Nokia PremiCell Data
List of AT Commands

9351671

Issue 4

Table of Contents

1. Introduction

Computers use AT commands to communicate with modems, i.e. you can use the commands described in this booklet to use data connections via your PremiCell terminal. Most communications applications, however, have a user-friendly interface that hides these AT commands from
the user.

The AT commands supported by the data adapter are listed below according to their uses. A short description, the syntax, the possible setting
values and responses of the AT commands are presented. Note that the **"AT"** or **"at"** prefix must be included at the beginning of each command line. You may type several AT commands on the same line, and in such cases you need to type the "AT" or "at" prefix only at the beginning of the command line. Some AT commands are not supported by all Nokia
products. Giving a command which is not supported causes an error response, and if the extended error report feature has been enabled with the AT+CMEE command, the error response also reports that the
command is not supported with the product used. Also, some parameters may not be supported by all products, and in this case those parameters are just ignored in commands or left blank in responses.

1.1 Command Syntax

The letter <n> used in a command syntax is the setting value typed in as a part of the command. If the value is optional it is enclosed in square brackets. Setting values for the commands are presented below under the description of the command. When you select a setting value with an AT command, the setting is valid until you change it. The functionality of a particular command form is described on the right side of the syntax, and after that follows the command response. **Note:** Default values are marked with bold.

1.2 Syntax of AT+ Commands

When you want to set or display a value for a setting, or you want to know the valid values, type in AT+ the command string followed by "=n", "?", or "=?", and press <ENTER>.

1) AT+__=n To write in a new setting with the command.
2) AT+__? Displays the current setting for the command.
3) AT+__=? Displays all setting values that can be used with the command.

1.3 Help on AT Commands

To get general Help on the AT commands supported by the terminal, use the commands AT? or AT?0. To get Help on a functional group of AT
commands type: AT?n (n= the number of the group). You issue AT commands to the data adapter via your communications application. When the data adapter receives a command, it responds with a message that is displayed on your computer screen.

1.4. Most common AT-commands

This section introduces the most commonly used AT commands with a brief description. You can find more detailed information on the command on the page indicated in the description.

AT? Command Help (Page 30)

Displays a list of available AT commands and Help in English. This command must stand alone on the command line.

ATA Answer Command (Page 7)

Answers an incoming call. If there is already a voice call active, the call is switched to data/fax receiving mode (depending on the application you are using).

ATD Dial Command (Page 7)

Initiates a call. When a data call is initiated, the command has to contain the recipient's number or a directory entry which contains the stored number.

ATEn Command Echo (Page 20)

Determines whether or not characters are echoed in the command mode.

n = 0 / n not present	echoing disabled
n = 1	echoing enabled

ATHn Hang-Up (Page 9)

Hangs up the call.

n = 0 / n not present	clears the call

ATO Go On-Line (Page 9)

Returns data adapter to on-line mode, after a connection has been established and the escape sequence (+++) has been issued.

ATS Select an S-Register (Page 11)

ATSr?	Displays the value of S-register r.
ATSr=n	Sets the value of S-register r.

ATV Define Response Format (Page 20)

Determines whether result codes are transmitted in numeric or alphanumeric form.

ATV[0]	Numeric responses (short form)
ATV1	Textual responses (long form)

AT&F Restore Factory Settings (Page 12)

Restores all factory settings including S-register settings but does not save them.

AT&V View Active Configuration (Page 12)

Displays the current S-register settings.

A/ Re-execute Command Line (Page 30)

Re-executes the command preceding this request. If this was the first
request, then an OK status will be returned.

+++ Escape Sequence (On-Line Command Mode)

Returns the data adapter to command mode after a connection has been established, without breaking the connection. The data adapter must be in command mode to accept AT Commands.

2. Descriptions of AT Commands

2.1. Call Control

ATA Answer Command

This command answers an incoming call. The call is indicated by the RING or +CRING message on the terminal equipment or by the number 2 if numeric mode has been selected.

Syntax:

ATA Answer incoming call.

ATD Dial Command

This command initiates a call. When a call is initiated, the command must contain the called party's number or a directory entry which contains the stored number. The ATD command can also be used for sending DTMF tones and for switching call mode from voice to data when an alternating call is active. When the data adapter tries to reach a number and fails to establish a connection, further attempts will be delayed, i.e. successive attempts to dial the same number will be rejected for a short period of time, and the response DELAYED will be displayed. The delay period only lasts for a few seconds initially; however,

if you continue to try to get the call through and fail, the delay will be prolonged for a few minutes. Finally, the called number will be included on a list of so-called blacklisted numbers. The response BLACKLISTED will be seen on the screen. The data adapter will not accept any new attempts to that number before you press any key on the phone keypad. This user action erases the number from the list and enables you to call the number again. The purpose of blacklisting numbers is to conserve the network's resources.

Syntax:

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

ATD[<dial_string>[;]] Dials the number in a dial-string.

ATD> SIM<n> [;]	Dials a stored number from a SIM card location <n>.
ATD><n> [;]	Dials a stored number from a SIM card memory location <n>.
ATDL	Redials the last number that has been dialled during the current session.

The following special characters in dial-string are valid (dial modifiers):

Character	Effect
+	Automatically adds the international dialling code before the number. Place this modifier before the dialling string.
,	A pause in dialling. The duration of the pause is specified by the S-register number 8. In the voice call mode, numbers after the modifier are sent as DTMF tones.
T, P, !, W	These dial modifiers have no effect. They have been included for compatibility reasons.

Examples:

ATD+3583123456	Make an international data call to the number 3583123456. The data adapter automatically adds the international access code.

ATD> SIM2 in the SIM card memory location 2. Make a data call to the number stored

ATH Hang Up Call

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

Syntax:

ATH[<n>] Hang up call.

ATL Monitor Speaker Volume

This command has no effect on the data adapter. It is included for compatibility reasons.

Syntax:

ATL[<n>]

ATM Monitor Speaker Mode

This command has no effect on the data adapter. It is included for compatibility reasons.

Syntax:

ATM[<n>]

ATO Go On-Line

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

Syntax:

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

ATP Set Pulse Dial as Default

This command has no effect on the data adapter. It is included for compatibility reasons.

Syntax: ATP

ATT Set Tone Dial as Default

This command has no effect on the data adapter. It is included for compatibility reasons.

Syntax: ATT

AT+CHUP Hang Up Call

This command hangs up the call, also when an alternating mode call is active.

Syntax:

AT+CHUP Hang up call. Response is NO CARRIER.

AT+CRC Cellular Result Codes

This command controls whether or not the extended format incoming call indication is used. When enabled, an incoming call is indicated to the DTE with the result["resulting"?] code +CRING:<type> instead of the normal RING.

Syntax:

AT+CRC=[<mode>]	Set incoming call indication mode.
AT+CRC?	Query current setting. Response is +CRC:<n>.
AT+CRC=?	Show supported modes. Response is +CRC:(list of supported <mode>s).

Values for <mode>:

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

AT+CSTA Select Type of Address

This command selects the type of number for further dialling commands (ATD).

Syntax:

AT+CSTA=[<type>] Set number type.

AT+CSTA? Query current setting. Response is +CSTA: <type>

AT+CSTA=? Show supported types. Response is +CSTA: (list of supported <type>s)

Values for <type>:

129	**normal**
145	international access code character '+' is automatically added

2.2. Data adapter Control Commands

ATI Identification

This command displays information about the data adapter.

	Syntax:
ATI0	Displays the (ID) number stored in S-register S39 in decimal format.
ATI1	Displays the serial number of the terminal .
ATI2/ATI3	Displays the revision of the data adapter.
ATI9	Displays the Plug and Play COM device field.

ATS Select an S-Register

This command manipulates the S-registers of the data adapter. The S-registers contain various user alterable parameters. See the section
S-registers below for information on the contents of the registers. If the S-register number is omitted, the operation will affect register number 0, i.e. ATS is the same as ATS0. If the <value> is omitted or is incorrect, the
ERROR result code will be displayed.

Syntax:

ATS [<register_number>]? Displays the value of the S-register.

ATS[<register_number>]=<value> Assigns <value> to the S-register.

ATZ Recall Stored Profile

This command restores the parameter values of one of the user sets by recalling the respective S-Register settings from the memory.

Syntax:

ATZ[0] Recall stored profile 0.

ATZ1 Recall stored profile 1.

AT&F Restore Factory Settings

The command restores all the factory settings including all the S-Register settings but does not save them.

Syntax:

AT&F Restore factory settings.

AT&V View Active Configuration

This command displays the current values of the S-registers and other set-
tings.

Syntax:

AT&V View active configuration.

AT&W Store Parameters In Given Profile

This command stores the current S-register and other settings to one of two user profiles. **Syntax:**

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

AT&Y Select Set As A Powerup Option

Defines which user profile (0 or 1) the parameters are loaded from when the data adapter is activated. **Syntax:**

AT&Y[0]	Load parameters from set 0.
AT&Y1	Load parameters from set 1.

AT+GCAP Request Complete Capabilities List

This command causes the data adapter to display information intended to permit the user to identify the overall capabilities of the data adapter. **Syntax:**

AT+GCAP	Display data adapter capabilities. Response is +GCAP: +CGSM which means that cellular commands are supported.

AT+GMI Request Manufacturer Identification

This command displays the data adapter manufacturer identification. **Syntax:**

AT+GMI Display manufacturer identification.

AT+GMM Request Model Identification

This command displays the terminal model identification. **Syntax:**

AT+GMM Display model identification.

AT+GMR Request Revision Identification

This command displays the terminal revision identification. **Syntax:**

AT+GMR Display revision identification.

AT+GSN Request Product Serial Number Identification

This command displays the terminal serial number.
Syntax:

AT+GSN Display serial number.

2.3. Terminal Control Commands

AT+CGMI Request Manufacturer Identification

This command displays phone manufacturer identification. **Syntax:**

AT+CGMI Display manufacturer identification.

AT+CGMM Request Model Identification

This command displays the terminal model identification.

Syntax:

AT+CGMM Display model identification.

AT+CGMR Request Revision Identification

This command displays the terminal revision identification. **Syntax:**

AT+CGMR Display revision identification.

AT+CGSN Request Product Serial Number Identification

This command causes the terminal to display its serial number.
Syntax:

AT+CGSN Display serial number.

AT+CMEE Report Terminal Error

This command disables or enables the use of the result code +CME ERROR: <err> as an indication of an error relating to the functionality of the terminal . When enabled, terminal related errors cause the +CME ERROR: <err> result code instead of the regular ERROR result code. ERROR is returned normally when the error is related to syntax, invalid parameters, or data adapter functionality.

Syntax:

AT+CMEE=[<mode>]	Enable or disable terminal error result code.
AT+CMEE?	Query current setting. Response is +CMEE:<mode>.
AT+CMEE=?	Show supported modes. Response is +CMEE: (list of supported <mode>s).

Values for <mode>:

0	**disable the result code and use ERROR instead**
1	enable the result code and use numeric values
2	enable the result code and use verbose values

AT+CPAS Terminal Activity Status

This command returns the activity status of the terminal. It can be used to interrogate the terminal before requesting action from it.

Syntax:

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

Values for <pas>:

0	ready (terminal allows commands from DTE)

1	unavailable (terminal does not allow commands from DTE)
3	ringing (terminal allows commands from DTE and an incoming call is waiting to be answered)
4	call in progress (terminal allows commands from DTE but a call is in progress)

AT+CPBF Find Phone Book Entries

This command returns phone book entries where the alphanumeric field starts with the search string <findtext>. Entries are searched from the current phone book memory storage selected with the AT+CPBS command. The format used for string information is selected with the AT+CSCS command.

Syntax:

AT+CPBF=<findtext>	Find entry. Response is +CPBF: <index>,<number>, <type>,<text> and it is repeated several times if more than one entry matches the search.
AT+CPBF=?	Show maximum field lengths. Response is +CPBF: <nlength>,<tlength>.

Parameters:

<index>	phone book memory location number
<number>	phone number
<type>	type of number, 129 for normal (default) and 145 for international access (number contains '+' character)
<text>	whole text field of the found entry

<nlength> maximum length of the field <number>

<tlength> maximum length of the field <text>

AT+CPBR Read Phone Book Entry

This command returns phone book entries in a location number range <index1>...<index2> from the current phone book memory storage selected with the AT+CPBS command. If <index2> is left out, only the location <index1> is returned. The format used for string information is selected with the AT+CSCS command.

Syntax:

AT+CPBR=<index1>[,<index2>]	Read phone book entry. Response is +CPBR: <index>, <number>, <type>, <text> and it is repeated several times if more than one entry is read.
AT+CPBR=?	Show list of supported indexes and maximum field lengths. Response is +CPBR:(list of supported <index>s), <nlength>, <tlength>.

Parameters:

<index>	phone book memory location number
<number>	phone number
<type>	type of number, 129 for normal and 145 for international access (number contains '+' character)
<text>	text field related to entry
<nlength>	maximum length of the field <number>
<tlength>	maximum length of the field <text>

Example:

AT+CPBR=20,22 Read SIM card memory locations 20 to 22.

AT+CPBS Select Phone Book Memory Storage

This command selects phone book memory storage, which is used by the phone book write commands. See +CPBW command. This command also affects the command AT+CPBF by setting the search to start from the memory storage selected by this command.

Syntax:

AT+CPBS=<storage>	Select phone book memory storage.
AT+CPBS?	Query current setting. Response is +CPBS:<storage>.
AT+CPBS=?	Show supported memory storages. Response is +CPBS: (list of supported<index>s).

Values for <storage>:

"SM" SIM's phone book

Example:

AT+CPBS="SM" Select active phone book memory to be the SIM card memory.

AT+CPBW Write Phone Book Entry

This command writes a phone book entry in a location number <index> in the current phone book memory storage selected with the AT+CPBS command. The format used for string information is selected with the AT+CSCS command.

Syntax:

AT+CPBW=<index>,<number>,<type>,<text>Write phone book entry.

AT+CPBW=,<number>,<type>,<text>	Write phone book entry to first free location.
AT+CPBW=<index>	Delete phone book entry.
AT+CPBW=?	Show list of supported indexes and maximum field lengths. Response is +CPBW: (list of supported<index>s), <nlength>, <tlength>.

Parameters:

<index>	phone book memory location number
<number>	phone number
<type>	type of number, 129 for normal (default) and 145 forinternational access ('+' character added to number)
<text>	text field related to entry
<nlength>	maximum length of the field <number>
<tlength>	maximum length of the field <text>

Example:

AT+CPBS=" SM"	Select active phone book memory to be the SIM's memory.

AT+CPBW=24,"285111",,"Mr Smith" Store number 285111 in the terminal's memory location 24 with the name Mr Smith.

AT+CSCS Select TE Character Set

This command informs the data adapter as to which character set is used by the DTE. The data adapter is then able to convert character strings correctly between DTE and mobile equipment character sets. This setting affects text mode SMS data and alpha fields in the phone book memory. **Syntax:**

AT+CSCS=[<chset>]	Select character set.
AT+CSCS?	Query current setting.
	Response is +CSCS: <chset>.
AT+CSCS=?	Show supported character sets.
	Response is +CSCS: (list of supported <chset>s).

Values for <chset>:

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

AT+CSQ Signal Quality

This command returns the received signal strength indication <rssi>. Bit error rate indication is not supported. **Syntax:**

AT+CSQ Query signal strength.

Response is +CSQ: <rssi>, 99.

AT+CSQ=? Show supported values.

Response is +CSQ: (list of supported <rssi>s), 99.

Values for <rssi>:

0	-113dBm or less
1	-111 -112dBm
2...30	-109...-53 dBm
31	-51 dBm or greater
99	not known or not detectable

2.4. Computer Data Adapter Interface Commands

ATE Command Echo

This command determines whether or not characters that are received from the DTE are echoed in the command mode.
Syntax:

ATE[0]	Disable echoing.
ATE1	**Enable echoing.**

ATQ Result Code Suppression

This command determines whether or not responses are sent to the DTE. **Syntax:**

ATQ[0]	**Enable sending of responses to DTE.**
ATQ1	Disable sending of responses to DTE**.**

ATV Define Response Format

This command determines whether result codes are transmitted in a numeric form or an alphabetic (or verbose) form.

Syntax:

ATV[0]	Select numeric (short form) responses.
ATV1	**Select textual (long) responses.**

ATX Response Range Selection

This command selectively enables or disables the response codes sent to the DTE.

Syntax:

ATX[0]	Enable response codes 0... 4.
ATX1	Enable response codes 0... 5, 10.
ATX2	Enable response codes 0... 5, 10.
ATX3	Enable response codes 0... 5, 7, 10.
ATX4	Enable response codes 0... 5, 7, 8, 10.
ATX5	**Enable all response codes.**

AT&C Define DCD Usage

This command determines how the state of the DCD V.24 signal relates to the detection on the received line signal from the distant enSyntax:

AT&C[0]	**Keep DCD always ON.**
AT&C1	Enable normal DCD usage*

*This is "always ON" with 09i/18i PremiCell. The command is included for compatibility purposes.

AT&D Define DTR Usage

This command defines how the DTR V.24 signal from the DTE is handled. **Syntax:**

AT&D[0]	DTR is ignored if AT&Q0 is selected. DTR ON-OFF hangs up the terminal if AT&Q2 is selected.

AT&D1	DTR ON-OFF causes a transition to the on-line command state.
AT&D2	**DTR ON-OFF hangs up the phone.**
AT&D3	DTR ON-OFF hangs up the phone and resets the data parameters to the start-upvalues.

AT&K Select Flow Control

This command selects the local flow control mode. Using this command is not recommended, instead use the AT+IFC command.

Syntax:	
AT&K[0]	Disable flow control.
AT&K3	**Set hardware flow control (CTS/RTS).**
AT&K4	Set software flow control (XON/XOFF).

AT&Q Define Communications Mode Option

This command defines the dialling and on-line options.

Syntax:	
AT&Q[0]	**Enable normal asynchronous operation.**
AT&Q2	Enable DTR controlled dial. DTR OFF to ON causes a call to be made to the number stored in the dial slot one (1).
DTR ON to OFF	hangs up the phone.

AT&S Define DSR Option

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

Syntax:	
AT&S[0]	Keep DSR always ON.
AT&S1	Enable normal DSR usage*

*This is "always ON" with 09i/18i PremiCell. The command is included for compatibility purposes.

AT+ICF DTE-DCE Character Framing

This command is used to determine the character framing that the data adapter uses while accepting commands and while transmitting
information text and a result code to/from a DTE.

Note: The terminal does not support autobauding. Therefore, after changing character framing settings of the data adapter and your communications application, close and restart the communications application. For repeated use of these settings you should issue the AT-commands AT&W and AT&Y.

Syntax:

AT+ICF=[<format>[,<parity>]] Set character framing.

AT+ICF?	Query current setting.
	Response is +ICF:<format>,<parity>.
AT+ICF=?	Show valid range of parameters.
	Response is +ICF:(1-6), (0,1,4).

Parameters:

<format>

3	**8 data, no parity, 1 stop**
4	7 data, no parity, 2 stop
5	7 data, parity, 1 stop
6	7 data, no parity, 1 stop

<parity>

0	odd
1	even
4	**none**

AT+IFC DTE-DCE Local Flow Control

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

Syntax:

AT+IFC=<DCE_by_DTE>,<DTE_by_DCE>
Set flow control.

AT+IFC?
Query current setting.
Response is

+IFC:<DCE_by_DTE><DTE_by_DCE>.

AT+IFC=?
Show valid range of parameters.
Response is +IFC:(0-3),(0-2).

Parameters:

<DCE_by_DTE>

0 no flow control

1 XON/XOFF (software) flow control

2 CTS/RTS (hardware) flow control

3 both XON/XOFF and CTS/RTS flow control

<DTE_by_DCE>

0 no flow control

1 XON/XOFF (software) flow control

2 CTS/RTS (hardware) flow control

AT+IPR Fixed DTE Rate

This command specifies the data rate at which the data adapter will accept commands.

Syntax:

AT+IPR=<rate>	Set DTE rate.
AT+IPR?	Query current setting.
	Response is +IPR:<rate>.
AT+IPR=?	Show valid range of rate.
	Response is +IPR:(0, 300, 1200, 2400, 4800, 9600,19200).

Values for <rate>:

300
1200
2400
4800
9600
19200

2.5. Reporting Options Commands

AT+CLIP Calling Line Identification Presentation

This command refers to the GSM supplementary service CLIP (Calling Line Identification Presentation) that enables a called subscriber to obtain the calling line identity (CLI) of the calling party when receiving a mobile terminated call. With this command, the user can enable or disable the presentation of the CLI on the DTE. It has no effect on the execution of the supplementary service CLIP in the network. **Syntax:**

AT+CLIP=[<mode>]	Set CLIP mode.
AT+CLIP?	Query current setting.
	Response is +CLIP:<mode>,2.
AT+CLIP=?	Show supported modes.
	Response is +CLIP: (list of supported <mode>s).

Values for <mode>:

0 **disable CLIP**

1 enable CLIP

CLIP information:

When the presentation of the CLIP on the DTE is enabled (and the calling subscriber permits), the +CLIP:<number>,<type>[,,,<alpha>] response is returned after every RING result code sent from the data adapter to the DTE (or +CRING).

<number> phone number

<type> type of number, 129 for normal and 145 for international
access (number contains '+' character)

<alpha> optional alphanumeric representation of a <number> corresponding to the entry found in the data adapter phone
book

AT+COLP Connected Line Identification Presentation

This command refers to the GSM supplementary service COLP (Connected Line Identification Presentation) that enables a calling subscriber to
obtain the connected line identity (COL) of the called party after setting up a mobile originated call. The command enables or disables the presentation of the COL at the DTE.

Syntax:

AT+COLP=[<mode>]
Set COLP mode.

AT+COLP? Query current setting. Response is +COLP:<mode>,2.

AT+COLP=? Show supported modes.
Response is +COLP: (list of supported <mode>s).

Values for <mode>:

0 **disable COLP**

1 enable COLP

COLP information:

When the presentation of COLP on the DTE is enabled (and the called subscriber permits), the +COLP:<number>,<type>[,,,<alpha>] response is returned before any +CR or V.25ter responses. Refer to AT+CLIP for descriptions of the response parameters.

AT+CR Service Reporting Control

This command controls whether or not the result code +CR:<serv> is returned from the data adapter to the computer. If enabled, the result code is transmitted at the point during the connect negotiation during which the data adapter has determined the speed and quality of service to be used, before any error control or data compression reports are transmitted, and before any final result code (e.g. CONNECT) is transmitted.

Syntax:

AT+CR=[<mode>]	Set service reporting control mode.
AT+CR?	Query current setting. Response is +CR: <mode>.
AT+CR=?	Show supported values. Response is +CR: (0,1).

Parameters:

<mode>	
0	**disable reporting**
1	enable reporting
<serv>	
ASYNC	asynchronous transparent
REL ASYNC	asynchronous non-transparent

AT+DR Data Compression Reporting

This command controls whether or not the +DR:<compr> result code is transmitted from the data adapter to the DTE. The result code shows the current data compression type. If enabled, the result code is transmitted at the point after error control negotiation (handshaking) during which the DCE has determined the data compression technique to be used (if any) and the direction of operation.

Syntax:

AT+DR=<mode>	Set reporting mode.
AT+DR? <mode>.	Query current setting. Response is NONE
AT+DR=?	Show supported values. Response is +DR: (0,1)

Parameters:

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

AT+ILRR DTE-DCE Local Rate Reporting

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

AT+ILRR=[<mode>] Set reporting mode.

AT+ILRR?	Query current setting. Response is +ILRR: <mode>.
AT+ILRR=?	Show supported values. Response is +ILRR: (0,1).

Values for <mode>:

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

2.6. Network Communication Parameter Commands

ATB Communications Standard Option

This command has no effect on the data adapter. It is included for compatibility reasons.

Syntax:

ATB[<n>]

AT+CBST Select Bearer Service Type

This command selects the bearer service <name> with data rate <speed> , and the connection element <ce> to be used when data calls are originated. The selected bearer service, rate, and connection element are used both in mobile originated and mobile terminated data and alternate type of calls during data mode.

Syntax:

AT+CBST=[<speed>[,<name>[,<ce>]]]	Select bearer service type.
AT+CBST?	Query current setting. Response is +CBST: <speed>, <name>, <ce>.
AT+CBST=?	Show supported values. Response is +CBST: (list of supported <speed>s), (list

of supported <name>s), (list of supported <ce>s).

Parameters:

<speed>

0 autobauding (automatic selection of speed)

1 300 bps (V.21)

2 1200 bps (V.22)

3 1200/75 bps (V.23)

4 2400 bps (V.22bis)

5 2400 bps (V.26ter)

6 4800 bps (V.32)

7 9600 bps (V.32)

<name>

0 asynchronous modem

2 PAD Access (asynchronous)

<ce>

0 transparent

1 non-transparent

2 both, transparent preferred

3 both, non-transparent preferred

AT+CEER Extended Error Report

This command causes the data adapter to return one or more lines of information text, which should offer the user of the data adapter an extended report of the reason for the failure in the last unsuccessful call setup (originating or answering). Typically, the text will consist of a single line containing the failure information given by the GSM network in a textual format.

Syntax:

AT+CEER Display error report.

Response is +CEER:<report>.

AT+CRLP Radio Link Protocol

This command selects the Radio Link Protocol parameters.

Syntax:

AT+CRLP=[<iws>[,<mws>[,<T1>[, <N2>]]]] Set RLP parameters.

AT+CRLP? Query current setting.

Response is +CRLP: <iws>, <mws>, <T1>, <N2>.

AT+CRLP=? Show valid values.

Response is +CRLP: (0-61),(0-61),(39-255),(1-255).

Parameters:

<iws> IWF to MS window size (default 61)

<mws> MS to IWF window size (default 61)

<T1> acknowledgement timer T1 (default 60)

<N2> retransmission attempts N2 (default 6)

2.7. Miscellaneous Commands

A/ Re-Execute Command Line

Re-executes the command preceding this request.

Syntax:

A/ Re-execute previous command.

AT? Command Help

Returns a list of available AT commands and Help in English. This command must be alone on the command line.

Syntax:

AT?[<n>] Display AT command help screen.

AT*C Start SMS Interpreter

This command activates the Short Message Service Interpreter.

Syntax:

AT*C Activate SMS interpreter.

Commands available in the SMS Interpreter:

SEND	Send a short message.
STORE, STORE/SIM or	Store a short message to active SIM memory.
DIR, DIR/SIM, DIR/NEW or	A short message stored in active SIM memory is displayed.
SHOW	Display current SMS transmission parameters.
SAVE	Save current SMS transmission parameters in the memory of the phone.
HELP	Display list of available SMS commands.

EXIT	Exit the SMS interpreter.
SCA=<phone number>	Change the service centre phone number through which your short messages are transmitted.
VALIDITY=<n>	Defines the length of time that sent short messages await delivery at the Service Centre, if the receiver is inaccessible.
<n>	may have following values:
NONE	Waiting time will be determined by network
0.....143	(n + 1) x 5 min
144.....167	12 hours+(n-143) x 30 min
168.....196	(n -166) x 24 hours
197.....255	(n -192) x 1 week
REPLY_PATH=ON, REPLY_PATH=OFF	The recipient is allowed to reply to the received message at the sender's expense, when the reply path isset to on.
CONFIRMATION=ON, CONFIRMATION=OFF	Sets the confirmation of message delivery to on or off.
DATA_BITS=7, DATA_BITS=8	Sets the number of data bits used in a short message transmission. DATA_BITS=8 can only be used when CLASSis not DEFAULT.

CLASS=<class> Set message class. <class> may have follow-
ing values:
DEFAULT sets the data coding scheme to a value according to Phase 1 GSM specifications,
number of bits is set to 7
0 message should be displayed immediately by
the receiver as it is not stored automatically
2 message should be stored in the SIM card
memory
PROTOCOL=<protocol> Select the protocol supported by the receiver
of the short message. The Service Centre of
the network provides the conversion of the
message. The remote party must be connect
ed to an appropriate terminal device.
<protocol> may have following values: DEFAULT, TELEX, FAX_G3, FAX_G4, VOICE,
ERMES, TELE-TEX, UCI, X.400, TYPE0, TYPE1,
TYPE2, TYPE3, TYPE4, TYPE5, TYPE7.

AT*T Enter SMS Block Mode Protocol

This command sets the data adapter in the SMS Block mode. The final result code OK (or 0) shall not be returned until the SMS Block mode is exited. Either the response OK or ERROR is returned. **Syntax:**

AT*T Activate SMS Block mode.

AT*V Activate V.25bis Mode

This command activates the CCITT V.25bis command mode.

Syntax:

AT*V Activate V.25bis command mode

AT*NOKIATEST Test Command

This command can be used to test that the data adapter communicates with the terminal. Either the response OK or ERROR is returned. **Syntax:**

AT*NOKIATEST Test connection to terminal.

AT+CESP Enter SMS Block Mode Protocol

Sets the data adapter in the SMS Block mode. The final result code OK (or 0) shall not be returned until block mode is exited. **Syntax:**

AT+CESP Activate SMS Block mode.

2.8. SMS Commands Used in Text and PDU Modes

AT+CSMS Select Message Service

This commands selects the messaging service and returns the type of messages supported. The supported service is specified by GSM 03.40 and 03.41 (service value 0).

Syntax:

AT+CSMS=0	Select message service.
	Response is +CSMS: <mt>,<mo>,<bm>.
AT+CSMS?	Query current setting.
	Response is +CSMS: 0,<mt>,<mo>,<bm>.
AT+CSMS=?	Show supported services.
	Response is +CSMS: 0.

Parameters:

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

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

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

AT+CPMS Preferred Message Storage

This command selects memory storages to be used for reading/deleting (m1), writing/sending (m2), and receiving (m3) short messages. Amount of used and available message locations in each memory is returned as response.

Syntax:

AT+CPMS=[<m1>[,<m2>[,<m3>]]]	Select preferred storage. Response is +CPMS: <used1>, <total1>, <used2>, <total2>, <used3>, <total3>.
AT+CPMS?	Current setting query. Response is +CPMS: <m1>, <used1>, <total1>, <m2>, <used2>, <total2>, <m3>, <used3>, <total3>.
AT+CPMS=?	Show supported values. Response is +CPMS: (list of supported <m1>s), (list of supported <m2>s), (list of supported <m3>s).

Parameters:

<m1>

"SM" SIM message storage

<m2>

"SM" SIM message storage

<m3>

"MT" Any of the storages associated with the Terminal.

AT+CMGF Message Format

This command tells the data adapter which input and output format of messages to use with send, list, read and write commands.

Syntax:

AT+CMGF=[<mode>]	Select message format.
AT+CMGF?	Query current setting.
	Response is +CMGF: <mode>.
AT+CMGF=?	Show supported values.
	Response is +CMGF: (list of supported <mode>s).

Values for <mode>:

0	**PDU mode**
1	Text mode

AT+CSCA Service Centre Address

This command updates the service centre address, through which mobile originated short messages are transmitted.

Syntax:

AT+CSCA=<sca>[,<type>]	Set service centre address.
AT+CSCA?	Current setting query.
	Response is +CSCA: <sca>, <type>.

Parameters:

<sca>	"service centre address in string format"

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

AT+CSMP Set Text Mode Parameters

This command is used to select values for additional parameters needed when short messages are sent, or stored. The parameters are only used in SMS text mode.

Syntax:

AT+CSMP=[<fo>[,<vp>[,<pid>[,<dcs>]]]]	Set parameter values.
AT+CSMP?	Current setting query. Response is +CSMP:

<fo>,<vp>,<pid>,<dcs>.

Parameters:

<fo>	depending on the command or result code: first octet of SMS-DELIVER, SMS-SUBMIT (default 17), or SMS-STATUS-REPORT in integer format
<vp>	depending on SMS-SUBMIT <fo> setting: validity period either in integer format (default 167) or in time-string format
<pid>	protocol identifier in integer format (default 0)
<dcs>	SMS Data Coding Scheme (default 0)

AT+CSDH Show Text Mode Parameters

This command controls whether detailed header information is shown in text mode short message result codes.

Syntax:

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

Values for <show>:

0	**do not show header values defined in commands +CSCA and +CSMP nor <length>, <type> in +CMT, +CMGL, +CMGR result codes for SMS text mode**
1	show all the values in result codes

AT+CSCB Select Cell Broadcast Message Types

This command selects which types of cell broadcast messages are to be received by the terminal.

Syntax:

AT+CSCB=[<mode>[,<mids>[,<dcss>]]]	Select message types.
AT+CSCB?	Query current setting. Response is +CSCB: <mode>, <mids>, <dcss>.
AT+CSCB=?	Show valid values. Response is +CSCB: (list of supported <mode>s).

Parameters:

<mode>

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

AT+CSAS Save Settings

This command saves active message service settings to a non-volatile memory. Saved values are not automatically restored after terminal power up.

Syntax:

AT+CSAS[=<profile>] Save settings.

AT+CSAS=? Show valid values.

Response is +CSAS: (list of supported <profile>s).

Values for <profile>:

1	settings are stored to terminal memory

AT+CRES Restore Settings

This command restores message service settings from a non-volatile memory.

Syntax:

AT+CRES[=<profile>]	Restore settings.
AT+CRES=?	Show valid values.

Response is +CRES: (list of supported <profile>s).

Values for <profile>:

1 settings are restored from terminal memory

AT+CNMI New Message Indications to DTE

This command selects how the receiving of new messages from the network is indicated to the DTE. See section 'Special responses in AT command mode' for detailed description of the syntax of indication responses.

Syntax:

AT+CNMI=[<mode>[,<mt>[,<bm>[,<ds>[,<bfr>]]]]]
Select indication procedure.

AT+CNMI? Query current setting.

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

AT+CNMI=? Show valid values.

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

Parameters:

<mode>

0 buffer all indications in data adapter

1 no indications when the DTE-DCE link is reserved

(on-line data mode)

2 buffer indications in data adapter when the DTE-DCE link is reserved, (e.g. in on-line data mode), and flush them to the DTE after reservation has ended

<mt>

0 **no received message indications are routed to the DTE**

1 indication of received message is routed to the DTE using a result code +CMTI

2 received messages (except class 2 messages which result only in +CMTI indication) are routed directly to the DTE using a result code +CMT

3 class 3 received messages are routed directly to the DTE using a result code +CMT and messages of other classes using a result indication +CMTI

<bm>

0 **no cell broadcast indications are routed to the DTE**

2 new cell broadcast messages are routed directly to the DTE using a result code +CBM

<ds>

0 **no status reports are routed to the DTE**

1 status reports are routed to the DTE using a result code +CDS

<bfr>

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

1 data adapter buffer of indications is cleared when

<mode> 1 or 2 is entered

AT+CMGL List Messages

This command returns messages with a status value <stat> from a preferred message storage selected with the AT+CPMS command. This command form applies only to the SMS text mode, and the PDU mode form of the command is described in the next section.

Syntax:

AT+CMGL[=<stat>] List messages.

Response is +CMGL: <index>,<stat>, <addr>,, [<scts>][,<type>, <length>]<CR><LF><data> and it

is repeated several times if more than one short message is listed.

AT+CMGL=? Show valid values.

Response is +CMGL: (list of supported <stat>s).

Parameters:

<stat>

"REC UNREAD"	received unread messages (default)
"REC READ"	received read messages
"STO UNSENT"	stored unsent messages
"STO SENT"	stored sent messages
"ALL"	all messages
<index>	location number
<addr>	origin or destination address
<scts>	service centre time stamp
<type>	type of origin or destination address, 129 for normal

and 145 for international access (number contains '+' character)

<length> length of <data> field

<data> user data

AT+CMGR Read Message

This command returns a message with a location value <index> from a preferred message storage selected with the AT+CPMS command. This command form applies only to the SMS text mode, and the PDU mode form of the command is described in the next section.

Syntax:

AT+CMGR=<index> Read message.

Response for received messages: +CMGR: <stat>, <addr>, , [<scts>][,<type>, <fo>, <pid>, <dcs>, <sca>,<typesca>, <length>]<CR> <LF><data>

Response for stored messages: +CMGR: <stat>, <addr>, [,<type>, <fo>, <pid>, <dcs>, [<vp>], <sca>, <typesca>, <length>]<CR><LF> <data>

Parameters:

<index> location number

<stat>

"REC UNREAD" received unread message

"REC READ" received read message

"STO UNSENT" stored unsent message

"STO SENT" stored sent message

<addr> origin or destination address

<scts> service centre time stamp

<type>	type of origin or destination address, 129 for normal
	and 145 for international access (number contains '+'
	character)
<fo>	depending on the command or result code: first octet
	of SMS-DELIVER, SMS-SUBMIT (default 17), or SMS-STATUS-REPORT in integer format
<pid>	protocol identifier in integer format (default 0)
<dcs>	SMS Data Coding Scheme (default 0)
<sca>	service centre address
<typesca>	type of service centre address, 129 for normal and 145
	for international access (number contains '+' character)
<length>	length of <data> field
<data>	user data
<vp>	depending on SMS-SUBMIT <fo> setting: validity
	period either in integer format (default 167) or in
	time-string format

AT+CMGS Send Message

This command sends a message to the network. A message reference value <mr> is returned to the DTE on successful message delivery. Sending can be cancelled by using the <ESC> character. <ctrl-Z> must be used to indicate the ending of the message body. This command form applies only to SMS text mode, and the PDU mode form of the command is described in the next section. **Syntax:**

AT+CMGS=<addr>[,<type>]<CR>text<ctrl-Z/ESC>

Send message.

Response is +CMGS:<mr>.

Parameters:

<addr>	"receiver's number in string format"
<type>	type of destination address, 129 for normal and 145 for international access ('+' character automatically added to address)
<mr>	message reference number

Example: **AT+CMGS="1234567", 129**

Sends SMS message to number (12)34567

AT+CMSS Send Message from Storage

This command sends a message with the location value <index> from a preferred message storage selected with the AT+CPMS command. If a new recipient address <addr> is given, it will be used instead of the one stored with the message. Reference value <mr> is returned to the DTE on successful message delivery.

Syntax:

AT+CMSS=<index>[,<addr>[,<type>]] Send message. Response is +CMSS:<mr>.

Parameters:

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

AT+CMGW Write Message to Memory

This command stores a message in a preferred memory storage selected with the AT+CPMS command. Memory location <index> of a stored message is returned. By default, the message status will be set to " STO UNSENT ", but the parameter <stat> also allows other status values to be given. Entering of text is done similarly as specified in the command AT+CMGS. This command form applies only to the SMS text mode, and the PDU mode form of the command is described in the next sec-
tion.

Syntax:

AT+CMGW=<addr>[,<type>[,<stat>]]<CR>text<ctrl-Z/ESC>
Store message.
Response is +CMGW:<index>.

Parameters:

<addr>	"origin or destination address in string format"
<type>	type of origin or destination address, 129 for normal
	and 145 for international access (number contains '+'
	character)
<stat>	
"REC UNREAD"	received unread message
"REC READ"	received read message
"STO UNSENT"	stored unsent message (default)
"STO SENT"	stored sent message
<index>	location number

AT+CMGD Delete Message

This command deletes a message from a preferred message storage selected with the AT+CPMS command.

Syntax:

AT+CMGD=<index>	Delete message.

Parameters:

<index>	location number

2.9. SMS Commands Used Only in PDU Mode

AT+CMGL List Messages

This command returns messages with a status value <stat> from a preferred message storage selected with the AT+CPMS command.

Syntax:

AT+CMGL[=<stat>]	List messages. Response is +CMGL: <index>, <stat>,,<length><CR><LF><pdu> and it is repeated several times if more than one short message is listed.
AT+CMGL=?	Show valid values. Response is +CMGL: (list of supported <stat>s).

Parameters:

<stat>

0	received unread messages
1	received read messages
2	stored unsent messages
3	stored sent messages
4	all messages

<index> location number

<length> length of the actual PDU in octets

<pdu> GSM 03.40 Protocol Data Unit in hexadecimal format

AT+CMGR Read Message

This command returns a message with the location value <index> from a preferred message storage selected with the AT+CPMS command. **Syntax:**

AT+CMGR=<index> Read message. Response is +CMGR: <stat>,<length>, <CR><LF> <pdu>.

Parameters:

<index> location number

<stat>

0 received unread message

1 received read message

2 stored unsent message

3 stored sent message

<length> length of the actual PDU in octets

<pdu> GSM 03.40 Protocol Data Unit in hexadecimal format

AT+CMGS Send Message

This command sends a message to the network. The message reference value <mr> is returned to the DTE on successful message delivery. Sending can be cancelled by using the <ESC> character. <ctrl-Z> must be used to indicate the ending of a message body.
Syntax:

AT+CMGS=<length><CR><pdu><ctrl-Z/ESC> Send message. Response is +CMGS:<mr>.

Parameters:

<length> length of the actual PDU in octets

<pdu> GSM 03.40 Protocol

Data Unit in hexadecimal format

<mr> message reference number

AT+CMGW Write Message to Memory

This command stores a message in a preferred memory storage selected with the AT+CPMS command. 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. Entering of text is done similarly as specified in the command AT+CMGS. **Syntax:**

AT+CMGW=<length>[,<stat>]<CR><pdu><ctrl-Z/ESC>
Store message.
Response is +CMGW:<index>.

Parameters:

<length> length of the actual PDU in octets

<stat>

0	received unread message
1	received read message
2	**stored unsent message**
3	stored sent message
<pdu>	GSM 03.40 Protocol
	Data Unit in hexadecimal format
<index>	location number

3. S-Registers

S-Reg Default	Unless otherwise specified the value range of the settings is from 0 to 255	
S0	Defines the number of rings after which the terminal automatically answers the call (Auto Answer Function). If the setting is 0, automatic answer is disabled.	0
S1	Ring count (read only)	0
S2	Escape code character	43
S3	Carriage return character	13
S4	Line feed character	10
S5	Backspace character	8
S7	Wait for connection completion (seconds) (0=connection waiting time is unlimited).	60
S8	Sets the duration, in seconds, for the pause (,) option in the dial command.	2
S10	DCD OFF to hang-up delay (seconds/10). Setting 255 signifies that the connection will not be cleared even if the DCD drops. Default is 6 seconds.	100
S12	Escape Guard Time (seconds/50) 0=escape disabled.	50
S14	For changing the S14 settings, use the following AT commands: **ATEn** (n=1) to enable the key presses to be displayed on the screen or (n=0) to disable, **ATQn** (n=0) to enable or (n=1) to disable the responses, **ATVn** to switch between the textual (long format) responses	10

S-Reg	Unless otherwise specified the value range of the settings is from 0 to 255	Default
S14	(n=1) and numerical (short format) responses (n=0). Bit-mapped options: bits 1, 2 and 3. bit 1: 0=ATE0, 1=ATE1 bit 2: 0=ATQ0, 1=ATQ1 bit 3: 0=ATV0, 1=ATV1. E.g. if bit 3 is 1, then the ATV1 command has been executed. The default values are shown in bold. The bits are numbered from 0 to 7.	10
S21	For changing the S21 settings use the following AT commands: **AT&Cn** to define the DCD signal usage. The DCD signal is always on (n=0 or not present) or else used in the normal way (n=1), **AT&Dn** to define the DTR signal usage. **AT&Sn** to define the DSR signal usage. The DSR signal is always on (n=0 or not present) or else used in the normal way (n=1). Bit-mapped options: bits 3, 4, 5 and 6. The default values are shown in bold. bits 4&3: 00=AT&D0, 01=AT&D1, **10=AT&D2**, 11=AT&D3 bit 5: 0=AT&C0, **1=AT&C1** bit 6: 0=AT&S0, **1=AT&S1** E.g. if bit 4 is 0 and bit 3 is 1, the command AT&D1 has been executed.	112

S-Reg	Unless otherwise specified the value range of the settings is from 0 to 255	Default
S22	For changing the S22 Register use the following AT commands for changing the response ranges: **ATX0** responses 0-4 are enabled **ATX1** responses 0-5, 10 are enabled **ATX2** responses 0-5, 10 are enabled **ATX3** responses 0-5, 7, 10 are enabled **ATX4** responses 0-5, 7, 8, 10 are enabled **ATX5** all responses are enabled	16
S22	Bit-mapped options: bits 4, 5 and 6. bits 6&5&4: 000=ATX0, 100=ATX1, 101=ATX2, 110=ATX3, 111=ATX4, **001=ATX5** E.g. if bit 4 is 0 and bits 5 and 6 are 1, the command ATX3 has been executed.	16
S25	Detect DTR change (seconds).	0
S27	For defining the communication mode option and changing the S27 Register use the ATQn command: **AT&Q0** for the normal asynchronous operation, **AT&Q2** for the DTR controlled dialling (on the DTR ON-OFF transition the terminal adapter automatically dials the number in the slot &Z0). Bit-mapped options: bit 1. bit 1: **0=AT&Q0**, 1=AT&Q2	0
S34	Local flow control 0=none 1=XON/XOFF **2=CTS/RTS** 3=both XON/XOFF and CTS/RTS	2

S-Reg	Unless otherwise specified the value range of the settings is from 0 to 255	Default
S35	Remote modem type 0=none (ISDN connection) 1=V.21 2=V.22 3=V.22bis 4=V.23 5=V.26ter 6=V.32 **7=autobauding (mobile switching centre selects a compatible modem)** 8=undefined	7
S38	Command Interpreter mode **0=EIA/TIA - 602** 1=CCTT V.25bis	0
S39	S39 stores the ID number of the terminal adapter in a decimal format. The ID can be displayed with the ATI0 command.	0
S40	Type of number **0=Unknown** **1=International** **2=National** **3=Network specific** **4=Dedicated PAD**	0
S41	Numbering plan 0=Unknown 1=ISDN/telephony (E.163/E.164) 2=Data (X.121) 3=Telex (F.69) 4=National 5=Private	1
S42	Radio Link Protocol uplink window size (0-61).	61
S43	Radio Link Protocol downlink window size (0-61).	61
S44	Radio Link Protocol T1 timer value (39-255) seconds/100.	60

S-Reg Default	Unless otherwise specified the value range of the settings is from 0 to 255	
S45	Radio Link Protocol N2 repetition count (1-255).	6
S46	Force Data Compression (only for mobile to mobile connections) 0=Disabled 1=Data compression in transmit direction only 2=Data compression in receive direction only 3=Data compression in both directions	0
S47	Error Correction Mode with FClasses 2 and 2.0 0=Disabled 1=Enabled, 64 byte frames 2=Enabled, 256 byte frames	0

4. Special Responses in AT Command Mode

4.1 +CME ERROR Mobile Equipment Error Result Code

The operation of the +CME ERROR: <err> result code is similar to the
regular ERROR result code. If +CME ERROR: <err> is the result code for any of the commands in a command line, none of the following commands in the same command line are executed. Neither the ERROR nor the OK result code will be returned as a result of a completed
command line execution. The format can be either numeric or verbose. This is set with the command +CMEE.

<err> values (numeric format followed by verbose format):

0	terminal failure
1	no connection to terminal
2	terminal-adapter link reserved
3	operation not allowed
4	operation not supported
10	SIM not inserted

16	incorrect password
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
31	network timeout
100	unknown

4.2 +CMS ERROR Message Service Failure Result Code

The final result code +CMS ERROR: <err> indicates an error related to mobile equipment or the network. The operation is similar to the ERROR result code. None of the following commands in the same command line is executed. Neither the ERROR nor the OK result code will be returned. ERROR is returned normally when the error is related to syntax or invalid parameters.

<err> values used by common messaging commands:

300	ME failure
301	SMS service of ME reserved
302	operation not allowed
303	operation not supported
304	invalid PDU mode parameter
305	invalid text mode parameter
310	SIM not inserted
311	SIM PIN necessary
312	PH-SIM PIN necessary

313	SIM failure
314	SIM busy
315	SIM wrong
320	memory failure
321	invalid memory index
322	memory full
330	SMSC address unknown
331	no network service
332	network timeout
500	unknown error
...511	other values in range 256...511 are reserved
512...	manufacturer specific

4.3 +CRING Extended Format Incoming Call Indication

The response +CRING:<type> indicates an incoming call if the extended format incoming call indication is selected by the command AT+CRC=1.

<type> values:

REL ASYNC	asynchronous non-transparent data call
ASYNC	synchronous transparent data call
FAX	facsimile call (TS62)
VOICE	normal voice (TS11)
VOICE/XXX ASYNC or	voice followed by data (BS 81) (XXX is REL ASYNC)
ALT VOICE/XXX	alternating voice/data, voice first (BS 61)
ALT XXX/VOICE	alternating data/voice, data first (BS 61)
ALT VOICE/FAX	alternating voice/fax, voice first (TS 61)
ALT VOICE/FAX	alternating fax/voice, voice first (TS 61)

4.4 RING Incoming Call Indication

The response RING indicates an incoming call. Voice calls generate no RING response. The numeric (short form) value of the RING response is 2.

4.5 +CMTI Received Message Indication

The response +CMTI: <mem>,<index> indicates that a short message has arrived and is stored. The indication mode is activated with the AT+CNMI command.

<mem>

"SM" SIM message storage

<index> location number

4.6 +CMT Received Message Routing

This response is used to carry a received short message to DTE when direct routing has been activated with the AT+CNMI command. The response +CMT:,<length> <CR><LF><pdu> is used when PDU mode is enabled, and +CMT: <addr>, , <scts>[,<type>, <fo>, <pid>, <dcs>, <sca>,
<typesca>, <length>]<CR><LF><data> when text mode is used.

<length> length of the actual PDU in octets or length of <data> field

<pdu> service centre address followed by GSM 03.40 Protocol Data
Unit in hexadecimal format

<addr> originator address

<scts> service centre time stamp

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

<fo> first octet of SMS-DELIVER in integer format

<pid> protocol identifier in integer format

<dcs> SMS Data Coding Scheme

<sca> service centre address

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

4.7 +CDS Received Status Report Routing

This response is used to carry a received short message status report to the DTE when direct routing has been activated with the AT+CNMI command. The response +CDS:<length><CR><LF><pdu> is used when PDU mode is enabled, and +CDS: <fo>,<mr>,[<addr>], [<type>], <scts>,<dt>,<st> when text mode is used.

<length> length of the actual PDU in octets

<pdu> service centre address followed by GSM 03.40 Protocol Data Unit in hexadecimal format

<fo> first octet of SMS-STATUS-REPORT in integer format

<mr> message reference

<addr> receiver address

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

<scts> service centre time stamp

<dt> discharge time

<st> status

4.8 +CMT Received Message Routing

This response is used to carry a received short message to DTE when direct routing has been activated with the AT+CNMI command. The response +CMT:,<length> <CR><LF><pdu> is used when PDU mode is enabled, and +CMT: <addr>, , <scts>[,<type>, <fo>, <pid>, <dcs>, <sca>, <typesca>, <length>]<CR><LF><data> when text mode is used.

<length> length of the actual PDU in octets or length of <data> field

<pdu> service centre address followed by GSM 03.40 Protocol Data Unit in hexadecimal format

<addr> originator address

<scts> service centre time stamp

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

<fo> first octet of SMS-DELIVER in integer format

<pid> protocol identifier in integer format

<dcs> SMS Data Coding Scheme

<sca> service centre address

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

4.9 +CDS Received Status Report Routing

This response is used to carry a received short message status report to the DTE when direct routing has been activated with the AT+CNMI command. The response +CDS:<length><CR><LF><pdu> is used when PDU mode is enabled, and +CDS: <fo>,<mr>,[<addr>], [<type>], <scts>,<dt>,<st> when text mode is used.

<length> length of the actual PDU in octets

<pdu>	service centre address followed by GSM 03.40 Protocol Data Unit in hexadecimal format
<fo>	first octet of SMS-STATUS-REPORT in integer format
<mr>	message reference
<addr>	receiver address
<type>	type of receiver address, 129 for normal and 145 for international access (number contains '+' character)
<scts>	service centre time stamp
<dt>	discharge time
<st>	status

5. Abbreviations

CTS	Clear To Send.
DCD	Data Carrier Detect.
DCE	Data Circuit-Terminating Equipment, i.e. here the Data adapter.
DSR	Data Set Ready.
DTE	Data Terminal Equipment (see also TE below).
DTR	Data Terminal Ready.
ME	Mobile Equipment, which in most cases is a mobile phone.
RTS	Request To Send.
TA	Terminal Adapter.
TE	Terminal Equipment, which in most cases is a computer.