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**Release Notes**

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# 1    Introduction

## 1.1      Purpose of the document

This document describes the messages exchanged between an application and the modem based on AT commands in order to control the modem. The generic parts of this document are valid for all AT manuals:

- Packet Domain AT commands      MS-AT-COMMANDS-PACKET_DOMAIN
- Proprietary AT commands          MS-AT-COMMANDS-PROPRIETARY

# 2   AT commands features

## 2.1   Serial interface settings

The serial driver works after start up with the following settings:

- data-rate: 115200 bps

- 1 stop bit

- No parity

- RTS/CTS flow control (HW flow control)

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

## 2.2   Command line

The commands starts normally with AT (means Attention) and finishes with a <CR> character. Only for writing or sending a SMS CtrlZ or ESC terminates the command; <CR> is used between the 2 parts of the SMS (address and text).

## 2.3   Default values

If the command parameters are optional, they can be also left out in the command line. In such cases normal default values are assumed as follows:

- in case of integer type parameters, the default value is 0, except the cases specified for each concerned command;

- in case of text parameters, the default value is an empty string, except the cases specified for each concerned command.

## 2.4   Information responses and result codes

Information responses start and end with <CR><LF> when V1 is enabled and with <CR> when V0 is enabled.

If the command syntax is wrong CME ERROR: unknown is sent.

If the parameters are wrong +CME ERROR: <error> or +CMS ERROR: <error> is sent. <error> gives hints to the kind of the error.

If no SIM-card is present or the PIN was not correctly entered, +CME ERROR: <error> is sent for the most commands.

If the command line could be performed successfully, the string OK is sent.

In the following description <CR><LF> are intentionally omitted.

# 3      General behaviours

## 3.1      Start up and initialisation

A complete start up can take place only with a SIM-card with disabled PIN-check. For a SIM-card with enabled PIN-check the most commands are answered with +CME ERROR: SIM-PIN requested. After entering PIN via +CPIN command, which allows a start up completion, a lot of SIM-files will be read; it is possible that some commands are affected for a few seconds.

The serial interface driver does not allow a new command, until the old one is  terminated by OK or +CME ERROR: <error>.

If at start up the MS detects inconsistencies related to the NVRAM the following message is displayed: "! NVR DOES NOT FIT TO SW-VERSION. NVR-update is needed !"

## 3.2      IPC – Inter Processor Communication

### 3.2.1      Multiplexing mode +CMUX

#### 3.2.1.1      Description

This command enables the multiplexing protocol control channel as defined in GSM07.10. The AT command sets parameters for the Control Channel. If parameters are left out the default values are used. If no autobauding is supported, a customer related interface speed is pre selected. The final response code OK or CME ERROR: <err> is returned using the old interface speed; the parameters become active only after sending OK.
It is stated that the +CMUX command usage while multiplexing, generates an CME_ERROR: operation not allowed.

#### 3.2.1.2      Syntax

Command syntax: AT+CMUX=<mode>[,<subset>[,<port_speed>[,<N1>[,<T1> [,<N2>[,<T2>[,<T3>[,<k>]]]]]]]]

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+CMUX | OK<br>or<br>CME ERROR: <error> |
| Read command<br>AT+CMUX? | +CMUX: <mode>,[<subset>],,<br><N1>,<T1>,<N2>,<T2>,<T3>[,<k>]<br>+CME ERROR: <err> |
| Test command<br>AT+CMUX=? | +CMUX: (list of supported <mode>s),(list of supported <subset>s),,(list of supported <N1>s),(list of supported <T1>s),(list of |

| | supported <N2>s),(list of supported <T2>s),(list of supported <T3>s),(list of supported <k>s) OK |
|---|---|

### 3.2.1.3　　Defined values

<mode> (multiplexer Transparency Mechanism)

- 0 Basic option (default)

- 1 Advanced option (forbidden t.b.d.)

<subset>:

This parameter defines the way in which the multiplexer control channel is set up. A virtual channel may subsequently be set up differently but in the absence of any negotiation for the settings of a virtual channel, the virtual channel shall be set up according to the control channel <subset> setting.

- 0: UIH frames used only

- 1: UI frames used only; value currently not supported

- 2: I frames used only; value currently not supported

Default value: 0

<port_speed> (transmission rate) this parameter is not yet supported and the value 0 is always displayed in case of read command; values:

- 1  9 600 bit/s

- 2 19 200 bit/s

- 3  38 400 bit/s

- 4  57 600 bit/s

- 5 115 200 bit/s

- 6 230 400 bits/s

- 7 1 Mbit/s (default)

<N1> (maximum frame size):

1- 32768; currently only the range 1-1509 is supported

default Value : 31 (64 if Advanced option is used)

<T1> (acknowledgement timer in units of ten milliseconds):

1-255, where 10 is default (100 ms)

<N2> (maximum number of re-transmissions):

0-100, where 3 is default; currently only the range 0-5 is supported

<T2> (response timer for the multiplexer control channel in units of ten milliseconds):

2-255, where 30 is default (300 ms)

NOTE:  T2 must be longer than T1.

<T3> (wake up response timer in seconds):

1-255, where 10 is default ; currently not supported, in case of read command 0 is returned;

<k> (window size, for Advanced operation with Error Recovery options):

1-7, where 2 is default; currently not supported, in case of read command 0 is returned.

### 3.2.2    Multiplexing mode +XMUX

#### 3.2.2.1    Description
*[ This command is only available in Software Rel.4 or higher ! ]*
This command configures the GSM07.10 multiplexing protocol.

#### 3.2.2.2    Syntax
Command syntax:
AT+XMUX=<action>[,[<p1>][,[<p2>][,[<p3>][,[<p4>][,[<p5>][,[<p6>][,[<p7>][,[<p8>][,[<p9>][,[<p10>]]]]]]]]]]

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+XMUX= | OK<br>or<br>CME ERROR: <error> |
| Read command<br>AT+XMUX? | +XMUX:<action>,<p1>,<p2>,<p3>,<p4>,<p5>,<p6>,<p7>,<p8>,<p9>,<p10><br>OK<br>or<br>+CME ERROR: <err> |
| Test command<br>AT+XMUX=? | +XMUX: (list of supported <actions>),<br>(list of supported <p1's>),<br>(list of supported <p2's>),<br>(list of supported <p3's>), |

| | (list of supported <p4's>),<br>(list of supported <p5's>),<br>(list of supported <p6's>),<br>(list of supported <p7's>),<br>(list of supported <p8's>),<br>(list of supported <p9's>),<br>(list of supported <p10's>)<br>OK |
|---|---|

### 3.2.2.3    Defined values
<action>: Action
<p1>…<p10>:  Parameter

### 3.2.3    DLC (Data Logical Channel) Handling
The number of available DLCs is customizable
In the current default configuration there are 10 DLC's (Data Logical Channel) with the following proposed functionality:

DLC 0        Mux control channel (used for 07.10 protocol handling, not to be used    for AT commands in multiplexed mode)

DLC 1        Call Control Commands

DLC 2        CSD (circuit switched data calls)

DLC 3        GPRS connection establishment and data

DLC 4        GPRS connection establishment and data

DLC 5        GPRS connection establishment and data

DLC 6, 7      Phonebook, SMS, SIMTK

DLC 8        XDRV, SYSTEM, SIM, NS

DLC 9        free to use

Note: the partition of commands except DLC 0 is not mandatory; it is a proposal in order to organize the usage and up to the customer.

Stack controllers with a list of AT commands provided by them is documented in at_ctrl_cmd_list.xls

### 3.2.4    Configuration of DLCs +XCONFIG

### 3.2.4.1    Description
This command allows the configuration of DLCs (Data Logical Channels).

### 3.2.4.2    Syntax

Command syntax: AT+XCONFIG=<config_item>,<switch> [,<dlc>]

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+XCONFIG=3,1,3 | OK<br>or<br>CME ERROR: <error> |
| Read command<br>AT+XCONFIG? | +XCONFIG: options=4000FFFF<br>OK |
| Test command<br>AT+XCONFIG=? | +XCONFIG: (0-4),0|1,(0-9)<br>OK |

### 3.2.4.3    Defined values

<config_item>:
   0 -> configure voice channel for auto answering
   1 -> configure CSD channel for auto answering
   2 -> configure GPRS channel for auto answering
3 -> configure unsolicited call results (RING, +XREDIAL)
4 -> configure unsolicited GPRS results (RING)

Note:
The enabling of auto answering with ATS0 is a prerequisite for the configuration of channels.
With ATS0 auto answering is enabled for voice, CSD and GPRS on the DLC where it had been latest requested.  With AT+XCONFIG it is possible to configure separate channels for voice, CSD and GPRS.

<switch>:
if <config_item> value 0, 1, 2:
0: disable selection
1: enable selection for <dlc>

if <config_item> value 3, 4:
0: disable on all channels or channel specific with optional parameter <dlc>
1: enable on all channels (default) or channel specific with optional parameter <dlc>

<dlc>: integer type value indicating the DLC in the range of 1 – 9 (the maximum number of DLC is customizable). In MUX mode DLC 0 is reserved for GSM 07.10 usage.
<options>: 32 bit field coded as hex field describing the current configuration, i.e. is a certain functionality enabled or not.
Bit 31: ATC_REL99
Bit 30: ATC_CELL_BROADCASTS_SUPPORTED

Bit 0: NFW_BT_CONTROLLER
Bit 1: NFW_CC_CONTROLLER
Bit 2: NFW_FAX_CONTROLLER
Bit 3: NFW_GPRS_CONTROLLER
Bit 4: NFW_LATC_CONTROLLER
Bit 5: NFW_LCS_CONTROLLER
Bit 6: NFW_NS_CONTROLLER
Bit 7: NFW_PBK_CONTROLLER
Bit 8: NFW_PMI_CONTROLLER
Bit 9: NFW_SIM_CONTROLLER
Bit 10: NFW_SMS_CONTROLLER
Bit 11: NFW_STK_CONTROLLER
Bit 12: NFW_SYS_CONTROLLER
Bit13: NFW_TERM_CONTROLLER
Bit 14: NFW_TEST_CONTROLLER
Bit 15: NFW_APP_CONTROLLER

### 3.2.5    Unsolicited result code handling

Unsolicited result codes belonging to a stack controller arrive on the channel where the sending had been enabled. Unsolicited responses will be queued when the display is not possible e.g. during a data call on this particular channel.
All other unsolicited result codes which are not handled by a stack controller are routed through legacy ATC and arrive on channel 1. Call related unsolicited responses arrive on the channel where they had been requested.

### 3.2.6    Controller Handling

Stack Controller
- Commands in a stack controller can be raised from every channel. If there is already a command ongoing for a particular stack controller the raising of a command to the same stack controller from another channel is queued. The queuing is also valid for legacy ATC.
- Stack Controllers have per default 1 instance. Some Stack Controllers exist in several instances:
    o SMS Controller: 2
    o GPRS Controller: 4
    o CC Controller: 2

GPRS
- A GPRS connection can be deactivated with +cgact on a different channel than established

CSD
- CSD Data calls can be released on a different channel than established with +chld

## 3.3 Dynamical channel handling

Connecting / replacing physical devices like Bluetooth, Irda or USB are opened / closed as a terminal at runtime. The UART0 is always active.

For the Bluetooth channel there are settings per default enabled:

- echo off

- error codes in verbose format

## 3.4 Terminal Settings

For a number of settings the settings are terminal specific:

- +XDNOABORT

- +CLIR

- +CCUG

- +CMEE

- +CSCS

- ATE

- ATV

- ATS<n>

- AT&D

- +CMER

- +XCIND

- ATQ

- +CRC

- +CR

- ATX

All other settings are valid for all terminals connected.
Note: This list is not up to date!

# 4    General commands

## 4.1    Manufacturer identification +CGMI

### 4.1.1    Description
This command gives the manufacturer identification.

### 4.1.2    Syntax
Command syntax: AT+CGMI

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+CGMI<br><br>Note:<br> get manufacturer identification | \<manufacturer><br>OK<br>or<br>CME ERROR: \<error> |
| Test command<br>AT+CGMI=? | OK |

## 4.2    Request model identification +CGMM

### 4.2.1    Description
This command gives the model identification.

### 4.2.2    Syntax
Command syntax: AT+CGMM

| COMMAND | POSSIBLE RESPONSES |
|---|---|

| AT+CGMM

Note:
 get model identification | <model>
OK
or
CME ERROR: <error> |
| Test command
AT+CGMM=? | OK |

## 4.3      Request revision identification +CGMR

### 4.3.1      Description
This command gives the revised version of the mobile station.

### 4.3.2      Syntax
Command syntax: AT+CGMR

| COMMAND | POSSIBLE RESPONSES |
| --- | --- |
| AT+CGMR

Note:
 get revision version | <revision>
OK
or
CME ERROR: <error> |
| Test command
AT+CGMR=? | OK |

## 4.4      Request product serial number identification +CGSN

### 4.4.1      Description
This command gets the product serial number, known as IMEI (International Mobile Equipment Identity) of the MS.

### 4.4.2      Syntax
Command syntax: AT+CGSN

| COMMAND | POSSIBLE RESPONSES |
| --- | --- |

| AT+CGSN<br><br>Note:<br> get the IMEI | <IMEI><br>OK<br>or<br>CME ERROR: <error> |
|---|---|
| Test command<br>AT+CGSN=? | OK |

## 4.5     Set TE character set +CSCS

### 4.5.1     Description
This command selects the TE character set.

### 4.5.2     Syntax
Command syntax: AT+CSCS=<chset>
<chset>:

-   "GSM": GSM default alphabet (GSM03.38 6.2.1)

-   "HEX"   character strings consist only of hexadecimal numbers from 00 to FF; e.g. "032FE6" equals three 8-bit characters with decimal values 3, 47 and 230; no conversions to the original MT character set shall be done

-   "IRA": international reference alphabet (ITU-T T.50)

-   "PCCP437": PC character set Code Page 437

-   "8859-1": ISO 8859 Latin 1 character set

-   "UCS2": 16-bit universal multiple-octet coded character set (USO/IEC10646); UCS2 character strings are converted to hexadecimal numbers from 0000 to FFFF. Only the strings found in quotation marks are UCS2 coded, the rest of commands or responses, remains in IRA alphabet.

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+CSCS="GSM"<br><br>Note:<br> set GSM default alphabet | OK<br><br>or<br>CME ERROR: <error> |
| Read command<br>AT+CSCS? | +CSCS="IRA"<br>OK |

| Test command<br>AT+CSCS=? | OK |
|---|---|

## 4.6    Request international mobile subscriber identification +CIMI

### 4.6.1    Description
This command allows to request the international mobile subscriber identity IMSI (International Mobile Subscriber Identity), which is intended to permit the TE user to identify the individual SIM which is attached to ME.

### 4.6.2    Syntax
Command syntax: AT+CIMI

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+CIMI<br><br>Note:<br> read the IMSI (15 digits starting with MCC / 3 digits and MNC / 2digits) | \<IMSI\><br>OK<br>or<br>CME ERROR: \<error\> |
| Test command<br>AT+CIMI=? | OK |

## 4.7    Card identification +CCID

### 4.7.1    Description
This command returns the ICCID of the SIM-card.

### 4.7.2    Syntax
Command syntax: AT+CCID

| COMMAND | POSSIBLE RESPONSES |
|---|---|

| AT+CCID<br><br>Note:<br> read the ICCID from the SIM-card | <ICCID><br>OK<br>or<br>CME ERROR: <error> |
|---|---|
| Read command<br>AT+CCID? | same as above |
| Test command<br>AT+CCID=? | OK |

## 4.8    Request complete capabilities list +GCAP

### 4.8.1    Description
This command requests the list of capabilities, containing the corresponding command names.

### 4.8.2    Syntax
Command syntax: AT+GCAP

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+GCAP<br><br>Note:<br> get the list of capabilities | +GCAP: +FCLASS, +CGSM<br>OK<br>or<br>CME ERROR: unknown |
| Read command<br>AT+GCAP? | same as above |
| Test command<br>AT+GCAP=? | OK |

## 4.9    Repeat last command A/
This syntax allows to repeat the previously executed command again. Only the A/ command can not be repeated.

### 4.9.1    Syntax
Command syntax: A/

| COMMAND | POSSIBLE RESPONSES |
|---|---|

| A/<br>Note: repeat last command | |
| --- | --- |

# 5    Mobile equipment control and status commands

## 5.1    Phone activity status +CPAS

### 5.1.1    Description
This execution command returns the activity status <pas> of the MT.

### 5.1.2    Syntax
Command syntax: AT+CPAS

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+CPAS | +CPAS: <pas><br>OK<br>or<br>CME ERROR: <error> |
| Test command<br>AT+CPAS=? | +CPAS: (0-5)<br>OK |

### 5.1.3    Defined values
<pas> may be:

-   0: ready (MT allows commands from TA/TE)

-   1: unavailable (MT does not allow commands from TA/TE)

-   2: unknown (MT is not guaranteed to respond to instructions)

-   3: ringing (MT is ready for commands from TA/TE, but the ringer is active)

-   4: call in progress (MT is ready for commands from TA/TE, but a call is in progress)

-   5: asleep (MT is unable to process commands from TA/TE because it is in a low functionality state)

## 5.2    Switch off MS +CPWROFF

### 5.2.1    Description
This command allows to switch off the MS.
Note: Usage of this command implies that the part of command line placed thereafter will be ignored.

### 5.2.2    Syntax

Command syntax: AT+CPWROFF

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+CPWROFF<br><br>Note: switch off the MS | OK<br>or<br>CME ERROR: \<error> |
| Test command<br>AT+CPWROFF=? | OK |

## 5.3      Set phone functionality +CFUN

### 5.3.1    Description

This command selects the level of functionality \<fun> in the MS. Only some values of \<fun> are allowed (see Defined values).

Note: if the syntaxes +CFUN=0, +CFUN=15 or +CFUN=16 are used, the rest of the command line, placed after that, will be ignored.

### 5.3.2    Syntax

Command syntax: AT+CFUN=\<fun>

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+CFUN=\<fun> | OK<br>or<br>CME ERROR: \<error> |
| Read command<br>AT+CFUN? | +CFUN:<br>\<power_mode>,\<STK_mode> |
| Test command<br>AT+CFUN=? | +CFUN: (list of supported \<fun>'s)<br>e.g. +CFUN: (0,1,6,7,8,15,16,17)<br>OK |

### 5.3.3    Defined values

\<fun> selected functionality which may be:

-   0 : minimum functionality meaning switch off of the MS

-   1: full functionality meaning start up MS (from offline mode)

- 4: disable phone both transmit and receive RF circuits (Airplane mode) (GFS21 line and higher)

- 6: enables the SIM-toolkit interface and fetching of proactive commands by SIM-APPL from the SIM-card

- 7: disables the SIM-toolkit interface and enables fetching of proactive commands by SIM-APPL from the SIM-card

- 8: disable fetching of proactive commands by SIM-APPL from the SIM-card

- 15: silent reset (reset MS without resetting the SIM).

- 16: Reset (reset MS with resetting the SIM).

<power_mode> may be:

- 1: MS is switched on

- 2: invalid mode

- 17: Airplane mode

<STK_mode> may be:

- 0: inactive state

- 6: enables the SIM-toolkit interface and fetching of proactive commands by SIM-APPL from the SIM-card

- 7: disables the SIM-toolkit interface and enables fetching of proactive commands by SIM-APPL from the SIM-card

- 8: disable fetching of proactive commands by SIM-APPL from the SIM-card


## 5.4     Battery charge +CBC


### 5.4.1     Description

This execution command returns battery status <bcs> and battery charge level <bcl> of the MT.

The charge level <bcl> will be also used to build and display the indicator "battchg" i.e. battery charge level in the response code +CIND and in the unsolicited result code +CIEV. The following mapping of "battchg" to <bcl> exists:

| "battchg" | <bcl> |
|---|---|
| 0 | < 17 % |
| 1 | < 33 % |
| 2 | < 50 % |
| 3 | < 67 % |
| 4 | < 83 % |
| 5 | >= 83 % |

### 5.4.2    Syntax

Command syntax: AT+CBC

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+CBC | +CBC: <bcs>,<bcl><br>OK<br>or<br>CME ERROR: <error> |
| Test command<br>AT+CBC=? | +CBC: (list of supported <bcs>'s),(list of supported <bcl>'s)<br>OK |

### 5.4.3    Defined values

<bcs> may be:

-   0: MT is powered by the battery

-   1: MT has a battery connected, but is not powered by it

-   2: MT does not have a battery connected

-   3: Recognized power fault, calls inhibited

<bcl> may be:

-   0: battery is exhausted, or MT does not have a battery connected

-   1...100: battery has 1-100 percent remaining

### 5.5    Keypad control +CKPD

### 5.5.1    Description

This execution command emulates MT keypad by giving each keystroke as a character in a string <keys>. <time>x0.1 seconds is the time to stroke each key and <pause>x0.1 seconds is the length of pause between two strokes.

### 5.5.2    Syntax

Command syntax: AT+CKPD

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+CKPD="*#21#" | OK<br>or<br>CME ERROR: <error> |

| Test command<br>AT+CKPD=? | OK |

## 5.5.3     Defined values

<keys> is a string of characters representing keys or conventions as listed in chapter 8.7 of the GSM07.07.
<time>, <pause> integer values 0 ... 255 defining a time interval of 0 ... 25.5 seconds.

## 5.6     Display control +CDIS

### 5.6.1     Description

This set command is used to write the contents of MT text type display elements. An element can consist of one or several characters. The order of element parameters <text> should follow the rule: first is the element in upper left corner, second is the element to the right and so on.

### 5.6.2     Syntax

Command syntax: AT+CDIS

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+CDIS=[<text>[,<text>[,...]]] | OK<br>or<br>CME ERROR: <error> |
| Read command<br>AT+CDIS? | +CDIS: <text>[<text>[,...]]<br>OK |
| Test command<br>AT+CDIS=? | +CDIS: <length>[,<length>[,...]]<br>OK |

### 5.6.3     Defined values

<text> is a string type parameter using character set specified by command +CSCS.
<length> is a integer type parameter giving the maximum length of corresponding <text> parameter.

## 5.7      Indicator control +CIND

### 5.7.1      Description

This set command is used to set the values of MT indicators. <ind> value 0 means that the indicator is off, 1 means that the indicator is on, 2 is more substantial than 1, and so on.
The proprietary command +XCIND configure the supported indicators; the default configuration of +XCIND enables the support of all indicators listed below.
The read command returns the status of MT indicators.
The test command returns pairs, where string value <descr> is a maximum 16 character description of the indicator and compound value is the allowed value for the indicator. If Bluetooth communication is supported, the length of the displayed string may be reduced to 127 bytes by using the configuration command +XCIND.

### 5.7.2      Syntax

Command syntax: AT+CIND
Because all possible supported parameters of the set syntax can not be overwritten, the setting will be ignored and the ATC sends the corresponding final result code OK to TE.

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+CIND=[<ind>[,<ind>[,...]]] | OK<br>or<br>CME ERROR: <error> |
| Read command<br>AT+CIND? | +CIND: <ind>[,<ind>[,...]]<br>OK |
| Test command<br>AT+CIND=? | +CIND:("battchg",(0-5)),("signal",(0-5)),("service",(0-1)),("sounder",(0-1)),("message",(0-1)),("call",(0-1)),("roam",(0-1)),("smsfull",(0-1(2) or proprietary, see note)),("gprs",(0-1)),("callsetup",(0-3)),("callheld",(0-2))<br>OK |

### 5.7.3      Defined values

<ind>: integer type value, which shall be in range of corresponding <descr>
<descr> values reserved by the norm and their <ind> ranges; it may have the values:

-   "battchg" battery charge level (0-5); see also +CBC for details;

-   "signal" signal quality (0-5); see also +CSQ for details;

-   "service" service availability (0-1);

- "sounder" sounder activity (0-1);

- "message" message received (0-1);

- "call" call in progress (0-1); 0 means no call active, 1 means a call is active;

- "roam" roaming indicator (0-1); see also +CREG for details;

- "smsfull" at receiving of a SMS
    - or memory locations are available (0)
    - has become full (1),
    - has become full and a short message has been rejected (2)- RELEASE 6 only!!!
    - see also note below for proprietary enhancements on this

- "gprs" indicating the GPRS registration status: 2 means GPRS registered, 1 means GPRS available but not registered, 0 means not registered and GPRS network not available;

- "callsetup" call setup status indicator destinated for Bluetooth usage (not covered by TS27.007); possible values are:  0: "not currently in call setup"; 1: "incoming call process ongoing"; 2: "outgoing call setup is ongoing"; 3: "remote party being alerted in an ongoing call";

- "callheld" call held indicator destinated for Bluetooth usage (not covered by TS27.007); possible values are:  0: "no calls held", 1: "call is placed on hold or active/held calls swapped (the AG has both an active and a held call)", 2: "call on hold, no active call (i.e. active call released, held call unchanged)"

Note: the parameters related to "smsfull" can be enhanced dependent on the define DR_TE_SM_EXTERNAL and is available for RELEASE 6 onwards:

- 3: a new SMS not-class-2 can not be stored because the external storage is full, whereby the storage on the SIM card is still free

- 4: a new SMS can not be stored because the external storage and the SMS storage on the SIM card are full.

- 5: the last free SMS entry on the SIM card is used

## 5.8      Mobile termination control mode +CMEC

### 5.8.1      Description

This set command is used for mobile termination control mode.

### 5.8.2      Syntax

Command syntax: AT+CMEC==[<keyp>[,<disp>[,<ind>]]]

| COMMAND | POSSIBLE RESPONSES |
|---|---|
|  |  |

| AT+CMEC=<br>[<keyp>[,<disp>[,<ind>]]] | OK/ERROR/CME ERROR |
|---|---|
| Read command<br>AT+CMEC? | +CMEC: <keyp>,<disp>,<ind><br>OK/ERROR/CME ERROR |
| Test command<br>AT+CMEC=? | +CMEC: (list of supported<br><keyp>s),(list of supported<br><disp>s),(list of supported <ind>s)<br>OK/ERROR/CME ERROR |

### 5.8.3      Defined values

<keyp> may be
- 0   MT can be operated only through its keypad
(+CKPD cannot be used)
- 1   MT can be operated only from TE (with +CKPD)
- 2   MT can be operated from both MT keypad and TE

<disp> may be
- 0   only MT can write to its display
(+CDIS can only be used to read the display)
- 1   only TE can write to MT display (with +CDIS)
- 2   MT display can be written by both MT and TE

<ind>
- 0   only MT can set the status of its indicators
(+CIND can only be used to read the indicators)
- 1   only TE can set the status of MT indicators (with command +CIND)
- 2   MT indicators can be set by both MT and TE

## 5.9      Mobile termination event reporting +CMER

### 5.9.1      Description
This 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.

### 5.9.2      Syntax
Command syntax: AT+CMER=[<mode>[,<keyp>[,<disp>[,<ind>[,<bfr>]]]]]

| COMMAND | POSSIBLE RESPONSES |
|---|---|

| AT+CMER=1,1,0,2,1 | OK<br>or<br>CME ERROR: <error> |
|---|---|
| Read command<br>AT+CMER? | +CMER:<br><mode>,<keyp>,<disp>,<ind>,<bfr><br>e.g. +CMER: 1,1,0,2,1<br>OK |
| Test command<br>AT+CMER=? | +CMER: (list of supported<br><mode>'s),(list of supported<br><keyp>'s),(list of supported<br><disp>'s),(list of supported<br><ind>'s),(list of supported <bfr>'s)<br>OK |

### 5.9.3    Defined values

<mode> may be:

- 0: buffer unsolicited result codes in the TA

- 1: discard unsolicited result codes when the V.24 interface is reserved for data; otherwise display them on TE directly

- 2: buffer unsolicited result codes in ATC when the V.24 interface is reserved and flush them after reservation; otherwise display them on TE directly

- 3: forward unsolicited result codes directly to the DTE

<keyp> can have the values:

- 0: no keypad event reporting

- 1: keypad event reporting via +CKEV: <key>,<press> (s. +CKPD) for those keys which are not caused via +CKPD when the V.24 interface is not reserved

- 2: keypad event reporting via +CKEV: <key>,<press> for all keys when the V.24 interface is not reserved

<disp> can have the values

- 0: no display event reporting

- 1: display event reporting via +CDEV: <elem>,<text> when the V.24 interface is not reserved, for those elements which are not caused via +CDIS; <elem> indicates the element order number (as specified for +CDIS) and <text> is the new value of text element; character set used in <text> is as specified by setting +CSCS;

- 2: display event reporting via +CDEV: <elem>,<text> for all elements when the V.24 interface is not reserved

<ind> can have the values:

- 0: no indicator event reporting

- 1: indicator event reporting using result code +CIEV: <ind>,<value>. <ind> indicates the indicator order number (as specified for +CIND) and <value> is the new value indicator. Only the indicator events which are not caused by +CIND shall be indicated by the TA to the TE.

- 2: indicator event reporting using result code +CIEV: <ind>,<value>. All indicator events shall be directed from TA to TE.

<bfr> may have the following values:

- 0: TA buffer of unsolicited result codes defined within this command is cleared when <mode> 1...3 is entered

- 1: TA buffer of unsolicited result codes defined within this command is flushed to the TE when <mode> 1...3 is entered (OK response shall be given before flushing the codes).

## 5.10    Clock +CCLK

### 5.10.1    Description
This set command sets the real-time clock of the ME.

### 5.10.2    Syntax
Command syntax: AT+CCLK=<time>

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+CCLK="02/07/01,14:54:00"<br>Note: set date to July 1-st, 2002<br>and time to 14:54 | OK<br>or<br>CME ERROR: <error> |
| Read command<br>AT+CCLK? | +CCLK: "02/07/01,14:55:00"<br>OK |
| Test command<br>AT+CCLK=? | OK |

### 5.10.3    Defined values
<time>: string type value; format is "yy/MM/dd,hh:mm:ss+TZ", wherein characters indicates year, month, day, hour, minutes, seconds.
TZ: Time zone information represented by two digits. The time zone information is optional; if it was entered it is always accepted, but the display of TZ for query contains this information (in updated form) only if the network supports the time zone information.

## 5.11    Alarm +CALA

### 5.11.1    Description

This set command sets an alarm time in the MT. There can be an array of different types of alarms. If setting fails, a CME ERROR: <error> is returned. To set up a recurrent alarm for more days in the week, the <recurr> parameter is used.

When an alarm is timed out, the alarm actions are executed:

- sound alarm (if not silent)
- unsolicited alarm code +CALV: <n> is displayed on DTE

### 5.11.2    Syntax

Command syntax: AT+CALA=<time>[,<n>[,<type>[,<text>[,<recurr>[,<silent>]]]]]

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+CALA="02/07/01,14:56:00 +04",1,1,"Alarm " | OK<br>or<br>CME ERROR: <error> |
| Read command AT+CALA? | [+CALA: <time>,<n1>,<type>,[<text>],[<recurr>],<silent> [<CR><LF>+CALA:<br><time>,<n2>,<type>,[<text>],[<recurr>],<silent><br>[...]]]<br>i.e. +CALA: "02/07/01,14:56:00+04",1,1,"Alarm",0<br>OK |
| Test command AT+CALA=? | +CALA: (list of supported <n>s),(list of supported <type>s),<tlength>,<rlength>,(list of supported <silent>'s)<br>OK |

### 5.11.3    Defined values

<time>: string type value; format is "yy/MM/dd,hh:mm:ss+tz", wherein characters indicates year, month, day, hour, minutes, seconds and time zone.
Note: if the <recur> parameter is used, the <time> parameter must not contain a date.
<n>, <n1>, <n2>: integer type value indicating the index of the alarm, the allowed range of indexes are 1-3; if not indicated by user, default value 1 is assumed;
  <type>: type of the alarm; this parameter is ignored
Note: if the MS does not have the possibility to generate an alarm tone, only the text is displayed at alarm time.
<text>: string type value indicating the text to be displayed when alarm time is reached; maximum length <tlength>
<tlength>: integer type value indicating the maximum length of <text>, currently set
      to 255

<recurr>: string type value (maximum string length is 13)  indicating day of week for the alarm in one of the following formats:

"<1..7>[,<1..7>[…]]" – Sets a recurrent alarm for one or more days in the week. The digits 1 to 7 corresponds to the days in the week, Monday (1), …, Sunday (7). Example: The string "1,2,3,4,5" may be used to set an alarm for some weekdays.

"0" – Sets a recurrent alarm for all days in the week and all following weeks

<rlength>: integer type value indicating the maximum length of <recurr> which is currently limited to 15 characters

<silent>: Integer type value indicating if the alarm is silent or not:

- 1:  the alarm will be silent and the only result from the alarm is the unsolicited result code +CALV.

- 0: the alarm will not be silent.

## 5.12     Delete alarm +CALD

### 5.12.1     Description
This action command deletes an alarm in the MT.

### 5.12.2     Syntax
Command syntax: AT+CALD=<n>

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+CALD=1 | OK<br>or<br>CME ERROR: <error> |
| Test command<br>AT+CALD=? | +CALD: (1-3) i.e. list of <n>s<br>OK |

### 5.12.3     Defined values
<n> integer type value indicating the index of the alarm; Refer +CALA description for the allowed range of indexes.

## 5.13    Generic SIM access +CSIM

### 5.13.1    Description
This command transmits the <command> to the SIM, transparently via MT. The <response> is returned in the same manner to the TE. So, this command allows a direct control of the SIM by a distant application on the TE.

### 5.13.2    Syntax
Command syntax: AT+CSIM=<length>,<command>
Response syntax: +CSIM: <length>,<response>

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+CSIM=4,"4134" | +CSIM: 4,"4330"<br>OK<br>or<br>CME ERROR: <error> |
| Test command<br>AT+CSIM=? | OK |

### 5.13.3    Defined values
<length>: integer type value; length of the characters that are sent to TE in <command> or <response>.
<command>: command passed on by MT to SIM in hex format (GSM11.11)
<response>: response to the command passed on by the SIM to the MT

## 5.14    Restricted SIM access +CRSM

### 5.14.1    Description
This command allows an easy access to the SIM database.
By using this command instead of Generic SIM Access +CSIM DTE application has easier but more limited access to the SIM database. Set command transmits to the MS the SIM <command> and its required parameters. MS handles internally all SIM-MS interface locking and file selection routines. As response to the command, MS sends the actual SIM information parameters and response data. MS error result code +CME ERROR may be returned when the command cannot be passed to the SIM, but failure in the execution of the command in the SIM is reported in <sw1> and <sw2> parameters.

### 5.14.2    Syntax
Command syntax: AT+CRSM=<command>[,<fileid>[,<P1>,<P2>,<P3>[,<data>[,<pathid>]]]]

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+CRSM=176,28471,0,0,3<br>Note: read ACMmax<br>AT+CRSM=176,28423,0,0,9<br>Note: read IMSI<br>AT+CRSM=178,28473,0,4,3<br>Note: read ACM<br>AT+CRSM=176,28481,0,0,5<br>Note: read PUKT | +CRSM:<br><sw1>,<sw2>[,<response>]<br>OK<br><br><br><br>or<br>CME ERROR: <error> |
| Test command<br>AT+CRSM=? | OK |

### 5.14.3　Defined values

<command> may be

- 176 READ BINARY
- 178 READ RECORD
- 192 GET RESPONSE
- 214 UPDATE BINARY
- 220 UPDATE RECORD
- 242 STATUS

<fileid> integer type; this is the identifier of a elementary datafile on SIM. Mandatory for every command except STATUS and may be e.g.:

- 28471 meaning ACMmax file (6F37)
- 28423 meaning IMSI file (6F07)
- 28473 meaning ACM file (6F39)
- 28481 meaning PUKT file (6F41)
- 28482 meaning SMS file (6F42)

<P1>, <P2>, <P3> integer type defining the request. These parameters are mandatory for every command, except GET RESPONSE and STATUS. The values are described in GSM 51.011.

<data>: information which shall be written to the SIM (hexadecimal character format; refer +CSCS – string containing hexadecimal characters -)

<sw1>, <sw2> integer type  containing the SIM information and can be:

0x90　0x00　normal entry of the command
0x9F　0xXX　length XX of the response data
0x92　0x0X　update successful but after using an internal retry routine X times
0x92　0x40　memory problem
0x94　0x00　no EF selected

0x94  0x02   out of range (invalid address)
0x94  0x04   file ID not found; pattern not found
0x94  0x08   file is inconsistent with the command
0x98  0x02   no CHV initialized
0x98  0x04   access cond. Not fullfiled / unsucc. CHV verify / authent.failed
0x98  0x08   in contradiction with CHV status
0x98  0x10   in contradiction with invalidation status
0x98  0x40   unsucc. CHV-verif. or UNBLOCK CHF / CHV blocked /UNBL.blocked
0x98  0x50   increase can not be performed. Max. value reached
0x67 0xXX   incorrect parameter P3
0x6B 0xXX   incorrect parameter P1 or P2
0x6D 0xXX   unknown instruction code given in the command
0x6E 0xXX   wrong instruction class given in the command
0x6F 0xXX   technical problem with no diagnostic given
<response> response of successful completion of the command previously issued (hexadecimal character format; refer +CSCS – string containing hexadecimal characters -). STATUS and GET RESPONSE return data, which gives information about the current elementary datafield. This information includes the type of file and its size (refer GSM 51.011 [28]). After READ BINARY or READ RECORD command the requested data will be returned. <response> is not returned after a successful UPDATE BINARY or UPDATE RECORD command.
<pathid>: string type; contains the path of an elementary file on the SIM/USIM  in hexadecimal format as defined in ETSI TS 102 221 [60] (e.g. "7F205F70" in SIM and USIM case).

Note: if a path_id is given, the <data> parameter cannot be skipped, it has to be "". If P1, P2 or P3 are not needed but the path_id, as 0 has to be given as value.

## 5.15    Alert sound mode +CALM

### 5.15.1    Description
This command is used to select the general alert sound mode of the ME.

### 5.15.2    Syntax
Command syntax: AT+CALM=<mode>

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+CALM=0 | OK<br>or<br>CME ERROR: <error> |
| Read command<br>AT+CALM? | +CALM: <mode><br>OK |

| Test command | +CALM: (0-1) |
| AT+CALM=? | OK |

### 5.15.3   Defined values

<mode> may be:

- 0 normal mode

- 1 silent mode

Note: In modem builds it is intended to use +XDRV!

## 5.16    Ringer sound level +CRSL

### 5.16.1    Description

This command is used to select the incoming ringer sound level of the ME.

### 5.16.2    Syntax

Command syntax: AT+CRSL=<level>

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+CRSL=2 | OK<br>or<br>CME ERROR: <error> |
| Read command<br>AT+CRSL? | +CRSL: <level><br>OK |
| Test command<br>AT+CRSL=? | +CRSL: (1-100)<br>OK |

### 5.16.3    Defined values

<level> may be a value in range 1-100 (1 means mute); the default value is 50.

Note: the <level> have the range 1-7 if the define AUD_MASTER_VOLUME_CONCEPT does not exist, in order to support also the old volume concept. The default value is 3.

Note: In modem builds it is intended to use +XDRV!

### 5.17    Loudspeaker volume level +CLVL

#### 5.17.1    Description
This command is used to select the volume of the internal loudspeaker of the ME.

#### 5.17.2    Syntax
Command syntax: AT+CLVL=<level>

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+CLVL=30 | OK<br>or<br>CME ERROR: <error> |
| Read command<br>AT+CLVL? | +CLVL: <level><br>OK |
| Test command<br>AT+CLVL=? | +CLVL: (1-100)<br>see also the note below.<br>OK |

#### 5.17.3    Defined values
<level> may be a value in range 1-100 (1 means minimum); the default value is 50.
Note: the <level> have the range 1-7 if the define AUD_MASTER_VOLUME_CONCEPT does not exist, in order to support also the old volume concept. The default value is 3.

### 5.18    Mute control +CMUT

#### 5.18.1    Description
This command is used to enable and disable the uplink voice muting during a voice call.

#### 5.18.2    Syntax
Command syntax: AT+CMUT=<n>

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+CMUT=0 | OK<br>or<br>CME ERROR: <error> |
| Read command<br>AT+CMUT? | +CMUT=<n><br>OK |

| Test command<br>AT+CMUT=? | +CMUT: (0-1)<br>OK |
| --- | --- |

### 5.18.3   Defined values
<n> may be:

- 0 mute off

- 1 mute on

## 5.19   Call meter maximum event +CCWE

### 5.19.1   Description
This command allows the sending of an unsolicited result code +CCWV to TE, when enabled. The warning is issued approximately when 30 seconds call time remains. It is also sent when starting a call if less than 30 s call time remains.

### 5.19.2   Syntax
Command syntax: AT+CCWE=<mode>

| COMMAND | POSSIBLE RESPONSES |
| --- | --- |
| AT+CCWE=1 | OK<br>or<br>CME ERROR: <error> |
| Read command<br>AT+CCWE? | +CCWE: <mode><br>OK |
| Test command<br>AT+CCWE=? | +CCWE: (0-1)<br>OK |

### 5.19.3   Defined values
<mode> may be:

- 0 disable the call meter warning event

- 1 enable the call meter warning event

### 5.20     Set greeting text +CSGT

#### 5.20.1     Description
This command sets and activates the greeting text in the ME. The greeting text is shown in the ME display when the ME is turned on. The command can also deactivate a text.

#### 5.20.2     Syntax
Command syntax: AT+CSGT=<mode>[,<text>]

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+CSGT=1,"Hello user" | OK<br>or<br>CME ERROR: <error> |
| Read command<br>AT+CSGT? | +CSGT: <text>,<mode><br>OK |
| Test command<br>AT+CSGT=? | +CSGT: (list of <mode>s),<ltext><br>OK |

#### 5.20.3     Defined values
<text> string type containing the greeting text.
<mode> may be:

-    0 turn off greeting text

-    1 turn on greeting text

<ltext> maximum length of the <text>.

### 5.21     Set voice mail number +CSVM

#### 5.21.1     Description
This command allows to set the voice mail server number.

#### 5.21.2     Syntax
Command syntax: AT+CSVM=<mode>[,<number[,<type>]]

| COMMAND | POSSIBLE RESPONSES |
|---|---|

| AT+CSVM=0 | OK<br>or<br>CME ERROR: <error> |
|---|---|
| Read command<br>AT+CSVM? | +CSVM: <mode>,<number>,<type><br>OK |
| Test command<br>AT+CSVM=? | +CSVM: (list of supported<br><mode>s),(list of supported<br><type>s)<br>OK |

### 5.21.3　Defined values

<mode> may be:

- 0: disable the voice mail number

- 1: enable the voice mail number

<number> string type (0...9,+) containing the phone number
<type> integer type indicating the type of address octet as follows:
may be: 128-255
meaningful values:

- 129 ISDN / telephony numbering plan, national / international unknown

- 145 ISDN / telephony numbering plan, international number

## 5.22　Automatic Time Zone Update +CTZU

### 5.22.1　Description
This set command enables and disables automatic time tone update via NITZ.

### 5.22.2　Syntax
Command syntax: AT+CTZU=<onoff>

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+CTZU=1 | OK<br>or<br>CME ERROR: <error> |
| Read command<br>AT+CTZU? | +CTZU: <onoff><br>OK |
| Test command<br>AT+CTZU=? | +C: (0-1) i.e. list of supported <onoff>s<br>OK |

### 5.22.3　Defined values
<onoff> integer type value indicating:

- 0: disable automatic time zone via NITZ (default)

- 1: enable automatic time zone update via NITZ.


## 5.23　Time Zone Reporting +CTZR

### 5.23.1　Description
This set command enables and disables the time zone change event reporting. If the reporting is enabled, the MT returns the unsolicited result code:
+CTZV: <tz>,<time>
[+CTZDST: <dst>]
whenever the time zone is changed.

### 5.23.2　Syntax
Command syntax: AT+CTZR=<onoff>

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+CTZR=1 | OK<br>or<br>CME ERROR: <error> |
| Read command<br>AT+CTZR? | +CTZR: <onoff><br>OK |
| Test command<br>AT+CTZR=? | +CTZR: (0-1) i.e. list of supported  <onoff>s<br>OK |

### 5.23.3　Defined values
<onoff> integer type value indicating:

- 0: disable time zone change event reporting (default)

- 1: enable time zone change event reporting.
<tz>: integer value indicating the time zone.
<time>: string type value; format is "yy/MM/dd,hh:mm:ss", wherein characters indicates year, month, day, hour, minutes, seconds.
<dst>: daylight savings time value:
- 0: No adjustment for Daylight Saving Time
- 1: +1 hour adjustment for Daylight Saving Time

- 2: +2 hours adjustment for Daylight Saving Time
- 3: Reserved

## 5.24    Report mobile termination error +CMEE

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

### 5.24.2    Syntax
Command syntax: AT+CMEE=[<n>]

| COMMAND | POSSIBLE RESPONSES |
|---------|--------------------|
| AT+CMEE=2 | OK<br>or<br>CME ERROR: <error> |
| Read command<br>AT+CMEE? | +CMEE: <n><br>OK |
| Test command<br>AT+CMEE=? | +CMEE: (0-2) i.e. list of supp.<n>s<br>OK |

### 5.24.3    Defined values
<n> may be:

- 0 disable +CME ERROR: <err> result code and use ERROR instead

- 1 enable +CME ERROR: <err> result code and use numeric <err> values

- 2 enable +CME ERROR: <err> result code and use verbose <err> values

Note: in case of selected value +CMEE=2, meaning formatting the error result code as +CME ERROR: <error> with <error> as verbose value, the following convention is valid:

- if the error result code is related to a parameter not covered by the GSM/ETSI or Comneon specification the value <error>="operation not supported" shall be used

- if the ATC is in a state which not allow to perform the entered command, the value <error>="operation not allowed" shall be used

### 5.25    List all available AT commands +CLAC

### 5.25.1    Description
This execution command causes the MS to return one or more lines of AT commands that are available for the DTE user. Each line contains one AT command. The presentation of commands respects the order in the AT-manual.

### 5.25.2    Syntax
Command syntax: AT+CLAC
Command response: <AT command 1>[<CR><LF><AT command 2>[…]]

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+CLAC | OK<br>or<br>CME ERROR: <error> |
| Test command<br>AT+CLAC=? | OK |

### 5.25.3    Defined values
<AT command> defines the AT command including the prefix AT. The text does not contain the sequence 0<CR> or OK<CR>.

# 6    Call control commands

## 6.1    Select type of address +CSTA

### 6.1.1    Description
This set command selects the type of number for further dialling commands (D) according to GSM specifications.

> Note:　　　Because the type of address is automatically detected on the dial string of the D command, the +CSTA command has really no effect.

### 6.1.2    Syntax
Command syntax: AT+CSTA=[<type>]

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+CSTA=145 | OK<br>or<br>CME ERROR: <error> |
| Read command<br>AT+CSTA? | +CSTA: <type><br>OK |
| Test command<br>AT+CSTA=? | +CSTA: (128-255)<br>OK |

### 6.1.3    Defined values
<type> may be:

- 145 when dialing string includes international access code character "+"

- 129 national coded dialing string

## 6.2    Dial command D

### 6.2.1    Description
The V.24ter dial command D lists characters that may be used in a dialling string for making a call or controlling supplementary services in accordance with GSM02.30 and initiates the indicated kind of call. No further commands may follow in the command line. The command is abortable by hit a key before establishment.

### 6.2.2    V.25ter dialling digits

They are:

1, 2, 3, 4, 5, 6, 7, 8, 9, 0, *,#, +, A, B, C.

Character D is allowed but ignored.

### 6.2.3    V.25ter or GSM modifier characters

- "," , "T", "P", "!", "W" or "@" are ignored

- ";" forces a voice call originated to the given address

- ">" allows direct dialling from phonebook

- "I" invocation restrict CLI presentation

- "i" suppression i.e. allows CLI presentation

- "G" or "g" control the CUG supplementary service information for this call (s.+CCUG)

### 6.2.4    Direct calling from phonebooks

D><str>[I][G][;] originate a call to phone number which corresponding alphanumeric field in the default phonebook is <str>.

D>mem<n>[I][G][;] originate a call to phone number in memory (one of the phonebooks) "mem" entry location <n>. "mem" may be for example "SM", "FD" or "LD".

D><n>[I][G][;] originate a call to phone number in entry location <n> of the default phonebook.

The semicolon character shall be added when a voice call is originated. CLIR and CUG per call modifiers can also be present.

### 6.2.5    Responses

| VERBOSE | NUMERIC | DESCRIPTION |
|---|---|---|
| OK | 0 | Acknowledges successful execution of cmd. |
| CONNECT | 1 | A connection has been established |
| RING | 2 | The DCE has detected an incoming call signal from the network |
| NO CARRIER | 3 | The connection has been terminated or the attempt to establish a connection failed |
| BUSY | 7 | Engaged (busy) signal detected |
| NO ANSWER | 8 | If no hang up is detected after a fixed network timeout |
| CONNECT<data rate> | 9 | Same as CONNECT but includes the data rate |
| RING CTM | 10 | The MS has detected an incoming CTM call signal from the network; this code is proprietary |

| CONNECT FAX | 11 | Same as CONNECT but includes the indication related to FAX call |
| CTM CALL | 12 | The DTE user is informed that a TTY/CTM MI call will be established; propr.code |
| NO CTM CALL | 13 | No TTY/CTM MO call can be established; proprietary code |

## 6.3 Select tone dialling T

### 6.3.1 Description
This set command causes subsequent D command to assume that DTMF dialling is to be used. Because in GSM DTMF dialling is default, this command has no effect.

### 6.3.2 Syntax
Command syntax: ATT

| COMMAND | POSSIBLE RESPONSES |
| --- | --- |
| ATT | OK |

## 6.4 Select pulse dialling P

### 6.4.1 Description
This set command causes subsequent D command to assume that pulse dialling is to be used. Because in GSM DTMF dialling is default, this command has no effect.

### 6.4.2 Syntax
Command syntax: ATP

| COMMAND | POSSIBLE RESPONSES |
| --- | --- |
| ATP | OK |

## 6.5        Call answer A

### 6.5.1        Description
This command instructs the DCE to immediately connect to line and start the answer sequence as specified for the underlying DCE. Any additional command that appears after A on the same command line is ignored. The command is abortable. The user is informed that an incoming call is waiting, by the information result code RING or +CRING displayed on TE.

### 6.5.2        Syntax
Command syntax: ATA

| COMMAND | POSSIBLE RESPONSES |
|---------|--------------------|
|         | RING               |
| ATA     | OK                 |

## 6.6        Hook control H

### 6.6.1        Description
This command is used to disconnect the remote user.

Note 1: all active and (!) held calls will be released
(!) needed to pass FTA test case 31.4.4.2, available with EFS21.25.02, EFS21.27.00, DFS23.01.00, DFS22.14.00

Note 2: AT+CHUP shall be used in case it is intended to release only (!) active calls!

Note 3: in case of dual service calls ATH will modify the data part of the call to the voice part, fax is not concerned.

### 6.6.2        Syntax
Command syntax: ATH or ATH0

| COMMAND | POSSIBLE RESPONSES |
|---------|--------------------|
| ATH     | OK                 |

### 6.7      Monitor speaker loudness L

### 6.7.1      Description
This command controls the volume of the monitor speaker. It has no effect.

### 6.7.2      Syntax
Command syntax: ATL<value>, wherein the range of <value> is 0-3.

| COMMAND | POSSIBLE RESPONSES |
|---------|--------------------|
| ATL1    | OK                 |

### 6.8      Monitor speaker mode M

### 6.8.1      Description
This command controls when the monitor speaker is on. The command has no effect.

### 6.8.2      Syntax
Command syntax: ATM<value>, wherein the range of <value> is 0-2.

| COMMAND | POSSIBLE RESPONSES |
|---------|--------------------|
| ATM1    | OK                 |

### 6.9      Call mode +CMOD

### 6.9.1      Description
This set command selects the call mode of further dialing commands (D) or for next answering command (A).

### 6.9.2      Syntax
Command syntax: AT+CMOD=<mode>

| COMMAND    | POSSIBLE RESPONSES           |
|------------|------------------------------|
| AT+CMOD=0  | OK<br>or<br>CME ERROR: <error> |

| Read command<br>AT+CMOD? | +CMOD: <mode><br>OK |
|---|---|
| Test command<br>AT+CMOD=? | +CMOD: <list of supported<br><mode>s><br>OK |

### 6.9.3 Defined values

<mode> may be:

- 0: single call

- 1: TS61 (voice alternating with fax)

- 2: SCUDIF/BS61 (voice alternating with data)

- 3: BS81 (voice followed by data)

- 4: FALLBACK (data followed by voice)

Note 1: TS meaning Tele Service, BS meaning Bearer Service
Note 2: value 4 is proprietary from 27.007 perspective but mandatory from multimedia call feature perspective

## 6.10 Hang up call +CHUP

### 6.10.1 Description

This execution command causes the TA to hang up the current GSM call of the ME.
Note: all active calls will be released but neither waiting nor held calls

### 6.10.2 Syntax

Command syntax: AT+CHUP

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+CHUP | OK<br>or<br>CME ERROR: <error> |
| Test command<br>AT+CHUP=? | OK |

### 6.11    Extended error report +CEER

### 6.11.1    Description
This execution command causes the TA to return one or more lines of information text <report>, determined by the ME manufacturer, which offer an extended report of the reason for:

- the failure in the last unsuccessful call setup or in-call modification

- the last call release

- the last unsuccessful GPRS attach or unsuccessful PDP context activation

- the last GPRS detach or PDP context deactivation

The displayed <report> text may contain only the numeric code if requested by the customer.

### 6.11.2    Syntax
Command syntax: AT+CEER

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+CEER | +CEER: <report><br>OK |
| Test command<br>AT+CEER=? | OK |

### 6.11.3    Defined values
<report>: the total number of characters, including line terminators, in the information text does not exceed 2041. The <report> text is the failure cause from GSM04.08 or a specific failure cause as specified in Appendices 18.3 and 18.4

### 6.12    Tone duration +VTD

### 6.12.1    Description

This command refers to an integer <n> that defines the length of tones emitted as a result of the +VTS command. In GSM/UMTS the value of tone duration is preset and cannot be altered.

### 6.12.2    Syntax

Command syntax: AT+VTD=<n>

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+VTD=2 | OK<br>or<br>CME ERROR: <error> |
| Read command<br>AT+VTD? | +VTD: <n><br>OK |
| Test command<br>AT+VTD=? | +VTD=(0-255) i.e. list of supported <n>s<br>OK |

### 6.12.3   Defined values

<n> is a integer in range of 0 to 255. A value different than zero causes a tone of duration <n>/10 seconds. The value 1 is default. If the value 0 is selected, the tone duration is set to 1/10 seconds.

## 6.13   DTMF and tone generation +VTS

### 6.13.1   Description

This command allows the transmission of DTMF tones and arbitrary tones. These tones may be used e.g. when announcing the start of a recording period. In GSM this operates only in voice mode. If the optional parameter <duration> is left out, the tone duration is given by the setting +VTD (see +VTD description).

The command is abortable by hit a key – proprietary feature, not covered by the GSM-specification -.

### 6.13.2   Syntax

Command syntax: AT+VTS=<DTMF>[,<duration>]

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+VTS=2 | OK<br>or<br>CME ERROR: <error> |
| Test command | +VTS: (list of <DTMF>s),(),(list of |

| AT+VTS=? | supported <duration>s) |
|----------|------------------------|
|          | OK                     |

### 6.13.3    Defined values

<DTMF> is a single ASCII character in the set 0-9, #, *, A-D.

<duration> integer in range 0-255, meaning 10ms multiples.

## 6.14    Redial last telephone number ATDL

### 6.14.1    Description
This command is used to redial the last number used in the ATD command. This command is abortable.

### 6.14.2    Syntax
Command syntax: ATDL

| COMMAND | POSSIBLE RESPONSES |
|---------|--------------------|
| ATDL    | OK<br>or<br>CME ERROR: <error> |

## 6.15    Automatic answer S0

### 6.15.1    Description
This S-parameter command controls the automatic answering feature of the DCE. If set to 0, automatic answering is disabled, otherwise it cause the DCE to answer when the incoming call indication (ring) has occurred the number of times indicated by the value.

### 6.15.2    Syntax
Command syntax: ATS0=<value>

| COMMAND | POSSIBLE RESPONSES |
|---------|--------------------|

| ATS0=2<br>Note: Automatic answer after 2<br>rings | OK<br>or<br>CME ERROR: <error> |
|---|---|
| Read command<br>ATS0? | S0: <value><br>OK |

### 6.15.3    Defined values
<value> is a integer in range 0-255.
Default setting: S0=0, meaning automatic answering is disabled.

# 7    Network service commands

## 7.1      Subscriber number +CNUM

### 7.1.1      Description
This action command returns the MSISDNs related to this subscriber. If the subscriber has different MSISDN for different services, each MSISDN is returned in a separate line.

### 7.1.2      Syntax
Command syntax: AT+CNUM
Response syntax:
 +CNUM: [<alpha1>],<number1>,<type1>[,<speed>,<service>[,<itc>]]
[<CR><LF>+CNUM: [<alpha2>],<number2>,<type2>[,<speed>,<service>[,<itc>]]
[...]]

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+CNUM | +CNUM: "Eigene Rufnummer","49175821708",145<br>+CNUM: "ABCD . AAA","123456789012",129<br>+CNUM: "","" <br>OK<br>or<br>CME ERROR: <error> |
| Test command<br>AT+CNUM=? | OK |

### 7.1.3      Defined values
<alphax> optional alphanumeric string associated with <numberx>; used character set is selected by setting +CSCS
<numberx> string type phone number of format specified by <typex>
<typex> type of address octet in integer format (129 or 145)
<speed> corresponding to setting +CBST
<service> service related to phone number as follows:

-   0: asynchronous modem

-   1: synchronous modem

-   2: PAD access (asynchronous)

-   3: Packet access (synchronous)

-   4: voice

-   5: FAX

<itc> information transfer capability as follows:

- 0: 3.1 kHZ

- 1: UDI

## 7.2    Signal quality +CSQ

### 7.2.1    Description

This execution command returns signal strength indication <rssi> and channel bit error rate <ber> from the ME.

The radio signal strength <rssi> will be also used to build and display the indicator "signal" i.e. signal quality in the response code +CIND and in the unsolicited result  code +CIEV. The following mapping of "signal" to <rssi> exists:

"signal"        <rssi>

| | | |
|---|---|---|
| 0 | < 4 or 99 | (< -107 dBm or unknown) |
| 1 | < 10 | (< -93 dBm) |
| 2 | < 16 | (< -71 dBm) |
| 3 | < 22 | (< -69 dBm) |
| 4 | < 28 | (< -57 dBm) |
| 5 | >=28 | (>= -57 dBm) |

### 7.2.2    Syntax

Command syntax: AT+CSQ
Response syntax: CSQ: <rssi>,<ber>

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+CSQ | +CSQ: 2,5<br>OK<br>or<br>CME ERROR: <error> |
| Test command<br>AT+CSQ=? | +CSQ: (0-31,99),(0-7,99)<br>i.e. list of supported <rssi>s and list of supported <ber>s<br>OK |

### 7.2.3    Defined values

<rssi> range for GSM:

- 0 i.e. -113dBm or less

- 1 i.e. -111 dBm

- 2 ... 30 i.e -109 ... -53 dBm

- 31 -51 dBm or greater

- 99 i.e. not known or not detectable

<rssi> range for UMTS:
- 0      not known or not detectable
- 1      /* -115 dBm */
- 17      /* -99  dBm */
- 25  /* -91  dBm */
- 33  /* -83  dBm */
- 41  /* -75  dBm */
- 49  /* -67  dBm */
- 57  /* -59  dBm */
- 65  /* -51  dBm */
- 91  /* -25  dBm */

<ber> bit error rate range for GSM:

- 0 ... 7 as RXQUAL values as described in GSM05.08 chapter 8.2.4

  - 99 not known or not detectable

<ber> bit error rate range for UMTS:
0 ... 49   RXQual value as defined in 25.133 / 9.1.2.3 CPICH Ec/Io measurement report mapping:

CPICH Ec/Io $\leqslant$ -24 dB
-24 $\leqslant$ CPICH Ec/Io < -23.5 dB
-23.5 $\leqslant$ CPICH Ec/Io < -23 dB
… … …
-1 $\leqslant$ CPICH Ec/Io < -0.5 dB
-0.5 $\leqslant$ CPICH Ec/Io < 0 dB
0 $\leqslant$ CPICH Ec/Io dB

## 7.3      Operator selection +COPS

### 7.3.1      Description
This command forces an attempt to select and register the GSM / UMTS network operator. The command in the execution syntax is abortable hitting a key.

### 7.3.2      Syntax
Command syntax: AT+COPS=[<mode>[,<format>[,<oper>>[,<AcT>]]]]

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+COPS=0,0 | OK<br>or<br>CME ERROR: <error> |
| Read command<br>AT+COPS? | +COPS:<br><mode>[,<format>,<oper>[,<AcT>]]<br>OK |
| Test command<br>AT+COPS=? | +COPS: [list of supported (<stat>),long alphanumeric <oper>, short alphanumeric <oper>, numeric <oper>)s[,<AcT>]]<br>[,,(list of supported <mode>s),(list of supported <format>s)]<br>OK |

### 7.3.3    Defined values

<mode> is used to select whether the selection is done automatically by the ME or is forced by this command to operator <oper> given in the format <format> and may be:

-    0 automatic (<oper> field is ignored)

-    1 manual

-    2 deregister from network

-    3 set only <format>

-    4 manual / automatic (if manual selection fails, automatic mode is entered)
<format> may be:

-    0 long alphanumeric <oper>  (default value)

-    1 short format alphanumeric <oper>

-    2 numeric <oper>
<oper> string type given in format <format>; this field may be up to 16 character long for long alphanumeric format, up to 8 characters for short alphanumeric format and 5 characters long for numeric format (MCC/MNC codes)
<stat> may be:

-    0 unknown

-    1 available

-    2 current

-    3 forbidden
<AcT> indicates the radio access technology and may be:

-    0 GSM

- 1 GSM compact

- 2 UTRAN

Note1: in the read syntax the parameter <AcT> is displayed only if UMTS is supported in the MS.

Note2: If GSM / UMTS Dual mode is selected as AcT (+XRAT) and manual mode is selected the AcT parameter is used to indicate the access technology to be used for the manual attach procedure.

Note3: In case of automatic mode the AcT parameter will be ignored

## 7.4　　Network registration +CREG

### 7.4.1　　Description
This set command controls the presentation of an unsolicited result code +CREG: <stat> when <n>=1 and there is a change in the ME network registration status, or code +CREG: <stat>[,<lac>,<ci>] when <n>=2 and there is a change of the network cell.

### 7.4.2　　Syntax
Command syntax: AT+CREG=<n>

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+CREG=1 | OK<br>or<br>CME ERROR: <error> |
| Read command<br>AT+CREG? | +CREG: <n>,<stat>[,<lac>,<ci>]<br>OK |
| Test command<br>AT+CREG=? | +CREG: (0-2)<br>Note: i.e. list of the supported <n>s<br>OK |

### 7.4.3　　Defined values
<n> may by:

- 0 disable network registration unsolicited result code

- 1 enable network registration unsolicited result code +CREG: <stat>

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

<stat> may be:

- 0 not registered, ME is not currently searching a new operator to register to

- 1 registered, home network

- 2 not registered, but ME is currently searching a new operator to register to

- 3 registration denied

- 4 unknown

- 5 registered, roaming

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

<ci> string type; two byte cell ID in hexadecimal format (e.g. "A13F")

### 7.4.4　Defined values

<index n> integer type; the order number of operator in the SIM preferred operator list

<format> may be (see also +COPS):

- 0 long format alphanumeric <oper>

- 1 short format alphanumeric <oper>

- 2 numeric <oper>

<oper n> string type in format indicated by <format>

<GSM_Act n> GSM access technology

- 0: access technology not selected

- 1: access technology selected

<GSM_Compact_AcT n> GSM compact access technology

- 0: access technology not selected

- 1: access technology selected

<UTRAN_AcT n> UTRAN access technology

- 0: access technology not selected

- 1: access technology selected

## 7.5　Preferred operator list +CPOL

### Table 1: +CPOL parameter command syntax

| Command | Possible response(s) |
|---|---|
| +CPOL=[<index>][,<format>[,<oper>]] | *+CME ERROR: <err>* |
| +CPOL? | +CPOL: <index1>,<format>,<oper1>[<CR><LF>+CPOL: <index2>,<format>,<oper2>[...]]<br>*+CME ERROR: <err>* |

| +CPOL=? | +CPOL: (list of supported <index>s),(list of supported <format>s) +CME ERROR: <err> |
|---------|---------------------------------------------------------------------------------------|

**Description**
This command is used to edit the SIM preferred list of networks. Execute command writes an entry in the SIM list of preferred operators (EFPLMNsel). If <index> is given but <oper> is left out, entry is deleted. If <oper> is given but <index> is left out, <oper> is put in the next free location. If only <format> is given, the format of the <oper> in the read command is changed. Refer subclause 9.2 for possible <err> values.
   NOTE:  ME may also update this list automatically when new networks are selected.

Read command returns all used entries from the SIM list of preferred operators.
Test command returns the whole index range supported by the SIM.
**Defined values**
<indexn>: integer type; the order number of operator in the SIM preferred operator list
<format>:
0       long format alphanumeric <oper>
1       short format alphanumeric <oper>
2       numeric <oper>
<opern>: string type; <format> indicates if the format is alphanumeric or numeric (see +COPS)

### 7.6      Selection of preferred PLMN list +CPLS

#### 7.6.1      Description
This command is used to select one PLMN selector with Access Technology list in the SIM card  or active application in the UICC(GSM or USIM), that is used by +CPOL command. Execute command selects a list in the SIM/USIM. Refer subclause 9.2 for possible <err> values.
Read command returns the selected PLMN selector list from the SIM/USIM
Test command returns the whole index range supported lists by the SIM./USIM
This command is only applicable in case R5_SUPPORT is set.

#### 7.6.2      Syntax
Command syntax: AT+CPLS=<list>

| COMMAND | POSSIBLE RESPONSES |
|---------|--------------------|
| AT+CPLS=0 | OK<br>or<br>CME ERROR: <error> |

| Read command | +CPLS: 1 |
| AT+CPLS? | OK |
| Test command | +CPLS: (0-2) |
| AT+CPLS=? | OK |

### 7.6.3    Defined values

&lt;list&gt; :

- 0 User controlled PLMN selector with Access Technology $EF_{PLMNwAcT}$, if not found in the SIM/UICC then PLMN preferred list $EF_{PLMNsel}$ (this file is only available in SIM card or GSM application selected in UICC)

- 1 Operator controlled PLMN selector with Access Technology $EF_{OPLMNwAcT}$

- 2 HPLMN selector with Access Technology $EF_{HPLMNwAcT}$

## 7.7    Read operator names +COPN

### 7.7.1    Description

This execution command returns the list of operator names from the ME. Each operator code &lt;numeric n&gt; that has an alphanumeric equivalent &lt;alpha n&gt; in the ME memory shall be returned.

### 7.7.2    Syntax

Command syntax: AT+COPN

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+COPN | +COPN: &lt;numeric 1&gt;,&lt;alpha1&gt;<br>[&lt;CR&gt;&lt;LF&gt;+COPN: &lt;numeric2&gt;,&lt;alpha2&gt;<br>[...]]<br>or<br>CME ERROR: &lt;error&gt; |
| Test command<br>AT+COPN=? | OK |

### 7.7.3    Defined values

&lt;numeric n&gt; string type; operator in numeric format (see +COPS)
&lt;alpha n&gt; string type; operator in long alphanumeric format (see +COPS).

## 7.8    User to user signalling service 1 +CUUS1

### 7.8.1    Description

This command allow control of the User-to-User Signalling Supplementary Sevice 1 (UUS1) according to 3G 22.087 norm.

Parameters <message> and <UUIE> are used to activate/deactivate the implicit request of the User-to-User Signalling Supplementary Service 1.

When <message> and <UUIE> are both present the string specified in <UUIE> is included as the value part of the User-to-User Information Element (as defined in 3G 24.008) into all subsequent messages of type <message>. If parameter <message> is present but parameter <UUIE> is not present then the User-to-User Information Element shall not be present in subsequent messages of type <message>.

Parameters <n> and <m> are used to enable/disable the presentation of incomingUser-to-User Information Elements.

When <n> = 1 and a User-to-User Information is received after a mobile originated call setup or after hanging up a call, intermediate result code +CUUS1I: <messageI>,<UUIE> is sent to the TE.

When <m> = 1 and a User-to-User Information is received during a mobile terminated call setup or during a remote party call hangup, unsolicited result code +CUUS1U: <messageU>,<UUIE> is sent to the TE.

### 7.8.2    Syntax

Command syntax: AT+CUUS1=[<n>[,<m>[,<message>[,<UUIE>
[,<message>[,<UUIE>[,...]]]]]]]

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+CUUS1=1,1,1,"7E00005123456" | OK<br>or<br>CME ERROR: <error> |
| Read command<br>AT+CUUS1? | +CUUS1: <n>,<m>[,<message>,<UUIE><br>[,<message>,<UUIE>[,...]]]<br>OK |
| Test command<br>AT+CUUS1=? | +CUUS1: (list of supported <n>s), (list of supported <m>s), (list of supported <message>s), (list of supported <messageI>s),(list of supported <messageU>s)<br>OK |

### 7.8.3    Defined values

<n> (parameter sets/shows the +CUUS1I result code presentation status in the TA)

0: disable

1  enable.

<m> (parameter sets/shows the +CUUS1U result code presentation status in the TA)

0  disable.

1  enable.

<message> (type of message containing the outgoing User-to-User Information Element)

0  ANY

1  SETUP

2  ALERT

3  CONNECT

4  DISCONNECT

5  RELEASE

6  RELEASE_COMPLETE

<messageI> (type of message containing the intermediate User-to-User Information Element)

0  ANY

1  ALERT

2  PROGRESS

3  CONNECT (sent after +COLP if enabled)

4  RELEASE

<messageU> (type of message containing the unsollicited User-to-User Information Element)

0  ANY

1  SETUP (returned after +CLIP if presented, otherwise after every RING or +CRING)

2  DISCONNECT

3  RELEASE_COMPLETE

< UUIE>: the User-user Information Element (as defined in 3G 24.008) in hexadecimal character format (for hexadecimal format, refer +CSCS).

NOTE:  If the TA does not distinguish the type of message containing the User-to-user Information Element, it can use the value for ANY message.

## 7.9    eMLPP Priority Registration and Interrogation +CAEMLPP

### 7.9.1    Description

The execute command is used to change the default priority level of the user in the network. The requested priority level is checked against the eMLPP subscription of the user stored on the SIM card or in the active application in the UICC (GSM or USIM) $EF_{eMLPP}$. If the user doesn't have subscription for the requested priority level an ERROR or +CMEE ERROR result code is returned.

The read command triggers an interrogation of the provision of the maximum priority level which the service subscriber is allowed to use and default priority level activated by the user.

If the service is not provisioned, a result code including the SS-Status (?) parameter is returned.

### 7.9.2    Syntax
Command syntax: +CAEMLPP=<priority>

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+CAEMLPP=1 | OK<br>or<br>CME ERROR: <error> |
| Read command<br>AT+CAEMLPP? | +CAEMLPP : <default priority>,<max priority><br>OK<br>Or<br>CME ERROR: <error> |
| Test command<br>AT+CAEMLPP=? | OK |

### 7.9.3    Defined values

<priority>: integer type parameter which identifies the default priority level to be activated in the network, which may be:

- (A: highest, for network internal use)

- (B: for network internal use)

- 0: for subscription

- 1: for subscription

- 2: for subscription

- 3: for subscription

- 4: lowest, for subscription


    s. also 3GPP TS 22.067

<default_priority>: integer type parameter which identifies the default priority level which is activated in the network; same values as defined for <priority>;

<max_priority>: integer type parameter which identifies the maximum priority level for which the service subscriber has a subscription in the network; same values as defined for <priority>.


## 7.10    PCCA STD-101 [17] select wireless network +WS46

### 7.10.1    Description
PCCA STD-101 [17] includes a command to select the cellular network (Wireless Data Service; WDS) to operate with the TA. PCCA calls this as WDS-Side Stack Selection. This command may be used when TA is asked to indicate the networks in which it can operate.


### 7.10.2    Syntax
Command syntax: AT+WS46=[<n>]

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+WS46=[<n>] | OK<br>or<br>CME ERROR: <error> |
| Read command<br>AT+WS46? | +WS46: <n><br>OK |
| Test command<br>AT+WS46=? | +WS46: (12,22,25)<br>Note: i.e. list of supported <n>s |

| | OK |
|---|---|
| | |

### 7.10.3　Defined values

<n> indicates WDS-Side Stack Selection and may be:

- 12 GSM digital cellular (Single mode GSM)

- 22 UTRAN only (Single mode UMTS)

- 25 3GPP Systems, both GERAN and UTRAN (Dual mode stack)

Note1: Any change in the WDS-Side stack selection has to be done in detached state!
Note2: This functionality is also supported by proprietary command +XRAT, this provides extended functionality compared to +ws46.

# 8　　Security commands

## 8.1　　Enter PIN +CPIN

### 8.1.1　　Description

This set command sends to the ME a password which is necessary before it can be operated. If no PIN request is pending, no action is taken towards ME and an corresponding error code is returned.

If the PIN required is SIM PUK or SIM PUK2, the second pin is required. This second pin, <newpin>, is used to replace the old pin in the SIM.

> Note:　　Commands which interact with ME that are accepted when ME is pending SIM PIN, SIM PUK, or PH-SIM are: +CGMI, +CGMM, +CGMR, +CGSN, +CALM, +CBC, +CCID, +CDIS, +CEER, +CFUN, +CGREG, +CHUP, +CIND, +CLVL, +CMER, +CMUT, +CMUX, +CPAS, +CPIN, +CPWROFF, +CRC, +CREG, +CRSL, +CSQ, +CSSN, +GMI, +GMM, +GMR, +TRACE, +WS46, +XBANDSEL, +XL1SET, +XMER, +XCALLSTAT, +XSIMLG, +XSIMSTATE, (+CPBS for "EC"), +XPINCNT, +XSIMCHG, +XSECSTATE, AT&D, AT&F, ATO, ATZ, D112

### 8.1.2　　Syntax

Command syntax: AT+CPIN=<pin>[,<newpin>]

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+COPS=0<br>AT+CPIN="0933" | CME ERROR: SIM PIN<br>OK<br>or<br>CME ERROR: <error> |
| Read command<br>AT+CPIN? | +CPIN: <code><br>OK |
| Test command<br>AT+CPIN=? | OK |

### 8.1.3　　Defined values

<pin>, <newpin> are string type values.
<code> values may be:

-　　READY: ME is not pending for any password

-　　SIM PIN: ME is waiting SIM PIN to be given

-　　SIM PUK: ME is waiting SIM PUK to be given

-　　SIM PIN2: ME is waiting SIM PIN2 to be given

- SIM PUK2: ME is waiting SIM PUK2 to be given

## 8.2 Facility lock +CLCK

### 8.2.1 Description
This execution command is used to lock, unlock or interrogate a ME or a network facility <fac>. Password is normally needed to do such actions. When querying the status of a network service (<mode>=2) the response line for "not active" case (<status>=0) should be returned only if service is not active for any <class>.
The command is abortable if network facilities are set or interrogated.

### 8.2.2 Syntax
Command syntax: AT+CLCK=<fac>,<mode>[,<passwd>[,<class>]]

| COMMAND | POSSIBLE RESPONSES |
|---------|--------------------|
| AT+CLCK="SC",1,"0933" | OK<br>Or<br>+CLCK: <status>[,<class1><br>[<CR><LF>+CLCK: <status>[,<class1><br>[…]]<br>CME ERROR: <error> |
| Test command<br>AT+CLCK=? | +CLCK:<br>"SC","FD","PS","PN","PU","PP","PC","AO"<br>,"OI","OX","AI","IR","AB","AG","AC"<br>OK |

### 8.2.3 Defined values
<fac> facility values:

- "SC" SIM (lock SIM card)

- "FD" SIM fixed dialling memory feature (if PIN2 authentication has not been done during the current session, PIN2 is required as <passwd>)

- "PS" PH-SIM (lock PHone to SIM card) (ME asks password when other than current SIM card inserted

- "PN" Network Personalisation (refer GSM 02.22 [33])

- "PU" network sUbset Personalisation (refer GSM 02.22 [33])

- "PP" service Provider Personalisation (refer GSM 02.22 [33])

- "PC" Corporate Personalisation (refer GSM 02.22 [33])

- "AO"BAR (Bar All Outgoing Calls)

- "OI" BOIC (Bar Outgoing International Calls)

- "OX" BOIC-exHC (Bar Outgoing International Calls except to Home Country)

- "AI" BAIC (Bar All Incoming Calls)

- "IR" BIC-Roam (Bar Incoming Calls when Roaming outside the home country)

- "AB" All Barring services (applicable only for <mode>=0)

- "AG" All outGoing barring services (applicable only for <mode>=0)

- "AC" All inComing barring services (applicable only for <mode>=0)

<mode> may be:

- 0 unlock

- 1 lock

- 2 query status

<status> may be:

- 0 not active

- 1 active

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

<class x> is a sum of integers each representing a class of information (default 7) and may be:

- 1 voice

- 2 data

- 4 FAX

- 8 short message service

- 16 data circuit sync

- 32 data circuit async

- 64 dedicated packet access

- 128 dedicated PAD access


## 8.3    Change password +CPWD

### 8.3.1    Description
This action command sets a new password for the facility lock function defined by command +CLCK. The command is abortable by hit a key.

### 8.3.2    Syntax
Command syntax: AT+CPWD=<fac>,<oldpwd>,<newpwd>

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+CPWD="SC","0933","0934" | OK<br>or<br>CME ERROR: <error> |
| Test command<br>AT+CPWD=? | +CPWD:<br>("SC",8"),("P2",8),("AO",4),("OI",4),("OX",4),("AI",4),("IR",4),("AB",4),("AG",4),("AC",4)<br>Note: list of supported<br>(<fac>,<pwdlength>)s<br>OK |

### 8.3.3    Defined values

<fac> "P2" and other values as defined for +CLCK except "PS", "PN", "PU", "PP, "PC"
<oldpwd> string type containing the old password
<newpwd> string type containing the new password
<pwdlength> length of password (digits).

# 9　Phonebook commands

## 9.1　Select phonebook memory storage +CPBS

### 9.1.1　Description
This command selects a phonebook memory storage for further usage in phonebook related commands.

### 9.1.2　Syntax
Command syntax: AT+CPBS=<storage>[,<password>]

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+CPBS="SM"<br>Note: selection of SIM phonebook | OK<br>or<br>CME ERROR: <error> |
| Read command<br>AT+CPBS? | +CPBS: "SM",25,150<br>Note: used syntax +CPBS:<br><storage>[,<used>,<total>]<br>OK |
| Test command<br>AT+CPBS=? | +CPBS: "SM","FD","LD","BN","SN","EC"<br>Note: (list of supported <storages>s)<br>OK |

### 9.1.3　Defined values
<storage> string type using following values:

- "SM": SIM phonebook

- "FD": SIM fix-dialling phonebook (only valid with PIN2)

- "LD": SIM last-dialling phonebook

- "BN": SIM barred-dialling-number phonebook (only valid with PIN2)

- "SN": SIM service-dialling-number phonebook

- "EC": SIM emergency-call-codes phonebook (read only)

- "ON": Own number phone-book (read/write); content is also shown by +CNUM.

- "IN": Information numbers phonebook (read only)

- "BL": Blacklist phonebook (delete only)

- "AP": Application phonebook – only available, if a UICC with an active USIM application is present

*[ "AP" is only implemented in Software Rel.5 or higher encapsulated with compiler switch (R5_SUPPORT) ! ]*

- "ME": MT phonebook (read only) – only in a full system build available
- "MT": MT+SM phonebook (read only) – only in a modem-only system build available
- "DC": MT dialled calls list  (read only) – only in full system builds available or if CRH_ACTIVATE is enabled
- "MC": MT missed calls list (read only) – only in full system builds available or if CRH_ACTIVATE is enabled
- "RC": MT received calls list (read only) – only in full system builds available or if CRH_ACTIVATE is enabled

<password>: string type value representing the PIN2-code required when selecting PIN2-code <storage>s above (e.g. "FD")

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

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

## 9.2　Read phonebook entries +CPBR

### 9.2.1　Description
This execution command returns phonebook entries in location number range <index1> ... <index2> from the current phonebook memory storage selected with +CPBS. If <index2> is left out, only location <index1> is returned.

Note: Wildcard chracters (*, ?) in the phone number of FDN (fixed number phonebook) are allowed.

Note: in case the type of number is international = 145 the "+" is skipped in the number

### 9.2.2　Syntax
Command syntax: AT+CPBR=<index1>[,<index2>]

Response syntax:　　[+CPBR: <index1>,<number>,<type>,<text>[,<hidden>][[...]
　　　　　　　　　　<CR><LF>+CPBR: <index2>,<number>,<type>,<text>[,<hidden>]]]

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+CPBR=1,3 | +CPBR: 1,"091137880",129,"Comneon"<br>+CPBR: 2,"09113788223",129,"MMI"<br>+CPBR: 3""09113788328",129,"Test-ro"<br>OK<br>or<br>CME ERROR: <error> |
| Test command<br>AT+CPBR=? | +CPBR: (1-100),20,18<br>i.e. +CPBR: (list of supported |

| | <index>s),[nlength],[tlength]<br>OK |
|---|---|

### 9.2.3    Defined values

<index1>, <index2>, <index> integer type values in the range of location numbers of phonebook memory
<number> string type phone number of format <type>
<type> type of address octet in integer format
<text> string type field of maximum length <tlength>
<hidden> indicates if the entry is hidden or not – only available, if a UICC with an active USIM application is present
0:     phonebook entry not hidden
1:     phonebook entry hidden
*[ <hidden> is only implemented in Software Rel.5 or higher encapsulated with compiler switch (R5_SUPPORT) ! ]*
<nlength> integer type value indicating the maximum length of field <number>
<tlength> integer type value indicating the maximum length of field <text> (40).

## 9.3    Find phonebook entries +CPBF

### 9.3.1    Description

This command returns the phonebook entries from the current phonebook (previously selected by +CPBS), which alphanumeric field starts with string <findtext>.

### 9.3.2    Syntax

Command syntax: AT+CPBF=<findtext>
Response syntax:   [+CPBF: <index1>,<number>,<type>,<text>[,<hidden>][[...]
                <CR><LF>+CPBF: <index2>,<number>,<type>,<text>[,<hidden>]]]

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+CPBF="Comneon" | +CPBF: 1,"091137880",129,"Comneon"<br>OK<br>or<br>CME ERROR: <error> |
| Test command<br>AT+CPBF=? | +CPBF: [<nlength>],[<tlength>]<br>OK |

### 9.3.3    Defined values

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

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

<type> type of address octet in integer format

<findtext>, <text> string type field of maximum length <tlength>

<hidden> indicates if the entry is hidden or not – only available, if a UICC with an active USIM application is present

0:　　phonebook entry not hidden

1:　　phonebook entry hidden

*[ <hidden> is only implemented in Software Rel.5 or higher encapsulated with compiler switch (R5_SUPPORT) ! ]*

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

<tlength> integer type value indicating the maximum length of field <text> (40).

### 9.4　　Write phonebook entry +CPBW

### 9.4.1　　Description

This execution command writes phonebook entry in location number <index> in the current phonebook memory storage selected with +CPBS. Entry fields written are phone number <number> in format <type> and <text> associated with the number. If all fields except <index> are omitted, the corresponding entry is deleted. If the <index> is left out, but <number> is given, entry is written to the first free location in the phonebook.

Note: Wildcard chracters (*, ?) in the phone number of FDN (fixed number phonebook) are allowed.

### 9.4.2　　Syntax

Command syntax: AT+CPBW=[<index>][,<number>[,<type>[,<text>[,<hidden]]]]

Note: in case of previously selected BL blacklist phonebook, no parameters are needed; <index>=0 is also accepted.

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+CPBW=5,"091137880" | OK<br>or<br>CME ERROR: <error> |
| Test command<br>AT+CPBW=? | +CPBW: (list of supported <index>s),[<nlength>],(list of supported <type>s),[<tlength>]<br>OK |

### 9.4.3　　Defined values

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

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

<type> type of address octet in integer format

<text> string type field of maximum length <tlength>

<hidden> indicates if the entry is hidden or not – only available, if a UICC with an active USIM application is present

0:　　phonebook entry not hidden

1:　　phonebook entry hidden

*[ <hidden> is only implemented in Software Rel.5 or higher encapsulated with compiler switch (R5_SUPPORT) ! ]*

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

<tlength> integer type value indicating the maximum length of field <text> (40).

## 10    Short messages commands

### 10.1    Parameter definition

| | |
|---|---|
| &lt;cdata&gt; | TP-Command-Data in text mode responses |
| &lt;ct&gt; | TP-Command-Type in integer format (default 0) |
| &lt;da&gt; | Destination address |
| &lt;dcs&gt; | Data coding scheme |
| &lt;dt&gt; | Discharge time in string format "yy/MM/dd,hh:mm:ss+yy" |
| &lt;fo&gt; | First octet, default value 17 for SMS-SUBMIT |
| &lt;index&gt; | Place of storage in memory |
| &lt;length&gt; | number of characters in text mode |
| | length of TP data unit in PDU mode |
| &lt;mem1&gt; | Memory used to list, read and delete SMS: |

- "BM" broadcast message storage
- "ME" ME message storage
- "MT" = "ME"+ "SM", "SM" preferred
- "SM" (U)SIM message storage

| | |
|---|---|
| &lt;mem2&gt; | Memory used to write and send SMS: "ME", "SM" |
| &lt;mem3&gt; | Memory to which received SMS are preferred stored: "BM", "SM", "ME" |
| &lt;mid&gt; | CBM message identifier |
| &lt;mr&gt; | Message reference |
| &lt;oa&gt; | Originator address |
| &lt;pid&gt; | Protocol identifier |
| &lt;pdu&gt; | Protocol data unit |
| &lt;ra&gt; | Recipient address |
| &lt;sca&gt; | Service center address |
| &lt;scts&gt; | Service center time stamp |
| &lt;sn&gt; | CBM serial number |
| &lt;st&gt; | Status of a SMS STATUS-REPORT |
| &lt;stat&gt; | Status of message in memory |
| &lt;toda&gt; | Type of address of &lt;da&gt; |
| &lt;tooa&gt; | Type of address of &lt;oa&gt; |
| &lt;tora&gt; | Type of address of &lt;ra&gt; |
| &lt;tosca&gt; | Type of address of &lt;sca&gt; |
| &lt;total1&gt; | Number of message locations in &lt;mem1&gt; |
| &lt;total2&gt; | Number of message locations in &lt;mem2&gt; |
| &lt;total3&gt; | Number of message locations in &lt;mem3&gt; |
| &lt;used1&gt; | Total number of messages in &lt;mem1&gt; |
| &lt;used2&gt; | Total number of messages in &lt;mem2&gt; |
| &lt;used3&gt; | Total number of messages in &lt;mem3&gt; |
| &lt;vp&gt; | Validity period of the SMS, default value 167 |

## 10.2    Select message service +CSMS

### 10.2.1    Description
This command selects message service <service>. It returns the types of messages supported by the ME: <mt> for mobile terminated messages, <mo> for mobile originated messages and <bm> for broadcast type messages.

### 10.2.2    Syntax
Command syntax: AT+CSMS=<service>

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+CSMS=1 | +CSMS:<mt>,<mo>,<bm><br>OK<br>or<br>CMS ERROR: <error> |
| Read command<br>AT+CSMS? | +CSMS: <service>,<mt>,<mo>,<bm><br>OK |
| Test command<br>AT+CSMS=? | +CSMS: (list of supported <service>s)<br>OK |

### 10.2.3    Defined values
<service> may be:

-   0: GFSM03.40 and GSM03.41; the syntax of SMS AT commands is compatible with GSM07.05 Phase 2; phase 2+ features may be supported

-   1: GSM03.40 and GSM03.41; the syntax of SMS AT commands is compatible with GSM07.05 Phase 2+

<mt>, <mo>, <bm> may be:

-   0: type not supported

-   1: type supported.

## 10.3    Preferred message storage +CPMS

### 10.3.1    Description
This set command selects memory storages <mem1>, <mem2> and <mem3> to be used for reading, writing, ...

### 10.3.2    Syntax
Command syntax: AT+CPMS=<mem1>[,<mem2>[,<mem3>]]

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+CPMS="SM","SM","BM" | AT+CPMS: <used1>,total1>,<used2>,<total2>,<used3>,<total3><br>OK<br>or<br>CMS ERROR: <error> |
| Read command<br>AT+CPMS? | +CPMS: <mem1>,<used1>,total1>,<mem2>,<used2>,<total2>,<mem3>,<used3>,<total3><br>OK<br>or<br>CMS ERROR: <error> |
| Test command<br>AT+CPMS=? | +CPMS: (list of supported <mem1>s),(list of supported <mem2>s),(list of supported <mem3>s)<br>OK |

Note:
- index 1 to n is used for "ME" and n+1 to n+m for "SM"
- for mem2 only "SM" can be selected

## 10.4    Preferred message format +CMGF

### 10.4.1    Description
This set command indicates to TA which input and output format of messages shall be used.

### 10.4.2    Syntax
Command syntax: AT+CMGF=[<mode>]

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+CMGF=1 | OK<br>or<br>CME ERROR: <error> |
| Read command<br>AT+CMGF? | +CMGF: <mode><br>OK |
| Test command<br>AT+CMGF=? | +CMGF: (list of supported <mode>s)<br>OK |

### 10.4.3    Defined values

<mode> indicates the format of messages used with send, list, read and write commands and unsolicited result codes resulting from receiving SMS's. It can be:

-   0: PDU mode (default)

-   1: text mode

## 10.5    Save settings +CSAS

### 10.5.1    Description

This execution command saves active message service settings to a non-volatile memory (NVRAM). In fact the settings related to +CSCA, +CSMP and +CSCB are stored in one profile.

### 10.5.2    Syntax

Command syntax: AT+CSAS[=<profile>]

| COMMAND | POSSIBLE RESPONSES |
|---------|--------------------|
| AT+CSAS | OK<br>or<br>CMS ERROR: <error> |
| Test command<br>AT+CSAS=? | +CSAS: (list of supported <profile>s)<br>OK |

### 10.5.3    Defined values

<profile> may be:

-   0: indicates the specific profile number where settings are to be stored.

## 10.6    Restore Settings +CRES

### 10.6.1    Description

This command restores message service settings from a non-volatile memory (NVRAM) to active memory. The settings specified in the commands +CSCA, +CSMP and +CSCB are restored. Only one profile of stored settings is available.

### 10.6.2    Syntax

Command syntax: AT+CRES[=<profile>]

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+CRES | OK<br>or<br>CMS ERROR: <error> |
| Test command<br>AT+CRES=? | +CRES: (list of supported <profile>s)<br>OK |

### 10.6.3   Defined values

<profile> may be:

- 0: specific profile number from where settings are to be restored.

## 10.7    Show text mode parameters +CSDH

### 10.7.1    Description

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

### 10.7.2    Syntax

Command syntax: AT+CSDH=[<show>]

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+CSDH=1 | OK<br>or<br>CME ERROR: <error> |
| Read command<br>AT+CSDH? | +CSDH: <show><br>OK |
| Test command<br>AT+CSDH=? | +CSDH: (list of supported <show>s)<br>OK |

### 10.7.3    Defined values

<show> may be:

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

- 1: show the values in result codes.

## 10.8    New message indication +CNMI

### 10.8.1    Description
This set command selects the procedure, how receiving of new SMS from network is indicated to the TE when DTR-signal is ON. IF TE is inactive (DTR-signal OFF), message receiving should be done as specified in GSM03.38. All SMS classes are supported accordingly.

Note (proprietary feature): the SMS's class 0 which are normally displayed via MMI, can be also indicated on DTE via unsolicited result code +CMTI: "SM",0 , wherein 0 represents a SMS without SIM-storage ("SM" indicates only that no other specific setting is needed in order to read the SMS via AT+CMGR=0).

### 10.8.2    Syntax
Command syntax: AT+CNMI=[<mode>[,<mt>[,<bm>[,<ds>[,<bfr>]]]]]

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+CNMI=1,1 | OK<br>or<br>CMS ERROR: <error> |
| Read command<br>AT+CNMI? | +CNMI=<mode>,<mt>,<bm>,<ds>,<bfr><br>OK |
| Test command<br>AT+CNMI=? | +CNMI: (list of supported <mode>s),(list of supported <mt>s),(list of supported <bm>s),(list of supported <ds>s),(list of supported <bfr>s)<br>OK |

### 10.8.3    Defined values
<mode> controls processing of unsolicited result codes specified with this command and may be:

- 0: buffer unsolicited result codes in the TA; if the TA buffer is full, the oldest indication may be discarded and replaced with the new received indications (ring buffer);

- 1: discard indication and reject new received message unsolicited result codes when TA-TE link is reserved; otherwise forward them directly to the TE;

- 2: buffer unsolicited result codes in the TA when the serial link is busy (e.g. data-transfer); otherwise forward them directly to the TE;

- 3: Forward unsolicited result codes directly to the TE. TA-TE link specific inband technique used to embed result codes and data when TA is in on-line data mode; **This value is not supported**;

<mt> contains the rules for storing received SMS dependent on its <dcs> and may be:

- 0: No SMS-DELIVER indications are routed to the TE

- 1: if SMS-DELIVER is stored in ME/TA, indication of the memory location is routed to the TE using unsolicited result code: +CMTI: <mem>,<index>

- 2: SMS-DELIVER (except class2 SMS) are routed directly to the TE using the unsolicited result code: +CMT: [<alpha],<length><CR><LF><pdu> in PDU mode or +CMT:
  <oa>,[<alpha>],<scts>[,<tooa>,<fo>,<pid>,<dcs>,<sca>,<tosca>,<length>]<CR><LF>
  If ME has its own display device then class 0 SMS and SMS in the message waiting indication group (discard message) may be copied to both ME display and to TE. In this case ME shall send the acknowledgement to the network. Class 2 SMSs and messages in the message waiting indication group (storage message) result in indication as defined in <mt>=1

- 3: Class 3 SMS-DELIVERs are routed directly to TE using unsolicited result codes defined in <mt>=2. Messages of other data coding schemes result in indication as defined in <mt>=1.

<bm> contains the rules for storing CBMs and may be

- 0: No CBM indications to the TE

- 1: if CBM is stored in RAM/NVRAM by ATC/DR, an indication of memory location is routed to DTE unsolicited result code +CBMI: <mem>,<index>

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

- 3: Class 3 CBMs are routed directly to TE using unsolicited result codes defined in <bm>=2. If CBM storage is supported, messages of other classes result in indication as defined in <bm>=1.

<ds> may be

- 0: No SMS-STATUS-REPORTs are routed to the TE

- 1: SMS-STATUS-REPORTs are routed to the TE using unsolicited result code: +CDS: <length><CR>LF><pdu>    if    PDU    mode    enabled    or    +CDS: <fo>,<mr>,[<ra>],[<tora>],>scts>,<dt>,<st> if text mode enabled

- 2: if SMS-STATUS-REPORT is stored into ME/TA, indication of the memory location is routed to the DTE using the unsolicited result code +CDSI: <mem>,<index>

<bfr> may be:

- 0: TA buffer of unsolicited result codes defined within this command is flushed to the TE when <mode> 1...3 is entered (OK response shall be given before flushing the codes).

- 1: TA buffer of unsolicited result codes defined within this command is cleared when <mode> 1...3 is entered.

## 10.9    Read message +CMGR

### 10.9.1    Description

This execution command returns message with location value <index> from message storage <mem1> to the TE.

Note: The parameters  <tooa>,<fo>,<pid>,<dcs>,<sca>,<tosca>,<length> shall be displayed only when setting +CSDH=1 is.

Note: The syntax AT+CMGR=0 allows to display a SMS class 0 if it is signalized to ATC, because no MMI is available in the MS (s. also the note from command +CNMI).

### 10.9.2    Syntax

Command syntax: +CMGR=<index>

| COMMAND | POSSIBLE RESPONSES |
|---------|--------------------|
| AT+CMGR=3 | *for SMS-DELIVER in text mode:*<br>+CMGR:<br><stat>,<oa>,[<alpha>],<scts>*[,<tooa>,<fo>,<pid>,<dcs>,<sca>,<tosca>,<length>]*<CR><LF><data><br>*for SMS-SUBMIT in text mode:*<br>+CMGR:<br><stat>,<da>,[<alpha>]*[<toda>,<fo>,<pid>,<dcs>,[<vp>],<sca>,<tosca>,<length>]*<CR><LF><data><br>*for SMS-STATUS-REPORT in text mode:*<br>+CMGR:<br><stat>,<fo>,<mr>,[<ra>],[<tora>]<scts><dt>,<st><br>*for SMS-COMMAND in text mode:*<br>+CMGR:<br><stat>,<fo>,<ct>*[,<pid>,[<mn>],[<da>],[<toda>],<length>]*<br>*for CBM storage in text mode:*<br>+CMGR:<br><stat>,<sn>,<mid>,<dcs>,<page>,<pages><CR><LF><data><br>*in PDU mode:*<br>+CMGR: <stat>,[<alpha>],<length><CR><LF><pdu><br>OK<br>or<br>CMS ERROR: <error> |

| Test command AT+CMGR=? | OK |
|---|---|

### 10.9.3　Defined values

<index>: may be in range 0-400; value 0 is possible only if a SMS class 0 is received and previously the setting +CNMI=1,… was set
Note:
index 1 to n is used for "ME" and n+1 to n+m for "SM"
<stat> may be:

- 0 in PDU mode or "REC UNREAD" in text mode: received unread SMS

- 1 in PDU mode or "REC READ" in text mode: received read SMS

- 2 in PDU mode or "STO UNSENT" in text mode: stored unsent SMS

- 3 in PDU mode or ""STO SENT" in text mode: stored sent SMS

- 4 in PDU mode or "ALL" in text mode: all SMS's

### 10.10　New Message Acknowledgement to ME/TA +CNMA

### 10.10.1　Description

This execution command confirms correct reception of a new message (SMS-DELIVER or SMS-REPORT) which is routed directly to the TE. This acknowledgement command (causing ME to send RP-ACK to the network) shall be used when +CSMS parameter <service> equals 1. MS shall not send another +CMT or +CDS result code to TE before previous one is acknowledged.
If the command +CNMA is received, but no acknowledgement is expected, or some other ME related errors occurs, a corresponding +CMS ERROR: <error> is returned.

[implementation-variant with DR_TE_SM_EXTERNAL not present]
If the mobile does not get the acknowledgement within required time (network timeout), it must send RP-ERROR to the network. Both settings <mt> and <ds> of +CNMI command will be automatically set to zero.

[implementation-variant with DR_TE_SM_EXTERNAL present]
In systems with application processor [compilerswitch DR_TE_SM_EXTERNAL is present] another behaviour is implemented:
if a timeout occurs: RP-ERROR will be sent but ATC will not trigger the change of storing-rules, the +CNMI-settings remain unchanged and the next +CNMA will be rejected with "+CMS ERROR: 332 / network timeout".
Note: the network re-sends the not acknowledged SMS again and again till it will be acknowledged successfully !
(so perhaps several identical SMS's are to be handled correctly by AP).

### 10.10.2  Syntax

Command syntax:

if text mode (+CMGF=1 enabled) +CNMA

if PDU mode (+CMGF=0 enabled) +CNMA[=<n>[,<length>[<CR>PDU<ctrl-Z/ESC>]]]

| COMMAND | POSSIBLE RESPONSES |
|---------|--------------------|
| AT+CNMA | OK<br>or<br>CMS ERROR: <error> |
| Test command<br>AT+CNMA=? | If PDU mode (+CMGF=0):<br>+CNMA(list of supported <n>s) |

### 10.10.3  Defined Values

<n>:

0        command operates similarly as defined for the text mode

1        send RP-ACK (or buffered result code received correctly)

2        send RP-ERROR (if PDU is not given, ME/TA shall send SMS-DELIVER-REPORT with 3GPP TS

     23.040 [3] TP-FCS value set to 'FF' (unspecified error cause))

### 10.10.4  Usecases for implementation-variant with DR_TE_SM_EXTERNAL present

```
1. one SMS, timeout, re-sent by network

AP                              ATC                          NW
|                                |                            |
=======================|=====================
                                |           SMS_1
                                |<----------------------
         +CMT:1                 |
<-----------------------|
                                |          TIMEOUT
                                |<----------------------
                                |
         +CNMA                  |
----------------------->|
                                |
   ERR:332/NW timeout           |
<-----------------------|
                                |
         +CNMA                  |
----------------------->|
                                |
```

```
ERR:340/no +CNMA expected |
<-------------------------|
                          |      SMS_1 [ repetition ]
                          |<----------------------
           +CMT:1         |
<-------------------------|
                          |
           +CNMA          |
------------------------->|
           OK             |            ACK
<-------------------------|---------------------->
                          |
```
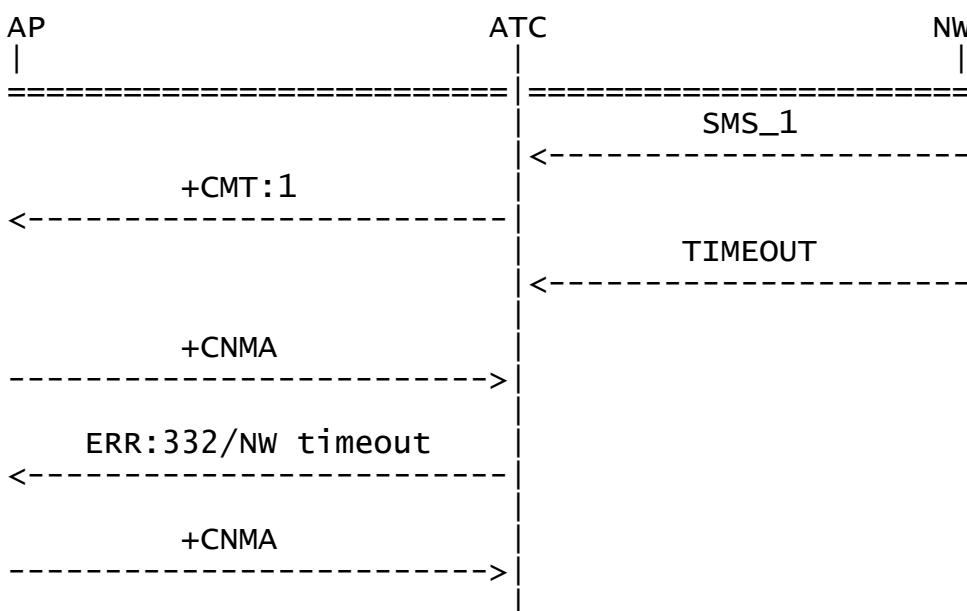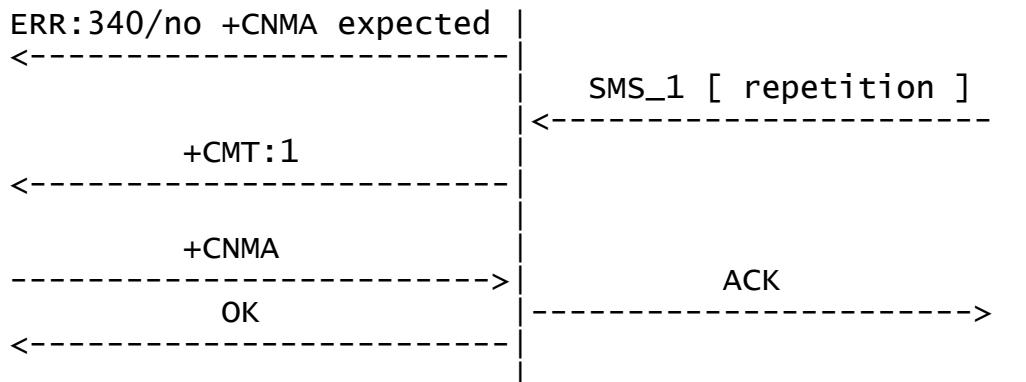
2. two SMS, one timeout, first SMS re-sent by Network

```
AP                         ATC                    NW
|                          |                      |
==========================|=======================
                          |          SMS_1
                          |<----------------------
           +CMT:1         |
<-------------------------|
                          |         TIMEOUT
                          |<----------------------
                          |
                          |          SMS_2
                          |<----------------------
           +CMT:2         |
<-------------------------|
                          |
           +CNMA          |   (concerns to SMS_1)
------------------------->|
                          |
       332/NW timeout     |
<-------------------------|
                          |
           +CNMA          |   (concerns to SMS_2)
------------------------->|            ACK
           OK             |---------------------->
<-------------------------|
                          |
           +CNMA          |
------------------------->|
                          |
ERR:340/no +CNMA expected |
<-------------------------|
                          |
                          |
                          |     SMS_1 [ repetition ]
                          |<----------------------
           +CMT:1         |
<-------------------------|
```

```
                              |
             +CNMA            |
    ------------------------->|              ACK
             OK               |------------------------>
    <-------------------------|
                              |
             +CNMA            |
    ------------------------->|
                              |
    ERR:340/no +CNMA expected |
    <-------------------------|
                              |
```
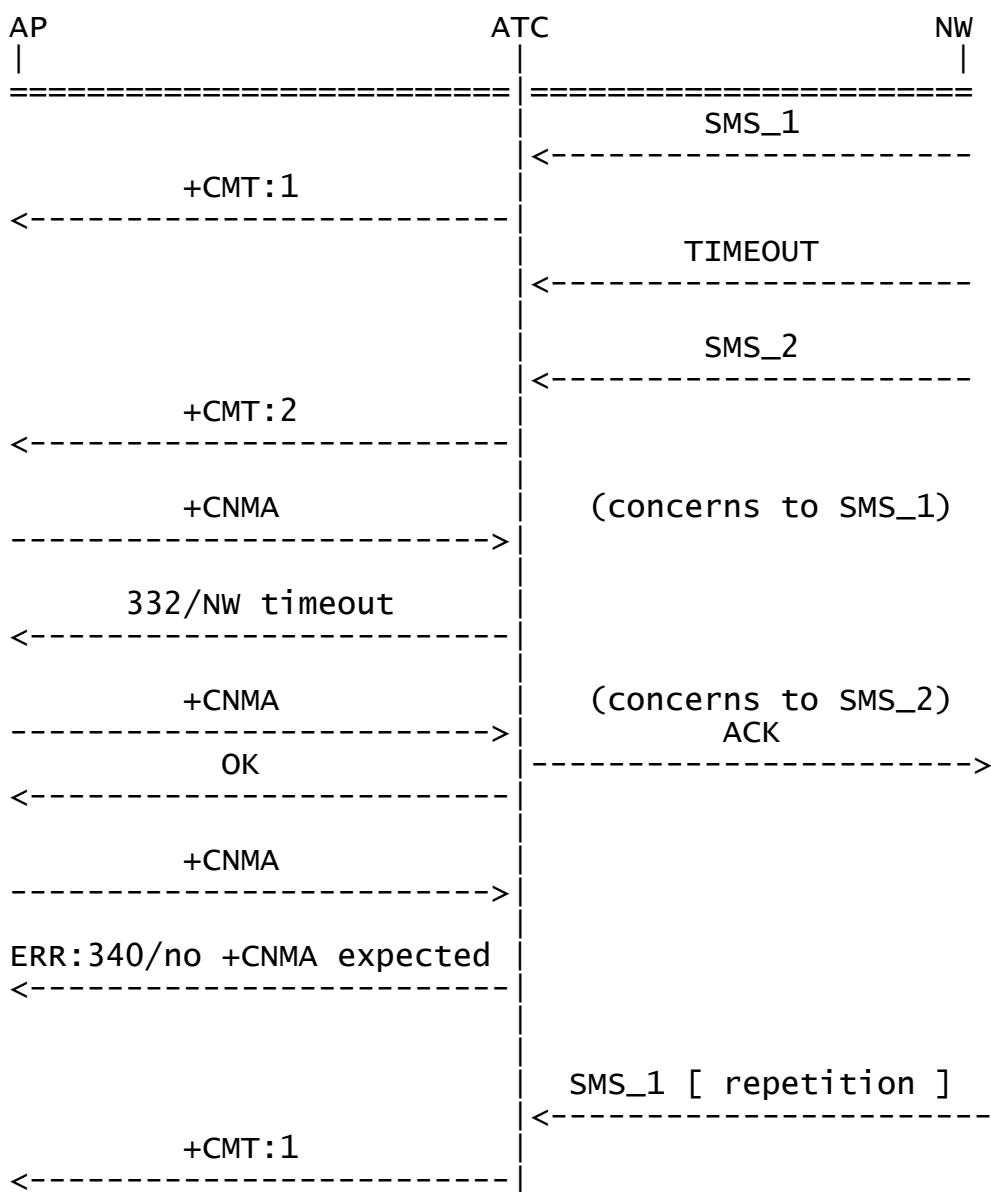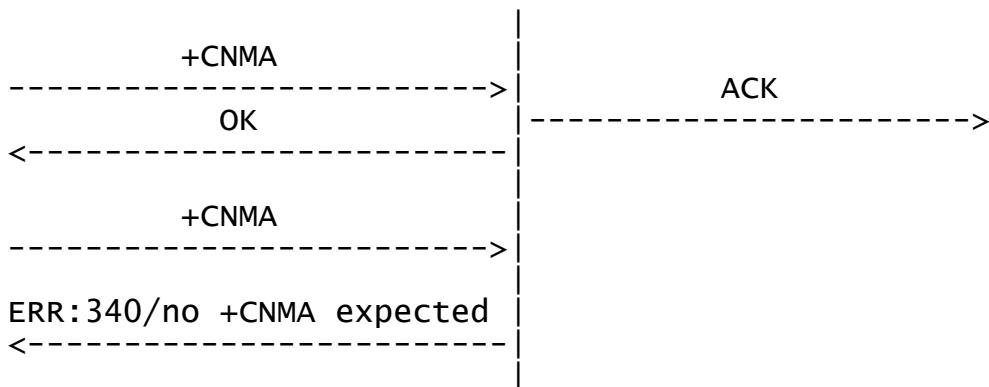
## 10.11  List message +CMGL

### 10.11.1  Description

This execution command returns SMS messages with status value <stat> from message storage <mem1> to the TE. Parameter in italics are displayed only when setting +CSDH=1 is. If status of the received message is "received unread", status in the storage changes to "received read".

Note:

index 1 to n is used for "ME" and n+1 to n+m for "SM"

### 10.11.2  Syntax

Command syntax: AT+CMGL[=<stat>]

| COMMAND | POSSIBLE RESPONSES |
|---------|---------------------|
| AT+CMGL | **if text mode (+CMGF=1), command successful and SMS-SUBMITs and/or SMS-DELIVERs:**<br>+CMGL:<br><index>,<stat>,<oa/da>,[<alpha>],[<scts>]*[,<tooa/toda>, <length>]*<CR><LF><data>[<CR><LF><br>+CMGL:<br><index>,<stat>,<da/oa>,[<alpha>],[<scts>]*[,<tooa/toda>, <length>]*<CR><LF><data>[...]]<br>**if text mode (+CMGF=1), command successful and SMS-STATUS-REPORTs:**<br>+CMGL:<br><index>,<stat>,<fo>,<mr>,[<ra>],[<tora>],<scts>,<dt>,<st>[<CR><LF><br>+CMGL:<br><index>,<stat>,<fo>,<mr>,[<ra>],[<tora>],<scts>,<dt>,<st>[...]]<br>**if text mode (+CMGF=1), command successful and** |

| | |
|---|---|
| | **SMS-COMMANDs:**<br>+CMGL: <index>,<stat>,<fo>,<ct>[<CR><LF><br>+CMGL: <index>,<stat>,<fo>,<ct>[...]]<br>**if text mode (+CMGF=1), command successful and CBM storage:**<br>+CMGL: <index>,<stat>,<sn>,<mid>,<page>,<pages><br><CR><LF><data>[<CR><LF><br>+CMGL: <index>,<stat>,<sn>,<mid>,<page>,<pages><br><CR><LF><data>[...]]<br>OK<br>or<br>**if PDU mode (+CMGF=0) and command successful:**<br>+CMGL:<br><index>,<stat>,[<alpha>],<length><CR><LF><pdu><br>[<CR><LF>+CMGL:<index>,<stat>,[<alpha>],<length><CR><LF><pdu><br>[...]]<br>or<br>CMS ERROR: <error> |
| Test command<br>AT+CMGL=? | +CMGL: (list of supported <stat>s)<br>OK |

## 10.12　Send message +CMGS

### 10.12.1　Description
This execution command sends message from a TE to the network (SMS-SUBMIT).
Message reference value <mr> is returned to the TE on successful message delivery.

　　Note: the optional response field <scts> is not returned when +CSMS=1 (t.b.d.)

<CR> separates the parameter part from the text part of the edited SMS in text mode.
<ctrl-Z> indicates that the SMS shall be sent, while <ESC> indicates aborting of the edited SMS.

### 10.12.2　Syntax
Command syntax (text mode): AT+CMGS=<da>[,<toda>]<CR>*text*<ctrl-Z/ESC>
Command syntax (PDU mode): +CMGS=<length><CR>*PDU is given*<ctrl-Z/ESC>

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| **if text mode:**<br>AT+CMGS="0171112233"<CR><br>"This is the text"<ctrl-Z><br>**if PDU mode (+CMGF=0):** | **if text mode:**<br>+CMGS: <mr>[,<scts>]<br><br>**if PDU mode (+CMGF=0):** |

| +CMGS=<length><CR>PDU is given<ctrl-Z/ESC> | +CMGS: <mr>[,<ackpdu>]<br>OK<br>or<br>CMS ERROR: <error> |
|---|---|
| Test command<br>AT+CMGS=? | OK |

## 10.13　Write message to memory +CMGW

### 10.13.1　Description
This execution command stores message  (SMS-DELIVER or SMS-SUBMIT) to memory storage <mem2>. Memory location <index> of the stored message is returned.
<CR> separates the parameter part from the text part of the edited SMS in text mode.
<ctrl-Z> indicates that the SMS shall be sent, while <ESC> indicates aborting of the edited SMS.
Note:
index 1 to n is used for "ME" and n+1 to n+m for "SM"

### 10.13.2　Syntax
Command syntax in text mode:
 AT+CMGW[=<oa/da>[,<tooa/toda>[,<stat>]]]<CR><text><ctrl-Z/ESC>
Command syntax in PDU mode:
 AT+CMGW=<length>[,<stat>]<CR><PDU><Ctrl-Z/ESC>

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| **In text mode:**<br>AT+CMGW="091137880"<CR><br>"This is the text"<Ctrl-Z><br>**if PDU mode:**<br>AT+CMGW=52,<CR><PDU><Ctrl-Z> | +CMGW: <index><br>OK<br><br><br>or<br>CMS ERROR: <error> |
| Test command<br>AT+CMGW=? | OK |

### 10.14　Send message from storage +CMSS

#### 10.14.1　Description
This execution command sends the message with location value <index> from the preferred message storage <mem2> to the network (SMS-SUBMIT or SMS-COMMAND). If a new recipient address <da> is given for SMS-SUBMIT, it shall be used instead of the one stored with the message. Reference value <mr> is returned to the TE on successful message delivery.

　　Note: the optional response field <scts> is not returned when +CSMS=1 (t.b.d.)

#### 10.14.2　Syntax
Command syntax: AT+CMSS=<index>[,<da>[,<toda>]]

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+CMSS=2 | **If text mode:**<br>+CMSS: <mr>[,<scts>]<br>OK<br>or<br>CME ERROR: <error> |
| Test command<br>AT+CMSS=? | OK |

### 10.15　Set text mode parameters +CSMP

#### 10.15.1　Description
This set command is used to select values for additional parameters needed when SM is sent to the network or placed in a storage when text format message mode is selected. It is possible to set the validity period starting from when the SM is received by the SMSC (<vp> is in range 0...255) or define the absolute time of the validity period termination (<vp> is a string). The format of <vp> is given by <fo>.

#### 10.15.2　Syntax
Command syntax: AT+CSMP=[<fo>[,<vp>[,<pid>[,<dcs>]]]]

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+CSMP=17,167,0,0 | OK<br>or<br>CME ERROR: <error> |

| Read command<br>AT+CSMP? | +CSMP: <fo>,<vp>,<pid>,<dcs><br>OK |
|---|---|
| Test command<br>AT+CSMP=? | OK |

### 10.16   Delete SMS +CMGD

#### 10.16.1   Description
This execution command deletes message from preferred message storage <mem1>
location <index>. If <delflag> is present and not set to 0 then the ME shall ignore <index>
and follow the rules for <delflag> shown below.
<delflag> will be supported with EFS21.03.00

#### 10.16.2  Syntax
Command syntax: AT+CMGD=<index> [,<delflag>]

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+CMGD=3 | OK<br>or<br>CMS ERROR: <error> |
| Test command<br>AT+CMGD=? | +CMGD: (list of supported<br><index>s)[,(list of supported <delflag>s)<br>OK |

#### 10.16.3  Defined values
<delflag>: an integer indicating multiple message deletion request as follows:
-        0 (or omitted)Delete the message specified in <index>

-        1               Delete all read messages from preferred message
                         storage, leaving unread messages and stored mobile originated
                         messages (whether sent or not) untouched

-        2               Delete all read messages from preferred message storage
                         and sent mobile originated messages, leaving unread
                         messages and unsent mobile originated messages untouched

-        3               Delete all read messages from preferred message
                         storage, sent and unsent mobile originated messages leaving
                         unread messages untouched.

-　　4　　　　　　　　Delete all messages from preferred message storage including unread messages.

## 10.17　Service center address +CSCA

### 10.17.1　Description
This set command updates the SMSC address, through which mobile originated SMS's are transmitted. In text mode the setting is used by send and write commands. In PDU mode the setting is used by the same commands, but only when the length of SMSC address coded into <pdu> parameter equals zero.

### 10.17.2　Syntax
Command syntax: AT+CSCA=<sca>[,<tosca>]

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+CSCA="0170111000",129 | OK<br>or<br>CME ERROR: <error> |
| Read command<br>AT+CSCA? | +CSCA: <sca>,<tosca><br>OK |
| Test command<br>AT+CSCA=? | OK |

## 10.18　Select cell broadcast message types +CSCB

### 10.18.1　Description
This set command selects which types of CBM's are to be received by the ME

### 10.18.2　Syntax
Command syntax: AT+CSCB=[<mode>[,<mids>[,<dcss>]]]

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+CSCB=0,"1,5,10-11,40","" | OK<br>or<br>CME ERROR: <error> |
| Read command<br>AT+CSCB? | +CSCB=<mode>,<mids>,<dcss><br>OK |

| Test command | +CSCB: (list of supported <mode>s) |
| AT+CSCB=? | OK |

### 10.18.3 Defined values

<mode> may be:

- 0 message types specified in <mids> and <dcss> are accepted

- 1 message types specified in <mids> and <dcss> are not accepted

<mids> string type containing all possible combinations of CBM message identifiers (<mid>)

<dcss> string type containing all possible combinations of CBM data coding schemes (<dcs>)

Note: if <mode>=0 and <mids> is an empty string, receiving of CB SMS is stopped.

## 10.19　Send command +CMGC

### 10.19.1 Description

This execution command sends a command message from a TE to the network (SMS-COMMAND). The entering of text is done similarly as specified in command +CMGS, but the format is fixed to be a sequence of two IRA characters. The message reference value <mr> is returned to the TE on successful message delivery.

Note: the optional response field <scts> is not returned when +CSMS=1 (t.b.d.)

### 10.19.2 Syntax

Command syntax in text mode:
 AT+CMGC=<fo>,<ct>[,<pid>[,<mn>[,<da>[,<toda>]]]]<CR><text><Ctrl-Z/ESC>
Command syntax in PDU mode: AT+CMGC=<length><CR><PDU><Ctrl-Z/ESC>

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| **if text mode:**<br>AT+CMGC=2,0,0,0,"0171123"<br><CR>"AB"<Ctrl-Z><br>**if PDU mode:**<br>AT+CMGC=23<CR><PDU><Ctrl-Z> | +CMGC: <mr><br><br><br>OK<br>or<br>CMS ERROR: <error> |
| Test command<br>AT+CMGC=? | OK |

### 10.20　More messages to send +CMMS

#### 10.20.1　Description
This set command controls the continuity of SMS relay protocol link. When enabled, multiple messages (SMS) can be sent much faster as link is kept open.

#### 10.20.2　Syntax
Command syntax:
　AT+CMMS=[<n>]

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+CMMS=2 | OK<br>or<br>CMS ERROR: <error> |
| Read command<br>AT+CMMS? | +CMMS: <n><br>OK |
| Test command<br>AT+CMMS=? | +CMMS: (list of supported <n>s)<br>OK |

#### 10.20.3　Defined values
<n> may be:

- 0: disable

- 1: keep enabled until the time between the response of the latest SMS send command and the next send command exceeds 1-5 seconds, then ME close the link and <n> will be switched back to 0;

- 2: keep permanently enabled (ME closes only the link after each send sequence, <n> is not switched back to 0).

### 10.21　Detection of signal DR_SM_FINISHED_IND +XSMS

#### 10.21.1　Description
This set command is triggered by sdl signal DR_SM_FINISHED_IND. When enabled, the command sends an URC which shows whether signal has been received or not.

#### 10.21.2　Syntax
Command syntax:
　AT+XSMS=<mode>

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+XSMS=1 | +XSMS:<state><br>OK<br>or<br>CMS ERROR: <error> |
| Read command<br>AT+XSMS? | +XSMS: <mode>,<state><br>OK |
| Test command<br>AT+XSMS=? | +XSMS: (list of supported <mode>s)<br>OK |

### 10.21.3 Defined values

<mode> may be:

- 0 XSMS disabled

- 1 XSMS enabled

<state> may be:

- 0 DR_SM_INIT_FINISHED_IND has been not received

- 1 DR_SM_INIT_FINISHED_IND has been received

# 11    Supplementary services commands

## 11.1    Call forwarding +CCFC

### 11.1.1    Description
This command allows the control of the call forwarding supplementary service according to GSM02.82. Registration, erasure, activation, deactivation and status query are supported. In case of enabled ALS <class> = 1 will be treated as voice line 1 and <class> = 256 will be treated as voice line 2. (CPHS feature). This command is abortable (proprietary feature for GFS19 line).

### 11.1.2    Syntax
Command syntax:
AT+CCFC=<reason>,<mode>[,<number>[,<type>[,<class>[,<subaddr>[,<satype>[,<time>]]]]]]

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+CCFC=0,3,"01711234"<br>Note: Register call forwarding unconditional. | OK<br>or<br>**when <mode>=2**<br>+CCFC:<br><status>,<class1>[,<number>,<type>[,<subaddr>,<satype>[,<time>]]]<br>[<CR><LF>+CCFC:<br><status>,<class1>[,<number>,<type>[,<subaddr>,<satype>[,<time>]]]<br>[...]]<br>CME ERROR: <error> |
| Test command<br>AT+CCFC=? | +CCFC: (list of supported <reason>s)<br>OK |

### 11.1.3    Defined values
<reason> may by:

-    0 unconditional

-    1 mobile busy

-    2 no reply

-    3 not reachable

-    4 all call forwarding

-    5 all conditional call forwarding

<mode> may be:

- 0 disable

- 1 enable

- 2 query status

- 3 registration

- 4 erasure

<number> string type phone number of forwarding address in <type> format
<type> type of address in integer format; default 145 when dialling string includes "+", otherwise 129
<subaddr> string type subaddress; parameter currently ignored after syntax check
<satype> type of subaddress; default 128 (TON/NPI unknown); parameter currently ignored after syntax check
<class> is a sum of integers each representing a class of information (default 7 or interpreted by network if not explicitly entered) and may be:

- 1 voice (voice line 1 if ALS enabled)

- 2 data

- 4 FAX

- 8 SMS

- 16 data circuit sync

- 32 data circuit async

- 64 dedicated packet access

- 128 dedicated PAD access

- 256 voice line 2 (if ALS enabled)

<time> time in seconds to wait before call is forwarded (default 20), but only when <reason>=2 (no reply) is enabled
<status> may be:

- 0 not active

- 1 active

## 11.2    Call waiting +CCWA

### 11.2.1    Description

This command allows control of the Call Waiting supplementary service according to GSM02.83. Activation, deactivation and status query are supported. When querying the status of a network service (<mode>=2) the response line for 'not active' case (<status>=0) should be returned only if service is not active for any <class>. In case of enabled ALS (de)activating Call waiting for one line always (de)activates Call waiting on the other line

too (CPHS feature). Status query is abortable by hit a key. If enabled by <n> an unsolicited result code is presented on TE when a call is signalled in following format:
+CCWA: <number>,<type>,<class>,[<alpha>][,<CLI validity>[,<subaddr>,<satype>[,<priority>[,<cause of no cli>]]]]

### 11.2.2  Syntax
Command syntax: AT+CCWA=[<n>[,<mode>[,<class>]]]

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| **Set command**<br>AT+CCWA=1,1,1 | OK |
| **Query command**<br>AT+CCWA=1,2 | +CCWA: <status>,<class1><br>[<CR><LF>+CCWA: <status>,<class2><br>[...]]<br>e.g. +CCWA: 1,1<br>OK<br>or<br>CME ERROR: <error> |
| Read command<br>AT+CCWA? | +CCWA: <n><br>OK |
| Test command<br>AT+CCWA=? | +CCWA: (0-1)<br>i.e. (list of supported <n>s)<br>OK |

### 11.2.3  Defined values
<n> is used to enable/disable the presentation of an unsolicited result code +CCWA:

-   0: disable

-   1: enable

<mode> (if <mode> not given, network is not interrogated) may be:

-   0: disable

-   1: enable

-   2: query status

<classx> is a sum of integers each representing a class of information (default 1)

-   1 voice (voice line 1 if ALS enabled)

-   2 data (refers to all bearer services; with <mode>=2 this may refer only to some bearer service if TA does not support values 16, 32, 64, and 128); currently not supported

-    4: FAX; currently not supported

-    8: SMS; currently not supported

-    16: data circuit sync; currently not supported

-    32: data circuit async; currently not supported

-    64: dedicated packet access; currently not supported

-    128: dedicated PAD access; currently not supported

-    256: voice line 2 (if ALS enabled);

-    512: multimedia data circuit sync; (only valid for unsolicited result code +CCWA:…)

-    1024: multimedia data circuit async; (only valid for unsolicited result code +CCWA:…)
<status>

-    0: not active

-    1: active

<number> string type phone number of calling address in format specified by <type>
<type> type of address in integer format
<alpha> optional string type alphanumeric representation of <number> corresponding to the entry found in phonebook
<CLI validity> may be:

-    0: CLI valid

-    1: CLI has been withheld by the originator

-    2: CLI is not available

<cause of no cli>

0      unavailable

1      reject by user

2      interaction with other service

3      coin line/payphone

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

<satype>: type of subaddress octet in integer format (refer TS 24.008 [8] subclause 10.5.4.8)

<priority>: optional digit type parameter indicating that the eMLPP priority level of the incoming call. The priority level values are as defined in eMLPP specification 3GPP TS 22.067 [54].

### 11.3    Calling line identification restriction +CLIR

#### 11.3.1    Description
This command allows to control the calling line identification restriction supplementary service (GSM02.81). This command is abortable (proprietary feature for GFS19 line).

#### 11.3.2    Syntax
Command syntax: AT+CLIR=[<n>]

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+CLIR=2 | OK<br>or<br>CME ERROR: <error> |
| Read command<br>AT+CLIR? | +CLIR: <n>,<m><br>OK |
| Test command<br>AT+CLIR=? | +CLIR: (0-2)<br>i.e. (list of supported <n>s)<br>OK |

#### 11.3.3    Defined values
<n> parameter sets the adjustment for outgoing calls and may be:

- 0: presentation indicator is used according to the subscription of the CLIR service

- 1: CLIR invocation

- 2: CLIR suppression

<m> parameter shows the subscriber CLIR status in the network and may be:

- 0: CLIR nor provisioned

- 1: CLIR provisioned in permanent mode

- 2: unknown

- 3: CLIR temporary mode presentation restricted

- 4: CLIR temporary mode presentation allowed

### 11.4    Calling line identification presentation +CLIP

#### 11.4.1    Description
This command allows to control the calling line identification presentation supplementary service. When CLI is enabled, +CLI response is returned after every RING (or +CRING)

result code. When the presentation of CLI at the TE is enabled, the following unsolicited result code is displayed after RING (or +CRING):
+CLIP: <number>,<type>[,<subaddr>,<satype>[,[<alpha>][,[<CLI validity>][,<Cause of No Cli>]]]]

Proprietary features:
- This command is abortable
- <cause of no cli> parameter

### 11.4.2   Syntax
Command syntax: AT+CLIP=<n>

| COMMAND | POSSIBLE RESPONSES |
|---------|--------------------|
| AT+CLIP=1 | OK<br>or<br>CME ERROR: <error> |
| Read command<br>AT+CLIP? | +CLIP: <n>,<m><br>OK |
| Test command<br>AT+CLIP=? | +CLIP: (0,1)<br>i.e. (list of supported <n>s)<br>OK |

### 11.4.3   Defined values
<n> parameter sets/shows the result code presentation in the TA:

-   0: disable

-   1: enable

<m> parameter shows the subscriber CLIP service status in the network and may be:

-   0: CLIP not provisioned

-   1: CLIP provisioned

-   2: unknown

<number> string type phone number of calling address in format specified by <type>
<type> type of address octet in integer format (refer TS 24.008 [8] subclause 10.5.4.7)
<subaddr>: string type subaddress of format specified by <satype>
<satype>: type of subaddress octet in integer format (refer TS 24.008 [8] subclause 10.5.4.8)
<alpha> optional string type alphanumeric representation of <number> corresponding to the entry found in phonebook, character set acc. AT+CSCS
<CLI validity> may be:

-   0: CLI valid

- 1: CLI has been withheld by the originator

- 2: CLI is not available

Note:

When CLI is not available ( <CLI validity>=2), <number> shall be an empty string ("") and <type> value will not be significant. Nevertheless, TA may return the recommended value 128 for <type> ((TON/NPI unknown in accordance with TS 24.008 [8] subclause 10.5.4.7).

When CLI has been withheld by the originator, (<CLI validity>=1) and the CLIP is provisioned with the "override category" option (refer 3GPP TS 22.081[3] and 3GPP TS 23.081[40]), <number> and <type> is provided. Otherwise, TA shall return the same setting for <number> and <type> as if the CLI was not available.

<Cause of No Cli> may be

- 0 unavailable

- 1 reject by user

- 2 interaction with other service

- 3 coin line/payphone

## 11.5    Connected line identification presentation +COLP

### 11.5.1    Description
This command allows the control of the connected line identification presentation supplementary service, useful in case of call forwarding of the connected line. When enabled and call allowed the following intermediate result code is sent to TE before any +CR or V.25ter responses:
+COLP: <number>,<type>[,<subaddr>,<satype>[,<alpha>]]
This command is abortable (proprietary feature for GFS19 line).

### 11.5.2    Syntax
Command syntax: AT+COLP=<n>

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+COLP=1 | OK<br>or<br>CME ERROR: <error> |
| Read command<br>AT+COLP? | +COLP: <n>,<m><br>OK |
| Test command<br>AT+COLP=? | +COLP: (0,1)<br>i.e. (list of supported <n>s) |

| | OK |
|---|---|
| | |

### 11.5.3   Defined values

<n> parameter sets/shows the result code presentation status in the TA and may be:

- 0: disable

- 1: enable

<m> parameter shows the subscriber COLP service status in the network and may be:

- 0: COLP not provisioned

- 1: COLP provisioned

- 2: unknown

<number>, <type>, <subaddr>, <satype>, <alpha> refer to +CLIP

## 11.6   Connected line identification restriction +COLR

### 11.6.1   Description

The COLR supplementary service enables the connected party to prevent presentation of its line identity to the calling party.

According to GSM02.81 the activation and deactivation of COLR is only a result of provision / withdrawal.

The command +COLR allows only the interrogation of the current state of COLR service in the network.

The set syntax is not allowed (CME ERROR: operation not supported).

### 11.6.2   Syntax

Command syntax: AT+COLR?

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| Read command<br>AT+COLR? | +COLR: <status><br>OK |
| Test command<br>AT+COLR=? | OK |

### 11.6.3   Defined values

<status> parameter shows the subscriber COLR service status in the network and may be:

- 0: COLR not provisioned

- 1: COLR provisioned

- 2: unknown

## 11.7    Advise of charge +CAOC

### 11.7.1    Description
This command allows the subscriber to get the information about the call costs in home units using the Advise of Charge supplementary service (3GPP TS 22.024 and 3GPP TS 22.086). If enabled the following unsolicited result code is sent to TE periodically:
+CCCM: <ccm>

### 11.7.2    Syntax
Command syntax: AT+CAOC[=<mode>]

| COMMAND | POSSIBLE RESPONSES |
|---------|--------------------|
| AT+CAOC=0 | +CAOC: "000A02"<br>OK<br>or<br>CME ERROR: <error> |
| Read command<br>AT+CAOC? | +CAOC: <mode><br>OK |
| Test command<br>AT+CAOC=? | +CAOC: (0-2)<br>i.e. (list of supported <mode>s)<br>OK |

### 11.7.3    Defined values
<mode> may be:

-   0: query the CCM value

-   1: deactivate the unsolicited reporting of CCM value

-   2: activate the unsolicited reporting of CCM value

<ccm> current call meter may is indicated as a string in hexadecimal format

## 11.8    Accumulated call meter +CACM

### 11.8.1    Description
This command resets the Advice of charge related accumulated call meter value in SIM file EF-ACM. ACM contains the total number of home units for both the current and preceding calls. SIM PIN2 is required to reset the value.

### 11.8.2   Syntax
Command syntax: AT+CACM=[<passwd>]

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+CACM="0933" | OK<br>or<br>CME ERROR: <error> |
| Read command<br>AT+CACM? | +CACM: <acm><br>OK |
| Test command<br>AT+CACM=? | OK |

### 11.8.3   Defined values
<passwd> SIM PIN2 as string type
<acm> accumulated call meter value similarly coded as <ccm> under +CAOC as string type

## 11.9   Accumulated call meter maximum +CAMM

### 11.9.1   Description
This command sets the Advise of Charge related accumulated call meter maximum value in the SIM file EF-ACMmax. ACMmax contains the maximum number of home units allowed to be consumed by the subscriber. When ACM reaches ACMmax, calls are prohibited. SIM PIN2 is required to set the value.

### 11.9.2   Syntax
Command syntax: AT+CAMM=[=<acmmax>[,<passwd>]]

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+CAMM="00300","0933" | OK<br>or<br>CME ERROR: <error> |
| Read command<br>AT+CAMM? | +CAMM: <acmmax><br>OK |
| Test command<br>AT+CAMM=? | OK |

### 11.9.3  Defined values
<acmmax> string type containing the accumulated call meter maximum value similarly coded as <ccm> under +CAOC; value zero disables ACMmax feature
<passwd> SIM PIN2

## 11.10  Price per unit and currency table +CPUC

### 11.10.1  Description
This set command sets the parameters of Advise of Charge related price per unit and currency table in SIM file EF-PUCT. PUCT information can be used to convert the home units into currency units. SIM PIN2 is required to set the parameters.

### 11.10.2  Syntax
Command syntax: AT+CPUC=<currency>,<ppu>[,<passwd>]

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+CPUC="USD","0.20","0933" | OK<br>or<br>CME ERROR: <error> |
| Read command<br>AT+CPUC? | +CPUC: <currency>,<ppu><br>OK |
| Test command<br>AT+CPUC=? | OK |

### 11.10.3  Defined values
<currency> string type containing the three-character currency code (e.g. "GBP","EUR")
<ppu> string type containing the price per unit; dot is used as a decimal separator
<passwd> string type containing the SIM PIN2

## 11.11  Call related supplementary services +CHLD

### 11.11.1  Description
This command allows to manage call hold and multiparty conversation (conference call). Calls can be put on hold, recovered, released or added to conversation.

### 11.11.2  Syntax
Command syntax: AT+CHLD=[<n>]

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+CHLD=2 | OK<br>or<br>CME ERROR: \<error\> |
| Test command<br>AT+CHLD=? | +CHLD: (0,1,1x,2,2x,3,4,4*,6,7)<br>i.e. (list of supported \<n\>s)<br>OK |

### 11.11.3　Defined values
\<n\> may be:

- 0: release all held calls or set User Determined User Busy for a waiting call; if both exists then only the waiting call will be rejected;

- 1: release all active calls and accepts the other (held or waiting)

- 1x: release a specific call (x specific call number as indicated by +CCLC)

- 2: place all active calls (if exist) on hold and accepts the other call (held or waiting)

- 2x: place all active calls on hold except call x with which communication is supported

- 3: adds a held call to the conversation

- 4: connects the two calls and disconnects the subscriber from both calls (Explicit Call Transfer)

- 4*: call deflection (proprietary feature – implemented only for GFS19 line -)

- 5: call completion of busy subscriber; this command syntax will be interpreted as an activation request, if the network has previously offered the possibility to activate this function, which will be indicated to the user by the unsolicited result code +XCCBS: 1 (CCBS is possible)

- 6: puts an active call on hold or an held call to active, while another call is waiting

- 7: disconnect users in multiparty without accepting incoming call.

## 11.12　Call deflection +CTFR

### 11.12.1　Description
This command allows the DTE user to respond to an incoming call offered by the network by requesting call deflection, i.e. redirection of this call to another number specified in the response. The call deflection is a supplementary service applicable only to voice calls (teleservice 11).

### 11.12.2  Syntax
Command syntax: AT+CTFR=<number>[,<type>[,<subaddr>[,<satype>]]]

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+CTFR="09113788" | OK<br>or<br>CME ERROR: <error> |
| Test command<br>AT+CTFR=? | OK |

### 11.12.3  Defined values
<number> is the string type phone number of format specified by <type>
<subaddr> is the string type subaddress of format specified by <satype>

## 11.13　List current calls +CLCC

### 11.13.1  Description
This command returns the list of current calls of ME. If command succeeds but no calls are available, no information response is sent to TE.

### 11.13.2  Syntax
Command syntax: AT+CLCC
Response syntax:
[+CLCC: <id1>,<dir>,<stat>,<mode>,<mpty>[,<number>,<type>[,alpha]]
[<CR><LF>+CLCC: <id2>,<dir>,<stat>,<mode>,<mpty>[,<number>,<type>[,<alpha>]]
[...]]]

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+CLCC | +CLCC: 1,0,0,0,0,""0913137880",129<br>OK<br>or<br>OK (if no calls)<br>or<br>CME ERROR: <error> |
| Test command<br>AT+CLCC=? | OK |

### 11.13.3   Defined values
<idx> integer type indicating the call identification (s.+CHLD x)
<dir> direction and may be:

-   0: mobile originated (MO)

-   1: mobile terminated (MT)
<stat> state of the call and may be

-   0: active

-   1: held

-   2: dialling (MO call)

-   3: alerting (MO cal)

-   4: incoming (MT call)

-   5: waiting (MT call)
<mode> teleservice and may be:

-   0: voice

-   1: data

-   2: FAX

-   9: unknown
<mpty> may be

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

-   1: call is one of multiparty cal parties
<number> string type indicating the phone number in format specified by <type>
<type> type of address octet (phone number) in integer format
<alpha> optional string alphanumeric representation of <number> corresponding to the entry found in phonebook


## 11.14   Supplementary service notifications +CSSN


### 11.14.1   Description
This command refers to supplementary service related network initiated notifications.
When <n>=1 and a supplementary service notification is received after a mobile originated call setup, intermediate result code +CSSI: <code1> is sent before any other MO call setup result codes.
When <m>=1 and a supplementary service notification is received during a call, unsolicited result code +CSSU: <code2> is sent.


### 11.14.2   Syntax
Command syntax: AT+CSSN=[<n>[,<m>]]
Response syntax:

+CSSI: <code1>[,<index>]
+CSSU: <code2>[<index>[,<number>,<type>[,<subaddr>,<satype>]]]

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+CSSN=1,1 | OK<br>or<br>CME ERROR: <error> |
| Read command<br>AT+CSSN? | +CSSN: <n>,<m><br>OK |
| Test command<br>AT+CSSN=? | +CSSN: (list of supported <n>s),(list of supported <m>s)<br>OK |

### 11.14.3  Defined values

<n> this parameter sets/shows the +CSSI result code presentation status in the TA and may be:

-  0: disable

-  1: enable

<m> this parameter sets/shows the +CSSU result code presentation status in the TA and may be:

-  0: disable

-  1: enable

<code1> may be:

-  0: unconditional call forwarding is active

-  1: some of the conditional call forwardings are active

-  2: call has been forwarded

-  3: call is waiting

-  4: this is a CUG call (also <index> present)

-  5: outgoing calls are barred

-  6: incoming calls are barred

-  7: CLIR suppression rejected

-  8: calls has been deflected

<index> refer +CCUG
<code2> may be:

- 0: this is a forwarded call (MT call setup)

- 1: this is a CUG call (<index> present) (MT call setup)

- 2: call has been put on hold (during a voice call)

- 3: call has been retrieved (during a voice call)

- 4: multiparty call entered (during a voice call)

- 5: cal on hold has been released – not a SS notification – (during a voice call)

- 6: forward check SS message received (can be received whenever)

- 7: call is being connected (alerting) with the remote party in alerting state in explicit call transfer operation (during a voice call)

- 8: call has been connected with the other remote party in explicit call transfer operation (during a voice call or MT call setup)

- 9: this is a deflected call (MT call setup)

- 10: additional incoming call forwarded

<number> string type phone of format specified by <type>
<type> type of address octet in integer format
<subaddr>, <satype> not used


## 11.15   Unstructured supplementary service data +CUSD

### 11.15.1  Description
This command allows control of the Unstructured Supplementary Service Data (USSD) according to GSM02.90. Both network and mobile initiated operations are supported. Parameter <n> is used to disable/enable the presentation of an unsolicited result code +CUSD: <m>[,<str>,<dcs>] to the TE. Value <n>=2 is used to cancel an ongoing USSD session. This command is abortable (proprietary feature for GFS19 line).
When <str> is given, a mobile initiated USSD-string or a response USSD-string to a network initiated operation is sent to the network. The response USSD-string from the network is returned in the unsolicited +CUSD result code indicated above.

### 11.15.2  Syntax
Command syntax: AT+CUSD=[<n>[,<str>[,<dcs>]]]

| COMMAND | POSSIBLE RESPONSES |
|---------|--------------------|
| AT+CUSD=1,"*100#",15 | +CUSD: 2,"Aktuelles Xtra-Guthaben: 7,87 Euro",15<br>OK<br>or<br>CME ERROR: <error> |

| Read command | +CUSD: <n> |
|---|---|
| AT+CUSD? | OK |
| Test command | +CUSD: (list of supported <n>s) |
| AT+CUSD=? | OK |

### 11.15.3  Defined values
<n> may be:

-   0: disable the result code presentation in the TA

-   1: enable the result code presentation in the TA

-   2: cancel session **(not applicable to read command response)**

<str> sting type USSD-string converted in the selected character set
<dcs> data coding scheme
<m> may be:

-   0: no further user action required

-   1: further user action required

-   2: USSD termination by network

-   4: operation not supported

-   5: network time out

## 11.16  Closed user group +CCUG

### 11.16.1  Description
This command enables subscribers to form closed user groups to and from which access is restricted (GSM02.85). The command can be used to:

-   activate/deactivate the control of the CUG information for all following calls

-   select a CUG index

-   suppress the outgoing access (OA). The OA allows a member of a CUG to place calls outside the CUG

-   suppress the preferential CUG.

### 11.16.2  Syntax
Command syntax: AT+CCUG=[<n>[,<index>[,<info>]]]

| COMMAND | POSSIBLE RESPONSES |
|---|---|

| AT+CCUG=1,2,1 | OK<br>or<br>CME ERROR: \<error> |
|---|---|
| Read command<br>AT+CCUG? | +CCUG: \<n>,\<index>,\<info><br>OK |
| Test command<br>AT+CCUG=? | OK |

### 11.16.3  Defined values
\<n> may be:

-   0: disable CUG temporary

-   1: enable CUG temporary

\<index> may be:

-   0 ... 9 CUG index

-   10 no index (preferred CUG taken from subscriber data)

\<info> may be:

-   0: no information

-   1: suppress OA

-   2: suppress preferential CUG

-   3:suppress OA and preferential CUG

## 11.17   Calling name presentation +CNAP

### 11.17.1  Description
This command allows to control the name identification supplementary service (s. GSM02.96). When the presentation of CNAP at the TE is enabled, the following unsolicited result code is displayed:

+CNAP: \<calling_name> [, \<CNAP validity>]

This command is abortable (proprietary feature for GFS19 line).

### 11.17.2  Syntax
Command syntax: AT+CNAP=[\<n>]

| COMMAND | POSSIBLE RESPONSES |
|---|---|

| AT+CNAP=1 | OK<br>or<br>CME ERROR: <error> |
|---|---|
| Read command<br>AT+CNAP? | +CNAP: <n>, <m><br>OK |
| Test command<br>AT+CNAP=? | +CNAP: (0,1)<br>i.e. (list of supported <n>s)<br>OK |

### 11.17.3  Defined values

<n> parameter sets the result code presentation in the TA:

- 0: disable

- 1: enable

<m> parameter shows the subscriber CNAP service status in the network and may be:

- 0: CNAP not provisioned

- 1: CNAP provisioned

- 2: unknown

<calling_name> string type containing the calling party name.

<CNAP validity>] may be:

- 0: name presentation allowed

- 1: presentation restricted

- 2: name unavailable

- 3: name presentation restricted

## 12    Data commands

### 12.1    Select bearer service type +CBST

#### 12.1.1    Description
This set command selects the bearer service <name> with data rate <speed>, and the connection element <ce> to be used when data calls are originated.

#### 12.1.2    Syntax
Command syntax: AT+CBST=[<speed>[,<name>[,<ce>]]]

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+CBST=5,0,1 | OK<br>or<br>CME ERROR: <error> |
| Read command<br>AT+CBST? | +CBST: <speed>,<name>,<ce><br>OK |
| Test command<br>AT+CBST=? | +CBST: (list of supported <speed>s),(list of supported <name>s),(list of supported <ce>s)<br>OK |

#### 12.1.3    Defined values
<speed> data rate may be:

- 0: autobauding

- 4: 2400 bps (V.22bis)

- 5: 2400 bps (V.26ter)

- 6: 4800 bps (V.32)

- 7: 9600 bps (V.32)

- 12: 9600 bps (V34); supported only for RAT_UMTS;

- 14: 14400 bps (V34); supported only for RAT_UMTS;

- 15: 19200 bps (V34); supported only for RAT_UMTS;

- 16: 28800 bps (V34); supported only for RAT_UMTS;

- 17: 33600 bps (V34); supported only for RAT_UMTS;

- 68: 2400 bps (V110 or X.31 flag stuffing)

- 70: 4800 bps (V110 or X.31 flag stuffing)

- 71: 9600 bps (V110 or X.31 flag stuffing)

- 75: 14400 bps (V110 or X.31 flag stuffing); supported only for RAT_UMTS;

- 79: 19200 (V110 or X.31 flag stuffing); supported only for RAT_UMTS;

- 80: 28800 (V110 or X.31 flag stuffing); supported only for RAT_UMTS;

- 81: 38400 (V110 or X.31 flag stuffing); supported only for RAT_UMTS;

- 82: 48000 (V110 or X.31 flag stuffing); supported only for RAT_UMTS;

- 83: 56000 bps (V.110 or X.31 flag stuffing; this setting can be used in conjunction with asynchronous non-transparent UDI or RDI service in order to get FTM);  supported only for RAT_UMTS;

- 84: 64000 bps (X.31 flag stuffing; this setting can be used in conjunction with asynchronous non-transparent UDI service in order to get FTM); supported only for RAT_UMTS;

- 115: 56000 bps (bit transparent); supported only for RAT_UMTS;

- 116: 64000 bps (bit transparent); supported only for RAT_UMTS;

- 130: 28800 bps (multimedia); supported only for RAT_UMTS;

- 131: 32000 bps (multimedia); supported only for RAT_UMTS;

- 133: 33600 bps (multimedia); supported only for RAT_UMTS;

- 134: 64000 bps (multimedia); supported only for RAT_UMTS;

<name> bearer service may be:

- 0: datacircuit asynchronous (UDI or 3.1 kHz modem); supported only for RAT_UMTS;

- 1: data circuit synchronous (UDI or 3.1 kHz modem); supported only for RAT_UMTS;

- 5: data circuit synchronous (RDI); supported only for RAT_UMTS;

<ce> connection element may be:

- 0: transparent

- 1: non-transparent

- 2: both, transparent preferred

- 3: both, non-transparent preferred

## 12.2    Service class selection and identification +FCLASS

### 12.2.1    Description
This command puts the MS into a particular mode of operation (voice, data or FAX).

### 12.2.2    Syntax
Command syntax: AT+FCLASS=<class>

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+FCLASS=2.0 | OK<br>or<br>CME ERROR: <error> |
| Read command<br>AT+FCLASS? | <n><br>OK |
| Test command<br>AT+FCLASS=? | list of supported <class>s<br>OK |

### 12.2.3    Defined values
<class> may be:

-   0: data

-   2.0: FAX (service class 2)

-   8: voice

## 12.3    Service reporting control +CR

### 12.3.1    Description
This set command controls whether or not intermediate result code +CR: <serv> is returned from the TA to the TE. If enabled, the intermediate result code is transmitted at the point during connect negotiation at which the TA has determined which speed and quality of service will be used, before any error control or data compression reports are transmitted and before the intermediate result code CONNECT is transmitted.

### 12.3.2    Syntax
Command syntax: AT+CR=[<mode>]

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+CR=1 | OK<br>or<br>CME ERROR: <error> |
| Read command<br>AT+CR? | +CR: <mode><br>OK |

| Test command | +CR: (list of supported <mode>s) |
|---|---|
| AT+CR=? | OK |

### 12.3.3    Defined values
<mode> may be:

- 0: disables reporting

- 1: enables reporting

<serv> may be:

- ASYNC : asynchronous transparent

- SYNC: synchronous transparent

- REL ASYNC: asynchronous non-transparent

- GPRS [<L2P]: GPRS

## 12.4    Cellular result codes +CRC

### 12.4.1    Description
This command enables a more detailed ring indication, in case of incoming call. Instead of RING a unsolicited result code +CRING: <type> is displayed on TE.

### 12.4.2    Syntax
Command syntax: AT+CRC:[<mode>]

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+CRC=1 | OK<br>or<br>CME ERROR: <error> |
| Read command<br>AT+CRC? | +CRC: <mode><br>OK |
| Test command<br>AT+CRC=? | +CRC: (list of supported <mode>s)<br>OK |

### 12.4.3    Defined values
<mode> may be:

- 0: disables extended format

- 1: enables extended format

<type> may be:

- ASYNC: asynchronous transparent

- SYNC: synchronous transparent

- REL ASYNC: asynchronous non-transparent

- REL SYNC: synchronous non-transparent

- FAX: facsimile (TS62)

- VOICE: normal voice (TS11)

- ALT VOICE / FAX: alternating voice/FAX, voice first (TS61)

- ALT FAX / VOICE alternating voice/FAX, FAX first (TS61)

- GPRS <PDP_type>,<PDP-addr>[,<L2P>][,<APN>]: GPRS network request for PDP context activation

- VOICE 2: normal voice on second ALS line

- CTM: CTM call

- CTM 2: CTM call on second ALS line

- ALT CTM / FAX: alternate CT/FAX call, CTM first

- ATC FAX / CTM: alternate CTM/FAX call, FAX first.


## 12.5    Radio link protocol +CRLP

### 12.5.1    Description
This command is used to change the radio link protocol (RLP) parameters used when non-transparent data-calls are originated.

### 12.5.2    Syntax
Command syntax: AT+CRLP=[<iws>[,<mws>[,<T1>[,<N2>]]]]

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+CRLP=61,61,48,6 | OK<br>or<br>CME ERROR: <error> |
| Read command<br>AT+CRLP? | +CRLP: <iws>,<mws>,<T1>,<N2><br>OK |
| Test command<br>AT+CRLP=? | +CRLP: (0-61),(0-61),(39-255)(1-255)<br>i.e. lists of supported <iws>, <mws>, <T1>, <N2><br>OK |

### 12.5.3　Defined values

<iws> IWF to MS window size
<mws> MS to IWF window size
<T1> acknowledgement timer T1
<N2> retransmission attempts

# 13     FAX class 2 commands

## 13.1     Transmit Data +FDT

### 13.1.1     Description
This action command prefixes data transmission. It requests the DCE to transmit a phase C page. It is issued at the beginning of each page in phase B or D.

### 13.1.2     Syntax
Command syntax: AT+FDT

## 13.2     Receive data +FDR

### 13.2.1     Description
This action command initiates data reception.

### 13.2.2     Syntax
Command syntax: AT+FDR

## 13.3     Initialize facsimile parameters +FIP

### 13.3.1     Description
This action command causes the DCE to initialize all Service Class Facsimile Parameters to the manufacturer determined default settings. It does not change the setting +FCLASS.

### 13.3.2     Syntax
Command syntax: AT+FIP[=<value>]

### 13.3.3     Defined values
<value> indicates the profile; only one profile is possible for <value>=0

## 13.4     Session termination +FKS, +FK

### 13.4.1     Description
This action command causes the DCE to terminate the session in an orderly manner. It will send a DCN message at the next opportunity and hang up.

### 13.4.2    Syntax
Command syntax: AT+FKS or AT+FK

## 13.5     Adaptive answer +FAA

### 13.5.1    Description
This command allows a adaptive answer of DCE depending on the parameter <value>.

### 13.5.2    Syntax
Command syntax: AT+FAA=<value>

### 13.5.3    Defined values
<value>

- 0: the DCE shall answer only as a Class 2 facsimile device

- 1: the DCE can answer and automatically determine whether to answer as a facsimile DCE or as a data modem. If a data modem is detected, the DCE shall operate as described in T.32 8.3.2.4.

## 13.6     Address & polling capabilities +FAP

### 13.6.1    Description
This command indicates the remote station the address and polling capabilities and also control the reporting of those frames if received.

### 13.6.2    Syntax
Command syntax: AT+FAP=<sub>,<sep>,<pwd>

### 13.6.3    Defined values
<sub> subaddressing; default value: 0
<sep> selective polling; default value: 0
<pwd> password; default value: 0

## 13.7     Buffer size +FBS

### 13.7.1    Description
This command allows the DCE to report the size of its data buffers.

### 13.7.2    Syntax
Command syntax: AT+FBS? (only read syntax)
Response syntax: <tbs>,<rbs>

### 13.7.3    Defined values
<tbs> transmit buffer size
<rbs> receive buffer size


## 13.8     Data bit order +FBO

### 13.8.1    Description
This set command controls the mapping between PSTN facsimile data and the DTE-DCE link. There are two choices:

- Direct: the first bit transferred of each octet on the DTE-DCE link is the first bit transferred on the GSTN data carrier

- Reversed: the last bit transferred of each octet on the DTE-DCE link is the first bit transferred on the GSTN data carrier.

### 13.8.2    Syntax
Command syntax: AT+FBO=<value>

### 13.8.3    Defined values
<value> has the range: 0-3.


## 13.9     HDLC frame reporting +FBU

### 13.9.1    Description
This command enables/disables the DCE to report the contents of phase B and phase D HDLC frames to the DTE, as they are sent and received, in addition to other responses.

### 13.9.2    Syntax
Command syntax: AT+FBU=<value>

### 13.9.3    Defined values
<value> is in range 0-1.


## 13.10    DS capabilities parameters +FCC

### 13.10.1   Description
This command allows the DTE to sense and constrain the capabilities of the facsimile DCE, from the choices defined in table 2/T.30. When +FCC is modified by the DTE, the DCE shall copy +FCC into +FIS.

### 13.10.2　Syntax
Command syntax: AT+FCC=<vr>,<br>,<wd>,<ln>,<df>,<ec>,<bf>,<st>,<jp>
(or AT+DCC=..)

### 13.10.3　Defined values
<vr> resolution in range 0-1
<br> bit rate in range 0-3
<wd> page width in pixels; only  0 value
<ln> page length in range 0-2
<df> data compression format; only 0 value
<ec> error correction; only 0 value
<bf> file transfer; only 0 value
<st> scan time/line in range 0-7
<jp> JPEG for colour and B&W; only 0 value.

## 13.11　Copy quality checking +FCQ

### 13.11.1　Description
This command allows to control copy quality checking and correction by a facsimile DCE.

### 13.11.2　Syntax
Command syntax: AT+FCQ=<rq>,<tq>

### 13.11.3　Defined values
<rq> controls copy quality checking and correction of data received from the remote station and delivered to DTE
<tq> controls copy quality checking and correction of image data received from the DTE and sent to the remote station.

## 13.12　Capability to receive data +FCR

### 13.12.1　Description
This command sets the capability to receive message data.

### 13.12.2　Syntax
Command syntax: AT+FCR=<value>

### 13.12.3　Defined values
<value> only value 1 allowed; it means that the DCE can receive message data. Bit 10 in the DIS or DTC frame will be set.

### 13.13   Current session results +FCS

#### 13.13.1   Description
This command allows to display the current session results, either as response to the read syntax or spontaneously during execution of +FDR.

#### 13.13.2   Syntax
Command syntax: AT+FCS?
Response syntax: <vr>,<br>,<wd>,<ln>,<df>,<ec>,<bf>,<st>,<jp>

#### 13.13.3   Defined values
See +FCC.

### 13.14   DTE phase C response timeout +FCT

#### 13.14.1   Description
This command determines how long the DCE will wait for a command after having transmitted all available phase C data.

#### 13.14.2   Syntax
Command syntax: AT+FCT=<value>

#### 13.14.3   Defined values
<value> is in range 0-FFH, meaning 1 second units. Default value: 1EH (30) sec.

### 13.15   Phase C received EOL alignment +FEA

#### 13.15.1   Description
This command enables optional octet-alignment of EOL markers in received T.4 data stream. It does not apply to T.6 data, or to any form of data.

#### 13.15.2   Syntax
Command syntax: AT+FEA=<value>

#### 13.15.3   Defined values
<value> may be:

- 0: determines that T.4 EOL patterns are bit aligned (as received)

- 1: determines that the last received bits of T.4 EOL patterns are octet aligned by the DCE, with necessary zero fill bits inserted.

### 13.16    Format conversion +FFC

#### 13.16.1   Description
This command determines the DCE response to mismatches between the phase C data delivered after the +FDT command and the data format parameters negotiated for the facsimile session.

#### 13.16.2   Syntax
Command syntax: AT+FFC=<vrc>,<dfv>,<lnc>,<wdc>

#### 13.16.3   Defined values
<vrc> vertical resolution format codes may be:

-   0: ignored

-   1: enabled

-   2: enabled for 1-D data

-   3: enabled for 2-D data

<dfc> data format codes  may be:

-   0: ignored

-   1: checking enabled

-   2: conversion

<lnc> page length format codes may be:

-   0: ignored

-   1: checking enabled

-   2: conversion for 1-D data

-   3: conversion enabled for 2-D data

<wdc> page with format codes may be:

-   0: ignored

-   1: checking enabled

-   2: conversion enabled

### 13.17    Call termination status +FHS

#### 13.17.1   Description
This command indicates the cause of a hang-up +FHS is set by the DS at the conclusion of a FAX session. The DCE resets this value to 0 at the beginning of phase A.

### 13.17.2　Syntax
Command syntax: AT+FHS? (read syntax only)
Response syntax: <value>

### 13.17.3　Defined values
<value> may be in range 0-FFH

## 13.18　Procedure interrupt enable +FIE

### 13.18.1　Description
This command allows either station to initiate interrupts; the other station may ignore or accept the requests.

### 13.18.2　Syntax
Command syntax: AT+FIE=<value>

### 13.18.3　Defined values
<value> only value 0 is allowed; it means that the procedure interrupt requests from the remote station are ignored and not reported to DTE.

## 13.19　Current session parameters +FIS

### 13.19.1　Description
This command allows the DTE to sense and constrain the capabilities used for the current session.

### 13.19.2　Syntax
Command syntax: AT+FIS=<vr>,<br>,<wd>,<ln>,<df>,<ec>,<bf>,<st>,<jp>

### 13.19.3　Defined values
See +FCC.

## 13.20　Inactivity timeout +FIT

### 13.20.1　Description
This command allows to provide an inactivity timer which allows the DS to break away from an unsuccessful connection attempt at any stage of a facsimile transfer.

### 13.20.2　Syntax
Command syntax: AT+FIT=[<time>[,<action>]]

### 13.20.3 Defined values
<time> valid time in range 0-255
<action> only value 0 possible and means: upon timeout the DCE shall go on-hook, executing an implied ATH command, then reset to +FCLASS=0.

## 13.21　Local ID string +FLI

### 13.21.1 Description
This command determines that DCE sends the ID frame if +FLI is not a zero-string.

### 13.21.2 Syntax
Command syntax: AT+FLI=<local ID string>

### 13.21.3 Defined values
<local ID string> 20 digit string; valid values are 0x20…0x7E.

## 13.22　Set flow control +FLO

### 13.22.1 Description
This command allows to set the flow control for communication via V.24 interface.

### 13.22.2 Syntax
Command syntax: AT+FLO=<value>

### 13.22.3 Defined values
<value> indicates the kind of flow control:

- 0: DTE-DCE flow control is disabled

- 1: DTE-DCE flow control is DC1/DC3 (SW)

- 2: DTE-DCE flow control is RTC/CTS (HW)

## 13.23　Indicate document to poll +FLP

### 13.23.1 Description
This command indicates document to poll. By default DTE has no document to poll.

### 13.23.2 Syntax
Command syntax: AT+FLP=[<value>]

### 13.23.3  Defined values
<value> only value 0 is allowed.

## 13.24   Request revision identification +FMR

### 13.24.1  Description
This command gives the revised version of the mobile station.

### 13.24.2  Syntax
Command syntax: AT+FMR

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+FMR<br><br>Note:<br> get revision version | <revision><br>OK<br>or<br>CME ERROR: <error> |
| Test command<br>AT+FMR=? | OK |

## 13.25   Minimum phase C speed +FMS

### 13.25.1  Description
This command limits the lowest negotiable speed for a session.

### 13.25.2  Syntax
Command syntax: AT+FMS=[<value>]

### 13.25.3  Defined values
<value> may be in range 0-3 (2400 bps to 9600 bps)

## 13.26   Negotiation reporting +FNR

### 13.26.1  Description
This command controls the reporting of messages generated during T.30 phase B negotiations.

### 13.26.2  Syntax
Command syntax: AT+FNR=[<rpr>[,<tpr>[,<idr>[,<nsr>]]]]

### 13.26.3  Defined values
<rpr> receiver parameters reporting 0-1 (no-yes)
<tpr>  transmitter parameters reporting 0-1 (no-yes)
<idr> ID strings reporting 0-1 (no-yes)
<nsr> non-standard frames reporting 0-1 (no-yes)

## 13.27   Non-standard frame FIF octet string +FNS

### 13.27.1   Description
This command allows to send the corresponding non-standard facilities frame.

### 13.27.2  Syntax
Command syntax: AT+FNS=<sring of hexadecimal coded octets>

### 13.27.3  Defined values
Valid is only the null string.

## 13.28   NSF message data indication +FND

### 13.28.1   Description
This command has no effect.

### 13.28.2  Syntax
Command syntax: AT+FND=[<value>]

### 13.28.3  Defined values
<value> may be in range 0-1

## 13.29   Selective polling address +FPA

### 13.29.1   Description
This command sets the selective polling address. The DCE sends the numeric string contained in the +FPA at the times specified in T.30, if the corresponding parameter is not zero string.

### 13.29.2  Syntax
Command syntax: AT+FPA=<selective polling address string>

### 13.29.3 Defined values
<selective polling address string> 20 digit string; valid values 0-9, *, #, space

## 13.30 Local polling ID string +FPI

### 13.30.1 Description
This command allows the DCE to send the ID frame if +FPI is not a zero string.
Polling is not supported.

### 13.30.2 Syntax
Command syntax: AT+FLI=<local polling ID string>

### 13.30.3 Defined values
<local polling ID string> only zero string; polling is not supported.

## 13.31 Packet protocol control +FPP

### 13.31.1 Description
This command allows to control the packet protocol. The packet protocol is not supported.

### 13.31.2 Syntax
Command syntax: AT+FPP=[<value>]

### 13.31.3 Defined values
<value> only value 0 allowed.

## 13.32 Page status +FPS

### 13.32.1 Description
This parameter contains a value representing the post age response, including copy
quality and related end-of-page status

### 13.32.2 Syntax
Command syntax: AT+FPS=[<value>]

### 13.32.3 Defined values
<value> may be:

- 1: MCF, page good

- 2: RTN, page bad; retrain requested

- 3: RTP, page good; retrain requested

- 4: PIN, page bad; interrupt requested

- 5: PIP, page good; interrupt requested

## 13.33  Password parameter +FPW

### 13.33.1  Description
This parameter sets the password. The DCE sends the numeric string contained in +FPW at the times specified in T.30, if the corresponding parameter is not zero string.

### 13.33.2  Syntax
Command syntax: AT+FPW=<password string>

### 13.33.3  Defined values
<password string> valid values: 0-9, *, #, space

## 13.34  Receive quality thresholds +FRQ

### 13.34.1  Description
This command allows to make the "Copy Quality OK" decision using the command parameter. The command has no effect.

### 13.34.2  Syntax
Command syntax: AT+FRQ=<pgl>,<cbl>

### 13.34.3  Defined values
<pgl> in range 0-64H
<cbl> in range 0-FFH

## 13.35  Error correction mode retry count +FRY

### 13.35.1  Description
This command has no effect.

### 13.35.2  Syntax
Command syntax: AT+FRY=[<value>]

### 13.35.3  Defined values
<value> in range 0-FFH

### 13.36   SubAddress parameter +FSA

#### 13.36.1   Description
This command sets the Subaddress. The DCE sends the numeric string contained in +FSA at the times specified in T.30, if the corresponding parameter is not zero string.

#### 13.36.2   Syntax
Command syntax: AT+FSA=<destination SubAddress string>

#### 13.36.3   Defined values
<destination SubAddress string> 20 digit string; allowed values: 0-9, *, #, space

### 13.37   Request to poll +FSP

#### 13.37.1   Description
This command indicates whether or not the DTE wants to poll. The command has no effect.

#### 13.37.2   Syntax
Command syntax: AT+FSP=[<value>]

#### 13.37.3   Defined values
<value> 0

# 14    V24 control and V25ter commands

## 14.1    Reset to default configuration Z

### 14.1.1    Description
This command resets the parameters of all AT-commands (also FAX-related). The values related to parameters contained in a user profile will be taken from the corresponding NVRAM-profile, indicated by the <value>.

### 14.1.2    Syntax
Command syntax: ATZ<value>

| COMMAND | POSSIBLE RESPONSES |
|---------|--------------------|
| ATZ | OK<br>or<br>CME ERROR: <error> |

### 14.1.3    Defined values
<value> indicates NVRAM profile; possible values 0-1.

## 14.2    Set to factory defined configuration &F

### 14.2.1    Description
This command resets only the parameters of the not FAX-related AT-command to factory defined defaults.

### 14.2.2    Syntax
Command syntax: AT&F[<value>]

| COMMAND | POSSIBLE RESPONSES |
|---------|--------------------|
| AT&F | OK<br>or<br>CME ERROR: <error> |

### 14.2.3　Defined values
<value> only 0 allowed

## 14.3　Circuit 109 behaviour &C

### 14.3.1　Description
This command determines how the state of circuit 109 relates to the detection of received line signal from the remote end.

### 14.3.2　Syntax
Command syntax: AT&C]<value>]

| COMMAND | POSSIBLE RESPONSES |
|---------|--------------------|
| AT&C | OK<br>or<br>CME ERROR: <error> |

### 14.3.3　Defined values
<value> indicates the behaviour of circuit 109 as follows:

- 0: the DCE always presents the ON condition on circuit 109

- 1: circuit 109 changes in accordance with the underlying DCE, which may include functions other than the physical layer functions

## 14.4　Circuit 108/2 behaviour &D

### 14.4.1　Description
This command determines how the DCE responds when circuit 108/2 is changed from ON to OFF condition during on-line data state.

### 14.4.2　Syntax
Command syntax: AT&D[<value>]

| COMMAND | POSSIBLE RESPONSES |
|---------|--------------------|
| AT&D1 | OK<br>or<br>CME ERROR: <error> |

### 14.4.3    Defined values
<value> may be:

- 0: the DCE ignores circuit 108/2

- 1: upon an ON-to-OFF transition of circuit 108/2, the DCE enters online command state and issues an OK result code

- 2: upon an ON-to-OFF transition of circuit 108/2, the DCE instructs the underlying DCE to perform an orderly cleardown of the call. Automatic answer is disabled while circuit 108/2 remains OFF.

## 14.5    DSR override &S

### 14.5.1    Description
This command selects how the modem will control DSR (V.24 control line 107).

### 14.5.2    Syntax
Command syntax: AT&S<value>

| COMMAND | POSSIBLE RESPONSES |
|---------|--------------------|
| AT&S | OK<br>or<br>CME ERROR: <error> |

### 14.5.3    Defined values
<value> indicates the behaviour as follows:

- 0: sets the DSR line to ON

- 1: sets the DSR line to OFF

## 14.6    Flow control &K

### 14.6.1    Description
This command controls the flow control mechanism.

### 14.6.2    Syntax
Command syntax: AT&K<value>

| COMMAND | POSSIBLE RESPONSES |
|---------|--------------------|
| AT&K3   | OK<br>or<br>CME ERROR: <error> |

### 14.6.3    Defined values
<value> may be:

- 0: disable DTE-DCE flow control

- 3: enable RTS/CTS DTE-DCE flow control (default for data modems)

- 4: enable XON/XOFF DTE-DCE flow control

- 5: enable XON/XOFF FTE-DCE flow control

- 6: enable XON/XOFF DTE-DCE flow control

## 14.7    Store current configuration &W

### 14.7.1    Description
This command stores the current active configuration into one of the two user profiles in NVRAM as denoted by the parameter value. The profile is stored for the terminal where the storing is requested.

### 14.7.2    Syntax
Command syntax: AT&W<value>

| COMMAND | POSSIBLE RESPONSES |
|---------|--------------------|
| AT&W1   | OK<br>or<br>CME ERROR: <error> |

### 14.7.3    Defined values
<value> may be:

- 0: selects profile 0

- 1: selects profile 1

## 14.8　Display current configuration &V

### 14.8.1　Description
This command reports the current configuration and the stored user profiles.

### 14.8.2　Syntax
Command syntax: AT&V

| COMMAND | POSSIBLE RESPONSES |
|---------|--------------------|
| AT&V | &C1, &D1, &K3, E1, Q0, V1, X0, S00:000, S02:000, S03:013, S04:010, S05:008, S07:060, +CBST:007, 0000, 001, +CRLP:061, 061, 048, 006, +CR:000, +CRC:000 STORED PROFILE 0: &C1, &D1, &K3, E1, Q0, V1, X0, S00:000, S02:000, S03:013, S04:010, S05:008, S07:060, +CBST:007, 0000, 001, +CRLP:061, 061, 048, 006, +CR:000, +CRC:000 STORED PROFILE 1: &C1, &D1, &K3, E1, Q0, V1, X0, S00:000, S02:000, S03:013, S04:010, S05:008, S07:060, +CBST:007, 0000, 001, +CRLP:061, 061, 048, 006, +CR:000, +CRC:000 OK or CME ERROR: \<error> |

## 14.9　Designate a default reset profile &Y

### 14.9.1　Description
This command selects which user profile will be used after a hardware reset. The settings which may be changed are described in the chapter related to the &V command. An error is returned if the parameter \<value> is greater then 2 or NVRAM is not installed or is not operational.

### 14.9.2　Syntax
Command syntax: AT&Y\<value>

| COMMAND | POSSIBLE RESPONSES |
|---------|--------------------|

| AT&Y1 | OK<br>or<br>CME ERROR: <error> |
|-------|---------------------------------|
|       |                                 |

### 14.9.3   Defined values
<value> may be:

-   0: selects profile 0

-   1: selects profile 1

-   2: selects the default factory settings.

## 14.10   Request identification information I

### 14.10.1  Description
This action command causes the DCE to transmit one or more lines of information text, determined by the manufacturer, followed by a final result code.

### 14.10.2  Syntax
Command syntax: ATI[<value>]

| COMMAND | POSSIBLE RESPONSES |
|---------|--------------------|
| ATI3    | Manufacturer 3<br>OK<br>or<br>CME ERROR: <error> |

### 14.10.3  Defined values
<value> may be in range 0-9; for each value an other text provided by the manufacturer will be displayed.

## 14.11   Request manufacturer Identification +GMI

### 14.11.1  Description
This action command causes the DCE to transmit one or more lines of information text, determined by the manufacturer, which allows to identify the manufacturer.

### 14.11.2  Syntax
Command syntax: AT+GMI

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+GMI<br><br>Note:<br> get manufacturer identification | \<manufacturer><br>OK<br>or<br>CME ERROR: \<error> |
| Test command<br>AT+GMI=? | OK |

## 14.12    Request model identification +GMM

### 14.12.1   Description
This command gives the model identification.

### 14.12.2  Syntax
Command syntax: AT+GMM

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+GMM<br><br>Note:<br> get model identification | \<model><br>OK<br>or<br>CME ERROR: \<error> |
| Test command<br>AT+GMM=? | OK |

## 14.13    Request revision identification +GMR

### 14.13.1   Description
This command gives the revised version of the mobile station.

### 14.13.2  Syntax
Command syntax: AT+GMR

| COMMAND | POSSIBLE RESPONSES |
|---------|--------------------|
| AT+GMR<br><br>Note:<br> get revision version | <revision><br>OK<br>or<br>CME ERROR: <error> |
| Test command<br>AT+GMR=? | OK |

### 14.14   Request product serial number identification +GSN

### 14.14.1   Description
This command gets the product serial number, known as IMEI (International Mobile Equipment Identity) of the MS.

### 14.14.2   Syntax
Command syntax: AT+GSN

| COMMAND | POSSIBLE RESPONSES |
|---------|--------------------|
| AT+GSN<br><br>Note:<br> get the IMEI | <IMEI><br>OK<br>or<br>CME ERROR: <error> |
| Test command<br>AT+GSN=? | OK |

### 14.15   DTE-DCE character framing +ICF

### 14.15.1   Description
This command sets the local serial port start-stop (asynchronous) character framing which is used in the information interchange between DCE and DTE.

### 14.15.2   Syntax
Command syntax: AT+ICF=[<format>[,<parity>]]

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+ICF=3,1 | OK<br>or<br>CME ERROR: <error> |
| Read command<br>AT+ICF? | +ICF: <format>,<parity><br>OK |
| Test command<br>AT+ICF=? | +ICF: (0-6),(0-3)<br>i.e. lists of supported <format> and <parity><br>OK |

### 14.15.3　Defined values

<format> may be:

- 0: auto detect

- 1: 8 data 2 stop

- 2: 8 data 1 parity 1 stop

- 3: 8 data 1 stop

- 4: 7 data 2 stop

- 5: 7 data 1 parity 1 stop

- 6: 7 data 1 stop

<parity> may be:

- 0: odd

- 1: even

- 2: mark

- 3: space

## 14.16　DTE-DCE local flow control +IFC

### 14.16.1　Description

This command controls the operation of local flow control between DTE and DCE used when data are sent or received.

### 14.16.2　Syntax

Command syntax: AT+IFC=[<DCE_by_DTE>[,<DTE_by_DCE>]]

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+IFC=2,2 | OK<br>or<br>CME ERROR: <error> |
| Read command<br>AT+IFC? | +IFC: <DCE_by_DTE>,<DTE_by_DCE><br>OK |
| Test command<br>AT+IFC=? | +IFC: (0-3),(0-2)<br>i.e. lists of supported <DCE_by_DTE><br>and <DTE_by_DCE><br>OK |

### 14.16.3  Defined values
<DCE_by_DTE> may be:

- 0: none

- 1: DC1/DC3 on circuit 103 (XON/XOFF)

- 2: circuit 133 (RTS)

<DTE_by_DCE> may be:

- 0: none

- 1: DC1/DC3 on circuit 104 (XON/XOFF)

- 2: circuit 106 (CTS)

## 14.17   Set flow control \Q

### 14.17.1  Description
This command controls the operation of local flow control between DTE and DCE used when data are sent or received.

### 14.17.2  Syntax
Command syntax: AT\Q[<value>]

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT\Q3 | OK<br>or<br>CME ERROR: <error> |

### 14.17.3  Defined values

<value> may be:

- 0: no flow control

- 1: DC1/DC3 on circuit 103 and 104 (XON/XOFF)

- 2: DTE_by_DCE on circuit 106 (CTS)

- 3: DCE_by_DTE on circuit 133 (RTS and DTE_by_DCE on circuit 106 (CTS)

### 14.18  Fixed DTE rate +IPR

### 14.18.1  Description

This command specifies the data rate at which the DCE will accept commands.The full range of data rate values may be reduced dependent on HW or other criteria.

### 14.18.2  Syntax

Command syntax: AT+IPR=[<rate>]

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+IPR=9600 | OK<br>or<br>CME ERROR: <error> |
| Read command<br>AT+IPR? | +IPR: 9600<br>OK |
| Test command<br>AT+IPR=? | +IPR: (list of supported autodetectable <rate> values)[,(list of fixed only <rate> values)]<br>OK |

### 14.18.3  Defined values

<rate> may be 0 meaning autobauding or 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200 bps.

### 14.19   Escape character S2

#### 14.19.1   Description

This command controls the decimal value of the ASCII character used as the escape character. The default value corresponds to an ASCII '+'. A value over 127 disables the escape process, i.e. no escape character will be recognized. The escape sequence contains three escape characters e.g. "+++".

#### 14.19.2   Syntax

Command syntax: ATS2=<value>

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| ATS2=43 | OK<br>or<br>CME ERROR: <error> |
| Read command<br>ATS2? | 043<br>OK |

### 14.20   Command line termination character S3

#### 14.20.1   Description

This command sets a value which represents the decimal IRA5 value of the character recognized by the DCE from the DTE to terminate the incoming command line. It is also generated by the DCE as part of the header, trailer and terminator for result codes and information text, along with the S4 setting.

#### 14.20.2   Syntax

Command syntax: ATS3=<value>

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| ATS3=13 | OK<br>or<br>CME ERROR: <error> |
| Read command<br>ATS3? | 013<br>OK |

### 14.20.3 Defined values

<value> is in range 0 to 127; mandatory default is 13 carriage return character (CR, IRA5 0/13).

## 14.21 Response formatting character S4

### 14.21.1 Description

This command sets a value which represents the decimal IRA5 value of the character generated by the DCE as part of the header, trailer and terminator for result codes and information text, along with the S3 setting.

### 14.21.2 Syntax

Command syntax: ATS4=[<value>]

| COMMAND | POSSIBLE RESPONSES |
|---------|--------------------|
| ATS4=10 | OK<br>or<br>CME ERROR: <error> |
| Read command<br>AT+S4? | 010<br>OK |

### 14.21.3 Defined values

<value> is in range 0 to 127; mandatory default is 10 line feed character (LF, IRA5 0/10).

## 14.22 Command line editing character S5

### 14.22.1 Description

This command sets a value representing the decimal IRA5 character recognized by the DCE as a request to delete from the command line the immediately preceding character.

### 14.22.2 Syntax

Command syntax: ATS5=[<value>]

| COMMAND | POSSIBLE RESPONSES |
|---------|--------------------|
| ATS5=8 | OK<br>or<br>CME ERROR: <error> |

| Read command | 008 |
| ATS5? | OK |

### 14.22.3 Defined values

<value> is in range 0-127; mandatory default value is 8 backspace character (BS, IRA5 0/8).

## 14.23 Pause before blind dialling S6

### 14.23.1 Description

This command specifies the amount of time in seconds, that the DCE waits between connecting to the line and dialling, when dial tone is not implemented or enabled.
The command is not applicable for signal based mobile phone software.

### 14.23.2 Syntax

Command syntax: ATS6=[<value>]

| COMMAND | POSSIBLE RESPONSES |
| --- | --- |
| ATS6=2 | OK<br>or<br>CME ERROR: <error> |
| Read command<br>AT+S6? | 002<br>OK |

### 14.23.3 Defined values

<value> is in range 2-10.

## 14.24 Connection completion timeout S7

### 14.24.1 Description

This command specifies the amount of time in seconds, that the DCE shall allow between either answering a call or completion of dialing and establishment of a connection with a remote site.

### 14.24.2 Syntax

Command syntax: ATS7=[<value>]

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| ATS7=30 | OK<br>or<br>CME ERROR: \<error> |
| Read command<br>ATS7? | 030<br>OK |

### 14.24.3 Defined values
<value> is in range 1-255.
Default value is 255.


## 14.25 Command dial modifier time S8


### 14.25.1 Description
This command specifies the amount of time in seconds, that the DCE shall pause, during dialling, when a ",", dial modifier is encountered in a dial string.
The command has no effect.


### 14.25.2 Syntax
Command syntax: ATS8=[<value>]

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| ATS8=4 | OK<br>or<br>CME ERROR: \<error> |
| Read command<br>AT+S8? | 004<br>OK |


### 14.25.3 Defined values
<value> is in range 0-255.


## 14.26 Automatic disconnect delay S10


### 14.26.1 Description
This command specifies the amount of time in tenth of a second, that the DCE will remain connected to the line after the DCE has indicated the absence of received line signal.

The command is not supported for GSM but OK returned.
The relevant SB bit in CT109 signal is not supported in UMTS therefore the command not applicable in UMTS.

### 14.26.2  Syntax
Command syntax: ATS10=[<value>]

| COMMAND | POSSIBLE RESPONSES |
|---------|-------------------|
| ATS10=30 | OK<br>or<br>CME ERROR: <error> |
| Read command<br>ATS10? | 030<br>OK |

### 14.26.3  Defined values
<value> is in range 1-254

## 14.27   Escape prompt delay (EPD) S12

### 14.27.1  Description
This command defines the maximum period, in fiftieths of a second, allowed between receipt of the last character of the three escape character sequence from the DTE and sending of the OK result code to the DTE. If any characters are detected during this time, the OK will not be sent.

### 14.27.2  Syntax
Command syntax: ATS12=[<value>]

| COMMAND | POSSIBLE RESPONSES |
|---------|-------------------|
| ATS12=80 | OK<br>or<br>CME ERROR: <error> |
| Read command<br>ATS12? | 080<br>OK |

### 14.27.3  Defined values
<value> is in range 0-255  1/50 of a second; default: 50 (1 second).

### 14.28　AutoSync bit mapped options S19

#### 14.28.1　Description
This command defines the options for AutoSync operation.

#### 14.28.2　Syntax
Command syntax: ATS19=[<value>]

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| ATS19=30 | OK<br>or<br>CME ERROR: <error> |
| Read command<br>ATS19? | 030<br>OK |

#### 14.28.3　Defined values
<value> is in range 0-31

### 14.29　Command echo E

#### 14.29.1　Description
This command controls whether or not the ATC echoes characters received from the DTE during command state.

#### 14.29.2　Syntax
Command syntax: ATE[<value>]

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| ATE1 | OK<br>or<br>CME ERROR: <error> |

#### 14.29.3　Defined values
<value> may be:

- 0: echo off

- 1: echo on

## 14.30   Result code suppression Q

### 14.30.1   Description
This command determines whether or not the DCE transmits result codes to the DTE. When result codes are being suppressed, no portion of any intermediate, final or unsolicited result code is transmitted. Information text transmitted in response to commands is not affected by this setting.

### 14.30.2   Syntax
Command syntax: ATQ[<value>]

| COMMAND | POSSIBLE RESPONSES |
|---------|--------------------|
| ATQ0 | OK<br>or<br>CME ERROR: <error> |
| ATQ1 | no response<br>[as this activates the resolt code suppression] |

### 14.30.3   Defined values
<value> may be:

- 0: DCE transmits result codes

- 1: Result codes are suppressed and not transmitted

## 14.31   DCE response format V

### 14.31.1   Description
This command allows to control the contents of the header and trailer transmitted with result codes and information responses. It also determines whether result codes are transmitted in a numeric form or a alphabetic (or verbose) form. The text portion of information responses is not affected by this setting.
The effect of V setting on response formats is described below:

in case of information responses the format is:

- for V0: <text><CR><LF>

- for V1: <CR><LF><text><CR><LF>

in case of result codes the format is:

- for V0: <numeric code><CR>
- for V1: <CR><LF><verbose code><CR><LF>

### 14.31.2 Syntax
Command syntax: ATV[<value>]

| COMMAND | POSSIBLE RESPONSES |
|---------|--------------------|
| ATV0 | 0<br>or<br>4 |
| ATV1 | OK<br>or<br>CME ERROR: <error> |

### 14.31.3 Defined values
<value> may be:

- 0: DCE transmits limited headers and trailers and numeric text
- 1: DCE transmits full headers and trailers and verbose response text (default)

## 14.32 Result code selection and call progress monitoring control X

### 14.32.1 Description
This command determines whether or not the DCE transmits particular result codes to the DTE. It also controls whether or not the DCE verifies the presence of dial tone when it first goes off-hook to begin dialling and whether or not engaged tone (busy signal) detection is enabled.

### 14.32.2 Syntax
Command syntax: ATX[<value>]

| COMMAND | POSSIBLE RESPONSES |
|---------|--------------------|

| ATX1 | OK<br>or<br>CME ERROR: <error> |
|------|-------------------------------|

### 14.32.3  Defined values

<value> may be:

- 0: CONNECT result code is given upon entering online data state; dial tone and busy detection are disabled;

- 1: CONNECT <text> result code is given upon entering online data state; dial tone and busy detection are disabled;

- 2: CONNECT <text> result code is given upon entering online data state; dial tone detection is enabled and busy detection is disabled;

- 3: CONNECT <text> result code is given upon entering online data state; dial tone detection is disabled and busy detection is enabled;

- 4: CONNECT <text> result code is given upon entering online data state; dial tone and busy detection are both enabled.

## 15    SIM toolkit

The commands in this section are only working if they have been activated by the terminal equipment. This is required, since an unanswered SIM-toolkit command (without terminal response sent back to the SIM) would block the SIM-toolkit processing.
This activation is done by sending AT+CFUN=6

### 15.1    SIM-APPL-TK proactive commands +STKPRO

#### 15.1.1    Description

This command displays the list of supported proactive commands. Only the test command syntax is allowed. In addition there is an unsolicited result code +STKPRO: <proactive_cmd>, …  provided defined as:

- +STKPRO: 01, <type>

- +STKPRO: 05, <event list>

- +STKPRO: 16, <number>, <subaddr>, <type>, <alpha_1>, <icon_id1>, <alpha_2>, <icon_id2>

- +STKPRO: 17, <ss_data>, <alpha>, <icon_id>, <ref_number>

- +STKPRO: 18, <dcs>, <hex_string>, <alpha>, <icon_id>, <ref_number>

- +STKPRO: 19, <alpha>, <icon_id>, <ref_number>

- +STKPRO: 20, <alpha>, <icon_id>, <dtmf_string>

- +STKPRO: 21, <URL>, <alpha>, <icon_id>

- +STKPRO: 32, <tone>, <unit>, <interval>, <alpha>, <icon_id>

- +STKPRO: 33, <type>, <dcs>, <hex string>, <icon_id>, <imm_resp>

- +STKPRO: 34, <type>, <dcs>, <hex string>, <icon_id>

- +STKPRO: 35, <type>, <dcs>, <hex string>, <max rsp len>, <min rsp len>, <default text>, <icon_id>

- +STKPRO: 36, <type>, <alpha>, <item_id>, <total items>, <item_text>, <next_action>, <default_item>, <icon_id>, <icon_id_list_element>

- +STKPRO: 37, <type>, <alpha>, <item_id>, <total items>, <item_text>, <next_action>, <icon_id>, <icon_id_list_element>

- +STKPRO: 38,<type>

- +STKPRO: 40, <dcs>, <hex string>, <icon_id>

- +STKPRO: 52, <type>, <alpha>, <icon_id>

- +STKPRO: 53, <language>

### 15.1.2　Syntax

Command syntax: AT+STKPRO=?

| COMMAND | POSSIBLE RESPONSES |
|---------|--------------------|
| Test command<br>AT+STKPRO=? | +STKPRO=01,05,16,17,18,19,20,21,32,<br>33,34,35,36,37,38,40,53<br>OK |

### 15.1.3　Defined values

<alpha>,<alpha_1>,<alpha_2>,<item_text>,<default text>,<dtmf_string>
: text string
<dcs> data coding scheme
<default_item> default item (s. item_id)
<event list> may be:

-  04: User activity event

-  05: Idle screen available event

-  07: Language selection

-  08: Browser Termination event

<format_mode>,<format_mode1>,<format_mode2> formatting mode value (alignment, font size, style) coded as following: Bit7 Bit6 Bit5 Bit4 Bit3 Bit2 Bit1 Bit0

- alignment (Bit1 Bit0):

  -  0: left

  -  1: center

  -  2: right

  -  3: language dependent (default)

- font size (Bit3 Bit2):

  -  0: normal

  -  1: large

  -  2: small

  -  3: reserved

- style bold (Bit4):

  -  0: bold off

  -  1: bold on

- style italic (Bit5):

  -  0: italic off

- 1: italic on

- style underlined (Bit6):

    - 0: underlined off

    - 1: underlined on

- style strikethrough (Bit7):

    - 0: strikethrough off

    - 1: strikethrough on

<exists>,<exists1>,<exists2>

- 0: text formatting is deactivated

- 1: text formatting is activated

<hex_string> sting containing data in hexadecimal format

<icon_id>,<icon_id1>,<icon_id2>

<icon_id_list_element> icon identifier list object  (list containing icon id's. Example:
<icon_id1>,<icon_id2>)

<interval> time duration in number of units

<item_id> item identifier (Identifier of item chosen s. GSM11.14)

<items>,<items1>,<items2> number of items in text formatting

<language> 2 bytes string indicating the language

<length>,<length1>,<length2> text formatting length. Gives the number of formatted
characters or sets a default text formatting

<max rsp len> maximum response length

<min rsp len> minimum response length

<next_action> next action

<number> called party number

<proactive_cmd> may be:

  - 01: refresh

  - 05: set up event list

  - 16: set up call

  - 17: send SS

  - 18: send USSD

  - 19: send SMS

  - 20: send DTMF

  - 21: launch browser

  - 32: play tone

  - 33: display text

  - 34: get inkey

- 35: get input

- 36: select item

- 37: set up menu

- 38: language setting

- 40: set up idle mode text

- 52: run at cmd info

- 53: language notification

<ref_number> reference number

<subaddr> called party subaddr.

<ss_data> data string

<start_pos>,<start_pos1>,<start_pos2> start position of the text formatting. Set to the number of characters after the formatting shall be applied from the beginning of the SM data.

<type> integer as command qualifier; possible value 4 meaning "language"

<text colour> may be:

- 00: black
- 01: dark grey
- 02: dark red
- 03: dark yellow
- 04: dark green
- 05: dark cyan
- 06: dark blue
- 07: dark magenta
- 08: grey
- 09: white
- 10: bright red
- 11: bright yellow
- 12: bright green
- 13: bright cyan
- 14: bright blue
- 15: bright magenta

<tone> tone may be:

- 01: dial tone

- 02: call subscriber busy

- 03: congestion

- 04: radio path acknowledge

- 05: radio path not available

- 06: error / special information

- 07: call waiting tone

- 08: ringing tone

- 10: general beep

- 11: positive acknowledgement tone

- 12: negative acknowledgement or error tone

<total items> total items

<unit> may be:

- 0: minutes

- 1: seconds

- 2: tenth of seconds

<URL> URL that shall be loaded

## 15.2    SIM-APPL-TK terminal response +STKTR

### 15.2.1    Description

This action command allows entering the response to a SIM-APPL-TK proactive command which was displayed by the unsolicited result code +STKPRO.

The parameters depend on the proactive command:

| | |
|---|---|
| +STKTR: 01, <result>, [<add_result>] | refresh |
| +STKTR: 05, <result> | set up event list |
| +STKTR: 16, <result>, [<add_result>] | set up call |
| +STKTR: 17, <result>, <add_result>, [<reference_number>] | send SS |
| +STKTR: 18, <result>, <add_result>, [<reference_number>] | send USSD |
| +STKTR: 19, <result>, <add_result>,[<reference_number>] | send SMS |
| +STKTR: 20, <result>,[<add_result>] | send DTMF |
| +STKTR: 21: <result> | launch browser |
| +STKTR: 32, <result>, <add_result> | play tone |
| +STKTR: 33, <result>, <add_result> | display text |
| +STKTR: 34, <result>, <add_result>,0,<dcs>,<hex_string> | get inkey |
| +STKTR: 35, <result>, <add_result>,0,<dcs>,<hex_string> | get input |
| +STKTR: 36, <result>, <add_result>,0,<dcs>,<hex_string> | select item |

Note: the 0 stands for the parameter <last_cmd> which is obsolete but not removed so far

| | |
|---|---|
| +STKTR: 37, <result>, <add_result> | set up menu |
| +STKTR: 38, <type>, <language as integer, e.g.28261> | language setting |
| +STKTR: 40, <result>, <add_result> | set up idle mode text |

### 15.2.2    Syntax

Command syntax:

AT+STKTR=<proactive_cmd>[,<type>][,<result>,<add_result>[,<reference_number>][,<last_cmd>][,<dcs>][,<hex string>]]

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+STKTR=1,0 | OK<br>or<br>CME ERROR: <error> |
| Test command<br>AT+STKTR=? | +STKTR=01,05,16,17,18,19,20,21,32,33,34,35,36,37,38,40,53<br>OK |

### 15.2.3    Defined values

<add_result> additional result
<dcs> data coding scheme
<hex_string> string in hexadecimal format
<last_cmd> last command, shall be always 0!!!
<proactive_cmd> decimal code indicates the command (refer +STKPRO)
<reference_number> integer containing the indicated reference number; this parameter can be used only in case of <proactive_cmd> related to SMS, SS, USSD
<result> may be (decimal code indicated):

- 0: command performed successfully

- 1: command performed with partial comprehension

- 2: command performed with missing information

- 3: REFRESH performed with additional Efs read

- 4: command performed successfully, but requested icon could not be displayed

- 5: command performed but modified by call control by SIM

- 6: command performed successfully, limited service

- 7: command performed with modification

- 16: proactive SIM session terminated by the user

- 17: backward move in the proactive SIM session requested by the user

- 18: no response from user

- 19: help information required by the user

- 20: USSD or SS transaction terminated by the user

- 32: ME currently unable to process command

- 33: network currently unable to process the command

- 34: user did not accept call set-up request

- 35: user cleared down call before connection or network release

- 36: action in contradiction with the current timer state

- 37: interaction with call control by SIM, temporary problem

- 38: launch browser generic error code

- 48: command beyond ME's capabilities

- 49: command type not understood by ME

- 50: command data not understood by ME

- 51: command number not known by ME

- 52: SS return error

- 53: SMS RP-ERROR

- 54: error, required values are missing

- 55: USSD return error

- 56: MultipleCard commands error, if class "a" is supported

- 57: interaction with call control by SIM or MO short message control by SIM, permanent problem

- 58: bearer independent protocol error (if class "e" is supported)

<type> command qualifier (usage in case of <proactive_cmd>=38)

### 15.3    SIM-APPL-TK envelope +STKENV

### 15.3.1    Description
This action command allows to send a SIM-APPL-TK envelope command to MS.

### 15.3.2    Syntax
Command syntax:
AT+STKENV=<envelope_cmd>,<optional_ENV_data>
AT+STKENV=214,7,<language>
AT+STKENV=214,8,<cause >

AT+STKENV=211,<item_id>,<help_requested>

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+STKENV=211,01 | OK<br>or<br>CME ERROR: <error> |
| Test command<br>AT+STKENV=? | +STKENV:<br>OK |

### 15.3.3　Defined values

<cause> may be:

- 00: User Termination
- 01: Error Termination

<envelope_cmd> supported envelope commands:

- code 211 (hexa D3): menu selection (needs <item identifier>)
- code 214 (hexa D6): Event download (only one event can be included in the <event_list>)

<item_id> item identification

<help_requested> indicates help requested and may be:

- 1: help is requested
- 0: help is not requested

<language> currently used language in the DTE (coding see 11.14)

<optional_ENV_data> indicates command code related parameters as follows:

- for code 211 (hexa D3): <item identifier>
- for code 214 (hexa D6): <event list>

## 15.4　SIM-APPL-TK terminal profile +STKPROF

### 15.4.1　Description
This command allows reading and changing the terminal profile data. The terminal profile sent by an external STK client states the facilities relevant to SIM Application Toolkit that are supported.

### 15.4.2　Syntax
Command syntax: AT+STKPROF=<length>,<data>

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+STKPROF=2,"1F7F" | OK<br>or<br>CME ERROR: <error> |

| AT+STKPROF? | +STKPROF: <length>,<data><br>e.g. +STKPROF=2,"1F7F"<br>OK |
| Test command<br>AT+STKPROF=? | OK |

### 15.4.3   Defined values

<length>: integer type value; number of hex values that are sent to TE in <data>
Note: <length> set to 0 forces a reset to the default terminal profile stored in the ME.
<data>: terminal profile data coded in hex format

## 15.5    SIM-APPL-TK call control commands +STKCC

### 15.5.1   Description

The SIMAP call control status is displayed using the  unsolicited result code
+STKCC: <cc_comand>,…   defined as:

- +STKCC: 1,<res_val>,<alpha>,<number>

- +STKCC: 2,<res_val>,<alpha>,<ss_code>

- +STKCC: 3,<res_val>,<alpha>,<ussd_code>

- +STKCC: 4,<res_val>,<alpha>,<ton_npi>,<sc_addr>,<ton_npi>,<dest_addr>

### 15.5.2   Defined values

<cc_command> may be:

- 1: set up call

- 2: send SS

- 3: send USSD

- 4: send SM

<res_val> call control result value
<alpha>  text string
<number> called party number
<ton_npi> type of number and numbering plan
<sc_addr> service centre address
<dest_addr> destination address

### 15.6    SIM-APPL-TK proactive session status +STKCNF

#### 15.6.1    Description
The SIMAP proactive session status is displayed using the unsolicited result code
+STKCNF: <proactive_cmd>,<result>,<add_result>,<sw1>

#### 15.6.2    Defined values
<proactive_cmd> a decimal code which indicates the command that was finished.
Proactive STK command values are documented in +STKPRO. Additionally following
proactive commands can be indicated:
-        02: More Time
-        03: Poll Interval
-        04: Polling OFF
-        39: Time Management

<add_result> additional result code

<sw1> status of the last response may be:

 -   0: command to SIM was suppressed because of multiple terminal response or wrong
     client

 -   other responses see GSM 11.11

### 15.7    SIM-APPL-TK Launch Browser Command +STKLBR

#### 15.7.1    Description
This command allows to enter a response to a SIM-APPL-TK launch browser request.
The SIMAP command Launch Browser is sent to the DTE using the unsolicited result code:
 +STKLBR: <cmd_details>,<URL>,[<bearer>],[gateway],[<Ref_1>], … ,[Ref_n]

#### 15.7.2    Syntax
The response to the unsolicited result is given with the command:
AT+STKLBR=<result>[,<add_result>]

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+STKLBR=0,0 | OK<br>or<br>CME ERROR: <error> |
| Test command<br>AT+STKLBR=? | OK |

### 15.7.3   Defined values

<cmd_details>

- 00 = launch browser, if not already launched ;

- 02 = use the existing browser (the browser shall not use the active
  existing secured session) ;

- 03 = close the existing browser session and launch new browser session;

<URL> URL that shall be loaded

<bearer>

- '00' = SMS

- '01' = CSD

- '02' = USSD

- '03' = GPRS

<gateway> This text gives to the mobile the name/identity of the Gateway/Proxy to be
          used for connecting to the URL.

<Ref_1>, <Ref_n> Provisioning File Reference

<result> see command +STKTR

<add_result>  see command +STKTR

# 16　　Packet Domain AT Commands

## 16.1　　Parameter Definition

<APN>　　　　Access Point Name is a string parameter, which is a logical name that is used to select the GGSN or the external packet data network. If the value is null or omitted, then the subscription value will be requested. An optional special code placed at the beginning of <APN> indicates the kind of the authentication handling MS/network and may be:

　　　　　- CHAP: challenge handshake authentication protocol

　　　　　- PAP: personal authentication protocol

　　　　　- NONE: authentication protocol not used

　　　　　- code omitted: authentication protocol not used

　　　　An example for the usage of <APN> is:

　　　　+CGDCONT=1,"IP","CHAP:internet.t-d1.de",0,0

　　　　An optional APN Operator Identifier can also be stated which has to be placed after the mandatory APN Network Identifier in the following format: ".mnc<digits>.mcc<digits>.gprs".

　　　　An example for the usage of <APN> including an APN Operator Identifier is:

　　　　+CGDCONT=1,"IP","CHAP:internet.t-d1.de.mnc262.mcc1.gprs",0,0

<cid>　　　　PDP context identifier meaning a numeric parameter, which specifies a particular PDP context definition. This parameter is valid only locally on the interface TE-MT.

<d_comp>　　is a numeric parameter that controls PDP data compression and can have the values:

　　　　　-　0: off

　　　　　-　1: on (manufacturer preferred compression)

　　　　　-　2 : V.42bis data compression

　　　　Note: maybe data compressions are not available (this is configured via features in the stack)

<delay>　　　is a numeric parameter which specifies the delay class acc 3GPP 24.008 (QoS)

　　　　Important Note: in case delay class = 4 (best effort) is selected, the PS maps this to the best delay class, in this case delay class 1.

<h_comp>　　is a numeric parameter that controls PDP header compression. The range may be:

- 0: off (default value is omitted)

- 1: on (manufacturer preferred compression)

- 2: RFC1144 (applicable for SNDCP only)

- 3: RFC2507 (applicable for SNDCP only)

Note: maybe not all header compressions are available (this is configured via features in the stack)

<L2P>　　is a string parameter that indicates the layer 2 protocol to be used between the TE and MT; only the values "PPP", "M-OPT-PPP", "M-HEX" and "M-RAW-IP" are supported.

<mean>　　is a numeric parameter which specifies the mean throughput class

<peak>　　is a numeric parameter which specifies the peak throughput class

<PDP_addr>　　is a string parameter that identifies the MT in the address space applicable to the PDP. If the value is null or omitted, then a value may be provided by the TE during the PDP startup procedure or, failing that, a dynamic address will be requested. Readable with AT-command +CGPADDR.
Depending on the IP-version the <PDP_addr> consists of
4 octetts (IPv4) or 16 octetts (IPv6):
IPv4: "ddd.ddd.ddd.ddd"
IPv6: "ddd.ddd.ddd.ddd.ddd.ddd.ddd.ddd.ddd.ddd.ddd.ddd.ddd.ddd.ddd.ddd"

<PDP_type>　　Packet Data Protocol type is a string parameter which specifies the type of packet data protocol:

- "IP" Internet Protocol (IETF STD 5)

- "IPV6" Internet Protocol, version 6 (IETF RFC 2460)

<pd1>,...<pdN>　　zero to N string parameters whose meanings are specific to the <PDP_type>. For PDP type OSP:IHOSS the following parameters are allowed:

- <pd1> = <host>

- <pd2> = <port>

- <pd3> = <protocol>

<precedence> is a numeric parameter which specifies the precedence class as:

- 0: network subscribed

- 1: high priority

- - 2: normal priority
- - 3: low priority

<reliability>   is a numeric parameter which specifies the reliability class

<state>          indicates the state of GPRS attachment

- 0 detached

- 1 attached

<status>         indicates the state of PDP context activation

- 0 deactivated

- 1 activated

## 16.2       Define PDP context +CGDCONT

### 16.2.1   Description

This command allows to specify specific PDP context parameter values for a PDP context, identified by the local context identification parameter <cid>. If the command is used only with the one parameter <cid>, it means that the corresponding PDP context becomes undefined. The command is abortable by hit a key t.b.d. (proprietary feature GFS19).

Check of ACL [APN Control List]:
*[ This feature is only implemented in Software Rel.4 or higher ! ]*

Only if an USIM is inserted the ACL will be checked:

before performing of contextdefinition it will be checked if the ACL-service [3GPP TS 31.102 version 5.2.0 Release 5, 5.3.14] is enabled and activated. If yes all APNs from ACL of EFACL of USIM will be read out and compared with the requested APN (3$^{rd}$ parameter of +CGDCONT):

- if the requested APN is listed in the ACL the contextdefinition will be performed.

- if the requested APN is empty ("") and ACL contains "network provided APN" the contextdefinition will also be requested.

- if the APN is not listed in the ACL the command returns the error:
      CME ERROR: 258
      or
      CME ERROR: APN not listed in APN Control List (ACL)
If the ACL-service is not enabled or not activated in the USIM or a GSM-SIM is inserted the contextdefinition will be performed without any checks.

Check of APN Operator Identifier:
*[ This feature is only implemented in Software Rel.4 or higher ! ]*

In addition to the mandatory APN network identifier the requested APN will be checked for a valid optional APN Operator Identifier [3GPP TS 23.003 V5.10.0 Release 5, 9.1]:

A valid APN Operator Identifier consists of following 3 tokens:

'.mnc<digits>', '.mcc<digits>' and '.gprs' .

<digits> can be 1 to 3 digits - if there're less than 3 digits they will be filled up automatically with leading zeros.

If one or two of the three tokens but not all three are present, the command returns with an error.

Examples for syntactical valid APN's including a syntactical valid APN Operator Identifier:

a.) "internet.t-d1.de.mnc123.mcc456.gprs"

b.) "internet.t-d1.de.mnc1.mcc45.gprs"

[ b.) -> will be automatically extended to:  "internet.t-d1.de.mnc001.mcc045.gprs" ]

### 16.2.2    Syntax

Command syntax:
AT+CGDCONT=[<cid>[,<PDP_type>[,<APN>[,<PDP_addr>[,<d_comp>[,<h_comp>[,

<pd1>[, ...[,<pdn>]]]]]]]]]

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+CGDCONT=1,"IP"," name","1.2.3.4",0,0 | OK<br>or<br>CME ERROR: <error><br>Or |
| Read command<br>AT+CGDCONT? | +CGDCONT: <cid>,<PDP_type>,<APN>,<PDP_addr>,<d_comp>,<h_comp>[<pd1>[,...[,<pdN>]]]<br><br>[<CR><LF>+CGDCONT: <cid>,<PDP_type>,<APN>,<PDP_addr>,<d_comp>,<h_comp>[<pd1>[,...[,<pdN>]]]<br><br>[...]]<br>OK |
| Test command<br>AT+CGDCONT=? | +CGDCONT: (1-255),"IP",,,(0),(0)<br><br>i.e. +CGDCONT: (range of <cid>s),<PDP_type>,,,(list of supported <d_comp>s)(list of supported <h_comp>s)[,(list of supported <pd1>s)[,(list of supported <pdN>s)]]] |

| | |
|---|---|
| | [<CR><LF>+CGDCONT: (range of <cid>s),<PDP_type>,,,(list of supported <d_comp>s)(list of supported <h_comp>s)[,(list of supported <pd1>s)[,(list of supported <pdN>s)]]] |
| | [...]] |
| | OK |

The parameters are described in chapter 16.1.

### 16.3 Quality of service profile (requested) +CGQREQ

### 16.3.1 Description

This command allows the TE to specify a quality of service profile that is used when the MT sends an activate PDP context request message to the network. The set command specifies a profile for the context identified by the <cid> (local context identification parameter). The syntax form used only with parameter <cid>, causes the requested profile for the indicated context number to become undefined.

### 16.3.2 Syntax

Command syntax:
AT+CGQREQ=[<cid>[,<precedence>[,<delay>[,reliability>[,<peak>[,<mean>]]]]]]

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| **AT+CGDCONT is needed previously**<br><br>AT+CGQREQ=1,1,1,1,1,1 | OK<br><br>or<br><br>CME ERROR: <error> |
| Read command<br><br>AT+CGQREQ? | +CGQREQ: 1,1,1,1,1,1<br><br>i.e. +CGQREQ: <cid>,<precedence>,<delay>,<reliability>,<peak>,<mean><br><br>[<CR><LF>+CGQREQ: <cid>,<precedence>,<delay>,<reliability>,<peak>,<mean><br><br>[...]]<br><br>OK |
| Test command<br><br>AT+CGQREQ=? | +CGQREQ: "IP",(0-3),(0-4),(0-5),(0-9),(0-18,31) |

| | |
|---|---|
| | i.e. +CGQREQ: <PDP_type>,(list of supported <precedence>s),(list of supported <delay>s),(list of supported <reliability>s),(list of supported <peak>s),(list of supported <mean>s)<br><br><CR><LF>+CGQREQ: <PDP_type>,(list of supported <precedence>s),(list of supported <delay>s),(list of supported <reliability>s),(list of supported <peak>s),(list of supported <mean>s)<br><br>[...]]<br><br>OK |

The parameters are described in chapter 16.1.

## 16.4      Quality of service profile (minimum acceptable) +CGQMIN

### 16.4.1     Description

This command allows the TE to specify a QoS (Quality of Service) minimum acceptable profile which is checked by the MT against the negotiated profile returned in the activate PDP context accept message. The profile is identified by the <cid> parameter.

Important note:

For SUBSCRIBED = 0 given QMIN parameters are automatically mapped to minimal values.

Reason:

If the setting for +CGQMIN is with SUBSCRIBED = 0 there is no useful comparing possible of the parameters as SUBSCRIBED means: accept everything

=> setting 0 does not take any effect.

### 16.4.2     Syntax

Command syntax:
AT+CGQMIN=[<cid>[,<precedence>[,<delay>[,<reliability>[,<peak>[,<mean>]]]]]]

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| **AT+CGDCONT     is needed previously**<br>AT+CGQMIN=1,1,1,1,1 | OK<br>or<br>CME ERROR: <error> |

| | |
|---|---|
| ,1 | |
| Read command<br><br>AT+CGQMIN? | +CGQMIN:<br><cid>,<precedence>,<delay>,<reliability>,<peak>,<mean><br><br>OK |
| Test command<br><br>AT+CGQMIN=? | +CGQMIN: "IP",(0-3),(0-4),(0-5),(0-9),(0-18)<br><br>i.e.<br><br>+CGQMIN:  <PDP-type>,(list  of  supported <precedence>s),(list  of  supported  <delays>s),(list  of supported <reliability>s),(list of supported <peak>s),(list of supported <mean>s)<br><br>[+CGQMIN:  <PDP-type>,(list  of  supported <precedence>s),(list  of  supported  <delays>s),(list  of supported <reliability>s),(list of supported <peak>s),(list of supported <mean>s)<br><br>[...]]<br><br>OK |

The parameters are described in chapter 16.1.

## 16.5      GPRS attach or detach +CGATT

### 16.5.1     Description

This execution command is used to attach the MT to, or detach the MT from the GPRS service. After this command the MT remains in command state. If the MT is already in the requested state, the command is ignored and OK is returned to TE. If the requested state can not be reached, an ERROR is returned. The command is abortable by hit a key; in this case a detach is performed (aborting is a proprietary feature).

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

### 16.5.2     Syntax

Command syntax: AT+CGATT=[<state>]

| COMMAND | POSSIBLE RESPONSES |
|---|---|

| AT+CGATT=1 | OK |
| | or |
| | CME ERROR: <error> |
| Read command<br>AT+CGATT? | +CGATT: <state> |
| | OK |
| Test command<br>AT+CGATT=? | +CGATT: (0-1) |
| | e.g. |
| | +CGATT: (list of supported <state>s) |
| | OK |

The parameters are described in chapter 16.1.

## 16.6    PDP context activate or deactivate +CGACT

### 16.6.1    Description

This execution command is used to activate or deactivate the specified PDP context(s). After this command the MT remains in the command state. If any context is already in the requested state, the state for the context remains unchanged. If the requested state can not be achieved, an ERROR is returned. If the MT is not GPRS attached when the activation form of the command is executed, the MT first performs a GPRS attach and them attempts to activate the specified contexts. The command is abortable by hit a key; in this case a deactivation is performed (aborting is a proprietary feature).

### 16.6.2    Syntax

Command syntax: AT+CGACT=[<status>[,<cid>[,<cid[,...]]]]

| COMMAND | POSSIBLE RESPONSES |
| --- | --- |
| AT+CGACT=1,1 | OK |
| | or |
| | CME ERROR: <error> |
| Read command<br>AT+CGACT? | +CGACT: <cid>,<status> |
| | [<CR><LF>+CGACT: <cid>,<status> |
| | [...]] |
| | OK |

| Test command | +CGACT: (0-1) |
|---|---|
| AT+CGACT=? | i.e. +CGACT: (list of supported \<status\>s) |
| | OK |

The parameters are described in chapter 16.1.


## 16.7    Enter data state +CGDATA

### 16.7.1    Description

This execution command causes the MT to perform whatever actions are necessary to establish communication between the TE and the network using one or more GPRS PDP types. This may include performing a GPRS attach and one or more PDP context activations. If the parameters are accepted, MT displays the intermediate result code CONNECT on TE and enters the online data state; thereafter data transfer may proceed. No other commands following +CGDATA in the command line will be processed.

After data transfer is complete, the MT re-enters the command state and the final result code is displayed on TE. In error case the final result code NO CARRIER or CME ERROR: \<error\> is displayed.

Note: Although a list of \<cid\>'s is possible (future usage), the MS does not support more then one \<cid\> and in this cases an error is returned.

### 16.7.2   Syntax

Command syntax: AT+CGDATA=[\<L2P\>,[\<cid\>[,\<cid\>[,...]]]]

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+CGDATA="PPP",1 | CONNECT |
| | **It follows data transfer** |
| | or |
| | CME ERROR: \<error\> |
| Test command <br> AT+CGDATA=? | +CGDATA: "PPP" |
| | i.e. +CGDATA: (list of supported \<L2P\>s) |
| | OK |

Note: Possible are protocols: "PPP", "M-OPT-PPP", "M-HEX", "M-RAW-IP". After entering of the L2 hex protocol with

AT+CGDATA="M-HEX",1

the protocol can be used as follows:

Syntax: <int: counter> <int: length[1-1500]> <hex-sequence>[0-9-fA-F]

Examples:

- 1 200<CR> - send 1 packet with 200 0y2B (fill character)

- 5 1000<CR> - send 5 packets with 1000 0x2B (fill character)

- 1 5 31 32 33 34 35<CR> - send 1 packet with the given contents

- 1 10 31<q><CR> - send 1 packet with 10 0x31

Either a packet is sent

- if the length field is terminated with <CR>

- or the length value is equal to # chars of hex-sequence

- or the input is terminated with a character not equal to a hex digit or <CR>.

The session is terminated by default with +++, the context is deactivated.

If ct108 (AT&D) is equal to 2 and the selected L2 protocol is "M-HEX", the channel is switched back to idle mode but the context remains activated. Leave the layer 2 packet protocol by typing of +++.

## 16.8    Automatic response to a network request for PDP context activation +CGAUTO

### 16.8.1    Description

This set command disables or enables an automatic positive response (auto-answer) to the receipt of a Request PDP context activation message from the network. The setting S0 is used as usual, but related to the GPRS incoming request. The A or H command handling may be used in order to accept or reject a network PDP request for PDP activation. The setting +CGAUTO does not affect the issuing of the unsolicited result code RING or +CRING.

If the parameter <n> allows an positive answer to the network request for PDP context activation, the MT shall initiate an attach if it is not already attached.

### 16.8.2    Syntax

Command syntax: AT+CGAUTO=[<n>]

| COMMAND | POSSIBLE RESPONSES |
|---------|--------------------|

| AT+CGAUTO=1 | OK |
| | or |
| | CME ERROR: <error> |
| Read command<br>AT+CGAUTO? | +CGAUTO: <n> |
| | OK |
| Test command<br>AT+CGAUTO=? | +CGAUTO: (list of the supported <n>s) |
| | OK |

### 16.8.3    Defined values

<n> may be:

- 0: turn off automatic response for GPRS only; in this case network requests are only manually accepted or rejected;

- 1: turn on automatic response for GPRS only; in this case network requests are automatically accepted.

- 2: modem compatibility mode, GPRS only; the automatic acceptance is controlled by the S0 setting; manual control using the A, +CGANS or H command is possible; incoming circuit switched calls can be neither manually nor automatically answered;

- 3: modem compatibility mode, GPRS and circuit switched calls (default); automatic acceptance of both GPRS network requests and incoming circuit switched calls is controlled by the S0 setting; A, +CGANS and H commands are also usable; not only GPRS but also circuit switched calls are also handled.

## 16.9    Show PDP address +CGPADDR

### 16.9.1    Description

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

### 16.9.2    Syntax

Command syntax: AT+CGPADDR=[<cid>[,<cid>[,...]]]

| COMMAND | POSSIBLE RESPONSES |

| AT+CGPADDR= | +CGPADDR: 1,"1.2.3.4" |
| | i.e. |
| | +CGPADDR: <cid>,<PDP_addr> |
| | [<CR><LF>+CGPADDR: <cid>,<PDP_addr> |
| | [...]] |
| | OK |
| | or |
| | CME ERROR: <error> |
| Test command<br>AT+CGPADDR=? | +CGPADDR: (list of defined <cid>s) |
| | OK |

The parameters are described in chapter 16.1.

## 16.10　Manual response to a network request for PDP context activation +CGANS

### 16.10.1　Description

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

When the command could be performed and an accept was indicated, the unsolicited result code CONNECT is issued and the MT enters the online data state.

After data transfer is complete, the MT re-enters the command state and the final result code is displayed on TE. In error case the final response code NO CARRIER or CME ERROR: <error> is displayed.

If the MT has no attachment or activation before the +CGANS command, these actions are automatically performed before +CGANS is executed.

### 16.10.2　Syntax

Command syntax: AT+CGANS=[<response>[,<L2P>[,<cid>]]]

| COMMAND | POSSIBLE RESPONSES |
| --- | --- |

| AT+CGANS=1,"PPP",1 | CONNECT |
| --- | --- |
| | **GPRS data transfer follows** |
| | or |
| | CME ERROR: <error> |
| Test command<br>AT+CGANS=? | +CGANS:    (list    of    supported<br><response>s),(list of supported <L2P>s) |
| | OK |

### 16.10.3  Defined values

<response> may be:

-   0: reject the request
-   1: accept and request that the PDP context be activated

Note: Possible are protocols: "PPP", "M-OPT-PPP", "M-HEX", "M-RAW-IP". After entering of the L2 hex protocol with

at+cgans=1,"M-HEX",1

the protocol can be used as follows:

Syntax: <int: counter> <int: length[1-1500]> <hex-sequence>[0-9-fA-F]

Examples:

- 1 200<CR> - send 1 packet with 200 0y2B (fill character)

- 5 1000<CR> - send 5 packets with 1000 0x2B (fill character)

- 1 5 31 32 33 34 35<CR> - send 1 packet with the given contents

- 1 10 31<q><CR> - send 1 packet with 10 0x31

- +++<CR> - leave the session

Either a packet is sent

- if the length field is terminated with <CR>

- or the length value is equal to # chars of hex-sequence

- or the input is terminated with a character not equal to a hex digit or <CR>. Leave the layer 2 packet protocol by typing of +++.

### 16.11   GPRS mobile station class +CGCLASS

#### 16.11.1   Description

This set command allows to set the MT to operate according to the specified GPRS mobile class.

#### 16.11.2   Syntax

Command syntax: AT+CGCLASS=[<class>]

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+CGCLASS="B" | OK<br>or<br>CME ERROR: <error> |
| Read command<br>AT+CGCLASS? | +CGCLASS: <class><br>OK |
| Test command<br>AT+CGCLASS=? | +CGCLASS: (list of supported <class>s)<br>OK |

#### 16.11.3   Defined values

<class> is a string parameter indicating the GPRS mobile class; it may be (in descending order of functionality):

- A: class A // only supported if UMTS_SUPPORT is enabled

- B: class B

- CG: class C in GPRS mode

- CC: class C in circuit switched mode

### 16.12   GPRS event reporting +CGEREP

#### 16.12.1   Description

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

### 16.12.2  Syntax

Command syntax: AT+CREREP=[<mode>[,<bfr>]]

The following unsolicited result codes are defined:

-   +CGEV: REJECT <PDP_type>,<PDP_addr> means that a network request for PDP context activation occurred when the MT was unable to report it to the TE with a +CRING unsolicited result code and was automatically rejected

-   +CGEV: NW REACT <PDP_type>,<PDP_addr>,[<cid>] means that the network has requested a context activation

-   +CGEV: NW DEACT <PDP_type>,<PDP_addr>,[<cid>] means that the network has forced a context deactivation

-   +CGEV: ME DEACT <PDP_type>,<PDP_addr>,[<cid>] means that the mobile equipment has forced a context deactivation

-   +CGEV: NW DETACH means that the network has forced a GPRS detach

-   +CGEV: ME DETACH means that the mobile equipment has forced a GPRS detach

-   +CGEV: NW CLASS <class> means that the network has forced a change of MS class; the highest available class is reported

-   +CGEV:ME CLASS <class> means that the mobile equipment has forced a change of MS class; the highest available class is reported.

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+CGEREP=1,1 | OK<br><br>or<br><br>CME ERROR: <error> |
| Read command<br><br>AT+CGEREP? | +CGEREP: <mode>,<bfr><br>OK |
| Test command<br><br>AT+CGEREP=? | +CGEREP: (list of supported <mode>s),(list of supported <bfr>s)<br>OK |

### 16.12.3  Defined values

<mode> controls the processing of unsolicited result codes specified within this command; it may be:

-   0: buffer unsolicited result codes in the MT; if buffer full the oldest ones will be discarded

- 1: discard unsolicited result codes when V.24 link is reserved (online); otherwise forward them directly to the TE
- 2: buffer unsolicited result codes in the MT when link reserved (online) and flush them to the TE when the link becomes available; otherwise forward them directly to the TE

<bfr> controls the effect on buffered codes when <mode> 1 or 2 is entered; it may be:

- 0: MT buffer unsolicited result codes defined within this command is cleared when <mode> 1 or 2 is entered
- 1: MT buffer of unsolicited result codes defined within this command is flushed to the TE when <mode> 1 or 2 is entered (OK is given before flushing the codes).

### 16.13   GPRS network registration status +CGREG

#### 16.13.1   Description

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

#### 16.13.2   Syntax

Command syntax: AT+CGREG=[<n>]

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+CGREG=1 | OK<br>or<br>CME ERROR: <error> |
| Read command<br>AT+CGREG? | +CGREG: <n>,<stat>[,<lac>,<ci>]<br>OK |
| Test command<br>AT+CGREG=? | +CGREG: (list of supported <n>s)<br>OK |

#### 16.13.3   Defined values

<n> may be:

- 0: disable network registration unsolicited result code
- 1: enable network registration unsolicited result code

- 2: enable network registration information unsolicited result code +CGREG: <stat>[,<lac>,<ci>]

<stat> may be:

- 0: not registered, home network

- 1: registered, home network

- 2: not registered, but ME is currently searching a new operator to register to

- 3: registration denied

- 4: unknown

- 5: registered, roaming

<lac> string type containing two byte location area in hexadecimal format

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

## 16.14  Select service for MO SMS messages +CGSMS

### 16.14.1  Description

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

### 16.14.2  Syntax

Command syntax: AT+CGSMS=[<service>]

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| AT+AT+CGSMS=1 | OK<br>or<br>CME ERROR: <error> |
| Read command<br>AT+CGSMS? | +CGSMS: <service><br>OK |
| Test command<br>AT+CGSMS=? | +CGSMS: (list of currently available <service>s)<br>OK |

### 16.14.3  Defined values

<service> numeric parameter indicating the service or service preference to be used and may be:

- 0: GPRS

- 1: circuit switched

- 2: GPRS preferred (use circuit switched if GPRS not available

- 3: circuit switched preferred (use GPRS if circuit switched not available)

## 16.15   Request GPRS service D

### 16.15.1   Description

This (dial) command causes the MT to enter the (GPRS) online data state using the layer 2 protocol. The command is answered by the response CONNECT on TE; thereafter no further commands may follow on the AT command line.

When the layer 2 protocol has terminated, OK or NO CARRIER is displayed on TE.

### 16.15.2  Syntax

Command syntax: ATD*<GPRS_SC>[*[<called_address>][*[<L2P>[*[<cid>]]]]#

| COMMAND | POSSIBLE RESPONSES |
|---------|--------------------|
| ATD*99,1# | CONNECT<br>or<br>CME ERROR: <error> |

### 16.15.3  Defined values

<GPRS_SC>

-   GPRS service code, digit string 98 or 99, which identifies a request to use GPRS

<called_address>

-   string type identifying the called party in the address space applicable to the PDP

<L2P>

-   string type indicating the layer 2 protocol to be used; only "PPP" and "M-OPT-PPP" are usable

- integer specifying a particular PDP context definition.

### 16.15.4  Examples

`atd*99#`

`atd*99***1#`

`atd*99**M-OPT-PPP*#`

## 16.16　Automatic response to a network request for PDP context activation S0

### 16.16.1  Description

This command may be used to turn off (n=0) or on (n>0) the automatic response to a network for a PDP context activation.

### 16.16.2  Syntax

Command syntax: ATS0=<value>

| COMMAND | POSSIBLE RESPONSES |
|---|---|
| ATS0=2<br>Note: Automatic answer after 2 rings | OK<br>or<br>CME ERROR: <error> |
| Read command<br>ATS0? | S0: <value><br>OK |

### 16.16.3  Defined values

<value> is a integer in range 0-255.

Default setting: S0=0, meaning automatic answering is disabled.

## 16.17　Manual acceptance of a network request for PDP context activation A

### 16.17.1  Description

This command A (Answer) may be used to accept a network request for a PDP context activation announced by the unsolicited result code RING. The MT answers with

CONNECT and enters online data state. The procedure is the same as described for the command +CGANS=1 without specified <L2P> and <cid>.

### 16.17.2  Syntax

Command syntax: ATA

## 16.18   Manual rejection of a network request for a PDP context activation H

### 16.18.1  Description

This command H (On-hook) may be used to reject a network request for PDP context activation announced by the unsolicited result code RING. The MT responds with OK.

Note: while GPRS data transfer the escape sequence "+++" followed by the ATH command is needed to terminate the connection.

### 16.18.2  Syntax

Command syntax: ATH

### 16.19   GPRS cell environment description +CGED

#### 16.19.1   Description
This command returns a dump of the cell environment, either as a one shot dump or as a periodic refreshed dump (each 5 seconds), dependent on the command parameter <mode>.

#### 16.19.2   Syntax
Command syntax: AT+CGED=[<mode>]

+CGED :
Service-Cell:
<MCC>,<MNC>,<LAC>,<CI>,<BSIC>,
Equivalent PLMNs :
<MCC>,<MNC>
<MCC>,<MNC>
<arfcn>,<RxLevServ>,<RfChannels>,<Arfcn_ded>,
<RxLevFull>,<RxLevSub>,<RxQualFull>,<RxQualSub>,GSM-<ciphering>,GPRS
Ciphering Algorithm: GEA<gprs_ciphering>,
<ms_txpwr>,<rx_acc_min>,<cbq>,<cba>,<c2_valid>,<cr_offset>,
<tmp_offset>,<penalty_t>,<c1>,<c2>,<ch_type>,<ch_mode>,
<txpwr>,<dtx_used>,< dtr_used >,<t3212>,<acc>,<t_adv>,<bs_pa_mfrms>,
dsc>,<rll>,
<amr_acs>,<amr_cod_ul>,<amr_cod_dl>,<amr_c_i>,
BEP GMSK: <mean_bep_gmsk>,<cv_bep_gmsk>, BEP 8PSK: <mean_bep_8psk>,
<cv_bep_8psk>,
Neighbour Cell <n>:
<MCC>,<MNC>,<LAC>,<CI>,<BSIC>,<arfcn>,<RxLev>
<C1_nc>,<C2_nc>
Note : the neighbour cell content may be repeated up to 6 times.
GPRS-Parameters:
<GPRS_sup>,<RAC>,<Split_Pg_Cycle>,<NCO>,<NOM>,<T3192>,
<Acc_Burst_type>,<DRX_Timer_Max>,<PBCCH>,<Ext_Measure_Order>
<PSI1_r_per>,<si13_location>,<packet_psi_status>,<packet_si_status>,<ext_upl_tbf_sup
ported>,<ccn_active>,<pfc_feat_supported>,
<Count_LR>,<Count_HR>,<C_R_Hyst>,<C31>,<C32>,
<Prior_Acc_Thr>

#### 16.19.3   Defined values
<mode> may be:

- - 0: one shot dump

- - 1: periodic refreshed dump

- - 2: stop periodic dump


Service-Cell:

<MCC>: Mobile country code, range 0-999 (3 digits)
<MNC>: Mobile network code, range 0-99 (2 digits)
<LAC>: Location area code, range 0h-FFFFh (2 octets)
<CI>: Cell Identity, range 0h-FFFFh (2 octets)
<BSIC>: Base Station Identify Code, range 0h-3Fh (6bits)
<arfcn>: absolute radio frequency chanel number, range 0-1023
<RfChannels>: number of frequencies in MA, no_of_rf_chans : 0x01 if single RF and 0 if n.a.
<Arfcn_ded>: single ARFCN of dedicated channel of first ARFCN of MA
<RxLevFull>: Received signal strength on serving cell, measured on all slots;
      0h-3Fh; 10.5.2.20 GSM04.08
<RxLevSub>: Received signal strength on serving cell, measured on all slots;
      0h-3Fh; 10.5.2.20 GSM04.08
<RxQualFull>Received signal quality on serving cell, measured on all slots;
      range 0-7; 10.5.2.20 GSM04.08
<RxQualSub>: Received signal qual.onserving cell, measured on a subset of
      slots, range 0-7;10.5.2.20 GSM04.08
<ms_txpwr>: Maximum TX power level an MS may use when accessing the
      system until otherwise commanded, range 0-31; 10.5.2.4 GSM08.08
<rx_acc_min>: RXLEV-ACCESS-MIN, range 0-63; 10.5.2.4 GSM04.08
<cbq>: CELL_BAR_QUALIFY, range 0-1; 10.5.2.34 GSM04.08
<cba>: CELL_BAR_ACCESS, range 0-1; 10.5.2.29 GSM04.08
<cs_valid>: True if all parameter for calculation of c2 are available; boolean
<cr_offset>: CELL_RESELECT_OFFSET, range 0-63 (6 bit); 10.5.2.34 GSM04.08
<tmp_offset>: TEMPORARY_OFFSET, range 0-7 mapped to 0-70; 10.5.2.34 GSM04.08
<penalty_t>: Penalty time, range 0-31; 10.5.2.34 GSM04.08
<c1>: Value of c1; 6.4 GSM04.08
<c2>: Value of c2; 6.4 GSM04.08
<ch_type>: Channel type of the current connection as follows (10.5.2.5 GSM04.08)
    see type T_CHANNEL_MODE):
  - 0: INVALID_CHN_TYPE
  - 1: TCH_F
  - 2: TCH_F
  - 3: SDCCH_4
  - 4: SDCCH_8
  - 5: TCH_H_H
  - 6: TCH_F_M
<ch_mode>: Channel mode of current connection (10.5.2.6 GSM04.08), range

    0-255 mapped to an internal value:
    - 0: MODE_SIG_ONLY
    - 1: MODE_SPEECH_F
    - 2: MODE_SPEECH_H
    - 3: MODE_DATA_96_F
    - 4: MODE_DATA_48_F
    - 5: MODE_DATA_48_H
    - 6: MODE_DATA_24_F
    - 7: MODE_DATA_24_H
    - 8: MODE_SPEECH_F_V2
    - 9: MODE_SPEECH_F_V3
    - 10: MODE_SPEECH_H_V2
    - 11: MODE_SPEECH_H_V3
    - 12: MODE_DATA_144_F

<txpwr>: Transmit power level of the current connection, range 0-31
    (5 bits); 10.5.2.4 GSM04.08
<dtx_used>: DTX used, range 0-1; 10.5.2.4 GSM04.08
<dtr_used>: DTX used, range 0-1;
<t3212>: T3212. The T3212 timeout value field is coded as the binary representation
    of the timeout value for periodic updating in decihours; range 0-255 (8 bits);
    10.5.2.11 GSM04.08
<acc>: Access control class (RACH Control Parameters), range 0-65535 (2 octets);
    10.5.2.29 GSM04.08
<t_adv>: Timing Advance, not used, always FFh
<bs_pa_mfrms>: BS_PA_MFRMS (multiframes period for transmission of PAGING
    REQUEST), range 0-7 mapped to 2-9; 10.5.2.11 GSM04.08
<amr_acs>: AMR active codec
<amr_cod_dl>: AMR codec used in DL
<amr_cod_ul>: AMR codec used in UL
<amr_ci_i>: AMR C/I in dB/2
<mean_bep_8psk>: MEAN_BEP_8PSK[0...31]
<cv_bep_8psk>: CV_BEP_8PSK[0...7]
<mean_bep_gmsk>: MEAN_BEP_GMSK[0...31]
<cv_bep_gmsk>: CV_BEP_GMSK[0...7]

GPRS-Parameters:

<GPRS_sup>: GPRS supported (in serving cell); range 0-255 (8 bits);
    10.5.2.37b GSM04.08
<RAC>: Routing Area Code, range 0-1 (i bit);10.5.2.37b GSM04.08
<Split_Pg_Cycle>SPGC_CCH_SUP split pg_cycle on ccch by network,
    range 0-1 (2 bits); 10.5.2.37b GSM04.08
<NCO>: NETWORK_CONTROL_ORDER (GPRS_Cell_Options), range 0-3
    (2 bits); 10.5.2.37b GSM04.08
<NOM>NETWORK OPERATION MODE (GPRS_Cell_Options), range 0-3
    (2 bits); 10.5.2.37b GSM04.08

<T3192>T3192 (Wait for Release of the TBF after reception of the final block),
range 0-7 mapped to 0-1500 msec (3 bits); 12.24 GSM04.60:
- 500 msec
- 1000 msec
- 1500 msec
- 0 msec
- 80 msec
- 120 msec
- 200 msec

<Acc_Burst_type>: ACCESS_BURST_TYPE (Literal AB_8 and AB_11),
range 0-1 mapped to 8,11 (1 bit); 12.24 GSM04.60

<DRX_Timer_Max>DRX_TIMER_MAX, range 0-7 (3 bits); 12.24 GSM04.60

<PBCCH>: PBCCH present, boolean; 11.2.25 GSM04.60

<Ext_Measure_Order>: EXT_MEASUREMENT_ORDER, range 0-3 (2 bits);
11.2.23 GSM04.60

<PSI1_r_per>: PSI1_REPEAT_PERIOD, range 0-15 mapped to 1-16 (4 bits);
11.2.18 GSM04.60

<si14_location>:
- "BCCH_NORM"
- "BCCH_EXT"
- "NO_BCCH_TYPE"

<packet_psi_status>: may be 0-1

<packet_si_status>: may be 0-1

<ext_upl_tbf_supported>: may be 0-1

<ccn_active>: may be 0-1

<pfc_feat_supported>: may be 0-1


<Count_LR>: PSI_COUNT_LR, range 0-63 (4 bits); 11.2.18 GSM04.60

<Count_HR>PSI_COUNT_HR, range 0-15 mapped to 1-16 (4 bits);
11.2.18 GSM04.60

<C_R_Hyst>: CELL-RESELECT-HYSTERESIS, range 0-7 (3 bits);
10.5.2.4 GSM04.08

<C1>: Value of c1, integer

<C2> Value of c2, integer

<C31>: Value of c31, integer

<C32>: Value of c32, integer

<Prior_Acc_Thr>: Prioriry_ACCESS_THR, range 0-7 (3 bits);10.5.2.37b GSM04.08

# References

| Name | Title |
| --- | --- |
| GSM 02.04 | Digital cellular telecommunication system (Phase 2+); General on supplementary services |
| GSM 02.04 | Digital cellular telecommunication system (Phase 2+); Mobile Stations (MS) features |
| GSM 02.30 | Digital cellular telecommunication system (Phase2+); Man-Machine Interface (MMI) of the mobile station (MS). |
| GSM 02.90 | Digital cellular telecommunication system (Phase2+); Unstructured supplementary service data (USSD) - stage 1 |
| GSM 03.38 | Digital cellular telecommunications system (Phase 2+); Alphabets and language-specific information |
| GSM 03.40 | Digital cellular telecommunications system (Phase 2+); Technical realization of the Short Message Service (SMS) Point-to-Point (PP) |
| GSM 03.41 | Digital cellular telecommunications system (Phase 2+); Technical realization of Cell Broadcast Service (CBS) |
| GSM 03.60 | Digital cellular telecommunication system (Phase 2+); GPRS Mobile Station (MS) supporting GPRS |
| GSM 04.07 | Digital cellular telecommunications system (Phase 2+); Mobile Radio Interface Signalling Layer 3 |
| GSM 04.08 | Digital cellular telecommunications system (Phase 2+); Mobile radio interface layer 3 specification |
| GSM 04.11 | Digital cellular telecommunications system (Phase 2+); Point-to-Point (PP) Short Message Service (SMS) Support on Mobile Radio Interface. |
| GSM 04.12 | Digital cellular telecommunications system (Phase 2+); Short Message Service Cell Broadcast (SMSCB) Support on Mobile |

| | |
|---|---|
| | Radio Interface. |
| 3GPP TS27.007 | Technical Specification Group Terminals; AT command set for User Equipment (UE); V3.11.0 |
| 3GPPTS27.005 | Technical Specification Group Terminals; Use of Data Terminal Equipment - Data Circuit terminating Equipment (DTE-DCE) interface for Short Message Services (SMS) and Cell Broadcast Service (CBS); V4.1.0 |
| GSM 07.60 | Digital cellular telecommunication system (Phase 2+); GPRS Service description; stage 2 |
| GSM 11.11 | Digital cellular telecommunications system (Phase 2+); Specification of the Subscriber Identity Module – Mobile Equipment (SIM – ME) interface |
| ITU-T V.25ter | ITU-T V.25 ter Recommendation: Data Communications over the Telephone Network; Serial asynchronous automatic dialling and control. |
| ITU-T T.32 | ITU-T Recommendation T.32 Asynchronous Facsimile DCE Control - Service Class 2 |
| 3GPP TS 22.030 | Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); Man-Machine Interface (MMI) of the User Equipment (UE) |
| ISO 639 (1988) | Code for the representation of names of languages |
| DWD-doc. | Audio driver interface specification; version 0.93 |
| DWD-doc. | Backlight driver interface specification; version 0.3 |
| DWD-doc. | Keyboard interface specification; version 0.3 |
| DWD-doc. | LED interface specification; version 0.19 |
| DWD-doc. | Battery driver specification; version 0.3 |

# Abbreviations

Abbreviations

| | |
|---|---|
| AT | **AT** Command Interpreter Software Subsystem, or attention |
| CB | **C**ell **B**roadcast |
| CM | **C**onnection **M**anagement |
| DA | **D**estination **A**ddress |
| DCE | **D**ata **C**ommunication **E**quipment |
| DTE, TE | **D**ata **T**erminal **E**quipment |
| L3 | **L**ayer **3** |
| ME | **M**obile **E**quipment |
| MN | **M**obile **N**etwork Software Subsystem |
| MO | **M**obile **O**riginated |
| MS | **M**obile **S**tation |
| MT | **M**obile **T**erminated |
| PDU | **P**rotocol **D**ata **U**nit |
| SC | **S**ervice **C**entre |
| SI | **SI**M Application Part Software Subsystem |
| SIM | **S**ubscriber **I**dentity **M**odule |
| SMS | **S**hort **M**essage **S**ervice |
| UICC | **U**niversal **I**ntegrated **C**ircuit **C**ard |
| USIM | **U**niversal **S**ubscriber **I**dentity **M**odule |

# Appendices

### Appendix A

Mobile Termination error result code +CME ERROR

| <err> | Meaning | Resulting from the following commands |
|---|---|---|
| 0 | phone failure | undeterminated |
| 1 | no connection to phone | |
| 2 | phone-adaptor link reserved | |
| 3 | operation not allowed | all +C.. commands described in GSM07.07 |
| 4 | operation not supported | all +C.. commands described in GSM07.07 |
| 5 | PH-SIM PIN required | all +C.. commands described in GSM07.07 |
| 6 | PH-FSIM PIN required | |
| 7 | PH-FSIM PUK required | |
| 10 | SIM not inserted | all +C.. commands described in GSM07.07 |
| 11 | SIM PIN required | all +C.. commands described in GSM07.07 |
| 12 | SIM PUK required | all +C.. commands described in GSM07.07 |
| 13 | SIM failure | all +C.. commands described in GSM07.07 |
| 14 | SIM busy | all +C.. commands described in GSM07.07 |
| 15 | SIM wrong | all +C.. commands described in GSM07.07 |
| 16 | incorrect password | +CLCK, +CPWD, +CPIN, ATD*...#... |
| 17 | SIM PIN2 required | |
| 18 | SIM PUK2 required | |
| 20 | memory full | +CPBW, +CPOL |
| 21 | invalid index | +CPBR, +CPBW |
| 22 | not found | +COPS, +CHLD, +CGATT, ATD*...#... |
| 23 | memory failure | +CSAS, +CRES, +CSGT |
| 24 | text string too long | +CPBW |
| 25 | invalid characters in text string | ATD*...#... |
| 26 | dial string too long | ATD, +CPBW |
| 27 | invalid characters in dial string | ATD, +CPBW, ... |
| 30 | no network service | ATD, +COPS, +CLIR, ... |
| 31 | network timeout | ATD |
| 32 | network not allowed - emergency calls only | |
| 40 | network personalisation PIN required | |
| 41 | network personalisation PUK required | |
| 42 | network subset personalisation PIN required | |

| 43 | network subset personalisation PUK required | |
|---|---|---|
| 44 | service provider personalisation PIN required | |
| 45 | service provider personalisation PUK required | |
| 46 | corporate personalisation PIN required | |
| 47 | corporate personalisation PUK required | |
| 100 | unknown | commands with wrong syntax |
| 103 | illegal MS | +CGATT |
| 106 | illegal ME | +CGATT |
| 107 | GPRS services not allowed | +CGATT |
| 111 | PLMN not allowed | +CGATT |
| 112 | Location area not allowed | +CGATT |
| 113 | roaming not allowed in this location area | +CGATT |
| 132 | service option not supported | +CGACT, or other non-GPRS cmds. |
| 133 | requested service option not subscribed | +CGACT, or other non-GPRS cmds. |
| 134 | service option temporarily out of order | +CGACT, or other non-GPRS cmds. |
| 135 | NS-api already used | |
| 148 | unspecified GPRS error | all GPRS related commands |
| 149 | PDP authentication failure | +CGACT |
| 150 | invalid mobile class | all GPRS related commands |
| 256 | ! SI_INFO_IND not received up to now -> AT will be blocked !\n\r! Check STARTUP-signals (PMI, DRV-startup-signals,...) ! | |
| 257 | Invalid error mapping | |
| 258 | APN not listed in APN Control List (ACL) | |
| 701 | incorrect security code | + XPIN, +XSECSTATE |
| 702 | max attempts reached | + XPIN, +XSECSTATE |
| | | |

## Appendix B

Message service failure result codes +CMS ERROR

| <err> | Meaning | Resulting from the following commands |
|---|---|---|
| 1 to 127 | Error cause values from the GSM recommendation 04.11 Annex E-2 | +CMGS, +CMMS |
| 128 to 301 | Error cause related to GSM 3.40 | (SMS commands) |
| 301 | SMS service of ME reserved | +CSMS |
| 302 | operation not allowed | all SMS commands |
| 303 | operation not supported | all SMS commands |
| 305 | invalid text mode parameter | |
| 310 | SIM not inserted | all SMS commands |
| 311 | SIM PIN required | all SMS commands |
| 312 | PH-SIM PIN required | all SMS commands |
| 313 | SIM failure | all SMS commands |
| 314 | SIM busy | all SMS commands |
| 315 | SIM wrong | all SMS commands |
| 316 | SIM PUK required | all SMS commands |
| 320 | memory failure | +CMGR |
| 321 | invalid memory index | +CMGR, +CMGL |
| 322 | memory full | |
| 330 | SMSC address unknown | +CMGR |
| 331 | No network service | |
| 332 | network timeout | +CNMA |
| 340 | no +CNMA acknowledgement expected | +CNMA |
| 500 | unknown error | commands with wrong syntax |
| 512 | MN_SMS_RP_ACK | This and the following codes are manufacturer specific |
| 513 | MN_SMS_TIMER_EXPIRED | |
| 514 | MN_SMS_FORW_AVAIL_FAILED | |
| 515 | MN_SMS_FORW_AVAIL_ABORTED | |
| 516 | MS invalid TP-Message-Type-Indicator | |
| 517 | MS no TP-Status-Report in Phase 1 | |
| 518 | MS no TP-Reject-Duplicate in phase 1 | |

| 519 | MS no TP-Replay-Path in Phase 1 | |
| 520 | MS no TP-User-Data-Header in Phase 1 | |
| 521 | MS missing TP-Validity-Period | |
| 522 | MS invalid TP-Service-Centre-Time-Stamp | |
| 523 | MS missing TP-Destination-Address | |
| 524 | MS invalid TP-Destination-Address | |
| 525 | MS missing Service-Centre-Address | |
| 526 | MS invalid Service-Centre-Address | |
| 527 | MS invalid alphabet | |
| 528 | MS invalid TP-User-Data-length | |
| 529 | MS missing TP-User-Data | |
| 530 | MS TP-User-Data to long | |
| 531 | MS no Command-Request in Phase 1 | |
| 532 | MS Cmd-Req invalid TP-Destination-Address | |
| 533 | MS Cmd-Req invalid TP-User-Data-Length | |
| 534 | MS Cmd-Req invalid TP-User-Data | |
| 535 | MS Cmd-Req invalid TP-Command-Type | |
| 536 | MN MNR creation failed | |
| 537 | MS CMM creation failed | |
| 538 | MS network connection lost | |
| 539 | MS pending MO SM transfer | |
| 540 | MS MO SM rejected by SIM MO SMS control | |

| 541 | RP-Error OK | |
|-----|-------------|--|
| 542 | RP-Error OK no icon display | |
| 543 | Unspecified SMS PP error | |

## Appendix C

Failure cause from GSM04.08 (+CEER)

| Cause value | Diagnostic |
|-------------|------------|
| 1 | unassigned (unallocated) number |
| 3 | no route destination |
| 6 | channel unacceptable |
| 8 | operator determined barring |
| 16 | normal call clearing |
| 17 | user busy |
| 18 | no user responding |
| 19 | user alerting, no answer |
| 21 | call rejected |
| 22 | number changed |
| 26 | non selected user clearing |
| 27 | destination out of order |
| 28 | invalid number format (incomplete number) |
| 29 | facility rejected |
| 30 | response to STATUS ENQUIIRY |
| 31 | normal, unspecified |
| 34 | no circuit / channel available |
| 38 | network out of order |
| 41 | temporary failure |
| 42 | switching equipment congestion |
| 43 | access information discarded |
| 44 | requested circuit / channel not available |
| 47 | resources unavailable, unspecified |
| 49 | quality of service unavailable |
| 50 | requested facility not subscribed |
| 55 | incoming calls barred with in the CUG |
| 57 | bearer capability not authorized |
| 58 | bearer capability not presently available |
| 63 | service or option not available, unspecified |
| 65 | bearer service not implemented |

| 68 | ACM equal to or greater than ACMmax |
|----|-------------------------------------|
| 69 | requested facility not implemented |
| 70 | only restricted digital information bearer capability is available |
| 79 | service or option not implemented, unspecified |
| 81 | invalid transaction identifier value |
| 87 | user not member of CUG |
| 88 | incompatible destination |
| 91 | invalid transit network selection |
| 95 | semantically incorrect message |
| 96 | invalid mandatory information |
| 97 | message type non-existent or not implemented |
| 98 | message type not compatible with protocol state |
| 99 | information element non-existent or not implemented |
| 100 | conditional IE error |
| 101 | message not compatible with protocol state |
| 102 | recovery on timer expiry |
| 111 | protocol error, unspecified |
| 127 | interworking, unspecified |
|  |  |

## Appendix D

Specific failure cause for +CEER

| Cause value | Diagnostic |
|-------------|------------|
| 244 | normal |
| 245 | alternate call unsuccessful modify |
| 246 | mobile originated unsuccessful call setup |
| 247 | mobile terminated unsuccessful call setup |
| 248 | unsuccessful in-call-modification |
| 249 | normal user request |
| 250 | last call release |
| 251 | last data call release |
| 252 | unsuccessful GPRS attach |
| 253 | GPRS detach |
| 254 | unsuccessful PDP context activation |
| 255 | PDP context deactivation |