



# **CMS91-900/1800 GSM/GPRS Module**

## **AT Commands Specification**

Version 2.15

February, 2003

Reference: CMS91-900/1800.ST.Spec\_AT

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# 1 Introduction

## 1.1 Purpose

This document describes AT commands supported by the CMS91-900/1800 GSM/GPRS module. The AT commands can be used by any external terminal equipment to control and access the module's GSM/GPRS wireless functions through a serial link.

## 1.2 Scope

- AT functionality
- AT commands syntax and usage

## 1.3 Using the CMS91 module documentation set

The suggested reading order of the CMS91 module document set is:

1. **Functional Specification** (reference [\[5\]](#))  
Defines the features supported by the CMS91 module.
2. **Hardware Specification** (reference [\[4\]](#))  
Describes the hardware architecture, connectors, external interfaces, design rules.
3. **AT Command Set** (this document)  
Describes the AT commands supported by the CMS91 module.
4. **Development Kit User Guide**  
Describes the development kit, which can be used to evaluate the module and integrate the module into your system.
5. **Cellon Mobile Director User Guide**  
Describes a Windows application that shows the features and functionality of the module.

## 1.4 Document history

**Table 1 Document history**

Version	Date	Status	Modification
0.1	26 Oct 01	Draft	First draft
0.1a	15 Nov 01	Draft	<ol style="list-style-type: none"> <li>1. Corrected mistakes</li> <li>2. Added Appendixes</li> </ol>
1	4 Jan 02	Draft	<ol style="list-style-type: none"> <li>1. Added AT command summary</li> <li>2. Categorized AT commands by function</li> <li>3. Added explanation for parameter &lt;storage&gt; in +CPBS</li> <li>4. Added AT command examples</li> </ol>
1.0a	9 Jan 02	Draft	Removed unrelated documentation references.
1.1	21 Mar 02	Draft	<ol style="list-style-type: none"> <li>1. Added specifications for GCAP, CIND, S1, S6, S8, S11, &amp;K, B, N, A, T, CMSS, FTS, FRS, CGREG, CPIN, CLCK, CCFC, CLIP, CLIR, CSSN, CBMI, CMGC, CGATT</li> <li>2. Added parameter range for CEER</li> <li>3. Adjusted parameter ranges for CRLP, L, CMER, COPS, CMGD, CMGL, CMGR, CNMI, CSMS, ICF, CGDCONT, 'D'.</li> <li>4. Modified restrictions for A, D, CMGS, CNMI</li> <li>5. Corrected parameter for CGDADDR</li> </ol>
1.2	24 Apr 02	Draft	<ol style="list-style-type: none"> <li>1. Adjusted the document format.</li> <li>2. Modified the examples of AT command</li> </ol>
1.3	7 May 02	Draft	<ol style="list-style-type: none"> <li>1. Deleted CMGC and CGDATA.</li> <li>2. Added under development AT command summary</li> <li>3. Added CSSN code 2</li> </ol>
1.3a	14 May 02	Draft	Removed CMT, and CIND in URC.
1.3b	31 May 02	Draft	Added Personalization of CLCK
1.3d	05 Jul 02	Draft	<ol style="list-style-type: none"> <li>1. Added &amp;R, CALM, CIMI, CLAC, CLCC, CMUT, COPN, CPOL, CVHU, VTD, VTS</li> <li>2. Modified CCFC, CRING</li> </ol>
1.4	19 Aug 02	Draft	<ol style="list-style-type: none"> <li>1. Deleted N, &amp;C, &amp;R, &amp;S</li> <li>2. Added CCWA, CHLD, CUSD, CPWD, CMAR, CFUN, CSCB, CRSL, PPWHOST, PPRD, PPURC, PPUSMS, PPRAT, PPTONE, PPSPKR, COLP, PPSTAC, PPSTIR, PPSTGI, PPSTUR</li> <li>3. Added CMAR restoration list</li> </ol>
1.4a	23 Aug 02	Draft	Modified baud rate in +IPR

Version	Date	Status	Modification
1.4b	26 Sep 02	Draft	<ol style="list-style-type: none"> <li>Listed under development AT commands. Modified some supported parameters</li> <li>Updated +PPURC table</li> <li>Added 1200 bps, 2400bps, 4800bps in +IPR auto-bauding</li> </ol>
1.4e	10 Oct 02	Draft	<ol style="list-style-type: none"> <li>Modified STK AT command</li> <li>Added +PPVMS, +PPSMSM, +PPDWL, +PPGMI, +PPGMM</li> <li>Updated +PPURC, +GMI, +GMM</li> </ol>
2.1	15 Nov 02	Released	Used new layout. Miscellaneous edits. Changes to appendix.
2.11	18 Nov 02		Fixed problems with figures.
2.12	25 Nov 02		<ol style="list-style-type: none"> <li>Expanded list of references</li> <li>Updated +CBST, +CCFC, +CGSMS, +CIND, +CLVL, +CMAR, +CMGR, +CMGW, +CNMI, +CPBS, +CPWD, +CSCB, +CSCS, +CSMP, +CSQ, +CUSD, +PPURC, Z</li> <li>Added examples to +CCFC, +CGDCONT, +CLIP, +COLP</li> <li>Added sections "Example of Supplementary Services", "Associated AT commands".</li> <li>Edited Table 43 (&lt;fo&gt; and &lt;vp&gt; entries)</li> <li>Added Table 40 "Default values restored by +CMAR".</li> <li>Minor changes to various other sections</li> </ol>
2.13	Dec02		<ol style="list-style-type: none"> <li>Updated A, +CBC, +CBST, +CGACT, +CGDCONT, +CHUP, +CLAM, +CLVL, +CMGS, +CMGW, +CNMI, +CNUM, +COPN, +CRC, +CSCS, +CSMP, +CSQ, +CVHU, D*, +GCAP, +PPDWL, +PPGMI, +PPGMM, +PPSTAC, +PPSTGI, +PPURC, +PPVMS, &amp;V, Table 36 (added +CGREG), Table 39 and Table 40 (added +CRLP and +CEER), Table 43 (&lt;fo&gt;).</li> <li>Added examples to +CPBF, +CPBR, +CPBW.</li> <li>Minor wording changes to +CCFC, +CREG, +GMM, +GMR, +GSN.</li> <li>Removed "under development" references</li> </ol>
2.14	23Dec02		<ol style="list-style-type: none"> <li>Added +PPLT</li> <li>Modified +PPURC</li> </ol>
2.15	Feb03		<ol style="list-style-type: none"> <li>Modified the index, +CHLD, +CMGD, +CMGW, +CMSS, +COLP, +CPOL, &amp;D, +GCAP, +IFC, &amp;K, +PPGMI, +PPSTAC, +PPSTGI, +PPTONE, S7, section "Command line format", Figure 2.</li> <li>Removed "Permanent store requirement" tables.</li> <li>Changed cross-references to <a href="#">blue</a>.</li> </ol>

## 1.5 Glossary

**Table 2 Glossary**

<b>Term</b>	<b>Meaning</b>
AT	ATtention; this two character abbreviation is always used to start a command line to be sent from TE to TA
BCD	Binary Coded Decimal
CPHS	Common PCN Handset Specification
DCE	Data Communication Equipment; for example, a fax modem
DTE	Data Terminal Equipment
ETSI	European Telecommunications Standards Institute
HSCSD	High Speed Circuit Switched Data
IMEI	International Mobile Equipment Identity
IRA	International Reference Alphabet (ITUT T.50 [17])
IrDA	Infrared Data Association
ISO	International Standards Organisation
ITU	International Telecommunication Union Telecommunications Standardization Sector
ME	Mobile Equipment, e.g. a GSM phone (equivalent to MS; Mobile Station)
MoU	Memorandum of Understanding (GSM operator joint)
MS	Mobile Station
MSISDN	Mobile Subscriber Integrated Services Digital Network number
MT	Mobile Termination or Mobile Terminated
PCCA	Portable Computer and Communications Association
PDP	Packet Data Protocol
PDU	Packet Data Unit
RDI	Restricted Digital Information
RFU	Reserved for Future Use
RLP	Radio Link Protocol
SIM	Subscriber Identity Module
STK	SIM Application Toolkit
TA	Terminal Adaptor, e.g. a GSM data card (equivalent to DCE; Data Circuit Terminating Equipment)
TE	Terminal Equipment, e.g. a computer (equivalent to DTE; Data Terminal)
TIA	Telecommunications Industry Association
UDI	Unrestricted Digital Information



## 1.6 References

- [1] GSM 07.05: "Digital cellular telecommunication system (Phase 2+); Use of Data Terminal Equipment - Data Circuit terminating Equipment (DTE - DCE) interface for Short Message Service (SMS) and Cell Broadcast Service (CBS)".
- [2] GSM 07.07 (ETS 300 916): "Digital cellular telecommunications system (Phase 2+); AT command set for GSM Mobile Equipment (ME)".
- [3] ITU-T Draft new Recommendation V.25ter: "Serial asynchronous automatic dialing and control".
- [4] CMS91-900/1800 GSM/GPRS Module – Hardware Specification
- [5] CMS91-900/1800 GSM/GPRS Module – Functional Specification
- [6] GSM 02.30: "Digital cellular telecommunication system (Phase 2+); Man Machine Interface (MMI) of the Mobile Station (MS)"
- [7] GSM 03.38: "Digital cellular telecommunication system (Phase 2+); Alphabet and language specific information"
- [8] GSM 02.82: "Digital cellular telecommunication system (Phase 2+); Call Forwarding (CF) supplementary services - Stage 1"
- [9] GSM 02.83: "Digital cellular telecommunication system (Phase 2+); Call Waiting (CW) and Call Hold (HOLD) supplementary services - Stage 1"
- [10] GSM 04.08: "Digital cellular telecommunication system (Phase 2+); Mobile radio interface layer 3 specification"
- [11] GSM 02.90: "Digital cellular telecommunication system (Phase 2+); Stage 1 description of Unstructured Supplementary Service Data (USSD)"
- [12] GSM 02.88: "Digital cellular telecommunication system (Phase 2+); Call Barring (CB) supplementary services - Stage 1"
- [13] 3GPP TS 11.14 V8.11.0. "Specification of the SIM Application Toolkit for the Subscriber Identity Module - Mobile Equipment (SIM - ME) interface"
- [14] 3GPP TS 27.007 V3.6.0 "Technical Specification Group Terminals; AT command set for User Equipment (UE)"
- [15] ETSI TS 101 267 "Digital cellular telecommunications system (Phase 2+); Specification of the SIM Application Toolkit for the Subscriber Identity Module - Mobile Equipment (SIM - ME) interface"
- [16] 3GPP TS 23.038 "3rd Generation Partnership Project; Alphabet and language specific information"
- [17] ITU-T Recommendation T.50: "International Reference Alphabet (IRA) (Formerly International Alphabet No. 5 or IA5) - Information technology - 7-bit coded character set for information exchange"

- [18] ETS 300 901 “Digital cellular telecommunications system (Phase 2+) (GSM); Technical realization of Short Message Service (SMS) Point-to-Point (PP) (GSM 03.40 version 5.8.1 Release 1996)”

## 1.7 Definitions used in this document

**Table 3 Definitions**

	Meaning
<CR>	Carriage return character. This value is specified with the command <a href="#">S3</a> .
<LF >	Linefeed character. This value is specified with the command <a href="#">S4</a> .
<...>	A syntactical element. The brackets do not appear in the command line.
[...]	Optional subparameter of a command or an optional part of TA information response. The brackets do not appear in the command line. When subparameter is not given in <i>parameter type</i> commands, new value equals to its previous value. In <i>action type</i> commands, action should be done on the basis of the recommended default setting of the subparameter.
Default value	Recommended default setting of the subparameter. In <i>parameter type</i> commands, this value should be used in factory settings that are configured by V.25ter <a href="#">[3]</a> command <a href="#">&amp;F</a> . In <i>action type</i> commands, this value should be used when the subparameter is not given.

## 1.8 Conventions used in this document

The AT commands described in this document comply with the GSM/V.25ter Technical Standards, therefore almost all the definition of AT commands must be derived from the original GSM/V.25ter Technical Standards (references [\[1\]](#), [\[2\]](#) and [\[3\]](#)). As a result, the following terms can be found throughout the document:

- ME (Mobile Equipment)
- MS (Mobile Station)
- TA (Terminal Adapter)
- DCE (Data Communication Equipment)
- DCE (FAX modem)
- TE (Terminal Equipment)

- DTE (Data Terminal Equipment)

## 1.9 Assumptions

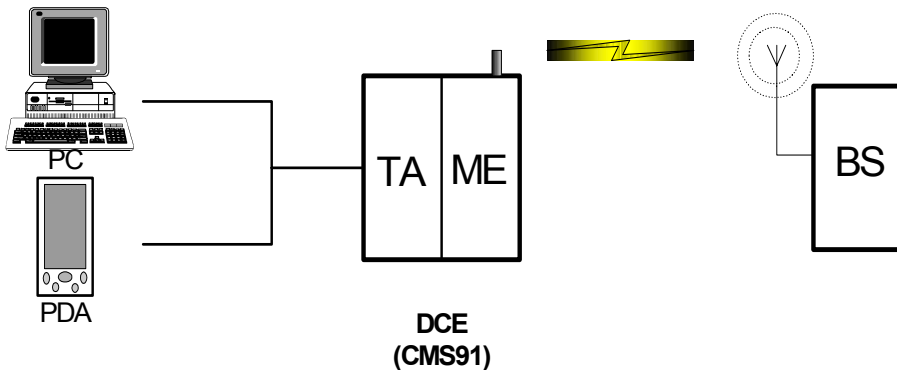
This document assumes that the ME, TA and DCE are the same entity – the CMS91 module. This means that the CMS91 module is:

- MS
- DCE
- TA + ME

This document also assumes TE and DTE to be any external equipment or device (for example, a PC or PDA).

This document also assumes an abstract architecture consisting of an external terminal equipment (TE / DTE) and the CMS91 module (TA/ME/DCE). The interface between the two entities is AT commands over RS232 serial link. The external terminal equipment can use AT commands to control the module and use GSM/GPRS services. This is illustrated in Figure 1.

**Figure 1 Abstract architecture**



# 2 AT command overview

This section describes general aspects of AT commands. For more information, see reference [3].

## 2.1 Command line format

Figure 2 shows the general structure of a command line. Standardized *basic* commands are found only in V.25ter [3]. GSM/GPRS commands use syntax rules of *extended* commands. Most of the extended commands have a *test command* (trailing=?) to test the existence of the command and to give information about the type of its subparameters. *Parameter type* commands also have a *read command* (trailing?) to check the current values of subparameters. *Action type* commands do not store the values of any of their possible subparameters, and therefore do not have a read command.

**Table 4 Basic and extended commands**

	<b>Examples</b>	<b>Comments</b>
Basic command	One command: ATCMD1  Two commands; the second has a subparameter ("12"): ATCMD1 CMD2=12	Standardized basic commands are found only in V.25ter [3]. No "+" prefix.  If several commands are used on one line, they can optionally be separated by a tab character or space.
Extended command	One command: AT+CMD1  Two commands: the second command has the first and second subparameters omitted: AT+CMD1; +CMD2=,15;	Extended commands start with a "+".  If several commands are used on one line, they must be separated by ";".

When a basic command is followed by an extended command, no delimiter is required between the commands (optionally you can use a tab character or space). For example: **ATCMD1+CMD2;**

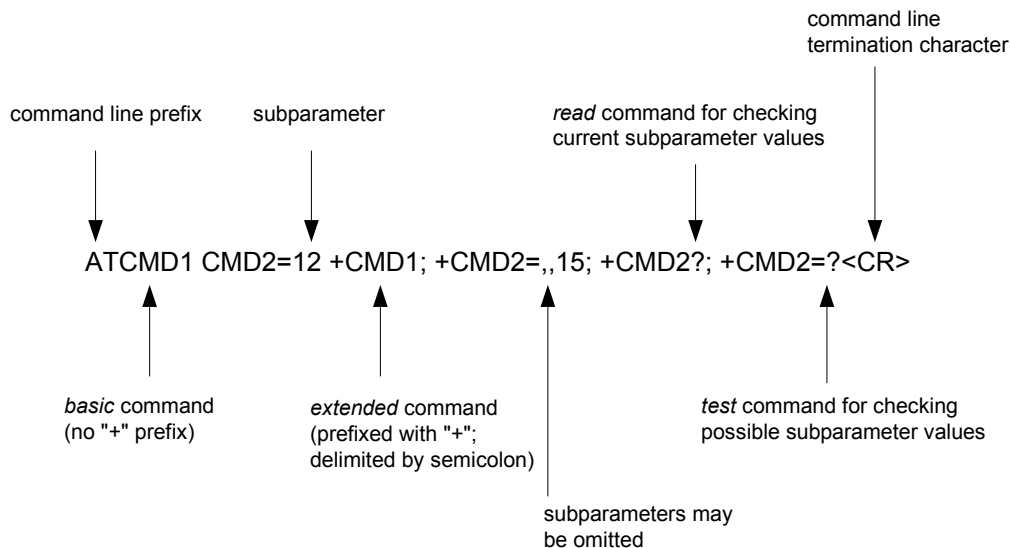
When an extended command is followed by a basic command, ";" is required between the commands. For example: **AT+CMD1;CMD2;**

If a command expects <number> (<command><number>) and it is missing (<command> is immediately followed in the command line by another <command> or the termination character), the value "0" is assumed. For example, **ATI** is accepted as **ATIO**.

**Table 5 Types of commands**

	Examples	Comments
Set command	AT+CMD1=,,15;	The first and second subparameters are omitted.
Test command	AT+CMD2=?	Tests the existence of a command, and returns the supported values for the subparameters.
Read command	AT+CMD2?	Returns the current values of subparameters. Only parameter type commands have a read command. Action type commands do not have a read command.

**Figure 2 Command line format**



## 2.2 Syntax rules

A command string must start with "AT" or "at", except for the commands "A/" and "+++".

Several commands can be given in one command string.

An AT command string is limited to a length of 200 bytes; the response line is limited to 600 bytes.

Commands and command strings must be terminated with a <CR>, except for the commands "A/" and "+++".

To correct an error while typing a command, use the <backspace> key (determined by the [S5](#) command).

## 2.3 Syntax check for multiple commands in one AT string

### 2.3.1 Result and response

#### 2.3.1.1 Success

If no error is encountered, each command is executed, and its intermediate result code, if any, is returned to the host sequentially.

**OK** as the final result code is returned to the host only after all commands have been successfully executed.

#### 2.3.1.2 Total failure

If any syntax error is detected at level 1 syntax checking (described in the following section), the whole command string is aborted; no command is executed. The final result code **error** is returned.

#### 2.3.1.3 Partial failure

If any error is encountered at level 2 syntax checking of command(x) or during the command(x) execution, the command string is aborted. However, all the commands in the command line before command(x) (that is, command1, command2, ... command(x-1)) are executed, and the intermediate results, if any, are returned to the host.

The final result code **error** is returned. (OK is not returned.)

**Constraint:** The error can't tell which AT command is incorrect and causes the command string to be aborted.

### 2.3.2 Syntax check rule

There are two levels of the syntax check, **level one** for the whole command line string and **level two** for each individual command. The level two starts only after the level one is passed.

### 2.3.2.1 Level one syntax checking

The 1st valid character following AT shall be one of +, \*, #, &, A-Z, <space>, <tab>, <CR>.

If a command line contains a basic command, the valid character in it shall be one of:

0-9 A-Z & = ? <tab> <space>

If a command line contains an extended AT command which is started with +, the valid character in it should be one of:

= ? ; <CR> A-Z 0-9 ! % - . ' / :

The extended command must be delimited by semicolon ";". The semicolon is not required after the last command on the command line.

For example, for a command line of

"**AT+CMGF=?;s0=1;+PPTONE=?**", "ERROR" would be returned due to an invalid semicolon at the end of the basic command s0=1.

### 2.3.2.2 Level two syntax checking (for each individual command)

The following is checked:

- Is the command name valid and supported
- Is the command parameter valid and supported

For example, for the command line of

"**AT+CMGF=?;ats0+1;+PPTONE=?**", **AT+CMGF** is executed correctly, followed by a ERROR due to "**s0**" not completing validation (missing =x or ?).

### 2.3.2.3 Error message

The syntax error information can have three formats, depending on the [+CMEE](#) setting (page 41):

- - If +CMEE=0, it returns **ERROR**
- - If +CMEE=1, it returns **+CME ERROR: 303**
- - If +CMEE=2, it returns **+CME ERROR: operation not allowed**

## 2.4 Responses from CMS91-900/1800 to DTE

The CMS91 module can issue two types of responses:

- Information text responses
- Result codes

## 2.4.1 Information text responses

Information text responses consist of:

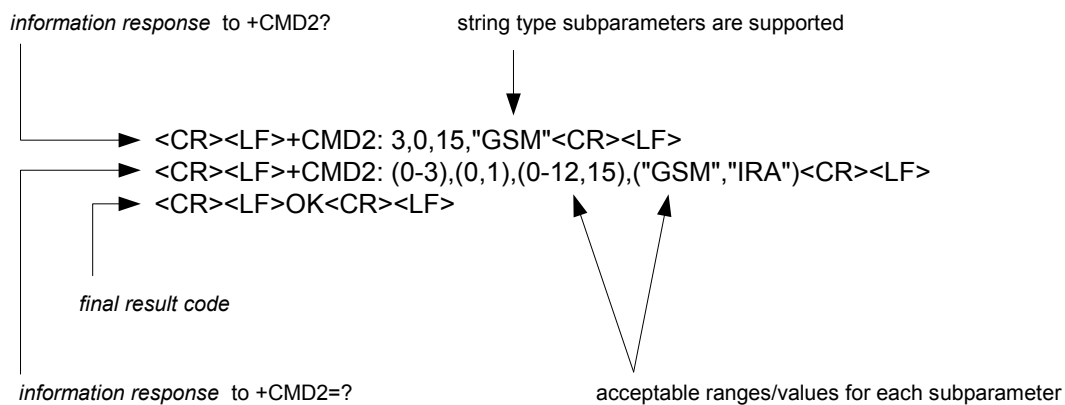
- Header
- Text
- Trailer

The structure of the header is determined by the setting of the **V** command. The default value is `<CR><LF>`. For details, see the **V** command (page 175).

The trailer consists of two characters: `<CR><LF>`.

For example, a response to the command line shown in [Figure 2](#) is shown in Figure 3. Here, verbose response format is enabled with the command **V1**.

**Figure 3 Response to a command line**



In this example:

- Header: `<CR><LF>`
- Text: Characters enclosed between the `<CR><LF>` characters at the beginning (header) and end (trailer) of each line
- Trailer: `<CR><LF>`

---

**NOTE:** If numeric format **V0** were used, `<CR><LF>` headers of *information text responses* would have been left out, and the *final result code* in Figure 3 would be changed to `0<CR>`.

---



## 2.4.2 Result codes

### 2.4.2.1 Result code formats

Result codes can be in these formats:

- Verbose
- Numeric

The format can be selected through the [V](#) command (page 175) or [+CMEE](#) command (page 41).

The result codes are listed in “[Appendix A—Result codes](#)” (page 189).

### 2.4.2.2 Result code types

Result codes are of the following types:

- Final
- Intermediate
- Unsolicited

### 2.4.2.3 Final result code

A final result code indicates the completion of a DCE action and the DCE is ready to accept new commands from the DTE.

A final result code can be one of the following:

- Successful result code
- Failure result code

For a complete listing, see [Table 34](#) (page 194).

**Table 6 Final result code**

Result code	Description
<b>Successful result code</b>	
<CR><LF>OK<CR><LF>	Sent from the CMS91 module to the host when: <ul style="list-style-type: none"> <li>• Verbose responses are enabled (through the command <a href="#">V1</a> (for V.25ter)) and</li> <li>• The command has been performed successfully.</li> </ul>
0<CR>	Sent from the CMS91 module to the host when: <ul style="list-style-type: none"> <li>• Numeric responses are enabled (through the command <a href="#">V0</a>) and</li> <li>• The command has been performed successfully</li> </ul>

Result code	Description
<b>Failure result code (NOTE: No subsequent commands in the command line are processed.)</b>	
<CR><LF>ERROR<CR><LF>	Sent from the CMS91 module to the host when verbose responses are enabled (through the command V1) and any of the following conditions are true: <ul style="list-style-type: none"> <li>• The AT command is not valid</li> <li>• Mandatory parameters are missing</li> <li>• The parameters are not correct. (See section 2.5 on page 15.)</li> <li>• The parameter is not supported</li> </ul>
4<CR>	Sent from the CMS91 module to the host when numeric responses are enabled (through the command V0) and any of the following conditions are true: <ul style="list-style-type: none"> <li>• The AT command is not valid</li> <li>• Mandatory parameters are missing</li> <li>• The parameters are not correct. (See section 2.5 on page 15.)</li> <li>• The parameter is not supported</li> </ul>
+CME ERROR: <err>	The error relates to ME operation or network. For possible error codes, see <a href="#">Table 33</a> on page 191.

#### 2.4.2.4 Intermediate result code

An intermediate result code is a report of the progress of a DCE action. The **CONNECT** result code is an intermediate result code. In the case of a dialing or answering command, the DCE moves from command state to online data state, and issues a **CONNECT** result code. This is an intermediate result code for the DCE because it is not prepared to accept commands from the DTE while in online data state. When the DCE moves back to the command state, it then issues a final result code (such as **OK** or **NO CARRIER**).

The intermediate code can be enabled and disabled by the **+CR** command (page 163).

#### 2.4.2.5 Unsolicited result code

An unsolicited result code is a report message sent from the CMS91 module to the host. It can either be delivered automatically when an event occurs or as a result of a query the CMS91 module received before. An unsolicited result code (such as **RING**) indicates the occurrence of an event not directly associated with the issuance of a command from the DTE.

## 2.5 Input parameters

To prevent and troubleshoot errors caused by incorrect parameters in the AT commands:

- Use the correct format for each parameter (for example, digits or a string).
- If the parameter is a string, check its length and its characters. For a phone number, check that the string contains only digits.
- Check whether the value is allowed. (Use the test command (trailing =? characters)).
- If the parameter is an index, its value must be different from 0.

## 2.6 AT command categories and types

### 2.6.1 AT command categories

- [General commands](#)
- [GSM telephony commands](#)
- [Supplementary Service commands](#)
- [Phonebook commands](#)
- [Security commands](#)
- [ME control and status commands](#)
- [Network service related commands](#)
- [SMS commands](#)
- [STK commands](#)
- [Fax and data commands](#)
- [Interface commands](#)
- [GPRS commands](#)
- [Audio commands](#)
- [Commands that are compliant but have no effect](#)
- [Proprietary commands](#)

### 2.6.2 AT command types

AT commands are of two types.

- Basic commands (defined in V.25ter – reference [3])
- Extended commands (prefixed with a '+' character) - used by GSM/GPRS

The extended commands are normally composed of 3 kinds of subcommands

- Set command, terminated by the character '=' (for example, **+CSMS=**)
- Test command, terminated by the characters '=?' (for example, **+CSMS=?**)
- Read command, terminated by the character '?' (for example, **+CSMS?**)

---

**NOTE:** Not all extended commands have all three subcommands.

---

## **2.7 Limitations and restrictions**

### **2.7.1 Limitations**

#### **2.7.1.1 SMS limitation**

The AT commands of the CMS91 module do not currently support Block Mode (binary protocol).

Text mode (a character-based interface based on AT commands) and PDU mode (a character-based interface with hex-encoded binary transfer of message blocks) are supported.

### **2.7.2 Restrictions**

Some AT commands have implementation restrictions that are described in the “Specification restriction” section of each individual command.

# 3 AT command summary

## 3.1 By function

### 3.1.1 General commands

**Table 7 General commands**

<b>Command</b>	<b>Description</b>	<b>Standard</b>
+CEER	Extended error report	GSM 07.07
+CGMI	Request manufacturer identification	GSM 07.07
+CGMM	Request model identification	GSM 07.07
+CGMR	Request revision date	GSM 07.07
+CGSN	Request product serial number	GSM 07.07
+CIMI	Request international mobile subscriber identity (to identify SIM)	GSM 07.07
+CLAC	List all available AT commands	GSM 07.07
+CMEE	Report ME errors	GSM 07.07
+CSCS	Select TE character set	GSM 07.07
+FCLASS	Select data or fax mode	GSM 07.07
+GCAP	Complete capabilities list	GSM 07.07
+GMI	Request manufacturer identification	V25ter
+GMM	Request model identification	V25ter
+GMR	Request revision date	V25ter
+GSN	Request product serial number	V25ter
+PPGMI	Change manufacturer identification	Proprietary
+PPGMM	Change model identification	Proprietary
I	Request identification information	V25ter

### 3.1.2 GSM telephony commands

**Table 8 GSM telephony commands**

<b>Command</b>	<b>Description</b>	<b>Standard</b>
+CHUP	Hang up call	GSM 07.07
+CMOD	Call mode	GSM 07.07
+CSTA	Select type of address (international or national)	GSM 07.07
+PPRD	Redial last call	Proprietary
+PPVMS	Voice mail dialing number	Proprietary
A	Answer	V25ter
A/	Repeat last command	V25ter
D	Dial command	V25ter
H	Hang-up	V25ter
O	Switch from command mode to data mode	V25ter
S0	Automatic answer	V25ter
S1	Ring counter	
S7	Connection completion timeout	V25ter

### 3.1.3 Supplementary Service commands

**Table 9 Supplementary Service commands**

<b>Command</b>	<b>Description</b>	<b>Standard</b>
+CCFC	Call forwarding number and conditions	GSM 07.07
+CCWA	Call waiting (URC)	GSM 07.07
+CHLD	Call related supplementary services	GSM 07.07
+CLCC	List current calls	GSM 07.07
+CLIP	Calling line identification presentation	GSM 07.07
+CLIR	Calling line identification restriction	GSM 07.07
+COLP	Connected Line Identification Presentation	GSM 07.07
+CSSN	Supplementary service notifications	GSM 07.07
+CUSD	Unstructured supplementary service data	GSM 07.07
+CVHU	Selects whether ATH or "OFF DTR" shall cause a voice connection to be disconnected or not.	GSM 07.07

### 3.1.4 Phonebook commands

**Table 10 Phonebook commands**

Command	Description	Standard
+CNUM	Subscriber number	GSM 07.07
+CPBF	Find phonebook entries	GSM 07.07
+CPBR	Read phonebook entries	GSM 07.07
+CPBS	Select phonebook memory storage	GSM 07.07
+CPBW	Write phonebook entry	GSM 07.07

### 3.1.5 Security commands

**Table 11 Security commands**

Command	Description	Standard
+CLCK	Facility lock	GSM 07.07
+CPIN	Enter PIN	GSM 07.07
+CPWD	Change password	GSM 07.07
+PPRAT	PIN remaining attempts number	Proprietary

### 3.1.6 ME control and status commands

**Table 12 ME control and status commands**

Command	Description	Standard
&F	Restore factory settings	V25ter
&V	Display configuration	
&W	Save configuration	
+CALM	Alert sound mode	GSM 07.07
+CBC	Battery charge	GSM 07.07
+CCLK	Clock	GSM 07.07
+CFUN	Set phone functionality	GSM 07.07
+CIND	Indicator control	GSM 07.07
+CMAR	Master reset	GSM 07.07
+CMEC	Mobile equipment control mode	GSM 07.07
+CMER	Mobile equipment error reporting	GSM 07.07

Command	Description	Standard
+CPAS	Phone activity status	GSM 07.07
+CSQ	Signal quality	GSM 07.07
+PPDWL	Firmware download	Proprietary
+PPLT	Total time the module has been in calls	Proprietary
+PPURC	Extended unsolicited result code	Proprietary
+PPWHOST	Host wakeup indication mode (ring indication)	Proprietary
Z	Reset to default configuration	V25ter

### 3.1.7 Network service related commands

**Table 13 Network service related commands**

Command	Description	Standard
+COPN	Read operator name	GSM 07.07
+COPS	Select operator	GSM 07.07
+CPOL	Edit the SIM preferred list of networks	GSM 07.07
+CREG	Register with the network	GSM 07.07

### 3.1.8 SMS commands

**Table 14 SMS commands**

Command	Description	Standard
+CMGD	Delete message	GSM 07.05
+CMGF	Preferred message format	GSM 07.05
+CMGL	List message	GSM 07.05
+CMGR	Read message	GSM 07.05
+CMGS	Send message	GSM 07.05
+CMGW	Write message to memory	GSM 07.05
+CMSS	Send message from storage	GSM 07.05
+CNMI	New message indication	GSM 07.05
+CPMS	Preferred message storage	GSM 07.05
+CRES	Restore settings	GSM 07.05
+CSAS	Save settings	GSM 07.05



Command	Description	Standard
+CSCA	Service center address	GSM 07.05
+CSCB	Select cell broadcast message type	GSM 07.05
+CSDH	Show text mode parameters	GSM 07.05
+CSMP	Set text mode parameters (to set the validity period)	GSM 07.05
+CSMS	Select message service	GSM 07.05
+PPSMSM	Request SMS memory status	Proprietary
+PPUSMS	Unchanged SMS status	Proprietary

### 3.1.9 STK commands

Table 15 STK commands

Command	Description	Standard
+PPSTAC	STK activation and configuration	Proprietary
+PPSTGI	STK get information	Proprietary
+PPSTIR	STK indication and request (URC)	Proprietary
+PPSTUR	STK user response	Proprietary

### 3.1.10 Fax and data commands

Table 16 Fax and data commands

Command	Description	Standard
#CLS	Microsoft specific ( = +FCLASS)	
+CBST	Select the bearer type	GSM 07.07
+CR	Service reporting control	GSM 07.07
+CRC	Cellular result codes	GSM 07.07
+CRLP	Radio link protocol parameters	GSM 07.07
+FMI	Request manufacturer identification	ITU-T.32
+FMM	Request model identification	ITU-T.32
+FMR	Request revision identification	ITU-T.32
+FRH	Receive HDLC Data with <MOD> carrier	ITU-T.31
+FRM	Receive Data with <MOD> carrier	ITU-T.31
+FRS	Receive silence	ITU-T.31

Command	Description	Standard
+FTH	Transmit HDLC Data with <MOD> carrier	ITU-T.31
+FTM	Transmit Data with <MOD> carrier	ITU-T.31
+FTS	Transmit silence	ITU-T.31

### 3.1.11 Interface commands

**Table 17 Interface commands**

Command	Description	Standard
&D	DTR behavior	V25ter
&K	Flow control option	V25ter
+ICF	DTE-DCE character framing	V25ter
+IFC	DTE-DCE local flow control	V25ter
+IPR	Fixed DTE rate	V25ter
E	Echo	V25ter
Q	Result code suppression	V25ter
S2	Escape character	
S3	Command line termination character	V25ter
S4	Response formatting character	V25ter
S5	Command line editing character	V25ter
V	DCE response format	V25ter
W	Extended result code	
X	Result code selection and progress monitoring control	V25ter

### 3.1.12 GPRS commands

**Table 18 GPRS commands**

Command	Description	Standard
+CGACT	PDP context activate	GSM 07.07
+CGATT	Perform a GPRS attach or detach	GSM 07.07
+CGCLASS	GPRS mobile station class	GSM 07.07
+CGDCONT	Define PDP context	GSM 07.07
+CGPADDR	Show PDP address	GSM 07.07

Command	Description	Standard
+CGQMIN	Quality of service profile (minimum acceptable)	GSM 07.07
+CGQREQ	Quality of service profile (requested)	GSM 07.07
+CGREG	GPRS network registration status	GSM 07.07
+CGSMS	Select service for MO SMS message	GSM 07.07
D*	Request GPRS service	GSM 07.07

### 3.1.13 Audio commands

**Table 19 Audio commands**

Command	Description	Standard
+CLVL	Speaker volume control	GSM 07.07
+CMUT	Enable and disable the uplink voice muting during a voice call	GSM 07.07
+CRSL	Ring sound level	GSM 07.07
+PPDTONE	Play tone during call setup	Proprietary
+PPSPKR	Speaker & microphone selection	Proprietary
+PPTONE	Play tone locally	Proprietary
+VTD	Tone duration	GSM 07.07
+VTS	DTMF and tone generation	GSM 07.07

### 3.1.14 Commands that are compliant but have no effect

**Table 20 Commands that are compliant but have no effect**

Command	Description	Standard
B	Communication option	
L	Monitor speaker loudness	V25ter
M	Monitor speaker mode	V25ter
P	Select pulse dialing	V25ter
S10	Automatic disconnect delay	V25ter
S11	DTMF dialing speed	
S6	Pause before blind dialing	V25ter
S8	Comma dial modifier time	V25ter
T	Tone dialing	V25ter

### 3.1.15 Proprietary commands

**Table 21 Proprietary commands**

Command	Description	Standard
+PPDTONE	Play tone during call setup	Proprietary
+PPDWL	Firmware download	Proprietary
+PPGMI	Change manufacturer identification	Proprietary
+PPGMM	Change model identification	Proprietary
+PPLT	Total time the module has been in calls	Proprietary
+PPRAT	PIN remaining attempt number	Proprietary
+PPRD	Redial last call	Proprietary
+PPSMSM	Request SMS memory status	Proprietary
+PPSPKR	Speaker & microphone selection	Proprietary
+PPSTAC	STK activation and configuration	Proprietary
+PPSTGI	STK get information	Proprietary
+PPSTIR	STK indication and request (URC)	Proprietary
+PPSTUR	STK user response	Proprietary
+PPTONE	Play tone locally	Proprietary
+PPURC	Extended unsolicited result code	Proprietary
+PPUSMS	Unchanged SMS status	Proprietary
+PPVMS	Voice mail service number	Proprietary
+PPWHOST	Host wakeup indication mode (ring indication)	Proprietary

### 3.1.16 Unsolicited result codes

For a complete listing, see [Table 36](#) (page 195).

**Table 22 Unsolicited result codes**

Name	Description	Standard
+CR	Service reporting	GSM 07.07
+CRING	Indication of an incoming call	GSM 07.07
+CMTI	Indication of a new short message	GSM 07.05
+CIEV	Report of an indicated event. (The command +CMER enables/disables the +CIEV reporting.)	GSM 07.07

Name	Description	Standard
+PPURC	Extended unsolicited result code	Proprietary

### 3.1.17 Result codes

**Table 23 Result codes**

Name	Description	Standard
+CME ERRORS	Return error related to GSM 07.07	Rec07_07
+CMS ERRORS	Return error related to GSM 07.05	Rec07_05
BUSY	Remote station busy	V.25
CONNECT	Link established	V.25
CONNECT 9600	Link with 9600 bps	V.25
CONNECT 9600/RLP	Link with 9600 bps and Radio Link Protocol	V.25
ERROR	Invalid command or command line too long	V.25
NO ANSWER	Connection completion timeout	V.25
NO CARRIER	Link not established, or link disconnected	V.25
OK	Command executed, no errors	V.25
RING	Ring detected	V.25

## 3.2 In alphabetic order

Total number of commands: 149.

**Table 24 Commands in alphabetic order**

	Command	Description	Standard	Type
1.	#CLS	Microsoft specific (=+FCLASS)		Fax data
2.	&D	DTR behavior	V25ter	Interface
3.	&F	Restore factory settings	V25ter	ME
4.	&K	Flow control option	V25ter	Interface
5.	&V	Display configuration	Rockwell	ME
6.	&W	Save configuration	Rockwell	ME
7.	+CALM	Alert sound mode	GSM 07.07	ME
8.	+CBC	Battery charge	GSM 07.07	ME

	<b>Command</b>	<b>Description</b>	<b>Standard</b>	<b>Type</b>
9.	<a href="#">+CBST</a>	Bearer type selection	GSM 07.07	Fax data
10.	<a href="#">+CCFC</a>	Call forwarding number and conditions	GSM 07.07	SS
11.	<a href="#">+CCLK</a>	Clock	GSM 07.07	ME
12.	<a href="#">+CCWA</a>	Call waiting (URC)	GSM 07.07	SS
13.	<a href="#">+CEER</a>	Extended error report	GSM 07.07	General
14.	<a href="#">+CFUN</a>	Set phone functionality	GSM 07.07	ME
15.	<a href="#">+CGACT</a>	PDP context activate	GSM 07.07	GPRS
16.	<a href="#">+CGATT</a>	GPRS attach or detach	GSM 07.07	GPRS
17.	<a href="#">+CGCLASS</a>	GPRS mobile station class	GSM 07.07	GPRS
18.	<a href="#">+CGDCONT</a>	Define PDP context	GSM 07.07	GPRS
19.	<a href="#">+CGMI</a>	Request manufacturer identification	GSM 07.07	General
20.	<a href="#">+CGMM</a>	Request model identification	GSM 07.07	General
21.	<a href="#">+CGMR</a>	Request revision date	GSM 07.07	General
22.	<a href="#">+CGPADDR</a>	Show PDP address	GSM 07.07	GPRS
23.	<a href="#">+CGQMIN</a>	Quality of service profile (minimum acceptable)	GSM 07.07	GPRS
24.	<a href="#">+CGQREQ</a>	Quality of service profile (requested)	GSM 07.07	GPRS
25.	<a href="#">+CGREG</a>	GPRS network registration on status	GSM 07.07	GPRS
26.	<a href="#">+CGSMS</a>	Select service for MO SMS message	GSM 07.07	GPRS
27.	<a href="#">+CGSN</a>	Request product serial number	GSM 07.07	General
28.	<a href="#">+CHLD</a>	Call related supplementary services	GSM 07.07	SS
29.	<a href="#">+CHUP</a>	Hang up call	GSM 07.07	Telephony
30.	<a href="#">+CIMI</a>	Request International Mobile Subscriber Identity (to identify SIM)	GSM 07.07	General
31.	<a href="#">+CIND</a>	Indicator control	GSM 07.07	ME
32.	<a href="#">+CLAC</a>	List all available AT commands	GSM 07.07	General
33.	<a href="#">+CLCC</a>	List current calls	GSM 07.07	SS
34.	<a href="#">+CLCK</a>	Facility lock	GSM 07.07	Security
35.	<a href="#">+CLIP</a>	Calling Line Identification Presentation	GSM 07.07	SS
36.	<a href="#">+CLIR</a>	Calling Line Identification Restriction	GSM 07.07	SS
37.	<a href="#">+CLVL</a>	Speaker volume control	GSM 07.07	Audio
38.	<a href="#">+CMAR</a>	Master reset	GSM 07.07	ME
39.	<a href="#">+CMEC</a>	Mobile equipment control mode	GSM 07.07	ME
40.	<a href="#">+CMEE</a>	Report ME errors	GSM 07.07	General
41.	<a href="#">+CMER</a>	Mobile equipment error reporting	GSM 07.07	ME

	<b>Command</b>	<b>Description</b>	<b>Standard</b>	<b>Type</b>
42.	<a href="#">+CMGD</a>	Delete message	GSM 07.05	SMS
43.	<a href="#">+CMGF</a>	Preferred message format	GSM 07.05	SMS
44.	<a href="#">+CMGL</a>	List message	GSM 07.05	SMS
45.	<a href="#">+CMGR</a>	Read message	GSM 07.05	SMS
46.	<a href="#">+CMGS</a>	Send message	GSM 07.05	SMS
47.	<a href="#">+CMGW</a>	Write message to memory	GSM 07.05	SMS
48.	<a href="#">+CMOD</a>	Call mode	GSM 07.07	Telephony
49.	<a href="#">+CMSS</a>	Send message from storage	GSM 07.05	SMS
50.	<a href="#">+CMUT</a>	Enable and disable the uplink voice muting during a voice call	GSM 07.07	Audio
51.	<a href="#">+CNMI</a>	New message indication	GSM 07.05	SMS
52.	<a href="#">+CNUM</a>	Subscriber number	GSM 07.07	PB
53.	<a href="#">+COLP</a>	Connected Line Identification Presentation	GSM 07.07	SS
54.	<a href="#">+COPN</a>	Read operator name	GSM 07.07	Network
55.	<a href="#">+COPS</a>	Operator selection	GSM 07.07	Network
56.	<a href="#">+CPAS</a>	Phone activity status	GSM 07.07	ME
57.	<a href="#">+CPBF</a>	Find phonebook entries	GSM 07.07	PB
58.	<a href="#">+CPBR</a>	Read phonebook entries	GSM 07.07	PB
59.	<a href="#">+CPBS</a>	Select phonebook memory storage	GSM 07.07	PB
60.	<a href="#">+CPBW</a>	Write phonebook entry	GSM 07.07	PB
61.	<a href="#">+CPIN</a>	Enter PIN	GSM 07.07	Security
62.	<a href="#">+CPMS</a>	Preferred message storage	GSM 07.05	SMS
63.	<a href="#">+CPOL</a>	Edit the SIM preferred list of networks	GSM 07.07	Network
64.	<a href="#">+CPWD</a>	Change password	GSM 07.07	Security
65.	<a href="#">+CR</a>	Service reporting control	GSM 07.07	Fax data
66.	<a href="#">+CRC</a>	Cellular result codes	GSM 07.07	Fax data
67.	<a href="#">+CREG</a>	Network registration	GSM 07.07	Network
68.	<a href="#">+CRES</a>	Restore settings	GSM 07.05	SMS
69.	<a href="#">+CRLP</a>	Radio link protocol parameters	GSM 07.07	Fax data
70.	<a href="#">+CRSL</a>	Ring sound level	GSM 07.07	Audio
71.	<a href="#">+CSAS</a>	Save settings	GSM 07.05	SMS
72.	<a href="#">+CSCA</a>	Service center address	GSM 07.05	SMS
73.	<a href="#">+CSCB</a>	Select cell broadcast message type	GSM 07.05	SMS
74.	<a href="#">+CSCS</a>	Select TE character set	GSM 07.07	General

	<b>Command</b>	<b>Description</b>	<b>Standard</b>	<b>Type</b>
75.	<b>+CSDH</b>	Show text mode parameters	GSM 07.05	SMS
76.	<b>+CSMP</b>	Set text mode parameters (to set the validity period)	GSM 07.05	SMS
77.	<b>+CSMS</b>	Select message service	GSM 07.05	SMS
78.	<b>+CSQ</b>	Signal quality	GSM 07.07	ME
79.	<b>+CSSN</b>	Supplementary service notifications	GSM 07.07	SS
80.	<b>+CSTA</b>	Select type of address (international or national)	GSM 07.07	Telephony
81.	<b>+CUSD</b>	Unstructured supplementary service data	GSM 07.07	SS
82.	<b>+CVHU</b>	Selects whether ATH or "OFF DTR" shall cause a voice connection to be disconnected or not.	GSM 07.07	SS
83.	<b>+FCLASS</b>	Select mode	GSM 07.07	General
84.	<b>+FMI</b>	Request manufacturer identification	ITU-T.32	Fax data
85.	<b>+FMM</b>	Request model identification	ITU-T.32	Fax data
86.	<b>+FMR</b>	Request revision identification	ITU-T.32	Fax data
87.	<b>+FRH</b>	Receive HDLC Data with <MOD> carrier	ITU-T.31	Fax data
88.	<b>+FRM</b>	Receive Data with <MOD> carrier	ITU-T.31	Fax data
89.	<b>+FRS</b>	Receive silence	ITU-T.31	Fax data
90.	<b>+FTH</b>	Transmit HDLC Data with <MOD> carrier	ITU-T.31	Fax data
91.	<b>+FTM</b>	Transmit Data with <MOD> carrier	ITU-T.31	Fax data
92.	<b>+FTS</b>	Transmit silence	ITU-T.31	Fax data
93.	<b>+GCAP</b>	Complete capabilities list	GSM 07.07	General
94.	<b>+GMI</b>	Request manufacturer identification	V25ter	General
95.	<b>+GMM</b>	Request model identification	V25ter	General
96.	<b>+GMR</b>	Request revision date	V25ter	General
97.	<b>+GSN</b>	Request product serial number	V25ter	General
98.	<b>+ICF</b>	DTE-DCE character framing	V25ter	Interface
99.	<b>+IFC</b>	DTE-DCE local flow control	V25ter	Interface
100.	<b>+IPR</b>	Fixed DTE rate	V25ter	Interface
101.	<b>+PPDTONE</b>	Play tone during call setup	Proprietary	Audio
102.	<b>+PPDWL</b>	Firmware download	Proprietary	ME
103.	<b>+PPGMI</b>	Change manufacturer identification	Proprietary	General
104.	<b>+PPGMM</b>	Change model identification	Proprietary	General
105.	<b>+PPLT</b>	Total time the module has been in calls	Proprietary	ME



	<b>Command</b>	<b>Description</b>	<b>Standard</b>	<b>Type</b>
106.	<b>+PPRAT</b>	PIN remaining attempt number	Proprietary	Security
107.	<b>+PPRD</b>	Redial last call	Proprietary	Telephony
108.	<b>+PPSMSM</b>	Request SMS memory status	Proprietary	SMS
109.	<b>+PPSPKR</b>	Speaker & microphone selection	Proprietary	Audio
110.	<b>+PPSTAC</b>	STK activation and configuration	Proprietary	STK
111.	<b>+PPSTGI</b>	STK get information	Proprietary	STK
112.	<b>+PPSTIR</b>	STK indication and request (URC)	Proprietary	STK
113.	<b>+PPSTUR</b>	STK user response	Proprietary	STK
114.	<b>+PPTONE</b>	Play tone locally	Proprietary	Audio
115.	<b>+PPURC</b>	Extended unsolicited result code	Proprietary	ME
116.	<b>+PPUSMS</b>	Unchanged SMS status	Proprietary	SMS
117.	<b>+PPVMS</b>	Voice mail dialing number	Proprietary	Telephony
118.	<b>+PPWHOST</b>	Host wakeup indication mode (ring indication)	Proprietary	ME
119.	<b>+VTD</b>	Tone duration	GSM 07.07	Audio
120.	<b>+VTS</b>	DTMF and tone generation	GSM 07.07	Audio
121.	<b>A</b>	Answer	V25ter	Telephony
122.	<b>A/</b>	Repeat last command	V25ter	Telephony
123.	<b>B</b>	Communication option	Rockwell	Compliant
124.	<b>D</b>	Dial command	V25ter	Telephony
125.	<b>D*</b>	Request GPRS service	GSM 07.07	GPRS
126.	<b>E</b>	Echo	V25ter	Interface
127.	<b>H</b>	Hang-up	V25ter	Telephony
128.	<b>I</b>	Request identification information	V25ter	General
129.	<b>L</b>	Monitor speaker loudness	V25ter	Compliant
130.	<b>M</b>	Monitor speaker mode	V25ter	Compliant
131.	<b>O</b>	Switch from command mode to data mode	V25ter	Telephony
132.	<b>P</b>	Select pulse dialing	V25ter	Compliant
133.	<b>Q</b>	Result code suppression	V25ter	Interface
134.	<b>S0</b>	Automatic answer	V25ter	Telephony
135.	<b>S1</b>	Ring counter		Telephony
136.	<b>S10</b>	Automatic disconnect delay	V25ter	Compliant
137.	<b>S11</b>	DTMF dialing speed		Compliant
138.	<b>S2</b>	Escape character		Interface

	<b>Command</b>	<b>Description</b>	<b>Standard</b>	<b>Type</b>
139.	<b>S3</b>	Command line termination character	V25ter	Interface
140.	<b>S4</b>	Response formatting character	V25ter	Interface
141.	<b>S5</b>	Command line editing character	V25ter	Interface
142.	<b>S6</b>	Pause before blind dialing	V25ter	Compliant
143.	<b>S7</b>	Connection completion timeout	V25ter	Telephony
144.	<b>S8</b>	Comma dial modifier time	V25ter	Compliant
145.	<b>T</b>	Tone dialing	V25ter	Compliant
146.	<b>V</b>	DCE response format	V25ter	Interface
147.	<b>W</b>	Extended result code		Interface
148.	<b>X</b>	Result code selection and progress monitoring control	V25ter	Interface
149.	<b>Z</b>	Reset to default configuration	V25ter	ME

# 4 AT command descriptions

## 4.1 General commands

### 4.1.1 Request manufacturer identification +GMI

This command reports information to identify the manufacturer.

#### 4.1.1.1 Syntax

Command	Response
+GMI	Successful: <Manufacturer identifier> Fail: ERROR

#### 4.1.1.2 Examples

Command	Response	Comment
AT+GMI	CELLon	Get manufacturer identification

#### 4.1.1.3 Specification restriction

Name	Description
	The text returned contains the manufacturer name. The default <Manufacturer identifier> is <b>CELLon</b> .

## 4.1.2 Request model identification +GMM

This command reports the model of the module.

### 4.1.2.1 Syntax

Command	Response
+GMM	Successful: <Module identifier> Fail: ERROR

### 4.1.2.2 Examples

Command	Response	Comment
AT+GMM	CMS91	

### 4.1.2.3 Specification restriction

Name	Description
	The model information contains the module name only. The default < Module identifier> is <b>CMS91</b> .

## 4.1.3 Request revision identification +GMR

This command reports the revision date of the module.

### 4.1.3.1 Syntax

Command	Response
+GMR	Successful: dd/mm/yyyy Fail: ERROR

### 4.1.3.2 Parameter

Name	Value	Description
< revision >	dd/mm/yyyy	Product specific value

#### 4.1.3.3 Specification restriction

Name	Description
	The revision information contains the revision date only.

### 4.1.4 Request product serial number identification +GSN

This command reports serial number information of the module.

#### 4.1.4.1 Syntax

Command	Response
+GSN	Successful: <IMEI> Fail: ERROR

#### 4.1.4.2 Parameter

Name	Value	Description
IMEI		International Mobile Station Equipment Identity

#### 4.1.4.3 Specification restriction

Name	Description
	The product serial number identification is the International Mobile Station Equipment Identity.

### 4.1.5 Request manufacturer identification +CGMI

Identical to the [+GMI](#) command (page 31).

### 4.1.6 Request model identification +CGMM

Identical to the [+GMM](#) command (page 32).

### 4.1.7 Request revision identification **+CGMR**

Identical to the [+GMR](#) command (page 32).

### 4.1.8 Request product serial number identification **+CGSN**

Identical to the [+GSN](#) command (page 33).

### 4.1.9 Change manufacturer identification **+PPGMI**

This command can be used to change the manufacturer identification which content can be read by the AT command [+CGMI](#).

---

**NOTE:** This command doesn't appear in the command list when the [+CLAC](#) command is executed to list all available commands.

---

#### 4.1.9.1 Syntax

Type	Command	Response
Set	+PPGMI=<pas>,<str>	Successful: OK Fail: ERROR

#### 4.1.9.2 Parameter

Name	Value	Description
<pas>	String type	The password set by <a href="#">+CPWD</a> (with the parameter "CS"). It uses 4 digits.
<str>	String	The manufacturer identification. The default value is <b>CELLon</b> .

#### 4.1.9.3 Examples

Command	Response	Comment
AT+PPGMI="0000", "CELLon"	OK	Write manufacturer identification "CELLon" to the ME

#### 4.1.9.4 AT commands affected by +PPGMI

+CGMI	I4
+FMI	I5
+GMI	

#### 4.1.9.5 Specification restriction

Name	Description
<str>	The text string length can't be longer than 40 bytes.

### 4.1.10 Change model identification +PPGMM

This command can be used to change the model identification which content can be read by the AT command [+CGMM](#).

---

**NOTE:** This command doesn't appear in the command list when the [+CLAC](#) command is executed to list all available commands.

---

#### 4.1.10.1 Syntax

Type	Command	Response
Set	+PPGMM=<pas>,<str>	Successful: OK Fail: ERROR

#### 4.1.10.2 Parameter

Name	Value	Description
<pas>	String type	The password of the firmware download. The value of the <pas> may be set by <a href="#">+CPWD</a> with the parameter "CS". It is 4 digits.
<str>	String	The model identification. The default value is <b>CMS91</b> .

#### 4.1.10.3 Examples

Command	Response	Comment
AT+PPGMM="0000","CMS91"	OK	

#### 4.1.10.4 AT commands affected by +PPGMM

+CGMM	+GMM
+FMM	I0

#### 4.1.10.5 Specification restriction

Name	Description
<str>	The text string length cannot be longer than 40 bytes.

### 4.1.11 Request identification information I

This command returns mobile identifying information.

Information returned by this command can be obtained through other commands:

Information	Command
Manufacturer name	+GMI (page 31) +CGMI (page 33)
Version number	+GMR (page 32) +CGMR (page 34)
Product name	+GMM (page 32) +CGMM (page 33)

#### 4.1.11.1 Syntax

Command	Response
I[<info>]	Successful: <manufacturer name, the version number, the product name > Fail: ERROR



#### 4.1.11.2 Parameter

Name	Value	Description
<info>		<b>Information</b>
	0	Module identifier
	3	Software version
	4	Manufacturer ID and Module ID
	5	Manufacturer ID

#### 4.1.11.3 Examples

Command	Response	Comment
ATI0	CMS91	

#### 4.1.11.4 Specification restriction

Name	Description
	<p>The text returned contains the manufacturer name, the version number, the product name.</p> <p>The default module identifier is <b>CMS91</b>.</p> <p>The default manufacturer is <b>CELLon</b>.</p>

### 4.1.12 Select mode +FCLASS

This command puts the ME into a particular mode of operation (data or fax). This causes the ME to process information in a manner suitable for that type of information (rather than for other types of information).

#### 4.1.12.1 Syntax

Type	Command	Response
Set	+FCLASS=<mod>	Successful: OK Fail: ERROR
Read	+FCLASS?	+FCLASS: mod
Test	+FCLASS=?	+FCLASS: (0,1)

#### 4.1.12.2 Parameter

Name	Value	Description
<mod>		<b>Mode</b>
	0	Data
	1	Fax

#### 4.1.12.3 Examples

Command	Response	Comment
AT+FCLASS=0	OK	Set the mode to data

#### 4.1.12.4 Specification restriction

Name	Description
<mod>	Mode 0 (data) and mode 1 (fax) are supported.

### 4.1.13 Complete capabilities list +GCAP

This command requests the capabilities of the module.

#### 4.1.13.1 Syntax

Type	Command	Response
Set	+GCAP	Successful: +GCAP: +CGSM, +FCLASS +CGSM: the module supports GSM commands. +FCLASS: the module supports data and fax. Fail: ERROR

### 4.1.14 Select TE character set +CSCS

This command informs the ME which character set <chset> the TE uses. The ME is then able to convert character strings correctly between TE and ME character sets.

#### 4.1.14.1 Syntax

Type	Command	Response
Set	+CSCS=[<chset>]	Successful: OK Fail: ERROR
Read	+CSCS?	+CSCS: <chset>
Test	+CSCS=?	+CSCS: ("IRA", "GSM", "UCS2")

#### 4.1.14.2 Parameter

Name	Value	Description
<chset>	"IRA" "GSM" "UCS2"	International Reference Alphabet (default alphabet) GSM Unicode

#### 4.1.14.3 AT commands affected by +CSCS

+CCWA	+CMER	+CMGS	+CPBF	+CUSD
+CLCC	+CMGL	+CMGW	+CPBR	D>
+CLIP	+CMGR	+CNUM	+CPBW	

#### 4.1.14.4 Notes

<chset> reflects the character set used by the TE for input and output. Normally, the TE uses ASCII Terminal<sup>1</sup> for input and output. Characters are sent to/from the TE (over the serial interface between the TE and the module) as IRA hexadecimal characters.

The setting of character set by +CSCS impacts the text content (such as <str>, <alpha>, <text> in GSM 07.07 and <da>, <oa>, <ra>, <data> in GSM 07.05).

For the effect of <chset> on the storage of SMS messages, see “[SMS data conversion for MO messages](#)” (page 59).

---

<sup>1</sup> For our purposes, ASCII Terminal is similar to IRA.

#### 4.1.14.5 Examples

Example 1:

```
AT+CSCS="UCS2"
AT+CSMP=,,8
AT+CMGW=" 00310033003900310031003500310031003200320032"
Telephone number: 13911511222
Hello! (UCS2)
>00480065006c006c006f0021 <Ctrl-Z>
```

Example 2:

```
AT+CMGR?
+CMGR: "REC READ","+8613911511493","Zhw","02/10/25,09:30:47+32",145,36,0,8,
"+8613800100500",145,12
00620079006500200021   bye<space>!(UCS2)
```

### 4.1.15 Request International Mobile Subscriber Identity +CIMI

This command causes the ME to return <IMSI>, which allows the TE to identify the individual SIM that is attached to ME.

#### 4.1.15.1 Syntax

Type	Command	Response
Set	+CIMI	Successful: <IMSI> Fail: +CME ERROR: <err>

#### 4.1.15.2 Examples

Command	Response	Comment
AT+CIMI	302370114958483	15 digits, start with MCC (302) and MNC (37)

## 4.1.16 List all available AT commands +CLAC

This command causes the ME to return one or more lines of AT commands that are available to the user.

### 4.1.16.1 Syntax

Type	Command	Response
Set	+CLAC	Successful: <AT Command1> [<CR> <LF> <AT Command2>[...]] Fail: +CME ERROR: <err>

## 4.1.17 Report Mobile Equipment error +CMEE

This command selects the mode to report errors.

### 4.1.17.1 Syntax

Type	Command	Response
Set	+CMEE=[<n>]	Successful: OK Fail: +CME ERROR: <err> ERROR
Read	+CMEE?	+CMEE: <n>
Test	+CMEE=?	+CMEE: (0-2)

### 4.1.17.2 Parameter

Name	Value	Description
<n>		<b>Enabling value</b>
	0	Disable +CME ERROR: <err> result code and use ERROR instead. (Default value)
	1	Enable +CME ERROR: <err> result code and use numeric <err> values
	2	Enable +CME ERROR: <err> result code and use verbose <err> values

#### 4.1.17.3 Examples

Command	Response	Comment
AT+CMEE=?	+CMEE: (0-2)	

### 4.1.18 Extended error report +CEER

This command causes the ME to return one or more lines of information text <report>, which contain an extended report of the reason of the failure in the last unsuccessful call setup (originating or answering) or in-call modification, or the reason for last call release.

#### 4.1.18.1 Syntax

Type	Command	Response
Set	+CEER	Successful: +CEER: <report> Fail: ERROR
Test	+CEER=?	OK

#### 4.1.18.2 Parameter

Name	Value	Description
<report>	Cause Select: <cause_select> Cause: <cause>	<cause_select> is the location that reports or generated the error. <cause> is the reason of an error

#### Parameter range:

<cause_select>	<cause>
0: No cause	0: No cause
16: Service provider	0: Unknown 1: Not allowed 2: No cause 6: Wrong parameter 9: Network access not allowed 20: All call instances are used 21: ACM over ACM Max

<b>&lt;cause_select&gt;</b>	<b>&lt;cause&gt;</b>
	22: Invalid AOC element 23: SIM increase not allowed 24: Switch off 25: Unknown call ID 28: Barred
25: DCM cause	5: GPRS already used
26: IP stack cause	0: Authentication 1: Bad configuration 2: IP server problem 3: IP unspecified error
65: Local cause	1: State error 2: No call entity 3: Wrong TI 6: DTMF buffer overflow 7: Call disconnected 17: No cell available 32: Local rejection 33: PLMN not allowed 34: Emergency call not possible 35: Authentication rejected 36: Network rejected 37: LA not allowed 38: Local timeout 39: Server congestion 40: Local timeout 48: Failed replace PDP context 51: No GPRS cell available 52: GPRS authentication rejected 53: GPRS LA not allowed 54: GPRS local timeout
66: MM network cause	See GSM 04.08 <a href="#">[10]</a> , Annex G.
67: CC network cause	See GSM 04.08 <a href="#">[10]</a> , Annex H.
69: RP cause	See GSM 04.08 <a href="#">[10]</a> , Annex F.
71: SIM cause	0: Unknown problem 1: Memory problem

<cause_select>	<cause>
	2: File ID not found 6: Increase problem 7: Technical problem 11: Command not allowed 15: SIM card out
73: SM cause	See GSM 04.08 <a href="#">[10]</a>

#### 4.1.18.3 Examples

Command	Response	Comment
AT+CEER	+CEER: "Cause Select: 0, Cause: 0"	

## 4.2 GSM telephony

### 4.2.1 Hang-up call +CHUP

This command hangs up a call or switches from data to voice call when the selected mode is an alternating voice/data mode.

#### 4.2.1.1 Syntax

Type	Command	Response
Set	+CHUP	Successful: OK Fail: ERROR

#### 4.2.1.2 Specification restriction

Name	Description
	As the only call mode supported is single mode, the command +CHUP always disconnects the active call.
	The Set command also ends an active PDP.



## 4.2.2 Call mode +CMOD

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

### 4.2.2.1 Syntax

Type	Command	Response
Set	+CMOD=[<mode>]	Successful: OK Fail: ERROR
Read	+CMOD?	+CMOD: <mode>
Test	+CMOD=?	+CMOD: (0)

### 4.2.2.2 Parameter

Name	Value	Description
<mode>	0	Single mode

### 4.2.2.3 Examples

Command	Response	Comment
AT+CMOD?	+CMOD: 0	

### 4.2.2.4 Specification restriction

Name	Description
<mode>	Only single mode is supported. Alternating calls are not managed.

## 4.2.3 Select type of address +CSTA

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

#### 4.2.3.1 Syntax

Type	Command	Response
Set	+CSTA=[<type>]	Successful: OK Fail: ERROR
Read	+CSTA?	+CSTA: <type>
Test	+CSTA=?	+CSTA: (129,145)

#### 4.2.3.2 Parameter

Name	Value	Description
<type>		<b>Type of address octet in integer format</b>
	129	National Type of Number. (Default value)
	145	International Type of Number

#### 4.2.3.3 Examples

Command	Response	Comment
AT+CSTA?	+CSTA: 129	

### 4.2.4 Answer command A

This command answers a call and can be aborted while in progress.

#### 4.2.4.1 Syntax

Command	Response
A	Successful: Data call: <b>CONNECT&lt;text&gt;</b> Note: <text> output only if +ATX parameter setting with value > 0. Voice call: <b>OK</b> Fail: NO CARRIER if no connection

#### 4.2.4.2 Notes

Most AT commands cannot be aborted: the command is executed until completion, even if a new AT command is issued during its execution. The new command is executed only after the previous command has completed.

Some action commands that require time to execute may be aborted while in progress; these commands include [A](#), [D](#) and [+COPS](#). Aborting of commands is accomplished by the transmission from the TE to the ME of any character; however, characters transmitted during the first 125 milliseconds after transmission of the termination character are ignored (to allow for the TE to append additional control characters such as line feed <LF> after the command line termination character). To ensure the ME recognizes the aborting character, it should be sent at the same rate as the preceding command line; the ME may ignore characters sent at other rates. When the ME recognizes such an aborting event, it terminates the command in progress and returns an appropriate result code to the TE, as specified for the particular command.

#### 4.2.5 Dial command D

This command dials a telephone number from the command line.

A voice call can be requested by terminating the command with a semicolon';'

This command can be aborted while in progress. For more information, see section [4.2.4.2](#) (page 47).

##### 4.2.5.1 Syntax

Command	Response
D[<str>][:]	Successful: <b>OK</b> - Successfully connected for voice call <b>CONNECT</b> - Successfully connected for non-voice call Fail: <b>BUSY</b> - Busy (parameter setting ATX3 or ATX4) <b>NO ANSWER</b> - A continuous ringback signal is detected on the line until the expiration of the timer <a href="#">S7</a> <b>NO CARRIER</b> - A connection cannot be set up <b>ERROR</b>

#### 4.2.5.2 Parameter

Name	Value	Description
<str> or <str>	0-9 * # + a b c d A B C D W w	String of dialing digits and optionally V.25ter modifiers (dialing digits)
<str>	>[mem]<n>	[mem]: one of supported values of <storage> in +CPBS command (page 94) <n>: index in this <mem> Default value of <n>: last dialed number
<;>		Initiate a voice call and return to command state

#### 4.2.5.3 Specification restriction

Name	Description
	<clir>, <cug> and characters T, P, D, !, @ and , in <str> are ignored.

#### 4.2.5.4 Note

After ATD, "OK" response is not sent to TE until the voice call connection has been established successfully.

### 4.2.6 Disconnect existing connection H

This command disconnects the existing connection.

#### 4.2.6.1 Syntax

Command	Response
H [<n>]	Successful: OK Fail: ERROR

#### 4.2.6.2 Parameter

Name	Value	Description
<n>	0	Instructs the ME to disconnect or hang-up. (Default value)

#### 4.2.6.3 Examples

Command	Response	Comment
ATH0	OK	

### 4.2.7 Switch from command mode to data mode O

This command returns the ME to the online mode and is usually used after the escape sequence (+++) to resume communication.

#### 4.2.7.1 Syntax

Command	Response
O [<n>]	Successful: CONNECT Fail: ERROR

#### 4.2.7.2 Parameter

Name	Value	Description
<n>	0	Instructs the ME to return to online data mode. (Default value)

#### 4.2.7.3 Examples

Command	Response	Comment
ATO0	CONNECT	

### 4.2.8 Set number of rings before automatically answering the call S0

This command sets the number of rings before automatically answering the call.

#### 4.2.8.1 Syntax

Type	Command	Response
Set	S0=[<n>]	Successful: OK Fail: ERROR
Read	S0?	<n>

#### 4.2.8.2 Parameter

Name	Value	Description
<n>	0	Automatic answering is disabled. (Default value)
	001-255	Enable automatic answering on the specified ring number.

### 4.2.9 Ring counter S1

S1 is incremented each time the ME detects a ring signal on the telephone line. S1 is cleared if no rings occur over an eight second interval.

Parameter range: 0-255.

### 4.2.10 Set time to wait for connection completion S7

This command sets the number of seconds to wait for connection completion.

#### 4.2.10.1 Syntax

Type	Command	Response
Set	S7=[<n>]	Successful: OK Fail: +CME ERROR
Read	S7?	

#### 4.2.10.2 Parameter

Name	Value	Description
<n>	1-255	Number of seconds 50 – Default value 0 – Do not wait for connection completion

#### 4.2.11 Repeat last command A/

Re-execute command, only A/ itself cannot be repeated.

#### 4.2.12 Redial last call +PPRD

This command redials the last voice call number that has been dialed via the ATD AT command. This command is for voice call only.

Read command reads the last voice call number.

##### 4.2.12.1 Syntax

Type	Command	Response
Set	+PPRD	Successful: [<nString>] OK or NO CARRIER Fail: ERROR
Read	+PPRD?	+PPRD: [<nString>]

##### 4.2.12.2 Parameter

Name	Value	Description
<nString>	0-9,*#, EMPTY	The voice call number that has been dialed last time If there isn't any voice call number available, the response is EMPTY.

### 4.2.12.3 Examples

Command	Response	Comment
AT+PPRD	+PPRD:16042703878; OK or NO CARRIER	The ME dials the number 16042703878 again and displays OK if it connected, or NO CARRIER if the connection fails.
AT+PPRD	+PPRD: EMPTY OK	If there isn't any voice call number available, the response is +PPRD: EMPTY.
AT+PPRD?	+PPRD:16042703878; OK	Displays the last voice call number.

## 4.2.13 Voice mail dialing number +PPVMS

This command can be used to query and change the voice mail dialing number in the SIM offered by the network operator or service provider.

This command only works on SIM cards that support CPHS. If the SIM doesn't support CPHS or the SIM card initialization<sup>1</sup> times out, the command returns an error.

### 4.2.13.1 Syntax

Type	Command	Response
Set	+PPVMS=<mailbox dialing number>	Successful: OK Fail: ERROR
Read	+PPVMS?	+PPVMS: <mailbox dialing number> or +PPVMS: EMPTY
Test	+PPVMS=?	OK

### 4.2.13.2 Parameter

Name	Value	Description
<mailbox dialing number>	0-9 * # + a b c d A B C D W w	String of dialing digits and optionally V.25ter modifiers (dialing digits)

<sup>1</sup> Whenever you insert a SIM card, it goes through an initialization process.



#### 4.2.13.3 Examples

Command	Response	Comment
AT+PPVMS="123456"	OK	The number is enclosed in quotation marks

#### 4.2.13.4 Specification restriction

Name	Description
<mailbox dialing number>	The length should be less than 40.

## 4.3 SMS commands

### 4.3.1 Delete message +CMGD

This command deletes message from preferred message storage <mem1> location <index>. If deleting fails, final result code +CMS ERROR: <err> is returned.

#### 4.3.1.1 Syntax

Type	Command	Response
Set	+CMGD=<index>	Successful: OK Fail: ERROR +CME ERROR: <err> - Message deleting has failed.

#### 4.3.1.2 Parameter

Name	Value	Description
index	1-255	Memory location. The maximum value of index is determined by SIM storage capacity.

### 4.3.2 Preferred SMS message format +CMGF

This command selects the message format.

#### 4.3.2.1 Syntax

Type	Command	Response
Set	+CMGF=[<mode>]	Successful: OK Fail: ERROR
Read	+CMGF?	+CMGF: <mode>
Test	+CMGF=?	+CMGF: (0,1)

#### 4.3.2.2 Parameter

Name	Value	Description
<mode>	0	PDU mode. (Default value)
	1	Text mode

### 4.3.3 List messages +CMGL

This command lists SMS messages from preferred storage.

#### 4.3.3.1 Syntax

Type	Command	Response
Set	+CMGL[=<stat>]	Successful: <b>Text mode (+CMGF=1) for SMS-SUBMITs and/or SMS-DELIVERs:</b>  +CMGL:<index>,<stat>,<oa/da>,<[alpha]>,<[scts]>],[<tooa/toda>,<length>]<CR><LF><data>[<CR><LF> +CMGL:<index>,<stat>,<da/oa>,<[alpha]>,<[scts]>],[<tooa/toda>,<length>]<CR><LF><data>[...]] OK  <b>PDU mode (+CMGF=0):</b>  +CMGL: <index>,<stat>,<[alpha]>,<length><CR><LF><pdu> [<CR><LF>+CMGL: <index>,<stat>,<[alpha]>,<length><CR><LF><pdu> [...]] OK  Fail: ERROR +CME ERROR: <err>

Type	Command	Response
Test	+CMGL=?	<p><b>Text mode (+CMGF=1)</b></p> <p>+CMGL: ("REC UNREAD","REC READ","STO UNSENT", "STO SENT","ALL")</p> <p><b>PDU mode (+CMGF=0)</b></p> <p>+CMGL: (0,1,2,3,4)</p>

#### 4.3.3.2 Parameter

Name	Value	Description
<stat>		<b>Text mode:</b>
	"REC UNREAD"	Received unread messages. (Default value)
	"REC READ"	Received read messages
	"STO UNSENT"	Stored unsend messages
	"STO SENT"	Stored send messages
	"ALL"	All messages
		<b>PDU mode:</b>
	0	Received unread messages. (Default value)
	1	Received read messages
	2	Stored unsend messages
3	Stored send messages	
4	All messages	

#### 4.3.3.3 Specification restriction

Name	Description
	Since SMS-STATUS-REPORTs, SMS-COMMANDs and CBM are not saved, only SMS-SUBMITs and/or SMS-DELIVERs are listed.

#### 4.3.4 Read message +CMGR

This command retrieves a message from the short message storage. The short message storage being used is defined by the command [+CPMS](#) (page 64).

#### 4.3.4.1 Syntax

Type	Command	Response
Set	+CMGR=<index>	<p>Successful: <b>Text mode (+CMGF=1) for SMS-DELIVER:</b></p> <p>+CMGR:&lt;stat&gt;,&lt;oa&gt;,[&lt;alpha&gt;],&lt;scts&gt;[,&lt;tooa&gt;,&lt;fo&gt;,&lt;pid&gt;,&lt;dc&gt;],&lt;sca&gt;,&lt;tosca&gt;,&lt;length&gt; &lt;CR&gt;&lt;LF&gt;&lt;data&gt;</p> <p><b>Text mode for SMS-SUBMIT:</b></p> <p>+CMGR: &lt;stat&gt;,&lt;da&gt;,[&lt;alpha&gt;] [,&lt;toda&gt;,&lt;fo&gt;,&lt;pid&gt;,&lt;dc&gt;], [&lt;vp&gt;], &lt;sca&gt;,&lt;tosca&gt;,&lt;length&gt; &lt;CR&gt;&lt;LF&gt; &lt;data&gt;</p> <p><b>PDU mode (+CMGF=0):</b></p> <p>+CMGR: &lt;stat&gt;,[&lt;alpha&gt;],&lt;length&gt;&lt;CR&gt;&lt;LF&gt;&lt;pdu&gt; OK</p> <p>Fail: ERROR</p> <p>+CME ERROR: &lt;err&gt; - When other errors are encountered.</p>
Test	+CMGR=?	

#### 4.3.4.2 Parameter

Name	Value	Description
<index>	0-255	Memory location
<stat>	<p>“REC UNREAD”</p> <p>“REC READ”</p> <p>“STO UNSENT”</p> <p>“STO SENT”</p> <p>“ALL”</p> <p>0</p> <p>1</p> <p>2</p> <p>3</p> <p>4</p>	<p><b>Text mode:</b></p> <p>Received unread messages. (Default value)</p> <p>Received read messages</p> <p>Stored unsent messages</p> <p>Stored sent messages</p> <p>All messages</p> <p><b>PDU mode:</b></p> <p>Received unread messages. (Default value)</p> <p>Received read messages</p> <p>Stored unsent messages</p> <p>Stored sent messages</p> <p>All messages</p>

#### 4.3.4.3 Examples

Command	Response	Comment
AT+CMGR=1	+CMS: ERROR 500	Unknown code

#### 4.3.4.4 Specification restriction

Name	Description
	<p>Since SMS-STATUS-REPORTs, SMS-COMMANDs and CBM are not saved, only SMS-SUBMITs and/or SMS-DELIVERs are listed.</p> <p>For mobile terminated messages, to avoid data corruption, the data coding scheme (&lt;dc&gt;) of the ME should match the data coding scheme used by the SMS message.</p> <p>&lt;dc&gt; defines the coding scheme used for storage and transmission of SMS messages. The short message data coding scheme can be set by &lt;dc&gt; in the command <b>+CSMP</b> (page 68).</p>

### 4.3.5 Send message command **+CMGS**

This command sends SMSPP message from a TE to the network (SMS-SUBMIT) in text or PDU mode. Message reference value <mr> is returned to TE on successful message delivery. Value can be used to identify message upon unsolicited delivery status report result code. If sending fails in a network or an ME error, final result code **+CMS ERROR:<err>** is returned.

#### 4.3.5.1 Syntax

Type	Command	Response
Set	<b>Text mode (+CMGF=1):</b> +CMGS=<da>[,<tda>] <CR> <i>text is entered</i> <ctrl-Z/ESC>	Successful: +CMGS: <mr>[,<scts>] Fail: See below
	<b>PDU mode (+CMGF=0):</b> +CMGS=<length><CR> <i>PDU is given</i> <ctrl-Z/ESC>	Successful: +CMGS: <mr>[,<ackpdu>] Fail: See below

Type	Command	Response
		<p>ERROR</p> <p>In PDU mode, the &lt;length&gt; parameter entered must equal the length of the entered text; the maximum length is 164.</p> <p>+CMS ERROR: &lt;err&gt; - If the message is not sent.</p>

#### 4.3.5.2 Parameter

Name	Value	Description
<ctrl-Z>		<ctrl-Z> must be used to indicate the ending of the message body.
<ESC>		Sending can be cancelled by giving <ESC> character.

#### 4.3.5.3 Examples

```

AT+CSCA="6890400"
AT+CMGS="6079386"
>Text to be sent
<ctrl-Z>
+CMGS: 2           ; Message reference is 2
    
```

#### 4.3.5.4 Specification restriction

Name	Description
	Since the Message service is restricted to 0, the Service Centre Time Stamp is not required, and is never filled in in response to a SMSPP sent in text mode. This also applies to RP-User-Data in PDU mode.

### 4.3.6 Write message to memory +CMGW

This command stores a message in memory storage. Memory location <index> of the stored message is returned. By default message status will be set to 'stored unsent', but parameter

<stat> allows also other status values to be given. The entering of PDU is done similarly as specified in the command Send Message +CMGS (page 57).

#### 4.3.6.1 Syntax

Type	Command	Response
Set	<b>Text mode (+CMGW=1):</b> +CMGW[=<oa/da> [,<toa/toda>[,>stat]]] <CR> <i>text is entered</i> <ctrl-Z/ESC>	Successful: +CMGW: <index> Memory location <index> of the stored message is returned. Fail: See below
	<b>PDU mode (+CMGW=0):</b> +CMGW=<length>[,<stat>]<CR> <i>PDU is given</i> <ctrl-Z/ESC>	Successful: +CMGW: <index> Fail: See below
		Fail response: ERROR - In PDU mode, the <length> parameter entered must equal the length of the entered text; the maximum length is 164. +CMS ERROR: <err> - If writing the message has failed.

#### 4.3.6.2 Parameter

Name	Value	Description
<ctrl-Z>		<ctrl-Z> must be used to indicate the ending of the message body;
<ESC>		Sending can be cancelled by giving <ESC> character.
index	1-255	Memory location. The maximum value of index is determined by SIM storage capacity.

#### 4.3.6.3 SMS data conversion for MO messages

Table 25 shows data conversion options and the amount of memory required to store characters, depending on the character set and coding scheme used.

<chset> reflects the character set used by the TE for input and output. The setting of character set by +CSCS (page 38) impacts the text content (such as <str>, <alpha>, <text> in GSM 07.07 and <da>, <oa>, <ra>, <data> in GSM 07.05).

<dc> defines the coding scheme used for storage and transmission of SMS messages. The short message data coding scheme is set by the command **+CSMP** (page 68).

<dc> and <chset> should be set compatible, to avoid data corruption. For example, when <chset> is “UCS2”, the <dc> should be “UCS2”. However, if you are using the UCS2 character set and the default value of <dc>, which is 7 bits format, then, if the data being converted has characters that have the 8th or higher bit(s) set, these characters are corrupted during data conversion (<dc> specifies to use only 7 bits; the 8th or higher bit(s) cannot be handled), and are displayed as “?”.

<dc> affects how data is stored; once the data is stored, <dc> has no effect. When outputting the data, the proper **+CSCS** (page 38) should be set; otherwise, data conversion errors may occur.

---

**NOTE:** No matter which input character set is used, the data is stored and transmitted on the serial interface using the IRA character set.

---

**Table 25 <chset> and <dc>**

<dc> (Set by <b>+CSMP</b> )	Maximum number of characters that can be stored	Maximum amount of SIM memory occupied by an SMS	Number of IRA characters used to store or transmit one character of the SMS message. (<chset> is set by <b>+CSCS</b> )		
			<chset>= IRA	<chset>= GSM	<chset>= UCS2
<b>7 bits</b>	160	7 bits x 160	1 IRA	1 IRA	Corruption may occur
<b>8 bits</b>	140	8 bits x 140	2 IRA	2 IRA	2 IRA
<b>UCS2</b>	70	16bits x 70	4 IRA	4 IRA	4 IRA

#### 4.3.6.4 Examples

Command	Response	Comment
AT <b>+CMGF</b> =1	OK	Set to text format
AT <b>+CMGW</b> = “+2329832” <CR> CELLon <ctrl-Z>	+ <b>CMGW</b> :1 OK	Write message
AT <b>+CMGL</b> = “ALL”	+ <b>CMGL</b> :1, “STO UNSENT”, “2329832”, “”, CELLon OK	List message



### 4.3.7 Send message from storage +CMSS

This command sends message with location value <index> from preferred message storage to the network (SMS-SUBMIT or SMS-COMMAND).

Message reference value <mr> is returned to TE on successful message delivery. Value can be used to identify message upon unsolicited delivery status report result code

#### 4.3.7.1 Syntax

Type	Command	Response
Set	+CMSS=<index>[,<da>[,<toda>]]	Successful: If text mode (+CMGF=1) and sending successful: +CMSS: <mr>[,<scts>] Fail: +CME ERROR: <err>
Test	+CMSS=?	

#### 4.3.7.2 Parameter

Name	Value	Description
index	1-255	Memory location. The maximum value of index is determined by SIM storage capacity.

#### 4.3.7.3 Specification restriction

Name	Description
	Since SMS-STATUS-REPORTs, SMS-COMMANDs and CBM are not saved, only SMS-SUBMITs and/or SMS-DELIVERs are read.

### 4.3.8 New message indications +CNMI

This command selects the mode used to send indications to the host after messages are received.

#### 4.3.8.1 Syntax

Type	Command	Response
Set	+CNMI=[<mode>[,<mt>[,<bm>[,<ds>[,<bfr>]]]]]	Successful: OK Fail: +CME ERROR: 303 - When input parameter is not supported.
Read	+CNMI?	+CNMI: <mode>,<mt>,<bm>,<ds>,<bfr>
Test	+CNMI=?	+CNMI: (0,1,2),(0,1,2),(0,2),(0,1),(0,1).

#### 4.3.8.2 Parameter

Name	Value	Description
<mode>		<b>Controls the processing of unsolicited result codes specified within this command.</b>
	0	Buffer unsolicited result codes in the ME. If ME result code buffer is full, the oldest indications are discarded and replaced with the new received indications. (Default value)
	1	Discard indication and reject new received message unsolicited result codes when ME-TE link is reserved (e.g. in online data mode). Otherwise forward them directly to the TE.
	2	Buffer unsolicited result codes in the ME when ME-TE link is reserved (e.g. in online data mode) and flush them to the TE after reservation. Otherwise forward them directly to the TE.

Name	Value	Description
<mt>	<p>0</p> <p>1</p> <p>2</p>	<p><b>Sets the result code indication routing for SMS-DELIVERs.</b></p> <p>The rules for storing received SMSs depend on its data coding scheme, (refer GSM 03.38 [7]), preferred memory storage (+CPMS) setting)</p> <p>NOTE: If AT command interface is acting as the only display device, the ME must support storing of class 0 messages and messages in the message waiting indication group (discard message).</p> <p>No SMS-DELIVER indications are routed to the TE. (Default value)</p> <p>If SMS-DELIVER is stored into ME, indication of the memory location is routed to the TE using unsolicited result code: <b>+CMTI:</b> &lt;mem&gt;,&lt;index&gt;</p> <p>SMS-DELIVERs are routed directly to the TE using unsolicited result code: <b>+CMT:</b> [&lt;alpha&gt;],&lt;length&gt;&lt;CR&gt;&lt;LF&gt;&lt;pdu&gt; (PDU mode enabled) or <b>+CMT:</b> &lt;oa&gt;, [&lt;alpha&gt;], &lt;scts&gt;[, &lt;tooa&gt;, &lt;fo&gt;, &lt;pid&gt;, &lt;dcs&gt;, &lt;sca&gt;, &lt;tosca&gt;, &lt;length&gt;]&lt;CR&gt;&lt;LF&gt;&lt;data&gt; (text mode enabled). For information on the parameters in <i>italics</i>, see the command Show Text Mode Parameters +CSDH (page 67).</p>
<bm>	<p>0</p> <p>2</p>	<p><b>Sets the result code indication routing for CBMs.</b></p> <p>No CBM indications are routed to the TE. (Default value)</p> <p>New CBMs are routed directly to the TE using unsolicited result code.</p>
<ds>	<p>0</p> <p>1</p>	<p><b>Sets the result code indication routing for SMS-STATUS-REPORTs.</b></p> <p>No SMS-STATUS-REPORTs are routed to the TE. (Default value)</p> <p>SMS-STATUS-REPORTs are routed to the TE using unsolicited result code: <b>+CDS:</b> &lt;length&gt;&lt;CR&gt;&lt;LF&gt;&lt;pdu&gt; (PDU mode enabled) or <b>+CDS:</b> &lt;fo&gt;,&lt;mr&gt;,&lt;ra&gt;,&lt;tora&gt;,&lt;scts&gt;,&lt;dt&gt;,&lt;st&gt; (text mode enabled)</p>
<bfr>	<p>0</p> <p>1</p>	<p><b>Defines the handling method for buffered result codes when &lt;mode&gt; 1 or 2 is enabled.</b></p> <p>TA buffer of unsolicited result codes defined within this command is flushed to the TE when &lt;mode&gt; 1 or 2 is entered. (Default value)</p> <p>TA buffer of unsolicited result codes defined within this command is cleared when &lt;mode&gt; 1 or 2 is entered.</p>

#### 4.3.8.3 Examples

Command	Response	Comment
AT+CNMI?	CNMI:1,0,0,0,0	

#### 4.3.8.4 Specification restriction

Name	Description
	1 is not supported for CBM Types (<mode>)

### 4.3.9 Preferred SMS message storage +CPMS

This command selects the memory storage to be used for SMSPP reading, sending and storing.

#### 4.3.9.1 Syntax

Type	Command	Response
Set	+CPMS=<mem1>[,<mem2>[,<mem3>]]	Successful: +CPMS: <used1>,<total1>,<used2>,<total2>, <used3>,<total3>  Fail: +CMS ERROR:303 if <memx> is not supported
Read	+CPMS?	Successful: +CPMS: <mem1>,<used1>,<total1>,<mem2> ,<used2>,<total2>,<mem3>,<used3> ,<total3>  Fail: +CMS ERROR: <err> if the information can't be received
Test	+CPMS=?	+CPMS:("SM"),("SM"),("SM")

#### 4.3.9.2 Parameter

Name	Value	Description
<mem1>	"SM"	For defined values, see page 213.
<mem2>	"SM"	
<mem3>	"SM"	
<used1>		
<used2>		
<used3>		
<total1>		
<total2>		
<total3>		

#### 4.3.9.3 Examples

Command	Response	Comment
AT+CPMS=?	+CPMS:("SM"),("SM"),("SM")	

#### 4.3.9.4 Specification restriction

Name	Description
<memx>	The only memory storage used for the message is the SIM.

### 4.3.10 Restore settings +CRES

This command restores the message settings from the non-volatile memory to the active memory.

#### 4.3.10.1 Syntax

Type	Command	Response
Set	+CRES[=<profile>]	Successful: OK Fail: +CMS ERROR:303 when <profile> is not supported. ERROR

Type	Command	Response
Test	+CRES=?	+CRES: (0,1)

#### 4.3.10.2 Parameter

Name	Value	Description
<profile>	0	Profile 1. (Default value)
	1	Profile 2

### 4.3.11 Save settings +CSAS

This command saves the current message service settings in non-volatile memory. The AT command settings that can be saved are listed in [Table 37](#) (page 199).

#### 4.3.11.1 Syntax

Type	Command	Response
Set	+CSAS[=<profile>]	Successful: OK Fail: +CMS ERROR:303 when <profile> is not supported. ERROR
Read	+CSAS=?	+CSAS: (0,1).

#### 4.3.11.2 Parameter

Name	Value	Description
<profile>	0	Profile 1. (Default value)
	1	Profile 2

#### 4.3.11.3 Examples

Command	Response	Comment
AT+CSAS=?	+CSAS:( 0,1)	

### 4.3.12 SMS Service Center address +CSCA

This command updates the SMSC address, through which mobile originated SMs are transmitted. In text mode, setting is used by send and write commands. Only text mode is supported.

#### 4.3.12.1 Syntax

Type	Command	Response
Set	+CSCA=<sca> [,<tosca>]	Successful: OK Fail: ERROR
Read	+CSCA?	+CSCA: <sca>,<tosca>

#### 4.3.12.2 Parameter

Name	Value	Description
<sca>		For defined values, see “ <a href="#">Appendix F—SMS parameter definitions</a> ” (page 213). 0xFF...0xFF – default value
<tosca>		Type of Address

### 4.3.13 Show text mode parameters +CSDH

This command sets whether or not detailed header information is shown in text mode result codes.

#### 4.3.13.1 Syntax

Type	Command	Response
Set	+CSDH=[<show>]	Successful: OK Fail: ERROR
Read	+CSDH?	+CSDH:<show>
Test	+CSDH=?	+CSDH:(0,1)

#### 4.3.13.2 Parameter

Name	Value	Description
<show>	0	Do not show header values defined in commands <b>+CSCA</b> and <b>+CSMP</b> (<sca>, <tosca>, <fo>, <vp>, <pid> and <dcs>) nor <length>, <toda> or <tooa> in <b>+CMGL</b> , <b>+CMGR</b> result codes for SMS-DELIVERs and SMS-SUBMITs in text mode.
	1	Show the header values in result codes

#### 4.3.13.3 Examples

Command	Response	Comment
AT+CSDH?	+CSDH:0	

### 4.3.14 Set text mode parameters +CSMP

This command selects values for additional parameters needed when SM is sent to the network or placed in a storage when text mode is selected. (See **+CMGF** command on page 53.)

#### 4.3.14.1 Syntax

Type	Command	Response
Set	+CSMP=<fo>[,<vp>[,<pid>[,<dcs>]]]	Successful: OK  Fail: +CMS ERROR: 303 when the input parameters are not supported  ERROR
Read	+CSMP?	+CSMP: <fo>,<vp>,<pid>,<dcs>

#### 4.3.14.2 Parameter

Name	Value	Description
<fo>		For a description, see page 216. 17 – default value (<vp> is present; relative format; Message Type Indicator: SMS-SUBMIT (MS to SC))
<vp>		For a description, see page 218. 167 – default value (12 hours + ((TP-167 -143) x 30 minutes)))



Name	Value	Description
<pid>		For a description, see page 217. 0 – default value
<dc>		For a description, see page 216. 0 – default value

#### 4.3.14.3 Examples

Command	Response	Comment
AT+CSMP?	+CSMP: 17, 167, 0, 0	

#### 4.3.14.4 Specification restriction

Name	Description
Parameter values restriction	<ul style="list-style-type: none"> <li>The enhanced validity period format \$(EVPF)\$, see reference [18] is not supported.</li> <li>&lt;fo&gt; is only for SMS-DELIVER, SMS-SUBMIT or SMS-STATUS-REPORT.</li> </ul>

#### 4.3.14.5 Notes

For the effect of <dc> on MO SMS messages, see “[SMS data conversion for MO messages](#)” (page 59).

For the effect of <dc> on MT SMS messages, see “[Specification restriction](#)” (page 57).

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**NOTE:** When storing SMSPP-Deliver in text mode, the validity period parameter is used as the Service Center Time Stamp.

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### 4.3.15 Select message service +CSMS

This command queries the messaging service. It returns the types of supported messages.

#### 4.3.15.1 Syntax

Type	Command	Response
Set	+CSMS=<service>	Successful: +CSMS: <mt>, <mo>, <bm> The types of supported messages returned Fail: +CMS ERROR: 303 if <service> is not supported. ERROR
Read	+CSMS?	+CSMS: <service>,<mt>,<mo>,<bm>
Test	+CSMS=?	+CSMS: (list of supported <service>s)

#### 4.3.15.2 Parameter

Name	Value	Description
<service>	0	The syntax of SMS AT commands is compatible with GSM 07.05 Phase 2 version 4.7.0. (Default value)
<mt>	0 1	<b>Mobile terminated messages</b> Type not supported Type supported. (Default value)
<mo>	0 1	<b>Mobile originated messages</b> Type not supported Type supported. (Default value)
<bm>	0 1	<b>Broadcast type messages</b> Type not supported Type supported. (Default value)

#### 4.3.15.3 Examples

Command	Response	Comment
AT+CSMS=0	+CSMS: 1,1,1	Service type is set to 1 and the types of supported messages is returned

Command	Response	Comment
AT+CSMS=1	+CMS ERROR: 303	Service type 1 is not supported
AT+CSMS=A	ERROR	"A" is an incorrect service type
AT+CSMS?	+CSMS: 0,1,1,1	The supported service type 0 and message types are returned.
AT+CSMS=?	+CSMS: (0)	The supported service type 0 is returned.

#### 4.3.15.4 Specification restriction

Name	Description
<service>	Service type 1 is not supported
<mt>,<mo>,<bm>	All type 0 are not supported

### 4.3.16 SMS-CB message type selection +CSCB

This command selects which types of SMS-CBs are to be received by the ME. It can select SMS-CB identifier and language.

#### 4.3.16.1 Syntax

Type	Command	Response
Set	+CSCB=[<mode>[,<mids>[,<dcss>]]]	Successful: OK Fail: ERROR
Read	+CSCB?	+CSCB: <mode>,<mids>,<dcss>
Test	+CSCB=?	+CSCB: (0,1)

#### 4.3.16.2 Parameter

Name	Value	Description
<mode>	0	Message types specified in <mids> and <dcss> are accepted
	1	Message types specified in <mids> and <dcss> are not accepted.

Name	Value	Description
<mids>	0-65534	<p>All different possible combinations of CBM message identifiers), for example "0,1,5,922"; the maximum is 65534.</p> <p>Ranges are not supported.</p> <p>The default value is empty (no &lt;mids&gt; are supported, and no CBM messages will be received).</p>
<dcss>		<p>All different possible combinations of CBM data coding schemes. For example "0,1,3,5".</p> <p>Ranges (for example, "0-2,5") are not supported.</p> <p>The default value is empty (no data coding schemes are supported).</p> <p>For supported values, see <a href="#">Table 27</a> on page 140.</p>

#### 4.3.16.3 Examples

	Command	Response	Comment
1.	AT+CSCB?	+CSCB:0,"2,600,60000","0-255"	Message identifiers 2, 600, and 60000, which can be any supported languages, are accepted.
2.	AT+CSCB=0	OK	No cell broadcast messages are accepted (since no message types specified for <mids> and <dcss>)
3.	AT+CSCB?	+CSCB:0,"", ""	
4.	AT+CSCB=0,"3"	OK	Add French as a supported language
5.	AT+CSCB?	+CSCB:0,"", "3"	
6.	AT+CSCB=0,"1"	+CSCB:0,"1", "3"	Message type 1 and the French language are supported

#### 4.3.16.4 Restriction

Name	Description
	<p>Either the full range of &lt;dcss&gt; values ("0-255") can be accepted (<b>+CSCB=1</b>), or up to 5 individual &lt;dcss&gt; values (without any ranges among them) can be accepted. For example, <b>+CSCB: 0, "2,3", "1,2,3,4,5"</b>.</p> <p>When adding message IDs, note that only 15 different &lt;mid&gt; values are supported. For example, if 14 &lt;mids&gt; values are already in the &lt;mids&gt; current list, and you issue the command <b>AT+CSCB=0,"10,20"</b>, the ME returns OK, but only the value "10" is added to the &lt;mids&gt; current list.</p>

Name	Description			
	Effect on <mids> and <dcss>, depending on the value of <mode> and whether <mids> and <dcss> are specified:			
	<b>&lt;mode&gt;</b>	<b>&lt;mids&gt; and &lt;dcss&gt;</b>	<b>Effect on &lt;mids&gt;</b>	<b>Effect on &lt;dcss&gt;</b>
	0	Not specified ( <b>+CSCB=0</b> )	All are cleared	All are cleared
	1	Not specified ( <b>+CSCB=1</b> )	Unchanged	Set to full range (0-255)
	1	Specified	Specified <mids> are cleared	Specified <dcss> are cleared

#### 4.3.16.5 Clarification

Name	Description
	<p>To set up the lists of &lt;dcss&gt; and &lt;mids&gt;:</p> <ol style="list-style-type: none"> <li>1. Use <b>AT+CSCB=0</b> command (without specifying parameters &lt;mids&gt; and &lt;dcss&gt;) to select no mid and no dcs.</li> <li>2. Add some <b>dc</b>s or <b>mid</b> to the current lists:                     <p><b>AT+CSCB=0,&lt;mids&gt;</b> : add the &lt;mids&gt; values to the &lt;mids&gt; current list handled by the mobile.</p> <p><b>AT+CSCB=0,,&lt;dcss&gt;</b> : add the &lt;dcss&gt; values to the &lt;dcss&gt; current list handled by the mobile.</p> </li> </ol>

### 4.3.17 Unchanged SMS status +PPUSMS

This command reads a short message. If the message status is UNREAD, it remains as UNREAD, and does not change to READ. Aside from this, the command is the same as +CMGR command (page 55).

#### 4.3.17.1 Syntax

Type	Command	Response
Set	+PPUSMS=<index>	Successful: <b>Text mode (+CMGF=1) for SMS-DELIVER:</b> +PPUSMS:<stat>,<oa>,[<alpha>],<scts>[,<tooa>,<fo>,<pid>,<dcsc>,<sca>,<tosca>,<length>] <CR><LF><data>  <b>Text mode for SMS-SUBMIT:</b> +PPUSMS: <stat>,<da>,[<alpha>] [,<tooa>,<fo>,<pid>,<dcsc>,[<vp>],<sca>,<tosca>,<length>]<CR><LF> <data>  <b>PDU mode (+CMGF=0):</b> +PPUSMS: <stat>,[<alpha>],<length><CR><LF><pdu> OK  Fail: ERROR +CMS ERROR:<err> when other errors are encountered.
Test	+PPUSMS=?	

#### 4.3.17.2 Parameter

Name	Value	Description
<index>	0-255	Memory location

#### 4.3.17.3 Examples

Command	Response	Comment
AT+PPUSMS=1	+CMS: ERROR 500	Unknown code

### 4.3.18 Request SMS memory status +PPSMSM

This command queries the number of used SMS storage locations and available storage locations in the SIM card.

#### 4.3.18.1 Syntax

Type	Command	Response
Read	+PPSMSM?	Successful: +PPSMSM:<x>,<y> Fail: ERROR
Test	+PPSMSM=?	OK

#### 4.3.18.2 Parameter

Name	Value	Description
x	Integer	The number of used SMS storage locations in SIM card.
y	Integer	The number of available storage locations in SIM card.

#### 4.3.18.3 Examples

Command	Response	Comment
AT+PPSMSM?	+PPSMSM:1,19	One SMS storage location is used; 19 SMS storage locations are available.

## 4.4 Supplementary Service

An example showing the various commands is shown in section [4.4.11](#) (page 88).

### 4.4.1 Call forwarding number and conditions +CCFC

This command allows control of the call forwarding supplementary service according to GSM 02.82 [8]. Registration, erasure, 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>.

#### 4.4.1.1 Syntax

Type	Command	Response
Set	+CCFC=<reason>,<mode> [,<number>[,<type> [,<class> [,<subaddr>[,<satype> [,<time>]]]]]]]	Successful: OK  When <mode>=2 and command successful: +CCFC: <status>, <class1> [, <number>, <type> [, <subaddr>, <satype>[, <time>]]][ <CR><LF>+CCFC: <status>,<class2>[,<number>,<type> [,<subaddr>,<satype>[,<time>]]] [...]
Test	+CCFC=?	+CCFC: (list of supported<reason>s)
		Fail: +CME ERROR: <err> ERROR

#### 4.4.1.2 Parameter

Name	Value	Description
<reason>	0	Unconditional. (Default value)
	1	Mobile busy
	2	No reply
	3	Not reachable
	4	All call forwarding
	5	All conditional call forwarding
<mode>	0	Disable. (Default value)
	1	Enable
	2	Query status
	3	Registration
	4	Erasure
<number>		String type phone number of forwarding address in format specified by <type>
<type>	145,129	Type of address octet in integer format
<subaddr>		String type subaddress of format specified by <satype>
<satype>	128	Type of subaddress octet in integer format
<classx>	1	Voice
	2	Data
	4	Fax
	7	All



Name	Value	Description
<time>	1..30	When "no reply" is enabled or queried, this gives the time in seconds to wait before call is forwarded.
<status>	0 1	Not active Active

#### 4.4.1.3 Examples

+CCFC		
AT+CFCC=1,3,"2328932",129		<i>;Register the call forwarding service (for when the mobile is busy) with the network; Calls are to be forwarded to 2328932</i>
OK		
AT+CCFC=1,1		<i>; Enable call forwarding (for when the mobile is busy)</i>
OK		

#### 4.4.1.4 Specification restriction

Name	Description
	<p>If STK call control modifies the SS, an error is returned to the TE.</p> <p>When TE sends an SS to the network, the SS may be allowed, disallowed or modified by SIM control (Call / MO Message Control By SIM). If it is modified, the TE is not informed why this SS was modified.</p> <p>If STK sends an SS, the host can be notified, but it may not be able to associate this Call Control indication with that modified SS. The host only knows that there is an SS that may be allowed, disallowed or modified, but the host won't know the specific case (whether it was allowed, or disallowed, or modified).</p>

## 4.4.2 Call Waiting +CCWA

This command allows control of the Call Waiting supplementary service according to GSM 02.83 [9]. 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>. Parameter <n> is used to disable/enable the presentation of an unsolicited result code:

**+CCWA: <number>,<type>,<class>,[<alpha>][,<CLI validity>]** to the TE when Call Waiting service is enabled. Command should be aborted when the network is interrogated.

### 4.4.2.1 Syntax

Type	Command	Response
Set	+CCWA=[<n>[,<mode>[,<class>]]]	Successful: OK  When <mode>=2 and command successful: +CCWA: <status>, <class1> [<CR><LF>+CCWA: <status>, <class2> [...]]  Fail: +CME ERROR: <err> ERROR
Read	+CCWA?	+CCWA: n
Test	+CCWA=?	+CCWA: (list of supported<n>s)

### 4.4.2.2 Parameter

Name	Value	Description
<n>	0	Disable
	1	Enable
<mode>	0	Disable
	1	Enable
	2	Query status
<classx>	1	<b>A sum of integers, each representing a class of information</b> Voice (telephony)

Name	Value	Description
	2 4 7	Data Fax All
<status>	0 1	Not active Active
<number>		String type phone number of calling address in format specified by<type>
<type>		Type of address octet in integer format (see GSM 04.08 [10], subclause 10.5.4.7)
<alpha>		Optional string type alphanumeric representation of<number> corresponding to the entry found in phonebook
<CLI validity>	0 1 2	CLI valid CLI has been withheld by the originator. CLI is not available due to interworking problems or limitations of originating network.

#### 4.4.2.3 Example

See “[Example of Supplementary Services](#)” (page 88).

#### 4.4.2.4 Specification restriction

Name	Description
	If STK call control modifies the SS, an error is returned to the TE.

### 4.4.3 Calling Line Identification Presentation +CLIP

This command enables the subscriber to get the calling line identity (CLI) of the calling party when receiving a mobile terminated call.

#### 4.4.3.1 Syntax

Type	Command	Response
Set	+CLIP=[<n>]	Successful: OK Fail: ERROR
Read	+CLIP?	+CLIP: <n>,<m>

Type	Command	Response
Test	+CLIP=?	+CLIP: (0,1)

#### 4.4.3.2 Parameter

Name	Value	Description
<n>		<b>Result code presentation status in the ME</b>
	0	Disable
	1	Enable
<m>		<b>Subscriber CLIP service status in the network</b>
	0	CLIP not provisioned
	1	CLIP provisioned
	2	Unknown

#### 4.4.3.3 Example

AT+CLIP=?	<i>;Test +CLIP</i>
AT+CLIP: (0,1)	
AT+CLIP=1	<i>;Enable +CLIP result.</i>
.....	
+RING	<i>;Incoming call</i>
+CLIP: "23456",129	<i>; Calling number is 23456</i>

#### 4.4.3.4 Specification restriction

Name	Description
	If STK call control modifies the SS, an error is returned to the TE.

## 4.4.4 Calling Line Identification Restriction +CLIR

This command allows a calling subscriber to enable or disable the presentation of the CLI to the called party when originating a call.

### 4.4.4.1 Syntax

Type	Command	Response
Set	+CLIR=[<n>]	Successful: OK Fail: ERROR
Read	+CLIR?	+CLIR: <n>,<m>
Test	+CLIR=?	+CLIR: (0,1,2)

### 4.4.4.2 Parameter

Name	Value	Description
<n>		<b>Adjustment for outgoing calls</b>
	0	Presentation indicator is used according to the subscription of the CLIR service
	1	CLIR invocation
	2	CLIR suppression
<m>		<b>Subscriber CLIR service status in the network</b>
	0	CLIR not provisioned
	1	CLIR provisioned in permanent mode
	2	Unknown
	3	CLIR temporary mode presentation restricted
	4	CLIR temporary mode presentation allowed

### 4.4.4.3 Specification restriction

Name	Description
	If STK call control modifies the SS, an error is returned to the TE.

## 4.4.5 Connected Line Identification Presentation +COLP

This command allows a calling subscriber to enable or disable the presentation of the COL<sup>1</sup> from the called party when originating a call.

### 4.4.5.1 Syntax

Type	Command	Response
Set	+COLP=[<n>]	Successful: OK Fail: ERROR
Read	+COLP?	+COLP: <n>,<m>
Test	+COLP=?	+COLP: (list of supported<n>s)

### 4.4.5.2 Parameter

Name	Value	Description
<n>		<b>Result code presentation status in the ME</b>
	0	Disable
	1	Enable
<m>		<b>Subscriber COLP service status in the network</b>
	0	COLP not provisioned
	1	COLP provisioned
	2	Unknown

### 4.4.5.3 Example

AT+COLP=1	<i>;Enable +COLP result</i>
OK	
ATD12345;	<i>;Originate a voice call</i>
+COLP:"12345",129	<i>; Connected phone number is 12345</i>

<sup>1</sup> Connected Line identity

OK
----

#### 4.4.5.4 Specification restriction

Name	Description
	If STK call control modifies the SS, an error is returned to the TE.

### 4.4.6 List current calls +CLCC

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

#### 4.4.6.1 Syntax

Type	Command	Response
Set	+CLCC	Successful: OK - No calls are available Current calls are available: [+CLCC: <id1>,<dir>,<stat>,<mode>,<mpty>[,<number>,<type>[,<alpha>]] [<CR><LF>+CLCC: <id2>,<dir>,<stat>,<mode>,<mpty>[,<number>,<type>[,<alpha>]]][... ]] Fail: ERROR

#### 4.4.6.2 Parameter

Name	Value	Description
<idx>	Integer type	Call identification number as described in GSM 02.30 [6] subclause 4.5.5.1
<dir>	0 1	Mobile originated (MO) call Mobile originated (MT) call
<state>	0 1 2 3	<b>State of the call</b> Active Held Dialing (MO) Alerting (MO)

Name	Value	Description
	4	Incoming (MT)
	5	Waiting (MT)
<mode>		<b>Bearer/teleservice</b>
	0	Voice
	1	Data
	2	Fax
	3	Voice followed by data, voice mode
	4	Alternating voice/data, voice mode
	5	Alternating voice/fax, voice mode
	6	Voice followed by data, data mode
	7	Alternating voice/data, data mode
	8	Alternating voice/fax, fax mode
	9	Unknown
<empty>	0	Call is not one of multiparty (conference) call parties
	1	Call is one of multiparty (conference) call parties

#### 4.4.6.3 Example

See “[Example of Supplementary Services](#)” (page 88).

#### 4.4.6.4 Specification restriction

Name	Description
	<number>,<type> and <alpha> are not supported

### 4.4.7 Call related supplementary services +CHLD

This command allows the control of the following call-related services:

- A call can be temporarily disconnected from the ME but the network retains the connection.
- Multiparty conversation (conference calls)
- The served subscriber who has two calls (one held and the other either active or alerting) can connect the other parties and release the served subscriber's own connection.



Calls can be put on hold, recovered, released, added to the conversation, and transferred.

#### 4.4.7.1 Syntax

Type	Command	Response
Set	+CHLD=[<n>]	Successful: OK Fail: +CME ERROR: <err> ERROR
Test	+CHLD=?	[+CHLD: (list of supported <n>s)

#### 4.4.7.2 Parameter

Name	Value	Description
<n>	Integer type	Equals to numbers entered before SEND button in GSM 02.30 [6] subclause 4.5.5.1
	0	Releases all held calls or sets User Determined User Busy (UDUB) for a waiting call.
	1	Releases all active calls (if any exist) and accepts the other (held or waiting) call.
	1x, where x is an integer	Releases a specific active call x.
	2	Places all active calls (if any exist) on hold and accepts the other (held or waiting) call.
	2x, where x is an integer	Places all active calls on hold except call x with which communication shall be supported.
	3	Adds a held call to the conversation.

#### 4.4.7.3 Example

See “[Example of Supplementary Services](#)” (page 88).

### 4.4.8 Unstructured supplementary service data +CUSD

This command allows control of the Unstructured Supplementary Service Data (USSD) according to GSM 02.90 [11]. Both network and mobile initiated operations are supported.

#### 4.4.8.1 Syntax

Type	Command	Response
Set	+CUSD=[<n>[,<str>[,<dc>]]]	Successful: OK Fail: +CME ERROR: <err> ERROR
Read	+CUSD?	+CUSD: <n>
Test	+CUSD=?	+CUSD: (list of supported<n>s)

#### 4.4.8.2 Parameter

Name	Value	Description
<n>	0	Disable the result code presentation in the ME
	1	Enable the result code presentation in the ME
	2	Cancel session (not applicable to read command response)
<str>		String type (when<str> parameter is not given, network is not interrogated).
<dc>	0	Cell Broadcast Data Coding Scheme in integer format See GSM 03.38 [7]
	2	See GSM 03.38 [7]
<m>	0	No further user action required (network initiated USSD-Notify, or no further information needed after mobile initiated operation)
	1	Further user action required (network initiated USSD-Request, or further information needed after mobile initiated operation)
	2	USSD terminated by network

### 4.4.9 Supplementary service notifications +CSSN

This command refers to supplementary service related network initiated notifications. The set command enables/disables the presentation of notification result codes from ME to TE.

#### 4.4.9.1 Syntax

Type	Command	Response
Set	+CSSN=[<n>[,<m>]]	Successful: OK Fail: ERROR
Read	+CSSN?	+CSSN: <n>,<m>

Type	Command	Response
Test	+CSSN=?	+CSSN: (0,1), (0,1)

#### 4.4.9.2 Parameter

Name	Value	Description
<n>	0	Disable
	1	Enable
<m>	0	Disable
	1	Enable
<code1>		<b>When &lt;n&gt;=1 and a supplementary service notification is received after a mobile originated call setup, intermediate result code +CSSI: &lt;code1&gt; is sent to TE before any other MO call setup result codes are presented.</b>
	0	Unconditional call forwarding is active
	1	Some of the conditional call forwarding are active
	2	Call has been forwarded
	3	Call is waiting
	5	Outgoing calls are barred
	6	Incoming calls are barred
	7	CLIR suppression rejected
<code 2 >		<b>When &lt;m&gt;=1 and a supplementary service notification is received during a mobile terminated call setup or during a call, or when a forward check supplementary service notification is received, unsolicited result code +CSSU: &lt;code2&gt; is sent to TE.</b>
	0	This is a forwarded call (MT call setup)
	2	Call has been put on hold (during a voice call)
	3	Call has been retrieved (during a voice call)
	4	Multiparty call entered (during a voice call)
	5	Call on hold has been released (this is not a SS notification) (during a voice call)

## 4.4.10 Voice hang-up control +CVHU

This command selects whether ATH or " OFF DTR" shall cause a voice connection to be disconnected or not. This also applies to alternating mode calls (voice/data) that are currently in voice mode.

### 4.4.10.1 Syntax

Type	Command	Response
Set	+CVHU=[<mode>]	Successful: OK Fail: ERROR
Read	+CVHU?	+CVHU:<mode>
Test	+CVHU=?	+CVHU:(0-2)

### 4.4.10.2 Parameter

Name	Value	Description
mode	0	" OFF DTR" ignored but OK response given. ATH disconnects.
	1	" OFF DTR" and ATH ignored but OK response given.
	2	" OFF DTR" behavior according to &D setting. ATH disconnects.

### 4.4.10.3 Examples

Command	Response	Comment
AT+CVHU=0	OK	

## 4.4.11 Example of Supplementary Services

Conference call example.

Command and actions	Response	Comment
AT+PPURC=7	+PPURC: 7	Enable PPURC for: <ul style="list-style-type: none"> <li>• Remote called party ring indication</li> <li>• New call index created indication</li> <li>• Call index release indication</li> </ul>

Command and actions	Response	Comment
	OK	
AT+CCWA= 1, 1	OK	Enable Call Waiting indication.
ATD 2345671; Mobile make an outgoing voice call to 2345671.	+PPURC: 2, 1 +PPURC: 1	New call index is created; the index is 1. Remote called party rings indication.
Answer the call.	OK	Mobile-----→2345671(active)
Subscriber 2345672 makes an outgoing voice call to Mobile.	+PPURC: 2, 2 +CRING: VOICE +CCWA: "2345672", 129	New call index is created; the index is 2
AT+CLCC	+CLCC: 1, 0, 0, 0, 0 +CLCC: 2, 1, 5, 0, 0	Mobile-----→ 2345671 (active) Mobile-----→ 2345672 (waiting)
AT+CHLD=2	OK	Place active calls on hold and accept the other (held or waiting) call.
AT+CLCC	+CLCC: 1, 0, 1, 0, 0 +CLCC: 2, 1, 0, 0, 0	Mobile-----→ 2345671 (hold) Mobile-----→ 2345672 (active)
AT+CHLD=3	OK	Add a held call to the conversation.
AT+CLCC	+CLCC: 1, 0, 0, 0, 1 +CLCC: 2, 1, 0, 0, 1	Mobile-----→ 2345671 (active multiparty) Mobile-----→ 2345672 (active multiparty)
AT+CHLD=2	OK	Place active calls on hold and accept the other (held or waiting) call.
AT+CLCC	+CLCC: 1, 0, 1, 0, 1 +CLCC: 2, 1, 1, 0, 1	Mobile-----→ 2345671 (hold multiparty) Mobile-----→ 2345672 (hold multiparty)
2345673 makes an outgoing voice call to Mobile.	+PPURC: 2, 3 +CRING: VOICE +CCWA: "2345673", 129	New call index is created; the index is 3
AT+CLCC	+CLCC: 1, 0, 1, 0, 1 +CLCC: 2, 1, 1, 0, 1 +CLCC: 3, 1, 5, 0, 0	Mobile-----→ 2345671 (hold multiparty) Mobile-----→ 2345672 (hold multiparty) Mobile-----→ 2345673 (waiting)
AT+CHLD= 3	ERROR	2345673 is waiting; all calls remain the same status.
AT+CHLD= 21	ERROR	No active call; all calls remain the same status.
AT+CHLD= 11	ERROR	2345671 cannot be released (because it's not active); all calls remain the same status.

<b>Command and actions</b>	<b>Response</b>	<b>Comment</b>
AT+CHLD=1	OK	Release active calls and accept the held or waiting (2345673) calls. Mobile-----→ 2345671 (hold multiparty) Mobile-----→ 2345672 (hold multiparty) Mobile-----→ 2345673 (active)
2345673 releases the call.	+PPURC: 4, 3 NO CARRIER	Mobile-----→ 2345671 (hold multiparty) Mobile-----→ 2345672 (hold multiparty)
2345673 makes an outgoing voice call to Mobile again.	+PPURC: 2, 3 +CRING: VOICE +CCWA: "2345673", 145	Mobile-----→ 2345671(hold multiparty) Mobile-----→ 2345672 (hold multiparty) Mobile-----→ 2345673 (waiting)
AT+CHLD= 2	OK	Place active calls on hold and accept the other (held or waiting) call. Mobile-----→ 2345671 (hold multiparty) Mobile-----→ 2345672 (hold multiparty) Mobile-----→ 2345673 (active)
AT+CHLD= 3	+CLCC: 1, 0, 0, 0, 1 +CLCC: 2, 1, 0, 0, 1 +CLCC: 3, 1, 0, 0, 1	Mobile-----→ 2345671 (active multiparty) Mobile-----→ 2345672 (active multiparty) Mobile-----→ 2345673 (active multiparty)
AT+CHLD=1	OK	Release all active calls: All 3 active calls are released.
ATH	OK	

## 4.5 Phonebook commands

### 4.5.1 Subscriber number +CNUM

This command returns the MSISDNs related to the subscriber (this information can be stored in the SIM or in the ME).

#### 4.5.1.1 Syntax

Type	Command	Response
Set	+CNUM	Successful: +CNUM: [<alpha 1>,<number1>,<type1>[,<speed>,<service>[,<itc>]][<CR><LF>+CNUM: [<alpha2>,<number2>,<type2>[,<speed>,<service> [,<itc>]][...]] Fail: +CME ERROR:<err> ERROR

#### 4.5.1.2 Parameter

Name	Value	Description
<alpha x>		Alphanumeric string associated with <number x>
<number x>		String type phone number
<type x>		<b>&lt;number x&gt; type of address</b>
	145	International Type of Number
	129	National Type of Number
<speed>	0-166	Data rate
<service>		<b>Service related to phone number</b>
	0	Asynchronous modem
	1	Synchronous modem
	2	PAD access
	3	Packet access
	4	Voice
	5	Fax
<itc>		<b>Information transfer capability</b>
	0	3.1 KHz
	1	UDI

#### 4.5.2 Find Phonebook entry +CPBF

This command returns phonebook entries.

#### 4.5.2.1 Syntax

Type	Command	Response
Set	+CPBF=<findtext>	Successful: +CPBF: <index1>,<number>,<type>,<text>[[...]<CR><LF>+CPBF: <index2>,<number>,<type>,<text>]]  Fail: <b>ERROR</b>  <b>+CME ERROR : operation not allowed</b> -If the list is the emergency number list  <b>+CME ERROR : &lt;num&gt;</b> -an error occurs during the previous request, num is number of previous request  <b>+CME ERROR: text string too long</b> -the string parameter is longer than the maximum text length allowed.
Test	+CPBF=?	+CPBF: [<nlength>],[<tlength>] +CME ERROR: <err>

#### 4.5.2.2 Parameter

Name	Value	Description
<findtext>		The start string of alphanumeric field
<index x>		Location number in phonebook memory
<number>		Phone number
<type>	145 129	<b>Phone number type of address</b> International Type of Number National Type of Number
<text>		Alphanumeric field associated with number
<nlength>		maximum length of number
<tlength>		maximum length of text

#### 4.5.2.3 Example

```

AT+CPBF="CELLon"

+CPBF: 1, "6042329832",129, "CELLon"

+CPBF: 3, "6042329831",129, "CELLon"
    
```



### 4.5.3 Read Phonebook entry +CPBR

This command reads a phonebook entry.

#### 4.5.3.1 Syntax

Type	Command	Response
Set	+CPBR=<index1>[,<index2>]	Successful: +CPBR: <index1>,<number>,<type>,<text>[[...]]  <CR><LF>+CPBR: <index2>,<number>,<type>,<text>]]  Fail: +CME ERROR: <err> ERROR
Test	+CPBR=?	+CPBR: (list of supported <index>s),[<nlength>],[<tlength>] +CME ERROR: <err>

#### 4.5.3.2 Parameter

Name	Value	Description
<index x>		Value in the range of location number of phonebook memory
<number>		Phone number of maximum length of <nlength>
<type>	145 129	<b>Phone number type of address</b> International Type of Number National Type of Number
<text>		Field of maximum length of <tlength>
<nlength>		Maximum length of number
<tlength>		Maximum length of text

#### 4.5.3.3 Example

See also “[Phonebook](#)” (page 210).

<pre>AT+CPBR=3 +CPBR: 3, "6042329831",129, "CELLon" AT+CNUM +CNUM: "CELLon", "6042329832",129</pre>
---

AT+CREG=2	<i>;Enable result code</i>
OK	
+CREG: 3	<i>;When ME is registered to the network</i>

## 4.5.4 Select Phonebook memory storage +CPBS

This command selects phonebook memory storages.

### 4.5.4.1 Syntax

Type	Command	Response
Set	+CPBS=<storage>	Successful: OK Fail: +CME ERROR: <err> ERROR
Read	+CPBS?	+CPBS: <storage>[,<used>,<total>] +CME ERROR: <err>
Test	+CPBS=?	+CPBS: (list of supported <storage>s)

### 4.5.4.2 Parameter

Name	Value	Description
<storage>	"SM" "EN" "FD" "ON"	<b>Phonebook memory storage</b> SIM phonebook SIM (or ME) emergency number SIM fix dialing-phonebook SIM (or ME) own numbers (MSISDNs) list
<used>		Number of used locations in selected memory
<total>		Number of locations in selected memory

### 4.5.4.3 Example

AT+CPBS="ON"	<i>; Set storage to SIM own numbers( MSISDNs ) list</i>
OK	
AT+CPBS?	<i>; Read current storage</i>

+CPBS: "ON",1,2	; Return current storage, total 2 index, used 1
OK	
AT +CPBR=1	; Read Index 1 of SIM own number list
+CPBR: 1,"5551234",129,"Gjk"	

#### 4.5.4.4 Specification restriction

Name	Description
+CPBS=<input parameter>	The following memory storages are not supported: "LD", "ME", "MT", "TA", "DC", "MC", "RC"

### 4.5.5 Write Phonebook entry +CPBW

This command writes a phonebook entry to the current phonebook memory storage

#### 4.5.5.1 Syntax

Type	Command	Response
Set	+CPBW=[<index>][,<number> [,<type>[,<text>]]]	Successful: OK Fail: ERROR  <b>+CME ERROR: &lt;num&gt;</b> - an error occurs during the previous request; num is the number of the previous request  <b>+CME ERROR: operation not allowed</b> - the list is the emergency number list  <b>+CME ERROR: text string too long</b> -the string parameter is longer than the maximum text length allowed.  <b>+CME ERROR: invalid index is returned.</b> -the index is null or is bigger than the total location number in the list
Test	+CPBW=?	+CPBW: (1-254), 40, (129,145), 18

#### 4.5.5.2 Parameter

Name	Value	Description
<index>	1-254	Value in the range of location number of phonebook memory

Name	Value	Description
<number>		Phone number
<type>	145 129	<b>Phone number type of address</b> International Type of Number National Type of Number
<text>		Alphanumeric field associated with number

#### 4.5.5.3 Example

```

AT+CBPS =“SM”

OK

AT+CPBS?

+CPBS: “SM”, 1, 254

AT+CPBW=1, “6042329832”, 129, “CELLon”

OK

```

## 4.6 Security

### 4.6.1 Enter PIN +CPIN

This command sends to the ME a password that is necessary before it can be operated (SIM PIN, SIM PUK, PH-SIM PIN, etc.). If the PIN is to be entered twice, the ME shall automatically repeat the PIN. If no PIN request is pending, no action is taken towards ME and an error message, +CME ERROR, is returned to TE.

#### 4.6.1.1 Syntax

Type	Command	Response
Set	+CPIN=<pin>[,<newpin>]	Successful: OK Fail: +CME ERROR: <err>
Read	+CPIN?	+CPIN: <code> +CME ERROR: <err>

#### 4.6.1.2 Parameter

Name	Value	Description
<pin>		String type values
<newpin>		String type values
<code>	READY	ME is not pending for any password
	SIM PIN	ME is waiting for the SIM PIN to be given
	SIM PUK	ME is waiting for the SIM PUK to be given
	SIM PIN2	ME is waiting for the SIM PIN2 to be given.
	SIM PUK2	ME is waiting for the SIM PUK2 to be given
	PH-NET PIN	ME is waiting for the network personalisation password to be given
	PH-NETSUB PIN	ME is waiting for the network subset personalisation password to be given
	PH-SP PIN	ME is waiting for the service provider personalisation password to be given
	PH-CORP PIN	ME is waiting for the corporate personalisation password to be given

#### 4.6.1.3 Examples

Command	Response	Comment
AT+CPIN?	+CPIN: READY	ME is not pending for password

## 4.6.2 Change password +CPWD

The Set command sets a new password for the facility lock function defined by command Facility Lock [+CLCK](#) (page 99).

The Test command returns a list of pairs that present the available facilities and the maximum length of their password.

#### 4.6.2.1 Syntax

Type	Command	Response
Set	+CPWD=<fac>,<oldpwd>,<newpwd>	Successful: OK Fail: +CME ERROR: <err> ERROR

Type	Command	Response
Test	+CPWD=?	+CPWD: list of supported (<fac>, <pwdlength>)s +CME ERROR: <err>

#### 4.6.2.2 Parameter

Name	Value	Description
<fac>	CS AO OI OX AI IR AB P2 SC	<b>Facility type</b> Lock control surface. BAOC (Barr All Outgoing Calls) (refer GSM 02.88 [12] clause 1) BOIC (Barr Outgoing International Calls) (refer GSM 02.88 [12] clause 1) BOIC-exHC (Barr Outgoing International Calls except to Home Country) (refer GSM 02.88 [12] clause 1) BAIC (Barr All Incoming Calls) (refer GSM 02.88 [12] clause 2) BIC-Roam (Barr Incoming Calls when Roaming outside the home country) (refer GSM 02.88 [12] clause 2) All Barring services (refer GSM 02.30 [6]) (applicable only for<mode>=0) SIM PIN2 SIM (lock SIM card) (SIM asks password in ME power-up and when this lock command issued)
<oldpwd>,<newpwd>	string type	<oldpwd> shall be the same as password specified for the facility from the ME user interface or with the command Change Password +CPWD; <newpwd> is the new password. For "CS", the password is numeric. For the other values, the password is alphanumeric.
<pwdlength>		Integer type. Maximum length of the password for the facility

#### 4.6.2.3 Examples

Command	Response	Comment
AT+CPWD= "CS", "0000", "1234"	OK	Change the initial password to 1234
AT+CPWD= "CS", "masterkey", "0000"	OK	Restore password to initial value (0000); masterkey is 4 digits.

#### 4.6.2.4 Specification restriction

Name	Description
	If STK call control modifies the SS, an error is returned to the TE.

### 4.6.3 Facility lock +CLCK

The Set command is used to lock, unlock or interrogate a ME or a network facility <fac>. Password is normally needed to perform such actions.

The Test command returns facility values supported by the ME as a compound value.

#### 4.6.3.1 Syntax

Type	Command	Response
Set	+CLCK=<fac>,<mode>[,<passwd> [ ,<class>]]	Successful: +CLCK: <status>[,<class1> [ <CR><LF>+CLCK: <status>,<class2> [...]] Fail: +CME ERROR: <err>
Test	+CLCK=?	+CLCK: (list of supported<fac>s) +CME ERROR: <err>

#### 4.6.3.2 Parameter

Name	Value	Description
<fac>		<b>Facility type</b>
	AO	BAOC (Barr All Outgoing Calls) (refer GSM 02.88 [12] clause 1)
	OI	BOIC (Barr Outgoing International Calls) (refer GSM 02.88 [12] clause 1)
	OX	BOIC-exHC (Barr Outgoing International Calls except to Home Country) (refer GSM 02.88 [12] clause 1)
	AI	BAIC (Barr All Incoming Calls) (refer GSM 02.88 [12] clause 2)
	IR	BIC-Roam (Barr Incoming Calls when Roaming outside the home country) (refer GSM 02.88 [12] clause 2)
	AB	All Barring services (refer GSM 02.30 [6]) (applicable only for <mode>=0)
	FD	SIM fixed dialling memory feature (if PIN2 authentication has not been done during the current session, PIN2 is required as <passwd>)
	PN	Network lock

Name	Value	Description
	PU PP SC	Network subset lock Service provider lock SIM lock
mode	0 1 2	Unlock Lock Query status
status	0 1	Not active Active
passwd		String type
<classx>	1 2 4 7	<b>A sum of integers, each representing a class of information</b> Voice (telephony) Data Fax (facsimile services) All

#### 4.6.3.3 Specification restriction

Name	Description
<fac>	PS (Corporate lock) and PF (Phone lock) are not available
	If STK call control modifies the SS, an error is returned to the TE.

## 4.6.4 PIN remaining attempts number +PPRAT

This command queries CHV1(PIN1/PUK1) and CHV2(PIN2/PUK2) remaining attempt times.

#### 4.6.4.1 Syntax

Type	Command	Response
Read	+PPRAT?	Successful: +PPRAT:<n1>,<n2>,<u1>,<u2> Fail: ERROR
Test	+PPRAT=?	+PPRAT:(3,3,10,10)



#### 4.6.4.2 Parameter

Name	Value	Description
<n1><n2>	0-3	The remaining attempt times of PIN1, PIN2
<u1><u2>	0-10	The remaining attempt times of PUK1, PUK2
<n1><n2>	-1	PIN1 or PIN2 disabled. No PIN required.
<u1><u2>	-1	PIN1 or PIN2 disabled. No PIN required.
<n1><n2>	255	Can't read the attempt times of PIN1 and PIN2 from SIM. SIM is unavailable, or problem accessing SIM.
<u1><u2>	255	Can't read the attempt times of PIN1 and PIN2 from SIM. SIM is unavailable, or problem accessing SIM.

#### 4.6.4.3 Examples

Command	Response	Comment
AT+PPRAT?	+PPRAT:(2,3,10,10)	The PIN1 has been entered once.

## 4.7 Mobile Equipment control and status commands

### 4.7.1 Battery charge +CBC

This command returns battery connection status and battery charge level.

#### 4.7.1.1 Syntax

Type	Command	Response
Set	+CBC	Successful: +CBC: <bcs>,<bcl> Fail: ERROR +CME ERROR: <err>
Test	+CBC=?	+CBC: (0-3),(0,100)

#### 4.7.1.2 Parameter

Name	Value	Description
<bc>	0	ME is powered by the battery
	1	ME has a battery connected, but is not powered by it
	2	ME does not have a battery connected
	3	Recognized power fault, calls inhibited
<bcl>	0, 25, 50, 75, 100	<b>Battery charge level</b> 0 – battery is exhausted 100 – battery is full

#### 4.7.1.3 Examples

Command	Response	Comment
AT+CBC	+CBC:0,75	

### 4.7.2 Signal quality +CSQ

This command returns received signal strength indication and channel bit error rate from the ME.

#### 4.7.2.1 Syntax

Type	Command	Response
Set	+CSQ	Successful: +CSQ: <rss>,<ber> Fail: +CME ERROR: <err> ERROR
Test	+CSQ=?	+CSQ: (list of supported <rss>s),(list of supported <ber>s)

#### 4.7.2.2 Parameter

Name	Value	Description
<rss>		<b>Received signal strength indication</b>

Name	Value	Description
	0	-113 dBm or less
	1	-111 dBm
	2-30	-109... -53 dBm
	2	-109 dBm
	3	-107 dBm
	4	-105 dBm
	5	-103 dBm
	6	-101 dBm
	7	-99 dBm
	8	-97 dBm
	9	-95 dBm
	10	-93 dBm
	11	-91 dBm
	12	-89 dBm
	13	-87 dBm
	14	-85 dBm
	15	-83 dBm
	16	-81 dBm
	17	-79 dBm
	18	-77 dBm
	19	-75 dBm
	20	-73 dBm
	21	-71 dBm
	22	-69 dBm
	23	-67 dBm
	24	-65 dBm
	25	-63 dBm
	26	-61 dBm
	27	-59 dBm
	28	-57 dBm
	29	-55 dBm
	30	-53 dBm
	31	-51 dBm or greater
	99	Not known or detectable
<ber>		<b>Channel bit error rate</b>
	99	Not known or not detectable

#### 4.7.2.3 Examples

Command	Response	Comment
AT+CSQ=?	+CSQ: (0-31,99), (99)	

#### 4.7.2.4 Specification restriction

Name	Description
<ber>	Information returned for the <ber> is always "not known".

### 4.7.3 Phone activity status +CPAS

This command returns the activity status of the ME.

#### 4.7.3.1 Syntax

Type	Command	Response
Set	+CPAS	Successful: +CPAS: <pas> Fail: +CME ERROR: <err> ERROR
Test	+CPAS=?	+CPAS: (list of supported <pas>s) +CME ERROR: <err>

#### 4.7.3.2 Parameter

Name	Value	Description
<pas>		<b>Phone activity status</b>
	0	Ready (ME allows commands from TE) (Default value)
	2	Unknown (ME is not guaranteed to respond to instructions)
	3	Ringing (ME is ready for commands from TE, but the ringer is active)
	4	Call in progress (ME is ready for commands from TE, but a call is in progress)

#### 4.7.3.3 Examples

Command	Response	Comment
AT+CPAS	+CPAS: 4	Call in progress

#### 4.7.3.4 Specification restriction

Name	Description
<pas>	Modes 1 and 5 are not supported.

## 4.7.4 Clock +CCLK

This command sets the date, the time and the time zone.

### 4.7.4.1 Syntax

Type	Command	Response
Set	+CCLK=<time>	Successful: OK Fail: +CME ERROR: <err> ERROR
Read	+CCLK?	+CCLK: <time> +CME ERROR: <err>

### 4.7.4.2 Parameter

Name	Value	Description
<time>	yy/mm/dd,hh:mm:ss ± zz	Time value

### 4.7.4.3 Examples

Command	Response	Comment
AT+CCLK?	02/11/15, 00:06:00+00	

## 4.7.5 Indicator control +CIND

This command is used to query the values of ME indicators.

Read command returns the status of ME indicators.

### 4.7.5.1 Syntax

Type	Command	Response
Set	+CIND=[<ind>[,<ind>[,...]]]	Successful: OK Fail: +CME ERROR: <err> ERROR

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

#### 4.7.5.2 Parameter

Name	Value	Description
<descr>	"battchg" "signal" "service" "message" "call" "roam" "smsfull"	Battery charge level Signal quality Service availability Message received Call in progress Roaming indicator A short message memory storage in the MT has become full (1), or memory locations are available (0)
<ind>		The range of values and meaning of each value are determined by the setting of <descr>.
	0-5	When <descr>= " battchg": Battery charge level. 5 means fully charged.
	0-4	When <descr>= "signal": Signal quality. 4 corresponds to the strongest signal.
	0 1	When <descr>= "service": Service is not available Service is available
	0 1	When <descr>= "message": No messages received Message received
	0 1	When <descr>= "call": No call in progress Call in progress
		When <descr>= "roam":

Name	Value	Description
	0	Not roaming
	1	Roaming
		When <descr>= "smsfull":
	0	Memory locations are available
	1	No short message memory storage locations are available

#### 4.7.5.3 Examples

Command	Response	Comment
AT+CIND?	+CIND: 3, 0, 0, 0, 0, 0, 0	Battery is ~50% charged; Signal quality is 0 (poor); Service is not available; No new messages; No call in progress; Not roaming; Memory locations are available

### 4.7.6 Mobile Equipment control mode +CMEC

This command queries which entity (TE or ME) controls the ME keypad, display, and indicators.

#### 4.7.6.1 Syntax

Type	Command	Response
Set	+CMEC=[<keyp>[,<disp>[,<ind>]]]	Successful: OK Fail: +CME ERROR: <err> ERROR
Read	+CMEC?	+CMEC: <keyp>, <disp>, <ind>
Test	+CMEC=?	+CMEC: (0), (0), (0)

#### 4.7.6.2 Parameter

Name	Value	Description
<keyp>		<b>Keypad behavior</b>

Name	Value	Description
	0	ME can be operated only through its keypad
<disp>	0	<b>Display behavior</b> Only the ME can write to its display.
<ind>	0	<b>Indicator behavior</b> Only the ME can set the status of its indicators (command <b>+CIND</b> can only be used to read the indicators)

#### 4.7.6.3 Examples

Command	Response	Comment
AT+CMEC=?	+CMEC:(0), (0), (0)	

#### 4.7.6.4 Specification restriction

Name	Description
<keyp>	Only mode 0 is supported.
<disp>	Only mode 0 is supported.
<ind>	Only mode 0 is supported.

### 4.7.7 Mobile Equipment event report +CMER

This command enables or disables sending of unsolicited result codes from ME to TE in the case of key pressings, display changes, and indicator state changes.

#### 4.7.7.1 Syntax

Type	Command	Response
Set	+CMER=[<mode>[,<keyp>[,<disp>[,<ind>[,<bfr>]]]]]	Successful: OK Fail: +CME ERROR: <err> ERROR
Read	+CMER?	+CMER: <mode>,<keyp>,<disp>,<ind>,<bfr>
Test	+CMER=?	+CMER: (0-1), (0), (0), (0-2), (0)



#### 4.7.7.2 Parameter

Name	Value	Description
<mode>	0	<b>Buffer result behavior</b> No result code. (Default value)
	1	Returns result code
<keyp>	0	No keypad event reporting
<disp>	0	No display event reporting
<ind>	0	<b>+CIEV behaviour</b> No indicator event reporting. (Default value)
	1	Indicator event reporting using result code +CIEV : <ind>,<value>. Only those indicator events that are not caused by +CIND shall be indicated by the ME to the TE.
	2	Indicator event reporting using result code +CIEV : <ind>,<value>. All indicator events shall be directed from ME to TE.
<bfr>	0	Clear/flush buffer: ME buffer of unsolicited result codes defined within this command is cleared when <mode> 1 is entered

#### 4.7.7.3 Examples

Command	Response	Comment
AT+CMER=?	+CMER: (0-1),(0),(0),(0-2),(0)	

#### 4.7.7.4 Specification restriction

Name	Description
<mode>	The supported modes to return result codes are modes 0 and 1. Result codes are never returned in case of keys pressing or display changes.

## 4.7.8 Alert sound mode +CALM

This command selects the general alert sound mode of the ME.

### 4.7.8.1 Syntax

Type	Command	Response
Set	+CALM=<mode>	Successful: OK Fail: +CME ERROR: <err> ERROR
Read	+CALM?	+CALM: <mode> +CME ERROR: <err>
Test	+CALM=?	+CALM: (0, 1) +CME ERROR: <err>

### 4.7.8.2 Parameter

Name	Value	Description
<mode>	0	Normal mode
	1	Silent mode (all sounds from ME are disabled, except the sound of an incoming call)

### 4.7.8.3 Examples

Command	Response	Comment
AT+CALM?	+CALM:0	Sounds for incoming SMS and key press are enabled

### 4.7.8.4 Specification restriction

Name	Description
	There is no synchronization between the AT command and the MMI of the CMS91 module (for example, the silent icon on the MMI of the CMS91 module is not updated when this command is used).

## 4.7.9 Set ME functionality +CFUN

This command selects the levels of functionality in the ME.

### 4.7.9.1 Syntax

Type	Command	Response
Set	+CFUN=[<n>]	Successful: OK Fail: +CME ERROR: <err> ERROR
Read	+CFUN?	+CFUN:<m> +CME ERROR: <err>
Test	+CFUN=?	+CFUN:(1, 4, 6) +CME ERROR: <err>

### 4.7.9.2 Parameter

Name	Value	Description
<m>	1	Full functionality mode (Enable both transmit and receive RF)
<n>	4	Disable both transmit and receive RF
	6	Power down. (Switch off the ME) Note: this value does not apply to <m> when you read with +CFUN.

### 4.7.9.3 Examples

Command	Response	Comment
+CFUN = 4	OK	Disable both transmit and receive RF

## 4.7.10 Master reset +CMAR

This command requests the ME to reset the current values of the AT commands to the original manufacturer default values.

---

**NOTE:** Not all of the AT commands' default values can be reset by +CMAR. For a listing, see [Table 40](#) (page 202).

---

The Set command requires a security code, which is set by [+CPWD](#), with the value of the first parameter as CS (page 97). The security code is initially set to 0000.

#### 4.7.10.1 Syntax

Type	Command	Response
Set	+CMAR=< security code >	Successful: OK  Fail: +CME ERROR: 0 – ME failure +CME ERROR: 4 – Operation not supported ERROR
Test	+CMAR=?	OK

#### 4.7.10.2 Parameter

Name	Value	Description
<security code >	String  0000..9999	Security code must be verified before performing the master reset.  Default value: 0000

#### 4.7.10.3 Examples

Command	Response	Comment
+CMAR = "0000"	OK	Request the module to reset to the original manufacturer default values.

#### 4.7.10.4 Note

It is recommended to reset the module and then execute +CMAR because the default values of [+CUSD](#), [+CGSMS](#), [+CCWA](#) and [+CSCA](#) are reset to the predefined value whenever the module switches on.

### 4.7.11 Reset to default configuration Z

This command restores the saved profile. For a list of data restored, see [Table 38](#) (page 199).

#### 4.7.11.1 Syntax

Command	Response
Z[<n>]	Successful: OK Fail: ERROR

#### 4.7.11.2 Parameter

Name	Value	Description
<n>	0	Profile 1. (Default value)
	1	Profile 2

#### 4.7.11.3 Examples

Command	Response	Comment
ATZ0	OK	

### 4.7.12 Reset to manufacturer default configuration &F

This command sets all current parameters to manufacturer defaults (described in [Table 39](#) on page 200).

#### 4.7.12.1 Syntax

Type	Command	Response
Set	&F	Successful: OK Fail: ERROR

### 4.7.13 View current configuration &V

This command shows the current configuration and the stored profiles.

#### 4.7.13.1 Syntax

Command	Response
&V	Successful: <the current configuration in stored profile> Fail: ERROR

#### 4.7.13.2 Examples

Command	Response	Comment
AT&V	ACTIVE PROFILE: E1 Q0 V0 X4 &C1 &D1 &K0 +FCLASS:0 S00:000 S03:013 S04:010 S05:008 S07:050 S08:002 S10:014 STORED PROFILE 0: E1 Q0 V1 X4 &C1 &D1 &K0 +FCLASS:0 S00:000 S03:013 S04:010 S05:008 S07:050 S08:002 S10:014	

### 4.7.14 Save current configuration &Wn

This command saves the current (active) configuration; the parameters that are saved are listed in [Table 38](#) (page 199).

#### 4.7.14.1 Syntax

Command	Response
&W[<conf_id>]	Successful: OK Fail: ERROR

#### 4.7.14.2 Parameter

Name	Value	Description
<conf_id>	0	Profile 0. (Default value)
	1	Profile 1

#### 4.7.14.3 Examples

Command	Response	Comment
AT&W0	OK	

### 4.7.15 Extended unsolicited result code +PPURC

This command selects the extended unsolicited result code level of the ME, and leads the supported unsolicited result codes.

This command sets the extended unsolicited result code level of the ME. Each of the following unsolicited indications is represented by one bit level of the **indValue** parameter:

- Remote called party ring indication.
- Call index indication when a new call is created.
- Call index indication when an existing call is released by the remote party.
- AT command ready indication when the ME is ready to process all the supported AT commands after initialization.
- Short message for SMS full memory indication.
- No network indication when no network signal (GSM 900/1800) can be detected.
- Emergency call only indication when the network is available but the ME is not able to register with the network for some reason (for instance, cannot succeed in registration to network by using current SIM card).
- Inform about accessories being plugged in or unplugged.

The **indValue** parameter can be any combination of the above bit levels.

If the unsolicited result code levels are set up, the relevant result code is returned to the host when the related event occurs.

#### 4.7.15.1 Syntax

Type	Command	Response
Set	+PPURC=<indValue>	Successful: OK Fail: +CME ERROR ERROR
Read	+PPURC?	+PPURC:<indValue>
Test	+PPURC=?	+PPURC:(0-255)

#### 4.7.15.2 Parameter

Name	Value	Description
<indValue>		<b>Extended URC level.</b> (Default value is 0)
	1 (bit0)	Remote called party ring indication
	2 (bit1)	New call index created indication (after an ATD or incoming call or a +CCWA command)
	4 (bit2)	Call index release indication
	8 (bit3)	AT ready indication
	16 (bit4)	SMS full memory indication
	32 (bit5)	No network indication
	64 (bit6)	Emergency call only indication
	128 (bit7)	Accessories indication
	Bit 8 – Bit 15	Reserved for future use; currently they should be set to zero.

#### 4.7.15.3 Examples

Command	Response	Comment
AT+PPURC=5	OK	The ME is set to send the URC when <ul style="list-style-type: none"> <li>Remote called party rings.</li> <li>An existing call index is deleted due to the remote party disconnection.</li> </ul>
AT+PPURC?	+PPURC:5	The ME will send the URC when <ul style="list-style-type: none"> <li>Remote called party rings.</li> <li>An existing call index is deleted due to the remote party disconnection.</li> </ul>
AT+PPURC=?	+PPURC:(0-255)	The ME supports bit0, bit1, bit2, bit3, bit4, bit5, bit6, and bit7 – eight categories of URC setting.

#### 4.7.15.4 Unsolicited result code +PPURC: <event>[,<idx>],[<type>]

Name	Value	Description
<event>	1	Remote called party rings
	2	New call index is created (after an ATD or a +CCWA command)



Name	Value	Description
	4	Existing call index is released due to the remote party disconnection
	8	The ME is ready to process all the supported AT commands after initialization
	16	SMS full memory indication
	32	No network signal (GSM 900/1800) can be detected
	64	The network is available but the ME is not able to register with the network for some reasons (Emergency call only)
	128	Accessories event report
Idx (when <event> = 2,4)	Integer type	Call identification number as described in GSM 02.30 [6]
Idx (when <event> = 128)	Integer type	0: An accessory is plugged in 1: An accessory is unplugged
type (when <event> = 128)	Integer type	1: Battery charger 2: Carkit 3: Headset 4: Bad battery 5: Bad carkit

Example:

URC	Comment
+PPURC:(128,1,3)	Headset is unplugged

#### 4.7.16 Host wakeup indication mode (ring indication) +PPWHOST

This command enables or disables the host wake up indication mode, which is used by the ME to determine whether it needs to wake up the host via the Ring Indication (RI) signal before sending the unsolicited result codes to the host.

The set command with mode 1 or 2 selects the host wake up indication mode, and cancels the wake up mode with the parameter of 0.

Read command reads the current host's wake-up mode setting.

Test command reads the supported modes.

#### 4.7.16.1 Syntax

Type	Command	Response
Set	+PPWHOST=<n>	Successful: OK Fail: ERROR
Read	+PPWHOST?	+PPWHOST:<n>
Test	+PPWHOST=?	+PPWHOST:(0-2)

#### 4.7.16.2 Parameter

Name	Value	Description
<n>		<b>When a RI signal is to be sent to wake up the host.</b>
	0	The ME doesn't set the RI signal line under any circumstances
	1	The ME sets the RI signal line before sending any unsolicited code
	2	The ME sets the RI signal line before sending the incoming call indications only

### 4.7.17 Firmware download +PPDWL

This command sets the ME to receive new firmware (via the X-modem protocol).

The following serial link pins are required to implement this function:

- TX
- RX
- RI
- GND

#### 4.7.17.1 Syntax

Type	Command	Response
Set	+PPDWL=<pas>	Successful: OK Fail: ERROR
Test	+PPDWL=?	OK

#### 4.7.17.2 Parameter

Name	Value	Description
<pas>	String type	The password of the firmware download. The value of the <pas> may be set by the <b>+CPWD</b> command (page 97) with the parameter "CS".

#### 4.7.17.3 Examples

Command	Response	Comment
+PPDWL="0000"	OK	The new firmware will be downloading. NOTE: The password can be changed through the command <b>+CPWD</b> (page 97).

#### 4.7.17.4 Overview of download procedure

1. To begin the Xmodem protocol download, the host must issue a special AT command along with the correct password to the CMS91 module.
2. Only after receiving the OK confirmation from the CMS91 module should the host begin to send the firmware.
3. Upon receipt of the first package, the firmware of the CMS91 module starts to be replaced by the received one. Therefore, the host must not abort the download procedure until the procedure is finished. Otherwise, the CMS91 module will not be able to be launched due to corruption of the firmware.
4. After the downloading procedure is finished successfully, the CMS91 module sends, via the RI pin, the Download Completion Indication to the host. The CMS91 module also sends to the host an END result code via the serial interface to indicate the successful downloading.
5. Only after receiving either the Download Completion Indication or the END result code, should the host perform a hard reset of the module, for the new firmware to take effect.

#### 4.7.17.5 Notes

- If the download procedure does not complete successfully, the firmware cannot be upgraded through this Xmodem approach, since the CMS91 module won't have the capability to process any AT command. In this case, download the firmware by a specific PC download application. Of course, the ME has to be separated from the host before downloading the firmware.

- Before sending out the first package of the downloading file, the host can abort the downloading procedure by powering off the CMS91 module. In this case, the existing firmware has not been erased, and the CMS91 module is still launchable.
- After the download procedure is completed, the new firmware does not take effect until a hard reset is performed (that is, until the module is powered off and on).

## 4.7.18 Lifetime call meter +PPLT

This command queries the total time the module has been in calls.

For information on when the module starts, stops and updates the call meter, see reference [\[5\]](#).

### 4.7.18.1 Syntax

Type	Command	Response
Read	+PPLT?	+PPLT:<n> OK

### 4.7.18.2 Parameter

Name	Value	Description
<n>	0 – 4294967295 (0xFFFFFFFF)	The total time the module has been in calls (in seconds).

### 4.7.18.3 Examples

Command	Response	Comment
AT+PPLT?	+PPLT:1250 OK	This module has been used to make voice, fax or GPRS calls for 1250 seconds.

## 4.8 Network service related commands

### 4.8.1 Operator selection +COPS

This command forces an attempt to select and register the GSM network operator.

This command can be aborted while in progress. For more information, see section [4.2.4.2](#) (page 47).

#### 4.8.1.1 Syntax

Type	Command	Response
Set	+COPS=[<mode>[,<format> [,<oper>]]]	Successful: OK Fail: ERROR +CME ERROR: <err>
Read	+COPS?	+COPS: <mode>[,<format>,<oper>] +CME ERROR: <err>
Test	+COPS=?	+COPS: [[list of supported (<stat>,long alphanumeric <oper>,short alphanumeric <oper>,numeric <oper>)s] [,,(list of supported <mode>s),(list of supported <format>s)] +CME ERROR: <err>

#### 4.8.1.2 Parameter

Name	Value	Description
<mode>		<b>Selection mode</b>
	0	Automatic. (Default value)
	1	Manual
	4	Manual/automatic
<format>		<b>Format of &lt;oper&gt;</b>
	0	Long format alphanumeric <oper>. (Default value)
	1	Short format alphanumeric <oper>
<oper>		MCC MNC of the operator
<stat>		<b>Status of the network</b>
	0	Unknown
	1	Available
	2	Current
	3	Forbidden

#### 4.8.1.3 Specification restriction

Name	Description
<mode>	Mode 2 and 3 are not supported.

## 4.8.2 Network registration +CREG

This command controls the presentation of unsolicited result code when there is a change in the network registration.

### 4.8.2.1 Syntax

Type	Command	Response
Set	+CREG=[<n>]	Successful: OK Fail: ERROR
Read	+CREG?	+CREG: <n>,<stat>[,<lac>,<ci>] +CME ERROR: <err>
Test	+CREG=?	+CREG: (0-2)

### 4.8.2.2 Parameter

Name	Value	Description
<n>		<b>Switch network registration</b>
	0	Disable network registration unsolicited result code (Default value)
	2	Enable network registration and location information unsolicited result code +CREG: <stat>[,<lac>,<ci>]
<stat>		<b>Registration state</b>
	0	Not registered, ME is not currently searching for a new operator to register with.
	1	Registered, home network
	2	Not registered, but ME is currently searching for a new operator to register with
	3	Registration denied
	4	Unknown
	5	Registered, roaming
<lac>		Two byte location area code in hexadecimal format
<ci>		Two byte cell ID in hexadecimal format

### 4.8.3 Read operator name +COPN

This command returns a list of operator names from the ME.

#### 4.8.3.1 Syntax

Type	Command	Response
Execute	+COPN	Successful: +COPN: <numeric1>, <alpha1 > [<CR><LF>+COPN: <numeric2>, <alpha2>[...]] Fail: ERROR
Test	+COPN=?	OK

#### 4.8.3.2 Parameter

Name	Value	Description
<numeric1> <numeric2>	Numeric	The operator name in numeric format.
<alpha1> <alpha2>	Alphanumeric	The operator name in alphanumeric format.

### 4.8.4 Preferred operator list +CPOL

This command is used to edit the SIM preferred list of networks.

#### 4.8.4.1 Syntax

Type	Command	Response
Set	+CPOL=[<index>] [, <format>[,<oper>]]	Successful: OK Fail: +CME ERROR: <err> ERROR
Read	+CPOL?	+CPOL: <index1>,<format>,<oper1> [<CR><LF>+CPOL: <index2>,<format>,<oper2> [...]]+CME ERROR: <err>
Test	+CPOL=?	+CPOL: (list of supported<index>s),(list of supported<format>s) +CME ERROR: <err>

#### 4.8.4.2 Parameter

Name	Value	Description
<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

#### 4.8.4.3 Examples

Command	Response	Comment
AT+CPOL=?	+CPOL: (1-16), (0-2)	

#### 4.8.4.4 Specification restriction

Name	Description
+CPOL:(1-N), (0-2)	N is a restriction due to SIM storage capability

## 4.9 SIM Toolkit

### 4.9.1 STK activation and configuration +PPSTAC

This function can activate, deactivate and configure SIM Toolkit features on ME.

Activation	Starts the application in SIM, starts to download profile to SIM, and builds a communication between SIM and ME
Deactivation	Turns off SIM Toolkit features
Configuration	Gets and sets profile, report activation or deactivation state and proactive running state. Set operation requires an ME software reboot (achieved through a hardware reset) to reload parameters and change the initial sequence according to those parameters.  If you set unsupported bits, this command automatically masks those bits to 0 (disable).
State report	Only one proactive SIM command can be run at a time, ME shall report current state to user, indicate the stage of last proactive command or an indication.



Time control	Set the general timer of user response for every proactive command, which needs response, i.e. select an item or input a text. When timeout, responds “No response from user” to SIM.
Error report	Supports CME Error report format, if verbose error message mode is switched on (CME Error code refers to GSM 07.07 [2] or 3GPP TS 27.007 [14]).

#### 4.9.1.1 Syntax

Type	Command	Response
Set	+PPSTAC=<Mode>[,<Config>][,<Timeout>]  Detailed syntax: +PPSTAC={0 1} +PPSTAC=2,<Config>[,<Timeout>]	Successful: OK  Fail: +CME ERROR: 3 Operation not allowed  ERROR  Note: Configuration need a software reboot
Read	+PPSTAC?	+PPSTAC: <Mode>,<Config>,<Timeout>
Test	+PPSTAC=?	+PPSTAC:(0-2), (00000000000000000000000000000000- FFFFFFFF7F0000DF2700000009FFFE7),(0- 255)  Note: Currently only the first 16 bytes of the profile defined in the GSM Specification are supported.  The <Config> parameter and setting function is TBD. Currently only <Timeout> setting feature is available.  Time unit is 10 seconds.

#### 4.9.1.2 Parameter

Name	Value	Description
<Mode>	0  1  2	Deactivate STK features (Default value)  Activate STK features  Configure profile and timeout
<Config>	00000000000000000000000000000000 ~ FFFFFFFF7F0000DF2700000009FFFE7	Reference [15] TS 101 267 “Structure and coding of TERMINAL PROFILE”  Default value: FFFFFFFF7F0000DF270000000858F07

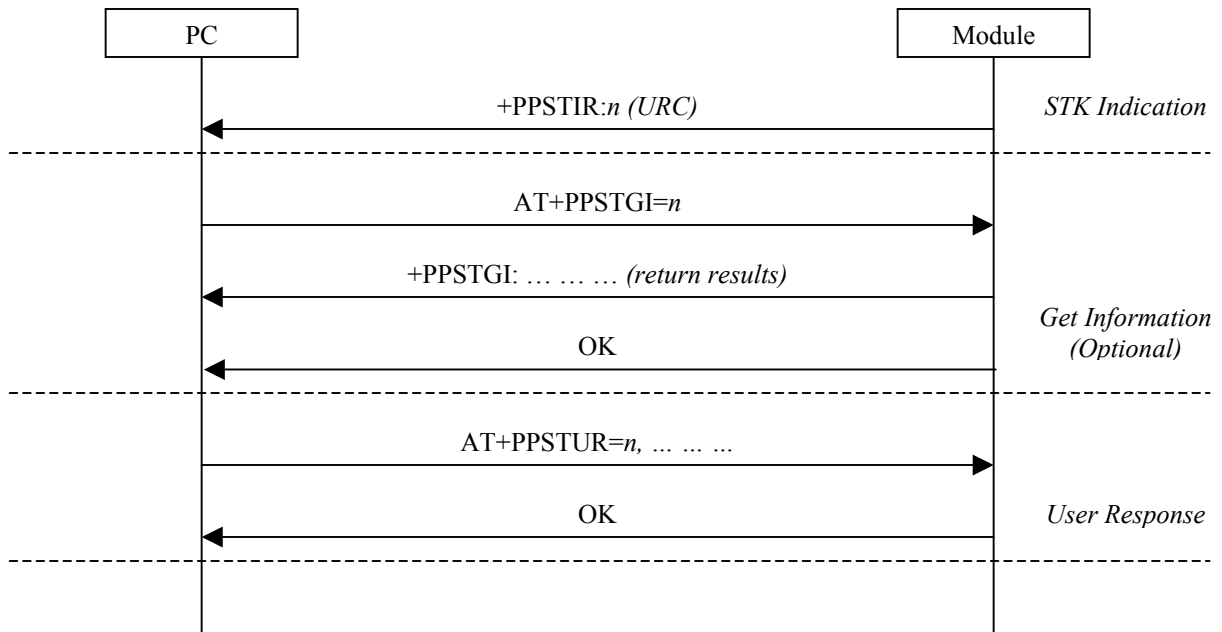
Name	Value	Description
<Timeout>	0  1-255	Timeout takes effects only on Get Inkey, Get Input, Display Text and Select Item proactive commands, which need user response.  No timeout limit (Default), if not provided, original setting keeps intact.  Timeout for user response (multiple of 10 seconds)

#### 4.9.1.3 Examples

Command	Response	Comment
AT+PPSTAC=2, "FFFFFFFF7F000 0DF27000000008 58F07"	OK	Configure the profile to "FFFFFFFF7F0000DF2700000000858F07", full support. Timeout parameter if not set means default to 0.
AT+PPSTAC?	+PPSTAC:0,"00000000 000000000000000000 0000",3	1st parameter: STK features deactivated 2nd parameter: Current profile 3rd parameter: Timeout in 15 seconds for any proactive command needs user response
AT+PPSTAC=?	+PPSTAC:(0-2),( 000000000000000000 0000000000000- FFFFFFFF7F0000DF2 7000000009FFFE7),(0- 255)	Valid value ranges.

#### 4.9.2 STK indication and request +PPSTIR (URC)

For a full proactive command communication, it follows the sequence as below.



The PC and module must communicate in an Indicate-Ask-Answer mode. Only step Ask could be ignored if user does not want to know the details. The STK does not support multi-session. That means, when the module is waiting for a proactive command user response, no further proactive command can be run. But on AT command level, this mis-operation will not be checked. It is still possible to return an OK, but the following STK behaviors after the AT command ([+PPSTUR](#)) are unpredictable.

#### 4.9.2.1 Function

It notifies the TE there is an indication/request sent from SIM.

URC: [+PPSTIR](#):<n>

#### 4.9.2.2 Parameter<n>

**Table 26 +PPSTIR parameter values**

Value	Description	Class	Note
0 (0X00)	Reserved for blank		GSM 11.14 - 13.4
21 (0X15)	Launch browser	"c"	Not supported
52 (0X34)	Run AT command	"b"	Not supported
64 (0X40)	Open channel	"e"	Not supported
65 (0X41)	Close channel	"e"	Not supported
66 (0X42)	Receive data	"e"	Not supported
67 (0X43)	Send data	"e"	Not supported
68 (0X44)	Get channel status	"e"	Not supported

Value	Description	Class	Note
1 (0X01)	Refresh		
2 (0X02)	More time		
3 (0X03)	Poll interval		Not valid *
4 (0X04)	Polling off		Not valid *
5 (0X05)	Set up event list		
16 (0X10)	Set up call		
17 (0X11)	Send SS		
18 (0X12)	Send USSD		
19 (0X13)	Send short message		
20 (0X14)	Send DTMF		
32 (0X20)	Play tone		
33 (0X21)	Display text		
34 (0X22)	Get inkey		
35 (0X23)	Get input		
36 (0X24)	Select item		
37 (0X25)	Set up menu		
38 (0X26)	Provide local information		Not valid *
39 (0X27)	Timer management		Not valid *
40 (0X28)	Set up idle mode text		
48 (0X30)	Perform card APDU <sup>1</sup> . See reference <a href="#">[13]</a>	"a"	Not supported
49 (0X31)	Power on card	"a"	Not supported
50 (0X32)	Power off card	"a"	Not supported
51 (0X33)	Get reader status	"a"	Not supported
53 (0X35)	Language notification		
129 (0X81)	End of the proactive session		
224 (0XE0)	Call / MO message controlled by SIM		

Note for ‘\*’: Only communicate between the ME and SIM, not valid for STK AT commands; if end session indication (129) is received, any previous proactive command session is terminated. So, user does not need to give any response for that command session.

For example, normally after REFRESH (+PPSTIR:1) or MORE TIME (+PPSTIR:2) indication, SIM will also give an End Session indication, so once the +PPSTIR:129 arrives,

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<sup>1</sup> Application Protocol Data Unit

user does not need to respond to the SIM with **AT+PPSTUR=1,0** for REFRESH or **AT+PPSTUR=2,0** for MORE TIME.

### 4.9.3 STK get information +PPSTGI

This command gets information from SIM with the specified indication number.

#### 4.9.3.1 Syntax

The response syntax depends on the parameter of set command, which specifies the indication type (command type).

##### General Syntax

Type	Command	Response
Set	+PPSTGI=<CmdType>	Successful: Refer to detail Syntax OK Fail: +CME ERROR 4: Operation not supported ERROR If the following conditions are not satisfied: <ul style="list-style-type: none"> <li>The parameters must be correct</li> <li>The parameters must be supported</li> </ul>
Test	+PPSTGI=?	+PPSTGI:(1,2,5,16-20,32-37,40,53,129,224)

##### Detail syntax of response

Command	Description	Response
+PPSTGI=1	REFRESH	+PPSTGI:<CmdType>,<CmdQualifier> <CmdType>: 1 – Proactive Command ID <CmdQualifier>: Unsigned integer, 0-255, specify the refresh mode 0: SIM Initialization and Full File Change Notification 1: File Change Notification 2: SIM Initialization and File Change Notification 3: SIM Initialization 4: SIM Reset 5~255: RFU
+PPSTGI=2	MORE TIME	+PPSTGI:<CmdType>,<CmdQualifier> <CmdType>: 2 – Proactive Command ID

Command	Description	Response
		<CmdQualifier>: 0, RFU
+PPSTGI=5	SET UP EVENT LIST	<p>+PPSTGI:&lt;CmdType&gt;,&lt;CmdQualifier&gt;,&lt;EventList&gt;</p> <p>&lt;CmdType&gt;: 5 – Proactive Command ID</p> <p>&lt;CmdQualifier&gt;: 0, RFU</p> <p>&lt;EventList&gt;: Unsigned integer, 0-65535, used as bit field. If any of these bits are set, the TE needs to notify SIM when the special event happens</p> <ul style="list-style-type: none"> <li>Bit 1: MT call, RFU</li> <li>Bit 2: Call connected, RFU</li> <li>Bit 3: Call disconnected, RFU</li> <li>Bit 4: Location status, RFU</li> <li>Bit 5: User activity</li> <li>Bit 6: Idle screen available</li> <li>Bit 7: Card reader status (class "a" feature), RFU</li> <li>Bit 8: Language selection, RFU</li> <li>Bit 9: Browser Termination (class "c" feature, NOT supported), RFU</li> <li>Bit 10: Data available (class "e" feature, NOT supported), RFU</li> <li>Bit 11: Channel status (class "e" feature, NOT supported), RFU</li> </ul>
+PPSTGI=16	SET UP CALL	<p>+PPSTGI:&lt;CmdType&gt;,&lt;CmdQualifier&gt;,&lt;CalledNumber&gt;,&lt;ConfirmText&gt;,&lt;ConfirmIconID&gt;,&lt;ConfirmIconQualifier&gt;,&lt;SetupText&gt;,&lt;SetupIconID&gt;,&lt;SetupIconQualifier&gt;,&lt;CallControlBySIM&gt;</p> <p>&lt;CmdType&gt;: 16 – Proactive Command ID</p> <p>&lt;CmdQualifier&gt;: Unsigned integer, 0-255, specify call mode</p> <ul style="list-style-type: none"> <li>0: Set up call, but only if not currently busy on another call</li> <li>1: Set up call, but only if not currently busy on another call, with redial</li> <li>2: Set up call, putting all other calls (if any) on hold</li> <li>3: Set up call, putting all other calls (if any) on hold, with redial</li> <li>4: Set up call, disconnecting all other calls (if any)</li> <li>5: Set up call, disconnecting all other calls (if any), with redial</li> </ul> <p>0~5: Defined but not ready to use, RFU</p>

Command	Description	Response
		<p>6~255: RFU</p> <p>&lt;CalledNumber&gt;: The phone number string</p> <p>&lt;ConfirmText&gt;: Information for user confirmation phase</p> <p>&lt;ConfirmIconID&gt;: 0-255, 0 no icon</p> <p>&lt;ConfirmIconQualifier&gt;: Unsigned integer, 0-255, used as a bit field</p> <p>bit 1: 0 = icon is self-explanatory, i.e. if displayed, it replaces the alpha identifier or text string</p> <p>1 = icon is not self-explanatory, i.e. if displayed, it shall be displayed together with the alpha identifier or text string</p> <p>bits 2-8: 0, RFU</p> <p>&lt;SetupText&gt;: Information for user call setup phase</p> <p>&lt;SetupIconID&gt;: 0-255, 0 no icon</p> <p>&lt;SetupIconQualifier&gt;: Unsigned integer, 0-255, used as a bit field</p> <p>bit 1: 0 = icon is self-explanatory, i.e. if displayed, it replaces the alpha identifier or text string</p> <p>1 = icon is not self-explanatory, i.e. if displayed, it shall be displayed together with the alpha identifier or text string</p> <p>bits 2-8: 0, RFU</p> <p>&lt;CallControlBySIM&gt;: Unsigned integer, 0-255</p> <p>0: Not Call Controlled by SIM, need user acceptance at confirmation phase</p> <p>1: Call controlled by SIM, do NOT need user acceptance at confirmation phase, directly prompt setup text ONLY</p>
+PPSTGI=17	SEND SS	<p>+PPSTGI:&lt;CmdType&gt;,&lt;CmdQualifier&gt;,&lt;InfoText&gt;,&lt;InfoIconID&gt;,&lt;InfoIconQualifier&gt;</p> <p>&lt;CmdType&gt;: 17 – Proactive Command ID</p> <p>&lt;CmdQualifier&gt;: 0, RFU</p> <p>&lt;InfoText&gt;: Information to be displayed to the user, but NOT the SS string!</p> <p>&lt;InfoIconID&gt;: 0-255, 0 no icon</p> <p>&lt;InfoIconQualifier&gt;: Unsigned integer, 0-255, used as a bit field</p>

Command	Description	Response
		<p>bit 1: 0 = icon is self-explanatory, i.e. if displayed, it replaces the alpha identifier or text string</p> <p>1 = icon is not self-explanatory, i.e. if displayed, it shall be displayed together with the alpha identifier or text string</p> <p>bits 2-8: 0, RFU</p> <p>NOTE: According to GSM 11.14 [13], SS string shall not be provided to user!</p>
+PPSTGI=18	SEND USSD	<p>+PPSTGI:&lt;CmdType&gt;,&lt;CmdQualifier&gt;,&lt;InfoText&gt;,&lt;InfolconID&gt;,&lt;InfolconQualifier&gt;</p> <p>&lt;CmdType&gt;: 18 – Proactive Command ID</p> <p>&lt;CmdQualifier&gt;: 0, RFU</p> <p>&lt;InfoText&gt;: Information to be displayed to the user, but NOT the USSD!</p> <p>&lt;InfolconID&gt;: 0-255, 0 no icon</p> <p>&lt;InfolconQualifier&gt;: Unsigned integer, 0-255, used as a bit field</p> <p>bit 1: 0 = icon is self-explanatory, i.e. if displayed, it replaces the alpha identifier or text string</p> <p>1 = icon is not self-explanatory, i.e. if displayed, it shall be displayed together with the alpha identifier or text string</p> <p>bits 2-8: 0, RFU</p> <p>NOTE: According to GSM 11.14 [13], USSD shall not be provided to user!</p>
+PPSTGI=19	SEND SHORT MESSAGE	<p>+PPSTGI:&lt;CmdType&gt;,&lt;CmdQualifier&gt;,&lt;InfoText&gt;,&lt;InfolconID&gt;,&lt;InfolconQualifier&gt;</p> <p>&lt;CmdType&gt;: 19 – Proactive Command ID</p> <p>&lt;CmdQualifier&gt;: Specify the need for code packing.</p> <p>bit 1: Defined but not ready to use, RFU.</p> <p>0 = packing not required</p> <p>1 = SMS packing by the ME required.</p> <p>bits 2-8: 0, RFU.</p> <p>&lt;InfoText&gt;: Information needs to indicate user, but NOT the SM itself!</p> <p>&lt;InfolconID&gt;: 0-255, 0 no icon</p> <p>&lt;InfolconQualifier&gt;: Unsigned integer, 0-255, used as a bit field</p>



Command	Description	Response
		bit 1: 0 = icon is self-explanatory, i.e. if displayed, it replaces the alpha identifier or text string 1 = icon is not self-explanatory, i.e. if displayed, it shall be displayed together with the alpha identifier or text string bits 2-8: 0, RFU NOTE: According to GSM 11.14 [13], SM and Address shall not be provided to user!
+PPSTGI=20	SEND DTMF	+PPSTGI:<CmdType>,<CmdQualifier>,<InfoText>,<InfolconID>,<InfolconQualifier> <CmdType>: 20 – Proactive Command ID <CmdQualifier>: 0, RFU <InfoText>: Information needs to indicate user, but NOT the DTMF string! <InfolconID>: 0-255, 0 no icon <InfolconQualifier>: Unsigned integer, 0-255, used as a bit field bit 1: 0 = icon is self-explanatory, i.e. if displayed, it replaces the alpha identifier or text string 1 = icon is not self-explanatory, i.e. if displayed, it shall be displayed together with the alpha identifier or text string bits 2-8: 0, RFU NOTE: According to GSM 11.14 [13], DTMF string shall not be provided to user!
+PPSTGI=32	PLAY TONE	+PPSTGI:<CmdType>,<CmdQualifier>,<InfoText>,<InfolconID>,<InfolconQualifier>,<ToneType>,<TimeoutUnit>,<TimeoutUnitNum> <CmdType>: 32 – Proactive Command ID <CmdQualifier>: 0, RFU <InfoText>: Information to be displayed to the user <InfolconID>: 0-255, 0 no icon <InfolconQualifier>: Unsigned integer, 0-255, used as a bit field bit 1: 0 = icon is self-explanatory, i.e. if displayed, it replaces the alpha identifier or text string 1 = icon is not self-explanatory, i.e. if displayed, it shall be displayed together with the alpha identifier or text string bits 2-8: 0, RFU <ToneType>: Standard supervisory tones: 1: Dial tone

Command	Description	Response
		<p>2: Called subscriber busy</p> <p>3: Congestion</p> <p>4: Radio path acknowledge</p> <p>5: Radio path not available / Call dropped</p> <p>6: Error / Special information</p> <p>7: Call waiting tone</p> <p>8: Ringing tone</p> <p>ME proprietary tones:</p> <p>16: General beep</p> <p>17: Positive acknowledgement tone</p> <p>18: Negative acknowledgement or error tone</p> <p>Others: RFU</p> <p>&lt;TimeoutUnit&gt;: Specify the unit in minutes, seconds, tenths of seconds</p> <p>0: Minutes</p> <p>1: Seconds</p> <p>2: Tenths of seconds</p> <p>3-255: 0, RFU</p> <p>&lt;TimeoutUnitNum&gt;: Specify the number of units to wait, 0-255, 0 RFU</p>
+PPSTGI=33	DISPLAY TEXT	<p>+PPSTGI:&lt;CmdType&gt;,&lt;CmdQualifier&gt;,&lt;InfoText&gt;,&lt;InfolconID&gt;,&lt;InfolconQualifier&gt;,&lt;ImmediateResponse&gt;</p> <p>&lt;CmdType&gt;: 33 – Proactive Command ID</p> <p>&lt;CmdQualifier&gt;: Specify the priority of that text</p> <p>bit 1: 0 = normal priority 1 = high priority</p> <p>bits 2-7: 0, RFU.</p> <p>bit 8: 0 = clear message after a delay 1 = wait for user to clear message</p> <p>&lt;InfoText&gt;: Text need to display, up to 240 characters</p> <p>&lt;InfolconID&gt;: 0-255, 0 no icon</p> <p>&lt;InfolconQualifier&gt;: Unsigned integer, 0-255, used as a bit field</p> <p>bit 1: 0 = icon is self-explanatory, i.e. if displayed, it replaces the alpha identifier or text string 1 = icon is not self-explanatory, i.e. if displayed, it shall be displayed together with the alpha identifier or text string</p>

Command	Description	Response
		<p>bits 2-8: 0, RFU</p> <p>&lt;ImmediateResponse &gt; Indicate when to send TERMINAL RESPONSE</p> <p>0: Send TERMINAL RESPONSE when text cleared from screen</p> <p>1: Send TERMINAL RESPONSE when ME received command</p>
+PPSTGI=34	GET INKEY	<p>+PPSTGI:&lt;CmdType&gt;,&lt;CmdQualifier&gt;,&lt;InfoText&gt;,&lt;InfolconID&gt;,&lt;InfolconQualifier&gt;</p> <p>&lt;CmdType&gt;: 34 – Proactive Command ID</p> <p>&lt;CmdQualifier&gt;: Unsigned integer, 0-255, used as a bit field</p> <p>bit 1: 0 = digits (0-9, *, # and +) only 1 = alphabet set</p> <p>bit 2: 0 = IRA alphabet 1 = UCS2 alphabet</p> <p>bit 3: 0 = character sets defined by bit 1 and bit 2 are enabled 1 = character sets defined by bit 1 and bit 2 are disabled and a "Yes/No" response is requested</p> <p>bits 4-7: 0, RFU</p> <p>bit 8: 0 = no help information available 1 = help information available</p> <p>&lt;InfoText&gt;: Information to be displayed to the user</p> <p>&lt;InfolconID&gt;: 0-255, 0 no icon</p> <p>&lt;InfolconQualifier&gt;: Unsigned integer, 0-255, used as a bit field</p> <p>bit 1: 0 = icon is self-explanatory, i.e. if displayed, it replaces the alpha identifier or text string 1 = icon is not self-explanatory, i.e. if displayed, it shall be displayed together with the alpha identifier or text string</p> <p>bits 2-8: 0, RFU</p> <p>NOTE: The &lt;InfoText&gt; can be in different data coding scheme, according to TS 23.038 <a href="#">[16]</a>.</p>
+PPSTGI=35	GET INPUT	<p>+PPSTGI:&lt;CmdType&gt;,&lt;CmdQualifier&gt;,&lt;InfoText&gt;,&lt;InfolconID&gt;,&lt;InfolconQualifier&gt;,&lt;DefaultText&gt;,&lt;MinLength&gt;,&lt;MaxLength&gt;</p> <p>&lt;CmdType&gt;: 35 – Proactive Command ID</p> <p>&lt;CmdQualifier&gt;: Unsigned integer, 0-255, used as a bit field</p>

Command	Description	Response
		<p>bit 1: 0 = digits (0-9, *, #, and +) only 1 = alphabet set</p> <p>bit 2: 0 = IRA alphabet 1 = UCS2 alphabet</p> <p>bit 3: 0 = ME may echo user input on the display 1 = user input shall not be revealed in any way (see <a href="#">NOTE</a>)</p> <p>bit 4: 0 = user input to be in unpacked format 1 = user input to be in SMS packed format</p> <p>bits 5-7: 0, RFU.</p> <p>bit 8: 0 = no help information available 1 = help information available</p> <p>&lt;InfoText&gt;: Information to be displayed to the user</p> <p>&lt;InfolconID&gt;: 0-255, 0 no icon</p> <p>&lt;InfolconQualifier&gt;: Unsigned integer, 0-255, used as a bit field</p> <p>bit 1: 0 = icon is self-explanatory, i.e. if displayed, it replaces the alpha identifier or text string 1 = icon is not self-explanatory, i.e. if displayed, it shall be displayed together with the alpha identifier or text string</p> <p>&lt;DefaultText&gt;: Default response text</p> <p>&lt;MinLength&gt;: Minimum length of user input</p> <p>&lt;MaxLength&gt;: Maximum length of user input</p> <p>NOTE: The &lt;InfoText&gt; and &lt;DefaultText&gt; can be in different data coding scheme, according to TS 23.038 [16]. Where user input is not to be revealed, the ME may provide an indication of key entries, such as by displaying "*"s.</p>
+PPSTGI=36	SELECT ITEM	<p><b>In the first line of output:</b></p> <p>+PPSTGI:&lt;CmdType&gt;,&lt;CmdQualifier&gt;,&lt;ItemNum&gt;,&lt;DefaultItem&gt;,&lt;TitleText&gt;,&lt;TitleIconID&gt;,&lt;TitleIconQualifier&gt;</p> <p>&lt;CmdType&gt;: 36 – Proactive Command ID</p> <p>&lt;CmdQualifier&gt;: Unsigned integer, 0-255, used as a bit field</p> <p>bit 1: 0 = presentation type is not specified 1 = presentation type is specified in bit 2</p> <p>bit 2: 0 = presentation as a choice of data values if bit 1 = '1' 1 = presentation as a choice of navigation options if bit 1 = '1'</p>

Command	Description	Response
		<p style="text-align: right;">bit 3: 0 = no selection preference 1 = selection using soft key preferred</p> <p style="text-align: right;">bits 1-3: Defined but not ready to use, RFU</p> <p style="text-align: right;">bits 4-7: 0, RFU.</p> <p style="text-align: right;">bit 8: 0 = no help information available 1 = help information available</p> <p>&lt;ItemNum&gt;: The number of all items, 0-255</p> <p>&lt;DefaultItem&gt;: The default item identifier</p> <p style="text-align: right;">0: No default item</p> <p style="text-align: right;">&gt;0: The default item identifier</p> <p>&lt;TitleText&gt;: The menu title text string</p> <p>&lt;TitleIconID&gt;: 0-255, 0 no icon</p> <p>&lt;TitleIconQualifier&gt;: Unsigned integer, 0-255, used as a bit field</p> <p style="text-align: right;">bit 1: 0 = icon is self-explanatory, i.e. if displayed, it replaces the alpha identifier or text string 1 = icon is not self-explanatory, i.e. if displayed, it shall be displayed together with the alpha identifier or text string</p> <p style="text-align: right;">bits 2-8: 0, RFU</p> <p><b>In the rest of lines:</b></p> <p>+PPSTGI:&lt;CmdType&gt;,&lt;ItemNum&gt;,&lt;ItemID&gt;,&lt;ItemText&gt;,&lt;ItemIconID&gt;,&lt;ItemIconQualifier&gt;,&lt;NextActionID&gt;</p> <p>&lt;CmdType&gt;: 36 – Proactive Command ID</p> <p>&lt;ItemNum&gt;: The number of all items, 0-255</p> <p>&lt;ItemID&gt;: The item identifier, 1-255. It may be inconsecutive and random, different from item index.</p> <p>&lt;ItemText&gt;: The menu item text string</p> <p>&lt;ItemIconID&gt;: 0-255, 0 no icon, the icon qualifier is provided in first line</p> <p>&lt;ItemIconQualifier&gt;: Unsigned integer, 0-255, used as a bit field</p> <p style="text-align: right;">bit 1: 0 = icon is self-explanatory, i.e. if displayed, it replaces the alpha identifier or text string 1 = icon is not self-explanatory, i.e. if displayed, it shall be displayed together with the alpha identifier or text string</p> <p style="text-align: right;">bits 2-8: 0, RFU</p>

Command	Description	Response
		<p>&lt;NextActionID&gt;: Next proactive command type, refer to GSM 11.14 [13] "Type of Command and Next Action Indicator"</p>
+PPSTGI=37	SET UP MENU	<p><b>In the first line of output:</b></p> <p>+PPSTGI:&lt;CmdType&gt;,&lt;CmdQualifier&gt;,&lt;ItemNum&gt;,&lt;TitleText&gt;,&lt;TitleIconID&gt;,&lt;TitleIconQualifier&gt;</p> <p>&lt;CmdType&gt;: 37 – Proactive Command ID</p> <p>&lt;CmdQualifier&gt;: Unsigned integer, 0-255, used as a bit field</p> <p>bit 1: 0 = presentation type is not specified 1 = presentation type is specified in bit 2</p> <p>bit 2: 0 = presentation as a choice of data values if bit 1 = '1' 1 = presentation as a choice of navigation options if bit 1 is '1'</p> <p>bit 3: 0 = no selection preference 1 = selection using soft key preferred</p> <p>bits 1-3: Defined but not ready to use, RFU</p> <p>bits 4-7: 0, RFU.</p> <p>bit 8: 0 = no help information available 1 = help information available</p> <p>&lt;ItemNum&gt;: The number of all items, 0-255 0 = remove menu, and the rest of three parameters will be omitted</p> <p>&lt;TitleText&gt;: The menu title text string</p> <p>&lt;TitleIconID&gt;: 0-255, 0 no icon</p> <p>&lt;TitleIconQualifier&gt;: Unsigned integer, 0-255, used as a bit field</p> <p>bit 1: 0 = icon is self-explanatory, i.e. if displayed, it replaces the alpha identifier or text string 1 = icon is not self-explanatory, i.e. if displayed, it shall be displayed together with the alpha identifier or text string</p> <p>bits 2-8: 0, RFU</p> <p><b>In the rest of lines:</b></p> <p>+PPSTGI:&lt;CmdType&gt;,&lt;ItemNum&gt;,&lt;ItemID&gt;,&lt;ItemText&gt;,&lt;ItemIconID&gt;,&lt;ItemIconQualifier&gt;,&lt;NextActionID&gt;</p> <p>&lt;CmdType&gt;: 37 – Proactive Command ID</p> <p>&lt;ItemNum&gt;: The number of all items, 0-255</p>

Command	Description	Response
		<p>&lt;ItemID&gt;: The item identifier, 1-255. It may be inconsecutive and random, different from item index.</p> <p>&lt;ItemText&gt;: The menu item text string</p> <p>&lt;ItemIconID&gt;: 0-255, 0 no icon, the icon qualifier is provided in first line</p> <p>&lt;ItemIconQualifier&gt;: Unsigned integer, 0-255, used as a bit field</p> <p style="padding-left: 40px;">bit 1: 0 = icon is self-explanatory, i.e. if displayed, it replaces the alpha identifier or text string</p> <p style="padding-left: 40px;">1 = icon is not self-explanatory, i.e. if displayed, it shall be displayed together with the alpha identifier or text string</p> <p style="padding-left: 40px;">bits 2-8: 0, RFU</p> <p>&lt;NextActionID&gt;: Next proactive command type, refer to GSM 11.14 [13] "Type of Command and Next Action Indicator"</p>
+PPSTGI=40	SET UP IDLE MODE TEXT	<p>+PPSTGI:&lt;CmdType&gt;,&lt;CmdQualifier&gt;,&lt;InfoText&gt;,&lt;InfoIconID&gt;,&lt;InfoIconQualifier&gt;</p> <p>&lt;CmdType&gt;: 40 – Proactive Command ID</p> <p>&lt;CmdQualifier&gt;: 0, RFU</p> <p>&lt;InfoText&gt;: The text string, it may in different data coding scheme</p> <p>&lt;InfoIconID&gt;: 0-255, 0 no icon</p> <p>&lt;InfoIconQualifier&gt;: Unsigned integer, 0-255, used as a bit field</p> <p style="padding-left: 40px;">bit 1: 0 = icon is self-explanatory, i.e. if displayed, it replaces the alpha identifier or text string</p> <p style="padding-left: 40px;">1 = icon is not self-explanatory, i.e. if displayed, it shall be displayed together with the alpha identifier or text string</p> <p style="padding-left: 40px;">bits 2-8: 0, RFU</p>
+PPSTGI=53	Language Notification	<p>+PPSTGI:&lt;CmdType&gt;,&lt;CmdQualifier&gt;,&lt;SimLanguage&gt;</p> <p>&lt;CmdType&gt;: 53 – Proactive Command ID</p> <p>&lt;CmdQualifier&gt;: Unsigned integer, 0-255, used as a bit field</p> <p style="padding-left: 40px;">bit 1: 0 = non-specific language notification</p> <p style="padding-left: 40px;">1 = specific language notification</p> <p style="padding-left: 40px;">bits 2-8: 0, RFU.</p> <p>&lt;SimLanguage&gt;: Unsigned integer, 0-255</p> <p>&gt;:</p> <p>Language code. See <a href="#">Table 27</a> on page 140.</p>

Command	Description	Response
+PPSTGI=129	End of The Proactive Session	+PPSTGI:<CmdType>,<CmdQualifier> <CmdType>: 129 – Proactive Command ID <CmdQualifier>: 0, RFU
+PPSTGI=224	Call / MO Message Controlled by SIM	+PPSTGI:<CmdType>,<CmdQualifier>,<CmdTypeControlled>,<InfoText> <CmdType>: 224 – Proactive Command ID <CmdQualifier>: 0, RFU <CmdTypeControlled>: Specify which proactive command is controlled by SIM 16: Set Up Call 17: Send SS 18: Send USSD 19: Send Short Message <InfoText>: The information text prompts to user.
NOTE: Any command type value not listed here is not supported. If user uses them as the parameter of +PPSTGI, the ME returns +CME ERROR 3.		

**Table 27 Language codes**

Code	Language	Code	Language	Code	Language
0x00	German	0x30	Galician	0x60	Russian
0x01	English	0x31	Georgian	0x61	Samoan
0x02	Italian	0x32	Greenlandic	0x62	Sangho
0x03	French	0x33	Guarani	0x63	Sanskrit
0x04	Spanish	0x34	Gujarati	0x64	Scots Gaelic
0x05	Dutch	0x35	Hausa	0x65	Serbian
0x06	Swedish	0x36	Hebrew	0x66	Serbo Croatian
0x07	Danish	0x37	Hindi	0x67	Sesotho
0x08	Portuguese	0x38	Icelandic	0x68	Setswana
0x09	Finnish	0x39	Indonesian	0x69	Shona
0x0A	Norwegian	0x3A	Interlingua	0x6A	Sindhi
0x0B	Greek	0x3B	Interlingue	0x6B	Singhalese
0x0C	Turkish	0x3C	Inupiak	0x6C	Siswati
0x0D	Hungarian	0x3D	Irish	0x6D	Slovak
0x0E	Polish	0x3E	Japanese	0x6E	Slovenian



<b>Code</b>	<b>Language</b>	<b>Code</b>	<b>Language</b>	<b>Code</b>	<b>Language</b>
		0x3F	Javanese	0x6F	Somali
0x10	Abkhazian	0x40	Kannada	0x70	Sundanese
0x11	Afan	0x41	Kashmiri	0x71	Swahili
0x12	Afar	0x42	Kazakh	0x72	Tagalog
0x13	Afrikaans	0x43	Kinyarwanda	0x73	Tajik
0x14	Albanian	0x44	Kirghiz	0x74	Tamil
0x15	Amharic	0x45	Kurundi	0x75	Tatar
0x16	Arabic	0x46	Korean	0x76	Telugu
0x17	Armenian	0x47	Kurdish	0x77	Thai
0x18	Assamese	0x48	Laothian	0x78	Tibetan
0x19	Aymara	0x49	Latin	0x79	Tigrinya
0x1A	Azerbaijani	0x4A	Latvian	0x7A	Tonga
0x1B	Bashkir	0x4B	Lingala	0x7B	Tsonga
0x1C	Basque	0x4C	Lithuanian	0x7C	Turkmen
0x1D	Bengali	0x4D	Macedonian	0x7D	Twi
0x1E	Bhutani	0x4E	Malagasy	0x7E	Ukrainian
0x1F	Bihari	0x4F	Malay	0x7F	Urdu
0x20	Czech	0x50	Malayalam	0x80	Uzbek
0x21	Bislama	0x51	Maltese	0x81	Vietnamese
0x22	Breton	0x52	Maori	0x82	Volapuk
0x23	Bulgarian	0x53	Marathi	0x83	Welsh
0x24	Burmese	0x54	Moldavian	0x84	Wolof
0x25	Byelorussian	0x55	Mongolian	0x85	Xhosa
0x26	Cambodian	0x56	Nauru	0x86	Yiddish
0x27	Catalan	0x57	Nepali	0x87	Yoruba
0x28	Chinese	0x58	Occitan	0x88	Zulu
0x29	Corsican	0x59	Oriya		
0x2A	Croatian	0x5A	Pashto		
0x2B	Esperanto	0x5B	Persian		
0x2C	Estonian	0x5C	Punjabi		
0x2D	Faroese	0x5D	Quechua		
0x2E	Fiji	0x5E	Rhaeto Romance		
0x2F	Frisian	0x5F	Romanian		

#### 4.9.3.2 Examples

Command	Response	Comment
AT+PPSTGI=?	+PPSTGI:(1,2,5,16-20,32-37,40,53,129,224) OK	Valid setting value
AT+PPSTGI=37	+PPSTGI:37,0,4,"Main Menu",0,0  +PPSTGI:37,4,1,"News",0,0, 0 +PPSTGI:37,4,2,"Weather",0,0,0 +PPSTGI:37,4,3,"Banking",0,0,0 +PPSTGI:37,4,4,"Quit",0,0,0	Proactive Command: SET UP MENU Menu Title: "Main Menu" Other Parameters: No icon, no help Sub Menu 1: "News", no icon Sub Menu 2: "Weather", no icon Sub Menu 3: "Banking", no icon Sub Menu 4: "Quit", no icon

#### 4.9.4 STK user response +PPSTUR

It gives the SIM user response or instruction.

##### 4.9.4.1 Syntax and parameter

The syntax depends on the first parameter, which specifies the indication type (command type).

##### General Syntax

Type	Command	Response
Set	+PPSTUR=<CmdType>[,<CmdResult>[,<UserInput>]]	Successful: See <a href="#">Table 30</a> on page 146. OK  Fail: +CME ERROR 4: Operation not supported  ERROR
Test	+PPSTUR=?	+PPSTUR:(1,2,5,16-20,32-37,40,53,129,224)

**Table 28 Command result table 1**

(Reference: GSM 11.14 [13] Proactive commands versus possible Terminal response)

Terminal Response	Refresh	Set up event list	Set up call	Send SS	Send USSD	Send Short Message	Send DTMF	Play tone	Display text
0 – Command performed successfully, or TE acknowledged	*	*	*	*	*	*	*	*	*
4 – Command performed successfully, but requested icon could not be displayed			*	*	*	*	*	*	*
16 – Proactive SIM session terminated by 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/SS Transact terminated by user			*	*	*				
32 – ME currently unable to process command	*	*	*	*	*	*	*	*	*
33 – Network currently unable to process command			*	*	*	*			
34 – User did not accept the proactive command			*						
35 – User cleared down call before connection or network release			*						
48 – Command beyond MEs capabilities	*	*	*	*	*	*	*	*	*

Terminal Response	Refresh	Set up event list	Set up call	Send SS	Send USSD	Send Short Message	Send DTMF	Play tone	Display text
Extended Result defined by CELLon (Start from 0xE0, highest 3 bits set to 1)									
224 – Event response (GSM 11.14 [13], section 12.25)		*							
225 – Screen busy			*	*	*	*	*		*
226 – Busy on call			*	*	*	*			
227 – Busy on SS			*	*	*	*			
228 – Busy on USSD			*	*	*	*			
255 – Menu selected by user									

**Table 29 Command result table 2**

(Reference: GSM 11.14 [13] Proactive commands versus possible Terminal response)

Terminal Response	Get Inkey	Get Input	Select Item	Set Up Menu	Set Up Idle Mode Text	Language Notification	End of Session	Call Control	More Time
0 – Command performed successfully	*	*	*	*	*	*	*	*	*
4 – Command performed successfully, but requested icon could not be displayed	*	*	*	*	*				
16 – Proactive SIM session terminated by user	*	*	*						
17 – Backward move in the proactive SIM session requested by the user	*	*	*						
18 – No response from user	*	*	*						

Terminal Response	Get Inkey	Get Input	Select Item	Set Up Menu	Set Up Idle Mode Text	Language Notification	End of Session	Call Control	More Time
19 – Help information required by the user	*	*	*						
20 – USSD/SS transaction terminated by user									
32 – ME currently unable to process command	*	*	*	*	*	*			*
33 – Network currently unable to process command									
34 – User did not accept the proactive command									
35 – User cleared down call before connection or network release									
48 – Command beyond ME's capabilities	*	*	*	*	*	*			*
Extended Result defined by CELLon (Start from 0xE0, highest 3 bits set to 1)									
224 – Event response (GSM 11.14 <a href="#">[13]</a> , section 12.25)									
225 – Screen busy	*	*	*	*			*	*	
226 – Busy on call	*	*	*	*					
227 – Busy on SS	*	*	*	*					
228 – Busy on USSD	*	*	*	*					
255 – Menu selected by user				*					

**Table 30 Detail syntax of response according to command result table 1 & 2**

Command	Description	Response
+PPSTUR=1	REFRESH	+PPSTUR:<CmdType>,<CmdResult> <CmdType>: 1 – Proactive Command ID <CmdResult>: Unsigned integer, 0-255. See <a href="#">Table 28</a> on page 143.
+PPSTUR=2	MORE TIME	+PPSTUR:<CmdType>,<CmdResult> <CmdType>: 2 – Proactive Command ID <CmdResult>: Unsigned integer, 0-255. See <a href="#">Table 28</a> on page 143.
+PPSTUR=5	SET UP EVENT LIST	+PPSTUR:<CmdType>,<CmdResult>[,<EventCode>] <CmdType>: 5 – Proactive Command ID <CmdResult>: Unsigned integer, 0-255. See <a href="#">Table 28</a> on page 143. <EventCode>: Event code; refer to GSM 11.14 <a href="#">[13]</a> , section 12.25  0 MT call, RFU 1 Call connected, RFU 2 Call disconnected, RFU 3 Location status, RFU 4 User activity 5 Idle screen available 6 Card reader status (if class "a" is supported), RFU 7 Language selection, RFU 8 Browser Termination (if class "c" is supported), RFU 9 Data available (if class "e" is supported), RFU 10 Channel status (if class "e" is supported), RFU But, only valid when <CmdResult> is 224 224 Event response
+PPSTUR=16	SET UP CALL	+PPSTUR:<CmdType>,<CmdResult> <CmdType>: 16 – Proactive Command ID <CmdResult>: Unsigned integer, 0-255. See <a href="#">Table 28</a> on page 143.
+PPSTUR=17	SEND SS	+PPSTUR:<CmdType>,<CmdResult> <CmdType>: 17 – Proactive Command ID <CmdResult>: Unsigned integer, 0-255. See <a href="#">Table 28</a> on page 143.

Command	Description	Response
+PPSTUR=18	SEND USSD	+PPSTUR:<CmdType>,<CmdResult> <CmdType>: 18 – Proactive Command ID <CmdResult>: Unsigned integer, 0-255. See <a href="#">Table 28</a> on page 143.
+PPSTUR=19	SEND SHORT MESSAGE	+PPSTUR:<CmdType>,<CmdResult> <CmdType>: 19 – Proactive Command ID <CmdResult>: Unsigned integer, 0-255. See <a href="#">Table 28</a> on page 143.
+PPSTUR=20	SEND DTMF	+PPSTUR:<CmdType>,<CmdResult> <CmdType>: 20 – Proactive Command ID <CmdResult>: Unsigned integer, 0-255. See <a href="#">Table 28</a> on page 143.
+PPSTUR=32	PLAY TONE	+PPSTUR:<CmdType>,<CmdResult> <CmdType>: 32 – Proactive Command ID <CmdResult>: Unsigned integer, 0-255. See <a href="#">Table 28</a> on page 143.
+PPSTUR=33	DISPLAY TEXT	+PPSTUR:<CmdType>,<CmdResult> <CmdType>: 33 – Proactive Command ID <CmdResult>: Unsigned integer, 0-255. See <a href="#">Table 28</a> on page 143.
+PPSTUR=34	GET INKEY	+PPSTUR:<CmdType>,<CmdResult>,<InputChar> <CmdType>: 34 – Proactive Command ID <CmdResult>: Unsigned integer, 0-255. See <a href="#">Table 29</a> on page 144. <InputChar>: A character user inputted, like +PPSTUR=34,0,"C"
+PPSTUR=35	GET INPUT	+PPSTUR:<CmdType>,<CmdResult>,<InputString> <CmdType>: 35 – Proactive Command ID <CmdResult>: Unsigned integer, 0-255. See <a href="#">Table 29</a> on page 144. <InputString>: A string user inputted, like +PPSTUR=35,0,"String"
+PPSTUR=36	SELECT ITEM	+PPSTUR:<CmdType>,<CmdResult>,<ItemID> <CmdType>: 36 – Proactive Command ID <CmdResult>: Unsigned integer, 0-255. See <a href="#">Table 29</a> on page 144.

Command	Description	Response
		<ItemID>: Item identifier user selected, 1-255. It may be inconsecutive and random, different from item index. Refer to <a href="#">+PPSTGI=36/37</a> .
+PPSTUR=37	SET UP MENU	+PPSTUR:<CmdType>,<CmdResult>[,<ItemID>] <CmdType>: 37 – Proactive Command ID <CmdResult>: Unsigned integer, 0-255. See <a href="#">Table 29</a> on page 144. <ItemID>: Specify the item identifier user selected, 1-255. It may be inconsecutive and random, different from item index. Refer to <a href="#">+PPSTGI=36/37</a> . But, it is only valid when <CmdResult> is 255: Menu selected by user Note: For Remove Menu (ItemNum = 0), the possible response is only 0, 32, 48. See <a href="#">Table 29</a> on page 144.
+PPSTUR=40	SET UP IDLE MODE TEXT	+PPSTUR:<CmdType>,<CmdResult> <CmdType>: 40 – Proactive Command ID <CmdResult>: Unsigned integer, 0-255. See <a href="#">Table 29</a> on page 144.
+PPSTUR=53	LANGUAGE NOTIFICATION	+PPSTUR:<CmdType>,<CmdResult> <CmdType>: 53 – Proactive Command ID <CmdResult>: Unsigned integer, 0-255. See <a href="#">Table 29</a> on page 144.
+PPSTUR=129	End of the proactive command	+PPSTUR:<CmdType>,<CmdResult> <CmdType>: 129 – Proactive Command ID <CmdResult>: Unsigned integer, 0-255. See <a href="#">Table 29</a> on page 144.
+PPSTUR=224	Call / MO Message Controlled by SIM	+PPSTUR:<CmdType>,<CmdResult> <CmdType>: 224 – Proactive Command ID <CmdResult>: Unsigned integer, 0-255. See <a href="#">Table 29</a> on page 144.



#### 4.9.4.2 Examples

Command	Response	Comment
AT+PPSTUR=?	+PPSTUR: (1,2,5,16-20,32-37,40,53,129,224) OK	Valid setting value
AT+PPSTUR=37	(Assuming the menu has been asked by <b>+PPSTGI=37</b> command, see section 4.9.3.2 example on page 142 for detail)  +PPSTUR: 37,255,2	Proactive Command: SET UP MENU  Operation: Menu Selection  Menu Item ID: Item 2, "Weather"  (See section 4.9.3.2 example on page 142).

## 4.10 GPRS commands

### 4.10.1 Define PDP context +CGDCONT

The set command specifies PDP context parameter values for a PDP context identified by the (local) context identification parameter.

#### 4.10.1.1 Syntax

Type	Command	Response
Set	+CGDCONT=[<cid> [,<PDP_type> [,<APN> [,<PDP_addr> [,<d_comp> [,<h_comp> [,<pd1> [,...[,pdN]]]]]]]]]]	Successful: OK  Fail: +CME ERROR: <err> ERROR
Read	+CGDCONT?	+CGDCONT: <cid>, <PDP_type>, <APN>, <PDP_addr>, <data_comp>, <head_comp>[,<pd1>[,...[,pdN]]] [<CR><LF>+CGDCONT: <cid>, <PDP_type>, <APN>, <PDP_addr>, <data_comp>, <head_comp>[,<pd1>[,...[,pdN]]] [...]]
Test	+CGDCONT=?	+CGDCONT: (1-3),"IP", , ,(0),(0),

#### 4.10.1.2 Parameter

Name	Value	Description
<cid>	1-3	PDP context identifier, 3- default value.
<PDP_type>	"IP"	Packet Data Protocol type
<APN>	String	Access Point Name
<PDP_address>	"n.n.n.n" (n < 256)	MT identifier in applicable PDP address space To have the IP address allocated by the network, set this parameter to NULL.
<d_comp>	0	<b>PDP data compression</b> Off. (Default value)
<h_comp>	0	<b>PDP header compression</b> Off. (Default value)

#### 4.10.1.3 Example

AT+CGDCONT=1,"IP",CMNET	<i>;Define a PDP context identifier: CID</i>
OK	
AT+CGQREQ=1,3,4,3,0,0	<i>;Define the Quality of Service (QoS) profile</i>
OK	
AT+CGATT=1	<i>;Attach</i>
OK	
ATD*99***1#	<i>;Request GPRS Packet Domain service</i>
CONNECT	

#### 4.10.1.4 Specification restriction

Name	Description
cid	<cid>=3 locked in the default configuration in EEPROM
PdN	pdN parameters are not supported
	The parameters <d_comp> and <h_comp> only support the value 0

## 4.10.2 Quality of Service profile (requested) +CGQREQ

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 (local) context identification parameter.

### 4.10.2.1 Syntax

Type	Command	Response
Set	+CGQREQ=[<cid> [,<precedence > [,<delay> [,<reliability.> [,<peak> [,<mean>]]]]]]	Successful: OK Fail: +CME ERROR: <err> ERROR
Read	+CGQREQ?	+CGQREQ: <cid>, <precedence >, <delay>, <reliability>, <peak>, <mean> [<CR><LF>+CGQREQ: <cid>, <precedence >, <delay>, <reliability.>, <peak>, <mean> [...]]
Test	CGQREQ=?	+CGQREQ: <PDP_type>, (list of supported <precedence>s), (list of supported <delay>s), (list of supported <reliability>s), (list of supported <peak>s), (list of supported <mean>s) [<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) [...]]

### 4.10.2.2 Parameter

Name	Value	Description
<cid>	1-3	PDP context identifier, 3 – default value
<precedence>	0-3	Precedence class; 0 – default value
<delay>	0-4	Delay class; 0 – default value
<reliability>	0-5	Reliability class; 3 – default value
<peak>	0-9	Peak throughput class; 0 – default value
<mean>	0-18,31	Mean throughput class; 0 – default value

#### 4.10.2.3 Examples

Command	Response	Comment
AT+CGQREQ=?	+CGQREQ: "IP",(1-3), (0,4), (0,5), (0,9), (0-18, 31)	

See also "[Example](#)" on page 150.

### 4.10.3 Quality of Service profile (minimum acceptable) +CGQMIN

This command allows the TE to specify a minimum acceptable profile that is checked by the MT against the negotiated profile returned in the Activate PDP Context Accept message.

The set command specifies a profile for the context identified by the (local) context identification parameter.

#### 4.10.3.1 Syntax

Type	Command	Response
Set	+CGQMIN=[<cid> [,<precedence > [,<delay>[,<reliability.> [,<peak> [,<mean>]]]]]]	Successful: OK  Fail: +CME ERROR: <err>  ERROR
Read	+CGQMIN?	+CGQMIN: <cid>, <precedence >, <delay>, <reliability>, <peak>, <mean> [ <cr&gt;&lt;lf&gt;+cgqmin: &gt;,="" &lt;cid&gt;,="" &lt;delay&gt;,="" &lt;mean&gt;[...]]<="" &lt;peak&gt;,="" &lt;precedence="" &lt;reliability.&gt;,="" td=""> </cr&gt;&lt;lf&gt;+cgqmin:>
Test	+CGQMIN=?	+CGQMIN: <PDP_type>, (list of supported <precedence>s), (list of supported <delay>s), (list of supported <reliability>s) , (list of supported <peak>s), (list of supported <mean>s) [ <cr&gt;&lt;lf&gt;+cgqmin: &lt;delay&gt;s),="" &lt;mean&gt;s)="" &lt;pdp_type&gt;,="" &lt;peak&gt;s),="" &lt;precedence&gt;s),="" &lt;reliability&gt;s)="" (list="" ,="" [...]]<="" of="" supported="" td=""> </cr&gt;&lt;lf&gt;+cgqmin:>

#### 4.10.3.2 Parameter

Name	Value	Description
<cid>	1-3	PDP context identifier
<precedence>	0-3	Precedence class
<delay>	0-4	Delay class
<reliability>	0-5	Reliability class
<peak>	0-9	Peak throughput class
<mean>	0-18,31	Mean throughput class

## 4.10.4 PDP context activate or deactivate +CGACT

This command activates or deactivates the specified PDP context (s).

### 4.10.4.1 Syntax

Type	Command	Response
Set	+CGACT=[<state> [,<cid>[,<cid>[...]]]]	Successful: OK Fail: +CME ERROR: <err> ERROR
Read	+CGACT?	+CGACT: <cid>, <state> [<CR><LF>+CGACT: <cid>, <state>[...]]
Test	+CGACT=?	+CGACT: (list of supported <state>s)

### 4.10.4.2 Parameter

Name	Value	Description
<state>		<b>State of PDP context activation</b>
	0	Deactivated
	1	The context identifier <cid> associated with ATD* is activated
<cid>	1-3	PDP context identifiers

### 4.10.4.3 Examples

Command	Response	Comment
AT+CGACT=?	+CGACT:(0,1)	

### 4.10.4.4 Specification restriction

Name	Description
	Only one PDP context can be activated at a time. cid=3 is locked in EEPROM and cannot be changed.

## 4.10.5 GPRS attach or detach +CGATT

This command attaches the MT to, or detaches the MT from, the GPRS service.

### 4.10.5.1 Syntax

Type	Command	Response
Set	+CGATT= [<state>]	Successful: OK Fail: ERROR
Read	+CGATT?	+CGATT:<state>
Test	+CGATT=?	+CGATT: (0, 1)

### 4.10.5.2 Parameter

Name	Value	Description
State	0 1	Indicates the state of GPRS attachment Detached Attached

## 4.10.6 Show PDP address +CGPADDR

This command returns a list of PDP addresses for the specified context identifiers.

### 4.10.6.1 Syntax

Type	Command	Response
Set	+CGPADDR=[<cid> [,<cid>[...]]]	Successful: +CGPADDR: <cid>,<PDP_addr> [<CR><LF>+CGPADDR: <cid>,<PDP_addr> [...]] Fail: ERROR
Test	+CGPADDR=?	+CGPADDR: (list of defined <cid>s)

### 4.10.6.2 Parameter

Name	Value	Description
<PDP_addr>	"<n>,<n>,<n>,<n>"	where <n>=0-255

Name	Value	Description
<cid>	1-3	PDP context identifiers specified (minimum value = 1)

#### 4.10.6.3 Examples

Command	Response	Comment
AT+CGPADDR=?	+CGPADDR:(1,2,3)	

### 4.10.7 GPRS Mobile Station class +CGCLASS

The set command is used to set the MT to operate according to the specified GPRS mobile class. If the requested class is not supported, an ERROR or +CME ERROR response is returned. Extended error responses are enabled by the [+CMEE](#) command (page 41).

#### 4.10.7.1 Syntax

Type	Command	Response
Set	+CGCLASS= [<class>]	Successful: OK Fail: ERROR
Read	+CGCLASS?	+CGCLASS: <class>
Test	+CGCLASS=?	+CGCLASS: (list of supported <class>s)

#### 4.10.7.2 Parameter

Name	Value	Description
<class>		<b>GPRS mobile class</b>
	"B"	Class B
	"CC"	Class C in circuit switched only mode

#### 4.10.7.3 Specification restriction

Name	Description
<class>	Only values "B" and "CC" are supported.  It is not possible to really change the class of the mobile. At the moment, the command is used only for compliance, and will answer OK if the class requested by the PC is the current class of the mobile.

### 4.10.8 GPRS network registration status +CGREG

The set command controls the presentation of an unsolicited result code.

#### 4.10.8.1 Syntax

Type	Command	Response
Set	+CGREG=[<n>]	
Read	+CGREG?	+CGREG: <n>,<stat>[,<lac>,<ci>] +CME ERROR: <err>
Test	+CGREG=?	+CGREG: (list of supported<n>s)

#### 4.10.8.2 Parameter

Name	Value	Description
<n>	0	Disable network registration unsolicited result code
	1	Enable network registration unsolicited result code +CGREG: <stat>
	2	Enable network registration and location information unsolicited result code
<stat>		<b>Registration state</b>
	0	Not registered, ME is not currently searching for a new operator to register with
	1	Registered, home network
	2	Not registered, but ME is currently searching for a new operator to register with
	3	Registration denied
	4	Unknown
5	Registered, roaming	
<lac>		Two byte location area code in hexadecimal format
<ci>		Two byte cell ID in hexadecimal format



## 4.10.9 Select service for MO SMS messages +CGSMS

The set command specifies the service or service preference that the MT will use to send MO SMS messages.

**NOTE:** Since no network currently supports SMS over GPRS, the command +CGSMS has not been tested.

### 4.10.9.1 Syntax

Type	Command	Response
Set	+CGSMS= [<service>]	Successful: OK Fail: ERROR
Read	+CGSMS?	+CGSMS: <service>
Test	+CGSMS=?	+CGSMS: (0,1)

### 4.10.9.2 Parameter

Name	Value	Description
<service>		<b>A numeric parameter that indicates the service or service preference to be used.</b>
	0	Packet Domain
	1	Circuit switched

## 4.10.10 Request GPRS service D\*

Establishes communication between the TE and the GPRS network.

### 4.10.10.1 Syntax

Type	Command	Response
Set	D*<GPRS_SC>[*<called_address>][*<L2P>][*<cid>]]# or D*<GPRS_SC_IP>[*<cid>]]#	Successful: CONNECT Fail: ERROR

#### 4.10.10.2 Parameter

Name	Value	Description
<GPRS_SC>	99	(GPRS Service Code) a digit string (value 99) that identifies a request to use the Packet Domain service.
<GPRS_IP>	98	(GPRS Service Code) a digit string (value 98) that identifies a request to use the IP service.
<called_address>		
<L2P>	1	Layer 2 protocol : PPP
<cid>	0-3	A digit string that specifies a particular PDP context definition (see <a href="#">+CGDCONT</a> command on page 149).

#### 4.10.10.3 Example

See “[Example](#)” on page 150.

#### 4.10.10.4 Specification restriction

Name	Description
L2P	L2P is restricted to the “PPP” or 1 value
<called address>	Called address must be left empty. If the supplied or default context is not correct, no further attempt (look for another suitable context, create one if necessary...) will be made.

## 4.11 Facsimile and data commands

### 4.11.1 Request manufacturer identification +FMI

Identical to the [+GMI](#) command (page 31).

### 4.11.2 Request model identification +FMM

Identical to the [+GMM](#) command (page 32).

### 4.11.3 Request revision identification +FMR

Identical to the [+GMR](#) command (page 32).

## 4.11.4 Select mode #CLS

This command selects data or fax mode.

### 4.11.4.1 Syntax

Type	Command	Response
Set	#CLS= <n>	Successful: OK Fail: ERROR
Read	#CLS?	This query returns the current setting of the #CLS command as an ASCII decimal value in result code format.
Test	#CLS=?	#CLS:(0,1)

### 4.11.4.2 Parameter

Name	Value	Description
<n>		<b>Device types supported by #CLS</b>
	0	Telephone line with telephone handset. (Default value)
	1	Transmit/receive device (other than telephone line)

### 4.11.4.3 Specification restriction

Name	Description
	Same behavior as <a href="#">+FCLASS</a> command (page 38).

## 4.11.5 HDLC transmit +FTH / HDLC receive +FRH

This command causes the ME to transmit/receive frames using HDLC protocol and the modulation defined below. An ERROR response code results if this command is issued while the ME is on-hook.

### 4.11.5.1 Syntax

Type	Command	Response
Set	+FRH=<mod>	Successful: CONNECT Fail: ERROR

Type	Command	Response
Read	+FRH?	+FRH:<mod>
Test	+FRH?	+FRH:(3)

#### 4.11.5.2 Parameter

Name	Value	Description
mod	3	<b>Modulation modes and rate</b> V.21 300 bps

#### 4.11.5.3 Examples

Command	Response	Comment
AT+FRH?	+FRH: 3	V.21 300 bps

#### 4.11.5.4 Specification restriction

Name	Description
<mod>	The only mode supported is the modulation mode 300 bits/s. The Set command is supported only after FAX communication has been established

### 4.11.6 Facsimile transmit +FTM / facsimile receive +FRM

This command causes the ME to transmit data using the modulation.

#### 4.11.6.1 Syntax

Type	Command	Response
Set	FTM=<mod>	Successful: CONNECT Fail: ERROR
Read	FTM?	FTM:<mod>
Test	FTM=?	FTM: (24,48,72,96)

#### 4.11.6.2 Parameter

Name	Value	Description
<mod>		<b>Modulation mode and rate</b>
	24	V.27 ter 2400 bps
	48	V.27 ter 4800 bps
	72	V.29 7200 bps
	96	V.29 9600 bps

#### 4.11.6.3 Examples

Command	Response	Comment
AT+FTM=?	+FTM: 96	

#### 4.11.6.4 Specification restriction

Name	Description
<mod>	The supported modes are 2400, 4800, 7200 and 9600 bits/s. The read command always returns 9600 bits/s because the communication must begin at this speed. The Set command is supported only after FAX communication has been established

### 4.11.7 Transmit silence +FTS

This command causes the ME to terminate a transmission and wait for <time> 10-ms intervals before responding with the OK result code.

#### 4.11.7.1 Syntax

Type	Command	Response
Set	+FTS=<time>	Successful: OK
		Fail: ERROR
Read	FTS?	FTS:<time>
Test	FTS=?	FTS:0..255

#### 4.11.7.2 Parameter

Name	Value	Description
<time>	0..255	Decimal number from 0 (default) to 255, which specifies the length of time in 10-ms intervals to delay before responding with the OK result code after terminating the session.

#### 4.11.7.3 Examples

Command	Response	Comment
AT+FTS=?	+FTM: 0..255	

#### 4.11.7.4 Specification restriction

Name	Description
	The Set command is supported only after FAX communication has been established

### 4.11.8 Receive silence +FRS

This command causes the ME to listen and report an OK result code when silence has been detected on the line for the specified period of time.

This command is aborted if any character is received from the DTE after receipt of the command but before the time delay elapses.

#### 4.11.8.1 Syntax

Type	Command	Response
Set	+FRS=<time>	Successful: OK Fail: ERROR
Read	FRS?	FRS:<time>
Test	FRS=?	FRS:0..255

#### 4.11.8.2 Parameter

Name	Value	Description
<time>	0..255	Decimal number from 0 (default) to 255 that specifies the length of time in 10-ms intervals to delay before responding with the OK result code after detecting silence on the line.

#### 4.11.8.3 Examples

Command	Response	Comment
AT+FRS=?	+FRS: 0..255	

#### 4.11.8.4 Specification restriction

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**NOTE:** The fax Class 2.0 commands are not yet implemented.

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### 4.11.9 Select reporting control +CR

This command controls whether or not intermediate result code +**CR**: <serv> is returned from the ME to the TE. If enabled, the intermediate result code is transmitted at the point during connect negotiation at which the ME 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.

#### 4.11.9.1 Syntax

Type	Command	Response
Set	+CR=[<mode>]	Successful: OK Fail: ERROR
Read	+CR?	+CR: <mode>
Test	+CR=?	+CR: (0,1)

#### 4.11.9.2 Parameter

Name	Value	Description
<mode>		Switch report

Name	Value	Description
	0	Disable reporting. (Default value)
	1	Enable reporting

#### 4.11.9.3 Examples

Command	Response	Comment
AT+CR=?	+CR:(0,1)	Support mode

### 4.11.10 Cellular result codes +CRC

This command controls whether or not the extended format of incoming call indication is used. When enabled, the incoming call is indicated with the result code **+CRING** followed by the call type instead of the normal RING.

#### 4.11.10.1 Syntax

Type	Command	Response
Set	+CRC=[<mode>]	Successful: OK Fail: ERROR
Read	+CRC?	+CRC: <mode>
Test	+CRC=?	+CRC: (0,1)

#### 4.11.10.2 Parameter

Name	Value	Description
<mode>	0	Disables extended format. (Default value)
	1	Enables extended format

#### 4.11.10.3 Examples

Command/action	Response	Comment
AT+CRC=1	OK	
Receive an incoming fax call	+CRING: FAX	



Command/action	Response	Comment
Receive an incoming data call	+CRING: REL ASYNC	
Receive an incoming voice call	+CRING: VOICE	

### 4.11.11 Radio Link Protocol +CRLP

This command selects the Radio Link Protocol parameters to be used when non-transparent data calls are originated.

#### 4.11.11.1 Syntax

Type	Command	Response
Set	+CRLP=[<iws>[,<mws>[,<T1>[,<N2>[,<ver>[,<T4>]]]]]]]	Successful: OK Fail: ERROR
Read	+CRLP?	+CRLP: <iws>,<mws>,<T1>,<N2>,0
Test	+CRLP=?	+CRLP: (0-61), (0-61), (44-255), (1-255), 0

#### 4.11.11.2 Parameter

Name	Value	Description
<iws>	0-61	IWF to MS window size; 61 – default value
<mws>	0-61	MS to IWF window size; 61 – default value
<T1>	44-255	Acknowledgement timer; 48 – default value
<N2>	1-255	Retransmission attempts; 6 – default value
<ver>	0	RLP version number in integer format. When version indication is not present, it equals 0 (Default value)

### 4.11.12 Select bearer service type +CBST

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

#### 4.11.12.1 Syntax

Type	Command	Response
Set	+CBST=[<speed>[,<name>[,<ce>]]]	Successful: OK Fail: ERROR
Read	+CBST?	+CBST: <speed>,<name>,<ce>
Test	+CBST=?	+CBST: (7,71),(0),(1)

#### 4.11.12.2 Parameter

Name	Value	Description
<speed>	7	<b>Data rate</b> 9600 bps (V.32) (Default value)
	71	9600 bps (v.110 or X.31 flag stuffing)
<name>	0	Bearer service: data circuit asynchronous (Default value)
<ce>	1	<b>Connection element</b> Non-transparent (Default value)

#### 4.11.12.3 Examples

Command	Response	Comment
AT+CBST?	+CBST:7,0,1	<Speed>71: 9600 bps (V.32) <Name>0:data circuit asynchronous <ce>1: non-transparent

#### 4.11.12.4 Specification restriction

Name	Description
<name>	The only supported name is data circuit asynchronous.
<ce>	The only supported connection element is Non-transparent.

## 4.12 DTE-DCE interface commands

### 4.12.1 Select Data Terminal Ready option &D

This command selects the Data Terminal Ready option.

#### 4.12.1.1 Syntax

Command	Response
&D[<n>]	Successful: OK Fail: ERROR

#### 4.12.1.2 Parameter

Name	Value	Description
<n>	0	ME ignores status on DTR.
	1	ON->OFF on DTR: Change to command mode while retaining the connected call. (Default value)
	2	ON->OFF on DTR: Disconnect call, change to command mode.

#### 4.12.1.3 Notes

In case of “OFF DTR”, if the signal remains in high state (OFF) more than two seconds, it is considered as a PC disconnection and no “OK” is sent to the TE (cable considered unplugged). The behavior of the command complies the recommendation description only within DTR pulses (DTR signal stay in the off state less than 2 seconds).

### 4.12.2 Character framing +ICF

This command sets the start-stop character framing.

#### 4.12.2.1 Syntax

Type	Command	Response
Set	+ICF=[<format>[,<parity>]]	Successful: OK

Type	Command	Response
		Fail: ERROR
Read	+ICF?	+ICF: 3, 3
Test	+ICF=?	+ICF: (3),(3)

#### 4.12.2.2 Parameter

Name	Value	Description
<format>	3	8 Data, 1 Stop
<parity>	3	Space

#### 4.12.2.3 Specification restriction

Name	Description
	The supported format is 8 Data, 1 Stop. The parity is Space.

### 4.12.3 Local flow control +IFC

This command is used to control the operation of local flow control between the DTE and DCE during the data.

#### 4.12.3.1 Syntax

Type	Command	Response
Set	+IFC= [<DCE_by_DTE> [,<DTE_by_DCE>]]	Successful: OK Fail: ERROR
Read	+ICF?	Return a string with the current flow control modes used when transmitting and receiving.
Test	+IFC=?	+IFC: (0,2), (0,2)

#### 4.12.3.2 Parameter

Name	Value	Description
<DCE_by_DTE>		<b>Specifies the method to be used by the DTE to control the flow of received data from the DCE.</b>
	0	None (Default value)
	2	RTS
<DTE_by_DCE>		<b>Specifies the method to be used by the DCE to control the flow of transmitted data from the DTE.</b>
	0	None
	2	CTS

#### 4.12.3.3 Notes

Commands +IFC and &K both control XON/XOFF. The flow control status is determined by the last setting (set through either +IFC or &K).

#### 4.12.3.4 Example

AT&K4	<i>; Enable XON/XOFF flow control</i>
AT&V	
ACTIVE PROFILE:	
E1 Q0 V0 X4 &C1 &D1 &K4 ....	<i>; XON/XOFF flow control is enabled</i>
AT+IFC=0,0	<i>; Disable flow control</i>
AT&V	
ACTIVE PROFILE:	
E1 Q0 V0 X4 &C1 &D1 &K0 ....	<i>; XON/XOFF flow control is disabled</i>

#### 4.12.3.5 Specification restriction

Name	Description
	Hardware flow control is always on; it cannot be disabled by +IFC or &K.

## 4.12.4 Fixed DTE rate +IPR

This command sets the DTE rate. The default value is 0 for auto-detectable rate.

### 4.12.4.1 Syntax

Type	Command	Response
Set	AT+IPR=<rate>	Successful: OK Fail: ERROR
Read	AT+IPR?	+IPR: <rate>
Test	AT+IPR=?	(list of supported auto-detectable <rate> values),(list of fixed-only <rate> values)

### 4.12.4.2 Parameter

Name	Value	Description
<rate>	0	Default value.  <b>Supported auto-detectable rates:</b>  1200 bps 2400 bps 4800 bps 9600 bps 19200 bps 38400 bps 57600 bps 115200 bps
	1200 2400 4800 9600 14400 19200 28800 38400 57600	<b>Fixed rate:</b>  1200 bps 2400 bps 4800 bps 9600 bps 14400 bps 19200 bps 28800 bps 38400 bps 57600 bps

Name	Value	Description
	115200	115200 bps

#### 4.12.4.3 Examples

Command	Response	Comment
AT+IPR=115200	OK	The rate is fixed to 115200bps. Disable the auto-detectable rate.
AT+IPR=?	+IPR:(0,9600, 19200, 38400, 57600, 115200), (1200,2400,4800,9600,14400,19200,28800,38400,57600, 115200)	

#### 4.12.4.4 Specification restriction

Name	Description
	After ME is set to auto-detectable mode, if it receives "\r\n"(0x0d 0x0a), it will synchronize and send OK back to TE during 100ms, otherwise TE setting is not successful.

### 4.12.5 Command echo E

This command enables or disables the echo of AT command.

#### 4.12.5.1 Syntax

Command	Response
E<n>	Successful: OK Fail: ERROR

#### 4.12.5.2 Parameter

Name	Value	Description
<n>	0	Echo mode off
	1	Echo mode on. (Default value)

## 4.12.6 Result code suppression Q

This command enables or disables sending of result code.

### 4.12.6.1 Syntax

Command	Response
Q[<n>]	Successful: OK Fail: ERROR

### 4.12.6.2 Parameter

Name	Value	Description
<n>	0	Result codes are transmitted (Default value)
	1	Result codes are suppressed and not transmitted

## 4.12.7 Escape character S2

This command sets the ASCII character used for the escape sequence (in data mode).

### 4.12.7.1 Syntax

Command	Response
S2=43	Successful: OK Fail: ERROR
S2?	43

### 4.12.7.2 Specification restriction

Name	Description
	The only supported escape character is '+' (ASCII value= 43)



## 4.12.8 Command line termination character S3

This command sets the ASCII character used for the command line termination character.

### 4.12.8.1 Syntax

Command	Response
S3=<chr>	Successful: OK Fail: ERROR

### 4.12.8.2 Parameter

Name	Value	Description
<chr>	13	The only supported character is <CR> (Default value)

### 4.12.8.3 Specification restriction

Name	Description
	The only supported character is <CR>

## 4.12.9 Response formatting character S4

This command sets the ASCII character used for the response formatting character.

### 4.12.9.1 Syntax

Command	Response
S4=<chr>	Successful: OK Fail: ERROR

#### 4.12.9.2 Parameter

Name	Value	Description
<chr>	10	The only supported character is <LF> (Default value)

#### 4.12.9.3 Specification restriction

Name	Description
	The only supported character is <LF>

### 4.12.10 Command line editing character S5

This command sets the ASCII character used to delete characters.

#### 4.12.10.1 Syntax

Command	Response
S5=<chr>	Successful: OK Fail: ERROR

#### 4.12.10.2 Parameter

Name	Value	Description
<chr>	8	The only supported character is <backspace> (Default value)

#### 4.12.10.3 Specification restriction

Name	Description
	The only supported character is <backspace>

## 4.12.11 Select result code format V

This command specifies:

- The contents of the header and trailer transmitted with result codes and information response (described in section 2.4.1 on page 12)
- The format in which the result codes are transmitted (numeric or verbose form)

### 4.12.11.1 Syntax

Command	Response
V[<n>]	Successful: 0 when <n> =0 1 when <n> =1 Fail: ERROR

### 4.12.11.2 Parameter

Name	Value	Description
<n>	0	Information response: <text><CR><LF> Short result code format: <numeric code><CR>
	1	(Default value) Information response: <CR><LF><text><CR><LF> Long result code format: <CR><LF><verbose code><CR><LF>>

## 4.12.12 Extended result code W

This command determines which <mode> of result code is to be used as extended result code in addition to the CONNECT result code.

### 4.12.12.1 Syntax

Command	Response
W[<mode>]	Successful: OK Fail: ERROR

#### 4.12.12.2 Parameter

Name	Value	Description
<mode>	0	The connection message code is CONNECT

#### 4.12.12.3 Examples

Command	Response	Comment
ATW0	OK	CONNECT

#### 4.12.12.4 Specification restriction

Name	Description
	The only supported connect message code is CONNECT (mode 0). All other extended result codes are disabled.

### 4.12.13 Result code selection and call progress monitoring control X

This command sets CONNECT result code format.

#### 4.12.13.1 Syntax

Command	Response
X[<n>]	Successful: OK Fail: ERROR

#### 4.12.13.2 Parameter

Name	Value	Description
<n>	0	CONNECT result code only returned, dial tone and busy detection are both disabled.
	1	CONNECT<text> result code only returned, dial tone and busy detection are both disabled.
	2	CONNECT<text> result code returned, dial tone detection is enabled, busy detection is disabled.

Name	Value	Description
	3	CONNECT<text> result code returned, dial tone detection is disabled, busy detection is enabled.
	4	CONNECT<text> result code returned, dial tone and busy detection are both enabled. (Default value)

## 4.12.14 Flow control option &K

This command sets the flow control <mode>.

### 4.12.14.1 Syntax

Type	Command	Response
Set	&K<mode>	Successful: OK Fail: ERROR
Read	&K?	<mode>

### 4.12.14.2 Parameter

Name	Value	Description
<mode>	0	Disable all flow control. (Default value)
	3	Enable RTS/CTS flow control.

### 4.12.14.3 Notes

&K and +IFC implement the same function. For more information, see “Notes” and “Example” on page 169.

### 4.12.14.4 Specification restriction

Name	Description
	Hardware flow control is always on; it cannot be disabled by &K or +IFC.

## 4.13 Audio

### 4.13.1 Mute control +CMUT

This command enables and disables the uplink voice muting during a voice call.

#### 4.13.1.1 Syntax

Type	Command	Response
Set	+CMUT=[<mode>]	Successful: OK Fail: +CME ERROR: <err> ERROR
Read	+CMUT?	+CMUT: <n> +CME ERROR: <err>
Test	+CMUT=?	+CMUT= (0,1)

#### 4.13.1.2 Parameter

Name	Value	Description
<mode>	0	Mute off
	1	Mute on

#### 4.13.1.3 Examples

Command	Response	Comment
AT+CMUT=?	+CMUT=1	The uplink voice is muted

### 4.13.2 Set DTMF tone duration +VTD

This command sets the duration of each DTMF tone when it is sent to the GSM network by the command [+VTS](#) (page 179).

#### 4.13.2.1 Syntax

Type	Command	Response
Set	+VTD=<n>	Successful: OK

Type	Command	Response
		Fail: +CME ERROR ERROR
Read	+VTD?	+VTD: 0

#### 4.13.2.2 Parameter

Name	Value	Description
<n>	0	The duration of DTMF is 300ms

#### 4.13.2.3 Examples

Command	Response	Comment
AT+VTD?	0	

#### 4.13.2.4 Specification restriction

Name	Description
	The duration of each DTMF tone is fixed to 300 ms

### 4.13.3 Send DTMF tone +VTS

This command transmits DTMF tone to the GSM network in voice operation, which includes 0~9, \* # ABCD.

#### 4.13.3.1 Syntax

Type	Command	Response
Set	1) +VTS=<DTMF> 2) +VTS = <tone1>, <tone2>, <duration> 3) +VTS = <DTMF>, <duration>	Successful: OK Fail: +CME ERROR ERROR
Test	+VTS=?	+VTS:(0),(0),(0)

#### 4.13.3.2 Parameter

Name	Value	Description
<DTMF>	0-9, #, *, A-D	A single ACSII character whose duration is set by the <b>+VTD</b> command.
<tone1> <tone2>		Dual tone of frequencies
duration	0	300 ms

#### 4.13.3.3 Examples

Command	Response	Comment
AT+VTS="A"	OK	The module sends the DTMF A out to the remote part.
AT+VTS="{A, 0},{B,0}"	OK	The module sends the DTMF A and B out to the remote part.

### 4.13.4 Ringer sound level +CRSL

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

Test command returns the supported values as compound value. There are 4 volume levels defined in integer type. The default value is 2.

#### 4.13.4.1 Syntax

Type	Command	Response
Set	+CRSL=<level>	Successful: OK Fail: ERROR
Read	+CRSL?	+CRSL: <level>
Test	+CRSL=?	+CRSL:(0-3)

#### 4.13.4.2 Parameter

Name	Value	Description
<level>	0 – 3	Ringer sound level.
	0	Silence
	1	Low



Name	Value	Description
	2	Medium (default value)
	3	High

#### 4.13.4.3 Examples

Command	Response	Comment
AT+CRSL=2	OK	The ME sets the ringer sound level to 2.
AT+CRSL?	+CRSL:2	The ME reads the value of the current ringer sound level. The value is 2.
AT+CRSL=?	+CRSL:(0-3)	The range of ringer sound level is from 0 to 3.

### 4.13.5 Speaker volume control +CLVL

This command selects the volume of ME speaker and headset speaker.

There are 10 volume levels (1-10) defined in integer type. The smaller the value is, the lower the sound level. The default value is 5.

Test command returns the supported values as compound value.

Read command returns current level of volume.

#### 4.13.5.1 Syntax

Type	Command	Response
Set	+CLVL=<level>	Successful: OK Fail: ERROR
Read	+CLVL?	+CLVL: <level>
Test	+CLVL=?	+CLVL:(1-10)

#### 4.13.5.2 Parameter

Name	Value	Description
<level>	1 – 10	Speaker sound level. Default value is 5.

#### 4.13.5.3 Examples

Command	Response	Comment
AT+CLVL=2	OK	The ME sets the speaker volume to 2.
AT+CLVL?	+CLVL:2	The ME reads the value of current speaker volume. The value is 2.
AT+CLVL=?	+CLVL:(1-10)	The range of speaker volume is from 1 to 10.

### 4.13.6 Play tone locally +PPTONE

This command plays the specific predefined tones on local devices, such as head speaker and earpiece. This command can't be aborted. The melody list is fixed in the module and cannot be modified by the host. The tones and indexes are listed in [Table 41](#) on page 205.

#### 4.13.6.1 Syntax

Type	Command	Response
Set	+PPTONE= <mIndex>[, <kDuration>]	Successful: OK Fail: ERROR
Test	+PPTONE=?	+PPTONE:(0-121)

#### 4.13.6.2 Parameter

Name	Value	Description
<mIndex>	0-121	The index stands for a different melody. The tones and indexes are listed in <a href="#">Table 41</a> on page 205.
<kDuration>	0 1-254 255	Stop the current tone The duration of the tone is <kDuration> * 10 ms. Start the tone and continue until +PPTONE=0 is received (to stop it).

#### 4.13.6.3 Examples

Command	Response	Comment
AT+PPTONE=2,255	OK	TE asks the ME to keep playing melody 2

#### 4.13.6.4 Specification restriction

Name	Description
<kDuration>	<p>The maximum duration of the tone is 2.54s if the fixed duration is asked by the command.</p> <p>mIndex 0, 62-68,82,83,118,119,120,121 are all "Silence" tone.</p> <p>The tones of mIndex 71-78, 80,81,84-88,92-94,96-101,103-116 are not time related, the durations of them are fixed and can't be controlled by the duration parameter of the +PPTONE.</p>

### 4.13.7 Play tone during call setup +PPDTONE

This command enables or disables playing a tone after an ATD command is issued and before a ringback is received. It is an audible indication for call setup.

#### 4.13.7.1 Syntax

Type	Command	Response
Set	+PPDTONE=<n>	Successful: OK Fail: ERROR
Read	+PPDTONE?	+PPDTONE:<m>
Test	+PPDTONE=?	+PPDTONE:(0-1)

#### 4.13.7.2 Parameter

Name	Value	Description
<n>	0	Disable playing tone during call setup. (Default value)
	1	Enable playing tone during call setup.
<m>	0	The disable mode is selected.
	1	The enable mode is selected.

#### 4.13.7.3 Examples

Command	Response	Comment
AT+PPDTONE=?	+PPDTONE:(0-1)	The ME supports two modes: 0 – disable 1 – enable

### 4.13.8 Speaker & microphone selection +PPSPKR

This command is used to choose the speaker and the microphone. When the speaker and microphone accessory is plugged in or pulled out, the ME hardware recognition circuit detects the event, and switches the speaker and microphone automatically.

Although both this command and the recognition circuit can select the current speaker and microphone, only the latest one of these two operations takes effect on the ME until another one alters it. The default setting is the earpiece and microphone.

Test command returns the supported value of the speaker and microphone.

#### 4.13.8.1 Syntax

Type	Command	Response
Set	+PPSPKR=<n>	Successful: OK Fail: ERROR
Read	+PPSPKR?	+PPSPKR:<m>
Test	+PPSPKR=?	+PPSPKR:(0-2)

#### 4.13.8.2 Parameter

Name	Value	Description
<n>		<b>Which speaker and microphone are selected.</b>
	0	The earpiece and microphone are selected.
	1	The head speaker and microphone are selected.
<m>	0	The earpiece and microphone are selected.
	1	The head speaker and microphone are selected.
	2	Other

#### 4.13.8.3 Examples

Command	Response	Comment
AT+PPSPKR=?	+PPSPKR:(0-2)	The ME supports two sets of speaker and microphone.

## 4.14 Compliant AT commands

Some AT commands are compliant to the recommendation (OK is returned) but have no effect on the ME. This type of AT commands was originally used in fixed-networks but is not suitable for a wireless modem, so nothing more is done than return an OK response to the host.

### 4.14.1 Communication option B

The ME selects Bell or CCITT modulation for a line speed connection of 300 or 1200 bps according to the parameter supplied. Any other line speed uses a CCITT modulation standard.

#### 4.14.1.1 Syntax

Command	Response
B[<n>]	Successful: OK n = 0 or 1 Fail: ERROR

### 4.14.2 Monitor speaker loudness L

This parameter controls the volume of the monitor speaker.

#### 4.14.2.1 Syntax

Command	Response
L [<n>]	Successful: OK Fail: ERROR

#### 4.14.2.2 Parameter

Name	Value	Description
<n>	0-9	Speaker loudness value

### 4.14.3 Monitor speaker mode M

This parameter controls when the monitor speaker is on. The speaker shall be off while the DCE is on-hook.

#### 4.14.3.1 Syntax

Command	Response
M[<n>]	Successful: OK Fail: ERROR

#### 4.14.3.2 Parameter

Name	Value	Description
<n>	0-9	Speaker mode value

### 4.14.4 Select pulse dialing P

Causes subsequent dial digits to be signaled using pulse dialing.

### 4.14.5 Tone dialing T

Set dialing mode to Tone.

### 4.14.6 Pause before blind dialing S6

S6 sets the length of the time in seconds that the ME will wait before starting to dial after going off-hook when blind dialing.

Parameter range: 0-999

### 4.14.7 Set time to wait for comma dial modifier S8

The set command sets the number of seconds to wait for comma dial modifier.

#### 4.14.7.1 Syntax

Type	Command	Response
Set	S8=[<n>]	Successful: OK Fail: ERROR
Read	S8?	<n>

#### 4.14.7.2 Parameter

Name	Value	Description
<n>	1-255	Number of seconds to pause 2 - Default value

#### 4.14.7.3 Examples

Command	Response	Comment
S8=3	OK	

#### 4.14.7.4 Specification restriction

Name	Description
	The character ',' is not managed in the dial command. So this pause time is never used.

### 4.14.8 Set disconnect delay after indicating the absence of data carrier S10

The set command sets the time during which the call is not disconnected after receiving the disconnection indication from the host.

#### 4.14.8.1 Syntax

Type	Command	Response
Set	S10=<n>	Successful: OK Fail: ERROR

Type	Command	Response
Read	S10?	<n>

#### 4.14.8.2 Parameter

Name	Value	Description
<n>	1-254	Number of tenths of a second of delay. 14 - Default value

#### 4.14.8.3 Examples

Command	Response	Comment
ATS10=3	OK	

### 4.14.9 DTMF dialing speed S11

S11 sets the duration of tones in DTMF dialing (has no effect on pulse dialing).

Parameter range: 0-999 millisecond.



# 5 Appendix A—Result codes

## 5.1 Associated AT commands

Some AT commands can enable/disable the result code and even define the display format.

The **V** command gives the general setting for the header and trailer of the response, and also determines the form (numeric or verbose) for the result code.

**+CMEE** enables/disables +CME ERROR: <err> result code and specifies verbose or numeric <err> values.

**+CSDH** determines whether detailed header information is shown in SMS text mode result codes.

**+CEER** causes the ME to return text that describes the reason of the failure of the last unsuccessful call setup.

**+CMER** enables or disables sending of unsolicited result codes from ME to TE in the case of key pressings, display changes, and indicator state changes.

**Table 31 AT commands that can enable/disable result codes**

Type	AT command	Affected result code
Result code switch	<b>Q</b>	All result code
ME error report	<b>+CMEE</b>	+CME: <err>
ME event report	<b>+CMER</b>	+CIEV: <ind>, <value>
Select control report	<b>+CR</b>	+CR: <ser>
Cellular report control	<b>+CRC</b>	+CRING: <type>
Supplementary Service report	<b>+CCWA</b>	+CCWA: <number>, <type>, <class>, [<alpha>] [,<CLI validity>]
	<b>+CUSD</b>	+CUSD: <m> [,<str>,<dcs>]
	<b>+CSSN</b>	+CSSI: <code1> +CSSU: <code2>
SMS report	<b>+CNMI</b>	+CDS; +CMTI; +CMT; +CBM
Network registration	<b>+CREG</b>	+CREG: <stat>[,<lac>,<ci>]

Type	AT command	Affected result code
GPRS network registration	+CGREG	+CGREG: <stat>[,<lac>,<ci>]
Extended events report	+PPURC	+PPURC: <indValue>

## 5.2 CME ERRORS related to GSM, excluding SMS (GSM 07.07)

The format of <err> can be either numeric or verbose. This is set with the command +CMEE (page 41).

---

**NOTE:** Command V does not affect the format of this result code.

---

**Table 32 CME ERRORS related to GSM 07.07 (GSM, excluding SMS)**

Numeric result code	Verbose result code
0	Phone failure
1	No connection to phone
2	Phone-adapter link reserved
3	Operation not allowed
4	Operation not supported
5	PH-SIM PIN required
6	PH-FSIM PIN required
7	PH-FSIM PUK required
10	SIM not inserted
11	SIM PIN required
12	SIM PUK required
13	SIM failure
14	SIM busy
15	SIM wrong
16	Incorrect password
17	SIM PIN2 required
18	SIM PUK2 required
20	Memory full

<b>Numeric result code</b>	<b>Verbose result code</b>
21	Invalid index
22	Not found
23	Memory failure
24	Text string too long
25	Invalid characters in text string
26	Dial string too long
27	Invalid characters in dial string
30	No network service
31	Network timeout
32	Network not allowed - emergency calls only
40	Network personalization PIN required
41	Network personalization PUK required
42	Network subset personalization PIN required
43	Network subset personalization PUK required
44	Service provider personalization PIN required
45	Service provider personalization PUK required
46	Corporate personalization PIN required
47	Corporate personalization PUK required
100	Unknown

## 5.3 CMS ERRORS related to SMS (GSM 07.05)

**Table 33 CMS ERRORS related to GSM 07.05 (SMS)**

<b>Code of &lt;err&gt;</b>	<b>Meaning</b>
1	Unassigned (unallocated) number
8	Operator determined barring
10	Call barred
21	Short message transfer rejected
27	Destination out of service
28	Unidentified subscriber

<b>Code of &lt;err&gt;</b>	<b>Meaning</b>
29	Facility rejected
30	Unknown subscriber
38	Network out of order
41	Temporary failure
42	Congestion
47	Resources unavailable, unspecified
50	Requested facility not subscribed
69	Requested facility not implemented
81	Invalid short message transfer reference value
95	Invalid message, unspecified
96	Invalid mandatory information
97	Message type non-existent or not implemented
98	Message not compatible with short message protocol state
99	Information element non-existent or not implemented
111	Protocol error, unspecified
127	Interworking, unspecified
128	Telematic interworking not supported
129	Short message Type 0 not supported
130	Cannot replace short message
143	Unspecified TP-PID error
144	Data coding scheme (alphabet) not supported
145	Message class not supported
159	Unspecified TP-DCS error
160	Command cannot be actioned
161	Command unsupported
175	Unspecified TP-Command error
176	TPDU not supported
192	SC busy
193	No SC subscription
194	SC system failure
195	Invalid SME address
196	Destination SME barred
197	SM Rejected-Duplicate SM
198	TP-VPF not supported

<b>Code of &lt;err&gt;</b>	<b>Meaning</b>
199	TP-VP not supported
208	D0 SIM SMS storage full
209	No SMS storage capability in SIM
210	Error in MS
211	Memory capacity exceeded
212	SIM Application Toolkit busy
213	SIM data download error
255	Unspecified error cause
300	ME failure
301	SMS service of ME reserved
302	Operation not allowed
303	Operation not supported
304	Invalid PDU mode parameter
305	Invalid text mode parameter
310	SIM not inserted
311	SIM PIN required
312	PH-SIM PIN required
313	SIM failure
314	SIM busy
315	SIM wrong
316	SIM PUK required
317	SIM PIN2 required
318	SIM PUK2 required
320	Memory failure
321	Invalid memory index
322	Memory full
330	SMSC address unknown
331	no network service
332	Network timeout
340	No +CNMA ACK expected
500	Unknown error
512	User abort

## 5.4 Final result codes

**Table 34 Final result codes**

Numeric	Indication	Meaning
0	OK	Command executed successfully; wake up after reset
3	NO CARRIER	Link not established, or link disconnected
4	ERROR	Invalid command or command line too long
7	BUSY	Busy signal detected
8	NO ANSWER	Connection completion timeout
As verbose	+CME ERROR: <err>	Error from GSM 07.07 commands
As verbose	+CMS ERROR: <err>	Error from SMS commands (07.05)

## 5.5 Intermediate result codes

**Table 35 Intermediate result codes**

Numeric	Indication	Meaning
As verbose	CONNECT 2400	Data connection at 2400 bauds
As verbose	CONNECT 4800	Data connection at 4800 bauds
As verbose	CONNECT 9600	Data connection at 9600 bauds
As verbose	+CR: <serv>	Outgoing call report control <serv>: "ASYNC", "SYNC", "REL ASYNC", "REL SYNC", "GPRS"
As verbose	+COLP: <number>, <type>,[<subaddr>,<satype>]	Outgoing call presentation
As verbose	+CSSI: <code1>	Supplementary service notification during a call setup <code1> : 0,1,2,3,5,6,7

## 5.6 Unsolicited result codes

Table 36 shows a summary of unsolicited result codes. For each of these messages, you can configure the ME whether or not to send an unsolicited result code.

**Table 36 Unsolicited result codes**

Message	Meaning	Supported parameter values
+CREG: <stat>[,<lac>, <ci>]	Indication of a change of the network cell	<stat>: 0..5 <lac>: Local Area Code <ci>: Cell Identity
+CGREG: <stat>[,<lac>, <ci>]	Indication of a change of the GPRS network cell	<stat>: 0..5 <lac>: Local Area Code <ci>: Cell Identity
RING	Incoming call signal from network	
+CRING: <type>	Indication of an incoming call	<type>: "ASYNC", "SYNC", "REL ASYNS", "REL SYNC", "FAX", "VOICE"
+CMTI:<mem>,<index>	Indication of a new short message	<mem>: "SM" <index>: 0..255
+CBM: <length><CR><LF><pdu> for PDU mode	Cell broadcast message sent to TE from the CMS91 module	All parameters are extracted from received message
+CBM:<sn>, <mid>, <dcs>, <page>,<pages> <CR> <LF> <data> for text mode		
+CIEV:<ind>,<value>	Report of an indicated event	<ind>: 0 (battery), 1 (signal)  <value>: 0..5 for <ind>=0 (battery) 0..4 for <ind>=1 (signal)

Message	Meaning	Supported parameter values
+CLIP:<number>, <type> [,<subaddr>, <satype>[,,<CLI validity>]]	Calling line identification presentation	<number>: string type phone number <type>: type of address octet in integer format <subaddr>: string type subaddress <satype>: type of subaddress octet in integer format <CLI validity>: 0 CLI valid 1 CLI has been withheld by the originator. 2 CLI is not available due to interworking problems or limitations of the originating network.
+CCWA: <number>, <type>, <class>[,<alpha>][,<CLI validity>]	Call Waiting number	<number>: string type phone number of calling address <type>: type of address octet in integer format <class>: 0..7
+CMT: [<alpha>],<length><CR><LF><pdu> for PDU mode	Received SMSPP content	All parameters are extracted from received message
+CMT: <oa>[,<alpha>],<scts> [,<toa>,<fo>,<pid>,<dcs>,<sca>,<tosca>,<length>] < CR><LF><data> for TEXT mode		
+CDS: <length><CR><LF><pdu> (PDU mode enabled) or +CDS: <fo>,<mr>,[<ra>],[<tora>],<scts>,<dt>,<st> (text mode enabled)	Received SMS status report content	All parameters are extracted from received message
+PPURC:<event>[,<ldx>]	Extended result code	<event>: bit0-bit9 <ldx>: See the table in section 4.7.15.4 on page 116.
+CSSU: <code2>	Supplementary service notification during a call	<code2>: 0, 2, 3, 4, 5



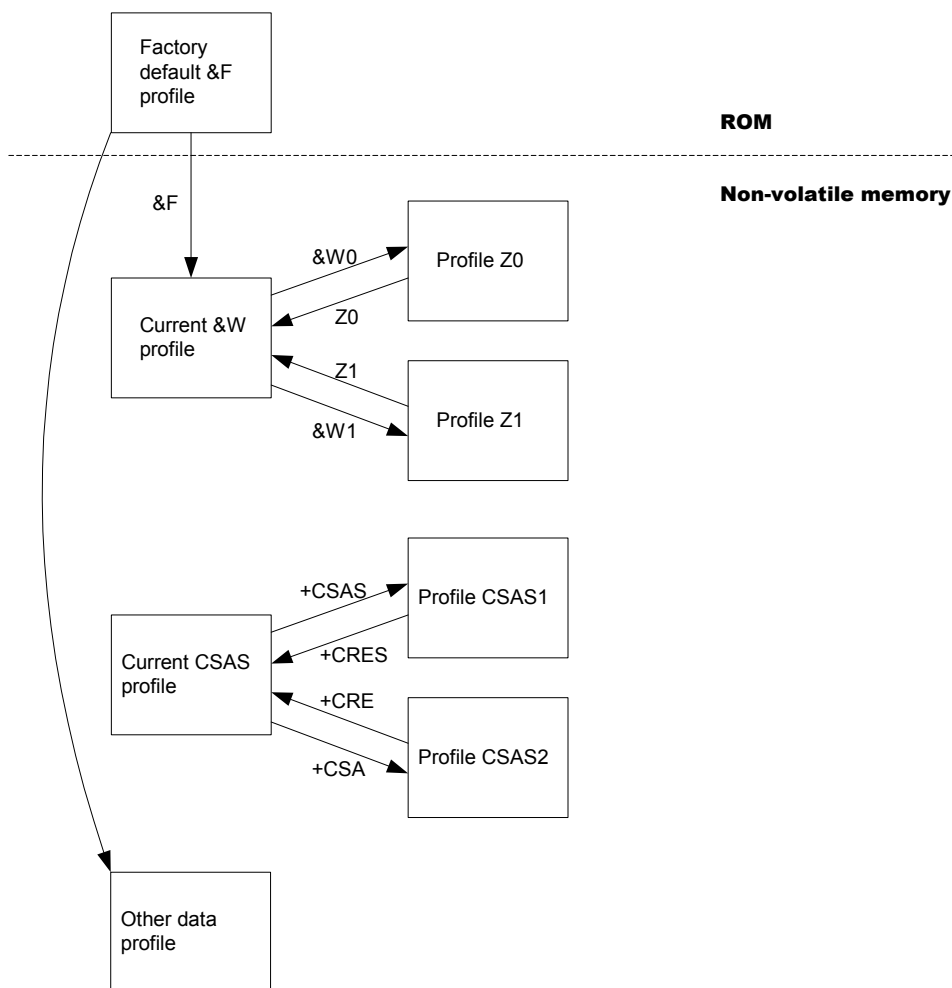
<b>Message</b>	<b>Meaning</b>	<b>Supported parameter values</b>
<b>+CUSD:</b> <m>[, <str>, <dc>]	Unstructured supplementary service data	<m>: 0..2 <str>: string type USSD string <dc>: Cell Broadcast Data Coding Scheme in integer format
<b>+PPSTIR:</b> <n>	Notifies the TE there is an indication/request sent from SIM	See <a href="#">Table 26</a> on page 127

# 6 Appendix B—Profiles

## 6.1 Storing and loading profiles

There are 7 non-volatile memory sections (profiles), the behavior of the modem on those sections is shown in Figure 4 below. Each component of the current profile can be modified by one of its associated commands.

**Figure 4 Storing and loading profiles**



### 6.1.1 Data saved by +CSAS and restored by +CRES

**Table 37 Data saved by +CSAS and restored by +CRES**

AT command	Parameters
+CSCA	Service Centre address
+CSMP	First byte of the SMS Validity period TP Protocol Identifier Data coding scheme

### 6.1.2 Data stored by &W and restored by Z

**Table 38 Data stored by &W and restored by Z**

AT command	Parameter of command	Displayed by &V
E	Echo mode on	Y
+FCLASS	Select data mode	Y
+IFC	No flow control method by DTE	Y
	Flow control method by DCE	Y
&K	Disable all flow control	Y
Q	Result codes are transmitted	Y
S0	Automatic answering is disabled	Y
S1	Tenths of a second of delay	N
S3	Line termination is <CR>. (Cannot be modified)	Y
S4	Response format character is <LF>. (Cannot be modified)	Y
S5	Deleting character is <backspace>. (Cannot be modified)	Y
S7	Seconds to wait for connection completion	Y
S8	Seconds to wait for comma dial modifier	Y
S10	Disconnect delay (in seconds) after indicating the absence of data carrier	Y
V	Information response: <CR><LF><text><CR><LF> Long result code format: <CR><LF><verbose code><CR><LF>>	Y
X	Configure to control answer format	Y

# 7 Appendix C—Default values of AT commands

## 7.1 Restoring default values

### 7.1.1 Default values restored by &F

**Table 39 Default values restored by &F**

	<b>AT command</b>	<b>Parameter of command</b>	
1.	<b>+CBST</b>	<speed>=7 <name>=0 <ce>=1	Data rate: 9600bps (V.32) Bearer service: data circuit asynchronous Non-transparent
2.	<b>+CEER</b>	<cause_select>=0 <cause>=0	The location that reported or generated the error The reason of an error
3.	<b>+CLIP</b>	<n>=0	Disable the result code presentation
4.	<b>+CLIR</b>	<n>=0	Presentation indicator is used according to the subscription of the CLIR service
5.	<b>+CMEE</b>	<n>=0	Disable +CME ERROR
6.	<b>+CMER</b>	<mode>=0	No result code
7.	<b>+CMGF</b>	<mode>=0	PDU mode
8.	<b>+COLP</b>	<n>=0	Disable the result code presentation status in the ME
9.	<b>+COPS</b>	<mod>=0 <format>=0	Automatic Long format alphanumeric <oper>
10.	<b>+CR</b>	<mode>= 0	Disable reporting
11.	<b>+CRC</b>	<mode>= 0	Disables extended format
12.	<b>+CREG</b>	<n>=0	Disable network registration unsolicited result code
13.	<b>+CRLP</b>	<iws>= 61 <mws>= 61 <T1>=48	IWF to MS window size MS to IWF window size Acknowledgement timer

	<b>AT command</b>	<b>Parameter of command</b>	
		<N2>=1 <ver>=0	Retransmission attempts RLP version number in integer format
14.	<b>+CSCS</b>	<chset>="IRA"	International Reference Alphabet
15.	<b>+CSDH</b>	<show>=0	Do not show header values
16.	<b>+CSMS</b>	<service>=0	SMS AT command comply with GSM 07.05 phase2
17.	<b>+CSSN</b>	<n>=0 <m>=0	<b>+CSSI</b> Result code presentation <b>+CSSU</b> Result code presentation
18.	<b>+CSTA</b>	<type>=129	National Type of Number
19.	<b>+CVHU</b>	<mode>=2	" OFF DTR" behavior according to &D setting. ATH disconnects
20.	<b>&amp;D</b>	<n>=1	ON->OFF on DTR
21.	<b>E</b>	<n>=1	Echo mode on
22.	<b>+FCLASS</b>	<n>=0	Select data mode
23.	<b>&amp;K</b>	<mode>=0	Disable all flow control
24.	<b>Q</b>	<n>=0	Result codes are transmitted
25.	<b>S0</b>	n=0	Automatic answering is disabled
26.	<b>S1</b>	n=0	Tenths of a second of delay
27.	<b>S3</b>	<chr>=13	Line termination is <CR>. (cannot be modified)
28.	<b>S4</b>	<chr>=10	Response format character is <LF>. (cannot be modified)
29.	<b>S5</b>	<chr>=8	Deleting character is <backspace>
30.	<b>S7</b>	n=50	Seconds to wait for connection completion
31.	<b>S8</b>	n=2	Seconds to wait for comma dial modifier
32.	<b>S10</b>	n=14	Disconnect delay (in seconds) after indicating the absence of data carrier
33.	<b>V</b>	<n>=1	Information response: <CR><LF><text><CR><LF> Long result code format: <CR><LF><verbose code><CR><LF>>
34.	<b>X</b>	<n>=4	CONNECT<text> result code returned, dial tone and busy detection are both enabled

## 7.1.2 Default values restored by +CMAR

**Table 40 Default values restored by +CMAR**

	<b>AT command</b>	<b>Parameter of command</b>	
1.	<b>+CALM</b>	<mode>=1	Silence mode
2.	<b>+CBST</b>	<speed>=7 <name>=0 <ce>=1	Data rate: 9600bps (V.32) Bearer service: data circuit asynchronous Non-transparent
3.	<b>+CEER</b>	<cause_select>=0	The location that reported or generated the error
		<cause>=0	The reason of an error
4.	<b>+CFUN</b>	<n>=1	Functional mode
5.	<b>+CGDCONT</b>	<PDP_type>="IP" <APN>=FF..FF <D_comp>=0 <H_comp>=0	Packet Data Protocol type Access point name (64 "FF"s) PDP data compression is off PDP header compression is off
6.	<b>+CGQMIN</b>	<precedence>=3 <delay>=4 <reliability>=3 <peak>=1 <mean>=31	Precedence class Delay class Reliability class Peak throughput class Mean throughput class
7.	<b>+CGQREQ</b>	<precedence>=0 <delay>=0 <reliability>=3 <peak>=0 <mean>=0	Precedence class Delay class Reliability class Peak throughput class Mean throughput class
8.	<b>+CGREG</b>	<n>=0	Disable network registration URC
9.	<b>+CLIP</b>	<n>=0	Disable the result code presentation
10.	<b>+CLIR</b>	<n>=0	Presentation indicator is used according to the subscription of the CLIR service
11.	<b>+CLVL</b>	<level>=7	Speaker level: 7
12.	<b>+CMEE</b>	<n>=0	Disable +CME ERROR
13.	<b>+CMER</b>	<mode>=0	No result code
14.	<b>+CMGF</b>	<mode>=0	PDU mode
15.	<b>+CNMI</b>	<mode>=0 <mt>=0	Buffer unsolicited result codes in the TA No SMS-DELIVER indications are routed to the TE

	<b>AT command</b>	<b>Parameter of command</b>	
		<bm>=0	Sets the result code indication routing for CBMs (only 0 is supported)
		<ds>=0	Sets the result code indication routing for SMS-STATUS-REPORTs
		<bfr>=0	Buffer unsolicited result codes in the ME
16.	<b>+COLP</b>	<n>=0	Disable the result code presentation status in the ME
17.	<b>+COPS</b>	<mod>=0 <format>=0	Automatic Long format alphanumeric <oper>
18.	<b>+CR</b>	<mode>= 0	Disable reporting
19.	<b>+CRC</b>	<mode>= 0	Disables extended format
20.	<b>+CREG</b>	<n>=0	Disable network registration unsolicited result code
21.	<b>+CRLP</b>	<iws>= 61 <mws>= 61 <T1>=48 <N2>=1 <ver>=0	IWF to MS window size MS to IWF window size Acknowledgement timer Retransmission attempts RLP version number in integer format
22.	<b>+CRSL</b>	<level>=2	Ring sound level: medium
23.	<b>+CSCB</b>	<mode>=0  <mids>=15 byte <dcss>=15 byte	CBM which type is defined in <b>mids</b> and <b>dcss</b> are accepted/not accepted  List of CBM message identifiers List of CDM Data Coding Scheme
24.	<b>+CSCS</b>	<chest>="IRA"	International Reference Alphabet
25.	<b>+CSDH</b>	<show>=0	Do not show header values
26.	<b>+CSMS</b>	<service>=0	SMS AT command comply with GSM 07.05 phase2
27.	<b>+CSSN</b>	<n>=0 <m>=0	<b>+CSSI</b> result code presentation <b>+CSSU</b> result code presentation
28.	<b>+CSTA</b>	<type>=129	National Type of Number
29.	<b>+CVHU</b>	<mode>=2	"OFF DTR" behavior according to &D setting. ATH disconnects
30.	<b>&amp;D</b>	<n>=1	ON->OFF on DTR
31.	<b>E</b>	<n>=1	Echo mode on
32.	<b>+FCLASS</b>	<n>=0	Select data mode
33.	<b>&amp;K</b>	<mode>=0	Disable all flow control
34.	<b>+PPSTAC</b>	<mode>=0	Deactivate STK features

	<b>AT command</b>	<b>Parameter of command</b>	
35.	+PPURC	<n>=0	A set of extended unsolicited indications can be sent to the host from the ME during run time
36.	+PPUSMS	<n>=0	The SMS status will be changed to READ after reading
37.	+PPWHOST	<n>=0	Disable the host wakeup indication mode
38.	Q	<n>=0	Result codes are transmitted
39.	S0	n=0	Automatic answering is disabled
40.	S1	n=0	Tenths of a second of delay
41.	S3	<chr>=13	Line termination is <CR>. (Cannot be modified)
42.	S4	<chr>=10	Response format character is <LF>. (Cannot be modified)
43.	S5	<chr>=8	Deleting character is <backspace>. (Cannot be modified)
44.	S7	n=50	Seconds to wait for connection completion
45.	S8	n=2	Seconds to wait for comma dial modifier
46.	S10	n=14	Disconnect delay (in seconds) after indicating the absence of data carrier
47.	V	<n>=1	Information response: <CR><LF><text><CR><LF> Long result code format: <CR><LF><verbose code><CR><LF>>
48.	X	<n>=4	CONNECT<text> result code returned, dial tone and busy detection are both enabled



# 8 Appendix D—Tones and index table

**Table 41 Tones**

Type	Index	Tone
Melody	0	MEL_NO_MELODY
	1	MEL_MELODY1
	2	MEL_MELODY2
	3	MEL_MELODY3
	4	MEL_MELODY4
	5	MEL_MELODY5
	6	MEL_MELODY6
	7	MEL_MELODY7
	8	MEL_MELODY8
	9	MEL_MELODY9
	10	MEL_MELODY10
	11	MEL_MELODY11
	12	MEL_MELODY12
	13	MEL_MELODY13
	14	MEL_MELODY14
	15	MEL_MELODY15
	16	MEL_MELODY16
	17	MEL_MELODY17
	18	MEL_MELODY18
	19	MEL_MELODY19
	20	MEL_MELODY20
	21	MEL_MELODY21
	22	MEL_MELODY22
	23	MEL_MELODY23
	24	MEL_MELODY24
	25	MEL_MELODY25
	26	MEL_MELODY26
	27	MEL_MELODY27

Type	Index	Tone
	28	MEL_MELODY28
	29	MEL_MELODY29
	30	MEL_MELODY30
	31	MEL_MELODY31
	32	MEL_MELODY32
	33	MEL_MELODY33
	34	MEL_MELODY34
	35	MEL_MELODY35
	36	MEL_MELODY36
	37	MEL_MELODY37
	38	MEL_MELODY38
	39	MEL_MELODY39
	40	MEL_MELODY40
	41	MEL_MELODY41
	42	MEL_MELODY42
	43	MEL_MELODY43
	44	MEL_MELODY44
	45	MEL_MELODY45
	46	MEL_MELODY46
	47	MEL_MELODY47
	48	MEL_MELODY48
	49	MEL_MELODY49
	50	MEL_MELODY50
	51	MEL_MELODY51
	52	MEL_MELODY52
	53	MEL_MELODY53
	54	MEL_MELODY54
	55	MEL_MELODY55
	56	MEL_MELODY56
	57	MEL_MELODY57
	58	MEL_MELODY58
	59	MEL_MELODY59
	60	MEL_MELODY60
Network tones to be played on the buzzer	61	MEL_CALL_WAITING_BUZZER
	62	MEL_RINGING_TONE_BUZZER

Type	Index	Tone
	63	MEL_SUBSCRIBER_BUSY_TONE_BUZZER
	64	MEL_CONGESTION_BUZZER
	65	MEL_RADIO_PATH_NOT_AVAILABLE_BUZZER
	66	MEL_RADIO_PATH_ACKNOWLEDGED_BUZZER
	67	MEL_DIAL_TONE_BUZZER
	68	MEL_NUMBER_UNOBTAINABLE_BUZZER
Buzzer tones	69	MEL_ALARM_CLOCK_SOUND
	70	MEL_SWITCH_ON
	71	MEL_SWITCH_OFF
	72	MEL_POSITIVE_SOUND
	73	MEL_NEGATIVE_SOUND
	74	MEL BUMPER_SOUND
	75	MEL_KEY_TONE
	76	MEL_NEW_OCCURENCE_SOUND
	77	MEL_ALARM_SOUND
	78	MEL_ALARM_SOUND_CONTINUOUS
	79	MEL_AUTOREDIALSTART
	80	MEL_AUTOREDIALSUCCES
	81	MEL_SILENCE
	82	MEL_SILENCE_FOR_INCREASING
	83	MEL_GAME_INTRO
	84	MEL_GAME_NEW_LEVEL
	85	MEL_GAME_NEW_HIGH_SCORE
	86	MEL_GAME_LOSE_LIFE
	87	MEL_GAME_OVER
Ear-piece network tones via DSP	88	MEL_CALL_WAITING
	89	MEL_RINGING_TONE
	90	MEL_SUBSCRIBER_BUSY_TONE
	91	MEL_CONGESTION
	92	MEL_RADIO_PATH_NOT_AVAILABLE
	93	MEL_RADIO_PATH_ACKNOWLEDGED
	94	MEL_DIAL_TONE
	95	MEL_NUMBER_UNOBTAINABLE
	96	MEL_POSITIVE_SOUND_KISS
	97	MEL_NEGATIVE_SOUND_KISS

Type	Index	Tone
	98	MEL_KEY_TONE_KISS
	99	MEL_CONFERENCE_TONE
	100	MEL_ERROR_BEEP_KISS
	101	MEL_KNOWN_CALL
	102	MEL_MINUTE_REMINDER
DTMF key tones	103	MEL_KEY_DTMF0
	104	MEL_KEY_DTMF1
	105	MEL_KEY_DTMF2
	106	MEL_KEY_DTMF3
	107	MEL_KEY_DTMF4
	108	MEL_KEY_DTMF5
	109	MEL_KEY_DTMF6
	110	MEL_KEY_DTMF7
	111	MEL_KEY_DTMF8
	112	MEL_KEY_DTMF9
	113	MEL_KEY_DTMF_STAR
	114	MEL_KEY_DTMF_HASH
	115	MEL_VIBRATOR_NEW_OCCURENCE
	116	MEL_VIBRATOR_MELODY
Car kit	117	MEL_CAR_KIT1
	118	MEL_CAR_KIT2
	119	MEL_CAR_KIT3,
	120	MEL_CAR_KIT4

# 9 Appendix E— Examples of AT commands

For an example on:	See:
Conference call	Page <a href="#">88</a>
Call forwarding	Page <a href="#">77</a>

## 9.1 ME identification

**AT+GMI** ;Request TA manufacturer identification

CELLon

OK

**AT+GMM** ;Request TA model identification

CMS91

OK

**AT+GMR** ;Request TA revision identification

30/10/2001

OK

**AT+GSN** ;Request TA product serial number identification

350052 50 100610 0

OK

## 9.2 Basic call

**ATD+1 604 555673** ;Type of address defaults to 145

CONNECT 9600

**ATH** ;Hang up call

OK

## 9.3 Phonebook

**AT+CPBS=?**

+CPBS: ("DC", "EN", "FD", "MC", "ON", "RC", "SM")

OK

**AT+CPBS="SM"** ;Select SIM memory

OK

**AT+CPBR=?** ;Read index range and element lengths

+CPBR: (1-254),40,12

OK

**AT+CPBR=1,2** ;Read 2 entries but only the ones set are returned

+CPBR: 1,"2329832",129,"du"

+CPBR: 2,"888888",129,"du"

OK

**AT+CPBW=2;** ;Clear index 2

OK

**AT+CPBW=2,"921123456"** ;Write index 2

OK

```
AT+CPBR=1,2 ;Read 2 entries but only the ones set
                are returned
+CPBR: 1,"2329832",129,"du"
+CPBR: 2,"921123456",129,""
OK
```

## 9.4 SMS

```
AT+CNMI=? ;Query new message unsolicited result code
            modes
+CNMI: (0,1,2),(0,1,2),(0,2),(0,1),(0,1)
OK
AT+CNMI? ;Current setting
+CNMI: 1,0,0,0,0
OK
AT+CMGF=1 ;Set to text mode
OK
AT+CMGL=?
+CMGL: ("REC UNREAD","REC READ","STO UNSENT","STO SENT","ALL")
OK
AT+CMGW="123456" CR ;Write message to memory
> welcome CTRL Z
+CMGW: 5
OK
AT+CMGL="STO UNSENT" ;List stored unsent messages
.....
```

+CMGL: 5,"STO UNSENT","123456",""

welcome

.....



# 10 Appendix F—SMS parameter definitions

This section describes the parameters used in the SMS-related AT commands. The formats of integer and string types are defined in reference [1]. The default values are for command parameters, not for result code parameters.

## 10.1 Message storage parameters for SMS

**Table 42 Message storage parameters for SMS**

Param.	Type	Description
<index>	Integer	Value in the range of location numbers supported by the associated memory.
<mem1>	String	Memory from which messages are read and deleted. Commands: List Messages <a href="#">+CMGL</a> (page 54), Read Message <a href="#">+CMGR</a> (page 55) and Delete Message <a href="#">+CMGD</a> (page 53)). Defined values (others are manufacturer specific): BM Broadcast message storage ME ME message storage MT Any of the storages associated with ME SM SIM message storage TA TA message storage SR Status report storage
<mem2>	String	Memory to which writing and sending operations are made. Commands: Send Message from Storage <a href="#">+CMSS</a> (page 61) and Write Message to Memory <a href="#">+CMGW</a> (page 58). For defined values, see <mem1> above.

Param.	Type	Description															
<mem3>	String	<p>Memory to which received SMS are preferred to be stored (unless forwarded directly to TE; see the command New Message Indications <a href="#">+CNMI</a> (page 62)).</p> <p>For defined values, see <a href="#">&lt;mem1&gt;</a> above.</p> <p>Received CBMs are always stored in "BM" (or some manufacturer specific storage) unless directly forwarded to TE.</p> <p>Received status reports are always stored in "SR" (or some manufacturer specific storage) unless directly forwarded to TE.</p>															
<stat>	Integer in PDU mode (default 0).  String in text mode (default "REC UNREAD")	<p>Status of message in memory.</p> <p>Defined values:</p> <table border="0"> <tr> <td>0</td> <td>REC UNREAD</td> <td>Received unread message (i.e. new message)</td> </tr> <tr> <td>1</td> <td>REC READ</td> <td>Received read message</td> </tr> <tr> <td>2</td> <td>STO UNSENT</td> <td>Stored unsent message (only applicable to SMS)</td> </tr> <tr> <td>3</td> <td>STO SENT</td> <td>Stored sent message (only applicable to SMS)</td> </tr> <tr> <td>4</td> <td>ALL</td> <td>All messages (only applicable to <a href="#">+CMGL</a> command)</td> </tr> </table>	0	REC UNREAD	Received unread message (i.e. new message)	1	REC READ	Received read message	2	STO UNSENT	Stored unsent message (only applicable to SMS)	3	STO SENT	Stored sent message (only applicable to SMS)	4	ALL	All messages (only applicable to <a href="#">+CMGL</a> command)
0	REC UNREAD	Received unread message (i.e. new message)															
1	REC READ	Received read message															
2	STO UNSENT	Stored unsent message (only applicable to SMS)															
3	STO SENT	Stored sent message (only applicable to SMS)															
4	ALL	All messages (only applicable to <a href="#">+CMGL</a> command)															
<total1>	Integer	Total number of message locations in <a href="#">&lt;mem1&gt;</a>															
<total2>	Integer	Total number of message locations in <a href="#">&lt;mem2&gt;</a>															
<total3>	Integer	Total number of message locations in <a href="#">&lt;mem3&gt;</a>															
<used1>	Integer	Number of messages currently in <a href="#">&lt;mem1&gt;</a>															
<used2>	Integer	Number of messages currently in <a href="#">&lt;mem2&gt;</a>															
<used3>	Integer	Number of messages currently in <a href="#">&lt;mem3&gt;</a>															

## 10.2 Message data parameters for SMS

**Table 43 Message data parameters for SMS**

Param.	Description
<ackpdu>	<p>GSM 03.40 <a href="#">[18]</a> RP-User-Data element of RP-ACK PDU.</p> <p>The format is same as for <a href="#">&lt;pdu&gt;</a> in case of SMS, but without GSM 04.11. The SC address field and parameter shall be bounded by double quote characters like a normal string type parameter.</p>

Param.	Description
<alpha>	<p>String type.</p> <p>Alphanumeric representation of &lt;da&gt; or &lt;oa&gt; corresponding to the entry found in MT phonebook.</p> <p>Implementation of this feature is manufacturer specific.</p> <p>The used character set should be the one selected with the command Select TE Character Set +CSCS (page 38) (see definition of this command in reference [2].)</p>
<cdata>	<p>GSM 03.40 [18] TP-Command-Data in text mode responses.</p> <p>The ME/TA converts each 8-bit octet into two IRA character long hexadecimal number. For example, an octet with integer value 42 is presented to TE as two characters 2A (IRA 50 and 65).</p>
<ct>	<p>GSM 03.40 [18] TP-Command-Type in integer format (default 0).</p>
<da>	<p>GSM 03.40 [18] TP-Destination-Address Address-Value field in string format.</p> <p>BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (refer command +CSCS in GSM 07.07 [2]); type of address given by &lt;toda&gt;</p>
<data>	<p><b>In the case of SMS:</b> GSM 03.40 [18] TP-User-Data in text mode responses. Format:</p> <p>If &lt;dcs&gt; indicates that GSM 03.38 ([7]) default alphabet is used and &lt;fo&gt; indicates that GSM 03.40 TP-User-Data-Header-Indication is not set:</p> <ul style="list-style-type: none"> <li>• If TE character set other than "HEX" (refer command Select TE Character Set +CSCS in GSM 07.07 [2]): ME/TA converts GSM alphabet into current TE character set according to rules of Annex A</li> <li>• If TE character set is "HEX": ME/TA converts each 7-bit character of GSM alphabet into two IRA character long hexadecimal number (e.g. character II (GSM 23) is presented as 17 (IRA 49 and 55))</li> </ul> <p>If &lt;dcs&gt; indicates that 8-bit or UCS2 data coding scheme is used, or &lt;fo&gt; indicates that GSM 03.40 TP-User-Data-Header-Indication is set:</p> <ul style="list-style-type: none"> <li>• ME/TA converts each 8-bit octet into two IRA character long hexadecimal number (e.g. octet with integer value 42 is presented to TE as two characters 2A (IRA 50 and 65))</li> </ul> <p><b>In the case of CBS:</b> GSM 03.41 CBM Content of Message in text mode responses. Format:</p> <p>If &lt;dcs&gt; indicates that GSM 03.38 default alphabet is used:</p> <ul style="list-style-type: none"> <li>• If TE character set other than "HEX" (refer command +CSCS in GSM 07.07): ME/TA converts GSM alphabet into current TE character set according to rules of Annex A</li> <li>• If TE character set is "HEX": ME/TA converts each 7-bit character of GSM alphabet into two IRA character long hexadecimal number</li> </ul> <p>If &lt;dcs&gt; indicates that 8-bit or UCS2 data coding scheme is used:</p> <ul style="list-style-type: none"> <li>• ME/TA converts each 8-bit octet into two IRA character long hexadecimal number</li> </ul>

Param.	Description																
<dc>	Depending on the command or result code: <ul style="list-style-type: none"> <li>GSM 03.38 [7] SMS Data Coding Scheme (default 0), or</li> <li>Cell Broadcast Data Coding Scheme in integer format</li> </ul>																
<dt>	GSM 03.40 [18] TP-Discharge-Time in time-string format: “yy/MM/dd,hh:mm:ss±zz”, where characters indicate year (two last digits), month, day, hour, minutes, seconds and time zone. For example, 6th of May 1994, 22:10:00 GMT+2 hours equals to “94/05/06,22:10:00+08”																
<fo>	Depending on the command or result code: <ul style="list-style-type: none"> <li>First octet of GSM 03.40 [18] SMS-DELIVER, SMS-SUBMIT (default 17), SMS-STATUS-REPORT, or SMS-COMMAND (default 2) in integer format.</li> </ul> First octet: <table border="1" data-bbox="412 730 1253 825"> <thead> <tr> <th>Bit7</th> <th>Bit6</th> <th>Bit5</th> <th>Bit4</th> <th>Bit3</th> <th>Bit2</th> <th>Bit1</th> <th>Bit0</th> </tr> </thead> <tbody> <tr> <td>RP</td> <td>UDHI</td> <td>SRR</td> <td colspan="2">VPF</td> <td>RD</td> <td colspan="2">MTI</td> </tr> </tbody> </table> 17 – default value. RP: Reply path (indicates the service center to deliver a reply from the replying MS to the originating SME; for details, see GSM 03.40); 0 (Default value, and recommended setting) UDHI: User Data Header Information (setting indicates that the beginning of the TP-UD field contains a header in addition to the short message; for details, see GSM 03.40); 0 (Default value, and recommended setting) SRR: Status report request: <ul style="list-style-type: none"> <li>0: A status report is requested. (Default value)</li> <li>1: A status report is not requested</li> </ul> VPF: Validity period format: <ul style="list-style-type: none"> <li>00: &lt;vp&gt; is not present</li> <li>10: &lt;vp&gt; is present; relative format (Default value). See &lt;vp&gt; on page 218.</li> <li>11: &lt;vp&gt; is present; absolute format</li> </ul> RD: Reject Duplications: <ul style="list-style-type: none"> <li>0: Instruct the SC to accept an SMS-SUBMIT for an SM still held in the SC which has the same TP-MR and the same TP-DA as a previously submitted SM from the same oa. (Default value)</li> <li>1: Instruct the SC to reject an SMS-SUBMIT for an SM still held in the SC which has the same TP-MR and the same TP-DA as a previously submitted SM from the same oa.</li> </ul> MTI: Message Type Indicator: <ul style="list-style-type: none"> <li>00: SMS-DELIVER (SC to MS)</li> <li>01: SMS-SUBMIT (MS to SC). (Default value)</li> </ul>	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0	RP	UDHI	SRR	VPF		RD	MTI	
Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0										
RP	UDHI	SRR	VPF		RD	MTI											

Param.	Description
<length>	Integer type value indicating: <ul style="list-style-type: none"> <li>In text mode (+CMGF=1), the length of the message body &lt;data&gt; (or &lt;cdata&gt;) in characters</li> <li>In PDU mode (+CMGF=0), the length of the actual TP data unit in octets (i.e. the RP layer SMSC address octets are not counted in the length)</li> </ul>
<mid>	GSM 03.41 CBM Message Identifier in integer format
<mn>	GSM 03.40 [18] TP-Message-Number in integer format
<mr>	GSM 03.40 [18] TP-Message-Reference in integer format
<oa>	GSM 03.40 [18] TP-Originating-Address Address-Value field in string format. BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (refer command +CSCS in GSM 07.07 [2]); type of address given by <tooa>
<page>	GSM 03.41 CBM Page Parameter bits 4-7 in integer format
<pages>	GSM 03.41 CBM Page Parameter bits 0-3 in integer format
<pdu>	In the case of SMS: <ul style="list-style-type: none"> <li>GSM 04.11 SC address followed by GSM 03.40 [18] TPDU in hexadecimal format: ME/TA converts each octet of TP data unit into two IRA character long hexadecimal number (e.g. octet with integer value 42 is presented to TE as two characters 2A (IRA 50 and 65)).</li> </ul> In the case of CBS: <ul style="list-style-type: none"> <li>GSM 03.41 TPDU in hexadecimal format.</li> </ul>
<pid>	GSM 03.40 [18] TP-Protocol-Identifier in integer format (default 0)
<ra>	GSM 03.40 [18] TP-Recipient-Address Address-Value field in string format. BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (refer command +CSCS in GSM 07.07 [2]); type of address given by <tora>
<sca>	GSM 04.11 RP SC address Address-Value field in string format. BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (refer command +CSCS in GSM 07.07 [2]); type of address given by <tosca>
<scts>	GSM 03.40 [18] TP-Service-Center-Time-Stamp in time-string format (refer <dt>)
<sn>	GSM 03.41 CBM Serial Number in integer format
<st>	GSM 03.40 [18] TP-Status in integer format
<toda>	GSM 04.11 TP-Destination-Address Type-of-Address octet in integer format. When the first character of <da> is + (IRA 43), the default value is 145; otherwise, the default value is 129.
<tooa>	GSM 04.11 TP-Originating-Address Type-of-Address octet in integer format. When the first character of <da> is + (IRA 43), the default value is 145; otherwise, the default value is 129.

Param.	Description										
<tora>	<p>GSM 04.11 TP-Recipient-Address Type-of-Address octet in integer format.</p> <p>When the first character of &lt;da&gt; is + (IRA 43), the default value is 145; otherwise, the default value is 129.</p>										
<tosca>	<p>GSM 04.11 RP SC address Type-of-Address octet in integer format.</p> <p>When the first character of &lt;da&gt; is + (IRA 43), the default value is 145; otherwise, the default value is 129.</p>										
<vp>	<p>Depending on SMS-SUBMIT &lt;fo&gt; setting: GSM 03.40 [18] TP-Validity-Period either in integer format (default 167) or in time-string format (refer &lt;dt&gt;).</p> <p><b>Relative format:</b></p> <table border="1" data-bbox="412 663 1365 951"> <thead> <tr> <th data-bbox="412 663 602 730">VP value</th> <th data-bbox="602 663 1365 730">Validity period</th> </tr> </thead> <tbody> <tr> <td data-bbox="412 730 602 810">0 to 143</td> <td data-bbox="602 730 1365 810">(TP-VP + 1) x 5 minutes (i.e. 5 minutes intervals up to 12 hours)</td> </tr> <tr> <td data-bbox="412 810 602 856">144 to 167</td> <td data-bbox="602 810 1365 856">12 hours + ((TP-VP - 143) x 30 minutes)</td> </tr> <tr> <td data-bbox="412 856 602 903">168 to 196</td> <td data-bbox="602 856 1365 903">(TP-VP - 166) x 1 day</td> </tr> <tr> <td data-bbox="412 903 602 949">197 to 255</td> <td data-bbox="602 903 1365 949">(TP-VP - 192) x 1 week</td> </tr> </tbody> </table> <p>Default value is 167.</p> <p><b>Absolute format:</b></p> <p>The TP-Validity Period comprises 7 octets in semi octet representation giving the absolute time of the validity period termination. Example: "00/01 /01,00:00:00+00"</p>	VP value	Validity period	0 to 143	(TP-VP + 1) x 5 minutes (i.e. 5 minutes intervals up to 12 hours)	144 to 167	12 hours + ((TP-VP - 143) x 30 minutes)	168 to 196	(TP-VP - 166) x 1 day	197 to 255	(TP-VP - 192) x 1 week
VP value	Validity period										
0 to 143	(TP-VP + 1) x 5 minutes (i.e. 5 minutes intervals up to 12 hours)										
144 to 167	12 hours + ((TP-VP - 143) x 30 minutes)										
168 to 196	(TP-VP - 166) x 1 day										
197 to 255	(TP-VP - 192) x 1 week										

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