Developers Guidelines

AT Commands
Online Reference

T68, T68i, T300, T310, T610, Z600, T230/T238/T226, T630, T290

Sony Ericsson

Preface

The Developers Guidelines for AT Commands Online Reference is designed to give the reader a deeper insight into how to design applications with AT commands supported by mobile phones. The information here is not relevant for the day-to-day operation of the phone. This is described in the User Guide supplied with the mobile phone.

This document is for advanced users who require detailed information in order to:

• Develop new communications software
• Add the mobile phone to an application's list of compatible modems
• Adjust the settings of their mobile phones

This document is based on general AT Commands information. However, specific information for mobile phones is found in the appendixes.

People who can benefit from this document include:

• Application providers
• Content providers
• Content aggregators
• Operators and service providers
• Software developers
• Business decision-makers

It is assumed that the reader has a basic understanding of AT Commands. More information is available at Sony Ericsson Developer World website at http://www.sonyericsson.com/developer where up to date information about technologies, products and tools can be obtained.

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Online Developer Resources

On Sony Ericsson Developer world, www.SonyEricsson.com/developer, developers will find all documentation and tools such as phone White Papers, Developers Guidelines, SDKs and APIs and so on. The developer web site also contains discussion forums monitored by our Sony Ericsson Developer Support team, a searcheable Knowledge Base of support queries and solutions, Tips & Tricks, example code etc. To stay up to date on development issues, register and subscribe to the monthly Sony Ericsson Developer Newsletter.

Sony Ericsson Developer Support

Sony Ericsson offers developers professional technical support services. The service can be purchased from the developer web portal, as part of the Sony Ericsson Core and Core+ membership packages or as single support queries. There are two levels of support included in the memberships:

The **Basic E-mail Developer Support** is an annual support service included in the Core membership that provides developers with all the basics to successfully develop world-class applications for Sony Ericsson products. Developers get access to Sony Ericsson developer support engineers via email with same-day response, five technical support incidents as well as the ability to purchase more.

The **Priority E-mail Developer Support** is an annual support service included in the Core+ membership that equips professional developers with everything they need to successfully develop world-class applications for Sony Ericsson products. Developers get priority access to Sony Ericsson developer support engineers via email with fast response times and up to 50 technical support incidents.

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Contents

Introduction

This manual describes the operation of the AT commands supported by the T68 mobile phone. Specific AT commands for other mobile phones are described in the Appendices. The information here is not relevant to the day-to-day operation of the phone. This is described in the User Guide supplied with the mobile phone.

The On-line Reference Manual is for advanced users who require detailed information in order to:

• Develop new communications software.
• Add the mobile phone to an application's list of compatible modems.
• Adjust the settings of their mobile phones.

About this manual

This manual is designed to supplement the Sony Ericsson mobile phone User Guide.

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Using this manual

The standard text in this manual is modified to distinguish between the text displayed on the screen, typed instructions and examples of command dialogue. The distinctions are as follows:

• Typed commands and option values are written in bold text; for example: **S2=**<esc>; <esc>=**0-127.**
• Any key strokes are written in bold text in brackets; for example **<CR>.**
• Examples of command dialogue, including keyboard entries and on-screen responses, are written in `Courier` text.
• The default parameter setting used by a command is indicated by the text "**Default setting**".

Using the built-in modem in the phone

The built-in modem can be accessed via Bluetooth, irDA, or RS 232 cable connection.

Standards
IrDA DATA with secondary implementation of IrLAP 1.0 and IrDA-Ultra, IRMC 1.1., ETSI 07.05, 07.07 and 07.10.

Fax specifications Group III, class 1 and 2. Class 2 is recommended. WAP 1.2.1.

Data rates (up to)
• 115,200 bits/s between phone and IrDA device (e.g. PC, another phone).
• 108,800 bits/s via Bluetooth (one time slot).

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- 9,600/14,400 bits/s for GSM data communication, no compression. 57,600 bits/s for GSM data communication with V.42bis compression.
- 28,800 bits/s (receiving data) using HSCSD, no compression. 115,200 bits/s (receiving data) using HSCSD with V.42bis compression.
- 40,200 bits/s (receiving data)/13,400 bits/s (transmitting data) using GPRS.
- 9,600/14,400 bits/s in fax communication.

AT modem V.25ter command set supported.

Power consumption
Slightly increased depending on type of communication.

Communications programs

Please refer to the User Guide for instructions on the installation and use of the Sony Ericsson built-in modem software drivers.

Configuring third-party communications programs
If you want to use a communications program which does not include the Sony Ericsson built-in modem in the list of supported hardware, the following options are suggested:

Configure for V.25ter
The built-in modem supports the V.25ter command set. If your communications program can generate and support a V.25ter command, the built-in modem does not require the installation of a specific driver.

Locate a Mobile Phone Modem driver
A Mobile Phone Modem driver for your communications program may be available on either the Sony Ericsson Infrared Mobile Phone Modem utilities disk or from one of the on-line services, for example

http://wap.sonyericssonmobile.com

Configure the data communications program manually
To configure your data communications program manually:

1. Select a generic mobile phone modem driver from the list of available mobile phone modem drivers.

2. Set the Init string to `AT&F`

3. Set the optional setup string to Asynchronous RLP:

`AT+CBST=0,0,1`

Configure your facsimile communications program manually
To configure your facsimile communications program manually, select a Fax Class 2 driver. The built-in modem supports Fax Class 1 facsimile which can be used if there are problems with the fax service or speed of the computer, or if your fax application does not support Fax Class 2.

Result and Error Codes

Result codes

When you send a command from your PC or PDA to the built-in modem, the response is terminated by a result code, which is shown on the computer screen. Use this code to confirm correct operation or to identify any problem with the command. There are two types of result codes:

- Final result codes related to the operation of AT commands.
- Result codes associated with call connections.

Final result codes from AT commands
The built-in modem always terminates each response to an AT command with a final result code:

OK   The command(s) and any specified parameters were valid and the command has completed execution.

Some AT commands are not relevant to the built-in modem operations or can only be set to one parameter value. For completeness and to allow the parameter to be read, some of these commands are supported but not implemented. Calling a command of this type produces the OK result code but does not cause any change to the built-in modem. These commands are included in the command descriptions in Chapters 4 and 5.

ERROR   An error has occurred during the command processing.

                          This could arise because:

                          - There is a fault in the command syntax.
                          - One or more parameters are outside the permitted range.
                          - The command you issued is not implemented in the built-in modem.
                          - The command is not appropriate to the service.
                          - Of the class the built-in modem is operating in.

When an error is reported, the ERROR message is preceded by a copy of the text response from the last valid AT command. This is shown in the following example:

Valid command:	AT+CBC=?
Response:	+CBC:(0,2),(0-100)
	OK
Invalid command:	AT+CBC=?;+FCLASS=3
Response:	+CBC:(0,2),(0-100)
	ERROR

Result codes from call connections
During on-line operation of the telephone, result codes inform you about the progress of call connections:

CONNECT   <speed>   A connection has been established and the data rate <speed> is shown.

BUSY	The number you called is engaged.
NO DIALTONE	Unable to establish the initial connection.
NO CARRIER	Either a connection could not be established or an existing connection has been lost.
RING	There is an incoming call. This is not a consequence of local activity and is referred to as an unsolicited result code.

Format of the result codes

The result codes described above are in verbose format. You can command the built-in modem to display result codes in verbose or numeric format or you can switch them off completely.

To switch between verbose and numeric format, please refer to the use of the ATV command on page 32.

To switch the display of result codes on or off, please refer to the use of the ATQ command on page 32.

Error codes

The +CME ERROR result codes indicate an error relating to the functionality of the built-in modem or mobile phone and replace the final result code ERROR when enabled by the AT+CMEE command.

Report mobile phone failure (+CME)

+CME ERROR: 0	Phone failure
+CME ERROR: 1	No connection to phone
+CME ERROR: 2	Phone modem link reserved
+CME ERROR: 3	Operation not permitted
+CME ERROR: 4	Operation not supported
+CME ERROR: 5	PH-SIM card PIN required
+CME ERROR: 10	SIM card not inserted
+CME ERROR: 11	SIM card PIN required
+CME ERROR: 12	SIM card PUK required
+CME ERROR: 13	SIM card failure
+CME ERROR: 14	SIM card busy
+CME ERROR: 15	SIM card wrong
+CME ERROR: 16	Incorrect password
+CME ERROR: 20	Memory full
+CME ERROR: 21	Invalid index
+CME ERROR: 22	Not found
+CME ERROR: 23	Memory failure
+CME ERROR: 24	Text string too long
+CME ERROR: 25	Invalid character in text string
+CME ERROR: 26	Dial string too long
+CME ERROR: 27	Invalid character in dial string
+CME ERROR: 100	Unknown

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Report operational/access failure (+CMS)

The `+CMS ERROR` result codes indicate an error relating to the built-in modem, mobile phone, or network relating to the Short Message Service (SMS). This replaces the final result code `ERROR`.

`+CMS ERROR: 0`	GSM 04.11 Annex E-2 values
`to`	
`+CMS ERROR: 127`	
`+CMS ERROR: 128`	GSM 03.40 Section 9.2.3.22 values
`to`	
`+CMS ERROR: 255`	
`+CMS ERROR: 300`	Mobile phone failure
`+CMS ERROR: 301`	Short message service of mobile phone reserved
`+CMS ERROR: 302`	Operation not allowed
`+CMS ERROR: 303`	Operation not supported
`+CMS ERROR: 304`	Invalid PDU mode parameter
`+CMS ERROR: 305`	Invalid text mode parameter
`+CMS ERROR: 310`	SIM card not inserted
`+CMS ERROR: 311`	SIM card PIN necessary
`+CMS ERROR: 312`	SIM card PIN necessary for PH-SIM
`+CMS ERROR: 313`	SIM card failure
`+CMS ERROR: 314`	SIM card busy
`+CMS ERROR: 315`	SIM card wrong
`+CMS ERROR: 316`	SIM PUK required
`+CMS ERROR: 317`	SIM PIN2 required
`+CMS ERROR: 318`	SIM PUK2 required
`+CMS ERROR: 320`	Memory failure
`+CMS ERROR: 321`	Invalid memory index
`+CMS ERROR: 322`	Memory full
`+CMS ERROR: 330`	SMSC address unknown
`+CMS ERROR: 331`	No network service
`+CMS ERROR: 332`	Network timeout
`+CMS ERROR: 340`	No +CNMA acknowledgement expected
`+CMS ERROR: 500`	Unknown error
`+CMS ERROR: 511`	Range 256...511 reserved
`+CMS ERROR: 512`	Manufacturer specific

Service Report (+CR)

When a data connection is being established, the `+CR` messages are sent to the PC before the final result code `CONNECT`. Use AT+CR to enable these messages.

`+CR: ASYNC`	Asynchronous transparent
`+CR: SYNC`	Synchronous transparent
`+CR: REL ASYNC`	Asynchronous non-transparent

+CR: REL SYNC	Synchronous non-transparent

Cellular Result Codes (+CRING)

The +CRING messages replace the unsolicited result code RING and provide more information about the type of the incoming call. Use AT+CRC to enable these messages.

+CRING: ASYNC	Asynchronous transparent
+CRING: SYNC	Synchronous transparent
+CRING: REL ASYNC	Asynchronous non-transparent
+CRING: REL SYNC	Synchronous non-transparent
+CRING: FAX	Facsimile
+CRING: VOICE	Normal voice

AT Commands

Introduction to AT commands

This chapter describes how AT commands are used to exchange information with the phone, the built-in modem and Bluetooth module. The AT commands are listed at the end of this chapter. For a description of each command, refer to Chapters 4, 5 and 6.

You use AT commands to:

- Configure the phone to connect via infrared port or the system bus.
- Configure the modem to connect via infrared port or the system bus.
- Request information about the current configuration or operational status of the phone or the modem.
- Test availability in the phone or modem and, when applicable, request the range of valid parameters when applicable, for an AT command.

Built-in modem operating modes

The built-in modem can be set in any one of the following three modes of operation:

Off-line command mode:	The built-in modem is placed in the off-line command mode when first switched on and ready for entry of AT commands.
On-line data mode:	Allows "normal" operation of the built-in modem, exchanging data or facsimile with the remote modem.
On-line command mode:	It is possible to switch to the on-line command mode when wanting to send AT commands to the built-in modem while still remaining connected to the remote modem.

Changing the built-in modem operating mode

The following illustration summarizes the methods that are used to switch between the three built-in modem operating modes:

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Operating in off-line command mode

Switch on

Off-line Command Mode

Exchange AT command data between

computer and Built-in Modem

Dial   Answer

ATD   **ATA**
<tel.no.>

Lose carrier
or
lose IR link
or
press "No"
button
(or pull DTR
low *) or **ATH**

Lose carrier
or
lose IR link
or
press "NO"
button
(or
pull DTR
low *)

On-line Data Mode

Exchange data or facsimile

with a remote modem

+++AT <?>
(or pull DTR
low *)

ATO

On-line Command Mode

Exchange AT command data with the Built-in

Modem while staying on-line

*** Pull DTR not available
when using cable.**

Figure 1. In the off-line command mode, the built-in modem accepts data as commands and not as normal communications traffic. You enter commands by typing at the PC/PDA keyboard.

Switching to the on-line data mode

To enter the on-line data mode, for data to be exchanged with the modem at the other end of the link, enter the **ATD** command followed by the telephone number to make the call. Alternatively, typing **ATA** to answer an incoming call also places the built-in modem in the on-line mode.

Switching back to the off-line command mode

Any of the following will return the built-in modem to the off-line command mode from the on-line data mode:

- Loss of the connection (NO CARRIER error).
- Loss of the infrared link between the built-in modem and your computer.
- Pressing the "NO" button on your mobile phone.
- Pulling DTR low (not available when using cable).

Using AT commands during a data connection

If wishing to use AT commands while connected to a remote modem in the on-line data mode and maintain connection with the remote modem, first enter the on-line command mode.

There are two ways to switch from the on-line data mode to the on-line command mode:

1. Type the escape sequence "+++" followed by an appropriate AT command. This command must be selected from the options **AT**, **ATE**, **ATH**, **ATI**, **ATL**, **ATM**, **ATQ**, **ATV** and **ATX**. By using this method, an AT function, such as moving into the on-line command mode, can be performed. For example, switching using

<div align="center">+++ATH<CR></div>

switches the built-in modem to the on-line command mode. The AT command is executed, causing the connection to be terminated (hang-up executed). Typing the escape sequence "+++" without any following command causes the system to wait one second, switch to the on-line command mode, and respond OK;

2. Pull DTR low after previously setting **AT&D=1**.

Switching from the on-line command mode to the on-line data mode

To return to the on-line data mode while in the on-line command mode, type:

<div align="center">ATO<CR></div>

Switching from on-line command mode to off-line command mode

To return the built-in modem to the off-line command mode from the on-line command mode:

Use any of the methods described in "Switching back to the off-line command mode" above.

Type **+++ATH <CR>** to switch to the on-line command mode and hang up at once.

Operating the AT commands

In command mode, four types of commands can be issued:

1. A set command to adjust the built-in modem's operating parameters.

2. An execute command to direct action without any need for parameters.

3. A read command to view the current command settings.

4. A test command to view the available command parameters.

Not all AT commands support all four functions. The descriptions in Chapters 4, 5 and 6 list the functions available for each AT command.

1. Entering a set command

The standard format for entering a set command is:

        AT<command>=<parameters>**<CR>**

where   AT   Notifies the built-in modem that a command is being entered.

<command>   The name of the command being entered.

<parameters>   The values to be used by the command.

<CR>   All command lines are terminated by pressing the **<CR>** (Return or Enter) key.

Note: All command lines are completed by pressing the **<CR>** key on the computer keyboard. For the remainder of this manual, appropriate use of the **<CR>** key is assumed.

To set the built-in modem to operate with autobaud over an asynchronous connection, the command line would be:

AT+CBST=0,0,1

However, the commands also have default settings. These are values that are assumed to have been entered when no actual value is placed in the command line.

For example, the above command can be entered as:

AT+CBST=,,1

The default values used by the commands are indicated by bold text in the following descriptions.

When the parameter is a character string (for example "<name>") then the value should be entered between quotes: for example "Peter".

Optional parameters are shown in square brackets: for example [<value>].

2. Entering an execute command

Execute commands are very similar to set commands. They usually do not require any parameters and are used to obtain information about the mobile phone or built-in modem or to execute an event.

For example, to find out information about the mobile phone battery, enter the +CBC command:

AT+CBC

The built-in modem responds:

CBC: 0,60

indicating that the mobile phone battery is connected (0) and that the remaining charge is 60%.

To answer an incoming call, you execute the A command:

ATA

3. Using read command to view the command settings

To check the current settings of a command, use the '?' option.

For example, to check the current settings of the +CBST command, enter:

AT+CBST?

If CBST has been set according to the previous example, the settings are displayed as

+CBST: 0,0,1

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4. Using test command to request command help

To test the availability of a command and the range of parameters, use the '=?' option with the command.

For example, to check the parameters available to the command line in the example above, enter:

```
AT+CBST=?
```

The line:

```
+CBST: (0,4,6,7,68,70,71),(0),(1)
```

is displayed indicating the range of valid entries that can be set for the parameters <data rate>, <bearer service>, and <connection element>.

AT Command List

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AT Commands Phone Terminal Terminated

Ensemble C2: Control and Identification

Commands

AT	**Attention Command**
Description:	Checks the communication between the phone and any accessory. Determines the presence of a phone.
Execution command:	**AT**

AT*	**List All Supported AT Commands**
Description:	Lists one or more lines of AT commands supported by the phone.
Execution command:	**AT***

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Response:	<AT Command1>**<CR><LF>**
	[<AT Command2>**<CR><LF>**
	[...]]

<AT Command>	Description
AT...	Defines the AT command, including the prefix AT

Example:
```
AT*
AT+CGMI
AT+CGMM
AT+CGMR
...
OK
```

AT+CLAC   List All Available AT Commands

Description:	Execution command causes the phone to return one or more lines of AT Commands.
	Note: This command only returns the AT commands available to the user.
Execution command:	**AT+CLAC**
Test command:	**AT+CLAC=?** Shows if the command is supported.
Possible execution command response(s):	<AT Command1>**<CR><LF>**
	[<AT Command2>**<CR><LF>**
	[...]]
	+CME Error: <err>

<AT Command>	Description
AT...	Defines the AT command, including the prefix AT

Example:
```
AT+CLAC
AT+CGMI
AT+CGMM
AT+CGMR
...
OK

+AT+CLAC=?
OK
```

ATZ   Reset to User-Defined Configuration

Description:	This command resets the values to default settings and closes all connections.
Execution command:	**ATZ**

AT&F   **Set To Factory-Defined Configuration**

Description: This command resets the values to default settings.

Execution command: **AT&F**

AT+CGMI   **Request Manufacturer Identification**

Description: The command causes the phone to return one or more lines of information text <manufacturer> which is intended to permit the user of the ITAE/ETAE to identify the manufacturer of the phone to which it is connected to.

Execution command: **AT+CGMI**

Execution command response: <manufacturer>

Test command: **AT+CGMI=?**   Shows if the command is supported.

Parameter:

<manufacturer>:   String; manufacturer name. Not to exceed 2048 characters.

Example:
```
AT+CGMI
SONY ERICSSON
OK

AT+CGMI=?
OK
```

AT+CGMM   **Request Model Identification**

Description: The command causes the phone to return one or more lines of information text <model> which is intended to permit the user of the ITAE/ETAE to identify the specific model of phone to which it is connected to.

Execution command: **AT+CGMM**

Execution command response: <model_type><model_name>

Test command: **AT+CGMM=?**   Shows if the command is supported.

Parameters:

<model_type>:   10-character ASCII string; padded with space if needed.

<model_name>:   Model name for transceiver unit.

AT+CGMR   **Request Revision Identification**

Description: The command causes the phone to return a string containing information regarding SW version.

Execution command: **AT+CGMR**

Execution command response: <revision>

Test command: **AT+CGMR=?**   Shows if the command is supported.

Parameter:

<revision>:   An ASCII string containing software revision plus KRC number.

Example: AT+CGMR
                     R1A091 CXC125112
                     OK

                     AT+CGMR=?
                     OK

AT+CGSN   **Request Product Serial Number Identification**

Description: Returns the IMEI number of the phone.

Execution   **AT+CGSN**
command:

Execution command <sn>
response:

Test command: **AT+CGSN=?**   Shows if the command is supported.

Parameter:

<sn>:   String; contains the phone IMEI.

Ensemble C3: Call Control

Commands

ATA   **Answer Incoming Call Command**

Description: Answers an incoming call.

Execution   **ATA**
command:

ATH   **Hook Control**

Description: Terminates an active call.

Execution   **ATH**
command:

ATD   Dial Command

Description: Causes the phone to dial a call.

All characters appearing on the same command line after the "**D**" are considered part of the call-addressing information to be signalled to the network, or modifiers used to control the signalling process (collectively known as a "dial string"), up to a semicolon character or the end of the command line. The DCE dials the voice number to complete the call, returns to the on-line command state, and sends an OK final result code.

Any characters appearing in the dial string that the DCE does not recognise as a valid part of the call-addressing information or as a valid modifier is ignored. This permits characters such as parentheses and hyphens, that are typically used in formatting of telephone numbers, to be included.

Execution command: **ATD**<dial_string>;

Parameter:

<dial_string>:   Valid characters: '0-9, #'

Possible responses:

NO DIALTONE   The line is busy.

ERROR   If ATD is unsuccessfully executed by the phone.

NO CARRIER   The mobile phone is not registered.

ATL   Monitor Speaker Loudness

Description: This command controls the volume of the monitor speaker.

Set command: **ATL**=[<value>]

Read command: **ATL?** Displays the current <value> setting.

Test command: **ATL=?** Shows if the command is supported.

Test command response: L: (list of supported <value>s)

Parameter:

<value>:

<value>	Description
0	-14 dB (minimum speaker volume)
1	-10.5 dB
2	-7 dB
3	-3.5 dB
4	0 dB (nominal speaker volume)
5	3.5 dB
6	7 dB
7	10.5 dB
8	14 dB (maximum speaker volume)

Example:

```
ATL=2
OK

ATL?
L: 2
OK

ATL=?
L: (0-8)
OK
```

AT+CFUN   Set Phone Functionality

Description: Selects the level of functionality in the phone. Sets the power status to either ON or OFF.

Set command: **AT+CFUN=**<fun>

Read command: **AT+CFUN?**   Displays the current <fun> setting.

Test command: **AT+CFUN=?**   Shows if the command is supported.

Test command response: +CFUN: (list of supported <fun>s)

Parameter:

<fun>:

<fun>	Description
0	Minimum functionality; minimum power is drawn **Default setting**
1	Maximum functionality; maximum power is drawn

Ensemble C4: Interface Commands

Commands

ATS3   Command Line Termination Character

Description: Defines the character to be used as the line termination character. This is used both for detection of an end-of-command and in formatting of responses.

Set command: **ATS3=**<value>

Read command: **ATS3?**   Displays the current <value> setting.

Test command: **ATS3=?**   Shows if the command is supported.

Test command response: S3: (list of supported <value>s)

Parameter:

<value>:

<value>	Description
0-127	Command line termination character
13	Command line termination character = **<CR>** **Default setting**

ATS4   Response Formatting Character

Description:	Defines the character to be used as the response formatting character.
Set command:	**ATS4=**<value>
Read command:	**ATS4?** Displays the current <value> setting.
Test command:	**ATS4=?** Shows if the command is supported.
Test command response:	S4: (list of supported <value>s)
Parameter:	

<value>:

<value>	Description
0-127	Command line termination character
10	Formatting character = **<LF>** **Default setting**

ATS5   Command-Line Editing Character

Description:	Defines the character to be used as the command-line editing character.
Set command:	**ATS5=**<value>
Read command:	**ATS5?** Displays the current <value> setting.
Test command:	**ATS5=?** Shows if the command is supported.
Test command response:	S5: (list of supported <value>s)
Parameter:	

<value>:

<value>	Description
0-127	Command line termination character
8	**Default setting**

ATE   Command Echo

Description:	Determines if the DCE echoes characters received from the DTE during command state and on-line command state.

Set command:	**ATE**[<value>]
Read command:	**ATE?** Displays the current <value> setting.
Test command:	**ATE=?** Shows if the command is supported.
Test command response:	E: (list of supported <value>s)
Parameter:	

<value>:

<value>	Description
0	DCE does not echo characters during command state and on-line command state
1	DCE echoes characters during command state and on-line command state **Default setting**

ATQ   Result Code Suppression

Description:	Determines if the DCE transmits result codes to the DTE.
Set command:	**ATQ**[=]<value>
Read command:	**ATQ?** Displays the current <value> setting.
Read command response:	Q: <value>
Test command:	**ATQ=?** Shows if the command is supported.
Test command response:	Q: (list of supported <value>s)
Parameter:	

<value>:

<value>	Description
0	DCE transmits result codes **Default setting**
1	Result codes are suppressed and not transmitted

ATV   DCE Response Mode

Description:	Selects either verbose or numeric response codes.
Set command:	**ATV**[=]<value>
Read command:	**ATV?** Displays the current <value> setting.
Read command response:	V: <value>
Test command:	**ATV=?** Shows if the command is supported.
Test command response:	V: (list of supported <value>s)

Parameter:

<value>:

<value>	Description
0	Display numeric result code
1	Display verbose result code **Default setting**

Result code (ATV1)	Result code (ATV0)	Description
OK	**0**	Acknowledges execution of a command
CONNECT	**1**	A connection has been established; the DCE is moving from command state to on-line data state
RING	**2**	The DCE has detected an incoming call from the network
NO CARRIER	**3**	The connection has been terminated, or the attempt to establish a connection failed
ERROR	**4**	Command not recognized, command line maximum length exceeded, parameter value invalid, or other problem with processing the command line
NO DIALTONE	**6**	No dial tone detected
BUSY	**7**	Engaged (busy) signal detected
NO ANSWER	**8**	"@" (Wait for Quiet Answer) dial modifier was used, but remote ringing followed by five seconds of silence was not detected before expiration of the connection timer

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Ensemble C9: Mode Management

Commands

AT+WS46 **Mode Selection**

Description: Allows an accessory to query and control the cellular-protocol mode of a multi-mode phone. The setting remains in effect until another AT+WS=<setting> command is issued, the phone is reset, a call is terminated, or the phone itself makes a mode change.

Set command: **AT+WS46=**<select>

Read command: **AT+WS46?** Displays the current <select> setting.

Test command: **AT+WS46=?** Shows if the command is supported.

Test command response: WS46: (list of supported <select>s)

Parameter:

<select>:

<select>	Description
12	GSM Digital Cellular
240	Charge-only mode; indicates that no wireless stack is active The phone is connected to a charger

Ensemble C20: Audio Control

Commands

AT*EALR **Audio Line Request**

Description: The AT*EALR command is used by accessories to request the ATMS and AFMS.

This command enables the unsolicited result code ***EALV**.

Set command: **AT*EALR=**<mode>[,<activation>[,<aud_status>]]

Read command: **AT*EALR?** Displays the current <mode>, <activation>, and <resp> settings.

Test command: **AT*EALR=?** Shows if the command is supported.

Test command response: *EALR: (list of supported <mode>s), (list of supported <activation>s),

(list of supported <aud_status>s)

Parameters:

<mode>:

<mode>	Description
0	No request of ATMS or AFMS
1	Request of ATMS and no request of AFMS
2	No request of ATMS and request of AFMS
3	Request of ATMS and AFMS **Default setting**

<activation>:   Used to indicate if the accessory wants to be activated directly or not. Direct-activated means that the accessory immediately gets access to the audio lines if a call is established from the phone. If the accessory does not request direct activation, it has to indicate to the phone when it wants to get access to the audio lines.

<activation>	Description
0	Not direct-activated audio accessory, for example a Cordless Portable Handsfree **Default setting**
1	Direct-activated audio accessory, for example a Vehicle Handsfree

<aud_status>:   Used to demand the audio lines and the call, or hand over the audio lines and the call to the phone.

<aud_status>	Description
0	No change of the audio status **Default setting**
1	Audio Handover; the accessory hands over control of both the audio lines and the call to the phone
2	Audio Demand; the accessory demands control of both the audio lines and the call

<resp>:   See ***EMIV**.

Example:
```
AT*EALR=0,0,1
*EALR: 0,0,1
OK

AT*EALR?
*EALR: 0,0,1
OK

AT*EALR=?
*EALR: (0-3),(0-1),(0-2)
OK
```

AT*EARS	**Analog Ring Signal (AFMS) Request**

Description:	This command is used to enable an analog ring signal, as an indication of an incoming call, in an external loudspeaker.
Set command:	**AT*EARS**=<mode>
Read command:	**AT*EARS?** Displays the current <mode> setting.
Test command:	**AT*EARS=?** Shows if the command is supported.
Test command response:	*EARS: (list of supported <mode>s)

Parameter:

<mode>:   Activates and deactivates the service.

<mode>	Description
0	Disable analog ring signal **Default setting**
1	Enable analog ring signal

Example:

```
AT*EARS=0
OK

AT*EARS?
*EARS: 0
OK

AT*EARS=?
*EARS: (0-1)
OK
```

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AT*EMIR   Music Mute Indication Request

Description: A music mute indication is sent to all accessories that have requested the indication when an incoming event (a phone call, an SMS, an email etc.), with an associated audio prompt (beep, melody, etc), is received by the phone or an internal event such as a calendar event, with an associated audio prompt occurs.

The music mute indication shall also be sent out when the Voice Recognition mechanism is activated. The only exception to this is when the Magic Word function is active, as the ASR is then capable of recognising a (predefined) keyword despite background noise.

After the event (when the call has been disconnected, the "new mail" signal has sounded etc.), or when the Voice Recognition mechanism is deactivated, a new music mute indication, ***EMIV**, with the <resp> parameter set to zero is sent.This command is used to request music mute indications.

A music mute indication shall be sent to all accessories that have requested the indication when a call is set up. After the call has been disconnected, a new music mute indication with the <resp> parameter set to zero shall be sent.

Set command: **AT*EMIR=**<mode>

Read command: **AT*EMIR?** Displays the current <mode> and <resp> settings.

Test command: **AT*EMIR=?** Shows if the command is supported.

Test command response: *EMIR: (list of supported <mode>s)

Parameters:

<mode>:

<mode>	Description
0	Off; Music Mute Indication result codes will **not** be sent to the accessory
1	On; Music Mute Indication result codes will be sent to the accessory **Default setting**

<resp>:

<resp>	Description
0	Music Mute inactive
1	Music Mute active

AT*ELAM   Local Audio Mode

Description: Routes the microphone and/or loudspeaker signal to the system bus. This function is used when the audio information is communicated over the system bus rather than the GSM radio. An MC link can utilize this function when communicating with a PSTN adapter.

Set command:	**AT*ELAM=**<mic>[,<loudspeaker>]
Read command:	**AT*ELAM?** Displays the current <mic> and <loudspeaker> settings.
Test command:	**AT*ELAM=?** Shows if the command is supported.
Test command response:	*ELAM: (list of supported <mode>s and<loudspeaker>s)
Parameters:	

<mic>:

<mic>	Description
0	Off **Default setting**
1	Analog microphone

<loudspeaker>:

<loudspeaker>	Description
0	Off **Default setting**
1	Analog loudspeaker

Example:
```
AT*ELAM=1,1
OK

AT*ELAM?
*ELAM: 1,1
OK

AT*ELAM=?
*ELAM: (0-1),(0-1)
OK
```

AT*EAPM   Audio Path Mode

Description:	This command is used by the accessory to set the audio path in the phone. This setting only applies for the specific accessory (each audio accessory has a separate value and this value only applies when the audio is routed to the accessory). This command is sent to the phone at the initialization phase of the accessory.
Set command:	**AT*EAPM=**<mode>
Read command:	**AT*EAPM?** Displays the current <mode> setting.
Test command:	**AT*EAPM=?** Shows if the command is supported.
Test command response:	*EAPM: (list of supported <mode>s)
Parameter:	

<mode>:

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<mode>	Description
0	Analog audio mode The audio is routed from the DSP, via the audio chip, to the AFMS/ATMS pins **Default setting**
1	Digital audio mode The audio is routed from the DSP, via the processor, to the DTMS/DFMS pins
2	Normal BT (Bluetooth) mode The audio is routed from the DSP to the Bluetooth module The Bluetooth module then sends the audio over the radio interface
3	PSTN mode The audio is sent directly from the audio chip to the Bluetooth module The Bluetooth module then sends the audio over the radio interface

Example:

```
AT*EAPM=1
*EAPM: 1
OK

AT*EAPM?
*EAPM: 1
OK

AT*EAPM=?
*EAPM: (0-3)
OK
```

AT*EAMS   Audio Mode Selection

Description: Used for setting the audio mode selection. The command has to be sent to the phone at the initialization of an audio accessory. It can also be sent later to change the audio mode selection.

Set command: **AT*EAMS=**<internal_voice_alg> [,<noise_reduction> [,<side_tone> [,<short_echo_canceling> [,<ATMS_gain> [,<class> [,<ATMS_sensitivity_deviation_from_class> [,<AFMS_sensitivity_deviation_from_class>]]]]]]]

Read command: **AT*EAMS?**   Displays the current parameter settings.

Test command: **AT*EAMS=?**   Shows if the command is supported.

Test command response:	*EAMS: (list of supported <internal_voice_alg>s, <noise_reduction>s, <side_tone>s, <short_echo_canceling>s, <ATMS_gain>s, <classs>s, <ATMS_sensitivity_deviation_from_class>s, and <ATMS_sensitivity_deviation_from_class>s)
Parameters:	**Note:** The last three parameters in this command (<class>, <ATMS_sensitivity_deviation_from_class>, and <AFMS_sensitivity_deviation_from_class>) are included to give the internal voice algorithm additional information to perform as well as possible. It is up to the phone to decide how this additional information is used.

<internal_voice_alg>: Sets the voice-processing mode in the phone.

<internal_voice_alg>	Description
0	None
1	Semi Duplex
2	Full Duplex (**Note:** the Internal Handsfree algorithm in the phone containing echo cancelling)

<noise_reduction>: Sets the noise reduction.

<noise_reduction>	Description
0	Off **Default setting**
1	On

<side_tone>: Activates the side_tone functionality in the phone.

<side_tone>	Description
0	Off **Default setting**
1	On

<short_echo_ cancelling>: Activates the short-echo cancelling functionality in the phone.

<short_echo_ cancelling>	Description
0	Off **Default setting**

<ATMS_gain>: Indicates the gain of the signal sent to the phone.

<ATMS_gain>	Description
0	Normal (0 dB) (internal voice processing) **Default setting**

<class>:	Indicates the handsfree class. The class parameter is used to adjust some parameters in the internal voice algorithm.

<class>	Description
0	None **Default setting**
1	Low End
2	Mid End
3	High End

<ATMS_sensitivity_de viation_from_class>: Indicates the ATMS deviation from a given class. This parameter is, for example, used if an HF product of a certain class has a new microphone that is more sensitive than the old one.

<ATMS_sensitivity_ deviation_from_class >	Description:
0	0 dB **Default setting**
1	2.5 dB
2	-2.5 dB
3	5.0 dB
4	-5.0 dB

<AFMS_sensitivity_de viation_from_class>: Indicates the AFMS deviation from a given class. This parameter is, for example, used if an HF product of a certain class has a new speaker that is more sensitive than the old one.

<AFMS_sensitivity_ deviation_from_class >	Description:
0	0 dB **Default setting**
1	2.5 dB
2	-2.5 dB
3	5.0 dB
4	-5.0 dB

Example:
```
AT*EAMS=0,0,0,0,1,1,1,1
OK

AT*EAMS?
*EAMS: 0,0,0,0,1,1,1,1
OK

AT*EAMS=?
*EAMS: (0-2),(0-1),(0-1),0,0,(0-3),(0-4),(0-4)
OK
```

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AT*EPHD   Portable Handsfree Detection

Description:	This command is used by cascade accessories to indicate to the phone that a voltage level of CFMS on the downstream side is constantly low, meaning a portable handsfree is connected.
	The <phf_level> and <button> parameters are, for example, used by an advanced handsfree that modifies the audio lines to portable handsfree.
Set command:	**AT*EPHD=**<mode>[,<phf_level>[,<button>]]
Read command:	**AT*EPHD?** Displays the current <mode> and <phf_level> settings.
Test command:	**AT*EPHD=?** Shows if the command is supported.
Test command response:	*EPHD: (list of supported <mode>s), (list of supported <phf_level>s), (list of supported <button>s)
Parameters:	

<mode>:

<mode>	Description
0	No portable handsfree attached
1	Portable handsfree attached **Default setting**

<phf_level>:

<phf_level>	Description
0	Internal microphone gain
1	External microphone gain **Default setting**

<button>:

<button>	Description
0	No button pushed
1	Button pushed on portable handsfree **Default setting**

Example:

```
AT*EPHD=1,0,1
OK

AT*EPHD?
AT*EPHD: 1,0
OK

AT*EPHD=?
AT*EPHD: (0-1),(0-1),(0-1)
OK
```

AT*ECBP	**CHF Button Pushed**

Description: This command is used by the cordless handsfree (CHF) to indicate to the phone that a button on the CHF has been pushed.

Action command: **AT*ECBP**[=<button>[,<time>]]

Test command: **AT*ECBP=?**   Shows if the command is supported.

Test command response: *ECBP: (list of supported <button>s),(list of supported <time>s)

Parameters:

<button>:

<button>	Description
0	Button pressed on HBH-10 handsfree **Default setting**
1	First ("YES") button pressed on HBH-20 handsfree
2	Second ("NO") button pressed on HBH-20 handsfree

<time>:

<time>	Description
0	Short press **Default setting**
1	Long press

Unsolicited Result Codes

***EALV**	**Audio Line Response**

Description: This unsolicited result code is sent to the accessory when the phone wants that accessory to change audio state. This response is enabled by using **AT*EALR**.

Unsolicited result code: ***EALV**: <mode>,<activation>,<resp>

Parameters:

<mode>:   See **AT*EALR**.

<activation>:   See **AT*EALR**.

<resp>:

<resp>	Description
0	Disable ATMS and AFMS
1	Enable ATMS and disable AFMS
2	Disable ATMS and enable AFMS
3	Enable ATMS and AFMS

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*EMIV	**Music Mute Indication response**
Description:	This music mute indication is sent out from the phone every time a parameter change occurs. The response is enabled by using **AT*EMIR**.
Unsolicited result code:	***EMIV**: <resp>
Parameter:	

<resp>:

<resp>	Description
0	Music Mute inactive
1	Music Mute active

Use scenarios

Handle Access to the Audio Lines
This scenario shows an example of how the access to the audio lines can be handled.
It includes:

- Request to access the audio lines
- Current settings query
- Unsolicited responses to the change of access to audio lines
- Audio line demand

AT command	Response	Comment
AT*EALR=3,1		Audio accessory requests ATMS and AFMS and indicates that the accessory wants to be activated directly if a call is established by the phone
	OK	
AT*EALR?		Query the current settings
	*EALR: 3,1,0 OK	Phone responds with the current settings (**Note:** The last parameter indicates that the audio is either disabled or routed elsewhere)
		Call answered by using the 'Yes' button on the phone
	*EALV: 3,1,3	The audio accessory gets control of the audio lines
	...	Another audio accessory demands the audio lines
	*EALV: 3,1,0	The accessory is no longer allowed to use the audio lines
AT*EALR=3,1,2		The accessory demands the audio lines
	*EALV: 3,1,3	The accessory gets control of the audio lines
		The call is disconnected
	*EALV: 3,1,0	The accessory is no longer allowed to use the audio lines

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Handle the Music Mute Service

This scenario shows an example of how the music mute service can be handled.
It includes:

- Request of the music mute service
- Query current settings
- Indication of music mute on/off

AT command	Response	Comment
AT*EMIR=1		Enable the music mute service
	OK	
AT*EMIR?		Query the current settings
	*EMIR: 1,0 OK	Phone responds with the current settings (**Note**: The last parameter indicates that the music mute is inactive)
		A call is established
	*EMIV: 1	Accessory mutes the car stereo
		The call is disconnected
	*EMIV: 0	Accessory deactivates the mute of the car stereo

Ensemble C21: Accessory Menus

Commands

AT*EAM   Accessory Menu

Description: Adds a persistent menu item to the phone menu structure. When the menu is selected, the unsolicited result code ***EAAI** is sent.

Set command: **AT*EAM=**<persistent_menu_item_text>

Test command: **AT*EAM=?**   Shows if the command is supported.

Parameter:

<persistent_menu_   Character string; the menu item text in the additional menu.
item_text>:

Example:
```
AT*EAM="menu_1"
OK

AT*EAM=?
OK
```

AT*EASM   Accessory Submenu

Description: Adds a submenu to a menu item.

The command can be issued several times to build up a menu. The menu is displayed when the command is issued with the <final_flag> parameter set to 1. Note that <title>, <next state> and <selected item> are only valid when the final flag is set.

When the user selects the menu, the unsolicited result code ***EAMI** is sent. If the accessory is disconnected, all corresponding accessory submenus are deleted.

Set command: **AT*EASM=**<title>,<next_state>,<selected_item>,<number_of_menu_items>

[,<menu_item>[,<menu_item>, ...]][,<final_flag>]

Test command: **AT*EASM=?**   Shows if the command is supported.

Parameters:

<title>:   Character string; menu title text.

<next_state>.   Specifies what happens when the user accepts or rejects the input dialogue or submenu.

<next_state>	Accept	Reject
0	Previous	Previous
1	Wait	Previous
2	Wait	Wait
3	Previous	Wait
4	Cancel	Previous
5	Cancel	Wait
6	Cancel	Cancel
7	Previous	Cancel
8	Wait	Cancel

<selected_item>:   Integer; index of the selected item, starting at 1.

<number_of_menu_items>:   Integer; number of menu items.

<menu_item>:   Character string; text for the menu items in the accessory menu.

<final_flag>:

<final_flag>	Description
0	Last menu item not entered
1	Last menu item entered **Default setting**

Example: AT*EASM="menu_1",0,1,1,"choice_1","choice_2",1
OK

AT*EASM=?
OK

AT*EAID	Accessory Input Dialogue

Description: Requests the phone to add an input dialogue. When the user is finished with the input, the unsolicited result code ***EAII** is sent to the phone.

The dialogue is dynamic. The dialogue can be denied, for example if the phone is already displaying a dialogue box on the stand-by screen. If AT*EAID is received while another dynamic dialogue is already showing for that device, the dialogue will be replaced with the new dialogue.

For AT*EAID=5 (1-of-many selection) and AT*EAID=15 (Form) there is a final flag. The flag is used to be able to build up the GUI by issuing the command several times. The reason for this is that the total length of an AT command may not exceed aprox. 250 bytes. Note that <next state>, <title>, <exit_text> and <default selected> are only valid when the final flag is set.

Set command: **AT*EAID=**<type>,<next_state>,<title>[,<para_1>[,<para_2>[,<para_3>]]] [,<final>]

Test command: **AT*EAID=?** Shows if the command is supported.

Parameters:

<type>: Character string. The title text for the menu.

<type>	Description	AT command syntax
0	No dialogue	AT*EAID=0
1	Message box	AT*EAID=1,<next_state>, <message_text>[,<time_out>]
2	Yes-No input	AT*EAID=2,<next_state>, <question_text>[,<time_out>]
3	On-Off input	AT*EAID=3,<next_state>, <title>,<default_on/off>
4	Percent input	AT*EAID=4,<next_state>, <title>,<percent_steps>, <default_percent_steps>
5	1-of-many selection	AT*EAID=5,<next_state>, <title>,<default_selected>, <number_of_list_items> [,<list_item>[,<list_item> [,...]]][,<final>]
6	Real input	AT*EAID=6,<next_state>, <title>,<prompt>, <max_real_value> [,<default_real_value>]
7	Integer input	AT*EAID=7,<next_state>, <title>,<prompt>,<min_value>,<max_value>[,<default_value>
8	Phone number	AT*EAID=8,<next_state>, <title>,<prompt> [,<default_number>]

<type>	Description	AT command syntax
9	Date input.	AT*EAID=9,<next_state>, <title>[,<default_date>]
10	Time input	AT*EAID=10,<next_state>, <title>[,<time>]
11	String input	AT*EAID=11,<next_state>, <title>,<prompt>, <max_length>[,<default_text >]
12	Numeric authentication input	AT*EAID=12,<next_state>, <title>,<prompt>, <max_length>
13	Timed feedback	AT*EAID=13,<next_state>, <title>
14	Information	AT*EAID=14,<next_state>, <title>,<text>
15	Form	AT*EAID=15,[<next state>], [<title>],[<exit_text>], <number of items> [,<prompt>, [<default text>] [,<prompt>,[<default text>] [,…]]][,<final>]

<title>:	Character string; the header for the input or the question.
<prompt>:	Character string; text before the input.
<next_state>:	See **AT*EASM**.
<message_text>:	Character string; text in the message box.
<time_out>:	Integer; range: 0-100. Time-out value (in tenths of a second), 0-10 seconds, until the information dialogue disappears.
<question_text>:	Character string; question text.
<default_selected>:	Integer; equal to zero if not specified.
<number_of_list_item s>	Integer; number of items in the list.
<list_item>:	Character string; list item.
<default_on/off>:	Default selected in an on/off dialogue. 0=off, 1=on.
<default_text>:	Character string; text to edit.
<max_real_value>:	Number string; maximum real data value allowed to be entered.
<default_real_value>:	Number string; default real value to be changed.
<min_value>:	Integer; minimum value accepted.
<max_value>:	Integer; maximum value accepted.
<default_value>:	Integer to edit.
<default_text>:	Character string; text to be edited.
<default_number>:	Number string; phone number to be edited.
<percent_steps>:	Integer; range: 1-10. Number of steps in the input dialogue.
<default_percent_ste ps>	Integer; range: 0-10. Default percent step selected.

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<default_date>:	Character string; 'YY/MM/DD'
<default_time>:	String; 'HH/MM'
<text>:	Character string; information text.
<final>:	

<final>	Description
0	Not final
1	Final
	Default setting

<exit_text>:	String; Text to be displayed at the end of the form.
	If omitted, "Save and close?" is default.
<unicode>:	Unicode value of the image file to be displayed. This value is returned by the Image handler when the image file is registered.
Example:	AT*EAID=1,0,"Info",50 OK AT*EAID=? OK

Parameter values:

Description	Min	Typical	Max
Timeout waiting for dialog		2 s	
Number of accessories using dynamic menus	0		2
Status text length			40
Title text length			15
Persistent menu item text length			15
Menu item text length			15
Number of menu items	1		12
Menu header text length			15
Prompt text length			15
List item text length			15
Number of list items	1		12
Question text length	0		30
Integer input	-32767		32767
Real digits	1		20
String length	0		100
Phone number length	0		50
Authentication length	1	4	8
Message box text length			16030
Information text			160
Exit text length			20
Form text length			50

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AT*EAST	**Accessory Status Text**

Description: Allows an accessory to display a status text on the standby display.

The request may be denied, for example if the phone is not capable of displaying the text. Another request will overwrite the previous text. If the entire text does not fit on the phone display, it will be scrolled horizontally.

A status text is removed by sending the command with an empty string as <status text> parameter.

Set command: **AT*EAST=**<status_text>

Read command: **AT*EAST?**   Displays the current <status_text>

Test command: **AT*EAST=?**   Shows if the command is supported.

Test command response: EAST: <max_text>

Parameters:

<status_text>: Character string; status text.

<max_text>. Integer; maximum number of characters in <status_text>

Unsolicited result codes

***EAAI**	**Accessory Additional Information**

Description: This result code is sent to the accessory that added the persistent menu by using **AT*EAM**. The result code indicates that the persistent menu was selected.

Unsolicited result code: ***EAAI**

***EAMI**	**Accessory Menu Indication**

Description: This result code is sent from the phone to the accessory that added the menu. It indicates that the phone user has selected a menu item. This result code is closely related to **AT*EASM**. If only *EAMI is returned (i.e. no <menu_item_index> is returned), the submenu has been aborted.

Unsolicited result code: ***EAMI:** <menu_item_index>

***EAMI**   (the sub-menu has been aborted)

Parameter:

<menu_item_index>:

<menu_item_index>	Description
0	submenu rejected
1...	Index of submenu

*EAII   Accessory Input Indication

Description: This result code is sent when the user has accepted a dynamic input
                       dialogue. Depending on the <next_state> parameter, it may also be sent if
                       the user rejected the dialogue, . For percent input, this result code is also a
                       change report sent every time the user changes the percentage setting.
                       This result code is closely related to **AT*EAID**.

Unsolicited result   *EAII[: <type>,<input_1>,...] <menu_item_index>
code:

Parameters:

<type>:

<type>	Dialogue type	Unsolicited result code syntax
	Aborted	*EAII
	Rejected	*EAII: 0
1	Message box	*EAII: 1,1
2	Yes-No	*EAII: 2,<yes-no>
3	On-Off	*EAII: 3,<on-off>
4	Percent	*EAII: 4,<percent>
5	1-of-many selection	*EAII: 5,<selected>
6	Real	*EAII: 6,<real_value>
7	Integer	*EAII: 7,<value>
8	Phone number	*EAII: 8,<phone_number>
9	Date	*EAII: 9,<date>
10	Time	*EAII: 10,<time>
11	String	*EAII: 11,<string>
12	Authentication (0-9)	*EAII: 12,<text>
13	Timed feedback	*EAII: 13,1
14	Information	*EAII: 14,1
15	Percentage change	*EAII: 15,1
16	Form	*EAII: 16, <selected> **Note!** <selected> = 255 indicates that the "exit text" has been selected

<yes-no>:   0=no, 1=yes

<on-off>:   0=off, 1=yes

<percent>:   Integer; range: 0-100

<selected>:   Integer

<text>:   String

<real_value>:   String

<value>:   Integer

<phone_number>:   String; phone number

<date>:	String; 'YY/MM/DD'
<time>:	String; 'HH:MM'

Ensemble C22: Accessory Authentication

Commands

AT+CSCC	**Secure Control Command**

Description:	This command is used for authentication of accessories.
Set command:	**AT+CSCC=**<mode>,<cmd_set>[,<token>]
Set command response:	**+CSCC:** <challenge>
Read command:	**AT+CSCC?** Displays the current <mode>, <cmd_set>, and <token> settings. **Note:** If the set command has not been executed before the read command is executed, the read command returns "OK"
Test command:	**AT+CSCC=?** Shows if the command is supported.
Test command response:	**+CSCC:** (list of supported <mode>s),(list of supported <cmd_set>s)
Parameters:	

<mode>:

<mode>	Description
1	Request challenge token to enable access to specified command set (<token> not used>)
2	Enable access to specified command set (<token> required)

<cmd_set>:

<cmd_set>	Description
0-127	Reserved by ETSI
128-198	Reserved for future use
199	Command set for Sony Ericsson accessories for 3 volt platform
200-255	Reserved for future use

<token>:	1-byte IRA string. 1-byte token from the authentication algorithm.
<challenge>:	1 byte to be converted into a token by the authentication algorithm.

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Use scenarios

Accessory Authentication

This use scenario consist of the following parts:

- The accessory requests a challenge token for command set '199'. (Sony Ericsson accessories command set).
- The phone returns the challenge parameter.
- The accessory inputs challenge parameter to authentication algorithm and gets a token.
- Accessory enables command set '199' with the calculated token.
- Phone compares the received token with calculated and responds OK if they are equal, or ERROR if they are not equal.

AT command	Response	Comment
AT+CSCC=1,199		Step 1
	+CSCC: E3 OK	Step 2
AT+CSCC=2,199,B9		Step 3
	OK	Step 4

Ensemble C24: Voice Call Control

Commands

AT*EVA	**Answer Incoming Call**

Description:	Signals the phone to answer a call. The command is followed by a final result code such as OK or ERROR and the command state is entered.
Execution command:	**AT*EVA**

AT*EVD	**Voice Dial Command**

Description:	Instructs the phone to dial a voice call.
Execution command:	**AT*EVD**=[<dial_string>]

Parameter:

<dial_string>:	Valid characters: '0-9 * # +'

AT*EVH   **Voice Hook Command**

Description: Instructs the phone to terminate an active call.

Execution   **AT*EVH**
command:

Unsolicited result codes

RING   **RING Incoming Call Indication**

Description: Indication to the phone that there is an incoming call.

Unsolicited result   **RING**
code:

Ensemble C26: Accessory Identification

Commands

AT*EACS   **Accessory Status**

Description: Identifies an accessory, reports accessory status, and requests a unique identifier.

Set command: **AT*EACS=**<accessory_id>,<status_value>[,<unique_id>]

Set command   ***EACS:** <unique_id>
response:

                     Note: The command returns *EACS: <unique id> only when the unique identity is requested by the accessory, i.e. the <unique id> is set to 0 in the set command. In all other cases, the set command returns OK (if no errors occurs).

Read command: **AT*EACS?** Displays the current device settings.

Read command   *EACS: <accessory_id1>,<status_value1>,<unique_id1> [*EACS:
response: <accessory_id2>,<status_value2>,<unique_id2> ...]]

Test command: **AT*EACS=?** Shows if the command is supported.

Test command   *EACS: (list of supported <accessory_id>s),(list of corresponding
response: status_value>s)

Parameters:

<accessory_id>:

<accessory_id>	Description
1	Portable handsfree; presented in phone as PORTABLE_HF_TXT

<accessory_id>	Description
2	Vehicle handsfree; presented in the phone as VEHICLE_HF_TXT
3	RS232 cord; presented in phone as DATA_CABLE_TXT
4	IR device; presented in phone as INFRARED_MODEM_TXT
6	Charger (intelligent); presented in phone as DESKTOP_CHARGER_TXT+<nr>
7	Charger (simple); presented in phone as TRAVEL_CHARGER_TXT
8	Reserved for MC-link
10	Reserved for cordless headset
12	External handset; presented in phone as EXTERNAL_HANDSET_TXT
13	Internal IR device
15	Audio player
16	Office Handsfree; presented in phone as: OFFICE_HF_TXT
17	Digital Camera; presented in phone as: ACC_CAMERA_TXT
18	GPS Module; presented in phone as: ACC_GPS_MODULE_TXT
19	Bluetooth device; presented in phone as: ACC_BLUETOOTH_DEVICE_TXT
20	Bluetooth PSTN adapter; presented in phone as: ACC_BLUETOOTH_PSTN_TXT
21	Chatboard with external MMI; presented in phone as: ACC_CHATBOARD_MMI_TXT
22	Vehicle Handsfree without external VAD; presented in phone as: ACC_VEHICLE_HF_NO_VAD_TXT
23-49	Reserved for future accessories; presented in phone as ACCESSORY_TYPE_TXT+<accessory_id>
50	Chatboard
51	Chatpad; presented in phone as: ACC_CHATPAD_TXT
52	WAPboard; presented in phone as: ACC_WAPBOARD_TXT
53-255	Reserved for future accessories; presented in phone as ACCESSORY_TYPE_TXT+<accessory_id>

<status_value>:   Integer type; Status values specific for each accessory.

<status_value>	Description
<connected_status>	Portable HF status
<connected_status>	Vehicle HF status
<connected_status>	RS232 cord status
<ir_status>	IR status
<connected_status>	Desktop charger status
<connected_status>	Travel charger status
<connected_status>	External handset status
<connected_status>	Accessory status used for all accessories unknown to the phone

<connected_status>:

<connected_status>	Description
0	The device is not working
1	The device is connected and working

<ir_status>:

<ir_status>	Description
0	The device is not working
1	The device is connected and working
2	The device is connected and working and is searching for other IrDA devices
4	The device is connected and working and is engaged in an IrDA connection
5	The device is connected and working and is engaged in an IrDA connection, but the IrDA beam is obstructed

<unique_id>:

<unique_id>	Description
0	Request a new unique identifier from the phone
1-65534	Unique identifier for a unique accessory
65535	Default value used by non-unique accessories

AT*EINA   System Interface Active

Description: Returns the active interface (the interface currently used for communication).

Execution command: **AT*EINA**

Execution command response: *EINA: <interface>

Test command: **AT*EINA=?**   Shows if the command is supported.

Test command response:	*EINA: (list of supported <interface>s)
Parameter:	

<interface>:

<interface>	Description
1	System connector
2	IR
3	MC link

Example:
```
AT*EINA
*EINA: 1
OK

AT*EINA=?
EINA: (1-3)
OK
```

Ensemble C31: Customized Menu

Commands

AT*EMLR   **Menu List Read**

Description:	Lists the menu items in the menu list.
Execution command:	**AT*EMLR**
Execution command response:	*EMLR: <index_1>,<name_1>**<CR><LF>**
	[*EMLR: <index_2>,<name_2>**<CR><LF>**
	[...]]
Test command:	**AT*EMLR=?** Shows if the command is supported.

Parameters:

<index>:	Integer; the position of a menu item in the menu list.
<name>:	String; menu item name.

AT*ECMW	**Customized Menu Write**

Description:	Puts a menu item, specified by <index>, from the menu list into the customized menu in the position given by <pos>. The item on this position and items below this position will be shifted down one step. If the parameter <pos> is not given, the item will be placed in the first empty space in the customized menu list.
Set command:	**AT*ECMW=**[<pos>,]<index> Adds the item to the customized menu list.
	AT*ECMW=<pos> Deletes an item from the customized menu.
Read command:	**AT*ECMW?** Lists the customized menu.
Read command response:	*ECMW: <pos_1>,<index_1>**<CR><LF>**
	[*ECMW: <pos_2>,<index_2>**<CR><LF>**
	[...]]
Test command:	**AT*ECMW=?** Shows if the command is supported.
Test command response:	*ECMW: (list of supported <pos>s),(list of supported <index>s)
Parameters:	
<index>:	Integer; the position of a menu item in the menu list.
<pos>:	Integer; the position in the customized menu.

Use scenarios

Add a menu item to the customized menu

AT command	Response	Comment
AT*EMLR		List the items in the list
	*EMLR: 1,"Ring Type" *EMLR: 2,"Edit Melody" *EMLR: 3,"Mail Alert" *EMLR: 4,"Lock" OK	
AT*ECMW?		List the items in the customized menu
	*ECMW: 1,2 *ECMW: 2,4	"Edit Melody" and "Lock" are in the customized menu
AT*ECMW=2,3		Put a menu item into position 3 in the customized menu
	OK	
AT*ECMW?		List the items in the customized menu
	*ECMW: 1,2 *ECMW: 2,3 *ECMW: 3,4	"Mail Alert" has been added to the list

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Delete an item fromthe customized menu

AT command	Response	Comment
AT*ECMW?		List the items in the customized menu
	*ECMW: 1,2 *ECMW: 2,3 *ECMW: 3,4	
AT*ECMW=2		Delete item 2 in the customized menu
	OK	
AT*ECMW?		List the items in the customized menu
	*ECMW: 1,2 *ECMW: 2,4	

Ensemble S1: GSM DTE-DCE Interface

Commands

AT+CSCS   **Select TE Character Set**

Description: Informs the phone about the character set being used by the terminal equipment.

Set command: **AT+CSCS=**<chset>

Read command: **AT+CSCS?**   Displays the current <chset> setting.

Test command: **AT+CSCS=?**   Shows if the command is supported.

Test command response: +CSCS: (list of supported <chset>s)

Parameter:

<chset>:

<chset>	Description
"GSM"	GSM default alphabet. Can cause software flow-control problems **Default setting**
"IRA"	International Reference Alphabet (ITU-T T.50)
"8859-n"	ISO 5589 Latin n (n=1-6) character set
"SONY ERICSSON"	International character set in the phone; may differ between different phones
"UTF-8"	Universal Text Format, 8 bits

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Ensemble S2: GSM Call Control

Commands

AT+CMOD	Call Mode

Description:	Selects the call mode for future dialling commands or for the next answering command.
Set command:	**AT+CMOD=**<mode>
Read command:	**AT+CMOD?** Displays the current <mode> setting.
Test command:	**AT+CMOD=?** Shows if the command is supported.
Test command response:	+CMOD: (list of supported <mode>s)
Parameter:	

<mode>:

<mode>	Description
0	Single mode **Default setting**
1	Alternating voice/fax
4-127	Reserved

AT+CHUP	Hang Up Call

Description:	Request hang-up.
Execution command:	**AT+CHUP**
Test command:	**AT+CHUP=?** Shows if the command is supported.

AT+CRC	Cellular Result Codes

Description:	Decides if the extended format of incoming call indication is used or not. When enabled, an incoming call is indicated by the unsolicited result code **+CRING** instead of the normal unsolicited result code **RING**.
Set command:	**AT+CRC=**[<mode>]
Read command:	**AT+CRC?** Displays the current <mode> setting.
Test command:	**AT+CRC=?** Shows if the command is supported.
Test command response:	+CMOD: (list of supported <mode>s)
Parameter:	

<mode>:

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<mode>	Description
0	Disables extended format **Default setting**
1	Enables extended format

AT+VTS — DTMF and Tone Generation

Description: Allows the transmission of DTMF tones. The command is write-only.

Note: The command is used only during voice calls.

Set command: **AT+VTS=**<DTMF>

Test command: **AT+VTS=?**   Shows if the command is supported.

Parameter:

<DTMF>: A character string with entries in the set '0-9, #, *, A-D' separated by commas. The string '8,9' sends two DTMF tones, '8' and '9'.

Unsolicited result codes

+CRING — Call Mode Indication

Description: When enabled by using **AT+CMOD**, an incoming call is indicated with +CRING instead of **+RING**.

Unsolicited result code: **+CRING:** <type>

Parameter:

<type>:

<type>	Description
ASYNC	Asynchronous transparent
SYNC	Synchronous transparent
REL ASYNC	Asynchronous non-transparent
FAX	Facsimile
VOICE	Normal voice
VOICE/XXX	Voice followed by data ('XXX' is SYNC, ASYNC, REL ASYNC, or REL SYNC)
ALT VOICE/XXX	Alternating voice/data; voice first
ALT XXX/VOICE	Alternating voice/data; data first
ALT VOICE/FAX	Alternating voice/fax; voice first
ALT FAX/VOICE	Alternating voice/fax; fax first

Use scenarios

Mode Change and Call Hang-up

This scenario shows the following steps:

- Set call mode to voice/data
- Enable cellular result code indication
- Switch from voice to fax and answer fax call
- Hang up fax call

AT command	Response	Phone mode	Comment
`AT+CMOD?`			
	`+CMOD: 0` `OK`		Single mode enabled
`AT+CMOD=1`			Change to alternating voice/fax
	`OK`		
`AT+CRC=1`			Extended format enabled
	`OK`		
	`+CRING: ALT` `VOICE/FAX`	Voice call	Voice call followed by fax call indication
`ATA`		Voice call	Switch to fax call
`AT+CHUP`		Fax call	Hang up fax call
	`OK`		

Ensemble S3: GSM Data/Fax

Commands

AT+CBST	**Select Bearer Service Type**
Description:	Selects the bearer service <name> with the data rate <speed>, and the connection element <ce> to be used when data calls are made. Values may also be used during mobile-terminated data-call setup, especially in the case of single numbering-scheme calls.
Set command:	**AT+CBST=**[<speed>[,<name>[,<ce>]]]
Read command:	**AT+CBST?** Displays the current <speed>, <name>, and <ce> settings.
Test command:	**AT+CBST=?** Shows if the command is supported.
Test command response:	+CBST: (list of supported <speed>s),(list of supported <name>s), (list of supported <ce>s)

Parameters:

\<speed\>:

\<speed\>	Description
0	Automatic selection of baud setting **Default setting**
4	2400 bits/s V.22bis
6	4800 bits/s V.32
7	9600 bits/s V.32
12	9600 bits/s V.34
14	14000 bits/s V.34
15	19200 bits/s V.34
16	28800 bits/s V.34
68	2400 bits/s V.110 (ISDN)
70	4800 bits/s V.110 (ISDN)
71	9600 bits/s V.110 (ISDN)
75	14400 bits/s V.110 (ISDN)
79	19200 bits/s V.110 (ISDN)
80	28800 bits/s V.110 (ISDN)
81	38400 bits/s V.110 (ISDN)
82	48000 bits/s V.110 (ISDN)
83	56000 bits/s V.110 (ISDN)

\<name\>:

\<name\>	Description
0	Asynchronous connection (UDI or 3.1 kHz modem) **Default setting**

\<ce\>:

\<ce\>	Description
1	Non-transparent **Default setting**

Ensemble S5: GSM HSCSD

Commands

AT+CHSD	HSCSD Device Parameters

Description: Shows HSCSD features supported by the phone.

Execution command: **AT+CHSD**

Execution command response: +CHSD: <mclass>,<maxRx>,<maxTx>,<sum>,<codings>

Test command: **AT+CHSD=?** Shows if the command is supported.

Parameters:

<mclass>:

<mclass>	Description
2	Multi slot class is '2' **Default setting**

<maxRx>:

<maxRx>	Description
2	Maximum number of receive time slots that the phone can use **Default setting**

<maxTx>:

<maxTx>	Description
1	Maximum number of time slots that the phone can use **Default setting**

<sum>:

<sum>	Description
3	Total number of send and receive time slots that the phone can use The following applies in an HSCSD call: (receive slots)+(transmit slots) may not equal less than 2, and not more that <sum>

<codings>:

<codings>	Description
4	Indicates that the accepted channel coding for the next established non-transparent HSCSD call is 9600 bits/s only

<codings>	Description
8	Indicates that the accepted channel coding for the next established non-transparent HSCSD call is 14000 bits/s only
12	Indicates that the accepted channel coding for the next established non-transparent HSCSD call is both 9600 bits/s and 14000 bits/s **Default setting**

AT+CHSN   HSCSD Non-transparent Call Configuration

Description:	Set HSCSD configuration. This command is also used during a call if a new <wAiur> and/or <wRx> are/is desired.
Set command:	**AT+CHSN=**[<wAiur>[,<wRx>[,<topRx>[,<codings>]]]]
Read command:	**AT+CHSN?** Displays the current <wAiur>, <wRx>, <topRx>, and <codings> settings.
Test command:	**AT+CHSN=?** Shows if the command is supported.
Test command response:	+CHSN: (list of supported <wAiur>s),(list of supported <wRx>s), (list of supported<topRx>s),(list of supported<codings>s)

Parameters:

<wAiur>:

<wAiur>	Description
0	Phone calculates a proper number of receive time slots from the currently selected fixed-network user rate See note below **Default setting**
1	Desired air-interface user rate is 9600 bits/s
2	Desired air-interface user rate is 14400 bits/s
3	Desired air-interface user rate is 19200 bits/s
4	Desired air-interface user rate is 28800 bits/s

<wRx>:

<wRx>	Description
0	Phone calculates a proper number of receive time slots from currently selected <wAiur> and <codings> See note below

<wRx>	Description
1	Desired number of time slots is 1 **Default setting**
2	Desired number of time slots is 2

Note: If the <wAiur> and <wRx> are both set to '0', the number of receive time slots is calculated from <speed> and <codings>. Furthermore, if <speed> is '0', the number of receive time slots is mapped from <maxRx>.

<topRx>:

<topRx>	Description
0	The user is not going to change <wAiur> and/or <wRx> during the next call
1	'1' is the top <wRx> value that the user is going to request during the next established non-transparent HSCSD call
2	'2' is the top <wRx> value that the user is going to request during the next established non-transparent HSCSD call **Default setting**

<codings>:

<codings>	Description
4	Indicates that the accepted channel coding for the next established non-transparent HSCSD call is 9600 bits/s only
8	Indicates that the accepted channel coding for the next established non-transparent HSCSD call is 14000 bits/s only
12	Indicates that the accepted channel coding for the next established non-transparent HSCSD call is both 9600 bits/s and 14000 bits/s **Default setting**

AT+CHSC   HSCSD Current Call Parameters

Description: Shows current HSCSD call parameter settings.

Execution   **AT+CHSC**
command:

Execution command +CHSC: <rx>,<tx>,<aiur>,<coding>
response:

Test command: **AT+CHSC=?**   Shows if the command is supported.

Parameters:

<rx>:

<rx>	Description
0	No HSCSD call is active; see note below

<rx>	Description
1	One receive time slot is currently in use
2	Two receive time slots are currently in use

<tx>:

<tx>	Description
0	No HSCSD call is active; see note below
1	One transmit time slot is currently in use

<aiur>:

<aiur>	Description
0	No HSCSD call is active; see note below
1	Current air-interface user rate is 9600 bits/s
2	Current air-interface user rate is 14400 bits/s
3	Current air-interface user rate is 19200 bits/s
4	Current air-interface user rate is 28800 bits/s

<coding>:

<coding>	Description
0	No HSCSD call is active; see note below
4	Current channel coding is 9600 bits/s
8	Current channel coding is 14400 bits/s

Note: The value '0' only applies when no HSCSD call is active. In such case, all parameter values will be '0'.

Ensemble S6: GSM Network Services

Commands

AT+CNUM   **Subscriber Number**

Description: The command requests the subscriber number.

Execution command: **AT+CNUM**

Execution command +CNUM:
response: [<alpha1>],<number1>,<type1>[,<speed>,<service>[,<itc>]]**<CR><LF>**

[+CNUM:
[<alpha2>],<number2>,<type2>[,<speed>,<service>[,<itc>]]**<CR><LF>**

[...]]

Test command: **AT+CNUM=?** Shows if the command is supported.

Parameters:

<alpha*x*>: Alphanumeric string. Associated with <number*x*>. The character set used is selected with **AT+CSCS**.

<number*x*>: String; phone number of format specified by <type*x*>.

<type*x*>: String; type of address.

<speed>: Integer; data rate.

<service>:

<service>	Description
0	Asynchronous modem
4	Voice
5	Fax

<itc>:

<itc>	Description
0	3.1 kHz
1	UDI

AT+CREG   Network Registration

Description: Controls the presentation of the unsolicited result code **+CREG**.

Set command: **AT+CREG=**[<n>]

Read command: **AT+CREG?** Displays the current <n> and <stat> settings.

Test command: **AT+CREG=?** Shows if the command is supported.

Test command response: +CREG: (list of supported <n>s)

Parameters:

<n>:

<n>	Description
0	Disable network registration unsolicited result code **Default setting**
1	Enable network registration unsolicited result code

<stat>: Shows the availability status for the operator.

<stat>	Description
0	Not registered The phone is currently not searching for a new operator to register to
1	Registered; home network
2	Not registered The phone is currently searching for a new operator to register to
3	Registration denied
4	Unknown
5	Registered; roaming

AT+COPS   Operator Selection

Description: Forces an attempt to select and register the GSM network operator.

Set command: **AT+COPS**=[<mode>[,<format>[,<oper>]]]

Read command: **AT+COPS?**   Displays the current <mode>[, <format>, and <oper>] setting(s).

Test command: **AT+COPS=?**   Shows if the command is supported.

Test command response: +COPS: (list of supported <stat>s, (list of supported long alphanumeric <oper>s), (list of supported short alphanumeric <oper>s), (list of supported numeric <oper>s)

Parameters:

<mode>: Selects whether the registration is done automatically by the phone or is forced by this command to operator <oper>.

<mode>	Description
0	Automatic (<oper> field ignored) **Default setting**
1	Manual (<oper> field used)
3	Set only <format> Do not attempt registration/de-registration This value is not applicable in read command response
4	Manual/automatic If manual selection fails, automatic mode is chosen

<format>:

<format>	Description
0	Automatic (<oper> field ignored) **Default setting**

<format>	Description
1	Short-format (8 characters) alphanumeric <oper>
2	Numeric <oper>

<oper>:   String; format determined by the <format> setting.

<stat>:   Shows the availability status for the operator.

<stat>	Description
0	Operator unknown
1	Operator available
2	Operator is currently selected
3	Operator forbidden

Example:

```
AT+COPS=?
+COPS: (2,"Telia Mobilel","Mobitel","12345")
+COPS: (3,"Europolitan","Euro","23456")
OK
```

Two operator networks have been found. Telia Mobitel is currently selected and Europolitan is forbidden.

AT+CLIP   Calling Line Identification

Description: Requests calling line identification. Determines if the **+CLIP** unsolicited result code is activated.

Set command: **AT+CLIP=**<n>

Read command: **AT+CLIP?**   Displays the current <n> and <m> settings.

Test command: **AT+CLIP=?**   Shows if the command is supported.

Test command response: +CLIP: (list of supported <n>s)

Parameters:

<n>:

<n>	Description
0	Unsolicited result code disabled **Default setting**
1	Unsolicited result code enabled

<m>:

<m>	Description
0	CLIP not provisioned
1	CLIP provisioned
2	Unknown

AT+CLIR   Calling Line Identification Restriction

Description: Requests calling line identification restriction.

Set command: **AT+CLIR=**[<n>]

Read command: **AT+CLIR?**   Displays the current <n> and <m> settings.

Test command: **AT+CLIR=?**   Shows if the command is supported.

Test command response: +CLIR: (list of supported <n>s)

Parameters:

<n>:

<n>	Description
0	Presentation is used according to the subscription to the CLIR service **Default setting**
1	CLIR invocation
2	CLIR suppression

<m>:

<m>	Description
0	CLIP not provisioned
1	CLIR provisioned in permanent mode
2	Unknown
3	CLIR temporary mode presentation restricted
4	CLIR temporary mode presentation allowed

AT+CCFC   Call Forwarding Number and Conditions

Description: Sets the call forwarding number and conditions. Registration, erasure, activation, deactivation and status query operations are supported.

Set command: **AT+CCFC=**<reason>,<mode>[,<number>[,<type>[,<classx>]]]

Test command: **AT+CCFC=?**   Shows if the command is supported.

Test command response: +CCFC: (list of supported <reason>s)

Parameters:

<reason>:

<reason>	Description
0	Unconditional
1	Mobile phone busy
2	No reply
3	Not reachable
4	All calls are forwarded
5	All conditional calls are forwarded

<mode>:

<mode>	Description
0	Disable
1	Enable
2	Query status
3	Registration
4	Erasure

<number>: String; phone number of forwarding address. Format specified by <format>.

<type>: Integer; type of address octet.

<classx>: Sum of integers; each representing a class of information.

<classx>	Description
1	Voice L1
2	Data
4	Fax
128	Voice L2

Response when <mode>=2:
+CCFC: <status>,<class1>[,<number>,<type>]

[+CCFC: <status>,<class2>[,<number>,<type>]

[...]]

<status>:

<status>	Description
0	Not active
1	Active

AT+CCWA   Call Waiting

Description: Allows control of the Call Waiting supplementary service. Enables or disables the **+CCWA** unsolicited result code.

Set command: **AT+CCWA=**[<n>,[<mode>[,<classx>]]]

Test command: **AT+CCWA=?**   Shows if the command is supported.

Test command response: **+CCWA:** (list of supported <n>s)

Parameters:

<n>:

<n>	Description
0	Disables the unsolicited result code **Default setting**
1	Enables the unsolicited result code

<mode>:

<mode>	Description
0	Disable
1	Enable
2	Query status

<class*x*>:

<class*x*>	Description
1	Voice L1
2	Data
4	Fax
128	Voice L2

Response when <mode>=2:

+CCWA: <status>,<class1>

[+CCWA: <status>,<class2>

[...]]

<status>:

<status>	Description
0	Not active
1	Active

AT+CHLD   Call Hold and Multiparty

Description: Requests call-related supplementary services. Refers to a service that allows a call to be temporarily disconnected from the phone but the connection to be retained by the network, and to a service that allows multiparty conversation. Calls can be put on hold, recovered, released and added to a conversation.

Set command: **AT+CHLD=**<n>

Test command: **AT+CHLD=?**   Shows if the command is supported.

Test command response: +CHLD: (list of supported <n>s)

Parameter:

<n>:

<n>	Description
0	Releases all held calls, or sets User-Determined User Busy for a waiting call
1	Releases all active calls and accepts the other (waiting or held) call
1X	Releases the specific active call X
2	Places all active calls on hold and accepts the other (held or waiting) call

<n>	Description
2X	Places all active calls, except call X, on hold
3	Adds a held call to the conversation
4	Connects two calls and disconnects the subscriber from both calls

AT+CSSN   Supplementary Service Notification

Description:	Determines if the **+CSSU** and **+CSSI** unsolicited result codes are enabled.
Set command:	**AT+CSSN**=[<n>[,<m>]]
Read command:	**AT+CSSN?** Displays the current <n> and <m> settings.
Test command:	**AT+CSSN=?** Shows if the command is supported.
Test command response:	+CSSN: (list of supported <n>s),(list of supported<m>s)
Parameters:	

<n>:

<n>	Description
0	Disables the +CSSI result code presentation status in the phone **Default setting**
1	Enables the +CSSI result code presentation status in the phone

<m>:

<m>	Description
0	Disables the +CSSU result code presentation status in the phone **Default setting**
1	Enables the +CSSU result code presentation status in the phone.

AT+CAOC   Advice of Charge

Description:	Sets the current call meter value in hexadecimal format. Must be supported on the SIM card. Enables the **+CCCM** unsolicited result code reporting.
Execution command:	**AT+CAOC**[=<mode>]
Read command:	**AT+CAOC** Displays the current <mode> setting.
Test command:	**AT+CAOC=?** Shows if the command is supported.
Test command response:	+CAOC: (list of supported <mode>s)
Parameter:	

<mode>:

<mode>	Description
0	Query CCM value.
1	Deactivate the unsolicited reporting of CCM value
2	Activate the unsolicited reporting of CCM value

AT+CACM   Accumulated Call Meter

Description:	Resets the Advice-of-Charge related accumulated call meter value in the SIM file EFACM.
Set command:	**AT+CACM=**[<passwd>]
Read command:	**AT+CACM**? Displays the current <ccm> value.
Test command:	**AT+CACM=?** Shows if the command is supported.
Parameters:	
<passwd>:	String; SIM-PIN2.
<ccm>:	String; accumulated call meter value. Similarly coded as <ccm> in **AT+CAOC**.

AT+CAMM   Accumulated Call Meter Maximum

Description:	Sets the maximum Advice-of-Charge related accumulated call meter value in the SIM file $EFACM_{max}$.
Set command:	**AT+CACM=**[<accmax>[,<passwd>]]
Read command:	**AT+CAMM**? Displays the current <accmax> value.
Test command:	**AT+CAMM=?** Shows if the command is supported.
Parameters:	
<passwd>:	String; SIM-PIN2.
<ccm>:	String; accumulated call meter value. Similarly coded as <ccm> in **AT+CAOC**.

The value '0' disables the ACMmax feature.

AT*EALS   Request ALS Status

Description:	Requests the phone to give the ALS (Alternate Line Services) status. If ALS is active, the user has two lines for voice calls.
Read command:	**AT*EALS**
Test command:	**AT*EALS=?** Shows if the command is supported.
Response:	*EALS: <status>
Parameter:	
<status>:	String type; SIM-PIN2.

<status>	Description
0	ALS function not active
1	ALS function active

AT*ECSP   Customer Service Profile

Description:	Reads the Customer Service Profile (CSD) from the SIM. CSP indicates the services that are user accessible. Each of the services has a related bit within the CSP. The services are grouped into service groups, with a maximum of 8 services in a group. For each group, a bit mask indicates the services available (bit=1).
	If the SIM card supports the Alternate Line Service (ALS) function, the <line> parameter is used to choose which Customer Service Profile list should be read. If the SIM does not support ALS, ERROR will be returned if the command is given with the <line> paramater set to '2'.
Read command:	**AT*ECSP=**<service_group>[,<line>]
Read command response:	*ECSP: <service_group>,<services>
Test command:	**AT*ECSP=?** Shows if the command is supported.
Test command response:	*ECSP: (list of supported <service_group>s),(list of supported <line>s)
Parameters:	
<service_group>:	Byte type; Service group code.
<services>:	Bit mask (8 bits) indicating the services available.
	bit='1': Service available.
	bit='0': Service unavailable, or unused.
<line>:	

<line>	Description
1	Line 1 **Default setting**
2	Line 2

AT*ESLN   Set Line Name

Description:	Sets the name tag for a selected line
Set command:	**AT*ESLN=**<line>[,<name>]
Read command:	**AT+ESLN?** Returns the current <line> and <name> settings.
Test command:	**AT+ESLN=?** Shows if the command is supported.
Test command response:	+ESLN: (list of supported <line>s),<lname>
Parameters:	
<line>:	

<line>	Description
0	The two lines will use the default name tags "L1" and "L2" **Default setting**
1	Line 1
2	Line 2

<name>:   Optional when <line>='0'.

Character string for name tag.

<lname>   Maximum number of characters to use in <name> string.

AT*ELIN   Set Line

Description: Sets the current <line>.

Set command: **AT*ELIN=**<line>

Read command: **AT+ELIN?**   Returns the current <line> setting.

Test command: **AT+ELIN=?**   Shows if the command is supported.

Test command response: +ELIN: (list of supported <line>s)

Parameter:

<line>:

<line>	Description
1	L1
2	L2

AT*EPNR   Read SIM Preferred Network

Description: Reads EFPLMN$_{sel}$, the SIM-preferred list of networks.

Execution command: **AT*EPNR=**<format>[,<index1>[,<index2>]]

Returns entries in the range <index1> to <index2>. If <index2> is omitted, only location <index1> is returned. If both <index1> and <index2> are omitted, the whole list is presented.

Test command: **AT*EPNR=?**   Shows if the command is supported.

Test command response: *EPNR: (list of supported <line>s),(list of supported <format>s)

Parameters:

<format>:

<format>	Description
2	Numeric <oper> **Default setting**

<index1>:	Integer; start index (>0).
<index2>:	Integer; stop index (>0).
<oper>:	String; indicates the operator code.

AT*EPNW   Write SIM Preferred Network

Description:	Writes/deletes entries in EFPLMN~sel~, the SIM-preferred list of networks.
Execution command:	**AT*EPNW=**[<index>][,<format>,<oper>] If both <format> and <oper> fields are omitted, the entry will be deleted. If <index> is omitted, the <oper> will be put in the next free entry. **Note:** The entered <oper> is compared to the <oper>s already in the list. If the <oper> is already in the list, no new entry is made, but "OK" is returned.
Test command:	**AT*EPNW=?** Shows if the command is supported.
Test command response:	*EPNW: (list of supported <index>s),(list of supported<format>s)
Parameters:	
<index>:	Integer; index to entry in SIM-preferred list.
<format>:	

<format>	Description
2	Numeric <oper> **Default setting**

<oper>:	String indicating the operator code.

AT*ESCN   Set Credit Card Number

Description:	Used for setting up a credit card number in the phone, disabling credit card calls, enabling one of the credit card call services, querying the settings for one of the services, or querying the active credit call access server.
Set command:	**AT*ESCN=**<mode>[,<passwd>][,<indexn>][,<asn>,<type>,<name>,<vercode>[,<sendorder>]]
Test command:	**AT*ESCN=?** Shows if the command is supported.
Test command response:	*ESCN: (list of supported <index>s),(list of supported <mode>s),(list of supported <sendorder>s)
Parameters:	
<mode>:	

<mode>	Description
0	Settings for a credit card call (<passwd>, <indexn>, <asn>, <type>, <name>, <vercode>[, <sendorder>]) When mode='0', the <passwd>, <indexn>, <asn>, and <vercode> parameters must be supplied, else ERROR will be returned
1	Disable credit card calling (<passwd>) Any other parameters submitted are ignored
2	Enable one of the credit card calling services (<passwd>, <indexn>) Any other parameters submitted are ignored
3	Query (<passwd>, <indexn>) Any other parameters submitted are ignored Gives the response *ESCN: <indexn>,<asn>,<type>, <name>,<vercode>,<sendorder>
4	Query for the selected credit call access server. Any other parameters submitted are ignored Gives the response *ESCN: <selindexn>

<passwd>: Character string; phone lock code "PS".

<indexn>:

<indexn>	Description
1	Index number to the first credit card call-access server
2	Index number to the second credit card call-access server

<selindexn>:

<selindexn>	Description
0	Credit card calling disabled **Default setting**
1	Index number to the first credit card call-access server
2	Index number to the second credit card call-access server

<asn>: Character string; '0-9,+'. Maximum 20 characters. Phone number of type specified by <type>.

<type>: Integer; type of format.

<name>: Character string; name tag.

<vercode>:   Character string; '0-9,#,*'. Maximum 20 characters.

<sendorder>:

<sendorder>	Description
1	Verification code first **Default setting**
2	Phone number first

AT+CPUC   **Price Per Unit and Currency Table**

Description: Sets the parameters of Advice-of-Charge related price per unit and currency in SIM file EFPUCT. PUCT information can be used to convert the home units (as used in **AT+CAOC**, **AT+CACM**, and **AT+CAMM**) into currency units.

Set command: **AT+CPUC=**<currency>,<ppu>[,<passwd>]

Read command: **AT+CPUC?**   Displays the current <currency> and <ppu> settings.

Test command: **AT+CPUC=?**   Shows if the command is supported.

Parameters:

<currency>:   String; alpha-identifier of the currency code.

<ppu>:   String; price per unit. Dot is used as decimal separator.

<passwd>:   String; SIM PIN2.

AT*ESVM   **Set Voice Mail Number**

Description: Sets the voice mail server number.

Set command: **AT*ESVM=**<line>,<index>,<onoff>,[,<number>[,<type>]]

Read command: **AT*ESVM?**   Displays the current parameter setting.

Read command response: *ESVM: <line1>,<index1>,<onoff1>,<number1>,<type1>**<CR><LF>**

<line2>,<index2>,<onoff2>,<number2>,<type2>

Test command: **AT*ESVM=?**   Shows if the command is supported.

Test command response: *ESVM: (list of supported <line>s),(list of supported <onoff>s),<nlength>, (list of supported <type>s)

Parameters:

<line>:

<line>	Description
1	Line 1
2	Line 2

<index>:

<index>	Description
1	Home network voice mail number
2	Roaming voice mail number

<onoff>:

<onoff>	Description
1	Enable the voice mail number

<number>:   Character string; '0-9,+'.

<nlength>:   Maximum length of number string.

<type>:   Integer; type of address octet.

<type>	Description
128-255	Valid values
129	ISDN / telephony numbering plan, national/ international unknown **Default setting**
145	ISDN / telephony numbering plan, international number
161	ISDN / telephony numbering plan, national number

AT*EDIF   Divert Function

Description: This command enables and disables notification of divert status changes with the unsolicited result code ***EDIF**.

Set command: **AT*EDIF=**<onoff>

Read command: **AT*EDIF?**   Displays the current <onoff> setting.

Test command: **AT*EDIF=?**   Shows if the command is supported.

Test command response: *EDIF: (List of supported <onoff>s)

Parameter:

<onoff>:

<onoff>	Description
0	Disable notification with the unsolicited result code *EDIF
1	Enable notification with the unsolicited result code *EDIF

AT*EDIS   Divert Set

Description: This command enables and disables the divert setting in the currently active profile. The command is also used to set the divert number for the profile. The command does not perform any call forwarding. To perform call forwarding, use **AT+CCFC**.

Set command: **AT*EDIS=**<onoff>[,<number>[,<type>]]

Read command: **AT*EDIS?**   Displays the current <onoff>, <number>, and <type> settings.

Test command: **AT*EDIS=?**   Shows if the command is supported.

Test command response:	*EDIS: (List of supported <onoff>s),(list of supported <number>s), (list of supported <type>s)
Parameters:	

<onoff>:

<onoff>	Description
0	Disable unconditional divert for the profile
1	Enable unconditional divert for the profile

<number>:   String; phone number of forwarding address. Format specified by <type>.

<type>:   Integer; type of address octet.

<type>	Description
145	Default setting when dialling string includes the international access code character '+'
129	Default setting when dialling string does not include the international access code character '+'

AT*EIPS   Identify Presentation Set

Description:	Enables or disables the presentation of the alpha tag (first name and last name) of the caller ID and called ID to the terminal equipment if the ID is recognised. The presentation is performed by unsolicited result codes, ***ELIP** for caller ID and ***EOLP** for called ID.
Set command:	**AT*EIPS=**<ID>,<alphatag_mode>
Read command:	**AT*EIPS?** Displays the current parameter settings.
Read command response:	*EIPS: <ID1>,<alphatag_mode1>**<CR><LF>** *EIPS: <ID2>,<alphatag_mode2>
Test command:	**AT*EIPS=?** Shows if the command is supported.
Test command response:	*EIPS: (List of supported <ID>s),(list of supported <alphatag_mode>s)
Parameters:	

<ID>:

<ID>	Description
1	Caller ID (***ELIP**)
2	Called ID (***EOLP**)

<alphatag_mode>:

<alphatag_mode>	Description
0	Off
1	First name and last name displayed

Unsolicited result codes

+CREG   **Network Registration**

Description: Indicates there is a change in the phone network registration status. This result code is enabled by using **AT+CREG**.

Unsolicited result code: **+CREG:** <stat>

Parameter:

<stat>:

<stat>	Description
0	Not registered The phone is currently not searching for a new operator to register to
1	Registered; home network
2	Not registered The phone is currently searching for a new operator to register to
3	Registration denied
4	Unknown
5	Registered; roaming

+CLIP   **Calling Line Identification**

Description: This result code is returned after every RING (or +CRING) result code sent from the phone to the terminal equipment. This response is also sent when a normal voice call is answered. This result code is enabled by using **AT+CLIP**.

Unsolicited result code: **+CLIP:** <number>,<type>

Parameters:

<number>:   String; phone number. Format specified by <type>.

<type>:   Integer; type of address octet.

*ELIP   **Calling Line Alpha Tag**

Description: This result code is returned after every RING (or +CRING) result code sent from phone to terminal equipment. This response is also sent when a normal voice call is answered. This result code is enabled by using **AT*EIPS**.

Unsolicited result code: ***ELIP:** <alpha_tag>

Parameter:

<alpha_tag>:	String; a text with the first name and last name of the caller ID.

*EOLP   Connected Line Alpha Tag

Description: This result code is returned after every RING (or +CRING) result code sent from phone to terminal equipment. This response is also sent when a normal voice call is answered. This result code is enabled by using **AT*EIPS**.

Unsolicited result code: ***EOLP:** <alpha_tag>

Parameter:

<alpha_tag>: String; a text with the first name and last name of the called ID.

+CCWA   Call Waiting Notification

Description: This unsolicited result code displays the specifics concerning the call waiting supplementary service. This result code is enabled by using **AT+CCWA**.

Unsolicited result code: **+CCWA:** <number>,<type>,<class>

Parameters:

<number>: String; phone number. Format specified by <type>.

<type> Integer; type of address octet.

<class>: Integer; sum of integers, each representing a class of information.

<class>	Description
1	Voice L1
128	Voice L2

+CSSI   Supplementary Service Notification

Description: Refers to supplementary service related network-initiated notifications. This unsolicited result code is sent when AT+CSSN <n>='1' and a supplementary service notification is received after a mobile-originated call setup.

This result code is enabled by using **AT+CSSN**.

Unsolicited result code: **+CSSI:** <code1>[,<cindex>]

Parameters:

<code1>:

<code1>	Description
0	Unconditional call forwarding is active
1	Some of the conditional call forwardings are active
2	A call has been forwarded

<code1>	Description
3	A call is waiting
5	Outgoing calls are barred
6	Incoming calls are barred
7	CLIR suppression rejected
8	This is a CUG call (<cindex> present)

<cindex>:   Integer; CUG index. Range: 0-32767.

+CSSU   Supplementary Service Notification

Description: Refers to supplementary-service related network-initiated notifications. This unsolicited result code is sent when AT+CSSN <m>='1' and a supplementary service notification is received during a mobile-originated call setup or during a call, or when a forward-check supplementary service notification is received.

This result code is enabled by using **AT+CSSN**.

Unsolicited result code: **+CSSU:** <code2>[,<cindex>]

Parameters:

<code2>:

<code2>	Description
0	This is a forwarded call
2	A call has been put on hold (during voice call)
3	A call has been retrieved (during voice call)
4	A multiparty call entered (during voice call)
5	The call on hold has been released (during voice call) (this is not an SS notification)
6	Forward check SS messages received (can be received whenever)
10	This is a CUG call (<cindex> present)

<cindex>:   Integer; CUG index. Range: 0-32767.

+CCCM   Advice of Charge Call Meter Notification

Description: This unsolicited result code is sent when the CCM value changes, but not more often than every 10 seconds. The result code is enabled by using **AT+CAOC**.

Unsolicited result code: **+CCCM:** <ccm>

Parameter:

<ccm>:   String; hexadecimal form of three bytes of the current call meter value. The value is in home units and the bytes are coded similarly as the ACMmax value in the SIM.

*EDIF	**Divert Function**

Description:	This unsolicited result code is sent when the call forwarding information for the phone is changed. The result code is enabled by using **AT*EDIF**.
Unsolicited result code:	*EDIF**:** <reason>,<status>,<class*x*>[,<number>[,<type>]]
Parameters:	

<reason>:

<reason>	Description
0	Unconditional
1	Mobile phone busy
2	No reply
3	Not reachable

<status>:

<status>	Description
0	Disabled
1	Enabled; the phone is diverted for the <reason> above

<class*x*>:

<class*x*>	Description
1	Voice L1
2	Data
4	Fax
1-127	All other values below 128 are reserved by ETSI
128	Voice L2

<number>:	String; phone number of forwarding address. Format specified by <type>.
<type>:	Integer; type of address octet.

<type>	Description
145	Default setting when dialling string includes the international access code character '+'
129	Default setting when dialling string does not include the international access code character '+'

Use scenarios

Calling Line Identification
This use scenario performs the following steps:

- Enable calling line identification
- Receive calling line identity indication when receiving a mobile-terminated call

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- Disable calling line identification

AT command	Response	Comment
AT+CLIP=1		Enable calling line identification
	OK	
	+CRING: VOICE +CLIP: "0706123456", 129	After every CRING, the calling line identity is presented
		Reject call
AT+CLIP?		
	+CLIP: 1,1 OK	CLIP enabled and provisioned
AT+CLIP=0		Disable calling line identification
	OK	

Call Hold and Multiparty

This use scenario uses the call hold functionality to switch between two calls.

AT command	Response	Comment
AT+CCWA=1,1		Activate call waiting
ATD046193000;	OK	Originate a voice call
	+CCWA: "+46706123456", 145	Another call is waiting
AT+CHLD=2		Put first call on hold and answer the second call
	OK	
AT+CHLD		Release the second call and recover the first call
	OK	

Ensemble S7: GSM USSD

Commands

AT+CUSD   Unstructured Supplementary Service Data

Description: Allows control of the Unstructured Supplementary Service Data (USSD). Both network- and mobile-initiated operations are supported.

This command is used to enable the unsolicited result code **+CUSD**.

Set command: **AT+CUSD=**[<n>[,<str>]]

Read command: **AT+CUSD?**   Displays the current <n> setting.

Test command:	**AT+CUSD=?** Shows if the command is supported.
Test command response:	+CUSD: (list of supported <n>s)
Parameters:	

<n>:

<n>	Description
0	Disable result code presentation **Default setting**
1	Enable result code presentation
2	Terminate USSD dialogue This value is not applicable to the read command response

<str>:   String; USSD string.

Unsolicited result codes

+CUSD	**CUSD Indication**

Description:	Indicates a network-initiated operation. This command is enabled by using **AT+CUSD**.
Unsolicited result code:	**+CUSD:** <m>[,<str>,<dcs>]
Parameters:	

<m>:

<m>	Description
0	No further user action needed (Network-initiated USSD notify, or no further information needed after mobile-initiated operation)
1	Further user action needed (Network-initiated USSD request, or further information needed after mobile-initiated operation)
2	USSD dialogue terminated
3	Other I/O client has responded This result code is received if the network initiates a USSD dialogue and some other I/O client responds
4	Operation not supported
5	Network time out

<str>:   String; USSD string.

<dcs>: Integer; Cell Broadcasting Data Coding Scheme.

Ensemble S8: GSM Facility Lock

Commands

AT+CLCK	**Facility Lock**
Description:	The command is used to lock, unlock, or interrogate an phone or network facility <fac>. A password is normally needed to carry out such operations.
Set command:	**AT+CLCK=**<fac>,<mode>[,<passwd>[,<class>]]
Set command response:	+CLCK: <status>[,<class1>]**<CR><LF>**
(When <mode>=2	[+CLCK: <status>[,<class2>]**<CR><LF>**
	[...]]
Test command:	**AT+CLCK=?** Shows if the command is supported.
Test command response:	+CLCK: (list of supported <fac>s)

Parameters:

<fac>:

<fac>	Description
"CS"	CNTRL (lock control surface, for example the phone keyboard)
"PS"	PH-SIM (lock phone to SIM card) The phone asks for the password when other-than-current SIM card is inserted
"SC"	SIM (lock SIM card) The phone asks for the password when the phone is in power-up and when the lock command is issued
"P2"	SIM PIN2
"AO"	BAOC (Bar All Outgoing Calls)
"OI"	BOIC (Bar Outgoing International Calls)
"AI"	BAIC (Bar All Incoming Calls)
"IR"	BIC-Roam (Bar Incoming Calls when Roaming outside the home country)
"OX"	BOIC-exHC (Bar Outgoing International Calls except to Home Country)

<fac>	Description
"AB"	All-Barring service
"AG"	All outGoing barring services
"AC"	All inComing barring services

<mode>:

<mode>	Description
0	Unlock
1	Lock
2	Query status Gives the response +CLCK: <status>,<class1>**<CR><LF>** [+CLCK: <status>,<class2>**<CR><LF>** [...]]
10	Full lock (only valid for <fac>="PS"; after power-on, always ask for password

<passwd>:   String; the same as the password specified for the facility from the phone user interface or with **AT+CPWD**.

<class*x*>:   Integer; sum of integers, each representing a class of information.

<class*x*>	Description
1	Voice L1
2	Data
4	Fax
8-127	Also all other values below 128 are reserved by ETSI
128	Voice L2

If no value is specified, all classes are included.

Note: "PS" and <mode>=1 correspond to Auto Lock

AT+CPWD   Change Password

Description: Sets a new password for the facility lock function defined by the **AT+CLCK** command.

Set command: **AT+CPWD=**<fac>,<old_pwd>,<new_pwd>

Test command: **AT+CPWD=?**   Shows if the command is supported.

Test command response: +CPWD: (list of supported <fac>s),(list of supported <pwd_length>s)

Parameters:

<fac>:

<fac>	Description
"PS"	PH-SIM (lock phone to SIM card) The phone asks for the password when other-than-current SIM card is inserted
"SC"	SIM (lock SIM card) The phone asks for the password when the phone is in power-up and when the lock command is issued
"P2"	SIM PIN2
"AO"	BAOC (Bar All Outgoing Calls)
"OI"	BOIC (Bar Outgoing International Calls)
"AI"	BAIC (Bar All Incoming Calls)
"IR"	BIC-Roam (Bar Incoming Calls when Roaming outside the home country)
"OX"	BOIC-exHC (Bar Outgoing International Calls except to Home Country)
"AB"	All Barring service
"AG"	All outGoing barring services
"AC"	All inComing barring services

<old_pwd>:   String; The same as password specified for the facility from the phone user interface or with command **AT+CPWD**.

<new_pwd>:   String; The new password. The maximum length of the password can be defined with <pwd_length>.

<pwd_length>:   Integer; the maximum length of the password for the facility.

Use scenarios

Phonelock Function

This scenario describes:

- PhoneLock status query
- Set lock
- Set auto lock
- Set full lock

AT command	Response	Comment
AT+CLCK="PS",2		Query status
	OK	
AT+CLCK="SC",1, "1234"		Set lock
	OK	
AT+CLCK="PS",1, "1234"		Set automatic lock

AT command	Response	Comment
	OK	
AT+CLCK="PS",10, "1234"		Set full lock
	OK	

Ensemble S9: GSM Mobile Equipment, Control, and Status

Commands

AT+CPAS   **Phone Activity Status**

Description: Returns the activity status <pas> of the phone. It can be used to interrogate the phone before requesting action from the phone. If the command is executed without the <mode> parameter, only <pas> values from 0 to 128 are returned. If the <mode> parameter is included in the execution command, <pas> values from 129 to 255 may also be returned.

Execution command: **AT+CPAS**[=<mode>]

Execution command response: +CPAS: <pas>

Test command: **AT+CPAS=?**   Shows if the command is supported.

Test command response: +CPAS: (list of supported <pas>s)

Parameters:

<mode>:

<mode>	Description
1	Allows the CPAS to return Sony Ericsson-specific <pas> values **Default setting**

<pas>:

<pas>	Description
0	Ready (phone allows commands from phone/ terminal equipment)
3	Ringing (phone is ready for commands from phone/ terminal equipment, but the ringer is active)

<pas>	Description
4	Call in progress (phone is ready for commands from phone/terminal equipment, but a call is in progress)
129	MMI is in idle state. This is a sub-state to 'ready' (0) and has the following definition: • MMI in idle state, meaning that operator, clock, and date is shown on the display • No conversation or data call in progress • No sub-menus shown on the display • Only digits, 'clear', '*', 'NO', and '#' allowed in this state
130	Mobile-oriented call in progress. Sub-state to 'Call in progress' (4)
131	Mobile-terminated call in progress. Sub-state to 'Call in progress' (4)

AT+CPIN   PIN Control

Description: Sends the password to the phone, which is necessary to make the phone operational.

Execution command: **AT+CPIN=**<pin>[,<new_pin>]

Read command: **AT+CPIN?**   Displays the current <code> setting.

Test command: **AT+CPIN=?**   Shows if the command is supported.

Test command response: +CPIN: (list of supported <code>s)

Parameters:

<pin>:   String: the range for the SIM PIN and the PH-SIM PIN is 4-8 digits.

                          The SIM PUK consists of 8 digits.

<new_pin>:   String: the range for the SIM PIN and the PH-SIM PIN is 4-8 digits.

                          The SIM PUK consists of 8 digits.

<code>:

<code>	Description
READY	phone is not pending for any password
SIM PIN	phone is waiting for SIM PIN
SIM PUK	phone is waiting for SIM PUK
PH-SIM PIN	phone is waiting for PHone-to-SIM password to be given
SIM PIN2	phone is waiting for SIM2
SIM PUK2	phone is waiting for SIM PUK2
BLOCKED	The SIM card is blocked for the user

AT+CBC   Battery Charge

Description: Execution and read command returns battery connection status <bcs> and battery level <bcl> of the phone.

Execution command: **AT+CBC**

Execution command response: +CBC: <bsc>,<bcl>

Read command: **AT+CBC?**   Displays the current <bcs> and <bcl> values.

Test command: **AT+CBC=?**   Shows if the command is supported.

Test command response: +CBC: (list of supported <bcs>s),(list of supported <bcl>s)

Parameters:

<bcs>:

<bcs>	Description
0	phone powered by the battery (no charger connected)
1	phone has a battery connected, but it is powered by the charger
2	phone does not have a battery connected

<bcl>:

<bcl>	Description
0	Battery exhausted
1-99	Battery charging level; the battery has 1-99 percent of capacity remaining
100	Battery fully charged

AT+CSQ   Signal Quality

Description: The command returns received signal strength indication <rssi> and channel bit error rate <ber> from the phone.

Execution command: **AT+CSQ**

Execution command response: +CSQ: <rssi>,<ber>

Test command: **AT+CSQ=?**   Shows if the command is supported.

Test command response: +CSQ: (list of supported <rssi>s),(list of supported<ber>s)

Parameters:

<rssi>:

<rssi>	Description
0	-113 dBm or less
1	-111 dBm

<rssi>	Description
2-30	-109 dBm to -53 dBm
31	-51 dBm or greater
99	Not known or not detectable

<ber>:

<ber>	Description
0-7	RXQUAL values
99	Not known or not detectable

AT+CKPD   Keypad Control

Description: Emulates phone keypad by setting each keystroke as a character in a string <keys>.

Execution command: **AT+CKPD=**<keys>[,<time>[,<pause>]]

Test command: **AT+CKPD=?**   Shows if the command is supported.

Parameters:

<keys>:

<keys>	Description
"#"	Hash (number)
"*"	Star (*)
"0"-"9"	Number keys
"<"	Left arrow
">"	Right arrow
"C"/"c"	Clear display (C/CLR)
"D"/"d"	Volume down.
"E"/"e"	Connection end (END)
"F"/"f"	Function (FCN) - option key
"S"/"s"	Connection start (SEND)
"U"/"u"	Volume up
"V"/"v"	Down arrow
"^"	Up arrow
"H"/"h"	Button pushed on the MC link handset

<time>:   Time to strike each key.

<time>	Description
0-255	0-25.5 seconds

<pause>:   Pause between keystrokes.

<pause>	Description
0-255	0-25.5 seconds

AT+CIND   Indicator Control

Description:	Displays the value of phone indicators.
Read command:	**AT+CIND?**
Read command response:	+CIND: <ind>,<ind>, ...
	The command displays the current value for the different <descr> given below.
Test command:	**AT+CIND=?** Shows if the command is supported.
Test command response:	+CIND: (<descr>,(list of supported <ind>s),(<descr>,(list of supported <ind>s)), (<descr>,(list of supported <ind>s)), ...
Parameters:	
<ind>:	Integer; in the range given by <descr>. <ind> value '0' means that the indicator is off, '1' means the indicator is on, '2' is more substantial than '1', and so on.
<descr>:	

<descr>	Description
"battchg"	Battery charge level (0-5)
"signal"	Signal quality (0-5)
"batterywarning"	Battery warning (0-1)
"chargerconnected"	Charger connected (0-1)
"service"	Service availability (0-1) (value = '1' means there is contact with the net)
"sounder"	Sounder activity (0-1) (Phone silent status, '1' = phone silent)
"message"	Message received (0-1)
"call"	Call in progress (0-1)
"roam"	Roaming indicator (0-1) (Home net status, '0' = Home Net)
"smsfull"	A short message memory storage in the MT has become full ('0'), or memory locations are available ('1')

Example:

```
AT+CIND?
+CIND: 2,3,1,1,1,1,1,0,0,1
OK

AT+CIND=?
+CIND: ("battchg",(0-1)),("signal",(0-5)),
("batterywarning",(0-1)),("chargerconnected",(0-1)),
("service",(0-1)),("sounder",(0-1)),("message",(0-1)),
("call",(0-1)),("roam",(0-1)),("smsfull",(0-1))
```

AT+CMER	**Mobile Equipment Event Reporting**

Description: Enables or disables the unsolicited result codes **+CKEV** and **+CIEV** for key presses, display changes, and indicator state changes.

Set command: **AT+CMER**=[<mode>[,<keyp>[,<disp>[,<ind>[,<bfr>]]]]]

Read command: **AT+CMER?** Displays the current <mode>, <keyp>, <disp>, <ind>, and <bfr> settings.

Test command: **AT+CMER=?** Shows if the command is supported.

Test command response: +CMER: (list of supported <mode>s),(list of supported <keyp>s),(list of supported <disp>s),(list of supported <ind>s),(list of supported <bfr>s)

Parameters:

<mode>:

<mode>	Description
0	Buffer unsolicited result codes in the phone. If the phone result code buffer is full, codes can be buffered elsewhere, or the oldest result codes can be removed to make room for the new result codes **Default setting**
3	Forward the unsolicited result codes directly to the terminal equipment; phone - terminal equipment link-specific inband technique used to embed result codes and data when phone is in on-line data mode.

<keyp>:

<keyp>	Description
0	No keypad event reporting **Default setting**
2	Keypad event reporting using **+CKEV** Enables keypad event reporting of all key presses

<disp>:

<disp>	Description
0	No display event reporting **Default setting**

<ind>:

<ind>	Description
0	No indicator event reporting **Default setting**

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<ind>	Description
1	Indicator event reporting using **+CIEV** Only those indicator that are not caused by **AT+CIND** shall be indicated by the phone to the terminal equipment

<bfr>:

<bfr>	Description
0	phone buffer of unsolicited result codes defined within this command is cleared when <mode>='0' or <mode>='3' is entered **Default setting**

AT+CVIB   Vibrator Mode

Description: Enables and disables the vibrator alert function of the phone.

Set command: **AT+CVIB=**<mode>

Read command: **AT+CVIB?**   Displays the current <mode> setting.

Test command: **AT+CVIB=?**   Shows if the command is supported.

Test command response: +CVIB: (list of supported <mode>s)

Parameter:

<mode>:

<mode>	Description
0	Disable vibrator alert function
1	Enable vibrator alert function
16	Enable vibrator alert function when silent mode is selected

AT*ECAM   Call Monitoring

Description: Activates or deactivates the call monitoring function in the phone. Also see the unsolicited result code ***ECAV**.

Set command: **AT*ECAM=**<onoff>

Set command response: *ECAM: <ccid>,<ccstatus>,<calltype>[,<processid>][,<exit_cause>]

[,<number>,<type>]

Read command: **AT*ECAM?**   Displays the current <onoff> setting.

Test command: **AT*ECAM=?**   Shows if the command is supported.

Test command response: *ECAM: (list of supported <onoff>s)

Parameters:

<onoff>:

<onoff>	Description
0	The call log function is disabled
1	The call log function is enabled

<ccid>:

<ccid>	Description
1-7	A number that uniquely identifies a call in the phone. The maximum number of call control processes is 7: 5 multiparty members, one call on hold and one waiting call

<ccstatus>:

<ccstatus>	Description
0	IDLE
1	CALLING
2	CONNECTING
3	ACTIVE
4	HOLD
5	WAITING
6	ALERTING
7	BUSY

<calltype>:

<calltype>	Description
1	VOICE
2	DATA
4	FAX
128	VOICE2

<processid>: Integer; reported when returning to IDLE state (<ccstatus>=0)

<processid>	Description
8=H´08	CC (Call Control)
68=H´44	MM (Mobile Management)
69=H´45	MS (Mobile Station)
122=H´7A	RR (Radio Resources)

<exit_cause>: Integer; reported when returning to IDLE state (<ccstatus>='0'.

<number>: Integer string; Phone number. Format specified by <type>.

Only valid for <ccstatus>=1 (CALLING).

<type>: Type of address octet. Only valid for <ccstatus>=1 (CALLING).

<type>	Description
145	Default setting when a dialling string includes the international access code character '+'
129	Default setting when a dialling string does not include the international access code character '+'

AT*ELAN   Language Set

Description:	Sets the language in the phone. If the language has been set to "AUTO", the read command returns the current language set from the SIM card. Hence, the "AUTO" code is never returned by the read command.
Set command:	**AT*ELAN=**<code>
Read command:	**AT*ELAN?** Displays the current language setting.
Test command:	**AT*ELAN=?** Shows if the command is supported.
Test command response:	*ELAN: (list of supported <code>s)
Parameter:	
<code>:	Language codes defined in ISO 639. Consist of two characters, for example "sv", "en" etc.

<code>	Description
"AUTO"	Read the language code from the SIM card "AUTO" is never returned by the read command
...	Miscellaneous language codes

AT+CLAN   Language Set

Description:	Sets the language in the phone. If the language has been set to "AUTO", the read command returns the current language set from the SIM card. Hence, the "AUTO" code is never returned by the read command.
Set command:	**AT+CLAN=**<code>
Read command:	**AT+CLAN?** Displays the current language setting.
Test command:	**AT+CLAN=?** Shows if the command is supported.
Test command response:	+CLAN: (list of supported <code>s)
Parameter:	
<code>:	Language codes defined in ISO 639. Consist of two characters, for example "sv", "en" etc.

<code>	Description
"AUTO"	Read the language code from the SIM card "AUTO" is never returned by the read command
	Miscellaneous language codes

AT*EMAR	Master Reset

Description: Requests the phone to reset user data.

Set command: **AT*EMAR=**<phone_lock_code>[,<option>]

Test command: **AT*EMAR=?**   Shows if the command is supported.

Parameter:

<phone_lock_code>: String; security code (phone lock code) must be verified before performing the master reset. Also see **AT+CLCK**.

<option>:

<option>	Description
0	Reset all settings to factory default **Default setting**
1	Reset internal memory **Note:** The phone lock code will be reset to "0000"

AT*ERIN	Ring Set

Description: Sets the sound for incoming voice, line L1 and L2, fax and data calls, and alarm.

A sound type is selected for each call type.

Set command: **AT*ERIN=**<sound_type>[,<call_type>]

Read command: **AT*ERIN?**

Read command response:

*ERIN: <sound_type1>,<call_type1>**<CR><LF>**

*ERIN: <sound_type2>,<call_type2>**<CR><LF>**

...

*ERIN: <sound_type*n*>,<call_type*n*>

Test command: **AT*ERIN=?**   Shows if the command is supported.

Test command response: *ERIN: (list of supported <sound_type>s),(list of supported <call_type>s)

Parameters:

<sound_type>:

<sound_type>	Description
1	Low ring signal
2	Medium ring signal
3	High ring signal
4	Mixed ring signal
11	Melody 1

<sound_type>	Description
12-20	Melody 2 - Melody 10
	Reserved for preset melodies
31-34	Own melodies 1-4

<call_type>:

<call_type>	Description
1	Line 1
	Default setting
2	Line 2
3	Fax
4	Data
5	Alarm

AT*ERIL	**Ring Level Set**

Description:	Sets the volume for the ring signal used for incoming voice, Line 1 and Line 2, fax, and data calls.
Set command:	**AT*ERIL=**<volume>[,<call_type>[,<place>]]
Read command:	**AT*ERIL?**
Read command response:	*ERIL: <volume1>[,<call_type1>[,<place1>]]**<CR><LF>**
	*ERIL: <volume2>[,<call_type2>[,<place2>]]**<CR><LF>**
	...
	*ERIL: <volume*n*>[,<call_type*n*>[,<place*n*>]]
Test command:	**AT*ERIL=?** Shows if the command is supported.
Test command response:	*ERIL: (list of supported <volume>s),(list of supported <call_type>s), (list of supported <place>s)
Parameters:	

<volume>:

<volume>	Description
0	Off
1-6	Volume setting; no increasing ring
129-134	Volume setting; increasing ring

<call_type>:

<call_type>	Description
1	Line 1
	Default setting
2	Line 2

<call_type>	Description
3	Fax
4	Data

<place>:

<place>	Description
0	Hand-held **Default setting**
1	Car mounted

AT*ERIP   Ring Signal Playback

Description: Plays one of the sound types available as ring/message signal in the phone.

Set command: **AT*ERIP=**<volume>,<sound_type>

Test command: **AT*ERIP=?**   Shows if the command is supported.

Test command response: *ERIP: (list of supported <volume>s),(list of supported <sound_type>s)

Parameters:

<volume>:

<volume>	Description
0	Off
2-*n*	Volume setting

<sound_type>:

<sound_type>	Description
1	Low ring signal
2	Medium ring signal
3	High ring signal
4	Mixed ring signal
11	Melody 1
12-20	Melody 2 - Melody 10 Reserved for preset melodies
31-34	Own melodies 1-4

AT*ESAM   Answer Mode

Description: Sets the answer mode in the phone.

Set command: **AT*ESAM=**<mode>

Read command: **AT*ESAM?**   Displays the current <mode> setting.

Test command: **AT*ESAM=?**   Shows if the command is supported.

Test command response:	*ESAM: (list of supported <mode>s)
Parameter:	

<mode>:

<mode>	Description
0	Answer mode is neither set to 'Any Key', nor 'Auto'
1	'Any Key' mode on
2	'Auto' mode on

AT*ESBL   Backlight Mode

Description:	Sets the backlight mode in the phone.
Set command:	**AT*ESBL=**[<place>,]<mode>
Read command:	**AT*ESBL?**
Read command response:	*ESBL: <place0>,<mode0>**<CR><LF>** *ESBL: <place1>,<mode1>
Test command:	**AT*ESBL=?** Shows if the command is supported.
Test command response:	*ESBL: (list of supported <place>s),(list of supported <mode>s)
Parameters:	

<place>:

<place>	Description
0	Hand-held
1	Car mounted

<mode>:

<mode>	Description
0	OFF, Back light always switched off
1	ON, always on
2	AUTO, backlight is turned on when the phone reacts to a user event or when receiving a call The light is then turned off after a short while

AT*ESIL   Silence Command

Description:	Orders the phone to enter or leave silent mode.
Set command:	**AT*ESIL=**<mode>
Read command:	**AT*ESIL?** Displays the current <mode> setting.
Test command:	**AT*ESIL=?** Shows if the command is supported.
Test command response:	*ESIL: (list of supported <mode>s)

Parameter:

<mode>:

<mode>	Description
0	Silent mode off Default setting
1	Silent mode on

AT*ESKL   Key-Lock Mode

Description: Sets the key-lock mode in the phone.

Set command: **AT*ESKL=**<mode>

Read command: **AT*ESKL?** Displays the current <mode> setting.

Test command: **AT*ESKL=?** Shows if the command is supported.

Test command response: *ESKL: (list of supported <mode>s)

Parameter:

<mode>:

<mode>	Description
0	MANUAL; the user has to manually lock the keyboard Default setting
1	AUTOMATIC; the phone will, after a time delay, automatically lock the keyboard

AT*ESKS   Key Sound

Description: Sets the key sound in the phone.

Set command: **AT*ESKS=**<mode>

Read command: **AT*ESKS?** Displays the current <mode> setting.

Test command: **AT*ESKS=?** Shows if the command is supported.

Test command response: *ESKS: (list of supported <mode>s)

Parameter:

<mode>:

<mode>	Description
0	SILENT; no sound when a key is pressed Default setting
1	CLICK; short click when a key is pressed
2	TONE, a continuous tone when a key is pressed

AT*ESMA   Message Alert Sound

Description:	Sets the message alert sound of the phone.
Set command:	**AT*ESMA=**\<mode>[,\<mess_type>]
Read command:	**AT*ESMA?**
Read command response:	*ESMA: list of supported \<mess_type>s with corresponding \<mode>*ESMA: \<mode>
Test command:	**AT*ESMA=?** Shows if the command is supported.
Test command response:	*ESMA: (list of supported \<mess_type>s),(list of supported \<mode>s)
Parameters:	

\<mode>:

\<mode>	Description
0	SILENT; no sound when a message arrives **Default setting**
1	CLICK; short click when a message arrives
2	TONE, a continuous tone when a message arrives

\<mess_type>:

\<mess_type>	Description
3	SMS **Default setting**

AT*ESMM   Minute Minder

Description:	Sets the minute minder setting in the phone.
Set command:	**AT*ESMM=**\<mode>
Read command:	**AT*ESMM?** Displays the current \<mode> setting.
Test command:	**AT*ESMM=?** Shows if the command is supported.
Test command response:	*ESMM: (list of supported \<mode>s)
Parameter:	

\<mode>:

\<mode>	Description
0	OFF; minute minder off Default setting
1	ON; minute minder on

AT*ESOM   Own Melody

Description:	Sets the user-defined melodies in the phone.

Set command:	**AT*ESOM=**[<melody_index>],<melody_string>[,<melody_format>]
Read command:	**AT*ESOM?** Displays the current parameter settings.
Read command response:	*ESOM: <melody_index>,<melody_string1><melody_format>**<CR><LF>**
	*ESOM: <melody_index>,<melody_string2><melody_format>**<CR><LF>**
	...
	*ESOM: <melody_index>,<melody_string*n*><melody_format>
Test command:	**AT*ESOM=?** Shows if the command is supported.
Test command response:	*ESOM: (list of supported <melody_index>s),(list of supported <pause>s),
	(list of supported <prefix>s),(list of supported <note>s),<mlength>,<mnotes>,
	(list of supported <melody_format>s).

Parameters:

<melody_index>:

<melody_index>	Description
1	Melody 1 Default setting
2	Melody 2
3	Melody 3
4	Melody 4
5	Melody 5
6	Melody 6
7	Melody 7
8	Melody 8

<melody_format>:

<melody_format>	Description
0	<melody_string> is formed by the characters specified by <pause>, <prefix>,<note>, and <length_modifier> below **Default setting**
1	<melody_string> is formed by hexcoding the melody in the format used when saving it to the phone memory See <hex_note> and <hex_length> below

<pause>:

<pause>	Description
"p"	Short pause

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<pause>	Description
"P"	Long pause

<prefix>:

<prefix>	Description
"#"	Half tone higher
"(b)"	Half tone lower
"+"	One octave higher
"++"	Two octaves higher

<note>:

<note>	Description
"c", "d"," e", "f", "g", "a", "h"	Short notes See <length_modifier> below
"C", "D", "E", "F", "G", "A", "H"	Long notes See <length_modifier> below

<length_modifier>:   The note length may be modified by using ".".

Syntax	Description
"c"	Note length: 150 ms
"C"	Note length: 225 ms
"c."	Note length: 300 ms
"C."	Note length: 450 ms

<mlength>:   Integer; indicates the maximum length of <melody_string>. If the length of <melody_string> exceeds <melngth>, only the first <mlength> characters are accepted.

<mnotes>:   Integer; indicates the maximum number of notes in a melody.

<hex_note>   String.

<hex_note>	Description	<prefix> and <note> equivalent
00	C_TONE_LOWER_OCTAVE	c
01	C_SHARP_TONE_LOWER_OCTAVE	#c
02	D_FLAT_TONE_LOWER_OCTAVE	(b)d
03	D_TONE_LOWER_OCTAVE	d
04	D_SHARP_TONE_LOWER_OCTAVE	#d
05	E_FLAT_TONE_LOWER_OCTAVE	(b)e
06	E_TONE_LOWER_OCTAVE	e
07	F_TONE_LOWER_OCTAVE	f
08	F_SHARP_TONE_LOWER_OCTAVE	#f
09	G_FLAT_TONE_LOWER_OCTAVE	(b)g

<hex_note>	Description	<prefix> and <note> equivalent
0a	E_TONE_LOWER_OCTAVE	g
0b	E_SHARP_TONE_LOWER_OCTAVE	#g
0c	A_FLAT_TONE_LOWER_OCTAVE	(b)a
0d	E_TONE_LOWER_OCTAVE	a
0e	E_SHARP_TONE_LOWER_OCTAVE	#a
0f	B_FLAT_TONE_LOWER_OCTAVE	(b)b
10	B_TONE_MIDDLE_OCTAVE	b
11	C_TONE_MIDDLE_OCTAVE	+c
12	C_SHARP_TONE_MIDDLE_OCTAVE	+#c
13	D_FLAT_TONE_MIDDLE_OCTAVE	+(b)d
14	D_TONE_MIDDLE_OCTAVE	+d
15	D_SHARP_TONE_MIDDLE_OCTAVE	+#d
16	E_FLAT_TONE_MIDDLE_OCTAVE	+(b)e
17	E_TONE_MIDDLE_OCTAVE	+e
18	F_TONE_MIDDLE_OCTAVE	+f
19	F_SHARP_TONE_MIDDLE_OCTAVE	+#f
1a	G_FLAT_TONE_MIDDLE_OCTAVE	+(b)g
1b	E_TONE_MIDDLE_OCTAVE	+g
1c	E_SHARP_TONE_MIDDLE_OCTAVE	+#g
1d	A_FLAT_TONE_MIDDLE_OCTAVE	+(b)a
1e	E_TONE_MIDDLE_OCTAVE	+a
1f	E_SHARP_TONE_MIDDLE_OCTAVE	+#a
20	B_FLAT_TONE_MIDDLE_OCTAVE	+(b)b
21	B_TONE_MIDDLE_OCTAVE	+b
22	C_TONE_UPPER_OCTAVE	++c
23	C_SHARP_TONE_UPPER_OCTAVE	++#c
24	D_FLAT_TONE_UPPER_OCTAVE	++(b)d
25	D_TONE_UPPER_OCTAVE	++d
26	D_SHARP_TONE_UPPER_OCTAVE	++#d
27	E_FLAT_TONE_UPPER_OCTAVE	++(b)e
28	E_TONE_UPPER_OCTAVE	++e
29	F_TONE_UPPER_OCTAVE	++f
2a	F_SHARP_TONE_UPPER_OCTAVE	++#f
2b	G_FLAT_TONE_UPPER_OCTAVE	++(b)g
2c	E_TONE_UPPER_OCTAVE	++g
2d	E_SHARP_TONE_UPPER_OCTAVE	++#g
2e	A_FLAT_TONE_UPPER_OCTAVE	++(b)a
2f	E_TONE_UPPER_OCTAVE	++a

<hex_note>	Description	<prefix> and <note> equivalent
30	E_SHARP_TONE_UPPER_OCTAVE	++#a
31	B_FLAT_TONE_UPPER_OCTAVE	++(b)b
32	E_TONE_UPPER_OCTAVE	++b
33	PAUSE_TONE	p
34	END_OF_OWN_MELODY_NOTE	
35	LAST_DISPLAY_NOTE	

<hex_length>:   Modifies the tone length.

<hex_length>	Description
0	Note length: 150 ms
1	Note length: 225 ms
2	Note length: 300 ms
3	Note length: 450 ms

The note byte in <melody_string> is formed by <hex_note> (6 bits) and <hex_length> (2 bits).

Example: An A_TONE_UPPER_OCTAVE note with the duration 300 ms is formed "2" (10 in binary representation) and "2f" (101111 in binary representation), giving the <hex_note> byte "af" (10101111 in binary representation).

AT*ETXT   Text Command

Description: Sets and activates the greeting text in the phone. The greeting is shown in the phone display when the phone is turned on. The command can also deactivate the greeting.

           Note: The optional <text> parameter is only to be used when activating the custom greeting (<mode>=1). If the <mode> parameter is set to 1, but no text is provided, the greeting text previously stored in the phone shall be used.

Set command: **AT*ETXT=**<mode>[,<melody>[,<text>]]

Read command: **AT*ETXT?**   Displays the current <mode> and <text> settings.

Test command: **AT*ETXT=?**   Shows if the command is supported.

Test command response: *ETXT: (list of supported <mode>s),(list of supported <melody>s),<ltext>.

Parameters:

<mode>:

<mode>	Description
0	No greeting <text> shall not be sent

<mode>	Description
1	Custom text, given in <text>
2	Standard ('SONY ERICSSON') start-up message <text> shall not be sent **Default setting**
3	Pre-defined start-up show
4	Custom start-up show

<melody>:

<melody>	Description
0	Melody off **Default setting**
1	Melody on

<text>:	Text to be displayed; may not contain **<CR>**.
<ltext>:	Integer; maximum number of characters in <text>.

AT*EAPP   Application Function

Description:	Requests the MT to perform an application function specified by <app> and <subfunc>. The <subfunc> parameter specifies which function within the specified application to call. **Note:** There is no guarantee that the application will execute. The command will return OK if the command, including sub-parameters, is supported. There is no correlation between the OK response and the time the application function is performed by the MT.
Set command:	**AT*EAPP=**<app>[,<subfunc>[,<text1>[,<text2>]]]
Test command:	**AT*EAPP=?** Shows if the command is supported.
Test command response:	*EAPP: <app>,(list of supported <subfunc>s) *EAPP: <app>,(list of supported <subfunc>s) ...

Parameters:

<app>:

<app>	Description
0	Message application
1	Phonebook application
2	E-mail application
3	WAP application
4	Calendar application
7	Notes application

<app>	Description
8	Image browser application

<subfunc>:   Application specific information, see tables below.

<subfunc>, **<app=0>**	Description
0	Send new message. Preentered message text can be provided in <text1> **Default setting**
1	Inbox
2	Unsent
3	Add new template. Preentered message text can be provided in <text1>
4	Sent items
5	Send new message to specific phonebook entry Pre-entered message text can be provided in <text1> The name of the phonebook entry to send message to shall be provided in <text2>
6	Send new message and include formatting characters and phonebook entry for e-mail **Note:** It is up to the MT to insert the formatting characters and the phonebook entry
7	Send new message and include formatting characters for WWW **Note:** It is up to the MT to insert the formatting characters and the phonebook entry

<subfunc>, **<app=1>**	Description
0	Add new number. Pre-entered number can be provided in <text1> **Default setting**
1	Find and Call. Pre-entered name can be provided in <text1> **Note:** If a name is provided, the search is started without user interaction
2	Find and Edit. Pre-entered name can be provided in <text1> **Note:** If a name is provided, the search is started without user interaction
3	Add new voice label

<subfunc>, **<app=1>**	Description
4	Add new group Pre-entered name can be provided in <text1>
5	Add new e-mail address Pre-entered address can be provided in <text1>

<subfunc>, **<app=2>**	Description
0	Send new message Pre-entered message text can be provided in <text1> **Default setting**
1	Inbox (read new mail). <text1>='Y' => check for new mail <text1>='N' => do not check for new mail
2	Outbox
3	Draft
4	Add attachment

<subfunc>, **<app=3>**	Description
0	Enter address Pre-entered URL can be provided in <text1> **Default setting**
1	Go to address Pre-entered URL **must be** provided in <text1> The connection is initiated without user interaction
2	Add new bookmark
3	Edit homepage
4	Go to homepage

<subfunc>, **<app=4>**	Description
0	Add new appointment **Default setting**
1	Add new ToDo
2	ToDo view
3	Today view
4	Week view
5	Month view

<subfunc>, **<app=7>**	Description
0	Create new note
	Pre-entered message text can be provided in <text1>
	Default setting
1	Display list of notes
	If only notes of a certain class should be shown, its name can be provided in <text1>
2	Display a certain note.
	The index of the note shall be provided in <text1>
3	Delete a certain note
	The index of the note shall be provided in <text1>

<subfunc>, **<app=8>**	Description
0	Display an image in fullscreen mode
	This is done by choosing a directory that contains only one picture
	The directory is specified in <text1>
1	Display thumbnail images
	The command shows thumbnail images of all pictures in the directory specified by <text1>
2	Delete one or several image(s)
	The image name is specified in <text1>
255	Close Image browser

Example:
```
AT*EAPP=?
*EAPP: 0,(0-7)
*EAPP: 1,(0-5)
*EAPP: 2,(0-4)
*EAPP: 3,(0-4)
*EAPP: 4,(0-5)
*EAPP: 7,(0-3)
*EAPP: 8,(0-2,255)
OK
```

AT*EKSE   Keystroke Send

Description: Sends a keystroke identifier to the MT. The MT will make a context-sensitive interpretation of the keystroke, based on the state of the MMI.

Set command: **AT*EKSE=**<key>[,<time>]

Test command: **AT*EKSE=?**   Shows if the command is supported.

Test command response: *EKSE: (list of supported <key>s),(list of supported <time>s)

Parameters:

<key>:

<key>	Description
0-65535	Keystroke identifier

<time>: Reports how long the key is pressed.

<time>	Description
0-255	0-25.5 seconds

AT*EIMR   Input Method Change Report

Description: Set command enables unsolicited result code ***EIMV** which indicates that the input method has been changed.

Set command: **AT*EIMR=**<onoff>

Read command: **AT*EIMR?**   Displays the current <onoff> setting.

Test command: **AT*EIMR=?**   Shows if the command is supported.

Test command response: *EIMR: (list of supported <onoff>s)

Parameter:

<onoff>:

<onoff>	Description
0	Unsolicited result code *EIMV is disabled
1	Unsolicited result code *EIMV is enabled

AT*ECAP   Camera Button Pressed

Description: Action command notifies the MS that a button on the camera has been pushed.

Action command: **AT*ECAP=**<button>,<time>,<state>

Test command: **AT*ECAP=?**   Shows if the command is supported.

Test command response: *ECAP: (list of supported <button>s), (list of supported <state>s)

Parameters:

<button>:

<button>	Description
1	Button 1 is pressed

<time>:

<time>	Description
0-255	The length of the camera button key press, in units of 100 ms

<state>:

<state>	Description
0	Stand-by
1	Active
2	View picture

Unsolicited result codes

+CKEV	**Keypad Event**

Description: Keypad event reporting is enabled by the **AT+CMER** command and indicates key press/release.

Unsolicited result code: **+CKEV:** <keys>,<press>

Parameters:

<keys>: See **AT+CKPD**.

<press>:

<press>	Description
0	Key released
1	Key pressed

+CIEV	**Indicator Event**

Description: Indicates changes in indicator levels. Enabled with **AT+CMER**.

Unsolicited result code: **+CKEV:** <ind>,<value>

Parameters:

<ind>: Indicates the indicator order number (as specified for **AT+CIND**)

<ind>	Description
1	Battery charge level indicator
2	Signal quality indicator
3	Battery warning indicator
4	Charger connected indicator
5	Service availability indicator
6	Sounder activity indicator
7	Message received indicator
8	Call-in-progress indicator
9	Transmit activated by voice activity indicator
10	Roaming indicator
11	Short message memory storage indicator in the SMS

<value>: Integer; new value of the specific indicator.

*ECAV   Call Monitoring Event

Description: Reports changes in call state for a certain call, indicated by <coid>.
Enabled by **AT+ECAM**.

Unsolicited result code: ***ECAV:** <ccid>,<ccstatus><calltype>[,<processid>][,<exit_cause>]

[,<number>,<type>]

Parameters:

<ccid>:

<ccid>	Description
1-7	A number that uniquely identifies a call in the phone. The maximum number of call control processes is 7: 5 multiparty members, one call on hold and one waiting call

<ccstatus>:

<ccstatus>	Description
0	IDLE
1	CALLING
2	CONNECTING
3	ACTIVE
4	HOLD
5	WAITING
6	ALERTING
7	BUSY

<calltype>:

<calltype>	Description
1	VOICE
2	DATA
4	FAX
128	VOICE2

<processid>: Integer; reported when returning to IDLE state (<ccstatus>=0)

<processid>	Description
8=H´08	CC (Call Control)
68=H´44	MM (Mobile Management)
69=H´45	MS (Mobile Station)

<processid>	Description
122=H´7A	RR (Radio Resources)

<exit_cause>:   Integer; reported when returning to IDLE state (<ccstatus>=0).

<number>:   Integer string; Phone number. Format specified by <type>.

         Only valid for <ccstatus>=1 (CALLING).

<type>:   Type of address octet. Only valid for <ccstatus>=1 (CALLING).

<type>	Description
145	Default setting when a dialling string includes the international access code character '+'
129	Default setting when a dialling string does not include the international access code character '+'

*EIMV   Input Method Event

Description: This unsolicited result code is issued when the input method, the language or the alphabet is changed on the MT and when the result code is first enabled.

         If there is no input method currently active, the result code will be an empty string. This indicates that keyboard emulation has to be done with **AT+CKPD**.

         The result code is enabled by **AT*EIMR**.

Unsolicited result code: ***EIMV:** [<method>,<language>,<alphabet>]

Parameters:

<method>:

<method>	Description
0	Multitap
1	Digit
2	Integer
3	Real
4	T9
5	Zi8
6	Zi8 Stroke
7	Zi8 BoPoMoFo
8	Zi8 Pinyin

<language>:

<language>	Description
0	Czech
1	Danish

<language>	Description
2	German
3	Estonian
4	English
5	Spanish
6	French
7	Croatian
8	Italian
9	Latvian
10	Lithuanian
11	Hungarian
12	Dutch
13	Norwegian
14	Polish
15	Portugese
16	Romanian
17	Slovak
18	Slovenian
19	Serbian
20	Finnish
21	Swedish
22	Turkish
23	Greek
24	Bulgarian
25	Russian
26	Hebrew
27	Arabic
28	Indonesian
29	Malay
30	Tagalog
31	Thai
32	Vietnamese
33	US_English
34	Latin_American_Spanish
35	Canadian
36	Brazilian_Portugese
37	Hong_Kong_Chinese
38	Simplified_Chinese
39	Taiwan_Chinese
40	Hong_Kong_Chinese_No_Punct
41	Simplified_Chinese_No_Punct

<language>	Description
42	Taiwan_Chinese_No_Punct
43	Digits
44	Integer
45	Real
46	Phone_No
47	DTMF
48	Ext_Digits
49	ISO_8859
50	URL
51	GSM
52	GSM_WML_A
53	GSM_WML_a
54	GSM_WML_X
55	GSM_WML_x
56	Greek_WML_A
57	Greek_WML_a
58	Greek_WML_X
59	Greek_WML_x
60	Cyrillic
61	Cyrillic_WML_A
62	Cyrillic_WML_a
63	Cyrillic_WML_X
64	Cyrillic_WML_x
65	Arabic_WML_A
66	Arabic_WML_X
67	Hebrew_WML_A
68	Hebrew_WML_X

<alphabet>:

<alphabet>	Description
0	GSM
1	Greek
2	Cyrillic
3	URL
4	Digits
5	Ext_Digits
6	Integer
7	Real
8	Phone_No
9	DTMF

<alphabet>	Description
10	ISO_8859
11	Arabic
12	Hebrew
13	Chinese
14	GSM_WML_A
15	GSM_WML_a
16	GSM_WML_X
17	GSM_WML_x
18	Greek_WML_A
19	Greek_WML_a
20	Greek_WML_X
21	Greek_WML_x
22	Cyrillic_WML_A
23	Cyrillic_WML_a
24	Cyrillic_WML_X
25	Cyrillic_WML_x
26	Arabic_WML_A
27	Arabic_WML_X
28	Hebrew_WML_A
29	Hebrew_WML_X

Use scenarios

Mobile Equipment Control Mode and Event Reporting

This scenario operates the keypad and reads the keypad and indicator status.

AT command	Response	Comment
AT+CKPD="046193000S",5,1		Dial number 046193000 by emulating a sequence of key presses Each key is pressed for half a second and the pause between the keystrokes is 0.1 seconds
	OK	
AT+CKPD="E",5		End connection by emulating a stroke of the "on hook" button for half a second
	OK	
AT+CIND?		Query the current indicator values
	+CIND: 3,4,0,0,1,0,0,0,0,0,0 OK	
AT+CMER=,2,,1,		Request unsolicited result codes for keypad and indicator events

AT command	Response	Comment
	OK	
	+CKEV: 49,1	Number key '1' is pressed
	+CKEV: 49,0	Number key '1' is released
	+CIEV: 2,5	Signal strength indicator changes its state to '5'
AT+CMER=,0,,0,		Disable unsolicited result codes for keypad and indicator events
	OK	

Call Monitoring

This scenario shows how call monitoring is activated and how call events are received.

AT command	Response	Comment
AT*ECAM=1		Enable the call log function
	*ECAM: 1,0,1 OK	IDLE
ATD046193000;		Dial number
	OK	
	*ECAV: 1,1,1,,,046193000 ,129	CALLING, VOICE1
	*ECAV: 1,2,1,,	CONNECTING, VOICE1
	*ECAV: 1,3,1,,	ACTIVE CALL, VOICE1
AT+CHLD		Put call on hold
	OK	
	*ECAV: 1,4,1,,	HOLD, VOICE1
AT+CHLD=2		Retrieve held call
	OK	
	*ECAV: 1,3,1	ACTIVE CALL, VOICE1
ATH		Hang up
	OK	
	*ECAV: 1,0,1,8,16	IDLE. Call Control exit cause 16 (normal clearing)
	RING	Incoming call
	*ECAV: 1,6,128,,	ALTERING, VOICE2
	RING	
	RING	

MMI Configuration

This scenario shows various settings of the MMI.

AT command	Response	Comment
AT*ELAN="sv"		Sets the MMI language to Swedish
	OK	

AT command	Response	Comment
AT*ESAM=2		Answer mode 'AUTO'
	OK	
AT*ESBL=1,1		Back light always on when phone is car mounted
	OK	
AT*ESIL=1		Request phone silent mode
	OK	Silent mode icon displayed
AT*ESKS=1		Set 'key pressed' sound to CLICK
	OK	
AT*ESMA=2		Set 'mail received' sound to TONE
	OK	
AT*ESKL=1		Set key lock mode to AUTOMATIC
	OK	The phone keyboard will, after a time delay, be locked
AT*ETXT=1,"Good Evening"		New greeting text entered
	OK	
AT*ESMM=1		Activate minute minder during call
	OK	

Ensemble S10: GSM Mobile Equipment Error Control

Commands

AT+CMEE   Report Mobile Equipment Error

Description: Requests GSM mobile equipment error control. The command disables or enables the use of result code **+CME ERROR** as an indication of an error relating to the functionality of the phone. When enabled, the phone-related errors cause +CME ERROR final result code instead of the regular ERROR final result code. ERROR is returned only when the error is related to syntax, invalid parameters or phone functionality.

Set command: **AT+CMEE=**[<n>]

Read command: **AT+CMEE?**   Displays the current <n> setting.

Test command: **AT+CMEE=?**   Shows if the command is supported.

Test command response: +CMEE: (list of supported <n>s)

Parameter:

<n>:

<n>	Description
0	Disable +CME ERROR result code. Use ERROR instead **Default setting**
1	Enable +CME ERROR result code and use numeric <err> values
2	Enable +CME ERROR result code and use verbose <err> values

Ensemble S11: GSM SMS and PDU Mode

Commands

AT+CSMS   Select Message Service

Description: Selects the message service and returns the type of messages supported by the phone. If chosen service is not supported by the phone (but supported by the phone), **+CME ERROR** is returned.

The command is aborted when an break command is received by the MS. A break command is sent by setting the DTMS to low, which is obtained when the accessory is detached.

It is possible to use ATZ and AT&F to set all parameters to their factory defaults as specified by the manufacturer.

Set command: **AT+CSMS=**<service>

Response: +CSMS: <mt>,<mo>,<bm>

Read command: **AT+CSMS?** Displays the current <service>, <mt>, <mo>, and <bm> settings.

Test command: **AT+CSMS=?** Shows if the command is supported.

Test command response: +CSMS: (list of supported <service>s)

Parameters:

<service>:

<service>	Description
0	GSM 03.40 and 03.41 specific The syntax of SMS AT commands is compatible with GSM 07.05 Phase 2 Version 4.7.0 Phase 2 features that do not require new command syntax may be supported **Default setting**
1	GSM 03.40 and 03.41 The syntax of SMS AT commands is compatible with GSM 07.05 Phase 2+ version
2-127	Reserved
128	Manufacturer specific

<mt>:

<mt>	Description
0	Mobile terminated messages not supported
1	Mobile terminated messages supported

<mo>:

<mo>	Description
0	Mobile originated messages not supported
1	Mobile originated messages supported

<bm>:

<bm>	Description
0	Broadcast messages not supported
1	Broadcast messages supported

AT+CPMS   Preferred Message Storage

Description:	Selects memory storage spaces to be used for reading, writing, etc. If chosen storage is not appropriate for the phone (but is supported by the phone), **+CME ERROR** is returned.
Set command:	**AT+CPMS=**<mem1>[,<mem2>][,<mem2>]
Set command response:	+CPMS: <used1>,<total1>,<used2>,<total2>,<used3>,<total3>
Read command:	**AT+CPMS?**
Read command response.	+CPMS: <mem1><used1>,<total1>,<mem2><used2>,<total2>, <mem3><used3>,<total3>
Test command:	**AT+CPMS=?** Shows if the command is supported.

Test command response:	+CPMS: (list of supported <mem1>s),(list of supported <mem2>s),(list of supported <mem3>s)
Parameters:	
<mem1>:	Memory from which messages are read and deleted (see **AT+CMGL**, **AT+CMGR**, and **AT+CMGD**).

<mem1>	Description
"ME"	phone message storage
"SM"	SIM message storage
"TL"	Template message storage

<mem2>:	Memory to which writing and sending options are made (see **AT+CMSS** and **AT+CMGW**).

<mem2>	Description
"ME"	phone message storage
"SM"	SIM message storage **Default setting**
"TL"	Template message storage

<mem3>:	Memory to which received SMs are preferred to be stored (unless directly forwarded to the terminal equipment). Received CBMs are always stored in "BM" (unless directly forwarded to the terminal equipment).

<mem3>	Description
"ME"	phone message storage

<usedx>:	Integer; number of messages currently in <memx>.
<totalx>:	Integer; total number of message locations in <memx>.

AT+CMGF   Message Format

Description:	Sets the input and output format to be used by the phone.
Set command:	**AT+CMGF=**<mode>
Read command:	**AT+CMGF?** Displays the current <mode> setting.
Test command:	**AT+CMGF=?** Shows if the command is supported.
Test command response:	+CMGF: (list of supported <mode>s)
Parameter:	
<mode>:	Indicates the message format used for send, read, write, list commands, and unsolicited result codes resulting from received messages.

<mode>	Description
0	PDU mode **Default setting**

AT+CSCA	**Service Centre Address**

Description: Updates the SMCS address, through which mobile-originated SMs are transmitted. In text mode, the setting is used by send **(AT+CMGS)** and write **(AT+CMGW)** commands. In PDU mode, the setting is used by the same commands, but only when the length of the SMCS address (coded into <pdu> parameter) equals zero.

Set command: **AT+CSCA=**<sca>[,<tosca>]

Read command: **AT+CSCA?** Displays the current <sca> and <tosca> settings.

Test command: **AT+CSCA=?** Shows if the command is supported.

Parameters:

<sca>: String; GSM 04.11 RP SC address-value field in string format. BCD numbers are converted to characters in the currently selected terminal equipment character set.

<tosca>: Integer; GSM 04.11 RP SC type-of-address octet in integer format.

<tosca>	Description
129	ISDN / telephony numbering plan, national/international unknown **Default setting if '+' is not in <sca>**
145	ISDN / telephony numbering plan, international number **Default setting if '+' is in <sca>**
161	ISDN / telephony numbering plan, national number
128-255	Valid values, see GSM 04.08 section 10.5.4.7

AT+CSCB	**Cell Broadcast Message Type**

Description: Selects which types of CBMs are to be received by the phone.

Set command: **AT+CSCB=**<mode>[,<mids>]

Read command: **AT+CSCB?** Displays the current <mode> and <mids> setting.

Test command: **AT+CSCB=?** Shows if the command is supported.

Test command response: +CSCB: (list of supported <mode>s),(list of supported <mid>s)

Parameters:

<mode>:

<mode>	Description
0	Message types in <mids> are accepted **Default setting**
1	Message types in <mids> are not accepted

<mids>: String; all possible combinations of CBM message identifiers.

AT+CSAS	**Save Settings**

Description:	Saves the active message service settings to a non-volatile memory. A phone can contain several profiles of settings. The settings specified in **AT+CSCA** and **AT+CSCB** are saved. Certain settings, for example SIM SMS parameters, may not be supported by the storage and can therefore not be saved.
Execution command:	**AT+CSAS**[=<profile>]
Test command:	**AT+CSAS=?** Shows if the command is supported.
Test command response:	+CSAS: (list of supported <profile>s)
Parameter:	

<profile>:

<profile>	Description
0	Profile number where settings are to be stored
	Default setting

AT+CRES	**Restore Settings**

Description:	Restores the message service settings from non-volatile memory. A phone can contain several profiles of settings. The settings specified in **AT+CSCA** and **AT+CSCB** are restored. Certain settings, for example SIM SMS parameters, may not be supported by the storage and can therefore not be restored.
Execution command:	**AT+CRES**[=<profile>]
Test command:	**AT+CRES=?** Shows if the command is supported.
Test command response:	+CRES: (list of supported <profile>s)
Parameter:	

<profile>:

<profile>	Description
0	Profile number where settings are stored
	Default setting

AT+CNMI	**New Message Indication to TE**

Description:	Selects the procedure how the reception of new messages from the network is indicated to the terminal equipment when terminal equipment is active (DTR signal is ON). IF terminal equipment is inactive (DTR signal OFF), message reception is carried out as specified in GSM 03.38. This command enables the unsolicited result codes **+CMT**, **+CMTI**, **+CBM**, and **+CDS**.

Set command:	**AT+CNMI=**[<mode>[,<mt>[,<bm>[,<ds>[,<bfr>]]]]]
Read command:	**AT+CNMI?** Displays the current <mode>,< mt>, <bm>, <ds>, and <bfr> settings.
Test command:	**AT+CNMI=?** Shows if the command is supported.
Test command response:	+CNMI: (list of supported <mode>s),(list of supported<mt>s), (list of supported <bm>s),(list of supported <ds>s),(list of supported <bfr>s)

Parameters:

<mode>:

<mode>	Description
3	Forward unsolicited result codes directly to the terminal equipment. phone - terminal equipment specific inband technique used to embed result codes and data when phone in on-line data mode **Default setting**

<mt>:

<mt>	Description
0	No SMS-DELIVER indications are routed to the terminal equipment **Default setting**
1	If SMS-DELIVER is stored into phone, indication of the memory location is routed to the terminal equipment, using the **+CMTI** result code
3	Class 3 SMS-DELIVERs are routed directly to the terminal equipment, using the **+CMT** result code. Messages of other data coding schemes results in indication as defined by <mt>='1'

<bm>:

<bm>	Description
0	Store message to "BM". No CBM indications are routed to the terminal equipment **Default setting**
2	New CBMs are routed directly to the terminal equipment, using the **+CBM** result code

<ds>:

<ds>	Description
0	No SMS-STATUS-REPORTs are routed to the terminal equipment **Default setting**
1	SMS-STATUS-REPORTs are routed to the terminal equipment, using the **+CDS** result code

<bfr>:

<bfr>	Description
0	phone buffer of unsolicited result codes defined within this command is flushed to the terminal equipment when <mode>=1 or 2 is entered (Not yet supported) **Default setting**

AT+CMGL   List Message

Description: Returns messages with status value <stat> from returned message storage <mem1> to the terminal equipment.

Execution command: **AT+CMGL**[=<stat>]

Execution command response: +CMGL: <index>,<stat>,[<alpha>],<length>,<pdu>**<CR><LF>**

[+CMGL: <index>,<stat>,[<alpha>],<length>,<pdu>**<CR><LF>**

[...]]

Test command: **AT+CMGL=?**   Shows if the command is supported.

Test command response: +CMGL: (list of supported <stat>s)

Parameters:

<stat>:

<stat>	Description
0	Received unread (new) message **Default setting**
1	Received read message
2	Stored unread message (only applicable to SMs)
3	Stored sent message (only applicable to SMs)
4	All messages
16	Template message

<index>: Integer; value in the range of location numbers supported by the associated memory.

<alpha>: String; left empty, but not omitted (commas mark the place where it should be). The character set used is selected with **AT+CSCS**.

<length>:	Integer; with **AT+CMGF**='0', this value indicates the length of the actual TP data unit (in octet units).
<pdu>:	**In case of SMS**: GSM 04.11 SC address followed by GSM 03.40 TPDU in hexadecimal format. phone converts each octet of TP data unit into two
	IRA-character long hexadecimal numbers.
	In case of CBS: GSM TPDU in hexadecimal format.
<mem1>:	Memory from which messages are read and deleted (see **AT+CMGL**, **AT+CMGR**, and **AT+CMGD**).

<mem1>	Description
"ME"	phone message storage
"SM"	SIM message storage
"TL"	Template message storage

AT+CMGR Read Message

Description:	Returns messages with location value <index> from preferred message storage <mem1> to the terminal equipment. If the status of the message is 'received unread', the status in the storage changes to 'received read'. If reading fails, **+CMS ERROR** is returned.
Execution command:	**AT+CMGR=**<index>
Execution command response:	+CMGR: <stat>,[<alpha>],<length> <pdu>
Test command:	**AT+CMGR=?** Shows if the command is supported.
Parameters:	
<index>:	Integer; value in the range of location numbers supported by the associated memory.
<stat>:	

<stat>	Description
0	Received unread (new) message **Default setting**
1	Received read message
2	Stored unread message (only applicable to SMs)
3	Stored sent message (only applicable to SMs)
16	Template message

<alpha>:	String; left empty but not omitted (commas mark the place where it should be). The character set used is selected with **AT+CSCS**.
<length>:	Integer; with **AT+CMGF**='0', this value indicates the length of the actual TP data unit (in octet units).

<pdu>:   **In case of SMS**: GSM 04.11 SC address followed by GSM 03.40 TPDU in hexadecimal format. phone converts each octet of TP data unit into two

IRA-character long hexadecimal numbers.

In case of CBS: GSM TPDU in hexadecimal format.

<mem1>:

<mem1>	Description
"ME"	phone message storage
"SM"	SIM message storage
"TL"	Template message storage

AT+CMGS   Send Message

Description: Sends message from a terminal equipment to the network (SMS-SUBMIT). <tr> is returned after successful message delivery. Optionally (when the network supports it, and **AT+CSMS** <service>='1'), <ackpdu> is returned. Values can be used to identify message upon unsolicited delivery status report result code. If sending fails in a network or if there is an phone error, **+CMS ERROR** is returned.

Execution command: **AT+CMGS=**<length>

<pdu><'ctrl-z/ESC'>

Execution command response: +CMGS: <mr>,[<ackpdu>]

Test command: **AT+CMGS=?**   Shows if the command is supported.

Parameters:

<length>:   Integer; with **AT+CMGF**='0', this value indicates the length of the actual TP data unit (in octet units).

<pdu>:   **In case of SMS**: GSM 04.11 SC address followed by GSM 03.40 TPDU in hexadecimal format. phone converts each octet of TP data unit into two

IRA-character long hexadecimal numbers.

In case of CBS: GSM TPDU in hexadecimal format.

<mr>:   Integer; GSM 03.40 TP-Message-Reference.

<ackpdu>:   GSM 03.40 RP-User-Data element of RP-ACK PDU; format is the same as for <pdu> in case of SMS, but without GSM 04.11 SC address field. The parameter is bounded by double quotation marks like a normal string-type parameter.

AT+CMSS   Send From Storage

Description:	Sends message with location value <index> from message storage <mem2> (see **AT+CPMS**) to the network (SMS-SUBMIT or SMS-COMMAND). <mr> is returned after successful delivery. If sending fails in a network, or if there is an phone error,
	+CMS ERROR is returned.
Execution command:	**AT+CMSS=**<index>[,<da>[,<toda>]]
Execution command response:	+CMSS: <mr>
Test command:	**AT+CMSS=?** Shows if the command is supported.
Parameters:	
<index>:	Integer; value in the range of location numbers supported by the associated memory.
<da>:	GSM 03.40 TP-Destination-Address. Address value field in string format; BCD numbers are converted into characters of the currently selected terminal equipment character set. The type of address is given by <toda>.
<toda>:	GSM 04.11 TP-Address Type-Of-Address octet; in integer format.

<toda>	Description
129	ISDN / telephony numbering plan, national/ international unknown
	Default setting if '+' is not in <da>
145	ISDN / telephony numbering plan, international number **Default setting if '+' is in <da>**
161	ISDN / telephony numbering plan, national number
128-255	Valid values, see GSM 04.08 section 10.5.4.7

<mr>:	Integer; GSM 03.40 TP-Message-Reference.

AT+CMGW   Write Message To Memory

Description:	Stores a message to message storage <mem2> (see **AT+CPMS**). The memory location <index> of the stored message is returned. By default, message status will be set to 'stored unsent', but parameter <stat> also allows other status values. If writing fails, **+CMS ERROR** is returned.
Execution command:	**AT+CMGW=**<length>[,<stat>]
	<pdu><'ctrl-z/ESC'>
Execution command response:	+CMGW: <index>
Test command:	**AT+CMGW=?** Shows if the command is supported.
Parameters:	
<length>:	Integer; with **AT+CMGF**='0', this value indicates the length of the actual TP data unit (in octet units).

<stat>:

<stat>	Description
0	Received unread (new) message **Default setting**
1	Received read message
2	Stored unread message (only applicable to SMs)
3	Stored sent message (only applicable to SMs)

<pdu>:   **In case of SMS**: GSM 04.11 SC address followed by GSM 03.40 TPDU in hexadecimal format. phone converts each octet of TP data unit into two

IRA-character long hexadecimal numbers.

In case of CBS: GSM TPDU in hexadecimal format.

<index>:   Integer; value in the range of location numbers supported by the associated memory.

AT+CMGD   Delete Message

Description: Deletes message from preferred message <mem1> (see **AT+CPMS**) storage location <index>. If deletion fails, **+CMS ERROR** is returned.

Execution command: **AT+CMGD=**<index>

Test command: **AT+CMGD=?**   Shows if the command is supported.

Parameter:

<index>:   Integer; value in the range of location numbers supported by the associated memory.

AT+CMGC   Send Command

Description: Sends a command message from a terminal equipment to the network (SMS-COMMAND). The entering of PDU is done similarly to specified in **AT+CMGS**. <mr> is returned after successful message delivery. Optionally (when the network supports it, and the AT+CSMS <service>='1'), <ackpdu> is returned. Values can be used to identify message upon unsolicited delivery status report result code. If sending fails in a network or if there is an phone error, **+CMS ERROR** is returned.

Execution command: **AT+CMGC=**<length>

     <pdu><'ctrl-z/ESC'>

Execution command response: +CMGC: <mr>,[<ackpdu>]

Test command: **AT+CMGC=?**   Shows if the command is supported.

Parameters:

<length>:   Integer; with **AT+CMGF**='0', this value indicates the length of the actual TP data unit (in octet units).

<pdu>:	**In case of SMS**: GSM 04.11 SC address followed by GSM 03.40 TPDU in hexadecimal format. phone converts each octet of TP data unit into two
	IRA-character long hexadecimal numbers.
	In case of CBS: GSM TPDU in hexadecimal format.
<mr>:	Integer; GSM 03.40 TP-Message-Reference.
<ackpdu>:	GSM 03.40 RP-User-Data element of RP-ACK PDU; format is the same as for <pdu> in case of SMS, but without GSM 04.11 SC address field. The parameter is bounded by double quotation marks like a normal string-type parameter.

AT*ESTL — SMS Template List Edit

Description:	Adds an SMS template, specified by <text>, to the list of SMS templates at the position specified by <stix>. If the list already contains an entry in the <stix> position, the old template is overwritten by the new template.
	If the <text> parameter is omitted, the command deletes the SMS template from the <stix> position.
Set command:	**AT*ESTL=**<stix>[,<text>]
Read command:	**AT*ESTL?** Displays the current parameter settings.
Read command response:	*ESTL: <stix1>,<text1>[<stix2>,<text2>[...]]
Test command:	**AT*ESTL=?** Shows if the command is supported.
Test command response:	*ESTL: (list of supported <stix>s),<ntext>

Parameters:

<stix>:	Integer; index to entry in list of SMS templates.
<text>:	String; SMS template text.
<ntext>:	Integer; maximum length of the <text> parameter.

Unsolicited result codes

+CBM — Received Cell Broadcast

Description:	Received CBMs are routed directly to the terminal equipment. Enabled by **AT+CNMI**.
Unsolicited result code:	**+CBM:** <length>
	<pdu>

Parameters:

<length>:	Integer; with **AT+CMGF**='0', this value indicates the length of the actual TP data unit (in octet units).

<pdu>:	**In case of SMS**: GSM 04.11 SC address followed by GSM 03.40 TPDU in hexadecimal format. phone converts each octet of TP data unit into two
	IRA-character long hexadecimal numbers.
	In case of CBS: GSM TPDU in hexadecimal format.

+CMTI   New Message Indication

Description:	Indication of the message memory location is routed to the terminal equipment. Enabled by **AT+CNMI**.
Unsolicited result code:	**+CMTI:** <mem>,<index>
Parameters:	
<mem>:	

<mem>	Description
"ME"	phone message storage
"SM"	SIM message storage

<index>:	Integer; value in the range of location numbers supported by the associated memory.

+CMT   Received Message

Description:	Received SMs are routed directly to the terminal equipment. Enabled by **AT+CNMI**.
Unsolicited result code:	**+CMT:** <length>**<CR><LF>**
	<pdu>
Parameters:	
<length>:	Integer; with **AT+CMGF**='0', this value indicates the length of the actual TP data unit (in octet units).
<pdu>:	**In case of SMS**: GSM 04.11 SC address followed by GSM 03.40 TPDU in hexadecimal format. phone converts each octet of TP data unit into two
	IRA-character long hexadecimal numbers.
	In case of CBS: GSM TPDU in hexadecimal format.

+CDS   SMS Status Report

Description:	SMS status is indicated to the terminal equipment. Enabled by **AT+CNMI**.
Unsolicited result code:	**+CDS:** <length>**<CR><LF>**
	<pdu>
Parameters:	

<length>:	Integer; with **AT+CMGF**='0', this value indicates the length of the actual TP data unit (in octet units).
<pdu>:	**In case of SMS**: GSM 04.11 SC address followed by GSM 03.40 TPDU in hexadecimal format. phone converts each octet of TP data unit into two
	IRA-character long hexadecimal numbers.
	In case of CBS: GSM TPDU in hexadecimal format.

Use scenarios

New Message Indication

This scenario shows how the new message indication result codes are handled.

AT Command	Response	Comment
AT+CNMI=?		Query new message unsolicited result code modes
	+CNMI: (3),(0-1), (0,2),(0),(0) OK	
AT+CNMI=0,1,2,0, 0		Send SM indications to terminal equipment Forward unsolicited CBM result codes directly to the terminal equipment
	OK	
AT+CNMI?		Query current settings
	+CNMI: 3,1,2,0,0	
		The phone receives and stores incoming SM
	+CMTI: "ME",3	New message stores in index 3 of <mem1> storage
		The phone receives a CBM and routes it directly to the terminal equipment
	+CBM: 128 <128 byte PDU>	New CBM PDU of 128 byte received at terminal equipment

Ensemble S15: GSM GPRS

Commands

AT+CGSMS   **Select Service for MO SMS Messages**

Description: The command is used to specify the service or service preference that the MT will use to send MO SMS messages

Set command: **AT+CGSMS=**[<service>]

Read command: **AT+CGSMS?**   Displays the current <service> setting.

Test command: **AT+CGSMS=?**   Shows if the command is supported.

Test command response: +CGSMS: (list of supported <service>s)

Parameter:

<service>:

<service>	Description
2	GPRS preferred (use circuit-switched if GPRS not available) **Default setting**
3	Circuit-switched preferred (use GPRS if circuit-switched not available)

Ensemble S16: GSM Phonebook

Commands

AT+CPBS   **Phonebook Storage**

Description: Selects the phonebook memory storage <storage> that is used by other phonebook commands.

Note: Each one of the defined profiles corresponds to one list of allowed callers. When <storage> is set to Callers Allowed (CA), the actual phone book storage to be used is represented by the list of allowed callers corresponding to the active profile, see **AT*EAPS**.

Set command: **AT+CPBS=**<storage>[,<password>]

Read command:	**AT+CPBS?** Displays the current \<storage> setting.
Test command:	**AT+CPBS=?** Shows if the command is supported.
Test command response:	+CPBS: (list of supported \<storage>s)
Parameters:	

\<storage>:

\<storage>	Description
"FD"	SIM fix-dialling phonebook
"ME"	phone phonebook
"SM"	SIM phonebook
"DC"	phone dialled-calls list
"RC"	phone received-calls list
"MC"	phone missed-calls list
"MV"	phone voice-activated dialling list
"HP"	Hierarchical phonebook
"BC"	Own business card Protected by phone lock code

\<password>:   String; represents the password required when selecting password protected \<storage>s, for example PIN2 for "FD".

AT+CPBR   Phonebook Read

Description: Returns phone book entries in location number range \<index1>...\<index2> from the current phonebook memory storage selected by **AT+CPBS**. If \<index2> is omitted, only location \<index1> is returned. Entry fields returned are location number \<index*n*>, phone number \<number> in \<index*n*>, and text \<text> associated with the number.

Note: If phone is the currently selected phonebook storage, \<text> will be constructed from two fields in the Hierarchical phonebook and a comma sign: "last name" + "," + "first name".

Note: Flags are used to indicate the contact field where the number is stored. See \<contact_flag> below.

Set command:	**AT+CPBR=**\<index1>[,\<index2>]
Set command response:	+CPBR: \<index1>,\<number>,\<type>,\<text>[,\<text_date>,\<text_time>]**<CR><LF>** +CPBR: \<index2>,\<number>,\<type>,\<text>[,\<text_date>,\<text_time>]
Test command:	**AT+CPBR=?** Shows if the command is supported.
Test command response:	+CPBR: (list of supported \<index>s),\<nlength>,\<tlength>.
Parameters:	

\<index*n*>:   Integer; values in the range of location numbers of phonebook memory.

<number>: String; phone number of format <type>.

<type>:

<type>	Description
128	Unknown numbering plan, national / international number unknown
129	ISDN / telephony numbering plan, national/ international unknown
145	ISDN / telephony numbering plan, international number
161	ISDN / telephony numbering plan, national number
128-255	Valid values, see GSM 04.08 section 10.5.4.7

<text>: String; maximum length <tlength>. Character set as specified by **AT+CSCS**.

<nlength>: Integer; maximum length of <number> field.

<tlength>: Integer; maximum length of <text> field.

<contact_flag>:

<contact_flag>	Desciption
"/H"	Home **Default setting**
"/W"	Work
"/O"	Other
"/M"	Mobile
"/F"	Fax

AT+CPBF	**Phonebook Find**

Description: Execution command returns phonebook entries (from the current phonebook memory storage selected with +CPBS) which alphanumeric field start with string <findtext>.

Entry fields returned are location number <index*n*>, phone number stored there <number> (of format <type>) and text <text> associated with the number.

Note: DC, RC, and MC are not supported.

Note: If phone is the currently selected phonebook storage, <text> will correspond to "first name" + "last name" in the hierarchical phonebook.

Note: When searching in phone, the execution command returns phonebook entries (from the current phonebook memory storage selected with +CPBS) whose first/last name field start with string <findtext>. If <findtext> is given as "xyz", entries whose first name and/or last name field begins with "xyz" are displayed. If <findtext> is given as " xyz" (space followed by characters), only entries whose last name field begins with "xyz" are displayed.

Execution command: **AT+CPBF=**<findtext>

Execution command response: +CPBF: <index1>,<number>,<type>,<text>

Test command: **AT+CPBF=?** Shows if the command is supported.

Test command response: +CPBF: <nlength>,<tlength>.

Parameters:

<findtext>: String; maximum length <tlength>. Character set as specified by **AT+CSCS**.

<index1>: Integer; values in the range of location numbers of phonebook memory.

<number>: String; phone number of format <type>.

<type>:

<type>	Description
128	Unknown numbering plan, national / international number unknown
129	ISDN / telephony numbering plan, national/ international unknown
145	ISDN / telephony numbering plan, international number
161	ISDN / telephony numbering plan, national number
128-255	Valid values, see GSM 04.08 section 10.5.4.7

<tlength>: Integer; maximum length of <findtext> field.

AT+CPBW	**Phonebook Write**

Description: Writes phonebook entry in location number <index> in the current phonebook memory storage area, selected with **AT+CPBS**. If the <number> and <text> parameters are omitted, the entry is deleted. If <index> is omitted but <number> is included, the entry is written to the first free location in the phonebook.

Execution command: **AT+CPBW=**[<index>][,<number>[,<type>[,<text>]]]

Note: If MV, BC or HP is the currently selected phonebook storage, +CME ERROR: <err> will be returned.

Note: DC, RC, and MC are not supported.

Note: If phone is the currently selected phonebook storage, <text> will be interpreted as "last name" + "," + "first name" when stored in the hierarchical phonebook.

Note: Flags may be used to indicate the contact field where the number should be stored. If no flag is used, the phone number will be stored as of type "home".

Note: If phone is the currently selected phonebook storage and AT+CPBW is used with an <index> that is already used by another number, the old number will be overwritten and removed from whatever contact it was previously a part of.

If phone is the currently selected phonebook storage and the following criteria are met:

1) AT+CPBW is used with an <index> that is part of a certain contact, and

2) all other parameters except <text> are omitted, and

3) the <text> parameter differs from the name of the contact in question,

the name of the contact will be changed.

Test command: **AT+CPBW=?**   Shows if the command is supported.

Test command response: +CPBW: (list of supported <index>s),<nlength>,(list of supported <type>s), <tlength>.

Parameters:

<index>: Integer; values in the range of location numbers of phonebook memory.

<number>: String; phone number of format <type>.

<type>:

<type>	Description
128	Unknown numbering plan, national / international number unknown
129	ISDN / telephony numbering plan, national/ international unknown

<type>	Description
145	ISDN / telephony numbering plan, international number **Default if no '+' in sca**
161	**ISDN / telephony numbering plan, national number** **Default if '+' in sca**
128-255	Valid values, see GSM 04.08 section 10.5.4.7

<text>: String; maximum length <tlength>. Character set as specified by **AT+CSCS**.

Note: If phone is the currently selected phonebook storage, <text> will be interpreted as "first name" + white space +"last name" when stored in the hierarchical phonebook. The phone number will be stored as of type "other".

Note: When writing to SM, <text> shall be written as "last name" + comma + white space +"first name" + "/" + <type_of_number>.

Example: "Smith, John/W"

<type_of_number>	Desciption
"H"	Home **Default setting**
"W"	Work
"O"	Other
"M"	Mobile
"F"	Fax

<nlength>: Integer; maximum length of <number> field.

<tlength>: Integer; maximum length of <text> field.

AT*EPRR   Personal Ringtype Read

Description: Returns phone number, phone number type, and sound type of entry <indexr>.

Execution command: **AT*EPRR=**<index*r*>,<number>,<type>,<sound_type>

Test command: **AT*EPRR=?** Shows if the command is supported.

Test command response: *EPRR: (list of supported <index*r*>s)

Parameters:

<index*r*>:

<index*r*>	Description
1-50	Location number

<number>: String; phone number of format <type>.

<type>:

<type>	Description
129	ISDN / telephony numbering plan, national/ international unknown
145	ISDN / telephony numbering plan, international number
161	**ISDN / telephony numbering plan, national number**
128-255	Valid values, see GSM 04.08 section 10.5.4.7

<sound_type>:

<sound_type>	Description
1	Low ring signal
2	Medium ring signal
3	**High ring signal**
4	Mixed ring signal
11	Melody 1
12-30	Melody 2 - melody 20 Reserved for pre-set melodies
31-38	Own melody 1-8

AT*EPRW   Personal Ringtype Write

Description: Writes phone number, phone number type, and sound type to entry <indexr>. It is possible to use wild-cards for phone number by substituting the digits with question marks. If all parameter but <indexr> are omitted, the entry at <indexr> is deleted.

If the phone number is not in the phone phonebook, the command fails.

Execution command: **AT*EPRW=**<index*r*>,<number>,[<type>],<sound_type>

Test command: **AT*EPRW=?**   Shows if the command is supported.

Test command response: *EPRW: (list of supported <index*r*>s),<nlength>,(list of supported <type>s), (list of supported <sound_type>s)

Parameters:

<index*r*>:

<index*r*>	Description
1-50	Location number

<number>: String; phone number of format <type>.

<type>:

<type>	Description
129	ISDN / telephony numbering plan, national/ international unknown
145	ISDN / telephony numbering plan, international number
161	**ISDN / telephony numbering plan, national number**
128-255	Valid values, see GSM 04.08 section 10.5.4.7

<nlength>:   Integer; maximum length of <number> field.

<sound_type>:

<sound_type>	Description
1	Low ring signal
2	Medium ring signal
3	**High ring signal**
4	Mixed ring signal
11	Melody 1
12-20	Melody 2 - melody 10 Reserved for pre-set melodies
31-38	Own melody 1-8

AT*ECAS   Callers Allowed Set

Description: Sets different alternatives for call screening.

Set command: **AT*ECAS=**<callscreen>

Read command: **AT*ECAS?**   Displays the current <callscreen> setting.

Test command: **AT*ECAS=?**   Shows if the command is supported.

Test command response: *ECAS: (list of supported <callscreen>s)

Parameter:

<callscreen>:

<callscreen>	Description
0	No callers allowed. The phone invokes a CFU request to the destination number stored for this purpose
1	All callers allowed. Normal action taken in response to incoming call **Default setting**

<callscreen>	Description
2	Some callers allowed. If the Calling Line Indicator (CLI) matches the one of the entries on the white list, the call is accepted as normal, else the call is rejected without alerting the user The data of the rejected call is stored as a normal missed call, and an indication is given in IDLE mode

AT*ECAR   Callers Allowed Read

Description:	Lists the calls allowed.
Execution command:	**AT*ECAR=**<CAindex1>[,<CAindex2>]
Execution command response:	*ECAR: <CAindex>[,<groupname>][,<storage>][,<PBindex>][,<CLUID>]
Test command:	**AT*ECAR=?** Shows if the command is supported.
Test command response:	*ECAR: (list of supported <CAindex>s),<gn_length>,(list of supported <storage>s)
Parameters:	
<CAindex*n*>:	Integer; start value of location number.
<groupname>:	String; name of callers-allowed group.
<storage>:	

<storage>	Description
"ME"	phone phonebook Default setting

<PBindex>:	Integer; values in the range of location numbers in phonebook memory.
<CLUID>:	LUID for contact.

AT*ECAW   Callers Allowed Write

Description:	Writes to or removes entries from Callers Allowed list.
Execution command:	**AT*ECAW=**[<CAindex>[,<storage>,<PBindex>]]
Test command:	**AT*ECAW=?** Shows if the command is supported.
Test command response:	*ECAW: (list of supported <CAindex>s),(list of supported <storage>s)
Parameters:	
<CAindex>:	Integer; values in the range of location numbers in CA list.
<storage>:	

<storage>	Description
"ME"	phone phonebook
	Default setting

<PBindex>: Integer; values in the range of location numbers in phonebook memory.

AT*ESCG   Create Group

Description:	This command creates a new group, or edits the name of an existing group, in the hierarchical phonebook.
	If <gindex> is not given, a new group is created at the first available position.
	If <gindex> is given, the group name at that position is changed to <name>.
	If <gindex> is given but no group exists at that position, a new group with the name <name> is created at position <gindex>
	Note: The groups are sorted alphabetically in the phonebook. If a group is added at position y, it is not certain that the group will remain at that position. Use AT*ESGR to list the current groups
Execution command:	**AT*ESCG=**<name>[,<gindex>]
Test command:	**AT*ESCG=?** Shows if the command is supported.
Test command response:	*ESCG: <maxnamelength>,(list of supported <gindex>s)
Parameters:	
<name>:	String; group name. Character set as specified by **AT+CSCS**.
<maxnamelength>:	Integer: maximum length of the group name (in bytes).
<gindex>:	

<gindex>	Description
1-10	Group index

AT*ESDG   Delete Group

Description:	Deletes group at position <index> in the hierarchical phonebook.
Execution command:	**AT*ESDG=**<gindex>
Test command:	**AT*ESDG=?** Shows if the command is supported.
Test command response:	*ESDG: (list of supported <gindex>s)
Parameter:	
<gindex>:	

<gindex>	Description
1-10	Group index

AT*ESGR   Group Read

Description:	Lists the groups defined in the hierarchical phonebook.
Execution command:	**AT*ESGR**
Execution command response:	ESGR: <gindex*1*>,<name*1*>[**<CR><LF>**
	<gindex*2*>,<name*2*>[**<CR><LF>**
	...
	<gindex*n*>,<name*n*>]]
Test command:	**AT*ESGR=?** Shows if the command is supported.
Parameters:	

<gindex>:

<gindex>	Description
1-10	Group index

<name>:   String; group name. Character set as specified by **AT+CSCS**.

AT*ESAG   Add To Group

Description:	Adds a contact, group, or phone number to the current group.
	If the number to be stored it a phone number, the optional <numbertype> parameter can be added.
Execution command:	**AT*ESAG=**<gindex>,<type>,<itemindex>[,<numbertype>]
Test command:	**AT*ESAG=?** Shows if the command is supported.
Test command response:	*ESAG: (list of supported <gindex>s, <type>s, and <numbertype>s)
Parameters:	

<gindex>:

<gindex>	Description
1-10	Group index

<type>:

<type>	Description
0	Group
1	Contact
2	Phone number

<itemindex>: Integer; the index of the contact/group/phonenumber to add. The <itemindex> parameter has the following meaning:

If the item to add is a contact, the <itemindex> is the index of the contact in the contacts book.

If the item to add is a phonenumber the <itemindex> is the index in the phonebook.

If the item to add is a group, the <itemindex> is the group index.

<numbertype>:

<numbertype>	Description
0	HOME_NBR **Default setting**
1	WORK_NBR
2	CELL_NBR
3	FAX_NBR
4	PAGER_NBR
5	OTHER_NBR

AT*EGIR   Group Item Read

Description:	Lists the items in the <gindex> group.
Execution command:	**AT*EGIR=**<gindex>
Execution Command Response:	*EGIR: <index*1*>,<type*1*>,<itemindex*1*>[**<CR><LF>**
	<index*2*>,<type*2*>,<itemindex*2*>[**<CR><LF>**
	...
	<index*n*>,<type*n*>,<itemindex*n*>]]]
Test command:	**AT*EGIR=?** Shows if the command is supported.
Parameters:	
<gindex>:	

<gindex>	Description
1-10	Group index

<index>: Integer; item index within the group.

<type>:

<type>	Description
0	Group
1	Contact
2	Phone number

<itemindex>: Integer; the item index within the group/contact/phonebook

<numbertype>:

<numbertype>	Description
0	HOME_NBR
1	WORK_NBR
2	CELL_NBR
3	FAX_NBR
4	PAGER_NBR
5	OTHER_NBR

AT*ESDI   Delete Group Item

Description:	Deletes the item with <itemindex> in the <gindex> group.
Execution command:	**AT*ESDI=**<gindex>,<itemindex>
Test command:	**AT*ESDI=?** Shows if the command is supported.
Parameters:	

<gindex>:   Integer; group index.

<gindex>	Description
1-10	Group index

<itemindex>:   Integer; the item index within the group/contact/phonebook

Use scenarios

Phonebook Read

This scenario shows how reading from the phonebook is performed.

AT command	Response	Comment
AT+CPBR=?		Read index range and element lengths
	+CPBR: (1-99), 30,30 OK	Max 99 entries Max number length equals 30
AT+CPBR=2		Read one entry at index 2
	+CPBR: 2,"90510", 129,"Dieter" OK	
AT+CPBR=1,4		Read entries from index 1 to 4 Only entries set are returned
	+CPBR: 1,"12356", 129,"Klaus" +CPBR: 2,"90510", 129,"Dieter" +CPBR: 4,"54321", 129,"Helmut" OK	Index 1 Index 2 Index 4

Callers Allowed Write

This scenario shows how call screening is controlled.

AT command	Response	Comment
AT*ECAW=,"ME",15		Write phone PB entry 15 to first free position in CA list
	OK	
AT*ECAW=2		Delete position 2 in CA list
	OK	
AT*ECAW=4,"ME",15		Supplying all three parameters will result in an error
	ERROR	

Ensemble S18: GSM Clock, Date and Alarm Handling

Commands

AT*ESDF   Date Format

Description: Sets the date format in the phone.

The command also sets the date format of the phone - terminal equipment interface, which is specified by use of the <auxmode> parameter (e.g. the <auxmode> setting affects the <time> of **AT+CCLK** and **AT+CALA**).

Set command: **AT*ESDF=**<mode>[,<auxmode>]

Read command: **AT*ESDF?**

Read command response: *ESDF: <mode>[,<auxmode>]

Test command: **AT*ESDF=?**   Shows if the command is supported.

Test command response: *ESDF: (list of supported <mode>s)[,(list of supporetd <auxmode>s)]

Parameters:

<mode>:

<mode>	Description
1	DD-MMM-YY Default setting
2	DD-MM-YY
3	MM/DD/YY

<mode>	Description
4	DD/MM/YY
5	DD.MM.YY
6	YYMMDD
7	YY-MM-DD

<auxmode>:

<auxmode>	Description
1	<time> format "yy/MM/dd,hh:mm:ssz" in AT+CCLK Default setting
2	<time> format "yyyy/MM/dd,hh:mm:ssz" in AT+CCLK

AT+CSDF   Date Format

Description: Sets the date format in the phone.

The command also sets the date format of the phone - terminal equipment interface, which is specified by use of the <auxmode> parameter (e.g. the <auxmode> setting affects the <time> of **AT+CCLK** and **AT+CALA**).

Set command: **AT+CSDF=**<mode>[,<auxmode>]

Read command: **AT+CSDF?**

Read command response: +CSDF: <mode>[,<auxmode>]

Test command: **AT+CSDF=?**   Shows if the command is supported.

Test command response: +CSDF: (list of supported <mode>s)[,(list of supporetd <auxmode>s)]

Parameters:

<mode>:

<mode>	Description
1	DD-MMM-YY Default setting
2	DD-MM-YY
3	MM/DD/YY
4	DD/MM/YY
5	DD.MM.YY
6	YYMMDD
7	YY-MM-DD

<auxmode>:

<auxmode>	Description
1	<time> format "yy/MM/dd,hh:mm:ssz" in AT+CCLK Default setting
2	<time> format "yyyy/MM/dd,hh:mm:ssz" in AT+CCLK

AT*ESTF   Time Format

Description: Sets the time format of the time information in the phone.

Set command: **AT*ESTF=**<mode>

Read command: **AT*ESTF?**   Displays the current <mode> setting.

Test command: **AT*ESTF=?**   Shows if the command is supported.

Test command response: *ESTF: (list of supported <mode>s)

Parameter:

<mode>:

<mode>	Description
1	HH:MM (24-hour clock)
2	HH:MM (a.m./p.m.)

AT+CCLK   Clock

Description: Sets the real-time clock in the phone.

Set command: **AT+CCLK=**<time>

Read command: **AT+CCLK?**   Displays the current <time> setting.

Test command: **AT+CCLK=?**   Shows if the command is supported.

Parameter:

<time>:   String; "yy/MM/dd,hh:mm:ss±zz", where characters indicate year (two last digits), month, day, hour, minutes, seconds and time zone (indicates the difference, expressed in quarters of an hour, between the local time and GMT; range -47...+48). E.g. 6th of May 1994, 22:10:00 GMT+2 hours equals to "94/05/06,22:10:00+08"

"yy/MM/dd,hh:mm:ssz" or "yyyy/MM/dd,hh:mm:ssz", where characters indicate year (two last digits or four digits, depending on the **AT+CFDS** setting).

"z" is the time zone difference from GMT, for example "+01" (plus/minus and two digits needed).

AT+CALA	**Alarm**

Description:	Sets an alarm time in the phone. There can be an array of different alarms and the alarms may be recurrent. When the alarm is timed out and executed, the unsolicited result code **+CALV** is returned, even if the alarm is set up to be silent.
Set command:	**AT+CALA=**\<time\>[,\<n\>[,\<recurr\>]]
Read command:	**AT+CALA?**
Read command response	+CALA: \<time1\>,\<n1\>[,\<recurr1\>] [+CALA: \<time2\>,\<n2\>[,\<recurr2\>] [...]
Test command:	**AT+CALA=?** Shows if the command is supported.
Test command response:	+CALA: (list of supported \<n\>s),(list of supported \<type\>s),\<tlength\>,\<rlength\>,(list of supported \<silent\>s) **Note**: \<type\> and \<silent\> are not supported.

Parameters:

\<time\>:	String; "hh:mm".
\<n\>:	Integer; identifies an active alarm.
\<recurr\>:	

\<recurr\>	Description
\<1-7\>[,\<1-7\>[...]	For setting an alarm for one or more days in the week. '1'=Monday, '7'=Sunday
0	Sets the alarm for all days in the week

\<tlength\>:	Integer; maximum length of the \<type\> parameter.
\<rlength\>:	Integer; maximum length of the \<recurr\> parameter.
Example:	AT+CALA="14:00" OK AT+CALA=? +CALA: (1-2),(),(),(13),()

AT+CALD	**Alarm Delete**

Description:	Removes an active alarm.
Execution command:	**AT+CALD=**\<n\>
Test command:	**AT+CALD=?** Shows if the command is supported.
Parameter:	
\<n\>:	Integer; identifies an active alarm.

AT+CAPD	**Postpone or Dismiss an Alarm**

Description: Controls an active alarm by either postponing or dismissing it.

If more than one active alarm occurs, this command influences the last activated alarm.

If the snooze function is disabled (see AT*ESZS – Sony Ericsson Snooze Set), the alarm cannot be postponed.

Execution command: **AT+CAPD=**[<sec>].

Test command: **AT+CAPD=?**   Shows if the command is supported.

Test command response: +CAPD: (list of supported <sec>s)

Parameter:

<sec>:

<sec>	Description
0	Dismisses the alarm **Default setting**
540	Postpones the alarm (snooze) for 540 seconds (9 minutes)

AT*EDST	**Daylight Saving Time**

Description: Sets the daylight saving time hours.

Note: It is recommended that the daylight saving time is set with this command before setting the actual local time with **AT+CCLK**.

Set command: **AT*EDST=**<dst>

Read command: **AT*EDST?**   Displays the current <dst> setting.

Test command: **AT*EDST=?**   Shows if the command is supported.

Test command response: *EDST: (list of supported <dst>s)

Parameter:

<dst>:

<dst>	Description
0	Standard time **Default setting**
1	Daylight saving time, +1 hour
2	Daylight saving time, +2 hours

| **AT+CTZU** | **Automatic Time Zone Update** |

Description: Enables and disables the automatic time zone update via NITZ.

Set command: **AT+CTZU=**<onoff>

Read command: **AT+CTZU?**   Displays the current <onoff> setting.

Test command: **AT+CTZU=?**   Shows if the command is supported.

Test command response: +CTZU: (list of supported <onoff>s)

Parameter:

<onoff>:

<onoff>	Description
0	The automatic time zone update is disabled **Default setting**
1	The automatic time zone update is enabled

| **AT*ESZS** | **Snooze Set** |

Description: Enables and disables the motion snooze function, meaning this command enables the possibility to postpone an alarm via an IR proximity switch on the phone. The ordinary alarm snooze function is not affected by this command.

Also see **AT+CAPD**.

This command is implemented for compatibility reasons only (to make AT+CAPD use possible). There is no motion snooze functionality in the T68 phone.

Set command: **AT*ESZS=**<onoff>

Read command: **AT*ESZS?**   Displays the current <onoff> setting.

Test command: **AT*ESZS=?**   Shows if the command is supported.

Test command response: *ESZS: (list of supported <onoff>s)

Parameter:

<onoff>:

<onoff>	Description
0	The motion snooze function is disabled **Default setting**
1	The motion snooze function is enabled

Unsolicited result codes

+CALV	**Alarm Event**

Description: This unsolicited result code is returned when an alarm is activated. The alarm is set using **AT+CALA**.

Unsolicited result code: **+CALV:** <n>

Parameter:

<n>: Integer; identifies an alarm event.

Use scenarios

Alarm Functionality

AT Command	Response	Comment
AT+CALA=?		Test if the command is supported
	+CALA: 1,,0,13, (0-13) OK	Only one alarm is supported, <type> is not supported
AT*ERIN=3,5		Set alarm ring type to 'High' ring signal
	OK	
AT+CALA="14:25"		Set alarm time to 14:25
	OK	
AT+CALA?		Shows all active alarms
	+CALA: "14:25",1,,, OK	One alarm is set The alarm index is '1' The alarm has no text set - default is set The alarm is not recurrent
AT+CALA="06:10", 2,,,"1,2,3,4,5"		Set a new alarm for 06:10 on all weekdays
	OK	
AT+CALA?		
	+CALA: "14:25",1,,, +CALA: "06:10",2,,, "1,2,3,4,5" OK	
	+CALV: 1	Alarm event reported Alarm is executed (at 06:10 every weekday)
AT+CAPD=540		Postpone the alarm for 9 minutes
	OK	
	+CALV: 1	9 minutes later; alarm event report

AT Command	Response	Comment
AT+CAPD=0		Dismiss the alarm
	OK	

Ensemble S19: GSM Subscriber Information

Commands

AT+CIMI	**Request International Mobile Subscriber Identity**

Description:	Causes the phone to return <IMSI>, identifying the individual SIM attached to the phone.
Execution command:	**AT+CIMI**
Execution command response:	+CIMI: <IMSI>
Test command:	**AT+CIMI=?** Shows if the command is supported.
Parameter:	
<IMSI>:	String without double quotes; International Mobile Subscriber Identity.

Ensemble S20: Sony Ericsson Specific AT Commands For GSM

Commands

AT*ECUR	**Current Report**

Description:	Reports the current consumption of a connected device. The value reported is used to adjust the phone's charging parameters.
Execution command:	**AT*ECUR=**<mapm>
Test command:	**AT*ECUR=?** Shows if the command is supported.
Parameter:	

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<mapm>:	Integer; number of milliamps, multiplied by 10 (120 mA reported as "1200"). Range: 0-65500.

AT*EMIC   Microphone Mode

Description:	Enables or disables the phone microphone.
Set command:	**AT*EMIC=**<mode>
Read command:	**AT*EMIC?** Displays the current <mode> setting.
Test command:	**AT*EMIC=?** Shows if the command is supported.
Test command response:	*EMIC: (list of supported <mode>s)
Parameter:	
<mode>:	

<mode>	Description
0	Microphone is disabled
1	Microphone is enabled **Default setting**

AT*EPEE   PIN Event

Description:	Requests the phone to inform when the PIN code has been entered and accepted. This command activates the unsolicited result code ***EPEV**.
Set command:	**AT*EPEE=**<onoff>
Read command:	**AT*EPEE?** Displays the current <onoff> setting.
Test command:	**AT*EPEE=?** Shows if the command is supported.
Test command response:	*EPEE: (list of supported <onoff>s)
Parameter:	
<onoff>:	

<onoff>	Description
0	Request for report on entered PIN is not activated **Default setting**
1	Request for report on entered PIN is activated

AT*ESNU   Settings Number

Description:	Sets a <type> number, in the format <number_type>, in the phone.
Set command:	**AT*ESNU=**<type>,<number>[,<number_type>]
Read command:	**AT*ESNU?** Displays the current parameter settings.

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Read command response:	*ESNU: <type1>,<number1>,<number_type1>**<CR><LF>**
	[*ESNU: <type2>,<number2>,<number_type2>**<CR><LF>**
	[...]]
Test command:	**AT*ESNU=?** Shows if the command is supported.
Test command response:	*ESNU: (list of supported <type>s)
Parameters:	

<type>:

<type>	Description
0	Voice L1
1	Voice L2
2	Fax
3	Data

<number>:   '0-9', '+'

<number_type>:   Integer; type of address octet, in hexadecimal format.

<number_type>	Description
129	Default setting when dialling string does not include the international access code character '+'
145	Default setting when dialling string includes the international access code character '+'

AT*ETCH   **Rear Slot Trickle Charge**

Description:	The charger may disconnect the phone slot (charger supply voltage) for 30 seconds to trickle charge rear slot without affecting the phone functionality. This command indicates if the phone is ready for immediate disconnection.
Execution command:	**AT*ETCH**
Execution command response:	*ETCH: <disconnect>
Test command:	**AT*ETCH=?** Shows if the command is supported.
Test command response:	*ETCH: (list of supported <disconnect>s)
Parameter:	

<disconnect>:

<disconnect>	Description
0	The phone **not** ready to disconnect **Default setting**
1	The phone ready to disconnect

AT*EKSP	**Key Sound Playback**

Description:	Generates a key playback sound.
Execution command:	**AT*EKSP**
Test command:	**AT*EKSP=?** Shows if the command is supported.

AT*EQVL	**External Volume Status**

Description: Turns on/off the unsolicited result code ***EVOLC**. The command also queries the status of the volume level of the phone. The user changes the volume via the phone keypad and the phone sends *EVOLC accordingly. The vehicle handsfree then adjusts the volume accordingly.

Set command:	**AT*EQVL=**<report>
Read command:	**AT*EQVL?** Displays the current <report> and <current_volume> settings.
Test command:	**AT*EQVL=?** Shows if the command is supported.
Test command response:	*EQVL: (list of supported <report>s)
Parameters:	

<type>

<report>	Description
0	*EVOLC report disabled **Default setting**
1	*EVOLC report enabled

<current_volume>:

<current_volume>	Description
0	Volume low
1–(n-1)	Steps in volume
n	Volume high

AT*EXVC	**Set External Volume Control**

Description: Sets or queries whether an external accessory, such as a vehicle handsfree, controls the audio volume. The set command is effective only as long as the phone senses it is connected to an external accessory that has issued the command. Once the phone is disconnected from the accessory, <external_volume> is reset to the default setting.

Set command:	**AT*EXVC=**<external_volume>
Read command:	**AT*EXVC?** Displays the current <external_volume> setting.
Test command:	**AT*EXVC=?** Shows if the command is supported.
Test command response:	*EXVC: (list of supported <external_volume>s)
Parameter:	

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<external_volume>

<external_volume>	Description
0	The phone controls the audio volume over AFMS **Default setting**
1	Audio volume over AFMS is set the maximum level where no clipping occurs The external accessory controls the actual volume heard by the user

AT*EENL   Environment List

Description:	Lists all environments known to the phone. Note that the accessories are added automatically to the known-environment list when they are connected to the phone, meaning that the number of environments may increase during the phone lifetime.
Execution command:	**AT*EENL**
Execution command response:	*EENL: <accessory_id1>,<unique_id1>,<env_name1>**<CR><LF>** [*EENL: <accessory_id2>,<unique_id2>,<env_name2>**<CR><LF>** [...]]
Test command:	**AT*EENL=?** Shows if the command is supported.
Test command response:	*EENL: <nenvnr>
Parameters:	

<accessory_id>:

<accessory_id>	Description
1	Portable handsfree; presented in phone as PORTABLE_HF_TXT
2	Vehicle handsfree; presented in the phone as VEHICLE_HF_TXT
3	RS232 cord; presented in phone as DATA_CABLE_TXT
4	IR device; presented in phone as INFRARED_MODEM_TXT
6	Charger (intelligent); presented in phone as DESKTOP_CHARGER_TXT+<nr>
7	Charger (simple); presented in phone as TRAVEL_CHARGER_TXT
8	Reserved for MC-link
12	External handset; presented in phone as EXTERNAL_HANDSET_TXT
13	Internal IR device

<accessory_id>	Description
15	Audio player
50	Chatboard
16-255	Reserved for future accessories; presented in phone as ACCESSORY_TYPE_TXT+<accessory_id>

<unique_id>:

<unique_id>	Description
0	Request a new unique identifier from the phone
1-65534	Unique identifier for a unique accessory
65535	Default value used by non-unique accessories

<env_name>:   String; name of the environment.

<nenvnr>:   Integer; maximum number of environments known to the phone.

AT*EKSR   Key Sound Change Report

Description: Sets and queries the key sound settings of the phone as sent over the AFMS. The command is also used to turn on/off the unsolicited result code ***EKSC** that reports changes in key sound settings.

Execution command: **AT*EKSR=**<report>

Read command: **AT*EKSR?**   Displays the current <report> and <mode> settings.

Test command: **AT*EKSR=?**   Shows if the command is supported.

Test command response: *EKSR: (list of supported <report>s),(list of supported <mode>s)

Parameters:

<report>:

<report>	Description
0	Key sound change report (*EKSC) disabled **Default setting**
1	Key sound change report (*EKSC) enabled

<mode>:

<mode>	Description
0	SILENT; no sound when a key is pressed
1	CONTINOUS TONE; a continuous tone while key is pressed
2	CLICK; a click when a key is pressed

AT*EPED   Environment Delete

Description: Deletes an environment from the list of environments associated with the
current profile.

Execution   **AT*EPED=**<accessory_id>[,<unique_id>]
command:

Test command: **AT*EPED=?**   Shows if the command is supported.

Parameters:

<accessory_id>:

<accessory_id>	Description
1	Portable handsfree; presented in phone as PORTABLE_HF_TXT
2	Vehicle handsfree; presented in the phone as VEHICLE_HF_TXT
3	RS232 cord; presented in phone as DATA_CABLE_TXT
4	IR device; presented in phone as INFRARED_MODEM_TXT
6	Charger (intelligent); presented in phone as DESKTOP_CHARGER_TXT+<nr>
7	Charger (simple); presented in phone as TRAVEL_CHARGER_TXT
8	Reserved for MC-link
12	External handset; presented in phone as EXTERNAL_HANDSET_TXT
13	Internal IR device
15	Audio player
50	Chatboard
16-255	Reserved for future accessories; presented in phone as ACCESSORY_TYPE_TXT+<accessory_id>

<unique_id>:

<unique_id>	Description
0	Request a new unique identifier from the phone
1-65534	Unique identifier for a unique accessory
65535	Default value used by non-unique accessories

AT*EPEW   Environment Write

Description: Adds an environment to the list of environments associated with the
current profile.

Execution   **AT*EPEW=**<accessory_id>[,<unique_id>]
command:

Read command: **AT*EPEW?**

Read command response:	*EPEW: <accessory_id1>,<unique_id1>,<env_name1>**<CR><LF>**
	[*EPEW: <accessory_id2>,<unique_id2>,<env_name2>**<CR><LF>**
	[...]]
Test command:	**AT*EPEW=?** Shows if the command is supported.
Test command response:	*EPEW: <nenvnr>
Parameters:	

<accessory_id>:

<accessory_id>	Description
1	Portable handsfree; presented in phone as PORTABLE_HF_TXT
2	Vehicle handsfree; presented in the phone as VEHICLE_HF_TXT
3	RS232 cord; presented in phone as DATA_CABLE_TXT
4	IR device; presented in phone as INFRARED_MODEM_TXT
6	Charger (intelligent); presented in phone as DESKTOP_CHARGER_TXT+<nr>
7	Charger (simple); presented in phone as TRAVEL_CHARGER_TXT
8	Reserved for MC-link
12	External handset; presented in phone as EXTERNAL_HANDSET_TXT
13	Internal IR device
15	Audio player
50	Chatboard
16-255	Reserved for future accessories; presented in phone as ACCESSORY_TYPE_TXT+<accessory_id>

<unique_id>:

<unique_id>	Description
0	Request a new unique identifier from the phone
1-65534	Unique identifier for a unique accessory
65535	Default value used by non-unique accessories

<env_name>: String; environment name.

<nenvnr>: Integer; maximum number of environments possible to associate with a profile.

AT*EAPS	Active Profile Set

Description: Selects the active phone profile. The profiles may be renamed using **AT+EAPN**.

The profile consists of the parameters and settings for the following commands:

AT Command	Name	Ensemble
AT+CCFC	Call Forwarding Number and Conditions	S6
AT*EDIF	Divert Function and Reporting	
AT*EDIS	Divert Set	
AT*ELIN	Set Line	S6
AT*ERIL	Ring Level Set	S9
AT*ECAS	Set Callers Allowed	S16
AT*ESBL	Set Back Light Mode	S9
AT*ESCN	Set Credit Card Number	S6
AT*ESIL	Silence Command	S9
AT+CVIB	Vibrator Mode	S9
AT*EPEW	List of Environments	S20
AT*EPED		

Set command: **AT*EAPS=**<index>

Read command: **AT*EAPS?** Displays the current <index> and <name_tagx> settings.

Test command: **AT*EAPS=?** Shows if the command is supported.

Test command response: *EAPS: (list of supported <index>s),<nlength>

Parameters:

<index>:

<index>	Description
1-7	Profile number

<name_tag*x*>: String; profile name tag.

<nlength>: Integer; maximum length of <name_tag*x*>.

AT*EAPN	Active Profile Rename

Description: Sets a new name for the active profile.

Set command: **AT*EAPN=**<name_tag>

Read command: **AT*EAPN?** Displays the current parameter settings.

Read command response:	*EAPN: <index1>,<name_tag1>**<CR><LF>**
	[*EAPN: <index2>,<name_tag2>**<CR><LF>**
	[...]]
Test command:	**AT*EAPN=?** Shows if the command is supported.
Test command response:	*EAPN: <nlength>

Parameters:

<index>:

<index>	Description
1-7	Profile number

<name_tagx>:	String; name tag for the profile.
<nlength>:	Integer; maximum length of <name_tagx>.

AT*EBCA   Battery and Charging Algorithm

Description:	Requests status of battery/charging and turns on/off unsolicited result code ***EBCA**.
Execution command:	**AT*EBCA=**<onoff>
Execution command response:	*EBCA: <vbat1>,<vbat2>,<vbat3>,<vbat4>,<btype>,<dcio>,<icharge>,<iphone>, <acapacity>,<ccapacity>,<pacapacity>,<ncapacity>,<tempbattery>,<tempphone>,<bcapacity>,<chargestate>,<remcapacity>,<cycles>, <ipulse>, <ibattery>, <ChTempMin>, <ChTempMax>, <MainChTempMin>, <MainChTempMax>, <FlatVTimer>, <DV>, <DT>, <D2V>
Read command:	**AT*ECBA?** Displays the current <onoff> setting.
Test command:	**AT*ECBA=?** Shows if the command is supported.
Test command response:	*ECBA: (list of supported <onoff>s)

Parameters:

<onoff>:

<onoff>	Description
0	Disable unsolicited result code ***EBCA** **Default setting**
1	Enable unsolicited result code ***EBCA**

<vbat1>:	Integer; battery voltage. Number of mV, multiplied by 10. Range: 0-65500.
<vbat2>:	Integer; battery voltage. Number of mV, multiplied by 10. Range: 0-65500.

<vbat3>:	Integer; battery voltage. Number of mV, multiplied by 10. Range: 0-65500.
<vbat4>:	Integer; battery voltage. Number of mV, multiplied by 10. Range: 0-65500.
<btype>:	

<btype>	Description
0	NiMH battery
1	Li battery
2	Unknown battery

<dcio>:	Integer; battery voltage from the charge. Number of mV, multiplied by 10. Range: 0-65500.
<icharge>:	Integer; current charge. Number of mA. Range: 0-65500.
<iphone>:	Integer; phone current consumption. Number of mA. Range: 0-65500.
<acapacity>:	Integer; added capacity during charge. Number of mAh, multiplied by 20. Range: 0-65500.
<ccapacity>:	Integer; consumed capacity during charge. Number of mAh, multiplied by 20. Range: 0-65500.
<ncapacity>:	Integer; nominal capacity during charge. Number of mAh, multiplied by 20. Range: 0-65500.
<tempbatt>:	Integer; battery temperature in degrees Celsius, -20 deg C - +70 deg C.
<tempphone>:	Integer; phone temperature in degrees Celsius, -20 deg C - +70 deg C.
<chargestate>:	

<chargestate>	Description
0	Start
1	Charge
2	Await
3	Handheld
4	Charge completed; safety timer
5	Charge completed; dv/dt (NiMH battery) Charge completed; Low Current (Li-Ion/Polymer battery)
6	Charge completed; dT/dt (NiMH battery) Charge Completed (Li-Ion/Polymer battery)
7	Charge completed; flat V (NiMH battery) Constant Current (Li-Ion/Polymer battery)
8	Charge completed; d^2V/dt^2 (NiMH battery) Constant Voltage (Li-Ion/Polymer battery)

<remcapacity>:	Integer; remaining capacity (in percent).
	Range: 0-100
<cycles>:	Integer; number of charge cycles.
	Range:0-65500
<ipulse>:	Integer; allowed pulse current charge in number of mA divided by 10.
	A value of 900 mA is reported as "90".
	Range 0-65500
<ibattery>:	Integer; allowed current charge in number of mA divided by 10.
	A value of 900 mA is reported as "90".
	Range 0-65500
<ChTempMax>:	Integer; maximum allowed charging temperature of battery in °C.
	Range: 0-65500
<ChTempMin>:	Integer; minimum allowed charging temperature of battery in °C.
	Range: 0-65500
<MainChTempMax>:	Integer; maximum allowed maintenance charging temperature of battery in °C.
	Range: 0-65500
<MailChTempMin>:	Integer; minimum allowed maintenance charging temperature of battery in °C.
	Range: 0-65500
<FlatVTimer>:	Integer; flat voltage timer when charging a battery, in number of minutes.
	A value of 30 minutes is reported as "30".
	Range: 0-65500
<DV>:	Integer; value of –dV/dt charging termination, in number of mV divided by 10.
	A value of 30mV is reported as "3".
	Range: 0-65500
<DT>:	Integer; value of dT/dt charging termination, in number of °C.
	A value of 3°C is reported as "3".
	Range: 0-65500

<D2V>:	Integer; value of d^2V/dt^2 charging termination in number of mV, divided by 10.

A value of 30mV is reported as "3".

Range: 0-65500

<bcapacity>:

<bcapacity>	Description
0	Slim
1	Standard
2	High

AT*ENAD   Internet Account Define

Description: This command is used for defining an Internet Account. An IA is called a "Data Account" in the phone MMI.

Set command: **AT*ENAD=**[<index>][,<name>,<userid><password>,<bearer>,(bearer settings_1)]

<bearer>	(bearer_settings_1)
0	<dialup_nr>,<dial_type>,<data_rate>
1	<pref_serv>,<pap_chap>
2	<bt_device_address>

Set command response: *ENAD: <index>[,<cid>]

Note: If the AT*ENAD command is issued with only the <index> parameter, this is interpreted as a request for the corresponding account to be deleted.

Read command: **AT*ENAD?** Displays the current <index>s <name>s,<userid>,,<bearer>,(bearer_settings_2).

Note: Extra comma between <userid> and <bearer>.

<bearer>	(bearer_settings_2)
0	<dialup_nr>,<dial_type>,<data_rate>,<lock_state>
1	<pref_serv>,<pap_chap>,<cid>,<lock_state>
2	<bt_device_address>,<lock_state>

Test command: **AT*ENAD=?** Shows if the command is supported.

Test command response:	*ENAD: (list of supported <index>s),max length of <name>,max length of <userid>,max length of <password>,0,max length of <dial_up_nr>,(list of supported <dial_type>s),(list of supported <data_rate>s),(list of supported <lock_state>s)

*ENAD: (list of supported <index>s),max length of <name>,max length of <userid>,max length of <password>,1,(list of supported <pref_serv>s),(list of supported<pap_chap>s),(list of supported <lock_state>s)

*ENAD: (list of supported <index>s),max length of <name>,max length of <userid>,max length of <password>,2,max length of <bt_device_address>(list of supported <lock_state>s)

Parameters:

<index>: Integer; When a new account is defined, the phone assigns an index that is returned as a result code. This is a unique index: even if a certain index is deleted, its index is never reused unless explicitly demanded. If the created account uses GPRS as the bearer, the <cid> of the PDP context associated with the account shall also be returned.

Note: There is a one-to-one mapping between PDP Contexts and Internet Accounts with GPRS as the bearer. When a PDP Context is defined via an AT command, an Internet account is thus automatically created with GPRS as the bearer and an association to this PDP Context. In the same way, a PDP Context with default values set is defined when an IA is created with GPRS as the bearer.

The easiest way to create a GPRS Internet account is to first use AT*ENAD, remember the <cid> being returned by the phone, and then modify this PDP Context using the standard GPRS commands in ensemble S15.

<index>	Description
1-65000	Unique index for each Internet Account

<name>: String; Internet Account name. Maximum of 20 16-bit characters.

<userid>: String; user ID. Maximum of 20 8-bit characters.

<password>: String; password. Maximum of 20 8-bit characters.

Note: If the <passwd> parameter is left blank this shall be interpreted as a request for the <userid> and <passwd> parameters to be set dynamically. The user will then be prompted for these values each time a connection is set up.

<bearer>:

<bearer>	Description
0	Circuit-switched dial-up
1	GPRS
2	Bluetooth
3	SMS

<dialup_nr>: String; the phone number to be used when setting up the connection.

Maximum of 30 8-bit characters.

<dial_type>:

<dial_type>	Description
0	GSM Data (CSD)
1	Digital (ISDN)

<data_rate>:

<data_rate>	Description
1	9600 bits/s
2	14400 bits/s
3	19200 bits/s
4	28800 bits/s Default setting

<cid>:   Integer; ID number of a PDP Context as defined in AT+CGDCONT (S15).

Note: There is a one to one mapping between an IA and a PDP context. A certain context can thus not be reused in another IA.

<pref_serv>:

<pref_serv>	Description
0	Automatic **Default setting**
1	GPRS only

<pap_chap>:

<pap_chap>	Description
0	Normal; only PAP allowed **Default setting**
1	Secure; only CHAP allowed
2	None, No authentication scheme is used

<bt_device_address>:String; 48 bit IEEE address, six groups of two hexadecimal numbers separated by ":". E.g. "1A:3C:CD:33:1F:G8"

<lock_state>:   Indicates if the Internet Account is locked.

<lock_state>	Description
0	The account is not locked
1	The account is locked

The <lock_state> parameter is set to "1" in the Internet Accounts that are predefined and not possible to alter via the MMI or AT-commands. No parameter values can be changed in an Internet Account. If the user tries to change the parameter values, ERROR is returned

AT*EASY	**System Event Alert**

Description:	Activates or deactivates the unsolicited result code ***EASI: \<event\>**, which is sent when certain system events occur.
Set command:	**AT*EASY=**\<onoff\>
Read command:	**AT*EASY?** Displays the current \<onoff\> setting.
Test command:	**AT*EASY=?** Shows if the command is supported.
Test command response:	*EASY: (list of suppoted \<onoff\>s),(list if supported \<event\>s)
Parameter:	
\<onoff\>:	

\<onoff\>	Description
0	Reporting of *EASI: \<event\> is disabled **Default setting**
1	Reporting of *EASI: \<event\> is disabled

Unsolicited result codes

*EPEV	**PIN Code Event**

Description:	This unsolicited result code is returned when a PIN code has been entered and accepted. The result code is activated using **AT*EPEE**.
Unsolicited result code:	***EPEV**

*EVOLC	**External Volume Change Report**

Description:	This unsolicited result code is returned when a user has made a change in the volume control. The result code is activated using **AT*EQVL**.
Unsolicited result code:	***EVOLC:** \<current_volume\>
Parameter:	
\<current_volume\>:	

\<current_volume\>	Description
0	Volume low
1-6	Steps in volume
7	Volume high

*EKSC — Key Sound Change Report

Description: This unsolicited result code is returned when a user has made a change in the key sound setting. This result code is also sent upon successful execution of AT*EKSR='1'. The result code is activated using **AT*EKSR**.

Unsolicited result code: ***EKSC:** <mode>

Parameter:

<mode>:

<mode>	Description
0	SILENT; no sound when a key is pressed
1	CONTINOUS TONE; a continuous tone while a key is pressed
2	CLICK; a click when a key is pressed

*EBCA — Indication Algorithm Status

Description: This unsolicited result code indicates the changes in status for the parameters of the charging algorithm. The result code is activated using **AT*EBCA**.

Unsolicited result code: *EBCA: <vbat1>, <vbat2>, <vbat3>, <vbat4>, <btype>, <dcio>, <icharge>, <iphone>, <acapacity>, <ccapacity>, <pacapacity>, <ncapacity>, <tempbattery>, <tempphone>, <chargestate>, <remcapacity>, <cycles>, <ipulse>, <ibattery>, <ChTempMin>, <ChTempMax>, <MainChTempMin>, <MainChTempMax>, <FlatVTimer>, <DV>, <DT>, <D2V>

Parameters: See **AT*EBCA**.

*EASI — System Event Indication

Description: When a system even occurs, *EASI: <event> is reported to the terminal equipment.

Enabled by **AT*EASY**.

Unsolicited result code: ***EASI:** <event>

Parameter:

<event>:

<event>	Description
0	Voice-activated dialling (VAD) is activated
1-254	Reserved for future use
255	No event

Use scenarios

Environment and Profiles

AT Command	Response	Comment
AT*EAPS?		Read the current profile
	*EAPS: 1,"Normal" OK	"Normal" is the current profile
AT*EAPS=3		Change profile to "Car"
	OK	
AT*EENL		List all environments known to the phone
	*EENL: 1,65535, "Portable HF" *EENL: 2,65535, "Vehicle HF" *EENL: 6,65519, "Desktop Charger" OK	
AT*EACS=4,1		An IR-device is now connected to the phone The new accessory is added to the list of known environments
	OK	
AT*EENL		List all environments known to the phone
	*EENL: 1,65535, "Portable HF" *EENL: 2,65535, "Vehicle HF" *EENL: 4,65535, "IR" *EENL: 6,65519, "Desktop Charger" OK	The IR-device is now added to the list of known environments
AT*EPEW?		List all environments associated with the "Car" profile
	OK	No environments are associated with the "Car" profile
AT*EPEW=2		Associate the vehicle handsfree accessory with the "Car" profile
	OK	
AT*EPEW?		List all environments associated with the "Car" profile
	*EPEW: 1,65535, "Vehicle HF" OK	The vehicle HF is associated with the "Car" profile
AT*EAPS=1		Change profile to "Normal"
	OK	

Ensemble S24: MMI Settings

Commands

AT*EFOS	**Font Size Set**

Description:	Sets the font size used by the phone MMI.
Set command:	**AT*EFOS=**<fs>
Read command:	**AT*EFOS?** Displays the current <fs> setting.
Test command:	**AT*EFOS=?** Shows if the command is supported.
Test command response:	*EFOS: (list of supported <fs>s)
Parameter:	

<fs>:

<fs>	Description
1	Font size small
2	Font size medium
3	Font size large

Ensemble S26: Voice Control

Commands

AT*EVAA	**Voice Answer Active**

Description:	Activates and deactivates the voice answering function.
Set command:	**AT*EVAA=**<type>,<onoff>
Read command:	**AT*EVAA?**
Read command response:	EVAA: <type1>,<onoff1>[**<CR><LF>**
	EVAA: <type2>,<onoff2>[**<CR><LF>**
	...]]
Test command:	**AT*EVAA=?** Shows if the command is supported.
Test command response:	*EVAA: (list of supported <type>s),(list of supported <onoff>s)

Parameters:

<type>:

<type>	Description
0	Car handsfree
1	Portable handsfree
2	Speakerphone

<onoff>:

<onoff>	Description
0	The magic word function is not activated **Default setting**
1	The magic word function is activated

AT*EMWS   Magic Word Set

Description:	Activates the Magic Word function. When activated, the voice recogniser continuously listens for the trained magic word. When the magic word is detected, the complete voice control functionality is activated.
Set command:	**AT*EMWS=**<type>,<onoff>
Read command:	**AT*EMWS?**
Read command response:	EMWS: <type1>,<onoff1>[**<CR><LF>** EMWS: <type2>,<onoff2>[**<CR><LF>** ...]]
Test command:	**AT*EMWS=?** Shows if the command is supported.
Test command response:	*EMWS: (list of supported <type>s),(list of supported <onoff>s)

Parameters:

<type>:

<type>	Description
0	Car handsfree
1	Portable handsfree
2	Speakerphone

<onoff>:

<onoff>	Description
0	The magic word function is not activated **Default setting**
1	The magic word function is activated

Ensemble S29: WAP Browser

Locked WAP profiles

In certain terminals a number of WAP profiles may be locked at manufacturing to prevent the users from altering the predefined WAP settings. When such a profile is active some of the commands in this ensemble will not function according to specification. The read and test commands should always function as expected but the set command will return 'ERROR' even though the command is given using the correct syntax and all parameters are within range.

The commands affected are:

- AT*EWPN - profile name
- AT*EWHP - homepage
- AT*EWPB - preferred bearer
- AT*EWCG - WAP gateway
- AT*EWLI - Connection login

Commands

AT*EWIL **WAP Image Load**

Description:	Enables and disables image download in the WAP browser.
Set command:	**AT*EWIL=**<onoff>
Read command:	**AT*EWIL?** Displays the current <onoff> setting.
Test command:	**AT*EWIL=?** Shows if the command is supported.
Test command response:	*EWIL: (list of supported <onoff>s)
Parameter:	

<onoff>:

<onoff>	Description
0	Disable image download
1	Enable image download **Default setting**

AT*EWHP **WAP Homepage**

Description:	Sets the homepage (start page) for the WAP browser.
Set command:	**AT*EWHP=**<url>
Read command:	**AT*EWHP?** Displays the current <url> setting.
Test command:	**AT*EWHP=?** Shows if the command is supported.
Test command response:	*EWHP: <nurl>

Parameters:

<url>: String; the URL representing the homepage.

<nurl>: Integer; maximum length of <url>.

AT*EWPR WAP Profiles

Description: Selects active WAP settings profile

Set command: **AT*EWPR=**<profile>

Read command: **AT*EWPR?**

Read command response: *EWPR: <profile>

Test command: **AT*EWPR=?** Shows if the command is supported.

Test command response: *EWPR: (list of supported <profile>s)

Parameter:

<profile>:

<profile>	Description
1	WAP settings profile number 1
2	WAP settings profile number 2
...	...
5	WAP settings profile number 5

AT*EWPN WAP Profile Name

Description: Sets the name of <profile>.

Set command: **AT*EWPN=**<profile>,<name>

Read command: **AT*EWPN?**

Read command response: *EWPN: <profile1>,<name1>**<CR><LF>**

[*EWPN: <profile2>,<name2>**<CR><LF>**

[...]]

Test command: **AT*EWPN=?** Shows if the command is supported.

Test command response: *EWPN: (list of supported <profile>s),<nlength>

Parameters:

<profile>:

<profile>	Description
1	WAP settings profile number 1
2	WAP settings profile number 2
...	...
5	WAP settings profile number 5

<name>:	String; WAP profile name.
<nlength>:	Integer; maximum length of <name>.

AT*EWDT　　　WAP Download Timeout

Description:	Sets the server response time used when downloading a WAP page.
Set command:	**AT*EWDT=**<sec>
Read command:	**AT*EWDT?**　Displays the current <sec> setting.
Test command:	**AT*EWDT=?**　Shows if the command is supported.
Test command response:	*EWDT: (list of supported <sec>s)
Parameter:	
<sec>:	Integer; number of seconds. Range: 15-300.

AT*EWLI　　　WAP Login

Description:	Sets the user identity and password to be used for logging on to a WAP proxy (service provider).
Set command:	**AT*EWLI=**<user>,<password>
Read command:	**AT*EWLI?**　Displays the current <user> setting.
Test command:	**AT*EWLI=?**　Shows if the command is supported.
Test command response:	*EWLI: <nuser>,<npassword>
Parameters:	
<user>:	String; user name for the WAP connection.
<password>:	String; password for the WAP connection.
<nuser>:	Integer; maximum length of <user>.
<npassword>:	Integer; maximum length of <password>

AT*EWPB　　　WAP Preferred Bearer

Description:	This command sets the preferred bearer for WAP.
	Note: If Internet Account is chosen as the preferred bearer but no accounts are yet defined, the phone shall return ERROR
Set command:	**AT*EWPB=**<pbearer>[,<IA_index>]
Read command:	**AT*EWPB?**　Displays the current <pbearer> and <IA_index> settings.
Test command:	**AT*EWPB=?**　Shows if the command is supported.
Test command response:	*EWPB: (list of supported <pbearer>s),(list of supported <IA_index>s)
Parameters:	
<pbearer>:	

<pbearer>	Description
1	SMS
3	Internet Account **Default setting**

<IA_index>:   Index of Internet Account to be used by the WAP browser

<IA_index>	Description
0	Always ask Default setting
1-65000	Valid values

AT*EWCG   WAP CSD Gateway

Description: Sets the primary gateway to be used when CSD is the preferred bearer. The gateway is either an URL or an IP address on the network where the gateway can be reached.

Set command: **AT*EWCG=**<prim>,<gateway>

Read command: **AT*EWCG?**   Displays the current <prim> and <gateway> settings.

Test command: **AT*EWCG=?**   Shows if the command is supported.

Test command response: *EWCG: (list of supported <gateway>s),<ngateway>

Parameters:

<prim>:

<prim>	Description
1	Set primary gateway

<gateway>:   String; gateway address.

<ngateway>:   Integer; maximum length of <gateway>.

AT*EWBA   WAP Bookmark Add

Description: Adds or deletes a bookmark in the list of bookmarks. A bookmark is always added to the last position in the bookmark list. If <title> is omitted, the bookmark title is set to the first <ntitle> number of characters of the <url>. If the <url> parameter exceeds <nurl> number of characters, the bookmark URL is truncated to the last '/' character among the last <nurl> number of characters.

To delete a bookmark, <bmix> is set to a value greater than '0', and <url> and <title> must be omitted.

Set command: **AT*EWBA=**<bmix>,[<url>[,<title>]]

Read command: **AT*EWBA?**

Read command response:	*EWBA: <bmix1>,<url1>,<title1>**<CR><LF>**
	[*EWBA: <bmix2>,<url2>,<title2>**<CR><LF>**
	[...]]
Test command:	**AT*EWBA=?** Shows if the command is supported.
Test command response:	*EWBA: (list of supported <bmix>s),<nurl>,<ntext>
Parameters:	

<bmix>:

<bmix>	Description
0	Adds the bookmark to the last position in the list of bookmarks. This value is only valid for adding bookmarks
1	Reserved. The index '1' is reserved for the bookmark to Sony Ericsson Mobile Internet and should not be deleted
2-25	**Index to list of bookmarks** **These values are only valid for deleting bookmarks**

<url>:	String; the URL representing the bookmark.
<nurl>:	Integer; maximum length of <url>.
<title>:	String; bookmark title.
<ntitle>:	Integer; maximum length of <title>.

AT*EWBR   WAP Bookmark Read

Description:	Reads a bookmark in the bookmark list
Read command:	**AT*EWBR=**<bmix>
Read command response:	*EWBR: <url>,<title>
Test command:	**AT*EWBR=?** Shows if the command is supported.
Test command response:	*EWBR: (list of supported <bmix>s)
Parameters:	
<bmix>:	Integer; index to the bookmark in the list.
<url>:	String; the URL representing the bookmark.
<title>:	String; bookmark title.

AT*EWCT   WAP Connection Timeout

Description:	Sets timeout time used when connecting to a WAP supplier, i.e. the time the WAP-browser will wait for a CSD call to be established.
Read command:	**AT*EWCT=**<sec>

Read command response:	*EWCT: <sec>
Test command:	**AT*EWCT=?** Shows if the command is supported.
Test command response:	*EWCT: (list of supported <sec>s)
Parameter:	
<sec>:	Integer; number of seconds.

<sec>	Description
60-300	Valid values

Use scenarios

WAP Browser Settings

AT Command	Response	Comment
AT*EWIL=1		Enable image download
	OK	
AT*EWHP="http://www.ericsson.se"		Set WAP homepage
	OK	
AT*EWDT=10		Set download timeout to 10 seconds
	OK	
AT*EWCT=10		Set connection timeout to 10 seconds
	OK	
AT*EWPR?		Query active WAP settings profile
	*EWPR: 2 OK	Profile '2' is active
AT*EWPN=2,"Off"		Change name of WAP settings profile number
	OK	
AT*EWPN?		Query WAP settings profile name(s)
	*EWPN: 1,"Priv" *EWPN: 2,"Off" *EWPN: 3,"Telia" OK	

WAP Browser Connection Settings

AT Command	Response	Comment
AT*EWLI="auser","apwd"		Set user identity and password for WAP proxy login
	OK	

AT Command	Response	Comment
AT*EWPB=2,0		Set preferred bearer to CSD Set the WAP browser to not ask for preferred bearer for every session
	OK	
AT*EWCG="1","192.18.178.143"		Set up IP address to CSD gateway
	OK	

AT Commands Modem Terminated

Ensemble C2: Control and Identification

Commands

AT	Attention Command

Description: Checks the communication between the phone and any accessory. Determines the presence of a phone.

Execution command: **AT**

AT*	List All Supported AT Commands

Description: The command causes the phone to return one or more lines of AT commands. It also causes the phone to return a list of AT Commands. The phone's and the phone's lists are separated by a '/' character.

Execution command: **AT***

Execution command response: <AT Command1>**<CR><LF>**

[<AT Command2>**<CR><LF>**

[...]]

/<CR><LF>

<AT Command1>**<CR><LF>**

[<AT Command2>**<CR><LF>**

[...]]

<AT Command>	Description
AT...	Defines the AT command, including the prefix AT

Example:

```
AT*
AT+CGMI
AT+CGMM
AT+CGMR
/
AT*
AT+CGMI
AT+CGMM
AT+CGMR
OK
```

AT+CLAC   List All Available AT Commands

Description: The command causes the ME to return one or more lines of AT Commands.

Note: This command only returns the AT commands available to the user.

Execution command: **AT+CLAC**

Possible response(s): <AT Command1>**<CR><LF>**

[<AT Command2>**<CR><LF>**

[...]]

+CME Error: <err>

<AT Command>	Description
AT...	Defines the AT command, including the prefix AT

Test command: **AT+CLAC=?** Shows if the command is supported.

Example:	`AT+CLAC`
	`AT+CGMI`
	`AT+CGMM`
	`AT+CGMR`
	`...`
	`OK`
	
	`+AT+CLAC=?`
	`OK`

ATI   Identification Information

Description: Causes the DCE to transmit one or more lines of information text followed by a final result code. <value> may optionally be used to select from multiple types of identifying information.

This command provides compatibility with Microsoft Windows 95.

Execution command: **ATI**[<value>]

Possible response: <information>

Parameters:

<value>:

<value>	Description
0	Same information as **AT+GMM** **Default setting**
1	Same information as **AT+GMR**
3	Modem model description
5	Active setting.
7	Modem Configuration Profile Brief listing of the modem functionality: fax classes, Bluetooth, IrDA, modem type, etc.

<information>:   String of characters.

ATZ   Restore to User Profile

Description: This command instructs the DCE to set all parameters to their default values as specified by the user. Uploads a set of parameters set by AT&W. This may include taking into consideration the settings of hardware configuration switches or non-volatile parameter storage (if implemented). If AT&W is not used, ATZ gives the same effect as AT&F, and ATZ can be interpreted as ATH&F.

Execution command: **ATZ**

Extended format command: **ATZ=**<profile>

Test command: **ATZ=?** Shows if the command is supported.

Test command response:	Z: (list of supported <profile>s)
Parameter:	

<profile>:

<profile>	Description
0	User profile to restore

AT&F   Set To Factory-Defined Configuration

Description:	This command instructs the DCE to set all parameters to default values specified by the factory. Uploads the factory defaults. This may take in consideration hardware configuration and other factory-defined criteria.
Execution command:	**AT&F**[=<profile>]
Test command:	**AT&F=?** Shows if the command is supported.
Test command response:	&F: (list of supported <profile>s)
Parameter:	

<profile>:

<profile>	Description
0	Resets all the settings to the factory defaults

AT&W   Store User Profile

Description:	Stores the current user profile to non-volatile storage.
Execution command:	**AT&W**[<pr>]
Test command:	**AT&W=?** Shows if the command is supported.
Test command response:	&W: (list of supported <pr>s)
Parameter:	

<pr>:

<pr>	Description
0	Stores current settings in User Profile 0

AT*ESIR   Read MS Systems Interface Release

Description:	Reads the interface release version.
Execution command:	**AT*ESIR**
Response:	*ESIR: <major>,<minor>
Test command:	**AT*ESIR=?** Shows if the command is supported.

Parameters:

<major>:

<major>	Description
integer	Major version (one digit)

<minor>:

<minor>	Description
integer	Minor version (one digit)

AT+GCAP   Request Infrared Modem Capabilities List

Description: Returns a list of valid modem command prefixes.

Execution command: AT+GCAP

Execution command response: +GCAP: (list of supported <capability>s)

Test command: **AT+GCAP=?**   Shows if the command is supported.

Parameter:

<capability>:

<capability>	Description
+CGSM	GSM commands
+FCLASS	Facsimile class 1 and 2 commands
+DS	V.42 bis compression

AT+GMI   Request Manufacturer Information

Description: Returns the manufacturer information for the infrared modem.

Execution command: AT+GMI

Execution command response: <manufacturer>

Test command: **AT+GMI=?**   Shows if the command is supported.

Parameter:

<manufacturer>:   String of characters.

Example:
```
AT+GMI
SONY ERICSSON
OK

AT+GMI=?
OK
```


AT+GMM   Request Model Identification

Description: Returns the model identification for the infrared modem.

Execution command:	**AT+GMM**
Execution command response:	<model>
Test command:	**AT+GMM=?** Shows if the command is supported.
Parameter:	
<model>:	String of characters.
Example:	AT+GMM T68m OK AT+GMM OK

AT+GMR   Request Revision Identification

Description:	Returns the revision identification of the infrared modem.
Execution command:	**AT+GMR**
Execution command response:	<revision>
Test command:	**AT+GMR=?** Shows if the command is supported
Parameter:	
<revision>:	String of characters.
Example:	AT+GMR 99229933 OK AT+GMR OK

Ensemble C3: Call Control

Commands

ATA   Answer Incoming Call Command

Description:	Answers and initiates a connection to an incoming call.
Execution command:	**ATA**

Possible responses:

CONNECT

CONNECT <text>

<text>	Description
28800	Connected with data bit rate of 28800 bits/s (HSCSD)
19200	Connected with data bit rate of 19200 bits/s (HSCSD)
14400	Connected with data bit rate of 14400 bits/s (HSCSD)
9600	Connected with data bit rate of 9600 bits/s
4800	Connected with data bit rate of 4800 bits/s
2400	Connected with data bit rate of 2400 bits/s

NO CARRIER   The mobile phone is not registered.

ERROR   If ATA is unsuccessfully executed by the phone.

ATH   Hook Control

Description: Terminates a connection.

Execution command: **ATH**[<n>]

Parameter:

<n>:

<n>	Description
0	Disconnect data connection

ATD   Dial Command

Description: Initiates a phone connection, which may be data, facsimile (+FCLASS> 0), or voice (phone number terminated by semicolon). The phone number used to establish the connection will consist of digits and modifiers, or a stored number specification.

Execution command: **ATD**[<dial_string>][;] Dial the phone number specified in the <dial_string> parameter.

ATD>ME<l>[;]   Dial the phone number stored in the mobile phone located by the index<l>.

ATD>SIM<l>[;]   Dial the phone number stored in the SIM card located by the index <l>.

ATD>LD<l>[;]   Dial the number stored in position <l> in the Last Dialled Number list on the SIM card. The most recently dialled number is assumed to have <l>="1".

ATDL   Redial the last dialled phone number.

Possible responses:

CONNECT

CONNECT <text>

<text>	Description
28800	Connected with data bit rate of 28800 bits/s (HSCSD)
19200	Connected with data bit rate of 19200 bits/s (HSCSD)
14400	Connected with data bit rate of 14400 bits/s (HSCSD)
9600	Connected with data bit rate of 9600 bits/s
4800	Connected with data bit rate of 4800 bits/s
2400	Connected with data bit rate of 2400 bits/s

NO CARRIER   The mobile phone is not registered.

ERROR   If ATD is unsuccessfully executed by the phone.

NO DIALTONE   The mobile phone is being used for a voice call or is not within coverage of the network.

BUSY   The phone number called is engaged; only valid for data and fax connections.

OK   Only valid for voice calls.

Parameter:

<dial_string>:

<dial_string>	Description
"0 1 2 3 4 5 6 7 8 9 +"	Valid characters for origination
W	The W modifier is ignored but is included for compatibility reasons only
,	The comma modifier is ignored but is included for compatibility reasons only
;	Informs the Infrared Modem that the number is a voice number rather than a fax or data number
T	The T modifier is ignored but is included only for compatibility purposes
P	The P modifier is ignored but is included only for compatibility purposes

ATO   Return To On-line Data Mode

Description: Switch from on-line command mode to on-line data mode during an active call.

Returns ERROR when not in on-line command mode.

Execution command: **ATO**[<value>]

Parameter:

<value>:

<value>	Description
0	Return from on-line command state to on-line data state

ATP — Select Pulse Dialling

Description: This command would normally cause the next **ATD** command to use pulses when dialling the number, but is ignored and is implemented for compatibility reasons only.

Execution command: **ATP**

Test command: **ATP=?** Shows if the command is supported.

ATT — Select Tone Dialling

Description: This command would normally cause the next **ATD** command to use tones when dialling the number, but is ignored and is implemented for compatibility reasons only.

Execution command: **ATT**

Test command: **ATT=?** Shows if the command is supported.

AT+CVHU — Voice Hang-up Control

Description: Selects whether **ATH** or "drop DTR" shall cause a voice connection to be disconnected or not.

Set command: **AT+CVHU=**[<mode>]

Read command: **AT+CVHU?** Displays the current <mode> setting.

Test command: **AT+CVHU=?** Shows if the command is supported.

Test command response: +CVHU: (list of supported <mode>s)

Parameter:

<mode>:

<mode>	Description
0	"Drop DTR" is ignored but OK response given **ATH** disconnects the call
1	"Drop DTR" and **ATH** ignored but OK response given
2	"Drop DTR" behaviour according to **&D** setting **ATH** disconnects the call

Ensemble C4: Interface Commands

Commands

ATS0 — Automatic Answer Control

Description:	Defines the automatic answering feature of the infrared modem. A non-zero value specifies the number of rings before the call is answered.
	Note: The call always answers in the current fax class, regardless of whether the incoming call is voice, data, or fax.
Set command:	**ATS0=**[<rcnt>]
Read command:	**ATS0?** Displays the current <rcnt> setting.
Test command:	**ATS0=?** Shows if the command is supported.
Test command response:	S0: (list of supported <rcnt>s)
Parameter:	

<rcnt>:

<rcnt>	Description
0	Disable automatic answer **Default setting**
1-7	Answer after the specified number of rings

ATS2 — Escape Sequence Character

Description:	Defines the character to be used as the escape sequence character when switching from on-line data mode to on-line command mode.
Set command:	**ATS2=**[<esc>]
Parameter:	

<esc>:

<esc>	Description
43	Escape sequence character **Default setting**
0-255	Escape sequence character

Note: If the **<esc>** parameter is set to a value in the range 128-255, the escape sequence detection is disabled.

ATS3   Command Line Termination Character

Description: Defines the character to be used as the line termination character. This is used both for the detection of an end-of-command and in formatting of responses.

Set command: **ATS3=**<value>

Read command: **ATS3?** Displays the current <value> setting.

Test command: **ATS3=?** Shows if the command is supported.

Test command response: S3: (list of supported <value>s)

Parameter:

<value>:

<value>	Description
0-127	Supported values
13	Command line termination character = <CR>
	Default setting

ATS4   Response Formatting Character

Description: Defines the character to be used as the response formatting character.

Set command: **ATS4=**<value>

Read command: **ATS4?** Displays the current <value> setting.

Test command: **ATS4=?** Shows if the command is supported.

Test command response: S4: (list of supported <value>s)

Parameter:

<value>:

<value>	Description
0-127	Supported values
10	Formatting character = <LF>
	Default setting

ATS5   Command Line Editing Character

Description: Defines the character to be used as the command line editing character.

Set command: **ATS5=**<value>

Read command: **ATS5?** Displays the current <value> setting.

Test command: **ATS5=?** Shows if the command is supported.

Test command response: S5: (list of supported <value>s)

Parameter:

<value>:

<value>	Description
0-127	Supported values
8	Formatting character
	Default setting

ATS6   Blind Dial Delay Control

Description: Defines the number of seconds to wait before call-addressing when a dial tone is not detected. This command is ignored by the infrared modem and is included for compatibility reasons only.

Set command: **ATS6=**[<delay>]

Read command: **ATS6?**   Displays the current <delay> setting.

Test command: **ATS6=?**   Shows if the command is supported.

Test command response: S6: (list of supported <delay>s)

Parameter:

<delay>:

<delay>	Description
2	Wait 2 seconds before blind dialling
	Default setting
2-255	Number of seconds to wait before blind dialling

ATS7   Completion Connection Timeout

Description: Defines the maximum time allowed between completion of dialling and the connection being established. If this time is exceeded, the connection is aborted.

Set command: **ATS7=**[<tmo>]

Read command: **ATS7?**   Displays the current <tmo> setting.

Test command: **ATS7=?**   Shows if the command is supported.

Test command response: S7: (list of supported <tmo>s)

Parameter:

<tmo>:

<tmo>	Description
50	Timeout value in seconds
	Default setting
1-255	Timeout value in seconds

ATS8	**Comma Dial Modifier Delay Control**

Description: Sets the Comma dial modifier delay control. Implemented for compatibility only.

Set command: **ATS8=**[<delay>]

Read command: **ATS8?** Displays the current <delay> setting.

Test command: **ATS8=?** Shows if the command is supported.

Test command response: S8: (list of supported <delay>s)

Parameter:

<delay>:

<delay>	Description
2	The value of the dial modifier delay (in seconds) **Default setting**
1-255	The value of the dial modifier delay (in seconds)

ATS10	**Automatic Disconnect Delay Control**

Description: Specifies the amount of time that the DCE will remain connected to the line after the absence of received line signal. This command is ignored by the infrared modem and is implemented for compatibility reasons only.

Set command: **ATS10=**[<val>]

Read command: **ATS10?** Displays the current <val> setting.

Test command: **ATS10=?** Shows if the command is supported.

Test command response: S10: (list of supported <val>s)

Parameter:

<val>:

<val>	Description
2	Remains connected for two tenths of a second **Default setting**
1-254	Delay, specified in tenths of a second

ATE	**Command Echo**

Description: Determines if the DCE echoes characters received from the DTE during command state and on-line command state.

Set command: **ATE**[<value>]

Read command: **ATE?** Displays the current <value> setting.

Test command: **ATE=?** Shows if the command is supported.

Test command response: E: (list of supported <value>s)

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Parameter:

<value>:

<value>	Description
0	DCE does not echo characters during command state and on-line command state
1	DCE echoes characters during command state and on-line command state **Default setting**

ATQ　　　　　Result Code Suppression

Description:　　Determines if the DCE transmits result codes to the DTE.

Set command:　　**ATQ**[=]<value>

Read command:　　**ATQ?**　Displays the current <value> setting.

Read command response:　　Q: <value>

Test command:　　**ATQ=?**　Shows if the command is supported.

Test command response:　　Q: (list of supported <value>s)

Parameter:

<value>:

<value>	Description
0	DCE transmits result codes **Default setting**
1	Result codes are suppressed and not transmitted

ATV　　　　　DCE Response Mode

Description:　　Selects either verbose or numeric response codes.

Set command:　　**ATV**[=]<value>

Read command:　　**ATV?**　Displays the current <value> setting.

Read command response:　　V: <value>

Test command:　　**ATV=?**　Shows if the command is supported.

Test command response:　　V: (list of supported <value>s)

Parameter:

<value>:

<value>	Description
0	Display numeric result code

<value>	Description
1	Display verbose result code **Default setting**

Result code (ATV1)	Result code (ATV0)	Description
OK	**0**	Acknowledges execution of a command
CONNECT	**1**	A connection has been established; the DCE is moving from command state to on-line data state
RING	**2**	The DCE has detected an incoming call from the network
NO CARRIER	**3**	The connection has been terminated, or the attempt establish a connection failed
ERROR	**4**	Command not recognized, command line maximum length exceeded, parameter value invalid, or other problem with processing the command line
NO DIALTONE	**6**	No dial tone detected
BUSY	**7**	Engaged (busy) signal detected
NO ANSWER	**8**	"@" (Wait for Quiet Answer) dial modifier was used, but remote ringing followed by five seconds of silence was not detected before expiration of the connection timer

ATM   Monitor Speaker Control

Description: Defines the activity of the speaker. This command is ignored by the infrared modem and is included for compatibility reasons only.

Set command: **ATM**[=][<value>]

Read command: **ATM?**   Displays the current <value> setting.

Test command: **ATM=?**   Shows if the command is supported.

Test command response: M: (list of supported <value>s)

Parameter:

<value>:

<value>	Description
0	Off during the entire call **Default setting**
1-3	Different On-modes

ATX   Call Progress Monitoring Control

Description: Defines if the dial-tone detection and busy-tone detection are to be used during a call.

Set command: **ATX**=[<speaker>] or **ATX**[<speaker>]

Read command: **ATX?**   Displays the current <speaker> setting.

Test command: **ATX=?**   Shows if the command is supported.

Test command response: X: (list of supported <speaker>s)

Parameter:

<speaker>:

<speaker>	Description
0	Busy and dial-tone detection off No line speed reported on connection
1	Busy and dial-tone detection off Report line speed on connection
2	Busy detection on and dial-tone detection off Report line speed on connection
3	Busy detect off and dial-tone detection on Report line speed on connection
4	Busy detection and dial-tone detection on Report line speed on connection **Default setting**

AT&C   DCD Control

Description: Determines the behaviour of the carrier detect.

Set command: **AT&C**[<value>]

Parameter:

<value>:

<value>	Description
0	DCD always on

<value>	Description
1	DCD follows the connection **Default setting**

AT&D DTR Response

Description: Controls all actions initiated by data terminal ready from DTE
Set command: **AT&D**[<value>]
Parameter:
<value>:

<value>	Description
0	Ignore **Default setting**
1	When in on-line data mode: Switch to on-line command mode All other states: Disconnect and switch to off-line command mode
2	Disconnect and switch to off-line command mode

AT+IFC Cable Interface DTE-DCE Flow Control

Description: The command is used to control the operation of local flow control between the DTE and DCE during the data state when V.42 error control is being used, or when fallback to non-error control mode is specified to include buffering and flow control.
Set command: **AT+IFC**=[<DCE_by_DTE>,[<DTE_by_DCE>]]
Read command: **AT+IFC?** Displays the current <DCE_by_DTE> and <DTE_by_DCE> settings.
Test command: **AT+IFC=?** Shows if the command is supported.
Test command response: +IFC: (list of supported <DCE_by_DTE>s),(list of supported <DTE_by_DCE>s)
Parameters:
<DCE_by_DTE>:

<DCE_by_DTE>	Description
0	No flow control on DTE
1	Xon/Xoff flow control on DCE. Control characters are removed by the DCE interface
2	RTS flow control on DCE **Default setting**

<DCE_by_DTE>	Description
3	Xon/Xoff flow control on DCE
	Control characters are passed to the remote DCE/DTE

<DTE_by_DCE>:

<DTE_by_DCE>	Description
0	No flow control on DCE
1	Xon/Xoff flow control on DTE
2	CTS flow control on DCE
	Default setting

AT+ICF   Cable Interface Character Format

Description:	Determines the local serial-port asynchronous character framing.
Set command:	**AT+ICF**=[<format>[,<parity>]
Read command:	**AT+ICF?** Displays the current <format> and <parity> settings.
Test command:	**AT+ICF=?** Shows if the command is supported.
Test command response:	+ICF: (list of supported <format>s),(list of supported <parity>s)
Parameters:	
<format>:	Determines the number of data bits, parity bits and stop bits in the start-stop frame.

<format>	Description
0	Auto-detect
1	8 Data bits, 2 Stop bits
2	8 Data bits, 1 Parity bit, 1 Stop bit
3	8 Data bits, 1 Stop bit
	Default setting
4	7 Data bits, 2 Stop bits
5	7 Data bits, 1 Parity bit, 1 Stop bit
6	7 Data bits, 1 Stop bit

<parity>:   Determines how the parity bit, if present, is generated and checked.

<parity>	Description
0	Odd
	Default setting
1	Even
2	Mark
3	Space

AT+IPR	**Cable Interface Port Rate**

Description: Specifies the data rate, in addition to 1200 bits/s or 9600 bits/s, at which the DCE will accept commands. May be used to select operation at rates at which the DCE is not capable of automatically detecting the data rate being used by the DTE.

Set command: **AT+IPR**=[<rate>]

Read command: **AT+IPR?** Displays the current <rate> setting.

Test command: **AT+IPR=?** Shows if the command is supported.

Test command response: +IPR: (list of supported auto detectable <rate>s)[,(list of fixed-only <rate>s)].

Parameter:

<rate>:

<rate>	Description
Discrete integer value	The rate, in bits per second, at which the DTE-DCE interface should operate. Currently, the following rates are supported: 0, 300, 1200, 2400, 4800, 9600, 14400, 19200, 28800, 38400, 57600, 115200, 230400, and 460800 If unspecified, or set to zero, automatic detection is selected, and the character format is forced to auto-detect (AT+ICF=0)

AT+ILRR	**Cable Interface Local Rate Reporting**

Description: Specifies whether or not the **+ILRR** intermediate result code is transmitted from the DCE to the DTE. The <rate> reported shall represent the current DTE-DCE rate. If enabled, the intermediate result code is transmitted after any modulation, error control or data-compression reports are transmitted, and before any final result code (for example CONNECT) is transmitted. The <rate> is applied after the final result code is transmitted.

Set command: **AT+ILRR**=<value>

Read command: **AT+ILRR?** Displays the current <value> setting.

Test command: **AT+ILRR=?** Shows if the command is supported.

Test command response: +ILRR: (list of supported auto detectable <value>s)

Parameter:

<value>:

<value>	Description
0	Disables reporting of local port-rate (+ILRR: is not transmitted) **Default setting**
1	Enables reporting of local port-rate (+ILRR: is transmitted)

Intermediate result codes

+ILRR	+ILRR Result Code

Description: Reports cable interface speed. This response is enabled by **AT+ILRR**.

Intermediate result code: +ILRR: <rate>

Parameter:

<rate>	Description
Discrete integer value	The rate, in bits per second, at which the DTE-DCE interface should operate. Currently, the following rates are supported: 0, 300, 1200, 2400, 4800, 9600, 14400, 19200, 28800, 38400, 57600, 115200, 230400, and 460800 If unspecified or set to zero, automatic detection is selected and the character format is forced to auto-detect (AT+ICF=0)

Ensemble C6: Data Compression

Commands

AT+DS	Data Compression

Description: Controls the V.42 bis data compression function, if provided in the phone.

Set command: **AT+DS**=[<direction>[,<compression_negotiation>[,<max_dict>[,<max-string>]]]]

Read command: **AT+DS?** Displays the current <direction>, <compression_negotiation>, <max_dict>, and <max_string> settings.

Test command: **AT+DS=?** Shows if the command is supported.

Test command response: +DS: (list of supported <direction>s),(list of supported <compression_negotiation>s),(list of supported <max_dict>s),(list of supported <max_string>s)

Parameters:

<direction>: Specifies the desired direction(s) of operation of the data compression function.

<direction>	Description
0	Disable V.42 bis
1	Enable V.42 bis in transmit direction only

<direction>	Description
2	Enable V.42 bis in receive direction only
3	Enable V.42 bis compression in both directions **Default setting**

<compression_ negotiation>:   Specifies if the phone should continue to operate if the desired result is not obtained.

<compression_ negotiation>	Description
0	Accept connection if compression is negotiated according to direction **Default setting**
1	Disconnect if compression is not negotiated according to direction

<max_dict>:   Maximum number of dictionary entries to be negotiated.

<max_dict>	Description
512 to 4096	Maximum dictionary size
1024	**Default setting**

<max_string>:   Maximum string length to be negotiated.

<max_string>	Description
6 to 250	Maximum string length
32	**Default setting**

AT+DR   Data Compression Reporting

Description: Controls whether or not the extended-format **+DR** intermediate result code is transmitted from the phone to the terminal equipment.

If enabled, the intermediate result code is transmitted after error-control negotiation.

Set command: **AT+DR=**<value>

Read command: **AT+DR?**   Displays the current <value> setting.

Test command: **AT+DR=?**   Shows if the command is supported.

Test command response: +DR: (list of supported <values>s)

Parameter:

<value>:

<value>	Description
0	Intermediate compression mode reporting disabled **Default setting**

<value>	Description
1	Intermediate compression mode reporting enabled

Intermediate result codes

+DR	**Data Compression Indication**

Description:	Data compression report. Enabled by using **AT+DR**.
Intermediate result code:	+DR: <type>
Parameter:	

<type>:

<type>	Description
NONE	No data compression negotiated
V42B	V.42 bis data compression negotiated
V42B RD	V.42 bis half duplex compression negotiated on received data
V42B TD	V.42 bis half duplex compression negotiated on transmitted data

Ensemble C18: Fax Class 1

Commands

AT+FCLASS	**Select Mode**

Description:	Puts the phone in a specific mode of operation. This causes the phone to process information in a manner suitable for that type of information.
Set command:	**AT+FCLASS=**<class>
Read command:	**AT+FCLASS?** Displays the current <class> setting.
Test command:	**AT+FCLASS=?** Shows if the command is supported.
Test command response:	+FCLASS: (list of supported <class>s)
Parameter:	

<class>:

<class>	Description
0	Data modem

<class>	Description
1	Service Class 1 fax modem
2	Service Class 2 fax modem

AT+FMI   Manufacturer Identification

Description:	Request manufacturer identification.
Read command:	**AT+FMI?**
Read command response:	<text>
Example:	AT+FMI? SONY ERICSSON OK

AT+FMM   Model Identification

Description:	Request model identification.
Read command:	**AT+FMM?**
Read command response:	<text>
Example:	AT+FMM? ABC0123 OK

AT+FMR   Revision Identification

Description:	Request revision identification.
Read command:	**AT+FMR?**
Read command response:	<text>
Example:	AT+FMM? 0007121323 OK

AT+FTS   Transmit Silence

Description:	Stops a transmission for a specified time.
Execution command:	**AT+FTS=**<time>
Test command:	**AT+FTS=?** Shows if the command is supported.
Test command response:	(list of supported <time>s)
Parameter:	

<time>:

<time>	Description
0-255	Silence period in units of 10 ms

Example:

```
AT+FTS=12
OK

AT+FTS=?
(0-255)
OK
```

AT+FRS   Receive Silence

Description: Waits for the specified time of silence on the line.

Execution command: **AT+FRS=**<time>

Test command: **AT+FRS=?**   Shows if the command is supported.

Test command response: (list of supported <time>s)

Parameter:

<time>:

<time>	Description
0-255	Silence period in units of 10 ms

Example:

```
AT+FRS=12
OK

AT+FRS=?
(0-255)
OK
```

AT+FTM   Facsimile Transmit

Description: Starts transmission of fax data at given speed.

Set command: **AT+FTM=**<MOD>

Test command: **AT+FTM=?**   Shows if the command is supported.

Test command response: (list of supported <MOD>s)

Parameter:

<MOD>:

<MOD>	Modulation	Rate (bits/s)
24	Rec. V.27 ter	2400
48	Rec. V.27 ter	4800
72	Rec. V.29	7200
96	Rec. V.29	9600

Example:

```
AT+FTM=24
CONNECT
OK

AT+FTM=?
(24,48,72,96)
OK
```

AT+FRM   Facsimile Receive

Description: Starts reception of fax data at given speed.

Set command: **AT+FRM=**<MOD>

Test command: **AT+FRM=?**   Shows if the command is supported.

**Test command
response:**   (list of supported <MOD>s)

Parameter:

<MOD>:

<MOD>	Modulation	Rate (bits/s)
24	Rec. V.27 ter	2400
48	Rec. V.27 ter	4800
72	Rec. V.29	7200
96	Rec. V.29	9600

Example:

```
AT+FTM=24
CONNECT
OK

AT+FTM=?
(24,48,72,96)
OK
```

AT+FTH   HDLC Transmit

Description: Sets the HDLC transmit speed.

**Execution
command:**   **AT+FTH=**<MOD>

Test command: **AT+FTH=?**   Shows if the command is supported.

**Test command
response:**   +FTH: (list of supported <MOD>s)

Parameter:

<MOD>:

<MOD>	Modulation	Rate (bits/s)
3	Clause 2/V.21	300

AT+FRH   HDLC Receive

Description: Stes the HDLC receive speed.

Execution command:	**AT+FRH=**<MOD>	
Test command:	**AT+FRH=?** Shows if the command is supported.	
Test command response:	+FRH: (list of supported <MOD>s)	
Parameter:		
<MOD>:		

<MOD>	Modulation	Rate (bits/s)
3	Clause 2/V.21	300

Ensemble C19: Fax Class 2

Commands

AT+FCLASS	**Select Mode**
Description:	Puts the phone in a specific mode of operation. This causes the phone to process information in a manner suitable for that type of information.
Set command:	**AT+FCLASS=**<class>
Read command:	**AT+FCLASS?** Displays the current <class> setting.
Test command:	**AT+FCLASS=?** Shows if the command is supported.
Test command response:	+FCLASS: (list of supported <class>s)
Parameter:	
<class>:	

<class>	Description
0	Data modem
1	Service Class 1 fax modem
2	Service Class 2 fax modem

AT+FAA	**Automatic Answer Parameter**
Description:	This command sets the automatic answer parameter.
Set command:	**AT+FAA=**<value>
Read command:	**AT+FAA?** Displays the current <value> setting.
Test command:	**AT+FAA=?** Shows if the command is supported.
Test command response:	+FAA: (list of supported <value>s)

Parameter:

<value>:

<value>	Description
0	Forces the phone to answer as set by **AT+FCLASS** **Default setting**

AT+FAXERR   T.30 Session Error Report

Description:	Indicates the reason for the hang-up. Also see the **+FHNG** unsolicited result code.
Execution command:	**AT+FAXERR=?**
Execution command response:	+FAXERR=<value>
Test command:	**AT+FAXERR=?** Shows if the command is supported.
Test command response:	+FAXERR: (list of supported <value>s)

<value>:

<value>	Description
0	Normal and proper end of connection
1	Ring Detect without successful handshake
2	Call aborted, from **AT+FK**
3	No Loop Current
10	Unspecified Phase A error
11	No Answer (T.30 T1 time out)
20	Unspecified Transmit Phase B error
21	Remote cannot receive or send
22	COMREC error in transmit Phase B
23	COMREC invalid command received
24	RSPEC error
25	DCS sent three times without response
26	DIS/DTC received 3 times; DCS not recognised
27	Failure to train at 2400 bits/s or FMINSP value
28	RSPREC invalid response received
40	Unspecified Transmit Phase C error
43	terminal equipment to phone data underflow
50	Unspecified Transmit Phase D error
51	RSPREC error
52	No response to MPS repeated 3 times
53	Invalid response to MPS
54	No response to EOP repeated 3 times

55	Invalid response to EOP
56	No response to EOM repeated 3 times
57	Invalid response to EOM
58	Unable to continue after PIN or PIP
70	Unspecified Receive Phase B error
71	RSPREC error
72	COMREC error
73	T.30 T2 time out, expected page not received
74	T.30 T1 time out after EOM received
90	Unspecified Receive Phase C error
91	Missing EOL after 5 seconds
93	phone to terminal equipment buffer overflow
94	Bad CRC or frame (ECM or BFT modes)
100	Unspecified Receive Phase D errors
101	RSPREC invalid response received
102	COMREC invalid response received
103	Unable to continue after PIN or PIP
120-255	-reserved codes-

AT+FBADLIN   Bad Line Threshold

Description:	Sets the maximum acceptable consecutive number of bad lines.
Set command:	**AT+FBADLIN=**<value>
Possible set command responses:	`Copy Quality OK.` `Copy Quality Not OK.`
Read command:	**AT+FBADLIN?** Displays the current <value> setting.
Test command:	**AT+FBADLIN=?** Shows if the command is supported.
Test command response:	+FBADLIN: (list of supported <value>s)
Parameter:	

<value>:

<value>	Description
0	Error checking not present, or disabled **Default setting**

AT+FBADMUL   Error Threshold Multiplier

Description:	Sets the maximum acceptable percentage of bad lines per page multiplication value.
Set command:	AT+**FBADMUL=**[<value>]

Read command:	**AT+FBADMUL?** Displays the current <value> setting.
Test command:	**AT+FBADMUL=?** Shows if the command is supported.
Test command response:	+FBADMUL: (list of supported <value>s)
Parameter:	

<value>:

<value>	Description
0	Error checking not present, or disabled **Default setting**
20	Corresponds to a 5% error rate
0-255	Valid values

AT+FBOR   Phase C Bit Order Parameter

Description:	Sets the bit order for negotiation (<bit_n>) and facsimile page transfer (<bit_f>).
Set command:	AT+FBADMUL=[<value>]. Value is the sum of <bit_n> and <bit_f>
Read command:	**AT+FBOR?** Displays the current <value> setting.
Test command:	**AT+FBOR=?** Shows if the command is supported.
Test command response:	+FBOR: (list of supported <value>s)
Parameters:	

<bit_n>:

<bit_n>	Description
0	Same bit order
1	Reverse bit order

<bit_f>:

<bit_f>	Description
0	Same bit order
1	Reverse bit order

<value>:

<value>	Description
0	<bit_n> + <bit_f>=0 **Default setting**
1	<bit_n> + <bit_f>=1
2	<bit_n> + <bit_f>=2
3	<bit_n> + <bit_f>=3

AT+FBUF   Buffer Size Report

Description:	Requests buffering parameters.
Read command:	**AT+FBUF?**
Read command response:	<bs>,<xoft>,<xont>,<bc>
<bs>:	Total buffer size.
<xoft>:	XOFF threshold.
<xont>:	XON threshold.
<bc>:	Current buffer byte count.
Example:	AT+FBUF? 256,0,0,0 OK

AT+FBUG   Session Message Reporting

Description:	Handles session message reporting.
Set command:	**AT+FBUG=**<value>
Read command:	**AT+FBUG?** Displays the current <value> setting.
Test command:	**AT+FBUG=?** Shows if the command is supported.
Test command response:	+FBUG: (list of supported <value>s)
Parameter:	
<value>:	

<value>	Description
0	Disables HDLC frame reporting **Default setting**
1	Enables HDLC frame reporting

AT+FCQ   Copy Quality Checking

Description:	Copy quality checking.
Set command:	**AT+FCQ=**[<value>]
Read command:	**AT+FCQ?** Displays the current <value> setting.
Test command:	**AT+FCQ=?** Shows if the command is supported.
Test command response:	+FCQ: (list of supported <value>s)
Parameter:	
<value>:	

<value>	Description
0	No copy quality checking performed **Default setting**

AT+FCR	**Capability to Receive Parameter**

Description: Sets the phone's capability to receive message data.

Set command: **AT+FCR=**<value>

Read command: **AT+FCR?** Displays the current <value> setting.

Test command: **AT+FCR=?** Shows if the command is supported.

Test command response: +FCR: (list of supported <value>s)

Parameter:

<value>:

<value>	Description
0	Can not receive message data, but can be polled
1	The phone can receive message data **Default setting**

AT+FCIG	**Local Polling ID Parameter**

Description: Sets the local polling ID parameter.

Set command: **AT+FCIG=**<polling_id>

Read command: **AT+FCIG?** Displays the current <polling_id> setting.

Test command: **AT+FCIG=?** Shows if the command is supported.

Test command response: (<string length>),(list of supported <polling_id>s)

Parameter:

<polling_id>: ASCII string; 0-20 characters.

Example:
```
AT+FCIG="Sony Ericsson Fax"
OK

AT+FCIG?
Sony Ericsson Fax
OK

AT+FCIG=?
(20)(32-127)
OK
```

AT+FDFFC	**Data Compression Format Conversion**

Description: Handles the data format failure check. Determines the response to a mismatch between the data format negotiated for the facsimile session and the Phase C data desired by the terminal equipment.

Set command: **AT+FDFFC=**<value>

Read command: **AT+FDFFC?** Displays the current <value> setting.

Test command: **AT+FDFFC=?** Shows if the command is supported.

Test command response: +FDFFC: (list of supported <value>s)

Parameter:

<value>:

<value>	Description
0	Disables mismatch checking **Default setting**

AT+FDCC   TAE Capability Parameters

Description: Allows the terminal equipment to sense and constrain the capabilities of the facsimile phone.

Set command: **AT+FDCC=**<vr>,
,<wd>,<ln>,<df>,<ec>,<bf>,<st>

Read command: **AT+FDCC?**   Displays the current <vr>, <br>, <wd>, <ln>, <df>, <ec>, <bf>, and <st> settings.

Test command: **AT+FDCC=?**   Shows if the command is supported.

Test command response: +FDCC: (list of supported <vr>s),(list of supported
s),(list of supported <wd>s), (list of supported <ln>s),(list of supported <df>s),(list of supported <ec>s), (list of supported <bf>s),(list of supported <st>s)

Parameters:

<vr>:   Vertical resolution.

<vr>	Description
0	Normal, 98 lpi (lines per inch)
1	Fine, 196 lpi **Default setting**

:   Bit rate.

 	Description
0	2400 bits/s V.27ter
1	4800 bits/s V.27ter
2	7200 bits/s V.29 or V.17, optional
3	9600 bits/s V.29 or V.17, optional **Default setting**

<wd>:   Page width.

<wd>	Description
0	1728 pixels in 215 mm **Default setting**
1	2048 pixels in 255 mm
2	2432 pixels in 303 mm
3	1216 pixels in 151 mm
4	864 pixels in 107 mm

<ln>:   Page length.

<ln>	Description
0	A4, 297 mm **Default setting**
1	B4, 364 mm
2	Unlimited length

<df>:   Data compression format.

<df>	Description
0	1-D modified Huffman **Default setting**
1	1-D modified Read
2	2-D uncompressed mode
3	2-D modified Read

<ec>:   Error correction.

<ec>	Description
0	Disable ECM **Default setting**

<bf>:   Binary file transfer.

<bf>	Description
0	Disable ECM **Default setting**

<st>:   Scan time per line.

<st>	Description
0-7	0-40 ms, in steps of 5 ms **Default setting=0**

AT+FDIS   Current Session Negotiation Parameters

Description: Allows the terminal equipment to sense and constrain the capabilities used for the current session.

Set command: **AT+FDIS=**<vr>,
,<wd>,<ln>,<df>,<ec>,<bf>,<st>

Read command: **AT+FDIS?** Displays the current <vr>, <br>, <wd>, <ln>, <df>, <ec>, <bf>, and <st> settings.

Test command: **AT+FDIS=?** Shows if the command is supported.

Test command response:	+FDIS: (list of supported <vr>s),(list of supported s),(list of supported <wd>s), (list of supported <ln>s),(list of supported <df>s),(list of supported <ec>s, (list of supported <bf>s),(list of supported <st>s)
Parameters:	See **AT+FDCC**.

AT+FDCS   Session Results

Description:	Reads the current session results.
Read command:	**AT+FDCS?**
Read command response:	+FDCS: <vr>, ,<wd>,<ln>,<df>,<ec> <bf>,<st>
Test command:	**AT+FDCS=?** Shows if the command is supported.
Test command response:	+FDCS: list of supported <vr>s),(list of supported s),(list of supported <wd>s), (list of supported <ln>s),(list of supported <df>s),(list of supported <ec>s, (list of supported <bf>s),(list of supported <st>s)
Parameters:	See **AT+FDCC**.

AT+FDR   Fax Data Receive Command

Description:	Initiates transition to Phase C data reception. This can occur after answering, after dialling, after a document is received, or after a page is received.
Execution command:	**AT+FDR**
Example:	AT+FDR OK

AT+FDT   Fax Data Transmission Command

Description:	The FDT command prefixes Phase C data transmission. When the phone is ready to accept Phase C data, it will issue the negotiation responses and the CONNECT result code to the phone. The <df>, <vr>, <wd> and <ln> parameters are optional.
Execution command:	**AT+FDT**[=<df>,<vr>,<wd>,<ln>]
Test command:	**AT+FDT=?** Shows if the command is supported.
Test command response:	+FDT: (list of supported <df>s),(list of supported <vr>s),(list of supported <wd>s),(list of supported <ln>s)
Parameters:	See **AT+FDCC**.

AT+FECM   Error Correction Mode Control

Description:	Sets the error correction mode.
Set command:	**AT+FECM=**<value>
Read command:	**AT+FECM?** Displays the current <value> setting.

Test command:	**AT+FECM=?** Shows if the command is supported.
Test command response:	+FECM: (list of supported <value>s)
Parameter:	

<value>:

	<value>	Description
	0	Error-correcting mode disabled or unsupported. Attempts to set the <ec> parameter in **AT+FDCC** or **AT+FDIS** to '1' will return an ERROR result code
		ECM.related commands will result in ERROR
		ECM-related responses will not be generated
		Default setting

AT+FET   Page Punctuation

Description:	Punctuates page and document transmission after one or more **AT+FDT** commands.
Set command:	**AT+FET=**<ppm>
Possible set command response:	**+FPTS: <ppr>**
Read command:	**AT+FET?** Displays the current <ppm> setting.
Test command:	**AT+FET=?** Shows if the command is supported.
Test command response:	+FET: (list of supported <ppm>s)
Parameter:	

<ppm>:

	<ppm>	Description
	0	Another page next, same document
	1	Another document next
	2	No more page(s) or document(s)

Example:
```
AT+FET=0
+FTPS: 1
OK

AT+FET?
0
OK

AT+FET=?
+FET: (0-2)
OK
```

AT+FK   Session Termination

Description:	Causes the phone to terminate the session in an orderly manner.
Execution command:	**AT+FK**
Unsolicited result code:	**+FHNG**: <hsc>

Example:
```
AT+FK
+FHNG: 2
OK
```

AT+FLID   Local ID String

Description:	Allows user to define the local ID string.
Set command:	**AT+FLID=**<ID_string>
Read command:	**AT+FLID?** Displays the current <ID_string> content.
Test command:	**AT+FLID=?** Shows if the command is supported.
Test command response:	+FLID: (<string length>) (supported ASCII values).
Parameter:	
<ID_string>:	String; 20 characters.

Example:
```
AT+FLID="Sony Ericsson"
OK

AT+FLID?
Sony Ericsson
OK

AT+FLID=?
+FLID: (20)(30-127)
```

AT+FLNFC   Page Length Format Conversion

Description:	Determines the phone response to a mismatch between the page length negotiated for the facsimile session, indicated by the optional **AT+FDT <ln>** parameter, or the **AT+FDIS <ln>** parameter for **AT+FDR** operation. A mismatch would require clipping or scaling a longer format to a shorter one.
Set command:	**AT+FLNFC=**<value>
Read command:	**AT+FLNFC?** Displays the current <value> setting.
Test command:	**AT+FLNFC=?** Shows if the command is supported.
Test command response:	+FLNFC: (list of supported <value>s)
Parameter:	
<value>:	

<value>	Description
0	Disables mismatch checking

AT+FLPL   Indicate Document to Poll

Description: Indicates which document that should be polled.

Set command: **AT+FLPL=**<value>

Read command: **AT+FLPL?** Displays the current <value> setting.

Test command: **AT+FLPL=?** Shows if the command is supported.

**Test command
response:**   +FLPL: (list of supported <value>s)

Parameter:

<value>:

<value>	Description
0	Indicates that the terminal equipment has no document to poll
	Default setting
1	Document available for polling

AT+FMDL   Request Model Identification

Description: Returns the model identification of a Class 2 fax machine.

Read command: **AT+FMDL?**

**Read command
response:**   <phone model identification>

AT+FMFR   Request Manufacturer Identification

Description: Returns the manufacturer identification of a Class 2 fax machine.

Read command: **AT+FMFR?**

Example:
```
AT+FMFR
Sony Ericsson
OK
```

AT+FMINSP   Minimum Phase 3 Speed

Description: Limits the lowest negotiable speed for a session. If a facsimile cannot negotiate to a minimum speed, it will perform an orderly disconnect.

Set command: **AT+FMINSP=**

Read command: **AT+FMINSP?** Displays the current <br> setting.

Test command: **AT+FMINSP=?** Shows if the command is supported.

**Test command
response:**   +FMINSP: (list of supported
s)

Parameter:

:

 	Description
0	2400 bits/s V.27ter **Default setting**
1	4800 bits/s V.27ter
2	7200 bits/s V.29 or V.17
3	9600 bits/s V.29 or V.17
4	12000 bits/s V.33 or V.17
5	14400 bits/s V.33 or V.17

AT+FPHCTO Phase C Timeout

Description: Determines how long the phone will wait for a command after reaching the end of data when transmitting in Phase C.

Set command: **AT+FPHCTO=**<value>

Read command: **AT+FPHCTO?** Displays the current <value> setting.

Test command: **AT+FPHCTO=?** Shows if the command is supported.

Test command response: +FPHCTO: (list of supported <value>s)

Parameter:

<value>:

<value>	Description
0-255	Timeout setting, in 100 ms units
30	Timeout after 3 seconds **Default setting**

AT+FPTS Page Transfer Status

Description: Sets the post-page transfer response.

Set command: **AT+FPTS=**<ppr>

Read command: **AT+FPTS?** Displays the current <ppr> setting.

Test command: **AT+FPTS=?** Shows if the command is supported.

Test command response: +FPTS: (list of supported <ppr>s)

Parameter:

<value>:

<ppr>	Description
0	Page good **Default setting**
1	Page bad; retrain requested
2	Page good; retrain requested

AT+FREV   Request Product Revision Identification

Description: Returns the version, revision level, or other information related to a Class 2 device.

Read command: **AT+FREV?**

Example: AT+FREV
                       <Revision ID>
                       OK

AT+FRBC   Phase C Receive Data Block Size

Description: Selects stream mode or block mode for Phase C data transfer.

Set command: **AT+FRBC=**<value>

Read command: **AT+FRBC?**   Displays the current <value> setting.

Test command: **AT+FRBC=?**   Shows if the command is supported.

Test command response: +FRBC: (list of supported <value>s)

Parameter:

<value>:

<value>	Description
0	Stream mode only **Default setting**

AT+FREL   Phase C Received EOL Alignment

Description: Sets the EOL alignments for received Phase C data.

Set command: **AT+FREL=**<value>

Read command: **AT+FREL?**   Displays the current <value> setting.

Test command: **AT+FREL=?**   Shows if the command is supported.

Test command response: +FREL: (list of supported <value>s)

Parameter:

<value>:

<value>	Description
0	EOL patterns are bit-aligned as received **Default setting**

AT+FSPL   Request to Poll

Description: Enables or disables the polling parameter.

Set command: **AT+FSPL=**<value>

Read command:	**AT+FSPL?** Displays the current <value> setting.
Test command:	**AT+FSPL=?** Shows if the command is supported.
Test command response:	+FSPL: (list of supported <value>s)
Parameter:	

<value>:

<value>	Description
0	The terminal equipment does not want to poll **Default setting**
1	The terminal equipment can receive a polled document. After a polled document is received, the <value> setting is reset to '0'.

AT+FTBC   Phase C Transmit Data Block Size

Description:	Selects stream mode or block mode for Phase C data transfer. Sets the size of the transmit data block.
Set command:	**AT+FTBC=**<value>
Read command:	**AT+FTBC?** Displays the current <value> setting.
Test command:	**AT+FTBC=?** Shows if the command is supported.
Test command response:	+FTBC: (list of supported <value>s)
Parameter:	

<value>:

<value>	Description
0	Stream mode only. Block size set to zero **Default setting**

AT+FVRFC   Vertical Resolution Format Conversion

Description:	Determines the phone response to a mismatch between the vertical resolution negotiated for the facsimile session, indicated by the **AT+FDCS <vs>** parameter, and the Phase C data desired by the terminal equipment, indicated by the **AT+FDT <vr>** parameter, or the **AT+FDIS <vr>** parameter for the **AT+FDR** operation.
Set command:	**AT+FVRFC=**<value>
Read command:	**AT+FVRFC?** Displays the current <value> setting.
Test command:	**AT+FVRFC=?** Shows if the command is supported.
Test command response:	+FVRFC: (list of supported <value>s)
Parameter:	

<value>:

<value>	Description
0	Disables mismatch checking. The terminal equipment must check the **AT+FDCS <vr>** parameter, and transfer matching data **Default setting**

AT+FWDFC   Page Width Format Conversion

Description: Determines the phone response to a mismatch between the page width negotiated for the facsimile session, indicated by the **AT+FDCS <wd>** parameter, and the Phase C data desired by the terminal equipment, indicated by the **AT+FDT <wd>** parameter, or the **AT+FDIS <wd>** parameter for **AT+FDR** operation.

A mismatch would require clipping or scaling a wider format to a narrower one.

Set command: **AT+FWDFC=**<value>

Read command: **AT+FWDFC?**   Displays the current <value> setting.

Test command: **AT+FWDFC=?**   Shows if the command is supported.

Test command response: +FWDFC: (list of supported <value>s)

Parameter:

<value>:

<value>	Description
0	Disables mismatch checking. The terminal equipment must check the **AT+FDCS <wd>** parameter, and transfer matching data **Default setting**

Unsolicited result codes

+FET   FET Indication

Description: Post-page message. The +FET: <ppm> message is generated by a receiving facsimile phone after the end of Phase C reception, on receipt of the post-page message from the transmitting station.

Unsolicited result code: +FET: <ppm>

Parameter:

<ppm>:   See the **AT+FET** command.

+FHNG   FHNG Indication

Description: Indicates that the call has been terminated. The hang-up cause is reported, and stored in the **AT+FAXERR** parameter for later inspection.

Unsolicited result code:	+FHNG: <hsc>

Parameter:

<hsc>:	Hang-up status code.

<hsc>	Description
0-9	Call placement and termination
0	Normal and proper end of connection
1	Ring Detect without successful handshake
2	Call aborted, from **AT+FK**
3	No Loop Current
10-19	Transmit Phase A & miscellaneous errors
10	Unspecified Phase A error
11	No Answer (T.30 T1 Timeout)
20-39	Transmit Phase B Hang-up Codes
20	Unspecified Transmit Phase B error
21	Remote cannot receive or send
22	COMREC error in transmit Phase B
23	COMREC invalid command received
24	RSPEC error
25	DCS sent three times without response
26	DIS/DTC received 3 times, DCS not recognized
27	Failure to train at 2400 bits/s or +FMINSP
28	RSPREC invalid response received
40-49	Transmit Phase C Hang-up Codes
40	Unspecified Transmit Phase D error
43	terminal equipment to phone data underflow
50-69	Transmit Phase D Hang-up Codes
50	Unspecified Transmit Phase D error
51	RSPREC error
52	No response to MPS repeated 3 times
53	Invalid response to MPS
54	No response to EOP repeated 3 times
55	Invalid response to EOP
56	No response to EOM repeated 3 times
57	Invalid response to EOM
58	Unable to continue after PIN or PIP
70-89	Receive Phase B Hang-up Codes
70	Unspecified Receive Phase B error
71	RSPREC error
72	COMREC error
73	T.30 T2 time out, expected page not received

74	T.30 T1 time out after EOM received
90-99	Receive Phase C Hang-up Codes
90	Unspecified Receive Phase C error
91	Missing EOL after 5 seconds
93	phone to terminal equipment buffer overflow
94	Bas CRC or frame (ECM or BFT modes)
100-119	Receive Phase D Hang-up Codes
100	Unspecified receive Phase D error
101	RSPREC invalid response received
102	COMREC invalid response received
103	Unable to continue after PIN or PIP
120-255	Reserved codes

+FPTS   FPTS Indication Transmit

Description: Reports a <ppr> number representing the copy quality and related post-page message responses received from the remote phone. The response is generated in execution of an **AT+FET** command.

Unsolicited result code: +FPTS: <ppr>

Parameter:

<ppr>:   See **AT+FPTS**.

+FPTS   FPTS Indication Receive

Description: Receive page transfer status.

Unsolicited result code: +FPTS: <ppr>,<lc>[,<blc>,<cblc>][,<lbc>]

Parameters:

<ppr>:

<ppr>	Description
0	Partial page errors
1	Page good
2	Page bad; retrain requested
3	Page good; retrain requested
4	Page bad; interrupt requested
5	Page good; interrupt requested
6	Partial page reception failed after 4 retries (ECM only)
7	Acknowledge a CTC message (ECM)

<lc>:   Line count.

<blc>:   Bad line count.

<cblc>:	Consecutive bad line count, see **AT+FBADLIN**.
<lbc>:	Lost byte count, due to phone overflow.

+FDTC   FDTC Indication

Description:	Reports the negotiated parameters. This message may be generated in execution of **AT+FDT** or **AT+FDR**, before the CONNECT result code, if new DCS frames are generated or received.
Unsolicited result code:	+FDTC: <vr>, ,<wd>,<ln>,<df>,<ec>,<bf>,<st>
Parameters:	See **AT+FDCC**.

+FDCS   FDCS Indication

Description:	Reports DID/DCS/DTC frame. This message may be generated in execution of **AT+FDT** or **AT+FDR**, before the CONNECT result code, if new DCS frames are generated or received.
Unsolicited result code:	+FDCS: <vr>, ,<wd>,<ln>,<df>,<ec>,<bf>,<st>
Parameters:	See **AT+FDCC**.

Use scenarios

FDT Handling

This scenario will demonstrate a transmission with the following steps:

- Enable fax data transmission.
- Send two pages, 1-D data, no errors.

TE command	TAE response
AT+FCLASS=2	OK
AT+FLID="local_ID"	OK
ATD<dial_string>	
	+FCON
	[+FCSI: "<csi>"]
	+FDIS: <dis_codes>
	OK
AT+FDT	
	+FDCS: <dcs codes>
	CONNECT
	<XON>
	OK
<First page data>	
<DLE><ETX>	

TE command	TAE response
`AT+FET=0`	
	`+FPTS: 1`
	`OK`
	`CONNECT`
	`<XON>`
`AT+FDT`	
	`OK`
`<Second page data>`	
`<DLE><ETX>`	
`AT+FET=2`	
	`+FPTS: 1`
	`+FHNG: 0`
	`OK`

Ensemble C25: GSM 07.10

Commands

AT+CMUX   Switch to 07.10 Multiplexer

Description:	Turns on the 07.10 multiplexer
Set command:	**AT+CMUX=**<transparency>[,<subset>[,<port_speed>[,<N1>[,<T1>[,<N2> [,<T2>[,<T3>]]]]]]]
Read command:	**AT+CMUX?** Displays the current <transparency>, <subset>, <port_speed>, <N1>, <T1>, <N2>, <T2> and<T3> settings.
Test command:	**AT+CMUX=?** Shows if the command is supported.
Test command response:	+CMUX: (list of supported <transparency>s),(list of supported <subset>s),(list of supported <port_speed>s),(list of supported <N1>s),(list of supported <T1>s),(list of supported <N2>s),(list of supported <T2>s),(list of supported <T3>s)

Parameters:

<transparency>:

<transparency>	Description
0	No transparency **Default setting**

<subset>:

<subset>	Description
0	Only UIH frames used **Default setting**

<port_speed>:

<port_speed>	Description
1	9600 bits/s
2	19200 bits/s
3	38400 bits/s
4	57600 bits/s
5	115200 bits/s

<N1>:

<N1>	Description
31	Maximum frame size **Default setting**

<T1>:

<T1>	Description
10	100 ms acknowledgement timer **Default setting**

<N2>:

<N2>	Description
3	Maximum number of re-transmissions **Default setting**

<T2>:

<T2>	Description
30	300 ms control channel response timer **Default setting**

<T3>:

<T3>	Description
10	10 s wake-up response timer **Default setting**

<k>:

<k>	Description
1-7	Window size

Ensemble C26: Accessory Identification

Commands

AT*EINA   **System Interface Active**

Description: Returns the active interface (the interface currently used for communication).

Execution command: **AT*EINA**

Execution command *EINA: <interface>
response:

Test command: **AT*EINA=?**   Shows if the command is supported.

Test command response: *EINA: (list of supported <interface>s)

Parameter:

<interface>:

<interface>	Description
1	System connector
2	IR
3	MC link

Example:
```
AT*EINA
*EINA: 1
OK

AT*EINA=?
EINA: (1-3)
OK
```

Ensemble S2: GSM Call Control

Commands

AT+CRC	Cellular Result Codes

Description: Decides if the extended format of an incoming call indication is used or not. When enabled, an incoming call is indicated by the unsolicited result code **+CRING** instead of the normal unsolicited result code **RING**.

Set command: **AT+CRC=**[<mode>]

Read command: **AT+CRC?** Displays the current <mode> setting.

Test command: **AT+CRC=?** Shows if the command is supported.

Test command response: +CMOD: (list of supported <mode>s)

Parameter:

<mode>:

<mode>	Description
0	Disables extended format **Default setting**
1	Enables extended format

AT+CR	Service Reporting Control

Description: Enables or disables display of intermediate bearer capability reports during the handshake phase. This command enables the **+CR** result code.

Set command: **AT+CR=**<mode>

Read command: **AT+CR?** Displays the current <mode> setting.

Test command: **AT+CR=?** Shows if the command is supported.

Test command response: +CR: (list of supported <mode>s)

Parameter:

<mode>:

<mode>	Description
0	Disable reporting **Default setting**
1	Enable reporting

Unsolicited result codes

+CME	**Mobile Equipment Error Result**

Description: Produced to indicate completion of a command. Produced when the command is not recognised, the command line maximum length is exceeded, the parameter value is invalid, or when there are other problems with processing the command line.

Unsolicited result code: **+CME:** <err>

Parameter:

<err>: Numeric or verbose format. Decided by **AT+CMEE**.

+CR	**Service Reporting Control**

Description: Transmitted at the point during connect negotiation at which the phone has determined what speed and quality-of-service will be used, before any error control or data compression reports are transmitted, and before any final result code is transmitted.

Unsolicited result code: **+CR:** <serv>

Parameter:

<serv>:

<type>	Description
ASYNC	Asynchronous transparent
SYNC	Synchronous transparent
REL ASYNC	Asynchronous non-transparent
REL SYNC	Synchronous non-transparent

Ensemble S3: GSM Data/Fax

Commands

AT+CRLP	**Radio Link Protocol**

Description: Sets the radio link protocol parameters.

Set command: **AT+CRLP=**[<iws>[,<mws>[,<t1>[,<N2>[,<ver>[,<T4>]]]]]]

Read command: **AT+CRLP?** Displays the current parameter settings.

Read command response:	+CRLP: <iws>,<mws>,<t1>,<N2>[,<ver1>[,<T4>]]**<CR><LF>**
	[+CRLP: <iws>,<mws>,<t1>,<N2>[,<ver2>[,<T4>]]**<CR><LF>**
	[...]]
Test command:	**AT+CRLP=?** Shows if the command is supported.
Test command response:	+CRLP: (list of supported <iws>s),(list of supported <mws>s),(list of supported <t1>s),(list of supported <n2>s)[,<ver1>[,(list of supported <T4>s)]]**<CR><LF>**
	[+CRLP: (list of supported <iws>s),(list of supported <mws>s),(list of supported <t1>s),(list of supported <n2>s)[,<ver2>[,(list of supported <T4>s)]]**<CR><LF>**
	[...]]

Parameters:

<iws>:

<iws>	Description
0-61	IWF to phone window size
61	**Default setting**

<mws>:

<mws>	Description
0-61	Phone to IWF window size
61	**Default setting**

<t1>:

<t1>	Description
38-100	Acknowledgement timer T1 setting, in 10 ms steps
48	T1=480 ms **Default setting**

<N2>:

<N2>	Description
0-255	Number of re-transmission attempts, N2
6	**Default setting**.

<ver>:

<ver>	Description
integer	RLP version When version indication is not present, <ver>=0 is assumed

<T4>:

<T4>	Description
3-100	Resequencing period T4, in 10ms steps
5	**Default setting**

Ensemble S4: GSM Extended Error Reporting

Commands

AT+CEER   **Extended Error Report**

Description: Causes the phone to return one or more lines of information text <report> which offers the user of the phone an extended report of the reason for the failure in the last unsuccessful call setup (originating or answering) or in-call modification, or the reason for the last call release.

Execute command: **AT+CEER**

Test command: **AT+CEER=?** Shows if the command is supported.

Parameter:

<report>:   Text string.

Example:
```
AT+CEER
+CEER: "failure"
OK
```

Ensemble S5: GSM High Speed Circuit Switched Data

Commands

AT+CHSR   **HSCSD Parameter Report**

Description: Sets the HSCSD parameter reporting on or off. If enabled, the intermediate result code **+CHSR** is activated.

Set command: **AT+CHSR=**[<mode>]

Read command: **AT+CHSR?** Displays the current <mode> setting.

Test command: **AT+CHSR=?** Shows if the command is supported.

| **Test command response:** | +CHSR: (list of supported <mode>s) |

Parameter:

<mode>:

<mode>	Description
0	Disable reporting **Default setting**
1	Enable reporting

AT+CHSU   HSCSD Automatic User-initiated Upgrade

Description:	Enables or disables the HSCSD automatic user-initiated upgrade.
Set command:	**AT+CHSU=**[<mode>]
Read command:	**AT+CHSU?** Displays the current <mode> setting.
Test command:	**AT+CHSU=?** Shows if the command is supported.
Test command response:	+CHSU: (list of supported <mode>s)

Parameter:

<mode>:

<mode>	Description
0	Disable use of UP bit for upgrading
1	Enable use of UP bit for upgrading **Default setting**

Intermediate result codes

+CHSR   HSCSD Parameters Report Result Code

Description:	When enabled by using the **AT+CHSR** command, this intermediate result code is transmitted at the point of call setup negotiation where the phone has determined what type of HSCSD connection will be used.
Intermediate result code:	**AT+CHSR:** <rx>, <tx>,<auir>,<coding>
Parameters:	See **AT+CHSC**.

Ensemble S15: GSM GPRS

Locked PDP contexts

In Sony Ericsson phones every PDP context has a one-to-one relationship with an Internet Account (for more information please refer to the **AT*ENAD** command in ensemble S20). If a certain Internet account is locked, the corresponding PDP context will also be locked for editing. As a consequence, an attempt to select PDP context parameters with

- AT+CGDCONT
- AT+CGQREQ or
- AT+CGQMIN

may fail even though the cid of the context is within the range reported with the test command. To find out which contexts that are locked, use the AT*ENAD read command. The read and test commands in this ensemble are not affected by these restrictions.

Commands

AT+CGDCONT   Define PDP Context

Description:	Specifies the PDP context parameter values for a PDP context identified by the <cid> parameter.
Set command:	**AT+CDGCONT=**[<cid>[,<pdp_type>[,<APN>[,<pdp_addr>[,<d_comp> [,<h_comp>[,<pd1>[,...[,<pd*N*>]]]]]]]]]
Read command:	**AT+CGDCONT?** Displays the current parameter settings.
Read command response:	+CGDCONT: <cid>,<pdp_type>,<APN>,<pdp_addr>,<d_comp>, <h_comp>[,<pd1>[,...[,<pdN]]] **<CR><LF>**
	[+CGDCONT: <cid>,<pdp_type>,<APN>,<pdp_addr>,<d_comp>, <h_comp>[,<pd1>[,...[,<pdN]]] **<CR><LF>**
	[...]]
Test command:	**AT+CGDCONT=?** Shows if the command is supported.
Test command response:	+CGDCONT: (range of supported <cid>s),<pdp_type>,(list of supported <d_comp>s),(list of supported <h_comp>s)[,(list of supported <pd1>s),(list of supported <pd2>s),...,(list of supported <pdN>s)]
Parameters:	
<cid>:	Integer; Specifies the particular PDP context definition. The parameter is local to the phone - terminal equipment interface and is used in other PDP-context related commands. The range of permitted values (minimum value='1') is returned by the test command.
<pdp_type>:	

<pdp_type>	Description
"X25"	ITU-T/CCIT X.25 layer 3

<pdp_type>	Description
"IP"	Internet Protocol
"OSPIH"	Internet Hosted Octet Stream Protocol
"PPP"	Point-to-Point Protocol

<APN>: String; used to select the GGSN or the external packet data network. If the value is null or is omitted, the subscription value will be requested.

<pdp_address>: String; identifies the MT in the address space applicable to the PDP. If the value is null or is omitted, a value may be provided by the terminal equipment during the PDP start-up procedure or, if that fails, a dynamic address will be requested.

<d_comp>:

<d_comp>	Description
0	PDP data compression OFF **Default setting**
1	PDP data compression ON
2-255	Reserved

<h_comp>:

<h_comp>	Description
0	PDP header compression OFF **Default setting**
1	PDP header compression ON
2-255	Reserved

<pdN>: Zero to N string parameters whose meanings are specific to the <pdp_type>.

AT+CGQREQ   Quality of Service Profile (Requested)

Description: Allows the terminal equipment to specify a Quality-of-Service profile that is used when the MT sends an active PDP context request message to the network. The set command specifies a profile for the context identified by the <cid> parameter. Since this is the same parameter as used in **AT+CGDCONT**, AT+CGQREQ is effectively an extension of AT+CGDCONT. The QoS profile consists of a number of parameters, each which may be set to a separate value.

A special form of the command, AT+CGQREQ=<cid>, causes the requested profile for context number <cid> to become undefined.

Set command: **AT+CGQREQ=**[<cid>[,<precedence>[,<delay>[,<reliability>[,<peak>

[,<mean>]]]]]]

Read command: AT+CGQREQ?   Displays the current parameter settings.

Read command response:	+CGQREQ: <cid>,<precedence>,<delay>,<reliability>,<peak>, <mean>**<CR><LF>**
	[+CGQREQ: <cid>,<precedence>,<delay>,<reliability>,<peak>, <mean>**<CR><LF>**
	[...]]
Test command:	AT+CGQREQ=? Shows if the command is supported.
Test command response:	+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)

Parameters:

<cid>: Integer; specifies the particular PDP context definition. The parameter is local to the phone - terminal equipment interface and is used in other PDP-context related commands. The range of permitted values (minimum value='1') is returned by the test command.

<precedence>:

<precedence>	Description
0	Subscribed (from network) value used
1	High priority
2	Normal priority
3	Low priority

<delay>: Delay class; defined in GSM 03.60 Section 15.2.2.

<delay>	Description
0	Subscribed (from network) value used
1-4	Delay class

<reliability>: Reliability class; defined in GSM 03.60 Section 15.2.3.

<reliability>	Description
0	Subscribed (from network) value used
1-5	Reliability class

<peak>: Peak throughput class; defined in GSM 03.60 Section 15.2.4.1.

<peak>	Description
0	Subscribed (from network) value used
1	Up to 1000 (8 kbit/s)
2	Up to 2000 (16 kbit/s)
3	Up to 4000 (32 kbit/s)
4	Up to 8000 (64 kbit/s)
5	Up to 16000 (128 kbit/s)
6	Up to 32000 (256 kbit/s)
7	Up to 64000 (512 kbit/s)
8	Up to 128000 (1024 kbit/s)

<peak>	Description
9	Up to 256000 (2048 kbit/s)

<mean>:   Mean throughput class; defined in GSM 03.60, section 15.2.4.2.

<mean>	Description
0	Subscribed (from network) value used
1	Best effort
2	100 (~0.22 bits/s)
3	200 (~0.44 bits/s)
4	500 (~1.1 bits/s)
5	1 000 (~2.2 bits/s)
6	2 000 (~4.4 bits/s)
7	5 000 (~11.1 bits/s)
8	10 000 (~22 bits/s)
9	20 000 (~44 bits/s)
10	50 000 (~111 bits/s)
11	100 000 (~0.22 kbit/s)
12	200 000 (~0.44 kbit/s)
13	500 000 (~1.11 kbit/s)
14	1 000 000 (~2.2 kbit/s)
15	2 000 000 (~4.4 kbit/s)
16	5 000 000 (~11.1 kbit/s)
17	10 000 000 (~22 kbit/s)
18	20 000 000 (~44 bits/s)
31	50 000 000 (~111 bits/s)

<pdp_type>:

<pdp_type>	Description
"X25"	ITU-T/CCIT X.25 layer 3
"IP"	Internet Protocol
"OSPIH"	Internet Hosted Octet Stream Protocol
"PPP"	Point-to-Point Protocol

AT+CGQMIN   Quality of Service Profile (Minimum Acceptable)

Description:	Allows the terminal equipment to specify a minimum acceptable profile which is checked by the MT against the negotiated profile returned in the Active PDP Context Accept Message.

The set command specifies a profile for the context identified by the <cid> parameter. Since this is the same parameter as used in AT+CGDCONT, AT+CGQMIN is effectively an extension of AT+CGDCONT. The QoS profile consists of a number of parameters, each which may be set to a separate value.

A special form of the command, AT+CGQMIN=<cid>, causes the minimum accepted profile for context number <cid> to become undefined.

Set command:	**AT+CGQMIN=**[<cid>[,<precedence>[,<delay>[,<reliability>[,<peak> [,<mean>]]]]]]
Read command:	AT+CGQMIN? Displays the current parameter settings.
Read command response:	+CGQMIN: <cid>,<precedence>,<delay>,<reliability>,<peak>,<mean>**<CR><LF>** [+CGQMIN: <cid>,<precedence>,<delay>,<reliability>,<peak>,<mean>**<CR><LF>** [...]]
Test command:	AT+CGQMIN=? Shows if the command is supported.
Test command response:	+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)

Parameters:

<cid>:	Integer; specifies the particular PDP context definition. The parameter is local to the phone - terminal equipment interface and is used in other PDP-context related commands. The range of permitted values (minimum value='1') is returned by the test command.

<precedence>:

<precedence>	Description
0	Subscribed (from network) value used
1	High priority
2	Normal priority
3	Low priority

<delay>:   Delay class; defined in GSM 03.60 Section 15.2.2.

<delay>	Description
0	Subscribed (from network) value used
1-4	Delay class

<reliability>:   Reliability class; defined in GSM 03.60 Section 15.2.3.

<reliability>	Description
0	Subscribed (from network) value used

<reliability>	Description
1-5	Reliability class

<peak>: Peak throughput class; defined in GSM 03.60 Section 15.2.4.1.

<peak>	Description
0	Subscribed (from network) value used
1	Up to 1000 (8 kbit/s)
2	Up to 2000 (16 kbit/s)
3	Up to 4000 (32 kbit/s)
4	Up to 8000 (64 kbit/s)
5	Up to 16000 (128 kbit/s)
6	Up to 32000 (256 kbit/s)
7	Up to 64000 (512 kbit/s)
8	Up to 128000 (1024 kbit/s)
9	Up to 256000 (2048 kbit/s)

<mean>: Mean throughput class; defined in GSM 03.60, section 15.2.4.2.

<mean>	Description
0	Subscribed (from network) value used
1	Best effort
2	100 (~0.22 bits/s)
3	200 (~0.44 bits/s)
4	500 (~1.1 bits/s)
5	1 000 (~2.2 bits/s)
6	2 000 (~4.4 bits/s)
7	5 000 (~11.1 bits/s)
8	10 000 (~22 bits/s)
9	20 000 (~44 bits/s)
10	50 000 (~111 bits/s)
11	100 000 (~0.22 kbit/s)
12	200 000 (~0.44 kbit/s)
13	500 000 (~1.11 kbit/s)
14	1 000 000 (~2.2 kbit/s)
15	2 000 000 (~4.4 kbit/s)
16	5 000 000 (~11.1 kbit/s)
17	10 000 000 (~22 kbit/s)
18	20 000 000 (~44 bits/s)
31	50 000 000 (~111 bits/s)

<pdp_type>:

<pdp_type>	Description
"X25"	ITU-T/CCIT X.25 layer 3

<pdp_type>	Description
"IP"	Internet Protocol
"OSPIH"	Internet Hosted Octet Stream Protocol
"PPP"	Point-to-Point Protocol

AT+CGATT   GPRS Attach or Detach

Description: Attaches the MT to, or detaches the MT from, the GPRS service. After the command has completed, the phone stays in V.250 command state. If the MT is already in the requested state, the command is ignored and OK is returned. If the requested state cannot be achieved, ERROR or +CME: ERROR is returned.

Set command: **AT+CGATT=**[<state>]

Read command: AT+CGATT?   Displays the current <state> settings

Test command: AT+CGATT=?   Shows if the command is supported.

Test command response: +CGATT: (list of supported <state>s)

Parameter:

<state>:

<state>	Description
0	Detached from GPRS service
1	Attached to GPRS service

AT+CGACT   PDP Context Activate or Deactivate

Description: Activates or deactivates the specific PDP context(s). After the command has completed, the phone stays in V.250 command state. If the MT is already in the requested state, the command is ignored and OK is returned. If the requested state cannot be achieved, ERROR or +CME: ERROR is returned. If the MT is not attached to the GPRS service when the activation form of the command is executed, the MT first performs a GPRS attach and then attempts to activate the specific contexts.

If no <cid>s are specified, the activation form of the command activates all defined contexts.

If no <cid>s are specified, the deactivation form of the command deactivates all defined contexts.

Set command: **AT+CGACT=**[<state>[,<cid>[,<cid>[,...]]]]

Read command: AT+CGACT?   Displays the current <cid> and <state> settings.

Read command response: +CGACT: <cid>,<state>**<CR><LF>**

[+CGACT: <cid>,<state>**<CR><LF>**

[...]]

Test command: AT+CGACT=?   Shows if the command is supported.

Test command response:	+CGACT: (list of supported \<state>s)	
Parameters:		
\<state>:		

\<state>	Description
0	PDP context activation deactivated
1	PDP context activation activated

\<cid>:	Integer; specifies the particular PDP context definition.

AT+CGDATA   Enter Data State

Description:	Causes the MT to perform whatever actions necessary to establish GPRS communication between the terminal equipment and the network by using one or more GPRS PDP types. This may include performing a GPRS attach and one or more PDP context activations.
Set command:	**AT+CGDATA=**[\<L2p>[,\<cid>[,\<cid>[,...]]]]
Test command:	AT+CGDATA=? Shows if the command is supported.
Test command response:	+CGDATA: (list of supported \<L2p>s)
Parameters:	
\<L2p>:	Layer 2 protocol used between ME and terminal equipment.

\<L2p>	Description
"PPP"	Point-to-Point Protocol **Default setting**
"M-xxx"	Manufacturer-specific protocol

\<cid>:	Integer; specifies the particular PDP context definition.

AT+CGEREP   GPRS Event Reporting

Description:	Enables or disables sending of the unsolicited result code **+CGEV** from ME to terminal equipment in the case of certain events occurring in the GPRS MT or the network.
Set command:	**AT+CGEREP=**[\<mode>[,\<bfr>]]
Read command:	AT+CGEREP? Displays the current \<mode> and \<bfr> settings.
Test command:	AT+CGEREP=? Shows if the command is supported.
Test command response:	+CGEREP: (list of supported \<mode>s),(list of supported \<bfr>s)
Parameters:	
\<mode>:	

<mode>	Description
0	Buffer unsolicited result codes in the MT. No codes are forwarded to the terminal equipment **Default setting**
1	Discard unsolicited result codes when MT-TE link is reserved, otherwise forward them directly to the terminal equipment

<bfr>:

<bfr>	Description
0	MT buffer of unsolicited result codes defined with this command is cleared when <mode>='1' or '2' is entered **Default setting**

AT+CGREG   GPRS Network Registration

Description: Controls the presentation of the unsolicited result code **+CGREG: <stat>** when <n>='1' and there is a change in the MT's GPRS network registration status, or **+CGREG: <stat>[,<lac>,<ci>]** when <n>='2' and there is a change of the network cell.

Note: If the GPRS MT also supports circuit mode services, AT+CREG and the +CREG result code apply to the registration status and location information for those services.

Set command: **AT+CGREG=**[<n>]

Read command: AT+CGREG?   Displays the current <n>, <stat>[, <lac>, and <ci>] settings.

Test command: AT+CGREG=?   Shows if the command is supported.

Test command response: +CGREG: (list of supported <n>s)

Parameters:

<n>:

<n>	Description
0	Disable network registration unsolicited result code. **Default setting**
1	Enable network registration unsolicited result code
2	Enable network registration and location information unsolicited result code

<stat>:

<stat>	Description
0	Not registered, ME is not currently searching a new operator to register to
1	Registered, home network
2	Not registered, but ME is currently searching a new operator to register to

<stat>	Description
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.

AT+CGPADDR   Show PDP Address

Description: Returns a list of PDP addresses for the specified context identifiers.

Execution command: **AT+CGPADDR=**[<cid>[,<cid>[,...]]]

Response: +CGPADDR: <cid>,<pdp_addr>**<CR><LF>**

                 [+CGPADDR: <cid>,<pdp_addr>**<CR><LF>**

                 [...]]

Test command: AT+CGPADDR=?   Shows if the command is supported.

Test command response: +CGPADDR: (list of supported <cid>s)

Parameters:

<cid>:   Integer; specifies a particular PDP context definition (see **AT+CGDCONT**).
                 If no <cid> is specified, the addresses for all defined contexts are returned.

<pdp_address>:   String; identifies the MT in the address space applicable to the PDP.
                 <pdp_addr> is omitted if none is available.

Extension of ATD - Request GPRS Service

Description: Makes a GPRS call.

Execution command: **ATD***<GPRS_SC>[*[<called_address>][*[<L2p>][*[<cid>]]]]#

Parameters:

<GPRS_SC>:   Digit string; a digit string (value='99') which identifies a request to use the GPRS.

<called_address>:   String; identifies the called party in the address space applicable to the PDP.

<L2p>:

<L2p>	Description
0	NULL
1	PPP
2	PAD
3	X25
9yyyy	M-xxxx

<cid>:	Digit string; specifies a particular PDP context definition.

Extension of ATD - Request GPRS IP Service

Description:	Makes a GPRS call.
Execution command:	**ATD***<GPRS_SC_IP>[*<cid>]#
Parameters:	
<GPRS_SC>:	Digit string; a digit string (value='98') which identifies a request to use the GPRS with IP (PDP types IP and PPP).
<cid>:	Digit string; specifies a particular PDP context definition.

Unconditional result codes

+CGEV	**GPRS Event Reporting**

Description:	This result code is enabled by using the **AT+CGEREP** command.
Possible unsolicited result codes:	+CGEV: X, where X is shown below.

<X>	Description
REJECT <pdp_type>,<pdp_addr>	A network request for PDP context activation occurred when the MT was unable to report it to the terminal equipment with a **+CRING** unsolicited result code and was automatically rejected
NW REACT <pdp_type>,<pdp_addr>[,<cid>]	The network has forced a network reactivation. The <cid> that was used to reactivate the context is provided, if known to the MT
NW DEACT <pdp_type>,<pdp_addr>[,<cid>]	The network has forced a network deactivation The <cid> that was used to deactivate the context is provided, if known to the MT
ME DEACT <pdp_type>,<pdp_addr>[,<cid>]	The mobile equipment has forced a network deactivation The <cid> that was used to deactivate the context is provided, if known to the MT
NW DETACH	The network has forced a GPRS detach This implies that all active have been deactivated These are not reported separately.

<X>	Description
ME DETACH	The mobile equipment has forced a GPRS detach This implies that all active have been deactivated These are not reported separately.
NW CLASS <class>	The network has forced a change of phone class The highest available class is reported
ME CLASS <class>	The mobile equipment has forced a change of phone class. The highest available class is reported

Parameters: See **AT+CGDCONT**.

+CGREG   Network Registration Reporting

Description: This result code is enabled by using the **AT+CGREG** command.

Possible unsolicited result codes: +CGREG: <stat>   If AT+CGREG <n>='1'

+CGREG: <stat>[,<lac>,<ci>]   If AT+CGREG <n>='2'

Parameters:

<stat>:

<stat>	Description
0	Not registered ME is currently searching for an operator to register to
1	Registered, home network
2	Registered, but ME is searching for a new operator to register to
3	Registration denied
4	Unknown
5	Registered, roaming

<lac>:   String; two byte location area code in hexadecimal format.

<ci>:   String; two byte cell ID in hexadecimal format.

Ensemble S27: OBEX

Commands

AT*EOBEX	**Object Exchange**

Description: Starts an OBEX session. When the remote client sends AT*EOBEX, the modem tries to connect to the OBEX server. If successful, CONNECT is returned. If the CONNECT response is received, the client can start sending OBEX frames. If unable to connect, the response NO CARRIER is returned.

The modem connection always returns from OBEX mode when the OBEX session is ended.

Note: This command is abortable. An OBEX frame containing a disconnect code must be sent. The hexadecimal code for disconnect is 0x81. This code must be sent in an OBEX frame and the hexadecimal value for the frame is 0x810003.

Execution command: **AT*EOBEX**

Test command: **AT*EOBEX=?** Shows if the command is supported.

OBEX Formats

OBEX File System Overview

One of the most basic and desirable uses of the IrDA infrared communication protocols is simply to send an arbitrary data object from one device to another, and to make it easy for both application developers and users to do so. This is referred to as object exchange (un-capitalized), and it is the subject of this section.

With the exception of Level 1 Information Exchange, whereby the objects are pushed into a device inbox, the object names passed to OBEX PUT and GET operations shall always include the path information.

The paths are specified in the IrMC specification from IrDA.

Filename	Description	Supported operations
Device Info		
telecom/devinfo.txt	Information hardware version, software version, serial number, etc. Character sets	GET
telecom/rtc.txt	The Real Time Clock Object contains the current date and time of the device	GET/PUT
Phone Book		
telecom/pb.vcf	Level 2 access (Access entire phonebook database)	GET/PUT
telecom/pb/luid/.vcf	Add new entry	PUT
telecom/pb/0.vcf	Own business card	GET/PUT
telecom/pb/###.vcf	Level 3 static index access	GET/PUT
telecom/pb/luid/*.vcf	Level 4 unique index access	GET/PUT
telecom/pb/info.log	Supported properties and memory info	GET
telecom/pb/luid/ ###.log	Change log	GET
telecom/pb/luid/ cc.log	Change counter	GET
Calendar		
telecom/cal.vcs	Level 2 access	GET/PUT
telecom/cal/luid/.vcs	Add new entry	PUT
telecom/cal/###.vcs	Level 3 static index access	GET/PUT
Telecom/cal/luid/*.vcs	Level 4 unique index access	GET/PUT
Telecom/cal/info.log	Supported properties and memory info	GET
Telecom/cal/luid/ ###.log	Change log	GET
Telecom/cal/luid/ cc.log	Change counter	GET

eMelody Format

eMelody Object

Description:	This is a definition of the eMelody object. This object is used when a user-defined melody is exchanged
Syntax:	**<emelody-object>**
	"BEGIN:EMELODY"<CR><LF>
	"NAME:"<name><CR><LF>
	"COMPOSER:" <composer><CR><LF>
	"VERSION:" <version><CR><LF>
	"MELODY:"<melody><CR><LF>
	"END:EMELODY"
File extension:	emy
Example filename	mymelody.emy
Parameters:	
<version>:	"1.0"
<name>:	Alphanumeric string
<composer>:	Alphanumeric string
<melody>:	{<pause>|<tone>}
<pause>:	"p"
<tone>:	{[<octave_prefix>]<basic_tone>}
<basic_short_tone>:	"c"|"d"|"e"|"f"|"g"|"a"|"b"
<ess_short_tone>:	"(b)d"|"(b)e"|"(b)g"|"(b)a"|"(b)b"
<iss_short_tone>:	"#d"|"#e"|"#g"|"#a"|"#b"
<basic_long_tone>:	"C"|"D"|"E"|"F"|"G"|"A"|"B"
<ess_long_tone>:	"(b)D"|"(b)E"|"(b)G"|"(b)A"|"(bB"
<iss_long_tone>:	"#D"|"#E"|"#G"|"#A"|"#B"
<basic_tone>:	<basic_short_tone>|<ess_short_tone>|<iss_short_tone>|<basic_long_tone> |<ess_long_tone>|<iss_long_tone>
<octave_high_prefix>:	"+"
Maximum number of tones:	40
Maximum numbers of characters in melody:	120
Example:	

```
BEGIN:EMELODY
VERSION:1.0
NAME:Test melody 1
COMPOSER:John Smith
MELODY:
+f+a+fa(b)bdcC+GA+d+#c+dfg+daea+d+#c+e+f+e+fa(b)bdC+EA+d+#c+
dfgba+d+#C
END:EMELODY
```

iMelody Format

iMelody Object

Description:	This is a definition of the iMelody object. This object is used when a user-defined melody is exchanged
Syntax:	**<imelody-object>**
	"BEGIN:IMELODY"<CR><LF>
	"VERSION:" <version><CR><LF>
	"FORMAT:"<format>
	["NAME:"<name><CR><LF>]
	["COMPOSER:" <composer><CR><LF>]
	["BEAT:"<beat>]
	["STYLE:"<style>]
	["VOLUME:"<volume>]
	"MELODY:"<melody><CR><LF>
	"END:IMELODY"
File extension:	imy
Example filename	mymelody.imy
Parameters:	
<version>:	"1.0"
<format>:	"CLASS1.0"	"CLASS2.0"
<name>:	Alphanumeric string
<composer>:	Alphanumeric string
<beat>:	"25"	"26"	"27"	...	"899"	"900"
<style>:	"S0"	"S1"	"S2"
<volume>:	V0"	"V1"	...	"V15"	"+"	"-"
	(+/- indicates volume change relative to current. Default is current)
<melody>:	{<silence>|<note>|<led>|<vib>|<backlight>|<repeat>}+
<silence>:	<rest ><duration>[<duration-specifier]
<rest>:	"r"
<duration>:	"0"	"1"	"2"	"3"	"4"	"5"
<duration-specifier>:	"."	":"	";"
<note>:	[<octave-prefix>]<basic-ess-iss-note><duration>[<duration-specifier]
<octave-prefix>:	"*0"	"*1"	…	"*8"
	((A=55Hz)	(A=110Hz)	…	(A=14080 Hz))
<basic-ess-iss-note>:	<basic-note>	<ess-note>	<iss-note>
<basic-note>:	"c"	"d"	"e"	"f"	"g"	"a"	"b"
<ess-note>:	"&d"	"&e"	"&g"	"&a"	"&b"
	(flat notes)
<iss-note>:	"#c"	"#d"	"#f"	"#g"	"#a"
	(sharp notes)
<led>:	"ledoff"	"ledon"
<vibe>:	"vibeon"	"vibeoff"
<backlight>:	"backon"	"backoff"

<repeat>:	"(" | ")" | "@"<repeat-count>
	(start of repeat block, end of repeat block and repetition count)
<repeat-count>:	"0" | "1" | "2" | ...
	(0 is repeat forever)
Maximum number of notes:	40
Maximum numbers of characters in melody:	120

Example:

```
BEGIN:IMELODY
VERSION:1.0
NAME:Melody1
COMPOSER:Mozart
BEAT:120
STYLE:1
VOLUME:7
MELODY:&b2#c3-c2*4g3d3+#d1r3d2e2:d1+f2f3
END:IMELODY
```

vCard Format

The vCard object in the T68 uses a subset of the properties defined in the vCard specification from the Internet Mail Consortium. The vCard standard is available from the Infrared Data Association at **http://www.irmc.org**.

vCard Object

.

Description:	This is a definition of the vCard object. This object is used when a user-defined contact card is exchanged
Syntax:	**<vcard-object>** **"BEGIN:VCARD<CR><LF>** **"VERSION:"<version><CR><LF>** **"N:"<encoding>";<character_set>":"<name><CR><LF>** **["FN:"<encoding>";"<character_set>":"<formatted_name><CR><LF>]** **["TEL:"<telephone_number><CR><LF>]** **["X-IRMC-LUID:"<x_irmc_local_unique_identifier><CR><LF>]** **"END:VCARD"**
File extension:	vcf
Example filename:	person.vcf
Parameters:	
<version>:	"2.1"
<encoding>:	("QUOTED-PRINTABLE"|"BASE-64"|"8BIT")
<character_set>:	("ISO-8859-1"|"UTF-8")
<name>:	String; maximum length 18 bytes. Encapsulates the individual components of an object's name. The property value is a concatenation of the Family Name (first field), Given Name (second field), Additional Names (third field), Name Prefix (fourth field) and Name Suffix (fifth field) strings.

<formatted_name>:   String; maximum length 20 bytes. Specifies the formatted name string associated with the vCard object. This is the way that the name is to be displayed.

<telephone_string>:   String; maximum length 20 bytes. Specifies the canonical number string for telephony communication with the vCard object. The value of this property is specified in a canonical form in order to specify an unambiguous representation of the globally unique telephony endpoint. This property is based on the X.520 Telephony Number attribute.

<x_irmc_local_unique _ identifier>:   String; maximum length 12 bytes. IrMC Local Unique Identifier field label. Local Unique identifier 48 bits coded in its hexadecimal representation as 12 ASCII characters.

Example:

```
BEGIN:VCARD
VERSION:2.1
N:QUOTED-PRINTABLE;CHARSET=ISO-8859-1:Book;Sven;Ola;Mr.
FN:QUOTED-PRINTABLE;CHARSET=ISO-8859-1:Mr. Sven O. Book
TEL:+4646123123
END:VCARD
```

vNote Format

Syntax:	**\<vnote-object\>** **"BEGIN:VNOTE\<CR\>\<LF\>** **"VERSION:"\<version\>\<CR\>\<LF\>** **["X-IRMC-LUID:"\<x_irmc_local_unique_identifier\>\<CR\>\<LF\>]** **"N:"\<encoding\>";"\<character_set\>":"\<name\>\<CR\>\<LF\>** **["FN:"\<encoding\>";"\<character_set\>":"\<formatted_name\>\<CR\>\<LF\>]** **["TEL:"\<telephone_number\>\<CR\>\<LF\>]** **"END:VCARD"**
File extension:	vnt
Example filename:	scribble.vnt
Parameters:	
\<version\>:	"2.1"
\<encoding\>:	("QUOTED-PRINTABLE"|"BASE-64"|"8BIT")
\<character_set\>:	("ISO-8859-1"|"UTF-8")
\<name\>:	String; maximum length 18 bytes. Encapsulates the individual components of an object's name. The property value is a concatenation of the Family Name (first field), Given Name (second field), Additional Names (third field), Name Prefix (fourth field), and Name Suffix (fifth field) strings.
\<formatted_name\>:	String; maximum length 20 bytes. Specifies the formatted name string associated with the vCard object. This is the way that the name is to be displayed.
\<telephone_string\>:	String; maximum length 20 bytes. Specifies the canonical number string for telephony communication with the vCard object. The value of this property is specified in a canonical form in order to specify an unambiguous representation of the globally unique telephony endpoint. This property is based on the X.520 Telephony Number attribute.
\<x_irmc_local_unique_ identifier\>:	String; maximum length 12 bytes. IrMC Local Unique Identifier field label. Local Unique identifier 48 bits coded in its hexadecimal representation as 12 ASCII characters.
Example:	BEGIN:VCARD VERSION:2.1 N:QUOTED-PRINTABLE;CHARSET=ISO-8859-1:Book;Sven;Ola;Mr. FN:QUOTED-PRINTABLE;CHARSET=ISO-8859-1:Mr. Sven O. Book TEL:+4646123123 END:VCARD

vCalendar Format

The vCalendar standard is available from the Infrared Data Association at **http://www.irmc.org**.

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vCalendar Object

Description: This is a definition of the vCalendar object, which is related to the vEvent object. These objects are used when a user-defined calendar entry is exchanged

Syntax: **<vcalendar-object>**

"BEGIN:VCALENDAR"<CR><LF>

"VERSION:"<version><CR><LF>

"PRODID:"<prodid><CR><LF>

"BEGIN:VEVENT"<CR><LF>

"END:VEVENT"<CR><LF>

"BEGIN:VEVENT"<CR><LF>

"END:VEVENT"<CR><LF>

...

"END:VCALENDAR"<CR><LF>

File extension: vcs

Example filename: filename.vcs

VEVENT See **vEvent** Object.

Parameters:

<version>: "1.0"

<prodid>: "Sony Ericsson Calendar 1.0"

Example vCalendar vEvent object (MEETING):
```
BEGIN:VCALENDAR
VERSION:1.0
PRODID:Sony Ericsson Calendar 1.0
BEGIN:VEVENT
DTSTART:19990125T123000
DTEND:19990125T170000
AALARM:19990125T121500
CATEGORIES:MEETING
SUMMARY;QUOTED-PRINTABLE;CHARSET=ISO-8859-1:Meeting
with Lars
LOCATION;QUOTED-PRINTABLE;CHARSET=ISO-8859-1:In my
room
X-IRMC-LUID:1E12FF7C01AB
END:VEVENT
END:VCALENDAR
```

vEvent Object

Decription:	This is a definition of the vEvent object, which is related to the vCalendar object. These objects are used when a user-defined calendar entry is exchanged. The phone supports all day event meetings. The sync engine shall send the vCalendar object with DTSTART, set the date (YYYYMMDD), and leave the time 'THHMMSS' out. The DTSTART is mandatory, as well as the DTEND. The same principles applies for DTEND, that is, 'THHMMSS' is skipped.

Syntax: **<vevent-object>**

"BEGIN:VEVENT"<CR>
"DTSTART:"<date_and_time>
"DTEND:"<date_and_time>
"AALARM:"<date_and_time>
"CATEGORIES:"<category>
"SUMMARY;"<encoding>";"<character_set>":"<summary>
"LOCATION;"<encoding>";"<character_set>":"<location>
"X-IRMC-LUID:" <x_irmc_luid>
"END:VEVENT"

Parameters:

<date_and_time>:	String; <year><month><day>T<hour><minute<second>. The date and time values for all vCalendar properties are formatted as a string consistent with the ISO 8601 representation for combinations of dates and times. Note: All time values are given in local time.
Example <date_and_time>:	19960415T083000. 8:30 AM on April 15, 1996 local time.
<category>:	"MEETING" | "PHONE CALL" | "MISCELLANEOUS"
<encoding>:	"QUOTED-PRINTABLE" | "BASE-64" | "8BIT"
<character_set>:	"ISO-8859-1" | "UTF-8"
<summary>:	String; maximum length 36 bytes.
<location>:	String; maximum length 20 bytes
<x_irmc_luid>:	String; maximum length 12 bytes. IrMC Local Unique Identifier field label. Local Unique identifier 48 bits coded in its hexadecimal representation as 12 ASCII characters. Holds the phone book index in decimal format.
Example *DTSTART-DTEND:*	DTSTART:1999-02-10, DTEND:1999-02-12. If the DTSTART and DTEND have different dates, the phone shall interpret it as a whole day event occurring over several days. In this example: the whole day on 1999-02-10, 1999-02-11, and 1999-02-12.

Appendix –T68i

This chapter contains information about specific AT commands for the T68i mobile phone. The AT commands in this chapter are new, updated or removed in comparison to the T68 mobile phone. See chapters 1 to 6 for AT commands that are not described in this chapter, as they are unchanged from T68.

New AT Commands

Ensemble C3: Call Control

Commands

| **AT+CLCC** | **List current call** |

Description:	This command returns list of current calls of phone. If command succeeds but no calls are available, no information response is sent to terminal equipment.
Execution command:	**AT+CLCC**
Execution command response:	[+CLCC: <id1> ,<dir>,<stat>,<mode>,<mpty> [,<number>,<type>[,<alpha> [,<priority>]]] [<CR><LF> +CLCC: <id2>,<dir>,<stat>,<mode>,<mpty> [,<number>,<type>[,<alpha> [,<priority>]]] [...]]] OK ERROR
Test command:	**AT+CLCC=?** Shows if the command is supported.
Termination:	Phone
Parameters:	

<idx>:

<idx>	**Description**
Integer	Call identification number as described in *Digital cellular telecommunications system (Phase 2+);Universal Mobile Telecommunications System (UMTS);Man-Machine Interface (MMI) of the User Equipment (UE).* This number can be used in **AT+CHLD** command operations.

<dir>:

<dir>	**Description**
0	Mobile originated (MO) call
1	Mobile terminated (MT) call

<stat>:

<stat>	Description
0	Active
1	Held
2	Dialing (MO call)
3	Alerting (MO call)
4	Incoming (MT call)
5	Waiting (MT call)

<mode>:

<mode>	Description
0	Voice
1	Data
2	Fax
3	Voice followed by data, voice mode **(Not supported!)**
4	Alternating voice/data, voice mode waiting (MT call) **(Not supported!)**
5	Alternating voice/fax, voice mode **(Not supported!)**
6	Voice followed by data, data mode **(Not supported!)**
7	Alternating voice/data, data mode **(Not supported!)**
8	Alternating voice/fax, fax mode **(Not supported!**)
9	Unknown

<mpty>:

<mpty>	Description
0	Call is not one of multiparty (conference) call parties
1	Call is one of multiparty (conference) call parties

<number>:

<number>	Description
String type	String type phone number of format specified by <type>.

<type>:

<type>	Description
Integer format	Type of address octet (Refer to *Digital cellular telecommunications system (Phase 2) (GSM);Mobile radio interface;Layer 3 specification* section 10.5.4.7)
128	Unknown numbering plan, national / international number unknown
129	ISDN / telephony numbering plan, national / international unknown
145	ISDN / telephony numbering plan, international number
161	ISDN / telephony numbering plan, national number
128 - 255	Other values refer to *Digital cellular telecommunications system (Phase 2) (GSM);Mobile radio interface;Layer 3 specification* section 10.5.4.7

<alpha>:

<alpha>	Description
String	Alphanumeric representation of <number> corresponding to the entry found in phonebook; used character set should be the one selected with command Select terminal equipment Character Set **AT+CSCS**

<priority>:

<priority>	Description
Integer	Optional digit type parameter indicating the eMLPP priority level of the call, values specified in *Technical Specification Group Services and System Aspects; enhanced Multi-Level Precedence and Pre-emption service (eMLPP) - Stage 1*.

Ensemble C38: Bluetooth Commands

Commands

AT+BINP	Bluetooth Input

Description: Command used for requesting some specific data input from the phone. On reception of this command the phone shall perform the proper actions such that the requested information is sent back to the HF using the +BINP response.

The type of data the HF shall expect in the <dataresp> parameter returned by the phone depends on the information requested in each case.

Execution command: AT+BINP=<datarequest>

Execution command response: +BINP:<dataresp>1...<dataresp>n

Test command: **AT+BINP=?** Shows if the command is supported**.**

Test command response: +BINP: (list of supported <datarequest>s)

Termination: Phone

Parameters:

<datarequest>: Integer type

<datarequest> integer type	Description
1	Request phone number corresponding to the last voice tag recorded in the HF.

<dataresp>:

<dataresp>	Description
<dataresp>1..<dataresp>n	Data parameters returned by the phone. Their contents depends on the value of the <datarequest> parameter as described in table 3.

Supported values on <dataresp> depending on <datarequest>:

<datarequest>	Description
1	<Phone number>; Phone number string (max. 32 digits). The format (type of address) of the phone number string shall conform with the rules stated in *Digital cellular telecommunications system (Phase 2) (GSM);Mobile radio interface;Layer 3 specification*, subclause 10.5.4.7, for a value (in integer format) of the type of address octec of 145, if dialling string includes international access code character "+", and for a value of 129 otherwise.

AT+BLDN	**Bluetooth Last Dialled Number**
Description:	Command used for calling the last phone number dialled. On reception of this command, the phone will set up a voice call to the last phone number dialed.
Execution command:	**AT+BLDN**
Test command:	**AT+BLDN=?** Shows if the command is supported.
Termination:	Phone

AT+BVRA	**Bluetooth Voice Recognition Activation**
Description:	Enables/disables the voice recognition function in the phone. This command activates the result code **+BVRA**
Execution command:	**AT+BVRA=**<vrec>
Read command:	**AT+BVRA?** Displays the current <vrec> setting.
Test command:	**AT+BVRA=?** Shows if the command is supported.
Test command response:	+BVRA: (list of supported <vrec>s) OK ERROR
Termination:	Phone
Parameter:	
<vrec>:	Integer type

<vrec>	**Description**
0	Disable Voice recognition in the phone.
1	Enable Voice recognition in the phone.

AT+NREC	**Noise Reduction and Echo Canceling**
Description:	Command issued to enable/disable any Echo Cancelling and Noise Reduction functions embedded in the phone.
Execution command:	**AT+NREC=**<nrec>
Read command:	**AT+NREC?** Displays the current <nrec> setting.
Test command:	**AT+NREC=?** Shows if the command is supported.
Test command response:	+NREC: (list of supported <nrec>s)
Termination:	Phone
Parameter:	
<nrec>:	Integer type

<nrec>	Description
0	Disable EC/NR in the phone.
1	Enable EC/NR in the phone. **Sony Ericsson Specific.**

AT+VGM   Gain of Microphone

Description:	Command issued by the HF to report its current microphone gain level setting to the phone. <gain> is a decimal numeric constant, relating to a particular (implementation dependent) volume level controlled by the HF. This command does not change the microphone gain of the phone, it simply indicates the current value of the microphone gain in the HF.
	This command activates the result code **+VGM**
Execution command:	**AT+VGM=**<gain>
Read command:	**AT+VGM?** Displays the current <gain> setting.
Test command:	**AT+VGM=?** Shows if the command is supported.
Test command response:	+VGM: (list of supported <gain>s)
Termination:	Bluetooth Adapter
Parameters:	
<gain>:	Integer type

<gain>	Description
0-15	0 - Minimum gain
	15 - Maximum gain

AT+VGS   Gain of Speaker

Description:	Command issued by the HF to report its current speaker gain level setting to the phone. <gain> is a decimal numeric constant, relating to a particular (implementation dependent) volume level controlled by the HF. This command does not change the speaker gain of the phone, it simply indicates the current value of the speaker gain in the HF.
	This command activates the result code **+VGS**
Execution command:	**AT+VGS=**<gain>
Read command:	**AT+VGS?** Displays the current <gain> setting.

Test command:	**AT+VGS=?** Shows if the command is supported.
Test command response:	+VGS: (list of supported <gain>s)
Termination:	Bluetooth Adapter
Parameter:	
<gain>:	Integer type

<gain>	Description
0-15	0 - Minimum gain
	15 - Maximum gain

Unsolicited Result Codes

+BVRA — Bluetooth Voice Recognition Activation Indication

Description:	Unsolicited result code used to notify the HF when the voice recognition function in the phone has been terminated autonomously.
	This result code is activated by **AT+BVRA** .
Unsolicited result code:	**+BVRA:** <vrect>
Parameter:	
<vrect>:	

<vrect>	Description
0	Voice recognition is disabled in the phone.

+VGM — Gain of Microphone Indication

Description:	Unsolicited result code issued by the phone to set the microphone gain of the HF. <gain> is a decimal numeric constant, relating to a particular (implementation dependent) volume level controlled by the HF.
	This result code is activated by **AT+VGM**.
Unsolicited result code:	**+VGM:** <gain>
Note!	Due to the small inconsistency between the *Digital cellular telecommunications system (Phase 2+); AT command set for GSM Mobile Equipment (ME)* standard and the current Headset specification *(Specification of the Bluetooth System; Profiles, v1.1, Part K:6, Headset Profile.)*, the HF shall also accept the "=" symbol in place of ":" as a valid separator for this unsolicited result code.
Parameter:	
<gain>:	Integer type

<gain>	Description
0-15	0 - Minimum gain 15 - Maximum gain

+VGS   Gain of Speaker Indication

Description: Unsolicited result code issued by the phone to set the speaker gain of the HF. <gain> is a decimal numeric constant, relating to a particular (implementation dependent) volume level controlled by the HF.

This result code is activated by **AT+VGS**.

Unsolicited result code: **+VGS:** <gain>

Note! Due to the small inconsistency between the *Digital cellular telecommunications system (Phase 2+); AT command set for GSM Mobile Equipment (ME)* standard and the current Headset specification *(Specification of the Bluetooth System; Profiles, v1.1, Part K:6, Headset Profile.)*, the HF shall also accept the "=" symbol in place of ":" as a valid separator for this unsolicited result code.

Parameter:

<gain>:   Integer type

<gain>	Description
0-15	0 - Minimum gain 15 - Maximum gain

+BSIR   Bluetooth Setting of In-band Ring tone Indication

Description: Unsolicited result code issued by the phone to indicate to the HF that the in-band ring tone setting has been locally changed. The HF may react accordingly by changing its own alert method.

Unsolicited result code: **+BSIR:** <bsir>

Parameter:

<bsir>:   Integer type

<bsir>	Description
0	The phone provides no in-band ring tone.
1	The phone provides an in-band ring tone.

+BINP   Bluetooth Input Indication

Description: Unsolicited result code issued by the phone in response to a request from the terminal equipment to provide information of a specified type.

Unsolicited result code: **+BINP:** <dataresp1>[,...,<datarespn>]

Parameters:

<datarespn>Type is dependent on the <datarequest> parameter:

<datarespn>	..
..	..
..	..

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Updated AT Commands

Ensemble C3: Call Control

Commands

ATD   Dial Command (ver.5)

Description: Used to initiate a phone connection, which may be data or voice (phone number terminated by semicolon). The phone number used to establish the connection will consist of digits and modifiers, or a stored number specification.

It is also possible to initiate a phone connection with the use of the alphanumeric field for a phonebook entry location or by the use of the entry location, <n>, itself .

Command Select Phonebook Memory Storage (+CPBS) is recommended to be used to select memory storage.

Note! Only phone and SM memory storage are supported by ATD.

If the dial string is followed by a semicolon this informs the phone that the number is a voice rather than a data number.

If the dial string is omitted but the semicolon included the command instructs the phone to do a network detect. If the network is available OK is returned.

Description:	Originate a call and dial the phone number specified in the command as <dial_string>. or Do a network detect.
Execution command:	**ATD**[<dial_string>][I][G][;]
Execution command response:	CONNECT CONNECT <text> NO CARRIER ERROR NO DIAL TONE BUSY OK
Version:	5
Termination:	Modem, Phone

Description:	Dial the phone number stored in the mobile phone which is located by the index <n>.
Execution command:	**ATD>**ME<n>[I][G][;]
Execution command response:	CONNECT CONNECT <text> NO CARRIER ERROR NO DIAL TONE BUSY OK
Version:	5
Termination:	Modem, Phone

Description:	Dial the phone number stored in the SIM card which is located by the index <n>.
Execution command:	**ATD>**SM<n>[I][G][;]
Execution command response:	CONNECT CONNECT <text> NO CARRIER ERROR NO DIAL TONE BUSY OK
Version:	5
Termination:	Modem, Phone

Description:	Dial the phone number stored in the Last dialled number list on the SIM card, which is located by the index <n>. The most recently dialled number is assumed to have <n>="1".
Execution command:	**ATD>**LD<n>[I][G][;]
Execution command response:	CONNECT CONNECT <text> NO CARRIER ERROR NO DIAL TONE BUSY OK
Version:	5
Termination:	Modem, Phone

Description:	Originate call to phone number which corresponding alphanumeric field is <str> (if possible, all available memories should be searched for the correct entry).
Execution command:	**ATD>**<str>[I][G][;]
Execution command response:	CONNECT CONNECT <text> NO CARRIER ERROR NO DIAL TONE BUSY OK
Version:	5
Termination:	Modem, Phone

Description:	Originate call to phone number in entry location <n>. (Command Select Phonebook Memory Storage +CPBS setting is recommended to be used, to select memory storage. Note: Only phone and SM memory storage are supported by ATD.)
Execution command:	**ATD>**<n>[I][G][;]
Execution command response:	CONNECT CONNECT <text> NO CARRIER ERROR NO DIAL TONE BUSY OK
Version:	5
Termination:	Modem, Phone

Description:	Redial the last phone number dialled. **Sony Ericsson specific.** **Note: AT will send the last dialled number for respective channel (accessory). This is not necessarily the same as ATD>LD1.**
Execution command:	**ATDL**[I][G][;]
Execution command response:	...
Version:	5
Termination:	Modem, Phone
Parameters:	

<dial_string>	Description
"0 1 2 3 4 5 6 7 8 9 * # + A B C"	Valid characters for origination.
D	The D modifier is ignored but is included only for compatibility purposes.
W	The W modifier is ignored but is included only for compatibility purposes.
,	The comma modifier is ignored but is included only for compatibility purposes.
T	The T modifier is ignored but is included only for compatibility purposes.
P	The P modifier is ignored but is included only for compatibility purposes.
!	The ! modifier is ignored but is included only for compatibility purposes.
@	The @ modifier is ignored but is included only for compatibility purposes.

<dial_string>:

<Final Result Code>	Description
CONNECT	If connection is successfully established, only valid for data connections.
CONNECT <text>	If connection is successfully established, only valid for data connections.
NO CARRIER	Unable to establish a connection or the connection attempt was aborted by the user.
ERROR	An unexpected error occurred while trying to establish the connection.
NO DIALTONE	The mobile phone is being used for a voice call or is not within coverage of the network.
BUSY	The phone number called is engaged, valid for data and voice connections.
OK	Only valid for voice connections

<text>	Description
28800	Connected with data bit rate of 28800 bits/s (HSCSD)
19200	Connected with data bit rate of 19200 bits/s (HSCSD)
14400	Connected with data bit rate of 14400 bits/s (HSCSD)
9600	Connected with data bit rate of 9600 bits/s
4800	Connected with data bit rate of 4800 bits/s
2400	Connected with data bit rate of 2400 bits/s

<str>	Description
String type	String type value, which should equal to an alphanumeric field in a phonebook entry in the searched memories. **Note:** The character specifying which number in the contact entry that should be used must be included in the string; e.g. "/H" for home number, "/M" for mobile number and so on. The character set used should be the one selected with Select terminal equipment Character Set **+CSCS**, refer to ensemble S1.

Character	Description
I or i	Override the CLIR supplementary service subscription default value for this call; I = invocation (restrict CLI presentation) and i = suppression (allow CLI presentation); Refer to **AT+CLIR**, ensemble S6.
G or g	Control the CUG supplementary service information for this call; uses index and info values set with command +CCUG.

Removed AT Commands

Ensemble C3: Call Control

Commands

AT command	Version	Termination
ATD<dial_string>	2	Phone
ATD<dial_string>	4	Modem

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Appendix – T300/T310

This chapter contains information about specific AT commands for the T300 and T310 mobile phones. The AT commands in this chapter are new, updated or removed in comparison to the T68 mobile phone. See chapters 1 to 6 for AT commands that are not described in this chapter, as they are unchanged from T68.

New AT Commands

Ensemble S29: WAP Browser

Commands

AT*EWPC	**Sony Ericsson WAP Profile Create**

Description: Creates a new WAP profile with name <name>.

Read command lists all WAP setting profile names and information about their status - locked or not.

Execution command: **AT*EWPC=**<name>

Read command: **AT*EWPC?** Displays the current <name> setting.

Read response: *EWPC: <name1>,<lock_state>[<CR><LF>

*EWPC: <name2>,<lock_state>[...]]

Test command: **AT*EWPC=?** Shows if the command is supported.

Test command response: *EWPC: <nlength>,(list of supported <lock_state>s)

Termination: Phone

Parameters:

<name>:

<name>	Function
String value	WAP profile name. Max length defined by <nlength>

<nlength>:

<nlength>	Function
16	Max length of WAP profile name.

<lock_state>:

<lock_state>	Function
...	This parameter indicates whether the profile is locked or not.
0	The profile is **not** locked
1	The profile **is** locked

AT*EWPD — Sony Ericsson WAP Profile Delete

Description:	Deletes the WAP profile with name <name>.
Execution command:	**AT*EWPD=**<name>
Test command:	**AT*EWPD=?** Shows if the command is supported.
Test command response:	*EWPD: (list of supported <nlength>s)
Termination:	Phone

Parameters:

<name>:

<name>	Function
String value	WAP profile name. Max length defined by <nlength>

<nlength>:

<nlength>	Function
16	Max length of WAP profile name.

Updated AT Commands

Ensemble S9: Mobile Equipment, Control and Status

Commands

AT*EAPP	**Sony Ericsson Application function (ver. 4)**
Description:	The set command is used for requesting the MT to perform an application function specified by <app> and <subfunc>. The sub-function parameter specifies which function within the specified application to call. The <text> parameters can be used to pass data to the application. The use of the <text> parameters are specified with each subfunction.

NOTE: There is no guarantee that the application will execute. The command will return OK if the command, including parameters, is supported. This also means that there is no correlation between the OK response and the time the application function is performed by the MT.

NOTE: If the *EAPP command is issued and the <app> parameter references an application that is already running, a second instance of this application shall not be started. The application already running should however perform the subfunction indicated with the <subfunc> parameter.

Test command shows which applications and subfunctions are supported by the MT.

AT*EAPP=?   Shows if the command is supported.

*EAPP: 0,(0-5)

*EAPP: 1,(1,3,4-5)

*EAPP: 3,(0,4)

*EAPP: 4,(0-2)

... etc.

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Execution command:	AT*EAPP=<app> [,<subfunc> [,<text1> [,<text2>]]]
Test command:	**AT*EAPP=?** Shows if the command is supported.
Test command response:	*EAPP: <app>,(list of supported <subfunc>s), [<CR><LF><app>,(list of supported <subfunc>s),[...]]
Termination:	Phone
Parameters:	

<app>:

<app>	Description
0	SMS application.
1	Phonebook application.
2	E-mail application.
3	WAP application.
4	Calendar application.
5	**Not supported**
6	Multimedia messaging application **Not supported in SIR 2.2**
7	Notes application **Not supported in SIR 2.2 T300/T310**
8	Image Browser
9	Sound Browser **Not supported in SIR 2.2**

<subfunc>:

<subfunc>	Description
0-15	Application specific information. See tables below.

SMS Message, <app> = 0:

<subfunc>	Description
0	Send new SMS message. Pre-entered message text can be provided in <text1>.
1	Inbox
2	Unsent
3	Add new template. Pre-entered message text can be provided in <text1>.
4	Sent items

<subfunc>	Description
5	Send new message to specified PB entry. Pre-entered message text can be provided in <text1>. Name of PB entry to send message to shall be provided in <text2>
6	Send new message and include formatting characters and PB entry for Email. NOTE: It is up to the MT to insert the formatting characters and the PB entry.
7	Send new message and include formatting characters for WWW NOTE: It is up to the MT to insert the formatting characters and the PB entry.
8	Add picture. **Not supported in SIR 2.2**
9	Add melody. **Not supported in SIR 2.2**

Phonebook, <app> = 1:

<subfunc>	Description
0	Add new number. Pre-entered number can be provided in <text1>.
1	Find and Call. Pre-entered name can be provided in <text1>. NOTE: If a name is provided, the search is started without user interaction.
2	Find and Edit. Pre-entered name can be provided in <text1>. NOTE: If a name is provided, the search is started without user interaction.
3	Add new voice label. **Not supported in SIR 2.2 T300/T310**
4	Add new group. Pre-entered name can be provided in <text1>.
5	Add email address. Pre-entered address can be provided in <text1>.

Email, <app> = 2:

<subfunc>	Description
0	Send new message. Pre-entered message (body) text can be provided in <text1>.

<subfunc>	Description
1	Inbox (read new mail). <text1>="Y" => Check for new mail. <text1>="N" => Do not check for new mail.
2	Outbox
3	Draft
4	Add attachment

WWW, <app> = 3:

<subfunc>	Description
0	Enter address (URL). Pre-entered URL can be provided in <text1>.
1	Go to address. Pre-entered URL **must** be provided in <text1>. The connection is initiated without user interaction.
2	Add new bookmark
3	Edit homepage
4	Go to homepage
5	Go to last visited page **Not supported in SIR 2.2**

Calendar, <app> = 4:

<subfunc>	Description
0	Add new appointment
1	Add new Todo
2	Todo view
3	Today view
4	Week view
5	Month view

Multimedia Messaging application, <app> = 6:

<subfunc>	Description
0	Send new message. Pre-entered message text can be provided in <text1>.
1	Inbox (read new mail). <text1>="Y" => Check for new mail. <text1>="N" => Do not check for new mail.
2	Outbox
3	Draft
4	Add attachment

Notes application, <app> = 7:

<subfunc>	Description
0	Create new note. Pre-entered message text can be provided in <text1>.
1	Display list of notes. If only notes of a certain class should be shown its name can be provided in <text1>

Image Browser application, <app> = 8:

<subfunc>	Description
0	Display an image in fullscreen mode. This is done by choosing a directory that contains only one picture. The directory is specified in <text1>
1	Display thumbnail images. The command shows thumbnail images of all pictures in the directory specified by <text1>.
2	Delete one or several images. The image name is specified in <text1>. (Note: Requester from Image Handler, not Image Browser)
255	Close Image Browser

Sound browser application, <app> = 9:

<subfunc>	Description
0	Play a certain sound The index of the sound shall be provided in <text1>.
255	Close sound browser

Ensemble S15: GPRS/Packet Domain

Commands

AT+CGDCONT   DEFINE PDP CONTEXT (ver. 2)

Description:	The set command specifies PDP context parameter values for a PDP context identified by the (local) context identification parameter, <cid>. The number of PDP contexts that may be in a defined state at the same time is given by the range returned by the test command.
	A special form of the set command, +CGDCONT= <cid> causes the values for context number <cid> to become undefined.
	The read command returns the current settings for each defined context.
	Sony Ericsson Implementation Note: The read command returns the current settings for each context defined by the +CGDCONT set command
	The test command returns values supported as a compound value. If the MT supports several PDP types, <PDP_type>, the parameter value ranges for each <PDP_type> are returned on a separate line.
	Sony Ericsson Implementation Note: Only a single PDP type is supported, namely "IP"
Execution command:	**+CGDCONT=**[<cid> [,<PDP_type> [,<APN> [,<PDP_addr> [,<d_comp> [,<h_comp> [,<pd1> [,…[,pdN]]]]]]]]]
Read command:	**+CGDCONT?** Displays the current <cid>, <PDP_type>,<APN>, <PDP_addr>,<d_comp>, <h_comp>[,<pd1>[,…[,pdN]]] [<CR><LF> +CGDONT: cid, <PDP_type>,<APN>,<PDP_addr>,<d_comp>, <h_comp>[,<pd1>[,...[,pdN]]] [. . .]]settings.
Test command:	**+CGDCONT=?** Shows if the command is supported.
Test command response:	+CGDCONT: (range of supported <cid>s), <PDP_type>,,,(list of supported <d_comp>s), (list of supported <h_comp>s)[,(list of supported <pd1>s)[,…[,(list of supported <pdN>s)]]] [<CR><LF> +CGDCONT: (range of supported <cid>s), <PDP_type>,,,(list of supported <d_comp>s), (list of supported <h_comp>s)[,(list of supported <pd1>s)[,…[,(list of supported <pdN>s)]]] [...]]
Termination:	Modem
Parameters:	

<cid>:

<cid>	Description
Integer type	(PDP Context Identifier) a numeric parameter which specifies a particular PDP context definition. The parameter is local to the TE-MT interface and is used in other PDP context-related commands. The range of permitted values (minimum value = 1) is returned by the test form of the command.
1-10	Supported values. **Sony Ericsson specific.**

<PDP_type>:

<PDP_type>	Description
X25	ITU-T/CCITT X.25 layer 3 **Not supported by Sony Ericsson**
IP	Internet Protocol (IETF STD 5)
OSPIH	Internet Hosted Octet Stream Protocol **Not supported by Sony Ericsson**
PPP	Point to Point Protocol (IETF STD 51) **Not supported by Sony Ericsson**

<APN>:

<APN>	Description
String type	(Access Point Name) a string parameter which is a logical name that is used to select the GGSN or the external packet data network. If the value is null or omitted, then the subscription value will be requested.

<PDP_address>:

<PDP_address>	Description
String type	A string parameter that identifies the MT in the address space applicable to the PDP. If the value is null or omitted, then a value may be provided by the terminal equipment during the PDP startup procedure or, failing that, a dynamic address will be requested.

<d_comp>:

<d_comp>	Description
0	PDP data compression OFF
1	PDP data compression ON **Not supported**

<d_comp>	Description
2..255	Reserved **Not supported**

<h_comp>:

<h_comp>	Description
1	PDP header compression OFF
2	PDP header compression ON **Not supported**
2..255	Reserved **Not supported**

<pdN>:

<pdN>	Description
String type	Zero to N string parameters whose meanings are specific to the <PDP_type> **Not supported by Sony Ericsson**

Ensemble S20: Sony Ericsson Specific AT Commands

Commands

AT*EBCA	**Sony Ericsson battery and charging algorithm (ver. 3)**

Description: This command is used to test the charging algorithm in the phone and to turn on/off unsolicited signal result codes (*EBCA). When turned on the unsolicited result code is given once per second.

Voltage, current and capacity are physically limited; i.e. they are platform dependent.

Note! For batteries without internal intelligence some of the parameters listed below might not be available. In these cases the value "0" (zero) will be returned.

The parameters below are used to store the results from the different ADC (A/D converter) measurements. They shall be cleared to zero after each read.

This command activates the result code ***EBCA.**

Execution command: **AT*EBCA=**<onoff>

Execution command response: *EBCA: <vbat1>, <vbat2>,<vbat3>, <vbat4>, <btype>, <dcio>, <icharge>, <iphone>,<acapacity>,<ccapacity>, <tempbattery>,<tempphone>,<chargestate>,<remcapacity>,<ipulse>, <ibattery>, <ChTempMin>, <ChTempMax>, <MainChTempMin>, <MainChTempMax>, <FlatVTimer>, <DV>, <DT>, <D2V>

Read command: **AT*EBCA?**   Displays the current <onoff> setting.

Test command: **AT*EBCA=?**   Shows if the command is supported.

Test command response: *EBCA: (list of supported<onoff>s)

Termination: Phone

Parameters:

<ADC result>:   ADC measurements

ADC result	Function
vbat1	TXON high and CHARGING on
vbat2	TXON high and CHARGING off
vbat3	TXON low and CHARGING on
vbat4	TXON low and CHARGING off
dcio	DCIO voltage measurement
vbat1	TXON high and CHARGING on

ADC result	Function
icharge	Charge current measurement

Note! The parameters <ncapacity>, <cycles> and <pacapacity> have been removed in this version of the command.

<onoff>:

<onoff>	Function
0	Disable
1	Enable

<vbat1>:

<vbat1>	Function
Integer	Battery voltage in number of mV divided by 10. I.e. a value of "3V" is reported as 300. Range 0-65500.

<vbat2>:

<vbat2>	Function
Integer	Battery voltage in number of mV divided by 10. I.e. a value of "3V" is reported as 300. Range 0-65500.

<vbat3>:

<vbat3>	Function
Integer	Battery voltage in number of mV divided by 10. I.e. a value of "3V" is reported as 300. Range 0-65500.

<vbat4>:

<vbat4>	Function
Integer	Battery voltage in number of mV divided by 10. I.e. a value of "3V" is reported as 300. Range 0-65500.

<btype>:

<btype>	Function
0	NiMH
1	Li
2	Unknown battery

<dcio>:

<dcio>	Function
Integer	Battery voltage from the charge in number of mV divided by 10. I.e. a value of "3V" is reported as 300. Range 0-65500

<icharge>:

<icharge>	Function
Integer	Current charge in number of mA. I.e. a value of "1A" is reported as 1000. Range 0-65500

<iphone>:

<iphone>	Function
Integer	Phone current consumption in number of mA. I.e. a value of "1A" is reported as 1000. Range 0-65500

<acapacity>:

<acapacity>	Function
Integer	Added capacity during charge in number of mAh divided by 10. I.e. a value of "1 Ah" is reported as 100. Range 0-65500.

Note! This parameter is applicable in GSM5/UMTS only.

<ccapacity>:

<ccapacity>	Function
Integer	Consumed capacity during charge in number of mAh divided by 10. I.e. a value of "1 Ah" is reported as 100. Range 0-65500

Note! This parameter is applicable in GSM5/UMTS only.

<tempbattery>:

<tempbattery>	Function
Signed integer	Temperature battery in °C, –20°C-+70°C

<tempbattery>:

<tempphone>	Function
Signed integer	Temperature phone in °C, –20°C-+70°C

<chargestate> parameter (if Li-Ion/Polymer):

<chargestate>	Function
0	Start
1	Safe Charge
2	Await
3	Handheld
4	Charge completed Safety timer
5	Charge completed Low Current
6	Charge Completed
7	Constant Current
8	Constant Voltage

<chargestate> parameter (if NiMH):

<chargestate>	Function
0	Start
1	Charge
2	Await
3	Handheld
4	Charge completed Safety timer
5	Charge completed dv/dt
6	Charge completed dT/dt
7	Charge completed: flat V
8	Charge completed: d2V/dt2

<remcapacity>:

<remcapacity>	Function
Integer	Remaining capacity in percents. Range 0-100%

<ipulse>:

<ipulse>	Function
Integer	Allowed Pulse Current charge in number of mA divided by 10. I.e. a value of "1A" is reported as 100. Range 0-65500.

<ibattery>:

<ibattery>	Function
Integer	Allowed Current charge in number of mA divided by 10. I.e. a value of "1A" is reported as 100. Range 0-65500.

<ChTempMin>:

<ChTempMin>	Function
Integer	Minimum Allowed Charging Temperature of Battery in °C. Range 0-65500.

<ChTempMax>:

<ChTempMax>	Function
Integer	Maximum Allowed Charging Temperature of Battery in °C. Range 0-65500.

<MainChTempMin>:

<MainChTempMin>	Function
Integer	Minimum Allowed Maintenance Charging Temperature of Battery in °C. Range 0-65500.

<MainChTempMax>:

<MainChTempMax>	Function
Integer	Maximum Allowed Maintenance Charging Temperature of Battery in °C. Range 0-65500.

<FlatVTimer>:

<FlatVTimer>	Function
Integer	Flat V Timer when charging a battery, in number of minutes. I.e. a value of "30 minutes" is reported as 30. Range 0-65500.

<DV>:

<DV>	Function
Integer	Value of –dV/dt charging termination in number of mV divided by 10. I.e. a value of "30mV" is reported as 3. Range 0-65500.

<DT>:

<DT>	Function
Integer	Value of dT/dt charging termination in number of °C. I.e. a value of "3 °C" is reported as 3. Range 0-65500.

<D2V>:

<D2V>	Function
Integer	Value of d2V/dt2 charging termination in number of mV divided by 10. I.e. a value of "30mV" is reported as 3. Range 0-65500.

Note! The parameters <ncapacity>, <cycles> and <pacapacity> have been removed in this version of the command.

Unsolicited Result Codes

*EBCA   **Sony Ericsson Indication Algorithm Status Indication (ver. 1)**

Description: This unsolicited result code indicates the changes in status of parameters of charging algorithm.

Unsolicited result code: ***EBCA (Refer to AT*EBCA ver. 3)**

Note!   The parameters <ncapacity>, <cycles> and <pacapacity> have been removed in this version of the command.

Parameters:

Ensemble S29: WAP Browser

Commands

AT*EWPR	**Sony Ericsson WAP Profiles (ver. 2)**

Description:	Set command selects active WAP settings profile. Read command queries active WAP settings profile. Note! If no active WAP-profile has been selected, the read command will return OK only.
Execution command:	**AT*EWPR=**\<name>
Read command:	**AT*EWPR?** Displays the current \<name> setting.
Test command:	**AT*EWPR=?** Shows if the command is supported.
Test command response:	*EWPR: (list of supported \<nlength>s)
Termination:	Phone
Parameters:	

\<name>:

\<name>	Function
string type	The name of the specific WAP settings profile to be activated. Field of maximum length \<nlength>. Character set as specified by command Select terminal equipment Character Set +CSCS.

\<nlength>:

\<nlength>	Function
16	Value indicating the maximum length of field \<name> (in characters).

Removed AT Commands

Ensemble C6: Data compression

Commands

AT command	Version	Termination
AT+DS	3	Modem
AT+DR		Modem

Ensemble C18: Fax Class 1

Commands

AT command	Version	Termination
AT+FCLASS		Modem
AT+FMI		Modem
AT+FMM		Modem
AT+FMR		Modem
AT+FTS		Modem
AT+FRS		Modem
AT+FTM		Modem
AT+FRM		Modem
AT+FTH		Modem

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Ensemble C19: Fax Class 2

Commands

AT command	Version	Termination
AT+FCLASS		Modem
AT+FAA		Modem
AT+FAXERR		Modem
AT+FBADLIN		Modem
AT+FBADMUL		Modem
AT+FBOR		Modem
AT+FBUF		Modem
AT+FBUG		Modem
AT+FCQ		Modem
AT+FCR		Modem
AT+FCIG		Modem
AT+FDFFC		Modem
AT+FDCC		Modem
AT+FDCS		Modem
AT+FDIS		Modem
AT+FDR		Modem
AT+FDT		Modem
AT+FECM		Modem
AT+FET		Modem
AT+FK		Modem
AT+FLID		Modem
AT+FLNFC		Modem
AT+FLPL		Modem

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AT+FMDL		Modem
AT+FMFR		Modem
AT+FMINSP		Modem
AT+FPHCTO		Modem
AT+FPTS		Modem
AT+FREV		Modem
AT+FRBC		Modem
AT+FREL		Modem
AT+FSPL		Modem
AT+FTBC		Modem
AT+FVRFC		Modem
AT+FWDFC		Modem

Ensemble S9: Mobile Equipment, Control and Status

Commands

AT command	Version	Termination
AT*EAPP	2	Phone

Ensemble S15: GPRS/Packet Domain

Commands

AT command	Version	Termination
AT+CGDCONT	1	Modem

Ensemble S20: Sony Ericsson Specific AT Commands

Commands

AT command	Version	Termination
AT*EBCA	2	Phone

Ensemble S26: Voice Control

Commands

AT command	Version	Termination
AT*EVAA		Phone
AT*EMWS		Phone

Ensemble S29: WAP Browser

Commands

AT command	Version	Termination
AT*EWPR	1	Phone
AT*EWPN		Phone

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Appendix – T610/T630

This chapter contains information about specific AT commands for the T610 and the T630 mobile phones. The AT commands in this chapter are new, updated or removed in comparison to the T68 mobile phone. See chapters 1 to 6 for AT commands that are not described in this chapter, as they are unchanged from the T68.

New AT Commands

Ensemble C2: Control and Identification

Commands

AT+CGMI	**Request manufacturer identification (ver. 1)**

Description: Execution command causes the MS to return one or more lines of information text <manufacturer>, determined by the MS manufacturer, which is intended to permit the user of the ITAE/ETAE to identify the manufacturer of the MS to which it is connected to. Typically, the text will consist of a single line containing the name of the manufacturer, but manufacturers may choose to provide more information if desired.

Execution command: **AT+CGMI**

Execution command response: **+CGMI=**<manufacturer>

Test command: **AT+CGMI=?** Shows if the command is supported.

Termination: Phone

Parameters:

<manufacturer>:

<manufacturer>	Function
SONY ERICSSON	Manufacturer's name in upper case letters. The total number of characters, including line terminators, in the information text shall not exceed 2048 characters. Text shall not contain the sequence "0<CR>" or "OK<CR>".

Ensemble C3: Call Control

Commands

AT+CVHU	**Voice Hangup Control**

Description: Set command selects whether ATH or "drop DTR" shall cause a voice connection to be disconnected or not. By voice connection is also meant alternating mode calls that are currently in voice mode.

NOTE: When <mode> = 2, this command must be seen in conjunction with the V.25ter, *Serial Asynchronous Automatic Dialing and Control*, command &D. Else, &D shall be ignored.

Execution command: **AT+CVHU=**[<mode>]

Read command: **AT+CVHU?** Displays the current <mode> setting.

Test command: **AT+CVHU=?** Shows if the command is supported.

Test command response: +CVHU (list of supported <mode>s)

Termination: Modem

Parameter:

<mode>:

<mode>	Description
0	"Drop DTR" ignored but OK response given. ATH disconnects.
1	"Drop DTR" and ATH ignored but OK response given.
2	"Drop DTR" behavior according to &D setting. ATH disconnects.

Ensemble C38: Bluetooth Commands

Commands

AT+BINP	Bluetooth Input

Description: Command used for requesting some specific data input from the phone. On reception of this command the phone shall perform the proper actions such that the requested information is sent back to the HF using the +BINP response.
The type of data the HF shall expect in the <dataresp> parameter returned by the phone depends on the information requested in each case.

Execution command: **AT+BINP=**<datarequest>

Execution command response: **AT+BINP:**<dataresp>1...<dataresp>n

Test command: **AT+BINP=?**   Shows if the command is supported.

Test command response: +BINP: (list of supported <datarequest>s)

Termination: Phone

Parameters:

<datarequest>:

<datarequest> integer type	Description
1	Request phone number corresponding to the last voice tag recorded in the HF.

<dataresp>:

<dataresp>	Description
<dataresp>1..<dataresp>n	Data parameters returned by the phone. Their contents depends on the value of the <datarequest> parameter as described in table 3.

Supported values on <dataresp> depending on <datarequest>:

<datarequest>	Description
1	<Phone number>; Phone number string (max. 32 digits). The format (type of address) of the phone number string shall conform with the rules stated in *Digital cellular telecommunications system (Phase 2+); Abbreviations and acronyms*, subclause 10.5.4.7, for a value (in integer format) of the type of address octec of 145, if dialling string includes international access code character "+", and for a value of 129 otherwise.

AT+BLDN	**Bluetooth Last Dialled Number**

Description: Command used for calling the last phone number dialled. On reception of this command, the phone will set up a voice call to the last phone number dialled.

Execution command: **AT+BLDN**

Test command: **AT+BLDN=?**   Shows if the command is supported.

Termination: Phone

AT+BVRA	**Bluetooth Voice Recognition Activation**

Description: Enables/disables the voice recognition function in the phone.

This command activates the result code **+BVRA**

Execution command: **AT+BVRA=**<vrec>

Read command: **AT+BVRA?**   Displays the current <vrec> setting.

Test command: **AT+BVRA=?**   Shows if the command is supported.

Test command response: +BVRA: (list of supported <vrec>s)

Termination: Phone

Parameters:

<vrec>:

<vrec> integer type	Description
0	Disable Voice recognition in the phone.
1	Enable Voice recognition in the phone.

AT+NREC	**Noise Reduction and Echo Cancelling**

Description: Command issued to enable/disable any Echo Cancelling and Noise Reduction functions embedded in the phone.

Execution command: **AT+NREC=**<nrec>

Read command: **AT+NREC?**   Displays the current <nrec> setting.

Test command: **AT+NREC=?**   Shows if the command is supported.

Test command response: +NREC: (list of supported <nrec>s)

Termination: Phone

Parameter:

<nrec>:

<nrec> integer type	Description
0	Disable EC/NR in the phone.
1	Enable EC/NR in the phone. **Sony Ericsson Specific.**

AT+VGM   Gain of Microphone

Description: Command issued by the HF to report its current microphone gain level setting to the phone. <gain> is a decimal numeric constant, relating to a particular (implementation dependent) volume level controlled by the HF. This command does not change the microphone gain of the phone, it simply indicates the current value of the microphone gain in the HF.

This command activates the result code **+VGM**

Execution command: **AT+VGM=**<gain>

Read command: **AT+VGM?** Displays the current <gain> setting.

Test command: **AT+VGM=?** Shows if the command is supported.

Test command response: +VGM: (list of supported <gain>s)

Termination: Bluetooth Adapter

Parameters:

<gain>:

<gain> integer type	Description
0-15	0 - Minimum gain 15 - Maximum gain

AT+VGS   Gain of Speaker

Description: Command issued by the HF to report its current speaker gain level setting to the phone. <gain> is a decimal numeric constant, relating to a particular (implementation dependent) volume level controlled by the HF. This command does not change the speaker gain of the phone, it simply indicates the current value of the speaker gain in the HF.

This command activates the result code **+VGS**

Execution command: **AT+VGS=**<gain>

Read command: **AT+VGS?** Displays the current <gain> setting.

Test command:	**AT+VGS=?** Shows if the command is supported.
Test command response:	+VGS: (list of supported <gain>s)
Termination:	Bluetooth Adapter
Parameter:	

<gain>:

<gain> integer type	Description
0-15	0 - Minimum gain 15 - Maximum gain

AT+BPBSO Select Phonebook Sort Order

Description:	Command issued by the terminal equipment to select the type of scrolling in the phonebook. <Sort Order> is a decimal numeric constant, indicating the type of scrolling needed in the selected phonebook. Test comand returns a list of supported <Sort Orders>.
Execution command:	**AT+BPBSO=**<Sort Order>
Read command:	**AT+BPBSO?** Displays the current <Sort Order> setting.
Test command:	**AT+BPBSO=?** Shows if the command is supported.
Test command response:	+BPBSO: (list of supported <Sort Order>s)
Termination:	Phone
Parameters:	

<Sort Order>:

<Sort Order>	Description
0	Sort by name(Alpha-numeric) in the list.
1	Sort by index (location) in the list.

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AT+BPBS	**Scroll phonebook list**

Description: Command issued by the terminal equipment to read phonebook entries in the selected phonebook memory via scrolling. <mode> is a decimal numeric constant, indicating the scroll direction. <No of entries> is a decimal numeric constant, indicating the number of entries requested from terminal equipment. <index> is a decimal numeric constant specifying the location. <char> if used is specified to locate the first entry in the alphanumerically sorted phonebook list starting with the specified character <char>. If <char> is specified, then the <Index> parameter shall be omitted.

Test command returns list of supported modes and location range supported by the current storage as a compound value. It also returns maximum length of <number> and <text>.

Note: MV and BC storages not supported

Execution command: **AT+BPBS=**<mode>[,<No of entries>[,<index>[,<char>]]]

Execution command response: **+BPBS:**<index>,<number>,<type>,<text>

Read command:

Read response:

Test command: **AT+BPBS=?** Shows if the command is supported.

Test command response: +BPBS:(List of supported <mode>s), (List of supported <index>s),[<nlength>], [<tlength>]

Termination: Phone

Parameters:

<mode>:

<mode>	Description
1	Return next <No of entries> starting from the first item in the list.
2	Return last <No of entries> starting from the end of the list.
3	Return previous <No of entries> starting from the previous location in the list.
4	Return next <No of entries> starting from the current location in the list..
5	Return next <No of entries> starting from the next item in the list.
6	Return next <No of entries> starting from next entry starting with a different character.
7	Return next <No of entries> starting fom previous entery starting with a diffrent character.

<No of entries>:

<No of entries>	Description
Integer type	Specifies the maximum number of phonebook entries to be returned.

<index>:

<index>	Description
Integer type	Identifies the current phonebook location, which serves as the point of reference for the subsequent scrolling operation. If the selected sort order is "Alpha-numeric", and an index to an empty entry is specified, the value shall default to the first available entry in the list. If the selected sort order is "index" based, and an empty entry is specified, that starting location shall be used anyway.

This parameter only applies to <mode> = 3 - 5. |

<char>:

<char>	Description
Character value	Locate the first entry in the alpha-numerically stored phone list starting with the character. If an antry meeting those criteria exists, it shall become the new "current location". If an entery beginning with <char> is not found, the phone shall return the next entry in alpha-numeric order. If there is no entry beginning with <char> and there is none following in apha-numeric order, the phone shall return OK and the "current location" shall remain unchanged from its previous value.

This parameter only applies to <mode> = 3 - 7 |

<number>:

<number>	Description
String type	Phone number of format <type>

<type>:

<type>	Description
Integer format	Type of address octet.

Refer to *Digital cellular telecommunications system (Phase 2+); Mobile radio interface layer 3 specification* section 10.5.4.7. |
129	ISDN / telephony numbering plan, national / international unknown.
145	ISDN / telephony numbering plan, international number.
161	ISDN / telephony numbering plan, national number.

<type>	Description
128 - 255	Other values, refer to *Digital cellular telecommunications system (Phase 2+); Mobile radio interface layer 3 specification* section 10.5.4.7.
6	Return next <No of entries> starting from next entry starting with a different character.
7	Return next <No of entries> starting fom previous entery starting with a diffrent character.

<text>:

<text>	Description
String type	Character set as specified by command Select terminal equipment Character Set **+CSCS**.

<nlength>:

<nlength:>	Description
Integer type	Maximum length of field <number>.

<tlength>:

<tlength:>	Description
Integer type	Maximum length of field <text>.

AT+BAPF   Find entry by name

Description: The set command is used to find advanced phonebook entries matching the string <findtext> from the current phonebook memory storage.

The test command returns the maximum lengths of <number> and <text> fields. In case of SIM storage, the lengths may not be available.

Note: FD, LD, DC, RC, MC, MV and BC storages not supported.

Execution command: **AT+BAPF=**<findtext>

Execution command response: +BAPF:<index>,<name>,<no. of phone no>, <CR>
[<label>],<number>,<type>,[<speed no.>]<CR>
[<label>],<number>,<type>,[<speed no.>]<CR><LF>
OK

Test command: **AT+BAPF=?**   Shows if the command is supported.

Test command response: +BAPF:[<nlength>],[<tlength>]

Termination: Phone

Parameters:

<findtext>:

<findtext>	Description
String type	String with maximum length <tlength>.

<index>:

<index>	Description
Integer type	Location number.

<name>:

<name>	Description
String type	String with maximum length <tlength>

<no. of phone no>:

<no. of phone no>	Description
Integer type	Indicating the number of phone numbers associated with the current record.

:

<label>	Description
1	Main
2	Work
3	Home
4	Mobile
5	Pager
6	Fax
7	email
8-15	Reserved by BT car working group.
16-128	Manufacturer specific.

<number>:

<number>	Description
String type	Phone number of format <type>

<type>:

<type>	Description
Integer type	Type of address octet. Refer to *Digital cellular telecommunications system (Phase 2+); Mobile radio interface layer 3 specification* section 10.5.4.7.
129	ISDN / telephony numbering plan, national / international unknown.
145	ISDN / telephony numbering plan, international number
161	ISDN / telephony numbering plan, national number.
128-255	Other values refer to *Digital cellular telecommunications system (Phase 2+); Mobile radio interface layer 3 specification* section 10.5.4.7.

<speed no>:

<speed no.>	Description
Integer type	Speed dial number

<nlength>:

<nlength:>	Description
Integer type	Maximum length of field <number>.

<tlength>:

<tlength:>	Description
Integer type	Maximum length of field <name>.

AT+BAPR   Read entry by location

Description: The AT+BAPR=<index1>[,<index2>] command is used to read the advanced phonebook entries in location number range <index1>…<index2> from the current phonebook memory storage.

The test command returns a list of the supported indexes that may be referenced. The test command also returns the maximum lengths of <number> and <text> fields. In case of SIM storage, the lengths may not be available.

 Note: MV storage not supported.

Execution command: **AT+BAPR=<index1>[,<index2>]**

Execution command response: +BAPR:<index>,<name>,<no. of phone no>, <CR>
[<label>],<number>,<type>,[<speed no.>]<CR>
[<label>],<number>,<type>,[<speed no.>]<CR><LF>
OK

Test command: **AT+BAPR=?** Shows if the command is supported.

Test command response: +BAPR:(List of supported <index>s)[<nlength>],[<tlength>]

Termination: Phone

Parameters:

<index1>:

<index1>	Description
Integer type	Start location number

<index2>:

<index2>	Description
Integer type	Stop location number

<index>:

<index>	Description
Integer type	Location number

<name>:

<name>	Description
String type	Location number

<no. of phone no.>:

<no. of phone no.>	Description
Integer type	Indicating the number of phone numbers associated with the current record.

:

<label>	Description
1	Main
2	Work
3	Home
4	Mobile
5	Pager
6	Fax
7	email
8-15	Reserved by BT car working group.
16-128	Manufacturer specific.

<number>:

<number>	Description
String type	Phone number of format <type>

<type>:

<type>	Description
Integer type	Type of address octet. Refer to *Digital cellular telecommunications system (Phase 2+); Mobile radio interface layer 3 specification* section 10.5.4.7.
129	ISDN / telephony numbering plan, national / international unknown.
145	ISDN / telephony numbering plan, international number
161	ISDN / telephony numbering plan, national number.
128-255	Other values refer to *Digital cellular telecommunications system (Phase 2+); Mobile radio interface layer 3 specification* section 10.5.4.7.

<speed no>:

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<speed no.>	Description
Integer type	Speed dial number

<nlength>:

<nlength:>	Description
Integer type	Maximum length of field <number>.

<tlength>:

<tlength:>	Description
Integer type	Maximum length of field <name>.

AT+BAPS   Advanced phonebook scrolling

Description: This command scrolls through the phonebook either numerically or alphabetically per the **AT+BPBSO** command. The operation is identical to **AT+BPBS** except that entries are returned on a record basis meaning that scrolling for the next entry could result in the transfer of multiple phone numbers. Entry fields returned are location number <index>, entry name <name>, phone number labels <label> (field population optional), phone number <number> (of format <type>) and speed number <speed no.> (field population optional) associated with the number.

Test command retsurns number of entries, maximum length of <number> and maximum length of <name>.

Note: MV and BC storages not supported.

Execution command: AT+BAPS=<mode>[,<No of entries>[,<index>[,<char>]]]

Execution command response: +BAPS:<index>,<name>,<no. of phone no>, <CR>
[<label>],<number>,<type>,[<speed no.>]<CR>
[<label>],<number>,<type>,[<speed no.>]<CR><LF>
OK

Test command: **AT+BAPS=?**   Shows if the command is supported.

Test command response: +BAPS:(List of supported <mode>s),(List of supported <index>s)[<nlength>],[<tlength>]

Termination: Phone

Parameters:

<mode>:

<mode>	Description
1	Return next <No of entries> starting from the first item in the list.
2	Return last <No of entries> starting from the end of the list.
3	Return previous <No of entries> starting from the end of the list.

<mode>	Description
4	Return next <No of entries> starting from the end of this list.
5	Return next <No of entries> starting from the next item in the list.
6	Return next <No of entries> starting from next entry starting with a different character.
7	Return next <No of entries> starting fom previous entery starting with a diffrent character.

<No of entries>:

<No of entries>	Description
Integer type	Specifies the maximum number of phonebook entries to be returned.

<index>:

<index>	Description
Integer type	Identifies the current phonebook location, which servs as the point of reference for the subsequent scrolling operation. If the selected sort order is "Alpha-numeric", and an index to an empty entry is specified, the value shall default to the first available entry in the list. If the selected sort order is "index" based, and an empty entry is specified, that starting location shall be used anyway. This parameter only applies to <mode> = 3 - 5.

<char>:

<char>	Description
Character value	Locate the first entry in the alpha-numerically stored phone list starting with the character. If an antry meeting those criteria exists, it shall become the new "current location. If an entery beginning with <char> is not found, the phone shall return the next entry in alpha-numeric order. If there is no entry beginning with <char> and there is none following in apha-numeric order, the phone shall return OK and the "current location" shall remain unchanged from its previous value. This parameter only applies to <mode> = 3 - 7

<name>:

<name>	Description
String type	String with maximum length <tlength>

<no. of phone no.>:

<no. of phone no.>	Description
Integer type	Indicating the number of phone numbers associated with the current record.

:

<label>	Description
1	Main
2	Work
3	Home
4	Mobile
5	Pager
6	Fax
7	email
8-15	Reserved by BT car working group.
16-128	Manufacturer specific.

<number>:

<number>	Description
String type	Phone number of format <type>

<type>:

<type>	Description
Integer type	Type of address octet. Refer to *Digital cellular telecommunications system (Phase 2+); Mobile radio interface layer 3 specification* section 10.5.4.7.
129	ISDN / telephony numbering plan, national / international unknown.
145	ISDN / telephony numbering plan, international number
161	ISDN / telephony numbering plan, national number.
128-255	Other values refer to *Digital cellular telecommunications system (Phase 2+); Mobile radio interface layer 3 specification* section 10.5.4.7.

<speed no>:

<speed no.>	Description
Integer type	Speed dial number

<nlength>:

<nlength:>	Description
Integer type	Maximum length of field <number>.

<tlength>:

<tlength:>	Description
Integer type	Maximum length of field <name>.

AT+BAPW   Adding an entery to phonebook

Description: The set command writes phonebook entry in location number <index> in the current phonebook memory storage. Entry fields written are entry name <name>, phone number labels <label> (field population optional), phone number <number> (of format <type>) and speed number <speed no.> (field population optional) associated with the number. If the fields listed in the previous sentence are omitted, phonebook record is deleted. If only <index> and <speed no.> are included, then only the phone number associated with the speed number is deleted. If <index> is left out, but <number> is given, entry is written to the first free location in the phonebook (the implementation of this feature is manufacturer specific).

If no <label> is included but is supported by the phone, it is up to the manufacturer to assign a default label type. If a <label> is included but the phone does not support the field, a +CME ERROR: 4 is returned.

In the case where a phone number does not have a speed dial number associated with it, editing and deleting of that number is still possible. The terminal equipment must delete the entire record and write back the other phone numbers separately. If editing an entry, the new version of the entry is written. If deleting an entry, no other action is necessary.

The test command returns a list of the supported indexes that may be entered, a list of supported phone number labels, list of supported number types, and list of supported speed numbers. The test command also returns the maximum lengths of <number> and <text> fields. In case of SIM storage, the lengths may not be available.

If the phone does not support any labels, it is up to the manufacturer to decide whether to indicate no label support or support for a single label type (i.e. 1 – main).

Note: FD, LD, DC, RC, MC and MV storages not supported.

Execution command: **AT+BAPW=**[<index>],[<name>],[<label>],[<number>],[<type>],[<speed no>]

Test command: **AT+BAPS=?**   Shows if the command is supported.

Test command response: +BAPW:(list of supported <index>s,[<tlength>],(list of supported <label>s]),[<nlength>],list of supported <type>s),(list of supported <speed no>s

Termination: Phone

Parameters:

<index>:

<index>	Description
Integer type	Location number

<name>:

<name>	Description
String type	String with maximum length <tlength>

:

<label>	Description
1	Main
2	Work
3	Home
4	Mobile
5	Pager
6	Fax
7	email
8-15	Reserved by BT car working group.
16-128	Manufacturer specific.

<number>:

<number>	Description
String type	Phone number of format <type>

<type>:

<type>	Description
Integer type	Type of address octet. Refer to *Digital cellular telecommunications system (Phase 2+); Mobile radio interface layer 3 specification* section 10.5.4.7.
129	ISDN / telephony numbering plan, national / international unknown.
145	ISDN / telephony numbering plan, international number
161	ISDN / telephony numbering plan, national number.
128-255	Other values refer to *Digital cellular telecommunications system (Phase 2+); Mobile radio interface layer 3 specification* section 10.5.4.7.

<speed no>:

<speed no>	Description
Integer type	Speed dial number

<nlength>:

<nlength:>	Description
Integer type	Maximum length of field <number>.

<tlength>:

<tlength:>	Description
Integer type	Maximum length of field <name>.

Unsolicited Result Codes

+BVRA	**Bluetooth Voice Recognition Activation Indication**

Description: Unsolicited result code used to notify the HF when the voice recognition function in the phone has been terminated autonomously.

This result code is activated by **AT+BVRA** .

Unsolicited result code: **+BVRA:** <vrect>

Parameter:

<vrect>:

<vrect>	Description
0	Voice recognition is disabled in the phone.

+VGM	**Gain of Microphone Indication**

Description: Unsolicited result code issued by the phone to set the microphone gain of the HF. <gain> is a decimal numeric constant, relating to a particular (implementation dependent) volume level controlled by the HF.

This result code is activated by **AT+VGM**.

Unsolicited result code: **+VGM:** <gain>

Note! Due to the small inconsistency between the GSM 07.07 standard and the current Headset specification (*Specification of the Bluetooth System; Profiles, v1.1, Part K:6, Headset Profile.*), the HF shall also accept the "=" symbol in place of ":" as a valid separator for this unsolicited result code.

Parameter:

<gain>:

<gain> integer type	Description
0-15	0 - Minimum gain
	15 - Maximum gain

+VGS   Gain of Speaker Indication

Description: Unsolicited result code issued by the phone to set the speaker gain of the HF. <gain> is a decimal numeric constant, relating to a particular (implementation dependent) volume level controlled by the HF.

This result code is activated by **AT+VGS**.

Unsolicited result code: +VGS: <gain>

Note! Due to the small inconsistency between the GSM 07.07 standard and the current Headset specification (*Specification of the Bluetooth System; Profiles, v1.1, Part K:6, Headset Profile.*), the HF shall also accept the "=" symbol in place of ":" as a valid separator for this unsolicited result code.

Parameter:

<gain>:

<gain> integer type	Description
0-15	0 - Minimum gain 15 - Maximum gain

+BSIR   Bluetooth Setting of In-band Ring tone Indication

Description: Unsolicited result code issued by the phone to indicate to the HF that the in-band ring tone setting has been locally changed. The HF may react accordingly by changing its own alert method.

Unsolicited result code: +BSIR: <bsir>

Parameter:

<bsir> integer type	Description
0	The phone provides no in-band ring tone.
1	The phone provides an in-band ring tone.

+BINP   Bluetooth Input Indication

Description: Unsolicited result code issued by the phone in response to a request from the terminal equipment to provide information of a specified type.

Unsolicited result code: +BINP: <dataresp1>[,...,<datarespn>]

Parameter:

<datarespn>Type is dependent on the <datarequest> parameter

<datarespn> Type is dependent on the <datarequest> parameter	..
..	..

<datarespn> **Type is dependent on the** **<datarequest>** **parameter**	..
..	..

Ensemble S6: Network Services

Commands

AT+COLP	**Connected line identification presentation**

Description:	This command refers to the GSM/UMTS supplementary service COLP (Connected Line Identification Presentation) that enables a calling subscriber to get the connected line identity (COL) of the called party after setting up a mobile originated call. The command enables or disables the presentation of the COL at the terminal equipment. It has no effect on the execution of the supplementary service COLR in the network.

When enabled (and called subscriber allows), +COLP: <number>,<type>[,<subaddr>,<satype> [,<alpha>]] intermediate result code is returned from the phone to terminal equipment before any +CR or V.25ter [14] responses. It is manufacturer specific if this response is used when normal voice call is established

Read command gives the status of <n>, and also triggers an interrogation of the provision status of the COLP service according *Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS);Line Identification supplementary services;* (given in <m>).

Test command returns values supported by the phone as a compound value. |
Execution command:	**AT+COLP=**[<n>]
Read command:	**AT+COLP?** Displays the current <n> and <m> settings.
Test command:	**AT+COLP=?** Shows if the command is supported.
Test command response:	+COLP: (list of supported <n>s)
Termination:	Phone
Parameters:	
<n>:	(sets/shows the result code presentation status in the phone)

<n>	Description
0	disable
1	enable

<m>: (shows the subscriber COLP service status in the network)

<m>	Description
0	COLP not provisioned
1	COLP provisioned
2	unknown (e.g. no network, etc.)

Unsolicited Result Codes

+COLP	**Connected Line Identification Indication**

Description: This command enables a calling subscriber to get the connected line identity (COL) of the called party when setting up a mobile originated call.

This result code is activated by **AT+BVRA** .

Unsolicited result code: **+COLP:** <number>,<type>[,<subaddr>,<satype> [,<alpha>]]

Parameters: Refer to **+CLIP** result code.

Ensemble S9 - Mobile Equipment, Control and Status

Commands

AT*ERIN	**Sony Ericsson Ring Set (ver.3)**
Description:	The command is used to set sound for incoming voice, line L1 and L2, fax and data calls and alarm. For each of the incoming call types and alarm: voice on line 1, voice on line 2, fax calls and data calls and alarm a sound type is selected.
	The type of sound is either a ring signal, selected from a predefined set, or a melody, selected from a predefined set, or an own melody, selected from a set specified by the user.
	Line 1 is default for <call type> if the parameter is not given.
Execution command:	**AT*ERIN=**<sound type>,[<call type>]
Read command:	**AT*ERIN?** Displays the current <sound type> and <call type> settings.
Test command:	**AT*ERIN=?** Shows if the command is supported.
Test command response:	*ERIN: (list of supported <sound type>s), (list of supported <call type>s)
Termination:	Phone
Parameters:	

<call type>:

<call type>	Description
1	Line 1
2	Line 2
3	Fax
4	Data
5	Alarm

<sound type>:

<sound type>	Description
0	Off **Not supported**
1	Low ring signal
2	Medium ring signal
3	High ring signal
4	Mixed ring signal
5	Beep **Not supported**
6	Alarm **Not supported**

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<sound type>	Description
7	Calendar Tone **Not supported**
8	Calendar Click **Not supported**
9-10	Reserved **Not supported**
11-20	Melody 1 – Melody 10, Reserved for preset melodies
21-30	Reserved **Not supported**
31-38	Own melodies 1-8
39-50	Reserved for own melodies **Not supported**

AT+ERIP   Sony Ericsson Ring Signal Playback (ver. 2)

Description: The command is used to play one of the sound types which are available as ring signal/message signal on the phone. The signal volume may not be chosen as "step"; with an increasing volume for each signal. If value 1 is chosen for parameter <volume>, nothing should happen. Signal volume may be chosen as a selected level.

Execution command: **AT*ERIP=**<volume>,<sound type>

Test command: **AT*ERIP=?** Shows if the command is supported.

Test command response: *ERIP: (list of supported <volume>s),(list of supported <sound type>s)

Termination: Phone

Parameters:

<volume>:

<volume>	Description
0	Off
1	Step **Not Supported**
2-n	Volume setting

<sound type>:   Refer to <sound type> for the **AT*ERIN (ver.3)** command in this ensemble.

Ensemble S11: SMS and PDU Mode

Commands

AT*ESTL	**Send command (ver. 2)**

Description:	This command adds an SMS Template, specified by the <text>-parameter, to the list of SMS Templates at the position specified by the <stix>-parameter. If the list already contains an SMS Template at the position <stix> this template is overwritten by the template given by the <text>-parameter.
	If the <text>-parameter is omitted, the command removes the SMS Template from the list at the position specified by the <stix>-parameter.
	The read command lists all entries in the SMS Template list.
Execution command:	**AT*ESTL=**<stix>[,<text>]
Read command:	**AT*ESTL?** Displays the current <stix1> and <text> settings.
Test command:	**AT*ESTL=?** Shows if the command is supported.
Test command response:	*ESTL: (list of supported <stix>s),(list of supported <ntext>s)
Termination:	Phone
Parameters:	

<stix>:

<stix>	**Description**
Integer value	Index to list of SMS Templates

<text>:

<text>	**Description**
String value	SMS Template text

<ntext>:

<ntext>	**Description**
Integer value	Maximum length of the SMS Template (<text>-parameter)

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AT+CSMP   **Set Text Mode Parameters**

Description: Set command is used to select values for additional parameters needed
when SM is sent to the network or placed in a storage when text format
message mode is selected. It is possible to set the validity period starting
from when the SM is received by the SMSC (<vp> is in range 0... 255) or
define the absolute time of the validity period termination (<vp> is a string).
The format of <vp> is given by <fo>. If the phone supports the EVPF, see
*Universal Mobile Telecommunications System (UMTS);Technical realization
of the Short Message Service (SMS)*, it shall be given as a hexadecimal
coded string (refer e.g. <pdu>) with double quotes.

NOTE: When storing a SMS-DELIVER from the terminal equipment to the
preferred memory storage in text mode (refer to the command Write
Message to Memory **AT+CMGW**), <vp> field can be used for <scts>.

Execution   **AT+CSMP=**[<fo>[,<vp>[,<pid>[,<dcs>]]]]
command:

Read command: **AT+CSMP?**   Displays the current <fo>,<vp>,<pid> and <dcs> settings.

Test command: **AT+CSMP=?**   Shows if the command is supported.

Termination: Phone

Parameters:

<fo>:

<fo>	Description
0..255	Depending on the command or result code: First octet of *Universal Mobile Telecommunications System (UMTS);Technical realization of the Short Message Service (SMS)*. SMS-DELIVER SMS-SUBMIT (default 17) SMS-STATUS-REPORT SMS-COMMAND (default 2)

<vp>:

<vp>	Description
0..255 or String format	Depending on SMS-SUBMIT <fo> setting: *Universal Mobile Telecommunications System (UMTS);Technical realization of the Short Message Service (SMS)* Validity-period parameter Integer format (default 167) Validity-period Time-string format "yy/MM/dd,hh:mm:ss±zz", where characters indicate year, month, day, hour, minutes, seconds and time zone. E.g. 6th of May 1994, 22:10:00 GMT+2 hours equals to "94/05/06,22:10:00+02".

<pid>:

<pid>	Description
0..255	*Universal Mobile Telecommunications System (UMTS);Technical realization of the Short Message Service (SMS)* TP-Protocol-Identifier (default 0)

<dcs>:

<dcs>	Description
0..255	Depending on the command or result code: *Digital cellular telecommunications system (Phase 2+) (GSM);Universal Mobile Telecommunications System (UMTS);Alphabets and language-specific information* data coding scheme. SMS Data Coding Scheme (default 0) Cell Broadcast Data Coding Scheme.

AT+CSDH   Show Text Mode Parameters

Description: Set command controls whether detailed header information is shown in text mode result codes.

Execution command: **AT+CSDH=**[<show>]

Read command: **AT+CSDH?**   Displays the current <show> setting.

Test command: **AT+CSDH=?**   Shows if the command is supported.

Test command response: +CSDH: (list of supported <show>s)

Termination: Phone

Parameter:

<show>:

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

Ensemble S16: Phonebook

Commands

AT+EPRR	**Sony Ericsson Personal Ringtype Read (ver. 3)**

Description:	Execution command returns phone number, phone number type and sound type in location number <indexr>. If listing fails in an phone error, +CME ERROR: <err> is returned.
Execution command:	**AT*EPRR=**<indexr>
Execution command response:	*EPRR: <indexr>,<number>,<type>,<sound type>
Test command:	**AT*EPRR=?** Shows if the command is supported.
Test command response:	*EPRR: (list of supported <indexr>s)
Termination:	Phone
Parameters:	

<indexr>:

<indexr>	Description
1-50	Value of location number

<number>:

<number>	Description
String type	phone number of format <type>

<type>:

<type>	Description
Integer format	Type of address octet Refer to *Digital cellular telecommunications system (Phase 2) (GSM);Mobile radio interface;Layer 3 specification.*
128	Unknown numbering plan, national / international number unknown.
129	ISDN / telephony numbering plan, national / international unknown
145	ISDN / telephony numbering plan, international number
161	ISDN / telephony numbering plan, national number
128 - 255	Other values refer to *Digital cellular telecommunications system (Phase 2) (GSM);Mobile radio interface;Layer 3 specification.*

<sound type>:

<sound type>	Description
1	Low ring signal
2	Medium ring signal
3	High ring signal
4	Mixed ring signal
11	Melody 1
12-20	Melody 2- Melody 10 Reserved for pre-set melodies
31-38	Own melody 1-8

AT+EPRW   Sony Ericsson Personal Ringtype Write (ver. 3)

Description: Execution command writes phone number, phone number type and sound type in location number <indexr>. It is possible to use wild cards for phone number by substituting the digits with question marks. If writing fails in an phone error, +CME ERROR: <err> is returned.

If all parameters but <indexr> are omitted, the personal ring type at position <indexr> will be deleted.

Note: For SIR 2.1 and later, this command only works if the <number> is in the phone phonebook. Also due to the architecture of the hierarchical phonebook the indexation of the personal rings is not constant and the <indexr> parameter will be ignored except when deleting a personal ring.

Execution command: **AT*EPRW=**<indexr>,<number>,[<type>],<soundtype>

Read command:

Read response:

Test command:	**AT*EPRW=?** Shows if the command is supported.	
Test command response:	*EPRW: (list of supported <indexr>s),<nlength>,(list of supported <type>s),(list of supported <sound type>s)	
Termination:	Phone	
Parameters:		

<indexr>:

<indexr>	Description
1-50	Value of location number. The location number must be free. If the given location number is not free, ERROR is returned.

<number>:

<number>	Description
String type	phone number of format <type>

<type>:

<type>	Description
Integer format	Type of address octet *Digital cellular telecommunications system (Phase 2) (GSM);Mobile radio interface;Layer 3 specification.*
128	Unknown numbering plan, national / international number unknown.
129	ISDN / telephony numbering plan, national / international unknown
145	ISDN / telephony numbering plan, international number
161	ISDN / telephony numbering plan, national number
128 - 255	Other values refer to *Digital cellular telecommunications system (Phase 2) (GSM);Mobile radio interface;Layer 3 specification.*

<nlength>:

<nlength>	Description
Integer type	Value indicating the maximum length of field <number>

<sound type>:

<sound type>	Description
1	Low ring signal
2	Medium ring signal
3	High ring signal
4	Mixed ring signal
11	Melody 1

<sound type>	Description
12-30	Melody 2- Melody 20 Reserved for pre-set melodies
31-38	Own melody 1-4

Updated AT Commands

Ensemble S1: DTE-DCE Interface Commands

Commands

AT+CSCS	**Select The Character Set (ver. 4)**

Description: Set command informs the phone which character set <chset> is used by the terminal equipment. The phone is then able to convert character strings correctly between terminal equipment and phone character sets.

When phone - terminal equipment interface is set to 8-bit operation and the used terminal equipment alphabet is 7-bit, the highest bit shall be set to zero.

Note: It is manufacturer specific how the internal alphabet of phone is converted to/from the terminal equipment alphabet.

Read command shows current setting and test command displays conversion schemes implemented in the phone.

Execution command: **AT+CSCS=**<chset>

Read command: **AT+CSCS?** Displays the current <chset> setting.

Test command: **AT+CSCS=?** **S**hows if the command is supported.

Test command response: +CSCS: (list of supported <chset>s)

Termination: Phone

Parameter:

<chset>:

<chset>	Description
"GSM"	GSM default alphabet (*Digital cellular telecommunications system (Phase 2+) (GSM);Alphabets and language-specific information* subclause 6.2.1); this setting causes easily software flow control (XON/XOFF) problems. **Default setting.**

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<chset>	Description
"IRA"	International reference alphabet (ITU-T T.50 [3]) Note: Recommended default setting by *Digital cellular telecommunications system (Phase 2+);* *AT command set for GSM Mobile Equipment (ME).* **Only in ref. Point E**
"8859-n"	ISO 8859 Latin *n* (1-6) character set. **Only number 1 and only in ref. Point E**
"SONY ERICSSON"	Internal character-set in the telephone, which maydiffer from different phones. **Only in ref. Point E**
"UTF8"	Universal Text Format, 8 bits. **Only in ref. Point E**
"UCS2"	Unicode, 16-bit universal multiple-octet coded character set (ISO/IEC10646). **Only in ref. Point E**

Ensemble S6: Network Services

Commands

AT+CLIP	**Calling Line Identification (ver. 2)**

Description: This command refers to the GSM/UMTS supplementary service CLIP (Calling Line Identification Presentation) that enables a called subscriber to get the calling line identity (CLI) of the calling party when receiving a mobile terminated call. Set command enables or disables the presentation of the CLI at the terminal equipment. It has no effect on the execution of the supplementary service CLIP in the network.

Read command gives the status of <n>, and also triggers an interrogation of the provision status of the CLIP service according to *Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS);Line Identification supplementary services.* (given in <m>). Test command returns values supported by the phone as a compound value

Test command returns values supported by the phone as a compound value.

This command activates the result code **+CLIP**.

Execution command: **AT+CLIP=**<n>

Read command: **AT+CLIP?** Displays the current <n> setting.

Test command: **AT+CLIP=?** Shows if the command is supported.

Test command response: + CLIP : (list of supported <n>s)

Termination: Phone

Parameters:

<n>: Sets/shows the result code representation status in the phone.

<n>	Description
0	disable
1	enable

<m>: Shows the subscriber CLIP service status in the network.

<m>	Description
0	CLIP not provisioned
1	CLIP provisioned
2	unknown (e.g. no network, etc.)

Note: When CLI is not available (<CLI validity>=2), <number> shall be an empty string ("") and <type> value will not be significant. Nevertheless, the phone may return the recommended value 128 for <type> ((TON/NPI unknown in accordance with *Digital cellular telecommunications system (Phase 2) (GSM);Mobile radio interface;Layer 3 specification* subclause 10.5.4.7).

When CLI has been withheld by the originator, (<CLI validity>=1) and the CLIP is provisioned with the "override category" option (refer to *Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS);Line Identification supplementary services*), <number> and <type> is provided. Otherwise, the phone shall return the same setting for <number> and <type> as if the CLI was not available.

<err>:   Possible values:

<err>	Description
0	Phone failure
3	Operation not allowed.
4	Operation not supported.
21	Invalid index.
30	No network service.
31	Network timeout.
100	Unknown.

Unsolicited Result Codes

+CLIP	**Calling Line Identification Indication (ver. 2)**

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

This result code is activated by **AT+CLIP**.

Unsolicited result code: +CLIP:<number>,<type>[,<subaddr>,<satype>[,[<alpha>][,<CLI validity>]]]

Parameters:

<number>:

<number>	Description
String type	Phone number of format specified by <type>

<type>:

<type>	Description
integer format	Type of address octet Refer to (*Digital cellular telecommunications system (Phase 2) (GSM);Mobile radio interface;Layer 3*, section 10.5.4.7).

<type>	Description
129	ISDN / telephony numbering plan, national / international unknown **Default setting if '+' is not in <sca>**
145	ISDN / telephony numbering plan, international number **Default setting if '+' is in <sca>**
161	ISDN / telephony numbering plan, national number
128 - 255	Other values, refer to (*Digital cellular telecommunications system (Phase 2) (GSM);Mobile radio interface;Layer 3*, section 10.5.4.7).

<subaddr>:

<subaddr>	Description
String type	String type subaddress of format specified by <satype>. As described in ITU_T I.330: "The subaddress is a sequence of digits, the maximum length of which shall be 20 octets (40 digits). All ISDNs shall be capable of conveying the ISDN subaddress transparently and shall not be required to examine or operate on any of the subaddress information. Special attention is drawn to the fact that subaddressing is not to be considered as part of the numbering plan, but constitutes an intrinsic part of ISDN addressing capabilities. The subaddress shall be conveyed in a transparent way as a separate entity from both ISDN number and user-to-user information. See also Recommendation I.334".

<satype>:

<satype>	Description
integer format	Type of subaddress octet
128	NSAP (X.213/ISO 8348 AD2), even number of address signals
136	NSAP (X.213/ISO 8348 AD2), odd number of address signals
160	User defined, even number of address signals
168	User defined, odd number of address signals
128 - 255	Other values reserved

<alpha>:

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

<CLI_validity>:

<CLI_validity>	Description
0	CLI valid
1	CLI has been withheld by the originator.
2	CLI is not available due to interworking problems or limitations of originating network.

Ensemble S8: Facility Lock

Commands

AT+CLCK	**Facility lock (ver. 3)**

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

Call barring facilities are based on GSM/UMTS supplementary services (refer to *Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS);Call Barring (CB) supplementary services*). The interaction of these with other commands based on other GSM/UMTS supplementary services is described in the GSM/UMTS standard.

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

Note! "PS" and <mode>=1 correspond to Auto Lock

Note! It is manufacturer specific which <passwd> (PIN-code) that will be used for authentication.

Execution command: **AT+CLCK=**<fac>,<mode>[,<passwd>[,<class>]]

Execution command response: when <mode>=2 and command successful:
+CLCK: <status>[,<class1>[<CR><LF>
+CLCK: <status>,<class2>[...]]

Test command: **AT+CLCK=?** Shows if the command is supported.

Test command response: +CLCK: (list of supported <fac>s)

Termination: Phone

Parameters:

<fac>:

<fac>	Description
"CS"	CNTRL (lock CoNTRoL surface (e.g. phone keyboard))
"PS"	PH-SIM (lock PHone to SIM card) (phone asks password when other than current SIM card inserted)

<fac>	Description
"PF"	Lock Phone to the very First inserted SIM/UICC card (also referred in the present document as PH-FSIM) (phone asks password when other than the first SIM/UICC card is inserted)
"SC"	SIM (lock SIM card) (SIM asks password in phone power-up and when this lock command issued)
"AO"	BAOC (Barr All Outgoing Calls) (refer to *Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS);Call Barring (CB) supplementary services* clause 1).
"OI"	BOIC (Barr Outgoing International Calls) (refer to *Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS);Call Barring (CB) supplementary services* clause 1).
"AI"	BAIC (Barr All Incoming Calls) (refer to *Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS);Call Barring (CB) supplementary services* clause 2).
"IR"	BIC-Roam (Barr Incoming Calls when Roaming outside the home country) (refer to *Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS);Call Barring (CB) supplementary services* clause 2).
"OX"	BOIC-exHC (Barr Outgoing International Calls except to Home Country) (refer to *Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS);Call Barring (CB) supplementary services* clause 1).
"NT"	Bar incoming calls from numbers Not stored to the phone memory
"NM"	Bar incoming calls from numbers Not stored to phone memory
"NS"	Bar incoming calls from numbers Not stored to SIM memory
"NA"	Bar incoming calls from numbers Not stored in Any memory
"AB"	All Barring services (refer to *Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS);Man-Machine Interface (MMI) of the User Equipment (UE)*) (applicable only for <mode>=0)
"AG"	All outGoing barring services (refer to *Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS);Man-Machine Interface (MMI) of the User Equipment (UE)*) (applicable only for <mode>=0)

<fac>	Description
"AC"	All inComing barring services (refer to *Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS);Man-Machine Interface (MMI) of the User Equipment (UE)*) (applicable only for <mode>=0)
"FD"	SIM card or active application in the UICC (GSM or USIM) fixed dialling memory feature (if PIN2 authentication has not been done during the current session, PIN2 is required as <passwd>)
"PN"	Network Personalization (refer to *Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS);Personalisation of Mobile Equipment (ME); Mobile functionality specification*).
"PU"	Network sUbset Personalization (refer to *Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS);Personalisation of Mobile Equipment (ME); Mobile functionality specification*).
"PP"	Service Provider Personalization (refer to *Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS);Personalisation of Mobile Equipment (ME); Mobile functionality specification*).
"PC"	Corporate Personalization (refer to *Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS);Personalisation of Mobile Equipment (ME); Mobile functionality specification*).

<mode>:

<mode>	Description
0	Unlock
1	Lock
2	Query status
10	Full lock (only valid for <fac>="PS", after power on always ask for password) **Sony Ericsson specific**

<status>:

<status>	Description
0	not active
1	active

<passwd>:

<passwd>	Description
string type	Shall be the same as password specified for the facility from the phone user interface or with command Change Password **AT+CPWD**

<classx>: A sum of integers each representing a class of information. Default=7.

<classx>	Description
1	voice
2	data (refers to all bearer services; with <mode>=2 this may refer only to some bearer service if the phone does not support values 16, 32, 64 and 128)
4	fax
8	Short message service
16	data circuit sync
32	data circuit async
64	dedicated packet access
128	dedicated PAD access

<err>:

<err>	Description
0	phone failure
3	operation not allowed
4	operation not supported
5	PH-SIM PIN 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
23	text string too long
24	invalid characters in text string
30	no network service
31	network timeout
100	unknown
101..255	reserved by ETS

Ensemble S9: Mobile Equipment, Control and Status

Commands

AT+CKPD	**Keypad Control (ver. 5)**

Description: Execution command emulates phone keypad by giving each keystroke as a character in a string <keys>. <time>*0.1 seconds is the time to strike each key, and <pause>*0.1 seconds is the length of pause between two strokes. If emulating fails in an phone error, +CME ERROR: <err> is returned. This command should be accepted (OK returned) before actually starting to press the keys. Thus unsolicited result codes of key pressings and display events can be returned. (Refer to Mobile Equipment Event Reporting **AT+CMER**).

The physical keypad shall always have higher priority than emulation of keystrokes via **AT+CKPD**. That is, if the physical keypad is operated during execution of a series of keystrokes generated by **AT+CKPD** the emulated keypad operation is to be terminated immediately. The final result code shall be ERROR.

Execution command: **AT+CKPD=**<keys>[,<time>[,<pause>]]

Test command: **AT+CKPD=?**   Shows if the command is supported.

Termination: Phone

Parameters:

<keys>: String of characters representing keys as listed in the following table (based on PCCA STD-101 Annex table I-3). Colon character (IRA 58) followed by one character can be used to indicate a manufacturer specific key not listed here. All characters from a semicolon character (IRA 59) to the next single semicolon characters are treated as alpha entries and are not converted to key equivalents. All semicolon characters inside alpha entries should be duplicated in the terminal equipment and stripped to one before entering to the phone. Pause character (IRA 87 or 119) can be used to pause between key pressings for a time specified by <pause>. All IRA values not listed here are reserved.

Char	IRA (dec)	Comment (+ some known key symbols)
#	35	hash (number sign)
*	42	star (*)
0... 9	48... 57	number keys
:	58	escape character for manufacturerspecific keys
<	60	left arrow
>	62	right arrow

Char	IRA (dec)	Comment (+ some known key symbols)
C/c	67/99	clear display (C/CLR)
D/d	68/100	volume down
E/e	69/101	connection end (END)
F/f	70/102	function (FCN) - option key
G/g	71/103	voice note
P/p	80/112	power (PWR)
S/s	83/115	connection start (SEND)
U/u	85/117	volume up
V/v	86/118	down arrow
[	91	soft key 1
]	93	soft key 2
^	94	up arrow
:J	58+74	joystick button pressed
:C	58+99	Camera button
:O	58+79	Operator button
:R	58+82	Return button
H/h	200	button pushed on the MC link (BT) headset

<time>:

<time>	Description
0..255	0… 25.5 seconds (default values are manufacturer specific, but should be so long that a normal phone can handle keystrokes correctly)

<pause>:

<pause>	Description
0..255	0… 25.5 seconds (default values are manufacturer specific, but should be so long that a normal phone can handle keystrokes correctly)

Note: The SEND and END keypad values should be mapped to an appropriate key.

AT+CIND   Indicator Control (ver.4)

Description:

Set command is used to set the values of phone indicators. <ind> value 0 means that the indicator is off (or in state which can be identified as "off"-state), 1 means that indicator is on (or in a state which is more substantial than "off"-state), 2 is more substantial than 1, and so on. If the indicator is a simple on/off style element, it has values 0 and 1. The number of elements is phone specific. If phone does not allow setting of indicators or phone is not currently reachable, +CME ERROR: <err> is returned. If a certain indicator is not writable, setting of it should be ignored. If parameter is empty field, indicator shall remain in the previous value.

Read command returns the status of phone indicators. If phone is not currently reachable, +CME ERROR: <err> is returned.

Test command returns pairs, where string value <descr> is a maximum 16 character description of the indicator and compound value is the allowed values for the indicator. If phone is not currently reachable, +CME ERROR: <err> is returned.

Execution command: **AT+CIND=**[<ind>[,<ind>[,…]]]

Read command: **AT+CIND?**   Displays the current [<ind>[,<ind>[,…]]] settings.

Test command: **AT+CIND=?**   Shows if the command is supported.

Test command response: +CIND: (<descr>,(list of supported <ind>s)),(<descr>,(list of supported <ind>s)),…

Termination: Phone

Parameters:

<ind>:

<ind>	Description
Integer type	value shall be in range of corresponding <descr>

<descr>:

<descr>	Description
"battchg"	battery charge level (0-5)
"signal"	signal quality (0-5)
"batterywarning"	batterywarning (0-1)
"chargerconnected"	chargerconnected (0-1)
"service"	service availability (0-1) (Net contact status, 1 = Net contact)
"sounder"	sounder activity (0-1) (Phone silent status, 1 = phone silent)
"message"	message received (0-1)
"call"	call in progress (0-1)
"vox"	transmit activated by voice activity (0-1) Not supported
"roam"	roaming indicator (0-1) (Home net status, 0 = Home Net)

<descr>	Description
"smsfull"	a short message memory storage in the MT has become full (1), or memory locations are available (0); i.e. the range is (0-1)
"callsetup"	Bluetooth proprietary call set up status indicator. Possible values are as follows: Not currently in call set up (0), incoming call process ongoing (1), outgoing call set up is ongoing (2), remote party being alerted in an outgoing call (3); i.e the range is (0-3)

AT*ESMA — Sony Ericsson Set Message Alert Sound (ver. 3)

Description:	This command sets the message alert sound of the MS
Execution command:	**AT*ESMA=**<mode>
Read command:	**AT*ESMA?** Displays the current <mode> setting.
Test command:	**AT*ESMA=?** Shows if the command is supported.
Test command response:	*ESMA: (list of supported <mode>s)
Termination:	Phone
Parameters:	

<mode>:

<mode>	Description
0	SILENT, no sound when a message arrives
1	CLICK, short click when a message arrives
2	Message alert 1 when a message arrives **Default setting**
3	Message alert 2 when a message arrives
4	Message alert 3 when a message arrives
5	Message alert 4 when a message arrives
6	Message alert 5 when a message arrives
7	Message alert 6 when a message arrives

Ensemble S11: SMS and PDU Mode

Commands

AT+CPMS	Preferred Message Storage (ver.4)

Description: Set command selects memory storage <mem1>, <mem2> and <mem3> to be used for reading, writing, etc. If chosen storage is not appropriate for the phone (but is supported by the phone), final result code +CMS ERROR: <err> shall be returned.

Test command returns lists of memory storage supported by the phone.

Execution command: **AT+CPMS=**<mem1>
[,<mem2>
[,<mem3>]]

Execution command response: +CPMS: <used1>,<total1>,<used2>,<total2>,<used3>,<total3>

Read command: AT+CPMS? Displays the current <mem1>,<used1>,<total1>,
<mem2>,<used2>,<total2>,
<mem3>,<used3>,<total3> settings.

Test command: **AT+CPMS=?** Shows if the command is supported.

Test command response: +CPMS: (list of supported <mem1>s),(list of supported <mem2>s),(list of supported <mem3>s)

Termination: Phone

Parameters:

<mem1>:

<mem1>	Description
string type	Memory from which messages are read and deleted (commands List Messages +CMGL, Read Message +CMGR and Delete Message +CMGD).
"ME"	phone message storage
"SM"	SIM message storage

<mem2>:

<mem2>	Description
string type	Memory to which writing and sending operations are made (commands Send Message from Storage +CMSS and Write Message to Memory +CMGW) .
"ME"	phone message storage
"SM"	SIM message storage

<mem3>:

<mem3>	Description
string type	Memory to which received SMs are preferred to be stored (unless forwarded directly to terminal equipment). Received CBMs are always stored in "BM" (or some manufacturer specific storage) unless directly forwarded to terminal equipment.
"ME"	phone message storage
"SM"	SIM message storage

<used1>,<used2>,<used3>

<used1>,<used2>, <used3>	Description
Integer type	Total number of messages currently in <mem1>, <mem2> and <mem3> respectively.

<total1>,<total2>,<total3>

<total1>,<total2>, <total3>	Description
Integer type	Total number of messages currently in <mem1>, <mem2> and <mem3> respectively.

AT+CMGF   Message Format (ver.2)

Description: Set command tells the phone, which input and output format of messages to use. <mode> indicates the format of messages used with send, list, read and write commands and unsolicited result codes resulting from received messages. Mode can be either PDU mode (entire TP data units used) or text mode (headers and body of the messages given as separate parameters).

Execution command: **AT+CMGF=**<mode>

Read command: **AT+CMGF?** Displays the current <mode> setting.

Test command: **AT+CMGF=?** Shows if the command is supported.

Test command response: +CMGF: (list of supported <mode>s)

Termination: Phone

Parameter:

<mode>:

<mode>	Description
0	PDU mode
1	Text mode

AT+CNMI	New Messages Indication to TE (ver.5)

Description: Set command selects the procedure, how receiving of new messages from the network is indicated to the terminal equipment when terminal equipment is active, e.g. DTR signal is ON. If terminal equipment is inactive (e.g. DTR signal is OFF), message receiving should be done as specified in *Digital cellular telecommunications system (Phase 2+) (GSM); Universal Mobile Telecommunications System (UMTS);Alphabets and language-specific information*.

If command fails and error is related to mobile equipment or network, return final result code CMS ERROR: <err>.

Execution command: **AT+CNMI=**[<mode>[,<mt>[,<bm>[,<ds>[, <bfr>]]]]]

Read command: **AT+CNMI?**   Displays the current <mode>,<mt>,<bm>,<ds>,<bfr> settings.

Test command: **AT+CNMI=?**   Shows if the command is supported.

Test command response: +CNMI: (list of supported <mode>s),(list of supported <mt>s),(list of supported <bm>s),(list of supported <ds>s),(list of supported <bfr>s)

Termination: Phone

Parameters:

<mode>:

<mode>	Description
2	Buffer unsolicited result code in the phone when phone - terminal equipment link is reserved (e.g. in on.line data mode) and flush them to the terminal equipment after reservation. Otherwise forward them directly to the terminal equipment.

<mt>:

<mt>	Description
0	No SMS-DELIVER indications are routed to the terminal equipment.
1	If SMS-DELIVER is stored into phone, indication of the memory location is routed to the terminal equipment using unsolicited result code: +CMTI: <mem>,<index>
3	Class 3 SMS-DELIVERs are routed directly to the terminal equipment using unsolicited result codes +CMT: <length><CR><LF><pdu>. Messages of other data coding schemes result in indication as defined in <mt>=1. For Mona, this setting gives the same result as <mt>=1.

<bm>:

<bm>	Description
0	Store message to "BM" (or some manufacturer specific memory). No CBM indications are routed to the terminal equipment.
2	New CBMs are routed directly to the terminal equipment using unsolicited result code: +CBM: <length><CR><LF><pdu> (PDU mode enabled) or +CBM: <sn>,<mid>,<dcs>,<page>,<pages><CR><LF><data> (text mode enabled)

<ds>:

<ds>	Description
0	No SMS-STATUS-REPORTs are routed to the terminal equipment.

<bfr>:

<bfr>	Description
0	Phone buffer of unsolicited result codes defined within this command is flushed to the terminal equipment when <mode> 1...3 is entered (OK response shall be given before flushing the codes).

AT+CMGL	List Message (ver.4)

Description: Execution command returns messages with status value <stat> from message storage <mem1> to the terminal equipment. About text mode parameters in italics, refer to command Show Text Mode Parameters +CSDH. If status of the message is 'received unread', status in the storage changes to 'received read'. If listing fails, final result code +CMS ERROR: <err> is returned.

The phone will send a dummy PDU for the storages "PT" and "CT".

NOTE: If the selected <mem1> can contain different types of SMs (e.g. SMS-DELIVERs, SMS-SUBMITs, SMS-STATUS-REPORTs and SMS-COMMANDs), the response may be a mix of the responses of different SM types. The terminal equipment application can recognize the response format by examining the third response parameter.

Execution command: **AT+CMGL**[=<stat>]

Execution command response:
- if text mode (+CMGF=1), command successful and SMS-SUBMITs and/or SMS-DELIVERs:
  +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>[...]]

- if text mode (+CMGF=1), command successful and SMS-COMMANDs:
  +CMGL: <index>,<stat>,<fo>,<ct>[<CR><LF>
  +CMGL: <index>,<stat>,<fo>,<ct>[...]]

- if PDU mode (+CMGF=0), command successful:
  +CMGL: <index>,<stat>,[<alpha>],<length><CR><LF><pdu>[<CR><LF>+CMGL: <index>,<stat>,[<alpha>],<length><CR><LF><pdu>[...]]

- otherwise:
  +CMS ERROR: <err>
  OK
  ERROR

Test command: **AT+CMGL=?** Shows if the command is supported.

Test command response: +CMGL: (list of supported <stat>s)

Termination: Phone

Parameters:

<stat>:

<stat>	Description
0	Received unread message (i.e. new message)
1	Received read message
2	Stored unsent message (only applicable to SMs)
3	Stored sent message (only applicable to SMs)
4	All messages (only applicable to +CMGL command)

<stat>	Description
16	Template message **Not supported**

<index>:

<index>	Description
Integer type	Value in the range of location numbers supported by the associated memory.

<oa>:

<oa>	Description
String type	TP-Originating-Address Address-Value field in string format; BCD number (or GSM 7 bit default alphabet characters) are converted to characters of currently selected terminal equipment character set. Refer to **+CSCS**.

<da>:

<da>	Description
String type	TP-Originating-Destination Address-Value field in string format; BCD number (or GSM 7 bit default alphabet characters) are converted to characters of currently selected terminal equipment character set. Refer to **+CSCS**.

<alpha>:

<alpha>	Description
String type	Manufacturing specific. Should be left empty but not omitted i.e. commas shall mark the place were it should be. Used character set should be the one selected with command Select TE Character Set +CSCS.

<scts>:

<scts>	Description
String type	TP-Service-Center-Time-Stamp in time-string format.

<tooa>:

<tooa>	Description
Integer type	TP-Originating-Address Type-of-Address octet in integer format.When first character of <oa> is +(IRA 43) default is 145, otherwise default is 129.

<toda>:

<toda>	Description
Integer type	TP-Destination-Address Type-of-Address octet in integer format. When first character of <da> is +(IRA 43) default is 145, otehrwise default is 129.

<length>:

<length>	Description
Integer type	In text mode (+CMGF=1) <length> indicates the length of the message body <data> in characters. In PDU mode (+CMGF=0) <length> indicates the length actual TP data unit in octets (i.e. the RP layer SMSC address octets are not counted).

<data>:

<data>	Description
String type	In the case of SMS <data> contains TP-user-Data. In case of CBS <data> contains CBM Content of Message. Refer to chapter 3.1 in *Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS);Use of Data Terminal Equipment - Data Circuit terminating Equipment (DTE-DCE) interface for Short Message Service (SMS) and Cell Broadcast Service (CBS)* for further details.

<pdu>:

<pdu>	Description
...	In the case of SMS: GSM 04.11 SC address followed by GSM 03.40 TPDU in hexadecimal format: phone converts each octet of TP data unit into two IRA character long hexadecimal number (e.g. octet with integer value 42 is presented to terminal equipment as two characters 2A (IRA 50 and 65)) In the case of CBS: GSM 03.41 TPDU in hexadecimal format.

<fo>:

<fo>	Description
Integer type	Depending on the command or result code: First octet of 3G TS 23.040[15] SMS-DELIVER, SMS-SUBMIT, or SMS-COMMAND.

<ct>:

<ct>	Description
Integer type	TP-Command-Type

AT+CMGR   Read Message (ver.4)

Description: Execution command returns message with location value <index> from message storage <mem1> to the terminal equipment. About text mode parameters in italics, refer command Show Text Mode Parameters +CSDH. If status of the message is 'received unread', status in the storage changes to 'received read'. If reading fails, final result code +CMS ERROR: <err> is returned.

The phone will send a dummy PDU for the storages "PT" and "CT".

Execution command: **AT+CMGR=**<index>

Execution command response:
- if text mode (+CMGF=1), command successful and SMS-DELIVER: +CMGR: <stat>,<oa>,*[<alpha>],<scts>[,<tooa>,<fo>,<pid>,<dcs>, <sca>,<tosca>,<length>]*<CR><LF><data>

- if text mode (+CMGF=1), command successful and SMS-SUBMIT: +CMGR: <stat>,<da>,*[<alpha>][,<toda>,<fo>,<pid>,<dcs>,[<vp>], <sca>,<tosca>,<length>]*<CR><LF><data>

- if text mode (+CMGF=1), command successful and SMS-COMMAND: +CMGR: <stat>,<fo>,<ct>*[,<pid>,[<mn>],[<da>],[<toda>],<length> <CR><LF><cdata>]*

- if PDU mode (+CMGF=0) and command successful: +CMGR: <stat>,[<alpha>],<length><CR><LF><pdu>

- otherwise: +CMS ERROR: <err> OK ERROR

Read command:

Read response:

Test command: **AT+CMGR=?**   Shows if the command is supported.

Termination: Phone

Parameters:

<stat>:

<stat>	Description
0	Received unread message (i.e. new message)
1	Received read message
2	Stored unsent message (only applicable to SMs)
3	Stored sent message (only applicable to SMs)
16	Template message **Not supported**

Integer type in PDU mode (default 0), indicates the status of message in memory.

<index>:

<index>	Description
Integer type	Value in the range of location numbers supported by the associated memory.

<oa>:

<oa>	Description
String type	TP-Originating-Address Address-Value field in string format; BCD number (or GSM 7 bit default alphabet characters) are converted to characters of currently selected terminal equipment character set. Refer to **+CSCS**.

<da>:

<da>	Description
String type	TP-Originating-Destination Address-Value field in string format; BCD number (or GSM 7 bit default alphabet characters) are converted to characters of currently selected terminal equipment character set. Refer to **+CSCS**.

<alpha>:

<alpha>	Description
String type	Manufacturing specific. Should be left empty but not omitted i.e. commas shall mark the place were it should be. Used character set should be the one selected with command Select terminal equipment Character Set +CSCS.

<scts>:

<scts>	Description
String type	TP-Service-Center-Time-Stamp in time-string format.

<tooa>:

<tooa>	Description
Integer type	TP-Originating-Address Type-of-Address octet in integer format.When first character of <oa> is +(IRA 43) default is 145, otherwise default is 129.

<toda>:

<toda>	Description
Integer type	TP-Destination-Address Type-of-Address octet in integer format. When first character of <da> is +(IRA 43) default is 145, otehrwise default is 129.

<length>:

<length>	Description
Integer type	In text mode (+CMGF=1) <length> indicates the length of the message body <data> in characters. In PDU mode (+CMGF=0) <length> indicates the length actual TP data unit in octets (i.e. the RP layer SMSC address octets are not counted).

<data>:

<data>	Description
String type	In the case of SMS <data> contains TP-user-Data. In case of CBS <data> contains CBM Content of Message. Refer to chapter 3.1 in *Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS);Use of Data Terminal Equipment - Data Circuit terminating Equipment (DTE-DCE) interface for Short Message Service (SMS) and Cell Broadcast Service (CBS)* for further details.

<pdu>:

<pdu>	Description
...	In the case of SMS: GSM 04.11 SC address followed by GSM 03.40 TPDU in hexadecimal format: phone converts each octet of TP data unit into two IRA character long hexadecimal number (e.g. octet with integer value 42 is presented to terminal equipment as two characters 2A (IRA 50 and 65)) In the case of CBS: GSM 03.41 TPDU in hexadecimal format.

<fo>:

<fo>	Description
Integer type	Depending on the command or result code: First octet of 3G TS 23.040[15] SMS-DELIVER, SMS-SUBMIT, or SMS-COMMAND.

<ct>:

<ct>	Description
Integer type	TP-Command-Type

<pid>:

<pid>	Description
Integer type	TP-Protocol -Identifier

<dcs>:

<dcs>	Description
Integer type	Depending on the comman or result code: SMS Data Coding Scheme or Cell Broadcast Data Coding Scheme.

<sca>:

<sca>	Description
String type	RP SC address Address-Value field. BCD numbers (or GSM 7 bit default alphabet characters) are converted to characters of the currently selected terminal equipment character set. Type of address is given by <tosca>.

<tosca>:

<tosca>	Description
Integer type	RP SC address Type-of-Address octet. .When first character of <oa> is +(IRA 43) default is 145, otherwise default is 129.

<vp>:

<vp>	Description
Integer or string format	TP-Validity-Period

<mn>:

<mn>	Description
Integer type	TP-Message-Number

AT+CMGS   **Send Message (ver.3)**

Description: **Text mode:**

Execution command sends message from a terminal equipment to the network (SMS-SUBMIT). Message reference value <mr> is returned to the terminal equipment on successful message delivery. Optionally (when +CSMS <service> value is 1 and network supports) <scts> is returned. Values can be used to identify message upon unsolicited delivery status report result code.

Entered text is sent to address <da> and all current settings (refer Set Text Mode Parameters +CSMP and Service Centre Address +CSCA) are used to construct the actual PDU in phone.

The phone shall send a four character sequence <CR><LF><greater_than><space> (IRA 13, 10, 62, 32) after command line is terminated with <CR>; after that text can be entered from terminal equipment to phone.

The DCD signal shall be in ON state while text is entered.

The echoing of entered characters back from the phone is controlled by V.25ter echo command E.

Note: In text mode character set UCS2 must be used.

PDU mode:

Execution command sends message from a terminal equipment to the network (SMS-SUBMIT). Message reference value <mr> is returned to the terminal equipment on successful message delivery. Optionally (when +CSMS <service> value is 1 and network supports) <ackpdu> is returned. Values can be used to identify message upon unsolicited delivery status report result code.

The phone shall send a four character sequence <CR><LF><greater_than><space> (IRA 13, 10, 62, 32) after command line is terminated with <CR>; after that PDU can be given from terminal equipment to phone.

The DCD signal shall be in ON state while PDU is given.

The echoing of given characters back from the phone is controlled by V.25ter echo command E.

The PDU shall be hexadecimal format (similarly as specified for <pdu>) and given in one line; phone converts this coding into the actual octets of PDU.

When the length octet of the SMSC address (given in the PDU) equals zero, the SMSC address set with command Service Centre Address +CSCA is used; in this case the SMSC Type-of-Address octet shall not be present in the PDU, i.e. TPDU starts right after SMSC length octet.

Sending can be cancelled by giving <ESC> character (IRA 27).

<ctrl-Z> (IRA 26) must be used to indicate the ending of PDU.

Execution command:	**if text mode (+CMGF=1)**
	AT+CMGS=<da>[,<toda>]<CR>text is entered
	<ctrl-Z/ESC>
	if PDU mode (+CMGF=0)
	AT+CMGS=<length><CR>
	<pdu><ctrl-Z/ESC>
Execution command response:	if text mode (+CMGF=1) and sending successful:
	+CMGS: <mr>[,<scts>]
	If PDU mode (+CMGF=0)
	+CMGS: <mr>[,<ackpdu>]
Test command:	**AT+CMGS=?** Shows if the command is supported.
Termination:	Phone
Parameters:	

<da>:

<da>	Description
String type	TP-Originating-Destination Address-Value field in string format; BCD number (or GSM 7 bit default alphabet characters) are converted to characters of currently selected terminal equipment character set. Refer to **+CSCS**.

<toda>:

<toda>	Description
Integer type	TP-Destination-Address Type-of-Address octet in integer format. When first character of <da> is +(IRA 43) default is 145, otherwise default is 129.

<mr>:

<mr>	Description
Integer type	GSM 03.40 TP-Message-Reference in integer format.

<scts>:

<scts>	Description
String type	TP-Service-Center-Time-Stamp in time-string format.

<length>:

<length>	Description
Integer type	Value indicating 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)

<ackpdu>:

<ackpdu>	Description
...	GSM 03.40 RP-User-Data element of RP-ACK PDU; format is same as for <pdu> in case of SMS, but without GSM 04.11 SC address field and parameter shall be bounded by double quote characters like a normal string type parameter

AT+CMGW   Write Message To Memory (ver.4)

Description: Execution command stores a message to memory storage <mem2>. 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. (phone manufacturer may choose to use different default <stat> values for different message types.) The entering of PDU is done similarly as specified in command Send Message +CMGS. If writing fails, final result code +CMS ERROR: <err> is returned.

Note: In text mode character set UCS2 must be used.

Execution command: **if text mode (+CMGF=1):**
+CMGW[=<oa/da>[,<tooa/toda>[,<stat>]]]<CR>**text is entered**<ctrl-Z/ESC>
if PDU mode(CMGF=0):
AT+CMGW=<length>[,<stat>]<CR>
<pdu><ctrl-Z/ESC>

Execution command response: +CMGW: <index>

Test command: **AT+CMGW=?** Shows if the command is supported.

Termination: Phone

Parameters:

<oa>:

<oa>	Description
String type	TP-Originating-Address Address-Value field in string format; BCD number (or GSM 7 bit default alphabet characters) are converted to characters of currently selected terminal equipment character set. Refer to **+CSCS**.

<da>:

<da>	Description
String type	TP-Originating-Destination Address-Value field in string format; BCD number (or GSM 7 bit default alphabet characters) are converted to characters of currently selected terminal equipment character set. Refer to **+CSCS**.

<tooa>:

<tooa>	Description
Integer type	TP-Originating-Address Type-of-Address octet in integer format. When first character of <oa> is +(IRA 43) default is 145, otherwise default is 129.

<toda>:

<toda>	Description
Integer type	TP-Destination-Address Type-of-Address octet in integer format. When first character of <da> is +(IRA 43) default is 145, otehrwise default is 129.

<stat>:

<stat>	Description
0	Received unread message (i.e. new message)
1	Received read message
2	Stored unsent message (only applicable to SMs)
3	Stored sent message (only applicable to SMs)
16	Template message

<index>:

<index>	Description
Integer type	Value in the range of location numbers supported by the associated memory.

<length>:

<length>	Description
Integer type	Value indicating 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).

<pdu>:

<pdu>	Description
...	In the case of SMS: GSM 04.11 SC address followed by GSM 03.40 TPDU in hexadecimal format: phone converts each octet of TP data unit into two IRA character long hexadecimal number (e.g. octet with integer value 42 is presented to terminal equipment as two characters 2A (IRA 50 and 65)) In the case of CBS: GSM 03.41 TPDU in hexadecimal format

AT+CMGC	Send command (ver. 2)

Description:

Text mode:

Execution command sends a command message from a terminal equipment to the network (SMS-COMMAND). The entering of text is done similarly as specified in command Send Message +CMGS, but the format is fixed to be a sequence of two IRA character long hexadecimal numbers which phone converts into 8-bit octets (refer +CMGS). Message reference value <mr> is returned to the terminal equipment on successful message delivery. Optionally (when +CSMS <service> value is 1 and network supports) <scts> is returned. Values can be used to identify message upon unsolicited delivery status report result code.

PDU mode:

Execution command sends a command message from a terminal equipment to the network (SMS-COMMAND). The entering of PDU is done similarly as specified in command Send Message +CMGS. Message reference value <mr> is returned to the terminal equipment on successful message delivery. Optionally (when +CSMS <service> value is 1 and network supports) <ackpdu> is returned. Values can be used to identify message upon unsolicited delivery status report result code. If sending fails in a network or an phone error, final result code +CMS ERROR: <err> is returned.

Execution command:

if text mode (+CMGF=1):
AT+CMGC=<fo>,<ct>[,<da>[,<toda>]]]]
<CR>**text is entered**<ctrl-Z/ESC>
if PDU mode (+CMGF=0):
AT+CMGC=<length><CR>
<pdu><ctrl-Z/ESC

Execution command response:

- if text mode (+CMGF=1) and sending successful:
  +CMGC=<mr>[,<scts>]

- if PDU mode (+CMGF=0) and sending successful:
  +CMGC: <mr>[,<ackpdu>]

- if sending fails:
  +CMS ERROR: <err>
  OK
  ERROR

Test command: **AT+CMGC=?** Shows if the command is supported.

Termination: Phone

Parameters:

<fo>:

<fo>	Description
Integer type	Depending on the command or result code: First octet of *3rd Generation Partnership Project; Technical Specification Group Terminals; Technical realization of the Short Message Service (SMS)* SMS-DELIVER, SMS-SUBMIT, or SMS-COMMAND.

<ct>:

<ct>	Description
Integer type	TP-Command-Type

<da>:

<da>	Description
String type	TP-Originating-Destination Address-Value field in string format; BCD number (or GSM 7 bit default alphabet characters) are converted to characters of currently selected terminal equipment character set. Refer to **+CSCS**.

<toda>:

<toda>	Description
Integer type	TP-Destination-Address Type-of-Address octet in integer format. When first character of <da> is +(IRA 43) default is 145, otherwise default is 129.

<mr>:

<mr>	Description
Integer type	GSM 03.40 TP-Message-Reference in integer format.

<scts>:

<scts>	Description
String type	TP-Service-Center-Time-Stamp in time-string format.

<length>:

<length>	Description
Integer type	Value indicating 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)

<pdu>:

<pdu>	Description
...	In the case of SMS: GSM 04.11 SC address followed by GSM 03.40 TPDU in hexadecimal format: phone converts each octet of TP data unit into two IRA character long hexadecimal number (e.g. octet with integer value 42 is presented to terminal equipment as two characters 2A (IRA 50 and 65)) In the case of CBS: GSM 03.41 TPDU in hexadecimal format

<mr>:

<mr>	Description
Integer type	GSM 03.40 TP-Message-Reference in integer format.

<ackpdu>:

<ackpdu>	Description
...	GSM 03.40 RP-User-Data element of RP-ACK PDU; format is same as for <pdu> in case of SMS, but without GSM 04.11 SC address field and parameter shall be bounded by double quote characters like a normal string type parameter

Ensemble S29: WAP Browser

Commands

AT*EWPR	**Sony Ericsson WAP Profiles (ver. 2)**

Description:	Set command selects active WAP settings profile.
	Read command queries active WAP settings profile.
	Note! If no active WAP-profile has been selected, the read command will return OK only.
Execution command:	**AT*EWPR=**<name>
Read command:	**AT*EWPR?** Displays the current <name> setting.
Test command:	**AT*EWPR=?** Shows if the command is supported.
Test command response:	*EWPR: <nlength>
Termination:	Phone
Parameters:	

<name>:

<name>	Function
string type	The name of the specific WAP settings profile to be activated. Field of maximum length <nlength>. Character set as specified by command Select TE Character Set **+CSCS**.

<nlength>:

<nlength>	Function
16	Value indicating the maximum length of field <name> (in characters).

AT*EWPC   Sony Ericsson WAP Profile Create

Description:	Command that creates a new WAP profile with name <name>.
	Read command lists all WAP setting profile names and information about their status - locked or not.
Execution command:	**AT*EWPC=**<name>
Read command:	**AT*EWPC?** Displays the current <name> and <lockstate> settings.
Test command:	**AT*EWPC=?** Shows if the command is supported.
Test command response:	*EWPC: <nlength>,(list of supported <lock_state>s)
Termination:	Phone
Parameters:	

<name>:

<name>	Function
String value	WAP profile name. Max length defined by <nlength>

<nlength>:

<nlength>	Function
16	Max length of WAP profile name.

<lock_state>:

<lock_state>	Function
...	This parameter indicates whether the profile is locked or not.
0	The profile is **not** locked
1	The profile **is** locked

AT*EWPD   Sony Ericsson WAP Profile Delete

Description:	Command that deletes the WAP profile with name <name>.
Execution command:	**AT*EWPD=**<name>

Test command:	**AT*EWPD=?** Shows if the command is supported.
Test command response:	*EWPD: <nlength>
Termination:	Phone
Parameters:	

<name>:

<name>	Function
String value	WAP profile name. Max length defined by <nlength>

<nlength>:

<nlength>	Function
16	Max length of WAP profile name.

Removed AT Commands

Ensemble C2: Control and Identification

Commands

AT command	Version	Termination
AT+CGMI	2	Phone

Ensemble S1: DTE-DCE Interface Commands

Commands

AT command	Version	Termination
AT+CSCS	2	Phone

Ensemble S6: Network Services

Commands

AT command	Version	Termination
AT+CLIP	1	Phone

Ensemble S8: Facility Lock

Commands

AT command	Version	Termination
AT+CLCK	2	Phone

Ensemble S9: Mobile Equipment, Control and Status

Commands

AT command	Version	Termination
AT+CKPD	3	Phone
AT*ESMA	2	Phone

Ensemble S11: SMS and PDU Mode

Commands

AT command	Version	Termination
AT+CPMS	2	Phone
AT+CMGF	1	Phone
AT+CNMI	3	Phone
AT+CMGL	2	Phone
AT+CMGR	2	Phone
AT+CMGS	2	Phone

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AT+CMGW	2	Phone

Ensemble S29: WAP Browser

Commands

AT command	Version	Termination
AT*EWPR	1	Phone
AT*EWPN		Phone

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Appendix – Z600

This chapter contains information about specific AT commands for the Z600 mobile phone. The AT commands in this chapter are new, updated or removed in comparison to the T68 mobile phone. See chapters 1 to 6 for AT commands that are not described in this chapter, as they are unchanged from the T68.

New AT Commands

Ensemble C2: Control and Identification

Commands

AT+CGMI	**Request manufacturer identification (ver. 1)**

Description: Execution command causes the MS to return one or more lines of information text <manufacturer>, determined by the MS manufacturer, which is intended to permit the user of the ITAE/ETAE to identify the manufacturer of the MS to which it is connected to. Typically, the text will consist of a single line containing the name of the manufacturer, but manufacturers may choose to provide more information if desired.

Execution command: **AT+CGMI**

Execution command response: **+CGMI=**<manufacturer>

Test command: **AT+CGMI=?** Shows if the command is supported.

Termination: Phone

Parameters:

<manufacturer>:

<manufacturer>	Function
SONYERICSSON	Manufacturer's name in upper case letters. The total number of characters, including line terminators, in the information text shall not exceed 2048 characters. Text shall not contain the sequence "0<CR>" or "OK<CR>".

Ensemble C3: Call Control

Commands

AT+CVHU	**Voice Hangup Control**

Description:
Set command selects whether ATH or "drop DTR" shall cause a voice connection to be disconnected or not. By voice connection is also meant alternating mode calls that are currently in voice mode.

NOTE: When <mode> = 2, this command must be seen in conjunction with the V.25ter, *Serial Asynchronous Automatic Dialing and Control*, command &D. Else, &D shall be ignored.

Execution command: **AT+CVHU=**[<mode>]

Read command: **AT+CVHU?** Displays the current <mode> setting.

Test command: **AT+CVHU=?** Shows if the command is supported.

Test command response: +CVHU (list of supported <mode>s)

Termination: Modem

Parameter:

<mode>:

<mode>	Description
0	"Drop DTR" ignored but OK response given. ATH disconnects.
1	"Drop DTR" and ATH ignored but OK response given.
2	"Drop DTR" behavior according to &D setting. ATH disconnects.

Ensemble C38: Bluetooth Commands

Commands

AT+BINP	**Bluetooth Input**

Description:	Command used for requesting some specific data input from the phone. On reception of this command the phone shall perform the proper actions such that the requested information is sent back to the HF using the +BINP response. The type of data the HF shall expect in the <dataresp> parameter returned by the phone depends on the information requested in each case.
Execution command:	**AT+BINP=**<datarequest>
Execution command response:	**AT+BINP:**<dataresp>1...<dataresp>n
Test command:	**AT+BINP=?** Shows if the command is supported.
Test command response:	+BINP: (list of supported <datarequest>s)
Termination:	Phone

Parameters:

<datarequest>:

<datarequest> integer type	Description
1	Request phone number corresponding to the last voice tag recorded in the HF.

<dataresp>:

<dataresp>	Description
<dataresp>1..<dataresp>n	Data parameters returned by the phone. Their contents depends on the value of the <datarequest> parameter as described in table 3.

Supported values on <dataresp> depending on <datarequest>:

<datarequest>	Description
1	<Phone number>; Phone number string (max. 32 digits). The format (type of address) of the phone number string shall conform with the rules stated in *Digital cellular telecommunications system (Phase 2+); Abbreviations and acronyms*, subclause 10.5.4.7, for a value (in integer format) of the type of address octec of 145, if dialling string includes international access code character "+", and for a value of 129 otherwise.

AT+BLDN	**Bluetooth Last Dialled Number**

Description: Command used for calling the last phone number dialled. On reception of this command, the phone will set up a voice call to the last phone number dialled.

Execution command: **AT+BLDN**

Test command: **AT+BLDN=?** Shows if the command is supported.

Termination: Phone

AT+BVRA	**Bluetooth Voice Recognition Activation**

Description: Enables/disables the voice recognition function in the phone.

This command activates the result code **+BVRA**

Execution command: **AT+BVRA=**<vrec>

Read command: **AT+BVRA?** Displays the current <vrec> setting.

Test command: **AT+BVRA=?** Shows if the command is supported.

Test command response: +BVRA: (list of supported <vrec>s)

Termination: Phone

Parameters:

<vrec>:

<vrec> integer type	Description
0	Disable Voice recognition in the phone.
1	Enable Voice recognition in the phone.

AT+NREC	**Noise Reduction and Echo Cancelling**

Description: Command issued to enable/disable any Echo Cancelling and Noise Reduction functions embedded in the phone.

Execution command: **AT+NREC=**<nrec>

Read command: **AT+NREC?** Displays the current <nrec> setting.

Test command: **AT+NREC=?** Shows if the command is supported.

Test command response: +NREC: (list of supported <nrec>s)

Termination: Phone

Parameter:

<nrec>:

<nrec> integer type	Description
0	Disable EC/NR in the phone.
1	Enable EC/NR in the phone. **Sony Ericsson Specific.**

AT+VGM   Gain of Microphone

Description: Command issued by the HF to report its current microphone gain level setting to the phone. <gain> is a decimal numeric constant, relating to a particular (implementation dependent) volume level controlled by the HF. This command does not change the microphone gain of the phone, it simply indicates the current value of the microphone gain in the HF.

This command activates the result code **+VGM**

Execution command: **AT+VGM=**<gain>

Read command: **AT+VGM?**   Displays the current <gain> setting.

Test command: **AT+VGM=?**   Shows if the command is supported.

Test command response: +VGM: (list of supported <gain>s)

Termination: Bluetooth Adapter

Parameters:

<gain>:

<gain> integer type	Description
0-15	0 - Minimum gain 15 - Maximum gain

AT+VGS   Gain of Speaker

Description: Command issued by the HF to report its current speaker gain level setting to the phone. <gain> is a decimal numeric constant, relating to a particular (implementation dependent) volume level controlled by the HF. This command does not change the speaker gain of the phone, it simply indicates the current value of the speaker gain in the HF.

This command activates the result code **+VGS**

Execution command: **AT+VGS=**<gain>

Read command: **AT+VGS?**   Displays the current <gain> setting.

Test command:	**AT+VGS=?** Shows if the command is supported.
Test command response:	+VGS: (list of supported <gain>s)
Termination:	Bluetooth Adapter
Parameter:	

<gain>:

<gain> integer type	Description
0-15	0 - Minimum gain 15 - Maximum gain

AT+BPBSO   Select Phonebook Sort Order

Description:	Command issued by the terminal equipment to select the type of scrolling in the phonebook. <Sort Order> is a decimal numeric constant, indicating the type of scrolling needed in the selected phonebook. Test comand returns a list of supported <Sort Orders>.
Execution command:	**AT+BPBSO=**<Sort Order>
Read command:	**AT+BPBSO?** Displays the current <Sort Order> setting.
Test command:	**AT+BPBSO=?** Shows if the command is supported.
Test command response:	+BPBSO: (list of supported <Sort Order>s)
Termination:	Phone
Parameters:	

<Sort Order>:

<Sort Order>	Description
0	Sort by name(Alpha-numeric) in the list.
1	Sort by index (location) in the list.

AT+BPBS	**Scroll phonebook list**

Description:	Command issued by the terminal equipment to read phonebook entries in the selected phonebook memory via scrolling. <mode> is a decimal numeric constant, indicating the scroll direction. <No of entries> is a decimal numeric constant, indicating the number of entries requested from terminal equipment. <index> is a decimal numeric constant specifying the location. <char> if used is specified to locate the first entry in the alphanumerically sorted phonebook list starting with the specified character <char>. If <char> is specified, then the <Index> parameter shall be omitted.
	Test command returns list of supported modes and location range supported by the current storage as a compound value. It also returns maximum length of <number> and <text>.
	Note: MV and BC storages not supported
Execution command:	**AT+BPBS=**<mode>[,<No of entries>[,<index>[,<char>]]]
Execution command response:	**+BPBS:**<index>,<number>,<type>,<text>
Read command:	
Read response:	
Test command:	**AT+BPBS=?** Shows if the command is supported.
Test command response:	+BPBS:(List of supported <mode>s), (List of supported <index>s),[<nlength>], [<tlength>]
Termination:	Phone
Parameters:	

<mode>:

<mode>	Description
1	Return next <No of entries> starting from the first item in the list.
2	Return last <No of entries> starting from the end of the list.
3	Return previous <No of entries> starting from the previous location in the list.
4	Return next <No of entries> starting from the current location in the list..
5	Return next <No of entries> starting from the next item in the list.
6	Return next <No of entries> starting from next entry starting with a different character.
7	Return next <No of entries> starting fom previous entery starting with a diffrent character.

<No of entries>:

<No of entries>	Description
Integer type	Specifies the maximum number of phonebook entries to be returned.

<index>:

<index>	Description
Integer type	Identifies the current phonebook location, which serves as the point of reference for the subsequent scrolling operation. If the selected sort order is "Alpha-numeric", and an index to an empty entry is specified, the value shall default to the first available entry in the list. If the selected sort order is "index" based, and an empty entry is specified, that starting location shall be used anyway. This parameter only applies to <mode> = 3 - 5.

<char>:

<char>	Description
Character value	Locate the first entry in the alpha-numerically stored phone list starting with the character. If an antry meeting those criteria exists, it shall become the new "current location". If an entery beginning with <char> is not found, the phone shall return the next entry in alpha-numeric order. If there is no entry beginning with <char> and there is none following in apha-numeric order, the phone shall return OK and the "current location" shall remain unchanged from its previous value. This parameter only applies to <mode> = 3 - 7

<number>:

<number>	Description
String type	Phone number of format <type>

<type>:

<type>	Description
Integer format	Type of address octet. Refer to *Digital cellular telecommunications system (Phase 2+); Mobile radio interface layer 3 specification* section 10.5.4.7.
129	ISDN / telephony numbering plan, national / international unknown.
145	ISDN / telephony numbering plan, international number.
161	ISDN / telephony numbering plan, national number.

<type>	Description
128 - 255	Other values, refer to *Digital cellular telecommunications system (Phase 2+); Mobile radio interface layer 3 specification* section 10.5.4.7.
6	Return next <No of entries> starting from next entry starting with a different character.
7	Return next <No of entries> starting fom previous entery starting with a diffrent character.

<text>:

<text>	Description
String type	Character set as specified by command Select terminal equipment Character Set **+CSCS**.

<nlength>:

<nlength:>	Description
Integer type	Maximum length of field <number>.

<tlength>:

<tlength:>	Description
Integer type	Maximum length of field <text>.

AT+BAPF   Find entry by name

Description: The set command is used to find advanced phonebook entries matching the string <findtext> from the current phonebook memory storage.

The test command returns the maximum lengths of <number> and <text> fields. In case of SIM storage, the lengths may not be available.

Note: FD, LD, DC, RC, MC, MV and BC storages not supported.

Execution command: **AT+BAPF=**<findtext>

Execution command response:
+BAPF:<index>,<name>,<no. of phone no>, <CR>
[<label>],<number>,<type>,[<speed no.>]<CR>
[<label>],<number>,<type>,[<speed no.>]<CR><LF>
OK

Test command: **AT+BAPF=?** Shows if the command is supported.

Test command response: +BAPF:[<nlength>],[<tlength>]

Termination: Phone

Parameters:

<findtext>:

<findtext>	Description
String type	String with maximum length <tlength>.

\<index\>:

\<index\>	Description
Integer type	Location number.

\<name\>:

\<name\>	Description
String type	String with maximum length \<tlength\>

\<no. of phone no\>:

\<no. of phone no\>	Description
Integer type	Indicating the number of phone numbers associated with the current record.

\<label\>:

\<label\>	Description
1	Main
2	Work
3	Home
4	Mobile
5	Pager
6	Fax
7	email
8-15	Reserved by BT car working group.
16-128	Manufacturer specific.

\<number\>:

\<number\>	Description
String type	Phone number of format \<type\>

\<type\>:

\<type\>	Description
Integer type	Type of address octet. Refer to *Digital cellular telecommunications system (Phase 2+); Mobile radio interface layer 3 specification* section 10.5.4.7.
129	ISDN / telephony numbering plan, national / international unknown.
145	ISDN / telephony numbering plan, international number
161	ISDN / telephony numbering plan, national number.
128-255	Other values refer to *Digital cellular telecommunications system (Phase 2+); Mobile radio interface layer 3 specification* section 10.5.4.7.

<speed no>:

<speed no.>	Description
Integer type	Speed dial number

<nlength>:

<nlength:>	Description
Integer type	Maximum length of field <number>.

<tlength>:

<tlength:>	Description
Integer type	Maximum length of field <name>.

AT+BAPR   Read entry by location

Description: The AT+BAPR=<index1>[,<index2>] command is used to read the advanced phonebook entries in location number range <index1>…<index2> from the current phonebook memory storage.

The test command returns a list of the supported indexes that may be referenced. The test command also returns the maximum lengths of <number> and <text> fields. In case of SIM storage, the lengths may not be available.

 Note: MV storage not supported.

Execution command: **AT+BAPR=<index1>[,<index2>]**

Execution command response: +BAPR:<index>,<name>,<no. of phone no>, <CR>
[<label>],<number>,<type>,[<speed no.>]<CR>
[<label>],<number>,<type>,[<speed no.>]<CR><LF>
OK

Test command: **AT+BAPR=?**   Shows if the command is supported.

Test command response: +BAPR:(List of supported <index>s)[<nlength>],[<tlength>]

Termination: Phone

Parameters:

<index1>:

<index1>	Description
Integer type	Start location number

<index2>:

<index2>	Description
Integer type	Stop location number

<index>:

<index>	Description
Integer type	Location number

<name>:

<name>	Description
String type	Location number

<no. of phone no.>:

<no. of phone no.>	Description
Integer type	Indicating the number of phone numbers associated with the current record.

:

<label>	Description
1	Main
2	Work
3	Home
4	Mobile
5	Pager
6	Fax
7	email
8-15	Reserved by BT car working group.
16-128	Manufacturer specific.

<number>:

<number>	Description
String type	Phone number of format <type>

<type>:

<type>	Description
Integer type	Type of address octet. Refer to *Digital cellular telecommunications system (Phase 2+); Mobile radio interface layer 3 specification* section 10.5.4.7.
129	ISDN / telephony numbering plan, national / international unknown.
145	ISDN / telephony numbering plan, international number
161	ISDN / telephony numbering plan, national number.
128-255	Other values refer to *Digital cellular telecommunications system (Phase 2+); Mobile radio interface layer 3 specification* section 10.5.4.7.

<speed no>:

<speed no.>	Description
Integer type	Speed dial number

<nlength>:

<nlength:>	Description
Integer type	Maximum length of field <number>.

<tlength>:

<tlength:>	Description
Integer type	Maximum length of field <name>.

AT+BAPS   Advanced phonebook scrolling

Description: This command scrolls through the phonebook either numerically or alphabetically per the **AT+BPBSO** command. The operation is identical to **AT+BPBS** except that entries are returned on a record basis meaning that scrolling for the next entry could result in the transfer of multiple phone numbers. Entry fields returned are location number <index>, entry name <name>, phone number labels <label> (field population optional), phone number <number> (of format <type>) and speed number <speed no.> (field population optional) associated with the number.

Test command retsurns number of entries, maximum length of <number> and maximum length of <name>.

Note: MV and BC storages not supported.

Execution command: AT+BAPS=<mode>[,<No of entries>[,<index>[,<char>]]]

Execution command response: +BAPS:<index>,<name>,<no. of phone no>, <CR>
[<label>],<number>,<type>,[<speed no.>]<CR>
[<label>],<number>,<type>,[<speed no.>]<CR><LF>
OK

Test command: AT+BAPS=?   Shows if the command is supported.

Test command response: +BAPS:(List of supported <mode>s),(List of supported <index>s)[<nlength>],[<tlength>]

Termination: Phone

Parameters:

<mode>:

<mode>	Description
1	Return next <No of entries> starting from the first item in the list.
2	Return last <No of entries> starting from the end of the list.
3	Return previous <No of entries> starting from the end of the list.

<mode>	Description
4	Return next <No of entries> starting from the end of this list.
5	Return next <No of entries> starting from the next item in the list.
6	Return next <No of entries> starting from next entry starting with a different character.
7	Return next <No of entries> starting fom previous entery starting with a diffrent character.

<No of entries>:

<No of entries>	Description
Integer type	Specifies the maximum number of phonebook entries to be returned.

<index>:

<index>	Description
Integer type	Identifies the current phonebook location, which servs as the point of reference for the subsequent scrolling operation. If the selected sort order is "Alpha-numeric", and an index to an empty entry is specified, the value shall default to the first available entry in the list. If the selected sort order is "index" based, and an empty entry is specified, that starting location shall be used anyway. This parameter only applies to <mode> = 3 - 5.

<char>:

<char>	Description
Character value	Locate the first entry in the alpha-numerically stored phone list starting with the character. If an antry meeting those criteria exists, it shall become the new "current location. If an entery beginning with <char> is not found, the phone shall return the next entry in alpha-numeric order. If there is no entry beginning with <char> and there is none following in apha-numeric order, the phone shall return OK and the "current location" shall remain unchanged from its previous value. This parameter only applies to <mode> = 3 - 7

<name>:

<name>	Description
String type	String with maximum length <tlength>

<no. of phone no.>:

<no. of phone no.>	Description
Integer type	Indicating the number of phone numbers associated with the current record.

:

<label>	Description
1	Main
2	Work
3	Home
4	Mobile
5	Pager
6	Fax
7	email
8-15	Reserved by BT car working group.
16-128	Manufacturer specific.

<number>:

<number>	Description
String type	Phone number of format <type>

<type>:

<type>	Description
Integer type	Type of address octet. Refer to *Digital cellular telecommunications system (Phase 2+); Mobile radio interface layer 3 specification* section 10.5.4.7.
129	ISDN / telephony numbering plan, national / international unknown.
145	ISDN / telephony numbering plan, international number
161	ISDN / telephony numbering plan, national number.
128-255	Other values refer to *Digital cellular telecommunications system (Phase 2+); Mobile radio interface layer 3 specification* section 10.5.4.7.

<speed no>:

<speed no.>	Description
Integer type	Speed dial number

<nlength>:

<nlength:>	Description
Integer type	Maximum length of field <number>.

<tlength>:

<tlength:>	Description
Integer type	Maximum length of field <name>.

AT+BAPW   Adding an entery to phonebook

Description: The set command writes phonebook entry in location number <index> in the current phonebook memory storage. Entry fields written are entry name <name>, phone number labels <label> (field population optional), phone number <number> (of format <type>) and speed number <speed no.> (field population optional) associated with the number. If the fields listed in the previous sentence are omitted, phonebook record is deleted. If only <index> and <speed no.> are included, then only the phone number associated with the speed number is deleted. If <index> is left out, but <number> is given, entry is written to the first free location in the phonebook (the implementation of this feature is manufacturer specific).

If no <label> is included but is supported by the phone, it is up to the manufacturer to assign a default label type. If a <label> is included but the phone does not support the field, a +CME ERROR: 4 is returned.

In the case where a phone number does not have a speed dial number associated with it, editing and deleting of that number is still possible. The terminal equipment must delete the entire record and write back the other phone numbers separately. If editing an entry, the new version of the entry is written. If deleting an entry, no other action is necessary.

The test command returns a list of the supported indexes that may be entered, a list of supported phone number labels, list of supported number types, and list of supported speed numbers. The test command also returns the maximum lengths of <number> and <text> fields. In case of SIM storage, the lengths may not be available.

If the phone does not support any labels, it is up to the manufacturer to decide whether to indicate no label support or support for a single label type (i.e. 1 – main).

Note: FD, LD, DC, RC, MC and MV storages not supported.

Execution command: **AT+BAPW**=[<index>],[<name>],[<label>],[<number>],[<type>],[<speed no>]

Test command: **AT+BAPS=?**   Shows if the command is supported.

Test command response: +BAPW:(list of supported <index>s,[<tlength>],(list of supported <label>s]),[<nlength>],list of supported <type>s),(list of supported <speed no>s

Termination: Phone

Parameters:

<index>:

<index>	Description
Integer type	Location number

<name>:

<name>	Description
String type	String with maximum length <tlength>

:

<label>	Description
1	Main
2	Work
3	Home
4	Mobile
5	Pager
6	Fax
7	email
8-15	Reserved by BT car working group.
16-128	Manufacturer specific.

<number>:

<number>	Description
String type	Phone number of format <type>

<type>:

<type>	Description
Integer type	Type of address octet. Refer to *Digital cellular telecommunications system (Phase 2+); Mobile radio interface layer 3 specification* section 10.5.4.7.
129	ISDN / telephony numbering plan, national / international unknown.
145	ISDN / telephony numbering plan, international number
161	ISDN / telephony numbering plan, national number.
128-255	Other values refer to *Digital cellular telecommunications system (Phase 2+); Mobile radio interface layer 3 specification* section 10.5.4.7.

<speed no>:

<speed no>	Description
Integer type	Speed dial number

<nlength>:

<nlength:>	Description
Integer type	Maximum length of field <number>.

<tlength>:

<tlength:>	Description
Integer type	Maximum length of field <name>.

Unsolicited Result Codes

+BVRA	**Bluetooth Voice Recognition Activation Indication**

Description: Unsolicited result code used to notify the HF when the voice recognition function in the phone has been terminated autonomously.

This result code is activated by **AT+BVRA** .

Unsolicited result code: **+BVRA:** <vrect>

Parameter:

<vrect>:

<vrect>	Description
0	Voice recognition is disabled in the phone.

+VGM	**Gain of Microphone Indication**

Description: Unsolicited result code issued by the phone to set the microphone gain of the HF. <gain> is a decimal numeric constant, relating to a particular (implementation dependent) volume level controlled by the HF.

This result code is activated by **AT+VGM**.

Unsolicited result code: **+VGM:** <gain>

Note! Due to the small inconsistency between the GSM 07.07 standard and the current Headset specification (*Specification of the Bluetooth System; Profiles, v1.1, Part K:6, Headset Profile.*), the HF shall also accept the "=" symbol in place of ":" as a valid separator for this unsolicited result code.

Parameter:

<gain>:

<gain> integer type	Description
0-15	0 - Minimum gain 15 - Maximum gain

+VGS	**Gain of Speaker Indication**

Description: Unsolicited result code issued by the phone to set the speaker gain of the HF. <gain> is a decimal numeric constant, relating to a particular (implementation dependent) volume level controlled by the HF.

This result code is activated by **AT+VGS**.

Unsolicited result code: +**VGS:** <gain>

Note! Due to the small inconsistency between the GSM 07.07 standard and the current Headset specification (*Specification of the Bluetooth System; Profiles, v1.1, Part K:6, Headset Profile.*), the HF shall also accept the "=" symbol in place of ":" as a valid separator for this unsolicited result code.

Parameter:

<gain>:

<gain> integer type	Description
0-15	0 - Minimum gain 15 - Maximum gain

+BSIR	**Bluetooth Setting of In-band Ring tone Indication**

Description: Unsolicited result code issued by the phone to indicate to the HF that the in-band ring tone setting has been locally changed. The HF may react accordingly by changing its own alert method.

Unsolicited result code: +**BSIR:** <bsir>

Parameter:

<bsir> integer type	Description
0	The phone provides no in-band ring tone.
1	The phone provides an in-band ring tone.

+BINP	**Bluetooth Input Indication**

Description: Unsolicited result code issued by the phone in response to a request from the terminal equipment to provide information of a specified type.

Unsolicited result code: +**BINP:** <dataresp1>[,...,<datarespn>]

Parameter:

<datarespn>Type is dependent on the <datarequest> parameter

<datarespn> Type is dependent on the <datarequest> parameter	..
..	..

<datarespn> **Type is dependent** **on the** **<datarequest>** **parameter**	..
..	..

Ensemble S6: Network Services

Commands

AT+COLP	**Connected line identification presentation**

Description: This command refers to the GSM/UMTS supplementary service COLP (Connected Line Identification Presentation) that enables a calling subscriber to get the connected line identity (COL) of the called party after setting up a mobile originated call. The command enables or disables the presentation of the COL at the terminal equipment. It has no effect on the execution of the supplementary service COLR in the network.

When enabled (and called subscriber allows), +COLP: <number>,<type>[,<subaddr>,<satype> [,<alpha>]] intermediate result code is returned from the phone to terminal equipment before any +CR or V.25ter [14] responses. It is manufacturer specific if this response is used when normal voice call is established

Read command gives the status of <n>, and also triggers an interrogation of the provision status of the COLP service according *Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS);Line Identification supplementary services;* (given in <m>).

Test command returns values supported by the phone as a compound value.

Execution command: **AT+COLP=**[<n>]

Read command: **AT+COLP?** Displays the current <n> and <m> settings.

Test command: **AT+COLP=?** Shows if the command is supported.

Test command response: +COLP: (list of supported <n>s)

Termination: Phone

Parameters:

<n>: (sets/shows the result code presentation status in the phone)

<n>	Description
0	disable
1	enable

<m>:   (shows the subscriber COLP service status in the network)

<m>	Description
0	COLP not provisioned
1	COLP provisioned
2	unknown (e.g. no network, etc.)

Unsolicited Result Codes

+COLP	**Connected Line Identification Indication**

Description: This command enables a calling subscriber to get the connected line identity (COL) of the called party when setting up a mobile originated call.

This result code is activated by **AT+BVRA** .

Unsolicited result code: **+COLP:** <number>,<type>[,<subaddr>,<satype> [,<alpha>]]

Parameters: Refer to **+CLIP** result code.

Ensemble S9 - Mobile Equipment, Control and Status

Commands

AT*ERIN	**Sony Ericsson Ring Set (ver.3)**
Description:	The command is used to set sound for incoming voice, line L1 and L2, fax and data calls and alarm. For each of the incoming call types and alarm: voice on line 1, voice on line 2, fax calls and data calls and alarm a sound type is selected. The type of sound is either a ring signal, selected from a predefined set, or a melody, selected from a predefined set, or an own melody, selected from a set specified by the user. Line 1 is default for <call type> if the parameter is not given.
Execution command:	**AT*ERIN=**<sound type>,[<call type>]
Read command:	**AT*ERIN?** Displays the current <sound type> and <call type> settings.
Test command:	**AT*ERIN=?** Shows if the command is supported.
Test command response:	*ERIN: (list of supported <sound type>s), (list of supported <call type>s)
Termination:	Phone
Parameters:	

<call type>:

<call type>	Description
1	Line 1
2	Line 2
3	Fax
4	Data
5	Alarm

<sound type>:

<sound type>	Description
0	Off **Not supported**
1	Low ring signal
2	Medium ring signal
3	High ring signal
4	Mixed ring signal
5	Beep **Not supported**
6	Alarm **Not supported**

<sound type>	Description
7	Calendar Tone **Not supported**
8	Calendar Click **Not supported**
9-10	Reserved **Not supported**
11-20	Melody 1 – Melody 10, Reserved for preset melodies
21-30	Reserved **Not supported**
31-38	Own melodies 1-8
39-50	Reserved for own melodies **Not supported**

AT+ERIP	**Sony Ericsson Ring Signal Playback (ver. 2)**
Description:	The command is used to play one of the sound types which are available as ring signal/message signal on the phone. The signal volume may not be chosen as "step"; with an increasing volume for each signal. If value 1 is chosen for parameter <volume>, nothing should happen. Signal volume may be chosen as a selected level.
Execution command:	**AT*ERIP=**<volume>,<sound type>
Test command:	**AT*ERIP=?** Shows if the command is supported.
Test command response:	*ERIP: (list of supported <volume>s),(list of supported <sound type>s)
Termination:	Phone
Parameters:	

<volume>:

<volume>	Description
0	Off
1	Step **Not Supported**
2-n	Volume setting

<sound type>:   Refer to <sound type> for the **AT*ERIN (ver.3)** command in this ensemble.

Ensemble S11: SMS and PDU Mode

Commands

AT*ESTL	**Send command (ver. 2)**

Description:	This command adds an SMS Template, specified by the <text>-parameter, to the list of SMS Templates at the position specified by the <stix>-parameter. If the list already contains an SMS Template at the position <stix> this template is overwritten by the template given by the <text>-parameter.
	If the <text>-parameter is omitted, the command removes the SMS Template from the list at the position specified by the <stix>-parameter.
	The read command lists all entries in the SMS Template list.
Execution command:	**AT*ESTL=**<stix>[,<text>]
Read command:	**AT*ESTL?** Displays the current <stix1> and <text> settings.
Test command:	**AT*ESTL=?** Shows if the command is supported.
Test command response:	*ESTL: (list of supported <stix>s),(list of supported <ntext>s)
Termination:	Phone
Parameters:	

<stix>:

<stix>	**Description**
Integer value	Index to list of SMS Templates

<text>:

<text>	**Description**
String value	SMS Template text

<ntext>:

<ntext>	**Description**
Integer value	Maximum length of the SMS Template (<text>-parameter)

AT+CSMP   Set Text Mode Parameters

Description: Set command is used to select values for additional parameters needed when SM is sent to the network or placed in a storage when text format message mode is selected. It is possible to set the validity period starting from when the SM is received by the SMSC (<vp> is in range 0... 255) or define the absolute time of the validity period termination (<vp> is a string). The format of <vp> is given by <fo>. If the phone supports the EVPF, see *Universal Mobile Telecommunications System (UMTS);Technical realization of the Short Message Service (SMS)*, it shall be given as a hexadecimal coded string (refer e.g. <pdu>) with double quotes.

NOTE: When storing a SMS-DELIVER from the terminal equipment to the preferred memory storage in text mode (refer to the command Write Message to Memory **AT+CMGW**), <vp> field can be used for <scts>.

Execution command: **AT+CSMP=**[<fo>[,<vp>[,<pid>[,<dcs>]]]]

Read command: **AT+CSMP?**   Displays the current <fo>,<vp>,<pid> and <dcs> settings.

Test command: **AT+CSMP=?**   Shows if the command is supported.

Termination: Phone

Parameters:

<fo>:

<fo>	Description
0..255	Depending on the command or result code: First octet of *Universal Mobile Telecommunications System (UMTS);Technical realization of the Short Message Service (SMS)*. SMS-DELIVER SMS-SUBMIT (default 17) SMS-STATUS-REPORT SMS-COMMAND (default 2)

<vp>:

<vp>	Description
0..255 or String format	Depending on SMS-SUBMIT <fo> setting: *Universal Mobile Telecommunications System (UMTS);Technical realization of the Short Message Service (SMS)* Validity-period parameter Integer format (default 167) Validity-period Time-string format "yy/MM/dd,hh:mm:ss±zz", where characters indicate year, month, day, hour, minutes, seconds and time zone. E.g. 6th of May 1994, 22:10:00 GMT+2 hours equals to "94/05/06,22:10:00+02".

<pid>:

<pid>	Description
0..255	*Universal Mobile Telecommunications System (UMTS);Technical realization of the Short Message Service (SMS)* TP-Protocol-Identifier (default 0)

<dcs>:

<dcs>	Description
0..255	Depending on the command or result code: *Digital cellular telecommunications system (Phase 2+) (GSM);Universal Mobile Telecommunications System (UMTS);Alphabets and language-specific information* data coding scheme. SMS Data Coding Scheme (default 0) Cell Broadcast Data Coding Scheme.

AT+CSDH   Show Text Mode Parameters

Description: Set command controls whether detailed header information is shown in text mode result codes.

Execution command: **AT+CSDH=**[<show>]

Read command: **AT+CSDH?** Displays the current <show> setting.

Test command: **AT+CSDH=?** Shows if the command is supported.

Test command response: +CSDH: (list of supported <show>s)

Termination: Phone

Parameter:

<show>:

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

Ensemble S16: Phonebook

Commands

AT+EPRR   **Sony Ericsson Personal Ringtype Read (ver. 3)**

Description: Execution command returns phone number, phone number type and sound type in location number <indexr>. If listing fails in an phone error, +CME ERROR: <err> is returned.

Execution command: **AT*EPRR=**<indexr>

Execution command response: *EPRR: <indexr>,<number>,<type>,<sound type>

Test command: **AT*EPRR=?**   Shows if the command is supported.

Test command response: *EPRR: (list of supported <indexr>s)

Termination: Phone

Parameters:

<indexr>:

<indexr>	Description
1-50	Value of location number

<number>:

<number>	Description
String type	phone number of format <type>

<type>:

<type>	Description
Integer format	Type of address octet Refer to *Digital cellular telecommunications system (Phase 2) (GSM);Mobile radio interface;Layer 3 specification.*
128	Unknown numbering plan, national / international number unknown.
129	ISDN / telephony numbering plan, national / international unknown
145	ISDN / telephony numbering plan, international number
161	ISDN / telephony numbering plan, national number
128 - 255	Other values refer to *Digital cellular telecommunications system (Phase 2) (GSM);Mobile radio interface;Layer 3 specification.*

<sound type>:

<sound type>	Description
1	Low ring signal
2	Medium ring signal
3	High ring signal
4	Mixed ring signal
11	Melody 1
12-20	Melody 2- Melody 10 Reserved for pre-set melodies
31-38	Own melody 1-8

AT+EPRW   Sony Ericsson Personal Ringtype Write (ver. 3)

Description: Execution command writes phone number, phone number type and sound type in location number <indexr>. It is possible to use wild cards for phone number by substituting the digits with question marks. If writing fails in an phone error, +CME ERROR: <err> is returned.

If all parameters but <indexr> are omitted, the personal ring type at position <indexr> will be deleted.

Note: For SIR 2.1 and later, this command only works if the <number> is in the phone phonebook. Also due to the architecture of the hierarchical phonebook the indexation of the personal rings is not constant and the <indexr> parameter will be ignored except when deleting a personal ring.

Execution command: **AT*EPRW=**<indexr>,<number>,[<type>],<soundtype>

Read command:

Read response:

Test command:	**AT*EPRW=?** Shows if the command is supported.
Test command response:	*EPRW: (list of supported <indexr>s),<nlength>,(list of supported <type>s),(list of supported <sound type>s)
Termination:	Phone
Parameters:	

<indexr>:

<indexr>	Description
1-50	Value of location number. The location number must be free. If the given location number is not free, ERROR is returned.

<number>:

<number>	Description
String type	phone number of format <type>

<type>:

<type>	Description
Integer format	Type of address octet *Digital cellular telecommunications system (Phase 2) (GSM);Mobile radio interface;Layer 3 specification.*
128	Unknown numbering plan, national / international number unknown.
129	ISDN / telephony numbering plan, national / international unknown
145	ISDN / telephony numbering plan, international number
161	ISDN / telephony numbering plan, national number
128 - 255	Other values refer to *Digital cellular telecommunications system (Phase 2) (GSM);Mobile radio interface;Layer 3 specification.*

<nlength>:

<nlength>	Description
Integer type	Value indicating the maximum length of field <number>

<sound type>:

<sound type>	Description
1	Low ring signal
2	Medium ring signal
3	High ring signal
4	Mixed ring signal
11	Melody 1

<sound type>	Description
12-30	Melody 2- Melody 20 Reserved for pre-set melodies
31-38	Own melody 1-4

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Updated AT Commands

Ensemble S1: DTE-DCE Interface Commands

Commands

AT+CSCS	**Select The Character Set (ver. 4)**

Description: Set command informs the phone which character set <chset> is used by the terminal equipment. The phone is then able to convert character strings correctly between terminal equipment and phone character sets.

When phone - terminal equipment interface is set to 8-bit operation and the used terminal equipment alphabet is 7-bit, the highest bit shall be set to zero.

Note: It is manufacturer specific how the internal alphabet of phone is converted to/from the terminal equipment alphabet.

Read command shows current setting and test command displays conversion schemes implemented in the phone.

Execution command: **AT+CSCS=**<chset>

Read command: **AT+CSCS?**   Displays the current <chset> setting.

Test command: **AT+CSCS=?**   **S**hows if the command is supported.

Test command response: +CSCS: (list of supported <chset>s)

Termination: Phone

Parameter:

<chset>:

<chset>	Description
"GSM"	GSM default alphabet (*Digital cellular telecommunications system (Phase 2+) (GSM);Alphabets and language-specific information* subclause 6.2.1); this setting causes easily software flow control (XON/XOFF) problems. **Default setting.**

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<chset>	Description
"IRA"	International reference alphabet (ITU-T T.50 [3]) Note: Recommended default setting by *Digital cellular telecommunications system (Phase 2+);* *AT command set for GSM Mobile Equipment (ME).* ***Only in ref. Point E***
"8859-n"	ISO 8859 Latin *n* (1-6) character set. **Only number 1 and only in ref. Point E**
"SONY ERICSSON"	Internal character-set in the telephone, which maydiffer from different phones. **Only in ref. Point E**
"UTF8"	Universal Text Format, 8 bits. **Only in ref. Point E**
"UCS2"	Unicode, 16-bit universal multiple-octet coded character set (ISO/IEC10646). **Only in ref. Point E**

Ensemble S6: Network Services

Commands

AT+CLIP	**Calling Line Identification (ver. 2)**

Description: This command refers to the GSM/UMTS supplementary service CLIP (Calling Line Identification Presentation) that enables a called subscriber to get the calling line identity (CLI) of the calling party when receiving a mobile terminated call. Set command enables or disables the presentation of the CLI at the terminal equipment. It has no effect on the execution of the supplementary service CLIP in the network.

Read command gives the status of <n>, and also triggers an interrogation of the provision status of the CLIP service according to *Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS);Line Identification supplementary services.* (given in <m>). Test command returns values supported by the phone as a compound value

Test command returns values supported by the phone as a compound value.

This command activates the result code **+CLIP**.

Execution command: **AT+CLIP=**<n>

Read command: **AT+CLIP?**   Displays the current <n> setting.

Test command: **AT+CLIP=?**   Shows if the command is supported.

Test command response: + CLIP : (list of supported <n>s)

Termination: Phone

Parameters:

<n>: Sets/shows the result code representation status in the phone.

<n>	Description
0	disable
1	enable

<m>: Shows the subscriber CLIP service status in the network.

<m>	Description
0	CLIP not provisioned
1	CLIP provisioned
2	unknown (e.g. no network, etc.)

Note: When CLI is not available (<CLI validity>=2), <number> shall be an empty string ("") and <type> value will not be significant. Nevertheless, the phone may return the recommended value 128 for <type> ((TON/NPI unknown in accordance with *Digital cellular telecommunications system (Phase 2) (GSM);Mobile radio interface;Layer 3 specification* subclause 10.5.4.7).

When CLI has been withheld by the originator, (<CLI validity>=1) and the CLIP is provisioned with the "override category" option (refer to *Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS);Line Identification supplementary services*), <number> and <type> is provided. Otherwise, the phone shall return the same setting for <number> and <type> as if the CLI was not available.

<err>:   Possible values:

<err>	Description
0	Phone failure
3	Operation not allowed.
4	Operation not supported.
21	Invalid index.
30	No network service.
31	Network timeout.
100	Unknown.

Unsolicited Result Codes

+CLIP	**Calling Line Identification Indication (ver. 2)**

Description:	This command enables a called subscriber to get the calling line identity (CLI) of the calling party when receiving a mobile terminated call.
	This result code is activated by **AT+CLIP**.
Unsolicited result code:	**+CLIP:**<number>,<type>[,<subaddr>,<satype>[,[<alpha>][,<CLI validity>]]]

Parameters:

<number>:

<number>	Description
String type	Phone number of format specified by <type>

<type>:

<type>	Description
integer format	Type of address octet

Refer to (*Digital cellular telecommunications system (Phase 2) (GSM);Mobile radio interface;Layer 3*, section 10.5.4.7). |

<type>	Description
129	ISDN / telephony numbering plan, national / international unknown **Default setting if '+' is not in <sca>**
145	ISDN / telephony numbering plan, international number **Default setting if '+' is in <sca>**
161	ISDN / telephony numbering plan, national number
128 - 255	Other values, refer to (*Digital cellular telecommunications system (Phase 2) (GSM);Mobile radio interface;Layer 3*, section 10.5.4.7).

<subaddr>:

<subaddr>	Description
String type	String type subaddress of format specified by <satype>. As described in ITU_T I.330: "The subaddress is a sequence of digits, the maximum length of which shall be 20 octets (40 digits). All ISDNs shall be capable of conveying the ISDN subaddress transparently and shall not be required to examine or operate on any of the subaddress information. Special attention is drawn to the fact that subaddressing is not to be considered as part of the numbering plan, but constitutes an intrinsic part of ISDN addressing capabilities. The subaddress shall be conveyed in a transparent way as a separate entity from both ISDN number and user-to-user information. See also Recommendation I.334".

<satype>:

<satype>	Description
integer format	Type of subaddress octet
128	NSAP (X.213/ISO 8348 AD2), even number of address signals
136	NSAP (X.213/ISO 8348 AD2), odd number of address signals
160	User defined, even number of address signals
168	User defined, odd number of address signals
128 - 255	Other values reserved

<alpha>:

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

<CLI_validity>:

<CLI_validity>	Description
0	CLI valid
1	CLI has been withheld by the originator.
2	CLI is not available due to interworking problems or limitations of originating network.

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Ensemble S8: Facility Lock

Commands

AT+CLCK	Facility lock (ver. 3)

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

Call barring facilities are based on GSM/UMTS supplementary services (refer to *Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS);Call Barring (CB) supplementary services*). The interaction of these with other commands based on other GSM/UMTS supplementary services is described in the GSM/UMTS standard.

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

Note! "PS" and <mode>=1 correspond to Auto Lock

Note! It is manufacturer specific which <passwd> (PIN-code) that will be used for authentication.

Execution command: **AT+CLCK=**<fac>,<mode>[,<passwd>[,<class>]]

Execution command response: when <mode>=2 and command successful:
+CLCK: <status>[,<class1>[<CR><LF>
+CLCK: <status>,<class2>[...]]

Test command: **AT+CLCK=?** Shows if the command is supported.

Test command response: +CLCK: (list of supported <fac>s)

Termination: Phone

Parameters:

<fac>:

<fac>	Description
"CS"	CNTRL (lock CoNTRoL surface (e.g. phone keyboard))
"PS"	PH-SIM (lock PHone to SIM card) (phone asks password when other than current SIM card inserted)

<fac>	Description
"PF"	Lock Phone to the very First inserted SIM/UICC card (also referred in the present document as PH-FSIM) (phone asks password when other than the first SIM/UICC card is inserted)
"SC"	SIM (lock SIM card) (SIM asks password in phone power-up and when this lock command issued)
"AO"	BAOC (Barr All Outgoing Calls) (refer to *Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS);Call Barring (CB) supplementary services* clause 1).
"OI"	BOIC (Barr Outgoing International Calls) (refer to *Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS);Call Barring (CB) supplementary services* clause 1).
"AI"	BAIC (Barr All Incoming Calls) (refer to *Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS);Call Barring (CB) supplementary services* clause 2).
"IR"	BIC-Roam (Barr Incoming Calls when Roaming outside the home country) (refer to *Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS);Call Barring (CB) supplementary services* clause 2).
"OX"	BOIC-exHC (Barr Outgoing International Calls except to Home Country) (refer to *Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS);Call Barring (CB) supplementary services* clause 1).
"NT"	Bar incoming calls from numbers Not stored to the phone memory
"NM"	Bar incoming calls from numbers Not stored to phone memory
"NS"	Bar incoming calls from numbers Not stored to SIM memory
"NA"	Bar incoming calls from numbers Not stored in Any memory
"AB"	All Barring services (refer to *Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS);Man-Machine Interface (MMI) of the User Equipment (UE)*) (applicable only for <mode>=0)
"AG"	All outGoing barring services (refer to *Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS);Man-Machine Interface (MMI) of the User Equipment (UE)*) (applicable only for <mode>=0)

<fac>	Description
"AC"	All inComing barring services (refer to *Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS);Man-Machine Interface (MMI) of the User Equipment (UE)*) (applicable only for <mode>=0)
"FD"	SIM card or active application in the UICC (GSM or USIM) fixed dialling memory feature (if PIN2 authentication has not been done during the current session, PIN2 is required as <passwd>)
"PN"	Network Personalization (refer to *Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS);Personalisation of Mobile Equipment (ME); Mobile functionality specification*).
"PU"	Network sUbset Personalization (refer to *Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS);Personalisation of Mobile Equipment (ME); Mobile functionality specification*).
"PP"	Service Provider Personalization (refer to *Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS);Personalisation of Mobile Equipment (ME); Mobile functionality specification*).
"PC"	Corporate Personalization (refer to *Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS);Personalisation of Mobile Equipment (ME); Mobile functionality specification*).

<mode>:

<mode>	Description
0	Unlock
1	Lock
2	Query status
10	Full lock (only valid for <fac>="PS", after power on always ask for password) **Sony Ericsson specific**

<status>:

<status>	Description
0	not active
1	active

<passwd>:

<passwd>	Description
string type	Shall be the same as password specified for the facility from the phone user interface or with command Change Password **AT+CPWD**

<classx>:   A sum of integers each representing a class of information. Default=7.

<classx>	Description
1	voice
2	data (refers to all bearer services; with <mode>=2 this may refer only to some bearer service if the phone does not support values 16, 32, 64 and 128)
4	fax
8	Short message service
16	data circuit sync
32	data circuit async
64	dedicated packet access
128	dedicated PAD access

<err>:

<err>	Description
0	phone failure
3	operation not allowed
4	operation not supported
5	PH-SIM PIN 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
23	text string too long
24	invalid characters in text string
30	no network service
31	network timeout
100	unknown
101..255	reserved by ETS

Ensemble S9: Mobile Equipment, Control and Status

Commands

AT+CKPD	**Keypad Control (ver. 5)**

Description: Execution command emulates phone keypad by giving each keystroke as a character in a string <keys>. <time>*0.1 seconds is the time to strike each key, and <pause>*0.1 seconds is the length of pause between two strokes. If emulating fails in an phone error, +CME ERROR: <err> is returned. This command should be accepted (OK returned) before actually starting to press the keys. Thus unsolicited result codes of key pressings and display events can be returned. (Refer to Mobile Equipment Event Reporting **AT+CMER**).

The physical keypad shall always have higher priority than emulation of keystrokes via **AT+CKPD**. That is, if the physical keypad is operated during execution of a series of keystrokes generated by **AT+CKPD** the emulated keypad operation is to be terminated immediately. The final result code shall be ERROR.

Execution command: **AT+CKPD=**<keys>[,<time>[,<pause>]]

Test command: **AT+CKPD=?** Shows if the command is supported.

Termination: Phone

Parameters:

<keys>: String of characters representing keys as listed in the following table (based on PCCA STD-101 Annex table I-3). Colon character (IRA 58) followed by one character can be used to indicate a manufacturer specific key not listed here. All characters from a semicolon character (IRA 59) to the next single semicolon characters are treated as alpha entries and are not converted to key equivalents. All semicolon characters inside alpha entries should be duplicated in the terminal equipment and stripped to one before entering to the phone. Pause character (IRA 87 or 119) can be used to pause between key pressings for a time specified by <pause>. All IRA values not listed here are reserved.

Char	IRA (dec)	Comment (+ some known key symbols)
#	35	hash (number sign)
*	42	star (*)
0... 9	48... 57	number keys
:	58	escape character for manufacturerspecific keys
<	60	left arrow
>	62	right arrow

Char	IRA (dec)	Comment (+ some known key symbols)
C/c	67/99	clear display (C/CLR)
D/d	68/100	volume down
E/e	69/101	connection end (END)
F/f	70/102	function (FCN) - option key
G/g	71/103	voice note
P/p	80/112	power (PWR)
S/s	83/115	connection start (SEND)
U/u	85/117	volume up
V/v	86/118	down arrow
[	91	soft key 1
]	93	soft key 2
^	94	up arrow
:J	58+74	joystick button pressed
:C	58+99	Camera button
:O	58+79	Operator button
:R	58+82	Return button
H/h	200	button pushed on the MC link (BT) headset

<time>:

<time>	Description
0..255	0… 25.5 seconds (default values are manufacturer specific, but should be so long that a normal phone can handle keystrokes correctly)

<pause>:

<pause>	Description
0..255	0… 25.5 seconds (default values are manufacturer specific, but should be so long that a normal phone can handle keystrokes correctly)

Note: The SEND and END keypad values should be mapped to an appropriate key.

AT+CIND	Indicator Control (ver.4)

Description: Set command is used to set the values of phone indicators. <ind> value 0 means that the indicator is off (or in state which can be identified as "off"-state), 1 means that indicator is on (or in a state which is more substantial than "off"-state), 2 is more substantial than 1, and so on. If the indicator is a simple on/off style element, it has values 0 and 1. The number of elements is phone specific. If phone does not allow setting of indicators or phone is not currently reachable, +CME ERROR: <err> is returned. If a certain indicator is not writable, setting of it should be ignored. If parameter is empty field, indicator shall remain in the previous value.

Read command returns the status of phone indicators. If phone is not currently reachable, +CME ERROR: <err> is returned.

Test command returns pairs, where string value <descr> is a maximum 16 character description of the indicator and compound value is the allowed values for the indicator. If phone is not currently reachable, +CME ERROR: <err> is returned.

Execution command: **AT+CIND=**[<ind>[,<ind>[,…]]]

Read command: **AT+CIND?** Displays the current [<ind>[,<ind>[,…]]] settings.

Test command: **AT+CIND=?** Shows if the command is supported.

Test command response: +CIND: (<descr>,(list of supported <ind>s)),(<descr>,(list of supported <ind>s)),…

Termination: Phone

Parameters:

<ind>:

<ind>	Description
Integer type	value shall be in range of corresponding <descr>

<descr>:

<descr>	Description
"battchg"	battery charge level (0-5)
"signal"	signal quality (0-5)
"batterywarning"	batterywarning (0-1)
"chargerconnected"	chargerconnected (0-1)
"service"	service availability (0-1) (Net contact status, 1 = Net contact)
"sounder"	sounder activity (0-1) (Phone silent status, 1 = phone silent)
"message"	message received (0-1)
"call"	call in progress (0-1)
"vox"	transmit activated by voice activity (0-1) Not supported
"roam"	roaming indicator (0-1) (Home net status, 0 = Home Net)

<descr>	Description
"smsfull"	a short message memory storage in the MT has become full (1), or memory locations are available (0); i.e. the range is (0-1)
"callsetup"	Bluetooth proprietary call set up status indicator. Possible values are as follows: Not currently in call set up (0), incoming call process ongoing (1), outgoing call set up is ongoing (2), remote party being alerted in an outgoing call (3); i.e the range is (0-3)

AT*ESMA   Sony Ericsson Set Message Alert Sound (ver. 3)

Description: This command sets the message alert sound of the MS

Execution command: **AT*ESMA=**<mode>

Read command: **AT*ESMA?**   Displays the current <mode> setting.

Test command: **AT*ESMA=?**   Shows if the command is supported.

Test command response: *ESMA: (list of supported <mode>s)

Termination: Phone

Parameters:

<mode>:

<mode>	Description
0	SILENT, no sound when a message arrives
1	CLICK, short click when a message arrives
2	Message alert 1 when a message arrives **Default setting**
3	Message alert 2 when a message arrives
4	Message alert 3 when a message arrives
5	Message alert 4 when a message arrives
6	Message alert 5 when a message arrives
7	Message alert 6 when a message arrives

Ensemble S11: SMS and PDU Mode

Commands

AT+CPMS	Preferred Message Storage (ver.4)

Description: Set command selects memory storage <mem1>, <mem2> and <mem3> to be used for reading, writing, etc. If chosen storage is not appropriate for the phone (but is supported by the phone), final result code +CMS ERROR: <err> shall be returned.

Test command returns lists of memory storage supported by the phone.

Execution command: **AT+CPMS=**<mem1> [,<mem2> [,<mem3>]]

Execution command response: +CPMS: <used1>,<total1>,<used2>,<total2>,<used3>,<total3>

Read command: AT+CPMS?   Displays the current <mem1>,<used1>,<total1>, <mem2>,<used2>,<total2>, <mem3>,<used3>,<total3> settings.

Test command: **AT+CPMS=?**   Shows if the command is supported.

Test command response: +CPMS: (list of supported <mem1>s),(list of supported <mem2>s),(list of supported <mem3>s)

Termination: Phone

Parameters:

<mem1>:

<mem1>	Description
string type	Memory from which messages are read and deleted (commands List Messages +CMGL, Read Message +CMGR and Delete Message +CMGD).
"ME"	phone message storage
"SM"	SIM message storage

<mem2>:

<mem2>	Description
string type	Memory to which writing and sending operations are made (commands Send Message from Storage +CMSS and Write Message to Memory +CMGW) .
"ME"	phone message storage
"SM"	SIM message storage

<mem3>:

<mem3>	Description
string type	Memory to which received SMs are preferred to be stored (unless forwarded directly to terminal equipment). Received CBMs are always stored in "BM" (or some manufacturer specific storage) unless directly forwarded to terminal equipment.
"ME"	phone message storage
"SM"	SIM message storage

<used1>,<used2>,<used3>

<used1>,<used2>, <used3>	Description
Integer type	Total number of messages currently in <mem1>, <mem2> and <mem3> respectively.

<total1>,<total2>,<total3>

<total1>,<total2>, <total3>	Description
Integer type	Total number of messages currently in <mem1>, <mem2> and <mem3> respectively.

AT+CMGF   Message Format (ver.2)

Description: Set command tells the phone, which input and output format of messages to use. <mode> indicates the format of messages used with send, list, read and write commands and unsolicited result codes resulting from received messages. Mode can be either PDU mode (entire TP data units used) or text mode (headers and body of the messages given as separate parameters).

Execution command: **AT+CMGF=**<mode>

Read command: **AT+CMGF?**   Displays the current <mode> setting.

Test command: **AT+CMGF=?**   Shows if the command is supported.

Test command response: +CMGF: (list of supported <mode>s)

Termination: Phone

Parameter:

<mode>:

<mode>	Description
0	PDU mode
1	Text mode

AT+CNMI	New Messages Indication to TE (ver.5)

Description: Set command selects the procedure, how receiving of new messages from the network is indicated to the terminal equipment when terminal equipment is active, e.g. DTR signal is ON. If terminal equipment is inactive (e.g. DTR signal is OFF), message receiving should be done as specified in *Digital cellular telecommunications system (Phase 2+) (GSM); Universal Mobile Telecommunications System (UMTS);Alphabets and language-specific information*.

If command fails and error is related to mobile equipment or network, return final result code CMS ERROR: <err>.

Execution command: **AT+CNMI=**[<mode>[,<mt>[,<bm>[,<ds>[, <bfr>]]]]]

Read command: **AT+CNMI?** Displays the current <mode>,<mt>,<bm>,<ds>,<bfr> settings.

Test command: **AT+CNMI=?** Shows if the command is supported.

Test command response: +CNMI: (list of supported <mode>s),(list of supported <mt>s),(list of supported <bm>s),(list of supported <ds>s),(list of supported <bfr>s)

Termination: Phone

Parameters:

<mode>:

<mode>	Description
2	Buffer unsolicited result code in the phone when phone - terminal equipment link is reserved (e.g. in on.line data mode) and flush them to the terminal equipment after reservation. Otherwise forward them directly to the terminal equipment.

<mt>:

<mt>	Description
0	No SMS-DELIVER indications are routed to the terminal equipment.
1	If SMS-DELIVER is stored into phone, indication of the memory location is routed to the terminal equipment using unsolicited result code: +CMTI: <mem>,<index>
3	Class 3 SMS-DELIVERs are routed directly to the terminal equipment using unsolicited result codes +CMT: <length><CR><LF><pdu>. Messages of other data coding schemes result in indication as defined in <mt>=1. For Mona, this setting gives the same result as <mt>=1.

<bm>:

<bm>	Description
0	Store message to "BM" (or some manufacturer specific memory). No CBM indications are routed to the terminal equipment.
2	New CBMs are routed directly to the terminal equipment using unsolicited result code: +CBM: <length><CR><LF><pdu> (PDU mode enabled) or +CBM: <sn>,<mid>,<dcs>,<page>,<pages><CR><LF><data> (text mode enabled)

<ds>:

<ds>	Description
0	No SMS-STATUS-REPORTs are routed to the terminal equipment.

<bfr>:

<bfr>	Description
0	Phone buffer of unsolicited result codes defined within this command is flushed to the terminal equipment when <mode> 1...3 is entered (OK response shall be given before flushing the codes).

AT+CMGL	List Message (ver.4)

Description: Execution command returns messages with status value <stat> from message storage <mem1> to the terminal equipment. About text mode parameters in italics, refer to command Show Text Mode Parameters +CSDH. If status of the message is 'received unread', status in the storage changes to 'received read'. If listing fails, final result code +CMS ERROR: <err> is returned.

The phone will send a dummy PDU for the storages "PT" and "CT".

NOTE: If the selected <mem1> can contain different types of SMs (e.g. SMS-DELIVERs, SMS-SUBMITs, SMS-STATUS-REPORTs and SMS-COMMANDs), the response may be a mix of the responses of different SM types. The terminal equipment application can recognize the response format by examining the third response parameter.

Execution command: **AT+CMGL**[=<stat>]

Execution command response:
- if text mode (+CMGF=1), command successful and SMS-SUBMITs and/or SMS-DELIVERs:
  +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>[...]]

- if text mode (+CMGF=1), command successful and SMS-COMMANDs:
  +CMGL: <index>,<stat>,<fo>,<ct>[<CR><LF>
  +CMGL: <index>,<stat>,<fo>,<ct>[...]]

- if PDU mode (+CMGF=0), command successful:
  +CMGL:
  <index>,<stat>,[<alpha>],<length><CR><LF><pdu>[<CR><LF>+CMGL: <index>,<stat>,[<alpha>],<length><CR><LF><pdu>[...]]

- otherwise:
  +CMS ERROR: <err>
  OK
  ERROR

Test command: **AT+CMGL=?** Shows if the command is supported.

Test command response: +CMGL: (list of supported <stat>s)

Termination: Phone

Parameters:

<stat>:

<stat>	Description
0	Received unread message (i.e. new message)
1	Received read message
2	Stored unsent message (only applicable to SMs)
3	Stored sent message (only applicable to SMs)
4	All messages (only applicable to +CMGL command)

<stat>	Description
16	Template message **Not supported**

<index>:

<index>	Description
Integer type	Value in the range of location numbers supported by the associated memory.

<oa>:

<oa>	Description
String type	TP-Originating-Address Address-Value field in string format; BCD number (or GSM 7 bit default alphabet characters) are converted to characters of currently selected terminal equipment character set. Refer to **+CSCS**.

<da>:

<da>	Description
String type	TP-Originating-Destination Address-Value field in string format; BCD number (or GSM 7 bit default alphabet characters) are converted to characters of currently selected terminal equipment character set. Refer to **+CSCS**.

<alpha>:

<alpha>	Description
String type	Manufacturing specific. Should be left empty but not omitted i.e. commas shall mark the place were it should be. Used character set should be the one selected with command Select TE Character Set +CSCS.

<scts>:

<scts>	Description
String type	TP-Service-Center-Time-Stamp in time-string format.

<tooa>:

<tooa>	Description
Integer type	TP-Originating-Address Type-of-Address octet in integer format.When first character of <oa> is +(IRA 43) default is 145, otherwise default is 129.

<toda>:

<toda>	Description
Integer type	TP-Destination-Address Type-of-Address octet in integer format. When first character of <da> is +(IRA 43) default is 145, otehrwise default is 129.

<length>:

<length>	Description
Integer type	In text mode (+CMGF=1) <length> indicates the length of the message body <data> in characters. In PDU mode (+CMGF=0) <length> indicates the length actual TP data unit in octets (i.e. the RP layer SMSC address octets are not counted).

<data>:

<data>	Description
String type	In the case of SMS <data> contains TP-user-Data. In case of CBS <data> contains CBM Content of Message. Refer to chapter 3.1 in *Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS);Use of Data Terminal Equipment - Data Circuit terminating Equipment (DTE-DCE) interface for Short Message Service (SMS) and Cell Broadcast Service (CBS)* for further details.

<pdu>:

<pdu>	Description
...	In the case of SMS: GSM 04.11 SC address followed by GSM 03.40 TPDU in hexadecimal format: phone converts each octet of TP data unit into two IRA character long hexadecimal number (e.g. octet with integer value 42 is presented to terminal equipment as two characters 2A (IRA 50 and 65)) In the case of CBS: GSM 03.41 TPDU in hexadecimal format.

<fo>:

<fo>	Description
Integer type	Depending on the command or result code: First octet of 3G TS 23.040[15] SMS-DELIVER, SMS-SUBMIT, or SMS-COMMAND.

<ct>:

<ct>	Description
Integer type	TP-Command-Type

AT+CMGR Read Message (ver.4)

Description: Execution command returns message with location value <index> from message storage <mem1> to the terminal equipment. About text mode parameters in italics, refer command Show Text Mode Parameters +CSDH. If status of the message is 'received unread', status in the storage changes to 'received read'. If reading fails, final result code +CMS ERROR: <err> is returned.

The phone will send a dummy PDU for the storages "PT" and "CT".

Execution command: **AT+CMGR=**<index>

Execution command response:
- if text mode (+CMGF=1), command successful and SMS-DELIVER: +CMGR: <stat>,<oa>,*[<alpha>],<scts>[,<tooa>,<fo>,<pid>,<dcs>, <sca>,<tosca>,<length>]*<CR><LF><data>

- if text mode (+CMGF=1), command successful and SMS-SUBMIT: +CMGR: <stat>,<da>,*[<alpha>][,<toda>,<fo>,<pid>,<dcs>,[<vp>], <sca>,<tosca>,<length>]*<CR><LF><data>

- if text mode (+CMGF=1), command successful and SMS-COMMAND: +CMGR: <stat>,<fo>,<ct>*[,<pid>,[<mn>],[<da>],[<toda>],<length> <CR><LF><cdata>]*

- if PDU mode (+CMGF=0) and command successful: +CMGR: <stat>,[<alpha>],<length><CR><LF><pdu>

- otherwise:
  +CMS ERROR: <err>
  OK
  ERROR

Read command:

Read response:

Test command: **AT+CMGR=?** Shows if the command is supported.

Termination: Phone

Parameters:

<stat>:

<stat>	Description
0	Received unread message (i.e. new message)
1	Received read message
2	Stored unsent message (only applicable to SMs)
3	Stored sent message (only applicable to SMs)
16	Template message **Not supported**

Integer type in PDU mode (default 0), indicates the status of message in memory.

\<index\>:

\<index\>	Description
Integer type	Value in the range of location numbers supported by the associated memory.

\<oa\>:

\<oa\>	Description
String type	TP-Originating-Address Address-Value field in string format; BCD number (or GSM 7 bit default alphabet characters) are converted to characters of currently selected terminal equipment character set. Refer to **+CSCS**.

\<da\>:

\<da\>	Description
String type	TP-Originating-Destination Address-Value field in string format; BCD number (or GSM 7 bit default alphabet characters) are converted to characters of currently selected terminal equipment character set. Refer to **+CSCS**.

\<alpha\>:

\<alpha\>	Description
String type	Manufacturing specific. Should be left empty but not omitted i.e. commas shall mark the place were it should be. Used character set should be the one selected with command Select terminal equipment Character Set +CSCS.

\<scts\>:

\<scts\>	Description
String type	TP-Service-Center-Time-Stamp in time-string format.

\<tooa\>:

\<tooa\>	Description
Integer type	TP-Originating-Address Type-of-Address octet in integer format.When first character of \<oa\> is +(IRA 43) default is 145, otherwise default is 129.

\<toda\>:

\<toda\>	Description
Integer type	TP-Destination-Address Type-of-Address octet in integer format. When first character of \<da\> is +(IRA 43) default is 145, otehrwise default is 129.

<length>:

<length>	Description
Integer type	In text mode (+CMGF=1) <length> indicates the length of the message body <data> in characters. In PDU mode (+CMGF=0) <length> indicates the length actual TP data unit in octets (i.e. the RP layer SMSC address octets are not counted).

<data>:

<data>	Description
String type	In the case of SMS <data> contains TP-user-Data. In case of CBS <data> contains CBM Content of Message. Refer to chapter 3.1 in *Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS);Use of Data Terminal Equipment - Data Circuit terminating Equipment (DTE-DCE) interface for Short Message Service (SMS) and Cell Broadcast Service (CBS)* for further details.

<pdu>:

<pdu>	Description
...	In the case of SMS: GSM 04.11 SC address followed by GSM 03.40 TPDU in hexadecimal format: phone converts each octet of TP data unit into two IRA character long hexadecimal number (e.g. octet with integer value 42 is presented to terminal equipment as two characters 2A (IRA 50 and 65)) In the case of CBS: GSM 03.41 TPDU in hexadecimal format.

<fo>:

<fo>	Description
Integer type	Depending on the command or result code: First octet of 3G TS 23.040[15] SMS-DELIVER, SMS-SUBMIT, or SMS-COMMAND.

<ct>:

<ct>	Description
Integer type	TP-Command-Type

<pid>:

<pid>	Description
Integer type	TP-Protocol -Identifier

<dcs>:

<dcs>	Description
Integer type	Depending on the comman or result code: SMS Data Coding Scheme or Cell Broadcast Data Coding Scheme.

<sca>:

<sca>	Description
String type	RP SC address Address-Value field. BCD numbers (or GSM 7 bit default alphabet characters) are converted to characters of the currently selected terminal equipment character set. Type of address is given by <tosca>.

<tosca>:

<tosca>	Description
Integer type	RP SC address Type-of-Address octet. .When first character of <oa> is +(IRA 43) default is 145, otherwise default is 129.

<vp>:

<vp>	Description
Integer or string format	TP-Validity-Period

<mn>:

<mn>	Description
Integer type	TP-Message-Number

AT+CMGS   **Send Message (ver.3)**

Description: **Text mode:**

Execution command sends message from a terminal equipment to the network (SMS-SUBMIT). Message reference value <mr> is returned to the terminal equipment on successful message delivery. Optionally (when +CSMS <service> value is 1 and network supports) <scts> is returned. Values can be used to identify message upon unsolicited delivery status report result code.

Entered text is sent to address <da> and all current settings (refer Set Text Mode Parameters +CSMP and Service Centre Address +CSCA) are used to construct the actual PDU in phone.

The phone shall send a four character sequence <CR><LF><greater_than><space> (IRA 13, 10, 62, 32) after command line is terminated with <CR>; after that text can be entered from terminal equipment to phone.

The DCD signal shall be in ON state while text is entered.

The echoing of entered characters back from the phone is controlled by V.25ter echo command E.

Note: In text mode character set UCS2 must be used.

PDU mode:

Execution command sends message from a terminal equipment to the network (SMS-SUBMIT). Message reference value <mr> is returned to the terminal equipment on successful message delivery. Optionally (when +CSMS <service> value is 1 and network supports) <ackpdu> is returned. Values can be used to identify message upon unsolicited delivery status report result code.

The phone shall send a four character sequence <CR><LF><greater_than><space> (IRA 13, 10, 62, 32) after command line is terminated with <CR>; after that PDU can be given from terminal equipment to phone.

The DCD signal shall be in ON state while PDU is given.

The echoing of given characters back from the phone is controlled by V.25ter echo command E.

The PDU shall be hexadecimal format (similarly as specified for <pdu>) and given in one line; phone converts this coding into the actual octets of PDU.

When the length octet of the SMSC address (given in the PDU) equals zero, the SMSC address set with command Service Centre Address +CSCA is used; in this case the SMSC Type-of-Address octet shall not be present in the PDU, i.e. TPDU starts right after SMSC length octet.

Sending can be cancelled by giving <ESC> character (IRA 27).

<ctrl-Z> (IRA 26) must be used to indicate the ending of PDU.

Execution command:	**if text mode (+CMGF=1)**
	AT+CMGS=<da>[,<toda>]<CR>text is entered
	<ctrl-Z/ESC>
	if PDU mode (+CMGF=0)
	AT+CMGS=<length><CR>
	<pdu><ctrl-Z/ESC>
Execution command response:	if text mode (+CMGF=1) and sending successful:
	+CMGS: <mr>[,<scts>]
	If PDU mode (+CMGF=0)
	+CMGS: <mr>[,<ackpdu>]
Test command:	**AT+CMGS=?** Shows if the command is supported.
Termination:	Phone
Parameters:	

<da>:

<da>	Description
String type	TP-Originating-Destination Address-Value field in string format; BCD number (or GSM 7 bit default alphabet characters) are converted to characters of currently selected terminal equipment character set. Refer to **+CSCS**.

<toda>:

<toda>	Description
Integer type	TP-Destination-Address Type-of-Address octet in integer format. When first character of <da> is +(IRA 43) default is 145, otherwise default is 129.

<mr>:

<mr>	Description
Integer type	GSM 03.40 TP-Message-Reference in integer format.

<scts>:

<scts>	Description
String type	TP-Service-Center-Time-Stamp in time-string format.

<length>:

<length>	Description
Integer type	Value indicating 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)

<ackpdu>:

<ackpdu>	Description
...	GSM 03.40 RP-User-Data element of RP-ACK PDU; format is same as for <pdu> in case of SMS, but without GSM 04.11 SC address field and parameter shall be bounded by double quote characters like a normal string type parameter

AT+CMGW   Write Message To Memory (ver.4)

Description: Execution command stores a message to memory storage <mem2>. 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. (phone manufacturer may choose to use different default <stat> values for different message types.) The entering of PDU is done similarly as specified in command Send Message +CMGS. If writing fails, final result code +CMS ERROR: <err> is returned.

Note: In text mode character set UCS2 must be used.

Execution command: **if text mode (+CMGF=1):**
+CMGW[=<oa/da>[,<tooa/toda>[,<stat>]]]<CR>**text is entered**<ctrl-Z/ESC>
if PDU mode(CMGF=0):
AT+CMGW=<length>[,<stat>]<CR>
<pdu><ctrl-Z/ESC>

Execution command response: +CMGW: <index>

Test command: **AT+CMGW=?** Shows if the command is supported.

Termination: Phone

Parameters:

<oa>:

<oa>	Description
String type	TP-Originating-Address Address-Value field in string format; BCD number (or GSM 7 bit default alphabet characters) are converted to characters of currently selected terminal equipment character set. Refer to **+CSCS**.

<da>:

<da>	Description
String type	TP-Originating-Destination Address-Value field in string format; BCD number (or GSM 7 bit default alphabet characters) are converted to characters of currently selected terminal equipment character set. Refer to **+CSCS**.

<tooa>:

<tooa>	Description
Integer type	TP-Originating-Address Type-of-Address octet in integer format. When first character of <oa> is +(IRA 43) default is 145, otherwise default is 129.

<toda>:

<toda>	Description
Integer type	TP-Destination-Address Type-of-Address octet in integer format. When first character of <da> is +(IRA 43) default is 145, otehrwise default is 129.

<stat>:

<stat>	Description
0	Received unread message (i.e. new message)
1	Received read message
2	Stored unsent message (only applicable to SMs)
3	Stored sent message (only applicable to SMs)
16	Template message

<index>:

<index>	Description
Integer type	Value in the range of location numbers supported by the associated memory.

<length>:

<length>	Description
Integer type	Value indicating 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).

<pdu>:

<pdu>	Description
...	In the case of SMS: GSM 04.11 SC address followed by GSM 03.40 TPDU in hexadecimal format: phone converts each octet of TP data unit into two IRA character long hexadecimal number (e.g. octet with integer value 42 is presented to terminal equipment as two characters 2A (IRA 50 and 65)) In the case of CBS: GSM 03.41 TPDU in hexadecimal format

AT+CMGC — Send command (ver. 2)

Description:

Text mode:

Execution command sends a command message from a terminal equipment to the network (SMS-COMMAND). The entering of text is done similarly as specified in command Send Message +CMGS, but the format is fixed to be a sequence of two IRA character long hexadecimal numbers which phone converts into 8-bit octets (refer +CMGS). Message reference value <mr> is returned to the terminal equipment on successful message delivery. Optionally (when +CSMS <service> value is 1 and network supports) <scts> is returned. Values can be used to identify message upon unsolicited delivery status report result code.

PDU mode:

Execution command sends a command message from a terminal equipment to the network (SMS-COMMAND). The entering of PDU is done similarly as specified in command Send Message +CMGS. Message reference value <mr> is returned to the terminal equipment on successful message delivery. Optionally (when +CSMS <service> value is 1 and network supports) <ackpdu> is returned. Values can be used to identify message upon unsolicited delivery status report result code. If sending fails in a network or an phone error, final result code +CMS ERROR: <err> is returned.

Execution command:

if text mode (+CMGF=1):
AT+CMGC=<fo>,<ct>[,<da>[,<toda>]]]]
<CR>**text is entered**<ctrl-Z/ESC>
if PDU mode (+CMGF=0):
AT+CMGC=<length><CR>
<pdu><ctrl-Z/ESC

Execution command response:

- if text mode (+CMGF=1) and sending successful:
  +CMGC=<mr>[,<scts>]

- if PDU mode (+CMGF=0) and sending successful:
  +CMGC: <mr>[,<ackpdu>]

- if sending fails:
  +CMS ERROR: <err>
  OK
  ERROR

Test command: **AT+CMGC=?** Shows if the command is supported.

Termination: Phone

Parameters:

<fo>:

<fo>	Description
Integer type	Depending on the command or result code: First octet of *3rd Generation Partnership Project; Technical Specification Group Terminals; Technical realization of the Short Message Service (SMS)* SMS-DELIVER, SMS-SUBMIT, or SMS-COMMAND.

<ct>:

<ct>	Description
Integer type	TP-Command-Type

<da>:

<da>	Description
String type	TP-Originating-Destination Address-Value field in string format; BCD number (or GSM 7 bit default alphabet characters) are converted to characters of currently selected terminal equipment character set. Refer to **+CSCS**.

<toda>:

<toda>	Description
Integer type	TP-Destination-Address Type-of-Address octet in integer format. When first character of <da> is +(IRA 43) default is 145, otherwise default is 129.

<mr>:

<mr>	Description
Integer type	GSM 03.40 TP-Message-Reference in integer format.

<scts>:

<scts>	Description
String type	TP-Service-Center-Time-Stamp in time-string format.

<length>:

<length>	Description
Integer type	Value indicating 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)

<pdu>:

<pdu>	Description
...	In the case of SMS: GSM 04.11 SC address followed by GSM 03.40 TPDU in hexadecimal format: phone converts each octet of TP data unit into two IRA character long hexadecimal number (e.g. octet with integer value 42 is presented to terminal equipment as two characters 2A (IRA 50 and 65)) In the case of CBS: GSM 03.41 TPDU in hexadecimal format

<mr>:

<mr>	Description
Integer type	GSM 03.40 TP-Message-Reference in integer format.

<ackpdu>:

<ackpdu>	Description
...	GSM 03.40 RP-User-Data element of RP-ACK PDU; format is same as for <pdu> in case of SMS, but without GSM 04.11 SC address field and parameter shall be bounded by double quote characters like a normal string type parameter

Ensemble S29: WAP Browser

Commands

AT*EWPR	**Sony Ericsson WAP Profiles (ver. 2)**

Description:	Set command selects active WAP settings profile.
	Read command queries active WAP settings profile.
	Note! If no active WAP-profile has been selected, the read command will return OK only.
Execution command:	**AT*EWPR=**<name>
Read command:	**AT*EWPR?** Displays the current <name> setting.
Test command:	**AT*EWPR=?** Shows if the command is supported.
Test command response:	*EWPR: <nlength>
Termination:	Phone
Parameters:	

<name>:

<name>	Function
string type	The name of the specific WAP settings profile to be activated. Field of maximum length <nlength>. Character set as specified by command Select TE Character Set **+CSCS**.

<nlength>:

<nlength>	Function
16	Value indicating the maximum length of field <name> (in characters).

AT*EWPC   Sony Ericsson WAP Profile Create

Description: Command that creates a new WAP profile with name <name>.

Read command lists all WAP setting profile names and information about their status - locked or not.

Execution command: **AT*EWPC=**<name>

Read command: **AT*EWPC?**   Displays the current <name> and <lockstate> settings.

Test command: **AT*EWPC=?**   Shows if the command is supported.

Test command response: *EWPC: <nlength>,(list of supported <lock_state>s)

Termination: Phone

Parameters:

<name>:

<name>	Function
String value	WAP profile name. Max length defined by <nlength>

<nlength>:

<nlength>	Function
16	Max length of WAP profile name.

<lock_state>:

<lock_state>	Function
...	This parameter indicates whether the profile is locked or not.
0	The profile is **not** locked
1	The profile **is** locked

AT*EWPD   Sony Ericsson WAP Profile Delete

Description: Command that deletes the WAP profile with name <name>.

Execution command: **AT*EWPD=**<name>

Test command:	**AT*EWPD=?** Shows if the command is supported.
Test command response:	*EWPD: <nlength>
Termination:	Phone
Parameters:	

<name>:

<name>	Function
String value	WAP profile name. Max length defined by <nlength>

<nlength>:

<nlength>	Function
16	Max length of WAP profile name.

Removed AT Commands

Ensemble C2: Control and Identification

Commands

AT command	Version	Termination
AT+CGMI	2	Phone

Ensemble S1: DTE-DCE Interface Commands

Commands

AT command	Version	Termination
AT+CSCS	2	Phone

Ensemble S6: Network Services

Commands

AT command	Version	Termination
AT+CLIP	1	Phone

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Ensemble S8: Facility Lock

Commands

AT command	Version	Termination
AT+CLCK	2	Phone

Ensemble S9: Mobile Equipment, Control and Status

Commands

AT command	Version	Termination
AT+CKPD	3	Phone
AT*ESMA	2	Phone

Ensemble S11: SMS and PDU Mode

Commands

AT command	Version	Termination
AT+CPMS	2	Phone
AT+CMGF	1	Phone
AT+CNMI	3	Phone
AT+CMGL	2	Phone
AT+CMGR	2	Phone
AT+CMGS	2	Phone

AT+CMGW	2	Phone

Ensemble S29: WAP Browser

Commands

AT command	Version	Termination
AT*EWPR	1	Phone
AT*EWPN		Phone

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Appendix – T226/T230/T238 and T290

This chapter contains information about specific AT commands for the T226, T230, T238 and T290 mobile phones. The AT commands in this chapter are new, updated or removed in comparison to the T68 mobile phone. See chapters 1 to 6 for AT commands that are not described in this chapter, as they are unchanged from T68.

New AT Commands

Ensemble S29: WAP Browser

Commands

AT*EWPC	**Sony Ericsson WAP Profile Create**

Description:	Creates a new WAP profile with name <name>.
	Read command lists all WAP setting profile names and information about their status - locked or not.
Execution command:	**AT*EWPC=**<name>
Read command:	**AT*EWPC?** Displays the current <name> setting.
Read response:	*EWPC: <name1>,<lock_state>[<CR><LF>
	*EWPC: <name2>,<lock_state>[...]]
Test command:	**AT*EWPC=?** Shows if the command is supported.
Test command response:	*EWPC: <nlength>,(list of supported <lock_state>s)
Termination:	Phone
Parameters:	

<name>:

<name>	Function
String value	WAP profile name. Max length defined by <nlength>

<nlength>:

<nlength>	Function
16	Max length of WAP profile name.

<lock_state>:

<lock_state>	Function
...	This parameter indicates whether the profile is locked or not.
0	The profile is **not** locked
1	The profile **is** locked

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| **AT*EWPD** | **Sony Ericsson WAP Profile Delete** |

Description:	Deletes the WAP profile with name <name>.
Execution command:	**AT*EWPD=**<name>
Test command:	**AT*EWPD=?** Shows if the command is supported.
Test command response:	*EWPD: (list of supported <nlength>s)
Termination:	Phone
Parameters:	

<name>:

<name>	Function
String value	WAP profile name. Max length defined by <nlength>

<nlength>:

<nlength>	Function
16	Max length of WAP profile name.

Updated AT Commands

Ensemble S9: Mobile Equipment, Control and Status

Commands

AT*EAPP	**Sony Ericsson Application function (ver. 4)**
Description:	The set command is used for requesting the MT to perform an application function specified by <app> and <subfunc>. The sub-function parameter specifies which function within the specified application to call. The <text> parameters can be used to pass data to the application. The use of the <text> parameters are specified with each subfunction.

NOTE: There is no guarantee that the application will execute. The command will return OK if the command, including parameters, is supported. This also means that there is no correlation between the OK response and the time the application function is performed by the MT.

NOTE: If the *EAPP command is issued and the <app> parameter references an application that is already running, a second instance of this application shall not be started. The application already running should however perform the subfunction indicated with the <subfunc> parameter.

Test command shows which applications and subfunctions are supported by the MT.

AT*EAPP=?   Shows if the command is supported.

*EAPP: 0,(0-5)

*EAPP: 1,(1,3,4-5)

*EAPP: 3,(0,4)

*EAPP: 4,(0-2)

... etc.

Execution command:	AT*EAPP=<app> [,<subfunc> [,<text1> [,<text2>]]]
Test command:	**AT*EAPP=?** Shows if the command is supported.
Test command response:	*EAPP: <app>,(list of supported <subfunc>s), [<CR><LF><app>,(list of supported <subfunc>s),[...]]
Termination:	Phone
Parameters:	

<app>:

<app>	Description
0	SMS application.
1	Phonebook application.
2	E-mail application.
3	WAP application.
4	Calendar application.
5	**Not supported**
6	Multimedia messaging application **Not supported in SIR 2.2**
7	Notes application **Not supported in SIR 2.2 T300/T310**
8	Image Browser
9	Sound Browser **Not supported in SIR 2.2**

<subfunc>:

<subfunc>	Description
0-15	Application specific information. See tables below.

SMS Message, <app> = 0:

<subfunc>	Description
0	Send new SMS message. Pre-entered message text can be provided in <text1>.
1	Inbox
2	Unsent
3	Add new template. Pre-entered message text can be provided in <text1>.
4	Sent items

<subfunc>	Description
5	Send new message to specified PB entry. Pre-entered message text can be provided in <text1>. Name of PB entry to send message to shall be provided in <text2>
6	Send new message and include formatting characters and PB entry for Email. NOTE: It is up to the MT to insert the formatting characters and the PB entry.
7	Send new message and include formatting characters for WWW NOTE: It is up to the MT to insert the formatting characters and the PB entry.
8	Add picture. **Not supported in SIR 2.2**
9	Add melody. **Not supported in SIR 2.2**

Phonebook, <app> = 1:

<subfunc>	Description
0	Add new number. Pre-entered number can be provided in <text1>.
1	Find and Call. Pre-entered name can be provided in <text1>. NOTE: If a name is provided, the search is started without user interaction.
2	Find and Edit. Pre-entered name can be provided in <text1>. NOTE: If a name is provided, the search is started without user interaction.
3	Add new voice label. **Not supported in SIR 2.2 T300/T310**
4	Add new group. Pre-entered name can be provided in <text1>.
5	Add email address. Pre-entered address can be provided in <text1>.

Email, <app> = 2:

<subfunc>	Description
0	Send new message. Pre-entered message (body) text can be provided in <text1>.

<subfunc>	Description
1	Inbox (read new mail). <text1>="Y" => Check for new mail. <text1>="N" => Do not check for new mail.
2	Outbox
3	Draft
4	Add attachment

WWW, <app> = 3:

<subfunc>	Description
0	Enter address (URL). Pre-entered URL can be provided in <text1>.
1	Go to address. Pre-entered URL **must** be provided in <text1>. The connection is initiated without user interaction.
2	Add new bookmark
3	Edit homepage
4	Go to homepage
5	Go to last visited page **Not supported in SIR 2.2**

Calendar, <app> = 4:

<subfunc>	Description
0	Add new appointment
1	Add new Todo
2	Todo view
3	Today view
4	Week view
5	Month view

Multimedia Messaging application, <app> = 6:

<subfunc>	Description
0	Send new message. Pre-entered message text can be provided in <text1>.
1	Inbox (read new mail). <text1>="Y" => Check for new mail. <text1>="N" => Do not check for new mail.
2	Outbox
3	Draft
4	Add attachment

Notes application, <app> = 7:

<subfunc>	Description
0	Create new note. Pre-entered message text can be provided in <text1>.
1	Display list of notes. If only notes of a certain class should be shown its name can be provided in <text1>

Image Browser application, <app> = 8:

<subfunc>	Description
0	Display an image in fullscreen mode. This is done by choosing a directory that contains only one picture. The directory is specified in <text1>
1	Display thumbnail images. The command shows thumbnail images of all pictures in the directory specified by <text1>.
2	Delete one or several images. The image name is specified in <text1>. (Note: Requester from Image Handler, not Image Browser)
255	Close Image Browser

Sound browser application, <app> = 9:

<subfunc>	Description
0	Play a certain sound The index of the sound shall be provided in <text1>.
255	Close sound browser

Ensemble S15: GPRS/Packet Domain

Commands

AT+CGDCONT   DEFINE PDP CONTEXT (ver. 2)

Description:	The set command specifies PDP context parameter values for a PDP context identified by the (local) context identification parameter, <cid>. The number of PDP contexts that may be in a defined state at the same time is given by the range returned by the test command.
	A special form of the set command, +CGDCONT= <cid> causes the values for context number <cid> to become undefined.
	The read command returns the current settings for each defined context.
	Sony Ericsson Implementation Note: The read command returns the current settings for each context defined by the +CGDCONT set command
	The test command returns values supported as a compound value. If the MT supports several PDP types, <PDP_type>, the parameter value ranges for each <PDP_type> are returned on a separate line.
	Sony Ericsson Implementation Note: Only a single PDP type is supported, namely "IP"
Execution command:	**+CGDCONT=**[<cid> [,<PDP_type> [,<APN> [,<PDP_addr> [,<d_comp> [,<h_comp> [,<pd1> [,…[,pdN]]]]]]]]
Read command:	**+CGDCONT?** Displays the current <cid>, <PDP_type>,<APN>, <PDP_addr>,<d_comp>, <h_comp>[,<pd1>[,…[,pdN]]] [<CR><LF> +CGDONT: cid, <PDP_type>,<APN>,<PDP_addr>,<d_comp>, <h_comp>[,<pd1>[,...[,pdN]]] [. . .]]settings.
Test command:	**+CGDCONT=?** Shows if the command is supported.
Test command response:	+CGDCONT: (range of supported <cid>s), <PDP_type>,,,(list of supported <d_comp>s), (list of supported <h_comp>s)[,(list of supported <pd1>s)[,…[,(list of supported <pdN>s)]]] [<CR><LF> +CGDCONT: (range of supported <cid>s), <PDP_type>,,,(list of supported <d_comp>s), (list of supported <h_comp>s)[,(list of supported <pd1>s)[,…[,(list of supported <pdN>s)]]] [...]]
Termination:	Modem
Parameters:	

<cid>:

<cid>	Description
Integer type	(PDP Context Identifier) a numeric parameter which specifies a particular PDP context definition. The parameter is local to the TE-MT interface and is used in other PDP context-related commands. The range of permitted values (minimum value = 1) is returned by the test form of the command.
1-10	Supported values. **Sony Ericsson specific.**

<PDP_type>:

<PDP_type>	Description
X25	ITU-T/CCITT X.25 layer 3 **Not supported by Sony Ericsson**
IP	Internet Protocol (IETF STD 5)
OSPIH	Internet Hosted Octet Stream Protocol **Not supported by Sony Ericsson**
PPP	Point to Point Protocol (IETF STD 51) **Not supported by Sony Ericsson**

<APN>:

<APN>	Description
String type	(Access Point Name) a string parameter which is a logical name that is used to select the GGSN or the external packet data network. If the value is null or omitted, then the subscription value will be requested.

<PDP_address>:

<PDP_address>	Description
String type	A string parameter that identifies the MT in the address space applicable to the PDP. If the value is null or omitted, then a value may be provided by the terminal equipment during the PDP startup procedure or, failing that, a dynamic address will be requested.

<d_comp>:

<d_comp>	Description
0	PDP data compression OFF
1	PDP data compression ON **Not supported**

<d_comp>	Description
2..255	Reserved **Not supported**

<h_comp>:

<h_comp>	Description
1	PDP header compression OFF
2	PDP header compression ON **Not supported**
2..255	Reserved **Not supported**

<pdN>:

<pdN>	Description
String type	Zero to N string parameters whose meanings are specific to the <PDP_type> **Not supported by Sony Ericsson**

Ensemble S20: Sony Ericsson Specific AT Commands

Commands

AT*EBCA	**Sony Ericsson battery and charging algorithm (ver. 3)**

Description: This command is used to test the charging algorithm in the phone and to turn on/off unsolicited signal result codes (*EBCA). When turned on the unsolicited result code is given once per second.

Voltage, current and capacity are physically limited; i.e. they are platform dependent.

Note! For batteries without internal intelligence some of the parameters listed below might not be available. In these cases the value "0" (zero) will be returned.

The parameters below are used to store the results from the different ADC (A/D converter) measurements. They shall be cleared to zero after each read.

This command activates the result code ***EBCA.**

Execution command: **AT*EBCA=**<onoff>

Execution command response: *EBCA: <vbat1>, <vbat2>,<vbat3>, <vbat4>, <btype>, <dcio>, <icharge>, <iphone>,<acapacity>,<ccapacity>, <tempbattery>,<tempphone>,<chargestate>,<remcapacity>,<ipulse>, <ibattery>, <ChTempMin>, <ChTempMax>, <MainChTempMin>, <MainChTempMax>, <FlatVTimer>, <DV>, <DT>, <D2V>

Read command: **AT*EBCA?** Displays the current <onoff> setting.

Test command: **AT*EBCA=?** Shows if the command is supported.

Test command response: *EBCA: (list of supported<onoff>s)

Termination: Phone

Parameters:

<ADC result>: ADC measurements

ADC result	Function
vbat1	TXON high and CHARGING on
vbat2	TXON high and CHARGING off
vbat3	TXON low and CHARGING on
vbat4	TXON low and CHARGING off
dcio	DCIO voltage measurement
vbat1	TXON high and CHARGING on

ADC result	Function
icharge	Charge current measurement

Note! The parameters <ncapacity>, <cycles> and <pacapacity> have been removed in this version of the command.

<onoff>:

<onoff>	Function
0	Disable
1	Enable

<vbat1>:

<vbat1>	Function
Integer	Battery voltage in number of mV divided by 10. I.e. a value of "3V" is reported as 300. Range 0-65500.

<vbat2>:

<vbat2>	Function
Integer	Battery voltage in number of mV divided by 10. I.e. a value of "3V" is reported as 300. Range 0-65500.

<vbat3>:

<vbat3>	Function
Integer	Battery voltage in number of mV divided by 10. I.e. a value of "3V" is reported as 300. Range 0-65500.

<vbat4>:

<vbat4>	Function
Integer	Battery voltage in number of mV divided by 10. I.e. a value of "3V" is reported as 300. Range 0-65500.

<btype>:

<btype>	Function
0	NiMH
1	Li
2	Unknown battery

<dcio>:

<dcio>	Function
Integer	Battery voltage from the charge in number of mV divided by 10. I.e. a value of "3V" is reported as 300. Range 0-65500

<icharge>:

<icharge>	Function
Integer	Current charge in number of mA. I.e. a value of "1A" is reported as 1000. Range 0-65500

<iphone>:

<iphone>	Function
Integer	Phone current consumption in number of mA. I.e. a value of "1A" is reported as 1000. Range 0-65500

<acapacity>:

<acapacity>	Function
Integer	Added capacity during charge in number of mAh divided by 10. I.e. a value of "1 Ah" is reported as 100. Range 0-65500.

Note! This parameter is applicable in GSM5/UMTS only.

<ccapacity>:

<ccapacity>	Function
Integer	Consumed capacity during charge in number of mAh divided by 10. I.e. a value of "1 Ah" is reported as 100. Range 0-65500

Note! This parameter is applicable in GSM5/UMTS only.

<tempbattery>:

<tempbattery>	Function
Signed integer	Temperature battery in °C, –20°C-+70°C

<tempbattery>:

<tempphone>	Function
Signed integer	Temperature phone in °C, –20°C-+70°C

<chargestate> parameter (if Li-Ion/Polymer):

<chargestate>	Function
0	Start
1	Safe Charge
2	Await
3	Handheld
4	Charge completed Safety timer
5	Charge completed Low Current
6	Charge Completed
7	Constant Current
8	Constant Voltage

<chargestate> parameter (if NiMH):

<chargestate>	Function
0	Start
1	Charge
2	Await
3	Handheld
4	Charge completed Safety timer
5	Charge completed dv/dt
6	Charge completed dT/dt
7	Charge completed: flat V
8	Charge completed: d2V/dt2

<remcapacity>:

<remcapacity>	Function
Integer	Remaining capacity in percents. Range 0-100%

<ipulse>:

<ipulse>	Function
Integer	Allowed Pulse Current charge in number of mA divided by 10. I.e. a value of "1A" is reported as 100. Range 0-65500.

<ibattery>:

<ibattery>	Function
Integer	Allowed Current charge in number of mA divided by 10. I.e. a value of "1A" is reported as 100. Range 0-65500.

<ChTempMin>:

<ChTempMin>	Function
Integer	Minimum Allowed Charging Temperature of Battery in °C. Range 0-65500.

<ChTempMax>:

<ChTempMax>	Function
Integer	Maximum Allowed Charging Temperature of Battery in °C. Range 0-65500.

<MainChTempMin>:

<MainChTempMin>	Function
Integer	Minimum Allowed Maintenance Charging Temperature of Battery in °C. Range 0-65500.

<MainChTempMax>:

<MainChTempMax>	Function
Integer	Maximum Allowed Maintenance Charging Temperature of Battery in °C. Range 0-65500.

<FlatVTimer>:

<FlatVTimer>	Function
Integer	Flat V Timer when charging a battery, in number of minutes. I.e. a value of "30 minutes" is reported as 30. Range 0-65500.

<DV>:

<DV>	Function
Integer	Value of –dV/dt charging termination in number of mV divided by 10. I.e. a value of "30mV" is reported as 3. Range 0-65500.

<DT>:

<DT>	Function
Integer	Value of dT/dt charging termination in number of °C. I.e. a value of "3 °C" is reported as 3. Range 0-65500.

<D2V>:

<D2V>	Function
Integer	Value of d2V/dt2 charging termination in number of mV divided by 10. I.e. a value of "30mV" is reported as 3. Range 0-65500.

Note! The parameters <ncapacity>, <cycles> and <pacapacity> have been removed in this version of the command.

Unsolicited Result Codes

*EBCA   **Sony Ericsson Indication Algorithm Status Indication (ver. 1)**

Description: This unsolicited result code indicates the changes in status of parameters of charging algorithm.

Unsolicited result code: ***EBCA (Refer to AT*EBCA ver. 3)**

Note!   The parameters <ncapacity>, <cycles> and <pacapacity> have been removed in this version of the command.

Parameters:

Ensemble S29: WAP Browser

Commands

AT*EWPR	**Sony Ericsson WAP Profiles (ver. 2)**

Description: Set command selects active WAP settings profile.
Read command queries active WAP settings profile.
Note! If no active WAP-profile has been selected, the read command will return OK only.

Execution command: **AT*EWPR=**<name>

Read command: **AT*EWPR?**   Displays the current <name> setting.

Test command: **AT*EWPR=?**   Shows if the command is supported.

Test command response: *EWPR: (list of supported <nlength>s)

Termination: Phone

Parameters:

<name>:

<name>	Function
string type	The name of the specific WAP settings profile to be activated. Field of maximum length <nlength>.

Character set as specified by command Select terminal equipment Character Set +CSCS. |

<nlength>:

<nlength>	Function
16	Value indicating the maximum length of field <name> (in characters).

Removed AT Commands

Ensemble C6: Data compression

Commands

AT command	Version	Termination
AT+DS	3	Modem
AT+DR		Modem

Ensemble C18: Fax Class 1

Commands

AT command	Version	Termination
AT+FCLASS		Modem
AT+FMI		Modem
AT+FMM		Modem
AT+FMR		Modem
AT+FTS		Modem
AT+FRS		Modem
AT+FTM		Modem
AT+FRM		Modem
AT+FTH		Modem

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Ensemble C19: Fax Class 2

Commands

AT command	Version	Termination
AT+FCLASS		Modem
AT+FAA		Modem
AT+FAXERR		Modem
AT+FBADLIN		Modem
AT+FBADMUL		Modem
AT+FBOR		Modem
AT+FBUF		Modem
AT+FBUG		Modem
AT+FCQ		Modem
AT+FCR		Modem
AT+FCIG		Modem
AT+FDFFC		Modem
AT+FDCC		Modem
AT+FDCS		Modem
AT+FDIS		Modem
AT+FDR		Modem
AT+FDT		Modem
AT+FECM		Modem
AT+FET		Modem
AT+FK		Modem
AT+FLID		Modem
AT+FLNFC		Modem
AT+FLPL		Modem

AT+FMDL		Modem
AT+FMFR		Modem
AT+FMINSP		Modem
AT+FPHCTO		Modem
AT+FPTS		Modem
AT+FREV		Modem
AT+FRBC		Modem
AT+FREL		Modem
AT+FSPL		Modem
AT+FTBC		Modem
AT+FVRFC		Modem
AT+FWDFC		Modem

Ensemble S9: Mobile Equipment, Control and Status

Commands

AT command	Version	Termination
AT*EAPP	2	Phone

Ensemble S15: GPRS/Packet Domain

Commands

AT command	Version	Termination
AT+CGDCONT	1	Modem

Ensemble S20: Sony Ericsson Specific AT Commands

Commands

AT command	Version	Termination
AT*EBCA	2	Phone

Ensemble S26: Voice Control

Commands

AT command	Version	Termination
AT*EVAA		Phone
AT*EMWS		Phone

Ensemble S29: WAP Browser

Commands

AT command	Version	Termination
AT*EWPR	1	Phone
AT*EWPN		Phone

Glossary

3GPP
3rd Generation Partnership Project. http://www.3gpp.org

Analog
An analog signal can have any value between two limits. For example, traditional telephone lines transfer the human voice, itself an analogue signal, by means of a continuously varying electrical voltage. This voltage is an electrical representation of the pressure produced by the sound on the telephone microphone.

ASCII
Acronym for American Standard Code for Information Interchange. A standard code used for transferring data between computers and associated equipment.

Asynchronous communication
Data communication in which data elements are NOT separated according to time. Instead, a special code such as a start bit and a stop bit is used. By using a code, in lieu of time, asynchronous communication is more tolerant of time variations, and complex timing circuits are not needed. The serial port and the COM port of a computer are associated with asynchronous communication, as is the RS-232-C interface. Also some end to end modem protocols are asynchronous.

AT
The characters AT stand for Attention and tells the Infrared Modem that a command follows. AT must be used at the beginning of a command line or dial string.

AT command set
The set of commands used to control the Infrared Modem.

Auto-answer mode
The state in which the Infrared Modem automatically answers the telephone when it rings.

Beam
Sending an item to another phone or a compatible application using the infrared link.This can include ring signals, calendar entries and business cards.

Bearer
The method for accessing WAP from the phone, for example GSM Data (CSD) and SMS.

Bluetooth
Secure, fast, point-to-multipoint radio connection technology. http://www.bluetooth.com

Bps
Acronym for 'bits per second' (bits/s). A measure of speed at which bits are transmitted over the telephone lines.

Card
A single WML unit of navigation and user interface. May contain information to present to the user, instructions for gathering user input, etc.

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Carrier

The frequency used by two connecting modems to transmit and receive data.

CCITT

Consultative Committee for International Telephony and Telegraphy. A European-based advisory committee established by the United Nations to recommend international communication protocol standards.

CD

Carrier Detect. An EIA232 signal sent from the Infrared Modem to your computer, usually indicating that the Infrared Modem has detected a carrier signal over the communications line.

Command line

A line of alphanumeric characters sent to the Infrared Modem to instruct the Infrared Modem to perform the commands specified in the line of characters.

COM (communications) port

The name allocated to the serial port through which digital signals are exchanged between the computer and a serial peripheral. For example COM1 and COM2.

CSD

Circuit Switched Data.

CTS

Clear To Send. An EIA232 signal sent from a modem to the computer, usually indicating that the modem is ready to receive data.

DCD

Data Carrier Connect. See AT&C.

DCE

Data Communications Equipment. This term applies to modems and to other equipment that provide communication between data terminal equipment and the telephone line.

Deck

A collection of WML cards.

Default setting

A setting that the Infrared Modem will always use unless specified otherwise.

Digital transmission

A digital signal can have only two values. These can, for example, be ON and OFF, HIGH and LOW, or 1 and 2. A digital signal is usually transferred by means of a voltage which is either HIGH or LOW. Conventional modems communicate by means of audio tones which can use the analog telephone network. The Infrared Modem links through your mobile telephone to a digital network and therefore has no need to use audio encoding. However, when you use your mobile telephone for a voice call, the analog signal from the microphone must be converted into a digital signal.

This is done by a converter which samples the signal voltage several thousand times per second. Each sample is converted into a binary number which represents the voltage at that instant, for example 10011010, and the binary numbers are sent as a serial stream down the digital network.

DSR

Data Set Ready. An EIA232 signal sent from the Infrared Modem to the computer, usually indicating that the Infrared Modem is ready to establish a connection.

DTE

Data Terminal Equipment. The equipment that provides data, such as a computer or terminal.

DTR

Data Terminal Ready. An EIA232 signal sent from the computer to the Infrared Modem, usually indicating that the computer is ready to begin communication.

EIA

Electronics Industries Association. A U.S. based group that forms technical standards and coordinates ITU-TCCITT activities in the United States.

EOL

End of line.

EOP

End of page.

EOM

End of message.

Escape code

A series of three consecutive characters (default is '+++') sent to the Infrared Modem, causing it to exit on-line data mode and enter on-line command mode.

Factory default settings

The profile configuration that is in effect when the Infrared Modem is shipped from the factory.

Fax Class

Standards for fax transmission are set as classes. Class I and II allow data transfer speeds ranging from 2400 bits/s to 9600 bits/s.

Final result code

A message sent from the Infrared Modem to inform the PC that execution of an entered AT command has been completed. Examples are `OK` and `ERROR`.

Flow control

The use of characters or EIA232 signals to start and stop the flow of data to avoid data loss during buffering.

Full duplex

Communication involving data transmitted in two directions simultaneously.

Gateway

A WAP Gateway typically includes the following functionality:

A Protocol Gateway. The protocol gateway translates requests from the WAP protocol stack to the WWW protocol stack (HTTP and TCP/IP).

Content Encoders and Decoders. The content encoders translate Web content into compact encoded formats to reduce the size and number of packets travelling over the wireless data network.

GIF

Graphics Interchange Format.

Half duplex
Communication involving data being transmitted in two directions, but not at the same time.

Intermediate result code
Information sent from the Infrared Modem to the PC as a response to an executed AT command. Intermediate result codes are always followed by a final result code. For example `+CBC: 0,100.`

IrMC
Infrared Mobile Communications standard.

IrDA
Infrared Data Association. http://www.irda.org.

ISDN
The term used to refer to the digital public switched telephone network.

ISP
Internet Service Provider.

ITU-T
The ITU Telecommunication Standardization Sector (ITU-T), is a permanent organ of the International Telecommunication Union. The ITU-T is responsible for studying technical, operating and tariff questions and issuing Recommendations on them with a view to standardizing telecommunication on a world wide basis.

As a consequence of a reform process within the International Telecommunication Union (ITU), the CCITT ceased to exist as of 28 February 1993. In its place the ITU Telecommunication Standardization Sector (ITU-T) was created as of 1 March 1993.

MMI
Man-Machine Interface.

ME
Mobile Equipment. The Sony Ericsson wireless terminal, excluding the SIM card, which in most cases is a mobile phone.

Micro browser
Accesses and displays the Internet contents in your mobile phone, just as an ordinary browser does in your computer. The micro browser uses small file sizes and the bandwidth of the wireless handheld-network.

Modem
Modulator-Demodulator. A device that converts digital signals to analog for transmission over telephone lines, then converts them back to digital at the other end of the line.

MS
This is the Sony Ericsson wireless terminal being controlled through the set of commands described in this document.

MT
Mobile Telephone.

OBEX

The OBEX specification consists of two major parts: a protocol and an application framework. The OBEX protocol is a session level protocol that specifies the structure for the conversation between devices. It also contains a model for representing objects. The OBEX application framework is built on top of the OBEX protocol. Its main purpose is to facilitate interoperability between devices using the OBEX protocol. Please refer to http://www.irda.org.

Off hook

The Infrared Modem state similar to picking up a telephone receiver. The Infrared Modem goes off hook to dial or answer, and remains off hook while connected.

Off-line command mode

The operational state in which the Infrared Modem can accept typed commands.

On hook

The Infrared Modem state similar to hanging up a telephone receiver.

On-line data mode

The state the Infrared Modem is in when transmitting or receiving data over the telephone line.

OTA

Over-the-Air Configuration. To provide settings for the phone by sending an SMS message over the network to the phone. This reduces the need for the user to configure the phone manually.

PIN

Personal identification number.

PDA

Personal Digital Assistant.

Phone Book

A memory in your mobile phone or SIM card where phone numbers can be stored and accessed by name or position.

Protocols

The rules or procedures all modems must follow to communicate.

Reference Point

Mobile phone and accessory system external and internal reference points.

Result code

A message the Infrared Modem sends to the computer containing information about the state of the Infrared Modem.

RLP

Radio Link Protocol, an error correction protocol used during radio link connections.

RLSD

Received Line Signal Detect. See AT&C.

RTS

Request To Send. An EIA232 signal sent from the computer to the Infrared Modem, usually indicating that the computer is ready to send data to the Infrared Modem.

RS-232-C interface
A communication standard established by the Electronics Industry Association (Recommended Standard number 232, revision C). Originally established to standardize communication between computer and modem. It was later adapted to become a popular standard for communication between computer and any other peripheral equipment, including other computers.

SC
Service Centre (for SMS).

Serial port
The port through which digital signals are exchanged between the Infrared Modem and the computer.

Short message service (SMS)

A text messaging service permitting the transmission of up to 160 characters to a facsimile, X400, telex and voice services or mobile phone.

SIM card
Subscriber Identity Module card. It is a card that must be inserted in any GSM-based mobile phone. It contains subscriber details, security information and memory for a personal directory of numbers. The card can be a small plug-in type or credit card-sized but both types have the same functions. Your phone uses the small plug-in card.

SIR
Serial Infrared.

SM
1. Short Message.

2. SIM message storage.

Synchronous Communication:
V.22bis

ITU-T standard for 2400 bps.

V.27ter
ITU-T standard for 4800 bps full-duplex modems connected to switched telephone networks.

V.29
ITU-T standard for 9600 bps half-duplex modems included in FAX machines.

V.42bis
ITU-T standard for the compression of asynchronous data. V.42bis is based on a dictionary that looks up common strings and replaces the strings with code words. This reduces the amount of characters actually being   transmitted. V.42bis has been found to be most effective for file transfers that contain long strings of repetitive information and least effective for short strings of unique data. It requires LAPM, MNP2, MNP3, or MNP4 as error correcting.

TA
Terminal Adaptor, which in most cases is a PCMCIA (Personal Computer Memory Card International Association) card.

TAE
Terminal Adaptor Equipment.

TCP/IP
Transmission Control Protocol/Internet Protocol.

TE
Terminal Equipment, which in most cases is a computer.

Unsolicited result code
A message sent from the Infrared Modem to the PC that is not a response to an executed AT command. For example RING.

vCalendar
vCalendar and vEvent define a transport and platform-independent format for exchanging calendar and scheduling information for use in PIMs/ PDAs and group schedulers. vCalendar and vEvent are specified by IMC and can be further studied at http://www.imc.org.

vCard
vCard automates the exchange of personal information typically found on a traditional business card, for use in applications such as Internet mail, voice mail, Web browsers, telephony applications, call centres, video conferencing, PIMs /PDAs, pagers, fax, office equipment, and smart cards. vCard is specified by IMC at

 http://www.imc.org.

vEvent
See vCalendar.

WAP
Wireless Application Protocol. Handheld devices, low bandwidth, binary coded, a deck/card metaphor to specify a service. A card is typically a unit of interaction with the user, that is, either presentation of information or request for information from the user. A collection of cards is called a deck, which usually constitutes a service.

WAP Application
A collection of WML cards, with the new context attribute set in the entry card.

WAP service
A WML application residing on a web site.

WBMP
WAP Bitmap.

WML
Wireless Markup Language. A markup language used for authoring services, fulfilling the same purpose as HyperText Markup Language (HTML) do on the World Wide Web (WWW). In contrast to HTML, WML is designed to fit small handheld devices.

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