



EV-DO and CDMA

AT Commands Reference Guide

EV3/C2 AT Commands Reference Guide for the following products:**MTSMC-EV3-xx, MTD-EV3-xx, MTSMC-C2-xx, MTCMR-EV3, MTCMR-C2, MT100UCC-EV3-xx, MT100UCC-C2-xx****Part Number S000546, Revision B****Copyright**

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Introduction

This guide describes the AT commands:

- V.250 general AT command set, in order to maintain the compatibility with existing SW programs.
- 3GPP TS 27.007 specific AT command and GPRS specific commands.
- 3GPP TS 27.005 specific AT commands for SMS (Short Message Service) and CBS (Cell Broadcast Service)
- CDMA commands, including carrier specific commands

Standard AT commands and proprietary AT commands help you control your product.

Formatting Conventions Overview

The following syntactical definitions apply:

- <CR> Carriage return character, is the command line and result code terminator character, which value, in decimal ASCII between 0 and 255, is specified within parameter S3. **Default: 13.**
- <LF> Linefeed character, is the character recognized as line feed character. Its value, in decimal ASCII between 0 and 255, is specified within parameter S4. The line feed character is output after carriage return character if verbose result codes are used (V1 option used) otherwise, if numeric format result codes are used (V0 option used) it does not appear in the result codes. **Default: 10.**
- <...> Name enclosed in angle brackets is a syntactical element. They do not appear in the command line.
- [...] Optional subparameter of a command or an optional part of Terminal Adapter (TA) information response is enclosed in square brackets. Brackets themselves do not appear in the command line. When subparameter is not given in AT commands which have a Read command, new value equals its previous value. For AT commands that do not store the values of any of their subparameters—which are called action type commands and do not have a Read command—action performed based on the recommended default setting of the subparameter.

AT Command Syntax

The syntax rules followed by commands in this guide are similar to those of standard basic and extended AT commands.

There are two types of extended commands:

- **Parameter type commands.** This type of command may be:
 - “set” to store a value or values for later use.
 - “read” to determine the current value or values stored.
 - “tested” to determine ranges of values supported.

Each has a Test command (trailing =?) to give information about the type of its subparameters. The parameters also have a Read command (trailing ?) to check the current values of subparameters.

- **Action type commands.** This type of command may be “executed” or “tested”.
 - “executed” to invoke a particular function of the equipment, which generally involves more than the simple storage of a value for later use.
 - “tested” to determine:
 - If subparameters are associated with the action, the ranges of subparameters values that are supported. If the command has no subparameters, issuing the corresponding Test command (trailing =?) raises the result code “ERROR”.
 - The response to the Test command (trailing =?) may change in the future to allow the description of new values and functions.

Note: Issuing the Read command (trailing ?) causes the command to be executed.

- Whether or not the equipment implements the action command (in this case issuing the corresponding Test command - trailing =? - returns the OK result code), and, if subparameters are associated with the action, the ranges of subparameters values that are supported.

Action commands do not store the values of any of their possible subparameters. Moreover: If all the subparameters of a parameter type command +CMD (or #CMD or \$CMD) are optional, issuing AT+CMD=<CR> (or AT#CMD=<CR> or AT\$CMD=<CR>) causes the OK result code to be returned and the previous values of the omitted subparameters to be retained.

String Type Parameters

A string, enclosed between quotes or not, is a valid string type parameter input. According to V.25ter space characters are ignored on the command line and may be used freely for formatting purposes, unless they are embedded in numeric or quoted string constants. Therefore a string containing a space character has to be enclosed between quotes to be considered a valid string type parameter.

A string is always case sensitive.

Some commands require you to always place the input string parameters within quotes. When this is required, the command descriptions explicitly tell you so.

Command Lines

A command line is made up of three elements: the prefix, the body and the termination character.

The command line prefix consists of the characters “AT” or “at”. To repeat the execution of the previous command line, use the characters “A/” or “a/” or AT#/ or at#/.

Using parameter S3, you can select the termination character. **The default is <CR>.**

The structures of the command line are:

- ATCMD1<CR> where AT is the command line prefix, CMD1 is the body of a basic command and <CR> is the command line terminator character.

The name of the command never begins with the character “+”

- ATCMD2=10<CR> where 10 is a subparameter.
- AT+CMD1;+CMD2=, ,10<CR> These are two Example of extended commands They are delimited with semicolon. In the second command the subparameter is omitted.

The name of the command always begins with the character “+”.

- +CMD1?<CR> This is a Read command for checking current subparameter values.
- +CMD1=?<CR> This is a Test command for checking possible subparameter values.

These commands might be performed in a single command line as shown below:

```
ATCMD1 CMD2=10+CMD1;+CMD2=, ,10;+CMD1?;+CMD1=?<CR>
```

- It is recommended to separate the basic commands and the extended commands into different command lines.
- Avoid placing several action commands in the same command line. If one command fails, an error message is received. However, it is not possible to determine which command failed the execution.

- If command V1 is enabled (verbose responses codes) and all commands in a command line performed successfully, result code <CR><LF>OK<CR><LF> is sent from the TA to the TE, if subparameter values of a command are not accepted by the TA or command itself is invalid, or command cannot be performed for some reason, result code <CR><LF>ERROR<CR><LF> is sent and no subsequent commands in the command line are processed.
- If command V0 is enabled (numeric responses codes), and all commands in a command line performed successfully, result code 0<CR> is sent from the TA to the TE. If sub-parameter values of a command are not accepted by the TA or command itself is invalid, or command cannot be performed for some reason, result code 4<CR> and no subsequent commands in the command line are processed.

In case of errors depending on ME operation, ERROR (or 4) response may be replaced by +CME ERROR: <err> or +CMS ERROR: <err>.

Note: The command line buffer accepts a maximum of 80 characters. If this number is exceeded none of the commands are executed and TA returns ERROR.

Information Responses And Result Codes

For the previous Example, if verbose response format is enabled the terminal adapter (TA) response might appear as:

- Information response to +CMD1?
<CR><LF>+CMD1:2,1,10<CR><LF>
- Information response to +CMD1=?
<CR><LF>+CMD1(0-2),(0,1),(0-15)<CR><LF>
- Final result code
<CR><LF>OK<CR><LF>

Result codes according to ITU-T V.25ter

Two types of result codes include:

- Result codes that inform about progress of TA operation, for example connection establishment CONNECT.
- Result codes that indicate occurrence of an event not directly associated with issuance of a command from TE (for example ring indication RING).

Numeric form	Verbose form
0	OK
1	CONNECT or CONNECT <text> where <text> can be "300", "1200", "2400", "4800", "9600", "14400" or "1200/75"
2	RING
3	NO CARRIER
4	ERROR
6	NO DIALTONE
7	BUSY
8	NO ANSWER

Command Response Timeout

If response codes are enabled, which is the default setting, then every command issued to the module returns a result response.

The time needed to process the given command and return the response varies depending on the command type.

Commands that do not interact with the network, and only involve internal setups or readings, have a quicker response than commands that require network interaction.

The table below lists the commands whose network interaction may lead to long response times. When not otherwise specified, timing is referred to set commands.

For phonebook and SMS writing and reading related commands, timing is referred to commands issued after phonebook sorting completes.

For DTMF sending and dialing commands, timing is referred to the module registered on the network (“AT+CREG?” answer is “+CREG: 0,1” or “+CREG: 0,5”).

Command	Estimated maximum time to get response (Seconds)
+CPBR	5 (single reading)
	15 (complete reading of a 500 records full phonebook)
+CPBF	10 (string present in a 500 records full phonebook)
	5 (string not present)
+CPBW	5
+VTS	5 (transmission of full “1234567890*#ABCD” string with no delay between tones, default duration)
+CSAS	5
+CRES	5
+CMGS	120 after CTRL-Z; 1 to get ‘>’ prompt
+CMSS	120 after CTRL-Z; 1 to get ‘>’ prompt
+CMGW	5 after CTRL-Z; 1 to get ‘>’ prompt
+CMGD	5 (single SMS cancellation)
	25 (cancellation of 50 SMS)
+CMGR	5
+CMGL	100
D	40
A	5 (voice call)
H	2
+CHUP	2
#TONE	5 (if no duration specified)
#EMAILD	60
#EMAILACT	150

Command	Estimated maximum time to get response (Seconds)
#SEMAIL	210 (context activation + DNS resolution)
#QDNS	170
#FTPOPEN	500 (timeout set with AT#FTPTO, in case no response is received from server)
#FTPCLOSE	500 (timeout set with AT#FTPTO, in case no response is received from server)
#FTPTYPE	500 (timeout set with AT#FTPTO, in case no response is received from server)
#FTPDELE	500 (timeout set with AT#FTPTO, in case no response is received from server)
#FTPPWD	500 (timeout set with AT#FTPTO, in case no response is received from server)
#FTPCWD	500 (timeout set with AT#FTPTO, in case no response is received from server)
#FTPLIST	500 (timeout set with AT#FTPTO, in case no response is received from server) + time to get listing
#FTPPUT	500 (timeout set with AT#FTPTO, in case no response is received from server)
#SGACT	150
#SH	10
#SD	140 (DNS resolution + connection timeout set with AT#SCFG)

Command Issuing Timing

The chain Command -> Response is always respected. You may not issue a new command until the module finishes sending all of its response result codes.

This applies especially to applications that “sense” the OK text and therefore may send the next command before the complete code <CR><LF>OK<CR><LF> is sent by the module.

It is recommended to wait for at least 20ms between the end of the reception of the response and the issue of the next AT command.

If the response codes are disabled, and as such, the module does not report responses to the command, then the 20ms pause time is respected.

Storing Values Set by Commands Overview

Factory Profile And User Profiles

The wireless module stores the values set by several commands in the internal, non-volatile memory (NVM), allowing this setting to remain even after power off. In the NVM, these values are set either as factory profile or as user profiles.

There are two customizable user profiles and one factory profile in the NVM of the device: By default the device starts with user profile 0 equal to factory profile.

For backward compatibility each profile is divided into two sections:

- **base section** which was historically the one that was saved and restored in early releases of code, and
- **extended section** which includes all the remaining values.

The &W command is used to save the actual values of both sections of profiles into the non-volatile memory user profile.

Commands &Y and &P are both used to set the profile to be loaded at startup. &Y instructs the device to load only the base section at startup. &P instructs the device to load, at startup, the full profile: base + extended sections.

For commands in the base section, the &F command resets values to factory profile defaults.

&F1 resets to factory profile values the full set of base + extended section commands.

The values set by other commands are stored in non-volatile memory outside the profile. Some values are always stored, without issuing &W. Other values are stored by issuing specific commands (+CSAS, #SLEDSAV, #ESAV). All of these values are read at power-up.

The values set by the following commands are stored in the profile base section.

COMMAND ECHO	E
RESULT MESSAGES	Q
VERBOSE MESSAGES	V
EXTENDED MESSAGES	X
DSR (C107) OPTIONS	&S
DTR (C108) OPTIONS	&D
DCD (C109) OPTIONS	&C
RI (C125) OPTIONS	\R
POWER SAVING	+CFUN
DEFAULT PROFILE	&Y0
S REGISTERS	S0;S1;S2;S3;S4;S5;S7;S12;S25;
CHARACTER FORMAT	+ICF

The values set by following commands are stored in the profile extended section.

+FCLASS	+ILRR	+DR
+CSCS	+CRC	+CVHU
+CREG	+CLIP	+CCWA
+CPBS	+CMEE	+CMGF
+CSDH	+CNMI	#ACAL
#PSMRI	#ACALEXT	#ECAM
#SMOV	#SKIPESC	#E2ESC
#CFLO	+CALM	+CRSL
+CMUT	+VTD	#PCMTXG
#PCMRXG	#DVICFG	#CAP
#SRS	#SRP	#STM
#SPKMUT	#E2SLRI	#DAC
#PSEL	#SHSAGC	#SHSEC
#SHSNR	#SHSSD	#TSVOL
#E2SMSRI	#TEMPMON	

Note: #TEMPMON is partially stored in non-volatile memory. See command description for details.

The values set by following commands are automatically stored in non-volatile memory, without issuing any storing command and independently from the profile (unique values), and are automatically restored at startup.

#DIALMODE	#CODEC	#SCFG
#SHSFTX	#SRXAGC	#SHSAGCTX
#SHSAGCRX	#DNS	#TCPMAXDAT
#TCPREASS	#TTY	#SMSMOEN
#SMSSO		

The values set by following commands are stored in non-volatile memory on demand, issuing specific commands and independently from the profile:

+CSMP

- Stored by +CSAS command and restored by +CRES command. Note, that both +CSAS and +CRES deal with non-volatile memory.

#SLED

- Stored by #SLEDSAV command.

#VAUX

- Stored by #ESAV command and automatically restored at startup. #ERST command restores default values.

\$GPSP	\$GPSAT	\$GPSNMUN
--------	---------	-----------

- Stored by \$GPSSAV command and automatically restored at startup. \$GPSRST command restores default values.

Format for Entering AT Commands

This chapter describes the general format you must use when entering AT commands.

Command Line Prefixes

Starting A Command Line **AT**

The prefix AT is a two-character abbreviation for Attention. With one exception—the AT#/ prefix—you always use AT to start a command line that is sending commands from Terminal Equipment (TE) to Terminal Adapter (TA).

Notes

- If you want to learn more about this command, refer to the 3GPP TS 27.007 specification.

Last Command Automatic Repetition **A/**

If the prefix A/ or a/ is issued, the module immediately re-executes the body of the preceding command line. No editing is possible and no termination character is necessary. A command line may be repeated multiple times through this mechanism, if desired.

If A/ is issued before any command line is executed, the preceding command line is assumed to have been empty (that results in an OK result code).

Notes

- This command works only at fixed IPR.
- The A/ command is similar to the custom prefix AT#/, in that both prefixes cause the last command to be re-executed. However, the prefix AT#/ does not need a fixed IPR.
- If you want to learn more about this command, refer to the V.25ter specification.

Repeat Last Command **AT#/**

Use this prefix to re-execute the last received command.

General Configuration Commands

Set Notification Port #NOPT

Execute command sets the port output notification (indication) data.

Read command reports the current notification port.

Test command reports the available value range for parameter <num>.

Syntax

Command	Command type
AT#NOPT=<num>	Execute
AT#NOPT?	Read
AT#NOPT=?	Test

Parameters and Values

This device supports the following values:

<num>	Notification port
0	All Ports. Notification is sent to all ports (USB Modem, UART Data, USB Auxiliary). Default: 0.
1	UART data port only.
2	USB modem port only.
3	EV3 models: USB auxiliary port only C2 models: Multiplexer DLCI port only.
4	C2 models only: Multiplexer DLCI port only.
5	C2 models only: Multiplexer DLCI port only.
6	C2 models only: Multiplexer DLCI port only.

Notes

- For C2 models only: The notification output on multiplexer port 3-6 is available only if CMUX is activated.

Manufacturer Serial Number #MSN

Execute command returns the device board serial number. The serial number is always eight digits, left-filled with zeros.

Test command returns OK result code.

Syntax

Command	Command type
AT#MSN	Execute
AT#MSN=?	Test

Hardware Revision #HWREV

Execute command returns the device hardware revision identification code without command echo.

Test command returns OK result code.

Syntax

Command	Command type
AT#HWREV	Execute
AT#HWREV?	Test

V.250 AT Commands

Generic Modem Control

Set to Factory-Defined Configuration &F

Execute command sets the configuration parameters to default values specified by the manufacturer. This includes hardware configuration switches and other manufacturer-defined criteria.

Syntax

Command	Command type
AT&F[<value>]	Set

Parameters and Values

<value>	Hardware version, a string of no more than 31 characters.
0	Only the factory profile base section parameters are set to default values.
1	Full factory profile restored, that is, the factory profile base section and the extended section are restored.

Notes

- If parameter <value> is omitted, the command has the same behavior as AT&F0.
- Reference: V.25ter.

Soft Reset Z

Execute command loads the base section of the specified user profile and the extended section of the default factory profile.

Syntax

Command	Command type
ATZ[<n>]	Execute

Parameters and Values

<n>	Hardware version, a string of no more than 31 characters.
0-1	User profile number.

Notes

- Any call in progress is terminated.
- If parameter <n> is omitted, the command has the same behavior as ATZ0.
- Reference: V.25ter.

Select Active Service Class +FCLASS

Set command sets the wireless module in specified connection mode (data, voice). All calls done after you set FCLASS are data or voice.

Read command queries the current mode.

Test command returns all supported values of the parameters <n>.

Syntax

Command	Command type
AT+FCLASS=<n>	Set
AT+FCLASS?	Read
AT+FCLASS=?	Test

Parameters and Values

This device supports the following values:

<n>	
0	Data. Default: 0.
8	Voice.

Notes

- Reference: 3GPP TS 27.007.

Default Reset Basic Profile Designation &Y

Execute command defines the basic profiles that load on startup.

Syntax

Command	Command type
AT&Y[<n>]	Execute

Parameters and Values

<n>	
0-1	Profile. The wireless module can store 2 complete configurations See &W. Default: 0.

Notes

- Different from command Z<n>, which loads the desired profile just once; the profile chosen through command &Y loads on every startup.
- If parameter is omitted, the command has the same behavior as AT&Y0.

Default Reset Full Profile Designation &P

Execute command defines which full profile loads on startup.

Syntax

Command	Command type
AT&P[<n>]	Execute

Parameters and Values

<n>

0-1

Profile number. The wireless module can store 2 full configurations. See &W.

Notes

- Different from command Z<n>, which loads the desired profile just once; the profile chosen through command &P loads on every startup.
- If parameter is omitted, the command has the same behavior as AT&P0.

Store Current Configuration &W

Execute command stores the complete configuration of the device in profile <n>.

Syntax

Command	Command type
AT&W[<n>]	Execute

Parameters and Values

<n>

0-1

Profile.

Notes

- If parameter is omitted, the command behaves the same as AT&W0.

Store Telephone Number &Z

Execute command stores the telephone number <nr> in the record <n>. The records cannot be overwritten. You must clear them before rewriting.

Syntax

Command	Command type
AT&Z<n>=<nr>	Execute

Parameters and Values

<n>

Phonebook record, 0-9.

<nr>

String type, telephone number.

Notes

- The wireless module has built-in, non-volatile memory where you can store 10 telephone numbers, each with a maximum 24 digits.
- To delete the record <n>, issue the command AT&Z<n>=<CR>.
- Use the command &N to view the records in the module memory
- To dial the telephone number stored in the record use the command ATDS=<n>.

Example

Store the number to index 0:

```
AT&Z0=5554443333
```

Display Stored Numbers &N

Execute command returns the telephone number stored at the <n> position in the internal memory

Syntax

Command	Command type
AT&N[<n>]	Execute

Parameters and Values

<n> Phonebook record number.

Notes

- If parameter <n> is omitted then all the internal records are shown.

Model Identification +GMM

Execute command returns the manufacturer's model identification.

Syntax

Command	Command type
AT+GMM	Execute

Notes

- Reference: V.25ter.

Revision Identification +GMR

Execute command returns the manufacturer's software revision identification.

Syntax

Command	Command type
AT+GMR	Execute

Notes

- Reference: V.25ter.

Capabilities List +GCAP

Execute command returns the equipment supported command set list.

Syntax

Command	Command type
AT+GCAP	Execute

Notes

- Reference: V.25ter.
- Response indicates:
 - +CIS707-A: IS-707-A (High Speed Packet Data Services) command set.
 - EV3 models only: +CIS-856: IS-856 (High Rate Packet Data Air Interface) command set.
 - +MS: Mobile Specific command set.
 - +FCLASS: Fax command set. Note that EV3 and C2 models do not support fax.
 - +ES: Error Control Selection command set.
 - +DS: Data Service common modem command set.

Serial Number +GSN

Execute command returns the cellular radio serial number.

Syntax

Command	Command type
AT+GSN	Execute

Notes

- The number returned is not the IMSI, it is only the board number.
- Reference: V.25ter.

Display Configuration and Profile &V

Execute command returns some of the base configuration parameters settings.

Syntax

Command	Command type
AT&V	Execute

Notes

- The row of information about **CTS (C106) OPTIONS** is in the output of **&V** only for compatibility reasons and represents only a dummy value.

Display Configuration and Profile &V0

Execute command returns configuration parameter settings for the following:

DTE SPEED	EXTENDED MESSAGES	DCD (C109) OPTIONS
DTE FORMAT	CONSTANT DTE SPEED	RI (C125) OPTIONS
AUTOBAUD	FLOW CONTROL OPTIONS	C108/1 OPERATION
COMMAND ECHO	CTS (C106) OPTIONS	POWER SAVING ON DTR
RESULT MESSAGES	DSR (C107) OPTIONS	DEFAULT PROFILE
VERBOSE MESSAGES	DTR (C108) OPTIONS	

Syntax

Command	Command type
AT&V0	Execute

Notes

- This command is the same as &V.
- The row of information about CTS (C106) OPTIONS is in the output of &V0 only for compatibility reasons and represents only a dummy value.

S Registers Display &V1

Execute command returns the value of the S registers in decimal and hexadecimal value in the format:

REG	DEC	HEX
<reg0>	<dec>	<hex>
<reg1>	<dec>	<hex>

Syntax

Command	Command type
AT&V1	Execute

Parameters and Values

<regn>	S register number.
<dec>	Current value in decimal notation.
<hex>	Current value in hexadecimal notation.

Extended S Registers Display &V3

Execute command returns the value of the S registers in decimal and hexadecimal value in the format:

REG	DEC	HEX
<reg0>	<dec>	<hex>
<reg1>	<dec>	<hex>

Syntax

Command	Command type
AT&V3	Execute

Parameters and Values

This device supports the only following values:

<regn>	S register number.
<dec>	Current value in decimal notation.
<hex>	Current value in hexadecimal notation.

Display Last Connection Statistics &V2

Execute command returns the last connection statistics & connection failure reason.

Syntax

Command	Command type
AT&V2	Execute

Single Line Connect Message \V

Execute command set single line connect message.

Syntax

Command	Command type
AT\V<n>	Execute

Parameters and Values

<n>

0	Off.
1	On.

Country of Installation +GCI

Set command selects the installation country code.

Read command reports the currently selected country code.

Test command reports the supported country codes.

Syntax

Command	Command type
AT+GCI=<code>	Set
AT+GCI?	Read
AT+GCI=?	Test

Parameters and Values

<code>

310	Currently supports the USA country code.
-----	--

DTE Modem Interface Control

Command Echo E

Set command enables or disables the command echo.

Syntax

Command	Command type
ATE[<n>]	Set

Parameters and Values

<n>

0	Disables command echo.
1	Enables command echo, hence commands sent to the device are echoed back to the DTE before the response is given. Default: 1.

Notes

- If parameter is omitted, the command has the same behavior as ATE0.
- Reference: V.25ter.

Quiet Result Codes Q

Set command enables or disables the result codes.

Syntax

Command	Command type
ATQ[<n>]	Set

Parameters and Values

<n>

- | | |
|----------|---|
| 0 | Enables result codes. Default: 0. |
| 1 | Disables result codes. |
| 2 | Disables result codes. Only for backward compatibility. |

Notes

- After issuing either ATQ1 or ATQ2 every information text transmitted in response to commands is not affected.
- If parameter is omitted, the command has the same behavior as ATQ0.

Example

After issuing ATQ1 or ATQ2:

```
AT+CREG?
```

```
+CREG:0,1
```

Response Format V

Set command determines the contents of the header and trailer transmitted with result codes and information responses. It also determines if result codes are transmitted in a numeric form or an alphanumeric form. For more information about the result codes, refer to “Information Responses And Result Codes”.

Syntax

Command	Command type
ATV[<n>]	Set

Parameters and Values

<n>

- | | |
|----------|--|
| 0 | Limited headers and trailers and numeric format of result codes |
| | information responses <text><CR><LF> |
| | result codes <numeric code><CR> |
| 1 | Full headers and trailers and verbose format of result codes. Default: 1. |
| | information responses <CR><LF> |
| | <text><CR><LF> |
| | result codes <CR><LF> |
| | <verbose code><CR><LF> |

Notes

- The <text> portion of information responses is not affected by this setting.
- If parameter is omitted, the command has the same behavior as ATV0.
- Reference: V.25ter.

Extended Result Codes X

Set command selects the result code messages subset that the modem uses to inform the DTE of command results.

Syntax

Command	Command type
ATX[<n>]	Set

Parameters and Values

<n>

0

On entering dial-mode CONNECT result code is given; OK, CONNECT, RING, NO CARRIER, ERROR, NO ANSWER result codes are enabled . Dial tone and busy detection (NO DIALTONE and BUSY result codes) are disabled.

1-4

On entering dial-mode CONNECT <text> result code is given; all the other result codes are enabled. **Default: 1.**

Notes

- If parameter is omitted, the command has the same behavior as ATX0.
- For complete control on CONNECT response message see +DR command.
- Reference: V.25ter.

Identification Information I

Execute command returns one or more lines of information text followed by a result code.

Syntax

Command	Command type
ATI[<n>]	Execute

Parameters and Values

<n>

0

Numerical identifier.

1

Module checksum.

2

Checksum check result.

3

Manufacturer (Telit).

4

Manufacturer's Product name (DE910-DUAL).

5

DOB version.

Notes

- If parameter is omitted, the command has the same behavior as ATIO.
- Reference: V.25ter.

Data Carrier Detect (DCD) Control &C

Set command controls the RS232 DCD output behavior.

Syntax

Command	Command type
AT&C[<n>]	Set

Parameters and Values

<n>

- | | |
|---|---|
| 0 | DCD remains high always. |
| 1 | DCD follows the carrier detect status: if carrier is detected DCD is high, otherwise DCD is low. Default: 1. |
| 2 | DCD off while disconnecting. |

Notes

- If parameter is omitted, the command has the same behavior as AT&C0.
- Reference: V.25ter.

Data Terminal Ready (DTR) Control &D

Set command controls the module behavior to the RS232 DTR transitions.

Syntax

Command	Command type
AT&D[<n>]	Set

Parameters and Values

<n>

- | | |
|---|--|
| 0 | Device ignores DTR transitions. Default: 0. |
| 1 | DCD follows the carrier detect status: if carrier is detected DCD is high, otherwise DCD is low. |
| 2 | When the module is connected, the high to low transition of DTR pin sets the device in command mode, the current connection is not closed. |
| 3 | Device ignores DTR transitions. |
| 4 | C108/1 operation is disabled. Of +CVHU is not 2, issuing AT&D3 is equivalent to AT&D5. |
| 5 | C108/1 operation is enabled. Same behavior as for <n>=2. |

Notes

- If +CVHU is not set at 2, issuing AT&D0, AT&D1, AT&D2, AT&D3, or AT&D4 is equivalent to AT&D5.
- If a connection is set up issuing #SKTD, then AT&D1 has the same effect as AT&D2. If a connection is set up issuing AT#SD then AT&D1 and AT&D2 have different effect, as described above.
- If AT&D2 is issued and the DTR is tied Low, auto answering is inhibited and it is possible to answer only issuing command ATA.
- If parameter is omitted, the command has the same behavior as AT&D0.
- Reference: V.25ter.

Flow Control &K

Set command controls the RS232 flow control behavior.

Syntax

Command	Command type
AT&K<n>	Set

Parameters and Values

This device supports the following values:

<n>	
0	No flow control.
1	Hardware mono-directional flow control (only CTS active)
3	Hardware bi-directional flow control (both RTS/CTS active). Default: 3
6	Hardware bi-directional flow control (both RTS/CTS active).

Notes

- &K has no Read command. To verify current setting, use AT&V to check the active profile settings.
- Hardware flow control (AT&K3) is not active in command mode.
- If parameter is omitted, the command has the same behavior as AT\K0.
- Reference: V.25ter.

Standard Flow Control \Q

Set command controls the RS232 DSR flow control behavior.

Syntax

Command	Command type
AT\Q<n>	Set

Parameters and Values

This device supports the following values:

<n>	
0	No flow control.
2	Hardware mono-directional flow control (only CTS active)
3	Hardware bi-directional flow control (both RTS/CTS active). Default: 3

Notes

- Hardware flow control (AT\Q3) is not active in command mode.
- \Q settings are functionally a subset of &K settings
- If parameter is omitted, the command has the same behavior as AT\K3.
- Reference: V.25ter.

Data Set Ready (DSR) Control &S

Set command controls the RS232 DSR pin behavior.

Syntax

Command	Command type
AT&S<n>	Set

Parameters and Values

<n>

0	Always high.
1	Follows the data traffic channel indication.
2	High when connected.
3	High when device is ready to receive commands. Default: 3

Notes

- If option 1 is selected then DSR is tied high when the device receives from the network the data traffic channel indication.
- In power saving mode the DSR pin is always tied low.
- If parameter is omitted, the command has the same behavior as AT&S0.
- If option 1 or 2 are active, DSR will not be tied high in case of voice channel.

Ring (RI) Control \R

Set command controls the RING output pin behavior.

Syntax

Command	Command type
AT\R[<n>]	Set

Parameters and Values

<n>

0	RING on during ringing and further connection.
1	RING on during ringing. Default: 1.
2	RING follows the ring signal.

Notes

- To check the ring option status use the &V command.
- If parameter is omitted, the command has the same behavior as AT\R0.

Fixed DTE Interface Rate +IPR

Set command specifies the DTE speed at which the device accepts commands during command mode operations; it may be used to fix the DTE-DCE interface speed.

Read command returns the current value of +IPR parameter.

Test command returns the list of fixed-only <rate> values in the format:

+IPR: (list of fixed-only <rate> values)

Syntax

Command	Command type
AT+IPR=<rate>	Set
AT+IPR?	Read
AT+IPR=?	Test

Parameters and Values

<rate>

300

1200

2400

4800

9600

19200

38400

57600

115200

Default: 115200.

230400

460800

3200000

4000000

Notes

- DTE speed of USB port is always 0. USB DTE speed does not change.
- If <rate> is specified and not 0, DTE-DCE speed is fixed at that speed.
- Rate can be higher than 115200. Maximum value depends on specific product. Check this value with AT+IPR=?.
- Reference: V.25ter.

DTE – Modem Local Flow Control +IFC

Set command selects the serial port flow control behavior in both directions, from DTE to modem (<by_ta> option) and from modem to DTE (<by_te>).

Read command returns active flow control settings.

Test command returns all supported values of the parameters <by_te> and <by_ta>.

The supported flow control list is:

<by_te>	<by_ta>
0	0
0	2
2	2

Syntax

Command	Command type
AT+IFC=<by_te>,<by_ta>	Set
AT+IFC?	Read
AT+IFC=?	Text

Parameters and Values

This device supports the following values:

<by_te>	Flow control option for the data sent by DTE
0	No flow control.
2	C105 (RTS) Default: 2.
<by_ta>	Flow control option for the data sent by modem
0	No flow control.
2	C106 (CTS) Default: 2.

Notes

- Hardware flow control (AT+IFC=2,2) is not active in command mode.
- This command is equivalent to &K.
- If flow control behavior has been set with AT&Kn with a parameter that is not allowed by AT+IFC, the Read command AT+IFC will return: +IFC: 0,0.
- Software flow control (XON/XOFF) is not supported.
- Reference: V.25ter.

DTE – Modem Local Rate Reporting +ILRR

Set command controls whether or not the +ILRR: <rate> information text is transmitted from the modem (module) to the DTE.

Read command returns active parameter <n> setting.

Test command returns all supported values of the parameter <n>.

Syntax

Command	Command type
AT+ILRR=<n>	Set
AT+ILRR?	Read
AT+ILRR=?	Text

Parameters and Values

<n>	
0	Local port speed rate reporting disabled. Default: 0.
1	Local port speed rate reporting enabled.

Notes

- If enabled, this information is sent upon connection.
- Reference: V.25ter.

DTE – Modem Character Framing +ICF

Set command defines the asynchronous character framing used.

Read command returns current parameters.

Test command returns value ranges for parameters.

Syntax

Command	Command type
AT+ICF=[<format>[,<parity>]]	Set
AT+ICF?	Read
AT+ICF=?	Text

Parameters and Values

This device supports the following values:

<format>	Determines the number of bits in the data bits, the presence of a parity bit, and the number of stop bits in the start-stop frame.
3	8 Data, 1 Stop Default: 3.
<parity>	If present, this subparameter has no meaning.

Notes

- The EV3 supports only 8 Data, 1 Stop character framing.
- Reference: V.25ter.

Example

```
AT+ICF=3 - 8N1
```

```
AT+ICF=?
```

```
+ICF: (0-3),(0-2)
```

Call Control

Dial D

Execute command starts a call to the phone number given as parameter.

If “;” is present, a voice call to the given number is performed, regardless of the current value of the connection mode set by +FCLASS command.

Syntax

Command	Description
ATD<number>[;]	<number> Phone number to be dialed.
ATD><str>[;]	Issues a call to phone number which corresponding alphanumeric field is <str>; all available memories are searched for the correct entry. If “;” is present a voice call is performed. <str> - alphanumeric field corresponding to phone number; it must be enclosed in quotation marks. Parameter <str> is case sensitive. Note: Used character set is the one selected with +CSCS.

ATD<n>[;]	Issues a call to phone number in entry location <n> of the active phonebook memory storage. See +CPBS. If “;” is present a voice call is performed. <n> - active phonebook memory storage entry location; it should be in the range of locations available in the active phonebook memory storage.
ATDL	Issues a call to the last number dialed.
ATDS=<nr>[;]	Issues a call to the number stored in the module internal phonebook position number <nr>. If “;” is present a voice call is performed. <nr> - internal phonebook position to be called. See commands &N and &Z.

Example

To have a voice call to the 6th entry of active phonebook:

```
ATD>6 ;
```

OK

To call the entry with alphanumeric field “Name”:

```
ATD>"Name" ;
```

Return to on-line mode O

Execute command answers returns to on-line mode from command mode. If there is no active connection, it returns NO CARRIER.

Syntax

Command	Command type
ATO	Execute

Notes

- After issuing this command, if the device is in conversation, to send other commands to the device, you must use the escape sequence to return to command mode. See register S2 or tying low DTR pin if &D1 option is active.
- Reference: V.25ter.

Answer A

Execute command answers an incoming call if automatic answer is disabled.

Syntax

Command	Command type
ATA	Execute

Notes

- This command must be the last in the command line and must be followed immediately by a <CR> character.
- Reference: V.25ter.

Disconnect H

Execute command closes the current conversation (voice or data).

Syntax

Command	Command type
ATH	Execute

Notes

- This command can be issued only in command mode; when a data conversation is active the device is in on-line mode (commands are not sensed and characters are sent to the other party), hence escape sequence is required before issuing this command, otherwise if &D1 option is active, DTR pin has to be tied Low to return in command mode.
- Reference: V.25ter.

Compression Control

Data Compression Reporting +DR

Set command enables or disables the data compression reporting upon connection.

Read command returns current value of <n>.

Test command returns all supported values of the parameter <n>.

Syntax

Command	Command type
AT+DR=<n>	Set
AT+DR?	Read
AT+DR=?	Test

Parameters and Values

<n>

- 0** Data compression reporting disabled.
- 1** Data compression reporting enabled upon connection.
If enabled, the following intermediate result code is transmitted before the final result code: +DR: <compression> The only supported value for <compression> is "NONE".

Notes

- Reference: V.25ter

S Parameters

Basic commands that begin with the letter "S" are known as "S-Parameters". The number following the "S" indicates the "parameter number" being referenced. If the number is not recognized as a valid parameter number, an ERROR result code is issued.

If no value is given for the subparameter of an S-Parameter, an ERROR result code is issued and the stored value left unchanged.

Tips for Selecting and Setting S-Parameters

- `ATSn<CR>` selects `n` as current parameter number. If the value of `n` is in the range (0, 2, 3, 4, 5, 7, 10, 12, 25), this command establishes `Sn` as last selected parameter. Every value out of this range and less than 256 can be used but has no meaning and is maintained only for backward compatibility with landline modems.
- `AT=<value><CR>` or `ATS=<value><CR>` set the contents of the selected S-parameter. For Example

<code>ATS7=10<CR></code>	Establishes S7 as last selected parameter and sets the S7 contents to 10.
<code>AT=40<CR></code>	Sets the content of S7 to 40.
<code>ATS=15<CR></code>	Sets the content of S7 to 15.
<code>AT? <CR></code>	Returns the S7 current value.

Notes

- Reference: V.25ter and RC56D/RC336D.

Number of Rings to Auto Answer S0

Set command sets the number of rings required before device automatically answers an incoming call.

Read command returns the current value of S0 parameter.

Syntax

Command	Command type
<code>ATS0=[<n>]</code>	Set
<code>ATS0?</code>	Read

Parameters and Values

<n>	Number of rings.
0	Auto answer disabled. Default: 0.
1-255	Number of rings required before automatic answer.

Notes

- Does not apply to non-voice models when receiving an inbound voice call.
- Reference: V.25ter.

Ring Counter S1

S1 is incremented each time the device detects the ring signal of an incoming call. S1 is cleared as soon as no ring occurs.

Read command returns the value of this parameter.

Syntax

Command	Command type
<code>ATS1</code>	
<code>ATS1?</code>	Read

Notes

- The form `ATS1` has no effect.

Escape Character S2

Set command sets the ASCII character to be used as escape character.

Read command returns the current value of S2 parameter. The format of the numbers in output is always 3 digits, left-filled with 0s.

Syntax

Command	Command type
ATS2=[<char>]	Set
ATS2?	Read

Parameters and Values

<char>	Escape character (decimal ASCII).
0-255	Default: 43 (+).

Notes

- The escape sequence consists of three escape characters preceded and followed by n ms of idel (see S12 to set n).
- Reference: V.25ter

Command Line Termination Character S3

Set command sets the value of the character either recognized by the device as command line terminator or generated by the device as part of the header, trailer, and terminator for result codes and information text, along with S4 parameter.

Read command returns the current value of S3 parameter. The format of the numbers in output is always 3 digits, left-filled with 0s.

Syntax

Command	Command type
ATS3=[<char>]	Set
ATS3?	Read

Parameters and Values

<char>	Command line termination character (decimal ASCII).
0-127	Default: 13 (ASCII <CR>). Note: The “previous” value of S3 is used to determine the command line termination character for entering the command line containing the S3 setting command. However the result code issued uses the “new” value of S3, as set during the processing of the command line.

Notes

- Reference: V.25ter.

Response Formatting Character S4

Set command sets the value of the character generated by the device as part of the header, trailer, and terminator for result codes and information text, along with the S3 parameter.

Read command returns the current value of S4 parameter. The format of the numbers in output is always 3 digits, left-filled with 0s.

Syntax

Command	Command type
ATS4=[<char>]	Set
ATS4?	Read

Parameters and Values

<char>	Response formatting character (decimal ASCII).
0-127	Default: 10 (ASCII LF).

Notes

- If the value of S4 is changed in a command line the result code issued in response of that command line uses the new value of S4.
- Reference: V.25ter.

Command Line Editing Character S5

Set command sets the value of the character recognized by the device as a request to delete from the command line the immediately preceding character.

Read command returns the current value of S5 parameter. The format of the numbers in output is always 3 digits, left-filled with 0s.

Syntax

Command	Command type
ATS5=[<char>]	Set
ATS5?	Read

Parameters and Values

<char>	Command line editing character (decimal ASCII).
0-127	Default: 8. (ASCII BS).

Notes

- Reference: V.25ter.

Connection Completion Timeout S7

Set command sets the amount of time, in seconds, that the device allows between either answering a call (automatically or by A command) or completion of signaling of call addressing information to network (dialing), and establishment of a connection with the remote device.

Read command returns the current value of S7 parameter. The format of the numbers in output is always 3 digits, left-filled with 0s.

Syntax

Command	Command type
ATS7=[<tout>]	Set
ATS7?	Read

Parameters and Values

<tout>	Number of seconds.
1-255	Default: 60.

Notes

- Reference: V.25ter.

Escape Prompt Delay S12

Set command sets:

1. The minimum period, before the first of the three escape characters is received, during which no other character has to be detected in order to accept it as a valid first character;
2. The maximum period allowed between receipt of first or second character of the three escape character sequence and receipt of the next;
3. The minimum period, after receipt of the last character of the three escape character sequence, during which no other character has to be detected in order to accept the escape sequence as a valid one.

Read command returns the current value of S12 parameter. The format of the numbers in output is always 3 digits, left-filled with 0s.

Syntax

Command	Command type
ATS12=[<char>]	Set
ATS12?	Read

Parameters and Values

<time>	Expressed in fiftieth of a second.
20-255	Default: 50.

Notes

- The minimum period **S12** has to pass after **CONNECT** result code too, before a received character is accepted as valid first character of the three escape character sequence.
- Reference: V.25ter.

Delay to DTR Off S25

Set command defines the amount of time, in hundredths of second, that the device ignores the DTR for taking the action specified by command &D.

Read command returns the current value of S25 parameter. The format of the numbers in output is always 3 digits, left-filled with 0s.

Syntax

Command	Command type
ATS25=[<time>]	Set
ATS25?	Read

Parameters and Values

<time>	Expressed in hundredths of a second.
0-255	Default: 5. Note: The delay is effective only if its value is greater than 5.

Error Control

Error Control Selection +ES

Set command sets the manner of operation of the modem's V.42 protocol.

Read command reports the current V.42 error control setting value in the format:

+ES: <orig_req>,<orig_fallback>,<ans_fallback>

Test command returns all supported values of the <orig_req>, <orig_fallback>, <ans_fallback> parameters.

Syntax

Command	Command type
AT+ES[=<orig_req>,<orig_fallback>,<ans_fallback>]	Set
AT+ES?	Read
AT+ES=?	Test

Parameters and Values

<orig_req>	Specifies the initial request mode of operation when originating a call.
0	Direct mode.
1	Initiate call with buffer mode only.
2	Initiate V.42 without detection phase. If V.8 is in use, this is a request to disable V.42 detection phase.
3	Initiate V.42 with detection phase. Default: 3.
4	Initiate alternative protocol.
<orig_fallback>	Specifies the acceptable fallback mode of operation when originating a call.
0	Error control optional; if error control can not be established, use buffered mode with flow control. Default: 0.
1	Error control optional; if error control can not be established, change data rate to match line <carrier> rate and use direct mode.
2	Error control required; if error control cannot be established, disconnect.
3	Error control (LAPM) required; if LAPM cannot be established, disconnect.
4	Error control (alternate MNP) required; if MNP cannot be established, disconnect.
<ans_fallback>	Specifies the acceptable fallback mode of operation when answering a call.
0	Direct mode.
1	Error control disabled, use buffer mode.
2	Error control optional; if error control cannot be established, use buffer mode with flow control. Default: 2.

- | | |
|----------|---|
| 3 | Error control optional; if error control can not be established, change data rate to match line <carrier> rate and use direct mode. |
| 4 | Error control required; if error control cannot be established, disconnect. |
| 5 | Error control (LAPM) required; if LAPM cannot be established, disconnect. |
| 6 | Error control (alternate MNP) required; if MNP cannot be established, disconnect. |

Notes

- Execution command (AT+ES<CR>) return the OK result code.
- Reference: V.25ter.

3GPP TS 27.007 AT Commands

General

Request Manufacturer Identification +CGMI

Execute command returns the device manufacturer's identification code without command echo.

Test command returns OK result code.

Syntax

Command	Command type
AT+CGMI	Execute
AT+CGMI=?	Test

Notes

- Reference: 3GPP TS 27.007.

Request Model Identification +CGMM

Execute command returns the device manufacturer's model identification code without command echo.

Test command returns OK result code.

Syntax

Command	Command type
AT+CGMM	Execute
AT+CGMM=?	Test

Notes

- Reference: 3GPP TS 27.007.

Request Revision Identification +CGMR

Execute command returns radio firmware revision number without command echo. Note that some products have additional firmware.

Test command returns OK result code.

Syntax

Command	Command type
AT+CGMR	Execute
AT+CGMR=?	Test

Notes

- Reference: 3GPP TS 27.007.

Request Product Serial Number Identification +CGSN

Execute command returns the modem's mobile equipment identifier (MEID) without command echo.

Test command returns OK result code.

Syntax

Command	Command type
AT+CGSN	Execute
AT+CGSN=?	Test

Notes

- The MEID is an 18-digit number.
- Reference: 3GPP TS 27.007.

Select TE Character Set +CSCS

Set command sets the current character set used by the device.

Read command returns the current value of the active character set.

Test command returns the supported values for parameter <chset>.

Syntax

Command	Command type
AT+CSCS=[<chset>]	Set
AT+CSCS?	Read
AT+CSCS=?	Test

Parameters and Values

<chset>	Character set.
IRA	International reference alphabet (ITU-T T.50). Default: IRA.

Notes

- Reference: 3GPP TS 27.007.

International Mobile Subscriber Identity (IMSI) +CIMI

Execute command returns the value of the Internal Mobile Subscriber Identity (IMSI) stored in the device.

Test command returns OK result code.

Syntax

Command	Command type
AT+CIMI	Execute
AT+CIMI=?	Test

Notes

- Reference: 3GPP TS 27.007.

Multiplexing Mode +CMUX

Set command +CMUX enables or disables the 3GPP TS 07.010 multiplexing protocol control channel.

Set command +CMUX <fwd>,<rev> sets the number of forward and reverse data call links and indicates if default service is Rate Set 1 or 2.

Read command returns the current value of <fwd>, <rev>

+CMUX: <fwd>,<rev>.

Test command returns the range of supported values for <fwd> and <rev>.

Syntax

Command	Command type
AT+CMUX=<mode>	Set
AT+CMUX=<fwd>,<rev>	Set
AT+CMUX?	Read
AT+CMUX=?	Test

Parameters and Values

<mode>	Multiplexer transparency mechanism.
0	Basic option. Currently the only supported value.
<fwd>	The forward MUX option specified in hexadecimal format.
1~F	
<rev>	The forward MUX option specified in hexadecimal format.
1~2	

Notes

- Entering the multiplexed mode starts an inactive five second timer. If no CMUX control channel is established before this inactivity timer expires, the engine returns to AT Command mode.
- All the CMUX protocol parameters are fixed as defined in GSM07.10 and cannot be changed.
- Maximum frame size is fixed: N1=128.
- Channel 1 handles all functions (voice call, data call, SMS, and AT commands). Channel 2 handles all functions, except the data call. Channel 3 is only the DM for debugging. Channel 4 is only the NMEA for GPS.
- If <rev> is omitted, it is assumed to have the same value as <fwd>.
- Reference: 3GPP TS 27.007, 3GPP TS 27.010, CL93-V0327-1F.

Call Control

Hang Up Call +CHUP

Execute command cancels all active and held calls, as well as multi-party sessions, if running.

Test command returns the OK result code.

Syntax

Command	Command type
AT+CHUP	Execute
AT+CHUP=?	Test

Notes

- Reference: GSM 07.07.

Extended Error Report +CEER

Execute command returns one or more lines of information text <report> offering the TA user an extended error report, in the format:

+CEER: <report>

This report regards some error condition that may occur:

- The failure in the last unsuccessful call setup, originating or answering.
- The last call release.
- The last unsuccessful CDMA attach or unsuccessful PDP context activation.
- The last CDMA detach or PDP context deactivation.

Note: If none of the previous conditions has occurred since power up then “No cause information available” condition is reported.

Test command returns OK result code.

Syntax

Command	Command type
AT+CEER	Execute
AT+CEER=?	Test

Notes

- Reference: 3GPP TS 27.007, GSM 04.08.

Cellular Result Codes +CRC

Set command controls whether the extended format of incoming call indication is used.

Read command returns current value of the parameter <mode>.

Test command returns supported values of the parameter <mode>.

Syntax

Command	Command type
AT+CRC=[<mode>]	Set
AT+CRC?	Read
AT+CRC=?	Test

Parameters and Values

<mode>

- 0** Disables extended format reporting. **Default: 0.**
- 1** Enables extended format reporting:
When enabled, an incoming call is indicated to the TE with unsolicited result code +CRING: <type> instead of the normal RING.

where
<type> - call type:
VOICE - normal voice (TS 11)

Notes

- Reference: 3GPP TS 27.007.

Voice Hang Up Control +CVHU

Set command selects whether ATH or "drop DTR" causes a voice connection to be disconnected.

Read command reports the current value of the <mode> parameter, in the format:

+CVHU: <mode>

Test command reports the range of supported values for parameter <mode>.

Syntax

Command	Command type
AT+CVHU=[<mode>]	Set
AT+CVHU?	Read
AT+CVHU=?	Test

Parameters and Values

<mode>

- 0** Drop DTR ignored but OK result code given. ATH disconnects.
- 1** Drop DTR and ATH ignored but OK result code given. **C2 only Default: 1.**
- 2** Drop DTR behavior according to &D setting. ATH disconnects. **EV3 only Default: 2.**

Network Service Handling

Subscriber Number +CNUM

Execute command returns the MSISDN—if the phone number of the device is stored in the SIM card—in the format:

+CNUM: <alpha>,<number>,<type>[<CR><LF>

+CNUM: <alpha>,<number>,<type>[...]]

where:

<alpha>	Alphanumeric string associated to <number>; Character set used is the one selected with +CSCS.
<number>	String containing the phone number in the format <type>.
<type>	Type of number.
129	National numbering scheme.
145	International numbering scheme. Contains the character "+".

Test command returns the OK result code.

Syntax

Command	Command type
AT+CNUM	Execute
AT+CNUM=?	Test

Notes

- Reference: 3GPP TS 27.007.

Read Operator Names +COPN

Execute command returns the list of operator names from the ME in the format:

+COPN: <numeric1>,<alpha1>[<CR><LF>

+COPN: <numeric2>,<alpha2>[...]]

where:

<numeric <i>n</i> >	String type, operator in numeric format.
<alpha <i>n</i> >	String type, operator in long alphanumeric format.

Note: Each operator code <numeric*n*> that has an alphanumeric equivalent <alpha*n*> in the ME memory is returned.

Test command returns the OK result code.

Syntax

Command	Command type
AT+COPN	Execute
AT+COPN=?	Test

Notes

- CDMA operators are confidential and will not be listed. The module supports only the following result codes:
 - +COPN: HOME: If the ERI value is 1.
 - +COPN: ROAMING: if the ERI value is any other value.
- Reference: 3GPP TS 27.007.

Network Registration Report +CREG

Set command enables or disables network registration reports depending on the parameter <mode>.

Read command reports the <mode> and <stat> parameter values in the format:

+CREG: <mode>,<stat>[,<SID>]

where:

<stat>

0	Not registered, ME is not currently searching a new operator to register to.
1	Registered, home network.
2	Reserved.
3	Registration denied.
4	Reserved.
5	Registered, roaming.

Note: <SID> is reported only if <mode>=2 and the mobile is registered on some network cell.

Test command returns the range of supported <mode>.

Syntax

Command	Command type
AT+CREG=[<mode>]	Set
AT+CREG?	Read
AT+CREG=?	Test

Parameters and Values

<mode>

0	Disable network registration unsolicited result code. Default: 0.
1	Enable network registration unsolicited result code. If <mode>=1, unsolicited network registration result code reports: +CREG: <stat>
2	Enable network registration unsolicited result code with network cell identification data. If <mode>=2, unsolicited network registration result code reports: +CREG: <stat>[,<SID>] where: <SID> - system identification

Notes

- Reference: 3GPP TS 27.007.

Calling Line Identification Presentation +CLIP

Set command enables or disables the presentation of the CLI (Calling Line Identity) of the calling party when receiving a mobile terminated call.

Read command returns the presentation status of the CLI in the format:

+CLIP: <n>,<m>

where:

- <n>
 - 0 CLI presentation disabled.
 - 1 CLI presentation enabled.
- <m> Status of the CLIP service .
 - 0 CLIP not provisioned.
 - 1 CLIP provisioned.
 - 2 Unknown (for Example no network is present).

Note: For compatibility with UC864, the value of <m> is returned.

This command issues a status request to the network, so it may take a few seconds to give the answer due to the time needed to exchange data with it.

Test command returns the supported values for <n>.

Syntax

Command	Command type
AT+CLIP=[<n>]	Set
AT+CLIP?	Read
AT+CLIP=?	Test

Parameters and Values

- <n>
 - 0 Disables CLI indication. **Default: 0.**
 - 1 Enables CLI indication.
- If enabled the device reports after each RING the response:

+CLIP: <number>,<type>,"",128,<alpha>,<CLI_validity>

where:

- <number> - String type, phone number of format specified by <type>.
- <type> - type of address octet in integer format.
 - 128 - both the type of number and the numbering plan are unknown.
 - 129 - unknown type of number and ISDN/Telephony numbering plan.
 - 145 - international type of number and ISDN/Telephony numbering plan. Contains the character "+".
- <alpha> - String type, alphanumeric representation of <number> corresponding to the entry found in phonebook. Character set used is the one selected with command Select TE character set +CSCS.

<CLI_validity>

0 - CLI valid.

1 - CLI withheld by the originator.

2 - CLI is not available due to interworking problems or limitation or originating network.

Notes

- The command changes only the reported behavior of the device. It does not change CLI supplementary service setting on the network.
- Reference: 3GPP TS 27.007.

Call Waiting +CCWA

Set command sets the presentation of an unsolicited result code of the call waiting supplementary service.

Read command reports the current value of the parameter <n>.

Test command reports the supported values for the parameter <n>.

Syntax

Command	Command type
AT+CCWA=<n>	Set
AT+CCWA?	Read
AT+CCWA=?	Test

Parameters and Values

<n> Enables or disables the presentation of an unsolicited result code.

0 Disable. **Default: 0.**

1 Enable.

Note: The unsolicited result code enabled by parameter <n> is in the format:

+CCWA: <number>,<type>,"",1,<alpha>,<cli_validity>

<number> - Phone number of format specified by <type>.

<type> - Address in Integer format.

<alpha> - Alphanumeric representation of <number> corresponding to the entry found in phonebook; used character set should be the one selected with +CSCS/

<CLI_validity>

0 - CLI valid/

1 - CLI has been withheld by the originator/

2 - CLI is not available due to interworking problems or limitations of originating network/

Notes

- Reference: 3GPP TS 27.007.

Example

AT+CCWA=<n>

AT+CCWA=?

+CCWA: (0 , 1)

OK

Call Holding Services +CHLD

Execute command controls the network call hold service. This command is used to manage call hold and multiparty conversation (conference call). Calls can be put on hold, recovered, released or added to a conversation.

Test command returns the list of supported <n>s.

+CHLD: (2)

Syntax

Command	Command type
AT+CHLD=<n>	Execute
AT+CHLD=?	Test

Parameters and Values

<n>	
2	Places all active calls, if any exist, on hold and accepts the other (held or waiting) call. If no calls are active, only OK is sent.

Notes

- Only for VOICE calls.
- Reference: 3GPP TS 27.007.

List Current Calls +CLCC

Execute command returns the list of current calls and their characteristics in the format:

[+CLCC:<id1>,<dir>,<stat>,<mode>,<mpty>,<number>,<type>,<alpha>[<CR><LF>+CLCC:<id2>,<dir>,<stat>,<mode>,<mpty>,<number>,<type>,<alpha>[...]]]

where:

<idn>	Call identification number.
<dir>	Call direction.
0	Mobile originated call.
1	Mobile terminated call.
<stat>	State of the call.
0	Active.
1	Held.
2	Dialing (MO call).
3	Alerting (MO call).
4	Incoming (MT call).
5	Waiting (MT call).
<mode>	Call type.
0	Voice.
1	Data.
9	Unknown.
<mpty>	Multiparty call flag.
0	Call is not one of multiparty (conference) call parties.
1	Call is one of multiparty (conference) call parties.

<number>	String type, phone number in format specified by <type>.
<type>	Type of phone number octet in integer format.
129	National numbering scheme.
145	International numbering scheme. Contains the character "+".
<alpha>	String type; alphanumeric representation of <number> corresponding to the entry found in phonebook. Character set used is the one selected with +CSCS. Note: If no call is active then only OK message is sent. This command is useful in conjunction with command +CHLD to know the various call status for call holding.

Test command returns the OK result code.

Syntax

Command	Command type
AT+CLCC	Execute
AT+CLCC=?	Test

Notes

- Reference: 3GPP TS 27.007.

Mobile Equipment Control

Phone Activity Status +CPAS

Execute command reports the device status in the form:

+CPAS: <pas>

where:

<pas>	Phone activity status.
0	Ready. Device allows commands from TA/TE.
1	Unavailable. Device does not allow commands from TA/TE.
2	Unknown. Device is not guaranteed to respond to instructions.
3	Ringing. Device is ready for commands from TA/TE, but the ringer is active.
4	Call in progress. Device is ready for commands from TA/TE, but a call is in progress.

Test command reports the supported range of values for <pas>.

Syntax

Command	Command type
AT+CPAS	Execute
AT+CPAS=?	Test

Notes

- Although +CPAS is an Execute command, ETSI 07.07 requires the Test command to be defined.
- Reference: 3GPP TS 27.007.

Example

```

ATD03282131321;
OK
AT+CPAS
+CPAS: 4    A call is in progress.
OK
ATH
OK

```

Set Phone Functions +CFUN

Set command selects the level of function in the ME.

Read command reports the current setting of <fun>.

Test command returns the list of supported values for <fun> and <rst>.

Syntax

Command	Command type
AT+CFUN=[<fun>[,<rst>]]	Set
AT+CFUN?	Read
AT+CFUN=?	Test

Parameters and Values

<fun>	Power saving function mode.
0	Minimum functions, NON-CYCLIC SLEEP mode. In this mode, the AT interface is not accessible. Consequently, once you have set <fun> level 0, do not send further characters. Otherwise these characters remain in the input buffer and may delay the output of an unsolicited result code. The first wake-up event stops power saving and takes the ME back to a fully functioning level <fun>=1.
1	Mobile full functions with power saving disabled. Default: 1.
2	Disable TX.
4	Disable both TX and RX.
5	Mobile full functions with power saving enabled.
<rst>	Reset flag.
0	Do not reset the ME before setting it to <fun> function level.

Notes

- Issuing AT+CFUN=4[,0] causes the module to perform either a network deregistration or a SIM deactivation.
- If power saving enabled, it reduces the power consumption during the idle time, thus allowing a longer standby time with a given battery capacity.
- To place the module in power saving mode, set the <fun> parameter at value = 5 and the line DTR (RS232) must be set to OFF. Once in power saving, the CTS line switch to the OFF status to signal that the module is really in power saving condition.
- During the power saving condition, before sending any AT command on the serial line, the DTR must be set to ON (0V) to exit from power saving and it must be waited for the CTS (RS232) line to go in ON status.

- Until the DTR line is ON, the module does not return back in the power saving condition.
- The power saving function does not affect the network behavior of the module, even during the power save condition the module remains registered on the network and reachable for incoming calls or SMS. If a call incomes during the power save, then the module wake ups and proceeds normally with the unsolicited incoming call code.
- Reference: 3GPP TS 27.007.

Signal Quality +CSQ

Execute command reports received signal quality indicators.

Test command returns the supported range of values of the parameters <rsi> and <ber>. Although +CSQ is an Execute command without parameters, ETSI 07.07 requires the Test command to be defined.

Syntax

Command	Command type
AT+CSQ	Execute
AT+CSQ=?	Test

Execute command reports received signal quality indicators in the form:

+CSQ: <rsi>,<ber>

Where:

<rsi>	Received signal strength indication.
0	(-113) dBm or less.
1	(-111) dBm.
2-30	(-109)dBm-(-53)dBm / 2 dBm per step.
31	(-51)dBm or greater.
99	Not known or not detectable.
<ber>	Bit error rate (in percent).
0	Less than 0.2%.
1	0.2% to 0.4%.
2	0.4% to 0.8%.
3	0.8% to 1.6%.
4	1.6% to 3.2%.
5	3.2% to 6.4%.
6	6.4% to 12.8%.
7	More than 12.8%.
99	Not known or not detectable.

Notes

- Reference: 3GPP TS 27.007.

Select Phonebook Memory Storage +CPBS

Set command selects phonebook memory storage <storage> that is used by other phonebook commands.

Read command returns the actual values of the parameter <storage>, the number of occupied records <used> and the maximum index number <total>, in the format:

+CPBS: <storage>,<used>,<total>

Test command returns the supported range of values for the parameters <storage>.

Syntax

Command	Command type
AT+CPBS=<storage>	Set
AT+CPBS?	Read
AT+CPBS=?	Test

Parameters and Values

This device supports the following values:

<storage>

"MC"	Device missed (unanswered received) calls list. +CPBF is not applicable for storage.
"RC"	ME received calls list. +CPBF is not applicable for this storage.
"DC"	ME last-dialing-phonebook. +CPBF is not applicable for this storage.
"ME"	ME phonebook. +CPBF is not applicable for this storage.

Notes

- For <storage>="MC": if there is more than one missed call from the same number the Read command returns only the last call.
- For <storage>="ME": an initial value of <used> is 1 because the module's own phone number always occupies index 1 of records.
- Reference: 3GPP TS 27.007.

Read Phonebook Entries +CPBR

Execute command returns phonebook entries in location number range <index1>..<index2> from the current phonebook memory storage selected with +CPBS. If <index2> is omitted, only location <index1> is returned.

Test command returns the supported range of values for <indexn> and the maximum lengths of <number> and <text> fields, in the format:

+CPBR: (<minIndex> - <maxIndex>),<nlength>,<tlength>

where:

<minIndex>	Minimum <index> number, integer type.
<maxIndex>	Maximum <index> number, integer type.
<nlength>	Maximum <number> field length, integer type.
<tlength>	Maximum <name> field length, integer type.

Syntax

Command	Command type
AT+CPBR=<index1>[,<index2>]	Execute
AT+CPBR=?	Test

Parameters and Values

<index1> Integer type, value in the range of location numbers of the currently selected phonebook memory storage. See +CPBS.

<index2> Integer type, value in the range of location numbers of the currently selected phonebook memory storage. See +CPBS.

If the storage is ME, the response format is:

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

If the storage is "DC" and "RC" then the response format is:

```
[+CPBR: <index1>,<number>,<type>,<text>,<time>,<duration>[<CR><LF>
+CPBR: <index2>,<number>,<type>,<text>,<time>,<duration>[...]]]
```

If the storage is "MC" then the response format is:

```
[+CPBR: <index1>,<number>,<type>,<text>,<time>[<CR><LF>
+CPBR: <index2>,<number>,<type>,<text>,<time>[...]]]
```

where:

<index*n*> - Location number of the phonebook entry.

<number> - String type, phone number of format <type>.

<type> - Type of phone number octet in integer format .

129 - National numbering scheme.

145 - International numbering scheme. Contains the character "+".

<text> - The alphanumeric text associated to the number. Used character set is the one selected with command +CSCS.

<e_text> - Email alphanumeric text; used character set should be the one selected with command +CSCS.

<time> - Date and time in clock seconds.

<duration> - Duration of the call.

Note:

If MC is the currently selected phonebook memory storage, a sequence of missed calls coming from the same number are saved as one missed call. +CPBR shows one line of information.

If all queried locations are empty (but available), no information text lines returned, while if listing fails in an ME error, +CME ERROR: <err> is returned.

Notes

- Before issuing PB commands, select the PB storage with +CPBS command.
- Reference: 3GPP TS 27.007.

Find Phonebook Entries +CPBF

Execute command returns phonebook entries (from the current phonebook memory storage selected with +CPBS) which alphanumeric field start with string <findtext>.

Test command reports the maximum lengths of <number> and <text> fields, in the format:

+CPBF: [<nlength>],[<tlength>]

where:

- <nlength> Maximum length of field <number>, integer type.
- <tlength> Maximum length of field <text>, integer type.

Syntax

Command	Command type
AT+CPBF=<findtext>	Execute
AT+CPBF=?	Test

Parameters and Values

- <findtext> String type. The command +CSCS selects the character set used.
The command returns a report in the form:
[+CPBF: <index1>,<number>,<type>,<text>[<CR><LF>
+CPBF: <index2>,<number>,<type>,<text>[...]]]

where:
<indexn> - the location number of the phonebook entry.
<number> - String type, phone number of format <type>.
<type> - type of phone number octet in integer format.
129 - National numbering scheme.
145 - International numbering scheme. Contains the character "+".
<text> - the alphanumeric text associated to the number; used character set is the one selected with command +CSCS.

Note:
+CPBF is not applicable if the current selected storage (see +CPBS) is either "MC", either "RC" or "DC".

If <findtext>="" the command returns all the phonebook records.

If no PB records satisfy the search criteria, an ERROR message is reported.

Notes

- Remember to select the PB storage with +CPBS command before issuing PB commands.
- Reference: 3GPP TS 27.007.

Example

AT+CPBS=?
+CPBS: ("ME" , "DC" , "MC" , "RC")
OK

Write Phonebook Entry +CPBW

Execute command writes phonebook entry in location number <index> in the current phonebook memory storage selected with +CPBS.

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

+CPBW: (list of supported <index>s),<nlength>,(list of supported <type>s),<tlength>

where:

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

<tlength> - integer type value indicating the maximum length of field <text>.

Syntax

Command	Command type
AT+CPBW=[<index>],[<number> [,<type>,<text>]]]	Execute
AT+CPBW=?	Test

Parameters and Values

<index>	Integer type, value in the range of location numbers of the currently selected phonebook memory storage. See +CPBS.
<number>	String type, phone number in the format <type>.
<type>	Type of number.
129	National numbering scheme.
145	International numbering scheme. Contains the character "+".
<text>	String type, the text associated to the number. The used character set is the one selected with command +CSCS.

If record number <index> already exists, it is overwritten.

If either <number>, <type> and <text> are omitted, the phonebook entry in location <index> is deleted.

If <index> is omitted or <index>=0, the number <number> is stored in the first free phonebook location. (example at+cpbw=0,"+390404192701",129,"Text" and at+cpbw=","+390404192701",129,"Text").

If either "LD", "MC" or "RC" memory storage is selected (see +CPBS) it is possible just to delete the phonebook entry in location <index>, therefore parameters <number>, <type> and <text> must be omitted.

Notes

- Before issuing PB commands, select the PB storage with +CPBS command.
- Reference: 3GPP TS 27.007.

Clock Management +CCLK

Set command sets the real-time clock of the ME.

Read command returns the current setting of the real-time clock, in the format <time>.

Test command returns the OK result code.

Syntax

Command	Command type
AT+CCLK=<time>	Set
AT+CCLK?	Read
AT+CCLK=?	Test

Parameters and Values

<time>	Current time as quoted string in the format: "yy/MM/dd,hh:mm:ss±zz".
Yy	Year (two last digits are mandatory). Range is 00-99.
MM	Month (two last digits are mandatory). Range is 01-12.
Dd	Day. Two last digits are mandatory. The range for dd(day) depends on the month and year it refers to. Available ranges are: (01-28) (01-29) (01-30) (01-31) Trying to enter an out of range value raises an error.
Hh	Hour. Two last digits are mandatory. Range is 00-23.
mm	Minute. Two last digits are mandatory. Range is 00-59.
Ss	Seconds. Two last digits are mandatory. Range is 00-59.
±zz	Time zone. Indicates the difference, expressed in quarter of an hour, between the local time and GMT. Two last digits are mandatory. Range is -47 to +48.

Example

```
AT+CCLK="02/09/07,22:30:00+00"
```

```
OK
```

```
AT+CCLK?
```

```
+CCLK: 02/09/07,22:30:25
```

```
OK
```

Alarm Management +CALA

Set command stores in the internal Real Time Clock an alarm time with respective settings. It is possible to set up a recurrent alarm for one or more days in the week.

Currently just one alarm can be set.

When the RTC time reaches the alarm time then the alarm starts, the behavior of the module depends upon the setting <type> and if the device was already ON at the moment when the alarm time had come.

Read command returns the list of current active alarm settings in the ME, in the format:

[+CALA: <time>,<n>,<type>,<text>,<recurr>,<silent>]

Test command returns the list of supported index values (currently just 0), alarm types, maximum length of the text to be displayed, maximum length of <recurr> and supported <silent>s, in the format:

+CALA: (list of supported <n>s),(list of supported <type>s),<tlength>,
<length>,(list of supported <silent>s)

Syntax

Command	Command type
AT+CALA=<time>[,<n>[,<type>[,<text>[,<recurr>[,<silent>]]]]]	Set
AT+CALA?	Read
AT+CALA=?	Test

Parameters and Values

<time>	Current alarm time as quoted string.
""	Empty string. Deletes the current alarm and resets all the +CALA parameters to the default configuration.
"hh:mm:ss±zz"	Format used only when issuing +CALA with parameter <recurr>.
"yy/MM/dd,hh:mm:ss±zz"	Generic format: it's the same as defined for +CCLK.
<n>	Index of the alarm.
0	The only value supported is 0.
<type>	Alarm behavior type.
0	Reserved for other equipment use.
1	The module simply wakes up fully operative as if the ON/OFF button had been pressed. If the device is already ON at the alarm time, then it does nothing. Default: 1.
2	The module wakes up in "alarm mode" if at the alarm time it was off, otherwise it remains fully operative. In both cases the module issues an unsolicited code every 3 seconds.
	+CALA: <text>
	where <text> is the +CALA optional parameter previously set.
	The device keeps on sending the unsolicited code every 3 seconds until a #WAKE or #SHDN command is received or a 90 seconds timer expires.
	If the device is in alarm mode and does not receive the #WAKE command within 90 seconds, it shuts down.

3	The module wakes up in "alarm mode" if at the alarm time it was off, otherwise it remains fully operative. In both cases the module starts playing the alarm tone on the selected path for the ringer. See #SRP. The device keeps playing the alarm tone until a #WAKE or #SHDN command is received or a 90 second timeout occurs. If the device is in alarm mode and does not receive the #WAKE command within 90 seconds, it shuts down.
4	The module wakes up in "alarm mode" if at the alarm time it was off, otherwise it remains fully operative. In both cases the module brings the pin GPIO6 high, provided its <direction> is set to alarm output, and keeps it in this state until a #WAKE or #SHDN command is received or a 90 seconds timer expires. If the device is in alarm mode and does not receive the #WAKE command within 90 seconds, it shuts down.
5	The module makes both the actions as for type=2 and <type>=3.
6	The module makes both the actions as for type=2 and <type>=4.
7	The module makes both the actions as for type=3 and <type>=4.
8	The module wakes up in "alarm mode" if at the alarm time it was off, otherwise it remains fully operative. In both cases the module sets High the RI output pin. The RI output pin remains High until next #WAKE issue or until a 90 second timer expires. If the device is in alarm mode and does not receive the #WAKE command within 90 seconds, it shuts down.
<text>	Unsolicited alarm code text string. It has meaning only if <type> is equal to 2, 5 or 6.
<recur>	String type, value indicating day of week for the alarm in one of the following formats:
"<1..7>[,<1..7>[, ...]]"	Sets a recurrent alarm for one or more days in the week; the digits 1 to 7 corresponds to the days in the week. Monday is 1.
"0"	Sets a recurrent alarm for all days in the week.
<silent>	Integer type indicating if the alarm is silent or not.
0	The alarm is not silent.
1	The alarm is silent.
	During the "alarm mode" the device does not make any network scan and does not register to any network and therefore is not able to dial or receive any call or SMS, the only commands that can be issued to the module in this state are the #WAKE and #SHDN, every other command must not be issued during this state. Note: You must set the RTC (issuing +CCLK) at least once before you can issue +CALA with <type>=8.

Notes

- Reference: ETSI 07.07, ETSI 27.007.

Example

```
AT+CALA="02/09/07,23:30:00+00"
```

```
OK
```

```
AT+CALA="12/09/07,10:38:00+02",0,2,GO GET SOME COFFEE,"",0
```

```
AT+CALA?
```

```
+CALA: "12/09/07,10:38:00",0,2,"GOGETSOMECOFFEE","",0
```

```
OK
```

Delete Alarm +CALD

Execute command deletes an alarm in the ME.

Test command reports the range of supported values for <n> parameter.

Syntax

Command	Command type
AT+CALD=<n>	Execute
AT+CALD=?	Test

Parameters and Values

<n>

0

Notes

- Reference: 3G TS 27.007.

Alert Sound Mode +CALM

Set command selects the general alert sound mode of the device.

Read command returns the current value of parameter <mode>.

Test command returns the supported values for the parameter <mode> as compound value.

+CALM: (0-2)

Syntax

Command	Command type
AT+CALM=<mode>	Set
AT+CALM?	Read
AT+CALM=?	Test

Parameters and Values

<mode>

0

Normal mode. **Default: 0.**

1

Silent mode. No sound is generated by the device, except for alarm sound.

2

Stealth mode. No sound is generated by the device.

Note: If silent mode is selected, incoming calls do not produce alerting sounds but only the unsolicited messages RING or +CRING.

Notes

- Reference: 3GPP TS 27.007.

Ringer Sound Level +CRSL

Set command selects the incoming call ringer sound level of the device.

Read command reports the current <level> setting of the call ringer in the format:

+CRSL: <level>

Test command reports <level> supported values as compound value.

+CRSL: (0-4)

Syntax

Command	Command type
AT+CRSL=<level>	Set
AT+CRSL?	Read
AT+CRSL=?	Test

Parameters and Values

<level>	Ringer sound level.
0	Off.
1	Low.
2	Middle.
3	High. Default: 3.
4	Progressive.

Notes

- Reference: 3GPP TS 27.007.

Microphone Mute Control +CMUT

Set command enables or disables the muting of the microphone audio line during a voice call.

Read command reports whether the muting of the microphone audio line during a voice call is enabled or not, in the format:

+CMUT: <n>

Test command reports the supported values for <n> parameter.

Syntax

Command	Command type
AT+CMUT=<n>	Set
AT+CMUT?	Read
AT+CMUT=?	Test

Parameters and Values

<n>	
0	Mute off, microphone active. Default: 0.
1	Mute on, microphone muted.
	Note: This command mutes or activates both internal and external microphone audio lines.

Notes

- Reference: 3GPP TS 27.007.

Available AT Commands +CLAC

Execute command causes the mobile equipment to return the AT commands available to the user, in the following format:

```
<AT cmd1>[<CR><LF><AT cmd2>[...]]
```

where:

<AT cmdn> - defines the AT command including the prefix AT

Test command returns the OK result code

Syntax

Command	Command type
AT+CLAC	Execute
AT+CLAC=?	Test

Notes

- Reference: 3GPP TS 27.007.

Mobile Equipment Errors

Report Mobile Equipment Error +CMEE

Set command enables or disables the report of result code:

```
+CME ERROR: <err>
```

as an indication of an error relating to the +Cxxx commands issued.

When enabled, device related errors cause the +CME ERROR: <err> final result code instead of the default ERROR final result code. ERROR is always returned when the error message is related to syntax, invalid parameters, or DTE function.

Read command returns the current value of subparameter <n>:

```
+CMEE: <n>
```

Test command returns the range of values for subparameter <n>.

Syntax

Command	Command type
AT+CMEE=[<n>]	Set
AT+CMEE?	Read
AT+CMEE=?	Test

Parameters and Values

<n>	Enable flag.
0	Disable +CME ERROR:<err> reports, use only ERROR report. Default: 0.
1	Enable +CME ERROR:<err> reports, with <err> in numeric format.
2	Enable +CME ERROR: <err> reports, with <err> in verbose format.

Notes

- +CMEE has no effect on the final result code +CMS.
- Reference: 3GPP TS 27.007.

Voice Control

DTMF Tones Transmission +VTS

Execute command allows users to send DTMF tone sequences.

Test command provides the list of supported <dtmf>s and the list of supported <duration>s in the format:

(list of supported <dtmf>s)[,(list of supported <duration>s)]

Syntax

Command	Command type
AT+VTS=<dtmfstring>[,duration]	Execute
AT+VTS=?	Test

Parameters and Values

<dtmfstring>	String of DTMF tones, which are ASCII characters in the set (0-9), #, * the string can be 32 characters long. Tone duration is defined through the +VTD command.
<duration>	Note: Input <dtmf string> without the double quotation mark (""). Duration of a tone in 1/100 sec. This parameter can be specified if only one ASCII character is used in the dtmfstring.
0...5	A single DTMF tone is transmitted for a duration depending on the network, no matter what the current +VTD setting is.

Notes

- This command operates in voice mode only. See +FCLASS.
- Reference: 3GPP TS 27.007 and TIA IS-101.

Tone Duration +VTD

Set command sets the length of tones transmitted with +VTS command.

Read command reports the current Tone Duration, in the format:

<duration>

Test command provides the list of supported <duration>s in the format:

(list of supported <duration>s)

Syntax

Command	Command type
AT+VTD=<duration>	Set
AT+VTD?	Read
AT+VTD=?	Test

Parameters and Values

<duration>	Duration of a tone.
0	95ms
1	150ms
2	200ms
3	250ms
4	300ms
5	350ms

Notes

- Reference: 3GPP TS 27.007 and TIA IS-101.

3GPP TS 27.005 AT Commands for SMS and CBS

General Configuration

Select Message Service +CSMS

Set command selects messaging service <service>. It returns the types of messages supported by the ME:

+CSMS: <mt>,<mo>,<bm>

Read command reports current service setting along with supported message types in the format:

+CSMS: <service>,<mt>,<mo>,<bm>

where:

- <service> Messaging service.
- <mt> Mobile terminated messages support.
- <mo> Mobile originated messages support.
- <bm> Broadcast type messages support.

For more information about these values, see the Values section for the set command.

where:

- <mt> Mobile terminated messages support.
 - 0 Type not supported.
 - 1 Type supported.
- <mo> Mobile originated messages support.
 - 0 Type not supported.
 - 1 Type supported.
- <bm> Broadcast type messages support.
 - 0 Type not supported. **Default: 0.**
 - 1 Type supported.

Test command reports the supported value of the parameter <service>.

Syntax

Command	Command type
AT+CSMS=<service>	Set
AT+CSMS?	Read
AT+CSMS=?	Test

Parameters and Values

- <service>
 - 2 The syntax of SMS AT Commands is compatible partially with 3GPP TS 27.005 Phase 3 version 4.7.0 (reflected partially IS-637A, B in CDMA network). **Default: 2.**

Notes

- Cell Broadcast Service (CBS) is controlled by <bm>. This feature depends on carrier support. The FCC allows carriers to send emergency alerts to users if the feature is enabled on the user's device. CBS support is one-way, sent from the network to the device. Devices are not able to send messages to other devices.
- Reference: 3GPP TS 27.005, 3GPP TS 23.040, and 3GPP TS 23.041.

Example

AT+CSMS=?

+CSMS: (2)

OK

AT+CSMS=2

+CSMS: 1, 1, 0

OK

AT+CSMS?

+CSMS: 2, 1, 1, 0

OK

Preferred Message Storage +CPMS

Set command selects memory storages <memr> and <memw> to be used for reading, writing, sending and storing SMS messages. The command returns memory storage in the format:

+CPMS: <usedr>,<totalr>,<usedw>,<totalw>

where:

<usedr>	Number of SMS stored in <memr>
<totalr>	Number of SMS that <memr> can contain.
<usedw>	Number of SMS stored in <memw>
<totalw>	Number of SMS that <memw> can contain.

Read command reports the message storage status in the format:

+CPMS: <memr>,<usedr>,<totalr>,<memw>,<usedw>,<totalw>

where <memr> and <memw> are the selected storage memories for reading, writing and storing respectively.

Test command reports the supported values for <memr> and <memw>.

Syntax

Command	Command type
AT+CPMS=<memr>[,<memw>[,<mems>]]	Set
AT+CPMS?	Read
AT+CPMS=?	Test

Parameters and Values

<memr>	Memory from which messages are read and deleted.
"ME"	SMS memory storage.
<memw>	Memory to which writing and sending operations are made.
"ME"	SMS memory storage.

Notes

- Reference: GSM 27.005

Example

AT+CPMS=?

+CPMS: ("ME") , ("ME")

OK

at+cpms?

+CPMS: "ME" , 5 , 99 , "ME" , 5 , 99

OK

AT+CPMS="ME" , "ME"

+CPMS: 5 , 99 , 5 , 99

Message Format +CMGF

Set command selects the format of messages used with send, list, read and write commands.

Read command reports the current value of the parameter <mode>.

Test command reports the supported value of <mode> parameter.

Syntax

Command	Command type
AT+CMGF=[<mode>]	Set
AT+CMGF?	Read
AT+CMGF=?	Test

Parameters and Values

<mode>	
0	PDU mode, as defined in GSM 3.40 and GSM 3.41. Default: 0.
1	Text mode.

Notes

- Reference: GSM 27.005

Example

AT+CMGF=1

OK

Message Configuration

Set Text Mode Parameters +CSMP

Set command selects values for additional parameters for storing and sending SMS when text mode is used (AT+CMGF=1).

Read command reports the current setting in the format:

+CSMP: <callback_addr>,<tele_id>,<priority>,<enc_type>

Test command returns the OK result code.

Syntax

Command	Command type
AT+CSMP=[<callback_addr> [,<tele_id> [,<priority> [,<enc_type>]]]]	Set
AT+CSMP?	Read
AT+CSMP=?	Test

Parameters and Values

<callback_addr>	Callback address. Maximum length depends on the carrier. For Sprint and Aeris, maximum length is 32 characters. For Verizon, maximum length is 20 characters. Note: Initially, this parameter is null. Some carriers discard SMS's without a callback number. Use the AT+CSMP command to setup a callback number.
<tele_id>	Teleservice ID.
4097	Page.
4098	SMS message (factory default).
<priority>	Priority. Priority is different with every carrier.
0	Normal. Default: 0.
1	Sprint/Aeris – Interactive. Verizon – High.
2	Sprint/Aeris – Urgent.
3	Sprint/Aeris – Emergency.
<enc_type>	Data coding scheme.
0	8-bit Octet. Aeris Default: 0.
2	7-bit ASCII. Verizon/Sprint Default: 0.
4	16-bit Unicode. Sprint does not support.

Notes

- Use +CSAS to store current settings.
- Reference: GSM 27.005, 3GPP TS 23.040, and 3GPP TS 23.038.

Example

```
AT+CSMP=?
OK
AT+CSMP?
+CSMP:  ,4098,0,0
OK
AT+CSMP="1234567890",4097,1,2
OK
AT+CSMP?
+CSMP: "1234567890",4097,1,2
OK
```

Show Text Mode Parameters +CSDH

Set command controls whether detailed header information is shown in text mode (AT+CMGF=1) result codes. Read command reports the current setting in the format:

```
+CSDH: <show>
```

Test command reports the supported range of values for parameter <show>.

Syntax

Command	Command type
AT+CSDH=<show>	Set
AT+CSDH?	Read
AT+CSDH=?	Test

Parameters and Values

<show>	
0	Do not show header values (<tooa>, <tele_id>, <priority>, <enc_type>, <length>) in +CMT, +CMGL, +CMGR result codes for SMS-DELIVERs and SMS-SUBMITs in text mode. Default: 0.
1	Show the values in result codes.

Notes

- Reference: GSM 27.005.

Example

```
AT+CSDH=1
OK
AT+CMGL="ALL"
+CMGL: 0,"STO SENT","0123456789","0123456789",,,4098,0,0,13
Test Message
+CMGL: 1,"STO UNSENT","123123","",,,4098,0,0,13
```

TEST MESSAGE

+CMGL: 2,"STO SENT","0123456789","0123456789",,,4098,0,0,10

TEST TEST

+CMGL: 3,"STO SENT","01196529157","01196529157",,,4098,0,0,19

TEST MESSAGE

+CMGL: 4,"REC UNREAD","",,"01196529157",20080819190757,,4098,0,0,19

TEST MESSAGE

OK

AT+CSDH?

+CSDH: 1

OK

AT+CSDH=0

OK

AT+CMGL="ALL"

+CMGL: 0,"STO SENT","0123456789","0123456789",

+CMGL: 1,"STO UNSENT","123123","",

+CMGL: 2,"STO SENT","0123456789","0123456789",

+CMGL: 3,"STO SENT","01196529157","01196529157",

+CMGL: 4,"REC READ","",,"01196529157",20080819190757

OK

Save Settings +CSAS

Execute command saves settings—made by the +CSMP commands—in local, non-volatile memory.

Test command returns the possible range of values for the parameter <profile>.

Syntax

Command	Command type
AT+CSAS[=<profile>]	Execute
AT+CSAS=?	Test

Parameters and Values

<profile>

0, 1

Settings saved to non-volatile memory. **Default: 0.**

Notes

- If parameter is omitted the settings are saved to profile 0 in non-volatile memory.
- Reference: GSM 27.005

Example

```
AT+CSAS=?  
+CSAS: ( 0 , 1 )  
OK  
AT+CSAS  
OK  
AT+CSAS=1  
OK  
AT+CSAS=0  
OK
```

Restore Settings +CRES

Execute command restores message service settings saved by +CSAS command from non-volatile memory.

Test command returns the possible range of values for the parameter <profile>.

Syntax

Command	Command type
AT+CRES[=<profile>]	Execute
AT+CRES=?	Test

Parameters and Values

<profile>

0, 1

Restores message service settings from non-volatile memory.

Notes

- If parameter is omitted the command restores message service settings from non-volatile memory.
- Reference: GSM 27.005.

Example

```
AT+CRES=?  
+CRES: ( 0 , 1 )  
OK  
AT+CRES=0  
OK  
AT+CRES=1  
OK
```

Message Receiving and Reading

New Message Indications +CNMI

Set command selects the device behavior on how receiving new messages from the network are indicated to the DTE.

Read command returns the current parameter settings for +CNMI command in the form:

+CNMI: <mode>

Test command reports the supported range of values for the +CNMI command parameters.

Syntax

Command	Command type
AT+CNMI=<mode>]	Set
AT+CNMI?	Read
AT+CNMI=?	Test

Parameters and Values

- <mode>** Unsolicited result codes buffering option.
- 0** No indication. **Default: 0.**
 - 1** Indicate as:
+CMTI: <memr>,<index>
<memr> - memory storage where the new message is stored "ME"
<index> - location on the memory where SMS is stored.
 - 2** Indicate as:
(PDU Mode)
+CMT: ,<length><CR><LF><pdu>
<length> - PDU length
<pdu> - PDU Message

(TEXT Mode)
+CMT:
<orig_num>,<callback>,<date>[,<tooa>,<tele_id>,<priority>,<enc_type>,<length>]<CR><LF><data>

<orig_num> - Origination number.
<callback> - Callback number.
<date> - Received date in form as "YYYYMMDDHHMMSS".
<tooa> - Type of <orig_num>.
<tele_id> - Teleservice ID.
4097 - page
4098 - SMS message
<priority> - Priority.
Note: Priority is different with every carrier.
For Sprint and Aeris.Net:
0 - Normal (factory default)
1 - Interactive
2 - Urgent
3 - Emergency

For Verizon:
0 - Normal (factory default)
1 - High
<enc_type> - Encoding type of message.
0 - 8-bit Octet
2 - 7-bit ASCII
4 - 16-bit Unicode
<length> - Length of message.
<data> - Message data.

Notes

- Some information appears depending on the last +CSDH setting.
- Regardless of <mode> a message is saved in SMS memory storage. When <mode> is 2, the message displays and saves to memory storage.
- Reference: GSM 27.005.
- DTR signal is ignored, hence the indication is sent even if the DTE is inactive (DTR signal is Low). In this case the unsolicited result code may be lost so if module remains active while DTE is not, at DTE startup is suggested to check whether new messages have reached the device meanwhile with command AT+CMGL=0 that lists the new messages received.

Example

```
AT+CNMI=?  
+CNMI: (0-2)  
OK  
AT+CNMI=1  
OK  
AT+CNMI?  
+CNMI: 1  
OK  
+CMTI: "ME",98  
AT+CNMI=2  
OK  
AT+CNMI?  
+CNMI: 2  
OK  
+CMT: "", "01191775982",20071221163655,,4098,,16,10  
TEST SMS
```

List Messages +CMGL

Execute command reports the list of all the messages with status value <stat> stored into <memr> message storage. <memr> is the message storage for read and delete SMs as last settings of command +CPMS.

The parameter type and the command output depend on the last settings of command +CMGF (message format to be used).

Test command returns a list of supported <stat>s.

Syntax

Command	Command type
AT+CMGL[=<stat>]	Execute
AT+CMGL=?	Test

Parameters and Values PDU Mode

PDU mode is used when the device is set to PDU mode by command AT+CMGF=0.

<stat>

- 0** New message.
- 1** Read message.
- 2** Stored message not yet sent.
- 3** Stored message already sent.
- 4** All messages.

If a received or storage message is present the message displays in the following format:

+CMGL: <index>,<stat>,"",<length><CR><LF><pdu>

where:

<index> - Message position in the memory storage list.

<stat> - Status of the message.

<length> - Length of the PDU in bytes.

<pdu> - Message in PDU format.

Parameters and Values Text Mode

Text mode is used when the device is set to PDU mode by command **AT+CMGF=1**.

<stat>

- "REC UNREAD"** New message.
- "REC READ"** Read message.
- "STO UNSENT"** Stored message not yet sent.
- "STO SENT"** Stored message already sent.
- "ALL"** All messages.

Each message to be listed is represented in the format (information in *italics* depends on the last +CSDH setting):

If there is a Received message, it displays in the following format:

+CMGL:

<index>,<stat>,<orig_num>,<callback>,<date>[,<tooa>,<tele_id>,<priority>,<enc_type>,<length>]<CR><LF> <data>

If a message written to storage present (See +CMGW), it displays in the following format:
+CMGL: <index>,<stat>,<da>,<callback>[,,<toda>,<tele_id>,<priority>,<enc_type>,<length>]
<CR><LF><data>

Where

<orig_num> - Origination number.
<da> - Destination address.
<callback> - Callback number.
<date> - Received date in form as "YYYYMMDDHHMMSS".
<tooa> - Type of <orig_num>.
<toda> - Type of <da>.
<tele_id> - Teleservice ID.
4097 - page.
4098 - SMS message.
<priority> - Priority. Priority is based on carrier.

For Sprint and Aeris.Net:

0 - Normal (factory default).
1 - Interactive.
2 - Urgent.
3 - Emergency.

For Verizon:

0 - Normal (factory default.)
1 - High.

<enc_type> - Encoding type of message.
0 - 8-bit Octet.
2 - 7-bit ASCII.
4 - 16-bit Unicode.
<length> - Length of message.
<data> - Message data.

Notes

- If a message is present when +CMGL="ALL" is used status will change status from **REC UNREAD** to **REC READ**.
- Reference GSM 27.005, 3GPP TS 23.040.

Example

<PDU Mode>

AT+CMGF=0

OK

AT+CSDH=0

OK

AT+CMGL=4

+CMGL: 0,1,"",31

06801642423127120905170837100200020e85B30E8418B661D68316CC3A00

```
+CMGL: 1,2,"",28
06801642423127068068226350541002000212DB979F3C39F2A0D3B9073E9BF961CF94
OK
AT+CSDH=1
OK
AT+CMGL=4
+CMGL: 0,1,"",31
06801642423127120905170837100200020e85B30E8418B661D68316CC3A00
+CMGL: 1,2,"",28
06801642423127068068226350541002000212DB979F3C39F2A0D3B9073E9BF961CF94
OK
```

<TEXT Mode>

```
AT+CSDH=0
OK
AT+CMGF=1
OK
AT+CMGL="ALL"
+CMGL: 0,"REC READ","6125551372","",20120905170837
This is a message.
+CMGL: 1,"STO UNSENT","6125551372","8622360545",
message in storage
OK
AT+CSDH=1
OK
AT+CMGL="ALL"
+CMGL: 0,"REC READ","6125551372","",20120905170837,129,4098,0,2,14
This is a message.
```

Read Message +CMGR

Execute command reports the message with location value <index> from <memr> message storage (<memr> is the message storage for read and delete SMs as last settings of command +CPMS).

Test command returns the OK result code.

Syntax

Command	Command type
AT+CMGR=<index>	Execute
AT+CMGR=?	Test

Parameters and Values

<index>	Message index. The output depends on the last settings of command +CMGF (message format to be used).
----------------------	---

PDU Mode

If a received message is present at the specified index or a message written to storage (See +CMGW) is present at the specified index, it displays in following format:

+CMGR: <stat>,"",<length><CR><LF><pdu>

where:

<stat>	Status of the message.
0	New message.
1	Read message.
2	Stored message not yet sent.
3	Stored message already sent.
<length>	Length of the PDU in bytes.
<pdu>	Message in PDU format.

Text Mode

Output format for received messages (the information in *italics* depends on the last +CSDH setting):

If a received message is present at the specific index, it displays in the following format:

+CMGR:
<stat>,<orig_num>,<callback>,<date>[,<tooa>,<tele_id>,<priority>,<enc_type>,<length>]<CR><LF><data>

If a message written to storage is present (See +CMGW) at the specific index, is displays in the following format:

+CMGR: <stat>,<da>,<callback>[,<toda>,<tele_id>,<priority>,<enc_type>,<length>]<CR><LF><data>

where:

<stat>	Status of the message.
"REC UNREAD"	New received message unread
"REC READ"	Received message read.
"STO UNSENT"	Message stored not yet sent.
"STO SENT"	Message stored already sent.
<da>	Destination address.
<orig_num>	Origination number.
<callback>	Callback number.
<date>	Received date in form as YYYYMMDDHHMMSS.
<tooa>	Type of <orig_num>.
<toda>	Type of <da>.
<tele_id>	Teleservice ID.
4097	Page.
4098	SMS message.

<priority>	Priority. Priority depends on carrier.
	For Spring and Aeris:
0	Normal. Default: 0.
1	Interactive.
2	Urgent.
3	Emergency.
	For Verizon:
0	Normal. Default: 0.
1	High.
<enc_type>	Encoding message type.
0	8-bit Octet.
2	7-bit ASCII.
4	16-bit Unicode.
<length>	Message length.
<date>	Message data.
<tda>	Type of da.

Notes

- Reference: GSM 27.005.

Example

<PDU Mode>

```

AT+CMGF=0
OK
AT+CSDH=0
OK
AT+CMGR=0
+CMGR: 1, "", 31
06801642423127120905170837100200020e85B30E8418B661D68316CC3A00
OK
AT+CMGR=1
+CMGR: 2, "", 28
06801642423127068068226350541002000212DB979F3C39F2A0D3B9073E9BF961CF94
OK
AT+CSDH=1
OK
AT+CMGR=0
+CMGR: 1, "", 31
06801642423127120905170837100200020e85B30E8418B661D68316CC3A00
OK
AT+CMGR=1

```

```
+CMGR: 2,"",28
06801642423127068068226350541002000212DB979F3C39F2A0D3B9073E9BF961CF94
OK
<Text Mode>
AT+CMGF=1
OK
AT+CSDH=1
OK
AT+CMGR=0
+CMGR: "REC READ","6124241372","",20120905170837,129,4098,0,2,18
message in storage
OK
AT+CMGR=1
+CMGR: "STO UNSENT","6124241372","8622360545",,129,4098,0,2,18
message in storage
OK
```

Message Sending And Writing

Send Message +CMGS

For both PDU mode and text mode, the execute command sends a message to the network.

Test command returns the OK result code.

Syntax

Command	Command type
AT+CMGS=<length>	Execute PDU mode
AT+CMGS=<da>[,<toda>]	Execute Text mode
AT+CMGS=?	Test

Parameters and Values PDU Mode

<length>	Length of the PDU to be sent in bytes, excluding the SMSC address octets.
7-164	After command line is terminated with <CR>, the device responds sending a four character sequence prompt: <CR><LF><greater_than><space> (IRA 13, 10, 62, 32) and waits for the specified number of bytes.

Notes PDU Mode

- Echoing given characters back from the TA is controlled by echo command E.
- The PDU is hexadecimal format (each octet of the PDU is given as two IRA character long hexadecimal number) and given in one line.
- To send the message issue Ctrl-Z char (0x1A hex).
- To exit without sending the message issue ESC char (0x1B hex).
- If message is successfully sent to the network, then the result is sent in the format:
+CMGS: <mr>

where

<mr> - message reference number; 3GPP TS 23.040 TP-Message-Reference in integer format.

- If message sending fails for some reason, an error code is reported.

Example PDU Mode

$$AT+CMGF=0$$

OK

$$AT+CMGS=35$$

```
>  
07801091346554F307801096224658F1100200001662626262626262626262626262626  
2626262
```

+CMGS: 4

OK

```
07          <addr_len: 7byte>
```

```
80         <type_addr: 128>
```

```
1091346554F3    <Destination address:01194356453>
```

```
07          <addr_len: 7byte>
```

```
80         <type_addr: 128>
```

```
1096224658F1      <callback address:01692264851>
```

```
1002      <Teleservice id: 4098(decimal)>
```

```
00          <priority: normal >
```

```
00          <encoding type: octet >
```

```
16          <data len: 22>
```

62

```
<user data: bbbbbbbbbbbbbbbbbbbbbbbbbbb>
```

Parameters and Values Text Mode

<da>	Destination address, string type represented in the currently selected character set. See +CSCS. ASCII characters in the set (0 9), #, *, (A D); Maximum length varies by carrier. For Sprint and Aeri: Maximum length is 32 characters. In case of Verizon: Maximum length is 20 characters.
<tda>	Type of destination address.
129	Number in national format.
145	Number in international format. Contains the "+".

Notes Text Mode

- The echo command E controls the echoing of entered characters back from the TA.
- To send the message issue Ctrl-Z char (0x1A hex).
- To exit without sending the message issue ESC char (0x1B hex).
- If message is successfully sent to the network, the result is sent in the format:
+CMGS: <mr>

where <mr> - Message reference number.
- If message sending fails for some reason, an error code is reported.
- User data limit is 160 characters.
- To discard SMS, press the ESC key. An OK response will be returned.

Example Text Mode

```
AT+CMGF=1
OK
AT+CMGS="9194547830"
> Test SMS
+CMGS: 1
OK
```

Notes

- To avoid malfunctions, wait for the +CMGS: <mr> or +CMS ERROR: <err> response before issuing further commands.
- Reference: GSM 27.005.

Write Message to Memory +CMGW

PDU Mode

Execute command writes in the <memw> memory storage a new message.

Text Mode

Execute command writes in the <memw> memory storage a new message.

Test command returns the OK result code.

Syntax

Command	Command type
(PDU Mode) AT+CMGW=<length>[,<stat>]	Execute PDU mode
(Text Mode) AT+CMGW[=<da>[,<tda>[,<stat>]]]	Execute Text mode
AT+CMGW=?	Test

Parameters and Values PDU Mode

<length>	Length in bytes of the PDU to be written.
7-164	
<stat>	Message status.
0	New message.
1	Read message.
2	Stored message not yet sent. Default: 2.
3	Stored message already sent.

Notes PDU Mode

- The device responds to the command with the prompt '>' and waits for the specified number of bytes.
- To write the message issue Ctrl-Z char (0x1A hex).
- To exit without writing the message issue ESC char (0x1B hex).
- If message is successfully written in memory, the result is sent in the format:
+CMGW: <index>

where:

<index> - message location index in the memory <memw>.

- If message storing fails for some reason, an error code is reported.

Example PDU Mode

$$AT+CMGF=0$$

OK

$$AT + CMGW = 35$$
 \succ [illegible]

+CMGW: 4

OK

```
07          <addr_len: 7byte>
```

```
80         <type_addr: 128>
```

```
1091346554F3    <Destination address:01194356453>
```

```
07          <addr_len: 7byte>
```

```
80          <type_addr: 128>  
1096224658F1    <callback_address:01692264851>  
1002            <Teleservice_id: 4098(decimal)>  
00              <priority: normal >  
00              <encoding_type: octet >  
16              <data_len: 22>  
62626262626262626262626262626262626262626262  
                <user_data: bbbbbbbbbbbbbbbbbbbbbb>
```

Parameters and Values Text Mode

<da>	Destination address, string type represented in the currently selected character set. See +CSCS. ASCII characters in the set (0 9), #, *, (A D); Maximum length varies by carrier. For Sprint and Aeris, maximum length is 32 characters. For Verizon, maximum length is 20 characters.
<toda>	Type of destination address.
129	Number in national format.
145	Number in international format. Contains the "+".
<stat>	Message status.
"REC UNREAD"	New received message unread. Default for DELIVER messages.
"REC READ"	Received message read.
"STO UNSENT"	Message stored not yet sent. Default for SUBMIT messages.
"STO SENT"	Message stored already sent.

After command line is terminated with <CR>, the device responds sending a four character sequence prompt:

```
<CR><LF><greater than><space> (IRA 13, 10, 62, 32)
```

Notes Text Mode

- The DCD signal is in ON state while text is entered.
- Echoing entered characters back from the TA is controlled by echo command E.
- To write the message issue Ctrl-Z char (0x1A hex).
- To exit without writing the message issue ESC char (0x1B hex).
- If message is successfully written in the memory, then the result is sent in the format:
+CMGW: <index>

where:

<index> - message location index in the memory <memw>.

- If message storing fails for some reason, an error code is reported.
- To discard SMS, press the ESC key. An OK response will be returned.

Example Text Mode

```
AT+CMGW=?  
OK  
AT+CMGF=1  
OK  
AT+CMGW  
> Test message  
> Ctrl+Z must be used to write message  
+CMGW: 1  
OK  
AT+CMGW="9194397977"  
> Test SMS  
+CMGW: 2  
OK  
AT+CMGW="9194397977",129  
> Test SMS  
+CMGW: 3  
OK
```

Notes

- Reference: GSM 27.005.
- To avoid malfunctions, wait for the +CMGW: <index> or +CMS ERROR: <err> response before issuing further commands.

Send Message from Storage +CMSS

Execute command sends to the network a message which is already stored in the <memw> storage (see +CPMS) at the location <index>.

Test command returns the OK result code.

Syntax

Command	Command type
AT+CMSS=<index>[,<da>[,<toda>]]	Execute
AT+CMSS=?	Test

Parameters and Values

<index>	In the message storage <memw>, the location value of the message to send.
<da>	Destination address, string type represented in the currently selected character set (see +CSCS); if given it is used instead of the one stored with the message.
<tda>	Type of destination address.
129	Number in national format.
145	Number in international format (contains the "+").
	If message is successfully sent to the network then the result is sent in the format: +CMSS: <mr> where: <mr> - message reference number.
	If message sending fails for some reason, an error code is reported: +CMS ERROR:<err>

Notes

- To store a message in the <memw> storage see command +CMGW.
- To avoid malfunctions is suggested to wait for the +CMSS: <mr> or +CMS ERROR: <err> response before issuing further commands.
- Reference: GSM 27.005.

Example Text Mode

```
AT+CMGF=1
OK
AT+CMGW="0165872928"
> test message...
+CMGW: 5
OK
AT+CMSS=5
+CMSS: 136
OK
```

Delete Message +CMGD

Execute command deletes messages from memory <memr>.

Test command shows the valid memory locations and optionally, <delflag> supported values.

+CMGD: (supported <index>s list)[,(supported <delflag>s list)]

Syntax

Command	Command type
AT+CMGD=<index>[,<delflag>]	Execute
AT+CMGD=?	Test

Parameters and Values

<index>	Message index in the selected storage <memr>.
<delflag>	Integer indicating multiple message deletion request.
0	If 0 or value omitted, delete message specified in <index>.
1	Delete all read messages from <memr> storage, leaving unread messages and stored mobile originated messages (whether sent or not) untouched.
2	Delete all read messages from <memr> storage and sent mobile originated messages, leaving unread messages and unsent mobile originated messages untouched.
3	Delete all read messages from <memr> storage, sent and unsent mobile originated messages, leaving unread messages untouched.
4	Delete all messages from <memr> storage.

Notes

- If <delflag> is present and not set to 0 then, if <index> is greater than 0, <index> is ignored and ME follows the rules for <delflag> shown above.
- If the location to be deleted is empty, an error message is report.
- Reference: GSM 27.005.

Example

AT+CMGD=?

+CMGD: (1,2,3,6,7,11,17,18,19,20,37,38,39,47),(0-4)

OK

AT+CMGD=11 Delete message index 11

OK

AT+CMGD=1,4 Delete all messages

OK

Custom AT Commands

General Configuration AT Commands

Manufacturer Identification #CGMI

Execute command returns the device manufacturer's identification code with command echo.

Test command returns the OK result code.

Syntax

Command	Command type
AT#CGMI	Execute
AT#CGMI=?	Test

Example

```
AT#CGMI
#CGMI: Telit
OK
```

Model Identification #CGMM

Execute command returns the device manufacturer's model identification code with command echo.

Test command returns the OK result code.

Syntax

Command	Command type
AT#CGMM	Execute
AT#CGMM=?	Test

Example

EV3

```
AT#CGMM
#CGMM: DE910-DUAL
OK
```

C2

```
AT#CGMM
#CGMM: CE910-DUAL
OK
```

Revision Identification #CGMR

Execute command returns the manufacturer's software revision number with command echo.

Test command returns the OK result code.

Syntax

Command	Command type
AT#CGMR	Execute
AT#CGMR=?	Test

Example

AT#CGMR

#CGMR: 15.00.021

OK

Product Serial Number Identification #CGSN

Execute command returns the mobile equipment identifier (MEID) in decimal with command echo.

Test command returns the OK result code.

Syntax

Command	Command type
AT#CGSN	Execute
AT#CGSN=?	Test

Notes

- For MEID, command returns 18 digits

Example

<MEID module>

AT#CGSN

#CGSN: 270113178513893871

OK

International Mobile Subscriber Identity (IMSI) #CIMI

Execute command returns the international mobile subscriber identity, identified as the IMSI number, with command echo.

Test command returns the OK result code.

Syntax

Command	Command type
AT#CIMI	Execute
AT#CIMI=?	Test

Example

AT#CIMI

#CIMI: 310001114445555

OK

Mobile Equipment Identifier #MEID

Read command returns current MEID.

Test command returns the OK result code.

Syntax

Command	Command type
AT#MEID?	Read
AT#MEID=?	Test

Note

- MEID is broken into two parts, high hex values separated by low hex values.

Example

AT#MEID?

#MEID: A10000,09D400EF

OK

Software Shut Down #SHDN

Execute command causes device to detach from the network and shut down. Before definitive shut down an OK response is returned.

Test command returns the OK result code.

Syntax

Command	Command type
AT#SHDN	Execute
AT#SHDN=?	Test

Notes

- After the execute command is issued, previous activity is terminated. The device does not respond to any further command.
- EV3 and C2 devices restart in 5-10 seconds.
- The maximum time to shutdown the device, completely is 25 seconds.

Extended Reset #Z

Set command loads both base section and extended section of the specified user profile stored with AT&W and selected with AT&P.

Test command tests for command existence.

Syntax

Command	Command type
AT#Z=<profile>	Set
AT#Z=?	Test

Parameters and Values

<profile>

- 0** User profile 0.
- 1** User profile 1.

Wake from Alarm Mode #WAKE

Execute command stops any present alarm activity. If the module is in alarm mode, it exits the alarm mode and enters the normal operating mode.

Read command returns the operating status of the device in the format:

#WAKE: <status>

where:

<status>

- 0** Normal operating mode.
- 1** Alarm mode or normal operating mode with some alarm activity.

Test command returns OK result code.

Syntax

Command	Command type
AT#WAKE=[<opmode>]	Execute
AT#WAKE?	Read
AT#WAKE=?	Test

Parameters and Values

<opmode>

- 0** Operating mode.
Normal operating mode. The module exits the alarm mode, enters the normal operating mode. Alarm activity—for example alarm tone playing—is stopped and an OK result code is returned.

Notes

- The alarm mode is indicated by status ON of hardware pin CTS and by status ON of pin DSR. The power saving status is indicated by a CTS - OFF and DSR - OFF status. The normal operating status is indicated by DSR - ON.
- During the alarm mode the device will not scan the network or register to any network. Therefore, the device cannot dial or receive any call or SM. The only commands that can be issued to the module in this state are #WAKE and #SHDN. Every other command must not be issued during this state.

Query Temperature Overflow #QTEMP

Read command queries the device internal temperature sensor for over temperature and reports in the format:

#QTEMP: <temp>

Test command reports supported value range for parameter <mode>.

Syntax

Command	Command type
AT#QTEMP?	Read
AT#QTEMP=?	Test

Parameters and Values

<temp>	The over temperature indicator.
0	The device temperature is in the working range.
1	The device temperature is out of the working range.

Notes

- Do not operate the device outside of its working temperature range, otherwise, the device may not function properly.

Temperature Monitor #TEMPMON

Set command sets the behavior of module internal temperature monitor.

Read command reports the current setting for #TEMPMON in the format:

#TEMPMON: <urcmode>,<action>[,<hyst_time>[,<GPIO>]]

Test command reports supported value range for parameter <mod>, <urdmode>, <action>, <hyst_time>, and <GPIO>.

Syntax

Command	Command type
AT#TEMPMON=<mod>[,<urcmode>[,<action>[,<hyst_time>[,<GPIO>]]]]	Set
AT#TEMPMON?	Read
AT#TEMPMON=?	Test

Parameters and Values

<mod>	
0	Sets the command parameters.
1	Triggers measurement of the module internal temperature and reports the result in the format: #TEMPMEAS: <level>,<value>
	where: <level> - Threshold level. -2 - Extreme temperature lower bound, -30°C. -1 - Operating temperature lower bound, -10°C.

- 0 - Normal temperature
- 1 - Operating temperature upper bound, +55°C.
- 2 - Extreme temperature upper bound, +80°C.

Notes:

Threshold levels are for the radio only.

Threshold temperatures are $\pm 2^{\circ}\text{C}$.

Refer to your User Guide or Developer Guide for operating temperature ranges for your device.

<value>

Actual temperature in Celsius degrees

The following parameters have meaning of <mod>=0.

<urcmode>

URC presentation mode.

- 0** Disables temperature monitor URC presentation.
- 1** Enables temperature monitor URC presentation, when the module internal temperature reaches either operating or extreme temperatures.
For extreme levels, the URC and action be applied as:
Hysteresis time, URC message, 5 sec delay, action.

The unsolicited message is in the format:

#TEMPMEAS: <level>,<value>

Where <level> and <value> are as before.

<action>

Sum of integers, each representing the action to be done when the module internal temperature reaches either operating or extreme levels (default is 1). If <action> is not zero, it is mandatory to set the <hyst_time> parameter too.

- 0** 00 - No action. **C2 Default: 0**
- 1** 01- Automatic shut-down when the temperature is beyond the extreme bounds. **EV3 Default: 1.**
- 2** 10 - RF TX circuits automatically disabled (using +CFUN=2) when operating temperature bounds are reached. When the temperature is back to normal, the module is brought back to the previous state, before RF TX disabled (10).
- 4** 100 - The output pin <GPIO> is tied HIGH when operating temperature bounds are reached; when the temperature is back to normal the output pin <GPIO> is tied LOW. If this <action> is required, it is mandatory to set the <GPIO> parameter too.

<hyst>

Hysteresis time: all the actions happen only if the extreme or operating bounds are maintained at least for this period. This parameter is required if <action> is not zero.

Note: <action> can assume values from

- 0 - 255** Time in seconds. **Default: 45.**

<GPIO>

GPIO number. Valid range is any output pin. This parameter is required only if <action>=4 is enabled.

Note: If <GPIO> is specified <action> shall assume values from 4-7.

Notes

- The last <action>, <hyst_time> and <GPIO> settings are global parameters saved in non-volatile memory.
- The automatic power off is deferred for emergency calls.

General Purpose Input/Output Pin Control #GPIO

Execute command sets the value of the general purpose output pin GPIO<pin> according to <dir> and <mode> parameter.

Not all configurations for the three parameters are valid.

Read command reports the read direction and value of all GPIO pins, in the format:

```
#GPIO: <dir>,<stat>[<CR><LF>#GPIO: <dir>,<stat>[...]]
```

where the sections that follow describe values for <dir> and <stat>.

Test command reports the supported range of values of the command parameters <pin>, <mode> and <dir>.

Syntax

Command	Command type
AT#GPIO=[<pin>,<mode>[,<dir>]]	Execute
AT#GPIO?	Read
AT#GPIO=?	Test

Parameters and Values

<pin>	GPIO pin number. Range is from 1 to a value that depends on the hardware. SocketModem supports GPIO0 to GPIO4. MTPCIE-x supports GPIO0 to GPIO3.
<mode>	<mode> - Meaning depends on <dir> setting:
0	No meaning if <dir>=0 - INPUT - Output pin cleared to 0 (Low) if <dir>=1 - OUTPUT. - No meaning if <dir>=2 - ALTERNATE FUNCTION .
1	No meaning if <dir>=0 - INPUT - Output pin set to 1 (High) if <dir>=1 - OUTPUT. - No meaning if <dir>=2 - ALTERNATE FUNCTION.
2	Reports the read value from the input pin if <dir>=0 - INPUT - Reports the read value from the input pin if <dir>=1 - OUTPUT. - Reports a no meaning value if <dir>=2 - ALTERNATE FUNCTION.
<dir>	GPIO pin direction: 0 - pin direction is INPUT. 1 - pin direction is OUTPUT. 2 - pin direction is ALTERNATE FUNCTION. See Notes section.

Notes

- When <mode>=2 (and <dir> is omitted) the command reports the direction and value of pin GPIO<pin> in the format:
#GPIO: <dir>,<stat>

where:

<dir>

Current direction setting for the GPIO<pin>.

<stat>

Logic value read from pin GPIO<pin> in the case the pin <dir> is set to input.

Logic value present in output of the pin GPIO<pin> in the case the pin <dir> is currently set to output.

No meaning value for the pin GPIO<pin> in the case the pin <dir> is set to alternate function or Tristate pull down.

- "ALTERNATE FUNCTION" value is valid only for following pins:
 - GPIO4 - Alternate function is "RF Transmission Control."
 - GPIO5 - Alternate function is "RF Transmission Monitor."
 - GPIO6 - Alternate function is "Alarm Output." (see +CALA)
- Direction value for GPIO1 is 2 and is used to enable the status LED.
- While using the pins in the alternate function, the GPIO read/write access to that pin is not accessible.

Example

```
AT#GPIO=3,0,1
```

```
OK
```

```
AT#GPIO=3,2
```

```
#GPIO: 1,0
```

```
OK
```

```
AT#GPIO=4,1,1
```

```
OK
```

```
AT#GPIO=5,0,0
```

```
OK
```

```
AT#GPIO=6,2
```

```
#GPIO: 0,1
```

```
OK
```

STAT_LED GPIO Setting #SLED

Set command sets the behavior of the STAT_LED GPIO

Read command returns the STAT_LED GPIO current setting, in the format:

```
#SLED: <mode>,<on_duration>,<off_duration>
```

Test command returns the range of available values for <mode>, <on_duration> and <off_duration>.

Syntax

Command	Command type
AT#SLED=<mode>[,<on_duration>[,<off_duration>]]	Set
AT#SLED?	Read
AT#SLED=?	Test

Parameters and Values

<mode>	Defines how the STAT_LED GPIO is handled.
0	GPIO tied low.
1	GPIO tied high.
2	GPIO and duration are handled by Module Software. Default: 2.
3	GPIO is turned on and off alternatively, with period defined by the sum <on_duration> + <off_duration>.
<on_duration>	Duration of period in which STAT_LED GPIO is tied high while <mode>=3.
1-100	In tenth of seconds. Default: 10.
<off_duration>	Duration of period in which STAT_LED GPIO is tied low while <mode>=3.
1-100	In tenth of seconds. Default: 10.

Notes

- Values are saved in non-volatile memory by command #SLEDsAV.
- At module boot the STAT_LED GPIO is always tied high and holds this value until the first non-volatile memory reading.
- To have STAT_LED operative, the first time enter AT#GPIO=1,0,2 setting the GPIO1 as alternate function.
- Set AT#GPIO=1,0,2 to enable LED on the EV3.
- When GPIO_1 is set to <dir> value of 2, the Module Software control the Stat_LED as followings:

Off	Device turned off.
Fast Blinking	Network search, not registered, or turning off.
Slow Blinking	Registered full service.
On	Active call.

Example

```

AT#SLED=?
#SLED: (0-3),(1-100),(1-100)
OK
AT#SLED?
#SLED: 2,10,10
OK
AT#SLED=0
OK
AT#SLED=1
OK
AT#SLED=2
OK
AT#SLED=3,50,50
OK
AT#SLED?
#SLED: 3,50,50
OK

```

```
AT#SLED=3,5,5
```

```
OK
```

```
AT#SLED?
```

```
#SLED: 3,5,5
```

```
OK
```

Save STAT_LED GPIO Setting #SLEDSAV

Execute command saves STAT_LED setting in non-volatile memory.

Test command returns OK result code.

Syntax

Command	Command type
AT#SLEDSAV	Execute
AT#SLED=?	Test

SMS Ring Indicator #E2SMSRI

Set command enables or disables the ring indicator (RI) pin response to an incoming SMS message. If enabled, a negative going pulse is generated on receipt of an incoming SMS message. The duration of this pulse is determined by the value of <n>.

Read command reports the duration in ms of the pulse generated on receipt of an incoming SM, in the format:

```
#E2SMSRI: <n>
```

Note: Value <n>=0 means that the RI pin response to an incoming SM is disabled.

Test command reports the range of supported values for parameter <n>.

Syntax

Command	Command type
AT#E2SMSRI=[<n>]	Set
AT#E2SMSRI?	Read
AT#E2SMSRI=?	Test

Parameters and Values

<n>	RI enabling.
0	Disables RI pin response for incoming SMS messages. Default: 0.
50-1150	Enables RI pin response for incoming SMS messages. The value of <n> is the duration in ms of the pulse generated on receipt of an incoming SM.

Example

```
AT#E2SMSRI=?
```

```
#E2SMSRI: (0,50-1150))
```

```
OK
```

```
AT#E2SMSRI?
```

```
#E2SMSRI: 0
OK
AT#E2SMSRI=50
OK
AT#E2SMSRI?
#E2SMSRI: 50
OK
```

Read Analog/Digital Converter Input #ADC

Execution command reads pin <adc> voltage, converted by ADC and outputs in the format:

#ADC: <value>

where:

<value> - pin<adc> voltage, expressed in mV

Read command reports the pin's voltage, converted by ADC, in the format:

#ADC: <value>[<CR><LF>#ADC: <value>[...]]

Test command reports the supported values of <adc>, <mode>, and <dir> command parameters.

Syntax

Command	Command type
AT#ADC=[<adc>,<mode>[,dir]]	Execute
AT#ADC?	Read
AT#ADC=?	Test

Parameters and Values

<adc>	Pin index
1	Available for EV3 and C2.
<mode>	Required action.
2	Query ADV value.
<dir>	Direction. Interpretation not currently implemented.
0	No effect.

Note:

- Command returns the last valid measure.

Digital/Analog Converter Control #DAC

EV3 models only.

Set command enables/disables DAC_OUT pin.

Read command reports whether the DAC_OUT pin is currently enabled, along with the integrated output voltage scale factor, in the format:

#DAC: <enable>,<value>

Test command reports the range for the parameters <enable> and <value>.

Syntax

Command	Command type
AT#DAC=[<enable>[,value]]	Set
AT#DAC?	Read
AT#DAC=?	Test

Parameters and Values

<enable>	Enables/disables DAC output.
0	Disables pin; it is in high impedance status. Default: 0.
1	Enables pin; the corresponding output is driven.
<value>	Scale factor of the integrated output voltage; it must be present if <enable>=1.
0...1023	10-bit precision.

Note:

- Integrated output voltage = max voltage * value/1023.
- With this command the DAC frequency is selected internally.
- Do not use D/A converter during POWERSAVING.
- DAC_OUT line must be integrated (for example with a low band pass filter) in order to obtain an analog voltage.

Example

Enable the DAC out and set its integrated output to the 50% of the max value:

```
AT#DAC=1,511
```

```
OK
```

Disable the DAC out:

```
AT#DAC=0
```

```
OK
```

Auxiliary Voltage Output Control #VAUX

Set command enables/disables the auxiliary voltage pins output.

Read command reports whether the Auxiliary Voltage pin output is currently enabled or not, in the format:

#VAUX: <value>

Test command reports the supported values of <n>, <stat>.

Syntax

Command	Command type
AT#VAUX=[<n>,stat]	Set
AT#VAUX?	Read
AT#VAUX=?	Test

Parameters and Values

<n>	VAUX pin index
1	Currently just one VAUX pin.
<stat>	
0	Output off.
1	Output on.
2	Query current value of VAUX pin.
	When <stat>=2 and command is successful, it returns:
	#VAUX:<value>
<value>	Power output status.
0	Output off.
1	Output on.

Note:

- Current setting is stored through #VAUXSAV.

Auxiliary Voltage Output Save #VAUXSAV

Execute command saves the actual state of #VAUX pin to non-volatile memory. The state will be reloaded at power-up.

Test command returns the OK result code.

Syntax

Command	Command type
AT#VAUXSAV=[<n>,stat]	Execute
AT#VAUXSAV=?	Test

V24 Output Pins Configuration #V24CFG

Set command sets the AT commands serial port interface output pins mode.

Read command returns actual mode for all the pins—output or input—in the format:

#V24CFG: <pin1>,<mode1>[<CR><LF><CR><LF>

#V24CFG: <pin2>,<mode2>[...]]

where:

<pin*n*> - AT command serial port interface HW pin.

<mode*n*> - AT commands serial port interface hardware pin mode.

Test command reports supported range of values for <pin> and <mode>.

Syntax

Command	Command type
AT#V24CFG=<pin>,<mode>	Set
AT#V24CFG?	Read
AT#V24CFG=?	Test

Parameters and Values

<pin>	AT commands serial port interface hardware pin.
0	DCD (Data Carrier Detect).
1	CTS (Clear To Send).
2	RI (Ring Indicator).
3	DSR (Data Set Ready). Not supported.
4	DTR (Data Terminal Ready). This is not an output pin. Value is maintained for backward compatibility. Trying to set its state raises the result code ERROR. Not yet implemented.
5	RTS (Request To Send). This is not an output pin. Maintained only for backward compatibility. Trying to set its state raises the result code ERROR.
<mode>	AT commands serial port interface hardware pins mode:
0	AT commands serial port mode: output pins are controlled by serial port device driver. Default: 0.
1	GPIO mode: output pins are directly controlled by #V24 command only.

V24 Output Pins Control #V24

Set command sets the AT commands serial port interface output pins state.

Read command returns actual state for all the pins—output or input—in the format:

#V24: <pin1>,<state1>[<CR><LF>

#V24: <pin2>,<state2>[...]]

where

<pin*n*> - AT command serial port interface HW pin.

<state*n*> - AT commands serial port interface hardware pin state.

Test command reports supported range of values for <pin> and <state>.

Syntax

Command	Command type
AT#V24=<pin>[,<state>]	Set
AT#V24?	Read
AT#V24=?	Test

Parameters and Values

<pin>	AT commands serial port interface hardware pin.
0	DCD (Data Carrier Detect).
1	CTS (Clear To Send).
2	RI (Ring Indicator).
3	DSR (Data Set Ready).
4	DTR (Data Terminal Ready). This is not an output pin: value is maintained only for backward compatibility, but trying to set its state raises the result code "ERROR" Not yet implemented.
5	RTS (Request To Send). This is not an output pin. The value is maintained only for backward compatibility. Trying to set its state raises the result code "ERROR"
<state>	State of AT commands serial port interface output hardware pins 0, 1, 2, 3 when pin is in GPIO mode. See #V24CFG.
0	Low.
1	High.

Notes

- If <state> is omitted the command returns the actual state of the pin <pin>.

Battery and Charger Status #CBC

Execute command returns the current battery and charger state in the format:

#CBC: <ChargerState>,<BatteryVoltage>

where:

<ChargerState>	Battery charger state.
0	Charger not connected.
1	Charger connected and charging.
2	Charger connected and charge completed.
<BatteryVoltage>	Battery voltage in millivolt. This is the real battery voltage only if charger is not connected. If the charger is connected this value depends on the charger voltage.

Test command returns the OK result code.

Syntax

Command	Command type
AT#CBC	Execute
AT#CBC=?	Test

ATD Dialing Mode #DIALMODE

Set command sets dialing modality.

Read command returns current ATD dialing mode in the format:

#DIALMODE: <mode>

Test command returns the range of values for parameter <mode>.

Syntax

Command	Command type
AT#DIALMODE=<mode>]	Set
AT#DIALMODE?	Read
AT#DIALMODE=?]	Test

Parameters and Values

<mode>

- | | |
|----------|--|
| 0 | Voice call only. OK result code is received as soon as it starts remotely ringing.
Default: 0. |
| 1 | Voice call only. OK result code is received only after the call is connected. Any character typed aborts the call and OK result code is received. |
| 2 | Voice call and data call. The following custom result codes are received, monitoring step by step the call status:
DIALING (MO in progress).
RINGING (remote ring, not supported in CDMA).
CONNECTED (remote call accepted).
RELEASED (after ATH).
DISCONNECTED (remote hang-up). |

Notes

- <mode> setting is saved in non-volatile memory and available after reboot.

Automatic Call #ACAL

Set command enables or disables the automatic call function.

Read command reports whether the automatic call function is currently enabled or not, in the format:

#ACAL: <mode>

Note: With the introduction of the command #ACALEXT (Extended Automatic Call) it is possible that the Read command returns a value supported by #ACALEXT but NOT supported by #ACAL.

AT#ACAL?

#ACAL: 0

OK

As such, it is strongly recommended that you do not to use both commands at the same time.

Test command returns the supported range of values for <mode>.

Syntax

Command	Command type
AT#ACAL=[<mode>]	Set
AT#ACAL?	Read
AT#ACAL=?	Test

Parameters and Values

<mode>

- 0** Disables the automatic call function. **Default: 0.**
- 1** Enables the automatic call function. If enabled (and &D2 is issued), the transition OFF/ON of DTR causes an automatic call to the first number (position 0) stored in the internal phonebook.

Notes

- Type of call depends on the last issue of command +FCLASS.
- See &Z to write and &N to read the number on module internal phonebook.

Extended Automatic Call #ACALEXT

Set command enables or disables the extended automatic call function.

Read command reports either whether the automatic call function is currently enabled or not, and the last <index> setting in the format:

#ACALEXT: <mode>,<index>

Test command returns the available values range for <mode> and <index>.

Syntax

Command	Command type
AT#ACALEXT=<mode>,<index>	Set
AT#ACALEXT?	Read
AT#ACALEXT=?	Test

Parameters and Values

<mode>

- 0** Disables the automatic call function. **Default: 0.**
- 1** Enables the automatic call function from internal phonebook.

<index>

Indicates a position in the currently selected phonebook.
If the extended automatic call function is enabled and &D2 is issued, the transition OFF/ON of DTR causes an automatic call to the number stored in position <index> in the selected phonebook.

Notes

- Type of call depends on the last issue of command +FCLASS
- Issuing #ACALEXT causes the #ACAL <mode> to be changed.
- Issuing AT#ACAL=1 causes the #ACALEXT <index> to be set to default.
- It is recommended to NOT use contemporaneously with either #ACALEXT and #ACAL
- See &Z to write and &N to read the number on module internal phonebook.

Example

AT#ACALEXT?

#ACALEXT: (0,1), (0-9)

Extended Call Monitoring #ECAM

Execute command enables or disables the call monitoring function in the ME.

Read command reports whether the extended call monitoring function is currently enabled or not, in the format:

#ECAM: <onoff>

Test command returns the list of supported values for <onoff>.

Syntax

Command	Command type
AT#ECAM=[<onoff>]	Execute
AT#ECAM?	Read
AT#ECAM=?	Test

Parameters and Values

<onoff>

- 0** Disables call monitoring function. **Default: 0.**
- 1** Enables call monitoring function; the ME informs about call events, such as incoming call, connected, hang up and so on using the following unsolicited indication:
 #ECAM: <ccid>,<ccstatus>,<calltype>,,,[<number>,<type>]
 where
 <ccid> - call ID.
 <ccstatus> - call status.
 0 - Idle.
 1 - Calling (MO).
 2 - Connecting (MO).
 3 - Active.
 4 - Hold.
 5 - Waiting (MT).
 6 - Alerting (MT).
 7 - Busy.
 8 - Retrieved.
 9 - CNAP (Calling Name Presentation) information (MT).
 <calltype> - call type.
 1 - Voice.
 2 - Circuit switched data.
 <number> - called number (valid only for <ccstatus>=1).
 <type> - Type of <number>.
 129 - National number.
 145 - International number.

Note: The unsolicited indication is sent along with usual codes (OK, NO CARRIER, BUSY...).

SMS Overflow #SMOV

Set command enables or disables the SMS overflow signaling function.

Read command reports whether the SMS overflow signaling function is currently enabled or not, in the format:

#SMOV: <mode>

Test command returns the supported range of values of parameter <mode>.

Syntax

Command	Command type
AT#SMOV=<mode>	Set
AT#SMOV?	Read
AT#SMOV=?	Test

Parameters and Values

<mode>

- 0** Disables SMS overflow signaling function. **Default: 0.**
- 1** Enables SMS overflow signaling function; when the maximum storage capacity is reached, the following network initiated notification is sent:
 #SMOV: <memo>
 <memo>
 ME SMS memory storage into module.

Note

- Once memory is full:
 - Additional attempts to store messages with +CMGW command results in an error.
 - If the network attempts to deliver additional SMS messages, no additional #SMOV indications appear.
 - To receive additional messages, delete current memory indexes (See +SMGD).
- An alternate command for SMS memory full indications is AT#NOTI. If AT#NOTI=6, 1 is enabled and an unsolicited #SMSFULL message appears when the last memory index is filled and there is no memory index available to store a message.

Example

AT+CPMS?

+CPMS: "ME",99,99,"ME",99,99

OK

AT+CMGD=1

OK

AT#SMOV=1

OK

AT+CMGF=1

OK

AT+CNMI=1

OK

(new message received)

+CMTI: "ME",1

#SMOV: "ME"

Audio Codec #CODEC

Set command sets the audio codec mode.

Read command returns current audio codec mode in the format:

#CODEC: <codec>

Test command returns the range of available values for parameter <codec>.

Syntax

Command	Command type
AT#CODEC=[<codec>]	Set
AT#CODEC?	Read
AT#CODEC=?	Test

Parameters and Values

<codec>

0 EVRC.
1 QCELP. **Default: 1.**

Example

AT#CODEC=?

#CODEC: (0,1)

OK

AT#CODEC?

#CODEC: 1

OK

AT#CODEC=0

OK

Network Timezone #NITZ

Read command reports current system time.

Test command returns supported values of parameters <val> and <mode>.

Syntax

Command	Command type
AT#NITZ?	Read
AT#NITZ=?	Test

Example

```
AT#NITZ=?  
OK  
AT#NITZ?  
#NITZ: "12/09/10,13:31:32"  
OK
```

Skip Escape Sequence #SKIPESC

Set command enables or disables skipping the escape sequence +++ while transmitting during a data connection.

Read command reports whether escape sequence skipping is currently enabled or not, in the format:

SKIPESC: <mode>

Test command reports supported range of values for parameter <mode>.

Syntax

Command	Command type
AT#SKIPESC=<mode>	Set
AT#SKIPESC?	Read
AT#SKIPESC=?	Test

Parameters and Values

<mode>

- | | |
|---|--|
| 0 | Does not skip the escape sequence; its transmission is enabled. Default: 0. |
| 1 | Skips the escape sequence; its transmission is not enabled. |

Notes

- In case of an FTP connection, the escape sequence is not transmitted, regardless of the command setting.

Escape Sequence Guard Time #E2ESC

Set command sets a guard time in seconds for the escape sequence in CDMA to be considered a valid one (and return to online command mode).

Read command reports whether escape sequence skipping is currently enabled or not, in the format:

#E2ESC: <gt>

Test command returns the OK result code.

Syntax

Command	Command type
AT#E2ESC=<gt>	Set
AT#E2ESC?	Read
AT#E2ESC=?	Test

Parameters and Values

<gt;

0 No guard time. **Default: 0.**

1...10 Guard time in seconds.

PPP Connection Authentication Type #GAUTH

Set command sets PPP connection authentication type.

Read command reports the current PPP authentication type, in the format:

#GAUTH: <type>

Test command returns the range of supported values for parameter <type>.

Syntax

Command	Command type
AT#GAUTH=<type>]	Set
AT#GAUTH?	Read
AT#GAUTH=?]	Test

Parameters and Values

<type>

3 AUTO authentication (PAP and CHAP). **Default: 3.**

RTC Status #RTCSTAT

Set command resets the RTC status flag.

Read command reports the current value of RTC status flag, in the format:

#RTCSTAT: <status>

Test command returns the range of supported values for parameter <status>.

Syntax

Command	Command type
AT#RTCSTAT=<status>]	Set
AT#RTCSTAT?	Read
AT#RTCSTAT=?]	Test

Parameters and Values

<status>

0 Set RTC status to RTC HW OK.

Notes

- The initial value of the RTC status flag is RTC HW Error and it doesn't change until a command AT#RTCSTAT=0 is issued.
- If a power failure occurs and the buffer battery is down, the RTC status flag is set to 1. It doesn't change until command AT#RTCSTAT=0 is issued.

Show Address #CGPADDR

Execute command returns either the IP address for the current activated CDMA PDP context.

<cid> - Context identifier

Test command returns <cid> when the modem gets the IP address, otherwise return only OK result.

Syntax

Command	Command type
AT#CGPADDR=<cid>	Execute
AT#CGPADDR=?	Test

Notes

- Only one context ID(1) is supported.
- If no <cid> is specified, the addresses for all defined contexts are returned.

Example

```
AT#SGACT=1,1
```

```
+IP: xxx.yyy.zzz.www
```

```
OK
```

```
AT#CGPADDR=?
```

```
#CGPADDR: (1)
```

```
OK
```

```
AT#CGPADDR=1
```

```
#CGPADDR: 1, "xxx.yyy.zzz.www"
```

```
OK
```

Power Saving Mode Ring #PSMRI

Set command enables or disables the Ring Indicator pin response to an URC message while modem is in power saving mode.

If enabled, a negative going pulse is generated when URC message for specific event is invoked. The duration of this pulse is determined by the value of <x>.

Read command reports the duration in ms of the pulse generated, in the format:

```
#PSMRI: <x>
```

Test command reports the supported range of values for parameter <x> .

Syntax

Command	Command type
AT#PSMRI= <x>	Set
AT#PSMRI?	Read
AT#PSMRI=?	Test

Parameters and Values

<x>	RI enabling.
0	Disables RI pin response for URC message. Default: 0.
50-1150	Enables RI pin response for URC messages.

Notes

- The behavior for #PSMRI is invoked, only when modem is in sleep mode (AT+CFUN=7).
- The value set by command is stored in the profile extended section and does not depend on the specific AT instance.
- When RING signal from incoming call/SMS/socket listen is enabled, the behavior for #PSMRI is ignored.

Command Mode Flow Control #CFLO

Set command enables or disables the flow control in command mode. If enabled, current flow control is applied to both command and data modes.

Read command reports current setting value, in the format:

#CFLO: <mode>

Test command reports the supported range of values for parameter <mode>.

Syntax

Command	Command type
AT#CFLO= <mode>	Set
AT#CFLO?	Read
AT#CFLO=?	Test

Parameters and Values

<mode>	
0	Disables flow control set in command mode. Default: 0.
1	Enables flow control set in command mode.

Notes

- This behavior is valid only for the Main UART port.

Cell Monitor #MONI

Set command to select one of three pilot sets (active, candidate, neighbor) from which CDMA-related information is extracted.

- When the number is set to 0 (active set), the extracting information format is:
#MONI: A_PN:<PNn>,A_PN_STR:<PNn_str>
- When number is set to 1 (candidate set), extracting information format is:
#MONI: C_PN:<PNn>,C_PN_STR:<PNn_str>
- When number is set to 2 (neighbor set), extracting information format is:
#MONI: N_PN:<PNn>,N_PN_STR:<PNn_str>

where:

<PNn> - Value of nth (active/candidate/neighbor)pilot sets.

<PNn_Str> - Pilot strength of nth (active/candidate/neighbor)pilot sets.

Test command returns the OK result code.

Syntax

Command	Command type
AT#MONI[=<number>]]	
AT#MONI=?	

Parameters and Values

<number>	CDMA Network
0	Active set. Default: 0.
1	Candidate set.
2	Neighbor set.
3-7	Not available.

Notes

- Candidate set (number=1) displays in traffic state only, per CDMA specifications (refer to 2.6.6.1.2 Pilot Sets of C.S0005). If the device stays in an idle state, pilot set, and strength are displayed as 0.

Example

```
AT#MONI=0
```

```
OK
```

```
AT#MONI
```

```
A_PN: 80 , A_PN_STR: -10
```

```
OK
```

```
AT#MONI=?
```

```
OK
```

Multisocket AT Commands

Note: For UIP devices, commands in this section apply only if the UIP stack is disabled (AT+WOPEN=0).

Socket Status #SS

Execute command reports the current status of the socket in the format:

#SS: <connID>,<state>,<locIP>,<locPort>,<remIP>,<remPort>

[<CR><LF><connID>,<state>,<locIP>,<locPort>,<remIP>,<remPort>[...]]

where:

<connID> Socket connection identifier.

1-6

The response format is:

#SS: <connID>,<state>,<locIP>,<locPort>,<remIP>,<remPort>

where:

<connID> Socket connection identifier.

<state>

Actual state of the socket.

0

Socket closed.

1

Socket with an active data transfer connection.

2

Socket suspended.

3

Socket suspended with pending data.

4

Socket listening.

5

Socket with an incoming connection. Waiting for the user accept or shutdown command.

<locIP>

IP address associated by the context activation to the socket.

<locPort>

If the socket is placed in listen mode, the listening port.

If the socket is used to connect to a remote machine, the local port for the connection.

<remIP>

When connected to a remote machine, this is the remote IP address.

<remPort>

The port connected to on the remote machine.

Test command reports the OK result code.

Syntax

Command	Command type
AT#SS	Execute
AT#SS=?	Test

Example

AT#SS

#SS: 1,3,91.80.90.162,61119,88.37.127.146,10510

#SS: 2,4,91.80.90.162,1000

#SS: 3,0

#SS: 4,0

#SS: 5,3,91.80.73.70,61120,88.37.127.146,10509

#SS: 6,0

OK

Socket 1: opened from local IP 91.80.90.162/local port 61119 to remote IP 88.37.127.146/remote port 10510 is suspended with pending data.

Socket 2: listening on local IP 91.80.90.162/local port 1000.

Socket 5: opened from local IP 91.80.73.70/local port 61120 to remote IP 88.37.127.146/remote port 10509 is suspended with pending data.

Socket Info #SI

Execute command gets information about socket data traffic.

Test command reports the range for parameter <connID>.

Syntax

Command	Command type
AT#SI[=<connID>]	Execute
AT#SI=?	Test

Parameters and Values

<connID> Socket connection identifier.

1-6

The response format is:

#SI: <connID>,<sent>,<received>,<buff_in>,<ack_waiting>

where:

<connID> Socket connection identifier.

<sent> Total amount (in bytes) of sent data since the last time the socket connection identified by <connID> is opened.

<received> Total amount (in bytes) of received data since the last time the socket connection identified by <connID> is opened.

<buff_in> Total amount (in bytes) of data just arrived through the socket connection identified by <connID> and currently buffered, not yet read.

<ack_waiting> Total amount (in bytes) of sent and not yet acknowledged data since the last time the socket connection identified by <connID> is opened.

Note: Not yet acknowledged data are available only for TCP connections; the value <ack_waiting> is always 0 for UDP connections.

Notes

- Issuing #SI<CR> causes getting information about data traffic of all the sockets; the response format is:
#SI: <connID1>,<sent1>,<received1>,<buff_in1>,<ack_waiting1><CR><LF>

...

#SI: <connID6>,<sent6>,<received6>,<buff_in6>,<ack_waiting6>

Example

AT#SI

#SI: 1,123,400,10,50

#SI: 2,0,100,0,0

#SI: 3,589,100,10,100

#SI: 4,0,0,0,0

#SI: 5,0,0,0,0

#SI: 6,0,98,60,0

OK

Sockets 1,2,3,6 are opened with some data traffic.

For example socket 1 has 123 bytes sent, 400 bytes received, 10 byte waiting to be read and 50 bytes waiting to be acknowledged from the remote side.

Information only about socket number 1

AT#SI=1

#SI: 1,123,400,10,50

OK

Context Activation #SGACT

Execute command activates or deactivates the specified PDP context.

Read returns the state of all the contexts, in the format:

#SGACT: <cid>,<stat>

where:

<cid>	PDP context identifier.
1	Numeric parameter that specifies a particular PDP context definition.
<stat>	Context status.
0	Context deactivated.
1	Context activated.
<userid>	String type, used only if the context requires it.
<pwd>	String type, used only if the context requires it.

Test command reports the range for the parameters <cid> and <stat>.

Syntax

Command	Command type
AT#SGACT=<cid>,<stat>[,<userId>,<pwd>]	Execute
AT#SGACT?	Read
AT#SGACT=?	Test

Parameters and Values

<cid>	PDP context identifier.
1	PDP context identifier.
<stat>	
0	Deactivate the context.
1	Activate the context.
<userId>	String type, used only if the context requires it.
<pwd>	String type, used only if the context requires it.

Notes

- In CDMA PDP context activation, only one context ID(1) is supported.
- North American carriers ignore <userId> and <pwd> because authentication information is automatically populated in a device based on their specification and updated by a network through over-the-air or a carrier-specific method.

Example

```
AT#SGACT=?
#SGACT: (1),(0,1)
OK
```

Socket Shutdown #SH

Execute command closes a socket.

Test command reports the range for parameter <connID>.

Syntax

Command	Command type
AT#SH=<connID>	Execute
AT#SH=?	Test

Parameters and Values

<connID>	Socket connection identifier.
1-6	

Notes

- A socket connection can be closed only when it is in suspended mode (with pending data too) and incoming connection mode. Trying to close an active socket connection produces a error. Trying to close a closed socket or a listening socket produces an OK response without any action.

Socket Configuration #SCFG

Set command sets the socket configuration parameters.

Read command returns the current socket configuration parameters values for all the six sockets, in the format:

```
#SCFG: <connID1>,<cid1>,<pktsz1>,<maxTo1>,<connTo1>,<txTo1>
```

```
<CR><LF>
```

```
...
```

```
#SCFG: <connID6>,<cid6>,<pktsz6>,<maxTo6>,<connTo6>,<txTo6>
```

```
<CR><LF>
```

Test command returns the range of supported values for all the subparameters.

Syntax

Command	Command type
AT#SCFG=<connID>,<cid>,<pktSz>,<maxTo>,<connTo>,<txTo>	Set
AT#SCFG?	Read
AT#SCFG=?	Test

Parameters and Values

Values are automatically saved in non-volatile memory.

<connID>	Socket connection identifier.
1-6	
<cid>	PDP context identifier.
1	Numeric parameter which specifies a PDP context definition.
<pktSz>	Packet size used by the TCP/UDP/IP stack for data sending.
0	Automatically chosen by the device.
1-1500	Packet size in bytes. Default: 300.
<maxTo>	Exchange timeout or socket inactivity timeout. If there is no data exchange within this timeout period the connection is closed.
0	No timeout.
1-1500	Timeout value in seconds. Default: 90.
<connTo>	Connection timeout; if cannot connect to the remote within this period, an error is raised.
0	No timeout.
1-65535	Timeout value in hundreds of milliseconds. Default: 600.
<txTo>	Data sending timeout. After this period data is sent also if less than maximum packet size.
0	No timeout.
1-255	Timeout value in hundreds of milliseconds. Default: 50.

Notes

- Values are saved in the non-volatile memory automatically.
- You must set the parameters with #SCFG before establishing a data connection using the AT+SGACT command.

Example

AT#SCFG=?

#SCFG: (1-6), (1), (0,1-1500), (0,1-65535), (10-1200), (0,1-255)

OK

AT#SCFG?

#SCFG: 1,1,300,90,600,50

#SCFG: 2,1,300,90,600,50

#SCFG: 3,1,300,90,600,50

#SCFG: 4,1,300,90,600,50

#SCFG: 5,1,300,90,600,50

#SCFG: 6,1,300,90,600,50

OK

AT#SCFG=6,1,500,100,700,60

OK

AT#SCFG?

#SCFG: 1,1,300,90,600,50

#SCFG: 2,1,300,90,600,50

#SCFG: 3,1,300,90,600,50

#SCFG: 4,1,300,90,600,50

#SCFG: 5,1,300,90,600,50

#SCFG: 6,1,500,100,700,60

OK

Socket Configuration Extended #SCFGEXT

Set command sets the socket configuration extended parameters.

Read command returns the current socket extended configuration parameters values for all the six sockets, in the format:

```
#SCFGEXT: <connID1>,<srMode1>,<dataMode1>,<keepalive1>,
```

```
<unused_A1>,<unused_B1><CR><LF>
```

...

```
#SCFGEXT: <connID6>,<srMode6>,<dataMode6>,<keepalive6>
```

```
<unused_A6>,<unused_B6>
```

Test command returns the range of supported values for all the subparameters.

Syntax

Command	Command type
AT#SCFGEXT=<connID>,<srMode>,<dataMode>,<keepalive>,[,<unused_A> [<unused_B>]]	Set
AT#SCFGEXT?	Read
AT#SCFGEXT=?	Test

Parameters and Values

<connID> 1-6	Socket connection identifier.
<srMode> 0	SRing URC mode. Normal mode. Default: 0.
1	SRING : <connID> where <connID> is the socket connection identifier.
2	Data amount. SRING : <connID>,<recData> where <recData> is the amount of data received on the socket connection number <connID>.
3	Data view. SRING : <connID>,<recData>,<data> is received data, presentation format depends on the subparameter.
<dataMode> 0	Data view mode presentation format. Text mode. Default: 0.
1	Hexadecimal mode (from 00 to FF).
<keepalive> 0	Set the TCP Keepalive value in minutes. Deactivated. Default: 0.
1 – 240	Keepalive time in minutes.
<unused_A> 0	Currently unused. Reserved for future use.
<unused_B> 0	Currently unused. Reserved for future use.

Notes

- These values are automatically saved in non-volatile memory.
- Keepalive is available only on TCP connections.

Example

Socket 1 set with data view string, text data mode, a keepalive time of 30 minutes.

Socket 3 set with data amount string, hex recv data mode, no keepalive.

```
AT#SCFGEXT?
#SCFGEXT: 1,2,0,30,0,0
#SCFGEXT: 2,0,0,0,0,0
#SCFGEXT: 3,1,1,0,0,0
#SCFGEXT: 4,0,0,0,0,0
#SCFGEXT: 5,0,0,0,0,0
#SCFGEXT: 6,0,0,0,0,0
OK
```

Socket Dial #SD

Execute command opens a remote connection through socket.

Test command reports the range of values for all parameters.

Syntax

Command	Command type
AT#SD=<connID>,<txProt>,<rPort>,<IPAddr>,<closureType> [,<IPort>,<connMode>]]]	Execute
AT#SD=?	Test

Parameters and Values

<connID>	Socket connection identifier.
1-6	
<txProt>	Transmission protocol.
0	TCP.
1	UDP.
<rPort>	Remote host port to contact.
1-65535	
<IPAddr>	String type, address of the remote host. Can be: any valid IP address in the format: "xxx.xxx.xxx.xxx". Any host name to be solved with a DNS query.
<closureType>	Socket closure behavior for TCP.
0	Local host closes immediately when remote host has closed. Default: 0.
255	Local host closes after an escape sequence (+++).

<IPort>	UDP connections local port.
1-65535	
<connMode>	Connection mode.
0	Online mode connection. Default: 0.
1	Command mode connection.

Notes

- <closureType> parameter is valid for TCP connections only and has no effect (if used) for UDP connections.
- <IPort> parameter is valid for UDP connections only and has no effect (if used) for TCP connections.
- If <connMode> is successfully set to online mode connection, the intermediate result code is CONNECT. After the CONNECT you can suspend the direct interface to the socket connection (the socket stays open) using the escape sequence (+++). The module moves back to command mode and you receive the final result code OK after the suspension. After such a suspension, it's possible to resume it in every moment (unless the socket inactivity timer timeouts, see #SCFG) by using the #SO command with the corresponding <connID>.
- If you set <connMode> to command mode connection and the command is successful, the socket is opened, you remain in command mode and the result code OK appears.
- If input data arrived through a connected socket and was not read because the device entered command mode before the data was read, the data is buffered and the SRING URC is received. SRING presentation format depends on the last #SCFGECT setting. To read this data, issue #SRECV. It is also possible to send data in command mode by issuing #SEND.

Example

Open socket 1 in online mode.

```
AT#SD=1,0,80,"www.google.com",0,0,0
CONNECT
```

...

Open socket 1 in command mode

```
AT#SD=1,0,80,"www.google.com",0,0,1
OK
```

Socket Restore #SO

Execute command resumes the direct interface to a socket connection which is suspended by the escape sequence.

Test command reports the range of values for <connID> parameter.

Syntax

Command	Command type
AT#SO=<connID>	Execute
AT#SO=?	Test

Parameters and Values

<connID> Socket connection identifier.
1-6

Socket Listen #SL

Execute command opens/closes a socket listening for an incoming connection on a specified port.

Read command returns all the actual listening sockets.

Test command returns the range of supported values for all the subparameters.

Syntax

Command	Command type
AT#SL=<connID>,<listenState>,<listenPort>>[,<lingerT>]	Execute
AT#SL?	Read
AT#SL=?	Test

Parameters and Values

<connID> Socket connection identifier.
1-6

<listenState>

0 Closes socket listening.

1 Starts socket listening.

<listenPort> Local listening port.
1-65535

<lingerT> Linger time.

0 Local host closes immediately when remote host has closed. **Default: 0.**

255 Local host closes after an escape sequence (+++).

Notes

- If successful, the command returns a final result code OK. When there is an incoming connection on the local port and if the sender is not filtered by internal firewall (see #FRWL), a URC is received:

+SRING : <connID>

The command #SCFGEXT doesn't influence the presentation format of the URC SRING.

Afterwards, use #SA to accept the connection of #SH to refuse it.

If the socket is closed by the network the follow URC is received:

+SL:ABORTED

- When closing the listening socket you do not need to specify the <listenPort> value.

Example

AT#SL=?

#SL: (1-6),(0,1),(1-65535),(0,255)

OK

Next command opens a socket listening on port 3500 without.

AT#SL=1,1,3500

OK

Socket Listen UDP #SLUDP

Execute command opens or closes a socket listening for an incoming connection on a specified port.

Read command returns all the actual listening sockets.

Test command returns the range of supported values for all the subparameters.

Syntax

Command	Command type
AT#SLUDP=<connID>,<listenState>,<listenPort>	Execute
AT#SLUDP?	Read
AT#SLUDP=?	Test

Parameters and Values

<connID>	Socket connection identifier.
1-6	
<listenState>	
0	Closes socket listening.
1	Starts socket listening.
<listenPort>	Local listening port.
1-65535	

Notes

- If successful, the command returns a final result code OK. When there is an incoming connection on the local port and if the sender is not filtered by internal firewall (see #FRWL), a URC is received:

+SRING : <connID>

Afterwards, use #SA to accept the connection of #SH to refuse it.

If the socket is closed by the network the follow URC is received:

+SLUDP: ABORTED

- When closing the listening socket you do not need to specify the <listenPort> value.

Example

AT#SLUDP=?

#SLUDP: (1-6),(0,1),(1-65535)

OK

Next command opens a socket listening on port 860.

AT#SLUDP=1,1,860

OK

SRING: 1

AT#SA=1

OK

CONNECT

Socket Accept #SA

Execute command accepts an incoming socket connection after an URC SRING: <connID>.

Test command reports the range of values for all the parameters.

Syntax

Command	Command Type
AT#SA=<connID>[,<connMode>]	Execute
AT#SA=?	Test

Parameters and Values

<connID>	Socket connection identifier.
1-6	
<connMode>	Connection mode, as for command #SD.
0	Online mode connection. Default: 0.
1	Command mode connection.

Notes

- The SRING URC has to be a consequence of a #SL issue.
- Setting the #SA command before receiving SRING causes an ERROR indication.

Receive Data In Command Mode #SRECV

Execute command permits the user to read data arrived through a connected socket, but buffered and not yet read because the module entered command mode before reading them; the module is notified of these data by a SRING URC, whose presentation format depends on the last #SCFGEXT setting.

Test command returns the range of supported values for <connID> and <maxByte>.

Syntax

Command	Command type
AT#SRECV=<connID>,<maxByte>	Execute
AT#SRECV=?	Test

Parameters and Values

<connID>	Socket connection identifier.
1-6	
<maxByte>	Maximum number of bytes to read.
1-1500	

Notes

- Issuing #SRECV when there's no buffered data causes an ERROR indication.

Example

```
SRING: 1
Read 15 bytes of buffered data on connID 1
AT#SRECV=1,15
#SRECV: 1,15
Have a nice day
OK
```

Note: The SRING indication format and the data display format is determined by the AT#SCFGEXT command.

```
SRING: 2,15
Read 15 bytes of buffered data on connID 2
AT#SRECV=2,15
#SRECV: 2,15
486176652061206E69636520646179
OK
```

Note: The SRING indication format and the data display format is determined by the AT#SCFGEXT command.

Send Data in Command Mode #SEND

Execute command permits, while the module is in command mode, to send data through a connected socket.

Test command returns the range of supported values for parameter <connID>.

Syntax

Command	Command type
AT#SEND=<connID>	Execute
AT#SEND=?	Test

Parameters and Values

<connID>	Socket connection identifier.
1-6	The device responds to the command with the prompt <greater_than><space> and waits for the data to send. To complete the operation send Ctrl-Z char (0x1A hex); to exit without writing the message send ESC char (0x1B hex). If data is successfully sent, then the response is OK. If data sending fails for some reason, an error code is reported.

Notes

- The maximum number of bytes to send is 1500 bytes. Trying to send more than 1500 bytes returns an ERROR.
- #SEND can be used with #SD or #SL after a socket connection has been established.
- A byte corresponding to BS char(0x08) is treated with its corresponding meaning; therefore previous byte is cancelled (and BS char itself is not sent)

Example

Send data through socket number 2

```
AT#SEND=2
>Test<CTRL-Z>
OK
```

Send Data in Command Mode Extended #SENDEXT

While the module is in command mode, this execute command sends data through a connected socket.

Test command returns the range of supported values for <connID> and <bytetosend>.

Syntax

Command	Command type
AT#SENDEXT=<connID>,<bytetosend>	Execute
AT#SENDEXT=?	Test

Parameters and Values

<connID>	Socket connection identifier.
1-6	
<bytetosend>	Number of bytes to be sent. To obtain the range use Test command. The device responds to the command with the prompt '>' <greater_than><space> and waits for the data to send. When <bytetosend> bytes is sent, operation is automatically completed. If data is sent successfully, then the response is OK. If data sending fails for some reason, an error code is reported.

Notes

- You can use #SSENDEXT if #SD or #SL opened the connection.
- All special characters are sent like a generic byte. For example, the Back Space key doesn't behave like a BS, that is, previous character is not deleted 0x08 is sent through the socket instead. The ESC key doesn't work like an escape sequence and sends a generic byte (0x1B) through the socket instead.

Example

Open the socket in command mode:

```
AT#SD=1,0,<port>,"IP address",0,0,1
```

OK

Give the command specifying total number of bytes as second parameter:

```
AT#SSENDEXT=1,256
```

```
> ..... ; // Terminal echo of bytes sent is displayed here
```

OK

All possible bytes(from 0x00 to 0xFF) are sent on the socket as generic bytes.

Single Socket AT Commands

Socket Parameters Reset #SKTRST

Execute command resets the actual socket parameters in the device's non-volatile memory to the default ones. The socket parameters to reset are:

- Packet Size
- Socket Inactivity Time-out
- Data Sending Time-out
- Socket Type
- Remote Port
- Remote Address
- TCP Connection Time-out

Test command returns the OK result code.

Syntax

Command	Command type
AT#SKTRST	Execute
AT#SKTRST=?	Test

Notes

- User ID and password are not affected by this command. They are not set to default values; they keep the previous value.

Example

```
AT#SKTRST
```

```
OK
```

Socket parameters have been reset.

FTP AT Commands

FTP Timeout #FTPTO

Set command sets the timeout used when opening either the FTP control channel or the FTP traffic channel.

Read command returns the current FTP operations timeout, in the format:

#FTPTO: <tout>

Test command returns the range of supported values for parameter <tout>

Syntax

Command	Command type
AT#FTPTO=<tout>]	Set
AT#FTPTO?	Read
AT#FTPTO=?	Test

Parameters and Values

<tout>	Time-out in 100 ms units.
100-5000	Hundreds of ms. Default: 100.

Notes

- The parameter is not saved in non-volatile memory.

FTP Open #FTPOPEN

Execute command opens an FTP connection toward the FTP server.

Test command returns the OK result code.

Syntax

Command	Command type
AT#FTPOPEN=[<server:port>,<username>,<password>[,<mode>]]	Execute
AT#FTPOPEN=?	Test

Parameters and Values

<server:port>	String type, address and port of FTP server. Default: port 21.
<username>	String type, authentication user identification string for FTP.
<password>	String type, authentication password for FTP.
<mode>	
0	Active mode. Default: 0.
1	Passive mode.

Notes

- Before opening an FTP connection the PDP context must be activated by AT#SGACT.

FTP Close #FTPCLOSE

Execute command closes an FTP connection.

Test command returns the OK result code.

Syntax

Command	Command type
AT#FTPCLOSE	Execute
AT#FTPCLOSE=?	Test

FTP Put #FTPPUT

Execute command, issued during an FTP connection, opens a data connection and starts sending <filename> file to the FTP server. If the data connection succeeds, a CONNECT message is indicated. When the socket is closed, a NO CARRIER message is indicated.

Test command returns the OK result code.

Syntax

Command	Command type
AT#FTPPUT=[<filename>]	Execute
AT#FTPPUT=?	Test

Parameters and Values

<filename> String type, name of the file.

Notes

- To close the data connection, use the escape sequence +++.
- If no FTP connection is open, the command returns an ERROR result code.

FTP Get #FTPGET

Execute command, issued during an FTP connection, opens a data connection and starts getting a file from the FTP server. If the data connection succeeds a CONNECT message is indicated. Otherwise, a NO CARRIER message is indicated. The file is received on the serial port.

Test command returns the OK result code.

Syntax

Command	Command type
AT#FTPGET=[<filename>]	Execute
AT#FTPGET=?	Test

Parameters and Values

<filename> String type, file name.

Notes

- The Execute command causes an ERROR result code to be returned if no FTP connection is open.

FTP Type #FTPTYPE

Set command, issued during an FTP connection, sets the file transfer type.

Read command returns the current file transfer type, in the format:

#FTPTYPE: <type>

Test command returns the range of available values for parameter <type>:

#FTPTYPE: (0,1)

Syntax

Command	Command type
AT#FTPTYPE=<type>]	Set
AT#FTPTYPE?	Read
AT#FTPTYPE=?]	Test

Parameters and Values

<type>	File transfer type.
0	Binary.
1	ASCII.

Notes

- The command causes an ERROR result code if no FTP connection is opened.

FTP Read Message #FTPMSG

Execute command returns the last response from the server.

Test command returns the OK result code.

Syntax

Command	Command type
AT#FTPMSG	Execute
AT#FTPMSG=?]	Test

FTP Delete #FTPDELE

Execute command, issued during an FTP connection, deletes a file from the remote working directory.

Test command returns the OK result code.

Syntax

Command	Command type
AT#FTPDELE=[<filename>]	Execute
AT#FTPDELE=?	Test

Parameters and Values

<filename> String type indicating the name of the file to delete.

Notes

- The Execute command causes an ERROR result code if no FTP connection is open.

FTP Print Working Directory #FTPPWD

Execute command, issued during an FTP connection, shows the current working directory on FTP server.

Test command returns the OK result code.

Syntax

Command	Command type
AT#FTPPWD	Execute
AT#FTPPWD=?	Test

Notes

- The Execute command causes an ERROR result code if no FTP connection is open.

FTP Change Working Directory #FTPCWD

Execute command, issued during an FTP connection, changes the working directory on FTP server.

Test command returns the OK result code.

Syntax

Command	Command type
AT#FTPCWD=[<dirname>]	Execute
AT#FTPCWD=?	Test

Parameters and Values

<dirname> String type, name of the new working directory.

Notes

- The Execute command causes an ERROR result code if no FTP connection is open.

FTP List #FTPLIST

Execute command, issued during an FTP connection, opens a data connection and starts getting from the server the list of contents of the specified directory or the properties of the specified file.

Test command returns the OK result code.

Syntax

Command	Command type
AT#FTPLIST[=[<name>]]	Execute
AT#FTPLIST=?	Test

Parameters and Values

<name> String type, name of the directory or file.

Notes

- The Execute command causes an ERROR result code to be returned if no FTP connection is opened yet.
- Issuing AT#FTPLIST<CR> opens a data connection and starts getting from the server the list of contents of the working directory.

Enhanced IP Stack Extension AT Commands

Query DNS #QDNS

Execute command executes a DNS query to resolve the host name into an IP address.

Test command returns the OK result code.

Syntax

Command	Command type
AT#QDNS=[<host name>]	Execute
AT#QDNS=?	Test

Parameters and Values

<host name> String type, host name.
If the DNS query is successful, the IP address is reported in the result code, as follows:
#QDNS: <host name>,<IP address>
where:
<host name> - string type.
<IP address> - string type, in the format "xxx.xxx.xxx.xxx".

Notes

- If the CDMA context was not activated previously, this command activates the context, perform the DNS query, and deactivate the CDMA context.
- Requires correct settings for authentication parameters and the CDMA network must be present.

Example

```
AT#QDNS=google.com
#QDNS: "google.com", "74.125.227.100"
OK
```

DNS Response Caching #CACHEDNS

Set command enables caching a mapping of domain names to IP addresses, as does a resolver library.

Read command reports whether the DNS Response Caching is currently enabled or not, in the format:

#CACHEDNS: <mode>

Test command returns the currently cached mapping along with the range of available values for parameter <mode>, in the format:

#CACHEDNS: [<hostn1>,<IPaddr1>,[...,<hostnn>,<IPaddrn>,]](0,1)

where:

<hostnn>	Hostname, string type.
<IPaddrn>	IP address, string type, in the format "xxx.xxx.xxx.xxx".

Syntax

Command	Command type
AT#CACHEDNS=<mode>	Set
AT#CACHEDNS?	Read
AT#CACHEDNS=?	Test

Parameters and Values

<mode>	
0	Caching disabled or clear current cache.
1	Caching enabled.

Notes

- The validity period of each cached entry—that is, how long a DNS response remains valid—is determined by a value called the Time To Live (TTL), set by the administrator of the DNS server handing out the response.
- If the cache is full (8 elements) and a new IP address is resolved, an element is deleted from the cache. The deleted element is the one not used for the longest time.
- It is recommended that you clean the cache, if command +CCLK is issued while the DNS Response Caching was enabled.

Example

```
AT#CACHEDNS=1
OK
AT#QDNS=google.com
#QDNS: "google.com", "74.125.227.2"
OK
AT#QDNS=Yahoo.com
#QDNS: "Yahoo.com", "98.139.183.24"
OK
AT#CACHEDNS=?
#CACHEDNS: ("google.com", "74.125.227.2"), ("Yahoo.com", "98.139.183.24"), (0,1)
OK
```

Manual DNS Selection #DNS

Set command allows manual setting of primary and secondary DNS servers.

Read command returns the manual DNS servers settings, in the format:

```
#DNS: <cid>,<primary>,<secondary>
```

Test command reports the supported range of values for the <cid> parameter only, in the format:

#DNS: (1)

Syntax

Command	Command type
AT#DNS=<cid>,<primary>,<secondary>	Set
AT#DNS?	Read
AT#DNS=?	Test

Parameters and Values

<cid>	Context identifier.
1	Numeric parameter that specifies a particular PDP context definition.
<primary>	String type, manual primary DNS server, in the format "xxx.xxx.xxx.xxx" used for the specified cid. Use this value instead of the primary DNS server from the network. Default: "0.0.0.0" .
<secondary>	String type, manual secondary DNS server, in the format "xxx.xxx.xxx.xxx" used for the specified cid. Use this value instead of the secondary DNS server from the network. Default: "0.0.0.0" .

Notes

- If <primary> is "0.0.0.0" and <secondary> is not "0.0.0.0", then issuing AT#DNS=... raises an error.
- If <primary> is "0.0.0.0" you are using the primary DNS server from the network as consequence of a context activation.
- If <primary> is not "0.0.0.0" and <secondary> is "0.0.0.0", then only the manual primary DNS server is used.
- If the context identified by <cid> has not been activated, issuing AT#DNS= causes an error.

Socket Listen Ring Indicator #E2SLRI

Set command enables or disables the Ring Indicator pin response to a Socket Listen connect and, if enabled, the duration of the negative going pulse generated on receipt of connect.

Read command reports whether the Ring Indicator pin response to a Socket Listen connect is currently enabled or not, in the format:

#E2SLRI: <n>

Test command returns the allowed values for parameter <status>.

Syntax

Command	Command type
AT#E2SLRI=[<n>]	Set
AT#E2SLRI?	Read
AT#E2SLRI=?	Test

Parameters and Values

<n>	Enable or disable RI.
0	RI disabled for Socket Listen connect. Default: 0.
50-1150	RI enabled for Socket Listen connect; a negative going pulse is generated on receipt of connect and <n> is the duration in ms of this pulse.

Firewall Setup #FRWL

Execute command controls the internal firewall settings.

Read command reports the list of all ACCEPT chain rules registered in the Firewall settings in the format:

```
#FRWL: <ip_addr>,<net_mask>

#FRWL: <ip_addr>,<net_mask>

....

OK
```

Test command returns the allowed values for parameter <action>.

Syntax

Command	Command type
AT#FRWL=[<action>,<ip_address>,<net mask>]	Execute
AT#FRWL?	Read
AT#FRWL=?	Test

Parameters and Values

<action>	Command action.
0	Remove selected chain.
1	Add an ACCEPT chain.
2	Remove all chains (DROP everything); <ip_addr> and <net_mask> have no meaning in this case.
<ip_addr>	String type, remote address to be added into the ACCEPT chain. Can be any valid IP address in the format: xxx.xxx.xxx.xxx.
<net_mask>	String type, mask to be applied on the <ip_addr>. Can be any valid IP address mask in the format: xxx.xxx.xxx.xxx.
	Command returns OK result code if successful.
	Note: The firewall applies for incoming (listening) connections only.
	Firewall general policy is DROP, therefore all packets that are not included into an ACCEPT chain rule is silently discarded.
	When a packet comes from the IP address incoming_IP, the firewall chain rules are scanned for matching with the following criteria:
	incoming_IP & <net_mask> = <ip_addr> & <net_mask>
	If criteria is matched, then the packet is accepted and the rule scan is finished. If criteria is not matched for any chain the packet is silently dropped.

Notes

- For outgoing connections made with #SD the remote host is dynamically inserted into the ACCEPT chain for the entire connection duration. Therefore the #FRWL command is used only for defining the #SL behavior, deciding which hosts are allowed to connect to the local device.
- Rules are not saved in non-volatile memory. At startup the rules list is empty.
- Issue this command before establishing a data connection using the AT#SGACT command.

Example

To accept connections only from devices that are on the IP addresses ranging from 197.158.1.1 to 197.158.255.255, add the following chain to the firewall:

```
AT#FRWL=1,"197.158.1.1","255.255.0.0"
```

OK

Data Volume #GDATAVOL

Execution command reports, for the active PDP context, the amount of data received and transmitted by the last data session or the total amount of data received and transmitted during the data session, since last reset.

Test command returns the range of supported values for parameter <mode>.

Syntax

Command	Command type
AT#GDATAVOL=[<mode>]	Execute
AT#GDATAVOL=?	Test

Parameters and Values

<mode>

- 0** Resets the data counter for the all the available PDP contexts (1).
- 1** Reports the last data session counter for the set PDP contexts, in the format:
- #GDATAVOL: <cid>,<tot>,<sent>,<received>
- where:
- <cid> - PDP context identifier.
 - <tot> - Number of bytes either received or transmitted in the last data session.
 - <sent> - Number of bytes transmitted in the last data.
 - <received> - Number of bytes received in the last data session.
- 2** Reports the total data counter, since last reset, for the all the set PDP contexts, in the format:
- #GDATAVOL: <cid>,<tot>,<sent>,<received>
- where:
- <cid> - PDP context identifier.
 - <tot> - Number of bytes either received or transmitted, in every data session since last reset.
 - <sent> - Number of bytes transmitted, in every data session since last reset.
 - <receivedn> - Number of bytes received, in every data session since last reset.

Notes

- Last data session counters are not saved in non-volatile memory so they are lost at power off.
- Total data session counters are saved in non-volatile memory.
- Internal use only.

ICMP Ping Support #ICMP

Set command enables or disables the ICMP ping support.

Read command returns whether the ICMP ping support is currently enabled or not, in the format:

#ICMP: <mode>

Test command reports the supported range of values for the <mode> parameter.

Syntax

Command	Command type
AT#ICMP=<mode>	Set
AT#ICMP?	Read
AT#ICMP=?	Test

Parameters and Values

<mode>

- 0** Disable ICMP ping support. **Default: 0.**
- 1** Enable firewalled ICMP ping support. The module is sending a proper ECHO_REPLY only to a subset of IP Addresses pinging it. The #FRWL specifies is subset of IP addresses.
- 2** Enable free ICMP ping support. The module is sending a proper ECHO_REPLY to every IP address pinging it.

PING Request #PING

Execute command sends ICMP ping echo request messages to an IP address or domain and displays the corresponding echo replies.

Test command reports the supported range of values for the #PING command.

Syntax

Command	Command type
AT#PING=<IPaddr>[,<retryNum>[,<len>[,<timeout>[,<ttl>]]]]	Execute
AT#PING=?	Test

Parameters and Values

<IPAddr>	String type. Address of the remote host. This parameter can be either: <ul style="list-style-type: none"> Any valid IP address in the format: "xxx.xxx.xxx.xxx". Any host name to be solved with a DNS query.
<retryNum>	The number of ping echo request to send. Range is 1-64. Default: 4.
<len>	The length of ping echo request message. Range is 32-1460. Default: 32.
<timeout>	The timeout, in 100 ms units, waiting a single echo reply. Range is 1-600. Default: 50.
<tll>	Time to live. Range is 1-255. Default: 128.

Once the single echo reply message is received, a string like the following is displayed:

```
#PING: <replyId>,<Ip Address>,<replyTime>,<tll>
```

where:

<replyId>	Echo reply number.
<IP Address>	IP address of the remote host
<replyTime>	Time, in 100 ms units, required to receive the response.
<tll>	Time to live of the echo reply message.

Notes

- Multi-Tech recommends increasing the default timeout value to allow the cellular network to respond.
- When the echo request timeout expires (no reply received on time) the response contains <replyTime> set to 600 and <tll> set to 255.
- Activate the CDMA context with AT#SGACT, before sending the PING request.

Example

```
AT#PING=google.com,4,32,600,128
#PING: 00,"74.125.227.99",147,54
#PING: 01,"74.125.227.99",152,54
#PING: 02,"74.125.227.99",296,54
#PING: 03,"74.125.227.99",163,54
OK
```

Maximum TCP Payload Size #TCPMAXDAT

Set command allows you to set the maximum TCP payload size in TCP header options.

Read command reports the current maximum TCP payload, in the format:

```
#TCPMAXDAT: <size>
```

Test command reports the supported range of values for the <size> parameter.

Syntax

Command	Command type
AT#TCPMAXDAT=<size>	Set
AT#TCPMAXDAT?	Read
AT#TCPMAXDAT=?	Test

Parameters and Values

<size>	Maximum TCP payload size accepted in one single TCP/IP datagram; it is sent in TCP header options in SYN packet.
0	The maximum TCP payload size is handled automatically by module. Default: 0.
496-1420	Maximum TCP payload size.

TCP Reassembly #TCPREASS

Set command enables the TCP reassembly feature, in order to handle fragmented TCP packets.

Read command returns whether the TCP reassembly feature is enabled or not, in the format:

#TCPREASS: <n>

Test command reports the supported range of values for the parameter <n>.

Syntax

Command	Command type
AT#TCPREASS=<size>	Set
AT#TCPREASS?	Read
AT#TCPREASS=?	Test

Parameters and Values

<n>	
1	Enable TCP reassembly feature. Default: 1.

E-mail Management AT Commands

E-mail SMTP Server #ESMTP

Set command sets the SMTP server address, used to send e-mails. SMTP server can be specified as IP address or as a nickname.

Read command reports the current SMTP server address, in the format:

#ESMTP: <smtp>

Test command returns the maximum length for the parameter <smtp>.

Syntax

Command	Command type
AT#ESMTP=[<smtp>]	Set
AT#ESMTP?	Read
AT#ESMTP=?	Test

Parameters and Values

<smtp>

String type, server address. This parameter can be either:

Valid IP address in the format: xxx.xxx.xxx.xxx.

Host name to be solved with a DNS query in the format: <host name>

Default: empty string "".

Note: Maximum value is 50.

Notes

- The SMTP server is used inside the APN space (the smtp server provided by the network operator) or it must allow the Relay, otherwise it refuses to send e-mail.

Example

```
AT#ESMTP="smtp.mydomain.com"
```

```
OK
```

E-mail Sender Address #EADDR

Set command sets the sender address string used for sending e-mail.

Read command reports the current sender address, in the format:

#EADDR: <e-addr>

Test command returns the maximum allowed length of the string parameter <e-addr>.

Syntax

Command	Command type
AT#EADDR=[<e-add>]	Set
AT#EADDR?	Read
AT#EADDR=?	Test

Parameters and Values

<e-add> String type, sender address. Any string value up to the maximum length of 80.
Default: empty string "".

Example

```
AT#EADDR="me@email.box.com"
OK
AT#EADDR?
#EADDR: "me@email.box.com"
OK
```

E-mail Authentication User Name #EUSER

Set command sets the user identification string used during the authentication step of the SMTP.

Read command reports the current user identification string, in the format:

#EUSER: <e-user>

Test command returns the maximum allowed length of the string parameter <e-user>.

Syntax

Command	Command type
AT#EUSER=[<e-user>]	Set
AT#EUSER?	Read
AT#EUSER=?	Test

Parameters and Values

<e-user> String type, e-mail authentication User ID.
 Any string value up to the maximum length is 50.
Default: empty string "".
 Note: If no authentication is required then the <e-user> parameter is empty "".

Notes

- This is a different user field than the one used for authentication.

Example

```
AT#EUSER="myE-Name "
OK
AT#EUSER?
#EUSER: "myE-Name "
OK
```

E-mail Authentication Password #EPASSW

Set command sets the password string used during the authentication step of the SMTP.

Test command returns the maximum allowed length of the string parameter <e-pwd>.

Syntax

Command	Command type
AT#EPASSW=[<e-pwd>]	Set
AT#EPASSW=?	Test

Parameters and Values

<e-pwd> String type, e-mail authentication password.
Any string value up to the maximum length of 50.
Default: empty string "".
Note: If no authentication is required then the <e-pwd> parameter is empty "".

Notes

- This is a different password field than the one used for authentication. See #PASSW.

Example

```
AT#EPASSW="myPassword"
OK
```

E-mail Sending with CDMA Context Activation #SEMAIL

Execute command sends an e-mail message. If not previously activated by #EMAILACT, activates a CDMA context. The CDMA context activated by #SEMAIL is deactivated when the e-mail is sent.

Test command returns the OK result code.

Syntax

Command	Command type
AT#SEMAIL=[<da>,<subj><att>]	Execute
AT#SEMAIL=?	Test

Parameters and Values

<da>	String type, destination address.
<subj>	String type, subject of message.
<att>	Attached image flag. Not supported.
0	Don't attach any image.
1	Attach the last snapshot taken.
	The device responds to the command with the prompt '>' and waits for the message body text.
	To complete the operation send Ctrl-Z char (0x1A hex). To exit without writing the message send ESC char (0x1B hex).
	If e-mail message is successfully sent, the response is OK.
	If message sending fails for some reason, an error code is reported.

Notes

- Ensure that no other commands are issued during command execution.
- To avoid malfunctions, wait for the OK or ERROR / +CMS ERROR:<err> response before issuing further commands.

Example

```
AT#SEMAIL="me@myaddress.com","subject of the mail"
```

```
>message body... this is the text of the mail message...
```

```
CTRL-Z
```

```
..wait..
```

```
OK
```

Message has been sent.

E-mail CDMA Context Activation #EMAILACT

Execute command deactivates and activates the CDMA context.

Read command reports the current status of the CDMA context for the e-mail, in the format:

```
#EMAILACT: <status>
```

where:

<status>	
0	CDMA context deactivated.
1	CDMA context activated.

Test command returns the OK result code.

Syntax

Command	Command type
AT#EMAILACT=[<mode>]	Execute
AT#EMAILACT=?	Test

Parameters and Values

<mode>	CDMA context activation mode.
0	CDMA context deactivation request.
1	CDMA context activation request.

Example

AT#EMAILACT=1

OK

CDMA context has been activated.

AT#EMAILACT=0

OK

CDMA context has been deactivated.

E-mail Sending #EMAILD

Execute command sends an e-mail message if context is already activated by AT#SGACT=1,1 or AT#EMAILACT=1.

Test command returns the OK result code.

Syntax

Command	Command type
AT#EMAILD=[<da>[,<subj>[,<att>]]]	Execute
AT#EMAILD=?	Test

Parameters and Values

<da>	String type, destination address.
<subj>	String type, subject of message.
<att>	Attached image flag. Not supported.
0	Don't attach any image.
1	Attach the last snapshot taken.
	The device responds to the command with the prompt '>' and waits for the message body text.
	To complete the operation send Ctrl-Z char (0x1A hex). To exit without writing the message send ESC char (0x1B hex).
	If e-mail message is successfully sent, the response is OK.
	If message sending fails for some reason, an error code is reported.

Notes

- If the length of one of the string type parameters exceeds the maximum, the string is truncated.
- Ensure that no other commands are issued during command execution.
- To avoid malfunctions, wait for the OK or ERROR / +CMS ERROR:<err> response before issuing further commands.
- The only difference between this command and the #SEMAIL is that this command does not interact with the CDMA context status, leaving it ON or OFF according to the #EMAILACT setting, thus, when the connection made with #EMAILD is closed, the context status is maintained.

Example

```
AT#EMAILD="me@myaddress.com","subject of the mail"
>message body... this is the text of the mail message...
CTRL-Z
..wait..
OK
Message has been sent.
```

E-mail Parameters Save #ESAV

Execute command stores the e-mail parameters in the device's non-volatile memory. Parameters stored are:

- E-mail user name
- E-mail password
- E-mail sender address
- E-mail SMTP server

Test command returns the OK result code.

Syntax

Command	Command type
AT#ESAV	Execute
AT#ESAV=?	Test

Notes

- If some parameters are not previously specified a default value is used.

E-mail Parameters Reset #ERST

Execute command resets the e-mail parameters to the "Default" configuration and stores them in the non-volatile memory of the device. Parameters reset are:

- E-mail user name
- E-mail password
- E-mail sender address
- E-mail SMTP server

Test command returns the OK result code.

Syntax

Command	Command type
AT#ERST	Execute
AT#ERST=?	Test

SMTP Read Message #EMAILMSG

Execute command returns the last response from SMTP server.

Test command returns the OK result code.

Syntax

Command	Command type
AT#EMAILMSG	Execute
AT#EMAILMSG=?	Test

GPS AT Commands Set

This section applies to MTPCIE-EV3 GPS-capable models only.

GPS Antenna Type Definition \$GPSAT

Set command selects the GPS antenna used.

Read command returns the currently used antenna, in the format:

\$GPSAT: <type>

Test command reports the range of supported values for parameter <type>.

Syntax

Command	Command type
AT\$GPSAT=<type>	Set
AT\$GPSAT?	Read
AT\$GPSAT=?	Test

Values

<status>

- 0** Disable external GPS antenna LNA.
- 1** Enable external GPS antenna LNA. **Default: 1.**

Notes

- This action works after power cycle.
- Current setting stored through \$GPSSAV.

Example

```
AT$GPSP=0
```

```
OK
```

GPS Controller Power Management \$GPSP

Set command allows to manage power-up or down of the GPS controller.

Read command reports the current value of the <status> parameter, in the format:

\$GPSP: <status>

Test command reports the range of supported values for <status>.

Syntax

Command	Command type
AT\$GPSP=<status>	Set
AT\$GPSP?	Read
AT\$GPSP=?	Test

Values

<status>

- | | |
|---|--|
| 0 | GPS controller is powered down. Default: 0. |
| 1 | GPS controller is powered up. |

Notes

- The current setting is stored through \$GPSSAV.

Example

```
AT$GPSP=0
```

```
OK
```

GPS Reset \$GPSR

Execute command resets the GPS controller.

Test command reports the range of supported values for <reset_type>.

Syntax

Command	Command type
AT\$GPSR=<reset_type>	Set
AT\$GPSR=?	Test

Parameters and Values

<reset_type>

- | | |
|---|---|
| 0 | Hardware reset. Resets the GPS receiver and restarts using values stored in the GPS receiver's internal memory. |
| 1 | Coldstart, no almanac, no ephemeris. This option clears all data that is currently stored in the internal memory of the GPS receiver including position, almanac, ephemeris, and time. The stored clock drift however, is retained. It is available in controlled mode only. |
| 2 | Warmstart, no ephemeris. This option clears all initialization data in the GPS receiver and subsequently reloads the data that is currently displayed in the Receiver Initialization Setup screen. The almanac is retained but the ephemeris is cleared. It is available in controlled mode only. |
| 3 | Hotstart, with stored almanac and ephemeris. The GPS receiver restarts by using the values stored in the internal memory of the GPS receiver, validated ephemeris and almanac. It is available in controlled mode only. |

Notes

- The current setting is stored through \$GPSSAV.
- Command works only while GPS is running.

Example

```
AT$GPSR=0
```

```
OK
```

Unsolicited NMEA Data Configuration \$GPSNMUN

Set command permits activation of unsolicited GPS data streaming (in NMEA format) through the NMEA port and defines which NMEA sentences are available.

Read command returns whether the unsolicited GPS NMEA data streaming is currently enabled or not, along with the NMEA sentences availability status, in the format:

\$GPSNMUN:<enable>,<GGA>,<GLL>,<GSA>,<GSV>,<RMC>,<VTG>

Test command returns the supported range of values for <enable>, <GGA>, <GLL>, <GSA>, <GSV>, <RMC>, <VTG>.

Syntax

Command	Command type
AT\$GPSNMUN=<enable>[,<GGA>,<GLL>,<GSA>,<GSV>,<RMC>,<VTG>]	Set
AT\$GPSNMUN?	Read
AT\$GPSNMUN=?	Test

Parameters and Values

<enable>

- 0** NMEA data stream deactivated. **Default: 0.**
- 1** NMEA data stream activated with the following unsolicited response syntax:
\$GPSNMUN:<CR><NMEA SENTENCE><CR>.
- 2** NMEA data stream activated with the following unsolicited response syntax:
<NMEA SENTENCE><CR>.
- 3** Dedicated NMEA data stream; it is not possible to send AT commands; with the escape sequence '+++' the user can return to command mode.

<GGA>

Global Positioning System fix data.

- 0** Disable. **Default: 0.**
- 1** Enable.

<GLL>

Geographical position - latitude/longitude.

- 0** Disable. **Default: 0.**
- 1** Enable.

<GSA>

GPS DOP and active satellites.

- 0** Disable. **Default: 0.**
- 1** Enable.

<GSV>

GPS satellites in view.

- 0** Disable. **Default: 0.**
- 1** Enable.

<RMC>

Recommended minimum specific GPS data.

- 0** Disable. **Default: 0.**
- 1** Enable.

<VTG>

Course over ground and ground speed.

- 0** Disable. **Default: 0.**
- 1** Enable.

Example

Enables unsolicited GSA messages to be output on the NMEA port:

```
AT$GPSNMUN=1,0,0,1,0,0,0
OK
```

Turn-off the unsolicited mode:

```
AT$GPSNMUN=0
OK
```

Read current NMEA settings:

```
AT$GPSNMUN?
$GPSNMUN: 1,0,0,1,0,0,0
OK
$GPSNMUN:
$GPGSA,A,3,23,20,24,07,13,04,02,,,,,2.4,1.6,1.8*3C
```

Get Acquired Position \$GPSACP

Execute command returns information about the last GPS position in the format:

```
$GPSACP: <UTC>,<latitude>,<longitude>,<hdop>,<altitude>,<fix>,<cog>,<spkm>,<spkn>,<date>,<nsat>
```

See the Parameters and Values for more information.

Read command supplies the same information as the Execute command.

Test command returns the OK result code.

Syntax

Command	Command type
AT\$GPSACP	Execute
AT\$GPSACP?	Read
AT\$GPSACP=?	Test

Parameters and Values

This section describes the information displayed when you use the Execute command.

<UTC>	UTC time (hhmmss.sss) referred to GGA sentence.
<latitude>	Format is ddmm.mmmm N/S, referred to GGA sentence. where: dd - degrees 00-90 mm.mmmm - minutes 00.0000-59.9999 N/S - North / South
<longitude>	Format is dddmm.mmmm E/W, referred to GGA sentence. where: ddd - degrees 000-180 mm.mmmm - minutes 00.0000-59.9999 E/W: East / West
<hdop>	x.x - Horizontal Dilution of Precision, referred to GGA sentence.
<altitude>	x.x Altitude - mean-sea-level (geoid) in meters, referred to GGA sentence.
<fix>	
0	Invalid fix.
2	2D fix.
3	3D fix.
<cog>	ddd.mm - Course over Ground (degrees, True), referred to VTG sentence, where:
ddd	Degrees 000-360
mm	Minutes 00-59
<spkm>	x.x Speed over ground (Km/hr), referred to VTG sentence.
<spkn>	x.x Speed over ground (knots), referred to VTG sentence.
<date>	ddmmyy Date of Fix, referred to RMC sentence. where: dd - day 01-31 mm - month 01-12 yy - year 00-99 - 2000 to 2099
<nsat>	nn - Total number of satellites in use, referred to GGA sentence.
00-12	

Example

```
AT$GPSACP
```

```
$GPSACP:080220.479,4542.82691N,01344.26820E,259.07,3,2.1,0.1,0.0,0.0,270705,09  
OK
```

Save GPS Parameters \$GPSSAV

Save GPS Parameters Configuration \$GPSSAV

Execute command stores the current GPS parameters in the non-volatile memory of the device.

Test command returns the OK result code.

Syntax

Command	Command type
AT\$GPSSAV	Execute
AT\$GPSSAV=?	Test

Notes

- To use the new configuration, restart the module.

Example

```
AT$GPSSAV
```

```
OK
```

Restore to Default GPS Parameters \$GPSRST

Execute command reset GPS parameters to the factory default configuration and stores them in the non-volatile memory.

Test command returns the OK result code.

Syntax

Command	Command type
AT\$GPSRST	Execute
AT\$GPSRST=?	Test

Notes

- To use the new configuration, restart the module.

Example

```
AT$GPSRST
```

```
OK
```

gpsOne Commands

Clear GPS Data **\$GPSCLR**

Execute command resets all GPS related parameters as follows:

- GPS Almanac Data
- GPS Ephemeris Data
- LBS User Plane PDE IP Address
- LBS User Plane PDE IP Port

Test command returns the OK result code.

Syntax

Command	Command type
AT\$GPSCLR	Execute
AT\$GPSCLR=?	Test

Notes

- This is a global command that cannot clear individual data.

Example

```
AT$GPSCLR=?
```

```
OK
```

```
AT$GPSCLR
```

```
OK
```

GPS Lock Mode **\$GPSLOCK**

Execute command sets the lock mode to be used with GPS. Allows the user to turn on or off location messaging (IS-801) to the network in modem.

Read command reports the current value of the <mode> parameter.

Test command reports the range of supported values for the parameter.

Syntax

Command	Command type
AT\$GPSLOCK=<mode>	Execute
AT\$GPSLOCK?	Read
AT\$GPSLOCK=?	Test

Parameters and Values

<mode>

0	GPS Unlock.
1	Mobile initiated call is locked.
2	Mobile terminated call is locked.
3	Except emergency call, all is locked.

Notes

- Applies to both control and user plane GPS.

Example

```
AT$GPSLOCK=?
```

```
$GPSLOCK: (0-3)
```

```
OK
```

```
AT$GPSLOCK?
```

```
$GPSLOCK: 0
```

```
OK
```

```
AT$GPSLOCK=3
```

```
OK
```

CDMA Custom AT Commands

General Configuration AT Commands

Common Air Interface Parameters #CAI

Read command returns the module's current common air interface parameters, in the following format:

#CAI:

<sid>,<nid>,<bsid>,<packetid>,<channel>,<pilot_pn>,<mb_prev>,<bs_prev>,<in_use_prev>,<rssi>,<ecio>,<tx_adj>,<rx_state>,<rx_rate>,<tx_rate>,<service_opt>,<slot_index>,<fer>,<voice_priv>,<band>

where:

<sid>	Integer value of current system ID.
<nid>	Integer value of current network ID.
<bsid>	Integer value of current base station ID.
<packetid>	Integer value of current packet zone ID.
<channel>	Integer value of current channel number.
<pilot_pn>	Integer value of current pilot PN number.
<mb_prev>	Integer value of current mobile station protocol revision.
3	IS95A.
4	IS95B.
6	IS2000.
7	IS2000 Rel A.
8	IS2000 Rel B. EV3 models only.
9	IS2000 Rel C. EV3 models only.
<bs_prev>	Integer value of current base station protocol revision. Refer to <mb_prev>.
<in_use_prev>	Integer value of current in use protocol revision. Refer to <mb_prev>.
<rssi>	Integer value of current RSSI.
<ecio>	Integer value of current ECIO.
<tx_adj>	Integer value of current TX gain.
<rx_state>	Integer value of current RX state.
0	CDMA state.
1	Process sync channel data.
2	Process paging channel data.
3	Process traffic channel initialization.
4	Process traffic channel data.
5	Monitor the BCCH.
6	Monitor the FCCCH.
7	Monitor both BCCH and FCCCH.
8	Exit state.
<rx_rate>	Current RX rate integer value.
<tx_rate>	Current TX rate integer value.
<service_opt>	Current service option integer value.
<slot_index>	Current slot cycle index integer value.
<fer>	Current frame error rate integer value.

<voice_priv>	Current voice privacy mode integer value.
0	Disable.
1	Enable.
<band>	Current band integer value.

Test command returns the OK result code.

Example

AT#CAI?

#CAI: 4376,30,522,30,350,330,6,6,6,-85,-5,0,2,0,0,0,2,0,0,1

OK

AT#CAI=?

OK

Modem Configure Parameters #MODEM

Read command returns the modem's configuration parameters.

#MODEM:

<mdn>,<msin>,<vbatt>,<temp>,<systemtime>,<calltime>,<totalcalltime>,<modemstatus>,<fwver>,<model>,<namname>,<lock>,<prlver>,<deepsleep>

where:

<mdn>	Mobile directory number.
<msin>	Mobile Subscriber Identifier Number.
<vbatt>	Current battery voltage level.
<temp>	Current temperature.
<systemtime>	Current system time (received from the network).
<calltime>	Latest call time.
<totalcalltime>	Total call time.
<modemstatus>	Current modem status.
0	IDLE state.
1	Origination state.
2	Alerting state.
3	Conversation state.
4	Call end state.
5	Dormant mode state.
<fwver>	Firmware version, Qualcomm patch release version.
<model>	Model name.
<namname>	Current Nam Name . Note: Not all service providers use NAM name, some providers use a string to display service provider's name. If service provider does not use this, then "UNKNOWN" will be displayed. In case of VERIZON, Nam Name is blank.
<lock>	Current lock status.
0	Not locked.
1	Registration lock.
<prlver>	Current PRL version.

<deepsleep>	Current deep sleep status.
0	Wake up.
1	Deep sleep.

Syntax

Command	Command type
AT#MODEM[=<index>]?	Read

Parameters and Values

<index>	To get specific modem configuration parameter value of the module.
0	<mdn>
1	<msin>
2	<vbatt>
3	<temp>
4	<systemtime>
5	<calltime>
6	<totalcalltime>
7	<modemstatus>
8	<fwver>
9	<model>
10	<namname>
11	<lock>
12	<prlver>
13	<deepsleep>

Example

AT#MODEM?

#MODEM:
9194547049,9194547049,3.9,0,20080923152338TUE,000000,00000000103,0,SCAUTHZ31340
118,DE910-DUAL,UNKNOWN,0,10030,0

OK

AT#MODEM=0?

#MODEM: 1234567890

OK

AT#MODEM=9?

#MODEM: DE910-DUAL

OK

AT#MODEM?

#MODEM:
9194547049,9194547049,3.9,0,20080923152338TUE,000000,00000000103,0,SCAUTHZ31340
118,CE910-DUAL,UNKNOWN,0,10030,0

OK

AT#MODEM=0?

#MODEM: 1234567890

OK

AT#MODEM=9?

#MODEM: CE910-DUAL

OK

Modem NAM Parameters #ENG

Set command sets to mobile NAM parameters according to <index> parameter.

Read command returns the current mobile NAM parameters in format:

#ENG: <mobprev>,<mcc>,<mnc>,<accolc>,<homereg>,<termforsid>,<termfornid>,<scm>,<sci>,<mdn>,<msin>,<prefserv>,<prefmode>,<primch_a>,<primch_b>,<scch_a>,<scch_b>,<sid>,<nid>[,<sid>,<nid>...],<prefrc>,<slotmode>

where:

<mobprev>	Mobile protocol revision.
<mcc>	Mobile country code.
<mnc>	Mobile network code.
<accolc>	Access overload control.
<homereg>	MOB_TERM_HOME registration flag.
<termforsid>	MOB_TERM_SID registration flag.
<termfornid>	MOB_TERM_NID registration flag.
<scm>	Station class mark.
<sci>	Slot cycle index.
<mdn>	Mobile directory number.
<msin>	Mobile subscriber identifier number.
<prefserv>	CDMA preferred serving system (A/B).
<prefmode>	Digital/analog mode preference.
<primch_a>	CDMA primary channel (A).
<primch_b>	CDMA primary channel (B).
<scch_a>	CDMA secondary channel (A).
<scch_b>	CDMA p secondary channel (B).
<sid>,<nid>	SID-NID pair.
<prefrc>	Preferred forward and reverse RC value.
<slotmode>	Slot mode.

Test command returns the OK result code.

Syntax

Command	Command type
AT#ENG= <index>:<value>[,<index>:<value>...]	Set
AT#ENG[=<index>[,<index>...]]?	Read
AT#ENG=?	Test

Parameters and Values

<index>	Integer type, index of mobile NAM parameter.
0	Mobile protocol revision.
1	Mobile country code.

2	Mobile network code.
3	Access overload control.
4	MOB_TERM_HOME registration flag.
5	MOB_TERM_SID registration flag.
6	MOB_TERM_NID registration flag.
7	Station class mark.
8	Slot cycle index.
9	Mobile directory number.
10	Mobile subscriber identifier number.
11	CDMA preferred serving system (A/B).
12	Digital/analog mode preference.
13	CDMA primary channel (A).
14	CDMA primary channel (B).
15	CDMA secondary channel (A).
16	CDMA p secondary channel (B).
17	SID-NID pair.
18	Preferred forward and reverse RC value,
19	Slot mode.

Example

AT#ENG?

#ENG:

6,310,00,9,1,1,1,42,2,1234567890,9135069409,5,4,283,384,691,777,(4139,65535),(0,0),0

OK

AT#ENG=9?

#ENG: 1234567890

OK

AT#ENG=1:400,2:06

OK

AT#ENG=1,2?

#ENG: 400,06

OK

Modem Change Operational Mode #MODE

Set command changes the modem's operational mode.

Read command returns the modem's current mode, in the format:

#MODE: <mode>

Test command reports the range of the parameter <mode>.

Syntax

Command	Command type
AT#MODE=[=<mode>]?	Set
AT#MODE?	Read
AT#MODE=?	Test

Parameters and Values

<mode>	Operational mode selection.
Offline	Offline mode for RF tests.
Reset	Resets the module.
PWROFF	Powers off the module.
LPM	Lower power mode. RX/TX turned off, unable to receive network.
FTM	Factory test mode. For RF tests.
ONLINE	Online mode. Returns to normal operation.

Notes

- Some mode change is not possible, such as LPM mode to FTM mode.

Example

```
AT#MODE=OFFLINE
```

```
OK
```

```
AT#MODE=LPM
```

```
OK
```

```
AT#MODE=FTM
```

```
OK
```

```
AT#MODE=ONLINE
```

```
OK
```

```
AT#MODE=RESET
```

```
OK
```

```
AT#MODE=PWROFF
```

```
OK
```

CDMA Notification #NOTI

Set command sets to enable or disable related CDMA notification.

Read command returns the current status flag of <onoff>, in the format:

```
#NOTI: <onoff (for index 1)>,<onoff (for index 2)>, ... ,<onoff (for index 18)>
```

Test command reports the range of the parameter <index>, <onoff>.

Syntax

Command	Command type
AT#NOTI= <index>,<onoff>	Set
AT#NOTI?	Read
AT#NOTI=?	Test

Parameters and Values

- <index>** CDMA notification selection.
- 0** All notification messages (1~18).
 - 1** "#CNIP" the output when the module receives a Calling Number Identification Presentation from the network.
 - 2** "#CNAP" the output when the module receives a Calling Naming Presentation from the network.
 - 3** "#DISREC" the output when the module receives a Display Record from the network.
 - 4** "#LOCK" the output when the module receives a LOCK from the network during registering state.
 - 5** "#UNLOCK" the output when the module receive a UNLOCK from the network during locked state.
 - 6** "#SMSFULL" the output when SMS are FULL.
 - 7** "#ENTERDEEP" the output when the module enters Power save mode.
 - 8** "#EXITDEEP" the output when the module exits Power save mode.
 - 9** "#ENTERDRM" the output when the module enters Dormant state.
 - 10** "#EXITDRM" the output when the module exits Dormant state into Activate state.
 - 11** "#DREL" the output when the module releases Data call.
 - 12** "#ROAM" the RI (roaming indicator) output matching with PRL when system is changed.
 - 13** "#ERR_CODE" the output when MIP ERROR is occurred.
 - 14** "#ROAMGUARD" the output when the module moves between Domestic area and International area regarding data roaming.
 - 15** "#N11" the output when N11 digits dialed by user.
 - 16** "#SERVICE" the output when the service state of module changed.

Service State Messages

"#SERVICE: 0" - No service state.

"#SERVICE: 2" - Normal service state.

"#SERVICE: 4" - CDMA lock state (This means the device received "Lock Order" from the Base Station).

- 17** "#EMERGENCY CALL" the output when the module try to emergency call.

- 18** **EV3 models only.**

"#SERVICE_HDR" the output when the HDR service state of module changed.

Service State Messages.

"#SERVICE_HDR: 0" - No service state.

"#SERVICE_HDR: 2" - Normal service state.

"#SERVICE_HDR: 4" - Power save or Deep sleep state.

- <onoff>** Device configuration message status

- 0** Disable. **Default: 0.**

- 1** Enable.

Example

```

AT#NOTI=?
#NOTI: (0-18),(0,1)
OK
AT#NOTI?
#NOTI: 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
OK
AT#NOTI=0,1
OK
AT#NOTI?
#NOTI: 1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1
OK
AT#NOTI=7,0
OK
AT#NOTI?
#NOTI: 1,1,1,1,1,1,0,1,1,1,1,1,1,1,1,1,1,1,1
OK

```

Mobile Directory Number \$MDN

Set command manipulates the module's Mobile Directory Number.

Read command returns the Mobile Directory Number with command echo:

\$MDN: <mdn>

Test command returns the OK result code.

Syntax

Command	Command type
AT\$MDN=<mdn>	Set
AT\$MDN=<msl>,<mdn>	Set (EV3 devices on Sprint network only)
AT\$MDN="<msl>",<mdn>	Set (C2 devices on Sprint network only)
AT\$MDN?	Read
AT\$MDN=?	Test

Parameters and Values

- <mdn>** The Mobile Directory Number expressed as a decimal phone number.
- <msl>** Master Subsidy Lock value (numeric password).

Notes

- Sprint requires Master Subsidy Lock for EV-DO (EV3) and CDMA (C2) devices.
- For Sprint C2 devices only, enclose the <msl> value in quotation marks, AT\$MDN="<msl>",<mdn>.

Example

```
AT$MDN=?
OK
AT$MDN?
$MDN: 1234567890
```

Mobile Station ID \$MSID

Set command manipulates the module's Mobile Station ID.

Read command returns the Mobile Station ID with command echo:

```
$MSID: <msid>
```

Test command returns the OK result code.

Syntax

Command	Command type
AT\$MSID= <msid>	Set
AT\$MSID=<msl>,<msid>	Set (EV3 devices on Sprint network only)
AT\$MSID="<msl>",<msid>	Set (C2 devices on Sprint network only)
AT\$MSID?	Read
AT\$MSID=?	Test

Parameters and Values

<msid>	The Mobile Station ID expressed as a decimal phone number.
<msl>	Master Subsidy Lock value (numeric password).

Notes

- Sprint requires <msl> for EV3 and C2 devices.
- For Sprint C2 devices only, enclose the <msl> value in quotation marks, AT\$MSID="<msl>",<msid>.

Example

```
AT$MSID=?
OK
AT$MSID?
$MSID: 0000000000
```


Notification of Service +SERVICE

Read command returns notification of service area without command echo.

+SERVICE: <serv>

where:

<serv>

- | | |
|---|---|
| 0 | No service. |
| 1 | 1XRTT Service |
| 2 | EV3 models only. EVDO Release 0. |
| 3 | EV3 models only. EVDO Release A. |

Test command returns the OK result code.

Syntax

Command	Command type
AT+SERVICE?	Read
AT+SERVICE=?	Test

Service Status #SVCSTAT

Read command returns service status about 1x and EVDO.

#SVCSTAT: <1x_svc_stat>,<EVDO_svc_stat>

where:

- | | |
|-----------------|---|
| <1x_svc_stat> | Status parameter for 1x service. |
| 0 | No service state. |
| 2 | Normal service state. |
| 4 | Power save or deep sleep. |
| <EVDO_svc_stat> | Status parameter for EVDO service. |
| 0 | No service state. |
| 2 | EV3 models only. Normal service state. |
| 4 | EV3 models only. Power Save or Deep Sleep. |

Test command returns the OK result code.

Syntax

Command	Command type
AT#SVCSTAT?	Read
AT#SVCSTAT=?	Test

Reverse Logistic Support #RTN

Execute command restores the selected parameter's factory value.

Test command returns the OK result code.

Syntax

Command	Command type
AT#RTN=<n>	Execute
AT#RTN=?	Test

Parameters and Values

<serv>	Parameter for reset.
0	MDN. (Resets when device is restarted.)
1	MSID. (Resets when device is restarted.)
2	Last call time.
3	Total call time.
4	MIP Profile, deletes only MIP profile 1.

Air Interface and Call Processing

Voice Privacy Setting #VOICEPRIV

Set command sets voice privacy mode according to <v_privacy> parameter.

Read command returns the current voice privacy setting value, in the following format:

#VOICEPRIV: <v_privacy>

Test command reports the range of <v_privacy> parameters:

#VOICEPRIV: <0,1>

Syntax

Command	Command type
AT#VOICEPRIV=<v_privacy>	Set
AT#VOICEPRIV?	Read
AT#VOICEPRIV=?	Test

Parameters and Values

<v_privacy>	Voice privacy setting value.
0	Off.
1	On. Verizon Default: 1.

Example

```
AT#VOICEPRIV=?
#VOICEPRIV: (0,1)
OK
```

Vocoder Setting Value Reading or Writing #PREFVOC

Set command sets vocoder setting value.

Read command returns the current vocoder setting values, in the following format:

#PREFVOC: <evrc>,<so1>,<so2>,<so3>

Test command reports the parameter range.

Syntax

Command	Command type
AT#PREFVOC= <evrc>,<so1>,<so2>,<so3>	Set
AT#PREFVOC?	Read
AT#PREFVOC=?	Test

Parameters and Values

<evrc>	EVRC mode.
0	Disable EVRC. Default: 0.
1	Enable EVRC.
<so1>	Page voice service option in home network.
3	For EVRC. Default: 3.
32768	For QCELP.
<so2>	Page voice service option in home network.
3	For EVRC. Default: 3.
32768	For QCELP.
<so3>	Page voice service option in home network.
3	For EVRC. Default: 0.
32768	For QCELP.

Note

- If <evrc> is set to 0, voice service option will be discarded.

Example

```
AT#PREFVOC?
#PREFVOC: 0,3,3,3
OK
AT#PREFVOC=1,3,3,3
OK
AT#PREFVOC?
#PREFVOC: 1,3,3,3
OK
AT#PREFVOC=0,32768,32768,32768
OK
AT#PREFVOC?
```

```
#PREFVOC: 0,32768,32768,32768
```

```
OK
```

Configuration Setting +CFG

Set command sets a module configuration string. The module stores the string and sends it to the base station prior to dialing. Each AT+CFG command transmission from Host replaces the contents of the previous string.

Read command returns the configuration string, in the following format:

```
+CFG: <string>
```

Test command returns the OK result code.

Syntax

Command	Command type
AT+CFG=<string>	Set
AT+CFG?	Read
AT+CFG=?	Test

Parameters and Values

<string>

Configuration string up to 248 characters.

Example

```
AT+CFG=?
```

```
OK
```

```
AT+CFG?
```

```
+CFG: " "
```

```
OK
```

```
AT+CFG="data"
```

```
OK
```

```
AT+CFG?
```

```
+CFG: "data"
```

```
OK
```

RM Interface Setting +CRM

Set command changes the RM interface protocol.

Read command returns the RM interface setting, in the following format:

+CRM: <value>

Test command reports the <value> parameter range.

Syntax

Command	Command type
AT+CRM=<value>	Set
AT+CRM?	Read
AT+CRM=?	Test

Parameters and Values

<value>	
	RM Interface protocol.
0	Circuit data.
1	Packet data (relay layer packet data).
2	Packet data (network layer packet data).

Notes

- When the AT\$QCMIP value is changed to “1” or “2”, it changes the value of AT+CRM to 2. When AT+CRM has a value of “2”, it enables network mode operation.
- Changing the value of AT\$QCMIP to “0” will reset the AT+CRM to its original value.

Example

```
AT+CRM=?
+CRM: (0-2)
OK
AT+CRM?
+CRM: 2
OK
AT+CRM=0
ERROR
AT$QCMIP?
$QCMIP: 2
OK
AT$QCMIP=0
OK
AT+CRM=0
OK
AT+CRM?
```

```
+CRM: 0
OK
AT$QCMIP=2
OK
AT+CRM?
+CRM: 2
OK
```

Data Session AT Commands

Data Inactivity Timer +CTA

Set command sets UM packet data inactivity timer.

Read command returns the data inactivity timer, in the following format:

```
+CTA: <n>
```

Test command reports the <n> parameter range.

Syntax

Command	Command type
AT+CTA=<n>	Set
AT+CTA?	Read
AT+CTA=?	Test

Parameters and Values

<n>	Um packet data inactivity timer.
0	Traffic channel not released during inactivity periods.
1-255	Release the traffic channel after <value> 1-second intervals have elapsed since last sending or receiving RLP data frames on the Um interface. Sprint/Aeris Default: 60 seconds. Verizon Default: 30 Seconds.

Example

```
AT+CTA=?  
+CTA: (0-255)  
OK  
AT+CTA?  
+CTA: 60  
OK  
AT+CTA=30  
OK  
AT+CTA?  
+CTA: 30  
OK
```

Packet Zone ID +PZID

Displays the current <packet_zone_id> in the Extended System Parameters Message or the In-Traffic System Parameters Message.

Test command returns the OK result code.

Syntax

Command	Command type
AT+PZID?	Read
AT+PZID=?	Test

Example

```
AT+PZID=?  
OK  
AT+PZID?  
+PZID: 30  
OK
```

Interrupt Packet Data \$GODORMANT

Returns the OK result code.

Executed immediately, not time critical.

After running this AT Command, the device emerges from the dormant state and becomes active as long as the device has packets to send or receive.

To get the OK result, the device should be in Packet Data Active Session. In case of QNC call, result will be ERROR, because QNC doesn't support dormant.

Test command returns the OK result code.

Syntax

Command	Command type
AT\$GODORMANT	Execute
AT\$GODORMANT=?	Test

Example

AT\$GODORMANT

OK

Test Origination #TESTORI

Set command originates a loopback test call according to <idx > parameter.

Syntax

Command	Command type
AT#TESTORI=<svc_opt>[,<num>]	Set

Parameters and Values

<svc_opt>	Service option for test call.
0	Rate Set 1 Loopback Service Option (Service Option: 0x02).
1	Rate Set 2 Loopback Service Option (Service Option: 0x09).
2	Loopback service Option 55 (Service Option: 0x37).
3	Markov Service Option (Service Option: 0x8002).
4	Markov Service Option (13K) (Service Option: 0x801C).
5	Rate Set 2 Markov Service Option (Service Option: 0x801F).
6	Rate Set 1 Markov Service Option (Service Option: 0x801E).
7	Markov Service Option 54 (Service Option: 0x36).
8	Service option for Simple TDSO (Service Option: 0x8008).
9	Service option for FULL TDSO (Service Option: 0x22).
<num>	Destination number for test call.

Example

AT#TESTORI=0

OK

AT#TESTORI=0 ,12345678

OK

EVDO Specific AT Commands

RX Diversity for CDMA #CRXD

EV3 models only.

Set command enables or disables RX diversity.

Read command reports the current configuration, in the format:

#CRXD: <1x rxd>,<evdo rxd>

Test command reports the supported value range for parameter <1x rxd>,<evdo rxd>.

Syntax

Command	Command type
AT#CRXD=<1x rxd>,<evdo rxd>	Set
AT#CRXD?	Read
AT#CRXD=?	Test

Parameters and Values

<1x rxd>	RX diversity enable/disable for 1x.
0	Disable. Default: 0.
1	Enable.
<evdo rxd>	RX diversity enable/disable for EVDO.
0	Disable. Default: 0.
1	Enable.

Note

- This command saves in non-volatile memory.
- This action works after power cycle.

High Data Rate Protocol Suite #HDRPS

EV3 models only.

Read command returns the current HDR protocol state and AT information, in the format:

#HDRPS: <AT state>,<SMP state>,<ALMP state>,<Init state>,<Idle state>,<Con state>,<RUP state>,<Hybrid Mode>,<Prot>,<ATI type>,<ATI value>,<Color Code>,<Subnet Mask>,<Serving PN>,<Band>,<Chan>,<rx0_rssi>,<rx1_rssi>,<Tx_Pwr>,<Rx-Diversity>,<Ec/Io>

where:

<AT state>	
0	Inactivity.
1	Acquisition.
2	Sync.
3	Idle.
4	Access.

5	Connected.
<SMP state>	
0	Inactivity state.
1	AMP setup state.
2	AT initialize state.
3	AN initialize state.
4	Open state.
5	Session closed state.
<ALMP state>	
0	Inactivity state.
1	Initialization state.
2	Idle state.
3	Connected state.
<Init state>	
0	Inactivity state.
1	Network determination state.
2	Pilot acquisition state.
3	Synchronization state.
4	Time transfer state.
5	Fast acquisition state.
<Idle state>	
0	Inactivity state.
1	Monitor state.
2	Sleep state.
3	Connection setup state.
4	Suspends state.
5	Connection setup suspend state.
<Con state>	
0	Inactivity state.
1	Connected state.
<RUP state>	
0	Inactivity state.
1	Idle state.
2	Connection setup state.
3	Connected state.
4	Synchronize connection setup state.
<Hybrid mode>	
0	Hybrid off.
1	Hybrid on.
<Prot>	
0	Active protocol revision.
0	Unknown.
1	HDR Release 0.
2	HDR Release A.
3	HDR Release B.
<ATI type>	
0	Access Terminal Identifier type.
0	BATI (Broadcast).
1	MATI (Multicast).

2	UATI (Unicast).
3	RATI (Random).
<ATI value>	Hex value of current ATI.
<Color code>	Hex value of current color code.
<Subnet mask>	Hex value of current subnet mask.
<Serving PN>	Integer value of current PN.
<Band>	Current value of band class.
<Chan>	Channel number.
<rx0_rssi>	RSSI value of main antenna.
<rx0_rssi>	RSSI value of diversity antenna.
<Tx_Pwr>	TX power.
<Rx -Diversity>	RX diversity setting value.
0	Rx0 only.
1	Diversity enable (Rx0 and Rx1),
<Ec/Io>	Ec/Io.

Syntax

Command	Command type
AT#HDRPS?	Read

Audio Commands

Change Audio Path #CAP

C2 models only.

Set command switches the active audio path depending on parameter **<n>**.

Read command reports current open audio path in the format:

#CAP: <n>

Test command reports the supported values for <n>.

Syntax

Command	Command type
AT#CAP=<n>	Set
AT#CAP?	Read
AT#CAP=?	Test

Parameters and Values

<n>	Audio path.
0	Audio path follows the AXE input. Default: 0. If AXE is low, handsfree is enabled. If AXE is high, internal path is enabled.
1	Enables handsfree external mic/ear audio path.
2	Enables internal mic/ear audio path.

Notes

- The audio paths are mutually exclusive. Enabling one disables the other.
- When changing the audio path, the volume level is set at the previously stored value for that audio path. See +CLVL.

Open Audio Loop #OAP

Set command sets the open audio path.

Read command reports current open audio path in the format:

#OAP: <mode>

Test command reports the supported values for <mode>.

Syntax

Command	Command type
AT#OAP=[<n>,<tout>]	Set
AT#OAP?	Read
AT#OAP=?	Test

Parameters and Values

<mode>	Ring tone.
0	Disables open audio path. Default: 0.
1	Enables open audio path.

Notes

- This parameter is not saved in non-volatile memory.

Select Ringer Sound #SRS

Set command sets the ringer sound.

Read command reports current selected ringing and its status in the format:

#SRS: <n>,<tout>

where:

<n>	Ring tone number.
1-max	
<n>	Ring tone status.
0	Selecting, but not playing.
1	Currently playing.

Test command reports the supported values for <n> and <tout>.

Syntax

Command	Command type
AT#SRS=[<n>,<tout>]	Set
AT#SRS?	Read
AT#SRS=?	Test

Parameters and Values

<n>	Ring tone number.
0	Current ringing tone.
1-32	Ring tone number. Default: 10.
<tout>	Ring tone playing timeout in seconds.
0	Ringer is stopped (if present) and current ringer sound is set.
1-60	Ringer sound playing for <tout> seconds and, if <n> > 0, ringer sound <n> is set as default ringer sound.

Notes

- When the command is issued with <n> > 0 and <tout> > 0, the <n> ringing tone is played for <tout> seconds and stored as default ringing tone.
- If command is issued with <n> > 0 and <tout> = 0, the playing of the ringing is stopped (if present) and <n> ringing tone is set as current.
- If command is issued with <n> = 0 and <tout> > 0 then the current ringing tone is played for <tout> seconds.
- If both <n> and <tout> are 0 then the default ringing tone is set as current and ringing is stopped.
- If all parameters are omitted then the behavior of Set command is the same as Read command.

Select Ringer Path #SRP

C2 models only.

Set command selects the ringer path to whom the sending ringer sounds and sends all signaling tones.

Read command reports set value of <n> in the format:

```
#SRP: <n>
```

Test command reports the supported values for <n>.

Syntax

Command	Command type
AT#SRP=<n>	Set
AT#SRP?	Read
AT#SRP=?	Test

Parameters and Values

<n>	Ringer path number
0	Sound output to the current selected audio path. See command #CAP. Default: 0.
1	Sound output to handsfree.
2	Sound output to handset.

Example

```
AT#SRP=?
```

```
#SRP: (0-3)
```

```
OK
```

```
AT#SRP=3
```

```
OK
```

Signaling Tones Mode #STM

Set command enables or disables the signaling tones output on the audio path.

Read command reports whether the current signaling tones status is enabled or not, in the format:

```
#STM: <mode>
```

Test command reports supported range of values for <mode>.

Syntax

Command	Command type
AT#STM=[<mode>]	Set
AT#STM?	Read
AT#STM=?	Test

Parameters and Values

<mode>	Signaling tones status.
0	Signaling tones disabled.
1	Signaling tones enabled.
2	All tones disabled.

Notes

- AT#STM=0 has the same effect as AT+CALM=2.
- AT#STM=1 has the same effect as AT+CALM=0.

Example

```
AT#STM?  
#STM: 1  
OK  
AT#STM=?  
#STM: (0-2)  
OK  
AT#STM=2  
OK  
AT#STM?  
#STM: 2  
OK
```

Tones Configuration

Tone Playback #TONE

Execute command allows the playback of a single DTMF tone or a dial tone for a specified period of time.

Test command returns the supported range of values for <tone> and <duration>.

Syntax

Command	Command type
AT#TONE=<tone>[,<duration>]	Execute
AT#TONE=?	Test

Parameters and Values

<tone>	Tone to be reproduced. ASCII characters. Range: ((0-9),#,*,(A-D),(G-L),Y,Z).
(0-9), #, *, (A-D)	DTMF tone.
G-L	User-defined tones.
Y	Free tone.
Z	Busy tone.
<duration>	Duration of current tone in 1/10 of second.
1-300	Tenth of seconds Default: 30.

Example

```
AT#TONE=?
#TONE: (0-9,#,*,A-D,G-L,Y,Z),(1-300)
OK
AT#TONE=3,60
OK
AT#TONE=3
OK
```

Tone Classes Volume #TSVOL

Set command selects the volume mode for one or more tone classes.

Read command returns for each class of tones the last setting of <mode> and, if <mode> is not 0, of <volume> too, in the format:

```
#TSVOL: 1,<mode1>[,<volume1>]<CR><LF>
```

...

```
#TSVOL:64,<mode64>[,<volume64>]
```

Test command returns the supported range of values of <class>, <mode> and <volume>.

Syntax

Command	Command type
AT#TSVOL=<class>,<mode>[,<volume>]	Set
AT#TSVOL?	Read
AT#TSVOL=?	Test

Parameters and Values

<class>	Sum of integers, each representing a class of tones to which the command refers.
1	CDMA tones.
2	Ringer tones.
4	Reserved.
8	Reserved.
16	DTMF tones.
32	Reserved.
64	User-defined tones.
128	Reserved.
255	All classes.
<mode>	Indicates volume that is used for the classes of tones represented by <class>.
0	Default volume is used.
1	The volume <volume> is used.
<volume>	Volume to be applied to the set of classes of tones represented by <class>; it is mandatory if <mode> is 1.
0-14	To get the value of max, issue the Test command AT#TSVOL=?.

Notes

- No information is returned for class 128.

Example

```
AT#TSVOL=84,1,5
```

```
OK
```

```
AT#TSVOL=84,0
```

```
OK
```

```
AT#TSVOL?
```

```
#TSVOL:1,0
```

```
#TSVOL:2,0
```

```
#TSVOL:4,1,5
```

```
#TSVOL:8,0
```

```
#TSVOL:16,1,5
```

```
#TSVOL: 32,0
```

```
#TSVOL:64,1,5
```

```
OK
```

Digital Voice Band Interface #DVI

Set command enables/disables the digital voiceband interface.

Read command reports last setting, in the format:

```
#DVI: <mode>, <dviport>, <clockmode>
```

Test command returns the supported range of values of <mode>, <dviport>, and <clockmode>.

Syntax

Command	Command type
AT#DVI=<mode>[,<dviport>,<clockmode>]	Set
AT#DVI?	Read
AT#DVI=?	Test

Parameters and Values

<mode>

0

Enables or disables the DVI.

C2 models only. Disable DVI, forwards audio to the analog line. DVI pins can be used for other purposes, like GPIO, etc. **C2 Default: 0.**

1

Enable DVI; audio is forwarded to the DVI block.

<dviport>

2

DVI port 2 will be used.

<clockmode>

0

DVI slave.

1

DVI master. **Default: 1.**

Example

DVI activated for audio. DVI is configured as master providing on DVI Port #2:

```
AT#DVI=1,2,1
```

OK

Digital Voice Band Interface Configuration #DVICFG

Set command sets the digital voiceband interface configuration.

Read command reports last setting, in the format:

```
#DVICFG: <clock>,<decoder pad>,<decoder format>,<encoder pad>,<encoder format>
```

Test command returns the supported range of values of <clock>,<decoder pad>,<decoder format>,<encoder pad>, and <encoder format>.

Syntax

Command	Command type
AT#DVICFG=[<clock>,<decoder pad>,<decoder format>,<encoder pad>,<encoder format>]]]]	Set
AT#DVICFG?	Read
AT#DVICFG=?	Test

Parameters and Values

<clock>	Clock speed for master mode.
0	Normal mode. Default: 0.
1	High speed mode.
<decoder pad>	PCM padding enable in decoder path.
0	Disable.
1	Enable. Default: 1.
<decoder format>	PCM format in decoder path.
0	u-Law. Default: 0.
1	A-Law.
2	Linear.
<encoder pad>	PCM padding enable in encoder path.
0	Disable.
1	Enable. Default: 1.
<encoder format>	PCM format in encoder path.
0	u-Law. Default: 0.
1	A-Law.
2	Linear.

Notes:

- #DVICFG parameters are saved in the extended profile.

Handsfree Echo Canceller #SHFEC

C2 models only.

Set command enables/disables the echo canceller function on audio handsfree output.

Read command reports the <mode> parameter value, in the format:

#SHFEC: <mode>

Test command reports the supported value range for <mode>.

Syntax

Command	Command type
AT#SHFEC=<mode>	Set
AT#SHFEC?	Read
AT#SHFEC=?	Test

Parameters and Values

<mode>

- | | |
|---|--|
| 0 | Disables echo canceller for handsfree mode. Default: 0. |
| 1 | Enables echo canceller for handsfree mode. |

Notes

- Save this parameter in non-volatile memory by issuing AT&W command.

Handsfree Microphone Gain #HFMICG

C2 models only.

Set command sets the handsfree microphone input gain.

Read command returns the current handsfree microphone input gain, in the format:

#HFMICG: <level>

Test command returns the supported value range for <level>.

Syntax

Command	Command type
AT#HFMICG=<mode>	Set
AT#HFMICG?	Read
AT#HFMICG=?	Test

Parameters and Values

<level>

- | | |
|-----|---|
| 0-7 | Handsfree microphone input gain +6dB/step. Default: 4. |
|-----|---|

Handset Microphone Gain #HSMICG

C2 models only.

Set command sets the handset microphone input gain.

Read command returns the current handset microphone input gain, in the format:

#HSMICG: <level>

Test command returns the supported value range for <level>.

Syntax

Command	Command type
AT#HSMICG=<mode>	Set
AT#HSMICG?	Read
AT#HSMICG=?	Test

Parameters and Values

<level>	Handset microphone input gain.
0-7	Handset microphone input gain +6dB/step. Default: 4.

Headset Sidetone #SHFSD

C2 models only.

Set command enables/disables the sidetone on the handsfree audio output.

Read command returns the current handset microphone input gain, in the format:

#SHFSD: <mode>

Test command returns the supported value range for <mode>.

Syntax

Command	Command type
AT#SHFSD=<mode>	Set
AT#SHFSD?	Read
AT#SHFSD=?	Test

Parameters and Values

<mode>	
0	Disables echo canceller for handsfree sidetone. Default: 0.
1	Enables echo canceller for handsfree sidetone.

Handset Sidetone #SHSSD

Set command enables or disables the sidetone on handset audio output.

Read command reports whether the handset sidetone is currently enabled or not, in the format:

#SHSSD: <mode>

Test command returns the supported range of values of <mode>.

Syntax

Command	Command type
AT#SHSSD=<mode>	Set
AT#SHSSD?	Read
AT#SHSSD=?	Test

Parameters and Values

<mode>

- | | |
|---|--|
| 0 | Disables the handset sidetone. C2 Default: 0. |
| 1 | Enables the handset sidetone. EV3 Default: 1. |

Notes

- To save the value of <mode> in non-volatile memory issue the AT&W command.

Speaker Mute Control #SPKMUT

Set command enables or disables the global muting of the speaker audio line, for every audio output—ring, incoming SMS voice, network coverage.

Read command reports whether the muting of the speaker audio line during a voice call is enabled or not, in the format:

#SPKMUT: <n>

Test command reports the supported values for <n>.

Syntax

Command	Command type
AT#SPKMUT=<n>	Set
AT#SPKMUT?	Read
AT#SPKMUT=?	Test

Parameters and Values

<n>

- | | |
|---|--|
| 0 | Mute off, speaker active. Default: 0. |
| 1 | Mute on, speaker muted. |

Notes

- Set command mutes/activates both speaker audio paths, internal speaker and external speaker.

Handsfree Receiver Gain #HFRECG

C2 models only.

Set command sets the handsfree analog output gain.

Read command returns the current value of <level>, in the format:

#HFRECG: <level>

Test command returns the supported value range for <level>.

Syntax

Command	Command type
AT#HFRECG=<level>	Set
AT#HFRECG?	Read
AT#HFRECG=?	Test

Parameters and Values

<level>	Handsfree analog output gain.
0-6	Handsfree analog output (-3dB/step). Default: 0.

Note

- To save the value of <level> in non-volatile memory issue the AT&W command.

Handset Receiver Gain #HSRECG

C2 models only.

Set command sets the handset analog output gain.

Read command returns the current value of <level>, in the format:

#HSRECG: <level>

Test command returns the supported value range for <level>.

Syntax

Command	Command type
AT#HSRECG=<level>	Set
AT#HSRECG?	Read
AT#HSRECG=?	Test

Parameters and Values

<level>	Handset analog output gain.
0-6	Handset analog output (-3dB/step). Default: 0.

Note

- To save the value of <level> in non-volatile memory issue the AT&W command.

Audio Profiles

Audio Profile Factory Configuration #PRST

Execute command resets the actual audio parameters in the non-volatile memory of the device to the default set. It is not allowed if active audio profile is 0. The audio parameters reset are:

- Microphone line gain
- Earpiece line gain
- Side tone gain
- LMS adaptation speed (step size)
- LMS filter length (number of coefficients)
- Speaker to micro signal power relation
- Noise reduction max attenuation
- Noise reduction weighting factor (band 300-500Hz)
- Noise reduction weighting factor (band 500-4000Hz)
- AGC additional attenuation
- AGC minimal attenuation
- AGC maximal attenuation

Test command returns the OK result code.

Syntax

Command	Command type
AT#PRST	Execute
AT#PRST=?	Test

Example

Current audio profile is reset.

```
AT#PRST
```

```
OK
```

Audio Profile Configuration Save #PSAV

Execute command saves the actual audio parameters in the non-volatile memory of the device. Saving is not allowed if active audio profile is 0. The audio parameters to store are:

- Microphone line gain
- Earpiece line gain
- Side tone gain
- LMS adaptation speed (step size)
- LMS filter length (number of coefficients)
- Speaker to micro signal power relation
- Noise reduction max attenuation
- Noise reduction weighting factor (band 300-500Hz)
- Noise reduction weighting factor (band 500-4000Hz)
- AGC Additional attenuation
- AGC minimal attenuation
- AGC maximal attenuation

Test command returns the OK result code.

Syntax

Command	Command type
AT#PSAV	Execute
AT#PSAV=?	Test

Example

To save current audio profile in non-volatile memory:

```
AT#PSAV
```

```
OK
```

Audio Profile Selection #PSEL

Set command selects the active audio profile.

The Read command returns the active profile in the format:

```
#PSEL:<prof>
```

Test command returns the supported range of values of parameter <prof>.

Syntax

Command	Command type
AT#PSEL=<prof>	Set
AT#PSEL?	Read
AT#PSEL=?	Test

Parameters and Values

<prof>	Current profile.
0	Standard profile.
1-3	Extended profile, modifiable.

Notes

- To save <prof> value in non-volatile memory, use the AT&W command.

Audio Profile Setting #PSET

Set command sets parameters for the active audio profile. It is not allowed if the active audio profile is 0.

The Read command returns the active profile in the format:

```
#PSET:<scal_in>,<scal_out>,<side_tone_atten>,<adaption_speed>,<filter_length>,<rxtxrelation>,<nr_atten>,<nr_w_0>,<nr_w_1>,<add_atten>,<min_atten>,<max_atten>
```

Test command returns the supported range of values for audio parameters.

Syntax

Command	Command type
AT#PSET=<scal_in>[,<scal_out>[,<side_tone_atten>[,<adaption_speed>[,<filter_length>[,<rxtxrelation>[,<nr_atten>[,<nr_w_0>[,<nr_w_1>[,<add_atten>[,<min_atten>[,<max_atten>]]]]]]]]]]]	Set
AT#PSET?	Read
AT#PSET=?	Test

Parameters and Values

<scal_in>	
-6-6	Microphone line digital gain (unused).
<scal_out>	
-6-6	Earpiece line digital gain (unused).
<side_tone_atten>	
-1-24	Side tone attenuation (unused).
<adaption_speed>	
0-2	LMS adaptation speed.
<filter_length>	
10-50	LMS filter length (number of coefficients).
<rxtxrelation>	
-90-90	Speaker to micro signal power (unused).
<nr_atten>	
6-42	Noise reduction max attenuation (unused).
<nr_w_0>	
0-9	Noise reduction weighting factor (band 300-500Hz) (unused).
<nr_w_1>	
0-9	Noise reduction weighting factor (band 500-4000Hz) (unused).

<add_atten>	
0-90	AGC additional attenuation (unused).
<min_atten>	
0-90	AGC minimal attenuation (unused).
<max_atten>	
0-90	AGC maximal attenuation (unused).

Example

AT#PSET?

#PSET: 0,0,-1,1,20,-5,6,2,2,6,0,12

OK

AT#PSET=?

#PSET: (-6,6),(-6,6),(-1,24),(0,2),(10,50),(-90,90),(6,42),(0,9),(0,9),(0,90),(0,90),(0,90)

OK

Handsfree Automatic Gain Control #SHFAGC

C2 models only.

Set command enables/disables the automatic gain control function on audio handsfree input.

The Read command returns the active profile in the format:

#SHFAGC:<mode>

Test command returns the supported range of values of parameter <prof>.

Syntax

Command	Command type
AT#SHFAGC=<mode>	Set
AT#SHFAGC?	Read
AT#SHFAGC=?	Test

Parameters and Values

<mode>	
0	Disables automatic gain control for handsfree mode. Default: 0.
1	Enables automatic gain control for handsfree mode.

Notes

- To save <prof> value in non-volatile memory, use the AT&W command.

Handsfree Noise Reduction #SHFNR

Set command enables/disables the noise reduction function on audio handsfree input.

The Read command returns the active profile in the format:

#SHFNR:<mode>

Test command returns the supported range of values of <mode>.

Syntax

Command	Command type
AT#SHFNR=<mode>	Set
AT#SHFNR?	Read
AT#SHFNR=?	Test

Parameters and Values

<mode>

- | | |
|---|---|
| 0 | Disables noise reduction for handsfree mode. Default: 0. |
| 1 | Enables noise reduction for handsfree mode. |

Notes

- To save <mode> value in non-volatile memory, use the AT&W command.

Echo Canceller Configuration

Handset Echo Canceller #SHSEC

Set command enables or disables the echo canceller function on audio handset output.

Read command reports whether the echo canceller function on audio handset output is currently enabled or not, in the format:

#SHSEC: <mode>

Test command returns the supported range of values for <mode>.

Syntax

Command	Command type
AT#SHSEC =<mode>	Set
AT#SHSEC?	Read
AT#SHSEC=?	Test

Parameters and Values

<mode>

- | | |
|---|--|
| 0 | Disables echo canceller for handset mode. Default: 0. |
| 1 | Enables echo canceller for handset mode. |

Notes

- To save <mode> value in non-volatile memory use the AT&W command.

Handset Automatic Gain Control #SHSAGC

Set command enables or disables the automatic gain control function on audio handset input.

Read command reports whether the automatic gain control function on audio handset input is currently enabled or not, in the format:

#SHSAGC: <mode>

Test command returns the supported range of values for <mode>.

Syntax

Command	Command type
AT#SHSAGC=<mode>	Set
AT#SHSAGC?	Read
AT#SHSAGC=?	Test

Parameters and Values

<mode>

- 0** Disables automatic gain control for handset mode. **Default: 0.**
- 1** Enables automatic gain control for handset mode.
Note: This parameter is saved in non-volatile memory issuing AT&W command.

Handset Noise Reduction #SHSNR

Set command enables or disables the noise reduction function on audio handset input.

Read command reports whether the noise reduction function on audio handset input is currently enabled or not, in the format:

SHSNR: <mode>

Test command returns the supported range of values for <mode>.

Syntax

Command	Command type
AT#SHSNR=<mode>	Set
AT#SHSNR?	Read
AT#SHSNR=?	Test

Parameters and Values

<mode>

- 0** Disables noise reduction for handset mode. **Default: 0.**
- 1** Enables noise reduction for handset mode.

Notes

- To save the value of <mode> use the AT&W command.

Digital Voice Interface

Digital Voiceband Interface #DVI

Set command enables or disables the Digital Voiceband Interface.

Read command reports last setting, in the format:

```
#DVI: <mode>,<dviport>,<clockmode>
```

Test command reports the range of supported values for <mode>,<dviport> and <clockmode>.

Syntax

Command	Command type
AT#DVI=<mode>[,<dviport>,<clockmode>]	Set
AT#DVI?	Read
AT#DVI=?	Test

Parameters and Values

- <mode> Enables or disables the DVI.
 - 0 Disable DVI.
 - 1 Enable DVI; audio is forwarded to the DVI block.
 - 2 Reserved.
- <dviport> 2 - DVI port 2 is used.
- <clockmode>
 - 0 DVI slave.
 - 1 DVI master. **Default: 1.**

Example

DVI is configured as master providing on DVI Port 2, the only port available:

```
AT#DVI=1,2,1
OK
```

Miscellaneous Audio Commands

TeleType Writer #TTY

EV3 models only.

Set command enables or disables the TTY feature.

Read command returns whether the TTY function is currently enabled or not, in the format:

```
#TTY: <support>
```

Test command reports the supported range of values for <support>.

Syntax

Command	Command type
AT#TTY=<support>	Set
AT#TTY?	Read
AT#TTY=?	Test

Parameters and Values

<support>

- 0** Disable TTY function **Default: 0.**
- 1** Enable TTY function.
- 2** TTY and voice (VCO: voice carry over).
- 3** TTY and hear (HCO: hearing carry over).

Notes

- The value set by this command is directly stored in non-volatile memory and does not depend on the specific AT instance.

DVI Microphone Gain #PCMTXG

Set command sets the DVI (PCM) Audio TX gain.

Read command returns the current PCM Audio TX, in the format:

#PCMTXG: <TX_VOL>

Test command reports the supported range of values for <TX_VOL>.

Syntax

Command	Command type
AT#PCMTXG=<TX_VOL>	Set
AT#PCMTXG?	Read
AT#PCMTXG=?	Test

Parameters and Values

<TX_VOL>

- PCM TX volume in TX path.
- 5000(-50dB) – 1200(+12dB)** A TX_VOL is 1/100 dB step.
- 50dB is mute.

DVI Speaker Volume Level #PCMRXG

Set command sets the PCM Audio RX gain.

Read command returns the current PCM Audio TX, in the format:

#PCMRXG: <RX_VOL>

Test command reports the supported range of values for <RX_VOL>.

Syntax

Command	Command type
AT#PCMRXG=<RX_VOL>	Set
AT#PCMRXG?	Read
AT#PCMRXG=?	Test

Parameters and Values

<TX_VOL>	PCM RX volume in RX path.
-5000(-50dB) – 1200(+12dB)	A RX_VOL is 1/100 dB step.
	-50dB is mute.

Handsfree RX AGC Value Tuning #SHFAGCRX

C2 models only.

Set command sets the handsfree RX AGC value tuning.

Read command returns the current handsfree RX AGC values, in the format:

#SHFAGCRX: <agc_static_gain>,<agc_aig>,<agc_exp_thres>,
<agc_exp_slope>,<agc_compr_thres>,<agc_compr_slope>

Test command reports the supported range of values for

<agc_static_gain>,<agc_aig>,<agc_exp_thres>,<agc_exp_slope>,<agc_compr_thres>,<agc_compr_slope>.

Syntax

Command	Command type
AT#SHFAGCRX=<agc_static_gain>,<agc_aig>,<agc_exp_thres>,<agc_exp_slope>,<agc_compr_thres>,<agc_compr_slope>	Set
AT#SHFAGCRX?	Read
AT#SHFAGCRX=?	Test

Parameters and Values

<agc_static_gain>	Precompressor static gain. This is the gain applied to input samples when static gain is enabled. Meaningful Range is 0x2000 to 0xFFFF. Value(agc_static_gain) = $8192 * 10^{(X/20)}$: X range is 0 to 18 dB.
<agc_aig>	Precompressor gain selection flag. Write 0xFFFF to enable adaptive gain (static gain disabled). Write 0x0000 to enable static gain (adaptive gain disabled). Meaningful value is just 0x0000 or 0xFFFF.
<agc_exp_thres>	Expansion threshold. This is the input energy threshold under which expansion is applied. This parameter must be less than agc_compr_thres. Meaningful range is 0x0 to 0x2580. Write 0 to disable the expander. Value(agc_exp_thres) = $128 * (X+75)$: X range is -75 to 0 dBm0mu.
<agc_exp_slope>	Expansion slope. This is the expander gain slope when expansion is applied. Meaningful range is 0xFF01 to 0xFFFF6. Value(agc_exp_slope) = $256 * X$: X range is -0.04 to -0.996.

<agc_compr_thres>	Compression threshold. This is the input energy threshold above which compression is applied. Meaningful range is 0x0 to 0x2580. This parameter must be greater than agc_exp_thres. Value(agc_compr_thres) = $128 * (X+75)$: X range is -75 to 0 dBm0mu.
<agc_compr_slope>	Compression slope. This is the slope of the compressor gain when compression is applied. Meaningful range is 0x8000 to 0xFFFF. Value(agc_compr_sloop) = $65536 * X$: X range is 0.50001 to 0.99999.

Handset RX AGC Value Tuning #SHSAGCRX

Set command sets the handset RX AGC value tuning.

Read command returns the current handset RX AGC values, in the format:

```
#SHSAGCRX: <agc_static_gain>,<agc_aig>,<agc_exp_thres>,<agc_exp_slope>,<agc_compr_thres>,<agc_compr_slope>
```

Test command reports the supported range of values for
<agc_static_gain>,<agc_aig>,<agc_exp_thres>,<agc_exp_slope>,<agc_compr_thres>,<agc_compr_slope>.

Syntax

Command	Command type
AT#SHSAGCRX=<agc_static_gain>,<agc_aig>,<agc_exp_thres>,<agc_exp_slope>,<agc_compr_thres>,<agc_compr_slope>	Set
AT#SHSAGCRX?	Read
AT#SHSAGCRX=?	Test

Parameters and Values

<agc_static_gain>	Precompressor static gain. This is the gain applied to input samples when static gain is enabled. Meaningful Range is 0x2000 to 0xFFFF. Value(agc_static_gain) = $8192 * 10^{(X/20)}$: X range is 0 to 18 dB.
<agc_aig>	Precompressor gain selection flag. Write 0xFFFF to enable adaptive gain (static gain disabled). Write 0x0000 to enable static gain (adaptive gain disabled). Meaningful value is just 0x0000 or 0xFFFF.
<agc_exp_thres>	Expansion threshold. This is the input energy threshold under which expansion is applied. This parameter must be less than agc_compr_thres. Meaningful range is 0x0 to 0x2580. Write 0 to disable the expander. Value(agc_exp_thres) = $128 * (X+75)$: X range is -75 to 0 dBm0mu.
<agc_exp_slope>	Expansion slope. This is the expander gain slope when expansion is applied. Meaningful range is 0xFF01 to 0xFFF6. Value(agc_exp_slope) = $256 * X$: X range is -0.04 to -0.996.
<agc_compr_thres>	Compression threshold. This is the input energy threshold above which compression is applied. Meaningful range is 0x0 to 0x2580. This parameter must be greater than agc_exp_thres. Value(agc_compr_thres) = $128 * (X+75)$: X range is -75 to 0 dBm0mu.
<agc_compr_slope>	Compression slope. This is the slope of the compressor gain when compression is applied. Meaningful range is 0x8000 to 0xFFFF. Value(agc_compr_sloop) = $65536 * X$: X range is 0.50001 to 0.99999.

Notes

- These values are automatically saved in non-volatile memory.

Examples

AT#SHSAGCRX?

#SHSAGCRX: 3FD9,0,F00,FF29,1EC0,E666

OK

AT#SHSAGCRX=?

#SHSAGCRX: (2000-FFFF),(0,FFFF),(0-2580),(FF01-FFF6),(0-2580),(8000-FFFF)

OK

Handsfree TX AGC Value Tuning #SHFAGCTX

C2 models only.

Set command sets the handset TX AGC value tuning.

Read command returns the current handset TX AGC values, in the format:

SHFAGCTX: <agc_static_gain>,<agc_aig>,<agc_exp_thres>,<agc_exp_slope>,<agc_compr_thres>,<agc_compr_slope>

Test command reports the supported range of values for

<agc_static_gain>,<agc_aig>,<agc_exp_thres>,<agc_exp_slope>,<agc_compr_thres>,<agc_compr_slope>.

Syntax

Command	Command type
AT#SHFAGCTX=<agc_static_gain>,<agc_aig>,<agc_exp_thres>,<agc_exp_slope>,<agc_compr_thres>,<agc_compr_slope>	Set
AT#SHFAGCTX?	Read
AT#SHFAGCTX=?	Test

Parameters and Values

<agc_static_gain>	Precompressor static gain. This is the gain applied to input samples when static gain is enabled. Meaningful Range is 0x2000 to 0xFFFF. Value(agc_static_gain) = $8192 * 10^{(X/20)}$: X range is 0 to 18 dB.
<agc_aig>	Precompressor gain selection flag. Write 0xFFFF to enable adaptive gain (static gain disabled). Write 0x0000 to enable static gain (adaptive gain disabled). Meaningful value is just 0x0000 or 0xFFFF.
<agc_exp_thres>	Expansion threshold. This is the input energy threshold under which expansion is applied. This parameter must be less than agc_compr_thres. Meaningful range is 0x0 to 0x2580. Write 0 to disable the expander. Value(agc_exp_thres) = $128 * (X+75)$: X range is -75 to 0 dBm0mu.
<agc_exp_slope>	Expansion slope. This is the expander gain slope when expansion is applied. Meaningful range is 0xFF01 to 0xFFF6. Value(agc_exp_slope) = $256 * X$: X range is -0.04 to -0.996.

<agc_compr_thres>	Compression threshold. This is the input energy threshold above which compression is applied. Meaningful range is 0x0 to 0x2580. This parameter must be greater than agc_exp_thres. Value(agc_compr_thres) = $128 * (X+75)$: X range is -75 to 0 dBm0mu.
<agc_compr_slope>	Compression slope. This is the slope of the compressor gain when compression is applied. Meaningful range is 0x8000 to 0xFFFF. Value(agc_compr_sloop) = $65536 * X$: X range is 0.50001 to 0.99999.

Notes

- These values are automatically saved in non-volatile memory.

Examples

AT#SHFAGCTX?

#SHFAGCTX: 2000,0,F00,FF29,2080,E666

OK

AT#SHFAGCTX=?

#SHFAGCTX: (2000-FFFF),(0,FFFF),(0-2580),(FF01-FFF6),(0-2580),(8000-FFFF)

OK

Handset TX AGC Value Tuning #SHSAGCTX

Set command sets the handset TX AGC value tuning.

Read command returns the current handset TX AGC values, in the format:

SHSAGCTX: <agc_static_gain>,<agc_aig>,<agc_exp_thres>,
<agc_exp_slope>,<agc_compr_thres>,<agc_compr_slope>

Test command reports the supported range of values for

<agc_static_gain>,<agc_aig>,<agc_exp_thres>,<agc_exp_slope>,<agc_compr_thres>,<agc_compr_slope>.

Syntax

Command	Command type
AT#SHSAGCTX=<agc_static_gain>,<agc_aig>,<agc_exp_thres>,<agc_exp_slope>,<agc_compr_thres>,<agc_compr_slope>	Set
AT#SHSAGCTX?	Read
AT#SHSAGCTX=?	Test

Parameters and Values

<agc_static_gain>	Precompressor static gain. This is the gain applied to input samples when static gain is enabled. Meaningful Range is 0x2000 to 0xFFFF. Value(agc_static_gain) = $8192 * 10^{(X/20)}$: X range is 0 to 18 dB.
<agc_aig>	Precompressor gain selection flag. Write 0xFFFF to enable adaptive gain (static gain disabled). Write 0x0000 to enable static gain (adaptive gain disabled). Meaningful value is just 0x0000 or 0xFFFF.

<agc_exp_thres>	Expansion threshold. This is the input energy threshold under which expansion is applied. This parameter must be less than agc_compr_thres. Meaningful range is 0x0 to 0x2580. Write 0 to disable the expander. Value(agc_exp_thres) = 128 * (X+75) : X range is -75 to 0 dBm0mu.
<agc_exp_slope>	Expansion slope. This is the expander gain slope when expansion is applied. Meaningful range is 0xFF01 to 0xFFFF6. Value(agc_exp_slope) = 256 * X : X range is -0.04 to -0.996.
<agc_compr_thres>	Compression threshold. This is the input energy threshold above which compression is applied. Meaningful range is 0x0 to 0x2580. This parameter must be greater than agc_exp_thres. Value(agc_compr_thres) = 128 * (X+75) : X range is -75 to 0 dBm0mu.
<agc_compr_slope>	Compression slope. This is the slope of the compressor gain when compression is applied. Meaningful range is 0x8000 to 0xFFFF. Value(agc_compr_sloop) = 65536 * X : X range is 0.50001 to 0.99999.

Notes

- These values are automatically saved in non-volatile memory.

Examples

AT#SHSAGCTX?

#SHSAGCTX: 2000,0,F00,FF29,2080,E666

OK

AT#SHSAGCTX=?

#SHSAGCTX: (2000-FFFF),(0,FFFF),(0-2580),(FF01-FFF6),(0-2580),(8000-FFFF)

OK

RX AGC Enable #SRXAGC

Set command sets the RX AGC enabling.

Read command returns the current RX AGC, in the format:

#SRXAGC: <mode>

Test command reports the supported range of values for <mode>.

Syntax

Command	Command type
AT#SRXAGC=<mode>	Set
AT#SRXAGC?	Read
AT#SRXAGC=?	Test

Parameters and Values

<mode>

- | | |
|----------|-------------------------------------|
| 0 | Disables RX AGC. Default: 0. |
| 1 | Enables RX AGC. |

Example

```
#SRXAGC: 0
OK
AT#SRXAGC=?
#SRXAGC: (0,1)
OK
AT#SRXAGC=1
OK
```

Handsfree TX Filter Coefficients Values #SHFFT**C2 models only.**

Set command sets the handsfree TX filter coefficients values.

Read command returns the current handset TX filter coefficients values:

```
#SHFFT: <tap0>,<tap1>,<tap2>,<tap3>,<tap4>,<tap5>,<tap6>
```

Test command reports the supported range of values for <tap0>,<tap1>,<tap2>,<tap3>,<tap4>,<tap5>,<tap6>.

Syntax

Command	Command type
AT#SHSFTX=<tap0>,<tap1>,<tap2>,<tap3>,<tap4>,<tap5>,<tap6>	Set
AT#SHSFTX?	Read
AT#SHSFTX=?	Test

Parameters and Values

<tap0>	Filter Tap, h[0] and h[12].
<tap1>	Filter Tap, h[1] and h[11].
<tap2>	Filter Tap, h[2] and h[10].
<tap3>	Filter Tap, h[3] and h[9].
<tap4>	Filter Tap, h[4] and h[8].
<tap5>	Filter Tap, h[5] and h[7].
<tap6>	Filter Tap, h[6].

Notes

- These values are automatically saved in non-volatile memory.

Example

```
AT#SHSFTX?
#SHSFTX: 0,0,0,0,0,0,0
OK
AT#SHSFTX=?
#SHSFTX: (0-FFFF),(0-FFFF),(0-FFFF),(0-FFFF),(0-FFFF),(0-FFFF),(0-FFFF)
OK
```

```
AT#SHSFTX=FFFF,0,0,0,0,0,0
OK
AT#SHSFTX?
#SHSFTX: FFFF,0,0,0,0,0,0
```

Handset TX Filter Coefficients Values #SHSFTX

Set command sets the handset TX filter coefficients values.
Read command returns the current handset TX filter coefficients values:

```
#SHSFTX: <tap0>,<tap1>,<tap2>,<tap3>,<tap4>,<tap5>,<tap6>
```

Test command reports the supported range of values for <tap0>,<tap1>,<tap2>,<tap3>,<tap4>,<tap5>,<tap6>.

Syntax

Command	Command type
AT#SHSFTX=<tap0>,<tap1>,<tap2>,<tap3>,<tap4>,<tap5>,<tap6>	Set
AT#SHSFTX?	Read
AT#SHSFTX=?	Test

Parameters and Values

<tap0>	Filter Tap, h[0] and h[12].
<tap1>	Filter Tap, h[1] and h[11].
<tap2>	Filter Tap, h[2] and h[10].
<tap3>	Filter Tap, h[3] and h[9].
<tap4>	Filter Tap, h[4] and h[8].
<tap5>	Filter Tap, h[5] and h[7].
<tap6>	Filter Tap, h[6].

Notes

- These values are automatically saved in non-volatile memory.

Example

```
AT#SHSFTX?
#SHSFTX: 0,0,0,0,0,0,0
OK
AT#SHSFTX=?
#SHSFTX: (0-FFFF),(0-FFFF),(0-FFFF),(0-FFFF),(0-FFFF),(0-FFFF),(0-FFFF)
OK
AT#SHSFTX=FFFF,0,0,0,0,0,0
OK
AT#SHSFTX?
#SHSFTX: FFFF,0,0,0,0,0,0
```

Verizon Specific AT Commands

MEID & ESN #MEIDESN

Read command returns the module's MEID or ESN, in the format:

#MEIDESN: <meid>,<esn_dec>,<esn_hex>

where:

<meid>	String 14-digit decimal of MEID.
<esn_dec>	String 11-digit decimal of ESN.
<esn_hex>	String 8-digit hexadecimal of ESN.

Test command returns the OK result code.

Syntax

Command	Command type
AT#MEIDESN?	Read
AT#MEIDESN=?	Test

Notes

- Only the MEID value displays.
- This device does not use ESN, therefore, all ESN values appear as all zeros.

Example

```
at#meidesn?
#MEIDESN: A1000009D11111,000000000000,00000000
OK
at#meidesn=?
OK
```

Alert Sound Setting #ALERTSND

Execute command enables and disables the alert sounds for the device.

Read command returns current alert sound setting, in the format:

#ALERTSND: <onoff(for index 1)>,<onoff(for index 2)>, ...

Test command reports the range of supported values for parameter <index>, <onoff>.

Syntax

Command	Command type
AT#ALERTSND=[<index>,<onoff>...]	Execute
AT#ALERTSND?	Read
AT#ALERTSND=?	Test

Parameters and Values

<index>

0	All alert sound.
1	Ready sound (not available). Default: 0.
2	SMS alert sound. Default: 1.
3	Emergency call alert sound. Default: 0.
4	Roaming alert sound. Default: 0.
5	No service alert sound. Default: 1.

<onoff>

0	Off.
1	On.

Notes

- Index number can be increased later.
- Command only has functionality on Verizon software, but will return "OK" results codes for Sprint or AERIS software even though the command has no effect.

Example

```

AT#ALERTSND?
#ALERTSND: 0,1,0,0,1
OK
AT#ALERTSND=2,0
OK
AT#ALERTSND?
#ALERTSND: 0,0,0,0,1
OK
AT#ALERTSND=0,1    <- All alert sound on.
OK
AT#ALERTSND?
#ALERTSND: 1,1,1,1,1
OK
AT#ALERTSND=0,0    <- All alert sound off.
OK
AT#ALERTSND?
#ALERTSND: 0,0,0,0,0

```

```

OK
AT#ALERTSND=2,1
OK
AT#ALERTSND=5,1
OK
AT#ALERTSND?
#ALERTSND: 0,1,0,0,1
OK
AT#ALERTSND=?
#ALERTSND: (0-5),(0,1)
OK

```

Emergency Call Tone Setting #EMERGALERT

Set command sets the emergency call tone.

Read command reports the current emergency call tone setting, in the format:

```
#EMERGALERT: <mode>
```

Test command reports the range of supported values for parameter <mode>.

Syntax

Command	Command type
AT#EMERGALERT=<mode>	Set
AT#EMERGALERT?	Read
AT#EMERGALERT=?	Test

Parameters and Values

<mode>

- | | |
|---|--|
| 0 | Disable the alert tone for emergency dialing. Default: 0. |
| 1 | Enable the alert tone for emergency dialing. |

Example

```

AT#EMERGALERT=?
#EMERGALERT: (0,1)
OK
AT#EMERGALERT?
#EMERGALERT: 0
OK
AT#EMERGALERT=1
OK

```


NAM Lock #NAMLOCK

Execute command enables and disables the device's current NAM lock.

Read command reports the current NAM lock setting, in the format:

#NAMLOCK: <n>

Test command reports the range of supported values for parameter <n>.

Syntax

Command	Command type
AT#NAMLOCK=<mode>	Execute
AT#NAMLOCK?	Read
AT#NAMLOCK=?	Test

Parameters and Values

<mode>

- | | |
|---|--|
| 0 | Disable the alert tone for emergency dialing. Default: 0. |
| 1 | Enable the alert tone for emergency dialing. |

Example

AT#NAMLOCK=?

#NAMLOCK: (0 , 1)

OK

AT#NAMLOCK?

#NAMLOCK: 0

OK

AT#NAMLOCK=1

OK

Read Message +VCMGR

Execute command reports the message with the location value <index> from <memr> message storage. <memr> is the message storage for read and delete SMs as the last settings of command +CPMS.

Test command returns the OK result code.

Syntax

Command	Command type
AT+VCMGR[=<index>]	Execute
AT#VCMGR=?	Test

Parameters and Values

<index> Message index.

If the indicated index contains a Received or Sent/Unsent message, it appears in the format:

```
+VCMGR: <stat>,<orig_num>,<callback>,<date>[,<tooa>,<tele_id>,<priority>,<enc_type>,<length>]
<CR><LF><data>
```

Note: Italicized information appears for received messages only and only if AT+CSDH=1 has been set.

where:

<stat> - Status of the message.

"REC UNREAD" - New received message unread.

"REC READ" - Received message read.

"STO UNSENT" - Message stored not yet sent.

"STO SENT" - Message stored already sent.

<orig_num> - Origination number.

<callback> - Callback number.

<date> - Received date in form as "YYYYMMDDHHMMSS".

<tooa> - Type of <orig_num>.

<toda> - Type of <da>.

<tele_id> - Teleservice ID.

4097 – Page.

4098 - SMS message.

<priority> - Priority.

Note: Priority is different with every carrier.

For Sprint and Aeris:

0 - Normal (factory default).

1 - Interactive.

2 - Urgent.

3 - Emergency.

For Verizon:

0 - Normal (factory default).

1 - High.

<enc_type> - Encoding type of message.

0 - 8-bit Octet.

2 - 7-bit ASCII.

4 - 16-bit Unicode.

<length> - Length of message.

<data> - Message data.

Unsolicited Result Codes - Not applicable.

Execution Time - Executes immediately.

Reference - Verizon.

Notes

- Available only under text mode (AT+CMGF=1).
- If an unread received message is present at the message index specified by +VCMGR command, the message status changes from REC UNREAD to REC READ.

Example

```
AT+CMGF=1
OK
AT+VCMGR=2
+VCMGR: "REC READ", "", 0111234567", 20071221160610, , 4098, , 16, 9
TEST MESSAGE2
OK
AT+VCMGR=3
+VCMGR: "STO SENT", "01191775982", "01096529157", 20071221160610, , 4098, , 16, 9
TEST MESSAGE3
OK
```

List Message +VCMGL

Execute command reports the list if all messages with status value <stat> stored into <memr> message storage. <memr> is the message storage for read and delete SMs as the last settings of command +CPMS.

Test command returns a list of supported <stat>s.

Syntax

Command	Command type
AT+VCMGL[=<stat>]	Execute
AT#VCMGL=?	Test

Parameters and Values

- <stat>

<stat>

"REC UNREAD" - New message.

"REC READ" - Read message.

"STO UNSENT" - Stored message not yet sent.

"STO SENT" - Stored message already sent.

"ALL" - All messages.

If the indicated index contains a Received or Sent/Unsent message, it appears in the following format:

+VCMGL:<index>,<stat>,<orig_num>,<callback>,<date>[,<tooa>,<tele_id>,<priority>,<enc_ty
pe>,<length>]<CR><LF> <data>

Note: Italicized information appears for received messages only and only if AT+CSDH=1 has been set.

- Where
- <index> - Message index.
 - <stat> - Message status.
 - <orig_num> - Origination number.

<callback> - Callback number.
 <date> - Received date in form as "YYYYMMDDHHMMSS".
 <tooa> - Type of <orig_num>.
 <toda> - Type of <da>.
 <tele_id> - Teleservice ID.
 4097 - Page.
 4098 - SMS message.
 <priority> - Priority.
 Note: The priority is different with every carrier.

For Sprint and Aeris:
 0 - Normal (factory default).
 1 - Interactive.
 2 - Urgent.
 3 - Emergency.

For Verizon:
 0 - Normal (factory default).
 1 - High.
 <enc_type> - Encoding type of message.
 0 - 8-bit Octet.
 2 - 7-bit ASCII.
 4 - 16-bit Unicode.
 <length> - Length of message.
 <data> - Message data.
 Unsolicited Result Codes - Not applicable.
 Execution Time - Executes immediately.
 Reference - Verizon.

Notes

- When issuing the command AT+VCMGL="REC UNREAD" or AT+VCMGL="ALL" the message status for any unread received messages changes from REC UNREAD to REC READ.

Example

```
AT+VCMGL="ALL"
```

```
+VCMGL: 0,"STO UNSENT","5554443333","",20121126144600
```

```
Message storage test
```

SMS Mobile Origination #SMSMOEN

Execute command sends Mobile Originated SMS Messages.

Read command reports the current value of parameter <n>.

Test command reports the supported value of parameter <n>.

Syntax

Command	Command type
AT#SMSMOEN=<n>	Execute
AT#SMSMOEN?	Read
AT#SMSMOEN=?	Test

Parameters and Values

<n>	Enable or disable SMS MO.
0	Disable SMS MO.
1	Enable SMS MO. Default: 1.

Example

```
AT#SMSMOEN=?
```

```
#SMSMOEN: ( 0 , 1 )
```

```
OK
```

```
AT#SMSMOEN?
```

```
#SMSMOEN: 1
```

```
OK
```

```
AT#SMSMOEN=0
```

```
OK
```

Service Option for SMS #SMSSO

Set command sets the SMS service option.

Read command reports the current value of parameter <n>.

Test command reports the supported value of parameter <n>.

Syntax

Command	Command type
AT#SMSSO=<n>	Set
AT#SMSSO?	Read
AT#SMSSO=?	Test

Parameters and Values

<n>	Service option.
0	Service option by default value from NV. Selected by service option set from NV (6 or 14).
6	Short message services (IS-637). Default: 6.
14	Short message service using MUX option 2 (TSB-79).

Example

```
AT#SMSSO=?
#SMSSO: ( 0 , 6 , 14 )
OK
AT#SMSSO?
#SMSSO: 6
AT#SMSSO=?
#SMSSO: ( 0 , 6 , 14 )
OK
AT#SMSSO?
#SMSSO: 6
OK
AT#SMSSO=14
OK
```

Set Payload Length #SMSPSIZ

Set command sets the SMS maximum payload length.

Read command reports the current value of parameter <length>.

Test command reports the supported value of parameter <length>.

Syntax

Command	Command type
AT#SMSPSIZ=<length>	Set
AT#SMSPSIZ?	Read
AT#SMSPSIZ=?	Test

Parameters and Values

<length>	SMS maximum payload length.
0-220	Default: 160.

Example

```
AT#SMSPSIZ=?
#SMSPSIZ: (0-220)
OK
AT#SMSPSIZ?
#SMSPSIZ: 160
OK
AT#SMSPSIZ=100
OK
AT#SMSPSIZ?
#SMSPSIZ: 100
```

Select Send SMS Transport Method #SMSAC

Set command selects the transport method to send SMS.

Read command reports the current value of parameter <method>.

Test command reports the supported value of parameter <method>.

Syntax

Command	Command type
AT#SMSAC=<method>	Set
AT#SMSAC?	Read
AT#SMSAC=?	Test

Parameters and Values

<method>	Transport method.
0	Traffic channel. Default: 0.
1	Access channel.

Example

```
AT#SMSAC?
#SMSAC: 0
OK
AT#SMSAC=?
#SMSAC: (0-1)
OK
AT#SMSAC=1
OK
```

Preferred Roaming List \$PRL

Read command returns the current device PRL ID <id>, in the format:

\$PRL: <id>

Test command returns the OK result code.

Syntax

Command	Command type
AT\$PRL?	Read
AT\$PRL=?	Test

Example

AT\$PRL=?

OK

AT\$PRL?

\$PRL: 10052

OK

Reset \$RESET

Execute command immediately resets the modem.

Test command returns the OK result code.

Syntax

Command	Command type
AT\$RESET	Execute
AT\$RESET=?	Test

Display Current Band Class #BANDCLS

Read command returns the current band class, in the format:

#BANDCLS: <Current BC>,<Supported BC>

Test command returns the OK result code.

Syntax

Command	Command type
AT#BANDCLS	Read
AT#BANDCLS=?	Test

Example

```
AT#BANDCLS?  
#BANDCLS: BC0,(BC0,BC1)  
OK
```

Set Default Band #DEFAULTBAND

Set command sets the band to determine system selection.

Read command reports the current value of the parameters, in the format:

```
#DEFAULTBAND: <Band>,<PRL_Enable>
```

PRL_Enable represents the PRL_enable of the PRL included in EV3 or C2.

Syntax

Command	Command type
AT#DEFAULTBAND=<Band>	Set
AT#DEFAULTBAND?	Read

Parameters and Values

<band>

0	Home only. The PRL Preferred only setting is disabled.
1	Automatic. PRL Preferred only setting is enabled.
2	Automatic-A.
3	Automatic-B.

Notes

- PRL Preferred Only (PRL PREF ONLY) is based on the specific PRL loaded onto the module and is not user controlled.
- The Default Band mode is made available when the PRL PREF ONLY setting is set to FALSE. When it is set to FALSE, the mobile station's system select setting provides options of Home only, Automatic-A, and Automatic-B.
- When the PRL is set to True, the mobile station's system select provides only Home Only and Automatic.

Example

```
AT#DEFAULTBAND?  
#DEFAULTBAND: 1,1  
OK  
AT#DEFAULTBAND=0  
OK  
AT#DEFAULTBAND?  
#DEFAULTBAND: 0,1  
OK
```

Clear MRU Table #CLRMRU

Execute command clears the Most Recently Used (MRU) table.

Syntax

Command	Command type
AT#CLRMRU	Execute

Example

```
AT#CLRMRU
```

```
OK
```

Enhanced Roaming Indicator #ERI

Execute command returns the enhanced roaming indicator information, in the format:

```
#ERI:<ind_id>,<icn_img_id>,<icn_mode>,<call_prmt_id>,<alert_id>,<eng_type>,<text_data_len>,<text_data>
```

If the ERI file is not include or is invalid in the current device and the PRL's roaming indicator value is 64-93, the mobile is set to <ind_id>=2.

where:

<ind_id>	Indicator ID.
0-2	Roaming indicator ID. (Not ERI ID). If <ind_id>=0-2, roaming indicator icon display refer to below. 0 - Roaming icon on. 1 - Roaming icon off. 2 - Roaming icon flash.
64-93	ERI Indicator ID. If <ind_id>=64~93, Roaming Indicator Icon display refer to <inc_img_id>.
<icn_img_id>	Icon image ID.
0	Roaming icon on.
1	Roaming icon off.
2	Roaming icon flash. If <ind_id>=0-2, <icn_img_ind>=0.
<icn_mode>	Icon mode.
	If <ind_id>=0-2, <icn_mode>=0.
<call_prmt_id>	Call prompt ID.
	If <ind_id>=0-2, <call_prmt_id>=0
<alert_id >	Alert ID.
0	Verizon Wireless.
1	Network Extender.
2	None.
3	None.
4	Extended Network.
5	Roaming.
6	None.

7	Loss of Service. If <ind_id>=0-2, <alert_id>=2. If mobile status is No Service, <alert_id>=7.
<eng_type>	Character encoding type.
0	Octet, unspecified.
1	IS91 Extended Protocol Message.
2	7-bit ASII.
3	IA5(Table 11 of ITU-T T.50).
4	UNICODE (ISO/IEC 10646-1:1993).
5	Shift-JIS.
6	Korean (KS x 1001:1998).
7	Latin/Hebrew (ISO 8859-8:1988).
8	Latin (ISO 8859-8:998).
9	GSM 7-bit default alphabet. If <ind_id>=0~2, <eng_type>=2.
<text_data_len>	Amount of text data.
<text_data>	Text data. If Mobile status is No service (AT+SERVICE? / +SERVICE: 0) , <text_data>="No Service". If <ind_id>=0~2, Text Data is None.

Test command returns the OK result code.

Syntax

Command	Command type
AT#ERI?	Execute

Example

```
AT#ERI?
#ERI: 71,1,0,0,4,2,16,Extended Network
OK
AT#ERI?
#ERI: 1,0,0,0,2,0,0,
OK
AT#ERI?
#ERI: 1,0,0,0,7,0,10,No Service
OK
AT#ERI=?
OK
```

Enhanced Roaming Indicator Version #ERIDATA

Read command returns the current device ERI version <eri_data_ver>, in the format:

```
#ERIDATA: <eri_data_ver>
```

Test command returns the OK result code.

Syntax

Command	Command type
AT#ERIDATA?	Read
AT#ERIDATA=?	Test

Example

AT#ERIDATA?

#ERIDATA: 5

OK

AT#ERIDATA?

#ERIDATA: None

OK

AT#ERIDATA=?

OK

Mobile IP Commands

Network Access Identifier \$QCMIPNAI

Set command sets the network access identifier.

Read command returns the current status, in the format:

```
$QCMIPNAI: <nai>,<store_nv>
```

Test command returns the parameter range:

```
$QCMIPNAI: (20,21,23-7E),(0,1)
```

The first parameter of \$QCMIPNAI always returns (20,21,23-7E), which is the range of printable ASCII characters. The maximum size is 70 bytes.

Syntax

Command	Command type
AT\$QCMIPNAI=<nai>,<store_nv>	Set
AT\$QCMIPNAI?	Read
AT\$QCMIPNAI=?	Test

Parameters and Values

<nai>	Network access identifier. (20,21,23-7E) which is the range of printable ASCII characters.
<store_nv>	Data store option.
0	Store in RAM.
1	Store in non-volatile memory.

Example

```
AT$QCMIPNAI=?
$QCMIPNAI: (20,21,23-7E),(0,1)
OK
AT$QCMIPNAI?
$QCMIPNAI: Unset
OK
AT$QCMIPNAI=5C9F421F@hcm.sprintpcs.com,1
OK
AT$QCMIPNAI?
5C9F421F@hcm.sprintpcs.com,1
OK
```

Primary Home Agent Address \$QCMIPPHA

Set command sets the primary home agent address.

Read command returns the current status, in the format:

```
$QCMIPPHA: <address>,<store_nv>
```

Test command returns the parameter range:

```
$QCMIPPHA: ((0-255).(0-255).(0-255).(0-255)),(0,1)
```

Syntax

Command	Command type
AT\$QCMIPPHA=<address>,<store_nv>	Set
AT\$QCMIPPHA?	Read
AT\$QCMIPPHA=?	Test

Parameters and Values

<address>	IP address.
<store_nv>	Data store option.
0	Store in RAM.
1	Store in non-volatile memory.

Example

```
AT$QCMIPPHA=?
```

```
$QCMIPPHA: ((0-255).(0-255).(0-255).(0-255)),(0,1)
```

```
OK
```

```
AT$QCMIPPHA?
```

```
$QCMIPPHA: 63.168.238.41,1
```

```
OK
```

```
AT$QCMIPPHA=255.255.255.255,0
```

```
OK
```

```
AT$QCMIPPHA?
```

```
$QCMIPPHA: 255.255.255.255,0
```

```
OK
```

```
AT$QCMIPPHA=63.168.238.41,1
```

```
OK
```

```
AT$QCMIPPHA?
```

```
$QCMIPPHA: 63.168.238.41,1
```

```
OK
```

Secondary Home Agent Address \$QCMIPSHA

Set command sets the secondary home agent address.

Read command returns the current status, in the format:

\$QCMIPPHA: <address>,<store_nv>

Test command returns the parameter range:

\$QCMIPPHA: ((0-255).(0-255).(0-255).(0-255)),(0,1)

Syntax

Command	Command type
AT\$QCMIPSHA=<address>,<store_nv>	Set
AT\$QCMIPSHA?	Read
AT\$QCMIPSHA=?	Test

Parameters and Values

<address>	IP address.
<store_nv>	Data store option.
0	Store in RAM.
1	Store in non-volatile memory.

Example

AT\$QCMIPSHA=?

\$QCMIPSHA: ((0-255).(0-255).(0-255).(0-255)),(0,1)

OK

AT\$QCMIPSHA?

\$QCMIPSHA: 63.168.238.41,1

OK

AT\$QCMIPSHA=255.255.255.255,0

OK

AT\$QCMIPSHA?

\$QCMIPSHA: 255.255.255.255,0

OK

AT\$QCMIPSHA=63.168.238.41,1

OK

AT\$QCMIPSHA?

\$QCMIPSHA: 63.168.238.41,1

OK

Home Address \$QCMIPHA

Set command sets the primary home agent address.

Read command returns the current status, in the format:

\$QCMIPHA: <address>,<store_nv>

Test command returns the parameter range:

\$QCMIPHA: ((0-255).(0-255).(0-255).(0-255)),(0,1)

Syntax

Command	Command type
AT\$QCMIPHA=<address>,<store_nv>	Set
AT\$QCMIPHA?	Read
AT\$QCMIPHA=?	Test

Parameters and Values

<address>	IP address.
<store_nv>	Data store option.
0	Store in RAM.
1	Store in non-volatile memory.

Example

AT\$QCMIPHA=?

\$QCMIPHA: ((0-255).(0-255).(0-255).(0-255)),(0,1)

OK

AT\$QCMIPHA?

\$QCMIPHA: 0.0.0.0,1

OK

AT\$QCMIPHA=255.255.255.255,0

OK

AT\$QCMIPHA?

\$QCMIPHA: 255.255.255.255,0

OK

AT\$QCMIPHA=0.0.0.0,1

OK

AT\$QCMIPHA?

\$QCMIPHA: 0.0.0.0,1

OK

Home Agent Shared Secret \$QCMIPMHSSX

Set command sets the MIP password.

Read command returns the current status, in the format:

\$QCMIPMHSSX: <set>

where:

<set>	Setting status.
Set	Parameter is set.
Unset	Parameter is not set.

Note: The value is not displayed.

Test command returns the parameter range.

\$QCMIPMHSSX: [0x00-0xFF] (max 16 bytes),(0,1)

Syntax

Command	Command type
AT\$QCMIPMHSSX=<password>,<store_nv>	Set
AT\$QCMIPMHSSX?	Read
AT\$QCMIPMHSSX=?	Test

Parameters and Values

<password>	Password.
<store_nv>	Data store option.
0	Store in RAM.
1	Store in non-volatile memory.

Example

```
AT$QCMIPMHSSX=?
$QCMIPMHSSX: [ 0x00-0xFF] (max 16 bytes),(0,1)
OK
AT$QCMIPMHSSX?
$QCMIPMHSSX: Unset
OK
AT$QCMIPMHSSX=00,1
OK
AT$QCMIPMHSSX?
$QCMIPMHSSX: Set
OK
```

AAA Server Shared Secret \$QCMIPMASSX

Set command sets the MIP AAA server security password.

Read command returns the current status, in the format:

\$QCMIPMASSX: <set>

where:

<set>	Setting status.
Set	Parameter is set.
Unset	Parameter is not set.

The value is not displayed.

Test command returns the parameter range.

\$QCMIPMASSX: [0x00-0xFF] (max 16 bytes),(0,1)

Syntax

Command	Command type
AT\$QCMIPMASSX=<password>,<store_nv>	Set
AT\$QCMIPMASSX?	Read
AT\$QCMIPMASSX=?	Test

Parameters and Values

<password>	Password.
<store_nv>	Data store option.
0	Store in RAM.
1	Store in non-volatile memory.

Example

AT\$QCMIPMASSX=?

\$QCMIPMASSX: [0x00-0xFF] (max 16 bytes),(0,1)

OK

AT\$QCMIPMASSX?

\$QCMIPMASSX: Unset

OK

AT\$QCMIPMASSX=00,1

OK

AT\$QCMIPMASSX?

\$QCMIPMASSX: Set

OK

Home Agent Security Parameter Index \$QCMIPMHSPI

Set command sets the MIP security parameter index.

Read command returns the current status, in the format:

```
$QCMIPMHSPI: <index>,<store_nv>
```

Test command returns the parameter range:

```
$QCMIPMHSPI: (0-4294967295),(0,1)
```

Syntax

Command	Command type
AT\$QCMIPMHSPI=<index>,<store_nv>	Set
AT\$QCMIPMHSPI?	Read
AT\$QCMIPMHSPI=?	Test

Parameters and Values

<index>	Security parameter index.
0-4294967295	Store in RAM.
<store_nv>	Data store option.
0	Store in RAM.
1	Store in non-volatile memory.

Example

```
AT$QCMIPMHSPI=?
$QCMIPMHSPI: (0-4294967295),(0,1)
OK
AT$QCMIPMHSPI=?
$QCMIPMHSPI: (0-4294967295),(0,1)
OK
AT$QCMIPMHSPI?
$QCMIPMHSPI: 3,1
OK
AT$QCMIPMHSPI=4,0
OK
AT$QCMIPMHSPI?
$QCMIPMHSPI: 4,0
OK
```

AAA Server Security Parameter Index \$QCMIPMASPI

Set command sets the MIP AAA server security parameter index.

Read command returns the current status, in the format:

\$QCMIPMASPI: <index>,<store_nv>

Test command returns the parameter range:

\$QCMIPMASPI: (0-4294967295),(0,1)

Syntax

Command	Command type
AT\$QCMIPMASPI=<index>,<store_nv>	Set
AT\$QCMIPMASPI?	Read
AT\$QCMIPMASPI=?	Test

Parameters and Values

<index>	Security parameter index.
0-4294967295	Store in RAM.
<store_nv>	Data store option.
0	Store in RAM.
1	Store in non-volatile memory.

Example

AT\$QCMIPMASPI=?

\$QCMIPMASPI: (0-4294967295),(0,1)

OK

AT\$QCMIPMASPI?

\$QCMIPMASPI: 3,1

OK

AT\$QCMIPMASPI=4,0

OK

AT\$QCMIPMASPI?

\$QCMIPMASPI: 4,0

OK

Reverse Tunneling Preference \$QCMIPRT

Set command sets the reverse tunnelling preference.

Read command returns the current status, in the format:

\$QCMIPRT: <rev_tun>,<store_nv>

Test command returns the parameter range:

\$QCMIPRT: (0,1),(0,1)

Syntax

Command	Command type
AT\$QCMIPRT=<rev_tun>,<store_nv>	Set
AT\$QCMIPRT?	Read
AT\$QCMIPRT=?	Test

Parameters and Values

<rev_tun>	Reverse tunneling preference.
0	Disable.
1	Enable.
<store_nv>	Data store option.
0	Store in RAM.
1	Store in non-volatile memory.

Example

AT\$QCMIPRT=?

\$QCMIPRT: (0,1),(0,1)

OK

AT\$QCMIPRT?

\$QCMIPRT: 0,0

OK

AT\$QCMIPRT=1,1

OK

AT\$QCMIPRT?

\$QCMIPRT: 1,1

OK

Enable/Disable Mobile IP \$QCMIP

Set command enables and disables mobile IP.

Read command returns the current status, in the format:

\$QCMIP: <n>

Test command returns the parameter range:

\$QCMIP: (0-2)

Syntax

Command	Command type
AT\$QCMIP=<n>	Set
AT\$QCMIP?	Read
AT\$QCMIP=?	Test

Parameters and Values

<n>

0 Mobile IP disable, simple IP only.

1 Mobile IP preferred.

In the initial MIP registration, if the network does not support Mobile IP, the mobile automatically reverts to Simple IP (forces a PPP renegotiation by sending an LCP C-Req). However, if a Mobile IP session is registered and then the mobile enters a network that does not support Mobile IP, the mobile will drop the session and inform the upper layers of the failure (for example, by dropping DCD to a laptop).

2 Mobile IP Only. If the module is provisioned. **Default: 2.**

The mobile will make data calls only when the Mobile IP is supported in the network. During an MIP session, if the mobile hands off to a network that does not support MIP, then the mobile will drop the session and inform the upper layers of the failure (for example, by dropping DCD to a laptop).

Example

AT\$QCMIP=?

\$QCMIP: (0-2)

OK

AT\$QCMIP?

\$QCMIP: 2

OK

AT\$QCMIP=0

OK

AT\$QCMIP?

\$QCMIP: 0

OK

```
AT$QCMIP=1
OK
AT$QCMIP?
$QCMIP: 1
OK
```

Active MIP Profile Selection \$QCMIPP

Set command selects the active MIP user profile.

Read command returns the current status, in the format:

```
$QCMIPP: <index>
```

Test command returns the parameter range:

```
$QCMIPP: (0-5)
```

Syntax

Command	Command type
AT\$QCMIPP=<n>	Set
AT\$QCMIPP?	Read
AT\$QCMIPP=?	Test

Parameters and Values

```
<index>           User profile number, 0-5.
```

Example

```
AT$QCMIPP=?
$QCMIPP: (0-5)
OK
AT$QCMIPP?
$QCMIPP: 2
OK
```

Enable/Disable Current MIP Profile \$QCMIEP

Execute command enables and disables the currently active MIP profile.

Read command returns the current status, in the format:

```
$QCMIEP: <n>
```

Test command returns the parameter range:

```
$QCMIEP: (0,1)
```

Syntax

Command	Command type
AT\$QCMIPPEP=<n>	Execute
AT\$QCMPEP?	Read
AT\$QCMPEP=?	Test

Parameters and Values

<n>

0

Disable the currently active profile. The profile is unavailable until it is re-enabled.

1

Enable the currently active profile.

Example

```
AT$QCMIPPEP=?
```

```
$QCMIPPEP: (0,1)
```

```
OK
```

```
AT$QCMIPPEP?
```

```
$QCMIPPEP: 1
```

```
OK
```

```
AT$QCMIPPEP=0
```

```
OK
```

```
AT$QCMIPPEP?
```

```
$QCMIPPEP: 0
```

```
OK
```

Profile Information \$QCMIPGETP

Execute command returns all information corresponding to the specified profile number.

Read command returns the current status, in the format:

```
$QCMIPGETP: <n>
```

Test command returns the parameter range:

```
$QCMIPGETP: (0,1)
```

Syntax

Command	Command type
AT\$QCMIPGETP =<n>	Execute
AT\$QCMIPGETP?	Read
AT\$QCMIPGETP=?	Test

Parameters and Values

<n> Profile number, 0-5.

Example

```
AT$QCMIPGETP=?
$QCMIPGETP: (0-5)
OK
AT$QCMIPGETP?
$QCMIPGETP: 0
OK
AT$QCMIPGETP=0
Profile:0 Disabled
NAI:Unset
Home Addr:0.0.0.0
Primary HA:255.255.255.255
Secondary HA:0.0.0.0
MN-AAA SPI:2
MN-HA SPI:3
Rev Tun:0
MN-AAA SS:Set
MN-HA SS:Set
OK
```

MN-AAA Shared Secrets \$QCMIPMASS

Set command sets the MN-AAA shared secrets for the currently active MIP profile.

Read command displays the current setting.

Test command returns the parameter range:

```
$QCMIPMASS: (20,21,23-7E),(0,1)
```

Syntax

Command	Command type
AT\$QCMIPMASS=<val>,<store_nv>	Set
AT\$QCMIPMASS?	Read
AT\$QCMIPMASS=?	Test

Parameters and Values

<val>	Shared secret data. Maximum size is 16 bytes. Double quotes are required only if the string contains a comma.
<store_nv>	Data store option.
0	Store in RAM.
1	Store in non-volatile memory.

Note

- If the value provisioned is not committed to non-volatile memory, the temporary values will be deleted at the end of the following call or if \$QCMIPP is called.

Example

```
AT$QCMIPMASS=secret data
OK
AT$QCMIPMASS?
$QCMIPMASS: Set
OK
AT$QCMIPMASS=?
$QCMIPMASS: ( 20 , 21 , 23-7E ) , ( 0 , 1 )
OK
```

MN-HA Shared Secrets \$QCMIPMHSS

Set command sets the MN-HA shared secrets for the currently active MIP profile.

Read command displays the current setting.

Test command returns the parameter range:

```
$QCMIPMHSS: (20,21,23-7E),(0,1)
```

Syntax

Command	Command type
AT\$QCMIPMHSS=<val>,<store_nv>	Set
AT\$QCMIPMHSS?	Read
AT\$QCMIPMHSS=?	Test

Parameters and Values

<value>	Shared secret data. Maximum size is 16 bytes. Note: Double quotes are required only if the string contains a comma.
<store_nv>	Data store option.
0	Store in RAM.
1	Store in non-volatile memory.

Note

- If the value provisioned is not committed to non-volatile memory, temporary values are deleted at the end of the following call or if \$QCMIPP is called.

Example

```
AT$QCMIPMHSS?
$QCMIPMHSS: Unset
OK
AT$QCMIPMHSS=secret data
OK
AT$QCMIPMHSS?
$QCMIPMHSS: Set
OK
AT$QCMIPMHSS=?
$QCMIPMHSS: ( 20,21,23-7E ), ( 0,1 )
OK
```

Medium Data Rate \$QCMDR

Set command changes the medium data rate settings.

Read command displays the current setting:

```
$QCMDR:(value)
```

Test command returns the parameter range:

```
$QCMDR:(0-3)
```

Syntax

Command	Command type
AT\$QCMDR=<value>	Set
AT\$QCMDR?	Read
AT\$QCMDR=?	Test

Parameters and Values

<store_nv>	
0	Set medium data rate. MDR service only.
1	MDR service if available.
2	LSPD only.
3	SO 33, if available.

Note

- When the AT\$QCMIP=1 or 2, AT\$QCMDR is always fixed at 3 and cannot be changed. It is necessary to change \$QCMIP=0 first to change \$QCMDR to 0-3 and it also means not using Mobile IP but Simple IP only.

Example

AT\$QCMDR=?

\$QCMDR: (0-3)

OK

AT\$QCMDRr?

\$QCMDR: 3

OK

AT\$QCMDR=3

OK

AT Parser Abort

The following AT Command list can be aborted, while executing the AT Command:

- ATD
- ATA
- +FRS
- +FRH
- +FRM
- +CLCC
- +COPN
- +CLIP

Note:

If DTE transmits any character before it receives a response to the issued AT Command, the AT Command aborts.

CME Error List

Mobile Equipment (ME) Error Result Code - +CME ERROR: <err>

+CME ERROR: <err> is NOT a command. Rather, it is the error response to +Cxxx 3GPP TS 27.007 commands.

Syntax

Command	Command type
+CME ERROR: <err>	This is not a command.

Parameters and Values

<err> The error code can be numeric or verbose. See +CMEE.

Numeric format

Verbose format

- | | |
|----|------------------------------------|
| 0 | Phone failure. |
| 1 | No connection to phone. |
| 2 | Phone-adaptor link reserved. |
| 3 | Operation not allowed. |
| 4 | Operation not supported. |
| 20 | Memory full. |
| 21 | Invalid index. |
| 22 | Not found. |
| 23 | Memory failure. |
| 24 | Text string too long. |
| 25 | Invalid characters in text string. |
| 26 | Dial string too long. |
| 27 | Invalid characters in dial string. |
| 30 | No network service. |

General purpose error

- | | |
|-----|---------------------------------|
| 100 | Unknown. |
| 560 | Cannot open socket. |
| 561 | Remote disconnected or timeout. |
| 562 | Connection failed. |
| 563 | TX error. |
| 564 | Already listening. |
| 683 | Active call state. |
| 684 | RR connection established. |

CMS Error List

Message Service Failure Result Code - +CMS ERROR: <err>

This is not a command. It is the error response to +Cxxx 3GPP TS 27.005 commands.

Syntax

Command	Command type
+CMS ERROR: <err>	This is not a command.

Parameters and Values

<err>	Numeric error code.
0-1	ME failure.
300	ME failure.
301	SMS service of ME reserved.
302	Operation not allowed.
303	Operation not supported.
304	Invalid PDU mode parameter.
305	Invalid text mode parameter.
320	Memory failure.
321	Invalid memory index.
322	Memory full.
331	No network service.
332	Network timeout.
340	Invalid transaction ID.
500	Unknown error.

Network Problems

0	Address vacant.
1	Address translation failure.
2	Network resource shortage.
3	Network failure.
4	Invalid teleservice ID.
5	Other network problem.
6	Other network problem more first.

Terminal Problems

32	No page response.
33	Destination busy.
34	No acknowledgement.
35	Network failure.
36	SMS delivery postponed.
37	Destination out of service.
38	Destination no longer at this address.
39	Other terminal problem.
40	Other terminal problem more first.
47	Other terminal problem more last.
48	SMS delivery postponed more first.

63 SMS delivery postponed more last.

Radio Interface Problems

64 Radio if resource shortage.

65 Radio if incompatible.

66 Other radio if problem.

67 Other radio if problem more first.

95 Other radio if problem more last.

General Problems

96 Unexpected parameter size.

97 SMS origination denied.

98 SMS termination denied.

99 Supplemental service not supported.

100 SMS not supported.

101 RESERVED 101.

102 Missing expected parameter.

103 Missing mandatory parameter.

104 Unrecognized parameter value.

105 Unexpected parameter value.

106 User data size error.

107 Other general problems.

108 Other general problems more first.

3GPP TS 27.007 CDMA Problems

148 Unspecified CDMA error.

553 Context already activated.

554 Stack already active.

555 Activation failed.

557 Cannot setup socket.

558 Cannot resolve DN.

603 Cannot resolve name.

605 Cannot connect control socket.

607 Not connected.

Acronyms

AT	Attention command
BA	BCCH Allocation
BCCH	Broadcast Control Channel
CA	Cell Allocation
CLIR	Calling Line Identification Restriction
CTS	Clear To Send
DCD	Data Carrier Detect
DCE	Data Communication Equipment
DNS	Domain Name System
DSR	Data Set Ready
DTE	Data Terminal Equipment
DTMF	Dual Tone Multi Frequency
DTR	Data Terminal Ready
IMSI	International Mobile Subscriber Identity
IP	Internet Protocol
IRA	International Reference Alphabet
MO	Mobile Originated
MT	Mobile Terminated <i>or</i> Mobile Terminal
NVM	Non Volatile Memory
PDP	Packet Data Protocol
PDU	Packet Data Unit
PIN	Personal Identification Number
PPP	Point to Point Protocol
PUK	Pin Unblocking Code
RLP	Radio Link Protocol
RMC	Recommended minimum Specific data
RTS	Request To Send
SCA	Service Center Address
SMS	Short Message Service
SMSC	Short Message Service Center
SMTP	Simple Mail Transport Protocol
TA	Terminal Adapter
TCP	Transmission Control Protocol
TE	Terminal Equipment
UDP	User Datagram Protocol
UTC	Coordinated Universal Time
VTG	Course over ground and ground speed