

**AT Command:
GSM0107AT001**

**Enfora Enabler IIG
GSM/GPRS Radio Modem
AT Command Set Reference**

Version 1.09

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1.0 Introduction

1.1. Document Scope

The following documentation pertains to the AT Command Set to be used in conjunction with the Enfora GSM/GPRS OEM module, the Enabler-G.

1.2. Platform Reference and Use

The Enabler-G will be referred to using various terms, to include: MS (Mobile Station), TA (Terminal Adapter), DCE (Data Communication Equipment), or ME (Mobile Equipment).

The Enabler-G can be controlled via the use of a DTE (Data Terminal Equipment) platform by issuing the AT commands via a serial interface.

1.3 Command Syntax

The attention or "AT" prefix is required prior to entering any command. All commands require a carriage return or <CR> following the entry of the desired command. All command responses are encapsulated by a carriage return and line feed or <CR><LF>. The ASCII display of these characters is suppressed with only the modem response being presented.

AT message concatenation can be done using the ; <semicolon> between commands.

The following examples demonstrate the potential usage of AT commands presented:

Type	Example	Description
Command Format Query	AT+GXXX=?	When entered will return the command format and value ranges.
Command Read	AT+GXXX?	When entered

		will return the current value assigned to the command.
Command Write	AT+GXXX=<value>,<value>,...	When entered will set the command to specified value(s).
Command Execution	AT+GXXX	When entered will execute the specified command.
Command Concatenation	AT+CRC=1;S0=1	When entered it will execute both the CRC and S0 command.

1.4. Revision History

Date	Rev	Author	Description
11/03/2004	1.00 -373	Tom Cone	<p>Initial Release. Derived from GSM0102PB001MAN version 1.13</p> <p>Minor clarifications to the following commands: AT+CGMM, AT+CUSD, AT+CAOC, AT+CSSN, AT+CLKCFG, AT+CPIN, AT+COPN, AT+CMEE, AT+GMM, ATX, AT+IPR, AT+CGATT, AT+CGCLASS, AT\$WAKEUP, AT\$ACTIVE, AT\$EVENT, AT\$STOATEV, AT%CGAATT, AT%CGPCO, AT%BAND, AT%CGREG, AT\$HOSTIF, AT\$CONN, AT\$DISC, AT\$BUFALOC, AT\$NETIP, AT\$LOCIP, AT\$SNDMSG, AT\$RESET, AT\$GATEWAY, AT\$NETMON, AT%CPI, AT\$7</p> <p>Removed AT\$BAT and AT+CBC to prevent confusion</p> <p>Added AT command AT\$UDPMSG</p>
01/07/2005	1.01 -378		<p>Modified at Command AT\$NETMON, AT%BAND, added +++, AT\$BUFALOC</p>
04/13/2005	1.02 -394		<p>Added AT Command AT%SLEEP</p> <p>Modified section 1.3 Command syntax to include concatenation of AT Commands</p> <p>Modified AT Commands AT+CEER, ATD, AT+CPBS, AT\$ESUP, AT\$UDPMSG, AT\$CGEER</p>
07/28/2005	1.03 -608		<p>Added AT Command AT%EM, AT+CMUX</p> <p>Modified AT Commands AT\$DISC, AT+CPBS, AT\$BUFALOC, AT\$MSDA, AT+CLCK, %CGREG, +CGAP, %CPI, %NRG, %BAND, \$EVENT</p>

Date	Rev	Author	Description
01/30/2006	1.04		B. Engler edited 2.2.3.1 and 3.2.3.4 Edited Output Parameters in 3.2.8.1
06/13/2006	1.05	Matt Glover	Edits to %CPI, +CNMI, \$SMSDA, General Error Codes, added \$LUPREJ
06/29/2006	1.06		Clarified fax functionalities.
11/15/2006	1.07- 767	Matt Glover	Added commands for TCP API support: AT\$TCPAPI, AT\$TCPRESTRT, AT\$TCPSTATS, AT\$TCPSRC, AT\$TCPIDLETO, AT\$TCPRETRYTO Modified the following commands for TCP API support: AT\$FRIEND, AT\$MSGSEND
		Diane O'Neil	Removed AT\$BUFALOC; edited AT+CPBS Added bits 21 and 22 to \$EVENT; Added \$MSGLOGAL command; Added new parameter to \$RTCALRM Edited %BAND (removed execution); edited the event table for \$EVENT Edited Command Function of +CPBS Edited Bit 6 value in \$EVENT Added \$LOCI command; Edited \$RTCALRM Edited \$ESUP Edited parameters in %CPI Added DNS name parameter to \$FRIEND and \$PADDST Added <mode> parameter to TCPAPI command and removed <status> parameter Added <mode> parameter to TCPSTATS command and removed <status> parameter Changed/added <echo level> parameters for \$ESUP
1/25/2007	1.08- 768	Diane O'Neil	Added \$OFF and \$OFFDLY Edited AT+STTONE

Date	Rev	Author	Description
2/22/2008	1.09	Diane O'Neil	<p>Added \$PWRMSG</p> <p>Edited \$PREAMP third parameter</p> <p>Added \$TCPAPI Default Value</p> <p>Added continuous filtering parameter to \$ESUP and removed echo type.</p> <p>Added %CSTAT</p> <p>Edited ATDT and ATDP commands to support DNS naming</p> <p>Changed number of PDP contexts from 2 to 6 for +CGDCONT</p> <p>Edited <name> parameter in +CBST command</p> <p>Added notes to \$IOADCx command</p> <p>Added Notes to \$HOSTIF</p> <p>Edited +CRES command</p> <p>Added \$SRN command</p> <p>Edited %SNCNT command</p> <p>Edited \$EVDEL</p> <p>Added \$EVCID</p> <p>Added \$IODBNC</p> <p>Added \$USRVAL</p> <p>Edited +CPMS</p> <p>Edited <rate> parameter for +IPR</p> <p>Removed "AF" param from +CPBS</p> <p>Added 4 new input timers to \$EVENT</p> <p>Edited \$EVTIM (added 4 new timers)</p> <p>Edited \$PADCMD</p> <p>Edited \$STOATEV</p> <p>Added \$EVTIMQRY, \$MSGLOGDMP and \$EVNTRY</p>

1.5. References

- | | |
|--------------|--|
| [GSM 07.05] | GTS 07.05: January 1998 (GSM 07.05 version 5.5.0)
Use of Data Terminal Equipment - Data Circuit
terminating Equipment (DTE - DCE) interface for Short
Message Service (SMS) and Cell Broadcast Service
(CBS), ETSI |
| [GSM 07.07] | ETS 300 916: February 1998 (GSM 07.07 version 5.5.0)
AT command set for GSM Mobile Equipment (ME) |
| [T.32] | T.32 (08/95) Asynchronous facsimile DCE control -
service class 2, ITU |
| [T V.25_TER] | (ITU-T V.25 ter, 1997) ITU-T Recommendation V.25 ter;
Series V: data communication over the telephone
network; Interfaces and voiceband modems; Serial
asynchronous automatic dialing and control, ITU |

2.0 Standard AT Commands

The following is the format in which all commands will be presented.

xx.xx (Command Number) Atx(Command) Xxxxx(Command Description)

Command Function	(Description of the command function)
Command Functional Group	(Functional group identification)
Command Format Query Response	ATx=? ATx: (parameter1 name 1 – 15), (parameter2 name 1-10),...
Write Format Response	ATx=<value>,<value>[,<optional value>],... OK or ERROR
Read Format Response	ATx? <value>,<value>,...
Execution Format Response	ATx OK, ERROR, or <value>
Parameter Values	<value1>,<value2> ATx: (1-15),(1-10)
Reference	(Applicable standard reference)
Standard Scope	Mandatory or Optional
Enfora Implementation Scope	Full, Partial, or Not Supported
Notes	(Additional command notes)

Please note that, where applicable, the <value> responses provided for the READ and EXECUTION formats are modem default values. All efforts will be made by Enfora, Inc. to keep these values current in the documentation but will not be responsible for any differences that may occur as a result subsequent software builds and version enhancements.

2.4. Commands Specified by GSM Rec. 07.07

2.4.1. General Commands

2.4.1.1. AT+CGMI Request Manufacturer Identification

Command Function	This command is used to obtain the manufacturer identification information.
Command Functional Group	Equipment Information
Command Format Query Response	AT+CGMI=? OK
Write Format Response	N/A N/A
Read Format Response	N/A N/A
Execution Format Response	AT+CGMI Enfora, Inc. OK
Parameter Values	N/A
Reference	GSM Ref. 07.07 Chapter 5.1
Standard Scope	Optional
Enfora Implementation Scope	Full
Notes	Return value is manufacturer specific.

2.4.1.2. AT+CGMM

Request Manufacturer Model Identification

Command Function

This command is used to obtain the manufacturer model identification information.

Command Functional Group

Equipment Information

Command Format Query Response

AT+CGMM=?
OK

Write Format Response

N/A
N/A

Read Format Response

N/A
N/A

Execution Format Response

AT+CGMM
Enabler-II G Modem
OK

Parameter Values

N/A

Reference

GSM Ref. 07.07 Chapter 5.2

Standard Scope

Optional

Enfora Implementation Scope

Full

Notes

Return value is manufacturer specific.

2.4.1.3. AT+CGMR	Request Revision Identification
Command Function	This command is used to obtain the manufacturer embedded firmware revision information.
Command Functional Group	Equipment Information
Command Format Query Response	AT+CGMR=? OK
Write Format Response	N/A N/A
Read Format Response	N/A N/A
Execution Format Response	AT+CGMR <revision> OK
Parameter Values	N/A
Reference	GSM Ref. 07.07 Chapter 5.3
Standard Scope	Optional
Enfora Implementation Scope	Full
Notes	Return value is manufacturer specific.

2.4.1.4. AT+CGSN

Request IMEI

Command Function

This command is used to obtain the manufacturer International Mobile Equipment Identity (IMEI).

Command Functional Group

Equipment Information

Command Format Query Response

AT+CGSN=?
OK

Write Format Response

N/A
N/A

Read Format Response

N/A
N/A

Execution Format Response

AT+CGSN
0044008824900101
OK

Parameter Values

N/A

Reference

GSM Ref. 07.07 Chapter 5.4

Standard Scope

Optional

Enfora Implementation Scope

Full

Notes

Return value is manufacturer specific.

The TA returns the International Mobile station Equipment Identifier (IMEI).

2.4.1.5. AT+CSCS

Select TE Character Set

Command Function

This command is used to select the terminal equipment character set.

Command Functional Group

State Control

Command Format Query Response

AT+CSCS=?
+CSCS: <"GSM", "IRA", "PCCP437",
"PCDN", "8859-1", "HEX", "UCS2">
OK

Write Format Response

AT+CSCS=<chset>
OK

Read Format Response

AT+CSCS?
+CSCS: "PCCP437"
OK

Execution Format Response

N/A
N/A

Parameter Values

<chset>

"GSM"
"IRA"
"PCCP437"
"PCDN"
"8859-1"
"HEX"
"UCS2"

Reference

GSM Ref. 07.07 Chapter 5.5

Standard Scope

Mandatory

Enfora Implementation Scope

Partial

Notes

Values are based on character set support.

2.4.1.6. AT+CIMI

Request IMSI

Command Function

This command is used to obtain the International Mobile Subscriber Identity (IMSI) value assigned to the SIM.

Command Functional Group

Equipment Information

Command Format Query Response

AT+CIMI=?
OK

Write Format Response

N/A
N/A

Read Format Response

N/A
N/A

Execution Format Response

AT+CIMI
310260101xxxxx
OK

Parameter Values

N/A

Reference

GSM Ref. 07.07 Chapter 5.6

Standard Scope

Optional

Enfora Implementation Scope

Full

Notes

Return value is manufacturer specific.

The TA returns the International Mobile Subscriber Identity (IMSI).

2.4.1.7. AT+WS46

Select Wireless Network

Command Function

This command is used to select the wireless network to operate with the TA.

Command Functional Group

Network

Command Format Query Response

AT+WS46=?
+WS46: <12>
OK

Write Format Response

AT+WS46=<n>
OK

Read Format Response

AT+WS46?
+WS46: 12
OK

Execution Format Response

N/A
N/A

Parameter Values

<n> **12** (GSM Digital Cellular)

Reference

GSM Ref. 07.07 Chapter 5.9

Standard Scope

Optional

Enfora Implementation Scope Partial

Notes

Will provide available network interface support selection.

2.4.2. Call Control Commands

2.4.2.1. AT+CSTA

Select Type of Address

Command Function	This command is used to select the type of number to be used for further dialing commands.
Command Functional Group	Call Control
Command Format Query Response	AT+CSTA=? +CSTA: <129 or 145> OK
Write Format Response	AT+CSTA=<n> OK
Read Format Response	AT+CSTA? +CSTA: 129 OK
Execution Format Response	N/A N/A
Parameter Values	
<n>	129 (Dialing string without International Access Code character "+") 145 (Dialing string with International Access Code character "+")
Reference	GSM Ref. 07.07 Chapter 6.1
Standard Scope	Mandatory
Enfora Implementation Scope	Full
Notes	N/A

2.4.2.2. ATD

Dial command

Command Function

This command is used to setup an outbound voice or data call.

Command Functional Group

Call Control

Command Format Query Response

N/A
N/A

Write Format Response

N/A
N/A

Read Format Response

N/A
N/A

Execution Format Response

ATD1234567I;
NO DIALTONE or
NO CARRIER or
CONNECT <value> or
BUSY or
OK

Parameter Values

<n>

V.25ter Dialing Digits = **0 – 9, *, #, +, A, B, C**

V.25ter Dialing Modifiers = **, (comma), T, P, !, @, W**

<cm0d>

GSM Modifier Characters
I = Restrict CLI, **i** = Allow CLI

<;>

Semicolon after dialing string or modifier indicates voice call and forces TA into command mode after successful completion.

2.1.2.2. ATD

Dial command (continued)

Reference

GSM Ref. 07.07 Chapter 6.2

Standard Scope

Mandatory

Enfora Implementation Scope Full

Notes

Modem Responses

NO DIALTONE

if no dial tone is detected

NO CARRIER

if call cannot be set up

CONNECT <value>

when connected in a non-voice call (data mode) **<value>** dependent on ATX setting

BUSY

if dialed number is busy

OK

when successful voice call or TA ends current call and returns to command mode

Example:

ATD5551212I

The TA will dial the number 5551212 and will block the CLI when made.

2.4.2.3. ATD>

Originate Call Using Phonebook Memory

Command Function

This command is used to setup an outbound voice or data call from a specific phonebook location.

Command Functional Group

Call Control

Command Format Query Response

ATD?
ATD<storage><n><cmode><;>

Write Format Response

N/A
N/A

Read Format Response

N/A
N/A

Execution Format Response

ATD>SD12I;
NO DIALTONE or
NO CARRIER or
CONNECT <value> or
BUSY or
OK

Parameter Values

<storage>

Phonebook Location

<n>

Storage location number in selected phonebook

<cmode>

GSM Modifier Characters
I = Restrict CLI, i = Allow CLI

<;>

Semicolon after dialing string or modifier forces TA into command mode after successful completion.

Reference

GSM Ref. 07.07 Chapter 6.3

Standard Scope

Mandatory

Enfora Implementation Scope

Full

2.1.2.3. ATD>

Originate Call Using Phonebook Memory (continued)

Notes

Phonebook Location Values

"EN"	SIM (or ME) emergency number
"FD"	SIM fixed-dialing-phonebook
"LD"	SIM last-dialing-phonebook
"BD"	SIM barred-dialing phonebook
"SD"	SIM service numbers
"LR"	Last received numbers (nonstandard)
"AD"	Abbreviated dialing numbers (nonstandard)
"LM"	Last missed numbers (nonstandard)
"AF"	comb. of fixed and abbrev. dialing phonebook (nonstandard)
"SM"	comb. of fixed and abbrev. dialing phonebook (nonstandard)
"UD"	User defined

Modem Responses

NO DIALTONE	if no dial tone is detected
NO CARRIER	if call cannot be set up
CONNECT <value>	when connected in a non-voice call (data mode) <value> dependent on ATX setting
BUSY	if dialed number is busy
OK	when successful voice call or TA ends current call and returns to command mode

Example:

ATD>FD2I

The TA will dial the number stored in memory location 2 the fixed-dialing phonebook. The call will block the CLI when made.

2.4.2.4. AT+CMOD

Call mode

Command Function

This command is used to select the type of call mode desired for following dial (D) and/or answer (A) commands.

Command Functional Group

Call Control

Command Format Query Response

AT+CMOD=?
+CMOD: (0-3)
OK

Write Format Response

AT+CMOD=<mode>
OK

Read Format Response

AT+CMOD?
+CMOD: 0
OK

Execution Format Response

N/A
N/A

Parameter Values

<mode>

- | | |
|----------|--|
| 0 | Single service |
| 1 | Alternating voice/fax (teleservice 61) |
| 2 | Alternating voice/data (bearer service 61) |
| 3 | Voice followed by data (bearer service 81) |

Reference

GSM Ref. 07.07 Chapter 6.4

Standard Scope

Mandatory

Enfora Implementation Scope

Full

Notes

Default value will be 0. AT&F, restore factory defaults will reset this value to 0.

2.4.2.5. AT+CHUP	Hangup call
Command Function	This command is used to end all active calls.
Command Functional Group	Call Control
Command Format Query Response	AT+CHUP=? OK
Write Format Response	N/A N/A
Read Format Response	N/A N/A
Execution Format Response	AT+CHUP OK
Parameter Values	N/A
Reference	GSM Ref. 07.07 Chapter 6.5
Standard Scope	Mandatory
Enfora Implementation Scope	Full
Notes	Default value will be 0. AT&F, restore factory defaults will reset this value to 0.

2.4.2.6. AT+CBST

Select Bearer service type

Command Function

This command is used to select the bearer service with data rate and the connection element to be used when data calls are originated.

Command Functional Group

Call Control

Command Format Query Response

AT+CBST=?
+CBST: (0-7, 12, 14, 65, 66, 68, 70, 71,75), (0-1), (0-3)

Write Format Response

AT+CBST=<baud rate>,<name>,<ce>
OK/ERROR

Read Format Response

AT+CBST?
+CBST: 7,0,1

Execution Format Response

N/A
N/A

Parameter Values

<baud rate>

- | | |
|-----------|---|
| 0 | autobauding (automatic selection of the speed; this setting is possible in case of 3.1 kHz modem and non-transparent service) |
| 1 | 300 bps (V.21) |
| 2 | 1200 bps (V.22) |
| 3 | 1200/75 bps (V.23) |
| 4 | 2400 bps (V.22bis) |
| 5 | 2400 bps (V.26ter) |
| 6 | 4800 bps (V.32) |
| 7 | 9600 bps (V.32) |
| 12 | 9600 bps (V.34) |
| 14 | 14400 bps (V.32) |
| 65 | 300 bps (V.110) |

2.4.2.6. AT+CBST

Select Bearer service type (continued)

- 66** 1200 bps (V.110)
- 68** 2400 bps (V.110 or X.31 flag stuffing)
- 70** 4800 bps (V.110 or X.31 flag stuffing)
- 71** 9600 bps (V.110 or X.31 flag stuffing)
- 75** 14400 bps (V.110 or X.31 flag stuffing)

<name>

- 0** data circuit asynchronous (UDI or 3.1 kHz modem)
- 1** data circuit synchronous (UDI or 3.1 kHz modem)

<ce>

- 0** transparent
- 1** non-transparent
- 2** both, transparent preferred
- 3** both, non-transparent preferred

Reference

GSM Ref. 07.07 Chapter 6.7

Standard Scope

Mandatory

Enfora Implementation Scope Partial

Notes

N/A

Example:

AT+CBST=7,0,1

- Non-transparent
- No name
- 9600 bps (V.32)

2.4.2.7. AT+CRLP	Radio link protocol parameters
Command Function	This command is used to select the radio link protocol parameters.
Command Functional Group	Call Control
Command Format Query Response	AT+CRLP=? +CRLP: (0-61), (0-61), (39-255), (1-255) OK
Write Format Response	AT+CRLP=<iws>,<mws>,<T1>,<N2> OK/ERROR
Read Format Response	AT+CRLP? +CRLP: 61, 61, 48, 6 OK
Execution Format Response	N/A N/A
Parameter Values	
<iws>	IWF to MS window size values = 0 to 61 (61 recommended)
<mws>	MS to IWF window size values = 0 to 61 (61 recommended)
<T1>	Acknowledgement timer values = 39 to 255 (10 msec increments) values = halfrate >380ms (480 recommended) fullrate >600ms (780 recommended)
<N2>	Retransmission attempts values = >0 (6 recommended)
Reference	GSM Ref. 07.07 Chapter 6.8
Standard Scope	Mandatory
Enfora Implementation Scope	Partial

Notes

N/A

2.4.2.8. AT+CR

Service Reporting Control

Command Function

This command is used to control the display of intermediate result code (+CR <serv>) status.

Command Functional Group

Response Control

Command Format Query Response

AT+CR=?
+CR: (0,1)
OK

Write Format Response

AT+CR=<mode>
OK

Read Format Response

AT+CR?
+CR: 0
OK

Execution Format Response

N/A
N/A

Parameter Values

<mode>

0	disable
1	enable

<serv>

ASYNC	asynchronous transparent
SYNC	synchronous transparent
REL ASYNC	asynchronous non-transparent
REL SYNC	synchronous non-transparent

Reference

GSM Ref. 07.07 Chapter 6.9

Standard Scope

Mandatory

Enfora Implementation Scope

Full

2.4.2.8. AT+CR

Service Reporting Control (continued)

Notes

If enabled, the intermediate result code is transmitted at the point during connect negotiation at which the TA has determined which speed and quality of service will be used, before any error control or data compression reports are transmitted, and before any final result code (e.g. CONNECT) is transmitted.

2.4.2.9. AT+CEER

Extended Error Reporting

Command Function

This command is used to control the display of extended result codes for last unsuccessful call setup, in-call modification, last call release, last short message, or last GPRS session.

Command Functional Group

Call Control

Command Format Query Response

AT+CEER=?
OK

Write Format Response

N/A
N/A

Read Format Response

N/A
N/A

Execution Format Response

AT+CEER
+CEER: < DEFBY >, <ORIGSIDE>,
<ORIGIN_ENTITY>, <VALUE>
OK

Parameter Values

<DEFBY> (defined by)

0 - Standard
1 - Enfora

<ORIGSIDE> (originating side)

0 - Network
1 - MS

<ORIGIN_ENTITY>:

0 - SIM
1 - ACI
2 - RLP
3 - RR
4 - MM
5 - CC
6 - SS
7 - SMSCP
8 - SMSRP

2.4.2.9. AT+CEER

Extended Error Reporting (continued)

9 - SMSTP
10 - GMM
11 - SM
12 - FAD
13 - T30
14 - GRR
15 - PPP
16 - LLC
17 - SNDCP
18 - PKTIO
19 - PSI

<VALUE>

See AT+CEER Table in Appendix B

Reference

GSM Ref. 07.07 Chapter 6.10, Enfora
Specific responses

Standard Scope

Optional

Enfora Implementation Scope

Full

Notes

N/A

2.4.2.10. AT+CRC

Cellular Result Codes

Command Function

This command is used to control the display of extended incoming call information.

Command Functional Group

Response Control

Command Format Query Response

AT+CRC=?
+CRC: (0,1)
OK

Write Format Response

AT+CRC=<mode>
OK

Read Format Response

AT+CRC?
+CRC: 0
OK

Execution Format Response

N/A
N/A

2.4.2.10. AT+CRIC

Cellular Result Codes (continued)

Parameter Values

<mode>	0	disable
	1	enable
<type>	ASYNC	asynchronous transparent
	SYNC	synchronous transparent
	REL ASYNC	asynchronous non-transparent
	REL SYNC	synchronous non-transparent
	FAX	facsimile (TS 62)
	VOICE	normal voice (TS 11)
	VOICE/ XXX	voice followed by data (BS 81) (XXX is ASYNC, SYNC, REL ASYNC or REL SYNC)
	ALT VOICE/ XXX	alternating voice/data, voice first (BS 61)
	ALT XXX/VOICE	alternating voice/data, data first (BS 61)
	ALT VOICE/FAX	alternating voice/fax, voice first (TS 61)
	ALT FAX/VOICE	alternating voice/fax, fax first (TS 61)

Reference GSM Ref. 07.07 Chapter 6.11

Standard Scope Mandatory

Enfora Implementation Scope Full

Notes When enabled, an incoming call is indicated to the TE with unsolicited result code +CRING: **<type>** instead of the normal RING.

2.4.2.11. AT+CSNS

Single Numbering Scheme

Command Function

This command selects the bearer or teleservice to be used when mobile terminated single numbering scheme call is established. Parameter values set with +CBST command shall be used when **<mode>** equals to a data service. If +CBST parameter is set to a value that is not applicable to single numbering calls, ME/TA shall map the value to the closest valid one. E.g. if user has set **<speed>**=71, **<name>**=0 and **<ce>**=1 (non-transparent asynchronous 9600 bps V.110 ISDN connection) for mobile originated calls, ME/TA shall map the values into non-transparent asynchronous 9600 bps V.32 modem connection when single numbering scheme call is answered.

Command Functional Group

Call Control

Command Format Query Response

AT+CSNS=?
+CSNS: (0-7)
OK

Write Format Response

AT+CSNS = **<mode>**
OK

Read Format Response

AT+CSNS?
+CSNS: 0
OK

Execution Format Response

N/A
N/A

2.4.2.11. AT+CSNS

Single Numbering Scheme (continued)

Parameter Values

<mode>	0	voice
	1	alternating voice/fax, voice first (TS 61)
	2	fax (TS 62)
	3	alternating voice/data, voice first (BS 61)
	4	data
	5	alternating voice/fax, fax first (TS 61)
	6	alternating voice/data, data first (BS 61)
	7	voice followed by data (BS 81)

Reference

GSM Ref. 07.07 Chapter 6.17

Standard Scope

Optional

Enfora Implementation Scope

Full

Notes

Fax not supported

2.4.3. Network Service Related Commands

2.4.3.1. AT+CNUM

Subscriber Number

Command Function

This command is used to obtain the MSISDNs related to the subscriber.

Command Functional Group

Network Information

Command Format Query Response

AT+CNUM=?
OK

Write Format Response

N/A
N/A

Read Format Response

N/A
N/A

Execution Format Response

AT+CNUM
+CNUM: "Line1", "1 719 xxx xxxx", 145
OK

Parameter Values

N/A

Reference

GSM Ref. 07.07 Chapter 7.1

Standard Scope

Optional

Enfora Implementation Scope

Full

Notes

Not all SIMs are received from the provider with the number stored on the SIM.

2.4.3.2. AT+CREG

Network Registration Info

Command Function

Write command controls the presentation of an unsolicited result code **+CREG: <stat>** .

Read command returns the status of result code, which shows whether the network has currently indicated the registration of the ME.

Command Functional Group

Network Information

Command Format Query Response

AT+CREG=?
+CREG: (0,2)
OK

Write Format Response

AT+CREG=[<n>]
OK

Read Format Response

AT+CREG?
+CREG: <n>,<stat>[,<lac>,<ci>]
OK

Execution Format Response

N/A
N/A

2.4.3.2. AT+CREG

Network Registration Info (continued)

Parameter Values

<n>	0	disable network registration unsolicited result code
	1	enable network registration unsolicited result code +CREG: <stat>
	2	enable network registration and location information unsolicited result code +CREG: <stat>[,<lac>,<ci>]
<stat>	0	not registered, ME is not currently searching a new operator to register to
	1	registered, home network
	2	not registered, but ME is currently searching a new operator to register to
	3	registration denied
	4	unknown
	5	registered, roaming
<lac>	string type; two-byte location area code in hexadecimal format (e.g. "00C3" equals 195 in decimal)	
<ci>	string type; two-byte cell ID in hexadecimal format	

Reference

GSM Ref. 07.07 Chapter 7.2

Standard Scope

Optional

Enfora Implementation Scope

Partial

Notes

N/A

2.4.3.3. AT+COPS

Operator Selection

Command Function

Write command forces an attempt to select and register the GSM network operator. **<mode>** is used to select whether the selection is done automatically by the ME or is forced by this command to operator **<oper>** (it shall be given in format **<format>**). If the selected operator is not available, no other operator shall be selected (except **<mode> = 4**). The selected operator name format shall apply to further read commands (**+COPS?**) also. **<mode>=2** forces an attempt to deregister from the network. The selected mode affects to all further registration (e.g. after **<mode>=2**, ME shall be unregistered until **<mode>=0 or 1** is selected).

Read command returns the current mode and the currently selected operator. If no operator is selected, **<format>** and **<oper>** are omitted.

Test command returns a list of quadruplets, each representing an operator present in the network. Quadruplet consists of an integer indicating the availability of the operator **<stat>**, long and short alphanumeric format of the name of the operator, and numeric format representation of the operator. Any of the formats may be unavailable and will then be an empty field (,,). The list of operators comes in the following order: Home network, networks referenced in SIM, and other networks.

Command Functional Group

Network Information

2.4.3.3. AT+COPS

Operator Selection (continued)

Command Format Query Response

AT+COPS=?
+COPS: (2, " ", " ", "31022"), (3, " ",
" ", "310380")
OK

Write Format Response

AT+COPS=<mode>
[, <format> [, oper>]]
OK or
+CME ERROR: <err>

Read Format Response

AT+COPS?
+COPS: 0
OK

Execution Format Response

N/A
N/A

2.4.3.3. AT+COPS

Operator Selection (continued)

Parameter Values

<mode>	0	automatic (<oper> field is ignored)
	1	manual (<oper> field shall be present)
	2	deregister from network
	3	set only <format> (for read command +COPS?), do not attempt registration/deregistration (<oper> field is ignored); this value is not applicable in read command response
	4	manual/automatic (<oper> field shall be present); if manual selection fails, automatic mode (<mode=0>) is entered
<format>	.	
	0	long format alphanumeric <oper>
	1	short format alphanumeric <oper>
	2	numeric <oper> ; GSM Location Area Identification Number
<oper>	operator in format as in per <format>	
<stat>	0	Unknown
	1	Available
	2	Current
	3	Forbidden

Reference

GSM Ref. 07.07 Chapter 7.3

Standard Scope

Optional

Enfora Implementation Scope

Partial

Notes

2.4.3.3. AT+COPS

Operator Selection (continued)

Example:

To manually register the modem on a known PLMN:

AT+COPS=1,2,"xxxxx"

- PLMN
- Numeric format
- Manually register

To read operator information:

AT+COPS=?

+COPS: (2,"Voicestream","Vstream","31022")

PLMN

Short format

Long format

State (current)

2.4.3.4. AT+CLCK

Facility Lock

Command Function

This command is used to lock, unlock or interrogate a ME or a network facility **<fac>**. When querying the status of a network service (**<mode>=2**) the response line for a “not active” case (**<status=0>**) should be returned only if service is not active for any **<class>**. It should be possible to abort the command when network facilities are set or interrogated.

Command Functional Group

Supplemental Services

Command Format Query Response

AT+CLCK=?
+CLCK: (“SC”, “AO”, “OI”, “OX”, “AI”, “IR”, “AB”, “AG”, “AC”, “FD”, “PC”, “PP”, “PS”, “PN”, “PU”, “PF”, “AL”)
OK

Write Format

AT+CLCK=**<fac>**, **<mode>** [,**<passwd>** [, **<class>**]]

Response

If **<mode><> 2** and command is successful then OK

If **<mode>=2** and command is successful then
+CLCK:**<status>** [,**<class1>**]<CR><LF>
>
+CLCK: **<status>**, **class2...**]
OK

Read Format Response

N/A
N/A

Execution Format Response

N/A
N/A

2.4.3.4. AT+CLCK

Facility Lock (continued)

Parameter Values

<fac>

- "SC"** (SIM PIN 1)
- "AO"** (Barr All Outgoing Calls)
- "OI"** (Barr Outgoing International Calls)
- "OX"** (Barr Outgoing International Calls except Home Country)
- "AI"** (Barr All Incoming Calls)
- "IR"** (Barr Incoming Calls when Roaming outside the Home Country)
- "AB"** (All Barring Services)
- "AG"** (All Outgoing Barring)
- "AC"** (All incoming Barring)
- "FD"** (SIM Fixed Dialing Feature)
- "PC"** (Corporate Personalization, allows personalization to custom corporate group settings)
- "PP"** (Provider Personalization, allows for personalization to custom service provider defined groups)
- "PS"** PH-SIM (lock PHone to SIM card) (ME asks password when other than current SIM card inserted; ME may remember certain amount of previously used cards thus not requiring password when they are inserted)
- "PF"** lock Phone to the very First inserted SIM card (also referred in the present document as PH-FSIM) (ME asks password when other than the first SIM card is inserted)
- "PN"** Network Personalization (refer GSM 02.22 [33])
- "PU"** network sUbset Personalization (refer GSM 02.22 [33])
- "AL"** alternating Line service (PIN2)

2.4.3.4. AT+CLCK

Facility Lock (continued)

<mode>

- 0 Unlock
- 1 Lock
- 2 Query Status

<password>

"password"

<class>

- 1 voice
- 2 data
- 4 fax (fax not supported)
- 7 all classes **(default)**
- 8 short message service

<status>

- 0 off
- 1 on

Reference

GSM Ref. 07.07 Chapter 7.4

Standard Scope

Optional

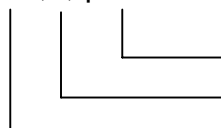
Enfora Implementation Scope Partial

Notes

Example:

To set Network Personalization on first SIM inserted:

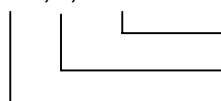
AT+CLCK="PF",1,"password",,"PN"



Password
Lock
Lock module to very first SIM
inserted

To enable SIM PIN:

AT+CLCK="SC",1,"xxxx"



PIN
Enable
SIM PIN

2.4.3.5. AT+CLCKCFG

Set Facility Lock Configuration

Command Function

This command set the configuration for facility lock "PN" (network personalization).

Command Functional Group

Enfora Specific

Command Format Query Response

AT+CLCKCFG=?
+CLCKCFG: (0-2),("MCC"),("MNC"),
("NWSub")
OK

Write Format Response

AT+CLCKCFG=<mode>,"MCC","MNC"
OK

Read Format Response

AT+CLCKCFG?
+CLCKCFG: **MCC,MNC,[NWSub]**
OK

Execution Format Response

N/A
N/A

Parameter Values

<mode>	0 Disable 1 Enable 2 Disable all
"MCC"	Mobile Country Code
"MNC"	Mobile Network Code
"NWSub"	2 digit Network Subset Code (optional)

Reference

N/A

Standard Scope

Optional

Enfora Implementation Scope

Full

2.4.3.5. AT+CLCKCFG

Set Facility Lock Configuration (continued)

Notes

AT+CLCKCFG will return "Locked" if facility is currently locked. Facility must be unlocked using AT+CLCK or AT+CPIN if currently receiving PH-SIM PIN from AT+CPIN? The usage of mode 2 requires that a value of ""999" be used for the MCC and "99" be used for the MNC value. This acts as a safety for the Delete All mode.

Examples

- | | |
|------------------------------|--|
| AT+CLCKCFG = 1, "310", "200" | Adds the MCC value 310 and MNC value of 200 to the phones Country/Network code list. |
| AT+CLCKCFG=2,"999","99" | Will disable/delete all MCC/MNC entries from the phones Country/Network code list. |

2.4.3.6. AT+CLCKCP

Set Corporate Personalization Lock

Command Function

This command allows the user to set, delete and or display the Corporate Provider personalization lock codes, which are stored in the device.

Command Functional Group

Enfora Specific

Command Format Query Response

AT+CLCKCP=?
+CLCKCP: (0-2), (0-FE)
OK

Write Format

AT+CLCKCP= <operation_code>,
<cp_personalization_code>
OK

Response

Read Format Response

AT+CLCKCP?
CP: "<cp_personalization_code(s)>"...

Execution Format Response

N/A
N/A

Parameter Values

< operation code >

Operation to be performed. The available options are;
0 => Delete the value "**cp_personalization_code**", from the current list stored in the device.
1 => Add the value "**cp_personalization_code**", to the current list stored in the device.
2 => Delete ALL entries from the device stored list. When this operation is selected the user **MUST** enter the value of **D6** for the **cp_personalization_code**. This acts as safety

2.4.3.6. AT+CLCKCP

Set Corporate Personalization Lock (continued)

< cp_personalization_code > **CP** personalization code which to set or delete from the devices stored list. The valid range for this parameter is **0..FE**. The values are hexadecimal input only.

Reference

N/A

Standard Scope

Optional

Enfora Implementation Scope Full

Notes

The **SIM** and **Device** must be programmed with valid **SP**(Service Provider Personalization) codes for **CP** personalization can be programmed. The **SIM** used for the device must be programmed and inserted into the device with valid **CP** and **SP** codes, and available to be read or this command will not store or delete device **CP** codes. If the **SIM** does not support **CP** personalization an error will be returned.

Examples

AT+CLCKCP=1,34

Adds the **Corporate** personalization code **34** to the device stored list. If the list is full an error will be returned.

AT+CLCKCP?

Display current **Corporate** code list from the device

CP: 34

OK

AT+CLCKCP=0,32

Deletes the code value **32** from the devices list. If the value is not found an error is returned.

AT+CLCKCP=2,D6

Deletes all entries from the **CP** device list.

2.4.3.7. AT+CLCKSP

Set Provider Personalization Lock

Command Function

This command allows the user to set, delete and or display the Service Provider personalization lock codes, which are stored in the phone device.

Command Functional Group

Enfora Specific

Command Format Query Response

AT+CLCKSP=?
+CLCKSP: (0-2),(0-FE)
OK

Write Format

AT+CLCKSP= <operation_code>,
<sp_personalization_code>
OK

Response

Read Format Response

AT+CLCKSP?
SP: "<sp_personalization_code(s)>"...

Execution Format Response

N/A
N/A

Parameter Values

< operation code >

Operation to be performed. The available options are;
0 => Delete the value "**sp_personalization_code**", from the current list stored in the phone.
1 => Add the value "**sp_personalization_code**", to the current list stored in the phone.
2 => Delete ALL entries from the phone stored list. When this operation is selected the user **MUST** enter the value of **D6** for the **sp_personalization_code**. This acts as safety

< sp_personalization_code >

SP personalization code which to set or delete from the phones stored list. The valid range for this parameter is **0..FE**. The values are hexadecimal input only.

2.4.3.7. AT+CLCKSP

Set Provider Personalization Lock (continued)

Reference

N/A

Standard Scope

Optional

Enfora Implementation Scope Full

Notes

The **SIM** used for the phone must be programmed and inserted into the phone with valid **SP** codes, and available to be read or this command will not store or delete phone **SP** codes. If the **SIM** does not support **SP** personalization an error will be returned.

Examples

AT+CLCKSP=1,34 Adds the **Service Provider** personalization code **34** to the phone stored list. If the list is full an error will be returned.

AT+CLCKSP?

Display current **Service Provider** code list from the phone

SP: 34

OK

AT+CLCKSP=0,32

Deletes the code value **32** from the phones list. If the value is not found an error is returned.

AT+CLCKSP=2,D6

Deletes all entries from the **SP** phone list.

2.4.3.8. AT+CPWD

Change Password

Command Function

This command is used to set a new password for the facility lock function defined by command Facility Lock +CLCK.

Command Functional Group

Supplemental Services

Command Format Query Response

AT+CPWD=?
+CPWD: ("SC", "AD", "OI", "OX", "AI",
"IR", "AB", "AG", "AC", "P2", "PC", "PP",
"PS", "PN", "PU", "PF")
OK

Write Format

AT+CPWD = <fac>, [<oldpwd>],
<newpwd>

Response

OK or
+CME ERROR: <err>

Read Format Response

N/A
N/A

Execution Format Response

N/A
N/A

2.4.3.8. AT+CPWD

Change Password (continued)

Parameter Values

<fac>

- "SC"** (SIM PIN 1)
- "AO"** (Barr All Outgoing Calls)
- "OI"** (Barr Outgoing International Calls)
- "OX"** (Barr Outgoing International Calls except Home Country)
- "AI"** (Barr All Incoming Calls)
- "IR"** (Barr Incoming Calls when Roaming outside the Home Country)
- "AB"** (All Barring Services)
- "AG"** (All Outgoing Barring)
- "AC"** (All incoming Barring)
- "P2"** (SIM PIN 2)
- "PC"** (Corporate Personalization, allows personalization to custom corporate group settings)
- "PP"** (Provider Personalization, allows for personalization to custom service provider defined groups)
- "PS"** PH-SIM (lock PHone to SIM card) (ME asks password when other than current SIM card inserted; ME may remember certain amount of previously used cards thus not requiring password when they are inserted)
- "PF"** lock Phone to the very First inserted SIM card (also referred in the present document as PH-FSIM) (ME asks password when other than the first SIM card is inserted)
- "PN"** Network Personalization (refer GSM 02.22 [33])
- "PU"** network sUbset Personalization (refer GSM 02.22 [33])

2.4.3.8. AT+CPWD

Change Password (continued)

<oldpwd>

Password specified for the facility. If an old password has not yet been set, **<oldpwd>** is not entered

<newpwd>

"new password"

Reference
Standard Scope

GSM Ref. 07.07 Chapter 7.5
Optional

Enfora Implementation Scope Partial

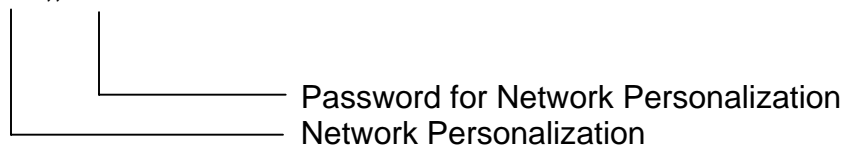
Notes

In order to change the password, the applicable facility must be enabled. See AT+CLK.

Example:

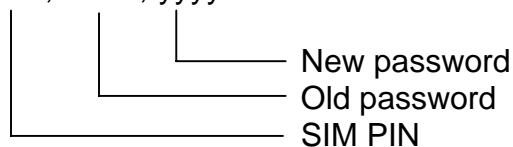
Enter first password for Network Personalization:

AT+CPWD="PN",,"xxxx"



To change SIM PIN:

AT+CPWD="SC","xxxx","yyyy"



2.4.3.9. AT+CLIP

Calling Line Identification Presentation

Command Function

This command refers to the GSM supplementary service CLIP (Calling Line Identification Presentation) that enables a called subscriber to get the Calling Line Identity (CLI) of the calling party when receiving a mobile terminated call. The write command enables or disables the presentation of the CLI at the TE. It has no effect on the execution of the supplementary service CLIP in the network.

Command Functional Group

Supplementary Services

Command Format Query Response

AT+CLIP=?
+CLIP: (0, 1)
OK

Write Format Response

AT+CLIP=<n>
+CLIP: <n> or
OK or
+CME ERROR: <err>

Read Format Response

AT+CLIP?
+CLIP: <n>, <m>
OK

Execution Format Response

N/A
N/A

2.4.3.9. AT+CLIP

Calling Line Identification Presentation (continued)

Unsolicited Result Code

When CLIP is enabled at the TE (and is permitted by the calling subscriber), an unsolicited result code is returned after the first RING (or +CRING: **<type>**) at a mobile terminating call

Voice call response format:

+CLIP: <number>, <type>,,,<CLI validity>

Data/FAX call response format:

+CLIP: <number>, <type>

Parameter Values

<n>

- 0** suppress unsolicited results codes
- 1** display unsolicited result codes

<m>

- 0** CLIP not enabled
- 1** CLIP enabled
- 2** Unknown

<number>

string type phone number of calling address in format specified by **<type>**

<type>

type of address octet in integer format:
145 when dialing string includes international access code character "+", otherwise **129**

<CLI validity>

- 0** CLI valid
- 1** CLI has been withheld by the originator
- 3** CLI is not available due to inter-working problems or limitations of originating network. **<number>** shall be an empty string ("") and **<type>** value will not be significant.

2.4.3.9. AT+CLIP

**Calling Line Identification
Presentation (continued)**

Reference

GSM Ref. 07.07 Chapter 7.6

Standard Scope

Optional

Enfora Implementation Scope

Full

Notes

N/A

2.4.3.10. AT+CLIR

Calling Line Identification Restriction

Command Function

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

The write command overrides the CLIR subscription (default is restricted or allowed) when temporary mode is provisioned as a default adjustment for all outgoing calls. This adjustment can be revoked by using the opposite command. This command, when used by a subscriber, without provision of CLIR in permanent mode the network will act according GSM 02.81 [3].

The read command gives the default adjustment for all outgoing calls (given in **<n>**), and also triggers and interrogation of the provision status of the CLIR service (given in **<m>**).

Command Functional Group

Supplementary Services

Command Format Query Response

AT+CLIR=?
+CLIR: (0, 1, 2)
OK

Write Format Response

AT+CLIR=[**<n>**]
N/A

Read Format Response

AT+CLIR?
+CLIR: **<n>**, **<m>**
OK

Execution Format Response

N/A
N/A

2.4.3.10. AT+CLIR

Calling Line Identification Restriction (continued)

Parameter Values

<n>

(parameter sets the adjustment for outgoing calls)

- 0** presentation indicator is used according to the subscription of the CLIR service
- 1** CLIR Invocation
- 2** CLIR suppression

<m>

(parameter shows the subscriber CLIR service status in the network)

- 0** CLIR not enabled
- 1** CLIR enabled in permanent mode
- 2** Unknown (e.g. no network, etc.)
- 3** CLIR temporary mode presentation restricted
- 4** CLIR temporary mode presentation allowed

Reference

GSM Ref. 07.07 Chapter 7.7

Standard Scope

Optional

Enfora Implementation Scope

Fully

Notes

N/A

2.4.3.11. AT+COLP

Connected Line Identification Presentation

Command Function

This command enables a calling subscriber to get the Connected Line Identity (COL) of the called party after setting up a mobile originated call. The command enables or disables the presentation of the COL at the TE. It has no effect on the execution of the supplementary service COLR in the network.

Command Functional Group

Supplementary Services

Command Format Query Response

AT+COLP=?
+COLP: (0, 1)
OK

Write Format Response

AT+COLP= [<n>]
OK

Read Format Response

AT+COLP?
+COLP: <n>, <m>
OK

Execution Format Response

N/A
N/A

2.4.3.11. AT+COLP

Connected Line Identification Presentation (continued)

Parameter Values

<n>

(parameter sets/shows the result code presentation status in the TA)

0 disable

1 enable

<m>

(parameter shows the subscriber COLP)

0 COLP not enabled

1 COLP enabled

2 Unknown (e.g. no network, etc.)

Reference

GSM Ref. 07.07 Chapter 7.8

Standard Scope

Optional

Enfora Implementation Scope Full

Notes

N/A

2.4.3.12. AT+CCUG

Closed User Group

Command Function

This command allows control of the Closed User Group supplementary service.

Write command with **<n>**=1 enables to control the CUG information on the air interface as a default adjustment for all following outgoing calls.

Command Functional Group

Supplementary Services

Command Format Query Response

AT+CCUG=?
+CCUG: (0, 1), (0,-10), (0-3)
OK

Write Format Response

AT+CCUG= [**<n>** [,**<index>** [,**<info>**]]]
N/A

Read Format Response

AT+CCUG?
+CCUG: 0, 0, 0
OK

Execution Format Response

N/A
N/A

Parameter Values

<n>	0	disable CUG temporary mode
	1	enable CUG temporary mode
<index>	0-9	CUG index
	10	no index preferred CUG taken from subscriber data)
<info>	0	no information
	1	suppress OA
	2	suppress preferential CUG
	3	suppress OA and preferential CUG

2.4.3.12. AT+CCUG

**Closed User Group
(continued)**

Reference

GSM Ref. 07.07 Chapter 7.9

Standard Scope

Optional

Enfora Implementation Scope

Full

Notes

N/A

2.4.3.13. AT+CCFC

Call Forwarding Number and Conditions

Command Function

This command allows control of the call forwarding supplementary service. Registration erasure, activation, deactivation, and status query are supported. When querying the status of a network service (**<mode> = 2**), the response line for “not active” (**<status> = 0**) should be returned only if service is not active for any **<class>**.

Command Functional Group

Supplementary Services

Command Format Query Response

AT+CCFC=?
+CCFC: (0-5)
OK

Write Format Response

N/A
N/A

Read Format Response

N/A
N/A

Execution Format

AT+CCFC=<reas>, <mode> [, <number>[,<type> [, <class> [,<time>]]]]

Response

If **<mode> <> 2** and command successful **OK**

If **<mode> = 2** and command successful (only in connection with **<reason> 03**)
+CCFC: <status>,
<class1>[,<number>,<type>[,<time>]]
[<CR><LF>+CCFC:] OK

If error is related to ME functionality:
+CME ERROR: <err>

2.4.3.13. AT+CCFC

Call Forwarding Number and Conditions (continued)

Parameter Values

<reas>	0	unconditional
	1	mobile busy
	2	no reply
	3	not reachable
	4	all call forwarding
	5	all conditional call forwarding
<mode>	0	disable
	1	enable
	2	query status
	3	registration
	4	erasure
<number>	string type phone number of forwarding address in format specified by <type>	
<type>	type of address in integer format; default 145 when dialing string includes international access code character "+", otherwise 129	
<class>	1	voice
	2	data
	4	fax (fax not supported)
	8	short message service
	16	data circuit sync
	32	data circuit async
<subaddr>	string type subaddress of format specified by <satype>	
<satype>	type of subaddress octet in integer format (refer GSM 04.08 [8] subclause 10.5.4.8); default 128	

2.4.3.13. AT+CCFC

Call Forwarding Number and Conditions (continued)

<time>

time to wait before call is forwarded,
rounded to a multiple of 5 sec
Default is 20.
1...20..30 (only for **<reas>**=no reply)

<status>

0 not active
1 active

Reference

GSM Ref. 07.07 Chapter 7.10

Standard Scope

Optional

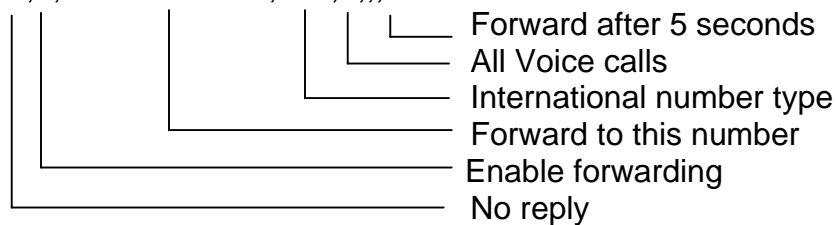
Enfora Implementation Scope Full

Notes

Example:

To call forward all voice calls, no reply after five seconds:

AT+CCFC=2,1,"+1719xxxxxx",145,1,,,5



2.4.3.14. AT+CCWA

Call Waiting

Command Function

This command allows control of the Call Waiting supplementary service. Activation and deactivation are supported.

Command Functional Group

Results

Command Format Query Response

AT+CCWA=?
+CCWA: (0,1)
OK

Write Format Response

AT+CCWA=<n>,<mode>,<class>
OK

Read Format Response

AT+CCWA?
+CCWA: 0
OK

Execution Format Response

N/A
N/A

Parameter Values

<n>

Sets/shows results code presentation in TA

0	Disable
1	Enable

<mode>

0	Disable
1	Enable
2	Query status

<class>

1	Voice
2	Data
4	Fax (fax not supported)

Reference

GSM Ref. 07.07 Chapter 7.11

Standard Scope

Optional

Enfora Implementation Scope

Partial

2.4.3.14. AT+CCWA

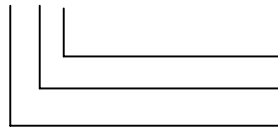
Call Waiting (continued)

Notes

Not all networks support call waiting for data and fax. Please contact service provider for details.

Example:

AT+CCWA=1,1,1



Voice
Enable Call Waiting
Enable Result Codes

2.4.3.15. AT+CHLD

Call Hold and Multiparty

Command Function

This command controls the supplementary services Call Hold, MultiParty and Explicit Call Transfer. Calls can be put on hold, recovered, released, added to conversation and transferred.

Command Functional Group

Supplementary Services

Command Format Query Response

AT+CHLD=?
+CHLD: (0, 1, 1x, 2, 2x, 3, 4)
OK

Write Format Response

N/A
N/A

Read Format Response

N/A
N/A

Execution Format Response

AT+CHLD=<n>
OK

2.4.3.15. AT+CHLD

**Call Hold and Multiparty
(continued)**

Parameter Values

<n>	0	Terminate all held calls; or set UDUB (User Determined User Busy) for a waiting call, i.e. reject the waiting call.
	1	Terminate all active calls (if any) and accept the other call (waiting call or held call)
	1X	Terminate the active call X (X= 1-7)
	2	Place all active calls on hold (if any) and accept the other call (waiting call or held call) as the active call
	2X	Place all active calls except call X (X= 1-7) on hold
	3	Add the held call to the active calls
	4	Connects the two calls and disconnects the subscriber from both calls (ECT).

Reference

GSM Ref. 07.07 Chapter 7.12

Standard Scope

Optional

Enfora Implementation Scope

Full

Notes

Call Hold, MultiParty and Explicit Call Transfer are only applicable to teleservice 11(Speech Telephony).

2.4.3.16. AT+CUSD

Unstructured Supplementary Service

Command Function

This command allows control of the Unstructured Supplementary Service Data (USSD)]. Both network and mobile initiated operations are supported. Parameter **<n>** is used to disable/enable the presentation of an unsolicited result code (network initiated operation) to the TE.

Command Functional Group

Supplementary Services

Command Format Query Response

AT+CUSD=?
+CUSD: (0, 1, 2)
OK

Write Format Response

+CUSD=[<n>[,<str>[,<dc>]]]
OK

Read Format Response

AT+CUSD?
+CUSD: 0
OK

Execution Format Response

N/A
N/A

Parameter Values

<n>

- 0** disable the result code presentation
- 1** enable the result code presentation
- 2** cancel session

(when **<str>** parameter is not given, network is not interrogated)

<str>

actual USSD string in "quotes"

<dc>

language parameter see GSM 03.38
- Default 15 (Language unspecified)

**2.4.3.16. AT+CUSD Unstructured Supplementary Service
(continued)**

Reference GSM Ref. 07.07 Chapter 7.14

GSM Ref. 03.38 Chapter 5

Standard Scope Optional

Enfora Implementation Scope Full

Notes

Example

AT+CUSD=1,"*201*35#",15

OK

+CUSD: 0,"*201*35#",15 (network response)

USSD stings can also be sent using the ATD command.

ATD*201*35#

OK

+CUSD: 0,"*201*35#",15 (network response)

2.4.3.17. AT+CAOC

Advice of Charge

Command Function

This refers to Advice of Charge supplementary service that enables subscriber to get information about the cost of calls. With **<mode>=0**, the execute command returns the current call meter value from the ME.

Command Functional Group

Supplementary Services

Command Format Query Response

AT+CAOC=?
+CAOC: (0-2)
OK

Write Format Response

AT+CAOC=**<mode>**

Read Format Response

AT+CAOC?
+CAOC: 1
OK

Execution Format Response

AT+CAOC
+CAOC: "000000"
OK

Parameter Values

<mode>	0	Query CCM value
	1	Deactivate
	2	Activate

Reference

GSM Ref. 07.07 Chapter 7.15

Standard Scope

Optional

Enfora Implementation Scope

Full

Notes

When **<mode>=0**, execution command will return the current call meter value.

2.4.3.18. AT+CSSN

Supplementary Service Notifications

Command Function

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

When **<n>=1** and a supplementary service notification is received after a mobile originated call setup, intermediate result code +CSSI:
<code1>[,<index>] is sent to TE before any other MO call setup result codes are presented. When several different **<code1>**s are received from the network, each of them shall have its own +CSSI result code.

When **<m>=1** and a supplementary service notification is received during a mobile terminated call setup or during a call; or when a forward check supplementary service notification is received, unsolicited result code +CSSU:
<code2>[,<index>[,<number>,<type>[,<subaddr>,<satype>]]] is sent to TE. In case of MT call setup, result code is sent after every +CLIP result code (refer command "Calling line identification presentation +CLIP"). When several different **<code2>**s are received from the network, each of them shall have its own +CSSU result code.

2.4.3.18. AT+CSSN

Supplementary Service Notifications (continued)

Command Functional Group

Supplementary Services

Command Format Query Response

AT+CSSN=?
+CSSN: (0, 1), (0, 1)
OK

Write Format Response

AT+CSSN=<n>, <m>
OK

Read Format Response

AT+CSSN?
+CSSN: <n>, <m>
OK

Execution Format Response

N/A
N/A

Parameter Values

<n>

(parameter sets/shows the +CSSI result code presentation status in the TA):
0 disable
1 enable

<m>

(parameter sets/shows the +CSSU result code presentation status in the TA):
0 disable
1 enable

<code1>

0 unconditional call forwarding is active
1 some of the conditional call forwardings are active
2 call has been forwarded
3 call is waiting
4 this is a CUG call (also <index> present)
5 outgoing calls are barred
6 incoming calls are barred
7 CLIR suppression rejected
8 call has been deflected

2.4.3.18. AT+CSSN

Supplementary Service Notifications (continued)

<index>

refer "Closed user group +CCUG"

<code2>

- 0** this is a forwarded call (MT call setup)
- 1** this is a CUG call (also <index> present) (MT call setup)
- 2** call has been put on hold (during a voice call)
- 3** call has been retrieved (during a voice call)
- 4** multiparty call entered (during a voice call)
- 5** call on hold has been released (this is not a SS notification) (during a voice call)
- 6** forward check SS message received (can be received whenever)
- 7** call is being connected (alerting) with the remote party in alerting state in explicit call transfer operation (during a voice call)
- 8** call has been connected with the other remote party in explicit call transfer operation (also number and subaddress parameters may be present) (during a voice call or MT call setup)
- 9** this is a deflected call (MT call setup)

<number>

string type phone number of format specified by **<type>**

<type>

type of address octet in integer format

<subaddr>

string type subaddress of format specified by **<satype>**

<satype>

type of subaddress octet in integer format

2.4.3.18. AT+CSSN	Supplementary Service Notifications (continued)
Reference	GSM Ref. 07.07 Chapter 7.16
Standard Scope	Optional
Enfora Implementation Scope	Full
Notes	N/A

2.4.3.19. AT+CLCC

List current calls

Command Function

Returns list of current calls of ME. If command succeeds but no calls are available, no information response is sent to TE.

Command Functional Group

Call Control

Command Format Query Response

AT+CLCC=?
OK

Write Format Response

N/A
N/A

Read Format Response

N/A
N/A

Execution Format Response

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

Parameter Values

<idx>

integer type; call identification number as described in GSM 02.30 [19] subclause 4.5.5.1; this number can be used in +CHLD command operations

<dir>

0 mobile originated (MO) call
1 mobile terminated (MT) call

2.4.3.19. AT+CLCC

List current calls (continued)

<stat>

(state of the call):

- 0** active
- 1** held
- 2** dialling (MO call)
- 3** alerting (MO call)
- 4** incoming (MT call)
- 5** waiting (MT call)

<mode>

(bearer/teleservice):

- 0** voice
- 1** data
- 2** fax (fax not supported)
- 3** voice followed by data, voice mode
- 4** alternating voice/data, voice mode
- 5** alternating voice/fax, voice mode
- 6** voice followed by data, data mode
- 7** alternating voice/data, data mode
- 8** alternating voice/fax, fax mode
- 9** unknown

<mpty>

- 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 address octet in integer format
(refer GSM 04.08 [8] subclause
10.5.4.7)

<alpha>

string type alphanumeric representation
of <number> corresponding to the entry
found in phonebook; used character set
should be the one selected with
command Select TE Character Set
+CSCS

2.4.3.19. AT+CLCC	List current calls (continued)
Reference	GSM Ref. 07.07 Chapter 7.17
Standard Scope	Optional
Enfora Implementation Scope	Full
Notes	N/A

2.4.3.20. AT+CPOL

Preferred Operator list

Command Function

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

Command Functional Group

Network

Command Format Query Response

AT+CPOL=?
+CPOL: (1-*n*), (0-2)
OK

Write Format

AT+CPOL=[<index>][,<format>[,<oper>]]

Response

OK

Read Format Response

AT+CPOL?
+CPOL: <index1>,<format>,<oper1>...<index10>,<format>,<oper10>
OK

Execution Format Response

N/A
N/A

Parameter Values

<index*n*>:

integer type; the order number of operator in the SIM preferred operator list

<format>:

- | | |
|----------|----------------------------------|
| 0 | long format alphanumeric <oper> |
| 1 | short format alphanumeric <oper> |
| 2 | numeric <oper> |

<oper*n*>:

string type; <format> indicates if the format is alphanumeric or numeric (see +COPS)

Reference

GSM Ref. 07.07 Chapter 7.18

Standard Scope

Optional

Enfora Implementation Scope

Full

2.4.3.20. AT+CPOL

**Preferred Operator list
(continued)**

Notes

This command is used to edit the SIM preferred list of networks. Execute command writes an entry in the SIM list of preferred operators (EF_{PLMNsel}). If **<index>** is given but **<oper>** is left out, entry is deleted. If **<oper>** is given but **<index>** is left out, **<oper>** is put in the next free location. If only **<format>** is given, the format of the **<oper>** in the read command is changed.

2.4.3.21. AT+COPN

Read Operator Names

Command Function	Execute command returns the list of operator names from the ME.
Command Functional Group	Network
Command Format Query Response	N/A N/A
Write Format Response	N/A N/A
Read Format Response	N/A N/A
Execution Format Response	AT+COPN +COPN: <numeric1>,<alpha1> [<CR><LF>+COPN: <numeric2>,<alpha2>[...]] OK
Parameter Values	
<numeric <i>n</i> >	string type; operator in numeric format (see +COPS)
<alpha <i>n</i> >	string type; operator in long alphanumeric format (see +COPS)
Reference	GSM Ref. 07.07 Chapter 7.19
Standard Scope	Optional
Enfora Implementation Scope	Full
Notes	N/A

2.4.4. ME Control and Status Commands

2.4.4.1. AT+CPAS

Phone Activity Status

Command Function

Execution command returns the activity status **<pas>** of the ME. It can be used to interrogate the ME before requesting action from the phone. Test command returns values supported by the ME as a compound value.

Command Functional Group

Phone Control

Command Format Query Response

AT+CPAS=?
+CPAS: (0-5) or
+CME ERROR: <err>
OK

Write Format Response

N/A
N/A

Read Format Response

N/A
N/A

Execution Format Response

AT+CPAS
AT+CPAS: **<pas>**
OK

2.4.4.1. AT+CPAS

Phone Activity Status (continued)

Parameter Values

<pas>	0	Ready (ME allows commands from TA/TE)
	1	Unavailable (ME does not allow commands from TA/TE)
	2	Unknown (ME is not guaranteed to respond to instructions)
	3	Ringing (ME is ready for commands from TA/TE, but the ringer is active)
	4	Call in progress (ME is ready for commands from TA/TE, but a call is in progress)
	5	Asleep (ME is unable to process commands from TA/TE because it is in a low functionality state)

Reference GSM Ref. 07.07 Chapter 8.1

Standard Scope Optional

Enfora Implementation Scope Full

Notes N/A

2.4.4.2. AT+CFUN

Set Phone Functionality

Command Function

Set command selects the level of functionality <fun> in the ME. Level "full functionality" is where the highest level of power is drawn. "Minimum functionality" is where minimum power is drawn.

Command Functional Group

Phone Control

Command Format Query Response

AT+CFUN=?
+CFUN: (0,1,4), (0)
OK

Write Format Response

AT+CFUN=<fun>,<rst>
OK

Read Format Response

AT+CFUN?
+CFUN: 1
OK

Execution Format Response

N/A
N/A

Parameter Values

<fun>

0 Minimum functionality
1 Full functionality
4 disable phone both transmit and receive RF circuits

<rst>

0 Do not reset ME

Reference

GSM Ref. 07.07 Chapter 8.2

Standard Scope

Optional

Enfora Implementation Scope

Partial

Notes

Once the modem has left the minimum functionality state, it will respond to AT+CFUN? with +CFUN: 1 regardless of whether the modem has reached full functionality yet.

2.4.4.3. AT+CPIN

Enter PIN

Command Function

Set command sends to the ME a password that is necessary before it can be operated (SIM PIN, SIM PUK, PH-SIM PIN, etc.). If no PIN request is pending, no action is taken towards ME and an error message, +CME ERROR, is returned to TE. If the PIN required is SIM PUK or SIM PUK2, the second pin is required. This second pin, **<newpin>**, issued to replace the old pin in the SIM.

Command Functional Group

Phone Control

Command Format Query Response

AT+CPIN=?
OK

Write Format Response

AT+CPIN=<"pin">,[<"newpin">]

Read Format Response

AT+CPIN?
+CPIN: <code>
OK
or
+CME ERROR: <err>

Execution Format Response

N/A
N/A

Parameter Values

<code>

READY	ME is not pending for any password
SIM PIN	ME is waiting SIM PIN to be given
SIM PUK	ME is waiting SIM PUK to be given
PH-SIM PIN	ME is waiting phone-to-SIM card password to be given

2.4.4.3. AT+CPIN

Enter PIN (continued)

PH-FSIM PIN

ME is waiting phone-to-very first SIM card password to be given

PH-FSIM PUK

ME is waiting phone-to-very first SIM card unblocking password to be given

SIM PIN2

ME is waiting SIM PIN2 to be given (this <code> is recommended to be returned only when the last executed command resulted in PIN2 authentication failure (i.e. +CME ERROR: 17); if PIN2 is not entered right after the failure, it is recommended that ME does not block its operation)

SIM PUK2

ME is waiting SIM PUK2 to be given (this <code> is recommended to be returned only when the last executed command resulted in PUK2 authentication failure (i.e. +CME ERROR: 18); if PUK2 and new PIN2 are not entered right after the failure, it is recommended that ME does not block its operation)

PH-NET PIN

ME is waiting network personalization password to be given

2.4.4.3. AT+CPIN

**Enter PIN
(continued)**

PH-NET PUK

ME is waiting network
personalization unblocking
password to be given

PH-NETSUB PIN

ME is waiting network
subset personalization
password to be given

PH-NETSUB PUK

ME is waiting network
subset personalization
unblocking password to be
given

PH-SP PIN

ME is waiting service
provider personalization
password to be given

PH-SP PUK

ME is waiting service
provider personalization
unblocking password to be
given

PH-CORP PIN

ME is waiting corporate
personalization password
to be given

PH-CORP PUK

ME is waiting corporate
personalization unblocking
password to be given

2.4.4.3. AT+CPIN

Enter PIN (continued)

Reference

GSM Ref. 07.07 Chapter 8.3

Standard Scope

Optional

Enfora Implementation Scope

Full

Notes Commands which interact with ME that are accepted when ME is pending SIM PIN, SIM PUK, or PH-SIM are: +CGMI, +CGMM, +CGMR, +CGSN, D112; (emergency call), +CPAS, +CFUN, +CPIN. After power on the modem needs 20-25 seconds to initialize and completely read the SIM.

*** If AT\$AREG=1, and PIN is enabled, the modem will not complete the auto registration process until after the PIN has been entered (AT+CPIN).**

2.4.4.4. AT+CPIN2

Enter PIN2

Command Function

Set command sends PUK2 to change PIN2. If no PIN2 request is pending, no action is taken towards ME and an error message, +CME ERROR, is returned to TE. The command will set PIN2 regardless of the state of PIN2 being SIM PIN2 or SIM PUK2.

Command Functional Group

Phone Control

Command Format Query Response

AT+CPIN2=?
OK

Write Format Response

AT+CPIN2=<"PUK2">,<["newpin2"]>

Read Format Response

N/A
N/A

Execution Format Response

N/A
N/A

Parameter Values

N/A

<code>

READY	ME is not pending for any password
SIM PIN2	ME is waiting SIM PIN to be given
SIM PUK2	ME is waiting SIM PUK to be given

2.4.4.4

AT+CPIN2

Enter PIN2
(continued)

SIM PIN2 ME is waiting SIM PIN2 to be given (this <code> is recommended to be returned only when the last executed command resulted in PIN2 authentication failure (i.e. +CME ERROR: 17); if PIN2 is not entered right after the failure, it is recommended that ME does not block its operation)

SIM PUK2 ME is waiting SIM PUK2 to be given (this <code> is recommended to be returned only when the last executed command resulted in PUK2 authentication failure (i.e. +CME ERROR: 18); if PUK2 and new PIN2 are not entered right after the failure, it is recommended that ME does not block its operation)

Reference N/A

Standard Scope Optional

Enfora Implementation Scope Full

Notes N/A.

2.4.4.5. AT+CSQ	Signal Quality and Bit Error Rate
Command Function	Execution command returns received signal strength indication <rss> and channel bit error rate <ber> from the ME.
Command Functional Group	Phone Control
Command Format Query Response	AT+CSQ=? +CSQ: (2-31,99),(99) OK
Write Format Response	N/A N/A
Read Format Response	N/A N/A
Execution Format Response	AT+CSQ +CSQ: <rss> , <ber> OK
Parameter Values	
<rss>	0 -113 dBm or less 1 -111 dBm 2-30 -109... -53 dBm 31 -51 dBm or greater 99 not known or not detectable
<ber> (in percent)	0-7 as RXQUAL values in the table in GSM 05.08 [20] subclause 8.2.4 99 not known or not detectable
Reference	GSM Ref. 07.07 Chapter 8.5
Standard Scope	Optional
Enfora Implementation Scope	Partial
Notes	N/A

2.4.4.6. AT+CPBS	Select Phonebook Memory Storage
Command Function	Set command selects phonebook memory storage <storage>, which is used by other phonebook commands.
Command Functional Group	Phonebook Control
Command Format Query Response	AT+CPBS=? +CPBS: ("EN","BD","FD","DC","LD","RC","LR", "MT","AD","SM","SD","MC","LM","ON", "UD") OK
Write Format Response	AT+CPBS=<storage> OK
Read Format Response	AT+CPBS? +CPBS: <storage>, <used>, <total> OK
Execution Format Response	N/A N/A

2.4.4.6. AT+CPBS

Select Phonebook Memory Storage (continued)

Parameter Values

<storage>

"EN"	SIM (or ME) emergency number
"FD"	SIM fixed-dialing-phonebook
"LD"	SIM last-dialing-phonebook
"BD"	SIM barred-dialing phonebook
"SD"	SIM service numbers
"DC"	MT dialed calls list
"RC"	MT received calls list
"LR"	Last received numbers (nonstandard)
"MT"	Combined MT and SIM/UICC
phonebook	
"AD"	Abbreviated dialing numbers (nonstandard)
"LM"	Last missed numbers (nonstandard)
"MC"	MT missed (unanswered received) calls list
"SM"	comb. of fixed and abbrev. dialing phonebook (nonstandard)
"ON"	Active application in the UICC (GSM or USIM) or SIM card (or MT) own numbers (MSISDNs) list
"UD"	User defined

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

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

Reference GSM Ref. 07.07 Chapter 8.11

Standard Scope Optional

Enfora Implementation Scope Partial

Notes To read the storage facilities, the correct
storage must be written to first and then
read.

2.4.4.6. AT+CPBS

Select Phonebook Memory Storage (continued)

Example:

AT+CPBS="EN"

Enable Emergency number storage

AT+CPBS?

+CPBS: "EN", 5,5

Total Number of locations in selected memory

Number of used locations in selected memory

Emergency number storage enabled

2.4.4.7. AT+CPBR

Read Phonebook Entries

Command Function

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

Command Functional Group

Phonebook Control

Command Format Query Response

AT+CPBR=?
+CPBR: (1-250), 44,16
OK

Write Format Response

N/A
N/A

Read Format Response

N/A
N/A

Execution Format Response

AT+CPBR=**<index1>,<index2>,...**
+CPBR: <index1>,<number>,<type>,<text>
OK

2.4.4.7. AT+CPBR

Read Phonebook Entries (continued)

Parameter Values

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

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

<type> type of address octet in integer format

<text> string type field of maximum length **<tlength>**; character set as specified by command Select TE Character Set +CSCS

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

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

Reference GSM Ref. 07.07 Chapter 8.12

Standard Scope Optional

Enfora Implementation Scope Full

Notes This command will read the storage facility that is set with AT+CPBS.

2.4.4.8. AT+CPBF

Find Phonebook Entries

Command Function

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

Command Functional Group

Phonebook Control

Command Format Query Response

AT+CPBF=?
+CPBF: <nlength>, <tlength>
OK

Write Format Response

N/A
N/A

Read Format Response

N/A
N/A

Execution Format Response

AT+CPBF=<"findtext">
+CPBF: <index1>, <number>,
<type>,<text><CR><LF>+CBPF:
<index2>,<number>,<type>,<text>...
OK

2.4.4.8. AT+CPBF

Find Phonebook Entries (continued)

Parameter Values

<index1>, <index2>	integer type values in the range of location numbers of phonebook memory
<number>	string type phone number of format <type>
<type>	type of address octet in integer format
<findtext>, <text>	string type field of maximum length <tlength> ; character set as specified by command Select TE Character Set +CSCS
<nlength>	integer type value indicating the maximum length of field <number>
<tlength>	integer type value indicating the maximum length of field <text>

Reference GSM Ref. 07.07 Chapter 8.13

Standard Scope Optional

Enfora Implementation Scope Full

Notes This command will find an entry within the storage facility that is set with AT+CPBS.

Example:

AT+CPBF="office"

+CPBF: 10,"19725551212",129,"office"

2.4.4.9. AT+CPBW

Write Phonebook Entries

Command Function

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

Command Functional Group

Phonebook Control

Command Format Query Response

AT+CPBW=?
+CPBW: (1-250), 44, (128-201), 16
OK

Write Format Response

N/A
N/A

Read Format Response

AT+CPBW?
+CPBW: <index>, [<nlength>],
<types>, [<tlength>]
OK

Execution Format Response

AT+CPBW=<index>,<number>,<type>
<text>
OK/+CME ERROR: <err>

2.4.4.9. AT+CPBW

Write Phonebook Entries (continued)

Parameter Values

<index>	integer type values in the range of location numbers of phonebook memory
<number>	string type phone number of format <type>
<type>	type of address octet in integer format; default 145 when dialling string includes international access code character "+", otherwise 129
<text>	string type field of maximum length <tlength> ; character set as specified by command Select TE Character Set +CSCS
<nlength>	integer type value indicating the maximum length of field <number>
<tlength>	integer type value indicating the maximum length of field <text>

Reference GSM Ref. 07.07 Chapter 8.14

Standard Scope Optional

Enfora Implementation Scope Full

Notes This command will write to the storage facility that is set with AT+CPBS.

Example:

AT+CPBW=10,"17192326602",129,"Toms Office"

2.4.4.10. AT+CMUT

Mute Control

Command Function

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

Command Functional Group

Phone Control

Command Format Query Response

AT+CMUT=?
+CMUT: (0,1)
OK

Write Format Response

AT+CMUT=<value>
OK

Read Format Response

AT+CMUT?
+CMUT: 0
OK

Execution Format Response

N/A
N/A

Parameter Values

<value>

0 mute off
1 mute on

Reference

GSM Ref. 07.07 Chapter 8.24

Standard Scope

Optional

Enfora Implementation Scope

Full

Notes

N/A

2.4.4.11. AT+CACM

Accumulated Call Meter

Command Function

Set command resets the Advice of Charge related accumulated call meter value in SIM file EF_{ACM}. ACM contains the total number of home units for both the current and preceding calls. SIM PIN2 is usually required to reset the value.

Command Functional Group

Phone Control

Command Format Query Response

N/A
N/A

Write Format Response

N/A
N/A

Read Format Response

AT+CACM?
+CACM: "000000"
OK

Execution Format Response

AT+CACM=<passwd>
OK

Parameter Values

<passwd>: string type; SIM PIN2

Reference

GSM Ref. 07.07 Chapter 8.25

Standard Scope

Optional

Enfora Implementation Scope

Full

Notes

Used in conjunction with AT+CAOC and AT+CMM

Example:

AT+CACM="1234"
_____ Password

2.4.4.12. AT+CMM

Accumulated Call Meter Maximum

Command Function

Set command sets the Advice of Charge related accumulated call meter maximum value in SIM file EF_{ACMmax}. ACMmax contains the maximum number of home units allowed to be consumed by the subscriber. When ACM (refer +CACM) reaches ACMmax calls are prohibited (see also GSM 02.24 [26]). SIM PIN2 is usually required to set the value.

Command Functional Group

Phone Control

Command Format Query Response

N/A
N/A

Write Format Response

N/A
N/A

Read Format Response

N/A
N/A

Execution Format Response

AT+CMM=<acmmax>,<passwd>
OK

Parameter Values

<acmmax>

string type; accumulated call meter maximum value similarly coded as <ccm> under +CAOC; value zero disables ACMmax feature

<passwd>

string type; SIM PIN2

Reference

GSM Ref. 07.07 Chapter 8.26

Standard Scope

Optional

Enfora Implementation Scope

Full

Notes

Used in conjunction with AT+CACM and AT+CAOC.

2.4.4.13. AT+CPUC

Price Per Unit and Currency Table

Command Function	Set command sets the parameters of Advice of Charge related price per unit and currency table in SIM file EF _{PUCT} .
Command Functional Group	Phone Control
Command Format Query Response	N/A N/A
Write Format	AT+CPUC=<currency>,<ppu>,<passwd>
Response	OK
Read Format Response	AT+CPUC? AT+CPUC: “ “, “ “ OK
Execution Format Response	N/A N/A
Parameter Values	
<currency>	string type; three-character currency code (e.g. "GBP", "DEM"); character set as specified by command Select TE Character Set +CSCS
<ppu>	string type; price per unit; dot is used as a decimal separator (e.g. "2.66")
<passwd>	string type; SIM PIN2
Reference	GSM Ref. 07.07 Chapter 8.27
Standard Scope	Optional
Enfora Implementation Scope	Full
Notes	N/A

2.4.4.14. AT+CCWE

Call Meter Maximum Event

Command Function

Shortly before the ACM (Accumulated Call Meter) maximum value is reached, an unsolicited result code +CCWV will be sent, if enabled by this command.

Command Functional Group

Phone Control

Command Format Query Response

AT+CCWE=?
+CCWE: (0,1)
OK

Write Format Response

AT+CCWE=<mode>
OK

Read Format Response

AT+CCWE?
+CCWE: 0
OK

Execution Format Response

N/A
N/A

Parameter Values

<mode>

- | | |
|----------|---------------------------------------|
| 0 | Disables the call meter warning event |
| 1 | Enable the call meter warning event |

Reference

GSM Ref. 07.07 Chapter 8.28

Standard Scope

Optional

Enfora Implementation Scope

Full

Notes

Used in conjunction with AT+CACM, AT+CAOC and AT+CAMM

2.4.4.15. AT+CSVM

Set Voicemail Number

Command Function

The number to the voice mail server is set with this command. The parameters <number> and <type> can be left out if the parameter <mode> is set to 0.

Command Functional Group

Phone Control

Command Format Query Response

AT+CSVM=?
+CSVM: (0,1), (129, 145, 161)
OK

Write Format Response

AT+CSVM=<mode>, <number>,
<type>
OK

Read Format Response

AT+CSVM?
+CSVM: 0, “ “, 129
OK

Execution Format Response

N/A
N/A

Parameter Values

<mode> **0** Disable the voice mail number
 1 Enable the voice mail number

<number> string type; Character string <0..9,+>

<type> integer type; Type of address octet

129 ISDN / telephony numbering plan, national / international unknown

145 ISDN / telephony numbering plan, international number

161 ISDN / telephony numbering plan, national number

Reference

GSM Ref. 07.07 Chapter 8.30

2.4.4.15. AT+CSVM

**Set Voicemail Number
(continued)**

Standard Scope

Optional

Enfora Implementation Scope Full

Notes

The voicemail number is set in the SIM by the service provider. Care should be taken when entering this command. If the voicemail number is lost or does not work, contact your service provider for the correct voicemail number.

2.4.4.16. AT+CLAE

Set Language Event

Command Function	This command is used to enable/disable unsolicited result code +CLAV: <code> .	
Command Functional Group	Phone Control	
Command Format Query Response	AT+CLAE=? +CLAE: (0,1) OK	
Write Format Response	AT+CLAE= <mode> OK	
Read Format Response	AT+CLAE? +CLAE: 0 OK	
Execution Format Response	N/A N/A	
Parameter Values		
<mode>	0	Disable
	1	Enable
Reference	GSM Ref. 07.07 Chapter 8.31	
Standard Scope	Optional	
Enfora Implementation Scope	Full	
Notes	N/A	

2.4.4.17. AT+CLAN

Set Language

Command Function

This command sets the language in the ME. The set-command must confirm the selected language with the MMI-module in the ME. If setting fails, a ME error, +CME ERROR: **<err>** is returned. Refer subclause 9.2 for **<err>** values.

Command Functional Group

Phone Control

Command Format Query Response

AT+CLAN=?
+CLAN: en, fr, de, it, es, pt, no, el, pl, in, cs, zh, ar
OK

Write Format Response

AT+CLAN=**<code>**
OK

Read Format Response

AT+CLAN?
+CLAN: en
OK

Execution Format Response

N/A
N/A

Parameter Values

<code>

"en" English
"fr" French
"de" German
"it" Italian
"es" Spanish
"pt" Portuguese
"no" Norwegian
"el" Greek
"pl" Polish
"in" Indonesian
"cs" Czech
"zh" Chinese
"ar" Arabic

2.4.4.17. AT+CLAN

**Set Language
(continued)**

Reference

GSM Ref. 07.07 Chapter 8.33

Standard Scope

Optional

Enfora Implementation Scope

Full

Notes

N/A

2.4.4.18. AT+CMUX

Set Multiplexing mode

Command Function

This command is used to enable/disable the GSM 07.10 multiplexing protocol control channel. Refer to subclause 9.2 for possible <err> values. The AT command sets parameters for the Control Channel. If the parameters are left out, the default value is used.

Command Functional Group

Phone Control

Command Format Query

AT+CMUX=?

Response:
<mode>s),(list of

+CMUX: (list of supported

supported <subset>s),(list of supported <port_speed>s),(list of supported <N1>s),(list of supported <T1>s),(list of supported <N2>s),(list of supported <T2>s),(list of supported <T3>s),(list of supported <k>s)

+CMUX: (1),(0),(1-5),(10-100),(1-255),(0-100),(2-255),(1-255),(1-7)

OK

Write Format

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

Response

OK

Read Format Response

AT+CMUX?
OK

If in CMUX it will return the current settings

Execution Format Response

N/A
N/A

2.4.4.18. AT+CMUX

Set Multiplexing Mode (continued)

Parameter Values

<operation/mode>
(multiplexer Transparency Mechanism)

1 Advanced option

<subset>

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

0 UIH frames used only

<port_speed>

(transmission rate):

- 1 9 600 bit/s
- 2 19 200 bit/s
- 3 38 400 bit/s
- 4 57 600 bit/s
- 5 115 200 bit/s

<N1>

(maximum frame size):

10- 100

<T1>

(acknowledgement timer in units of ten milliseconds):

1-255,

<N2>

(maximum number of re-transmissions):

10-100

2.4.4.18. AT+CMUX

**Set Multiplexing Mode
(continued)**

<T2>
control

(response timer for the multiplexer
channel in units of ten milliseconds):

2-255

NOTE: T2 must be longer than T1.

<T3>

(wake up response timer in seconds):

1-255, where 10 is default

<k>
with

(window size, for Advanced operation
Error Recovery options):

1-7

Reference

GSM Ref. 07.07 Chapter 5.7

Standard Scope

Mandatory if GSM 7.10 is used

Enfora Implementation Scope Full

Notes

N/A

ME Errors

2.4.4.19. AT+CMEE

Report Mobile Equipment Errors

Command Function

Set command disables or enables the use of result code +CME ERROR: **<err>** as an indication of an error relating to the functionality of the ME. When enabled, ME related errors cause +CME ERROR: **<err>** final result codes to be returned, instead of the default ERROR final result code. ERROR is returned normally when error is related to syntax, invalid parameters, or TA functionality.

Command Functional Group

Response Control

Command Format Query Response

AT+CMEE=?
+CMEE: (0-2)
OK

Write Format Response

AT+CMEE=<n>
OK

Read Format Response

AT+CMEE?
+CMEE: 0
OK

Execution Format Response

N/A
N/A

2.4.4.19. AT+CMEE

Report Mobile Equipment Errors (continued)

Parameter Values

<n>	0	Disable +CME ERROR
	1	Enable +CME result code and username values
	2	Enable +CME result code and ME verbose values

Reference GSM Ref. 07.07 Chapter 9.1

Standard Scope Mandatory

Enfora Implementation Scope Full

Notes See Appendix B for error code descriptions.

2.4.5. Commands from TIA IS-101

2.4.5.1. AT+FCLASS GSM Class of Service

Command Function	Select Mode
Command Functional	This command puts the TA into a particular mode of operation (data, voice etc.). This causes the TA to process information in a manner suitable for that type of information (rather than for other types of information).
Group	
Command Format Query Response	AT+FCLASS=? 0, 8 OK
Write Format Response	AT+FCLASS=<mode> OK
Read Format Response	AT+FCLASS? 0 OK
Execution Format Response	N/A N/A
Parameter Values	
<mode>	0 Data 8 Voice
Reference	GSM Ref. 07.07 Chapter C.1
Standard Scope	Optional
Enfora Implementation Scope	Partial
Notes	N/A

2.4.5.2. AT+VTS

DTMF and Tone Generation

Command Function

This command allows the transmission of DTMF tones and arbitrary tones (see note). These tones may be used (for example) when announcing the start of a recording period. The command is write only. In this profile of commands, this command does not operate in data mode of operation

Command Functional Group

Audio Functions

Command Format Query Response

AT+VTS=?
+VTS: (0, 1, 2, 3, 4, 5, 6, 7, 8, 9, A, B, C, #, *)
OK

Write Format Response

N/A
N/A

Read Format Response

N/A
N/A

Execution Format Response

AT+VTS=<DTMF>
OK

2.4.5.2 AT+VTS

DTMF and Tone Generation (continued)

Parameter Values

<DTMF>

0
1
2
3
4
5
6
7
8
9
A
B
C

*

Reference

GSM Ref. 07.07 Chapter C.11

Standard Scope

Optional

Enfora Implementation Scope Partial

Notes

In GSM this operates only in voice mode. Fixed tone duration.

2.4.5.3. AT+STTONE

Start or Stop Generating a Tone

Command Function

This command allows the user to start generating a tone or stop generating a tone.

Command Functional Group

Enfora Specific

Command Format Query Response

AT+STTONE=?
+STTONE: (0-1), (1-8,16-18), (0-15300000)
OK

Write Format

AT+STTONE=<mode>[,
<tone>[,<duration>]]

Response

OK

Read Format

N/A

Response

N/A

Execution Format

N/A

Response

N/A

Parameter Values

< mode >

0=> Stop generating a tone. For stop generating a tone, the AT command is AT+STTONE=0, <tone>.
1=> Start generating a tone.

< tone >

The value of tone is as follows:

1 => Dial Tone
2 => Called Subscriber Busy
3 => Congestion
4 => Radio Path Acknowledge
5 => Radio path not Available/Call Dropped
6 => Error/Special Information
7 => Call Waiting Tone
8 => Ring Tone
16=> General Beep
17=> Positive Acknowledgement tone
18=> Negative Acknowledgement or Error Tone

2.4.5.3 AT+STTONE

Start or Stop Generating a Tone (continued)

When the optional tone is not present, default value is 16, which is a general Beep.

< duration >

0-15300000 in milliseconds.
When the optional duration is not present, default value is 500ms. When the duration is 0, it plays once. When the duration is 0, all other tones play once except 2 => called subscriber busy, which plays 4 times.

Reference

Reference 3GPP TS 22.001 F.2.5
Comfort tones.

Standard Scope

Optional

Enfora Implementation Scope

Full

Notes

All tones generated by audio speaker.
The tones need to be stopped before originating calls.

Examples

AT+STTONE=1,7,5000

Generate Call Waiting tone for 5 seconds.

AT+STTONE=0,7

Stop Call Waiting tone.

2.5. Commands Specified by GSM Rec. 07.05

2.5.1. General Configuration Commands

2.5.1.1. AT+CSMS Select Message Service

Command Function	Set command selects messaging service <service> . It returns the types of messages supported by the ME: <mt> for mobile terminated messages, <mo> for mobile originated messages and <bm> for broadcast type messages.
Command Functional Group	Short Message Services
Command Format Query Response	AT+CSMS=? +CSMS: (0,1) OK
Write Format Response	AT+CSMS= <service> +CSMS: 0,1,1,1 OK
Read Format Response	AT+CSMS? +CSMS: 0,1,1,1 OK
Execution Format Response	N/A N/A
Parameter Values	
<service>	0 Phase 2 version 1 Phase 2+ version
Reference	GSM Ref. 07.05 Chapter 3.2.1
Standard Scope	Mandatory
Enfora Implementation Scope	Full
Notes	N/A

2.5.1.2. AT+CPMS

Preferred Message Storage

Command Function

Set command selects memory storages **<mem1>**, **<mem2>** and **<mem3>** to be used for reading, writing, etc.

Command Functional Group

Short Message Services

Command Format Query Response

AT+CPMS=?
+CPMS: ("SM"), ("SM"), ("SM")
OK

Write Format

AT+CPMS=<mem1>,<mem2>,<mem3>

Response

+CPMS: (0-30), (0-30), (0-30)
OK

Read Format Response

AT+CPMS?
+CPMS: "SM", (0-30), "SM", (0-30),
"SM", (0-30)
OK

Execution Format Response

N/A
N/A

Parameter Values

<mem1>

String type; memory from which messages are read and deleted (commands List Messages +CMGL, Read Message +CMGR and Delete Message +CMGD); defined values: "SM" SIM message storage

<mem2>

String type; memory to which writing and sending operations are made (commands Send Message from Storage +CMSS and Write Message to Memory +CMGW); refer to <mem1> for defined values

2.5.1.2. AT+CPMS

**Preferred Message Storage
(continued)**

<mem3>

String type; memory to which received messages are preferred to be stored (unless class of message defines a specific storage location; refer to command New Message Indications +CNMI); refer to<mem1> for defined values

Reference

GSM Ref. 07.05 Chapter 3.2.2

Standard Scope

Mandatory

Enfora Implementation Scope Partial

Notes

2.5.1.3. AT+CMGF

SMS Format

Command Function

Set command tells the TA, which input and output format of messages to use. <mode> indicates the format of messages used with send, list, read and write commands and unsolicited result codes resulting from received messages. Mode can be either PDU mode (entire TP data units used) or text mode (headers and body of the messages given as separate parameters).

Command Functional Group

Short Message Services

Command Format Query Response

AT+CMGF=?
AT+CMGF: (0,1)
OK

Write Format Response

AT+CMGF=<mode>
OK

Read Format Response

AT+CMGF?
+CMGF: 1
OK

Execution Format Response

N/A
N/A

Parameter Values

<mode>

0	PDU mode
1	Text mode

Reference

GSM Ref. 07.05 Chapter 3.2.3

Standard Scope

Mandatory

Enfora Implementation Scope

Partial

Notes

Use of PDU mode requires an in depth understanding of PDU message and header formats.

2.5.2. Message Configuration Commands

2.5.2.1. AT+CSCA

Service Center Address

Command Function

Set command updates the SMSC address, through which mobile originated SMS are transmitted.

Command Functional Group

Short Message Services

Command Format Query Response

AT+CSCA=?
OK

Write Format Response

AT+CSCA=<"sca">,<tosca>
+CSCA: <"sca">,<tosca>
OK

Read Format Response

AT+CSCA?
+CSCA="12063130004", 145
OK

Execution Format Response

N/A
N/A

Parameter Values

<"sca">

SMSC Address

<tosca>

SC address Type-of-Address

Reference

GSM Ref. 07.05 Chapter 3.3.1

Standard Scope

Mandatory

Enfora Implementation Scope

Full

Notes

The service center address must be present to complete delivery of SMS. Most SIMs are delivered from the service provider with a service center already programmed into the SIM. A "+" should be entered in front of the smsaddress, but is not required by all operators.

2.5.2.2. AT+CSMP

Set Text Mode Parameters

Command Function

Selects additional values needed when the SIM is sent to the network or placed in storage.

Command Functional Group

Short Message Services

Command Format Query Response

AT+CSMP=?
OK

Write Format Response

AT+CSMP=<fo>,<vp>,<pid>,<dc>
OK

Read Format Response

AT+CSMP?
+CSMP: 17, 167, 0, 0
OK

Execution Format Response

N/A
N/A

Parameter Values

<fo>

depending on the command or result code: first octet of GSM 03.40 SMS-DELIVER, SMS-SUBMIT (default 17), or SMS-COMMAND (default 2) in integer format

<vp>

depending on SMS-SUBMIT <fo> setting: GSM 03.40 TP-Validity-Period either in integer format (default 167), in time-string format (refer <dt>), or if is supported, in enhanced format (hexadecimal coded string with quotes)

<pid>

Protocol-Identifier in integer format (default 0), refer GSM 03.40

<dc>

SMS Data Coding Scheme (default 0), or Cell Broadcast Data Coding Scheme in integer format depending on the command or result code: GSM 03.38

2.5.2.2. AT+CSMP	Set Text Mode Parameters (continued)
Reference	GSM Ref. 07.05 Chapter 3.3.2
Standard Scope	Mandatory
Enfora Implementation Scope	Full
Notes	N/A

2.5.2.3. AT+CSDH

Show Text Mode Parameters

Command Function	Determines if detail information is shown in result codes.	
Command Functional Group	Short Message Services	
Command Format Query Response	AT+CSDH=? +CSDH=(0,1) OK	
Write Format Response	AT+CSDH=<show> OK	
Read Format Response	AT+CSDH? +CSDH: 1 OK	
Execution Format Response	N/A N/A	
Parameter Values		
<show>	0	Do not show header values
	1	Show the values in result codes
Reference	GSM Ref. 07.05 Chapter 3.3.3	
Standard Scope	Mandatory	
Enfora Implementation Scope	Full	
Notes	N/A	

2.5.2.4. AT+CSCB

Select Cell Broadcast Message Types

Command Function

Select which types of CBm's are to be received by the ME.

Command Functional Group

Short Message Services

Command Format Query Response

AT+CSCB=?
+CSCB: (0,1)
OK

Write Format Response

AT+CSCB=<mode>
OK

Read Format Response

AT+CSCB?
+CSCB: 0," <mids> ", "<dcss> "
OK

Execution Format Response

N/A
N/A

Parameter Values

<mode>

- 0** Message types specified in <MIDS> and <DCCS> are accepted
- 1** Message types specified in <MIDS> and <DCCS> are not accepted

<mids>

string type; all different possible combinations of CBM message identifiers (refer <mid>) (default is empty string); e.g. "0,1,5,320-478,922"

<dcss>

string type; all different possible combinations of CBM data coding schemes (refer <dc>) (default is empty string); e.g. "0-3,5"

Reference

GSM Ref. 07.05 Chapter 3.3.4

Standard Scope

Optional

2.5.2.4. AT+CSCB

**Select Cell Broadcast Message Types
(continued)**

Enfora Implementation Scope Partial

Notes An understanding of CBM message identifiers and CBM loading schemes is required to properly implement this command. Used in conjunction with AT+CNMI.

2.5.2.5. AT+CSAS

Save Settings

Command Function

Saves active message service commands into non-volatile memory.

Command Functional Group

Short Message Services

Command Format Query Response

AT+CSAS=?
+CSAS: (0)
OK

Write Format Response

N/A
N/A

Read Format Response

N/A
N/A

Execution Format Response

AT+CSAS
OK

Parameter Values

N/A

Reference

GSM Ref. 07.05 Chapter 3.3.5

Standard Scope

Optional

Enfora Implementation Scope

Full

Notes

AT+CRES retrieves stored profiles. Settings specified in commands Service Center Address +CSCA, Set Message Parameters +CSMP and Select Cell Broadcast Message Types +CSCB are saved.

2.5.2.6. AT+CRES

Restore Settings

Command Function	Restores message service settings from non-volatile memory to active memory.
Command Functional Group	Short Message Services
Command Format Query Response	AT+CRES=? +CRES: (0) OK
Write Format Response	N/A N/A
Read Format Response	N/A N/A
Execution Format Response	AT+CRES OK
Parameter Values	N/A
Reference	GSM Ref. 07.05 Chapter 3.3.6
Standard Scope	Optional
Enfora Implementation Scope	Full
Notes	Retrieves profiles stored using AT+CSAS.

2.5.3. Message Receiving and Reading Commands

2.5.3.1. AT+CNMI

New Message Indication to TE

Command Function

Selects how incoming messages from the network are indicated to the TE when the TE is active.

Command Functional Group

Short Message Services

Command Format Query Response

AT+CNMI=?
+CNMI: (0-2), (0-3), (0,2), (0,1), (0,1)
OK

Write Format

AT+CNMI=<mode>, <mt>,
<bm>,<ds>,<bfr>

Response

OK

Read Format Response

AT+CNMI?
+CNMI: 1,1,0,0,0
OK

Execution Format Response

N/A
N/A

Parameter Values

<mode>

- | | |
|----------|--|
| 0 | Buffer unsolicited result codes in the TA |
| 1 | Discard indication and reject new received message unsolicited result codes when TA-TE link is reserved |
| 2 | Buffer unsolicited result codes in the TA when TA-TE link is reserved and flush them to the TE after reservation |

2.5.3.1. AT+CNMI

New Message Indication to TE (continued)

<mt>

<mt>	Receiving procedure for different message data coding schemes (refer GSM 03.38 [2])
0	no class: as in GSM 03.38, but use <mem3> as preferred memory class 0: as in GSM 03.38, but use <mem3> as preferred memory if message is tried to be stored class 1: as in GSM 03.38, but use <mem3> as preferred memory class 2: as in GSM 03.38 class 3: as in GSM 03.38, but use <mem3> as preferred memory message waiting indication group (discard message): as in GSM 03.38, but use <mem3> as preferred memory if message is tried to be stored message waiting indication group (store message): as in GSM 03.38, but use <mem3> as preferred memory
1	as <mt>=0 but send indication if message stored successfully
2	no class: route message to TE class 0: as in GSM 03.38, but also route message to TE and do not try to store it in memory class 1: route message to TE class 2: as <mt>=1 class 3: route message to TE message waiting indication group (discard message): as in GSM 03.38, but also route message to TE and do not try to store it in memory message waiting indication group (store message): as <mt>=1
3	class 3: route message to TE others: as <mt>=1

<bm>

0 No CBM indications are routed to the TE

1 If CBM is stored into ME/TA, indication of the memory location is routed to the TE using unsolicited result code:
+CBMI: <mem>,<index>

- 2 New CBMs are routed directly to the TE using unsolicited result code

2.5.3.1. AT+CNMI

New Message Indication to TE (continued)

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

<ds>

- 0 No SMS-STATUS_REPORTs are routed to the TE
1 SMS-STATUS-REPORTs are routed to the TE using unsolicited result code

<bfr>

- 0 TA buffer of unsolicited result codes defined within this command is flushed to the TE when <mode> 1...2 is entered.
1 TA buffer of unsolicited result codes defined within this command is cleared when <mode> 1...2 is entered.

Reference

GSM Ref. 07.05 Chapter 3.4.1

Standard Scope

Optional

Enfora Implementation Scope

Partial

Notes

N/A

2.5.3.2. AT+CMGL	List Messages
Command Function	List messages from storage.
Command Functional Group	Short Message Services
Command Format Query Response	AT+CMGL=? +CMGL: ("REC UNREAD","REC READ","STO UNSENT","STO SENT","ALL") OK
Write Format Response	N/A N/A
Read Format Response	N/A N/A
Execution Format Response	AT+CMGL =<stat> +CMGL: <index>, <stat>, <da/oa>, [<alpha>, <scts>, <tooa/toda>, <length>] <CR><LF> data OK
Parameter Values	See Notes
<index>	Memory location integer
<stat>	Status of message "REC UNREAD" "REC READ" "STO UNREAD" "STO READ" "ALL"
<do/oa>	destination address
<alpha>	alphanumeric representation of <da> or <oa> corresponding to the entry found in MT phonebook
<scts>	Service center time stamp
<tooa/toda>	Address Type-of-Address octet in integer format
<length>	Length of message in octets

2.5.3.2. AT+CMGL

List Messages (continued)

Reference

GSM Ref. 07.05 Chapter 3.4.2

Standard Scope

Optional

Enfora Implementation Scope

Partial

Notes

Above settings for <stat> assume AT+CMGF=1 (text mode). For AT+CMGF=0 (PDU mode), the following <stat> values are supported: 0,1,2,3,4. Parameters in [] may or may not be reported dependent upon the setting of AT+CMGF.

:

- | | |
|----------|--------------|
| 0 | "Rec Unread" |
| 1 | "Rec Read" |
| 2 | "Sto Unsent" |
| 3 | "Sto Sent" |
| 4 | "ALL" |

2.5.3.3. AT+CMGR

Read Message

Command Function

Read stored messages.

Command Functional Group

Short Message Services

Command Format Query Response

N/A
N/A

Write Format Response

N/A
N/A

Read Format Response

N/A
N/A

Execution Format Response

AT+CMGR=<index>
+CMGR: <stat>, <oa>, <scts>,
[<tooa>, <fo>, <pid>, <sca>, <tosca>,
<length>]<CR><LF><data>
OK

Parameter Values

<stat>

Status of message (Rec Read, Rec Unread, Sto Unsent, Sto Sent)

<oa>

Originating address

<scts>

Service center time stamp

<tooa>

Originating address – type of address

<fo>

First octet

<pid>

Protocol identifier

<sca>

Service center address

<tosca>

Type of address

<length>

Length of message in octets

Reference

GSM Ref. 07.05 Chapter 3.4.3

2.5.3.3. AT+CMGR	Read Message (continued)
Standard Scope	Optional
Enfora Implementation Scope	Partial
Notes	The above parameters are for text mode.

2.5.4. Message Sending and Writing Commands

2.5.4.1. AT+CMGS

Send Message

Command Function	Sends message from the TE to the network.
Command Functional Group	Short Message Services
Command Format Query Response	N/A N/A
Write Format Response	N/A N/A
Read Format Response	N/A N/A
Execution Format Response	AT+CMGS="<da>",[<toda>] Enter text <cntl Z> +CMGS <mr> OK
Parameter Values	
<da>	Destination address
<mr>	Message reference
Reference	GSM Ref. 07.05 Chapter 3.5.1
Standard Scope	Optional
Enfora Implementation Scope	Full
Notes	The example provided is for text mode (AT+CMGF=1). An in depth understanding of PDU messages is required for PDU mode.

2.5.4.2. AT+CMSS

Send Message from Storage

Command Function	Sends message (with location value) from preferred message storage.
Command Functional Group	Short Message Services
Command Format Query Response	N/A N/A
Write Format Response	N/A N/A
Read Format Response	N/A N/A
Execution Format Response	AT+CMSS=<index> +CMSS: <mr> OK
Parameter Values	
<index>	Integer value of location number supported by associated memory
<mr>	Message reference
Reference	GSM Ref. 07.05 Chapter 3.5.2
Standard Scope	Optional
Enfora Implementation Scope	Full
Notes	The above is for text mode only.

2.5.4.3. AT+CMGW

Write Message to Memory

Command Function	Writes message to preferred storage location.
Command Functional Group	Short Message Services
Command Format Query Response	N/A N/A
Write Format Response	N/A N/A
Read Format Response	N/A N/A
Execution Format Response	AT+CMGW=<"da"><CR><LF>Text is entered<ctrlZ> +CMGW: <index> OK
Parameter Values	
<da>	Destination Address
<index>	Integer value of memory location of the stored message
Reference	GSM Ref. 07.05 Chapter 3.5.3
Standard Scope	Optional
Enfora Implementation Scope	Full
Notes	The above is for text mode only.

2.5.4.4. AT+CMGD

Delete Message

Command Function	Deletes message from preferred storage location.
Command Functional Group	Short Message Services
Command Format Query Response	N/A N/A
Write Format Response	N/A N/A
Read Format Response	N/A N/A
Execution Format Response	AT+CMGD=<index> OK
Parameter Values	
<index>	Integer value of memory location.
Reference	GSM Ref. 07.05 Chapter 3.5.4
Standard Scope	Optional
Enfora Implementation Scope	Full
Notes	If there is no message stored in the selected index, an error will be returned.

2.5.4.5. AT+CMGC

Send Command

Command Function

Execution command sends a command message from a TE to the network (SMS-COMMAND). The entering of PDU is done similarly as specified in command Send Message +CMGS. Message reference value **<mr>** is returned to the TE on successful message delivery

Command Functional Group

Short Message Services

Command Format Query Response

N/A
N/A

Write Format Response

N/A
N/A

Read Format Response

N/A
N/A

Execution Format Response

AT+CMGC=<length>
PDU is given<ctrl-Z
+CMGC: <mr>[,<ackpdu>]
OK

Parameter Values

<length>

length of PDU message in octets

<mr>

Message reference

<ackpdu>

data element of ack-pdu

Reference

GSM Ref. 07.05 Chapter 3.5.5

Standard Scope

Optional

Enfora Implementation Scope

Full

Notes

This command only applicable to pdu mode AT+CMGF=0.

2.6. Commands Specified by ITU-T Rec.V25ter as Referenced by GSM Rec. 07.07

2.6.1. Generic TA Control Commands

2.6.1.1. ATZ Set All TA Parameters to Default Configuration

Command Function	Set All TA Parameters to Default Configuration.
-------------------------	---

Command Functional Group	State Control
---------------------------------	---------------

Command Format Query Response	N/A N/A
--------------------------------------	------------

Write Format Response	N/A N/A
------------------------------	------------

Read Format Response	N/A N/A
-----------------------------	------------

Execution Format Response	ATZ OK
----------------------------------	-----------

Parameter Values	N/A
-------------------------	-----

Reference	GSM Ref. 07.07 Chapter 6.1.1
------------------	------------------------------

Standard Scope	Mandatory
-----------------------	-----------

Enfora Implementation Scope	Full
------------------------------------	------

Notes	N/A
--------------	-----

2.6.1.2. AT&F

Set All TA Parameters to Factory Defined Configuration

Command Function

Set All TA Parameters to Factory Defined Configuration

Command Functional Group

State Control

Command Format Query Response

N/A
N/A

Write Format Response

N/A
N/A

Read Format Response

N/A
N/A

Execution Format Response

AT&F
OK

Parameter Values

N/A

Reference

GSM Ref. 07.07 Chapter 6.1.2

Standard Scope

Mandatory

Enfora Implementation Scope

Full

Notes

N/A

2.6.1.3. AT&V

Display Current Profile

Command Function	This command allows the user to view the settings in the current profile.
Command Functional Group	State control
Command Format Query Response	N/A N/A
Write Format Response	N/A N/A
Read Format Response	N/A N/A
Execution Format Response	AT&V OK
Parameter Values	N/A
Reference	N/A
Standard Scope	Optional
Enfora Implementation Scope	Full
Notes	N/A

2.6.1.4. AT&W

Save Current Settings

Command Function	This command allows the user to save the current settings in memory.
Command Functional Group	State control
Command Format Query Response	N/A N/A
Write Format Response	N/A N/A
Read Format Response	N/A N/A
Execution Format Response	AT&W OK
Parameter Values	N/A
Reference	N/A
Standard Scope	Optional
Enfora Implementation Scope	Full
Notes	N/A

2.6.1.5. ATI

Manufacturer Information About TA

Command Function

List manufacturer.

Command Functional Group

Equipment Information

Command Format Query Response

N/A
N/A

Write Format Response

N/A
N/A

Read Format Response

N/A
N/A

Execution Format Response

ATI
Enfora, Inc.
OK

Parameter Values

N/A

Reference

GSM Ref. 07.07 Chapter 6.1.3

Standard Scope

Optional

Enfora Implementation Scope

Full

Notes

N/A

2.6.1.6. AT+GMI	TA Manufacturer ID
Command Function	TA returns information about the manufacturer.
Command Functional Group	Equipment Information
Command Format Query Response	N/A N/A
Write Format Response	N/A N/A
Read Format Response	N/A N/A
Execution Format Response	AT+GMI Enfora, Inc. OK
Parameter Values	N/A
Reference	GSM Ref. 07.07 Chapter 6.1.4
Standard Scope	Mandatory
Enfora Implementation Scope	Full
Notes	N/A

2.6.1.7. AT+GMM	TA Model ID
Command Function	TA returns manufacturer model identification.
Command Functional Group	Equipment Information
Command Format Query Response	N/A N/A
Write Format Response	N/A N/A
Read Format Response	N/A N/A
Execution Format Response	AT+GMM Enabler-II G Modem OK
Parameter Values	N/A
Reference	GSM Ref. 07.07 Chapter 6.1.5
Standard Scope	Mandatory
Enfora Implementation Scope	Full
Notes	N/A

2.6.1.8. AT+GMR	TA Revision Number
Command Function	Returns software revision information.
Command Functional Group	Equipment Information
Command Format Query Response	N/A N/A
Write Format Response	N/A N/A
Read Format Response	N/A N/A
Execution Format Response	AT+GMR <revision> OK
Parameter Values	N/A
Reference	GSM Ref. 07.07 Chapter 6.1.6
Standard Scope	Optional
Enfora Implementation Scope	Full
Notes	N/A

2.6.1.9. AT+GSN	TA Serial Number
Command Function	This command is used to obtain the manufacturer International Mobile Equipment Identity (IMEI).
Command Functional Group	Equipment Information
Command Format Query Response	AT+GSN=? OK
Write Format Response	N/A N/A
Read Format Response	N/A N/A
Execution Format Response	AT+GSN 0044008824900101 OK
Parameter Values	N/A
Reference	GSM Ref. 07.07 Chapter 5.4
Standard Scope	Optional
Enfora Implementation Scope	Full
Notes	Return value is manufacturer specific. The TA returns the International Mobile station Equipment Identifier (IMEI).

2.6.1.10. AT+GCAP	Request Overall Capabilities for TA
Command Function	TA returns a list of additional capabilities
Command Functional Group	Equipment Information
Command Format Query Response	N/A N/A
Write Format Response	N/A N/A
Read Format Response	N/A N/A
Execution Format Response	AT+GCAP +GCAP: +CGSM,+FCLASS OK
Parameter Values	N/A
Reference	GSM Ref. 07.07 Chapter 6.1.9
Standard Scope	Mandatory
Enfora Implementation Scope	Full
Notes	N/A

2.6.1.11. ATS3	Command Line Termination Character
Command Function	Determines the character recognized by the TA to terminate an incoming command line.
Command Functional Group	State Control
Command Format Query Response	ATS3=? S3(0-127) OK
Write Format Response	ATS3=<n> OK
Read Format Response	ATS3? 013 OK
Execution Format Response	N/A N/A
Parameter Values	N/A
Reference	GSM Ref. 07.05 Chapter 6.2.1
Standard Scope	Mandatory
Enfora Implementation Scope	Full
Notes	N/A

2.6.1.12. ATS4

Response Formatting Character

Command Function	Determines the character generated by the TA for result code and information text.
Command Functional Group	State Control
Command Format Query Response	ATS4=? S4(0-127) OK
Write Format Response	ATS4=<n> OK
Read Format Response	ATS4? 010 OK
Execution Format Response	N/A N/A
Parameter Values	N/A
Reference	GSM Ref. 07.07 Chapter 6.2.2
Standard Scope	Mandatory
Enfora Implementation Scope	Full
Notes	N/A

2.6.1.13. ATS5

Editing Character

Command Function	Determines the character recognized by the TA as a request to delete the preceding character from the command line.
Command Functional Group	State Control
Command Format Query Response	ATS5=? S5(0-127) OK
Write Format Response	ATS5=<n> OK
Read Format Response	ATS5? 008 OK
Execution Format Response	N/A N/A
Parameter Values	N/A
Reference	GSM Ref. 07.07 Chapter 6.2.3
Standard Scope	Mandatory
Enfora Implementation Scope	Full
Notes	N/A

2.6.1.14. ATE

Command Echo Mode

Command Function	Determines whether the TA echoes characters typed locally.	
Command Functional Group	State Control	
Command Format Query Response	N/A	N/A
Write Format Response	ATE<value> OK	
Read Format Response	N/A	N/A
Execution Format Response	N/A	N/A
Parameter Values		
<value>	0	Do not echo characters locally
	1	Echo characters locally
Reference	GSM Ref. 07.07 Chapter 6.2.4	
Standard Scope	Mandatory	
Enfora Implementation Scope	Full	
Notes	N/A	

2.6.1.15. ATQ

Result Code Suppression

Command Function	Determines whether or not the TA transmits any result code to the TE.	
Command Functional Group	State Control	
Command Format Query Response	N/A	N/A
Write Format Response	ATQ<value> OK	
Read Format Response	N/A	N/A
Execution Format Response	N/A	N/A
Parameter Values		
<value>	0	DCE transmits result codes
	1	Result codes are suppressed and not transmitted
Reference	GSM Ref. 07.07 Chapter 6.2.5	
Standard Scope	Mandatory	
Enfora Implementation Scope	Full	
Notes	N/A	

2.6.1.16. ATV

Response Format

Command Function

Determines the DCE response format, with or without header character, and the use of numerical results code.

Command Functional Group

State Control

Command Format Query Response

N/A
N/A

Write Format Response

ATV<value>
OK

Read Format Response

N/A
N/A

Execution Format Response

N/A
N/A

Parameter Values

<value>

- | | |
|----------|---|
| 0 | DCE transmits limited headers and trailers and numeric result codes |
| 1 | DCE transmits full headers and trailers and verbose response text |

Reference

GSM Ref. 07.07 Chapter 6.2.6

Standard Scope

Mandatory

Enfora Implementation Scope

Full

Notes

N/A

2.6.1.17. ATX

CONNECT Result

Command Function

Determines whether or not the TA transmits particular result codes.

Command Functional Group

State Control

Command Format Query Response

N/A
N/A

Write Format Response

ATX<value>
OK

Read Format Response

N/A
N/A

Execution Format Response

N/A
N/A

Parameter Values**<value>**

0	Short result code format
1	Long result code format

Reference

GSM Ref. 07.07 Chapter 6.2.7

Standard Scope

Mandatory

Enfora Implementation Scope

Partial

Notes

For UDP and TCP PAD operation, setting of ATX1 will display the network assigned IP after the CONNECT or LISTEN message.

2.6.1.18. AT&C

DCD Usage

Command Function	Controls the Data Carrier Detect signal.	
Command Functional Group	State Control	
Command Format Query Response	N/A N/A	
Write Format Response	AT&C<value> OK	
Read Format Response	N/A N/A	
Execution Format Response	N/A N/A	
Parameter Values		
<value>	0	DCD always on
	1	DCD matches the state of the remote modem's data carrier
Reference	GSM Ref. 07.05 Chapter 6.2.8	
Standard Scope	Mandatory	
Enfora Implementation Scope	Partial	
Notes	N/A	

2.6.1.19. AT&D

DTR Usage

Command Function

This command controls the Data Terminal Ready signal.

Command Functional Group

State Control

Command Format Query Response

N/A
N/A

Write Format Response

AT&D<value>
OK

Read Format Response

N/A
N/A

Execution Format Response

N/A
N/A

Parameter Values**<value>**

- 0** Ignore DTR
- 1** Modem switches from DATA to COMMAND mode when DTR switches to off
- 2** When DTR switches to off, disconnect the call

Reference

GSM Ref. 07.05 Chapter 6.2.9

Standard Scope

Mandatory

Enfora Implementation Scope

Partial

Notes

N/A

2.6.1.20. AT+IPR	Fixed TE-TA Data Rate
Command Function	Determines the data rate of the TA serial interface.
Command Functional Group	State Control
Command Format Query Response	AT+IPR=? +IPR: (75, 150, 300, 600, 1200, 2400, 4800, 7200, 9600, 14400, 19200, 28800, 38400, 57600, 115200) OK
Write Format Response	AT+IPR=<rate> OK
Read Format Response	AT+IPR? +IPR: 19200 OK
Execution Format Response	N/A N/A
Parameter Values	
<rate>	75, 150, 300, 600, 1200, 2400, 4800, 7200, 9600, 14400, 19200, 28800, 38400, 57600, 115200
Reference	GSM Ref. 07.05 Chapter 6.2.10
Standard Scope	Mandatory
Enfora Implementation Scope	Partial
Notes	When changing the value of AT+IPR, the new baud rate is effective immediately. In order to properly save the new setting and communicate with

the modem, the user must change the baud rate of the communicating device to the new baud rate before any more communication with the modem can be accomplished.

2.6.1.21. AT+ICF

TE-TA Character Framing

Command Function

This command determines the number of data/stop/parity bits that will be used by the TA serial interface.

Command Functional Group

State Control

Command Format Query Response

AT+ICF=?
+ICF: (1-6), (0-3)
OK

Write Format Response

AT+ICF=<format>,<parity>
OK

Read Format Response

AT+ICF?
+ICF: 3
OK

Execution Format Response

N/A
N/A

Parameter Values

<format>

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

<parity>

- | | |
|----------|-------|
| 0 | odd |
| 1 | even |
| 2 | mark |
| 3 | space |

Reference

GSM Ref. 07.0 Chapter 6.2.11

Standard Scope

Mandatory

Enfora Implementation Scope

Partial

Notes

If no parity is specified in <format>, then <parity> is ignored.

2.6.1.22. AT+IFC

TE-TA Local Flow Control

Command Function

This command determines the TE/TA flow control interface.

Command Functional Group

State Control

Command Format Query Response

AT+IFC=?
+IFC: (0-2), (0-2)
OK

Write Format

AT+IFC=<DCE_by_DTE>,
<DTE_by_DCE>

Response

OK

Read Format Response

AT+IFC?
+IFC: 2,2
OK

Execution Format Response

N/A
N/A

Parameter Values

<DCE_by_DTE>

0	None
1	Xon/Xoff (not supported)
2	RTS

<DTE_by_DCE>

0	None
1	Xon/Xoff (not supported)
2	CTS

Reference

GSM Ref. 07.05 Chapter 6.2.12

Standard Scope

Mandatory

Enfora Implementation Scope

Partial

Notes

N/A

2.6.1.23. AT+ILRR	TE-TA Local Rate Reporting
Command Function	State Control
Command Functional Group	Results
Command Format Query Response	AT+ILRR=? +ILRR: (0,1) OK
Write Format Response	AT+ILRR=<value> OK
Read Format Response	AT+ILRR? +ILRR: 0 OK
Execution Format Response	N/A N/A
Parameter Values	
<value>	0 Disable reporting of local port rate 1 Enable reporting of local port rate
Reference	GSM Ref. 07.05 Chapter 6.2.13
Standard Scope	Optional
Enfora Implementation Scope	Full
Notes	N/A

2.6.2. Call Control Commands

2.6.2.1. T Tone Dialing

Command Function	Select tone dialing.
Command Functional Group	Call Control
Command Format Query Response	N/A N/A
Write Format Response	N/A N/A
Read Format Response	N/A N/A
Execution Format Response	ATT OK
Parameter Values	N/A
Reference	ITU-T Ref. V.25ter Chapter 6.3.2
Standard Scope	Mandatory
Enfora Implementation Scope	Full
Notes	This command has no effect on GSM.

2.6.2.2.	Pulse Dialing
Command Function	Select pulse dialing.
Command Functional Group	Call Control
Command Format Query Response	N/A N/A
Write Format Response	N/A N/A
Read Format Response	N/A N/A
Execution Format Response	ATP OK
Parameter Values	N/A
Reference	ITU-T Ref. V.25ter Chapter 6.3.3
Standard Scope	Mandatory
Enfora Implementation Scope	Full
Notes	This command has no affect on GSM.

2.6.2.3. A	Answer a Call
Command Function	Answers an incoming call.
Command Functional Group	Call Control
Command Format Query Response	N/A N/A
Write Format Response	N/A N/A
Read Format Response	N/A N/A
Execution Format Response	ATA
Parameter Values	N/A
Reference	ITU-T Ref. V.25ter Chapter 6.3.5
Standard Scope	Mandatory
Enfora Implementation Scope	Full
Notes	Auto answer can be enabled using ATS0.

2.6.2.4. H	Hook Control
Command Function	Disconnect an existing call.
Command Functional Group	Call Control
Command Format Query Response	N/A N/A
Write Format Response	N/A N/A
Read Format Response	N/A N/A
Execution Format Response	ATH OK
Parameter Values	N/A
Reference	ITU-T Ref. V.25ter Chapter 6.3.6
Standard Scope	Mandatory
Enfora Implementation Scope	Full
Notes	If data call or session is active, +++ (escape sequence) must be entered to go to command mode prior to sending ATH command.

2.6.2.5. O

Return to Data State

Command Function	This command issued to return to online mode from command mode when a circuit-switched data call is active.
Command Functional Group	Call Control
Command Format Query Response	N/A N/A
Write Format Response	N/A N/A
Read Format Response	N/A N/A
Execution Format Response	ATO OK
Parameter Values	N/A
Reference	ITU-T Ref. V.25ter Chapter 6.3.7
Standard Scope	Mandatory
Enfora Implementation Scope	Full
Notes	N/A

2.6.2.6. +++

Escape Sequence

Command Function

This command allows a user to escape out of data mode to command mode in a CSD call or from connect or listen mode to command mode in a GPRS call

Command Functional Group

Call Control

Command Format Query Response

N/A
N/A

Write Format Response

N/A
N/A

Read Format Response

N/A
N/A

Execution Format Response

+++
OK or no carrier

Parameter Values

N/A

Reference

N/A

Standard Scope

Mandatory

Enfora Implementation Scope

Full

Notes

The escape sequence requires a guard period of 1 second before and after entering +++. Other wise the +++ will be considered data and forwarded as data.

For CSD, to end the call ATH or AT+CHUP must be entered. To return to data mode issue ATO command.

2.6.2.7. S0

Rings Before Automatic Answer

Command Function

Sets the number of rings before automatically answering a call for GSM and enables automatic answer to a network request for PDP activation.

Command Functional Group

Call Control

Command Format Query Response

ATS0=?
S0(0-255)
OK

Write Format Response

ATS0=<value>
OK

Read Format Response

ATS0?
<value>
OK

Execution Format Response

N/A
N/A

Parameter Values

N/A

Reference

ITU-T Ref. V.25ter Chapter 6.3.8

Standard Scope

Mandatory

Enfora Implementation Scope

Full

Notes

ATS0=000 will disable auto answer for GSM. If AT+CGAUTO is = to 2 or 3 (default), the MT shall attempt to perform a GPRS attach if it is not already attached, when the 'S0=n' (n>0) command is received.

With default settings, if ATS0=(>0) is sent immediately after power up, an error will be returned because the MT will attempt to do an attach before the AT+CREG state has changed to 1.

2.6.2.8. S6

Pause Before Blind Dialing

Command Function	Sets the number of seconds to wait after dialtone detection before dialing. This is a dummy command and does not affect functionality.
Command Functional Group	Call Control
Command Format Query Response	ATS6=? S6(2-10) OK
Write Format Response	ATS6=<value> OK
Read Format Response	ATS6? 002 OK
Execution Format Response	N/A N/A
Parameter Values	N/A
Reference	ITU-T Ref. V.25ter Chapter 6.3.9
Standard Scope	Mandatory
Enfora Implementation Scope	Full
Notes	Does not affect GSM functionality.

2.6.2.9. S7

Wait for Completion

Command Function

This command sets the number of seconds to wait after dial tone detection before dialing a number. This is a dummy command that will display a value that has been set, but does not affect functionality.

Command Functional Group

Call Control

Command Format Query Response

ATS7=?
S7(1-255)
OK

Write Format Response

ATS7=<value>
OK

Read Format Response

ATS7?
060
OK

Execution Format Response

N/A
N/A

Parameter Values

N/A

Reference

ITU-T Ref. V.25ter Chapter 6.3.10

Standard Scope

Mandatory

Enfora Implementation Scope

Full

Notes

Does not affect GSM functionality.

2.6.2.10. S8

Dial Pause

Command Function

This command sets the number of seconds to wait for the comma dial modifier in the ATD dial string. This is a dummy command that will display a value that has been set, but does not affect functionality.

Command Functional Group

Call Control

Command Format Query Response

ATS8=?
S8(0-255)
OK

Write Format Response

ATS8=<value>
OK

Read Format Response

ATS8?
002
OK

Execution Format Response

N/A
N/A

Parameter Values

N/A

Reference

ITU-T Ref. V.25ter Chapter 6.3.11

Standard Scope

Mandatory

Enfora Implementation Scope

Full

Notes

Does not affect GSM functionality.

2.6.2.11. S10

Hang Up Delay

Command Function

This command sets the length of time, in tenths of seconds, to wait before disconnecting after the carrier is lost. This is a dummy command that will display a value that has been set, but does not affect functionality.

Command Functional Group

Call Control

Command Format Query Response

AT+S10=?
S10(1-254)
OK

Write Format Response

ATS10=<value>
OK

Read Format Response

ATS10?
001
OK

Execution Format Response

N/A
N/A

Parameter Values

N/A

Reference

ITU-T Ref. V.25ter Chapter 6.3.12

Standard Scope

Mandatory

Enfora Implementation Scope

Full

Notes

Does not affect GSM functionality.

3.0 Standardized GPRS AT Commands

3.1 Commands Specified by GSM Rec. 07.07

3.1.1 +CGDCONT	Define PDP Context
Command Function	Specifies PDP context parameter values for a PDP context identified by the (local) context identification parameter, <cid>.
Command Functional Group	GPRS Commands
Command Format Query Response	AT+CGDCONT=? +CGDCONT: (1-6),"IP",,,(0),(0,1) OK
Write Format Response	AT+CGDCONT=<cid>,<PDP_Type>,<APN>,<PDP_ADDR>,<d_comp>,<h_comp> OK
Read Format Response	AT+CGDCONT? +CGDCONT: <cid>,<PDP_Type>,<"APN">,<"PDP_ADDR">,<d_comp>,<h_comp> OK
Execution Format Response	N/A N/A

3.1.1. +CGDCONT

**Define PDP Context
(continued)**

Parameter Values

<cid>	PDP Context Identifier
<PDP_type>	"IP"
<"APN">	"Access Point Name"
<"PDP_addr">	" Identifies the MT in the address space"
<d_comp>	0 off 1 on
<h_comp>	0 off 1 on

Reference GSM Ref. 07.07 Chapter 10.1.1

Standard Scope Mandatory

Enfora Implementation Scope Full

Notes AT+CGDCONT must be entered before Context activation.
AT+CGDCONT=1,"IP","", "",0,0 may be entered for networks that dynamically assign the APN. Contact your service provider for correct APN information.

3.1.2 +CGQREQ	Quality of Service Profile (Requested)
Command Function	Allows the TE to specify a Quality of Service Profile that is used when the MT sends an Activate PDP Context Request message to the network.
Command Functional Group	GPRS Commands
Command Format Query Response	AT+CGQREQ=? +CGQREQ: "IP",(1-3),(1-4),(1-5),(1-9),(1-18,31) OK
Write Format Response	AT+CGQREQ=<cid>,<precedence>,<delay>,<reliability.>,<peak>,<mean> OK
Read Format Response	AT+CGQREQ? +CGQREQ: 1,0,0,0,0,0 OK
Execution Format Response	N/A N/A
Parameter Values	
<cid>	numeric value of PDP context activation
<precedence class>	1-3
<delay class>	1-4
<reliability class>	1-5
<peak throughput>	1-9
<mean throughput>	1-18,31

* For any parameter where network subscribed is desired, enter 0.

3.1.2. +CGQREQ	Quality of Service Profile (Requested) (continued)
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Reference	GSM Ref. 07.07 Chapter 10.1.2
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Standard Scope	Optional
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Enfora Implementation Scope	Full
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Notes	A special form of the set command, +CGQREQ=,... or +CGQMIN=,... provide a set of the default values of Quality of Service Profile for new PDP context definitions. AT+CGDCONT must be entered into the modem prior to entering AT+CGQREQ command.
--------------	---

3.1.3 +CGQMIN	Quality of Service Profile (Minimum Acceptable)
Command Function	Allows the TE to specify a minimum acceptable profile which is checked by the MT against the negotiated profile returned in the Activate PDP Context Accept message.
Command Functional Group	GPRS Commands
Command Format Query Response	AT+CGQMIN=? +CGQMIN: "IP",(1-3),(1-4),(1-5),(1-9),(1-18,31) OK
Write Format Response	AT=CGQMIN=<cid>, <precedence>, <delay>,<reliability>, <peak>, <mean>
Read Format Response	AT+CGQMIN? +CGQMIN: 1,0,0,0,0,0 OK
Execution Format Response	N/A N/A

3.1.3. +CGQMIN	Quality of Service Profile (Minimum Acceptable) (continued)
Parameter Values	
<cid>	> numeric value of PDP context activation
<precedence class>	1-3
<delay class>	1-4
<reliability class>	1-5
<peak throughput>	1-9
<mean throughput>	1-18,31
	* For any parameter where network subscribed is desired, enter 0.
Reference	GSM Ref. 07.07 Chapter 10.1.3
Standard Scope	Mandatory
Enfora Implementation Scope	Full
Notes	A special form of the set command, +CGQREQ=,... or +CGQMIN=,... provide a set of the default values of Quality of Service Profile for new PDP context definitions. AT+CGDCONT must be entered prior to entering AT+CGQMIN command.

3.1.4 +CGATT

GPRS Attach or Detach

Command Function	The execution command is used to attach the MT to, or detach the MT from GPRS service.	
Command Functional Group	GPRS Commands	
Command Format Query Response	AT+CGATT=? +CGATT: (0,1) OK	
Write Format Response	AT+CGATT=<state> OK	
Read Format Response	AT+CGATT? +GCATT: 0 OK	
Execution Format Response	N/A N/A	
Parameter Values		
<state>	0	detached
	1	attached
Reference	GSM Ref. 07.07 Chapter 10.1.4	
Standard Scope	Optional	
Enfora Implementation Scope	Full	
Notes	If parameter <state> is omitted the GPRS attach state will be changed.	

3.1.5 +CGACT

PDP Context Activate or Deactivate

Command Function

The execution command is used to activate or deactivate the specified PDP context (s).

Command Functional Group

GPRS Commands

Command Format Query Response

AT+CGACT=?
+:CGACT: (0,1)
OK

Write Format Response

AT+CGACT=<state>,<cid>
OK

Read Format Response

AT+CGACT?
+CGACT: 1,0
OK

Execution Format Response

N/A
N/A

Parameter Values

<state>

0 deactivated
1 activated

<cid>

numeric value of PDP context activation

Reference

GSM Ref. 07.07 Chapter 10.1.5

Standard Scope

Optional

Enfora Implementation Scope

Full

Notes

It is not possible to omit the parameter **<state>**. AT+CGDCONT command must be entered prior to context activation.

3.1.6 +CGDATA

Enter Data State

Command Function

The execution command causes the MT to perform whatever actions are necessary to establish communication between the TE and the network using one or more GPRS PDP types.

Command Functional Group

GPRS Commands

Command Format Query Response

AT+CGDATA=?
+CGDATA: "PPP"
OK

Write Format Response

AT+CGDATA=<L2P>,<cid>
CONNECT

Read Format Response

N/A
N/A

Execution Format Response

N/A
N/A

Parameter Values

<L2P>

"PPP"

<cid>

numeric value of PDP context activation

Reference

GSM Ref. 07.07 Chapter 10.1.6

Standard Scope

Optional

Enfora Implementation Scope

Full

Notes

Supported value for <L2P>: "PPP".

3.1.7 +CGPADDR

Show PDP Address

Command Function

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

Command Functional Group

GPRS Commands

Command Format Query Response

AT+CGPADDR=?
+:CGPADDR: (1)
OK

Write Format Response

N/A
N/A

Read Format Response

N/A
N/A

Execution Format Response

AT+CGPADDR=<cid>
+CGPADDR: 1
OK

Parameter Values

<cid>

numeric value of PDP context activation

Reference

GSM Ref. 07.07 Chapter 10.1.7

Standard Scope

Optional

Enfora Implementation Scope

Full

Notes

N/A

3.1.8 +CGAUTO

Automatic Response to a Network Request for PDP Context Activation

Command Function

The set command disables or enables an automatic positive response (auto-answer) to the receipt of a Request PDP Context Activation message from the network.

Command Functional Group

GPRS Commands

Command Format Query Response

AT+CGAUTO=?
+CGAUTO: (0-3)
OK

Write Format Response

AT+CGAUTO=<n>
OK

Read Format Response

AT+CGAUTO?
+CGAUTO: 3
OK

Execution Format Response

N/A
N/A

Parameter Values

<n>

- | | |
|----------|---|
| 0 | turn off automatic response for GPRS only |
| 1 | turn on automatic response for GPRS only |
| 2 | modem compatibility mode, GPRS only |
| 3 | modem compatibility mode, GPRS and circuit switched calls (default) |

3.1.8 +CGAUTO

**Automatic Response to a Network
Request for PDP Context Activation
(continued)**

Reference

GSM Ref. 07.07 Chapter 10.1.8

Standard Scope

Optional

Enfora Implementation Scope

Full

Notes

If parameter **<n>** is omitted it is assumed to be 3 (modem compatibility mode, GPRS and circuit switched calls).

3.1.9 +CGANS

Manual Response to a Network Request for PDP Context Activation

Command Function

The execution command requests the MT to respond to a network request for GPRS PDP context activation which has been signaled to the TE by the RING or +CRING: unsolicited result code.

Command Functional Group

GPRS Commands

Command Format Query Response

AT+CGANS=?
+CGANS: (0,1),"PPP"
OK

Write Format Response

N/A
N/A

Read Format Response

N/A
N/A

Execution Format Response

AT+CGANS+<response>,<L2P>
OK

Parameter Values

<response>

0 request is rejected
1 request is accepted

<L2P>

"PPP"

Reference

GSM Ref. 07.07 Chapter 10.1.9

Standard Scope

Optional

Enfora Implementation Scope

Full

Notes

Supported value for <L2P>: "PPP".

3.1.10 +CGCLASS	GPRS Mobile Station Class
Command Function	Sets the MT to operate to a specified GPRS mobile class.
Command Functional Group	GPRS Commands
Command Format Query Response	AT+CGCLASS=? +CGCLASS: ("B","CG","CC") OK
Write Format Response	AT+CGCLASS=<class> OK
Read Format Response	AT+CGCLASS? +CGCLASS: "B" OK
Execution Format Response	N/A N/A
Parameter Values	
<class>	"B" class B "CG" class C in GPRS only mode "CC" class C in circuit switched only mode (lowest)
Reference	GSM Ref. 07.07 Chapter 10.1.10
Standard Scope	Optional
Enfora Implementation Scope	Full
Notes	If parameter <class> is omitted, a detached mobile attaches with the last class or the default class ("B").

3.1.11 +CGEREP

GPRS Event Reporting

Command Function

Set command enables or disables sending of unsolicited result codes, +CGEV: XXX from MT to TE in the case of certain events occurring in the GPRS MT or the network.

Command Functional Group

GPRS Commands

Command Format Query Response

AT+CGEREP=?
+:CGEREP: (0-2),(0,1)
OK

Write Format Response

AT+CGEREP=<mode>,<bfr>
OK

Read Format Response

AT+CGEREP?
+CGEREP: 0,0
OK

Execution Format Response

N/A
N/A

3.1.11. +CGEREP

GPRS Event Reporting (continued)

Parameter Values

<mode>	0	buffer unsolicited result codes in the MT
	1	discard unsolicited result codes when MT-TE link is reserved (e.g. in on-line data mode); otherwise forward them directly to the TE
	2	buffer unsolicited result codes in the MT when MT-TE link is reserved (e.g. in on-line data mode) and flush them to the TE when MT-TE link becomes available; otherwise forward them directly to the TE

<bfr>	0	MT buffer of unsolicited result codes defined within this command is cleared when <mode> 1 or 2 is entered
	1	MT buffer of unsolicited result codes defined within this command is flushed to the TE when <mode> 1 or 2 is entered (OK response shall be given before flushing the codes)

Reference

GSM Ref. 07.07 Chapter 10.1.12

Standard Scope

Optional

Enfora Implementation Scope

Full

Notes

If parameter **<mode>** is omitted it is assumed to be the value of the last command execution or the default value (0). If parameter **<bfr>** is omitted it is assumed to be the value of the last command execution or the default value (0).

3.1.12 +CGREG

GPRS Network Registration Status

Command Function

Controls the presentation of an unsolicited result code +CGREG.

Command Functional Group

GPRS Commands

Command Format Query Response

AT+CGREG=?
+CGREG: (0,2)
OK

Write Format Response

AT+CGREG=1
OK

Read Format Response

AT+CGREG?
+CGREG: <n>,<stat>[,<lac>,<ci>]
OK

Execution Format Response

N/A
N/A

Parameters

<n>

- 0** disable network registration unsolicited result code
- 1** enable network registration unsolicited result code +CGREG: <stat>
- 2** enable network registration and location information unsolicited result code +CGREG: <stat>[,<lac>,<ci>]

<stat>

- 0** not registered, ME is not currently searching a new operator to register to
- 1** registered, home network
- 2** not registered, but ME is currently searching a new operator to register to
- 3** registration denied
- 4** unknown
- 5** registered, roaming

3.1.12 +CGREG

**GPRS Network Registration Status
(continued)**

<lac>

string type; two-byte location area code in hexadecimal format (e.g. "00C3" equals 195 in decimal)

<ci>

string type; two-byte cell ID in hexadecimal format

Reference

GSM Ref. 07.07 Chapter 10.1.13

Standard Scope

Optional

Enfora Implementation Scope Partial

Notes

If parameter **<n>** is omitted the command does nothing.

3.1.13 +CGSMS Select Service for MO SMS Messages

Command Function The set command is used to specify the service or service preference that the MT will use to send MO SMS messages.

Command Functional Group GPRS Commands

Command Format Query Response AT+CGSMS=?
+CGSMS: (0-3)
OK

Write Format Response AT+CGSMS=<service>
OK

Read Format Response AT+CGSMS?
:+CGSMS: 3
OK

Execution Format Response N/A
N/A

Parameter Values

<service>

0	GPRS
1	circuit switched
2	GPRS preferred (use circuit switched if GPRS not available)
3	circuit switched preferred (use GPRS if circuit switched not available)

Reference GSM Ref. 07.07 Chapter 10.1.14

Standard Scope Optional

Enfora Implementation Scope Full

Notes If parameter <service> is omitted the command does nothing. SMS over GPRS has not been fully tested.

3.1.14 D

Request GPRS Service

Command Function

This command causes the MT to perform whatever actions are necessary to establish communication between the TE and the external PDN

Command Functional Group

Modem Compatibility Command

Command Format Query Response

N/A
N/A

Write Format Response

N/A
N/A

Read Format Response

N/A
N/A

Execution Format Response

D<GPRS_SC> <CID>#
Connect

Parameter Values

<GPRS_SC>

***99**

<CID>

*****1**
*****2**

Reference

GSM Ref. 07.07 Chapter 10.2.1.1

Standard Scope

Optional

Enfora Implementation Scope

Full

Notes

ATD*99*1#** - Dials GPRS call for context activation 1. See +CGDCONT for context activation definition.

3.1.15 S0

Automatic Response to a Network Request for PDP Context Activation

Command Function

The V.25ter 'S0=n' (Automatic answer) command may be used to turn off (n=0) and on (n>0) the automatic response to a network request for a PDP context activation.

Command Functional Group

Modem Compatibility Command

Command Format Query Response

ATS0=?
s0(0-255)
OK

Write Format Response

ATS0=<n>
OK

Read Format Response

ATS0?
000
OK

Execution Format Response

N/A
N/A

Parameter Values

<n>

0 do not answer
n>0 establish data session

Reference

GSM Ref. 07.07 Chapter 10.2.2.1

Standard Scope

Optional

Enfora Implementation Scope

Full

Notes

N/A

3.1.16 A

**Manual Acceptance of a Network
Request for PDP Context Activation**

Command Function

The V.25ter 'A' (Answer) command may be used to accept a network request for a PDP context activation announced by the unsolicited result code RING.

**Command Functional
Group**

Modem Compatibility Command

**Command Format Query
Response**

N/A
N/A

**Write Format
Response**

N/A
N/A

**Read Format
Response**

N/A
N/A

**Execution Format
Response**

A
Connect

Parameter Values

N/A

Reference

GSM Ref. 07.07 Chapter 10.2.2.2

Standard Scope

Optional

Enfora Implementation Scope

Full

Notes

N/A

3.1.17 H	Manual Rejection of a Network Request for PDP Context Activation
Command Function	The V.25ter 'H' or 'H0' (On-hook) command may be used to reject a network request for PDP context activation announced by the unsolicited result code RING.
Command Functional Group	Modem Compatibility Command
Command Format Query Response	N/A N/A
Write Format Response	N/A N/A
Read Format Response	N/A N/A
Execution Format Response	H OK
Parameter Values	N/A
Reference	GSM Ref. 07.07 Chapter 10.2.2.3
Standard Scope	Optional
Enfora Implementation Scope	Full
Notes	N/A

3.2 Enfora Specific Commands

3.2.1 SIM Toolkit Commands

3.2.1.1. %SATC

SET SIM Application Toolkit Configuration

Command Function	This command sets the configuration for SIM application toolkit download mechanism.	
Command Functional Group	Enfora Specific	
Command Format Query Response	AT%SATC=? SATC: (<n>(0,1)),(<prflLen>(24)) OK	
Write Format Response	AT%SATC=<n>,<satPrfl> OK	
Read Format Response	AT%SATC? SATC: =<n>,<satPrfl > OK	
Execution Format Response	N/A N/A	
Parameter Values		
<n>	0	disable presentation of unsolicited notifications result codes from the TA to the TE
	1	enable presentation of unsolicited notifications result codes from the TA to the TE
<prflLen>	Length in Bytes of the current <satPrfl>	
<satPrfl>	String type: SIM application toolkit profile, starting with the first byte of the profile.	

3.2.1.1. %SATC

**SET SIM Application Toolkit
Configuration
(continued)**

Reference

GSM 11.14

Standard Scope

Optional

Enfora Implementation Scope

Full

Notes

Associated commands
AT%SATT,AT%SATE, AT%SATR.
Associate results codes %SATE,
%SATA,
%SATN and %SATI. String types in
Hexadecimal format (refer to AT+CSCS)

3.2.1.2. %SATE

Send SAT Envelope Command

Command Function

This command sends a SAT command to the SIM, using the envelope mechanism of SIM application toolkit.

Command Functional Group

Enfora Specific

Command Format Query Response

N/A
N/A

Write Format Response

AT%SATE=<satCmd>
%SATE: <satRsp>
OK

Read Format Response

AT%SATE?
OK

Execution Format Response

N/A
N/A

Parameter Values

<satCmd>

String type: SIM application toolkit command, starting with command tag

<satRsp>

String type: SIM application toolkit response, starting with first byte of response data

Reference

GSM 11.14

Standard Scope

Optional

Enfora Implementation Scope

Full

Notes

Associated commands
AT%SATT,AT%SATC, AT%SATR.
Associate results codes %SATE,
%SATA, %SATN and %SATI. String
types in Hexadecimal format (refer to
AT+CSCS)

3.2.1.3. %SATR

Send SAT Command Response

Command Function

This command sends a SAT response to a previously received SAT command.

Command Functional Group

Enfora Specific

Command Format Query Response

N/A
N/A

Write Format Response

AT%SATR=<satRsp>
OK

Read Format Response

N/A
N/A

Execution Format Response

N/A
N/A

Parameter Values**<satRsp>**

String type: SIM application toolkit response, starting with first byte of response data.

Reference

GSM 11.14

Standard Scope

Optional

Enfora Implementation Scope

Full

Notes

Associated commands
AT%SATT,AT%SATC, AT%SATE.
Associate results codes %SATE,
%SATA, %SATN and %SATI. String
types in Hexadecimal format (refer to
AT+CSCS)

3.2.1.4. %SATT	Terminate SAT Command or Session
Command Function	This command is used to terminate a SIM application toolkit command or session
Command Functional Group	Enfora Specific
Command Format Query Response	N/A N/A
Write Format Response	AT%SATT=<cs> OK
Read Format Response	N/A N/A
Execution Format Response	N/A N/A
Parameter Values	
<cs>	0 user stop redialing 1 end of redialing reached 2 user ends session
Reference	GSM 11.14
Standard Scope	Optional
Enfora Implementation Scope	Full
Notes	Associated commands AT%SATR,AT%SATC, AT%SATE. Associate results codes %SATE, %SATA, %SATN and %SATI. String types in Hexadecimal format (refer to AT+CSCS)

3.2.2 Basic Audio Commands

3.2.2.1. \$VGR

Microphone Receiver Gain

Command Function

This command sets the receive level gain for the microphone input.

Command Functional Group

Enfora Specific

Command Format Query Response

AT\$VGR=?
\$VGR: (0-24)
OK

Write Format Response

AT\$VGR=<rxgain>
\$VGR: <rxgain>
OK

Read Format Response

AT\$VGR?
\$VGR: <rxgain>
OK

Execution Format Response

N/A
N/A

Parameter Values

<rxgain>	0	-12 dB
	1	-11 dB
	2	-10 dB

	24	+12 dB

Reference

N/A

Standard Scope

Optional

Enfora Implementation Scope

N/A

Notes

Receiver gain settings are in 1 dB steps from -12 to +12 dB.

3.2.2.2. \$VGT

Speaker Transmit Gain

Command Function	This command is used to set the coarse speaker transmit gain	
Command Functional Group	Enfora Specific	
Command Format Query Response	AT\$VGT=? \$VGT: (0-12) OK	
Write Format Response	AT\$VGT=<txgain> \$VGT: <txgain> OK	
Read Format Response	AT\$VGT? \$VGT: <txgain> OK	
Execution Format Response	N/A N/A	
Parameter Values		
<txgain>	0	-6 dB
	1	-5 dB
	2	-4 dB
	3	-3 dB

	12	+6 dB
Reference	N/A	
Standard Scope	Optional	
Enfora Implementation Scope	Full	
Notes	Tx gain settings in 1 dB steps from –6 to +6 dB.	

3.2.2.3. \$VLVL

Speaker Volume

Command Function	This command is used to set the speaker volume	
Command Functional Group	Enfora Specific	
Command Format Query Response	AT\$VLVL=? \$VLVL: (0-5) OK	
Write Format Response	AT\$VLVL=<volume> OK	
Read Format Response	AT\$VLVL? \$VLVL: <volume> OK	
Execution Format Response	N/A N/A	
Parameter Values		
<volume>	0	Mute
	1	-24 dB
	2	-18 dB
	3	-12 dB
	4	-6 dB
	5	0 dB
Reference	N/A	
Standard Scope	Optional	
Enfora Implementation Scope	Full	
Notes	N/A	

3.2.2.4. \$VST

Sidetone Volume

Command Function

This command is used to set the sidetone volume

Command Functional Group

Enfora Specific

Command Format Query Response

AT\$VST=?
\$VST: (0-10)
OK

Write Format Response

AT\$VST=<sidetone level>
OK

Read Format Response

AT\$VST
\$VST: =<sidetone level>
OK

Execution Format Response

N/A
N/A

Parameter Values

<sidetone level>

0	mute
1	-23
2	-20 dB
3	-17 dB
4	-14 dB
5	-11 dB
6	-8 dB
7	-5 dB
8	-2 dB
9	+1 Db
10	+4 dB

Reference

N/A

Standard Scope

Optional

Enfora Implementation Scope

Full

Notes

N/A

3.2.3 Advanced Audio Commands

3.2.3.1. \$DFIR

Configure Downlink FIR Coefficients

Command Function

This command allows the user to set the downlink FIR filter coefficients to improve voice quality.

Command Functional Group

Enfora Specific

Command Format Query Response

AT\$DFIR=?
\$DFIR: 0-ffff,0-ffff, ... 0-ffff (32 entries)
OK

Write Format Response

AT\$DFIR =<coeff1>,<coeff2>, ...
<coeff31>,<coeff32>
OK

Read Format Response

AT\$DFIR?
\$DFIR: <coeff1>, <coeff2>, ... (12)
 <coeff13>, <coeff14>, ... (12)
 <coeff25>, <coeff26>, ... (8)

Execution Format Response

N/A
N/A

Parameter Values

< coeff1 > 0-ffff=> 2.14 fixed point number.

< coeff2 > 0-ffff=> 2.14 fixed point number.

...

< coeff31 > 0-ffff=> 2.14 fixed point number.

< coeff32 > 0-ffff=> 2.14 fixed point number.

Reference

N/A

Standard Scope

Optional

Enfora Implementation Scope

Full

3.2.3.1. \$DFIR

Configure Downlink FIR Coefficients (continued)

Notes

Only 31 coefficients are required for the hw but programs being used to generate the coefficients output 32. The less modifications needed to the output the better.

These coefficients are 2.14 fixed point values input in hexadecimal.

Examples

AT\$DFIR =4000,0,0,...,0,0

4000 followed by all zeros is unity (pass through mode).

3.2.3.2. \$UFIR

Configure Uplink FIR Coefficients

Command Function

This command allows the user to set the uplink FIR filter coefficients to improve voice quality.

Command Functional Group

Enfora Specific

Command Format Query Response

AT\$UFIR=?
\$UFIR: 0-ffff,0-ffff, ... 0-ffff (32 entries)
OK

Write Format Response

AT\$UFIR =<coeff1>,<coeff2>, ...
<coeff31>,<coeff32>
OK

Read Format Response

AT\$UFIR?
\$UFIR: <coeff1>, <coeff2>, ... (12)
 <coeff13>, <coeff14>, ... (12)
 <coeff25>, <coeff26>, ... (8)

Execution Format Response

N/A
N/A

Parameter Values

< coeff1 > 0-ffff=> 2.14 fixed point number.

< coeff2 > 0-ffff=> 2.14 fixed point number.

...

< coeff31 > 0-ffff=> 2.14 fixed point number.

< coeff32 > 0-ffff=> 2.14 fixed point number.

Reference

N/A

Standard Scope

Optional

Enfora Implementation Scope

Full

3.2.3.2. \$UFIR

Configure Uplink FIR Coefficients (continued)

Notes

Only 31 coefficients are required for the hw but programs being used to generate the coefficients output 32. The less modifications needed to the output the better.

These coefficients are 2.14 fixed point values input in hexadecimal.

Examples

AT\$UFIR =4000,0,0,...,0,0

4000 followed by all zeros is unity (pass through mode).

3.2.3.3. \$ESUP

Echo Suppression Control

Command Function

This command allows the user to configure the echo suppression settings for the current voice mode (see \$vselect)

Command Functional Group

Enfora Specific

Command Format Query Response

AT\$ESUP=?
\$ESUP: (0-1), (0-1), (0-5),(0-1),(0-3),20,3276,13392,256
OK

Write Format Response

AT\$ESUP=<echo>, <continuous filtering>, <type>,<echo level>,<noise>,<noise level>
OK

Read Format Response

AT\$ESUP?
\$ESUP: <echo>,<echo type>,<echo level>,<noise>,<noise level>

Execution Format Response

N/A
N/A

Parameter Values

< echo >

0=> disable echo suppression.
1=> enable echo suppression.

< continuous filtering >

0 => off
1 => on

< echo level >

0 => 0 dB
1 => 2 dB
2 => 3 dB
3 => 12 dB
4 => 18 dB
5 => 24 dB

< noise >

0=> disable noise suppression.
1=> enable noise suppression.

3.2.3.3. \$ESUP

Echo Suppression Control (continued)

< noise level >

0 => no limit
1 => 6 dB
2 => 12 dB
3 => 18 dB

Reference

N/A

Standard Scope

Optional

Enfora Implementation Scope Full

Notes

Currently AT\$ESUP values must be entered into the modem for each call that is connected.

The **<continuous filtering>** parameter and **<echo level>** parameter can only be set while in an active voice call.

Examples

AT\$ESUP=1,1,3,0,0

Enable short suppression (12 dB) with continuous filtering and noise suppression disabled.

The last four parameters are used in fine-tuning handset level integration and are not documented as part of the module level integration. They will not have any effect on the GSM noise.

3.2.3.4. \$PREAMP

Set Uplink Voice Parameters

Command Function

This command allows the user to enter uplink voice specific parameters for the current voice mode (see \$vselect).

Command Functional Group

Enfora Specific

Command Format Query Response

AT\$PREAMP=?
\$PREAMP: (0-1), (0-24), (0,1)
OK

Write Format Response

AT+PREAMP=<bias>, <gain>,<extra gain>
OK

Read Format Response

AT\$PREAMP?
\$PREAMP: <bias>,<gain>,<extra gain>

Execution Format Response

N/A
N/A

Parameter Values

< bias >

0=> 2v.
1=> 2.5v.

< gain >

The value of the gain follows:

0 => -12 dB
1 => -11 dB
2 => -10 dB
3 => -9 dB
...
21 => 9 dB
22 => 10 dB
23 => 11 dB
24 => 12 dB

< extra gain >

0 => 28.2 dB.
1 => 4.6 dB.

3.2.3.4. \$PREAMP

Set Uplink Voice Parameters (continued)

Reference

N/A

Standard Scope

Optional

Enfora Implementation Scope

Full

Notes

Change in bias may or may not have an affect, depending on hardware.
Extra gain is not support. Changing the value will have no affect on the module configuration.

Examples

AT\$PREAMP =1,12,0

Max volume from the microphone.

3.2.3.5. \$SPKCFG

Set Downlink Voice Parameters

Command Function

This command allows the user to configure the downlink voice path parameters for the current voice mode (see \$vselect).

Command Functional Group

Enfora Specific

Command Format Query Response

AT\$SPKCFG=?
\$SPKCFG: (0-12), (0-5), (0,1)
OK

Write Format

AT\$SPKCFG=<gain>,
<volume>,<filter>

Response

OK

Read Format Response

AT\$SPKCFG?
\$SPKCFG: <gain>,<volume>,<filter>

Execution Format Response

N/A
N/A

Parameter Values

< gain >

0=> -6 dB.
1=> -5 db.
2=> -4 db.
3=> -3 db.
4=> -2 db.
5=> -1 db.
6=> 0 db.
7=> 0 db.
8=> 2 db.
9=> 3 db.
10=> 3 db.
11=> 5 db.
12=> 6 db.

3.2.3.5. \$SPKCFG

Set Downlink Voice Parameters (continued)

< volume >

The value of volume is as follows:

- 0** => Mute
- 1** => -24 dB
- 2** => -18 dB
- 3** => -12 dB
- 4** => -6 db
- 5** => 0 dB

< filter >

- 0** - on
- 1** - off

Enable/disable voice filter. Filter coefficients set by \$DFIR/\$UFIR commands

Reference

N/A

Standard Scope

Optional

Enfora Implementation Scope Full

Notes

N/A

Examples

AT\$SPKCFG=12,5,0
AT\$SPKCFG=12,0,0
AT\$SPKCFG=8,4,1

Max gain/volume with the filter enabled.
Downlink voice is muted.
Less than optimal voice quality with filter disabled.

3.2.3.6. \$VSELECT

Voice Select

Command Function

This command selects the voice mode of the device. Only valid options applicable to the hardware will be allowed. All applicable constants and settings are loaded when the mode is changed and at power up.

Command Functional Group

Enfora Specific

Command Format Query Response

AT\$VSELECT=?
\$VSELECT: (0-2)
OK

Write Format Response

AT\$VSELECT= <mode>
OK

Read Format Response

AT\$VSELECT?
\$VSELECT: 0

Execution Format Response

AT\$VSELECT
\$VSELECT : <reset state>
OK

Parameter Values

<Mode>

0 Selects handset for voice
1 Selects headset for voice
2 Selects speakerphone for voice

Reference

N/A

Standard Scope

Optional

Enfora Implementation Scope

Full

Notes

N/A

Examples

To set the voice mode to Headset:

AT\$VSELECT=1
OK

3.2.4 Input/Output Commands

3.2.4.1. \$IOCFG

GPIO Configuration

Command Function:

This command is used to set or query the GPIO direction setting (input or output).

Command Functional Group

Enfora Specific

Command Format Query Response

```
AT$IOCFG=?
$IOCFG: (00000000-11111111)
OK
```

Write Format Response

AT\$IOCFG=<mode>
OK

Read Format Response

```
AT+IOCFG?
+IOCFG: <current setting>
          <configured setting>
OK
```

Execution Format Response

N/A

N/A

Parameter Values

<mode>

0	OUTPUT
1	INPUT

3.2.4.1 \$IOCFG

GPIO Configuration (continued)

Reference

N/A

Standard Scope

Optional

Enfora Implementation Scope Full

Notes

8 Digits where left bit represents GPIO 1 and right most bit represents GPIO 8.

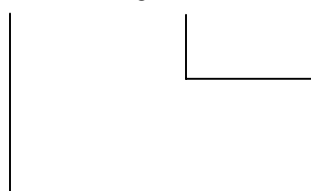
Example:

Output format for read command

AT\$IOCFG?

\$IOCFG: 11111111 10111111

OK



Configured I/O settings where I/O pins 1,3,4,5,6,7, and 8 are inputs and pin 2 is an output.

Current I/O settings where I/O pin 2 has been changed to an input line.

3.2.4.2. \$IOGP(x)

GPIO Bit Control

Command Function:

This command allows the user to set the state of the specified GPIO bit. The GPIO being written to must have previously been set to an output. (See AT\$IOCFG)

Command Functional Group

Enfora Specific

Command Format Query Response

AT\$IOGP(x)=?
\$IOGP(x): (0-1)
OK

Write Format Response

AT\$IOGP(x)=<mode>
OK

Read Format Response

AT\$IOGP(x)?
\$IOGP(x): <current setting>
<configured setting>
OK

Execution Format Response

N/A
N/A

Parameter Values

(x)

1-8 GPIO bit

<mode>

0 off
1 on

3.2.4.2 \$IOGP(x)

GPIO Bit Control (continued)

Reference

N/A

Standard Scope

Optional

Enfora Implementation Scope Full

Notes

See Enabler Integration Guides for pinout definitions.

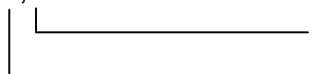
Example:

Output format for read command

AT\$IOGP2?

\$IOGP2: 1,0

OK



Output pin was configured off
Output pin is currently on

3.2.4.3. \$IOGPA

GPIO Byte Control

Command Function:

This command allows the user to set the state of all GPIO bits simultaneously. Only GPIO pins previously configured as outputs will be effected.
(See AT\$IOCFG)

Command Functional Group

Enfora Specific

Command Format Query Response

AT\$IOGPA=?
\$IOGPA: (00000000-11111111)
OK

Write Format Response

AT\$IOGPA=<mode>
OK

Read Format Response

AT\$IOGPA?
\$IOGPA: <current setting>
 <configured setting>
OK

Execution Format Response

N/A
N/A

Parameter Values

<mode>	0	off
	1	on

3.2.4.3 \$IOGPA

GPIO Byte Control (continued)

Reference

N/A

Standard Scope

Optional

Enfora Implementation Scope	Full
<p> Enfora Implementation Scope </p>	<p> Full </p>

Notes

8 Digits where left bit represents GPIO 1 and right most bit represents GPIO 8.

Example:

Output format for read command

AT\$IOGPA?

\$IOGPA: 11111111 00000000

OK

Configured I/O settings where I/O pins are all off.

Current I/O settings where I/O pins are all on.

3.2.4.4. \$IOADCx

Read Analog to Digital Converter

Command Function:

This command returns the value of the last reading on the Analog to Digital Converter in millivolts.

Command Functional Group

Enfora Specific

Command Format Query Response

N/A
N/A

Write Format Response

N/A
N/A

Read Format Response

N/A
N/A

Execution Format Response

AT\$IOADCx
\$IOADCx: <value>
OK

Parameter Values

x

1 Value of ADC1
2 Value of ADC2

<value>

decimal value in millivolts

Reference

N/A

Standard Scope

Optional

Enfora Implementation Scope Full

3.2.4.4 \$IOADCx

Read Analog to Digital Converter (continued)

Notes

See applicable Integration Guide for pinout definitions. If the modem is not registered or attached, the modem may take up to a minute to update the digital output to reflect a change on the analog input. 0 – 1.75 Vdc range. 1.709 mV resolution. 10 bit.

This command returns the current values. In the event reporting using UDP message, the values are reported and filtered using a low-pass filter mechanism.

The event reporting is done using the event engine.

3.2.4.5. \$IODAC Converter

Read/Write Digital to Analog

Command Function:	This command set controls the enabling, disabling, and setting of the internal Digital to Analog Converter.	
Command Functional Group	Enfora Specific	
Command Format Query Response	AT\$IODAC=? \$IODAC: (0-1023) OK	
Write Format Response	AT\$IODAC=<value> OK	
Read Format Response	AT\$IODAC? \$IODAC: <value> OK	
Execution Format Response	N/A	
Parameter Values	N/A	
<value>	0	off
	1	.220 Volts
	2	.222 Volts

	1023	2.220 volts
Reference	N/A	
Standard Scope	Optional	
Enfora Implementation Scope	Full	
Notes	DAC output value increases approximately .002 volts per unit increment. Read responds with last written value.	

3.2.5 TCP API Commands

3.2.5.1. \$TCPAPI

TCP API Control

Command Function

This command allows the user to initiate and terminate and query the status of the TCP API connection. *Please note that the TCP API can only be used over the air.*

Command Functional Group

Enfora Specific

Command Format Query Response

AT\$TCPAPI=?
\$TCPAPI: (0-3)
OK

Write Format Response

AT\$TCPAPI=<mode>
OK

Read Format Response

AT\$TCPAPI?
\$TCPAPI: <mode> (M-<Mgr Task>,R-<Rec Task>,T-<Trans Task>,Idx<Friend Index>)

Execution Format Response

N/A
N/A

Parameter Values

<mode>

0 = Disabled
1 = Enabled

<Mgr Task >

TCP API Manager Task

0 = None
1 = Init
2 = Idle
3 = Connecting
4 = Connected
5 = Disconnecting

3.2.5.1. \$TCPAPI

TCP API Control (continued)

<Rec Task >

TCP API Receive Task

0 = None

1 = Init

2 = Idle

3 = Connecting

4 = Waiting for Header

5 = Waiting for Frame

<Trans Task >

TCP API Transmit Task

0 = None

1 = Init

2 = Idle

3 = Connected

4 = Sending

<Friend Index >

Friend Index (1 – 10)

Reference

Standard Scope

Optional

Enfora Implementation Scope

Full

Notes

N/A

3.2.5.2. \$TCPSRC

TCP API Source Ports

Command Function

Specifies the TCP API source port range used when making a TCPAPI connection.

Command Functional Group

Enfora Specific

Command Format Query Response

AT\$TCPSRC=?
\$TCPSRC: (1024-65535),(1024-65535)
OK

Write Format Response

AT\$TCPSRC=<Start Port Number>,
[<End Port Number>]
OK

Read Format Response

AT\$TCPSRC?
\$TCPSRC: <Start Port Number>,
<End Port Number>

Execution Format Response

N/A
N/A

Parameter Values

<Start Port Number>

TCP API starting port number

<End Port Number >

TCP API ending port number

Reference

Standard Scope

Optional

Enfora Implementation Scope

Full

Notes

- Each connection attempt uses the next port number in sequence until the end port is passed. When this happens the port is set to the start port number.
- This current port number in use is retained over a power cycle.
- If only the start port number is provided, the end port number will be start port number + 49 (range of 50)

3.2.5.3. \$TCPRETRYTO

TCP API Retry Timeout

Command Function Specifies the number of seconds without receiving a TCP level ACK that will cause the connection to be closed.

Command Functional Group Enfora Specific

Command Format Query Response AT\$TCPRETRYTO=?
\$TCPRETRYTO: (120-65535)
OK

Write Format AT\$TCPRETRYTO=<Timeout>
OK

Read Format Response AT\$TCPRETRYTO?
\$TCPRETRYTO: <Timeout>

Execution Format Response N/A
N/A

Parameter Values

<Timeout> TCP API retry timeout value

Reference

Standard Scope Optional

Enfora Implementation Scope Full

Notes After closing the connection, the device will attempt to reconnect using the FRIEND list. The purpose of this command is to provide an abort to the TCP stack level retries.

Currently, the number of retries is 10 and the amount of time varies based on calculated round trip time. The minimum time allowed is 120 seconds.

Attempts to set the retry timeout to a value less than 120 or more than 65535 will result in an error.

3.2.5.4. \$TCPIDLETO

TCP API Idle Timeout

Command Function	Specifies the number of seconds without data traffic, in either direction, before closing the connection.
Command Functional Group	Enfora Specific
Command Format Query Response	AT\$TCPIDLETO=? \$TCPIDLETO: (0-65535) OK
Write Format	AT\$TCPIDLETO=<Timeout> OK
Read Format Response	AT\$TCPIDLETO? \$TCPIDLETO: <Timeout>
Execution Format Response	N/A N/A
Parameter Values	
<Timeout>	TCP API idle timeout value
Reference	
Standard Scope	Optional
Enfora Implementation Scope	Full
Notes	After closing the connection, the device will attempt to reconnect using the FRIEND list.

3.2.5.5. \$TCPSTATS

TCP API Statistics

Command Function

Displays bytes transmitted and received since last reset or last AT\$TCPSTATS=0 command.

Command Functional Group

Enfora Specific

Command Format Query Response

AT\$TCPSTATS=?
\$TCPSTATS: (0)
OK

Write Format Response

AT\$TCPSTATS=<mode>
OK

Read Format Response

AT\$TCPSTATS?
\$TCPSTATS: Rx <Rx Bytes>, Tx <Tx Bytes>, M <Mode Change>, D <GPRS Deactivate>, R <Restarts>, C <Connection Timeout>, I <Idle Timeout>, S <Socket Errors>

Execution Format Response

N/A
N/A

Parameter Values

<clear>

0 to clear TCPSTATS

<Rx Bytes>

TCP API bytes received

<Tx Bytes>

TCP API bytes transmitted

<Mode Changes>

Mode change (AT\$TCPAPI=0)

<GPRS Deactivate>

GPRS deactivate

<Restarts>

TCP API restarts (AT\$TCPRESTR)

<Connection Timeout>

TCP API connection timeout

<Idle Timeout>

TCP API idle timeout

<Socket Errors>

TCP API socket errors

3.2.5.5. \$TCPSTATS

TCP API Statistics (continued)

Reference

Standard Scope

Optional

Enfora Implementation Scope

Full

Notes

AT\$TCPSTATS=0 will clear all TCP API statistics.

3.2.5.6. \$TCPRESTR

TCP API Restart

Command Function

If a connection exists, it is dropped and a new connection is attempted starting at the beginning of the Friend list.

Command Functional Group

Enfora Specific

Command Format Query Response

AT\$TCPRESTR=?
OK

Write Format

AT\$TCPRESTR
OK

Read Format Response

N/A
N/A

Execution Format Response

N/A
N/A

Parameter Values

N/A

Reference

Standard Scope

Optional

Enfora Implementation Scope

Full

Notes

N/A

3.2.6 UDP API Commands

3.2.6.1. \$UDPAPI

Modem API Address

Command Function

This command allows the user to query/set the API IP address and port number. Any UDP packet received from a local host and addressed to the modem API IP and port will be intercepted and processed as a modem API request. Any UDP packet received from a remote server and addressed to the modem API port will be intercepted and processed as a modem API request.

Command Functional Group

Enfora Specific

Command Format Query Response

AT\$UDPAPI=?
\$UDPAPI: "(0-255).(0-255).(0-255).(0-255)",(0-65535)
OK

Write Format Response

AT\$UDPAPI="<API IP>",<API port>
OK

Read Format Response

AT\$UDPAPI?
\$UDPAPI: "<APIIP>",<API port>

Execution Format Response

N/A
N/A

Parameter Values

<API IP>

IP address for local API access

<API port >

Udp port number for local and remote API access

Reference

Standard Scope

Optional

Enfora Implementation Scope

Full

Notes

N/A

3.2.6.2. \$APIPWD

API Password

Command Function

This command allows the user to query/set the API password. A non-friend remote user must gain password access before being allowed API access.

Command Functional Group

Enfora Specific

Command Format Query Response

AT\$APIPWD=?
\$APIPWD: ("PASSWORD")
OK

Write Format Response

AT\$APIPWD="<API password>"
OK

Read Format Response

AT\$APIPWD?
\$APIPWD: "<API password>"

Execution Format Response

N/A
N/A

Parameter Values

<API password>

8 character string. A NULL password indicates ALL remote users are allowed API access.

Reference

Standard Scope

Optional

Enfora Implementation Scope

Full

Notes

See *Enfora GSM-GPRS Family UDP-API Reference GSM0102PB002MAN* for further details regarding the use of the API Password.

3.2.7 Dynamic IP/Wakeup-Keep Alive Commands

3.2.7.1. \$WAKEUP

Modem to Server Wakeup/Keep Alive

Command Function

This command allows the user to configure the modem wakeup/keep alive parameters. These parameters control how the modem initiates contact with its server friends. Parameters can be selected so that a wakeup message sequence is executed every time the modem receives a new IP, and/or after a requested period has passed since the previous wakeup sequence has completed. A wakeup message sequence consists of sending <max retry> messages to each server friend in sequence (i.e. server 2 is contacted after all retries for server 1 is complete) and is complete when each server friend has received <max retry> messages, or upon receipt of an acknowledge message from a server.

Command Functional Group

Enfora Specific

Command Format Query Response

AT\$WAKEUP=?
\$WAKEUP: (0-2),(0-10080)
OK

Write Format Response

AT\$WAKEUP=<wakeup mode>,<retry period>
OK

Read Format Response

AT\$WAKEUP?
\$WAKEUP: <wakeup mode>, <retry period>

Execution Format Response

N/A
N/A

3.2.7.1. \$WAKEUP

Modem to Server Wakeup/Keep Alive (continued)

Parameter Values

<wakeup mode>

0 = No wakeup messages sent
1 = Send one message upon receipt of new IP and every **<retry period>** minutes
2 = send acknowledgement message using at\$acktm parameters upon receipt of new IP and every <retry period> minutes message

<retry period >

The number of minutes for keep alive period. Zero indicates no retries.

Reference

N/A

Standard Scope

Optional

Enfora Implementation Scope

Full

Notes

When this command is used, it will generate event group 0 events in the event table when the AT\$EVENT? command is issued.

The <retry period> parameter of this command populates the event timer value when the AT\$EVTIM4? command is issued. The AT\$EVTIM value will be in seconds. The parameter will also generate additional event group 0 entries.

If AT\$EVDEL=0 is issued or any entry for group 0 is deleted, this command MUST be re-entered for proper functionality. If a read command is issued, it will not reflect the true state of the AT\$WAKEUP setting.

Wakeup messages are sent to the IPs specified in AT\$FRIEND and to the port specified in AT\$UDPAPI command.

3.2.7.2. \$ACKTM

Acknowledgment Message Period & Retry Number

Command Function

This command allows the user to configure the modem msg acknowledge behavior. If server acknowledgement is selected for a message, the message will be re-sent every <retry period> number of seconds until the acknowledge message sequence is complete, or until an acknowledge message is received from a server. An acknowledge message sequence consists of sending <max retry> messages to each server friend in sequence (i.e. server 2 is contacted after all retries for server 1 is complete) and is complete when each server friend has received <max retry> messages, or upon receipt of an acknowledge message from a server.

Command Functional Group

Enfora Specific

Command Format Query Response

AT\$ACKTM=?
\$ACKTM: (0-255),(0-3600),(0,1)
OK

Write Format Response

AT\$ACKTM=<max retry>,<retry period><IP reselect>
OK

Read Format Response

AT\$ACKTM?
\$ACKTM: <max retry>, <retry period>,<IP reselect>

Execution Format Response

N/A

3.2.7.2. \$ACKTM

Acknowledgment Message Period & Retry Number (continued)

Parameter Values

<max retry>

The maximum number of times an acknowledge message is re-sent to a single friend server. After all retries to the friend server are exhausted, the modem will move on to the next friend server if one exists. If there are no more friend servers available, the modem will start PDP activation recovery if the recovery option is selected; otherwise, the message will be discarded.

In the case of the default acknowledge wakeup message: The maximum number of wakeup messages the modem will send to each server friend upon receipt of a new IP, or upon expiration of each keep-alive period. Zero indicates no wakeup message should be sent

<retry period >

The number of seconds between successive message retries. Zero indicates no retries.

<IP reselect >

- | | |
|----------|--|
| 0 | IP reselection is OFF. |
| 1 | If an acknowledge message has not been received after all friend servers and retries for the message are exhausted, assume a problem with round-trip communication and initiate IP re-selection. |

Reference

Standard Scope

Optional

Enfora Implementation Scope

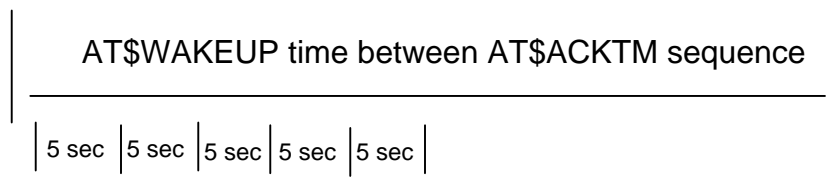
Full

3.2.7.2. \$ACKTM

Acknowledgment Message Period & Retry Number (continued)

Notes

This command is used in conjunction with the AT\$WAKEUP command.



AT\$ACKTM sending 5
messages, 5 seconds apart

Example:

AT\$ACKTM=5,5,1 ——— Perform IP reselect if no ACK from FRIENDS
 └——— Transmit messages every 5 seconds
 └——— Transmit 5 messages total

3.2.7.3. \$MDMID

Modem ID

Command Function

This command allows the user to query/set the modem ID. The modem ID is copied into each wakeup message sent from the modem. (see AT\$WAKEUP)

Command Functional Group

Enfora Specific

Command Format Query Response

AT\$MDMID=?
\$MDMID: ("MODEM ID")
OK

Write Format Response

AT\$MDMID = "<modem ID >"
OK

Read Format Response

AT\$MDMID?
\$MDMID: "<modem ID >"

Execution Format Response

N/A
N/A

Parameter Values

<modem ID >

0-20 character string in ASCII format.

Reference

Standard Scope

Optional

Enfora Implementation Scope

Full

Notes

Changing the modem ID will automatically clear the contents of Message Log.

3.2.7.4. \$FRIEND

Set/Query API Friends

Command Function

This command allows the user to configure the modem friend/server list. A friend is always allowed remote API access. Friend servers can be configured to receive WAKEUP messages whenever the modem receives a new IP, or after a certain period has elapsed. (see AT\$WAKEUP)

Command Functional Group

Enfora Specific

Command Format Query Response

\$FRIEND=?
\$FRIEND: (1-10),(0,1),"(0-255).(0-255).(0-255).(0-255)",(0-65535),(0-3)
OK

Write Format Response

AT\$FRIEND =<friend number>,
<server indication>,"<friend IP> or
<DNS name>", <destination port>,
<usage>
OK

3.2.7.4. \$FRIEND

Set/Query API Friends (continued)

Read Format Response

AT\$FRIEND?
\$FRIEND: =01, <server
indication>,"<friend IP> or <DNS
name>",
<destination port>, <usage>
\$FRIEND: =02, <server
indication>,"<friend IP> or <DNS
name>",
<destination port>, <usage>
\$FRIEND: =03, <server
indication>,"<friend IP> or <DNS
name>",
<destination port>, <usage>
\$FRIEND: =04, <server
indication>,"<friend IP> or <DNS
name>",
<destination port>, <usage>
\$FRIEND: =05, <server
indication>,"<friend IP> or <DNS
name>",
<destination port>, <usage>
\$FRIEND: =06, <server
indication>,"<friend IP> or <DNS
name>",
<destination port>, <usage>
\$FRIEND: =07, <server
indication>,"<friend IP> or <DNS
name>",
<destination port>, <usage>
\$FRIEND: =08, <server
indication>,"<friend IP> or <DNS
name>",
<destination port>, <usage>
\$FRIEND: =09, <server
indication>,"<friend IP> or <DNS
name>",
<destination port>, <usage>
\$FRIEND: =10, <server
indication>,"<friend IP> or <DNS
name>",
<destination port>, <usage>

3.2.7.4. \$FRIEND

Set/Query API Friends (continued)

Execution Format
Response

N/A
N/A

Parameter Values

<friend number>

friend identification (1-10).

<server indication>

0 = Friend is not a server.
1 = Friend is a server.

<friend IP>

friend IP value.

OR

<DNS name>

friend DNS name

<destination port>

friend destination port (TCP API only).

<usage>

0 = Unspecified (treated as UDPAPI)
1 = TCPAPI
2 = UDPAPI
3 = TCPAPI and/or UDPAPI

Reference

N/A

Standard Scope

Optional

Enfora Implementation Scope Full

Notes

If destination port and usage are not
resent in the command, it is assumed to
be a UDPAPI friend with the destination
port filled in with the UDPAPI port
number and usage = 0.

You will use either the Friend IP address
or the Friend DNS name, but not both.

3.2.8 PAD Commands

3.2.8.1. \$PADDST

PAD Destination IP/Port

Command Function

This command allows the user to query/set the PAD destination IP and port address.

Command Functional Group

Enfora Specific

Command Format Query Response

AT\$PADDST=?
\$PADDST: "(0-255),(0-255),(0-255),(0-255)",(0-65535)
OK

Write Format Response

AT\$PADDST = "<PAD destination IP> or <PAD destination DNS name>",<PAD destination port>
OK

Read Format Response

AT\$PADDST?
\$PADDST: ="<PAD destination IP> or <PAD destination DNS name>",<PAD destination port>

Execution Format Response

N/A
N/A

Parameter Values

<PAD destination IP >

Destination IP for PAD data. PAD data is sent to and received from this IP. A destination IP address of 0 will allow PAD access from any IP destination, and will cause all locally generated PAD data to be sent to the IP address associated with the last remotely received PAD data.

OR

<PAD destination DNS name> Destination DNS name for PAD data.

3.2.8.1 \$PADDST

Set/Query PAD Destination IP/Port (continued)

<PAD destination port >

Destination port for PAD data. PAD data is sent to and received from this port. A destination port of 0 will allow PAD access from any port, and will cause all locally generated PAD data to be sent to the port associated with the last remotely received PAD data.

Reference

N/A

Standard Scope

Optional

Enfora Implementation Scope Full

Notes

A value of 0 will allow any IP/port access to the TCP PAD. If populated and in passive, server mode (AT\$ACTIVE=0) the TCP PAD will limit access to the IP/port defined.

You will use either the PAD Destination IP Address, or the PAD Destination DNS Name, but not both.

3.2.8.2. \$PADSRC

PAD Source Port

Command Function

This command allows the user to query/set the API PAD source port. Remote data received from a valid destination address to this source port will be processed as incoming PAD data. This port is also used as the source port for all data sent to the PAD destination. This value must be different than the UDPAPI port.

Command Functional Group

Enfora Specific

Command Format Query Response

AT\$PADSRC=?
\$PADSRC: (0-65535)
OK

Write Format Response

AT\$PADSRC = <PAD source port>
OK

Read Format Response

AT\$PADSRC?
\$PADSRC: <PAD source port>

Execution Format Response

N/A
N/A

Parameter Values

<PAD source port >

PAD source port is used as the source port in all outgoing PAD data messages. The remote host must use this port number as the destination port for PAD data sent to the device.

Reference

N/A

Standard Scope

Optional

Enfora Implementation Scope

Full

Notes

N/A

3.2.8.3. \$ACTIVE

TCP PAD State

Command Function

This command determines the active or passive state of the TCP PAD connection.

Command Functional Group

Enfora Specific

Command Format Query Response

AT\$ACTIVE=?
\$ACTIVE: (0-1)
OK

Write Format Response

AT\$ACTIVE =<state >
OK

Read Format Response

AT\$ACTIVE?
\$ACTIVE: <state>

Execution Format Response

N/A
N/A

Parameter Values

<state>

0 TCP PAD passive/server mode
1 TCP PAD active/client mode

Reference

N/A

3.2.8.3. \$ACTIVE

TCP PAD State (continued)

Standard Scope

Optional

Enfora Implementation Scope Full

Notes

If passive is chosen, the PAD will be in server mode and listen for inbound TCP connection requests. If active is chosen, the PAD will be in client mode and will initiate a connection based on the ATDT command, or if atd*99# is used to initiate a GPRS connection, the values populated in AT\$PADDST. A value of 0 indicates passive, server mode of operation. A value of 1 indicates active, client mode of operation. ATDT will be used to initiate the passive, server mode functionality. If ATDTxxx.xxx.xxx.xxx/xxxx is used, it will override the passive mode and replace the AT\$PADDST parameters as it does in UDP PAD mode.

3.2.8.4. \$PADBLK

PAD Block Size

Command Function

This command allows the user to query/set the PAD block size.

Command Functional Group

Enfora Specific

Command Format Query Response

AT\$PADBLK=?
PADBLK: (3-512)
OK

Write Format Response

AT\$PADBLK =<block size >
OK

Read Format Response

AT\$PADBLK?
\$PADBLK: <block size>

Execution Format Response

N/A
N/A

Parameter Values

<block size >

PAD data will be created at the requested PAD block size (number of bytes) unless an enabled forward character or PAD timeout forces the data to be sent out at a smaller block size. Block size does NOT include the IP or TCP/UDP header size.

Reference

N/A

Standard Scope

Optional

Enfora Implementation Scope

Full

Notes

N/A

3.2.8.5. \$PADBS

PAD Backspace Character

Command Function

This command allows the user to query/set the PAD backspace character. If PAD edit is enabled via AT\$PADCMD, this character will cause the previous character to be deleted from the PAD output buffer. If the previous character has already been forwarded due to a PAD timeout or receipt of an enabled forward character, receipt of the PAD edit character will have no affect.

Command Functional Group

Enfora Specific

Command Format Query Response

AT\$PADBS =?
\$PADBS: (0-ff)
OK

Write Format Response

AT\$PADBS =<backspace character>
OK

Read Format Response

AT\$PADBS?
\$PADBS: <backspace character>

Execution Format Response

N/A
N/A

Parameter Values

<backspace character >

Hex representation of user selected backspace character. Normal backspace character is 08.

Reference

N/A

Standard Scope

Optional

Enfora Implementation Scope

Full

Notes

N/A

3.2.8.6. \$PADFWD

PAD Forward Character

Command Function

This command allows the user to query/set the PAD forward character. If PAD forward is enabled via AT\$PADCMD, receipt of this character will immediately forward all currently buffered PAD data.

Command Functional Group

Enfora Specific

Command Format Query Response

AT\$PADFWD =?
\$PADFWD: (0-ff)
OK

Write Format Response

AT\$PADFWD =<forward character>
OK

Read Format Response

AT\$PADFWD?
\$PADFWD: <forward character>

Execution Format Response

N/A
N/A

Parameter Values

<backspace character >

Hex representation of user selected forward character. Default forward character is 0D (Carriage return).

Reference

N/A

Standard Scope

Optional

Enfora Implementation Scope

Full

Notes

N/A

3.2.8.7. \$PADTO	PAD Timeout Value
Command Function	This command allows the user to query/set the PAD timeout value. Data will be forwarded to the PAD destination even if the PAD block size has not been reached if <pad timeout> period has elapsed since the last PAD character was received from the local host.
Command Functional Group	Enfora Specific
Command Format Query Response	AT\$PADTO \$PADTO: (0-65535) OK
Write Format Response	AT\$PADTO = <PAD timeout> OK
Read Format Response	AT\$PADTO \$PADTO: <PAD timeout>
Execution Format Response	N/A N/A
Parameter Values	
<PAD timeout>	The number of tenths of seconds to wait for the receipt of more PAD data before forwarding the currently accumulated PAD buffer to the PAD destination. A value of zero disables the PAD timeout feature. If the PAD timeout feature is disabled, no data will be forwarded to the destination until either an enabled forward character is received, or the selected PAD buffer size is reached. (50 = 5 seconds)
Reference	N/A
Standard Scope	Optional
Enfora Implementation Scope	Full
Notes	N/A

3.2.8.8. \$PADCMD	PAD Command Features
Command Function	This command allows the user to set/query PAD configuration options.
Command Functional Group	Enfora Specific
Command Format Query Response	AT\$PADCMD=? \$PADCMD: (0-FFFF) OK
Write Format Response	AT\$PADCMD =<pad feature select > OK
Read Format Response	AT\$PADCMD? \$PADCMD: "<pad feature select >"
Execution Format Response	N/A N/A
Parameter Values	
<pad feature select >	Add Bitwise Hex word to enable/Disable features. Bit 1, 1 = Enable Forwarding on Character defined by \$PADFWD 0 = Disable Forwarding on Character defined by \$PADFWD Bit 2, 1 = Forward Character defined by \$PADFWD with the data 0 = Do not forward Character defined by \$PADFWD with the data Bit 8, 1 = Enable \$PADBS Character. 0 = Disable \$PADBS and send \$PADBS character with the data.
Reference	N/A
Standard Scope	Optional

3.2.8.8. \$PADCMD

PAD Command Features (continued)

Enfora Implementation Scope Full

Notes

A +++ is an escape sequence to exit PAD mode. Disabling of the escape sequence is not supported, however the escape is only applicable when there is a 1 second guard time before and after the +++. If the guard period is not met before and after the escape sequence, it will be forwarded as data.

3.2.8.9. \$CONNTO

TCP PAD Connection Timeout

Command Function

This command is used to indicate the amount of time, in seconds, to spend attempting to make a TCP connection.

Command Functional Group

Enfora Specific

Command Format Query Response

AT\$CONNTO=?
\$CONNTO: (0, 10-3600)
OK

Write Format Response

AT\$CONNTO =<timeout>
OK

Read Format Response

AT\$CONNTO?
\$CONNTO: <timeout>

Execution Format Response

N/A
N/A

Parameter Values**<timeout>**

0 = Infinite timeout value
10-3600 = timeout value in seconds

Reference

N/A

Standard Scope

Optional

Enfora Implementation Scope

Full

Notes

A value of 0 will indicate infinite connection wait time. This command pertains to client mode operation only.

3.2.8.10. \$IDLETO

TCP PAD Idle Timeout

Command Function

This command sets the length of time, in seconds, a TCP session connection will remain active without the remote connection sending any data.

Command Functional Group

Enfora Specific

Command Format Query Response

AT\$IDLETO=?
\$IDLETO: (10-86400)
OK

Write Format Response

AT\$IDLETO =<timeout>
OK

Read Format Response

AT\$IDLETO?
\$IDLETO: <timeout>

Execution Format Response

N/A
N/A

Parameter Values

<timeout> 10-86400 = timeout value in seconds

Reference

N/A

Standard Scope

Optional

Enfora Implementation Scope Full**Notes**

If no communication is received from the remote connection in the specified time, the modem will gracefully attempt to close the connection.

3.2.8.11. DP

Dial Command for UDP PAD

Command Function	This command is used to invoke the UDP PAD via a dial command.
Command Functional Group	Enfora Specific
Command Format Query Response	N/A N/A
Write Format	(Using IP Address) atdp<IP_ADDRESS>/<UDP Port Number> (Using DNS Name) atdp"<PAD Destination DNS_Name>", <UDP Port Number>
Response	Connect
Read Format Response	N/A N/A
Execution Format Response	N/A N/A
Parameter Values	
<IP_ADDRESS>	IP Address of the destination host. Or,
<PAD Destination DNS_Name>	DNS Name of the destination host.
<UDP Port Number>	UDP Port number. If no UDP port number is required, a value zero (0) should be specified here.
Reference	GSM 11.14
Standard Scope	Optional
Enfora Implementation Scope	Full

3.2.8.11. \$ DP

Dial Command for UDP PAD (continued)

Notes

This command will override the AT\$PADDST settings for the current connected session.

DNS Name supported on software versions 0.7.6 and higher

Example:

```
atdp123.456.789.1/0  
atdp123.456.789.2/3000  
atdp"www.enfora.com",0  
atdp"www.enfora.com",3000
```

3.2.8.12. DT

Dial Command for TCP PAD

Command Function	This command is used to invoke the TCP PAD via a dial command.
Command Functional Group	Enfora Specific
Command Format Query Response	N/A N/A
Write Format	(Using IP Address) atdt<IP_ADDRESS>/<TCP Port Number> (Using DNS Name) atdt"<PAD Destination DNS_Name>", <TCP Port Number>
Response	Connect
Read Format Response	N/A N/A
Execution Format Response	N/A N/A
Parameter Values	
<IP_ADDRESS>	IP Address of the destination host. Or,
<PAD Destination DNS_Name>	DNS Name of the destination host.
<TCP Port Number>	TCP Port number. If no TCP port number is required, a value zero (0) should be specified here.
Reference	GSM 11.14
Standard Scope	Optional
Enfora Implementation Scope	Full

3.2.8.12. \$ DT

Dial Command for TCP PAD (continued)

Notes

This command will override the AT\$PADDST settings for the current connected session.

DNS Name supported on software versions 0.7.6 and higher

Example:

```
atdt123.456.789.1/0  
atdt123.456.789.2/3000  
atdt"www.enfora.com",0  
atdt"www.enfora.com",3000
```

3.2.9 Event Processing Commands

3.2.9.1. \$EVCID	User Defined Incoming Call Number Event
Command Function	This command allows the user to define up to 5 separate incoming call number user input events
Command Functional Group	Enfora Specific
Command Format Query Response	AT\$EVCID=? \$EVCID: (0-5),(0-2), 44 OK
Write Format	AT\$EVCID=<entry>,<mode>[,<number>]
Response	OK
Read Format Response	AT\$EVCID? \$EVCID: <entry>,<mode>,<number>
Execution Format Response	N/A N/A
Parameter Values	
<entry>	1-5 Selects which CID entry to modify
<mode>	0 Disable event generation for incoming call number 1 Enable event generation for incoming call number and suppress ring indication and respond to network with busy signal. 2 Enable event generation for incoming call number and do not suppress ring indication.

3.2.9.1. \$EVCID

User Defined Incoming Call Number Event (continued)

<number>

string type;Character string
[~]<0..9,+,>?. Where <?> is a single character wildcard. If number starts with '~' it will match to any incoming call number with 0 or more digits preceding the remaining digits in the string. This is useful for matching to local, national and international ISDN telephony numbering plans.

Reference

N/A

Standard Scope

Optional

Enfora Implementation Scope Full

Notes

In the event the incoming call number matches more than one incoming call number selection, the mode selection will be based on priority order. The priority order will be for entries 1 through 5 with entry 1 having the highest priority.

3.2.9.1. \$EVCID

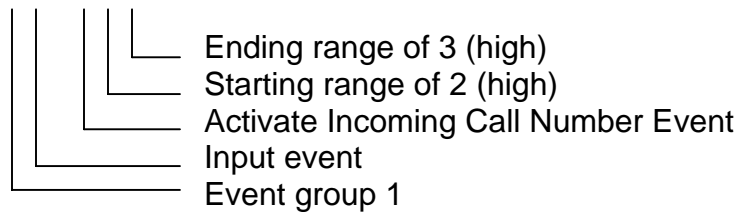
User Defined Incoming Call Number Event (continued)

Example:

These commands will cause the example in AT\$EVENT to trigger for incoming call numbers matching event call id 2 or event call id 3.

AT\$EVCID=2,1,"123456789?" // Define incoming call number
with the last digit a wildcard
AT\$EVCID=3,1,"~123456789" // Define incoming call number to allow
For local and international prefixes

AT\$EVENT=1,1,65,2,3



3.2.9.2. \$EVENT

User Defined Input/Output

Command Function

This command allows the user to customize the modem's input and output capabilities. Any combination of input events can be monitored to trigger any combination of output events.

Command Functional Group

Enfora Specific

Command Format Query Response

AT\$EVENT=?
\$EVENT: (0-99),(0-3),((0-255),
(-2147483647 - 2147483647), (-
2147483647 - 2147483647)

Write Format Response

AT\$EVENT=<event group>,<event
type>,<event category>,
<parm1>,<parm2>
OK

Read Format Response

AT\$EVENT?
\$EVENT: evgp evtyp evcat p1 p2
1A 0 9 2 4
1B 3 33 1 0
2A 0 9 5 5
2B 3 17 0 0
3A 0 9 0 0
3B 3 9 0 0
4A 0 9 1 1
4B 3 17 0 0

Execution Format Response

N/A
N/A

3.2.9.2. \$EVENT

User Defined Input/Output (continued)

Parameter Values

<event group>

The event group. This parameter defines all of the events and the order they are executed. Events are grouped together to control execution sequence. If all input event group entries or an entry in the group are within range and at least 1 trigger input is valid, all event group outputs are activated. An event group should have at least 1 trigger input event, and at least 1 output event.

<event type>

Event type

Type of event	Description	Value
transition trigger	Trigger when the requested event has transitioned into the event range. Valid when within the event range.	0
occurrence trigger	Trigger anytime the event occurs and is in the valid event range. Valid when within the event range.	1
input	Valid when within the event range.	2
output	Event is created when all inputs are valid & a trigger is present.	3

<event category>

Event categories

3.2.9.2. \$EVENT

User Defined Input/Output (continued)

Input State Event - Event based on GPIO pin activity when defined as an input. 0 = LOW 1 = HIGH

event category	Parm1	Parm2	Description
0	0 or 1	0 or 1	GPIO1 – General purpose Input/Output #1 0 = Low 1 = High
1	0 or 1	0 or 1	GPIO2 – General purpose Input/Output #2
2	0 or 1	0 or 1	GPIO3 – General purpose Input/Output #3
3	0 or 1	0 or 1	GPIO4 – General purpose Input/Output #4
4	0 or 1	0 or 1	GPIO5 – General purpose Input/Output #5
5	0 or 1	0 or 1	GPIO6 – General purpose Input/Output #6
6	0 or 1	0 or 1	GPIO7 – General purpose Input/Output #7
7	0 or 1	0 or 1	GPIO8 – General purpose Input/Output #8
8	1	1	Modem power up indication
9	0 to 5	0 to 5	Modem GSM registration (see AT+CREG command description for GSM registration status information)
10	0 to 8	0 to 8	Modem GPRS registration (see AT%CGREG command description for GPRS registration status information)
11	0 or 1	0 or 1	Receipt of IP address. 0 = No IP address 1 = Valid IP address obtained
12	1	1	Timer 1 (set by AT\$EVTIM1)
13	1	1	Timer 2 (set by AT\$EVTIM2)
14	1	1	Timer 3 (set by AT\$EVTIM3)
15	1	1	Timer 4 (set by AT\$EVTIM4)
18	0 to 1760	1760	Analog/Digital 1
19	0 to 1760	1760	Analog/Digital 2
20			Reserved
51	0	0	**Input Event Counter. This event will occur when a counter reaches the maximum number of a selected Input event count.
52	0 or 1	0 or 1	Receipt of an SMS message
66	1	1	Timer 5 (set by AT\$EVTIM5)
67	1	1	Timer 6 (set by AT\$EVTIM6)
68	1	1	Timer 7 (set by AT\$EVTIM7)
69	1	1	Timer 8 (set by AT\$EVTIM8)

3.2.9.2. \$EVENT

User Defined Input/Output (continued)

Modem Status Events - Events based on modem status.

Input Timer Events - Event timer used to provide input signal based on timer value. See AT\$EVTIM# command to set pulse rate.

Value	Description	Valid range
12	EVTIM1 – Input event timer #1	1
13	EVTIM2 – Input event timer #2	1
14	EVTIM3 – Input event timer #3	1
15	EVTIM4 – Input event timer #4	1
66	EVTIM5 – Input event timer #5	1
67	EVTIM6 – Input event timer #6	1
68	EVTIM7 – Input event timer #7	1
69	EVTIM8 – Input event timer #8	1

Output State Event - Events based on GPIO pin activity when defined as an output.

Value	Description
0	GPIO1 input – Changes GPIO line #1 to an input
1	GPIO2 input – Changes GPIO line #2 to an input
2	GPIO3 input – Changes GPIO line #3 to an input
3	GPIO4 input – Changes GPIO line #4 to an input
4	GPIO5 input – Changes GPIO line #5 to an input
5	GPIO6 input – Changes GPIO line #6 to an input
6	GPIO7 input – Changes GPIO line #7 to an input
7	GPIO8 input – Changes GPIO line #8 to an input
8	GPIO1 low – Generate a low signal on GPIO line #1
9	GPIO2 low – Generate a low signal on GPIO line #2
10	GPIO3 low – Generate a low signal on GPIO line #3
11	GPIO4 low – Generate a low signal on GPIO line #4
12	GPIO5 low – Generate a low signal on GPIO line #5
13	GPIO6 low – Generate a low signal on GPIO line #6
14	GPIO7 low – Generate a low signal on GPIO line #7
15	GPIO8 low – Generate a low signal on GPIO line #8
16	GPIO1 high – Generate a high signal on GPIO line #1
17	GPIO2 high – Generate a high signal on GPIO line #2
18	GPIO3 high – Generate a high signal on GPIO line #3
19	GPIO4 high – Generate a high signal on GPIO line #4
20	GPIO5 high – Generate a high signal on GPIO line #5

21	GPIO6 high – Generate a high signal on GPIO line #6
22	GPIO7 high – Generate a high signal on GPIO line #7
23	GPIO8 high – Generate a high signal on GPIO line #8

Output Transition Events - Events based on GPIO pin activity to transition an output line to the opposite state.

24	GPIO1 toggle – Transition line signal on GPIO line #1
25	GPIO2 toggle – Transition line signal on GPIO line #2
26	GPIO3 toggle – Transition line signal on GPIO line #3
27	GPIO4 toggle – Transition line signal on GPIO line #4
28	GPIO5 toggle – Transition line signal on GPIO line #5
29	GPIO6 toggle – Transition line signal on GPIO line #6
30	GPIO7 toggle – Transition line signal on GPIO line #7
31	GPIO8 toggle – Transition line signal on GPIO line #8

Output Flash Events - Events based on GPIO pin activity to flash an output line.

32	GPIO1 flash – Flash line signal on GPIO line #1 based on parm1 and parm2 values
33	GPIO2 toggle – Flash line signal on GPIO line #2 based on parm1 and parm2 values
34	GPIO3 toggle – Flash line signal on GPIO line #3 based on parm1 and parm2 values
35	GPIO4 toggle – Flash line signal on GPIO line #4 based on parm1 and parm2 values
36	GPIO5 toggle – Flash line signal on GPIO line #5 based on parm1 and parm2 values
37	GPIO6 toggle – Flash line signal on GPIO line #6 based on parm1 and parm2 values
38	GPIO7 toggle – Flash line signal on GPIO line #7 based on parm1 and parm2 values
39	GPIO8 toggle – Flash line signal on GPIO line #8 based on parm1 and parm2 values

Output Message Events - Events that generate a UDP message based on GPIO pin activity.

3.2.9.2. \$EVENT

User Defined Input/Output (continued)

40	UDP Message – Generate and transmit one UDP message based on parm1 and parm2 values.
41	UDP Message w/ Acknowledge – Generate and transmit a UDP message based on parm1 and parm2 values. This message is controlled by the \$ACKTM and \$WAKEUP parameters. This message can also be acknowledged thus canceling the \$ACKTM and \$EVTIM parameters.
42	UDP Broadcast message – Generate and broadcast an UDP message based on parm1 and parm2 values to all the IP addresses listed in the \$friend command
45	Output message via SMS – Generate and broadcast a SMS message based on parm1 and parm2 values to all the SMS/email addresses listed in the \$smsda command

Output Reset Timer Event -

43	Reset Timer – Reset timer (1 – 8) indicated by parm1 to a value specified by parm2 or to the original value if parm2 is set to 0. Continuous timers are used NOTE: Timers are reset, when expired, and start the countdown immediately after being reset. Hence, A user doesn't have to reset the timer every time it expires
----	--

Output AT Command Event - Event that executes stored AT commands as defined in the AT\$STOATEV command.

44	Execute stored AT command – Execute stored AT command as defined in AT\$STOATEV. Parm1 identifies the index number of the command to be executed as defined in AT\$STOATEV. Parm 2 is ignored.
----	--

3.2.9.2. \$EVENT

User Defined Input/Output (continued)

Real Time Clock Output Event

46	Set RTC On/Off time. Parm1 sets the RTC ON time in minutes while Parm2 sets the OFF time in mins
----	--

Event Counter

47	Event Counter. Counts occurrences of an event till the number specified by parm2 (parm1 is not used). The input event 51 is generated when maximum number is reached.
----	---

3.2.9.2. \$EVENT

User Defined Input/Output (continued)

<parm1>

parameter values

Event Type	Event Category	Result
Input, transition, occurrence	Input State Event	Defines the valid start range
Input, transition, occurrence	Modem Status Event	Defines the valid start range
Input, transition, occurrence	Input Timer Event	Defines the valid start range
Output, transition, occurrence	Output State Event	Parm1 is ignored
Output	Output Transition Event	Parm1 is ignored
Output	Output Flash Event	Bits 16 – 31 determine the low signal state while bits 0 – 15 determine the high signal state. A value of 0 for bits 16 – 31 indicates the GPIO will remain in low signal state for the same amount of time as the as the high signal state (50% duty cycle). The high or low states are measured in multiples of ¼ seconds. The toggle count is set by Parm2.
Output	Output Message Event	parm1 is a special user message identification. The 32-bit number entered can be used to dynamically generate intelligent messages. It will be the first 4 bytes of data following the API header in the output message. An example of using this field would be to designate the bytes as unique identifiers. Bytes 1 and 2 could identify the device, byte 3 could define the message format, and byte 4 could provide the event group that triggered the message.
Output	Output Reset Timer Event	Parm1 defines the timer (1 – 4) to be reset.

Output	Output AT Command Event	Parm1 identifies the index number of the command to be executed as defined in AT\$STOATEV.
Output	Real Time Clock Output Event	Parm1 defines the ON time that the device will stay in normal power mode. The unit of this value is Minutes.
Output	Event Counter	Parm1 is Ignored

3.2.9.2. \$EVENT

User Defined Input/Output (continued)

<parm2>

parameter values

Event Type	Event Category	Result
Input, transition, occurrence	Input State Event	Defines the valid end range
Input, transition, occurrence	Modem Status Event	Defines the valid end range
Input, transition, occurrence	Input Timer Event	Defines the valid end range
Output	Output State Event	Parm2 is ignored
Output	Output Transition Event	Parm2 is ignored
Output	Output Flash Event	The flashing GPIO event will cause the GPIO output state to toggle at time 0 to the opposite state prior to starting the GPIO output flash event processing. This counts as toggle #1. An even number of toggle count will force a final state which is the same as the initial state. An odd number of toggle count will force the final state to be opposite of the initial GPIO output condition. 0 = toggle forever.
Output	Output Message Event	Parm2 defines the output UDP message format. Bit 0: 1 = send all numeric data, generated as a result of enabling and disabling bits below, in binary format 0 = send all numeric data, generated as a result of enabling and disabling bits below, in ASCII format Bit 1: 1 = add PARM1 value (4 bytes binary or 11 bytes ASCII) 0 = do not add Parm1 value Bit 2: 1 = add \$MDMID value (22 bytes ASCII)

		<p>0 = do not add \$MDMID value</p> <p>Bit 3: 1 = add GPIO data and direction (2 bytes binary or 6 bytes ASCII)</p> <p>0 = do not add GPIO data</p> <p>Bit 4: 1 = add ADC-1 value (2 bytes binary or 5 bytes ASCII)</p> <p>0 = do not add ADC-1 value</p> <p>Bit 5: 1 = add ADC-2 value (2 bytes binary or 5 bytes ASCII)</p> <p>0 = do not add ADC-1 value</p> <p>Bit 6: 1 = Message is stored in non-volatile memory until it can be sent, regardless of network status.</p> <p>0 = Code checks network status before storing message in non-volatile memory. If it appears that the message can be sent out immediately (network status is clear and message queue has few or no messages pending), the message is stored in the non-volatile message queue until it can be sent. Otherwise, the message is deleted.</p> <p>Bit 7: 1 = add Input Event code (1 bytes binary or 3 bytes ASCII)</p> <p>0 = do not add Input Event code</p> <p>Bits 8-17: Reserved</p> <p>Bit 18: 1 = send message via SMS when GPRS is not present</p> <p>0 = do not send message via SMS as backup</p> <p>Bits 19-20: Reserved</p> <p>Bit 21: 1 = add current RTC Time and Date (6 – bytes of RTC information in Binary format or 13 – bytes if Bit-0 is set to 0)</p> <p>0 = do not add RTC time and date</p>
--	--	---

		<p>Bit 22: 1 = Replace/append modem ID field with 10-byte modem ID (including one leading and one ending space character) if bit-0 is set to 1 (no leading or ending space characters in binary mode). (NOTE: bit-22 setting overrides bit-2 setting)</p> <p>0 = sent the modem ID as defined by Bit-2</p> <p>Bits 23-32: Reserved</p>
Output	Output Reset Timer Event	Parm2 defines the time that the timer needs to be reset to. A value of 0 indicates that the original timer value will not be changed. Unit of time is: seconds
Output	Output AT Command Event	Parm1 identifies the index number of the command to be executed as defined in AT\$STOATEV.
Output	Real Time Clock Output Event	Parm2 defines the OFF time that the device will stay in RTC sleep mode. The unit of this value is Minutes.
Output	Event Counter	Parm2 defines the maximum value of the counter, which when reached will cause an input event (event 51) to be triggered. Range= 0 to 2147483647

Reference

Standard Scope

Optional

Enfora Implementation Scope

Full

3.2.9.2. \$EVENT

User Defined Input/Output (continued)

Notes

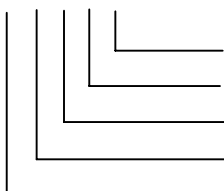
Example:

Objective: Create an input event that will generate an output event.

AT\$EVENT parameters:

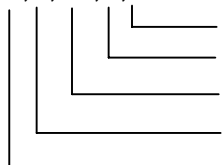
- 1a). Define, as a part of the first event group, a setting that monitors a state transition on pin 1 when it goes high (value of 1)
- 1b). Define, as a part of the first event group, a setting that transitions I/O (output) pin #2 state

AT\$EVENT=1,0,0,1,1



Ending range of 1 (high)
Starting range of 1 (high)
Activity on I/O line #1 based on range
Input transition event
Event group 1

AT\$EVENT=1,3,25,0,0



Ignored
Ignored
Transition I/O line signal on GPIO #2
Output event
Event group 1

Query the EVENT table:

AT\$EVENT?

The table should reflect the following:

\$EVENT:	evgp	evtyp	evcat	p1	p2
1A	0	0	1	1	1
1B	3	25	0	0	0

3.2.9.3. \$EVTIM#

User Defined Input Event Timers

Command Function

This command allows the user to define up to 8 separate periodic input events in 1 second increments

Command Functional Group

Enfora Specific

Command Format Query Response

AT\$EVTIM#=?
\$EVTIM#: (0-604800)
OK

Write Format Response

AT\$EVTIM#=<rate>
OK

Read Format Response

AT\$EVTIM#?
\$EVTIM#: <rate>

Execution Format Response

N/A
N/A

Parameter Values

<rate>

number of seconds between each generated input event.

Reference

N/A

Standard Scope

Optional

Enfora Implementation Scope

Full

Notes

AT\$EVTIM4 will affect the values in AT\$WAKEUP. Do not use this event timer if you are using AT\$WAKEUP.

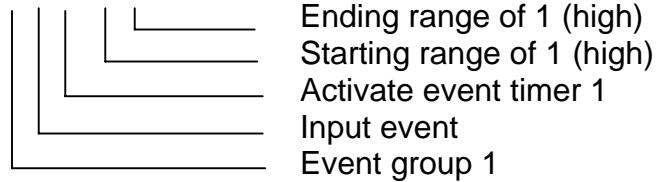
3.2.9.3. \$EVTIM#

User Defined Input Event # = <1- 8>
(continued)

Example:

These commands will cause the example in AT\$EVENT to trigger every 60 seconds.

AT\$EVENT=1,1,12,1,1



AT\$EVTIM1=60

** Please note that you will have to toggle the I/O pin # 2 low with the AT\$IOP2=0 command prior to each event time cycle to see the I/O line go high based on the timer. In this example, prior to each 60 second time cycle.

3.2.9.4. \$EVTEST

Generate Test Input Event

Command Function

This command allows the user to generate any input event. This is useful for testing the user event table.

Command Functional Group

Enfora Specific

Command Format Query Response

N/A
N/A

Write Format Response

N/A
N/A

Read Format Response

N/A
N/A

Execution Format Response

AT\$EVTEST=<event>,<state>
OK

Parameter Values

<event>

input event number

<state>

input event test state

Reference

Standard Scope

Optional

Enfora Implementation Scope

Full

Notes

N/A

Example:

This example will cause the example provided in the AT\$EVENT to trigger.

AT\$EVTEST=0,0

└── Create a low input signal
└── Event category 0 (Input line 1)

AT\$EVTEST=0,1

└── Create a high input signal
└── Event category 0 (Input line 1)

3.2.9.5. \$EVDEL

Delete Event

Command Function

This command allows the user to delete items from the user generated event table. Entering only the group number will delete the whole group.

Command Functional Group

Enfora Specific

Command Format Query Response

N/A
N/A

Write Format Response

N/A
N/A

Read Format Response

N/A
N/A

Execution Format Response

AT\$EVDEL=<group><letter ID>
OK

Parameter Values

<group>

event list group number

<letter ID>

letter indicating which element of the group (optional)

Reference

N/A

Standard Scope

Optional

Enfora Implementation Scope

Full

Notes

Example:

AT\$EVDEL=1 Will delete all entries event group 1

AT\$EVDEL=1b Will delete only the second entry in event group 1

3.2.9.6. \$EVDELA

Delete Event

Command Function

This command allows the user to delete all user generated events from the event table.

Command Functional Group

Enfora Specific

Command Format Query Response

N/A
N/A

Write Format Response

N/A
N/A

Read Format Response

N/A
N/A

Execution Format Response

AT\$EVDELA
OK

Parameter Values

N/A

Reference

N/A

Standard Scope

Optional

Enfora Implementation Scope

Full

Notes

N/A

3.2.9.7. \$STOATEV

Store AT Command Events

Command Function

This commands allows the user to store AT command output events. The AT command is executed upon the triggering of the associated input event.

Command Functional Group

Enfora Specific

Command Format Query Response

AT\$STOATEV=?
\$\$STOATEV: (1-25)<,AT commands>
OK

Write Format Response

AT\$STOATEV = <1-25>,
< AT command >
OK

Read Format Response

AT\$ STOATEV?
\$STOATEV: AT Event# AT Cmds
1
2
...
...
25
OK

Execution Format Response

N/A
N/A

Parameter Values

<1-25 >

AT event index.

<AT command>

AT command associated with the AT event index. The AT command is not checked for validity.

Reference

N/A

Standard Scope

Optional

Enfora Implementation Scope

Full

3.2.9.7. \$STOATEV

Store AT Command Events (continued)

Notes

This command is used in conjunction with the Dynamic Input Output event (AT\$EVENT). The output event associated with this command is event 44. When output event 44 is defined in the event table, Parm1 defines which index to refer to. The AT command associated with the index is executed.

When storing command to dial a voice call, a “v” replaces the “;” at the end of the dial string..ie atd17195551212v

Example:

Initiate a voice call from abbreviated dialing phone book store location 1.

AT\$STOATEV=1,ATD>AD1v

Dial number in phonebook location 1
AT Command event index

Use a GPIO input event to trigger a stored AT command event:

AT\$EVENT=1,0,0,1,1

Ending range of 1 (high)
Starting range of 1 (high)
Activity on I/O line #1 based on range
Input transition event
Event group 1

AT\$EVENT=1,3,44,1,0

```

Ignored
Stored Event index
Execute stored AT event
Output event
Event group 1

```

3.2.9.8. \$MSGLOGAL

Message Log Alarm

\$MSGLOGAL

Send an Alarm message when Message Log buffer trigger conditions are violated

Command Function

This command allows a user to set trigger conditions and send a message when conditions are violated

Command Functional Group

Enfora Specific

Command Format Query Response

AT\$MSGLOGAL=?
\$MSGLOGAL: (0–100),(0–10000),(0–4)
OK

Write Format Response

AT\$MSGLOGAL=<*pctg*>,<*msgs*>,<*msgType*>

Read Format Response

AT\$MSGLOGAL?
\$MSGLOGAL: 0,0,0
OK

Execution Format Response

N/A

Parameter Values

<*pctg*>

This field specifies the trigger condition when *x* Percentage of the message log buffer is filled with unsent messages. Valid values for this parameter are 0 – 100 % positive integer values only.

<*msgs*>

Maximum number of messages stored in the message log buffer before sending a msg log alarm message. Valid values for this parameter are 0 – 10000 messages. Note, the maximum number of messages stored in the buffer depends on the message length. This does not imply that one can store 10,000 messages of any length. Maximum buffer size is 50Kbytes.

3.2.9.8. \$MSGLOGAL

Message Log Alarm (continued)

<msgType>

This parameter specifies the medium/transport used to send the alarm message

- 0 = send alarm message out the serial port
- 1 = send alarm message via SMS to addresses specified by \$smsda command
- 2 = send alarm message via UDP to address specified by \$friend command
- 4 = send alarm message via TCP to address specified by \$friend command

Reference

N/A

Standard Scope

Optional

Enfora Implementation Scope

Full

Notes

The alarm message will have the following format: <mdmid>,<# of bytes available>,<# of unsent messages>.

Example: Send the following command at \$msglogal=1,0,0 to enable message log alarm when 1% of memory is full with unsent messages. When alarm condition is triggered, you should see a message similar to this: "010754000056580,55399,12" over the serial port where "010754000056580" is the modem ID of the device, "55399" is the number of bytes available to store messages, and "12" is the number of unsent messages currently stored in buffer. **A new alarm message is sent only after the current alarm condition is cleared.**

3.2.9.9. \$EVTIMQRY

Event Counter

Command Function

This command shows the current count for the event counter of the timer specified indicated by the argument.

Command Functional Group

Enfora Specific

Command Format Query Response

AT\$EVTIMQRY=?
\$EVTIMQRY: (1-8)
OK

Write Format Response

AT\$EVTIMQRY=<timer_index>
\$EVTIMQRY:<timer_index>=<count>
OK

Read Format Response

AT\$EVTIMQRY?
ERROR

Execution Format Response

AT\$EVTIMQRY=8
\$EVTIMQRY: 8=0.000
OK

Parameter Values

N/A

Reference

ITU-T Ref. V.25ter Chapter 6.3.8

Standard Scope

Mandatory

Enfora Implementation Scope

Full

Notes

3.2.9.10. \$MSGLOGDMP

Dump Unsent Messages to Serial Port

Command Function

This command allows the user to dump the contents of the unsent messages to the serial port. This command is non-destructive in that it does not actually remove the messages from the queue.

Command Functional Group

Enfora Specific

Command Format Query Response

AT\$MSGLOGDMP=?
\$MSGLOGDMP:(0-3,(0-1)
OK

Write Format

AT\$MSGLOGDMP=<queue>,<format>,
<bytes_per_line>

Response

...
OK

Read Format Response

N/A

Execution Format Response

N/A

Parameter Values

<queue>

0 = event data that was configured to be sent to a remote server via GPRS only
1 = event data that was configured to be sent to a remote server via GPRS primarily but also use SMS as backup method if GPRS is not available
2 = event data that was configured to be sent to a remote server via SMS only
3 = event data that was configured to be sent to a remote server via TCPAPI only

3.2.9.10 \$MSGLOGDMP

Dump unsent messages to serial port (continued)

<queue>

0 = ASCII format (if message contains a byte that is not a printable ASCII character, it will be displayed as '?')

1 = hex format (Each byte in message is displayed as a two-digit hex character representing the value of the byte with spaces between each byte. Maximum of 16 bytes per line.)

<bytes_per_line>

1-83 (default = 16) number of bytes displayed per line for binary data (each byte is represented as a two-digit hex value followed by a space)

Reference

N/A

Standard Scope

Optional

Enfora Implementation Scope Full

Notes

This command was developed primarily as a troubleshooting utility to help debug problems related to handling unsent messages in flash.

However, it has also been useful in collecting GPS data where a SIM was not available and it was not possible to connect the unit to a laptop. With this utility, you can put multiple devices in a vehicle for a drive test to collect NMEA data and dump the data for analysis easily when you return.

This feature is available in software version 0.7.8, and later.

3.2.9.11. \$EVNTRY

Event Query

Command Function

This command queries how many events have been used and how many are left.

Command Functional Group

Command Format Query Response

AT\$EVNTRY?
\$EVNTRY: <used>,<left>
OK

Write Format Response

N/A
N/A

Read Format Response

N/A
N/A

Execution Format Response

N/A
N/A

Parameter Values

<used>

Number of events that have been used

<left>

Number of events available for new entries

Reference

N/A

Standard Scope

Optional

Enfora Implementation Scope

Full

Notes

3.2.10 Real-Time Clock Commands

3.2.10.1. \$RTCALRM

Real Time Clock Alarm

Command Function

This command handles the setting and querying of the RTC alarm registers. When the alarm feature has been enabled the \$EVENT engine will be invoked upon the going off. If the \$RTCWAKE call is invoked following the alarm feature setup the modem will power back up automatically upon the alarm going off. The actions of these two features are mutually exclusive of each other, so one or the other will occur but not both.

Command Functional Group

Enfora Specific

Command Format Query Response

AT\$RTCALRM=?
\$RTCALRM: (0..99), (1..12), (1..31), (0..23),
(0..59), (0..59), (0..43200)
OK

Write Format Response

AT\$RTCALRM= <rtc_year>,
<rtc_month>, <rtc_day>, <rtc_hour>,
<rtc_min>, <rtc_sec>,
<rtc_alarmTimeinMinutes>

OK

Read Format Response

AT\$RTCALRM?
\$RTCALRM: <rtc_enabled>, <rtc_year>,
<rtc_month>, <rtc_day>, <rtc_hour>,
<rtc_min>, <rtc_sec>,
<rtc_alarmTimeinMinutes>"
OK

Execution Format Response

N/A
N/A

3.2.10.1. \$RTCALRM

Real Time Clock Alarm (continued)

Parameter Values

Parameters are positional dependent, any parameter may be omitted with the use of the **comma (',')** as a place holder on command line. If a parameter is omitted then the current value in the hardware is used.

< rtc_enabled >

Indicates if alarm is enabled or not.
1->Enabled, 0->Disabled

< rtc_year >

The year on which the alarm is being set to trigger on. The RTC supports years 2000-2099. The data is entered as a two digit value 0..99.

<rtc_month>

The month on which the alarm is being set to trigger on. Values range from 1..12.

<rtc_day>

The day on which the alarm is being set to trigger on. Values range from 1..31.

<rtc_hour>

The hour on which the alarm is being set to trigger on. Values range from 0..24 for 24-Hour mode settings.

NOTE: only 24-Hour mode currently supported.

<rtc_min>

The minute on which the alarm is being set to trigger on. Values range from 0..59.

<rtc_sec>

The second on which the alarm is being set to trigger on. Values range from 0..59.

<rtc_alarmTimeinMinutes>

Periodic Alarm time in minutes. RTC Alarm will be reset at a period specified by this parameter.

Reference

N/A

Standard Scope

Optional

Enfora Implementation Scope Full

3.2.10.1. \$RTCALRM

Real Time Clock Alarm (continued)

Notes

This command is used to set the Alarm time for the RTC. Currently all time is based on 24-Hour time format. The alarm may be cleared using the command

AT\$RTCCLRA. This call in conjunction with the use of either the \$EVENT engine or the \$RTCWAKE command the user has a rich feature set of driving other events or waking the system up at a pre-determined time in the future. No checks are made for alarm time not being later than current time.

AT\$RTCALRM will not trigger if the alarm time is occurring while the unit is resetting.

Examples

Following sets and alarm for 2003, October, 13th at 17:00 Hours

```
at$rtcalrm=3,10,13,17,0,0
```

OK

Following queries the alarm for current time, and shows that the alarm being; Enabled, for 2003, October 13th at 17:00 hours.

```
at$rtcalrm?
```

\$RTCALRM: 01, 03, 10, 13, 17, 00, 00

OK

Following call unsets alarm followed by displaying alarm time information.

```
at$rtcclra
```

OK

```
at$rtcalrm?
```

\$RTCALRM: 00, 03, 10, 13, 17, 00, 00

OK

3.2.10.2. \$RTCTIME

Real Time Clock Time

Command Function

This command handles the setting and querying of the RTC time registers.

Command Functional Group

Enfora Specific

Command Format Query Response

AT\$RTCTIME=?
\$RTCTIME: (0..6), (0..99), (1..12), (1..31),
(0..23), (0..59), (0..59)
OK

Write Format Response

AT\$RTCTIME= <rtc_wkday>, <rtc_year>,
<rtc_month>, <rtc_day>, <rtc_hour>,
<rtc_min>, <rtc_sec>
OK

Read Format Response

AT\$RTCTIME?
\$RTCTIME: <rtc_wkday>, <rtc_year>,
<rtc_month>, <rtc_day>, <rtc_hour>,
<rtc_min>, <rtc_sec>"
OK

Execution Format Response

N/A
N/A

3.2.10.2. \$RTCTIME

Real Time Clock Time (continued)

Parameter Values

Parameters are positional dependent, any parameter may be omitted with the use of the **comma (',')** as a place holder on command line. If a parameter is omitted then the current value in the hardware is used.

< rtc_wkday >

Current week day matching time day being set.

The week day values range from 0..6, where;

0->Sunday, 1->Monday, 2->Tuesday, 3->Wednesday, 4->Thursday, 5->Friday, and 6->Saturday.

< rtc_year >

The year on which the time is being set to. The RTC supports years 2000-2099. The data is entered as a two digit value 0..99.

<rtc_month>

The month on which the time is being set to. Values range from 1..12.

<rtc_day>

The day on which the time is being set to. Values range from 1..31.

<rtc_hour>

The hour on which the time is being set to. Values range from 0..24 for 24-Hour mode settings.

NOTE: only 24-Hour mode currently supported.

<rtc_min>

The minute on which the time is being set to. Values range from 0..59.

<rtc_sec>

The second on which the time is being set to. Values range from 0..59.

Reference

N/A

Standard Scope

Optional

Enfora Implementation Scope Full

3.2.10.2. \$RTCTIME

Real Time Clock Time (continued)

Notes

This command is used to set the time for the RTC. Currently all time is based on 24-Hour time format.

Examples:

at\$rtctime?

\$RTCTIME: 01, 03, 10, 13, 14, 03, 2

OK

at\$rtctime=?

\$RTCTIME: (0..6), (0..99), (1..12), (1..31), (0..23), (0..59), (0..59)

at\$rtctime=1,3,10,13,14,37,50

OK

3.2.10.3. \$RTCWAKE

Real Time Alarm Wake

Command Function

This command attempts to de-register from the network, at the end of a 5 second delay then powers down the modem so only the RTC is running. Upon the RTC alarm going off the modem will re-boot and initialize again. The command relies on the RTC Alarm feature being set prior, if system is to wake up at a preset time in the future.

Command Functional Group

Enfora Specific

Command Format Query Response

N/A
N/A

Write Format Response

N/A
N/A

Read Format Response

N/A
N/A

Execution Format Response

\$RTCWAKE
N/A

Parameter Values

N/A

Reference

N/A

Standard Scope

Optional

Enfora Implementation Scope

Full

Notes

The \$RTCWAKE command powers down the modem, so only the RTC clock will be running. The modem will power up automatically only if the RTC Alarm feature has been, otherwise modem will remain powered off. See the \$RTCALRM command for setup of the RTC alarm.

3.2.10.4. \$RTCCLRA

Real Time Clock Clear Alarm

Command Function

This command allows the modem to clear/disable the active RTC alarm. The alarm interrupt enable is cleared but alarm time not altered.

Command Functional Group

Enfora Specific

Command Format Query Response

N/A
N/A

Write Format Response

N/A
N/A

Read Format Response

N/A
N/A

Execution Format Response

AT\$RTCCLRA
OK

Parameter Values

None

Reference

N/A

Standard Scope

Optional

Enfora Implementation Scope

Full

Notes

This command will disable the RTC alarm while leaving the value of the last alarm time setting alone.

3.2.10.5. \$RTCRSET

RTC Report Reset State

Command Function

This command reports the reset state of the RTC following a power cycle. The command reports TRUE only if a reset occurred since last power up and last call to check it. So multiple calls will report the current status only.

Command Functional Group

Enfora Specific

Command Format Query Response

N/A
N/A

Write Format Response

N/A
N/A

Read Format Response

N/A
N/A

Execution Format Response

AT\$RTCRSET
\$RTCRSET : <reset state>

OK

Parameter Values

<reset state>

1 indicates that a RTC reset occurred,
0 indicates that a RTC reset did NOT occur

Reference

N/A

Standard Scope

Optional

Enfora Implementation Scope

Full

Notes

This command returns the current reset state of the RTC since power-up. If multiple calls are made only current reset state is returned.

3.2.10.5. \$RTCRSET

RTC Report Reset State (continued)

Examples

Following example shows the check for the RTC being reset since last check of reset and since last power up, with a response of True.

```
at$rtcrset?
```

```
$RTCRSET: 1
```

```
OK
```

Following example shows the check for the RTC being reset since last check of reset and since last power up, with a response of False.

```
at$rtcrset?
```

```
$RTCRSET: 0
```

```
OK
```

3.2.11 Miscellaneous Commands

3.2.11.1. %NRG

Network Registration and Service Selection

Command Function

Set command forces an attempt to select and register the GSM network operator. **<regMode>** is used to select whether the selection is done automatically by the ME or is forced by this command to operator **<opr>** (it shall be given in format **<oprFrmt>**).

Command Functional Group

Network

Command Format Query Response

AT%NRG=?
%NRG: (0,1,4),(0-3),(0-2)
OK

Write Format Response

AT%NRG=<regMode>, <srvMode>,
<oprFrmt>, <opr>
OK

Read Format Response

AT%NRG?
%NRG==<regMode>, <srvMode>,
<oprFrmt>, <srvStat>, <opr>
OK

Execution Format Response

N/A
N/A

3.2.11.1 %NRG

Network Registration and Service Selection (continued)

Parameter Values

<regMode>	0 automatic registration (<opr> field is ignored) 1 manual registration (<opr> field shall be present on registration attempt) 4 both
<srvMode>	0 full service 1 limited service 2 no service 3 set registration mode only
<oprFrmt>	0 long format alphanumeric <opr> 1 short format alphanumeric <opr> 2 numeric <opr>
<srvStat>	0 full service 1 limited service 2 no service
<opr>	string type
<oprFrmt>	indicates if the format is alphanumeric or numeric; long alphanumeric format can be up to 16 characters long and short format up to 8 characters; numeric format is the GSM Location Area Identification number (refer GSM 04.08 subclause 10.5.1.3) which consists of a three BCD digit country code coded as in ITU-T E.212 Annex A, plus a two BCD digit network code, which is administration specific; returned <opr> shall not be in BCD format, but in IRA characters converted from BCD; hence the number has structure: (country code digit 3)(country code digit 2)(country code digit 1)(network code digit 2)(network code digit 1)

3.2.11.1. %NRG	Network Registration and Service Selection (continued)
Reference	N/A
Standard Scope	N/A
Enfora Implementation Scope	N/A
Notes	The command %NRG is an expansion of the +COPS command. The new command allows specifying the service state of the registration. For a list of current available network operators please use the test command of +COPS>

3.2.11.2. %CACM

Query Accumulated Call Meter Using PUCT

Command Function	Returns the current value of the accumulated call meter, calculated with the values given by the price per unit and currency table stored in SIM. Refer subclause 9.2 of [GSM 07.07] for possible <err> values.
Command Functional Group	Phone Control
Command Format Query Response	N/A N/A
Write Format Response	N/A N/A
Read Format Response	N/A N/A
Execution Format Response	AT%CACM %CACM: <cur> , <price> OK
Parameter Values	
<cur>	string type; three-character currency code (e.g. "GBP", "DEM"); character set as specified by command Select
<price>	string type; calculated price value of accumulated call meter; dot is used as a decimal separator (e.g. 2.66)
Reference	N/A
Standard Scope	N/A
Enfora Implementation Scope	N/A
Notes	N/A

3.2.11.3. %CAOC

Query Current Call Meter Using PUCT

Command Function	Returns the current value of the current call meter, calculated with the values given by the price per unit and currency table stored in SIM. Refer subclause 9.2 of [GSM 07.07] for possible <err> values.
Command Functional Group	Phone Control
Command Format Query Response	N/A N/A
Write Format Response	N/A N/A
Read Format Response	N/A N/A
Execution Format Response	AT%CAOC %CAOC: <cur> , <price> OK
Parameter Values	
<cur>	string type; three-character currency code (e.g. "GBP", "DEM"); character set as specified by command Select
<price>	string type; calculated price value of accumulated call meter; dot is used as a decimal separator (e.g. 2.66)
Reference	N/A
Standard Scope	N/A
Enfora Implementation Scope	N/A
Notes	N/A

3.2.11.4. %CPI

Call Progress Information

Command Function

This command refers to call progress information, which is indicated by the network during call establishment. The set command enable/disables the presentation of unsolicited notification result codes from TA to TE. When **<mode>**=1 and a call progress information is received during a call establishment, intermediate result code %CPI: **<cld>**,**<msgType>**,**<ibt>**,**<tch>** is sent to TE. **<cld>** identifies the call in the call table. The value of **<msgType>** describes the layer 3-message type that was used to transfer the call progress information. The state of TCH assignment and the use of in-band tones for that call can be monitored by the values of **<ibt>** and **<tch>**. Test command returns values supported by the TA as compound value.

Command Functional Group

Call Control

Command Format Query Response

AT%CPI=?
%CPI: (0-3)
OK

Write Format Response

AT%CPI=**<mode>**
OK

Read Format Response

AT%CPI?
%CPI: 0
OK

Execution Format Response

N/A
N/A

3.2.11.4. %CPI

**Call Progress Information
(continued)**

Parameter Values

<mode>	(parameter sets/shows the result code presentation status in the TA) 0 disable 1 enable 2 status 3 append cause and ALS bearer state to unsolicited result code
<cld>	integer type; call identification number as described in GSM 02.30 subclause 4.5.5.1
<msgType>	(layer 3 message type) 0 setup message 1 disconnect message 2 alert message 3 call proceed message 4 synchronization message 5 progress description message 6 connect 7 reset request for call reestablishment 8 reset confirm for call reestablishment 9 call release 10 call reject 11 mobile originated call setup
<ibt>	(status of the usage of in-band tones) 0 no in-band tones 1 in-band tones
<tch>	(TCH assignment) 0 TCH not assigned 1 TCH assigned
Reference	N/A
Standard Scope	N/A
Enfora Implementation Scope	N/A

3.2.11.4.	%CPI	Call Progress Information (continued)
------------------	-------------	--

Notes	%CPI=4 appends an Advanced Cause Code (For Experienced Users Only)
--------------	---

3.2.11.5. %CTV

Call Timer Value

Command Function

Returns the current value of the last call duration in seconds. Refer subclause 9.2 of [GSM 07.07] for possible **<err>** values

Command Functional Group

Results

Command Format Query Response

N/A
N/A

Write Format Response

N/A
N/A

Read Format Response

N/A
N/A

Execution Format Response

AT%CTV
%CTV: **<dur>**

Parameter Values

<dur>

integer type; represents the duration of the last call in unit of seconds.

Reference

N/A

Standard Scope

N/A

Enfora Implementation Scope

N/A

Notes

N/A

3.2.11.6. %SNCNT

**Query (or Reset) the Byte Counters.
(Only GPRS)**

Command Function	Returns (or resets) the byte counts of every current connection.
Command Functional Group	GPRS
Command Format Query Response	AT%SNCNT=? %SNCNT: (0) OK
Write Format Response	%SNCNT=<rst> OK
Read Format Response	AT%SNCNT? %SNCNT: <nsapi1>, <upo>, <dno>, <upp>, <dn><CR><LF> %SNCNT: <nsapi2>, <upo>, <dno>, <upp>, <dn><CR><LF> OK
Execution Format Response	N/A N/A
Parameter Values	
<rst>	resets the counters if rst = 0
<nsapi>	connection id
<upo>	uplink octets count.
<dno>	downlink octets count.
<upp>	uplink packets count.
<dn>	downlink packets count.
Reference	N/A
Standard Scope	N/A
Enfora Implementation Scope	N/A
Notes	N/A

3.2.11.7. %CGAATT

Automatic Attach and Detach Mode

Command Function

This command is used to chose the behavior of the attach procedure.

Command Functional Group

GPRS Commands

Command Format Query Response

AT%CGAATT=?
%CGAATT: (0,1),(0,1)
OK

Write Format Response

AT%CGAATT=<att_m>,<det_m>
OK

Read Format Response

AT%CGAATT?
%CGAATT: 1,1
OK

Execution Format Response

<att_m>

automatic attach mode
0 automatic attach
1 manual attach

<det_m>

automatic detach mode
0 automatic detach after last context deactivation
1 manual detach

Reference

Standard Scope

Enfora Implementation Scope

Notes

When automatic attach/detach is enabled and at\$areg=1 or 2, the modem will automatically attach onto and detach from the GPRS network upon power on or power down.

3.2.11.8. %CGPPP

PPP Negotiation Selection

Command Function

This command is used select the type of negotiation protocol.

Command Functional Group

GPRS Commands

Command Format Query Response

AT%CGPPP=?
%CGPPP: (0-3)
OK

Write Format Response

AT%CGPPP=<pt>
OK

Read Format Response

N/A
N/A

Execution Format Response

N/A
N/A

Parameter Values

<pt>

(authentication protocol)
0 No authentication (ignore login +
pwd)
1 PAP
2 CHAP
3 automatic authentication

Reference

N/A

Standard Scope

N/A

Enfora Implementation Scope

Full

Notes

This command is used in conjunction with the %CGPCO command.

3.2.11.9. %CGPCO

Set Type of Authentication, Username and Password

Command Function

This command sets the type of Authentication, username and password for GPRS context activation.

Command Functional Group

Enfora Specific

Command Format Query Response

AT%CGPCO=?
%CGPCO: 0,(0-251),(1-2)
OK

Write Format

AT%CGPCO=<Input format>,
“<Authentication data>”,
<cid>

Response

OK

Read Format Response

AT%CGPCO?
CGPCO: 0,"<PCO Hex string>",1
CGPCO: 0,"<PCO Hex string>",2
OK

AT%CGPCO?
CGPCO: 1,"<Username,Password>",1
CGPCO: 1,"<Username,Password>",2
OK

Execution Format Response

N/A
N/A

3.2.11.9. %CGPCO

Set Type of Authentication, Username and Password (continued)

Parameter Values

<Input format>

- 0** - Inputs specified in Hexadecimal
- 1** - Inputs specified in ASCII

<Authentication data>

Authentication data (**ASCII**)
<username>,<password> where

Username: Maximum 64 bytes ASCII string.
Password: Maximum 64 bytes ASCII string.

Authentication data (**Hexadecimal**):
Protocol Configuration Option specified in Hex value; maximum size is equal to 251 bytes.

<cid>

- 0** – The new username and password is to be applied to all context Activation.
- 1** – The new username and password is to be applied to Context identifier 1.
- 2** – The new username and password is to be applied to Context identifier 2.

Reference

N/A

Standard Scope

N/A

Enfora Implementation Scope

Full

Notes

If %CGPCO is set with the input format of 0 (hexadecimal), then the setting of AT%CGPPP will be ignored.

Username and Password are case sensitive.

3.2.11.9. %CGPCO

Set Type of Authentication, Username and Password (continued)

Example:

Example of ASCII input parameters:

AT%CGPCO=1, "username, password", 1

AT%CGPCO?

CGPCO: 1,"username,password",1

(PAP:80C023160101001608757365726E616D65087061737
776F726480211001010010810600000000830600000000)

Example of Hex input parameters:

AT%CGPCO=0, "80C023160101001608757365726E616D650870617373
776F726480211001010010810600000000830600000000", 1

3.2.11.10. %ALS

Alternating Line Service

Command Function

Alternate Line Service provides the MS with the capability of associating two alternate lines with one IMSI. A user will be able to make and receive calls on either line as desired and will be billed separately for calls on each line. Each line will be associated with a separate directory number (MSISDN) and separate subscription profile.

Command Functional Group

GPRS Commands

Command Format Query Response

AT%ALS=?
%ALS: (0,1)
OK

Write Format Response

AT%ALS=<line>
OK

Read Format Response

AT%ALS?
%ALS: 0
OK

Execution Format Response

N/A
N/A

Parameter Values

<line>

line number
0 line one
1 line two

Reference

Standard Scope

Enfora Implementation Scope

Notes

N/A

3.2.11.11. %CGREG

GPRS Extended Registration State

Command Function

This command reports extended information about GPRS registration state. %CGREG behaves exactly as +CGREG does. In addition %CGREG supports three states +CGREG does not support.

Command Functional Group

GPRS Commands

Command Format Query Response

AT%CGREG=?
%CGREG: (0,3)
OK

Write Format Response

AT%CGREG=<mode>
OK

Read Format Response

AT%CGREG?
%CGREG: <n>,<stat>[,<lac>,<ci>,<act>]
OK

Execution Format Response

N/A
N/A

Parameter Values

<mode>

enable or disable extended GPRS registration state reporting

- 0** do not report registration state
- 1** do report registration state
- 2** enable network registration and location information unsolicited result code +CGREG: <stat>[,<lac>,<ci>]
- 3** enable network registration, location information, and activated/deactivated PDP context unsolicited result code +CGREG: <stat>[,<lac>,<ci>,<act>].

3.2.11.11 %CGREG

**GPRS Extended Registration State
(continued)**

<state>	0	not registered
	1	registered to home network
	2	not yet registered, but searching for network to register to
	3	registration denied
	4	unknown state
	5	registered to foreign network (roaming)
	6	limited service (cell might be overloaded)
	7	GSM call active
	8	no cell available
	9	next attempt to update MS
<lac>	string type; two-byte location area code in hexadecimal format (e.g. "00C3" equals 195 in decimal)	
<ci>	string type; two-byte cell ID in hexadecimal format	
<act>	0	deactivated
	1	activated

Reference N/A

Standard Scope N/A

Enfora Implementation Scope N/A

Notes N/A

3.2.11.12. %BAND

Frequency Band Information

Command Function

This command sets the Frequency bands the modem will scan for available network service.

Command Functional Group

Enfora Specific

Command Format Query Response

AT%BAND=?
%BAND: (0-1),(<band>)*
OK

Write Format Response

AT%BAND= <mode>,<band>
N/A

Read Format Response

AT%BAND?
%BAND: 0,<band>

Execution Format Response

N/A
N/A

Parameter Values

<mode>

0 automatic
1 manual

<band>

1 GSM 900 MHz
2 DCS 1800 MHz
4 PCS 1900 MHz
8 EGSM channels (in 900 band but not all the GSM channels)
16 850

Examples of combining Primary bands

11 GSM/EGSM/DCS
15 GSM/EGSM/DCS/PCS
20 850/PCS
31 GSM/EGSM/DCS/PCS/850

Reference

Standard Scope

Optional

3.2.11.12. %BAND

**Frequency Band Information
(continued)**

Enfora Implementation Scope N/A

Notes

Usable frequency bands dependent on product type. Do not enter <band> in Write command if <mode> is automatic.

Examples

The parameter values for <band> can be added together to support multiple frequency bands.

1 + 8 = 9 – The value of 9 is a combination of adding the bands 1 and 8 together, which would include the complete 900 MHz band., supported by the Enfora radio.

1 + 2 + 4 + 8 + 16 = 31 – The combination of all values supports the quad-band radio.

3.2.11.13. %SLEEP

Select level of sleep mode

Command Function

This command allows the user to select the level of sleep the modem will enter during periods of inactivity.

Command Functional Group

Enfora Specific

Command Format Query Response

AT%SLEEP=?
%SLEEP: (0-4)
OK

Write Format Response

AT%SLEEP=<mode>
OK

Read Format Response

AT%SLEEP?
%SLEEP: <mode>
OK

Execution Format Response

N/A
N/A

Parameter Values

< mode >

0=> no sleep
1=> Small
2 => Big
3 => Big + Deep
4 => Small+ Big +Deep

Reference

N/A

Standard Scope

Optional

Enfora Implementation Scope

Full

Notes

If %SLEEP <mode> of 3 or 4 is selected, and the modem has entered Deep sleep, the UART will miss the first character that is sent over the serial port. This first character will wake up the UART and subsequent characters will be accepted by the UART. Default setting is 2

3.2.11.14. %EM	Engineering Mode
Command Function	This command allows the user to view engineering mode functions including Serving cell and neighboring cell information
Command Functional Group	Enfora Specific
Command Format Query Response	AT%EM=? %EM: (2-3),(1-13) OK
Write Format Response	AT%EM=<mode>,<type> OK
Read Format Response	AT%EM? Error
Execution Format Response	N/A N/A
Parameter Values	
< mode >	2 AT Command 3 PCO
<type>	See Engineering Mode Document
Reference	N/A
Standard Scope	Optional
Enfora Implementation Scope	Full
Notes	Please see the Engineering mode Manual Technical note GSM0000TN012 for complete details of this command.

3.2.11.15. \$AREG	Auto Registration
Command Function	This command sets the auto registration state of the modem
Command Functional Group	Enfora specific
Command Format Query Response	AT\$AREG=? \$AREG: (0,2) OK
Write Format Response	AT\$AREG=<state> OK
Read Format Response	AT\$AREG? \$AREG: <state> OK
Execution Format Response	N/A N/A
Parameter Values	
<state>	0 Autoreg off 1 Autoreg on 2 Auto GPRS Activation on Power up. (for \$hostif=1 and 2, MT will perform GPRS activation and go into PAD data mode. For Hostif=0 and 3, MT will perform GPRS activation, but remain in AT command mode)
Reference	N/A
Standard Scope	Optional
Enfora Implementation Scope	Full

3.2.11.15. \$AREG

**Auto Registration
(continued)**

Notes

This command sets GMS registration state. When set to **1**, upon power on, the modem will automatically register on the GSM network. To set the modem to automatically attach to the GPRS network on power on, see AT%CGAATT command.

AT+CGDCONT must be entered and saved before MT is placed in AREG=2.

*** If PIN is enabled, the modem will not complete the auto registration process until after the PIN has been entered (AT+CPIN).**

3.2.11.16. \$HOSTIF

Configure Host to Modem Interface

Command Function

This command allows the user to configure the desired Host to Modem interface. This parameter determines the behavior of the ATD command.

Command Functional Group

Enfora Specific

Command Format Query Response

AT\$HOSTIF=?
(0-3)

Write Format Response

AT\$HOSTIF=<host interface>
OK

Read Format Response

AT\$HOSTIF=?
HOSTIF: <host interface>

Execution Format Response

N/A
N/A

Parameter Values

<host interface>

0 = Establish normal external Dial up networking modem to network connection.
1 = Establish UDP PAD session. Upon establishment of a network activation, a CONNECT message will be displayed. "No Carrier" or error will indicate failed or terminated UDP PAD session.
2 = Establish TCP PAD session Upon establishment of a network activation, a CONNECT message for at\$active=1, or a LISTEN message for at\$active=0 will be displayed. "No Carrier" or error will indicate failed or terminated TCP PAD session.
3 = Establish non-GPRS PPP connection.

Reference

N/A

Standard Scope

Optional

Enfora Implementation Scope

Full

3.2.11.16 \$HOSTIF

**Configure Host to Modem Interface
(continued)**

Notes

When HOSTIF = 3, all port connection requests must originate from the Host system. When the modem is configured for this mode, it is operating as a non-configurable router / firewall. FTP active mode is not supported. Some programs may require a remote proxy in order to work.

3.2.11.17. \$CONN

Initiate Network Connection

Command Function

This command allows the user to initiate a network connection while the modem already has a local PPP connection. This command is only valid when AT\$HOSTIF=3 after the local PPP connection has been established.

Command Functional Group

Enfora Specific

Command Format Query Response

N/A
N/A

Write Format Response

N/A
N/A

Read Format Response

N/A
N/A

Execution Format Response

AT\$CONN
OK

Parameter Values

N/A

Reference

N/A

Standard Scope

Optional

Enfora Implementation Scope

Full

Notes

This feature is only valid when AT\$HOSTIF=3.

3.2.11.18. \$DISC

Disconnect Network Connection

Command Function

This command allows the user to initiate a network disconnect. This command is only valid for AT\$HOSTIF=3 after the local PPP connection has been established or over-the-air as an API command when in TCP PAD mode.

Command Functional Group

Enfora Specific

Command Format Query Response

N/A
N/A

Write Format Response

N/A
N/A

Read Format Response

N/A
N/A

Execution Format Response

AT\$DISC
OK

Parameter Values

N/A

Reference

N/A

Standard Scope

Optional

Enfora Implementation Scope

Full

Notes

This command will only disconnect the network connection when AT\$HOSTIF=3. The local PPP connection will remain active.

This command can also be used to function as a disconnect request for TCP PAD. It must be sent over the air using the UDPAPI AT Command write sequence

3.2.11.19. \$LOCIP	Display Local Modem to Host IP & DNS
Command Function	This command allows the user to query the modem's locally assigned IP.
Command Functional Group	Enfora Specific
Command Format Query Response	N/A N/A
Write Format Response	N/A N/A
Read Format Response	AT\$LOCIP? <"IP">,<"DNS1">,<"DNS2">
Execution Format Response	N/A N/A
Parameter Values	
<IP>	local host to modem IP
<DNS1>	local host to modem DNS1
<DNS2>	local host to modem DNS2
Reference	N/A
Standard Scope	Optional
Enfora Implementation Scope	Full
Notes	N/A

3.2.11.20. \$NETIP	Display Network Assigned IP & DNS
Command Function	This command allows the user to query the modem's network assigned IP.
Command Functional Group	Enfora Specific
Command Format Query Response	N/A N/A
Write Format Response	N/A N/A
Read Format Response	AT\$NETIP? <"IP">,<"DNS1">,<"DNS2">
Execution Format Response	N/A N/A
Parameter Values	
<IP>	network assigned IP
<DNS1>	network assigned DNS1
<DNS2>	network assigned DNS2
Reference	N/A
Standard Scope	Optional
Enfora Implementation Scope	Full
Notes	N/A

3.2.11.21. \$PKG	Request Firmware Package
Command Function	This command is used to obtain the firmware package version.
Command Functional Group	Equipment Information
Command Format Query Response	N/A N/A
Write Format Response	N/A N/A
Read Format Response	N/A N/A
Execution Format Response	AT\$PKG <firmware version> OK
Parameter Values	N/A
Reference	N/A
Standard Scope	Optional
Enfora Implementation Scope	Full
Notes	Return value is manufacturer specific.

3.2.11.22. \$MSCLS	Set GPRS Multislot Class
Command Function	This command is used to set the GPRS multislot class.
Command Functional Group	Equipment Information
Command Format Query Response	AT\$MSCLS=? \$MSCLS: (1-12) OK
Write Format Response	AT\$MSCLS=<msclass> OK
Read Format Response	AT\$MSCLS? \$MSCLS: <msclass> OK
Execution Format Response	N/A N/A
Parameter Values	
<msclass>	1-12
Reference	N/A
Standard Scope	Optional
Enfora Implementation Scope	Full
Notes	The value is saved when using AT&W command. To return to default MS class, use AT&F command.

3.2.11.23. \$SNDMSG

Send Test message

Command Function

This command allows the user to send the requested test message to the destination IP and port as defined in AT\$FRIEND and AT\$UDPAPI.

Command Functional Group

Enfora Specific Test Command

Command Format Query Response

N/A
N/A

Write Format Response

AT\$SNDMSG=<test message select >
OK

Read Format Response

N/A
N/A

Execution Format Response

N/A
N/A

Parameter Values

<test message select >

AND selected HEX options into a single 16 bit word.

01=Send Remote Ack Test Msg
02=Send Remote Broadcast Test Msg
04=Send Remote Fire & Forget Test Msg
08=Send Local PAD Test Msg
10=Send Local UDP Test Msg

Reference

N/A

Standard Scope

Optional

Enfora Implementation Scope

Full

Notes

N/A

3.2.11.24. \$RESET	Reset Modem
Command Function	This command is used to perform a modem reset.
Command Functional Group	Equipment Information
Command Format Query Response	N/A N/A
Write Format Response	N/A N/A
Read Format Response	N/A N/A
Execution Format Response	AT\$RESET N/A
Parameter Values	N/A
Reference	N/A
Standard Scope	Optional
Enfora Implementation Scope	Full
Notes	Execution of this command will perform a full reset of the software stack. If the modem is currently registered onto the GSM/GPRS network, the modem will perform a detach before performing the stack reset.

3.2.11.25. \$GATEWAY

Gateway IP

Command Function

This command allows the user to select a gateway IP. Windows CE 3.0 devices and some Linux platforms require a gateway address. Default value "0.0.0.0" indicates that no gateway IP will be requested from the host. A non-zero value will cause the modem to request the indicated gateway IP from the host.

Command Functional Group

Enfora Specific

Command Format Query Response

AT\$GATEWAY=?
\$GATEWAY: ("<IP>")
OK

Write Format Response

AT\$GATEWAY = "<IP >"
OK

Read Format Response

AT\$GATEWAY?
\$GATEWAY: "<IP >"

Execution Format Response

N/A
N/A

Parameter Values

<IP>

gateway IP address.

Reference

Standard Scope

Optional

Enfora Implementation Scope

Full

Notes

N/A

3.2.11.26. \$NETMON

Monitor Network Availability

Command Function

This command allows the modem to take aggressive network recovery action based upon the results of continuous network monitoring.

Command Functional Group

Enfora Specific

Command Format Query Response

AT\$NETMON=?
\$NETMON: (0,5-1440),(0-10),(0-255),(0-1)
OK

Write Format Response

AT\$NETMON= <net_unavail_min>,
<reset_cnt>,<ping check>,<rst timers>
OK

Read Format Response

AT\$NETMON?
\$NETMON: "<net_unavail_min >,
<reset_cnt>,<ping check>,<rst timers>"

Execution Format Response

N/A
N/A

3.2.11.26 \$NETMON

Monitor Network Availability (continued)

Parameter Values

<net_unavail_min >

Number of minutes the network must remain unavailable before current network connection is released, and a new network connection is attempted. A value of zero means the connection will never be released via AT\$NETMON.

<reset_cnt >

Number of connections released before the modem erases all volatile network knowledge, before attempting to make a network connection. A value of zero indicates that a reset will never occur via AT\$NETMON.

<ping check >

Number of minutes between modem initiated ping checks. A value of zero indicates that the modem will never initiate a ping check. If a ping check is requested and the modem has obtained a valid IP, and no network data has been received within "ping check" minutes, the modem will generate a ping to the 1st server friend. If no ping response is received, the modem will initiate pings to all server friends. If no ping response is returned from the friend servers, a new IP is obtained via a modem initiated de-activate/activate sequence.

<rst timers>

0 Reset network monitoring timers upon any activity on the serial port
1 Do not reset the network monitoring timers if there is activity on the serial ports

Reference

N/A

Standard Scope

Optional

Enfora Implementation Scope Full

3.2.11.26 \$NETMON

Monitor Network Availability (continued)

Notes

This command is intended for extreme activation conditions, such as repeatedly moving in and out of coverage areas, or for modems that are required to be attached to the network continuously.

RST TIMERS parameter is only available on later firmware versions. For earlier versions and in the default configuration of later firmware versions, if the modem senses at command activity on the serial port, it will reset the timers defined in parameters <net unavail min> and <ping check>, and will not reset the modem if the timers expire. To disable serial port activity from effecting the timers, set this bit to 1

For later firmware versions, a check for valid IP has been added to the first parameter, <net_unavail_min>.

3.2.11.27. \$CGEER

Get PDP Context Activation Reject Cause

Command Function

This command is used to get the last GPRS PDP context activation reject cause.

Command Functional Group

Enfora Specific

Command Format Query Response

AT\$CGEER=?
OK

Write Format Response

N/A
N/A

Read Format Response

N/A
N/A

Execution Format Response

AT\$CGEER
\$CGEER: <reject cause>
OK

Parameter Values

< reject cause >

no PDP reject cause
insufficient resources
missing or unknown APN
unknown PDP address or PDP type
user authentication failed
activation rejected by GGSN
activation rejected, unspecified
service option not supported
requested service option not subscribed
service option temporarily out of order
NSAPI already used
protocol errors

3.2.11.27. \$CGEER	Get PDP Context Activation Reject Cause (continued)
Reference	N/A
Standard Scope	Optional
Enfora Implementation Scope	Full
Notes	Default reject cause is “no PDP reject cause” . <reject cause> is reset to this default reject cause by PDP context activation confirmed or PDP context deactivation confirmed.

3.2.11.28. \$SMSDA	Destination Address for SMS Messages
Command Function	This command allows a user to configure the phone number or email address for sending of event data.
Command Functional Group	Enfora Specific
Command Format Query Response	AT\$SMSDA=? \$SMSDA: (1 - 5),"1234...", "123.."
Write Format Response	AT\$SMSDA=< <i>index</i> >,< <i>dest addr</i> >,< <i>gateway number</i> >
Read Format Response	AT\$SMSDA? \$SMSDA: 1,"< <i>dest addr</i> >","< <i>gateway number</i> >", \$SMSDA: 2,"< <i>dest addr</i> >","< <i>gateway number</i> >", \$SMSDA: 3,"< <i>dest addr</i> >","< <i>gateway number</i> >", \$SMSDA: 4,"< <i>dest addr</i> >","< <i>gateway number</i> >", \$SMSDA: 5,"< <i>dest addr</i> >","< <i>gateway number</i> >", OK
Execution Format Response	N/A
Parameter Values	
< <i>index</i> >	1 – 5 defines the index number for destination address
< <i>dest addr</i> >	38 characters or less phone number or email address
< <i>gateway</i> >	7 characters or less gateway number for email address
Reference	N/A
Standard Scope	Optional

3.2.11.28 \$SMSDA

**Destination Address for SMS messages
(continued)**

Enfora Implementation Scope Full

Notes

The **gateway number** is provided by the Network Provider (ex: AT&T, Cingular, etc) and is only used for sending email over SMS. It is not required if you are sending SMS to a phone number.

If using this command with a international number (preceded by a "+") it may be required to change the command `at+csc=145`.

An `AT$EVENT` command has to be set to send a GPS message over SMS.

3.2.11.29. \$UDPMSG

Send and Receive UDP Messages

Command Function

This command allows the user to send UDP/IP data packets while in AT command mode. The destination IP address is set by the \$friend command while the port number is set by the \$udpapi command. The modem must have a GPRS context activation established (\$areg=2 command setting). Incoming messages addressed to the modem's IP and port specified in AT\$UDPAPI will be displayed on the serial port with the unsolicited response \$UDPMSG: followed by the message.

Command Functional Group

Enfora Specific

Command Format Query Response

AT\$UDPMSG=?
(0-1),(0-2),("data")
OK

Write Format

AT\$UDPMSG=<format>,<type>,<data>
<cr>

Response

OK

Read Format Response

AT\$ UDPMSG?
OK

Execution Format Response

N/A
N/A

Parameter Values

<format>

- 0** <data> is an ASCII string (i.e.: "is this is my data")
- 1** <data> is an ASCII-Hex bytes (i.e.: 050a25)

3.2.11.29 \$UDPMSG

Send and Receive UDP Messages (continued)

<type>

0 message will only be sent to the first IP address in the friend's list and to port number mentioned by the \$UDPAPI command

1 message will be sent via the ACK method (controlled by \$ACKTM command) to the IP address listed in \$FRIEND and port number listed by \$UDPAPI command

2 message will be sent to all IP address in \$FRIEND command at port number listed by \$UDPAPI command.

<data>

"ABCD" (Data to be transmitted in quotes)
(NOTE: HEX format data shall always be entered as two ASCII characters per byte. ex: 0x5 should be entered as 05)

Reference

N/A

Standard Scope

Optional

Enfora Implementation Scope

Full

Notes

Data received from OTA shall be sent to the modem's serial port as:

\$UDPMSG: <text> (ASCII or Binary data)

(NOTE: Binary message will be displayed as two ASCII Hex characters

<data> field from the at\$udpmsg command will be sent to IP address(es) listed in the \$FRIEND command and at port number defined by \$UDPAPI command.

3.2.11.29 \$UDPMSG

Send and Receive UDP Messages (continued)

<data> sent or received OTA shall be appended with a 4-byte UDP-API header as follows:

Bytes 0 - 1: First 2 bytes of <data> field

Byte 2: 0x06 for ASCII data type or 0x07 for Binary data type

Byte 3: reserved

Byte 4 - n: <data> minus the first two bytes

* A minimum of 2 and maximum of 250 ASCII characters are support. For HEX, a minimum of 2 and maximum of 125 bytes are supported.

3.2.11.30. \$LUPREJ

Get LUP Reject Cause

Command Function

This command is used to get the last Location Area Update cause.

Command Functional Group

Enfora Specific

Command Format Query Response

AT\$LUPREJ=?
\$LUPREJ: (0,1)

Write Format Response

N/A
N/A

Read Format Response

N/A
N/A

Execution Format Response

AT\$LUPREJ
\$LUPREJ: <output>,<cause>,<MCC/MNC>
OK

Parameter Values

<cause>

Location Area Update reject cause. See notes section for reject codes.

<MCC/MNC>

Mobile network that issued the Reject

Reference

N/A

Standard Scope

Optional

Enfora Implementation Scope

Full

3.2.11.30 \$LUPREJ

Get LUP Reject Cause (continued)

Notes

LUP Reject codes:

02	RC_IMSI_IN_HLR
03	RC_ILLEGAL_MS
04	RC_IMSI_IN_VLR
05	RC_IMEI_NOT_ACCEPTED
06	RC_ILLEGAL_ME
11	RC_PLMN_NOT_ALLOWED
12	RC_LA_NOT_ALLOWED
13	RC_ROAMING_NOT_ALLOWED
17	RC_NETWORK_FAILURE
22	RC_CONGETION
32	RC_SERVICE_NOT_SUPPORTED
33	RC_SERVICE_NOT_SUBSCRIBED
34	RC_SERVICE_ORDER
38	RC_IDENTIFIY
95	RC_INCORRECT_MESSAGE
96	RC_INVALID_MAND_MESSAGE
97	RC_MESSAGE_TYPE_NOT_IMPLM
98	RC_MESSAGE_TYPE_INCOMPAT
99	RC_IE_NOT_IMPLM
100	RC_CONDITIONAL_IE
101	RC_MESSAGE_INCOMPAT
111	RC_UNSPECIFIED

Examples

AT\$LUPREJ

\$LUPREJ: 0,13,310260

Network 310260 (TMO) reject the Location Area Update for roaming not allowed

3.2.11.31. \$MSGSEND

Message Send

Command Function

The \$MSGSEND command has been created to allow sending of data from one mode to another.

Command Functional Group

Enfora Specific

Command Format Query Response

AT\$MSGSEND=?
\$MSGSEND: (0-4),("ASCII DATA")
OK

Write Format Response

N/A
N/A

Read Format Response

N/A
N/A

Execution Format Response

AT\$MSGSEND=<destination>,<"data">
OK

Parameter Values

<destination>

0 – 4 (possible Valid Values)
0 = <"data"> is sent out the serial port
1 = <"data"> is sent to all SMS addresses listed in AT\$SMSDA command.
2 = <"data"> is sent via GPRS to first IP address, configured as server, in AT\$FRIEND command and port number defined by AT\$UDPAPI command
3 = <"data"> is sent via GPRS to IP address and Port number listed in the AT\$PADDST command
4 = <"data"> is sent via GPRS to first IP address, configured as server, in AT\$FRIEND command and port number for TCP API values

<"data">

a maximum of 50 bytes ASCII characters

3.2.11.31 \$MSGSEND

Message Send (continued)

Reference

Standard Scope

Optional

Enfora Implementation Scope

Full

Notes

N/A

3.2.11.32. \$LOCI	Location Information Configuration
Command Function	This command allows the user to enable storage of the GSM LOCI info in the modem NVMEM
Command Functional Group	Enfora Specific
Command Format Query Response	AT\$LOCI=? (0-1) OK
Write Format	AT\$LOCI=<mode> <cr>
Response	OK
Read Format Response	AT\$ LOCI? \$LOCI: <mode>,<IMSI>,<TMSI>,<LAI>,<TMSI Time>,<LOC UPDATE STATUS> OK
Execution Format Response	N/A N/A
Parameter Values	
<fmode>	0 GSM LOCI information is stored in the SIM 1 GSM LOCI information is stored in the Modem
Reference	N/A
Standard Scope	Optional
Enfora Implementation Scope	Full
Notes:	The GSM LOCI is saved in non-volatile memory every time the SIM's GSM LOCI is updated. AT&W is not needed to save the settings.

3.2.11.33. \$OFF

Power off command

Command Function

This command allows the user to perform a software-controlled shutdown. The modem gracefully deregisters from the network before powering down so it may take a few seconds before current consumption decreases. Requires a pulse on the PWR_CTRL or RESET pin to wake the unit back up.

Command Functional Group

Enfora Specific

Command Format Query Response

N/A
N/A

Write Format Response

N/A
N/A

Read Format Response

N/A
N/A

Execution Format Response

AT\$OFF
None, unit powers down

Parameter Values

None

Reference

N/A

Standard Scope

Optional

Enfora Implementation Scope

Full

Notes

Refer to GSM0000AN020 for more details.

3.2.11.34. \$OFFDLY

Power off delay

Command Function

This command allows the user to configure the minimum time that the PWR_CTRL signal must be low before the module recognizes the signal as a power off command. This delay can be considered as a software debounce time for the PWR_CTRL signal.

If the PWR_CTRL signal is held low for longer than the time specified by \$OFFDLY, then the modem performs a software-controlled shutdown. The modem gracefully deregisters from the network before powering down so it may take a few seconds before current consumption decreases. Requires a pulse on the PWR_CTRL or RESET pin to wake the unit back up.

Command Functional Group

Enfora Specific

Command Format Query Response

AT\$OFFDLY=?
\$OFFDLY: (0,100-250 msec)
OK

Write Format Response

AT\$OFFDLY=<delay>
OK

Read Format Response

AT\$OFFDLY?
\$OFFDLY: <delay>

Execution Format Response

N/A
N/A

3.2.11.34 \$OFFDLY

**Power Off Delay
(continued)**

Parameter Values

< delay >

Delay time in milliseconds

0 = disable power down via PWR_CTRL signal.

100 to 250 = enable power down command via PWR_CTRL signal after signal is low for specified time in milliseconds.

Reference

N/A

Standard Scope

Optional

Enfora Implementation Scope

Full

Notes

Refer to GSM0000AN020 for more details.

3.2.11.35. \$PWRMSG

Power On Message

Command Function

This command allows the user to change the default Power-Up message.

Command Functional Group

Enfora Specific

Command Format Query Response

AT\$PWRMSG=?
\$PWRMSG: "message"

Write Format Response

AT\$PWRMSG="new pwr up message"
OK

Read Format Response

AT\$PWRMSG?
\$PWRMSG: "AT-Command Interpreter Ready"

Execution Format Response

N/A
N/A

Parameter Values**<message>**

New Power up Message

Reference

N/A

Standard Scope

Optional

Enfora Implementation Scope

Full

Notes

N/A

Example:

```
AT$PWRMSG ="Ready To Go"  
OK  
AT$PWRMSG?  
$PWRMSG: "Ready To Go"  
AT$RESET  
Ready To Go
```

3.2.11.36. %CSTAT	Unsolicited SIM status
Command Function	Enable/disable unsolicited status reports from SIM processes
Command Functional Group	Enfora Specific
Command Format Query Response	AT%CSTAT=? %CSTAT: (0,1)
Write Format Response	AT%CSTAT=<mode> OK
Read Format Response	AT%CSTAT? %CSTAT: <mode> OK
Execution Format Response	N/A N/A
Parameter Values	
<mode>	0 = disabled 1 = enabled
Reference	None
Standard Scope	N/A
Enfora Implementation Scope	N/A
Notes	N/A

3.2.11.37. \$SRN	Module Serial Number
Command Function	This command will return the serial number of the module.
Command Functional Group	Enfora Specific
Command Format Query Response	AT\$SRN=? OK
Write Format Response	N/A N/A
Read Format Response	N/A N/A
Execution Format Response	AT\$SRN \$SRN: xxxxxxxxxxxxxx
Parameter Values	N/A
Reference	N/A
Standard Scope	N/A
Enfora Implementation Scope	N/A
Notes	Returned values are unique for each module

3.2.11.38. \$USRVAL	User Value
\$USRVAL	Script Version
Command Function	Allows the user to store a value in flash memory which can later be retrieved.
Command Functional Group	Enfora Specific
Command Format Query Response	AT\$USRVAL=? OK
Write Format Response	AT\$USRVAL=<hex value> OK
Read Format Response	AT\$USRVAL? \$USRVAL:(hex value) OK
Execution Format Response	N/A N/A
Parameter Values	
<hexval>	(0-FFFFFFFF)
Reference	N/A
Standard Scope	Optional
Enfora Implementation Scope	Full

Appendix A – Result Codes

Result Codes

Modem Verbose Response	Modem Terse Response	Definition
OK	0	command successful completed; ready
CONNECT	1	entering data transfer state
RING	2	Ring indication detected
NO CARRIER	3	connection terminated
ERROR	4	Command abnormally completed, ready
NO DIALTONE	6	Dial tone not found
BUSY	7	Busy signal detected
NO ANSWER	8	connection completion timeout

Unsolicited Result Codes

Result Code	Definition	
+CCCM: <ccm>	Current call meter value	AT+CACM=1
+CCWA: <number>,<type> ,<class>[,<alpha>]	Call Waiting Status	AT+CCWA=1
+CLAV: <code>	ME Language Change	AT+CLAE=1
+CLIP: <number> ,<type>[,<subaddr> ,<satype>[,<alpha>]]	Calling Line Identification Presentation	AT+CLIP=1
+CME ERROR: <err>	ME Error Result Code	AT+CMEE=x
+COLP: <number> ,<type>[,<subaddr> ,<satype>[,<alpha>]]	Connected Line Identification Presentation	AT+COLP=1
+CR: <type>	Service Reporting Control	AT+CR=1
+CREG: <stat>[,<lac>,<ci>]	Registration status indication	AT+CREG=1
+CRING: <type>	Incoming Call Indication	AT+CRIC=1
+CSSI: <code1>[,<index>]	Supplementary Services Result Code	AT+CSSN=1,1
+CSSU: <code2> ,<index>[,<number> ,<type>[,<subaddr>,<satype>]]]	Supplementary Services Result Code	AT+CSSN=1,1
+CUSD: <m>[,<str>,<dcs>]	Indication of Incoming USSD String	AT+CUSD=1
+CGREG: <stat>[,<lac>,<ci>]	GPRS Registration Status	AT+CGREG=1

SMS Unsolicited Result Codes

Result Code	Definition	AT Command
+CMTI: <mem>,<index>	Indication of new short message	AT+CNMI=1,1
+CMT: <length><CR><LF><pdu>	Short Message output Directly to TE (PDU mode)	AT+CNMI=1,2
+CBM: <sn>,<mid>,<dc>,<page>,<pages><CR><LF><data>	Incoming Cell Broadcast Message routed directly to TE	AT+CNMI=1,0,2
+CDS: <length><CR><LF><pdu>	SMS status report routed directly to the TE	AT+CNMI=1,0,0,1, AT+CSMP=49,

SAT Application Toolkit Result Codes

Result Code	Definition	AT Command
%SATI: <satCmd>	Indication of SAT command	AT%SATC=1
%SATE: <satRsp>	Indication of SAT envelope response	AT%SATC=1
%SATA: <rdl> (<rdl> redial timeout for the call in milliseconds.)	SAT pending call alert	AT%SATC=1
%SATN: <satNtfy> (<satNtfy> commands or responses sent my the ME to SIM or handled by the ME.)	Notification of SAT commands and responses sent by ACI	AT%SATC=1

Appendix B – Error Codes

General Error Codes

Modem Numeric Response	Modem Verbose Response
0	phone failure
1	no connection to phone
2	phone-adaptor link reserved
3	operation not allowed
4	operation not supported
5	PH-SIM PIN required
6	PH-FSIM PIN required
7	PH-FSIM PUK required
10	SIM not inserted
11	SIM PIN required
12	SIM PUK required
13	SIM failure
14	SIM busy
15	SIM wrong
16	incorrect password
17	SIM PIN2 required
18	SIM PUK2 required
20	memory full
21	invalid index
22	not found
23	memory failure
24	text string too long
25	invalid characters in text string
26	dial string too long
27	invalid characters in dial string
30	no network service
31	network timeout
32	network not allowed - emergency calls only
40	network personalization PIN required
40	network personalization PIN required
41	network personalization PUK required
42	network subset personalization PIN required
43	network subset personalization PUK required
44	service provider personalization PIN required
44	service provider personalization PIN required
45	service provider personalization PUK required

Modem Numeric Response	Modem Verbose Response
46	corporate personalization PIN required
47	corporate personalization PUK required
48	SIM personalization PIN required
49	SIM personalization PUK required
100	unknown

GPRS Error Codes

Modem Numeric Response	Modem Verbose Response
25 (19)	LLC or SMDCP error
26 (1a)	Insufficient resources
27 (1b)	Unknown or missing access point name
28 (1c)	Unknown PDP address or PDP type
29 (1d)	User authentication failed
30 (1e)	Activation reject by GGSN
31 (1f)	Activation rejected, unspecified
32 (20)	Service option not supported
33 (21)	Requested service option not subscribed
34 (22)	Service option temporarily out of order
35 (23)	NSAPI already used
36 (24)	Regular PDP context deactivation
37 (25)	QoS not accepted
38 (26)	Network Failure
39 (27)	Reactivation requested
40 (28)	Feature not supported
103	Illegal MS
106	Illegal ME
107	GPRS services not allowed
111	PLMN not allowed
112	Location area not allowed
113	Roaming not allowed in this location area
132	service option not supported
133	requested service option not subscribed
134	service option temporarily out of order
148	unspecified GPRS error
149	PDP authentication failure
150	invalid mobile class

SMS Error Codes

Modem Numeric Response	Modem Verbose Response
1	unassigned (unallocated) number
8	operator determined barring
10	call barred
21	short message transfer rejected
27	destination out of service
28	unidentified subscriber
29	facility rejected
30	unknown subscriber
38	network out of order
41	temporary failure
42	congestion
47	resources unavailable, unspecified
50	requested facility not subscribed
69	requested facility not implemented
81	invalid short message transfer ref. value
95	invalid message, unspecified
96	invalid mandatory information
97	message type non-existent or not implemented
98	message not compatible with SM protocol state
99	information element non-existent or not impl.
111	protocol error, unspecified
127	interworking, unspecified
128	telematic interworking not supported
129	short message type 0 not supported
130	cannot replace short message
143	unspecified TP-PID error
144	data coding scheme (alphabet) not supported
145	message class not supported
159	unspecified TP-DCS error
160	command cannot be actioned
161	command unsupported
175	unspecified TP-Command error
176	TPDU not supported
192	SC busy
193	no SC subscription
194	SC system failure
195	invalid SME address
196	destination SME barred

Modem Numeric Response	Modem Verbose Response
197	SM rejected-duplicate SM
208	SIM SMS storage full
209	no SMS storage capability in SIM
210	error in MS
211	memory capacity exceeded
255	unspecified error cause
300	ME failure
301	SMS service of ME reserved
302	operation not allowed
303	operation not supported
304	invalid PDU mode parameter
305	invalid text mode parameter
310	SIM not inserted
311	SIM PIN required
312	PH-SIM PIN required
313	SIM failure
314	SIM busy
315	SIM wrong
316	SIM PUK required
317	SIM PIN2 required
318	SIM PUK2 required
320	memory failure
321	invalid memory index
322	memory full
330	SMSC address unknown
331	no network service
332	network timeout
340	no +CNMA acknowledgement expected
500	unknown error
512	failed to abort
255	other error

Release Causes for Extended Error Reporting (+CEER)

Error Description	
-1,255	no error
1	unassigned number
3	no route to destination
6	channel unacceptable
8	operator determined barring
16	normal call clearing
17	user busy
18	no user responding
19	user alerting
21	call rejected
22	number changed
26	non selected user clearing
27	destination out of order
28	invalid number format
29	facility rejected
30	response to status enquiry"
31	normal
34	no channel available
38	network out of order
41	temporary failure
42	switching equipment congestion
43	access information discarded
44	requested channel unavailable
47	resources unavailable
49	quality of service unavailable
50	requested facility unsubscribed
55	incoming calls barred within CUG
57	bearer capability not authorized
58	bearer capability not available
63	service not available
65	bearer service not implemented
68	ACM reached ACM maximum
69	facility not implemented
70	only restricted bearer cap. avail.
79	service not implemented
81	invalid TI
87	no member of CUG

Error Description	
88	incompatible destination
91	invalid transit network selection
95	incorrect message
96	invalid mandatory information
97	message type not implemented
98	message type incompatible
99	info element not implemented
100	conditional info element error
101	message incompatible
102	recovery on time expiry
101	unsuccessful GPRS attach
102	unsuccessful PDP context activation
103	GPRS detach
104	GPRS PDP context deactivation
128	NoService
202	timer 303 expiry
203	establishment failure
210	no error
211	operation failed
212	timeout
213	bearer service not compatible

Appendix C – Default AT Values

ATE Enable Command Echo

Default Value: 1
Default Value Meaning: Echo on.

ATQ Result Code Suppression

Default Value: 0
Default Value Meaning: DCE transmits result codes.

ATV Set Result Code Format Mode

Default Value: 1
Default Value Meaning: Information response:
<CR><LF><text><CR><LF>

ATX Set ATD Call Result Code Selection and Call Progress Monitoring Control

Default Value: 0
Default Value Meaning: Dial tone and busy detection are disabled.

AT&C Set circuit Data Carrier Detect (DCD) function mode

Default Value: 1
Default Value Meaning: DCD matches the state of the remote modem's carrier.

AT&D Set Circuit Data Terminal Ready (DTR) Function Mode

Default Value: 0
Default Value Meaning: TA ignores status on DTR.

ATS0 Set Number of Rings Before Automatically Answering the Call

Default Value: 0
Default Value Meaning: Automatic answering is disabled.

ATS3 Write Command Line Termination Character

Default Value: 13
Default Value Meaning: Command line terminal character is ASCII 13.

ATS4 Set Response Formatting Character

Default Value: 10
Default Value Meaning: Response formatting character is ASCII 10.

ATS5 Write Command Line Editing Character

Default Value: 8
Default Value Meaning: Command line editing character is ASCII 8.

AT+WS46 Select Wireless Network

Default Value: 12
Default Value Meaning: GSM Digital Cellular.

AT+CBST Select Bearer Service Type

Default Value: speed=7, name=0, ce=1
Default Value Meaning: Over the air baud rate is 9600, no name, non-transparent connection element.

AT+CRLP Select Radio Link Protocol Param. for Orig. Non-Transparent Data Call

Default Value: iws=61,mws=61,T1=48,N2=6
Default Value Meaning:

<iws>	0-61 Interworking window size (IWF to MS)
<mws>	0-61 Mobile window size (MS to IWF)
<T1>	48-78-255 Acknowledgement timer (T1 in 10 ms units)
<N2>	1-6-255 Re-transmission attempts N2

AT+CR Service Reporting Control

Default Value: 0
Default Value Meaning: Disable.

AT+FCLASS Fax: Select, Read or Test Service Class

Default Value: 0
Default Value Meaning: Data.

AT+CRC Set Cellular Result Codes for Incoming Call Indication

Default Value: 0
Default Value Meaning: Disable.

AT+ILRR Set TE-TA Local Rate Reporting

Default Value: 0
Default Value Meaning: Disable reporting of local port rate.

AT+IPR Set Fixed Local Rate

Default Value: 115200
Default Value Meaning: The data rate of TA serial interface is 115200.

AT+CMEE Report Mobile Equipment Error

Default Value: 0
Default Value Meaning: Disable CME Error reporting.

AT+CSMS Select Message Service

Default Value: service=0,mt=1,mo=1,bm=1
Default Value Meaning: Service=0: CSMS_SERV_GsmPh2
Mt=1: mobile terminated message enable
Mo=1: Mobile originated message enable
Bm=1: broadcast type message enable

AT+CMGF Select SMS Message Format

Default Value: 1
Default Value Meaning: Text Mode.

AT+CNMI New SMS Message Indications

Default Value: mode=1,mt=1,bm=0,ds=0,bfr=0
Default Value Meaning: Mode=1: Discard indication and reject new received message unsolicited result codes when TA-TE link is reserved Mt=0: prefer memory under different class
Mt=1: If SMS-DELIVER is stored into ME/TA, indication of the memory location is routed to the TE using unsolicited result code:+CMTI: <mem>,<index>
Bm=0: no CBM indications
Ds=0: no status report indications
Bfr=0: TA buffer of unsolicited result codes defined within this command is flushed to the TE when <mode>1...3 is entered

AT+CREG Network Registration

Default Value: 0
Default Value Meaning: Not registered.

AT+CGREG Network Registration

Default Value: 0
Default Value Meaning: Not registered.

AT+CLIP Calling Line Identification Presentation

Default Value: 0
Default Value Meaning: Calling Line Identification Presentation disabled.

AT+CLIR Calling Line Identification Restriction

Default Value: 0
Default Value Meaning: Calling Line Identification Restriction disabled.

AT+COLP Connected Line Identification Presentation

Default Value: 0
Default Value Meaning: Connected Line Identification Presentation disabled.

AT+COPS Operator Selection

Default Value: mode=0, format=0, oper="operator"
Default Value Meaning: Mode=0: Automatic selection
Format=0: long format alphanumeric
Oper="operator", the name of the operator

AT+CSCS Select Character Set

Default Value: "PCCP437"
Default Value Meaning: Character set equals PCCP437.

AT+CSNS Single Numbering Scheme

Default Value: 0
Default Value Meaning: Single numbering scheme set to voice.

AT+CAOC Advice of Charge

Default Value: 1
Default Value Meaning: Advice of charge deactivated.

AT+CSSN Supplementary Services Notification

Default Value: 0,0
Default Value Meaning: Supplementary Service notifications disabled.

AT+CPBS Select Phonebook Memory Storage

Default Value: "AD"
Default Value Meaning: Phonebook storage facility set to abbreviated dialing.

AT+CLAE Set Language Event

Default Value: 1
Default Value Meaning: Language Event enabled.

AT+CLAN Set Language

Default Value: "en"
Default Value Meaning: English.

AT+CPMS Preferred Message Storage

Default Value: "SM","SM","SM"
Default Value Meaning: Store short messages in SIM.

AT+CSDH Show Text Mode Parameters

Default Value: 0
Default Value Meaning: Do not show header values.

AT+IFC Local Flow Control

Default Value: 2,2
Default Value Meaning: Hardware flow control enabled.

AT+ICF Character Framing

Default Value: 3
Default Value Meaning: 8 bits, 1 stop bit, parity ignored.

AT+CGDCONT Define PDP Context

Default Value:
Default Value Meaning: No context defined.

AT+CGQREQ Quality of Service (requested)

Default Value: 1,0,0,0,0,0
Default Value Meaning: Subscribed.

AT+CGQMIN Quality of Service (minimum)

Default Value: 1,0,0,0,0,0
Default Value Meaning: Subscribed.

AT+CGAUTO Automatic Response to Network Request of PDP Context Activation

Default Value: 3
Default Value Meaning: Modem Capability mode, GPRS and Circuit switched calls.

AT+CGCLASS GPRS Mobile Station Class

Default Value: "B"
Default Value Meaning: Class B.

AT+CGEREP GPRS Events Reporting

Default Value: 0,0
Default Value Meaning: Reporting disabled.

AT+CGSMS Select Service for MO SMS

Default Value: 3
Default Value Meaning: Circuit Switched Preferred.

AT%CGPPP PPP Negotiation Selection

Default Value: 3
Default Value Meaning: Automatic authentication.

AT+CMOD Call Mode

Default Value: 0
Default Value Meaning: Single call mode service.

AT+CFUN Set Phone Functionality

Default Value: 1
Default Value Meaning: Minimum functionality.

AT+CMUT Mute Control

Default Value: 0
Default Value Meaning: Muting off.

AT+CSVM Set Voicemail Number

Default Value: 0,"",129
Default Value Meaning: No voicemail number entered.

AT+CSTA Select Type of Address

Default Value: 129
Default Value Meaning: Dialing string without International Access Code character "+".

AT+CCUG Closed User Group

Default Value: 0,0,0
Default Value Meaning: Closed User Group disabled.

AT+CCWA Call Waiting

Default Value: 0
Default Value Meaning: Call Waiting disabled.

AT+CUSD Unstructured Supplementary Service

Default Value: 0
Default Value Meaning: Unstructured Supplementary Service disabled.

AT+CPAS Phone Activity Status

Default Value: 0
Default Value Meaning: Ready (ME allows commands from TA/TE).

AT+CCWE Call Meter Maximum Event

Default Value: 0
Default Value Meaning: Call Meter Warning Event disabled.

AT+CGDATA Enter Data State

Default Value: PPP
Default Value Meaning: Use PPP as PDP context activation protocol.

AT%CGAATT Automatic Attach and Detach Mode

Default Value: 0,1
Default Value Meaning: Automated GPRS Attach, manual GPRS detach.

AT\$AREG Set Auto Registration

Default Value: 1
Default Value Meaning: Auto registration set to on.

AT\$BAT Battery Status Query

Default Value: 0,0,0
Default Value Meaning: No battery detected.

AT\$UDPAPI Modem API Address

Default Value: "199.245.180.013",1720
Default Value Meaning: Default UDP API IP and Port.

AT\$APIPWD API Password

Default Value: ""
Default Value Meaning: No password defined.

AT\$FRIEND Modem Friends (NOT affected by AT&F)

Default Value: 1,0,"0.0.0.0".....10,0,"0.0.0.0"
Default Value Meaning: No friends defined.

AT\$HOSTIF Configure Host to Modem Interface

Default Value: 0
Default Value Meaning: Normal network PPP connection.

AT\$MDMID Modem ID

Default Value: ""
Default Value Meaning: No modem id defined.

AT\$WAKEUP Modem to Server Wakeup/Keep Alive

Default Value: 0,0
Default Value Meaning: No wakeup or keep alive messages sent.

AT\$EVENT User Defined Input/Output

Default Value: evgrp evtyp evcat p1 p2
Default Value Meaning: No events populated.

AT\$EVTIM(x) User Defined Input Event Timers

Default Value: 0
Default Value Meaning: No event timers populated.

AT\$ACKTM Acknowledgment Message Period & Retry Number

Default Value: 0,0
Default Value Meaning: No acknowledgment event count and period defined.

AT\$PADBLK PAD Block Size

Default Value: 512
Default Value Meaning: PAD block size.

AT\$PADBS PAD Backspace Character

Default Value: 08
Default Value Meaning: PAD backspace character is backspace key.

AT\$PADFWD PAD Forward Character

Default Value: 0D
Default Value Meaning: PAD forwarding character is carriage return.

AT\$PADTO PAD Timeout Value

Default Value: 50
Default Value Meaning: PAD forwarding timeout is 5 seconds.

AT\$PADDST PAD Destination IP/Port

Default Value: 0.0.0.0.,0
Default Value Meaning: No PAD destination IP and port defined.

AT\$PADSRC PAD Source Port

Default Value: 0
Default Value Meaning: No PAD source port defined.

AT\$PADCMD PAD Command Features

Default Value: 1B
Default Value Meaning: All PAD features enabled.

AT\$ACTIVE TCP PAD State

Default Value: 1
Default Value Meaning: Active/client mode.

AT\$CONNTO TCP PAD Connection Timeout

Default Value: 60
Default Value Meaning: TCP Connection timer 1 minute.

AT\$IDLETO TCP PAD Idle Timeout

Default Value: 120
Default Value Meaning: TCP Idle timer 2 minutes.

AT\$VGR Microphone Receiver Gain

Default Value: 20
Default Value Meaning: Receive level gain is 8 dB.

AT\$VGT Speaker Transmit Gain

Default Value: 12
Default Value Meaning: Coarse transmit speaker gain is +6 dB.

AT\$VLVL Speaker Volume

Default Value: 4
Default Value Meaning: Speaker volume is set to –6 dB.

AT\$VST Sidetone Volume

Default Value: 4
Default Value Meaning: Side tone volume set to –14 dB.

AT\$IOCFG GPIO Configuration

Default Value: 11111111 11111111
Default Value Meaning: All I/O set to input, current status: all input.

AT\$IOGP(x) GPIO Bit Control

Default Value: 1
Default Value Meaning: I/O bit enabled.

AT\$IOGPA GPIO Byte Control

Default Value: 11111111 11111111
Default Value Meaning: All I/O pins enabled, current status: all enabled.

AT\$GATEWAY Gateway IP

Default Value: 0.0.0.0
Default Value Meaning: No Gateway IP defined.

AT\$VSELECT Voice Select

Default Value: 0
Default Value Meaning: Selects handset for voice

AT\$SPKCFG Set Downlink Voice Parameters

Default Value: 8,4,0
Default Value Meaning: 2 dB of gain, -6 dB of volume, filter on

AT\$PREAMP Set Uplink Voice Parameters

Default Value: 0,20,0
Default Value Meaning: 2V bias, 8 dB of gain, 0 dB of extra gain.

AT\$ESUP Echo Suppression Control

Default Value: 1,1,3,1,3
Default Value Meaning: Enable echo supp. for short echo type, echo level 18 dB, enable noise supp. at 18 dB.

AT\$TCPAPI TCP API Control

Default Value: 0
Default Value Meaning: TCP API Disabled