AT Command:
GSM2228AT001

Enfora® Mini-MT
AT Command Set Reference

Release 1.05

Enfora, Inc.
www.enfora.com

Document Title:	Enfora Mini-MT AT Command Set Reference
Version:	1.05
Date:	12 September 2008
Status:	Released
Document Control ID:	GSM2228AT001

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I. Introduction

1.01 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.

1.02 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.

1.03 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.

1.04 Revision History

Date	Rev	Author	Description
3/14/2008	1.04	Diane O'Neil	Added Enabler-IIG AT Commands from GSM0107AT001 – Revision 1.09 Added Enfora Mobile Tracker AT Commands from GSM2000AT001 – Revision 1.09
9/12/2008	1.05	Diane O'Neil	Edited $GOPMD Added Output Event 59 Edited $GPSCLR Edited Bit 25 of the Bit Field Table in $EVENT Edited Default Values of $BATTLVL, $WAKEENBL and $WAKETIME Edited Appendix B Edited input and output event tables Edited $WAKEENBL Edited $MOTTRANS Edited $BATTLVL Removed overspeed information Edited +CEER Edited $MSCLS Added $PASSWD, $KEYDLY, $KEYFNC, $GPSOSI, $SPDFILT, $WALKER Removed $EVNTRY Edited Input Event #72 Edited %CSTAT Added second parameter to $MSGSND Added $CHGOFF

1.05 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

II. 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.

2.01 Commands Specified by GSM Rec. 07.07

(a) General Commands

(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) 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.

(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.

(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).

(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.

(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).

(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.

(b) Call Control Commands

(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) 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**
<cmod>	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) 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.

(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><cmod><;>**
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
<cmod>	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

(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.

(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.

(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.

(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)

(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

- 1 — Non-transparent
- 0 — No name
- 7 — 9600 bps (V.32)

(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

(7)	**AT+ CRLP**	**Radio link protocol parameters (continued)**

Enfora Implementation Scope	Partial
Notes	N/A

(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** **1**	disable enable
<serv>	**ASYNC** **SYNC** **REL ASYNC** **REL SYNC**	asynchronous transparent synchronous transparent asynchronous non-transparent synchronous non-transparent
Reference	GSM Ref. 07.07 Chapter 6.9	
Standard Scope	Mandatory	
Enfora Implementation Scope	Full	

(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.

(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>[,ERROR DESCRIPTION]** 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

(9) AT+CEER	**Extended Error Reporting (continued)**
	7 - SMSCP **8** - SMSRP **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
<ERROR DESCRIPTION>	Optional extended error description
Reference	GSM Ref. 07.07 Chapter 6.10, Enfora Specific responses
Standard Scope	Optional
Enfora Implementation Scope	Full
Notes	N/A

(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

(10) AT+CRC	**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.

(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

(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

(c) Network Service Related Commands

(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) 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) 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	

(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

(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

(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

(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)

(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>**. Is 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 **Response**	AT+CLCK=**<fac>, <mode> [,<passwd> [, <class>]]** 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

(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)

(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" — Password
- 1 — Lock
- "PF" — Lock module to very first SIM inserted

To enable SIM PIN:

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

- "xxxx" — PIN
- 1 — Enable
- "SC" — SIM PIN

(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

(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 fro 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.

(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**>
Response	OK
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

(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.

(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**>
Response	OK
Read Format	AT+CLCKSP?
Response	SP: "<**sp_personalization_code(s)**>"**…**
Execution Format	N/A
Response	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.

(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.

(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	N/A
Response	N/A
Execution Format	N/A
Response	N/A

(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])

(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	GSM Ref. 07.07 Chapter 7.5
Standard Scope	Optional
Enfora Implementation Scope	Partial
Notes	In order to change the password, the applicable facility must be enabled. See AT+CLCK.

Example:

Enter first password for Network Personalization:

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

- "xxxx" — Password for Network Personalization
- "PN" — Network Personalization

To change SIM PIN:

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

- "yyyy" — New password
- "xxxx" — Old password
- "SC" — SIM PIN

(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

(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.

(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

(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

(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

(11) AT+COLP	**Connected Line Identification Presentation**
Command Function	This command is 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

(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

(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

(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

(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>**

(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

(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

- Forward after 5 seconds
- All Voice calls
- International number type
- Forward to this number
- Enable forwarding
- No reply

(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

(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

- 1 — Voice
- 1 — Enable Call Waiting
- 1 — Enable Result Codes

(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

(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).

(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>[,<dcs>]]] 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”
<dcs>	language parameter see GSM 03.38 - Default 15 (Language unspecified)

(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)

(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.

(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.

(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

(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

(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

(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	
<id*x*>	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

(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

(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

(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

(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.

(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*n*>	string type; operator in numeric format (see +COPS)
<alpha*n*>	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

(d) ME Control and Status Commands

(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

(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) 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.

(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

(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

(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

(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).**

(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

(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.

(5) AT+CSQ — Signal Quality and Bit Error Rate

Command Function	Execution command returns received signal strength indication **<rssi>** 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: **<rssi>**, **<ber>** OK
Parameter Values	
<rssi>	**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

(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

(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”	**A**ctive 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.

(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

(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**

(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.

(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**

(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”

(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>**

(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”

(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

(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+CAMM

Example:

AT+CACM=”1234”
└──── Password

(12) AT+CAMM — 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+CAMM**=<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.

(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	N/A
Response	N/A
Write Format	AT+CPUC=**<currency>**,**<ppu>**, **<passwd>**
Response	OK
Read Format	AT+CPUC?
Response	AT+CPUC: **" ", " "** OK
Execution Format	N/A
Response	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

(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

(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	AT+CSVM=**<mode>, <number>, <type>**
Response	OK
Read Format	AT+CSVM?
Response	+CSVM: 0, " ", 129 OK
Execution Format	N/A
Response	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

(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 des not work, contact your service provider for the correct voicemail number.

(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

(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"** Porteguese **"no"** Norwiegen **"el"** Greek **"pl"** Polish **"in"** Indonesian **"cs"** Czech **"zh"** Chinese **"ar"** Arabic

(17) AT+CLAN	**Set Language (continued)**
Reference	GSM Ref. 07.07 Chapter 8.33
Standard Scope	Optional
Enfora Implementation Scope	Full
Notes	N/A

(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	**A**T+CMUX=**<mode>,[<subset>], <port_speed>,<N1>,<T1>, <N2>,<T2>, <T3>[,<k>]**
Response	OK
Read Format	AT+CMUX?
Response	OK If in CMUX it will return the current settings
Execution Format	N/A
Response	N/A

(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

(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

(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

(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.

(e) Commands from TIA IS-101

(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) 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) 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.

(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

(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.

2.02 Commands Specified by GSM Rec. 07.05

(a) General Configuration Commands

(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) 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	AT+CPMS=?
Response	+CPMS: (“SM”), (“SM”), (“SM”) OK
Write Format	AT+CPMS=**<mem1>,<mem2>,<mem3>**
Response	+CPMS: (0-30), (0-30), (0-30) OK
Read Format	AT+CPMS?
Response	+CPMS: “SM”, (0-30), “SM”, (0-30), “SM”, (0-30) OK
Execution Format	N/A
Response	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) 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

(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.

(b) Message Configuration Commands

(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) 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>,<dcs>** 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 (de-fault 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
<dcs>	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) 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

(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

(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 <dcs>) (default is empty string); e.g. "0-3,5"
Reference	GSM Ref. 07.05 Chapter 3.3.4
Standard Scope	Optional

(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.

(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.

(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.

(c) Message Receiving and Reading Commands

(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

(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>

(1)	**AT+CNMI**	**New Message Indication to TE (continued)**
		2 New CBMs are routed directly to the TE using unsolicited result code
		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** **T**A 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) 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) 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"

(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

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

(d) Message Sending and Writing Commands

(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) 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.

(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<cntlZ>** +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.

(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.

(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.

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

(a) Generic TA Control Commands

(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) 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

(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

(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

(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

(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

(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

(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

(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).

(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

(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

(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

(13) ATS5	**Editing Character**
Command Function	Determines the character recognized by the TA as a request to delete the preceding character form 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

(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

(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	N/A
Response	N/A
Write Format	ATQ**<value>**
Response	OK
Read Format	N/A
Response	N/A
Execution Format	N/A
Response	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

(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	N/A
Response	N/A
Write Format	ATV**<value>**
Response	OK
Read Format	N/A
Response	N/A
Execution Format	N/A
Response	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

(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.

(18) AT&C — DCD Usage

Command Function	Controls the Data Carrier Detect signal.
Command Functional Group	State Control
Command Format Query	N/A
Response	N/A
Write Format	AT&C**<value>**
Response	OK
Read Format	N/A
Response	N/A
Execution Format	N/A
Response	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

(19) AT&D — DTR Usage

Command Function	This command controls the Data Terminal Ready signal.
Command Functional Group	State Control
Command Format Query	N/A
Response	N/A
Write Format	AT&D**<value>**
Response	OK
Read Format	N/A
Response	N/A
Execution Format	N/A
Response	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

(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

(20) AT+IPR	**Fixed TE-TA Data Rate (continued)**
	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.

(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.

(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	AT+IFC?
Response	+IFC: 2,2 OK
Execution Format	N/A
Response	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

(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

(b) Call Control Commands

(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) P	**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.

(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.

(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.

(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

(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.

(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.**

(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.

(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.

(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.

(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.

III. Standardized GPRS AT Commands

(a) Commands Specified by GSM Rec. 07.07

(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

(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.

(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.

(2) +CGQREQ	**Quality of Service Profile (Requested) (continued)**
Reference	GSM Ref. 07.07 Chapter 10.1.2
Standard Scope	Optional
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 into the modem prior to entering AT+CGQREQ command.

(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) +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.

(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.

(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.

(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”.

(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

(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)

(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).

(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".

(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”).

(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

(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).

(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? +CREG: **<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

(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.

(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.

(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.

(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

(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

(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

(18) +CIND Indicator Control

Command Function	Set command is used to set the values of MT indicators. Read command returns the status of MT indicators. If MT is not currently reachable, +CME ERROR: <err> is returned. Refer subclause 9.2 for <err> values. Test command returns pairs, where string value <descr> is a maximum 16 character description of the indicator and compound value is the allowed values for the indicator. If MT is not currently reachable, +CME ERROR: <err> is returned. Refer subclause 9.2 for <err> values.
Command Functional Group	
Command Format Query **Response**	AT+CIND=? +CIND: (“signal”,(0-5)),(“smsfull”,(0-1)) OK
Write Format **Response**	AT+CIND=<signal>,<smsfull> *OK*
Read Format **Response**	AT+CIND? +CIND: <signal>,<smsfull> OK
Execution Format **Response**	N/A N/A
Parameter Values .	
<signal>	signal quality (0-5)
<smsfull>	A short message memory storage in the MT has become full and a short message has been rejected (2), has

(18) +CIND	**Indicator Control (continued)**
	become full(1), or memory locations are available (0).
Reference	3GPP TS 27.GSM027 rel99 8.9
Standard Scope	Optional
Enfora Implementation Scope	Full
Notes	N/A

(19) +CMER — Mobile Termination Event Reporting

Command Function	Set command enables or disables sending of unsolicited result codes from TA to TE in the case of key pressings, display changes, and indicator state changes. <mode> controls the processing of unsolicited result codes specified within this command. <bfr> controls the effect on buffered codes when <mode> 1, 2 or 3 is entered. If setting is not supported by the MT, +CME ERROR: <err> is returned. Refer subclause 9.2 for <err> values. Test command returns the modes supported as compound values.
Command Functional Group	
Command Format Query	AT+CMER=?
Response	**+CMER: (0-2), (0-2), (0), (0-2), (0,1)**
Write Format	AT+CMER=[<mode>[,<keyp>[,<disp>[,<ind>[,<bfr>]]]]]
Response	OK
Read Format	AT+CMER?
Response	+CMER:<mode>,<keyp>,<disp>,<ind>,<bfr>
Execution Format	N/A
Response	N/A
Parameter Values	
<mode>	0 buffer unsolicited result codes in the TA; if TA result code buffer is full, codes can be buffered in some other place or the oldest ones can be discarded

(19) +CMER **Mobile Termination Event Reporting (continued)**

0 discard unsolicited result codes when TA-TE link is reserved (e.g. in on-line data mode); otherwise forward them directly to the TE.

1 buffer unsolicited result codes in the TA when TA-TE link is reserved (e.g. in on-line data mode) and flush them to the TE after reservation; otherwise forward them directly to the TE

2 forward unsolicited result codes directly to the TE; TA-TE link specific inband technique used to embed result codes and data when TA is in on-line data mode

<keyp>

0 no keypad event reporting

1 keypad event reporting using result code +CKEV: <key>,<press>. <key> indicates the key (refer IRA values defined in table in subclause "Keypad control +CKPD") and <press> if the key is pressed or released (1 for pressing and 0 for releasing). Only those key pressings, which are not caused by +CKPD shall be indicated by the TA to the TE.

NOTE 1: When this mode is enabled, corresponding result codes of all keys currently pressed should be flushed to the TA regardless of <bfr> setting.

(19) +CMER **Mobile Termination Event Reporting (continued)**

2 keypad event reporting using result code +CKEV: <key>,<press>. All key pressings shall be directed from TA to TE.

NOTE 2: When this mode is enabled, corresponding result codes of all keys currently pressed should be flushed to the TA regardless of <bfr> setting.

<disp>

0 no display event reporting

1 display event reporting using result code +CDEV: <elem>,<text>. <elem> indicates the element order number (as specified for +CDIS) and <text> is the new value of text element. Only those display events, which are not caused by +CDIS shall be indicated by the TA to the TE. Character set used in <text> is as specified by command Select TE Character Set +CSCS

2 display event reporting using result code +CDEV: <elem>,<text>. All display events shall be directed from TA to TE. Character set used in <text> is as specified by command Select TE Character Set +CSCS

(19) +CMER	**Mobile Termination Event Reporting (continued)**
<ind>	0 no indicator event reporting 1 indicator event reporting using result code +CIEV: <ind>,<value>. <ind> indicates the indicator order number (as specified for +CIND) and <value> is the new value of indicator. Only those indicator events, which are not caused by +CIND shall be indicated by the TA to the TE 2 indicator event reporting using result code +CIEV: <ind>,<value>. All indicator events shall be directed from TA to TE
<bfr>	0 TA buffer of unsolicited result codes defined within this command is cleared when <mode> 1...3 is entered 1 TA buffer of unsolicited result codes defined within this command is flushed to the TE when <mode> 1...3 is entered (OK response shall be given before flushing the codes)
Reference	3GPP TS 27.GSM027 rel99 8.10
Standard Scope	Mandatory
Enfora Implementation Scope	Full
Notes	N/A

3.02 Enfora Specific Commands

(a) SIM Toolkit Commands

(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.

(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)

(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 bye 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) %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 bye 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)

(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)

(b) Basic Audio Commands

(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.

(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) $VLVL	**Speaker Volume**
Command Function	This command is used to set the speaker volume
Command Functional Group	Enfora Specific
Command Format Query Response	AT$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

(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

(c) Advanced Audio Commands

(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

(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).

(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

(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) $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) $ESUP	**Echo Suppression Control (continued)**
< noise level >	**0** => no limit **1 =**> 6 dB **2 =**> 12 dB **3 =**> 18 dB
Reference	N/A
Standard Scope	Optional
Enfora Implementation Scope	Full
Notes	Currently AT$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.

(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.

(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.

(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.

(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$SPKCFG=12,5,0	Max gain/volume with the filter enabled.
AT$SPKCFG=12,0,0	Downlink voice is muted.
AT$SPKCFG=8,4,1	Less than optimal voice quality with filter disabled.

(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

(d) TCP API Commands

(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=? $TCPAPI: (0-1) OK
Write Format Response	AT$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

(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

(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) $TCPRETRYTO	**TCP API Retry Timeout**
Command Function	Specifies the number of seconds without receiving a TCP level ACK that will cause the connection to be closed.
Command Functional Group	Enfora Specific
Command Format Query Response	AT$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.

(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.

(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$TCPRESTRT)
<Connection Timeout>	TCP API connection timeout
<Idle Timeout>	TCP API idle timeout
<Socket Errors>	TCP API socket errors

(5) $TCPSTATS	TCP API Statistics (continued)
Reference	
Standard Scope	Optional
Enfora Implementation Scope	Full
Notes	AT$TCPSTATS=0 will clear all TCP API statistics.

(6) $TCPRESTRT	TCP API Restart
Command Function	If a connection exists, it is dropped and a new connection is attempted starting at the beginning of the Friend list.
Command Functional Group	Enfora Specific
Command Format Query Response	AT$TCPRESTRT=? OK
Write Format	AT$TCPRESTRT 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

(e) UDP API Commands

(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

(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.

(f) Message Log Commands

(1) $MSGLOGCL — Message Log Clear

Command Function	The $MSGLOGCL command erases the log file.
Command Functional Group	
Command Format Query	N/A
Response	N/A
Write Format	N/A
Response	N/A
Read Format	N/A
Response	N/A
Execution Format	AT$MSGLOGCL
Response	OK
Parameter Values	None
Reference Standard Scope	
Enfora Implementation Scope	
Notes	

(2) $MSGLOGDMP	**Dump Unsent Messages to Serial Port**
Command Function	This command allows the user to dump the contents of the unsent messages to the serial port. This command is non-destructive in that it does not actually remove the messages from the queue.
Command Functional Group	Enfora Specific
Command Format Query Response	AT$MSGLOGDMP=? $MSGLOGDMP:(0-3),(0-1),(1-83) OK
Write Format	AT$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

(2) $MSGLOGDMP — **Dump unsent messages to serial port (continued)**

<format>	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. This feature is available in software version 0.7.8, and later.

(3) $MSGLOGEN — Message Log Enable

Command Function	The $MSGLOGEN command has been created to enable or disable saving GPS data generated via the event engine in modem's memory
Command Functional Group	
Command Format Query Response	AT$MSGLOGEN=? $MSGLOGEN: (0-1) OK
Write Format Response	AT$MSLOGEN=<**setting>** OK
Read Format Response	AT$MSGLOGEN? $MSGLOGEN: **<setting>**
Execution Format Response	
Parameter Values	
<setting> =	**0 – 1** (possible valid values) **0** = Disable message logging (default). Event data is sent to the remote server upon occurrence. **1** = Enable message logging. Event data has to be read via AT$MSGLOGEN command or when AT$MSGLOGEN=0 is sent.
Reference Standard Scope	
Enfora Implementation Scope	

(3) $MSGLOGEN **Message Log Enable (continued)**

Notes

If AT$MSGLOGEN command was enabled and any unsent messages exist in memory, then the unsent data will be sent to the remote server when data logging is disabled.

(4) $MSGLOGRD	**Message Log Read Data**
Command Function	The $MSGLOGRD command has been created to read data from memory.
Command Functional Group	
Command Format Query Response	AT$MSGLOGRD=? $MSGLOGRD: (0-2),(0-x),(0-y) OK
Write Format Response	N/A N/A
Read Format Response	N/A N/A
Execution Format Response	AT$MSGLOGRD? $MSGLOGRD: **<queue>,<number of messages>,<starting index>** OK
Parameter Values	
<queue> =	**0 – 2 (possible valid values).** 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

(4) $MSGLOGRD **Message Log Read Data (continued)**

<number of messages> = x
x = total number of messages one desires to read from the memory. A user can choose to read 1 message in which case x = 1 or read all messages in which case x = 65535.

<starting index> = y
y = starting index number of messages that are stored in the memory.

NOTE: y cannot be greater than maximum number of stored messages.

Reference
Standard Scope

Enfora Implementation Scope

Notes

AT$MSGLOGRD? command returns 8 values. The first two values correspond to data stored for the GPRS queue. The next two values correspond to data stored for SMS AS BACKUP queue, and the last two values correspond to data stored for SMS queue

- Each value is comma (,) delimited.
- The first value of any queue represents “Total Number of Unread Messages”. This value can be used as the <number of messages> field while reading messages
- The second value of any queue represents: “Total Number of Messages Stored for that Queue”. Subtract the “Total Number of Unread Messages” from the “Total Number of Messages Stored for that Queue” and use that as the <starting

(4) $MSGLOGRD

Message Log Read Data (continued)

index> of where to read data from in the memory.

(5) $MSGLOGAL	**Message Log Alarm**
Command Function	This command allows a user to set trigger conditions and send a message when conditions are violated
Command Functional Group	Enfora Specific
Command Format Query Response	AT$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.

(5) $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**.

(g) GPS Commands

(1) $GEOFNC	**Geo fencing a circular area**
Command Function	This command allows a user to send a GPS message when the device moves in or out of a geographical area. The distance is measured in meters.
Command Functional Group	Enfora Specific
Command Format Query Response	AT$GEOFNC=? $GEOFNC: (1 – 25),(0 - 100000),(-90 - +90),(-180 - +180) OK
Write Format Response	AT$GEOFNC=<***fenceNum***>,<***radius***>,<***latitude***>,<***longitude***> OK
Read Format Response	AT$GEOFNC? $GEOFNC: <***fenceNum***>,<***radius***>,<***latitude***>,<***longitude***> OK
Execution Format Response	N/A
Parameter Values	
<***fenceNum***>	Defines the fence number
<***radius***>	Defines radius of the circle from given Latitude and Longitude coordinates
<***latitude***>	Defines the latitude for the center point of a circle
<***longitude***>	Defines the longitude for the center point of a circle
Reference	N/A
Standard Scope	Optional

(1) $GEOFNC	**Geo fencing a circular area (continued)**
Enfora Implementation Scope	Full
Notes	An AT$EVENT command has to be set to send a GPS message to the remote host when entering or exiting the fenced area. See the MT-G Users Manual for example.

(2) $GFDBNC — Set Geofence Debounce Count

Command Function	This command allows the user to set the # of consecutive geofence positions required to trigger an 'inside geofence' or 'outside geofence' event.
Command Functional Group	Enfora Specific
Command Format Query Response	AT$GFDBNC=? $GFDBNC:(0-250, 0-250) OK
Write Format	AT$GFDBNC=**<out_cnt>, <in_cnt>**
Response	OK
Read Format Response	AT$GFDBNC? $GFDBNC: <out_cnt>, <in_cnt> OK
Execution Format Response	N/A
Parameter Values	
<out_cnt>	consecutive GPS position reports outside a geofence required to trigger '0' condition for geofence input event (see $EVENT)
<in_cnt>	consecutive GPS position reports inside a geofence required to trigger '1' condition for geofence input event (see $EVENT)
Reference	N/A
Standard Scope	Optional

(2) $GFDBNC **Set geofence debounce count (continued)**

Enfora Implementation Scope	Full
Notes	The GPS reporting interval varies depending on the product. For the MTGL, the updates are sent once a second so the $GFDBNC counts correspond to seconds. For the MT-uL, the updates are sent once every two seconds.

(3) $GOPMD GPS Receiver Operation Mode

Command Function	This command allows a user to set the operation mode for the GPS receiver.
Command Functional Group	Enfora Specific
Command Format Query	AT$GOPMD=? $GOPMD: (0-3),(1-3),(0,2-7200) OK
Write Format Response	AT$GOPMD=<***option***>,<***fixMode***>,<***reportInterval***> OK
Read Format Response	AT$GOPMD? $GOPMD: =<***option***>,<***fixMode***>,<***reportInterval***> OK
Execution Format Response	N/A
Parameter Values	
<***option***>	0 – Turn GPS receiver Off 1 – Autonomous 2 – Reserved 3 – Enhanced Autonomous
<***fixMode***>	1 – One-Time Fix 2 – Low Power Navigation 3 – Timed Interval
<***reportInterval***>	0 – One-Time Fix or Native Mode 2 – 7200 Time in seconds at which the NMEA GPS data will be generated in Timed Interval mode NOTE: A value of 0 when fixMode = Timed Interval Mode is the same as turning the GPS receiver Off.

(3) $GOPMD	**GPS Receiver Operation Mode (continued)**
Reference	N/A
Standard Scope	Optional
Enfora Implementation Scope	Full
Notes	N/A

(4) $GPSCLR — Clear GPS positioning information

Command Function

This command allows the user to clear the selected GPS positioning information.

Command Functional Group

Enfora Specific

Command Format Query Response

AT$GPSCLR=?
$GPSCLR: (1-31)
OK

Write Format Response

N/A

Read Format Response

N/A

Execution Format Response

AT$GPSCLR=<**mask**>

Parameter Values

<***mask***>

Bit mask specifying which GPS information is to be cleared. Each bit specifies the GPS information that is to be cleared as enumerated in the table below.

Bit value	GPS Info
1	LTO
2	Ephemeris
4	Almanac
8	GPS Time
16	Last known position

To select multiple items to clear, add the bit values of each item to be cleared. To clear LTO, Ephemeris and Almanac, the mask value is 7 (1 + 2 + 4).

(4) $GPSCLR **Clear GPS Positioning Information (continued)**

Notes

If GPS is positioning when this command is issued, an error will be returned and the command will not be executed. GPS must be stopped before issuing the $GPSCLR command using $GOPMD=0.

(5) $GPSDST — GPS Destination IP Address

Command Function

This command allows a user to set the destination IP address and port number for SUPL interface

Command Functional Group

Enfora Specific

Command Format Query

AT$GPSDST=?
$GPSDST: “(0-255).(0-255).(0-255).(0-255)”, “(0-255).(0-255).(0-255).(0-255)”,(0-65535),(0-1), (supl srvr)
OK

Write Format Response

AT$GPSDST=<***ip_addr1***>,<***ip_addr2***>,<***port Num***>,
<***DNS enable***>,<***DNS addr***>
OK

Read Format Response

AT$GPSDST?
$GPSDST:
<***ip_addr1***>,<***ip_addr2***>,<***portNum***>,
<***DNS enable***>,<***DNS addr***>
OK

Execution Format Response

N/A

Parameter Values

<***ip_addr1***>	“(0-255).(0-255).(0-255).(0-255)” Primary IP address
<***ip_addr2***>	“(0-255).(0-255).(0-255).(0-255)” Secondary IP address
<***portNum***>	(0 – 65535) Port Number associated with the IP address
<***DNS enable***>	0 – Disable DNS resolution for SUPL server 1 – Enable DNS resolution for SUPL server
<***DNS addr***>	DNS address for the SUPL server. Format is: www.myurl.com. HTTP:// is not required.

(5) $GPSDST **GPS Destination Address (continued)**

Reference	N/A
Standard Scope	Optional
Enfora Implementation Scope	Full
Notes	If the ***DNS enable*** parameter is set to 1 (default setting) the ***DNS addr*** will be used to connect to the SUPL server. The ***ip_addr1*** and ***ip_addr2***parameters can be 000.000.000.000 (default settings).

(6) $GPSFLASH — Flushing of GPS NVRAM to the FFS

Command Function	This command allows the user to specify the interval, in minutes, at which the modem will stop positioning, write GPS' NVRAM to the FFS and then resume positioning.
Command Functional Group	Enfora Specific
Command Format Query Response	AT$GPSFLASH=? $GPSFLASH: (0-1440) OK
Write Format Response	AT$GPSFLASH=(0-1440) OK
Read Format Response	AT$GPSFLASH? $GPSFLASH: <***interval***>, <***remaining***> OK
Execution Format Response	AT$GPSFLASH ERROR
Parameter Values	
<***interval***>	Interval in minutes at which the modem will stop positioning, write GPS' NVRAM to the FFS and then resume positioning.
<***remaining***>	Seconds remaining in the current interval. It will be this many seconds until Whistler stops positioning, writes GPS' NVRAM to the FFS and then resumes positioning.
Notes	If the interval is set to 0, then the Whistler will never stop positioning to write NVRAM.

(7) $GPSLCL — Send message to the Serial Port

$GPSLCL	**Configure sending of GPS message to the Serial Port**
Command Function	This command allows the user to configure sending of GPS data on the USB port.
Command Functional Group	Enfora Specific
Command Format Query **Response**	AT$GPSLCL=? $GPSLCL: (0 – 5),(0-63) OK
Write Format **Response**	AT$GPSLCL=<***option***>,<nmeaMsgs> OK or ERROR
Read Format **Response**	AT$GPSLCL? $GPSLCL: <***option***>,<nmeaMsgs> OK
Execution Format **Response**	N/A N/A

(7) $GPSLCL **Configure sending of GPS message to the Serial Port (continued)**

Parameter Values

<***option***>	**0** – Disable sending of GPS data to the local USB port when the device is in AT command mode (***Default***) **1** – Enable sending of GPS NMEA ASCII data to the local USB port when the device is in AT command mode **2** – Enable sending of GPS NMEA ASCII data to the local USB port. This option has to be sent by the user in DUN mode. Data sent as a result of this option will always contain a UDP/IP header. Data will be sent to the IP address and port number set by $UDPAPI command. This option has no effect on the operation of the modem when entered via the AT command mode. **3** – Reserved **4** – Reserved
<***nmeaMsgs***>	This field is the bit-wise OR of the type of messages desired. The user has following message options to select from. Maximum value for <***nmeaMsgs***> in this case would be 3F

(7) $GPSLCL **Configure sending of GPS message to the Serial Port (continued)**

User Selectable Bits	Type of NMEA Message
0x01	GGA
0x02	GLL
0x04	GSA
0x08	GSV
0x10	RMC
0x20	VTG

Reference N/A

Standard Scope Optional

Enfora Implementation Scope Full

Notes N/A

(8) $GPSODOM	**GPS Odometer History**
Command Function	This command allows the user to read the hourly Odometer history for four days – starting with the current day.
Command Functional Group	Enfora Specific
Command Format Query Response	AT$GPSODOM=? $GPSODOM: (0-3) OK
Write Format Response	N/A
Read Format Response	AT$ GPSODOM=<**day** > $ GPSODOM: <**day** > <date (DDMMYY – **GMT**)> <Hour 0 (Hundreds of meters traveled between **Midnight** and **1 AM**> <Hour 1 (Hundreds of meters traveled between **010000** and **015959**> <Hour 2 (Hundreds of meters traveled between **020000** and **025959**> <Hour 3 (Hundreds of meters traveled between **030000** and **035959**> <Hour 4 (Hundreds of meters traveled between **040000** and **045959**> <Hour 5 (Hundreds of meters traveled between **050000** and **055959**> <Hour 6 (Hundreds of meters traveled between **060000** and **065959**> <Hour 7 (Hundreds of meters traveled between **070000** and **075959**> <Hour 8 (Hundreds of meters traveled between **080000** and **085959**> <Hour 9 (Hundreds of meters traveled between **090000** and **095959**> <Hour 10 (Hundreds of meters traveled between **100000** and **105959**>

(8) $GPSODOM

GPS Odometer History (continued)

<Hour 11 (Hundreds of meters traveled between **110000** and **115959**>
<Hour 12 (Hundreds of meters traveled between **120000** and **125959**>
<Hour 13 (Hundreds of meters traveled between **130000** and **135959**>
<Hour 14 (Hundreds of meters traveled between **140000** and **145959**>
<Hour 15 (Hundreds of meters traveled between **150000** and **155959**>
<Hour 16 (Hundreds of meters traveled between **160000** and **165959**>
<Hour 17 (Hundreds of meters traveled between **170000** and **175959**>
<Hour 18 (Hundreds of meters traveled between **180000** and **185959**>
<Hour 19 (Hundreds of meters traveled between **190000** and **195959**>
<Hour 20 (Hundreds of meters traveled between **200000** and **205959**>
<Hour 21 (Hundreds of meters traveled between **210000** and **215959**>
<Hour 22 (Hundreds of meters traveled between **220000** and **225959**>
<Hour 23 (Hundreds of meters traveled between **230000** and **235959**>

Execution Format	N/A
Response	N/A
Parameter Values	
<day >	0 = today 1 = yesterday (1 day ago) 2 = 2 days ago 3 = 3 days ago
Reference	N/A
Standard Scope	Optional
Enfora Implementation Scope	Full

(8) $GPSODOM

GPS Odometer History (continued)

Notes

Distance traveled within an hour is only saved on top of every hour and during an Ignition off (if configured). Distance for the current hour is not saved in the event of a power cycle.

Hour displayed is in Greenwich Mean Time (GMT) zone.

(9) $GPSQUAL	**GPS Quality Filters**
Command Function	This command allows the user to set/query the filter values used to determine when to interpret GPS data as valid.
Command Functional Group	Enfora Specific
Command Format Query **Response**	AT$GPSQUAL=? $GPSQUAL:(0-1), (0-255) OK
Write Format **level>”** **Response**	AT$GPSQUAL=**”<fix type>,<HDOP** OK
Read Format **Response**	AT$GPSQUAL? $GPSQUAL:**<fix type>,<HDOP level>**
Execution Format **Response**	N/A
Parameter Values	
<fix type>	0 (default) = consider GPS data valid if $GPGSA fix is either 2D GPS fix (2) or (3D) Differential GPS fix (3). 1 = consider GPS data valid only if $GPGSA fix is (3D) Differential GPS fix (3).
<HDOP level>	0 (default) = do not use HDOP value from $GPGSA sentence when determining whether GPS is valid 1-255 = consider GPS data valid only if HDOP value from $GPGSA sentence is less than or equal to indicated this HDOP limit.

(9) $GPSQUAL	**GPS Quality Filters (continued)**
Reference	N/A
Standard Scope	Optional
Enfora Implementation Scope	Full
Notes	

(10) $GPSRD	**Read current GPS ASCII data**
Command Function	This command allows a user to read current NMEA format GPS data.
Command Functional Group	Enfora Specific
Command Format Query **Response**	AT$GPSRD=? $GPSRD: [(0-3F),(0-63)], (0-1) OK
Write Format **Response**	N/A N/A
Read Format	AT$GPSRD=<***nmeaMsgs***>,<***decimal***> "$GPG……."
Response	OK
Execution Format **Response**	N/A N/A
Parameter Values	The output NMEA sentence depends on whether the <***nmeaMsgs***> parameter is entered in Hex or Decimal format. By default, the <***decimal***> parameter is not required and <***nmeaMsgs***> parameter has to be entered as HEX value without the preceding "0x" characters as outlined in Hex Format table below.
<***nmeaMsgs***>	This field is the sum of the type of NMEA messages desired. A user has the following message options to select from. Maximum value for <***nmeaMsgs***> in this case would be 3F in Hex format or 63 in decimal format.

(10) $GPSRD

Read current GPS ASCII data (continued)

Hex Format

User Selectable	Type of NMEA Message
0x01	GGA
0x02	GLL
0x04	GSA
0x08	GSV
0x10	RMC
0x20	VTG

Decimal Format

User Selectable	Type of NMEA Message
1	GGA
2	GLL
4	GSA
8	GSV
16	RMC
32	VTG

<***decimal***>

1 = <***nmeaMsg***> value has to be sum of User Selectable values from decimal table format
0 = select values out of hex table format

Reference N/A

Standard Scope Optional

Enfora Implementation Scope Full

Notes N/A

(11) $GPSSRC GPS Source Port Number

Command Function	This command allows a user to set the source port number for SUPL interface
Command Functional Group	Enfora Specific
Command Format Query	AT$GPSSRC=? $GPSSRC: (0-65535) OK
Write Format Response	AT$GPSSRC=<***portNum***> OK
Read Format Response	AT$GPSSRC? $GPSSRC: <***portNum***> OK
Execution Format Response	N/A
Parameter Values	
<***portNum***>	0-65535: Source port number for SUPL interface
Reference	N/A
Standard Scope	Optional
Enfora Implementation Scope	Full
Notes	N/A

(12) $LTODL — LTO download and LTO data

Command Function	This command allows the user to initiate an LTO download, and query the status of an LTO download and of the LTO data. An LTO download cannot be initiated if a download is already in progress, or in the absence of a GPRS registration.
Command Functional Group	Enfora Specific
Command Format Query Response	AT$LTODL=? $LTODL OK
Write Format Response	N/A OK
Read Format Response	AT$LTODL? $LTODL: <***lto_valid***>, <***dnld_sts***>, <***failures***>, <***dnld_year***>, <***dnld_month***>, <***dnld_day***>, <***dnld_hour***>, <***dnld_min***>, <***dnld_sec***>, OK
Execution Format Response	AT$LTODL OK

Parameter Values

<***lto_valid***>	**0** – Current LTO data is not valid **1** – Current LTO data is valid
<***dnld_sts***>	**0** – LTO download is not in progress **1** – LTO download is in progress
<***failures***>	Number of LTO download failures since last successful download

(12) $LTODL	**LTO Download (continued)**
<***dnld_year***>	Year of completion of last LTO download
<***dnld_month***>	Month of completion of last LTO download
<***dnld_day***>	Day of completion of last LTO download
<***dnld_hour***>	Hour of completion of last LTO download
<***dnld_min***>	Minute of completion of last LTO download
<***dnld_sec***>	Second of completion of last LTO download
Notes	If the download completes when the modem does not know the time, the time reported will be the age of the LTO data in hours, minutes, seconds.

Example:

Events that will display when an LTO download starts, completes or fails.

```
at$event=8,1,64,1,1
at$event=8,3,44,8,0
at$stoatev=8,at$msgsnd=0,"LTO started"
at$event=9,1,64,2,2
at$event=9,3,44,9,0
at$stoatev=9,at$msgsnd=0,"LTO complete"
at$event=10,1,64,3,3
at$event=10,3,44,10,0
at$stoatev=10,at$msgsnd=0,"LTO failed"
```

(13) $LTORATE	**Set LTO File Download Frequency**
Command Function	This command allows a user to set the frequency at which the LTO file will be downloaded from the GPS server
Command Functional Group	Enfora Specific
Command Format Query	AT$LTORATE =? $LTORATE: (0,4-48) OK
Write Format Response	AT$LTORATE =<***frequency***> OK
Read Format Response	AT$LTORATE? $LTORATE: <***frequency***> OK
Execution Format Response	N/A
Parameter Values	
<***frequency***>	0: disable downloading of LTO file from the server 4-48: frequency (in hours) at which the LTO file will be downloaded from the GPS server
Reference	N/A
Standard Scope	Optional
Enfora Implementation Scope	Full
Notes	N/A

(14) $ODOMETER — MT Trip Odometer

Command Function	The $ODOMETER command records how far the vehicle has traveled in one trip. The user can reset the odometer at the beginning of a new trip.
Command Functional Group	
Command Format Query **Response**	AT$ODOMETER=? $ODOMETER: (0-4000000000)
Write Format	AT$ODOMETER=1234 (where 1234 is distance in meters)
Response	OK
Read Format **Response**	AT$ODOMETER? $ODOMETER xxxx (xxxx=distance traveled in meters)
Execution Format Response	
Parameter Values	
Reference Standard Scope	
Enfora Implementation Scope	

(14) $ODOMETER

Odometer (continued)

Notes

The user shall be able to set a seed value for the Virtual Odometer (including a value of 0 but not higher than the maximum value of 4000000000)

The AT&F command shall not reset the seed value to 0.

The Virtual Odometer reading would be a 4-byte value starting from 0 to 4000000000 (maximum of approximately 2500000 miles before it rolls over to 0)

The unit for Virtual Odometer shall be in METERS.

The Virtual Odometer history shall be updated every second

The Virtual Odometer history shall be saved once a minute in modem's memory. This value shall be retained through an internal or external reset and can be read upon the next power up or during run time mode. The delta distance traveled between the minute marks could be lost due to an unexpected external or non-modem originated reset. However, the total distance traveled till the prior minute would still be preserved.

(15) $GPSOSI	**Set and Query the GPS Overspeed Interval**
Command Function	This command allows the user to define the criteria for a GPS overspeed event. A GPS overspeed event occurs when a minimum speed is maintained for a specific duration of time.
Command Functional Group	Enfora Specific
Command Format Query Response	AT$GPSOSI=? $GPSOSI: (0 – 65535),(0-65535) OK
Write Format Response	AT$GPSOSI=(0-65535),(0-65535) OK
Read Format Response	AT$GPSOSI? $GPSOSI: <***speed***>, <***interval***>, <***status***>, <***max_speed***>, <***duration***> OK
Execution Format Response	AT$GPSOSI ERROR
Parameter Values	
<***speed***>	Speed, in nautical miles/hr, that must be met and/or exceeded to trigger the GPS overspeed event.
<***interval***>	Number of consecutive seconds for which <speed> must be maintained to trigger the GPS overspeed event.
<***status***>	If 1, then <max_speed> and <duration> represent a GPS overspeed interval that is currently active. If 0, they represent the previous GPS overspeed interval.

(15) $GPSOSI	GPS Overspeed Interval (continued)
<***max_speed***>	The highest speed that was attained in the current or previous GPS overspeed interval.
<***duration***>	Number of consecutive seconds that the speed was at or above <speed>.
Notes	If <speed> is set to zero, the GPS overspeed event is disabled.

(h) Motion Sensor Commands

(1) $WAKEENBL	**Motion Wake Enable**
Command Function	This command allows the user to set/query the optional conditions used by the MSP430 to wake the modem. The modem will always be activated by a Power-On Reset or application of external (USB) power. The optional wake conditions controlled via this command include motion state transitions and motion timer expirations.
Command Functional Group	Enfora Specific
Command Format Query **Response**	AT$WAKEENBL=? $WAKEENBL:(0-31) OK
Write Format **Response**	AT$WAKEENBL=**<wake conditions>** OK
Read Format **Response**	AT$WAKEENBL? $WAKEENBL:**<wake conditions>** OK
Execution Format **Response**	N/A N/A
Parameter Values	
<wake conditions>	**1** – transition from “stopped” to “moving” state **2** – transition from “moving” to “stopped” state **4** – current state is “moving” (no transition required) **8** – current state is “stopped” (no transition required) **16** – Push-to-Call (PTC) button is pressed

(1) $WAKEENBL	**Motion Wake Enable (continued)** Multiple wake conditions can be specified by adding these values. For example, AT$WAKEENBL=12 would enable MSP430 to wake modem for transition to “stopped” or “moving” state (4 +8 = 12).
Reference	N/A
Standard Scope	Optional
Enfora Implementation Scope	Full
Notes	The Mini-MT motion sensor generates interrupts based on movement of a ball-bearing in the sensor device. Each interrupt increments a motion count. Once a second the MSP 430 takes the motion count, clips it if necessary, and filters it to produce a filtered motion count.

(2) $WAKEINTVL	**Interval Wakeup Timer**
Command Function	This command allows the user to set/query a timer used to periodically wake up the modem at a user-defined interval (in minutes).
Command Functional Group	Enfora Specific
Command Format Query **Response**	AT$WAKEINTVL=? $WAKEINTVL:(0-65535) OK
Write Format **Response**	AT$WAKEINTVL=**<interval>** OK
Read Format **Response**	AT$WAKEINTVL? $WAKEINTVL:**<interval>**
Execution Format **Response**	N/A
Parameter Values	
<interval>	Number of minutes between each attempt to wake up the modem (if modem is already awake, no action is taken). If value is zero, the wake interval feature is disabled.
Reference	N/A
Standard Scope	Optional
Enfora Implementation Scope	Full
Notes	This command relays the <interval> value to the MSP430. If the value is non-zero, the MSP430 starts a counter, counting down from the interval value. When the count reaches zero, the microprocessor wakes the modem if the modem is inactive (asleep). Regardless

(2) $WAKEINTVL

Interval Wakeup Timer (continued)

of whether it needs to wake the modem or not, the microprocessor resets it count and starts the cycle all over again.

The interval value is also stored by the modem in non-volatile memory. So if the battery is removed (therefore causing the microprocessor to lose its memory of the interval value), the modem relays the interval value to the MSP430 at power-up (when the battery is installed) and the cycle starts again at this point.

This command is completely independent of the $wakeenbl and $wakertc commands. Although it would normally be used instead of the $wakeenbl and $wakertc commands, you can use this command in conjunction with the other commands.

For example, let's suppose you wanted the modem to be awake whenever the device was in motion, but you also wanted the modem to wake up for at least five minutes once an hour even if there was no motion. You could use the following commands:

(Wake up any time there is motion)
at$wakeenbl=4
(Stay awake for at least five minutes)
at$waketime=300
(Must detect no motion for 120 consecutive seconds before declaring unit stopped)
at$mottrans=120 (default)
(Check modem every 60 minutes and wake it up, if asleep)
at$wakeintvl=60

(3) $WAKERTC	**RTC Wakeup Timer**
Command Function	This command allows the user to set/query a wakeup timer that is initially set based on RTC inputs.
Command Functional Group	Enfora Specific
Command Format Query **Response**	AT$WAKERTC=? $WAKERTC:(0,,6),(0..99),(1..12),(1..31),(0..23),(0..59),(0..59) OK
Write Format	AT$WAKERTC=**<rtc_wkday>,<rtc_year>,<rtc_month>,<rtc_day>,<rtc_hour>,<rtc_min>,<rtc_sec>**
Response	OK
Read Format **Response**	AT$WAKERTC? $WAKERTC: **<mins_left>** OK
Execution Format **Response**	N/A N/A
Parameter Values	Parameters are positional dependent, any parameter may be omitted with the use of the comma (‘,’) as a place holder on command line. If a parameter is omitted then the current ($RTCTIME) 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

(3) $WAKERTC	**RTC Wakeup Timer (continued)**
<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_hour>	The hour on which the time is being set to. Values range from 0 to 33.
<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.
<mins_left>	The number of minutes remaining before the $WAKERTC timer will expire.
Reference	N/A
Standard Scope	Optional
Enfora Implementation Scope	Full

(3) $WAKERTC

RTC Wakeup Timer (continued)

Notes

When setting the $WAKERTC timer, the RTC inputs are compared against the current ($RTCTIME) hardware values to determine the number of minutes remaining until the target time arrives. (If modem is already awake when target time arrives, no action is taken.) Therefore, it is important that the $RTCTIME values have been set properly before executing this command (this normally happened upon initial GPS acquisition each time the modem is activated). This calculated value is loaded into the MSP430, which starts counting down until the number of minutes has expired.

(4) $VIBNOW	**Exercise Vibration Motor**
Command Function	This command allows the user to exercise the vibration motor for a user-defined number of seconds.
Command Functional Group	Enfora Specific
Command Format Query Response	AT$VIBNOW=? $VIBNOW:(1-255) OK
Write Format Response	AT$VIBNOW=**<secs>** OK
Read Format	N/A
Execution Format Response	N/A
Parameter Values	
<secs>	number of seconds the vibration motor will be active.
Reference	N/A
Standard Scope	Optional
Enfora Implementation Scope	Full
Notes	

(5) $WAKETIME

Control time that modem is in active state

Command Function

This command allows the user to set/query the amount of time that the modem will remain in the active state before going into Mini-MT “sleep” mode. When the Mini-MT is in sleep mode, the modem is completely shut down to conserve power. The MSP430 is responsible for re-awakening the modem at the appropriate time based on user’s configuration settings.

Once a second, the modem executes the code to determine if it is time to sleep based on the following algorithm:

1. Internal waketime count is incremented.

2. If there is an active call or ringing state, code will exit and modem will not initiate sleep command.

3. If device is currently in moving state and $wakeenbl is set to wake modem on moving state, code will exit and modem will not initiate sleep command.

4. If device is currently in stopped state and $wakeenbl is set to wake modem on stopped state, code will exit and modem will not initiate sleep command.

5. If external (USB) power is currently applied, flag will be set, code will exit and modem will not initiate sleep command. If external power is removed and flag is set, modem will reset internal waketime count to 0.

(5) $WAKETIME	**Control time that modem is in active state (continued)** 6. If $waketime value = 0, code will exit and modem will not initiate sleep command. 7. If internal waketime count less than $waketime value, code will exit and modem will not initiate sleep command. 8. If waketime count greater than $waketime value and all checks above have passed, modem will initiate sleep command. This is the equivalent of executing the at$off command which allows the modem to shut down gracefully (de-register from network, save current status to flash, update MSP430 with current date/time, etc.)
Command Functional Group	Enfora Specific
Command Format Query Response	AT$WAKETIME=? $WAKETIME:(0-4294967295) OK
Write Format Response	AT$WAKETIME=**”<waketime>”** OK
Read Format Response	N/A
Execution Format Response	N/A
Parameter Values	
<waketime>	Time in seconds that modem will be active before shutting down to conserve power. If <waketime>is 0 (default), modem will stay active indefinitely.
Reference	N/A

(5) $WAKETIME	**Control time that modem is in active state (continued)**
Standard Scope	Optional
Enfora Implementation Scope	Full
Notes	N/A
Example	To set up the modem to stay awake while device is in moving state and sleep while device is in stopped state, use the following commands: AT$WAKETIME=60 AT$MOTTRANS=120 AT$WAKEENBL=4 Modem will wake up on motion ($WAKEENBL=4) and stay in motion for at least 120 seconds ($MOTTRANS=120). Since $waketime count (60) expires before the $mottrans, code will not initiate sleep while motion state is still moving. When motion state transitions to moving, $waketime algorithm will immediately be able to initiate sleep command.

(6) $MOTTRANS — Motion Transition Count

Command Function	This command allows the user to set/query the motion transition count used to declare an intermediate period between the “moving” and “stopped” states. For example, this might be used to inhibit the immediate transition from “moving” to “stopped” when a vehicle is waiting at a red light.
Command Functional Group	Enfora Specific
Command Format Query **Response**	AT$MOTTRANS=? $MOTTRANS:(5-65535) OK
Write Format **Response**	AT$MOTTRANS=**<transition count>** OK
Read Format **Response**	AT$MOTTRANS? $MOTTRANS:**<transition count>** OK
Execution Format **Response**	N/A N/A
Parameter Values	
<transition count>	Number of seconds to remain in moving state as long as filtered motion count is below motion stop threshold before declaring the “stopped” state.

(6) $MOTTRANS	**Motion Transition Count (continued)**
Reference	N/A
Standard Scope	Optional
Enfora Implementation Scope	Full
Notes	The Mini-MT motion sensor generates interrupts based on movement of a ball-bearing in the sensor device. Each interrupt increments a motion count. Once a second the MSP430 takes the motion count, clips it if necessary, and filters it to produce a filtered motion count.

(i) Mini-MT Control Commands

(1) $RINGIND	Ring Indicator
Command Function	This command configures the Mini-MT to either ring, vibrate, or remain silent when a call comes in.
Command Functional Group	Enfora Specific
Command Format Query **Response**	AT$RINGIND = ? $RINGIND: (0-2) OK
Write Format **Response**	AT$RINGIND = <option> OK
Read Format **Response**	AT$RINGIND? RINGIND: <option>
Execution Format **Response**	N/A N/A
Parameter Values	
<option>	0 = ring 1 = vibrate 2 = off (neither ring nor vibrate)
Reference	N/A
Standard Scope	Optional
Enfora Implementation Scope	Full
Notes	N/A

(2) $BATTLVL	**Battery Level**
Command Function	This command allows the user to view the approximate remaining battery level percentage.
Command Functional Group	Enfora Specific
Command Format Query **Response**	N/A N/A
Write Format **Response**	N/A N/A
Read Format **Response**	AT$BATTLVL? $BATTLVL: **<percentage>** OK
Execution Format **Response**	N/A N/A
Parameter Values	
<percentage>	Approximate percentage of battery life remaining.
Reference	N/A
Standard Scope	Optional
Enfora Implementation Scope	Full
Notes	When the modem wakes up, the initial readings related to the battery level are not a reliable indicator of the actual battery level. So for the first 50 seconds after the modem wakes up, the modem collects battery level readings to establish an initial battery level

(2) $BATTLVL **Battery Level (continued)**

percentage. If $BATTLVL is queried before this initial percentage is established following a power up reset, $BATTLVL will return 50.

To send a low battery message, you would typically set up the following input event (using event group 20 and 15% for the low battery threshold in this case):

AT$EVENT=20,0,59,0,15

The modem determines battery state. If the battery state changes in “hibernate” mode the controller will not know until the modem wakes up and sends a message to the controller.

(3) $EMERNUM	**Emergency Phone Number**
Command Function	This command allows the user to query and set the phone number used when the emergency call buttons are pressed. See the Mini-MT User's Guide for instructions on making an emergency call.
Command Functional Group	Enfora Specific
Command Format Query **Response**	AT$EMERNUM=? $EMERNUM: "Number" OK
Write Format	AT$EMERNUM=**"<emergency number>"**
Response	OK
Read Format **Response**	AT$EMERNUM? $EMERNUM:"**<emergency number>**" OK
Execution Format **Response**	N/A N/A
Parameter Values	
<emergency number>	Phone number used for emergency assistance
Reference	N/A
Standard Scope	Optional
Enfora Implementation Scope	Full
Notes	N/A

(4) $KEYSND	**Keybeep Sound Setting**
Command Function	This command allows the user to enable/disable the internal keybeep sounds that are played when a button is pressed. This allows the user to set up custom keybeep sounds using the event engine.
Command Functional Group	Enfora Specific
Command Format Query Response	AT$KEYSND=? $KEYSND:(0-1) OK
Write Format Response	AT$KEYSND=**<setting>** OK
Read Format Response	AT$KEYSND? $KEYSND:**<setting>**
Execution Format Response	N/A
Parameter Values	
<setting>	0 – play keybeep sounds hard-coded in the software (default) 1 – disable internal keybeep sounds
Reference	N/A
Standard Scope	Optional
Enfora Implementation Scope	Full
Notes	

(4) $KEYSND

Keybeep Sound Setting (continued)

Example

Use the following commands to set up custom keybeep sounds using the at+sttone command:

(Disable default keybeep sounds)
at$keysnd=1

(Generic keybeep sound)
at$stoatev=3,at+stone=1,16,100

(Volume Up button event)
at$event=95,1,58,4,4
at$event=95,3,44,3,0

(Volume Down button event)
at$event=96,1,58,3,3
at$event=96,3,44,3,0

(Push-To-Call button event)
at$event=97,1,58,2,2
at$event=97,3,44,3,0

(User-Defined button event)
at$event=98,1,58,1,1
at$event=98,3,44,3,0

(Geofence button event – no GPS lock)
at$stoatev=2,at+sttone=1,18,100
at$event=99,1,58,0,0
at$event=99,2,27,0,0
at$event=99,3,44,2,0

(Geofence button event – GPS lock)
(at$event=1,1,58,0,0 is factory default)
(at$event=1,49,3,1,805 is factory default)
at$stoatev=1,at+sttone=1,17,100
at$event=1,2,27,1,1
at$event=1,3,44,1,0

(j) Dynamic IP/Wakeup-Keep Alive Commands

(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

(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.

(1) $WAKEUP

Modem to Server Wakeup/Keep Alive (continued)

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.

(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

(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

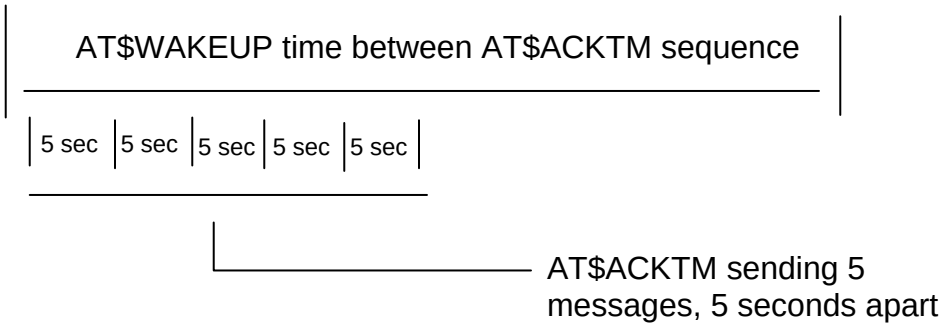
Standard Scope Optional

Enfora Implementation Scope Full

(2) $ACKTM **Acknowledgment Message Period & Retry Number (continued)**

Notes

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



Example:

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

(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.

(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

(4) $FRIEND	**Set/Query API Friends (continued)**
Read Format	AT$FRIEND?
Response	$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**>

(4) $FRIEND	**Set/Query API Friends (continued)**
Execution Format	N/A
Response	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.

(k) PAD Commands

(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.

(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.

(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) $ACTIVE	**TCP PAD State**
Command Function	This command determines the active or passive state of the TCP PAD connection.
Command Functional Group	Enfora Specific
Command Format Query Response	AT$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) $ACTIVE	**TCP PAD State (continued)**
Standard Scope	Optional
Enfora Implementation Scope	Full
Notes	If passive is chosen, the PAD will be in server mode and listen for inbound TCP connection requests. If active is chosen, the PAD will be in client mode and will initiate a connection based on the ATDT command, or if atd*99# is used to initiate a GPRS connection, the values populated in AT$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.

(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

(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

(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

(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

(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

(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.

(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.

(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. T-Mobile and AT&T networks will shut down a TCP connection if the connection is idle.

(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	N/A
Response	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	N/A
Response	N/A
Execution Format	N/A
Response	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

(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

(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

(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

(I) Event Processing Commands

(1) $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	27	1	1
1B	3	22	0	0

OK

Execution Format Response

N/A
N/A

(1) $EVENT User Defined Input/Output (continued)

Parameter Values

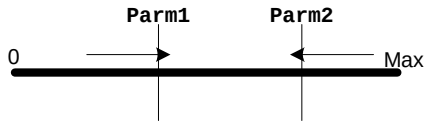
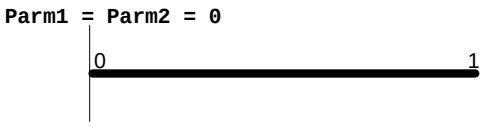
<event group>

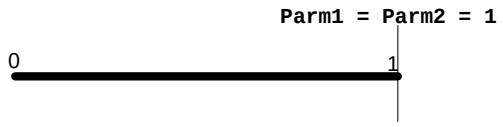
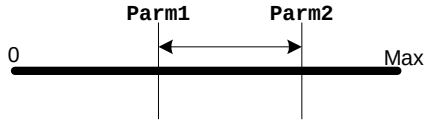
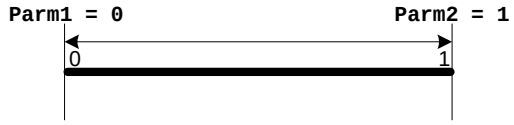
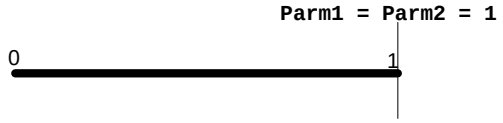
This parameter defines the group number of a group of events and the order they are executed. Events are grouped together to control execution sequence. A group number has to have at least one input event and one output event. Multiple input events within a group number would be treated as a logical **AND** condition. Multiple output events within a group number would be executed individually in a sequential manner.

Valid values for group number are: 1 thru 99.

<event type>

This parameter defines the type of event: Input or Output. An Input event can be defined as: Transition, Occurrence, or Input. The output event is executed when input event conditions are met.

Value	Type of event	Description
0	***Transition Trigger***	A transition Trigger is defined as an input condition, defined by **`<event category>`**, whose value was previously **`<parm1>`** or less is now greater than **`<parm1>`** and less than **`<parm2>`** **or** was greater or equal to **`<parm2>`** is now less than **`<parm2>`** but greater than **`<parm1>`**. The output event would be executed when an input **`<event category>`** requirements are satisfied or transition to the value set by **`<parm1>`** and **`<parm2>`** when they are equal. **`<parm1>`** should be the min value and **`<parm2>`** should be the max value. Example 1:  **Figure 1.** An output event will be executed when the value of an input event exceeds **`<Parm1>`** (previously it was **`<Parm1>`**> or less) or decreases to a value less than **`<Parm2>`** (previously it was <**`Parm2>`** or greater). Example 2:  **Figure 2.** An output event will be executed when the

		value of an input event is 0 (previously it was anything else but 0) and **<Parm1>** along with **<Parm2>** is set to 0. Example 3:  **Figure 3.** An output event will be executed when the value of an input event is 1 (previously it was anything else but 1) and **<Parm1>** along with **<Parm2>** is set to 1.
1	***Occurrence Trigger***	An Occurrence Trigger is defined as an input condition, defined by **<event category>**, whose current value is greater than or equal to **<parm1>** and less than or equal to **<parm2>**. The output event would be executed when an input **<event category>** requirements are satisfied or transition to the value set by **<parm1>** and **<parm2>** when they are equal. **<parm1>** should be the min value and **<parm2>** should be the max value Example 4:  **Figure 4.** An output event will be executed when the current value of an input event is between **<Parm1>** and **<Parm2>** including boundary conditions. Example 5:  **Figure 5.** An output event will be executed when the value of the input event changes from 0 to 1 or vice-versa. Example 6:  **Figure 6.** An output event will be executed when the value of the input event is 1 and **<Parm1>** along with **<Parm2>** is set to 1.

2	***Input Trigger***	An Input Trigger is defined as an input condition, defined by **`<event category>`**, that should be used as a logical **AND** condition to another input condition defined as Transition Trigger or an Occurrence Trigger. An Output event is not triggered when Input Trigger condition is valid. The input event, defined as Input Trigger, is valid when within the event range defined by **`<parm1>`** and **`<parm2>`** or when **`<parm1>`** and **`<parm2>`** are equal.
3	***Output***	An Output event is executed when all input event conditions (defined as Transition Trigger, Occurrence Trigger, or Input Trigger) for that particular **`<event group>`** are met.

<event category>

This parameter defines the actual Input or Output Event number and their valid range for **<parm1>** and **<parm2>**.

The below table defines the values for **<event category>**, **<parm1>** and **<parm2>** parameter for input events defined as a ***Transition Trigger***, ***Occurrence Trigger***, or ***Input Trigger***.

	`event category`	**`Parm1`**	**`Parm2`**	**Description**
	0	N/A	N/A	Reserved
	1	N/A	N/A	Reserved
	2	N/A	N/A	Reserved
	3	N/A	N/A	Reserved
	4	N/A	N/A	Reserved
	5	N/A	N/A	Reserved
	6	N/A	N/A	Reserved
	7	N/A	N/A	Reserved
	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)
	16	0 to 1000000	1000000	GPS Distance (unit of measurement is: meters)

	17	0 to 250	250	Maximum Velocity (unit of measurement is: Knots)
	18	N/A	N/A	Reserved
	19	N/A	N/A	Reserved
	20			Reserved
	21	0 or 1	0 or 1	Geo Fence #1. See AT$GEOFNC command for details on setting a circular geo-fence 0 = Leaving Geofence area 1 = Entering Geofence area
	22	0 or 1	0 or 1	Geo Fence #2
	23	0 or 1	0 or 1	Geo Fence #3
	24	0 or 1	0 or 1	Geo Fence #4
	25	0 or 1	0 or 1	Geo Fence #5
	26	N/A	N/A	Reserved
	27	0 or 1	0 or 1	GPS Status 0 = Invalid GPS data 1 = Valid GPS data
	28	N/A	N/A	Reserved
	29	0 to 1000000	1000000	Invalid GPS data for a period of time (unit of measurement is: increment of GPS reporting interval defined in $GOPMD command)
	30	0 to 1000000	1000000	Unit staying Idle in one place (unit of measurement is: increment of GPS reporting interval defined in $GOPMD command)
	31	0 or 1	0 or 1	Geo Fence #6. See AT$GEOFNC command for details on setting a circular geo-fence 0 = Leaving Geofence area 1 = Entering Geofence area
	32	0 or 1	0 or 1	Geo Fence #7
	33	0 or 1	0 or 1	Geo Fence #8
	34	0 or 1	0 or 1	Geo Fence #9
	35	0 or 1	0 or 1	Geo Fence #10
	36	0 or 1	0 or 1	Geo Fence #11
	37	0 or 1	0 or 1	Geo Fence #12
	38	0 or 1	0 or 1	Geo Fence #13
	39	0 or 1	0 or 1	Geo Fence #14
	40	0 or 1	0 or 1	Geo Fence #15
	41	0 or 1	0 or 1	Geo Fence #16
	42	0 or 1	0 or 1	Geo Fence #17
	43	0 or 1	0 or 1	Geo Fence #18
	44	0 or 1	0 or 1	Geo Fence #19
	45	0 or 1	0 or 1	Geo Fence #20
	46	0 or 1	0 or 1	Geo Fence #21
	47	0 or 1	0 or 1	Geo Fence #22
	48	0 or 1	0 or 1	Geo Fence #23
	49	0 or 1	0 or 1	Geo Fence #24
	50	0 or 1	0 or 1	Geo Fence #25

Will only work on occurrence trigger, not transitions	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	New SMS indication. 0 = SMS message read from SIM 1 = New SMS message received
	53	0 to -1	0 to –1	Current Input Event Counter count that can be used as an AND condition with other input events
	54	0-1	0-1	Geofence Exist
	55	N/A	N/A	Reserved (Do Not Use)
	56	N/A	N/A	Reserved (Do Not Use)
	57	0-2147483647	0-2147483647	Messages to be sent Over-The-Air exist
	58	0 – 4	0 – 4	Keypress Event 0 = Set Geofence key pressed 1 = User Defined key pressed 2 = Push To Call key pressed 3 = Volume Down key pressed 4 = Volume Up key pressed
	59	0-100	0-100	Battery Level Event Approximate percentage of battery life left (0-100% - see $BATTLVL)
	60	0-2147483647	0-2147483647	Number of unsent messages
	61	0-100	0-100	Memory full percentage
	62	0-1	0-1	Motion Status 1 = moving 0 = stopped
	63	0-1	0-1	Power Source 1 = External power 0 = Battery power
	64	1 – 3	1 – 3	1 = LTO download started 2 = LTO download completed successfully 3 = LTO download failed
	65	1 to 5	1 to 5	Receipt of Incoming Call with Call Identifier matching one the numbers configured via the **$EVCID** command. <Parm1> and <Parm2> correspond to range **$EVCID** entries which will generate the input event.
	66	1	1	Timer 5 (set by AT$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)

	70	0-4000000000	0-4000000000	Current $ODOMETER value
	71	N/A	N/A	Reserved
	72	0-1	0-1	0 = A GPS overspeed interval has ended 1 = A GPS overspeed interval has begun
	73	0-4	0-4	Key Release Event 0 = Set Geofence key released 1 = User Defined key released 2 = Push To Call key released 3 = Volume Down key released 4 = Volume Up key released
	74	N/A	N/A	Reserved
	75	N/A	N/A	Reserved
	76	N/A	N/A	Reserved
	77	N/A	N/A	Reserved
	78	N/A	N/A	Reserved
	79	N/A	N/A	Reserved
	80	0-2147483647	0-2147483647	User Variable 0: User variable is in range indicated by parm1 and parm2. Value can be manipulated via output events 61, 62 and 63. Value is initialized to zero (0) when modem powers up. Value can be queried via AT$EVTQRY=80. (AT$EVTQRY will not return the correct value if AT$EVTEST has been used to manipulate event.)
	81	0-2147483647	0-2147483647	User Variable 1: See Input Event 80 for detailed information
	82	0-2147483647	0-2147483647	User Variable 2: See Input Event 80 for detailed information
	83	0-2147483647	0-2147483647	User Variable 3: See Input Event 80 for detailed information
	84	0-2147483647	0-2147483647	User Variable 4: See Input Event 80 for detailed information
	85	0-2147483647	0-2147483647	User Variable 5: See Input Event 80 for detailed information
	86	0-2147483647	0-2147483647	User Variable 6: See Input Event 80 for detailed information
	87	0-2147483647	0-2147483647	User Variable 7: See Input Event 80 for detailed information

	88	0-2147483647	0-2147483647	User Variable 8: See Input Event 80 for detailed information
	89	0-2147483647	0-2147483647	User Variable 9: See Input Event 80 for detailed information

The below table defines the values for **<event category>**, **<parm1>** and **<parm2>** parameter for output events defined as ***Output***.

event category	Parm1	Parm2	Description
0	N/A	N/A	Reserved
1	N/A	N/A	Reserved
2	N/A	N/A	Reserved
3	N/A	N/A	Reserved
4	N/A	N/A	Reserved
5	N/A	N/A	Reserved
6	N/A	N/A	Reserved
7	N/A	N/A	Reserved
8	N/A	N/A	Reserved
9	N/A	N/A	Reserved
10	N/A	N/A	Reserved
11	N/A	N/A	Reserved
12	N/A	N/A	Reserved
13	N/A	N/A	Reserved
14	N/A	N/A	Reserved
15	N/A	N/A	Reserved
16	N/A	N/A	Reserved
17	N/A	N/A	Reserved
18	N/A	N/A	Reserved
19	N/A	N/A	Reserved
20	N/A	N/A	Reserved
21	N/A	N/A	Reserved
22	N/A	N/A	Reserved
23	N/A	N/A	Reserved
24	N/A	N/A	Reserved
25	N/A	N/A	Reserved
26	N/A	N/A	Reserved
27	N/A	N/A	Reserved
28	N/A	N/A	Reserved
29	N/A	N/A	Reserved
30	N/A	N/A	Reserved
31	N/A	N/A	Reserved
32	N/A	N/A	Reserved
33	N/A	N/A	Reserved
34	N/A	N/A	Reserved
35	N/A	N/A	Reserved
36	N/A	N/A	Reserved
37	N/A	N/A	Reserved
38	N/A	N/A	Reserved
39	N/A	N/A	Reserved

40	0-2147483647	See **Bit-Field Table** below	Generate and transmit one UDP Message to first IP address listed in **$FRIEND** command and port number listed in **$UDPAPI** command based on **Parm1** and **Parm2** values
41			Generate and transmit a UDP message with Acknowledge. This message is controlled by **$ACKTM** command for number of retries sent. This message has to be acknowledged to avoid sending of retries.
42			Generate and transmit one UDP Message to all IP address listed in **$FRIEND** command and port number listed in **$UDPAPI** command based on **Parm1** and **Parm2** values
43	1 – 8	0	Resets the timer (Timer #1 – Timer #8) specified by **Parm1** to the time (in seconds) specified by **Parm2**. **Parm2**, when set to 0, resets the timer to the time last set by **$EVTIMx** command. A value other than 0 would set the timer to expire at the new specified interval (e.g. xx,3,43,1,180 would set timer 1 to expire in 180 seconds).
44	1 – 15	0	Execute AT command stored at index number of the **$STOATEV** command. **Parm1** identifies the index number.
45	0-2147483647	See **Bit-Field Table** below	Sends data over SMS to All SMS destination addresses configured via **$SMSDA** command. (For select **$SMSDA** entries, see event categories 54-58)
46	N/A	N/A	Reserved
47	0	0 to –1	Input Event Counter
48	0	0	Reset Event Counter to zero
49	1 – 25	0 - 1000000	Set geo-fence specified by parm1 to current latitude & longitude with radius specified by parm2
50	0 – 57	0 to –1	Emulate AT$EVTEST command via event engine. Parm1 is the input event number while Parm2 is the value to emulate for the input event
51	N/A	N/A	Reserved
52	0 to –1	See Bit-Field Table below	Generate and transmit one TCP/IP Message to IP address & port number listed by $FRIEND command based on Parm1 and Parm2 values
53	N/A	N/A	Reserved
54	0-2147483647	See **Bit-Field Table** below	Sends data over SMS to the first indexed SMS destination address configured via **$SMSDA** command
55	0-2147483647	See **Bit-Field Table** below	Sends data over SMS to the second indexed SMS destination address configured via **$SMSDA** command

56	0-2147483647	See **Bit-Field Table** below	Sends data over SMS to the third indexed SMS destination address configured via **$SMSDA** command
57	0-2147483647	See **Bit-Field Table** below	Sends data over SMS to the fourth indexed SMS destination address configured via **$SMSDA** command
58	0-2147483647	See **Bit-Field Table** below	Sends data over SMS to the fifth indexed SMS destination address configured via **$SMSDA** command
59	0	0	Turns off the modem. (Not to be confused with sleeping where RTC continues to function. This command shuts down all modem functions.)
60	0-2147483647	See Bit-Field Table below	Generate and transmit a serial message to main serial port (only applicable if bit 0 of Parm1 = 0 for ASCII format)
61	0-9	0-2147483647	Sets user variable indicated in parm1 (see Input Events 80-89) to value indicated in parm2.
62	0-9	0-2147483647	Increments user variable in parm1 (see Input Events 80-89) by value indicated in parm2.
63	0-9	0-2147483647	Decrements user variable in parm1 (see Input Events 80-89) by value indicated in parm2.

Bit-Field Table

Parm2 value is obtained as a result of selecting individual bit-fields from the table below.

Parm2	
Bit 0:	1 = send all data generated as a result of this table in Binary format 0 = send all data generated as a result of this table in ASCII format
Bit 1:	1 = add **parm1** data to UDP message (4 – bytes in Binary format, 11 – bytes of data in ASCII format) 0 = do not add **parm1** data to outbound UDP message
Bit 2:	1 = add **$MDMID** value (22 – bytes of ASCII data – irrespective of Bit– 0 setting) 0 = do not add **$MDMID** value
Bit 3:	N/A
Bit 4:	N/A
Bit 5:	N/A
Bit 6:	N/A
Bit 7:	1 = add input **<event category>** number (1 – byte in binary format, 3 – bytes in ASCII format) 0 = do not add input **<event category>** number

Bit 8:	1 = add GPS data (3 – bytes of **Date** information in Binary format **or** up to 80 – bytes of **$GPGGA** NMEA message if Bit-0 is set to 0) 0 = do not add this particular field of GPS data
Bit 9:	1 = add GPS data (1 – bytes of **Status** information in Binary format **or** up to 80 – bytes of **$GPGLL** NMEA message if Bit-0 is set to 0) 0 = do not add this particular field of GPS data
Bit 10:	1 = add GPS data (3 – bytes of **Latitude** information in Binary format **or** up to 80 – bytes of **$GPGSA** NMEA message if Bit-0 is set to 0) 0 = do not add this particular field of GPS data
Bit 11:	1 = add GPS data (4 – bytes of **Longitude** information in Binary format **or** up to two 80 – bytes of **$GPGSV** NMEA message if Bit-0 is set to 0) 0 = do not add this particular field of GPS data
Bit 12:	1 = add GPS data (2 – bytes of **Velocity** information in Binary format **or** up to 80 – bytes of **$GPRMC** NMEA message if Bit-0 is set to 0) 0 = do not add this particular field of GPS data
Bit 13:	1 = add GPS data (2 – bytes of **Heading** information in Binary format **or** up to 80 – bytes of **$GPVTG** NMEA message if Bit-0 is set to 0) 0 = do not add this particular field of GPS data
Bit 14:	1 = add GPS data (3 – bytes of **Time** information in Binary format **or** 0 bytes if Bit-0 is set to 0) 0 = do not add this particular field of GPS data
Bit 15:	1 = add GPS data (3 – bytes of **Altitude** information in Binary format **or** 0 bytes if Bit-0 is set to 0) 0 = do not add this particular field of GPS data
Bit 16:	1 = add GPS data (1 – byte of **Number Of Satellites In View** information in Binary format **or** 0 bytes if Bit-0 is set to 0) 0 = do not add this particular field of GPS data
Bit 17:	N/A
Bit 18:	1 = send this OTA message via SMS when GPRS services is not available 0 = send this OTA message via GPRS only
Bit 19:	1 = send Last Valid GPS data if current data is invalid 0 = send current GPS data – valid or invalid
Bits 20:	1 = add Odometer reading (4 – bytes of **Odometer** information in Binary format **or** 11 – bytes if Bit-0 is set to 0) 0 = do not add this particular field of GPS data
Bits 21:	1 = add RTC time (6 – bytes of **RTC** time in Binary format **or** 13 – bytes if Bit-0 is set to 0) 0 = do not add RTC time with GPS data
Bits 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 0. Replace/append it with 8-bytes long modem ID value if bit-0 is set to 1 (no leading or ending space characters in binary mode). (**NOTE**: bit-22 setting overrides bit-2 setting) 0 = sent the modem ID as defined by Bit-2

Bit 23:	1 = Add battery level (1-byte in Binary format or 3-bytes if Bit-0 is set to 0) 0 = Do not add battery level
Bit 24:	N/A
Bit 25:	0 - Do not add cell information 1 - Add cell information as follows (see GSM0000TN012 - Engineering Mode Manual for details of the %EM command): If Binary format (Bit0=1) is selected, please refer to the “Bit 25 Binary Format” table below. If ASCII format (Bit0=0) is selected please refer to the “Bit 25 ASCII Format” table below.

Bit 25 Binary Format Table	
MCC	3 bytes - equivalent to mcc digits returned from AT%EM=2,4
MNC	3 bytes - equivalent to mnc digits returned from AT%EM=2,4
Serving Cell LAC	2 bytes - equivalent to lac returned from AT%EM=2,1
Serving Cell CellID	2 bytes - equivalent to cell_id returned from AT%EM=2,1
Serving Cell ARFCN	2 bytes - equivalent to arfcn returned from AT%EM=2,1
Serving Cell signal strength	1 byte - equivalent to rxlev returned from AT%EM=2,1 in Idle mode or rxlev_f in Dedicated mode
Serving Cell timing advance	1 byte - equivalent to tav returned in AT%EM=2,1
Neighbor Cell 0 LAC	2 bytes - equivalent to lac_nc[0] returned from AT%EM=2,3
Neighbor Cell 0 CellID	2 bytes - equivalent to cell_id_nc[0] returned from AT%EM=2,3
Neighbor Cell 0 ARFCN	2 bytes - equivalent to afrcn_nc[0] returned from AT%EM=2,3
Neighbor Cell 0 rxlev	1 byte - equivalent to rxlev_nc[0] returned from AT%EM2,3
Neighbor Cell 1 LAC	2 bytes - equivalent to lac_nc[1] returned from AT%EM=2,3
Neighbor Cell 1 CellID	2 bytes - equivalent to cell_id_nc[1] returned from AT%EM=2,3
Neighbor Cell 1 ARFCN	2 bytes - equivalent to afrcn_nc[1] returned from AT%EM=2,3
Neighbor Cell 1 rxlev	1 byte - equivalent to rxlev_nc[1] returned from AT%EM2,3
Neighbor Cell 2 LAC	2 bytes - equivalent to lac_nc[2] returned from AT%EM=2,3
Neighbor Cell 2 CellID	2 bytes - equivalent to cell_id_nc[2] returned from AT%EM=2,3
Neighbor Cell 2 ARFCN	2 bytes - equivalent to afrcn_nc[2] returned from AT%EM=2,3
Neighbor Cell 2 rxlev	1 byte - equivalent to rxlev_nc[2] returned from AT%EM2,3
Neighbor Cell 3 LAC	2 bytes - equivalent to lac_nc[3] returned from AT%EM=2,3
Neighbor Cell 3 CellID	2 bytes - equivalent to cell_id_nc[3] returned from AT%EM=2,3
Neighbor Cell 3 ARFCN	2 bytes - equivalent to afrcn_nc[3] returned from AT%EM=2,3
Neighbor Cell 3 rxlev	1 byte - equivalent to rxlev_nc[3] returned from AT%EM2,3
Neighbor Cell 4 LAC	2 bytes - equivalent to lac_nc[4] returned from AT%EM=2,3
Neighbor Cell 4 CellID	2 bytes - equivalent to cell_id_nc[4] returned from AT%EM=2,3
Neighbor Cell 4 ARFCN	2 bytes - equivalent to afrcn_nc[4]

	returned from AT%EM=2,3
Neighbor Cell 4 rxlev	1 byte - equivalent to rxlev_nc[4] returned from AT%EM2,3
Neighbor Cell 5 LAC	2 bytes - equivalent to lac_nc[5] returned from AT%EM=2,3
Neighbor Cell 5 CellID	2 bytes - equivalent to cell_id_nc[5] returned from AT%EM=2,3
Neighbor Cell 5 ARFCN	2 bytes - equivalent to afrcn_nc[5] returned from AT%EM=2,3
Neighbor Cell 5 rxlev	1 byte - equivalent to rxlev_nc[5] returned from AT%EM2,3

Bit 25 ASCII Format Table	
If ASCII format (Bit0=0) is selected: Variable length string is appended to message with semicolons separating cells Serving Cells and Neighbor Cells) and commas separating the fields within a cell as follows: mcc,mnc,sc_lac,sc_cell_id,sc_arfcn,sc_rxlev,sc_tav; lac_nc0,cell_id_nc0,arfcn_nc0,rxlev_nc0; lac_nc1,cell_id_nc1,arfcn_nc1,rxlev_nc1; lac_nc2,cell_id_nc2,arfcn_nc2,rxlev_nc2; lac_nc3,cell_id_nc3,arfcn_nc3,rxlev_nc3; lac_nc4,cell_id_nc4,arfcn_nc4,rxlev_nc4; lac_nc5,cell_id_nc5,arfcn_nc5,rxlev_nc5	
mcc	equivalent to mcc digits returned from AT%EM=2,4
mnc	equivalent to mnc digits returned from AT%EM=2,4
sc_lac	equivalent to lac returned from AT%EM=2,1
sc_cell_id	equivalent to cell_id returned from AT%EM=2,1
sc_arfcn	equivalent to arfcn returned from AT%EM=2,1
sc_rxlev	equivalent to rxlev returned from AT%EM=2,1 in Idle mode or rxlev_f in Dedicated mode
sc_tav	equivalent to tav returned from AT%EM=2,1
lac_nc0	equivalent to lac_nc[0] returned from AT%EM=2,3
cell_id_nc0	equivalent to cell_id_nc[0] returned from AT%EM=2,3
arfcn_nc0	equivalent to arfcn_nc[0] returned from AT%EM=2,3
rxlev_nc0	equivalent to rxlev_nc[0] returned from AT%EM=2,3
lac_nc1	equivalent to lac_nc[1] returned from AT%EM=2,3
cell_id_nc1	equivalent to cell_id_nc[1] returned from AT%EM=2,3
arfcn_nc1	equivalent to arfcn_nc[1] returned from AT%EM=2,3
rxlev_nc1	equivalent to rxlev_nc[1] returned from AT%EM=2,3
lac_nc2	equivalent to lac_nc[2] returned from AT%EM=2,3
cell_id_nc2	equivalent to cell_id_nc[2] returned from AT%EM=2,3
arfcn_nc2	equivalent to arfcn_nc[2] returned from AT%EM=2,3

rxlev_nc2	equivalent to rxlev_nc[2] returned from AT%EM=2,3
lac_nc3	equivalent to lac_nc[3] returned from AT%EM=2,3
cell_id_nc3	equivalent to cell_id_nc[3] returned from AT%EM=2,3
arfcn_nc3	equivalent to arfcn_nc[3] returned from AT%EM=2,3
rxlev_nc3	equivalent to rxlev_nc[3] returned from AT%EM=2,3
lac_nc4	equivalent to lac_nc[4] returned from AT%EM=2,3
cell_id_nc4	equivalent to cell_id_nc[4] returned from AT%EM=2,3
arfcn_nc4	equivalent to arfcn_nc[4] returned from AT%EM=2,3
rxlev_nc4	equivalent to rxlev_nc[4] returned from AT%EM=2,3
lac_nc5	equivalent to lac_nc[5] returned from AT%EM=2,3
cell_id_nc5	equivalent to cell_id_nc[5] returned from AT%EM=2,3
arfcn_nc5	equivalent to arfcn_nc[5] returned from AT%EM=2,3
rxlev_nc5	equivalent to rxlev_nc[5] returned from AT%EM=2,3

Reference N/A

Standard Scope Optional

Enfora Implementation Scope Full

Notes Maximum of 150 events (input and output).

(2) $EVCID	**User Defined Incoming Call Number Event**
Command Function	This command allows the user to define up to 5 separate incoming call number user input events
Command Functional Group	Enfora Specific
Command Format Query Response	AT$EVCID=? $EVCID: (0-5),(0-2), 44 OK
Write Format	AT$EVCID=<**entry**>,<**mode**>[**,** <**number**>]
Response	OK
Read Format	AT$EVCID?
Response	$EVCID: <**entry**>,<**mode**>,<**number**>
Execution Format	N/A
Response	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.

(2) $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.

(2) $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

- Ending range of 3 (high)
- Starting range of 2 (high)
- Activate Incoming Call Number Event
- Input event
- Event group 1

(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) $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

- Ending range of 1 (high)
- Starting range of 1 (high)
- Activate event timer 1
- Input event
- Event group 1

AT$EVTIM1=60

(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	N/A
Response	N/A
Write Format	N/A
Response	N/A
Read Format	N/A
Response	N/A
Execution Format	AT$EVTEST=<**event**>,<**state**>
Response	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)
```

(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

(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

(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

(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>AD1**v**

Dial number in phonebook location 1

AT Command event index

(8) $EVTIMQRY	**Event Counter**
Command Function	This command shows the current count for the event counter of the timer specified indicated by the argument.
Command Functional Group	Enfora Specific
Command Format Query Response	AT$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	

(m) Real-Time Clock Commands

(1) $RTCTIME — Real Time Clock Time

Command Function	This command handles the querying of the RTC time registers.
Command Functional Group	Enfora Specific
Command Format Query **Response**	AT$RTCTIME=? $RTCTIME: (0..6), (0..99), (1..12), (1..31), (0..23), (0..59), (0..59) OK
Write Format **Response**	N/A N/A
Read Format **Response**	AT$RTCTIME? $RTCTIME: <**rtc_wkday**>, <**rtc_year**>, <**rtc_month**>, <**rtc_day**>, <**rtc_hour**>, <**rtc_min**>, <**rtc_sec**>” OK
Execution Format **Response**	N/A N/A

(1) $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

(1) $RTCTIME	**Real Time Clock Time (continued)**
Notes	Currently all time is based on 24-Hour time format.

(n) IP Router Commands

(1) $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

(1) $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.

(2) $CONN	Initiate Network Connection
Command Function	This command allows the user to initiate a network connection while the modem already has a local PPP connection. This command is only valid when AT$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) $DISC	**Disconnect Network Connection**
Command Function	This command allows the user to initiate a network disconnect. This command is only valid for AT$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

(4) $LOCIP	**Display Local Modem to Host IP & DNS**
Command Function	This command allows the user to query the modem's locally assigned IP.
Command Functional Group	Enfora Specific
Command Format Query **Response**	N/A N/A
Write Format **Response**	N/A N/A
Read Format **Response**	AT$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

(5) $NETIP	**Display Network Assigned IP & DNS**
Command Function	This command allows the user to query the modem's network assigned IP.
Command Functional Group	Enfora Specific
Command Format Query **Response**	N/A N/A
Write Format **Response**	N/A N/A
Read Format **Response**	AT$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

(6) $GATEWAY	**Gateway IP**
Command Function	This command allows the user to select a gateway IP. Windows CE 3.0 devices and some Linux platforms require a gateway address. Default value “0.0.0.0” indicates that no gateway IP will be requested from the host. A non-zero value will cause the modem to request the indicated gateway IP from the host.
Command Functional Group	Enfora Specific
Command Format Query Response	AT$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

(o) Network Commands

(1) $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=? $MSCLS: (1-10) OK
Write Format Response	AT$MSCLS=**<msclass>** OK
Read Format Response	AT$MSCLS? $MSCLS: **<msclass>** OK
Execution Format Response	N/A N/A
Parameter Values	
<msclass>	1-10
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.

(2) $CGEER	**Get PDP Context Activation Reject Cause**
Command Function	This command is used to get the last GPRS PDP context activation reject cause.
Command Functional Group	Enfora Specific
Command Format Query Response	AT$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*

(2) $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) $LOCI	**Location Information Configuration**
Command Function	This command allows the user to enable storage of the GSM LOCI info in the modem NVMEM
Command Functional Group	Enfora Specific
Command Format Query **Response**	AT$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.

(4) %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

(4) %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.

(p) Network Monitoring Commands

(1) $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

(1) $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).**

(2) $RESET	Reset Modem
Command Function	This command is used to perform a modem reset.
Command Functional Group	Equipment Information
Command Format Query **Response**	N/A N/A
Write Format **Response**	N/A N/A
Read Format **Response**	N/A N/A
Execution Format **Response**	AT$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) $NETMON	**Monitor Network Availability**
Command Function	This command allows the modem to take aggressive network recovery action based upon the results of continuous network monitoring.
Command Functional Group	Enfora Specific
Command Format Query Response	AT$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) $NETMON **Monitor Network Availability (continued)**

Parameter Values

<net_unavail_min >

Number of minutes the network must remain unavailable before current GPRS Activation is released, and a new GPRS Activation is attempted. Network availability is determined by monitoring GPRS attach status (AT%CGREG) and valid Network IP (AT$NETIP). A value of zero means the GPRS Activation will never be released via AT$NETMON.

<reset_cnt >

Number of GPRS Activations attempted before all volatile network knowledge is erased and the modem performs a soft reset. A value of 1 indicates the modem will perform a graceful detach from the network and then a soft reset of the device. For values greater than 1, the modem will attempt a GPRS deactivation / activation sequence every <net_unavail_min> until the number of attempts equals <reset_cnt>. The modem then will perform a graceful detach from the network and then a soft reset. A value of zero indicates that a modem reset will never occur via AT$NETMON.

<ping check >

Number of minutes between modem-initiated ping checks. If no network data has been received within <ping check> minutes, the modem will initiate pings (up to 4 ICMP messages are generated) to the 1st server on the $FRIEND list. If no ping response is received to any of the 4 ICMP messages, the modem will initiate pings to the next server in the list. If no ping response is returned from any of the $FRIEND servers, a new IP is obtained via a modem-initiated GPRS de-activation /

(3) $NETMON	**Monitor Network Availability (continued)**
	activation sequence. A value of zero indicates that the modem will never initiate a ping check.
<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
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.

(q) Miscellaneous Commands

(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

(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)	

(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>

(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) %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

(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

(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

(4)	**%CPI**	**Call Progress Information (continued)**
Notes		%CPI=4 appends an Advanced Cause Code (For Experienced Users Only)

(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

(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>, <dnp><CR><LF>** %SNCNT: **<nsapi2>, <upo>, <dno>, <upp>, <dnp><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.
<dnp>	downlink packets count.
Reference	N/A
Standard Scope	N/A
Enfora Implementation Scope	N/A
Notes	N/A

(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.

(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.

(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

(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.

(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:80C0231601010016087573657 26E616D65087061737
776F72648021100101001081060000000008306000000000)

Example of Hex input parameters:

AT%CGPCO=0, “80C0231601010016087573657 26E616D650870617373
776F72648021100101001081060000000008306000000000”, 1

(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

(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>].

(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

(12) %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.

(13) $PKG	**Request Firmware Package**
Command Function	This command is used to obtain the firmware package version.
Command Functional Group	Equipment Information
Command Format Query **Response**	N/A N/A
Write Format **Response**	N/A N/A
Read Format **Response**	N/A N/A
Execution Format **Response**	AT$PKG <**firmware version**> OK
Parameter Values	N/A
Reference	N/A
Standard Scope	Optional
Enfora Implementation Scope	Full
Notes	Return value is manufacturer specific.

(14) $SNDMSG	**Send Test Message**
Command Function	This command allows the user to send the requested test message to the destination IP and port as defined in AT$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

(15) $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=<***index***>,<***dest addr***>,<***gateway number***>
Read Format Response	AT$SMSDA? $SMSDA: 1,"<***dest addr***>","<***gateway number***>", $SMSDA: 2,"<***dest addr***>","<***gateway number***>", $SMSDA: 3,"<***dest addr***>","<***gateway number***>", $SMSDA: 4,"<***dest addr***>","<***gateway number***>", $SMSDA: 5,"<***dest addr***>","<***gateway number***>", OK
Execution Format Response	N/A
Parameter Values	
<***index***>	1 – 5 defines the index number for destination address
<***dest addr***>	38 characters or less phone number or email address
<***gateway***>	7 characters or less gateway number for email address
Reference	N/A
Standard Scope	Optional

(15) $SMSDA	**Destination Address for SMS messages (continued)**
Enfora Implementation Scope	Full
Notes	The ***gateway number*** is provided by the Network Provider (ex: AT&T, Cingular, etc) and is only used for sending email over SMS. It is not required if you are sending SMS to a phone number. If using this command with a international number (preceded by a "+") it may be required to change the command at+csca=145. An AT$EVENT command has to be set to send a GPS message over SMS.

(16) $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)

(16) $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.

(16) $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.

(17) $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

(17) $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_IMPLEM
98	RC_MESSAGE_TYPE_INCOMPAT
99	RC_IE_NOT_IMPLEM
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

(18) $MSGSND — Message Send

Command Function	The $MSGSND command has been created to allow sending of data from one mode to another.
Command Functional Group	Enfora Specific
Command Format Query Response	AT$MSGSND=? $MSGSND: (0-4),("ASCII DATA") OK
Write Format Response	N/A N/A
Read Format Response	N/A N/A
Execution Format Response	AT$MSGSND=**<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

(18) $MSGSND	**Message Send (continued)**
<"data">	a maximum of 50 bytes ASCII characters *****If <"data"> shall contain the ';' character (semicolon) the hexadecimal equivalent '\3b' must be used instead.
Reference	
Standard Scope	Optional
Enfora Implementation Scope	Full
Notes	N/A
Example:	

```
AT$MSGSND=0,"hello;"
ERROR

OK
AT$MSGSND=0,"hello\3b"
OK
hello;
```

(19) $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.
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	

(20) $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
```

(21) %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
Example:	AT%CSTAT=1 After power on, the following unsolicited results codes will be delivered to the SIM as the processes are have been initialized and are initialized. %CSTAT: EONS, 0 EONS not ready %CSTAT: PHB, 1 Phonebook ready %CSTAT: SMS, 1 SMS Ready %CSTAT: RDY, 1 All SIM functions ready

(22) $SRN	**Module Serial Number**
Command Function	This command will return the serial number of the module.
Command Functional Group	Enfora Specific
Command Format Query **Response**	AT$SRN=? OK
Write Format **Response**	N/A N/A
Read Format **Response**	N/A N/A
Execution Format **Response**	AT$SRN $SRN: xxxxxxxxxxxxx
Parameter Values	N/A
Reference	N/A
Standard Scope	N/A
Enfora Implementation Scope	N/A
Notes	Returned values are unique for each module

(23) $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

(24) $DLYCALL	**Call Delay**
Command Function	This command provides a delay between the detection of the Push-To-Call (PTC) button press and the actual initiation of the call to the dispatch number. The delay allows the event engine time to perform tasks such as sending GPS data via UDP while the modem is still GPRS registered.
Command Functional Group	Enfora Specific
Command Format Query **Response**	AT$DLYCALL=? $DLYCALL=(0-5) OK
Write Format **Response**	AT$DLYCALL=**<seconds>** OK
Read Format **Response**	AT$DLYCALL? $DLYCALL: **<seconds>** OK
Execution Format **Response**	N/A N/A
Parameter Values	
<seconds>	Number of seconds to delay between detection of PTC button press and initiation of call.
Reference	N/A
Standard Scope	Optional
Enfora Implementation Scope	Full

(25) $DSPNOTIF	**Dispatch Notification**
Command Function	This command is used to control the 'Dispatch Notification' LED. It is used primarily via the AT command over SMS function to notify the user that the user should call the dispatch number.
Command Functional Group	Enfora Specific
Command Format Query **Response**	AT$DSPNOTIF=? $DSPNOTIF:(0-1) OK
Write Format **Response**	AT$DSPNOTIF=**<state>** OK
Read Format **Response**	AT$DSPNOTIF? $DSPNOTIF:**<state>** OK
Execution Format **Response**	N/A N/A
Parameter Values	
<state>	1 = causes dispatch notification LED to flash 0 = caused dispatch notification LED to stop flashing
Reference	N/A
Standard Scope	Optional
Enfora Implementation Scope	Full

(26) $DSPATCH	**Dispatch Phone Number**
Command Function	This command allows the user to query/set the phone number used when the CALL button is pressed
Command Functional Group	Enfora Specific
Command Format Query **Response**	AT$DSPATCH=? $DSPATCH:"Number" OK
Write Format **Response**	AT$DSPATCH="**<dispatch number>**" OK
Read Format **Response**	AT$DSPATCH? $DSPATCH:"**<dispatch number>**" OK
Execution Format **Response**	N/A N/A
Parameter Values	
<dispatch number>	Phone number used when CALL button is pressed
Reference	N/A
Standard Scope	Optional
Enfora Implementation Scope	Full

Notes N/A

(27) $ATPASSWD	**Set authorization for AT commands for serial, SMS and API**
Command Function	This command allows the user to enable or disable authorization for AT commands for the serial, SMS and API. It also sets the password required to run this command
Command Functional Group	Enfora Specific
Command Format Query Response	AT$ATPASSWD=? $ATPASSWD: (“oldpasswd”,mask|”newpasswd”) OK
Write Format Response	N/A
Read Format Response	N/A
Execution Format Response	AT$ATPASSWD= <**”oldpasswd”,”newpasswd”**> AT$ATPASSWD=<**”passwd”,mask**>
Parameter Values <***oldpasswd***>	Specified when the password is being changed.
<***newpasswd***>	This is the value of the new password and is specified only when the password is being changed. It must be no more than eight characters in length and must be enclosed in double quotes.
<***passwd***>	Specified when changing the AT command authorization mask.
<***mask***>	Bit mask specifying which interfaces will be authorized to enter AT commands. Each bit specifies one interface as enumerated in the table below.

(27) $ATPASSWD

Set authorization for AT commands for serial, SMS and API (continued)

Bit value	Interface
1	Serial Port
2	SMS
4	API

To select multiple items to authorize, add the bit values of each interface to be authorized. To authorize API and SMS only, the mask value is 6 (4 + 2). AT commands entered over the serial port will not execute and will reply with ERROR.

Notes

N/A

(28) $KEYDLY — Key Delay

Command Function

The $KEYDLY allows the user to configure the sensitivity of the Mini-MT buttons by setting a programmable delay before a button press is considered valid. Modem must be reset for new settings to take effect.

Command Functional Group

Enfora Specific

Command Format Query Response

AT$KEYDLY=?
$KEYDLY:(1-255),(1-255)
OK

Write Format Response

AT$KEYDLY=**<delay>,<ptcdly>**
OK

Read Format Response

AT$KEYDLY?
$KEYDLY: **<delay>,<ptcdly>**

Execution Format Response

N/A

Parameter Values

<delay>

Delay increment before button down event will be acted on. Value increments are roughly in tenths of a second (usually a little longer). You will need to experiment to find the best setting for your application.

Optional separate delay value for PTC button only. If this value is present and valid, this value will be used for the PTC button. Otherwise, the **<delay>** value will be used for the PTC button also.

(28) $KEYDLY	**Key Delay (continued)**
Reference	N/A
Standard Scope	Optional
Enfora Implementation Scope	Full
Notes	None
Example	The following script settings can be used to test the key function delays:

```
at&f
/* Disable default keypress functions */
at$keyfnc=1
/* Disable default keypress sounds */
at$keysnd=1
/* Set keypress delay to roughly 5 secs (actually ends up more like 6 secs)  */
/* Use optional PTC delay parameter to keep PTC button delay ~300 msecs */
at$keydly=50,3
/* Set up messages for keypress events */
at$stoatev=10,at$msgsnd=0,"UserDef Button is Down"
at$stoatev=11,at$msgsnd=0,"UserDef Button is Up"
at$stoatev=12,at$msgsnd=0,"GeoFnc Button is Down"
at$stoatev=13,at$msgsnd=0,"GeoFnc Button is Up"
at$stoatev=14,at$msgsnd=0,"+ Button is Down"
at$stoatev=15,at$msgsnd=0,"+ Button is Up"
at$stoatev=16,at$msgsnd=0,"- Button is Down"
at$stoatev=17,at$msgsnd=0,"- Button is Up"
at$stoatev=18,at$msgsnd=0,"PTC Button is Down"
at$stoatev=19,at$msgsnd=0,"PTC Button is Up"
/* Set up UserDef keypress events */
at$event=10,0,58,1,1
at$event=10,3,44,10,0
at$event=11,0,73,1,1
at$event=11,3,44,11,0
/* Set up GeoFnc keypress events */
at$event=12,0,58,0,0
at$event=12,3,44,12,0
at$event=13,0,73,0,0
```

(28) $KEYDLY **Key Delay (continued)**

```
at$event=13,3,44,13,0
/* Set up + keypress events */
at$event=14,0,58,4,4
at$event=14,3,44,14,0
at$event=15,0,73,4,4
at$event=15,3,44,15,0
/* Set up - keypress events */
at$event=16,0,58,3,3
at$event=16,3,44,16,0
at$event=17,0,73,3,3
at$event=17,3,44,17,0
/* Set up PTC keypress events */
at$event=18,0,58,2,2
at$event=18,3,44,18,0
at$event=19,0,73,2,2
at$event=19,3,44,19,0
at&w
at$reset
```

Delay only affects the key down events. If key is not held down long enough, you will still get the key up events.

(29) $KEYFNC — Key Function Disable

Command Function

The $KEYFNC command enables the user to disable the hard-coded actions of the Mini-MT buttons (initiate phone call via PTC button, increase/decrease volume via +/- buttons, and play special tones for geo-fnc button depending on whether GPS data is currently valid). The buttons can still be used via the event engine (see EVENT) when the default hard-coded actions are disabled (for example, to execute a user-defined action and play a customized tone).

Command Functional Group

Enfora Specific

Command Format Query Response

AT$KEYFNC=?
$KEYFNC:(0-62)
OK

Write Format Response

AT$KEYFNC=**<status>**
OK

Read Format Response

AT$KEYFNC?
$KEYFNC: **<status>**

Execution Format Response

N/A

Parameter Values

<status>

0 = hard-coded key functions enabled (default)
1 = all hard-coded key functions disabled

The following values can be OR'ed together to disable combinations of buttons:

(29) $KEYFNC	**Key Function Disable (continued)**
	2 = Volume Up (+) key function disabled 4 = Volume Down (-) key function disabled 8 = Push-to-Call key function disabled (for making calls) 16 = GeoFnc key function disabled (but does not delete default event group 1 – use AT$EVDEL to delete default action for setting geofence via this button) 32 = User Defined key function disabled (no action required – just provided here for completeness)
Reference	N/A
Standard Scope	Optional
Enfora Implementation Scope	Full
Notes	To disable PTC and GeoFnc buttons without losing volume up/down functions, use $KEYFNC=24 (8 + 16). When PTC button function is disabled ($KEYFNC=1 or $KEYFNC=8), pressing PTC button will still wake the modem depending on the $WAKEENBL setting (see Motion Wake Enable). The default $WAKEENBL value of 20 wakes modem on motion or PTC button press. Also note that button sounds are disabled via the $KEYSND command (see Keybeep Sound).

(30) $WALKER	**Sets Walking Mode**
Command Function	This command allows the user to set/query a walking mode for the device. This command primarily concerns the odometer calculations. By default, the device assumes that odometer calculations are related to vehicles. Therefore, internal odometer calculations are optimized for the device characteristics when operating in that environment. In particular, walking speeds are filtered out. This command allows the device to remove the restrictions for odometer calculations if its primary function will be to track walking speeds and to optimize itself for a walking application.
Command Functional Group	Enfora Specific
Command Format Query Response	AT$WALKER=? $WALKER:(0-1) OK
Write Format Response	AT$WALKER=**<mode>** OK
Read Format Response	AT$WALKER? $WALKER: **<mode>**
Execution Format Response	N/A
Parameter Values	

(30) $WALKER	**Sets Walking Mode (continued)**
<mode>	0 = primary use of odometer is to track vehicle (default) 1 = primary use of odometer is to track at walking speeds (odometer will be updated for all valid GPS data if motion sensor indicates device is moving and USB power is not connected). Filtering of GPS data based on $GPSQUAL and $SPDFILT still applies (this command would typically be used in conjunction with $SPDFILT to cap the maximum walking speed).
Reference	N/A
Standard Scope	Optional
Enfora Implementation Scope	Full
Notes	N/A
Example	N/A

(31) $SPDFILT	**Sets filtering values for GPS status based on motion**
Command Function	This command allows the user to set/query filtering values for GPS status based on motion. If the filtering checks of this command are not met, the GPS lock status is invalidated and all subsequent actions based on a valid GPS lock status (such as geofence calculations and odometer updates) will not be performed for the data in that GPS frame.
Command Functional Group	Enfora Specific
Command Format Query Response	AT$SPDFILT=? $SPDFILT:(0-1), (0-255),(0-1) OK
Write Format Response	AT$SPDFILT=**<mot_sens>,<speed>, <nmea_ind>** OK
Read Format Response	AT$SPDFILT? $SPDFILT: **<mot_sens>,<speed>, <nmea_ind>**
Execution Format Response	N/A
Parameter Values	
<mot_sens>	0 = do not reject GPS lock status based on motion sensor status (default) 1 = allow GPS lock status to be rejected based on motion sensor status

(31) $SPDFILT

Sets filtering values for GPS status based on motion (continued)

On rare occasions, the GPS engine incorrectly detects motion when the device is not moving. Setting this flag invalidates the GPS lock status if the motion sensor indicates that the device is not moving, but the GPS data indicates a speed greater than 0.

<speed>

0 = do not reject GPS lock status based on speed (default)
1 - 255 = allow GPS lock status to be rejected based on this speed (in knots)

On rare occasions, the GPS engine generates speed values that are obviously too high based on the application. Setting this upper speed threshold, allows the code to invalidate the GPS lock status for a speed that is not possible for your application.

<nmea_ind>

0 = do not filter NMEA sentences (default)
1 = insert 'invalid' indicator into NMEA sentences that would otherwise be valid if not for filtering values:

- for $GPGGA sentences, '0' is inserted into the Fix Quality field
- for $GPGLL sentences, 'V' is inserted into the 'Data Valid' field
- for $GPGSA sentences, '1' is inserted into the Fix Type field
- for $GPRMC sentences, 'V' is inserted into the Status field

(31) $SPDFILT	**Sets filtering values for GPS status based on motion (continued)** In some cases, this will cause deviation from the standard NMEA format, but it allows you to get a positive indication that your filter values are being effective. In particular, the presence of $GPRMC latitude/longitude/speed values when the Status field indicates the data is not valid provides immediate feedback that it is your filtering that is rejecting the GPS data. This field is also applicable to the filtering criteria specified in the $GPSQUAL command.
Reference	N/A
Standard Scope	Optional
Enfora Implementation Scope	Full
Notes	N/A
Example	N/A

(32) $CHGOFF — Charger Off

Command Function	In order to extend the MiniMT battery life, the battery charging cycle has been modified to charge the battery up to 100%, then disable the charging circuit until the battery falls to 90%, where it will start charging again. This AT command allows the user to disable this charging option to ensure that the device will be as close to 100% as possible when USB power is removed (for example, after charging overnight).
Command Functional Group	Enfora Specific
Command Format Query Response	AT$CHGOFF=? $CHGOFF:(0-1) OK
Write Format Response	AT$CHGOFF=**<option>** OK
Read Format Response	AT$CHGOFF? $CHGOFF: **<option>**
Execution Format Response	N/A
Parameter Values	
<option>	1 = (default) Disable charging when battery level is 100%. Charging will resume when battery level falls to 90%. This option protects the battery from damage in applications where USB power will constantly be present for months.

(32) $CHGOFF	**Charger Off (continued)** 0 = Enable constant charging as long as USB power is present. This option ensures the battery is as close as possible to 100% when USB power is removed.
Reference	N/A
Standard Scope	Optional
Enfora Implementation Scope	Full
Notes	None
Example	N/A

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+CRC=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>,<dcs>, <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 SNDCP 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	**Modem Verbose Response**

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$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

$BATTLVL **BATTERY LEVEL**

Default Value: 50
Default Value Meaning: The battery has 50% power left

$DLYCALL **DELAY CALL**

Default Value: 0
Default Value Meaning: No user-defined delay between pressing the PTC button and placing a call.

$DSPATCH **DISPATCH NOTIFICATION PHONE NUMBER**

Default Value: 12345678123456789
Default Value Meaning: This is the number the Mini-MT will call when the PTC button is pressed.

$DSPNOTIF **DISPATCH NOTIFICATION**

Default Value: 0
Default Value Meaning: Dispatch notification is not active.

$EMERNUM **EMERGENCY NUMBER**

Default Value: 411
Default Value Meaning: This is the emergency number the Mini-MT will call when the emergency call sequence is performed.

$EVENT **User-defined Input/Output**
Default Value: Set Geofence at current location
Default Value Meaning: Event group 1 configured for half-mile geofence when pressing geofence button.

$GEOFNC **Geo fencing a circle area**
Default Value: 1,0,0,0 – (default for push button)
2,0,0,0
3,0,0,0
4,0,0,0
5,0,0,0
6,0,0,0
7,0,0,0
8,0,0,0
9,0,0,0
10,0,0,0
11,0,0,0
12,0,0,0
13,0,0,0
14,0,0,0
15,0,0,0
16,0,0,0
17,0,0,0
18,0,0,0
19,0,0,0
20,0,0,0
21,0,0,0
22,0,0,0
23,0,0,0
24,0,0,0
25,0,0,0

Default Value Meaning: feature disabled

$GPSLCL **GPS Local Subscription**
Default Value: 0
Default Value Meaning: feature disabled

$GPSRD **Read current GPS NMEA data**
Default Value: N/A
Default Value Meaning: N/A

$MOTTRANS **MOTION TRANSITION COUNT**

Default Value: 120
Default Value Meaning: N/A

$MSGLOGCL **MESSAGE LOG CLEAR**

Default Value: N/A
Default Value Meaning: N/A

$MSGLOGEN **MESSAGE LOG ENABLE**

Default Value: 0
Default Value Meaning: Message log is enabled

$MSGLOGRD **MESSAGE LOG READ DATA**

Default Value: N/A
Default Value Meaning: N/A

$MSGSND **MESSAGE SEND**

Default Value: N/A
Default Value Meaning: N/A

$ODOMETER **TRIP ODOMETER**

Default Value: N/A
Default Value Meaning: N/A

$RINDIND **RING INDICATOR**

Default Value: 0

Default Value Meaning: The Mini-MT is configured for audible ring for incoming calls

$WAKEENBL **MOTION WAKE ENABLE**

Default Value: 20
Default Value Meaning:

$WAKEINTVL **INTERVAL WAKEUP TIMER**

Default Value: 0
Default Value Meaning: Mini-MT will not be scheduled to wakeup at an interval.

$WAKERTC **RTC WAKEUP TIMER**

Default Value:
Default Value Meaning: The Mini-MT is not configured to wake up based on future date/time.

$WAKETIME **Modem Wake Duration**
Default Value: 60
Default Value Meaning: Mini-MT will go to sleep after one minute if USB is not connected and motion status is stationary.