L'esprit Modem

Command List

GenPro 30e

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The main modifications in this document compared to its previous version are easily identifiable on a screen by the blue color of the text.

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1 INTRODUCTION

This document describes standard and proprietary AT commands that are available for users of GenPro 30e.

The standard 3GPP AT commands for UMTS devices are described in 2 standards documents available from the 3GPP (3rd Generation Partnership Project) web site, www.3gpp.org:

• TS 27.007 AT command set for User Equipment (UE)

• TS 27.005 Use of Data Terminal Equipment Data Circuit terminating Equipment (DTE-DCE) interface for Short Message Service (SMS) and Celle Broadcast Service (BSE)

The proprietary AT commands are supplemental to the standard AT commands.

Note: Some standard 3GPP commands are NOT supported, or are partially supported. These commands are identified in Supported GSM / WCDMA AT Commands chapter.

Note: When designing applications that use these AT commands, use 3G Display as functionality templates to ensure proper use of command groups. For questions or concerns relating to command implementation, please contact your ERCO & GENER account representative.

RESULT CODES

Result codes are not shown in the command tables unless special conditions apply. Generally the result code OK is returned when the command has been executed. ERROR may be returned if parameters are out of range, and will be return if the command is not recognized or is not permitted in the current state or condition of the modem.

2 TERMINOLOGY AND ACRONYMS

This document makes use of acronyms that are in common use in data communications and cellular technology.

3 UPGRADING

If your modem firmware is an earlier version, you can acquire updated firmware by downloading on our website www.ercogener.com.

4 DOCUMENT STRUCTURE

This document assumes you have the 3GPP TS 27.007 AT command documentation. You can download it from ERCO & GENER website: http://www.ercogener.com

This reference includes a chapter covering Supported 27.007 AT Commands as well as the propriietary commands listed in the tables below. Each table corresponds to one chapter of this document.

5 COMMANDS

5.1 MODEM STATUS, CUSTOMIZATION, AND RESET COMMANDS

This chapter describes commands used to determine modem status, adjust customization settings, and reset the modem.

Table 1-1: Modem status and reset commands

Command	Description
!BAND	Selects a set of frequency bands / queries current selection
!BCINF	Returns the bootloader version
!BOOTHOLD	Resets modem and waits in bootloader for firmware download
^CARDMODE	Returns SIM card mode (card type)
+CLVL	Sets / returns internal loudspeaker volume
+CMUT	Enables / disables uplink voice muting
*CNTI	Returns current, available, and supported network technologies
+CQI	Returns or enables / disables return of averaged CQI (Channel Quality Indicator) value (WCDMA only)
!CSDONSIO2	Configures secondary SIO port for circuit-switched data
+ECIO	Returns total Energy per chip per power density value (WCDMA only)
!GETBAND	Returns the current active band
!GETRAT	Returns the current active radio access technology (RAT)
!GRELIMEI	Returns the modem's production TAC
!GRESET	Resets the modem
!GSMINFO	Displays 2G network information
!GSTATUS	Returns operational status
!GVER	Returns the firmware version
^HVER	Returns the modem hardware version
!NVPORTSET	Assigns appropriate USB endpoint AT port
!PCTEMP	Returns current temperature information
!PCVOLT	Returns current power supply voltage information
!POWERDOWN	Powers down the system
!REL	Queries the active protocol / revision
!RESET	Resets the modem
+RSCP	Returns Received Signal Code Power (RSCP) (WCDMA only)
!SCACT	Activates / deactivates PDP context for FIFO interface
!SCDFTPROF	Queries / sets the default profile ID
!SCDNS	Queries / sets profile ID DNS address
!SCPADDR	Displays IP address for specified PDP context
!SCPROF	Queries / sets SWI-specific profile information
!SCPROFDEL	Erase profile information

Command	Description
!SELMODE	Queries / sets current service domain
!SELRAT	Queries / sets current radio access technology (RAT)
!SDNOTINSTALLED	Returns SD installation status
!SIMNOTINSTALLED	Returns SIM installation status
!SMSRETRY	Queries / sets SMS retry period and interval
!SMSSTSEN	Enables / disables SMS status reports
!SWICALLPROG	Enables / disables Call Progress Notification
^SYSCONFIG	Queries / sets system configuration information
^SYSINFO	Returns service status information
!TIME	Queries / sets current time of day
!UDINFO	Queries / sets current time of day
+UPSC	Displays Primary Scrambling Code (WCDMA only)
+USET	Displays WCDMA set information
&V	Return operating mode AT configuration parameters

5.2 DIAGNOSTIC COMMANDS

This chapter describes commands used to select frequency bands and diagnose problems.

Table 1-2: Diagnostic commands

Cmnd	Description
!AUTH	!AUTH = <randNumber>
!GCIPHER	Enables / disables ciphering and integrity settings
!MXSTATS	Displays / clears 27.010 statistics

5.3 TEST COMMANDS

This chapter describes commands required to place the modem in particular modes of operation, test host connect ivity, and configure the transmitters and receivers for test measurements.

Table 1-3: Test commands

Cmnd	Description
!ERR	Displays diagnostic information
!GCCLR	Clears crash dump data
!GCDUMP	Displays the crash dump data

5.4 MEMORY MANAGEMENT COMMANDS

This chapter describes commands that control the data stored in non-volatile memory of the modem.

Table 1-4: Memory management commands

Cmnd	Description
!NVBACKUP	Backs up items stored in non-volatile memory

5.5 SIM COMMANDS

This chapter describes commands that communicate with an installed (U)SIM.

Table 1-5: SIM commands

Cmnd	Description
!ICCID	Returns (U)SIM card's ICCID

6 CONVENTIONS

The following format conventions are used in this reference:

Character codes or keystrokes that are described with words or standard abbreviations are shown within angle bra -ckets using a different font, such as <CR> for Carriage Return and <space> for a blank space character.

Numeric values are decimal unless prefixed as noted below.

Hexadecimal values are shown with a prefix of 0x, i.e. in the form 0x3D.

Binary values are shown with a prefix of 0b, i.e. in the form 0b00111101.

Command and register syntax is noted using an alternate font: !CHAN=<c>[,b]. The "AT" characters are not shown but must be included before all commands except as noted in the reference tables.

Characters that are required are shown in uppercase; parameters are noted in lower case. Required parameters are enclosed in angle brackets (<n>) while optional parameters are enclosed within square brackets (x). The brackets are not to be included in the command string.

Commands are presented in table format. Each chapter covers the commands related to that subject and presents a summary table to help you locate a needed command. Commands are in ASCII alphabetical order in the body of each chapter.

Any default settings are noted in the command tables. Note that these are the factory default settings and not the default parameter value assumed if no parameter is specified.

RESULT CODE

This is a numeric or text code that is returned after all commands (except resets). Only one result code is returned for a command line regardless of the number of individual commands contained on the line.

RESPONSE

This term indicates a response from the modem that is issued prior to a result code. Reading registers or issuing commands that report informa tion will provide a response followed by a result code unless the command generates an error.

Responses and result codes from the modem, or host system software prompts, are shown in this font:

CONNECT 14400

7 SUPPORTED GSM / WCDMA AT COMMANDS

This chapter identifies which ITU Recommendation V.250, 3GPP TS 27.005, and 3GPP TS 27.007 AT commands are supported on GenPro 30e.

These commands are used to:

•Control serial communications over an asynchronous interface (ITU-T Recommendation V.250)

•Control SMS functions for devices on GSM/WCDMA networks (3GPP TS 27.005)

•Control devices operating on GSM/WCDMA networks (3GPP TS 27.007)

The ITUT specification, Serial Asynchronous Dialling and Control (Recommendation V.250), is available on the International Telecommunication Union web site, www.itu.int, and the 3GPP specification documents, 3GPP TS 27 .007 V3.13.0 (2003-03) and 3GPP TS 27.007 V3.13.0 (2003-03), are available on the 3GPP web site, www.3gpp.org.

The tables below identify whether each command is supported on GenPro 30e.

An “N/A” in the Supported column of the table indicates that the command is related to a feature that is not available on the modems.

Some commands are partially supported.

The descriptions for these commands identify any limitations on command usage.

Also, some commands are described in more detail in later chapters

the descriptions for these commands link to those detailed entries (for example, &V in Table 1).

Table 1: Supported ITU-T Recommendation V.250 AT commands

Command	Description	Supported
&C	Set Data Carrier Detected (Received line signal detector) function mode	No
&D	Set Data Terminal Ready function mode	No
&F	Set all current parameters to manufacturer’s defaults	Yes
&S	Set DSR signal	No
&T	Auto tests	No
&V	Return operating mode AT configuration parameters	Yes
&W	Store current parameter to user-defined profile	No
+DR	V42bis data compression report	Yes
+DS	V42bis data compression	Yes
+GCAP	Request complete TA capabilities list	Yes
+GMI	Request manufacturer identification	Yes
+GMM	Request TA model identification	Yes
+GMR	Request TA revision identification	Yes
+GOI	Request global object identification	No
+GSN	Request TA serial number identification	Yes
+ICF	Set TE-TA control character framing	Yes
+IFC	Set TE-TA local data flow control	Yes

Command	Description	Supported
+ILRR	Set TE-TA local rate reporting mode	No
+IPR	Set fixed local rate	Yes
A	Answer incoming call	Yes
A/	Re-issues last AT command given	No
D	Dial	Yes
D><MEM><N>	Originate call to phone number in memory <MEM>	No
D><N>	Originate call to phone number in current memory	Yes
D><STR>	Originate call to phone number in memory which corresponds to alphanumeric field <STR>	No
DL	Redial last telephone number used	No
E	Set command echo mode	Yes
H	Disconnect existing connections	Yes
I	Display product identification information	Yes
L	Set monitor speaker loudness	No
M	Set monitor speaker mode	No
O	Switch from command mode to data mode	Yes
P	Select pulse dialing	No
Q	Set Result code presentation mode	No
S0	Set number of rings before automatically answering the call	Yes
S10	Set disconnect delay after indicating the absence of data carrier	Yes
S3	Set command line termination character	Yes
S4	Set response formatting character	Yes
S5	Set command line editing character	Yes
S6	Set pause before blind dialing	Yes
S7	Set number of seconds to wait for connection completion	Yes
S8	Set number of seconds to wait when comma dial modifier used	Yes
T	Select tone dialing	Yes
V	Set result code format mode	Yes
X	Set connect result code format and call monitoring	Yes
Z	Set all current parameters to user-defined profile	Yes

Table 2 : Supported 27.005 AT commands

Command	Description	Supported
+CBM	Cell broadcast message directly displayed	Yes
+CMBI	Cell broadcast message stored in Memory at specified <index> location	No
+CDS	SMS status report after sending a SMS	Yes
+CDSI	Incoming SMS status report	Yes
+CMGC	Send command	Yes
+CMGD	Delete message	Yes
+CMGF	Message format	Yes
+CMGL	List messages	Yes
+CMGR	Read message	Yes
+CMGS	Send message	Yes
+CMGW	Write message to memory	Yes
+CMMS	More message to send	Yes
+CMNA	New message acknowledgement to ME/TA	Yes
+CMS ERROR : <err>	SMS error (mobile or network error)	Yes
+CMSS	Send message from Storage	Yes
+CMT	Incoming message directly displayed	Yes
+CMTI	Incoming message stored in <mem> (“SM” - (U)SIM message storage) at location <index>	Yes
+CNMA	New message acknowledgement to mobile equipment	Yes
+CNMI	New message indications to TE	Yes
+CPMS	Preferred message storage	Yes
+CRES	Restore settings	No
+CSAS	Save settings	No
+CSCA	Service centre address	Yes
+CSCB	Select cell broadcast message types	Yes
+CSDH	Show text mode parameters	Yes
+CSMP	Set text mode parameters	Yes
+CSMS	Select message service	Yes

Table 3: Supported 27.007 AT commands

Command	Description	Support
C	ITU T V.24 circuit 109 carrier detect signal behavior command Format C<value> Limitations Default <value> = 2 <vallue> = 2 causes the AT/Data carrier detect pin to 'wink' (briefly Switch off and on) when data calls end <value> = 0 or 1 performs as defined in the standard	Partial
+CACM	Accumulated call meter	No
+CACSP	Voice Group or Voice Broadcast Call State Attribute Presentation	N/A
+CAEMLPP	eMLPP Priority Registration and Interrogation	No
+CAHLD	Leave an ongoing Voice Group or Voice Broadcast Call	N/A
+CAJOIN	Accept an incoming Voice Group or Voice Broadcast Call	N/A
+CALA	Alarm	N/A
+CALCC	List current Voice Group and Voice Broadcast Calls	N/A
+CALD	Delete alarm	N/A
+CALM	Alert sound mode	No
+CAMM	Accumulated call meter maximum	No
+CANCHEV	NCH Support Indication	No
+CAOC	Advice of Charge	No
+CAPD	Postpone or dismiss an alarm	N/A
+CAPTT	Talker Access for Voice Group Call	N/A
+CAREJ	Reject an incoming Voice Group or Voice Broadcast Call	N/A
+CAULEV	Voice Group Call Uplink Status Presentation	N/A
+CBC	Battery charge	Yes
+CBST	Select bearer service type	Yes
+CCCM	Current call meter value	No
+CCFC	Call forwarding number and conditions	Yes
+CCLK	Clock	N/A
+CCUG	Closed user group	Yes
+CCWA	Call waiting	Yes
+CCWE	Call Meter maximum event	No
+CDIP	Called line identification presentation	No
+CDIS	Display control	No
+CEER	Extended error report	No

Command	Description	Support
+CFUN	Set phone functionality Format +CFUN = [<fun> [, <rst>]] Limitations Valid <fun> values : 0 (minimum functionality, low power draw) 1 (full functionality, High power draw)	Partial
+CGACT	PDP context activate or deactivate	Yes
+CGANS	Manual response to a network request for PDP context activation	No
+CGATT	PS attach or detach	Yes
+CGAUTO	Automatic response to a network request for PDP context activation	No
+CGCLASS	GPRS mobile station class	Yes
+CGCLOSP	Configure local octet stream PAD parameters	No
+CGCMOD	PDP Context Modify	No
+CGDATA	Enter data state	No
+CGDCONT	Define PDP Context	Yes
+CGDSCONT	Define Secondary PDP Context	Yes
+CGEQMIN	3G Quality of Service Profile (Minimum acceptable)	Yes
+CGEQNEG	3G Quality of Service Profile (Negotiated)	Yes
+CGEQREQ	3G Quality of Service Profile (Requested)	Yes
+CGEREP	Packet Domain event reporting	Yes
+CGEV	GPRS network event indication	Yes
+CGMI	Request manufacturer identification	Yes
+CGMM	Request model identification	Yes
+CGMR	Request revision identification	Yes
+CGPADDR	Show PDP address	Yes
+CGQMIN	Quality of Service Profile (Minimum acceptable)	Yes
+CGQREQ	Quality of Service Profile (Requested)	Yes
+CGREG	GPRS network registration status	Yes
+CGSMS	Select service for MO SMS messages	Yes
+CGSN	Request product serial number identification	Yes
+CGTFT	Traffic Flow Template	Yes
+CHLD	Call related supplementary services	Yes
+CHSA	HSCSD non-transparent asymmetry configuration	N/A
+CHSC	HSCSD current call parameters	N/A
+CHSD	HSCSD device parameters	N/A

Command	Description	Support
+CHSR	HSCSD parameters report	N/A
+CHST	HSCSD transparent call configuration	N/A
+CHSU	HSCSD automatic user initiated upgrading	N/A
+CHUP	Hangup call	Yes
+CIEV	Indicator event	No
+CIMI	Request international mobile subscriber identity	Yes
+CIND	Indicator control	No
+CKEV	Key press or release event	No
+CKPD	Keypad control	No
+CLAC	List all available AT commands	No
+CLAE	Language Event	No
+CLAN	Set Language	No
+CLCC	List current calls	No
+CLCK	Facility lock	Yes
+CLIP	Calling line identification presentation	Yes
+CLIR	Calling line identification restriction	Yes
+CLVL	Sets / returns internal loudspeaker volume	Yes
+CMAR	Master Reset	No
+CME ERROR: <err>	Mobile Termination error result code	Yes
+CMEC	Mobile Termination control mode	No
+CMEE	Report Mobile Termination error	Yes
+CMER	Mobile Termination event reporting	No
+CMOD	Call mode	Yes
+CMUT	Enables / disables uplink voice muting	Yes
+CMUX	Multiplexing mode	Yes
+CNUM	Subscriber number	Yes
+COLP	Connected line identification presentation	Yes
+COPN	Read operator names	Yes
+COPS	Operator selection	Yes
+CPAS	Phone activity status	Yes
+CPBF	Find phonebook entries	Yes
+CPBR	Read phonebook entries	Yes
+CPBS	Select phonebook memory storage	Yes
+CPBW	Write phonebook entry	Yes
+CPIN	Enter PIN	Yes
+CPOL	Preferred operator list	Yes
+CPROT	Enter protocol mode	No

Command	Description	Support
+CPUC	Price per unit and currency table	Yes
+CPWC	Power class	No
+CPWD	Change password	Yes
+CR	Service reporting control	Yes
+CRC	Cellular result codes	Yes
+CREG	Network registration	Yes
+CRING	Incoming call type	Yes
+CRLP	Radio link protocol	Yes
+CRMP	Ring Melody Playback	N/A
+CRSL	Ringer sound level	N/A
+CRSM	Restricted SIM access	Yes
+CSCC	Secure control command	No
+CSCS	Select TE character set	Yes
+CSDF	Settings date format	N/A
+CSGT	Set Greeting Text	N/A
+CSIL	Silence Command	N/A
+CSIM	Generic SIM access	Yes
+CSNS	Single numbering scheme	No
+CSQ	Signal quality	Yes
+CSSN	Supplementary service notifications	Yes
+CSTA	Select type of address	Yes
+CSTF	Settings time format	Yes
+CSVM	Set Voice Mail Number	No
+CTFR	Call deflection	No
+CTZR	Time Zone Reporting	N/A
+CTZU	Automatic Time Zone Update	No
+CUSD	Unstructured supplementary service data	Yes
+CV120	V.120 rate adaption protocol	No
+CVHU	Voice Hangup Control	No
+CVIB	Vibrator mode	N/A
D	ITU T V.25ter [14] dial command	Yes
D*99#	Sets up a packet data call (PDP context) based on profile ID #1	Yes
D*99***<n>#	Sets up a packet data call (PDP context) based on profile ID #<n> (<n> is the <cid> in the +CGDCONT command)	Yes
+VTD	Tone duration	Yes
+VTS	DTMF and arbitrary tone génération	Yes
+WS46	PCCA STD 101 [17] select wireless network	No

8 MODEM STATUS, CUSTOMIZATION, AND RESET COMMANDS

8.1 INTRODUCTION

This chapter describes commands used to reset the modem, adjust customization settings, retrieve the firmware version, and monitor the temperature, voltage, and modem status.

8.2 COMMAND SUMMARY

The table below lists the commands described in this chapter.

Table 3-1: Modem status commands

Command	Description
!BAND	Selects a set of frequency bands / queries current selection
!BCINF	Returns the bootloader version
!BOOTHOLD	Resets modem and waits in bootloader for firmware download
^CARDMODE	Returns SIM card mode (card type)
+CLVL	Sets / returns internal loudspeaker volume
+CMUT	Enables / disables uplink voice muting
!CNTI	Returns current, available, and supported network technologies
+CQI	Returns or enables / disables return of averaged CQI (Channel Quality Indicator) value (WCDMA only)
+CSDONSIO2	Configures secondary SIO port for circuit-switched data
+ECIO	Returns total Energy per chip per power density value (WCDMA only)
!GETBAND	Returns the current active band
!GETRAT	Returns the current active radio access technology (RAT)
!GRELIMEI	Returns the modem's production IMEI
!GRESET	Resets the modem
!GSMINFO	Displays 2G network information
!GSTATUS	Returns operational status
!GVER	Returns the firmware version
^HVER	Returns the modem hardware version
!NVPORTSET	Assigns appropriate USB endpoint AT port
!PCTEMP	Returns current temperature information
!PCVOLT	Returns current power supply voltage information
!POWERDOWN	Powers down the system
!REL	Queries the active protocol / revision
!RESET	Resets the modem
+RSCP	Returns Received Signal Code Power (RSCP) (WCDMA only)
!SCACT	Activates / deactivates PDP context for FIFO interface
!SCDFTPROF	Queries / sets the default profile ID
!SCDNS	Queries / sets profile ID DNS address
!SCPADDR	Displays IP address for specified PDP context
!SCPROF	Queries / sets SWI-specific profile information

Command	Description
!SCPROFDEL	Erase profile information
!SDNOTINSTALLED	Returns SD installation status
!SELMODE	Queries / sets current service domain
!SELRAT	Queries / sets current radio access technology (RAT)
!SIMNOTINSTALLED	Returns SIM installation status
!SMSRETRY	Queries / sets SMS retry period and interval
!SMSSTSEN	Enables / disables SMS status reports
!SWICALLPROG	Enables / disables Call Progress Notification
^SYSCONFIG	Queries / sets system configuration information
^SYSINFO	Returns service status information
!TIME	Queries / sets current time of day
!UDINFO	Returns information from active USB descriptor
+UPSC	Displays Primary Scrambling Code (WCDMA only)
+USET	Displays WCDMA set information
&V	Return operating mode AT configuration parameters

8.3 COMMAND REFERENCE

Table 3-2: Modem status, customization, and reset commands

Command	Description
!BAND=<bandsetlnd> !BAND= ? !BAND?	Selects a set of frequency bands / queries current sélection This command is used to configure the modem to operate on a set of frequency bands, to look up the sets available, and to query the current sélection. Usage: A !BAND = ? reports allowed values for <bandsetlnd> and the corresponding frequency bands. AT!BAND=<bandsetlnd> is used to select a set of bands. AT!BAND? reports the current band sélection. Parameters: <bandsetlnd> (band index value-When configured for ‘all regions’, all of thèse bands appear) : 00 = All bands 01 = WCDMA 2100 02 = WCDMA 850/1900 03 = GSM 900/1800 04 = GSM 850/1900 05 = GSM ALL 06 = WCDMA 2100 GSM 900/1800 07 = WCDMA 850/1900 GSM 850/1900 08 = WCDMA ALL 09 = WCDMA 850/2100 0A = WCDMA 800/2100 0B = WCDMA 850/ 0C = WCDMA 850 GSM 900/1800 0D = WCDMA 850 Example: When configured for a specific region by the manufacturer, AT!BAND=? could return: 00, All bands 01, WCDMA 2100 02, N/A (Defaults to All) 03, GSM 900/1800 04, N/A (Defaults to All) 05, GSM ALL 06, N/A (Defaults to All) 07, N/A (Defaults to All) 08, WCDMA ALL 09, N/A (Defaults to All) 0A, N/A (Defaults to All)
Note : These band sets are preconfigured by ERCO & GENER. The bands displayed by the query command (AT!BAND=?) depend on this configuration, as shown in this example.	

Command	Description
	0B, N/A (Defaults to All) 0C, N/A (Defaults to All) 0D, N/A (Defaults to All)
!BCINF	Returns the bootloader version This command is used to return the module's bootloader version. Usage: AT!BCINF returns several values-the bootloader version is the second parameter returned. Example: AT!BCINF returns: BOOT Address: <…> Version: <version>… Parameters: <version> (bootloader version): ASCII string Maximum length: 84 characters Example: H1_0_0_0ACBT G:/WS/FW/H1_0_0_0ACBT/MSM6280/SRC 2006/09/01 16:33:30
!BOOTHOLD	Resets modem and waits in bootloader for firmware download This command is used to prepare for a firmware download by resetting the modem and waiting in 'boot and hold' mode. Usage: AT!BOOTHOLD forces the modem to backup user NV options, reset, and then wait in boot and hold mode for a firmware download.
^CARDMODE	Returns SIM card mode (card type) This command is used to identify the type of SIM card being used. Returned parameters: <sim_type> (the type of sim card) 0 = unknown 1 = SIM 2 = USIM
+CLVL=<level> +CLVL=? +CLVL?	Sets / returns internal loudspeaker volume This command is used to set or report the modem's internal loudspeaker volume. Usage: AT+CLVL=<level> sets the volume within a specified range AT+CLVL=? reports allowed values for <level> AT+CLVL? reports the current volume Parameters: <level> (Sound level): Manufacturer-specific volume levels

Command	Description
	Valid range: 0(lowest)-7(highest)
+CMUT=<enableFlag>	Enables / disables uplink voice muting
+CMUT=?	This command is used to enable or disable uplink voice muting during a voice call. Usage: AT+CMUT=<enableFlag> turns muting on or off AT+CMUT=? returns valid <enableFlag> values Parameters: <enableFlag> (Enable / disable muting): 0 = Mute off 1 = Mute on
*CNTI=<n>	Returns current, available, and supported network technologies This command is used to report the network technology currently being used, the technologies available for use, or the technologies supported by the modem. Usage: AT*CNTI=<n> returns *CNTI: <n>,<tech>[,<tech>[…]] Parameters: <n> (reporting option): 0 = Network technology currently in use 1 = Available technologies on current network 2 = All technologies supported by the modem <tech> (technology type): ASCII string Valid values: “GSM”, “GPRS”, “EDGE”, “UMTS”, “HSDPA”, “HSUPA” (only when <n> = 1)
+CQI?	Returns or enables / disables return of averaged CQI (Channel Quality Indicator) value (WCDMA only)
+CQI=<enableFlag>	This command returns the averaged CQI from the modems. Usage: AT!CQI? returns the average CQI and the number of samples used to determine the average. For example: +CQI: total valid samples 1600, average cqi 26 AT!CQI=<enableFlag> enables or disables the query version of the command (+CQI?) Parameters: <enableFlag> (enable / disable CQI value retrieval): 0 = Disable retrieval 1 = Enable retrieval
!CSDONSIO2?	Configures secondary SIO port for circuit-switched data

Command	Description
!CSDONSIO2=<port#>	This command configures the secondary serial I/O (SIO) port for circuit-switched data over the main AT port or MUX1/MUX2/MUX3. Note: The modem must be reset before any change takes effect. Usage: AT!CSDONSIO2? returns the current port number currently used for the SIO port. For example: +CSDONSIO2: <port#> AT!CSDONSIO2=<port#> sets the port number to use for the SIO port. Parameters: <port#> (Port used for circuit-switched data): 0 = CSD on main AT port (Default) 1 = CSD on MUX1 2 = CSD on MUX2 3 = CSD on MUX3
+ECIO?	Returns total Energy per chip per power density value (WCDMA only) This command returns the total energy per chip per power density (Ec/Io) value of the active set's three strongest cells. Usage: AT!ECIO2? returns the signed dB values of the three strongest cells in the active set. The values are listed from strongest to weakest, based on RSCP, and separated by tabs. If there are less than three cells, only those values appear. For example: +ECIO: Ec/Io: -3.5 dB -14.0 dB -24.5 dB ---or--- +ECIO: Ec/Io: -7.5 dB Valid range = -31.5 dB to 0 dB The command +USET also displays Tot Ec/Io as one of its outputs.
!GETBAND?	Returns the current active band This command returns the active band currently being used by the modem. Usage: AT!GETBAND? returns a description of the current active band, or returns an error message. Note: Due to stack implementation requirements, !GETBAND reports W800 for both W800 and W850
!GETRAT?	Returns the current active radio access technology (RAT) This command returns the RAT currently being used by the modem. Usage: AT!GETRAT? returns a description of the current RAT, or returns an error

Command	Description
	message.
!GRELIMEI?	Returns the modem's production TAC This command returns the modem's production TAC (Type Allocation Code). (TAC is first 8 chars, then padded with Zeros). EG: if IMEI is 289258158732085, returns 289258150000000. Usage: AT!GRELIMEI? returns the <TAC> assigned to the modem. Parameters: <TAC> 15-character string. First 8 characters are the TAC, remainder of string is zero-padded. Example: If the modem's IMEI is 289258158732085, !GRELIMEI returns 289258150000000.
!GRESET	Resets the modem This command performs a modem reset. Note: This command is identical in function to !RESET.
!GSMINFO?	Displays 2G network information This command returns 2G network information for the 'serving' cell and up to 6 'neighbor' cells. Parameters: (referenced in example below) <mccmnc>: Mobile Country Code and Mobile Network Code (combine to form the PLMN) 16-bit decimal <lac>: Location Area Code 16-bit decimal <cellid>: Cell Id 16-bit decimal <bsic>: Base Station Identity Code 8-bit decimal <ncc>: Network Color Code 8-bit decimal <bscc>: Base Station Color Code 8-bit decimal <rac>: Routing Area Code 8-bit decimal <minrx>: Minimum Rx level (dBm) needed to register 16-bit decimal <maxrach>: Reserved for future use 16-bit decimal <band>: Indicates the 2G network band

Command	Description
	Valid values: “E900”, “P900”, “1900”, “1800”, “850”, “Unknown” <arfcn>: Absolute Radio Frequency level (dBm) 16-bit decimal <rxlvl>: Received BCCH frequency level (dBm) 16-bit decimal <c1>: C1 cell selection criteria 16-bit decimal <c2>: C2 cell selection criteria 16-bit decimal <c31>: C31 cell selection criteria 16-bit decimal <c32>: C32 cell selection criteria 16-bit decimal Returns: !gsminfo: Serving Cell: PLMN: <mccmnc> LAC: <lac> Cell ID: <cellid> BSIC: <bsic> NCC: <ncc> BSCC: <bscc> RAC: <rac> Min Rx Lvl Rqd:<minrx> Max Rach: <maxrach> Band: <band> ARFCN: <arfcn> Rx level (dBm): <rxlvl> C1: <c1> C2: <c2> C31: <c31> C32: <c32> Neighbour Cells: Band: <band> <band> <band> ARFCN: <arfcn> <arfcn> <arfcn> RAC: <rac> <rac> <rac> RX level (dBm): <rxlvl> <rxlvl> <rxlvl> C1: <c1> <c1> <c1> C2: <c2> <c2> <c2>

Command	Description
!GSTATUS?	C31: <c31> <c31> <c31> C32: <c32> <c32> <c32> Returns operational status This command returns specific details about the current operational status of the modem. Parameters: <ctime>: Current time (Seconds from bootup) <temperature>: Approximative temperature (± 5°C) <btime>: Bootup Time (Seconds from reset) <mode>: Current modem mode (“POWERING OFF”, “FACTORY TEST”, “OFFLINE”, “ONLINE”, LOW POWER MODE”, “RESETTING”, “NETWORK TEST”, “OFFLINE REQUEST”, “PSEUDO ONLINE”, “Unknown”) <smode>: System mode acquired by modem (“No service”, “AMPS”, “CDMA”, “GSM”, “HDR”, “WCDMA”, “GPS”, “WCDMA+GSM”, “Unknown”) <Psstate>: Current PS state (“Attached”, “Not attached”) <wband>: Current WCDMA band being accessed (“CDMA cell”, “CDMA PCS”, “IMT2000”, “WCDMA1900”, “WCDMA1800”, “WCDMA800”, “GSM EGSM900”, “GSM DCS1800”, “GSM 850”, “GSM1900”, “GPS”, “No band”) <gband>: Current GSM band, either TCH or BCCH (“GSM850”, “GSM900”, “DCS1800”, “PCS1900”, “Unknown”) <wchan>: WCDMA channel number <gchan>: GSM channel number <gmmstate>: Current GMM state (“IDLE”, “DEREGISTERED”, “Registering”, “REGISTERED”, “Deregistering”, “RA updating”, “Requesting srvc”) <gmmsubstate>: Current GMM sub-state (“NORMAL SERVICE”, “LIMITED SERVICE”, “ATT NEEDED”, “ATTEMPTING ATT”, “NO IMSI”, “NO SERVICE”, “PLMN SEARCH”, “SUSPENDED”, “UPDATE NEEDED”, “UPDATING”, “DEATACHING”, “---“) Note: “---“ indicates ‘undefined sub-state’ <mmstate>: Current MM state (“NULL”, “IDLE”, “LA Rejected”, “LA Start”, “CONNECTED”, “Network Command”, “---“) Note: “---“ indicates ‘undefined state’ <mmsubstate>: Current MM sub-state (“NORMAL SERVICE”, “LIMITED SERVICE”, “NO IMSI”, “NO SERVICE”, “PLMN SEARCH”, “UPDATE NEEDED”, “UPDATING”, “---“)

Command	Description
	Note: "---" indicates 'undefined sub-state'
!GVER?	Returns the firmware version This command returns the firmware version as a string in the format version yyyy/mm/dd hh:mm:ss.
^HVER	Returns the modem hardware version This command returns the modem's hardware version number based on the FSN. The version number is returned as a short string representing the actual version. Examples: "E2" – Eng2 device "1.0" – Production v1.0 "1.1" – Production v1.1 etc.
!NVPORTSET?	Assigns appropriate USB endpoint AT port
!NVPORTSET=<mapping>	This command maps the AT port to either endpoint 5 or endpoint 2 in non-MUX mode, or reports the current mapping. Usage: AT!NVPORTSET? returns the current endpoint <mapping> AT!NVPORTSET=<mapping> maps the AT port to the appropriate USB endpoint Parameters: <mapping> (mapping type): 0 = endpoint 5 (Default value) 1 = endpoint 2
!PCTEMP?	Returns current temperature information This command returns the module's temperature state and actual temperature. Usage: AT!PCTEMP? returns the <state> and <temperature> Parameters: <state> (temperature state): "Normal" "High Warning" "High Critical" "Low Critical" <temperature> (current temperature): Current temperature in degrees Celsius – this is the highest temperature reported by the two thermistors (one measures the PA (Power Amplifier) used by the WCDMA transceiver, the other measures the temperature of the PA used by the GSM transceiver).
!PCVOLT?	Returns current power supply voltage information This command returns the module's power supply state and actual voltage. Usage:

Command	Description
	AT!PCVOLT? returns the <state>, <voltage>, and <raw> (Analog/Digital Convertor reading). Parameters: <state> (power supply state): “Normal” “High Critical” “Low Warning” “Low Critical” <voltage>: Current voltage reading in mV. <raw>: Analog/Digital Convertor reading
!POWERDOWN	Powers down the system This command powers down the system. After using this command, the modem will not communicate with the host until is has been power cycled. Usage: AT!POWERDOWN returns “OK” and powers the system down. Note: This command should only be used when testing using an appropriate testing jig-do not use it when the modem is installed in a computer.
!REL?	Queries the active protocol / revision This command is used to indicate the modem’s current protocol, SGSN, and MSC revision settings. Usage: AT!REL? reports the current operating protocol, SGSN revision, and MSC revision in the format <wcdmarrc> <sgsnr> <mscr> (each value appears on a separate line). Parameters: <wcdmarrc>: WCDMA RRC Revision (Protocol) 00 = Release 99 01 = Release 5 (Default) <sgsnr>: SGSNR Revision 00 = Release 97 01 = Release 99 02 = Release 5 03 = Dynamic (Default)--- uses whichever protocol is broadcast by the network <mscr>: MSC Revision 00 = Release 97 01 = Release 99 02 = Release 5 03 = Dynamic (Default)--- uses whichever protocol is broadcast by the network

Command	Description
!RESET	Resets the modem This command performs a modem reset. Note: This command is identical in function to !GRESET.
+RSCP?	Returns Received Signal Code Power (RSCP) (WCDMA only) This command returns the RSCP of the active set's three strongest cells. Usage: AT!RSCP? returns the signed dBm value, from weakest to strongest cell. For example: +RSCP: RSCP: -73 dBm -84 dBm Valid return values: -120 dBm to -20 dBm
!SCACT? [<pid>] !SCACT=<state>[, <pid>]	Actives / deactivates PDP context for FIFO interface This command is used to activate or deactivate the specified PDP context for FIFO interface. Usage: AT!SCACT?[<pid>] reports the status of the identified profile (<pid>). If no <pid> is specified, the status of all profiles is returned. AT!SCACT=<state>[,<pid>] is used to set the state of the identified profile (<pid>). If no <pid> is specified, profile 1 is updated. Parameters: <state> (PDP context activation state): 0 = Dactivated 1 = Activated During assignment, any <state> other than 1 or 2 will return an ERROR response. <pid> (PDP context definition): Valid range: 1-16
!SCDFTPROF? !SCDFTROPF=<pid>	Queries / sets the default profile ID This command is used to query / set the default profile ID. Usage: AT!SCDFTPROF? returns the default profile ID (<pid>). AT!SCDFTPROF=<pid> sets the default profile ID to <pid>. Parameters: <pid> (Profile ID): Valid range: 1-16 – a valid profile ID that will be used as the default
!SCDNS?<pid> !SCDNS=<pid>, <pri_dns>,<sec_dns>	Queries / sets profile ID DNS address This command is used to query / set the primary and secondary DNS addresses of a profile. Usage: AT!SCDNS?<pid> returns the primary (<pri_dns>) and secondary (<sec_dns>) DNS addresses for the specified profile (<pid>). AT!SCDNS=<pid>,<pri_dns>,<sec_dns> sets the default primary and secondary

Command	Description
	IP addresses for domain name services. Parameters: <pid> (PDP context definition) Valid range: 1-16 – a valid profile ID that will be used as the default <pri_dns> (Default primary IP address for DNS lookup): 'Dot format' IP address. For example, 10.10.10.1 Used by modem when no DNS server address is received over the air during PDP context activation <sec_dns>: Default secondary IP address for DNS lookup 'Dot format' IP address. For example, 10.10.10.1 Used by modem when no DNS server address is received over the air during PDP context activation
!SCPADDR=<pid>	Displays IP address for specified PDP context This command is used to display the IP address of the specified PDP context (profile), or for all profiles. Usage: AT!SCPADDR=<pid> returns the IP address for the specified <pid> in the format <pid>, <addr>. AT!SCPADDR= returns the IP addresses for all defined profiles. Parameters: <pid> (profile ID (PDP context)) Valid range: 1-16 <addr> (IP address of <pid>) 'Dot' format IP address (for example, 255.255.255.0)
!SCPROF?<pid> !SCPROF=<pid>,<label>,<autoconnect>,<promptforpassword>,<autolaunchapp>,<rffu>	Queries / sets SWI-specific profile information This command is used to query / set the SWI specific information for a profile. Usage: !SCPROF?<pid> reports current SWI-specific information for the specified profile (<pid>) in the format <pid> <label> <autoconnect> <promptforpassword> <autolaunchapp> <pdplingertime>. !SCPROF=<pid>…<rffu> sets the SWI-specific information for the specified profile (<pid>). Parameters: <pid>: PDP context definition Valid range: 1-16 – a valid profile ID that will be used as the default <label>: Configuration buffer label 30-character string surrounded by quotation marks <autoconnect>: Automatic context activation mode 0 = manual activation 1 = auto activation <promptforpassword>: Flag value (prompt for password)

Command	Description
	0 = do not prompt for password 1 = prompt for password <autolaunchapp>: Flag value (auto launch application) 0 = do not auto launch the application 1 = auto launch the application <ruff>: Reserved for future use 0-32767 = Reserved for future use
!SCPROFDEL=?	Erase profile information
!SCPROFDEL=<pid>	This command is used to erase the information for one or all profiles.
!SCPROFEL	Usage: !SCPROFDEL=? returns valid formats for the assignment command (!SCPROFDEL=). !SCPROFDEL=<pid>deletes the identified profile. !SCPROFDEL deletes all profiles Parameters: <pid>: PDP context definition Valid range: 1-16
!SELMODE?	Queries / sets current service domain
!SELMODE=?	This command is used to configure the modem to use a specific service domain.
!SELMODE=<sdlnd>	Usage: AT!SELMODE? returns the current service domain index (<sdlnd>) and description. If the <sdlnd> is undefined, an error message is returned. AT!SELMODE=? returns a list of supported service domain indexes in the format <sdlnd>, <description>. AT!SELMODE=<sdlnd> sets the desired service domain. Parameters: <sdlnd> (service domain index): 00 = CS only 01 = PS only 02 = CS and PS
!SELRAT?	Queries / sets current radio access technology (RAT)
!SELRAT=?	This command is used to configure the modem to use a specific (or preferred) RAT.
!SELRAT=<ratlnd>	Usage: AT!SELRAT? returns the current RAT configuration index (<ratlnd>) and description. If the <ratlnd> is undefined, an error message is returned. AT!SELRAT=? returns a list of supported RAT configurations in the format <ratlnd>, <description>. AT!SELRAT=<ratlnd> sets the desired RAT configuration. Parameters: <ratlnd> (RAT configuration index):

Command	Description
	00 = Automatic 01 = UMTS 3G only 02 = GSM 2G only 03 = UMTS 3G preferred 04 = GSM 2G preferred
!SMSRETRY? !SMSRETRY=? !SMSRETRY=<period>,<interval>	Queries / sets SMS retry period and interval This command is used to configure the SMS retry period and interval for MO-SMS. Usage: AT!SMSRETRY? returns the current <period> and <interval> settings. AT!SMSRETRY=? reports the format used for AT!SMSRETRY. AT!SMSRETRY=<period>, <interval> sets the retry period and retry interval Parameters: <period> (Number of seconds allowed for MO-SMS retry attempts): 0-255 <interval> (Number of seconds to wait between MO-SMS retry attempts): 0-255 Note: If <interval> is greater than <period>, a single retry attempt is made. Note: <interval> ignores the time spent actually performing a retry attempt. If <interval> = 5, attempts are made at elapsedTime = 0, 5, 10, etc. until an attempt is successful or <period> - elapsedTime < <interval>. Example 1: Assume a retry attempt takes 2 seconds. If <period> = 1 and <interval> = 8, and no attempts are successful: time = 0: Retry attempt fails at time = 2. No more attempts are made because <period> has expired. Example 2: Assume a retry attempt takes 2 seconds. If <period> = 3 and <interval> = 5, and no attempts are successful: time = 0: Retry attempt fails at time = 2. No more attempts are made because <period> will expire before the <interval> passes. Example 3: Assume a retry attempt takes 2 seconds. If <period> = 14 and <interval> = 5, and no attempts are successful: time = 0: Retry attempt fails at time = 2; next attempt will begin at time=5 (the <interval> counts from the beginning of the previous attempt) time = 5: Retry attempt fails at time = 7 ; next attempt will begin at time=10 time = 10: retry attempt fails at time = 12; No more attempts will be made because

Command	Description
	the <period> will expire before another <interval> of 5 seconds can pass.
!SMSSTSEN? !SMSSTSEN=? !SMSSTSEN=<enable>, <mode>	Enables / disables SMS status reports This command is used to enable / disable SMS status reports for MO-SMS messages, and to indicate if the user should be able to enable / disable the reports. The status report indicates when a message is delivered to its intended recipient (in addition to the report that is sent when the network first receives the message). Usage: AT!SMSSTSEN? returns the current <enable> and <mode> settings. AT!SMSSTSEN=? reports the format used for AT!SMSSTSEN. AT!SMSSTSEN=<enable>, <mode> enables / disables status reports, and indicates if the user can enable / disable the feature. Parameters: <enable> (Enable / Disable SMS status reports): 0 = Disable 1 = Enable <mode> (User access to reporting feature): 0 = Read / Write (User can enable / disable the feature) 1 = Read only (User cannot enable / disable the feature---the feature status is preset by the device provider)
!SWICALLPROG? !SWICALLPROG=<cpnStatus>	Enables / disables Call Progress Notification This command is used to enable or disable call progress notification. This allows the host to receive call status updates such as type of call, answered, on hold, etc. Usage: AT!SWICALLPROG? returns the current <cpnStatus>. AT!SWICALLPROG=<cpnStatus> Information on current calls is returned, when the call status changes, in the format: !SWICALLPROG:<idx1>,<dir>,<stat>,<mode>,<mpty>,<number>,<type>,<alpha> !SWICALLPROG:<idx2>,<dir>,<stat>,<mode>,<mpty>,<number>,<type>,<alpha> … Note: When call progress notification is enabled, the standard AT command +CLCC (List Current Calls) is disabled. Parameters: <cpnStatus> (Call progress notification status): 0 = Disabled 1 = Output on AT channel if AT is not blocked 2 = Output on AT channel even if AT is blocked Any other value will return an ERROR response <idx> (Call identification number): Integer value as described in GSM 02.30 Section 4.5.5.1

Command	Description
	Can be used in +CHLD command <dir> (Call direction): 0 = Mobile-originated (MO) 1 = Mobile-terminated (MT) <state> (Call state): 0 = Active 1 = Held 2 = Dialing (MO calls) 3 = Alerting (MO calls) 4 = Incoming (MT calls) 5 = Waiting (MT calls) 6 = Disconnected <mode> (Bearer / teleservice): 0 = Voice 1 = Data 2 = Fax <mpty> (Multiparty status) 0 = Not part of a multiparty (conference) call 1 = Part of a multiparty (conference) call <number> (Telephone number of other end of connection): format specified by next parameter (<type>) <type> (Address octet type): Two bitfields identifying the type of telephone number and numbering plan type (national / international) Format specified in 3GPP TS 24.008 Section 10.5.4.7 <alpha> (Tag associated with <number> in the phonebook): Example: “John Doe”
^SYSCONFIG? ^SYSCONFIG=<mode>,<acq order>,<roam>,<srvDomain>	Queries / sets system configuration information This command is used to set and retrieve the modem’s configuration. Usage: AT^SYSCONFIG= sets the various configuration parameters. You must specify all of the parameters. AT^SYSCONFIG? Returns the current modem configuration information in the format <mode> <netAccessOrder> <roaming> <srvDomain>. Parameters: <mode> (Supported system mode): 2 = Auto-select 13 = GSM only 14 = WCDMA only 16 = No change-use this value with AT^SYSCONFIG= if you do not want to

Command	Description
	change the current setting. <acqOrder> (Network acquisition order) 0 = Automatic 1 = GSM, then WCDMA 2 = WCDMA, then GSM 3 = No change-use this value with AT^SYSCONFIG= if you do not want to change the current setting. <roam> (Roaming support) 0 = Not supported 1 = Supported 2 = No change-use this value with AT^SYSCONFIG=if you do not want to change the current setting. <srvDomain> (Service domain support) 0 = Circuit-switched only 1 = Packet-switched only 2 = Circuit- and packet-switched 3 = Any 4 = No change-use this value with AT^SYSCONFIG= if you do not want to change the current setting. <simStatus> (SIM status) 0 = SIM is not available 1 = SIM is available 255 = No SIM, or the SIM has been PIN-locked (invalid PIN was entered and must be reset)
^SYSINFO	Returns service status information This command returns current service type and availability information, and the current status of the module's SIM in the format <srvStatus> <srvDomain> <roamStatus> <sysMode> <simState>. Parameters: <srvStatus> - Service availability 0 = No service 1 = Limited service 2 = Service 3 = Limited regional service 4 = Power save mode or deep sleep mode <srvDomain> - Service domain 0 = No service 1 = Circuit-switched service only 2 = Packet-switched service only 3 = Circuit- and packet-switched service <roamStatus> - Roaming status indicator

Command	Description
	0 = Not roaming 1 = Roaming <sysMode> - System mode 0 = No service 3 = GSM / GPRS mode 5 = WCDMA mode <simStatus> - SIM status 0 = SIM is not available 1 = SIM is available 255 = No SIM, or the SIM has been PIN-locked (invalid PIN was entered and must be reset)
!TIME=<YYYY>, <MM>, <DD>, <hh>, <mm>, <ss> [, <TZ>, <DST>] !TIME? !TIME=?	Queries / sets current time of day This command is used to set and retrieve the current time of day---the time of day can be set using this command, or could be set by the network. If the time has not been set, the command returns ERROR. Usage: AT!TIME= <YYYY>,<MM>,<DD>,<hh>,<mm>,<ss> [, <TZ>, <DST>] sets the current time. AT!TIME? returns four lines of data. Lines 1-2 show local date and time, lines 3-4 show UTC date and time. Date format is YYYY/MM/DD; time format is hh:mm:ss. Example response: !TIME: 2007/10/21 10:23:38 (local) 2007/10/21 17:23:38 (UTC) OK Note: In this example, <tz> is -32 (-8 hours) and DST is 1 (+1 hour). AT!TIME=? reports the format used for AT!TIME Parameters: <YYYY> - year 4 digits required <MM> - month Valid values: 01-12 <DD> - day Valid values: 01-31 <hh> - hour Valid values: 00-23 <mm> - minute Valid values: 00-59

Command	Description
	<ss> - second Valid values: 00-59 <TZ> - time zone offset from UTC in 15-minute increments Valid values: -48 to 48 <DST> must also be set if <TZ> is used <DST> - Daylight Saving Time offset in 1-hour increments Valid values 0 to 2 <TZ> must also be set if <DST> is used
!UDINFO?	Returns information from active USB descriptor This command returns information from the active USB descriptor in the format <vid> <pid> <manuf string> <product string> (each parameter on a separate line). Parameters: <vid> - Vendor ID Valid range: 0000-FFFF <pid> - Product ID Valid range: 0000-FFFF <manuf string> - Manufacturer string ASCII string (29 characters maximum) Example: “Sierra Wireless, Incorporated” <product string> - Product string ASCII string (64 characters maximum) Example: “Mini Card”
+UPSC	Displays Primary Scrambling Code (WCDMA only) This command displays the Primary Scrambling Code (PSC) of the reference WCDMA cell. Example: AT!UPSC returns: +UPSC: <psc> Parameters: <psc> - Primary Scrambling Code of reference WCDMA cell Valid range: 0-255 255 = No valid cell
+USET?<set> +USET=?	Displays WCDMA set information This command displays WCDMA set information (Active Set, Candidate Set, etc.). Usage: AT+USET?<set> returns detailed information about each item in the <set>. AT+USET=? Returns the list of valid <set> values Example: AT+USET?<set> returns: +USET:<setName>

Command	Description
	Count: <count> PSC: <psc> <ref> SSC: <ssc> STTD: <sttd> Tot Ec/Io: <totEcIo> Ec/Io: <EcIo> RSCP: <rscp> Window Size: <winSize> …(repeats for <count> items) Parameters: <set> - Set for which details are requested Valid range: 0-11 (see <setName> for descriptions) <setName> - Description of <set> value ASCII string Valid values: 0-Active Set 1-Sync Neighbour Set 2-Async Neighbour Set 3-Unlisted Set 4-Add-Candidate Set 5-Drop-Candidate Set 6-After failed W2G Set 7-DCH-Only Set 8-HHO Active Set 9-HHO Active No PN Set 10-Candidate to Unlisted Set 11-Saved Set <count> - Number of items in <set> Valid range: 0-255 <psc> - Primary Scrambling Code Valid range: 0-FFFF <ref> - Reference PSC designator string Displays “(REF)” if this is the reference PSC <ssc> - Secondary Scrambling Code Valid range: 0-FFFF <sttd> - Common Pilot Channel (CPICH) supports Space Time Transit Diversity 0 = Not supported 1 = Supported <totEcIo> - Total Ec/Io

Command	Description
	Valid range: 00-FF To convert to a dB value, convert to decimal and divide by -2. Example: 0x0B / -2 = 11 / -2 = -5.5 dB Note: The command AT+ECIO? also reports Total Ec/Io as a dB value. <EcIo> - Best path Ec/Io Valid range: 00-FF To convert to a dB value, convert to decimal and divide by -2. Example: 0x0B / -2 = 11 / -2 = -5.5 dB <rscp> - Received Signal Code Power Valid range: 0-FFFF <winSize> - Search window size Valid range: 0000-FFFFFFFF
&V	Return operating mode AT configuration parameters This command returns the status of all AT command parameters that apply to the current operating mode. Example: “AT&V <Enter> &C: 2; &D: 2; &F: 0; E: 1; L: 0; M: 0; Q: 0; V: 1; X: 0; Z: 0; S0: 0; S2; 43; S3: 13; S4: 10; S5: 8; S6: 2; S7: 50; S8: 2; S9: 6; S10: 14; S11: 95; +FCLASS: 0; +ICF: 3,3; +IFC: 2,2; +IPR: 115200; +DR: 0; +DS: 0,0,2048,6; +WS46: 12; +CBST: 0,0,1; +CRLP: (61,61,48,6,0),(61,61,48,6,1),(240,240,52,6,2); +CV120: 1,1,1,0,0,0; +CHSN: 0,0,0,0; +CSSN: 0,0; +CREG: 0; +CGREG: 0; +CFUN:; +CSCS: “IRA”; +CSTA: 129; +CR: 0; +CRC: 0; +CMEE: 2; +CGDCONT: (1,”IP”,””,””,0,0); +CGDSCONT: ; +CGTFT: ; +CGEQREQ: ; +CGEQMIN: ; +CGQREQ: ; +CGQMIN: ; +CGEREP: 0,0; +CGDATA: “PPP”; +CGCLASS: “A”; +CGSMS: 3; +CSMS: 0; +CMGF: 0; +CSCA: “”,; +CSMP: ,,0,0; +CSDH: 0; +CSCB: 0,””,””; +FDD: 0; +FAR: 0; +FCL: 0; +FIT: 0,0; +ES: ,,; +ESA: 0,,,,0,0,255,; +CMOD: 0; +CVHU: 0; +CPIN: ,; +CMEC: 0,0,0; +CKPD: 1,1; +CGATT: 0; +CGACT: 0; +CPBS: “SM”; +CPMS: “SM”,”SM”,”SM”; +CNMI: 0,0,0,0,0; +CMMS: 0; +FTS: 0; +FRS: 0; +FTH: 3; +FRH: 3; +FTM: 96; +CCUG: 0,0,0; +COPS: 0,0,””; +CUSD: 0; +CAOC: 1; +CCWA: 0; +CPOL: 0,2,””; +CTZR: 0; +CLIP: 0; +COLP: 0; +CMUX: 0,0,5,31,10,3,30,10,2; !CMUX: 0,0,5,31,10,3,30,10,2 OK”

9 DIAGNOSTIC COMMANDS

9.1 INTRODUCTION

This chapter describes commands used to diagnose modem problems.

9.2 COMMAND SUMMARY

The table below lists the commands described in this chapter.

Table 4-1: Diagnostic commands

Command	Description
!AUTH	Runs GSM algorithm on SIM
!GCIPHER	Enables / disables ciphering and integrity settings
!MXSTATS	Displays / clears 27.010 statistics

9.3 COMMAND REFERENCE

Table 4-2: Diagnostic command details

Command	Description
!AUTH = <randNumber>	Runs GSM algorithm on SIM This command is used to authenticate the SIM using a random number. The command returns the SIM's response and a 64-bit ciphering key in the format: <key>, <SRES> Parameters: <randNumber> 32 hexadecimal digit random number. Example: 123A567B9012C4567D90123E56789012 <SRES> - SIM response Example: 500e2879 <key> - Ciphering key Example: ec793ac5662e7000
!GCIPHER = <setting> !GCIPHER ?	Enables / disables ciphering and integrity settings To register onto a network with WCDMA service, the modem's ciphering and integrity settings must be enabled or disabled to match the network settings. Most carriers enable both ciphering and integrity. When testing the modem, you may be using a SIM that has different codes for ciphering and integrity than those used by the test system. In this case, you may need to disable ciphering and integrity checking to use the test system. Usage: AT!GCIPHER=<setting> sets the ciphering and integrity settings. AT!GCIPHER? reports the current ciphering and integrity settings (0=disabled, 1=enabled). Parameters: <setting> (enable / disable ciphering and integrity) 0 = ciphering disabled; integrity disabled

	1 = ciphering enabled; integrity disabled 2 = ciphering enabled; integrity enabled 3 = ciphering disabled; integrity enabled
!MXSTATS=0 !MXSTATS ?	Displays / clears 27.010 statistics TS 27.010 is a standard that defines a multiplexing protocol between a mobile station and a terminal. This standard is supported on the modem and AT!MXSTATS is used to display statistics related to that protocol for debugging purposes. Usage: AT!MXSTATS=0 clears the statistics. AT!MXSTATS? reports the statistics. The command AT!MXSTATS? returns these statistics: Sessions Started Sessions Ended SABM (Tx/Rx) DISC (Tx/Rx) UA (Tx/Rx) DM (Tx/Rx) UIH (Tx/Rx) T1 expiry T2 expiry T3 expiry N1 count N2 count Bad Frame (addr) Bad Frame (ctl) Bad Frame (len) Bad Frame (F9) Bad Frame (fcs) Bad Frame (mem) Values are accumulated until cleared (by issuing the command AT!MXSTATS=0).

10 TEST COMMANDS

10.1 INTRODUCTION

This chapter describes commands used to display and clear data that is stored if the modem crashes.

10.2 COMMAND SUMMARY

The table below lists the commands described in this chapter.

Table 5-1: Test commands

Command	Description
!ERR	Displays diagnostic information
!GCCLR	Clears crash dump data
!GCDUMP	Displays the crash dump data

10.3 COMMAND REFERENCE

Table 5-2: Test command details

Command	Description
!ERR	Displays diagnostic information This command is used to display diagnostic information that ERCO & GENER uses to assist in resolving technical issues.
!GCCLR	Clears crash dump data This command clears the crash dump and assert data.
!GCDUMP	Displays the crash dump data This command displays crash dump data. If there is no crash dump data, it displays the string “No crash data available”.

11 MEMORY MANAGEMENT COMMANDS

11.1 INTRODUCTION

The modem has 2 MB of non volatile memory that is used to store:

- Factory calibration data
- Settings made in a host application such as Watcher

The commands in this chapter allow you to back up and restore the data in non volatile memory.

11.2 COMMAND SUMMARY

The table below lists the commands described in this chapter:

Table 6-1: Memory management command passwords

Command	Description
!NVBACKUP	Backs up items stored in non-volatile memory

11.3 COMMAND REFERENCE

Table 6-2: Memory management command details

Command	Description
!NVBACKUP=<category>	Backs up items stored in non-volatile memory This command creates a backup that is stored in the modem's flash memory. Parameters: <category> (specify items to back up): 0 = Factory items (RF calibration data) – Used only at the factory (only needs to be done once for the lifetime of the device) 1 = OEM items (PRI customizations) – Used only by the OEM when loading a new PRI configuration (only needs to be done once for the lifetime of the device) 2 = User items (customizations, including those made by Watcher or other host applications) – This is the only backup option that should be employed by users. Use this command before doing a firmware update. If the modem's file system is reinitialized for some reason during the update, the customizations would then be automatically restored using from the backed-up information. The command returns: NV Items saved NV Items skipped The 'item skipped' represent memory to which nothing has been written.

12 SIM COMMANDS

12.1 INTRODUCTION

This chapter describes commands used to communicate with an installed (U)SIM.

12.2 COMMAND SUMMARY

The table below lists the commands described in this chapter:

Table 7-1: SIM command passwords

Command	Description
!ICCID	Returns (U)SIM card's ICCID

12.3 COMMAND REFERENCE

Table 7-2: SIM command details

Command	Description
!!CCID	Returns (U)SIM card's ICCID This command returns a (U)SIM's ICCID (Integrated Circuit Card ID). Usage: AT!ICCID? returns !ICCID: <iccid> Parameters: <iccid> (ICCID of the (U)SIM currently being tested): 20 digit decimal number – This number is often printed on the (U)SIM card.