



UbiSurf SM56 Software Modem

AT Command Reference Manual

Notices

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Introduction

This document specifies the AT command set for Motorola UbiSurf SM56 softmodem product family. The details of the supported commands, responses, and registers used by Motorola UbiSurf SM56 soft modem products are provided in this reference manual.

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AT Commands - Basics

Attention (AT) commands are the means by which you control and monitor a modem. Typically, the communications application automatically issues them, and you need not know the commands and their options.

However, to custom-configure the modem for an application, or to optimize performance, you can issue commands through the communications application yourself. In most communications applications, there is a menu item, or option, for entering extended or custom AT commands. See your communications application documentation.

You can also configure the modem by issuing AT commands directly from a simple terminal-emulation application such as ZTERM and PowerTerm.

To issue an AT command from the terminal-emulation application, you must ensure that the modem is in command mode (in which it can detect and respond to commands), rather than data mode (in which it is transmitting and receiving data). To enter command mode from data mode, enter +++. You need not press the ENTER key.

When entering AT commands, the following basic rules apply:

- AT commands can be entered in uppercase, lowercase, or mixed text
- The characters AT begin all AT commands, except A/ and +++
- The key used as the ENTER key is specified in S-Register S3
- The maximum command length is 64 characters.

You can enter more than one AT command on a line, and you can chain commands using just one AT at the start. However, some commands must occur at the beginning or end of the command line.

Some of the AT commands and options are product specific and may not be applicable to the product you are using.

+++ (Plus-Plus-Plus) Commands

This command, known as the escape sequence, causes the modem to stop transmitting data (if it is doing so), and go into command mode.

Issue this command at the computer keyboard, in the communications application's terminal window, by typing the plus sign (+) three times.

■ Note

Do not press the ENTER key after the +++ command. It may cancel the command.

**AT and AT&
(Ampersand)**

The modem responds to the following **AT** and **AT&** command options.
The letters **AT** (or **at**) must precede all commands *except* **A/** and **+++**. Factory-default options are underlined.

Table 1: AT and AT& Commands

<i>Command</i>	<i>Option</i>	<i>Description</i>
A	(none)	Answer incoming call
A/	(none)	Repeat Last Command Re-issues the previous command to the modem. (Do not press Return; the command executes as soon as the / is pressed.)
D	(none)	Dial a Number Instructs the modem to dial the telephone number that you enter immediately after the ATD command. Example: ATD5554678. ■ Note If multiple ATD commands are used in speakerphone mode, the modem must be forced to blind-dial after dial-tone detection.
E		Echo Async (Keyboard) Input to Terminal Determines whether the characters you type at the keyboard are displayed (echoed) to the terminal-emulation window (if it is active) or to the communications application.
	E0	Disable
	<u>E1</u>	<u>Enable</u>
H		Hook
	H0	Go on Hook (disconnect from the telephone line; hang up)
	H1	Go off Hook (connect to the telephone line)
I		Request Information From Modem
	I0	“5600”
	I1	Software driver Version “Apple Version ###”
	I2	“OK”
	I3	Software Version
	I4	“Apple Internal Modem”
	I5	Country Code in Hex
	I6	Country Code
	I7	Product Code
	I8	Disconnect Reason

Table 1: AT and AT& Commands

<i>Command</i>	<i>Option</i>	<i>Description</i>
	I9	Country Name
	I12	Apple Product Code
L		Speaker Volume This parameter determines the volume, for call-progress monitor only, of sounds such as dialing, ringing, busy, negotiation.
	L0, L1	Low
	<u>L2</u>	<u>Medium</u>
	L3	High
M		Speaker Control
	M0	Off
	<u>M1</u>	<u>On During Training Only</u>
	M2	Always On
	M3	Off during dialing; on during call progress; off during data transfer
O		Return to On-Line Mode This parameter determines whether the modem initiates a retrain after changing from escape mode to data mode, or after a semi-colon in dial strings.
	O0	No Retrain
	O1	Retrain
	O2	Initiate Rate Renegotiation
	O3	Rate Renegotiation with silence
P	P	Pulse Dial Instructs the modem to dial the telephone number that you enter immediately after the ATDP command using pulse dial mode. Example: ATDP5554678. This command uses Pulse Dialing to dial the number 5554678
Q		Result-Code Display The modem can send result codes and connect messages to the computer as a result of connecting or failing to connect; establishing a data rate; and establishing error-correction and data-compression protocols. Refer to: ATV; ATV; ATX.
	<u>Q0</u>	<u>Enable display</u>
	Q1	Disable display

Table 1: AT and AT& Commands

<i>Command</i>	<i>Option</i>	<i>Description</i>
T	T	Tone Dial This command instructs the modem to use DTMF tone dialing. Example: ATDT5554678. This command uses DTMF tone Dialing to dial the number 5554678
V		Result-Code Format Determines whether the modem sends short- or long-form messages to the communications application, indicating the connection status, rate, and mode.
	V0	Return Numeric Code (Short Form)
	<u>V1</u>	<u>Return Text (Long Form)</u>
X		Select Call-Progress Result Codes to Return
	X0	No Carrier; Connect. Modem reports lack of a carrier signal; connection success/failure; modem dials without waiting for a dial tone
	X1	No Carrier; Connect; Connect <rate>. Modem reports lack of a carrier signal; connection success/failure, and the computer data rate established
	X2	No Carrier; Connect; Connect <rate>; No Dial Tone. Modem reports lack of a carrier signal; connection success/failure; the computer data rate established; and the lack of a dial tone
	X3	No Carrier; Connect; Connect <rate>; Busy-tone. Modem reports lack of a carrier signal; connection success/failure; the computer data rate established; and the presence of a busy signal
	<u>X4</u>	<u>No Carrier; Connect; Connect <rate>; No Dial-tone; Busy-tone. Modem reports lack of a carrier signal; connection success/failure; the computer data rate established; the lack of a dial tone; and the presence of a busy signal</u>
Z	Z	Reset Modem Parameters to Default Configuration
&C		DCD Control
	&C0	Always Asserted
	<u>&C1</u>	<u>Asserted in Data Mode Only</u>
&D		DTR Control Determines how modem responds to DTR signal from DTE.
	&D0	Ignore DTR
	&D1	Enter Command mode when DTR transitions from asserted to de-asserted

Table 1: AT and AT& Commands

<i>Command</i>	<i>Option</i>	<i>Description</i>
	<u>&D2</u>	<u>Disconnect call when DTR transitions from asserted to de-asserted</u>
	&D3	Reset modem parameters to default configuration when DTR transitions from asserted-to-de-asserted
&F		Initialize modem to default factory configuration.
&F90		Initialize modem to V.90 configuration.
&F92		Initialize modem to V.92 configuration.
&G		Guard Tone
	<u>&G0</u>	<u>Off</u>
	&G1	550 Hz Guard Tone
	&G2	1800 Hz Guard Tone
&I		Dial TX Level
	&In	Level <i>n</i> ; <i>n</i> = 0 to 15. <u>Default = 12</u> Note: the default value is 15 for Japan country setting.
	&I99	Automatic Level
&P		Pulse Cycle Used when the modem is instructed to pulse dial.
	<u>&P0</u>	<u>40/60 Make/Break Ratio</u>
	&P1	33/67 Make/Break Ratio Note: The default value is &P1 for Japan country setting.
	&P2	38/62 Make/Break Ratio
&R		CTS Control
	&R0	Normal
	<u>&R1</u>	<u>Always On</u>
&S		DSR Control
	<u>&S0</u>	<u>Always On</u>
	&S1	On When Modem Recognizes Remote
&T		Test
	&T0	Terminate Test
	&T1	Initiate Local Analog Loopback Test Disconnect the telephone line from the modem line input connector before using this command. Set S-Register 46 = 23 (ATS46=23) before executing &T1.
&V		Modem Status
	&V0	Short Form Report
	&V1	Current or Last Connection Report
	&V2	Long Form Report

**AT% (Percent)
and AT\
(Backslash)
Commands**

The modem responds to the following **AT%** and **AT\
(Backslash)** command options.
The letters AT (or at) must precede all commands *except* A/ and +++.
Factory-default options are underlined.

**Table 2: AT% (Percent) and AT\
(Backslash) Commands**

<i>Command</i>	<i>Option</i>	<i>Description</i>
%B		Maximum Modulation Rate Sets the maximum rate that the modem uses when connecting in a data modulation mode for performing functions such as Internet access or file transfer
	<u>%B0</u>	<u>Maximum modem rate that the modem supports</u>
	%B1	300 bps
	%B2	1.2 Kbps
	%B3	2.4 Kbps
	%B4	4.8 Kbps
	%B6	9.6 Kbps
	%B7	7.2 Kbps
	%B8	12.0 Kbps
	%B9	14.4 Kbps
	%B11	16.8 Kbps
	%B12	19.2 Kbps
	%B13	21.6 Kbps
	%B14	24.0 Kbps
	%B15	26.4 Kbps
	%B16	28.8 Kbps
	%B17	31.2 Kbps
	%B18	33.6 Kbps
	%B19	32.0 Kbps
	%B20	34.0 Kbps
	%B21	36.0 Kbps
	%B22	38.0 Kbps
	%B23	40.0 Kbps
	%B24	42.0 Kbps
	%B25	44.0 Kbps
	%B26	46.0 Kbps
	%B27	48.0 Kbps
	%B28	50.0 Kbps

Table 2: AT% (Percent) and AT\ (Backslash) Commands

<i>Command</i>	<i>Option</i>	<i>Description</i>
	%B29	52.0 Kbps
	%B30	54.0 Kbps
	%B31	56.0 Kbps
	%B32	58.0 Kbps
	%B33	60.0 Kbps
	%B34	28000 bps
	%B35	29333 bps
	%B36	30666 bps
	%B37	33333 bps
	%B38	34666 bps
	%B39	37333 bps
	%B40	38666 bps
	%B41	41333 bps
	%B42	42666 bps
	%B43	45333 bps
	%B44	46666 bps
	%B45	49333 bps
	%B46	50666 bps
	%B47	53333 bps
	%B48	54666 bps
%C		Data Compression (DC) Mode Determines whether the modem implements methods of increasing the effective data rate by reducing the number of bits used to represent data
	%C0	Disable Compression
	<u>%C1</u>	<u>Enable Compression</u>
%D		Disconnect Buffer Delay Controls the delay after detection of a disconnect request before the modem disconnects from the telephone line
	<u>%D0</u>	<u>Disable Delay</u>
	%Dn	Delay for n Seconds (n = 1 to 255)
%L		Minimum Modulation Rate Sets the minimum rate that the modem uses when connecting in a data modulation mode.
	<u>%L0</u>	<u>Minimum modem rate that the modem supports(300 bps)</u>
	%L1	300 bps
	%L2	1.2 Kbps

Table 2: AT% (Percent) and AT\ (Backslash) Commands

<i>Command</i>	<i>Option</i>	<i>Description</i>
	%L3	2.4 Kbps
	%L4	4.8 Kbps
	%L7	7.2 Kbps
	%L6	9.6 Kbps
	%L8	12.0 Kbps
	%L9	14.4 Kbps
	%L11	16.8 Kbps
	%L12	19.2 Kbps
	%L13	21.6 Kbps
	%L14	24.0 Kbps
	%L15	26.4 Kbps
	%L16	28.8 Kbps
	%L17	31.2 Kbps
	%L18	33.6 Kbps
	%L19	32.0 Kbps
	%L20	34.0 Kbps
	%L21	36.0 Kbps
	%L22	38.0 Kbps
	%L23	40.0 Kbps
	%L24	42.0 Kbps
	%L25	44.0 Kbps
	%L26	46.0 Kbps
	%L27	48.0 Kbps
	%L28	50.0 Kbps
	%L29	52.0 Kbps
	%L30	54.0 Kbps
	%L31	56.0 Kbps
	%L32	58.0 Kbps
	%L33	60.0 Kbps
	%L34	28000 bps
	%L35	29333 bps
	%L36	30666 bps
	%L37	33333 bps
	%L38	34666 bps
	%L39	37333 bps

Table 2: AT% (Percent) and AT\ (Backslash) Commands

<i>Command</i>	<i>Option</i>	<i>Description</i>
	%L40	38666 bps
	%L41	41333 bps
	%L42	42666 bps
	%L43	45333 bps
	%L44	46666 bps
	%L45	49333 bps
	%L46	50666 bps
	%L47	53333 bps
	%L48	54666 bps
\K		Break Handling Method
	<u>\K1</u>	<u>Destructive Expedited</u>
	\K3	Non-destructive Expedited
	\K5	Non-destructive Non-expedited
\N		Error-Correction (EC) Mode
	\N0	Normal
	\N1	Direct
	\N4	LAP-M Only
	\N6	Reliable
	<u>\N7</u>	<u>Auto-Reliable</u>
\Q		DTE Flow Control
	\Q0	Disable
	\Q1	XON/XOFF (software flow control)
	<u>\Q3</u>	<u>RTS/CTS (hardware flow control)</u>
\T		Disconnect on DTE Inactivity
	<u>\T0</u>	<u>Disable</u>
	\Tn	Disconnect after <i>n</i> minutes of inactivity by the computer; n = 0 to 255
\V		Connect Message Format Determines which messages the modem generates at connection time
	\V0	Display DTE Rate
	\V1	DTE with EC/DC_message
	\V2	Display DCE Rate
	<u>\V3</u>	<u>DCE with EC/DC Message</u>
	\V4	DCE with Modulation & EC/DC Message

AT* (Asterisk) Commands

The modem responds to the following **AT*** command options.
 The letters **AT** (or **at**) must precede all commands *except* A/ and +++.
 Factory-default options are underlined

Table 3: AT* (Asterisk) Commands

<i>Command</i>	<i>Option</i>	<i>Description</i>
*DD		Dial Wait Specifies the time interval to wait when the modem encounters a W or w while processing a dial string
	<u>*DD0</u>	<u>2 Seconds</u>
	*DD1	3 Seconds
	*DD2	4 Seconds Note: the default value is *DD2 for Japan country setting.
	*DD3	5 Seconds
	*DD4	12 Seconds
	*DD5	15 Seconds
	*DD6	20 Seconds
	*DD7	30 Seconds
	*DD8	40 Seconds
*LS		Low-Speed Operation Protocol Lets you select a communications protocol to communicate with very low-speed or older modems.
	*LS0	Bell 103
	*LS1	ITU-T V.21 (international standard)
	<u>*LS2</u>	<u>Bell 103 or ITU-T V.21 (Auto determination)</u>
*MM		Modulation Mode
	*MM0	V.34 Auto Modulation
	*MM1	V.21
	*MM2	Bell 103
	*MM4	V.22/Bell 212
	*MM5	V.22bis
	*MM6	V.23
	*MM10	V.32 Only
	*MM11	V.32 bis
	*MM12	V.34 Only
	*MM13	K56flex™ Only

Table 3: AT* (Asterisk) Commands

<i>Command</i>	<i>Option</i>	<i>Description</i>
	*MM14	K56flex™ Auto-modulation
	*MM15	V.90 Only
	*MM16	V.90 Auto
	*MM17	V.92 Only
	<u>*MM18</u>	<u>V.92 Auto</u>

AT+ (Plus) Commands

The modem responds to the following **AT+** command options. The letters **AT** (or **at**) must precede all commands *except* A/ and +++.

Factory-default options are underlined.

AT commands that begin with:

+D control data compression

+F control fax application operation

These commands are primarily used by software applications.

Table 4: AT+ (Plus) Commands

<i>Command</i>	<i>Option</i>	<i>Description</i>
+A8E		V.8 Configuration
	+A8= <i>a,b,c,d</i>	
	<i>a</i> options:	Specifies V.8 origination negotiation options
	0	Disable
	<u>1</u>	<u>Enable computer-controlled V.8 origination negotiation</u>
	6	Enable computer-controlled V.8 origination negotiation with +A8x indications
	<i>b</i> options:	Specifies V.8 answer negotiation options
	0	Disable
	<u>1</u>	<u>Enable computer-controlled V.8 answer negotiation</u>
	5	Enable computer-controlled V.8 answer negotiation with +A8x indications
	<i>c</i> options:	Specifies the V.8 CI Signal Call Function Octet options
	00h - FFh, <u>default=00h</u>	
	<i>d</i> options:	Specifies V.8 control options
	0	Disabled
	<u>1</u>	<u>Enabled, modem control</u>
	2	Enabled, computer control
+A8T		V.8bis Signal and Message Control
	+A8T= <i>a,b,c,d,e,f</i>	
	<i>a</i> options:	Specifies V.8bis Signal to Transmit
	0	None
	1	Initiating MRe

Table 4: AT+ (Plus) Commands

<i>Command</i>	<i>Option</i>	<i>Description</i>
	2	Initiating MRd
	3	Initiating Cre, low power
	4	Initiating Cre, high power
	5	Initiating Crd
	6	Initiating Esi
	7	Responding MRd, low power
	8	Responding MRd, high power
	9	Responding CRd
	10	Responding ESr
	<i>b</i> options:	Specifies V.8bis Transmit Message 1
		hexadecimal octet coded string
	<i>c</i> options:	Specifies V.8bis Transmit Message 2
		hexadecimal octet coded string
	<i>d</i> options:	Specifies V.8bis signal detection
	<u>0</u>	<u>Enable detection of initiating V.8bis signal</u>
	1	Enable detection of responding V.8bis signal
	2	Enable detection of both V.8bis signals
	<i>e</i> options:	Specifies V.8bis message detection
	<u>0</u>	<u>Disable detection</u>
	1	Enable detection
	<i>f</i> options:	Specifies the V.8bis message delay
	<u>0</u>	<u>No delay between transmitting signal and messages</u>
	1	1.5 second delay between transmitting signal and any message
+DR		Data Compression (DC) Reporting
	<u>+DR=0</u>	<u>Disabled</u>
	+DR=1	Enabled
+DS		Data Compression Control
	+DS= <i>p,q,r,s</i>	
	<i>p</i> options:	Specifies compression on/off direction
	0	No compression
	1	Tx direction only
	2	Rx direction only
	<u>3</u>	<u>Both directions; accept any direction</u>
	<i>q</i> options:	Specifies negotiation

Table 4: AT+ (Plus) Commands

<i>Command</i>	<i>Option</i>	<i>Description</i>
	0	Do not disconnect if data compression is not negotiated per Direction option
	1	Disconnect if data compression is not negotiated per Direction option
	<i>r</i> options:	Specifies maximum dictionary size
	512 - 65535	<u>Default = 2048</u>
	<i>s</i> options:	Specifies maximum string size
	6 - 250	<u>Default = 32</u>
+EB		Break Handling Control
	+EB= <i>p,q r</i>	
	<i>p</i> options:	Specifies break selection
	0	Ignore break
	1	Non-expedited, non-destructive
	2	Expedited, non-destructive
	<u>3</u>	<u>Expedited, destructive</u>
	<i>q</i> options:	Specifies break length control
	<u>0</u>	<u>Transmission of V.42 L-SIGNAL does not indicate break length</u>
	1	Transmission of V.42 L-SIGNAL indicates break length
	<i>r</i> options:	Specifies the default break-length
	0	Break is not transmitted to the computer
	1- 254, <u>default=100</u>	Break length, in 0.01-second increments
+ER		Error-Control Reporting
		Specifies the modem's error-control reporting activity.
	<u>0</u>	<u>Disabled</u>
	1	Enabled: modem issues one of the following messages to the computer, before it issues a connect message. The message specifies the Error Correction protocol negotiated: +ER:NONE +ER:LAPM +ER:ALT
+ES		Error-Correction (EC) Control
	+ES= <i>p,q r</i>	
	<i>p</i> options:	Specifies the originate-modem's Request Error Correction mode
	0	Direct mode

Table 4: AT+ (Plus) Commands

<i>Command</i>	<i>Option</i>	<i>Description</i>
	1	Normal mode
	2	LAP-M Only
	<u>3</u>	<u>LAP-M or MNP</u>
	4	MNP Only
	6	Initiate Sync Access mode when connection is established
	<i>q</i> options:	Specifies the answer-modem's Fallback Error Correction mode
	<u>0</u>	<u>EC optional, fallback to Normal mode</u>
	1	EC optional, fallback to Direct mode
	2	EC required (LAP-M or MNP)
	3	EC required (LAP-M only)
	4	EC required (MNP only)
	<i>r</i> options:	Specifies the originate-modem's Fallback Error Correction mode
	0	Direct mode
	1	Normal mode
	<u>2</u>	<u>EC optional, fallback to Normal mode</u>
	3	EC optional, fallback to Direct mode
	4	EC required (LAP-M or MNP)
	5	EC required (LAP-M only)
	6	EC required (MNP only)
	8	Initiate synchronous access mode when connected
+ESA		Synchronous Access Mode Configuration
	+ESA= <i>a,b,c,d,e,f</i>	
	<i>a</i> options:	Specifies the Idle in Transparent sub-mode
	<u>0</u>	<u>Computer transmits 8 bit SYN sequence on idle. Computer does not hunt for synchronization sequence</u>
	<i>b</i> options:	Specifies the Idle in Framed sub-mode
	<u>0</u>	<u>Computer transmits HDLC flags on idle</u>
	<i>c</i> options:	Specifies under-run and over-run in Framed sub-mode
	<u>0</u>	<u>Computer transmits Abort on an under-run within a frame</u>

Table 4: AT+ (Plus) Commands

<i>Command</i>	<i>Option</i>	<i>Description</i>
	1	Computer transmits a Flag on an under-run within a frame, and notifies the modem of any under-run or over-run
	<i>d</i> options	Specifies half-duplex control. Not available.
	<i>e</i> options	Specifies the Cyclic Response Code (CRC) type
	<u>0</u>	<u>Disabled. No CRC generation or checking.</u>
	1	In Framed sub-mode, the computer generates 16-bit CRC in the Transmit direction and the modem generates 16-bit CRC on the Receive direction.
	<i>f</i> options:	Specifies Non-Return to Zero (NRZI) options
	<u>0</u>	<u>NRZI encoding and decoding are disabled.</u>
+ETBM		Disconnect Buffer Delay Control
	+ETBM= <i>p,q</i> <i>r</i>	
	<i>p</i> options:	Specifies the disconnect buffer delay with pending transmit data
	0	Discard buffered data and disconnect
	<u>1</u>	<u>Attempt to transmit until all data is delivered, then disconnect. Ignore timer.</u>
	2	Attempt to transmit until all data is delivered or timer expires.
	<i>q</i> options:	Specifies the disconnect buffer delay with pending receive data
	0	Discard buffered data and disconnect
	<u>1</u>	<u>Attempt to transmit until all data is delivered, then disconnect. Ignore timer.</u>
	2	Attempt to transmit until all data is delivered or timer expires.
	<i>r</i> options: 1-255, <u>default=0</u>	Disconnect buffer delay timer, in 1-second increments
+FCLASS		Fax/Data Mode
	<u>+FCLASS=</u> <u>0</u>	<u>Data Mode</u>
	+FCLASS= 1	Fax Class 1
	+FCLASS= 8	Voice Mode (Not available in Data/Fax and Data/Fax/TAM modems.)
+FLO		Fax Flow Control
	<u>+FLO=0</u>	<u>None</u>

Table 4: AT+ (Plus) Commands

<i>Command</i>	<i>Option</i>	<i>Description</i>
	+FLO=1	XON/XOFF
	+FLO=2	RTS/CTS
+FMI?		Report Manufacturer ID
+FMM?		Report Modem ID
+FMR?		Report Revision Level
+FRH		Receive High-Level Data Link Control (HDLC) Mode Sets mode and transmit/receive rate for faxes
	+FRH=3	V.21 at 300 bps
	+FRH=24	V.27ter at 2.4 Kbps
	+FRH=48	V.27ter at 4.8 Kbps
	+FRH=72	V.27ter at 7.2 Kbps
	+FRH=73	V.27ter at 7.2 Kbps with long train time
	+FRH=74	V.27ter at 7.2 Kbps with short train time
	+FRH=96	V.29 at 9.6 Kbps
	+FRH=97	V.17 at 9.6 Kbps with long train time
	+FRH=98	V.17 at 9.6 Kbps with short train time
	+FRH=121	V.17 at 12.0 Kbps with long train time
	+FRH=122	V.17 at 12.0 Kbps with short train time
	+FRH=145	V.17 at 14.4 Kbps with long train time
	+FRH=146	V.17 at 14.4 Kbps with short train time
+FRM		Receive Mode Sets the modulation mode for receiving faxes
	+FRM <i>m</i>	Use mode <i>m</i> ; see mode options for +FRH, above.
+FRS		Wait for Silence
	+FRS <i>n</i>	Wait (<i>n</i> *10) ms; <i>n</i> =0 to 255
+FTH		Transmit High-Level Data Link Control (HDLC) Mode
	+FTH <i>mode</i>	Use mode <i>mode</i> ; see options for +FRH, above.
+FTM		Transmit Mode Sets the modulation mode for transmitting faxes
	+FTM <i>mode</i>	Use mode <i>mode</i> ; see options for +FRH, above.
+FTS		Pause Transmission
	+FTS <i>n</i>	Pause transmission for (<i>n</i> *10) ms; <i>n</i> =0 to 255
+GCAP		Report Capabilities
	+GCAP	Display modem capabilities
+GCI		Country of Installation

Table 4: AT+ (Plus) Commands

<i>Command</i>	<i>Option</i>	<i>Description</i>
	+GCI= <i>a</i>	Set country in which modem is installed
	00	Japan
	04	Germany
	07	Argentina
	09	Australia
	0A	Austria
	0F	Belgium
	16	Brazil
	1B	Bulgaria
	20	Canada
	25	Chile
	26	China
	27	Columbia
	2E	Czech Republic
	2D	Cyprus
	31	Denmark
	3C	Finland
	3D	France
	42	Germany
	50	Hong Kong
	57	Ireland
	58	Israel
	59	Italy
	5E	Jordan
	61	Korea
	68	Liechtenstein
	6C	Malaysia
	70	Malta
	7B	Netherlands
	82	Norway
	8B	Portugal
	8C	Puerto Rico
	9C	Singapore
	9F	South Africa
	A0	Spain

Table 4: AT+ (Plus) Commands

<i>Command</i>	<i>Option</i>	<i>Description</i>
	A5	Sweden
	A6	Switzerland
	A9	Thailand
	AE	Turkey
	B4	United Kingdom
	B5	USA
	BB	Venezuela
	BC	Vietnam
+GMI		Request Manufacturer ID
	+GMI?	Display modem-manufacturer information
+GMM		Request Model ID
	+GMM?	Display modem-model information
+GMR		Request Software Revision Number
	+GMR?	Display modem-software revision number
+IFC		Flow Control
	+IFC= <i>p,q</i>	
	<i>p</i> options:	Specifies the computer's flow control method for data passing to the modem (downstream)
	0	None
	1	XON/XOFF flow control, no pass-through
	<u>2</u>	<u>RTS flow control</u>
	3	XON/XOFF flow control, with pass-through
	<i>q</i> options:	Specifies the modem's flow control method for data passing from the modem (upstream)
	0	None
	1	XON/XOFF flow control, no pass-through
	<u>2</u>	<u>CTS flow control</u>
+ILRR		Computer's Local Rate Reporting
	<u>+ILRR=0</u>	<u>Disabled</u>
	+ILRR=1	Enabled
+ITF		Transmit Flow Control Thresholds (V.80)
	+ITF= <i>a,b</i>	
	<i>a</i> options:	Specifies the threshold, in octets, at which the modem turns transmit flow-control off
	0-2047 <u>default=255</u>	

Table 4: AT+ (Plus) Commands

<i>Command</i>	<i>Option</i>	<i>Description</i>
	<i>b</i> options:	Specifies the threshold, in octets, at which the modem turns transmit flow-control on
	0-2047 <u>default=255</u>	
+MR		Modulation Mode Reporting
	<u>+MR=0</u>	<u>Disabled</u>
	+MR=1	Enabled
+MS		Modulation Control
	+MS= <i>p,q,r,s,t,u</i>	
	<i>p</i> options:	Specifies the modulation mode
	V21	V.21
	V22	V.22
	V22B	V.22bis
	V23C	V.23c
	V32	V.32
	V32B	V.32bis
	V34	V.34
	K56FLEX	K56flex™
	V90	V.90
	<u>V92</u>	<u>V.92</u>
	<i>q</i> options:	Specifies the Automode option
	0	Disabled
	<u>1</u>	<u>Enabled</u>
	<i>r</i> options:	Specifies the minimum data rate in the Tx direction
	<u>0</u>	<u>Use the minimum rate of the specified modulation mode (300 bps)</u>
	300 - 33600	bps
	<i>s</i> options:	Specifies the maximum data rate in the Tx direction
	<u>0</u>	<u>Use the maximum rate of the specified modulation mode</u>
	300 - 33600	bps
	<i>t</i> options:	Specifies the minimum data rate in the Rx direction
	<u>0</u>	<u>Use the minimum rate of the specified modulation mode</u>
	300 - 60000	bps
	<i>u</i> options:	Specifies the maximum data rate in the Rx direction

Table 4: AT+ (Plus) Commands

<i>Command</i>	<i>Option</i>	<i>Description</i>
	<u>0</u>	<u>Use the maximum rate of the specified modulation mode</u>
	300 - 60000	bps
+PCW		Call Waiting Enable
		This option controls the action to execute upon detecting a call waiting signal.
	<u>+PCW=0</u>	<u>Toggle the RI signal and collect Caller Identification if enabled</u>
	+PCW=1	Hang up the modem
	+PCW=2	Ignore the call waiting ID signal
	+PCW=3	Disable call waiting detection.
	+PCW=?	Display Call Waiting Status
+PMH		Modem on Hold Enable
		This command controls the enabling of modem on hold execution.
	<u>+PMH=0</u>	<u>Enable modem on hold</u>
	+PMH=1	Disable modem on hold negotiation.
	+PMH=?	Display Modem on Hold Status
+PMHT		Modem on Hold Timer
		This command controls whether to grant or deny a remote modem on hold request. If the request is granted, it also controls the amount of time allowed for the timeout.
	+PMH=0	Deny remote requests
	+PMH=1	10 seconds
	+PMH=2	20 seconds
	+PMH=3	30 seconds
	+PMH=4	40 seconds
	+PMH=5	1 minute
	+PMH=6	2 minutes
	+PMH=7	3 minutes
	+PMH=8	4 minutes
	+PMH=9	6 minutes
	+PMH=10	8 minutes
	+PMH=11	12 minutes
	+PMH=12	16 minutes
	+PMH=13	Indefinite

Table 4: AT+ (Plus) Commands

<i>Command</i>	<i>Option</i>	<i>Description</i>
	+PMH=?	Display Modem on Hold Timer Status
+PMHR		Initiate Modem on Hold
		This command requests the modem to initiate the modem on hold procedure. If MH is disabled, or if the remote side rejects the request, an ERROR message is returned. Otherwise, the message “+PMHR:<t>” is returned, where <t> is the allowed timeout.
+PMF		Modem Hook Flash
		This command cause the modem to perform a flash hook operation.
+PQC		Phase 1 and Phase 2 control
		This command controls the use of full or shortened Phase 1 and Phase2 startup procedures.
	<u>+PQC=0</u>	<u>Enable Short Phase 1 and Short Phase 2</u>
	+PQC=1	Enable Short Phase 1 and Full Phase 2
	+PQC=2	Enable Full Phase 1 and Short Phase 2
	+PQC=3	Enable Full Phase 1 and Full Phase 2
	+PQC=?	Display Quick Connect Status
+VCID		Caller ID Control
		This option takes effect only where the function is supported. Data/Fax modems do not support this option.
	<u>+VCID=0</u>	<u>Disable</u>
	+VCID=1	Enable
	+VCID=?	Display Caller ID Status (returns 0 or 1)
+VDR		Distinctive Ring Control and Report
		This option takes effect only where the function is supported. Data/Fax modems do not support this option
	+VDR= <i>m,n</i>	<p>■ Note If Distinctive Ring is enabled, the first ring reported by the modem may be incorrect.</p>
	<i>m</i> options:	Specifies control
	<u>0</u>	<u>Disable</u>
	1	Enable
	<i>n</i> options:	Specifies reporting
	<u>0</u>	<u>Produce DROFF/DRON report, no RING</u>

Table 4: AT+ (Plus) Commands

<i>Command</i>	<i>Option</i>	<i>Description</i>
	1-255	Produce DROFF/DRON, followed by RING after delay of n/10 seconds
+VEM		Event Reporting and Masking Control
		Data/Fax/Speakerphone modem only
		Bit-mapped event control mask. See Event Reporting Word.
+VGR		Receive Gain
		Data/Fax/Speakerphone modem only
	0	Automatic Gain Control
	1-255	Relative range, where 128 indicates a nominal value.
+VGT		Transmit Volume
		Data/Fax/Speakerphone modem only
	1-255	"Relative range, where 128 indicates a nominal value.
+VIP		Initialize Voice Parameters
		Data/Fax/Speakerphone modem only
		Set speakerphone parameters to factory-default options.
+VLS		Select Analog Source and Destination
		Data/Fax/Speakerphone modem only
	0	DCE (modem) on-hook
	1	DCE off-hook, DCE connected to telco
	8	DCE on-hook, DCE connected to speaker
	9	speakerphone with mute enabled
	11	DCE on-hook, DCE connected to microphone
	13	DCE off-hook, DCE connected to telco, speaker, and microphone (speakerphone)
+VNH		Automatic Hangup Control
		Data/Fax/Speakerphone modem only
	<u>+VNH=0</u>	<u>Retain automatic hang-ups</u>
	+VNH=1	Disable DCE-initiated automatic hang-ups
	+VNH=2	Disable all Automatic hang-ups
+VPR		Voice DTE-DCE Rate
		Data/Fax/Speakerphone modem only
	+VPR=0	Autobaud
+VRA		Ringback Gone Timer
		Data/Fax/Speakerphone modem only

Table 4: AT+ (Plus) Commands

<i>Command</i>	<i>Option</i>	<i>Description</i>
		If, after detecting ringback, no further ringbacks are detected after n/10 seconds, operate as if the remote device answered the call.
	+VRA=n	If no ringback is received, after n/10 seconds, assume that the remote device has answered the call; n = 0-255
		Ringback Never Occurred
	+VRN=n	After n/10 seconds, operate as if ringback never occurred; n = 0-255
+VRID		Repeat Caller ID
		This command instructs the modem to send all available call information on the last incoming call to the DTE. Note: “AT+VRID” is identical to “AT+VRID=0”
	<u>+VRID or +VRID=0</u>	<u>Display Caller ID information in formatted form</u>
	+VRID=1	Display Caller ID information in unformatted form
	+VRID=?	Display Repeat Caller ID Status
+VRX		Voice Receive Mode
		Data/Fax/Spkerphone modem only
		Determines whether the modem generates a periodic beep, audible to both parties on the speakerphone, indicating that the call is being recorded.
		<p>■ Note</p> <p>The speakerphone state does not have to be reset after recording to the line or playing a message to the line. The baud rate is not set before the StartPlay and StartRecord commands. The baud rate is not reset after the StopPlay and StopRecord commands.</p>
	<u>+VRX or +VRX=0</u>	<u>Produce Periodic DCE Tone While Recording</u>
	+VRX=1	Disable Periodic DCE Tone Production During Recording
+VSD		Remote Silence-Detection Properties
		Data/Fax/Spkerphone modem only
	+VSD=m,n	Used in answering-machine mode. Specifies the volume and duration thresholds that determine whether the remote device has hung up.
	m options:	Specifies the silence-detection level

Table 4: AT+ (Plus) Commands

<i>Command</i>	<i>Option</i>	<i>Description</i>
	0	Use current +VSM value; or, if current +VSM value is 0, use 128.
	127	Low Threshold (most sensitive)
	<u>128</u>	<u>Medium Threshold</u>
	129	High Threshold (least sensitive)
	n options:	Specifies the silence-detection duration
	0	Disable
	1-255	Detect n/10 seconds silence; n = 0-255
	<u>50</u>	<u>Default = 5 seconds</u>
+VSM		Speech Compression Properties
		Data/Fax/Speakerphone modem only
	+VSM=m,n, p,q	Specifies the speakerphone compression parameters
	m options:	Specifies the compression method
	<u>128</u>	<u>PCM</u>
	129	ADPCM
	n options:	Specifies the sampling rate to determine whether to compress
	<u>8000</u>	<u>8000 Hz</u>
	p options:	Parameter p specifies compression and expansion of periods of silence. These parameters are not implemented in Release 1.0. You may leave them blank or enter the value 0.
	<u>0</u>	<u>Disable</u>
	q options:	Parameter q specifies compression and expansion of periods of silence. These parameters are not implemented in Release 1.0. You may leave them blank or enter the value 0.
	<u>0</u>	<u>Disable</u>
+VTD		Dual Tone Multi-Frequency (DTMF) Tone Duration
		Data/Fax/Speakerphone modem only
	+VTDn	Generates tone for n/100 seconds; n = 0-255. Default=100.
+VTS		DTMF Tone Generation Properties
		Data/Fax/Speakerphone modem only
		+VTS accepts multiple options, separated by commas, of any of the following types. Use square or curly brackets as shown.

Table 4: AT+ (Plus) Commands

<i>Command</i>	<i>Option</i>	<i>Description</i>
	D	Generate default DTMF Tone, default duration.
	{t,n}	t specifies a DTMF tone; t = 0-9 n specifies tone duration n/100 seconds; n = 1-500
	{f,g,n}	f and g specify a tone pair, f Hz and g Hz; in the range n Specifies tone-pair duration n/100 seconds; n = 1-500
	Example:	AT+VTS=4, {}, [1000,1300,50], 8, {*,5}, [, , 100], 5 This example specifies the following sequence: 1. Play DTMF 4 for the duration stored in +VTD 2. Play silence for the duration stored in +VTD 3. Play tone pair at 1000 Hz and 1300 Hz for 500 ms 4. Play DTMF 8 for a duration stored in +VTD 5. Play DTMF * for 50 ms 6. Play silence for 1 second 7. Play DTMF 5 for the duration stored in +VTD
+VTX		Enter Voice-Transmission Mode
		Data/Fax/Speakerphone modem only
		<p>■ Note</p> <p>The speakerphone state does not have to be reset after recording to the line or playing a message to the line. The baud rate is not set before the StartPlay and StartRecord commands. The baud rate is not reset after the StopPlay and StopRecord commands.</p>

ATS (S-Register) Commands

The modem responds to the following **ATS** command options.

The letters **AT** (or **at**) must precede all commands *except* A/ and +++. Factory-default options are underlined.

Table 5: ATS (S-Register) Commands

<i>S-Register</i>	<i>Option</i>	<i>Description</i>
S0		Auto-Answer on Ring Number
	<u>S0=0</u>	<u>Disable</u>
	S0=n	Answer on Ring n; n=0 to 255
S1		Ring Count
	S1=n	Counts the number of rings in an incoming call. If the modem is configured to auto-answer (S0 set to a non-zero option), when S1=S0, the modem answers the call.
S2		Select Escape Character
	S2=n	Specifies ASCII character for Escape; n=0 to 255. <u>Default = 43 (+)</u>
S3		Select Carriage-Return Character
	S3=n	Specifies ASCII character for Carriage-Return; n=0 to 127. <u>Default = 13 (CR)</u>
S4		Select Line-Feed Character
	S4=n	Specifies ASCII character for Line-Feed; n=0 to 127. <u>Default = 10 (LF)</u>
S5		Select Backspace Character
	S5=n	Specifies ASCII Character for Backspace; n=0 to 127. <u>Default = 8 (BS)</u>
S6		Blind Dial
	S6=n	Before dialing, the modem goes off-hook and waits n seconds; n=0 to 255. Note: When the ATX2 or ATX4 option is in effect, the S6 value is disregarded. <u>Default = 2</u>
S7		Call Time-out
	S7=n	Number of seconds in which connection must be established or call will be disconnected; n=1 to 255. <u>Default = 60</u>
S8		Pause Delay
	S8=n	Pause for n seconds; n=0 to 255; for dial modifier in a dial string. <u>Default = 2</u>
S10		DCD Loss Disconnect

Table 5: ATS (S-Register) Commands

<i>S-Register</i>	<i>Option</i>	<i>Description</i>
	S10=n	Disconnect after n seconds; n=0 to 255 in 0.1 second increments; after DCD signal is de-asserted. <u>Default = 14</u>
S11		Tone Length
	S11=n	Specifies duration, in 0.001 second increments, of DTMF tone when it is generated; n=60 to 255. <u>Default =80</u>
S12		Escape Code Guard Time
	S12=n	Specifies the interval, in 0.02-second increments, that must be present on either side of the escape code (+++) for the modem to recognize the escape command and enter command mode. If S12=0, the speed at which you enter the escape sequence is not a factor. <u>Default = 50</u>
S18		Test Timer
	S18=n	Specifies test execution duration; n=0 to 255. <u>Default = 0</u>
S92		Modem-on-Hold Messaging Monitoring
	S92=n	Specifies the enable(n=1) or disable(n=0) of the Modem-on-Hold UbiSurf SM56 tray applet helper messaging. <u>Default = 1</u>

AT#UD Unimodem Diagnostic Command

The Unimodem Diagnostic Command Specification is provided by Microsoft to enable modems to exhibit consistent behavior during data session diagnostics. The latest specification revision of this command can be found on the Microsoft Web site.

Command Syntax:

AT#UD

#UD is an action command. It does not take parameters.

Although this command is intended for use after call termination, codes are defined so that a modem can respond before the call is placed, and during a call for live monitoring purposes.

Command Response:

In response to this command, the modem reports information about the modem. Each information text line is formatted as follows, including one or more key=value pairs:

DIAG <token *key = value* [*key = value*] [*key = value*] ...>

Where, token is a unique 32-bit hex number 2A4D3263

key is a hex number, described in column 1 of Table 1.

value is a string defined by column 2 in Table 1.

■Note

Unless otherwise noted, all values are hexadecimal numbers.

Table 6- AT#UD Last Call Status Report Format

<i>Key</i>	<i>Value</i>	<i>Definition</i>
0	2 digits	Diagnostic Command Specification revision number
1	See Table 7	Call Setup Result code
2	See Table 8	Multi-media mode
3	See Table 9	DTE-DCE interface mode
4	String	V.8 CM octet string, same format as V.25ter Annex A, in quotes
5	String	V.8 JM octet string, same format as V.25ter Annex A, in quotes
6 - F		Reserved for call negotiation reports
10	0-2F	Received signal power level, in -dBm (0-43)
11	0-1F	Transmit signal power level, in -dBm (e.g. 0-17)
12	0-64	Estimated noise level, in -dBm (e.g. 10-90)

Table 6- AT#UD Last Call Status Report Format

<i>Key</i>	<i>Value</i>	<i>Definition</i>
13	0-FF	Normalized Mean Squared error, 100 (0x64) = minimum inter-symbol distance
14	0-3F	Near echo loss, in units of dB
15	0-3F	Far echo loss, in units of dB
16	0-3F	Far echo delay, in units of ms
17	0-FFF	Round Trip delay, in units of ms
18	See Table 10	V.34 INFO bit map
19-1F		Reserved for modulation setup and training reports
20	See Table 11	Transmit Carrier Negotiation Result
21	See Table 11	Receive Carrier Negotiation Result
22	0-1F40	Transmit Carrier symbol rate (0-8000) in symbol/s
23	0-1F40	Receive Carrier symbol rate (0-8000) in symbol/s
24	0-FA0	Transmit Carrier frequency (0-4000) in Hz
25	0-FA0	Receive Carrier frequency (0-4000) in Hz
26	0-FA00	Initial transmit carrier data rate (0-64000) in bit/s
27	0-FA00	Initial receive carrier data rate (0-64000) in bit/s
28-2F		Reserved
30	0-FF	Temporary carrier loss event count
31	0-FF	Carrier Rate re-negotiation event count
32	0-FF	Carrier Retrains requested
33	0-FF	Carrier Retrain requests granted
34	0-FA00	Final transmit carrier data rate in bit/s
35	0-FA00	Final receive carrier data rate in bit/s
36-3F		Reserved
40	See Table 12	Protocol Negotiation Result
41	0-400	Error Control frame size in bytes
42	0-FF	Error control link timeouts in transmission
43	0-FF	Error control link NAKs received
44	See Table 13	Compression Negotiation Result
45	0-800	Compression dictionary size in bytes
46-4F		Reserved
50	0-2	Transmit flow control: 0 = off; 1 = DC1/DC3; 2 = V.24 ckt 106/133
51	0-2	Receive flow control: 0 = off; 1 = DC1/DC3; 2 = V.24 ckt 106/133
52	0-FFFFFFFF	Transmit characters sent from DTE

Table 6- AT#UD Last Call Status Report Format

<i>Key</i>	<i>Value</i>	<i>Definition</i>
53	0-FFFFFFFF	Received characters sent to DTE
54	0-FFFF	Transmit characters lost (data overrun errors from DTE)
55	0-FFFF	Received characters lost (data overrun errors to DTE)
56	0-FFFFFFFF	Transmit I- Frame count, if error control protocol running
57	0-FFFFFFFF	Received I-Frame count, if error control protocol running
58	0-FFFF	Transmit I-Frame error count, if error control protocol running
59	0-FFFF	Received I- Frame error count, if error control protocol running
5A-5F		Reserved
60	See Table 14	Termination Cause
62-7F		Reserved for future versions of this specification
80-FF		Reserved for manufacturer proprietary keys

Table 7- Call Setup Result Codes

<i>Code</i>	<i>Definition</i>
0	No previous call (modem log has been cleared since any previous calls)
1	No dial tone detected
2	Reorder signal detected, network busy
3	Busy signal detected
4	No recognized signal detected (e.g. no signal, or nothing recognizable)
5	Voice detected * if this is a voice modem (e.g. V.253) operating in voice mode (e.g. +FCLASS=8.0)
6	Text telephone signal detected (see V.18)
7	Data Answering signal detected (e.g. V.25 ANS, V.8 ANSam)
8	Data Calling signal detected (e.g. V.25 CT, V.8 CI)
9	Fax Answering signal detected (e.g. T.30 CED, DIS)
A	Fax Calling signal detected (e.g. T.30 CNG)
B	V.8bis signal detected
C-F	Reserved

Table 8– Multimedia modes

<i>Code</i>	<i>Definition</i>
0	Data Only
1	FAX Only
2	Voice Only * if voice mode supported (e.g. V.253, IS-101)
3	VoiceView™
4	ASVD, V.61
5	ASVD, “V.34Q”
6	DSVD, Multi-Tech
7	DSVD, 1.2
8	DSVD, V.70
9	Video-telephony, H.324
A	Other V.80 call
B-F	Reserved

Table 9– DTE-DCE modes

<i>Code</i>	<i>Definition</i>
0	Async data
1	V.80 transparent synchronous mode
2	V.80 framed synchronous mode
3-F	Reserved

Table 10– V.34 INFO bit report (applicable only to V.34 or V.90/V.92 calls)

<i>Bits</i>	<i>Source bits</i>	<i>Definition</i>
31-30	INFO0 bit 20; 0	
20-29	INFOc bits 79-88	
16-19	INFOc bits 26-29 or 35-38 or 44-47 or 53-56- or 62-65 or 71-74	Pre-emphasis field, selected by the symbol rate chosen
15-Dec	INFOa bits 26-29	
11-Oct	MP bit 50; 0	
0-9	INFOa bits 40-49	

Table 11– gstnModulationSchemeActive from 3.7.2/V.58

<i>Value</i>	<i>Description</i>
0	V.17 (G3 Fax call)
1	V.21
2	V.22
3	V.22bis
4	V.23 Constant Carrier (1200/75)
5	V.23 Switched Carrier (half duplex)
6	V.26bis
7	V.26ter
8	V.27ter (G3 Fax call)
9	V.29 HD (G3 Fax call)
A	V.32 (difficult to distinguish from V.32bis)
B	V.32bis
C	V.34
D	V.34 HD (G3 Fax call)
E	V.90 Issue 1 (asymmetric)
F	V.90 Issue 2 (symmetric)
E-7F	Reserved (V.58)
80	X2™
81	K56FLEX™
82	V.FC
83	V.32terbo
84	Bell 212A (if modem supports B212A)
85	Bell 103 (if modem supports B103)
80-FF	Reserved for mfgs

Table 12– errorControl Active from 3.5.2/V.58

<i>Value</i>	<i>Description</i>
0	Disable/none
1	V.42 LAPM
2	V.42 Alterative protocol (MNP™)
3-7F	Reserved (V.58)
80	MNP10™
81	ECP™ Enhanced Cellular Protocol

Table 12– errorControl Active from 3.5.2/V.58

<i>Value</i>	<i>Description</i>
82	ETC™ Enhanced Throughput Cellular
82-FF	Reserved for mfgs

Table 13– compressionActive from 3.2.2/V.58

<i>Value</i>	<i>Description</i>
0	None
1	V.42bis
2-7F	Reserved (V.58)
80	MNP5™
81-FF	Reserved for mfgs

Indicates that the DCE has gone on hook and that the previously existing network connection has been cleared. These values are hex.

Table 14– callCleared codes from 3.6.4/V.58-1994

<i>Value</i>	<i>Description</i>	<i>Notes</i>
0	CauseUnidentified	Call setup issues
1	No Previous call	Not in V.58
2	Call is still in progress	Not in V.58
3	Call Waiting signal detected	Not in V.58, only if modem can detect it
4	Delayed	Same as value 2A, CallAttemptsLimitExceeded
A	NMSinitiatedDialCall	-- Network Management System
B	NMSinitiatedLeased-LineRestoral	
C	NMSinitiatedRedial	
D	NMSinitiatedDialDisconnect	
14	PowerLoss	DCE
15	EquipmentFailure	
16	FrontPanelDisconnectRequested	If there is a front panel with this control
17	FrontPanelLeasedLineRestoral	
18	AutomaticLeasedLineRestoral	

Table 14– callCleared codes from 3.6.4/V.58-1994

<i>Value</i>	<i>Description</i>	<i>Notes</i>
19	InactivityTimerExpired	
1E	cct116RestoralRequest	DTE Interface
1F	cct108isOffInhibitsDial	
20	cct108turnedOff	This is hangup with &D2
28	NoNumberProvided	Prohibited by some national regulations
29	BlacklistedNumber	
2A	CallAttemptsLimitExceeded	Same as “Delayed”, see ETS 300 001
2B	ExtensionPhoneOff-Hook	If extension detection supported
2C	CallSetupFailTimerExpired	e.g. S7 timeout
2D	IncomingCallDetected	If incoming call while sending dial command.
2E	LoopCurrentInterrupted	
2F	NoDialTone	
30	VoiceDetected	
31	ReorderTone	
32	SitTone	
33	EngagedTone	
34	LongSpaceDisconnect	And if modem program to abort on long space
3C	CarrierLost	Signal Converter
3D	TrainingFailed	
3E	NoModulationinCommon	
3F	RetrainFailed	
40	RetrainAttemptCountExceeded	
41	GstnCleardownReceived	
42	FaxDetected	
46	InTestMode	Test
47	IntrusiveSelfTestInitiated	
50	AnyKeyAbort	Call Control

Table 14— callCleared codes from 3.6.4/V.58-1994

<i>Value</i>	<i>Description</i>	<i>Notes</i>
51	DteHangupCommand	If ATH was used to terminate the previous call.
52	DteResetCommand	If ATZ was used to terminate the previous call.
5A	FrameReject	Error Control
5B	NoErrorControlEstablished	Error control was required
5C	ProtocolViolation	
5D	n400exceeded	
5E	NegotiationFailed	
5F	DisconnectFrameReceived	
60	SabmeFrameReceived	
64	LossOfSynchronization	Data Compression

Example Modem Response and Usage

Table 15 - Completed Data Call, with some errors and rate retrain during the call

<i>Modem response line</i>	<i>Description</i>
DIAG <2A4D3263 0=10	This is version 1.0
DIAG <2A4D3263 1=06 2=0 3=0>	Data Answer signal detected; Data only; Character async
DIAG <2A4D3263 5="C14513902A" 6="A145"	V.8 Call Menu indicates: V.8 Joint Menu selects:
DIAG <2A4D3263 10=1F 11=0C 12=52>	Receive level = -31dbm; transmit level = -12dbm; noise level = -82dbm
DIAG <2A4D3263 14=03 15=05 16=10>	Far end echo delay in milliseconds; Far end echo loss in dB; Near end echo loss = 16 dB
DIAG <2A4D3263 20=C 22=780 24=0C80 26=79E0 >	Transmitter: V.34 training completed; V.34 carrier frequency = 1920; V.34 symbol rate = 3200; initial transmit rate is 31200 bit/s
DIAG <2A4D3263 21=D 25=1F40 27=DAC0 >	Receiver: V.90 training completed; V.90 symbol rate = 8000; initial receive rate is 56000 bit/s

Table 15 - Completed Data Call, with some errors and rate retrain during the call

<i>Modem response line</i>	<i>Description</i>
DIAG <2 A4D3263 30=00 31=03 32=01 33=01>	No carrier loss events, 3 carrier rate renegotiations attempted; 1 carrier retrain requested; 1 carrier retrain granted
DIAG <2A4D3263 34=7080 35=CB20>	Final transmit rate is 28800 bit/s; final receive rate is 52000 bit/s
DIAG <2A4D3263 40=1 41=100>	LAPM negotiation completed; frame size = 256
DIAG <2A4D3263 42=0 43=0>	No error control timeout or link NAKs
DIAG <2A4D3263 44=1 45=400>	V.42bis data compression used; dictionary size = 1024
DIAG <2A4D3263 50=2 51=2>	Hardware transmit and receive flow control
DIAG <2A4D3263 52=343CC 54=0>	213964 DTE characters transmitted, w/o underrun
DIAG <2A4D3263 53=7230E6 55=47>	7483622 DTE characters received, 71 characters lost due to receive data overrun
DIAG <2A4D3263 56=29D 58=0001>	597 (decimal) frames transmitted, with 1 frame error
DIAG <2A4D3263 58=2A4B 59=0004>	10827 (decimal) frames received, with 4 frame errors
DIAG <2A4D3263 60=51>	Local PC initiated hangup

Event Reporting Word

You can use the AT+VEM command to define events on which to report. The list is encoded as a word composed of the following bits.

■Note

All events are enabled by default and indicated by the underlined bit number. Blank table entries are unsupported events.

A **1** in a bit-position indicates an event is reported.

A **0** in a bit-position indicates an event is not reported.

Read bits from right (Bit 0) to left (Bit 32).

<i>Bit</i>	<i>Signal</i>
<u>0</u>	Caller ID (effective only where function is supported by the phone company. Not supported on Data/Fax modems.
1	
<u>2</u>	Distinctive Ring (effective only where function is supported

<i>Bit</i>	<i>Signal</i>
<u>3</u>	RING
<u>4</u>	DTMF Detection
<u>5</u>	Receive Buffer Overrun
<u>6</u>	Fax Calling
<u>7</u>	Data Calling
8	
<u>9</u>	Presumed Hang-Up (SILENCE) Time-Out
<u>10</u>	Presumed End-of-Message (QUIET) Time-Out
11	
12	
13	
14	
15	
16	
17	
<u>18</u>	Ring Back
<u>19</u>	BUSY
<u>20</u>	DIALTONE
21	
22	
<u>23</u>	Playback Buffer Underrun
24	
<u>25</u>	Fax or Data Answering Modem Detected
26	
<u>27</u>	Voice Detected
28	
29	
30	
31	
32	

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