FAX/MODEM

User Guide

TADPOLE RDI

431108002A

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FAX/MODEM User Guide

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1 Introduction

This Reference Guide is intended for system administrators, programmers, and FAX/MODEM users who possess a working knowledge of UNIX networking. This Reference Guide lists the AT commands, S registers, and responses supported by many PCMCIA FAX/MODEMs. Some commands may be different on your particular modem. For an exhaustive command reference, please contact your modem manufacturer. Default settings are shown in **bold**.

Before you proceed, observe the following conventions that are used in this User Guide.

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Precedes information that requires special attention.
- Directories and variables are shown in *italics*.
- Commands, switches, primitives, and tokens are shown in **bold**.
- Filenames are shown in *italics*.
- References to other information is preceded by +.

Contents of This Guide

In addition to this Introduction, this User Guide contains the following chapter:

- **Chapter 2, FAX/MODEM information**— provides a list of the AT commands, S registers, and responses supported by many PCMCIA FAX/MODEMs.

Supplemental Documentation

This Reference Guide is part of a set of documents provided by Tadpole-RDI for your convenience. Additional information can be found in the following supplemental documentation:

- "UltraBookIIi User Guide"
- "Solaris Software Installation Guide"
- "VWA Software Installation Guide"
- "VWA Control Panel User Guide"
- "AutoNet Reference Guide"

2 FAX/MODEM Information

This appendix lists the AT commands, S registers, and responses supported by the UltraBookIIi's PCMCIA FAX/MODEM. Default settings are shown in **bold**.

The AT commands vary from one modem to another. If you are not using an UltraBookIIi PCMCIA FAX/MODEM, use the AT commands specified in your modem's manual. Only use modems from vendors qualified by Tadpole-RDI.

AT Commands

Command	Explanation
A	Answer Command. This command causes the modem to attempt to answer an incoming call. The modem will make its attempt regardless of whether the modem is in auto-answer mode or not. This command should be issued after the RING result code is seen (when another modem is attempting to connect).
A/	Re-executes the previous command line. This command is NOT preceded by AT or followed by <Enter>.
Bn	CCITT/Bell Setting. This command selects either the CCITT standard or the Bell standard for 300 and 1200 bps communications. B0CCITT V.22 for 1200bps, CCITT V.21 for 300bps. **B1BELL 212A FOR 1200BPS, BELL 103 FOR 300BPS.**
C1	Carrier Control Command. This command is included for compatibility only and performs no function other than to return an OK message.
Dn	Dial Command. This command directs the modem to go off-hook, wait for a dialtone, and dial the number indicated in the dial string, n. The dial string may contain the characters 0-9 for pulse-mode dialing or 0-9, A-D, *, and # for touch-tone dialing. Spaces, hyphens, and parentheses can be included in the command to improve readability. For example, D (123) 456-7890 and D1234567890 are equivalent.

Command	Explanation
Dn, continued	In addition, the dial string may contain these dial command modifiers:

L Redial the last valid telephone number entered.
PPulse-mode dialing. (See S14.)
T Touch-tone dialing. (See S14.)
S=n Dial 1 of 4 stored telephone numbers, where n is 0, 1, 2, or 3. (See &Zn)
WWait for a dialtone. (See S7.)

, Pause before dialing the digits that follow. (See S8.)

@ Wait for quiet answer. Wait for one or more rings followed by at least five seconds of silence before continuing with execution of the dial string. This is useful for transferring calls on some PBX systems.

; Return the modem to command state. When placed at the end of the dial string, this puts the modem into command mode. While in command mode, the modem will not attempt to connect with the remote modem.

If you see duplicate characters, then both your modem local echo and your application software local echo are enabled.

! Put the modem briefly on-hook. This can be useful for transferring calls on some telephone systems. (See S29.)

^ Toggles calling tone for this call only.

J Accepted but causes no action.

K Enable power level adjustment during MNP 10 link negotiation for this call only (see "Mn").

& Wait for credit card bong before continuing with the dial string. If the bong is not detected within the time specified in S7, the dial string will be aborted, dialing terminated, and an error message generated.
RAccepted but causes no action.
EnLocal Echo Setting. This command determines whether the commands you type are echoed to the screen. (See S14.)

Command	Explanation
En	Echo Command Setting. E0 Disable command echo. **E1 Enable command echo.**
Fn	Line Connection Speed Setting. This command is not supported in V.34 modems and above but reports OK for compatibility. N0 or +MS, and S37 may be used to force a particular connect mode.
Hn	Hang-up Command. H0 On-hook (hang up). H1 Off-hook.
In	Identification Command. I0 Reports product code (e. g. 28800). I1 Reports read-only memory (ROM) check-sum. This number should always remain the same. I2 Reports OK. I3 Reports ROM revision level and model. I4 Reports modem identifier string. I5 Reports country code (e.g. 022 for U.S.). I6 Reports data pump model and code revision. I7 Reports DAA code for external DAA (if not installed, reports 255)
Ln	Speaker Volume Setting. (See also register S22.) On PCMCIA modems, there may be no discernible difference between some volume levels. L0 Off. L1 Low. L2 Medium. **L3 High.**
Mn	Speaker Control Setting. This command controls when the speaker will be on or off. (See also S22.) M0 Always off. **M1 On during call establishment, off after receiving carrier.** M2 Always on, even during data transmission. M3 On between dialing and carrier detection.

Command	Explanation
Nn	Automatic Line Speed Detection Setting. (See also S31 and S37.) N0 Automatic line speed detection disabled. Handshaking will be conducted according to the contents of S37. **N1 Automatic line speed detection enabled.**
On	On-line Command. This command switches the modem from command mode to on-line mode. If there is no established connection, ERROR is returned. O0 Go back on-line without a retrain. O1 Go back on-line after initiating a retrain.
P	Pulse-mode Dial Setting. This setting specifies pulse-mode dialing for all subsequent connections. (See *S14*, contrast with *T*.)
Qn	Result Code On/Off Setting. This command determines whether or not the modem returns result codes such as OK, ERROR, or CONNECT. (See *S14, S95, Vn, Wn, Xn*.) **Q0 Display result codes.** Q1 Do not display results codes.
Sn?	Read S-register. This command enables you to read the S-register specified by the number n. For example, typing *ATS0? <Enter>* will allow you to view the contents of the *S0* register.
Sn=x	Write to an S-register. This command allow you to change the contents of an S-register. For example *ATS0=2<enter>* writes the value 2 to the *S0* register.  The modem does not perform error checking on values written to S-registers. It will always return the OK message. (See *S-Registers* for details on the contents of each S-register.)
T	Touch-tone Dial Setting. This setting speciffies touch-tone dialing for all subsequent connections. (See *S14*, contrast with *P*.)

Command	Explanation
Vn	Result Code Format Setting. (See *S14, S95, Qn, Wn, Xn*.) V0 Numeric result codes. **V1 Verbose result codes.**
Wn	Connection Message Setting. If you change the value of *S95*, it may override the Wn setting. (See *S31, Vn, Qn*.) **W0 Reports DTE rate only.** For example: CONNECT 57600 W1 Reports DCE rate, error correction period, and DTE rate. For example: CARRIER 28800 PROTOCOL: LAPM CONNECT 57600 W2 Reports DCE rate only. For example: CONNECT: 28800
Xn	Extended Result Code Setting. This command selects which call progress result codes are reported. (See S22, S95, Qn, Vn, Wn, and "Result Codes and Messages.") X0 Send basic call progress result codes: OK, CONNECT, RING, NO CARRIER, ERROR, NO ANSWER. X1 Same as X0 but also report rate-specific CONNECT messages. X2 Same as X1 but also report NO DIALTONE detection. X3 Same as X2 but also report BUSY signal detection. **X4 Send all call progress messages.**
Yn	Long Space Disconnect String. This command determines whether the modem hangs up when it receives a long space signal (greater than 1.6 seconds) from the remote modem. If enables, the modem will send a 4 second space signal to the remote modem before hanging up. (See *S21*.) **Y0 Disable long space disconnect.** Y1 Enable long space disconnect.

Command	Explanation
Zn	Modem Reset/Restore Profile Command. Z0 Perform modem reset and restore configuration profile 0 Z1 Perform modem reset and restore configuration profile 1
&Cn	Carrier Detect (CD) Signal Setting. (See *S21*.) &C0 CD always on. **&C1 CD follows state of carrier.**
&Dn	Data Terminal Ready (DTR) Signal Setting. This command affects the interpretation of the DTR signal.  When the modem is online, it ignores a DTR drop that lasts less than the value in *S25*, .05 seconds by default. (See *S21*.) &D0 DTR is ignored. &D1 DTR drop causes the modem to go into command mode. **&D2 Auto-answer is inhibited and a DTR drop causes the modem to hang up.** &D3 DTR drop causes the modem to perform a soft reset.
&Fn	Restore Factory Profile Command. This command will restore one of the two preset factory profiles. These profiles enable automatic line speed detection, hardware flow control, error correction, and data compression. You can also define and store your own specialized profiles. (See *&Wn, &Yn,* and *Zn* for details.)
&Gn	Guard Tone Setting. This command sets the guard tone for V.22 and V.22bis connections. (See S23.) &G0 No guard tone. &G1 No guard tone. &G2 1800 Hz guard tone. Used in the U.K. and some other Commonwealth countries.

Command	Explanation
&Jn	Telephone Jack Setting. The *&J0* and *&J1* commands are included for compatibility only and perform no function other than to return an OK message.
&Kn	Flow Control Setting. If your communications software does not support hardware flow control, you will need to specify *&K0* or *&K4* (see below). (See *S39*.) &K0 Disable flow control. &K3 Enable hardware flow control only. &K4 Enable software flow control only. &K5 Enable transparent software flow control. &K6 Enable both hardware and software flow control.
&L	Leased Line Setting. The *&L0* command is included for compatibility only and performs no function other than to return an OK message. This modem does not support leased line operation.
&M	Selects a direct connection. This command is equivalent to *&Q0*.
&Pn	Pulse Dial Make/Break Ratio Setting. Enabled on a per country basis (see *S28*), If enabled, the dial make/break ratio is as follows: &PO 39%-61% dial ratio at 10 pulses per second. &P1 33% - 67% dial ratio at 10 pulses per second. &P2 39% - 61% dial ratio at 20pulses per second. &P3 33% - 67% dial ratio at 10 pulses per second.

Command	Explanation
&Qn	Asynchronous Mode Setting. (See S27 and S36.) &Q0 Selects a direct connection. &Q1 Reserved. &Q2 Reserved. &Q3 Reserved. &Q4 Selects AutoSync operation. The value l00b is written to S27 bits 3.1. and 0. respectively. AutoSync operation. when used in conjunction with the Hayes Synchronous Interface (HSI) capability in the DTE provides synchronous communication capability from an asynchronous terminal. ***Starting AutoSync:*** Set registers S19, S20, and S25 to the desired values before selecting AutoSync operation with &Q4. After the CONNECT message is issued, the modem waits the period of time specified by S25 before examining DTR. If DTR is on, the modem enters the synchronous operating state: if DTR is off, the modem terminates the line connection and returns to the asynchronous command state. ***Stopping AutoSync:*** AutoSync operation is stopped upon loss of carrier or the on-to-off transition of DTR. Loss of carrier will cause the modem to return to the asynchronous command state. ***Stopping AutoSync:*** AutoSync operation is stopped upon loss of carrier or the on-to-off transition of DTR. Loss of carrier will cause the modem to return to the asynchronous command state. An on-to-off transition of DTR will cause the modem to return to the asynchronous command state and either not terminate the line connection (&D1 active) or terminate the line connection (any other &Dn command active).

Command	Explanation
&Qn, continued	**&Q5** **Selects a reliable connection.** The value in S36 will determine whether or not a failure to establish a particular error correction link will result in the modem hanging up or trying to make another type of connection. (See also \N2, \N3, \N4, and \N5.) &Q6 Selects normal connection. (Equivalent to \N0.)
&Rn	Hardware Flow Control Setting. This command selects how the modem controls its Clear to Send (CTS) signal if hardware flow control is selected. (See *S21*.) &S0 CTS is always on. &S1 CTS will drop only if required by flow control.
&Sn	Data Set Ready (DSR) Signal Setting. (See S21.) &S0 DSR always on. &S1 DSR is active after an answer tone has been detected and inactive after the carrier has been lost. Very few communications packages require this setting.
&Tn	Diagnostic Test Commands. This set of commands provides diagnostic tests that comply with the CCITT V.54 recommendations. All connections established during testing must be normal or direct connections. (See \N0, +Q0, S16, S181.) &T0 Terminate test in progress. Generally during a test the modem is on-line. Therefore to issue this command you will need to type the escape sequence +++ and wait for the OK message. You can then type AT&T0 <Enter> to terminate the test. Alternatively, if S18 is non-zero, a test will terminate automatically after the number of seconds specified in S18.

Command	Explanation
&Tn, continued	&T1 Local analog loopback test. This test checks the operation of your modem's transmitter and receiver. For example: 1. Your modem should be on-hook and in command mode. Type AT\N0 <Enter>. This specifies a normal connection. 2. Type AT S18=10 <Enter>. This specifies a test period of 10 seconds. 3. Type AT &T1 <Enter>. This initiates the local analog loopback test. 4. Type a simple character pattern. If your modem is working properly, you will see this character pattern echoed to the screen. 5. The test will end automatically after 10 seconds. 6. Return your modem to its original state by typing ATZ <Enter>. &T2 Reserved. &T3 Local digital loopback test. This test verifies the operation of two connected modems and the phone channel. For example: 1. Your modem should be on-hook and in command mode. Type AT\N0 <Enter>. This specifies a normal connection. 2. Type AT S18=10 <Enter>. This specifies a test period of 10 seconds. 3. Establish a connection with the remote modem by typing ATDnnn-nnnn <Enter>. Wait for the CONNECT message. 4. Issue the escape sequence to put the modem back into command mode (type +++ without pressing <Enter>). When you see the OK message, your modem is in command mode. 5. Issue the command AT &T3 <Enter>. This initiates the local digital loopback test. 6. Have someone at the remote modem type a simple character pattern. This character pattern then loops through your modem back to the remote modem. Everything is working properly if the original character pattern is echoed back to the remote user's screen.

Command	Explanation
&Tn, continued	7. The test will end automatically after 10 seconds. 8. When your testing is complete, hang up the line and return your modem to its original state by typing ATHZ <Enter>. &T4 Allows local modem to accept a request from the remote modem for a remote digital loopback test. (See S23.) &T5 Prohibits local modem from accepting a request from the remote modem for a remote digital loopback test. (See S23.) &T6 Remote digital loopback test. This test verifies the operation of two connected modems and the phone channel. For example: 1. Your modem should be on-hook and in command mode. Type AT\N0 <Enter>. 2. Type AT S18=10 <Enter>. This specifies a test period of 10 seconds. 3. Establish a connection with the remote modem by typing AT Dnnn-nnnn <Enter>. Wait for the CONNECT message. 4. Issue the escape sequence to put the modem back into command mode (type +++ without pressing <Enter>). When you see the OK message, your modem is in command mode. 5. Issue the command AT &T6 <Enter>. This initiates the remote digital loopback test. Note that the remote modem must support CCITT V.54 and must be prepared to accept the request for this test. (See &T4.) 6. Type a simple character pattern and verify that what you type is echoed correctly to your screen. 7. The test will end automatically after 10 seconds. 8. When your testing is complete, hang up the line and return your modem to its original state by typing ATHZ <Enter>. &T7 Remote digital loopback with self-test. This test verifies the operation of two connected modems and the phone channel. It sends an internal test pattern through the loop and

Command	Explanation
&Tn, continued	returns a numeric message that indicates the number of errors that were counted during the test period. (See &T6.) For example: 1. Your modem should be on-hook and in command mode. Type AT \N0 <Enter>. 2. Type AT S18=10 <Enter>. This specifies a test period of 10 seconds. 3. Establish a connection with the remote modem by typing AT Dnnn-nnnn <Enter>. Wait for the CONNECT message. 4. Issue the escape sequence to put the modem back into command mode (type +++ without pressing <Enter>). When you see the OK message, your modem is in command mode. 5. Issue the command AT &T7 <Enter>. This initiates the remote digital loopback with self-test. Note that the remote modem must support CCITT V.54 and must be prepared to accept the request for this test. (See &T4.) 6. The test will end automatically after 10 seconds. The number of errors that were counted are displayed on your screen at the end of the test. 000 means that there were no errors. 255 means that there were 255 or more errors. 7. When your testing is complete, hang up the line and return your modem to its original state by typing ATHZ <Enter>. &T8 Local analog loopback with self-test. This test checks the operation of your modem's transmitter and receiver. It sends an internal test pattern through the loop and returns a numeric message that indicates the number of errors that were counted during the test period. (See &T1.) For example: 1. Your modem should be on-hook and in command mode. Type AT\N0 <Enter>. This specifies a normal connection. 2. Type AT S18=10 <Enter>. This specifies a test period of 10 seconds.

Command	Explanation
&Tn, continued	3. Type AT &T8 <Enter>. This initiates the local analog loopback with self-test. 4. The test will end automatically after 10 seconds. When the test is ended, the modem will display the number of errors detected. 000 means that there were no errors. 255 means that there were 255 or more errors. 5. Return your modem to its original state by typing ATZ <Enter>.
&V	View Profiles Command. This command displays the active modem profile, the user-defined profiles, and the stored telephone numbers. (See &Wn and Zn.)
&V1	Display active s-registers (v.34), Display statistics of last connection for 33.6 and 56k configurations.
&Wn	Store Current Profile Command. This command stores the active modem configuration into nonvolatile memory (NVRAM) as user-defined profile 0 or 1. Storable parameters can be viewed with the &V command and recalled with the Zn command. To return to the factory defaults, type AT& F0 <Enter>. &W0 Store the current profile as profile 0. &W1 Store the current profile as profile 1.
&Yn	Default Reset Profile Setting. This command determines which user-defined profile will be used after a power-on reset. &Y0 Select user-defined stored profile 0. &Y1 Select user-defined stored profile 1.
&Zn=X	Store Telephone Number Command. This command stores a phone number, X, to phone number entry n, where n is 0, 1, 2, or 3. Each phone number can be up to 34 digits long. Spaces, hyphens, and parentheses are not saved. The purpose of this command is to allow you to abbreviate dial commands. For example, you can store the dial string 9,(123)456-7890 by typing: AT&Z3=9,(123)456-7890 <Enter>. Subsequent calls to this number can be issued with the command ATDS=3 <Enter>. (See Dn, dial modifier S).

Command	Explanation
%Cn	Compression Control Setting. (See S41 and S46.) %C0 Disable data compression. %C1 Enable MNP 5 data compression only. %C2 Enable V.42bis data compression only. %C3 Enable both V.42bis and MNP 5 data compression.
%En	Line Quality Monitor Setting. (See S41.) %E0 Disable line quality monitoring and auto-retrain. %E1 Enable line quality monitor and auto-retrain. %E2 Enable line quality monitor and fallback/fall forward.
%L	Line Signal Level Command. This command reports a value which indicates the received signal level. For example, 004 = -4dBm, 043 = -43dBm, etc.
%Q	Line Signal Quality Command. This command reports the line signal quality. Typical values are in the range from 0 to 2 and increase as the signal quality degrades. Based on this value, retrain or fallback/fall forward may be initiated if enabled by the %E1 or %E2 commands. The command reports an ERROR if the modem is not connected, or is connected at 300bps, V.23, or fax modes. In V.34, the symbol rate, SNR, THD, TX level and pre-emphasis are also reported.
\An	Maximum MNP Block Size Setting. This sets the maximum allowable MNP block size. Block size is negotiated during the MNP handshaking. In general, the better the line quality, the larger the blocks. (See S40.) \A0 64 characters. \A1 128 characters. \A2 192 characters. \A3 256 characters.

Command	Explanation
\Bn	Break Command. In reliable mode, the modem will signal a BREAK through the active error correction protocol. In non-error correction mode, the modem will transmit a BREAK signal to the remote modem that is a length n times 100 ms, where n is between 1 and 9 (the default for n is 3). When the modem receives a break from the remote modem, the break is passed as follows: 1) For non-corrected modes, the break length is passed; 2) For error-corrected modes a 300ms break is passed. (See \Kn.)
\Gn	Modem-to-Modem Software Flow Control Setting. This command enables or disables software flow control between the local and remote modem. During a reliable connection, this setting is ignored. (See S41.) \G0 Disable modem-to-modem software flow control. \G1 Enable modem-to-modem software flow control.
\Kn	Break Control Setting. This command allows you to send a BREAK to stop data transfer without disconnecting. (See S40.) The resulting behavior depends on the state of the modem: 1. Modem receives a BREAK from the computer while operating in data mode. \K0Modem enters on-line command mode. No BREAK is sent to remote modem. \K1Modem clears data buffers and sends BREAK to remote modem. \K2Same as \K0. \K3Sends BREAK to remote modem immediately. \K4Same as \K0. **\K5Sends break in sequence with transmitted data.**

Command	Explanation
\Kn, continued	2. Modem receives a BREAK from the computer while operating in command mode. (See \B.) \K0Clears data buffers and sends BREAK to remote modem. \K1Same as \K0. \K2Sends BREAK to remote modem immediately. \K3Same as \K2. \K4Sends BREAK to remote modem in sequence with data. **\K5Same as \K4.** 3. Modem receives BREAK from remote modem during non-error corrected connection: \K0Clears data buffers and sends BREAK to computer. \K1Same as \K0. \K2Sends a BREAK immediately to computer. \K3Same as \K2 \K4Sends a BREAK in sequence with received data to computer. \K5Same as \K4 4. Modem receives BREAK from remote modem during reliable connection: the modem passes a 300 ms BREAK to the host.

Command	Explanation
\Nn	Error correction Mode Setting. This command selects the error correction mode to be negotiated in subsequent connections. (See &Qn, S36, and S48.) \N0 Selects a normal connection. A normal connection is a connection with flow control, but no error correction or data compression. (Equivalent to &Q6.) \N1 Same as &Q0. \N2 Selects a reliable connection (a connection that uses error correction). In this mode the modem will try to establish a V.42 (LAPM) or MNP connection. If the attempt fails, the modem will hang up. (Equivalent to &Q5 S36=4 S48=7.) **\N3 Selects an auto-reliable connection. In this mode the modem will first try to establish a reliable connection. If it fails, it will try to establish a normal connection.** (Equivalent to &Q5 S36=7 S48=7.) \N4 Selects LAPM error correction. If the attempt to make a LAPM connection fails, the modem will hang up the line. -K1 may override this command (Equivalent to &Q5 S48=0.) \N5 Selects MNP error correction. If an attempt to make an MNP connection fails, the modem will hang up the line. (Equivalent to &Q5 S36=4 S48=128.)
\Vn	Single Line Connect Message Enable The Single line connect message format can be enabled or disabled by the Vn command as follows. V0 Connect messages are controlled by the command settings X. W. and S95 V1 Connect messages are displayed in the single line format described below subject to the command settings V (Verbose) and Q (Ouiet).

Command	Explanation
\Vn, continued	In Non-Verbose mode (V0). single line connect messages are disabled and a single numeric result code is generated for CONNECT DTE. When single line connect messages are enabled there are no CARRIER PROTOCOL or COMPRESSION messages apart from the fields described below. The single line connect message format is: CONNECT <DTE Speed>< Modulation>< Protocol></Compression></Line Speed> <Voice and Data> Where: <DTE Speed = DTE speed e.g.. 57600. Modulation = "V32" for V.32 or V.32bis modulations "V34" for V.34 modulations.  Modulation is omitted for all other modulations. Protocol ="NONE" for no protocol. "ALT" for Microcom Network Protocol. "LAPM" for LAP-M protocol. Compression ="CLASS5" for Microcom MNP5 compression. "V42BIS" for V.42bis compression.  Compression is omitted if protocol is NONE. Line Speed =Asymmetric rates are displayed as /rate:TX/rate:RX, e.g.. /1200 TX/75 RX. Symmetric rates are displayed as a single DCE rate e.g.. 14400. Voice and Data = Blank for Data mode only. "SVD" for AudioSpan analog simultaneous audio/voice and data. "DSVD" for G.729A or DigiTalk digital simultaneous voice and data.

Command	Explanation
)Mn	Cellular Power Level Setting. This command enables or disables the automatic transmit power level adjustment during MNP 10 link negotiation. The @Mn command sets the initial modem transmit level. (See S40.))M0 Disable power level adjustment.)M1 Enable power level adjustment.)M2 Enable power level adjustment during MNP10 link negotiation. After connection, the power level remains fixed.
*Hn	Link Negotiation Speed Setting. This command controls the initial connection speed for MNP 10 link negotiations. (See S28.) *H0 Link negotiation at highest speed supported. *H1 Link negotiation at 1200 bps. *H2 Link negotiation at 4800 bps.
**	Download to Flash Memory. A flash programming algorithm must first be loaded into RAM, then the Flash PROM may be loaded. The terminal program must be set to accept hardware and software flow control and should be set to 8 bits, no parity, 1 stop bit. DTE speeds to 115 Kbps are supported. Turn off character and line spacing options. You must have both the Flash loading file and the modem hex code. WARNING: Do not stop once the modem code is loading. The modem will be irreparably damaged. Before attempting this procedure, contact the factory for the latest object code and instructions. Procedure: 1) Issue the AT** command. Response: "Downloading initiated..." 2) Perform an ASCII file transfer of the flash code. Response: "Downloading flash file..." 3) Perform an ASCII file transfer of the modem hex code. Response: "Download successful." 4) Issue the ATZ command.

Command	Explanation
:En	Compromise Equalizer Setting. By default, the compromise equalizer is turned on. However, with some cellular lines, connections may be more reliable with the compromise equalizer turned off. (See S201.) :E0 Disable equalizer. :E1 Enable equalizer.
-Kn	MNP Extended Services Setting. This command enables or disables conversion of a V.42 LAPM connection to an MNP 10 connection. (See S40.) -K0 Disable conversion. -K1 Enable conversion. -K2 Enable conversion, except during V.42 LAPM answer detection.
-Qn	V.22bis/V.22 Fallback Setting. This command enables or disables fallback to V.22bis or V.22. (See S41.) -Q0 Disable fallback so that it is limited to 4800 bps. -Q1 Enable fallback.
-SEC=X,Y	MNP 10EC Cellular Protocol Settings. This command enables or disables MNP 10EC and selects initial transmit level. Saved in nonvolatile memory. X=0 Disable MNP 10EC mode. X=1 Enable MNP 10EC mode. Y=-10 to -30Initial transmit level in dBm. Overwritten with S91 on factory default.
-SEC?	Display MNP 10EC parameters.

Command	Explanation
-SDRn	Distinctive Ring. This command permits reporting of distinctive ringing cadences. There are three ring types: 1) 2 seconds on, 4 seconds off; 2) 0.8 seconds on, 0.4 seconds off, 0.8 seconds on, 4.0 seconds off; 3) 0.4 seconds on, 0.2 seconds off, 0.4 seconds on, 0.2 seconds off, 0.8 seconds on, 4.0 seconds off. n=0 Disable distinctive ring. Any valid ring is reported as RING. n=1 Enable Type 1 ring detection (RING1). n=2 Enable Type 2 ring detection (RING2). n=3 Enable Type 1 and Type 2 ring detection. n=4 Enable Type 3 ring detection (RING3). n=5 Enable Type 1 and Type 3 ring detection. n=6 Enable Type 2 and Type 3 ring detection. n=7 Enable Type 1, Type 2, and Type 3 ring detection.
+MS=X,Y, MINRATE, MAXRATE	Sets protocol, automode, and speed range. Saved in nonvolatile memory. X=0 V.21 X=1 V.22 X=2 V.22bis X=3 V.23 X=9 V.32 X=10 V.32bis X=11 V.34 X=64 B103 X=69 B212 X=74 V.FC Y=0 Fixed mode Y=1 Automode MINRATE and MAXRATE equals one of the following: 300, 600, 1200, 2400, 4800, 7200, 9600, 12000, 14400, 16800, 19200, 24000, 26400, 28800, 31200, 32000, 33600, 34000, 36000, 38000, 40000, 42000, 44000, 46000, 48000, 50000, 52000, 54000, 56000

Command	Explanation
#CIDn - Caller ID	Enables or disables Caller ID. #CID=0Disables Caller ID. (Default.) #CID=1Enables Caller ID with formatted presentation to the DTE. The modem will present the data items in a <Tag><Value> pair format. The expected pairs are data, time, caller code (telephone number) and name. #CID=2Enables Caller ID with unformatted presentation to the DTE. The modem will present the entire packet of information excluding the leading U's in ASCII printable hex numbers. Result Codes: OK n = 0 or 2. ERROROtherwise. Inquiries #CID? Retrieves the current Caller ID mode from the modem. #CD=?Returns the mode capabilities of the modem in a list with each element separated by commas. Formatted Form Reporting The modem presents the data in the <tag> = <value> pair format as described in the table below. Spaces are present on both sides of the equal sign Tag Description DATE DATE = MMDD where MM is the month number (01 to 12) and DD is the day number (01..31) TIME TIME = HHMM where HH is the hour number 100 to 23) and MM is the minute number (00 to 59) NMBR NMBR = <number> or P or O where <number> is the telephone number of the caller where P indicates that the calling number information is not available since the originating caller has requested private service. and where O indicates that the calling number information is not available or out of service at the calling location.

Command	Explanation
#CIDn - Caller ID, continued	NAME NAME = <listing name> where <listing name> is the subscription name MESG MESG = <data tag> <length of message> <data> <checksum> in printable ASCII hex numbers. This tag indicates a data item not listed above. The message is only possible for Multiple Message Format. NOTES: 1. The modem does not present any Caller ID information, if the DCE detects a checksum error in the Caller ID packet. 2. In the event of an unrecognized data tag, the modem will present the data in ASCII hex numbers following the MESG tag. **Example of Formatted Form Reporting** 1. The following example illustrates the standard Caller ID message packet. RING DATE=0 3 2 1 TIME=1 4 0 5 NMBR=5 0 4 5 5 5 1 2 3 4 NAME=A N OTHER RING RING 2. The following example illustrates the case where the tag of the packet is not recognized by the modem. RING MESG = 0 6 0 3 4 2 4 2 4 2 3 2 RING RING **Unformatted Form Reporting** The modem presents all information and packet control information found in the message. The modem however, excludes the leading U's (channel seizure information) from the presentation. The packet is presented in ASCII printable hex numbers. The modem does not insert spaces or line feeds for formatting between bytes or words of the packet. The modem does not detect the checksum of the packet.

Command	Explanation
#CIDn - Caller ID, continued	**Example of Unformatted Form Reporting** RING 2 4 0 0 0 2 32 RING RING

S Registers

Register	Range	Default	Explanation
S0	0-255	0	Rings to Auto-Answer. Sets the number of telephone rings required before the modem automatically answers a call. If S0=0, then auto-answer is disabled. Units: rings In Profile: Yes Writeable: Yes
S1	0-255	0	Ring Counter. Counts the number of telephone rings from an incoming call. The register is set to 0 if it detects no rings for 8 seconds. Units: rings In Profile: No Writeable: No
S2	0-255	43	Escape Character. The default value corresponds to the '+' character. Any value over 127 disables the escape process. Units: ASCII decimal In Profile: Yes Writeable: Yes
S3	0-127	13	Carriage Return Character. Units: ASCII decimal In Profile: No Writeable: Yes
S4	0-127	10	Line Feed Character. Units: ASCII decimal In Profile: No Writeable: Yes
S5	0-32	8	Backspace Character. Units: ASCII decimal In Profile: No Writeable: Yes
S6	Range: 2-255	Default: 4	Wait Time for Dialtone. Sets the length of time that the modem will wait before dialing. This register is ignored if the X2 or X4 commands have been issued. This register is also ignored when the W dial command modifier has been processed. (See Dn.) Units: seconds In Profile: Yes Writeable: Yes

Register	Range	Default	Explanation
S7	1-255	50	Wait Time for Carrier. Sets the length of time that a) the modem waits for a carrier before hanging up, b) the modem waits for silence when processing the @ dial command modifier, c) the modem waits for a dialtone when processing the W dial command modifier, and d) the modem waits for credit card bong when processing & dial command modifier. (See Dn.) Units: seconds In Profile: Yes Writeable: Yes
S8	2-255	2	Wait Time for Comma Dial Command Modifier. Sets the length of time that the modem pauses when processing the , (comma) dial command modifier. (See Dn.) Units: seconds In Profile: Yes Writeable: Yes
S9	1-255	6	Carrier Detect Response Time. Sets the time that the carrier must be present before the modem considers it valid and turns on carrier detect (CD). Increasing this delay decreases the chance of your modem incorrectly detecting a carrier due to noise on the telephone line. Units: 0.1 seconds In Profile: Yes Writeable: Yes
S10	1-255	14	Carrier Loss Disconnect Time. Sets the length of time that the modem waits to hang up the line after it detects a loss of carrier. If S10 is set to 255, the modem will not hang up when the carrier is lost. Units: 0.1 seconds In Profile: Yes Writeable: Yes
S11	50-255	95	Touch-tone Duration/Spacing. Sets the tone duration and spacing of touch-tones. Units: 0.001 seconds Default: In Profile: Yes Writeable: Yes

Register	Range	Default	Explanation
S12	0-255	50 (ONE SECOND)	Escape Code Guard Time. This is the minimum delay required before and after entering the escape sequence +++ and the maximum delay allowed between consecutive + characters within the escape sequence. Units: 0.02 seconds In Profile: Yes Writeable: Yes
S14		138 (2+8+128)	Bit-Mapped Options. By default the modem is set up to originate calls, use verbose result codes, and to echo commands. In Profile: Yes Writeable: No Bit / Value / Meaning 0 / 0 / Not used 1 / 0 / Command echo disabled (E0). 1 / 2 / Command echo enabled (E1). 2 / 0 / Send result codes (Q0). 2 / 4 / Do not send result codes (Q1). 3 / 0 / Numeric result codes (V0). 3 / 8 / Verbose result codes (V1). 4 / 0 / Reserved. 5 / 0 / Tone (T). 5 / 32 / Pulse (P). 6 / 0 / Reserved. 7 / 0 / Answer. 7 / 128 / Originate.
S16		0	Bit-Mapped Options (Test Mode). By default, all loopback testing is disabled. In Profile: No Writeable: No **Bit / Value / Meaning** 0 / 0 / Disable local analog loopback test. 0 / 1 / Enable local analog loopback test (&T1). 1 / 0 / Not used. 2 / 0 / Disable local digital loopback test. 4 / Enable local digital loopback test (&T3).

Register	Range	Default	Explanation		
S16, continued			**Bit**	**Value**	**Meaning**
			3	0	Remote digital loopback test off.
				8	Remote digital loopback test in progress.
			4	0	Disable remote digital loopback test.
				16	Enable remote digital loopback test (&T6).
			5	0	Disable remote digital loopback with self-test.
				32	Enable remote digital loopback with self-test (&T7).
			6	0	Disable local analog loopback with self-test.
				64	Enable local analog loopback with self-test (&T8).
S18	0-255	0	Test Timer. Sets the duration of the modem diagnostic tests initiated with the &Tn commands. If set to 0, tests will continue until forced to stop by another command, like &T0. Units: seconds In Profile: Yes Writeable: Yes		
S21		52 [4+16+32]	Bit-Mapped Options. In Profile: Yes Writeable: No		
			Bit	Value	Meaning
			0	0	Not used.
			1	0	Reserved.
			2	0	Clear to send (CTS) always on (&R0).
				4	CTS follows request to send (RTS) (&R1).
			3, 4	0	Data terminal ready (DTR) behaves according to &D0.
				8	DTR behaves according to &D1.
				16	DTR behaves according to &D2.
				24	DTR behaves according to &D3.

Register	Range	Default	Explanation		
S21, continued			**Bit**	**Value**	**Meaning**
			5	0	Carrier detect (CD) always on (&C0).
				32	CD follows state of carrier (&C1).
			6	0	Data set ready (DSR) always on (&S0).
				64	DSR active after answer tone has been detected (&S1).
			7	0	Disable long space disconnect (Y0).
				128	Enable long space disconnect (Y1).
S22		119 (3+4+112)	Bit-Mapped Options (Speaker/Results). By default, the speaker is on at low volume during call establishment, and result codes are limited according to X4. In Profile: Yes Writeable: No		
			Bit	**Value**	**Meaning**
			0, 1	0	Speaker off (L0).
				1	Low speaker volume (L1).
				2	Low speaker volume (L2).
				3	Low speaker volume (L3).
			2, 3	0	Speaker always off (M0)
				4	Speaker on during call establishment only (M1).
				8	Speaker always on (M2).
				12	Speaker on after receiving carrier (M3).
			4, 5, 6	0	Limit result codes according to X0.
				64	Limit result codes according to X1.
				80	Limit result codes according to X2.
				96	Limit result codes according to X3.
					112Limit result codes according to X4.
				7	0Reserved.

Register	Range	Default	Explanation
S23		54 (6+48)	Bit-Mapped Options. By default, the modem assumes 2400 bps DTE rate with no parity. Remote digital loopback tests are allowed. In Profile: Yes Writeable: No **Bit** **Value** **Meaning** 0 0 Prohibit remote digital loopback (&T5). 1 Allow remote digital loopback (&T4). 1, 2, 3 0 0-300 bps data terminal equipment (DTE) rate. 2600 bps DTE rate. 41200 bps DTE rate. 6 2400 bps DTE rate. 8 4800 bps DTE rate. 10 9600 bps DTE rate. 12 19200 bps DTE rate. 4, 5 0 Even parity. 16Not used. 32 Odd parity. 48 No parity. 6, 7 0 No guard tone (&G0). 64 No guard tone (&G1). 128 1800 Hz guard tone (&G2).
S24	0-255	10 (in US)	Sleep Inactivity Timer. Sets the length of time that the modem will operate in normal mode with no activity before entering low-power sleep mode. If set to 0, the low-power sleep mode is disabled. Units: seconds In Profile: Yes Writeable: Yes
S25	0-255	5	DTR Drop Detect Delay. Sets the length of time that the modem will ignore a DTR drop before hanging up. Units: 0.01 seconds In Profile: No Writeable: Yes

Register	Range	Default	Explanation
S26	0-255	1	RTS to CTS Delay. Sets the length of time before the modem will respond to RTS with CTS. Units: 0.01 seconds In Profile: Yes Writeable: Yes
S27		9	Bit-Mapped Options. In Profile: Yes Writeable: No **Bit** **Value** **Meaning** 0, 1, 3 0 Direct asynchronous mode connection (&M0 or &Q0). 8 AutoSync (&Q4) 9 Reliable asynchronous mode connection (&Q5). 10 Normal asynchronous mode connection (&Q6 or \N0). 2, 4, 5 0 Reserved. 6 0 Select CCITT mode (B0). 64 Select Bell mode (B1). 7 0 Reserved.
S28		0	Bit-Mapped Options. In Profile: Yes Writeable: No **Bit** **Value** **Meaning** 0, 1, 2 0 Reserved. 3, 4, 5 6, 7 0 MNP 10 link negotiation at highest speed (*H0). 64 MNP 10 link negotiation at 1200 bps (*H1). 128 MNP 10 link negotiation at 4800 bps (*H2).
S29	0-255	0	Flash Dial Modifier Time. Sets the length of time that the modem will go on-hook when processing the ! dial command modifier. (See Dn.) Units: 0.01 seconds In Profile: No Writeable: No

Register	Range	Default	Explanation
S30	0-255	0	Disconnect Inactivity Timer. Sets the length of time that the modem waits before disconnecting when no data is sent or received. When set to 0, the disconnect inactivity timer is disabled. Units: 10 seconds In Profile: No Writeable: Yes
S31		194 (2+192)	Bit-Mapped Options. In Profile: Yes Writeable: No **Bit** **Value** **Meaning** 0 Single line connect message (\Vn) 1 0 Disable automatic line speed detection (N0). 2 Enable automatic line speed detection (N1). 2, 3 0 Report DTE rate connection message only (W0). 4 Full reporting of connection messages (W1). 8 Report DCE rate connection message only (W2). 4, 5 0 Reserved. 6, 7 192 Restricted.
S32	0-255	17	XON Character. Units: ASCII decimal In Profile: No Writeable: Yes
S33	0-255	19	XOFF Character. Units: ASCII decimal In Profile: No Writeable: Yes
S36		7	Bit-Mapped Options (V.42 Control after LAPM Failure). This register specifies the behavior of the modem upon failure of the LAPM error-correction protocol. In Profile: Yes Writeable: Yes **Bit** **Value** **Meaning** 0, 1, 2 0 Modem disconnects if connection fails. 1 Direct connection is established. 2 Reserved.

Register	Range	Default	Explanation		
S36, continued			**Bit**	**Value**	**Meaning**
				3	Normal connection is established.
				4	MNP connection is attempted and, if it fails, modem disconnects.
				5	MNP connection is attempted and if it fails, a direct connection is established.
				6	Reserved.
				7	MNP connection is attempted and if it fails, a normal connection is established.
			3, 4, 5 6, 7	0	Reserved.
S37	0-12, 15-21	0	Line Speed. (See also Nn.) In Profile: Yes Writeable: Yes		
				0	Automatic line speed detection (N1).
				1	300 bps.
				2	300 bps.
				3	300 bps.
				4	Reserved.
				5	1200 bps.
				6	2400 bps (V.22bis).
				7	V.23.
				8	4800 bps (V.32bis/V.32).
				9	9600 bps (V.32bis/V.32).
				10	12000 bps (V.32bis).
				11	14400 bps (V.32bis).
				12	7200 bps (V.32bis).
				15	14400 bps (V.34)
				16	16800 bps (V.34)
				17	19200 bps (V.34)
				18	21600 bps (V.34)
				19	24000 bps (V.34)
				20	26400 bps (V.34)
				21	28800 bps (V.34)

Register	Range	Default	Explanation
S38	0-255	20	Delay Before Force Hang-up. Sets the length of time that your modem waits after receiving an H0 command (or a DTR drop if your modem is set to follow DTR) before it hangs up. An OK message indicates that all data was transmitted before disconnecting. A NO CARRIER message indicates that the timer expired before all the data was sent. If S38 is set to 255, then the modem will stay connected until all the data in its buffer is delivered or the connection is lost. Units: seconds In Profile: No Writeable: Yes
S39		3	Bit-Mapped Options (Flow Control). In Profile: Yes Writeable: No **Bit** **Value** **Meaning** 0, 1, 2 0 Disable flow control (&K0). 3 Hardware flow control (&K3). 4 Software flow control (&K4). 5 Transparent software flow control (&K5). 6 Both hardware and software flow control (&K6). 3, 4, 5, 6, 7 0 Reserved.
S40		168 (40+128)	Bit-Mapped Options. By default, the MNP block is 128 characters, break control is set according to \K5, and MNP extended services are set according to -K1. In Profile: Yes Writeable: No **Bit** **Value** **Meaning** 0, 1 0 Disable according to -K0. 1 Enable according to -K1. 2Enable according to -K2. 2 0 Automatic cellular power level adjustment ( )M0).

Register	Range	Default	Explanation		
S40, continued			**Bit**	**Value**	**Meaning**
				4	Forced cellular power level adjustment ()M1).
			3, 4, 5	0	Break control according to \K0.
				8	Break control according to \K1.
				16	Break control according to \K2.
				24	Break control according to \K3.
				32	Break control according to \K4.
				40	Break control according to \K5.
			6, 7	0	64 character MNP block size (\A0).
				64	128 character MNP block size (\A1).
				128	192 character MNP block size (\A2).
				192	256 character MNP block size (\A3).
S41		195 (3+64+128)	Bit-Mapped Options. In Profile: Yes Writeable: No		
			Bit	Value	Meaning
			0, 1	0	Disable compression (%C0).
				1	MNP 5 compression (%C1).
				2	V.42bis compression (%C2).
				3	V.42bis and MNP5 compression (%C3).
			2, 6	0	Disable line quality monitor (%E0).
				4	Enable line quality monitor with auto-retrain (%E1).
				64	Enable line quality monitor with fallback/ fall forward (%E2).
			3	0	Disable received data software control (\G0).
				8	Enable received data software contro(\G1).

Register	Range	Default	Explanation
S41, continued			4 0 Use MNP stream mode control (\L0). 16 Use MNP block mode control (\L1). 5 0 Reserved. 7 0 Disable fallback from MNP 10 to V.22bis/V.22 (-Q0). 128 Enable fallback from MNP 10 to V.22bis/V.22 (-Q1).
S46	136 or 138	138	Data Compression Control. In Profile: Yes Writeable: Yes 136 Disable compression. 138 Enable compression.
S48	0, 7, 128	7	V.42 Error Correction Negotiation. In Profile: Yes Writeable: Yes 0 Disable negotiation and proceed with LAPM. 7 Enable negotiation. 128 Disable negotiation and proceed once with fallback option in S36. Use this setting to force MNP error correction.
S82	3, 7, 128	128	LAPM Break Control. In Profile: No Writeable: Yes 3 BREAK is sent immediately. Data integrity is maintained. 7 BREAK is sent immediately. Data is destroyed. 128 BREAK is sent in sequence with transmitted data. Data integrity is maintained.
S86	0-14	None	Connection Failure Reason Code. In Profile: No Writeable: No When a connection fails and the modem sends NO CARRIER, this register will contain the reason for failure. This register is read-only. 0 Normal disconnect. 4 Loss of carrier. 5 V.42 negotiation failed with remote modem.

Register	Range	Default	Explanation
S86, continued			6 No response to feature negotiation. 7 This modem is asynchronous but the remote modem is synchronous. 9 Modems could not find a common protocol. 10 Bad response to feature negotiation. 12 Normal disconnect initiated by remote modem. 13 Remote modem does not respond after 10 attempts. 14 Protocol violation.
S95		0	Bit-Mapped Options (Result Code Message Control). In Profile: Yes Writeable: Yes **Bit Value Meaning** 0 0 CONNECT nnnn result code indicates DTE rate. 1 CONNECT nnnn result code indicates DCE rate instead of DTE rate. 1 0 Standard CONNECT nnnn result code enabled. 2 /ARQ appended to CONNECT nnnn result code in error correction mode. 2 0 Disable CARRIER nnnn result code. 4 Enable CARRIER nnnn result code. 3 0 Disable PROTOCOL nnnn result code. 8 Enable PROTOCOL nnnn result code. 4 0 Reserved. 5 0 Disable COMPRESSION nnnn result code. 32 Enable COMPRESSION nnnn result code. 6, 7 0 Reserved.
S201	0-255	50 (18+32)	Bit-Mapped Options (Cellular Transmit Level). Units: ASCII decimal In Profile: Yes Writeable: Yes **Bit Value Meaning** 0-5 18 Initial power setting

Register	Range	Default	Explanation		
S201, continued					determined by @Mn.
			5	0	Disable compromise equalizer (:E0)
				32	Enable compromise equalizer (:E1)
			6	0	Reserved.
			7	0	MNP 10EC mode off.
				128	MNP 10EC mode on.
S210	0-255	13 (5+8)	Bit-Mapped Options (Symbol Rates and Asymmetric Rate Select). Units: ASCII decimal In Profile: Yes Writeable: Yes		
			Bit	**Value**	**Meaning**
			0-2	0	2400
				1	2400
				2	2400, 2800
				3	2400, 2800, 3000
				4	2400, 2800, 3000, 3200
				5	2400, 2800, 3000, 3200, 3429
				0	V.34 Asymmetric Disabled
				8	V.34 Asymmetric Enabled

Modem Responses

Word Response	Numeric Response	Explanation
OK	00	Command executed.
CONNECT	01	Connection established.
RING	02	Ring is detected.
NO CARRIER	03	Modem hangs up because: a carrier is not detected, carrier is lost, or carrier has been inactive for the period of time set in the S30 register.
ERROR	04	Invalid command
CONNECT	05	CONNECT for X0.
NO DIALTONE	06	Did not receive expected dialtone. ERROR for X0 and X1.
BUSY	07	Detected a busy signal on the line. ERROR for X0, X1, and X2.
NO ANSWER	08	A continuous ringing signal is detected on the line when attempting to originate a call. The value in S7 determines how long the modem will wait for an answer.
CONNECT 600	09	600 bps.
CONNECT 2400	10	2400 bps.
CONNECT 4800	11	4800 bps DTE rate.
CONNECT 9600	12	9600 bps DTE rate.
CONNECT 7200	13	7200 bps DTE rate.
CONNECT 12000	14	12000 bps DTE rate.
CONNECT 14400	15	14400 bps DTE rate.
CONNECT 19200	16	19200 bps DTE rate.
CONNECT 38400	17	38400 bps DTE rate.
CONNECT 57600	18	57600 bps DTE rate.
CONNECT 115200	19	115200 bps DTE rate.
CONNECT 75TX/1200RX	22	V.23 originate connection.
CONNECT 1200TX/75RX	23	V.23 answer connection.
DELAYED	24	Delayed by blacklisting. ERROR for X0, X1, and X3.
BLACKLISTED	32	Blocked by blacklisting. ERROR for X0, X1, and X3.
FAX	33	Connection established in fax mode.

Word Response	Numeric Response	Explanation
+FCERROR	34	Error in FAX mode
DATA	35	Connection established in data mode.
CARRIER300	40	300 bps DCE rate.
CARRIER 600	42	600 bps DCE rate.
CARRIER 1200/75	44	V.23 backward channel carrier detected.
CARRIER 75/1200	45	V.23 forward channel carrier detected.
CARRIER 1200	46	1200 bps DCE rate.
CARRIER 2400	47	2400 bps DCE rate.
CARRIER 4800	48	4800 bps DCE rate.
CARRIER 7200	49	7200 bps DCE rate.
CARRIER 9600	50	9600 bps DCE rate.
CARRIER 12000	51	12000 bps DCE rate.
CARRIER 14400	52	14400 bps DCE rate.
CARRIER 16800	53	16800 bps DCE rate.
CARRIER 19200	54	19200 bps DCE rate.
CARRIER 21600	55	21600 bps DCE rate.
CARRIER 24000	56	24000 bps DCE rate.
CARRIER 26400	57	26400 bps DCE rate.
CARRIER 28800	58	28800 bps DCE rate.
CONNECT 16800	59	16800 bps DTE rate.
CONNECT 19200	60	19200 bps DTE rate.
CONNECT 21600	61	21600 bps DTE rate.
CONNECT 24000	62	24000 bps DTE rate.
CONNECT 26400	63	26400 bps DTE rate.
CONNECT 28800	64	28800 bps DTE rate.
COMPRESSION: CLASS 5	66	Connected with MNP 5 compression.
COMPRESSION: V.42	67	Connected with V.42 compression.
COMPRESSION: NONE	69	Connected with no data compression.
PROTOCOL: NONE	70	Connected with no error correction.
PROTOCOL: LAPM	77	Connected with V.42bis LAPM error correction.
CARRIER 31200	78	31200 bps DCE rate.
CARRIER 33600	79	33600 bps DCE rate.

Word Response	Numeric Response	Explanation
PROTOCOL: ALT	80	Connected with MNP 2, 3, or 4 error correction.
PROTOCOL:ALT-CEL-LULR	81	Connected with MNP 10EC.
CONNECT 33600	84	33600 bps DTE rate.
CONNECT 31200	91	31200 bps DCE Rate
CARRIER 32000	150	32000 bps DCE Rate
CARRIER 34000	151	34000 bps DCE Rate
CARRIER 36000	152	36000 bps DCE Rate
CARRIER 38000	153	38000 bps DCE Rate
CARRIER 40000	154	40000 bps DCE Rate
CARRIER 42000	155	42000 bps DCE Rate
CARRIER 44000	156	44000 bps DCE Rate
CARRIER 46000	157	46000 bps DCE Rate
CARRIER 48000	158	48000 bps DCE Rate
CARRIER 50000	159	50000 bps DCE Rate
CARRIER 52000	160	52000 bps DCE Rate
CARRIER 54000	161	54000 bps DCE Rate
CARRIER 56000	162	56000 bps DCE Rate
CONNECT 32000	165	32000 bps DCE Rate
CONNECT 34000	166	34000 bps DCE Rate
CONNECT 36000	167	36000 bps DCE Rate
CONNECT 38000	168	38000 bps DCE Rate
CONNECT 40000	169	40000 bps DCE Rate
CONNECT 42000	170	42000 bps DCE Rate
CONNECT 44000	171	44000 bps DCE Rate
CONNECT 46000	172	46000 bps DCE Rate
CONNECT 48000	173	48000 bps DCE Rate
CONNECT 50000	174	50000 bps DCE Rate
CONNECT 52000	175	52000 bps DCE Rate
CONNECT 54000	176	54000 bps DCE Rate
CONNECT 56000	177	56000 bps DCE Rate
+F4	+F4ERROR	Error detected in fax mode.