

The following chart summarizes the modem's registers.

Register	Range	Unit	Default	Description
S0	0-255	rings	0	Ring to answer on
S1	0-255	rings	0	Number of rings passed
S2	0-127	ASCII	43	Escape code character
S3	0-127	ASCII	13	Carriage Return character
S4	0-127	ASCII	10	Line Feed character
S5	0-127	ASCII	8	Backspace character
S6	0-255	seconds	2	Wait time for dial tone
S7	0-255	seconds	30	Wait time for carrier
S8	0-255	seconds	2	Pause time for comma
S9	0-255	1/10 sec	6	Carrier detect response time
S10	0-255	1/10 sec	14	Carrier loss hangup delay
S11	0-255	1/10 sec	95	Touch-tone timing
S12	0-255	1/50 sec	50	Escape code timing
S13				Not used
S14		Bit Mapped		Option Register
S15				Not used
S16				Option Register
S17				Not used
S18	0-255	seconds	0	Test duration
S19				Not used
S20				Not used
S21		Bit mapped		Option Register
S22		Bit mapped		Option Register
S23		Bit mapper		Option register
S24	0-255		0	Sleep inactivity timer
S25	0-255	seconds	5	Delay to DTR
S26	0-255	seconds		RTS - CTS delay interval

Register	Range	Unit	Default	Description
S27		Bit mapped		Option register
S28	0-7		0	Option Register
S29	0-255	1/100	0	Flash Modifier Time
S30	0-255	Seconds	0	Inactivity Timer
S31	0-7		2	Open Register
S32	0-255	ASCII	19	Xon Character
S33	0-255	ASCII	19	Xoff Character
S34-35				Not Used
S36	0-77			Negotiation Failure Treatment
S37	0-7		0	Desire Telco Line

				Speed
S38	0-255	Seconds	20	Delay before Dis-connect
S39			3	Flow Control
S40		Bit Mapped	77	Option (MNP)
S41		Bit Mapped	1	Option (MNP)
S42-45				Not Used
S46				Protocol Selection
S48	0,7,128		7	V.42 Negotiation Action
S82	3,7,128**		128	Break Handling Action
S86				Connection Failure Cause Code
S91	-1 to -15	dBm		Programmable Transmit Levels
S92	0-15	dBm	10	Fax Transmit Attenuation Level
S95				Extended Result Code
S99	1 to -15	dBm	10	Leased Line Transmit Level
S202	0-255	ASCII	10	Remote Access Escape
** Not Used				

### Viewing Registers

To view the contents of a register, in the command mode type:  
 ATSr? ENTER. Where r is the register number.

The modem returns:

nn           Where nn is the current setting of the register.

OK

You can view the contents of several registers with one command:

ATSr?Sr?Sr? ENTER

The modem returns:

nn First register.

nn Second register.

nn Third register.

OK

#### Setting Registers

To change the contents of a register, in the command mode type:

ATSr= ENTER Where r is the register number and n is the  
new value.

The modem returns:

OK

You can set the contents of several registers with one command:

AT Sr=n Sr=n Sr=n ENTER

The modem returns:

OK

#### Register S0 - Auto Answer Control

This register determines how many times the phone rings before the modem answers. If you set this register to 0, the modem does not answer the telephone. The default value for this register is 0.

#### Register S1 - Ring Counter

This register contains the count of the current number of rings. If the telephone does not ring again within 8 seconds, this register resets to 0. You should never need to set the value in this register.

#### Register S2 - Escape Code ASCII Value

This register contains the ASCII value of the escape code. You must set this value to a legitimate ASCII character within the range 0-127. Setting this code to greater than 127 disables the escape code. See "Switching From the Communications to the Command Mode" in "Dialing and Answering with the AT Command Set," earlier in this manual. The default value for this register is 43 (ASCII value of =).

#### Register S3 - Carriage Return Character

The register sets the command line and result code terminator character. It pertains to asynchronous operation only. The default for this register is 13 (ASCII value of ENTER).

#### Register S4 - Line Feed ASCII Value

This register sets the character the modem sends after any result code. You should never need to change this value. If you do not want the modem to send a line feed after the result code, set this register to 0. The default value for this register is 10 (ASCII value for line feed).

#### Register S5 - Backspace ASCII Value

This register sets the character the modem uses as a backspace character for editing. You do not normally need to change this register. The default value is 8 (ASCII backspace).

#### Register S6 - Wait For Dial Tone Duration

This register sets how many seconds the modem waits to begin dialing after it goes off hook. If the modem begins dialing before the dial tone starts, the call might not go through. You can set this register to a higher value to provide a longer delay. The default value is 2 (setting to 0 or 1 also gives a 2 second delay).

#### Register S7 - Wait For Carrier Duration

This register sets how long your modem waits after dialing to detect a carrier from an answering modem. If this time expires without a carrier detect, your modem returns the NO CARRIER result code. The default value is 30.

#### Register S8 - Dialing Pause (,) Duration

This register sets how many seconds your modem pauses when it encounters a comma (,) in the dialing sequence. If you dial from a system that requires a second dial tone (like a PABX system), you might need to increase the duration of this pause if your modem is not waiting long enough for an outside line. The default value is 2.

#### Register S9 - Carrier Detect Response Time

Sets the length of time for the modem to acknowledge a valid carrier. Default is 6/10 seconds.

#### Register S10 - Carrier Loss To Disconnect Duration

This register sets how many tenths of a second (1/10 seconds) your modem waits to disconnect from the phone line after the other modem's carrier stops. In some areas with poor quality phone service, the carrier can occasionally drop out and cause your modem to disconnect during a call. If you set this register to 255, your modem considers the carrier always present. The default value is 14 (1.4 seconds).

#### Register S11 - Touch Tone Dialing Speed

This register controls the dialing rate during tone dialing (no effect on pulse dialing). The default value of 95 sets a rate of about seven digits per second.

#### Register S12 - Escape Code Guard Time

This register sets the length of time (in 1/50 second increments) you must pause before and after the escape code for your modem to recognize the escape code. See ENTER "Switching From the Communications to the Command Mode" in "Dialing and Answering with the AT Command Set," earlier in this manual. The default value is 50 (1 second).

Register S13 - Not Used

Register S14 - Bit Mapped Options

This register is a bit-mapped register that shows the status of some of the operation options. Normally, you do not write to this register. You use specific commands to set these options.

Bit	Value	Description
0	Not used	
1	0	Local echo disabled
	1	Local echo enabled
2	0	Result codes enabled
	1	Result codes disabled
3	0	Result codes as numbers
		Result codes as words
4	Not used	
5	0	Tone dial
	1	Pulse dial
6	Not used	
7	0	Answer mode Originate mode

Register S15 - Not used

Register S16 - Test Mode Option Register

This register is a bit-mapped register that shows the status of the test functions. Normally you do not write to this register. You use the &T command to change these options. See "Modem Test Commands" for more information.

Bit	Value	Description
0	0	Analog loopback disabled
	1	Analog loopback enabled (&T1)
1	Not used	
2	0	Digital loopback disabled
	1	Digital loopback enabled (&T3)
3	0	Loopback not in process
	1	Responding to remote digital loopback
4	0	Remote digital loopback disabled
	1	Remote digital loopback enabled (&T6)
5	0	Remote digital loopback, self test disabled
	1	Remote digital loopback, self test enabled (&T7)
6	0	Analog loopback with self test disabled
	1	Analog loopback with self test enabled (&T8)
7	Not used	

Register S17 - Not Used

Register S18 - Test Timer

This register controls the duration in seconds for the test. The default value is 0. This causes the modem to perform any test until you cancel it with the &T0 command. See "Modem Test Commands" for more information.

Register S19 - Not Used

Register S20 - Not Used

Register S21 - Bit Mapped Options

This register is a bit-mapped register that shows the status of the &D, &C, and Y commands. You do not normally write to this register. Use the individual commands to affect these options.

Bit	Value	Description
0	Not used	
1	Not used	
2	Not used	
3,4	00	&D0 (Forced DTR)
	10	&D1 (Async command state) disables auto answer)
	11	&D3 (Assumes initialization state)
5	0	&C0 (Carrier detect forced)
	1	&C1 (Carrier detect true)
6	Not used	
7	0	Y0 (Disable long space disconnect)
	1	&Y1 (Enable long space disconnect)

Register S22 - Bit Mapped Options

This register is a bit-mapped register that shows the status of the M, X, and &P commands. You do not normally write to this register. Use the individual commands to affect these options.

Bit	Value	Description
0,1	Not used	
2,3	00	M0 (Speaker disabled)
10	M1	(Speaker disabled during data transfer)
01	M2	(Speaker always on)
11	M3	Speaker disabled during dialing & data transfer)
4,5,6,000	X0	(Result code status)
	100	X1 (Result code status)
	101	X2 (Result code status)
	110	X3 (Result code status)
	111	X4 (Result code status)
7	0	&P0 (U.S. make/break dial pulse ratio)
	1	&P1 (U.K./Hong Kong make/break dial pulse ratio)

Register S23 - Bit Mapped Options

This register is a bit-mapped register that shows your modem's current communications settings, and the status of the &G command. You do not normally write to this register. The modem sets the communications

settings automatically.

Bit	Value	Description
0	0	Response to remote digital loopback disabled.
		Response to remote digital loopback enabled.
1,2	00	300 bps
	10	1200 bps
	11	2400 bps
3	Not used	
4,5	00	Even parity
	10	Space parity
	01	Odd parity
	11	Mark/No parity
6,7	00	&G0 (No guard tone)
	10	&G1 (550 Hz guard tone)
	01	&G2 (1800 Hz guard tone)

#### Register S24 - Sleep Inactivity Timer

This register sets the length of time, in seconds, that the modem will operate in normal mode with no detected telephone line or PC line activity before entering low-power sleep mode. The timer is reset upon any PC line or telephone line activity. If the S24 value is zero, neither PC line nor telephone inactivity will cause the modem to enter the sleep mode. Available range for S24 register is 0 to 255 seconds. The default is 0.

#### Register S25 - Delay to DTR

This register determines the delay to DTR. The interpretation of the value stored in S25 depends on the &Q mode. A change in the state of DTR from ON to OFF will be ignored if it is less than the value specified in S25 (in 0.01 second increments).

#### Register S26 - RTS to CTS Delay Interval

This register specifies the delay after an OFF-to-ON transition of Request-to-Send before Clear-to-Send is asserted when the &R0 option is in effect (default). The range of values will be from 0 to 2.55 seconds with a 10 millisecond resolution. The S26 values are 0 to 255 (255 x 10mS = 2.55 seconds). The default for this register is 1.

#### Register S27 - Bit Mapped Options

This register is a bit-mapped register that shows the status of the B command. You do not normally write to this register. Use the B command to affect the status of this register. The default is 0.

Bit	Value	Description
1-3	000	&M0 or Q0
	001	&M1 or Q1
	010	&M2 or Q2
	011	&M3 or Q3
	100	&Q4
	101	&Q5
	110	&Q6

4	0	Internal clock (&X0)
	1	External clock (&X1)
	2	Slave clock (&X2)
6	0	B0 CCITT V.22bis/V.22
	1	B1 Bell 212A
7		Not used

#### Register S28 - Bit Mapped Options

The default for this register is 0.

Bit	Value	Description
3-4	0	Make :break at 10 pulses = 39:61
	1	Make :break at 10 pulses = 33:67
	2	Make :break at 20 pulses = 39:61
	3	Make :break at 20 pulses = 33:61
6-7	0	MNP link negotiation at highest speed
	1	MNP link negotiation at 1200 bps
	2	MNP link negotiation at 4800 bps

#### S29 - Flash Dial Modifier Time

Sets the length of time, in units of 10 ms, that the modem will go on-hook when it encounters the flash (!) dial modifier in the dial string. The time can be limited as it is a country dependent parameter.

#### Register S30 - Inactivity Timer

Determines the length of time that the modem will wait before disconnecting when no data is send or received. Allowable range for S30 register is 0-255, in tenth of a second intervals. Default:0 (disabled).

#### Register S31 - Bit Mapped Options

The default for this register is 2.

Bit	Value	Description
1	0	Auto line speed detection disabled
	1	Auto line speed detection enabled
2-3	0	PC speed only
	1	Full reporting
	2	Modem speed only

#### Register S32 - XON Character

Sets the value of the XON character. The default for this register is 17.

#### Register S33 - XOFF Character

Sets the value of the XOFF character. The default for this register is 19.

#### Register S36 - Negotiation Failure Treatment

This register is read when the S48 register is set to 128 or if an



attempted error correction link fails. These fallback options are initiated upon connection if S48=128. The range for S36 register is 0-7. Default:5

- S36=0 - Modem hangs up.
- S36=1 Modem stays on line and a Direct mode connection is established.
- S36=2 Not Used
- S36=3 Modem Stays on-line and a Normal mode connection is established.
  
- S36=4 If S48 is 128, then an MNP connection is attempted; if it fails the modem disconnects.
  
- S36=5 If S48 is 128, then an MNP connection is attempted; if it fails, a Direct mode connection is established.
  
- S36=6 Not Used
  
- S36=7 If S48 is 128, then an MNP connection is attempted; if it fails, a Normal mode connection is established.

If an invalid number is entered, the number is accepted into the register, but S36 act as if the default value is entered.

#### Register S37 - Desired Telco Line Speed

- S37=0 Attempt to connect at the speed of the last AT command issued. For PC speeds greater than 9600 bps, the modem will attempt to connect at 9600 bps.
  
- S37=1-3 Attempt to connect at 300 bps.
  
- S37=4 Not Used.
  
- S37=5 Attempt to connect at 1200 bps
  
- S37=6 Attempt to connect at 2400 bps
  
- S37=7 Not Used
  
- S37=8 Attempt to connect at 4800 bps
  
- S37=9 Attempt to connect at 9600 bps
  
- S37=10 Attempt to connect at 12000 bps
  
- S37=11 Attempt to connect at 14400 bps
  
- S37=12 Attempt to connect at 7200 bps

If an invalid number is entered, the number is accepted into the register, but S37 acts as if the default value is entered.

#### Register S38 - Delay Before Forced Disconnect (Error Correction Mode Only)

This register specifies the delay between the modem's receipt of the ATH command to disconnect and the disconnect operation. The allowable range for S38 is 0-255. Default:20

If S38 is set between 0 and 254, the modem waits that number of seconds for the remote modem to acknowledge all data in the modem buffer before disconnecting. NO CARRIER is sent if data has been lost, otherwise the response to the ATH0 command will be OK.

If S38 is set to 255, the modem waits until all data in the buffer is delivered or until the connection is lost.

#### Register S39 - Flow Control

The default for this register is 3.

Bit	Value	Description
0-2	0	No flow control
	3	RTS/CTS (&K3)
	4	XON/XOFF (&K4)
	5	Transparent XON (&K5)
	6	Both methods (&K6)

#### Register S40-Bit Mapped Options (MNP)

Bit	Value	Description
0	0	Disable extended services
	1	Enable extended services
1	0	Fallback to V.22bis disabled
	1	Fallback to V.22bis enabled

#### Register S41 - Bit Mapped Options (MNP)

Bit 0	AT%C1
Bit 1	AT%C0
Bit 2	At%C2
Bit 3-7	Not Used
Default:0000 0001	

#### Register S44 - S45 - Not Used

#### Register S46 - Data Compression Protocol

Controls selection of compression. The possible values for S46 register are 136 or 138.

Default: 138

S46=136 Execute error correction protocol with no compression.

S46=138 Execute error correction protocol with compression

#### Register S48 - V.42 Negotiation Action

This register determines the capabilities of the remote modem to communicate using V.42 protocol. The allowable values for S46 are 0,7, or 128.

S48=0 Disable negotiation and proceeds with LAPM error correction

S48=7 Enable negotiation

S48=128 Disable negotiation and proceeds according to the value stored on S36

Default:7

If an invalid number is entered, it is accepted into the S register, but S48 will act as if 128 was entered.

#### Register S82 - Break Handling Option

Break signals enable the user to get the attention of the remote mode. The possible values for S82 register are 3,7, or 128. Default: 128

S82=3 Expedite: Modem sends a break immediately while data integrity is preserved.

S82=7 Destructive: Modem sends a break immediately while data is destroyed.

S82=128 In Sequence: Modem sends a break in sequence with any transmitted data; while data integrity is preserved.

If an invalid number is entered, it is accepted into the S register, but S82 will act as if the default value was entered.

#### Register S86 - Connection Failure Cause Code

In the event of NO CARRIER result code, the content of the S86 register can assist in determining the cause of the failed connection.

S86=0 Normal Disconnect, no error occurred

S86=4 Loss of carrier

S86=5 V.42 negotiation failed to detect error-correction modem at the other end

S86=9 The modem could not find a common protocol

S86=12 Normal disconnect initiated by the remote modem

S86=13 Remote modem does not respond after 10 attempts of retransmission of the same message

S86=14 Protocol violation

#### Register S91 Programmable Transmit Level

Sets the transmit level for both Synchronous and Asynchronous operation. The transmit level is adjustable from -0 dBm to -15 dBm. This register goes into effect when the Japanese parameters are enabled and it may not be changed once the connection exists.

S91=0 0 dBm (default value for the U.S.A.)

S91=1 -1 dBm

S91=2 -2 dBm

S91=14 -14 dBm

S91=-15 dBm (default value for Japan)

#### Register S92 - Fax Transmit Attenuation Level

This register sets the transmit attenuation level from 0 to 15 dBm for the fax mode, resulting in a transmit level from 0 to -15 dBm. In some countries, the transmit level may not be changed and there are checks to prevent transmit attenuation level change using ConfigurACE. The default for this register is 10.

#### Register S95 - Extended Result Codes

The bits in this register can be set to override some of the ATWn command options.

- Bit 0= CONNECT result code indicate modem speed instead of PC speed
- Bit 1= Append /ARQ to verbose CONNECT XXXX result code if protocol is NONE
- Bit 2= Enable CARRIER XXXX result code
- Bit 3= Enable PROTOCOL XXXX result code
- Bit 4= Not Used
- Bit 5= Enable COMPRESSION result code
- Bit 6= Not Used
- Bit 7= Not Used

#### Register S202 - Remote Access Escape Character

This register holds the decimal value of the ASCII character used as the escape character in the escape sequence from on-line to Remote Access. S202 works similar to S2 except that the S2 escape character is used in the escape sequence from on-line to the command mode. The default for this register is 170.

#### Troubleshooting

When you have problems transmitting data with your modem (garbled data, intermittent errors, and so on), check to see that:

The phone connection is clean and noise-free

No one is talking on the telephone line

The phone and all extensions are on the hook

The operation speed is correct for the modem you are using and the modem with which you are communicating

If you still cannot transmit data, disconnect your modem to see if the phone line is operating correctly. If it is, the trouble is probably in your modem. At this point, you can try some of the remedies listed below or take it to your local Radio Shack store for further testing or repair.

To test the modem, use your communication software in the command (local or terminal) mode. In this mode, your keyboard acts as a dumb terminal's keyboard talking to the modem. Once you are in the command mode, you can send commands and start testing your modem.

PROBLEM: YOU CAN NOT INSTALL YOUR MODEM CORRECTLY

SOLUTION(S):

The first step to solve the above problem is to verify communication between your modem and your PC. Load your communication software and enter the command mode and type capital ATZ, and then the carriage return key.

Type: ATZ <Enter>

Depending on your communication software, you receive a 0 or an OK response.

If you do not see the ATZ, but you get the 0 or OK on the screen, this is normal. Your software has initialized the modem using the E0 command (not echoing the command characters).

You can type ATE1 to activate the echo so you can see what you have typed.

If you do not see any result code for your ATZ command, do not be concerned. Your modem was tested at the factory before shipment. Difficulties often occur during the installation of a modem that reveal an existing problem in your PC. The most common problem is a conflict among the devices installed in your PC. The solution might be as simple as changing the dip switch setting of the modem.

Add-on cards such as modems, serial or multifunction cards communicate with the computer by means of communication (Com) ports and by sending interrupt (IRQ) signals to the PC. Com ports share the same interrupt. Com1 and Com3 use IRQ4, while Com2 and Com4 share IRQ3. In most cases, modems CANNOT share an IRQ with another device.

Therefore, your modem should be set to an exclusive Com/IRQ combination. For example, if you have a mouse on Com1, set your modem to Com2 or Com4.

Refer to the manuals for your PC and mouse card or other peripheral devices installed on your computer to determine their Com port settings. Then set your communication software and your modem to a Com port which is not assigned to any other device.

Some PCs display this information during the boot-up process. Follow results from the PC during this process and note the available Com ports.

You can run the DOS command MODE to locate the available Com ports.

Setting COM PORTS for Your Internal Modem

For the new setting to take effect, first turn off your PC.

If your PC has a multifunction card and it has an optional unused serial port, we recommend that you disable that unused Com port. Refer to the card's manual for the proper jumper/switch setting.

Check the dip switches of your modem and select a Com port which has not been assigned to any other device.

Set your communication software to the same Com port setting that you have selected for your modem. Turn on your PC and load your communication software to test the modem.

Setting the Modem to a Valid Speed: If all of the above items are set correctly, and you still don't get a result code, check the speed setting of your software, and set it to a valid speed which is supported by your modem.

PROBLEM: THE MODEM DOES NOT DIAL.

SOLUTION(S):

Make sure that you can communicate with your modem as described above, then check the following:

Make sure that your modem is connected to a live phone line, and that the modem volume setting is not too low to be heard.

Issue the ATL2 command for medium speaker volume.

Check the speed setting of your software, and set it to a valid speed which is supported by your modem and your communication software.

Check the DTR setting. Refer to your software manual for the correct setting.

PROBLEM: THE MODEM DIALS BUT DOES NOT CONNECT.

SOLUTION(S):

The remote modem might not recognize your modem's speed. This can happen when you call a modem that does not have auto speed detect.

Change your speed setting.

Change the state of DTR. To change the state of the DTR, use the AT command AT&Dn, n being a valid parameter.

You might have a noisy phone line. Check the line with a regular telephone. If it is bad, notify your local telephone company.

Your phone cord may be bad. Check it by plugging it into a regular telephone set and listening for a dial tone.

If you are using a PBX telephone line, you might need to use a prefix digit(s) and a comma when issuing a dial command. For instance, if your PBX requires that you dial 9 for an outside line, you should type a 9 and then a , (the comma allows a 2 second pause), then the number you are trying to dial.

For example: ATDT9,5551212

PROBLEM: YOUR MODEM CONNECTS TO THE REMOTE MODEM BUT YOU CAN'T SIGN-IN

SOLUTION(S):

Check the communication parameters of the remote modem and make sure that your software is configured for the same number of data bits, start bits, stop bits, parity, and speed.

Check the terminal emulation of your software and set it to the correct emulation as required by the party you are calling. You may use ANSI terminal emulation + the most common (i.e. BBS, mainframe computer, or your bank).

PROBLEM: BURSTS OF GARBLED CHARACTERS DURING THE COMMUNICATION & FILE TRANSFER SESSION

SOLUTION(S):

Make sure your telephone line is used ONLY by your modem.

If your telephone line has a call-waiting feature, disable it by issuing the command: ATDT70\*555-1234 when dialing out. Some telephone companies use different codes for disabling and enabling call-waiting. If this one does not work, contact them for more information.

Your connection might be poor. Terminate the call and try again.

PROBLEM: DIFFICULTIES IN TRANSFERRING FILES

SOLUTION:

Use the same file transfer protocol as the remote modem.

PROBLEM: YOU HEAR A HIGH PITCH TONE WHEN YOU ANSWER YOUR PHONE

SOLUTION(S):

Your modem is auto-answering the calls.

Set Auto Answer to off by issuing the ATSO command.

PROBLEM: YOU CAN NOT TERMINATE A COMMUNICATION SESSION

SOLUTION:

To terminate a communication session, follow these steps:

1. Type +++ to enter command mode, wait for an OK response
2. Type ATH0 ENTER

Refer to the AT Command section for details on the &Cn and &Dn settings.

Lightning

Your modem has protection circuits, which meet or exceed FCC requirements, to reduce the risk of damage from surges in telephone and power line currents. However, lightning striking near or on these lines can damage the modem.

Lightning damage is uncommon. However, if this concerns you or if you live in an area with frequent and/or severe electrical storms, we suggest that you unplug your electronic equipment during storms.

#### Diagnostics

Your modem has built-in diagnostic capabilities. Test patterns for the analog loopback can be generated by either the modem or the computer. You use the test commands (&T) outlined in "Modem Test Commands" to perform these tests. The modem does not respond to an incoming call while in the diagnostic mode.

#### The FCC Wants You to Know

##### FCC Part 68 Certification

We have designed your modem to conform to federal regulations, and you can connect it to most telephone lines. However, each modem (and each device, such as a telephone, that you connect to the telephone line), draws power from the telephone line. We refer to this power draw as the device's ringer equivalence number, or REN. The REN is shown on the silver label attached to your modem.

If you are using more than one device on the line, add up all the RENs. If the total is more than five, your telephones might not ring. In rural areas, a total REN of three might impair ringer operation.

The label with the REN also contains the FCC Part 68 of FCC Rules registration number. You must, upon request, provide the FCC registration number and the REN to your telephone company.

This modem complies with the FAX branding requirements of the Telephone Consumer Protection Act of 1991. Please refer to the fax modem software manual for instructions on how to program your fax modem.

Modifying or tampering with your modem can cause a malfunction and might invalidate the modem's warranty and void your FCC authorization to operate it. If your modem is not operating as it should, take it to your local Radio Shack store for assistance. If the trouble is harming the telephone lines, the telephone company might ask you to disconnect your modem until you have resolved the problem.

##### FCC Part 15 CLASS B Certification

In the unlikely event that your modem causes problems on the telephone line, the telephone company can disconnect your service. The telephone company attempts to notify you in advance. If advance notice is not practical, the telephone company notifies you as soon as possible and advises you of your right to file a complaint with the FCC.

Also, the telephone company can make changes to its lines, equipment, operations, or procedures that could affect the modem's operation. The telephone company notifies you of these changes in advance, so you can take the necessary steps to prevent interruption of your telephone service.

Note: You must not connect your modem to:



Coin-operated systems

Party-line systems

Most electronic key telephone systems

This modem complies with the limits for a Class B digital device, as specified in Part 15 of FCC Rules. These limits provide reasonable protection against radio and TV interference in a residential area. However, your modem might cause TV or radio interference even when it is operating properly. To eliminate the interference, you can try one or more of the following corrective measures.:

Reorient or relocate the receiving antenna

Increase the distance between the modem and the radio or TV

Use different outlets for your computer and the radio or TV

(br/all-10/17/94)