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Section 1 Contents of Package

- One V.92 PCI bus window modem
- One telephone cable
- One CD-ROM disk comprises Communication software, Modem Driver & User's Manual
- Quick installation guide

Please contact the place of purchase if any of the above listed items are missing.

Section 2 Comprehensive Modem Installation Instructions

Section 2.1 System Requirements

The modem operates on a personal computer equipped with the following:

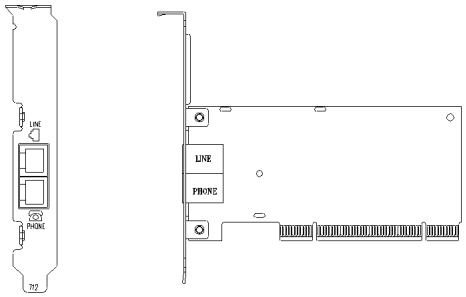
- Windows 98 or Windows Me or Windows NT 4.0 or Windows 2000 or Windows XP operating system
- Any of the following processor/cache memory configurations:

  - 150 MHz Pentium(r) or faster CPU (200 MHz, recommended for V.92 operation)
  - 233 MHz AMD K6(r) or faster CPU with 256K L2 cache memory
  - 266 MHz Cyrix(r) 6X86MX or faster CPU with 256K L2 cache memory
  - 266 MHz Intel(r) Celeron or faster CPU

- 8 MB hard disk space
- 16 MB RAM
- One vacant 32-bit PCI slot
- One available IRQ: 3 through 15

Section 2.2 Hardware Installation

Please refer to Fig. 2 - 1 and proceed to following steps for how to insert your modem into the computer and connect telephone wire and audio accessories.



Model: I203

FIGURE 2-1 Internal modem diagram

1. Turn off and unplug your computer from the AC outlet.
2. Unplug any peripheral devices (keyboard, monitor, etc.) from your computer to avoid the risk of electric shock.
3. Take the cover off your computer, review computer's manual if you need further instructions.
4. Find an empty PCI slot.
5. Unscrew the PCI slot bracket and save the screw, then remove the bracket.
6. Plug the modem into the PCI slot carefully until the modem is properly seated.
7. Fasten the modem bracket firmly with the screw saved in step 5.
8. Reassemble your computer cover and re-plug cables for peripheral.
9. Plug one end of telephone cord into the **"LINE"** jack at the modem's bracket. Plug another end of the telephone cord into the telephone wall jack
10. Some models may comprise a phone jack for an optional telephone. If you wish to use a phone through the same telephone wall jack when the modem is not in use, plug the telephone cord of the phone into **"PHONE"** jack at the modem's bracket now. Lift the handset and listen for a dial tone to check for a properly connection.
11. Plug the power cord into the computer and turn the computer on.
12. Up to now, the hardware installation has been finished. If you have not encountered any problems, you can go to **Section 2.3 System Setup**. If you are having problems, see **Section 3 Troubleshooting.**

NOTE : The telephone wall jack you use must be for an ANALOG phone line (the type found in most homes). Many offices are equipped with digital phone lines. Please be sure you know which type of line you have. The modem will be damaged if you use a digital phone line.

Section 2.3 System Setup

Section 2.3.1 Setup instructions for Windows 98

STEP 1. After you complete the modem hardware installation and turn on your PC, Windows system will automatically detect your new added devices. Windows system will then prompt you with a Add New Hardware Wizard screen as shown in figure.

Then click on **Next**.

STEP 2. A prompt screen will ask you to select **Search for the best driver for your device** or display a list of all the drivers in a specific location, so you can select the driver you want. Please select the recommended one as shown in figure.

Then click on **Next**

STEP 3. And then, a prompt screen will ask you to indicate where your driver is located, floppy disk drives, CD-ROM drive, Microsoft Windows Update or **specify a location:** .

Please select **Specify a location** as shown in figure.

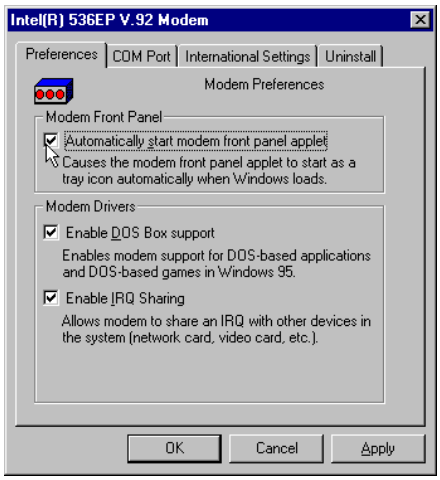
Insert the **Modem Driver** CD-ROM disk attached with your modem into the CD-ROM drive device then click on **Next**.

STEP 4. Then, a prompt screen indicates Windows has found the best driver for your modem as shown in figure.

Please make sure the source of your driver is correct then click on **Next**.

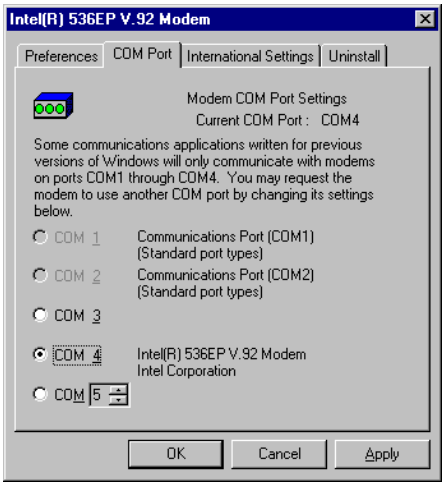
STEP 5. Click on **Finish** to complete the modem installation.

STEP 6. Then, an Intel(R) 536EP V.92 Modem Setting screen show **Preferences** tab as shown in figure.



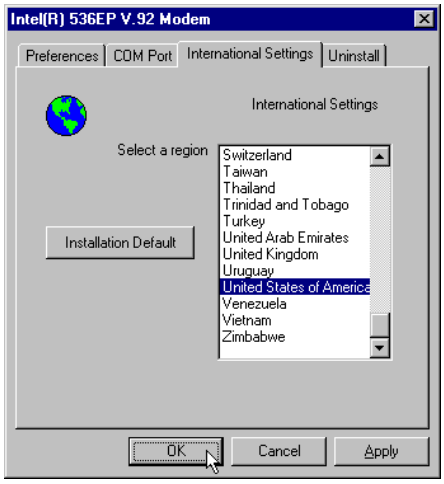
Select the check box of Modem Front Panel, it will automatically start front panel applet when Windows loads.

STEP 7. Select **COM Port** tab as shown in figure.



You can assign the COM Port of modem, if you need to do that.

STEP 8. Select **International Settings** tab as shown in figure.



Make sure the country setting is correct (default **United States of America**).

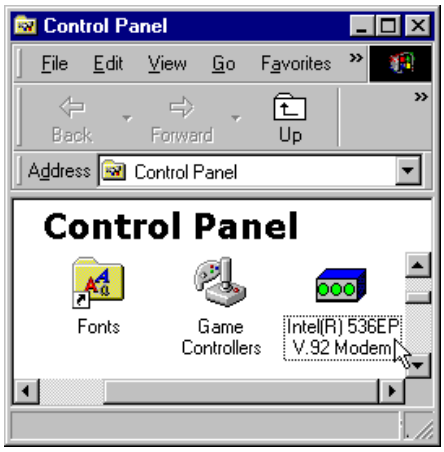
Changes of the setting will effect to modem performance.

Please select a correct option to match your location and click **OK**.

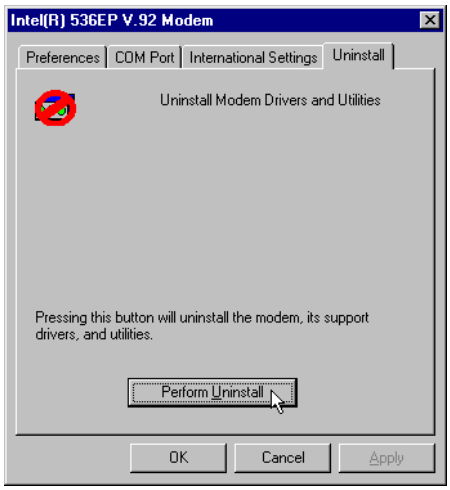
Section 2.3.2 Uninstall Modem from Windows 98

In any reason, you want to remove or reinstall the modem. Please follow the steps below to completely uninstall the modem.

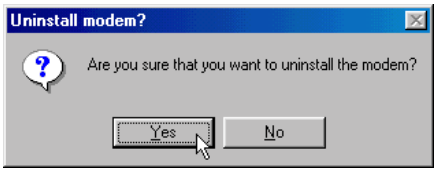
STEP 1. Open **Control Panel** windows, then click **Intel(R) 536EP V.92 Modem** icon.



STEP 2. Click **Perform Uninstall** button under the **Uninstall** tab.



STEP 3. And then, a prompt screen will ask you to ensure to uninstall the modem driver.



Click on **Yes**.

STEP 4. If you want to remove Intel(R) 536EP V.92 modem card, then click on **Yes**.

Section 2.3.3 Setup instructions for Windows Me

STEP 1. After you complete the modem hardware installation and turn on your PC, Windows system will automatically detect your new added devices "**PCI Communication Device**".

A prompt screen will ask you to select **Automatic search for a better driver** or **Specify the location of the driver**, so you can select the driver you want.

Please select the **Specify the location of the driver [Advanced]** as shown in figure.

Then click on **Next**.

STEP 2. And then, a prompt screen will ask you to indicate where your driver is located, floppy disk drives, CD-ROM drive, Microsoft Windows Update or **specify a location:** .

Insert the **Modem Driver** CD-ROM disk attached with your modem into the CD-ROM drive device, then select **Specify a location** as shown in figure.

Click on **Next**.

STEP 3. Then, a prompt screen indicates Windows has found the best driver for your modem as shown in figure.

Please make sure the source of your driver is correct then click on **Next**.

STEP 4. Then, an Intel(R) 536EP WDM Modem Settings screen show **International Settings** tab as shown in figure.

Make sure the country setting is correct (default **United States of America**).

Changes of the setting will effect to modem performance.

Please select a correct option to match your location and click **OK**.

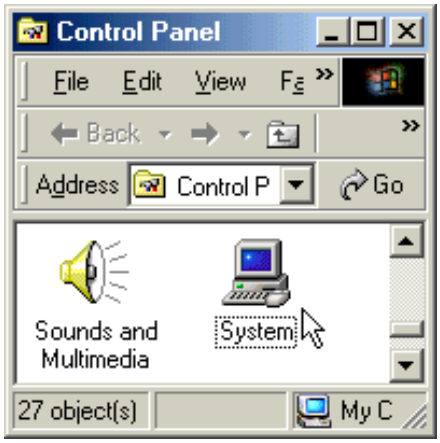
STEP 5. Click on **Finish** to complete the modem installation.

STEP 6. System will detect a new Modem Device. Please repeat **STEP 1** to **STEP 5** again.

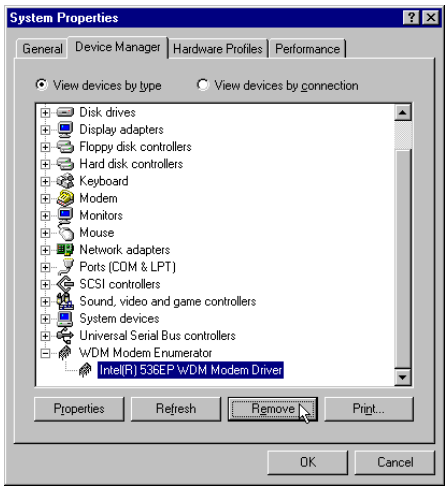
Section 2.3.4 Uninstall Modem from Windows Me

In any reason, you want to remove or reinstall the modem. Please follow the steps below to completely uninstall the modem.

STEP 1. Open **Control Panel** window, then click **System** icon.



STEP 2. Expand **WDM Modem Enumerator** item in **Device Manager** tab, then choose **Intel(R) 536EP WDM Modem Driver** device.



Then, click on **Remove**.

STEP 3. And then, a prompt screen will ask you to ensure to uninstall the modem driver.

Click on **OK**.

Section 2.3.5 Setup instructions for Windows NT4.0

STEP 1. Run **<CD-ROM letter>:\drivers\NT4\INSTALLER.EXE** as shown in figure.

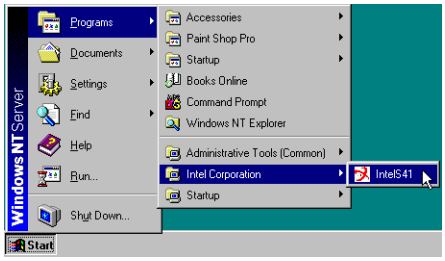
STEP 2. Then a prompt screen will ask you to ensure to install the modem driver.

Click on **Yes**.

STEP 3. The installation is completed, then click on **OK**.

STEP 4. You must be to select the correct country setting of modem for the best performance and compatible.

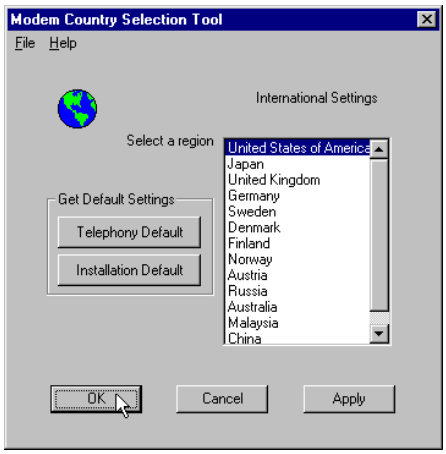
Run **IntelS41** in **Intel Corporation** group as shown in figure.



STEP 5. Make sure the country setting is correct (default **United States of America**).

Changes of the setting will effect to modem performance.

Please select a correct option to match your location and click **OK**.

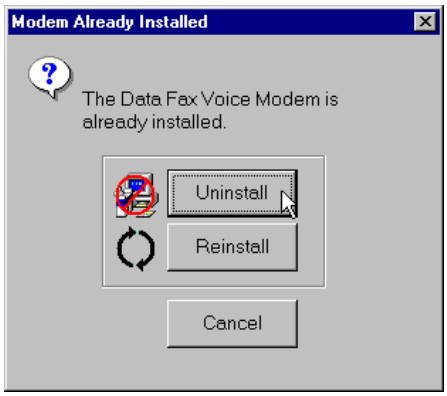


Section 2.3.6 Uninstall Modem from Windows NT4.0

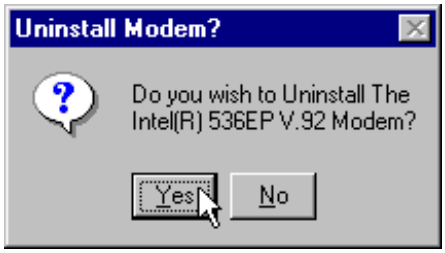
In any reason, you want to remove or reinstall the modem. Please follow the steps below to completely uninstall the modem.

STEP 1. Run **<CD-ROM letter>:\drivers\NT4\INSTALLER.EXE** as shown in figure.

STEP 2. Click on **Uninstall** button.



STEP 3. Then a prompt screen will ask you to ensure to uninstall the modem driver.



Click on **Yes**.

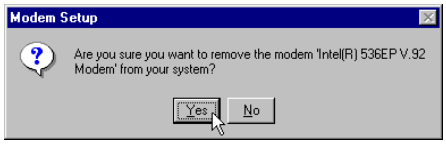
STEP 4. The modem uninstall is completed, then a prompt screen will ask you to remove the modem from modem control Panel.

Click on **OK**.

STEP 5. Choose **Intel(R) 536EP V.92 Modem**, then click **Remove**.

STEP 6. If you want to remove Intel(R) 536EP V.92 modem card, then click on **Yes.**

Otherwise, click on **No.**



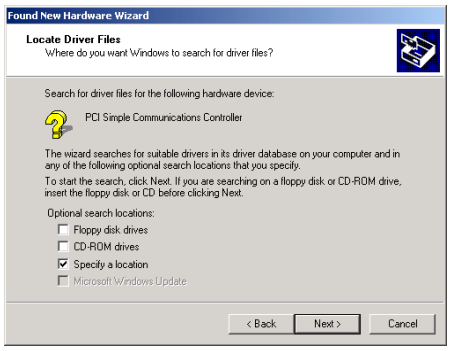
Section 2.3.7 Setup instructions for Windows 2000

STEP 1. After you complete the modem hardware installation and turn on your PC. Windows system will automatically detect your new added devices. Windows system will then prompt you with a **Found New Hardware Wizard** screen, as shown in figure.

STEP 2. A prompt screen will ask you to select **Search for a suitable driver for my device** or display a list of all the drivers in a specific location, so you can select the driver you want. Please select the recommended one as shown in figure.

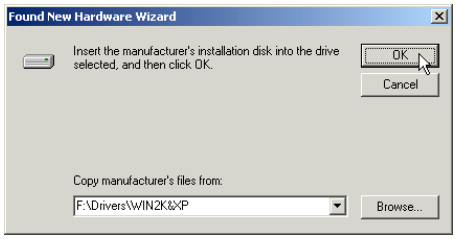
Click on **Next**.

STEP 3. And then, a prompt screen will ask you to indicate where your driver is located, floppy disk drives, CD-ROM drive, Microsoft Windows Update or specify a location:. Please select **Specify a location** as shown in figure.



Insert the **Modem Driver** CD-ROM disk attached with your modem into the CD-ROM drive device, then click on **Next**.

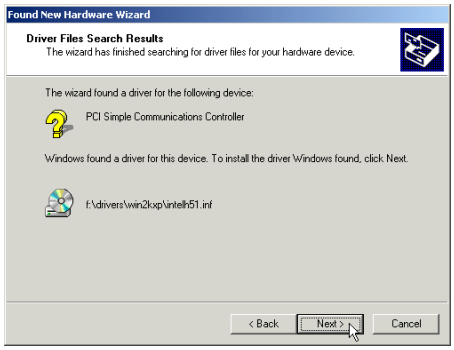
STEP 4. Then a prompt screen will ask you to locate the driver for your modem as shown in figure.



Please browse the CD-ROM disk directory at **<CD-ROM letter>:\drivers\Win2K&XP**.

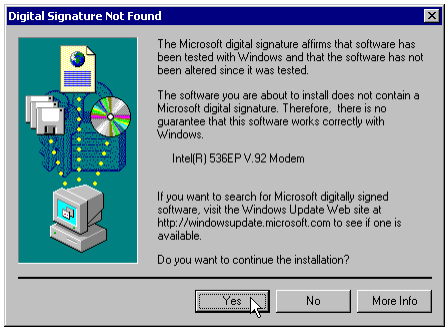
Then click on **OK**.

STEP 5. Then, a prompt screen will advise you and confirm the modem's driver has been found, as shown in figure.



Then click on **Next**.

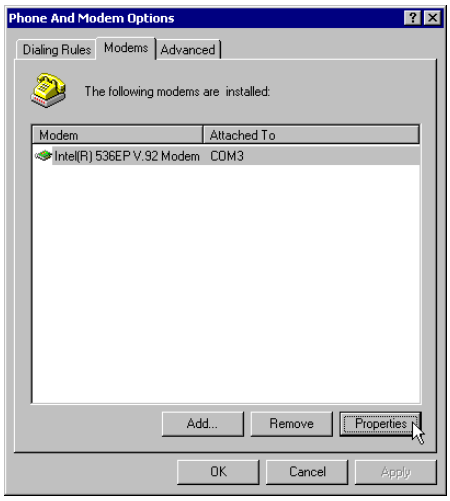
STEP 6. The installation wizard will shows a prompt window as below and then click on **Yes**.



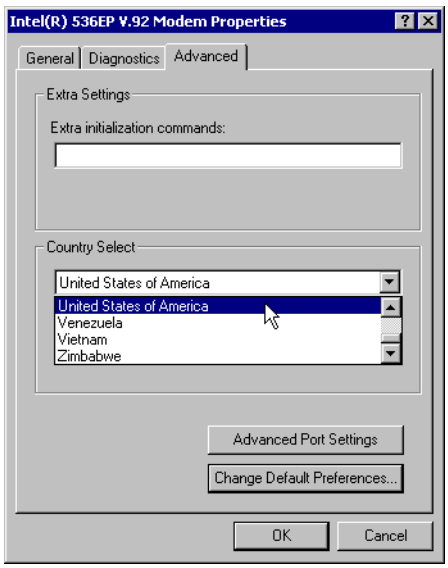
STEP 7. Click on **Finish** to complete the modem installation.

STEP 8. Open **Control Panel** windows and click **Phone and Modem Options** icon.

STEP 9. Choose **Modem** tab, select **Intel(R) 536EP V.92 Modem**, then click **Properties**.



STEP 10. Choose **Advanced** tab as shown in figure.



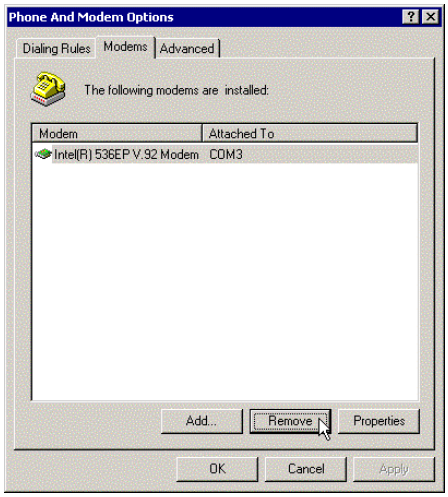
Make sure the country setting is correct (default **United States of America**). Changes of the setting will effect to modem performance. Please select a correct option to match your location and click **OK**.

Section 2.3.8 Uninstall Modem from Windows 2000

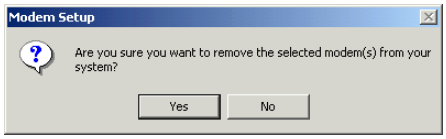
In any reason, you want to remove or reinstall the modem. Please follow the steps below to completely uninstall the modem.

STEP 1. Open **Control Panel** windows and click **Phone and Modem Options** icon.

STEP 2. Choose **Intel(R) 536EP V.92 Modem**, then click **Remove**.



STEP 3. A prompt screen will ask you to ensure to uninstall the modem driver.



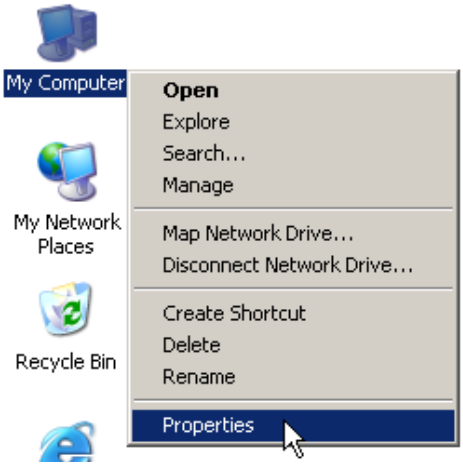
Click on **Yes**.

Section 2.3.9 Setup instructions for Windows XP

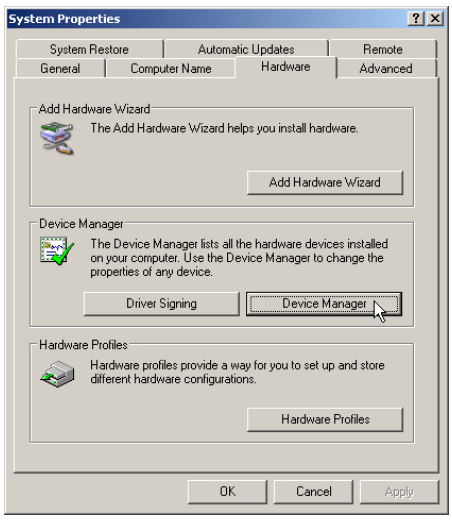
STEP 1. After you complete the modem hardware installation and turn on your PC, Windows system will automatically detect and install your new added devices "**Intel(R) 536EP V.92 Modem**".

But you must update the driver of Intel(R) 536EP V.92 Modem.

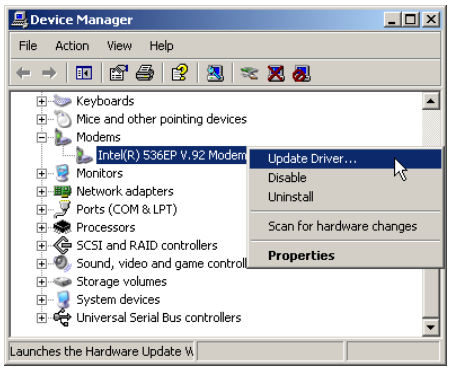
Right click on **My Computer** icon on Desktop, then choose **Properties** as shown in figure.



STEP 2. Click **Device Manager** button in **Hardware** tab as shown in figure.

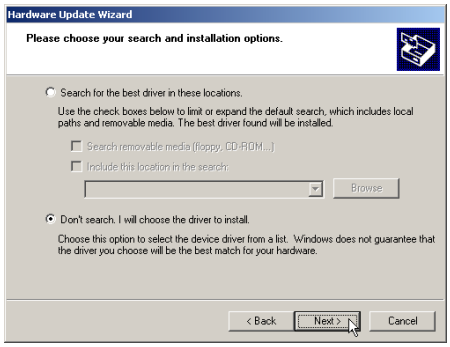


STEP 3. Expand **Modems** item then right click **Intel(R) 536EP V.92 Modem** as shown in figure.



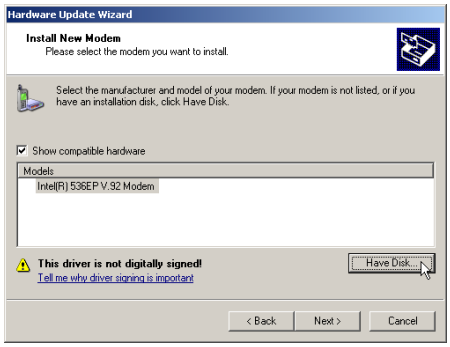
Click on **Updated Driver**.

STEP 4. Select radio button of **Don't Search. I will choose the driver to install** as shown in figure.

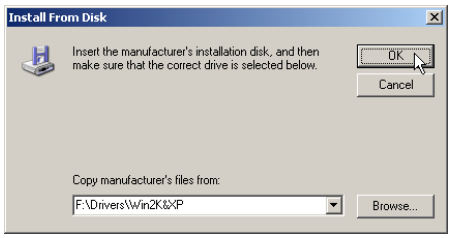


Then click on **Finish**.

STEP 5. Click on **Have Disk..** as shown in figure.

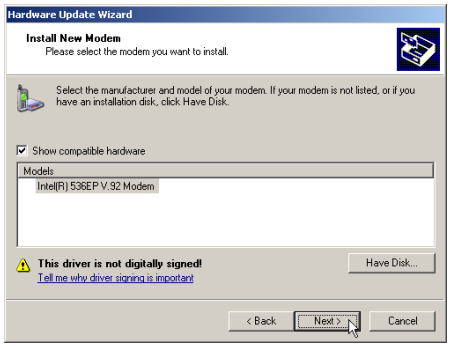


STEP 6. Select the directory of modem driver like **<CD-ROM letter>:\drivers\Win2K&XP** as shown in figure.



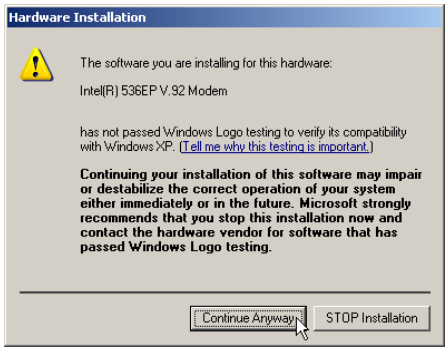
Click on **OK**.

STEP 7. Choose **Intel(R) 536EP V.92 Modem** in Modem list as shown in figure.



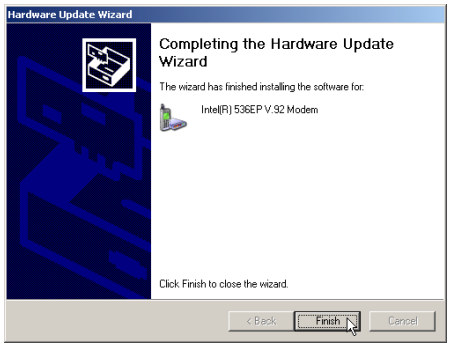
Click on **Next**.

STEP 8. The prompt screen will ask you to ensure the driver for your modem as shown in figure.



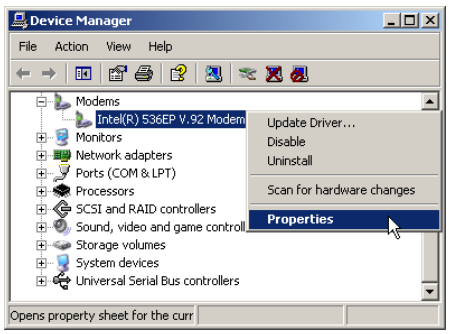
Click on **Continue anyway**.

STEP 9. System has completed the modem driver installation.



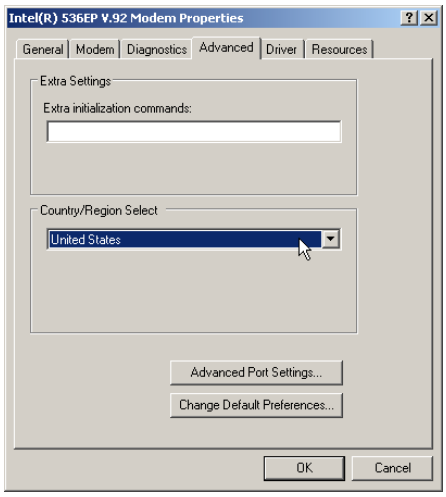
Then click on **Finish**.

STEP 10. Right click on **Intel(R) 536EP V.92 Modem** in **Modems** item again which in **Device Manager** as shown in figure.



Then click on **Properties**.

STEP 11. Make sure the country setting is correct (default **United States of America**) in **Advanced** tab. Changes of the setting will effect to modem performance.

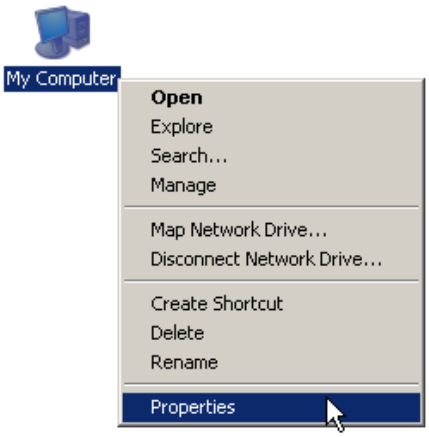


Please select a correct option to match your location and click **OK**.

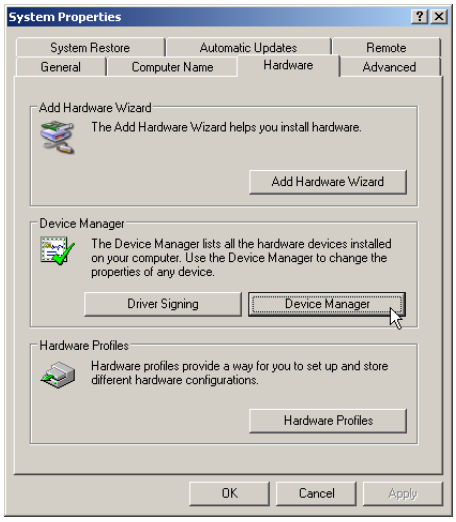
Section 2.3.10 Uninstall Modem from Windows XP

In any reason, you want to remove or reinstall the modem. Please follow the steps below to completely uninstall the modem.

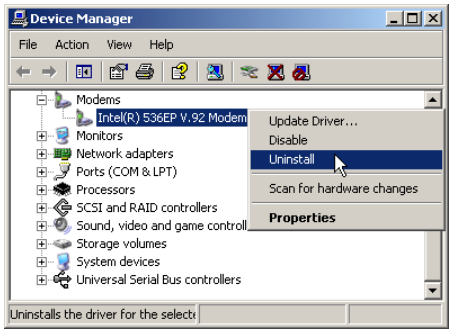
STEP 1. Right click on **My Computer** icon on Desktop, then choose **Properties** as shown in figure.



STEP 2. Click on **Device Manager** button in **Hardware** tab as shown in figure.



STEP 3. Right click on **Intel(R) 536EP V.92 Modem** in **Modems** item which in **Device Manager** as shown in figure.



Then, choose **Uninstall**.

STEP 4. A prompt screen will ask you to ensure to uninstall the modem driver.

Click on **OK**.

Section 2.4 Testing Your Modem

Before you set up your software, start with a quick test to check that your modem is working. Once you have determined that your modem is setup properly, go on to **Section 2.5 Install Communication Software** to install your communications software. If you are having problems, see **Section 3 Troubleshooting**.

Click on **Start** and point to **Setting**. Then click on **Control Panel**. When the **Control Panel** window opens. Scroll down to the **Modem** icon and double click on it. Click on the **Diagnostics** tab and highlight the COM port for your modem. Then click on **More Info**, your computer will automatically communicate with your new modem using AT commands and receiving responses from your modem. A list of response means the modem is setup properly.

Section 2.5 Install Communication Software

You can install the communication software from the CD-ROM disc attached with your new modem. Please consult the software manual in the CD-ROM disc for the detail of software installation.

You do not have to use the communication software attached with your new modem. The modem was designed for and tested using a wide range of communications software packages. Many communication applications identify the modem automatically and configure themselves for the correct operating settings. Some of the communication applications will ask you to select the type of modem you are using. Select a **Generic Fax class 1 modem** will let you use basic communication and fax functions.

Section 3 Troubleshooting

Your modem is designed to provide reliable and trouble-free functionality, however, should you experience any difficulty, the information contained in this section will assist you in determining and resolving the source of the problem.

Problem: Modem does not respond to AT commands

Possible solutions:

1. Make sure the modem is not configured with a conflicting COM port and IRQ setting. Make sure the communication software is configured with the correct COM and IRQ settings (the same COM port and IRQ as the modem). Your communications software will not be able to send or receive any data if it is not configured to match the COM port and IRQ settings for the modem.
DOS based communication program is not working with this modem neither can you operate the modem in MS-DOS prompt screen.

2. Make sure the modem is properly initialized using the driver software. The software may improperly Initialize your modem because you have selected an incorrect modem type. You may also be prompted to enter an initialization string by the software. Use AT&F as your initialization string.

Problem: Modem dials but does not connect

Possible solutions:

1. Be sure the IRQ setting is identical on the modem and the software.

2. Make sure that the phone line is working properly. A noisy line will prevent proper modem operation.

Problem: Modem makes a connection but no data appears on screen

Possible solutions:

3. Make sure all communication parameters (baud rate, data, stop, and parity bits) are properly configured and are identical on both sides. Be certain hardware flow control (RTS/CTS - default) is enabled in both the modem and the communication software.

4. Press the ENTER key several times. The remote system may be waiting to receive your data before it begins.

5. Make sure the correct terminal emulation mode is being used in the software (refer to software manual).

Problem: Modem displays errors while on-line with a remote modem

Possible solutions:

6. Make sure Call Waiting is turned off.

7. Make sure RTS/CTS hardware flow control is enabled (do not use XON/XOFF software flow control when transferring binary files).

8. Make sure the data speed is not faster than your computer capability. Operating too many applications

at the same time may cause communication problem. Close unnecessary application in your system.

Problem: Modem exhibits poor voice recording or playback

Possible solutions:

9. Make sure the correct modem type is selected in the Voice/FAX software. Volume adjustment is available in control panel.

10. Make sure your computer is fast enough to handle voice operations (38.4 Kbps). Voice operations are CPU intensive and require a better CPU sharing when running under Windows.

Problem: No dial tone

Possible solutions:

11. Ensure that the telephone cord it securely connected at both modem and wall outlet.

12. Unplug the telephone cord from the computer and connect it directly to a telephone from the wall outlet. Check for a dial tone. If there is none, the problem is in the telephone cord or system. Call your telephone service provider.

13. Double-check your country setting. Different country setting will cause different modem performance. Please select the correct country as you located.

14. Check modem performance with a direct line from your telephone company. Some PBXs may cause the telephone line condition change and affect modem performance.

Problem: The modem does not answer incoming calls

Possible solutions:

15. Ensure that the automatic answer parameter is set to one of the enabled options, using the ATS0 command (ATS0=1 to answer after one ring, and so on).

16. Ensure that no other devices, such as fax or answering machines, are answering calls before the modem does.

If you cannot resolve your situation after reading this section, contact your dealer or vendor for assistance.

Appendix 1 Modem Specifications

Modulation standard	: V.92, V.90, K56 flex, V.34+, V.34, V.32bis, V.32, V.29, V.27ter, V.22bis, V.23,V.22, V.21, V.17, Bell212/103
Compression	: V.42bis, MNP Class 5
Error Correction	: V.44, V.42, MNP Class 2-4
Host Interface	: PCI bus
FAX Group	: Group III
FAX Command	: EIA/TIA 578 class 1
Transmit level	: -10 dBm +/- 1 dB
Sensitivity	: -43 dBm
Power	: 0.75 W max
Temperature	: 0 to 55 degrees C, operating; -20 to 80 degrees C, non-operating

Appendix 2 AT Commands

Executing commands

Your modem is in Command Mode upon power-on and is ready to receive and execute AT commands. The modem remains in Command Mode until it makes a connection with a remote modem. Commands may be sent to the modem from an attached terminal or a PC running a communication program. This modem is designed to operate at common DTE speeds ranging from 115.2 Kbps to 300 bps. All commands and data must be issued to the modem using one of the valid DTE speeds.

AT commands and format

All commands must begin with the AT prefix, followed by the command letter and ended with the ENTER key. All default settings are printed in bold text. Spaces are allowed in the command string to increase command line readability but are ignored by the modem during command execution. All commands may be typed in either upper or lower case, but not
mixed. A command issued without any parameters is considered as specifying the same command with a parameter of "0".

Example: ATL [ENTER]

This command causes your modem to lower its speaker volume.

AT Command Summary

All default settings are printed in bold and italic text.

AT	Command prefix	
A/	Repeat last command	
A	Answer	
B0	Select V.22/V.21	
B1	***Select B212A/B103***	
B2	Select V.23 only; Dial modem transmit @ 75 BPS, receive @ 1200 BPS; Answer modem receive @ 75 BPS, transmit @ 1200 BPS	
B3	Select V.23 only; Dial modem transmit @ 1200 BPS, receive @ 75 BPS; Answer modem receive @ 1200 BPS, transmit @ 75 BPS	
D	Dial	
	0 - 9	Dialing digits
	ABCD*#	Tone dial characters
	P	Pulse dial
	T	Tone dial
	R	The modem goes into answer mode directly after finish dialing
	S=n	Dial stored telephone number n
	W	Wait for dial tone
	,	Pause the time specified in S-register S8
	!	Flash hook
	@	Wait for quiet answer
	;	Return to command mode
E0	Disables echo	
E	***Enables echo***	
H0	Hangs up the telephone line	
H1	Picks up the telephone line	
I0	Reports product code	
I1	Reports modem chip firmware version	
I2	Verifies ROM checksum	
I3	Report chipset name	
L0	Low speaker volume	
L1	Low speaker volume	
L2	***Medium speaker volume***	
L3	High speaker volume	
M0	Speaker always off	
M1	***Speaker on until carrier present***	
M2	Speaker always on	
M3	Speaker off during dialing; speaker on until carrier present	

N0	Handshake only at DTE speed
N1	***Begin handshake at DTE speed and falls to highest compatible speed***
O0	Return to data mode
O1	Retrain and return to data mode
P	Select pulse dialing
Q0	***Enables result code***
Q1	Disables result code
Sn	Select S-register n; refer to **S-register summary** for the details
Sn=x	Write x to S-register n; refer to **S-register summary** for the details
Sn?	Read from S-register n; refer to **S-register summary** for the details
T	***Select tone dialing***
V0	Choose numeric form result code
V1	***Choose verbose form result code***
W0	***Reports DTE connect speed result code***
W1	Reports DTE connect speed result code
W2	Reports DCE connect speed result code
W3	Reports DTE connect speed result code with error correct and data compression Information
W4	Reports error correction, data compression and DCE speed
X0	Enables result code 0-4; disables dial tone and busy tone detection
X1	Enables result code 0-5,10 and above; disables dial tone and busy tone detection
X2	Enables result code 0-6, 10 and above; enables dial tone detection and disables busy tone detection
X3	Enables result code 0-5,7,10 and above; disables dial tone detection and enables busy tone detection
X4	**Enables result code 0-7, 10 and above; enables dial tone and busy tone detection**
Y0	**Disables long space disconnect**
Y1	Enables long space disconnect
Z0	Reset modem and recalls user profile 0
Z1	Reset modem and recalls user profile 1
&C0	Ignores carrier status; CD always ON
&C1	**CD set according to carrier status**
&D0	Ignores DTR
&D1	Modem switches from data mode to command mode when an ON-to-OFF transition of DTR occurs
&D2	When DTR switches OFF , the modem goes on-hook and disables auto-answer
&D3	Reset modem and recall user profile when DTR switches OFF
&F	Load factory defaults
&G0	***Disables guard tone***
&G1	Enables 550 Hz guard tone

&G2 Enables 1800 Hz guard tone

&J0 Auxiliary relay never operated

&J1 Activates auxiliary relay when modem is off-hook

&K0 Disable flow control

&K3 Enables CTS/RTS hardware flow control

&K4 Enables XON/XOFF software flow control

&M0 Select asynchronous operation mode

&P0 Select 10 pps pulse dial with 39%/61% make/break ratio

&P1 Select 10 pps pulse dial with 33%/67% make/break ratio

&Q0 Select asynchronous operation mode

&S0 DSR always ON

&S1 DSR ON only during handshaking and when carrier is lost

&T0 Terminates test in progress

&T1 Initiates local analog loop-back (LAL)

&T3 Initiates local digital loop-back

&T4 Grants RDL request from remote modem

&T5 Denies RDL requests from remote modem

&T6 Initiates remote digital loopback(RDL)

&T7 Initiates RDL with self-test

&T8 Initiates LAL with self-test

&U0 Enables trellis coding

&U1 Disables trellis coding

&V0 View active profile, stored user profile 0 and stored telephone number

&V1 View active profile, stored user profile 1 and stored telephone number

&W0 Stores active profile into user profile 0

&W1 Stores active profile into user profile 1

&Y0 Recall user profile 0 on power-up

&Y1 Recall user profile 1 on power-up

&Zn=x Stores telephone number x(up to 30 digits) to location n(0-3)

%E0 Disables auto-retrain

%E1 Enables auto-retrain

%G0 Disables rate-renegotiation

%G1 Enables rate-renegotiation

-C0 Disables calling tone

-C1 Enables 1300 Hz calling tone

-C2 Enables V.8 calling tone for V.34 and 1300 Hz calling tone for others

+MS=<carrier>,<automode>,<min rate>,<max rate>

This command set the type of modulation used and the transmit and receive speeds. **The defaults is V90,1,0,0** <carrier> the string parameter specifies the type of modulation used

V21 V.21 300 bps

V22 V.22 1200 bps

V22B V.22bis 1200/2400 bps

V23C V.23 1200/75 bps

V32 V.32 4800/9600 bps

V32B V.32bis 7200-14400 bps

V34 V.34 asymmetrical 2400-33600 bps

V34S V.34 symmetrical 2400-33600 bps

V34B V.34 extended asymmetrical 2400-33600 bps

V34BS V.34 extended symmetrical 2400-33600 bps

X2 X2 asymmetrical transmit 4800 - 31200 bps and receive 33333 - 53333 bps

V90 V.90 asymmetrical transmit 4800-31200 bps and receive 33333-53333 bps

<automode> control the modem to negotiate modulation automatically.

If <automode>=0 Disabled

If <automode>=1 Enabled

<min rate>

If <min rate> = 0 The lowest data rate = 300 when<automode>= 1.
The lowest data rate = lowest modulation data rate when<automode> = 0

If <min rate> ≠ 0 The parameter specifies the lowest data rate.
Range = 0,300,1200,2400,4800,7200,9600,
12000,14400,16800,19200,21600,24000,26400,
28800,31200,33600

<max rate>.

If <max rate> = 0 The highest data rate = the highest modulation rate that less than or equal to DTE speed

If <max rate> ≠ 0 The parameter specifies the highest Connection Speed Range =0,300,1200, 2400,4800,7200,
9600,12000,14400,16800,19200,21600,24000,
26400,28800,31200,33333,33600,37333,41333,
42666,44000,45333,46666,48000,49333,50666,
52000,53333,54666,56000,57333

%An Set auto-reliable fallback character (n=0-127, default is 13)

%C0 Disables data compression

%C1 Enables MNP5 data compression

%L Report receive line signal level

\A0 Set maximum MNP block size to 64 characters

\A1	Set maximum MNP block size to 128 characters
\A2	Set maximum MNP block size to 192 characters
\A3	***Set maximum MNP block size to 256 characters***
\Bn	Transmit break in n*100ms (n = 0-9)
\C0	***Disables auto-reliable mode data buffering***
\C1	4 seconds buffer until 200 characters in the buffer or detection of a SYN character
\C2	No buffering, connect non-V.42 modem to V.42 modem
\G0	***Disables XON/XOFF flow control between local and remote modems***
\G1	Enables XON/XOFF flow control between local and remote modems
\J0	***Disables DTE speed adjust***
\J1	Enables DTE speed adjust
\Kn	Set break control (n=0-5, default is 5)
\N0	Select normal mode
\N1	Select normal mode
\N2	Select MNP reliable mode
\N3	***Select V.42 auto-reliable mode***
\N4	Select V.42 reliable mode
\Q0	Disables flow control
\Q1	Enables XON/XOFF software flow control
\Q2	Enables CTS hardware flow control
\Q3	***Enables CTS/RTS hardware flow control***
\Tn	Set inactivity timer (n=0-90, default is 0)
\X0	***Process XON/XOFF character as flow control character only***
\X1	Process XON/XOFF character as flow control character and pass through to local DTE or remote modem
-J0	Disables V.42 detect phase
-J1	***Enables V.42 detect phase***
"H0	Disables V.42bis data compression
"H1	Enables V.42bis data compression at transmit direction
"H2	Enables V.42bis data compression at receive direction
"H3	***Enables V.42bis data compression at both transmit and receive direction***
"On	Set V.42bis string length (n=6-250,default is 32)

Appendix 3 S-Registers Summary

Register	Function	Default	Range	Units
S0*	No. of rings to start auto-answer	0	0-255	ring
S1	Ring count	0	0-255	ring
S2*	Escape character	43	0-127	ASCII
S3	Carriage return character	13	0-127	ASCII
S4	Line feed character	10	0-127	ASCII
S5	Backspace character	8	0-32,127	ASCII
S6*	Wait before dialing	2	2-255	second
S7*	Wait for carrier	60	1-255	second
S8*	Pause time for dial modifier ,	2	0-255	second
S9*	Carrier recovery time	6	1-255	0.1 second
S10*	Lost carrier hang up delay	14	1-255	0.1 second
S11*	DTMF dialing speed	70	50-255	msec
S12*	Escape guard time	50	0-255	20msec
S14*	Bit-mapped register	-	0-255	–

Bit 0 Reserved

Bit 1 = 0 E0 is selected

= ***1*** ***E1 is selected***

Bit 2 = ***0*** ***Q0 is selected***

= 1 Q1 is selected

Bit 3 = 0 V0 is selected

= ***1*** ***V1 is selected***

Bit 4 Reserved

Bit 5 = 0 T(Tone dial) is selected

= ***1*** ***P(Pulse dial) is selected***

Bit 6 Reserved

Bit 7 = 0 Answer

= ***1*** ***Originate***

S16	Bit-mapped register	-	0-255	–

Bit0 = ***0*** ***LAL disabled***

= 1 LAL enabled (&T1)

Bit 1 Reserved

Bit 2 = ***0*** ***LDL disabled***

= 1 LDL enabled (&T3)

Bit 3 = ***0*** ***RDL OFF***

= 1 RDL in progress (&T6)

Bit 4 = ***0*** ***RDL not active***

Register	Function				Default	Range	Units
		=	1		RDL request from remote modem is in service		
	Bit 5	=	***0***		***RDL with self-test disabled***		
		=	1		RDL with self-test enabled (&T7)		
	Bit 6	=	***0***		***LAL with self-test disabled***		
		=	1		LAL with self-test enabled (&T8)		
	Bit 7				Reserved		
S18*	Modem test timer				0	0-255	second
S21*	Bit-mapped register				-	0-255	–
	Bit0	=	***0***		***&J0 is selected***		
		=	1		&J1 is selected		
	Bit 1				Reserved		
	Bit 2				Reserved		
	Bit 4-3	=	00		&D0 is selected		
		=	01		&D1 is selected		
		=	***10***		***&D2 is selected***		
		=	11		&D3 is selected		
	Bit 5	=	0		&C0 is selected		
		=	***1***		***&C1 is selected***		
	Bit 6	=	***0***		***&S0 is selected***		
		=	1		&S1 is selected		
	Bit 7	=	***0***		***Y0 is selected***		
		=	1		Y1 is selected		
S22*	it-mapped register				-	0-255	-
	Bit1-0	=	00		L0 is selected		
		=	01		L1 is selected		
		=	***10***		***L2 is selected***		
		=	11		L3 is selected		
	Bit 3-2	=	00		M0 is selected		
		=	***01***		***M1 is selected***		
		=	10		M2 is selected		
		=	11		M3 is selected		
	Bit 6-4	=	000		X0 is selected		
		=	001		Reserved		
		=	010		Reserved		
		=	011		Reserved		
		=	100		X1 is selected		
		=	101		X2 is selected		

Register	Function			Default	Range	Units
		=	110	X3 is selected		
		=	***111***	***X4 is selected***		
	Bit 7	=	***0***	***&P0 is selected***		
		=	1	&P1 is selected		
S23*	Bit-mapped register				0-255	-
	Bit 0	=	0	&T5 is selected		
		=	***1***	***&T4 is selected***		
	Bit 3-1	=	000	0-300 BPS DTE rate		
		=	001	1200 BPS DTE rate		
		=	010	2400 BPS DTE rate		
		=	011	4800 BPS DTE rate		
		=	100	7200 BPS DTE rate		
		=	101	9600 BPS DTE rate		
		=	110	19200 BPS DTE rate		
		=	111	>= 38400 BPS DTE rate		
	Bit 5-4	=	***00***	***Even parity***		
		=	01	Space parity/No parity		
		=	10	Odd parity		
		=	11	Mark parity		
	Bit 7-6	=	***00***	***&G0 is selected***		
		=	01	&G1 is selected		
		=	10	&G2 is selected		
		=	11	Reserved		
S25*	DTR transition timer			5	0-255	10 msec
S27*	Bit-mapped register			-	0-255	–
	Bit 3,1,0	=	***000***	***&Q0 is selected***		
		=	001	Reserved		
		=	010	Reserved		
		=	011	Reserved		
		=	100	Reserved		
		=	101	Reserved		
		=	110	Reserved		
		=	111	Reserved		
	Bit 2,4,5			Reserved		
	Bit 7,6	=	00	B0 is selected		
		=	***01***	***B1 is selected***		
		=	10	B2 is selected		

Register	Function			Default	Range	Units
		=	11	B3 is selected		
S30*	Inactivity timer			0	0-255	minute
S33*	Sleep mode timer			10	0-90	second
S37*	Max line speed attempted			0	0-35	–
		=	***0***	***According to DTE rate***		
		=	1-2	Reserved		
		=	3	300 BPS		
		=	4	Reserved		
		=	5	1200 BPS		
		=	6	2400 BPS		
		=	7	4800 BPS		
		=	8	7200 BPS		
		=	9	9600 BPS		
		=	10	12000 BPS		
		=	11	14400 BPS		
		=	12	16800 BPS		
		=	13	19200 BPS		
		=	14	21600 BPS		
		=	15	24000 BPS		
		=	16	26400 BPS		
		=	17	28800 BPS		
		=	18	31200 BPS		
		=	19	33600 BPS		
		=	20	36000 BPS		
		=	21	33333 BPS		
		=	22	37333 BPS		
		=	23	41333 BPS		
		=	24	42666 BPS		
		=	25	44000 BPS		
		=	26	45333 BPS		
		=	27	46666 BPS		
		=	28	48000 BPS		
		=	29	49333 BPS		
		=	30	50666 BPS		
		=	31	52000 BPS		
		=	32	53333 BPS		
		=	33	54666 BPS		

Register	Function	Default	Range	Units
	= 34	56000 BPS		
	= 35	57333 BPS		
S91*	Data mode transmit level	10	0-15	dBm
S92*	Fax mode transmit level	10	0-15	dBm

Notes : The value of the S-registers marked with (*) were saved in NVRAM.

Appendix 4 Result Codes Summary

Verbose Code	Numeric Code
OK	0
CONNECT	1
RING	2
NO CARRIER	3
ERROR	4
CONNECT 1200	5
NO DIAL TONE	6
BUSY	7
NO ANSWER	8
RINGBACK	45
CONNECT 1200/75	22
CONNECT 75/1200	23
CONNECT 2400	10
CONNECT 4800	11
CONNECT 7200	24
CONNECT 9600	12
CONNECT 12000	25
CONNECT 14400	13
CONNECT 16800	59
CONNECT 19200	14
CONNECT 21600	61
CONNECT 24000	62
CONNECT 26400	63
CONNECT 28800	64
CONNECT 31200	65
CONNECT 33333	33
CONNECT 33600	66
CONNECT 37333	34
CONNECT 38400	28
CONNECT 41333	35
CONNECT 42666	36
CONNECT 44000	37
CONNECT 45333	38
CONNECT 46666	39
CONNECT 48000	42
CONNECT 49333	43

Verbose Code	Numeric Code
CONNECT 50666	53
CONNECT 52000	54
CONNECT 53333	55
CONNECT 54666	56
CONNECT 56000	57
CONNECT 57333	58
CONNECT 57600	18
CONNECT 115200	31

CONNECT (DTE data rate)/(modulation)/(error correction)/(data compression)/
TX:(DCE transmit data rate)/RX:(DCE receive data rate)

Appendix 5 Government compliance notices

FCC compliance

This equipment complies with Part 68 of the FCC Rules. On this equipment is a label that contains, among other information, the FCC registration number and Ringer Equivalence Number (REN) for this equipment. You must, upon request, provide this information to your telephone company.

If your telephone equipment causes harm to the telephone network, the Telephone Company may discontinue your service temporarily. If possible, they will notify in advance. But, if advance notice isn't practical, you will be notified as soon as possible. You will be informed of your right to file a complaint with the FCC.

Your telephone company may make changes in its facilities, equipment, operations, or procedures that could affect proper operation of your equipment. If they do, you will be notified in advance to give you an opportunity to maintain uninterrupted telephone service.
The FCC prohibits this equipment to be connected to party lines or coin-telephone service.
In the event that this equipment should fail to operate properly, disconnect the equipment from the phone line to determine if it is causing the problem. If the problem is with the equipment, discontinue use and contact your dealer or vendor.

FCC Class B statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy, and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following
measures:

Reorient or relocate the receiving antenna.
Increase the separation between the equipment and the receiver.
Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
Consult the dealer or an experienced radio/TV technician for help.

Notice: 1) Shielded cables, if any, must be used in order to comply with the emission limits.
2) Any change or modification not expressly approved by the Grantee of the equipment authorization could void the user's authority to operate the equipment.

DOC compliance information

NOTICE: The Canadian Department of Communications label identifies certified equipment. This certification means that the equipment meets certain telecommunications network protective, operational and safety requirements. The Department does not guarantee the equipment will operate to the user's satisfaction.
Before installing this equipment, users ensure that it is permissible to be connected to the facilities of the local Telecommunications Company. The equipment must also be installed using an acceptable method of connection. The customer should be aware that compliance with the above conditions might not prevent degradation of service in some situations.

Repairs to certified equipment should be made by an authorized Canadian maintenance facility designated by the supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

CAUTION: Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or electrician, as appropriate.
NOTICE: The Load Number (LN) assigned to each terminal device denotes the percentage of the total load to be connected to a telephone loop which is used by the device, to prevent overloading. The termination on a loop may consist of any combination of devices subject only to the requirement that the sum of the Load Numbers of all the devices does not exceed 100.

European CTR 21 compliance

The equipment has been approved in accordance with Council Decision 98/482/EC for pan-European single terminal connection to the public switched telephone network (PSTN). However, due to differences between the individual PSTNs provided in different countries, the approval does not, of itself, give an unconditional assurance of successful operation on every PSTN network termination point. In the event of problem, you should contact your equipment supplier in the first instance.
Note: The manufacturer should ensure that the vendor and user of the equipment is clearly informed of the above information by means of package and /or user manuals of the forms of user instructions.