IBM PCI AUDIO ADAPTER

USER'S GUIDE

June 1999

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By IBM

Product registration

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http://www.pc.ibm.com/register

IBM will send you information and updates on your registered product unless you indicate on the Web site questionnaire that you do not want to receive further information.

About this book

This manual contains information on the IBM PCI AUDIO ADAPTER. It is divided into the following parts:

Installation guide
This section contains the product description and the hardware and software installation instructions.

Appendices
This section contains service, warranty, and notice information.

Note: The illustrations in this manual might be slightly different from your hardware.

Contents

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I.Description

II.

The IBM PCI Audio Adapter provides the next generation of PCI audio performance to the PC market. The adapter not only meets the new demands of advanced PC audio applications but also enables the integration of a complete multimedia subsystem on a single adapter. The adapter functionality and interfaces are compliant with all major industry standards, including SoundBlaster® compatible, PC99, Windows DirectSound®, Windows Sound System® and PCI 2.1 bus specification.

A.   Features

❖ Single, high performance, mixed signal, 16-bit stereo VLSI® chip
❖ PCI parallel bus interface, version 2.1
❖ Full native DOS games compatibility, via the following technologies:
   I.   TDMA
   II.   DDMA
   III.   PC/PCI(Optionally supported only)
❖ High-Quality **ESFM**™ music synthesizer
❖ Dynamic range (SNR) over 80 dB
❖ Integrated *Spatializer*® 3-D audio effects processor

Record and playback features
❖ Record, compress, and play back voice, sound, and music
❖ 16-bit stereo ADC and DAC
❖ Programmable independent sample rates from 4 kHz up to 48 kHz for record and playback
❖ Full-Duplex operation for simultaneous record and playback

Inputs and outputs
❖ Stereo inputs for line-in, auxiliary A (CD audio), and a mono input for microphone.
❖ MPU-401 (UART mode) interface for wavetable synthesizers and MIDI devices
❖ Integrated dual game port
❖ Separate mono input (MONO-IN) and mono output (MONO-OUT) for speakerphone

Mixer features
❖ 6-channel mixer with stereo inputs for line, CD audio, music synthesizer, digital audio (wave files), and mono inputs for microphone and speakerphone
❖ Programmable 6-bit logarithmic master volume control

Compatibility
❖ Supports PC games and applications for SoundBlaster® and SoundBlaster® Pro.
❖ Supports Microsoft® Windows Sound System®.
❖ Meets PC 97/PC 98/PC99 and WHQL® specifications
I.A.1.a)(1)(a)(i)(a)(i)

B.   Card Figure for the IBM PCI Audio Adapter

III.
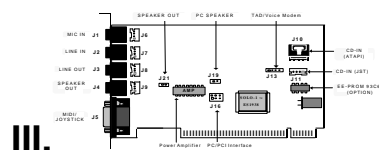
A.   Connectors for the IBM PCI Audio Adapter

The IBM PCI Audio Adapter includes up to five internal connectors, four external jack ports, and one external MIDI/ Joystick connector.

1. External Connectors:

J1: . . . . ∅ 3.5mm Phone Jack for **MIC IN**
J2: . . . . ∅ 3.5mm Phone Jack for **LINE IN**
J3: . . . . ∅ 3.5mm Phone Jack for **LINE OUT**
J4: . . . . ∅ 3.5mm Phone Jack for **SPEAKER OUT**
J5: . . . . Connector for **MIDI/JOYSTICK**

2. Internal Connectors:

J10: . . . . **CD-AUDIO IN (ATAPI** type) Connector
J11: . . . . **CD-AUDIO IN (JST** type) Connector
J13: . . . . **TAD (Telephony Audio Device)** connector for Voice Modem
J16: . . . . **PC/PCI Legacy Audio SIDEBAND SIGNAL** connector
J19: . . . . **PC SPEAKER IN** connector
J21: . . . . **INTERNAL SPEAKER OUT** connector

Handling the IBM PCI Audio Adapter

Follow these precautions when handling the card:

I.   Before you open the static protective bag, touch it to a metal expansion slot cover on the back of your computer. This drains static electricity from the package and from your body.

II.   Do not touch any exposed printed circuitry after opening the package.

III.   Keep other people from touching the card. They might have a static-electricity build-up.

IV.   Limit your movement. Movement causes a build-up of static electricity.

0 Installing the IBM PCI Audio Adapter

Step 1.   Turn off the system and all peripheral devices.

Step 2.   Disconnect the power cord and all peripheral devices from the system.

Step 3.   Remove the system cover and identify an unused PCI slot.

Step 4.   Unscrew the slot cover plate, plug in the audio adapter, and tighten it with the screw.

Step 5.   If you have a microphone, plug the respective cable into the jack **J1** on the back of the audio adapter. If you have a CD player or tape deck, plug the cable into the jack **J2**.

Step 6.   If you have speakers or amplifiers or headset, plug the cable into the jack **J3** or **J4** on the back of the audio adapter.

Step 7.   If you have a MIDI or joystick device, plug the cable into connector **J5** on the back of the audio adapter.

Step 8.   Use the CD audio cable that comes with the audio adapter to connect either **J10** or **J11** on the audio adapter and the audio output at the back of the CD-ROM drive.

Step 9.   To use other connectors on the audio adapter to connect other devices, please consult the user manual.

Step 10.   Put back the system cover, reconnect the system power cord and all peripheral devices. Check and make sure all connections are correct before turning on the system.

Installing and Uninstalling Device Drivers under Windows® 95, Windows® 95 OSR2 and Windows® 98

There is one CD title that comes with this package.
This CD-title includes the necessary device drivers for Windows® 95,Windows® 98, Windows® NT4.0 and IBM OS/2®operating system.

The driver described in this chapter supports 14 languages, that is, English, Simplified Chinese, Traditional Chinese, Danish, French, German, Italian, Japanese, Dutch, Norwegian, Portuguese, Spanish, Finish and Swedish.

To install a device driver in the same language as the operating system, follow section 3.1 as the installation program will auto-detect the language of the operating system and select the device driver accordingly.
To install a device driver in English irrespective of the language of the operating system, follow the installation procedures in section 3.2, 3.3 or 3.4, depends on the operation system used.

0 Installation device driver under Windows®95, Windows ®95 OSR2 and Windows® 98—InstallShield® Method

1) Please bypass the normal Windows PnP procedures by clicking the "**Cancel**" or pressing the "**Esc**" key on the "**Add New Hardware Wizard**" dialog box.

2) In Desktop, please click "**Start**"->"**Run**" on the lower left corner of the window and execute the Setup.exe program in the "**Win95&98**"directory of the driver CD as shown below.

3) Please click the "**Next>**" push button on the "**Welcome**" dialog box to continue installing the driver.

4) To install the driver, please choose the "**Upgrade Drivers**" then click the "**Next>**" button to continue.
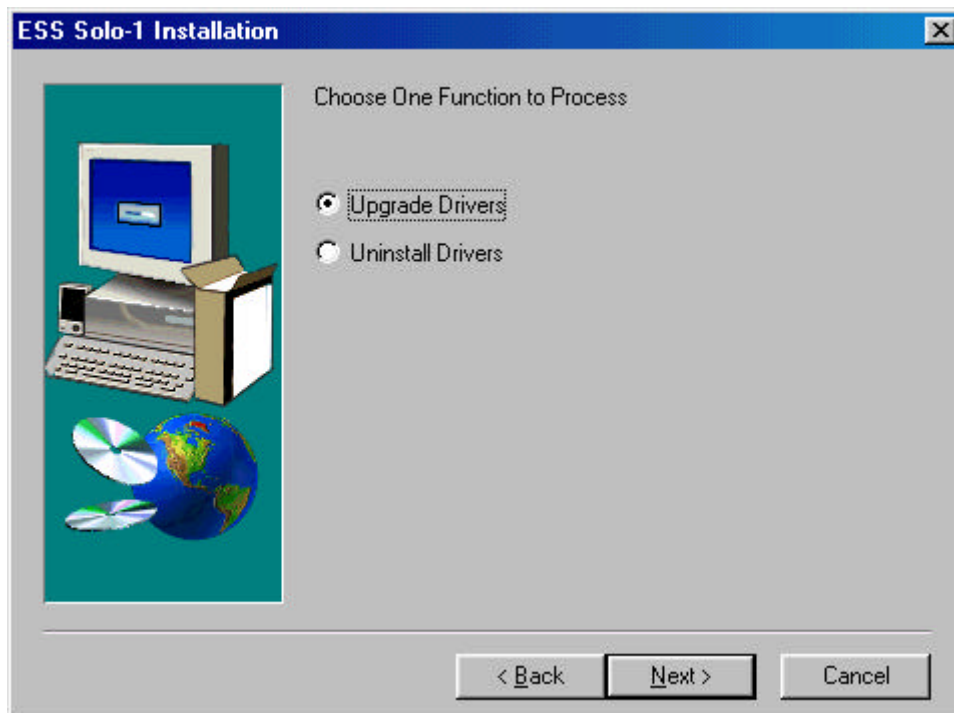
5) When the "**Setup Complete**" dialog box appears, choose to restart the computer now in order that the drivers be installed..

6) After the computer is restarted, for Win95, no user actions ard needed, for Win98 the system will detect the PCI Multimedia Audio device, and begin to process the PnP procedure. Please press "**Enter**" key in all the PnP procedures to accept the default settings that the setup program has set up for you.

7) Note that the setup program may ask you to insert the Win95 or Win98 system CD into the CD ROM drive, please just do as the dialog indicates to finish the driver installation.

1 Installing the Device Driver under Windows® 95---PnP

0 Installing the Device Driver under Win95

To install the device driver for the first time, please follow the steps below:

1.) After you have installed your new audio adapter, start up your Win95 operating system.

2.) The "**New Hardware Found**" dialog box will appear, informing you that the system has found the new hardware "PCI Multimedia Audio Device". Please choose the option "**Driver from disk provided by hardware manufacturer**" and click "**OK**".

3.) The "**Install From Disk**" dialog box will appear and ask you to specify the path of the device driver files. Insert now the CD-title that comes with your audio adapter package into your CD ROM drive. Assuming your CD-ROM drive is D, type **D:\WIN95&98** in the command line and click "**OK**".
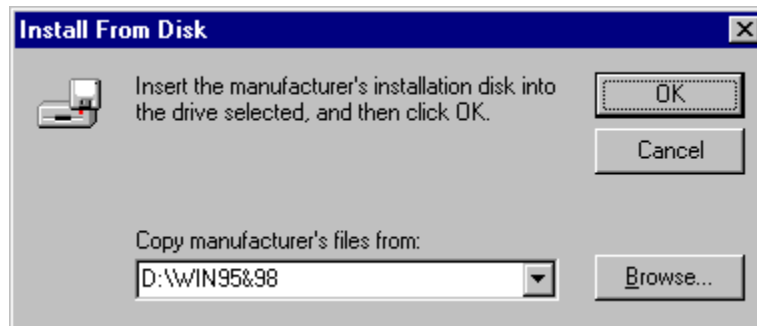
3.) The "**Copying Files**" dialog box will appear showing you the status of the copying process.

4.) The "**New Hardware Found**" dialog boxes will then appear. The system has found the new hardware and is installing the software for it. The installation of the device drivers has been completed successfully.

1 Verifying the Device Driver under Win95

To verify that the correct device driver for the audio adapter has been installed, please follow the steps below:

1.) Go to the "**Control Panel**" and double-click **"System"**.

2.) Choose the "**Device Manager**" and double-click **"Sound, Video and Game Controllers"**. You should see the following three devices listed:

ESS Solo-1 DOS Emulation
ESS Solo-1 PCI AudioDrive
Gameport Joystick

2 Installing the Device Driver under Windows® 95 OSR2 --- PnP

0 Installing the Device Driver under Win95 OSR2

1.) The "**Update Device Driver Wizard**" dialog box will appear informing you that a new "PCI Multimedia Audio Device" has been found and will guide you through the rest of the SETUP program. Please insert now the installation CD title that comes with your PCI Audio Adapter. Click "**Next>**" to continue the installation.

2.) The "**Update Device Driver Wizard**" dialog box will inform you that the system was unable to locate the driver. Please continue with the Setup program by clicking **"Other Locations…"**.
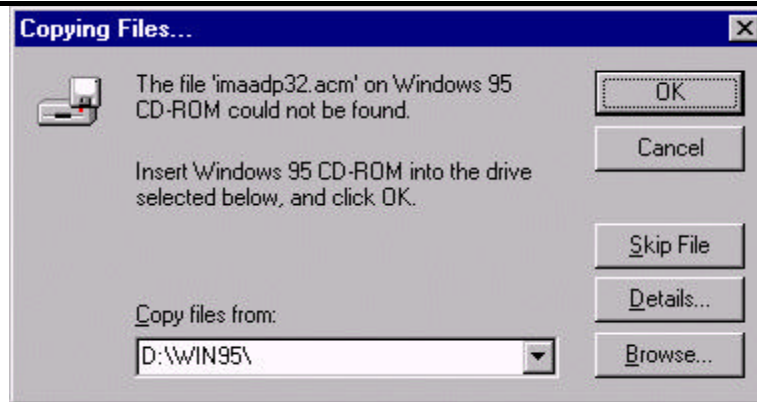
3.) The "**Select Other Location**" dialog box will appear. Assuming your CD-ROM drive is D, type the command **D:\Win95&98** and click "**OK**".
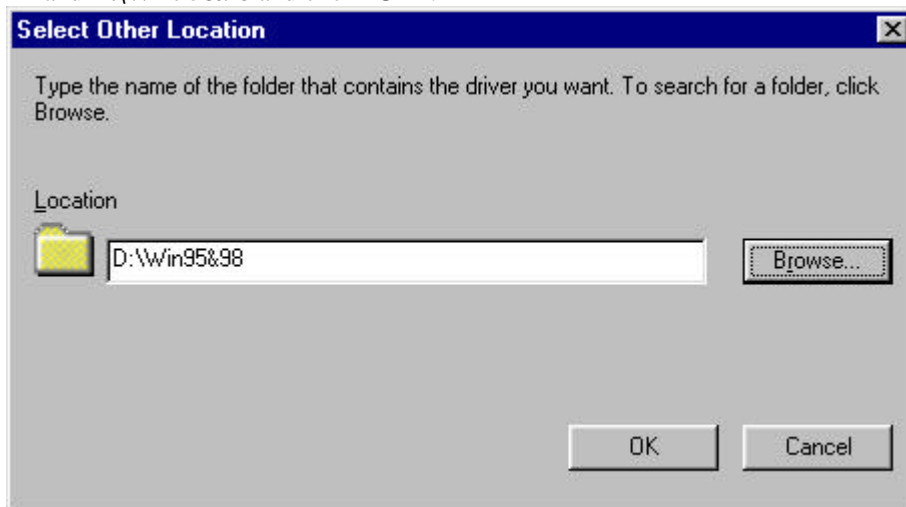
4.) The "**Update Device Driver Wizard**" dialog box will appear, informing you that the "ESS Solo-1 PCI AudioDrive " has been found by the system. Please continue by clicking "**Finish**".

5.) The "**Insert Disk**" dialog box will ask you to insert the "Driver Disk". Please insert the driver CD and click "**OK**".

6.) The "**Copying Files…**" dialog box will first inform you that some files cannot be found.
You need to enter the correct path name **D:\Win95&98** as shown below.
All necessary files will then be copied onto your system.

7.) It is possible that the "**Insert Disk**" dialog box will appear and asks for the Win95 system CD-ROM. Just insert it and continue by clicking "**OK**".

8.) The system will ask you for the path of your Win95 CD-ROM. Please enter the path of the Win95 CD-ROM,ex.:**D:\Win95** and click "**OK**".

Copying Files...

The file 'imaadp32.acm' on Windows 95 CD-ROM could not be found.

Insert Windows 95 CD-ROM into the drive selected below, and click OK.

Copy files from:

D:\WIN95\

[OK] [Cancel] [Skip File] [Details...] [Browse...]

9.) The system will copy all the necessary files from the Win95 CD-ROM.

1 Verifying the Device Driver under Win95 OSR2

To verify that the correct device driver for the audio adapter has been installed, please follow the steps below:

1.) Go to the "**Control Panel**" and double-click **"System"**.

2.) Choose the "**Device Manager**" and double-click **"Sound, Video and Game Controllers"**. You should see the following three devices listed:

ESS Solo-1 DOS Emulation
ESS Solo-1 PCI AudioDrive
Gameport Joystick

3 Installing the Device Driver under Win98 --- PnP

0 Installing the Device Driver under Win98

If you want to install the device driver please follow the steps as described below:

1.) After you have installed the audio adapter, start up your Win98 operating system.

2.) The "**Add New Hardware Wizard**" dialog box will appear first. Click "**Next>**" to continue.

3.) As recommended choose "**Search for the best driver for your device**". Click "**Next>**".

4.) In the next "**Add New Hardware Wizard**" dialog box choose "**Specify a location**". Please insert your driver CD into the CD ROM drive, assuming your CD-ROM drive is D, please type the path: **D:\Win95&98** in the command line,and click "**Next>**" to continue.

5.) Next, the "**Add New Hardware Wizard**" dialog box will inform you that the wizard has found the "ESS Solo-1 PCI AudioDrive" device. Click "**Next>**" to accept the location of the new device driver.

7.) An "**Insert Disk**" dialog box will appear to ask you to insert the driver disk. Please click "**OK**" to continue installing the driver.

8.) Type the path: **D:\Win95&98** in the command line of "**Copying Files…**" dialog box and click "**OK**".

9.) The "**Add New Hardware Wizard**" dialog box will appear to inform you that the system has finished installing the ESS Solo-1 PCI AudioDrive device driver.Please click "**Finish**".

10.) An "**Insert Disk**" dialog box may appear and ask you to insert the Win98 CD-ROM. Just insert it and click "**OK**" to complete the device driver installation.

1 Verifying the device driver installation under Win98

To verify that the correct device driver for the audio adapter has been installed, please follow the steps below:

1) Go to the "**Control Panel**" and double-click **"System"**.

2) Choose the "**Device Manager**" and double-click **"Sound, Video and Game Controllers"**. You should see the following three devices listed:

ESS Solo-1 DOS Emulation
ESS Solo-1 PCI AudioDrive
Gameport Joystick

## A. Uninstalling the Device Driver under Window® 95 and Windows®98

To Uninstall the device driver under Win95 and Win98, please follow the steps below:
1) To remove the device driver, follow the same installation procedure as described in 1.) to 3.) in section 3.1
2) In "**ESS Solo-1 Installation**" dialog box, please choose the "**Uninstall Drivers**" then click the "**Next>**" button to continue.
3) The "**Setup Complete**" dialog box appears. If you want the device driver removed immediately, please select "**Yes, I want to restart my computer now**" and click "**Finish**" to complete the uninstallation.

4 Installing the Device Driver under Windows® NT4.0

To install the device driver for your IBM PCI Audio Adapter, please follow the steps described below:

1.) After you have installed your new audio adapter, start up your Windows® NT4.0 operating system.

2.) Click "**START**" and choose "**RUN**" from the menu.

3.) Please insert driver CD title into your CD-ROM drive. Assuming your CD-ROM drive is D, type **D:\NT40\Setup.exe** in the command line of the "**Run**" dialog box.
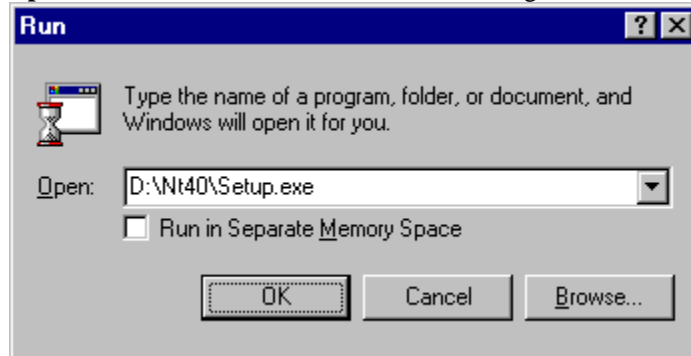
4.) The first "Setup" dialog box will flash by, preparing the **InstallShield® Wizard** to guide you through the rest of the SETUP program.

5.) The "**Welcome**" dialog box will recommend that you exit all Windows programs before you run the installation program. Click "**Next>**" to continue.

3.) The first "**ESS Solo-1 Installation**" dialog box appears. Please select "**Install**" and click "**Next>**".

7.) The "**Setup Complete**" dialog box will inform you that setup has finished copying files to your computer, please select "**Yes, I want to restart my computer now**" and click "**Finish**" to restart your computer to take effect the new driver.

5 Uninstalling the Device Driver under Windows® NT4.0

To uninstall the device driver for your IBM PCI Audio Adapter, please follow the steps described below:

1.) To remove the device driver, follow the same installation procedure as described in 1.) to 5.) in section 4.1.

2.) When the "**ESS Solo-1 Installation**" dialog box appears, please select "**Uninstall Drivers**", and click "**Next>**" to continue.

3.) The "**Setup Complete**" dialog box appears. If you want the device driver removed immediately, please select "**Yes, I want to restart my computer now**" and click "**Finish**" to complete the uninstallation.

Installing the Driver under IBM OS/2 Warp 3.0/4.0

The driver for IBM OS/2 Warp 3.0/4.0 supports 10 languages, that is, Danish, Dutch, English, French, German, Italian, Japanese, Norwegian, Spanish, Swedish. You may either choose the driver language to be consistent with your OS's language or choose the language in English, for OS language not supported by the driver, you have to choose the English driver.

0 Installing the Device Driver under OS/2 Warp 3.0

To install the driver under OS/2 Warp 3.0 please follow the steps described below:
Open the **Multimedia** Folder from the desktop:

1) Open the **Multimedia Application Install** Object

2) At the "**IBM Multimedia Presentation Manager/2 – Installation**" dialog box, insert the driver CD into the CD ROM drive.Use the pull-down menu to select the correct driver location(ex. D:\OS2\English is the driver location for ESS Solo PCI Audio device English driver, assuming the CD ROM drive is at 'D')

When the ESS Solo PCI Audio feature appears, click "**Install"**, and follow on screen instructions to install the driver successfully.

1 Installing the Device Driver under OS/2 Warp 4.0

To install the driver under OS/2 Warp 4 .0 please follow the steps described below:

1) Open the **OS/2 System** Object from the desktop.

2) Open the **System Setup** Object

3) Open the **Install/Remove** Folder

4) Open the **Multimedia Application Install** Object

5) At the "**IBM Multimedia Presentation Manager/2 – Installation**" dialog box, insert the driver CD into the CD ROM drive, use the pull-down menu to select the correct driver location (ex. D:\OS2\English is the driver location for ESS Solo PCI Audio device English driver, assuming the CD ROM drive is at 'D').

6) When the ESS Solo PCI Audio feature appears, click on the "**Install**" button.

7) The "**MMPM/2-Change Config.sys**" dialog box will appear to inform you that the config.sys file must be changed. Please click "**YES**" to continue.

8) You have to specify the number of the ESS Solo PCI Audio device in the "**Multimedia Installation**" dialog box. Please choose the default number and click "**OK**".

9) The "**MMPM/2-Config.sys changed**" dialog box will inform you that the config.sys file has been changed. Please click "**OK**" to continue.

10) At the end of the installation, "**MMPM/2-Multimedia Installation Successful**" dialog box will inform you that the device driver has been successfully installed, please click "**OK**" to finish the installation. You have to go to the desktop, shut down and restart the system before using the IBM PCI Audio Adapter.

Installing and Uninstalling the Software Wavetable under Windows® 95, and Windows® 98

0 Installing the Software Wavetable under Win95/98

1.) After you have installed your IBM PCI Audio Adapter, start up your Win 95/98 operating system.

2.) Click "**START**" and choose the "**RUN**" item from the menu.

3.) Please insert now your driver CD title into your CD-ROM drive. Assuming your CD-ROM drive is D, type **D:\SWWT\ Setup.exe** in the "**RUN**" dialog box as shown in the figure below.

4.) The first "**Setup**" dialog box will flash by, preparing the **InstallShield® Wizard** to guide you through the rest of the SETUP program.

5.) The "**Welcome**" dialog box will recommend that you exit all Windows programs before you run the installation program. Click "**Next>**" to continue.

6.) The first "**ESS Software Wavetable Installation**" dialog box appears. Please select "**Install ESS Software Wavetable**" and continue by clicking "**Next>**".

7.) A figure will follow to display the copying process . Please wait for the completion of the copying process.

8.) A "**Setup Complete**" dialog box indicates that Setup has finished copying files to your computer, before you can use the software wavetable, you must restart your computer. Select "**Yes, I want to restart my computer now**" and click "**Finish**" to restart your computer.

1 Verifying the Software Wavetable Installation under Win95/98

To verify the correct installation of the software wavetable application program for your IBM PCI Audio Adapter, please follow the steps below:

1.) Go to your "Control Panel" and double-click **"Multimedia"**.

2.) Choose the "**MIDI**" in the "**Multimedia Properties**" window. If "ESS Software Wavetable" under Win98 or "Internal ESS Software Wavetable" under Win95 has been added to your system, the software wavetable has been successfully installed.

A. Uninstalling the Software Wavetable under Win95/98

1.) To remove the software wavetable please first follow the same installation procedure in 1.) to 5.) in section 6.1.

2.) The "**ESS Software Wavetable Installation**" dialog box appears again. This time select "**Uninstall ESS Software Wavetable**" and click "**Next>**".

3.) The "**Setup Complete**" dialog box appears. If you want the program to be removed immediately, select "**Yes, I want to restart my computer now**" and click "**Finish**" to restart your computer.

Playing games under DOS mode

To play games under DOS mode, please add the following line to your CONFIG.SYS file, assuming the startup driver is C:

DEVICE=C:\ESSolo.SYS

After rebooting your system, please type the file name "ESSolo.COM" under the root directory. For example: **C:\ESSolo.COM**.

I.Appendix A. Help and Service Information

This section contains information on how to obtain online and telephone technical support.

Online Technical Support

Online Technical support is available during the life of your product. Online assistance can be obtained through the Personal Computing Support Web site, the PSG Electronic Bulletin Board System, and the IBM Automated Fax System.

IBM Personal Computing support Web Site	http://www.pc.ibm.com/support
IBM PSG BBS	1-919-517-0001
IBM Automated Fax System	1-800-426-3395
	1-800-465-3299 (in Canada)

During the warranty period, assistance for replacement or exchange of defective components is available. In addition, if your IBM option is installed in an IBM computer, you might be entitled to service at your location. Your technical support representative can help you determine the best alternative.

Telephone Technical Support

Marketing, installation, and configuration support through the HelpCenter will be withdrawn or made available for a fee, at IBM's discretion, 90 days after the option has been withdrawn from marketing. Additional support offerings, including step-by-step installation assistance, are available for a nominal fee.

To assist the technical support representative, have available as much of the following information as possible:

1. Option name
2. Option number
3. Proof of purchase
4. Computer manufacturer, model, serial number (if IBM), and manual
5. Exact wording of the error message (if any)
6. Description of the problem
7. Hardware and software configuration information for your system

If possible, be at your computer. Your technical support representative might want to walk you through the problem during the call.

For the support telephone number and support hours by country, refer to the following table or to the enclosed technical support insert. If the number is not provided, contact your IBM reseller or IBM marketing representative. Response time may vary depending on the number and nature of the calls received.

Support 24 hours a day, 7 days a week

Canada	1-800-565-3344
U.S.A. / Puerto Rico	1-800-772-2227

I.Appendix B. Product Warranty and Notice
II.

Warranty Statements

The warranty statements consist of two parts: Part 1 and Part 2. Part 1 varies by country. Part 2 is the same for both statements. Be sure to read both the Part 1 that applies to your country and Part 2.

- **United States, Puerto Rico, and Canada (Z125-4753-05 11/97)**
  (Part 1 – General Terms on page 3-4)
- **Worldwide except Canada, Puerto Rico, Turkey, and United States (Z125-5697-01 11/97)**
  (Part 1 – General Terms on page 3-7)
- **Worldwide Country-Unique Terms**
  (Part 2 – Country-Unique Terms on page 3-9)

IBM Statement of Limited Warranty for United States, Puerto Rico, and Canada (Part 1 – General Terms)

This Statement of Limited Warranty includes Part 1 – General Terms and Part 2 – Country-Unique Terms. **The terms of Part 2 may replace or modify those of Part 1.** *The warranties provided by IBM in this Statement of Limited Warranty apply only to Machines you purchase for your use, and not for resale, from IBM or your reseller. The term "Machine" means an IBM machine, its features, conversions, upgrades, elements, or accessories, or any combination of them. The term "Machine does not include any software programs, whether pre-loaded with the Machine, installed subsequently or otherwise. Unless IBM specifies otherwise, the following warranties apply only in the country where you acquire the Machine. Nothing in this statement of Warranty affects any statutory rights of consumers that cannot be waived or lim...*

> **Machine –** IBM PCI Audio Adapter
>
> **Warranty Period*** - One Year
>
> **Contact your place of purchase for warranty service information. Some IBM Machines are eligible for On-site warranty service depending on the*

The IBM warranty for Machines

IBM warrants that each machine 1) is free from defects in materials and workmanship and 2) conforms to IBM's Official Published Specifications. The warranty period for a Machine is a specified, fixed period commencing on its Date of Installation. The date on your sales receipt is the date of installation, unless IBM or your reseller informs you otherwise.

During the warranty period IBM or your reseller, if approved by IBM to provide warranty service, will provide repair or exchange service for the Machine, without charge, under the type of service designated for the Machine and will manage and install engineering changes that apply to the Machine.

If a Machine does not function as warranted during the warranty period, and IBM and your reseller are unable to either 1) make it do so or 2) replace it with one that is at least functionally equivalent, you may return it to your place of purchase and money will be refunded. The replacement may not be new but in good working order.

Extent of Warranty

The warranty does not cover the repair or exchange of a Machine resulting from the misuse, accident, modification, unsuitable physical or operating environment, improper maintenance by you, or failure caused by a product for which IBM is not responsible. The warranty is voided by removal or alteration of Machine or parts identification labels.

THESE WARRANTIES ARE YOUR EXCLUSIVE WARRANTIES AND REPLACE ALL OTHER WARRANTIES OR CONDITIONS, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO , THE IMPLIED WARRANTIES OR CONDITIONS OR MERCHANTIBILITY AND FITNESS FOR A PARTICULAR PURPOSE. THESE WARRANTIES GIVE YOU SPECIFIC LEGAL RIGHTS AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM JURISDICTION TO JURISDICTION. SOME JURISDICTIONS DO NOT ALLOW THE EXCLUSION OR LIMITATION OF EXPRESS OR IMPLIED WARRANTIES, SO THE ABOVE EXCLUSION OR LIMITATION MAY NOT APPLY TO YOU. IN THAT EVENT, SUCH WARRANTIES ARE LIMITED IN DURATION TO THE WARRANTY PERIOD. NO WARRANTIES APPLY AFTER THAT PERIOD.

Items Not Covered by Warranty

IBM does not warrant uninterrupted or error-free operation of Machine.

Unless otherwise specified, IBM provides non-IBM machines **WITHOUT WARRANTIES OF ANY KIND**.

Any technical or other support provided for a Machine under warranty, such as assistance via telephone with "how-to" questions and those regarding Machine set-up and installation, will be provided **WITHOUT WARRANTIES OF ANY KIND**.

Warranty Service

To obtain warranty service for the Machine, contact your reseller or IBM. In the United States, call IBM at 1-800-772-2227. In Canada, call IBM at 1-800-565-3344. You may be required to present proof of purchase.

IBM or your reseller provides certain types of repair and exchange service, either at your location or at a service center, to keep Machines in, or restore them to, conformance with their Specifications. IBM or your reseller will inform you of the available types of service for a Machine based in its country of installation. IBM may repair the failing machine or exchange it at its discretion.

When warranty service involves the exchange of a Machine or part, the item IBM or your reseller replaces becomes its property and the replacement becomes yours. You represent that all removed items are genuine and unaltered. The replacement may not be new, but will be in good working order and at least functionally equivalent to the item replaced. The replacement assumes the warranty service status of the replaced item.

Any feature, conversion, or upgrade IBM or your reseller services must be installed on a Machine which is 1) for certain Machines, the designated, serial –numbered Machine and 2) at an engineering-change level compatible with the feature, conversion, or upgrade. Many features, conversions or upgrades involve the removal of parts and their return to IBM. A part that replaces a removed part will assume the warranty service status of the removed part.

Before IBM or your reseller exchanges a Machine or part, you agree to remove all features, parts, options, alterations, and attachments not under warranty service.

You also agree to

1. ensure that the Machine is free of any legal obligations or restrictions that prevent its exchange;
2. obtain authorization from the owner to have IBM or your reseller service a Machine that you do not own; and
3. where applicable, before service is provided
    a. follow the problem determination, problem analysis, and service request procedures that IBM or your reseller provides,
    b. secure all programs, data, and funds contained in a Machine,
    c. provide IBM or your reseller with sufficient, free, and safe access to your facilities to permit them to fulfil their obligations, and
    d. inform IBM or your reseller of changes in a Machine's location.

IBM is responsible for loss of, or damage to, your Machine while it is 1) in IBM's possession or 2) in transit in those cases where IBM is responsible for the transportation charges.

Neither IBM nor your reseller is responsible for any of your confidential, proprietary or personal information contained in a Machine which you return to IBM or your reseller for any reason.
You should remove all such information from the Machine prior to its return.

Production Status
Each IBM Machine is manufactured from new parts, or new and used parts. In some cases, the Machine may not be new and may have been previously installed. Regardless of the Machine's production status, IBM's appropriate warranty terms apply.

Limitation of Liability
Circumstances may arise where, because of a default on IBM's part or other liability, you are entitled to recover damages from IBM. In each such instance, regardless of the basis on which you are entitled to claim damages from IBM (including fundamental breach, negligence, misrepresentation, or other contract or tort claim), IBM is liable for no more than

1.   damages for bodily injury (including death) and damage to real property and tangible personal property; and

1.   the amount of any other actual direct damages, up to the greater of U.S. $100,000 (or equivalent in local currency) or the charges (if recurring, 12 months' charges apply) for the Machine that is the subject of the claim.

     This limit also applies to IBM's suppliers and your reseller. It is the maximum for which IBM, its suppliers, and your reseller are collectively responsible.

UNDER NO CIRCUMSTANCES IS IBM LIABLE FOR ANY OF THE FOLLOWING: 1) THIRD-PARTY CLAIMS AGAINST YOU FOR DAMAGES (OTHER THAN THOSE UNDER THE FIRST ITEM LISTED ABOVE); 2) LOSS OF, OR DAMAGE TO, YOUR RECORDS OR DATA; OR 3) SPECIAL, INCIDENTAL, OR INDIRECT DAMAGES OR FOR ANY ECONOMIC CONSEQUENTIAL DAMAGES (INCLUDING LOST PROFITS OR SAVINGS), EVEN IF IBM, ITS SUPPLIERS OR YOUR RESELLER IS INFORMED OF THEIR POSSIBILITY. SOME JURISDICTIONS DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU.

IBM Statement of Warranty Worldwide except Canada, Puerto Rico, Turkey, United States

(Part 1 – General Terms)

This Statement of Warranty includes Part 1 – General Terms and Part 2 – Country-unique Terms. **The terms of Part 2 may replace or modify those of Part 1***. The warranties provided by IBM in this Statement of Warranty apply only to Machines you purchase for your use, and not for resale, from IBM or your reseller. The term "Machine" means an IBM machine, its features, conversions, upgrades, elements, or accessories, _____ loaded with the Machine, install _____ country where you acquire the Mac _____ ed or limited by contract. If you*

> **Machine** – IBM L70 PCI Audio Adapter
>
> **Warranty Period*** - One Year
>
> *Contact your place of purchase for warranty service information. Some IBM Machines are eligible for On-site warranty service depending on the country where service is*

The IBM Warranty for Machines

IBM warrants that each Machine 1) is free from defects in materials and workmanship and 2) conforms to IBM's Official Published Specifications. The warranty period for a Machine is a specified, fixed period commencing on its Date of Installation. The date on your sales receipt is the Date of Installation, unless IBM or your reseller informs you otherwise.

During the warranty period IBM or your reseller, if approved by IBM to provide warranty service, will provide repair and exchange service for the Machine, without charge, under the type of service designated for the Machine and will manage and install engineering changes that apply to the Machine.

If a Machine does not function as warranted during the warranty period, and IBM or your reseller are unable to either 1) make it do so or 2) replace it with one that is at least functionally equivalent, you may return it to your place of purchase and your money will be refunded. The replacement may not be new, but will be in good working order.

Extent of Warranty

The warranty does not cover the repair or exchange of a Machine resulting from misuse, accident, modification, unsuitable physical or operating environment, improper maintenance by you, or failure caused by a product for which IBM is not responsible. The warranty is voided by removal or alteration of Machine or parts identification labels.

THESE WARRANTIES ARE YOUR EXCLUSIVE WARRANTIES AND REPLACE ALL OTHER WARRANTIES OR CONDITIONS, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OR CONDITIONS OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THESE WARRANTIES GIVE YOU SPECIFIC LEGAL RIGHTS AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM JURISDICTION TO JURISDICTION. SOME JURISDICTIONS DO NOT ALLOW THE EXCLUSION OR LIMITATION OF EXPRESS OR IMPLIED WARRANTIES, SO THE ABOVE EXCLUSION OR LIMITATION MAY NOT APPLY TO YOU. IN THAT EVENT, SUCH WARRANTIES ARE LIMITED IN DURATION TO THE WARRANTY PERIOD. NO WARRANTIES APPLY AFTER THAT PERIOD.

Items Not Covered by Warranty

IBM does not warrant uninterrupted or error-free operation of a Machine.

Unless specified otherwise, IBM provides non-IBM machines **WITHOUT WARRANTIES OF ANY KIND**.

Warranty Service

To obtain warranty service for the Machine, contact your reseller or IBM. You may be required to present proof of purchase.

IBM or your reseller provides certain types of repair and exchange service, either at your location or at a service center, to keep Machines in, or restore them to , conformance with their Specifications. IBM or your reseller will inform you of the available types of service for a Machine based on its country of installation. IBM may repair the failing Machine or exchange it at its discretion.

When warranty service involves the exchange of a Machine or part, the item IBM or your reseller replaces becomes its property and the replacement becomes yours. You represent that all removed items are genuine and unaltered. The replacement may not be new, but will be in good working order and at least functionally equivalent to the item replaced. The replacement assumes the warranty service status of the replaced item.

Any feature, conversion, or upgrade IBM or your reseller services must be installed on a Machine which is 1) for certain Machines, the designated, serial-numbered Machine and 2) at an engineering-change level compatible with the feature, conversion, or upgrade. Many features, conversions, or upgrades involve the removal of parts and their return to IBM. A part that replaces a removed part will assume the warranty service status of the removed part.

Before IBM or your reseller exchanges a Machine or part, you agree to remove all features, parts, options, alterations, and attachments not under warranty service.

You also agree to:
1. ensure that the Machine is free of any legal obligations or restrictions that prevent its exchange;
2. obtain authorization from the owner to have IBM or your reseller service a Machine that you do not own; and
3. where applicable, before service is provided
   a. follow the problem determination, problem analysis, and service request procedures that IBM or your reseller provides,
   b. secure all programs, data, and funds contained in a Machine,
   c. provide IBM or your reseller with sufficient, free, and safe access to your facilities to permit them to fulfil their obligations, and
   d. inform IBM or your reseller of changes in a Machine's location

IBM is responsible for loss of, or damage, to, your Machine while it is 1) in IBM's possession or 2) in transit in those cases where IBM is responsible for the transportation charges.

Neither IBM nor your reseller is responsible for any of your confidential, proprietary or personal information contained in a Machine which you return to IBM or your reseller for any reason. You should remove all such information from the Machine prior to its return.

Production Status
Each IBM machine is manufactured from new parts, or new and used parts. In some cases, the Machine may not be new and may have been previously installed. Regardless of the Machine's production status, IBM's appropriate warranty terms apply.

Limitation of Liability
Circumstances may arise where, because of a default on IBM's part or other liability, you are entitled to recover damages from IBM. In each such instance, regardless of the basis on which you are entitled to claim damages from IBM (including fundamental breach, negligence, misrepresentation, or other contract or tort claim), IBM is liable for no more than

1. damages for bodily injury (including death) and damage to real property and tangible personal property; and
2. the amount of any other actual direct damages, up to the greater of U.S. $100,000 (or equivalent in local currency) or the charges (if recurring, 12 months' charges apply) for the Machine that is the subject of the claim

This limit also applies to IBM's suppliers and your reseller. It is the maximum for which IBM, its suppliers, and your reseller are collectively responsible.

UNDER NO CIRCUMSTANCES IS IBM LIABLE FOR ANY OF THE FOLLOWING: 1) THIRD-PARTY CLAIMS AGAINST YOU FOR DAMAGES (OTHER THAN THOSE UNDER THE FIRST ITEM LISTED ABOVE); 2) LOSS OF, OR DAMAGE TO, YOUR RECORDS OR DATA; OR 3) SPECIAL, INCIDENTAL, OR INDIRECT DAMAGES OR FOR ANY ECONOMIC CONSEQUENTIAL DAMAGES (INCLUDING LOST PROFITS OR SAVINGS), EVEN IF IBM, ITS SUPPLIERS OR YOUR RESELLER IS INFORMED OF THEIR POSSIBLITY. SOME JURISDICTIONS DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU.

Part 2 – Worldwide Country-Unique Terms

ASIA PACIFIC

AUSTRALIA: The IBM Warranty for Machines: The following paragraph is added to this Section:
The warranties specified in this Section are in addition to any rights you may have under the Trade Practices Act 1974 or other legislation and are

only limited to the extent permitted by the applicable legislation.

Extent of Warranty: The following replaces the first and second sentences of this Section:
The warranty does not cover the repair or exchange of a Machine resulting from misuse, accident, modification, unsuitable physical or operating environment, operation in other than the Specified Operating Environment, improper maintenance by you, or failure caused by a product for which IBM is not responsible.

Limitation of Liability: The following is added to this Section:

Where IBM is in breach of a condition or warranty implied by the Trade Practices Act 1974, IBM's liability is limited to the repair or replacement of the goods or the supply of equivalent goods. Where that condition or warranty relates to right to sell, quiet possession or clear title, or the good. Where that condition or warranty relates to right to sell, quiet possession or clear title, or the goods are of a kind ordinarily acquired for personal, domestic or household use or consumption, then none of the limitations in this paragraph apply.

PEOPLE'S REPUBLIC OF CHINA: Governing Law: The following is added to this Statement:
The Laws of the State of New York govern this Statement.

INDIA: Limitation of Liability: The following replaces items 1 and 2 of this Section:
1. liability for bodily injury (including death) or damage to real property and tangible personal property will be limited to that caused by IBM's negligence;
2. as to any other actual damage arising in any situation involving nonperformance by IBM pursuant to, or in any way related to the subject of this Statement of Warranty, IBM's liability will be limited to the charge paid by you for the individual Machine that is the subject of the claim.

NEW ZEALAND: The IBM Warranty for Machines: The following paragraph is added to this Section:
The warranties specified in this Section are in addition to any rights you may have under the Consumer Guarantees Act 1993 or other legislation which cannot be excluded or limited. The Consumer Guarantees Act 1993 will not apply in respect of any goods which IBM provides, if you require the goods for the purposes of a business as defined in that Act.

Limitation of Liability: The following is added to this Section:
Where Machines are not acquired for the purposes of a business as defined in the Consumer Guarantees Act 1993, the limitations in this Section are subject to the limitations in that Act.

EUROPE, MIDDLE EAST, AFRICA (EMEA)

The following terms apply to all EMEA countries.

The terms of this Statement of Warranty apply to Machines purchased from an IBM reseller. If you purchased this Machine from IBM, the terms and conditions of the applicable IBM agreement prevail over this warranty statement.

Warranty Service
If you purchased an IBM Machine in Austria, Belgium, Denmark, Estonia, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, Or United Kingdom, you may obtain warranty service for that Machine in any of those countries from either (1) an IBM reseller approved to perform warranty service or (2) from IBM.

If you purchased an IBM Personal Computer Machine in Albania, Armenia, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Georgia, Hungary, Kazakhstan, Kirghizia, Federal Republic of Yugoslavia, Former Yugoslav Republic of Macedonia (FYROM), Moldova, Poland, Romania, Russia, Slovak Republic, Slovenia, or Ukraine, you may obtain warranty service for that Machine in any of those countries from either (1) an IBM reseller approved to perform warranty service or (2) from IBM.

The applicable laws, Country-unique terms and competent court for this Statement are those of the country in which the warranty service is being provided. However, the laws of Austria govern this Statement if the warranty service is provided in Albania, Armenia, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Federal Republic of Yugoslavia, Georgia, Hungary, Kazakhstan, Kirghizia, Former Yugoslav Republic of Macedonia (FYROM), Moldova, Poland, Romania, Russia, Slovak Republic, Slovenia, and Ukraine.

The following terms apply to the country specified:

EGYPT: Limitation of Liability: The following replaces item 2 in this Section:
1. as to any other actual direct damages, IBM's liability will be limited to the total amount you paid for the Machine that is the subject of the claim.

Applicability of suppliers and resellers (unchanged).

FRANCE: Limitation of Liability: The following replaces the second sentence of the first paragraph of this Section:
In such instances, regardless of the basis on which you are entitled to claim damages from IBM, IBM is liable for no more than: (items 1 and 2 unchanged).

GERMANY: The IBM Warranty for Machines: The following replaces the first sentence of the first paragraph of this Section:
The warranty for an IBM Machine covers the functionality of the Machine for its normal use and the Machine's conformity to its Specifications.

The following paragraphs are added to this Section:
The minimum warranty period for Machines is six months.

In case IBM or your reseller are unable to repair an IBM Machine, you can alternatively ask for a partial refund as far as justified by the reduced value of the unrepaired Machine or ask for a cancellation of the respective agreement for such Machine and get your money refunded.

Extent of Warranty: The second paragraph does not apply

Warranty Service: The following is added to this Section:
During the warranty period, transportation for delivery of the failing Machine to IBM will be at IBM's expense.

Production Statue: The following paragraph replaces this Section:
Each Machine is newly manufactured. It may incorporate in addition to new parts, re-used parts as well.

Limitation of Liability: The following is added to this Section:
The limitations and exclusions specified in the Statement of Warranty will not apply to damages caused by IBM with fraud or gross negligence and for express warranty.

In Item 2, replace "U.S. $100,000" with "1.000.000 D.E.M."

The following sentence is added to the end of the first paragraph of item 2:
IBM's liability under this item is limited to the violation of essential contractual terms in cases of ordinary negligence.

IRELAND: Extent of Warranty: The following is added to this Section:
Except as expressly provided in these terms and conditions, all statutory conditions, including all warranties implied, but without prejudice to the generality of the foregoing all warranties implied by the Sale of Goods Act 1893 or the Sale of Goods and Supply of Services Act 1980 are hereby excluded.

Limitation of Liability: The following replaces items one and two of the first paragraph of this Section:
1. death or personal injury or physical damage to your real property solely caused by IBM's negligence; and
2. the amount of any other actual direct damages, up to the greater of Irish Pounds 75,000 or 125 percent of the charges (if recurring, the 12 months' charges apply) for the Machine that is the subject of the claim or which otherwise gives rise to the claim.

Applicability of suppliers and resellers (unchanged).

The following paragraph is added at the end of the Section:
IBM's entire liability and your sole remedy, whether in contract or in tort, in respect of any default shall be limited to damages.

ITALY: Limitation of Liability: The following replaces the second sentence in the first paragraph:
In each such instance unless otherwise provided by mandatory law, IBM is liable for no more than: (item 1 unchanged) 2) as to any other actual damage arising in all situations involving non-performance by IBM pursuant to, or in any way related to the subject matter of this Statement of Warranty, IBM's liability, will be limited to the total amount you paid for the Machine that is the subject of the claim.

Applicability of suppliers and resellers (unchanged).

The following replaces the second paragraph of this Section:
Unless otherwise provided by mandatory law, IBM and your reseller are not liable for any of the following: (items 1 and 2 unchanged)
3) indirect damages, even if IBM or your reseller is informed of their possibility.

SOUTH AFRICA, NAMIBIA, BOTSWANA, LESOTHO AND SWAZILAND: Limitation of Liability: The following is added to this Section:
IBM's entire liability to you for actual damages arising in all situations involving non-performance by IBM in respect of the subject matter of this Statement of Warranty will be limited to the charge paid by you for the individual Machine that is the subject of your claim from IBM.

TURKIYE: Production Status: The following replaces this Section:
IBM fulfills customer orders for IBM Machines as newly manufactured in accordance with IBM's production standards.

UNITED KINGDOM: Limitation of Liability: The following replaces items 1 and 2 of the first paragraph of this Section:
1. death or personal injury or physical damage to your real property solely caused by IBM's negligence;
2. the amount of any other actual direct damages or loss, up to the greater of Pounds Sterling 150,000 or 125 percent of the charges (if recurring, the 12 months' charges apply) for the Machine that is the subject of the claim or which otherwise gives rise to the claim.

The following item is added to this paragraph:
1. breach of IBM's obligations implied by Section 12 of the Sale of Goods Act 1979 or Section 2 of the Supply of Goods and Services Act 1982

Applicability of suppliers and resellers (unchanged).

The following is added to the end of this Section:
IBM's entire liability and your sole remedy, whether in contract or in tort, in respect of any default will be limited to damages.

NORTH AMERICA

CANADA: Warranty Service: The following is added to this Section:
To obtain warranty service from IBM, call **1-800-465-6666.**

UNITED STATES OF AMERICA: Warranty Service: The following is added to this Section:
To obtain warranty service from IBM, call **1-800-IBM-SERV.**

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