Symantec NetBackup™ Appliance and Symantec Storage Shelf Safety and Maintenance Guide

Release 2.6.0.3

NetBackup 5220

Symantec™

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Symantec Corporation
350 Ellis Street
Mountain View, CA 94043

http://www.symantec.com

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Chapter 1

Product overview

This chapter includes the following topics:

- NetBackup 5220 Appliance description
- Symantec Storage Shelf description
- Product documentation

NetBackup 5220 Appliance description

The following sections describe the physical features of the NetBackup 5220 Appliance.

The following image shows the front and top of the appliance chassis.

The following are some features of the 2U appliance.

- 3.44 inches (87.38 mm) high
- 16.93 inches (430 mm) wide
- 27.75 inches (704.8 mm) deep
- Approximately 50 lbs (22.7 kg)

See "Appliance front panel" on page 10.

Appliance front panel

The following image shows details about the front of the appliance.

The following table lists the appliance front panel components that are displayed in the image.

Table 1-1 NetBackup 5220 Appliance front panel components

Number	Description
1	Drive tray containing two SATA hard disk drives (not hot swappable). System power must be turned off to insert or remove these drives. Contact Symantec Technical Support for assistance.
2	USB ports (qty 2)
3	Control panel with system LED indicators, on/off button, scroll mechanism to obtain system messages.
4	Slimline drive bay (functionality not available with NetBackup 5220).
5	Hot spare SAS disk drive module, slot #7.

Table 1-1 NetBackup 5220 Appliance front panel components *(continued)*

Number	Description
6	Disk modules containing one SAS disk drive and one disk carrier each (qty 8, labeled 0 through 7 from left to right) (hot swappable). Drives can consume up to 17 watts of power each. Drives must run at a maximum ambient temperature of 45°C.

See "Appliance rear panel" on page 11.

Appliance rear panel

The following image shows the rear panel of the NetBackup 5220 Appliance.

The following table lists the appliance rear panel components that are displayed in the image.

Table 1-2 NetBackup 5220 Appliance rear panel components

Number	Description
1	Low Profile PCIe Add-in Card Slots (qty 2)
2	Full-height PCIe Add-in Card Slots (qty 3)
3	Upper Power Supply Module
4	Upper Power Receptacle
5	Lower Power Receptacle
6	Lower Power Supply Module
7	I/O Expansion Module (not available)
8	Remote management port. This port is also known as the IPMI port.

Table 1-2 NetBackup 5220 Appliance rear panel components *(continued)*

Number	Description
9	NIC2/eth1 Ethernet port
10	NIC1/eth0 Ethernet port
11 and 12	USB 2.0 ports
13	DB-9 Serial B Connector
14	Video Graphics Array (VGA) port
15	RJ-45 Serial A Connector

The following image displays the rear panel ports of the appliance.

The following tables list the ports and LEDs on the rear panel of the appliance.

Table 1-3 Appliance rear panel ports

Number	Name	Qty	Model	Function
1	Serial port	1	RJ45	For use by Symantec Technical Support only.
2	VGA (video) port	1	D15	Connects to a computer monitor.
3 and 4	USB 2.0 ports	2	A	Connects a mouse, keyboard, or similar devices.
5	NIC1/eth0 Ethernet port	1	RJ-45	“Private” network port provides for device management.
6	NIC2/eth1 Ethernet port	1	RJ-45	Customer network port provides input or output access to the device from the customer's network.
7	Remote management port	1	RJ-45	Provides remote access to the appliance for Symantec Technical Support. This port is also known as the IPMI port.

Table 1-4 NIC port LED indications

LED	State	Indications
Left	Off	No network connection
	Solid Amber	Network connection in place
	Flashes Amber	Transmit/receive activity
Right	Off	10-Mbps connection (if left LED is on or flashes)
	Solid Amber	100-Mbps connection
	Solid Green	1000-Mbps connection

See "Symantec Storage Shelf description" on page 13.

Symantec Storage Shelf description

You can use the NetBackup 5220 appliance by itself.

The Symantec Storage Shelf is 3U high and contains 16 drives. If the storage shelf is added separately to the appliance, an Expansion Kit is shipped along with the storage shelf. Some features of the storage shelf are listed:

- Height of 13.1 cm (5.25")
- Width of 44.7 cm (17.6")
- Depth of 56.1 cm (22.1")
- Weight is 32.5 kg (71.65 lbs)

See "Symantec Storage Shelf front and rear panels" on page 13.

Symantec Storage Shelf front and rear panels

This section contains images of the front view and rear view of the storage shelf.

See "Symantec Storage Shelf I/O module and power module LEDs" on page 22.

See "Product documentation" on page 14.

Product documentation

Table 1-5 lists documents that are related to the NetBackup 5220 and the Symantec Storage Shelf.

Table 1-5 NetBackup 5220 Appliance and Symantec Storage Shelf hardware documentation

Document	Description
NetBackup 5220 Product Description Guide	Describes all physical aspects of the appliance and storage shelf including configuration options.
NetBackup 52xx Hardware Installation and Initial Configuration Guide	Provides the hardware-specific information to install the hardware components into an equipment rack. Describes the steps and the options that are involved in the initial configuration of the appliance.

To obtain the 52xx series documentation, go to the following URL.

http://www.symantec.com/docs/DOC2792

See "Appliance front panel" on page 10.

Chapter 2

LED status indicators

This chapter includes the following topics:

- Appliance disk drive module LEDs
- Appliance control panel LEDs
- 8Gb FC HBA LEDs
- 1GE add-in card LEDs
- 10GE add-in card LEDs
- Symantec Storage Shelf disk drive module and system LEDs
- Symantec Storage Shelf I/O module and power module LEDs

Appliance disk drive module LEDs

Drive bay slots are labeled 0-7 starting from the left. Slot 7 contains the hot spare.

Each drive has 2 LEDs; one red LED and one green LED. The green LED (8) flashes when drive activity occurs and is lit when no activity occurs. The red LED (9) is lit when drive faults occur.

Figure 2-1 Appliance disk drive slots and LEDs

See "Appliance control panel LEDs" on page 16.

Appliance control panel LEDs

Figure 2-2 Control panel LEDs

Table 2-1 LED functions and indicators

Number	LED function	Indicator
1	Hard disk Activity	▪ Random flashing green light indicates hard disk drive activity (SAS). ▪ No light indicates no hard disk drive activity.

Table 2-1 LED functions and indicators *(continued)*

Number	LED function	Indicator
2	NIC 2 Activity	■ Continuous green light indicates a link between the system and the network to which it is connected. ■ Flashing green light indicates network activity.
3	NIC 1 Activity	■ Continuous green light indicates a link between the system and the network to which it is connected. ■ Flashing green light indicates network activity.
4	System Status	■ Solid green indicates normal operation. ■ Flashing green indicates degraded performance. ■ Solid amber indicates a critical or non-recoverable condition. ■ Flashing amber indicates a non-critical condition. ■ No light indicates POST is running or the system is off.
5	Power/Sleep	■ Continuous green light indicates the system has power that is applied to it or the system is in S0 state. ■ Flashing green indicates the system is in sleep or in ACPI S1 state. ■ No light indicates the power is off or the system is in ACPI S4 or in S5 state.
6	System identification	■ Solid blue indicates system identification is active. ■ No light indicates system identification is not activated.

See "8Gb FC HBA LEDs" on page 17.

8Gb FC HBA LEDs

An 8Gb FC HBA card connects the appliance to other network and storage devices. The card provides two FC ports for tape transport. By using the Fibre Channel tape out card, data can be exported from the appliance to a tape library for offline storage.

Each port contains a Receive (RX) LED (1) and a Transmit (TX) LED (2). These LEDs show the type of input or output through each port.

Figure 2-3 8Gb FC HBA ports

Each port on the 8Gb FC HBA card has three data transfer rate LEDs. The LEDs are labeled “8”, “4”, and “2” to correspond to the rate of data transfer (8Gbit/s, 4Gbit/s, or 2Gbit/s).

Table 2-2 8Gb FC HBA data transfer rate LED descriptions

8 - Yellow	4 - Green	2 - Amber	Description
Off	Off	Off	Turn off.
Off	Off	On, Flashes	Data transfers at a rate of 2 Gbit/s.
Off	On, Flashes	Off	Data transfers at a rate of 4 Gbit/s.
On, Flashes	Off	Off	Data transfers at a rate of 8 Gbit/s.
On	On	On	Turn on (before firmware initialization).
Flashes	Flashes	Flashes	Turn on (after firmware initialization).
Flashes alternately			Firmware error.

See “1GE add-in card LEDs” on page 18.

1GE add-in card LEDs

The model of the 4-port 1GE (Gigabit Ethernet) card is Intel E1G44HT. The 4-port 1GE NIC provides four 1GE network ports for backup or replication.

Each port contains one Activity (ACT) LED (2) and one Link (LNK) LED (1).

Figure 2-4 1GE NIC ports

Table 2-3 1GE card LED descriptions

Type	Color	Status	Description
ACT	Green	Flashes	The link is normal and data transfers.
	Green	On	The link is normal.
	n/a	Off	No link.

Table 2-3 1GE card LED descriptions *(continued)*

Type	Color	Status	Description
LNK	n/a	Off	Data transfers at a rate of 10 Mbit/s.
	Green	On	Data transfers at a rate of 100 Mbit/s.
	Amber	On	Data transfers at a rate of 1000 Gbit/s.

See "10GE add-in card LEDs" on page 19.

10GE add-in card LEDs

This section provides the physical view, features, and technical specifications for the 10GE (10 Gigabit Ethernet) card. This card provides two 10GE network ports for backup.

Figure 2-5 10GE ports

Table 2-4 10GE LED indicators

Type	Color	Status	Description
ACT/LINK	Green	Flashes	The link is normal and data transfers.
	Green	On	The link is normal.
	n/a	Off	No link.
GRN=10G	n/a	Off	No link.
	Green	On	Data transfers at a rate of 10 Gbit/s.
	Yellow	On	Data transfers at a rate of 1 Gbit/s.

See "Symantec Storage Shelf disk drive module and system LEDs" on page 19.

Symantec Storage Shelf disk drive module and system LEDs

The front panel shows two different sets of LEDs:

- Two LEDs each per disk drive module, for a total of 32 LEDs
- Six system LEDs show the status of the entire storage shelf

Figure 2-6 Symantec Storage Shelf front panel LEDs

Table 2-5 Disk drive module LEDs

Number	LED name	State	Description
1	Power	Not lit Solid green	Off On
2	Global Enclosure Status	Not lit Solid green Amber Red	Off On One power supply offline Both power supplies offline
3	Reserved	N/A	N/A
4	Disk status	Solid green Amber or red	Disk drive operation normal Disk drive fault
5	Disk Power/activity	Solid blue Flashing blue	Disk drive operation normal, after appliance is turned on Disk activity is in progress.
6	I/O module 1 activity	Not lit Flashes green	No activity Activity

Table 2-5 Disk drive module LEDs *(continued)*

Number	LED name	State	Description
7	I/O module 2 activity	Not lit Flashes green	No activity Activity
8	Heartbeat	Not lit Flashes green	System off Normal operation

The NetBackup 5220 releases 2.5 and higher support the addition of two storage shelves to the appliance. Each storage shelf has system LEDs that apply to that particular shelf. The storage shelf that is attached to the appliance is known as Storage Shelf #1. The storage shelf that is attached to Storage Shelf #1 is known as Storage Shelf #2.

Release 2.6.0.3 enables support of up to four storage shelves for each appliance. The number designations of storage shelves is the same. Shelf #3 is connected to Shelf #2 and to Shelf #4 if a fourth shelf is used. Shelf #4 is only connected to Shelf #3.

A storage shelf has two I/O modules which contain the SAS_IN and SAS_OUT ports. In the rear panel of a storage shelf, the I/O module on the left is I/O Module 1. The I/O module to the right of I/O Module 1 is known as I/O Module 2.

The ports in the I/O module connect to RAID ports on the appliance or other SAS ports on a second storage shelf. If two storage shelves are used with an appliance, the I/O module SAS ports are as follows:

- Storage shelf #1 - SAS_IN ports in the two I/O modules connect to the two SAS_OUT ports in the RAID card in the appliance.
- Storage shelf #2 - SAS_IN ports in the two I/O modules connect to the two SAS_OUT ports of storage shelf #1.

Table 2-6 Storage shelf system LEDs

LED name	State	Description
Power	Solid green	The storage shelf functions normally.
Global Enclosure Status	Solid green	The storage shelf functions normally.
Reserved	Off (no light)	This LED is not in use at this time.
I/O Module 1 activity - storage shelf #1	Flashes green	The SAS_IN port of storage shelf #1is properly connected to a SAS_OUT port of the appliance.

Table 2-6 Storage shelf system LEDs *(continued)*

LED name	State	Description
I/O Module 2 activity - storage shelf #1	Flashes green	The SAS_IN port of storage shelf #1 is properly connected to a SAS_OUT port of the appliance.
I/O Module 1 activity - storage shelf #2	Flashes green	The SAS_IN port of storage shelf #2 is properly connected to a SAS_OUT port of storage shelf #1.
I/O Module 2 activity - storage shelf #2	Flashes green	The SAS_IN port of storage shelf #2 is properly connected to a SAS_OUT port of storage shelf #1.
Heartbeat	Flashes green once every 4 seconds.	If one I/O module in one storage shelf is properly connected to an external SAS port.
Heartbeat	Flashes green once every 2 seconds.	If two I/O modules in one storage shelf are properly connected to external SAS ports.

See "Symantec Storage Shelf disk drive module and system LEDs" on page 19.

Symantec Storage Shelf I/O module and power module LEDs

The right side of the rear panel of the Symantec Storage Shelf contains two power modules. Each module includes two fans, a connector to a main AC power supply, an on/off switch, and a status indicator LED.

The Symantec Storage Shelf contains two I/O modules, that are accessed from the rear panel. You can connect two storage shelves with their total of four I/O modules to an appliance. The SAS_IN port on the storage shelf is used to attach to a SAS port on the rear panel of the appliance. The SAS ports are in slot #5 of the PCI riser assembly in the rear of the appliance.

The storage shelf that is connected directly to the appliance is known as Storage Shelf #1. The storage shelf that connects to Storage Shelf #1 is known as Storage Shelf #2.

A storage shelf connected to Storage Shelf #2 is known as Storage Shelf #3. A storage shelf connected to Storage Shelf #3 is known as Storage Shelf #4. Storage shelves #2, #3, and #4 are not directly connected to the appliance.

One I/O module is shown, however each storage shelf includes two such modules.

Figure 2-7 I/O module and power module components

Table 2-7 I/O module and power module descriptions

Number	Component	LED states	Description
1	SAS_IN port LED	■ Solid green ■ Flashes green ■ Red ■ Not lit	■ Link available ■ Activity ■ N/A ■ No link available
2	SAS_IN port	N/A	N/A
3	SAS_OUT port	N/A	N/A
4	SAS_OUT port LED	■ Solid green ■ Flashes green ■ Red ■ Not lit	■ Link available ■ Activity ■ N/A ■ No link available
5	I/O module LED	■ Solid green ■ Flashes green ■ Red ■ Not lit	■ Ready ■ n/a ■ Starting up ■ Off
6	Power module LED	Solid green Flashes green Red Not lit	Power ok Power ok, but turned off Turning on the power failed Power not detected

---

Note: When you start the Symantec Storage Shelf, the primary I/O module (on the left side of the rear panel) starts up first. The LED turns green a few seconds after the main startup. The LED of the secondary I/O module (on the right of the rear panel) starts after the primary module is operational.

See "Appliance disk drive module LEDs" on page 15.

Chapter 3

Basic Maintenance

This chapter includes the following topics:

- Maintenance requirements and timeframes
- Maintenance tools
- Maintenance log

Maintenance requirements and timeframes

The following table describes requirements and timeframes for hardware and software components.

Table 3-1 NetBackup 5220 routine requirements and timeframes

Owner	Site	Maintenance requirement	Recommended timeframe
Maintenance engineers	Device site	Check equipment room and device surroundings	Daily
		Check rack cabinet	Monthly
		Check all indicator LEDs on the front panel of the device	Daily
		Check all indicator LEDs on the rear panel of the device	Daily

Table 3-1 NetBackup 5220 routine requirements and timeframes *(continued)*

Owner	Site	Maintenance requirement	Recommended timeframe
Network engineers	Management software site	Check the CPU status	It is recommended to check the alarm information every day and other items every week.
		Check the disk status	
		Check the RAID status	
		Check the fan status	
		Check the power supply status	
		Check the FC HBA status	
		Check the 10GE NIC status	
		Check the 1GE NIC status	
		Check the RAID card status	

See "Maintenance tools" on page 26.

Maintenance tools

The following table describes the maintenance tools and their functions.

Table 3-2 Maintenance tools

Tool	Function
NetBackup Appliance Web Console	Graphically displays real-time data about hardware components. http://www.symantec.com/docs/DOC2792

Table 3-2 Maintenance tools *(continued)*

Tool	Function
NetBackup Appliance Shell Menu	Checks the running status of the device. Refer to the *NetBackup 52xx Command Reference Guide at the following URL.* http://www.symantec.com/docs/DOC2792
Fiber cleaning tool	Use fiber-specific cleaning tools and materials to avoid damage to fiber connectors. Use with the 8Gb FC HBA NIC.
Thermometer	Measures the temperature of the equipment room.
Hygrometer	Measures the humidity of the equipment room.

See "Maintenance log" on page 27.

Maintenance log

Make copies of this table to keep a log of maintenance activities. Consistent log keeping may help you identify trends or patterns to better maintain your equipment. Electronic copies are recommended. You can create a sortable spreadsheet to track issues.

Table 3-3 Maintenance log

Requirement/parameter		Status	Comments	Maintenance Owner
Check the equipment environment	Operating temperature	□Normal □Abnormal		
	Operating humidity	□Normal □Abnormal		
	Fire safety	□Normal □Abnormal		
	Dust	□Normal □Abnormal		
	Enclosure power supply	□Normal □Abnormal		

Table 3-3 Maintenance log *(continued)*

Requirement/parameter		Status	Comments	Maintenance Owner
Check the rack cabinet environment	Power system	□Normal □Abnormal		
	Cable system	□Normal □Abnormal		
	Ground system	□Normal □Abnormal		
	Protective system	□Normal □Abnormal		
	Dust-proof system	□Normal □Abnormal		
	Cable labels	□Normal □Abnormal		

Table 3-3 Maintenance log *(continued)*

Requirement/parameter		Status	Comments	Maintenance Owner
Check the indicator status	System power indicator status	□Normal □Abnormal		
	System alarm indicator	□Normal □Abnormal		
	Disk online status indicator	□Normal □Abnormal		
	Disk read and write status indicator	□Normal □Abnormal		
	Power activity and alarm indicator	□Normal □Abnormal		
	Fan on and alarm indicator	□Normal □Abnormal		
	NetBackup 5220 running status	□Normal □Abnormal		
	Link indicator of the management network port	□Normal □Abnormal		
	Active indicator of the management network port	□Normal □Abnormal		
	Link indicator of the service network port	□Normal □Abnormal		
	Active indicator of the service network port	□Normal □Abnormal		
	ACT/LNK indicator of the 10GE NIC port	□Normal □Abnormal		
	GRN=10GE indicator of the 10GE NIC port	□Normal □Abnormal		
	The 2/Amber indicator of the Tape out card (Fiber Channel) port	□Normal □Abnormal		
		□Normal □Abnormal		

Table 3-3 Maintenance log *(continued)*

Requirement/parameter		Status	Comments	Maintenance Owner
	The 4/Green indicator of the Tape out card (Fiber Channel) port			
	The 8/Yellow indicator of the Tape out card (Fiber Channel) port	□Normal □Abnormal		
	ACT indicator of the 1GE service network port	□Normal □Abnormal		
	LNK indicator of the 1GE service network port	□Normal □Abnormal		
Check the Appliance and the storage shelf components	CPU status	□Normal □Abnormal		
	Disk status	□Normal □Abnormal		
	RAID status	□Normal □Abnormal		
	Fan status	□Normal □Abnormal		
	Power Supply status	□Normal □Abnormal		
	Temperature	□Normal □Abnormal		
	FC HBA status	□Normal □Abnormal		
Problems and troubleshooting				
Remaining problems				
Verification				
Date				

See “Maintenance requirements and timeframes” on page 25.

Chapter 4

Hardware-specific maintenance

This chapter includes the following topics:

- Environmental requirements
- Checking the Appliance
- Checking the Symantec Storage Shelf

Environmental requirements

Environmental conditions surrounding the NetBackup 5220 and Symantec Storage Shelf are very important to the devices operating normally and efficiently. Checking that the equipment room and rack cabinet conditions helps prevent equipment problems or failures.

Equipment room specifications

Storage devices require stable environmental conditions. Dedicated heating and cooling systems and a redundant power system are required.

Table 4-1 Equipment room specifications

Environmental parameter	Equipment required	Specifications
Operating temperature	Equipment room thermometer or thermostat.	Temperature should range between 5°C and 35°C. If equipment room temperatures fail to meet specifications, repair or replace the heating or cooling system.

Table 4-1 Equipment room specifications *(continued)*

Environmental parameter	Equipment required	Specifications
Operating humidity	Equipment room hygrometer.	Relative humidity should range between 10% and 85%. If relative humidity is too high, install a dehumidifier; if the percentage is too low, install a humidifier.
Fire safety	Check key locations, such as the power distribution box, cabinet, frames, and cabling troughs; check the fire facilities.	All parts should be free of fire hazard. All fire facilities in the equipment room should be easily accessible and in good condition.
Dust	Check the cabinet surface and inside, equipment room floor and worktable surfaces.	All parts must be clean and dust-free.
Rack cabinet power supplies	Check the power supplies of each cabinet.	Each cabinet has two separate channels of power input. If the power system fails to meet the requirement, install separate power supply lines and a transformer with a sufficient capacity.

See "Rack cabinet specifications" on page 32.

Rack cabinet specifications

The following table describes the criteria for checking that the rack cabinet adheres to specifications, to prevent equipment problems due to environmental issues.

Table 4-2 Environmental rack cabinet specifications

Parameter	Requirements	Specifications
Power system	Check whether the power input and output terminal blocks of each cabinet's power distribution frame are in good condition. Check for corrosion, overcurrent, and overheating.	All connecting parts are secure and free from damage or corrosion.

Table 4-2 Environmental rack cabinet specifications *(continued)*

Parameter	Requirements	Specifications
Power system	Check whether the power input terminal block, power socket, and connector of each cabinet's power distribution frame are in good condition. Check for corrosion, overcurrent, and overheating.	All equipment is free from deformation and evidence of long term overheating at contacts.
Power system	Use a multimeter to measure the input and output voltage of the power distribution frame.	For an input voltage of 110 V AC, the measured voltage should range from 100 V to 127 V. For an input voltage of 220 V AC, the measured voltage should range from 200 V to 240 V.
Cable system	Check all power, grounding, and signal cables in the cabinet for defects or hazards such as wear, damage, aging, corrosion, or burns.	All cables are free from wear, damage, aging, corrosion, or burns.
Cable labels	Check that labels are marked and securely attached.	Labels are correctly marked and securely attached.
Grounding equipment	Check whether all connection terminals and fastening screws inside the cabinet are tight. Check for loosening or corrosion.	All connecting parts are secure and free from damage and corrosion.
Protective system	Check whether the rodent-proof net on each signal cable outlet at the cabinet top or bottom is tightly wrapped and in good condition.	All rodent-proof nets should be tightly wrapped and undamaged.
Cleanliness	Check the cabinet top, bottom, front and back and all rack air filters for cleanliness and lack of dust.	All surfaces should be clean, dust-free, and cleared of any blockages or impediments.

See "Air filter maintenance (optional)" on page 33.

See "Grounding check (optional)" on page 34.

Air filter maintenance (optional)

The guidelines that are listed are general requirements for the racks that include air filters or air deflectors. Your specific rack environment may differ.

- Remove the air filter frame from the rack cabinet bottom. Wash and dry the filter thoroughly and then place it back into the cabinet.

- Remove the air filter gauze from the inner side of the cabinet's front door. Squeeze water out of the gauze and let it dry and reinstall it.
- Remove the air deflector from inside the jamb on the cabinet's front side. Use a piece of clean cotton gauze, an anti-static brush, or a vacuum cleaner to remove any dust or particles and reinstall it.

See "Rack cabinet specifications" on page 32.

Grounding check (optional)

You can use a multimeter to check the grounding of each rack cabinet component.

To check resistance

1. Set the multimeter to the resistance position.
2. Connect one lead to a fixed place in the equipment room. You may need to extend the lead cable. Use the other lead to measure each grounding point inside the cabinet.
3. Given the measuring accuracy, the measured resistance of each grounding point should be approximately 1 ohm or less.

   If the resistance that is measured at a grounding point exceeds 1 ohm, check the grounding cable, connecting terminal, and fastening screw. Make sure that all interfaces are secure.

To check voltage

1. Set the multimeter to the voltage position.
2. Connect one lead to a fixed place in the equipment room. You may need to extend the lead cable. Use the other lead to measure each grounding point inside the cabinet.
3. Given the measuring accuracy, the voltage that is measured at each grounding point should range between 0 V and 5 V.

   If the voltage measured at a grounding point is 0 V, the point is not grounded.

   If the value larger than 5 V, check the grounding cable, connecting terminal, and fastening screw at the grounding point. Make sure that all interfaces are secure.

See "Rack cabinet specifications" on page 32.

See "Air filter maintenance (optional)" on page 33.

Checking the Appliance

Verify that the physical exterior of the device is intact, clean, and in proper working condition.

Front and rear panels

Check the front and the rear panels to verify the following:

- All components are securely attached.
- All components are undamaged.
- No obstructions block the air vents or access to the components.
- Inspect the cables that are connected to the ports on the rear panel of the appliance. Verify that the cables are properly connected. Verify that the correct cables are used.

Figure 4-1 Appliance ports

Table 4-3 identifies the appliance ports and required cables.

Table 4-3 NetBackup 5220 Appliance ports

Number	Description	Cable
1	Serial port	N/A
2	VGA port	Standard video or monitor cable, with a VGA connector
3 and 4	USB 2.0 ports	Standard keyboard or mouse cables
5	NIC1 Ethernet port	Cat5 Ethernet cable, or better

Table 4-3 NetBackup 5220 Appliance ports *(continued)*

Number	Description	Cable
6	NIC2 Ethernet port	Cat5 Ethernet cable, or better
7	Remote management port	Cat5 Ethernet cable, or better

See "Bezel" on page 36.

Bezel

Check the optional bezel on the front panel of the appliance. The black molded-plastic bezel protects the front panel from damage or accidental contact. Proper air flow through the chassis may be impeded if there are problems with the bezel.

Verify that the bezel is:

- Securely attached to the front panel
- Not damaged
- Not obstructed or blocked

See "AC power connections" on page 36.

AC power connections

Verify that both power cables are properly connected to AC power sources. You can use Power Distrubution Unit (PDU) cords instead of power cables if your environment supports these cords.

Figure 4-2 Appliance AC power connections

See "Front and rear panels" on page 35.

Checking the Symantec Storage Shelf

Verify that the physical exterior of the device is intact, clean, and in proper working condition. Verify the following.

- All components are securely attached.
- All components are undamaged.
- No obstructions block the air vents or access to the components.
- NetBackup appliances and storage shelves currently ship with two AC power cords. To improve the power distribution within a rack environment, Symantec will ship two Power Distribution Unit (PDU) compatible cords (C13-C14) instead of the AC power cords with these devices. The transition to the new cords will be gradual.
- Verify that both PDU or power cords are connected properly. You must provide power to both power supply modules.

Figure 4-3 Symantec Storage Shelf AC power connections

Table 4-4 describes the numbered components.

Table 4-4 Storage shelf power module components

Number	Description
1	On and off switches
2	Power cords connecting the storage shelf power sockets to a PDU or AC main power outlets

Figure 4-4 and Table 4-5 describe the C13 connector components.

Figure 4-4 C13 connector to the storage shelf

Table 4-5 C13 connector component details

Number	Component color
1	Green and yellow
2	Blue
3	Brown

Figure 4-5 and Table 4-6 describe the C14 plug components.

Figure 4-5 C14 plug to the PDU

Table 4-6 C14 plug component details

Number	Component color
1	Green and yellow
2	Brown
3	Blue

See “Front and rear panels” on page 35.

Chapter 5

Troubleshooting

This chapter includes the following topics:

- Troubleshooting overview
- Appliance-induced shut down
- Temperature issues
- Chassis issues
- Power supply module issues

Troubleshooting overview

The following sections give information and guidelines to troubleshoot any problems with the appliance and the storage shelf.

For detailed troubleshooting information, refer to the *NetBackup 52xx Appliance Troubleshooting Guide* at the following URL.

http://www.symantec.com/docs/DOC2792.

See “Appliance-induced shut down” on page 39.

Appliance-induced shut down

The terms "protection" or "protected" refer to a power supply that has shut down or locked up. The appliance may turn off to protect itself and other components that are connected to the appliance. A short-circuit, voltage overload, or power surge can cause self-protection.

If both power supplies are faulty, do not attempt to turn on the appliance. If the power supplies are not working, the fans in the power supplies do not operate to

cool the appliance. Physical damage to the appliance and a potential loss of data may be caused by increased temperatures.

See "Temperature issues" on page 40.

Temperature issues

Several problems may lead to the appliance or the storage shelf temperatures higher than 35C. Thoroughly check all aspects of the rack environment, such as:

- Make sure that nearby equipment is not overly warm.
- Make sure that room temperature is within specifications.
- Make sure that the AC power that is supplied to the devices functions properly.
- Make sure that the front and back of the NetBackup 5220 appliance are clear of any obstructions. Air must flow easily and continually from the front of the appliance to the back of the appliance.

When the system alarm and location indicator on the appliance control panel is red, the alarm information is displayed in the NetBackup Appliance Web Console. The following types of information are shown.

Table 5-1 Temperature alarm information

Alarm indication	Issue	Affected component	Description
Overtemperature of the CPU core	Temperature	CPU	Temperature is not critical yet, but approaches the upper limit of the range.
Overtemperature of the chassis air intake	Temperature	Chassis air intake	Temperature is not critical yet, but approaches the upper limit of the range.
Fan module absence	Cooling device	Fan	Device absent

See "Chassis issues" on page 40.

Chassis issues

Problems may occur because the chassis cover is damaged or improperly installed. Intake and output vents in the front and rear of the chassis may be blocked or damaged. A visual inspection of all external parts of the chassis is required.

If the chassis is damaged, contact Technical Support for assistance. Photograph the damage for the support engineer.

If there is significant damage that cannot be repaired, it may be necessary to turn off the appliance. Before you turn off the appliance, turn off all peripheral devices that are connected to the appliance. Shut down all programs and jobs that are running. Press the power button on the front of the appliance to turn it off. Unplug the AC power cords from the main AC power sources.

See “Power supply module issues” on page 41.

Power supply module issues

The two power supply modules are hot-swappable. However, there must be one functioning power supply in the appliance at all times. If a power supply is faulty, order a new power supply quickly. If there is only one functioning power supply, the appliance is at risk if that power supply also fails. If there are no functioning power supplies in the appliance, internal temperature increases and damages the components inside the chassis.

The fans in the power supply module are not removable. They remain inside the module as a complete unit. If there are problems with the fans, the entire power supply module must be removed and replaced.

See “Troubleshooting overview” on page 39.

Chapter 6

Safety

This chapter includes the following topics:

- Overview
- Symbol and identifier conventions
- Electrical safety
- Power-on work
- Additional safety precautions

Overview

Before performing any installation or maintenance operation, learn the safety regulations of the site. Read the safety precautions in this document for correct operating methods to ensure safety of persons and devices.

To prevent the risk of accidents, carefully read all operation instructions and precautions in this manual before performing any operation(s). The Caution, Warning, and Danger statements in this document do not cover all possible safety precautions that must be followed. Only specific supplements to standard safety precautions are provided. Personnel responsible for installing and maintaining Symantec products are required to understand the basics of standard electronic device safety practices. Training and qualification are required to learn the proper operating methods.

Symbol and identifier conventions

Warning symbols remind you of safety precautions to be followed during installation and maintenance operations.

The following table describes warning and safety identifiers.

Table 6-1 Warning symbols

Symbol	Description
	Indicates a hazard with a high level of risk. If the hazard is not avoided, it could result in death or serious injury.
	Indicates a hazard with a medium or low level of risk. If the hazard is not avoided, it could result in minor or moderate injury.
	Indicates a potentially hazardous situation. If the situation is not avoided, it could result in equipment damage, data loss, performance degradation, or unexpected results.

Table 6-2 Warning and safety identifiers

Identifier	Descriptions
	Electrostatic discharge (ESD) prevention identifier To to avoid electrostatic injuries or damage you must take strict ESD-preventive measures such as wearing ESD-preventive gloves or an ESD preventive wrist strap.
	Weight warning identifier You must pay attention to the weight of the device before moving it. See “Lifting heavy objects” on page 48.

Table 6-2 Warning and safety identifiers *(continued)*

Identifier	Descriptions
	Warning identifier against inserting and removing system disks You should not insert or remove system disks without following proper procedures.
	Power warning identifier You must shut off all power sources when turning off a device.
	Identifier for reading the manual You must read the manual before operating the device.
	Identifier for opening the chassis cover Provides the procedure for opening the chassis cover; 1.Unfasten the captive screws. 2.Press the button on the chassis and then remove the cover.
0, 1, 2, 3, 4, 5, 6, 7	Drive identifier Indicates the ID number of the slot where the disk resides.

Electrical safety

This section describes electrical safety precautions against personnel and device damage during installation and maintenance of Symantec products.

High-voltage precautions and tools

DANGER

A high-voltage power supply provides power for the device. Direct or indirect contact (through damp objects) with a high-voltage power supply (including the main power in a building) can result in fatal danger.

- When installing the AC power supply, follow standard safety regulations. Personnel who install the AC power supply must be qualified to perform high voltage and AC operations.
- Do not wear conductive objects such as a watch, chain, bracelet, or ring during the operation.
- Switch off the power supply immediately if you find water in the cabinet or if the rack is damp.
- Make sure that the device is kept away from water when being operated in a damp environment

WARNING

Improper operation on a high-voltage power supply may result in fire and electric shock. To connect and route the AC cables through a certain area, you must follow standard rules and regulations. Personnel must have an up-to-date certificate for operating high voltage and AC power devices.

WARNING

You must use insulated tools when operating on high voltage and AC power.

Electrostatic discharge (ESD)

CAUTION

The static discharged by human bodies can damage static-sensitive components on the boards.

When installing and maintaining the equipment, observe appropriate static safety precautions to prevent personnel injuries or device damage.

Indicates an electrostatic sensitive area. When operating a device in this area, you must take ESD-preventive measures. You must prevent personnel injury or device damage that is caused by electrostatic discharge. You can wear ESD-preventive gloves, an ESD-preventive wrist strap or ESD-preventive clothes. To prevent the device from damage, pay attention to the following during operations:

- Do not touch devices with bare hands because the ESD from the human body may damage the electrostatically sensitive elements on a board.
- Electronic circuits are prone to damage caused by ESD. When dealing with a disk, especially a raw disk, wear an ESD-preventive wrist strap, ESD-preventive gloves, and ESD-preventive suit. Touch only the edge of the disk.
- Use appropriate ESD-preventive bags when picking up, putting down, and transporting equipment or parts.

Short-circuit protection

To prevent short-circuits, do not leave or drop screws or other metallic parts in the chassis.

When installing or maintaining a device, follow regulations concerning use and placement of tools to avoid short-circuits of devices caused by metallic tools.

Power cables

Do not install or remove a power cable with the power turned on. Even minimal contact between the core of the power cable and a conductor could generate an electric arc or spark, which can cause a fire or injury.

- Wrap bare wires of the power cable with insulating tape before connecting the cable to the power distribution cabinet.
- Before installing or removing the power cable, turn off the power switch.
- Before connecting the power cable, make sure that the power cable and label conform to the requirements for the installation.

Electrical storms

DANGER

Do not perform operations on high voltage, power supplies and connections, or other conductive materials during the storms which may produce lightening.

Be sure that all devices are properly grounded to prevent damage or injury during storms.

Power-on work

This section describes the safety precautions for troubleshooting when the power is on to avoid personnel injury and device damage.

Power on/off

DANGER

Before checking the device installation and cable connection, confirm that all power supplies to the device are shut off to prevent personnel injury or device damage caused by incorrect cable connections or loosened cables.

CAUTION

If you need to perform hot-line operations and you need to touch power cables, you must take off the ESD-preventive wrist strap to prevent possible electrocution.

- Do not plug or unplug cables during power on; otherwise, data loss may occur.
- Before reconnecting the power supply, wait at least one minute.

- You must shut off all disk drives before turning off the power to the system, to avoid disk damage or data loss.

Troubleshooting

DANGER

Do not touch the connectors of power cables or communication cables. Otherwise, you might receive an electrical shock.

CAUTION

Do not touch the device with bare hands in an electrostatic sensitive area. Take ESD-preventive measures, such as wearing ESD-preventive gloves or an ESD-preventive wrist strap to avoid personnel injuries or device damage caused by electrostatic discharge.

During troubleshooting, pay attention to the following:

- Do not carry out troubleshooting in stormy weather if lightening is possible.
- Ensure that the power cables are intact and effective grounding measures are taken.
- Keep the troubleshooting area clean and dry.

Additional safety precautions

This section describes the safety precautions for lifting heavy objects, operating sharp objects, plugging and unplugging boards, and bundling signal cables to avoid personnel injuries and device damage.

Lifting heavy objects

WARNING

Do not stand or walk under the heavy objects that are lifted.

- Only trained and qualified personnel are allowed to lift heavy objects.

- Before lifting, check whether the required tools are complete and intact.
- Before lifting, ensure that the lifting tools are firmly fixed on a wall or fixtures with enough load-bearing capacity.
- Use simple and short commands to avoid accidents and damage to humans or materials.
- While lifting, ensure that the angle between two ropes is no larger than 90°.

Sharp objects

WARNING

When carrying equipment with your hands, wear protective gloves to avoid injuries caused by sharp objects.

Plugging and unplugging boards

CAUTION

When inserting a board, wear an antistatic wrist strap and antistatic gloves. Insert the board gently to avoid distorting pins on the backplane.

- Place the board along the guide rails.
- To avoid short-circuits and scratches, be sure that boards do not touch other boards.
- To avoid damaging the sensitive components by the electrostatic discharge of your body, do not touch the board circuit, components, connectors, or connection slots with bare hands.

Binding signal cables

WARNING

Signal cables must be separately bundled from the strong-current cables and high-voltage cables at a spacing of at least 30 mm.

Batteries

Follow the safety precautions for operating lithium (Li-ion) batteries against personnel and device damage during installation and maintenance of Symantec products.

WARNING

Be sure that you use correct replacement batteries. Otherwise, an explosion may occur.

- Only use batteries of the same or a similar model as recommended by the vendor.
- Deal with the waste batteries according to standard instructions.
- Do not put a lithium battery into a fire.

Lasers

When installing and maintaining equipment, observe standard laser safety precautions to prevent personnel injury or device damage.

Personal injuries

WARNING

The laser emitted by the optical interface board is an invisible infrared ray, which may cause permanent damage to human eyes.

During device maintenance, direct eye exposure to the laser light must be avoided.

Device damage

To prevent device damage when you operate the device, take the following precautions:

- Cap any unused optical interfaces and the optical connectors of unused tail fibers.
- When removing the optical tail fiber that connects to an optical port that is in use, cover the optical port on the device and the optical connector of the tail fiber with dust-proof caps.

- When performing a hardware loopback test on the optical connector with the tail optical fiber, you must add an attenuator to protect the optical transceiver from the received optical power.
- When using the Optical Time Domain Effect Reflectometer (OTDR), you must disconnect the optical tail fiber between the peer device and the local device to protect the optical transceiver from the optical power.
- Do not remove or insert the optical transceiver that connects to the optical fiber without proper safety procedures.

Optical fibers

The laser beams of the optical interface board or inside the optical fiber may cause damage to the eyes. Do not expose your eyes to the laser beams.

The safe use of optical fibers ensures proper running of the device and avoids personnel injuries and device damage.

Cleaning optical connectors and ports

The fiber connectors and optical fiber interfaces of a laser must be cleaned with special cleaning tools and the materials listed below:

- Special cleaning solvent (Isoamylol is preferred, propyl alcohol is the next best solvent. Alcohol and formalin are forbidden.)
- Non-woven lens tissue
- Special compressed gas
- Cotton stick (medical cotton or long fiber cotton)
- Special cleaning roll (Isoamylol is the preferred solvent)
- Special magnifier for optical connectors

Replacing optical fibers

When replacing a fiber, cap the connector of a fiber that is not used.

Combustible gas

Never place or operate a device in an environment with combustible or explosive gases, or smoke.

Operations to any electronic devices in the presence of combustible gases cause an extreme danger.

Appendix A

Technical References

This appendix includes the following topics:

- 750W single power supply input voltages
- Environmental specifications

750W single power supply input voltages

The power supply must operate within all specified limits over the input voltage range. The following tables lists the appliance power supply input voltages.

Table A-1 NetBackup 5220 Appliance power supply input voltages

Parameter	Min	Rated	Max	Startup VAC	Power-off VAC	Max input AC current	Max rated input AC current
Voltage (110)	90 Vrms	100-127 Vrms	140 Vrms	85 VAC +/- 5 VAC	75 VAC +/- 5 VAC	12 Arms	11.0 Arms 3
Voltage (220)	180 Vrms	200-240 Vrms	264 Vrms	-	-	6.0 Arms	5.5 Arms
Frequency	47 Hz	50/60 Hz	63 Hz	-	-	-	-

Important information about input current:

- Maximum input current at low input voltage range is measured at 90 VAC, at maximum load.
- Maximum input current at high input voltage range is measured at 180 VAC, at maximum load.
- Maximum rated input current is measured at 100 VAC and 200 VAC.

See “Environmental specifications” on page 54.

Environmental specifications

The following table defines the system level operating and non-operating environmental limits for the NetBackup 5220 Appliance and the Symantec Storage Shelf.

Table A-2 System Environmental Specifications

Parameter	State	Details
Temperature	Non-operating Operating	-40°F to 70°F 10°C to 35°C with the maximum rate of change not to exceed 10°C per hour
Humidity	Non-operating	90% relative humidity (non-condensing) at 28°C.
Shock	Operating Packaged Unpackaged	2.0-g peak, 11 msec, half sine Non-palletized free fall in height 24” (> 40 lbs to < 80 lbs) Operational after an 18" free fall. Trapezoidal, 25 g, velocity change 136 inches per sec.
Vibration	Unpackaged	5 Hz to 500 Hz, 2.20 g RMS random
Acoustic noise	n/a	Sound power: 7.0 A-weighted decibels in an idle state at typical office ambient temperature (23 +/- 2°C)
Electrostatic discharge (ESD)	n/a	+/-12 KV except I/O port +/- 8 KV
System Cooling Requirement (BTU/Hr)	n/a	NetBackup 5220 Appliance: 2550 BTU/Hr Storage Shelf: 1270 BTU/Hr

See “750W single power supply input voltages” on page 53.

Appendix B

Product regulatory and compliance

This appendix includes the following topics:

- Regulatory and certification overview

Regulatory and certification overview

The following sections provide information about the product regulations and compliance.

WARNING

To ensure regulatory compliance, you must adhere to the assembly instructions in this guide to ensure and maintain compliance with existing product certifications and approvals. Use only the described, regulated components that are specified in this guide. Use of other products or components void the UL listing and other regulatory approvals of the product. Misuse can result in noncompliance with product regulations in the region(s) in which the product is sold.

Before computer integration, to help ensure EMC compliance with your local regional rules and regulations, make sure that the appliance, power supply, and other modules have passed EMC testing. The testing is done using a server board with a microprocessor from the same family (or higher) and operating at the same (or higher) speed as the microprocessor that is used on this server board. The final configuration of your appliance product may require additional EMC compliance testing.

This product is an FCC Class A device. Integration of it into a Class B system does not result in a Class B device.

See "Regulatory compliance" on page 56.

Regulatory compliance

The NetBackup 5220 product, when correctly integrated per this guide, complies with the following safety and electromagnetic compatibility (EMC) regulations.

Intended Application:

This product was evaluated as Information Technology Equipment (ITE), which may be installed in offices, schools, computer rooms, and similar commercial type locations. The suitability of this product for other product categories and environments such as medical, industrial, telecommunications, NEBS, residential, alarm systems, or test equipment other than an ITE application, may require further evaluation.

See "Safety compliance" on page 56.

Safety compliance

The following is a list of product safety compliance norms for different countries:

- UL60950 - CSA 60950 (USA / Canada)
- EN60950 (Europe)
- IEC60950 (International)
- CB Certificate & Report, IEC60950 (report to include all country national deviations)
- GS Certification (Germany)
- GOST R 50377-92 - Certification (Russia)
- Belarus Certification (Belarus)
- Ukraine Certification (Ukraine)
- CE - Low Voltage Directive 73/23/EEE (Europe)
- IRAM Certification (Argentina)
- GB4943- CNCA Certification (China)

See "Product EMC Compliance - Class A Compliance" on page 57.

Product EMC Compliance - Class A Compliance

The following is a list of EMC compliance norms for different countries:

- FCC /ICES-003 - Emissions (USA/Canada) Verification
- CISPR 22 - Emissions (International)
- EN55022 - Emissions (Europe)
- EN55024 - Immunity (Europe)
- EN61000-3-2 - Harmonics (Europe)
- EN61000-3-3 - Voltage Flicker (Europe)
- CE - EMC Directive 89/336/EEC (Europe)
- VCCI Emissions (Japan)
- AS/NZS 3548 Emissions (Australia / New Zealand)
- BSMI CNS13438 Emissions (Taiwan)
- GOST R 29216-91 Emissions (Russia)
- GOST R 50628-95 Immunity (Russia)
- Belarus Certification (Belarus)
- Ukraine Certification (Ukraine)
- GB 9254 - CNCA Certification (China)
- GB 17625 - (Harmonics) CNCA Certification (China)

See “Ecology compliance” on page 57.

Ecology compliance

Use of banned substances are restricted in accordance with world-wide regulatory requirements. A Material Declaration Data Sheet is available for the following substances.

- Quantity limit of 0.1% by mass (1000 PPM) for: Lead, Mercury, Hexavalent Chromium, Polybrominated Biphenyls Diphenyl-Ethers (PBB/PBDE)
- Quantity limit of 0.01% by mass (100 PPM) for: Cadmium

The appliance and storage shelf comply with the following requirements.

- California Code of Regulations, Title 22, Division 4.5, Chapter 33: Best Management Practices for Perchlorate Materials
- China - Restriction of Hazardous Substances (China RoHS)

- WEEE Directive (Europe)
- Packaging Directive (Europe)

See "Certifications, registrations, and declarations" on page 58.

Certifications, registrations, and declarations

The following is a list of the required certifications, registrations, and declarations.

- NRTL Certification (US/Canada)
- CE Declaration of Conformity (CENELEC Europe)
- FCC/ICES-003 Class A Attestation (USA/Canada)
- VCCI Certification (Japan)
- C-Tick Declaration of Conformity (Australia)
- MED Declaration of Conformity (New Zealand)
- BSMI Certification (Taiwan)
- GOST R Certification / Certification (Russia)
- Belarus Certification / Certification (Belarus)
- IRAM Certification (Argentina)
- CNCA CCC Certification (China)
- Ecology Declaration (International)
- China RoHS Environmental Friendly Use Period
- Packaging & Product Recycling Marks

See "Electromagnetic compatibility (EMC) notices" on page 58.

Electromagnetic compatibility (EMC) notices

The following sections list the electromagnetic compatibility notices for USA, Canada, Europe, Japan, and Taiwan.

See "FCC Verification Statement (USA)" on page 59.

See "ICES-003 (Canada)" on page 59.

See "CE Declaration of Conformity (Europe)" on page 60.

See "VCCI (Japan)" on page 60.

See "BSMI (Taiwan)" on page 60.

FCC Verification Statement (USA)

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class A 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 a radio or a television reception (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 to an outlet on a circuit other than the one to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help. Any changes or modifications not expressly approved by the grantee of this device can void the user's authority to operate the equipment. The customer is responsible for ensuring compliance of the modified product. Only peripherals (computer input or output devices, terminals, printers, etc.) that comply with FCC Class A or B limits may be attached to this computer product. Operation with noncompliant peripherals is likely to result in interference to radio and TV reception. All cables that are used to connect to peripherals must be shielded and grounded. Operation with cables that are connected to peripherals that are not shielded and grounded may result in interference to radio and TV reception.

See “Electromagnetic compatibility (EMC) notices” on page 58.

ICES-003 (Canada)

Cet appareil numérique respecte les limites bruits radioélectriques applicables aux appareils numériques de Classe A prescrites dans la norme sur le matériel brouilleur: "Apparelis Numériques", NMB-003 édictee par le Ministre Canadian des Communications.

English translation of the notice above:

This digital apparatus does not exceed the Class A limits for radio noise emissions from the digital apparatus that is set out in the interference-causing equipment standard entitled: "Digital Apparatus," ICES-003 of the Canadian Department of Communications.

See “Electromagnetic compatibility (EMC) notices” on page 58.

CE Declaration of Conformity (Europe)

This product has been tested in accordance to, and complies with the Low Voltage Directive (73/23/EEC) and EMC Directive (89/336/EEC). The product has been marked with the CE Mark to illustrate its compliance.

See “Electromagnetic compatibility (EMC) notices” on page 58.

VCCI (Japan)

This is a Class A product based on the standard of the Voluntary Control Council for Interference (VCCI) from Information Technology Equipment. If the product is used near a radio or a television receiver in a domestic environment, it may cause radio interference. Install and use the equipment according to the instruction manual.

See “Electromagnetic compatibility (EMC) notices” on page 58.

BSMI (Taiwan)

The BSMI Certification Marking and EMC warning is located on the outside rear area of the product.

See “Electromagnetic compatibility (EMC) notices” on page 58.

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