



# **R440LX Environmental CISPR 22 (EN 55022) Test Report Summary**

# Revision History

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Revision	Revision History	Date
1.0	Original draft; just the summary... actual report is 10MB	11/97
2.0	Reformatted for web posting	12/97

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The R440LX may contain design defects or errors known as errata which may cause the product to deviate from published specifications. Current characterized errata are available on request. The hardware vendor remains solely responsible for the design, sale and functionality of its product, including any liability arising from product infringement or product warranty.

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## **INTRODUCTION**

This Test Report Summary documents the results of the electromagnetic compatibility (EMC) testing performed by Northwest EMC, Inc. Details and results of testing performed on October 22, 1997 through October 23, 1997 are contained in a 10MB document. A compressed version, *CISPR\_FULL\_TEST\_REPORT.ZIP*, is available. Testing was performed to evaluate the electromagnetic compatibility (EMC) performance of the R440LX DP Server baseboard in the Columbus-II chassis.

The Open Area Test Site was used by Northwest EMC, Inc. The measurement facility is located in Newberg, Oregon. These sites have been fully described in reports filed with the FCC (Federal Communications Commission), and accepted by the FCC in letters maintained in Northwest EMC's files. Northwest EMC, Inc. is recognized under the United States Department of Commerce, National Institute of Standards and Technology, National Voluntary Laboratory Accreditation Program (NVLAP) for satisfactory compliance with criteria established in Title 15, Part 285 Code of Federal Regulations. These criteria encompass the requirements of ISO/IEC Guide 25 and the relevant requirements of ISO 9002 (ANSI/ASQC Q92-1987) as suppliers of calibration or test results. NVLAP Lab Code: 200059-0. Northwest EMC, Inc. is included by TUV Product Service Group in its Listing of Recognized Laboratories. It qualifies in connection with the TUV Certification after Recognition of Agent's Testing Program for the product categories and/or standards shown in TUV's current Listing of CARAT Laboratories available from TUV. A certificate was issued to represent that this laboratory continues to meet TUV's CARAT Program requirements, (Certificate No. USA9601C). Northwest EMC, Inc. has been accepted as an Associate Member to the VCCI, Acceptance No. 564. The conducted and radiated measurement facilities have been registered in accordance with Regulations for Voluntary Control Measures, Article 8. Registration No. R-165 and C-160. Northwest EMC, Inc. has been assessed and accredited by NEMKO (Norwegian testing and certification body) for European emissions and immunity testing. The immunity facilities meet the IEC 1000-4-3 sixteen point field uniformity requirements. Ambient temperature is maintained between 60° and 75°F with approximate relative humidity of 50%. As a result of NEMKO's laboratory assessment, they will accept test results from Northwest EMC, Inc. for product certification (Authorization No. ELA 119).

## **Summary**

A maximum system configuration was utilized per ANSI C63.4 (section 11.2), consisting of a Personal Computer, keyboard, mouse, monitor, two serial printers, one parallel printer, two headphones, and two External Hard Drives mounted to an internal SCSI RAID card, four internal Hard Drives, internal Tape Drive, and two CD ROM Drives. Some of the test software which exercised the R440LX Server system was run off of the hard disk inside the PC and some was run from the hard disk of the remote system. 512 MB of memory was populated on the baseboard.

<b>Description</b>	<b>Specified Requirement</b>	<b>Results</b>
Conducted Emissions	CISPR (EN 55022) Class A	Pass
Radiated Emissions	CISPR (EN 55022) Class A	Pass

The R440LX Server system has met the average limit and the quasipeak limit when using, an average detector and a quasipeak detector.

R440LX Server system Input Power for Test .....	230 VAC, 50 Hz
Test Method.....	CISPR 22 (EN 55022)
Specification Limits .....	Class A
R440LX Server system Input Power for Test .....	100 VAC, 50 Hz
Test Method.....	VCCI ITE
Specification Limits .....	Class 1

## Tested System

<b>Description</b>	<b>Manufacturer</b>	<b>Model Number</b>	<b>Serial Number</b>	<b>FCC ID#</b>
Chassis	Intel	Columbus II, P/N 651331-010	2	n/a
Power Supply	Delta Electronics	DPS-275BB-1	9739-0021976	n/a
Floppy Drive	Teac	FD-235HF	8152650	n/a
CD ROM	NEC	CDR-1600A	7505273J112	A3DCDR-1600AA
CD ROM	Sony	CDU611	5016022	AK8CDU61110
Tape Drive	Seagate	Tape STOR8000, P/N 10002299-002	DL02BS7	n/a
Baseboard	Intel	Redwood, P/N 674688-022	IBRD73900023	n/a
Network Card	3 COM	P/N 3C905-TX	6KK1939DDO	DF63C905-TX
Network Card	SMC	P/N 60-600542-000	00-E029-0584CC	JT59332BDT
Network Card	Intel	Pro100B, P/N 678400-001	00A0C98CC4FA 36713	EJMNPDSPD035
RAID Board	AMI	Megaraid 428	4283004103	IUESER418
Hard Disk Drive	Seagate	ST19171W	N8054678	n/a
Hard Disk Drive	IBM	P/N 27H1771	68171936PI	n/a
Hard Disk Drive	Western Digital	Caviar 35100	WT3900121962	n/a
Hard Disk Drive	Seagate	DY36450A	JG254592	n/a

## *R440LX Server system and Peripherals*

<b>Item</b>	<b>Description</b>
R440LX system	Intel Corporation (Columbus II/Redwood) Pentium® II processor

Serial Printer	HP Model 2225D+, Serial No. 2916542280, FCC ID DSI6XU2225.
Serial Printer	HP Model 2225D, Serial No. 2828S22043, FCC ID DSI6XU2225.
Parallel Printer	HP Model 2225C, Serial No. 2917S43792, FCC ID DSI6XU2225.
Video Monitor	IBM Model P70, Serial No. 23-92863, FCC ID AK8GDM17SE2T.
Keyboard	Dell Quiet Key SK-1000REW, FCC ID GYUR26SK.
Mouse	Microsoft Model PS/2, Serial No. 0043712, FCC ID C3KAMP2.
Headphones	Sony Model MDR-V7.
Headphones	Sony Model MCR-55.
External Hard Drive	Seagate Part No. 9A3001-011, Serial No. WV000483.
External Hard Drive	Seagate Part No. 9A3001-011, Serial No. TV523464.

***Cables:***

<b>Item</b>	<b>Description</b>
Serial (2)	1 meter in length. Shielded and no ferrite beads attached. Metal connector backshells. Connected from the serial printer to the R440LX Server system.
Parallel	1 meter in length. Shielded and no ferrite beads attached. Metal connector backshells. Connected from the parallel printer to the R440LX Server system.
Video	1.2 meters in length. Shielded and no ferrite beads attached. Metal connector backshells. Connected from the R440LX Server system to the monitor.
Network (4)	10 feet in length. Unshielded and no ferrite beads attached. RJ45 connectors. Connected from the R440LX Server system to the HUB.
Network	50 feet in length. Shielded and no ferrite beads attached. RJ45 connectors. Connected from the HUB to the remote system.

SCSI	1.2 meters in length. Shielded and no ferrite beads attached. SCSI connectors. Connected from the External Hard Drive to the R440LX Server system.
SCSI	1 meter in length. Shielded and no ferrite beads attached. SCSI connectors. Connected from the External Hard Drive to the R440LX Server system.
Audio	10 feet in length. Unshielded and no ferrite beads attached. Connected from the headphones to the R440LX Server system.
Audio	12 feet in length. Unshielded and no ferrite beads attached. Connected from the headphones to the R440LX Server system.
Power	1.6 meters in length. Unshielded and no ferrite beads attached. AC connectors. Connected from the Hard Drive to the AC Mains.
Power	2 meters in length. Unshielded and no ferrite beads attached. AC connectors. Connected from the Hard Drive to the AC Mains.
Power	1.8 meters in length. Unshielded and no ferrite beads attached. AC connectors. Connected from the monitor to the AC Mains.
Power Brick(3)	3.6 meters in length. Unshielded and no ferrite beads attached. Connected from the printer to the AC Mains.
Mouse	2 meters in length. Unshielded and no ferrite beads attached. PS/2 connector. Permanently attached to the mouse and connected to the R440LX Server system.
Keyboard	1.8 meters in length. Unshielded and no ferrite beads attached. PS/2 connector. Permanently attached to the keyboard and connected to the R440LX Server system.

**Scanned Images and Photos:**

These items are compressed to save disk space on the server. These items are from the complete test report. A complete report is also compressed, but is 5MB in size.

<b>Item</b>	<b>Description</b>
Conducted Emissions	pages 12 - 20 are compressed into Conducted_Limit_1.ZIP
Radiated Emissions	pages 21 - 35 are compressed into Radiated_Limit_1.ZIP
Test Setup	Conducted Emissions test photo; Test_Setup_CISPR1.ZIP
Test Setup	Interface Cable photo; Test_Setup_CISPR2.ZIP
Test Setup	Radiated Emissions photo; Test_Setup_CISPR3.ZIP

