

ELECTROMAGNETIC EMISSIONS
TEST REPORT

FCC Part 15, Subpart B : Class B Digital Device
Name of Appliances : DVD-RAM Drive
Model : LF-D311HP

Matsushita EMC Center
Matsushita Electric Industrial Co.,Ltd.
Yashiro Sasayama,
Hyogo 669-2356
JAPAN
TEL 0795-52-5681
FAX 0795-52-5682

This test report with appendix consists of 26 pages.

The test results only responds to the tested sample.

It is not allowed to copy this report even partly without the allowance of the test laboratory.

This test report must not be used to claim product endorsement by NVLAP or any agency of the U.S. Government.

ENGINEERING TEST REPORT

This is to certify that the DVD-RAM Drive from which the following data has been derived through the required measurements, properly complies with the requirements of Unintentional Radiators Rules in ANSI C63.4-1992, FCC Rules and Regulations Part 15 Subpart B as of date of measurements were made.

In the evaluation, limits for the requirements of the FCC Rules and Regulations Part 15 Subpart B, apply Section 15.107(e) and 15.109(g) alternative, CISPR publication 22 for frequency range of 0.15MHz to 1000MHz and Section 15.109(a) of the FCC Rules and Regulations for frequency range of 1GHz to 2GHz.

1. Applicant : AVC Company
Matsushita Electric Industrial Co.,Ltd.
- Address : 1-4 Matsuo-cho, Kadoma, Osaka
571-8505, Japan
2. Manufacture : AVC Company
Matsushita Electric Industrial Co.,Ltd.
- Address : 1-15 Matsuo-cho, Kadoma, Osaka
571-8504, Japan
3. Description of Appliance
- a. Name of Appliance : DVD-RAM Drive
- b. FCC ID : ACJ0DSDFD311
- c. Model No. : LF-D311HP
- d. Serial No. : JF014080001
- e. Date of Manufacture : April, 2001
- f. Oscillating Frequency : 16.93 MHz (IC Clock Generator)
4.32~86.44 MHz (Compact Disk Play control Clock)
29.2 MHz (DVD-RAM Write/read control Clock)
- g. Highest Frequency : 300±50 MHz (Override Laser High Frequency)
- h. Power Supply : DC 5V and DC 12V from the Personal Computer
- i. EUT Conditions : Production (Client samples)
4. Measurement Site : Matsushita EMC Center
Matsushita Electric Industrial Co.,Ltd.
5. Date of Measurement : 18 April, 2001

CERTIFYING ENGINEER : Matsushita EMC Center

Katsuo Ishihara

Katsuo Ishihara
Chief Engineer of
Matsushita EMC Center
Date: 26 April, 2001

Certification of Measurement Results

I hereby certify that this DVD-RAM Drive passed and give min. limit margins of 6.1 dB μ V/m(QP) at 930.60 MHz at the Radiated Emissions and min. limit margins of 12.4 dB μ V(Av) at 0.96 MHz at the Conducted Emissions with respect to the limits to which it was tested.

EUT Operating Mode: DVD-RAM mode and CD-ROM mode

DVD-RAM mode:

- (a) The data which was on the hard disk of the personal computer were written on the DVD-RAM Disk.
- (b) The data which was on the DVD-RAM Disk were read.
- (c) The data which was on the DVD-RAM Disk were written on the hard disk of the personal computer.
- (d) One-Line "H" patterns were appeared on the color display.
- (e) "H" patterns were printed by the printer.
- (f) (a)to(c) operations were repeated.

CD-ROM mode:

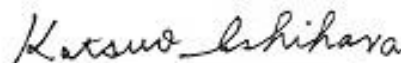
- (a) The data which was on the CD-ROM were read at x24 speed.
- (b) The data which was on the hard disk were read.
- (c) Music is played.
- (d) One-Line "H" patterns were appeared on the color display.
- (e) "H" patterns were printed by the printer.
- (f) (a)to(e) operations were repeated.

These test results are traceable to the National and International Standards.

Measurement Uncertainty, at time of test, and at least 95% confidence, was estimated to be as follows:

Radiated Emission Measurement	: 2.6 dB
Conducted Emission Measurement	: 3.1 dB

Certifying Engineer : Matsushita EMC Center



Katsuo Ishihara
Chief Engineer of
Matsushita EMC Center
Date: 26 April, 2001

General description of Appliance

This disk drive is a built in type 4.75" optical disk drive which has audio CD play function, CD-ROM read function at 24x(Max) rotational speed and 4.7GB rewritable function for computer data storage using 4.75" phase change media called "DVD-RAM disk".

When a CD-ROM disk is inserted into this drive, the CD-ROM disk is rotated at the speed from the standard speed of CD/CD-ROM disk to 24x(Max) speed controlled by the host computer, and the data in the disk is retrieved by the laser diode.

When an audio CD disk is inserted into this drive, music sound can be heard through the head phones or through the computer interface.

When DVD-RAM disk is inserted into this drive, the data transferred from the host computer is modulated and recorded into the DVD-RAM disk using laser diode controlled by the host computer. The data in the DVD-RAM disk is retrieved using laser diode and demodulated and transferred to the host computer.

Description of Measurement Facility

Name of Test Site : Matsushita EMC Center

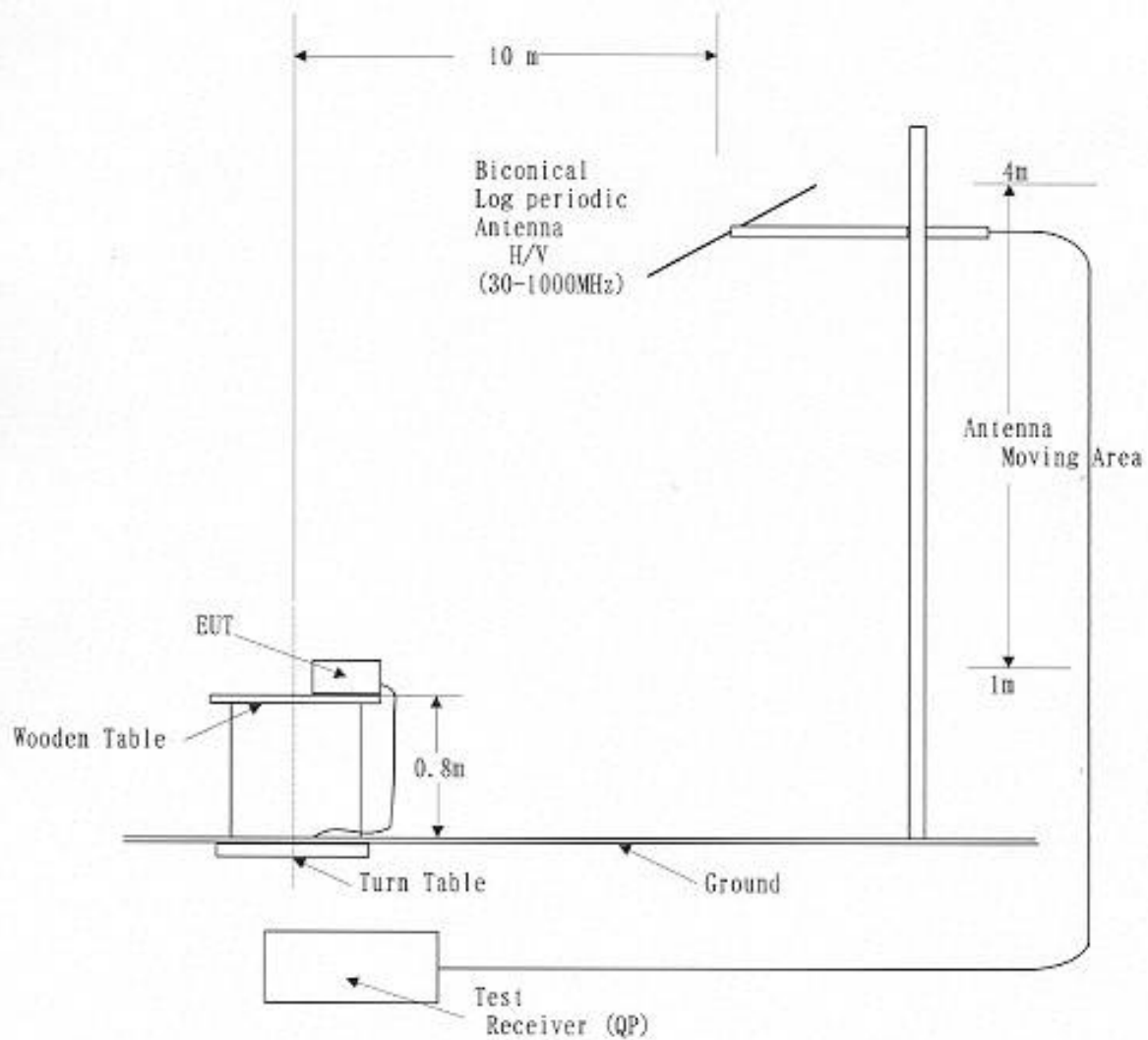
Address : Yashiro Sasayama,
Hyogo 669-2356 JAPAN

Approval : This site has been filed with FCC
FEDERAL COMMUNICATIONS COMMISSION
Registration Number: 90789
(Refild date:August 14, 2000)

Accredited by NVLAP
National Institute of Standards and Technology
National Voluntary Laboratory Accrediation Program
NVLAP Lab Cord: 100428-0
(Effective through:December 31, 2001)

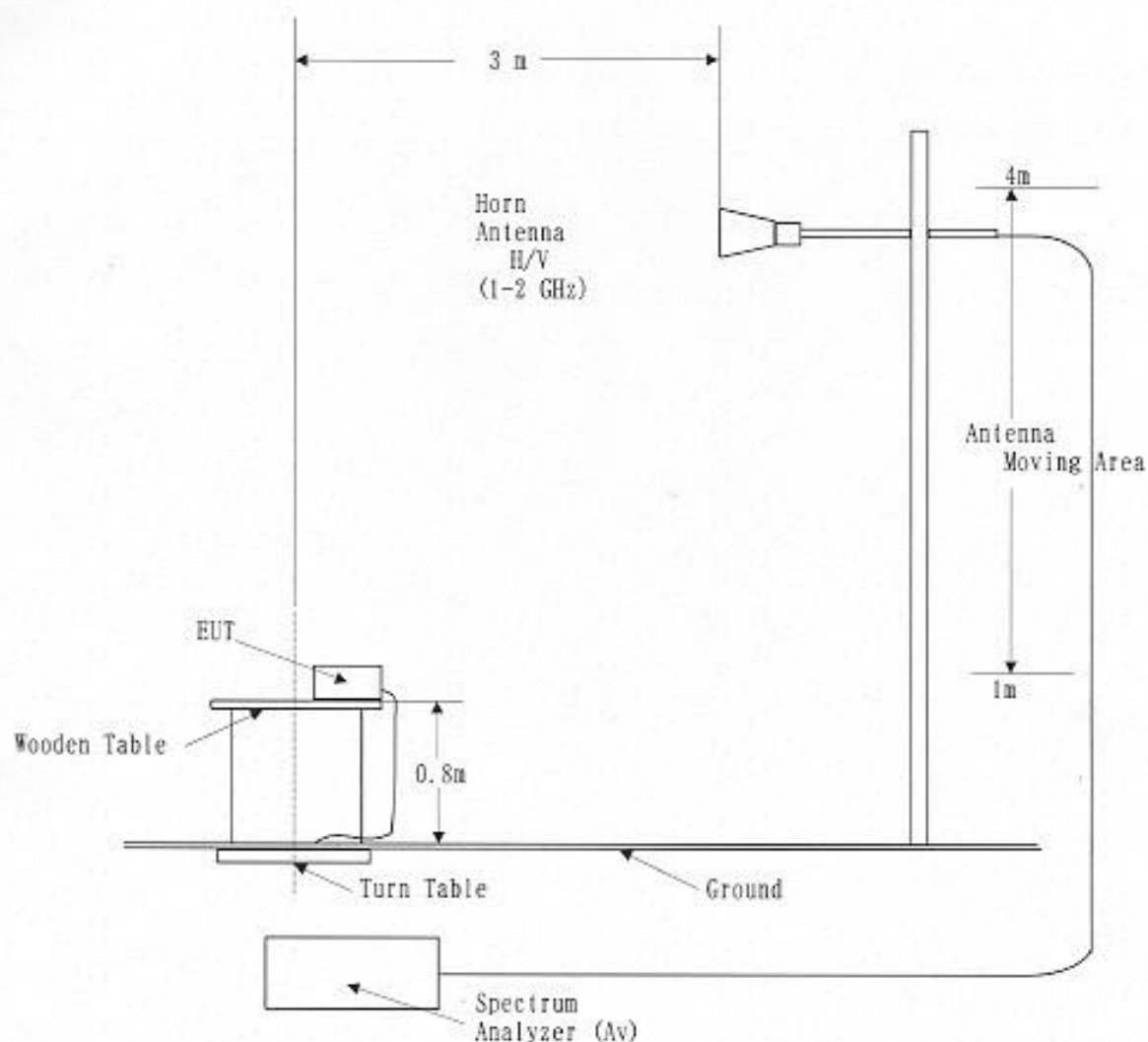
□ RADIATED EMISSIONS(I)

- a. Measurement Methods and test Procedure : ANSI C63.4-1992
- b. Classification of EUT : CISPR 22 (1997) Class B
- c. Test Arrangement



□ RADIATED EMISSIONS(II)

- a. Measurement Methods and test Procedure : ANSI C63.4-1992
- b. Classification of EUT : FCC Part15 (2001) Class B
- c. Test Arrangement



DESCRIPTION OF DEVICE

Type of EUT : DVD-RAM Drive LF-D311HP

RADIATED EMISSIONS MEASUREMENT

EUT Warm-up Time : 30 minutes

TEST CONDITION OF INSTRUMENT

Date : 18 April 2001

(1) Resolution Bandwidth : 120 kHz (30~1000MHz) Temp.: 20°C Humi.: 56%
1 MHz (1~2GHz)(2) Detector Function : QP (30~1000MHz)
Av (1~2GHz)

OPERATING CONDITION:

DVD-RAM Operation Mode

(30MHz-1000MHz)

Frequency (MHz)	* Factor (dB)		Meter Reading at 10 m (dB μ V/m)		Limits at 10 m (dB μ V/m)	Emissi. Level at 10 m (dB μ V/m)	
	Horizontal	Vertical	Horizontal	Vertical		Horizontal	Vertical
50.12	-15.1	—	28.7	—	30.0	13.6	—
125.28	-11.6	—	26.7	—	30.0	15.1	—
150.34	-9.7	—	28.9	—	30.0	19.2	—
240.00	-6.5	—	29.5	—	37.0	23.0	—
310.50	-9.6	—	23.9	—	37.0	14.3	—
715.92	-2.7	—	25.7	—	37.0	23.0	—
50.12	—	-15.1	—	37.5	30.0	—	22.4
150.34	—	-9.7	—	32.8	30.0	—	23.1
228.88	—	-6.8	—	26.7	30.0	—	19.9
816.00	—	1.1	—	28.0	37.0	—	29.1
912.00	—	1.2	—	28.8	37.0	—	30.0
930.60	—	1.4	—	29.5	37.0	—	30.9

(1GHz-2GHz)

Frequency (MHz)	* Factor (dB)		Meter Reading at 3 m (dB μ V/m)		Limits at 3 m (dB μ V/m)	Emissi. Level at 3 m (dB μ V/m)	
	Horizontal	Vertical	Horizontal	Vertical		Horizontal	Vertical
1104.80	—	-10.4	—	42.5	54.0	—	32.1

CISPR 22 Limits (Class B)

Frequency (MHz)
30 ~ 230
230 ~ 1000Limit (dB μ V/m)
30.0
37.0

FCC Part15 Limits (Class B)

Frequency (GHz)
1 ~ 2Limit (dB μ V/m)
54.0

NOTE : I checked spectrum from 30 MHz to 2000 MHz and listed greater 6 points spectrum only.

* Factor = Antenna Factor + Cable loss - AMP Gain

DESCRIPTION OF DEVICE

Type of EUT : DVD-RAM Drive LF-D311HP

RADIATED EMISSIONS MEASUREMENT

EUT Warm-up Time : 30 minutes

TEST CONDITION OF INSTRUMENT

Date : 18 April 2001

(1) Resolution Bandwidth : 120 kHz (30~1000MHz)
1 MHz (1~2GHz)

Temp.: 20°C Humi.: 56%

(2) Detector Function : QP (30~1000MHz)
Av (1~2GHz)

OPERATING CONDITION:

CD-ROM Operation Mode

(30MHz-1000MHz)

Frequency (MHz)	* Factor (dB)		Meter Reading at 10 m (dB μ V/m)		Limits at 10 m (dB μ V/m)	Emissi. Level at 10 m (dB μ V/m)	
	Horizontal	Vertical	Horizontal	Vertical		Horizontal	Vertical
150.35	-9.7	—	28.0	—	30.0	18.3	—
229.09	-6.8	—	23.5	—	30.0	16.7	—
240.00	-6.5	—	31.6	—	37.0	25.1	—
741.80	-2.0	—	24.3	—	37.0	22.3	—
775.52	-1.6	—	26.7	—	37.0	25.1	—
910.39	1.1	—	25.3	—	37.0	26.4	—
50.84	—	-15.3	—	35.7	30.0	—	20.4
125.28	—	-11.6	—	31.8	30.0	—	20.2
150.35	—	-9.7	—	29.5	30.0	—	19.8
240.00	—	-6.5	—	31.3	37.0	—	24.8
775.52	—	-1.6	—	29.7	37.0	—	28.1
910.39	—	1.1	—	26.7	37.0	—	27.8

(1GHz-2GHz)

Frequency (MHz)	* Factor (dB)		Meter Reading at 3 m (dB μ V/m)		Limits at 3 m (dB μ V/m)	Emissi. Level at 3 m (dB μ V/m)	
	Horizontal	Vertical	Horizontal	Vertical		Horizontal	Vertical
1104.80	—	-10.4	—	42.5	54.0	—	32.1

CISPR 22 Limits (Class B)

Frequency (MHz)
30 ~ 230
230 ~ 1000Limit (dB μ V/m)
30.0
37.0

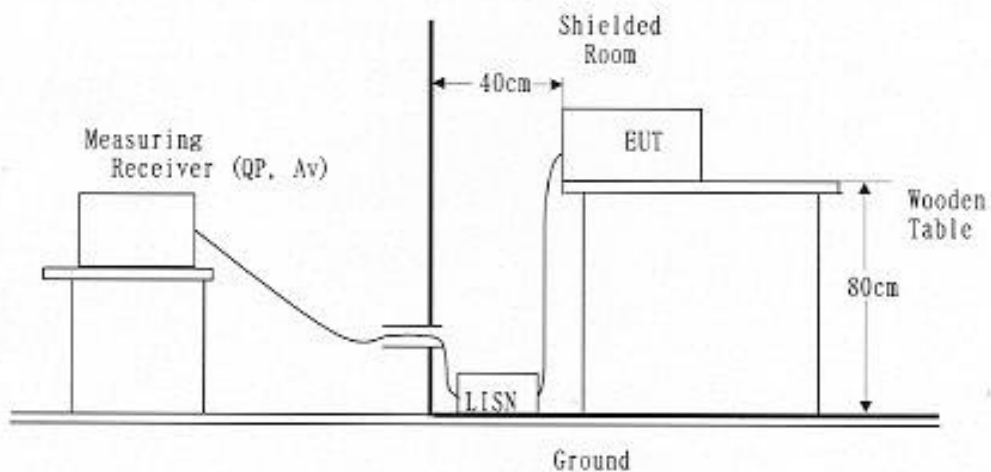
FCC Part15 Limits (Class B)

Frequency (GHz)
1 ~ 2Limit (dB μ V/m)
54.0NOTE : I checked spectrum from 30 MHz to 2000 MHz and listed
greater 6 points spectrum only.

* Factor = Antenna Factor + Cable loss - AMP Gain

□ LINE CONDUCTED EMISSIONS

- a. Measurement Methods and test Procedure : ANSI C63.4-1992
- b. Classification of EUT : CISPR 22 (1997) Class B
- c. Test Arrangement



DESCRIPTION OF DEVICE

Type of EUT : DVD-RAM Drive LF-D311HP

Line conducted emissions measurement at AC Power Line of Personal Computer.

TEST CONDITION OF INSTRUMENT

(1) Resolution Bandwidth : 9kHz
(2) Detector Function : QP

EUT Warm-up Time : 30 minutes

Date : 18 April 2001

Temp. : 20°C Humi. : 64%

OPERATING CONDITION

DVD-RAM Operation Mode

Frequency (MHz)	Factor (dB)	Meter Reading (dB μ V)		Limits (dB μ V)	Emissi. Level (dB μ V)	
		1 end - Ground	Other end- Ground		1 end - Ground	Other end- Ground
0.24	0.3	35.0		62.1	35.3	
0.54	0.2	34.6		56.0	34.8	
0.84	0.3	34.6		56.0	34.9	
0.96	0.3	35.2		56.0	35.5	
2.15	0.4	33.5		56.0	33.9	
11.92	1.0	35.8		60.0	36.8	

CISPR 22 Limits (CLASS B)

Frequency (MHz)
0.15 ~ 0.50
0.50 ~ 5.00
5.00 ~ 30.00Limit (dB μ V)
66~56
56
60

NOTE : I checked spectrum from 0.15 MHz to 30 MHz and listed greater 6 points spectrum only.

* Factor = Lisn Factor + Cable loss

DESCRIPTION OF DEVICE

Type of EUT : DVD-RAM Drive LF-D311HP

Line conducted emissions measurement at AC Power Line of Personal Computer.

TEST CONDITION OF INSTRUMENT

(1) Resolution Bandwidth : 9kHz
(2) Detector Function : QPEUT Warm-up Time : 30 minutes
Date : 18 April 2001
Temp. : 20°C Humi. : 64%

OPERATING CONDITION

DVD-RAM Operation Mode

Frequency (MHz)	Factor (dB)	Meter Reading (dB μ V)		Limits (dB μ V)	Emissi. Level (dB μ V)	
		1 end - Ground	Other end- Ground		1 end - Ground	Other end- Ground
0.24	0.3		31.9	62.1		32.2
0.54	0.2		28.6	56.0		28.8
0.84	0.3		27.5	56.0		27.8
0.96	0.3		30.4	56.0		30.7
2.16	0.4		29.4	56.0		29.8
2.76	0.5		34.1	56.0		34.6

CISPR 22 Limits (CLASS B)

Frequency (MHz)
0.15 ~ 0.50
0.50 ~ 5.00
5.00 ~ 30.00Limit (dB μ V)
66~56
56
60

NOTE : I checked spectrum from 0.15 MHz to 30 MHz and listed greater 6 points spectrum only.

* Factor = Liss Factor + Cable loss

DESCRIPTION OF DEVICE

Type of EUT : DVD-RAM Drive LF-D311HP

Line conducted emissions measurement at AC Power Line of Personal Computer.

TEST CONDITION OF INSTRUMENT

(1) Resolution Bandwidth : 9kHz
(2) Detector Function : Av

EUT Warm-up Time : 30 minutes

Date : 18 April 2001

Temp. : 20°C Humi. : 64%

OPERATING CONDITION

DVD-RAM Operation Mode

Frequency (MHz)	Factor (dB)	Meter Reading (dB μ V)		Limits (dB μ V)	Emissi. Level (dB μ V)	
		1 end - Ground	Other end- Ground		1 end - Ground	Other end- Ground
0.24	0.3	34.5		52.1	34.8	
0.54	0.2	32.6		46.0	32.8	
0.84	0.3	31.8		46.0	32.1	
0.96	0.3	32.0		46.0	32.3	
2.15	0.4	32.1		46.0	32.5	
11.92	1.0	31.9		50.0	32.9	

CISPR 22 Limits (CLASS B)

Frequency (MHz)
0.15 ~ 0.50
0.50 ~ 5.00
5.00 ~ 30.00

Limit (dB μ V)
56~46
46
50

NOTE : I checked spectrum from 0.15 MHz to 30 MHz and listed greater 6 points spectrum only.

* Factor = Lisn Factor + Cable loss

DESCRIPTION OF DEVICE

Type of EUT : DVD-RAM Drive LF-D311HP

Line conducted emissions measurement at AC Power Line of Personal Computer.

TEST CONDITION OF INSTRUMENT

(1) Resolution Bandwidth : 9kHz	EUT Warm-up Time : 30 minutes
(2) Detector Function : Av	Date : 18 April 2001
	Temp. : 20°C Humi. : 64%

OPERATING CONDITION

DVD-RAM Operation Mode

Frequency (MHz)	Factor (dB)	Meter Reading (dB μ V)		Limits (dB μ V)	Emissi. Level (dB μ V)	
		I end - Ground	Other end- Ground		I end - Ground	Other end- Ground
0.24	0.3		31.4	52.1		31.7
0.54	0.2		27.0	46.0		27.2
0.84	0.3		24.1	46.0		24.4
0.96	0.3		27.5	46.0		27.8
2.15	0.4		26.4	46.0		26.8
2.76	0.5		32.2	46.0		32.7

CISPR 22 Limits (CLASS B)

Frequency (MHz)	Limit (dB μ V)
0.15 ~ 0.50	56~46
0.50 ~ 5.00	46
5.00 ~ 30.00	50

NOTE : I checked spectrum from 0.15 MHz to 30 MHz and listed greater 6 points spectrum only.

* Factor = Liss Factor + Cable loss

DESCRIPTION OF DEVICE

Type of EUT : DVD-RAM Drive LF-D311HP

Line conducted emissions measurement at AC Power Line of Personal Computer.

TEST CONDITION OF INSTRUMENT

(1) Resolution Bandwidth : 9kHz
(2) Detector Function : QP

EUT Warm-up Time : 30 minutes

Date : 18 April 2001

Temp. : 20°C Humi. : 64%

OPERATING CONDITION

CD-ROM Operation Mode

Frequency (MHz)	Factor (dB)	Meter Reading (dB μ V)		Limits (dB μ V)	Emissi. Level (dB μ V)	
		1 end - Ground	Other end- Ground		1 end - Ground	Other end- Ground
0.66	0.2	31.4		56.0	31.6	
0.90	0.3	35.1		56.0	35.4	
0.96	0.3	36.6		56.0	36.9	
2.16	0.4	34.4		56.0	34.8	
2.75	0.5	31.5		56.0	32.0	
3.05	0.5	33.7		56.0	34.2	

CISPR 22 Limits (CLASS B)

Frequency (MHz)	
0.15 ~ 0.50	
0.50 ~ 5.00	
5.00 ~ 30.00	

Limit (dB μ V)
66~56
56
60

NOTE : I checked spectrum from 0.15 MHz to 30 MHz and listed greater 6 points spectrum only.

* Factor = Liss Factor + Cable loss

DESCRIPTION OF DEVICE

Type of EUT : DVD-RAM Drive LF-D311HP

Line conducted emissions measurement at AC Power Line of Personal Computer.

TEST CONDITION OF INSTRUMENT

(1) Resolution Bandwidth : 9kHz	EUT Warm-up Time : 30 minutes
(2) Detector Function : QP	Date : 18 April 2001
	Temp. : 20°C Humi. : 64%

OPERATING CONDITION

CD-ROM Operation Mode

Frequency (MHz)	Factor (dB)	Meter Reading (dB μ V)		Limits (dB μ V)	Emissi. Level (dB μ V)	
		I end - Ground	Other end- Ground		I end - Ground	Other end- Ground
0.24	0.3		32.0	62.1		32.3
0.66	0.2		26.8	56.0		27.0
0.90	0.3		29.4	56.0		29.7
0.96	0.3		31.9	56.0		32.2
2.75	0.5		33.0	56.0		33.5
22.21	1.8		29.9	60.0		31.7

CISPR 22 Limits (CLASS B)

Frequency (MHz)	Limit (dB μ V)
0.15 ~ 0.50	66~56
0.50 ~ 5.00	56
5.00 ~ 30.00	60

NOTE : I checked spectrum from 0.15 MHz to 30 MHz and listed greater 6 points spectrum only.

* Factor = Loss Factor + Cable loss

DESCRIPTION OF DEVICE

Type of EUT : DVD-RAM Drive LF-D311HP

Line conducted emissions measurement at AC Power Line of Personal Computer.

TEST CONDITION OF INSTRUMENT

(1) Resolution Bandwidth : 9kHz
(2) Detector Function : AvEUT Warm-up Time : 30 minutes
Date : 18 April 2001
Temp. : 20°C Humi. : 64%

OPERATING CONDITION

CD-ROM Operation Mode

Frequency (MHz)	Factor (dB)	Meter Reading (dB μ V)		Limits (dB μ V)	Emiss. Level (dB μ V)	
		l end - Ground	Other end- Ground		l end - Ground	Other end- Ground
0.66	0.2	29.1		46.0	29.3	
0.90	0.3	32.2		46.0	32.5	
0.96	0.3	33.3		46.0	33.6	
2.16	0.4	32.6		46.0	33.0	
2.75	0.5	30.5		46.0	31.0	
3.05	0.5	32.9		46.0	33.4	

CISPR 22 Limits (CLASS B)

Frequency (MHz)
0.15 ~ 0.50
0.50 ~ 5.00
5.00 ~ 30.00Limit (dB μ V)
56~46
46
50

NOTE : I checked spectrum from 0.15 MHz to 30 MHz and listed greater 6 points spectrum only.

* Factor = Lisn Factor + Cable loss

DESCRIPTION OF DEVICE

Type of EUT : DVD-RAM Drive LF-D311HP

Line conducted emissions measurement at AC Power Line of Personal Computer.

TEST CONDITION OF INSTRUMENT

(1) Resolution Bandwidth : 9kHz
(2) Detector Function : AvEUT Warm-up Time : 30 minutes
Date : 18 April 2001
Temp. : 20°C Humi. : 64%

OPERATING CONDITION

CD-ROM Operation Mode

Frequency (MHz)	Factor (dB)	Meter Reading (dB μ V)		Limits (dB μ V)	Emiss. Level (dB μ V)	
		1 end - Ground	Other end- Ground		1 end - Ground	Other end- Ground
0.24	0.3		31.6	52.1		31.9
0.66	0.2		25.5	46.0		25.7
0.90	0.3		26.4	46.0		26.7
0.96	0.3		29.0	46.0		29.3
2.75	0.5		31.5	46.0		32.0
22.21	1.8		27.1	50.0		28.9

CISPR 22 Limits (CLASS B)

Frequency (MHz)
0.15 ~ 0.50
0.50 ~ 5.00
5.00 ~ 30.00Limit (dB μ V)
56~46
46
50

NOTE : I checked spectrum from 0.15 MHz to 30 MHz and listed greater 6 points spectrum only.

* Factor = Liss Factor + Cable loss

Test Condition and Configuration

1. The Equipment under Test (EUT) consist of:

Manufacture	Model No.	FCC ID / DoC	Serial No.
Personal Computer HEWLETT PACKARD	D3496A	HCJVECTRAVE4	SG52900599
IDE-CD board Acculogic	sIDE-CD	IIV0043300A00	0007951
Keyboard HEWLETT PACKARD	C3757-60413	CIGE03614	MX02010770
Mouse HEWLETT PACKARD	C3751A	DZL210472	ITA50705762
Color Display HEWLETT PACKARD	D2804B	CSYSC-428VSP	KR52737221
Printer EPSON	STYLUS PHOTO 750	BKMPBP112A	C25901001D19824176
Modem U. S. Robotics	0701	With DoC Label	22SBB639H725
Stereo Radio Cassette Recorder Matsushita	RX-FW50	N/A	6EANC39715
Headphones SONY	MDR-Z900	N/A	

Note: N/A: Not Applicable

The Stereo Radio Cassette Recorder is operating with the cell 1.5V×6.

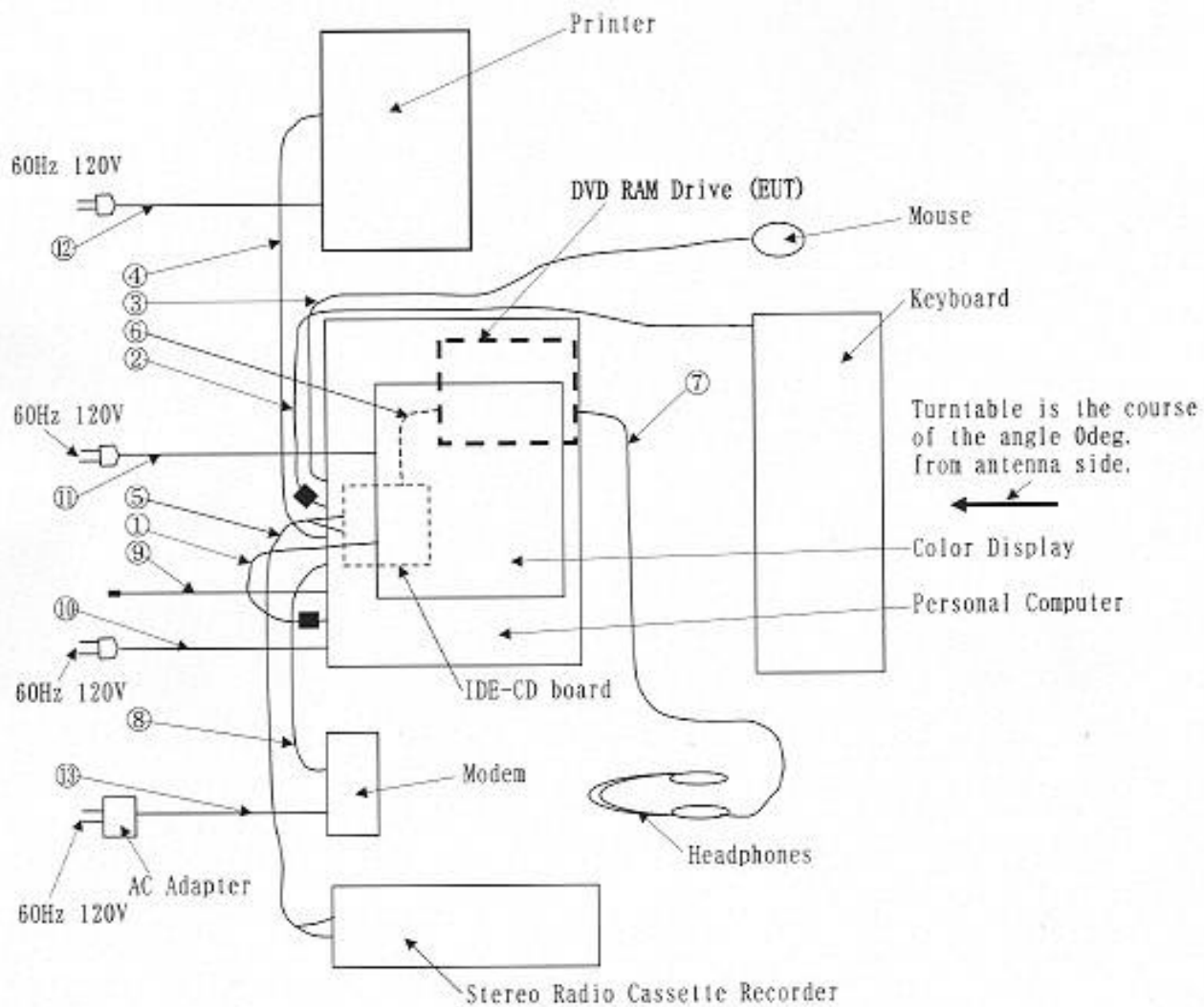
Test Condition and Configuration

2. Type of Interface Cables

CableNo.	EUT/Peripheral	Type No.	Manufacture	Length of Cable
①	RGB Monitor Cable Shielded(Metal Shielded) With one Ferrite core	D2804B	HEWLETT PACKARD	1.45 meters
②	Keyboard Cable Shielded(Metal Shielded) With one Ferrite core	TSX4515-3	HEWLETT PACKARD	1.8 meters
③	Mouse Cable Shielded(Metal Shielded)	C3571A	HEWLETT PACKARD	1.9 meters
④	Printer Cable Shielded(Metal Shielded)	28AWG	—————	1.8 meters
⑤	Audio Cable 2 Wires type Shielded(Metal Shielded)		—————	2.1 meters
⑥	Audio Cable 3 Wires type Shielded		—————	0.68 meters
⑦	Headphones Cable Un Shielded		SONY	1.2 meters
⑧	Serial Interface Cable (Modem) Shielded(Metal Shielded)	28AWG	—————	1.45 meters
⑨	Serial Interface Cable (Open) Shielded(Metal Shielded)	28AWG	—————	1.55 meters
⑩	Power Cord for Personal Computer 3 Wires type	—————	HEWLETT PACKARD	2.3 meters
⑪	Power Cord for Color Display 3 Wires type	—————	HEWLETT PACKARD	2.3 meters
⑫	Power Cord for Printer 3 Wires type		EPSON	1.9 meters
⑬	Modem Cord from AC Adapter 2 Wires type	T41091000 A040G	U.S. Robotics	1.8 meters

Configuration and Blockdiagram of the EUT

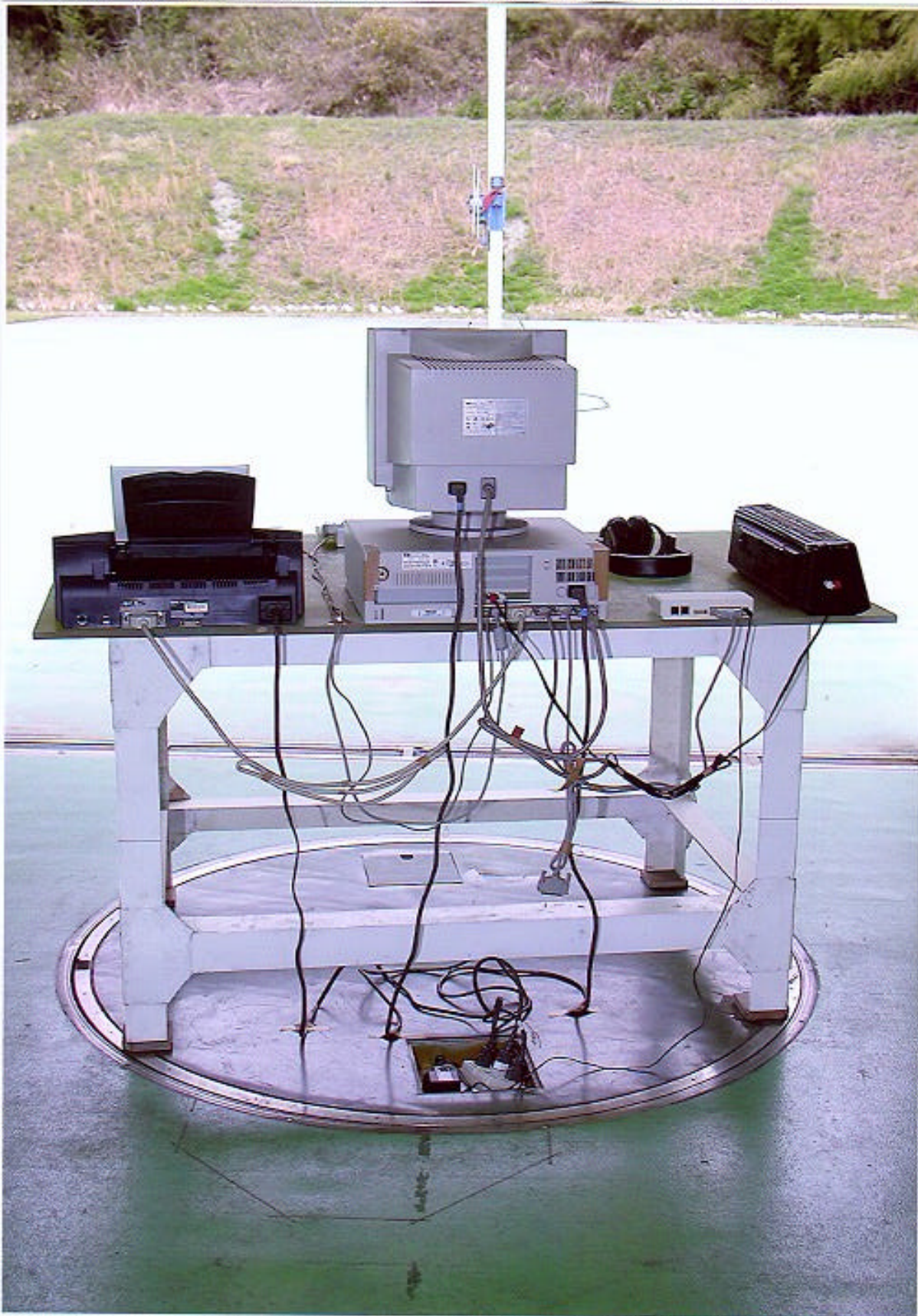
■ : Ferrite Core



Radiated Emissions Test

This photo shows the configuration of the worst emission measurement.

Antenna Height: 1.8m, Polarity: Vertical Angle of turntable: 350deg. (CW)



Radiated Emissions Test

This photo shows the configuration of the worst emission measurement.

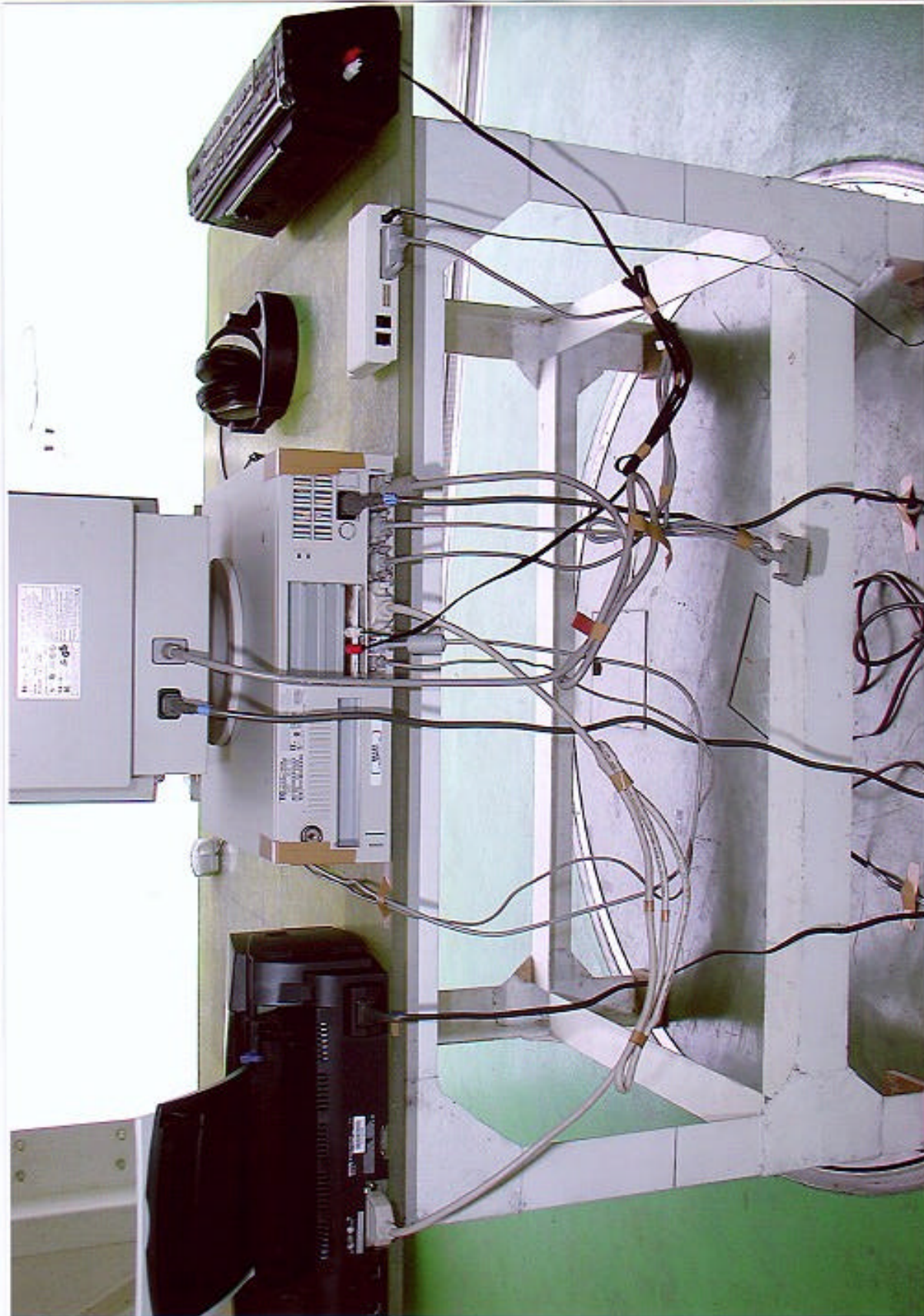
Antenna Height: 1.8m, Polarity: Vertical Angle of turntable: 350deg. (CW)



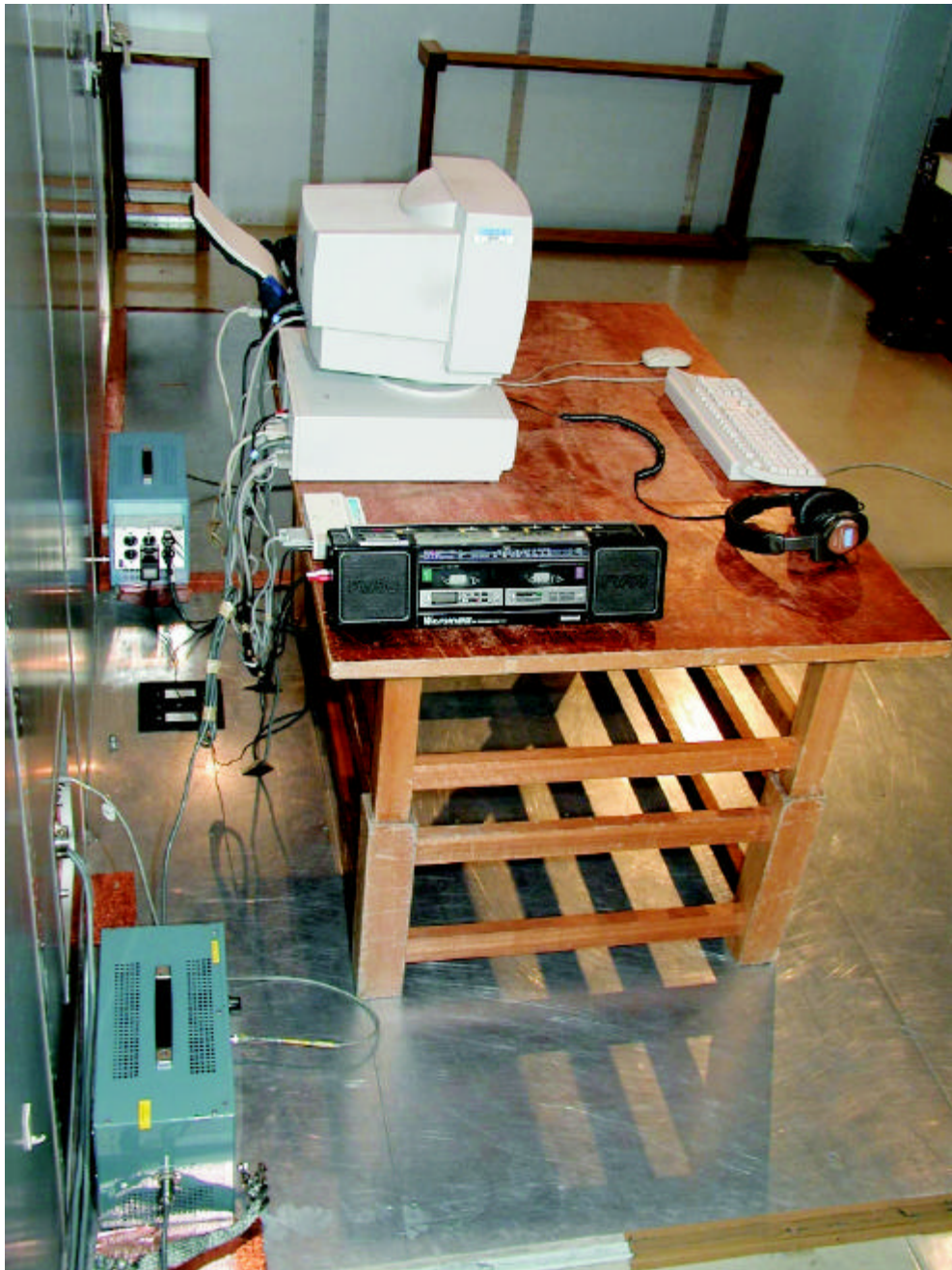
Radiated Emissions Test

This photo shows the configuration of the worst emission measurement.

Antenna Height: 1.8m. Polarity: Vertical Angle of turntable: 350deg. (CW)



Report number CSF-01006
Conducted Emissions TEST



Conducted Emissions Test



List of Test Equipment

	Device	Model No.	Reg.No.	Last Calibrated	Cal. Period	Frequency Range
R	Half wave Dipole Antenna	Schwarzbeck VHA9103	280	February, 2001	1 Year	30 ~ 300MHz
R	Half wave Dipole Antenna	Schwarzbeck UHA9105	281	February, 2001	1 Year	300 ~ 1000MHz
R	Biconical Antenna	Schwarzbeck BBA9106	510-1 510-2A 510-2B	February, 2001	1 Year	30 ~ 300MHz
R	Logperiodic Antenna	Schwarzbeck UHALP9108	507-1	February, 2001	1 Year	300 ~ 1000MHz
C	Test Receiver	Rohde & Schwarz ESI 26	526	April, 2000	1 Year	9kHz ~ 30MHz
R	Test Receiver	Rohde & Schwarz ESS 30	402	April, 2000	1 Year	5Hz ~ 1000MHz
R	Amplifire	Hewlett Packard 8447D	397	May, 2001	1 Year	0.1 ~ 1300MHz
R	Spectrum Analyzer	Hewlett Packard 8563E	446	April, 2000	1 Year	1 ~ 2 GHz
R	Amplifire	Hewlett Packard 8449B	450	April, 2000	1 Year	1 ~ 2 GHz
R	Horn Antenna	Tegan 96001	342	August, 2000	1 Year	1 ~ 2 GHz
C	LISN	Kyoritsu Denshi KNW 407	8-639-2	August, 2000	1 Year	0.15 ~ 30MHz
C	LISN	Kyoritsu Denshi KNW 407	8-833-8	August, 2000	1 Year	0.15 ~ 30MHz
R	Cable A		453	August, 2000	1 Year	0.15 ~ 1000MHz
C	Cable C1		455-1	August, 2000	1 Year	0.15 ~ 30MHz
C	Cable C2		455-2	August, 2000	1 Year	0.15 ~ 30MHz
R	Cable D		386	August, 2000	1 Year	1 ~ 2 GHz
R	Cable F		461	August, 2000	1 Year	1 ~ 2 GHz
R	RF Relay Matrix	Rohde & Schwarz 290.8014	326	August, 2000	1 Year	0.15 ~ 1000MHz
R	Matsushita EMC Center OATS	3 m 10 m 30 m		May, 2000	3 Years	30 ~ 1000MHz

Note.

R : Radiated Emission measurement
C : Conducted Emission measurement

SYSTEM TEST CONFIGURATION

Justification

This disk drive is an optical disk drive which can play audio CD disk, can read CD-ROM disk at 24x(Max.) speed of the CD specification and can read and write the phase change rewritable optical disk called "DVD-RAM disk" using same mechanism.

This drive is used as the internal storage device in the personal computer.

Therefore, the verification tests of this device were carried out by using CD-ROM disk, the DVD-RAM disk after installing this device into the personal computer.

For the verification test using CD-ROM disk, this disk drive was connected to the built-in sound board of the personal computer, tested with playing audio sound and data transfer from CD-ROM disk through ATAPI interface at 24x(Max.) speed.

For the verification test using DVD-RAM disk, this disk drive was tested with data transfer operation from hard disk drive in the personal computer to DVD-RAM disk drive and from DVD-RAM disk drive to the hard disk drive through ATAPI interface.

Test Methodology

1. AC Power Line Conducted Emission

- (1) Configure the EUT system in accordance with ANSI C63.4 – 1992 SECTION 7.
See also the block diagram and the photographs of EUT system configuration in this report.
- (2) Connect the EUT's AC power cord to one Line Impedance Stabilization Network (LISN).
- (3) Any other power cord of other equipment is connected to a LISN different from the LISN used for the EUT.
- (4) Active the EUT Systems and run the software prepared for the test.
- (5) The test receiver is connected to the LISN for the EUT, and AC Power Line Conducted Emission was measured.

2. Radiated Emission Measurement

- (1) Configure the EUT system in accordance with ANSI C63.4 – 1992 SECTION 8.
- (2) If the EUT system is connected to a public power network, all power cords for the EUT System are connected the receptacle on the turn table.
- (3) Active the EUT Systems and run the software prepared for the test.