

# Matsushita-Kotobuki Electronics Industries Ltd.

Matsuyama Division

Address: 2131-1 Minamikata, Kawauchi-cho, Onsen, Ehime 791 – 0395 Japan  
Tel: 089 - 966 - 2111 / Fax: 089 – 966 - 6006

Page 1 of 18 pages

## TEST REPORT

REPORT NUMBER : MKM00F-007

APPLICANT : Matsushita-Kotobuki  
Electronics Industries, Ltd.

MODEL NUMBER : CW-7586-J

FCC ID : IUO9TB089CRB

Regulation : FCC Part15B Class B

Conducted Emission Test  
Radiated Emission Test

Matsushita-Kotobuki Electronics Ind., Ltd.  
Matsuyama Division

2131-1 Minamikata, Kawauchi-cho, Onsen-gun,  
Ehime-ken, 791-0395 Japan  
Tel.: +81 89 966 2111 Fax.: +81 89 966 5733

TABLE OF CONTENTS

---

	Page
SECTION 1. <u>TEST CERTIFICATION</u> .....	3
SECTION 2. <u>EQUIPMENT UNDER TEST</u> .....	5
SECTION 3. <u>SUPPORT EQUIPMENT USED</u> .....	6
SECTION 4. <u>CABLE(S) USED</u> .....	7
SECTION 5. <u>CONSTRUCTION OF EQUIPMENT</u> .....	9
SECTION 6. <u>OPERATING CONDITIONS</u> .....	10
SECTION 7. <u>TEST PROCEDURE(S)</u> .....	11
SECTION 8. <u>EVALUATION OF TEST RESULTS</u> .....	12
SECTION 9. <u>PHOTOGRAPHS OF TEST SET-UP</u> .....	16
SECTION 10. <u>INSTRUMENTS USED FOR TEST</u> .....	17
SECTION 11. <u>PRECISION</u> .....	18
SECTION 12. <u>VALIDITY OF TEST REPORT</u> .....	18

---

SECTION 1. TEST CERTIFICATION

## APPLICANT INFORMATION

Company : Matsushita-Kotobuki Electronics Industries, Ltd.  
Address : 8-1, Furujin-machi, Takamatsu-city, Kagawa-ken,  
760-0025 Japan

## GRANTEE INFORMATION

Company : Matsushita-Kotobuki Electronics Industries, Ltd.  
Division / Section : Matsuyama Division Legal Affairs Sec.  
Address : 2131-1 Minamikata, Kawauchi-cho, Onsen-gun,  
Ehime-ken, 791-0395 Japan  
Telephone number : +81 89 966 2111  
Fax number : +81 89 966 5733  
Contact person : Kenji Matsugi

## DESCRIPTION OF TEST ITEM

Kind of equipment : CD-RW Drive  
Trademark : Matsushita-Kotobuki  
FCC ID : IUO9TB089CRB  
Model number : CW-7586-J  
Serial number : 0X06XXX00012

TEST PERFORMED	
FCC Registration No.	: 90793
Test started	: October 27, 2000
Test completed	: October 27, 2000
Purpose of test	: FCC Docket 87-389
Regulation	: FCC Part 15B Class B Unintentional Radiators
Test setup	: ANSI C63.4 -1992

Report file number : MKM00F-007

Report issue date : October 27, 2000

Test engineer : Shinji Yamauchi S. Yamauchi

Report approved by : Hisayuki Honda H. Honda  
[ Manager ]

This equipment complies with above standard or regulation under the test condition or test configuration shown on this test report.

## SECTION 2. EQUIPMENT UNDER TEST

The equipment under test (EUT) consists of the following equipment.

Indication in the following left side column corresponds to section 5.

Symbol	Item	Model No.	Serial No.	FCC ID	Manufacturer
A)	CD-RW Drive	CW-7586-J	0X06XXX00012	IUO9TB089CRB	Matsushita-Kotobuki Electronics Ind., Ltd.

Power ratings of EUT : +5V DC, 2.0A / +12V DC, 2.0A

### 2.1 Port(s) / Connector(s) :

IDE Bus Connector(40pin), Head Phone Jack(Stereo Mini Plug),  
Audio Out Connector(4pin), Digital Audio Out Connector(2pin), DC IN Connector(4pin)

### 2.2 Oscillator(s) / Crystal(s) :

Oscillator	Operating Frequency	Board name	Remarks
33.86 MHz	33.86 MHz	Main PCB	
275 MHz typ.	275 MHz typ.	Pick Up	High Frequency Module (Highest Frequency)

### SECTION 3. SUPPORT EQUIPMENT USED

The EUT has been supported by the following equipment during these tests. Indication in the following left side column corresponds to section 5.

Symbol	Item	Model No.	Serial No.	FCC ID	Manufacturer
B)	Interface Card	LMEP0345A	None	IUO9TB035CRI	Matsushita-Kotobuki
C)	Host Computer	OptiPlex GXa DCS	SPHWX	Declaration of Conformity	DELL
D)	Head Phone	RP-HT28	None	N.A.	Panasonic
E)	Stereo Radio Cassette Recorder	RX-F5	None	ACJ9TBRX-F5	Panasonic
F)	Keyboard	SK-1000REW	M970911905	GYUR36SK	DELL
G)	Color Display	XC-1429C	009133290	BGB9J5XC-1429C	MITSUBISHI
H)	Printer	3630A	3219A17397	BSD8533630A	HEWLETT PACKARD
I)	Modem	C202A	010489	BKM552C202A	EPSON

SECTION 4. CABLE(S) USED

The following cable(s) was used for testing. Indication number in the following left side column corresponds to section 5.

Number	Name	Length	Shield	From	To
1)	40Pin Flat cable	0.4 m	None	CD-RW Drive Plastic connector	Host Computer
2)	Audio cable	0.4 m	None	CD-RW Drive Plastic connector	Interface Card
3)	Digital Audio cable	0.4 m	None	CD-RW Drive Plastic connector	Interface Card
4)	DC Power cable	0.4 m	None	CD-RW Drive	Host Computer
5)	Head Phone cable	1.5 m	None	CD-RW Drive Plastic connector	Head Phone
6)	Audio cable	1.0 m	None	Interface Card	Stereo Radio Cassette Recorder
7)	Audio cable	1.0 m	None	Interface Card	Stereo Radio Cassette Recorder
8)	Keyboard I/F cable	1.9 m	Yes	Host Computer Metal connector	Keyboard
9)	Video Signal I/F cable	1.4 m	Yes	Host Computer Metal connector	Color Display

None :

All cables are not attached ferrite core.

The following cable(s) was used for testing. Indication number in the following left side column corresponds to section 5.

Number	Name	Length	Shield	From	To
10)	Parallel I/F cable	1.5 m	Yes	Host Computer Metal connector	Printer
11)	RS-232C I/F cable	1.1 m	Yes	Host Computer Metal connector	Modem
12)	Power cord for Host Computer	1.9 m	Yes	Host Computer	Power Source
13)	Power cord for Stereo Radio Cassette Recorder	1.9 m	None	Stereo Radio Cassette Recorder	Power Source
14)	Power cord for Color Display	1.5 m	None	Color Display	Power Source
15)	Power cord for Printer	2.0 m	None	Printer	AC Adapter
16)	Power cord for Printer	2.0 m	None	AC Adapter	Power Source
17)	Power cord for Modem	1.9 m	None	Modem	Power Source

None :

All cables are not attached ferrite core.

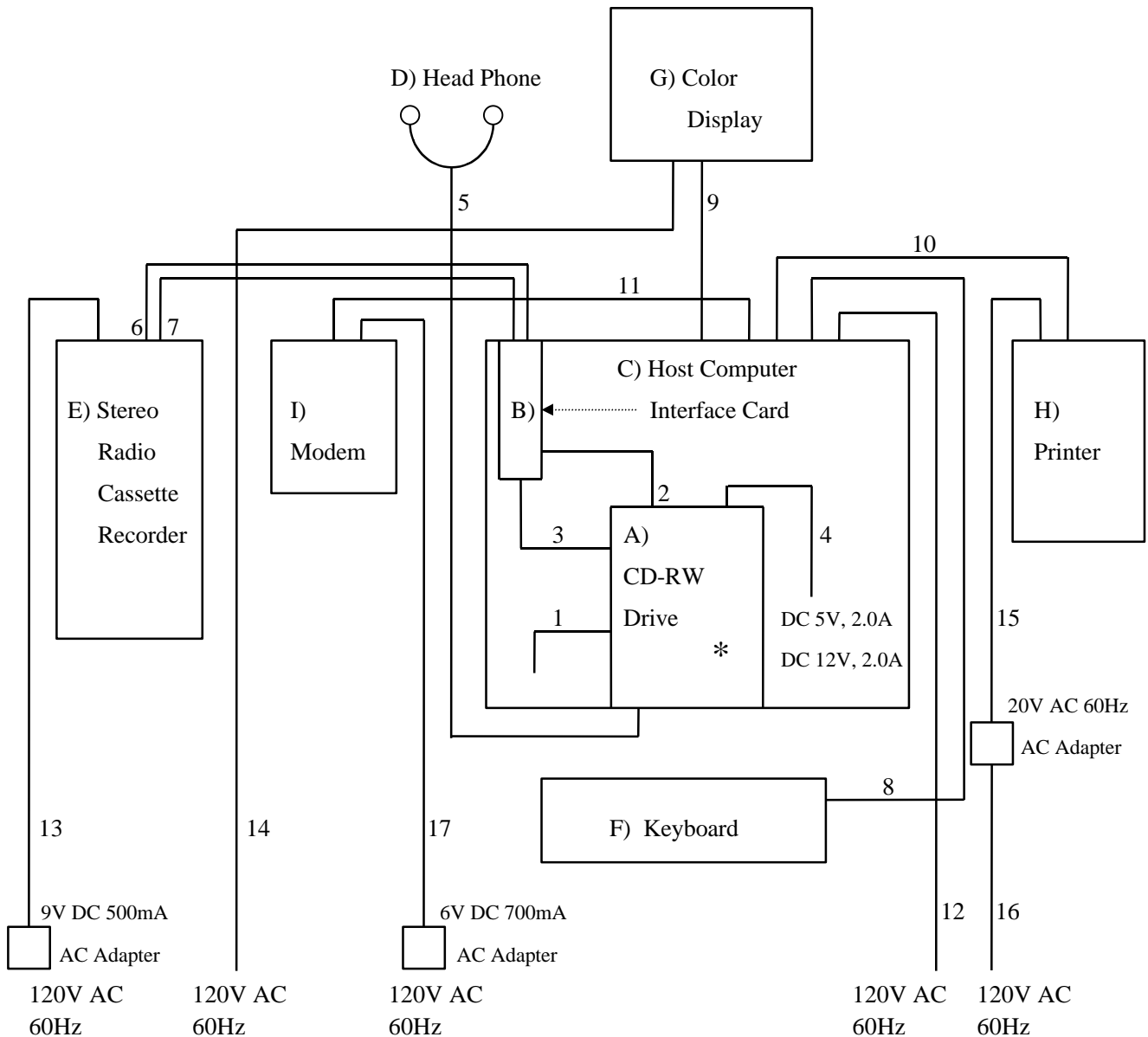


## SECTION 5. CONSTRUCTION OF EQUIPMENT

The construction of EUT during testing is as follows.

### System configuration

∗: EUT



Symbol or numbers assigned to equipment or cables on this diagram are corresponded to the symbols or numbers assigned to equipment or cables on tables in Sections 2 to 4.

## SECTION 6. OPERATING CONDITIONS

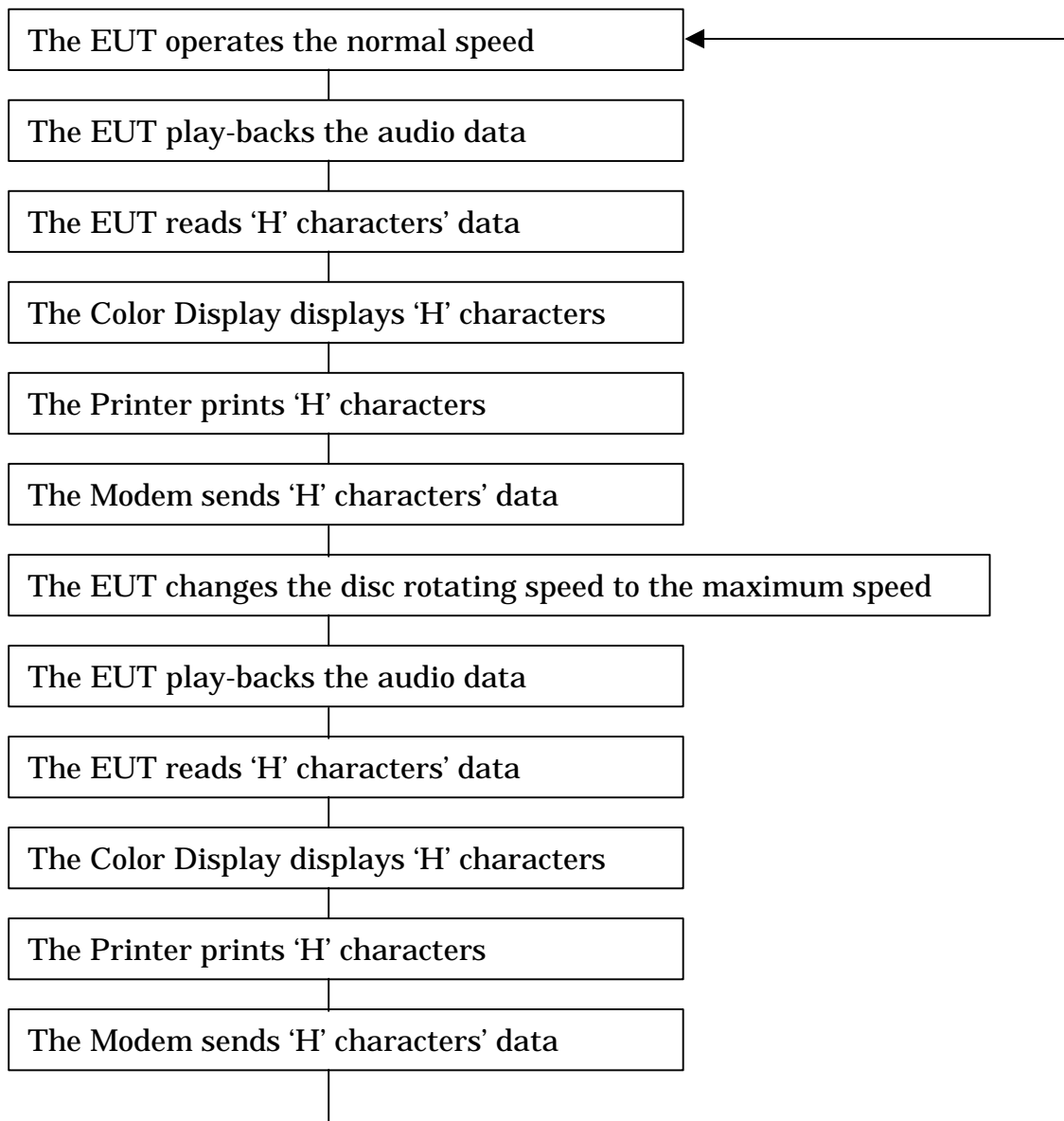
The EUT has been operated under the following conditions during the tests.

### 6.1 Operating condition

The tests have been carried out under Read mode.

### 6.2 Operation flow

Performed following operations continuously.



**SECTION 7. TEST PROCEDURE(S)**

Tests have been carried out with the test procedure(s) drawn up by our laboratory which is in accordance with the following test procedure(s).

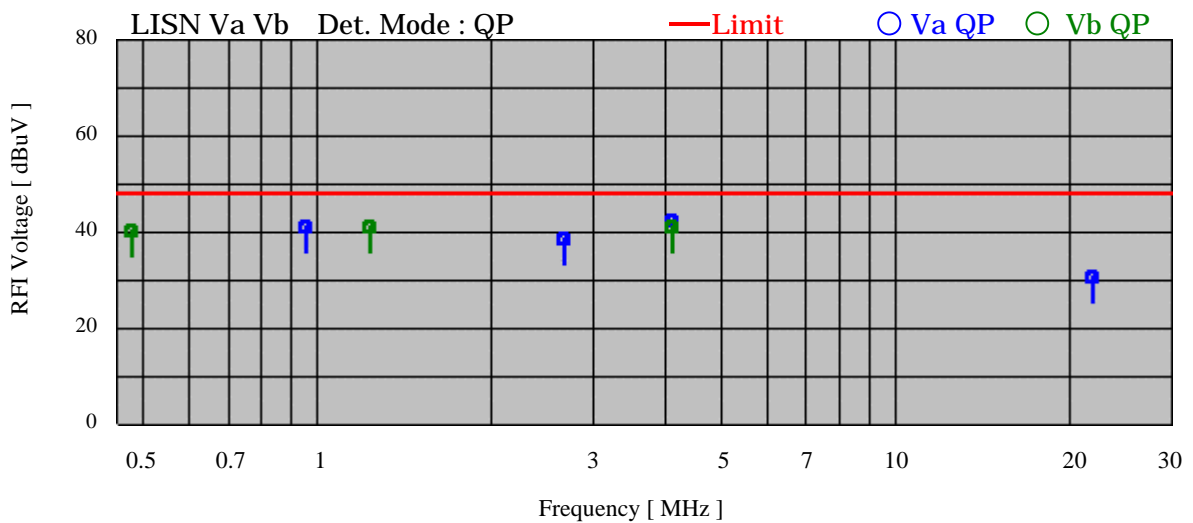
Test item	Test procedure used	Scanned frequency range
Conducted Emission	ANSI C63.4-1992	0.45 - 30 MHz
Radiated Emission	ANSI C63.4-1992	30 - 2000 MHz

## SECTION 8. EVALUATION OF TEST RESULTS

### 8.1 Conducted Emission Test

Product Name	: CD-RW Drive
Model No.	: CW-7586-J
Serial No.	: 0X06XXX00012
Power Supply	: 120V / 60Hz
Test Mode	: Read mode
Temp / Humi / Pres	: 20 °C / 32% / 1002hPa
Operator	: S. Yamauchi

No	Freq. [ MHz ]	Reading Level		Factor [ dB ]	Emission Level		Limit [ dBuV ]	Margin [ dB ]
		Va [ dBuV ]	Vb		Va [ MHz ]	Vb		
1	0.480	----	39.7	0.1	----	39.8	48.0	8.2
2	0.959	40.8	----	0.1	40.9	----	48.0	7.1
3	1.247	----	40.5	0.2	----	40.7	48.0	7.3
4	2.684	38.3	----	0.2	38.5	----	48.0	9.5
5	4.122	42.0	----	0.2	42.2	----	48.0	5.8
6	4.123	----	40.7	0.2	----	40.9	48.0	7.1
7	22.005	29.2	----	1.1	30.3	----	48.0	17.7



## 8.2 Radiated Emission Test

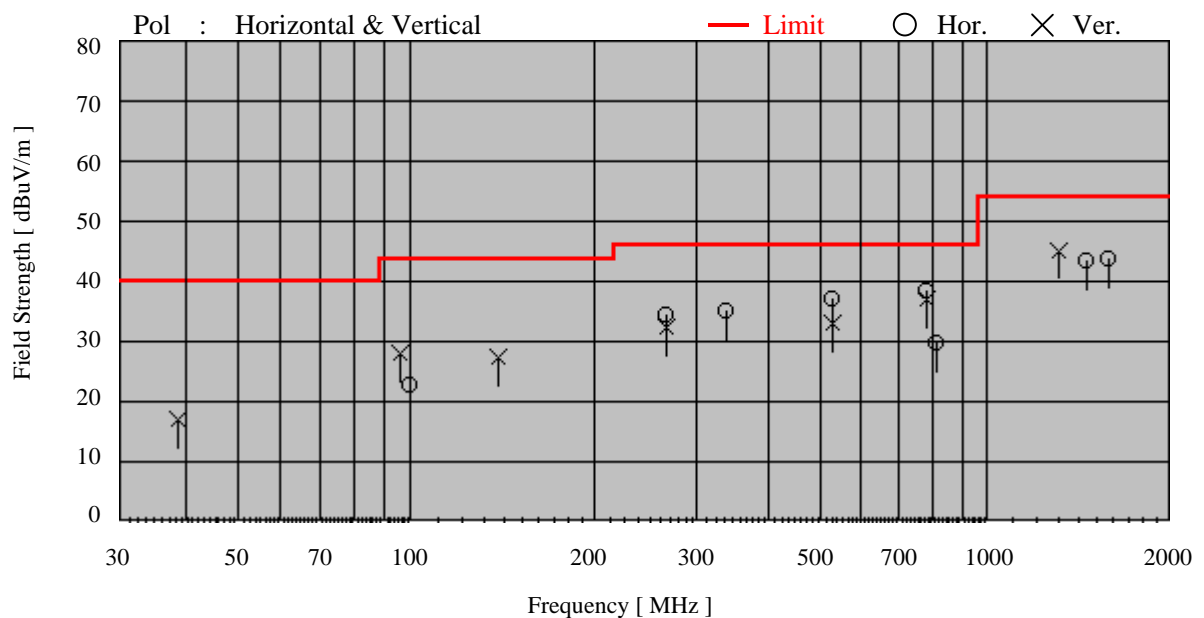
Product Name	: CD-RW Drive
Model No.	: CW-7586-J
Serial No.	: 0X06XXX00012
Power Supply	: 120V / 60Hz
Test Mode	: Read mode
Temp / Humi / Pres	: 20 °C / 32% / 1002hPa
Operator	: S. Yamauchi

[ Quasi Peak mode ]

No	Freq. [ MHz ]	Reading Level [ dBuV ]		Factor [ dB ]	Emission Level [ dBuV/m ]		Limit [ dBuV/m ]	Margin [ dB ]
		Hor.	Ver.		Hor.	Ver.		
1	38.664	----	-0.4	17.5	----	17.1	40.0	22.9
2	95.767	----	16.1	11.5	----	27.6	43.5	15.9
3	99.772	10.6	----	12.4	23.0	----	43.5	20.5
4	139.645	----	11.1	16.2	----	27.3	43.5	16.2
5	260.780	14.0	----	20.4	34.4	----	46.0	11.6
6	260.883	----	12.1	20.4	----	32.5	46.0	13.5
7	336.096	15.6	----	19.5	35.1	----	46.0	10.9
8	521.738	14.7	----	22.3	37.0	----	46.0	9.0
9	521.924	----	10.8	22.3	----	33.1	46.0	12.9
10	782.723	11.5	----	26.8	38.3	----	46.0	7.7
11	782.972	----	10.3	26.8	----	37.1	46.0	8.9
12	811.455	2.6	----	27.1	29.7	----	46.0	16.3

[ Peak mode ]

No	Freq. [ MHz ]	Reading Level [ dBuV ]		Factor [ dB ]	Emission Level [ dBuV/m ]		Limit [ dBuV/m ]	Margin [ dB ]
		Hor.	Ver.		Hor.	Ver.		
1	1308	----	14.5	29.9	----	44.4	54.0	9.6
2	1443	12.7	----	30.4	43.1	----	54.0	10.9
3	1590	12.3	----	31.3	43.6	----	54.0	10.4



### 8.3 Conclusion

This test report clearly shows that the EUT is in compliance with the FCC Part 15B, Class B specification.

The minimum margins to the limits are as follows:

Conduction measurement	5.8 dB	at	4.122 MHz
Radiation measurement	7.7 dB	at	782.723 MHz

## 8.4 Sample Calculations

### 8.4.1 Conducted Emission

---

Example @ 4.122 MHz

$$\begin{array}{rcl}
 \text{Emission Level} & = & \text{Meter Reading} & 42.0 \text{ dBuV} \\
 & & + \text{ A.M.N. Factor} & + 0.2 \text{ dB} \\
 & & & \hline
 & & = & 42.3 \text{ dBuV}
 \end{array}$$

$$\begin{array}{rcl}
 \text{Margin} & = & \text{Limit} & 48.0 \text{ dBuV} \\
 & & - \text{ Emission Level} & - 42.3 \text{ dBuV} \\
 & & & \hline
 & & = & 5.8 \text{ dB}
 \end{array}$$


---

A.M.N. : Artificial Mains Network = Line Impedance Stabilization Network (LISN)

### 8.4.2 Radiated Emission

---

Example @ 782.723 MHz

$$\begin{array}{rcl}
 \text{Emission Level} & = & \text{Meter Reading} & 11.5 \text{ dBuV} \\
 & & + \text{ Factor} & + 26.8 \text{ dB} \\
 & & & \hline
 \text{( Factor = Antenna Factor + Cable Loss )} & & & = 38.3 \text{ dBuV/m}
 \end{array}$$

$$\begin{array}{rcl}
 \text{Margin} & = & \text{Limit} & 46.0 \text{ dBuV/m} \\
 & & - \text{ Emission Level} & - 38.3 \text{ dBuV/m} \\
 & & & \hline
 & & = & 7.7 \text{ dB}
 \end{array}$$


---

## SECTION 9. PHOTOGRAPHS OF TEST SET-UP

### Test setup in accordance with ANSI C63.4-1992

#### 9.1 Conducted Emission Test



Front View

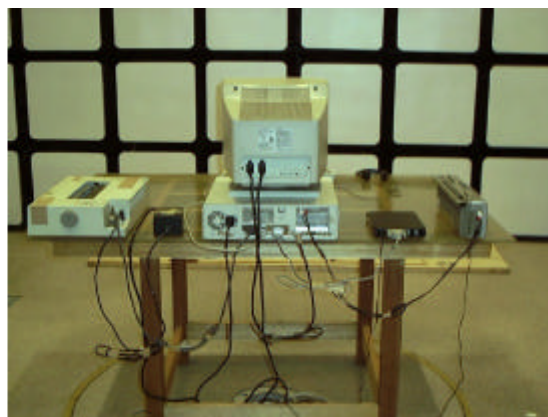


Rear view

#### 9.2 Radiated Emission Test



Front View



Rear view

Note : Maintaining 10cm spacing between all the equipment cabinets.



SECTION 10. INSTRUMENTS USED FOR TEST

Instrument	Model No.	Serial No.	Manufacturer	Last cal.	Period
EMI Test Receiver	85462A	3520A00241	Hewlett Packard	8/2000	1 Year
RF Filter Section	85460A	3448A00210	Hewlett Packard	8/2000	1 Year
Biconical Antenna	BBA9106	None	Schwarzbeck	3/2000	1 Year
Logperiodic Antenna	UHALP9107	1623	Schwarzbeck	3/2000	1 Year
Double Ridged Antenna	3115	9702-5139	EMCO	7/2000	1 Year
Artificial Mains Network(AMN) = Line Impedance Stabilization Network(LISN)	ESH3-Z5	840062/024	Schwarzbeck	7/2000	1 Year
Artificial Mains Network(AMN) = Line Impedance Stabilization Network(LISN)	ESH3-Z5	840062/028	Schwarzbeck	8/2000	1 Year

## SECTION 11. PRECISION

Tolerances of the measuring instruments are shown on below.

1. Antenna factor  $\pm 2.0$  dB
2. Cable loss  $\pm 1.0$  dB
3. EMI test receiver  $\pm 2.0$  dB
4. Artificial Mains Network(AMN) impedance  $\pm 20\%$   
= Line Impedance Stabilization Network(LISN)
5. Site Attenuation  $\pm 4.0$  dB

Repeatability and reproducibility about maximum emission setup are not specified herein.

## SECTION 12. VALIDITY TEST REPORT

- 12.1 The test result of this report is effective for equipment under test itself and under the test configuration described on the report.
- 12.2 This test report does not assure that whether the test result taken in other testing laboratory is compatible or reproducible to the test result on this report or not.
- 12.3 Copying of this report without permission is prohibited.