

Matsushita Kotobuki
Electronics Industries Ltd.

Storage Products Business Unit
Address: 2131-1 Minamigata, Kawauchi-cho, Onsen, Ehime 791 – 0395 Japan

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TEST REPORT

REPORT NUMBER : MKM03F-001

APPLICANT : Matsushita Kotobuki
Electronics Industries, Ltd.

MODEL NUMBER : SR-8589-B

FCC ID : IUO9TB096CRB

Regulation : FCC Part15B Class B

Conducted Emission Test
Radiated Emission Test

Matsushita Kotobuki Electronics Ind., Ltd.
Storage Products Business Unit

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SECTION 1. TEST CERTIFICATION**APPLICANT INFORMATION**

Company : Matsushita Kotobuki Electronics Industries, Ltd.
Address : 2131-1 Minamigata, Kawauchi-cho, Onsen-gun,
Ehime-ken, 791-0395 Japan

GRANTEE INFORMATION

Company : Matsushita Kotobuki Electronics Industries, Ltd.
Division / Section : Storage Products Business Unit Legal Affairs Team.
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Contact person : Shinji Yamauchi

DESCRIPTION OF TEST ITEM

Kind of equipment : DVD-ROM Drive
Trademark : Matsushita Kotobuki
FCC ID : IUO9TB096CRB
Model number : SR-8589-B
Serial number : 331200A00012

TEST PERFORMED

FCC Registration No.	: 90793
Test started	: March 13, 2003
Test completed	: March 13, 2003
Purpose of test	: FCC Docket 87-389
Regulation	: FCC Part 15B Class B Unintentional Radiators
Test setup	: ANSI C63.4 -1992

Report file number : MKM03F-001

Report issue date : March 20, 2003

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)	DVD-ROM Drive	SR-8589-B	331200A00012	IUO9TB096CRB	Matsushita Kotobuki Electronics Ind., Ltd.

Power ratings of EUT : +5V DC, 1.0A / +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
16.93 MHz	58.0 MHz	Main PCB	Optical Disc Controller
420 MHz / typ.	420 MHz / typ.	Pick Up	High Frequency Module

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-HT40	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	3040A00351	BSD8533630A	HEWLETT PACKARD
I)	Modem	C202A	010489	BKM552C202A	EPSON
J)	Mouse	M-S34-6MD	ID75BCIF1MON	DZL211029	COMPAQ

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	DVD-ROM Drive Plastic connector	Host Computer
2)	Audio cable	0.4 m	None	DVD-ROM Drive Plastic connector	Interface Card
3)	Digital Audio cable	0.4 m	None	DVD-ROM Drive Plastic connector	Interface Card
4)	DC Power cable	0.4 m	None	DVD-ROM Drive	Host Computer
5)	Head Phone cable	1.5 m	None	DVD-ROM 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 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)	Mouse cable	1.8m	None	Host Computer Metal connector	Mouse
11)	Parallel I/F cable	1.5 m	Yes	Host Computer Metal connector	Printer
12)	RS-232C I/F cable	1.1 m	Yes	Host Computer Metal connector	Modem
13)	Power cord for Host Computer	2.0 m	Yes	Host Computer	Power Source
14)	Power cord for Stereo Radio Cassette Recorder	1.9 m	None	Stereo Radio Cassette Recorder	Power Source
15)	Power cord for Color Display	1.5 m	None	Color Display	Power Source
16)	Power cord for Printer	2.0 m	None	Printer	AC Adapter
17)	Power cord for Printer	2.0 m	None	AC Adapter	Power Source
18)	Power cord for Modem	1.9 m	None	Modem	Power Source

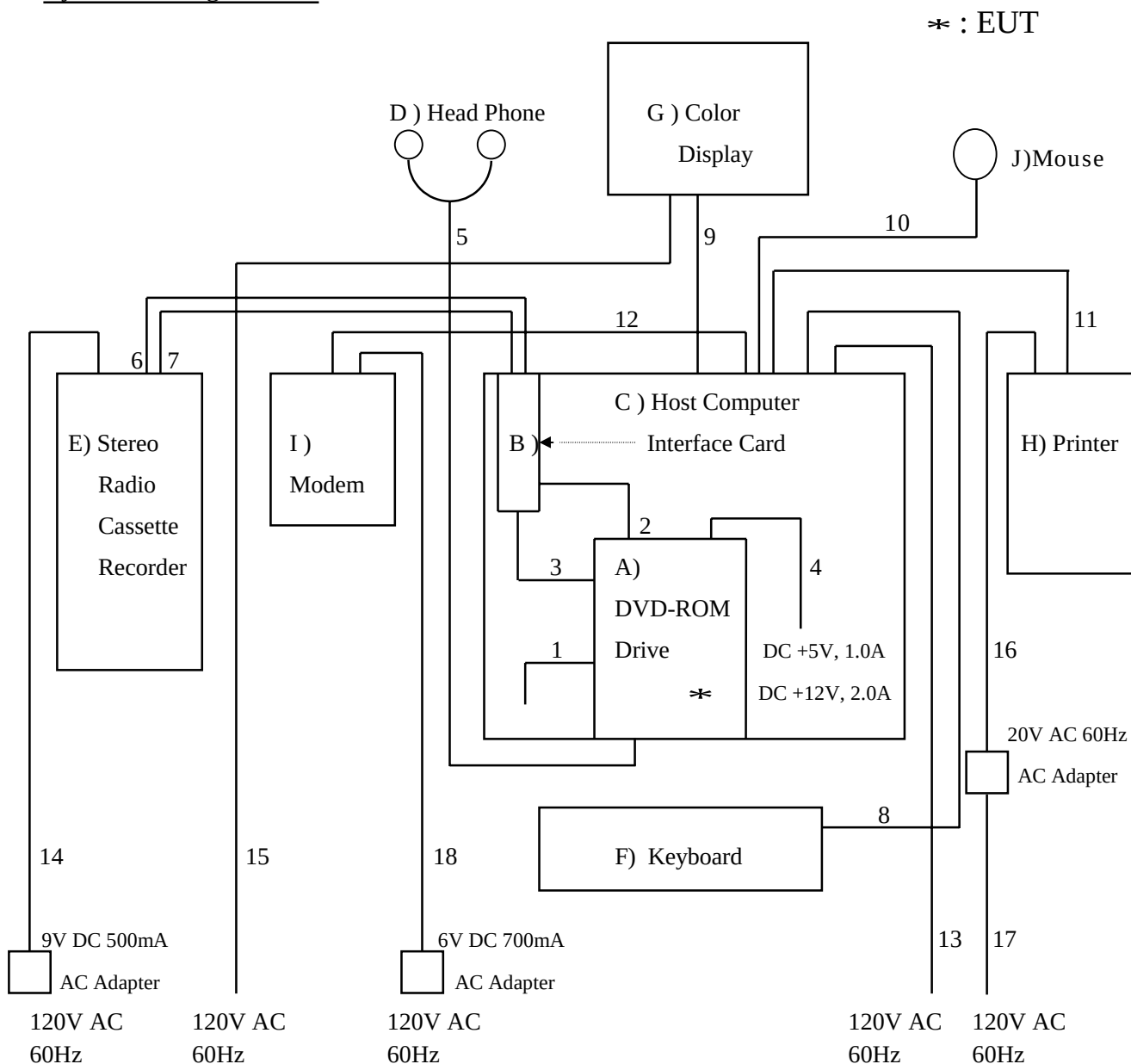
None :

All cables are not attached ferrite core.

SECTION 5. CONSTRUCTION OF EQUIPMENT

The construction of EUT during testing is as follows.

System configuration



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

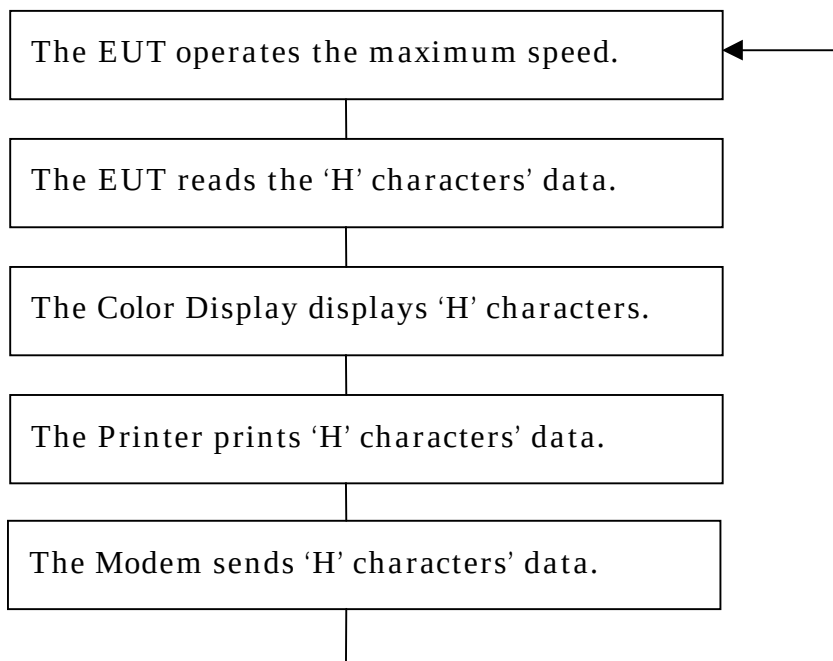
The EUT has been operated under the following conditions during the tests.

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).

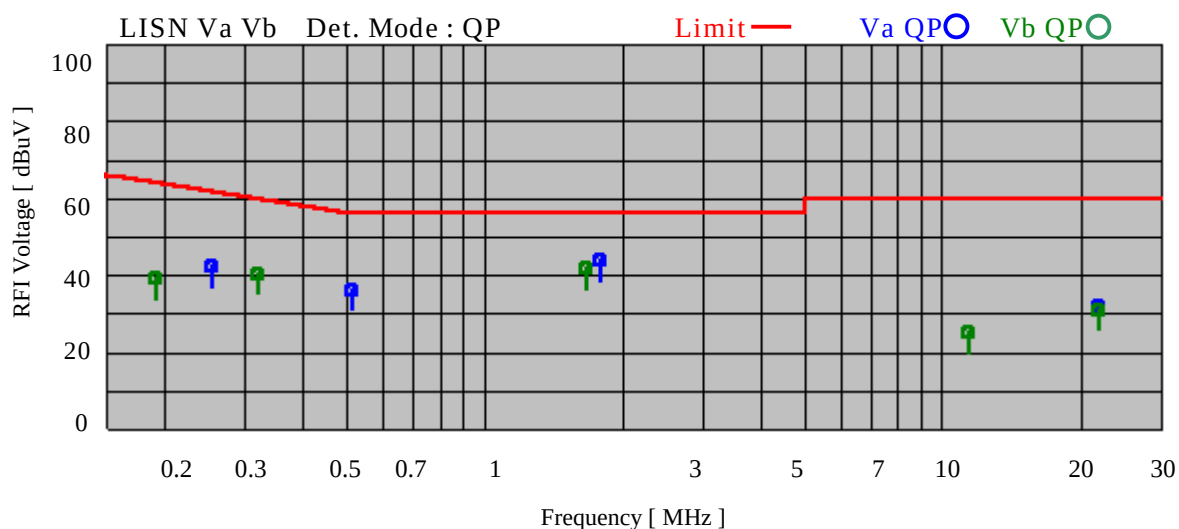
Test item	Test procedure used	Scanned Frequency Range
Conducted Emission	ANSI C63.4-1992	0.15 - 30 MHz
Radiated Emission	ANSI C63.4-1992	30 - 2000 MHz

SECTION 8. EVALUATION OF TEST RESULTS

8.1 Conducted Emission Test

Product Name	: DVD-ROM Drive
Model No.	: SR-8589-B
Serial No.	: 331200A00012
Power Supply	: 120V / 60Hz
Test Mode	: DVD-ROM Read mode
Temp / Humi / Pres	: 21°C / 38% / 1002hPa
Operator	: S. Yamauchi

No	Freq. [MHz]	Reading Level		Factor [dB]	Emission Level		Limit [dBuV]	Margin [dB]
		Va [dBuV]	Vb [dBuV]		Va [dBuV]	Vb [dBuV]		
1	0.192	----	38.9	0.1	----	39.0	63.9	24.9
2	0.257	41.9	----	0.1	42.0	----	61.5	19.5
3	0.321	----	40.1	0.1	----	40.2	59.7	19.5
4	0.515	36.0	----	0.1	36.1	----	56.0	19.9
5	1.672	----	41.4	0.2	----	41.6	56.0	14.4
6	1.803	43.5	----	0.2	43.7	----	56.0	12.3
7	11.456	----	24.3	0.6	----	24.9	60.0	35.1
8	22.005	30.9	----	1.1	32.0	----	60.0	28.0
9	22.006	----	29.7	1.1	----	30.8	60.0	29.2



8.2 Radiated Emission Test

Product Name	: DVD-ROM Drive
Model No.	: SR-8589-B
Serial No.	: 331200A00012
Power Supply	: 120V / 60Hz
Test Mode	: DVD-ROM Read mode
Temp / Humi / Pres	: 21℃ / 38% / 1002hPa
Operator	: S. Yamauchi

[Quasi Peak mode]

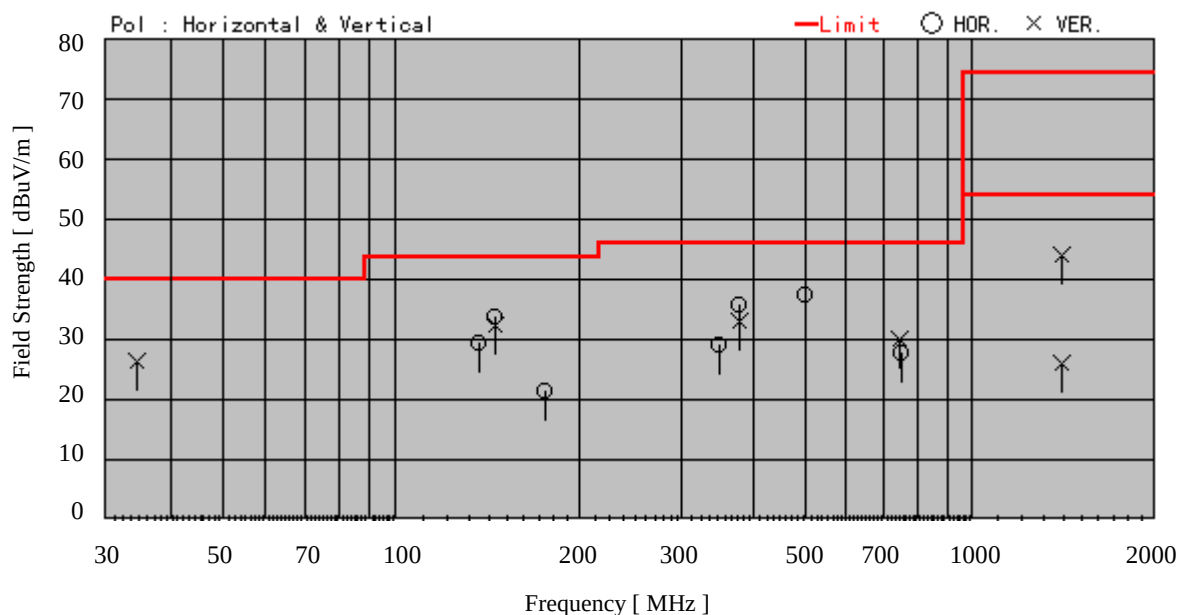
No	Freq. [MHz]	Reading Level		Factor [dB]	Emission Level		Limit [dBuV/m]	Margin [dB]
		Hor.	Ver.		Hor.	Ver.		
		[dBuV]			[dBuV/m]			
1	34.584	----	9.8	16.9	----	26.7	40.0	13.3
2	138.024	14.0	----	15.7	29.7	----	43.5	13.8
3	144.028	----	16.3	16.0	----	32.3	43.5	11.2
4	144.033	17.5	----	16.0	33.5	----	43.5	10.0
5	176.039	4.4	----	17.4	21.8	----	43.5	21.7
6	341.089	10.2	----	18.5	28.7	----	46.0	17.3
7	372.220	----	13.7	19.1	----	32.8	46.0	13.2
8	372.627	16.3	----	19.2	35.5	----	46.0	10.5
9	498.884	14.9	----	22.2	37.1	----	46.0	8.9
10	744.450	----	3.9	26.1	----	30.0	46.0	16.0
11	744.820	1.2	----	26.1	27.3	----	46.0	18.7

[Peak mode]

No	Freq. [MHz]	Reading Level		Factor [dB]	Emission Level		Limit [dBuV/m]	Margin [dB]
		Hor.	Ver.		Hor.	Ver.		
		[dBuV]			[dBuV/m]			
1	1398	----	53.5	-9.3	----	44.2	74.0	29.8

[Average mode]

No	Freq. [MHz]	Reading Level		Factor [dB]	Emission Level		Limit [dBuV/m]	Margin [dB]
		Hor.	Ver.		Hor.	Ver.		
		[dBuV]			[dBuV/m]			
1	1398	----	35.7	-9.3	----	26.4	54.0	27.6



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	12.3 dB	at	1.803 MHz
Radiation measurement	8.9 dB	at	498.884 MHz

8.4 Sample Calculations

8.4.1 Conducted Emission

Example @ 1.803 MHz

$$\begin{array}{rcl}
 \text{Emission Level} & = & \text{Meter Reading} \quad 43.5 \text{ dBuV} \\
 & + & \text{A.M.N. Factor} \quad + \quad 0.2 \text{ dB} \\
 & & \hline
 & = & 43.7 \text{ dBuV}
 \end{array}$$

$$\begin{array}{rcl}
 \text{Margin} & = & \text{Limit} \quad 56.0 \text{ dBuV} \\
 & - & \text{Emission Level} \quad - \quad 43.7 \text{ dBuV} \\
 & & \hline
 & = & 12.3 \text{ dB}
 \end{array}$$

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

8.4.2 Radiated Emission

Example @ 498.884 MHz

$$\begin{array}{rcl}
 \text{Emission Level} & = & \text{Meter Reading} \quad 14.9 \text{ dBuV} \\
 & + & \text{Factor} \quad + \quad 22.2 \text{ dB} \\
 (\text{Factor} & = & \text{Antenna Factor} + \text{Cable Loss}) \quad \hline
 & & = \quad 37.1 \text{ dBuV/m}
 \end{array}$$

$$\begin{array}{rcl}
 \text{Margin} & = & \text{Limit} \quad 46.0 \text{ dBuV/m} \\
 & - & \text{Emission Level} \quad - \quad 37.1 \text{ dBuV/m} \\
 & & \hline
 & = & 8.9 \text{ dB}
 \end{array}$$

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	8/2002	1 Year
RF Filter Section	85460A	3448A00210	Hewlett Packard	8/2002	1 Year
PREAMPLIFIER	8449B	3008A01744	Agilent technologies	8/2002	1 Year
Biconical Antenna	BBA9106	None	Schwarzbeck	10/2002	1 Year
Logperiodic Antenna	UHALP9107	1622	Schwarzbeck	10/2002	1 Year
Double Ridged Antenna	3115	9702-5139	EMCO	9/2002	1 Year
Artificial Mains Network(AMN) = Line Impedance Stabilization Network(LISN)					
	ESH3-Z5	840062/024	Schwarzbeck	7/2002	1 Year
Artificial Mains Network(AMN) = Line Impedance Stabilization Network(LISN)					
	ESH3-Z5	840062/028	Schwarzbeck	8/2002	1 Year

SECTION 11. PRECISION

Tolerances of the measuring instruments are shown on below.

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