JQA File No. : KL80070362

Issued Date : November 13, 2007

TEST REPORT

APPLICANT	:	Sharp Corporation, CS Promotion Group, Quality Assurance Center
ADDRESS	:	22-22 Nagaike-cho, Abeno-ku, Osaka, 545-8522, Japan
PRODUCTS	:	Microwave Oven
MODEL NO.	:	R-CD2200M
SERIAL NO.	:	--
FCC ID	:	APYDMR0168
TEST STANDARD	:	CFR 47 FCC Rules and Regulations Part 18
TESTING LOCATION	:	Japan Quality Assurance Organization KITA-KANSAI Testing Center 1-7-7, Ishimaru, Minoh-shi, Osaka 562-0027, Japan
TEST RESULTS	:	**Passed**
DATE OF TEST	:	October 19, 2007 - November 7, 2007

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

NVLAP LAB CODE 200191-0

Yuichi Fukumoto
Manager
Japan Quality Assurance Organization
KITA-KANSAI Testing Center
Testing Dept. EMC Division
1-7-7, Ishimaru, Minoh-shi, Osaka 562-0027, Japan

- The measurement values stated in Test Report was made with traceable to National Institute of Advanced Industrial Science and Technology (AIST) of Japan and National Institute of Information and Communications Technology (NICT) of Japan.
- The applicable standard, testing condition and testing method which were used for the tests are based on the request of the applicant.
- The test results presented in this report relate only to the offered test sample.
- The contents of this test report cannot be used for the purposes, such as advertisement for consumers.
- This test report shall not be reproduced except in full without the written approval of JQA.

TABLE OF CONTENTS

DEFINITIONS FOR ABBREVIATION AND SYMBOLS USED IN THIS TEST REPORT

"EUT" means Equipment Under the Test.
"N/A" means that Not Applicable.
"N/T" means that Not Tested.

☒ - indicates that the listed condition, standard or equipment is applicable for this report.
☐ - indicates that the listed condition, standard or equipment is not applicable for this report.

Documentation

1 Test Regulation

Applied Standard : CFR 47 FCC Rules and Regulations Part 18
Industrial, Scientific, and Medical Equipment

Test Procedure : FCC/OET MP-5 (1986)
FCC Methods of Measurements of Radio Noise Emissions from Industrial, Scientific, and Medical equipment

2 Test Location

KITA-KANSAI Testing Center
1-7-7, Ishimaru, Minoh-shi, Osaka 562-0027, Japan
KAMEOKA EMC Branch
9-1, Ozaki, Inukanno, Nishibetsuin-cho, Kameoka-shi, Kyoto 621-0126, Japan

3 Recognition of Test Laboratory

JQA KITA-KANSAI Testing Center Testing Department EMC Division is accredited under ISO/IEC 17025 by following accreditation bodies and the test facility of Testing Division is registered by the following bodies.

VLAC Code	:	VLAC-001-2 (Effective through : April 3, 2008)
NVLAP Lab Code	:	200191-0 (Effective through : June 30, 2008)
BSMI Recognition No.	:	SL2-IS-E-6006, SL2-IN-E-6006, SL2-AI-E-6006 (Effective through : September 14, 2010)
VCCI Registration No.	:	R-006, R-008, R-1117, C-006, C-007, C-1674, C-2143 (Effective through : April 3, 2008)
FCC Registration No.	:	683630 (Effective through : June 30, 2008)
IC Registration No.	:	IC 4125-1, IC 6217-1, IC 6217-2 (Effective through : November 16, 2008)

Accredited as conformity assessment body for Japan electrical appliances and material law by METI. (Effective through : February 22, 2010)

4 Description of the Equipment Under Test

1.	Manufacturer	:	Sharp Appliances(Thailand) Limited 64 Moo 5, Tambol Bangsamuk, Amphur, Bangpankong Chachoengsao, Province, Thailand
2.	Products	:	Microwave Oven
3.	Model No.	:	R-CD2200M
4.	Serial No.	:	--
5.	Product Type	:	Prototype
6.	Date of Manufacture	:	--
7.	Power Rating	:	208/230VAC 60Hz, 3.2kW
8.	Rated RF Power Output	:	2200 W
9.	EUT Grounding	:	Grounded at the plug end of the power line
10.	Category	:	Any type unless otherwise specified (miscellaneous)
11.	EUT Authorization	:	Certification
12.	Operating Frequency	:	2450 MHz (ISM frequency)
13.	Upper Frequency of Measurement	:	24.5 GHz
14.	Received Date of EUT	:	October 18, 2007

5 Test Condition

5.1 Power Output

The requirements are ☒ - Applicable [☒ - Tested. ☐ - Not tested by applicant request.]
☐ - Not Applicable

Test site : KITA-KANSAI Testing Center

Test instruments : Refer to Appendix B.

5.2 ISM Frequency

The requirements are ☒ - Applicable [☒ - Tested. ☐ - Not tested by applicant request.]
☐ - Not Applicable

Test site : KITA-KANSAI ☐ - Shielded room ☒ - Anechoic chamber
KAMEOKA ☐ - Shielded room ☐ - Conducted emission facility
☐ - 1st open site

Test instruments : Refer to Appendix B.

5.3 Conducted Powerline

The requirements are ☒ - Applicable [☒ - Tested. ☐ - Not tested by applicant request.]
☐ - Not Applicable

Test site : KITA-KANSAI ☒ - Shielded room ☐ - Anechoic chamber
KAMEOKA ☐ - Shielded room ☐ - Conducted emission facility
☐ - 1st open site

Test instruments : Refer to Appendix B.

5.4 Radiated Emission

5.4.1 Radiated Emission 9 kHz – 30 MHz

The requirements are ☒ - Applicable [☒ - Tested. ☐ - Not tested by applicant request.]
☐ - Not Applicable

Test site : ☐ - KITA-KANSAI 1st open site (3 m)
☒ - KAMEOKA 1st open site ☐ - 3 m ☒ - 10 m ☐ - 30 m
☐ - KAMEOKA 2nd open site ☐ - 3 m ☐ - 10 m

Test instruments : Refer to Appendix B.

5.4.2 Radiated Emission 30 MHz – 1000 MHz

The requirements are ☒ - Applicable [☒ - Tested. ☐ - Not tested by applicant request.]
☐ - Not Applicable

Test site : ☐ - KITA-KANSAI 1st open site (3 m)
☒ - KAMEOKA 1st open site ☐ - 3 m ☒ - 10 m ☐ - 30 m
☐ - KAMEOKA 2nd open site ☐ - 3 m ☐ - 10 m

Test instruments : Refer to Appendix B.

5.4.3 Radiated Emission above 1 GHz

The requirements are ☒ - Applicable [☒ - Tested. ☐ - Not tested by applicant request.]
☐ - Not Applicable

Test site : ☐ - KITA-KANSAI 1st open site (3 m)
☒ - KAMEOKA 1st open site ☒ - 3 m ☐ - 10 m ☐ - 30 m
☐ - KAMEOKA 2nd open site ☐ - 3 m ☐ - 10 m

Test instruments : Refer to Appendix B.

6 Preliminary Test and Test Setup

6.1 Power Output

The power output is measured by the calorimetric method, computing from the observed temperature rise of the load over a period of time. The measured value of power output is used to determine the allowable out-of-band field strength.

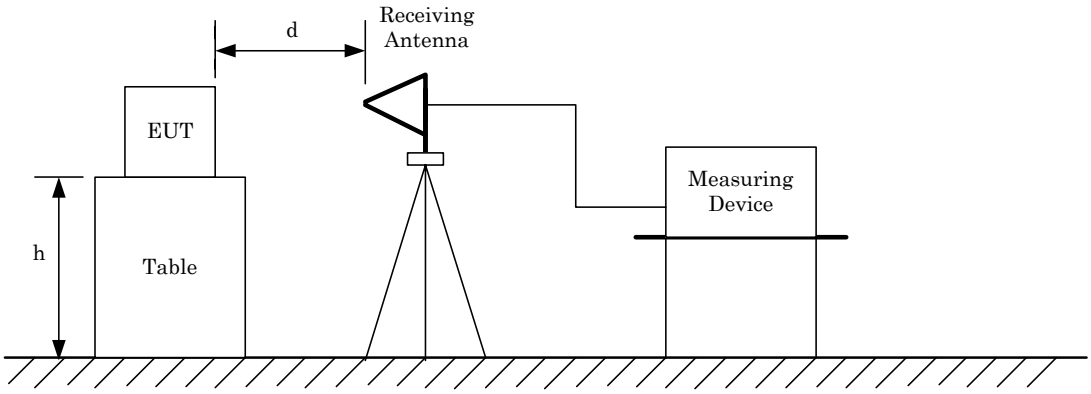
6.2 ISM Frequency

For the EUT was operated with a fundamental frequency in one of the designated band listed in International Telecommunication Union for use as ISM frequencies, the frequency was checked with measuring equipment.

The variation of frequency with time, starting with the EUT and load at the room temperature and continuing until the load quantity has been reduced by evaporation to approximately 20 % of the original quantity. This test is made with nominal rated ac supply voltage.

The variation of frequency for line voltage variation from 80 % to 125 % of nominal rated voltage, starting from the EUT warm from at least 10 minutes use, with the load at room temperature at the beginning of the test.

– Side View –

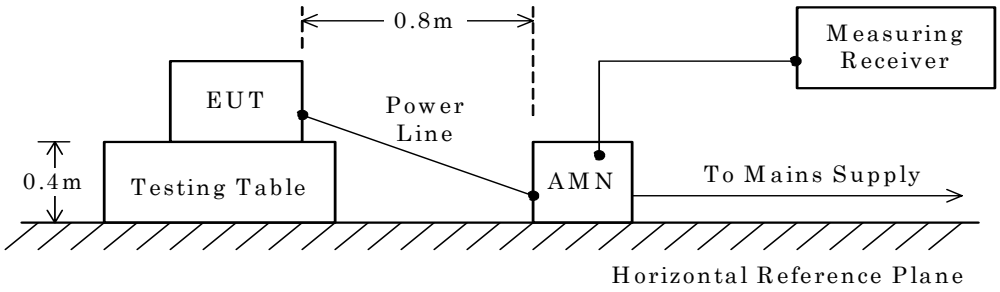


NOTE h : Arbitrary height
d : Arbitrary distance

6.3 Conducted Powerline

The preliminary tests were performed using the spectrum analyzer to observe the emissions characteristics of the EUT.
The EUT configuration, cable configuration and mode of operation were determined for producing the maximum level of emissions.
This configurations was used for final tests.

– Side View –



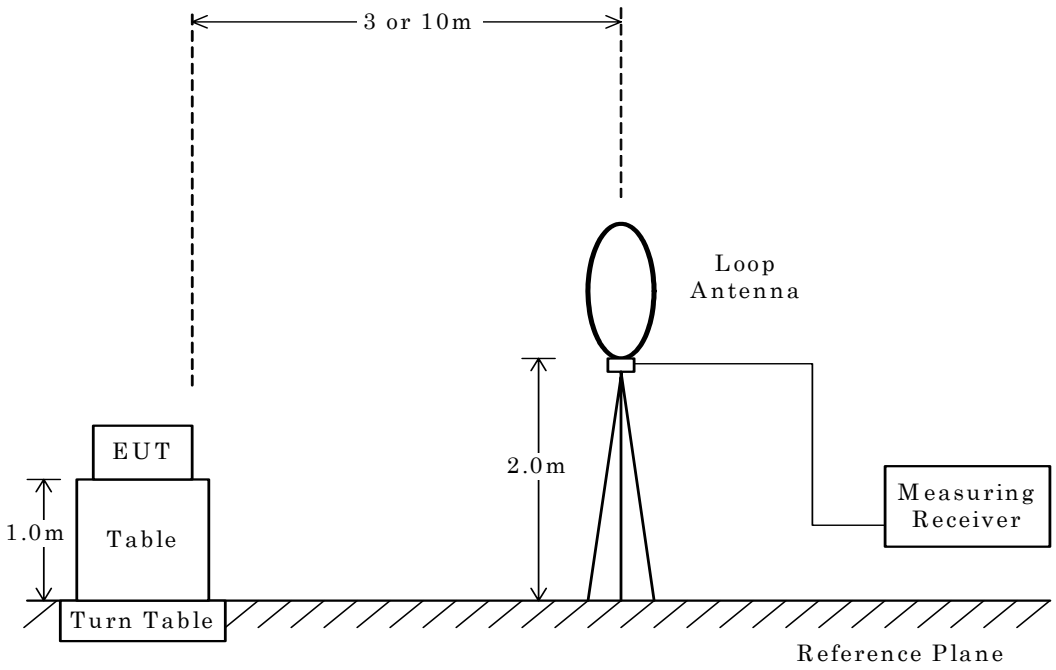
NOTE
AMN : Artificial Mains Network

6.4 Radiated Emission

6.4.1 Radiated Emission 9 kHz – 30 MHz

The preliminary tests were performed at the measurement distance that specified for compliance to determine the emission characteristics of the EUT.
The EUT configuration, cable configuration and mode of operation were determined for producing the maximum level of emissions.
This configurations was used for the final tests.

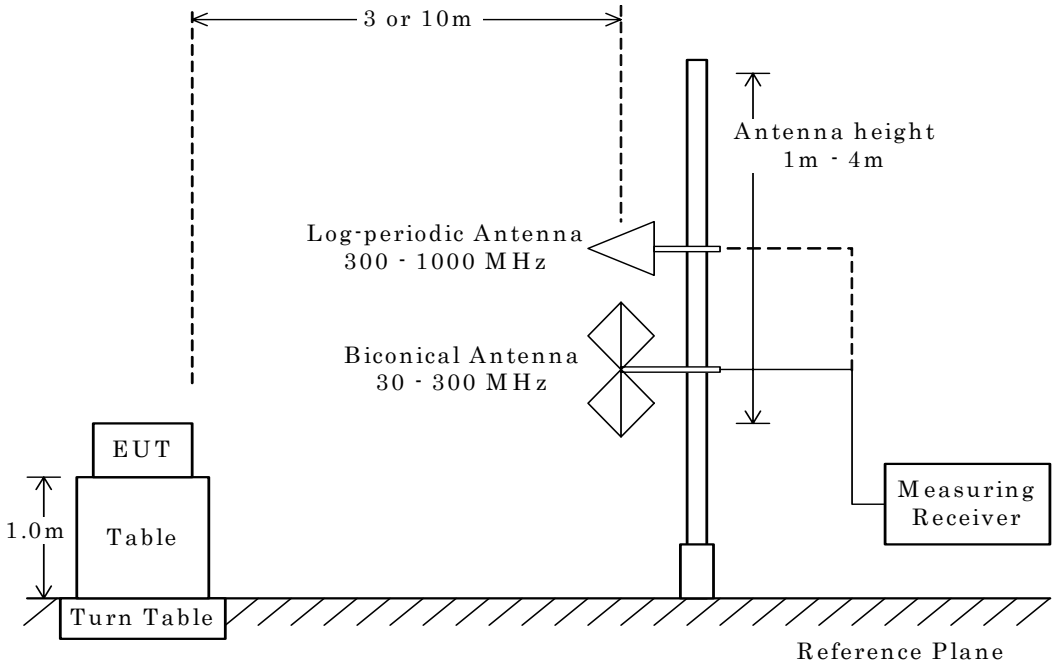
– Side View –



6.4.2 Radiated Emission 30 MHz – 1000 MHz

The preliminary tests were performed at the measurement distance that specified for compliance to determine the emission characteristics of the EUT.
The EUT configuration, cable configuration and mode of operation were determined for producing the maximum level of emissions.
This configurations was used for the final tests.

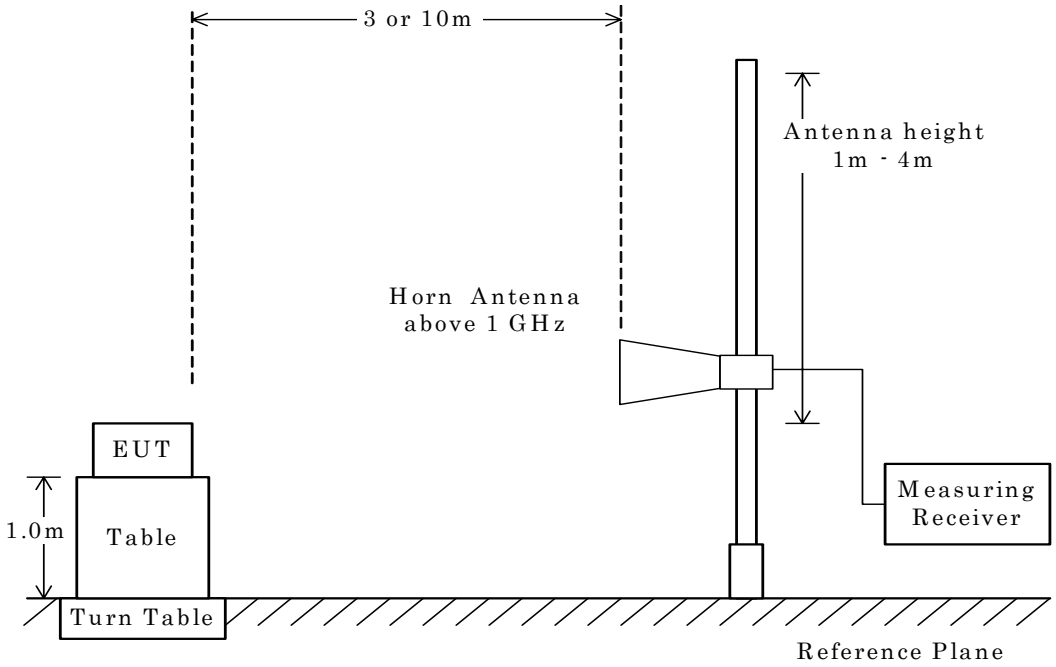
– Side View –



6.4.3 Radiated Emission above 1 GHz

The preliminary tests were performed at the measurement distance that specified for compliance to determine the emission characteristics of the EUT.
The EUT configuration, cable configuration and mode of operation were determined for producing the maximum level of emissions.
This configurations was used for the final tests.

– Side View –



NOTE
The antenna height is scanned depending on the EUT's size and mounting height.

7 Equipment Under Test Modification

☒ - No modifications were conducted by JQA to achieve compliance to the limitations.
☐ - To achieve compliance to the limitations, the following changes were made by JQA during the compliance test.

The modifications will be implemented in all production models of this equipment.

Applicant : Not Applicable
Date : Not Applicable
Typed Name : Not Applicable
Position : Not Applicable Signatory : _____

8 Responsible Party

Responsible Party of Test Item (Product)

Responsible Party :

Contact Person :

_____
Signatory

9 Deviation from Standard

☒ - No deviations from the standard described in clause 1.
☐ - The following deviations were employed from the standard described in clause 1.

_____

10 Test Results

10.1 Power Output

The requirements are ☒ - Applicable [☒ - Tested. ☐ - Not tested by applicant request.]
☐ - Not Applicable

AC208V 60Hz
Power Output (calorimetric method) 2005.2 watts

Field Strength Limit 50.1 μV/m at 300 meters

AC Power Input 3050 watts

AC230V 60Hz
Power Output (calorimetric method) 2051.9 watts

Field Strength Limit 50.6 μV/m at 300 meters

AC Power Input 3109 watts

Remarks : Field strength may not exceed 10 μV/m at 1600 meters.

10.2 ISM Frequency

The requirements are ☒ - Applicable [☒ - Tested. ☐ - Not tested by applicant request.]
☐ - Not Applicable

☒ - **Passed** ☐ - **Failed** ☐ - **Not judged**

Remarks :

10.3 Conducted Powerline

The requirements are ☒ - Applicable [☒ - Tested. ☐ - Not tested by applicant request.]
☐ - Not Applicable

☒ - **Passed** ☐ - **Failed** ☐ - **Not judged**

Min. Limit Margin (Quasi-Peak)	13.8	dB	at	0.55 MHz
Max. Limit Exceeding (Quasi-Peak)		dB	at	MHz
Uncertainty of Measurement Results				+/-2.9 dB(2σ)

Remarks : AC208V 60Hz

10.4 Radiated Emission

The requirements are ☒ - Applicable [☒ - Tested. ☐ - Not tested by applicant request.]
☐ - Not Applicable

☒ - **Passed** ☐ - **Failed** ☐ - **Not judged**

Min. Limit Margin (Average)	1.8	dB	at	4903.8 MHz
Max. Limit Exceeding (Average)		dB	at	MHz

Uncertainty of Measurement Results		
9 kHz – 30 MHz	+/-1.6	dB(2σ)
30 MHz – 300 MHz	+/-4.2	dB(2σ)
300 MHz – 1000 MHz	+/-4.3	dB(2σ)
above 1 GHz	+/-3.7	dB(2σ)

Remarks : AC230V 60Hz
The measurement result is within the range of measurement uncertainty.

11 Summary

General Remarks :

The EUT was tested according to the requirements of the following standard.
CFR 47 FCC Rules and Regulations Part 18
The test configuration is shown in clause 12 to 14.
The conclusion for the test items of which are required by the applied regulation is indicated under the test results.

Test Results :

The "as received" sample;

☒ - fulfill the test requirements of the regulation mentioned on clause 1.
☐ - doesn't fulfill the test requirements of the regulation mentioned on clause 1.

Reviewed by:

S. Kino

Shigeru Kinoshita
Deputy Manager
Testing Dept. EMC Div.
JQA KITA-KANSAI Testing Center

Tested by:

A. Hosoda

Akio Hosoda
Manager
Testing Dept. EMC Div.
JQA KITA-KANSAI Testing Center

12 Operating Condition

Power Supply Voltage : 120VAC 60Hz

Operation Mode
The EUT is tested with the dummy load located in the center of the oven.
The load consists of a quantity of tap water in a beaker, which is as follows.

Power output measurement	: 2500 ml
ISM frequency measurement	: 2500 ml
Conducted powerline measurement	: 1000 ml
Radiated emission measurement	: 1750 ml

For measurement of radiation on 2nd and 3rd harmonic, two loads, one of 1750 ml and the other of 750 ml, of water are used. Each load is tested both with the beaker located in the center of the oven and with it in the right front corner.

Type of Magnetron : 2M248K(L) by Toshiba

13 Test Configuration

The equipment under test (EUT) consists of :

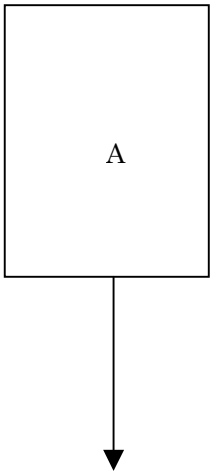
	Item	Manufacturer	Model No.	Serial No.	FCC ID
A	Microwave Oven	Sharp Appliances(Thailand)	R-CD2200M	--	APYDMR0168

The auxiliary equipment used for testing :
None

Type of Cable:

No.	Description	Identification (Manu. etc.)	Connector Shielded	Cable Shielded	Ferrite Core	Length (m)
1	AC Cord	--	--	No	No	1.4

14 Equipment Under Test Arrangement (Drawings)



AC208/230V 60Hz

15 Equipment Under Test Arrangement (Photographs)

15.1 Conducted Powerline

Photograph present configuration with maximum emission

15.2 Radiated Emission

– Front View –

– Rear View –

Photograph present configuration with maximum emission

Appendix A: Test Data

A.1 Power Output

AC208V 60Hz

ISM Frequency Device

Test Date: October 19, 2007
Temp.: 29 °C, Humi: 55 %

The power output was measured by the calorimetric method, computing the power output from the observed temperature rise of the load over a period of time.

Rated RF Power: 2200W
Load(water): 2500ml (800ml X2, 900ml)
Time: 48sec $T = \frac{4.2 \times Load(ml) \times 10}{RFPower}$

	$t_1(before\ \ test)$	$t_2(after\ \ test)$	$t_2 - t_1$	RF Power**
1st	11.5°C	20.4°C	8.9°C	
	10.7°C	20.2°C	9.5°C	
	10.3°C	19.4°C	9.1°C	
Average			9.17°C	2005.9W
2nd	11.4°C	20.2°C	8.8°C	
	9.7°C	19.0°C	9.3°C	
	11.3°C	20.7°C	9.4°C	
Average			9.17°C	2005.9W
3rd	10.8°C	19.8°C	9.0°C	
	9.5°C	19.0°C	9.5°C	
	10.9°C	20.0°C	9.1°C	
Average			9.20°C	2012.5W
4th	10.6°C	19.5°C	8.9°C	
	10.2°C	19.6°C	9.4°C	
	11.2°C	20.3°C	9.1°C	
Average			9.13°C	1997.2W
5th	9.2°C	18.1°C	8.9°C	
	10.1°C	19.6°C	9.5°C	
	8.9°C	18.0°C	9.1°C	
Average			9.17°C	2005.9W

$$**RFPower = \frac{4.2 \times Load(ml) \times (t_2 - t_1)}{T}$$

Results of Average RF Power: 2005.5W

The limit of the radiated emission at 300m : 25SQRT(2005.5/500)[μV/m]=50.1[μV/m]
25SQRT(2005.5/500)[μV/m]=34[dB(μV/m)]

The AC power input to the oven is measured to determine if the oven is operating in accordance with the manufacturer's specifications.

Rated Power Supply:AC208V/60Hz, 3200W
Measured Input Power :AC208V60Hz 15.29A, 3050W

AC230V 60Hz

ISM Frequency Device

Test Date: October 19, 2007
Temp.: 29 °C, Humi: 55 %

The power output was measured by the calorimetric method, computing the power output from the observed temperature rise of the load over a period of time.

Rated RF Power: 2200W
Load(water): 2500ml (800ml X2, 900ml)
Time: 48sec $T = \frac{4.2 \times Load(ml) \times 10}{RFPower}$

	$t_1(before\ \ test)$	$t_2(after\ \ test)$	$t_2 - t_1$	RF Power**
1st	11.1°C	20.8°C	9.7°C	
	11.7°C	21.3°C	9.6°C	
	10.5°C	19.4°C	8.9°C	
Average			9.40°C	2056.3W
2nd	11.4°C	21.0°C	9.6°C	
	11.1°C	20.5°C	9.4°C	
	11.8°C	20.8°C	9.0°C	
Average			9.33°C	2040.9W
3rd	10.8°C	20.4°C	9.6°C	
	9.8°C	19.4°C	9.6°C	
	9.5°C	18.5°C	9.0°C	
Average			9.40°C	2056.3W
4th	10.4°C	20.0°C	9.6°C	
	10.2°C	19.9°C	9.7°C	
	11.2°C	20.1°C	8.9°C	
Average			9.40°C	2056.3W
5th	10.1°C	19.8°C	9.7°C	
	10.8°C	20.3°C	9.5°C	
	10.6°C	19.5°C	8.9°C	
Average			9.37°C	2049.7W

$$**RFPower = \frac{4.2 \times Load(ml) \times (t_2 - t_1)}{T}$$

Results of Average RF Power: 2051.9W

The limit of the radiated emission at 300m : 25SQRT(2051.9/500)[μV/m]=50.6[μV/m]
25SQRT(2051.9/500)[μV/m]=34.1[dB(μV/m)]

The AC power input to the oven is measured to determine if the oven is operating in accordance with the manufacturer's specifications.

Rated Power Supply:AC208V/60Hz, 3200W
Measured Input Power :AC230V60Hz 14.13A, 3109W

A.2 ISM Frequency

Test Date : November 7, 2007
Temp. : 22°C Humi. : 57 %

The maximum frequency deviation was measured at -26dB with respect to the maximum level.

AC208V 60Hz

Maximum Frequency		Voltage Variations	Remarks
Lower Freqency	Upper Freqency		
2420.4	2470.0	166.4V(80%)	A
2411.6	2470.4	208.0V(100%)	A
2421.2	2470.0	260.0V(125%)	A

AC230V 60Hz

Maximum Frequency		Voltage Variations	Remarks
Lower Freqency	Upper Freqency		
2415.2	2469.3	184.0V(80%)	A
2400.8	2471.2	230.0V(100%)	A
2414.3	2470.0	287.5V(125%)	A

The results were within 2450MHz±50MHz.

Remarks

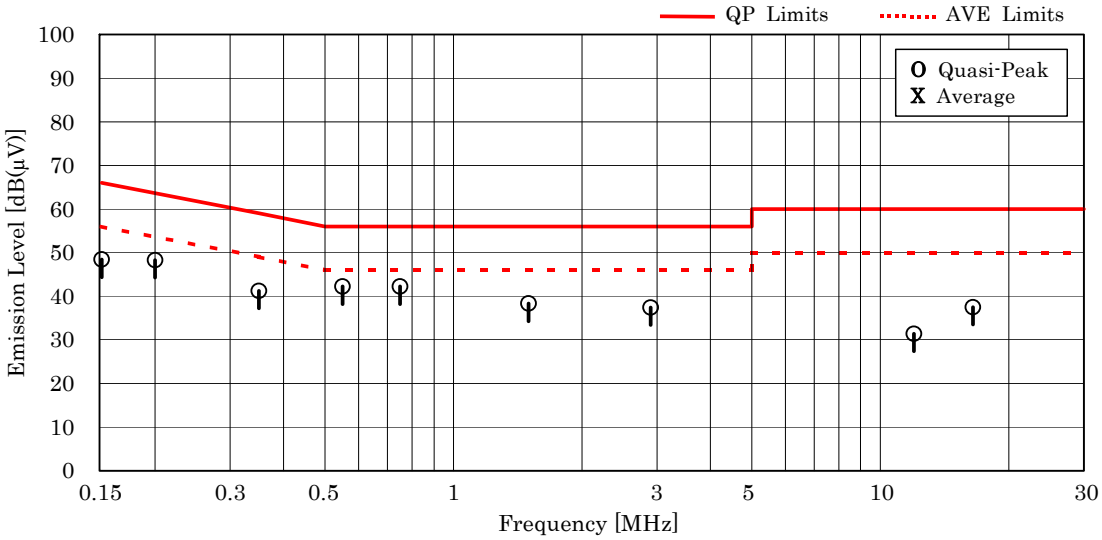
	Detector Function	RES B.W.	V.B.W.	Sweep Time	Span
A	Peak	100 kHz	10 kHz	30 msec.	100 MHz

A.3 Conducted Powerline

Test Date: October 22, 2007
Temp.: 25 °C, Humi: 52 %

Test condition : AC208V 60Hz

Frequency [MHz]	Corr. Factor [dB]	Meter Readings [dB(μV)] VA QP	VA AVE	VB QP	VB AVE	Limits [dB(μV)] QP	Limits [dB(μV)] AVE	Results [dB(μV)] QP	Results [dB(μV)] AVE	Margin [dB]	Remarks
0.15	0.4	48.0	--	48.0	--	66.0	56.0	48.4	--	+17.6	-
0.20	0.3	48.0	--	48.0	--	63.6	53.6	48.3	--	+15.3	-
0.35	0.2	41.0	--	41.0	--	59.0	49.0	41.2	--	+17.8	-
0.55	0.2	42.0	--	42.0	--	56.0	46.0	42.2	--	+13.8	-
0.75	0.2	42.0	--	42.0	--	56.0	46.0	42.2	--	+13.8	-
1.50	0.3	38.0	--	32.0	--	56.0	46.0	38.3	--	+17.7	-
2.90	0.4	35.0	--	37.0	--	56.0	46.0	37.4	--	+18.6	-
12.00	0.4	31.0	--	31.0	--	60.0	50.0	31.4	--	+28.6	-
16.50	0.5	37.0	--	37.0	--	60.0	50.0	37.5	--	+22.5	-

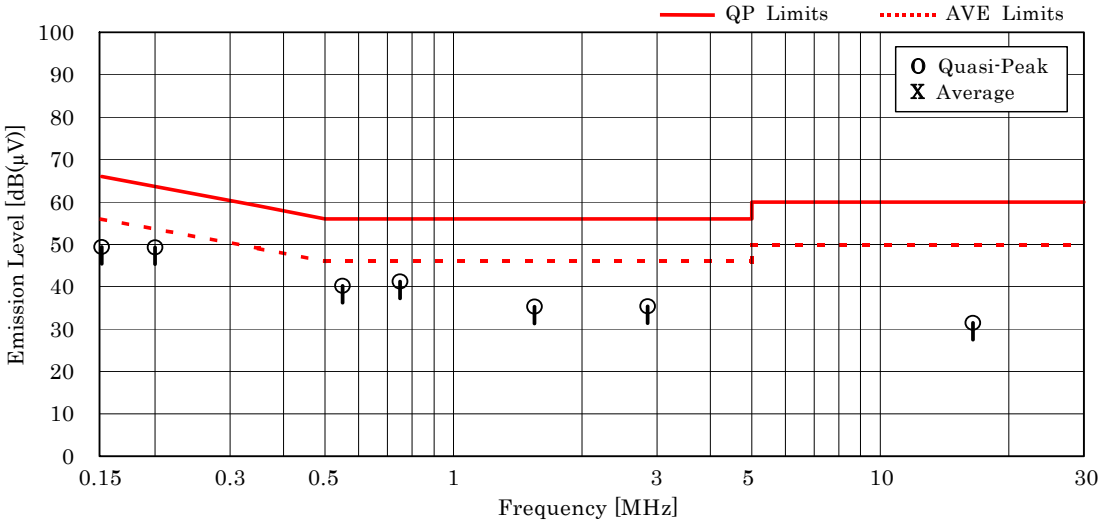


NOTES
1. The spectrum was checked from 0.15 MHz to 30 MHz.
2. The correction factor includes the AMN insertion loss and the cable loss.
3. The symbol of "<" means "or less".
4. The symbol of ">" means "more than".
5. The symbol of "--" means "not applicable".
6. Calculated result at 0.55 MHz, as the worst point shown on underline:
   Correction Factor + Meter Reading = 0.2 + 42.0 = 42.2 dB(μV)
7. QP : Quasi-Peak Detector / AVE : Average Detector
8. Test receiver setting(s) : CISPR QP 9 kHz / Average 9 kHz

Test Date: October 22, 2007
Temp.: 25 °C, Humi: 52 %

Test condition : AC230V 60Hz

Frequency [MHz]	Corr. Factor [dB]	Meter Readings [dB(μV)] VA QP	VA AVE	VB QP	VB AVE	Limits [dB(μV)] QP	Limits [dB(μV)] AVE	Results [dB(μV)] QP	Results [dB(μV)] AVE	Margin [dB]	Remarks
0.15	0.4	49.0	--	49.0	--	66.0	56.0	49.4	--	+16.6	-
0.20	0.3	49.0	--	49.0	--	63.6	53.6	49.3	--	+14.3	-
0.55	0.2	40.0	--	40.0	--	56.0	46.0	40.2	--	+15.8	-
0.75	0.2	41.0	--	41.0	--	56.0	46.0	41.2	--	+14.8	-
1.55	0.3	35.0	--	33.0	--	56.0	46.0	35.3	--	+20.7	-
2.85	0.4	35.0	--	33.0	--	56.0	46.0	35.4	--	+20.6	-
16.50	0.5	31.0	--	31.0	--	60.0	50.0	31.5	--	+28.5	-



NOTES
1. The spectrum was checked from 0.15 MHz to 30 MHz.
2. The correction factor includes the AMN insertion loss and the cable loss.
3. The symbol of "<" means "or less".
4. The symbol of ">" means "more than".
5. The symbol of "--" means "not applicable".
6. Calculated result at 0.20 MHz, as the worst point shown on underline:
   Correction Factor + Meter Reading = 0.3 + 49.0 = 49.3 dB(μV)
7. QP : Quasi-Peak Detector / AVE : Average Detector
8. Test receiver setting(s) : CISPR QP 9 kHz / Average 9 kHz

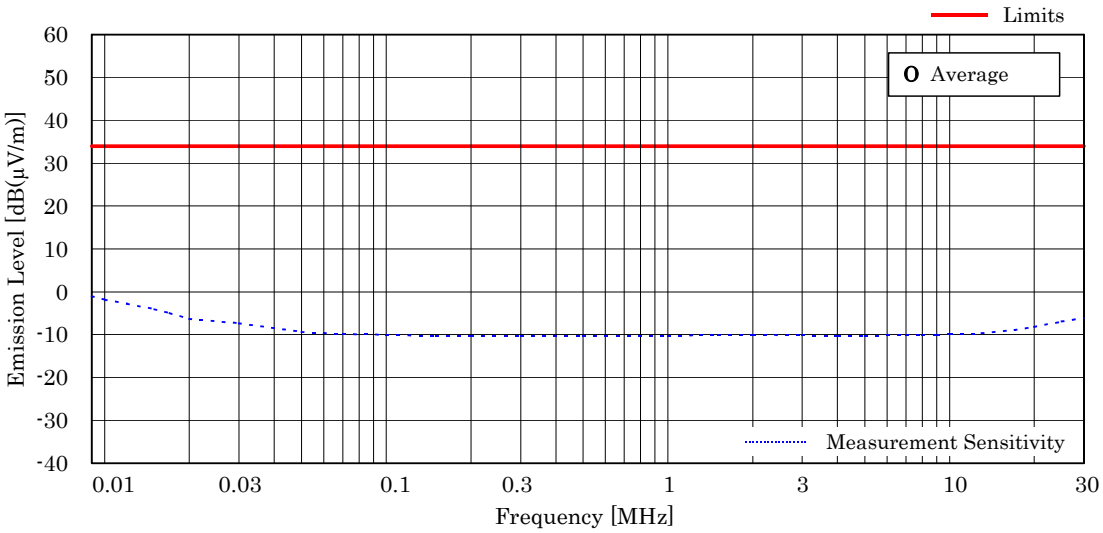
A.4 Radiated Emission

A.2.1 Radiated Emission 9 kHz – 30 MHz

Test Date: October 28, 2007
Temp.: 26 °C, Humi: 57 %

Test condition : AC208V 60Hz

Frequency [MHz]	Correction Factor [dB(1/m)]	Meter Readings at 3 m [dB(μV)]	Limits at 300 m [dB(μV/m)]	Results at 300 m [dB(μV/m)]	Margin [dB]	Remarks
0.15	-0.2	< 40.0	34.0	< - 0.2	> +34.2	-
0.30	-0.3	< 40.0	34.0	< - 0.3	> +34.3	-
0.50	-0.3	< 40.0	34.0	< - 0.3	> +34.3	-
1.00	-0.2	< 40.0	34.0	< - 0.2	> +34.2	-
3.00	-0.1	< 40.0	34.0	< - 0.1	> +34.1	-
5.00	-0.2	< 40.0	34.0	< - 0.2	> +34.2	-
10.00	0.1	< 40.0	34.0	< 0.1	> +33.9	-
20.00	1.8	< 40.0	34.0	< 1.8	> +32.2	-
30.00	3.9	< 40.0	34.0	< 3.9	> +30.1	-

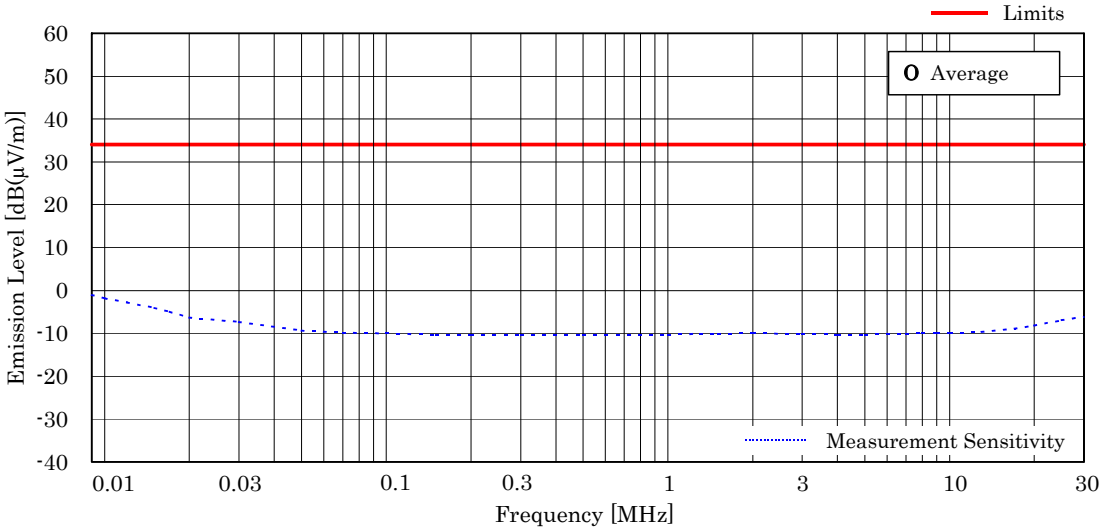


NOTES
1. Test Distance : 3 m (Specified Distance : 300 m)
2. The spectrum was checked from 9 kHz to 30 MHz.
3. The correction factor includes the antenna factor and the cable loss.
4. The symbol of "<" means "or less".
5. The symbol of ">" means "more than".
6. Calculated result at 30.00 MHz, as the worst point shown on underline:
   Correction Factor + Meter Reading = 3.9 + <40.0 = <43.9 dB(μV/m)
   Result at 300 m = -40.0 + <43.9 = <3.9 dB(μV/m) = <1.6 μV/m (Conversion Factor : 20dB/decade)
7. Test receiver setting(s) : Average 200 Hz (9 kHz - 150 kHz) / Average 9 kHz (150 kHz - 30 MHz)

Test Date: October 28, 2007
Temp.: 26 °C, Humi: 57 %

Test condition : AC230V 60Hz

Frequency [MHz]	Correction Factor [dB(1/m)]	Meter Readings at 3 m [dB(μV)]	Limits at 300 m [dB(μV/m)]	Results at 300 m [dB(μV/m)]	Margin [dB]	Remarks
0.15	-0.2	< 40.0	34.1	< - 0.2	> +34.3	-
0.30	-0.3	< 40.0	34.1	< - 0.3	> +34.4	-
0.50	-0.3	< 40.0	34.1	< - 0.3	> +34.4	-
1.00	-0.2	< 40.0	34.1	< - 0.2	> +34.3	-
3.00	-0.1	< 40.0	34.1	< - 0.1	> +34.2	-
5.00	-0.2	< 40.0	34.1	< - 0.2	> +34.3	-
10.00	0.1	< 40.0	34.1	< 0.1	> +34.0	-
20.00	1.8	< 40.0	34.1	< 1.8	> +32.3	-
30.00	3.9	< 40.0	34.1	< 3.9	> +30.2	-



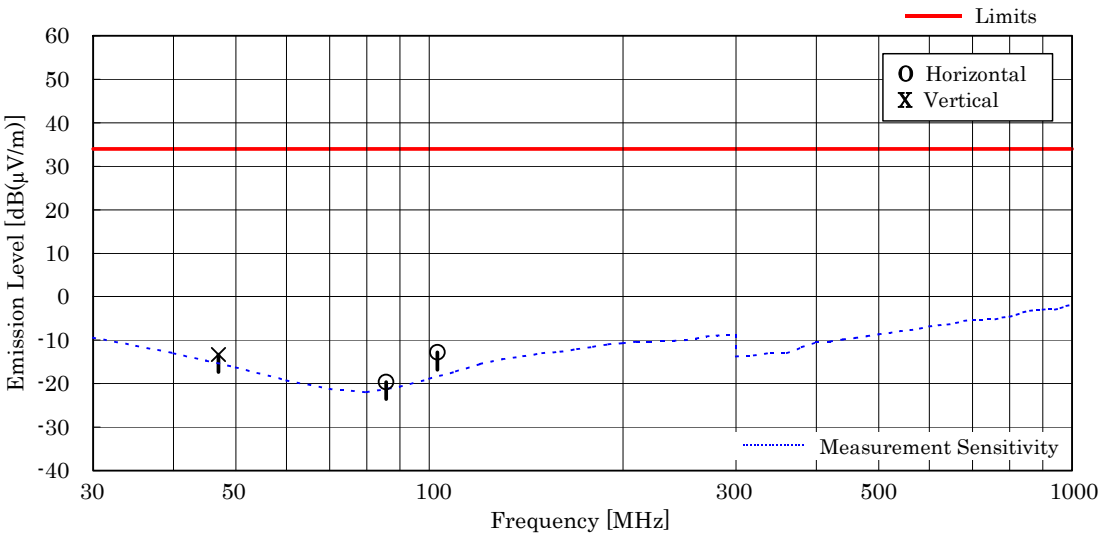
NOTES
1. Test Distance : 3 m (Specified Distance : 300 m)
2. The spectrum was checked from 9 kHz to 30 MHz.
3. The correction factor includes the antenna factor and the cable loss.
4. The symbol of "<" means "or less".
5. The symbol of ">" means "more than".
6. Calculated result at 30.00 MHz, as the worst point shown on underline:
   Correction Factor + Meter Reading = 3.9 + <40.0 = <43.9 dB(μV/m)
   Result at 300 m = -40.0 + <43.9 = <3.9 dB(μV/m) = <1.6 μV/m (Conversion Factor : 20dB/decade)
7. Test receiver setting(s) : Average 200 Hz (9 kHz - 150 kHz) / Average 9 kHz (150 kHz - 30 MHz)

A.2.2 Radiated Emission 30 MHz – 1000 MHz

Test Date: November 7, 2007
Temp.: 13 °C, Humi: 66 %

Test condition : AC208V 60Hz

Frequency [MHz]	Antenna Factor [dB(1/m)]	Cable Loss [dB]	Meter Readings at 10 m [dB(μV)] Hori.	Vert.	Limits at 300 m [dB(μV/m)]	Results at 300 m [dB(μV/m)] Hori.	Vert.	Margin [dB]	Remarks
38.0	16.5	0.8	< 0.0	< 0.0	34.0	< -12.2	< -12.2	> +46.2	-
47.0	13.4	0.8	< 0.0	2.0	34.0	< -15.3	-13.3	+47.3	-
85.7	7.2	1.2	1.5	< 0.0	34.0	-19.6	< -21.1	+53.6	-
103.0	9.9	1.3	5.5	< 0.0	34.0	-12.8	< -18.3	+46.8	-
180.0	16.3	1.7	< 0.0	< 0.0	34.0	< -11.5	< -11.5	> +45.5	-
200.0	17.1	1.8	< 0.0	< 0.0	34.0	< -10.6	< -10.6	> +44.6	-
325.0	13.8	2.4	< 0.0	< 0.0	34.0	< -13.3	< -13.3	> +47.3	-
400.0	16.3	2.8	< 0.0	< 0.0	34.0	< -10.4	< -10.4	> +44.4	-
1000.0	23.0	4.7	< 0.0	< 0.0	34.0	< - 1.8	< - 1.8	> +35.8	-

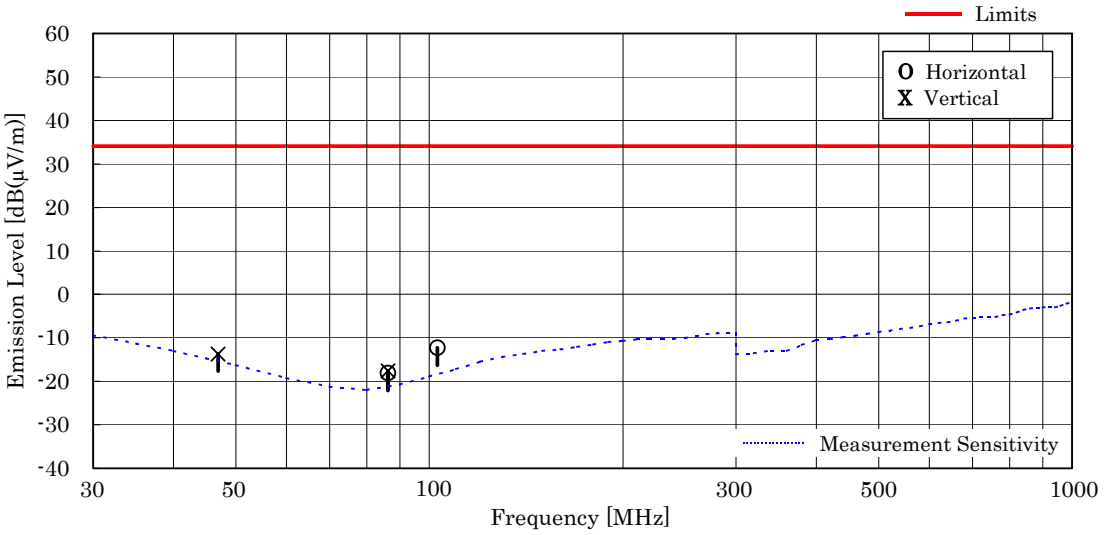


NOTES
1. Test Distance : 10 m (Specified Distance : 300 m)
2. The spectrum was checked from 30 MHz to 1000 MHz.
3. The symbol of "<" means "or less".
4. The symbol of ">" means "more than".
5. Calculated result at 1,000.0 MHz, as the worst point shown on underline:
   Antenna Factor + Cable Loss + Meter Reading = 23.0 + 4.7 + <0.0 = <27.7 dB(μV/m)
   Result at 300 m = -29.5 + <27.7 = <-1.8 dB(μV/m) = <0.8 μV/m (Conversion Factor : 20dB/decade)
6. Test receiver setting(s) : Average 120 kHz

Test Date: November 7, 2007
Temp.: 13 °C, Humi: 66 %

Test condition : AC230V 60Hz

Frequency [MHz]	Antenna Factor [dB(1/m)]	Cable Loss [dB]	Meter Readings at 10 m [dB(μV)] Hori.	Vert.	Limits at 300 m [dB(μV/m)]	Results at 300 m [dB(μV/m)] Hori.	Vert.	Margin [dB]	Remarks
46.9	13.5	0.8	< 0.0	1.5	34.1	< -15.2	-13.7	+47.8	-
86.2	7.2	1.2	3.0	3.5	34.1	-18.1	-17.6	+51.7	-
103.0	9.9	1.3	6.0	< 0.0	34.1	-12.3	< -18.3	+46.4	-
150.0	15.0	1.6	< 0.0	< 0.0	34.1	< -12.9	< -12.9	> +47.0	-
180.0	16.3	1.7	< 0.0	< 0.0	34.1	< -11.5	< -11.5	> +45.6	-
230.0	17.3	2.0	< 0.0	< 0.0	34.1	< -10.2	< -10.2	> +44.3	-
250.0	17.5	2.1	< 0.0	< 0.0	34.1	< - 9.9	< - 9.9	> +44.0	-
320.0	13.7	2.4	< 0.0	< 0.0	34.1	< -13.4	< -13.4	> +47.5	-
400.0	16.3	2.8	< 0.0	< 0.0	34.1	< -10.4	< -10.4	> +44.5	-
1000.0	23.0	4.7	< 0.0	< 0.0	34.1	< - 1.8	< - 1.8	> +35.9	-



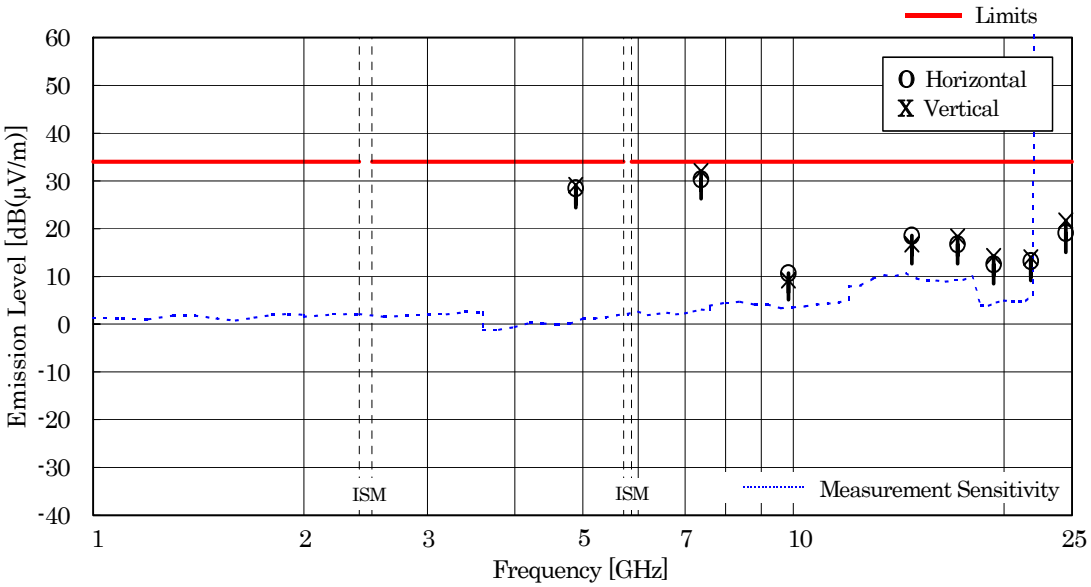
NOTES
1. Test Distance : 10 m (Specified Distance : 300 m)
2. The spectrum was checked from 30 MHz to 1000 MHz.
3. The symbol of "<" means "or less".
4. The symbol of ">" means "more than".
5. Calculated result at 1,000.0 MHz, as the worst point shown on underline:
   Antenna Factor + Cable Loss + Meter Reading = 23.0 + 4.7 + <0.0 = <27.7 dB(μV/m)
   Result at 300 m = -29.5 + <27.7 = <-1.8 dB(μV/m) = <0.8 μV/m (Conversion Factor : 20dB/decade)
6. Test receiver setting(s) : Average 120 kHz

A.2.3 Radiated Emission above 1 GHz

Test Date: October 28, 2007
Temp.: 26 °C, Humi: 57 %

Test condition : AC208V 60Hz

Frequency [MHz]	Antenna Factor [dB(1/m)]	Corr. Factor [dB]	Meter Readings at 3 m [dB(μV)] Hori.	Vert.	Limits at 300 m [dB(μV/m)]	Results at 300 m [dB(μV/m)] Hori.	Vert.	Margin [dB]	Remarks
2399.5	21.4	10.8	< 26.0	< 26.0	34.0	< 18.2	< 18.2	> +15.8	-
4891.0	36.4	-20.8	52.8	53.5	34.0	28.4	29.1	+ 4.9	-
7381.0	36.8	-18.8	52.3	54.0	34.0	30.3	32.0	+ 2.0	-
9834.3	39.3	-26.0	37.3	35.9	34.0	10.6	9.2	+23.4	-
12290.0	43.4	-25.2	< 35.0	< 35.0	34.0	< 13.2	< 13.2	> +20.8	-
14763.0	45.0	-25.0	38.5	36.7	34.0	18.5	16.7	+15.5	-
17166.1	44.0	-25.3	38.0	39.6	34.0	16.7	18.3	+15.7	-
19320.0	40.5	-25.8	37.8	39.5	34.0	12.5	14.2	+19.8	-
21830.0	40.5	-24.5	37.2	38.0	34.0	13.2	14.0	+20.0	-
24500.0	40.5	-20.0	38.6	41.2	34.0	19.1	21.7	+12.3	-

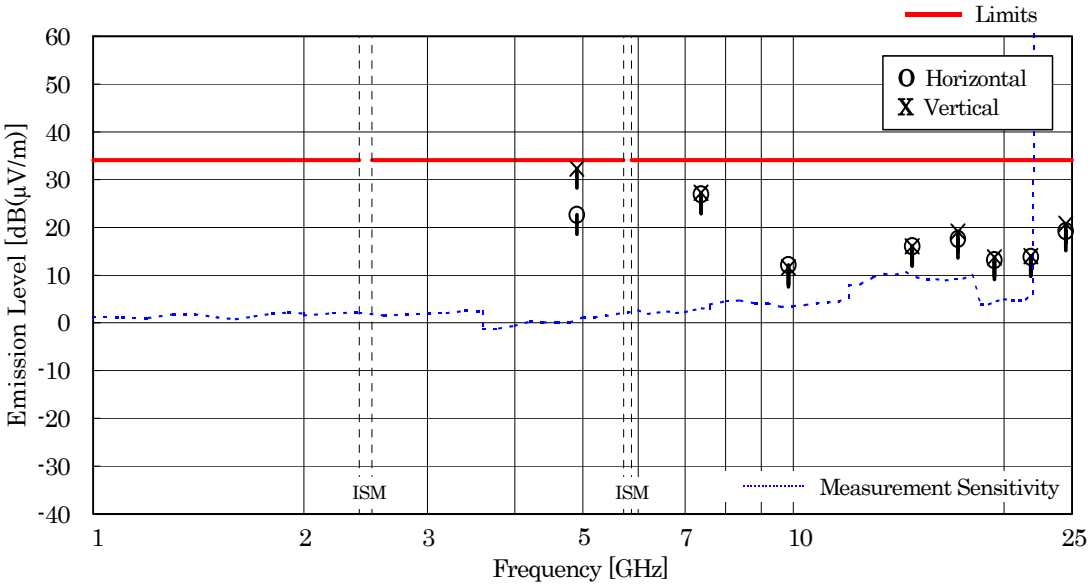


NOTES
1. Test Distance : 3 m (Specified Distance : 300 m)
2. The spectrum was checked from 1.0 GHz to 25 GHz (10th harmonic of the operating frequency).
3. The correction factor is shown as follows:
   Cable Loss + 10dB Pad Attenuator [dB] (1.0 - 3.6GHz)
   Cable Loss + 20dB Pad Attenuator - Pre-Amplifier Gain [dB] (3.6 - 7.6GHz / 18.0 - 26.5GHz)
   Cable Loss + 10dB Pad Attenuator - Pre-Amplifier Gain [dB] (7.6 - 18.0GHz)
4. The symbol of "<" means "or less".
5. The symbol of ">" means "more than".
6. Calculated result at 7381.0 MHz, as the worst point shown on underline:
   Antenna Factor + Correction Factor + Meter Reading = 36.8 + (-18.8) + 54.0 = 72.0 dB(μV/m)
   Result at 300 m = -40.0 + 72.0 = 32.0 dB(μV/m) = 39.8 μV/m (Conversion Factor : 20dB/decade)
7. Spectrum analyzer setting(s) :
   Resolution Bandwidth = 1 MHz, Video Bandwidth = 10 Hz, Sweep Time = AUTO

Test Date: October 28, 2007
Temp.: 26 °C, Humi: 57 %

Test condition : AC230V 60Hz

Frequency [MHz]	Antenna Factor [dB(1/m)]	Corr. Factor [dB]	Meter Readings at 3 m [dB(μV)] Hori.	Vert.	Limits at 300 m [dB(μV/m)]	Results at 300 m [dB(μV/m)] Hori.	Vert.	Margin [dB]	Remarks
2399.5	21.4	10.8	< 26.0	< 26.0	34.1	< 18.2	< 18.2	> +15.9	-
4903.8	36.4	-20.8	47.0	56.7	34.1	22.6	32.3	+ 1.8	-
7378.8	36.8	-18.8	48.9	49.2	34.1	26.9	27.2	+ 6.9	-
9834.3	39.3	-26.0	38.8	38.3	34.1	12.1	11.6	+22.0	-
12293.0	43.4	-25.2	< 35.0	< 35.0	34.1	< 13.2	< 13.2	> +20.9	-
14776.0	45.0	-25.0	36.0	36.0	34.1	16.0	16.0	+18.1	-
17169.0	44.0	-25.3	38.9	40.4	34.1	17.6	19.1	+15.0	-
19362.0	40.5	-25.8	38.4	39.0	34.1	13.1	13.7	+20.4	-
21840.0	40.5	-24.5	37.8	38.0	34.1	13.8	14.0	+20.1	-
24500.0	40.5	-20.0	38.7	40.2	34.1	19.2	20.7	+13.4	-



NOTES
1. Test Distance : 3 m (Specified Distance : 300 m)
2. The spectrum was checked from 1.0 GHz to 25 GHz (10th harmonic of the operating frequency).
3. The correction factor is shown as follows:
   Cable Loss + 10dB Pad Attenuator [dB] (1.0 - 3.6GHz)
   Cable Loss + 20dB Pad Attenuator - Pre-Amplifier Gain [dB] (3.6 - 7.6GHz / 18.0 - 26.5GHz)
   Cable Loss + 10dB Pad Attenuator - Pre-Amplifier Gain [dB] (7.6 - 18.0GHz)
4. The symbol of "<" means "or less".
5. The symbol of ">" means "more than".
6. Calculated result at 4903.8 MHz, as the worst point shown on underline:
   Antenna Factor + Correction Factor + Meter Reading = 36.4 + (-20.8) + 56.7 = 72.3 dB(μV/m)
   Result at 300 m = -40.0 + 72.3 = 32.3 dB(μV/m) = 41.2 μV/m (Conversion Factor : 20dB/decade)
7. Spectrum analyzer setting(s) :
   Resolution Bandwidth = 1 MHz, Video Bandwidth = 10 Hz, Sweep Time = AUTO

Appendix B: Test Instruments

B.1 Power Output

Type	Model	Manufacturer	Assigned C/N	Last Cal.	Interval
Digital Power Meter	3167	HIOKI	08011116	2007/6	1 Year
Stopwatch	S111-5000	SEIKO	Q47097350	2007/2	1 Year
Thermometer	245506	YOKOGAWA	Q47097361	2007/3	1 Year

B.2 ISM Frequency

Type	Model	Manufacturer	ID No.	Last Cal.	Interval
Spectrum Analyzer	E4446A	Agilent	A-39	2006/11	1 Year
Horn Antenna	91889-2	EATON	C-41-2	2007/6	1 Year
Attenuator	54-10	Weinschel	D-82	2007/3	1 Year
RF Cable	SUCOFLEX104	SUHNER	C-40-11	2006/11	1 Year

B.3 Conducted Powerline

Type	Model	Manufacturer	ID No.	Last Cal.	Interval
Test Receiver	ESCI	Rohde & Schwarz	A-42	2006/11	1 Year
AMN (main)	KNW-408	Kyoritsu	D-11	2007/3	1 Year
RF Cable	--	----	H-8	2007/9	1 Year

B.4 Radiated Emission

B.4.1 Radiated Emission 9 kHz – 30 MHz

Type	Model	Manufacturer	ID No.	Last Cal.	Interval
Test Receiver	ESCI	Rohde & Schwarz	A-42	2006/11	1 Year
Loop Antenna	HFH2-Z2	Rohde & Schwarz	C-2	2007/8	1 Year
RF Cable	RG213/U	Rohde & Schwarz	H-28	2007/8	1 Year

B.4.2 Radiated Emission 30 MHz – 1000 MHz

Type	Model	Manufacturer	ID No.	Last Cal.	Interval
Test Receiver	ESVS 10	Rohde & Schwarz	A-5	2007/8	1 Year
Biconical Antenna	VHA9103/FBAB9177	Schwarzbeck	C-25	2007/8	1 Year
Log-periodic Antenna	UHALP 9108-A1	Schwarzbeck	C-28	2007/8	1 Year
RF Cable	--	----	H-2	2007/8	1 Year

B.4.3 Radiated Emission above 1 GHz

Type	Model	Manufacturer	ID No.	Last Cal.	Interval
Spectrum Analyzer	E4446A	Agilent	A-39	2006/11	1 Year
Pre-Amplifier	WJ-6882-824	Watkins Johnson	A-21	2006/11	1 Year
Pre-Amplifier	DBL-0618N515	DBS Microwave	A-33	2006/11	1 Year
Pre-Amplifier	ALN-22093545-01	Wise Wave	A-37	2007/3	1 Year
Horn Antenna	91888-2	EATON	C-41-1	2007/6	1 Year
Horn Antenna	91889-2	EATON	C-41-2	2007/6	1 Year
Horn Antenna	94613-1	EATON	C-41-3	2007/6	1 Year
Horn Antenna	91891-2	EATON	C-41-4	2007/6	1 Year
Horn Antenna	CL-107-43	ARNELLAB	C-41-5	2007/6	1 Year
Horn Antenna	3160-09	EMCO	C-48	2007/6	2 Years
Attenuator	54-10	Weinschel	D-82	2007/3	1 Year
Attenuator	54-10	Weinschel	D-83	2007/3	1 Year
RF Cable	SUCOFLEX104	SUHNER	C-40-11	2006/11	1 Year
RF Cable	SUCOFLEX104	SUHNER	C-40-14	2006/11	1 Year
RF Cable	SUCOFLEX102	SUHNER	C-54	2007/3	1 Year
RF Cable	102EA-40 11K-252 x2 2m	SUCOFLEX	C-69	2007/3	1 Year