

Issue Date : December 12, 2005  
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## ***EMC* EMISSION - TEST REPORT**

JQA APPLICATION No. : KL80050512

Name of Product : Microwave Oven

Model/Type No. : R-403KK-T

FCC ID : APYDMR0167

Applicant : Sharp Corporation, CS Promotion Group,  
Quality Assurance Center

Address : 22-22 Nagaike-cho, Abeno-ku, Osaka, 545-8522, Japan

Manufacturer : Sharp Appliances(Thailand) Ltd.

Address : 64 Moo 5, Tambol Bangsamuk, Amphur Bangpakong  
Chachoengsao, Province, Thailand

Receive date of EUT : November 21, 2005

**Final Judgement** : **Passed**

**TEST RESULTS IN THIS REPORT** are obtained in use of equipment that is traceable to National Institute of Advanced Industrial Science and Technology (AIST) under METI Japan and National Institute of Information and Communications Technology (NICT) under MPHPT Japan.

**THE TEST RESULTS** only responds to the test sample. This test report shall not be reproduced except in full.

Authorized by:



Yuichi Fukumoto, Manager  
JQA KITA-KANSAI Testing Center

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## **TEST REGULATION**

FCC Rules and Regulations Part 18 Subpart A, B and C

- - Miscellaneous equipment
- - Medical diathermy
- - Industrial heaters and RF stabilized arc welder
- - Induction cooking ranges
- - ISM Frequency Device
- - Non-ISM Frequency Device

### **Test procedure:**

The test was performed according to the procedures in FCC/OET MP-5 (1986).

## **GENERAL INFORMATION**

### **Test facility:**

- 1) Test Facility located at Kita-Kansai : 1st Open Site (3 m Site)  
Test Facility located at Kameoka : 1st Open Site (3, 10 and 30 m, on common plane)  
: 2nd Open Site (3 and 10 m, on common plane)

**FCC filing No. : 31040/SIT 1300F2**

- 2) KITA-KANSAI TESTING CENTER is recognized under the National Voluntary Laboratory Accreditation Program for satisfactory compliance established in Title 15, Part 285 Code of Federal Regulations.  
**NVLAP Lab Code: 200191-0**

- 3) Average Measurement Method  
**FCC filing No. : 950523A 1300F2**

### **Description of the Equipment Under Test (EUT):**

- 1) Name : Microwave Oven
- 1) Model/Type No. : R-403KK-T
- 3) Product Type : Prototype
- 4) Category : ISM Frequency Device
- 5) EUT Authorization : ○ - Verification ● - Certification ○ - D.o.C.
- 6) Highest frequency used/generated : 2450 MHz
- 7) Rated RF Power Output : 1100 W
- 9) Power Rating : AC 120V 60Hz

### **Definitions for symbols used in this test report:**

- - Black box indicates that the listed condition, standard or equipment is applicable for this Report.
- - Blank box indicates that the listed condition, standard or equipment is not applicable for this Report.

## TEST CONDITIONS

### **RF Power Output Measurement**

was performed in the following test site.

#### **Test location:**

KITA-KANSAI Testing Center

7-7, Ishimaru, 1-Chome, Mino-Shi, Osaka, 562-0027, Japan

● - Shielded room

○ - Anechoic chamber

○ - 1st open test site

KAMEOKA EMC Branch

9-1, Ozaki, Inukanno, Nishibetsuin-Cho, Kameoka-Shi, Kyoto, 621-0126, Japan

○ - Shielded room

○ - 1st open test site

○ - 2nd open test site

#### **Used test instruments:**

Model No.	Assigned C/N	Last Cal. Date	Cal. Interval
● - 2533-21	08011090	June, 2005	1 Year
● - 245506	Q47097361	March, 2005	1 Year
● - SIII-5000	Q47097350	February, 2005	1 Year

#### **Environmental conditions:**

Temperature: 28 °C      Humidity: 67 %

## ISM Frequency Measurement

was performed for line voltage variation from 80 % to 125 % of normal rated voltage, in the following test site.

### Test location:

KITA-KANSAI Testing Center

7-7, Ishimaru, 1-Chome, Mino-Shi, Osaka, 562-0027, Japan

○ - Shielded room

● - Anechoic chamber

○ - 1st open test site

KAMEOKA EMC Branch

9-1, Ozaki, Inukanno, Nishibetsuin-Cho, Kameoka-Shi, Kyoto, 621-0126, Japan

○ - Shielded room

○ - 1st open test site

○ - 2nd open test site

### Used test instruments:

Model No.	Device ID	Last Cal. Date	Cal. Interval
○ - 8566B	A - 13	October, 2005	1 Year
○ - 8593A	A - 15		
● - E4446A	A - 39		
○ - 4T-10	D - 73		
○ - 4T-10	D - 74		
○ - WJ-6611-513	A - 23	May, 2005	1 Year
○ - WJ-6882-824	A - 21		
○ - DBL-0618N515	A - 33		
○ - 91888-2	C - 41 - 1		
● - 91889-2	C - 41 - 2		
○ - 94613-1	C - 41 - 3	June, 2005	1 Year
○ - 91891-2	C - 41 - 4		
○ - 94614-1	C - 41 - 5		
● - 2-10	D - 40		
● - TR5212	B - 30		
● - Cable	C - 40 - 8	May, 2005	1 Year
○ - Cable	C - 40 - 11		
○ - Cable	C - 40 - 12		

### Environmental conditions:

Temperature: 22 °C Humidity: 50 %

## AC Powerline Conducted Emission Measurement

was performed in the following test site.

### Test location:

KITA-KANSAI Testing Center

7-7, Ishimaru, 1-Chome, Mino-Shi, Osaka, 562-0027, Japan

● - Shielded room

KAMEOKA EMC Branch

9-1, Ozaki, Inukanno, Nishibetsuin-Cho, Kameoka-Shi, Kyoto, 621-0126, Japan

○ - Shielded room

○ - On metal plane of open site

### Used test instruments and sites:

Model No.	Device ID	Last Cal. Date	Cal. Interval
● - ESCS 30	A - 1	August, 2005	1 Year
○ - ESCS 30	A - 9		
○ - ESH 2	A - 2		
○ - ESH 2	A - 3		
○ - KNW-407	D - 6	February, 2005	1 Year
● - KNW-408	D - 11		
○ - KNW-242	D - 7		
○ - ESH3-Z5	D - 12		
○ - KNW-341C	D - 13		
○ - KNW-408	D - 14		
○ - KNW-244C	D - 77		
○ - KNW-408	D - 78		
○ - ESH2-Z5	D - 10		
○ - ESH2-Z3	D - 17		
○ - 65 BNC-50-0-1	H - 26		
○ - 65 BNC-50-0-1	H - 27		
○ - Cable	H - 7	February, 2005	1 Year
● - Cable	H - 8		

### Environmental conditions:

Temperature: 21 °C      Humidity: 48 %

**Magnetic Field Radiated Emission Measurement**

was performed in the frequency range of 9 kHz - 30 MHz, in the following test site.

**Test location:**

KITA-KANSAI Testing Center

7-7, Ishimaru, 1-Chome, Mino-Shi, Osaka, 562-0027, Japan

○ - 1st open test site (3 meters)

KAMEOKA EMC Branch

9-1, Ozaki, Inukanno, Nishibetsuin-Cho, Kameoka-Shi, Kyoto, 621-0126, Japan

● - 1st open test site      ○ - 3 m      ● - 10 m      ○ - 30 m  
○ - 2nd open test site      ○ - 3 m      ○ - 10 m

**Used test instruments:**

Model No.	Device ID	Last Cal. Date	Cal. Interval
● - ESCS 30	A - 1	August, 2005	1 Year
○ - ESCS 30	A - 9		
○ - ESH 2	A - 2		
○ - ESH 2	A - 3		
○ - HFH2-Z2	C - 2		
● - HFH2-Z2	C - 3	August, 2005	1 Year
○ - Cable	H - 28		
● - Cable	H - 29	August, 2005	1 Year

**Environmental conditions:**

Temperature: 20 °C      Humidity: 30 %

**Electromagnetic Field Radiated Emission Measurement**

was performed in horizontal and vertical polarization, in the frequency range of 30 MHz - 1000 MHz, in the following test site.

**Test location:**

KITA-KANSAI Testing Center

7-7, Ishimaru, 1-Chome, Mino-Shi, Osaka, 562-0027, Japan

○ - 1st open test site (3 meters)

KAMEOKA EMC Branch

9-1, Ozaki, Inukanno, Nishibetsuin-Cho, Kameoka-Shi, Kyoto, 621-0126, Japan

● - 1st open test site      ○ - 3 m      ● - 10 m      ○ - 30 m

○ - 2nd open test site      ○ - 3 m      ○ - 10 m

**Validation of Site Attenuation:**

1) Last Confirmed Date : November 10, 2005

2) Interval : 1 Year

**Used test instruments:**

Model No.	Device ID	Last Cal. Date	Cal. Interval
○ - ESV/ESV-Z3	A - 7 / A - 17		
○ - ESV/ESV-Z3	A - 6 / A - 18		
○ - ESV/ESV-Z3	A - 4 / A - 20		
○ - ESV/ESV-Z3	A - 8 / A - 19		
● - ESVS 10	A - 5	August, 2005	1 Year
○ - KBA-511A	C - 11		
○ - KBA-611	C - 21		
○ - VHA9103/BBA9106	C - 43		
○ - UHALP9107	C - 42		
● - VHA9103/FBAB9177	C - 25	August, 2005	1 Year
● - UHALP9108-A1	C - 28	August, 2005	1 Year
● - Cable	H - 2	August, 2005	1 Year

**Environmental conditions:**

Temperature: 20 °C      Humidity: 30 %



## Electromagnetic Field Radiated Emission Measurement

was performed in horizontal and vertical polarization, in the frequency range of 1 GHz - 26 GHz, in the following test site.

### Test location:

KITA-KANSAI Testing Center

7-7, Ishimaru, 1-Chome, Mino-Shi, Osaka, 562-0027, Japan

● - 1st open test site (3 meters)

KAMEOKA EMC Branch

9-1, Ozaki, Inukanno, Nishibetsuin-Cho, Kameoka-Shi, Kyoto, 621-0126, Japan

○ - 1st open test site      ○ - 3 m      ○ - 10 m      ○ - 30 m

○ - 2nd open test site      ○ - 3 m      ○ - 10 m

### Used test instruments:

Model No.	Device ID	Last Cal. Date	Cal. Interval
● - ESCS 30	A - 1	August, 2005	1 Year
○ - ESCS 30	A - 9		
○ - 8566B	A - 13		
● - E4446A	A - 39	October, 2005	1 Year
● - 4T-10	D - 73	May, 2005	1 Year
● - 4T-10	D - 74	May, 2005	1 Year
● - WJ-6611-513	A - 23	May, 2005	1 Year
● - WJ-6882-824	A - 21	May, 2005	1 Year
● - DBL-0618N515	A - 33	May, 2005	1 Year
● - ALN-22093545-1	A - 37	February, 2005	1 Year
● - 91888-2	C - 41 - 1	May, 2005	1 Year
● - 91889-2	C - 41 - 2	May, 2005	1 Year
● - 94613-1	C - 41 - 3	May, 2005	1 Year
● - 91891-2	C - 41 - 4	May, 2005	1 Year
● - 94614-1	C - 40 - 5	May, 2005	1 Year
● - 3160-09	C - 48	December, 2005	2 Years
● - Cable	C - 40 - 11	May, 2005	1 Year
● - Cable	C - 40 - 12	May, 2005	1 Year
● - Cable	C - 53	February, 2005	1 Year
● - Cable	C - 54	February, 2005	1 Year

### Environmental conditions:

Temperature: 22 °C      Humidity: 50 %

**CONFIGURATION OF EUT****The Equipment Under Test (EUT) consists of:**

Description	Applicant (Manufacturer)	Model No. (Serial No.)	FCC ID
Microwave Oven	Sharp Corporation (Sharp Corporation)	R-403KK-T (--)	APYDMR0167

**The measurement was carried out with the following equipment connected:**

Description	Grantee/Distributor	Model No. (Serial No.)	FCC ID
None			

**Type of Interference Cable(s) and the AC Power Cord used with the EUT:**

	Description	Port	Shielded Cable	Shell Material	Ferrite Core	Cable Length
1	AC Power Cord (EUT) 1 $\phi$ 3-pin Plug	--	NO	--	NO	1.0 m

## Operation - mode of the EUT:

The EUT was operated during the measurement under following load condition according to Sec. 4.1 in FCC/OET MP-5 (1986).

- 1) RF Power Output Measurement  
1500 ml of water, with the beaker located in the center of the food container.
- 2) ISM Frequency Measurement  
1500 ml of water, with the beaker located in the center of the food container.
- 3) AC Conducted Emission Measurement  
1000 ml of water, with the beaker located in the center of the food container.
- 4) Radiated Emission Measurement (radiation on second and third harmonics)  
Two loads, one of 1050 ml and the other of 450 ml, of water are used. Each load is tested both with the beaker located in the center of the food container and with it in the right front center.
- 5) All Other Measurement (radiated emission)  
1050 ml of water, with the beaker located in the center of the food container.

## Test system:

The EUT is an microwave oven.  
There is not any interface ports on the EUT.

## Special accessories:

None

## Type of Magnetron:

Cat. No. 2M253J(L) (manufactured by Toshiba Corporation)

## The used (generated) frequencies in the EUT:

Magnetron : 2450 MHz  
CPU : 4 MHz

### **EUT Modification**

- - No modifications were conducted by JQA to achieve compliance to applied levels.
- - To achieve compliance to applied levels, the following change(s) were made by JQA during the compliance test.

— The modification(s) will be implemented in all production models of this equipment. —

Applicant : N/A Date : N/A

Typed Name : N/A Position : N/A

### **Responsible Party**

— Responsible Party of Test Item(Product) —

Responsible party :

Contact Person :

\_\_\_\_\_  
Signatory

### **Deviation from Standard**

- - No deviations from the standard described in page 3.
- - The following deviations were employed from the standard described in page 3.

\_\_\_\_\_  
\_\_\_\_\_

## TEST RESULTS

### RF Power Output

Measurement Results (Calorimetric method) 883.1 W

Applied Limits of Radiated Emission 33.2  $\mu\text{V/m}$  at 300 m  
10.0  $\mu\text{V/m}$  at 1600 m

Remarks: \_\_\_\_\_  
 \_\_\_\_\_

### ISM Frequency 2.4 GHz - 2.5 GHz

The requirements are ● - Passed      ○ - Not Passed

Worst (lowest/highest) range 2400.6 MHz - 2478.0 MHz  
 against 2.45 GHz  $\pm$  50 MHz

Uncertainty of measurement results  $\pm 100$  kHz

Remarks: \_\_\_\_\_  
 \_\_\_\_\_

### AC Powerline Conducted Emission 150 kHz - 30 MHz

The requirements are ● - Passed      ○ - Not Passed

Min. limit margin 9.8 dB at 1.80 MHz

Max. limit exceeding \_\_\_\_\_ dB at \_\_\_\_\_ MHz

Uncertainty of measurement results + 2.1 dB(2 $\sigma$ ) - 2.1 dB(2 $\sigma$ )

Remarks: \_\_\_\_\_  
 \_\_\_\_\_

**Magnetic Field Radiated Emission 9 kHz - 30 MHz**

The requirements are	● - Passed	○ - Not Passed
Min. limit margin	More than <u>28.0</u> dB at <u>0.01</u> MHz	
Max. limit exceeding	<u>          </u> dB at <u>          </u> MHz	
Uncertainty of measurement results	<u>+ 2.5</u> dB(2σ)	<u>- 2.5</u> dB(2σ)

Remarks: \_\_\_\_\_  
\_\_\_\_\_

**Electromagnetic Field Radiated Emission 30 MHz - 1000 MHz**

The requirements are	● - Passed	○ - Not Passed
Min. limit margin	More than <u>32.5</u> dB at <u>1000.0</u> MHz	
Max. limit exceeding	<u>          </u> dB at <u>          </u> MHz	
Uncertainty of measurement results	<u>+ 3.8</u> dB(2σ)	<u>- 3.9</u> dB(2σ)

Remarks: \_\_\_\_\_  
\_\_\_\_\_

**Electromagnetic Field Radiated Emission 1 GHz - 26 GHz**

The requirements are	● - Passed	○ - Not Passed
Min. limit margin	<u>1.6</u> dB at <u>14688.0</u> MHz	
Max. limit exceeding	<u>          </u> dB at <u>          </u> MHz	
Uncertainty of measurement results	<u>+ 3.2</u> dB(2σ)	<u>- 3.2</u> dB(2σ)

Remarks: The measurement result is within the range of measurement uncertainty.  
\_\_\_\_\_

## SUMMARY

### GENERAL REMARKS :

The EUT was tested according to the requirements of FCC Rules and Regulations Part 18 Subpart A, B and C under the test configuration, as shown in page 16.

The conclusion for the test items of which are required by the applied regulation is indicated under the final judgement.

### FINAL JUDGEMENT :

The "as received" sample;

- - fulfill the test requirements of the regulation mentioned on page 3.
- - fulfill the test requirements of the regulation mentioned on page 3, but with certain qualifications.
- - doesn't fulfill the test regulation mentioned on page 3.

Begin of testing : November 29, 2005

End of testing : December 7, 2005

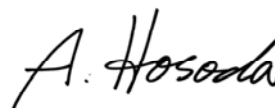
- JAPAN QUALITY ASSURANCE ORGANIZATION -

Reviewed by :

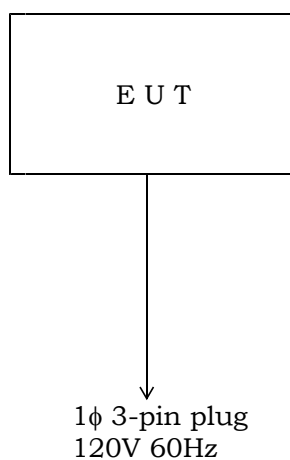
Tested by :



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



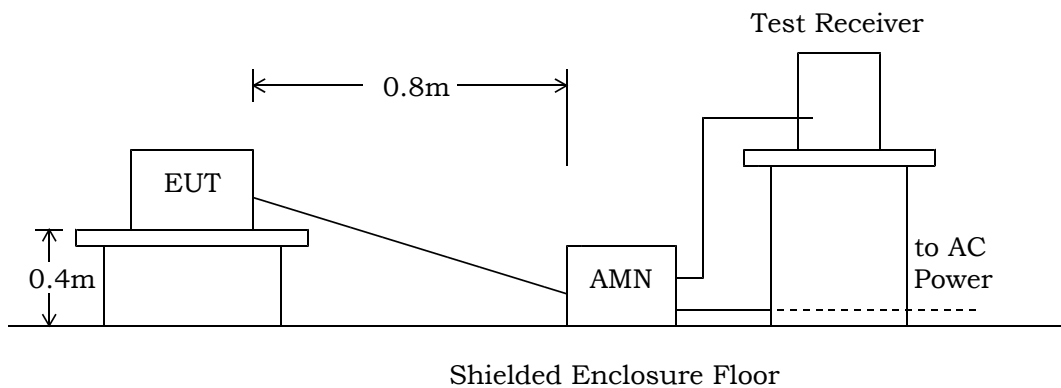
Akio Hosoda  
Manager  
EMC Div.  
JQA KITA-KANSAI Testing Center

**Test System-Arrangement (Drawings)**



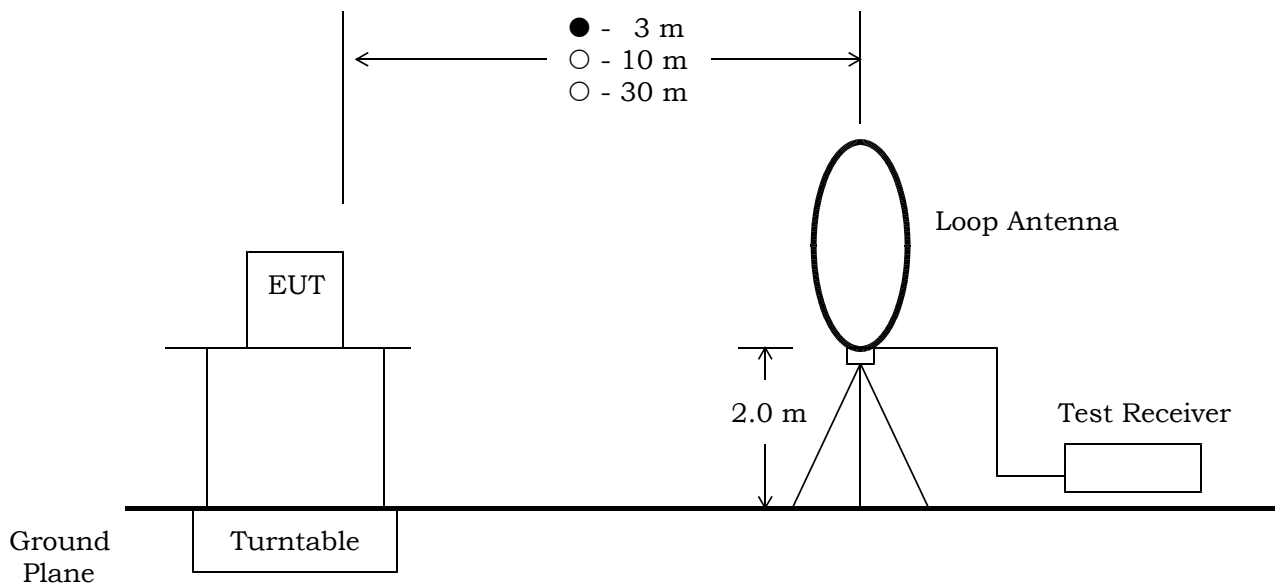
**Test-setup(Drawings)****Conducted Disturbance 150 kHz - 30 MHz:**

The test was performed according to the description of FCC/OET MP-5 (1986) Sec.7.0 (Conducted Powerline Measurements).



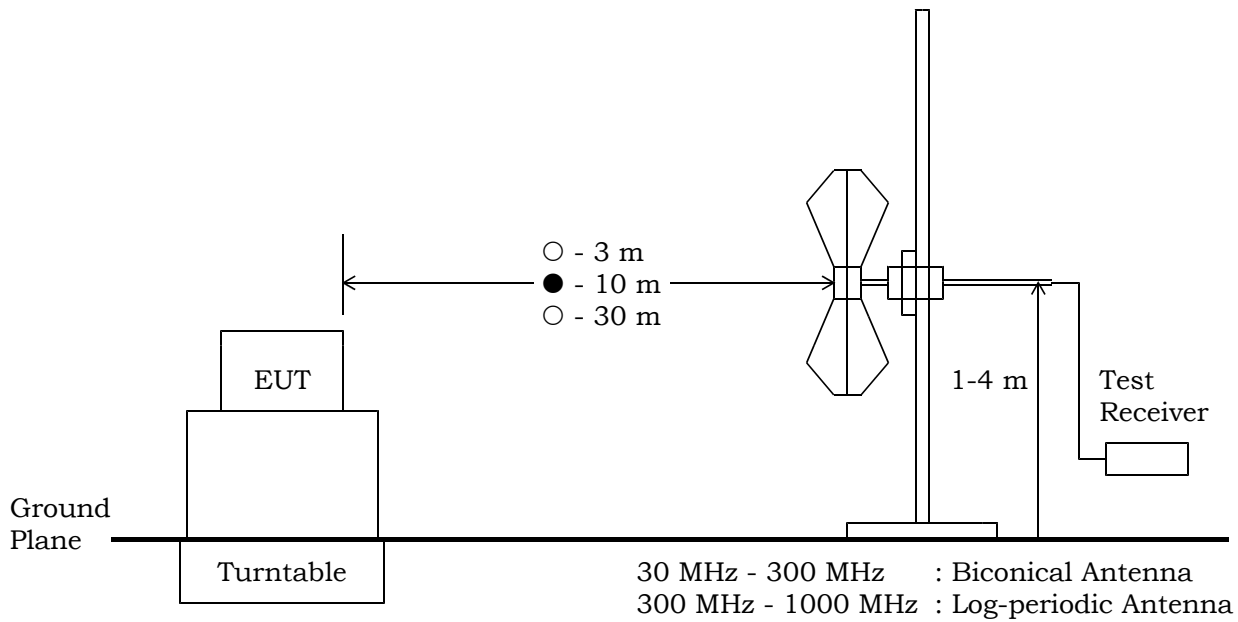
Magnetic Field Radiated Emission 9 kHz - 30 MHz:

The test was performed according to the description of FCC/OET MP-5 (1986) Sec.5.0 (Radiated Emissions Measurements for Certified Equipment).



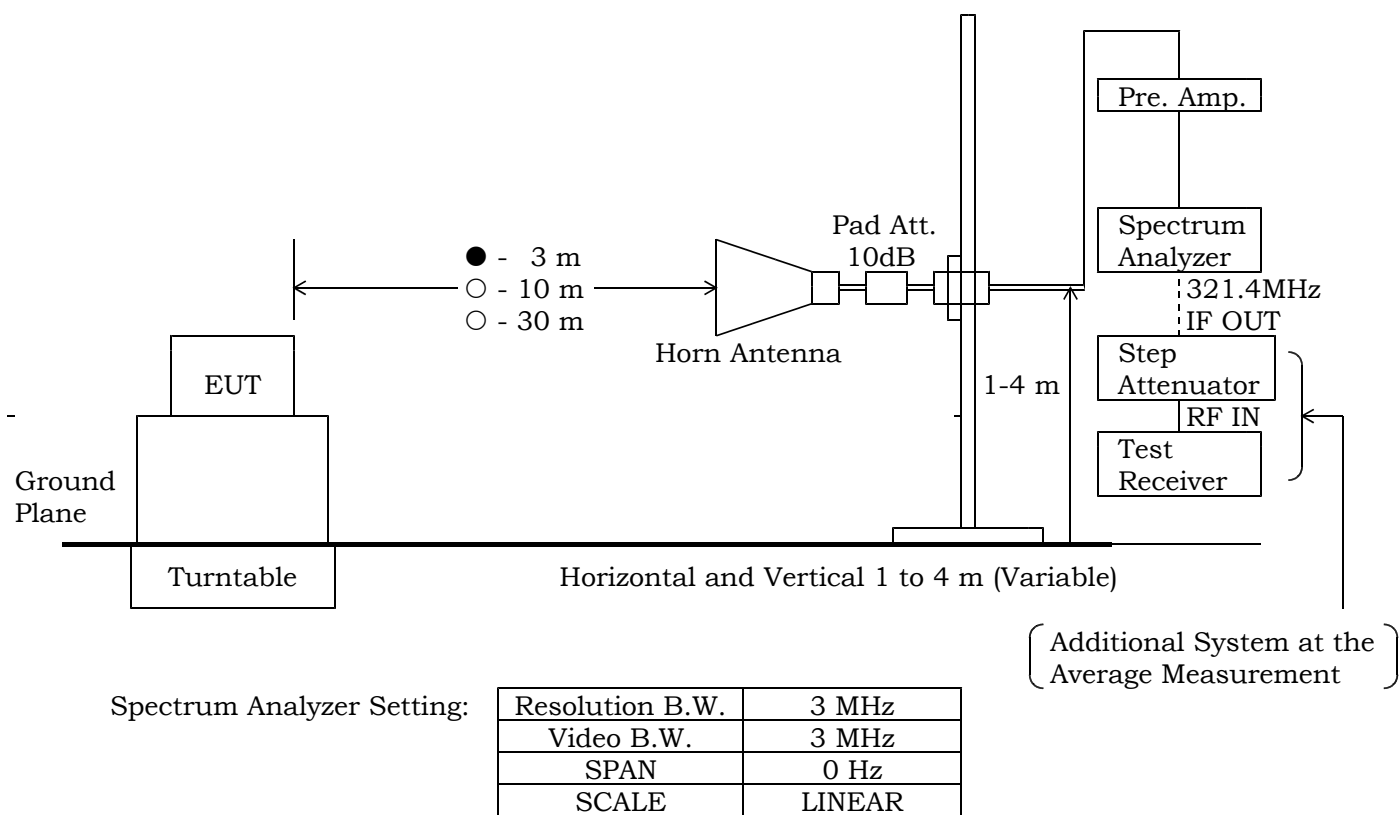
Electromagnetic Field Radiated Emission 30 MHz - 1000 MHz:

The test was performed according to the description of FCC/OET MP-5 (1986) Sec.5.0 (Radiated Emissions Measurements for Certified Equipment).



### Electromagnetic Field Radiated Emission 1 GHz - 26 GHz:

The test was performed according to the description of FCC/OET MP-5 (1986) Sec.5.0 (Radiated Emissions Measurements for Certified Equipment).



**Test-Setup (Photographs) at worst case**

Conducted Emission :



Rear View

Radiated Emission :



Front View



Rear View

## RF Power Output Measurement

ISM Frequency Device

Test Date : November 29, 2005

Temp. : 28°C Humi. : 67%

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: 1100W  
 Load(water): 1500ml (750mlx2)  
 Time: 57sec (T=4.2\*Load(ml)\*10/RF Power)

	t1(before test)	t2(after test)	t1-t2	RF Power**
1st	10.5°C →	18.5°C	8.0°C	
	10.7°C →	18.5°C	7.8°C	
Average			7.90°C	873.2W
2nd	10.1°C →	18.1°C	8.0°C	
	10.2°C →	18.2°C	8.0°C	
Average			8.00°C	884.2W
3rd	10.0°C →	18.0°C	8.0°C	
	10.0°C →	18.0°C	8.0°C	
Average			8.00°C	884.2W
4th	9.5°C →	17.6°C	8.1°C	
	9.0°C →	17.0°C	8.0°C	
Average			8.05°C	889.7W
5th	9.9°C →	17.9°C	8.0°C	
	10.0°C →	18.0°C	8.0°C	
Average			8.00°C	884.2W

\*\*RF Power=4.2\*Load(ml)\*(t2-t1)/T

Results of Average RF Power: 883.1W

The limit of the radiated emission at 300m :  $25 \cdot \text{SQRT}(883.1/500)$  [uV/m]: 30.4dB[uV/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: AC120V/60Hz, 1600W

Measured Input Power : AC120V60Hz 14.04A, 1625W

## ISM Frequency Measurement

### ISM Frequency Device

Test Date: December 7, 2005

Temp.: 22 °C ; Humi.: 55 %

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

Maximum Frequency Deviation [MHz]		Voltage Variation	Remarks
Lower Frequency	Upper Frequency		
2401.0	2470.3	96.0V (80 %)	A
2400.9	2477.8	120.0V (100 %)	A
2400.6	2478.0	150.0V (125 %)	A

The results were within 2450 MHz  $\pm$  50 MHz.

**Remarks:**

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

## AC Powerline Conducted Emission Measurement

Test Date: November 30, 2005

Temp.: 21 °C, Humi: 48 %

Frequency [MHz]	Corr. Factor [dB]	Meter Readings [dB(μV)]				Limits [dB(μV)]		Results [dB(μV)]		Margin [dB]	Remarks
		VA		VB		QP	AVE	QP	AVE		
		QP	AVE	QP	AVE						
0.15	0.2	40.0	--	41.0	--	66.0	56.0	41.2	--	+24.8	A
0.24	0.2	39.0	--	39.0	--	62.1	52.1	39.2	--	+22.9	A
0.31	0.1	41.0	--	36.0	--	60.0	50.0	41.1	--	+18.9	A
0.40	0.1	36.0	--	36.0	--	57.9	47.9	36.1	--	+21.8	A
0.89	0.1	27.0	--	28.0	--	56.0	46.0	28.1	--	+27.9	A
1.80	0.2	46.0	< 30.0	46.0	< 30.0	56.0	46.0	46.2	< 30.2	+ 9.8	A/B
3.60	0.3	38.0	--	32.0	--	56.0	46.0	38.3	--	+17.7	A
4.80	0.3	30.0	--	26.0	--	56.0	46.0	30.3	--	+25.7	A
6.60	0.4	24.0	--	21.0	--	60.0	50.0	24.4	--	+35.6	A
16.00	0.7	24.0	--	27.0	--	60.0	50.0	27.7	--	+32.3	A

Calculated result at 1.80 MHz, as the worst point shown on underline:

Corr. Factor	=	0.2 dB
+ ) Meter Reading	=	46.0 dB(μV)
Result	=	46.2 dB(μV)

Minimum Margin: 56.0 - 46.2 = 9.8 (dB)

### 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. QP : Quasi-Peak Detector AVE : Average Detector
7. Setting of measuring instrument(s) :

	Detector Function	IF Bandwidth
A	CISPR QP	9 kHz
B	Average	10 kHz



## Electromagnetic Field Radiated Emission Measurement

Test Date: December 1, 2005

Temp.: 20 °C, Humi: 30 %

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
0.01	7.4	< 35.0	30.4	< 2.4	> +28.0	A
0.03	2.4	< 35.0	30.4	< - 2.6	> +33.0	A
0.05	0.7	< 35.0	30.4	< - 4.3	> +34.7	A
0.10	0.1	< 35.0	30.4	< - 4.9	> +35.3	A
1.40	0.1	< 35.0	30.4	< - 4.9	> +35.3	B
2.00	0.2	< 35.0	30.4	< - 4.8	> +35.2	B
10.00	0.3	< 35.0	30.4	< - 4.7	> +35.1	B
13.30	0.7	< 35.0	30.4	< - 4.3	> +34.7	B
22.00	2.5	< 35.0	30.4	< - 2.5	> +32.9	B
30.00	4.1	< 35.0	30.4	< - 0.9	> +31.3	B

Calculated result at 0.01 MHz, as the worst point shown on underline:

Corr. Factor	=	7.4 dB(1/m)
Conversion Factor	=	-40.0 dB (20dB/decade)
+ ) Meter Reading	=	<35.0 dB(μV)
Result	=	<2.4 dB(μV/m) at 300 m = <1.3 μV/m

Minimum Margin: 30.4 - <2.4 = >28.0 (dB)

### 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. Setting of measuring instrument(s) :

	Detector Function	IF Bandwidth
A	Average	200 Hz
B	Average	10 kHz

## Electromagnetic Field Radiated Emission Measurement

Test Date: December 1, 2005

Temp.: 20 °C, Humi: 30 %

Frequency [MHz]	Antenna Factor [dB(1/m)]	Cable Loss [dB]	Meter Readings at 10 m [dB(μV)]		Limits at 300 m [dB(μV/m)]	Results at 300 m [dB(μV/m)]		Margin [dB]	Remarks
			Hori.	Vert.		Hori.	Vert.		
30.0	19.6	0.6	< 0.0	< 0.0	30.4	< - 9.3	< - 9.3	> +39.7	B
250.0	17.5	2.0	< 0.0	< 0.0	30.4	< -10.0	< -10.0	> +40.4	B
272.0	18.1	2.1	< 0.0	< 0.0	30.4	< - 9.3	< - 9.3	> +39.7	B
440.0	16.7	2.9	< 0.0	< 0.0	30.4	< - 9.9	< - 9.9	> +40.3	B
500.0	17.7	3.1	< 0.0	< 0.0	30.4	< - 8.7	< - 8.7	> +39.1	B
630.0	19.5	3.5	< 0.0	< 0.0	30.4	< - 6.5	< - 6.5	> +36.9	B
750.0	20.5	3.8	< 0.0	< 0.0	30.4	< - 5.2	< - 5.2	> +35.6	B
770.0	20.6	3.9	< 0.0	< 0.0	30.4	< - 5.0	< - 5.0	> +35.4	B
816.0	21.2	4.0	< 0.0	< 0.0	30.4	< - 4.3	< - 4.3	> +34.7	B
1000.0	23.0	4.4	< 0.0	< 0.0	30.4	< - 2.1	< - 2.1	> +32.5	B

Calculated result at 1,000.0 MHz, as the worst point shown on underline:

Antenna Factor	=	23.0 dB(1/m)
Cable Loss	=	4.4 dB
Conversion Factor	=	-29.5 dB (20dB/decade)
+ ) Meter Reading	=	<0.0 dB(μV)
Result	=	<-2.1 dB(μV/m) at 300 m = <0.8 μV/m

Minimum Margin: 30.4 - (<-2.1) = >32.5 (dB)

### 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. Setting of measuring instrument(s) :

	Detector Function	IF Bandwidth	Antenna
A	CISPR QP	120 kHz	Broadband
B	Average	120 kHz	
C	CISPR QP	120 kHz	Tuned Dipole
D	Average	120 kHz	

## Electromagnetic Field Radiated Emission Measurement

Test Date: December 7, 2005

Temp.: 22 °C, Humi: 50 %

Frequency [MHz]	Antenna Factor [dB(1/m)]	Corr. Factor [dB]	Meter Readings at 3 m [dB(μV)]		Limits at 300 m [dB(μV/m)]	Results at 300 m [dB(μV/m)]		Margin [dB]	Remarks
			Hori.	Vert.		Hori.	Vert.		
2399.5	21.5	10.8	< 17.0	18.0	30.4	< 9.3	10.3	+20.1	B
4894.0	37.1	-20.5	49.0	44.0	30.4	25.6	20.6	+ 4.8	B
7340.0	37.8	-18.4	45.0	45.0	30.4	24.4	24.4	+ 6.0	B
9789.0	39.3	-26.0	47.0	44.0	30.4	20.3	17.3	+10.1	B
12232.0	44.0	-25.1	40.0	39.0	30.4	18.9	17.9	+11.5	B
14688.0	45.5	-24.7	46.0	48.0	30.4	26.8	28.8	+ 1.6	B
17122.1	44.3	-25.0	45.0	47.0	30.4	24.3	26.3	+ 4.1	B
19591.8	40.3	-30.8	37.0	40.0	30.4	6.5	9.5	+20.9	B
22035.8	40.3	-30.8	30.0	31.0	30.4	- .5	0.5	+29.9	B
24491.0	40.4	-31.9	43.0	43.0	30.4	11.5	11.5	+18.9	B

Calculated result at 14688.0 MHz, as the worst point shown on underline:

Antenna Factor	=	45.5 dB(1/m)
Corr. Factor	=	-24.7 dB
Conversion Factor	=	-40.0 dB (20dB/decade)
+ ) Meter Reading	=	48.0 dB(μV)
Result	=	28.8 dB(μV/m) at 300 m = 27.5 μV/m

Minimum Margin: 30.4 - 28.8 = 1.6 (dB)

### NOTES

- Test Distance : 3 m (Specified Distance : 300 m)
- The spectrum was checked from 1.0 GHz to 24.5 GHz.
- The correction factor is shown as follows:
  - Corr. Factor [dB] = Cable Loss + 10dB Pad Att. [dB] (1.0 - 3.6GHz)
  - Corr. Factor [dB] = Cable Loss + 20dB Pad Att. - Pre-Amp. Gain [dB] (3.6 - 7.6GHz)
  - Corr. Factor [dB] = Cable Loss + 10dB Pad Att. - Pre-Amp. Gain [dB] (7.6 - 18.0GHz)
  - Corr. Factor [dB] = Cable Loss + 20dB Pad Att. - Pre-Amp. Gain [dB] (18.0-26.0GHz)
- The symbol of "<" means "or less".
- The symbol of ">" means "more than".
- Setting of measuring instrument(s) :

	Detector Function	IF Bandwidth
A	Peak	1 MHz
B	Average	1 MHz