

TEST REPORT

APPLICANT : Sharp Corporation, CS Promotion Group,
Product Safety Promotion Center

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

PRODUCTS : Household Microwave Oven

MODEL NO. : FGMV173K

SERIAL NO. : 110900001

FCC ID : APYDMR0163

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 5~26, 2011



Kousei Shibata
Manager
Japan Quality Assurance Organization
KITA-KANSAI Testing Center
Testing Dept. SAITO EMC Branch
7-3-10, Saito-asagi, Ibaraki-shi, Osaka 567-0085, 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.
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- This test report shall not be reproduced except in full without the written approval of JQA.
- VLAC does not approve, certify or warrant the product by this test report.

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DEFINITIONS FOR ABBREVIATION AND SYMBOLS USED IN THIS TEST REPORT**EUT** : Equipment Under Test**EMC** : Electromagnetic Compatibility**AE** : Associated Equipment**EMI** : Electromagnetic Interference**N/A** : Not Applicable**EMS** : Electromagnetic Susceptibility**N/T** : 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

Japan Quality Assurance Organization (JQA)

KITA-KANSAI Testing Center Testing Department SAITO EMC Branch

7-3-10, Saito-asagi, Ibaraki-shi, Osaka 567-0085, Japan

MINOH Test Site (KITA-KANSAI Testing Center)

7-7, Ishimaru, 1-chome, 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 Dept. SAITO EMC Branch 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 : March 30, 2012)

BSMI Recognition No. : SL2-IS-E-6006, SL2-IN-E-6006, SL2-AI-E-6006
(Effective through : September 14, 2013)

IC Registration No. : 2079E-2 (Effective through : January 25, 2014)
2079E-3, 2079E-4 (Effective through : July 20, 2014)

Accredited as conformity assessment body for Japan electrical appliances and material law by METI.
(Effective through : February 22, 2012)

4 Description of the Equipment Under Test

1. Manufacturer : Sharp Appliances (Thailand) Ltd.
64 Moo 5, Tambol Bangsamuk, Amphur Bangpakong
Chachoengsao, Province, Thailand
2. Products : Household Microwave Oven
3. Model No. : FGMV173K
4. Serial No. : 110900001
5. Type of Magnetron : 2M240E(L) by Toshiba
6. Product Type : Prototype
7. Date of Manufacture : September, 2011
8. Power Rating : 120VAC 60Hz, 1640 W
9. Rated RF Power Output : 1000 W
10. EUT Grounding : Grounded at the plug end of the power line
11. Category : Any type unless otherwise specified (miscellaneous)
12. EUT Authorization : Certification
13. Operating Frequency : 2450 MHz (ISM frequency)
14. Upper Frequency of Measurement : 24.5 GHz
15. Received Date of EUT : September 29, 2011

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 C.

5.2 ISM Frequency

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

Test site : SAITO - Anechoic chamber (A1) - Anechoic chamber (A2)
 - Anechoic chamber (A3) ←GHz超のみ追加
KAMEOKA - 1st open site

Test instruments : Refer to Appendix C.

5.3 Conducted Powerline

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

Test site : KITA-KANSAI - Shielded room - 2nd shielded room
 - Anechoic chamber
KAMEOKA - Shielded room - Conducted emission facility
 - 1st open site

Test instruments : Refer to Appendix C.

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 : SAITO - Anechoic chamber (A1) - Anechoic chamber (A2)
 - Anechoic chamber (A3)
KAMEOKA - 1st open site

Test Distance : - 3 m - 10 m

Test instruments : Refer to Appendix C.

5.4.2 Radiated Emission 30 MHz – 1000 MHz

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

Test site : SAITO - Anechoic chamber (A1) - Anechoic chamber (A2)
KAMEOKA - 1st open site

Test Distance : - 3 m - 10 m

Test instruments : Refer to Appendix C.

5.4.3 Radiated Emission above 1 GHz

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

Test site : SAITO - Anechoic chamber (A1) - Anechoic chamber (A2)
 - Anechoic chamber (A3)
KAMEOKA - 1st open site

Test Distance : - 3 m - 10 m

Test instruments : Refer to Appendix C.

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.

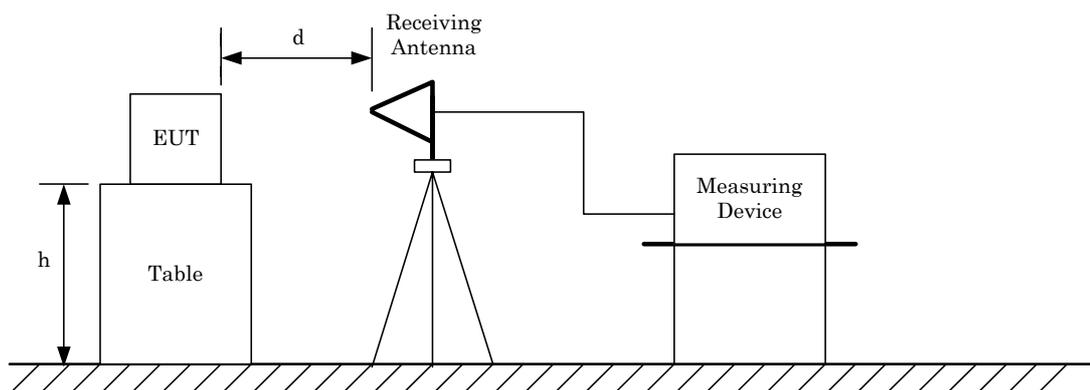
6.2 ISM Frequency

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

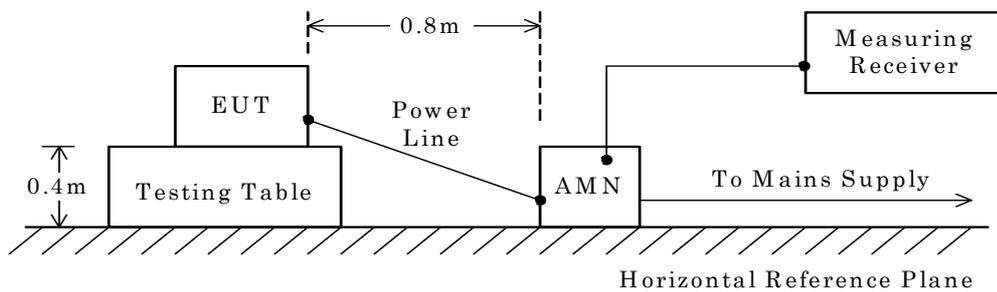
6.3 Conducted Powerline

The preliminary tests were performed using the scan mode of test receiver or 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

Typical Arrangement

6.4 Radiated Emission

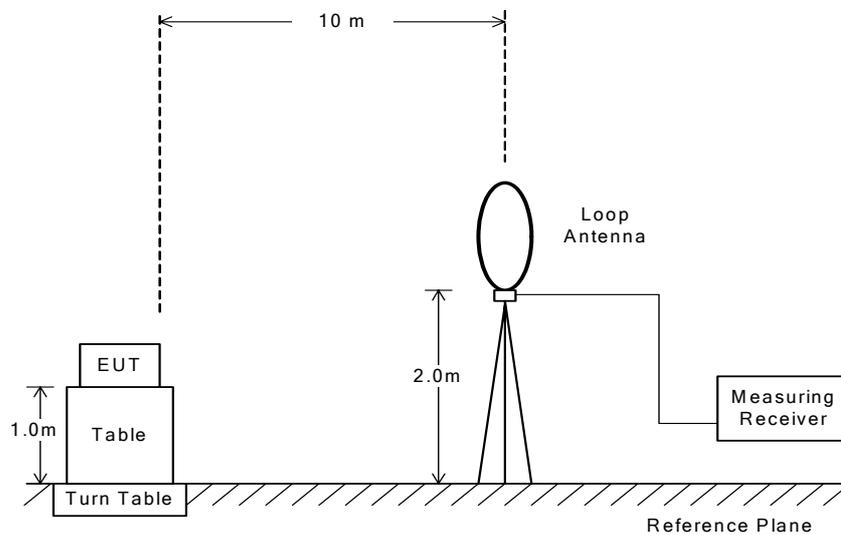
6.4.1 Radiated Emission 9 kHz – 30 MHz

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 –



Typical Arrangement

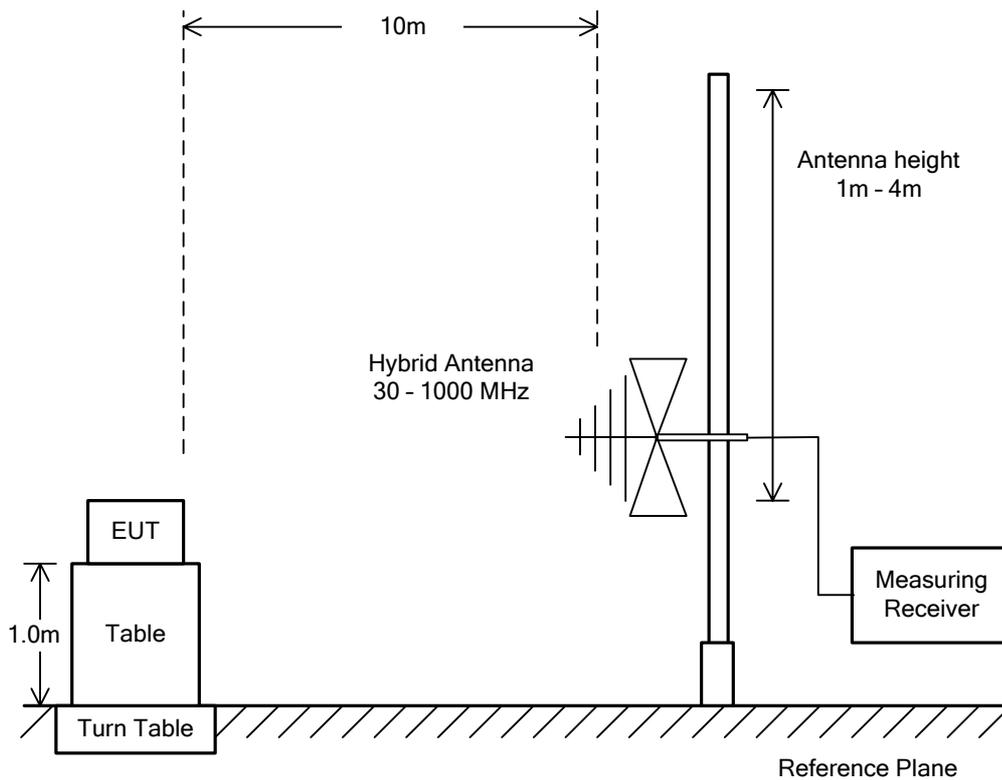
6.4.2 Radiated Emission 30 MHz – 1000 MHz

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 –



Typical Arrangement

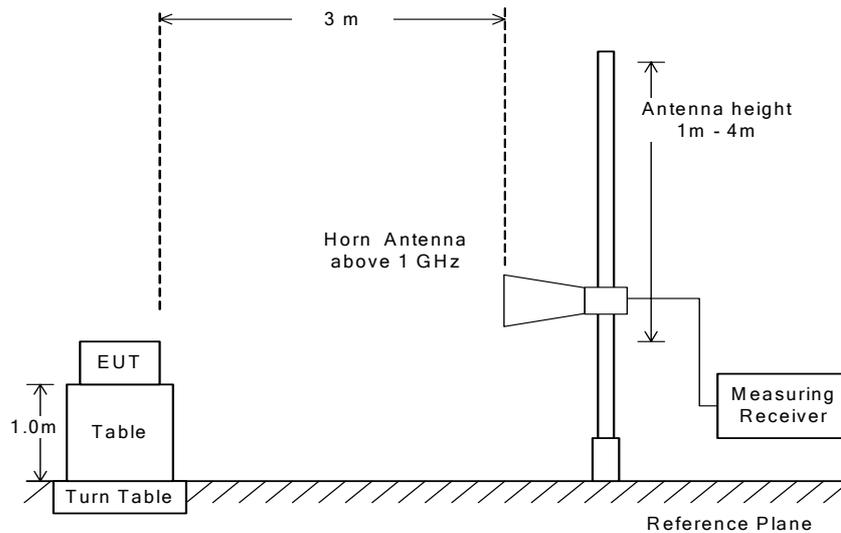
6.4.3 Radiated Emission above 1 GHz

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.

Typical Arrangement

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 : Not Applicable

8 Responsible PartyResponsible 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

Power Output (calorimetric method) 860.0 watts

Field Strength Limit 30.3 $\mu\text{V/m}$ at 300 meters

Field Strength Limit 32.8 dB($\mu\text{V/m}$) at 300 meters

AC Power Input 1655.2 watts

Remarks : Field strength may not exceed 10 $\mu\text{V/m}$ 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) 15.3 dB at 11.36 MHz

Max. Limit Exceeding (Quasi-Peak) _____ dB at _____ MHz

Uncertainty of Measurement Results +/-2.5 dB(2 σ)

Remarks : _____

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.

Determining compliance with the limits in this report was based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

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:



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

Tested by:



Akio Hosoda
Advisor
JQA KITA-KANSAI Testing Center
Testing Dept. SAITO EMC Branch

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 : 1000 ml
- ISM frequency measurement : 1000 ml
- Conducted powerline measurement : 1000 ml
- Radiated emission measurement : 700 ml

For measurement of radiation on 2nd and 3rd harmonic, two loads, one of 700 ml and the other of 300 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.

Clock Frequency

- Magnetron : 2450 MHz
- LSI : 8 MHz

Type of Magnetron : 2M240E(L) by Toshiba

13 Test Configuration

The equipment under test (EUT) consists of :

	Item	Manufacturer	Model No.	Serial No.	FCC ID
A	Household Microwave Oven	Sharp Appliances (Thailand) Ltd.	FGMV173K	110900001	APYDMR0163

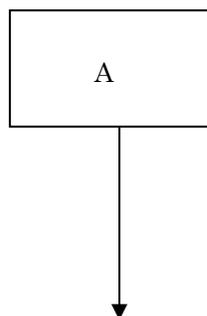
The auxiliary equipment used for testing :

None

Type of Cable:

No.	Description	Identification (Manu. etc.)	Connector Shielded	Cable Shielded	Ferrite Core	Length (m)
1	AC Power Cable	--	--	No	No	1.0

14 Equipment Under Test Arrangement (Drawings)



AC120V 60Hz

Appendix A: Test Data

A.1 Power Output

Test Date: October 5, 2011

Temp.: 23 °C, Humi: 80 %

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: 1000W
 Load(water): 1000ml
 Time: 42sec $T = \frac{4.2 \times Load(ml) \times 10}{RFPower}$

	t_1 (before test)		t_2 (after test)	$t_2 - t_1$	RF Power**
1st	9.2°C	→	18.2°C	9.0°C	900.0W
2nd	8.4°C	→	17.1°C	8.7°C	870.0W
3rd	8.7°C	→	17.2°C	8.5°C	850.0W
4th	9.4°C	→	17.8°C	8.4°C	840.0W
5th	9.5°C	→	17.9°C	8.4°C	840.0W

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

Results of Average RF Power: 860.0W

The limit of the radiated emission at 300m : $25\sqrt{860/500}[\mu V/m]=32.8[\mu V/m]$
 $25\sqrt{860/500}[\mu V/m]=30.3[dB(\mu V/m)]$

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, 1640W

Measured Input Power : AC120V60Hz 15.176A, 1655.2W

A.2 ISM Frequency

Test Date : October 26, 2011

Temp. : 26°C Humi. : 41 %

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

Maximum Frequency		Voltage Variations	Remarks
Lower Frequency	Upper Frequency		
2402.3	2468.9	96.0V(80%)	A
2404.4	2485.3	120.0V(100%)	A
2409.0	2485.5	150.0V(125%)	A

The results were within 2450MHz±50MHz.

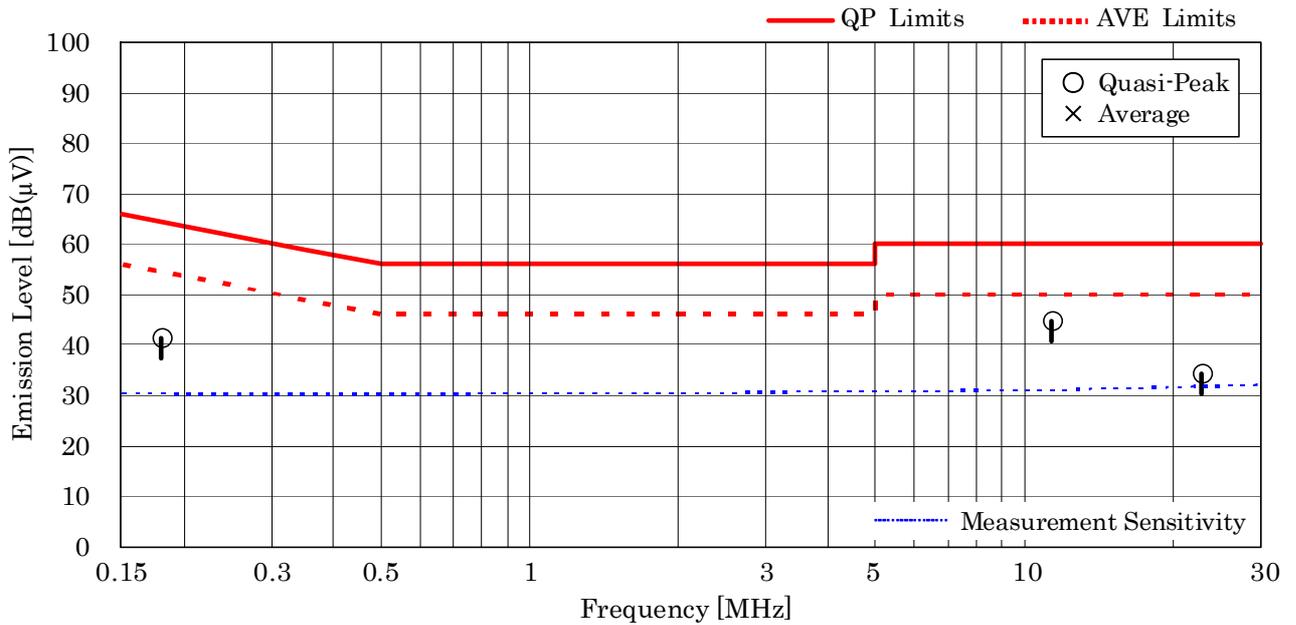
Remarks					
	Detector Function	RES B.W.	V.B.W.	Sweep Time	Span
A	Peak	100 kHz	300 kHz	AUTO	300 MHz

A.3 Conducted Powerline

Test Date: October 21, 2011

Temp.: 22 °C, Humi.: 55 %

Frequency [MHz]	Corr. Factor [dB]	Meter Readings [dB(μV)]				Limits [dB(μV)]		Results [dB(μV)]		Margin [dB]	Remarks
		VA		VB		QP	AVE	QP	AVE		
0.18	10.4	30.3	--	31.1	--	64.5	54.5	41.5	--	+23.0	-
5.00	10.7	< 20.0	--	< 20.0	--	56.0	46.0	< 30.7	--	> +25.3	-
10.00	11.1	< 20.0	--	< 20.0	--	60.0	50.0	< 31.1	--	> +28.9	-
11.36	11.1	33.6	--	28.0	--	60.0	50.0	44.7	--	+15.3	-
15.00	11.3	< 20.0	--	< 20.0	--	60.0	50.0	< 31.3	--	> +28.7	-
22.86	11.8	20.4	--	22.6	--	60.0	50.0	34.4	--	+25.6	-



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 11.36 MHz, as the worst point shown on underline:
Correction Factor + Meter Reading = 11.1 + 33.6 = 44.7 dB(μV)
7. QP : Quasi-Peak Detector / AVE : Average Detector
8. Test receiver setting(s) : CISPR QP 9 kHz / Average 9 kHz

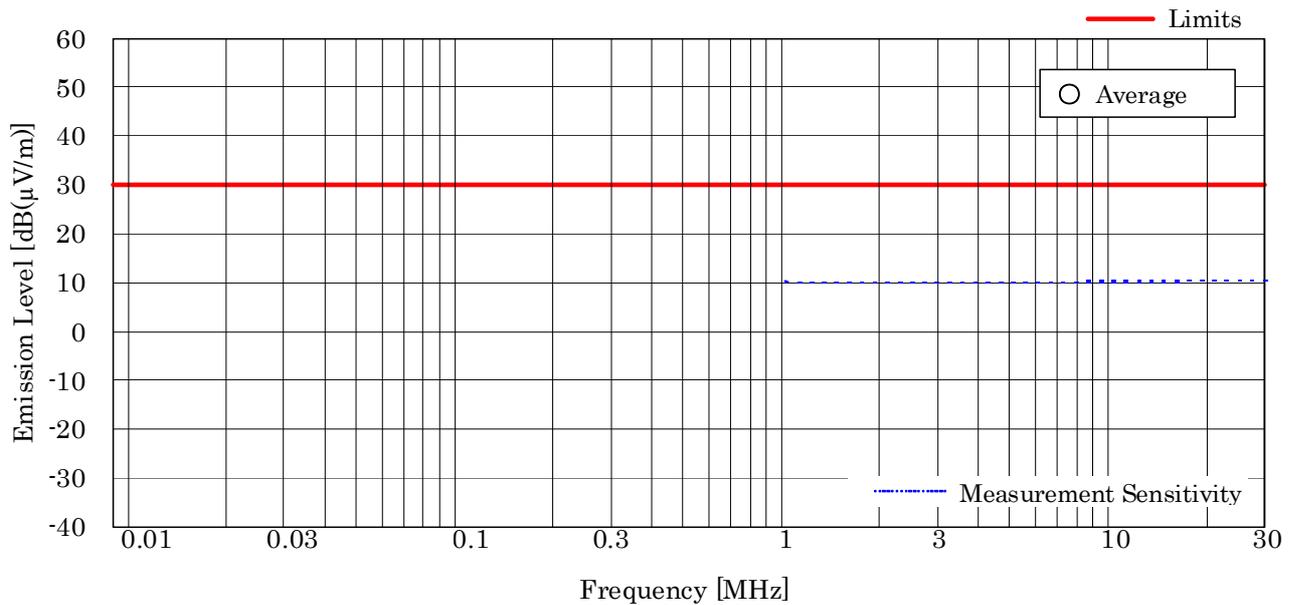
A.4 Radiated Emission

A.4.1 Radiated Emission 9 kHz – 30 MHz

Test Date: October 10, 2011

Temp.: 24 °C, Humi: 48 %

Frequency [MHz]	Correction Factor [dB(1/m)]	Meter Readings at 10 m [dB(μV)]	Limits at 300 m [dB(μV/m)]	Results at 300 m [dB(μV/m)]	Margin [dB]	Remarks
0.01	-0.2	< 40.0	30.2	< 10.3	> +19.9	-
0.10	-0.4	< 40.0	30.2	< 10.1	> +20.1	-
0.15	-0.4	< 40.0	30.2	< 10.1	> +20.1	-
0.30	-0.4	< 40.0	30.2	< 10.1	> +20.1	-
0.50	-0.4	< 40.0	30.2	< 10.1	> +20.1	-
1.00	-0.2	< 40.0	30.2	< 10.3	> +19.9	-
3.00	-0.1	< 40.0	30.2	< 10.4	> +19.8	-
5.00	-0.1	< 40.0	30.2	< 10.4	> +19.8	-
10.00	0.0	< 40.0	30.2	< 10.5	> +19.7	-
30.00	2.5	< 40.0	30.2	< 13.0	> +17.2	-



NOTES

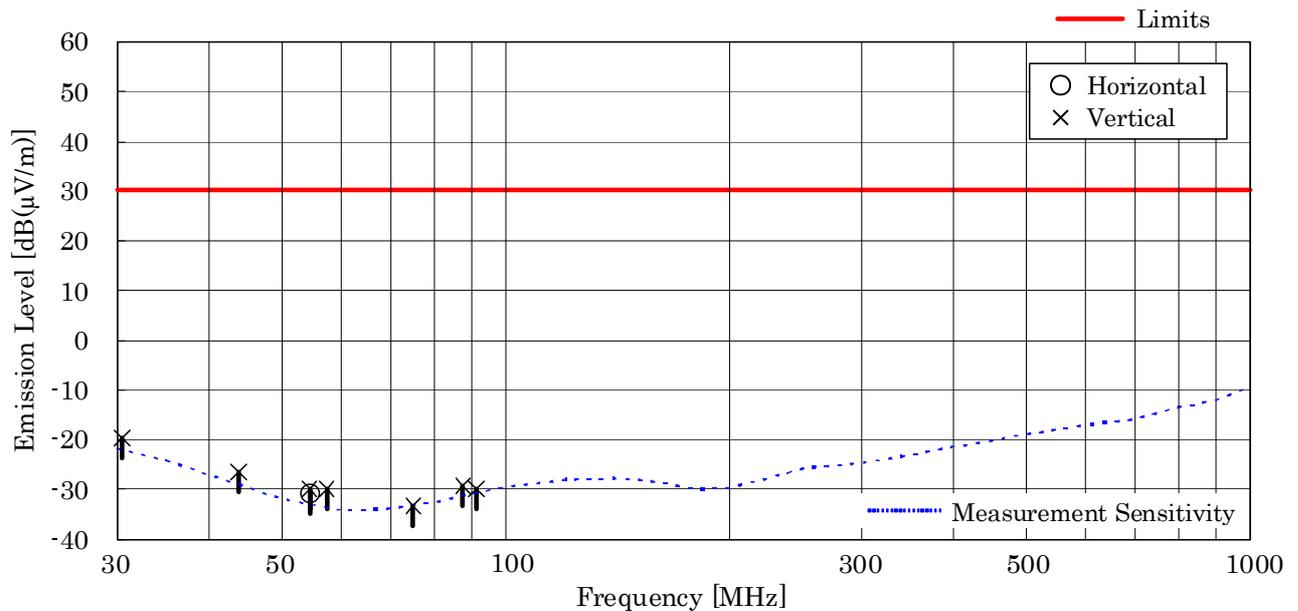
1. Test Distance : 10 m (Specified Distance : 300 m)
2. The spectrum was checked from 9 kHz to 30 MHz.
3. The correction factor includes the antenna factor and the cable loss.
4. The symbol of “<” means “or less”.
5. The symbol of “>” means “more than”.
6. Calculated result at 30.00 MHz, as the worst point shown on underline:
 Correction Factor + Meter Reading = 2.5 + <40.0 = <42.5 dB(μV/m)
 Result at 300 m = -29.5 + <42.5 = <13.0 dB(μV/m) = <4.4 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.4.2 Radiated Emission 30 MHz – 1000 MHz

Test Date: October 10, 2011

Temp.: 24 °C, Humi: 48 %

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.		
30.5	18.6	-31.1	< 20.0	22.4	30.3	< -22.0	-19.6	+49.9	-
43.8	11.5	-30.9	< 20.0	22.4	30.3	< -28.9	-26.5	+56.8	-
54.4	7.3	-30.8	22.2	23.1	30.3	-30.8	-29.9	+60.2	-
57.4	6.6	-30.7	< 20.0	23.7	30.3	< -33.6	-29.9	+60.2	-
75.1	6.8	-30.5	< 20.0	20.0	30.3	< -33.2	-33.2	+63.5	-
87.6	8.5	-30.3	< 20.0	22.0	30.3	< -31.3	-29.3	+59.6	-
91.2	9.0	-30.2	< 20.0	20.8	30.3	< -30.7	-29.9	+60.2	-
105.2	10.4	-30.0	< 20.0	< 20.0	30.3	< -29.1	< -29.1	> +59.4	-
107.0	10.6	-30.0	< 20.0	< 20.0	30.3	< -28.9	< -28.9	> +59.2	-
306.3	13.5	-28.4	< 20.0	< 20.0	30.3	< -24.4	< -24.4	> +54.7	-



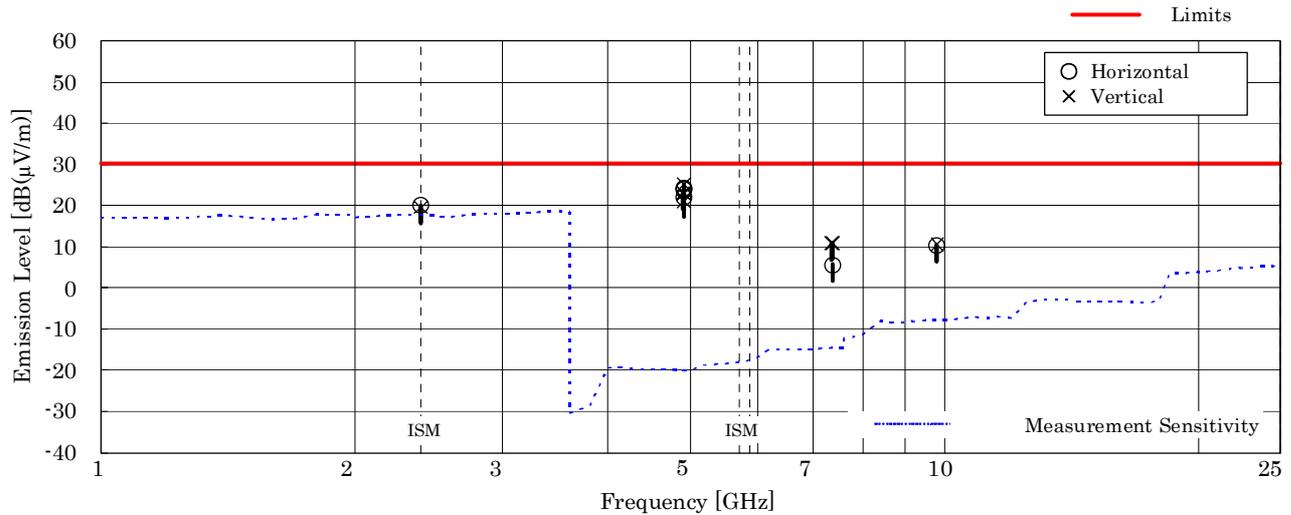
NOTES

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 30.5 MHz, as the worst point shown on underline:
 $\text{Antenna Factor} + \text{Cable Loss} + \text{Meter Reading} = 18.6 + -31.1 + 22.4 = 9.9 \text{ dB}(\mu\text{V/m})$
 $\text{Result at 300 m} = -29.5 + 9.9 = -19.6 \text{ dB}(\mu\text{V/m}) = 0.1 \mu\text{V/m}$ (Conversion Factor : 20dB/decade)
6. Test receiver setting(s) : Average 120 kHz

A.4.3 Radiated Emission above 1 GHz

Test Date: October 24, 2011
Temp.: 25 °C. Humi: 58 %

Frequency [MHz]	Antenna Factor [dB(1/m)]	Corr. Factor [dB]	Conversion Factor [dB]	Meter Readings at 3 m [dB(μV)]		Limits at 300 m [dB(μV/m)]	Results at at 300 m [dB(μV/m)]		Margin [dB]	Load Condition (ml)	
				Hori.	Vert.		Hori.	Vert.		Center	Right Front Corner
2396.0	21.3	10.4	-40.0	28.4	27.9	30.3	20.1	19.6	+10.2	700.0	None
2502.0	21.2	10.4	-40.0	< 26.0	< 26.0	30.3	< 17.6	< 17.6	> +12.7	700.0	None
4907.6	27.3	-31.1	-40.0	-	66.9	30.3	-	23.1	+ 7.6	None	300.0
4909.3	27.3	-31.3	-40.0	68.4	65.1	30.3	24.4	21.1	+ 6.3	700.0	None
4910.0	27.3	-31.3	-40.0	68.0	66.9	30.3	24.0	22.9	+ 6.7	300.0	None
4911.2	27.3	-31.3	-40.0	66.1	69.3	30.3	22.1	25.3	+ 5.4	None	700.0
7361.5	29.9	-29.4	-40.0	-	50.4	30.3	-	10.9	+19.8	700.0	None
7366.3	29.9	-29.4	-40.0	45.3	50.5	30.3	5.8	11.0	+19.7	None	700.0
9784.0	33.4	-26.2	-40.0	43.2	-	30.3	10.4	-	+20.4	700.0	None
9816.6	33.4	-26.1	-40.0	-	43.3	30.3	-	10.6	+20.2	700.0	None
14796.8	37.1	-25.3	-40.0	< 41.0	< 41.0	30.3	< 12.8	< 12.8	> +17.5	700.0	None
17150.0	37.1	-25.5	-40.0	< 41.0	< 41.0	30.3	< 12.6	< 12.6	> +17.7	700.0	None
19870.8	40.3	-21.4	-40.0	< 40.0	< 40.0	30.3	< 18.9	< 18.9	> +11.4	None	None
20000.0	40.3	-21.3	-40.0	< 40.0	< 40.0	30.3	< 19.0	< 19.0	> +11.3	None	None
24021.2	40.3	-20.1	-40.0	< 41.0	< 41.0	30.3	< 21.2	< 21.2	> + 9.1	None	None

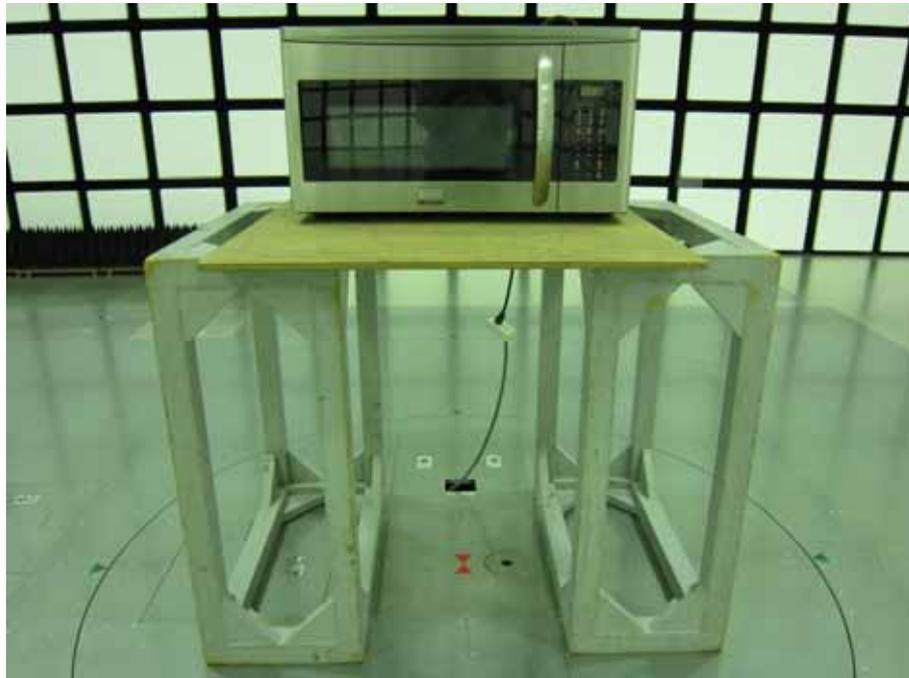


NOTES

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 + 10dB Pad Attenuator - Pre-Amplifier Gain [dB] (3.6 - 7.6GHz)
 - Cable Loss + 10dB Pad Attenuator - Pre-Amplifier Gain [dB] (7.6 - 18.0GHz)
 - Cable Loss - Pre-Amplifier Gain [dB] (18.0 - 25.0GHz)
4. The symbol of "<" means "or less".
5. The symbol of ">" means "more than".
6. The symbol of ">" means "No measurement".
7. Calculated result at 4911.2 MHz, as the worst point shown on underline:
 - Antenna Factor + Correction Factor + Meter Reading = 27.3 + -31.3 + 69.3 = 65.3dB(uV/m)
 - Result at 300 m = -40.0 + 65.3 = 25.3 dB(μV/m) = 18.4 μV/m (Conversion Factor : 20dB/decade)
8. Spectrum analyzer setting(s) :
 - Resolution Bandwidth = 1 MHz, Video Bandwidth = 10 Hz, Sweep Time = AUTO

Appendix B: Test Arrangement (Photographs)**B.1 Conducted Powerline**

Photograph present configuration with maximum emission

B.2 Radiated Emission

– Front View –



– Rear View –

Photograph present configuration with maximum emission

Appendix C: Test Instruments**C.1 Power Output**

Type	Model	Manufacturer	ID No.	Last Cal.	Interval
Digital Power Meter	3331	HIOKI	G47007006	2011/7	1 Year
Stopwatch	S321-4000	SEIKO	Q47097483	2011/3	1 Year
Thermometer	245506	YOKOGAWA	Q47097361	2011/4	1 Year

C.2 ISM Frequency

Type	Model	Manufacturer	ID No.	Last Cal.	Interval
Test Receiver	ESU 26	Rohde & Schwarz	A-6	2011/5	1 Year
Horn Antenna	91889-2	EATON	C-41-2	2011/6	1 Year
Attenuator	54A-10	Weinschel	D-28	2011/9	1 Year
RF Cable	SUCOFLEX104	SUHNER	C-40-11	2010/12	1 Year

C.3 Conducted Powerline

Type	Model	Manufacturer	ID No.	Last Cal.	Interval
Test Receiver	ESCI	Rohde & Schwarz	A-42	2010/11	1 Year
AMN (main)	KNW-407R	Kyoritsu	D-39	2011/9	1 Year
RF Cable	RG223/U	SUHNER	H-35	2011/6	1 Year

C.4 Radiated Emission

C.4.1 Radiated Emission 9 kHz – 30 MHz

Type	Model	Manufacturer	ID No.	Last Cal.	Interval
Test Receiver	ESCI 7	Rohde & Schwarz	A-8	2011/1	1 Year
Loop Antenna	HFH2-Z2	Rohde & Schwarz	C-3	2011/8	1 Year
RF Cable	RG213/U	SUHNER	H-29	2011/8	1 Year

C.4.2 Radiated Emission 30 MHz – 1000 MHz

Type	Model	Manufacturer	ID No.	Last Cal.	Interval
Test Receiver	ESCI 7	Rohde & Schwarz	A-8	2011/1	1 Year
Pre-Amplifier	310N	SONOMA	A-16	2010/12	1 Year
Hybrid Antenna	CBL6111D	TESEQ	C-71	2010/12	1 Year
RF Cable	S 10162 B-11 etc.	SUHNER	H-3	2011/3	1 Year
Site Attenuation	--	----	H-14	2011/2	1 Year

C.4.3 Radiated Emission above 1 GHz

Type	Model	Manufacturer	ID No.	Last Cal.	Interval
Test Receiver	ESU 26	Rohde & Schwarz	A-6	2011/5	1 Year
Pre-Amplifier	WJ-6882-824	Watkins Johnson	A-21	2010/12	1 Year
Pre-Amplifier	WJ-6611-513	Watkins Johnson	A-23	2010/12	1 Year
Pre-Amplifier	BZ1840LD1	B&Z	A-29	2010/12	1 Year
Pre-Amplifier	DBL-0618N515	DBS Microwave	A-33	2010/12	1 Year
Horn Antenna	91888-2	EATON	C-41-1	2011/6	1 Year
Horn Antenna	91889-2	EATON	C-41-2	2011/6	1 Year
Horn Antenna	3160-05	EMCO	C-56	2011/6	2 Years
Horn Antenna	3160-06	EMCO	C-57	2011/6	2 Years
Horn Antenna	3160-07	EMCO	C-58	2011/6	2 Years
Horn Antenna	3160-08	EMCO	C-59	2011/6	2 Years
Horn Antenna	3160-09	EMCO	C-48	2011/6	2 Years
Attenuator	54A-10	Weinschel	D-29	2011/9	1 Year
RF Cable	SUCOFLEX104	SUHNER	C-40-11	2010/12	1 Year
RF Cable	SUCOFLEX104	SUHNER	C-40-14	2010/12	1 Year
RF Cable	SUCOFLEX102	SUHNER	C-54	2010/12	1 Year
RF Cable	SUCOFLEX102EA	SUHNER	C-69	2010/12	1 Year
HPF	BRM50701	MICRO-TRONICS	D-93	2011/2	1 Year
RF Cable	SUCOFLEX104	SUHNER	C-40-11	2010/12	1 Year
RF Cable	SUCOFLEX104	SUHNER	C-40-14	2010/12	1 Year