

TEST REPORT

APPLICANT : CITIZEN SYSTEMS JAPAN CO., LTD.

ADDRESS : 6-12 Tanashi-cho, Nishi-Tokyo-shi, Tokyo 188-8511, Japan

PRODUCTS : Digital Photo Printer

MODEL No. : JR20-M01

SERIAL No. : CY01-ES05

FCC ID : TLGJR20M01

TEST STANDARD : CFR 47 FCC Rules and Regulations Part 15 Subpart A and C

TESTING LOCATION : Japan Quality Assurance Organization
SAFETY & EMC CENTER
EMC Engineering Department Testing Division
and EMC Engineering Department TSURU EMC Branch

TEST RESULTS : **Passed**

DATE OF TEST : February 15, 2011 - March 7, 2011



VLAC
Lab Accreditation
VLAC-001-4


Shinichi Yokoi
Manager
Japan Quality Assurance Organization
Safety & EMC Center
EMC Engineering Department, TSURU EMC Branch
2096, Ohata, Tsuru-shi, Yamanashi-ken 402-0045, 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.
 - 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” means Equipment Under the Test.

“AE” means Associated Equipment.

“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 15 Subpart A and C

Test procedure : ANSI C63.4-2003

2 Test Location

2.1 Test Location 1

Japan Quality Assurance Organization
SAFETY & EMC CENTER
EMC Engineering Department Testing Division
1-21-25, Kinuta, Setagaya-ku, Tokyo 157-8573, Japan

2.2 Test Location 2

Japan Quality Assurance Organization
SAFETY & EMC CENTER
EMC Engineering Department TSURU EMC Branch
2096, Ohata, Tsuru-shi, Yamanashi-ken 402-0045, JAPAN

3 Recognition of Test Laboratory

3.1 Test Laboratory 1

Japan Quality Assurance Organization
SAFETY & EMC CENTER, EMC Engineering Department Testing 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-001-1 (Effective through : March 30, 2012)
NVLAP Lab Code : 200189-0 (Effective through : June 30, 2011)
VCCI Registration Number : R-002, R-003, C-002, C-966, C-3679, T-1814, T-1815, T-1816,
G-170, G-171 (Effective through : March 30, 2012)
FCC Registration Number : 349652 (Date of Listing : March 30, 2012)
IC Registration Number : 2079A-1, 2079A-2 (Effective through : October 20, 2012)
Accredited as conformity assessment body for Japan electrical appliances and material law
by METI. (Effective through : February 22, 2013)

3.2 Test Laboratory 2

Japan Quality Assurance Organization
SAFETY & EMC CENTER
EMC Engineering Department TSURU 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-001-4 (Effective through : March 30, 2012)
NVLAP Lab Code : 200192-0 (Effective through : June 30, 2011)
BSMI Recognition Number : SL2-IN-E-6004, SL2-IS-E-6004, SL2-A1-E-6004
(Effective through : September 14, 2013)
VCCI Registration Number : R-004, R-824, R-828, C-003, C-005, C-859, C-860, C-864, C-3085,
T-1420, T-1421, T-1422, T-1423, T-1424, T-1425, G-175, G-176, G-177
(Effective through : March 30, 2012)
FCC Registration Number : 444763 (Effective through : March 30, 2012)
IC Registration Number : 2079D-1, 2079D-2, 2079D-3 (Effective through : December 16, 2012)
Accredited as conformity assessment body for Japan electrical appliances and material law
by METI. (Effective through : February 22, 2013)

4 Description of the Equipment Under Test

- 1 Manufacturer : CITIZEN SYSTEMS JAPAN CO., LTD.
6-1-12 TANASHI-CHO NISHI-TOKYO-SHI TOKYO
188-8511 JAPAN
- 2 Products : Digital Photo Printer
- 3 Model No. : JR20-M01(*)
- 4 Serial No. : CY01-ES05
- 5 Product Type : Production
- 6 Date of Manufacture : February 7, 2011
- 7 Power Rating : 100VAC-240VAC 50/60Hz
- 8 EUT Grounding : Grounded at the plug end of the power Line cord.
- 9 Received Date of EUT : February 10, 2011
- 10 EUT Authorization : Certification
- 11 EUT Highest Frequency : 13.56MHz(Section 15.225)
Used/Generated Operation within the band 13.110 - 14.010 MHz
- 12 Modulation : ASK
- 13 Antenna type : Fixed using
- 14 Temperature Range : 5 ~ 40 degree

Note 1 : * The following models exist by customer's difference. No structural changes.
JR20-M01, CZ-01, CW-02

5 Test Condition

5.1 AC Powerline Conducted Emission

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

Test site & instruments :

Type	Number of test site & instruments (Refer to Appendix C)
Test Site	<input type="checkbox"/> OS-1 <input type="checkbox"/> OS-2 <input type="checkbox"/> AC-1 <input checked="" type="checkbox"/> SR-A <input type="checkbox"/> SR-B <input checked="" type="checkbox"/> 5
Test Receiver	<input type="checkbox"/> R-3 <input type="checkbox"/> R-4 <input type="checkbox"/> R-5 <input type="checkbox"/> R-5 <input type="checkbox"/> R-5 <input checked="" type="checkbox"/> 172
Cable	<input type="checkbox"/> CB-3 <input type="checkbox"/> CB-4 <input type="checkbox"/> CB-5 <input checked="" type="checkbox"/> 42
Network (for EUT)	<input type="checkbox"/> L-1 <input type="checkbox"/> L-2 <input type="checkbox"/> L-3 <input type="checkbox"/> L-4 <input type="checkbox"/> L-5 <input type="checkbox"/> L-6 <input type="checkbox"/> L-7 <input type="checkbox"/> L-8 <input type="checkbox"/> L-9 <input type="checkbox"/> L-10 <input type="checkbox"/> L-11 <input type="checkbox"/> L-12 <input type="checkbox"/> L-13 <input checked="" type="checkbox"/> 34
Network (for AE)	<input type="checkbox"/> L-1 <input type="checkbox"/> L-2 <input type="checkbox"/> L-3 <input type="checkbox"/> L-4 <input type="checkbox"/> L-5 <input type="checkbox"/> L-6 <input type="checkbox"/> L-7 <input type="checkbox"/> L-8 <input type="checkbox"/> L-9
Pulse Limiter	<input type="checkbox"/> PL-3 <input type="checkbox"/> PL-4 <input type="checkbox"/> PL-5 <input checked="" type="checkbox"/> 175
Termination	<input type="checkbox"/> TM-1 <input type="checkbox"/> TM-2
High Pass Filter	<input type="checkbox"/> 246
Thermo-Hygrometer	<input checked="" type="checkbox"/> 202

5.2 Radiated Emission

5.2.1 Radiated Emission 0.009 MHz - 30 MHz

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

Test site & instruments :

Type	Number of test site & instruments (Refer to Appendix C)
Test Site	<input type="checkbox"/> OS-1 <input type="checkbox"/> OS-2 <input checked="" type="checkbox"/> AC-1
Test Receiver	<input checked="" type="checkbox"/> R-4 <input type="checkbox"/> R-5 <input type="checkbox"/> S-1
Cable	<input type="checkbox"/> CN-1 <input type="checkbox"/> CN-2 <input type="checkbox"/> CN-3
Antenna	<input type="checkbox"/> AB-1 <input type="checkbox"/> AB-2 <input type="checkbox"/> AB-3 <input type="checkbox"/> AD-1 <input type="checkbox"/> AD-2 <input type="checkbox"/> AD-3 <input type="checkbox"/> AL-1 <input type="checkbox"/> AL-2 <input type="checkbox"/> AL-3 <input type="checkbox"/> AL-4 <input type="checkbox"/> AL-5 <input type="checkbox"/> AD-4 <input checked="" type="checkbox"/> AL-0

5.2.2 Radiated Emission 30 MHz - 1000 MHz

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

Test site & instruments :

Type	Number of test site & instruments (Refer to Appendix C)
Test Site	<input type="checkbox"/> OS-1 <input type="checkbox"/> OS-2 <input type="checkbox"/> AC-1 <input checked="" type="checkbox"/> 1
Test Receiver	<input type="checkbox"/> R-1 <input type="checkbox"/> R-2 <input type="checkbox"/> R-6 <input type="checkbox"/> R-5 <input type="checkbox"/> S-1 <input checked="" type="checkbox"/> 13
Cable	<input type="checkbox"/> CN-1 <input type="checkbox"/> CN-2 <input type="checkbox"/> CN-3 <input checked="" type="checkbox"/> 38
Antenna	<input type="checkbox"/> AB-1 <input type="checkbox"/> AB-2 <input checked="" type="checkbox"/> AB-3 <input type="checkbox"/> AD-1 <input type="checkbox"/> AD-2 <input checked="" type="checkbox"/> 167 <input type="checkbox"/> AL-1 <input type="checkbox"/> AL-2 <input checked="" type="checkbox"/> AL-3 <input type="checkbox"/> AL-4 <input type="checkbox"/> AL-5 <input checked="" type="checkbox"/> 168

5.2.3 Radiated Emission above 1 GHz

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

Test site & instruments :

Type	Number of test site & instruments (Refer to Appendix C)
Test Site	<input type="checkbox"/> OS-1 <input type="checkbox"/> OS-2 <input type="checkbox"/> AC-1
Test Receiver	<input type="checkbox"/> R-3 <input type="checkbox"/> R-5 <input type="checkbox"/> S-1 <input type="checkbox"/> S-3 <input type="checkbox"/> S-4 <input type="checkbox"/> S-5
Cable	<input type="checkbox"/> CS-1 <input type="checkbox"/> CS-2
Antenna	<input type="checkbox"/> AL-1 <input type="checkbox"/> AL-2 <input type="checkbox"/> AL-3 <input type="checkbox"/> AL-4 <input type="checkbox"/> AL-5 <input type="checkbox"/> AL-6
Pre-Amplifier	<input type="checkbox"/> PA-1 <input type="checkbox"/> PA-2 <input type="checkbox"/> PA-3 <input type="checkbox"/> PA-5

5.3 Frequency Stability

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

Test site & instruments :

Type	Number of test site & instruments (Refer to Appendix C)
Test Receiver	<input type="checkbox"/> R-1 <input type="checkbox"/> R-2 <input type="checkbox"/> R-3 <input type="checkbox"/> R-4 <input type="checkbox"/> R-5 <input type="checkbox"/> S-1 <input type="checkbox"/> S-3 <input checked="" type="checkbox"/> 13
Cable	<input type="checkbox"/> CB-3 <input type="checkbox"/> CB-4 <input type="checkbox"/> CB-5 <input type="checkbox"/> CB-3 <input type="checkbox"/> CB-4 <input type="checkbox"/> CB-5 <input type="checkbox"/> CS-1 <input type="checkbox"/> CS-2 <input type="checkbox"/> CS-3 <input type="checkbox"/> CS-4 <input type="checkbox"/> CS-5 <input checked="" type="checkbox"/> 45
Oven	<input checked="" type="checkbox"/> 76
Frequency Counter	<input checked="" type="checkbox"/> 75
Antenna	<input type="checkbox"/> AB-1 <input type="checkbox"/> AB-2 <input type="checkbox"/> AB-3 <input type="checkbox"/> AD-1 <input type="checkbox"/> AD-2 <input type="checkbox"/> AD-3 <input type="checkbox"/> AL-1 <input type="checkbox"/> AL-2 <input type="checkbox"/> AL-3 <input type="checkbox"/> AL-4 <input type="checkbox"/> AL-5 <input type="checkbox"/> AD-4 <input type="checkbox"/> AL-0

5.4 Occupied Bandwidth

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

Test site & instruments :

Type	Number of test site & instruments (Refer to Appendix C)
Oven	<input type="checkbox"/> 76
Test Receiver	<input type="checkbox"/> R-1 <input type="checkbox"/> R-2 <input type="checkbox"/> R-3 <input type="checkbox"/> R-4 <input type="checkbox"/> R-5 <input type="checkbox"/> S-1 <input type="checkbox"/> S-3 <input checked="" type="checkbox"/> 13
Cable	<input type="checkbox"/> CB-3 <input type="checkbox"/> CB-4 <input type="checkbox"/> CB-5 <input type="checkbox"/> CB-3 <input type="checkbox"/> CB-4 <input type="checkbox"/> CB-5 <input type="checkbox"/> CS-1 <input type="checkbox"/> CS-2 <input type="checkbox"/> CB-3 <input type="checkbox"/> CB-4 <input type="checkbox"/> CB-5 <input checked="" type="checkbox"/> 45
Pre-Amplifier	<input type="checkbox"/> PA-1 <input type="checkbox"/> PA-2 <input type="checkbox"/> PA-3
Antenna	<input type="checkbox"/> AB-1 <input type="checkbox"/> AB-2 <input type="checkbox"/> AB-3 <input type="checkbox"/> AD-1 <input type="checkbox"/> AD-2 <input type="checkbox"/> AD-3 <input type="checkbox"/> AL-1 <input type="checkbox"/> AL-2 <input type="checkbox"/> AL-3 <input type="checkbox"/> AL-4 <input type="checkbox"/> AL-5 <input type="checkbox"/> AD-4 <input type="checkbox"/> AL-0

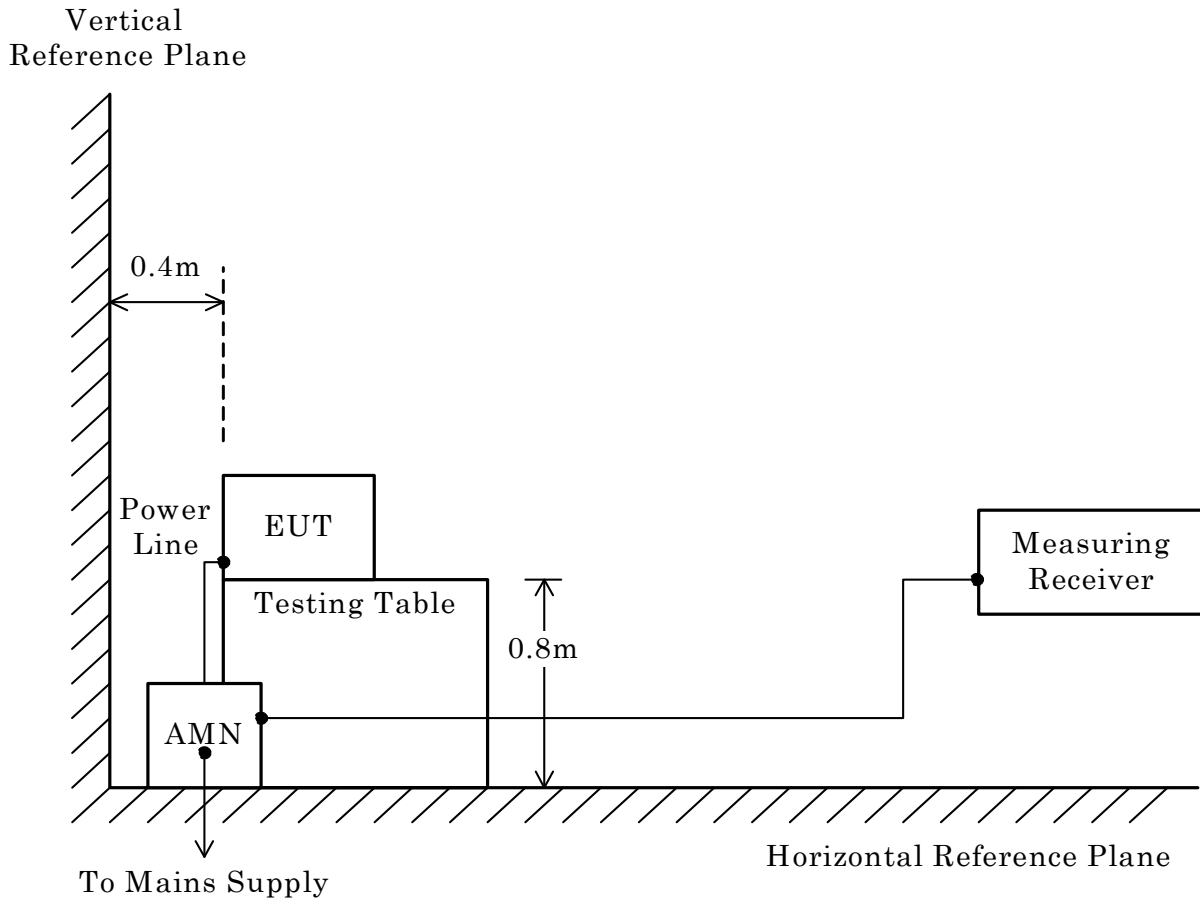
6 Preliminary Test and Test Setup

6.1 AC Powerline Conducted Emission

The preliminary conducted disturbance at the mains ports measurements were carried out. The preliminary conducted disturbance at the mains ports 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 conducted disturbance at the mains ports measurements.

(Referred documentation is No.G34364I in JQA Tsuru)

- Side View -



* AMN : Artificial Mains Network

6.2 Radiated Emission

6.2.1 Radiated Emission 0.009 MHz - 30 MHz

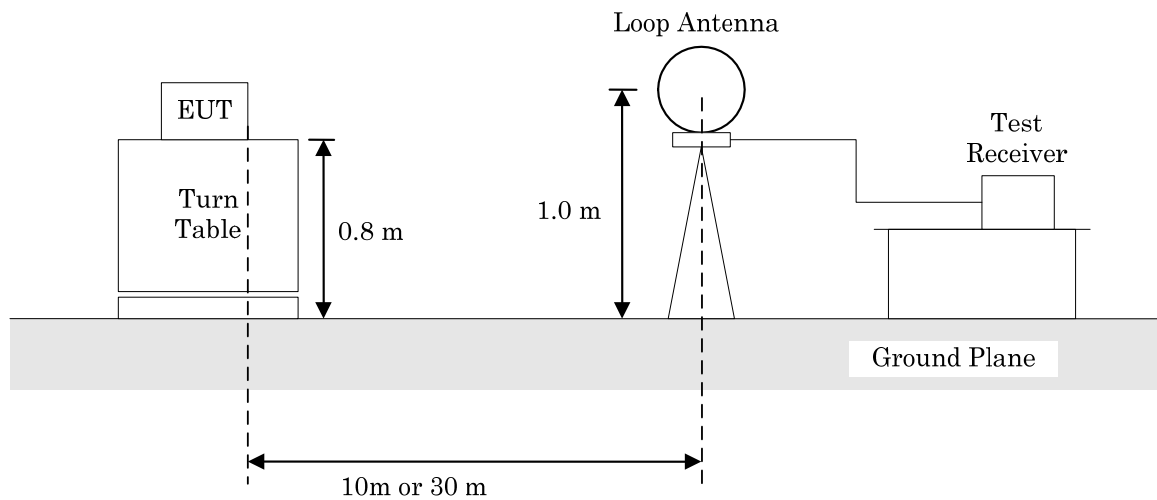
The preliminary radiated disturbance measurements were carried out.

The preliminary radiated disturbance measurements 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 radiated disturbance measurements.

(Referred documentation is No.G34364I in JQA Tsuru)



6.2.2 Radiated Emission 30 MHz - 1000 MHz

The preliminary radiated disturbance measurements were carried out.

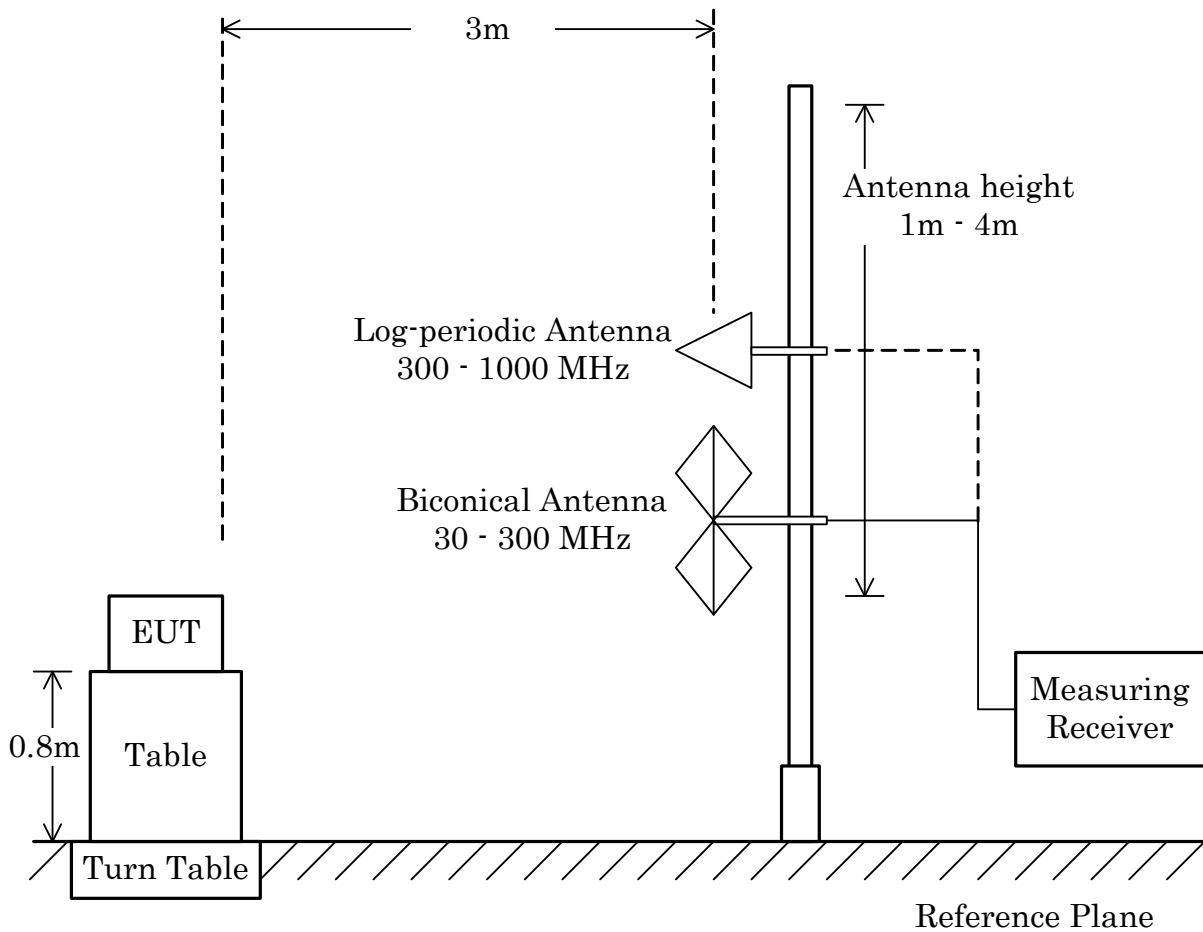
The preliminary radiated disturbance measurements were performed at the measurement distance that specified for compliance to determine the emission characteristics of the EUT.

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 radiated disturbance measurements.

(Referred documentation is No.G34364I in JQA Tsuru)

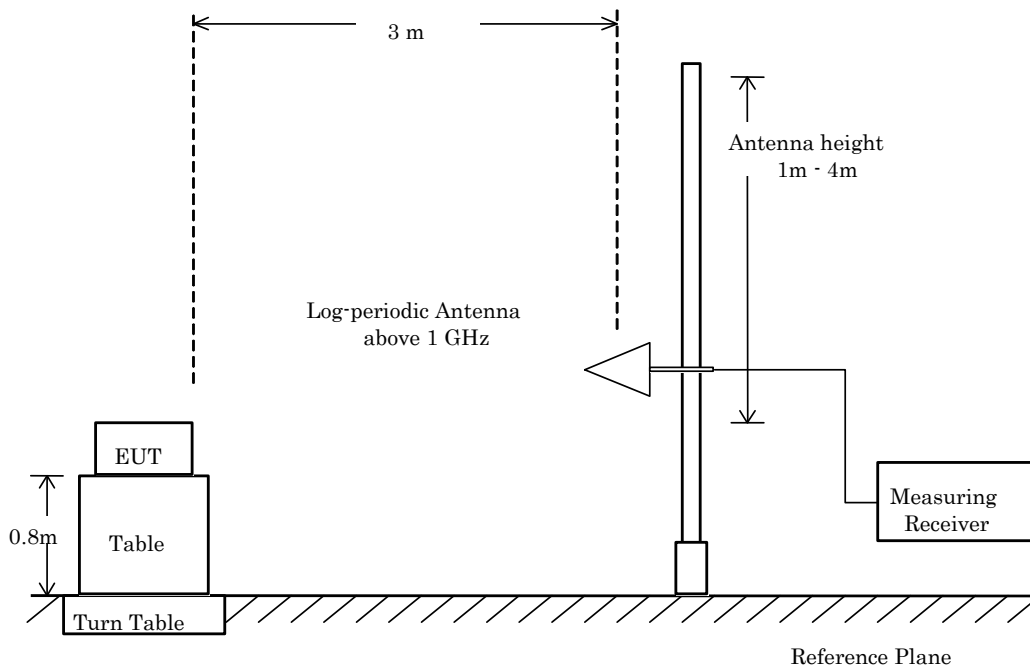
- Side View -



6.2.3 Radiated Emission above 1 GHz

The preliminary radiated disturbance measurements were carried out.
 The preliminary radiated disturbance measurements 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 radiated disturbance measurements.
 (Referred documentation is No.G34364I in JQA Tsuru)

- Side View -

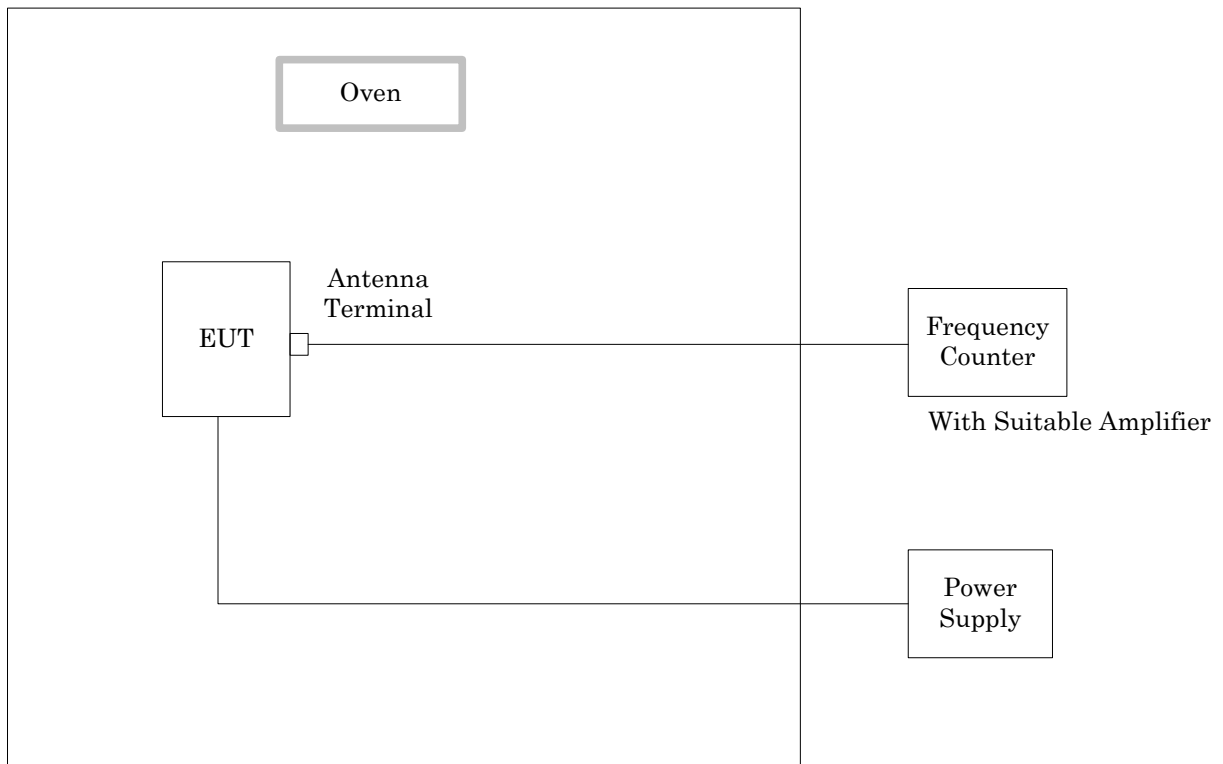


6.3 Frequency Stability

The frequency stability measurements were carried out. By using frequency counter with suitable RF amplifier, the carrier frequency of the transmitter under test was measured with a temperature variation of -20°C to $+50^{\circ}\text{C}$ at the normal supply voltage, and if required, with a variation in the primary voltage from 85% to 115% the rated supply voltage at the temperature of $+20^{\circ}\text{C}$.

These measurements were carried out after allow sufficient time (approximately 1 hour) for the temperature of the chamber to stabilize.

(Referred documentation is No.G34366L in JQA Testing section)

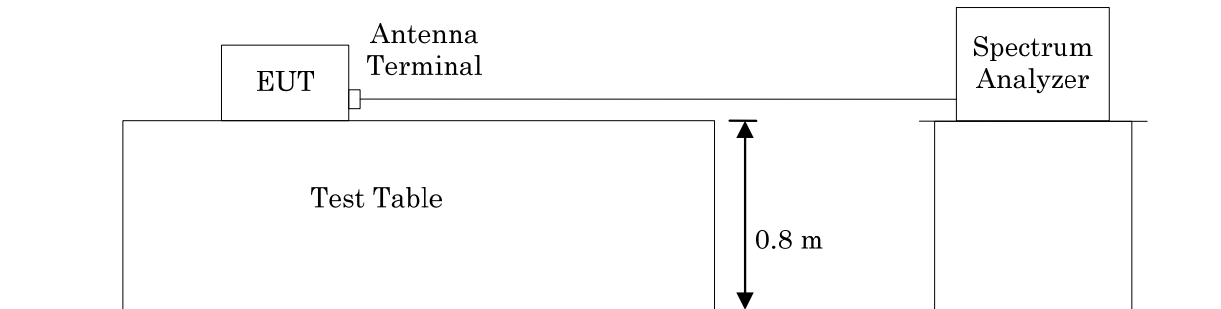


6.4 Occupied Bandwidth

According to description of ANSI C63.4-2003 sec.13.1.7, the occupied bandwidth measurements were carried out. By using a spectrum analyzer with a vertical antenna for picking up the signal, the measurements of the emission were made under the transmitting modes of the EUT.

The resolution bandwidth of spectrum analyzer was set to the value specified in sec.13.1.7.

(Referred documentation is No.G34366K in JQA Testing section)



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 Signatory: Not Applicable
Position : Not Applicable

8 Responsible Party

Responsible Party of Test Item (Product)

Responsible Party :	
Contact Person :	<hr style="width: 100%;"/>
	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 AC Powerline Conducted Emission**

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

-Passed -Failed -Not judged

Min. Limit Margin (QP) 21.7 dB at 0.182 MHz

Min. Limit Margin (AVE) N/A dB at N/A MHz

Max. Limit Exceeding N/A dB at N/A MHz

Uncertainty of measurement results ± 2.6 dB(2σ)

Remarks : _____

10.2 Radiated Emissions (Section 15.225(a)(b)(c))

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

-Passed -Failed -Not judged

Min. Limit Margin 82.2 dB at 13.560 MHz

Max. Limit Exceeding N/A dB at N/A MHz

Uncertainty of measurement results ± 1.9 dB(2σ)

Remarks : _____

10.3 Radiated Emissions (Section 15.225(d))

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

-Passed -Failed -Not judged

Min. Limit Margin 2.6 dB at 480.0 MHz

Max. Limit Exceeding N/A dB at N/A MHz

Uncertainty of measurement results

<input checked="" type="checkbox"/> - 3 meters	0.009-30 MHz	<u>± 1.9</u> dB(2 σ)
	30- 300 MHz	<u>± 4.5</u> dB(2 σ)
	300-1000 MHz	<u>± 4.6</u> dB(2 σ)
	1 - 18 GHz	<u>± 3.7</u> dB(2 σ)

Remarks : The measurement results is within the range of measurement uncertainty.

10.4 Frequency Stability (Section 15.225(e))

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

-Passed -Failed -Not judged

Remarks : _____

10.5 Occupied Bandwidth

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

-Passed -Failed -Not judged

Remarks : _____

11 Summary

General Remarks :

The EUT was tested according to the requirements of CFR 47 FCC Rules and Regulations Part 15. under the test configuration, as 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:



Shinichi Yokoi
Manager
TSURU EMC Branch
EMC Engineering Department

Tested by:



Takashi Koyama
Assistant Manager
TSURU EMC Branch
EMC Engineering Department

12 Operating Condition

Power Supply Voltage : 120VAC 60Hz

Operation Mode : The RFID module continuously repeats communication.

13 Test Configuration

The equipment under test consists of :

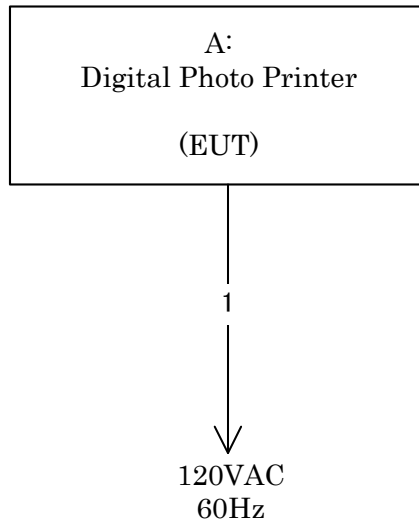
Sign	Item	Manufacturer	Model No.	Serial No.	FCC ID
A	Digital Photo Printer	CITIZEN SYSTEMS JAPAN CO., LTD.	JR20-M01	CY01-ES05	TLGJR20M01

The auxiliary equipment used for testing :
 None

Type of Cable:

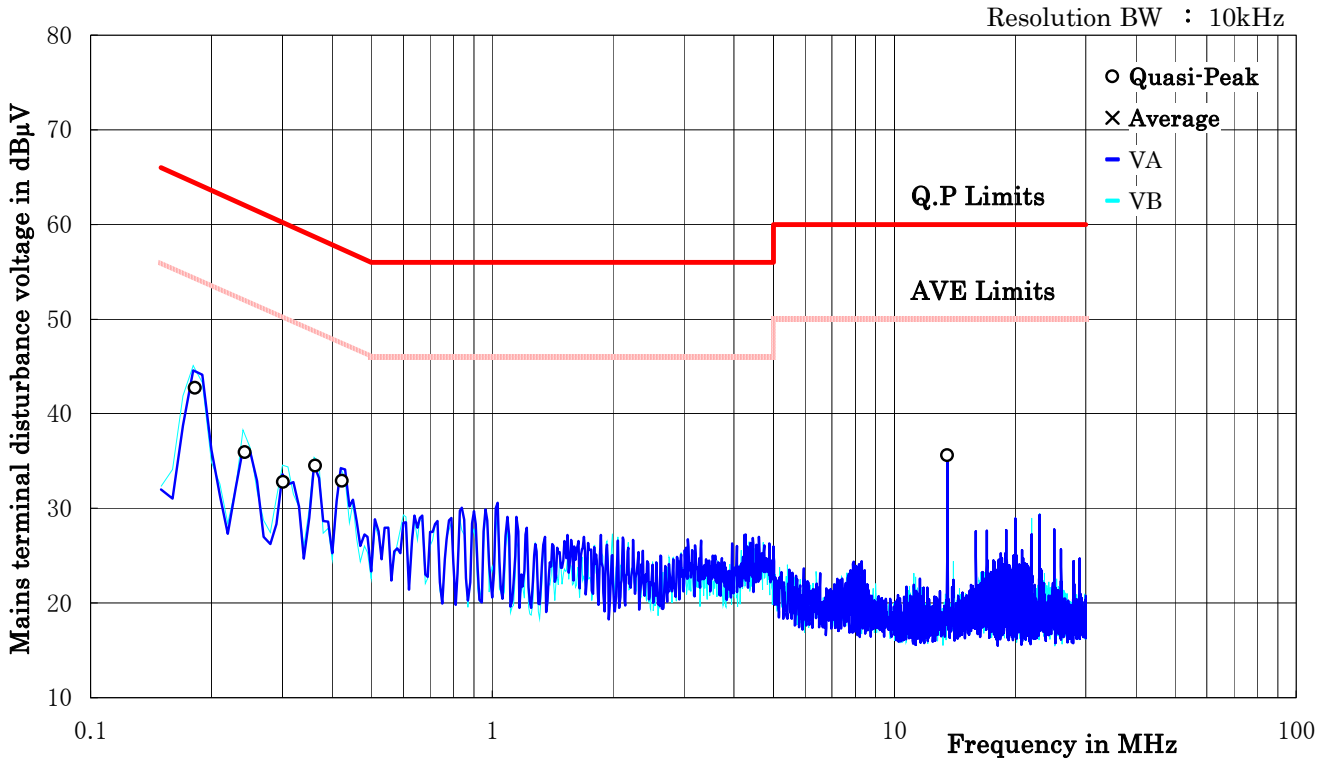
No.	Description	Identification (Manu. etc.)	Connector Shielded	Cable Shielded	Ferrite Core	Length (m)
1	AC Power Cable	None	No	No	No	1.95

14 Equipment Under Test Arrangement (Drawings)



Appendix A: Test Data
A.1 AC Powerline Conducted Emission

Date : February 20, 2011
 Temp. : 18°C Humi. : 51%



Freq. [MHz]	Factor. [dB]	Meter Reading[dBµV]				Limit [dBµV]		Result. [dBµV]		Margin [dB]	
		QP		AV		QP	AV	QP	AV	QP	AV
0.182	21.6	20.4	21.1	-	-	64.4	54.4	42.7	-	21.7	-
0.242	21.0	13.7	14.9	-	-	62.0	52.0	35.9	-	26.1	-
0.302	20.7	10.1	12.1	-	-	60.2	50.2	32.8	-	27.4	-
0.363	20.5	12.3	14.0	-	-	58.7	48.7	34.5	-	24.2	-
0.422	20.3	12.6	11.9	-	-	57.4	47.4	32.9	-	24.5	-
13.56	20.4	15.2	14.6	-	-	60.0	50.0	35.6	-	24.4	-
27.12	20.7	< 10.0	< 10.0	-	-	60.0	50.0	< 30.7	-	> 29.3	-

- Note :
- 1) QP : CISPR Quasi-Peak. ; AV : Average.
 - 2) VA : One end & grounded ; VB : The other end & grounded
 - 3) The symbol of '<' means 'or less' .
 - 4) The symbol of '>' means 'or greater' .
 - 5) The symbol of '-' means 'Not applicable' .
 - 6) Factor includes an A. M. N. factor, Hi-Pass Filter loss, Pulse Limiter loss and a cable loss.
 - 7) A sample calculation was made at 0.182MHz
 Factor + Meter Reading = 21.6 + 21.1 = 42.7

A.2 Radiated Emissions

A.2.1 Radiated Emission (Section 15.225(a)(b)(c))

Date : February 15, 2011

Temp : 15.7°C Humi : 35.7% Atom : 954hPa

Frequency (MHz)	Antenna Factor (dB)	Meter Reading/ 3m	Limits/ 30m	Field Strength/ 30m	Margin
		(dB μ V) Q.P	(dB μ V) Q.P	(dB μ V) Q.P	(dB) Q.P
13.110	-	< 30.0	29.5	< 10.9	> 18.6
13.410	-	< 30.0	40.5	< 10.9	> 29.6
13.553	-	< 30.0	50.5	< 10.9	> 39.6
13.560	-	41.8	84.0	1.8	82.2
13.567	-	< 30.0	50.5	< 10.9	> 39.6
13.710	-	< 30.0	40.5	< 10.9	> 29.6
14.010	-	< 30.0	29.5	< 10.9	> 18.6

Notes: 1) The testing location : Anechoic Chamber No.1 Distance : 3 m

2) Q.P : Quasi-Peak Detector (IF Band width : 9 kHz)

3) The symbol of "<" means "or less".

4) The symbol of ">" means "more than".

5) The symbol of "-" means "Zero", because the used test receiver calculated and displayed in the Meter Reading including the Correction Factor(Antenna and cable loss) directly .

6) The testing loop antenna was rotated at the vertical and horizontal axis to maximize received emissions. The above Meter Reading was maximum emissions level.

7) Calculation :

For fundamental, the measured field strength was extrapolated to distance 30 meters, using the formula that field strength varies as the inverse distance square (40 dB per decade of distance).

Fundamental(13.560MHz): $41.8 \text{ dB}\mu\text{V/m} - 20\log_{10}((30/3)^2) = 41.8 - 40.0 = 1.8 \text{ dB}\mu\text{V/m}$ at 30 meters

Limits for 13.553-13.567MHz (§15.225(a)) = $20\log_{10}(15848) = 84.0 \text{ dB}\mu\text{V/m}$

Limits for 13.410-13.553, 13.567-13.710 MHz (§15.225(b)) = $20\log_{10}(334) = 50.5 \text{ dB}\mu\text{V/m}$

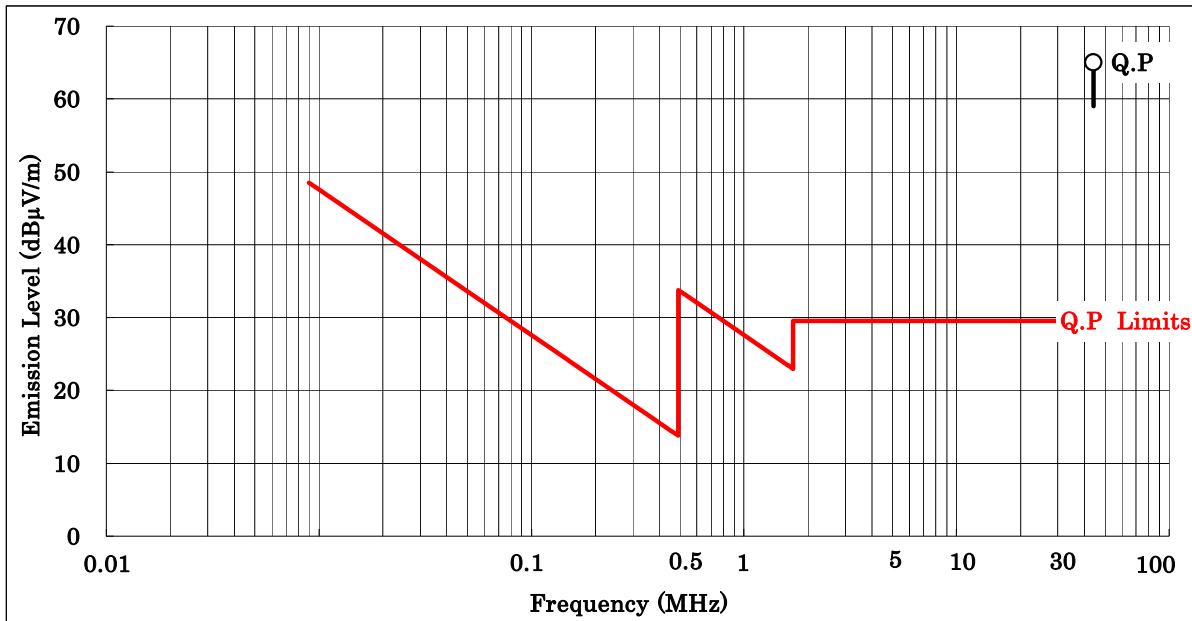
Limits for 13.110-13.410, 13.710-14.010MHz (§15.225(c)) = $20\log_{10}(106) = 40.5 \text{ dB}\mu\text{V/m}$

Limits for except for 13.110-14.010MHz(§15.225(d)) = $20\log_{10}(30) = 29.5 \text{ dB}\mu\text{V/m}$

A.2.2 Radiated Emission 0.009 MHz - 30 MHz

Date : February 15, 2011
 Temp : 15.7°C Humi : 35.7% Atom : 954hPa

Frequency (MHz)	Antenna Factor (dB)	Meter Reading (dBμV) Q.P	Limits (dBμV) Q.P	Specified Distance (m)	Extrapolated Emission Level (dBμV)		Margin (dB) Q.P
					Q.P	Q.P	
0.009	-	< 60.0	48.5	300.0	< 0.9	> 47.6	
0.01	-	< 60.0	47.6	300.0	< 0.9	> 46.7	
0.02	-	< 60.0	41.6	300.0	< 0.9	> 40.7	
0.03	-	< 60.0	38.1	300.0	< 0.9	> 37.1	
0.05	-	< 60.0	33.6	300.0	< 0.9	> 32.7	
0.07	-	< 60.0	30.7	300.0	< 0.9	> 29.8	
0.10	-	< 60.0	27.6	300.0	< 0.9	> 26.7	
0.20	-	< 60.0	21.6	300.0	< 0.9	> 20.7	
0.30	-	< 60.0	18.1	300.0	< 0.9	> 17.1	
0.50	-	< 30.0	33.6	30.0	< 10.9	> 22.7	
1.00	-	< 30.0	27.6	30.0	< 10.9	> 16.7	
2.00	-	< 30.0	29.5	30.0	< 10.9	> 18.6	
3.00	-	< 30.0	29.5	30.0	< 10.9	> 18.6	
5.00	-	< 30.0	29.5	30.0	< 10.9	> 18.6	
10.00	-	< 30.0	29.5	30.0	< 10.9	> 18.6	
27.12	-	< 30.0	29.5	30.0	< 10.9	> 18.6	
30.00	-	< 30.0	29.5	30.0	< 10.9	> 18.6	

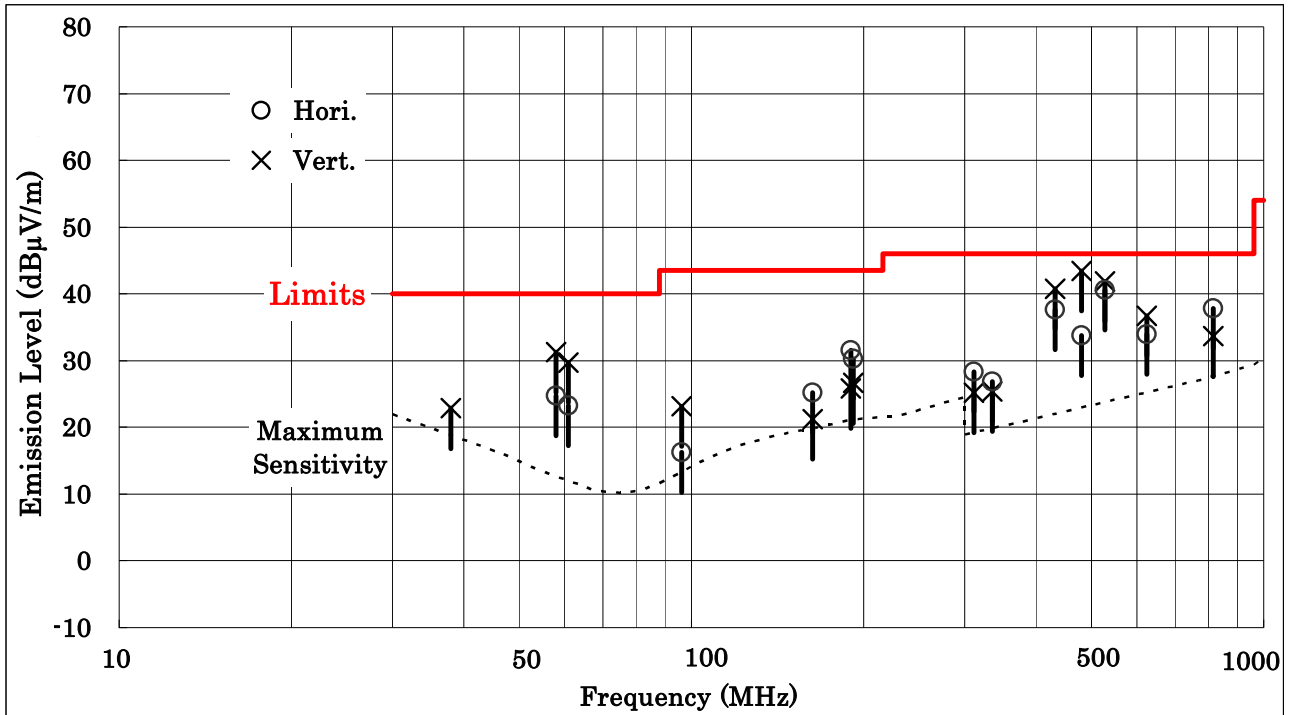


- Notes:
- 1) The testing location : Anechoic Chamber No.1 Distance : 10 m
 - 2) The symbol of "<" means "or less".
 - 3) The symbol of ">" means "more than".
 - 4) The symbol of "-" means "Zero", because the used test receiver calculated and displayed in the Meter Reading including the Correction Factor(Antenna and cable loss) directly
 - 5) A sample calculation was made at 0.009 MHz
 $60 \text{ dB}\mu\text{V/m (at 10m distance)} \Rightarrow 60 - 20\log_{10}((300/10)^2) = 0.9 \text{ dB}\mu\text{V/m (at 300m distance)}$
 - 6) Setting of measuring instrument :
 Quasi-Peak Detector, IF Bandwidth: 9 kHz or 200Hz (9 kHz - 90 kHz, 110-490kHz)
 Average Detector, IF Bandwidth: 9 kHz or 200Hz (except for 9 kHz - 90 kHz, 110-490kHz)
 - 7) The spectrum was checked from 0.009 MHz to 30 MHz.

A.2.2 Radiated Emission 30 MHz - 1000 MHz

Date : February 15, 2011
 Temp : 15 °C Humi : 35 %

Frequency (MHz)	Antenna Factor (dB/m)	Meter Reading (dB μ V)		Limits (dB μ V) Q.P	Emission Level (dB μ V/m)		Margin (dB)	
		Hori.	Vert.		Hori.	Vert.	Hori.	Vert.
38.0	19.1	< 0.0	3.7	40.0	< 19.1	22.8	> 20.9	17.2
58.0	12.5	12.2	18.7	40.0	24.7	31.2	15.3	8.8
61.0	11.8	11.5	17.9	40.0	23.3	29.7	16.7	10.3
96.0	13.4	2.9	9.8	43.5	16.3	23.2	27.2	20.3
162.7	19.9	5.3	1.4	43.5	25.2	21.3	18.3	22.2
189.8	21.1	10.5	4.8	43.5	31.6	25.9	11.9	17.6
192.0	21.1	9.1	5.5	43.5	30.2	26.6	13.3	16.9
311.9	18.9	9.4	6.3	46.0	28.3	25.2	17.7	20.8
336.0	19.3	7.6	6.1	46.0	26.9	25.4	19.1	20.6
432.0	22.1	15.5	18.6	46.0	37.6	40.7	8.4	5.3
480.0	22.9	10.8	20.5	46.0	33.7	43.4	12.3	2.6
528.0	23.8	16.8	18.1	46.0	40.6	41.9	5.4	4.1
624.0	25.4	8.5	11.3	46.0	33.9	36.7	12.1	9.3
816.0	27.8	10.0	5.8	46.0	37.8	33.6	8.2	12.4



- Notes:
- 1) The testing location : Anechoic Chamber A Distance : 3 m
 - 2) The spectrum was checked from 30 MHz to 1000 MHz.
 - 3) Antenna factor includes the cable loss.
 - 4) Hori. : Horizontal polarization Vert. : Vertical polarization
 - 5) Q.P: Quasi-Peak Detector
 - 6) The symbol of "<" means "or less", ">" means "more than".
 - 7) A sample calculation was made at 38.0 MHz
 $(\text{Antenna Factor}) + (\text{Meter Reading}) = 19.1 + 3.7 = 22.8 \text{ dB}\mu\text{V}$

A.2.3 Radiated Emission above 1 GHz

-Not applicable-

A.3 Frequency Stability

Testing Date : March 7, 2011
 Ambient Temperature : 17 (°C), Humidity : 30(%)

Operating Frequency: 13.56MHz

Temperature (°C)	Primary Supply Voltage (V)	Frequency (MHz)			
		0 minute later	2 minutes later	5 minutes later	10 minutes later
-20	102	13.5598135	13.5598245	13.5599813	13.5598100
	120	13.5598015	13.5598160	13.5598160	13.5598090
	138	13.5598225	13.5598165	13.5598135	13.5598255
20	102	13.5599295	13.5599275	13.5599265	13.5599275
	120	13.5599265	13.5599280	13.5599929	13.5599265
	138	13.5599280	13.5599275	13.5599270	13.5599270
50	102	13.5598890	13.5598870	13.5598850	13.5598835
	120	13.5598860	13.5598810	13.5598915	13.5598710
	138	13.5598735	13.5598725	13.5598845	13.5598795

Specified Limit +/-0.01%

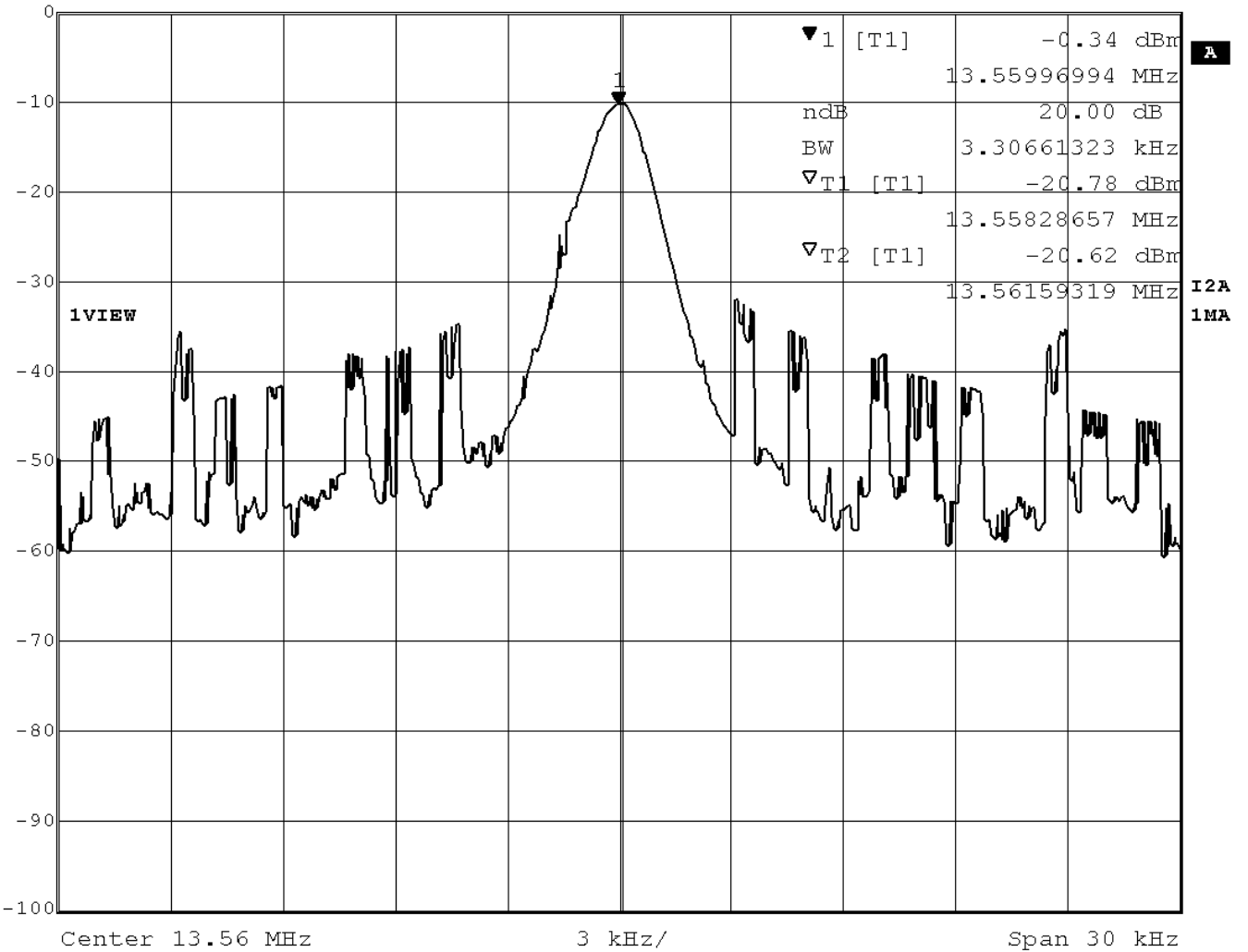
Temperature (°C)	Primary Supply Voltage (V)	Frequency with time elapse (%)			
		0 minute later	2 minutes later	5 minutes later	10 minutes later
-20	102	-0.0013754	-0.0012942	-0.0001379	-0.0014012
	120	-0.0014639	-0.0013569	-0.0013569	-0.0014086
	138	-0.0013090	-0.0013532	-0.0013754	-0.0012869
20	102	-0.0005199	-0.0005347	-0.0005420	-0.0005347
	120	-0.0005420	-0.0005310	-0.0005524	-0.0005420
	138	-0.0005310	-0.0005347	-0.0005383	-0.0005383
50	102	-0.0008186	-0.0008333	-0.0008481	-0.0008591
	120	-0.0008407	-0.0008776	-0.0008001	-0.0009513
	138	-0.0009329	-0.0009403	-0.0008518	-0.0008886

A.4 Occupied Bandwidth

Testing Date : March 4, 2011
 Ambient Temperature : 16 (°C), Humidity : 30(%)



Ref Lvl	10 dBm	Marker 1 [T1 ndB]	ndB	20.00 dB	RBW	1 kHz	RF Att	50 dB
		BW	3.30661323 kHz		VBW	3 kHz		
					SWT	200 ms	Unit	dB



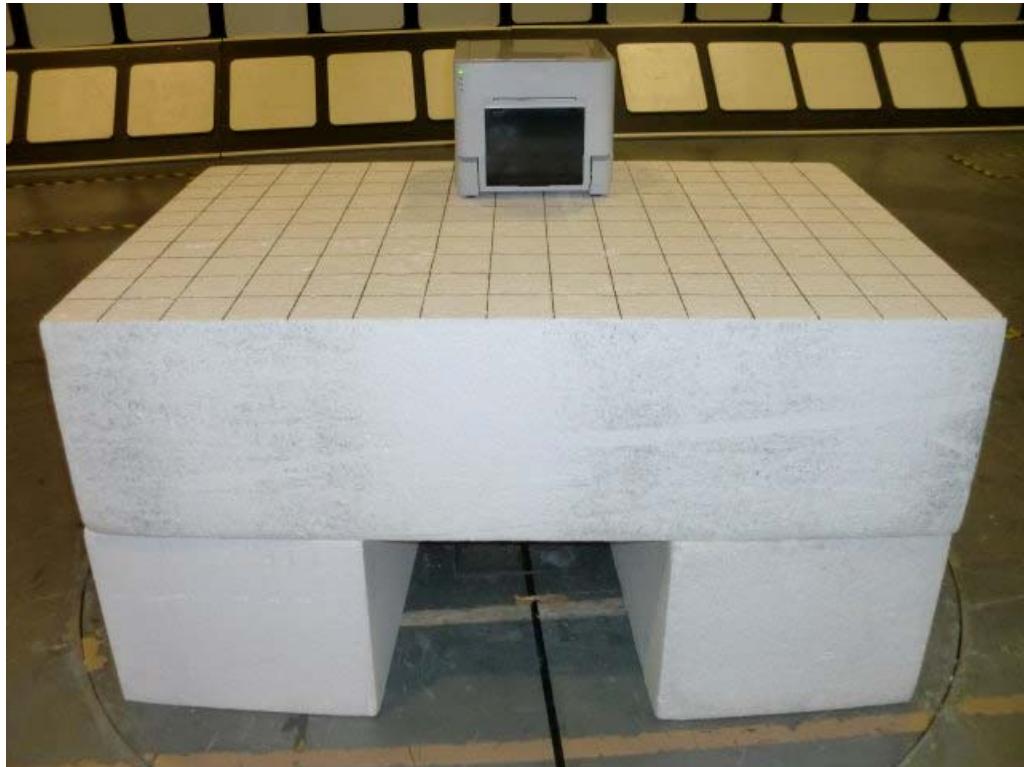
Appendix B : Test Arrangement (Photographs)
B.1 AC Powerline Conducted Emission

- Front View -



- Side View -

* The EUT was rotated all axis(X-axis, Y- axis, Z-axis), this photograph present configuration with maximum emission.

B.2 Radiated Emissions

- Front View -



- Rear View -

* The EUT was rotated all axis(X-axis, Y- axis, Z-axis), this photograph present configuration with maximum emission.

**Appendix C: Test Instruments
 For Test Laboratory 1**

07-Mar-2011

No	Type	Model	Manufacturer	Serial	ID	Last Cal.	Interval
Test Facilities:							
1	Anechoic Chamber A	-	TDK	-	800-01-502E0	Apr 2010	1 Year
2	Anechoic Chamber B	-	TDK	-	800-01-503E0	Apr 2010	1 Year
3	Shield Room A	-	TDK	-	800-01-501E0	-	-
4	Shield Room B	-	Ray Proof	-	800-01-010E0	-	-
5	Shield Room C	-	TDK	-	800-01-504E0	-	-
6	Shield Room D	-	Emerson	-	800-01-022E0	-	-
7	Shield Room E	-	TDK	-	800-01-505E0	-	-
8	H/F Test Room	-	Shimizu Corporation	-	-	-	-
259	GTEM Cell	EGT-250	ELENA Electronics	G280080	800-03-506E0	Oct 2010	1 Year

Measuring Instruments:

10	Test Receiver	ESHS10	Rohde & Schwarz	835871/004	119-01-505E0	Jun 2010	1 Year
11	Test Receiver	ESVS10	Rohde & Schwarz	826148/002	119-03-504E0	Jul 2010	1 Year
12	Test Receiver	ESVS10	Rohde & Schwarz	832699/001	119-03-506E0	Oct 2010	1 Year
13	Test Receiver	ESI26	Rohde & Schwarz	100043	119-04-511E0	Oct 2010	1 Year
14	Spectrum Analyzer	R3182	Advantest	120600581	122-02-521E0	Apr 2010	1 Year
19	Spectrum Analyzer	R3132	Advantest	120500072	122-02-520E0	May 2010	1 Year
20	Spectrum Analyzer	R3132	Advantest	150400998	122-02-523E0	Jul 2010	1 Year
65	Power Meter	436A	Hewlett Packard	1725A01930	100-02-501E0	May 2010	1 Year
66	Power Sensor	8482A	Hewlett Packard	1551A01013	100-02-501E0	May 2010	1 Year
68	FM Linear Detector	MS61A	Anritsu	M77486	123-02-008E0	Oct 2010	1 Year
69	Level Meter	ML422C	Anritsu	M87571	114-02-501E0	Jul 2010	1 Year
70	Measuring Amplifier	2636	B & K	1614851	082-01-502E0	May 2010	1 Year
75	Frequency Counter	53131A	Hewlett Packard	3546A11807	102-02-075E0	May 2010	1 Year
83	FFT Analyzer	R9211C	Advantest	02020253	122-02-506E0	Jul 2010	1 Year
84	Noise Meter	MN-446	Meguro	53030478	082-01-144E0	Apr 2010	1 Year
129	Audio Analyzer	A2	Neutrik	2482	082-04-503E0	Sep 2010	1 Year
165	Multimeter	VOAC7413	Iwatsu Electric	0267973	114-02-502E0	Apr 2010	1 Year
172	Test Receiver	ESCI	Rohde & Schwarz	100408	119-04-512E0	Oct 2010	1 Year
210	Peak Power Meter	ML2495A	Anritsu	0836023	100-02-507E0	Dec 2010	1 Year
211	Power Sensor	MA2491A	Anritsu	0811206	100-02-507E0	Dec 2010	1 Year
212	Power Sensor	MA2411B	Anritsu	0738312	100-02-507E0	Dec 2010	1 Year
230	Spectrum Analyzer	U3751	Advantest	150800116	122-02-003T	Mar 2010	1 Year
232	Digital Oscilloscope	TDS3052C	Tektronix, Inc.	C010708	121-02-504E0	Jun 2010	1 Year
227	Harmonic/Flicker Analyzer	KHA1000	Kikusui	MH002292	122-02-525E0	Nov 2010	1 Year
251	Signal Analyzer	N9010A	Agilent	MY50210236	122-02-526E0	Aug 2010	1 Year

Antennas:

21	Loop Antenna	HFH2-Z2	Rohde & Schwarz	881058/62	119-05-033E0	Aug 2010	1 Year
234	Dipole Antenna	KBA-511A	Kyoritsu	0-316-5	119-05-123E0	Nov 2009	2 Year
235	Dipole Antenna	KBA-611	Kyoritsu	0-317-3	119-05-124E0	Nov 2009	2 Year
31	Horn Antenna	3115	EMC Test Systems	6442	119-05-514E0	Jan 2010	2 Year
32	Horn Antenna	3116	EMC Test Systems	2547	119-05-515E0	Jun 2009	2 Year
167	Biconical Antenna	BBA9106	Schwarzbeck	VHA91032325	119-05-520E0	Jun 2010	1 Year
168	Log-periodic Antenna	UHALP9108A	Schwarzbeck	0666	119-05-521E0	Jun 2010	1 Year
169	Biconical Antenna	BBA9106	Schwarzbeck	VHA91032399	119-05-522E0	Jul 2010	1 Year
170	Log-periodic Antenna	UHALP9108A	Schwarzbeck	0724	119-05-523E0	Jul 2010	1 Year
198	Log-periodic Antenna	HL050	Rohde & Schwarz	100251	119-05-524E0	Oct 2010	1 Year
225	Loop Sensor/Radiating Loop	F55103-2-0.13M	FCC	03018	119-05-516E0	-	-
236	Horn Antenna	3160-03	EMC Test Systems	00078687	119-05-525E0	Nov 2010	2 Year
237	Horn Antenna	3160-08	EMC Test Systems	00026081	119-05-517E0	Feb 2010	2 Year
238	Horn Antenna	3160-09	EMC Test Systems	00023883	119-05-518E0	May 2009	2 Year
239	Horn Antenna	3160-10	EMC Test Systems	00026026	119-05-519E0	Jul 2009	2 Year

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No	Type	Model	Manufacturer	Serial	ID	Last Cal.	Interval
<u>Cables:</u>							
38	RF Cable	5D-2W	Fujikura	-	155-21-001E0	Feb 2011	1 Year
39	RF Cable	5D-2W	Fujikura	-	155-21-002E0	Feb 2011	1 Year
41	RF Cable	RG223/U	HUBER+SUHNER	-	155-21-006E0	Apr 2010	1 Year
42	RF Cable	RG223/U	HUBER+SUHNER	-	155-21-007E0	Apr 2010	1 Year
43	RF Cable	RG213/U	Rohde & Schwarz	-	155-21-010E0	Apr 2010	1 Year
44	RF Cable(10m)	S 04272B	Suhner	-	155-21-011E0	May 2010	1 Year
45	RF Cable(1.5m 18GHz)	S 04272B	Suhner	-	155-21-012E0	May 2010	1 Year
46	RF Cable(1m 18GHz)	SUCOFLEX104	Suhner	-	155-21-013E0	Aug 2010	1 Year
48	RF Cable(1m 26GHz)	SUCOFLEX	Suhner	14543/4E	155-21-016E0	Dec 2010	1 Year
49	RF Cable(4m 26GHz)	SUCOFLEX104	Suhner	190630	155-21-017E0	Dec 2010	1 Year
50	RF Cable(10m)	F130-S1S1-394	MEGA PHASE	10510	155-21-018E0	Dec 2010	1 Year
52	RF Cable(7m)	RG223/U	Suhner	-	155-21-021E0	May 2010	1 Year
195	RF Cable(10m)	F130-S1S1-394	MEGA PHASE	20051	155-21-020E0	Apr 2010	1 Year
241	RF Cable(6m 40GHz)	SUCOFLEX	Suhner	6257/2E	155-21-024E0	Oct 2010	1 Year
252	RF Cable(10m)	MWX315	Junkosha Inc.	J12J101305-	155-21-025E0	Aug 2010	1 Year
253	RF Cable(1m 26GHz)	MWX221	Junkosha Inc.	1004S138	155-21-026E0	Aug 2010	1 Year
<u>Networks:</u>							
33	LISN	KNW-407	Kyoritsu	8-833-6	149-04-052E0	Nov 2010	1 Year
34	LISN	KNW-407	Kyoritsu	8-855-2	149-04-055E0	May 2010	1 Year
35	LISN	KNW-407	Kyoritsu	8-1130-6	149-04-062E0	May 2010	1 Year
36	LISN	KNW-242C	Kyoritsu	8-837-13	149-04-054E0	Apr 2010	1 Year
164	LISN	KNW-403D	Kyoritsu	8-1474-3	149-04-059E0	Apr 2010	1 Year
255	LISN for DC	NNBM8125	Schwarzbeck	81251823 / 81251824	149-04-505E0 / 149-04-	Sep 2010	2 Year
174	Pulse Limiter	ESH3-Z2	Rohde & Schwarz	-	156-01-502E0	Apr 2010	1 Year
175	Pulse Limiter	ESH3-Z2	Rohde & Schwarz	-	156-01-503E0	Apr 2010	1 Year
224	RF Current Probe	KTC-2504	Kyoritsu	8S-2916-1	083-01-502E0	May 2010	2 Year
194	High Impedance Probe	HP-2	JQA	001	149-06-503E0	Oct 2010	1 Year
248	High Impedance Probe	KNW-411	Kyoritsu	8-2071-2	149-06-504E0	Feb 2011	1 Year
228	Reference Impedance Network	LIN40MA-PCR-L	Kikusui	NC003432	800-03-507E0	Aug 2010	1 Year
247	LISN	KNW-243C	Kyoritsu	8-831-4	149-04-047E0	Jun 2010	1 Year
250	Absorbing Clamp	MDS21	Luthi	3974	119-06-508E0	Aug 2010	1 Year
<u>Amplifiers:</u>							
53	AF Amplifier	P-500L	Accuphase	BOY806	127-01-501E0	Feb 2011	1 Year
54	RF Amplifier	WJ-6882-814	Watkins-Johnson	0414	127-04-017E0	Aug 2010	1 Year
55	RF Amplifier	WJ-5315-556	Watkins-Johnson	106	127-04-006E0	Aug 2010	1 Year
56	RF Amplifier	WJ-5320-307	Watkins-Johnson	645	127-04-005E0	Aug 2010	1 Year
57	RF Amplifier	JS4-00102600-28-5A	MITEQ	669167	127-04-502E0	Aug 2010	1 Year
226	Differential Amplifier	5303	NF	155726- 5305046	127-01-502E0	Apr 2010	1 Year

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No	Type	Model	Manufacturer	Serial	ID	Last Cal.	Interval
Generators:							
58	Function Generator	3325B	Hewlett Packard	2847A03284	118-08-124E0	Jul 2010	1 Year
59	Function Generator	VP-7422A	Matsushita Communication	050351E122	118-08-503E0	Jul 2010	1 Year
60	Signal Generator	8664A	Hewlett Packard	3035A00140	118-03-014E0	May 2010	1 Year
61	Signal Generator	8664A	Hewlett Packard	3438A00756	118-04-502E0	May 2010	1 Year
62	Signal Generator	6061A	Gigatronics	5130593	118-04-024E0	Apr 2010	1 Year
171	Signal Generator	SML03	Rohde & Schwarz	102651	118-04-509E0	Mar 2011	1 Year
222	Signal Generator	8673D	Hewlett Packard	2938A00988	118-04-015E0	Jul 2009	2 Year
Others:							
63	Termination(50)	-	Suhner	-	154-06-501E0	Jan 2011	1 Year
64	Termination(50)	-	Suhner	-	154-06-502E0	Jan 2011	1 Year
76	Oven	-	Ohnishi	-	023-02-018E0	-	-
77	DC Power Supply	6628A	Hewlett Packard	3224A00284	072-05-503E0	Jul 2010	1 Year
78	Band Reject Filter	BRM12294	Micro-tronics	003	149-01-501E0	Jan 2011	1 Year
79	High Pass Filter	F-100-4000-5-R	RLC Electronics	0149	149-01-502E0	Feb 2011	1 Year
80	Attenuator	43KC-10	Anritsu	-	148-03-506E0	Feb 2011	1 Year
81	Attenuator	43KC-20	Anritsu	-	148-03-507E0	Feb 2011	1 Year
82	Attenuator	355D	Hewlett Packard	219-10782	148-03-065E0	Apr 2010	1 Year
85	RF Detector	75KC-50	Anritsu	305002	100-02-506E0	Aug 2010	1 Year
200	Artificial Hand	AH-1	ES Factory	001	155-07-561E0	Jul 2010	1 Year
201	Barometer	TYPE6	Yanagi	16076	209-02-014E0	Mar 2010	2 Year
202	Thermo-Hygrometer	-	Empex	-	141-01-504E0	Mar 2010	2 Year
203	Thermo-Hygrometer	EX-2727	Empex	-	141-01-505E0	Mar 2010	2 Year
204	Thermo-Hygrometer	EX-2727	Empex	-	141-01-506E0	Mar 2010	2 Year
205	Thermo-Hygrometer	EX-2727	Empex	-	141-01-507E0	Mar 2010	2 Year
206	Low Pass Filter	LPM13323	Micro-tronics	001	149-01-505E0	Aug 2010	1 Year
207	High Pass Filter	HPM13321	Micro-tronics	001	149-01-506E0	Aug 2010	1 Year
208	High Pass Filter	HPM13322	Micro-tronics	001	149-01-507E0	Aug 2010	1 Year
242	Power Divider	1575	Aeroflex Weischel	1153	086-02-501E0	Oct 2010	1 Year
243	Power Divider	1575	Aeroflex Weischel	1157	086-02-502E0	Oct 2010	1 Year
244	Power Divider	1575	Aeroflex Weischel	1161	086-02-503E0	Oct 2010	1 Year
229	Multi Outlet Unit	OT01-KHA	Kikusui	MG002628	155-07-562E0	-	-
249	AC Power Supply	PCR4000LA	Kikusui	MH001847	072-10-510E0	-	-
245	High Pass Filter	KFL-009	Kyoritsu	8-1996-1	149-01-512E0	Apr 2010	1 Year
246	High Pass Filter	KFL-009	Kyoritsu	8-2072-5	149-01-513E0	Apr 2010	1 Year

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No	Type	Model	Manufacturer	Serial	ID	Last Cal.	Interval
ESD Immunity:							
100	ESD Tester	ESD-3000	EMC-PARTNER	069	118-18-515E0	Mar 2011	1 Year
Radiated Immunity:							
60	Signal Generator	8664A	Hewlett Packard	3035A00140	118-03-014E0	May 2010	1 Year
62	Signal Generator	6061A	Gigatronics	5130593	118-04-024E0	Apr 2010	1 Year
171	Signal Generator	SML03	Rohde & Schwarz	102651	118-04-509E0	Mar 2011	1 Year
176	FAN Antenna	FAN-1	JQA	1	119-05-047E0	Jun 2010	1 Year
121	Log-periodic Antenna	VULP9118-E	Schwarzbeck	VULP9118-E-704	119-05-016E0	Jun 2010	1 Year
218	Horn Antenna	AT4002A	Amplfier Research	26532	119-05-508E1	Jun 2010	1 Year
233	RF Power Amplifier	R122C	RF POWER LABS	092695-2	127-07-014E0	Jun 2010	1 Year
216	RF Power Amplifier	2068-BBS2Q4AMP	RF Systems	1007 D/C 0633	127-07-501E0	Jun 2010	1 Year
217	RF Power Amplifier	50S1G4	Amplfier Research	24616	127-07-501E1	Jun 2010	1 Year
213	Field Probe/Meter	FP1000 / FM1000	Amplfier Research	12025/12175	119-04-005E0	Dec 2010	1 Year
214	Power Meter	NRVD	Rohde & Schwarz	101020	100-03-507E0	Jun 2010	1 Year
215	Insertion Unit	URV5-Z4	Rohde & Schwarz	100193	100-03-507E0	Jun 2010	1 Year
219	Dual Directional Coupler	C5086-10	Werlatone Inc.	67819	155-02-504E0	Jun 2010	1 Year
220	Dual Directional Coupler	DC6180A	AR	0328620	155-02-503E0	Jun 2010	1 Year
221	Dual Directional Coupler	CCS30-B26	Pulsar Microwave	0740	155-02-502E0	Jun 2010	1 Year
EFT/B Immunity:							
101	EFT/B Generator	PEFT-JUNIOR	Haefely	083818-14	118-18-037E0	Nov 2010	1 Year
166	EFT/Burst & Surge Generator	TRA2000	EMC-PARTNER	582	118-18-514E0	Jul 2010	1 Year
177	Capacitive Clamp	IP4	Haefely	083926-07	118-18-508E0	-	-
Surge Immunity:							
166	EFT/Burst & Surge Generator	TRA2000	EMC-PARTNER	582	118-18-514E0	Jul 2010	1 Year
Transient and Surge Immunity for Vehicular:							
256	Transient Immunity Tester	KES7702	Kikusui	QF001066	118-18-516E0	Aug 2010	1 Year
257	Transient Immunity Tester	KES7713B	Kikusui	QF001068	118-18-517E0	Aug 2010	1 Year
258	Intelligent Bi-Polar Power Supply	PBZ40-10	Kikusui	QB001180	072-04-501E0	Aug 2010	1 Year

07-Mar-2011

No	Type	Model	Manufacturer	Serial	ID	Last Cal.	Interval
RF Conductive Immunity:							
61	Signal Generator	8664A	Hewlett Packard	3438A00756	118-04-502E0	May 2010	1 Year
62	Signal Generator	6061A	Gigatronics	5130593	118-04-024E0	Apr 2010	1 Year
171	Signal Generator	SML03	Rohde & Schwarz	102651	118-04-509E0	Mar 2011	1 Year
178	RF Amplifier	FLL-75	Frankonia	0040	127-03-501E0	Jul 2010	1 Year
179	Attenuator	8341-060	Bird Electronic	766	148-06-001E0	Jul 2010	1 Year
180	Coupling/Decoupling Network	FCC-801-M1-16	FCC	97-07	155-07-554E0	Jul 2010	1 Year
182	Coupling/Decoupling Network	FCC-801-M2-16	FCC	97-12	155-07-555E0	Jul 2010	1 Year
183	Coupling/Decoupling Network	TSCDN-M2-25A	TSJ(FCC)	06006	155-07-558E0	Jul 2010	1 Year
184	Coupling/Decoupling Network	FCC-801-M3-16	FCC	158	155-07-556E0	Jul 2010	1 Year
185	Coupling/Decoupling Network	TSCDN-M3-25A	TSJ(FCC)	06011	155-07-559E0	Jul 2010	1 Year
186	150-50 ohms Adaptor	FCC-150-50	FCC	380	155-07-557E0	Jul 2010	1 Year
187	150-50 ohms Adaptor	FCC-150-50	FCC	381	155-07-557E0	Jul 2010	1 Year
188	EM Clamp	EM101	Luthi	35196	119-06-008E0	Jul 2010	1 Year
196	BCI Probe	F-120-9A	FCC	509	083-01-503E0	Jul 2010	1 Year
260	Termination(50)	BNC-P-1.5 TDC	TDC	-	154-06-503E0	Jan 2011	1 Year
Magnetic Field Immunity:							
189	Magnetic Field Tester	TRA2000	EMC-PARTNER	582	118-18-514E0	-	-
190	Loop Coil	MF1000-1	EMC-PARTNER	087	118-18-514E0	-	-
223	Helmholtz Coil	6400-X-H-6404	Electro-Mechanics Company	-	800-03-028E0	-	-
192	Magnetic Field Sensor	EFA-200	Wandel & Goltermann	H-0027	115-01-508E0	Dec 2009	2 Year
Voltage Dip Immunity:							
193	Dip/Interruption Tester	PLINE1610	Haefely	083732-14	800-15-001E0	Feb 2011	1 Year
Low Frequency Conductive Immunity:							
53	AF Amplifier	P-500L	Accuphase	BOY806	127-01-501E0	Feb 2011	1 Year
58	Function Generator	3325B	Hewlett Packard	2847A03284	118-08-124E0	Jul 2010	1 Year
84	Noise Meter	MN-446	Meguro	53030478	082-01-144E0	Apr 2010	1 Year
Others:							
201	Barometer	TYPE6	Yanagi	16076	209-02-014E0	Mar 2010	2 Year
202	Thermo-Hygrometer	-	Empex	-	141-01-504E0	Mar 2010	2 Year
203	Thermo-Hygrometer	EX-2727	Empex	-	141-01-505E0	Mar 2010	2 Year
204	Thermo-Hygrometer	EX-2727	Empex	-	141-01-506E0	Mar 2010	2 Year
205	Thermo-Hygrometer	EX-2727	Empex	-	141-01-507E0	Mar 2010	2 Year
224	RF Current Probe	KTC-2504	Kyoritsu	8S-2916-1	083-01-502E0	May 2010	2 Year
129	Audio Analyzer	A2	Neutrik	2482	082-04-503E0	Sep 2010	1 Year

For Test Laboratory 2

Sign	Type	Model No.	Manufacturer	Serial No.	Last Cal.	Interval
OS-1	Open Site	-	Toshiba	-	2010/5	1 Year
OS-2	Open Site	-	Toshiba	-	2010/5	1 Year
AC-1	Anechoic Chamber (L)	-	TDK	-	2010/5	1 Year
AC-2	Anechoic Chamber (S)	-	TDK	-	2010/11	1 Year
SR-A	Shielded Room	-	TDK	-	-	-
SR-B	Shielded Room	-	TDK	-	-	-
SR-C	Shielded Room	-	TDK	-	-	-
TR-1	Tested Room	-	-	-	-	-
R-1	Test Receiver	ESVS10	Rohde & Schwarz	849231/004	2010/3	1 Year
R-2	Test Receiver	ESVS10	Rohde & Schwarz	843744/018	2010/6	1 Year
R-3	Test Receiver	ESI7	Rohde & Schwarz	100059/007	2010/10	1 Year
R-4	Test Receiver	ESHS30	Rohde & Schwarz	842053/001	2010/2	1 Year
R-5	Test Receiver	ESCS30	Rohde & Schwarz	100203	2010/5	1 Year
R-6	Test Receiver	ESU40	Rohde & Schwarz	100214	2010/11	1 Year
S-3	Spectrum Analyzer	U3751	Advantest	160100139	2010/3	1 Year
S-4	Spectrum Analyzer	8563E	Hewlett Packard	3221A00201	2010/4	1 Year
S-5	Spectrum Analyzer	U3751	Advantest	170500170	2010/6	1 Year
CB-3	RF Cable	3D-2W	Fujikura	-	2010/5	1 Year
CB-4	RF Cable	3D-2W	Fujikura	-	2010/5	1 Year
CB-5	RF Cable	3D-2W	Fujikura	-	2010/5	1 Year
CN-1	RF Cable	20D/5D-2W	Fujikura	-	2010/8	1 Year
CN-2	RF Cable	20D/5D-2W	Fujikura	-	2010/10	1 Year
CN-3	RF Cable	20D/5D-2W	Fujikura	-	2010/9	1 Year
CS-1	RF Cable	SUCOFLEX 104P	Huber+Suhner	27290/4P	2010/11	1 Year
CS-2	RF Cable	SUCOFLEX 104P	Huber+Suhner	27289/4P	2010/11	1 Year
CS-3	RF Cable	SUCOFLEX 104P	Huber+Suhner	37027/4P	2010/3	1 Year
CS-4	RF Cable	SUCOFLEX 104P	Huber+Suhner	37028/4P	2010/3	1 Year
L-1	AMN	KNW-407	Kyoritsu Corp.	8-833-5	2010/9	1 Year
L-2	AMN	KNW-407	Kyoritsu Corp.	8-680-14	2010/9	1 Year
L-3	AMN	KNW-407	Kyoritsu Corp.	8-757-1	2010/6	1 Year
L-4	AMN	KNW-242	Kyoritsu Corp.	8-755-1	2010/6	1 Year
L-5	AMN	KNW-242C	Kyoritsu Corp.	8-837-14	2010/6	1 Year
L-6	AMN	KNW-243C	Kyoritsu Corp.	8-692-5	2010/9	1 Year
L-7	AMN	KNW-243C	Kyoritsu Corp.	8-831-3	2010/6	1 Year
L-9	AMN	KNW-244C	Kyoritsu Corp.	8-1373-3	2010/8	1 Year
L-10	ISN	FCC-TLISN-T2-02	FCC	20234	2010/11	1 Year
L-11	ISN	FCC-TLISN-T4-02	FCC	20235	2010/11	1 Year
L-12	High Impedance Probe	KNW-410	Kyoritsu Corp.	8-876-3	2010/8	1 Year
L-13	Artificial Hand	K-9003	Kyoritsu Corp.	7-1639-4	2010/10	1 Year
L-14	Hi-pass Filter	KFL-009D	Kyoritsu Corp.	8-1996-8	2010/7	1 Year
L-15	ISN	F-070306-1057-1	FCC	20591	2010/7	1 Year
L-16	RF Current Probe	KCT-2504	Kyoritsu Corp	8S-3061-5	2010/5	1 Year
PL-3	Pulse Limiter	ESH3-Z2	Rohde & Schwarz	-	2010/10	1 Year
PL-4	Pulse Limiter	ESH3-Z2	Rohde & Schwarz	-	2010/2	1 Year
PL-5	Pulse Limiter	ESH3-Z2	Rohde & Schwarz	-	2010/5	1 Year
TM-1	50ohm Termination	BNC-P-1.5	TDC	-	2010/3	1 Year
TM-2	50ohm Termination	-	Y&R	-	2010/3	1 Year
AL-0	Loop Antenna	HFH2-Z2	Rohde & Schwarz	879284/14	2010/4	1 Year
AT-1	Triple Loop Antenna	HXYZ9170	Schwarzbeck	9170-138	2010/7	1 Year
AT-3	Bilog Antenna	CBL6111D	Teseq GmbH	27075	2010/8	1 Year
AB-1	Biconical Antenna	BBA9106	Schwarzbeck	91031741	2010/8	1 Year
AB-2	Biconical Antenna	BBA9106	Schwarzbeck	91032349	2010/10	1 Year
AB-3	Biconical Antenna	BBA9106	Schwarzbeck	VHA11905516	2010/9	1 Year
AL-1	Log-Periodic Antenna	UHALP9108-A	Schwarzbeck	0678	2010/8	1 Year
AL-2	Log-Periodic Antenna	UHALP9108-A	Schwarzbeck	0679	2010/10	1 Year
AL-3	Log-Periodic Antenna	UHALP9108-A	Schwarzbeck	0278	2010/9	1 Year
AL-4	Log-Periodic Antenna	USLP9143	Schwarzbeck	140	2010/6	1 Year

Sign	Type	Model No.	Manufacturer	Serial No.	Last Cal.	Interval
AL-5	Log-Periodic Antenna	94612-1	Eaton	97062301	2010/4	1 Year
AL-6	Log-Periodic Antenna	ESLP9145	Schwarzbeck	9145-216	2010/3	1 Year
AH-1	Horn Antenna	91888-2	EATON	563	2010/5	1 Year
AH-2	Horn Antenna	91889-2	EATON	569	2010/5	1 Year
AH-3	Horn Antenna	94613-1	EATON	575	2010/5	1 Year
AH-4	Horn Antenna	91891-2	EATON	583	2010/5	1 Year
AH-5	Horn Antenna	12-12	Scientific Atlanta	741	2010/5	1 Year
AH-12	Horn Antenna	3177	ETS LINDGREN	00051800	2010/7	1 Year
AD-1	Dipole Antenna	KBA-511A	Kyoritsu Corp.	0-195-5	2010/8	1 Year
AD-2	Dipole Antenna	KBA-511A	Kyoritsu Corp.	0-228-13	2010/8	1 Year
AD-3	Dipole Antenna	KBA-611	Kyoritsu Corp.	0-196-8	2010/8	1 Year
AD-4	Dipole Antenna	KBA-611	Kyoritsu Corp.	0-230-6	2010/8	1 Year
CL-1	Absorbing Clamp	MDS21	Rohde & Schwarz	894245/002	2010/5	1 Year
PA-1	Pre-Amplifier	WJ-6811-513	Watkins Johnson	0288	2010/3	1 Year
PA-2	Pre-Amplifier	WJ-6682-824	Watkins Johnson	0052	2010/3	1 Year
PA-3	Pre-Amplifier	WJ-6870-506	Watkins Johnson	0018	2010/3	1 Year
PA-5	Pre-Amplifier	AMF-4D-005080-18-13P	MITEQ, INC.	1218917	2010/11	1 Year
RN-1	Reference Impedance Network	4151	NF ELECTRONIC INSTRUMENTS	3168114151011	2010/5	1 Year
RN-2	Reference Impedance Network	ES4153	NF ELECTRONIC INSTRUMENTS	9099436	2010/10	1 Year
HF-1	Harmonic/Flicker Analyzer	KHA3000	KIKUSUI ELECTRONICS CORPORATION	NB001642	2010/4	1 Year
2-1	ESD Tester	ESD3000	EMC PARTNER	092	2010/5	1 Year
2-2	ESD Tester	ESD3000	EMC PARTNER	428	2010/6	1 Year
3-1	Signal Generator	SMT 02	Rohde & Schwarz	838616/021	2010/3	1 Year
3-2	Signal Generator	83732B	Hewlett Packard	US37101411	2010/10	1 Year
3-3	Function Generator	1941	NF	328730	2010/10	1 Year
3-4	RF Power Amplifier	150W1000M1	Amplifier Research	0328963	2010/11	1 Year
3-5	RF Power Amplifier	500A100M1	Amplifier Research	19671	2010/11	1 Year
3-6	RF Power Amplifier	200W1000M2A	Amplifier Research	19572	2010/5	1 Year
3-7	RF Power Amplifier	60S1G3M1	Amplifier Research	0325545	2010/11	1 Year
3-8	Biconical Antenna	3109	EMCO	9607-3014	2010/11	1 Year
3-10	Log-Periodic Antenna	3144	EMCO	9701-1032	2010/5	1 Year
3-11	Log-Periodic Antenna	AT5080	Amplifier Research	322092	2010/11	1 Year
3-12	Horn Antenna	AT4002A	Amplifier Research	0325039	2010/5	1 Year
3-13	Field Monitor	FM2000	Amplifier Research	19166	-	1 Year
3-14	Field Monitor	FM5004	Amplifier Research	25843	-	1 Year
3-15	Field Probe	FP2000	Amplifier Research	18767	2010/5	1 Year
3-16	Field Probe	FP2000	Amplifier Research	22646	2010/8	1 Year
3-18	Field Probe	FP6001	Amplifier Research	303557	2010/10	1 Year
3-19	Power Meter	4421	Bird	2919	2010/7	1 Year
3-20	Power Head	4022	Bird	6147	2010/7	1 Year
3-21	Power Meter	PM2002	Amplifier Research	25774	2010/7	1 Year
3-22	Power Head	PH2000	Amplifier Research	26413	2010/7	1 Year
3-23	Power Head	PH2000	Amplifier Research	26414	2010/7	1 Year
3-24	Dual Coupler	DC2600	Amplifier Research	19734	2010/7	1 Year
3-25	Dual Coupler	DC6080	Amplifier Research	302555	2010/7	1 Year
3-26	Dual Coupler	DC7144	Amplifier Research	26463	2010/7	1 Year
3-27	Signal Generator	SML 03	Rohde & Schwarz	103413	2010/9	1 Year
3-29	Power Meter	NRT	Rohde & Schwarz	103116	2010/10	1 Year
3-30	Power Head	NRT-Z44	Rohde & Schwarz	102682	2010/10	1 Year
3-31	Field Probe	EP 600	Narda S.T.S.	301WX90609	2010/1	1 Year
3-32	Field Probe	EP 601	Narda S.T.S.	301WX00125	2010/7	1 Year
3-33	Signal Generator	SMB100A	Rohde & Schwarz	103740	2010/6	1 Year
4-1	Immunity Tester	TRA2000	EMC PARTNER	659	2010/7	1 Year
4-2	EFT/B Generator	PEFT-Junior	HAEFELY	083818-13	2010/5	1 Year

Sign	Type	Model No.	Manufacturer	Serial No.	Last Cal.	Interval
4-3	EFT/B Generator	FNS-AXII B50	Noise Laboratory	FNS0620431	2010/5	1 Year
4-4	Coupling Clamp	IP4	HAEFELY	-	2010/5	1 Year
4-5	Coupling Clamp	15-00001A	Noise Laboratory	-	2010/5	1 Year
5-1	Surge Tester	PSURGE4.1	HAEFELY	083665-08	2010/11	1 Year
5-2	Coupling Filter	FP-SURGE 100M	HAEFELY	149163	2010/11	1 Year
5-3	Coupling Network	IP6.2	HAEFELY	083811-10	2010/11	1 Year
5-4	Decoupling Network	DEC1A	HAEFELY	083793-08	2010/11	1 Year
5-5	Pruefpistole	AP 300	HAEFELY	081 438	2010/11	1 Year
6-1	Signal Generator	PSG1000B	W.K. Electronics	000234	2010/6	1 Year
6-2	RF Power Amplifier	75A250	Amplifier Research	19502	2010/8	1 Year
6-3	RF Power Amplifier	75A250	Amplifier Research	26255	2010/8	1 Year
6-4	6dB Attenuator	8343-060	Bird	2054	2010/8	1 Year
6-5	6dB Attenuator	65-6-33	Weinschel	LW166	2010/8	1 Year
6-6	CDN	FCC-801-M1-16	FCC	50	2010/5	1 Year
6-7	CDN	FCC-801-M1-25A	FCC	04001	2010/6	1 Year
6-8	CDN	FCC-801-M2-25	FCC	59	2010/5	1 Year
6-9	CDN	FCC-801-M2-25A	FCC	03023	2010/6	1 Year
6-10	CDN	FCC-801-M2-25A	FCC	03024	2010/6	1 Year
6-11	CDN	FCC-801-M3-25	FCC	137	2010/5	1 Year
6-12	CDN	FCC-801-M3-25A	FCC	05021	2010/6	1 Year
6-13	CDN	FCC-801-M3-25A	FCC	99133	2010/6	1 Year
6-14	CDN	FCC-801-M4-25	FCC	21	2010/5	1 Year
6-15	CDN	FCC-801-M4-50	FCC	9806	2010/4	1 Year
6-16	CDN	FCC-801-C1	FCC	79	2010/6	1 Year
6-19	CDN	FCC-801-T8	FCC	9956	2010/6	1 Year
6-20	150-50 Ohms Adaptor	FCC-801-150-50	FCC	638	2010/6	1 Year
6-21	150-50 Ohms Adaptor	FCC-801-150-50	FCC	639	2010/6	1 Year
6-22	EM Clamp	F-203I	FCC	220	2010/8	1 Year
6-23	Decoupling Clamp	F-203I-DCN	FCC	105	-	-
6-24	Bulk Current Injection Clamp	F-120-2	FCC	53	2010/8	1 Year
6-25	CDN	FCC-801-M3-25A	FCC	08008	2010/6	1 Year
8-1	Interference Tester	LFP6.1	HAEFELY	083374-03	2010/3	1 Year
8-2	Magnetic Field Tester	MFG100.1	HAEFELY	080136-06	2010/3	1 Year
8-3	Field Coil	FC-1	ES Factory	001	2010/3	1 Year
8-4	Large Coil	L2X1.6	ES Factory	001	2010/3	1 Year
11-1	Voltage Dip Tester	PLINE1610	HAEFELY	148709	2010/10	1 Year
11-2	3 Phase Extension	PLS1630	HAEFELY	149685	2010/4	1 Year
11-3	External Variac Network	VAR-EXT1000	EMC PARTNER	046	2010/12	1 Year