



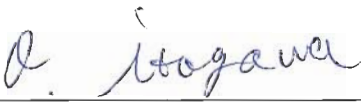
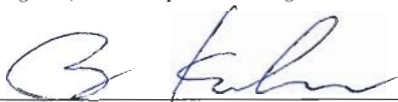
MEASUREMENT/TECHNICAL REPORT

FCC Part 15 Subpart C

Issued: February 8, 2011

Name and Address of the Applicant:	YUYAMA Mfg. Co., Ltd. 1-2-12, Koudushima, Toyonaka City, Osaka-fu 561-0843 Japan	
Test Item:	RFID Module	
Identification:	T-2212B	
Serial No.:	01	
FCC ID:	WSLF321A	
Sample Receipt Date:	December 24, 2010	
Test Specification:	FCC Part 15 Subpart C, 15.225	
Date of Testing:	December 24 and 27, 2010 January 7 and 20, 2011	
Test Result:	PASS	

Report Prepared by:	Cosmos Corporation 3571-2 Ohnoki, Watarai-cho, Watarai-gun, Mie-ken 516-2102, Japan Phone: +81-596-63-0707 Fax: +81-596-63-0777	
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Tested by:	 O. Itogawa, EMC Dept. EMC Engineer	February 8, 2011 Date
Reviewed by:	 Y. Kawahara, EMC Dept. EMC Manager	February 8, 2011 Date

Notes:

1. This Test Report should not be reproduced except in full, without the written approval of Cosmos Corporation.
2. All measurement data contained in this Test Report may have uncertainty. A judgment for the limitation should be taken into the count.
3. This Test Report is based on the tests made for sample provided, and it is not applicable to individual product identical to the sample.

Revision History

Revision	Issue Date	Description	Effect Page	Revised By
00	February 8, 2011	Initial Issue	-	-

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1. Description of Equipment under Test

1.1 Product Description

Manufacturer	YUYAMA Mfg. Co., Ltd
Model (referred to as the EUT)	T-2212B
Transmitter Type	☐ WLAN ☐ Bluetooth ☐ Zigbee ☒ RFID ☐ Other ()
Nominal Voltage	DC 5V
Type of Modulation	ASK
Mode of Operation	☐ duplex ☐ 1/2 duplex ☒ simplex ☐ other
The type of the equipment	☐ Stand-alone ☐ Combined Equipment ☐ Plug -In Card ☒ Other (Module Unit)
The type of the antenna	☒ Integral ☐ external ☐ Other
The type of power source	☐ AC mains ☐ Dedicated AC adaptor (V) ☒ DC Voltage ☐ Battery
The type of battery (if applicable)	N/A
Type of Operation	☐ Continuous ☐ Burst ☒ Intermittent
Stand by Mode	☐ Available ☒ N/A
Intended functions	RFID Card Reader/Writer
The bandwidth of the IF filters	N/A
Frequency Band	13.56MHz
Frequency of Operating	13.56MHz
The thermal limitation	Not specified

1.2 Antenna Description

It is impossible for end users to replace the antenna, because the antenna is mounted inside of the EUT.

Therefore, the equipment complies with the antenna requirement of Section 15.203.

No.	Type Name	Gain	Antenna Type	Remarks
1	T2212B	- 53dBi	Printed Loop	Originally Integrated

1.3 Accompanied Peripherals Description

No.	Equipment Name	Manufacturer	Type Name	Serial Number	Remarks
1	Jig	---	---	---	
2	Jig	---	---	---	

2. General Information

2.1 Test Methodology

All measurement subject to the present test report is carried out according to the procedures in ANSI C63.4:2003.

2.2 Test Facility

All measurement was performed in the following facility;

Cosmos Corporation EMC Lab. Ohnoki

3571-2 Ohnoki, Watarai-cho, Watarai-gun, Mie-ken 516-2102, Japan

FCC registration number: 604492

2.3 Tractability

The calibration of measurement equipment used in the test subject to the present report is designed and operated to ensure that the measurement is traceable to national standards of measurement or equivalent abroad.

3. Summary of Test Results

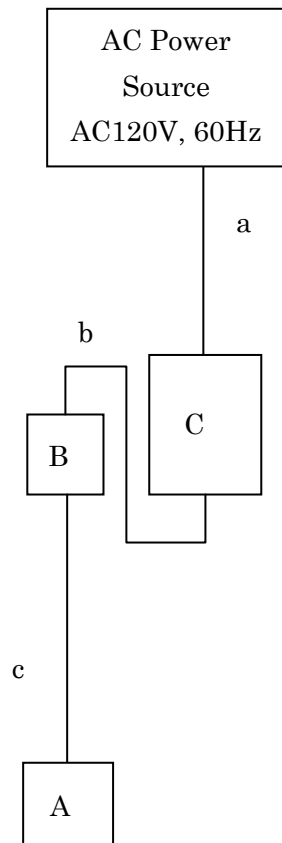
No.	Requirement	RSS-210 Issue 8, RSS-Gen Issue 3 (Industry Canada)	CFR 47 Part. 15 (FCC)	Result
1	Frequency Tolerance	A2.6 – RSS-210	15.225 (e)	Pass
2	Maximum Output Power	A2.6 – RSS-210	15.225 (a)(b)(c)	Pass
3	Field Strength of Spurious Emission (Transmitter)	A2.6 – RSS-210	15.209,15.225 (d)	Pass
4	AC Power lines Conducted Emission	7.2.4 – RSS-Gen	15.207	Pass
5	Spurious Emission (Receiver)	6 – RSS-Gen	N/A	N/A
6	Occupied Band Width(99%)	4.6.1 – RSS-Gen	N/A	N/A
7	20dB Bandwidth	N/A	15.215 (c)	Pass

4. Test Configuration

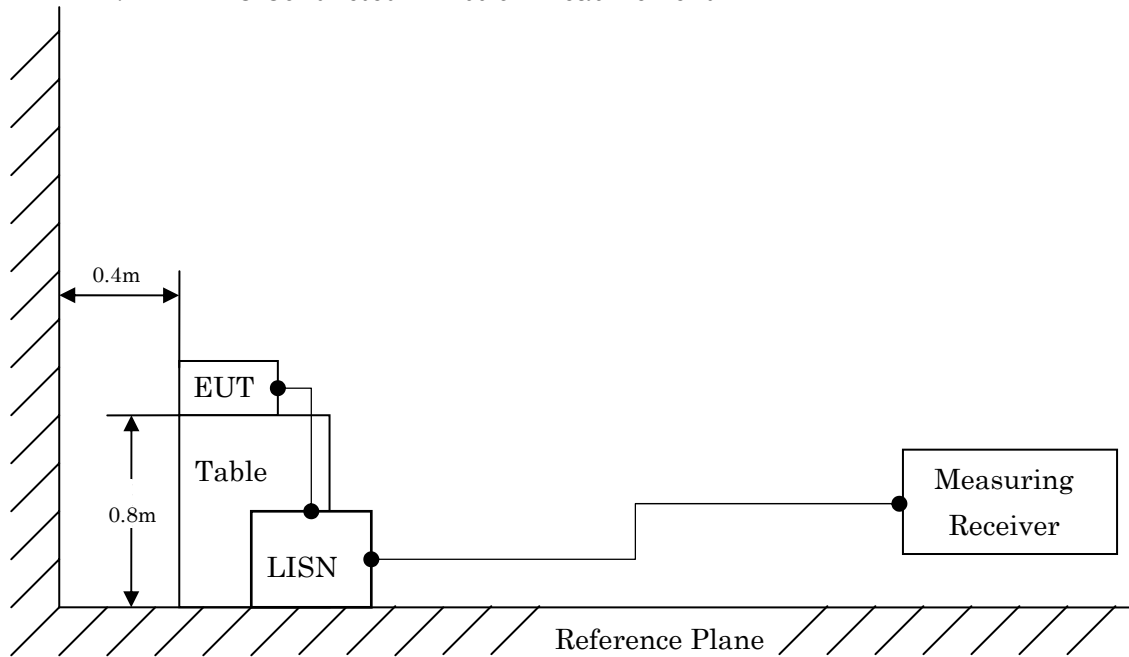
	Instrument	Model	Rating
A	RFID module	T-2212B	DC5V
B	Jig	---	---
C	Jig	---	AC100-240V, 50/60Hz

	Cable	Length	Ferrite Core Yes / No	Shield Yes / No
a	AC Power Cable	1.0 m	No	No
b	Flat Cable	1.2 m	No	No
c	Signal Cable	1.5 m	Yes	No

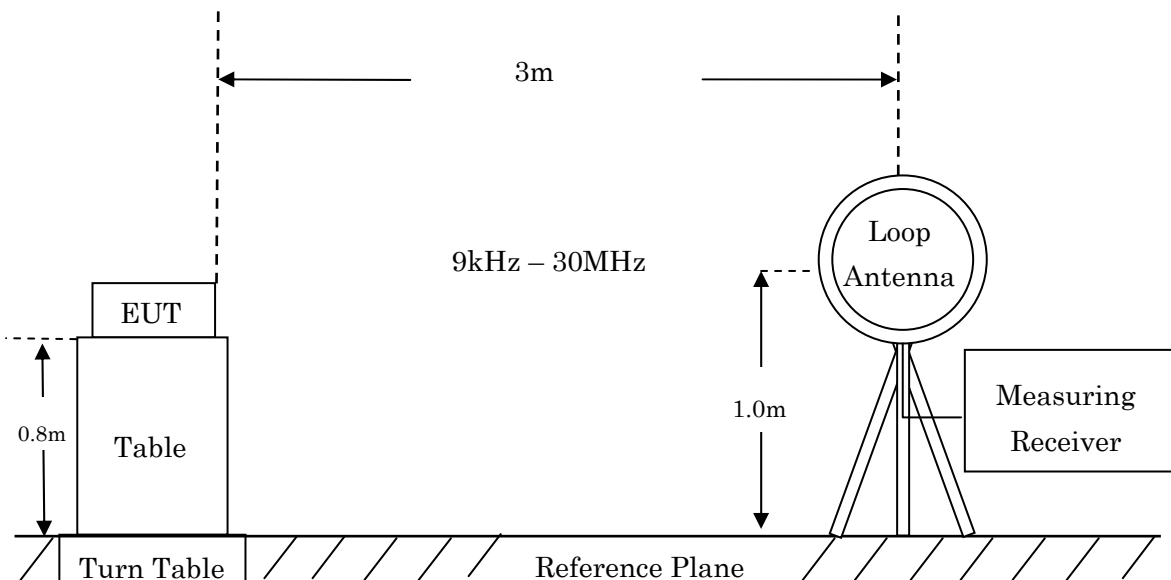
Setup diagram of tested system



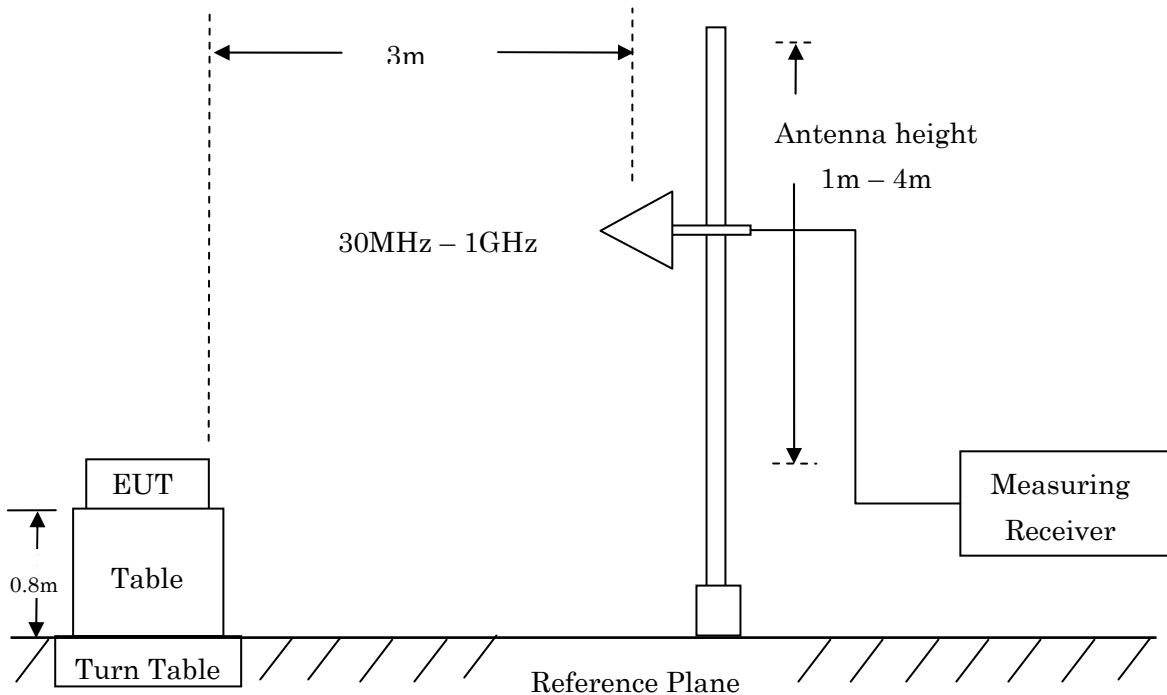
4.1 AC Conducted Emission Measurement



4.2 15.209 15.225 (d) Transmitter Radiated Emissions, Frequency Tolerance, Maximum Output Power, Field Strength of Spurious Emission (Transmitter) and 20dB Bandwidth



4.3 15.209 15.225 (d) Transmitter Radiated Emissions



4.4 Test Mode

In all test configurations above, EUT makes communication link between the integrated RFID module and a RFID tag in a dedicated ink ribbon with the maximum RF power by a special test program.

Maximum Output Power and Frequency Tolerance measurement were performed with an external stabilized DC power supply voltage varied between 85% and 115% of the nominal rated supply voltage 120 VAC.

Frequency Tolerance and Maximum Output Power measurements are performed under the following condition:

Temperature: -20 to +50
Voltage: DC 5V $\pm$ 15%

5. Measurement Result

5.1 15. 207 AC Power Conducted Emission

5.1.1 Setting Remarks

- Configure the EUT System in accordance with ANSI C63.4-2003.
- A wooden test table (1.5m×1.0m, height 0.8m) was used.
- Other power cord of support equipment is connected to another LISN to isolate its emission from the measured emission of EUT.
- The measuring port of LISN for support equipment was terminated by the 50Ω
- Activate the EUT System and run the software prepared for the test, if necessary.
- Refer to test configuration figure 4.1.

5.1.2 Minimum Standard

15. 207 (a) Except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 μH/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56 *	56 to 46 *
0.5-5	56	46
5-30	60	50

* Decreases with the logarithm of the frequency.

5.1.3 Result

EUT complies with the requirement.

Uncertainty of measurement : ± 2.26 dB
Temperature, Humidity : 22 / 40%

5.1.4 Measured Data

<<Conducted Emission>>

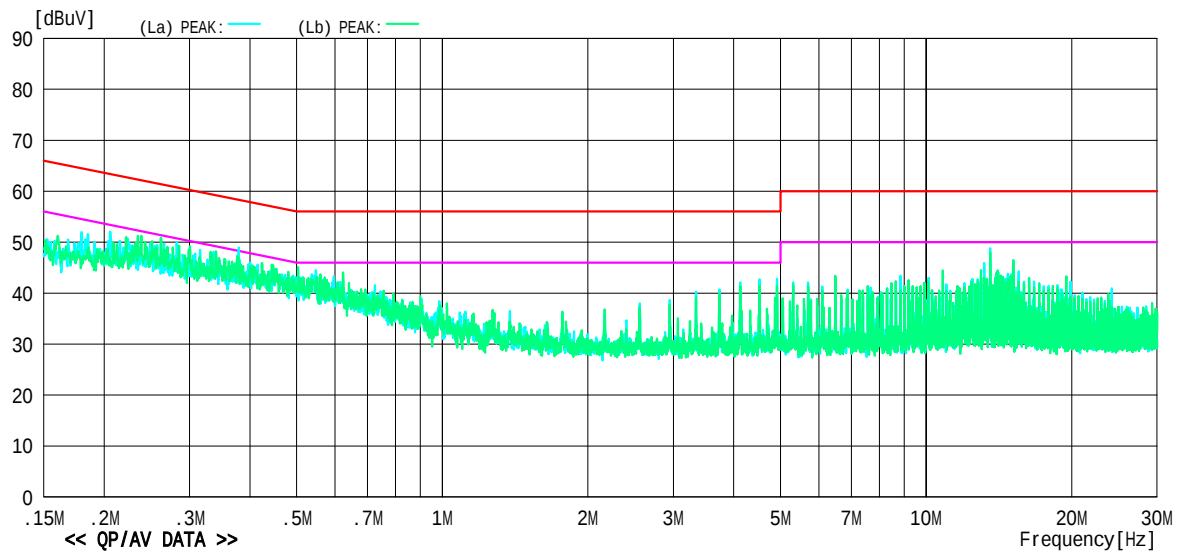
Cosmos Corporation Onoki Lab.
Date : 2011/01/07

Model Name : T-2212 B
Serial No. : 01
Operator : O. Itogawa
Power Supply : AC 120V, 60Hz

Job No : CJ10-101273E
Temp/Humi : 22 /40%
Condition : Operated
Remark :

Memo : RBW:9kHz(150k-30MHz)

LIMIT : FCC 15.207(QP)
FCC 15.207(AV)



No	Freq. [MHz]	Reading Level		C.Fac [dB]	Results		Limit		Margin		Phase	Comment
		QP	AV		QP	AV	QP	AV	QP	AV		
		[dBuV]	[dBuV]		[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]		
1	0.18254	26.3	22.1	10.0	36.3	32.1	64.4	54.4	28.1	22.3	La	
2	0.36041	15.9	15.1	10.1	26.0	25.2	58.7	48.7	32.7	23.5	La	
3	0.89747	16.7	16.5	10.1	26.8	26.6	56.0	46.0	29.2	19.4	La	
4	4.91385	30.4	30.2	10.4	40.8	40.6	56.0	46.0	15.2	5.4	La	
5	13.56014	36.0	34.3	10.8	46.8	45.1	60.0	50.0	13.2	4.9	La	
6	24.17975	24.1	22.3	10.9	35.0	33.2	60.0	50.0	25.0	16.8	La	
7	0.25155	-0.7	-5.5	10.1	9.4	4.6	61.7	51.7	52.3	47.1	Lb	
8	0.45461	1.1	-4.0	10.1	11.2	6.1	56.8	46.8	45.6	40.7	Lb	
9	0.78382	2.8	-1.2	10.1	12.9	8.9	56.0	46.0	43.1	37.1	Lb	
10	4.91307	29.0	29.0	10.3	39.3	39.3	56.0	46.0	16.7	6.7	Lb	
11	13.56002	35.4	33.7	10.5	45.9	44.2	60.0	50.0	14.1	5.8	Lb	
12	23.78595	25.1	23.2	10.6	35.7	33.8	60.0	50.0	24.3	16.2	Lb	

-TEPT0-DV/CE Ver1.50.0128

5.2 15. 209 Transmitter Radiated Emissions

5.2.1 Setting Remarks

- The data lists in “5.2.4 Measured Data “ list the significant emission frequencies, measured levels, correction factor (includes cable and antenna corrections), the corrected reading, plus the limit.
- In the frequency range between 9kHz to 1 GHz, the Electric Field Strength was measured in accordance with ANSI C63.4: 2003 and CISPR22: 1997.
- The test setup was made in accordance with ANSI C63.4: 2003.
- The antenna was measured at 1-4m height for 30MHz to 1GHz.
- The EUT was placed on the non-conductive table in the center of turntable. The height of this table was 0.8m.
- The measurement was carried out with both horizontal and vertical antenna polarization.
- The highest radiation from the equipment was recorded.
- Below 30MHz, a loop antenna was used at 1m height.
- By varying the configuration of the test sample and the cable routing, it was attempted to maximize the emission.
- The test receiver with Quasi Peak and Average detector is in compliance with CISPR 16-1.
- The spectrum analyzer was set-up as following;

(Frequency range : 9kHz - 30 MHz)

- ✓ Resolution bandwidth : 10 kHz
- ✓ Video bandwidth : 100 kHz
- ✓ Detector function : Peak
- ✓ Trace Mode : Max Hold

(Frequency range : 30 - 1000 MHz)

- ✓ Resolution bandwidth : 100 kHz
- ✓ Video bandwidth : 300 kHz
- ✓ Detector function : Peak
- ✓ Trace Mode : Max Hold

- EMI Test Receiver analyzer was set-up as following (Quasi-Peak Detector);

- ✓ IF bandwidth : 200 Hz (9kHz - 150kHz)
- ✓ IF bandwidth : 9 kHz (150kHz - 30MHz)
- ✓ IF bandwidth : 120 kHz (30MHz - 1GHz)

- Refer to test configuration figure 4.2 and 4.3.

5.2.2 Minimum Standard

15. 225 (d) The field strength of any emissions appearing outside of the 13.110-14.010 MHz band shall not exceed the general radiated emission limits in § 15.209.

5.2.3 Result

EUT complies with the requirement.

Uncertainty of measurement result: ± 3.64 dB

Temperature, Humidity : Refer to each data table

5.2.4 Note (Specification limits)

SUBCLAUSE § 15.209

Frequency (MHz)	Field strength (μ V/m)	Measurement distance (m)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
above 960	500	3

Note:

below 30 MHz

(a) Measurement of magnetic field strength were performed using a magnetic field loop antenna, according to ANSIC63.4:2003 Section 4.1.5.1, referenced by 47 CFR Part 15 Section 15.31(3). The results were expressed as electric field strength assuming far field measurement conditions in order to compare with the limit which is expressed as electric field.

(b) Where results have been measured at one distance, and a signal level displayed at another, the results have been extrapolated using the following formula:

$$\text{Extrapolation(dB)} = 40\log_{10} \left(\frac{\text{measurement distance}}{\text{specification distance}} \right)$$

The results displayed take into account applicable antenna factors and cable losses.

Measurement distance

below 30 MHz : 3m
over 30 MHz : 3m

5.2.5 Measured Data

9kHz to 30MHz

<<Electromagnetic Radiation>>

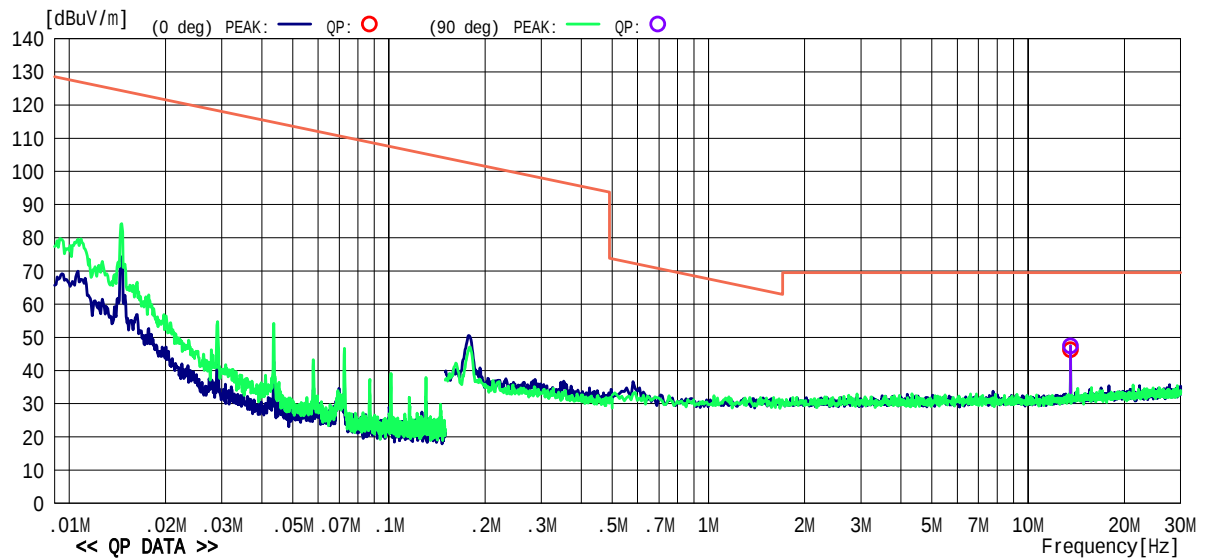
Cosmos Corporation Onoki Lab.
Date : 2010/12/24 13:26:51

Model Name : T-2212B
Serial No. : 01
Operator : O. Itogawa
Power Supply : AC120V, 60Hz/DC5V

Job No. : CJ10-100733E
Temp./Humi. : 23 /42%
Condition : Operated
Remark :

Memo : RBW:200Hz(9k-150kHz), 9kHz(150k-30MHz)

LIMIT : FCC Part15 SubpartC 15.209 9KHz-30MHz



No	Freq.	Reading	Ant. Fac	Loss	Result	Limit	Margin	Antenna	Angle	Comment
	[MHz]	[dBuV]	[dB/m]	[dB]	[dBuV/m]	[dBuV/m]	[dB]		[deg]	
1	13.56174	24.5	20.8	0.9	46.2	69.5	23.3	0deg	19	QP
2	13.56134	25.7	20.8	0.9	47.4	69.5	22.1	90deg	334	QP

5.2.5 Measured Data (Continued)

30MHz to 1GHz

<<Radiated Emission>>

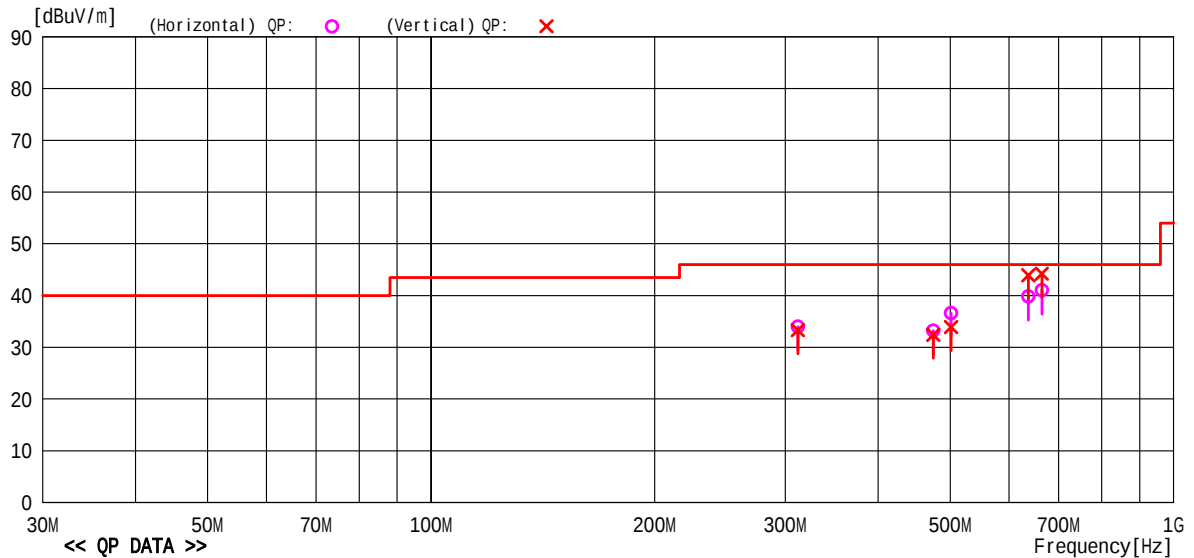
Cosmos Corporation Onoki Lab.
Date : 2010/12/24 10:30:41

Model Name : T-2212B
Serial No. : 01
Operator : O. Itogawa
Power Supply : AC120V, 60Hz/DC5V

Job No : CJ10-100733E
Temp./Humi. : 23 /42%
Condition : Operated
Remark :

Memo : RBW:30M ~ 1GHz(120kHz)

LIMIT : Fcc15C 15_209 (3m) 30MHz-1000MHz



-TEPTO-DV/RE Ver 1.80.0020

5.3 Maximum Carrier Output Power

5.3.1 Setting Remarks

- Refer to 5.2.1
- The EUT was placed on the non-conductive table in the center of turntable.
The height of this table was 0.8m.
- The measurement was carried out with both horizontal and vertical antenna polarization.
- The highest radiation from the equipment was recorded.
- The test receiver with Quasi Peak is in compliance with CISPR 16-1.
- The spectrum analyzer was set-up as following;
 - ✓ Frequency Span : Appropriate to determine carrier frequency.
 - ✓ Resolution bandwidth : Appropriate to determine carrier frequency.
 - ✓ Video bandwidth : Appropriate to determine carrier frequency.
 - ✓ Sweep : Auto
 - ✓ Detector function : Peak
 - ✓ Trace Mode : Max Hold
- EMI Test Receiver analyzer was set-up as following (Quasi-Peak Detector);
 - ✓ IF bandwidth : 9 kHz
- Refer to test configuration figure 4.2.

5.3.2 Minimum Standard

15.225(a) The field strength of any emissions within the band 13.553-13.567 MHz shall not exceed 15,848 microvolts/meter at 30 meters.

(b) Within the bands 13.410-13.553 MHz and 13.567-13.710 MHz, the field strength of any emissions shall not exceed 334 microvolts/meter at 30 meters.

(c) Within the bands 13.110-13.410 MHz and 13.710-14.010 MHz the field strength of any emissions shall not exceed 106 microvolts/meter at 30 meters.

5.3.3 Result

EUT complies with the requirement.

Uncertainty of measurement result: ± 3.64 dB

Temperature, Humidity : Refer to each data table

5.3.4 Measured Data
(3m distance)

-20

Date of testing : January 20, 2011

Room temperature : 23

Relative humidity : 42%

【-15%V】

Frequency [MHz]	Polarization [°]	Correction Factor [dB]	Reading [dBμV]	Peak Power [dBμV/m]	Limit [dBμV/m]	Margin [dB]
13.110	90	21.7	26.45	48.15	80.50	32.35
13.410	90	21.7	26.34	48.04	80.50	32.46
13.553	90	21.7	33.55	55.25	90.47	35.22
13.560	90	21.7	34.06	55.76	124.00	68.24
13.567	90	21.7	33.23	54.93	90.47	35.54
13.710	90	21.7	26.54	48.24	80.50	32.26
14.010	90	21.7	25.98	47.68	80.50	32.82

【±0%V】

Frequency [MHz]	Polarization [°]	Correction Factor [dB]	Reading [dBμV]	Peak Power [dBμV/m]	Limit [dBμV/m]	Margin [dB]
13.110	90	21.7	27.45	49.15	80.50	31.35
13.410	90	21.7	27.12	48.82	80.50	31.68
13.553	90	21.7	34.34	56.04	90.47	34.43
13.560	90	21.7	34.85	56.55	124.00	67.45
13.567	90	21.7	34.04	55.74	90.47	34.73
13.710	90	21.7	27.30	49.00	80.50	31.50
14.010	90	21.7	26.74	48.44	80.50	32.06

【+15%V】

Frequency [MHz]	Polarization [°]	Correction Factor [dB]	Reading [dBμV]	Peak Power [dBμV/m]	Limit [dBμV/m]	Margin [dB]
13.110	90	21.7	26.74	48.44	80.50	32.06
13.410	90	21.7	26.46	48.16	80.50	32.34
13.553	90	21.7	33.66	55.36	90.47	35.11
13.560	90	21.7	34.15	55.85	124.00	68.15
13.567	90	21.7	33.34	55.04	90.47	35.43
13.710	90	21.7	26.56	48.26	80.50	32.24
14.010	90	21.7	26.55	48.25	80.50	32.25

5.3.4 Measured Data (Continued)

25

Date of testing : January 20, 2011

Room temperature : 23

Relative humidity : 42%

【-15%V】

Frequency [MHz]	Polarization [°]	Correction Factor [dB]	Reading [dBμV]	Peak Power [dBμV/m]	Limit [dBμV/m]	Margin [dB]
13.110	90	21.7	24.71	46.41	80.50	34.09
13.410	90	21.7	24.70	46.40	80.50	34.10
13.553	90	21.7	29.89	51.59	90.47	38.88
13.560	90	21.7	30.00	51.70	124.00	72.30
13.567	90	21.7	29.00	50.70	90.47	39.77
13.710	90	21.7	23.70	45.40	80.50	35.10
14.010	90	21.7	23.60	45.30	80.50	35.20

【±0%V】

Frequency [MHz]	Polarization [°]	Correction Factor [dB]	Reading [dBμV]	Peak Power [dBμV/m]	Limit [dBμV/m]	Margin [dB]
13.110	90	21.7	24.31	46.01	80.50	34.49
13.410	90	21.7	25.30	47.00	80.50	33.50
13.553	90	21.7	30.55	52.25	90.47	38.22
13.560	90	21.7	30.60	52.30	124.00	71.70
13.567	90	21.7	30.54	52.24	90.47	38.23
13.710	90	21.7	24.30	46.00	80.50	34.50
14.010	90	21.7	24.20	45.90	80.50	34.60

【+15%V】

Frequency [MHz]	Polarization [°]	Correction Factor [dB]	Reading [dBμV]	Peak Power [dBμV/m]	Limit [dBμV/m]	Margin [dB]
13.110	90	21.7	23.96	45.66	80.50	34.84
13.410	90	21.7	24.97	46.67	80.50	33.83
13.553	90	21.7	30.15	51.85	90.47	38.62
13.560	90	21.7	32.21	53.91	124.00	70.09
13.567	90	21.7	30.14	51.84	90.47	38.63
13.710	90	21.7	23.90	45.60	80.50	34.90
14.010	90	21.7	23.80	45.50	80.50	35.00

5.3.4 Measured Data (Continued)

+50

Date of testing : January 20, 2011

Room temperature : 23

Relative humidity : 42%

【-15%V】

Frequency [MHz]	Polarization [°]	Correction Factor [dB]	Reading [dBμV]	Peak Power [dBμV/m]	Limit [dBμV/m]	Margin [dB]
13.110	90	21.7	23.92	45.62	80.50	34.88
13.410	90	21.7	24.65	46.35	80.50	34.15
13.553	90	21.7	31.87	53.57	90.47	36.90
13.560	90	21.7	31.88	53.58	124.00	70.42
13.567	90	21.7	31.57	53.27	90.47	37.20
13.710	90	21.7	25.04	46.74	80.50	33.76
14.010	90	21.7	23.76	45.46	80.50	35.04

【±0%V】

Frequency [MHz]	Polarization [°]	Correction Factor [dB]	Reading [dBμV]	Peak Power [dBμV/m]	Limit [dBμV/m]	Margin [dB]
13.110	90	21.7	24.42	46.12	80.50	34.38
13.410	90	21.7	25.15	46.85	80.50	33.65
13.553	90	21.7	32.22	53.92	90.47	36.55
13.560	90	21.7	32.25	53.95	124.00	70.05
13.567	90	21.7	32.07	53.77	90.47	36.70
13.710	90	21.7	25.54	47.24	80.50	33.26
14.010	90	21.7	24.33	46.03	80.50	34.47

【+15%V】

Frequency [MHz]	Polarization [°]	Correction Factor [dB]	Reading [dBμV]	Peak Power [dBμV/m]	Limit [dBμV/m]	Margin [dB]
13.110	90	21.7	24.74	46.44	80.50	34.06
13.410	90	21.7	25.45	47.15	80.50	33.35
13.553	90	21.7	32.52	54.22	90.47	36.25
13.560	90	21.7	32.55	54.25	124.00	69.75
13.567	90	21.7	32.34	54.04	90.47	36.43
13.710	90	21.7	25.84	47.54	80.50	32.96
14.010	90	21.7	24.65	46.35	80.50	34.15

5.4 Frequency Tolerance

5.4.1 Setting Remarks

- Refer to setting remarks 5.3.1.
- Refer to test configuration figure 4.2.
- With an environmental test chamber, EUT is exposed in extreme temperatures until its temperature is stabilized. (Approximately 30 minutes) Then EUT is on with nominal AC voltage, installed a fully charged battery or DC voltage.

5.4.2 Minimum Standard

15.225(e) The frequency tolerance of the carrier signal shall be maintained within +/- 0.01% of the operating frequency over a temperature variation of -20 degrees to +50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. For battery operated equipment, the equipment tests shall be performed using a new battery.

5.4.3 Result

EUT complies with the requirement.

Uncertainty of measurement result: ± 1 Hz

5.4.4 Measured Data

Date of testing : January 20, 2011

Room temperature : 23

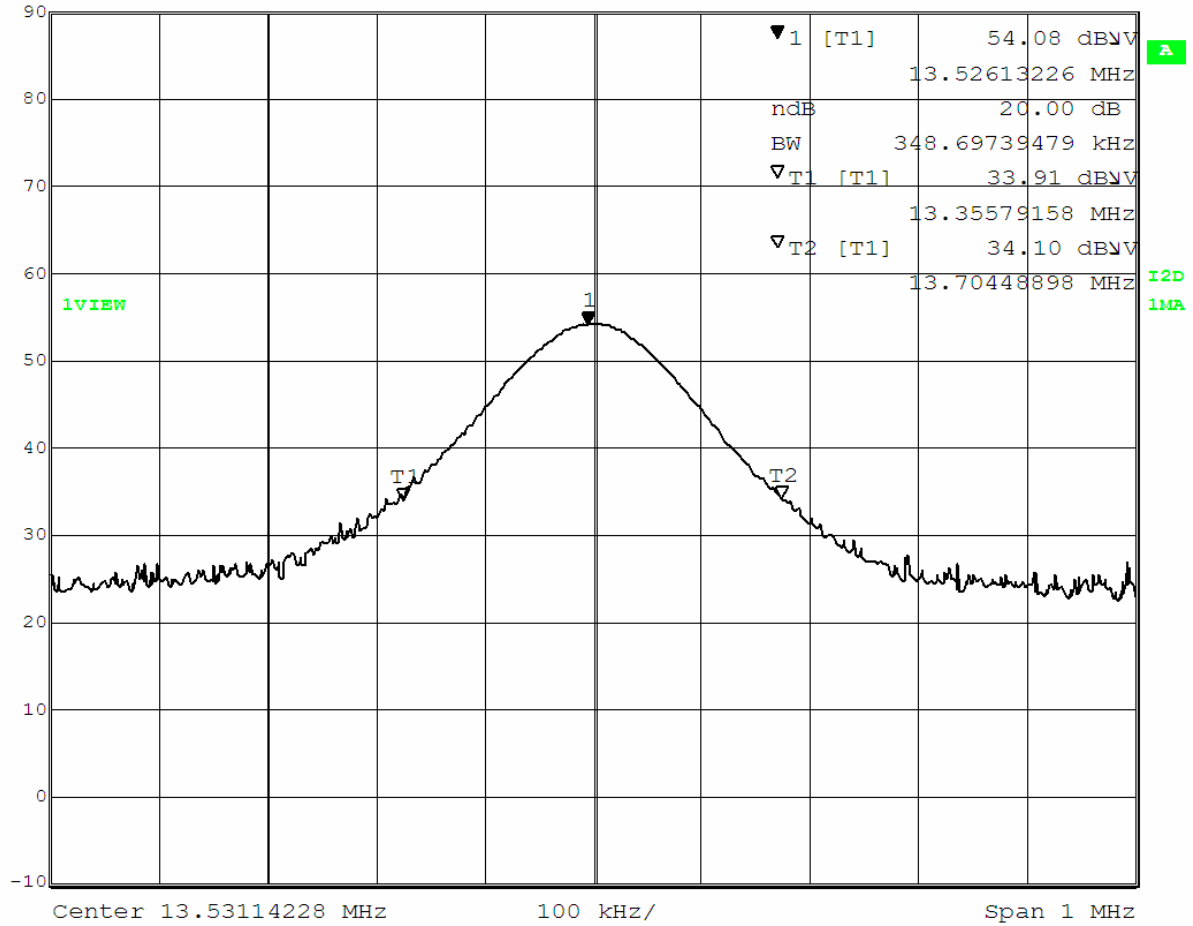
Relative humidity : 42%

Temp [°C]	P/S [VAC]	Frequency [Hz]	Limit [±Hz]	Offset from the CF [Hz]	Limit [%]	Result [%]
Center Frequency		13,560,000				
-20	4.25	13560441	1356.00	541	±0.01	0.004
-20	5.00	13560441	1356.00	541	±0.01	0.004
-20	5.75	13560441	1356.00	541	±0.01	0.004
20	4.25	13560425	1356.00	525	±0.01	0.004
20	5.00	13560529	1356.00	525	±0.01	0.004
20	5.75	13560425	1356.00	525	±0.01	0.004
50	4.25	13560399	1356.00	501	±0.01	0.004
50	5.00	13560399	1356.00	501	±0.01	0.004
50	5.75	13560399	1356.00	501	±0.01	0.004

5.5 20 dB bandwidth



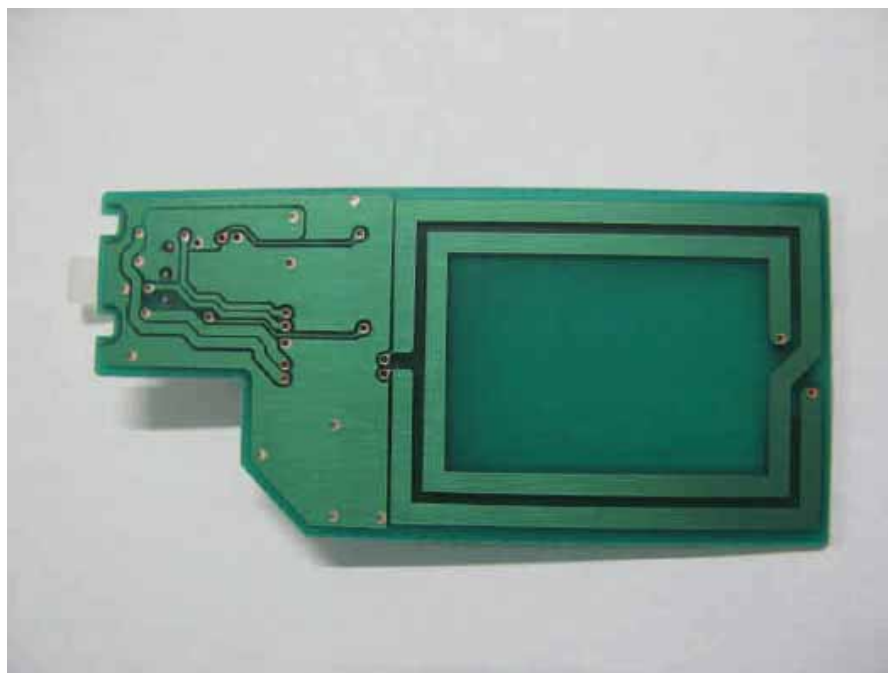
Marker 1 [T1 ndB] RBW 100 kHz RF Att 10 dB
Ref Lvl ndB 20.00 dB VBW 300 kHz
90 dBV BW 348.69739479 kHz SWT 5 ms Unit dBV



Date: 27.DEC.2010 11:04:32

6. Photos

6.1 Photo of the EUT



6.2 Setup Photo (AC Power Conducted Emission)

Front View



Side View



6.3 Setup Photo (Radiated Emission)

Front View (9kHz - 30MHz)

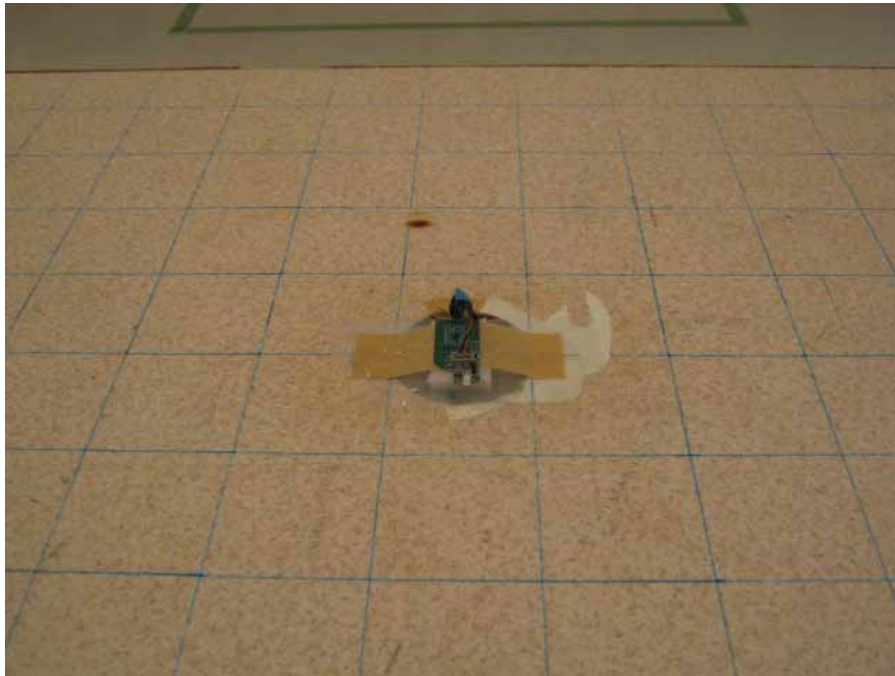


Rear View (9kHz - 30MHz)

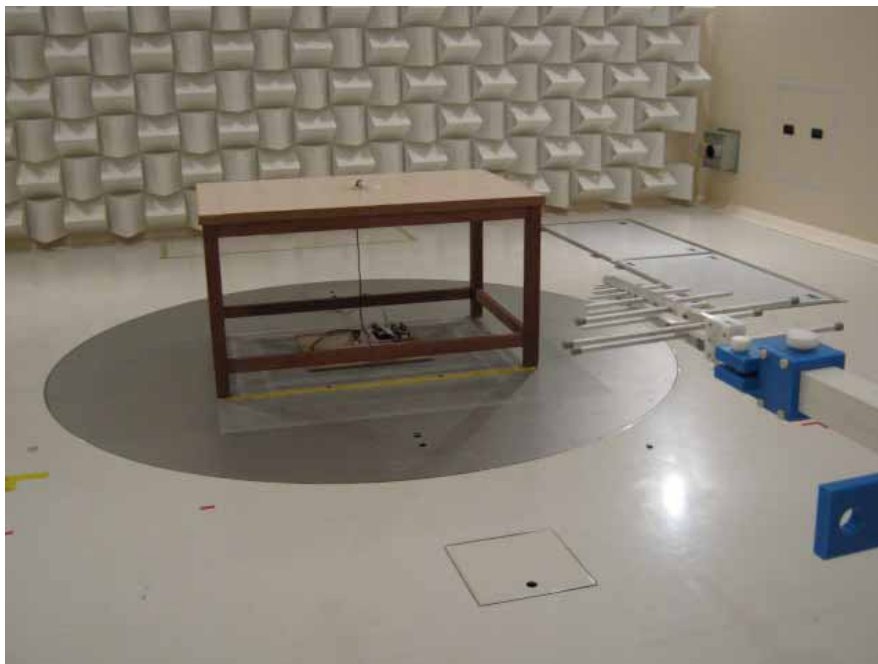


6.3 Setup Photo (Radiated Emission) (Continued)

Close-up (9kHz - 30MHz)



Front View (30MHz – 1GHz)

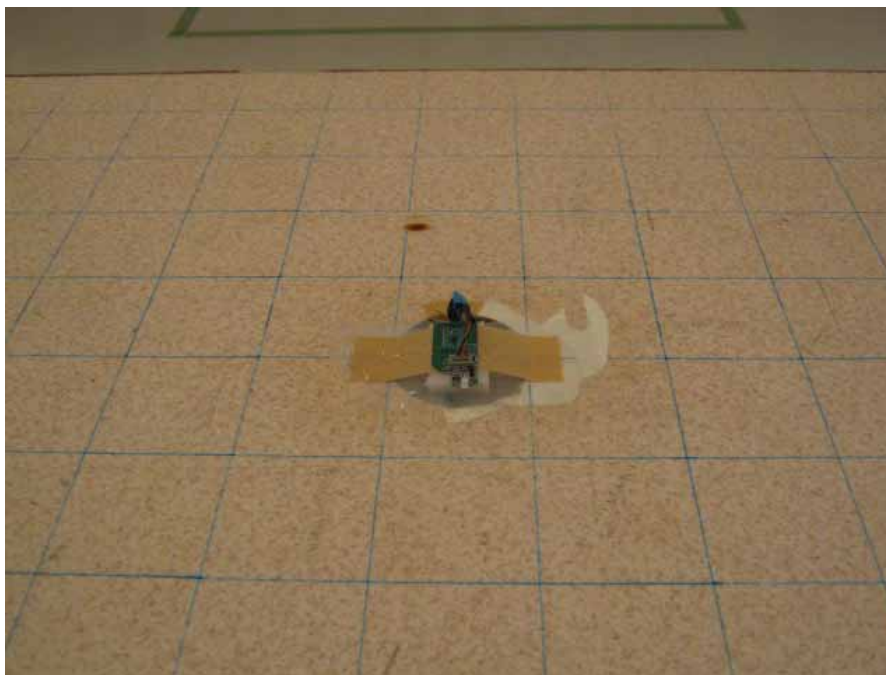


6.3 Setup Photo (Radiated Emission) (Continued)

Rear View (30MHz – 1GHz)



Close-up (30MHz – 1GHz)



7. List of Test Measurement Instruments

7.1 AC Power Conducted Emission Measurement

Instruments	Manufacturer	Model / Type	Serial No.	Calibration Date Next Calibration
Spectrum Analyzer	ADVANTEST CORPORATION	R3132	140501174	November., 2010 November., 2011
EMI Test Receiver	ROHDE & SCHWARZ	ESCS30	100335	November., 2010 November., 2011
Artificial-Mains Network	KYORITSU CORPORATION	KNW-341F	8S-2996-1	July, 2010 July, 2011
RF Selector	TSJ	RFM-E221	3148	October, 2010 October, 2011

7.2 Radiated Emission Measurement

Instruments	Manufacturer	Model / Type	Serial No.	Calibration Date Next Calibration
Programmable AC/DC Power Source	NF Corporation	ES18000W	425779	Confirmed before Test
RF Selector	TSJ	RFM-E121	03149	October, 2010 October, 2011
EMI Test Receiver	ROHDE & SCHWARZ	ESIB40	100211	October, 2010 October, 2011
Loop Antenna (0.009 to 30 MHz)	ROHDE & SCHWARZ	HFH2-Z2	827945/011	June, 2010 June, 2011
Biconical Antenna (30MHz to 300MHz)	SCHWARZBECK	VHBB9124 BBA9106	9124-311	September, 2010 September, 2011
Log-Periodic Antenna (300MHz to 1GHz)	SCHWARZBECK	UHALP9108A	645	September, 2010 September, 2011
Pre Amp	HEWLETT PACKARD	8447D	2944A07891	October, 2010 October, 2011