MEASUREMENT/TECHNICAL REPORT
FCC Part 15 Subpart C

Issued: March 30, 2010

Name and Address of the Applicant:	KYOCERAMITA Corporation 2-28, 1-CHOME, TAMATSUKURI, CHUO-KU, Osaka, 540-8585 Japan
Test Item:	RFID Reader Writer module
Identification:	A0440
Serial No.:	01
FCC ID:	E522KV0440
Sample Receipt Date:	February 22, 2010
Test Specification:	FCC Part 15 Subpart C, 15.225
Date of Testing:	February 22, 23 and March 26, 2010
Test Result:	PASS

Report Prepared by: Cosmos Corporation
2-3571 Ohnogi, Watarai-cho, Watarai-gun, Mie, Japan 516-2102
Phone: +81-596-63-0707 Fax: +81-596-63-0777

Tested by: O. Itogawa — O.Itogawa, EMC Dept. EMC Engineer — March 30, 2010 — Date

Reviewed by: — Y. Kawahara, EMC Dept. EMC manager — March 30, 2010 — Date

Notes:
1. This report should not be reproduced except in full, without the written approval of Cosmos Corporation.
2. All measurement data contained in this report may have uncertainty. A judgment for the limitation should be taken into the count.
3. The report in this report apply only to the sample tested.

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1. Description of Equipment Under Test

1.1 Product Description

Manufacturer	: KYOCERAMITA Corporation
Model (referred to as the EUT)	: A0440
Product Type	: Module
Nominal Voltage	: DC 3.3V
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 adapter (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
Method of Communication Link	: Software to make maximum speed transmitting
The operating frequency band	: 13.56 MHz
The thermal limitation	: Not specified

1.2 Antenna Description

No.	Type Name	Gain	Antenna Type	Remarks
1	0440	−53dBi	Printed Loop	Originally Integrated.

1.3 Accompanied Peripherals Description

No.	Equipment Name	Manufacturer	Type Name	Serial Number	Remarks
1	DC Power Supply	---	---	---	AC 100-120V, 50/60Hz

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. Ohnogi

(2-3571 Ohaza-iwatachi, Ohnogi, Watarai-cho, Watarai-gun, Mie-ken 516-2102, Japan) The test site has been filed by FCC.

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.

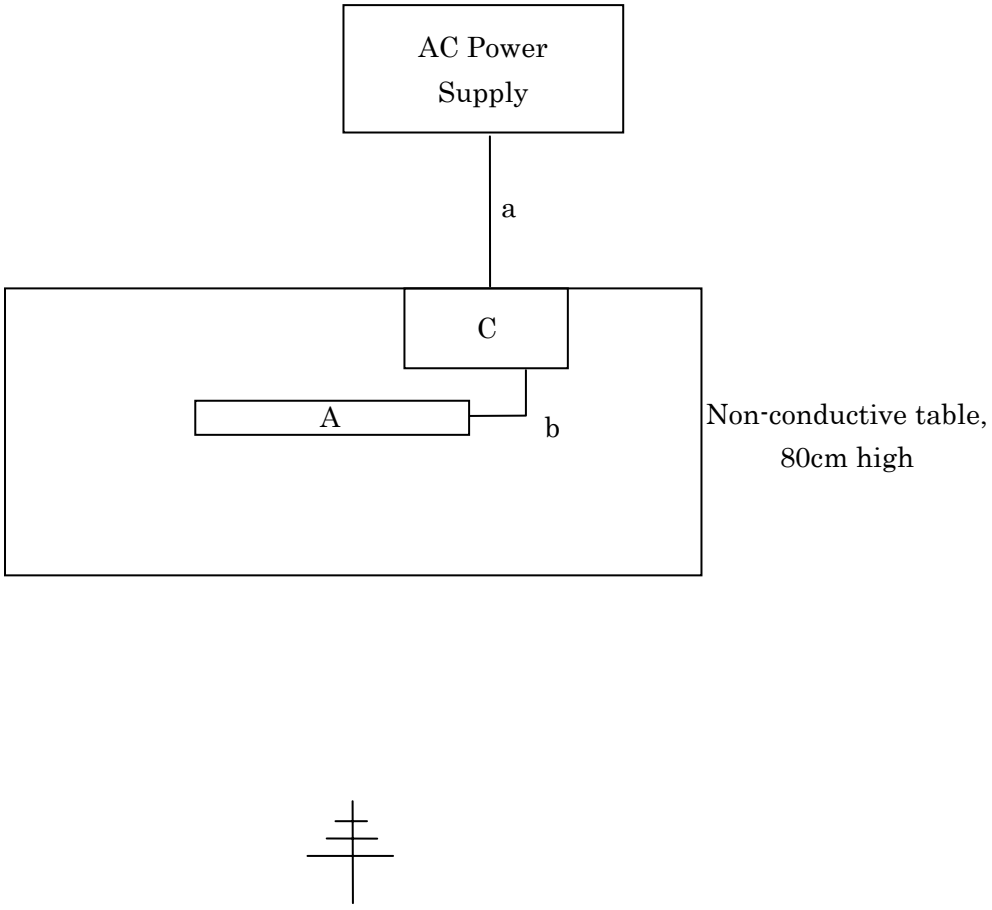
3. Summary of Test Results

No.	Requirement	RSS 210 Issue 7, RSS-Gen Issue 2 (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	7.2.2 – RSS-Gen	15.207	Pass
5	Spurious Emission (Receiver)	7.2.3 – 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		Cable	Length	Shield
A	EUT (RFID Reader Writer module)	A0440	a	AC Power Cord	2.2 m	×
B	Laser Printer	FS-C5150DN	b	Flat Cable	0.1 m	×
C	DC Power Supply	---				

4.1 Conducted Emission Measurement



4.2 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 DC 3.3 V.

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

Temperature: - 20℃ to +50℃
Voltage: DC 3.3 V ±15%

The test was conducted in continuous operation. (Transmitter)

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 : 24℃ / 40%

5.1.4 Measured Data

Measured Value Table

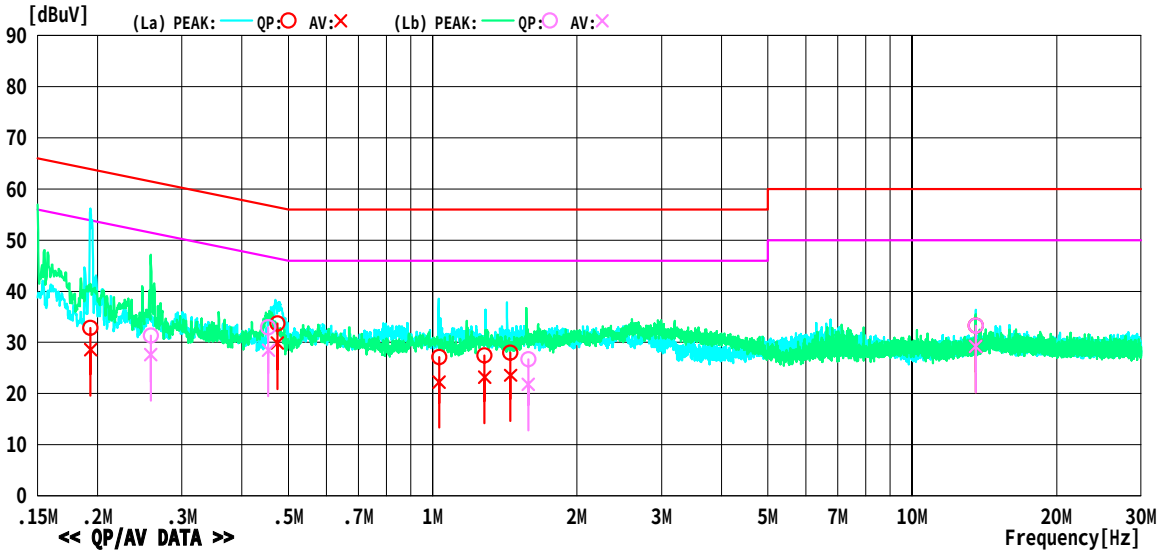
Cosmos Corporation Onoki Lab.
Date : 2010/02/23

Model Name : A0440
Serial No. : 01
Operator : O.Itogawa
Power Supply : AC120V,60Hz

Job No : CJ09-092362E
Temp/Humi : 24°C/40%
Condition : Operated
Remark :

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

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



No	Freq.	Reading Level QP	Reading Level AV	C.Fac	Results QP	Results AV	Limit QP	Limit AV	Margin QP	Margin AV	Phase	Comment
	[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]		
1	0.19350	22.7	18.5	10.1	32.8	28.6	63.9	53.9	31.1	25.3	La	
2	0.47428	23.6	19.8	10.1	33.7	29.9	56.4	46.4	22.7	16.5	La	
3	1.03106	16.9	12.1	10.2	27.1	22.3	56.0	46.0	28.9	23.7	La	
4	1.28288	17.3	13.0	10.2	27.5	23.2	56.0	46.0	28.5	22.8	La	
5	1.45361	17.8	13.4	10.2	28.0	23.6	56.0	46.0	28.1	22.4	La	
6	13.56255	21.9	17.9	11.3	33.2	29.2	60.0	50.0	26.8	20.8	La	
7	0.25835	21.1	17.4	10.2	31.3	27.6	61.5	51.5	30.2	23.9	Lb	
8	0.45404	22.7	18.2	10.2	32.9	28.4	56.8	46.8	23.9	18.4	Lb	
9	1.58261	16.5	11.6	10.2	26.7	21.8	56.0	46.0	29.3	24.2	Lb	
10	13.56117	22.0	17.9	11.3	33.3	29.2	60.0	50.0	26.7	20.8	Lb	

-TEPTO-DV/CE Ver1.50.0128

5.1.4 Measured Data (Continued)

Measured Value Table

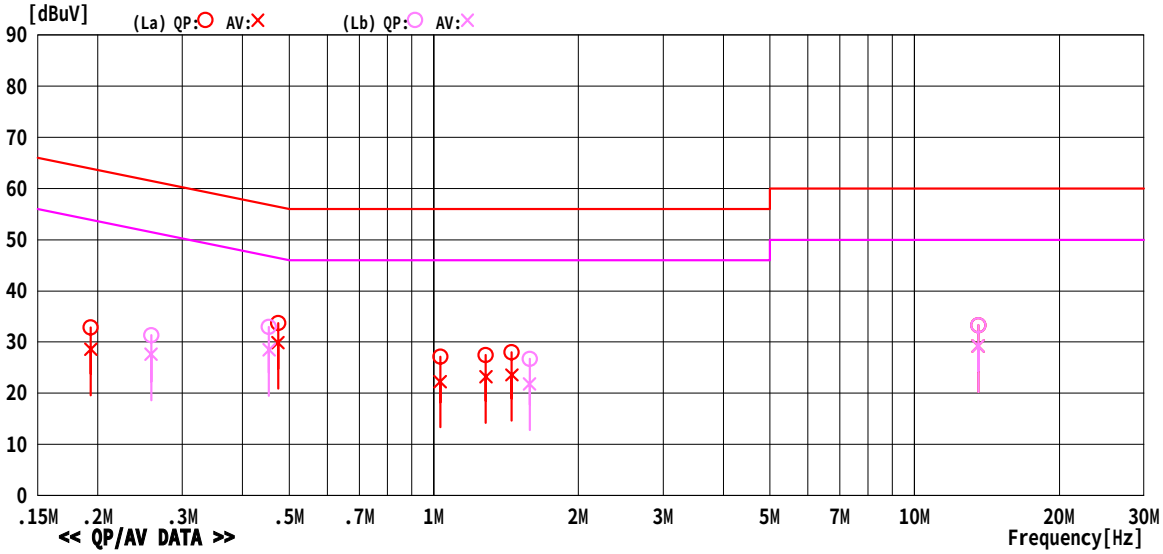
Cosmos Corporation Onoki Lab.
Date : 2010/02/23

Model Name : A0440
Serial No. : 01
Operator : O.Itogawa
Power Supply : AC120V,60Hz

Job No : CJ09-092362E
Temp/Humi : 24°C/40%
Condition : Operated
Remark :

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

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



No	Freq.	Reading Level		C.Fac	Results		Limit		Margin		Phase	Comment
		QP	AV		QP	AV	QP	AV	QP	AV		
	[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]		
1	0.19350	22.7	18.5	10.1	32.8	28.6	63.9	53.9	31.1	25.3	La	
2	0.47428	23.6	19.8	10.1	33.7	29.9	56.4	46.4	22.7	16.5	La	
3	1.03106	16.9	12.1	10.2	27.1	22.3	56.0	46.0	28.9	23.7	La	
4	1.28288	17.3	13.0	10.2	27.5	23.2	56.0	46.0	28.5	22.8	La	
5	1.45361	17.8	13.4	10.2	28.0	23.6	56.0	46.0	28.1	22.4	La	
6	13.56255	21.9	17.9	11.3	33.2	29.2	60.0	50.0	26.8	20.8	La	
7	0.25835	21.1	17.4	10.2	31.3	27.6	61.5	51.5	30.2	23.9	Lb	
8	0.45404	22.7	18.2	10.2	32.9	28.4	56.8	46.8	23.9	18.4	Lb	
9	1.58261	16.5	11.6	10.2	26.7	21.8	56.0	46.0	29.3	24.2	Lb	
10	13.56117	22.0	17.9	11.3	33.3	29.2	60.0	50.0	26.7	20.8	Lb	

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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)

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 (μV/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

<<Electromagnetic Radiation>>

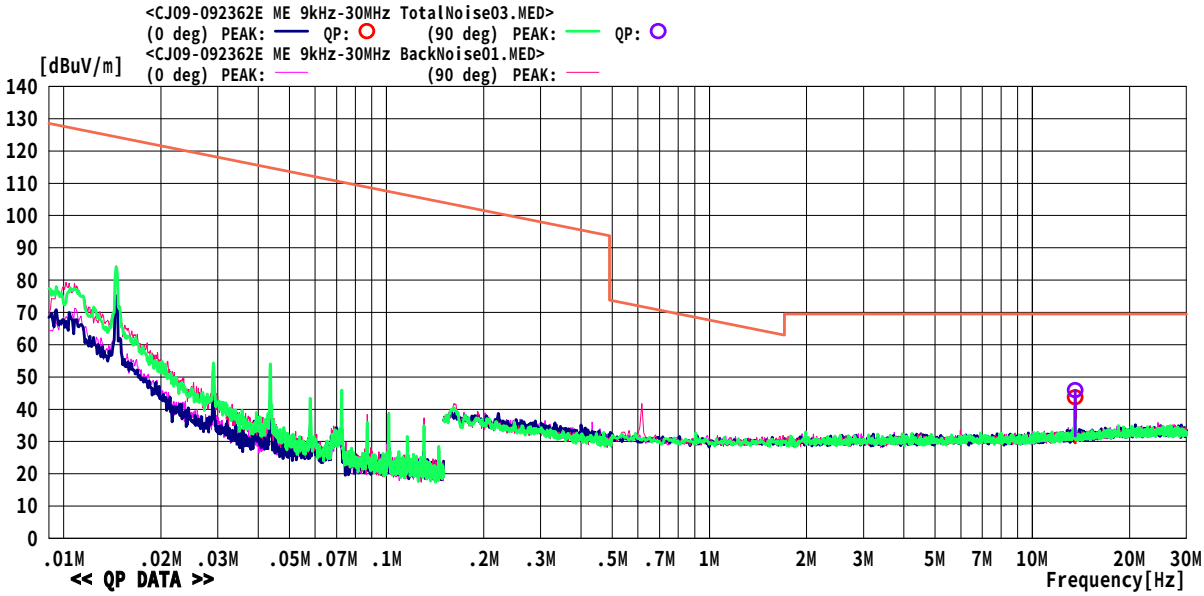
Cosmos Corporation Onoki Lab.
Date : 2010/03/26 01:04:35

Model Name : A0440
Serial No. : 01
Operator : O.Itogawa
Power Supply : AC120V,60Hz / DC3.3V

Job No. : CJ09-092362E
Temp./Humi. : 24℃/40%
Condition : Operated
Remark : Angle2

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

LIMIT : FCC Part15 SubpartC 15.209 9KHz-30MHz



No	Freq. [MHz]	Reading [dBuV]	Ant.Fac [dB/m]	Loss [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Antenna	Angle [deg]	Comment
1	13.56154	22.0	20.8	0.9	43.7	69.5	25.8	0deg	0	QP Fundamental Frequency
2	13.56024	24.2	20.8	0.9	45.9	69.5	23.6	90deg	212	QP Fundamental Frequency

-TEPTO-DV/ME Ver 1.80.0020

This result is the worst data of 3 angles.

5.2.5 Measured Data (Continued)

30MHz to 1GHz (Angle 2)

<<Radiated Emission>>

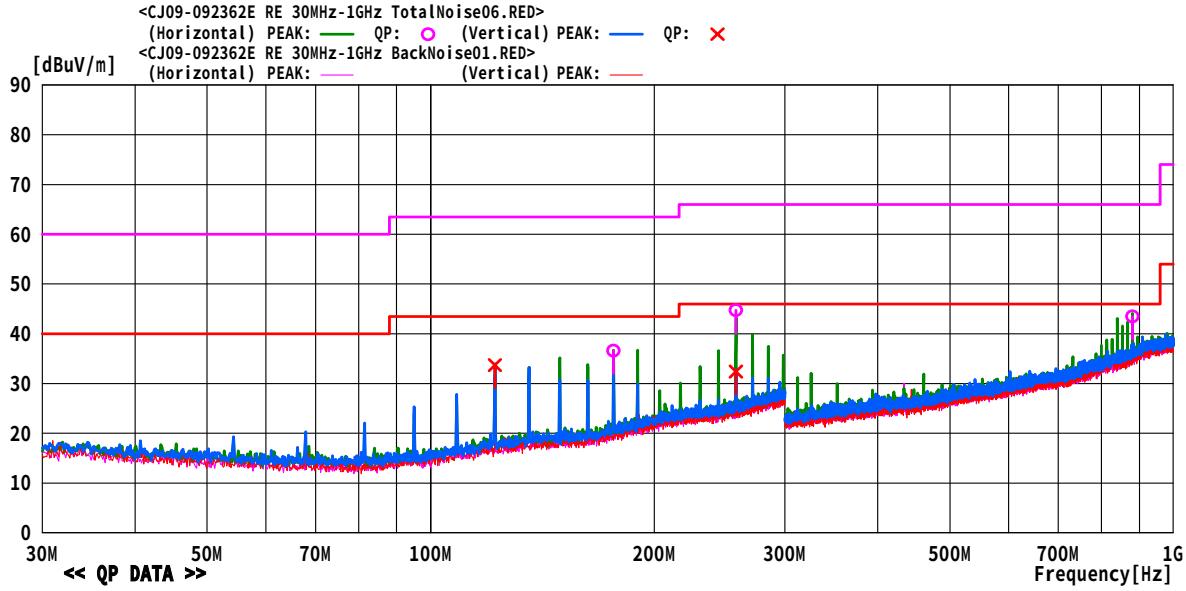
Cosmos Corporation Onoki Lab.
Date : 2010/03/26 22:13:03

Model Name : A0440
Serial No. : 01
Operator : O.Itogawa
Power Supply : AC 120V,60Hz / DC3.3V

Job No : CJ09-092362E
Temp./Humi. : 24℃/40%
Condition : Operated
Remark : Angle2

Memo : RBW:30M～1GHz(120kHz)

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



No	Freq. [MHz]	Reading [dBuV]	Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Pola. [H/V]	Height [cm]	Angle [deg]	Ant Type	Comment
1	176.287	45.4	13.2	5.8	27.8	36.6	43.5	6.9	Hori.	191	0	BC	
2	257.650	49.2	16.5	6.4	27.4	44.7	46.0	1.3	Hori.	128	187	BC	
3	881.381	39.4	22.1	9.9	27.9	43.5	46.0	2.5	Hori.	100	197	LP	
4	122.049	45.5	11.0	5.3	28.1	33.7	43.5	9.8	Vert.	100	73	BC	
5	257.630	36.9	16.5	6.4	27.4	32.4	46.0	13.6	Vert.	100	98	BC	

-TEPTO-DV/RE Ver 1.80.0020

This result is the worst data of 3 angles.

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 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
✓	Condition of input voltage	: DC＋3.3V±15%

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

✓	IF bandwidth	: 9 kHz

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℃ (Angle 2)

Date of testing : March 26, 2010
Room temperature : 24℃
Relative humidity: 40%

【DC2.805V】

Frequency [MHz]	Polarization [°]	Correction Factor [dB]	Reading [dBμV]	Peak Power [dBμV/m]	Limit [dBμV/m]	Margin[dB]
13.110	0	21.7	-13.00	8.70	80.50	71.80
13.410	0	21.7	-13.00	8.70	80.50	71.80
13.553	0	21.7	-13.00	8.70	90.47	81.77
13.560	0	21.7	20.67	42.37	124.00	81.63
13.567	0	21.7	-13.00	8.70	90.47	81.77
13.710	0	21.7	-13.00	8.70	80.50	71.80
14.010	0	21.7	-13.00	8.70	80.50	71.80

【DC3.300V】

Frequency [MHz]	Polarization [°]	Correction Factor [dB]	Reading [dBμV]	Peak Power [dBμV/m]	Limit [dBμV/m]	Margin[dB]
13.110	0	21.7	-13.00	8.70	80.50	71.80
13.410	0	21.7	-13.00	8.70	80.50	71.80
13.553	0	21.7	-13.00	8.70	90.47	81.77
13.560	0	21.7	21.95	43.65	124.00	80.35
13.567	0	21.7	-13.00	8.70	90.47	81.77
13.710	0	21.7	-13.00	8.70	80.50	71.80
14.010	0	21.7	-13.00	8.70	80.50	71.80

【DC3.795V】

Frequency [MHz]	Polarization [°]	Correction Factor [dB]	Reading [dBμV]	Peak Power [dBμV/m]	Limit [dBμV/m]	Margin[dB]
13.110	0	21.7	-13.00	8.70	80.50	71.80
13.410	0	21.7	-13.00	8.70	80.50	71.80
13.553	0	21.7	-13.00	8.70	90.47	81.77
13.560	0	21.7	22.01	43.71	124.00	80.29
13.567	0	21.7	-13.00	8.70	90.47	81.77
13.710	0	21.7	-13.00	8.70	80.50	71.80
14.010	0	21.7	-13.00	8.70	80.50	71.80

5.3.4 Measured Data (3m distance)

25℃ (Angle 2)

Date of testing : March 26, 2010
Room temperature : 24℃
Relative humidity: 40%

【DC2.805V】

Frequency [MHz]	Polarization [°]	Correction Factor [dB]	Reading [dBμV]	Peak Power [dBμV/m]	Limit [dBμV/m]	Margin[dB]
13.110	0	21.7	-13.00	8.70	80.50	71.80
13.410	0	21.7	-13.00	8.70	80.50	71.80
13.553	0	21.7	-13.00	8.70	90.47	81.77
13.560	0	21.7	21.10	42.80	124.00	81.20
13.567	0	21.7	-13.00	8.70	90.47	81.77
13.710	0	21.7	-13.00	8.70	80.50	71.80
14.010	0	21.7	-13.00	8.70	80.50	71.80

【DC3.300V】

Frequency [MHz]	Polarization [°]	Correction Factor [dB]	Reading [dBμV]	Peak Power [dBμV/m]	Limit [dBμV/m]	Margin[dB]
13.110	0	21.7	-13.00	8.70	80.50	71.80
13.410	0	21.7	-13.00	8.70	80.50	71.80
13.553	0	21.7	-13.00	8.70	90.47	81.77
13.560	0	21.7	24.20	45.90	124.00	78.10
13.567	0	21.7	-13.00	8.70	90.47	81.77
13.710	0	21.7	-13.00	8.70	80.50	71.80
14.010	0	21.7	-13.00	8.70	80.50	71.80

【DC3.795V】

Frequency [MHz]	Polarization [°]	Correction Factor [dB]	Reading [dBμV]	Peak Power [dBμV/m]	Limit [dBμV/m]	Margin[dB]
13.110	0	21.7	-13.00	8.70	80.50	71.80
13.410	0	21.7	-13.00	8.70	80.50	71.80
13.553	0	21.7	-13.00	8.70	90.47	81.77
13.560	0	21.7	23.37	45.07	124.00	78.93
13.567	0	21.7	-13.00	8.70	90.47	81.77
13.710	0	21.7	-13.00	8.70	80.50	71.80
14.010	0	21.7	-13.00	8.70	80.50	71.80

5.3.4 Measured Data (3m distance)

50℃ (Angle 2)

Date of testing : March 26, 2010
Room temperature : 24℃
Relative humidity: 40%

【DC2.805V】

Frequency [MHz]	Polarization [°]	Correction Factor [dB]	Reading [dBμV]	Peak Power [dBμV/m]	Limit [dBμV/m]	Margin[dB]
13.110	0	21.7	-13.00	8.70	80.50	71.80
13.410	0	21.7	-13.00	8.70	80.50	71.80
13.553	0	21.7	-13.00	8.70	90.47	81.77
13.560	0	21.7	20.78	42.48	124.00	81.52
13.567	0	21.7	-13.00	8.70	90.47	81.77
13.710	0	21.7	-13.00	8.70	80.50	71.80
14.010	0	21.7	-13.00	8.70	80.50	71.80

【DC3.300V】

Frequency [MHz]	Polarization [°]	Correction Factor [dB]	Reading [dBμV]	Peak Power [dBμV/m]	Limit [dBμV/m]	Margin[dB]
13.110	0	21.7	-13.00	8.70	80.50	71.80
13.410	0	21.7	-13.00	8.70	80.50	71.80
13.553	0	21.7	-13.00	8.70	90.47	81.77
13.560	0	21.7	21.81	43.51	124.00	80.49
13.567	0	21.7	-13.00	8.70	90.47	81.77
13.710	0	21.7	-13.00	8.70	80.50	71.80
14.010	0	21.7	-13.00	8.70	80.50	71.80

【DC3.795V】

Frequency [MHz]	Polarization [°]	Correction Factor [dB]	Reading [dBμV]	Peak Power [dBμV/m]	Limit [dBμV/m]	Margin[dB]
13.110	0	21.7	-13.00	8.70	80.50	71.80
13.410	0	21.7	-13.00	8.70	80.50	71.80
13.553	0	21.7	-13.00	8.70	90.47	81.77
13.560	0	21.7	21.45	43.15	124.00	80.85
13.567	0	21.7	-13.00	8.70	90.47	81.77
13.710	0	21.7	-13.00	8.70	80.50	71.80
14.010	0	21.7	-13.00	8.70	80.50	71.80

This table is the worst data of 3 angles.

5.4 Frequency Tolerance

5.4.1 Setting Remarks

- Refer to setting remarks 5.3.1.
- 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, or installed a fully charged battery.

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.

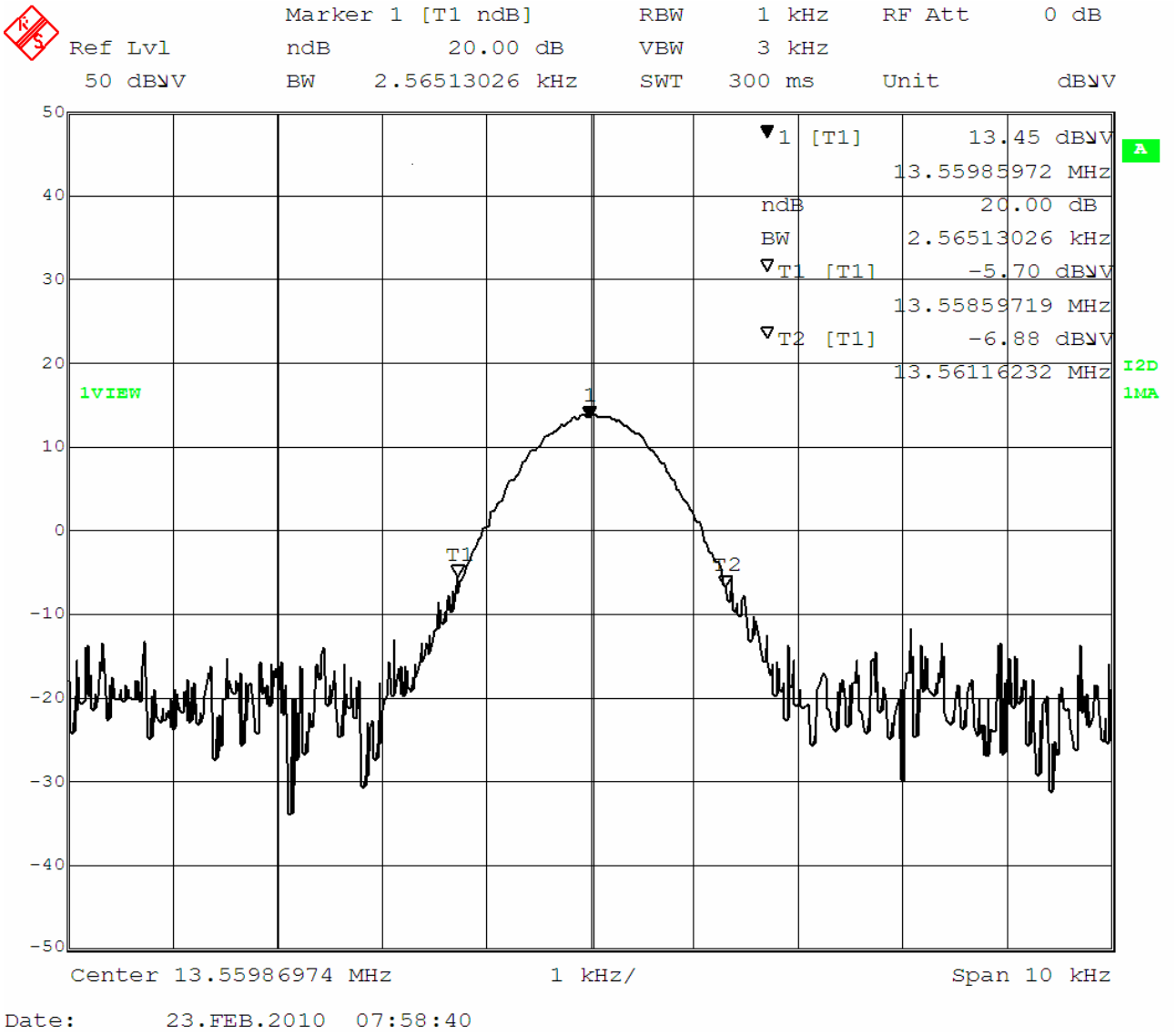
Uncertainty of measurement result: ± 1 Hz

5.4.4 Measured Data

Date of testing : February 22, 2010
Room temperature : 24℃
Relative humidity : 40%

Temp [℃]	P/S [VAC]	Frequency [Hz]	Limit [±Hz]	Offset from the CF [Hz]	Limit [%]	Error[%]
Center Frequency		13,560,000				
-20	2.805	13559950	1356.00	-50	±0.01	0.000
	3.300	13559858	1356.00	-142	±0.01	-0.001
	3.795	13559949	1356.00	-51	±0.01	0.000
25	2.805	13559784	1356.00	-216	±0.01	-0.002
	3.300	13559886	1356.00	-114	±0.01	-0.001
	3.795	13559956	1356.00	-44	±0.01	0.000
50	2.805	13559695	1356.00	-305	±0.01	-0.002
	3.300	13559800	1356.00	-200	±0.01	-0.001
	3.795	13559923	1356.00	-77	±0.01	-0.001

5.5 20 dB bandwidth



6. Photos

6.1 Setup Photo (Conducted Emission)

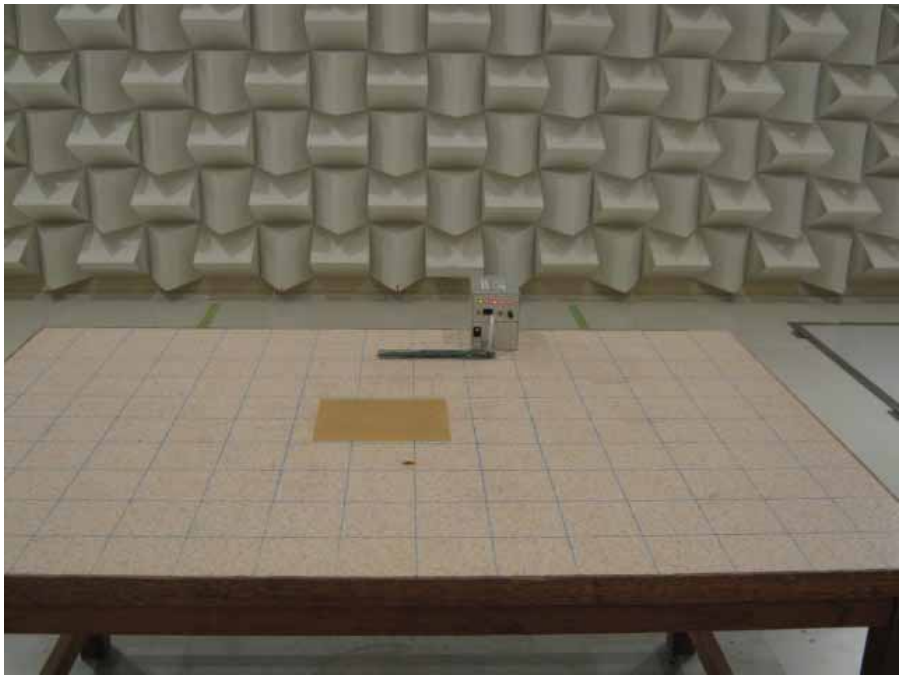
Front View

Side View

6.2 Setup Photo (Electromagnetic Radiated Emission)

Angle 1, Front View (9kHz - 30MHz)

Angle 1, Front View (9kHz - 30MHz)



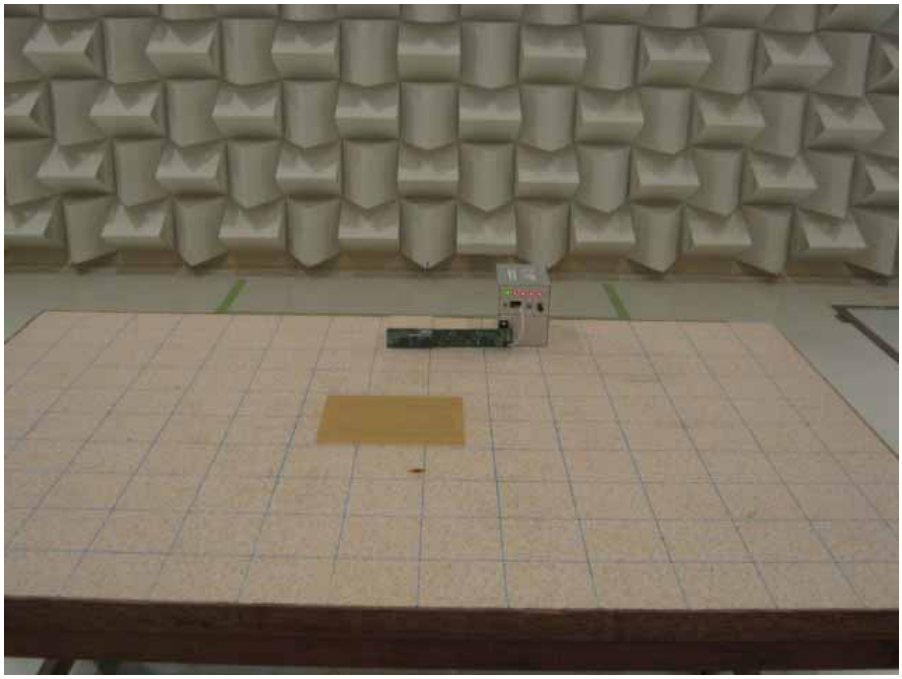
6.2 Setup Photo (Electromagnetic Radiated Emission) (Continued)

Angle 1, Close-up (9kHz - 30MHz)

Angle 2, Front View (9kHz - 30MHz)

6.2 Setup Photo (Electromagnetic Radiated Emission) (Continued)

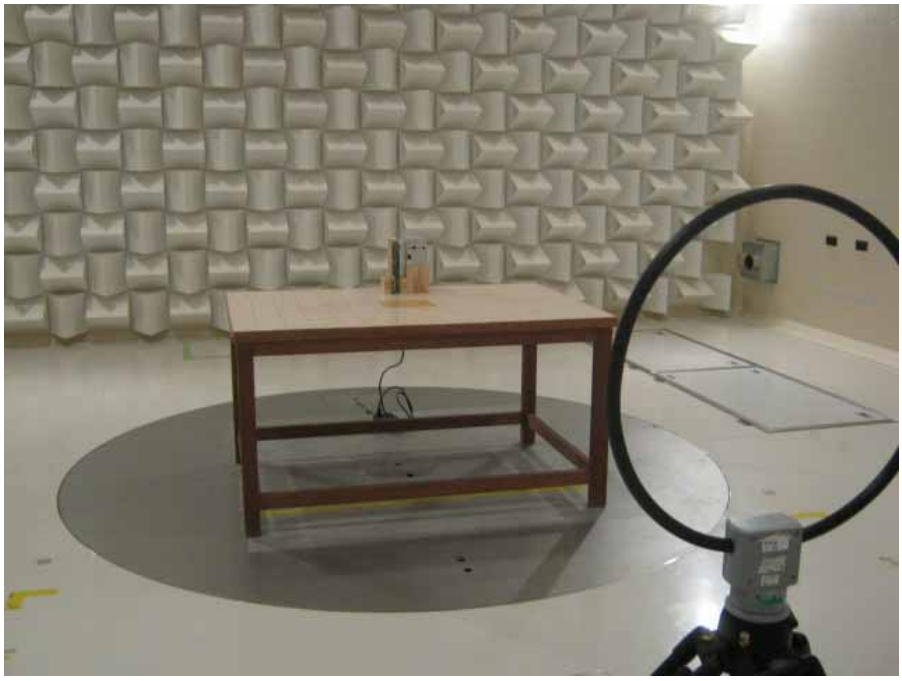
Angle 2, Front View (9kHz - 30MHz)



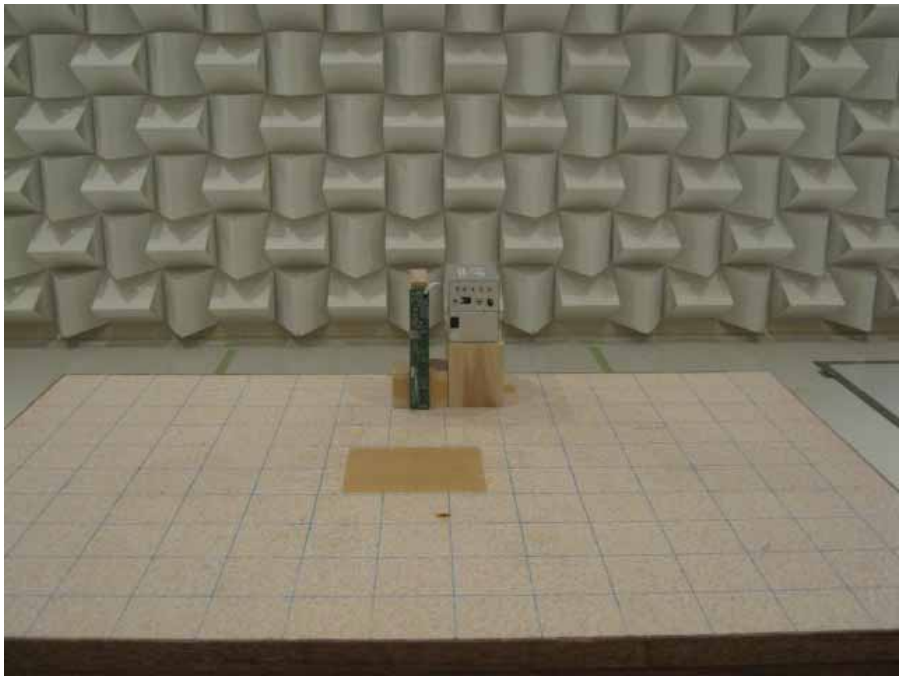
Angle 2, Close-up (9kHz - 30MHz)

6.2 Setup Photo (Electromagnetic Radiated Emission) (Continued)

Angle 3, Front View (9kHz - 30MHz)

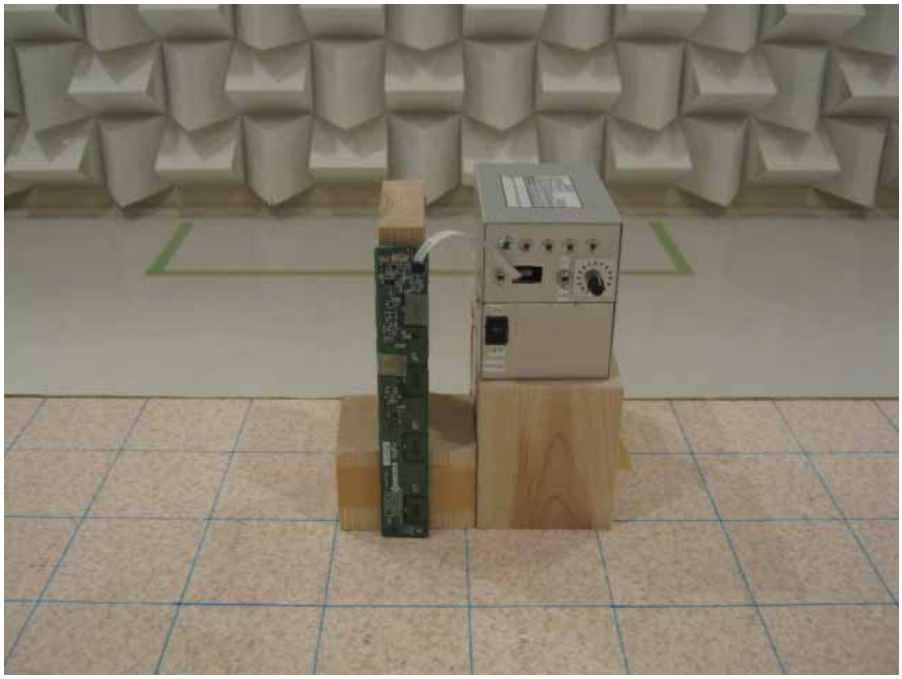


Angle 3, Front View (9kHz - 30MHz)



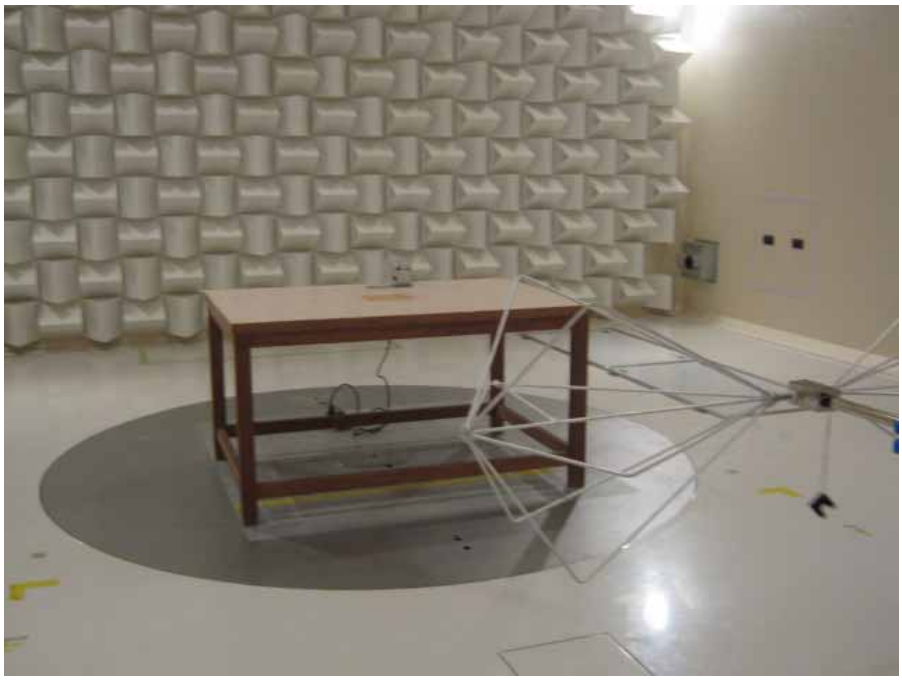
6.2 Setup Photo (Electromagnetic Radiated Emission) (Continued)

Angle 3, Close-up (9kHz - 30MHz)



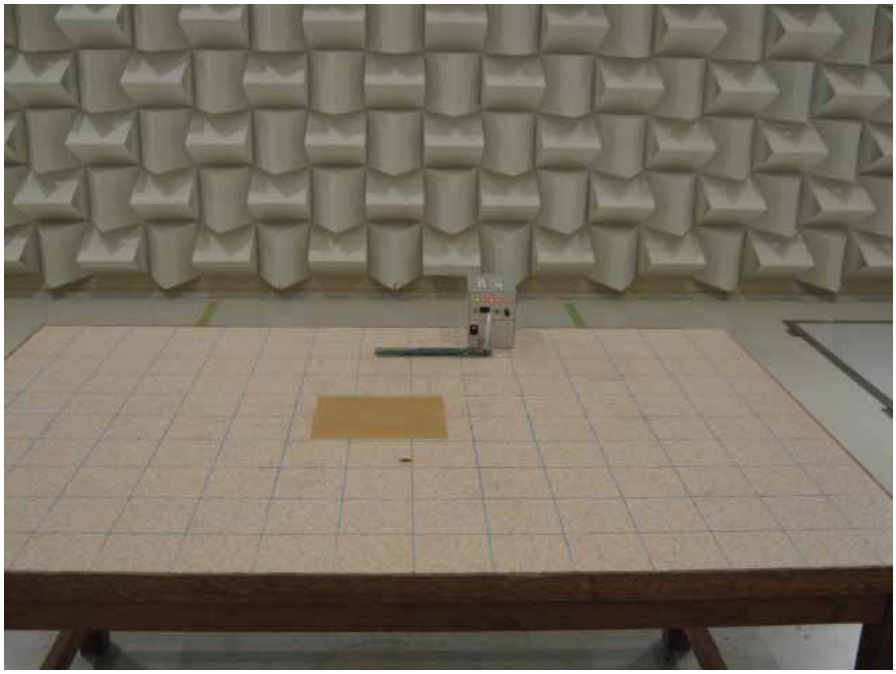
6.3 Setup Photo (Radiated Emission)

Angle 1, Front View (30MHz – 1GHz)



6.3 Setup Photo (Radiated Emission) (Continued)

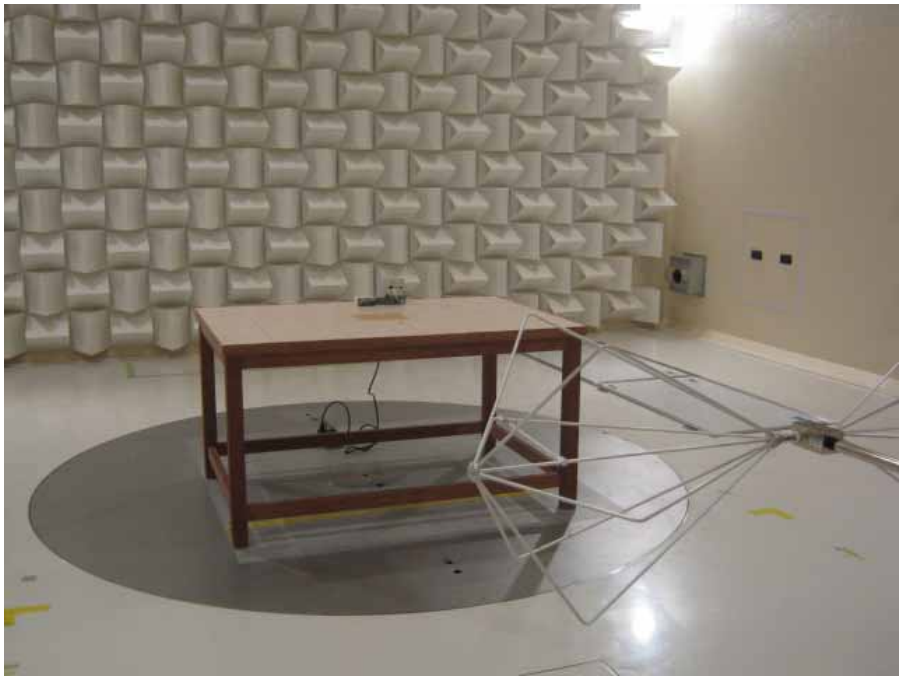
Angle 1, Front View (30MHz – 1GHz)



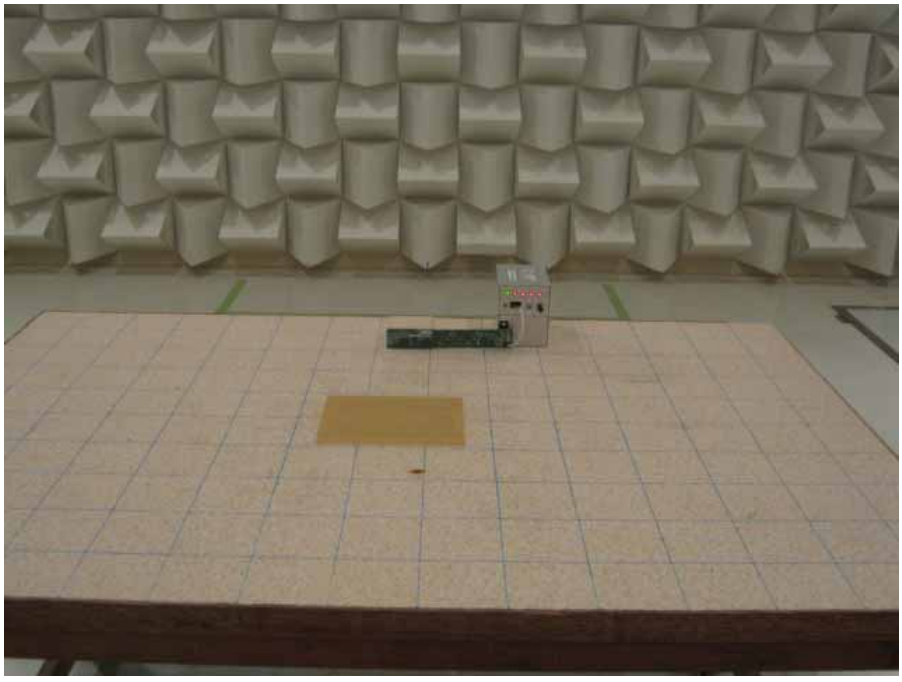
Angle 1, Close-up (30MHz – 1GHz)

6.3 Setup Photo (Radiated Emission) (Continued)

Angle 2, Front View (30MHz – 1GHz)



Angle 2, Front View (30MHz – 1GHz)



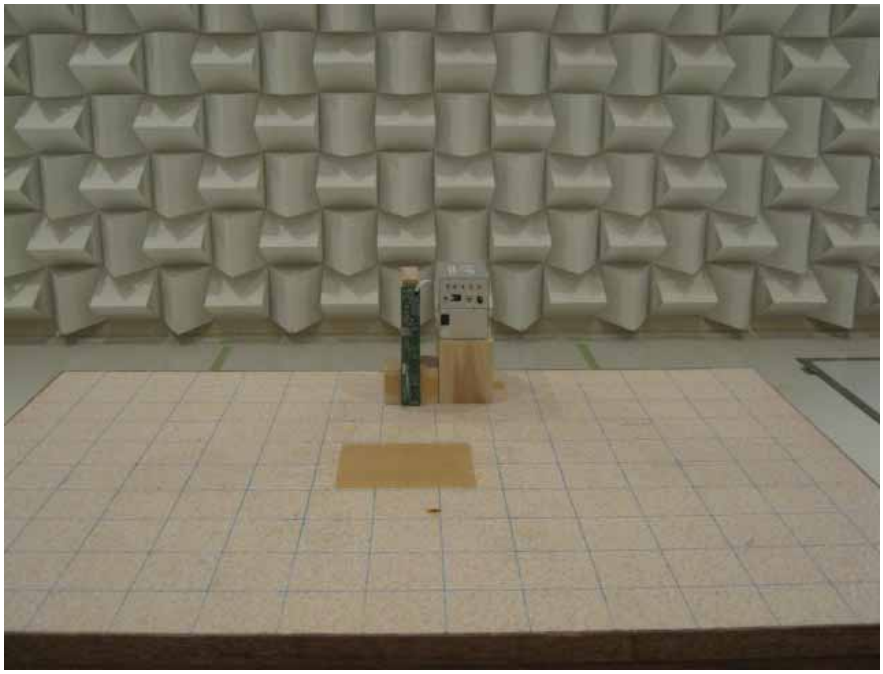
6.3 Setup Photo (Radiated Emission) (Continued)

Angle 2, Close-up (30MHz – 1GHz)

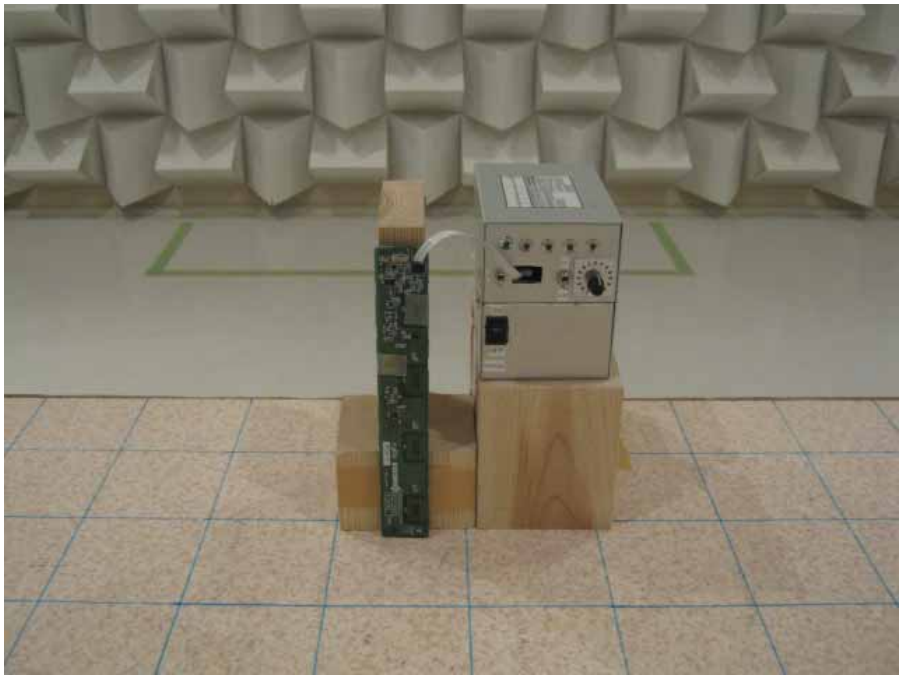
Angle 3, Front View (30MHz – 1GHz)

6.3 Setup Photo (Radiated Emission) (Continued)

Angle 3, Front View (30MHz – 1GHz)



Angle 3, Close-up (30MHz – 1GHz)



7. List of Test Measurement Instruments

7.1 AC Conducted Emission Measurement

Instruments	Manufacturer	Model / Type	Serial No.	Calibration Date Next Calibration
Spectrum Analyzer	ADVANTEST CORPORATION	R3132	100803390	November ,2009 November ,2010
EMI Test Receiver	ROHDE& SCHWARZ	ESCS30	100335	November ,2009 November ,2010
Artificial-Mains Network	KYORITSU CORPORATION	KNW-341F	8S-2996-1	July ,2009 July ,2010
Transient Limiter	AGILENT TECHNOLOGIES	11947A	3107A03745	September ,2009 September ,2010
RF Selector	Techno Science Japan Corp.	RFM-E221	3148	Confirmed Before Test

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	Techno Science Japan Corp.	RFM-E221	3148	Confirmed Before Test
EMI Test Receiver	ROHDE& SCHWARZ	ESIB40	100211	October ,2009 October ,2010
Loop Antenna (0.15 to 30 MHz)	ROHDE & SCHWARZ	HFH2-Z2	131	June , 2009 June , 2010
Biconical Antenna (30to 300MHz)	SCHWARZBECK	VHBB9124 BBA9106	9124-311	September ,2009 September ,2010
Log.-Periodic Antenna (300MHz to1GHz)	SCHWARZBECK	UHALP9108A	645	September ,2009 September ,2010
Pre Amp	HEWLETT PACKARD	8447D	2944A07891	October ,2009 September ,2010