MEASUREMENT/TECHNICAL REPORT
FCC Part 15 Subpart C

Issued: April 14, 2009

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:	TG-F321
Serial No.:	---
FCC ID:	WSLF321
Sample Receipt Date:	February 17, 2009
Test Specification:	FCC Part 15 Subpart C, 15.225
Date of Testing:	February 17, 19, 24, April 3 and 6, 2009
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, Engineer — April 14, 2009 (Date)

Reviewed by: Y. Kawahara, Leader — April 14, 2009 (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	: YUYAMA Mfg. CO., Ltd
Model (referred to as the EUT)	: TG-F321
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 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	: 13.56MHz
The thermal limitation	: Not specified

1.2 Antenna Description

No.	Type Name	Gain	Antenna Type	Remarks
1	TG-F321	−53dBi	Printed Loop	Originally Integrated.

1.3 Accompanied Peripherals Description

No.	Equipment Name	Manufacturer	Type Name	Serial Number	Remarks
1	Jig	---	---	---	AC120 V, 50/60 Hz

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.

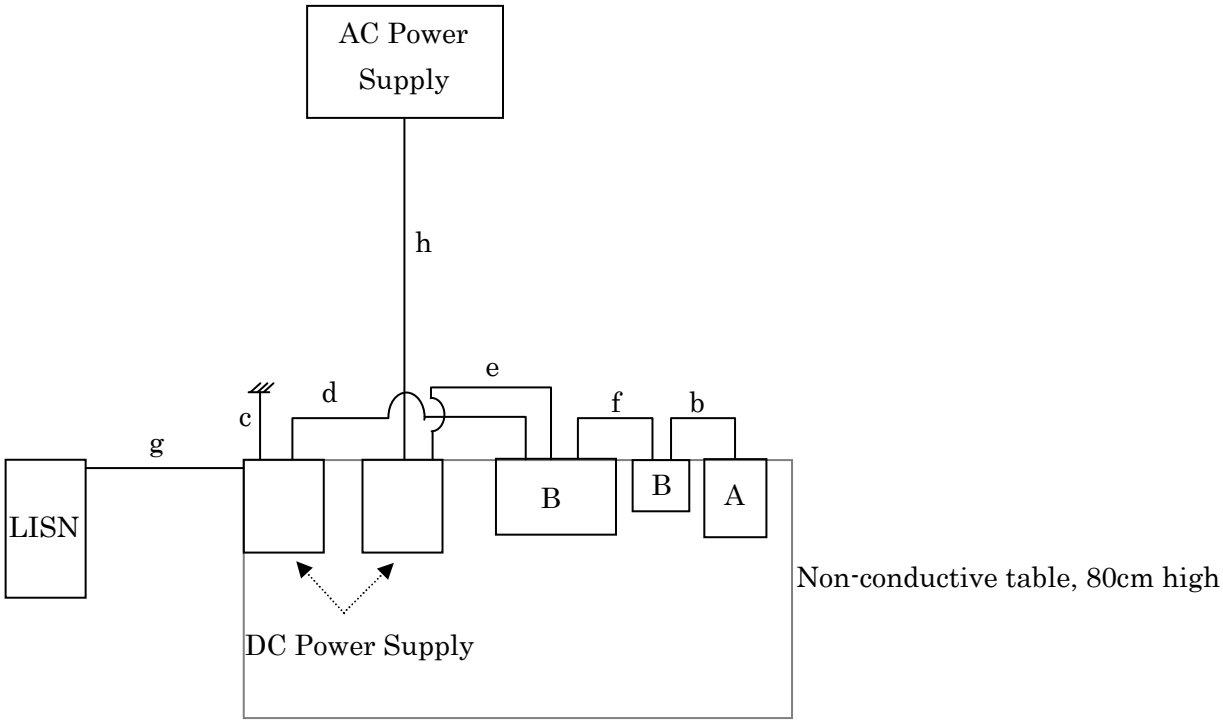
3. Summary of Test Results

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 Carrier 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

4. Test Configuration

	Instrument	Model		Cable	Length	Shield
A	EUT	TG-F321	a	AC Power Cable	1.0 m	×
B	Jig	---	b	Signal Cable	1.5 m	○
			c	Earth Cord	1.0 m	×
			d	DC Power Cord	1.5 m	×
			e	DC Power Cord	1.0 m	×
			f	Signal Cable	1.0 m	○
			g	AC Power Cord	2.0 m	×
			h	AC Power Cord	2.0 m	×

4.1 15.207 AC Power Line Conducted Emission in Shield Room

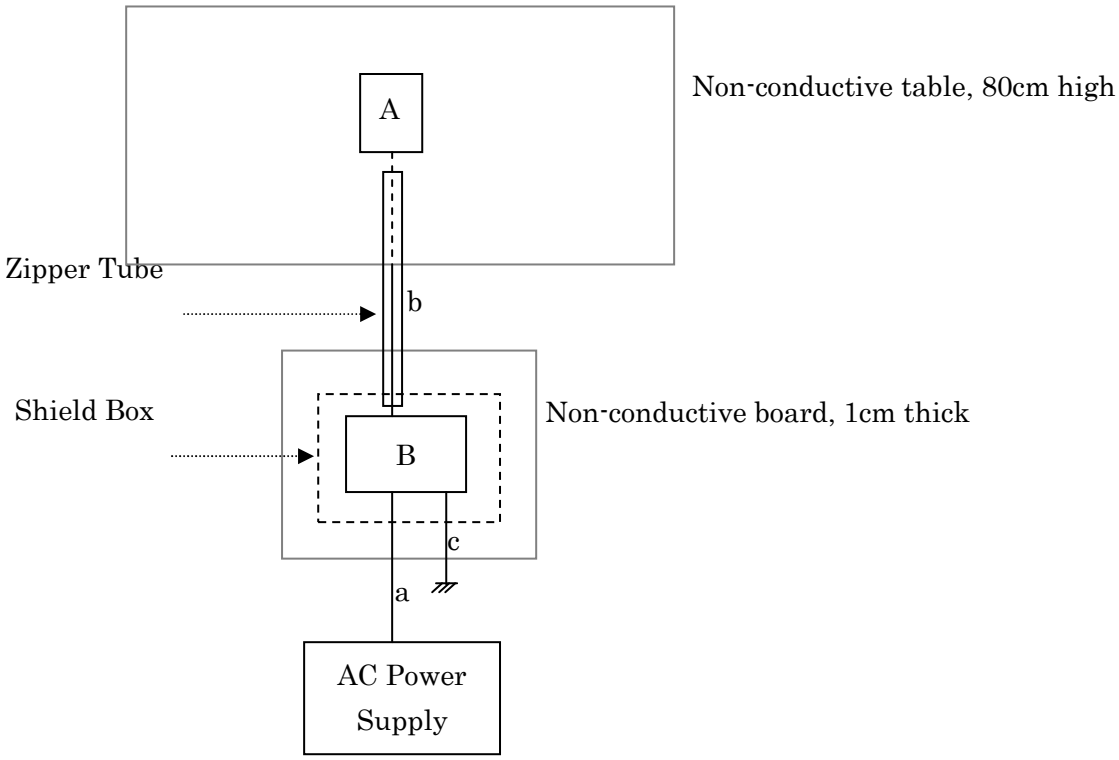


Excess cable arrangement (Conducted Emission)

Sym.	Bundle (Length / Position)	Hung
b	1.5 m / center	×

4. Test Configuration (Continued)

4.2 Radiated Measurement in 3m Anechoic Chamber
(Radiated Emission, Maximum Carrier Output Power, Frequency Tolerance)



4.3 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%.

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

Temperature: - 20℃ to +50℃
Voltage: DC 5V ±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.
- Non-conductive board (10mm thick) for EUT and non-conductive table (80cm high) for personal computer were 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℃ / 38%

5.1.4 Measured Data

Measured Value Table

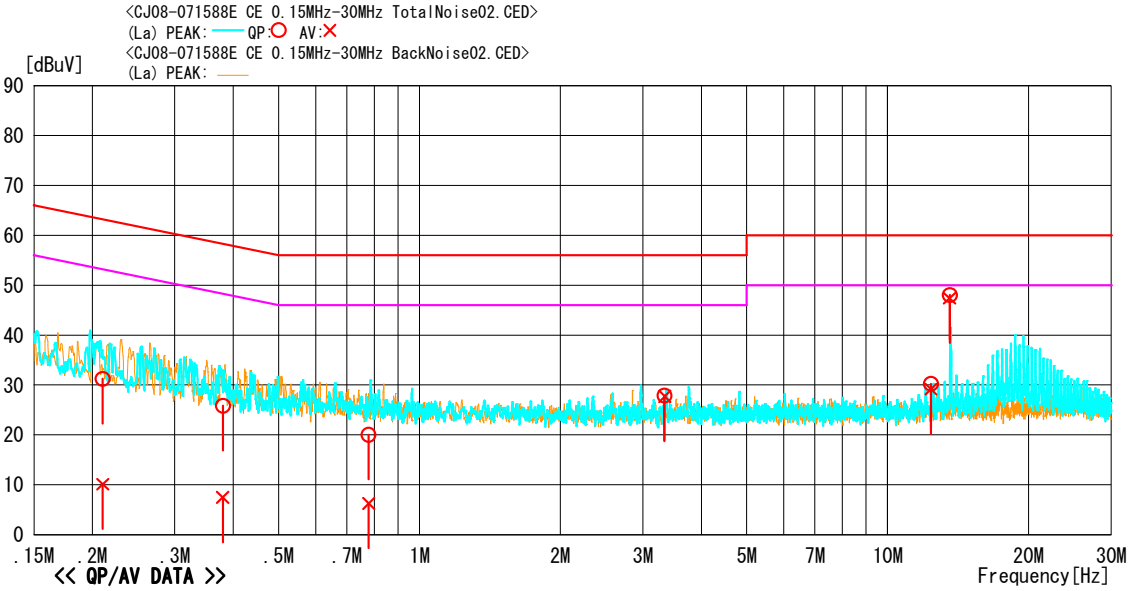
<<Conducted Emission>>

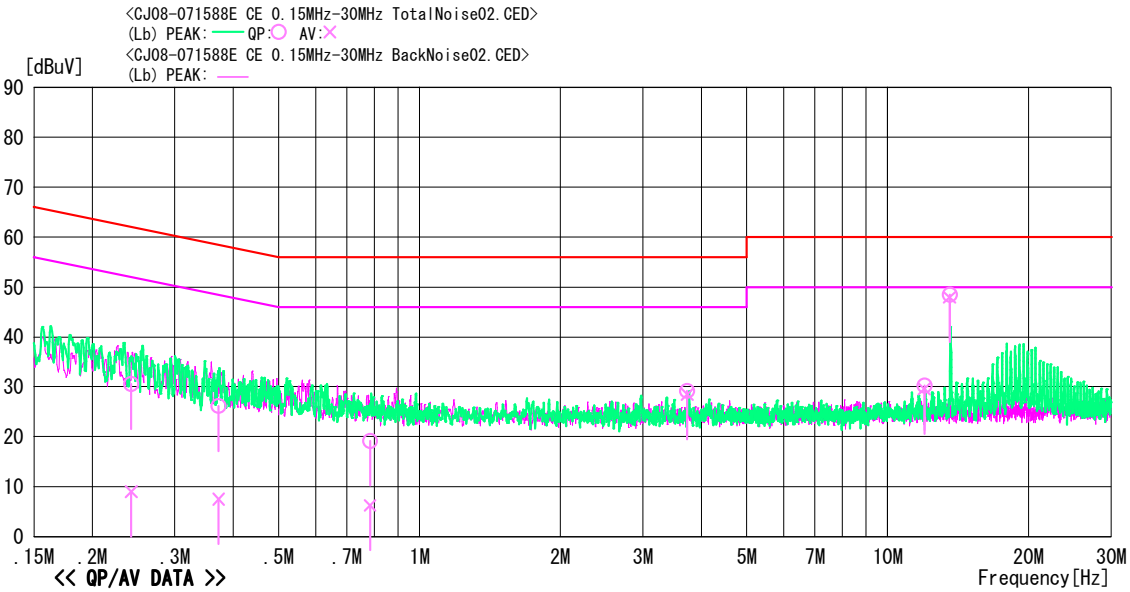
Cosmos Corporation Onoki Lab.
Date : 2009/04/07

Model Name	: TG-F321	Job No	: CJ08-071588E
Serial No.	: None	Temp/Humi	: 24℃/38%
Operator	: O. Itogawa	Condition	: Operated
Power Supply	: AC 120V, 60Hz	Remark	:

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

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





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5.1.4 Measured Data (Continued)

Measured Value Table

<<Conducted Emission>>

Cosmos Corporation Onoki Lab.
Date : 2009/04/07

Model Name : TG-F321
Serial No. : None
Operator : O.Itogawa
Power Supply : AC 120V, 60Hz

Job No : CJ08-071588E
Temp/Humi : 24℃/38%
Condition : Operated
Remark :

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

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

<< QP/AV DATA >>

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	0.21045	21.1	0.0	10.1	31.2	10.1	63.2	53.2	32.0	43.1	La	
2	0.38010	15.7	-2.6	10.1	25.8	7.5	58.3	48.3	32.5	40.8	La	
3	0.77900	9.9	-3.8	10.1	20.0	6.3	56.0	46.0	36.0	39.7	La	
4	3.33950	17.7	17.5	10.2	27.9	27.7	56.0	46.0	28.1	18.3	La	
5	12.37793	19.4	18.4	10.8	30.2	29.2	60.0	50.0	29.8	20.8	La	
6	13.55993	37.2	36.6	10.8	48.0	47.4	60.0	50.0	12.0	2.6	La	
7	0.24210	20.4	-1.1	10.1	30.5	9.0	62.0	52.0	31.5	43.0	Lb	
8	0.37225	16.0	-2.6	10.1	26.1	7.5	58.5	48.5	32.4	41.0	Lb	
9	0.78465	9.1	-3.9	10.1	19.2	6.2	56.0	46.0	36.8	39.8	Lb	
10	3.73350	19.0	18.3	10.2	29.2	28.5	56.0	46.0	26.9	17.5	Lb	
11	11.98493	19.6	18.8	10.7	30.3	29.5	60.0	50.0	29.8	20.5	Lb	
12	13.55993	37.8	37.2	10.7	48.5	47.9	60.0	50.0	11.5	2.1	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)

- Refer to test configuration figure 4.2.

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

9 kHz to 30 MHz

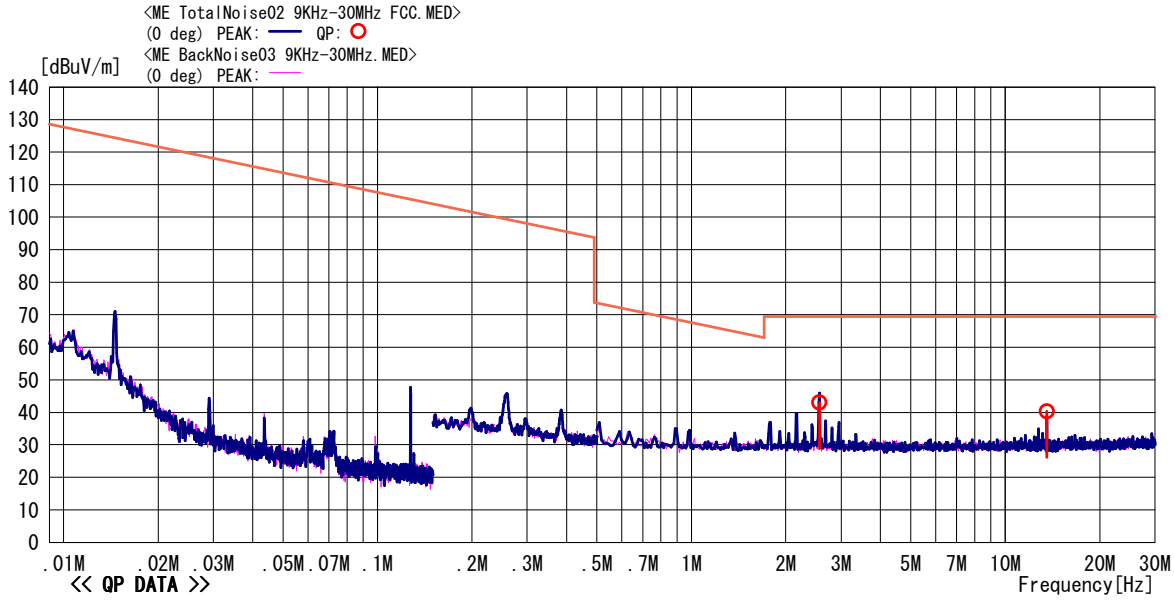
<<Electromagnetic Radiation>>

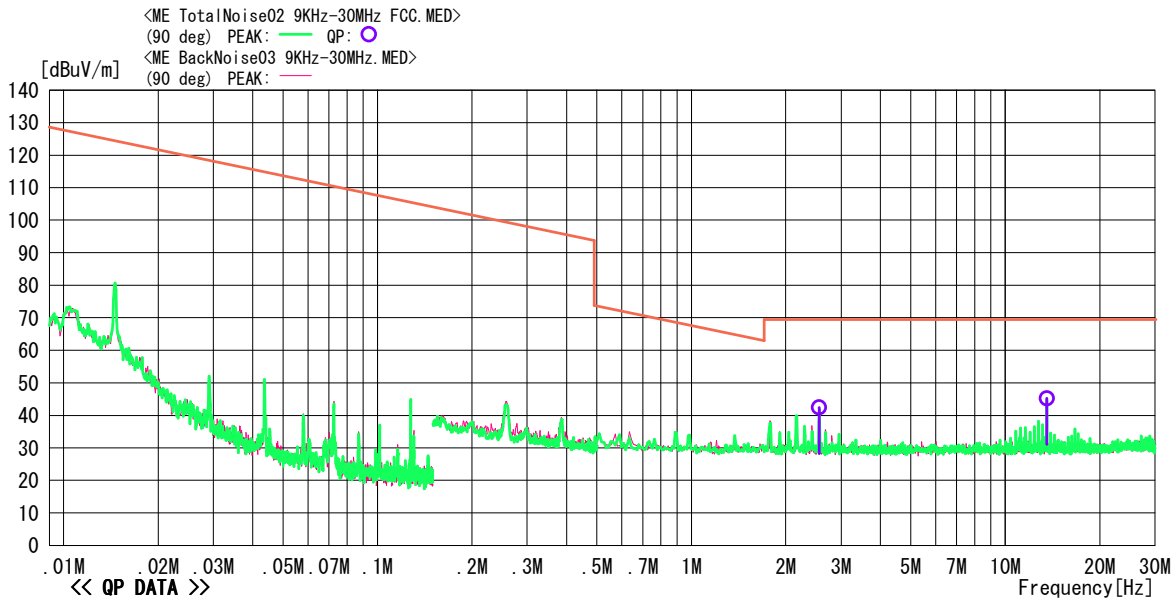
Cosmos Corporation Onoki Lab.

Model Name	: TG-F321	Job No.	: CJ08-071588E
Serial No.	: None	Temp./Humi.	: 23℃/39%
Operator	: O.Itogawa	Condition	: Operated
Power Supply	: DC5 V	Remark	:

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

LIMIT : FCC Part15 SubpartC 15.209 9KHz-30MHz





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5.2.4 Measured Data (Continued)

9 kHz to 30 MHz

<<Electromagnetic Radiation>>

Cosmos Corporation Onoki Lab.

Model Name	: TG-F321	Job No.	: CJ08-071588E
Serial No.	: None	Temp./Humi.	: 23℃/39%
Operator	: O.Itogawa	Condition	: Operated
Power Supply	: DC5 V	Remark	:

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

LIMIT : FCC Part15 SubpartC 15.209 9KHz-30MHz

<< QP DATA >>

No	Freq.	Reading	Ant.Fac	Loss	Result	Limit	Margin	Antenna	Angle	Comment
	[MHz]	[dBuV]	[dB/m]	[dB]	[dBuV/m]	[dBuV/m]	[dB]		[deg]	
1	2.55521	23.7	18.9	0.4	43.0	69.5	26.5	0deg	128	QP
2	13.56545	21.1	18.4	0.8	40.3	69.5	29.2	0deg	195	QP Fundamental Frequency
3	2.55421	23.1	18.9	0.4	42.4	69.5	27.1	90deg	203	QP
4	13.56515	26.0	18.4	0.8	45.2	69.5	24.3	90deg	275	QP Fundamental Frequency

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5.2.4 Measured Data (Continued)

30 MHz to 1 GHz

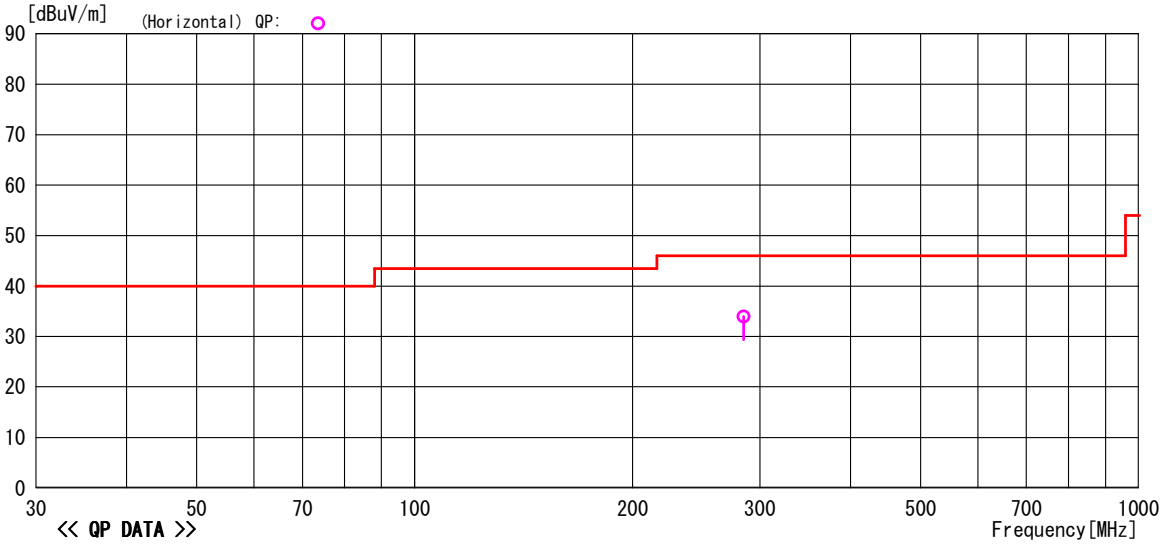
<<Radiated Emission>>

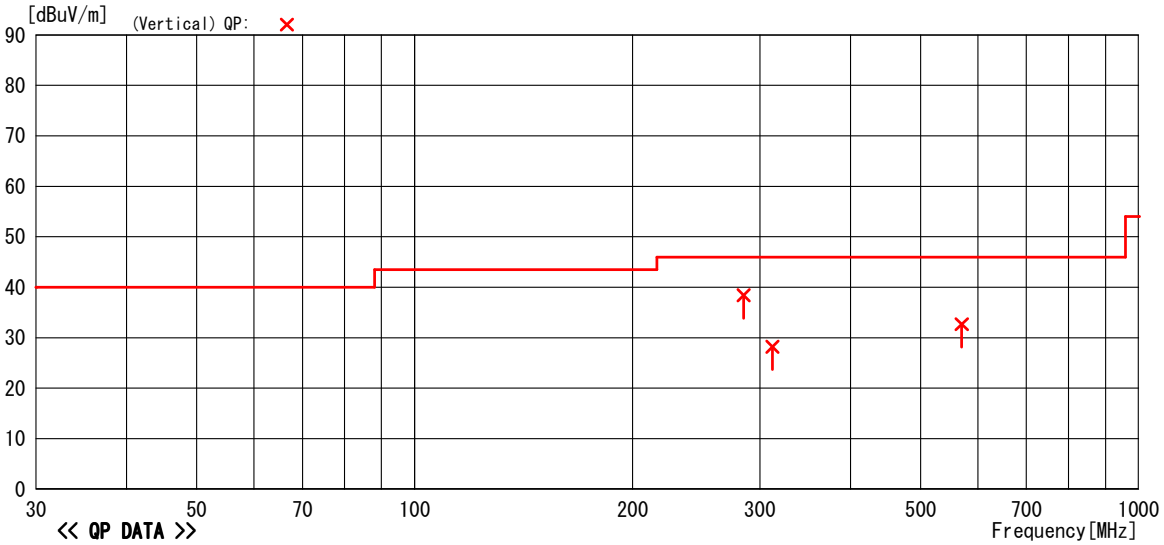
Cosmos Corporation Onoki Lab.

Model Name	: TG-F321	Job No	: CJ08-071588E
Serial No.	: None	Temp./Humi.	: 22℃/39%
Operator	: O.Itogawa	Condition	: Operated
Power Supply	: DC5 V	Remark	:

Memo : RBW:30M～1GHz(120kHz)

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





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5.2.4 Measured Data (Continued)

30 MHz to 1 GHz

<<Radiated Emission>>

Cosmos Corporation Onoki Lab.

Model Name : TG-F321
Serial No. : None
Operator : O.Itogawa
Power Supply : DC5 V

Job No : CJ08-071588E
Temp./Humi. : 22℃/39%
Condition : Operated
Remark :

Memo : RBW:30M～1GHz(120kHz)

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

<< QP DATA >>

No	Freq.	Reading	C.Fac	Result	Limit	Margin	Pola.	Height	Angle	Ant	Comment
	[MHz]	[dBuV]	[dB/m]	[dBuV/m]	[dBuV/m]	[dB]	[H/V]	[cm]	[deg]	Type	
1	284.845	35.5	-1.6	33.9	46.0	12.1	Hori.	120	257	BC	
2	284.835	40.0	-1.6	38.4	46.0	7.6	Vert.	193	323	BC	
3	311.939	34.3	-6.1	28.2	46.0	17.8	Vert.	174	318	LP	
4	569.684	35.2	-2.5	32.7	46.0	13.3	Vert.	100	120	LP	

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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 highest radiation from the equipment was recorded.
- The test receiver with Quasi Peak is in compliance with CISPR 16-1.
- The measurement was carried out in a thermostatic chamber. (-20℃～+50℃)
- 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 : February 24, 2009
Room temperature : 25℃
Relative humidity: 42%

【−15%V】

Frequency [MHz]	Polarization [°]	Correction Factor [dB]	Reading [dB μ V]	Peak Power [dB μ V/m]	Limit [dB μ V/m]	Margin[dB]
13.110	90	19.3	25.80	45.100	80.50	35.400
13.410	90	19.2	26.02	45.220	80.50	35.280
13.553	90	19.2	32.63	51.830	90.47	38.640
13.560	90	19.2	32.42	51.620	124.00	72.380
13.567	90	19.2	32.73	51.930	90.47	38.540
13.710	90	19.2	25.10	44.300	80.50	36.200
14.010	90	19.3	25.10	44.400	80.50	36.100

【±0%V 】

Frequency [MHz]	Polarization [°]	Correction Factor [dB]	Reading [dB μ V]	Peak Power [dB μ V/m]	Limit [dB μ V/m]	Margin[dB]
13.110	90	19.3	25.80	45.100	80.50	35.400
13.410	90	19.2	25.57	44.770	80.50	35.730
13.553	90	19.2	32.70	51.900	90.47	38.570
13.560	90	19.2	33.25	52.450	124.00	71.550
13.567	90	19.2	32.46	51.660	90.47	38.810
13.710	90	19.2	25.72	44.920	80.50	35.580
14.010	90	19.3	25.18	44.480	80.50	36.020

【+15%V 】

Frequency [MHz]	Polarization [°]	Correction Factor [dB]	Reading [dB μ V]	Peak Power [dB μ V/m]	Limit [dB μ V/m]	Margin[dB]
13.110	90	19.3	26.02	45.320	80.50	35.180
13.410	90	19.2	26.51	45.710	80.50	34.790
13.553	90	19.2	33.16	52.360	90.47	38.110
13.560	90	19.2	32.53	51.730	124.00	72.270
13.567	90	19.2	33.19	52.390	90.47	38.080
13.710	90	19.2	25.42	44.620	80.50	35.880
14.010	90	19.3	25.26	44.560	80.50	35.940

5.3.4 Measured Data (Continued)

3m distance

25℃

Date of testing : February 24, 2009
Room temperature : 25℃
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	19.3	25.42	44.720	80.50	35.780
13.410	90	19.2	25.95	45.150	80.50	35.350
13.553	90	19.2	31.28	50.480	90.47	39.990
13.560	90	19.2	31.08	50.280	124.00	73.720
13.567	90	19.2	31.08	50.280	90.47	40.190
13.710	90	19.2	25.95	45.150	80.50	35.350
14.010	90	19.3	25.87	45.170	80.50	35.330

【±0%V 】

Frequency [MHz]	Polarization [°]	Correction Factor [dB]	Reading [dBμV]	Peak Power [dBμV/m]	Limit [dBμV/m]	Margin[dB]
13.110	90	19.3	25.34	44.640	80.50	35.860
13.410	90	19.2	26.30	45.500	80.50	35.000
13.553	90	19.2	31.89	51.090	90.47	39.380
13.560	90	19.2	31.63	50.830	124.00	73.170
13.567	90	19.2	31.63	50.830	90.47	39.640
13.710	90	19.2	25.95	45.150	80.50	35.350
14.010	90	19.3	25.65	44.950	80.50	35.550

【+15%V 】

Frequency [MHz]	Polarization [°]	Correction Factor [dB]	Reading [dBμV]	Peak Power [dBμV/m]	Limit [dBμV/m]	Margin[dB]
13.110	90	19.3	25.57	44.870	80.50	35.630
13.410	90	19.2	25.72	44.920	80.50	35.580
13.553	90	19.2	32.04	51.240	90.47	39.230
13.560	90	19.2	31.24	50.440	124.00	73.560
13.567	90	19.2	31.24	50.440	90.47	40.030
13.710	90	19.2	25.34	44.540	80.50	35.960
14.010	90	19.3	25.18	44.480	80.50	36.020

5.3.4 Measured Data (Continued)

3m distance

+50℃

Date of testing : February 24, 2009
Room temperature : 25℃
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	19.3	25.18	44.480	80.50	36.020
13.410	90	19.2	26.16	45.360	80.50	35.140
13.553	90	19.2	31.74	50.940	90.47	39.530
13.560	90	19.2	32.77	51.970	124.00	72.030
13.567	90	19.2	32.67	51.870	90.47	38.600
13.710	90	19.2	26.98	46.180	80.50	34.320
14.010	90	19.3	25.42	44.720	80.50	35.780

【±0%V 】

Frequency [MHz]	Polarization [°]	Correction Factor [dB]	Reading [dBμV]	Peak Power [dBμV/m]	Limit [dBμV/m]	Margin[dB]
13.110	90	19.3	25.42	44.720	80.50	35.780
13.410	90	19.2	26.16	45.360	80.50	35.140
13.553	90	19.2	33.28	52.480	90.47	37.990
13.560	90	19.2	33.25	52.450	124.00	71.550
13.567	90	19.2	33.09	52.290	90.47	38.180
13.710	90	19.2	26.16	45.360	80.50	35.140
14.010	90	19.3	25.34	44.640	80.50	35.860

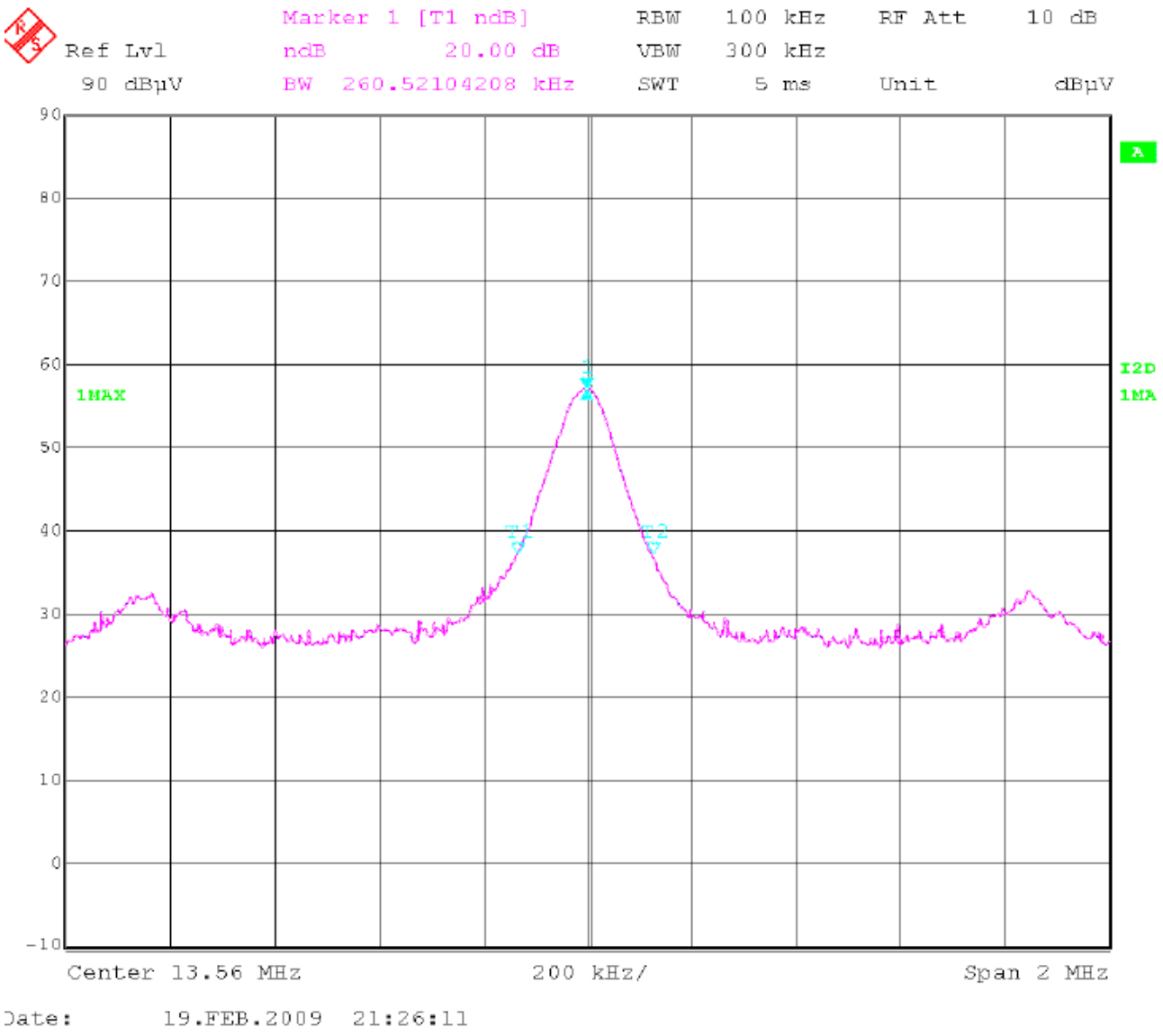
【+15%V 】

Frequency [MHz]	Polarization [°]	Correction Factor [dB]	Reading [dBμV]	Peak Power [dBμV/m]	Limit [dBμV/m]	Margin[dB]
13.110	90	19.3	25.72	45.020	80.50	35.480
13.410	90	19.2	25.95	45.150	80.50	35.350
13.553	90	19.2	33.53	52.730	90.47	37.740
13.560	90	19.2	33.53	52.730	124.00	71.270
13.567	90	19.2	33.22	52.420	90.47	38.050
13.710	90	19.2	25.87	45.070	80.50	35.430
14.010	90	19.3	25.57	44.870	80.50	35.630

5.3.4 Measured Data (Continued)

3m distance

Carrier Spectrum (20 dB BW)



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 or 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

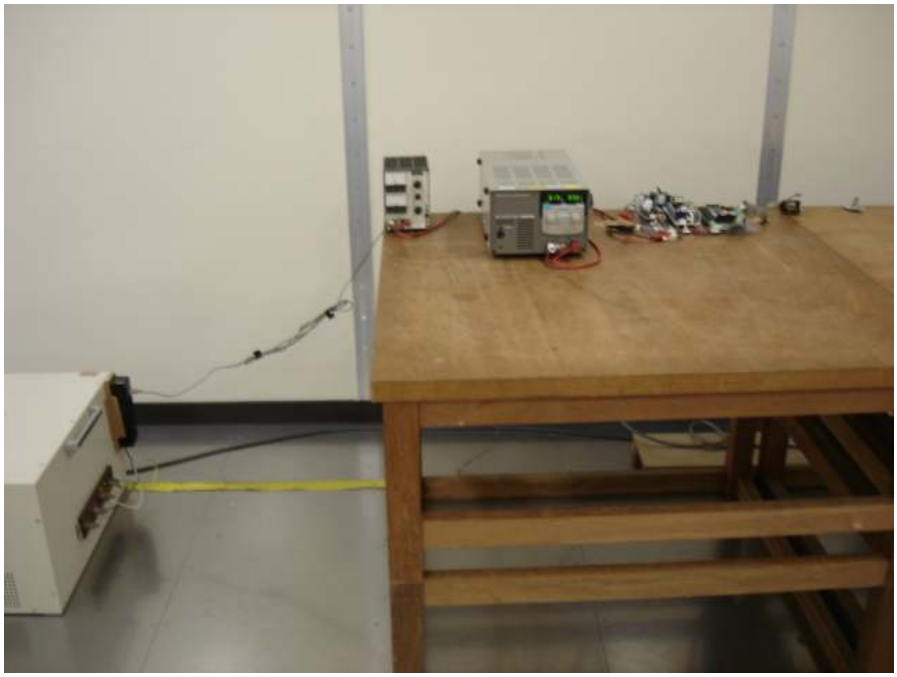
Date of testing: April 3, 2009
Room temperature: 20℃
Relative humidity: 41%

Temp [℃]	P/S [VAC]	Frequency [Hz]	Limit [±Hz]	Offset from the CF [Hz]	Limit [%]	Reslut [%]
Center Frequency		13,560,000				
−20	4.25	13560441	1356.00	441	±0.01	0.003
−20	5.00	13560441	1356.00	441	±0.01	0.003
−20	5.75	13560441	1356.00	441	±0.01	0.003
20	4.25	13560425	1356.00	425	±0.01	0.003
20	5.00	13560425	1356.00	425	±0.01	0.003
20	5.75	13560425	1356.00	425	±0.01	0.003
50	4.25	13560399	1356.00	399	±0.01	0.003
50	5.00	13560399	1356.00	399	±0.01	0.003
50	5.75	13560399	1356.00	399	±0.01	0.003

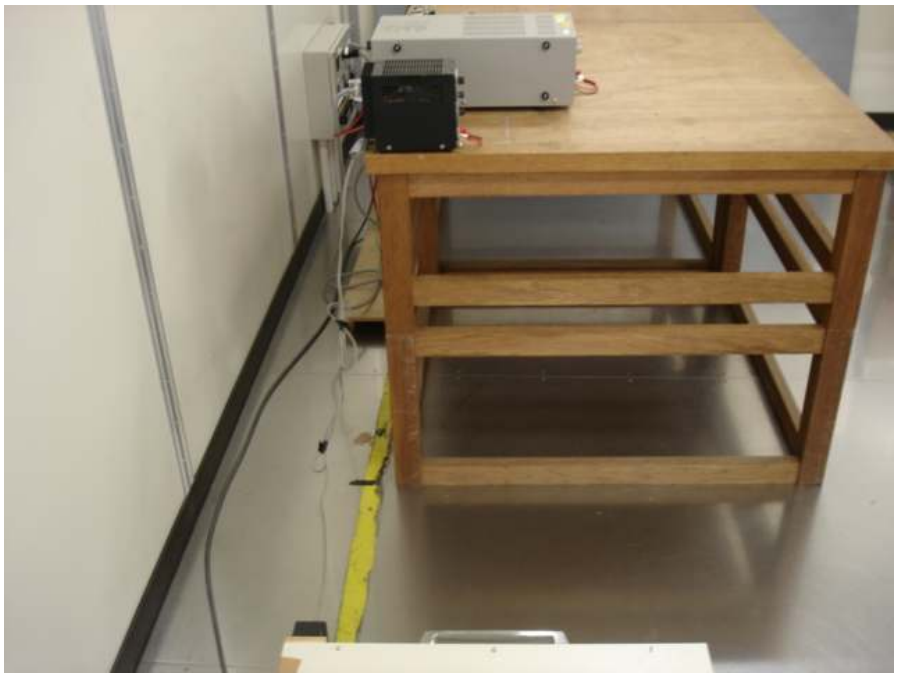
6. Photos

6.1 Setup Photo (AC Power Line Conducted Emission)

Front View

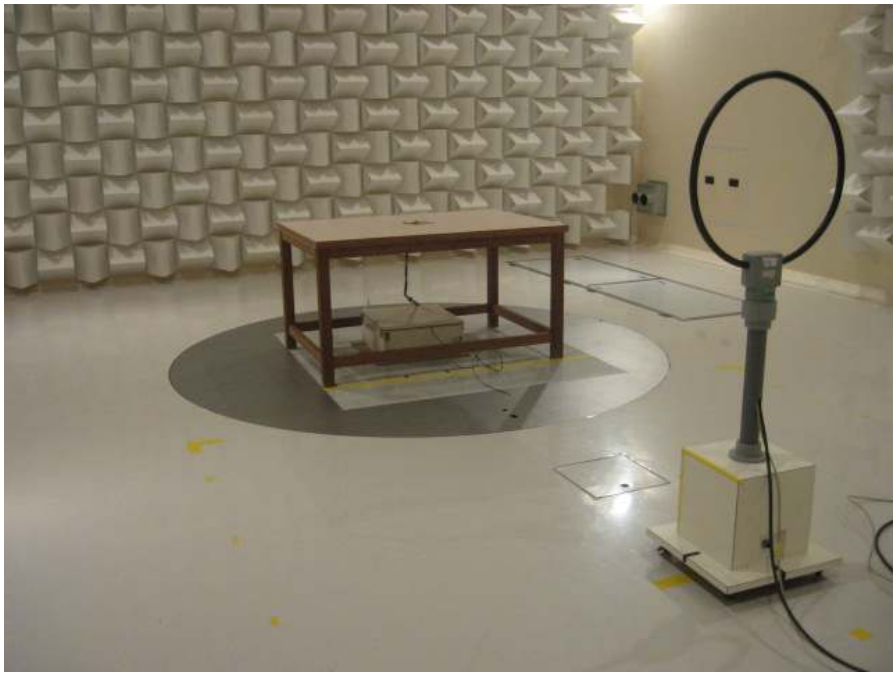


Side View

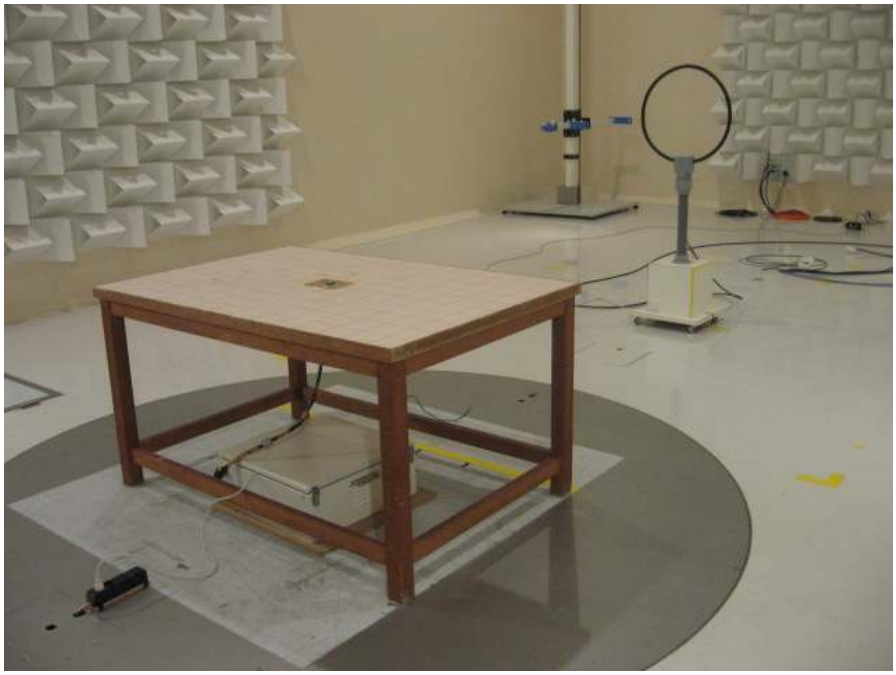


6.2 Setup Photo
(Radiated Emission, Maximum Carrier Output power, Frequency Tolerance)

Front View (Below 30MHz)

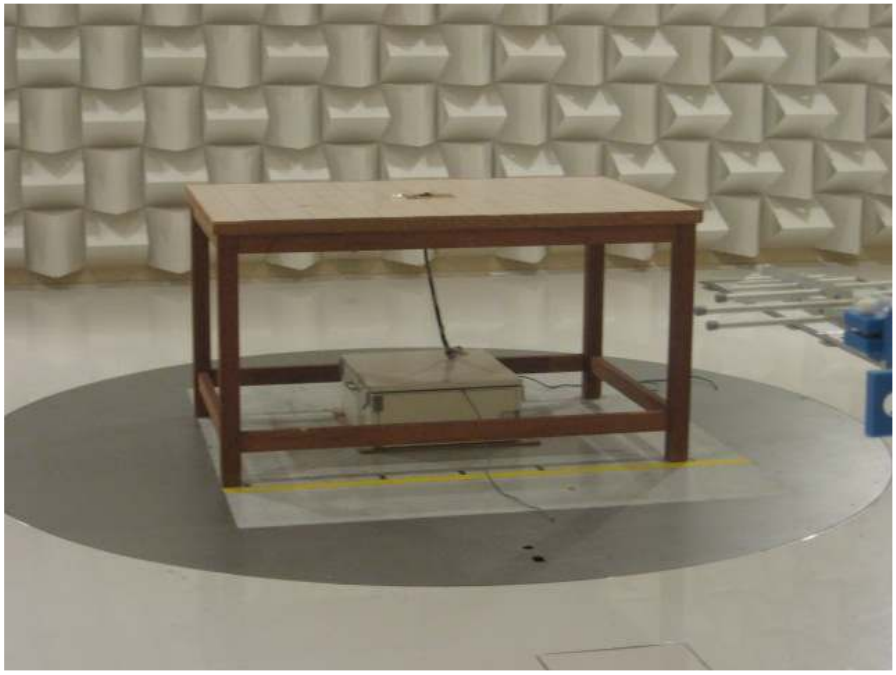


Rear View (Below 30MHz)



6.2 Setup Photo (Continued)
(Radiated Emission)

Front View (Above 30 MHz)



Rear View (Above 30 MHz)

7. List of Test Measurement Instruments

7.1 Conducted Emission Measurement

Instruments	Manufacturer	Model / Type	Serial No.	Calibrated Date/Until
Spectrum Analyzer	ADVANTEST CORPORATION	R3132	140501174	July,2008 July,2010
EMI Test Receiver	ROHDE& SCHWARZ	ESCS30	100335	August,2008 August,2009
Artificial-Mains Network	KYORITSU CORPORATION	KNW-341C	8-1659-1	July,2008 July,2009
Transient Limiter	AGILENT TECHNOLOGIES	11947A	3107A03745	October,2008 October,2009
RF Selector	Techno Science Japan Corp.	RFM-E221	3148	Confirmed Before Test

7.2 Radiated Emission, Maximum Carrier Output power, Frequency Tolerance Measurement

Instruments	Manufacturer	Model / Type	Serial No.	Calibrated Date/Until
Programmable AC/DCPower Source	NF Corporation	ES18000W	425779	Confirmed Before Test
EMI Test Receiver	ROHDE& SCHWARZ	ESIB40	100211	February,2009 February,2010
Biconical Antenna (30to 300MHz)	SCHWARZBECK	VHBB9124(Balun) BBA9106(Elements)	311	September,2007 September,2009
Log.-Periodic Antena (300MHz to1GHz)	SCHWARZBECK	UHALP9108A	645	September,2007 September,2009
Loop Antenna (0.15 to 30MHz)	ROHDE& SCHWARZ	HFH2-Z2	131	August,2008 August,2009