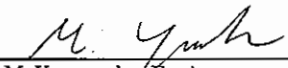
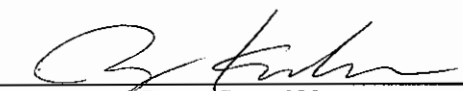


MEASUREMENT/TECHNICAL REPORT
FCC Part 15 Subpart CIssued: December 14th, 2007

Name and Address of the Applicant:	Konicaminolta Sensing, Inc. 3-91, Daisen, Nishimachi, Sakai-shi, Osaka 590-8551 Japan	
Test Item:	Spectrophotometer / AC Adapter	
Identification:	CM-700d / CM-A305	
Serial No.:	10010007 / G264	
Sample No.:	1	
FCC ID:	---	
Sample Receipt Date:	November 12 th , 2007	
Test Specification:	CFR 47 Part.15 Subpart C 15.247	
Date of Testing:	December 4 th - 13 th , 2007	
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:	 M. Yamanaka, Engineer	December 14 th , 2007 Date
Reviewed by:	 Y. Kawahara, Deputy General Manager	December 14 th , 2007 Date
Notes:	<ol style="list-style-type: none"> 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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2. General Information

2.1 Test Methodology

All measurement subject to the present report was 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 firm has been filed since November 2, 2004 under CFR 47 Part.2.948.

2.3 Traceability

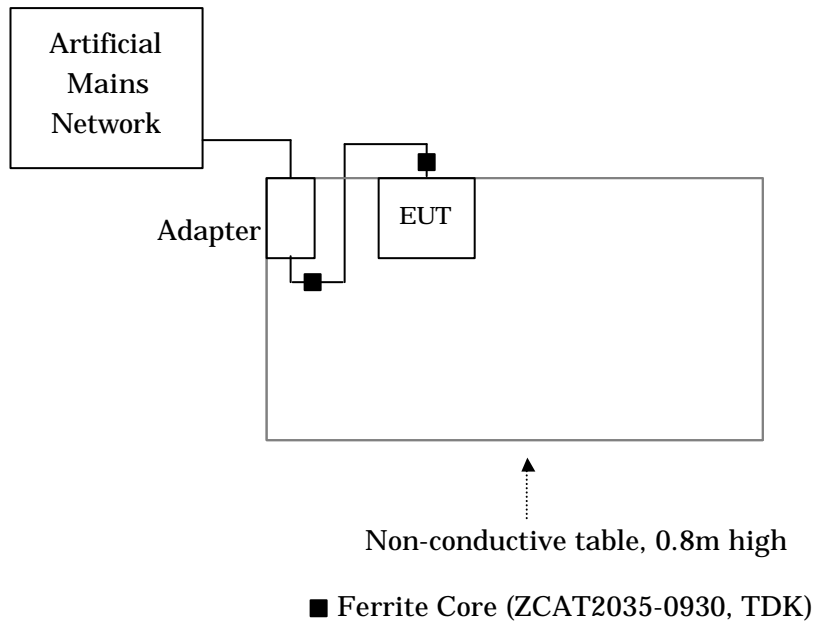
The calibration of measurement equipment used in the test subject to the present report is designed and operated to ensure that the measurement is traceable to national standards of measurement or equivalent abroad.

3. Summary of Test Results

Section	Test Item	Limit	Result
15. 207	AC Power Conducted Emission	See 5.1.2	Pass
15. 247(a)(1)	Spectrum Bandwidth of Frequency Hopping Spread Spectrum System	< 1MHz if using less than 15 non-overlapping channels	Pass
15. 247(a)(1)	Channel Separation	> 2/3 of 20dB BW for systems with output power < 125mW	Pass
15. 247(a)(1)	Number of Channels	> 15 channels	Pass
15. 247(a)(1)	Time of Occupancy	< 0.4 sec in 30 sec period	Pass
15. 247(b)	Maximum Peak Output Power	Max. 30dBm	Pass
15. 247(c)	Transmitter Radiated Emissions	20dB less than the peak value	Pass
15. 247(c)	Band Edge Measurement	See 5.7.2	Pass

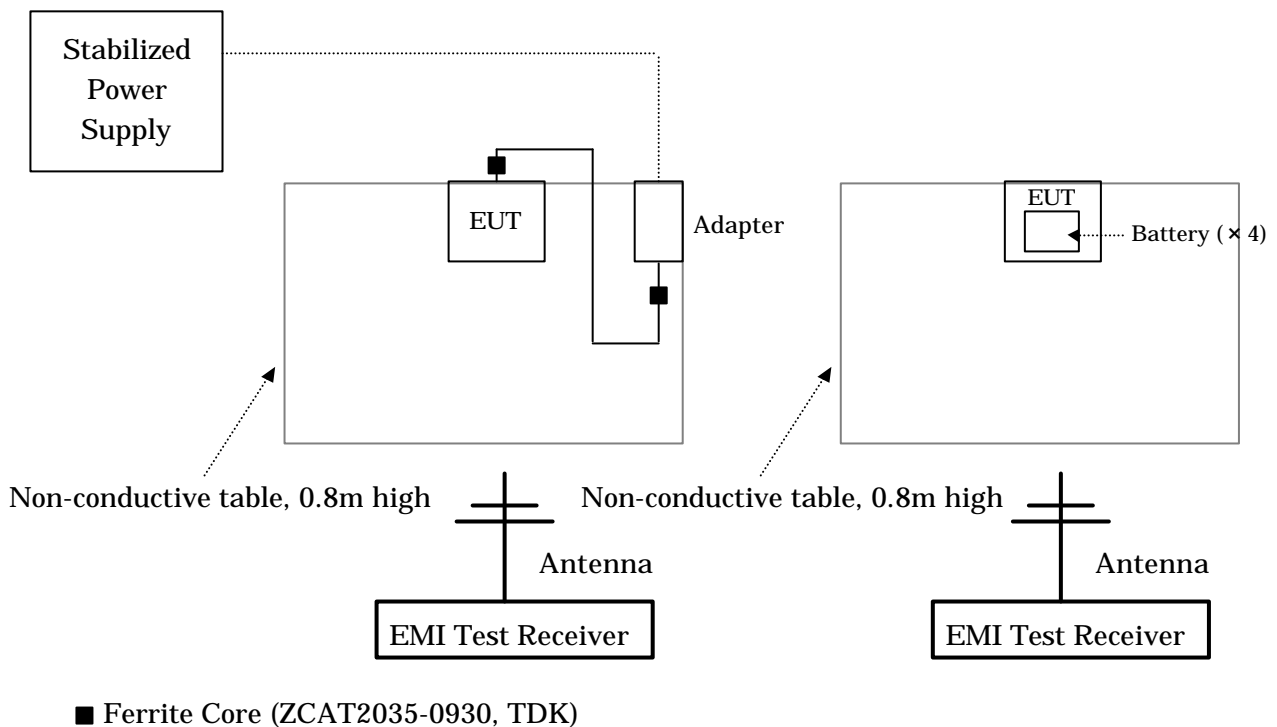
4. Test Configuration

4.1 15. 207 AC Power Conducted Emission in Shield Room

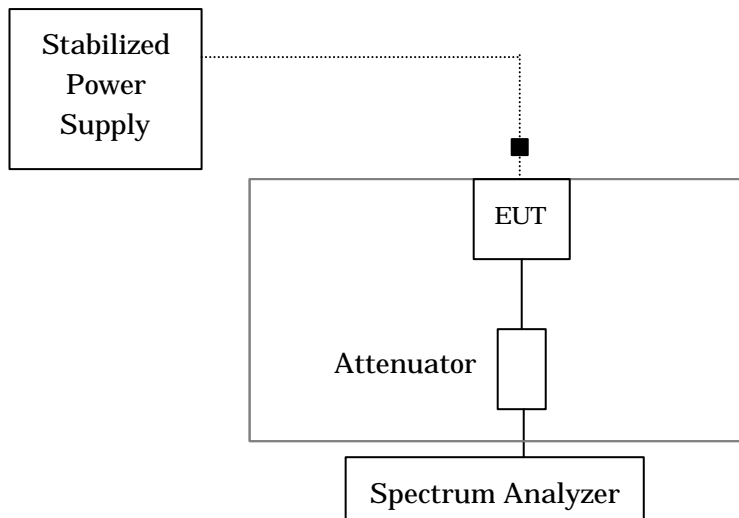


4.2 15. 247(c) Transmitter Radiated Emissions and Band Edge (Radiated) in 3m Anechoic Chamber

With AC Adapter

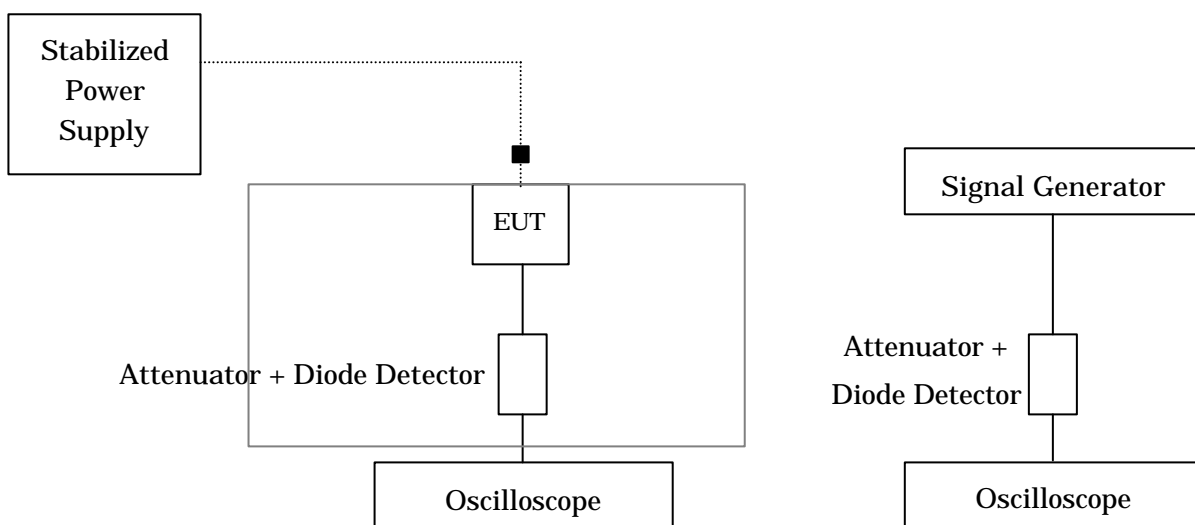


4.3 All Other Test Items (Except Maximum Peak Output Power)



■ Ferrite Core (ZCAT2035-0930, TDK)

4.4 Maximum Peak Output Power



■ Ferrite Core (ZCAT2035-0930, TDK)

4.5 Test Mode

In all test configurations above, EUT makes continuous RF transmitting with maximum power.

All conducted measurement is performed with an external stabilized power supply voltage varied between 85% and 115% of the nominal rated supply voltage in accordance with the section 15.31 (e) of the part.

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) is used.
- EUT's dedicated AC adapter connected to Artificial Mains Network (AMN).
- Other power cord of support equipment is connected to another AMN to isolate its emission from the measured emission of EUT.
- The measuring port of AMN for support equipment is terminated by the 500
- Activate the EUT System and run the software prepared for the test, if necessary.
- See test configuration figure 4.1.

5.1.2 Minimum Standard

(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.

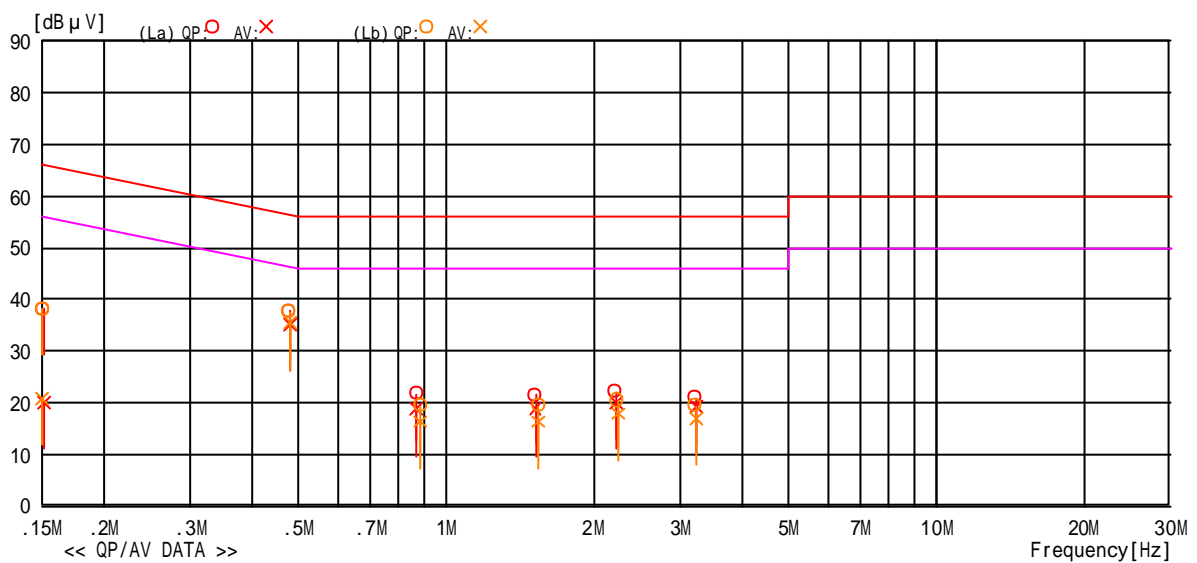
Uncertainty of measurement : ± 2.26 dB
 Temperature, Humidity : 23°C, 40%

5.1.4 Measured Data

Measured Value Table

Model Name : CM-700d
 Serial No. : 10010003
 Operator : M.Yamanaka
 Power Supply : AC 120V,60Hz
 Job No : CJ07-060626E
 Temp/Humi : 23 /40%
 Condition : CH39 (2440MHz)
 Remark : Firm Ver.1.0005BT
 Memo : RBW:9kHz(150k-30MHz)

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



No	Freq. [MHz]	Reading Level		C.Fac	Results		Limit		Margin		Phase	Comment
		QP	AV		QP	AV	QP	AV	QP	AV		
		[dBμV]	[dBμV]		[dBμV]	[dBμV]	[dBμV]	[dBμV]	[dB]	[dB]		
1	0.15100	28.0	9.8	10.2	38.2	20.0	65.9	55.9	27.7	35.9	La	
2	0.47885	27.6	25.2	10.1	37.7	35.3	56.4	46.4	18.7	11.1	La	
3	0.87100	11.6	8.6	10.1	21.7	18.7	56.0	46.0	34.3	27.3	La	
4	1.51920	11.4	8.7	10.1	21.5	18.8	56.0	46.0	34.5	27.2	La	
5	2.22200	12.0	10.0	10.1	22.1	20.1	56.0	46.0	33.9	25.9	La	
6	3.23200	10.7	8.9	10.2	20.9	19.1	56.0	46.0	35.1	26.9	La	
7	0.15000	28.0	10.6	10.2	38.2	20.8	66.0	56.0	27.8	35.2	Lb	
8	0.47940	27.5	25.4	10.1	37.6	35.5	56.3	46.3	18.7	10.8	Lb	
9	0.88680	9.3	6.2	10.1	19.4	16.3	56.0	46.0	36.6	29.7	Lh	
10	1.54200	9.3	6.2	10.1	19.4	16.3	56.0	46.0	36.6	29.7	Lb	
11	2.23610	10.3	7.8	10.1	20.4	17.9	56.0	46.0	35.6	28.1	Lh	
12	3.22450	9.1	6.9	10.2	19.3	17.1	56.0	46.0	36.7	28.9	Lb	

5.2 15. 247(a)(1) Spectrum Bandwidth and Channel Separation of Frequency Hopping Spread Spectrum System

5.2.1 Setting Remarks

- The both side of 20dB down value from peak power are measured by using delta-maker function of the spectrum analyzer.
- The spectrum analyzer is set-up as following;

/// Frequency Span	:	10 MHz
/// Resolution bandwidth	:	30 kHz
/// Video bandwidth	:	30 kHz
/// Sweep	:	Auto
/// Detector function	:	Peak
/// Trace Mode	:	Max Hold

- See test configuration figure 4.3.

5.2.2 Minimum Standard

The maximum permissible 20dB bandwidth is 1MHz, unless more than 15 non-overlapping channels are employed.

Frequency hopping systems operating in the 2402-2480 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.

5.2.3 Result

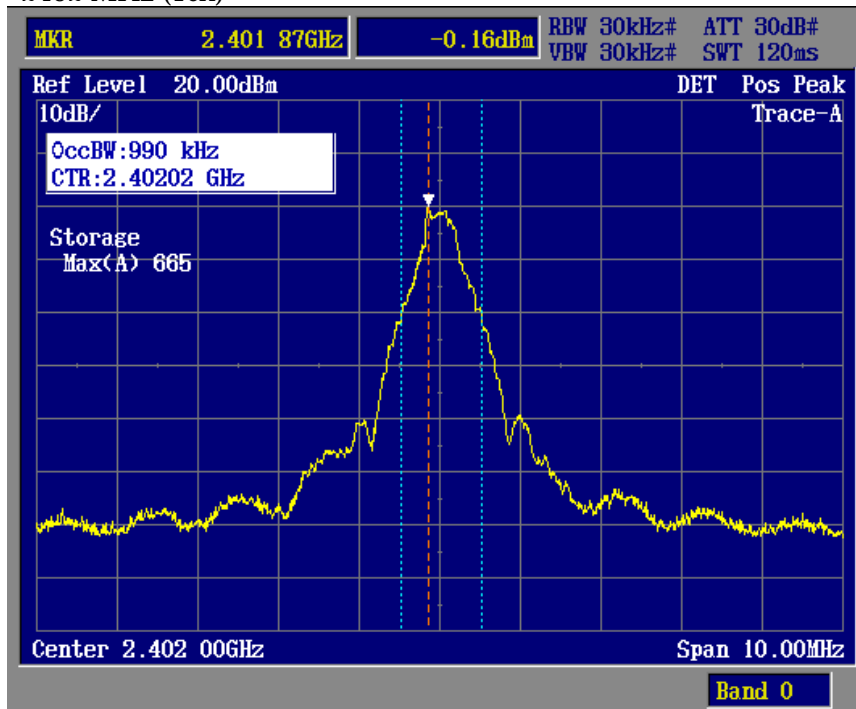
EUT complies with the requirement.

Uncertainty of measurement	:	± 1.2 dB
Temperature, Humidity	:	23°C, 40%

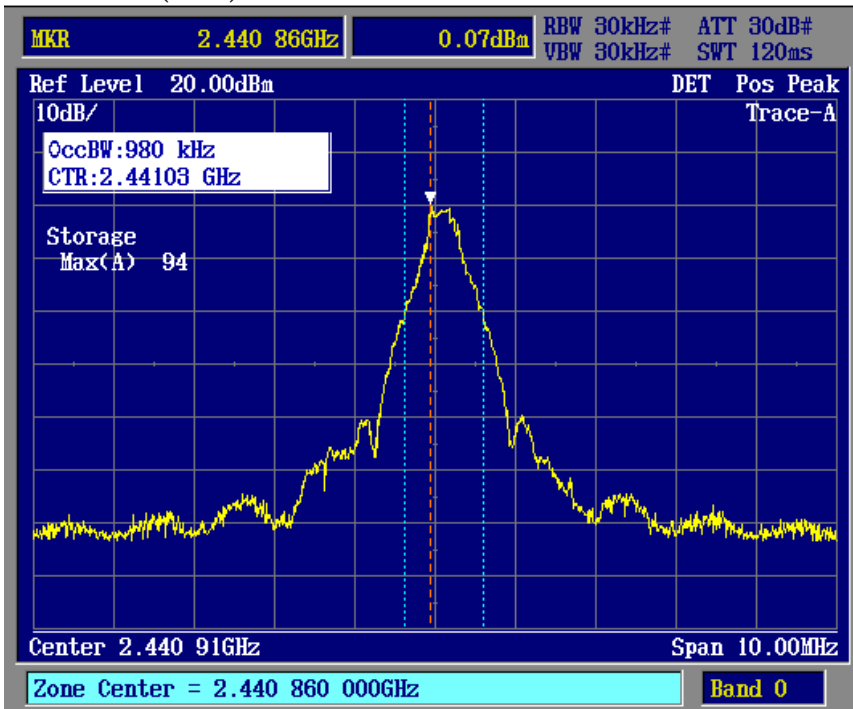
5.2.4 Measured Data

Frequency (MHz)	Measured Bandwidth (kHz)	Limit (MHz)
20 dB band width		
2402 (1ch)	990	< 1
2441 (39ch)	980	< 1
2480 (78ch)	990	< 1
Channel separation		
Hopping channel	835	

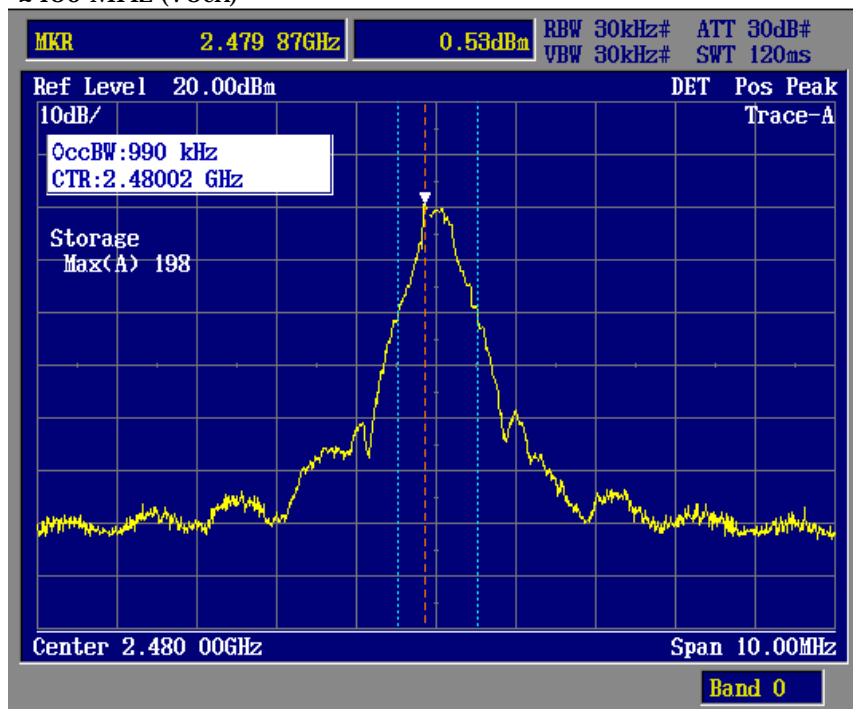
2402 MHz (1ch)



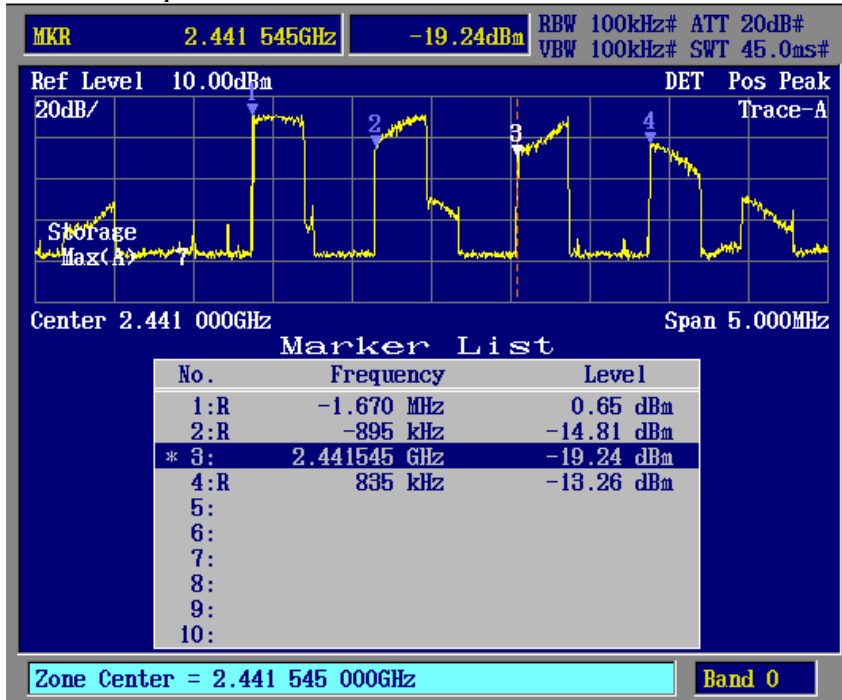
2441 MHz (39ch)



2480 MHz (78ch)



Channel Separation



5.3 15. 247(b) Maximum Peak Output Power

5.3.1 Setting Remarks

- See test configuration figure 4.4.
- The maximum peak output power is measured as following;
 1. The diode detector is inserted between EUT and the oscilloscope.
 2. The oscilloscope is used to read the peak response of the detector.
 3. Replaced EUT by the signal generator (SG).
 4. Adjusted the frequency of SG to the fundamental frequency.
 5. Adjusted the amplitude of SG to be the same peak recorded in 2.
- The oscilloscope is set-up as following;

∞ Voltage level range	: 10 mV / Div
∞ Sampling time	: 1.00GS / s
∞ Function	: Peak search

5.3.2 Minimum Standard

The maximum peak output power shall not exceed 1 watt. If transmitting antennas of directional gain greater than 6 dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

5.3.3 Result

EUT complies with the requirement.

Uncertainty of measurement result: ± 0.5 dB
Temperature, Humidity : 25°C, 40%

5.3.4 Measured Data

(Normal Rated Voltage, 5.0 VDC)

Frequency (MHz)	Peak Power (dBm)	Limit (dB)	Margin (dB)
2402 (1ch)	2.6	30	27.4
2441 (39ch)	2.95	30	27.05
2480 (78ch)	3.44	30	26.56

(High-varied voltage, 5.75 VDC)

Frequency (MHz)	Peak Power (dBm)	Limit (dB)	Margin (dB)
2402 (1ch)	2.59	30	27.41
2441 (39ch)	2.94	30	27.06
2480 (78ch)	3.46	30	26.54

(Low-varied voltage, 4.25 VDC)

Frequency (MHz)	Peak Power (dBm)	Limit (dB)	Margin (dB)
2402 (1ch)	2.58	30	27.42
2441 (39ch)	2.92	30	27.08
2480 (78ch)	3.42	30	26.58

5.4 15. 247(c) Transmitter Radiated Emissions (Conducted)**5.4.1 Setting Remarks**

- EUT directly connects to the spectrum analyzer via calibrated coaxial cable and a suitable attenuator.
- The Spectrums are scanned from the lowest generated frequency of EUT up to the 10th harmonics by using the spectrum analyzer.
- The spectrum analyzer is set-up as following;

/ / Resolution bandwidth	: 100 kHz
/ / Video bandwidth	: 100 kHz
/ / Sweep	: Auto
/ / Detector function	: Peak
/ / Trace Mode	: Max Hold

- See test configuration figure 4.3.

5.4.2 Minimum Standard

(d) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required.

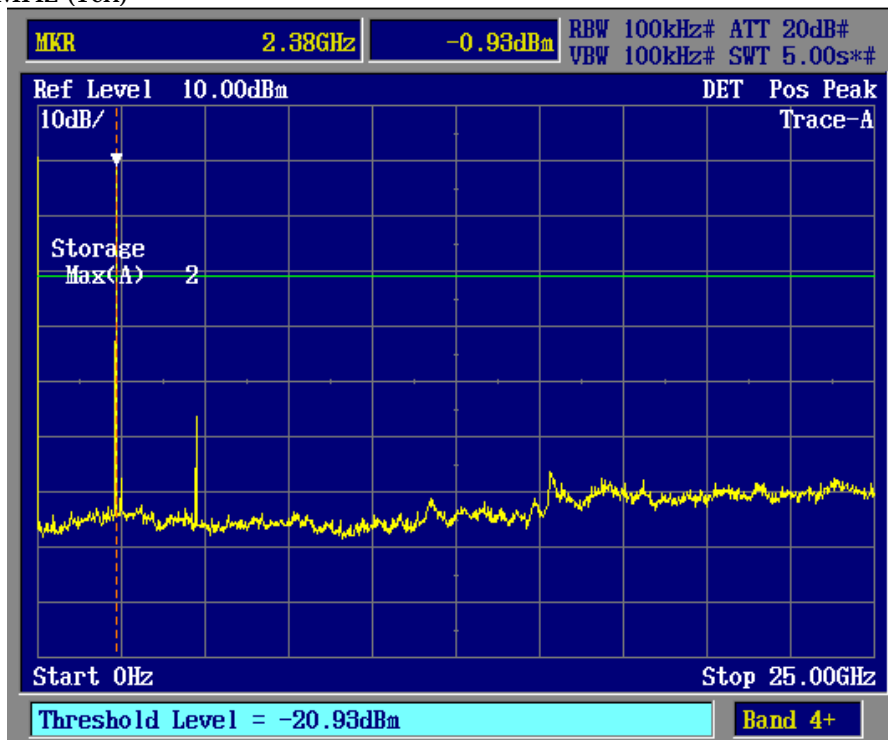
5.4.3 Result

EUT complies with the requirement.

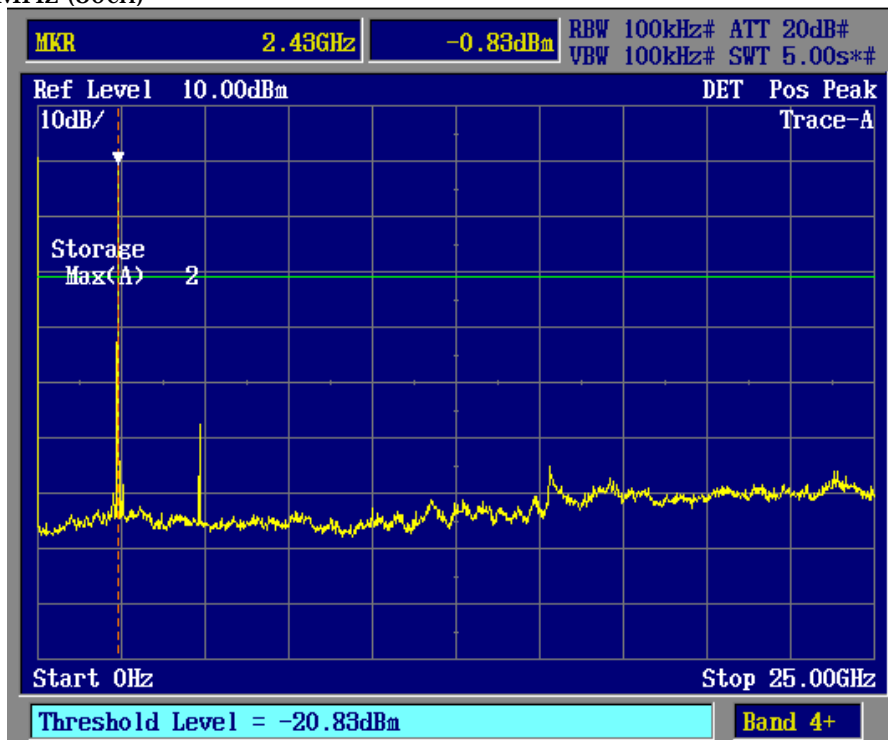
Uncertainty of measurement result: ± 0.8 dB
Temperature, Humidity : 23°C, 40%

5.4.4 Measured Data (No emission exceeding the 20dB limit was found)

2402 MHz (1ch)



2441 MHz (39ch)



2480 MHz (78ch)



5.5 15. 247(c) Transmitter Radiated Emissions (Radiated)

5.5.1 Setting Remarks

- The data lists in “5.5.4 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 30MHz to 25 GHz (as 10th harmonics), the Electric Field Strength is measured in accordance with ANSI C63.4: 2003 and CISPR22: 1997.
- The test setup is made in accordance with ANSI C63.4: 2003.
- The antenna is measured at 1-4m height.
- The EUT is placed on the non-conductive table in the center of turntable. The height of this table is 0.8m.
- The measurement is carried out with both horizontal and vertical antenna polarization.
- The highest radiation from the equipment is recorded.
- By varying the configuration of the test sample and the cable routing, it is attempted to maximize the emission.
- The test receiver with Quasi Peak and Average detector is in compliance with CISPR 16-1:1993.
- The spectrum analyzer is set-up as following;

Note: Angle 1~3 : Refer to page 47 and 48 Appendix A

(Frequency range : 30 - 1000 MHz)

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

(Frequency range : Above 1000 MHz)

- ☞ Resolution bandwidth : 1 MHz
- ☞ Video bandwidth : 1 MHz
- ☞ Detector function : Peak
- ☞ Trace Mode : Max Hold

- EMI Test Receiver analyzer is set-up as following;

- ☞ IF bandwidth : 120 kHz (Quasi-Peak Detector)
- ☞ IF bandwidth : 1 MHz (Average Detector)

- See test configuration figure 4.2.
- Measurement distance : 3m

Note: The worst data is attached (Page 21 to 32).

5.5.2 Minimum Standard

In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

5.5.3 Result

EUT complies with the requirement.

Uncertainty of measurement result: ± 3.28 dB

Temperature, Humidity : See each data table

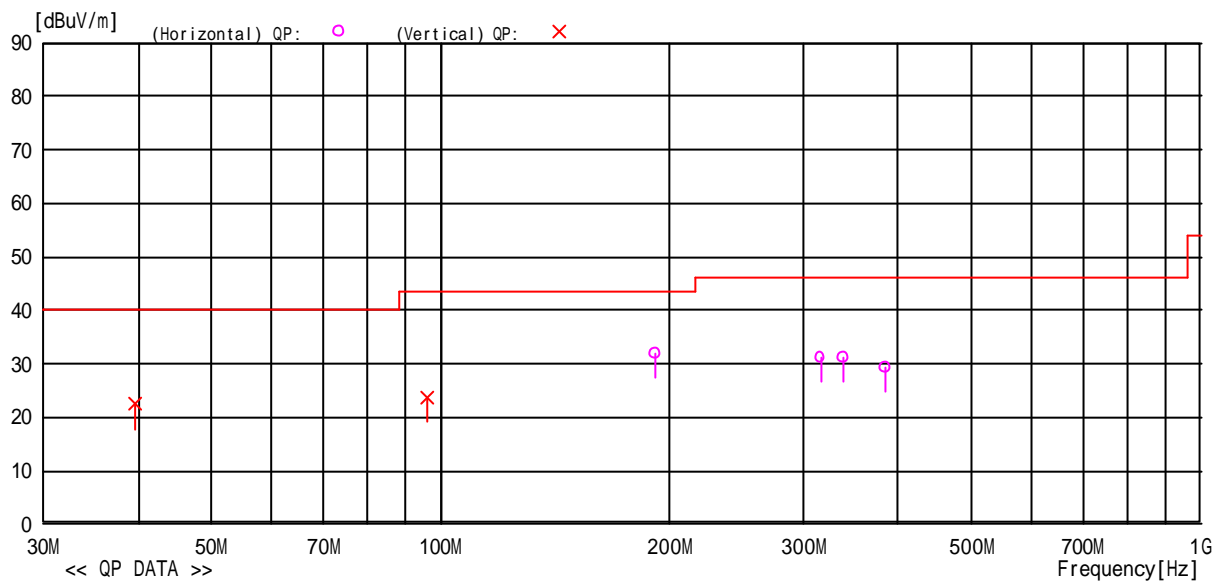
5.4.4 Measured Data

30MHz to 1GHz, Channel 1

Model Name : CM-700d
 Serial No. : 10010003
 Operator : M. Yamanaka
 Power Supply : AC120V, 60Hz
 Memo : RBW: 30M ~ 1GHz(120kHz)

Job No : CJ07-060626E
 Temp./Humi. : 22 / 42%
 Condition : CH01 (2402MHz)
 Remark : Angle 1

LIMIT : FCC 15.209 3m



No	Freq.	Reading	C.Fac	Result	Limit	Margin	Pola.	Height	Angle	Ant
	[MHz]	[dBuV]	[dB/m]	[dBuV/m]	[dBuV/m]	[dB]	[H/V]	[cm]	[deg]	Type
1	192.008	39.5	-7.7	31.8	43.5	11.7	Hori.	180	265	BC
2	315.859	36.9	-5.8	31.1	46.0	14.9	Hori.	100	220	LP
3	338.708	36.5	-5.3	31.2	46.0	14.8	Hori.	100	208	LP
4	384.061	33.9	-4.5	29.4	46.0	16.6	Hori.	100	206	LP
5	39.623	34.7	-12.3	22.4	40.0	17.6	Vert.	100	175	BC
6	95.802	37.3	-13.8	23.5	43.5	20.0	Vert.	100	110	RC

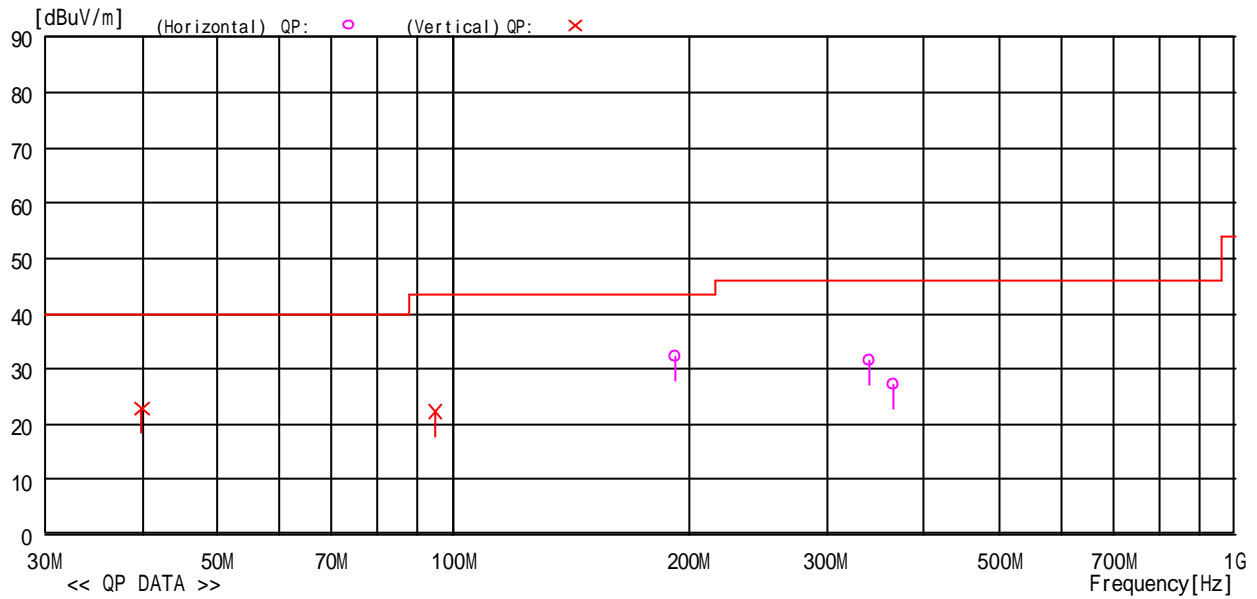
30MHz to 1GHz, Channel 39

Model Name : CM-700d
 Serial No. : 10010003
 Operator : M.Yamanaka
 Power Supply : AC120V,60Hz

Job No : CJ07-060626E
 Temp./Humi. : 22 /42%
 Condition : CH39 (2441MHz)
 Remark : Angle 1

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

LIMIT : FCC 15.209 3m



No	Freq.	Reading	C.Fac	Result	Limit	Margin	Pola.	Height	Angle	Ant
	[MHz]	[dBuV]	[dB/m]	[dBuV/m]	[dBuV/m]	[dB]	[H/V]	[cm]	[deg]	Type
1	192.003	40.0	-7.7	32.3	43.5	11.2	Hori.	181	300	BC
2	340.005	36.8	-5.3	31.5	46.0	14.5	Hori.	100	206	LP
3	365.235	32.1	-4.9	27.2	46.0	18.8	Hori.	100	221	LP
4	39.998	35.3	-12.4	22.9	40.0	17.1	Vert.	100	180	BC
5	94.873	36.0	-13.8	22.2	43.5	21.3	Vert.	100	172	BC

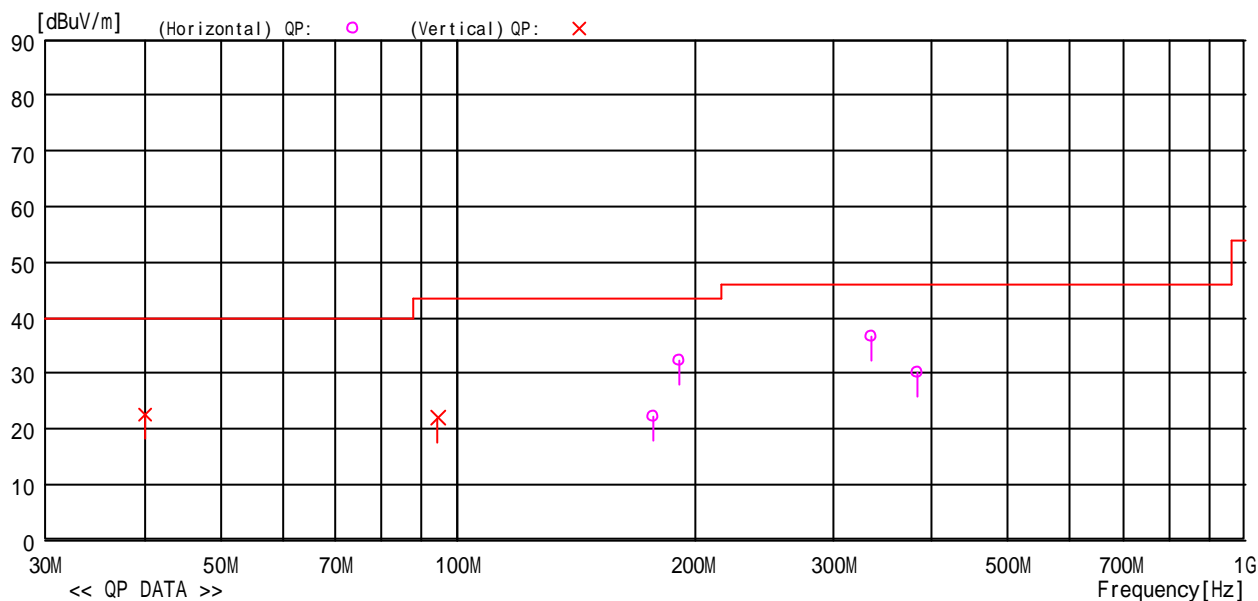
30MHz to 1GHz, Channel 78

Model Name : CM-700d
Serial No. : 10010003
Operator : M.Yamanaka
Power Supply : AC120V,60Hz

Job No : CJ07-060626E
Temp./Humi. : 22 /42%
Condition : CH78 (2480MHz)
Remark : Angle 1

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

LIMIT : FCC 15.209 3m



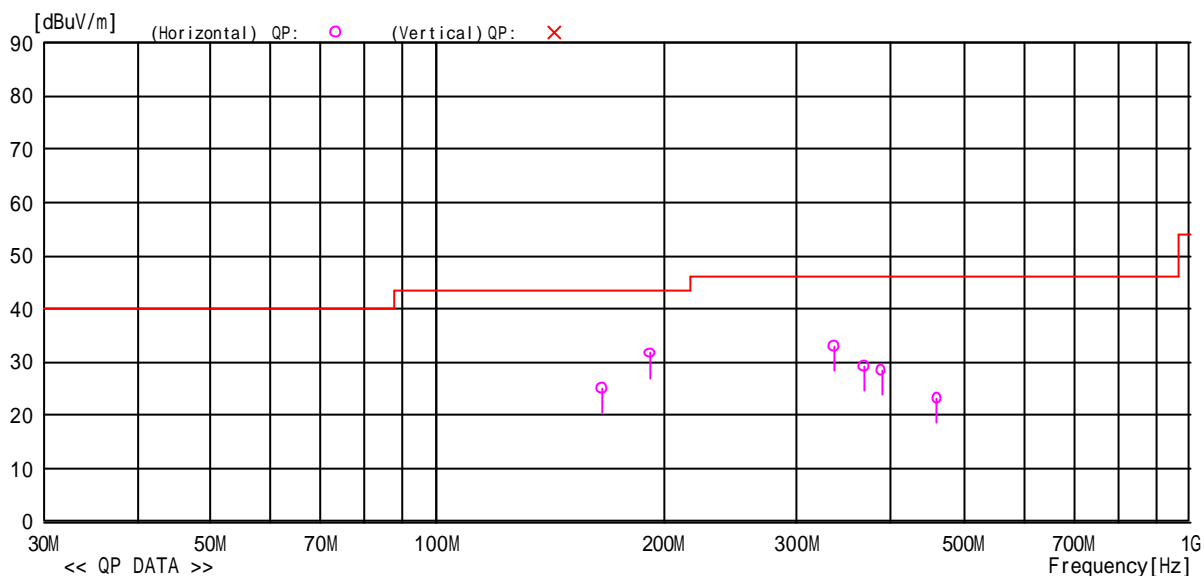
No	Freq. [MHz]	Reading [dBuV]	C.Fac [dB/m]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Pola. [H/V]	Height [cm]	Angle [deg]	Ant. Type
1	177.753	31.5	-9.3	22.2	43.5	21.3	Hori.	181	300	BC
2	192.002	40.0	-7.7	32.3	43.5	11.2	Hori.	180	0	BC
3	336.010	42.0	-5.4	36.6	46.0	9.4	Hori.	100	213	LP
4	383.998	34.8	-4.5	30.3	46.0	15.7	Hori.	100	212	LP
5	40.059	35.0	-12.4	22.6	40.0	17.4	Vert.	100	170	BC
6	94.567	35.9	-13.9	22.0	43.5	21.5	Vert.	100	168	BC

30MHz to 1GHz, Channel 78 (Angle1)

Model Name : CM-700d
 Serial No. : 10010003
 Operator : M. Yamanaka
 Power Supply : DC 1.5V X 4 (Battery)
 Memo : RBW:30M ~ 1GHz(120kHz)

Job No : CJ07-060626E
 Temp./Humi. : 22 / 42%
 Condition : CH78 (2480MHz)
 Remark : Angle 1

LIMIT : FCC 15.209 3m



No	Freq.	Reading	C.Fac	Result	Limit	Margin	Pola.	Height	Angle	Ant
	[MHz]	[dBuV]	[dB/m]	[dBuV/m]	[dBuV/m]	[dB]	[H/V]	[cm]	[deg]	Type
1	166.012	34.9	-9.7	25.2	43.5	18.3	Hori.	125	168	BC
2	192.008	39.3	-7.7	31.6	43.5	11.9	Hori.	183	170	PC
3	336.209	38.2	-5.4	32.8	46.0	13.2	Hori.	100	15	LP
4	369.563	33.8	-4.7	29.1	46.0	16.9	Hori.	100	190	LP
5	388.591	32.8	-4.4	28.4	46.0	17.6	Hori.	100	192	IP
6	460.523	27.0	-3.7	23.3	46.0	22.7	Hori.	226	172	LP

-TEPTO-DV/RE Ver 1.80.0020

* Only fundamental emissions were found.

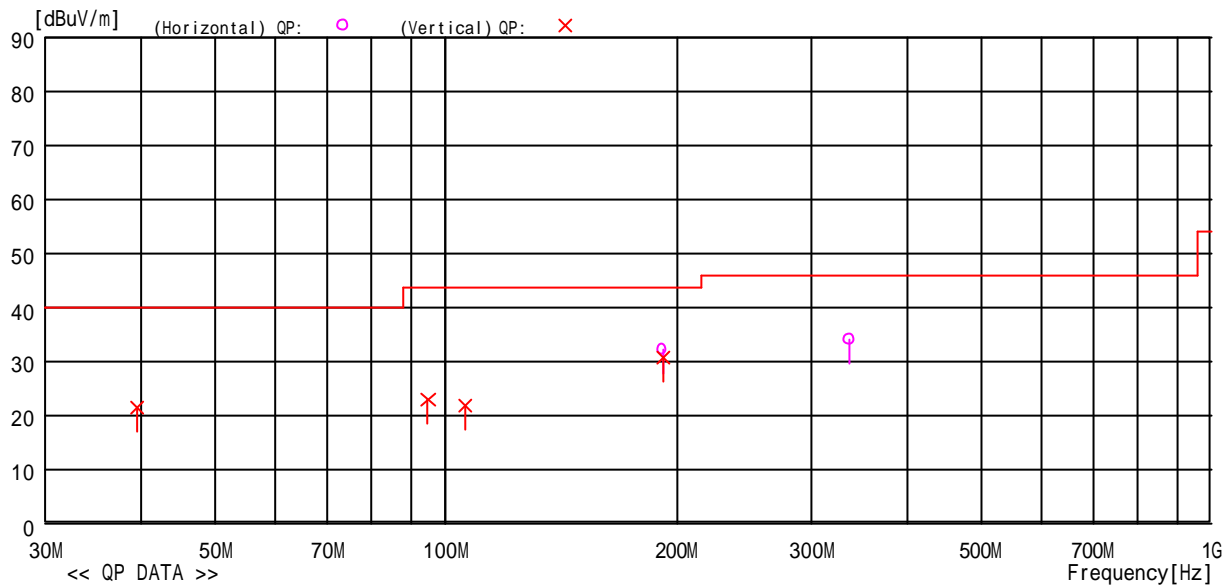
30MHz to 1GHz, Channel 78 (Angle2)

Model Name : CM-700d
Serial No. : 10010003
Operator : M.Yamanaka
Power Supply : AC120V,60Hz

Job No : CJ07-060626E
Temp./Humi. : 22 /42%
Condition : CH78 (2480MHz)
Remark : Angle 2

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

LIMIT : FCC 15.209 3m



No	Freq.	Reading	C.Fac	Result	Limit	Margin	Pola.	Height	Angle	Ant
	[MHz]	[dBuV]	[dB/m]	[dBuV/m]	[dBuV/m]	[dB]	[H/V]	[cm]	[deg]	Type
1	192.003	40.0	-7.7	32.3	43.5	11.2	Hori.	100	130	BC
2	336.025	39.5	-5.4	34.1	46.0	11.9	Hori.	100	100	LP
3	39.653	33.7	-12.3	21.4	40.0	18.6	Vert.	100	182	BC
4	94.865	36.8	-13.8	23.0	43.5	20.5	Vert.	100	85	BC
5	105.968	35.2	-13.3	21.9	43.5	21.6	Vert.	100	136	BC
6	192.051	38.4	-7.7	30.7	43.5	12.8	Vert.	100	350	BC

* Only fundamental emissions were found.

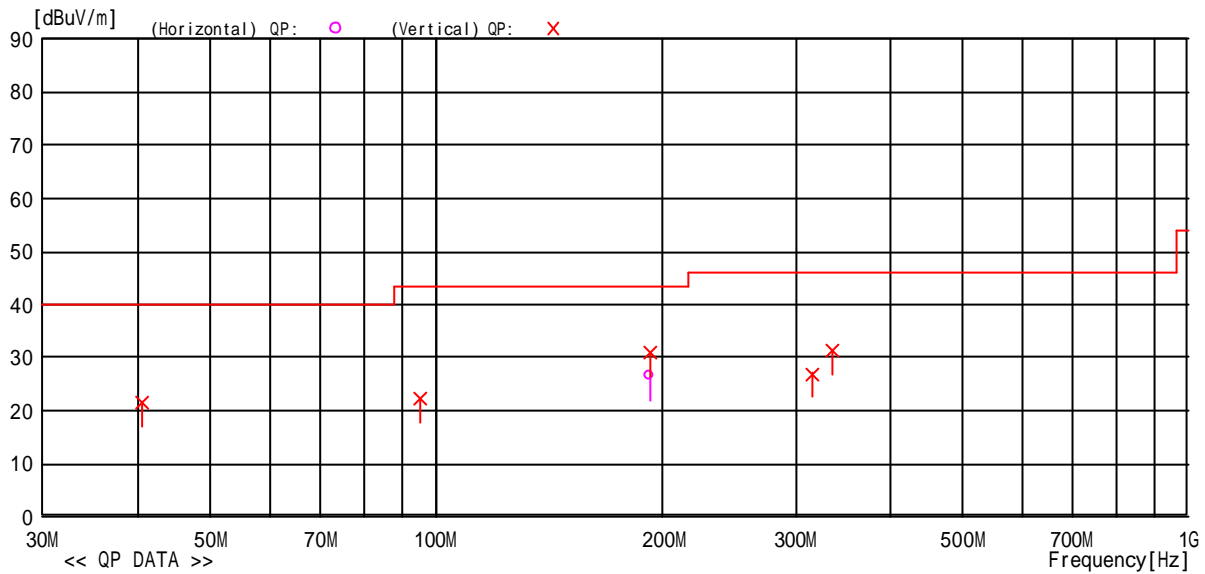
30MHz to 1GHz, Channel 78 (Angle3)

Model Name : CM-700d
 Serial No. : 10010003
 Operator : M.Yamanaka
 Power Supply : AC120V,60Hz

Job No : CJ07-060626E
 Temp./Humi. : 22 /42%
 Condition : CH78 (2480MHz)
 Remark : Angle 3

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

LIMIT : FCC 15.209 3m



No	Fren	Reading	C. Fac	Result	Limit	Margin	Pol	Height	Angle	Ant
	[MHz]	[dBuV]	[dB/m]	[dBuV/m]	[dBuV/m]	[dB]	[H/V]	[cm]	[deg]	Type
1	192.001	34.3	-7.7	26.6	43.5	16.9	Hori.	243	180	BC
2	40.623	33.9	-12.5	21.4	40.0	18.6	Vert.	100	165	BC
3	94.898	35.9	-13.8	22.1	43.5	21.4	Vert.	100	90	BC
4	192.000	38.8	-7.7	31.1	43.5	12.4	Vert.	100	230	BC
5	315.365	32.8	-5.8	27.0	46.0	19.0	Vert.	139	153	LP
6	336.052	36.7	-5.4	31.3	46.0	14.7	Vert.	140	176	LP

-TEPT0-DV/RE Ver 1.80.0020

* Only fundamental emissions were found.

1GHz to 18GHz, Channel 78

CJ07-060626E RE 1G-18GHz TotalNoise05 FCC CM-700d 78CH.RED

RADIATED EMISSION

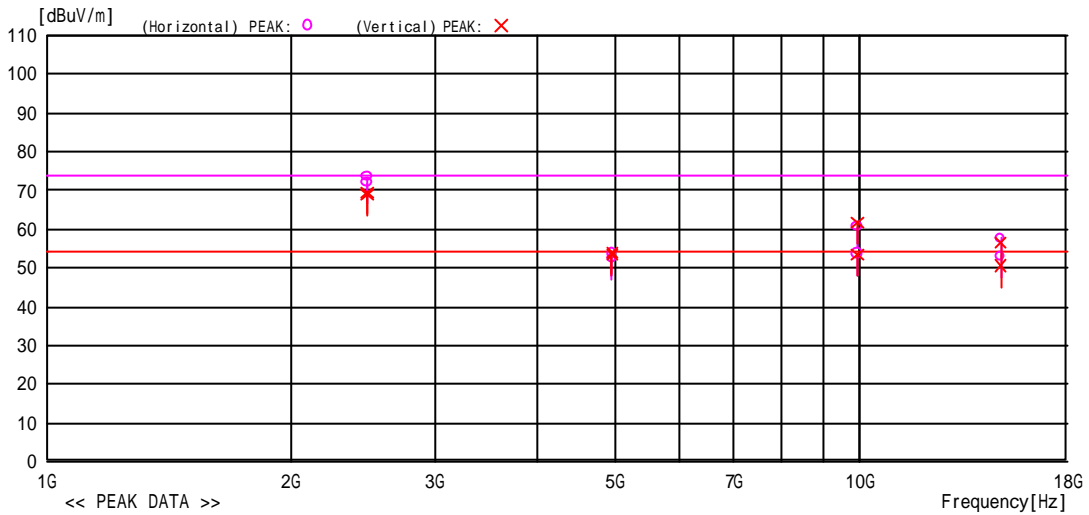
Cosmos Corporation Onoki Lab.

Model Name : CM-700d
Serial No. : 10010003
Operator : M.Yamanaka
Power Supply : AC 120V, 60Hz

Job No. : CJ07-060626E
Temp/Humi : 26 /42%
Condition : CH78 (2480MHz)
Remark : Angle 1 Firm Ver.1.0005BT

Memo : RBW:1GHz ~ (1MHz)

LIMIT : FCC Subpart C 15.209 (3m) 1G-26.5GHz(AV)
FCC Subpart C 15.209 (3m) 1G-26.5GHz(PK)



No	Freq. [MHz]	Reading [dBuV]	C.Fac [dB/m]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Pola. [H/V]	Height [cm]	Angle [deg]	Ant Type	Comment
1	2480.231	75.2	-1.6	73.6	54.0	-19.6	Hori.	151	59	HRN	PK Fundamental Frequency
2	2480.231	73.6	-1.6	72.0	54.0	-18.0	Hori.	151	59	HRN	AV Fundamental Frequency
3	4960.315	47.9	5.8	53.7	54.0	0.3	Hori.	100	156	HRN	PK
4	4960.315	46.5	5.8	52.3	54.0	1.7	Hori.	100	156	HRN	AV
5	9919.436	39.0	14.7	53.7	54.0	0.3	Hori.	121	150	HRN	AV
6	9919.436	45.8	14.7	60.5	54.0	-6.5	Hori.	121	150	HRN	PK
7	14879.060	39.2	18.5	57.7	54.0	-3.7	Hori.	178	80	HRN	PK Freq:14879.060MHz
8	14879.060	34.5	18.5	53.0	54.0	1.0	Hori.	178	80	HRN	AV Freq:14879.060MHz
9	2480.166	70.4	-1.6	68.8	54.0	-14.8	Vert.	100	55	HRN	AV Fundamental Frequency
10	2480.166	71.2	-1.6	69.6	54.0	-15.6	Vert.	100	55	HRN	PK Fundamental Frequency
11	4960.365	47.5	5.8	53.3	54.0	0.7	Vert.	115	63	HRN	AV
12	4960.365	48.3	5.8	54.1	54.0	-0.1	Vert.	115	63	HRN	PK
13	9919.456	38.8	14.7	53.5	54.0	0.5	Vert.	123	123	HRN	AV
14	9919.456	47.0	14.7	61.7	54.0	-7.7	Vert.	123	123	HRN	PK
15	14881.620	32.1	18.5	50.6	54.0	3.4	Vert.	100	60	HRN	AV Freq:14881.620MHz
16	14881.620	38.0	18.5	56.5	54.0	-2.5	Vert.	100	60	HRN	PK Freq:14881.620MHz

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18GHz to 26.5GHz, Channel 78

CJ07-060626E RE 18G-26.5GHz TotalNoise02 FCC CM-700d 78CH.RED

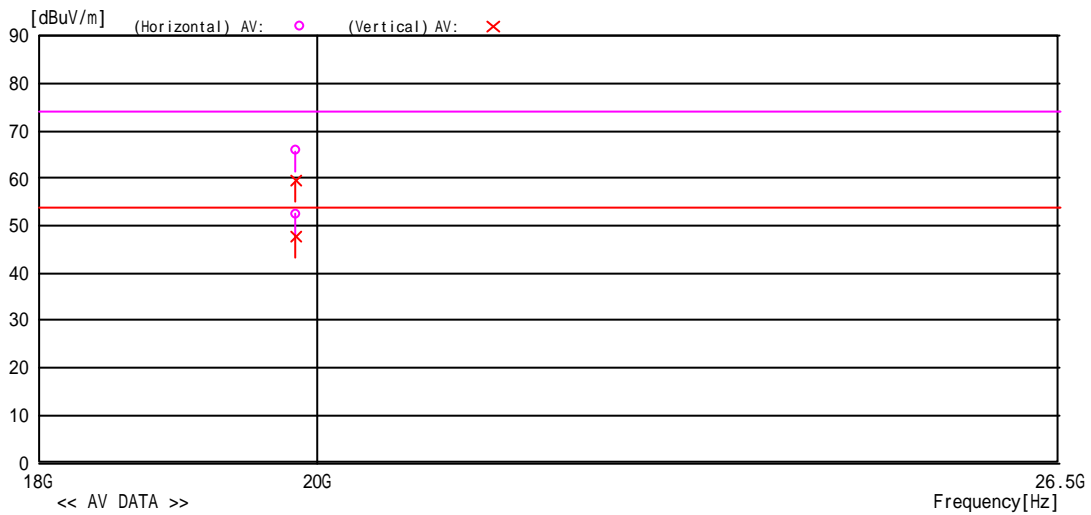
RADIATED EMISSION

Cosmos Corporation Onoki Lab.

Model Name : CM-700d
Serial No. : 10010003
Operator : M.Yamanaka
Power Supply : AC 120V , 60Hz
Memo : RBW:1G~ (1MHz)

Job No : CJ07-060626E
Temp/Humi : 26 , 41%
Condition : CH78 (2480MHz)
Remark : Angle1 Firm Ver.1.0005BT

LIMIT : FCC Subpart C 15.209 (3m) 1G-26.5GHz(AV)
FCC Subpart C 15.209 (3m) 1G-26.5GHz(PK)



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	9846.650	45.3	20.5	65.8	54.0	-11.8	Hori.	100	23	HRN	PK Freq:19846.650MHz
2	9846.650	31.8	20.5	52.3	54.0	1.7	Hori.	100	23	HRN	AV Freq:19846.650MHz
3	9845.890	27.2	20.5	47.7	54.0	6.3	Vert.	100	54	HRN	AV Freq:19845.890MHz
4	9845.890	38.9	20.5	59.4	54.0	-5.4	Vert.	100	54	HRN	PK Freq:19845.890MHz

-TEPTO-DV/Ver 1.80.0020

1GHz to 18GHz, Channel 39

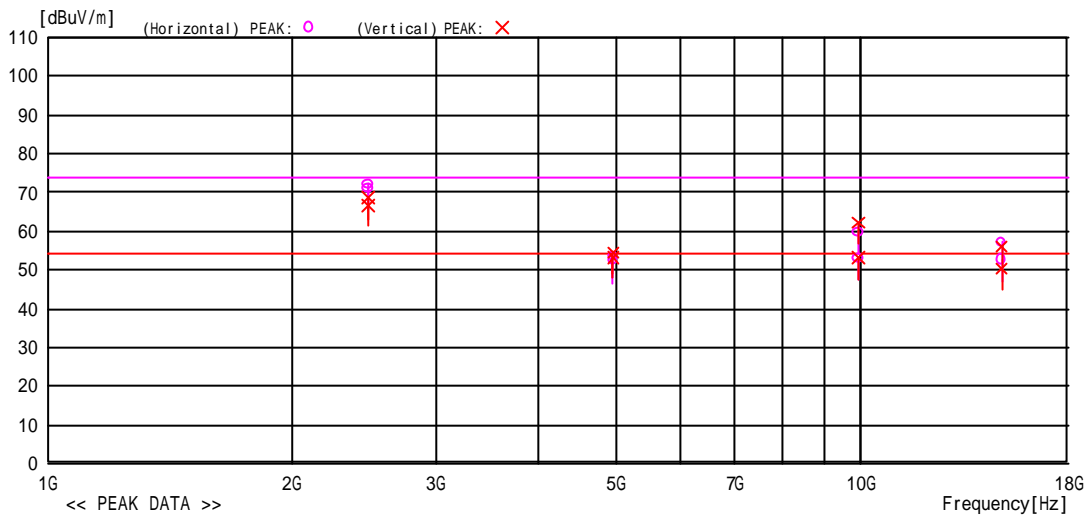
CJ07-060626E RE 1G-18GHz TotalNoise FCC CM-700d 39CH Angle1.RED

RADIATED EMISSION

Cosmos Corporation Onoki Lab.

Model Name	: CM-700d	Job No.	: CJ07-060626E
Serial No.	: 10010003	Temp/Humi	: 26 /42%
Operator	: M.Yamanaka	Condition	: CH39 (2440MHz)
Power Supply	: AC 120V, 60Hz	Remark	: Angle 1 Firm Ver.1.0005BT
Memo	: RBW:1GHz ~ (1MHz)		

LIMIT : FCC Subpart C 15.209 (3m) 1G-26.5GHz(AV)
FCC Subpart C 15.209 (3m) 1G-26.5GHz(PK)



No	Freq.	Reading	C.Fac	Result	Limit	Margin	Pol.	Height	Angle	Ant	Comment
	[MHz]	[dBuV]	[dB/m]	[dBuV/m]	[dBuV/m]	[dB]	[H/V]	[cm]	[deg]	Type	
1	2480.192	73.9	-1.6	72.3	54.0	-18.3	Hori.	138	23	HRN	PK Fundamental Frequency
2	2480.192	72.8	-1.6	71.2	54.0	-17.2	Hori.	138	23	HRN	AV Fundamental Frequency
3	4960.280	47.5	5.8	53.3	54.0	0.7	Hori.	100	185	HRN	PK
4	4960.280	46.4	5.8	52.2	54.0	1.8	Hori.	100	185	HRN	AV
5	9919.561	45.1	14.7	59.8	54.0	-5.8	Hori.	100	134	HRN	PK
6	9919.561	38.3	14.7	53.0	54.0	1.0	Hori.	100	134	HRN	AV
7	4879.170	34.1	18.5	52.6	54.0	1.4	Hori.	100	66	HRN	AV Freq:14879.170MHz
8	4879.170	38.6	18.5	57.1	54.0	-3.1	Hori.	100	66	HRN	PK Freq:14879.170MHz
9	2480.237	70.2	-1.6	68.6	54.0	-14.6	Vert.	100	28	HRN	PK Fundamental Frequency
10	2480.237	68.3	-1.6	66.7	54.0	-12.7	Vert.	100	28	HRN	AV Fundamental Frequency
11	4960.569	48.6	5.8	54.4	54.0	-0.4	Vert.	100	275	HRN	PK
12	4960.569	47.4	5.8	53.2	54.0	0.8	Vert.	100	275	HRN	AV
13	9919.464	47.3	14.7	62.0	54.0	-8.0	Vert.	150	246	HRN	PK
14	9919.464	38.4	14.7	53.1	54.0	0.9	Vert.	150	246	HRN	AV
15	4880.780	31.8	18.5	50.3	54.0	3.7	Vert.	100	151	HRN	AV Freq:14880.780MHz
16	4880.780	37.6	18.5	56.1	54.0	-2.1	Vert.	100	151	HRN	PK Freq:14880.780MHz

-TEPT0-DV/RE Ver1.80.0020

18GHz to 26.5GHz, Channel 39

CJ07-060626E RE 18G-26.5GHz TotalNoise FCC CM-700d 39CH.RED

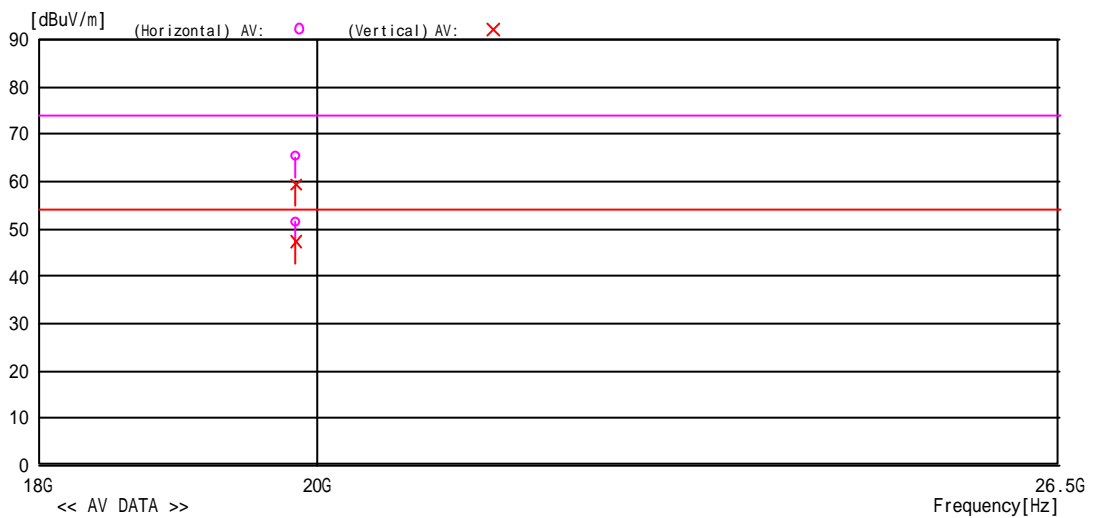
RADIATED EMISSION

Cosmos Corporation Onoki Lab.

Model Name : CM-700d
Serial No. : 10010003
Operator : M.Yamanaka
Power Supply : AC 120V , 60Hz
Memo : RBW:1G ~ (1MHz)

Job No : CJ07-060626E
Temp/Humi : 26 , 41%
Condition : CH39 (2440MHz)
Remark : Angle1 Firm Ver.1.0005BT

LIMIT : FCC Subpart C 15.209 (3m) 1G-26.5GHz(AV)
FCC Subpart C 15.209 (3m) 1G-26.5GHz(PK)



No	Freq.	Reading	C.Fac	Result	Limit	Margin	Pol.	Height	Angle	Ant	Comment
	[MHz]	[dBuV]	[dB/m]	[dBuV/m]	[dBuV/m]	[dB]	[H/V]	[cm]	[deg]	Type	
1	9846.360	44.8	20.5	65.3	54.0	-11.3	Hori.	100	36	HRN	PK Freq:19846.360MHz
2	9846.360	31.0	20.5	51.5	54.0	2.5	Hori.	100	36	HRN	AV Freq:19846.360MHz
3	9844.990	26.8	20.5	47.3	54.0	6.7	Vert.	100	78	HRN	AV Freq:19844.990MHz
4	9844.990	38.8	20.5	59.3	54.0	-5.3	Vert.	100	78	HRN	PK Freq:19844.990MHz

-TEPT0-DV/Ver 1.80.0020

1GHz to 18GHz, Channel 1

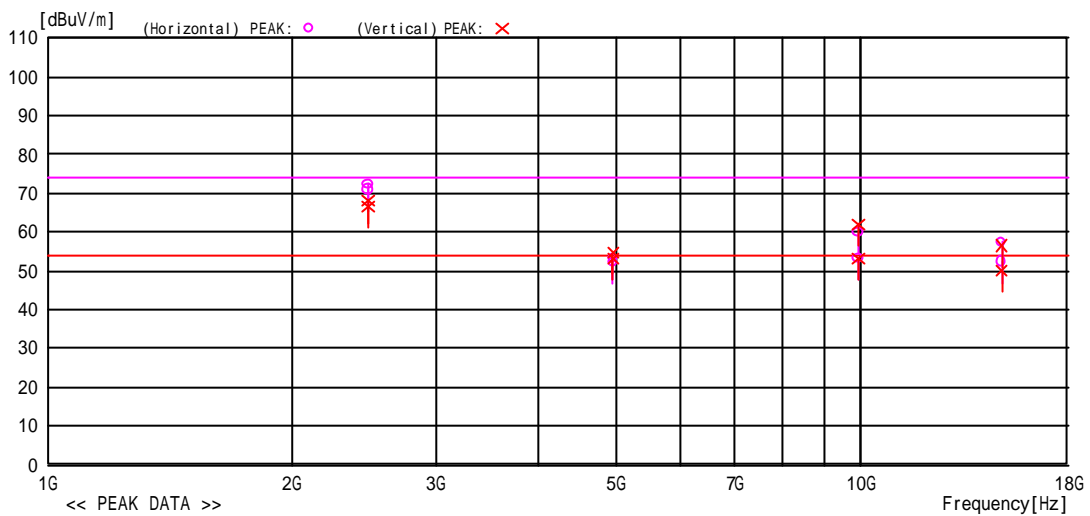
CJ07-060626E RE 1G-18GHz TotalNoise FCC CM-700d 1CH Angle1.RED

RADIATED EMISSION

Cosmos Corporation Onoki Lab.

Model Name	: CM-700d	Job No.	: CJ07-060626E
Serial No.	: 10010003	Temp/Humi	: 26 /42%
Operator	: M.Yamanaka	Condition	: CH1 (2402MHz)
Power Supply	: AC 120V, 60Hz	Remark	: Angle 1 Firm Ver.1.0005BT
Memo	: RBW:1GHz ~ (1MHz)		

LIMIT : FCC Subpart C 15.209 (3m) 1G-26.5GHz(AV)
FCC Subpart C 15.209 (3m) 1G-26.5GHz(PK)



No	Freq.	Reading	C.Fac	Result	Limit	Margin	Pol.	Height	Angle	Ant	Comment
	[MHz]	[dBuV]	[dB/m]	[dBuV/m]	[dBuV/m]	[dB]	[H/V]	[cm]	[deg]	Type	
1	2480.023	74.0	-1.6	72.4	54.0	-18.4	Hori.	151	38	HRN	PK Fundamental Frequency
2	2480.023	72.5	-1.6	70.9	54.0	-16.9	Hori.	151	38	HRN	AV Fundamental Frequency
3	4959.897	46.2	5.8	52.0	54.0	2.0	Hori.	100	164	HRN	AV
4	4959.897	47.4	5.8	53.2	54.0	0.8	Hori.	100	164	HRN	PK
5	9919.232	45.0	14.7	59.7	54.0	-5.7	Hori.	100	128	HRN	PK
6	9919.232	38.4	14.7	53.1	54.0	0.9	Hori.	100	128	HRN	AV
7	4880.000	38.9	18.5	57.4	54.0	-3.4	Hori.	102	127	HRN	PK Freq:14879.170MHz
8	4880.000	33.8	18.5	52.3	54.0	1.7	Hori.	102	127	HRN	AV Freq:14879.170MHz
9	2480.167	69.5	-1.6	67.9	54.0	-13.9	Vert.	100	46	HRN	PK Fundamental Frequency
10	2480.167	68.3	-1.6	66.7	54.0	-12.7	Vert.	100	46	HRN	AV Fundamental Frequency
11	4960.632	47.2	5.8	53.0	54.0	1.0	Vert.	100	312	HRN	AV
12	4960.632	48.7	5.8	54.5	54.0	-0.5	Vert.	100	312	HRN	PK
13	9919.969	38.3	14.7	53.0	54.0	1.0	Vert.	141	125	HRN	AV
14	9919.969	47.4	14.7	62.1	54.0	-8.1	Vert.	141	125	HRN	PK
15	4880.670	38.0	18.5	56.5	54.0	-2.5	Vert.	100	73	HRN	PK Freq:14880.780MHz
16	4880.670	31.5	18.5	50.0	54.0	4.0	Vert.	100	73	HRN	AV Freq:14880.780MHz

-TEPTO-DV/RE Ver1.80.0020

18GHz to 26.5GHz, Channel 1

CJ07-060626E RE 18G-26.5GHz TotalNoise FCC CM-700d 1CH.RED

RADIATED EMISSION

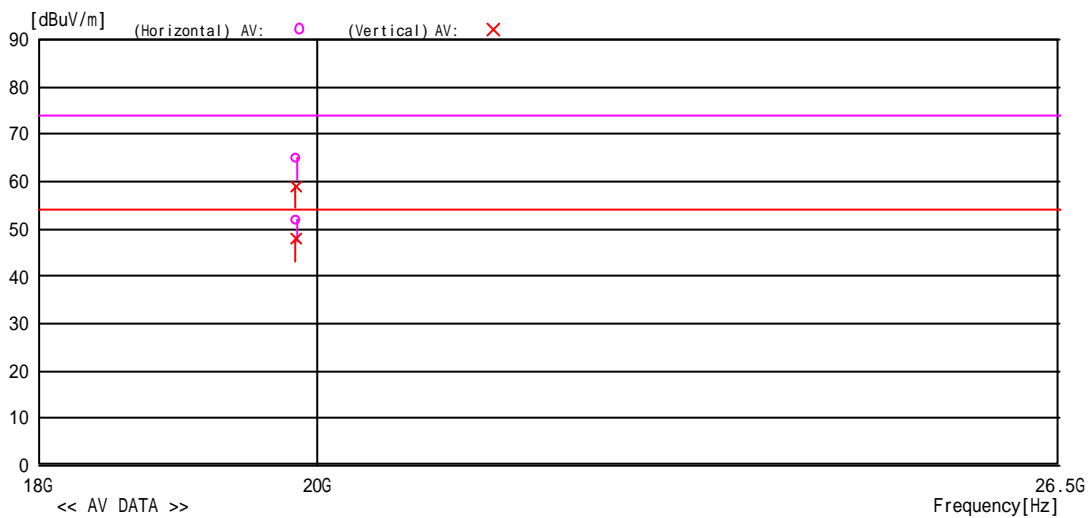
Cosmos Corporation Onoki Lab.

Model Name : CM-700d
Serial No. : 10010003
Operator : M.Yamanaka
Power Supply : AC 120V , 60Hz

Job No : CJ07-060626E
Temp/Humi : 26 , 41%
Condition : CH1 (2402MHz)
Remark : Angle1 Firm Ver.1.0005BT

Memo : RBW:1G ~ (1MHz)

LIMIT : FCC Subpart C 15.209 (3m) 1G-26.5GHz(AV)
FCC Subpart C 15.209 (3m) 1G-26.5GHz(PK)



No	Freq.	Reading	C.Fac	Result	Limit	Margin	Pol.	Height	Angle	Ant	Comment
	[MHz]	[dBuV]	[dB/m]	[dBuV/m]	[dBuV/m]	[dB]	[H/V]	[cm]	[deg]	Type	
1	19848.290	44.4	20.5	64.9	54.0	-10.9	Hori.	100	98	HRN	PK Freq:19848.290MHz
2	19848.290	31.3	20.5	51.8	54.0	2.2	Hori.	100	98	HRN	AV Freq:19848.290MHz
3	19845.000	38.6	20.5	59.1	54.0	-5.1	Vert.	100	123	HRN	PK Freq:19845.000MHz
4	19845.000	27.3	20.5	47.8	54.0	6.2	Vert.	100	123	HRN	AV Freq:19845.000MHz

-TEPT0-DV/Ver 1.80.0020

5.6 15. 247(a)(1) Number of Channels and Time of Occupancy

5.6.1 Setting Remarks

- EUT directly connects to the spectrum analyzer via calibrated coaxial cable and a suitable attenuator.
- The Number of Channels is determined by using Max-hold of the spectrum shape of spectrum analyzer.
- Time of Occupancy is determined by using the marker-data function of spectrum analyzer.
- The spectrum analyzer is set-up as following to measure Number of Channels;

/// Frequency Span	: 79 MHz
/// Resolution bandwidth	: 1 MHz
/// Video bandwidth	: 3 MHz
/// Sweep Time	: Auto
/// Detector function	: Peak
/// Trace Mode	: Max Hold

- The spectrum analyzer is set-up as following to measure Time of Occupancy;

/// Frequency Span	: 0 Hz
/// Resolution bandwidth	: 30 kHz
/// Video bandwidth	: 30 kHz
/// Detector function	: Peak
/// Trace Mode	: Max Hold

- See test configuration figure 4.3.

5.6.2 Minimum Standard

This frequency hopping system must employ minimum of 15 hopping channels.

The maximum permissible time of occupancy is 400 ms within the minimum time period required to hop through all channels.

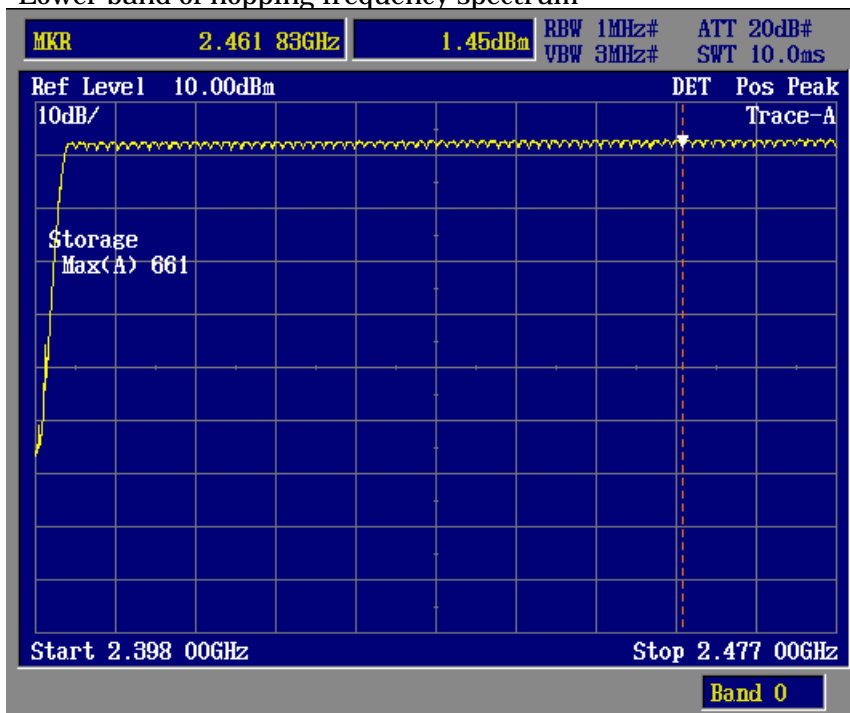
5.6.3 Result

EUT complies with the requirement.

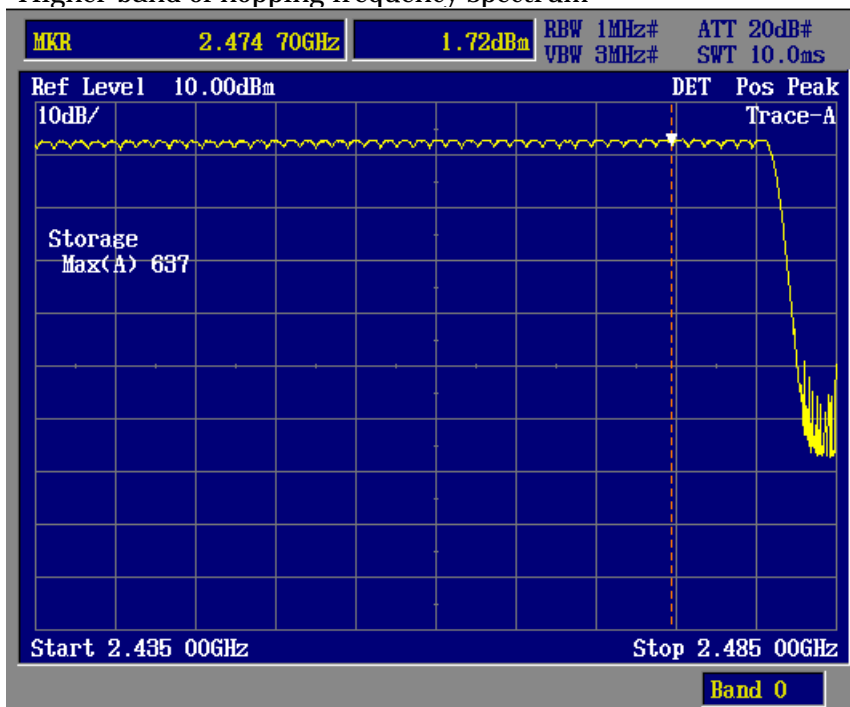
Uncertainty of measurement result: 1 usec
 Temperature, Humidity : 23°C, 40%

5.6.4 Measured Data

Lower band of hopping frequency spectrum

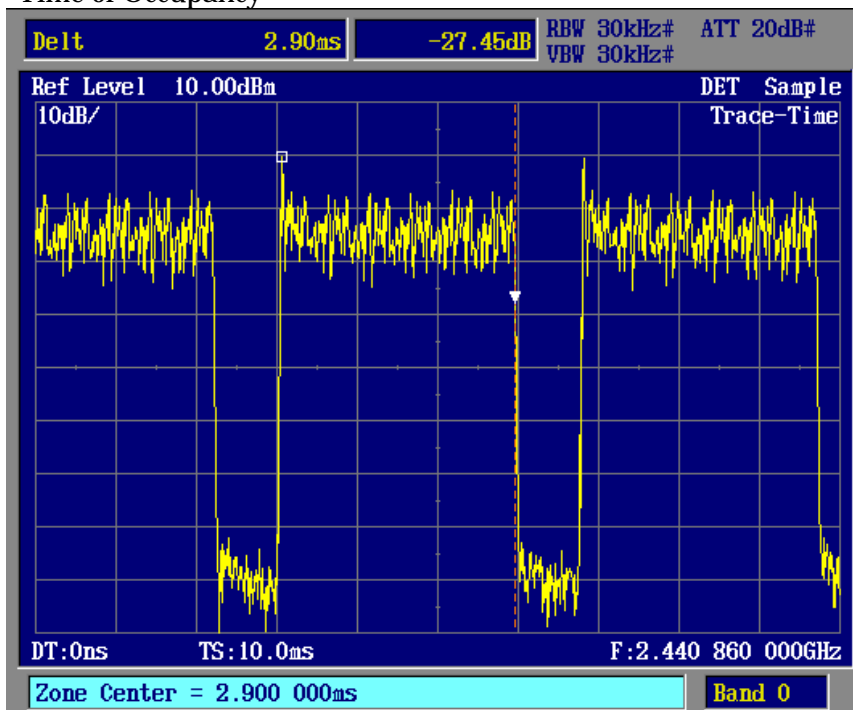


Higher band of hopping frequency spectrum



Number of observed channels	79
-----------------------------	----

Time of Occupancy



The dwell time within a 31.6sec period in data mode is 1 inside the packet type.

Channel Hopping Rate: 1600 hops / sec
Number of channels: 79
Time slot length: 2.9 msec

The calculation for a 31.6sec period is as follows;

$$\text{Dwell time} = \text{time slot length} \times \text{hoprate} / \text{number of channels} \times \text{period time}$$

Time of occupancy (dwell time) is as follows;

$$(\text{DH5 Time slot Dwell time}) = 2.9\text{msec} \times (1600 / (6 \times 79)) \times 31.6\text{sec} = 0.309\text{sec}$$

5.7 15. 247(c) Band Edge Measurement

5.7.1 Setting Remarks

- EUT directly connects to the spectrum analyzer via calibrated coaxial cable and 10 dB attenuator.
- The emission at the band edge is measured by using the marker function of spectrum analyzer.
- The peak of the in-band emission is measured by using the marker to peak function of spectrum analyzer.
- This measurement is repeated in both side of the spectrum.
- The spectrum analyzer is set-up as following;

- ~~///~~ Resolution bandwidth : Equal or less than 1% of frequency span
- ~~///~~ Video bandwidth : > RBW
- ~~///~~ Sweep : Auto
- ~~///~~ Detector function : Peak
- ~~///~~ Trace Mode : Max Hold

- Where bandedge spectrum is too rough to find precise edge point, larger RBW i.e. 1MHz, 3MHz shall be applied as severer condition.
- See test configuration figure 4.3.

5.7.2 Minimum Standard

In any 100kHz bandwidth outside the frequency band in which the transmitter is operating, emissions shall be at least 20 dB below the fundamental emission or shall not exceed the following field strength limits. Emissions falling in the restricted bands of 15.205 shall not exceed the following field strength limits:

Frequency of Emission (MHz)	Limit of the band edge spurious emission (dBμV)	
	Peak	Average
Below 2,390.0		
Above 2,483.5	74	54

5.7.3 Result

EUT complies with the requirement.

Uncertainty of measurement result: ± 2.6 dB
 Temperature, Humidity : 23°C, 40%

5.7.4 Measured Data

The band edge emissions are calculated as following;

(Angle 1)

Lower frequency 2,390 MHz (FH) Vertical Higher frequency 2,483.5 MHz (FH) Vertical

	Level (dBuV/m)
P _{max}	77.25
P _{av}	73.46
P _{dev}	38.34

	Level (dBuV/m)
P _{max}	74.32
P _{av}	70.82
P _{dev}	36.31

	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
E _{be}	38.91	74.00	35.09
E _{av}	35.12	54.00	18.88

	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
E _{be}	38.01	74.00	35.99
E _{av}	34.51	54.00	19.49

- P_{max} : Maximum peak power of the fundamental.
- P_{dev} : The amplitude delta between the peak power and the band edge emission.
- E_{be} : Band edge emission.
- E_{av} : Average of the band edge emission.

(Angle 2)

Lower frequency 2,390 MHz (FH) Vertical

	Level (dBuV/m)
P_{max}	76.73
P_{av}	74.75
P_{dev}	38.03

Higher frequency 2,483.5 MHz (FH) Vertical

	Level (dBuV/m)
P_{max}	73.56
P_{av}	60.23
P_{dev}	32.88

	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
E_{be}	38.70	74.00	35.30
E_{av}	36.72	54.00	17.28

	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
E_{be}	40.68	74.00	33.32
E_{av}	27.35	54.00	26.65

- P_{max} : Maximum peak power of the fundamental.
- P_{dev} : The amplitude delta between the peak power and the band edge emission.
- E_{be} : Band edge emission.
- E_{av} : Average of the band edge emission.

(Angle 3)

Lower frequency 2,390 MHz (FH) Vertical

	Level (dBuV/m)
P_{max}	79.23
P_{av}	72.56
P_{dev}	41.12

Higher frequency 2,483.5 MHz (FH) Vertical


	Level (dBuV/m)
P_{max}	75.56
P_{av}	68.82
P_{dev}	40.69

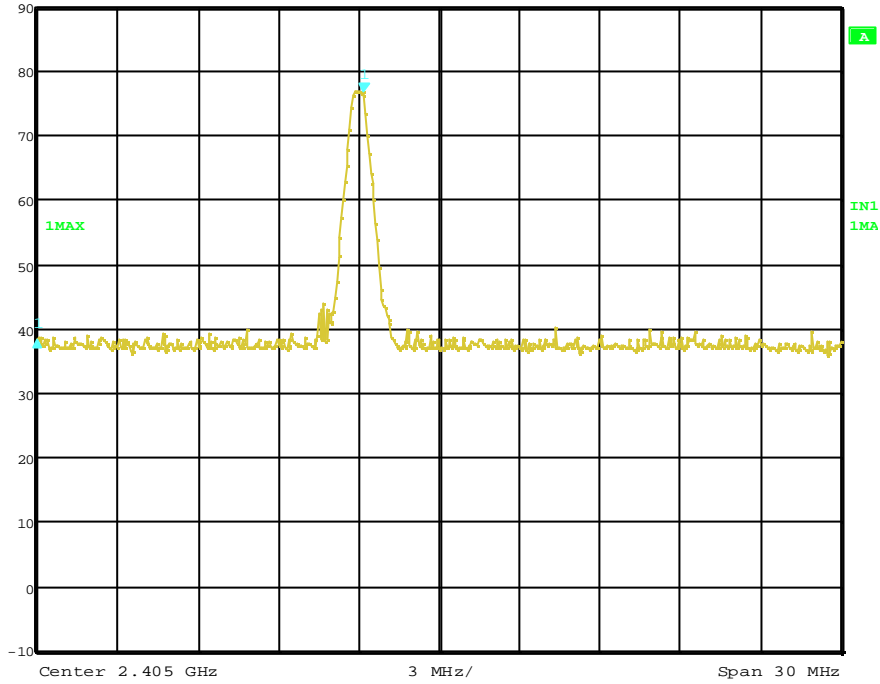
	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
E_{be}	38.11	74.00	35.89
E_{av}	31.44	54.00	22.56

	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
E_{be}	34.87	74.00	39.13
E_{av}	28.13	54.00	25.87

- P_{max} : Maximum peak power of the fundamental.
- P_{dev} : The amplitude delta between the peak power and the band edge emission.
- E_{be} : Band edge emission.
- E_{av} : Average of the band edge emission.


Lower frequency of the band edge 2,390.0 MHz, Angle 1

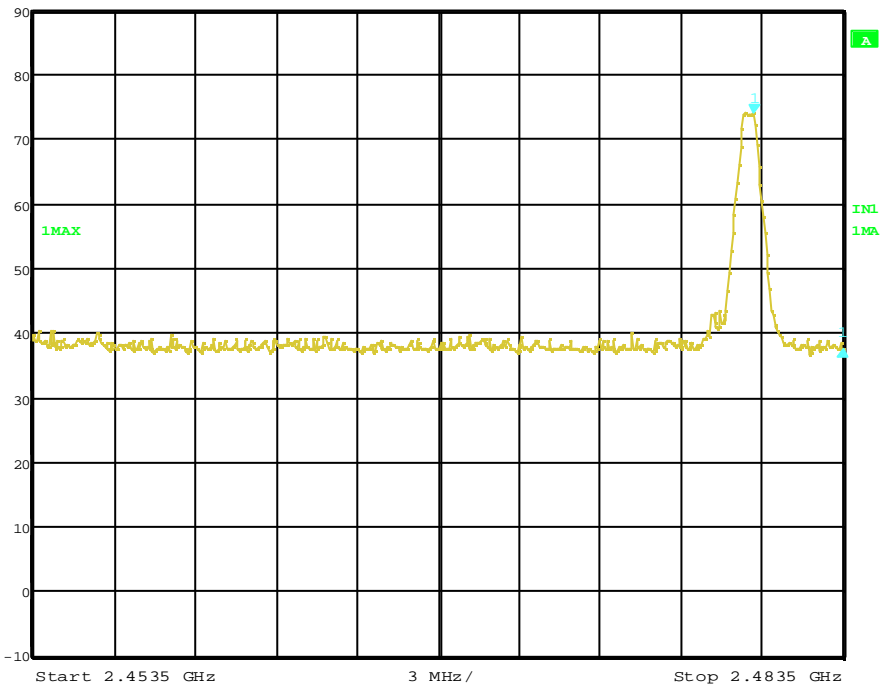
 Delta 1 [T1] RBW 300 kHz RF Att 10 dB
Ref Lvl -38.34 dB VBW 300 kHz
90 dB μ V -12.20440882 MHz SWT 5 ms Unit dB μ V



Date: 12.DEC.2007 02:54:47


Higher frequency of the band edge 2,483.5 MHz, Angle 1

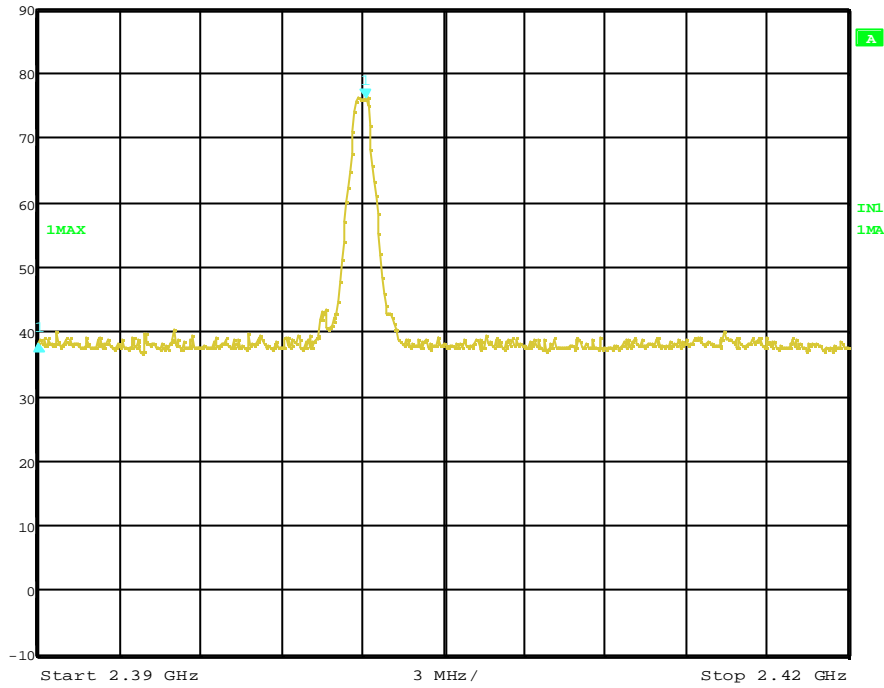
 Delta 1 [T1] RBW 300 kHz RF Att 10 dB
Ref Lvl -36.31 dB VBW 300 kHz
90 dB μ V 3.30661323 MHz SWT 5 ms Unit dB μ V



Date: 12.DEC.2007 02:41:28


Lower frequency of the band edge 2,390.0 MHz, Angle 2

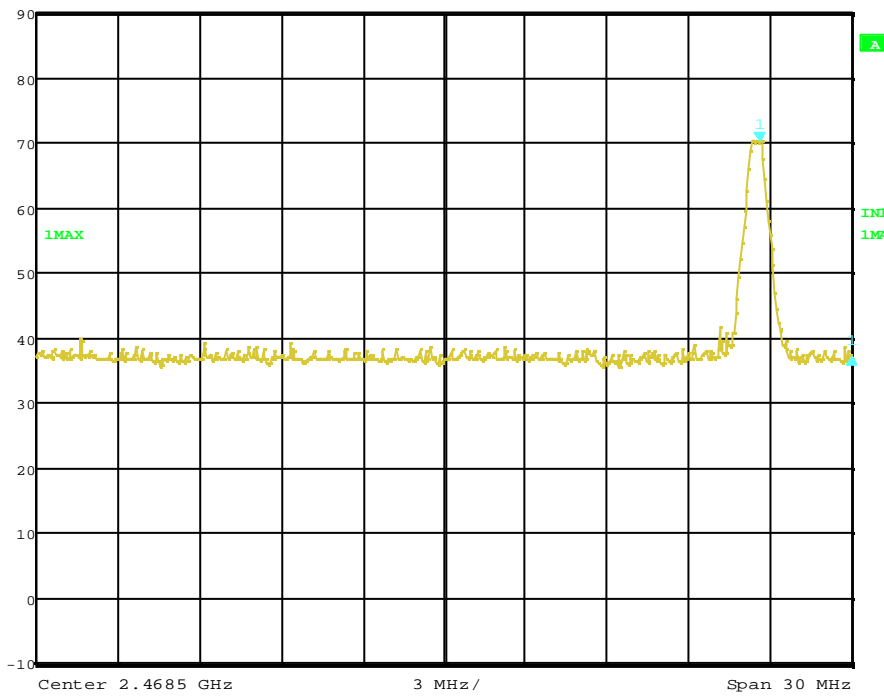
 Ref Lvl 90 dB μ V Delta 1 [T1] -38.03 dB RBW 300 kHz RF Att 10 dB
-12.14428858 MHz VBW 300 kHz Unit dB μ V
SWT 5 ms



Date: 14.DEC.2007 02:12:11


Higher frequency of the band edge 2,483.5 MHz, Angle 2

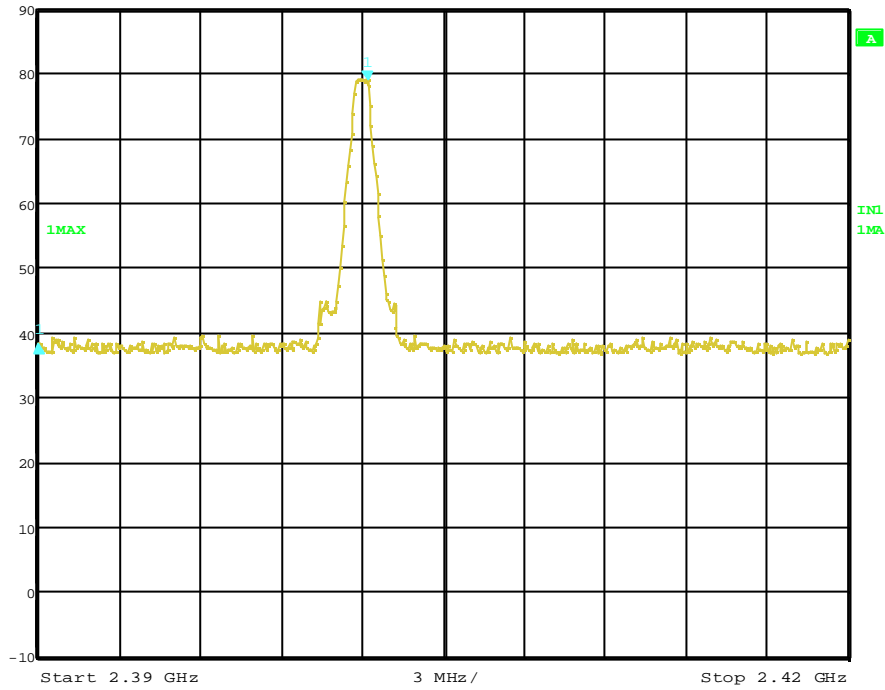
 Ref Lvl 90 dB μ V Delta 1 [T1] -32.88 dB RBW 300 kHz RF Att 10 dB
3.36673347 MHz VBW 300 kHz Unit dB μ V
SWT 5 ms



Date: 14.DEC.2007 02:22:01


Lower frequency of the band edge 2,390.0 MHz, Angle 3

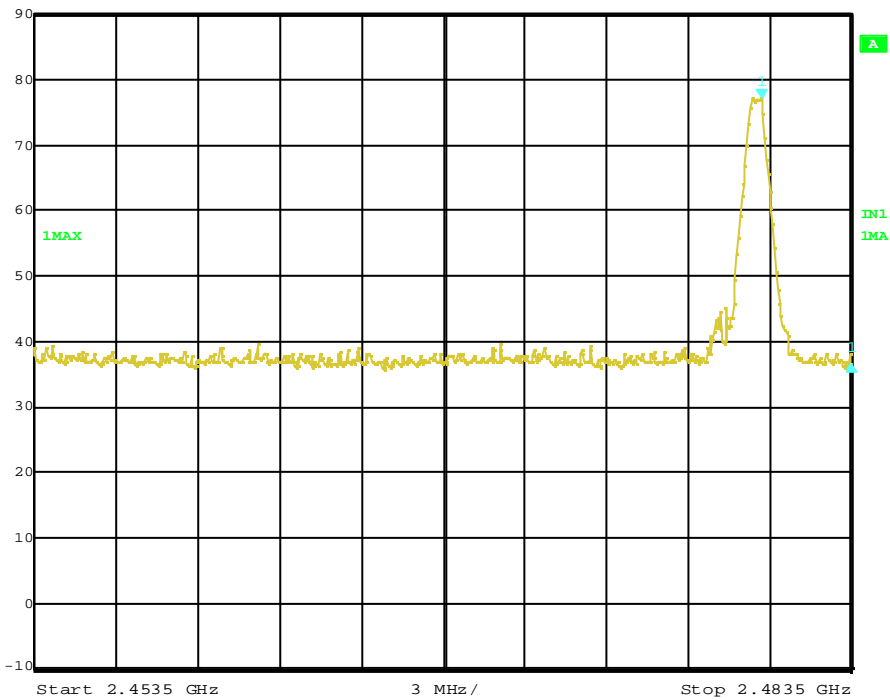
 Ref Lvl 90 dB μ V Delta 1 [T1] -41.12 dB RBW 300 kHz RF Att 10 dB
-12.20440882 MHz VBW 300 kHz Unit dB μ V
SWT 5 ms



Date: 14.DEC.2007 02:41:02

Higher frequency of the band edge 2,483.5 MHz, Angle 3

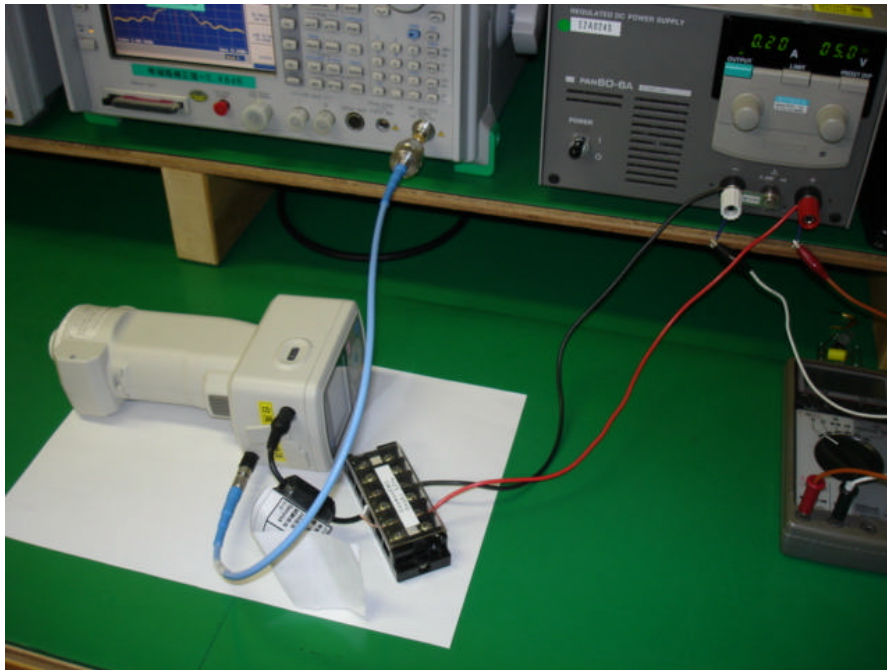
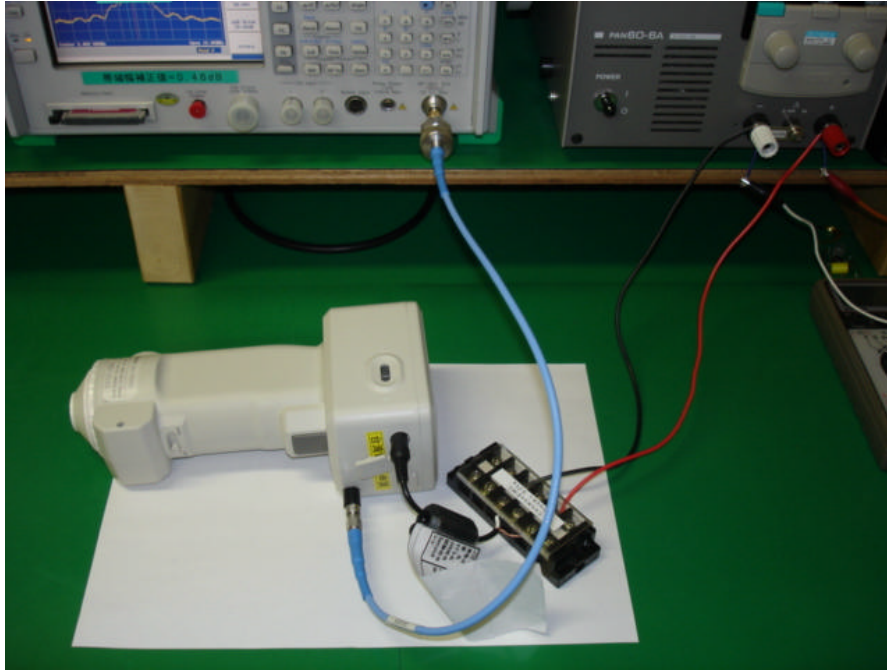
 Ref Lvl 90 dB μ V Delta 1 [T1] -40.69 dB RBW 300 kHz RF Att 10 dB
3.30661323 MHz VBW 300 kHz Unit dB μ V
SWT 5 ms



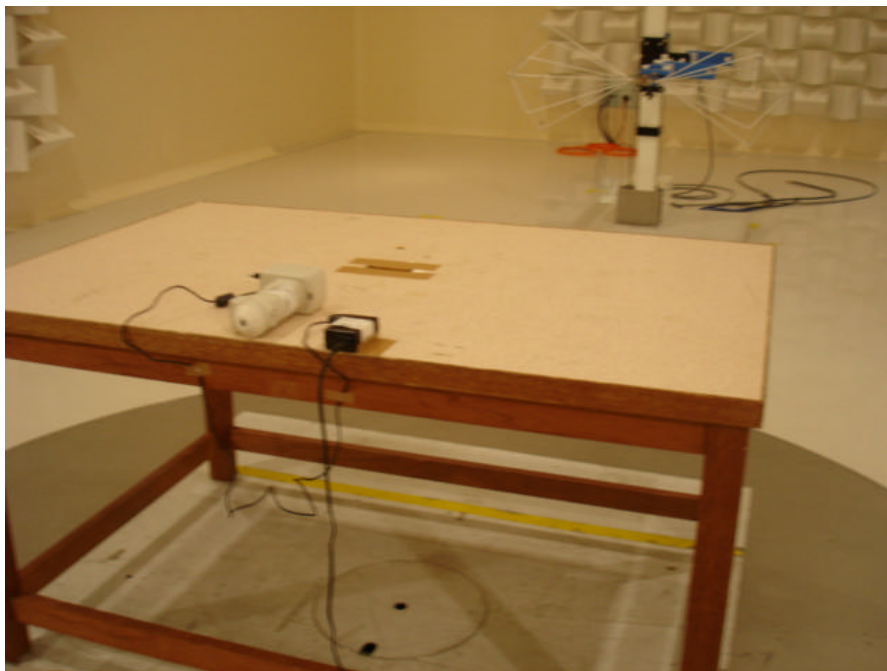
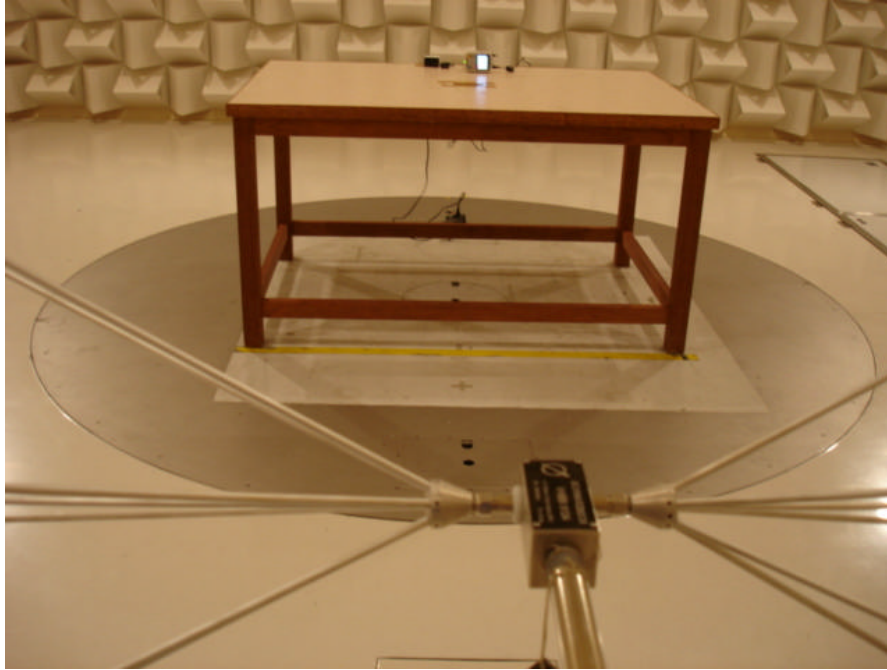
Date: 14.DEC.2007 02:31:53

6. Photos

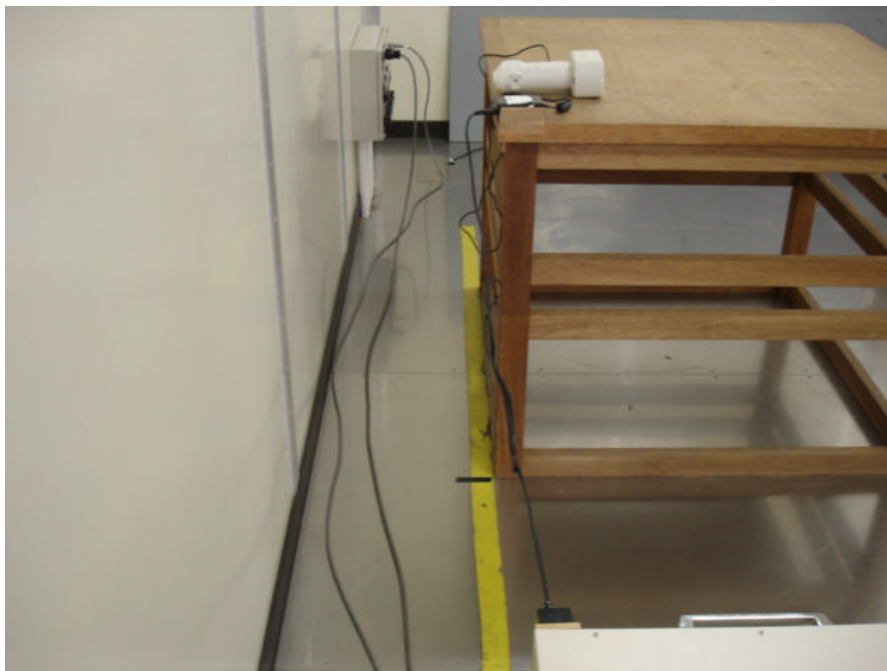
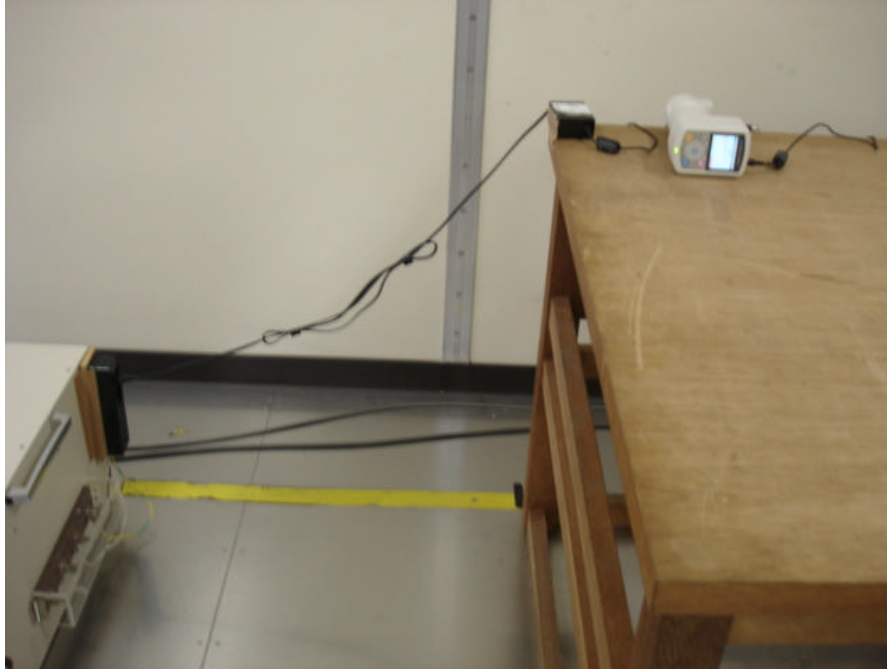
6.1 Setup Photo (All Other Test Items)



6.2 Setup Photo (Radiated Emission)



6.3 Setup Photo (Conducted Emission)



7. List of Test Measurement Instruments

7.1 Conducted Emission

Instruments	Manufacturer	Model / Type	Serial No.	Calibration Date Next Calibration
Spectrum Analyzer	ADVANTEST CORPORATION	R3132	140501174	July, 2007 July, 2008
EMI Test Receiver	ROHDE & SCHWARZ	ESCS30	100335	May, 2007 May, 2008
Artificial-Mains Network	KYORITSU CORPORATION	KNW-341C	8-1659-1	September, 2007 September, 2008
Transient Limiter	AGILENT TECHNOLOGIES	11947A	3107A03745	July, 2007 July, 2008
RF Selector	Techno Science Japan Corp.	RFM-E221	3148	---

7.2 Radiated Emission Measurement

Instruments	Manufacturer	Model / Type	Serial No.	Calibration Date Next Calibration
Programmable AC/DC Power Source	NF Corporation	ES18000W	425779	---
EMI Test Receiver	ROHDE & SCHWARZ	ESIB40	100211	April, 2007 April, 2008
Biconical Antenna (30 to 300MHz)	SCHWARZBECK	VHBB9124(Balun) BBA9106(Elements)	311	September, 2007 September, 2008
Log.-Periodic Antenna (300 MHz to 1 GHz)	SCHWARZBECK	UHALP 9108 A	645	September, 2007 September, 2008
Horn Antenna	SCHWARZBECK	BBHA 9120 D	446	September, 2007 September, 2008
Horn Antenna	ETS LINDGREN	3160-08	00033778	September, 2007 September, 2008
Horn Antenna	ETS LINDGREN	3160-09	00034723	September, 2007 September, 2008
Pre-Amplifier	HEWLETT PACKARD	8447D OPT 010	2944A 07891	September, 2007 September, 2008
Pre-Amplifier (1 GHz to 18 GHz)	HEWLETT PACKARD	8449B	3008A 01251	July, 2007 July, 2008
Pre-Amplifier (18 GHz to 26.5 GHz)	Techno Science Japan Corp.	MLA-1826POM-30	---	January, 2007 January, 2008

7.3 Conducted Radio Measurement

Instruments	Manufacturer	Model / Type	Serial No.	Calibration Date Next Calibration
DC Power Source	Diamond Antenna	GSV3000	01101481	---
Spectrum Analyzer	Anritsu	MS2687B	620016270 6	April, 2007 April, 2008
Signal Generator	Agilent Technology	E8254A	US411401 86	June, 2007 June, 2008
Oscilloscope	Tektronix	TDS794D	B031832	June, 2007 June, 2008
Diode Detector	Agilent Technology	423B	MY422418 36	March, 2007 March, 2008

Appendix A

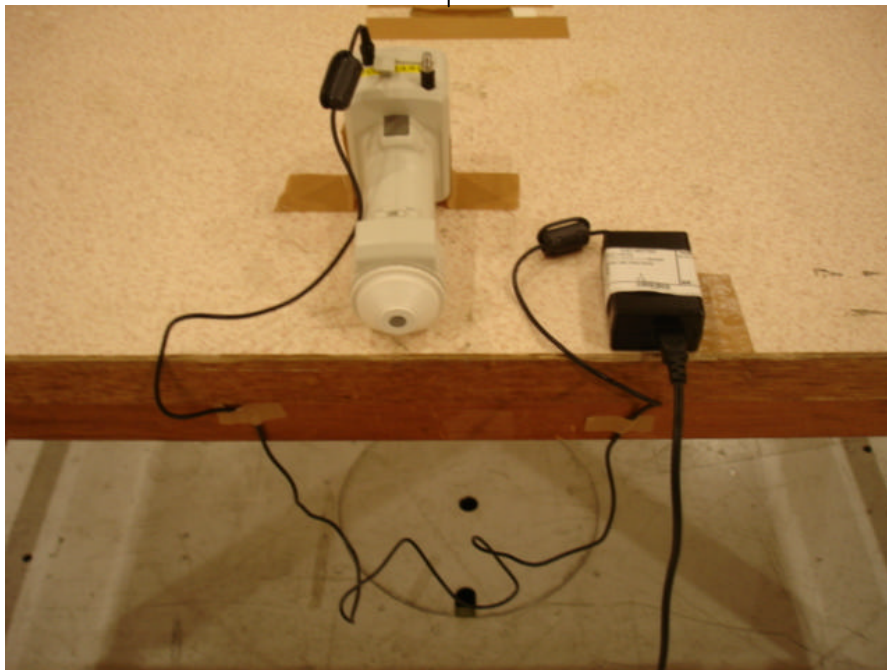
Angle 1

Antenna



Angle 2

Antenna



Appendix A (Continued)

Angle 3

Antenna

