

FCC TEST REPORT

FCC ID : VW98050-01

Applicant : **Harvest Franco Ltd.**
Rm.204, Tower 1, Harbour Centre.1 Hok Cheung Street, Hung Hom,
Kowloon, Hong Kong

Equipment Under Test (EUT) :


Product description : 2.4GHz Digital Wireless Bridge

Model No. : 8050-01

Standards : FCC 15 Paragraph 15.247

Date of Test : Jan.7, 2008

Test Engineer : Tiger Su

Reviewed By : 

PERPARED BY:

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3 Test Summary

Test	Test Requirement	Test Method	Class / Severity	Result
Radiated Emission (30MHz to 25GHz)	FCC PART 15: 2003	ANSI C63.4: 2003	Class B	PASS
Conducted Emission (150KHz to 30MHz)	FCC PART 15: 2003	ANSI C63.4: 2003	Class B	PASS

4 General Information

4.1 Client Information

Applicant: **Harvest Franco Ltd.**
Address of Applicant: Rm.204, Tower 1, Harbour Centre.1 Hok Cheung Street, Hung Hom, Kowloon, Hong Kong

4.2 General Description of E.U.T.

Product description: 2.4GHz Digital Wireless Bridge
Model No.: 8050-01

4.3 Details of E.U.T.

Power Supply: Adapter input: 120V AC 60Hz
Adapter output: 9VDC

4.4 Description of Support Units

The EUT has been tested as an independent unit.

4.5 Standards Applicable for Testing

The customer requested FCC tests for a 2.4GHz Digital Wireless Bridge. The standards used were FCC 15 Paragraph 15.247, Paragraph 15.205, Paragraph 15.207, Paragraph 15.209, Paragraph 15.31, Paragraph 15.33, Paragraph 15.35.

4.6 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **IC – Registration No.:IC4147**

Shenzhen Academy Of Metrology and Quality Inspection EMC Laboratory has been registered and fully described in a report filed with the Industry Canada. The acceptance letter from the Industry Canada is maintained in our files. Registration IC4147.

- **FCC – Registration No.: 97379**

Shenzhen Academy Of Metrology and Quality Inspection EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 97379, April 20, 2006.

4.7 Test Location

All Emissions tests were performed at:-

Bldg, of Metrology and Quality Inspection ,Longzhu Road ,Nanshan District ,Shenzhen ,Guangdong ,China

5 Equipment Used during Test

Conducted Emission Test						
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due date
1	CE Variac	GZ Debao Factory	TS/DGC ₂ -5	N/A	N/A	N/A
2	LISN	SCHAFFNER CHASE	MNZ050D11	100002	18-11-2007	17-11-2008
3	Shielding Room	Frankonia	12 x 4 x 4 m ³	N/A	N/A	N/A
4	EMI Receiver	ROHDE & SCHWARZ	ESCS30	830245/009	18-11-2007	17-11-2008
5	Coaxial Cable	SMQ	2m	N/A	18-11-2007	17-11-2008
Radiated Emission Test						
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due date
1	3m Semi- Anechoic Chamber	Albatross Projects	9X6X6	N/A	18-11-2007	17-11-2008
2	EMI Test Receiver	ROHDE & SCHWARZ	ESCS30	830245/009	18-11-2007	17-11-2008
3	EMI Test Software	ROHDE & SCHWARZ	ES-K1	N/A	N/A	N/A
4	Coaxial cable	SMQ	N/A	N/A	18-11-2007	17-11-2008
5	Signal Generator	GW	GIG-810	N/A	18-11-2007	17-11-2008
6	Bilog Antenna	Chase	CBL6112B	2591	18-11-2007	17-11-2008
7	Horn Antenna	ROHDE & SCHWARZ	HF906	100014	18-11-2007	17-11-2008
Common Used Equipment						
Item	Test Equipment	Manufacturer	Model No.	Series No.	Cal. Date	Due date
1	Temperature, Humidity & Barometer	OREGON SCIENTIFIC	BA-888	EMC0001 to EMC0004	11-11-2007	10-11-2008
2	DMM	FLUKE	73	70681569 or 70671122	11-11-2007	10-11-2008

6 Conducted Emission Test

Test Requirement:	FCC Part15 Paragraph 15.207
Test Method:	Based on FCC Part15 Paragraph 15.207
Test Date:	Jan.7, 2008
Frequency Range:	150kHz to 30MHz
Class:	Class B
Detector:	Peak for pre-scan (9kHz Resolution Bandwidth) Quasi-Peak & Average if maximised peak within 6dB of Average Limit

6.1 Test Equipment

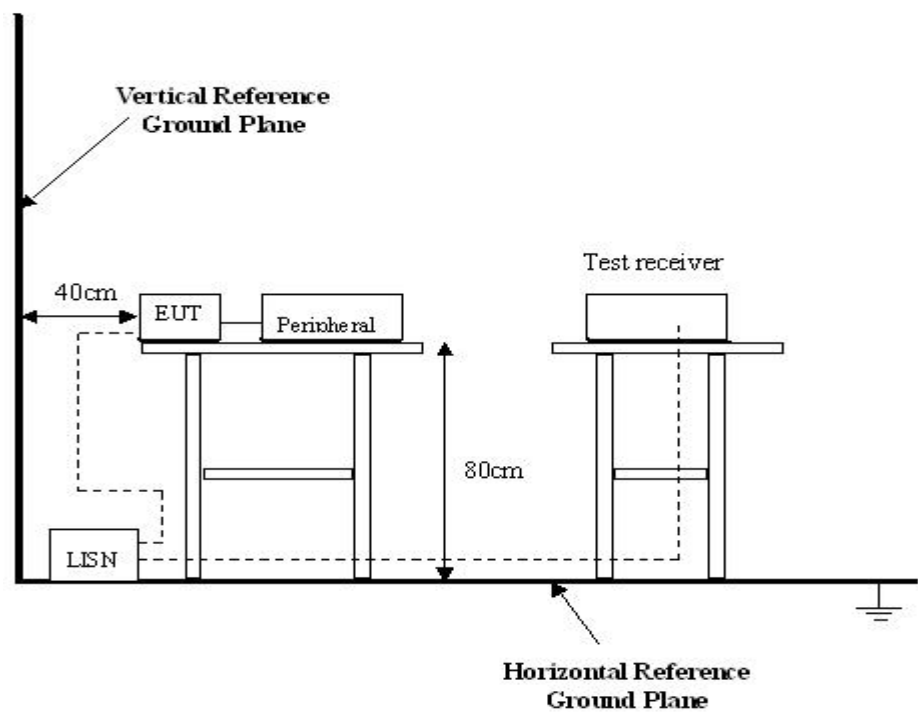
Please refer to Section 5 this report.

6.2 Test Procedure

1. The EUT was connected with signal generator and placed on a table.
2. The EUT was tested according to ANSI C63.4:2003. The frequency spectrum from 150kHz to 30MHz was investigated.
3. The maximised peak emissions from the EUT was scanned and measured for both the Live and Neutral Lines. Quasi-peak & average measurements were performed if peak emissions were within 6dB of the average limit line.

6.3 Conducted Test Setup

The conducted emission tests were performed using the setup accordance with the ANSI C63.4:2003, The specification used in this report was the FCC Part15 Paragraph 15.207 limits.



6.4 EUT Operating Condition

Operating condition is according to ANSI C63.4:2003.

- A. Setup the EUT and simulators as shown on follow.
- B. Enable RF signal and confirm EUT active.
- C. Modulate output capacity of EUT up to specification.



6.5 Conducted Emission Limits

66-56 dB μ V/m between 0.15MHz & 0.5MHz

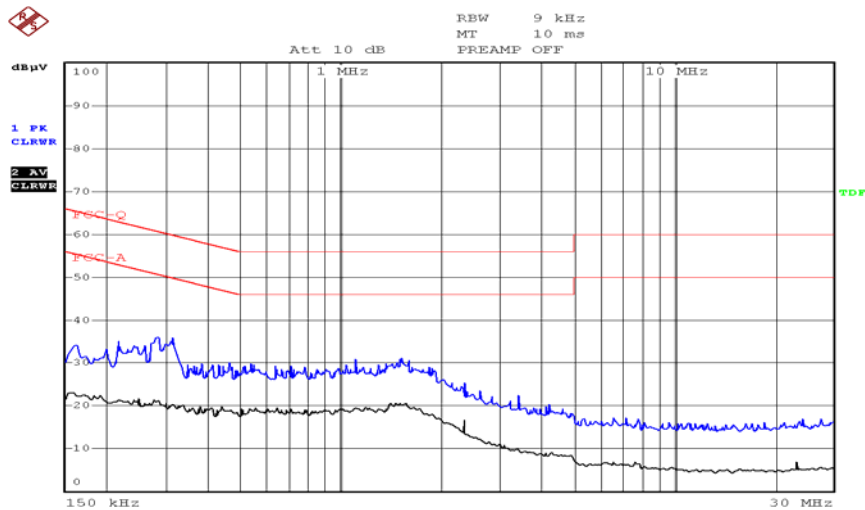
56 dB μ V/m between 0.5MHz & 5MHz

60 dB μ V/m between 5MHz & 30MHz

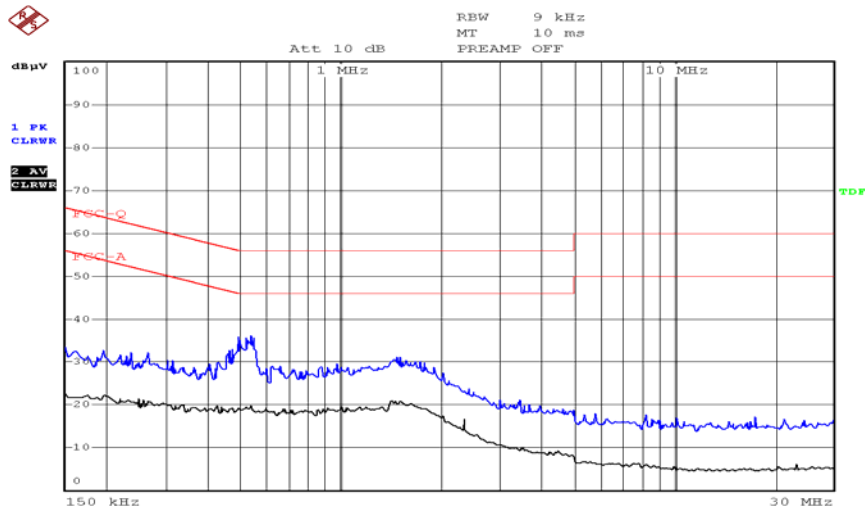
Note: In the above limits, the tighter limit applies at the band edges.

6.6 Conducted Test Result

Live Line



Neutral Line



6.7 Conducted Test Data

Freq. MHz	Line	QP Reading dBuV	Limit dBuV	Margin dB	AV Reading dBuV	Limit dBuV	Margin dB
0.17	Live	34.15	64.96	30.81	23.85	54.96	31.11
0.32	Live	35.67	59.74	24.07	20.09	49.74	29.65
0.56	Neutral	37.23	56.00	18.77	19.42	46.00	26.58
1.57	Neutral	31.85	56.00	24.15	21.36	46.00	24.64

7 Radiation Emission Test

Test Requirement:	FCC Part15 Paragraph 15.247
Test Method:	Based on ANSI 63.4:2003
Test Date:	Jan.7, 2008
Frequency Range:	30MHz to 25GHz
Measurement Distance:	3m
Detector:	Peak for pre-scan (120kHz resolution bandwidth) Quasi-Peak if maximised peak within 6dB of limit

7.1 Test Equipment

Please refer to Section 5 this report.

7.2 Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in the field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

Based on ANSI C63.4:2003, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiation emissions measurement at SMQ EMC Lab is +4.0 dB.

7.3 Test Procedure

1. The EUT was connected with signal generator and placed on a table.
2. Maximizing procedure was performed on the six (6) highest emissions to ensure EUT is compliant with all installation combinations.
3. All data was recorded in the peak and average detection mode.
4. The EUT was under normal mode during the final qualification test and the configuration was used to represent the worst case results.

The radiated emission tests were performed in the 3m Semi- Anechoic Chamber test site, using the setup accordance with the ANSI C63.4:2003, The specification used in this report was the FCC Part15 Paragraph 15.209 limits and Paragraph 15.247 limits.

Start Frequency	30 MHz
Stop Frequency	25000 MHz
Sweep Speed	Auto
IF Bandwidth	100 kHz
Video Bandwidth	1 MHz
Quasi-Peak Adapter Bandwidth	120 kHz
Quasi-Peak Adapter Mode.....	Normal
Resolution Bandwidth	1MHz

7.6 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

$$\text{Corr. Ampl.} = \text{Indicated Reading} + \text{Antenna Factor} + \text{Cable Factor} - \text{Amplifier Gain}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7dB μ V means the emission is 7dB μ V below the maximum limit for Class B. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corr. Ampl.} - \text{Class B Limit}$$

7.7 Summary of Test Results

According to the data in section 7.10, the EUT complied with the FCC Part15 Paragraph 15.247 standards.

7.8 EUT Operating Condition

Same as section 6.4 of this report.

Let the EUT work in test mode and test it.

7.9 Radiated Emissions Limit on Paragraph 15.209

Frequency(MHZ)	Distance(m)	Field strength(dBuV/m)
30-88	3	40.0
88-216	3	43.5
216-960	3	46.0
Above 960	3	54.0

- Note:**
- (1) $\text{RF Voltage(dBuV)} = 20 \log \text{RF Voltage(uV)}$
 - (2) In the Above Table, the tighter limit applies at the band edges.
 - (3) Distance refers to the distance in meters between the measuring instrument antenna.
 - (4) The emission limit in this paragraph is based on measurement instrumentation employing an average detector. Measurement using instrumentation with a peak detector function, corresponding to 20dB above the maximum permitted average limit.
 - (5) Above 1GHz, do a Peak and average measurements for all emissions, Limit for peak is 74dBuV/m, According to Part 15.35(b) and average is 54BuV/m.

7.10 Radiated Emissions Test Result

Formula of conversion factors:the field strength at 3m was established by adding
The meter reading of the spectrum analyzer (which is set to read in units of dBuV)
To the antenna correction factor supplied by the antenna manufacturer. The antenna
Correction factors are stated in terms of dB.The gain of the pressletor was accounted
For in the spectrum analyser meter reading.

Example:

Freq(MHz) Meter Reading +ACF=FS

33 20dBuV+10.36dB=30.36dBuV/m @3m

7.11 Radiated Emission Data

A. Test Item: Radiated Emission Data
Test Voltage: 120VAC
Test Mode: TX On
Temperature: 24 °C
Humidity: 52%RH
Test Result: PASS

Remarks: 30-1000MHz radiation test no significant emissions above the equipment noise floor were detected.

Frequency (MHz)	Detector	Antenna Polarization	Emission Level (dBuV/m)	FCC 15 Subpart C Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Turntable Angle (°)
Low frequency							
2402.00	AV	Vertical	62.27		(Fund.)	1.5	90
4804.00	AV	Vertical	39.62	54.00	14.38	1.5	120
7206.00	AV	Vertical	40.23	54.00	13.77	1.8	100
9608.00	AV	Vertical	39.37	54.00	14.63	1.5	90
12010.00	AV	Vertical	41.11	54.00	12.89	1.0	60
14412.00	AV	Vertical	40.39	54.00	13.61	1.5	60
16814.00	AV	Vertical	41.28	54.00	12.72	1.8	100
19216.00	AV	Vertical	42.67	54.00	11.33	1.8	180
21618.00	AV	Vertical	42.59	54.00	11.41	1.5	100
24020.00	AV	Vertical	42.73	54.00	11.27	1.0	45
2402.00	AV	Horizontal	61.38		(Fund.)	1.5	45
4804.00	AV	Horizontal	39.55	54.00	14.45	1.6	180

7206.00	AV	Horizontal	40.16	54.00	13.84	1.5	60
9608.00	AV	Horizontal	39.03	54.00	14.97	1.0	90
12010.00	AV	Horizontal	40.21	54.00	13.79	1.8	45
14412.00	AV	Horizontal	38.36	54.00	15.64	1.0	120
16814.00	AV	Horizontal	40.74	54.00	13.26	1.8	180
19216.00	AV	Horizontal	41.22	54.00	12.78	1.5	90
21618.00	AV	Horizontal	41.53	54.00	12.47	1.5	60
24020.00	AV	Horizontal	42.36	54.00	11.64	1.0	60
2402.00	PK	Vertical	76.25		(Fund.)	1.5	90
4804.00	PK	Vertical	53.16	74.00	20.84	1.5	100
7206.00	PK	Vertical	47.88	74.00	26.12	1.8	120
9608.00	PK	Vertical	42.42	74.00	31.58	1.8	100
12010.00	PK	Vertical	43.63	74.00	30.37	1.0	90
14412.00	PK	Vertical	43.77	74.00	30.23	1.8	90
16814.00	PK	Vertical	45.89	74.00	28.11	1.0	60
19216.00	PK	Vertical	48.67	74.00	25.33	1.8	100
21618.00	PK	Vertical	48.78	74.00	25.22	1.5	120
24020.00	PK	Vertical	49.31	74.00	24.69	1.5	45
2402.00	PK	Horizontal	75.37		(Fund.)	1.5	45
4804.00	PK	Horizontal	52.21	74.00	21.79	1.6	60
7206.00	PK	Horizontal	47.76	74.00	26.24	1.5	100
9608.00	PK	Horizontal	42.33	74.00	31.67	1.0	90
12010.00	PK	Horizontal	43.19	74.00	30.81	1.0	60
14412.00	PK	Horizontal	43.62	74.00	30.38	1.5	60
16814.00	PK	Horizontal	45.73	74.00	28.27	1.8	100
19216.00	PK	Horizontal	47.57	74.00	26.43	1.8	120
21618.00	PK	Horizontal	48.59	74.00	25.41	1.8	180
24020.00	PK	Horizontal	48.88	74.00	25.12	1.0	120
Middle frequency							
2441.00	AV	Vertical	63.37		(Fund.)	1.5	90
4882.00	AV	Vertical	40.19	54.00	13.81	1.5	45
7323.00	AV	Vertical	40.24	54.00	12.76	1.6	60
9764.00	AV	Vertical	41.33	54.00	12.67	1.0	100
12205.00	AV	Vertical	41.87	54.00	12.13	1.8	180

14646.00	AV	Vertical	42.73	54.00	11.27	1.0	120
17087.00	AV	Vertical	42.26	54.00	11.74	1.6	100
19528.00	AV	Vertical	43.17	54.00	10.83	1.6	180
21969.00	AV	Vertical	43.65	54.00	10.35	1.5	90
24410.00	AV	Vertical	43.86	54.00	10.14	1.0	45
2441.00	AV	Horizontal	62.25		(Fund.)	1.5	100
4882.00	AV	Horizontal	39.94	54.00	14.06	1.5	180
7323.00	AV	Horizontal	40.33	54.00	13.67	1.8	90
9764.00	AV	Horizontal	42.52	54.00	11.48	1.0	100
12205.00	AV	Horizontal	43.45	54.00	10.55	1.8	120
14646.00	AV	Horizontal	43.67	54.00	10.33	1.6	90
17087.00	AV	Horizontal	44.24	54.00	9.76	1.5	45
19528.00	AV	Horizontal	44.86	54.00	9.14	1.8	180
21969.00	AV	Horizontal	45.59	54.00	8.41	1.6	120
24410.00	AV	Horizontal	45.71	54.00	8.29	1.0	120
2441.00	PK	Vertical	76.87		(Fund.)	1.5	120
4882.00	PK	Vertical	57.23	74.00	16.77	1.5	60
7323.00	PK	Vertical	46.62	74.00	27.38	1.5	90
9764.00	PK	Vertical	47.94	74.00	26.06	1.6	100
12205.00	PK	Vertical	47.87	74.00	26.13	1.5	120
14646.00	PK	Vertical	48.36	74.00	25.64	1.8	90
17087.00	PK	Vertical	49.47	74.00	24.53	1.0	180
19528.00	PK	Vertical	49.85	74.00	24.15	1.5	120
21969.00	PK	Vertical	50.22	74.00	23.78	1.6	45
24410.00	PK	Vertical	50.61	74.00	23.39	1.8	90
2441.00	PK	Horizontal	75.89		(Fund.)	1.5	100
4882.00	PK	Horizontal	56.68	74.00	17.32	1.8	45
7323.00	PK	Horizontal	46.51	74.00	27.49	1.5	60
9764.00	PK	Horizontal	45.14	74.00	28.86	1.5	90
12205.00	PK	Horizontal	43.36	74.00	30.64	1.6	100
14646.00	PK	Horizontal	43.74	74.00	30.26	1.0	120
17087.00	PK	Horizontal	46.82	74.00	27.18	1.8	180
19528.00	PK	Horizontal	48.86	74.00	25.14	1.5	120
21969.00	PK	Horizontal	49.22	74.00	24.78	1.5	100

24410.00	PK	Horizontal	49.67	74.00	24.33	1.6	45
High frequency							
2480.00	AV	Vertical	64.52		(Fund.)	1.5	100
4960.00	AV	Vertical	41.26	54.00	12.74	1.5	45
7440.00	AV	Vertical	41.73	54.00	12.27	1.5	120
9920.00	AV	Vertical	42.26	54.00	11.74	1.6	90
12400.00	AV	Vertical	42.55	54.00	11.45	1.8	45
14880.00	AV	Vertical	43.34	54.00	10.66	1.5	100
17360.00	AV	Vertical	43.62	54.00	10.38	1.6	120
19840.00	AV	Vertical	44.13	54.00	9.87	1.8	90
22320.00	AV	Vertical	44.27	54.00	9.73	1.5	90
24800.00	AV	Vertical	44.84	54.00	9.16	1.5	60
2480.00	AV	Horizontal	63.72		(Fund.)	1.5	180
4960.00	AV	Horizontal	40.95	54.00	13.05	1.5	100
7440.00	AV	Horizontal	41.35	54.00	12.65	1.5	90
9920.00	AV	Horizontal	41.47	54.00	12.53	1.0	60
12400.00	AV	Horizontal	41.89	54.00	12.11	1.6	90
14880.00	AV	Horizontal	42.42	54.00	11.58	1.0	100
17360.00	AV	Horizontal	43.17	54.00	10.83	1.8	120
19840.00	AV	Horizontal	43.55	54.00	10.45	1.5	180
22320.00	AV	Horizontal	43.86	54.00	10.14	1.0	100
24800.00	AV	Horizontal	44.25	54.00	9.75	1.6	60
2480.00	PK	Vertical	77.62		(Fund.)	1.5	60
4960.00	PK	Vertical	48.94	74.00	25.06	1.5	100
7440.00	PK	Vertical	49.83	74.00	24.17	1.5	180
9920.00	PK	Vertical	45.35	74.00	28.65	1.8	90
12400.00	PK	Vertical	45.56	74.00	28.44	1.0	90
14880.00	PK	Vertical	44.72	74.00	29.28	1.6	60
17360.00	PK	Vertical	45.87	74.00	28.13	1.8	45
19840.00	PK	Vertical	46.26	74.00	27.74	1.5	100
22320.00	PK	Vertical	46.73	74.00	27.27	1.5	90
24800.00	PK	Vertical	46.33	74.00	27.67	1.6	60
2480.00	PK	Vertical	76.75		(Fund.)	1.5	60
4960.00	PK	Vertical	47.57	74.00	26.43	1.5	90

7440.00	PK	Vertical	48.64	74.00	25.36	1.5	90
9920.00	PK	Vertical	43.37	74.00	30.63	1.6	90
12400.00	PK	Vertical	43.52	74.00	30.48	1.6	45
14880.00	PK	Vertical	43.26	74.00	30.74	1.5	60
17360.00	PK	Vertical	46.41	74.00	27.59	1.8	100
19840.00	PK	Vertical	49.25	74.00	24.75	1.8	120
22320.00	PK	Vertical	50.11	74.00	23.89	1.0	180
24800.00	PK	Vertical	50.62	74.00	23.38	1.6	60

8 Maximum Peak Output Power

Test Requirement:	FCC Part15 Paragraph 15.247
Test Method:	Based on ANSI 63.4:2003
Test Date:	Jan.7, 2008
Test mode:	Compliance test in the worse case: Tx Low/Tx Middle/Tx High
Requirements:	Regulation 15.247(b) The limit of Maximum Peak Output Power Measurement is 1W(30dBm)

Test procedure:

The following test procedure as below:

1. The EUT was powered ON and placed on a table in the chamber.
2. The fundamental frequency of the transmitter was maximized on the test receiver display by raising and lowering the receive antenna and by rotating the turntable. After the fundamental emission was maximized, a field strength measurement was made.
3. The device under test has an integral antenna and the power was measured on a radiated basis.
4. The technique used to find the output power of the transmitter was the antenna substitution method. Substitution method was performed to determine the actual ERP emission levels of the EUT.

Test Result: The unit does meet the FCC requirements.

Test Channel	Fundamental Frequency(GHz)	Output Power (mW)	Limit (W)	Power output level
low	2.402	3.42	1	EIRP
middle	2.441	3.11	1	EIRP
high	2.480	3.26	1	EIRP

9 Hopping Channel Number

Test Requirement: FCC Part15 C

Test Method: Based on FCC Part15 Paragraph 15.247

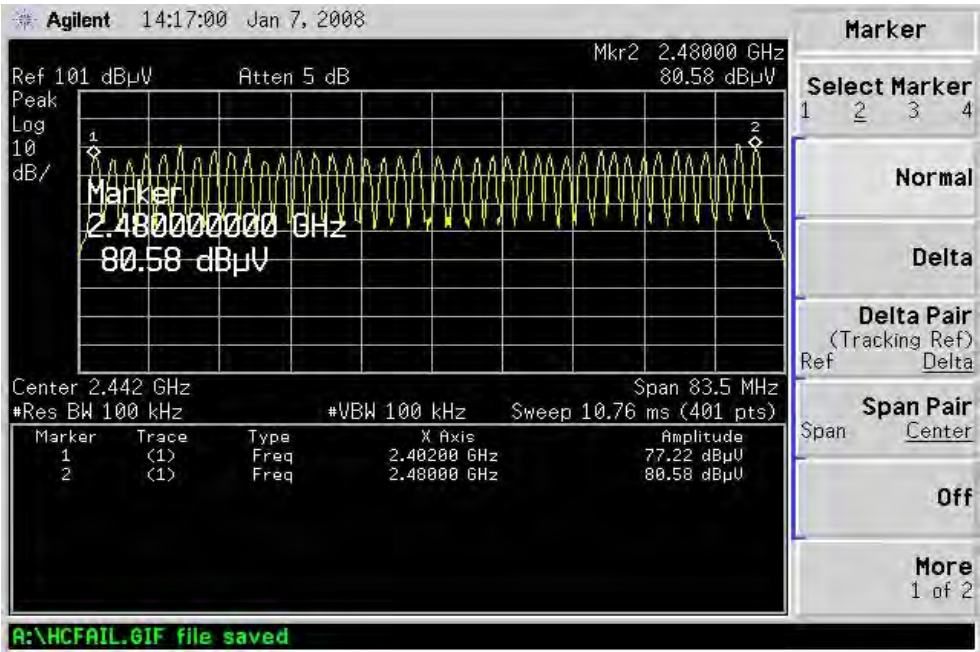
Test Date: Jan.7, 2008

Test mode: The EUT work in test mode(Tx) and test it

Requirements: Regulation 15.247(a) For frequency hopping systems operating In the 2400-2483.5MHz band employing at least 50 hopping channels.

Test result: The total number of channels would be 55 channels.
The unit does meet the FCC requirements.

Please refer the graph as below:



10 Carrier Frequencies Separated

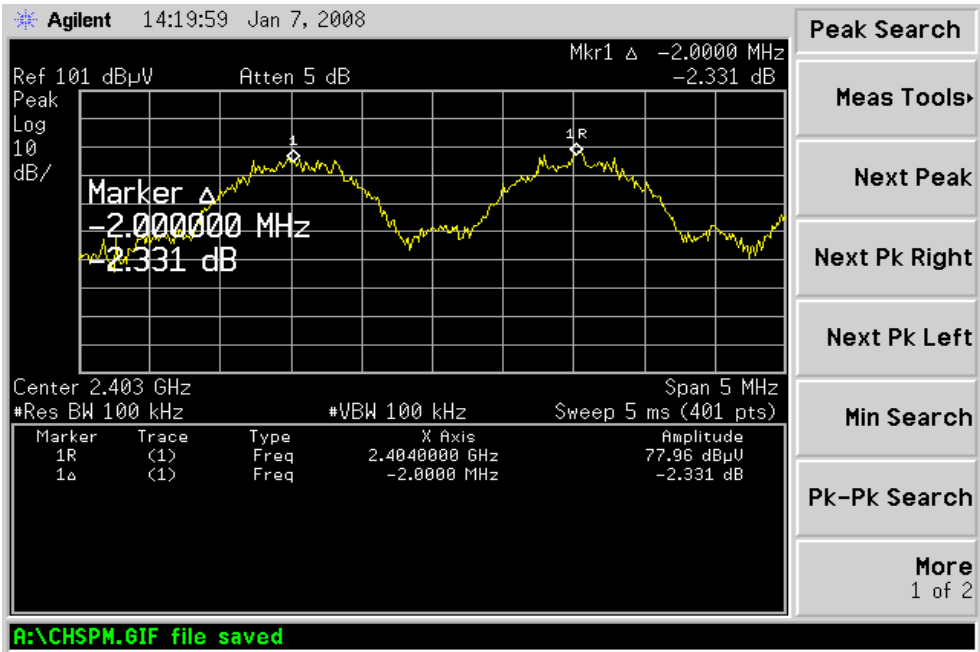
Test Requirement: FCC Part15 C
Test Method: Based on FCC Part15 Paragraph 15.247
Test Date: Jan.7, 2008
Test mode: The EUT work in test mode(Tx) and test it
Requirements: The bandwidth of the fundamental frequency was measur by spectrum analyser with 100kHz RBW and 100kHz VBW.The 20dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 20dB.
Test result: PASS

Channel Carrier Frequency Separated

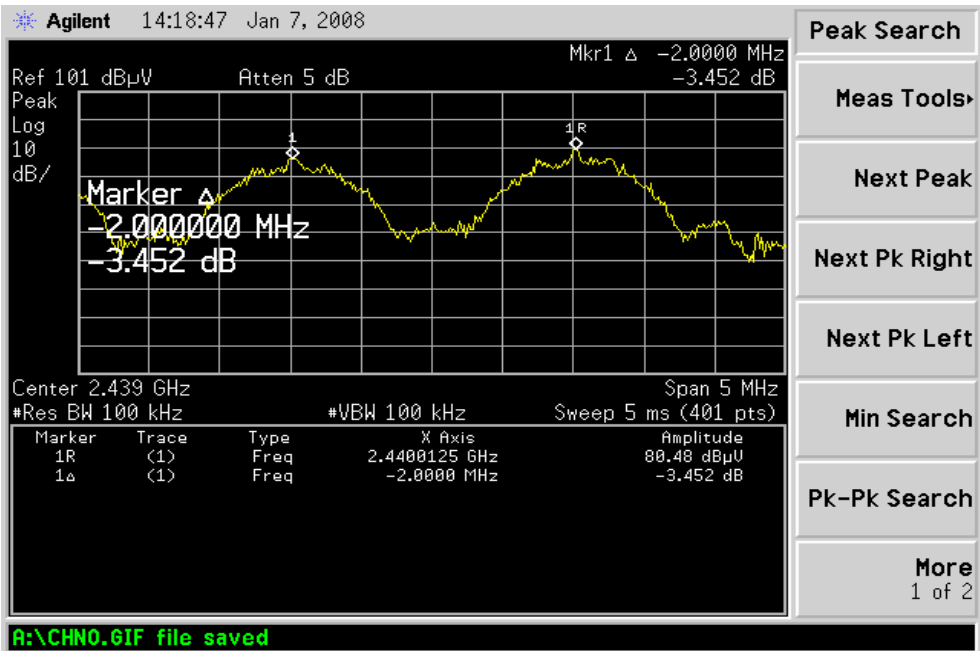
Test Channel	Carrier Frequencies Separated	PASS/FAIL
Lower Channels (channel 1 and channel 2)	2MHz	Pass
Lower Channels (channel 26 and channel 27)	2MHz	Pass
Lower Channels (channel 54 and channel 55)	2MHz	Pass

The unit does meet the FCC requirements.

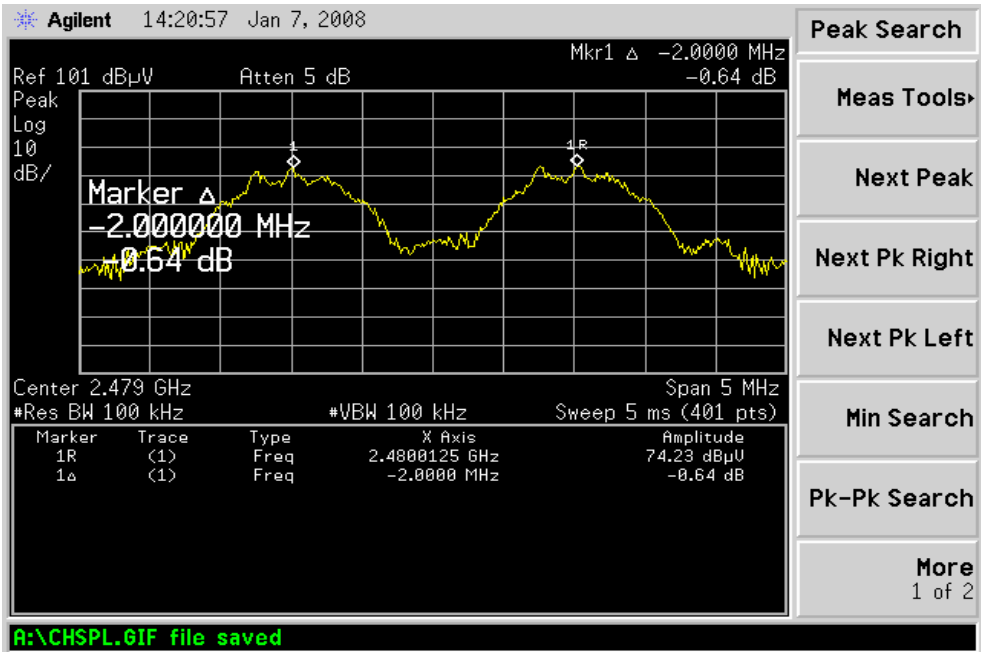
10.1 Lower Channel: Carrier Frequencies Separated



10.2 Middle Channel: Carrier Frequencies Separated



10.3 Upper Channel: Carrier Frequencies Separated



11 Dwell Time

Test Requirement:	FCC Part15 C
Test Method:	Based on FCC Part15 Paragraph 15.247
Test Date:	Jan.7, 2008
Test mode:	The EUT work in test mode(Tx) and test it

Requirements: 15.247 a(1)(iii)Frequency hopping systems in the 2400-2483.5MHz band shall use at least 15 non-overlapping channels.The average time of occupancy on any channel shall not greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

11.1 Test procedure

EUT and its simulators are placed on a turn table, the EUT and let it work normally, let EUT working in test mode,then test it.

The bandwidth of the fundamental frequency was measured with the spectrum analyser using 100kHz RBW and 100kHz VBW,set sweep time:10 ms.Span:0Hz.

11.2 Test Results : PASS

Number of hopping channels is 55.

A channel was used 107 times within $0.4 * 55 = 22S$.

Dwell time of each occupation in this channel a follows:

1.Low Channel: $1.975 \text{ mS} * 107 = 0.211 \text{ S} < 0.4 \text{ s}$

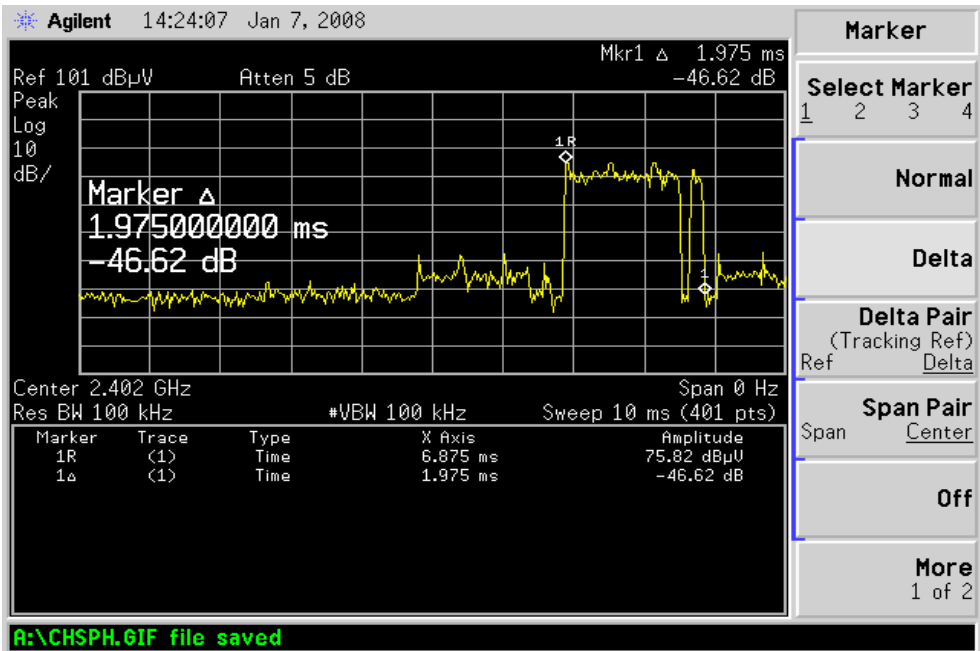
2.Middle Channel: $1.95 \text{ mS} * 107 = 0.208 \text{ S} < 0.4 \text{ s}$

3.High Channel: $1.65 \text{ mS} * 107 = 0.176 \text{ S} < 0.4 \text{ s}$

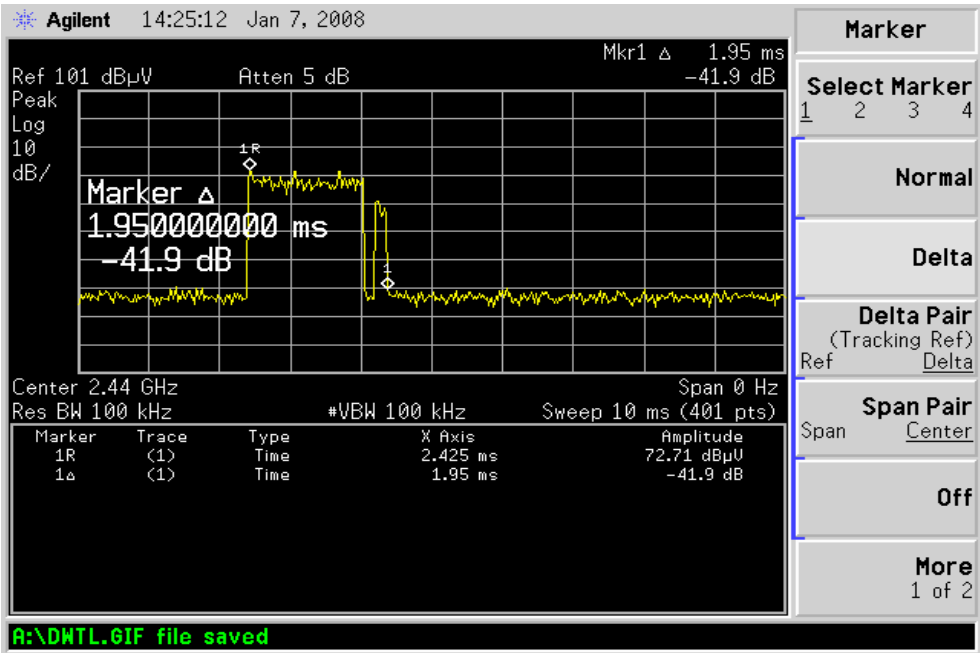
The Results are not be greater than 0.4 seconds.

Please refer the graph as below:

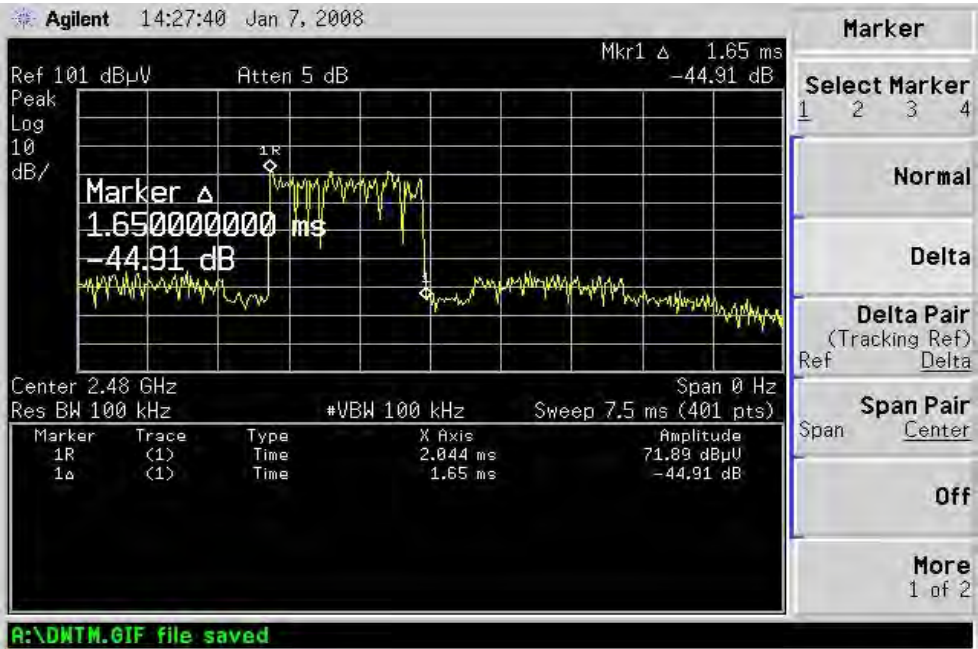
Channel 0: 2.402GHz



Channel 27: 2.441GHz



Channel 55: 2.480GHz



12 20-dB Bandwith

Test Requirement:	FCC Part15 C
Test Method:	Based on FCC Part15 Paragraph 15.247
Test Date:	Jan.7, 2008
Test mode:	The EUT work in test mode(Tx) and test it

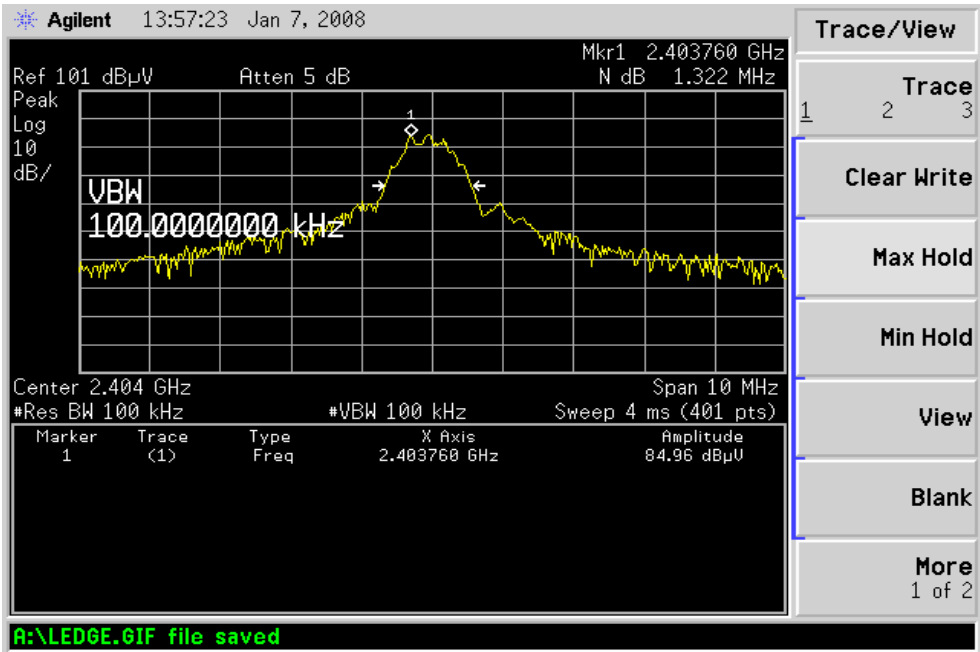
12.1 Test Procedure

1. The EUT, peripherals were put on the turntable which table size is 1mX1.5m, table high 0.8m. All set up is according to ANSI C63.4:2003.
2. With the EUT's antenna attached, The EUT's radiated emission power was received by the test antenna which was connected to the spectrum analyser with the START and STOP frequencies set to the EUT's operation band. Measurements were made at 3 meters.
3. The antenna high were varied from 1m to 4m high to find the maximum emission for each frequency.
4. The bandwidth of the fundamental frequency was measure by spectrum analyser with 100KHz RBW and 100KHz VBW. The 20dB bandwidth is defined as the total spectrum the power of which is higher than peak power 20dB.

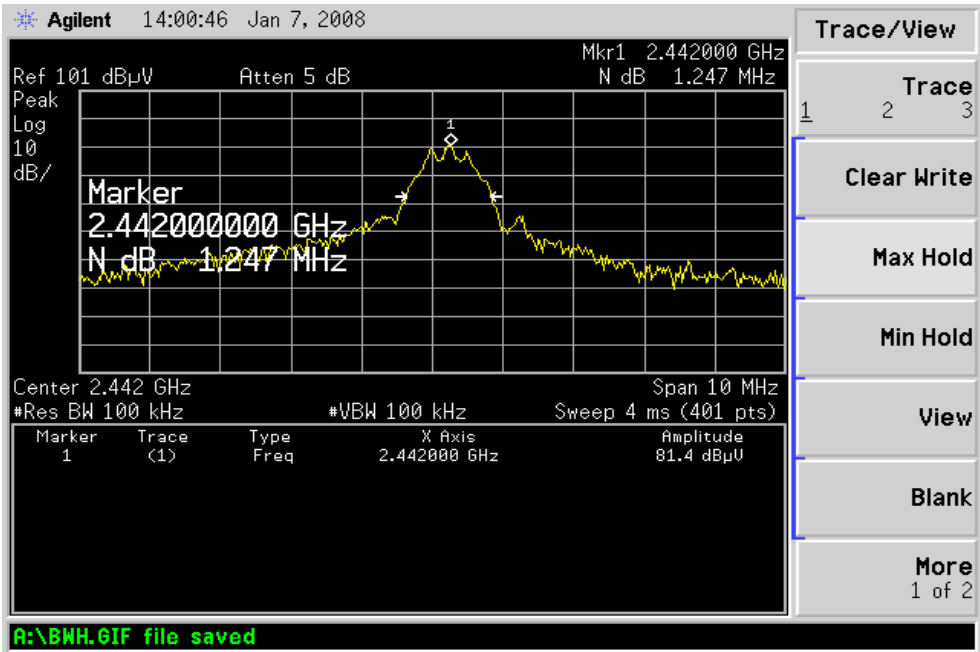
12.2 Test Result

Please refer the graph as below

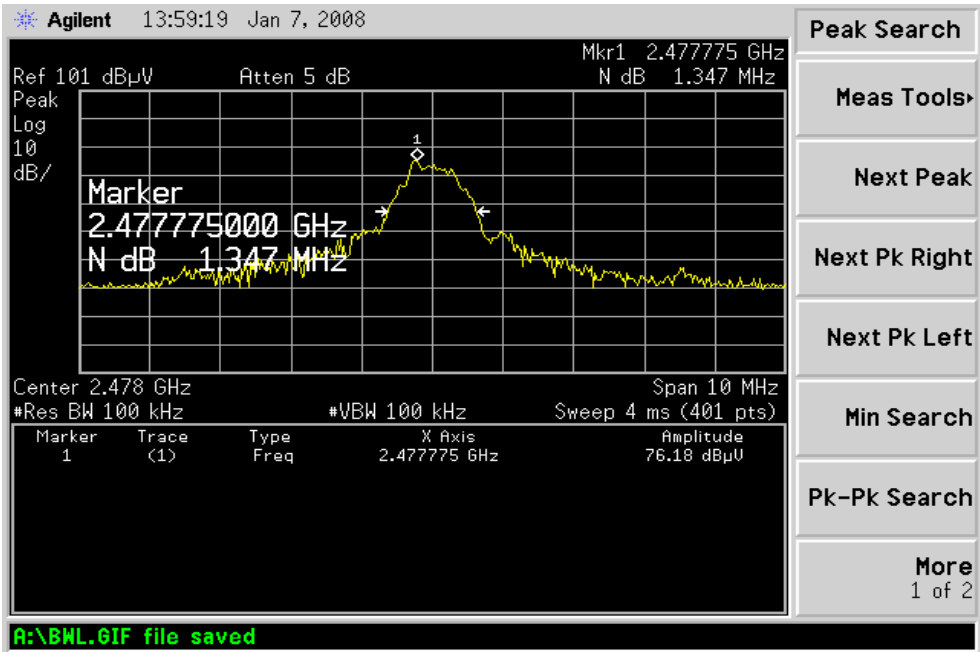
Low



Middle



High



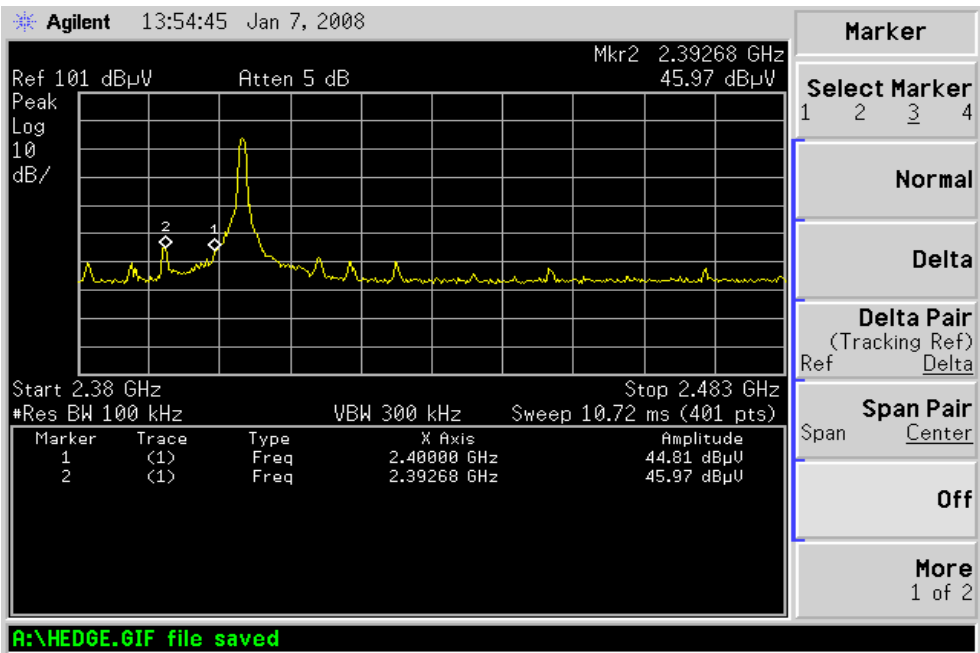
13 Radiated spurious emissions into adjacent restricted band

Test Requirement: FCC Part15 Paragraph 15.205
Test Method: Based on FCC Part 15 Paragraph 15.247
Test Date: Jan.7, 2008
Requirements: The EUT work in test mode(Tx) and test it

Requiments:emissions that fall in the restricted bands(15.205).Above 1000MHz, compliance with the emissions limits in section 15.209 shall be demonstrated based on the average value of the measured emissions,The provisions in section 15.35apply to these measurements.

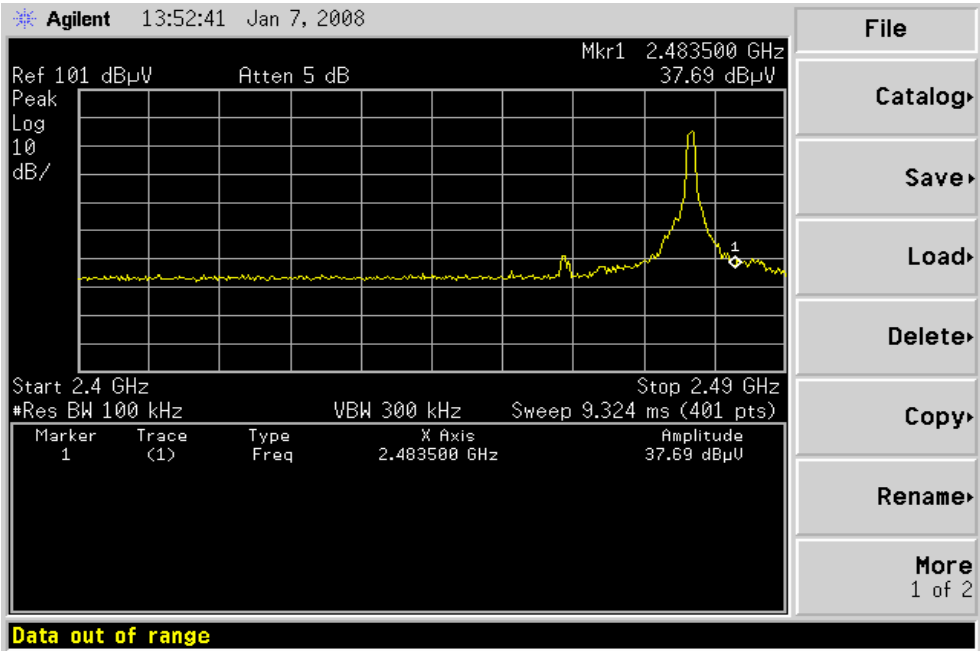
Test procedure:An in band field strength measurement of the fundamental emission using the RBW and detector function required by C63.4-2003 and FCC Rules.The procedure was repeated with an average detector and a plot made.The calculated field strength in the adjacent restricted band is presented below.

lower bandedge/ restricted band (peak value)



From plot, Reading is 44.81dBuV/m with TDS has been calculated Peak meets the average value(54 dBuV/m).

upper bandedge/ restricted band (peak value)



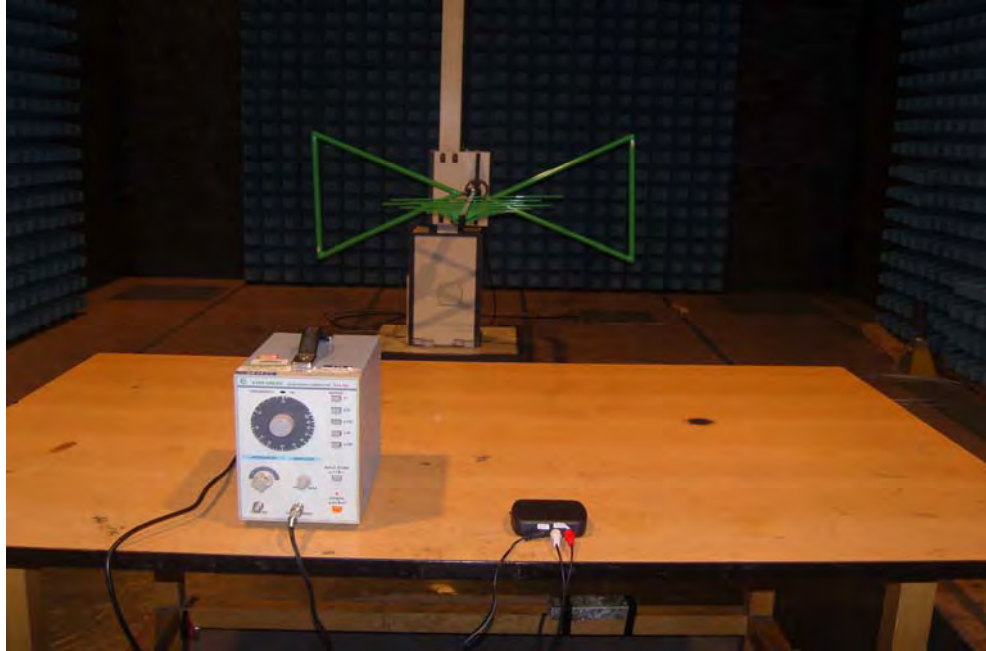
From plot, Reading is 37.69dBuV/m with TDS has been calculated Peak meets the average value(54 dBuV/m).

14 Photographs of Testing

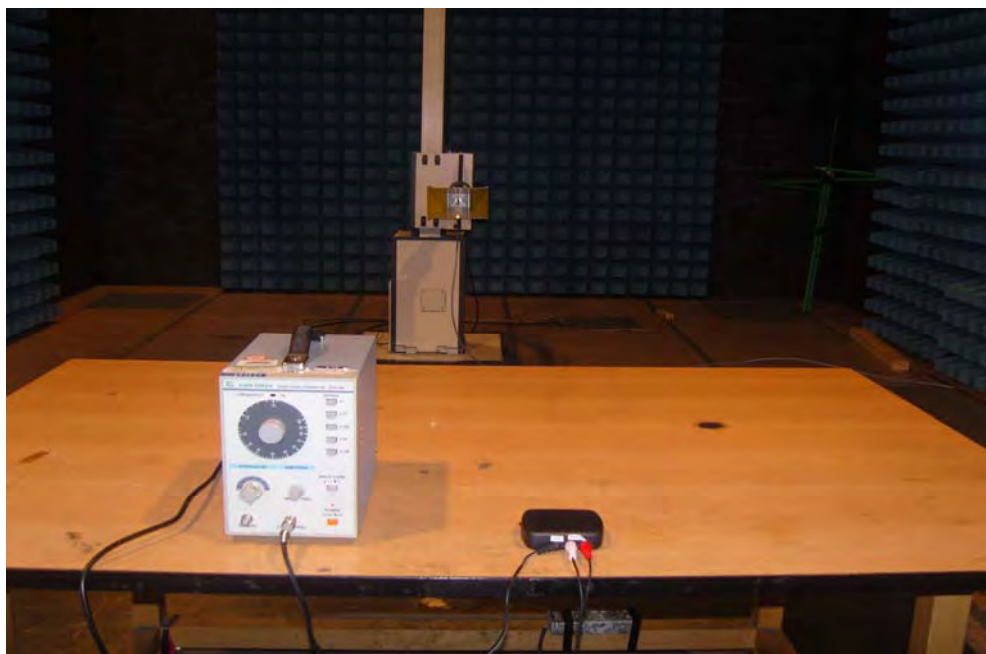
14.1 Conduction Emission Test View



14.2 Radiation Emission Test View For 30MHz-1000MHz



14.3 Radiation Emission Test View For 1GHz-25GHz



15 Photographs - Constructional Details

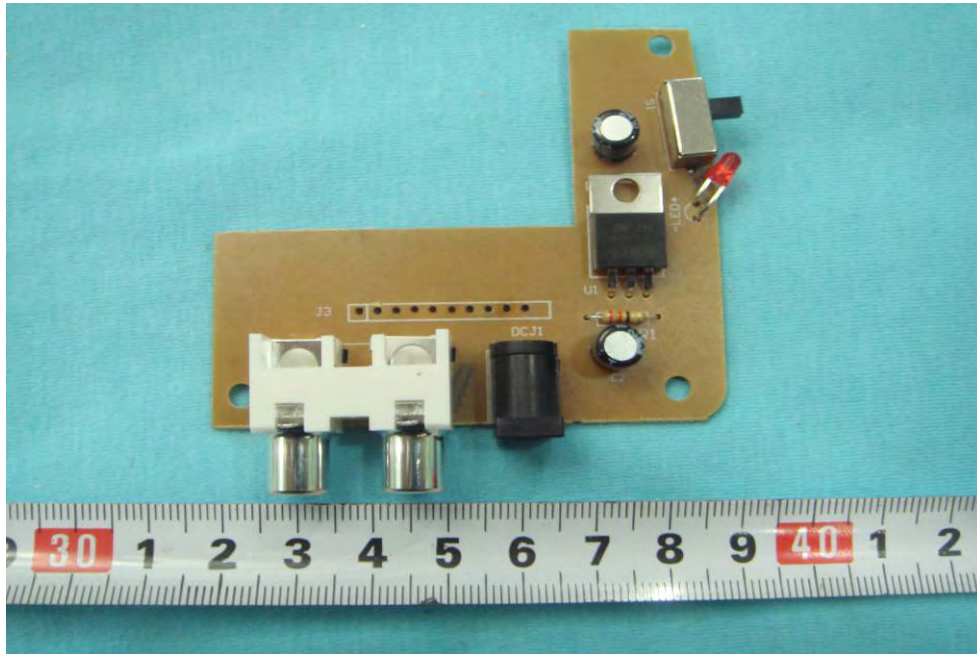
15.1 EUT - Front View



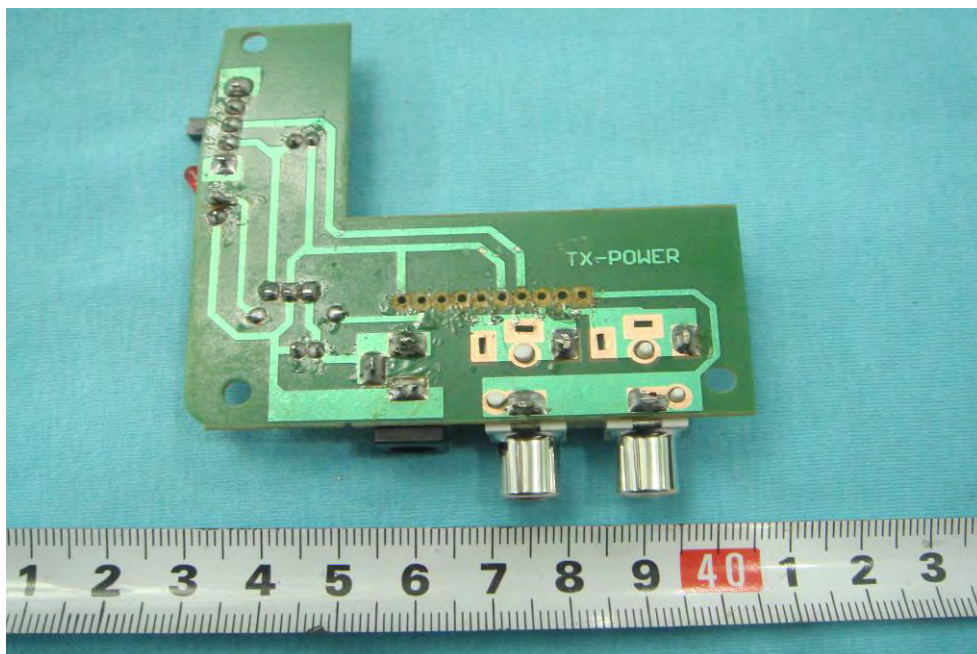
15.2 EUT - Back View



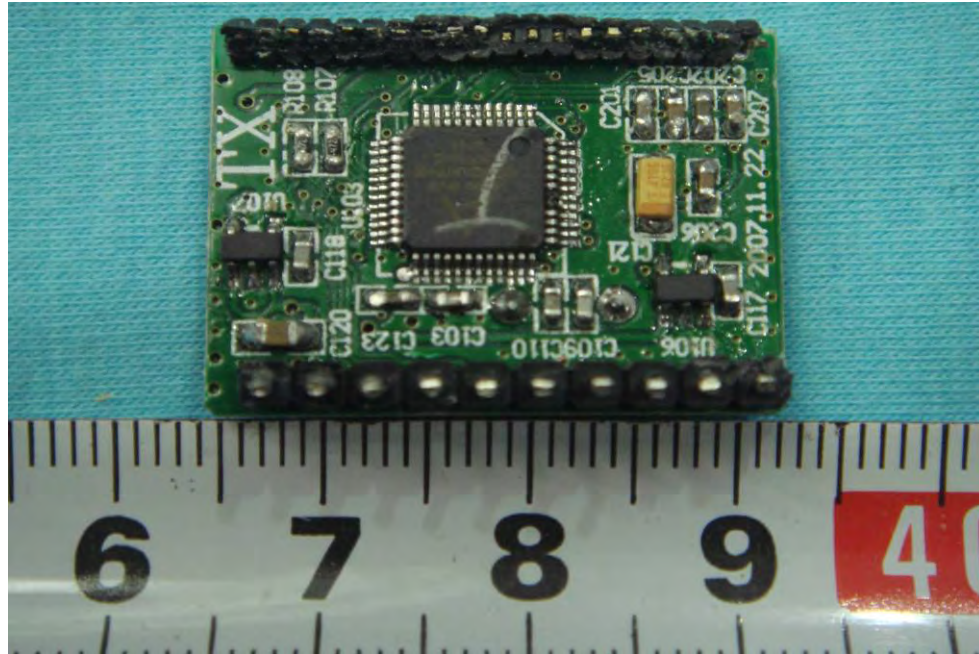
15.3 PCB1 – Front View



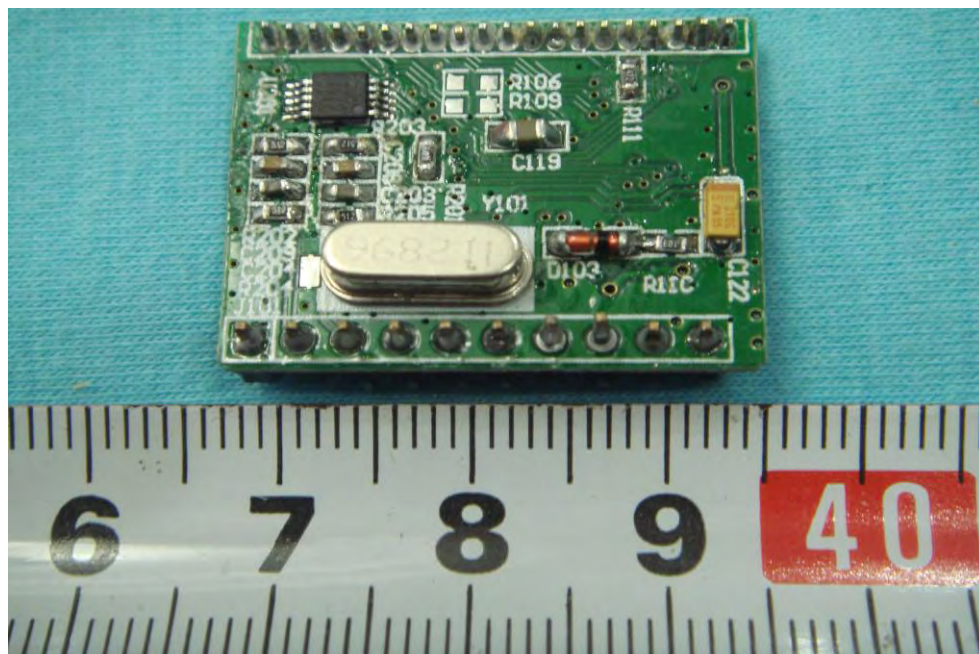
15.4 PCB 1- Back View



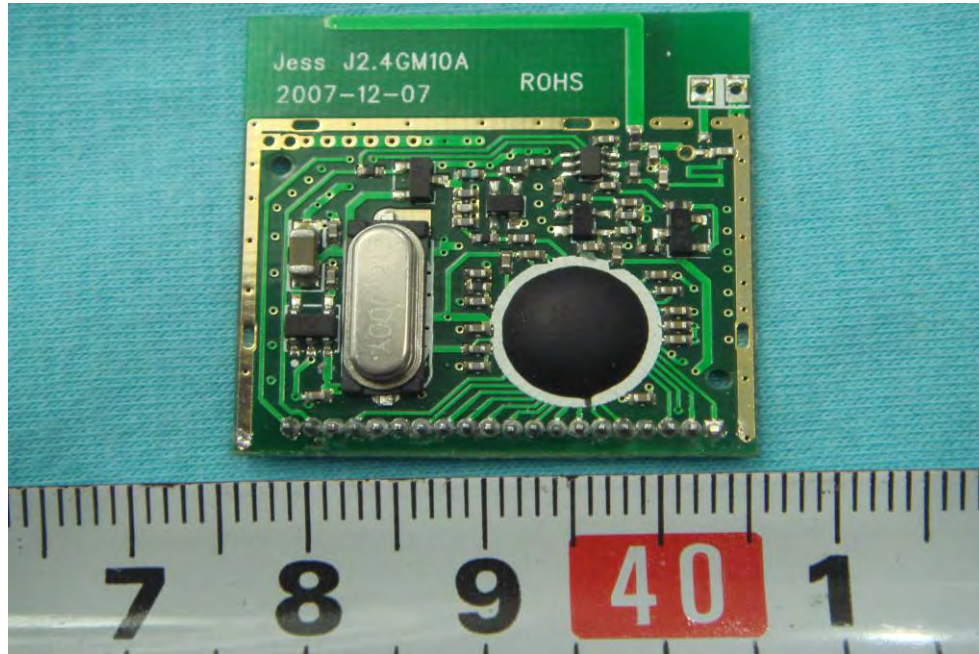
15.5 PCB 2- Front View



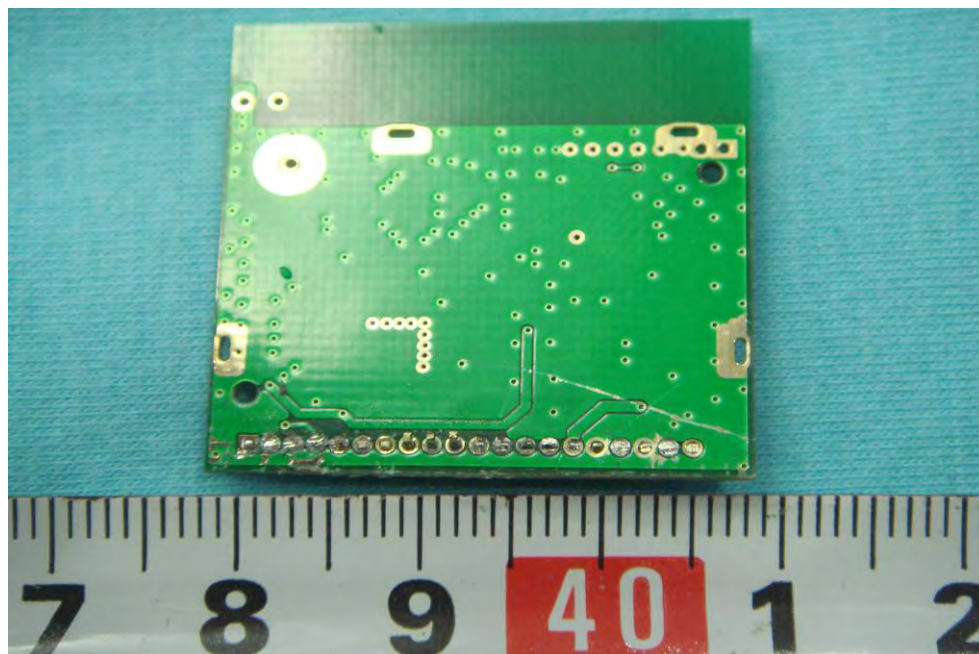
15.6 PCB 2- Back View



15.7 PCB 3- Front View



15.8 PCB 3- Back View



16 FCC ID Label

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:(1)this device may not cause harmful interference,and (2) this device must accept any interference received, including interference that may cause undesired operation.

The Label must not be a stick-on paper. The Label on these products must be permanently affixed to the product and readily visible at the time of purchase and must last the expected lifetime of the equipment not be readily detachable.

Proposed Label Location on EUT
EUT Bottom View/proposed FCC Mark Location

