ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT
INTENTIONAL RADIATOR CERTIFICATION TO
FCC PART 15 SUBPART C
REQUIREMENT T

OF

2.4G wireless optical mouse

MODEL No.: TM137G

Trademark: N/A

FCC ID: R2U-TM137G

REPORT NO: ES130118117E

ISSUE DATE: February 26, 2013

Prepared for

Hunan Ocean Wing Ecommerce Limited Company
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VERIFICATION OF COMPLIANCE

Applicant:	Hunan Ocean Wing Ecommerce Limited Company Room 2301, Best-one Metro Building, No.359 Furong, Changsha, Hunan Province, China.
Manufacturer:	Hunan Ocean Wing Ecommerce Limited Company Room 2301, Best-one Metro Building, No.359 Furong, Changsha, Hunan Province, China.
Product Description:	2.4G wireless optical mouse
Model Number:	TM137G
Serial Number:	N/A
Trademark:	N/A
File Number:	ES130118117E
Date of Test:	February 1, 2013 to February 26, 2013

We hereby certify that:

The above equipment was tested by SHENZHEN EMTEK CO., LTD. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.4 (2009) and the energy emitted by the sample EUT tested as described in this report is in compliance with conducted and radiated emission limits of FCC Rules Part 15.249.

The test results of this report relate only to the tested sample identified in this report.

Date of Test : February 1, 2013 to February 26, 2013

Prepared by : Sara Tang

Sara Tang/Editor

Reviewer :

Aaron Lai /Supervisor

SHENZHEN EMTEK CO., LTD. TESTING

Approve & Authorized Signer :

Lisa Wang/Manager

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1. GENERAL INFORMATION

1.1. Product Description

The Hunan Ocean Wing Ecommerce Limited Company
Model: TM137G (referred to as the EUT in this report) The EUT is a short range, lower power, 2.4G wireless optical mouse designed as a Device. It is designed by way of utilizing the GFSK modulation achieves the system operating.

A major technical descriptions of EUT is described as following:

A). Operation Frequency: 2408-2474MHz
B). Modulation: GFSK
C). Number of Channel: 34
D). Channel space: 2MHz
E). Antenna Type: Integral antenna
F). Antenna Gain: 1dBi
G). Rating: 3.0V DC(Supplied by 2.*1.5V AAA Battery)

1.2. Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for FCC ID: R2U-TM137G filing to comply with Section 15.249 of the FCC Part 15, Subpart C Rules.

1.3. Test Methodology

Both conducted and radiated testing was performed according to the procedures in ANSI C63.10 (2009). Radiated testing was performed at an antenna to EUT distance 3 meters.

1.4. Special Accessories

Not available for this EUT intended for grant.

1.5. Equipment Modifications

Not available for this EUT intended for grant.

1.6. Measurement Uncertainty

Measurement Type	Range	Confidence Level (%)	Calculated Uncertainty
AC Conducted Spurious Emissions	0.15 MHz to 30 MHz	95%	±3.00dB
Fundamental Fieldstrength	Not Applicable	95%	±2.94dB
Transmitter 20 dB Bandwidth	Not Applicable	95%	±0.92PPm
Radiated Spurious Emissions	30 MHz to 40 GHz	95%	±3.00dB

1.7. Test Facility

Site Description

EMC Lab. : Accredited by CNAS, 2010.10.29
The certificate is valid until 2013.10.28
The Laboratory has been assessed and proved to be in compliance with CNAS/CL01:2006(identical to ISO/IEC17025: 2005)
The Certificate Registration Number is L2291

Accredited by TUV Rheinland Shenzhen 2010.5.25
The Laboratory has been assessed according to the requirements ISO/IEC 17025

Accredited by FCC, October 28, 2010
The Certificate Registration Number is 406365.

Accredited by Industry Canada, March 5, 2010
The Certificate Registration Number is 46405-4480.

Name of Firm : SHENZHEN EMTEK CO., LTD

Site Location : Bldg 69, Majialong Industry Zone,
Nanshan District, Shenzhen, Guangdong, China

2. SYSTEM TEST CONFIGURATION

2.1. EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

2.2. EUT Exercise

The Transmitter was operated in the normal operating mode. The TX frequency was fixed which was for the purpose of the measurements.

2.3. Test Procedure

2.3.1 Conducted Emissions

The EUT is a placed on as turn table which is 0.8 m above ground plane. According to the requirements in Section 13.1.4.1 of ANSI C63.4-2009 Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-Peak and average detector mode.

2.3.2 Radiated Emissions

The EUT is a placed on as turn table which is 0.8 m above ground plane. The turn table shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the max. Emission, the relative positions of this hand-held transmitter (EUT) was rotated through three orthogonal axes according to the requirements in Section 13.1.4.1 of ANSI C63.4-2009.

2.4. Description of test modes

The EUT (2.4G wireless optical mouse) has been tested under normal operating condition.
Pre-scanned tests, X, Y, Z in the three orthogonal panels, were conducted to determine the final configuration from all possible combinations. We use blue test to control the EUT, Let EUT hopping on and transmit with highest power, and the worst result was reported with modulation GFSK. 34Channels are provided by EUT. The 3 channels of lower, medium and higher were chosen for test.

Pretest Mode	Description
Mode 1	Low – 2408MHz
Mode 2	Middle – 2440MHz
Mode 3	High -2474MHz

For Conducted Test	
Final Test Mode	Description
--	” N/A” denotes test is not applicable in this test report.

For Radiated Test	
Mode 1	Low – 2408MHz
Mode 2	Middle – 2440MHz
Mode 3	High -2474MHz

Channel list

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2408	13	2432	25	2456
2	2410	14	2434	26	2458
3	2412	15	2436	27	2460
4	2414	16	2438	28	2462
5	2416	17	2440	29	2464
6	2418	18	2442	30	2466
7	2420	19	2444	31	2468
8	2422	20	2446	32	2470
9	2424	21	2448	33	2472
10	2426	22	2450	34	2474
11	2428	23	2452		
12	2430	24	2454		

Note:
1. Test of channel was included the lowest middle and highest frequency to perform the test, and then record on this report.

3. SUMMARY OF TEST RESULTS

FCC Part15, Subpart C (15.249)&Canada RSS-Gen:2010		
Standard Section FCC	**Test Item**	**Result**
15.207	Conducted Emission	N/A
15.209	Radiated Emission	Pass
15.249	Radiated Spurious Emission	Pass
15.249	Band edge test	Pass
15.249	20dB Bandwidth	Pass

Note: (1)"N/A" denotes test is not applicable in this test report.

3.1. CONFIGURATION OF TESTED SYSTEM

Fig. 2-1 Configuration of Tested System

3.2. DESCRIPTION OF SUPPORT UNITS

Equipment	Mfr/Brand	Model/Type No.	FCC ID / IC	Series No.	Note
2.4G wireless optical mouse	Hunan Ocean Wing Ecommerce Limited Company	TM137G	R2U-TM137G	N/A	EUT

4. CONDUCTED EMISSIONS TEST

4.1. Measurement Procedure:

1. The EUT was placed on a table which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. Repeat above procedures until all frequency measured was complete.

4.2. Test SET-UP (Block Diagram of Configuration)

4.3. Measurement Equipment Used:

Conducted Emission Test Site # 1					
EQUIPMENT TYPE	**MFR**	**MODEL NUMBER**	**SERIAL NUMBER**	**LAST CAL.**	**CAL DUE.**
Test Receiver	Rohde & Schwarz	ESCS30	828985/018	05/28/2012	05/28/2013
L.I.S.N	Rohde & Schwarz	ESH2-Z5	834549/005	05/28/2012	05/28/2013
L.I.S.N	Rohde & Schwarz	ENV216	834549/005	05/28/2012	05/28/2013
50ΩCoaxial Switch	Anritsu	MP59B	M20531	05/28/2012	05/28/2013

4.4. Conducted Emission Limit

(7) Conducted Emission

Frequency(MHz)	Quasi-peak	Average
0.15-0.5	66-56	56-46
0.5-5.0	56	46
5.0-30.0	60	50

Note:

1. The lower limit shall apply at the transition frequencies
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

4.5. Measurement Result:

Note: Not applicable, the EUT power supply from DC 3.0V battery.

4.6. Conducted Measurement Photos:

N/A

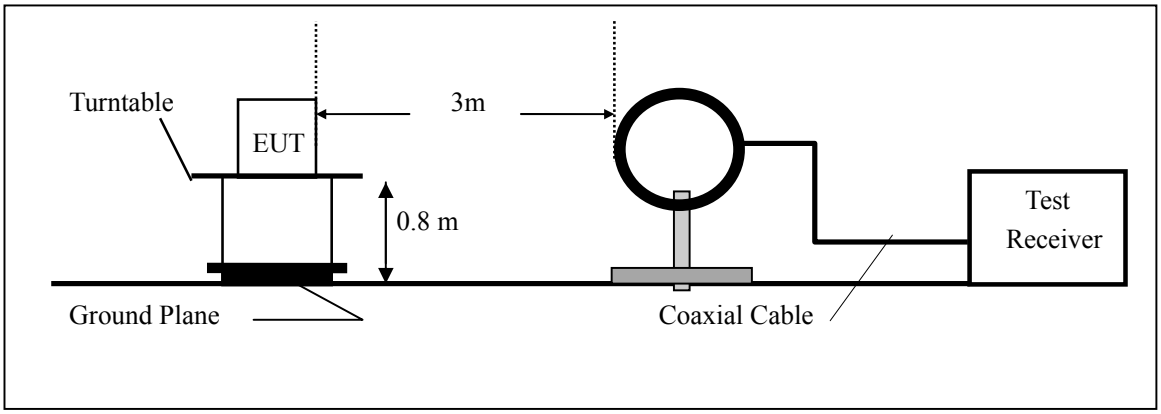
5. RADIATED EMISSION TEST

5.1. Measurement Procedure

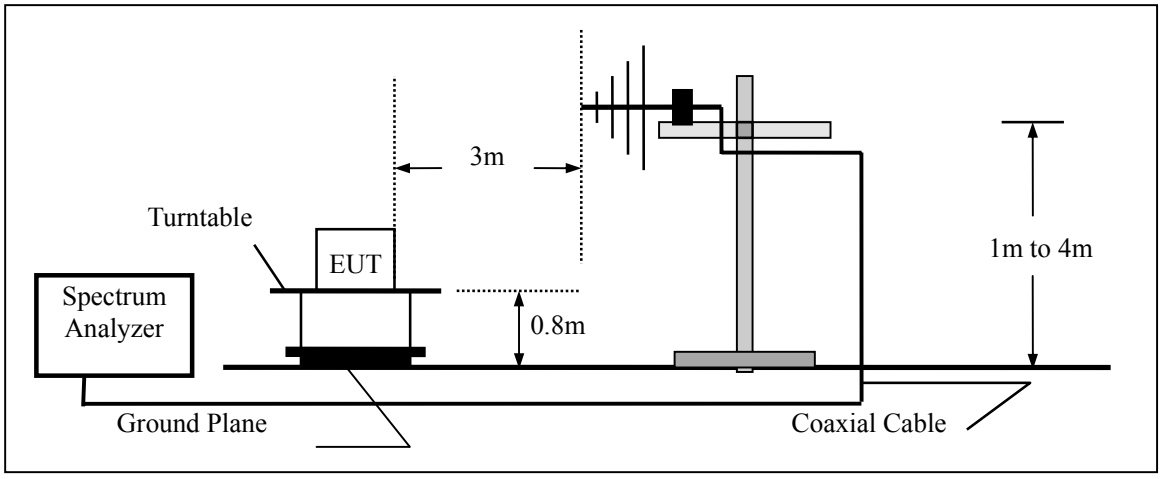
a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter Semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(below 1GHz)
b. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter Semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(above 1GHz)
c. The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test
Antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
d. The initial step in collecting conducted emission data is a spectrum analyzer peak detector Mode pre-scanning the measurement frequency range. Significant peaks are then marked and then AV detector mode re-measured.
e. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.

5.2. Test SET-UP (Block Diagram of Configuration)

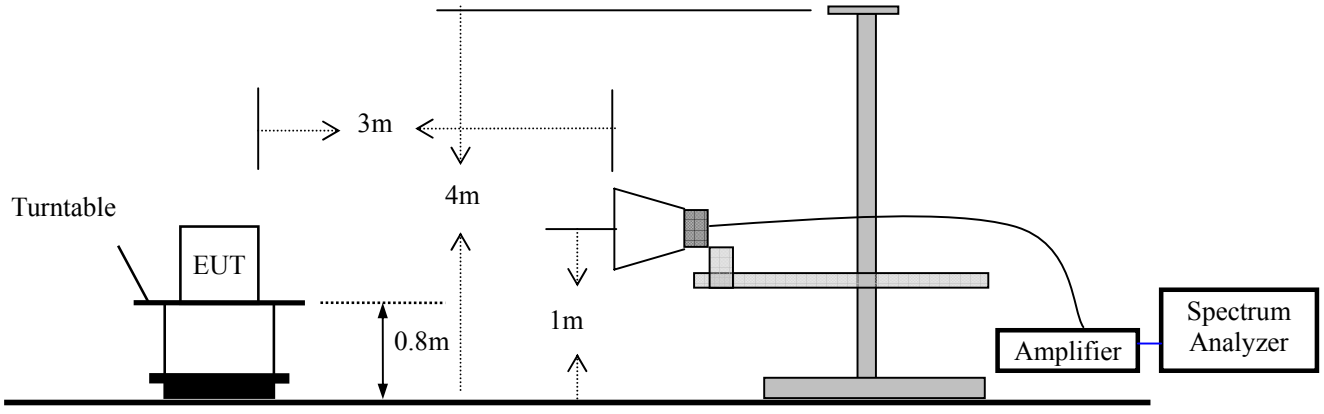
(A) Radiated Emission Test Set-Up, Frequency Below 30MHz



(B) Radiated Emission Test Set-Up, Frequency Below 1000MHz



(C) Radiated Emission Test Set-Up, Frequency above 1000MHz



5.3 Measurement Equipment Used:

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer	Rohde & Schwarz	FSP7	839511/010	05/29/2012	05/28/2013
Spectrum Analyzer	HP	E4407B	839840481	05/29/2012	05/28/2013
EMI Test Receiver	Rohde & Schwarz	ESCS30	828985/018	05/29/2012	05/28/2013
Pre-Amplifier	HP	8447D	2944A07999	05/29/2012	05/28/2013
Bilog Antenna	Schwarzbeck	VULB9163	142	05/29/2012	05/28/2013
Loop Antenna	ARA	PLA-1030/B	1029	05/29/2012	05/28/2013
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170399	05/29/2012	05/28/2013
Horn Antenna	Schwarzbeck	BBHA 9120	D143	05/29/2012	05/28/2013

5.4 Radiated Emission Limit

Frequencies (MHz)	Field Strength (micorvolts/meter)	Measurement Distance (meters)
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
960~1000	500	3

Harmonic emissions limits comply with below 54 dBuV/m at 3m. Other emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or comply with the radiated emissions limits specified in section 1 5.209(a) limit in the table below has to be followed.

Note:

(1) The tighter limit applies at the band edges.

(2) Emission level (dBuV/m)=20log Emission level (uV/m).

Limits of radiated emission measurement (FCC 15.209)

FREQUENCY (MHz)	(dBuV/m) (at 3m)	
	PEAK	AVERAGE
Above 1000	74	54

Notes:
(1) The limit for radiated test was performed according to FCC PART 15C.
(2) The tighter limit applies at the band edges.
(3) Emission level (dBuV/m) =20log Emission level (uV/m).

Limits of radiated emission measurement (FCC 15.249)

FCC Part15 (15.249) , Subpart C	
Limit	Frequency Range (MHz)
Field strength of fundamental 50000uV/m (94 dBV/m) @ 3 m	2400-2483.5
Field strength of harmonics 500uV/m (54 dBV/m) @ 3 m	Above 2483.5

5.5 Measurement Result

Transmitter Fundamental Field Strength

Operation Mode:	CH01: 2408MHz	Test Date :	February 02, 2013
FCC Part:	15.249(a)	Temperature :	28℃
Test Result:	PASS	Humidity :	65 %
Measured Distance:	3m	Test By:	WOLF
Test Method Used:	As detailed in ANSI C63.4 Section 8 and relevant annexes		

Freq. (MHz)	Ant.Pol. H/V	Emission Level(dBuV/m) PK	AV	Limit 3m(dBuV/m) PK	AV	Over(dB) PK	AV
2408.00	V	90.46	89.30	114.00	94.00	-21.51	-4.50
2408.00	H	93.82	90.15	114.00	94.00	-18.70	-3.39

Operation Mode:	CH17: 2440MHz	Test Date :	February 02, 2013
FCC Part:	15.249(a)	Temperature :	28℃
Test Result:	PASS	Humidity :	65 %
Measured Distance:	3m	Test By:	WOLF
Test Method Used:	As detailed in ANSI C63.4 Section 8 and relevant annexes		

Freq. (MHz)	Ant.Pol. H/V	Emission Level(dBuV/m) PK	AV	Limit 3m(dBuV/m) PK	AV	Over(dB) PK	AV
2440.00	V	90.47	89.51	114.00	94.00	-23.53	-4.49
2440.00	H	93.58	90.67	114.00	94.00	-20.42	-3.33

Operation Mode:	CH34: 2474MHz	Test Date :	February 02, 2013
FCC Part:	15.249(a)	Temperature :	28℃
Test Result:	PASS	Humidity :	65 %
Measured Distance:	3m	Test By:	WOLF
Test Method Used:	As detailed in ANSI C63.4 Section 8 and relevant annexes		

Freq. (MHz)	Ant.Pol. H/V	Emission Level(dBuV/m) PK	AV	Limit 3m(dBuV/m) PK	AV	Over(dB) PK	AV
2474.00	V	90.19	89.40	114.00	94.00	-23.81	-4.60
2474.00	H	92.20	91.30	114.00	94.00	-21.80	-2.70

Operation Mode:	TX	Test Date :	February 02, 2013
Frequency Range:	9KHz~30MHz	Temperature :	28℃
Test Result:	PASS	Humidity :	65 %
Measured Distance:	3m	Test By:	WOLF

Freq. (MHz)	Ant.Pol. H/V	Emission Level (dBuV/m)	Limit 3m (dBuV/m)	Over (dB)
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Note: the amplitude of spurious emission that is attenuated by more than 20dB below the permissible limit has no need to be reported.

Operation Mode:	CH01: 2408MHz	Test Date :	February 02, 2013
Frequency Range:	30~1000MHz	Temperature :	28 ℃
Test Result:	PASS	Humidity :	65 %
Measured Distance:	3m	Test By:	KL

Freq. (MHz)	Ant.Pol. H/V	Emission Level (dBuV/m)	Limit 3m (dBuV/m)	Margin (dB)	Note
99.95	V	19.34	43.50	-24.16	PK
190.11	V	16.74	43.50	-26.76	PK
289.60	V	16.43	46.00	-29.57	PK
384.42	V	20.72	46.00	-25.28	PK
443.49	V	21.60	46.00	-24.40	PK
518.11	V	25.88	46.00	-20.12	PK
37.77	H	15.38	40.00	-24.62	PK
96.84	H	14.82	43.50	-28.68	PK
180.79	H	17.49	43.50	-26.01	PK
258.51	H	20.77	46.00	-25.23	PK
371.99	H	24.87	46.00	-21.13	PK
608.27	H	23.73	46.00	-22.27	PK

Note: (1) All Readings are Peak Value.
(2) Emission Level= Reading Level+Probe Factor +Cable Loss
(3) The average measurement was not performed when the peak measured data under the limit of average detection.
(4) All the x/y/z orientation has been investigated, and only worst case is presented in this report.

Operation Mode:	CH17: 2440MHz	Test Date :	February 02, 2013
Frequency Range:	30~1000MHz	Temperature :	28 ℃
Test Result:	PASS	Humidity :	65 %
Measured Distance:	3m	Test By:	KL

Freq. (MHz)	Ant.Pol. H/V	Emission Level (dBuV/m)	Limit 3m (dBuV/m)	Margin (dB)	Note
47.10	V	15.86	40.00	-24.14	PK
99.95	V	15.85	43.50	-27.65	PK
298.93	V	16.95	46.00	-29.05	PK
407.74	V	20.52	46.00	-25.48	PK
479.25	V	26.15	46.00	-19.85	PK
600.50	V	28.82	46.00	-17.18	PK
54.87	H	15.64	40.00	-24.36	PK
99.95	H	15.12	43.50	-28.38	PK
188.56	H	15.80	43.50	-27.70	PK
298.93	H	17.62	46.00	-28.38	PK
364.21	H	23.87	46.00	-22.13	PK
547.64	H	20.77	46.00	-25.23	PK

Operation Mode:	CH34: 2474MHz	Test Date :	February 02, 2013
Frequency Range:	30~1000MHz	Temperature :	28 ℃
Test Result:	PASS	Humidity :	65 %
Measured Distance:	3m	Test By:	KL

Freq. (MHz)	Ant.Pol. H/V	Emission Level (dBuV/m)	Limit 3m (dBuV/m)	Margin (dB)	Note
47.10	V	19.99	40.00	-20.01	PK
95.29	V	20.01	43.50	-23.49	PK
289.60	V	17.52	46.00	-28.48	PK
389.09	V	21.04	46.00	-24.96	PK
482.36	V	22.83	46.00	-23.17	PK
608.27	V	28.35	46.00	-17.65	PK
47.10	H	15.15	40.00	-24.85	PK
101.51	H	14.85	43.50	-28.65	PK
149.70	H	14.65	43.50	-28.85	PK
232.08	H	15.14	46.00	-30.86	PK
289.60	H	17.18	46.00	-28.82	PK
371.99	H	23.68	46.00	-22.32	PK

Note: (1) All Readings are Peak Value.
(2) Emission Level= Reading Level+Probe Factor +Cable Loss
(3) The average measurement was not performed when the peak measured data under the limit of average detection.
(4) All the x/y/z orientation has been investigated, and only worst case is presented in this report.

Operation Mode:	CH1: 2408MHz	Test Date :	February 02, 2013
Frequency Range:	1-25GHz	Temperature :	28 ℃
Test Result:	PASS	Humidity :	65 %
Measured Distance:	3m	Test By:	Andy

Freq.	Ant.Pol.	Emission Level(dBuV/m)		Limit 3m(dBuV/m)		Margin(dB)	
(MHz)	H/V	PK	AV	PK	AV	PK	AV
4820.64	V	57.10	33.20	74.00	54.00	-16.90	-20.80
7225.41	V	59.96	37.07	74.00	54.00	-14.04	-16.93
9630.20	V	59.46	34.03	74.00	54.00	-14.54	-19.97
12045.65	V	57.07	32.89	74.00	54.00	-16.93	-21.11
--	--	--	--	--	--	--	--
4821.78	H	56.78	34.68	74.00	54.00	-17.22	-19.32
7230.07	H	57.57	34.42	74.00	54.00	-16.43	-19.58
9635.30	H	60.44	35.35	74.00	54.00	-13.56	-18.65
12050.06	H	59.72	34.09	74.00	54.00	-14.28	-19.91

Operation Mode:	CH17: 2440MHz	Test Date :	February 02, 2013
Frequency Range:	1-25GHz	Temperature :	28 ℃
Test Result:	PASS	Humidity :	65 %
Measured Distance:	3m	Test By:	Andy

Freq.	Ant.Pol.	Emission Level(dBuV/m)		Limit 3m(dBuV/m)		Margin(dB)	
(MHz)	H/V	PK	AV	PK	AV	PK	AV
4885.78	V	56.75	36.39	74.00	54.00	-17.25	-17.61
7322.39	V	55.58	33.22	74.00	54.00	-18.42	-20.78
9762.06	V	59.61	35.13	74.00	54.00	-14.39	-18.87
12203.92	V	56.95	31.45	74.00	54.00	-17.05	-22.55
--	--	--	--	--	--	--	--
4890.88	H	55.68	33.38	74.00	54.00	-18.32	-20.62
7320.57	H	58.56	36.71	74.00	54.00	-15.44	-17.29
9780.88	H	58.11	32.71	74.00	54.00	-15.89	-21.29
12210.06	H	58.98	35.29	74.00	54.00	-15.02	-18.71

Note: (1) All Readings are Peak Value and AV.
(2) Emission Level= Reading Level+Probe Factor +Cable Loss
(3) Data of measurement within this frequency range shown "--" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
(4) All the x/y/z orientation has been investigated, and only worst case is presented in this report.

Operation Mode:	CH34: 2474MHz	Test Date :	February 02, 2013
Frequency Range:	1-25GHz	Temperature :	28 ℃
Test Result:	PASS	Humidity :	65 %
Measured Distance:	3m	Test By:	Andy

Freq.	Ant.Pol.	Emission Level(dBuV/m)		Limit 3m(dBuV/m)		Margin(dB)	
(MHz)	H/V	PK	AV	PK	AV	PK	AV
4950.06	V	53.49	30.44	74.00	54.00	-20.51	-23.56
7430.73	V	59.10	34.84	74.00	54.00	-14.90	-19.16
9895.25	V	58.97	34.15	74.00	54.00	-15.03	-19.85
12375.06	V	58.77	32.20	74.00	54.00	-15.23	-21.80
--	--	--	--	--	--	--	--
4949.33	H	53.77	32.24	74.00	54.00	-20.23	-21.76
7425.19	H	59.45	37.82	74.00	54.00	-14.55	-16.18
9890.07	H	58.26	32.90	74.00	54.00	-15.74	-21.10
12380.06	H	59.52	33.09	74.00	54.00	-14.48	-20.91

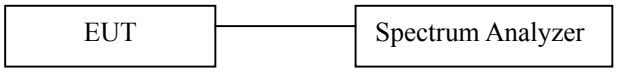
Note: (1) All Readings are Peak Value and AV.
(2) Emission Level= Reading Level+Probe Factor +Cable Loss
(3) Data of measurement within this frequency range shown "--" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
(4) All the x/y/z orientation has been investigated, and only worst case is presented in this report.

6. BANDWIDTH TEST

6.1. Measurement Procedure

The EUT was operating in hopping mode or could be controlled its channel. Printed out the test result from the spectrum by hard copy function.

6.2. Test SET-UP (Block Diagram of Configuration)



6.3. Measurement Equipment Used:

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer	Agilent	E4407B	88156318	05/29/2012	05/29/2013

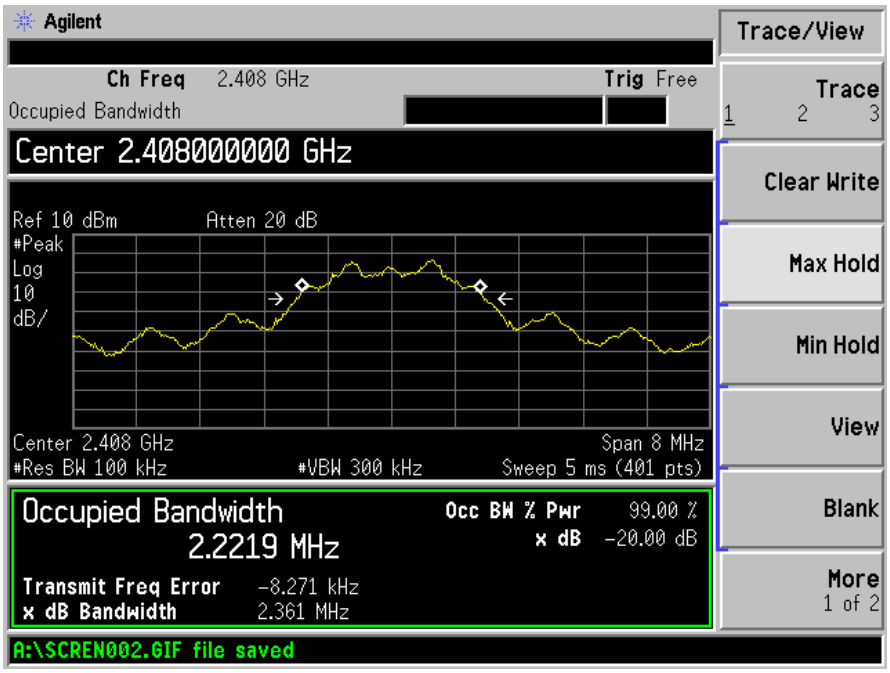
6.4. Measurement Results:

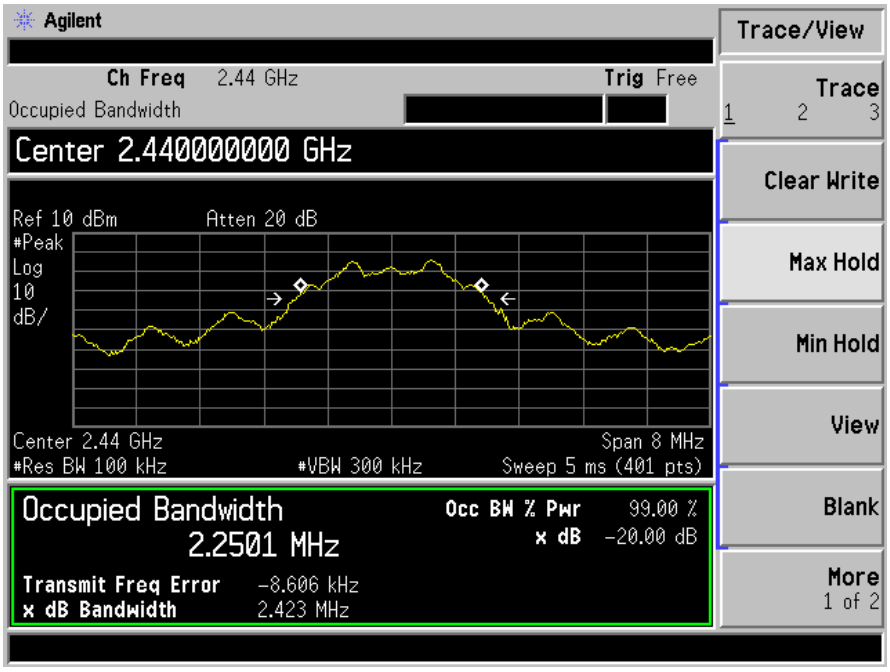
6.4.1. 20dB Bandwidth test data Chart:

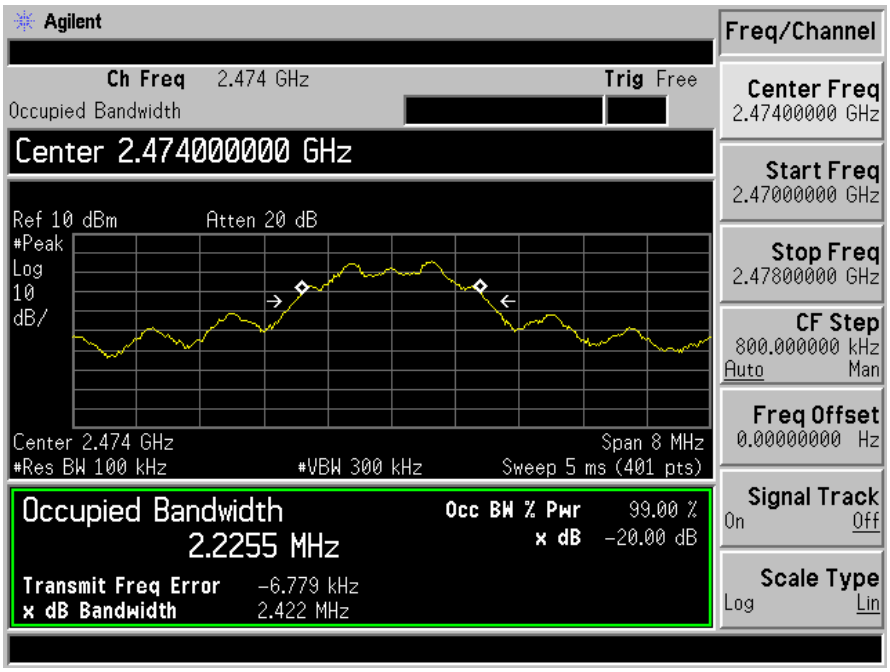
Refer to attached data chart.

Spectrum Detector:	PK	Test Date:	February 02, 2013
Test By:	Andy	Temperature:	28 ℃
Test Result:	PASS	Humidity:	65 %
Modulation:	GFSK		

Channel number	Channel frequency (MHz)	20dB Down BW(kHz)	99% Down BW(kHz)
CH01	2408	2361.00	2221.90
CH17	2440	2423.00	2250.10
CH34	2474	2422.00	2255.50


Agilent
Trace/View
Ch Freq 2.408 GHz
Trig Free
Occupied Bandwidth
Trace
1 2 3
Center 2.408000000 GHz
Clear Write
Ref 10 dBm
Atten 20 dB
#Peak
Log
10
dB/
Max Hold
Min Hold
View
Center 2.408 GHz
Span 8 MHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 5 ms (401 pts)
Blank
Occupied Bandwidth
2.2219 MHz
Occ BW % Pwr 99.00 %
x dB -20.00 dB
Transmit Freq Error -8.271 kHz
x dB Bandwidth 2.361 MHz
More
1 of 2
A:\SCREN002.GIF file saved


Agilent
Trace/View
Ch Freq 2.44 GHz
Trig Free
Occupied Bandwidth
Trace
1 2 3
Center 2.440000000 GHz
Clear Write
Ref 10 dBm
Atten 20 dB
#Peak
Log
10
dB/
Max Hold
Min Hold
View
Center 2.44 GHz
Span 8 MHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 5 ms (401 pts)
Blank
Occupied Bandwidth
2.2501 MHz
Occ BW % Pwr 99.00 %
x dB -20.00 dB
Transmit Freq Error -8.606 kHz
x dB Bandwidth 2.423 MHz
More
1 of 2


Agilent
Ch Freq 2.474 GHz
Trig Free
Occupied Bandwidth
Center 2.474000000 GHz
Ref 10 dBm
Atten 20 dB
#Peak
Log
10
dB/
Center 2.474 GHz
Span 8 MHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 5 ms (401 pts)
Occupied Bandwidth
2.2255 MHz
Occ BW % Pwr 99.00 %
x dB -20.00 dB
Transmit Freq Error -6.779 kHz
x dB Bandwidth 2.422 MHz
Freq/Channel
Center Freq
2.47400000 GHz
Start Freq
2.47000000 GHz
Stop Freq
2.47800000 GHz
CF Step
800.000000 kHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Scale Type
Log Lin

7. BAND EDGE TEST

7.1. Measurement Procedure

1. The EUT was Operating in hopping mode or could be controlled its channel. Printed out test result from the spectrum by hard copy function.
2. The EUT was placed on a turn table which is 0.8m above ground plane.
3. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
4. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
5. Repeat above procedures until all frequency measured were complete.

7.2. Test SET-UP (Block Diagram of Configuration)

As 5.2 Test set up (B) and (C)

7.3. Measurement Equipment Used:

Same as 5.3 Radiated Emission Measurement.

7.4. Measurement Results:

Spectrum Detector:	PK/AV	Test Date :	February 02, 2013
Test By:	Andy	Temperature :	28 ℃
Test channel:	CH01	Humidity :	65 %

Frequency (MHz)	Polarity	Level (dBuV/m)		Limited (dBuV/m)	
		PK	AV	PK	AV
2390.00	H	42.20	39.10	74	54
2390.00	V	45.69	41.71	74	54

Spectrum Detector:	PK/AV	Test Date :	February 02, 2013
Test By:	Andy	Temperature :	28 ℃
Test channel:	CH34	Humidity :	65 %

Frequency (MHz)	Polarity	Level (dBuV/m)		Limited (dBuV/m)	
		PK	AV	PK	AV
2483.50	H	41.58	39.12	74	54
2483.50	V	44.80	40.60	74	54

8. Antenna Application

12.1 Antenna Requirement

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

12.2 Result

The EUT'S antenna is PCB Antenna. The antenna's gain is 1.0dBi and meets the requirement.