

FCC PART 15.247

TEST REPORT

For

Shenzhen Fuyeda Industry Development Corp., Ltd.

No.1, Newmen Road, Tongsheng Village, Dalang Street, Bao'An, Shenzhen, China

FCC ID: V4P-245IR

Report Type: Original Report	Product Type: 2.4G Wireless Mouse
Test Engineer: Henry Ding	<i>Henry Ding</i>
Report Number: RSZ120717006-00	
Report Date: 2012-08-16	
Alvin Huang	<i>Alvin Huang</i>
Reviewed By: RF Leader	
Test Laboratory:	Bay Area Compliance Laboratories Corp. (Shenzhen) 6/F, the 3rd Phase of WanLi Industrial Building ShiHua Road, FuTian Free Trade Zone Shenzhen, Guangdong, China Tel: +86-755-33320018 Fax: +86-755-33320008 www.baclcorp.com.cn

Note: This test report is prepared for the customer shown above and for the equipment described herein. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp. This report **must not** be used by the customer to claim product certification, approval, or endorsement by NVLAP* or any agency of the Federal Government.

* If this report contains data that are not covered by the NVLAP accreditation, they will be marked with an asterisk "★"
(Rev.2)

TABLE OF CONTENTS

GENERAL INFORMATION.....	4
PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT)	4
OBJECTIVE	4
RELATED SUBMITTAL(S)/GRANT(S)	4
TEST METHODOLOGY	4
TEST FACILITY	4
SYSTEM TEST CONFIGURATION.....	6
DESCRIPTION OF TEST CONFIGURATION	6
EUT EXERCISE SOFTWARE	6
EQUIPMENT MODIFICATIONS	6
BLOCK DIAGRAM OF TEST SETUP	6
SUMMARY OF TEST RESULTS	7
FCC §15.247 (i) & §1.1307 (b) (1) & §2.1093- RF EXPOSURE.....	8
APPLICABLE STANDARD	8
FCC §15.203 – ANTENNA REQUIREMENT	9
APPLICABLE STANDARD	9
ANTENNA CONNECTOR CONSTRUCTION	9
FCC §15.209, §15.205 & §15.247(d) - SPURIOUS EMISSIONS.....	10
APPLICABLE STANDARD	10
MEASUREMENT UNCERTAINTY	10
EUT SETUP	10
EMI TEST RECEIVER & SPECTRUM ANALYZER SETUP	11
TEST PROCEDURE	11
TEST EQUIPMENT LIST AND DETAILS.....	11
CORRECTED AMPLITUDE & MARGIN CALCULATION	11
TEST RESULTS SUMMARY	12
TEST DATA	12
FCC §15.247(a) (1)-CHANNEL SEPARATION TEST	15
APPLICABLE STANDARD	15
TEST PROCEDURE	15
TEST EQUIPMENT LIST AND DETAILS.....	15
TEST DATA	15
FCC §15.247(a) (1) – 20 dB BANDWIDTH TESTING	18
APPLICABLE STANDARD	18
TEST PROCEDURE	18
TEST EQUIPMENT LIST AND DETAILS.....	18
TEST DATA	18
FCC §15.247(a) (1) (iii)-QUANTITY OF HOPPING CHANNEL TEST	21
APPLICABLE STANDARD	21
TEST PROCEDURE	21
TEST EQUIPMENT LIST AND DETAILS.....	21
TEST DATA	21
FCC §15.247(a) (1) (iii) -TIME OF OCCUPANCY (DWELL TIME).....	23

APPLICABLE STANDARD	23
TEST PROCEDURE	23
TEST EQUIPMENT LIST AND DETAILS.....	23
TEST DATA	23
FCC §15.247(b) (1) - PEAK OUTPUT POWER MEASUREMENT	26
APPLICABLE STANDARD	26
TEST PROCEDURE	26
TEST EQUIPMENT LIST AND DETAILS.....	26
TEST DATA	26
FCC §15.247(d) - BAND EDGES TESTING	29
APPLICABLE STANDARD	29
TEST PROCEDURE	29
TEST EQUIPMENT LIST AND DETAILS.....	29
TEST DATA	30

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *Shenzhen Fuyeda Industry Development Corp., Ltd.*'s product, model number: *MS-245IR (FCC ID: V4P-245IR)* (or the "EUT") in this report was a *2.4G Wireless Mouse*, which was measured approximately: 11.0 cm (L) x 6.0 cm (W) x 3.5 cm (H), rated input voltage: 3V battery.

** All measurement and test data in this report was gathered from production sample serial number: 1207091 (Assigned by BACL, Shenzhen). The EUT was received on 2012-07-17.*

Objective

This report is prepared on behalf of *Shenzhen Fuyeda Industry Development Corp., Ltd.* in accordance with Part 2-Subpart J, Part 15-Subparts A, B and C of the Federal Communication Commissions rules.

The tests were performed in order to determine compliance with FCC Part 15, Subpart C, section 15.203, 15.205, 15.207, 15.209 and 15.247 rules.

Related Submittal(s)/Grant(s)

Part of dongle with FCC ID: V4P-245IR-1.

Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2009, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

All emissions measurement was performed and Bay Area Compliance Laboratories Corp. (Shenzhen). The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Shenzhen) to collect test data is located on the 6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone Shenzhen, Guangdong, China.

Test site at Bay Area Compliance Laboratories Corp. (Shenzhen) has been fully described in reports submitted to the Federal Communication Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on December 06, 2010. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2009.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 382179. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

Additionally, Bay Area Compliance Laboratories Corp. (Shenzhen) is an ISO/IEC 17025 accredited laboratory, and is accredited by National Voluntary Laboratory Accredited Program (Lab Code 200707-0).



The current scope of accreditations can be found at <http://ts.nist.gov/Standards/scopes/2007070.htm>.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The system was configured for testing in an engineering mode which was selected by manufacturer.

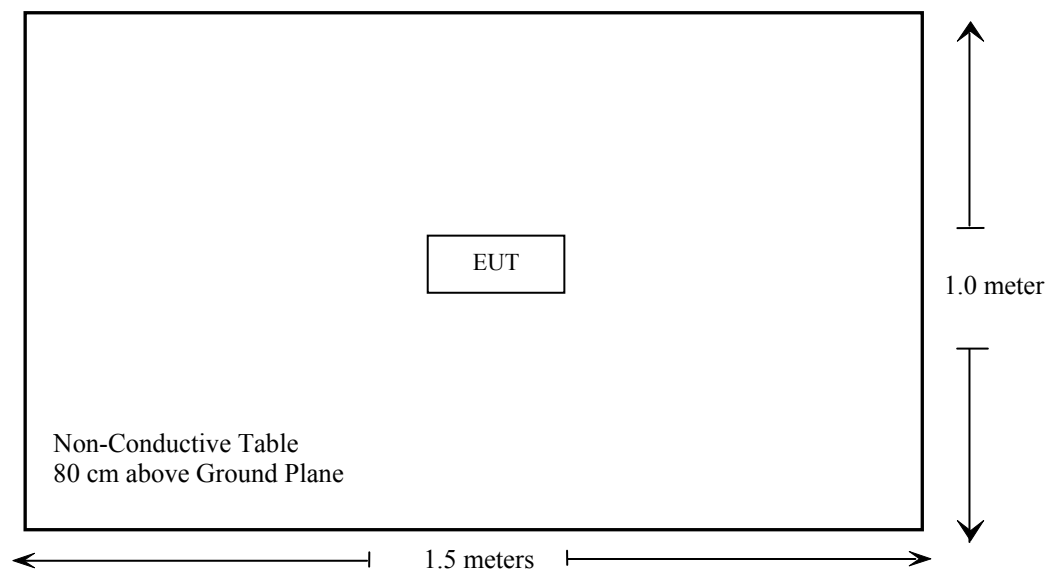
EUT Exercise Software

No exercise software was used.

Equipment Modifications

No equipment modification was made to the EUT.

Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§15.247 (i), §1.1307 (b)(1), §2.1093	RF Exposure	Compliance
§15.203	Antenna Requirement	Compliance
§15.207 (a)	Conducted Emissions	Not Applicable
§15.205, §15.209, §15.247(d)	Radiated Emissions	Compliance
§15.247 (a)(1)	20 dB Bandwidth	Compliance
§15.247(a)(1)	Channel Separation Test	Compliance
§15.247(a)(1)(iii)	Time of Occupancy (Dwell Time)	Compliance
§15.247(a)(1)(iii)	Quantity of hopping channel Test	Compliance
§15.247(b)(1)	Peak Output Power Measurement	Compliance
§15.247(d)	Band Edges	Compliance

Not Applicable – The EUT was powered by battery!

FCC §15.247 (i) & §1.1307 (b) (1) & §2.1093- RF EXPOSURE

Applicable Standard

According to §15.247(e)(i) and §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensure that the public is not exposed to radio frequency energy level in excess of the Commission's guideline.

According to KDB 447498 D01 Mobile Portable RF Exposure v03r03, no SAR required if power is lower than the flowing threshold:

When routine evaluation is required for SAR and the output power is $\leq 60/f(\text{GHz})$ mW, the test reduction and test exclusion procedures given herein, or in KDB 616217 or KDB 648474, are applicable.

A device may be used in portable exposure conditions with no restrictions on host platforms when either the source-based time-averaged output power is $\leq 60/f(\text{GHz})$ mW or all measured 1-g SAR are < 0.4 W/kg.10 When SAR evaluation is required, the most conservative exposure conditions for all expected operating configurations must be tested.

Measurement Result

The max peak conducted output power is -1.36 dBm; the antenna gain is 0 dBi, so the e.i.r.p is 0.731 mW, SAR exclusion threshold= $60/f=60/2.441=24.58$ mW

The e.i.r.p is less than 24.58 mW, so the SAR evaluation is not necessary.

FCC §15.203 – ANTENNA REQUIREMENT

Applicable Standard

According to FCC § 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. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

Antenna Connector Construction

The EUT has a PCB antenna connected to RF board, which in accordance to section 15.203, the maximum gain is 0 dBi; please refer to the internal photos.

Result: Compliance.

FCC §15.209, §15.205 & §15.247(d) - SPURIOUS EMISSIONS

Applicable Standard

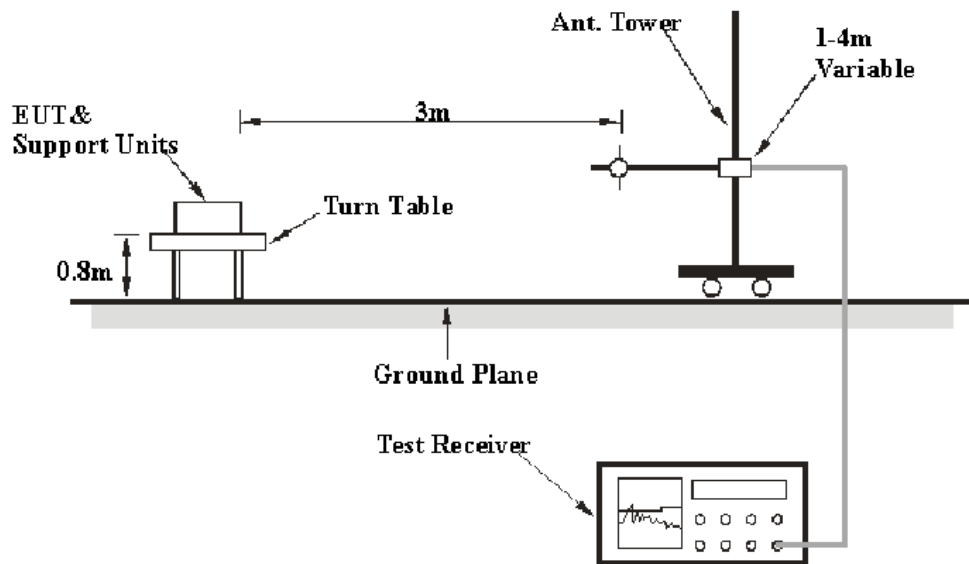
FCC §15.247 (d); §15.209; §15.205;

Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in 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 CISPR 16-4-4, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiation emissions measurement at Bay Area Compliance Laboratories Corp. (Shenzhen) is 4.0 dB (k=2, 95% level of confidence).

EUT Setup



The radiated emission tests were performed in the 3 meters test site, using the setup accordance with the ANSI C63.4-2009. The specification used was the FCC 15.209 and FCC 15.247 limits.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

EMI Test Receiver & Spectrum Analyzer Setup

The system was investigated from 30 MHz to 25 GHz.

During the radiated emission test, the EMI test receiver & Spectrum Analyzer Setup were set with the following configurations:

<i>Frequency Range</i>	<i>RBW</i>	<i>Video B/W</i>	<i>Detector</i>
30 MHz – 1000 MHz	100 kHz	300 kHz	QP
1000 MHz – 25 GHz	1 MHz	3 MHz	PK
1000 MHz – 25 GHz	1 MHz	10 Hz	Ave.

Test Procedure

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

Data was recorded in Quasi-peak detection mode for frequency range of 30 MHz to 1GHz and peak and Average detection modes for frequencies above 1GHz.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
HP	Amplifier	8447E	1937A01046	2011-11-24	2012-11-23
Rohde & Schwarz	EMI Test Receiver	ESCI	101122	2011-11-17	2012-11-16
Sunol Sciences	Broadband Antenna	JB1	A040904-2	2011-11-28	2012-11-27
SUPER ULTRA	Amplifier	ZVA-213+	N/A	2011-11-24	2012-11-23
Sunol Sciences	Horn Antenna	DRH-118	A052304	2011-12-01	2012-11-30
Rohde & Schwarz	Signal Analyzer	FSIQ26	8386001028	2011-11-24	2012-11-23
the electro-Mechanics Co.	Horn Antenna	3116	9510-2270	2011-10-14	2012-10-13
R&S	Auto test Software	EMC32	V6.30	N/A	N/A

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Corrected Amplitude & Margin Calculation

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

$$\text{Corrected Amplitude} = \text{Meter Reading} + \text{Antenna Factor} + \text{Cable Loss} - \text{Amplifier Gain}$$

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

$$\text{Margin} = \text{Limit} - \text{Corrected Amplitude}$$

Test Results Summary

According to the recorded data in following table, the EUT complied with the FCC Title 47, Part 15, Subpart C, section 15.205, 15.209 and 15.247, with the worst margin reading of:

7.64 dB at 4804.0 MHz in the **Vertical** polarization

Test Data

Environmental Conditions

Temperature:	25
Relative Humidity:	56 %
ATM Pressure:	100.0kPa

The testing was performed by Henry Ding on 2012-07-19.

30 MHz-25 GHz:

Indicated		Detector (PK/QP/Ave.)	Table Angle Degree	Antenna		Correction Factor			FCC Part 15.247/15.209/15.205			
Frequency (MHz)	Receiver Reading (dBμV)			Height (m)	Polar (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. Gain (dB)	Cord. Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Comment
Low Channel (2402 MHz)												
2402.0	79.66	PK	87	1.2	V	29.60	3.03	26.50	85.79	/	/	Fund.
2402.0	60.13	Ave.	87	1.2	V	29.60	3.03	26.50	66.26	/	/	Fund.
2402.0	78.67	PK	125	1.1	H	29.60	3.03	26.50	84.80	/	/	Fund.
2402.0	59.12	Ave.	125	1.1	H	29.60	3.03	26.50	65.25	/	/	Fund.
4804.0	52.85	PK	32	1.2	V	34.60	4.30	26.50	65.25	74.00	8.75	Harmonic
4804.0	33.96	Ave.	32	1.2	V	34.60	4.30	26.50	46.36	54.00	7.64	Harmonic
7206.0	45.98	PK	162	1.3	H	37.90	5.22	26.50	62.60	74.00	11.40	Harmonic
7206.0	25.37	Ave.	162	1.3	H	37.90	5.22	26.50	41.99	54.00	12.01	Harmonic
9608.0	33.65	PK	7	1.1	V	39.80	5.98	26.50	52.93	74.00	21.07	Spurious
9608.0	17.54	Ave.	7	1.1	V	39.80	5.98	26.50	36.82	54.00	17.18	Spurious
2336.1	35.86	PK	11	1.3	V	29.00	2.98	26.50	41.34	74.00	32.66	Spurious
2336.1	19.64	Ave.	11	1.3	V	29.00	2.98	26.50	25.12	54.00	28.88	Spurious
2365.7	39.39	PK	34	1.2	H	29.00	2.98	26.50	44.87	74.00	29.13	Spurious
2365.7	20.52	Ave.	34	1.2	H	29.00	2.98	26.50	26.00	54.00	28.00	Spurious
2486.1	36.23	PK	206	1.2	V	29.60	3.03	26.50	42.36	74.00	31.64	Spurious
2486.1	20.11	Ave.	206	1.2	V	29.60	3.03	26.50	26.24	54.00	27.76	Spurious
Middle Channel (2441 MHz)												
2441.0	74.69	PK	31	1.3	V	30.20	3.11	26.50	81.50	/	/	Fund.
2441.0	54.32	Ave.	31	1.3	V	30.20	3.11	26.50	61.13	/	/	Fund.
2441.0	72.35	PK	261	1.2	H	30.20	3.11	26.50	79.16	/	/	Fund.
2441.0	53.76	Ave.	261	1.2	H	30.20	3.11	26.50	60.57	/	/	Fund.
4882.0	51.28	PK	65	1.2	V	34.60	4.36	26.50	63.74	74.00	10.26	Harmonic
4882.0	32.64	Ave.	65	1.2	V	34.60	4.36	26.50	45.10	54.00	8.90	Harmonic
7323.0	44.58	PK	82	1.2	H	37.90	5.09	26.50	61.07	74.00	12.93	Harmonic
7323.0	24.15	Ave.	82	1.2	H	37.90	5.09	26.50	40.64	54.00	13.36	Harmonic
9764.0	33.28	PK	34	1.1	V	39.80	6.10	26.50	52.68	74.00	21.32	Spurious
9764.0	17.44	Ave.	34	1.1	V	39.80	6.10	26.50	36.84	54.00	17.16	Spurious
2335.4	36.38	PK	44	1.2	V	29.00	2.98	26.50	41.86	74.00	32.14	Spurious
2335.4	19.68	Ave.	44	1.2	V	29.00	2.98	26.50	25.16	54.00	28.84	Spurious
2369.3	36.67	PK	97	1.2	H	29.00	2.98	26.50	42.15	74.00	31.85	Spurious
2369.3	19.66	Ave.	97	1.2	H	29.00	2.98	26.50	25.14	54.00	28.86	Spurious
2484.1	37.98	PK	116	1.3	V	29.60	3.03	26.50	44.11	74.00	29.89	Spurious
2484.1	20.01	Ave.	116	1.3	V	29.60	3.03	26.50	26.14	54.00	27.86	Spurious

Indicated		Detector (PK/QP/Ave.)	Table Angle Degree	Antenna		Correction Factor			FCC Part 15.247/15.209/15.205			
Frequency (MHz)	Receiver Reading (dBμV)			Height (m)	Polar (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. Gain (dB)	Cord. Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Comment
High Channel (2476 MHz)												
2476.0	72.39	PK	37	1.2	V	30.20	3.11	26.50	79.20	/	/	Fund.
2476.0	53.87	Ave.	37	1.2	V	30.20	3.11	26.50	60.68	/	/	Fund.
2476.0	71.05	PK	102	1.1	H	30.20	3.11	26.50	77.86	/	/	Fund.
2476.0	52.36	Ave.	102	1.1	H	30.20	3.11	26.50	59.17	/	/	Fund.
4952.0	51.09	PK	91	1.1	V	34.60	4.40	26.50	63.59	74.00	10.41	Harmonic
4952.0	32.38	Ave.	91	1.1	V	34.60	4.40	26.50	44.88	54.00	9.12	Harmonic
7428.0	41.63	PK	243	1.3	H	37.20	5.20	26.50	57.53	74.00	16.47	Harmonic
7428.0	21.89	Ave.	243	1.3	H	37.20	5.20	26.50	37.79	54.00	16.21	Harmonic
9904.0	33.29	PK	6	1.2	V	39.80	6.08	26.50	52.67	74.00	21.33	Spurious
9904.0	17.05	Ave.	6	1.2	V	39.80	6.08	26.50	36.43	54.00	17.57	Spurious
2331.5	36.38	PK	41	1.3	V	29.00	2.98	26.50	41.86	74.00	32.14	Spurious
2331.5	20.06	Ave.	41	1.3	V	29.00	2.98	26.50	25.54	54.00	28.46	Spurious
2362.7	37.88	PK	53	1.2	H	29.00	2.98	26.50	43.36	74.00	30.64	Spurious
2362.7	19.87	Ave.	53	1.2	H	29.00	2.98	26.50	25.35	54.00	28.65	Spurious
2484.1	38.95	PK	55	1.1	V	29.60	3.03	26.50	45.08	74.00	28.92	Spurious
2484.1	20.31	Ave.	55	1.1	V	29.60	3.03	26.50	26.44	54.00	27.56	Spurious

FCC §15.247(a) (1)-CHANNEL SEPARATION TEST

Applicable Standard

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20dB bandwidth of the hopping channel, whichever is greater provided the systems operate with an output power no greater than 125 mW.

Test Procedure

1. Set the EUT in Operating mode, radio spectrum Bandwidth was set at 100 kHz, maxhold the channel.
2. Set the adjacent channel of the EUT maxhold another trace
3. Measure the channel separation.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Signal Analyzer	FSIQ26	8386001028	2011-11-24	2012-11-23

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Data

Environmental Conditions

Temperature:	25
Relative Humidity:	56 %
ATM Pressure:	100.0 kPa

* The testing was performed by Henry Ding on 2012-07-19.

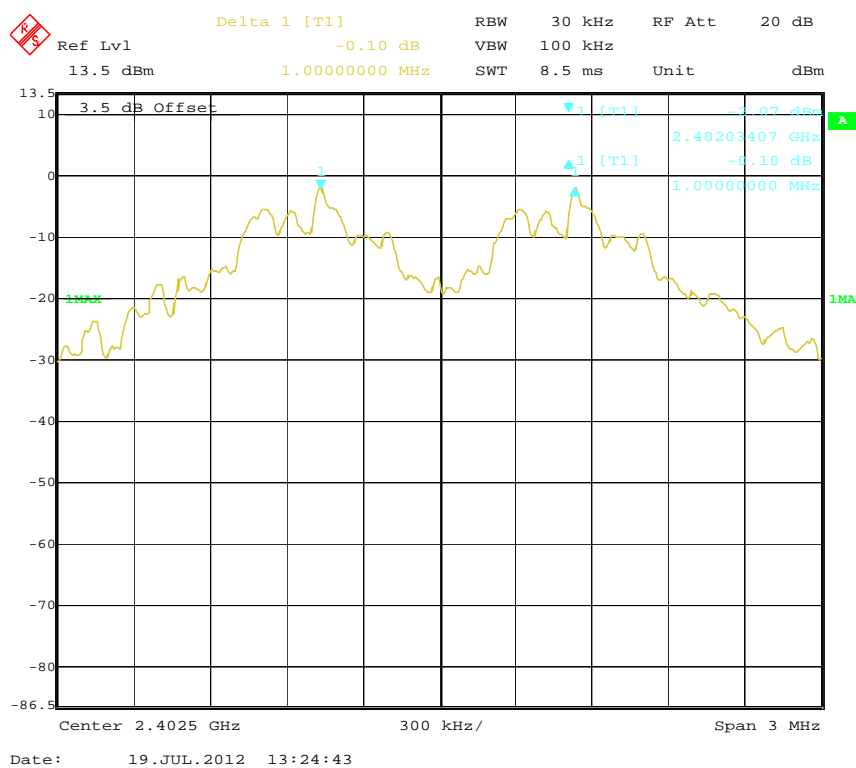
Test Result: Compliance.

Please refer to following tables and plots

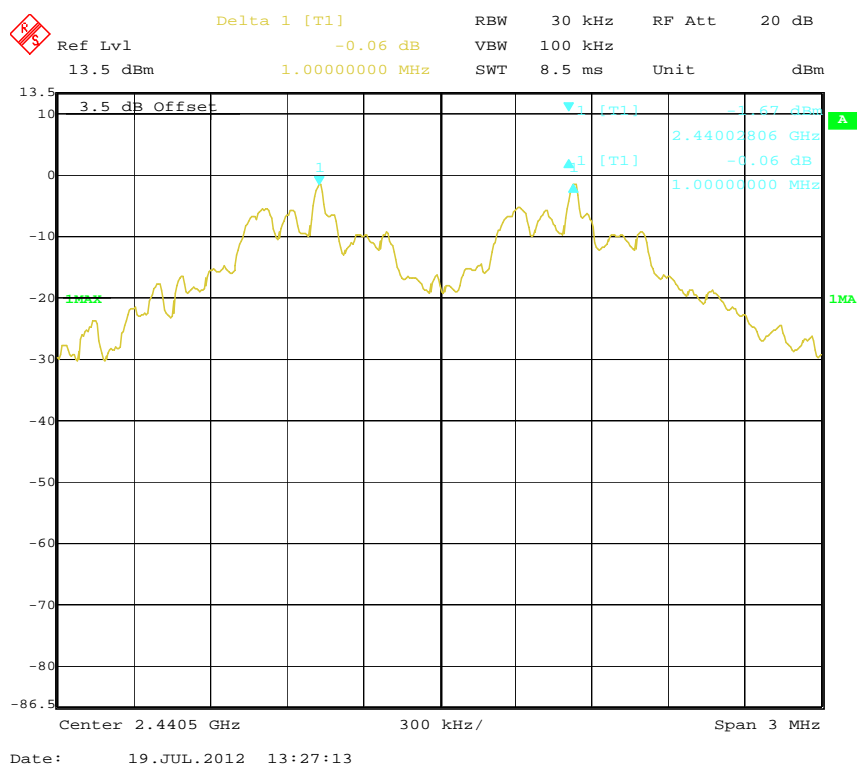
Channel	Channel Frequency (MHz)	Channel Separation (MHz)	Limit (MHz)	Result
Low Channel	2402	1.000	0.925	Pass
Adjacency Channel	2403			
Mid Channel	2441	1.000	0.919	
Adjacency Channel	2440			
High Channel	2476	1.000	0.919	
Adjacency Channel	2475			

Note: limit=20 dB bandwidth*2/3

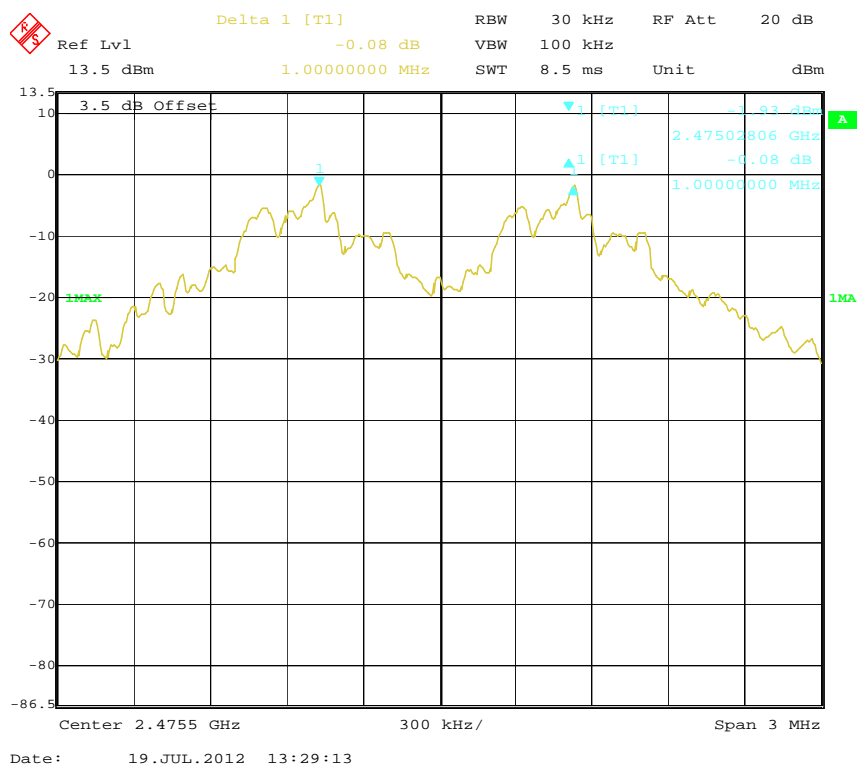
Low Channel



Middle Channel



High Channel



FCC §15.247(a) (1) – 20 dB BANDWIDTH TESTING

Applicable Standard

Alternatively, frequency hopping systems operating in the 2400–2483.5 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 125mW.

Test Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT on the test table without connection to measurement instrument. Turn on the EUT. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.
3. Measure the frequency difference of two frequencies that were attenuated 20 dB from the reference level. Record the frequency difference as the emission bandwidth.
4. Repeat above procedures until all frequencies measured were complete.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Signal Analyzer	FSIQ26	8386001028	2011-11-24	2012-11-23

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Data

Environmental Conditions

Temperature:	25
Relative Humidity:	56 %
ATM Pressure:	100.0 kPa

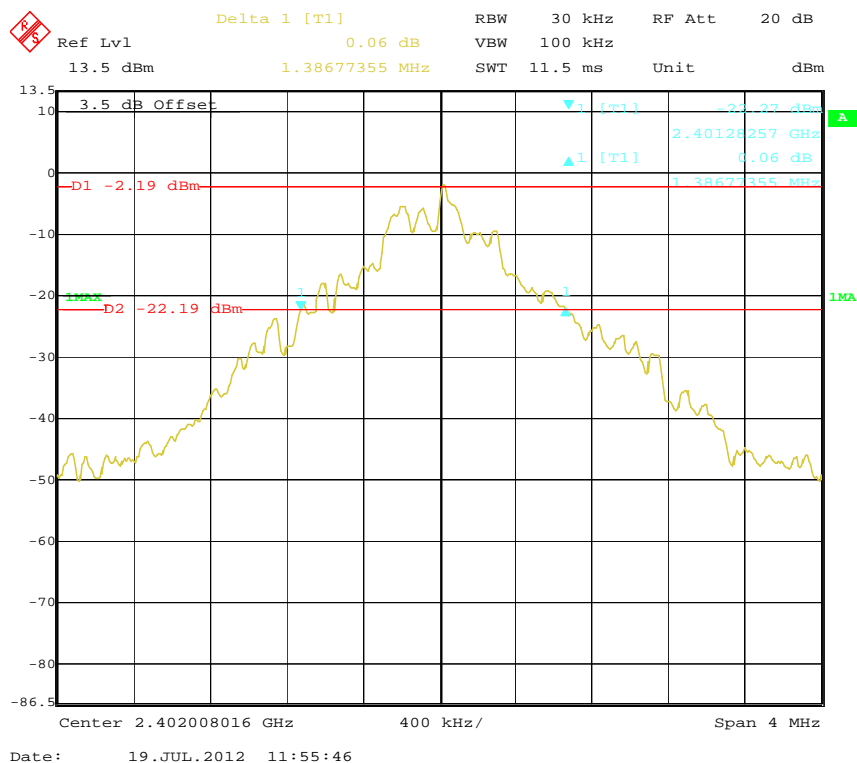
* The testing was performed by Henry Ding on 2012-07-19.

Test Result: Compliance.

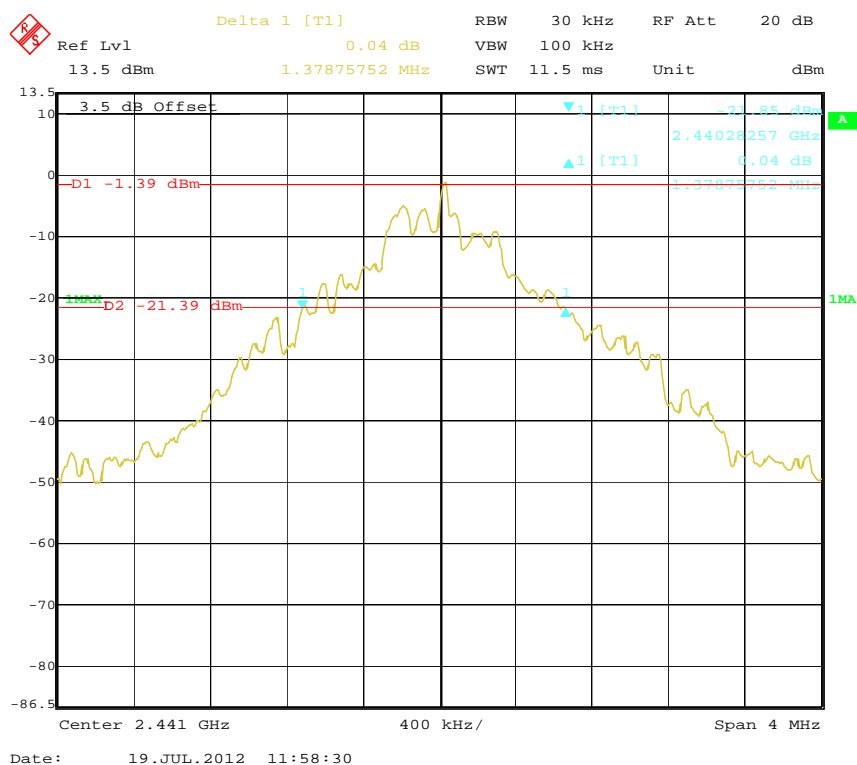
Please refer to following tables and plots

Test Mode: Transmitting

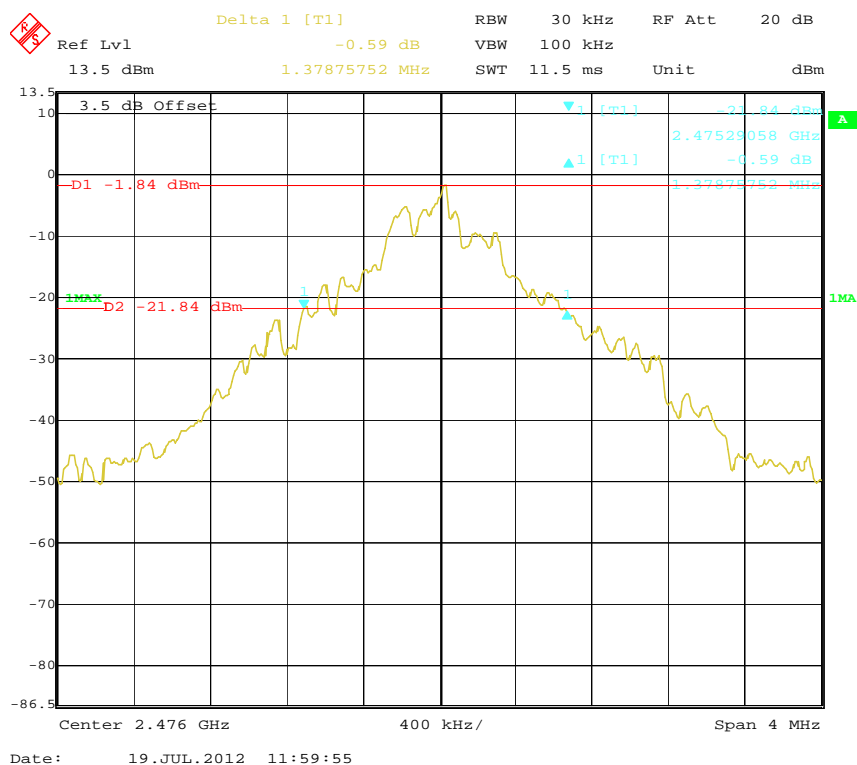
Channel	Frequency (MHz)	20 dB Bandwidth (MHz)
Low	2402	1.387
Middle	2441	1.379
High	2476	1.379

Low Channel

Middle Channel



High Channel



FCC §15.247(a) (1) (iii)-QUANTITY OF HOPPING CHANNEL TEST**Applicable Standard**

Frequency hopping systems in the 2400–2483.5 MHz band shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.

Test Procedure

1. Check the calibration of the measuring instrument (SA) using either an internal calibrator or a known signal from an external generator.
2. Set the EUT in hopping mode from first channel to last.
3. By using the max-hold function record the quantity of the channel.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Signal Analyzer	FSIQ26	8386001028	2011-11-24	2012-11-23

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Data**Environmental Conditions**

Temperature:	25 °C
Relative Humidity:	56 %
ATM Pressure:	100.0kPa

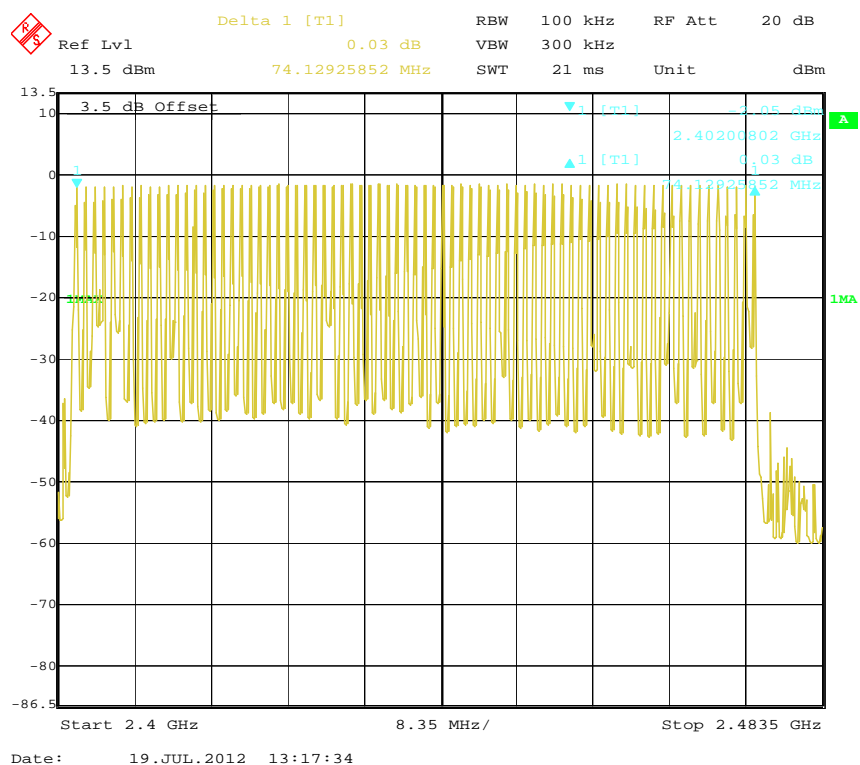
The testing was performed by Henry Ding on 2012-07-19.

Test Result: Compliance.

Please refer to following tables and plots

Test Mode: Transmitting

Frequency Range (MHz)	Number of Hopping Channel	Limit
2400-2483.50	75	≥ 15

Number of Hopping Channels

FCC §15.247(a) (1) (iii) -TIME OF OCCUPANCY (DWELL TIME)**Applicable Standard**

Frequency hopping systems in the 2400-2483.5 MHz shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.

Test Procedure

Dwell Time= Pulse time (ms) * hope rate/2/ number of hopping channels * hopping No.*0.4 s.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Signal Analyzer	FSIQ26	8386001028	2011-11-24	2012-11-23

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Data**Environmental Conditions**

Temperature:	25 °C
Relative Humidity:	56 %
ATM Pressure:	100.0kPa

The testing was performed by Henry Ding on 2012-07-19.

Test Result: Compliance.

Please refer to following tables and plots

[illegible]

Ref Lvl 13.5 dBm Delta 1 [T1] -0.07 dB RBW 1 MHz RF Att 20 dB VBW 3 MHz Unit dBm

3.5 dB Offset 252.505010 μs SWT 500 μs

Center 2.476 GHz 50 μs/

Date: 19.JUL.2012 15:24:25

FCC §15.247(b) (1) - PEAK OUTPUT POWER MEASUREMENT

Applicable Standard

According to §15.247(b) (1), for frequency hopping systems operating in the 2400–2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725–5850 MHz band: 1 watt. For all other frequency hopping systems in the 2400–2483.5 MHz band: 0.125 watts.

Test Procedure

1. Place the EUT on a bench and set in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to an EMI test receiver.
3. Add a correction factor to the display.



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Signal Analyzer	FSIQ26	8386001028	2011-11-24	2012-11-23

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Data

Environmental Conditions

Temperature:	25
Relative Humidity:	56 %
ATM Pressure:	100.0kPa

* The testing was performed by Henry Ding on 2012-07-19.

Test Result: Compliance.

Channel	Channel frequency (MHz)	Conducted Output Power		Limit (mW)
		(dBm)	(mW)	
Low channel	2402	-1.61	0.69	1000
Middle channel	2441	-1.36	0.73	1000
High channel	2476	-1.49	0.71	1000

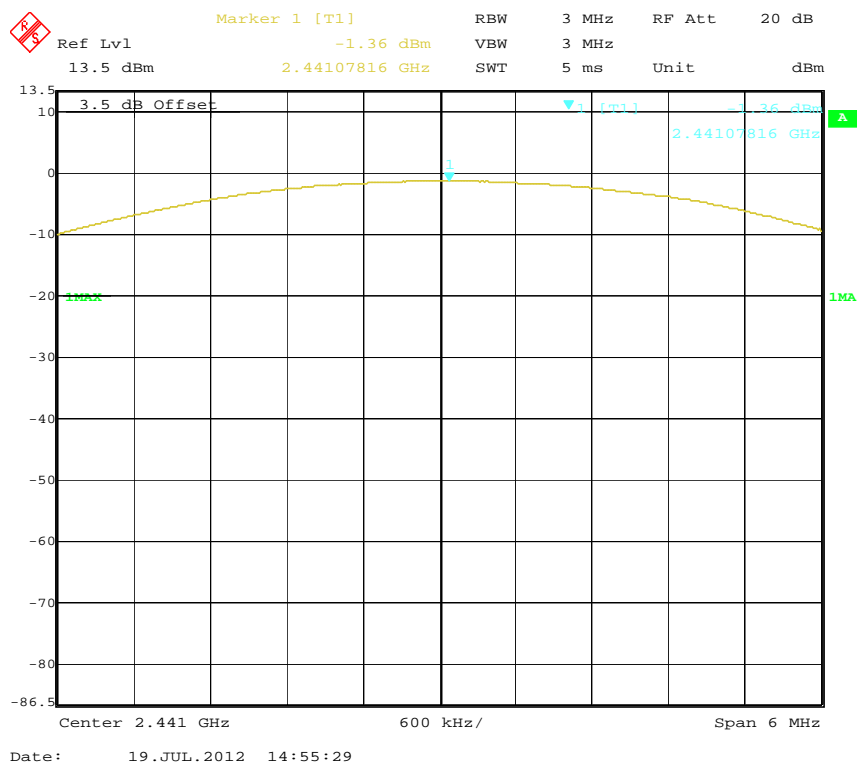
Ref Lvl 13.5 dBm
 Marker 1 [T1] 2.40216232 GHz
 RBW 3 MHz
 VBW 3 MHz
 SWT 5 ms
 RF Att 20 dB
 Unit dBm

3.5 dB Offset
 -1.61 dBm
 2.40216232 GHz

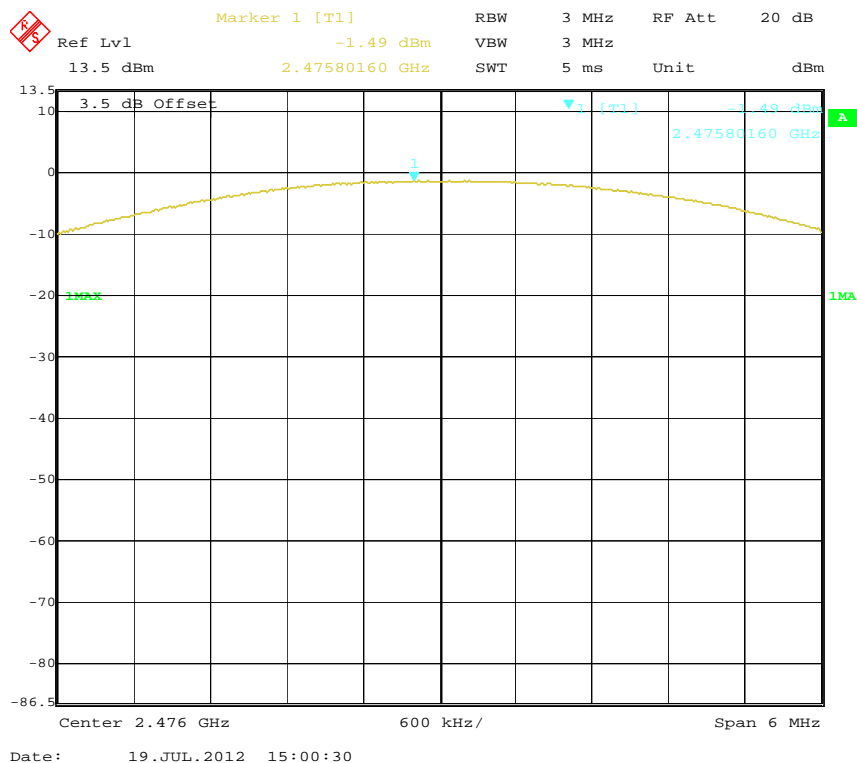
Center 2.402 GHz
 600 kHz/
 Span 6 MHz

Date: 19.JUL.2012 14:57:22

Middle Channel



High Chanel



FCC §15.247(d) - BAND EDGES TESTING

Applicable Standard

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 §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

Test Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Put it on the Rotated table and turn on the EUT and make it operate in Operating mode. Then set it to Low Channel and High Channel within its operating range, and make sure the instrument is operated in its linear range.
3. Set RBW of spectrum analyzer to 300kHz and VBW of spectrum analyzer to 1 MHz with a convenient frequency span including 100 kHz bandwidth from band edge.
4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
5. Repeat above procedures until all measured frequencies were complete.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Signal Analyzer	FSIQ26	8386001028	2011-11-24	2012-11-23

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Data

Environmental Conditions

Temperature:	25
Relative Humidity:	56 %
ATM Pressure:	100.0kPa

*The testing was performed by Henry Ding on 2012-07-19.

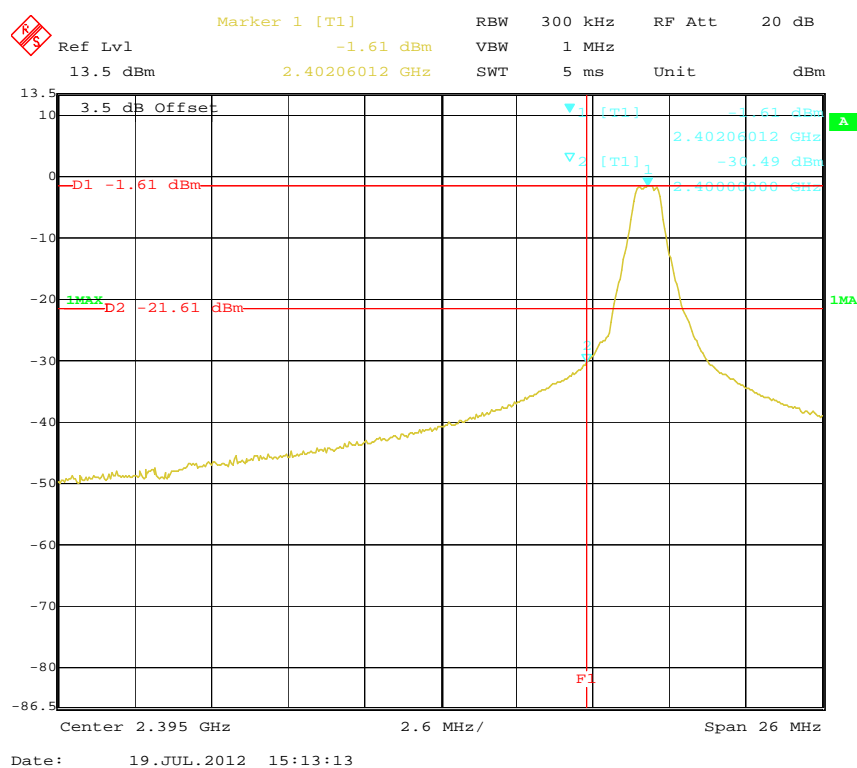
Test Result: Compliance.

Test Mode: Transmitting

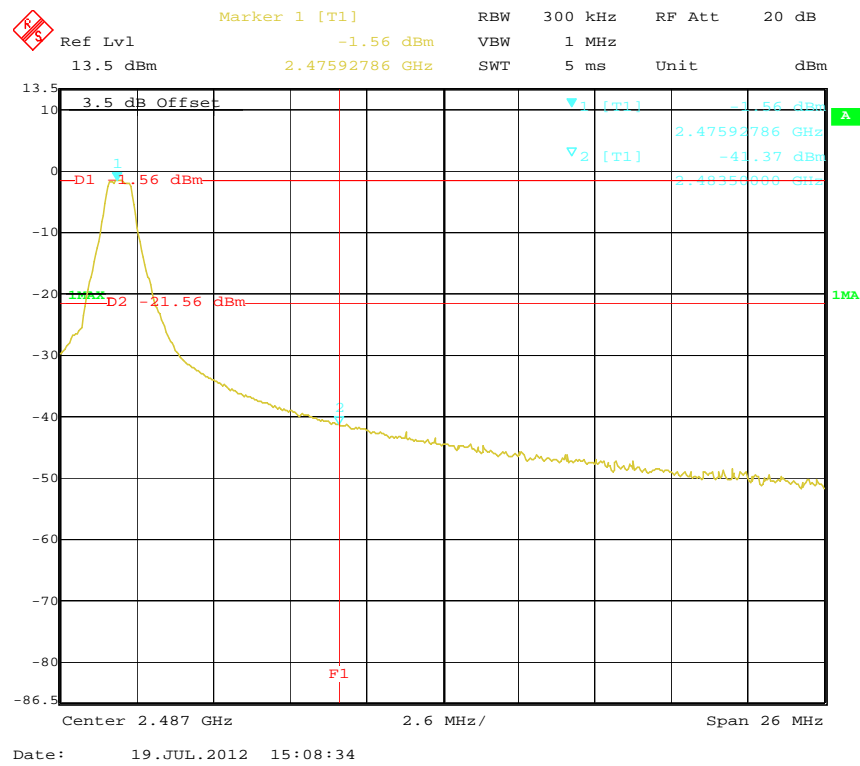
Frequency (MHz)	Delta Peak to Band Emission (dBc)	Delta Limit (dBc)
2400.000	28.88	20
2483.500	39.81	20

Please refer to follow plots:

Band Edge-Left Side



Band Edge-Right Side



***** END OF REPORT *****