

FCC PART 15.247
TEST REPORT

For

Dorel Juvenile Group

2525 State Street, Columbus, Indiana, 47201-7494, United States

FCC ID: MNJ08903TX

Report Type: Original Report	Product Type: Genesis Handheld Digital Color Video Monitor (Baby Unit)
Test Engineer: <u>Dean Liu</u>	<i>Dean Liu</i>
Report Number: <u>R1DG120518004-00</u>	
Report Date: <u>2012-05-29</u>	
Reviewed By: <u>Ivan Cao</u>	<i>Ivan Cao</i>
Test Laboratory:	EMC Engineer
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.

* This report contains data that are not covered by the NVLAP accreditation and are 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	5
SYSTEM TEST CONFIGURATION.....	6
DESCRIPTION OF TEST CONFIGURATION	6
EQUIPMENT MODIFICATIONS	6
BLOCK DIAGRAM OF TEST SETUP	6
SUMMARY OF TEST RESULTS	7
FCC §15.247 (i) & §1.1307 (b) (1) & §2.1091- MAXIMUM PERMISSIBLE EXPOSURE (MPE).....	7
APPLICABLE STANDARD	7
FCC §15.203 – ANTENNA REQUIREMENT	7
APPLICABLE STANDARD	7
ANTENNA CONNECTOR CONSTRUCTION	7
FCC §15.207 (a) - CONDUCTED EMISSIONS	7
APPLICABLE STANDARD	7
MEASUREMENT UNCERTAINTY	7
EUT SETUP	7
EMI TEST RECEIVER SETUP.....	7
TEST EQUIPMENT LIST AND DETAILS.....	7
TEST PROCEDURE	7
TEST RESULTS SUMMARY	7
TEST DATA	7
FCC §15.209, §15.205 & §15.247(d) - SPURIOUS EMISSIONS.....	7
APPLICABLE STANDARD	7
MEASUREMENT UNCERTAINTY	7
EUT SETUP	7
EMI TEST RECEIVER & SPECTRUM ANALYZER SETUP	7
TEST EQUIPMENT LIST AND DETAILS.....	7
TEST PROCEDURE	7
CORRECTED AMPLITUDE & MARGIN CALCULATION	7
TEST RESULTS SUMMARY	7
TEST DATA	7
FCC §15.247(a) (1)-CHANNEL SEPARATION TEST	7
APPLICABLE STANDARD	7
TEST EQUIPMENT LIST AND DETAILS.....	7
TEST PROCEDURE	7
TEST DATA	7
FCC §15.247(a) (1) – 20 dB BANDWIDTH TESTING.....	7
APPLICABLE STANDARD	7
TEST EQUIPMENT LIST AND DETAILS.....	7
TEST PROCEDURE	7

TEST DATA7

FCC §15.247(a) (1) (iii)-QUANTITY OF HOPPING CHANNEL TEST7

 APPLICABLE STANDARD7

 TEST EQUIPMENT LIST AND DETAILS.....7

 TEST PROCEDURE7

 TEST DATA7

FCC §15.247(a) (1) (iii) -TIME OF OCCUPANCY (DWELL TIME).....7

 APPLICABLE STANDARD7

 TEST EQUIPMENT LIST AND DETAILS.....7

 TEST PROCEDURE7

 TEST DATA7

FCC §15.247(b) (1) - PEAK OUTPUT POWER MEASUREMENT7

 APPLICABLE STANDARD7

 TEST EQUIPMENT LIST AND DETAILS.....7

 TEST PROCEDURE7

 TEST DATA7

FCC §15.247(d) - BAND EDGES TESTING7

 APPLICABLE STANDARD7

 TEST EQUIPMENT LIST AND DETAILS.....7

 TEST PROCEDURE7

 TEST DATA7

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *Dorel Juvenile Group*'s product, model number: 08903 (FCC ID: MNJ08903TX) (the "EUT") in this report was a *Genesis Handheld Digital Color Video Monitor(Baby Unit)*, which was measured approximately: 11.5 cm (L) x 6.8 cm (W) x 6.8 cm (H), rated input voltage: DC 5V from adapter or DC 3.7V from lithium battery, the operating frequency is 2400~2483.5MHz .

Adapter Information:

Model No.: HK-U-050A100-US

Input: AC 100-240V~50/60Hz, 0.2A

Output: DC 5V, 1.0A

** All measurement and test data in this report was gathered from production sample serial number: 120518004 (Assigned by BACL, Shenzhen). The EUT was received on 2012-05-21.*

Objective

This report is prepared on behalf of *Dorel Juvenile Group* 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)

No related submittal(s).

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. (Dongguan) to collect test data is located on the No.69 Pulongcun, Puxinhu Industrial Zone, Tangxia, Dongguan, Guangdong, China

Test site at Bay Area Compliance Laboratories Corp. (Dongguan) 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 February 02, 2012. 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.: 273710. 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. 18 hopping channels are provided:

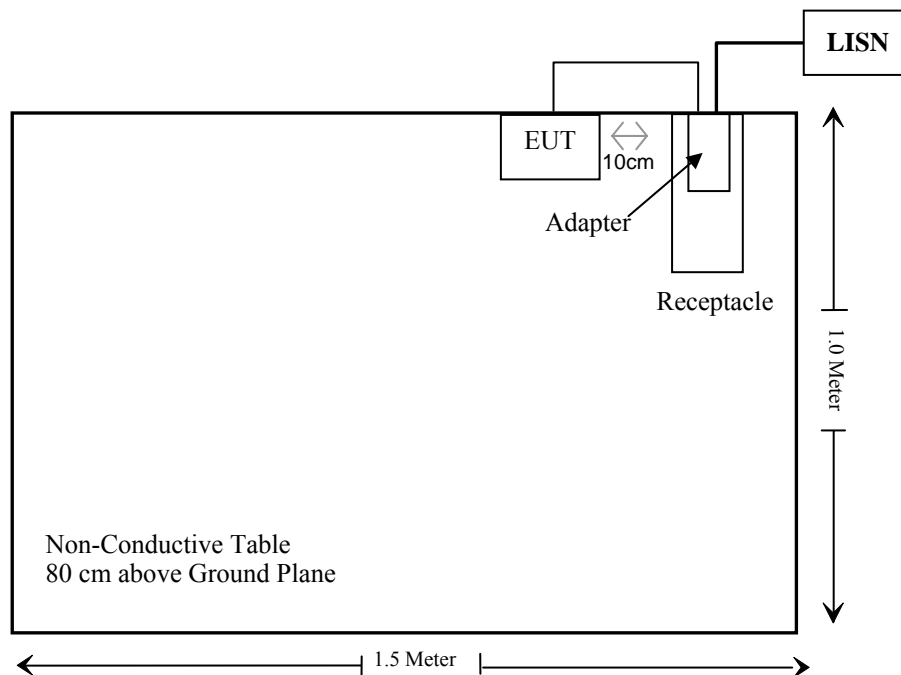
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2408.625	2	2412	3	2415.375	4	2418.75
5	2422.125	6	2425.5	7	2430	8	2434.5
9	2439	10	2443.5	11	2448	12	2452.5
13	2457	14	2460.375	15	2463.75	16	2467.125
17	2470.5	18	2473.875	/	/	/	/

EUT was tested with Channel 1, Channel 9 and Channel 18.

Equipment Modifications

No 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), §2.1091	RF Exposure	Compliance
§15.203	Antenna Requirement	Compliance
§15.207 (a)	Conducted Emissions	Compliance
§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

FCC §15.247 (i) & §1.1307 (b) (1) & §2.1091- MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Applicable Standard

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

Limits for Maximum Permissible Exposure (MPE) (§1.1310, §2.1091)

(B) Limits for General Population/Uncontrolled Exposure				
Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm²)	Averaging Time (minutes)
0.3–1.34	614	1.63	*(100)	30
1.34–30	824/f	2.19/f	*(180/f ²)	30
30–300	27.5	0.073	0.2	30
300–1500	/	/	f/1500	30
1500–100,000	/	/	1.0	30

f = frequency in MHz; * = Plane-wave equivalent power density;

According to §1.1310 and §2.1091 RF exposure is calculated.

Calculated Formulary:

Predication of MPE limit at a given distance

$S = PG/4\pi R^2$ = power density (in appropriate units, e.g. mW/cm²);

P = power input to the antenna (in appropriate units, e.g., mW);

G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain;

R = distance to the center of radiation of the antenna (appropriate units, e.g., cm);

Calculated Data:

Frequency (MHz)	Antenna Gain		Conducted Power		Evaluation Distance (cm)	Power Density (mW/cm²)	MPE Limit (mW/cm²)
	(dBi)	(numeric)	(dBm)	(mW)			
2439	0.7	1.17	8.60	7.24	20	0.0017	1.0

Result: The device meet FCC MPE at 20 cm distance

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 used one Pifa antenna, the gain is 0.7 dBi, which fully in accordance to section 15.203, please refer to the EUT photos.

Result: Compliance.

FCC §15.207 (a) - CONDUCTED EMISSIONS

Applicable Standard

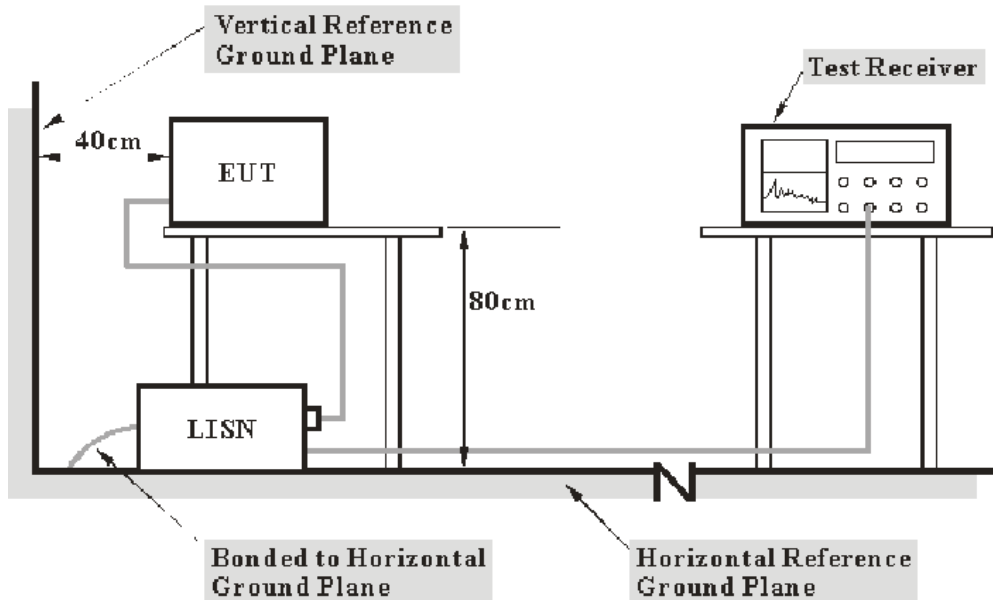
FCC §15.207

Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, and LISN.

Based on CISPR 16-4-4, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any conducted emissions measurement at Bay Area Compliance Laboratory Corp. (Shenzhen) is ± 2.4 dB ($k=2$, 95% level of confidence).

EUT Setup



- Note: 1. Support units were connected to second LISN.
2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The setup of EUT is according with per ANSI C63.4-2009 measurement procedure. The specification used was with the FCC Part 15.207 limits.

The spacing between the peripherals was 10 cm.

The adapter was connected to a 120VAC/60 Hz power source.

EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

<i>Frequency Range</i>	<i>IF B/W</i>
150 kHz – 30 MHz	9 kHz

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCS30	100176	2011-11-24	2012-11-23
Rohde & Schwarz	L.I.S.N.1	ESH2-Z5	892107/021	2011-11-17	2012-11-16

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

Test Procedure

During the conducted emission test, the adapter was connected to the outlet of the LISN.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All data was recorded in the Quasi-peak and average detection mode.

Test Results Summary

According to the recorded data in following table, the EUT complied with the FCC Part 15.207, with the worst margin reading of:

13.34 dB at 0.360 MHz in the **Neutral** conducted mode

Test Data

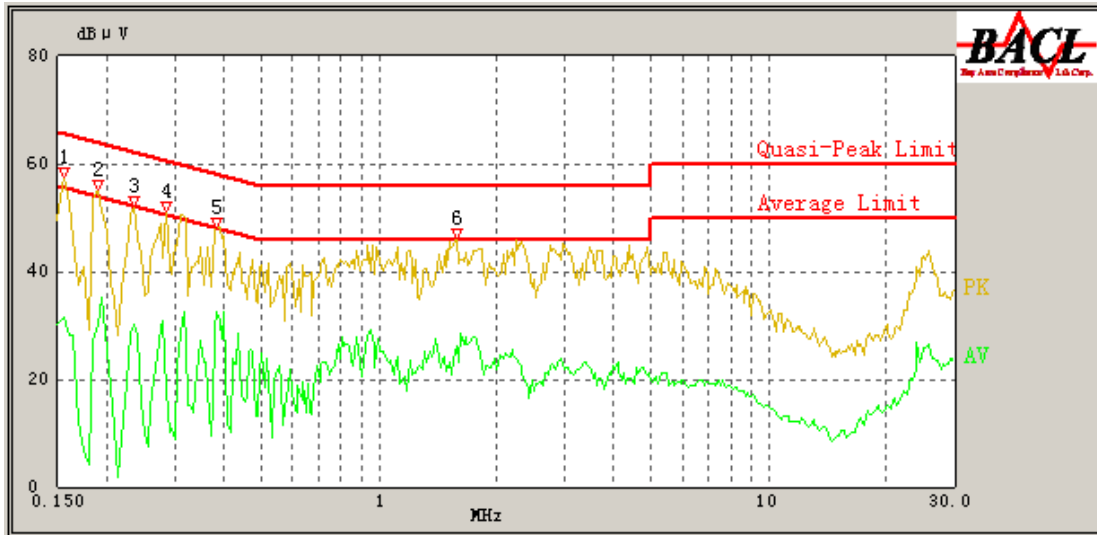
Environmental Conditions

Temperature:	25 ° C
Relative Humidity:	48 %
ATM Pressure:	100.0 kPa

The testing was performed by Dean Liu on 2012-05-28.

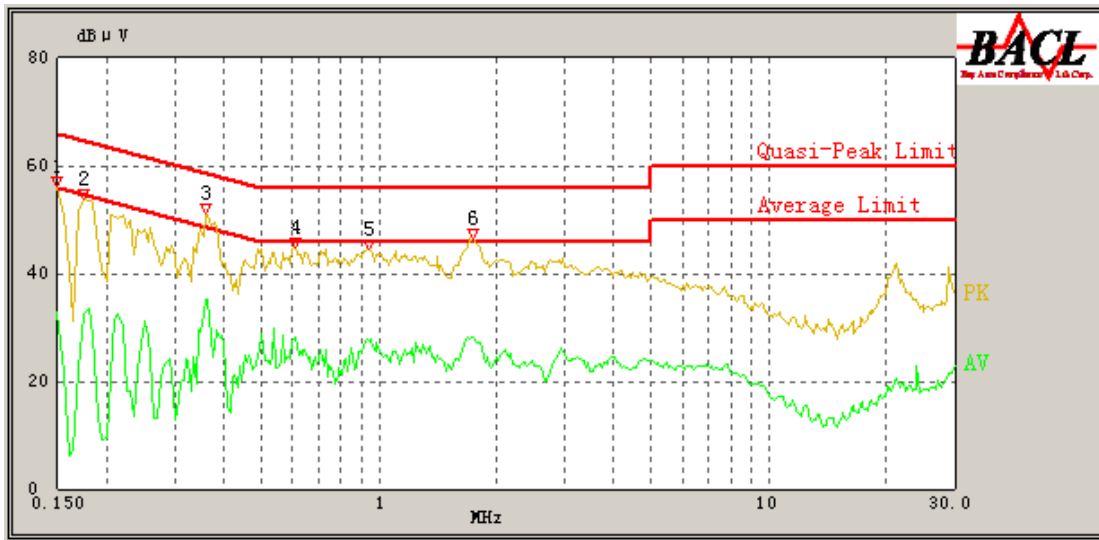
Test Mode: Transmitting

AC 120 V, 60 Hz, Line:



Frequency (MHz)	Corrected Amplitude (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Detector (PK/QP/Ave.)
0.155	50.71	0.4	65.86	15.15	QP
0.385	43.18	0.42	59.29	16.11	QP
0.385	32.5	0.42	49.29	16.79	Ave.
0.19	46.75	0.42	64.86	18.11	QP
1.585	36.73	0.47	56	19.27	QP
0.235	44.22	0.42	63.57	19.35	QP
1.585	26.17	0.47	46	19.83	Ave.
0.235	30.07	0.42	53.57	23.5	Ave.
0.155	31.59	0.4	55.86	24.27	Ave.
0.19	30.11	0.42	54.86	24.75	Ave.
0.285	31.03	0.42	62.14	31.11	QP
0.285	17.74	0.42	52.14	34.4	Ave.

AC 120V, 60 Hz, Neutral:



Frequency (MHz)	Corrected Amplitude (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Detector (PK/QP/Ave.)
0.360	46.66	0.42	60.00	13.34	QP
1.740	41.27	0.47	56.00	14.73	QP
0.360	35.14	0.42	50.00	14.86	Ave.
0.175	50.07	0.41	65.29	15.22	QP
0.610	40.00	0.43	56.00	16.00	QP
0.150	49.95	0.40	66.00	16.05	QP
0.945	39.45	0.45	56.00	16.55	QP
1.745	28.32	0.47	46.00	17.68	Ave.
0.610	28.03	0.43	46.00	17.97	Ave.
0.940	27.49	0.45	46.00	18.51	Ave.
0.175	32.61	0.41	55.29	22.68	Ave.
0.150	33.00	0.40	56.00	23.00	Ave.

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

Applicable Standard

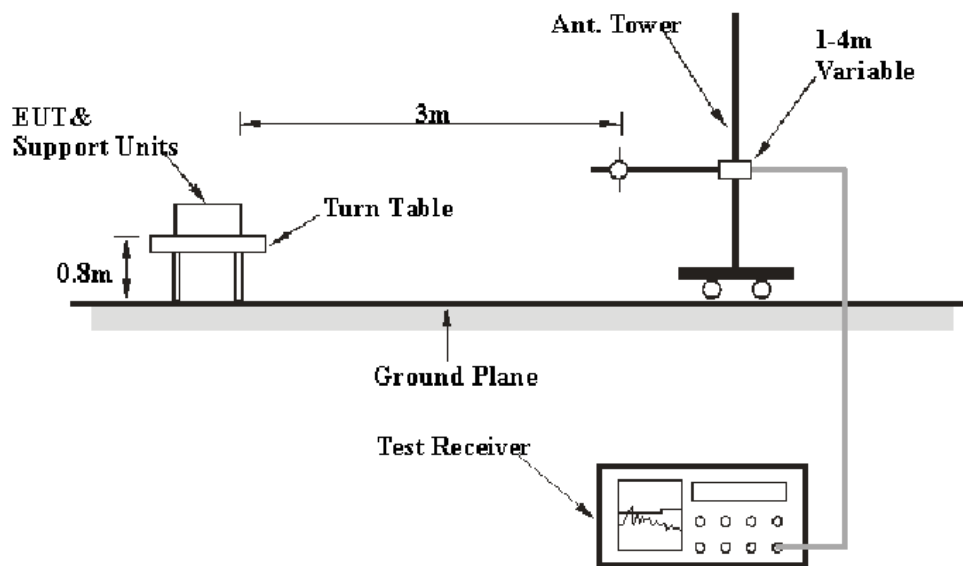
FCC §15.247 (d); §15.209; §15.205;

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.

The spacing between the peripherals was 10 cm.

The adapter was connected to a 120 VAC/60 Hz power source.

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 Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
HP	Amplifier	HP8447D	2944A09795	2011-08-02	2012-08-01
Rohde & Schwarz	EMI Test Receiver	ESCI	100035	2011-11-11	2012-11-10
Sunol Sciences	Broadband Antenna	JB1	A040904-2	2011-07-05	2012-07-04
Mini-circuits	Amplifier	ZVA-213+	T-E27H	2011-11-24	2012-11-23
Sunol Sciences	Horn Antenna	DRH-118	A052604	2011-12-01	2012-11-30
HP	Spectrum Analyzer	8593A	2919A00242	2011-07-09	2012-07-08
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 Procedure

For the radiated emissions test, the adapter was connected to the AC floor outlet.

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-1GHz and peak and Average detection modes for frequencies above 1GHz.

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:

1.51 dB at **4878 MHz** in the **Vertical** polarization at **Middle** channel

Test Data

Environmental Conditions

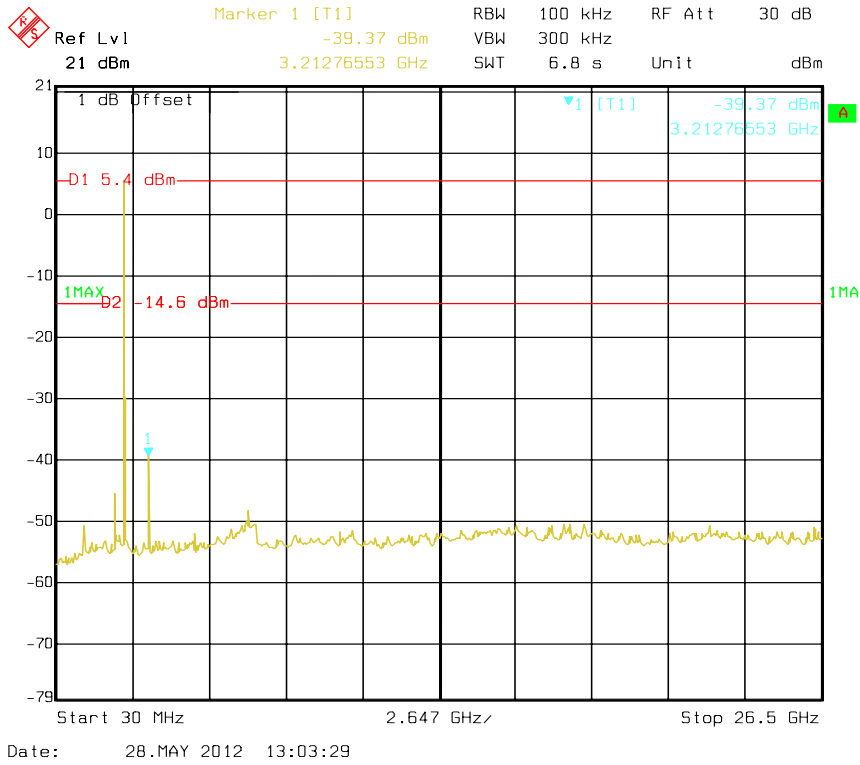
Temperature:	25 °C
Relative Humidity:	56 %
ATM Pressure:	100.0kPa

The testing was performed by Dean Liu on 2012-05-28.

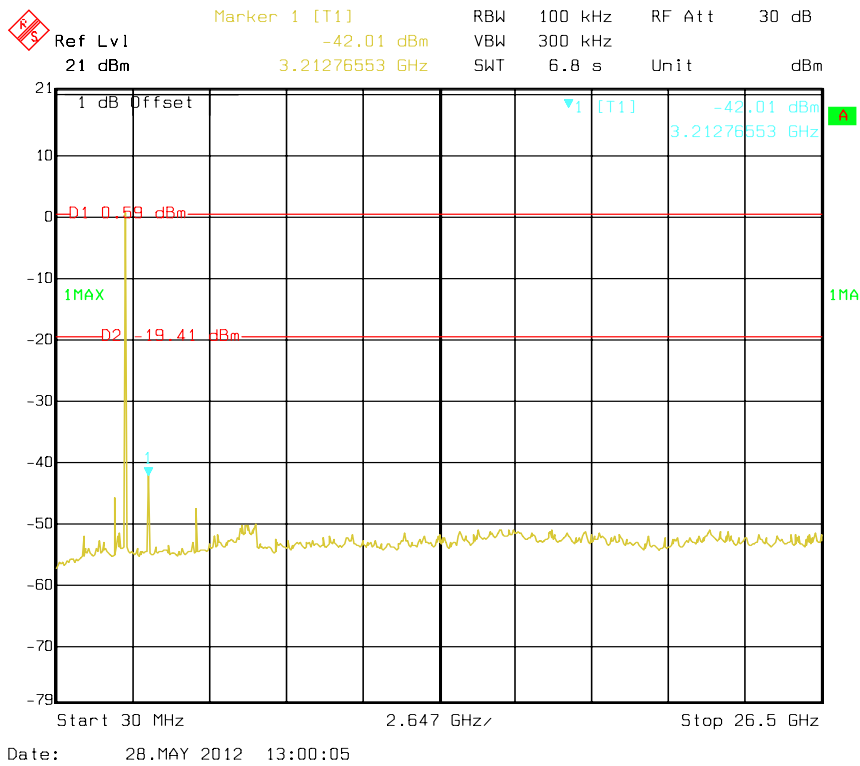
Test Mode: Transmitting

Frequency (MHz)	S.A. Reading (dBμV)	Detector (PK/QP/Ave.)	Polar (H/V)	Corrected Factor (dB)	Correction Data (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Comment
Low Channel (2408.625MHz)								
4817.25	60.47	PK	V	10.7	71.17	74	2.83*	Harmonic
4817.25	58.47	PK	H	10.7	69.17	74	4.83	Harmonic
2352	50.04	PK	V	6.95	56.99	74	17.01	spurious
2352	48.99	PK	H	6.95	55.94	74	18.06	spurious
4817.25	25.14	Ave.	V	10.7	35.84	54	18.16	Harmonic
4817.25	24.71	Ave.	H	10.7	35.41	54	18.59	Harmonic
323	29.35	QP	V	-4.83	24.52	46	21.48	spurious
323	28.44	QP	H	-4.83	23.61	46	22.39	spurious
2352	21.11	Ave.	V	6.95	28.06	54	25.94	spurious
2352	20.24	Ave.	H	6.95	27.19	54	26.81	spurious
2408.625	66.67	PK	H	34.91	101.58	N/A	N/A	Fundamental
2408.625	26.3	Ave.	H	34.91	61.21	N/A	N/A	Fundamental
2408.625	62.56	PK	V	34.91	97.47	N/A	N/A	Fundamental
2408.625	25.97	Ave.	V	34.91	60.88	N/A	N/A	Fundamental
Middle Channel (2439MHz)								
4878	61.42	PK	V	11.07	72.49	74	1.51*	Harmonic
4878	59.4	PK	H	11.07	70.47	74	3.53*	Harmonic
4878	26.01	Ave.	V	11.07	37.08	54	16.92	Harmonic
4878	25.7	Ave.	H	11.07	36.77	54	17.23	Harmonic
259	29.84	QP	V	-6.72	23.12	46	22.88	spurious
259	28.61	QP	H	-6.72	21.89	46	24.11	spurious
2439	63.46	PK	H	35.22	98.68	N/A	N/A	Fundamental
2439	26.31	Ave.	H	35.22	61.53	N/A	N/A	Fundamental
2439	64.21	PK	V	35.22	99.43	N/A	N/A	Fundamental
2439	26.95	Ave.	V	35.22	62.17	N/A	N/A	Fundamental
High Channel (2473.875MHz)								
4947.75	60.97	PK	H	10.96	71.93	74	2.07*	Harmonic
4947.75	59.25	PK	V	10.96	70.21	74	3.79*	Harmonic
2483.5	49.56	PK	H	7.53	57.09	74	16.91	spurious
4947.75	25.84	Ave.	V	10.96	36.8	54	17.2	Harmonic
4947.75	25.53	Ave.	H	10.96	36.49	54	17.51	Harmonic
2483.5	48.16	PK	V	7.53	55.69	74	18.31	spurious
401	29.01	QP	H	-2.52	26.49	46	19.51	spurious
401	28.79	QP	V	-2.52	26.27	46	19.73	spurious
2483.5	20.72	Ave.	H	7.53	28.25	54	25.75	spurious
2483.5	19.18	Ave.	V	7.53	26.71	54	27.29	spurious
2473.875	68.88	PK	H	35.3	104.18	N/A	N/A	Fundamental
2473.875	26.5	Ave.	H	35.3	61.8	N/A	N/A	Fundamental
2473.875	63.84	PK	V	35.3	99.14	N/A	N/A	Fundamental
2473.875	26.04	Ave.	V	35.3	61.34	N/A	N/A	Fundamental

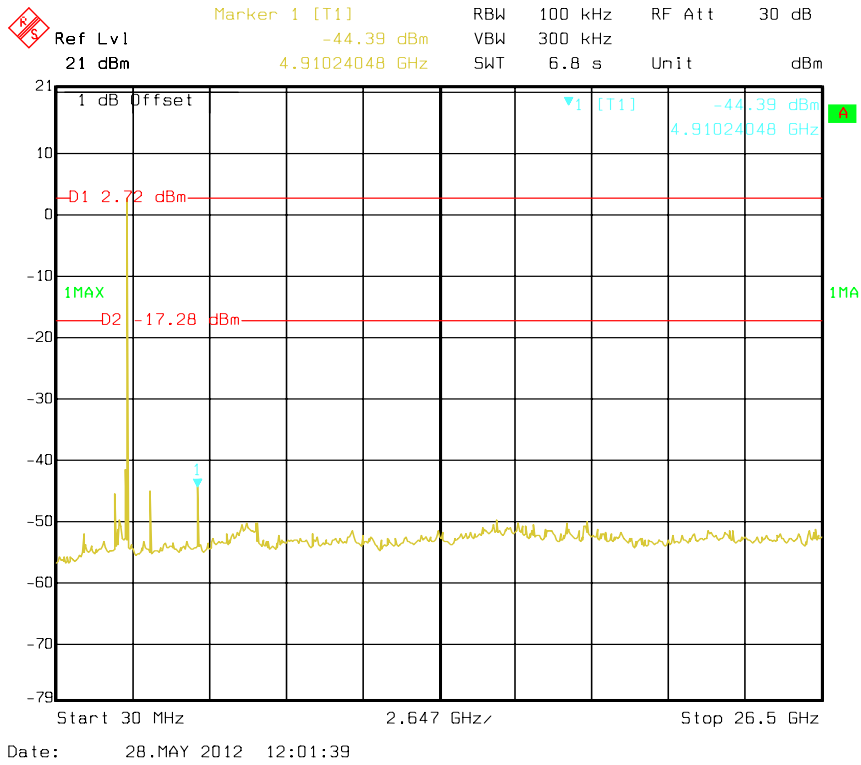
Low Channel



Middle Channel



High Channel



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 Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCI	100035	2011-11-11	2012-11-10

* **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 Procedure

1. Set the EUT in Operating mode, 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 Data

Environmental Conditions

Temperature:	25 °C
Relative Humidity:	56 %
ATM Pressure:	100.9 kPa

* *The testing was performed by Dean Liu on 2012-05-28.*

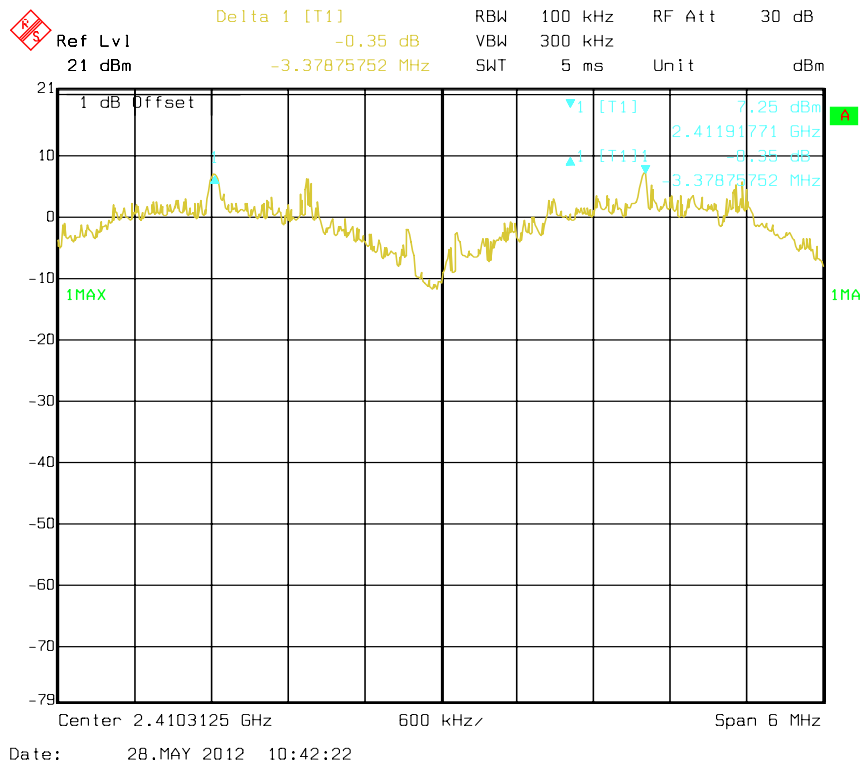
Test Result: Compliance.

Please refer to following tables and plots

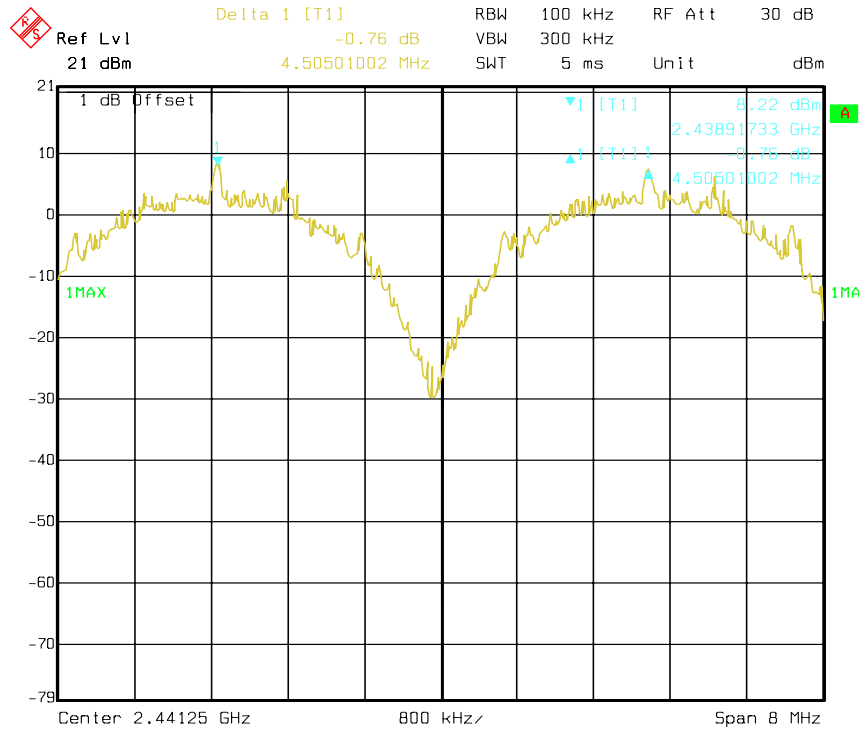
Test Mode: Transmitting

Channel	Channel Frequency (MHz)	Channel Separation (MHz)	Limit (MHz)	result
Low Channel	2408.625	3.38	2.44	Pass
Adjacency Channel	2412			
Mid Channel	2439	4.51	2.41	Pass
Adjacency Channel	2443.5			
High Channel	2470.5	3.38	2.44	Pass
Adjacency Channel	2473.875			

Low Channel

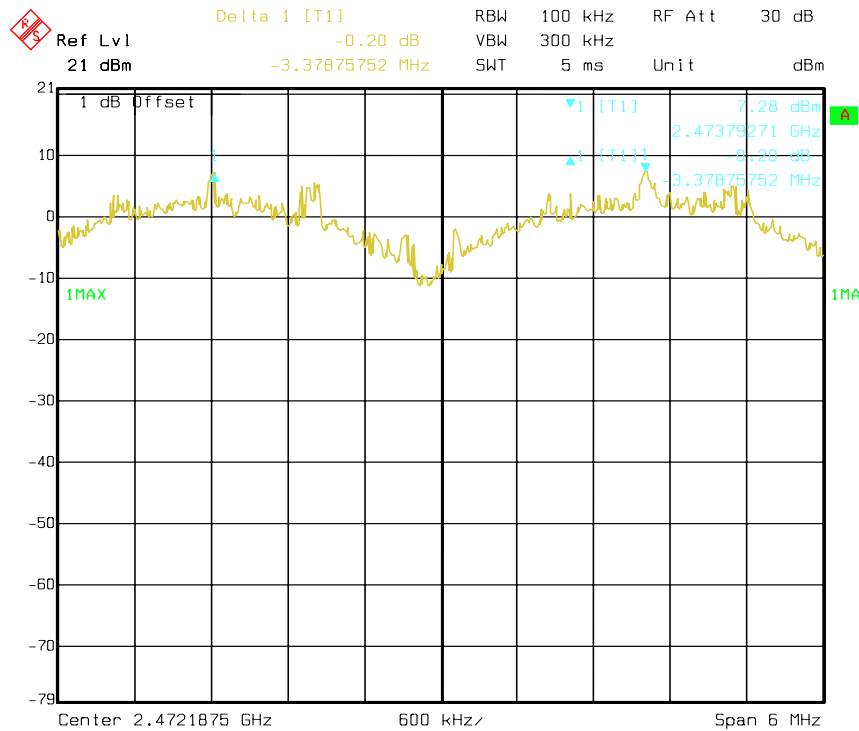


Middle Channel



Date: 28.MAY 2012 10:47:16

High Channel



Date: 28.MAY 2012 10:57:44

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 Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCI	100035	2011-11-11	2012-11-10

* **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 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 Data

Environmental Conditions

Temperature:	25 °C
Relative Humidity:	56 %
ATM Pressure:	100.9kPa

* *The testing was performed by Dean Liu on 2012-05-28.*

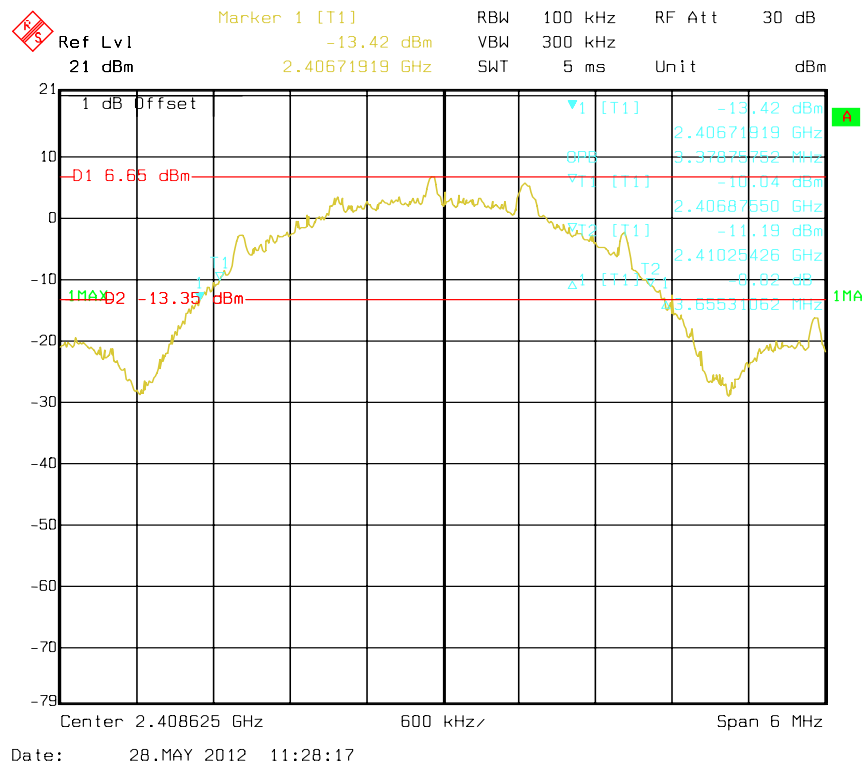
Test Result: Compliance.

Please refer to following tables and plots

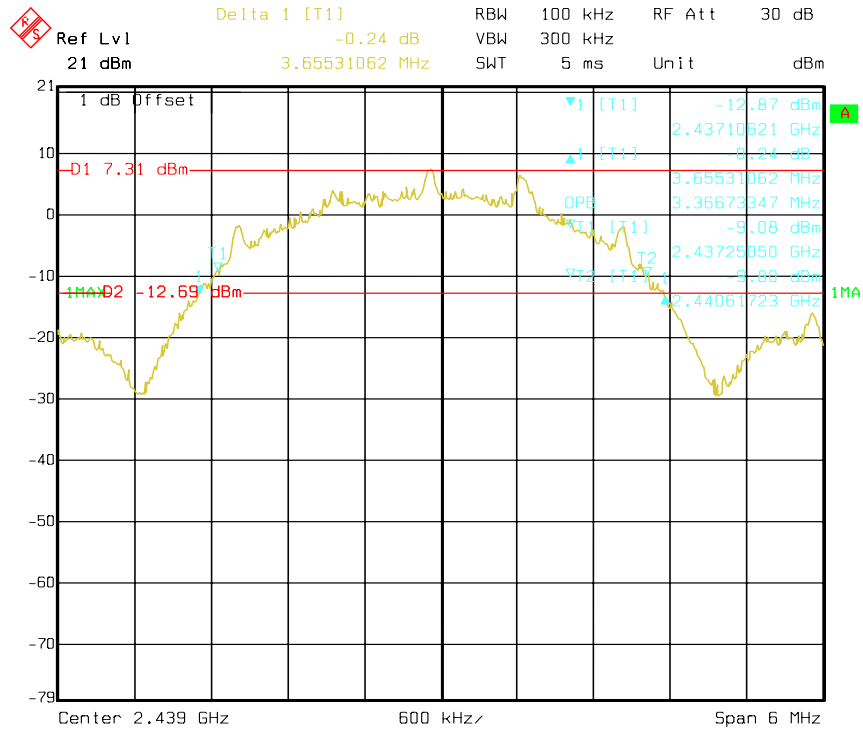
Test Mode: Transmitting

Frequency (MHz)	20 dB Bandwidth (MHz)
2408.625	3.66
2439	3.66
2473.875	3.66

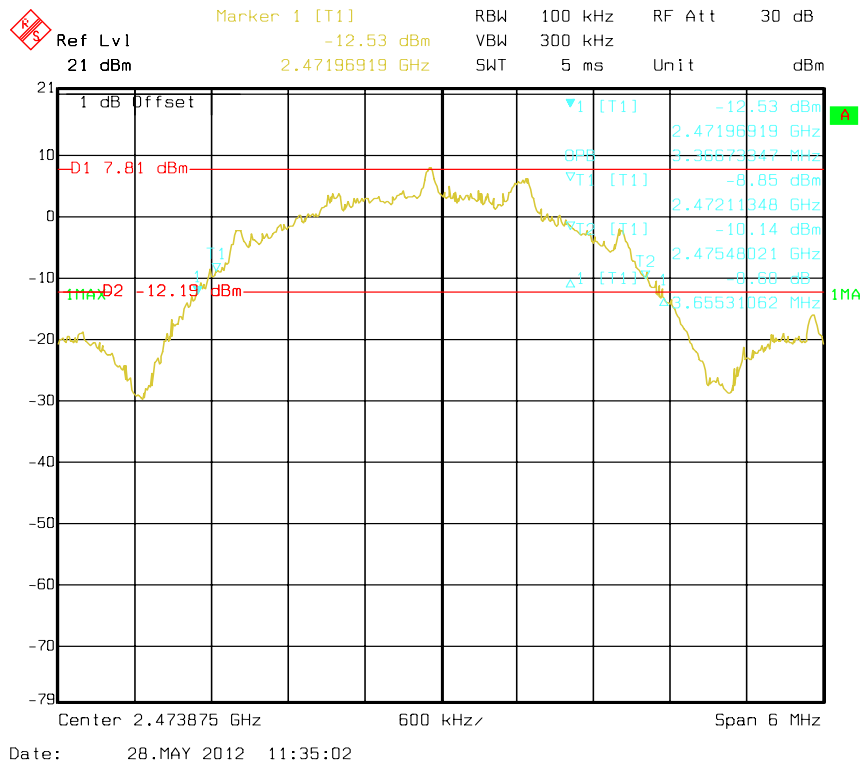
Low Channel



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 Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCI	100035	2011-11-11	2012-11-10

* **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 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 Data

Environmental Conditions

Temperature:	25 °C
Relative Humidity:	56 %
ATM Pressure:	100.9kPa

The testing was performed by Dean Liu on 2012-05-28.

Test Result: Compliance.

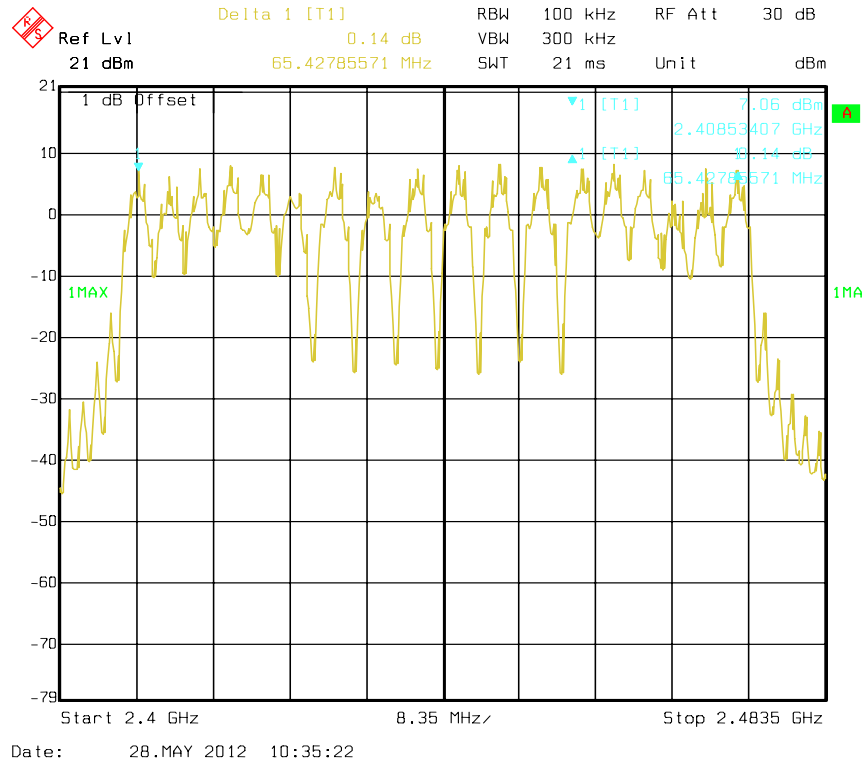
Please refer to following tables and plots

Test Mode: Transmitting

Frequency Range (MHz)	Number of Hopping Channel	Limit
2400-2483.50	18	≥ 15

Number of Hopping Channels

Low Channel



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 Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCI	100035	2011-11-11	2012-11-10

* **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 Procedure

The EUT was worked in channel hopping; Spectrum SPAN was set as 0. Sweep was set as 1s, the quantity of pulse was get from single sweep. In addition, the time of single pulses was tested.

Dwell time= Pulse time* number of hopping channel *0.4*(pulse number/sweep time)

Test Data

Environmental Conditions

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

The testing was performed by Dean Liu on 2012-05-28.

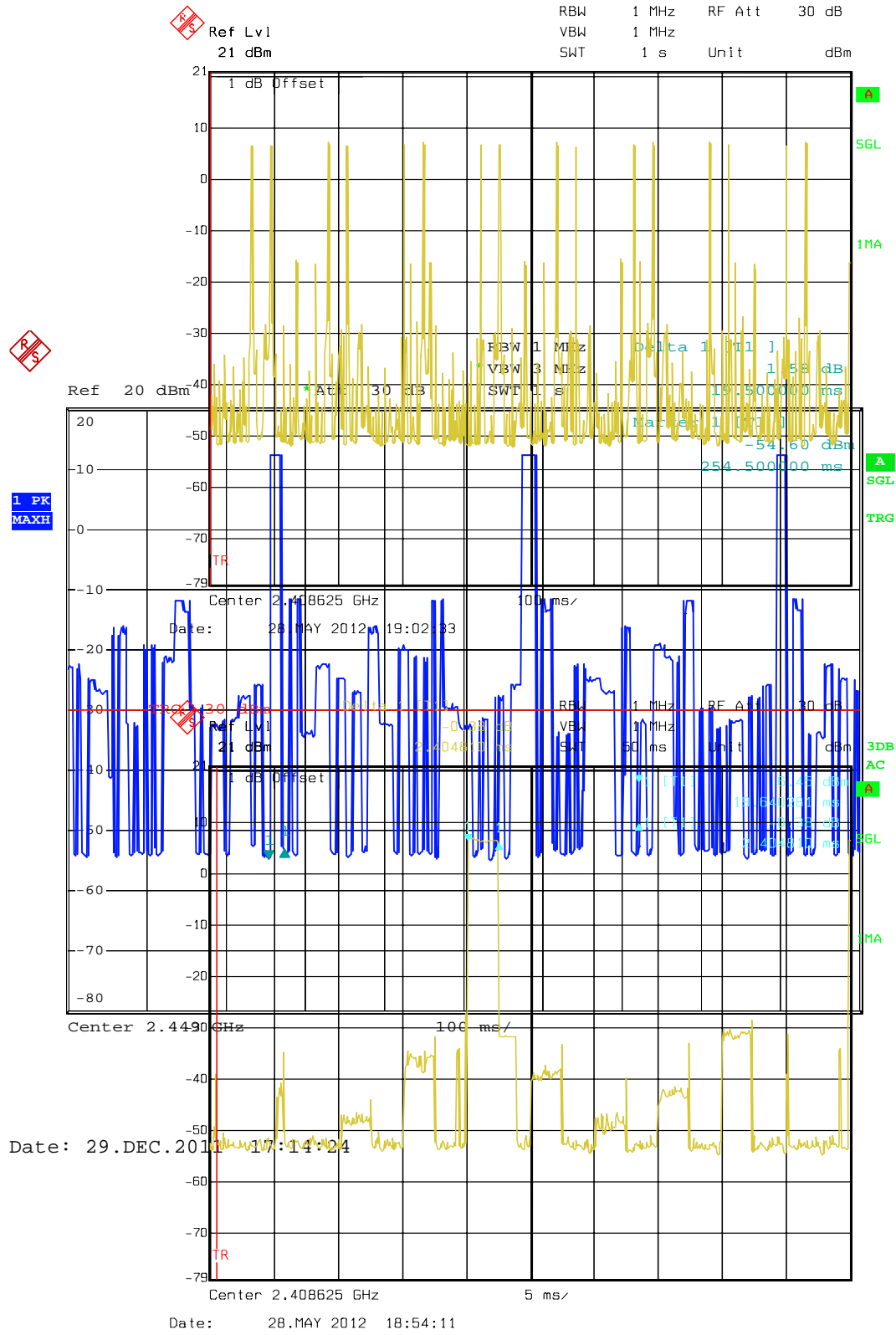
Test Result: Compliance.

Please refer to following tables and plots

Test Mode: Transmitting

Channel	Pulse Width (ms)	Dwell Time (S)	Limit (S)	Result
Low	2.4	0.28	0.4	Pass
<i>Note: Dwell time= Pulse time*18*0.4*(16/1)</i>				

16pulse per second



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.

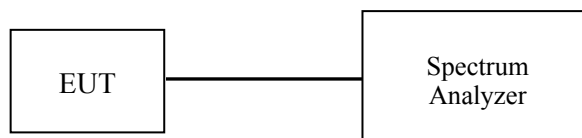
Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCI	100035	2011-11-11	2012-11-10

* **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 Procedure

1. Place the EUT on a bench and set it 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 Data

Environmental Conditions

Temperature:	25 °C
Relative Humidity:	56 %
ATM Pressure:	100.9kPa

* The testing was performed by Dean Liu on 2012-05-28.

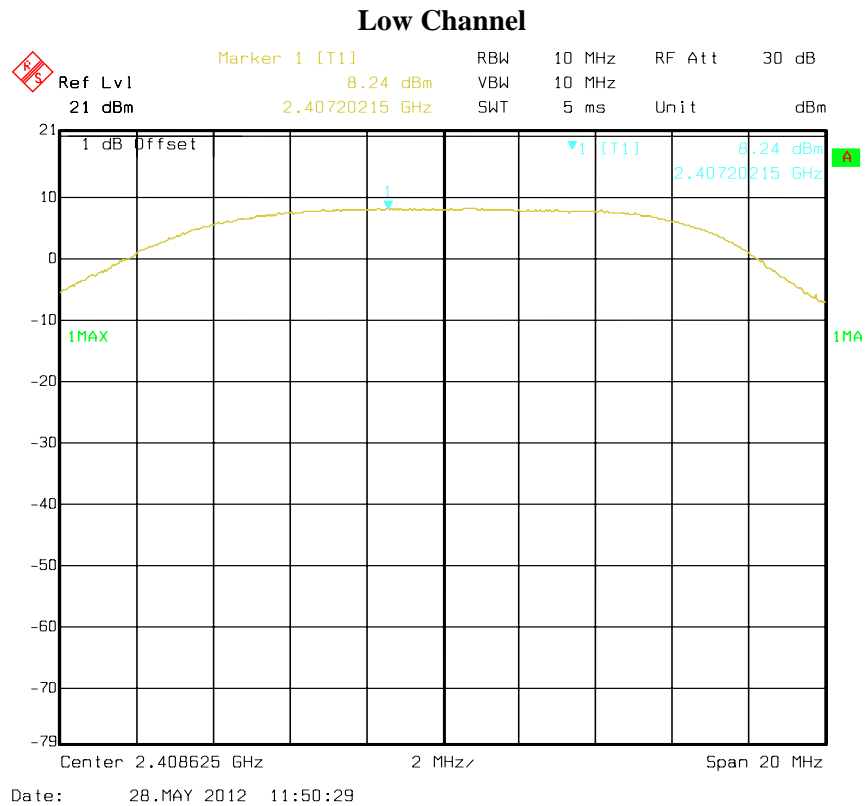
Test Result: Compliance.

Please refer to following tables and plots

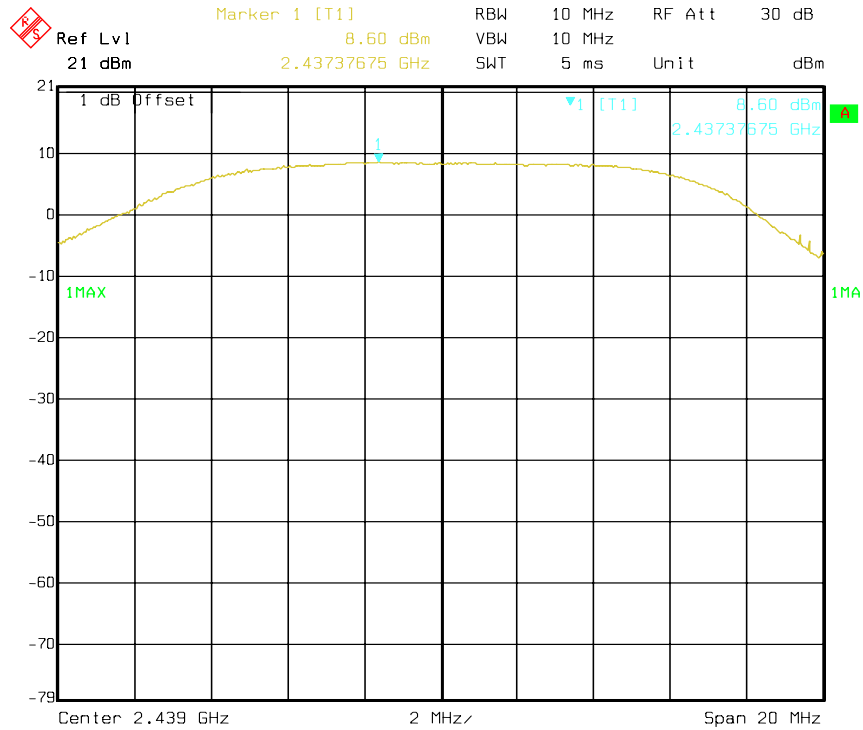
Test Mode: Transmitting

Frequency (MHz)	Conducted Output Power (dBm)	Part 15.247 Limit (dBm)
2408.625	8.24	21
2439	8.60	21
2473.875	8.12	21

Note: The data above was tested in conducted mode.

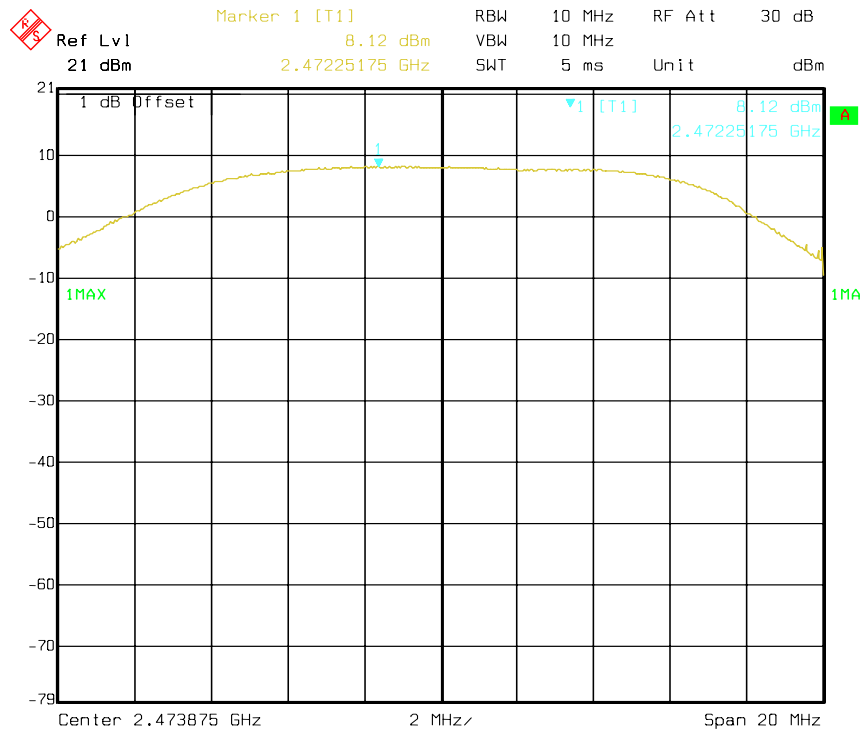


Middle Channel



Date: 28.MAY 2012 11:52:47

High Channel



Date: 28.MAY 2012 11:54:06

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 Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCI	100035	2011-11-11	2012-11-10

* **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 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 both RBW and VBW of spectrum analyzer to 100 kHz with a convenient frequency span including 100kHz bandwidth from band edge, for Radiated emissions restricted band RBW=1MHz, VBW=3MHz.
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 Data**Environmental Conditions**

Temperature:	25 °C
Relative Humidity:	56 %
ATM Pressure:	100.9kPa

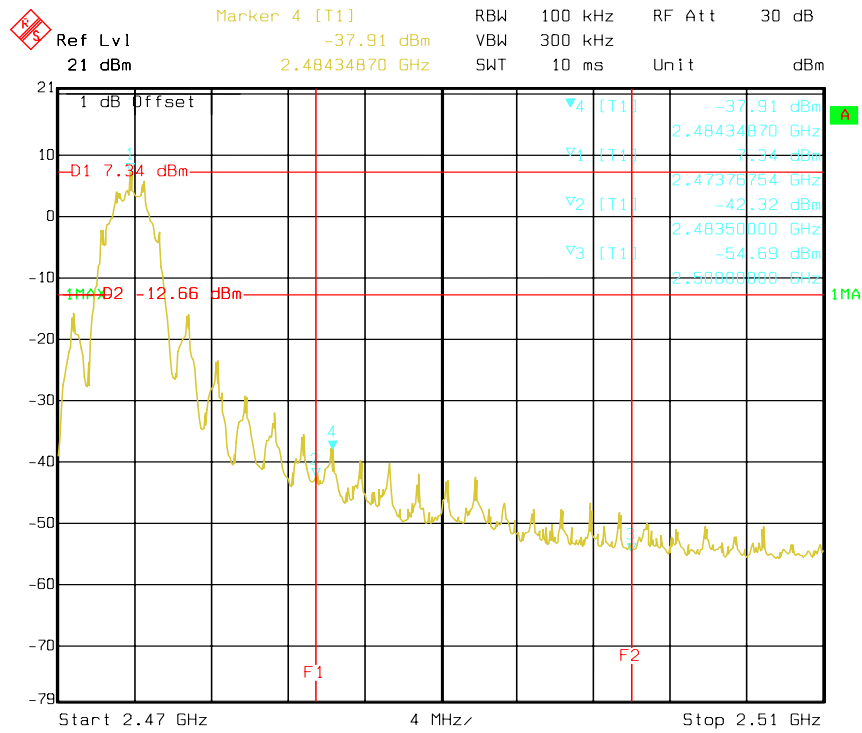
**The testing was performed by Dean Liu on 2012-05-28.*

Test Result: Compliance.

Please refer to following tables and plots

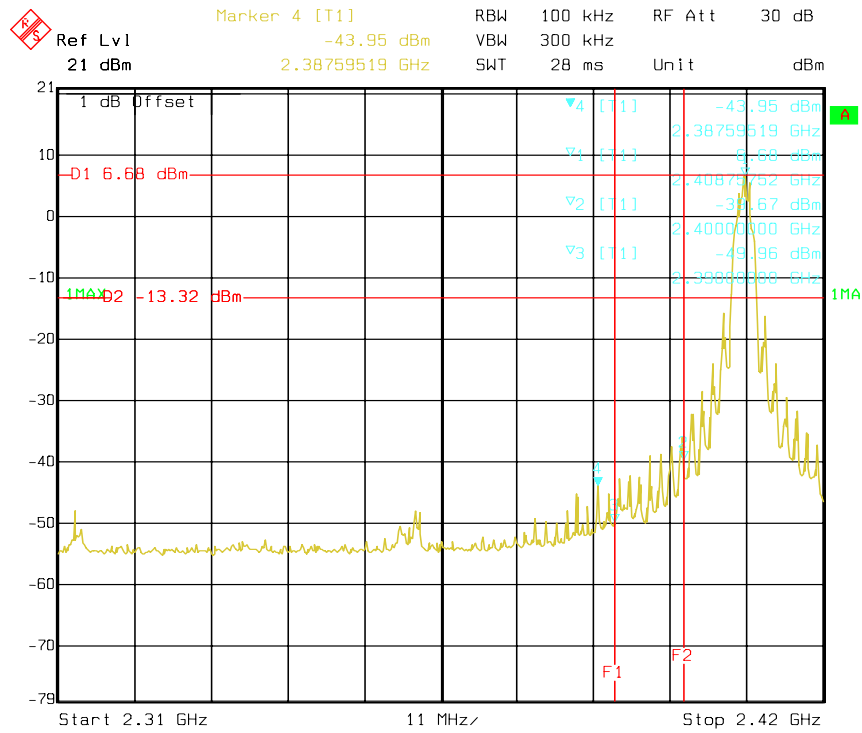
Test Mode: Transmitting

Band Edge: Left Side



Date: 28.MAY 2012 11:38:37

Band Edge: Right Side



Date: 28.MAY 2012 11:43:23

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