



NVLAP LAB CODE 200707-0



# FCC PART 15.247

## MEASUREMENT AND TEST REPORT

For

### Kiss Communications Technology Co., Ltd.

Room 13A20, 14F, New Asia International Digital Center,

No.55 Xi Di Er Road, Li wan District, Guangzhou, Guangdong, China

**FCC ID: TJ7-BTK810**  
**Model: BTK-810**  
**(BTK-809/811/812/813/815/816/817/818/819)**

<b>Report Type:</b> Original Report	<b>Product Type:</b> Bluetooth Car Kit
<b>Test Engineer:</b> <u>Bruce Zhang</u> <i>Bruce Zhang</i>	
<b>Report Number:</b> <u>RSZ09122201</u>	
<b>Report Date:</b> <u>2010-02-02</u>	
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**Note:** This test report is prepared for the customer shown above and for the device described herein. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp. (Shenzhen). This report **must not** be used by the customer to claim product certification, approval, or endorsement by NVLAP\*, NIST, or any agency of the Federal Government.

\* This report may contain data that are not covered by the NVLAP accreditation and are marked with an asterisk "\*" (Rev.2)

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## GENERAL INFORMATION

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### Product Description for Equipment under Test (EUT)

The *Kiss Communications Technology Co., Ltd.*'s product, model number: *BTK-810* (FCC ID: *TJ7-BTK810*) or the "EUT" as referred to in this report is a *Bluetooth Car Kit*, which measures approximately: 10.4 cm L x 6.4 cm W x 1.6 cm H, rated input voltage: DC 3.7 V Lithium battery.

*\*Note: The series products, model BTK-810(BTK-809/811/812/813/815/816/817/818/819), we select BTK-810 to test, and all the models are electrically identical, the difference between them is just the model names due to marketing purposes, which was explained in the attached Declaration Letter.*

*All measurement and test data in this report was gathered from production sample serial number: 0912068 (Assigned by BAEL, Shenzhen). The EUT was received on 2009-12-22.*

### Objective

This Type approval report is prepared on behalf of *Kiss Communications Technology Co., 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, and section 15.203, 15.205, 15.207, 15.209, 15.109 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 C63.4-2003, 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 in the 6/F, the 3<sup>rd</sup> 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 November 21, 2007. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2003.

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 a National Institute of Standards and Technology (NIST) accredited laboratory, under the National Voluntary Laboratory Accredited Program (Lab Code 200707-0).



NVLAP 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 a typical fashion (as normally used by a typical user).

### Equipment Modifications

No modification was made to the unit tested.

### Host System Configuration List and Details

Manufacturer	Description	Model	Serial Number	FCC ID
Intel	Motherboard	D865GKD	11S19R1949ZJ1WCB46J1K8	DoC
DELL	Power	NPS-250KB D	CN-0H2678-17972-56E-80BM	DoC
Maxtor	Hard Disk	6Y080L0	Y23QNXTE	DoC
ALPS	3.5' Floppy	06P5226	11S06P5226ZJ1W25373957	DoC
Lite-ON	CD-Rom	LTN-489S	11S71P7366ZJ1SYC130015	DoC
ProMOS	Memory	V826616J24SATG-C0	D61A2605H	N/A
Intel	CPU	Pentium4 2800MHz	N/A	N/A
Intel	Ethernet	PRO 10/100 VE	N/A	DoC

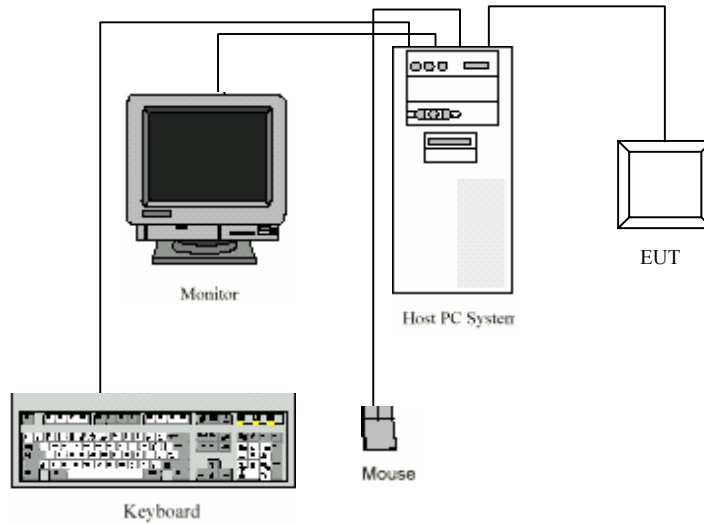
### Local Support Equipment List and Details

Manufacturer	Description	Model	Serial Number	FCC ID
DELL	PC	DELL 170L	CN-0TC670-70821-560-F4WQ	DoC
DELL	Keyboard	L100	CNORH656658907BL05DC	DoC
DELL	Mouse	MOC5UO	G1900NKD	DoC
DELL	LCD Monitor	1505FP	CN-OY4287-71618-574-GBSH	DoC

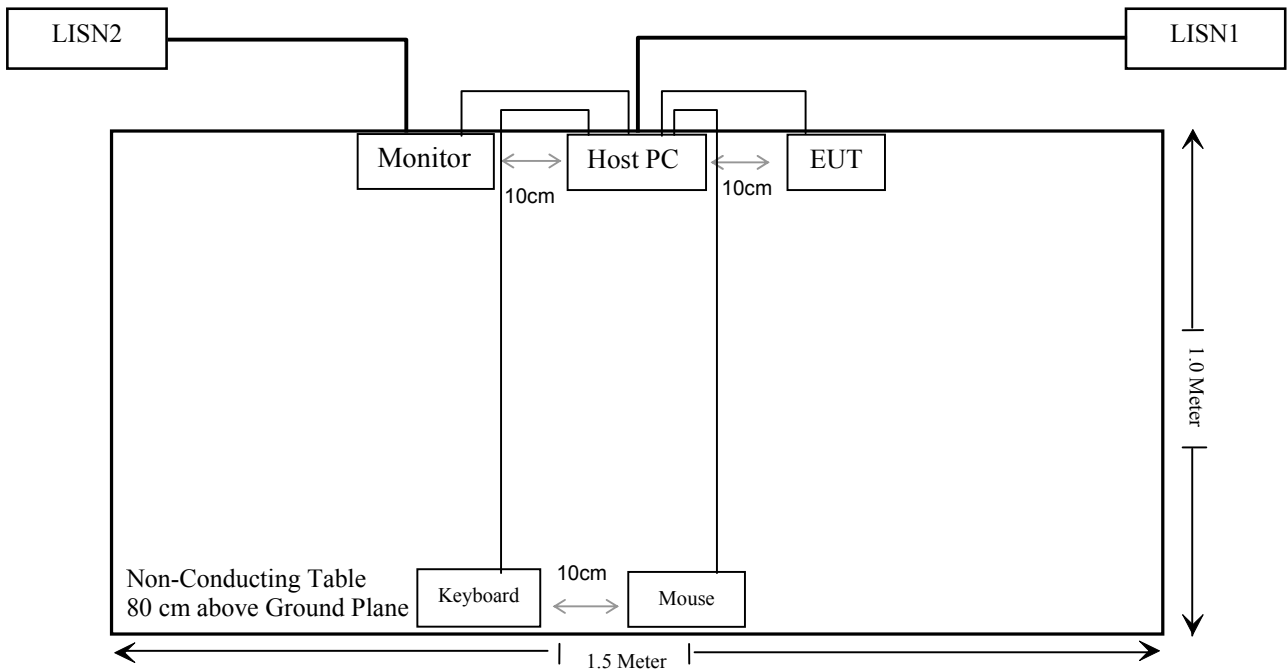
### External I/O Cable

Cable Description	Length (m)	From/Port	To
Shielded Detachable K/B Cable	1.50	K/B Port / Host	K/B
Shielded Detachable Mouse Cable	1.50	PS/2 Port / Host	Mouse
Shielded Detachable VGA Cable	1.50	VGA Port / Host	Monitor
Unshielded Detachable USB Power Line	0.7	PC	EUT

### Configuration of Test Setup



### Block Diagram of Test Setup



**SUMMARY OF TEST RESULTS**

<b>FCC Rules</b>	<b>Description of Test</b>	<b>Result</b>
§15.247 (i), §1.1307 (b)(1), §2.1093	RF Exposure	Compliant
§15.203	Antenna Requirement	Compliant
§15.207 (a)	Conducted Emissions	Compliant
§15.205, §15.209, §15.109, §15.247(d)	Radiated Emissions	Compliant
§15.247 (a)(1)	20 dB Bandwidth	Compliant
§15.247(a)(1)	Channel Separation Test	Compliant
§15.247(a)(1)(iii)	Time of Occupancy (Dwell Time)	Compliant
§15.247(a)(1)(iii)	Quantity of hopping channel Test	Compliant
§15.247(b)(1)	Peak Output Power Measurement	Compliant
§15.247(d)	Band Edges	Compliant



**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:**

Max peak output power:

$$P_{\text{BDR}} = 3.11 \text{ dBm} = 2.046 \text{ mW}$$

$$P_{\text{EDR}} = 2.35 \text{ dBm} = 1.718 \text{ mW}$$

$$60/f_{\text{GHz}} = 60/2441 = 24.58 \text{ mW}$$

$$P_{\text{BDR}} < 60/f_{\text{GHz}}$$

This is a portable device and the Max peak output power of EUT is less than 24.58mW, the SAR is not required.

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## **FCC §15.203 – ANTENNA REQUIREMENT**

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### **Applicable Standard**

According to CFR47 § 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 printed antenna on the PCB, which in accordance to section 15.203, the maximum gain is 0.5 dBi; please refer to the internal photos.

**Result:** Compliant.

## FCC §15.207(a) - CONDUCTED EMISSIONS

### Applicable Standard

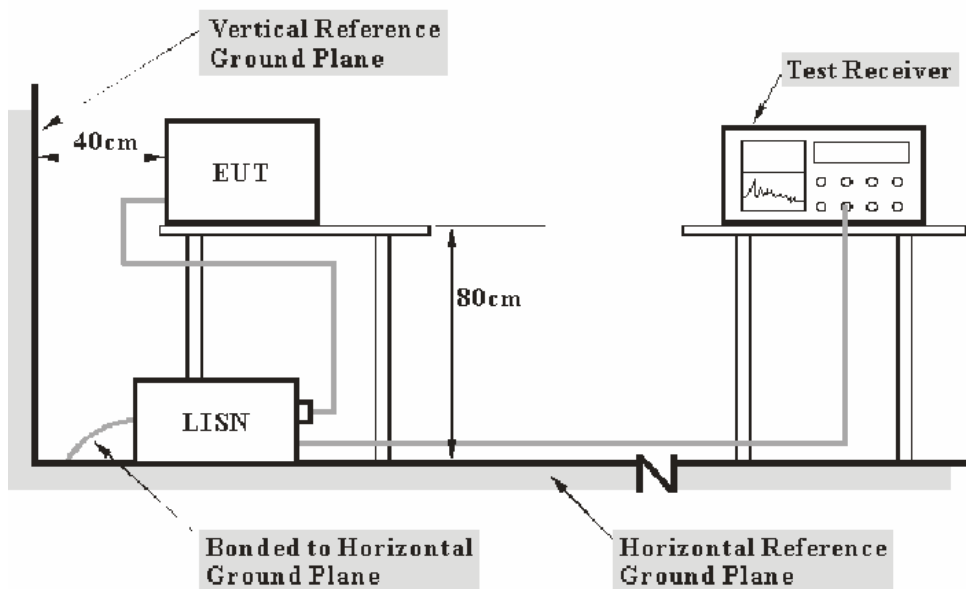
CFR47 §15.207

### 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 NIS 81, 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  $\pm 2.4$  dB.

### EUT Setup



- Note:**
1. Support units were connected to second LISN.
  2. Both of LISNs (AMN) 80 cm from EUT and at the least 30 cm from other units and other metal planes support units.

The setup of EUT is according with per ANSI C63.4-2003 measurement procedure. The specification used was with the FCC Part 15.207 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 host PC was connected to a 120V 60Hz 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	ESCI	100035	2009-11-24	2010-11-24
Rohde & Schwarz	L.I.S.N.	ESH2-Z5	892107/021	2009-04-28	2010-04-27

\* **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 host PC 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:

**6.70 dB at 1.410 MHz** in the **Line** conductor mode  
**8.10 dB at 1.410 MHz** in the **Neutral** conductor mode

## Test Data

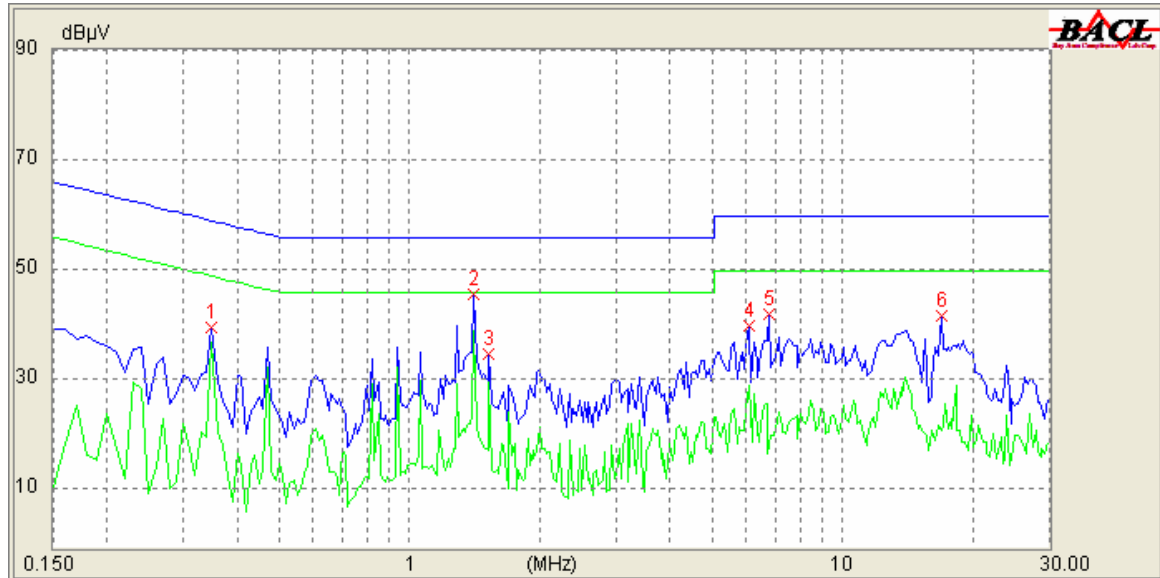
### Environmental Conditions

<b>Temperature:</b>	25 ° C
<b>Relative Humidity:</b>	48 %
<b>ATM Pressure:</b>	100.0 kPa

\* *The testing was performed by Bruce Zhang on 2010-01-07.*

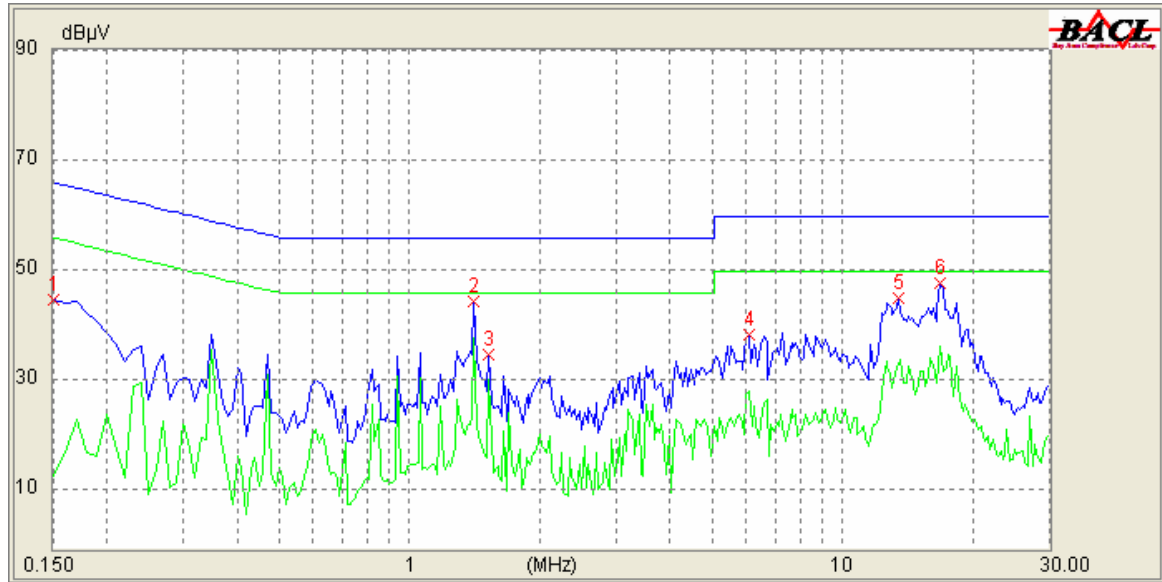
*Test Mode: Transmitting & Charging*

**120 V/60Hz, Line:**



Conducted Emission			FCC Part 15.207		
Frequency (MHz)	Correction Factor (dB)	Cord. Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector (PK/AV/QP)
1.410	10.10	39.30	46.00	6.70	AV
0.350	10.10	37.12	49.07	11.95	AV
1.410	10.10	43.33	56.00	12.67	QP
1.530	10.10	29.94	46.00	16.06	AV
6.110	10.20	29.13	50.00	20.87	AV
0.350	10.10	37.73	59.07	21.34	QP
6.110	10.20	36.65	60.00	23.35	QP
1.530	10.10	32.29	56.00	23.71	QP
16.960	10.30	21.05	50.00	28.95	AV
16.960	10.30	29.62	60.00	30.38	QP
6.720	10.20	16.97	50.00	33.03	AV
6.760	10.20	20.67	60.00	39.33	QP

**120 V/60 Hz, Neutral:**



Conducted Emission			FCC Part 15.207		
Frequency (MHz)	Correction Factor (dB)	Cord. Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector (PK/AV/QP)
1.410	10.10	37.90	46.00	8.10	AV
1.410	10.10	43.23	56.00	12.77	QP
16.870	10.30	36.47	50.00	13.53	AV
1.530	10.10	30.60	46.00	15.40	AV
13.510	10.30	33.30	50.00	16.70	AV
6.120	10.20	28.50	50.00	21.50	AV
1.530	10.10	31.85	56.00	24.15	QP
0.150	10.10	37.31	66.00	28.69	QP
13.510	10.30	30.40	60.00	29.60	QP
6.120	10.20	28.05	60.00	31.95	QP
16.870	10.30	25.45	60.00	34.55	QP
0.150	10.10	12.96	56.00	43.04	AV

## **FCC §15.205, §15.209, §15.109 & §15.247 – RADIATED EMISSIONS**

### **Applicable Standard**

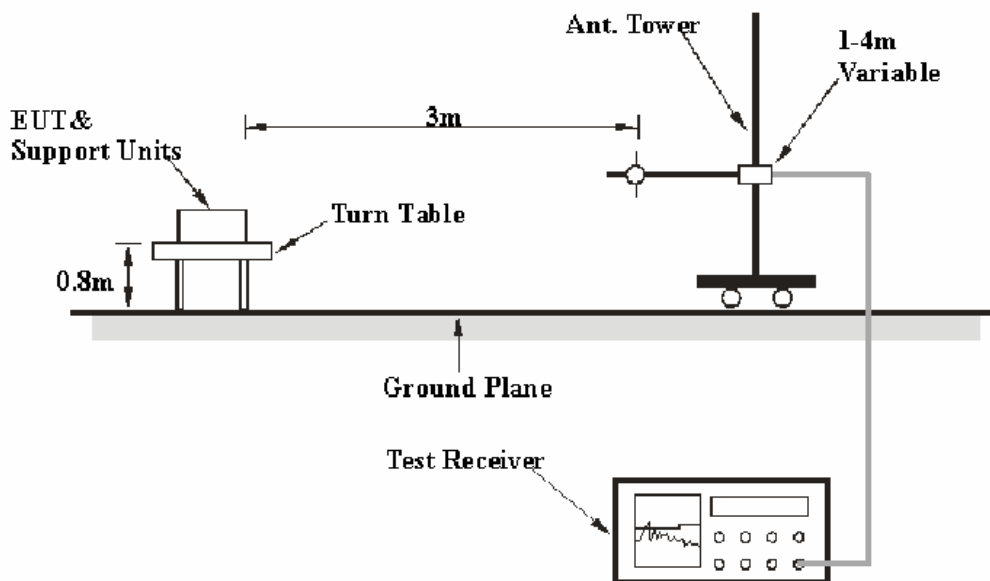
CFR47 §15.205; §15.209; §15.109; §15.247 (d)

### **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 NIS 81, 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  $\pm 4.0$  dB.

### **EUT Setup**



The radiated emission tests were performed in the 3 meters chamber B test site, using the setup accordance with the ANSI C63.4-2003. The specification used was the FCC 15.209, FCC 15.109 and FCC 15.247 limits.

## 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	AV

## Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
HP	Amplifier	HP8447D	2944A09795	2009-08-02	2010-08-02
Rohde & Schwarz	EMI Test Receiver	ESCI	100035	2009-11-24	2010-11-23
Sunol Sciences	Broadband Antenna	JB1	A040904-1	2009-03-11	2010-03-11
HP	Amplifier	8449B	3008A00277	2009-09-12	2010-09-11
Sunol Sciences	Horn Antenna	DRH-118	A052604	2009-05-05	2010-05-04
Rohde & Schwarz	Spectrum Analyzer	FSEM30	849720/019	2009-07-08	2010-07-07

\* **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 host PC 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 maximum 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, 15.109, 15.209 and 15.247, with the worst margin reading of:

### Below 1GHz:

**Charging mode: 14.7 dB** at 373.703250 MHz in the **Horizontal** polarization  
**Transmitting mode: 17.0 dB** at 386.421000 MHz in the **Horizontal** polarization, BDR  
**Transmitting mode: 20.0 dB** at 30.166625 MHz in the **Vertical** polarization, EDR

### Above 1 GHz:

For BDR:

**Transmitting mode: 10.76 dB** at 4804.0 MHz in the **Horizontal** polarization (Low Channel)  
**Transmitting mode: 8.40 dB** at 4882.0 MHz in the **Horizontal** polarization (Middle Channel)  
**Transmitting mode: 8.62 dB** at 4960.0 MHz in the **Horizontal** polarization (High Channel)

For EDR:

**Transmitting mode: 12.20 dB** at 4804.0 MHz in the **Vertical** polarization (Low Channel)  
**Transmitting mode: 11.51 dB** at 4882.0 MHz in the **Horizontal** polarization (Middle Channel)  
**Transmitting mode: 10.34 dB** at 4960.0 MHz in the **Vertical** polarization (High Channel)

## Test Data

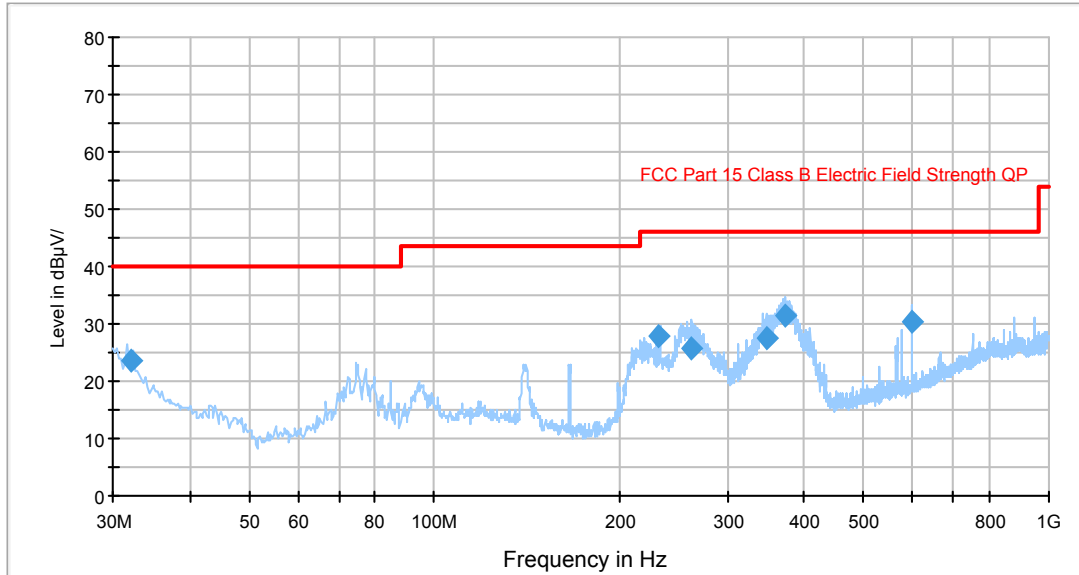
### Environmental Conditions

<b>Temperature:</b>	22 °C
<b>Relative Humidity:</b>	52 %
<b>ATM Pressure:</b>	100.9 kPa

\* The testing was performed by Bruce Zhang on 2010-01-09 to 2010-01-26.

Test Mode: Charging (below 1 GHz)

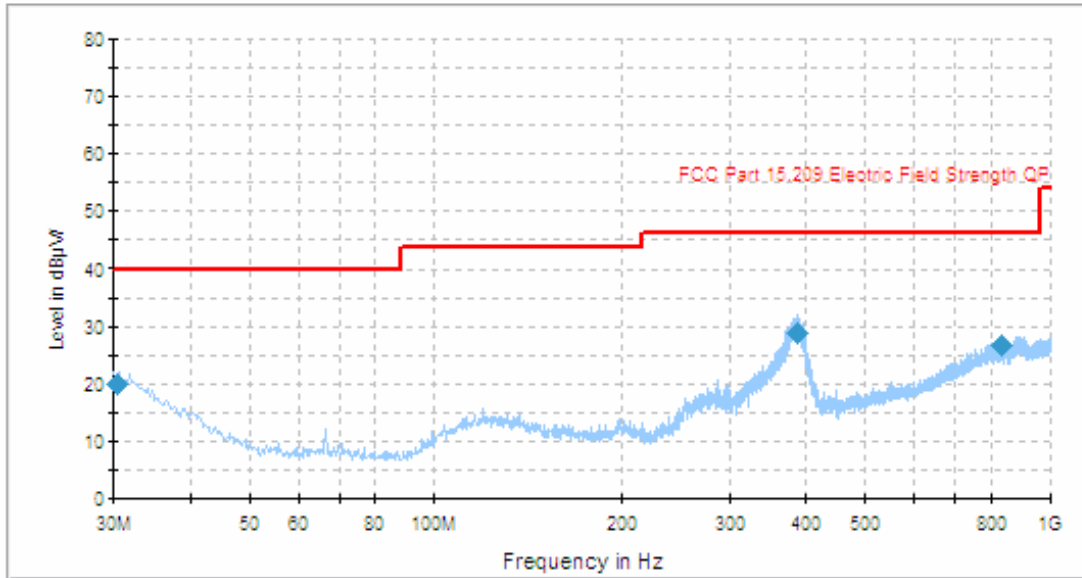
Auto Test(FCC 15 Class B)



Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Position (deg)	Correction Factor (dB)	Limit (dBµV/m)	Margin (dB)
373.703250	31.3	100.0	H	285.0	-12.9	46.0	14.7
597.277000	30.5	122.0	V	177.0	-8.5	46.0	15.5
32.120250	23.4	155.0	V	8.0	-7.6	40.0	16.6
232.487500	27.8	225.0	H	71.0	-0.4	46.0	18.2
346.468000	27.5	101.0	H	295.0	-13.5	46.0	18.5
261.220250	25.9	100.0	H	60.0	-15.4	46.0	20.1

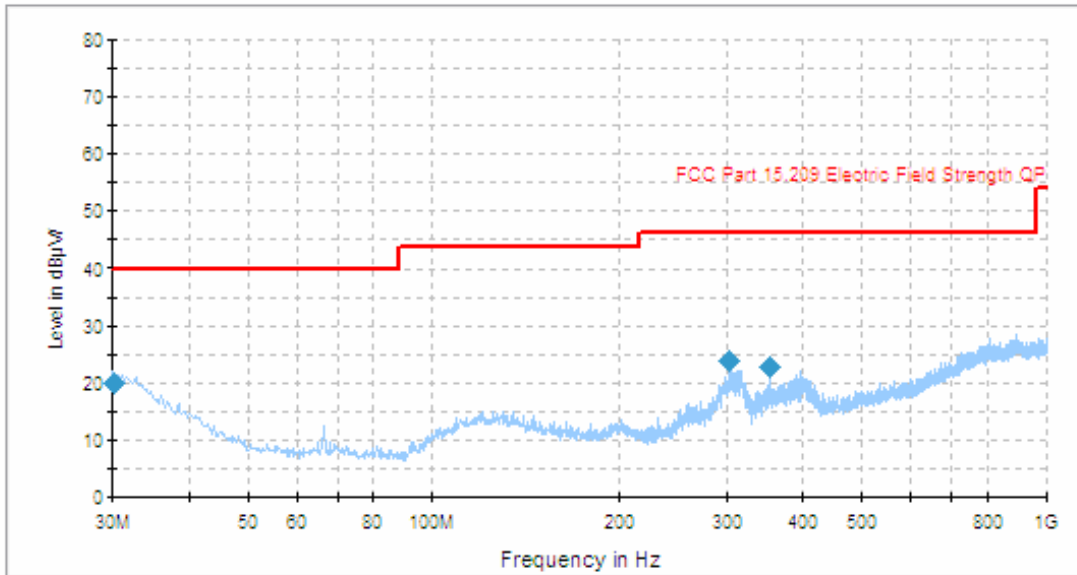
Test Mode: Transmitting (below 1 GHz, worse case)

**BDR:**



Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Position (deg)	Correction Factor (dB)	Limit (dBµV/m)	Margin (dB)
386.421000	29.0	100.0	H	297.0	-12.6	46.0	17.0
30.415750	19.8	133.0	H	218.0	-6.2	40.0	24.2
832.747000	26.7	327.0	H	8.0	-1.4	46.0	25.3

**EDR:**



Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Position (deg)	Correction Factor (dB)	Limit (dBµV/m)	Margin (dB)
30.166625	20.0	305.0	V	249.0	-6.0	40.0	20.0
304.025000	23.8	243.0	H	77.0	-1.3	46.0	22.2
352.020000	22.7	258.0	H	78.0	-0.3	46.0	23.3

Test Mode: Transmitting (Above 1 GHz, BDR)

Frequency (MHz)	S.A. Reading (dB $\mu$ V/m)	Detector PK/QP/AV	Direction Degree	Test Antenna			Cable Loss (dB)	Pre-Amp. Gain (dB)	Cord. Amp. (dB $\mu$ V/m)	FCC Part 15.247/209		
				Height (m)	Polar (H/V)	Factor (dB/m)				Limit (dB $\mu$ V/m)	Margin (dB)	Remarks
<b>Low Channel (2402 MHz)</b>												
4804.0	34.69	AV	130	1.3	H	33.8	8.45	33.7	43.24	54	10.76	harmonic
4804.0	34.30	AV	155	1.3	V	33.5	8.45	33.7	42.55	54	11.45	harmonic
4804.0	49.25	PK	130	1.2	H	33.8	8.45	33.7	57.80	74	16.20	harmonic
4804.0	49.45	PK	155	1.2	V	33.5	8.45	33.7	57.70	74	16.30	harmonic
1602.0	39.05	AV	170	1.8	V	25.5	4.54	31.68	37.41	54	16.59	spurious
2327.6	32.11	AV	260	1.5	V	29.1	6.22	31.83	35.60	54	18.40	spurious
2314.8	32.19	AV	125	1.0	H	28.9	6.22	31.83	35.48	54	18.52	spurious
1602.0	35.85	AV	200	1.7	H	25.3	4.54	31.68	34.01	54	19.99	spurious
2314.8	47.10	PK	125	1.0	H	28.9	6.22	31.83	50.39	74	23.61	spurious
2327.6	46.48	PK	260	1.5	V	29.1	6.22	31.83	49.97	74	24.03	spurious
1602.0	48.40	PK	170	1.8	V	25.5	4.54	31.68	46.76	74	27.24	spurious
1602.0	46.92	PK	200	1.7	H	25.3	4.54	31.68	45.08	74	28.92	spurious
<b>Middle Channel (2441 MHz)</b>												
4882.0	37.05	AV	122	1.1	H	33.8	8.45	33.7	45.60	54	8.40	harmonic
4882.0	36.42	AV	155	1.2	V	33.5	8.45	33.7	44.67	54	9.33	harmonic
4882.0	53.79	PK	122	1.2	H	33.8	8.45	33.7	62.34	74	11.66	harmonic
4882.0	52.13	PK	155	1.2	V	33.5	8.45	33.7	60.38	74	13.62	harmonic
1628.1	39.93	AV	184	1.0	V	25.5	4.54	31.68	38.29	54	15.71	spurious
1628.1	34.98	AV	210	1.7	H	25.3	4.54	31.68	33.14	54	20.86	spurious
1628.1	48.66	PK	184	1.0	V	25.5	4.54	31.68	47.02	74	26.98	spurious
1628.1	48.26	PK	210	1.7	H	25.3	4.54	31.68	46.42	74	27.58	spurious
<b>High Channel (2480 MHz)</b>												
4960.0	36.83	AV	116	1.4	H	33.8	8.45	33.7	45.38	54	8.62	harmonic
4960.0	36.41	AV	165	1.4	V	33.5	8.45	33.7	44.66	54	9.34	harmonic
4960.0	53.59	PK	116	1.5	H	33.8	8.45	33.7	62.14	74	11.86	harmonic
2483.5	35.02	AV	180	1.2	H	28.9	5.89	30.58	39.23	54	14.77	spurious
4960.0	50.75	PK	165	1.3	V	33.5	8.45	33.7	59.00	74	15.00	harmonic
2483.5	34.56	AV	151	1.3	V	29.1	5.89	30.58	38.97	54	15.03	spurious
2483.5	52.68	PK	180	1.7	H	28.9	5.89	30.58	56.89	74	17.11	spurious
1654.0	37.91	AV	183	1.0	V	25.5	4.54	31.68	36.27	54	17.73	spurious
2483.5	51.73	PK	151	1.3	V	29.1	5.89	30.58	56.14	74	17.86	spurious
1654.0	32.16	AV	57	1.7	H	25.3	4.54	31.68	30.32	54	23.68	spurious
1654.0	47.19	PK	183	1.0	V	25.5	4.54	31.68	45.55	74	28.45	spurious
1654.0	45.15	PK	57	1.7	H	25.3	4.54	31.68	43.31	74	30.69	spurious

Test Mode: Transmitting (Above 1 GHz, EDR)

Frequency (MHz)	S.A. Reading (dBμV/m)	Detector PK/QP/AV	Direction Degree	Test Antenna			Cable Loss (dB)	Pre-Amp. Gain (dB)	Cord. Amp. (dBμV/m)	FCC Part 15.247/209		
				Height (m)	Polar (H/V)	Factor (dB/m)				Limit (dBμV/m)	Margin (dB)	Remarks
<b>Low Channel (2402 MHz)</b>												
4804.0	33.55	AV	155	1.2	V	33.5	8.45	33.7	41.80	54	12.20	harmonic
4804.0	33.10	AV	130	1.3	H	33.8	8.45	33.7	41.65	54	12.35	harmonic
1602.0	38.72	AV	170	1.4	V	25.5	4.54	31.68	37.08	54	16.92	spurious
4804.0	47.68	PK	130	1.1	H	33.8	8.45	33.7	56.23	74	17.77	harmonic
4804.0	47.83	PK	155	1.3	V	33.5	8.45	33.7	56.08	74	17.92	harmonic
2327.6	32.05	AV	260	1.5	V	29.1	6.22	31.83	35.54	54	18.46	spurious
2314.8	32.03	AV	125	1.0	H	28.9	6.22	31.83	35.32	54	18.68	spurious
1602.0	35.47	AV	200	1.7	H	25.3	4.54	31.68	33.63	54	20.37	spurious
2314.8	46.85	PK	125	1.0	H	28.9	6.22	31.83	50.14	74	23.86	spurious
2327.6	46.25	PK	260	1.5	V	29.1	6.22	31.83	49.74	74	24.26	spurious
1602.0	48.15	PK	170	1.8	V	25.5	4.54	31.68	46.51	74	27.49	spurious
1602.0	46.84	PK	200	1.7	H	25.3	4.54	31.68	45.00	74	29.00	spurious
<b>Middle Channel (2441 MHz)</b>												
4882.0	33.94	AV	130	1.0	H	33.8	8.45	33.7	42.49	54	11.51	harmonic
4882.0	33.65	AV	155	1.6	V	33.5	8.45	33.7	41.90	54	12.10	harmonic
4882.0	49.69	PK	130	1.2	H	33.8	8.45	33.7	58.24	74	15.76	harmonic
1628.1	39.45	AV	184	1.0	V	25.5	4.54	31.68	37.81	54	16.19	spurious
4882.0	49.16	PK	155	1.6	V	33.5	8.45	33.7	57.41	74	16.59	harmonic
1628.1	34.52	AV	210	1.7	H	25.3	4.54	31.68	32.68	54	21.32	spurious
1628.1	48.21	PK	184	1.5	V	25.5	4.54	31.68	46.57	74	27.43	spurious
1628.1	48.04	PK	210	1.7	H	25.3	4.54	31.68	46.20	74	27.80	spurious
<b>High Channel (2480 MHz)</b>												
4960.0	35.41	AV	165	1.2	V	33.5	8.45	33.7	43.66	54	10.34	harmonic
4960.0	34.75	AV	116	1.2	H	33.8	8.45	33.7	43.30	54	10.70	harmonic
4960.0	51.62	PK	116	1.3	H	33.8	8.45	33.7	60.17	74	13.83	harmonic
2483.5	34.11	AV	180	1.7	H	28.9	5.89	30.58	38.32	54	15.68	spurious
2483.5	32.84	AV	151	1.3	V	29.1	5.89	30.58	37.25	54	16.75	spurious
4960.0	48.83	PK	165	1.8	V	33.5	8.45	33.7	57.08	74	16.92	harmonic
1654.0	36.77	AV	183	1.0	V	25.5	4.54	31.68	35.13	54	18.87	spurious
2483.5	50.13	PK	180	1.7	H	28.9	5.89	30.58	54.34	74	19.66	spurious
2483.5	49.73	PK	151	1.3	V	29.1	5.89	30.58	54.14	74	19.86	spurious
1654.0	32.02	AV	57	1.7	H	25.3	4.54	31.68	30.18	54	23.82	spurious
1654.0	46.23	PK	183	1.2	V	25.5	4.54	31.68	44.59	74	29.41	spurious
1654.0	44.17	PK	57	1.7	H	25.3	4.54	31.68	42.33	74	31.67	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 Equipment List and Details**

<b>Manufacturer</b>	<b>Description</b>	<b>Model</b>	<b>Serial Number</b>	<b>Calibration Date</b>	<b>Calibration Due Date</b>
Rohde & Schwarz	EMI Test Receiver	ESCI	100035	2009-11-24	2010-11-23

\* **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**

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

### **Test Data**

#### **Environmental Conditions**

<b>Temperature:</b>	26 °C
<b>Relative Humidity:</b>	56 %
<b>ATM Pressure:</b>	100.9 kPa

\* *The testing was performed by Bruce Zhang on 2010-01-01.*

**Test Result:** Compliant.

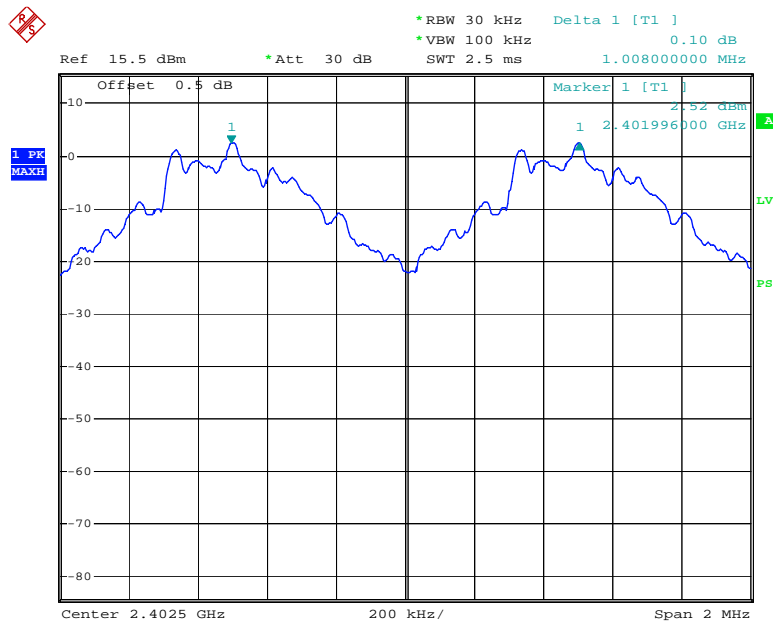
Please refer to following tables and plots

Mode	Channel	Channel Frequency (MHz)	Channel Separation (MHz)	Limit (MHz)	Result
BDR	Low Channel	2402	1.008	0.564	Pass
	Adjacent Channel	2403			
	Mid Channel	2441	1.004	0.564	Pass
	Adjacent Channel	2442			
	High Channel	2480	1.000	0.564	Pass
Adjacent Channel	2479				
EDR	Low Channel	2402	1.002	0.816	Pass
	Adjacent Channel	2403			
	Mid Channel	2441	1.002	0.816	Pass
	Adjacent Channel	2442			
	High Channel	2480	1.002	0.816	Pass
Adjacent Channel	2479				

Please refer to the following plots.

**BDR:**

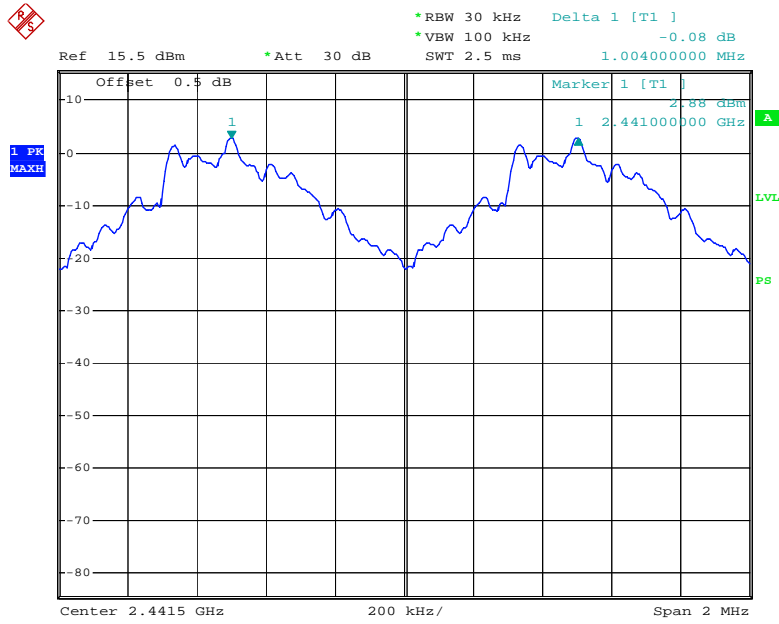
**Low Channel**



Date: 1.JAN.2010 20:31:36

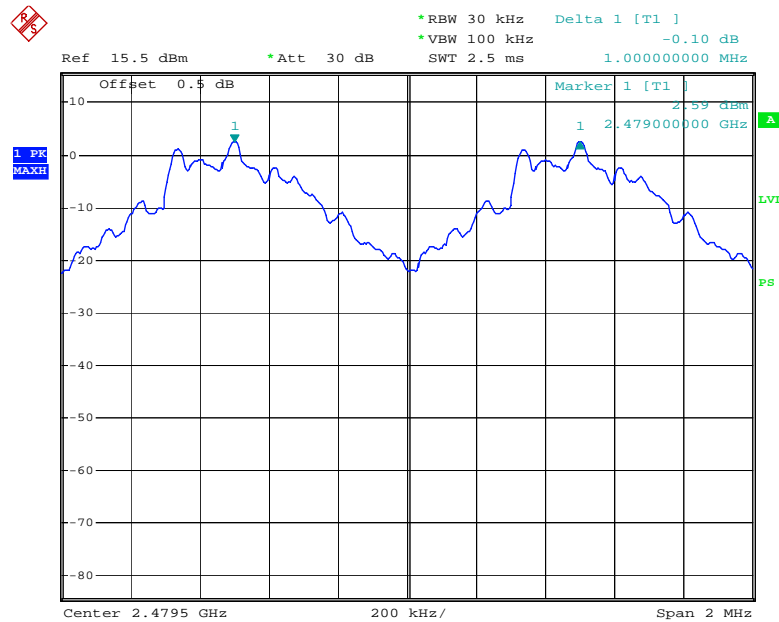


### Middle Channel



Date: 1.JAN.2010 20:32:49

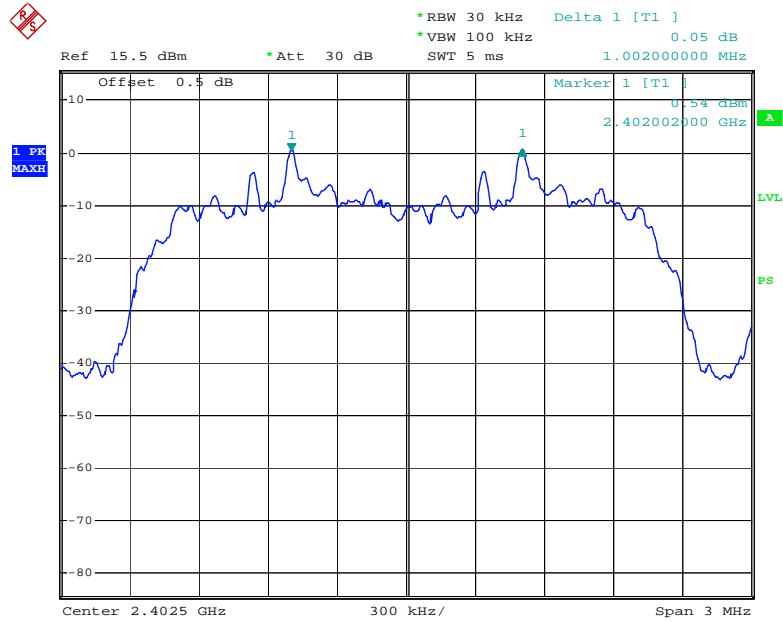
### High Channel



Date: 1.JAN.2010 20:34:22

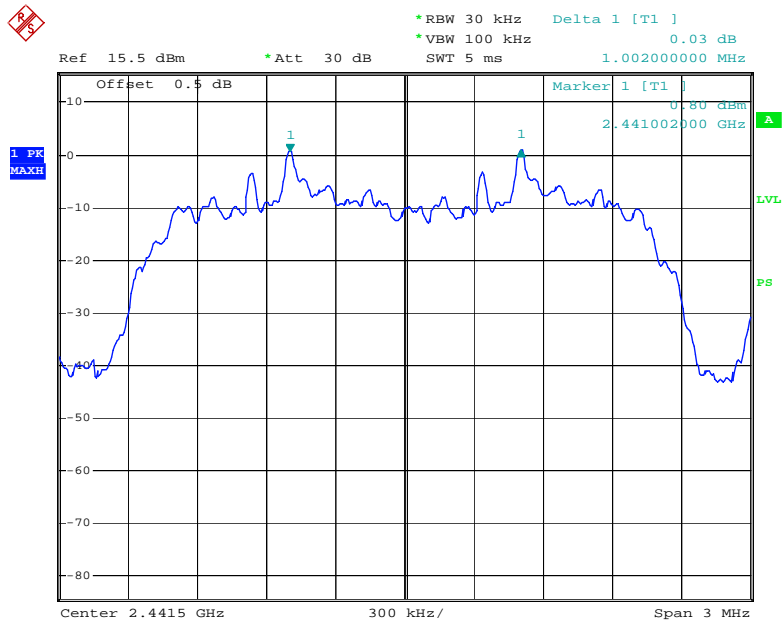
**EDR:**

**Low Channel**



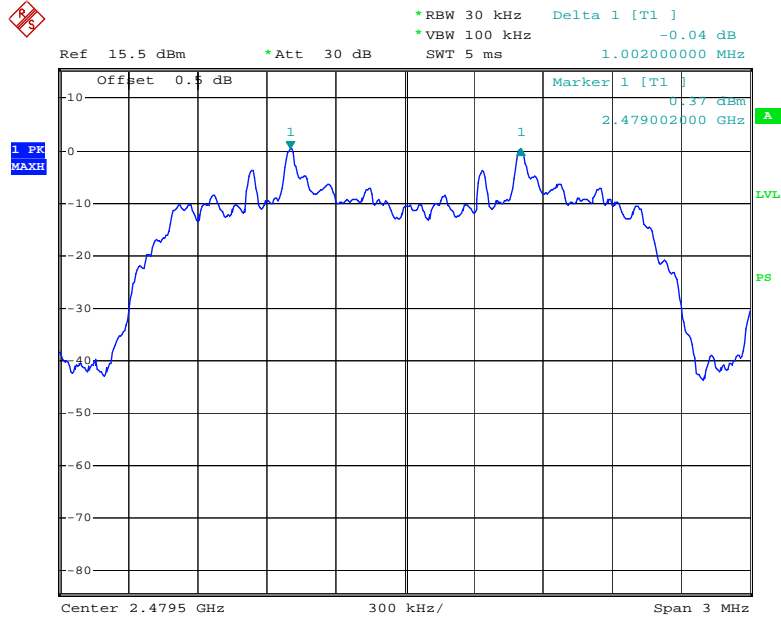
Date: 1.JAN.2010 22:03:01

**Middle Channel**



Date: 1.JAN.2010 22:03:44

### High Channel



Date: 1.JAN.2010 22:04:44

## 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	2009-11-24	2010-11-23

\* **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

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. Turn on the EUT and connect it to measurement instrument. 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

<b>Temperature:</b>	26 °C
<b>Relative Humidity:</b>	56 %
<b>ATM Pressure:</b>	100.9 kPa

\* *The testing was performed by Bruce Zhang on 2010-01-01.*

**Test Result:** Compliant.

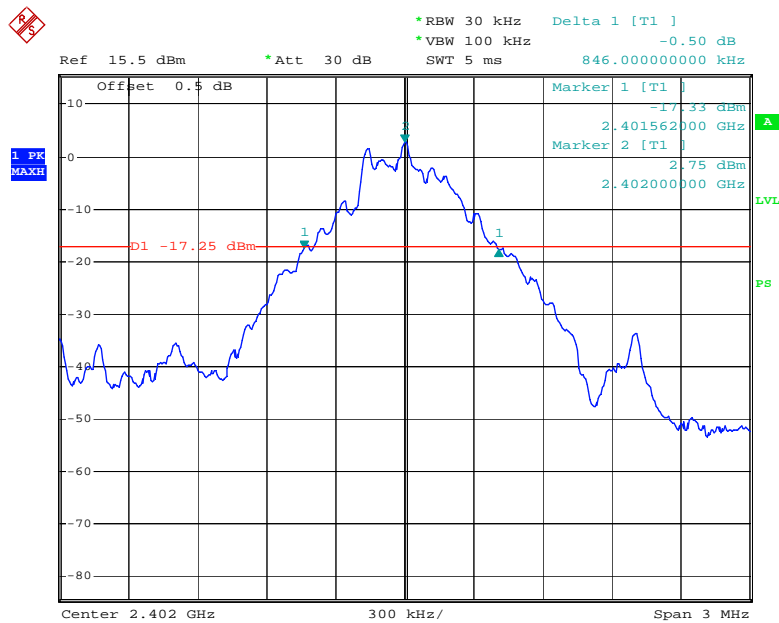
Please refer to following tables and plots

Mode	Channel	Frequency (MHz)	20 dB Bandwidth (MHz)
BDR	Low	2402	0.846
	Middle	2441	0.846
	High	2480	0.846
EDR	Low	2402	1.212
	Middle	2441	1.206
	High	2480	1.206

Please refer to the following plots.

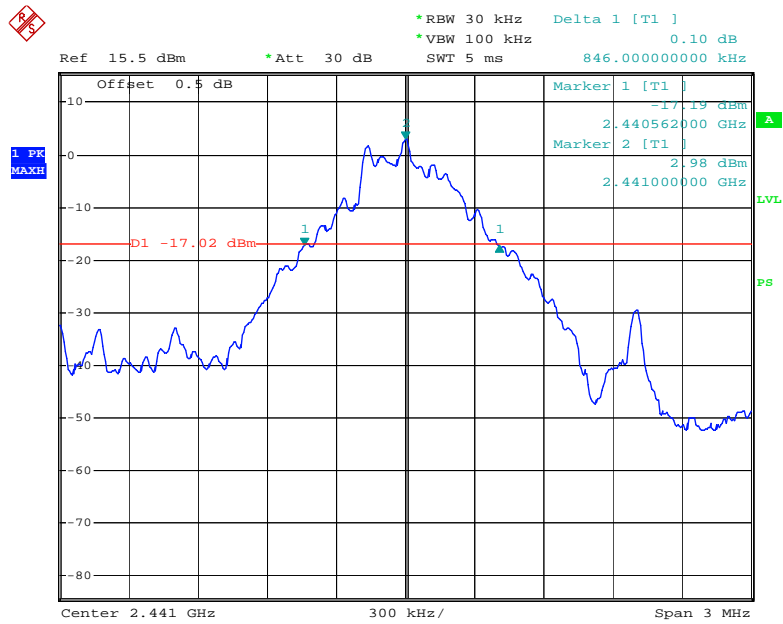
**BDR:**

**Low Channel**



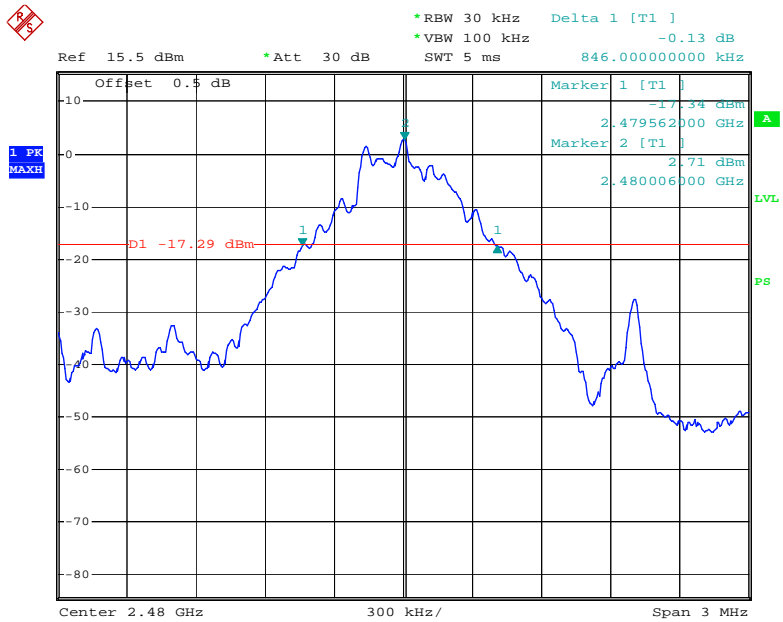
Date: 1.JAN.2010 20:11:53

### Middle Channel



Date: 1.JAN.2010 20:14:18

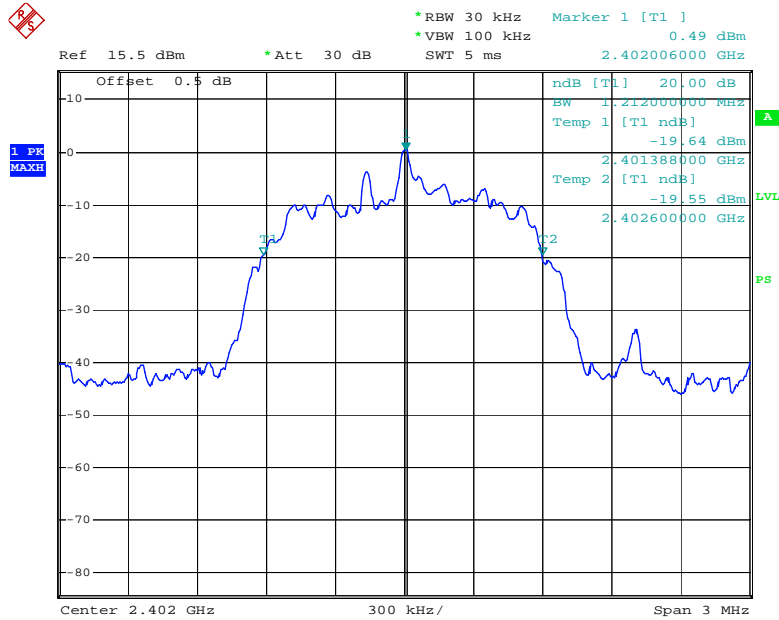
### High Channel



Date: 1.JAN.2010 20:17:46

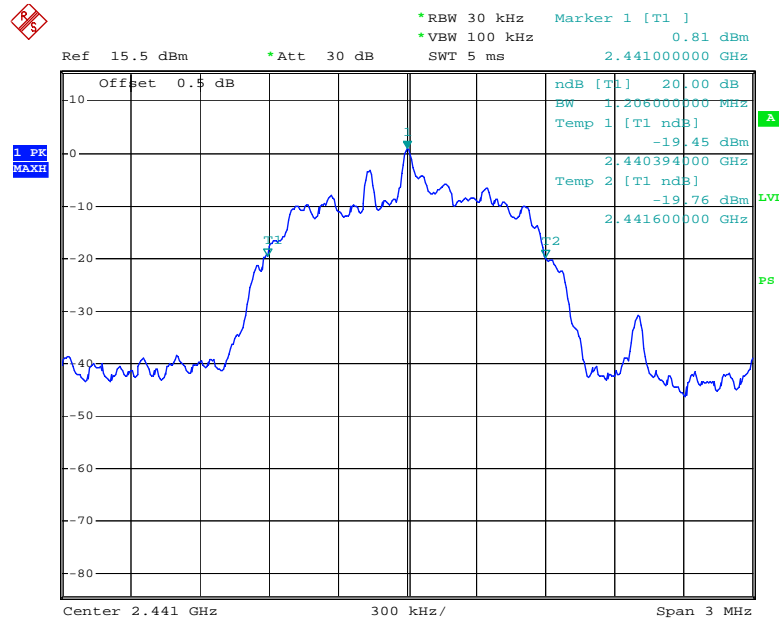
**EDR:**

**Low Channel**



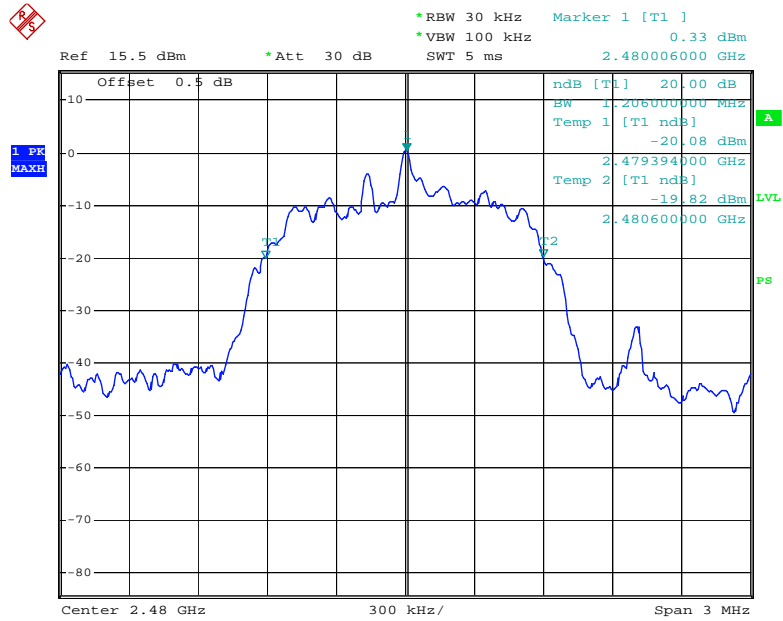
Date: 1.JAN.2010 22:00:28

**Middle Channel**



Date: 1.JAN.2010 22:01:02

### High Channel



Date: 1.JAN.2010 21:59:47



## **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	2009-11-24	2010-11-23

\* **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**

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**

<b>Temperature:</b>	26 °C
<b>Relative Humidity:</b>	56 %
<b>ATM Pressure:</b>	100.9 kPa

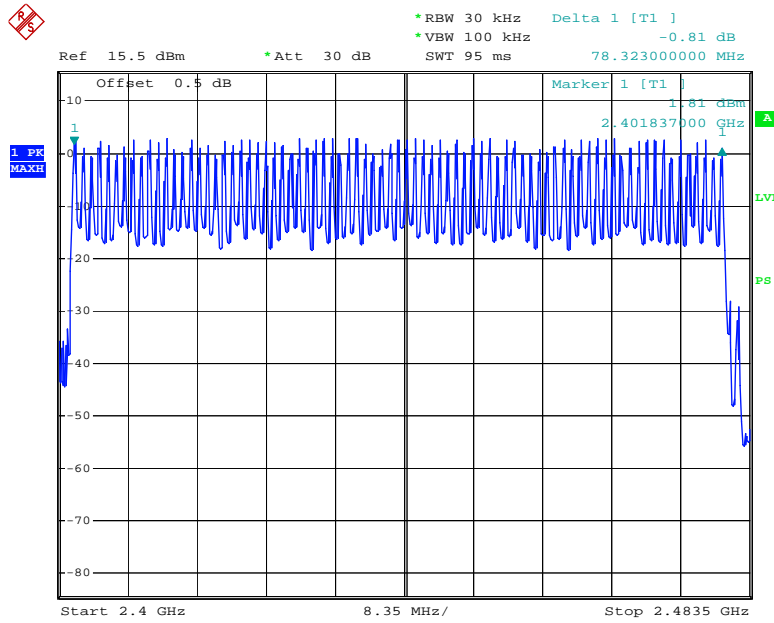
*The testing was performed by Bruce Zhang on 2010-01-01 and 2010-01-07.*

**Test Result:** Compliant, please refer to following tables and plots

Mode	Frequency Range (MHz)	Number of Hopping Channels	Limit
BDR	2400-2483.5	79	≥ 15
EDR	2400-2483.5	79	≥ 15

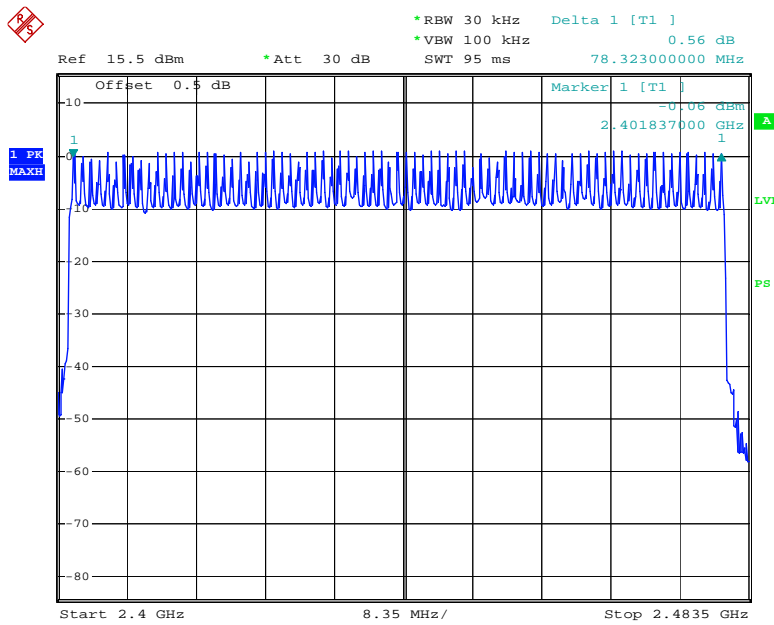
### Number of Hopping Channels

#### BDR



Date: 1.JAN.2010 20:42:14

#### EDR



Date: 7.JAN.2010 15:54:53

## **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**

<b>Manufacturer</b>	<b>Description</b>	<b>Model</b>	<b>Serial Number</b>	<b>Calibration Date</b>	<b>Calibration Due Date</b>
Rohde & Schwarz	EMI Test Receiver	ESCI	100035	2009-11-24	2010-11-23

\* **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**

The EUT was worked in channel hopping; Spectrum SPAN was set as 0. Sweep was set as 0.4 X channel no. (s), the quantity of pulse was get from single sweep. In addition, the time of single pulses was tested.

Dwell Time= time slot length \* hope rate/ number of hopping channels \* 31.6s  
Hop rate=1600/s

### **Test Data**

#### **Environmental Conditions**

<b>Temperature:</b>	26 °C
<b>Relative Humidity:</b>	56 %
<b>ATM Pressure:</b>	100.9 kPa

\* The testing was performed by Bruce Zhang on 2010-01-07 to 2010-01-09.

**Test Result:** Compliant.

Please refer to following tables and plots

*Test Mode: Transmitting (BDR)*

Mode	Channel	Pulse Width (ms)	Dwell Time (Sec)	Limit (Sec)	Result
DH 1	Low	0.528	0.16896	0.4	Pass
	Middle	0.528	0.16896	0.4	Pass
	High	0.528	0.16896	0.4	Pass
	Note: Dwell time=Pulse width (ms)× (1600 ÷ 2 ÷ 79)×31.6 Second				
DH 3	Low	1.800	0.28800	0.4	Pass
	Middle	1.800	0.28800	0.4	Pass
	High	1.800	0.28800	0.4	Pass
	Note: Dwell time=Pulse width (ms)× (1600 ÷ 4 ÷ 79)×31.6 Second				
DH 5	Low	3.056	0.32597	0.4	Pass
	Middle	3.063	0.32672	0.4	Pass
	High	3.071	0.32757	0.4	Pass
	Note: Dwell time=Pulse width (ms)× (1600 ÷ 6 ÷ 79)×31.6 Second				

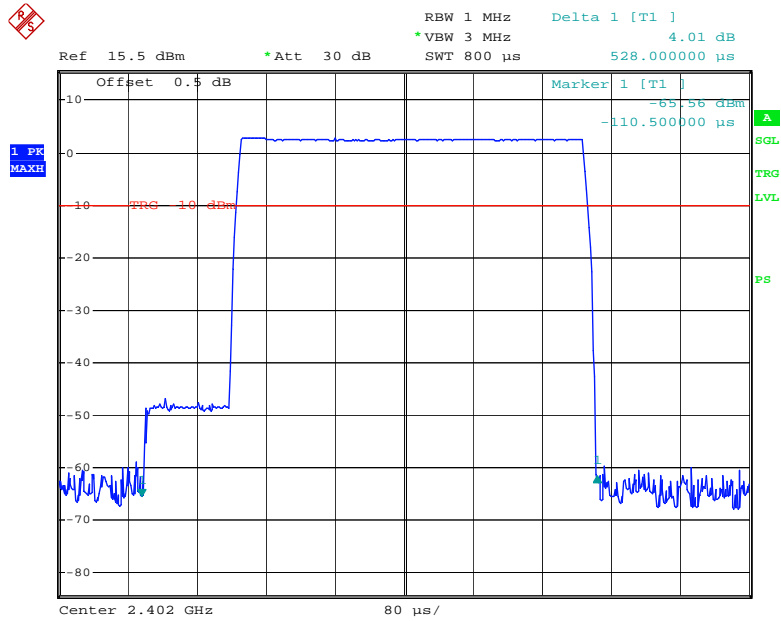
*Test Mode: Transmitting (EDR)*

Mode	Channel	Pulse Width (ms)	Dwell Time (Sec)	Limit (Sec)	Result
DH 1	Low	0.5392	0.17254	0.4	Pass
	Middle	0.5392	0.17254	0.4	Pass
	High	0.5392	0.17254	0.4	Pass
	Note: Dwell time=Pulse width (ms)× (1600 ÷ 2 ÷ 79)×31.6 Second				
DH 3	Low	1.804	0.28864	0.4	Pass
	Middle	1.804	0.28864	0.4	Pass
	High	1.804	0.28864	0.4	Pass
	Note: Dwell time=Pulse width (ms)× (1600 ÷ 4 ÷ 79)×31.6 Second				
DH 5	Low	3.072	0.32768	0.4	Pass
	Middle	3.080	0.32853	0.4	Pass
	High	3.064	0.32683	0.4	Pass
	Note: Dwell time=Pulse width (ms)× (1600 ÷ 6 ÷ 79)×31.6 Second				

Please refer to the following plots.

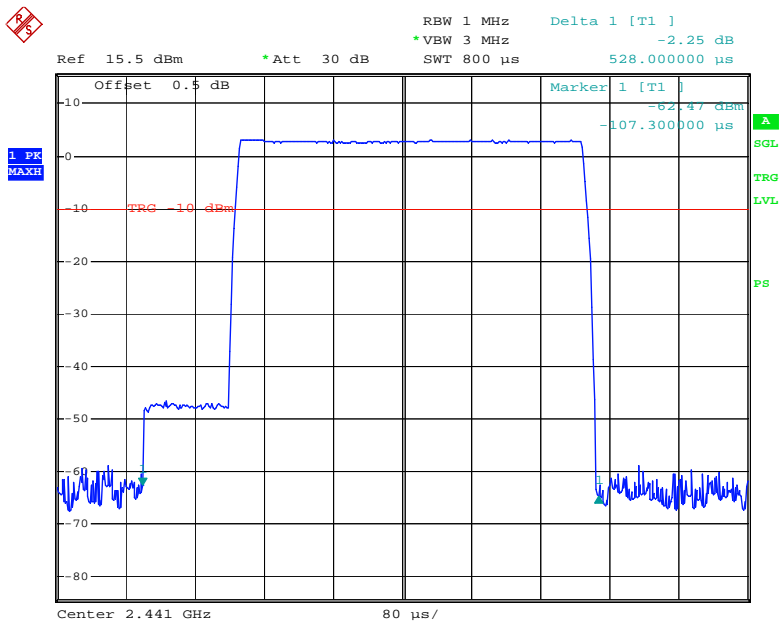
**BDR:**

### Low Channel for DH1



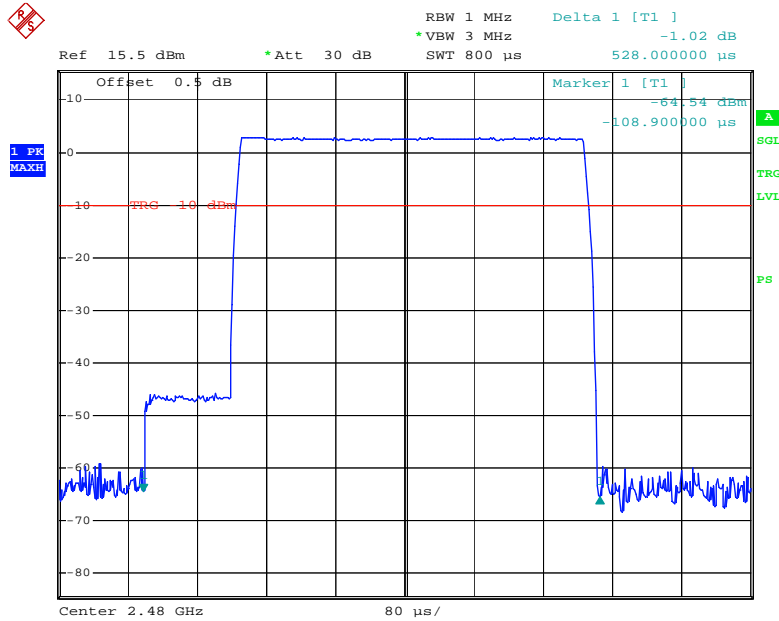
Date: 1.JAN.2010 20:54:09

### Middle Channel for DH1



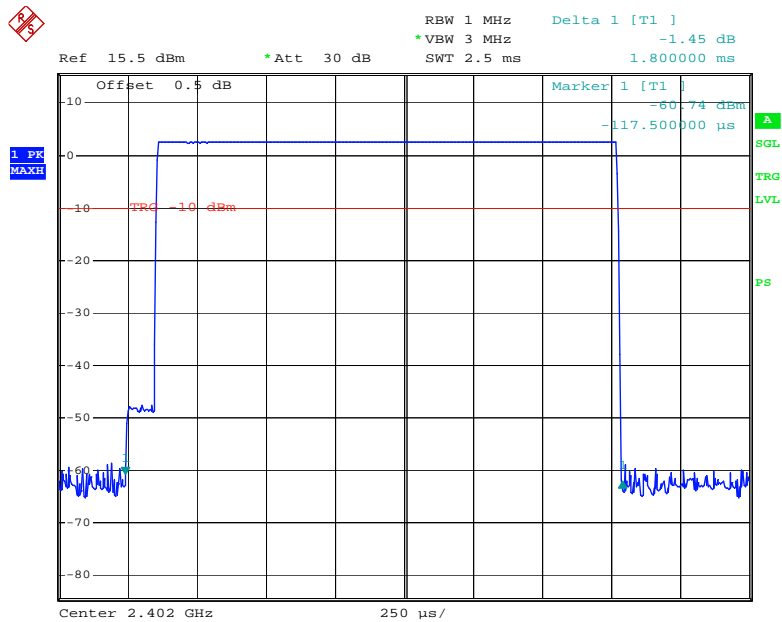
Date: 1.JAN.2010 20:54:57

### High Channel for DH1



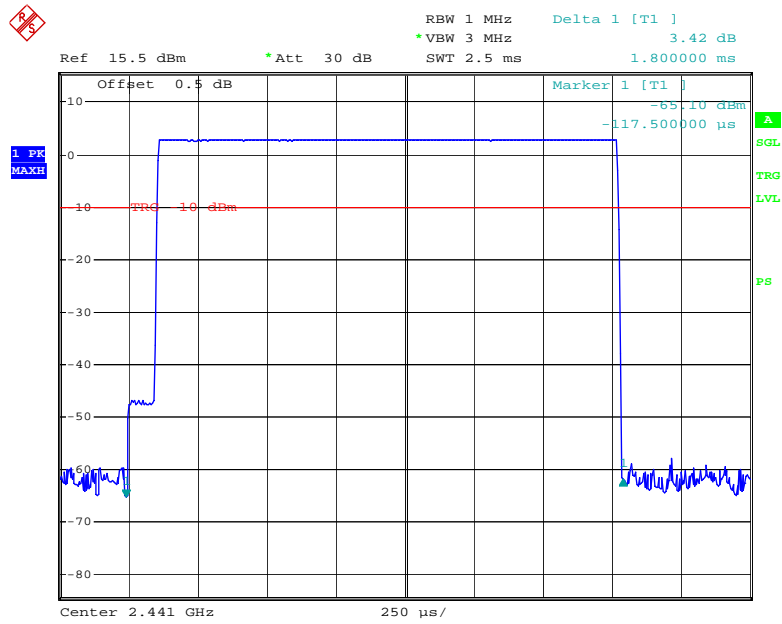
Date: 1.JAN.2010 20:56:07

### Low Channel for DH3



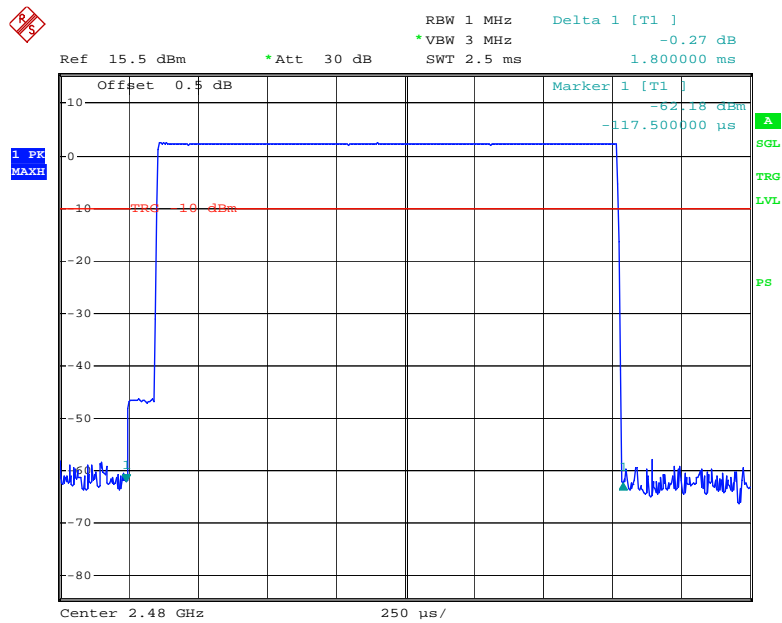
Date: 1.JAN.2010 21:50:57

### Middle Channel for DH3



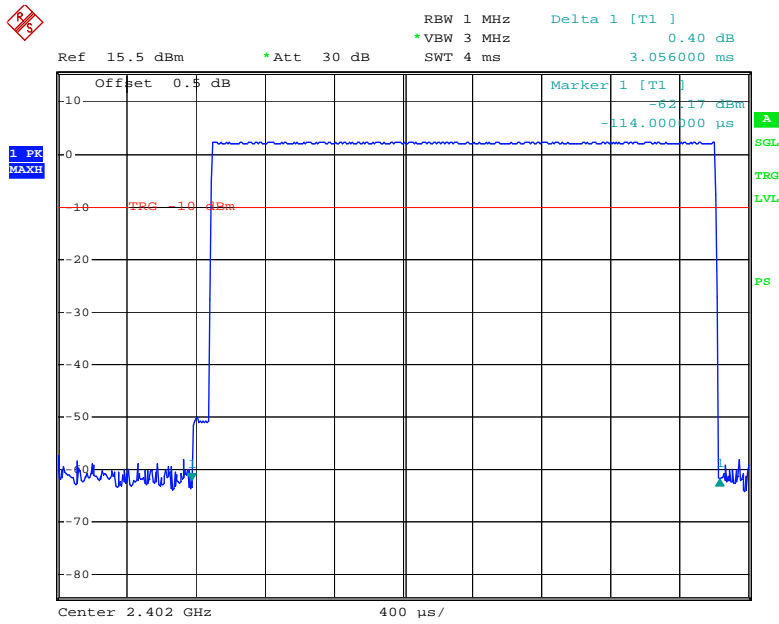
Date: 1.JAN.2010 21:49:27

### High Channel for DH3



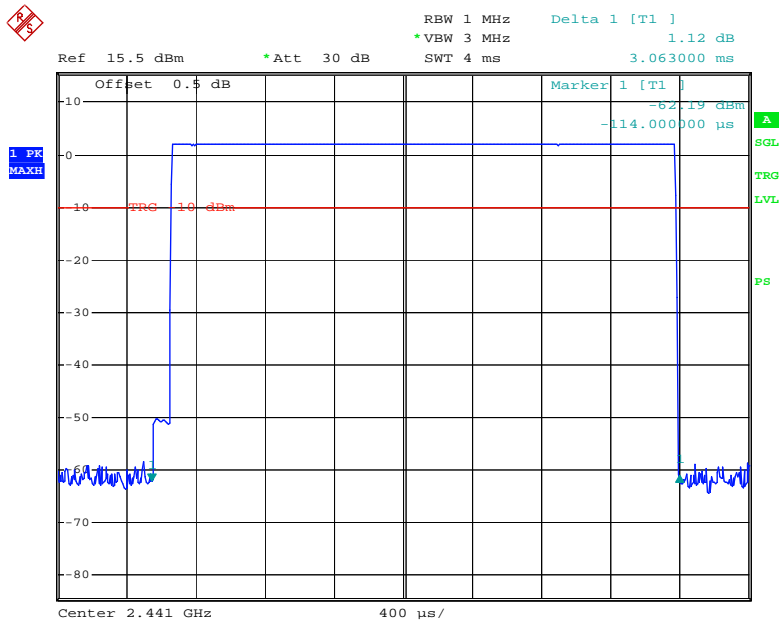
Date: 1.JAN.2010 21:50:26

### Low Channel for DH5



Date: 9.JAN.2010 12:01:18

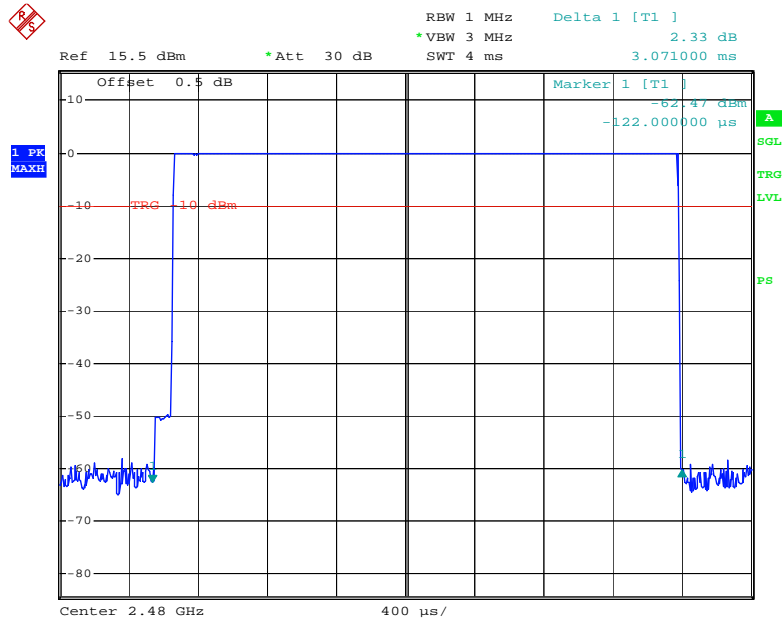
### Middle Channel for DH5



Date: 9.JAN.2010 12:03:31



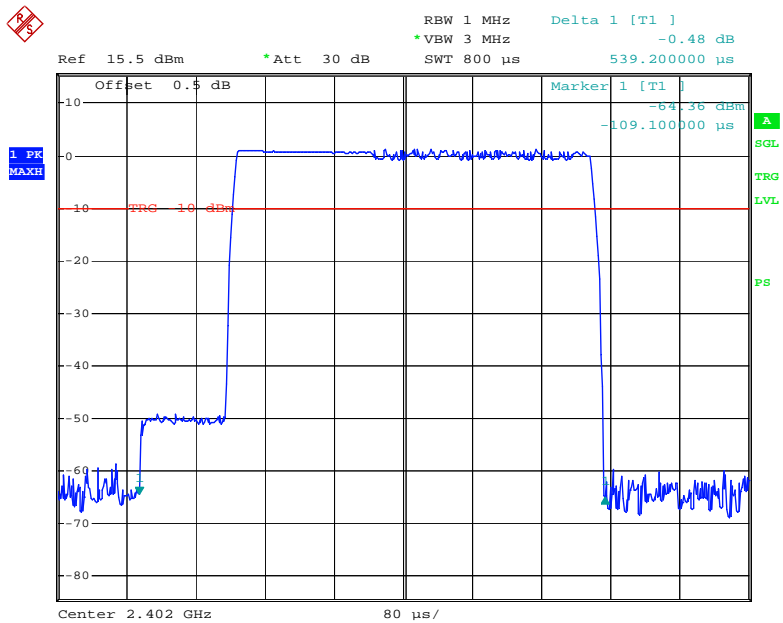
### High Channel for DH5



Date: 9.JAN.2010 12:05:58

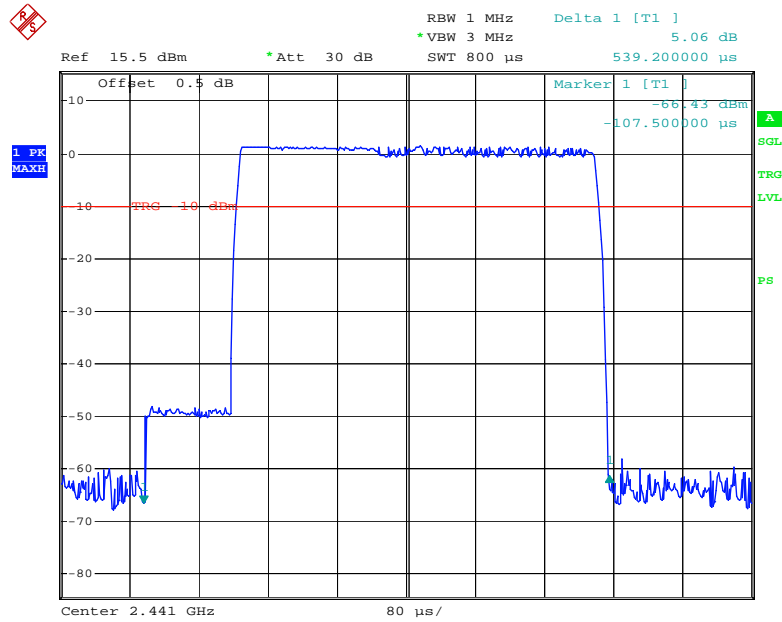
EDR:

### Low Channel for DH1



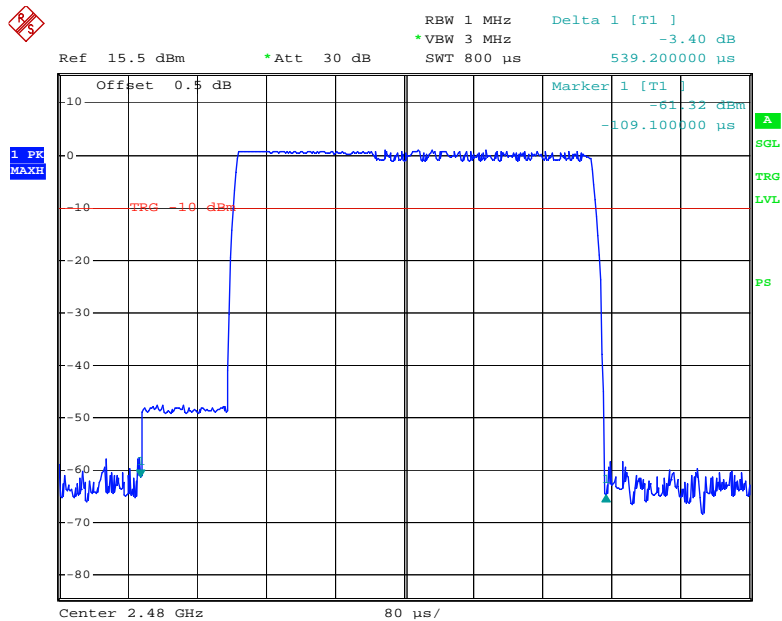
Date: 7.JAN.2010 16:00:24

### Middle Channel for DH1



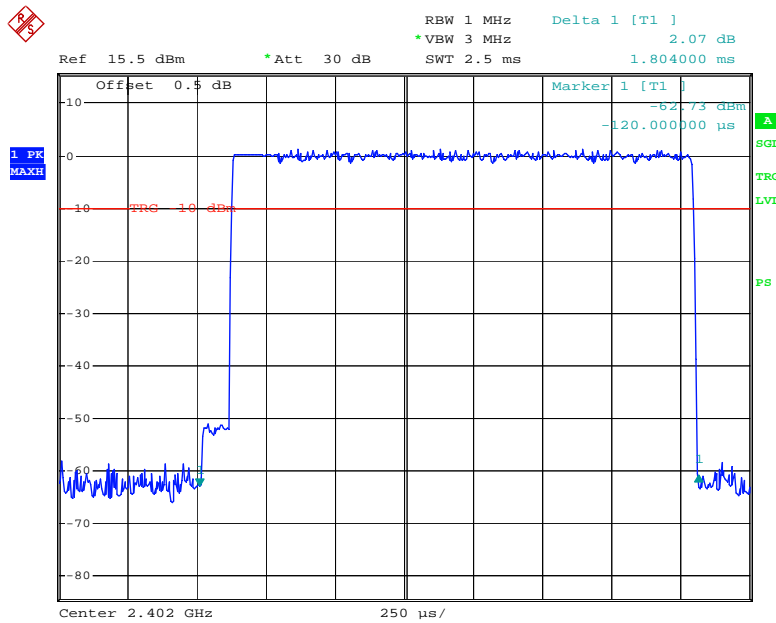
Date: 7.JAN.2010 16:01:49

### High Channel for DH1



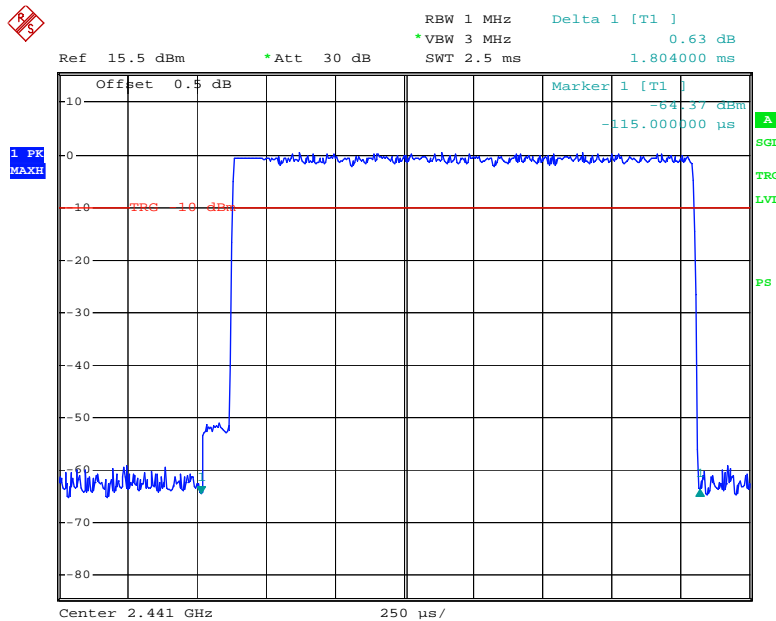
Date: 7.JAN.2010 16:02:37

### Low Channel for DH3



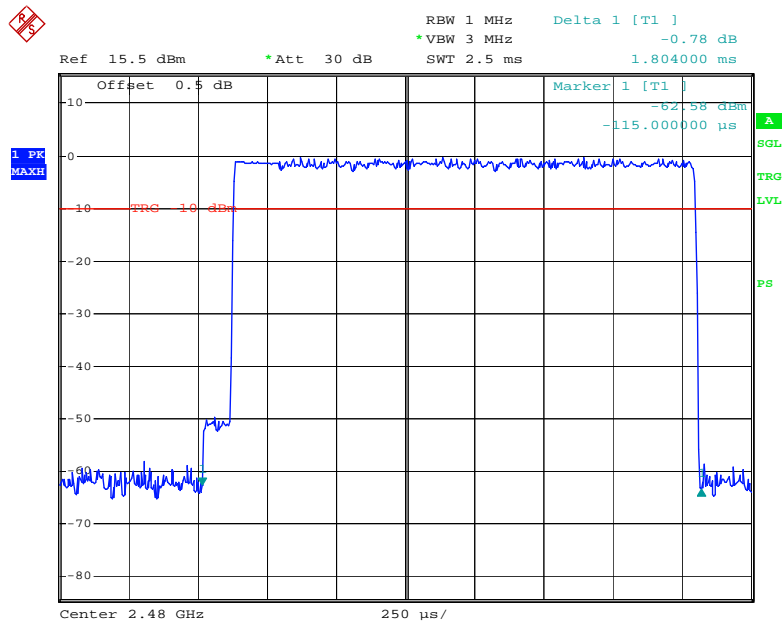
Date: 9.JAN.2010 12:16:01

### Middle Channel for DH3



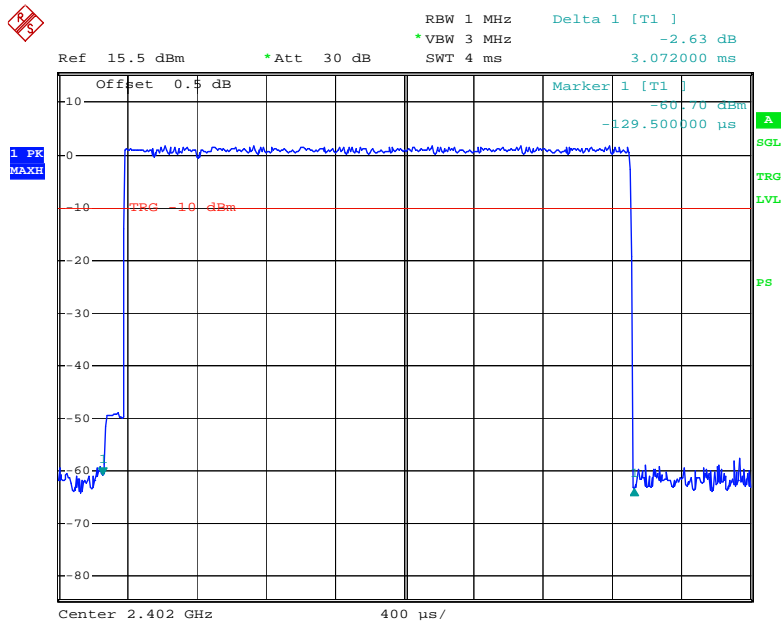
Date: 9.JAN.2010 12:15:23

### High Channel for DH3



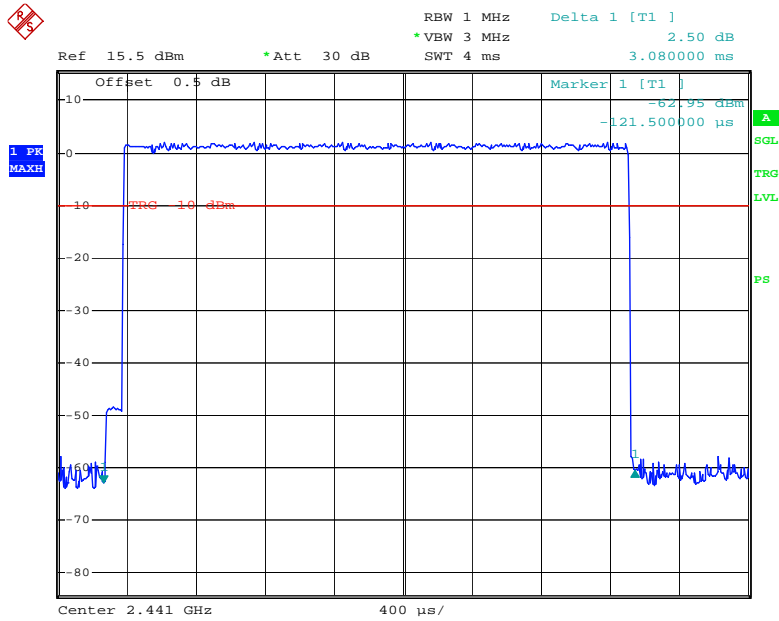
Date: 9.JAN.2010 12:14:48

### Low Channel for DH5



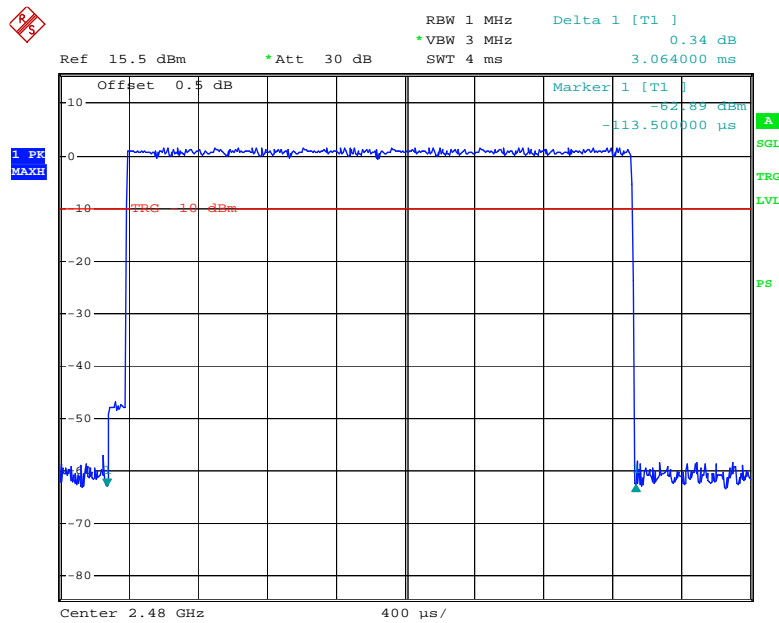
Date: 7.JAN.2010 16:10:13

### Middle Channel for DH5



Date: 7.JAN.2010 16:09:35

### High Channel for DH5



Date: 7.JAN.2010 16:08:11

## 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.

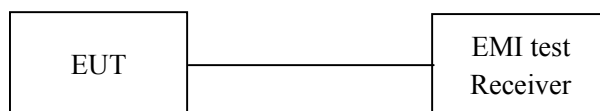
### Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCI	100035	2009-11-24	2010-11-23

\* **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

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 Data

#### Environmental Conditions

Temperature:	26 °C
Relative Humidity:	56 %
ATM Pressure:	100.9 kPa

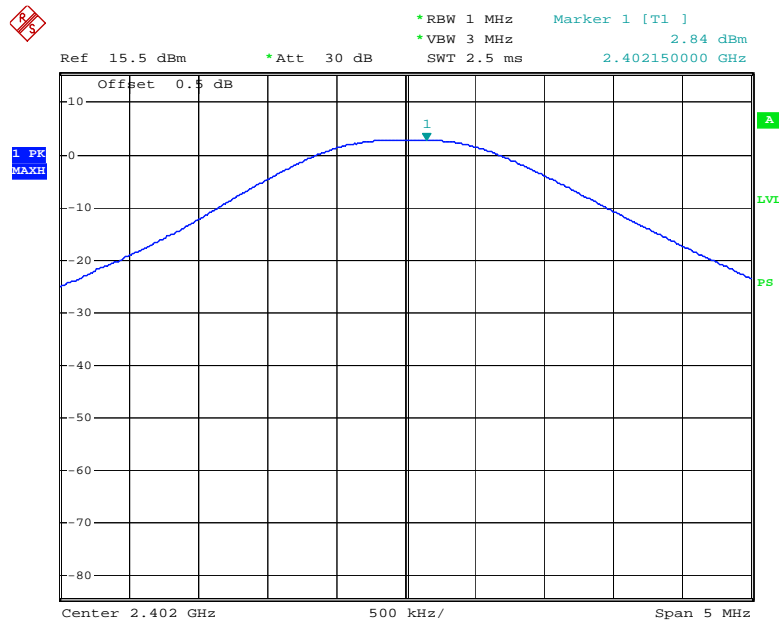
\* The testing was performed by Bruce Zhang on 2010-01-01 and 2010-01-07.

**Test Result:** Compliant.

Mode	Channel	Frequency (MHz)	Output Power (dBm)	Output Power (mw)	Limit (mW)
BDR	Low	2402	2.84	1.923	125
	Middle	2441	3.11	2.046	125
	High	2480	3.02	2.004	125
EDR	Low	2402	2.01	1.589	125
	Middle	2441	2.35	1.718	125
	High	2480	2.07	1.611	125

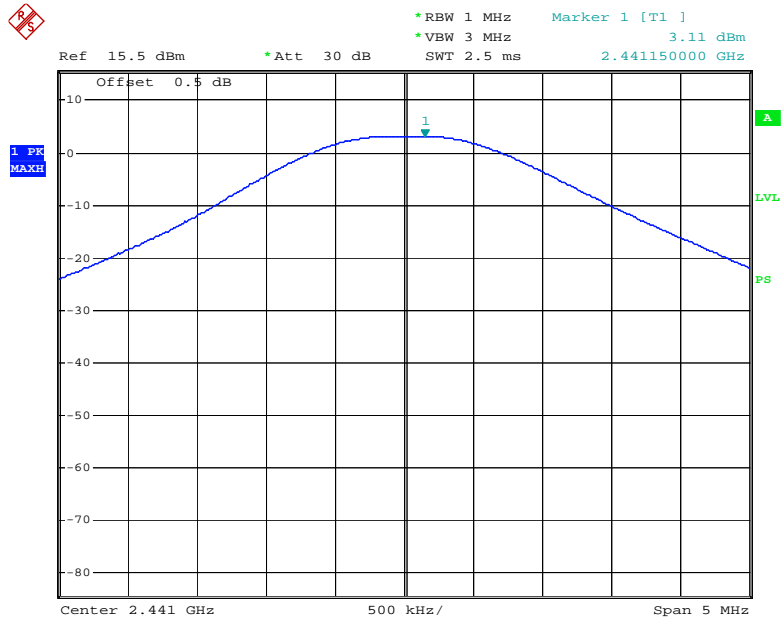
**BDR:**

**Low Channel**



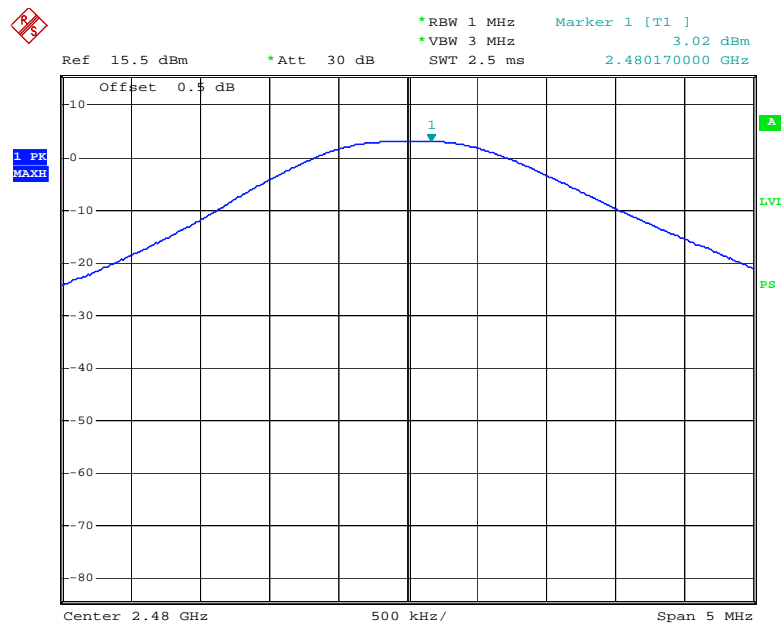
Date: 1.JAN.2010 20:48:00

### Middle Channel



Date: 1.JAN.2010 20:45:27

### High Channel

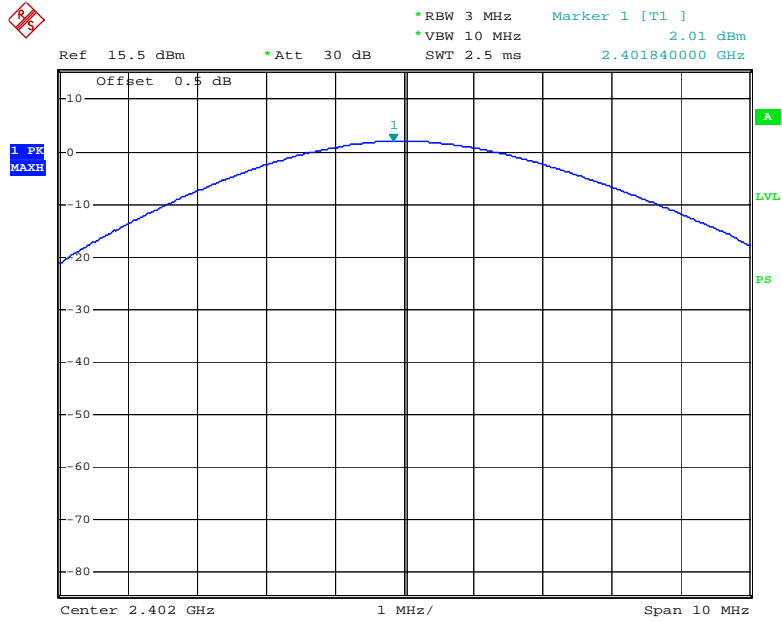


Date: 1.JAN.2010 20:44:29



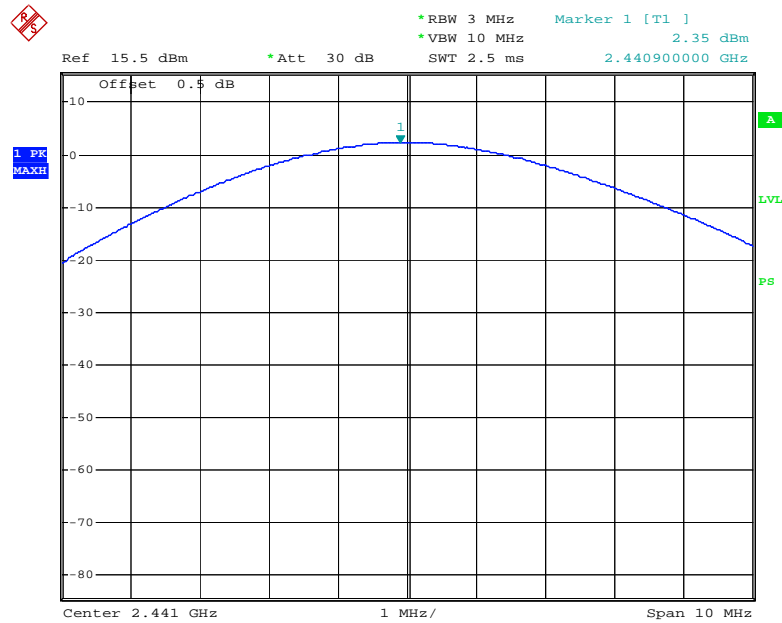
**EDR:**

**Low Channel**



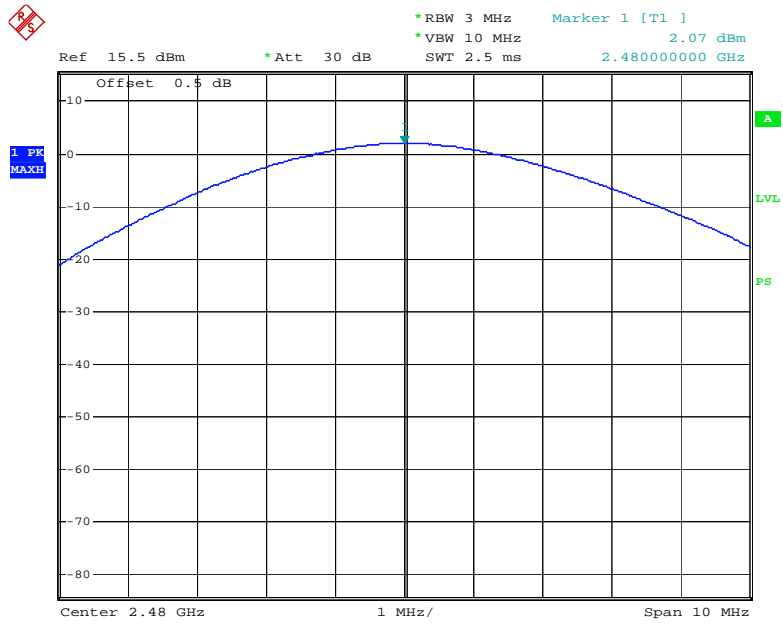
Date: 7.JAN.2010 16:12:29

**Middle Channel**



Date: 7.JAN.2010 16:13:04

### High Chanel



Date: 7.JAN.2010 16:13:50

## **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**

<b>Manufacturer</b>	<b>Description</b>	<b>Model</b>	<b>Serial Number</b>	<b>Calibration Date</b>	<b>Calibration Due Date</b>
Rohde & Schwarz	EMI Test Receiver	ESCI	100035	2009-11-24	2010-11-23

\* **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**

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Remove the antenna from the EUT and then connect to a low loss RF cable from the antenna port to a EMI test receiver, then turn on the EUT and make it operate in transmitting 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**

<b>Temperature:</b>	26 °C
<b>Relative Humidity:</b>	56 %
<b>ATM Pressure:</b>	100.9 kPa

*\*The testing was performed by Bruce Zhang on 2010-01-01 and 2010-01-07.*

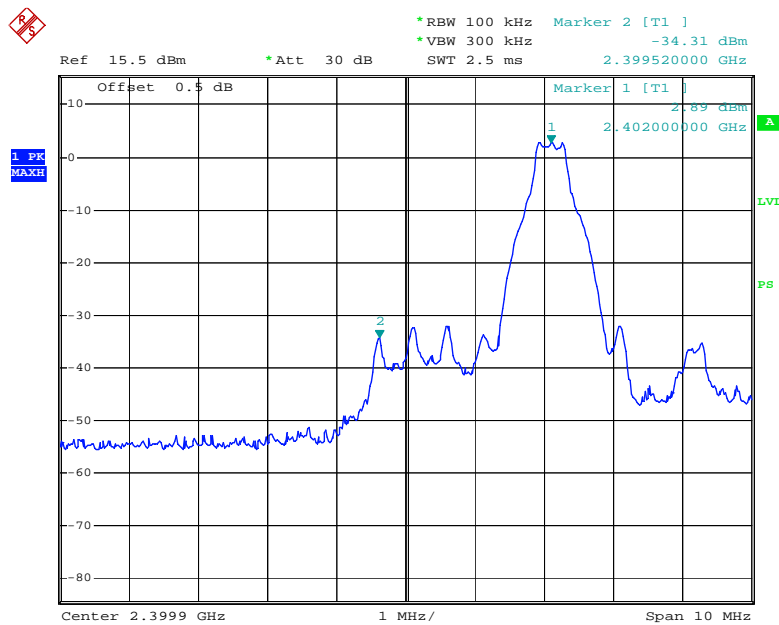
**Test Result: Compliant**

Mode	Frequency (MHz)	Delta Peak to Band Emission (dBc)	Limit (dBc)
BDR	2399.520	37.20	20
	2484.000	48.19	20
EDR	2399.508	41.16	20
	2483.600	48.64	20

Please refer to follow plots.

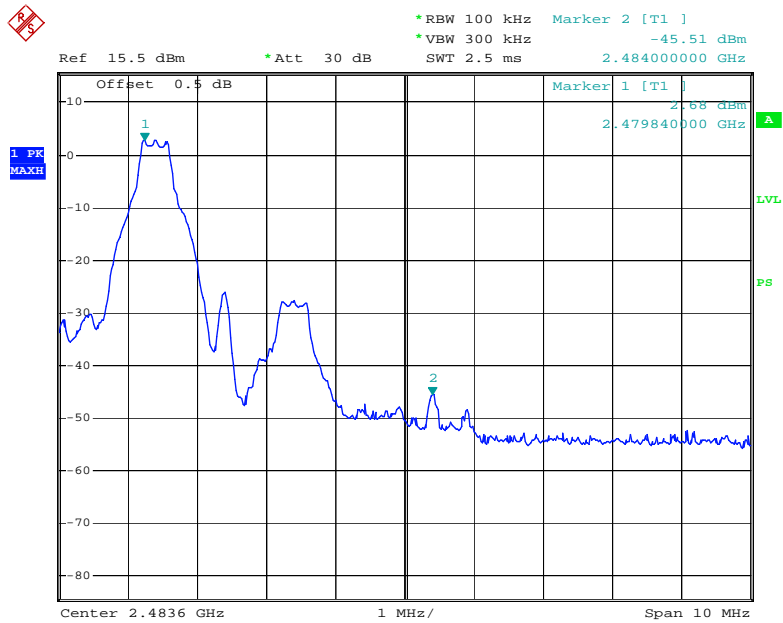
**BDR:**

**Band Edge: Left Side**



Date: 1.JAN.2010 20:24:42

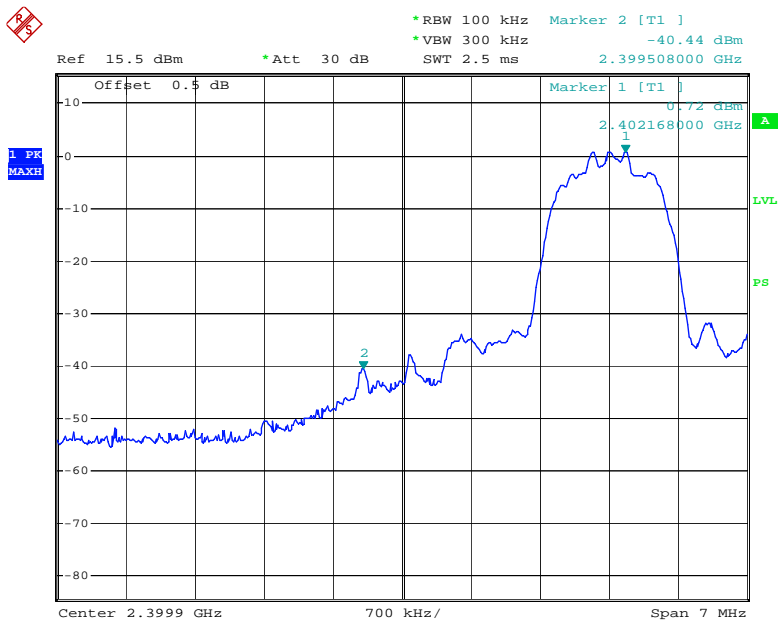
### Band Edge: Right Side



Date: 1.JAN.2010 20:26:11

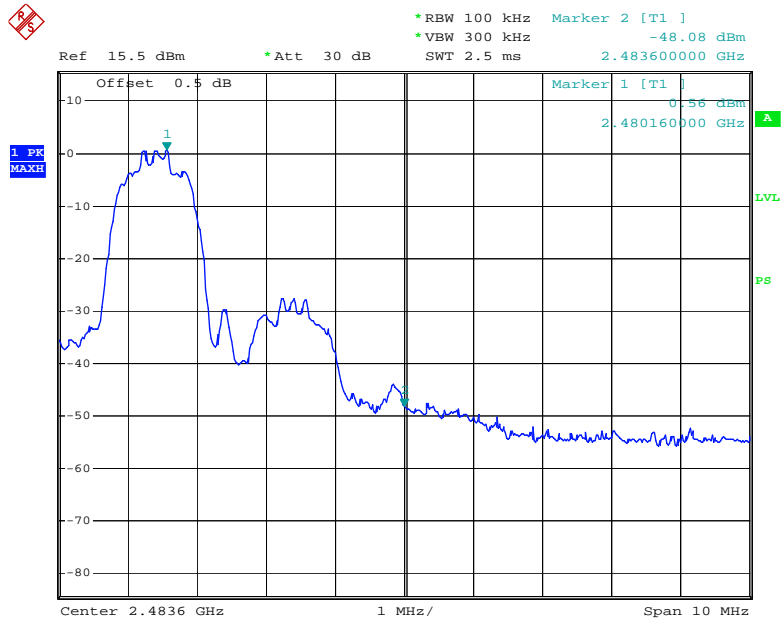
### EDR:

### Band Edge: Left Side



Date: 7.JAN.2010 16:17:24

### Band Edge: Right Side



Date: 7.JAN.2010 16:15:04

## **APPENDIX A - PRODUCTE SIMILARITY DECALARATION LETTER**



广州市凯狮通讯科技有限公司  
Kiss Communications Technology Co.,Ltd

Address: Room 12A20, New Asia International Digital Centre, No.55 Xi Di Er Road, Liwan District, Guangzhou

Tel/Fax: +86-20-2693 8070 2693 9277

### **Product Similarity Declaration**

To Whom It May Concern,

We, **Kiss Communications Technology Co., Ltd.**, hereby declare that our Bluetooth car kit : Model Number: BTK-809/811/812/813/815/816/817/818/819 are electrically identical with the Model Number: BTK-810 that was certified by BACL. They are named differently due to marketing purposes.

Please contact me if you have any question.

Signature:

A handwritten signature in black ink, appearing to be "Steve Cai", written over a horizontal line.

Print Name: Steve Cai

Title: Manager

Date: 2010-2-02

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