NVLAP LAB CODE 200707-0

FCC PART 15 SUBPART C

MEASUREMENT AND TEST REPORT

For

Scosche Industries, Inc.

P.O. Box 2901 Oxnard, CA 93034

FCC ID: IKQBTTRNS02

This Report Concerns:	Equipment Type:
☒ Original Report	Universal Bluetooth Transmitter

Test Engineer:	Andy Yan Lisa Zhu
Report Number:	R0608302
Test Date:	2007-04-23 to 2007-04-27
Report Date:	2007-04-28
Reviewed By:	EMC Manager: Boni Baniqued
Prepared By:	Bay Area Compliance Laboratory 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

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GENERAL INFORMATION

Product Description for Equipment Under Test (EUT)

The *Scosche Industries, Inc.*'s product, FCC ID: IKQBTTRNS02 model number: *IUBTT* or the "EUT" as referred to in this report is marketed as a *Universal Bluetooth Transmitter*. The EUT is a portable device designed to wirelessly send digital audio transmittions from devices such as phones, CD players or MP3 players to Bluetooth compatable receivers. It is powered by a lithium ion battery pack that is recharged via USB connection to 5 VDC provided from PC/laptop. The EUT will transmit to or "attach"(simultaneous hopping communication) with any bluetooth audio transceiver employing Bluetooth V1.2 supporting A2DP profile.

EUT Photo

Mechanical Description

The EUT is a portable Bluetooth Transceiver of plastic enclosure construction operating on frequencies from 2402 – 2480 MHz which measures approximately: 5.6 cm L x 4.1 cm W x 1.0 cm H, with rated input voltage of 3.7 VDC (from PC USB)

** The test data gathered are from production sample, serial number: 0610139. Provided by the manufacturer, the EUT was received on 2006-08-30.*

Objective

This Type approval report is prepared on behalf of *Scosche Industries, Inc.* 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, 15.209 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 C63.4-2003, 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 Laboratory 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 Laboratory Corp. (Shenzhen) to collect radiated and conducted emission measurement data is located in 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 Laboratory 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 04, 2004. 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 and Industrial Canada registration test site No.: 5500A. 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 Laboratory Corp. (Shenzhen) is a National Institute of Standards and Technology (NIST) accredited laboratory, under the National Voluntary Laboratory Accredited Program (Lab Code 200707-0). The current scope of accreditations can be found at http://ts.nist.gov/ts/htdocs/210/214/scopes/2007070.htm

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The system was configured for testing with additional control unit as shown on the configuration of test setup on page 9.

EUT Exercise Software

The exercise software is available.

Special Accessories

The special Accessories were provided by Bay Area Compliance Laboratory Corp. (Shenzhen).
The control unit was provided by manufacturer.

Equipment Modifications

Bay Area Compliance Laboratory Corp. (Shenzhen) has not done any modification on the EUT.

Host System Configuration List and Details

Manufacturer	Description	Model	Serial Number	FCC ID
DELL	Motherboard	OWC297	CN-OWC297-70821-564-00NI	DoC
DELL	Power	NPS-250KB D	CN-0H2678-17972-56E-80BM	DoC
Seagate	Hard Disk	ST340014A	5JXK3GXE	DoC
DELL	3.5” Floppy	N/A	CN-0N8893-69802-54Q-02P0	DoC
Lite-ON	CD-ROM	LTN-489S	N/A	DoC
Intel	Ethernet	PRO 10/100 VE	N/A	DoC

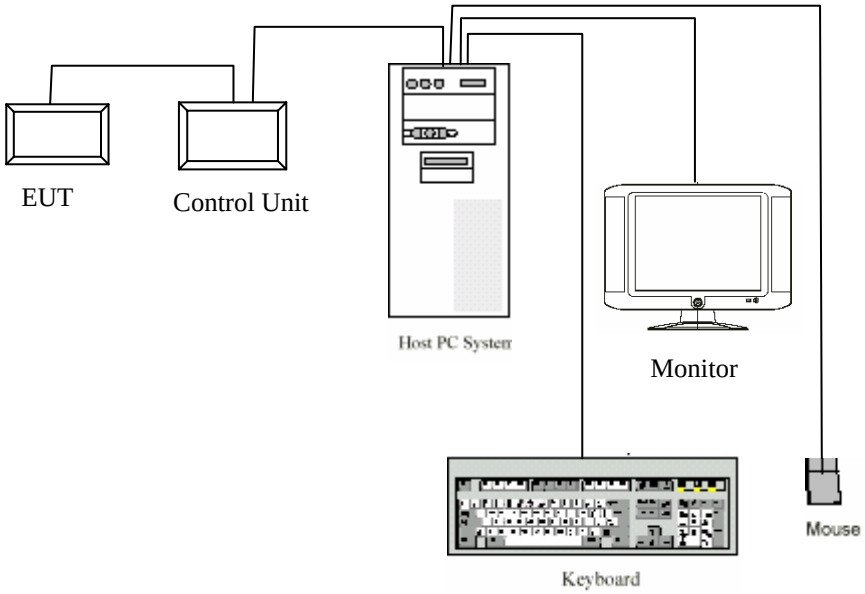
Local Support Equipment List and Details

Manufacturer	Description	Model	Serial Number	FCC ID
DELL	PC	DELL 170L	CN-0TC670-70821-560-F4Q6	DoC
DELL	Keyboard	SK-8110	CN07N244-71616-56A-1B1E	DoC
DELL	Mouse	M071KC	520027907	DoC
DELL	LCD Monitor	1505FP	Y4287-7168-571-GBSH	DoC
ProMOS	Memory	V826632K24SATG-C0	0525-K1933700	DoC
Intel	CPU	Celeron D-2533	N/A	DoC

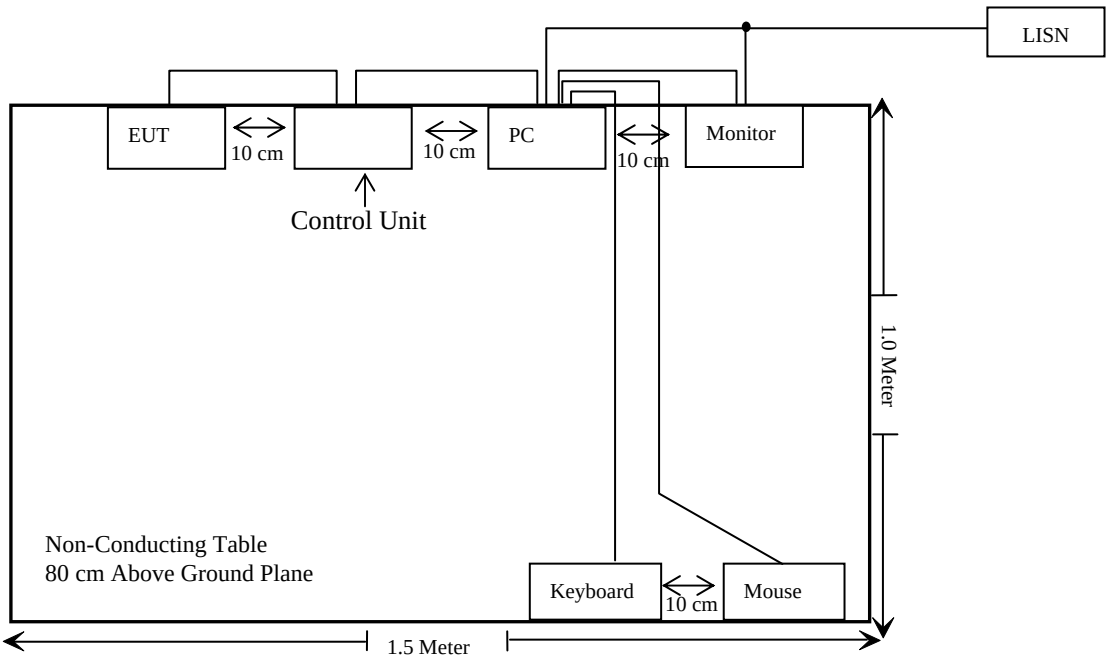
External I/O Cable

Cable Description	Length (M)	From/Port	To
Shielded Detachable Keyboard Cable	1.50	Keyboard Port / Host	Keyboard
Shielded Detachable Mouse Cable	1.50	PS/2 Port / Host	Mouse
Shielded Detachable VGA Cable	1.50	VGA Port/Host	Monitor
Shielded Detachable USB Cable	1.20	Control Unit	PC
Shielded Detachable Serial Cable	1.50	Control Unit	PC
Unshielded Undetachable Control Cable	0.10	EUT	PC

Configuration of Test Setup



Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

FCC RULES	DESCRIPTION OF TEST	RESULT
§15.107 (a)	Conducted Emission	Compliant
§15.247 (b)	RF Exposure	Compliant
§15.203	Antenna Requirement	Compliant
§15.205	Restricted Band	Compliant
§15.205, §15.209, §15.247(d)	Radiated Emission	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 testing	Compliant

§15.247(b) - RF EXPOSURE

Limit

According to §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.

Since the output power of this device was so low (0.001167 Watts), it is exempt from RF Exposure Requirements.

§15.203 - ANTENNA REQUIREMENT

Standard Applicable

According to § 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.

Antenna Connector Construction

The Equipment has an integrally attached antenna which cannot be accessed or replaced by the end user and is permanently affixed to the EUT PCB. The antenna is in accordance to section 15.203, which is considered sufficient to comply with the provisions of this section. Please see photo below

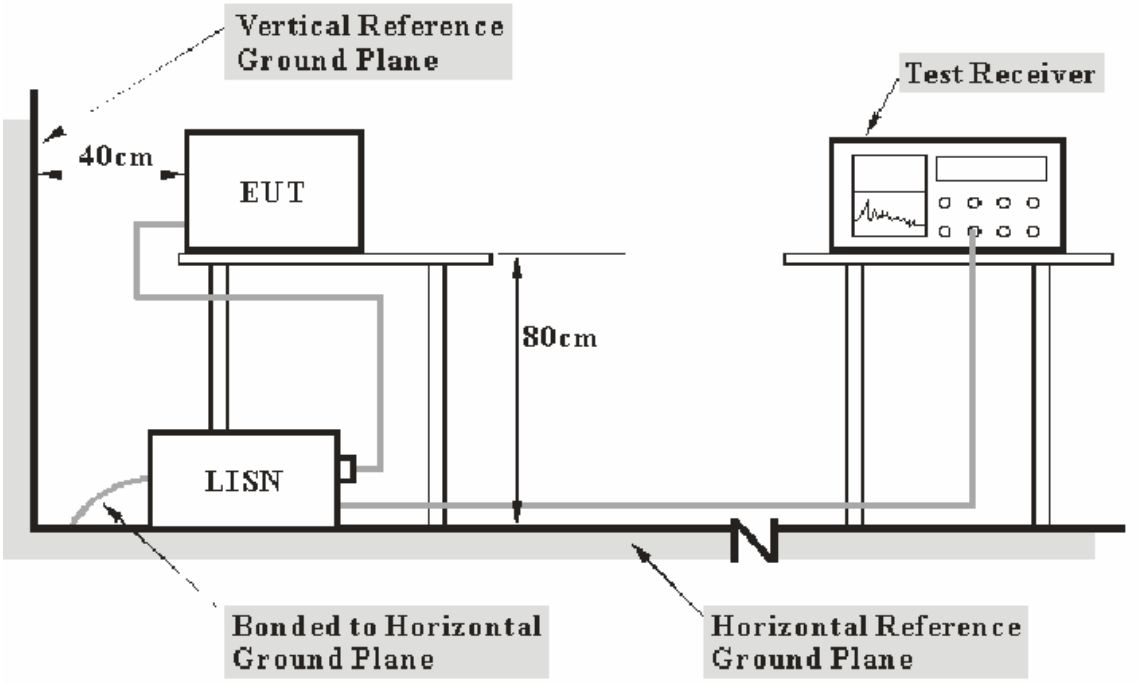
§15.207 (a)- CONDUCTED EMISSIONS

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 ±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 80 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 Class B 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 120 VAC/60 Hz power source and the EUT drew 5 VDC from the PC's USB port.

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:

Frequency Range	***IF B/W***
150 kHz – 30 MHz	9 kHz

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Com-Power	L.I.S.N.	LI-200	12005	N/A	N/A
Com-Power	L.I.S.N.	LI-200	12008	N/A	N/A
Rohde & Schwarz	EMI Test Receiver	ESCI	100035	2006-09-29	2007-09-29
Rohde & Schwarz	L.I.S.N.	ESH2-Z5	892107/021	2007-03-26	2008-03-26

***** Com-Power's LISN were used as the supporting equipment.
*** 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 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:

2.80 dB at **11.940 MHz** in the **Line** conductor.

Test Data

Environmental Conditions

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

The testing was performed by Andy Yan on 2007-04-27

Test Mode: Charging

LINE CONDUCTED EMISSIONS				FCC PART 15 CLASS B	
Frequency MHz	Amplitude dBµV	Detector QP/AV	Phase Line/Neutral	Limit dBµV	Margin dB
11.940	57.20	QP	Live	60.00	2.80
10.130	56.20	QP	Live	60.00	3.80
1.990	39.90	AV	Live	46.00	6.10
16.190	50.30	QP	Neutral	60.00	9.70
10.140	48.80	QP	Neutral	60.00	11.20
16.300	38.10	AV	Neutral	50.00	11.90
6.480	47.70	QP	Neutral	60.00	12.30
0.500	33.30	AV	Live	46.00	12.70
0.180	41.00	AV	Neutral	54.49	13.49
1.990	42.20	QP	Live	56.00	13.80
0.900	31.60	AV	Neutral	46.00	14.40
0.630	29.90	AV	Neutral	46.00	16.10
1.000	28.80	AV	Live	46.00	17.20
0.180	37.10	AV	Live	54.49	17.39
0.900	36.40	QP	Neutral	56.00	19.60
0.500	36.20	QP	Live	56.00	19.80
0.180	43.40	QP	Neutral	64.49	21.09
0.630	34.30	QP	Neutral	56.00	21.70
6.520	27.80	AV	Neutral	50.00	22.20
1.000	33.60	QP	Live	56.00	22.40
11.950	26.20	AV	Live	50.00	23.80
0.180	40.60	QP	Live	64.49	23.89
10.200	26.00	AV	Neutral	50.00	24.00
10.130	25.70	AV	Live	50.00	24.30

Plot(s) of Test Data

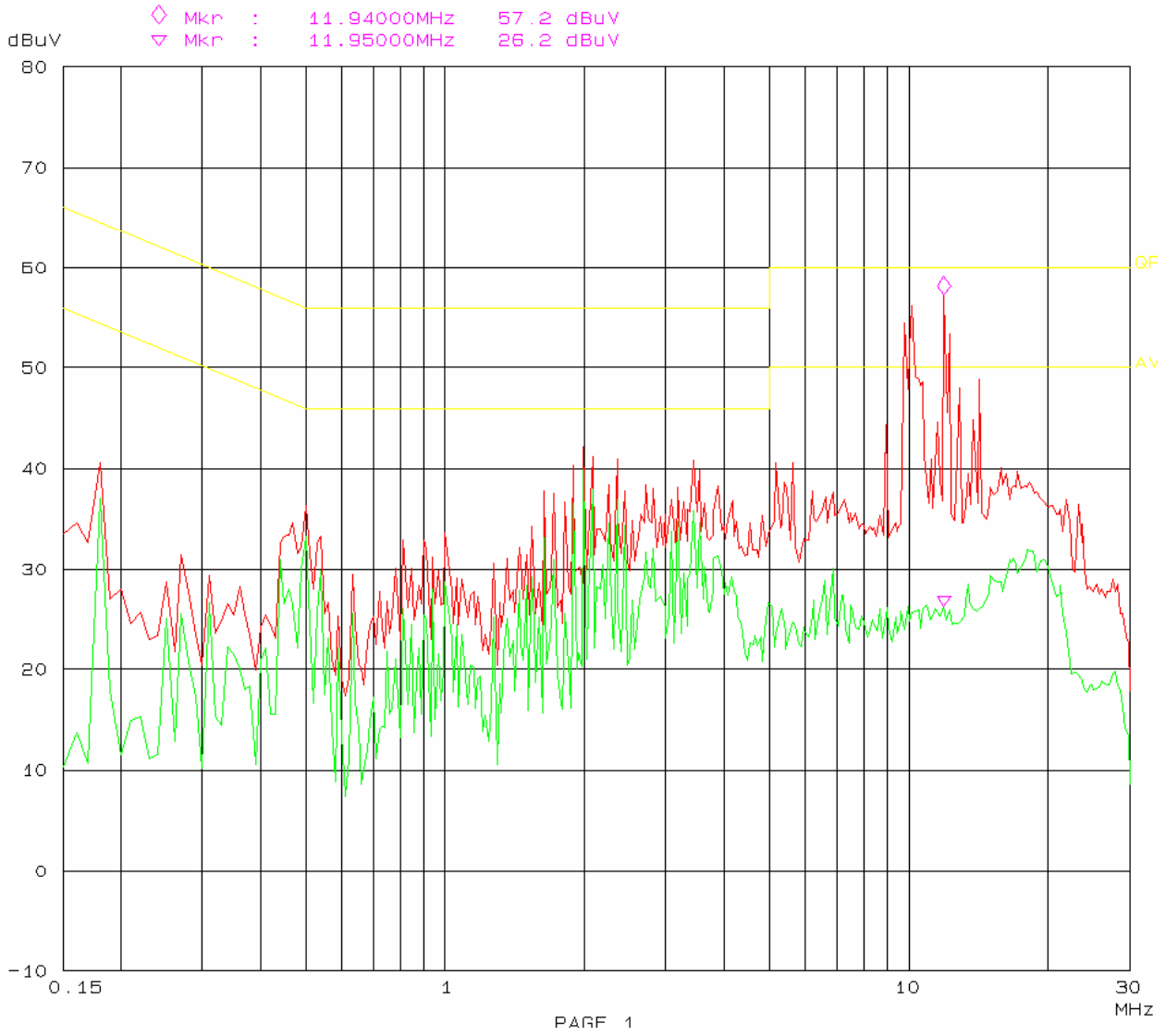
Plot(s) of Test Data is presented hereinafter as reference.

Conducted Emission Test

27. Apr 07 09:10

FCC Part15.207

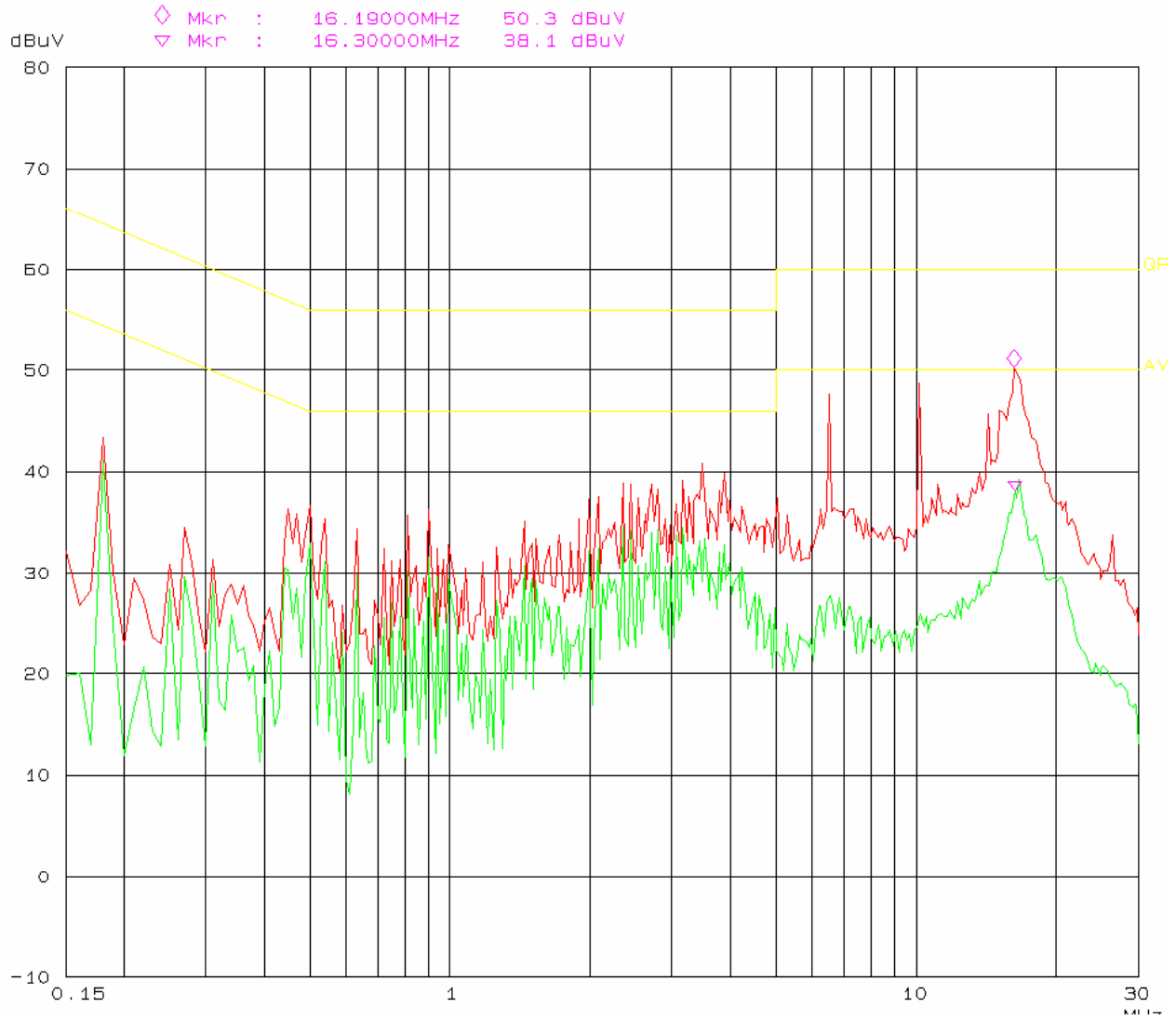
EUT: Universal Bluetooth Transmitter
Manuf: Scosche
Op Cond: charging
Operator: Andy
Test Spec: AC 120V/60Hz L
Comment: Temp: 25'C Humi: 56%



Conducted Emission Test
FCC Part15.207

27. Apr 07 08:31

EUT: Universal Bluetooth Transmitter
Manuf: Scosche
Op Cond: charging
Operator: Andy
Test Spec: AC 120V/60Hz N
Comment: Temp: 25'C Humi: 56%



§15.205, §15.209, §15.247 - RADIATED EMISSIONS

Applicable Standard

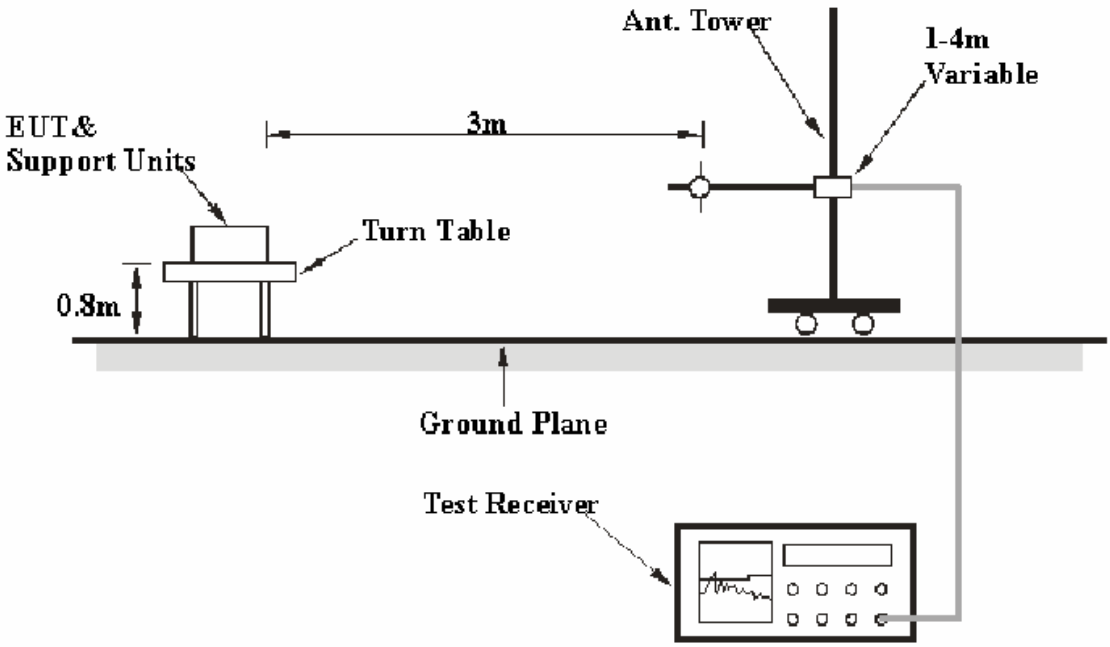
According to FCC §15.247 (d)

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 Laboratory Corp. (Shenzhen) is ±4.0 dB.

EUT Setup



The radiated emission tests were performed in the 3-meter Chamber, using the setup accordance with the ANSI C63.4-2003. 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 host PC was connected to a 120 VAC/60 Hz power source and the EUT drew 5 VDC from the PC's USB port.

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:

Frequency Range	***RBW***	***Video B/W***
30MHz – 1000 MHz	100 kHz	300 kHz
1000 MHz – 25 GHz	1 MHz	3 MHz

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
HP	Amplifier	HP8447D	2944A09795	2006-11-15	2007-11-15
Rohde & Schwarz	EMI Test Receiver	ESCI	100035	2006-09-29	2007-09-29
Sunol Sciences	Broadband Antenna	JB1	A040904-1	2006-08-14	2007-08-14
HP	Amplifier	8449B	3008A00277	2006-09-29	2007-09-29
Sunol Sciences	Horn Antenna	DRH-118	A052604	2006-09-25	2007-09-25
Agilent	Spectrum Analyzer	8564E	3943A01781	2006-11-22	2007-11-22

*** 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

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.

All data was recorded in the PK&AV detection mode.

Corrected Amplitude & Margin Calculation

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

Corr. Ampl. = Meter Reading + Antenna Loss + Cable Loss- 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:

Margin = Limit - Corr. Ampl.

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:

6.24 dB at **7206 MHz** in the **Horizontal** polarization, for Low Channel (Above 1 GHz)
16.92 dB at **7323 MHz** in the **Horizontal** polarization, for Middle Channel (Above 1 GHz)
5.15 dB at **7440 MHz** in the **Horizontal** polarization, for High Channel (Above 1 GHz)
7.3 dB at **39.872325MHz** in the **Vertical** polarization for FCC 15.209

Test Data

Environmental Conditions

Temperature:	25 °C
Relative Humidity:	52 %
ATM Pressure:	100.9 kPa

The testing was performed by Lisa Zhu on 2007-04-27.

Test Mode: Transmitting (Above 1GHz)

Low Channel:

Frequency	Meter Reading	Detector	Azimuth	Height	Polar	Antenna Loss	Cable loss	Amplifier Gain	Corr. Ampl.	FCC Part 15.247		
MHz	dBuV	PK/QP/AV	Degrees	Meters	H / V	dB	dB	dB	dBuV/m	Limit dBuV/m	Margin dB	Remarks
2402	95.33	PK	20	1.2	H	30.6	3.61	35	94.54			fundamental
2402	94.51	AV	263	1.4	H	30.6	3.61	35	93.72			fundamental
2402	96.53	PK	18	1.6	V	30.6	3.61	35	95.74			fundamental
2402	96.01	AV	45	1.0	V	30.6	3.61	35	95.22			fundamental
7206	37.85	AV	261	1.0	H	39.1	4.51	33.7	47.76	54	6.24	harmonic
7206	37.91	AV	90	1.2	V	37.8	4.51	33.7	46.52	54	7.48	harmonic
4804	33.69	AV	270	1.6	H	36.0	4.64	33.4	40.93	54	13.07	harmonic
4804	32.53	AV	180	1.6	V	35.0	4.64	33.4	38.77	54	15.23	harmonic
7206	46.01	PK	180	1.3	H	39.1	4.51	33.7	55.92	74	18.08	harmonic
7206	46.50	PK	180	1.0	V	37.8	4.51	33.7	55.11	74	18.89	harmonic
4804	42.33	PK	49	1.2	H	36.0	4.64	33.4	49.57	74	24.43	harmonic
4804	41.37	PK	250	1.0	V	35.0	4.64	33.4	47.61	74	26.39	harmonic

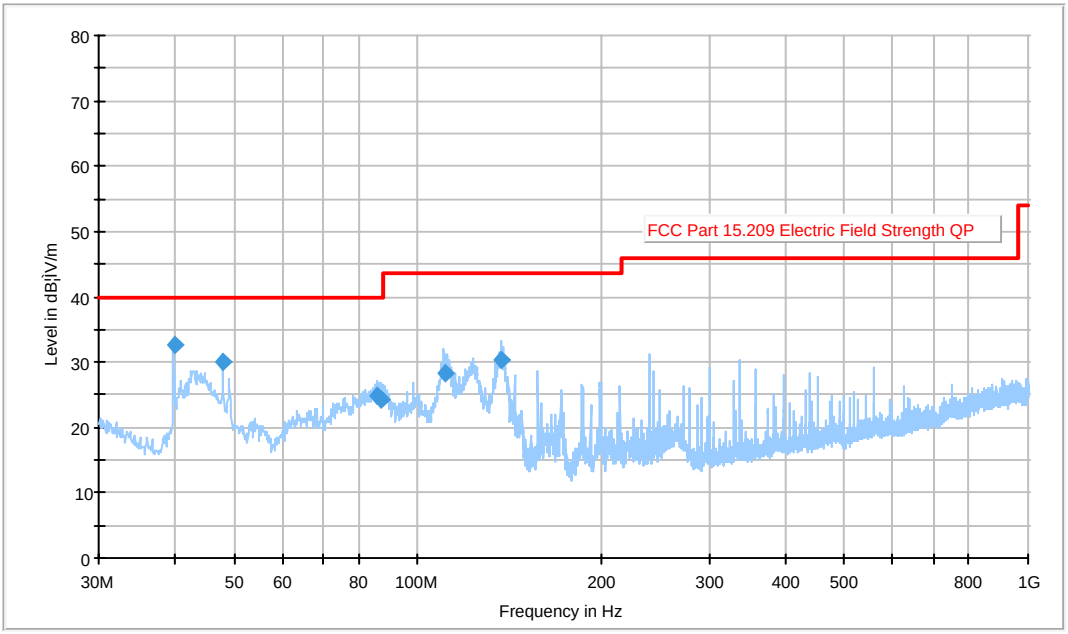
Middle Channel:

Frequency	Meter Reading	Detector	Azimuth	Height	Polar	Antenna Loss	Cable loss	Amplifier Gain	Corr. Ampl.	FCC Part 15.247		
MHz	dBuV	PK/QP/AV	Degrees	Meters	H / V	dB	dB	dB	dBuV/m	Limit dBuV/m	MHz	dBuV
2441	95.01	PK	197	1.6	H	30.6	3.61	35	94.22			fundamental
2441	94.22	AV	197	1.6	H	30.6	3.61	35	93.43			fundamental
2441	96.50	PK	182	1.2	V	30.6	3.61	35	95.71			fundamental
2441	95.99	AV	182	1.2	V	30.6	3.61	35	95.20			fundamental
7323	47.17	PK	180	1.0	H	39.1	4.51	33.7	57.08	74	16.92	harmonic
7323	47.67	PK	90	1.2	V	37.8	4.51	33.7	56.28	74	17.72	harmonic
4882	43.17	PK	45	1.0	V	35.0	4.64	33.4	49.41	74	24.59	harmonic
7323	38.96	AV	45	1.0	H	39.1	4.51	33.7	48.87	54	5.13	harmonic
7323	39.16	AV	90	1.2	V	37.8	4.51	33.7	47.77	54	6.23	harmonic
4882	34.51	AV	109	1.2	H	36.0	4.64	33.4	41.75	54	12.25	harmonic
4882	34.56	AV	180	1.6	V	35.0	4.64	33.4	40.80	54	13.20	harmonic
4882	43.33	PK	109	1.2	H	36.0	4.64	33.4	50.57	74	23.43	harmonic

High Channel:

Frequency	Meter Reading	Detector	Azimuth	Height	Polar	Antenna Loss	Cable loss	Amplifier Gain	Corr. Ampl.	FCC Part 15.247		
MHz	dBuV	PK/QP/AV	Degrees	Meters	H / V	dB	dB	dB	dBuV/m	Limit dBuV/m	MHz	dBuV
2480	91.20	PK	197	1.6	H	30..6	3.61	35	90.41			fundamental
2480	90.51	AV	197	1.6	H	30.6	3.61	35	89.72			fundamental
2480	95.33	PK	182	1.2	V	30..6	3.61	35	94.54			fundamental
2480	94.68	AV	182	1.2	V	30.6	3.61	35	93.89			fundamental
7440	38.94	AV	45	1.0	H	39.1	4.51	33.7	48.85	54	5.15	harmonic
7440	38.98	AV	90	1.2	V	37.8	4.51	33.7	47.59	54	6.41	harmonic
4960	35.66	AV	109	1.2	H	36.0	4.64	33.4	42.90	54	11.10	harmonic
4960	34.85	AV	180	1.6	V	35.0	4.64	33.4	41.09	54	12.91	harmonic
7440	47.50	PK	180	1.0	H	39.1	4.51	33.7	57.41	74	16.59	harmonic
7440	47.17	PK	90	1.2	V	37.8	4.51	33.7	55.78	74	18.22	harmonic
4960	44.01	PK	109	1.2	H	36.0	4.64	33.4	51.25	74	22.75	harmonic
4960	43.11	PK	45	1.0	V	35.0	4.64	33.4	49.35	74	24.65	harmonic

Test Mode: Transmitting



Frequency (MHz)	Quasi Peak (dBµV/m)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Limit (dBµV/m)	Margin (dB)
39.872325	32.7	100.0	V	295.0	-11.8	40.0	7.3
48.008150	29.9	116.0	V	289.0	-16.9	40.0	10.1
136.809150	30.4	123.0	V	212.0	-10.8	43.5	13.1
86.041475	24.9	99.0	V	205.0	-18.1	40.0	15.1
110.542800	28.3	100.0	V	82.0	-13.3	43.5	15.2
86.969150	24.2	115.0	V	44.0	-18.1	40.0	15.8

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

Applicable Standard

Frequency hopping systems shall have hoping 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	2006-09-29	2007-09-29

*** 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

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.

Limit

FCC Part 15, Subpart C Section 15.247(a)(1). Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB Bandwidth of the hopping channel, whichever is greater.

FREQUENCY RANGE (MHz)	Limit (kHz)
902-928	>25kHz or the 20dB bandwidth
2400-2483.5	>25kHz or two-thirds of the 20dB bandwidth
5725-5850	>25kHz or the 20dB bandwidth

Test Data

Environmental Conditions

Temperature:	27 °C
Relative Humidity:	50 %
ATM Pressure:	100.9 kPa

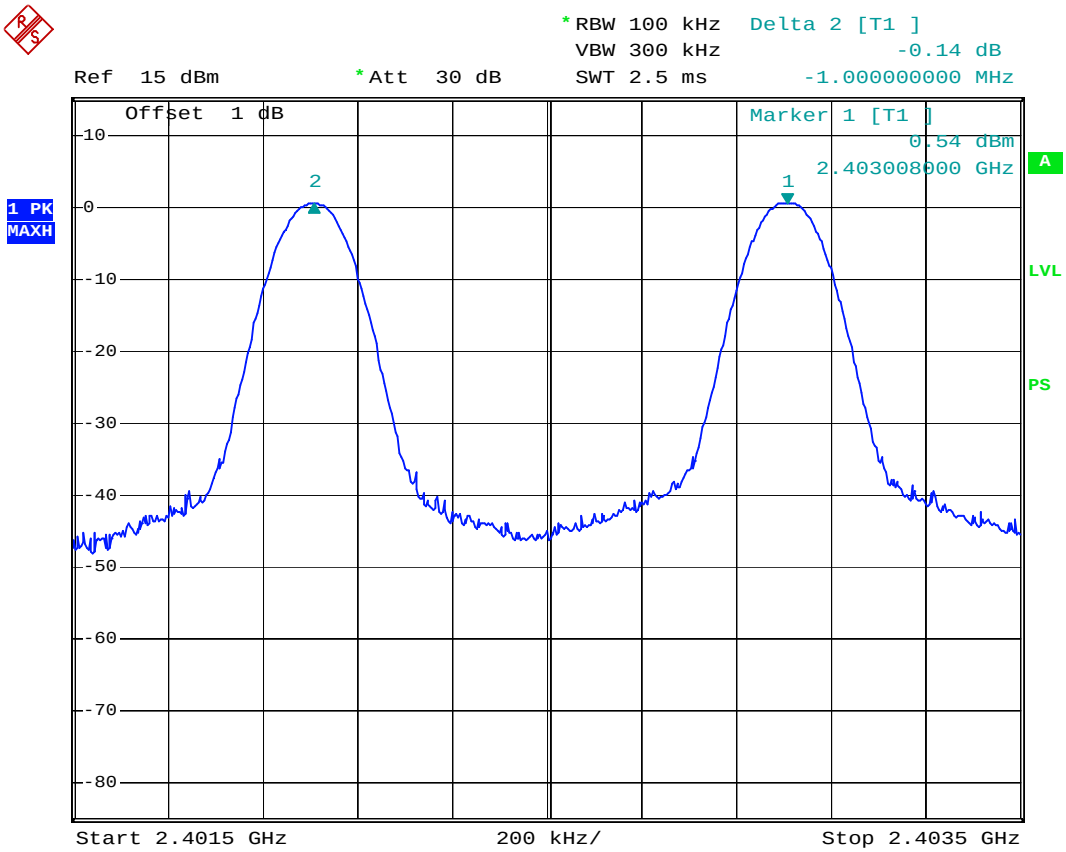
The testing was performed by Lisa Zhu on 2007-04-25.

Test mode: Transmitting

Channel	Channel Frequency (MHz)	Channel Separation (KHz)	Limit (kHz)	Result
Low Channel	2402	1000.00	182.67	Compliant
Adjacency Channel	2403			
Mid Channel	2441	1000.00	181.33	Compliant
Adjacency Channel	2442			
High Channel	2480	1000.00	181.33	Compliant
Adjacency Channel	2479			

Test result: Compliant, Please refer to the following plots

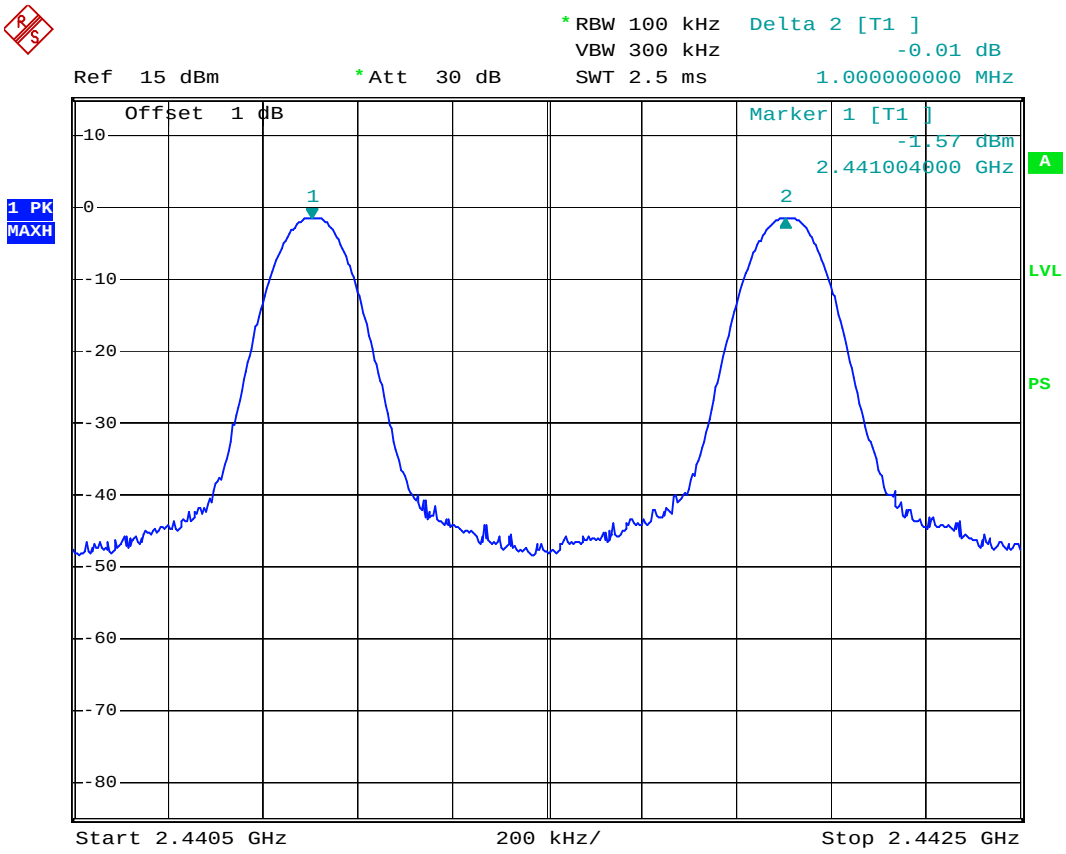
Low channel:



channel separation low channel

Date: 25.APR.2007 11:43:15

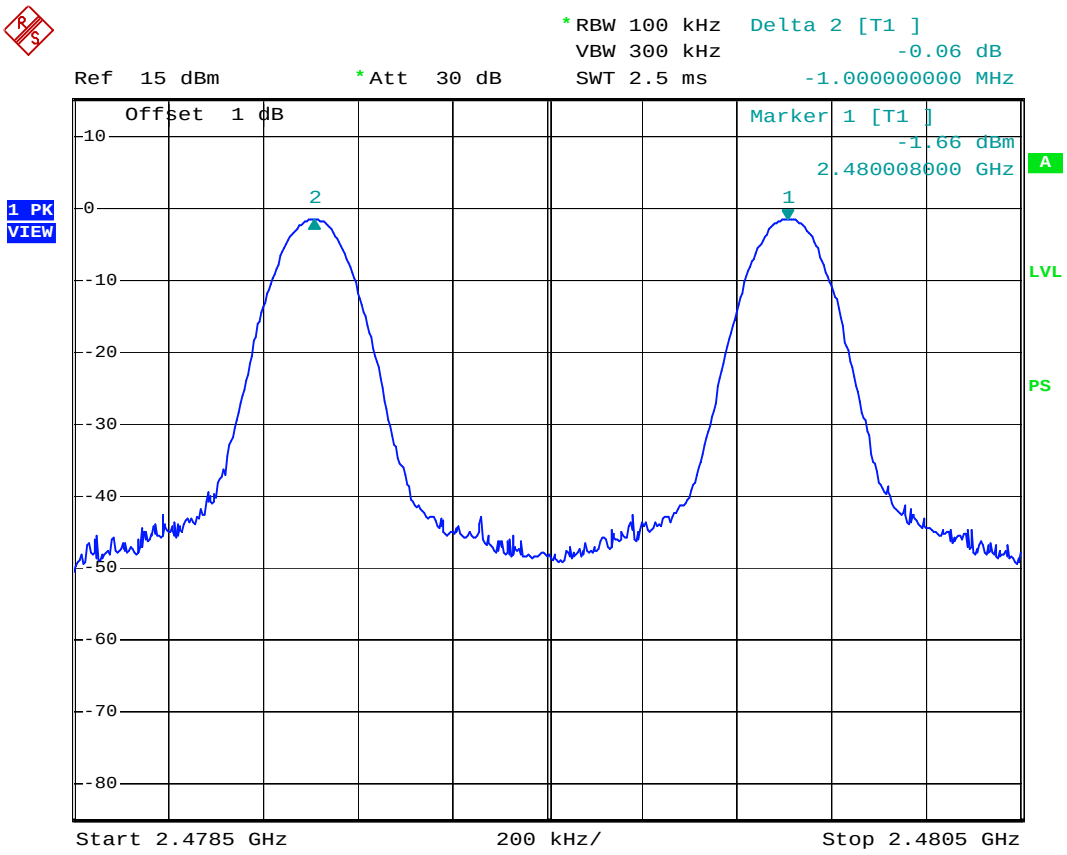
Middle channel:



channel separation mid channel

Date: 25.APR.2007 11:38:21

High channel:



channel separation high channel

Date: 25.APR.2007 11:35:20

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

Applicable Standard

Frequency hopping systems shall have hoping channel carrier frequencies separated by a minimum of 25 kHz or the 20dB Bandwidth of the hopping channel, whichever is greater.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde&Schwarz	EMI Test Receiver	ESCI	100035	2006-09-29	2007-09-29

*** 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

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

Temperature:	25 °C
Relative Humidity:	53 %
ATM Pressure:	100.9 kPa

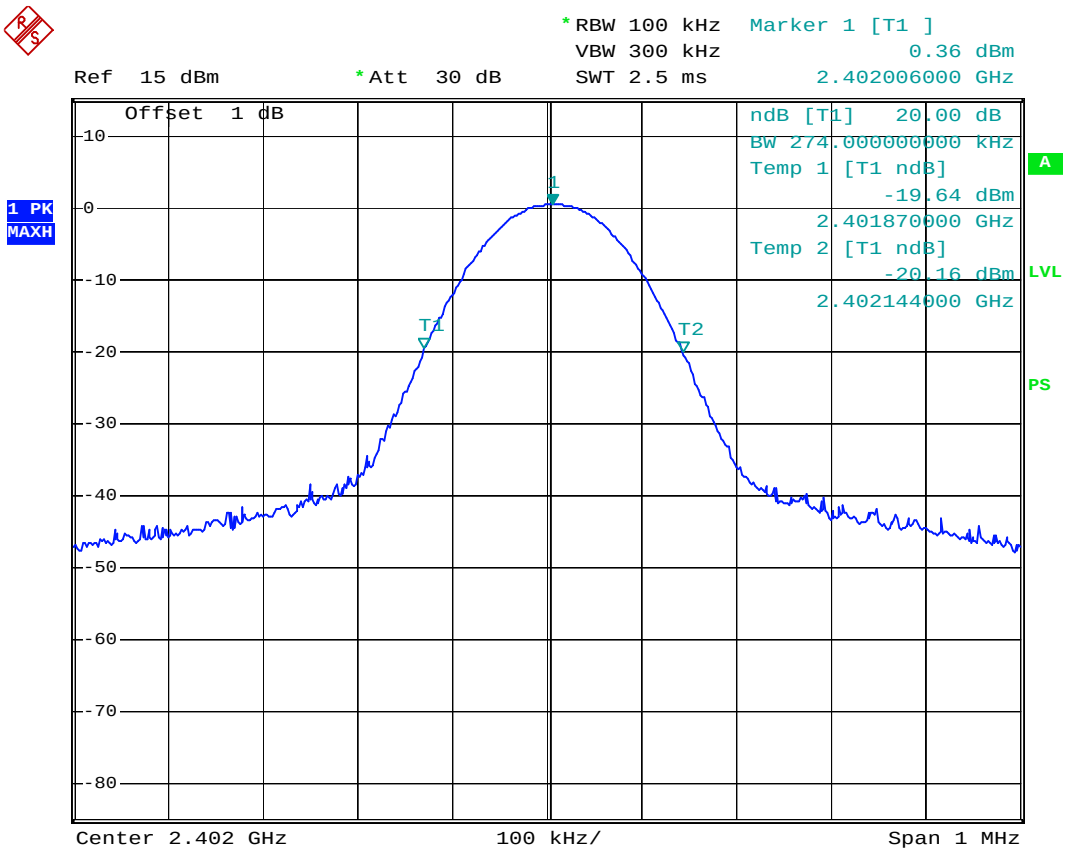
The testing was performed by Lisa Zhu on 2007-04-25.

Test Mode: Transmitting

Channel	Channel Frequency (MHz)	20dB Bandwidth (kHz)
Low Channel	2402	274
Mid Channel	2441	272
High Channel	2480	272

Test result: Compliant, Please refer to the following plots

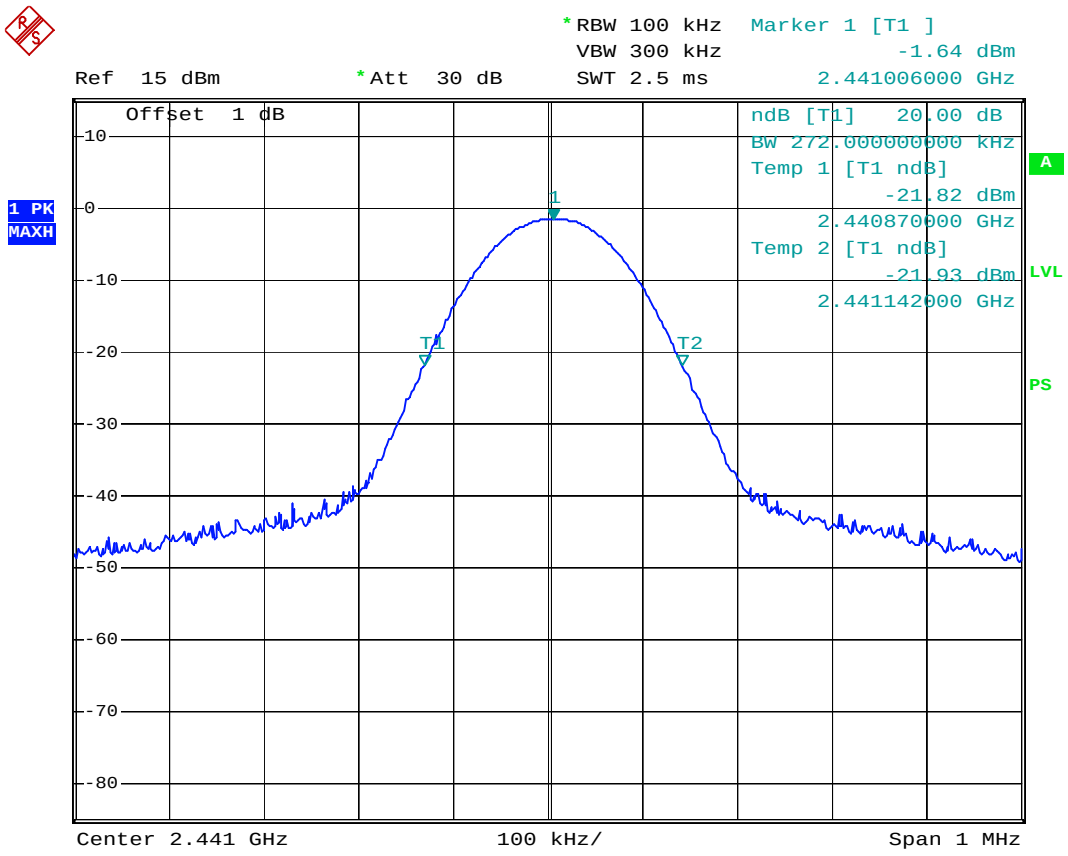
Low channel:



20 dB bandwidth low channel

Date: 25.APR.2007 12:06:53

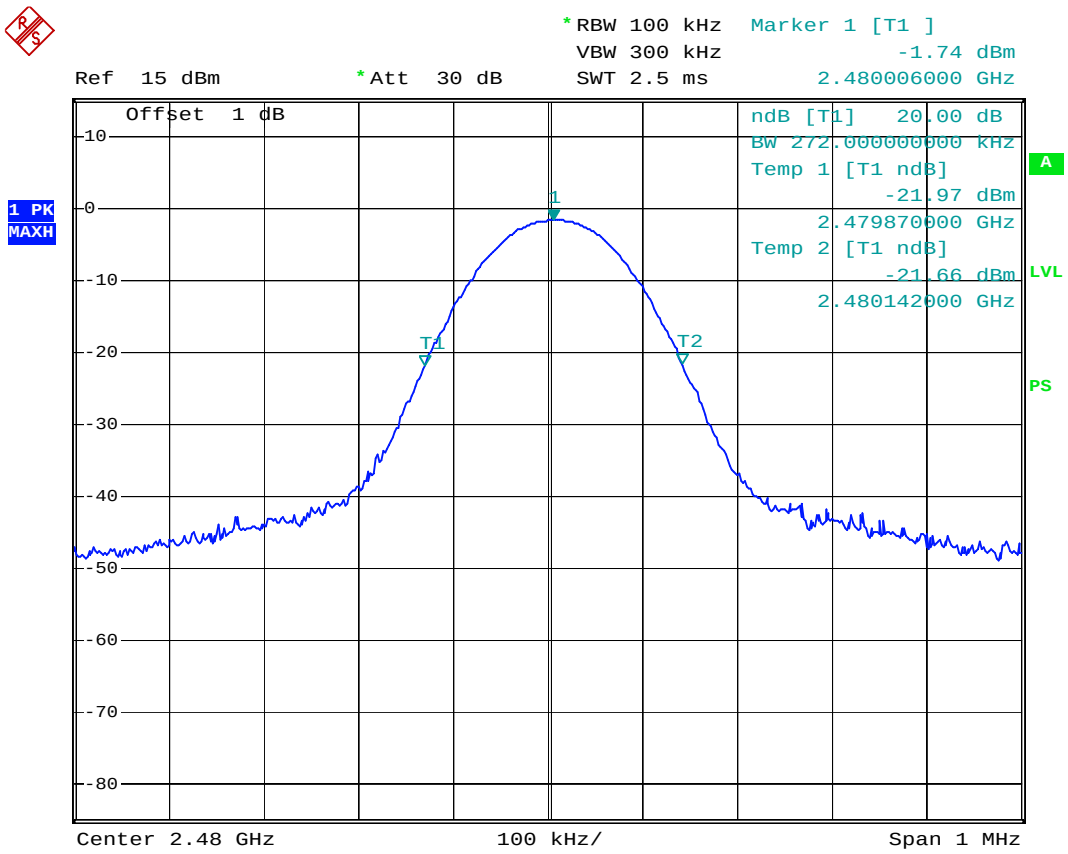
Middle channel:



20 dB bandwidth mid channel

Date: 25.APR.2007 12:06:15

High channel:



20 dB bandwidth high channel

Date: 25.APR.2007 12:07:39

§15.247(a) (1) (iii)-NUMBER OF HOPPING CHANNELS

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	2006-09-29	2007-09-29

*** 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

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 transmitting mode from first channel to last.
3. By using the Max-Hold function record the Quantity of the channel.

Limit

FCC Part 15, Subpart C Section 15.247

Frequency Range	Quantity of Hopping Channel (CH)	Limit (CH)
2402-2480	79	>15

Test Data

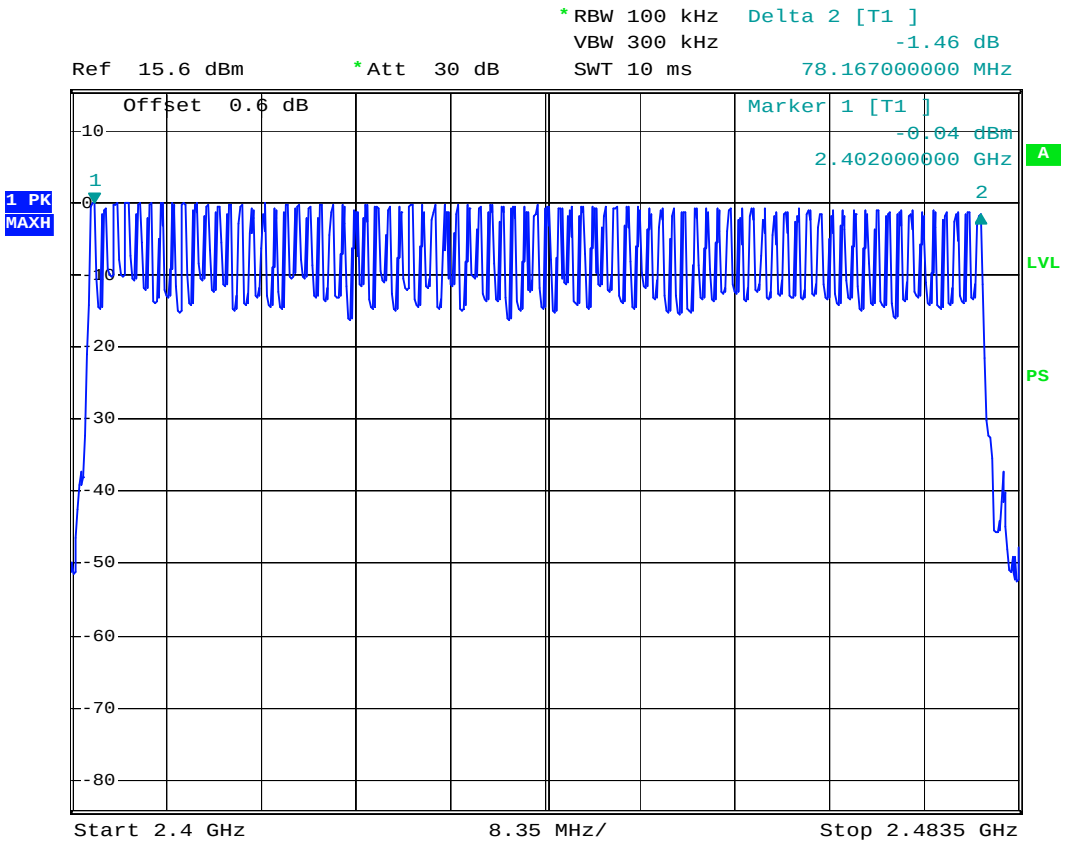
Environmental Conditions

Temperature:	27 °C
Relative Humidity:	50 %
ATM Pressure:	100.9 kPa

The testing was performed by Lisa Zhu on 2007-04-23.

Test mode: Transmitting

Test Result: Compliant, Please refer to the following plot



quantity of channel

Date: 23.APR.2007 18:02:52

§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	2006-09-29	2007-09-29

*** 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

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 False was get from single sweep. In addition, the time of single Pluses was tested.

Limit

FCC Part 15, Subpart C Section 15.247.

FREQUENCY RANGE (MHz)	LIMIT (ms)		
	20dB bandwidth <250kHz (50 Channel)	20dB bandwidth >250kHz (50 Channel)	20dB bandwidth <1 MHz (79 Channel)
902-928	N/A	N/A	N/A
2400-2483.5	N/A	N/A	31.6s
5725-5850	N/A	N/A	N/A

Dwell Time= Pulse width (ms) * number of hopping pulses in 31.6 seconds.

Test Data

Environmental Conditions

Temperature:	27 °C
Relative Humidity:	50 %
ATM Pressure:	100.9 kPa

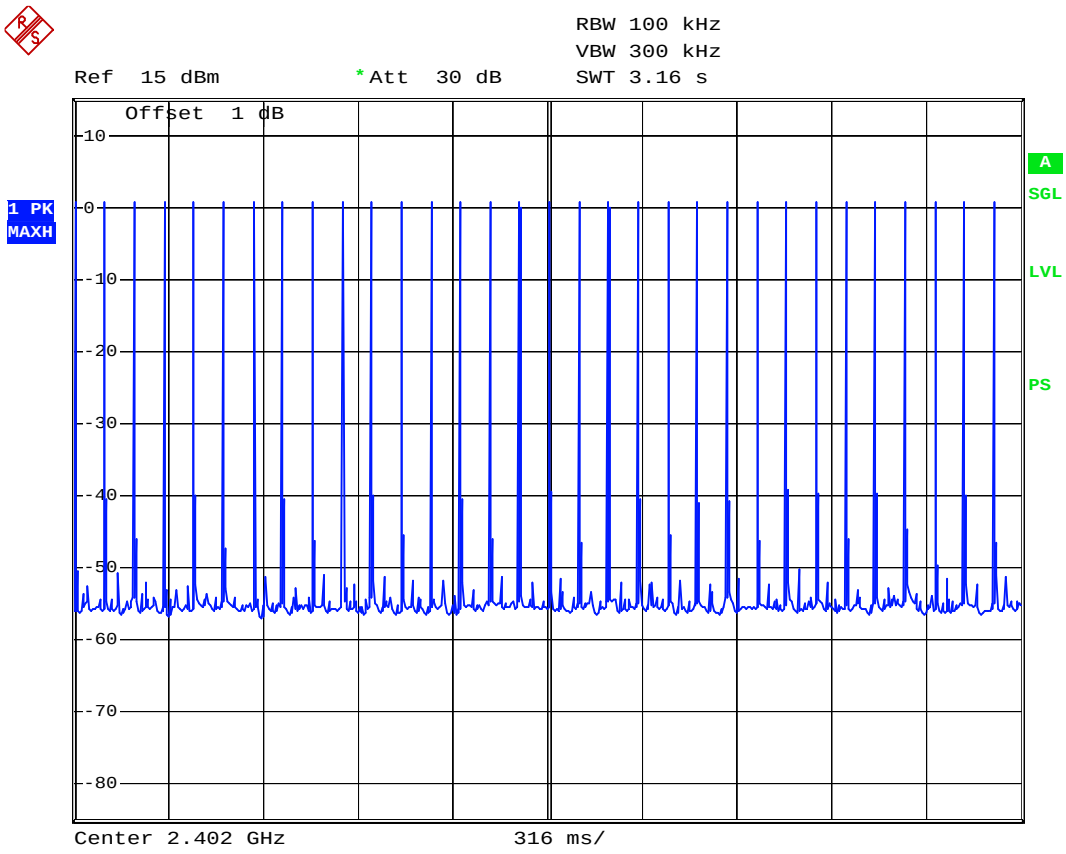
The testing was performed by Lisa Zhu on 2007-04-25.

Test mode: Transmitting

Channel	Pulse wide (msec)	Number of Hopping Pulses in 31.6 sec	Dwell time (sec)	Limit (sec)	Result
Low Channel	0.404	320	0.129	0.4	Compliant
Mid Channel	0.404	320	0.129	0.4	Compliant
High Channel	0.404	320	0.129	0.4	Compliant

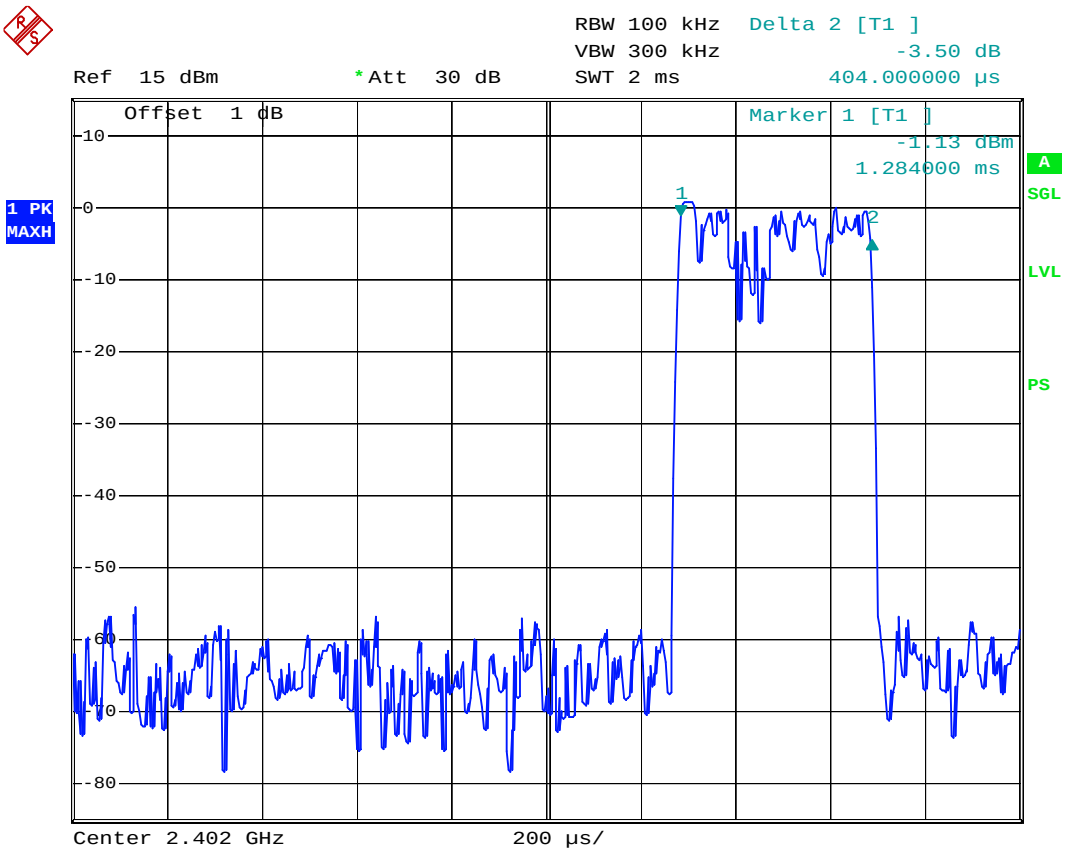
Test Result: Compliant, Please refer to the following plots

Low channel:



occupied time No.of pulse low channel

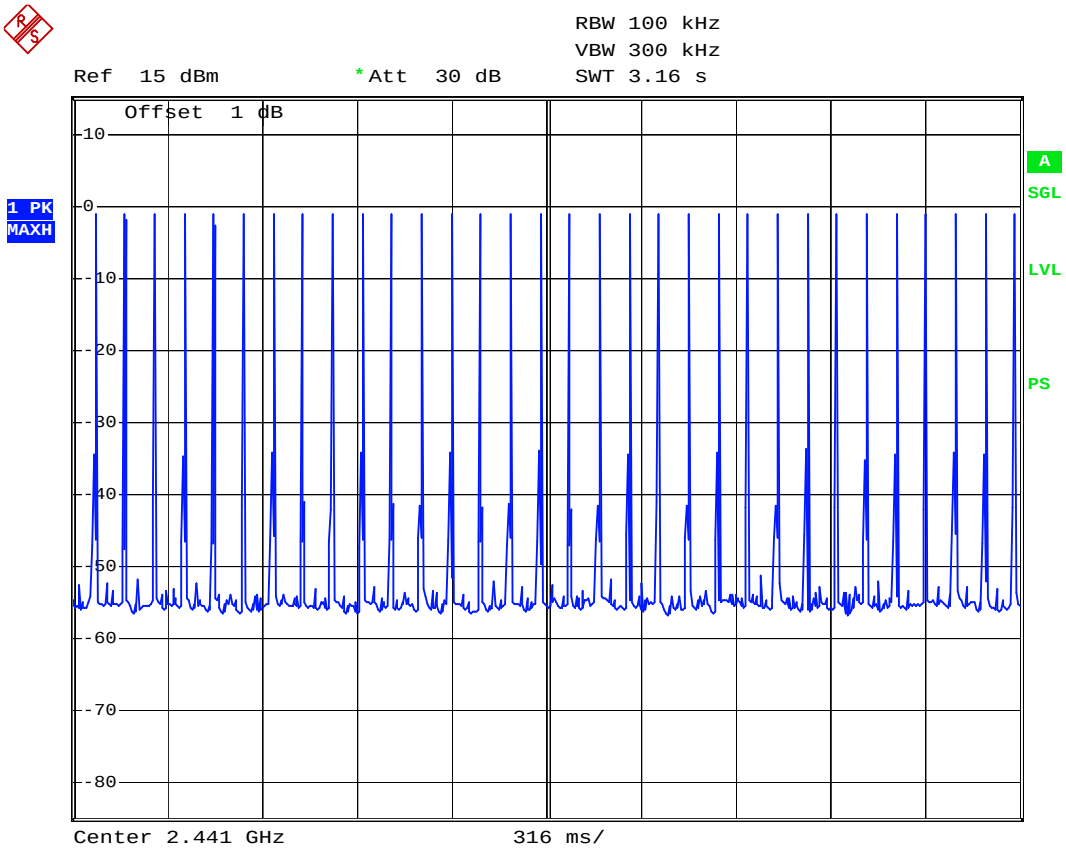
Date: 25.APR.2007 12:20:04



occupied time pulse width low channel

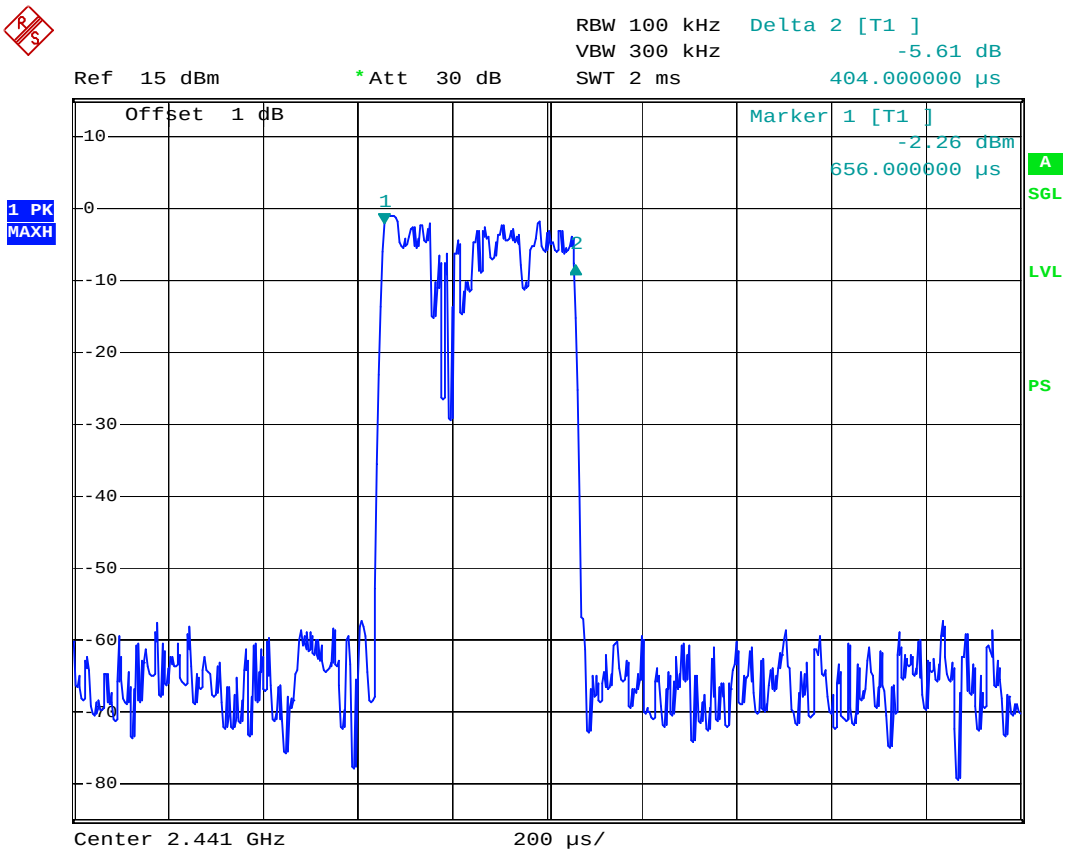
Date: 25.APR.2007 12:21:23

Middle channel



occupied time No.of pulse mid channel

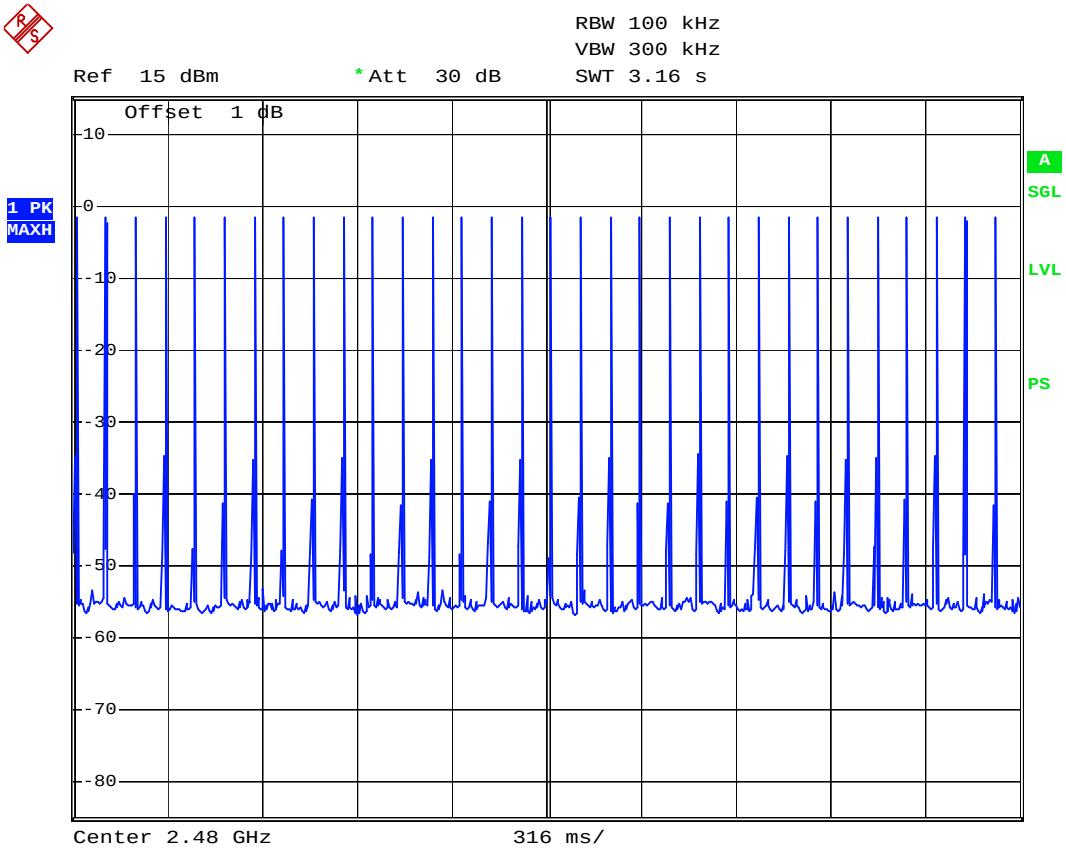
Date: 25.APR.2007 12:19:15



occupied time pulse width mid channel

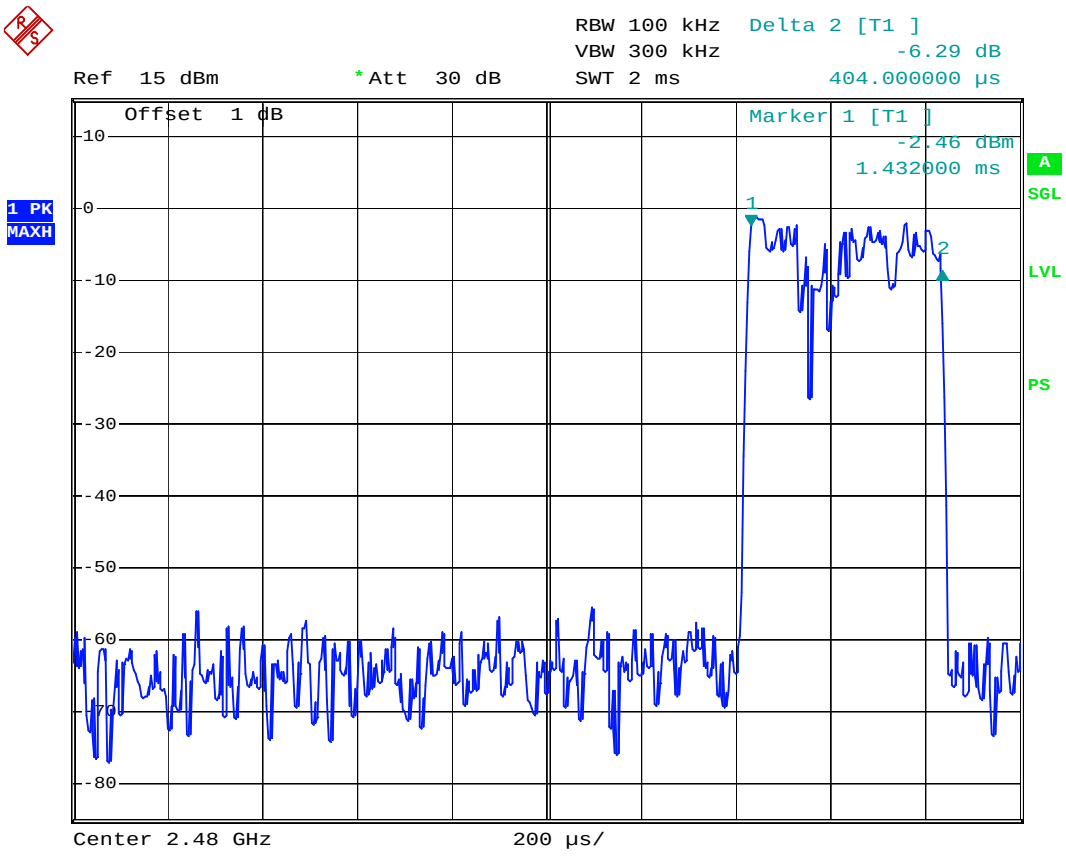
Date: 25.APR.2007 12:17:44

High channel



occupied time No.of pulse high channel

Date: 25.APR.2007 12:12:11



occupied time pulse width high channel

Date: 25.APR.2007 12:15:20

§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.

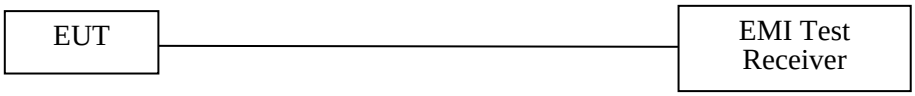
Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde&Schwarz	EMI Test Receiver	ESCI	100035	2006-09-29	2007-09-29

*** 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

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:	53 %
ATM Pressure:	100.9 kPa

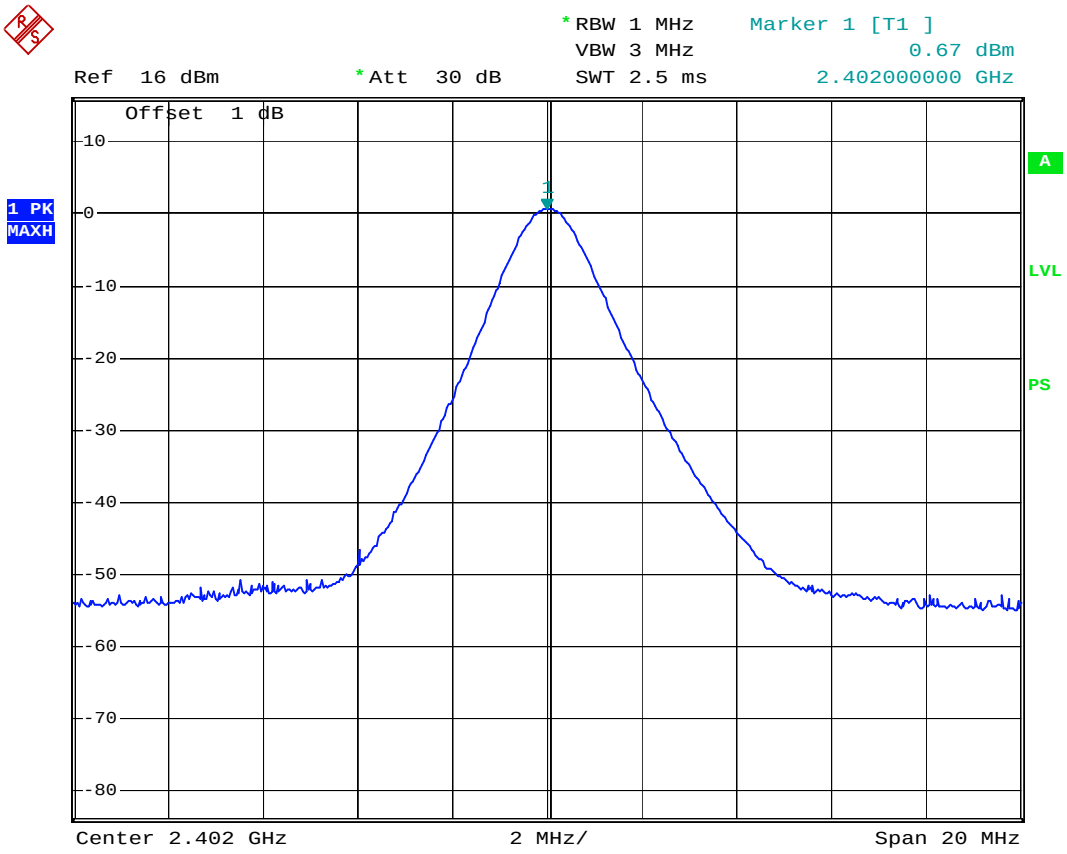
The testing was performed by Lisa Zhu on 2007-04-25

Test mode: Transmitting

Channel	Channel Frequency (MHz)	Power Output		Limit (w)
		(dBm)	(w)	
Low Channel	2402	0.67	0.001167	1
Mid Channel	2441	-1.31	0.000740	1
High Channel	2480	-1.84	0.000655	1

Test Result: Compliant, Please refer to the following plots.

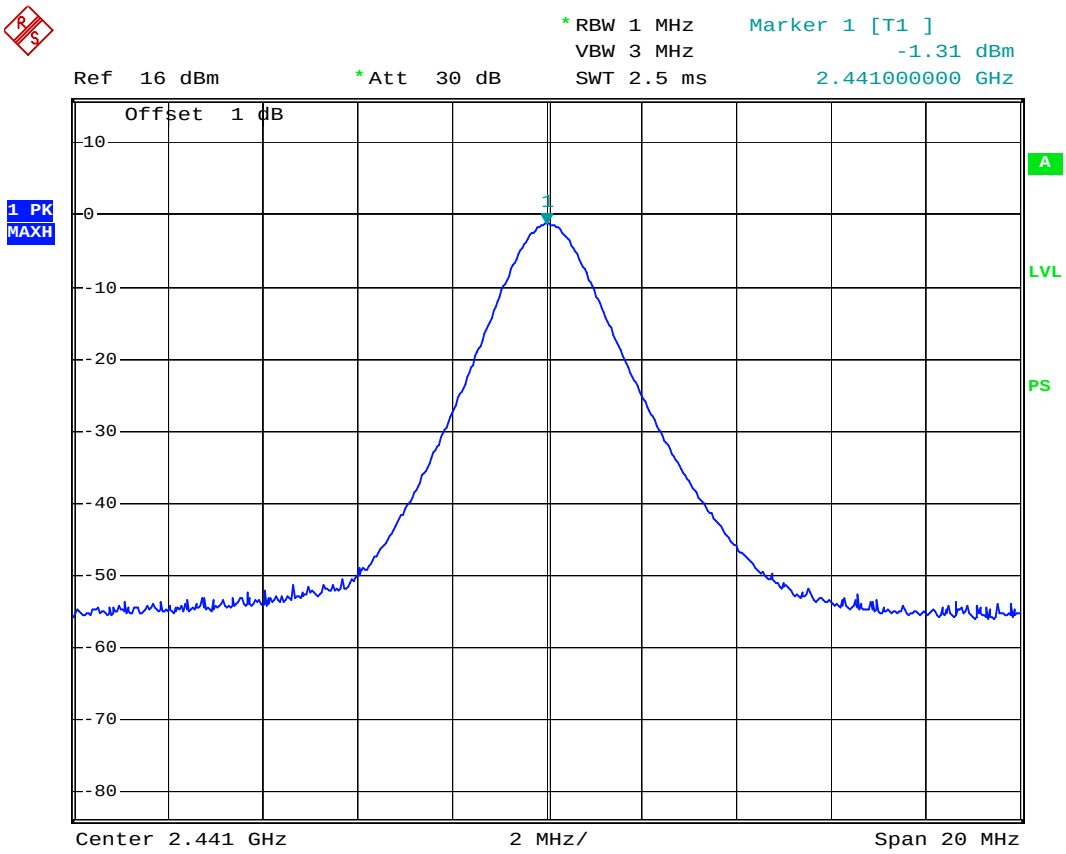
Low channel



output power low channel

Date: 25.APR.2007 10:44:23

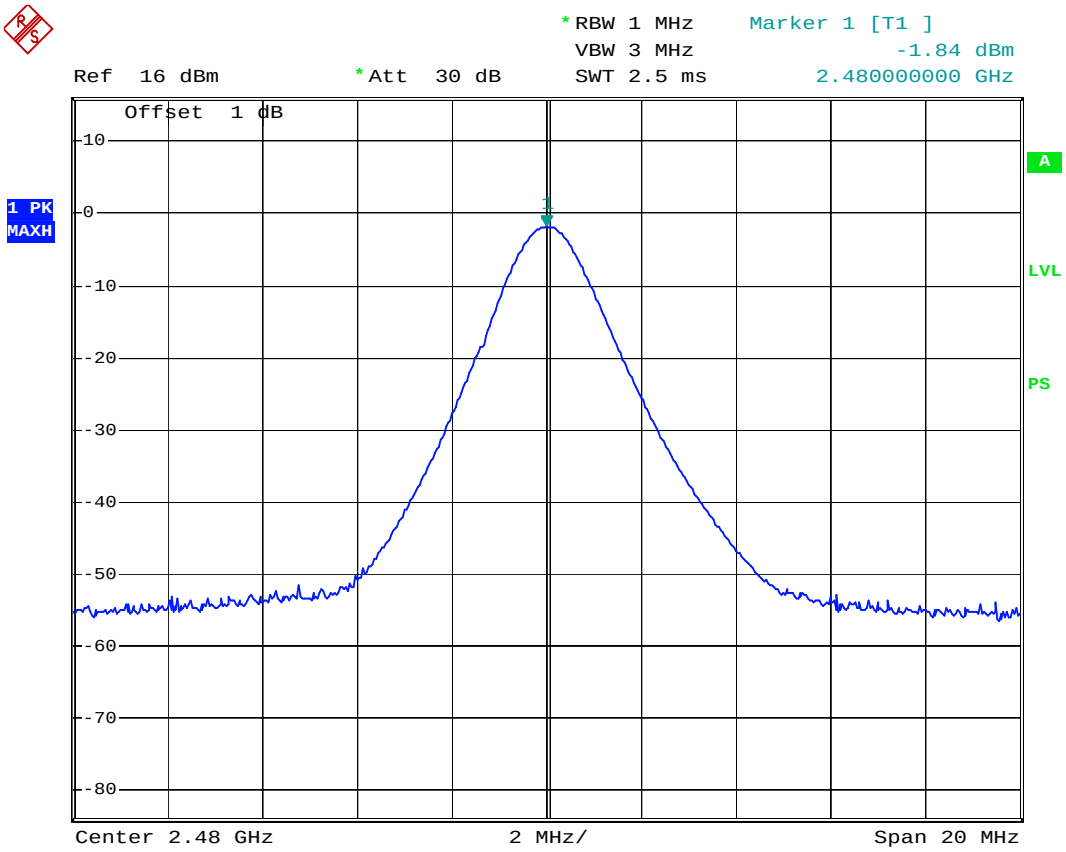
Middle channel:



output power mid channel

Date: 25.APR.2007 10:48:36

High channel:



output power high channel

Date: 25.APR.2007 10:47:57

§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	2006-09-29	2007-09-29

*** 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

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 its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency 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.
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:	18 °C
Relative Humidity:	53 %
ATM Pressure:	100.9 kPa

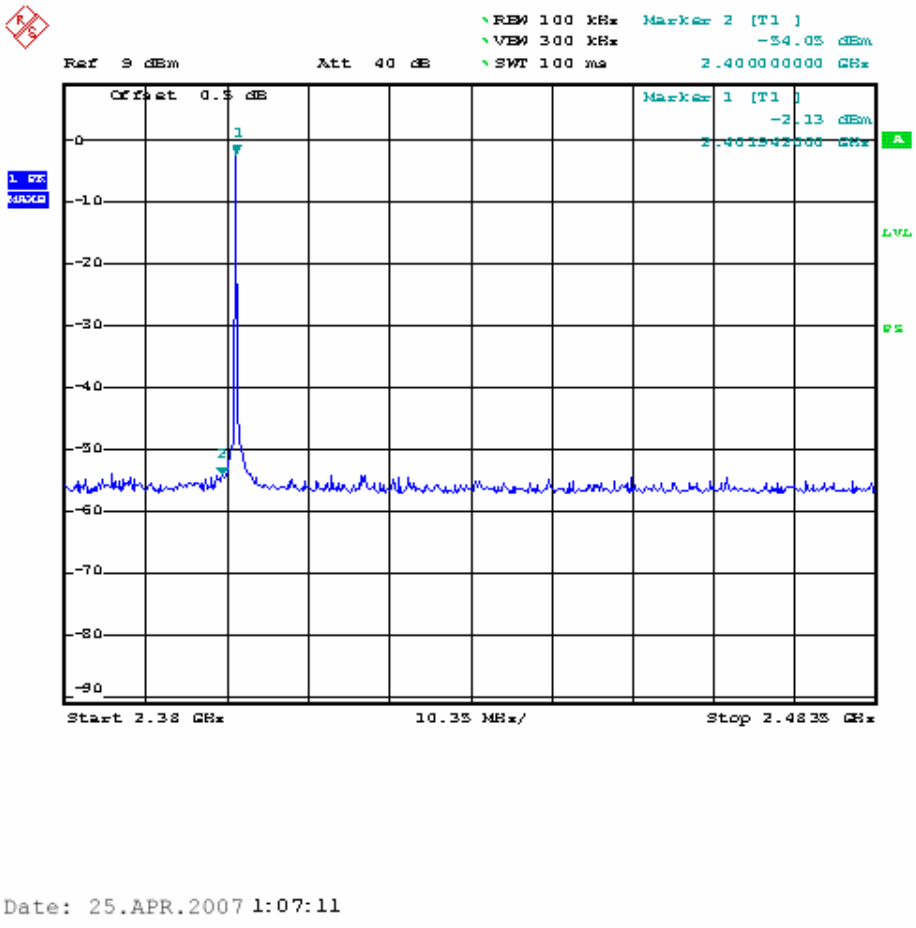
The testing was performed by Lisa Zhu on 2007-04-25.

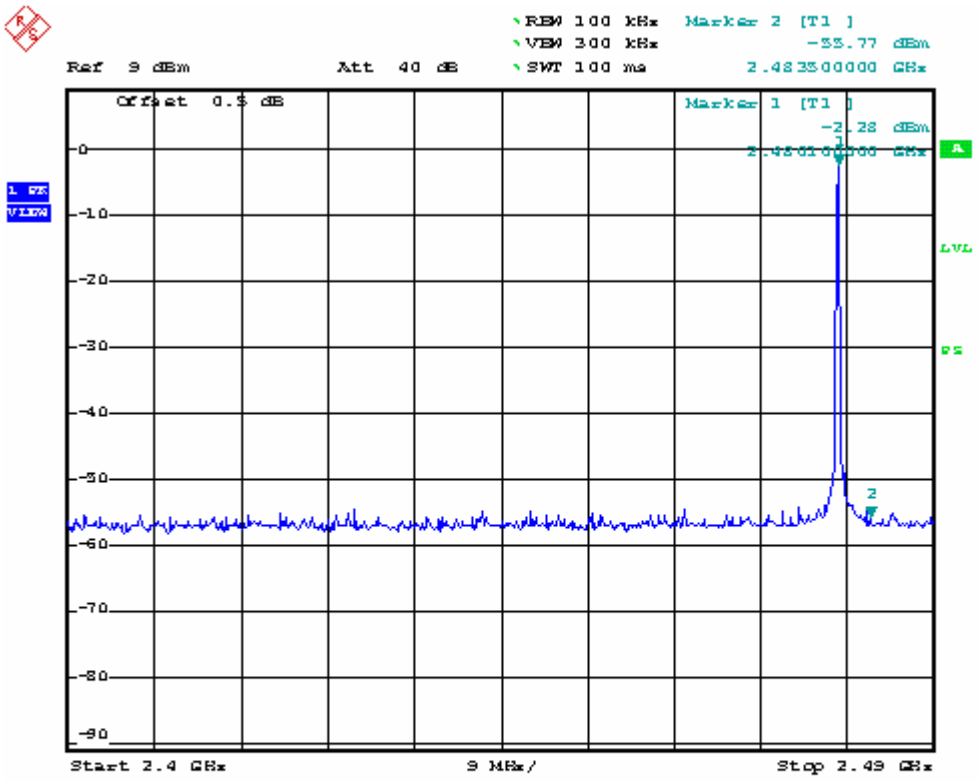
Test Mode: Transmitting

Frequency MHz	Emission (dBuV/m)	Limit (§15.209) (dBuV/m)
2399.9	43.43	54
2483.6	41.99	54

Test Result: Compliant

Please see the following plots for test detailed test results





Date: 25.APR.2007 1:09:50