Lab Code: 200707-0

FCC PART 15.247

MEASUREMENT AND TEST REPORT

For

A & R CAMBRIDGE (T/A ARCAM)

Denny Industrial Centre, Pembroke Avenue, Waterbeach,

Cambridge., CB25 9QR, England

FCC ID: YONDNW101014-00

Report Type:	**Product Type:**
Original Report	rDAC Wireless (2.4 GHz Transmitter)

Test Engineer:	Felix Li
Report Number:	RSZ10080205
Report Date:	2010-10-30
Reviewed By:	Merry Zhao EMC Engineer
Prepared By:	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

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *A & R CAMBRIDGE (T/A ARCAM)'s* product, model number: *rDAC wireless (FCC ID: YONDNW101014-00)* or the "EUT" as referred to in this report is a *rDAC wireless (2.4 GHz Transmitter)*, which measures approximately: 16.0 cm (L) x 10.0 cm (W) x 4.0 cm (H), rated input voltage: DC 6 V adapter.

Adapter information:
Model: ADS-5N-06 06004G;
Input: AC 100-240 V 50/60 Hz 0.3 A
Output: DC 6 V 600 mA

All measurement and test data in this report was gathered from production sample serial number: 1008013 (Assigned by BACL, Shenzhen). The EUT was received on 2010-08-02.

Objective

This Type approval report is prepared on behalf of *A & R CAMBRIDGE(T/A ARCAM)* 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 and 15.247 rules.

Related Submittal(s)/Grant(s)

Submitted with the FCC ID: YONDNW101015-00

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 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone Shenzhen, Guangdong, China.

Test site at Bay Area Compliance Laboratories Corp. (Shenzhen) has been fully described in reports submitted to the Federal Communication Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on 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).

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

SYSTEM TEST CONFIGURATION

Description of Test Configuration

EUT operates within 2403-2473 MHz, 15 channels are available and listed in the table below:

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
0	2403	1	2408	2	2413
3	2418	4	2423	5	2428
6	2433	7	2438	8	2443
9	2448	10	2453	11	2458
12	2463	13	2468	14	2473

Device has been tested with lowest, middle and highest channel.

EUT Exercise Software

N/A

Equipment Modifications

No modification was made to the unit tested.

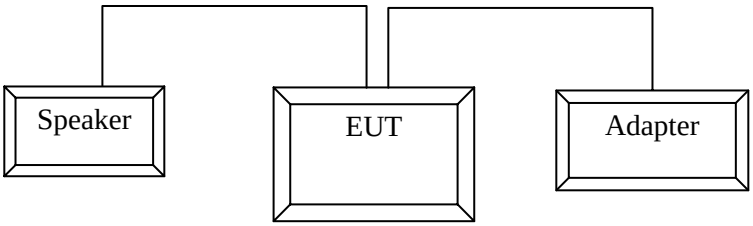
Local Support Equipment List and Details

Manufacturer	Description	Model	Serial Number	FCC ID
VOICA	Speaker	RTD170	N/A	N/A

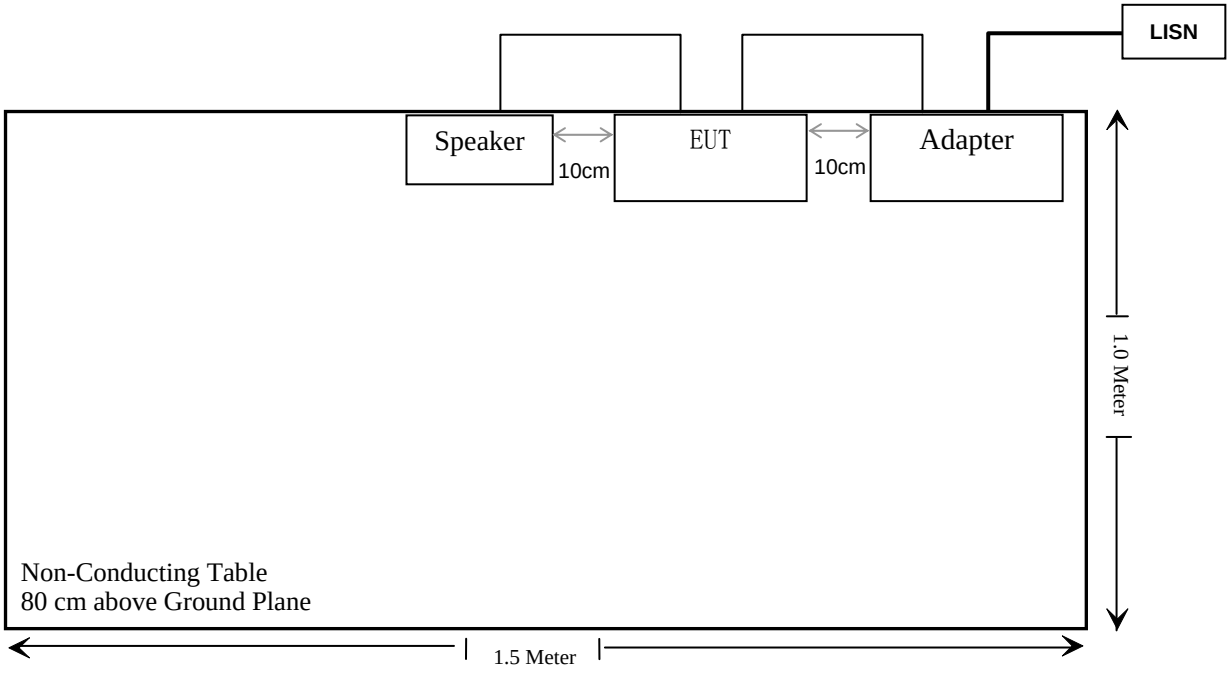
External I/O Cable

Cable Description	Length (m)	From/Port	To
Shielded Detachable Serial Cable	1.2	Serial Port/Host	Serial Download Port
Shielded Detachable USB Cable	1.2	USB Port/Host	rWAVE

Configuration of Test Setup



Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§15.247(i), §2.1091	MaximuM Permissible exposure (MPE)	Compliance
§15.203	Antenna Requirement	Compliance
§15.207 (a),	Conducted Emissions	Compliance
§15.247(d)	Spurious Emissions at Antenna Port	Compliance
§15.205, §15.209, §15.247(d)	Spurious Emissions & Restricted Bands	Compliance
§15.247 (a)(2)	6 dB Bandwidth	Compliance
§15.247(b)(3)	Maximum Peak Output Power	Compliance
§15.247(d)	100 kHz Bandwidth of Frequency Band Edge	Compliance
§15.247(e)	Power Spectral Density	Compliance

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

Applicable Standard

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.

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

Limits for General Population/Uncontrolled Exposure

Limits for General Population/Uncontrolled Exposure				
Frequency Range (MHz)	**Electric Field Strength (V/m)**	**Magnetic Field Strength (A/m)**	**Power Density (mW/cm^2)**	**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

Test Data

Predication of MPE limit at a given distance

$$S = \frac{PG}{4\pi R^2}$$

Where: S = 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)

Maximum peak output power at antenna input terminal: 14.88 (dBm)
Maximum peak output power at antenna input terminal: 30.76 (mW)
Prediction distance: >20 (cm)
Predication frequency: 2438 (MHz)
Antenna Gain (typical): 2.0 (dBi)
Antenna Gain (typical): 1.585 (numeric)
The worst case is power density at predication frequency at 20 cm: 0.0097 (mW/cm^2)
MPE limit for general population exposure at prediction frequency: 1 (mW/cm^2)

Result: The MPE of device at 20 distances complies with FCC limit.

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 user of a standard antenna jack or electrical connector is prohibited. The structure and application of the EUT were analyzed to determine compliance with section §15.203 of the rules. §15.203 state that the subject device must meet the following criteria:

a. Antenna must be permanently attached to the unit.
b. Antenna must use a unique type of connector to attach to the EUT.

Unit must be professionally installed, and installer shall be responsible for verifying that the correct antenna is employed with the unit.

And according to FCC §15.247 (b), if the transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Antenna Connector Construction

The antenna of EUT has the reversed SMA connector which complies with the Part 15.203. The maximum antenna gain is 2 dBi. Please see EUT photo for details.

Result: Compliant.

FCC §15.207 (a) - CONDUCTED EMISSIONS

Applicable Standard

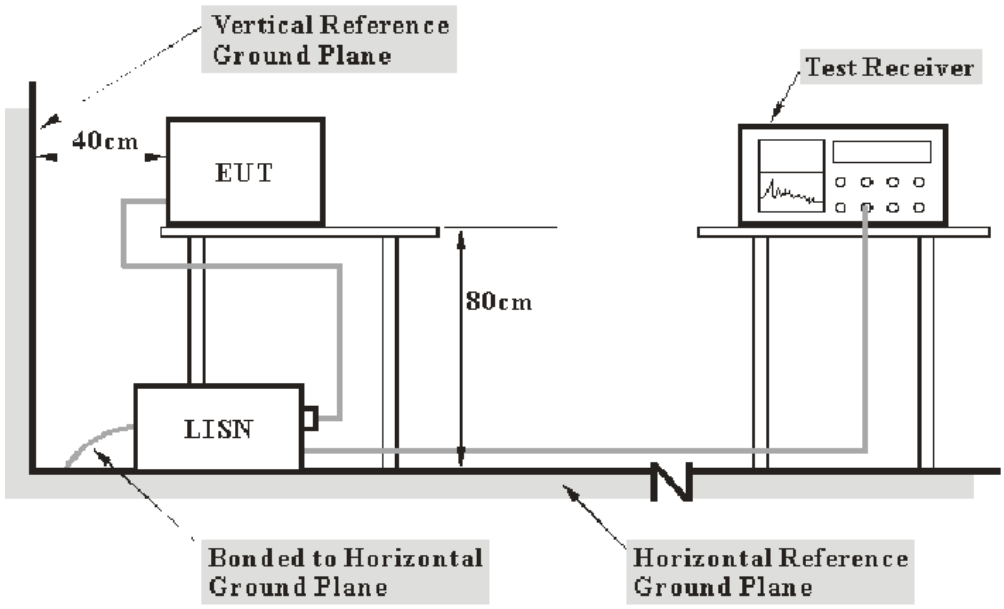
CFR47 §15.207

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 ±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 15.207 limits.

The spacing between the peripherals was 10 cm.

The adapter was connected to a 120 VAC/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:

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
Rohde & Schwarz	EMI Test Receiver	ESCS30	830245/006	2010-03-03	2011-03-02
Rohde & Schwarz	L.I.S.N.	ESH2-Z5	892107/021	2010-03-09	2011-03-08

*** 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 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:

9.96 dB at **0.420 MHz** in the **Neutral** conductor mode

Test Data

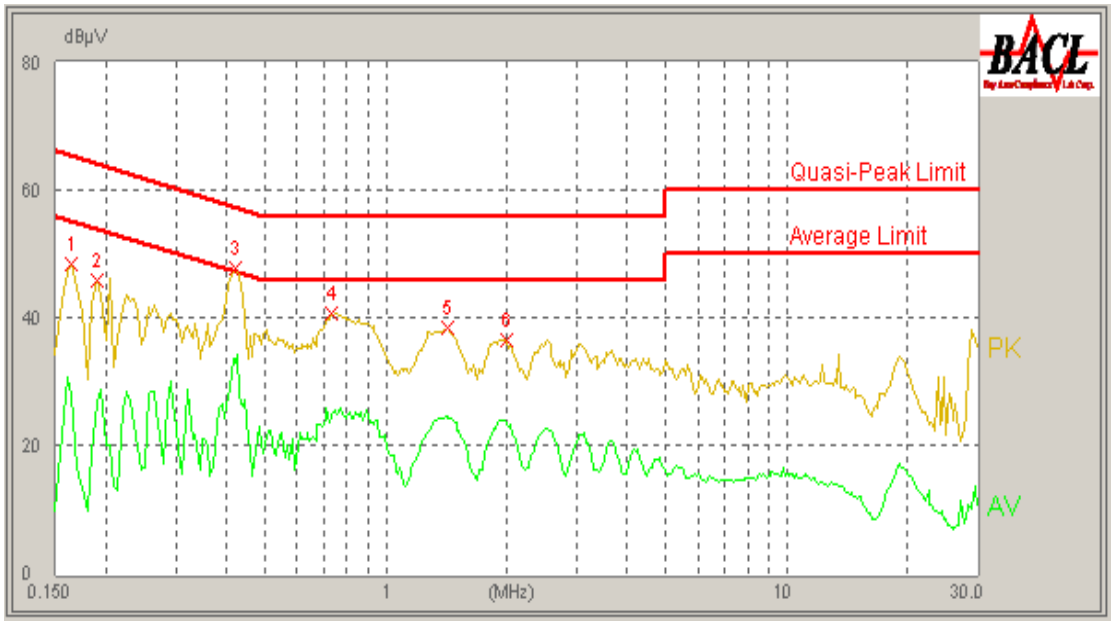
Environmental Conditions

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

The testing was performed by Felix Li on 2010-10-29.

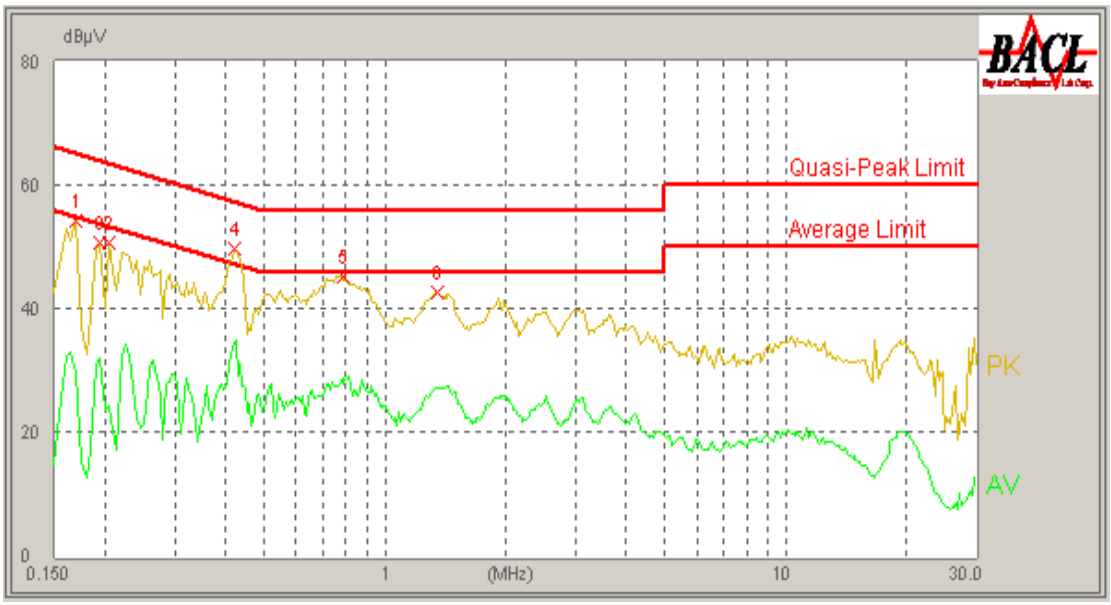
Test Mode: Transmitting

120 V, 60 Hz, Line:



Conducted Emissions			FCC Part 15.207		
Frequency (MHz)	**Correction Factor (dB)**	**Cord. Result (dBµV)**	**Limit (dBµV)**	**Margin (dB)**	**Remark (PK/QP/Ave)**
0.420	10.00	46.23	58.29	12.06	QP
0.420	10.00	33.12	48.29	15.17	Ave
0.735	10.20	37.64	56.00	18.36	QP
0.735	10.20	24.65	46.00	21.35	Ave
1.430	10.10	34.50	56.00	21.50	QP
1.430	10.10	24.50	46.00	21.50	Ave
2.010	10.20	23.70	46.00	22.30	Ave
0.165	10.10	42.94	65.57	22.63	QP
2.005	10.20	32.93	56.00	23.07	QP
0.190	10.10	40.76	64.86	24.10	QP
0.165	10.10	28.13	55.57	27.44	Ave
0.190	10.10	27.07	54.86	27.79	Ave

120V, 60 Hz, Neutral:



Conducted Emissions			FCC Part 15.207		
Frequency (MHz)	**Correction Factor (dB)**	**Cord. Result (dBµV)**	**Limit (dBµV)**	**Margin (dB)**	**Remark (PK/QP/Ave)**
0.420	10.00	48.33	58.29	9.96	QP
0.420	10.00	34.86	48.29	13.43	Ave
0.785	10.20	41.99	56.00	14.01	QP
0.785	10.20	28.96	46.00	17.04	Ave
1.350	10.10	38.56	56.00	17.44	QP
1.335	10.10	27.45	46.00	18.55	Ave
0.195	10.10	43.57	64.71	21.14	QP
0.170	10.10	43.99	65.43	21.44	QP
0.195	10.10	32.23	54.71	22.48	Ave
0.205	10.10	41.18	64.43	23.25	QP
0.170	10.10	29.78	55.43	25.65	Ave
0.205	10.10	24.41	54.43	30.02	Ave

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

Applicable Standard

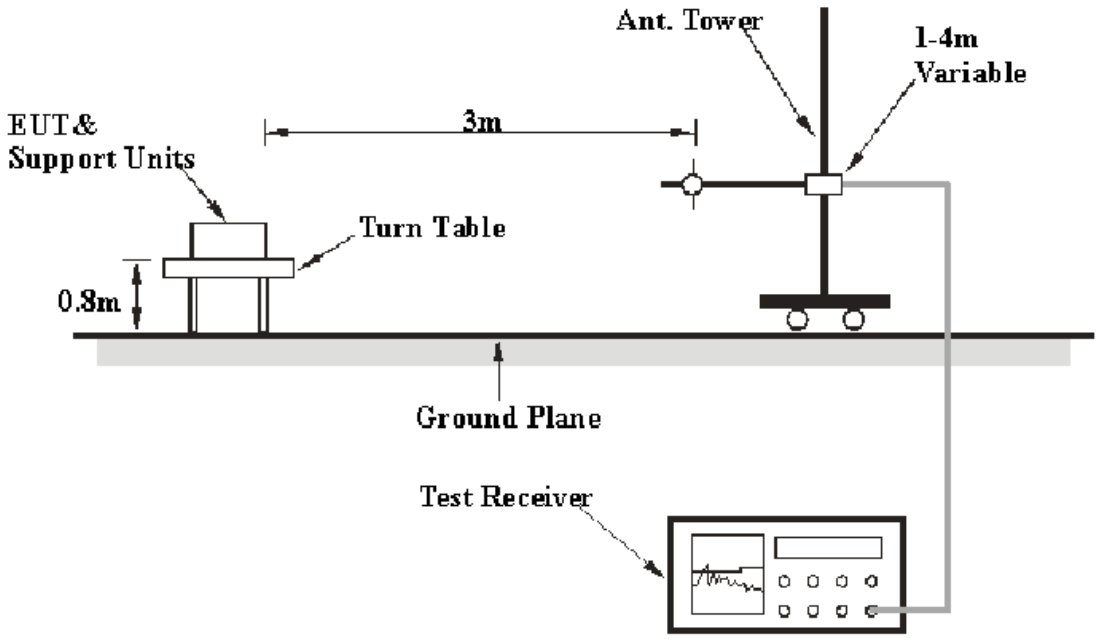
FCC §15.247 (d); §15.209; §15.205;

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 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 ±4.0 dB.

EUT Setup



The radiated emission tests were performed in the 3 meters, 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 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:

Frequency Range	***RBW***	***Video B/W***
30 MHz – 1000 MHz	100 kHz	300 kHz
1000 MHz – 25 GHz	1 MHz	3 MHz
1000 MHz – 25 GHz	1 MHz	10 Hz

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
HP	Amplifier	HP8447D	2944A09795	2010-08-02	2011-08-02
Rohde & Schwarz	EMI Test Receiver	ESCI	100035	2009-11-24	2010-11-23
Sunol Sciences	Broadband Antenna	JB1	A040904-1	2010-03-11	2011-03-11
HP	Amplifier	2VA-213+	T-E27H	2010-03-08	2011-03-07
Sunol Sciences	Horn Antenna	DRH-118	A052604	2010-05-05	2011-05-04
Rohde & Schwarz	Spectrum Analyzer	FSEM30	849720/019	2010-07-08	2011-07-08

*** 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 LISN.

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

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:

Corrected Amplitude = Meter Reading + Antenna Factor + 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 limit. The equation for margin calculation is as follows:

Margin = Limit – 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:

Below 1 GHz:

4.3 dB at **30.281000 MHz** in the **Vertical** polarization

Above 1 GHz:

High Channel: **1.77 dB** at **2484.79 MHz** in the **Horizontal** polarization

Test Data

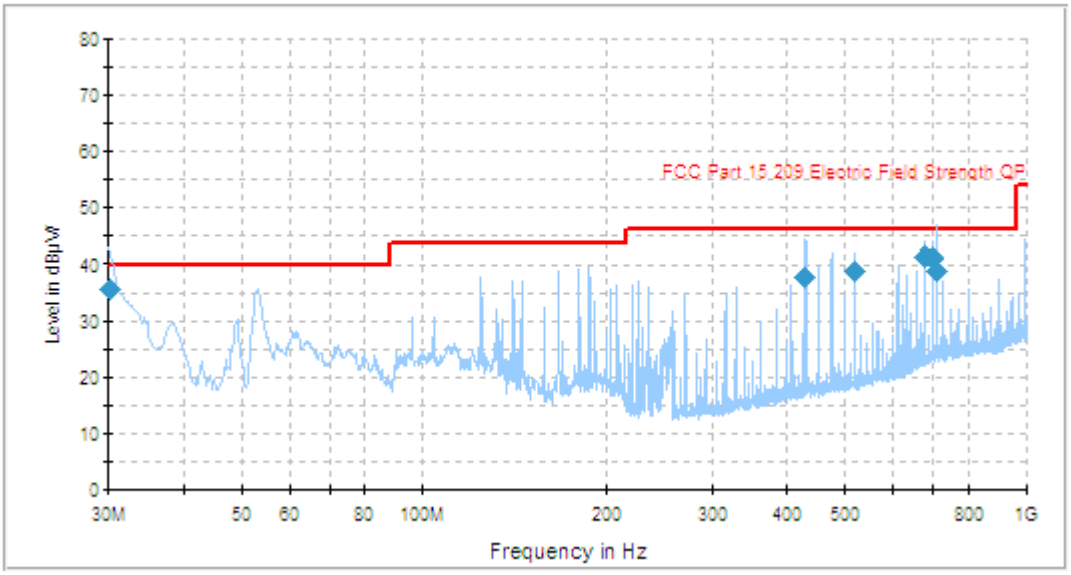
Environmental Conditions

Temperature:	24 °C
Relative Humidity:	56 %
ATM Pressure:	100.0kPa

The testing was performed by Felix Li on 2010-10-29.

Test Mode: Transmitting (worse case)

Below 1 GHz:



Frequency (MHz)	Corrected Amplitude (dBµV/m)	Ant. Height (cm)	Ant. Polarity (H/V)	Turntable Position (deg)	Correction Factor (dB)	Limit (dBµV/m)	Margin (dB)
30.281000	35.7	117.0	V	217.0	-5.6	40.0	4.3
677.365250	41.5	100.0	V	339.0	-3.9	46.0	4.5
699.976500	41.2	114.0	V	0.0	-3.1	46.0	4.8
518.705500	38.9	100.0	H	177.0	-8.0	46.0	7.1
707.322500	38.9	163.0	V	196.0	-3.0	46.0	7.1
429.002000	37.9	120.0	H	96.0	-9.5	46.0	8.1

Above 1 GHz:

Indicated		Detector (PK/Ave.)	Table Angle Degree	Test Antenna		Correction Factor			FCC Part 15.247/15.209/15.205			
Frequency (MHz)	S.A. Reading (dBµV)			Height (m)	Polar (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. (dB)	Cord. Amp. (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Comment
Low Channel (2403 MHz)												
4806	59.27	PK	180	1.2	V	34.5	4.30	26.80	71.27	74	2.73*	harmonic
4806	55.4	PK	180	1.0	H	34.6	4.30	26.80	67.5	74	6.50	harmonic
4806	33.24	Ave.	150	1.2	V	34.5	4.30	26.80	45.24	54	8.76	harmonic
4806	32.2	Ave.	160	1.0	H	34.6	4.30	26.80	44.30	54	9.70	harmonic
7209	27.3	Ave.	70	1.2	V	37.8	5.20	26.62	43.68	54	10.32	harmonic
7209	45.6	PK	60	1.2	V	37.8	5.20	26.62	61.98	74	12.02	harmonic
2331.84	35.26	Ave.	352	1.5	V	30.6	3.61	27.54	41.93	54	12.07	spurious
7209	26.8	Ave.	80	1.0	H	36.5	5.20	26.62	41.88	54	12.12	harmonic
2389.04	35.14	Ave.	355	1.3	H	30.6	3.61	27.54	41.81	54	12.19	spurious
7209	43.5	PK	70	1.0	H	36.5	5.20	26.62	58.58	74	15.42	harmonic
1869.4	31.6	Ave.	12	1.2	H	28.3	2.52	26.50	35.92	54	18.08	spurious
1869.4	30.5	Ave.	35	1.2	V	28.2	2.52	26.50	34.72	54	19.28	spurious
2389.04	47.39	PK	355	1.3	H	30.6	3.61	27.54	54.06	74	19.94	spurious
2331.84	47.10	PK	352	1.5	V	30.6	3.61	27.54	53.77	74	20.23	spurious
1869.4	49.2	PK	20	1.2	H	28.3	2.52	26.50	53.52	74	20.48	spurious
1869.4	48.7	PK	20	1.2	V	28.2	2.52	26.50	52.92	74	21.08	spurious
Middle Channel (2438 MHz)												
4876	55.3	PK	180	1.2	V	34.7	4.36	26.79	67.57	74	6.43	harmonic
4876	34.1	Ave.	175	1.0	H	34.8	4.36	26.79	46.47	54	7.53	harmonic
4876	32.9	Ave.	185	1.1	V	34.7	4.36	26.79	45.17	54	8.83	harmonic
7314	26.7	Ave.	30	1.0	H	39.2	5.20	26.64	44.46	54	9.54	harmonic
7314	27.9	Ave.	45	0	V	38	5.20	26.64	44.46	54	9.54	harmonic
4876	49.6	PK	180	1.2	H	34.8	4.36	26.79	61.97	74	12.03	harmonic
7314	45.2	PK	30	1.0	V	38	5.20	26.64	61.76	74	12.24	harmonic
7314	43.8	PK	45	1.2	H	39.2	5.20	26.64	61.56	74	12.44	harmonic
1859.1	30.2	Ave.	10	1.0	V	28.3	2.53	26.60	34.43	54	19.57	spurious
1859.1	49.7	PK	0	1.2	V	28.3	2.53	26.60	53.93	74	20.07	spurious
1859.1	28.6	Ave.	15	1.1	H	28.3	2.53	26.60	32.83	54	21.17	spurious
1859.1	47.2	PK	0	1.0	H	28.3	2.53	26.60	51.43	74	22.57	spurious

Indicated		Detector (PK/Ave.)	Table Angle Degree	Test Antenna		Correction Factor			FCC Part 15.247/15.209/15.205			
Frequency (MHz)	S.A. Reading (dBμV)			Height (m)	Polar (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. Gain (dB)	Cord. Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Comment
High Channel (2473 MHz)												
2484.79	45.56	Ave.	275	1.30	H	30.6	3.61	27.54	52.23	54	1.77*	spurious
2483.53	45.06	Ave.	225	1.50	V	30.6	3.61	27.54	51.73	54	2.27*	spurious
4946	55.7	PK	157	1.2	V	34.7	4.40	26.75	68.05	74	5.95	harmonic
7419	31.2	Ave.	34	1.0	V	37.7	5.20	26.59	47.51	54	6.49	harmonic
2484.79	60.81	PK	275	1.30	H	30.6	3.61	27.54	67.48	74	6.52	spurious
7419	29.6	Ave.	10	1.1	H	39.0	5.20	26.59	47.21	54	6.79	harmonic
7419	48.5	PK	10	1.1	H	39.0	5.20	26.59	66.11	74	7.89	harmonic
4946	53.3	PK	225	1.2	H	34.6	4.40	26.75	65.55	74	8.45	harmonic
4946	32.8	Ave.	157	1.2	V	34.7	4.40	26.75	45.15	54	8.85	harmonic
4946	31.6	Ave.	225	1.2	H	34.6	4.40	26.75	43.85	54	10.15	harmonic
2483.53	56.96	PK	225	1.50	V	30.6	3.61	27.54	63.63	74	10.37	spurious
7419	45.2	PK	34	1.0	V	37.7	5.20	26.59	61.51	74	12.49	harmonic
1857.4	29.6	Ave.	68	1.0	V	28.3	2.52	26.61	33.81	54	20.19	spurious
1857.4	48.5	PK	68	1.0	V	28.3	2.52	26.61	52.71	74	21.29	spurious
1857.4	29.7	Ave.	30	1.2	H	26.5	2.52	26.61	32.11	54	21.89	spurious
1857.4	43.8	PK	30	1.2	H	26.5	2.52	26.61	46.21	74	27.79	spurious

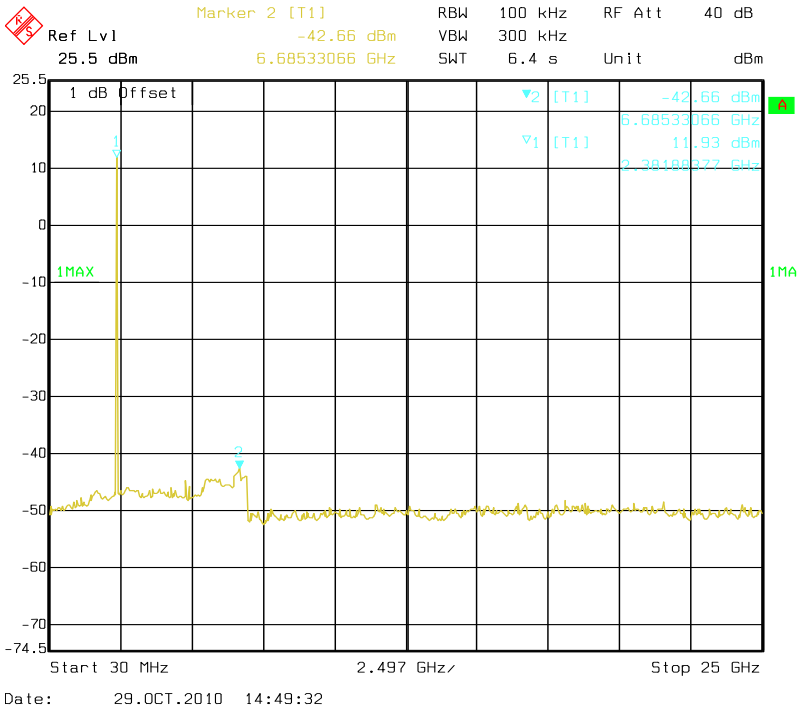
*Within measurement uncertainty.

Antenna Port Conducted Spurious Emissions

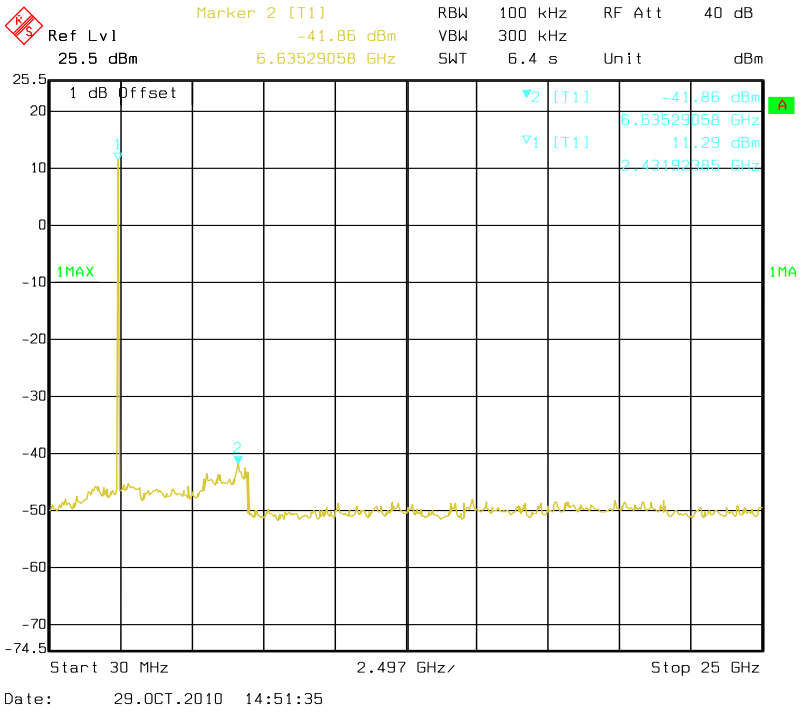
Channel Frequency (MHz)	Limit (dBc)	Ref. Plot	Result
2403	54.59	20	Pass
2438	53.15	20	Pass
2473	51.54	20	Pass

Please refer to the following plots.The limit was 20 dBc to the fundamental in 100 kHz RBW.

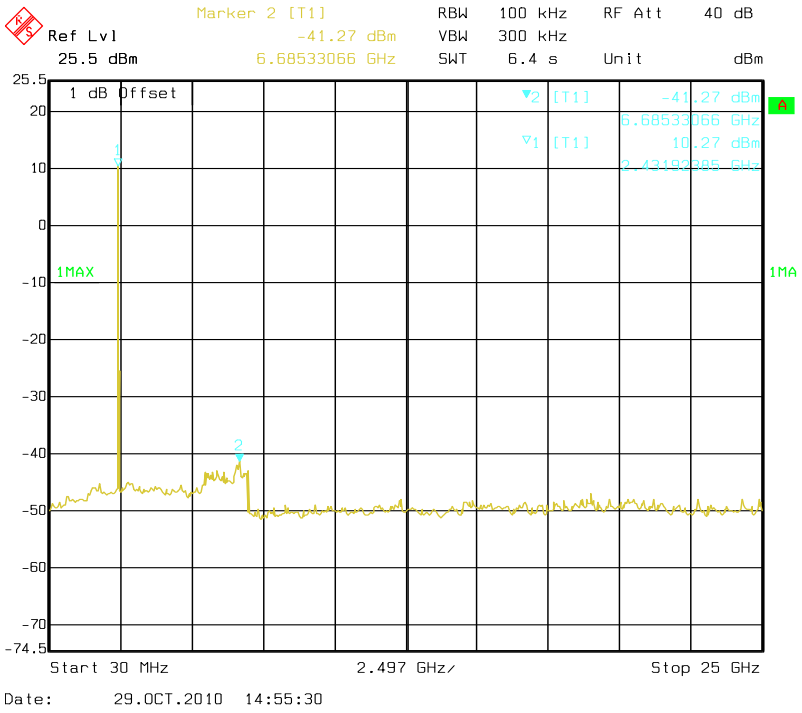
Low Channel



Middle Channel



High Channel



FCC §15.247(a) (2) – 6 dB BANDWIDTH TESTING

Applicable Standard

Systems using digital modulation techniques may operate in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

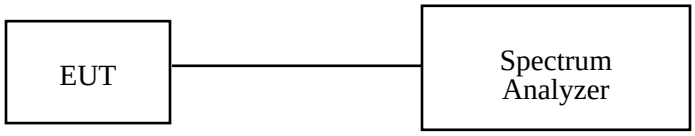
Test Equipment List and Details

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

*** 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 6 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:	100.0kPa

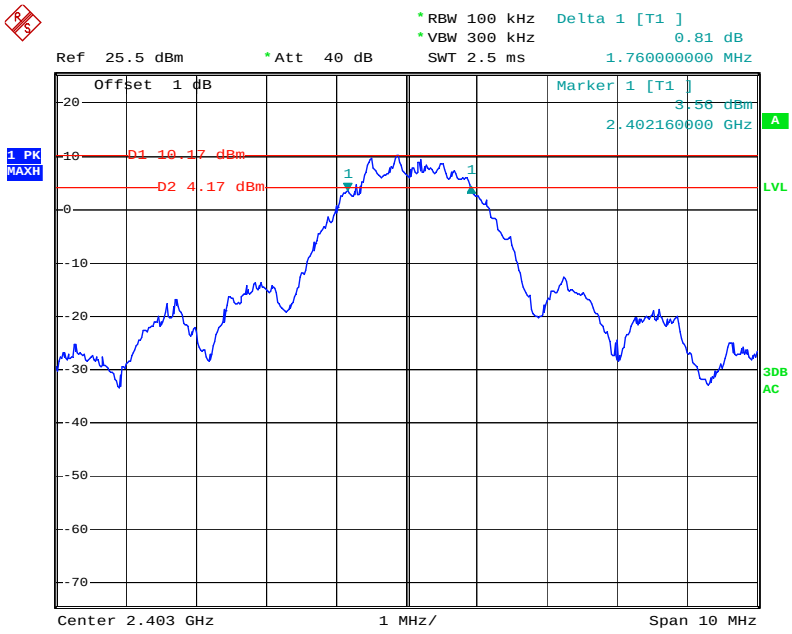
The testing was performed by Felix Li on 2010-10-29.

Test Result: Compliant

Please refer to the following tables and plots.

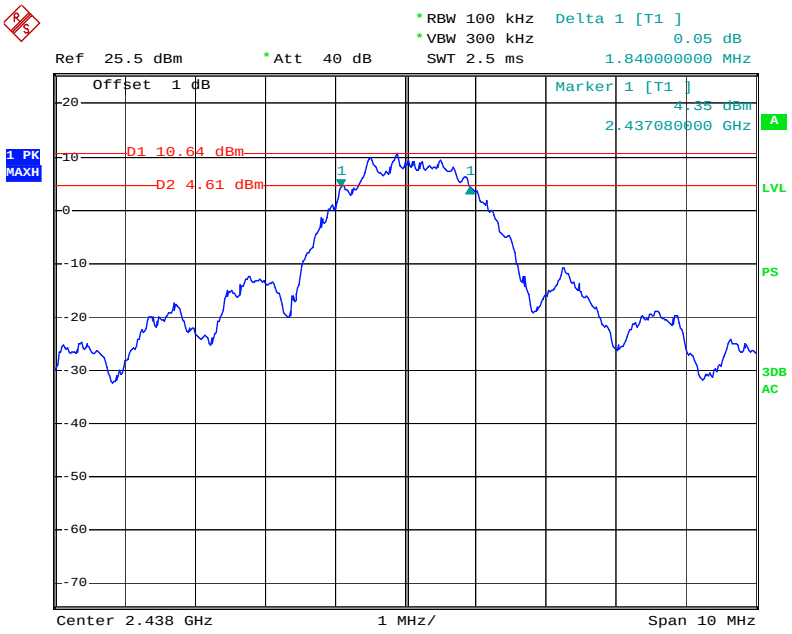
Channel	Frequency (MHz)	Measured 6 dB Bandwidth (MHz)	FCC Limit (kHz)
Low	2403	1.76	500
Middle	2438	1.84	500
High	2473	1.84	500

Low Channel



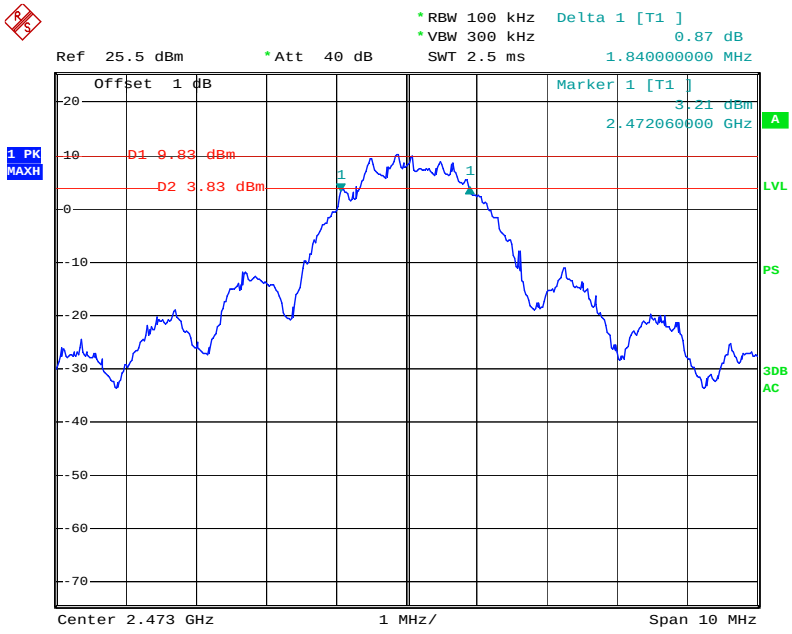
Date: 29.OCT.2010 15:25:25

Middle Channel



Date: 29.OCT.2010 16:19:03

High Channel



Date: 29.OCT.2010 16:38:53

FCC §15.247(b) (3) - MAXIMUM PEAK OUTPUT POWER

Applicable Standard

According to §15.247(b) (3), for systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the maximum conducted output power is the highest total transmit power occurring in any mode.

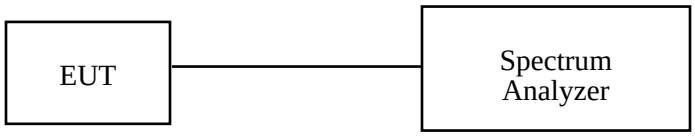
Test Equipment List and Details

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 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:	100.0kPa

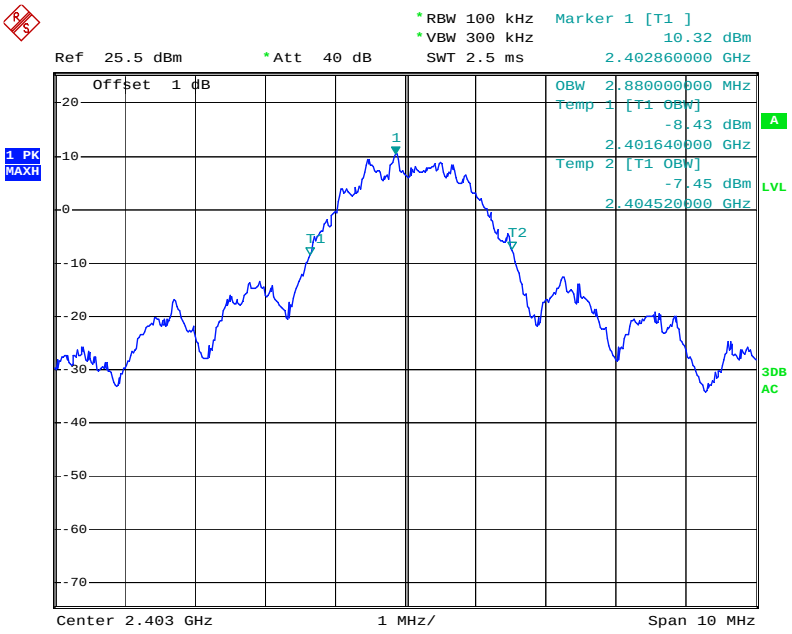
The testing was performed by Felix Li on 2010-10-29.

Test Mode: Transmitting

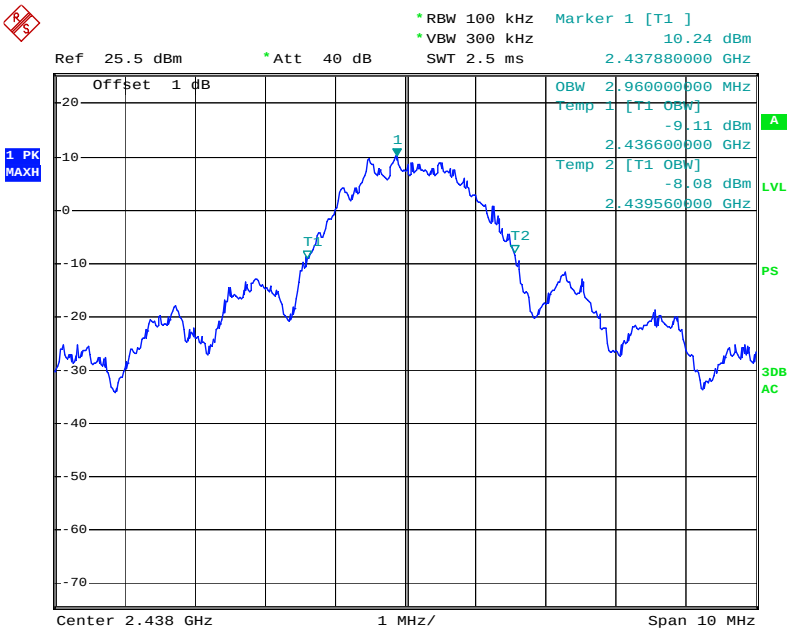
Channel	Frequency (MHz)	Conducted Output Power (dBm)	Limit (dBm)
Low	2403	14.72	30
Middle	2438	14.88	30
High	2473	14.42	30

Plots for OBW:

Low Channel

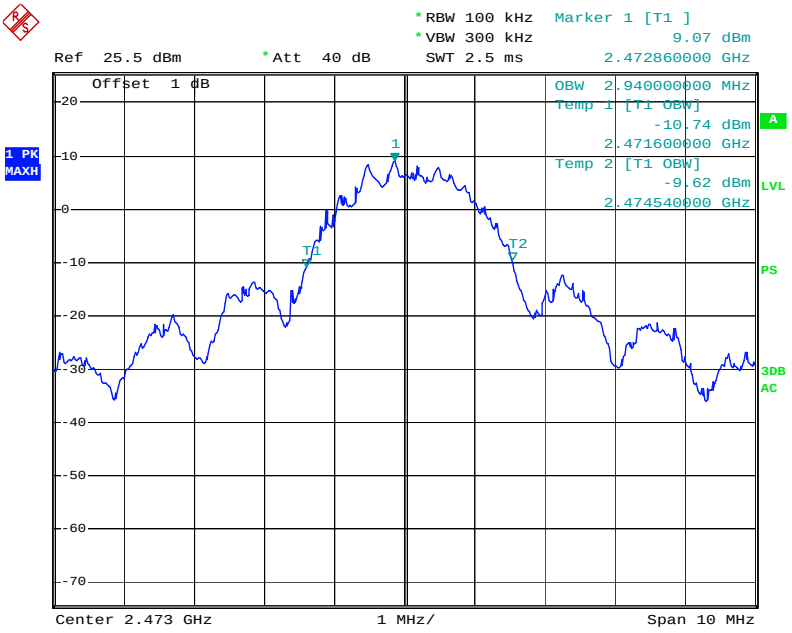


Middle Channel



Date: 29.OCT.2010 16:15:37

High Channel



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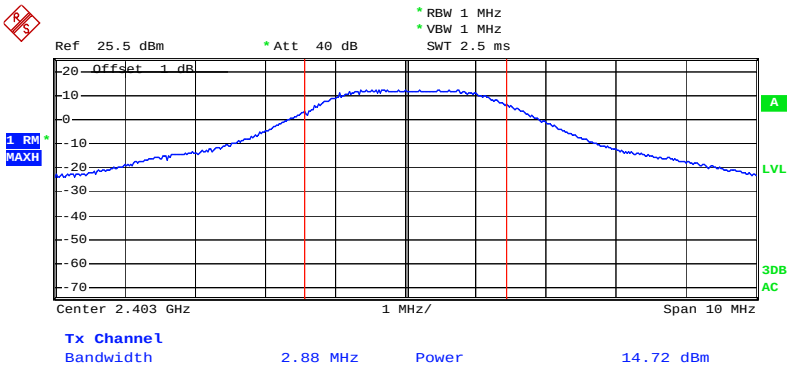
Plots for output power:

Low Channel



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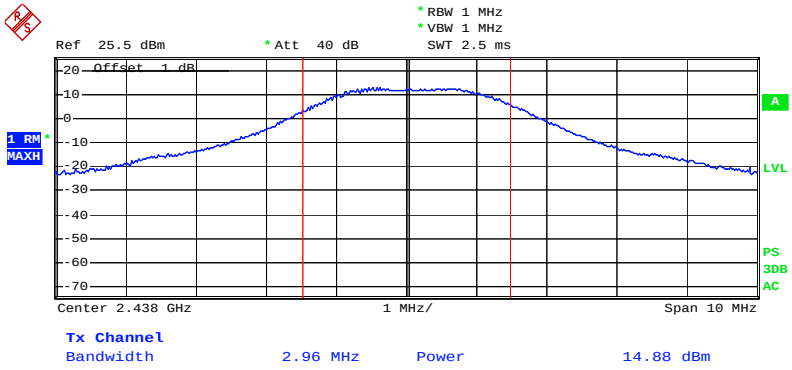
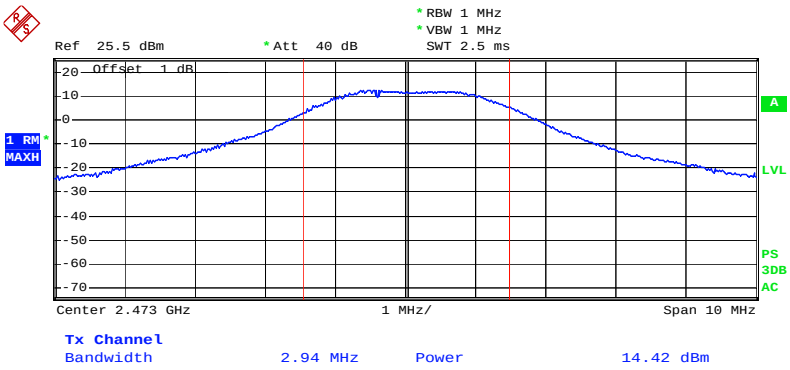
Middle Channel



Date: 29.OCT.2010 16:16:36

High Channel



Date: 29.OCT.2010 16:35:11

FCC §15.247(d) – 100 kHz BANDWIDTH OF FREQUENCY BAND EDGE

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	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 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 RBW to 1 MHz and VBW of spectrum analyzer to 1 MHz with a convenient frequency span including 100 kHz bandwidth from band edge.
4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
5. Repeat above procedures until all measured frequencies were complete.

Test Data

Environmental Conditions

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

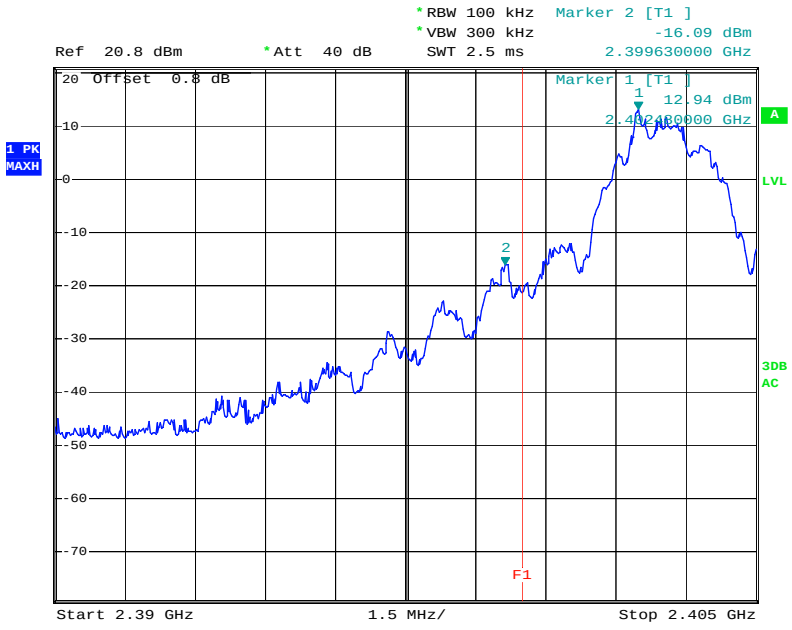
The testing was performed by Felix Li on 2010-10-28.

Test Result: *Compliance.*

Frequency (MHz)	Delta Peak to band emission (dBc)	Limit (dBc)
2399.63	29.03	20
2484.70	56.15	20

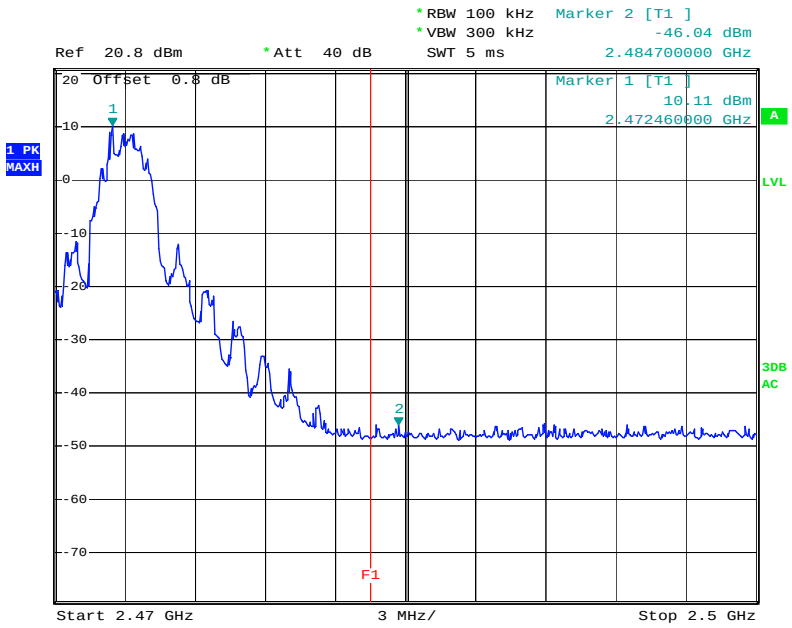
Please refer to following plots.

Band Edge, Left Side



Date: 28.SEP.2010 08:13:14

Band Edge, Right Side



Date: 28.SEP.2010 07:54:37

FCC §15.247(e) - POWER SPECTRAL DENSITY

Applicable Standard

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of paragraph (b) of this section. The same method of determining the conducted output power shall be used to determine the power spectral density.

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 Lab 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 was set 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. Adjust the center frequency of SA on any frequency be measured and set SA to 1.5MHz span mode. And then, set RBW and VBW of spectrum analyzer to proper value. (DTS)
4. Repeat above procedures until all frequencies measured were complete.

Test Data

Environmental Conditions

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

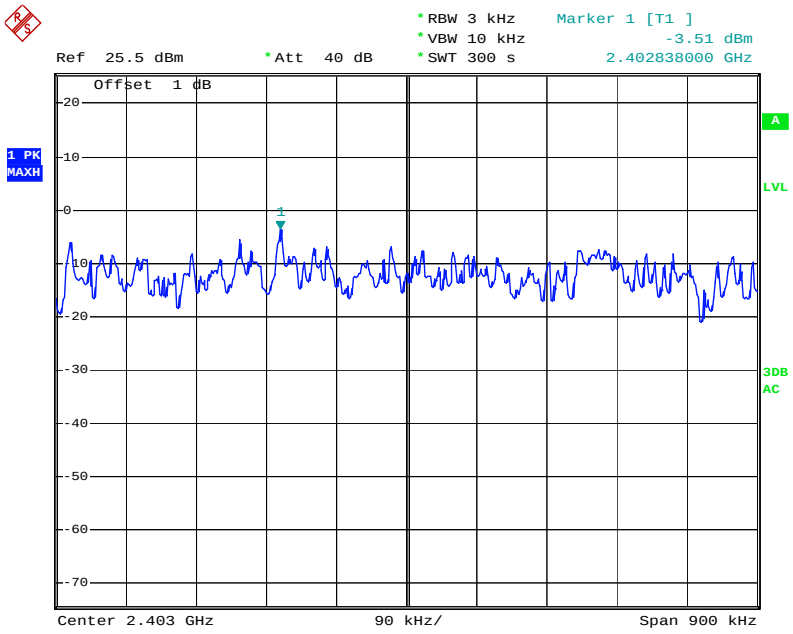
The testing was performed by Felix Li on 2010-10-29.

Test Mode: Transmitting

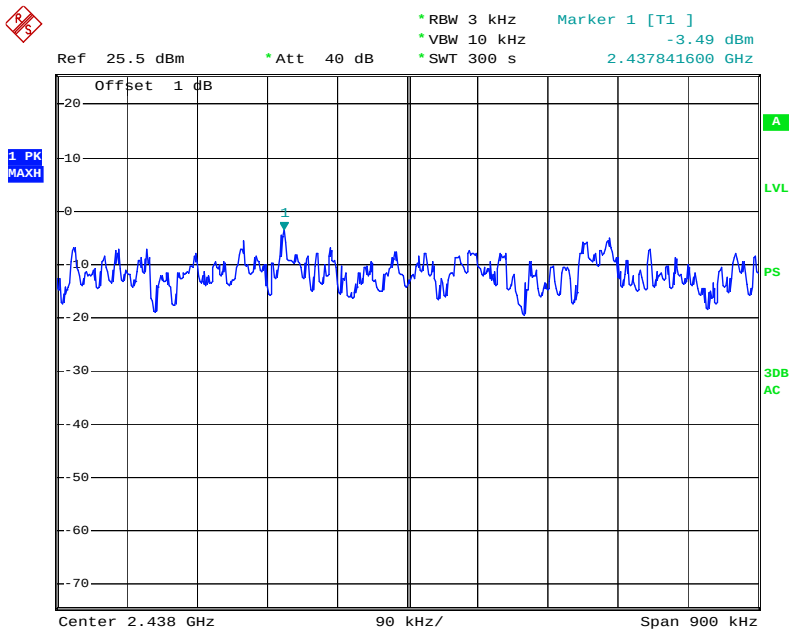
Test Result: Pass

Channel	Frequency (MHz)	PSD (dBm)	Limit (dBm)	Result
Low	2403	-3.51	8	Pass
Middle	2438	-3.49	8	Pass
High	2473	-5.03	8	Pass

Low Channel

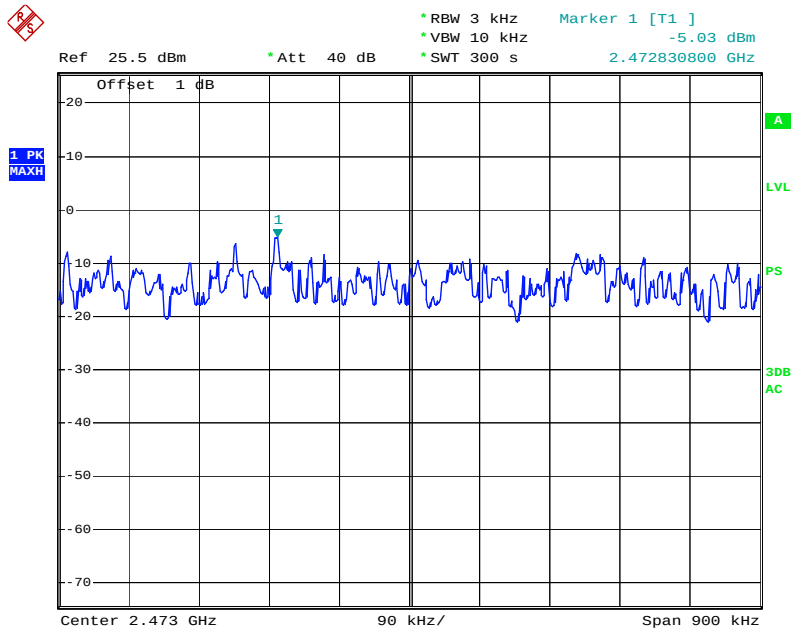


Middle Channel



Date: 29.OCT.2010 16:25:46

High Channel



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