NVLAP LAB CODE 200707-0

FCC PART 15.247

MEASUREMENT AND TEST REPORT

For

Shenzhen Coson Electronic Co., Ltd.

17 F, Ying Long Building, No. 6025, Shen Nan Middle Road,

Shenzhen, Guangdong, China

FCC ID: XPW-HMT5800RWG01

Report Type:	**Product Type:**
Original Report	RFID Hand-Held Mobile Terminal

Test Engineer:	Vicent Kang
Report Number:	RSZ09081052-WiFi
Report Date:	2010-05-25
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 *SHENZHEN COSON ELECTRONIC CO., LTD.*'s product, model number: *SD5800* (FCC ID: XPW-HMT5800RWG01)or the "EUT" as referred to in this report is a *RFID hand-held mobile terminal, which* measures approximately 27.0 cm L x 11.5 cm W x 17.0 cm H, rated input voltage: DC 15V adapter or DC 11.1V battery.

Adapter information
Manufacture: Artesyn technologies (Z.S.);
Model: SSL40-7615;
Input: AC 100-240V 100-120VA 50/60Hz;
Output: 15VDC, 2.6A

** All measurement and test data in this report was gathered from production sample serial number: 0908816(Assigned by BACL). The EUT was received on 2009-08-10*

Objective

This Type approval report is prepared on behalf of *SHENZHEN COSON ELECTRONIC 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 and 15.247 rules.

Related Submittal(s)/Grant(s)

FCC Part 15.247 RFID and FCC Part 22H/24E submissions with FCC ID: XPW-HMT5800RWG01.

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).

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

For 802.11b and 802.11g mode, 11 channels are provided to testing:

Channel NO.	Frequency (MHz)	Channel NO.	Frequency (MHz)
1	2412	7	2442
2	2417	8	2447
3	2422	9	2452
4	2427	10	2457
5	2432	11	2462
6	2437	/	/

EUT was tested with Channel 1, 6 and 11.

The worst-case data rates are determined to be as follows for each mode based upon inverstigation by measuring the average power, peak power and PSD across all date rates bandwidths, and modulations.

EUT Exercise Software

WiFI Test provided by manufacturer.

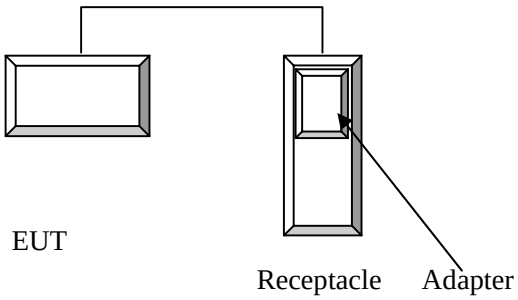
Equipment Modifications

No modification was made to the unit tested.

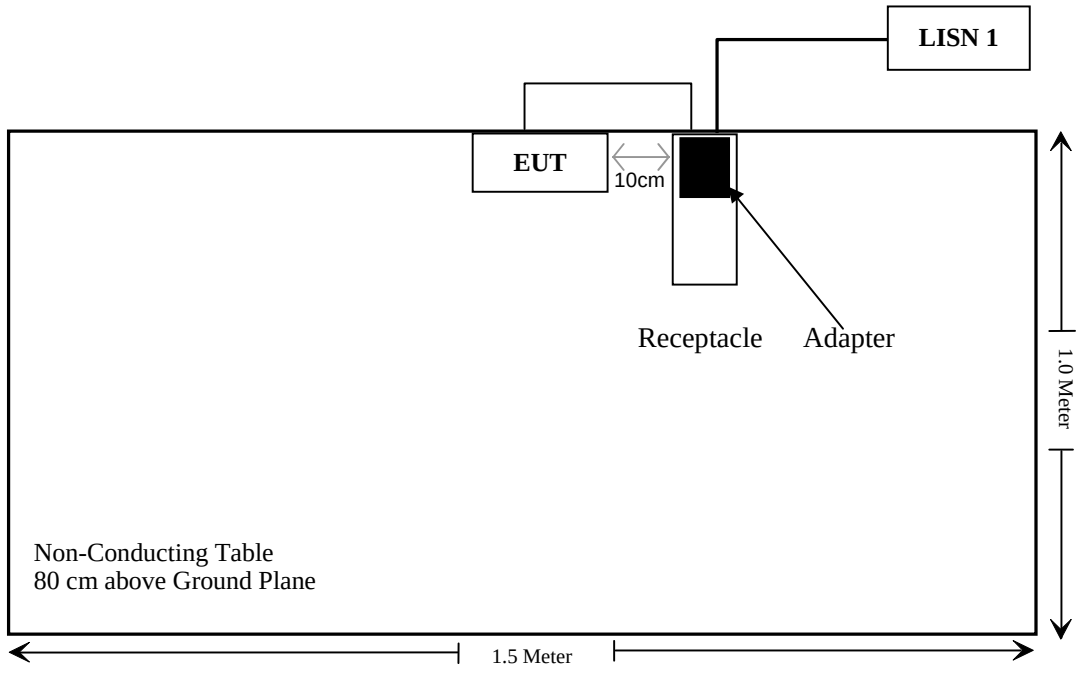
External I/O Cable

Cable Description	Length (m)	From Port	To
Unshielded Detachable Power Cable with a Core	0.85	Adapter	EUT

Configuration of Test Setup



Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§15.247 (i), §2.1093	RF Exposure	Compliant*
§15.203	Antenna Requirement	Compliant
§15.207 (a),	Conducted Emissions	Compliant
§15.205, §15.209, §15.247(d)	Spurious Emissions and Restricted Bands	Compliant
§15.247 (a)(2)	6 dB Bandwidth	Compliant
§15.247(b)(3)	Maximum Peak Output Power	Compliant
§15.247(d)	100kHz Bandwidth of Frequency Band Edge	Compliant
§15.247(e)	Power Spectral Density	Compliant

Note: *Please refer to the SAR report: R1002118-FCC-SAR.

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

Applicable Standard

FCC§15.247(i) &1.1307 & §2.1093.

Test Result

Compliance

The EUT is a portable device which needs SAR evaluation; please refer to BACL SAR Report: R1002118-FCC-SAR.

FCC§15.203 - ANTENNA REQUIREMENT

Standard Applicable

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:
Antenna must be permanently attached to the unit.
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 EUT has 3 antennas; one is for RFID, the gain is 3.5 dBi; one is for WiFi, the gain is 2 dBi; other is for GSM850/PCS1900, the gain of PCS1900 is 2.15 dBi and the gain of GSM850 is 2.5 dBi, The WiFi antenna and GPRS antenna are intergral antennas, which are permanently attached. The RFID uses a unique antenna which designed by manufacturer.

Result: Compliant

FCC §15.207 (a) - CONDUCTED EMISSIONS

Applicable Standard

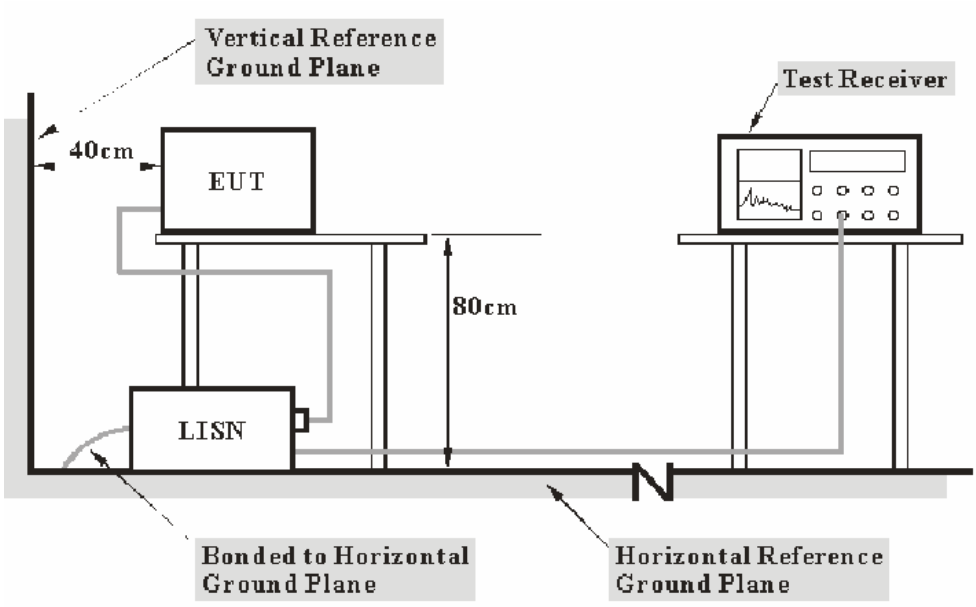
FCC §15.207

Measurement Uncertainty

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

Based on 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.

Test 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	2009-04-28	2010-04-27
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 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:

802.11b: 7.65 dB at **0.4650 MHz** in the **Line** conductor mode
802.11b: 7.79 dB at **0.3660 MHz** in the **Neutral** conductor mode
802.11g: 5.74 dB at **0.2850 MHz** in the **Line** conductor mode
802.11g: 7.13 dB at **0.2850 MHz** in the **Neutral** conductor mode

Test Data

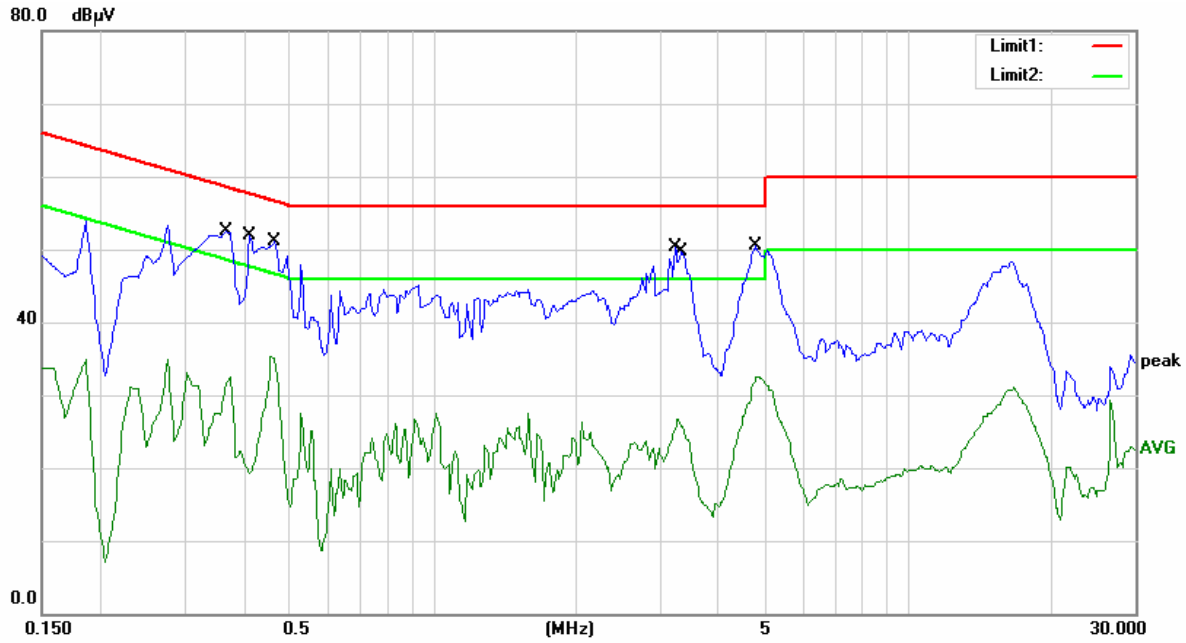
Environmental Conditions

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

The testing was performed by Vicent kang on 2009-09-19.

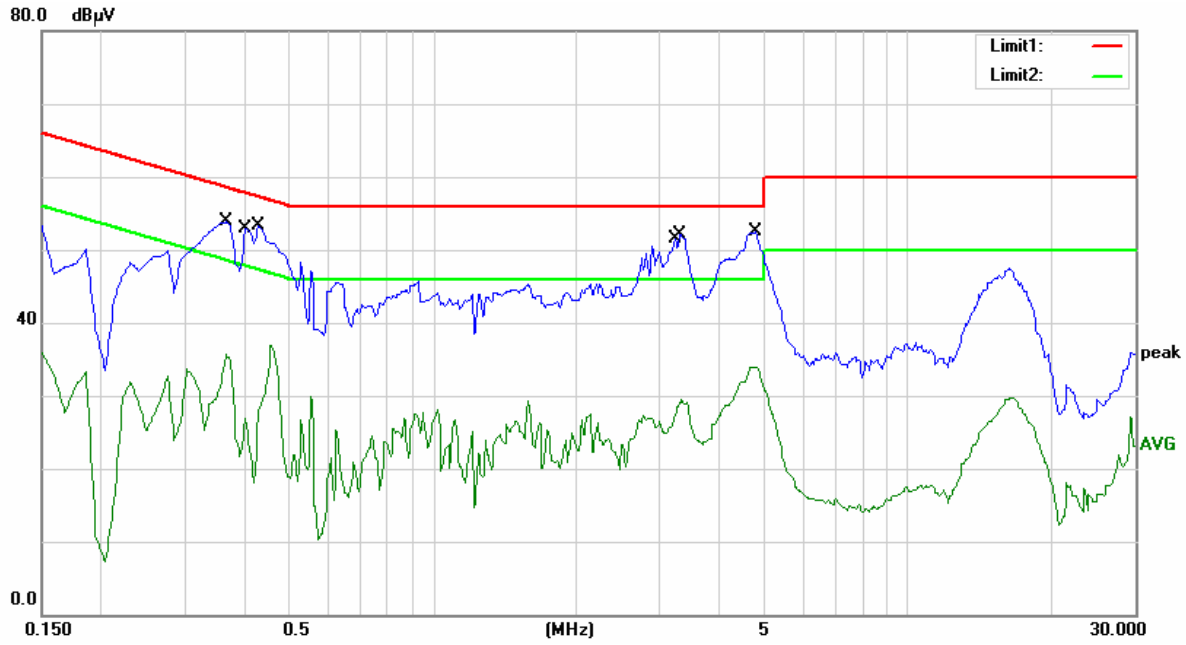
Test Mode: Transmitting

120 V/60 Hz, Line (802.11b):



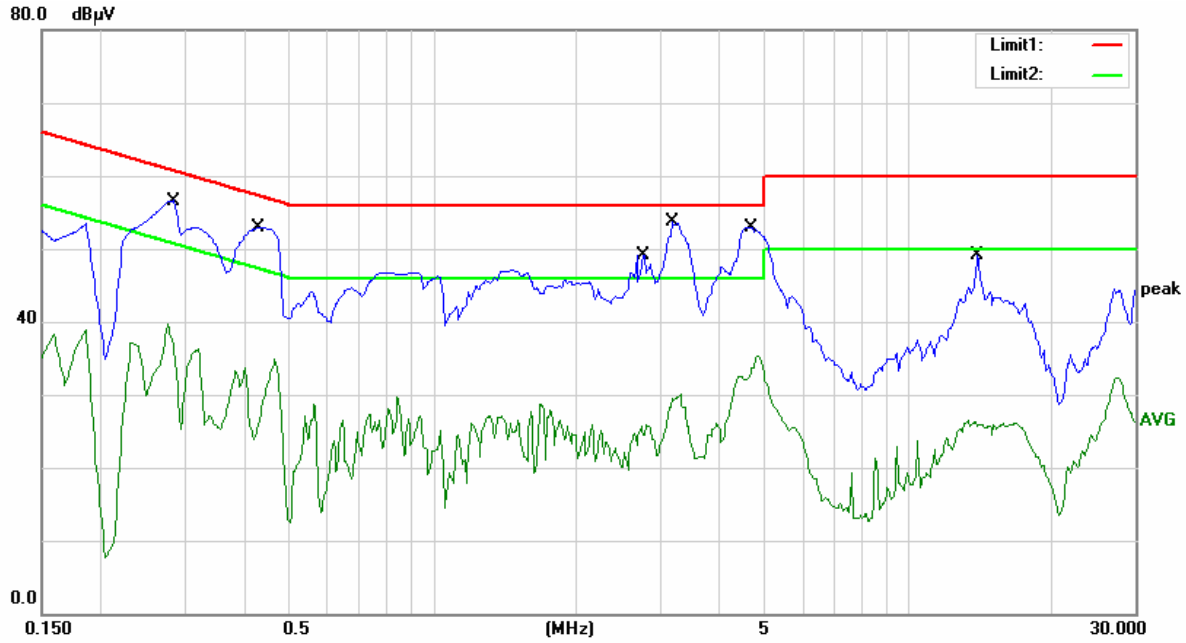
Frequency (MHz)	Receiver Reading (dBµV)	Correction Factor (dB)	Cord. Result (dBµV)	Limit (dBµV)	Margin (dB)	Remark
0.4650	38.85	10.10	48.95	56.60	7.65	QP
0.3660	40.07	10.10	50.17	58.59	8.42	QP
4.7760	35.30	10.10	45.40	56.00	10.60	QP
0.4650	24.05	10.10	34.15	46.60	12.45	AV
0.4110	34.09	10.10	44.19	57.63	13.44	QP
4.7760	22.13	10.10	32.23	46.00	13.77	AV
3.3360	31.80	10.10	41.90	56.00	14.10	QP
0.3660	23.97	10.10	34.07	48.59	14.52	AV
3.2280	30.93	10.10	41.03	56.00	14.97	QP
3.3360	13.93	10.10	24.03	46.00	21.97	AV
3.2280	13.32	10.10	23.42	46.00	22.58	AV
0.4110	5.38	10.10	15.48	47.63	32.15	AV

120 V/60 Hz, Neutral (802.11b):



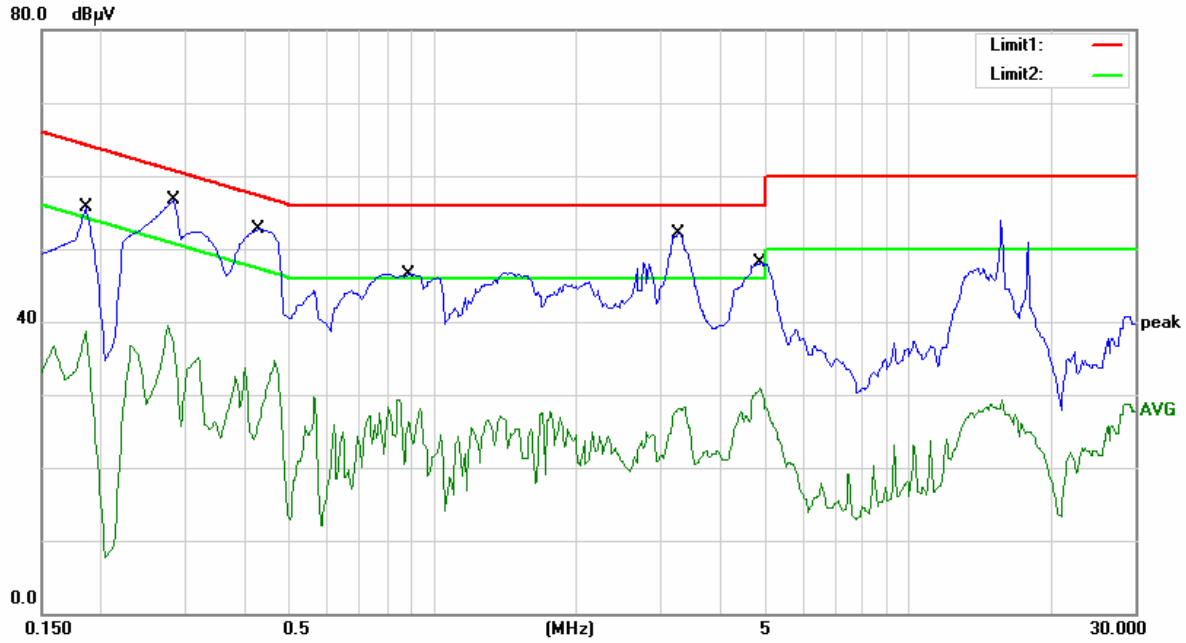
Frequency (MHz)	Receiver Reading (dBµV)	Correction Factor (dB)	Cord. Result (dBµV)	Limit (dBµV)	Margin (dB)	Remark
0.3660	40.70	10.10	50.80	58.59	7.79	QP
4.7760	37.86	10.10	47.96	56.00	8.04	QP
0.4290	36.62	10.10	46.72	57.27	10.55	QP
3.2280	35.07	10.10	45.17	56.00	10.83	QP
3.3090	34.71	10.10	44.81	56.00	11.19	QP
4.7760	23.65	10.10	33.75	46.00	12.25	AV
0.3660	25.16	10.10	35.26	48.59	13.33	AV
0.4020	32.37	10.10	42.47	57.81	15.34	QP
3.2280	16.42	10.10	26.52	46.00	19.48	AV
3.3090	16.04	10.10	26.14	46.00	19.86	AV
0.4290	14.92	10.10	25.02	47.27	22.25	AV
0.4020	10.97	10.10	21.07	47.81	26.74	AV

120 V/60 Hz, Line (802.11g):



Frequency (MHz)	Receiver Reading (dBµV)	Correction Factor (dB)	Cord. Result (dBµV)	Limit (dBµV)	Margin (dB)	Remark
0.2850	44.83	10.10	54.93	60.67	5.74	QP
0.4290	39.90	10.10	50.00	57.27	7.27	QP
4.6950	37.04	10.10	47.14	56.00	8.86	QP
3.1829	36.81	10.10	46.91	56.00	9.09	QP
2.7780	32.65	10.10	42.75	56.00	13.25	QP
0.2850	26.53	10.10	36.63	50.67	14.04	AV
4.6950	21.59	10.10	31.69	46.00	14.31	AV
3.1829	17.31	10.10	27.41	46.00	18.59	AV
0.4290	16.42	10.10	26.52	47.27	20.75	AV
2.7780	14.42	10.10	24.52	46.00	21.48	AV
13.9380	28.18	10.20	38.38	60.00	21.62	QP
13.9380	15.49	10.20	25.69	50.00	24.31	AV

120 V/60 Hz, Neutral (802.11g):



Frequency (MHz)	Receiver Reading (dBµV)	Correction Factor (dB)	Cord. Result (dBµV)	Limit (dBµV)	Margin (dB)	Remark
0.2850	43.44	10.10	53.54	60.67	7.13	QP
0.4290	38.49	10.10	48.59	57.27	8.68	QP
4.8930	34.85	10.10	44.95	56.00	11.05	QP
0.1860	42.67	10.10	52.77	64.21	11.44	QP
3.2910	34.31	10.10	44.41	56.00	11.59	QP
0.8880	31.84	10.10	41.94	56.00	14.06	QP
4.8930	21.36	10.10	31.46	46.00	14.54	AV
0.2850	24.93	10.10	35.03	50.67	15.64	AV
0.1860	27.13	10.10	37.23	54.21	16.98	AV
3.2910	17.39	10.10	27.49	46.00	18.51	AV
0.8880	15.13	10.10	25.23	46.00	20.77	AV
0.4290	14.77	10.10	24.87	47.27	22.40	AV

FCC§15.205, §15.209 & §15.247 - SPURIOUS EMISSIONS AND RESTRICT BANDS

Applicable Standard

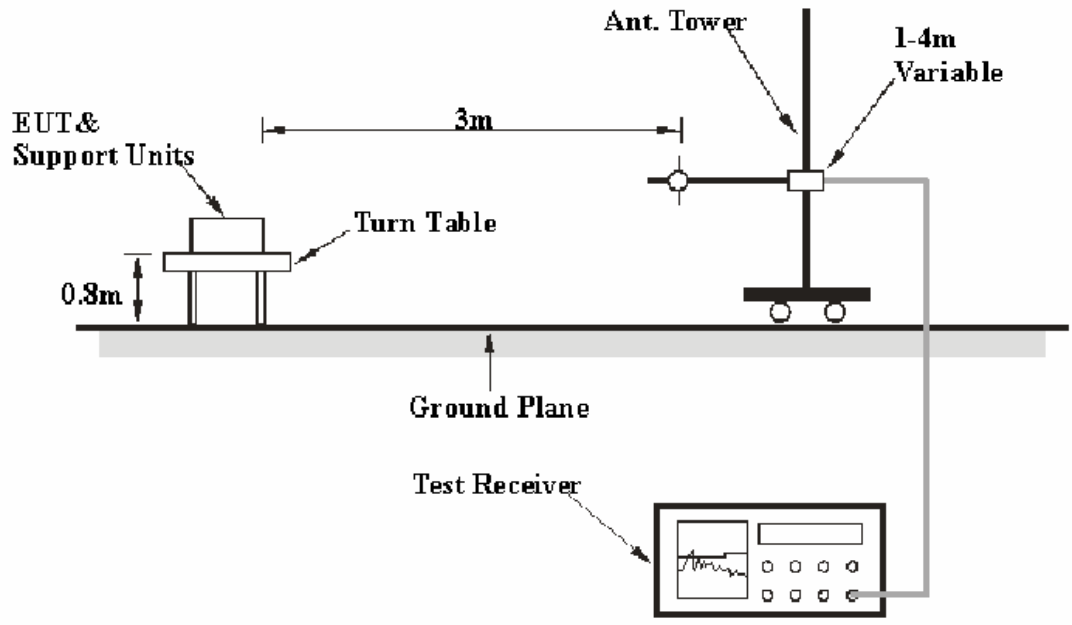
FCC §15.205; §15.209; §15.247 (d).

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 ±4.0 dB.

Test 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 §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 of EUT 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***
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	2009-08-02	2010-08-02
Rohde & Schwarz	EMI Test Receiver	ESCI	100035	2008-11-07	2009-11-06
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	2008-09-25	2009-09-25
Rohde & Schwarz	Spectrum Analyzer	FSEM30	849720/019	2009-07-08	2010-07-08

*** 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 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:

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 7 dB means the emission is 7 dB below the maximum 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:

Blew 1 GHz

Transmitting (802.11b):

4.6 dB at 279.525500 MHz in the Vertical polarization

Transmitting (802.11g):

4.3 dB at 279.487500 MHz in the Vertical polarization

Above 1 GHz

Transmitting (802.11b):

3.19 dB at 4824.00 MHz in the Horizontal polarization (Low Channel)
6.68 dB at 4874.00 MHz in the Horizontal polarization (Middle Channel)
11.00 dB at 4924.00 MHz in the Horizontal polarization (High Channel)

Transmitting (802.11g):

13.11 dB at 4824.00 MHz in the Horizontal polarization (Low Channel)
7.77 dB at 1152.00 MHz in the Vertical polarization (Middle Channel)
9.23 dB at 4924.00 MHz in the Horizontal polarization (High Channel)

Test Data

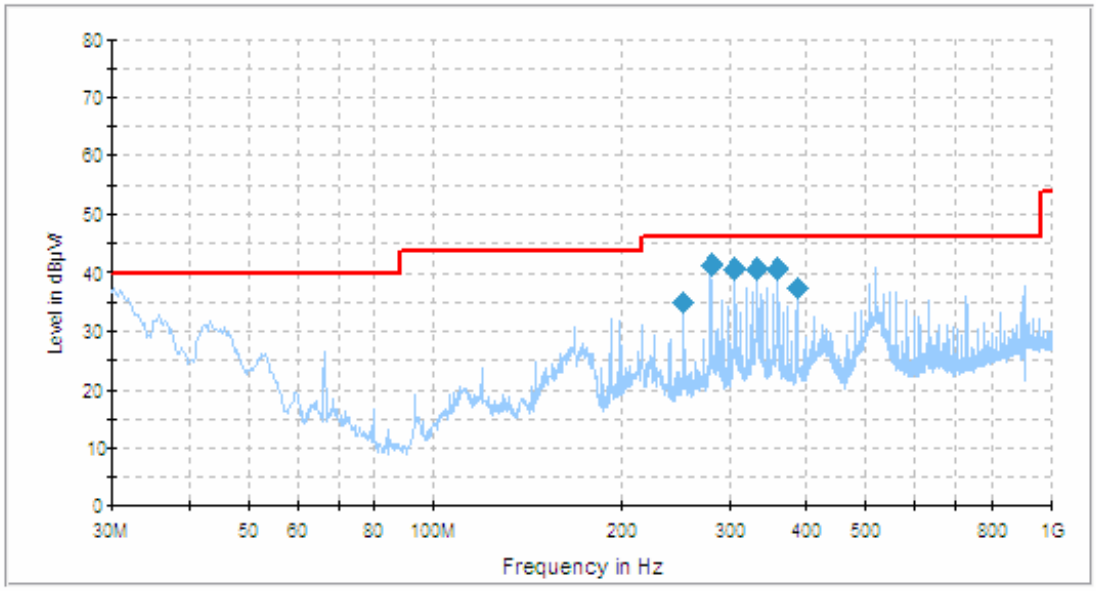
Environmental Conditions

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

** The testing was performed by Vicent Kang on 2009-09-17.*

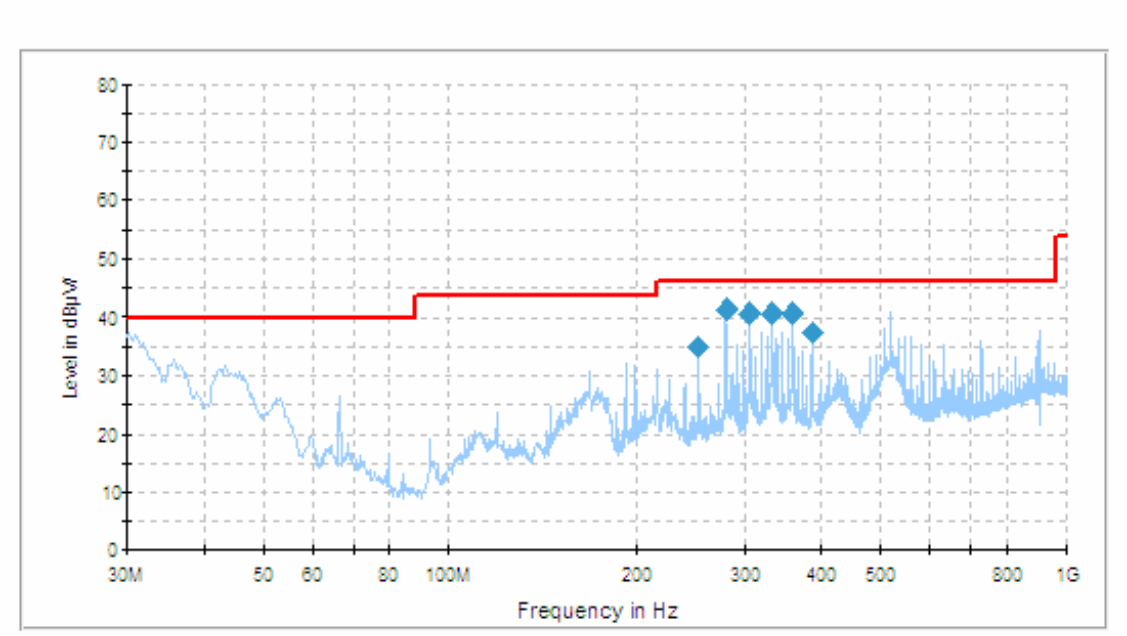
Blew 1 GHz

Test Mode: Transmitting (Worst case for 802.11b)



Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Position (deg)	Correction Factor (dB)	Limit (dBµV/m)	Margin (dB)
279.525500	41.4	115.0	V	180.0	-14.9	46.0	4.6
305.882250	40.7	100.0	H	282.0	-14.4	46.0	5.3
332.498000	40.6	100.0	H	100.0	-13.8	46.0	5.4
359.104250	40.6	100.0	H	273.0	-13.2	46.0	5.4
385.743415	37.4	100.0	H	353.0	-13.0	46.0	8.6
252.150750	35.2	198.0	H	258.0	-15.3	46.0	10.8

Test Mode: Transmitting (Worse case for 802.11g)



Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Position (deg)	Correction Factor (dB)	Limit (dBµV/m)	Margin (dB)
279.487500	41.7	108.0	V	3.0	-14.9	46.0	4.3
332.1765000	40.8	102.0	H	135.0	-13.7	46.0	5.2
305.782350	40.5	100.0	H	278.0	-14.3	46.0	5.5
358.934750	40.3	110.0	H	278.0	-13.1	46.0	5.7
385.932610	37.8	105.0	H	1783.0	-13.3	46.0	8.2
251.970750	35.0	190.0	H	128.0	-15.3	46.0	11.0

Above 1GHz

Test Mode: *Transmitting (802.11b)*

Indicated		Detector (PK/AV)	Table Angle Degree	Test Antenna		Correction Factor			FCC Part 15.247/15.209		
Frequency (MHz)	S.A. Reading (dBμV/m)			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)
802.11b Low Channel (2412 MHz)											
4824.00	60.65	PK	162	1.2	H	36.30	7.56	33.70	70.81	74	3.19*
4824.00	40.15	AV	162	1.2	H	36.30	7.56	33.70	50.31	54	3.69
4824.00	34.61	AV	172	1.1	V	35.00	7.56	33.70	43.47	54	10.53
2487.04	37.78	AV	215	1.0	H	31.20	8.04	33.90	43.12	54	10.88
2377.14	37.05	AV	150	1.3	H	30.90	7.90	33.90	41.95	54	12.05
2487.34	36.52	AV	180	1.0	V	31.20	8.04	33.90	41.86	54	12.14
2336.50	37.44	AV	152	1.0	V	30.30	7.90	33.90	41.74	54	12.26
1019.13	45.17	AV	110	1.0	H	25.10	4.78	35.00	40.05	54	13.95
2486.97	35.37	AV	360	2.0	V	30.50	8.05	33.90	40.02	54	13.98
4824.00	49.90	PK	172	1.1	V	35.00	7.56	33.70	58.76	74	15.24
1019.13	43.87	AV	215	1.2	V	23.80	4.78	33.70	38.75	54	15.25
2487.04	51.96	PK	215	1.0	H	31.20	8.04	33.90	57.30	74	16.70
2377.14	51.18	PK	150	1.3	H	30.90	7.90	33.90	56.08	74	17.92
2336.50	50.92	PK	152	1.0	V	30.30	7.90	33.90	55.22	74	18.78
2487.34	47.21	PK	180	1.0	V	31.20	8.04	33.90	52.55	74	21.45
2486.97	46.83	PK	360	2.0	V	30.50	8.05	33.90	51.48	74	22.52
1019.13	51.00	PK	110	1.0	H	25.10	4.78	35.00	45.88	74	28.12
1019.13	48.88	PK	215	1.2	V	23.80	4.78	33.70	43.76	74	30.24
802.11b Middle Channel (2437 MHz)											
4874.00	37.16	AV	220	1.0	H	36.30	7.56	33.70	47.32	54	6.68
4874.00	37.37	AV	210	1.3	V	35.00	7.56	33.70	46.23	54	7.77
4874.00	55.37	PK	210	1.3	V	35.00	7.56	33.70	64.23	74	9.77
4874.00	52.81	PK	220	1.0	H	36.30	7.56	33.70	62.97	74	11.03
2357.63	35.79	AV	190	1.5	H	30.90	7.90	33.90	40.69	54	13.31
2361.05	34.67	AV	180	1.4	V	30.30	7.90	33.90	38.97	54	15.03
1019.18	43.93	AV	140	1.6	V	23.80	4.78	33.70	38.81	54	15.19
2357.63	53.14	PK	190	1.5	H	30.90	7.90	33.90	58.04	74	15.96
1019.18	40.20	AV	170	1.2	H	25.10	4.78	35.00	35.08	54	18.92
2361.05	48.93	PK	180	1.4	V	30.60	8.09	33.90	53.72	74	20.28
1019.18	50.41	PK	140	1.6	V	23.80	4.78	33.70	45.29	74	28.71
1019.18	48.82	PK	170	1.2	H	25.10	4.78	35.00	43.70	74	30.30

**With measurement uncertainty!*

Indicated		Detector (PK/AV)	Table Angle Degree	Test Antenna		Correction Factor			FCC Part 15.247/15.209		
Frequency (MHz)	Reading (dBμV/m)			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)
802.11b High Channel (2462 MHz)											
4924.00	32.15	AV	215	1.1	H	36.60	7.95	33.70	43.00	54	11.00
4924.00	31.31	AV	222	1.0	V	35.40	7.95	33.70	40.96	54	13.04
1018.87	44.72	AV	210	1.0	V	23.80	4.78	33.70	39.60	54	14.40
2487.48	33.97	AV	360	1.2	H	31.20	8.04	33.90	39.31	54	14.69
2319.93	32.78	AV	170	1.5	H	30.90	7.70	33.90	37.48	54	16.52
4924.00	45.99	PK	215	1.1	H	36.60	7.95	33.70	56.84	74	17.16
2317.37	32.37	AV	150	1.5	V	30.30	7.90	33.90	36.67	54	17.33
2487.34	31.59	AV	360	1.0	V	30.50	8.05	33.90	36.24	54	17.76
4924.00	45.37	PK	222	1.0	V	35.40	7.95	33.70	55.02	74	18.98
2487.48	46.36	PK	360	1.2	H	31.20	8.04	33.90	51.70	74	22.30
2319.93	46.11	PK	170	1.5	H	30.90	7.70	33.90	50.81	74	23.19
2317.37	44.64	PK	150	1.5	V	30.30	7.90	33.90	48.94	74	25.06
1152.13	34.04	AV	210	1.0	H	25.10	4.78	35.00	28.92	54	25.08
2487.34	43.97	PK	360	1.0	V	30.50	8.05	33.90	48.62	74	25.38
1018.87	49.54	PK	210	1.0	V	23.80	4.78	33.70	44.42	74	29.58
1152.13	46.98	PK	210	1.0	H	25.10	4.78	35.00	41.86	74	32.14

Test Mode: *Transmitting (802.11g)*

Indicated		Detector (PK/AV)	Table Angle Degree	Test Antenna		Correction Factor			FCC Part 15.247/15.209		
Frequency (MHz)	Reading (dBμV/m)			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)
802.11g Low Channel (2412 MHz)											
4824.00	30.73	AV	215	1.2	H	36.30	7.56	33.70	40.89	54	13.11
4824.00	31.89	AV	220	1.1	V	35.00	7.56	33.70	40.75	54	13.25
4824.00	49.55	PK	215	1.2	H	36.30	7.56	33.70	59.71	74	14.29
2487.57	53.22	PK	152	1.0	H	31.20	8.04	33.90	58.56	74	15.44
2487.57	32.66	AV	152	1.0	H	31.20	8.04	33.90	38.0	54	16.00
2310.77	32.39	AV	180	1.3	H	30.90	7.90	33.90	37.29	54	16.71
2486.52	32.23	AV	180	1.5	V	30.50	8.05	33.90	36.88	54	17.12
2365.76	31.79	AV	150	1.0	V	30.30	7.90	33.90	36.09	54	17.91
4824.00	46.25	PK	220	1.1	V	35.00	7.56	33.70	55.11	74	18.89
2486.52	48.09	PK	180	1.5	V	30.50	8.05	33.90	52.74	74	21.26
1164.77	36.68	AV	175	1.3	V	23.80	4.78	33.70	31.56	54	22.44
2365.76	46.41	PK	150	1.0	V	30.30	7.90	33.90	50.71	74	23.29
2310.77	45.11	PK	180	1.3	H	30.90	7.90	33.90	50.01	74	23.99
1147.59	33.63	AV	180	1.5	H	25.10	4.85	35.00	28.58	54	25.42
1164.77	47.72	PK	175	1.3	V	23.80	4.78	33.70	42.60	74	31.40
1147.59	47.17	PK	180	1.5	H	25.10	4.85	35.00	42.12	74	31.88
802.11g Middle Channel (2437 MHz)											
1152.00	51.35	AV	349	1.0	V	23.80	4.78	33.70	46.23	54	7.77
2384.80	39.50	AV	26	1.2	V	30.30	7.90	33.90	43.80	54	10.20
2489.20	38.94	AV	20	1.0	V	30.50	8.05	33.90	43.59	54	10.41
4874.00	33.09	AV	220	1.1	H	36.30	7.56	33.70	43.25	54	10.75
4874.00	33.08	AV	33	1.0	V	35.00	7.56	33.70	41.94	54	12.06
2384.80	54.55	PK	26	1.2	V	30.60	8.09	33.90	59.34	74	14.66
2489.20	54.68	PK	20	1.0	V	30.50	8.05	33.90	59.33	74	14.67
2312.80	33.26	AV	170	1.2	H	30.90	7.70	33.90	37.96	54	16.04
4874.00	45.25	PK	220	1.1	H	36.30	7.56	33.70	55.41	74	18.59
4874.00	44.35	PK	33	1.0	V	35.00	7.56	33.70	53.21	74	20.79
1159.50	34.67	AV	360	2.0	H	25.10	3.88	31.72	31.93	54	22.07
1152.00	56.94	PK	349	1.0	V	23.80	4.78	33.70	51.82	74	22.18
2312.80	45.94	PK	170	1.2	H	30.90	7.70	33.90	50.64	74	23.36
1159.50	47.91	PK	360	2.0	H	25.10	3.88	31.72	45.17	74	28.83

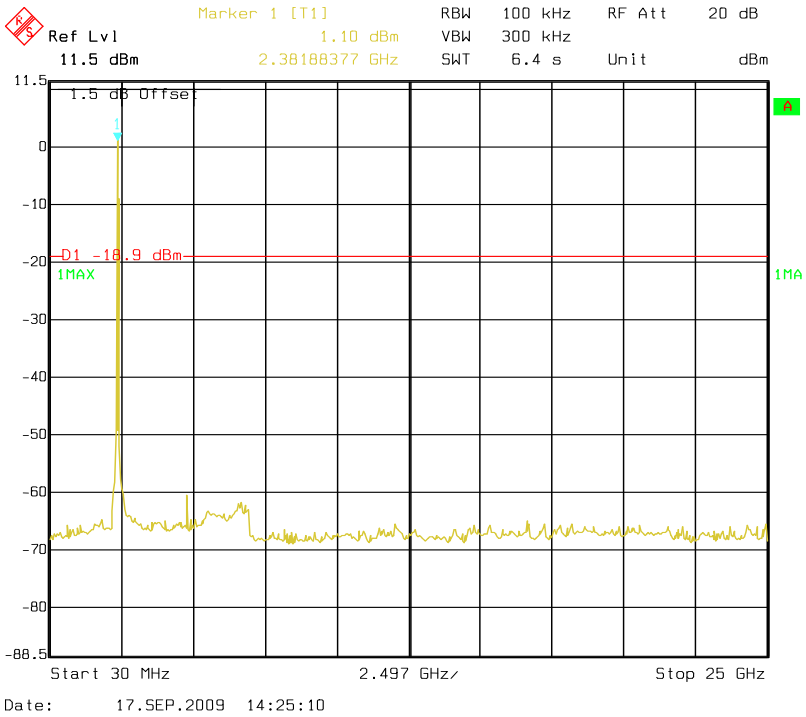
Indicated		Detector (PK/AV)	Table Angle Degree	Test Antenna		Correction Factor			FCC Part 15.247/15.209		
Frequency (MHz)	Reading (dBμV/m)			Height (m)	Polar (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. Gain (dB)	Cord. Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)
802.11g High Channel (2462 MHz)											
4924.00	33.92	AV	160	1.4	H	36.60	7.95	33.70	44.77	54	9.23
2560.00	38.69	AV	110	1.0	H	31.50	8.09	33.90	44.38	54	9.62
4924.00	34.15	AV	130	1.4	V	35.40	7.95	33.70	43.8	54	10.20
1018.03	43.41	AV	190	1.8	V	23.80	4.78	33.70	38.29	54	15.71
2317.79	33.23	AV	210	1.0	V	30.30	7.90	33.90	37.53	54	16.47
2317.81	32.77	AV	318	1.2	H	30.90	7.70	33.90	37.47	54	16.53
4924.00	45.92	PK	160	1.4	H	36.60	7.95	33.70	56.77	74	17.23
2483.50	31.69	AV	0	1.0	V	30.50	8.05	33.90	36.34	54	17.66
4924.00	46.47	PK	130	1.4	V	35.40	7.95	33.70	56.12	74	17.88
1019.31	39.76	AV	190	1.2	H	25.10	4.78	35.00	34.64	54	19.36
2560.00	47.96	PK	110	1.0	H	31.50	8.09	33.90	53.65	74	20.35
2483.50	47.79	PK	0	1.0	V	30.50	8.05	33.90	52.44	74	21.56
2317.81	47.11	PK	318	1.2	H	30.90	7.70	33.90	51.81	74	22.19
2317.79	45.73	PK	210	1.0	V	30.30	7.90	33.90	50.03	74	23.97
1019.31	48.83	PK	190	1.2	H	25.10	4.78	35.00	43.71	74	30.29
1018.23	44.07	PK	190	1.8	V	23.80	4.78	33.70	38.95	74	35.05

Antenna Port Conducted Spurious Emissions

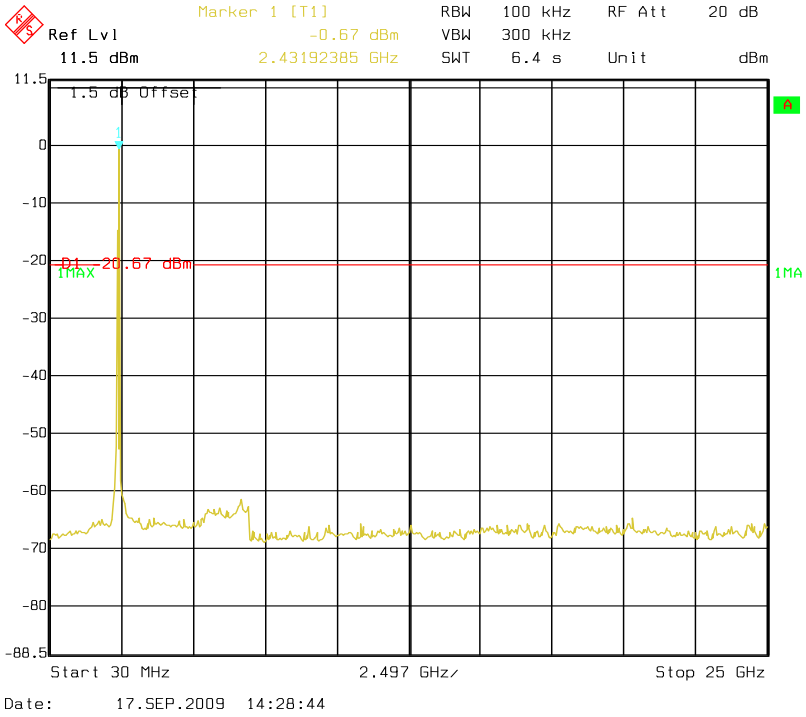
Channel Frequency (MHz)	Delta Value (dBc)	Limit (dBc)	Ref. Plot	Result
802.11b Mode				
2412	*	20	PLOT1	PASS
2437	*	20	PLOT2	PASS
2462	*	20	PLOT3	PASS
802.11g Mode				
2412	*	20	PLOT4	PASS
2437	*	20	PLOT5	PASS
2462	*	20	PLOT6	PASS

Please refer to the following plots.

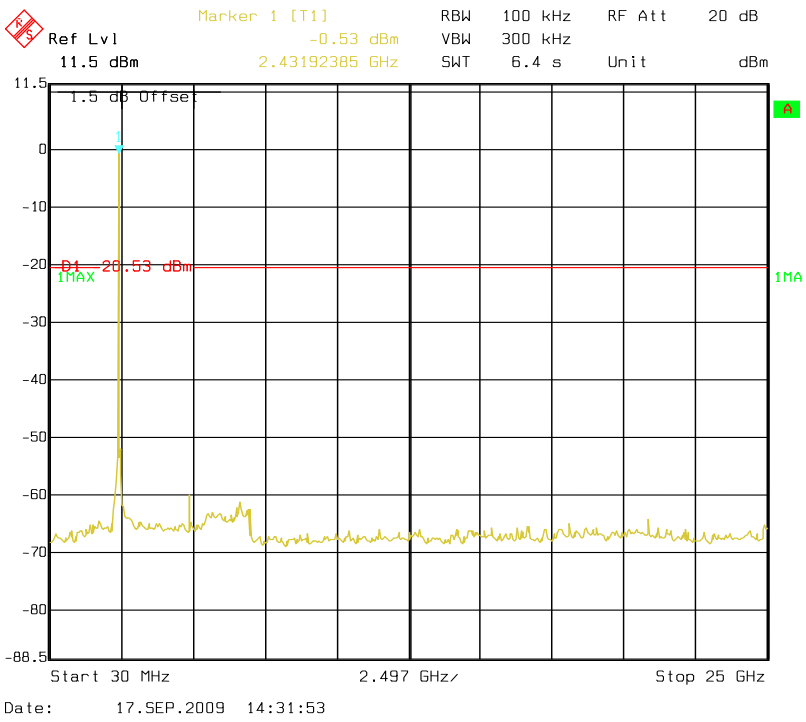
802.11b Low Channel



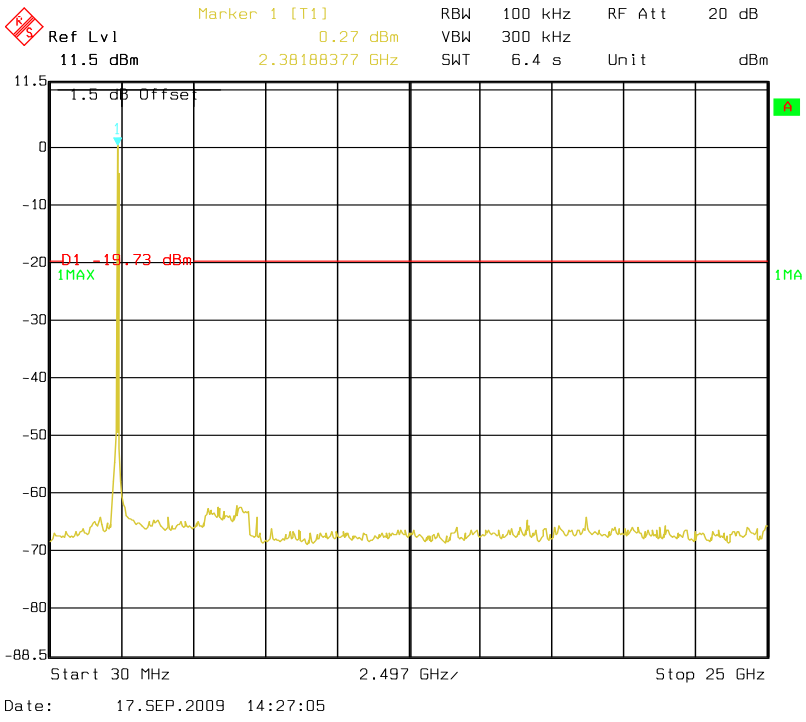
802.11b Middle Channel



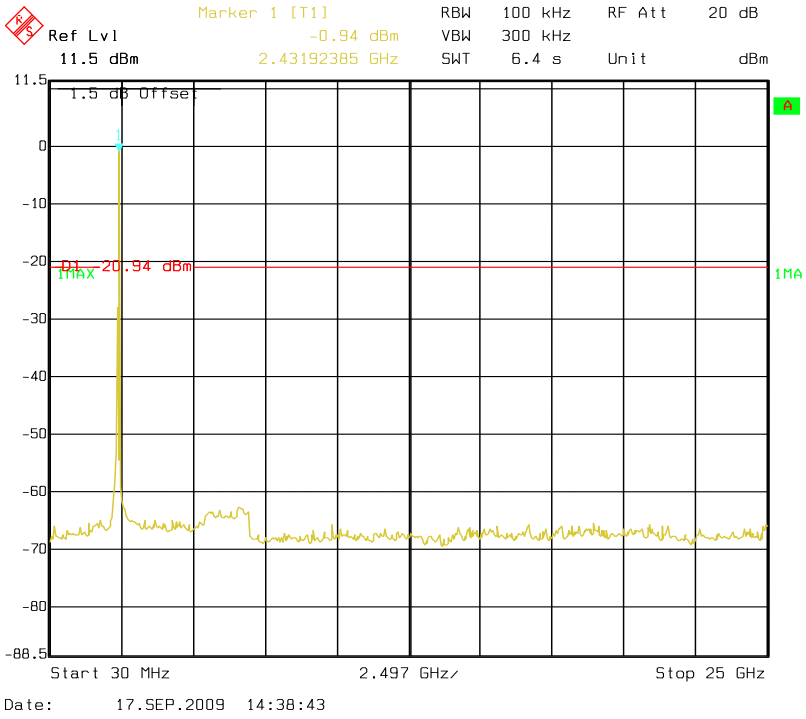
802.11b High Channel



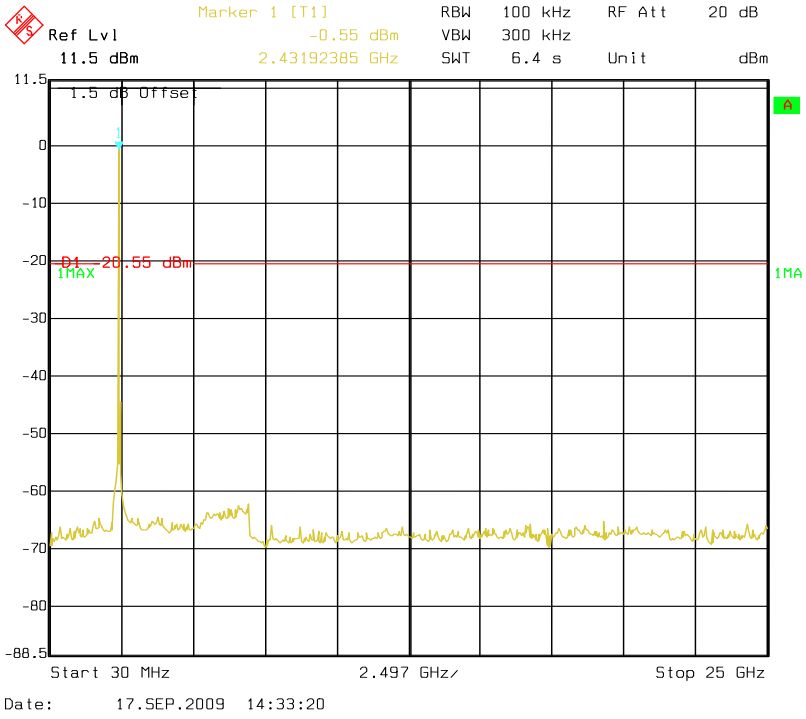
802.11g Low Channel



802.11g Middle Channel



802.11g 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.

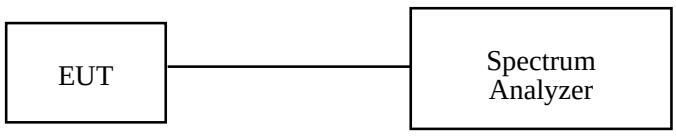
Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCI	100035	2008-11-07	2009-11-06

*** 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

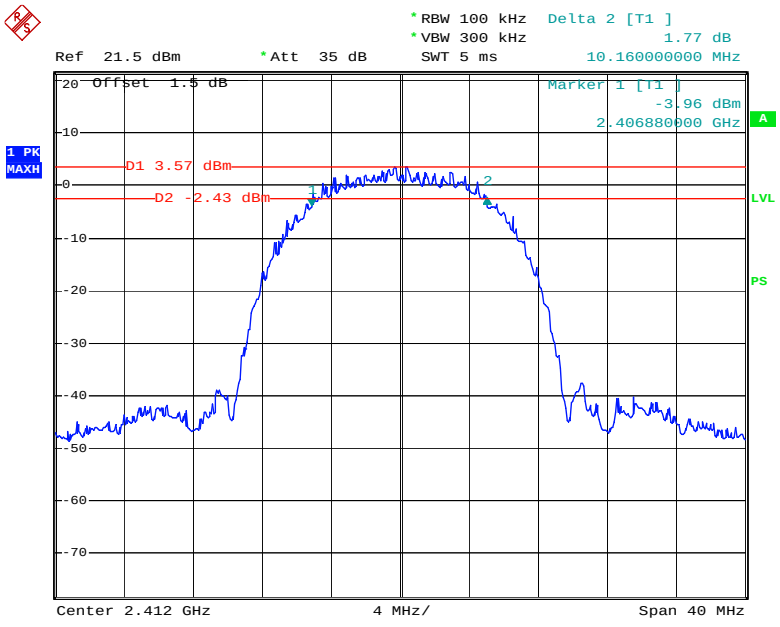
The testing was performed by Vicent Kang on 2009-09-18.

Test Result: Pass.

Please refer to the following tables and plots.

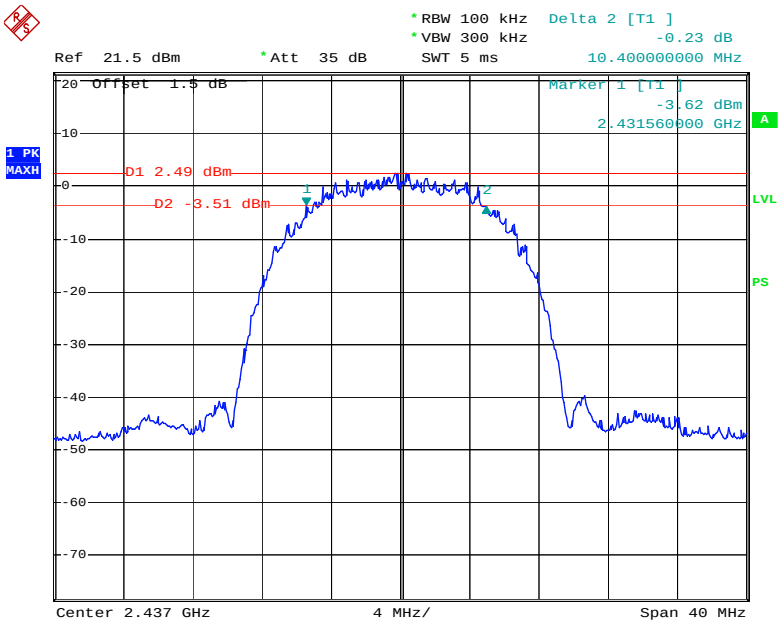
Channel	Frequency (MHz)	Data Rate (Mbps)	Measured 6 dB Bandwidth (MHz)	FCC Part 15.247 Limit (kHz)
802.11b Mode				
Low	2412	11	10.16	＞500
Middle	2437	11	10.40	＞500
High	2462	11	10.16	＞500
802.11g Mode				
Low	2412	54	16.64	＞500
Middle	2437	54	16.64	＞500
High	2462	54	16.64	＞500

802.11b Low Channel



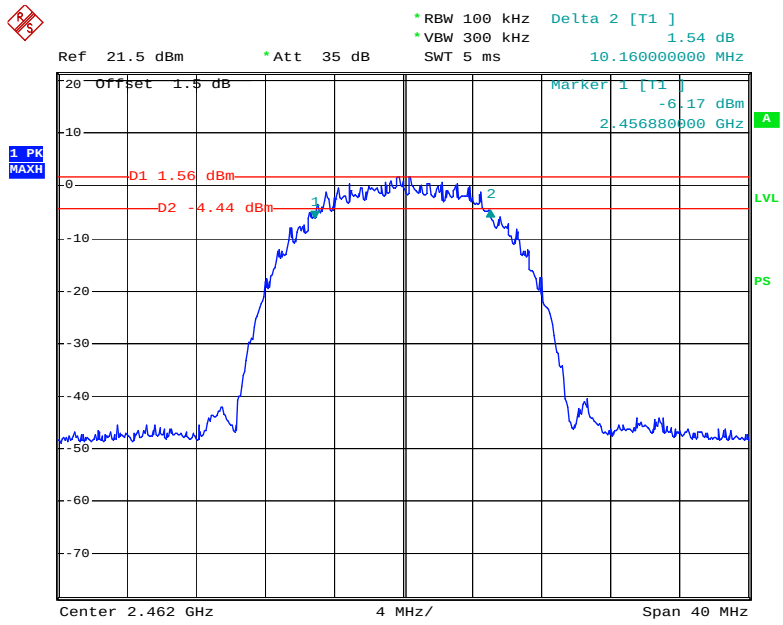
Date: 18.SEP.2009 13:51:26

802.11b Middle Channel



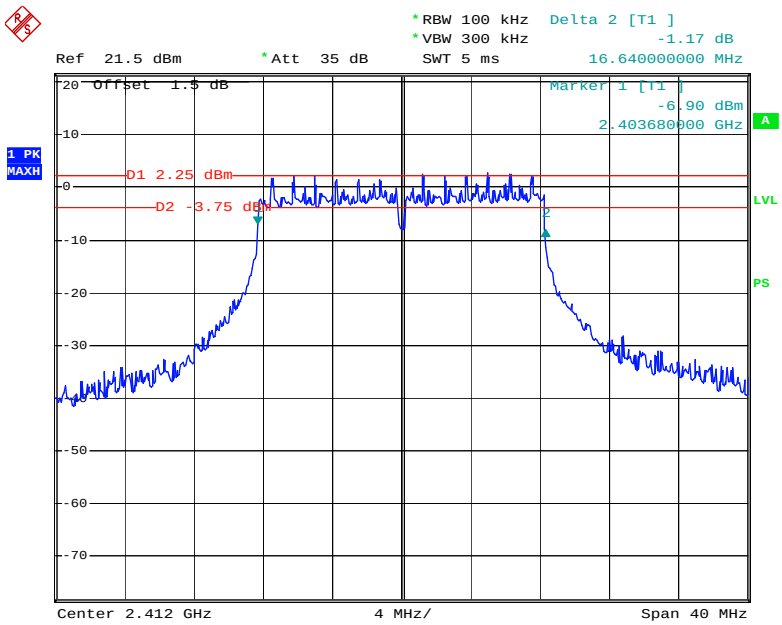
Date: 18.SEP.2009 13:55:45

802.11b High Channel



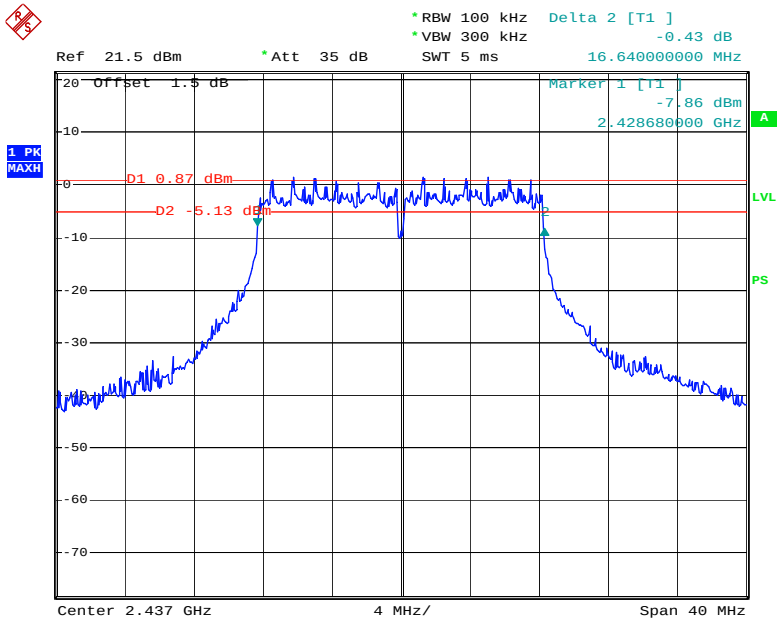
Date: 18.SEP.2009 13:57:55

802.11g Low Channel



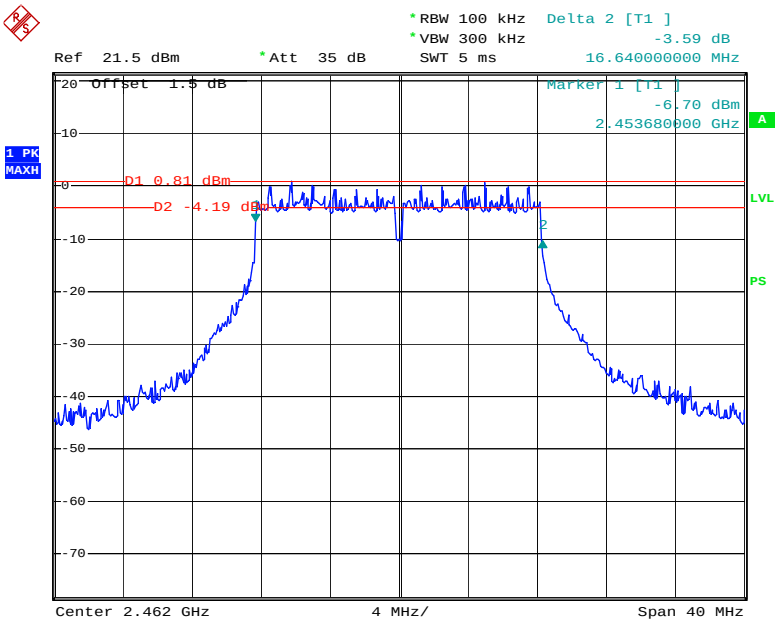
Date: 18.SEP.2009 13:52:31

802.11g Middle Channel



Date: 18.SEP.2009 13:54:33

802.11g High Channel



Date: 18.SEP.2009 13:59:15

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.

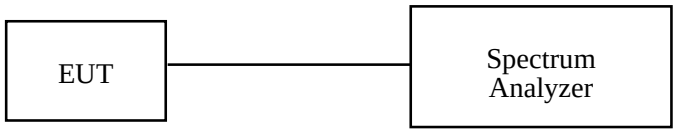
Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCI	100035	2008-11-07	2009-11-06

*** 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 Vicent Kang on 2009-09-17.

Test Mode: Transmitting

802.11b Mode:

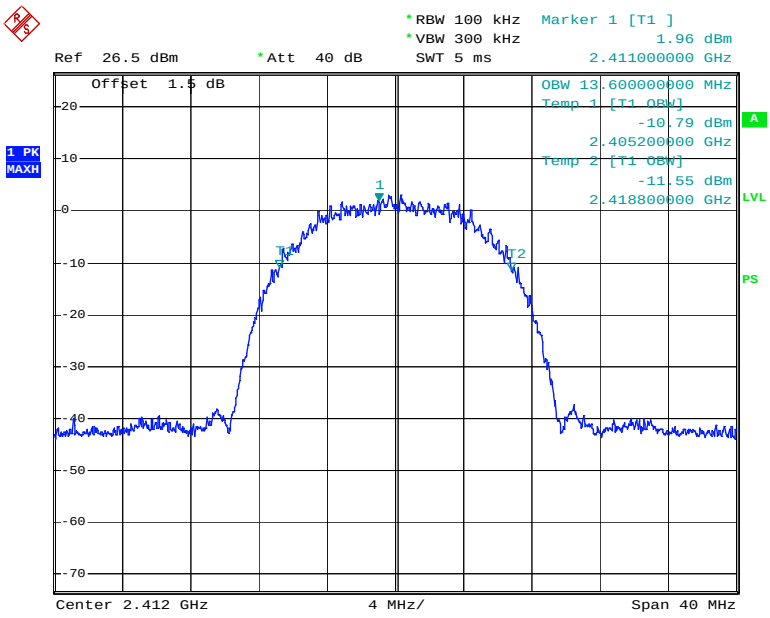
Channel	Frequency (MHz)	Conducted Output Power (dBm)	Limit (dBm)
Low	2412	14.74	30
Middle	2437	13.66	30
High	2462	12.56	30

802.11g Mode:

Channel	Frequency (MHz)	Conducted Output Power (dBm)	Limit (dBm)
Low	2412	15.88	30
Middle	2437	14.39	30
High	2462	13.14	30

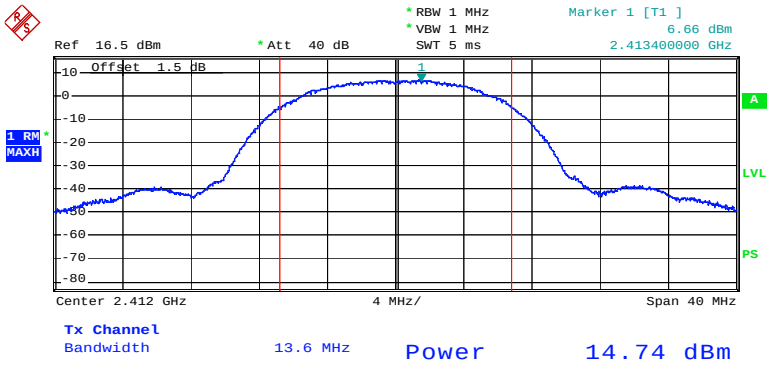
802.11b Mode:

99% Occupied Bandwith



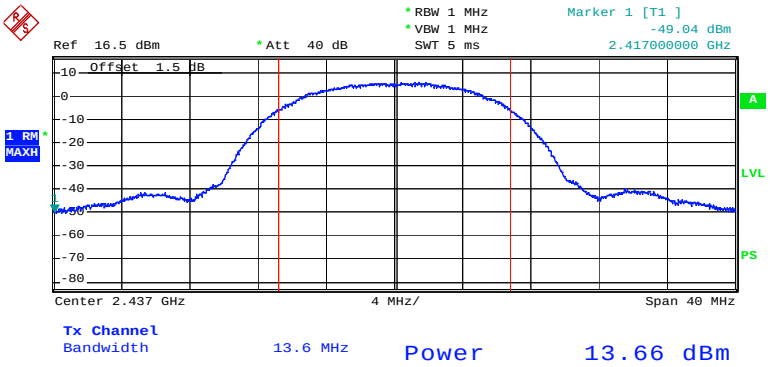
Date: 17.SEP.2009 09:35:36

802.11b RF Output Power, Low Channel



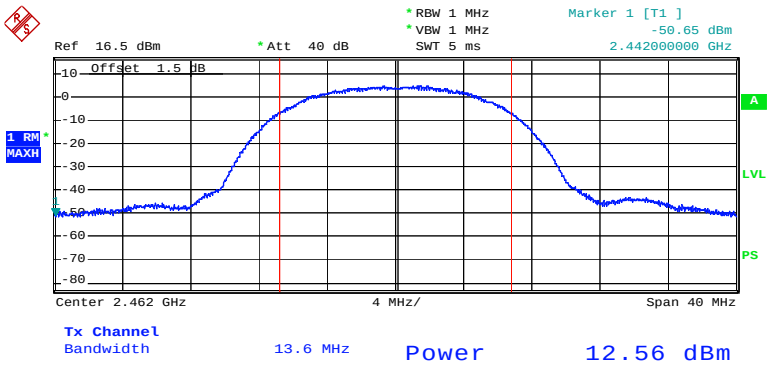
Date: 17.SEP.2009 09:42:39

802.11b RF Output Power, Middle Channel



Date: 17.SEP.2009 09:44:32

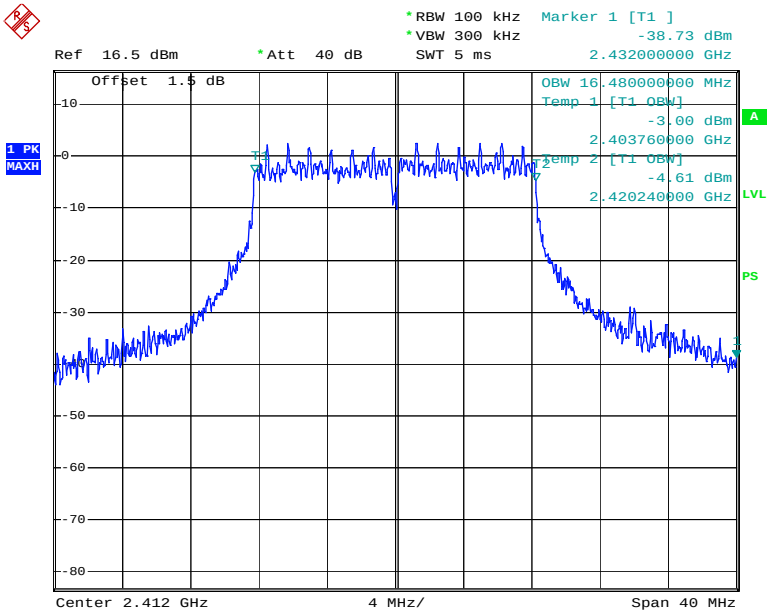
802.11b RF Output Power, High Channel



Date: 17.SEP.2009 09:48:46

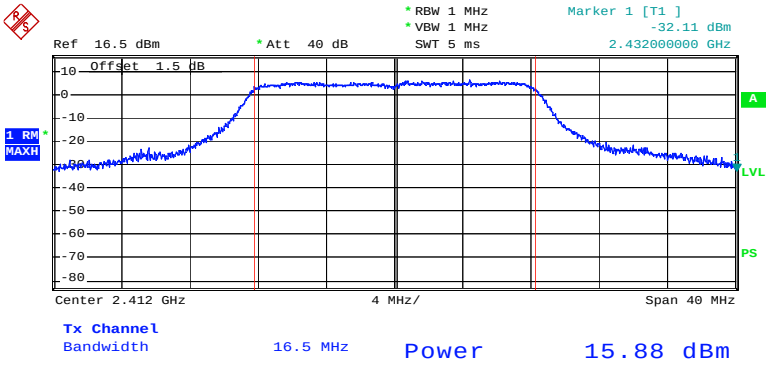
802.11g Mode:

99% Occupied Bandwith



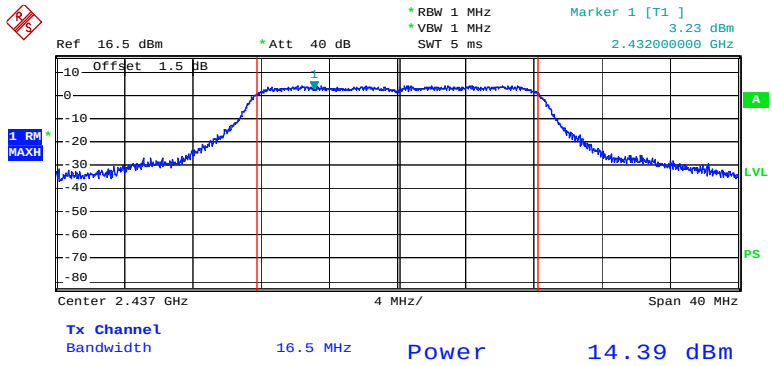
Date: 17.SEP.2009 09:51:52

802.11g RF Output Power, Low Channel



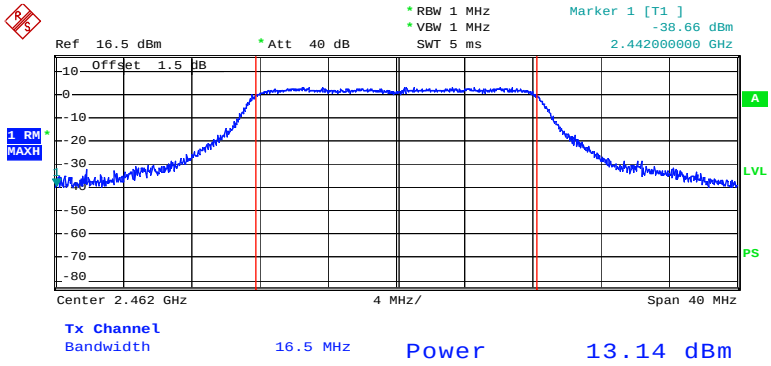
Date: 17.SEP.2009 09:56:27

802.11g RF Output Power, Middle Channel



Date: 17.SEP.2009 09:58:41

802.11g RF Output Power, High Channel



Date: 17.SEP.2009 10:04:21

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	2008-11-07	2009-11-06

*** 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

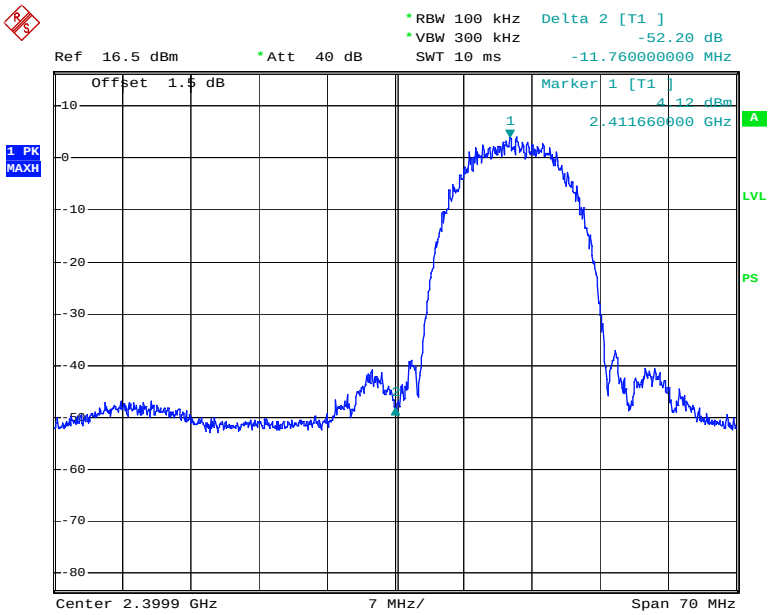
The testing was performed by Vicent Kang on 2009-09-17.

Test Result: *Compliant.*

Frequency (MHz)	Delta Value (dBc)	Limit (dBc)	Result
802.11b			
2399.9	52.20	20	PASS
2483.6	53.91	20	PASS
802.11g			
2399.9	33.92	20	PASS
2483.6	46.99	20	PASS

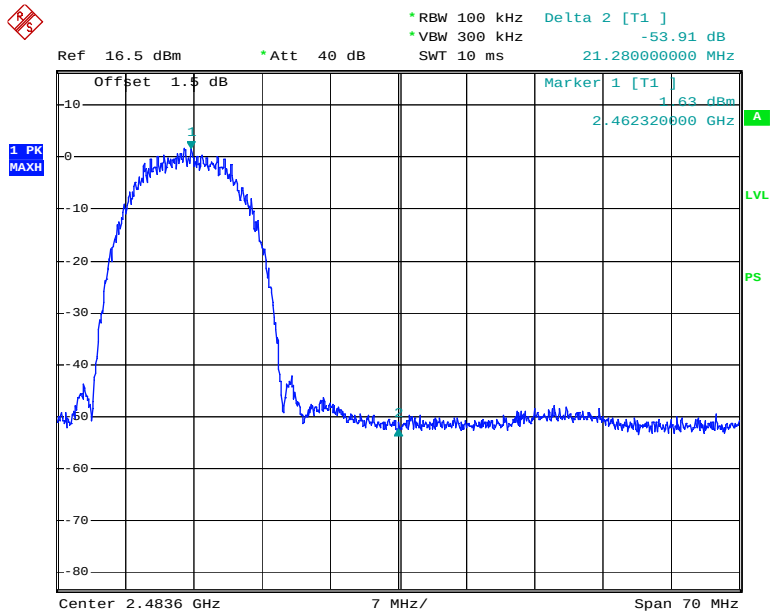
Please refer to following plots.

802.11b: Band Edge, Left Side



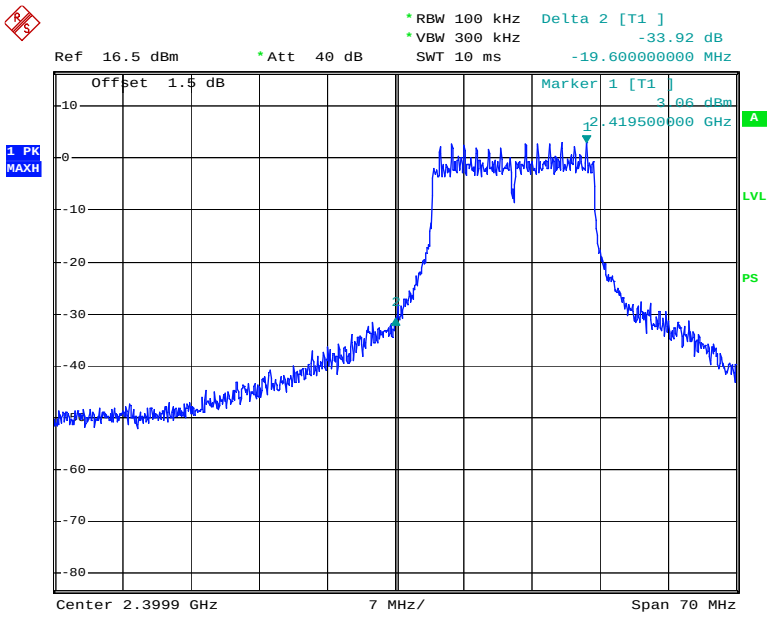
Date: 17.SEP.2009 11:25:47

802.11b: Band Edge, Right Side



Date: 17.SEP.2009 11:27:15

802.11g: Band Edge, Left Side



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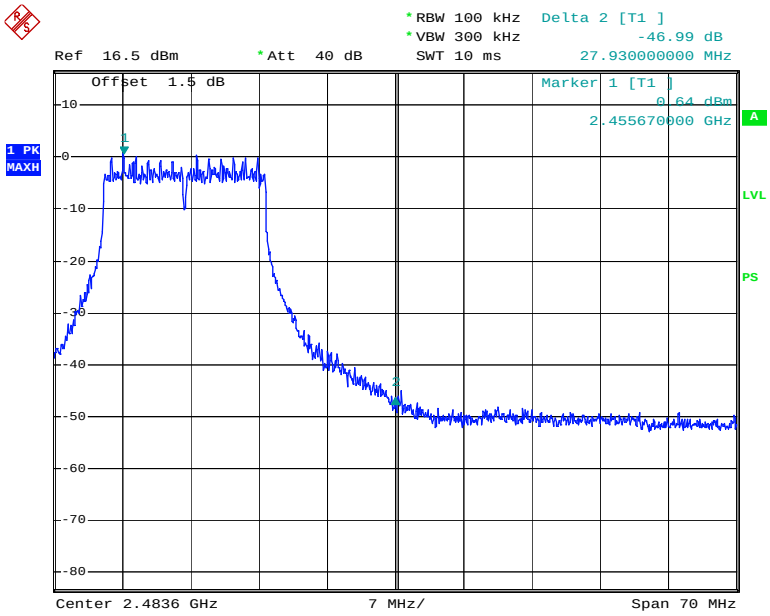
802.11g: Band Edge, Right Side



Date: 17.SEP.2009 11:23:19

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	2008-11-07	2009-11-06

*** 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

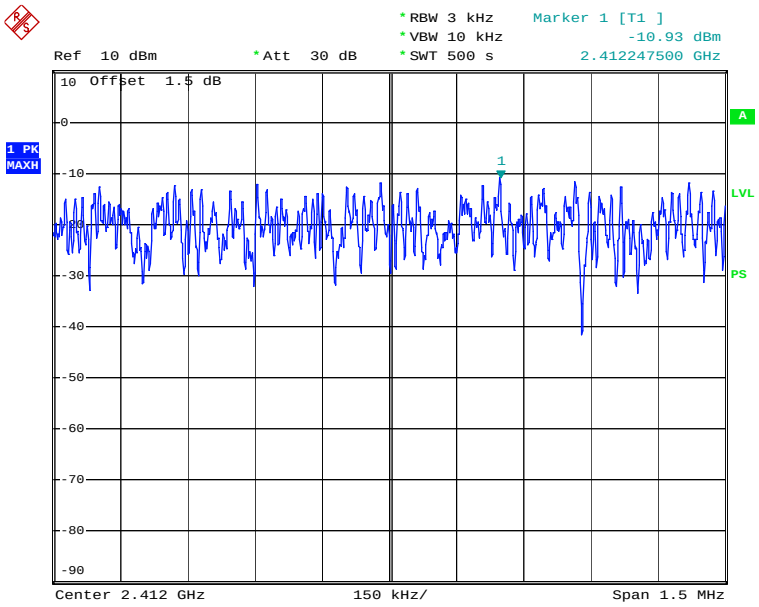
The testing was performed by Vicent Kang on 2009-09-17.

Test Mode: Transmitting

Test Result: Pass

Channel	Frequency (MHz)	Power Spectal Density (dBm/3kHz)	Part 15.247 Limit (dBm/3kHz)	Result
802.11b Mode				
Low	2412	-10.93	8	Pass
Middle	2437	-10.03	8	Pass
High	2462	-9.59	8	Pass
802.11g Mode				
Low	2412	-13.99	8	Pass
Middle	2437	-12.82	8	Pass
High	2462	-12.62	8	Pass

Power Spectral Density, 802.11b Low Channel



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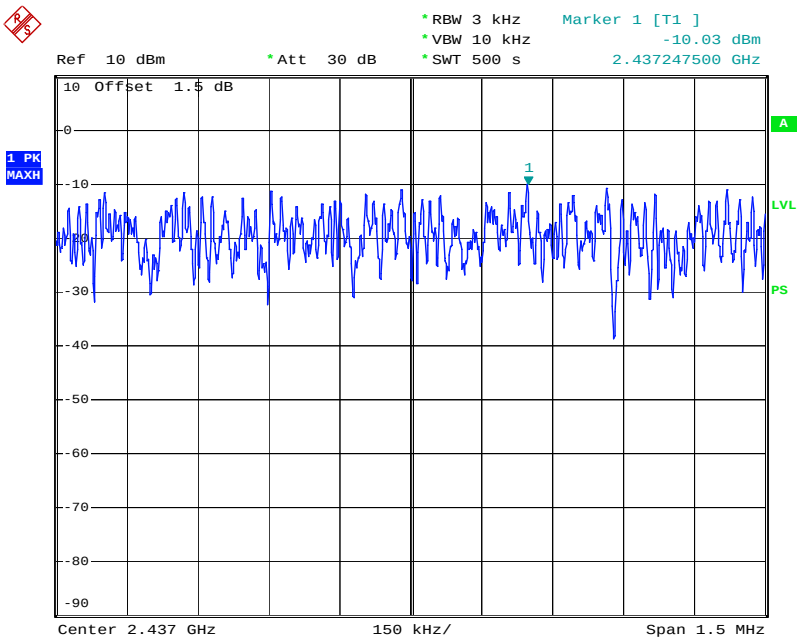
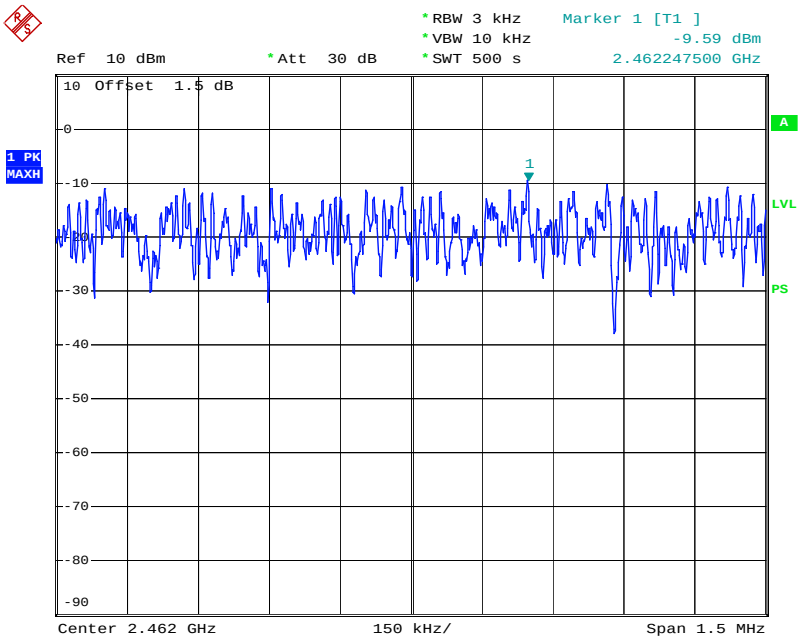
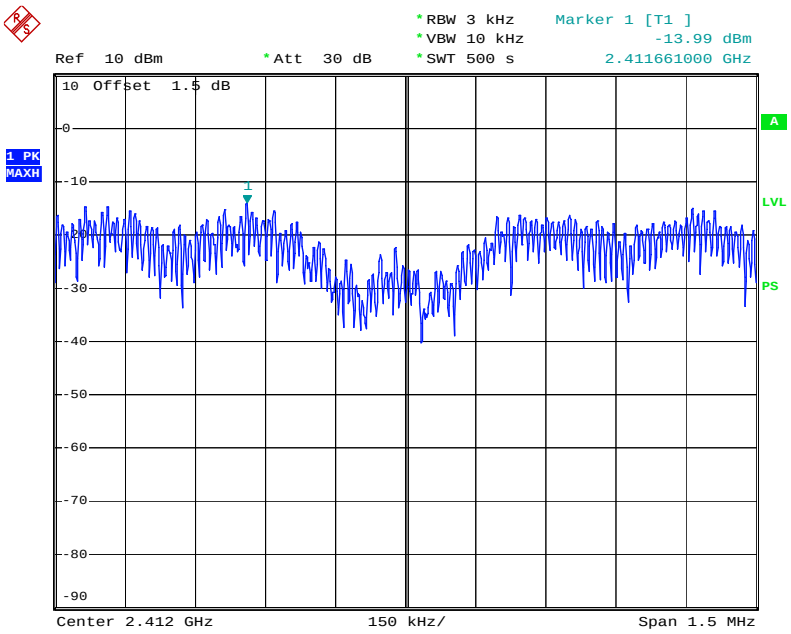
Power Spectral Density, 802.11b Middle Channel



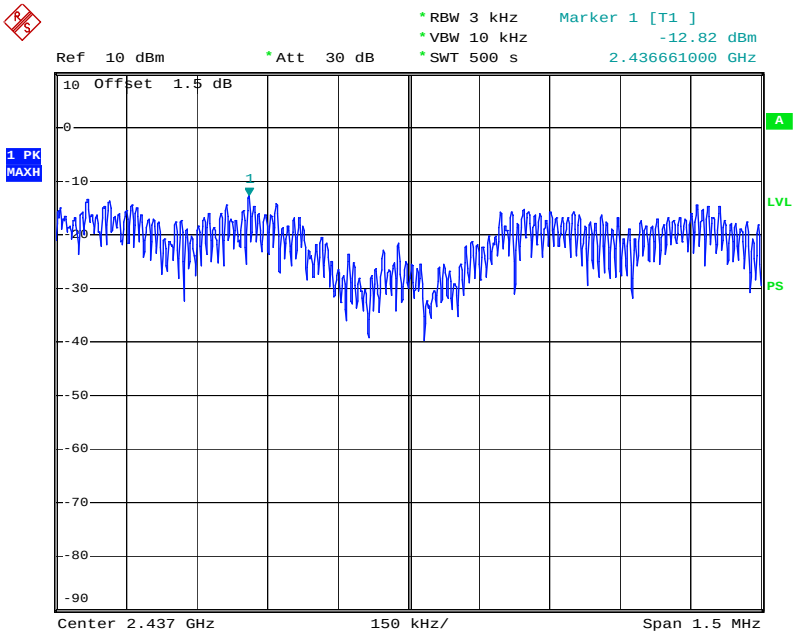
Power Spectral Density, 802.11b High Channel



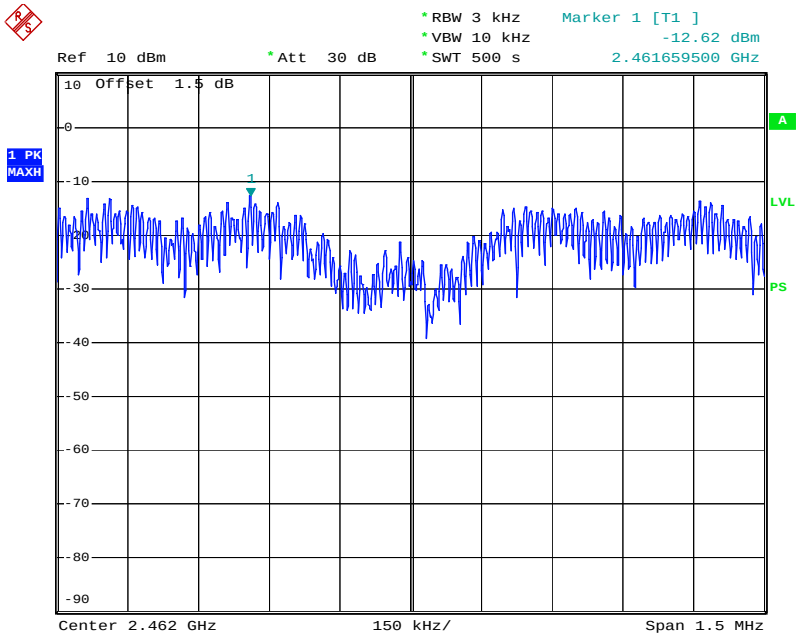
Power Spectral Density, 802.11g Low Channel



Power Spectral Density, 802.11g Middle Channel



Power Spectral Density, 802.11g High Channel



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