

FCC PART 15.247

TEST REPORT

For

ProcessingPoint, Inc.

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FCC ID: SPL-UATTENDBIOW

Report Type: Original Report	Product Type: uAttend Account
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* This report may contain data that are not covered by the NVLAP accreditation and shall be marked with an asterisk "★" (Rev.2)

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *ProcessingPoint, Inc.*'s product, model number: *BN4000 (FCC ID: SPL-UATTENDBIOW)* or ("EUT") in this report is a uAttend Account, which was measured approximately: 18.5 cm (L) x 13.7cm (W) x4.5cm (H), rated input voltage: DC 12V from adapter.

Adapter information:

MODEL: FJ-SW1201000C

Input: 100-240VAC, 50/60Hz 0.35A

Output: 12V DC 1000mA

Note: The series product, model number: BN4000, BN2500 are electrically identical, the difference between them is just the appearance, color and keyboard, the details was explained in the attached declaration letter.

** All measurement and test data in this report was gathered from production sample serial number: 130318017 (Assigned by BACL, Dongguan). The EUT was received on 2013-03-22.*

Objective

This report is prepared on behalf of *ProcessingPoint, Inc.* in accordance with Part 2-Subpart J, Part 15-Subparts A, B and C of the Federal Communications Commission rules.

The tests were performed in order to determine the compliance of the EUT with FCC Part 15-Subpart C, section 15.203, 15.205, 15.207, 15.209 and 15.247 rules.

Related Submittal(s)/Grant(s)

No related submittal grant.

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. (Dongguan). The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

The uncertainty of any RF tests which use conducted method measurement is ± 0.96 dB, the uncertainty of any radiation on emissions measurement is:

30M~200MHz: 5.0 dB

200M~1GHz: 6.2 dB

1G~6GHz: 4.45 dB

6G~18GHz: 5.23 dB

and the uncertainty will not be taken into consideration for all the test data recorded in the report.

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Dongguan) to collect test data is located on the No.69 Pulongcun, Puxinhu Industrial Zone, Tangxia, Dongguan, Guangdong, China

Test site at Bay Area Compliance Laboratories Corp. (Dongguan) has been fully described in reports submitted to the Federal Communication Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on February 02, 2012. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2003.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 273710. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

Additionally, Bay Area Compliance Laboratories Corp. (Dongguan) is an ISO/IEC 17025 accredited laboratory, and is accredited by National Voluntary Laboratory Accredited Program (Lab Code 500069-0).



The current scope of accreditations can be found at <http://ts.nist.gov/standards/scopes/5000690.htm>

SYSTEM TEST CONFIGURATION

Description of Test Configuration

For 802.11b, 802.11g, and 802.11n20 mode, 11 channels are provided to testing:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2412	7	2442
2	2417	8	2447
3	2422	9	2452
4	2427	10	2457
5	2432	11	2462
6	2437	/	/

For 802.11b, 802.11g, and 802.11n20 modes EUT was tested with Channel 1, 6 and 11.
For 802.11n40 mode were tested with Channel 3, 6 and 9.

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

EUT Exercise Software

The test was performed with software 'QA RT3x7x_V1.4.0.0.exe', which was provided by the manufacturer. The worst condition (maximum power) was setting by the software as following table:

Test Mode	Test Software Version	QA RT3x7x_V1.4.0.0.exe		
802.11b	Test Frequency	2412MHz	2437MHz	2462MHz
	Data Rate	1Mbps	1Mbps	1Mbps
	Power Level Setting	45	45	45
802.11g	Test Frequency	2412MHz	2437MHz	2462MHz
	Data Rate	6Mbps	6Mbps	6Mbps
	Power Level Setting	45	45	45
802.11n ht20	Test Frequency	2412MHz	2437MHz	2462MHz
	Data Rate	6.5Mbps	6.5Mbps	6.5Mbps
	Power Level Setting	45	45	45
802.11n ht40	Test Frequency	2422MHz	2437MHz	2452MHz
	Data Rate	13.5Mbps	13.5Mbps	13.5Mbps
	Power Level Setting	45	45	45

Equipment Modifications

No equipment modifications used.

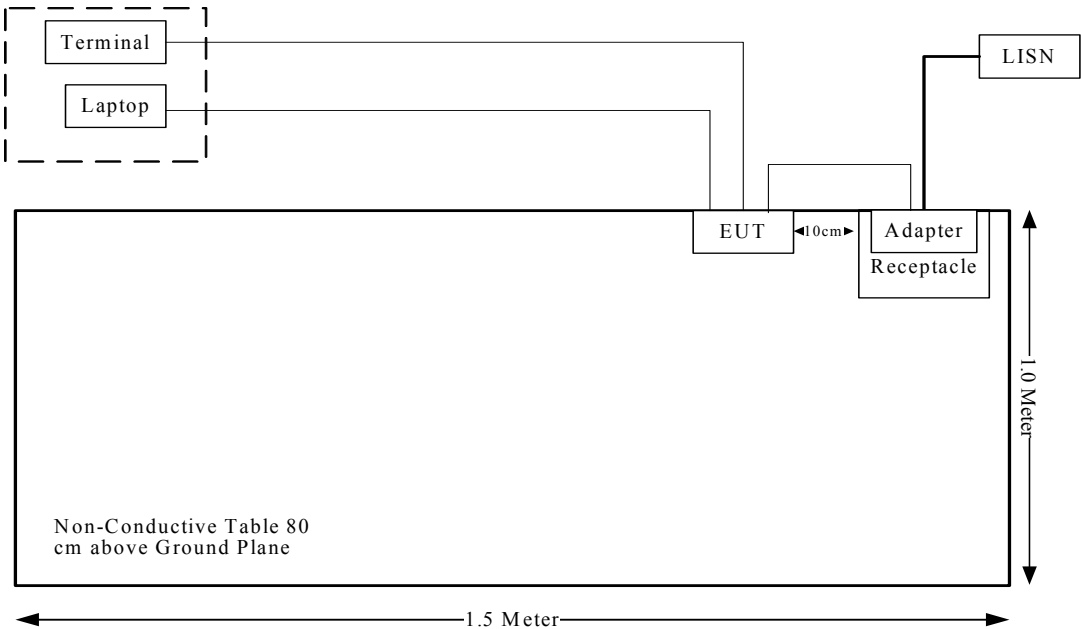
Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
DELL	Laptop	PP11L	N/A

External Cable

Cable Description	Shielding Type	Ferrite Core	Length (m)	From Port	To
RJ45 Cable	No	no	10	EUT	Laptop
RS232 Cable	yes	no	3.0	EUT	Terminal

Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§15.247 (i), §1.1310, §2.1091	Maximum Permissible exposure (MPE)	Compliance
§15.203	Antenna Requirement	Compliance
§15.207 (a)	AC Line Conducted Emissions	Compliance
§15.247(d)	Spurious Emissions at Antenna Port	Compliance
§15.205, §15.209, §15.247(d)	Spurious Emissions	Compliance
§15.247 (a)(2)	6 dB Emission 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) & §1.1310& §2.1091- MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Applicable Standard

According to subpart 15.247(i) and subpart §1.1310, systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

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

(B) Limits for General Population/Uncontrolled Exposure				
Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/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;

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

Calculated Formulary:

Predication of MPE limit at a given distance

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

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

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

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

Calculated Data:

Mode	Frequency (MHz)	Antenna Gain		Conducted Power		Evaluation Distance (cm)	Power Density (mW/cm ²)	MPE Limit (mW/cm ²)
		(dBi)	(numeric)	(dBm)	(mW)			
802.11b	2462	2	1.58	16.60	45.71	20	0.014	1.0
802.11g	2462	2	1.58	13.66	23.23	20	0.007	1.0
802.11n20	2437	2	1.58	13.01	20.00	20	0.006	1.0
802.11n40	2452	2	1.58	12.55	17.99	20	0.006	1.0

Result: The device meet FCC MPE at 20 cm distance

FCC §15.203 - ANTENNA REQUIREMENT

Applicable Standard

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. 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.

Antenna Connector Construction

The EUT has an internal antenna, which was complied with 15.203, the maximum gain is 2 dBi, please refer to the internal photos.

Result: Compliance.

FCC §15.207 (a) – AC LINE CONDUCTED EMISSIONS

Applicable Standard

FCC§15.207

Measurement Uncertainty

Compliance or non-compliance with a disturbance limit shall be determined in the following manner:

If U_{lab} is less than or equal to U_{cisp} of Table 1, then:

- compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.

If U_{lab} is greater than U_{cisp} of Table 1, then:

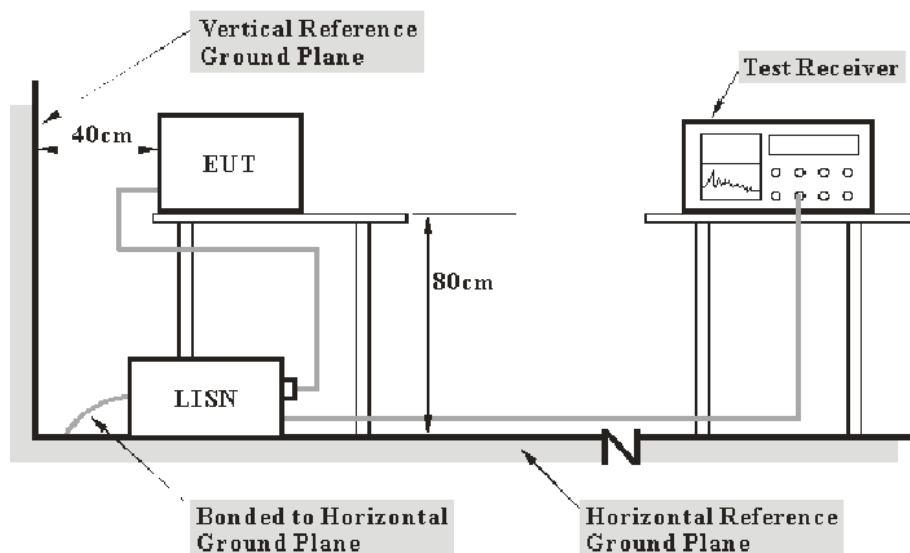
- compliance is deemed to occur if no measured disturbance level, increased by $(U_{lab} - U_{cisp})$, exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance level, increased by $(U_{lab} - U_{cisp})$, exceeds the disturbance limit.

Based on CISPR 16-4-2: 2011, measurement uncertainty of conducted disturbance at mains port using AMN at Bay Area Compliance Laboratories Corp. (Dongguan) is 3.46 dB (150 kHz to 30 MHz).

Table 1 – Values of U_{cisp}

Measurement	U_{cisp}
Conducted disturbance at mains port using AMN (150 kHz to 30 MHz)	3.4 dB

EUT Setup



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

The setup of EUT is according with per ANSI C63.4-2003 measurement procedure. The specification used was with the FCC Part 15.207 limits.

The 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 Procedure

During the conducted emission test, the adapter was connected to the outlet of the first LISN and the other support equipments were connected to the outlet of the second 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.

Corrected Amplitude & Margin Calculation

The basic equation is as follows:

$$V_C = V_R + A_C + VDF$$

Herein,

V_C : corrected voltage amplitude

V_R : reading voltage amplitude

A_C : attenuation caused by cable loss

VDF: voltage division factor of AMN or ISN

The “**Margin**” column of the following data tables indicates the degree of compliance within the applicable limit. For example, a margin of 7dB means the emission is 7dB below the maximum limit. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Limit} - \text{Corrected Amplitude}$$

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI TEST RECIEVER	ESCS 30	830245/006	2013-1-10	2014-1-9
R&S	L.I.S.N	ESH3-Z5	843331/015	2012-9-17	2013-9-16
R&S	L.I.S.N	ESH3-Z5	100113	2012-11-29	2013-11-28
BACL	Test Software	BACL-EMC	V1.0-2010	N/A	N/A

* Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to National Primary Standards and International System of Units (SI).

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:

8.46 dB at 12.930 MHz in the **Neutral** conducted mode.

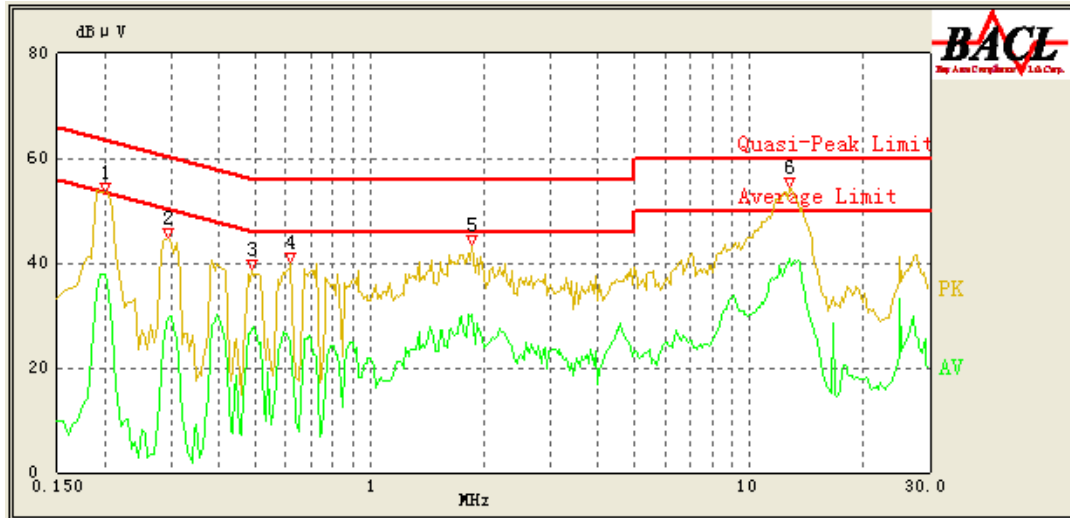
Test Data**Environmental Conditions**

Temperature:	27.5 ° C
Relative Humidity:	63 %
ATM Pressure:	100.7kPa

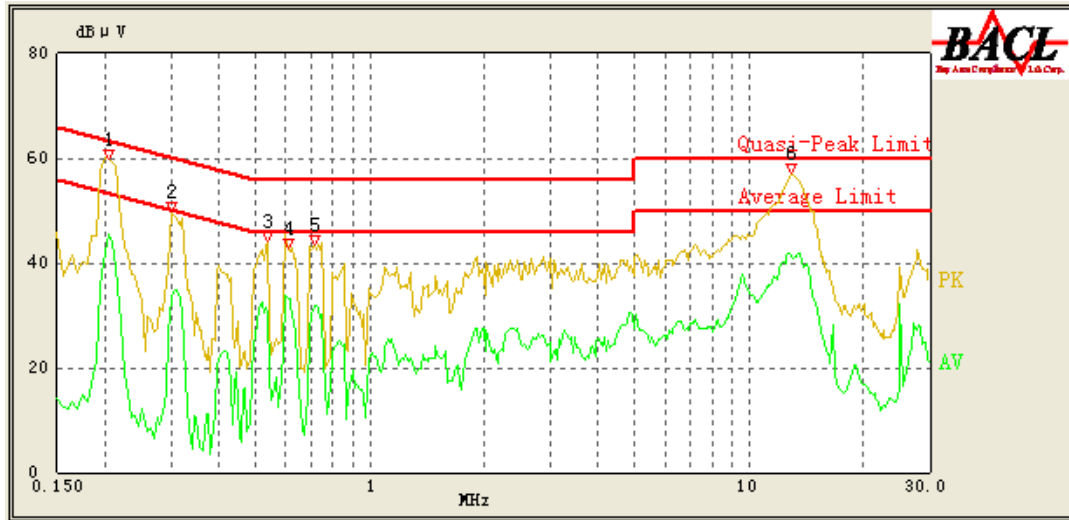
The testing was performed by Leon Chen on 2013-09-07.

Test Mode: Transmitting

AC 120V/60 Hz, Line



Frequency (MHz)	Corrected Amplitude (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Detector (PK/AV/QP)
0.200	48.51	0.98	64.57	16.06	QP
0.200	37.69	0.98	54.57	16.88	AV
0.295	39.81	0.82	61.86	22.05	QP
0.295	29.46	0.82	51.86	22.40	AV
0.490	34.68	0.54	56.29	21.61	QP
0.490	27.54	0.54	46.29	18.75	AV
0.620	24.77	0.48	56.00	31.23	QP
0.620	24.06	0.48	46.00	21.94	AV
1.860	33.35	0.35	56.00	22.65	QP
1.860	30.25	0.35	46.00	15.75	AV
12.795	49.03	1.33	60.00	10.97	QP
12.795	40.96	1.33	50.00	9.04	AV

AC 120V/60 Hz, Neutral

Frequency (MHz)	Corrected Amplitude (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Detector (PK/AV/QP)
0.205	52.80	1.56	64.43	11.63	QP
0.205	45.65	1.56	54.43	8.78	AV
0.300	43.07	1.07	61.71	18.64	QP
0.300	33.11	1.07	51.71	18.60	AV
0.535	35.84	0.53	56.00	20.16	QP
0.535	30.77	0.53	46.00	15.23	AV
0.610	38.43	0.48	56.00	17.57	QP
0.610	33.26	0.48	46.00	12.74	AV
0.715	36.64	0.41	56.00	19.36	QP
0.715	32.00	0.41	46.00	14.00	AV
12.975	51.25	0.96	60.00	8.75	QP
12.930	41.54	0.96	50.00	8.46	AV

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

Applicable Standard

FCC §15.247 (d); §15.209; §15.205;

Measurement Uncertainty

Compliance or non-compliance with a disturbance limit shall be determined in the following manner:

If U_{lab} is less than or equal to U_{cisp} of Table 1, then:

- compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.

If U_{lab} is greater than U_{cisp} of Table 1, then:

- compliance is deemed to occur if no measured disturbance level, increased by $(U_{lab} - U_{cisp})$, exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance level, increased by $(U_{lab} - U_{cisp})$, exceeds the disturbance limit.

Based on CISPR 16-4-2: 2011, measurement uncertainty of radiated emission at a distance of 3m at Bay Area Compliance Laboratories Corp. (Dongguan) is:

30M~200MHz: 5.0 dB

200M~1GHz: 6.2 dB

1G~6GHz: 4.45 dB

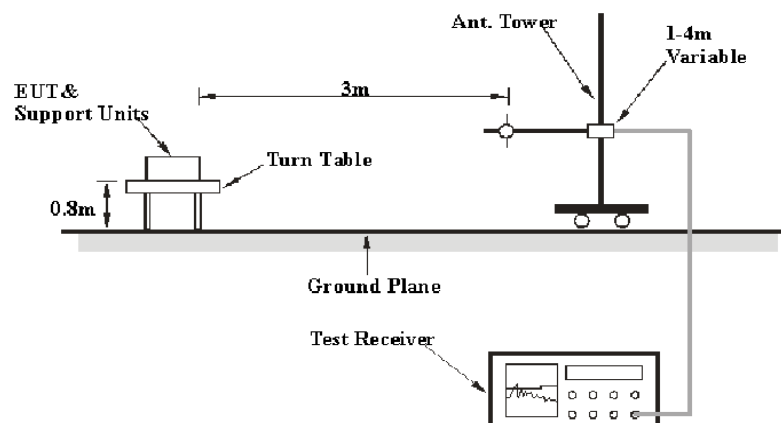
6G~18GHz: 5.23 dB

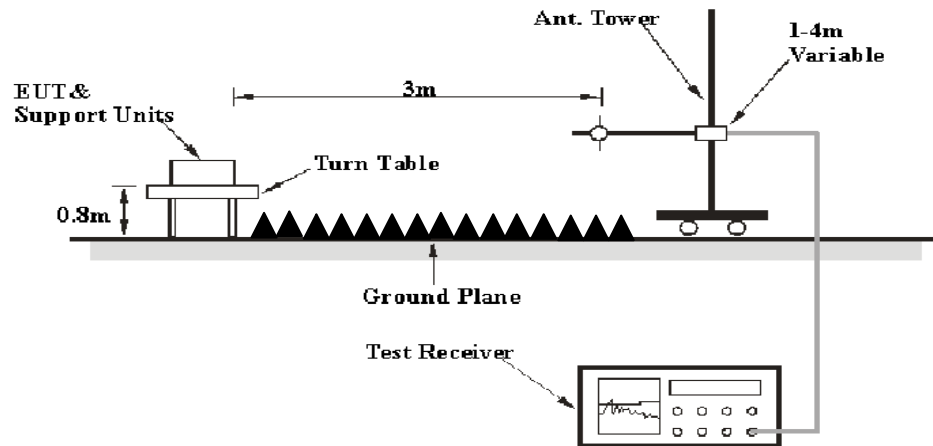
Table 1 – Values of U_{cisp}

Measurement	U_{cisp}
Radiated disturbance (electric field strength at an OATS or in a SAC) (30 MHz to 1000 MHz)	6.3 dB
Radiated disturbance (electric field strength in a FAR) (1 GHz to 6 GHz)	5.2 dB
Radiated disturbance (electric field strength in a FAR) (6 GHz to 18 GHz)	5.5 dB

EUT Setup

Below 1GHz:



Above 1GHz:

The radiated emission tests were performed in the 3 meters chamber test site, 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	Detector
30MHz – 1000 MHz	100 kHz	300 kHz	QP
1000 MHz – 25 GHz	1MHz	3 MHz	PK
1000 MHz – 25 GHz	1MHz	10 Hz	Ave.

Test Procedure

During the radiated emissions, the EUT was connected to the AC floor outlet and the other support equipments were connected to the second 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-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:

$$\text{Corrected Amplitude} = \text{Meter Reading} + \text{Antenna Factor} + \text{Cable Loss} - \text{Amplifier Gain}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7dB means the emission is 7dB below the limit. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Limit} - \text{Corrected Amplitude}$$

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI TEST RECEIVER	ESCI	100224	2013-5-6	2014-5-5
Sunol Sciences	Antenna	JB3	A060611-1	2011-9-6	2014-9-5
HP	HP AMPLIFIER	8447E	2434A02181	N/A	N/A
R&S	Spectrum analyzer	FSEM 30	849016/001	2012-12-7	2013-12-6
ETS LINDGREN	horn antenna	3115	000 527 35	2012-9-6	2015-9-5
Mini-Circuit	Amplifier	ZVA-213-S+	054201245	N/A	N/A
Ducommun Technologies	Horn antenna	ARH-4223-02	1007726-02-1304	2013-6-16	2014-6-15
QUINSTAR	Amplifier	QLW-18045536-J0	15964001001	N/A	N/A
R&S	Spectrum analyzer	FSP 38	100478	2013-6-16	2014-6-15

* Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to National Primary Standards and International System of Units (SI).

Test Results Summary

According to the recorded data in following table, the EUT complied with the FCC Title 47, Part 15, Section 15.205, 15.209 and 15.247, with the worst margin reading of:

3.77 dB at 467.59 MHz in the **Horizontal** polarization of 802.11n20 mode

Test Data

Environmental Conditions

Temperature:	27.5 ° C
Relative Humidity:	63 %
ATM Pressure:	100.7kPa

The testing was performed by Leon Chen on 2013-09-07.

Mode: Transmitting

802.11b Mode:

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	FCC 15.247	
	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB(1/m))				Limit (dBμV/m)	Margin (dB)
Low Channel:2412MHz									
2412	79.49	PK	H	25.67	4.42	0.00	109.58	N/A	N/A
2412	74.48	AV	H	25.67	4.42	0.00	104.57	N/A	N/A
2412	74.62	PK	V	25.67	4.42	0.00	104.71	N/A	N/A
2412	69.67	AV	V	25.67	4.42	0.00	99.76	N/A	N/A
2390	29.33	PK	H	25.61	4.39	0.00	59.33	74.00	14.67
2390	15.3	AV	H	25.61	4.39	0.00	45.30	54.00	8.70
4824	37.58	PK	H	30.64	6.03	27.26	46.99	74.00	27.01
4824	34.94	AV	H	30.64	6.03	27.26	44.35	54.00	9.65
7236	32.22	PK	H	34.17	7.47	26.36	47.50	74.00	26.50
7236	18.36	AV	H	34.17	7.47	26.36	33.64	54.00	20.36
9648	33.53	PK	H	36.06	8.81	26.06	52.34	74.00	21.66
9648	17.95	AV	H	36.06	8.81	26.06	36.76	54.00	17.24
3617	31.78	PK	H	29.06	5.02	27.43	38.43	74.00	35.57
3617	19.69	AV	H	29.06	5.02	27.43	26.34	54.00	27.66
473.2	38.27	QP	H	17.91	2.64	21.95	36.87	46.00	9.13
Middle Channel:2437MHz									
2437	79.56	PK	H	25.74	4.41	0.00	109.71	N/A	N/A
2437	74.75	AV	H	25.74	4.41	0.00	104.90	N/A	N/A
2437	74.23	PK	V	25.74	4.41	0.00	104.38	N/A	N/A
2437	69.67	AV	V	25.74	4.41	0.00	99.82	N/A	N/A
4874	37.39	PK	H	30.77	6.09	27.26	46.99	74.00	27.01
4874	35.16	AV	H	30.77	6.09	27.26	44.76	54.00	9.24
7311	32.39	PK	H	34.35	7.51	26.51	47.74	74.00	26.26
7311	18.32	AV	H	34.35	7.51	26.51	33.67	54.00	20.33
9748	33.5	PK	H	36.30	8.83	25.68	52.95	74.00	21.05
9748	18.22	AV	H	36.30	8.83	25.68	37.67	54.00	16.33
1720	31.45	PK	H	24.04	3.51	26.97	32.03	74.00	41.97
1720	17.4	AV	H	24.04	3.51	26.97	17.98	54.00	36.02
3617	31.85	PK	H	29.06	5.02	27.43	38.50	74.00	35.50
3617	19.94	AV	H	29.06	5.02	27.43	26.59	54.00	27.41
473.2	38.53	QP	H	17.91	2.64	21.95	37.13	46.00	8.87
High Channel:2462MHz									
2462	79.5	PK	H	25.80	4.43	0.00	109.73	N/A	N/A
2462	74.63	AV	H	25.80	4.43	0.00	104.86	N/A	N/A
2462	74.46	PK	V	25.80	4.43	0.00	104.69	N/A	N/A
2462	69.93	AV	V	25.80	4.43	0.00	100.16	N/A	N/A
2483.5	29.22	PK	H	25.86	4.49	0.00	59.57	74.00	14.43
2483.5	15.46	AV	H	25.86	4.49	0.00	45.81	54.00	8.19
4924	38	PK	H	30.90	5.97	27.27	47.60	74.00	26.40
4924	35.05	AV	H	30.90	5.97	27.27	44.65	54.00	9.35
7386	32.1	PK	H	34.53	7.55	26.66	47.52	74.00	26.48
7386	18.69	AV	H	34.53	7.55	26.66	34.11	54.00	19.89
9848	33.48	PK	H	36.54	8.85	25.49	53.38	74.00	20.62
9848	17.76	AV	H	36.54	8.85	25.49	37.66	54.00	16.34
3617	31.91	PK	H	29.06	5.02	27.43	38.56	74.00	35.44
3617	19.73	AV	H	29.06	5.02	27.43	26.38	54.00	27.62
473.2	38.32	QP	H	17.91	2.64	21.95	36.92	46.00	9.08

*Within measurement uncertainty!

802.11g Mode:

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	FCC 15.247	
	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB(1/m))				Limit (dBμV/m)	Margin (dB)
Low Channel:2412MHz									
2412	77.51	PK	H	25.67	4.42	0.00	107.60	N/A	N/A
2412	66.42	AV	H	25.67	4.42	0.00	96.51	N/A	N/A
2412	72.3	PK	V	25.67	4.42	0.00	102.39	N/A	N/A
2412	61.65	AV	V	25.67	4.42	0.00	91.74	N/A	N/A
2390	30.29	PK	H	25.61	4.39	0.00	60.29	74.00	13.71
2390	16.98	AV	H	25.61	4.39	0.00	46.98	54.00	7.02
4824	36.89	PK	H	30.64	6.03	27.26	46.30	74.00	27.70
4824	26.19	AV	H	30.64	6.03	27.26	35.60	54.00	18.40
7236	32.13	PK	H	34.17	7.47	26.36	47.41	74.00	26.59
7236	18.46	AV	H	34.17	7.47	26.36	33.74	54.00	20.26
9648	33.77	PK	H	36.06	8.81	26.06	52.58	74.00	21.42
9648	17.95	AV	H	36.06	8.81	26.06	36.76	54.00	17.24
3617	31.85	PK	H	29.06	5.02	27.43	38.50	74.00	35.50
3617	19.83	AV	H	29.06	5.02	27.43	26.48	54.00	27.52
473.2	38.49	QP	H	17.91	2.64	21.95	37.09	46.00	8.91
Middle Channel:2437MHz									
2437	77.62	PK	H	25.74	4.41	0.00	107.77	N/A	N/A
2437	66.37	AV	H	25.74	4.41	0.00	96.52	N/A	N/A
2437	72.29	PK	V	25.74	4.41	0.00	102.44	N/A	N/A
2437	61.72	AV	V	25.74	4.41	0.00	91.87	N/A	N/A
4874	36.73	PK	H	30.77	6.09	27.26	46.33	74.00	27.67
4874	26.48	AV	H	30.77	6.09	27.26	36.08	54.00	17.92
7311	32.54	PK	H	34.35	7.51	26.51	47.89	74.00	26.11
7311	18.35	AV	H	34.35	7.51	26.51	33.70	54.00	20.30
9748	33.7	PK	H	36.30	8.83	25.68	53.15	74.00	20.85
9748	18.1	AV	H	36.30	8.83	25.68	37.55	54.00	16.45
1720	31.39	PK	H	24.04	3.51	26.97	31.97	74.00	42.03
1720	17.03	AV	H	24.04	3.51	26.97	17.61	54.00	36.39
3617	32.09	PK	H	29.06	5.02	27.43	38.74	74.00	35.26
3617	19.89	AV	H	29.06	5.02	27.43	26.54	54.00	27.46
473.2	38.35	QP	H	17.91	2.64	21.95	36.95	46.00	9.05
High Channel:2462MHz									
2462	77.95	PK	H	25.80	4.43	0.00	108.18	N/A	N/A
2462	66.57	AV	H	25.80	4.43	0.00	96.80	N/A	N/A
2462	72.25	PK	V	25.80	4.43	0.00	102.48	N/A	N/A
2462	61.66	AV	V	25.80	4.43	0.00	91.89	N/A	N/A
2483.5	30.03	PK	H	25.86	4.49	0.00	60.38	74.00	13.62
2483.5	16.88	AV	H	25.86	4.49	0.00	47.23	54.00	6.77
4924	37.15	PK	H	30.90	5.97	27.27	46.75	74.00	27.25
4924	26.26	AV	H	30.90	5.97	27.27	35.86	54.00	18.14
7386	32.02	PK	H	34.53	7.55	26.66	47.44	74.00	26.56
7386	18.52	AV	H	34.53	7.55	26.66	33.94	54.00	20.06
9848	33.84	PK	H	36.54	8.85	25.49	53.74	74.00	20.26
9848	17.9	AV	H	36.54	8.85	25.49	37.80	54.00	16.20
3617	32.13	PK	H	29.06	5.02	27.43	38.78	74.00	35.22
3617	20.04	AV	H	29.06	5.02	27.43	26.69	54.00	27.31
473.2	38.77	QP	H	17.91	2.64	21.95	37.37	46.00	8.63

*Within measurement uncertainty!

802.11n20 Mode:

Frequency	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	FCC 15.247	
(MHz)	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB(1/m))				Limit (dBμV/m)	Margin (dB)
Low Channel:2412MHz									
2412	77.55	PK	H	25.67	4.42	0.00	107.64	N/A	N/A
2412	66.7	AV	H	25.67	4.42	0.00	96.79	N/A	N/A
2412	72.11	PK	V	25.67	4.42	0.00	102.20	N/A	N/A
2412	61.45	AV	V	25.67	4.42	0.00	91.54	N/A	N/A
2390	37.24	PK	H	25.61	4.39	0.00	67.24	74.00	6.76
2390	18.43	AV	H	25.61	4.39	0.00	48.43	54.00	5.57
4824	37.16	PK	H	30.64	6.03	27.26	46.57	74.00	27.43
4824	25.07	AV	H	30.64	6.03	27.26	34.48	54.00	19.52
7236	32.18	PK	H	34.17	7.47	26.36	47.46	74.00	26.54
7236	18.57	AV	H	34.17	7.47	26.36	33.85	54.00	20.15
9648	33.73	PK	H	36.06	8.81	26.06	52.54	74.00	21.46
9648	17.83	AV	H	36.06	8.81	26.06	36.64	54.00	17.36
3617	32.07	PK	H	29.06	5.02	27.43	38.72	74.00	35.28
3617	19.82	AV	H	29.06	5.02	27.43	26.47	54.00	27.53
473.2	38.6	QP	H	17.91	2.64	21.95	37.20	46.00	8.80
Middle Channel:2437MHz									
2437	77.73	PK	H	25.74	4.41	0.00	107.88	N/A	N/A
2437	66.73	AV	H	25.74	4.41	0.00	96.88	N/A	N/A
2437	71.95	PK	V	25.74	4.41	0.00	102.10	N/A	N/A
2437	61.84	AV	V	25.74	4.41	0.00	91.99	N/A	N/A
4874	36.57	PK	H	30.77	6.09	27.26	46.17	74.00	27.83
4874	24.97	AV	H	30.77	6.09	27.26	34.57	54.00	19.43
7311	32.36	PK	H	34.35	7.51	26.51	47.71	74.00	26.29
7311	18.06	AV	H	34.35	7.51	26.51	33.41	54.00	20.59
9748	33.28	PK	H	36.30	8.83	25.68	52.73	74.00	21.27
9748	18.36	AV	H	36.30	8.83	25.68	37.81	54.00	16.19
1720	31.41	PK	H	24.04	3.51	26.97	31.99	74.00	42.01
1720	16.87	AV	H	24.04	3.51	26.97	17.45	54.00	36.55
3617	32.19	PK	H	29.06	5.02	27.43	38.84	74.00	35.16
3617	19.96	AV	H	29.06	5.02	27.43	26.61	54.00	27.39
473.2	38.36	QP	H	17.91	2.64	21.95	36.96	46.00	9.04
High Channel:2462MHz									
2462	77.82	PK	H	25.80	4.43	0.00	108.05	N/A	N/A
2462	66.87	AV	H	25.80	4.43	0.00	97.10	N/A	N/A
2462	72.09	PK	V	25.80	4.43	0.00	102.32	N/A	N/A
2462	61.73	AV	V	25.80	4.43	0.00	91.96	N/A	N/A
2483.5	37.93	PK	H	25.86	4.49	0.00	68.28	74.00	5.72
2483.5	18.44	AV	H	25.86	4.49	0.00	48.79	54.00	5.21
4924	37.29	PK	H	30.90	5.97	27.27	46.89	74.00	27.11
4924	24.97	AV	H	30.90	5.97	27.27	34.57	54.00	19.43
7386	32.2	PK	H	34.53	7.55	26.66	47.62	74.00	26.38
7386	18.94	AV	H	34.53	7.55	26.66	34.36	54.00	19.64
9848	34.05	PK	H	36.54	8.85	25.49	53.95	74.00	20.05
9848	17.74	AV	H	36.54	8.85	25.49	37.64	54.00	16.36
3617	32.2	PK	H	29.06	5.02	27.43	38.85	74.00	35.15
3617	20	AV	H	29.06	5.02	27.43	26.65	54.00	27.35
473.2	38.77	QP	H	17.91	2.64	21.95	37.37	46.00	8.63

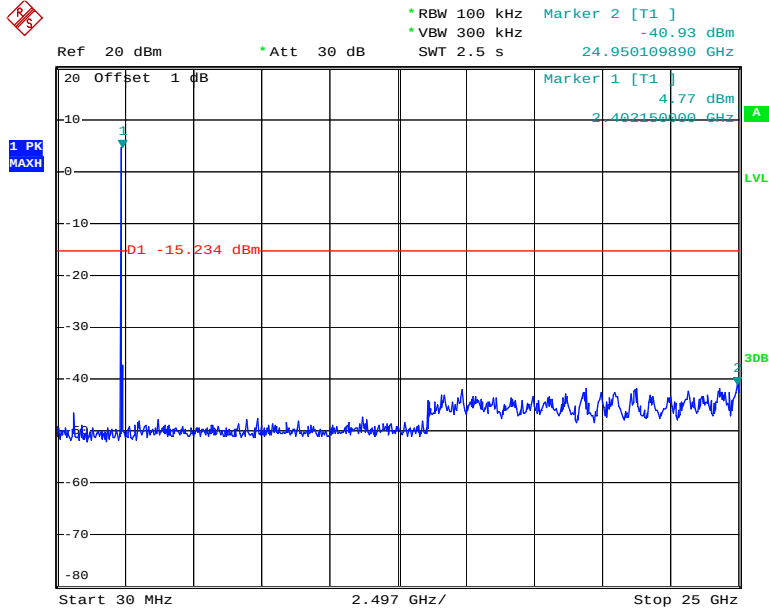
*Within measurement uncertainty!

802.11n40 Mode:

Frequency	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBµV/m)	FCC 15.247	
(MHz)	Reading (dBµV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB(1/m))				Limit (dBµV/m)	Margin (dB)
Low Channel:2422MHz									
2422	77.59	PK	H	25.70	4.41	0.00	107.70	N/A	N/A
2422	66.8	AV	H	25.70	4.41	0.00	96.91	N/A	N/A
2422	72.08	PK	V	25.70	4.41	0.00	102.19	N/A	N/A
2422	61.87	AV	V	25.70	4.41	0.00	91.98	N/A	N/A
2390	31	PK	H	25.61	4.39	0.00	61.00	74.00	13.00
2390	19.89	AV	H	25.61	4.39	0.00	49.89	54.00	4.11
4844	37.12	PK	H	30.69	6.08	27.26	46.63	74.00	27.37
4844	25.01	AV	H	30.69	6.08	27.26	34.52	54.00	19.48
7266	31.87	PK	H	34.24	7.48	26.42	47.17	74.00	26.83
7266	18.99	AV	H	34.24	7.48	26.42	34.29	54.00	19.71
9688	34.03	PK	H	36.15	8.82	25.91	53.09	74.00	20.91
9688	17.77	AV	H	36.15	8.82	25.91	36.83	54.00	17.17
3617	32.31	PK	H	29.06	5.02	27.43	38.96	74.00	35.04
3617	20.08	AV	H	29.06	5.02	27.43	26.73	54.00	27.27
473.2	39	QP	H	17.91	2.64	21.95	37.60	46.00	8.40
Middle Channel:2437MHz									
2437	77.94	PK	H	25.74	4.41	0.00	108.09	N/A	N/A
2437	66.94	AV	H	25.74	4.41	0.00	97.09	N/A	N/A
2437	71.88	PK	V	25.74	4.41	0.00	102.03	N/A	N/A
2437	62.02	AV	V	25.74	4.41	0.00	92.17	N/A	N/A
4874	36.54	PK	H	30.77	6.09	27.26	46.14	74.00	27.86
4874	25.16	AV	H	30.77	6.09	27.26	34.76	54.00	19.24
7311	32.43	PK	H	34.35	7.51	26.51	47.78	74.00	26.22
7311	18.08	AV	H	34.35	7.51	26.51	33.43	54.00	20.57
9748	33.04	PK	H	36.30	8.83	25.68	52.49	74.00	21.51
9748	18.75	AV	H	36.30	8.83	25.68	38.20	54.00	15.80
1720	31.64	PK	H	24.04	3.51	26.97	32.22	74.00	41.78
1720	17.06	AV	H	24.04	3.51	26.97	17.64	54.00	36.36
3617	32.13	PK	H	29.06	5.02	27.43	38.78	74.00	35.22
3617	20.22	AV	H	29.06	5.02	27.43	26.87	54.00	27.13
473.2	38.71	QP	H	17.91	2.64	21.95	37.31	46.00	8.69
High Channel:2452MHz									
2452	77.65	PK	H	25.78	4.41	0.00	107.84	N/A	N/A
2452	66.86	AV	H	25.78	4.41	0.00	97.05	N/A	N/A
2452	71.95	PK	V	25.78	4.41	0.00	102.14	N/A	N/A
2452	61.7	AV	V	25.78	4.41	0.00	91.89	N/A	N/A
2483.5	30.81	PK	H	25.86	4.49	0.00	61.16	74.00	12.84
2483.5	19.86	AV	H	25.86	4.49	0.00	50.21	54.00	3.79
4904	37.45	PK	H	30.85	6.06	27.27	47.09	74.00	26.91
4904	24.63	AV	H	30.85	6.06	27.27	34.27	54.00	19.73
7356	31.72	PK	H	34.45	7.53	26.60	47.10	74.00	26.90
7356	18.95	AV	H	34.45	7.53	26.60	34.33	54.00	19.67
9808	34.39	PK	H	36.44	8.84	25.48	54.19	74.00	19.81
9808	17.69	AV	H	36.44	8.84	25.48	37.49	54.00	16.51
3617	32.5	PK	H	29.06	5.02	27.43	39.15	74.00	34.85
3617	20.13	AV	H	29.06	5.02	27.43	26.78	54.00	27.22
473.2	38.99	QP	H	17.91	2.64	21.95	37.59	46.00	8.41

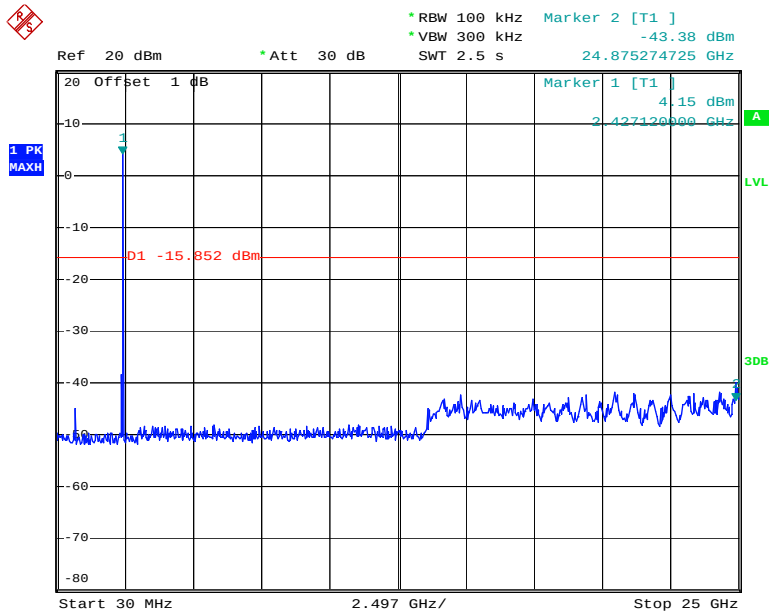
Conducted Spurious Emissions at Antenna Port

802.11b Low Channel



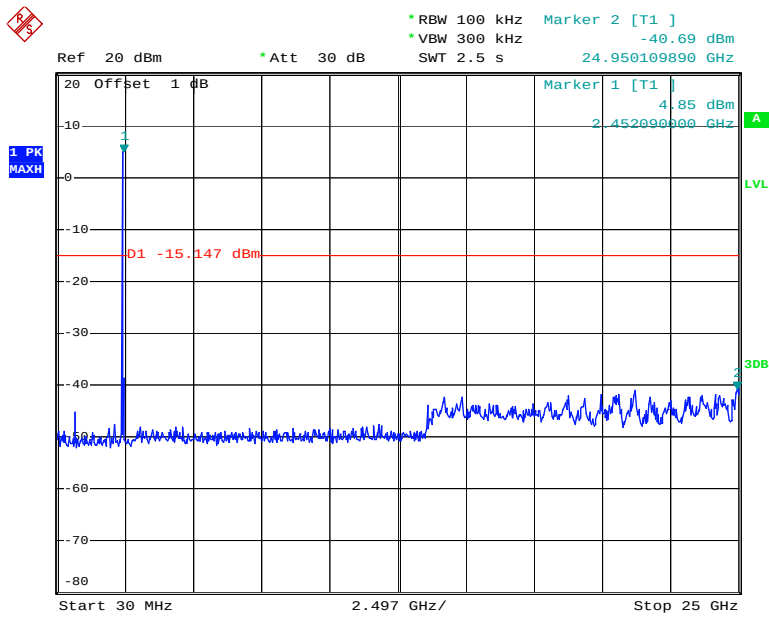
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802.11b Middle Channel



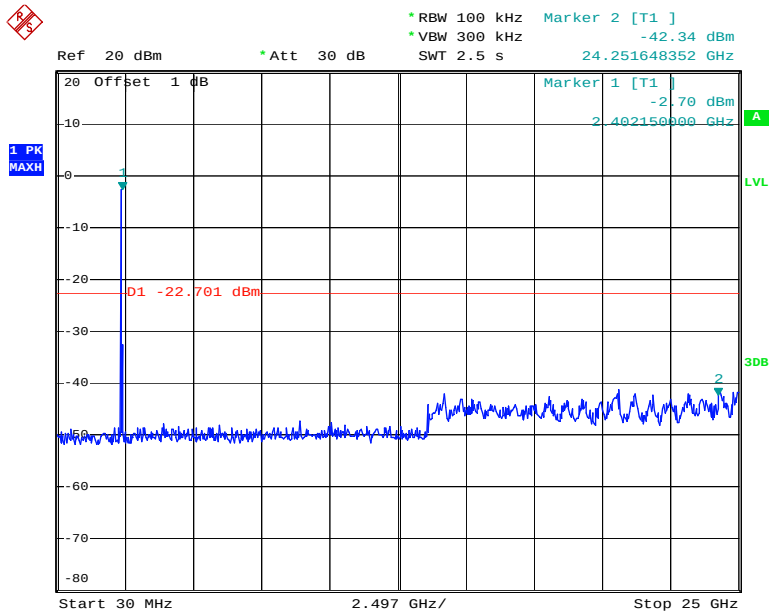
Date: 7.SEP.2013 11:20:21

802.11b High Channel



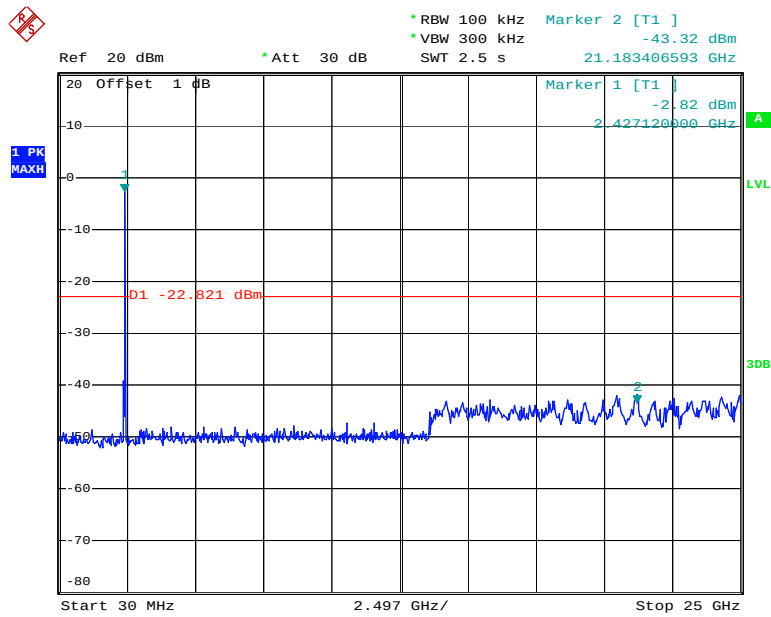
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802.11g Low Channel



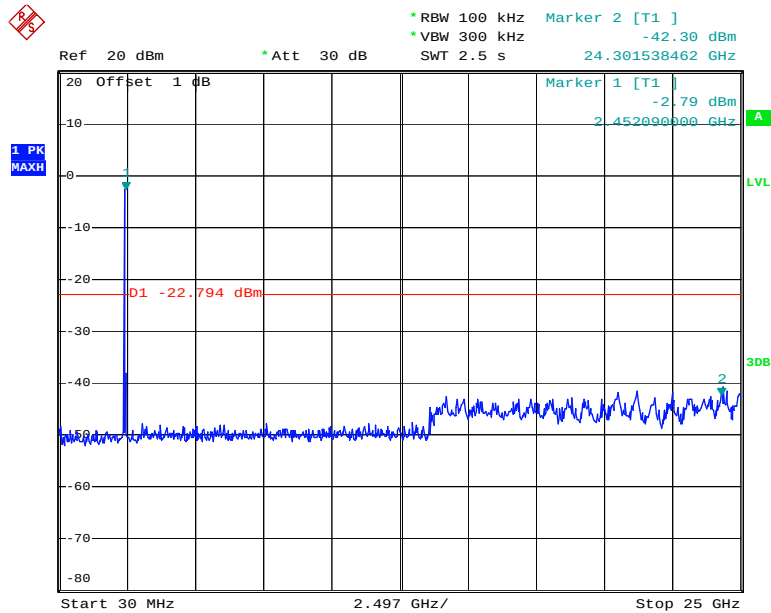
Date: 7.SEP.2013 11:23:59

802.11g Middle Channel



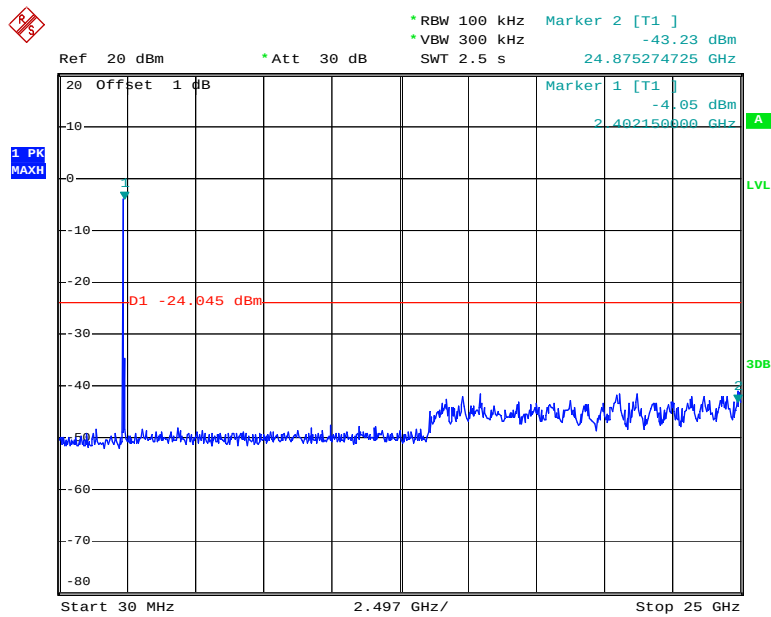
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802.11g High Channel



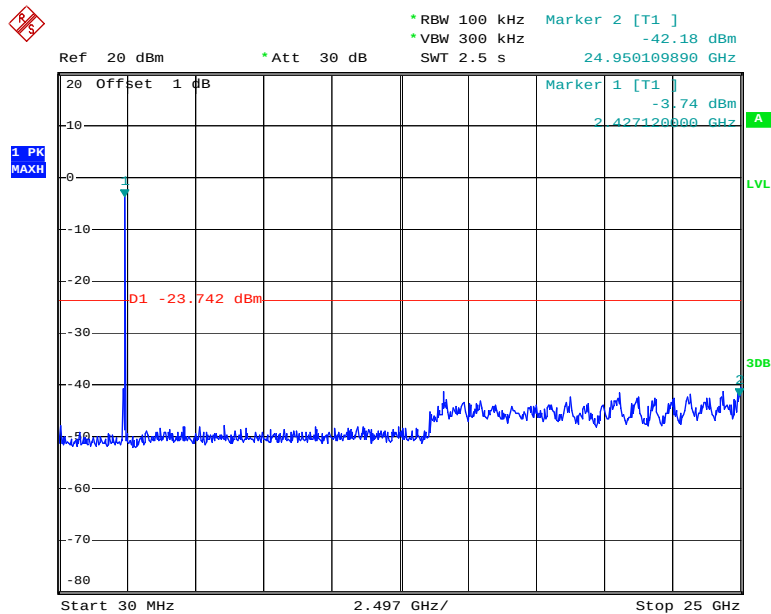
Date: 7.SEP.2013 11:26:28

802.11n20 Low Channel



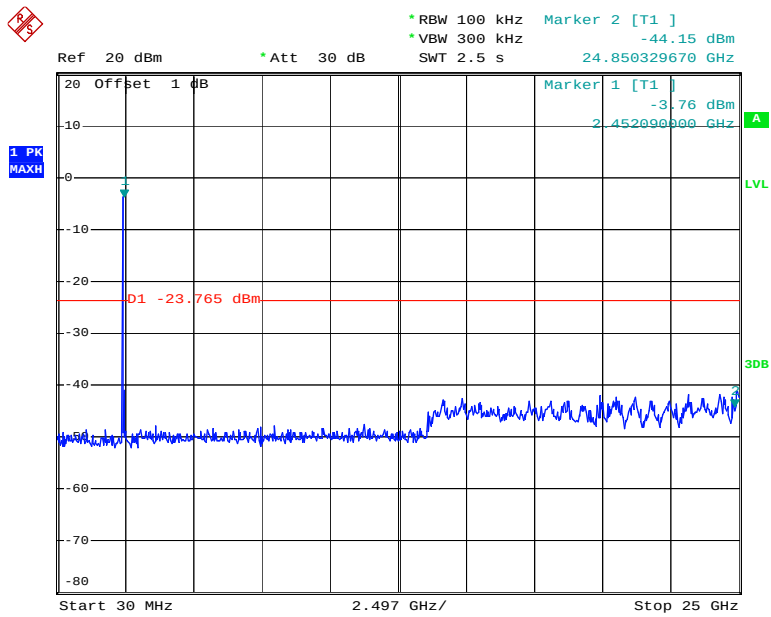
Date: 7.SEP.2013 11:28:14

802.11n20 Middle Channel



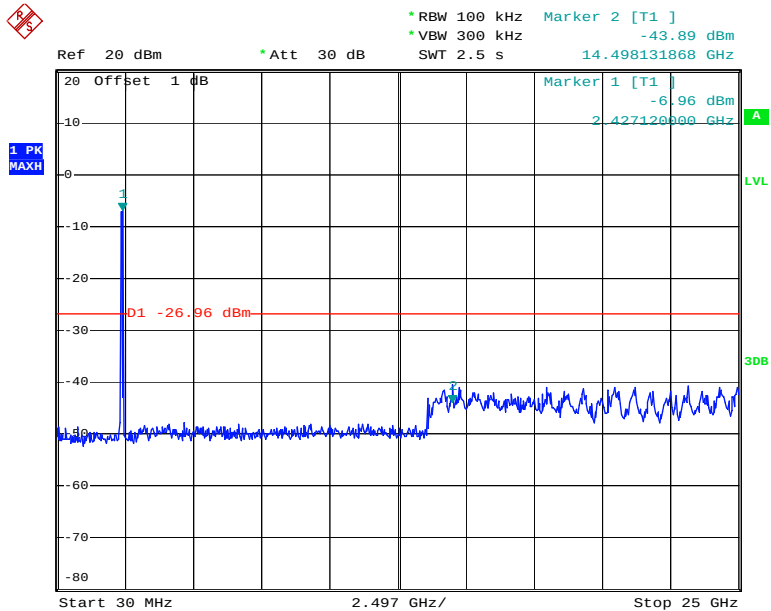
Date: 7.SEP.2013 11:30:20

802.11n20 High Channel



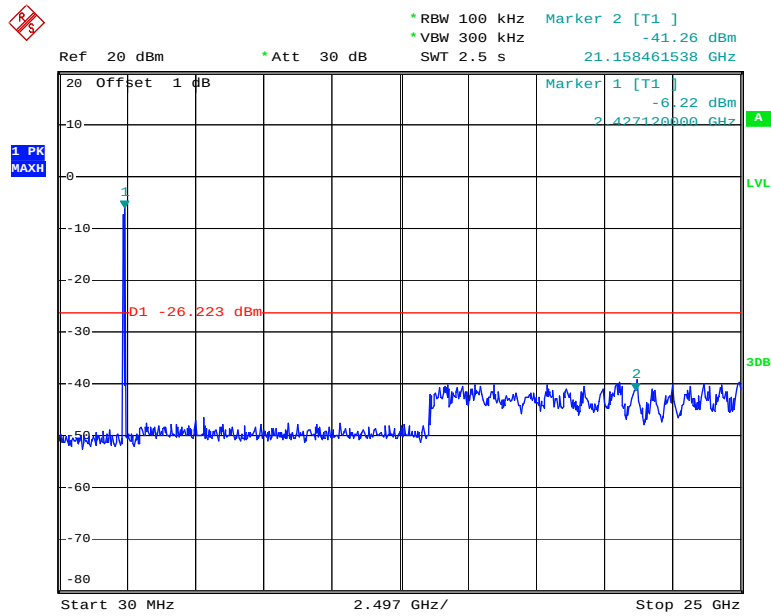
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802.11n40 Low Channel



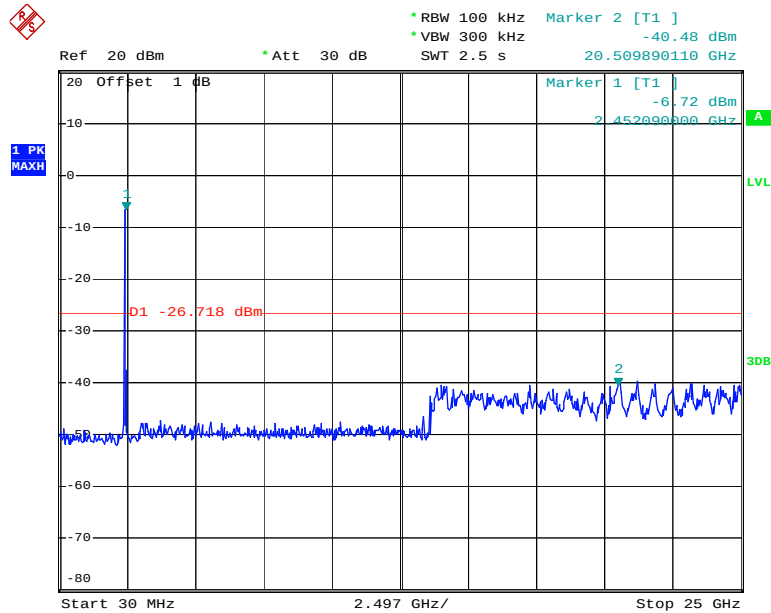
Date: 7.SEP.2013 11:34:03

802.11n40 Middle Channel



Date: 7.SEP.2013 11:35:41

802.11n40 High Channel



Date: 7.SEP.2013 11:37:08

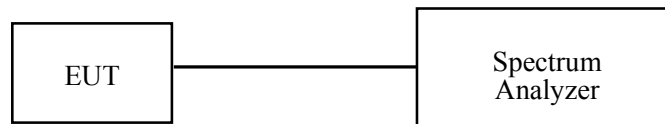
FCC §15.247(a) (2) – 6 dB EMISSION BANDWIDTH

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 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 Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum analyzer	FSP 38	100478	2013-6-16	2014-6-15

* Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	27.5 ° C
Relative Humidity:	63%
ATM Pressure:	100.7kPa

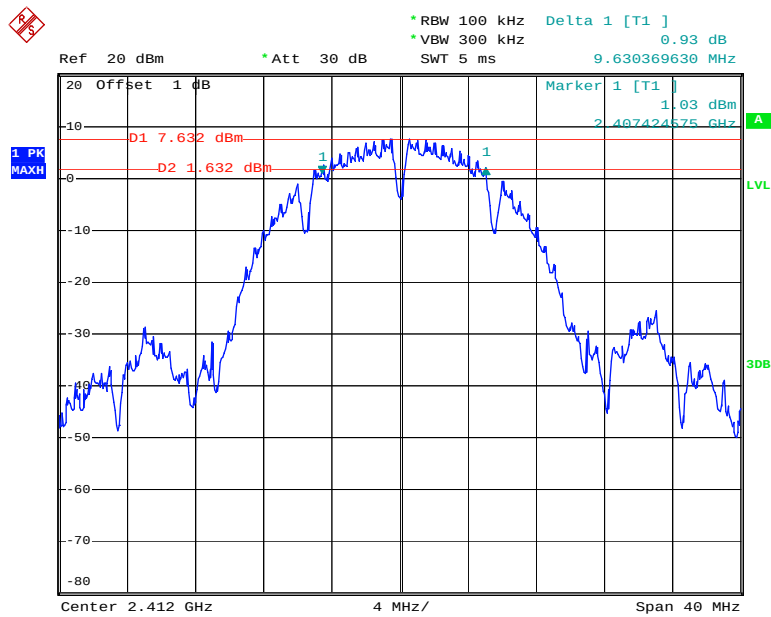
The testing was performed by Leon Chen on 2013-09-07.

Test Result: Pass.

Please refer to the following tables and plots.

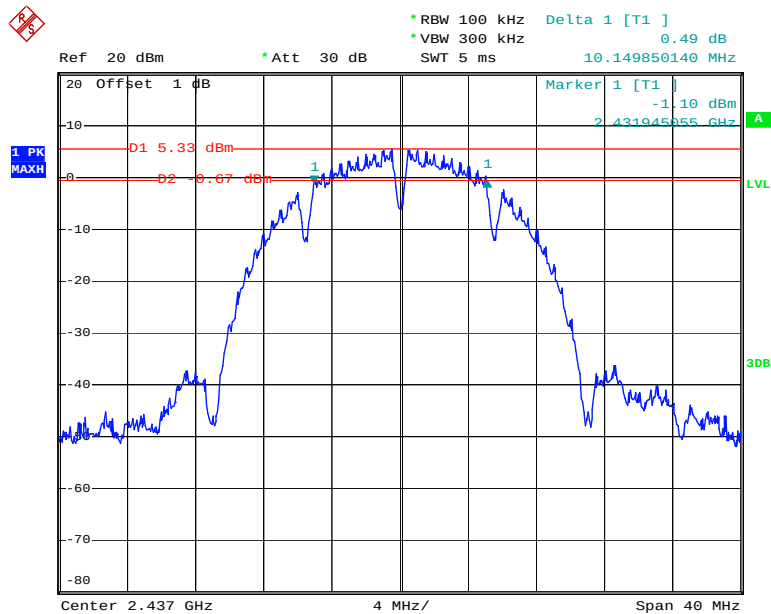
Channel	Frequency	6 dB Bandwidth	Limit
	(MHz)	(MHz)	(kHz)
802.11b mode			
Low	2412	9.63	>500
Middle	2437	10.15	>500
High	2462	10.11	>500
802.11g mode			
Low	2412	16.62	>500
Middle	2437	16.62	>500
High	2462	16.66	>500
802.11n20 mode			
Low	2412	17.86	>500
Middle	2437	17.86	>500
High	2462	17.86	>500
802.11n40 mode			
Low	2422	36.52	>500
Middle	2437	36.52	>500
High	2452	36.52	>500

802.11b Low Channel



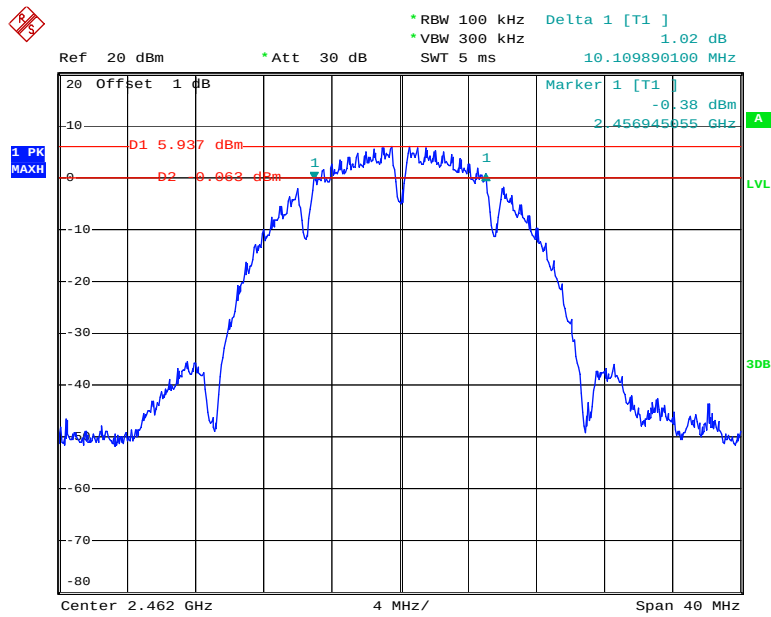
Date: 7.SEP.2013 11:14:39

802.11b Middle Channel



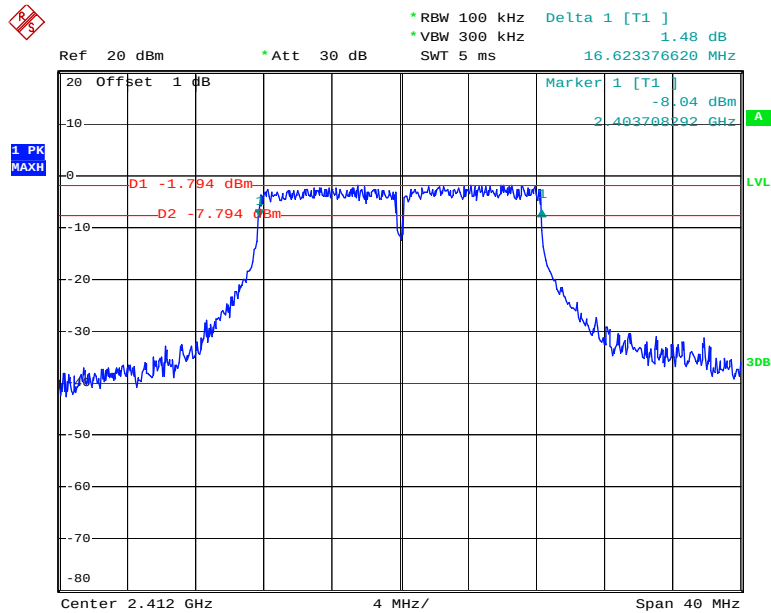
Date: 7.SEP.2013 11:19:14

802.11b High Channel



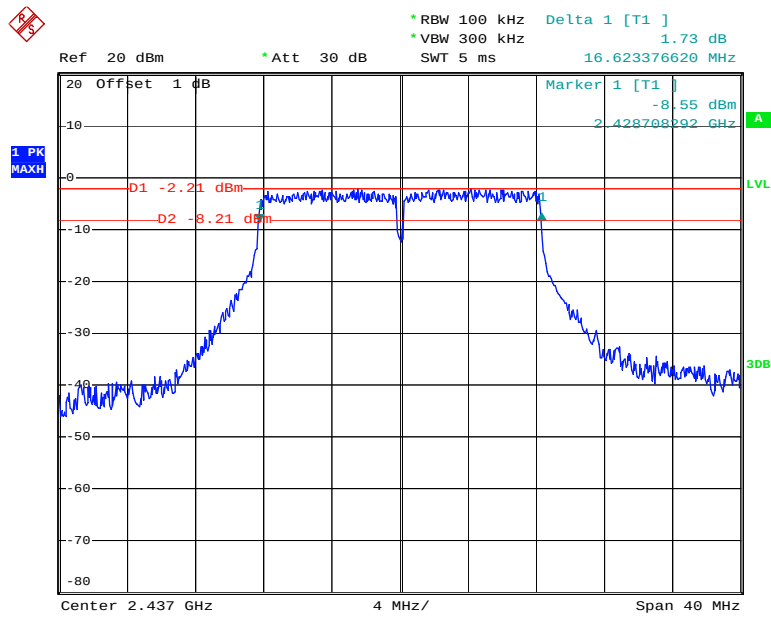
Date: 7.SEP.2013 11:21:49

802.11g Low Channel



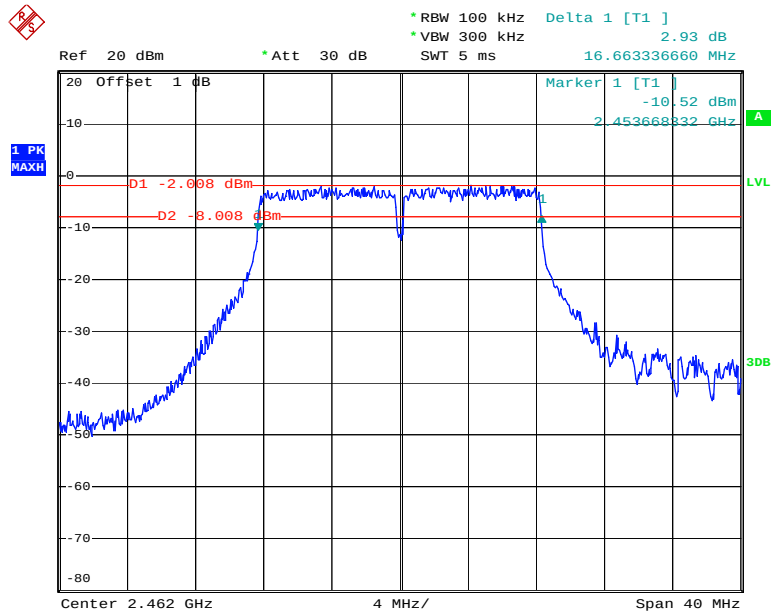
Date: 7.SEP.2013 11:23:16

802.11g Middle Channel



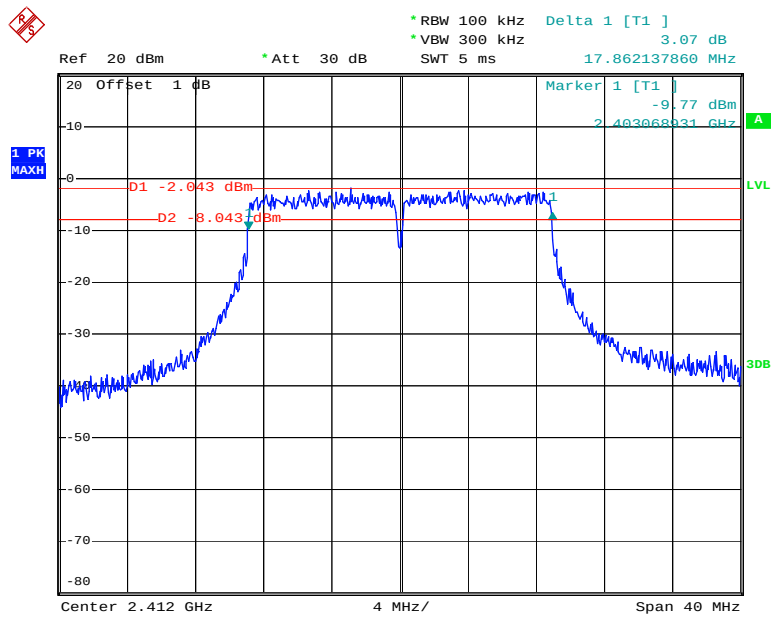
Date: 7.SEP.2013 11:24:38

802.11g High Channel



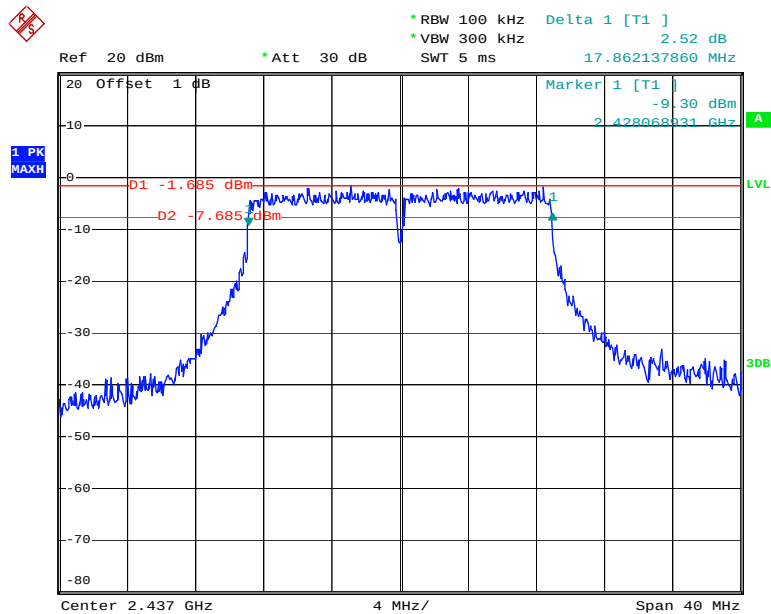
Date: 7.SEP.2013 11:25:45

802.11n20 Low Channel



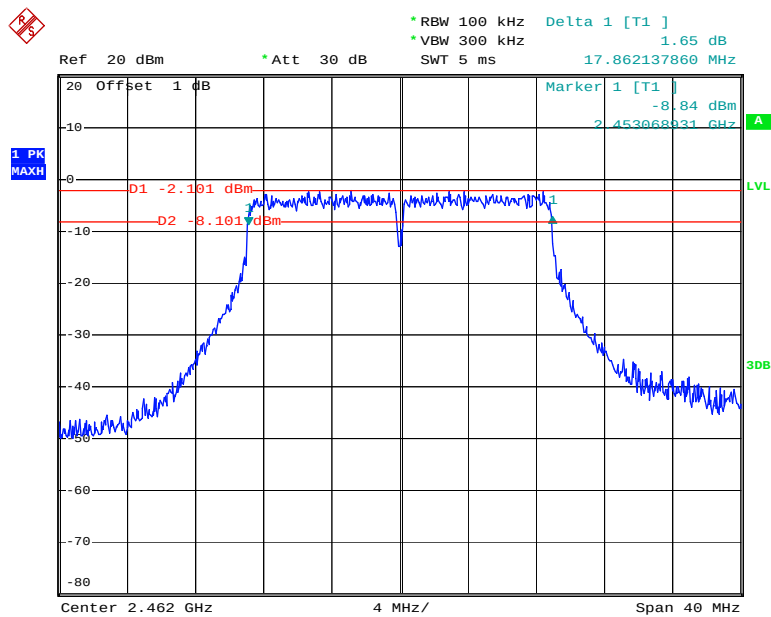
Date: 7.SEP.2013 11:27:30

802.11n20 Middle Channel



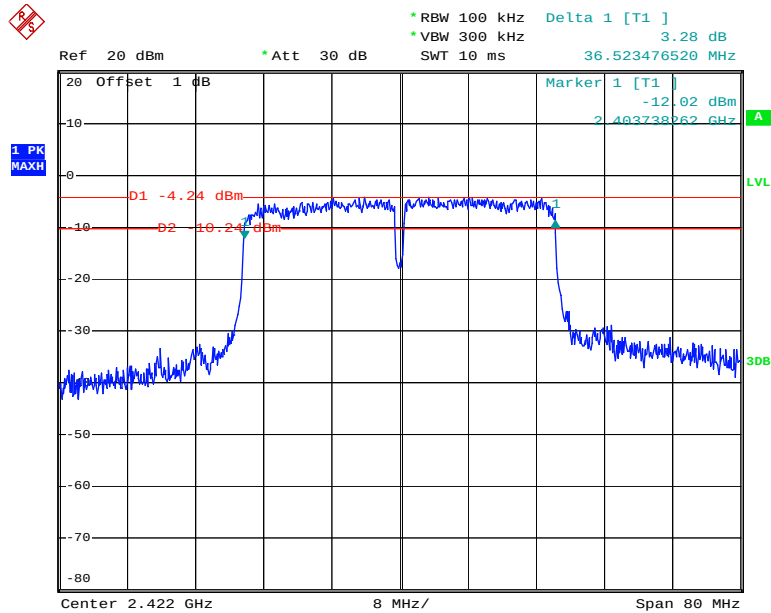
Date: 7.SEP.2013 11:29:36

802.11n20 High Channel



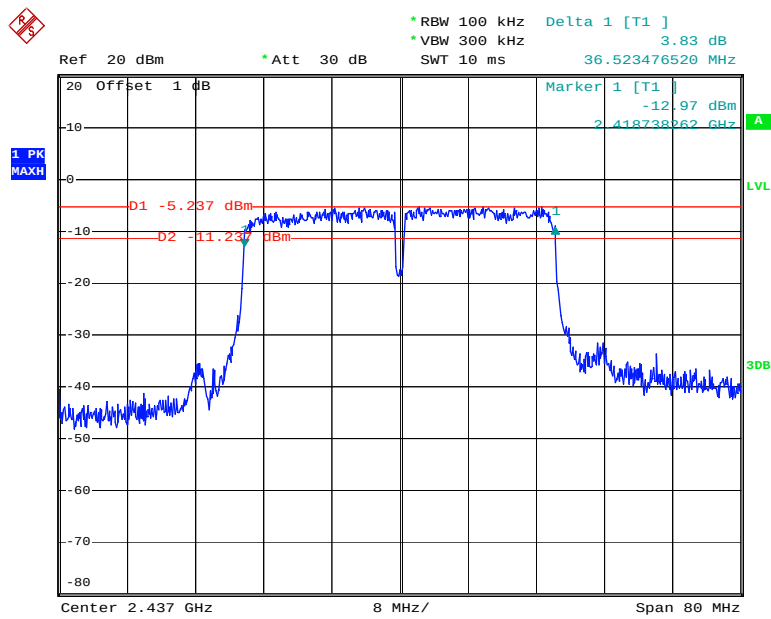
Date: 7.SEP.2013 11:31:01

802.11n40 Low Channel



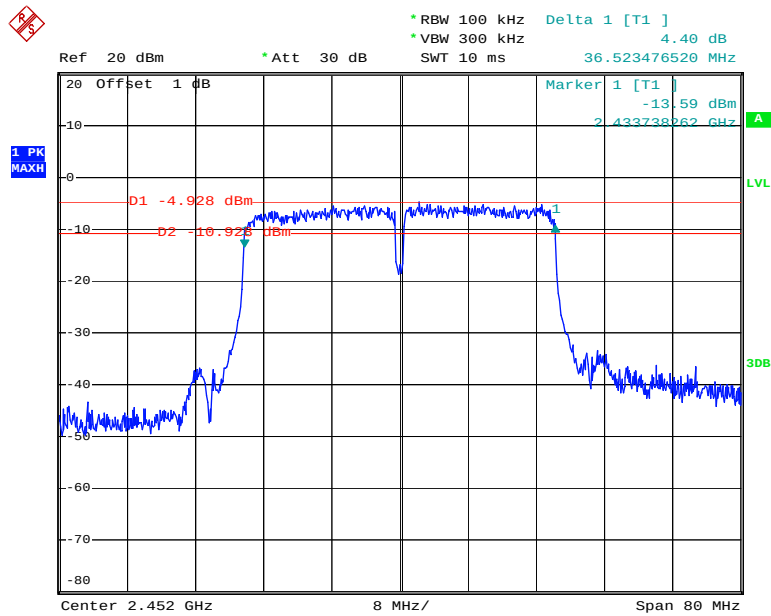
Date: 7.SEP.2013 11:33:10

802.11n40 Middle Channel



Date: 7.SEP.2013 11:34:48

802.11n40 High Channel



Date: 7.SEP.2013 11:36:15

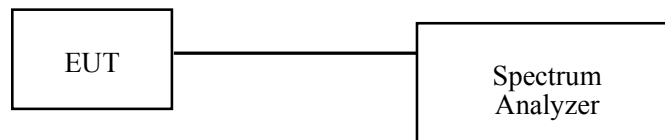
FCC §15.247(b) (3) - MAXIMUM CONDUCTED OUTPUT POWER

Applicable Standard

According to FCC §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 Procedure

1. According to KDB 558074 D01 DTS Meas Guidance v03r01, 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 the Spectrum analyzer.
3. Add a correction factor to the display.



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum analyzer	FSP 38	100478	2013-6-16	2014-6-15

* Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	26.2° C
Relative Humidity:	55 %
ATM Pressure:	99kPa

The testing was performed by Leon Chen on 2013-11-29.

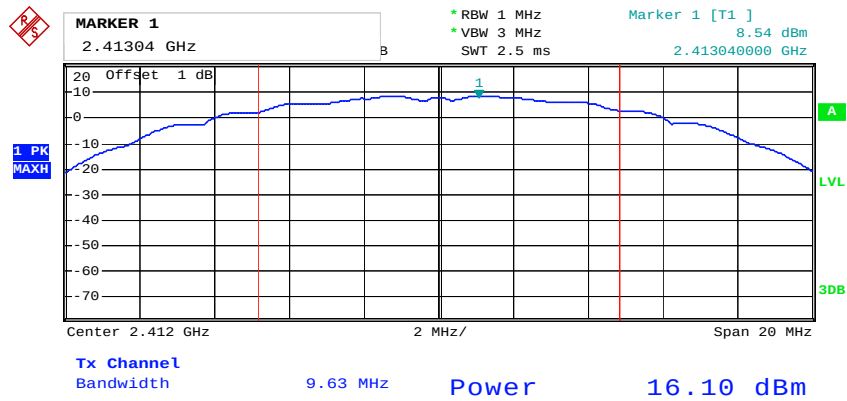
Test Mode: Transmitting

Channel	Frequency	Conducted Output Power	Limit	Result
	(MHz)	(dBm)	(dBm)	
802.11b mode				
Low	2412 MHz	16.10	30	PASS
Middle	2437 MHz	16.38	30	PASS
High	2462 MHz	16.60	30	PASS
802.11g mode				
Low	2412 MHz	13.37	30	PASS
Middle	2437 MHz	13.63	30	PASS
High	2462 MHz	13.66	30	PASS
802.11n20 mode				
Low	2412 MHz	12.71	30	PASS
Middle	2437 MHz	13.01	30	PASS
High	2462 MHz	12.67	30	PASS
802.11n40 mode				
Low	2422 MHz	12.46	30	PASS
Middle	2437 MHz	12.54	30	PASS
High	2452 MHz	12.55	30	PASS

The antenna gain is 2.0 dBi.

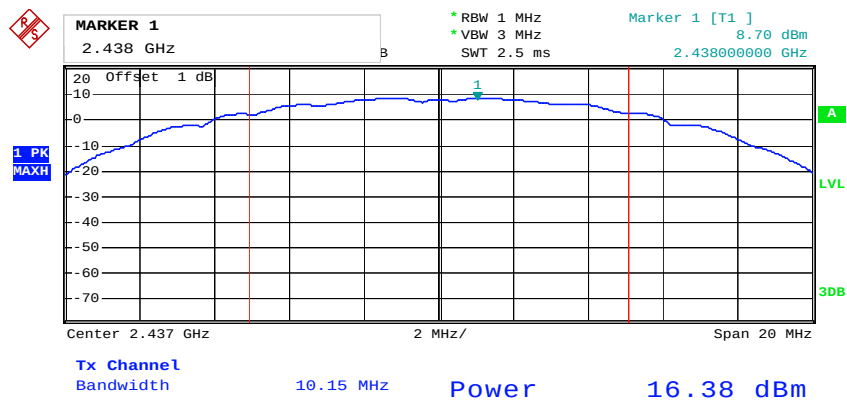
Please refer to the following plots

802.11b Output Power, Low Channel



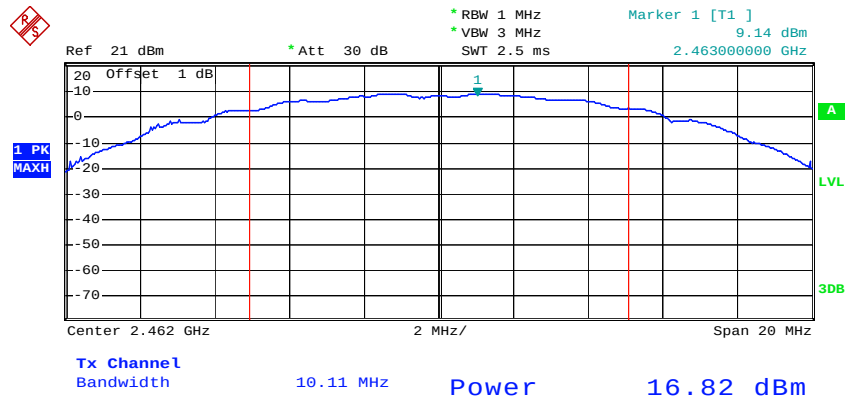
Date: 29.NOV.2013 15:19:15

802.11b Output Power, Middle Channel



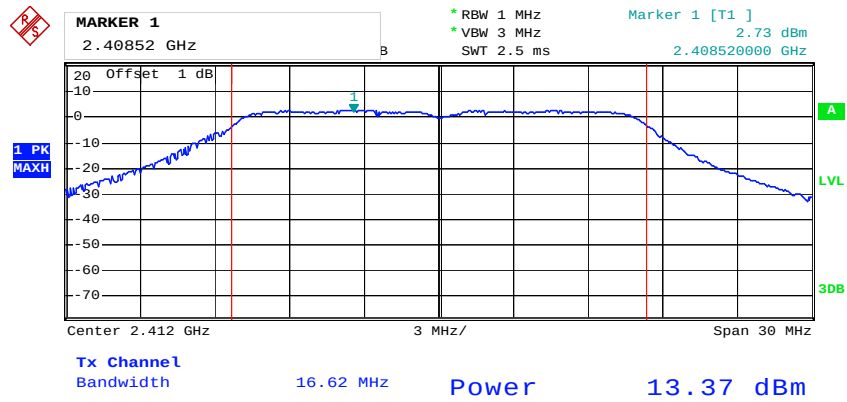
Date: 29.NOV.2013 15:22:20

802.11b Output Power, High Channel



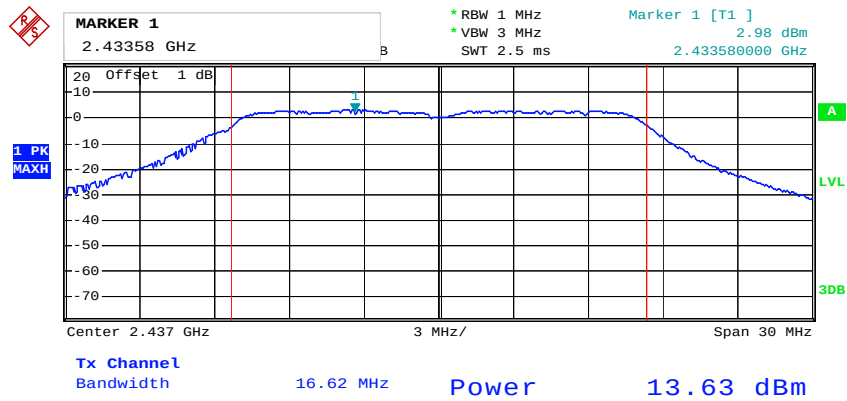
Date: 29.NOV.2013 15:01:55

802.11g Output Power, Low Channel



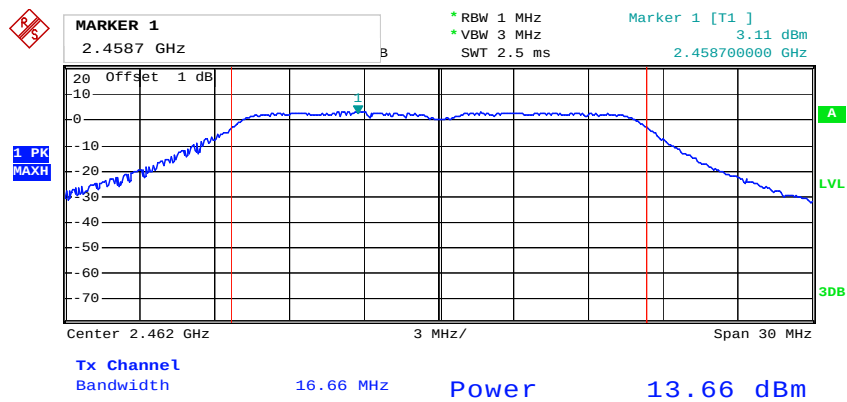
Date: 29.NOV.2013 15:23:36

802.11g Output Power, Middle Channel



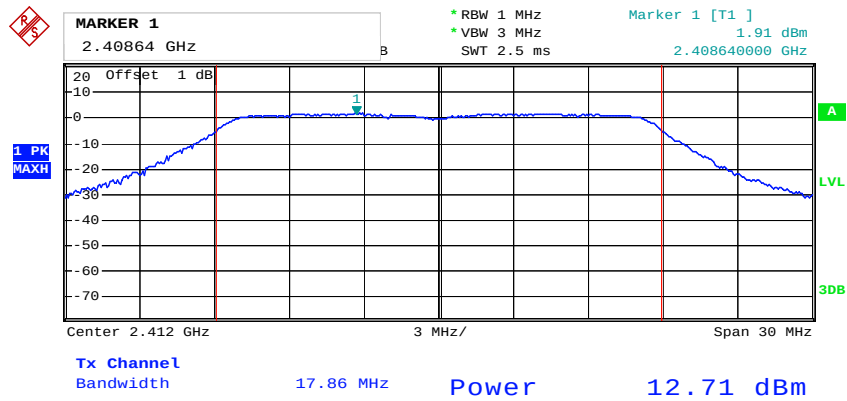
Date: 29.NOV.2013 15:24:07

802.11g Output Power, High Channel



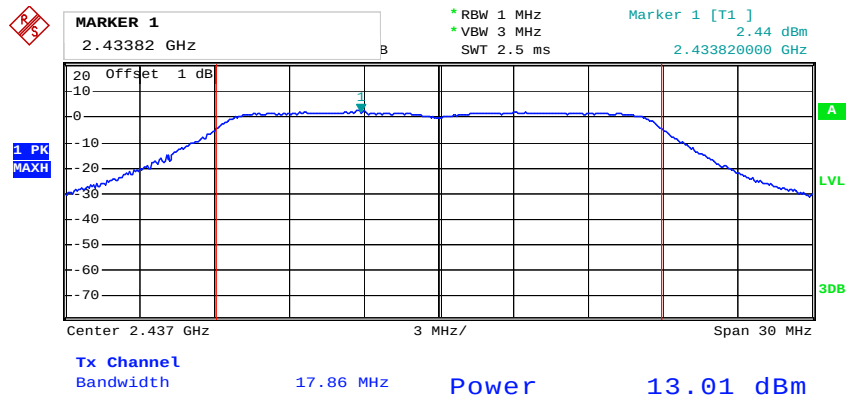
Date: 29.NOV.2013 15:24:29

802.11n20 Output Power, Low Channel



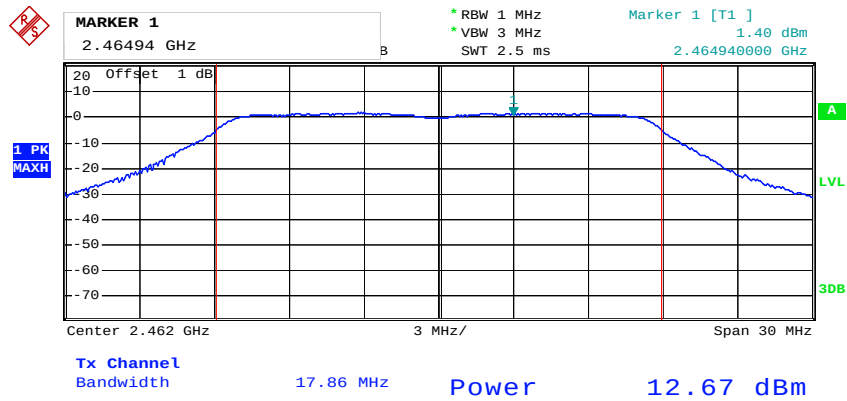
Date: 29.NOV.2013 15:25:17

802.11n20 Output Power, Middle Channel



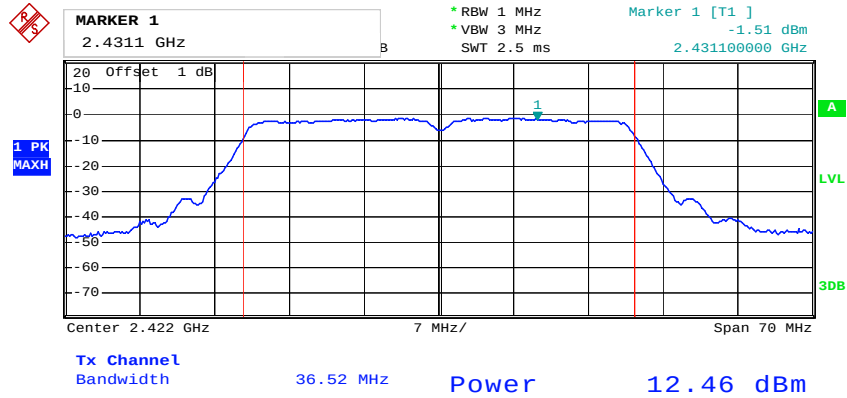
Date: 29.NOV.2013 15:25:47

802.11n20 Output Power, High Channel



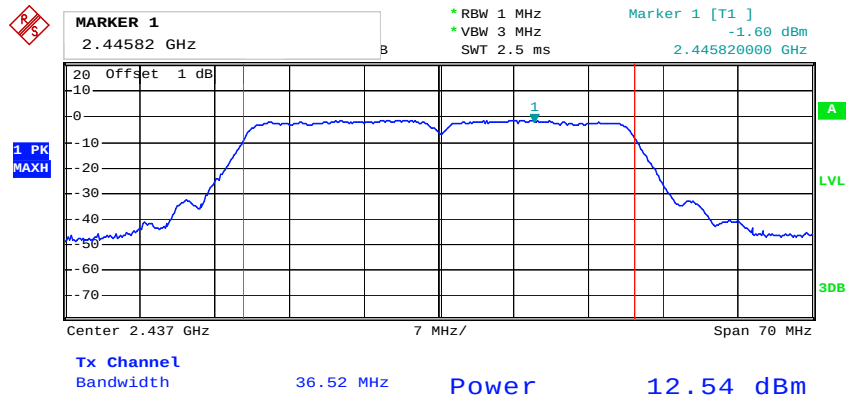
Date: 29.NOV.2013 15:26:13

802.11n40 Output Power, Low Channel



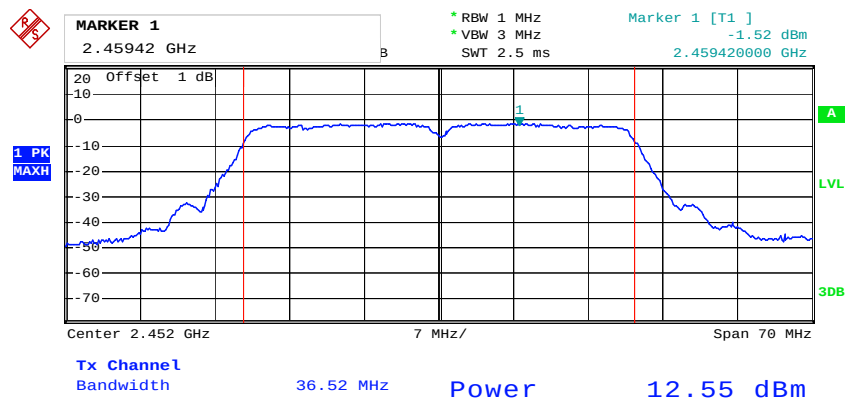
Date: 29.NOV.2013 15:27:13

802.11n40 Output Power, Middle Channel



Date: 29.NOV.2013 15:27:33

802.11n40 Output Power, High Channel



Date: 29.NOV.2013 15:27:51

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 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 100 kHz and VBW of spectrum analyzer to 300 kHz 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 Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum analyzer	FSP 38	100478	2013-6-16	2014-6-15

* Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

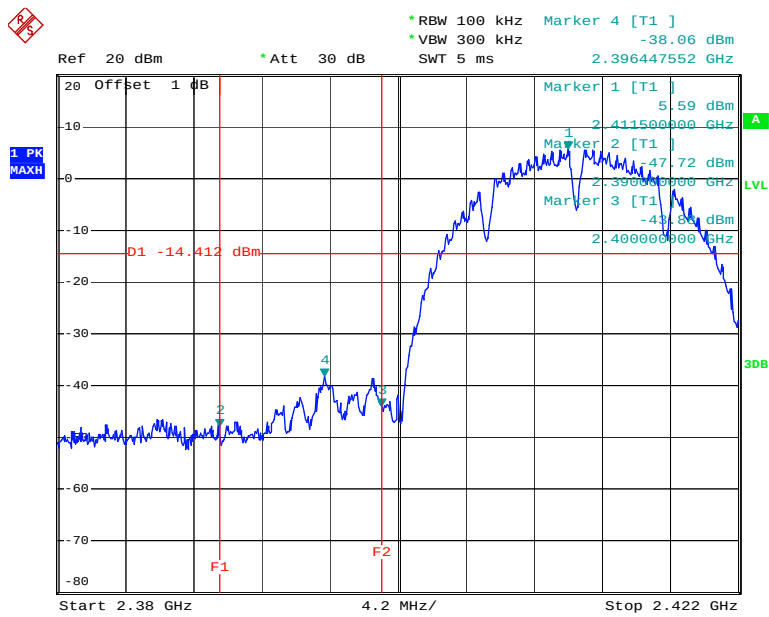
Temperature:	27.5 ° C
Relative Humidity:	63 %
ATM Pressure:	100.7kPa

The testing was performed by Leon Chen on 2013-09-07.

Test Result: Compliance

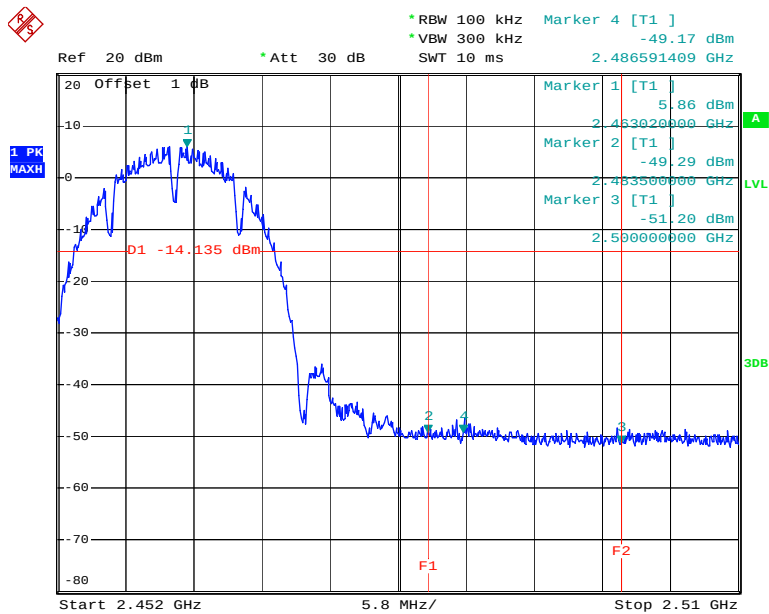
Please refer to following plots.

802.11b: Band Edge, Left Side



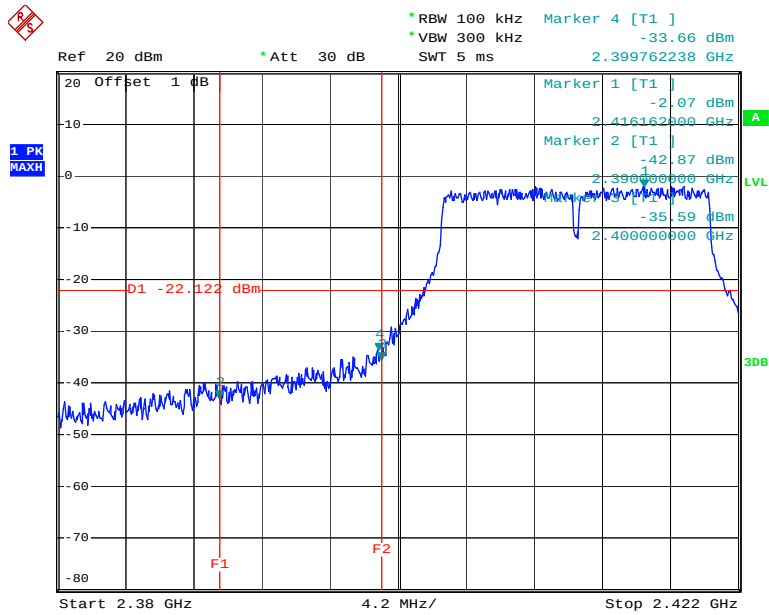
Date: 7.SEP.2013 11:16:01

802.11b: Band Edge, Right Side



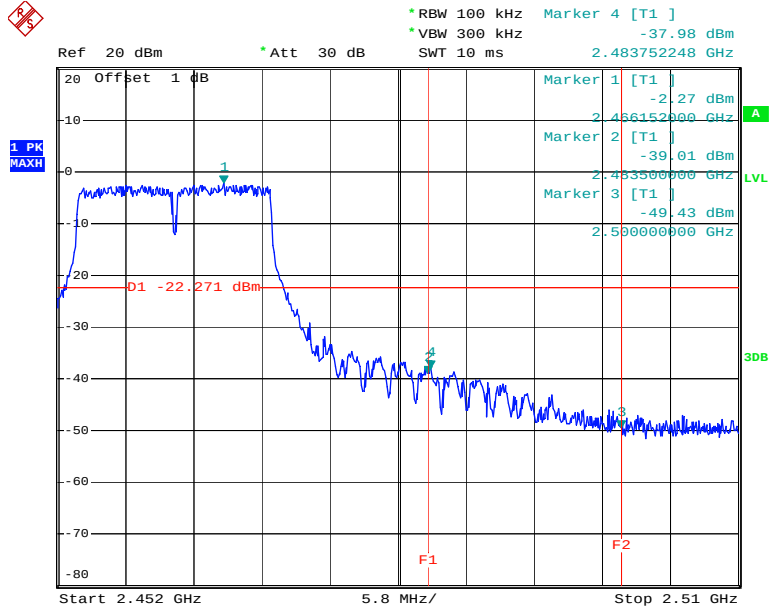
Date: 7.SEP.2013 11:22:42

802.11g: Band Edge, Left Side



Date: 7.SEP.2013 11:24:11

802.11g: Band Edge, Right Side



Date: 7.SEP.2013 11:26:40

* RBW 100 kHz
 * VBW 300 kHz
 SWT 5 ms

Ref 20 dBm
 * Att 30 dB

Marker 4 [T1]
 -34.56 dBm
 2.399720280 GHz

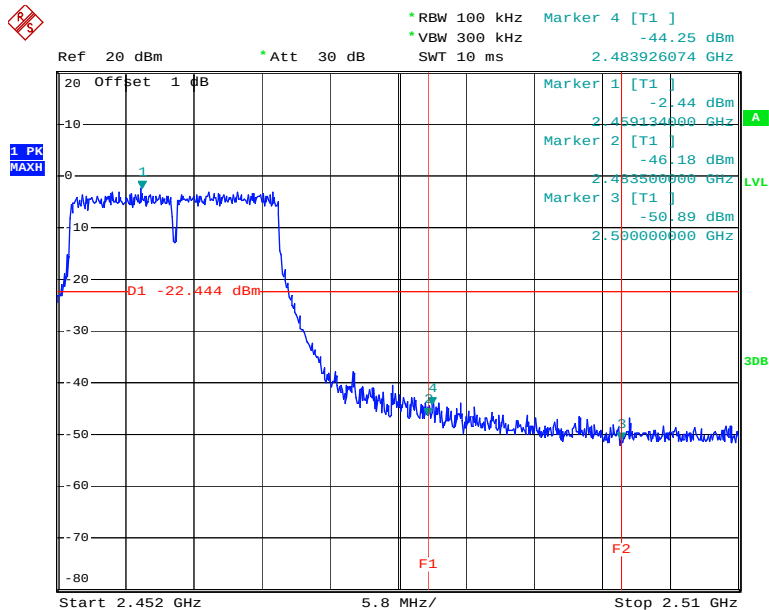
Marker 1 [T1]
 -2.70 dBm
 2.420404000 GHz

Marker 2 [T1]
 -43.75 dBm
 2.390000000 GHz

D1 -22.704 dBm

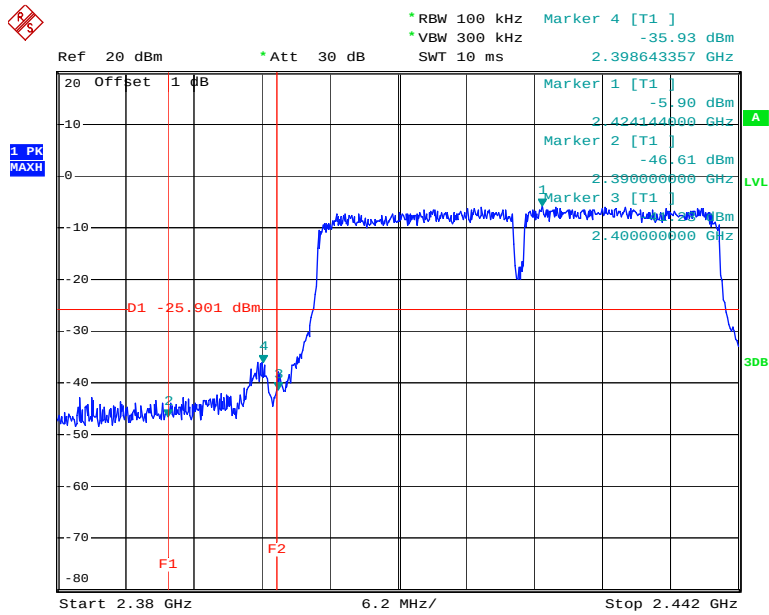
Start 2.38 GHz
 4.2 MHz/
 Stop 2.422 GHz

802.11n20: Band Edge, Right Side



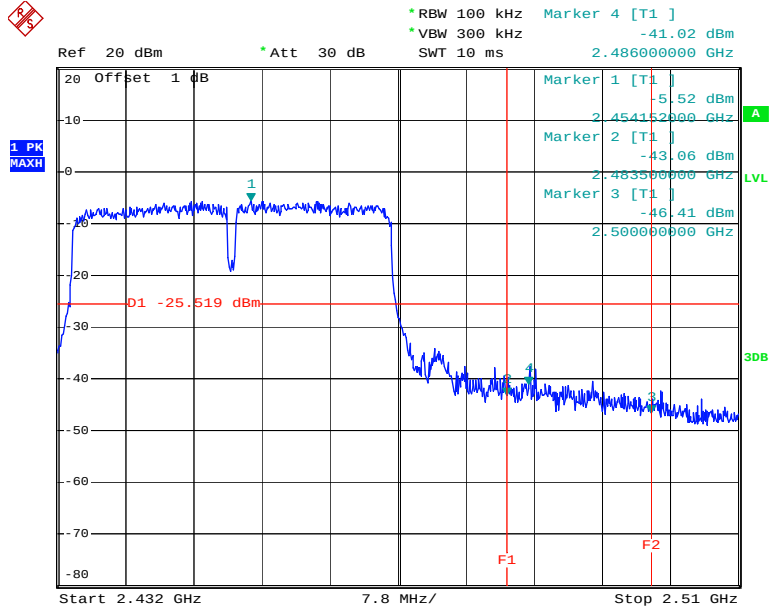
Page 49 of 59

802.11n40: Band Edge, Left Side



Date: 7.SEP.2013 11:34:15

802.11n40: Band Edge, Right Side



Date: 7.SEP.2013 11:37:20

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 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. 3. Set the RBW = 3 kHz, VBW = 10 kHz, Set the span to 1.5 times the DTS bandwidth.
4. 4. Use the peak marker function to determine the maximum amplitude level.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum analyzer	FSP 38	100478	2013-6-16	2014-6-15

* Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to National Primary Standards and International System of Units (SI).

Test Data**Environmental Conditions**

Temperature:	25 ° C
Relative Humidity:	59 %
ATM Pressure:	100.1kPa

The testing was performed by Leon Chen on 2013-04-15.

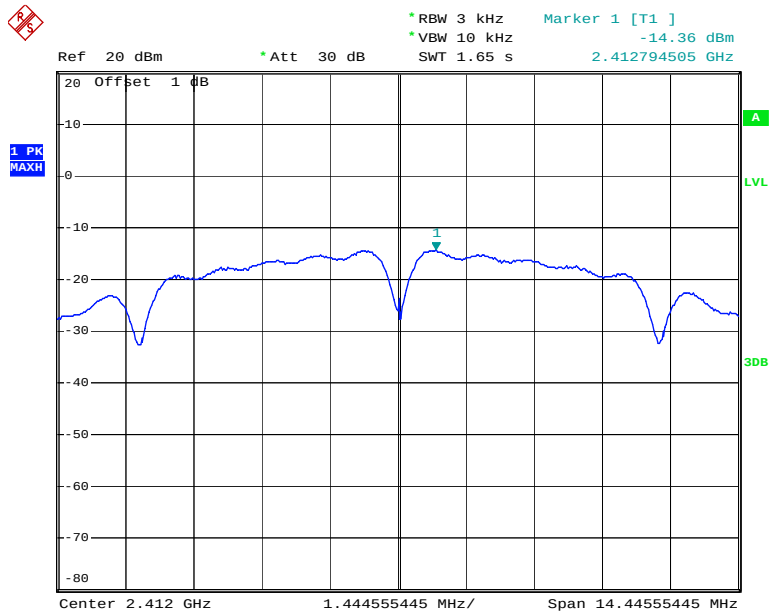
Test Mode: Transmitting

Test Result: Pass

Channel	Frequency	PSD	Limit	Result
	(MHz)	(dBm/3kHz)	(dBm/3kHz)	
802.11b mode				
Low	2412	-14.36	8	PASS
Middle	2437	-14.31	8	PASS
High	2462	-14.06	8	PASS
802.11g mode				
Low	2412	-16.35	8	PASS
Middle	2437	-16.56	8	PASS
High	2462	-16.72	8	PASS
802.11n20 mode				
Low	2412	-16.99	8	PASS
Middle	2437	-16.63	8	PASS
High	2462	-17.11	8	PASS
802.11n40 mode				
Low	2422	-18.14	8	PASS
Middle	2437	-17.36	8	PASS
High	2452	-17.56	8	PASS

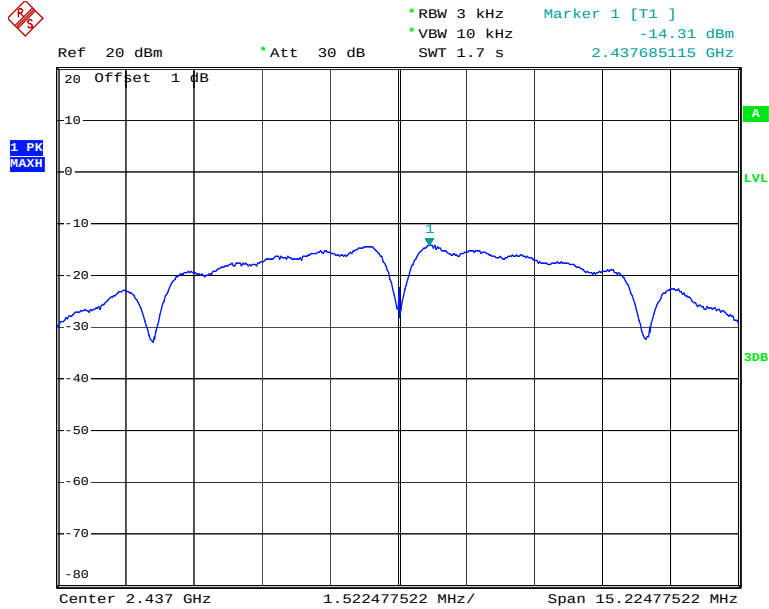
Please refer to the following plots

Power Spectral Density, 802.11b Low Channel



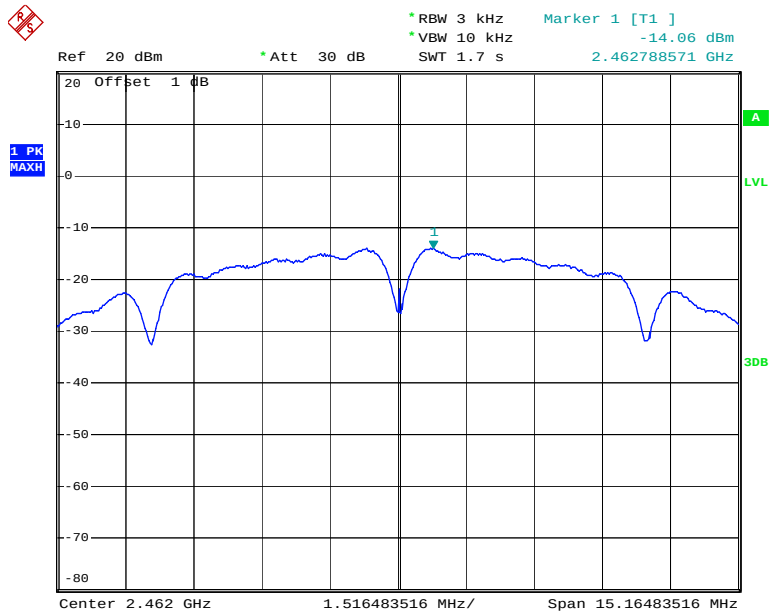
Date: 7.SEP.2013 11:15:37

Power Spectral Density, 802.11b Middle Channel



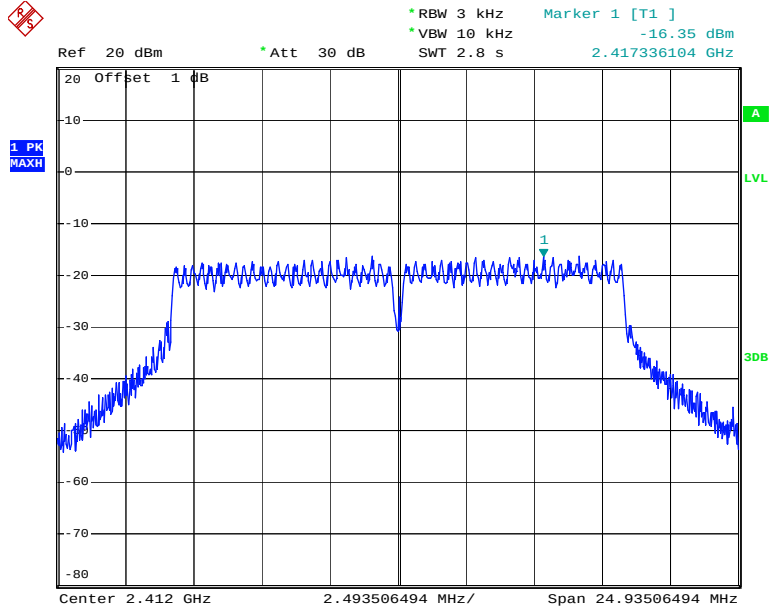
Date: 7.SEP.2013 11:20:08

Power Spectral Density, 802.11b High Channel



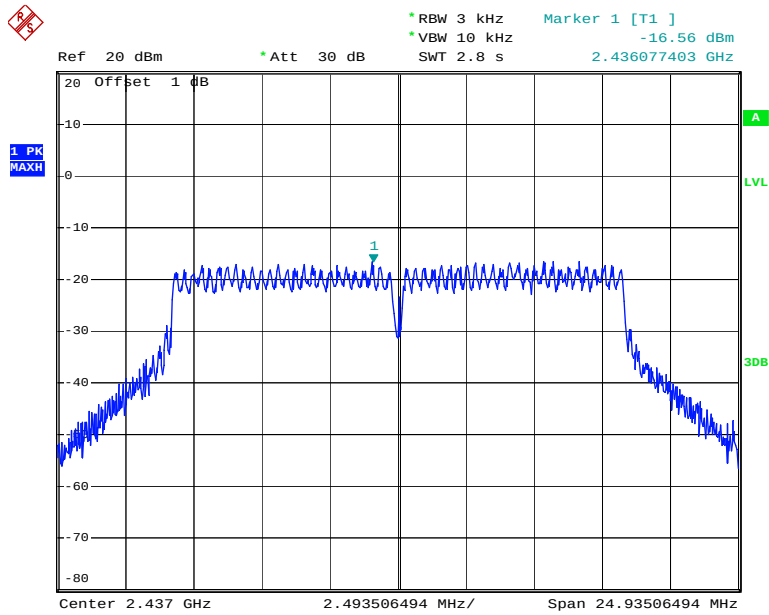
Date: 7.SEP.2013 11:22:17

Power Spectral Density, 802.11g Low Channel



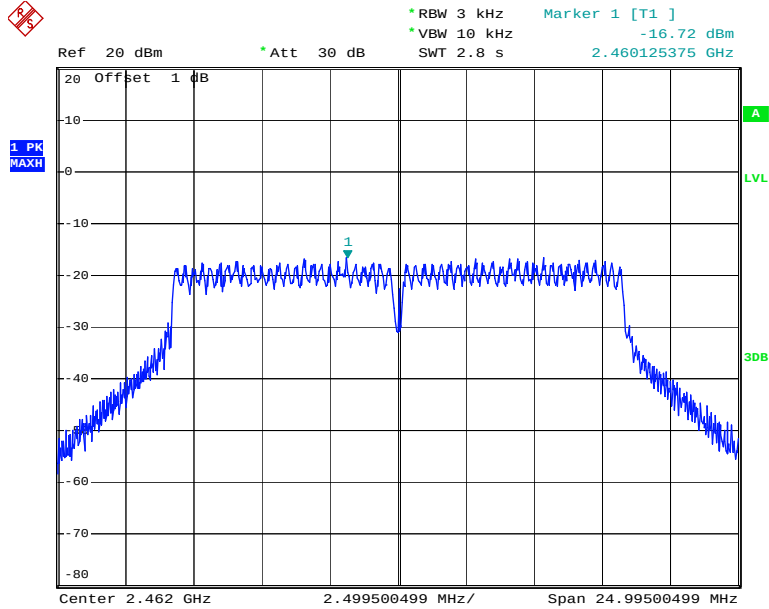
Date: 7.SEP.2013 11:23:46

Power Spectral Density, 802.11g Middle Channel



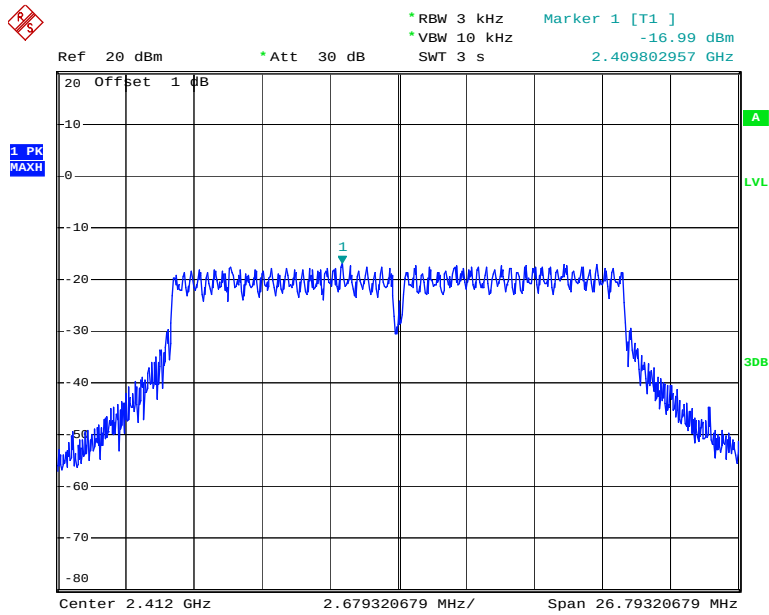
Date: 7.SEP.2013 11:25:08

Power Spectral Density, 802.11g High Channel



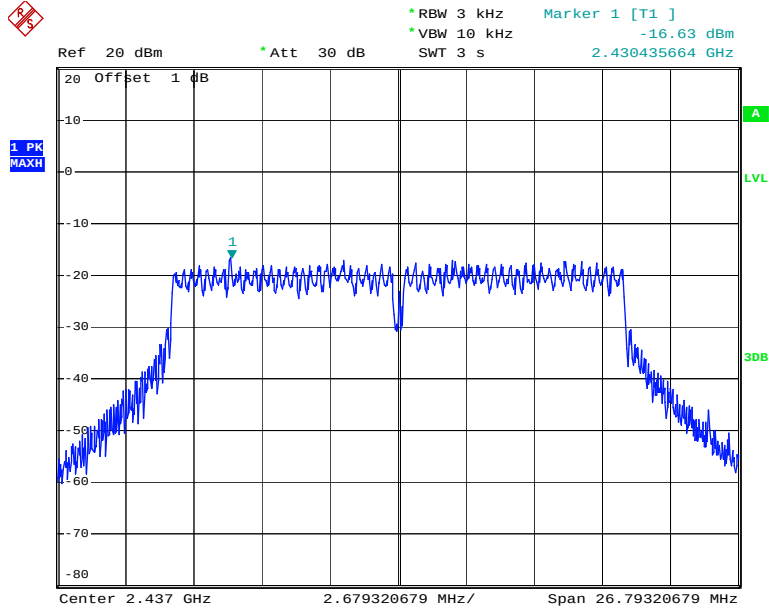
Date: 7.SEP.2013 11:26:15

Power Spectral Density, 802.11n20 Low Channel



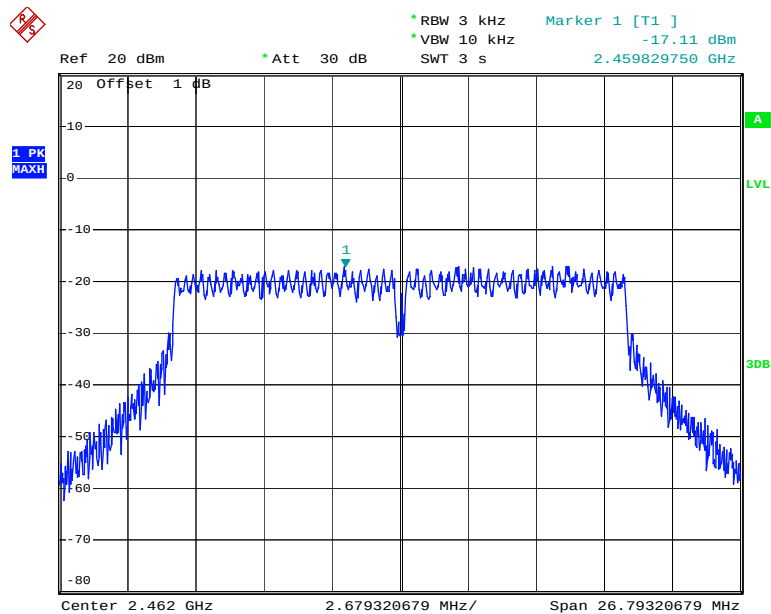
Date: 7.SEP.2013 11:28:01

Power Spectral Density, 802.11n20 Middle Channel



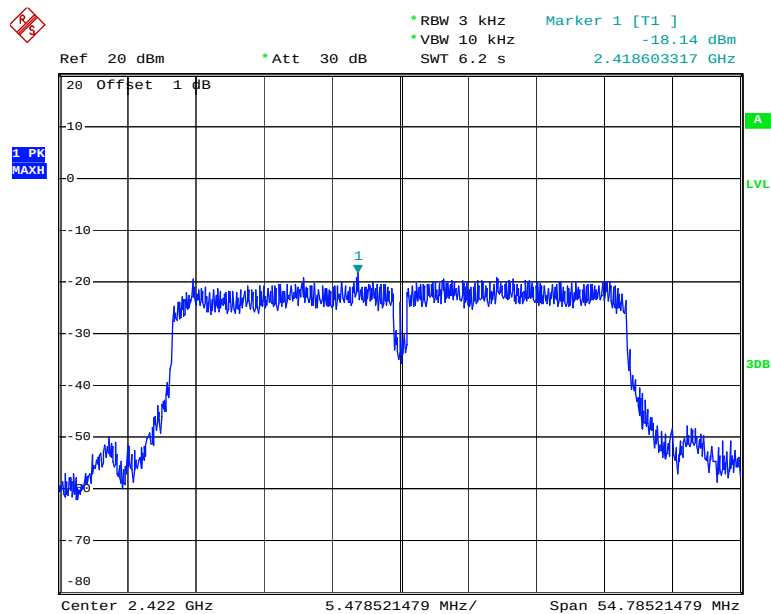
Date: 7.SEP.2013 11:30:07

Power Spectral Density, 802.11n20 High Channel

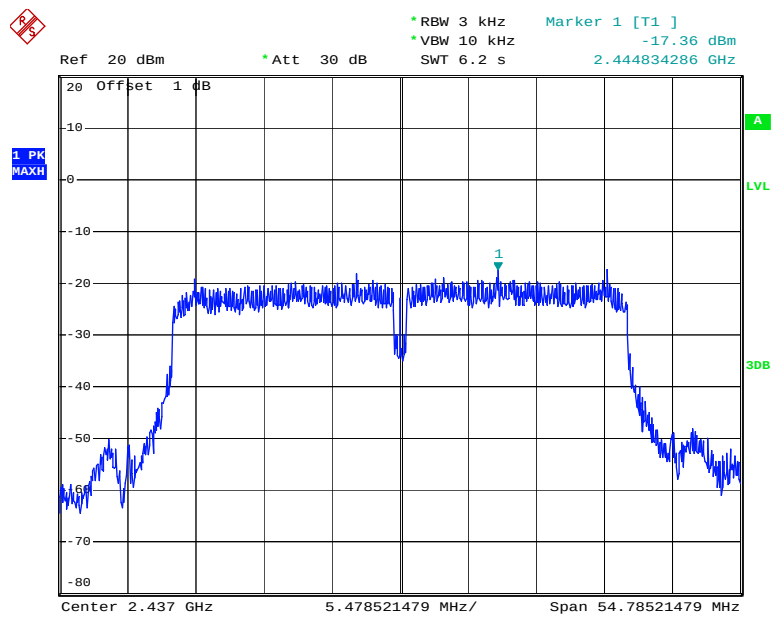


Date: 7.SEP.2013 11:31:31

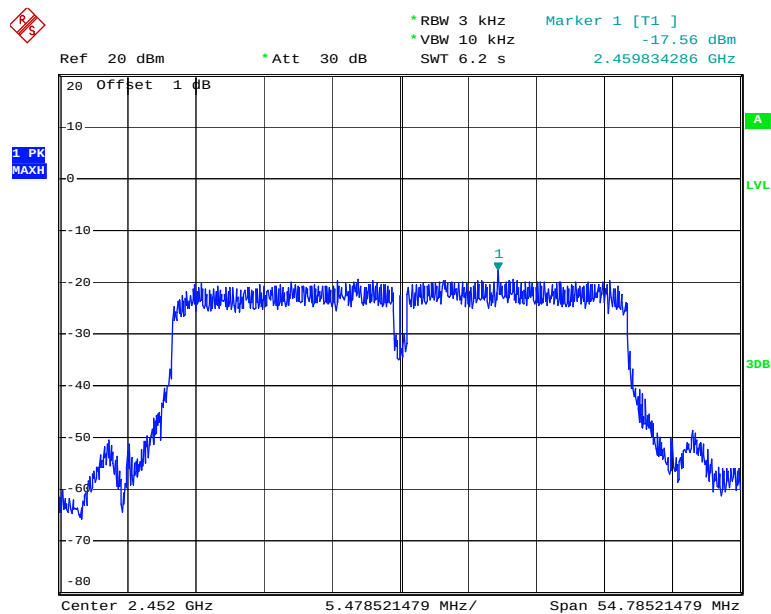
Power Spectral Density, 802.11n40 Low Channel



Date: 7.SEP.2013 11:33:50

Power Spectral Density, 802.11n40 Middle Channel

Date: 7.SEP.2013 11:35:28

Power Spectral Density, 802.11n40 High Channel

Date: 7.SEP.2013 11:36:55

DECLARATION LETTER

ProcessingPoint, Inc.

Add: 2796 Loker Avenue, Suite 111 Carlsbad, California 92010, USA

Tel: (800)518-8925-1004 Fax: (760)-448-6315

DECLARATION OF SIMILARITY

Date: 2013-9-10

To:

Bay Area Compliance Laboratories Corp.

Add: 69# Pulongcun, Puxinhu Industrial Zone Tangxia Town,

Dongguan, Guangdong, China

Tel: +86 769 86858888 Fax: +86 769 86858891

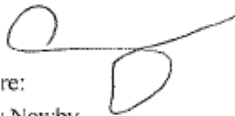
Dear Sir or Madam:

We, ProcessingPoint, Inc. , hereby declare that product: uAttend BN4000 & uAttend BN2500, model: BN2500 is electrically identical with the same electromagnetic emissions and electromagnetic compatibility characteristics as model name: BN4000 of products that was tested by BACL, the results of which are featured in BACL project: R2DG130318017, R2DG130318018. A description of the differences between the tested model and those that are declared similar areas follows:

The 2 models have different appearance, color and the model: BN2500 is Resistive keyboard, the other model BN4000 is Capacitive keyboard.

Please contact me should there be need for any additional clarification or information.

Best Regards,



Signature:

Andrew Newby

Chief Operating Officer

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