

## FCC PART 15.247

## TEST REPORT

For

### ZIONCOM ELECTRONICS (SHENZHEN) LTD.

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**FCC ID: X7D-WL0273**

<b>Report Type:</b> Original Report	<b>Product Type:</b> AC600 Wireless Dual Band USB Adapter
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F E M V A L

## GENERAL INFORMATION

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

The ZIONCOM ELECTRONICS (SHENZHEN) LTD.'s product, model number: A1000UA (FCC ID: X7D-WL0273) or ("EUT") in this report is a AC600 Wireless Dual Band USB Adapter, which was measured approximately: 8.6 cm (L) x2.5 cm (W) x 1.5 cm (H), rated input voltage: DC 5.0V from system.

*Note: The series product, model A1000UA, WL0273 are electrically identical, the only difference between them is the model name, we selected A1000UA for fully testing, the details was explained in the attached declaration letter.*

*\* All measurement and test data in this report was gathered from production sample serial number: 141110002 (Assigned by BACL.Dongguan). The EUT was received on 2014-11-10.*

### Objective

This report is prepared on behalf of ZIONCOM ELECTRONICS (SHENZHEN) LTD. in accordance with Part 2, Subpart J, Part 15, Subparts A, B and C of the Federal Communications Commission's 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)

FCC Part 15C NII submissions with FCC ID: X7D-WL0273

### 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).

### 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.

## SYSTEM TEST CONFIGURATION

### Description of Test Configuration

The system was configured for testing in testing mode, which was provided by manufacturer. For 2.4GHz band, 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 802.11n ht20 modes were tested with Channel 1, 6 and 11. For 802.11n ht40 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 investigations by measuring the average power and PSD across all data rates bandwidths, and modulations.

### Equipment Modifications

No modification was made to the EUT tested.

### EUT Exercise Software

The software “MT76xxU QA V2.0.4.0 [0325]” was used for testing, which was provided by manufacturer. The worst condition (maximum power with 100% duty cycle) was setting by the software as following table:

Test Mode	Test Software Version	MT76xxU QA V2.0.4.0 [0325]		
802.11b	Test Frequency	2412MHz	2437MHz	2462MHz
	Data Rate	(CCK)1Mbps	(CCK)1Mbps	(CCK)1Mbps
	Power Level Setting	1B	1C	1D
802.11g	Test Frequency	2412MHz	2437MHz	2462MHz
	Data Rate	(OFDM)6Mbps	(OFDM)6Mbps	(OFDM)6Mbps
	Power Level Setting	20	21	21
802.11n ht20	Test Frequency	2412MHz	2437MHz	2462MHz
	Data Rate	(HT Mixmode) MCS0	(HT Mixmode) MCS0	(HT Mixmode) MCS0
	Power Level Setting	1B	1C	1D
802.11n ht40	Test Frequency	2422MHz	2437MHz	2452MHz
	Data Rate	(HT Mixmode) MCS0	(HT Mixmode) MCS0	(HT Mixmode) MCS0
	Power Level Setting	16	17	1B

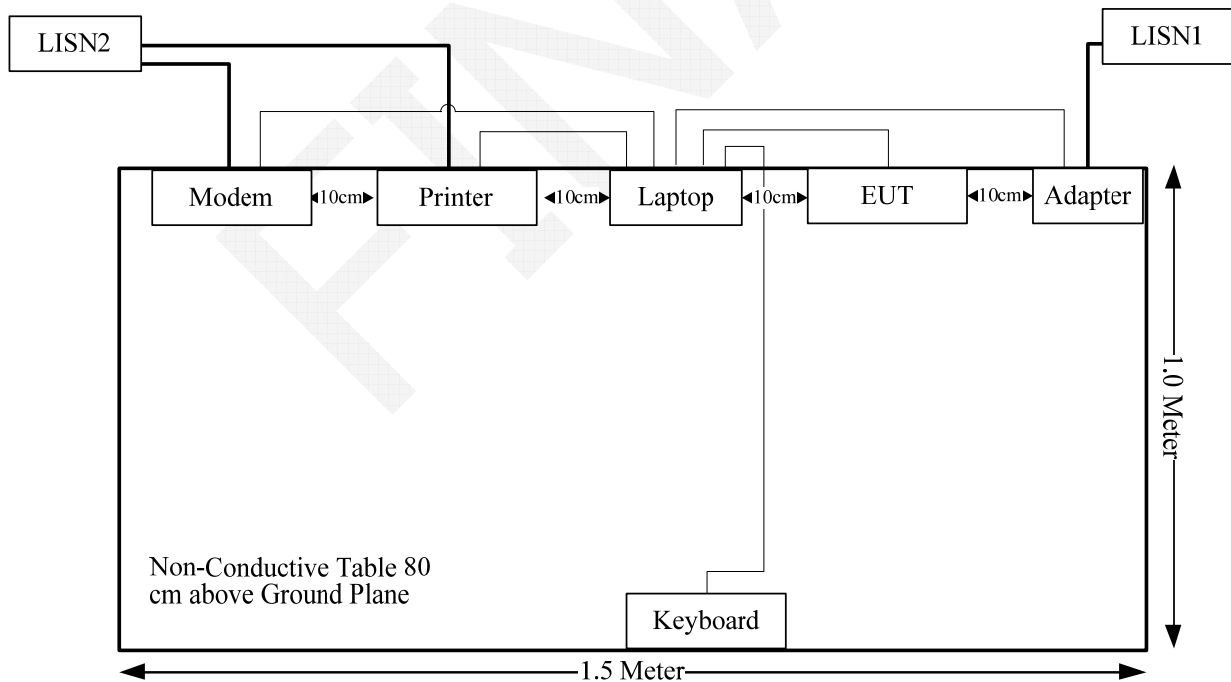
**Support Equipment List and Details**

Manufacturer	Description	Model	Serial Number
DELL	Laptop	PP11L	QDS-BRCM1017
HP	Printer	C3941A	JPTVOB2337
DELL	Keyboard	L100	CNORH656658907BL05DC
SAST	Modem	AEM-2100	0293

**External Cable**

Cable Description	Shielding Type	Ferrite Core	Length (m)	From Port	To
Serial Cable	yes	No	1.2	Serial Port of Laptop	Modem
Parallel Cable	yes	No	1.2	ParallelPort of Laptop	Printer
Keyboard Cable	yes	No	1.5	USB Port of Laptop	Keyboard
USB Cable	No	No	1.5	USB Port of Laptop	EUT

**Block Diagram of Test Setup**



**SUMMARY OF TEST RESULTS**

FCC Rules	Description of Test	Result
FCC §15.247 (i) & §1.1310 & §2.1093	RF Exposure	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 conducted 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 & §2.1093- RF EXPOSURE**

### **Applicable Standard**

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

According to KDB447498 D01 General RF Exposure Guidance v05r02:

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances  $\leq 50$  mm are determined by:

$[(\text{max. power of channel, including tune-up tolerance, mW})/(\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0$  for 1-g SAR and  $\leq 7.5$  for 10-g extremity SAR, where

- $f(\text{GHz})$  is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation
- The result is rounded to one decimal place for comparison
- 3.0 and 7.5 are referred to as the numeric thresholds in the step 2 below

The test exclusions are applicable only when the minimum test separation distance is  $\leq 50$  mm and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is  $< 5$  mm, a distance of 5 mm according to 5) in section 4.1 is applied to determine SAR test exclusion.

### **Measurement Result**

The maximum conducted average output power = 9.48 dBm (8.87mW) at 2412MHz  
 $[(\text{max. power of channel, mW})/(\text{min. test separation distance, mm})][\sqrt{f(\text{GHz})}]$   
 $= 8.87/5 \cdot (\sqrt{2.412}) = 2.76 < 3.0$

**So the stand-alone SAR evaluation is not necessary.**



## **FCC §15.203 - ANTENNA REQUIREMENT**

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### **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**

This product used one external detachable dual-band antenna and with RP-SMA female connector, the maximum gain is 5 dBi, which fulfill the requirement of this section, please refer to the EUT 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  $U_{cispr}$  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  $U_{cispr}$  of Table 1, then:

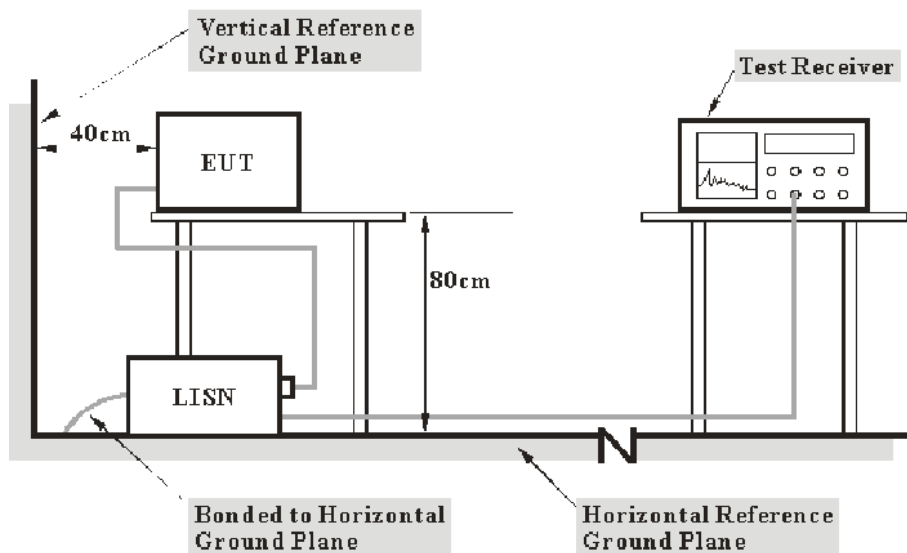
- compliance is deemed to occur if no measured disturbance level, increased by  $(U_{lab} - U_{cispr})$ , exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance level, increased by  $(U_{lab} - U_{cispr})$ , exceeds the disturbance limit.

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  $U_{cispr}$

Measurement	$U_{cispr}$
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 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 of laptop 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 of laptop was connected to 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:

$$V_C = V_R + A_C + VDF$$

$$C_f = A_C + VDF$$

Herein,

$V_C$  (cord. Reading): corrected voltage amplitude

$V_R$ : reading voltage amplitude

$A_C$ : attenuation caused by cable loss

VDF: voltage division factor of AMN

$C_f$ : Correction Factor

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 Receiver	ESCS 30	830245/006	2014-10-16	2015-10-16
R&S	L.I.S.N	ESH3-Z5	843331/015	N/A	N/A
R&S	Two-line V-network	ENV 216	3560.6550.12	2014-01-22	2015-01-22
R&S	Test Software	EMC32	Version8.53.0	N/A	N/A

\* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, 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:

**4.5 dB at 0.195114 MHz** in the **Neutral** conducted mode

### Test Data

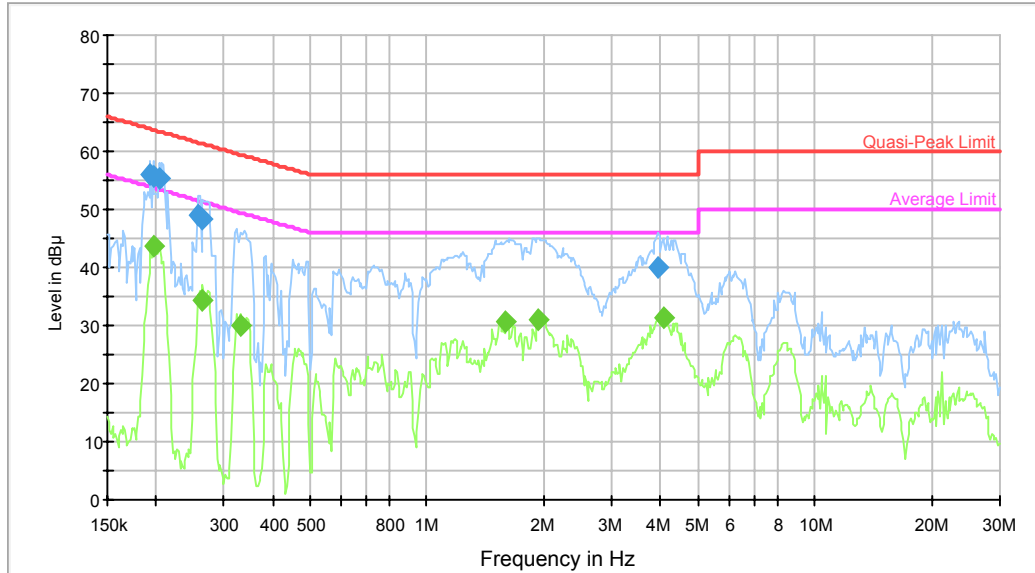
#### Environmental Conditions

<b>Temperature:</b>	24.3 °C
<b>Relative Humidity:</b>	47 %
<b>ATM Pressure:</b>	101.6 kPa

*The testing was performed by Dean Liu on 2014-11-13.*

Test Mode: Transmitting

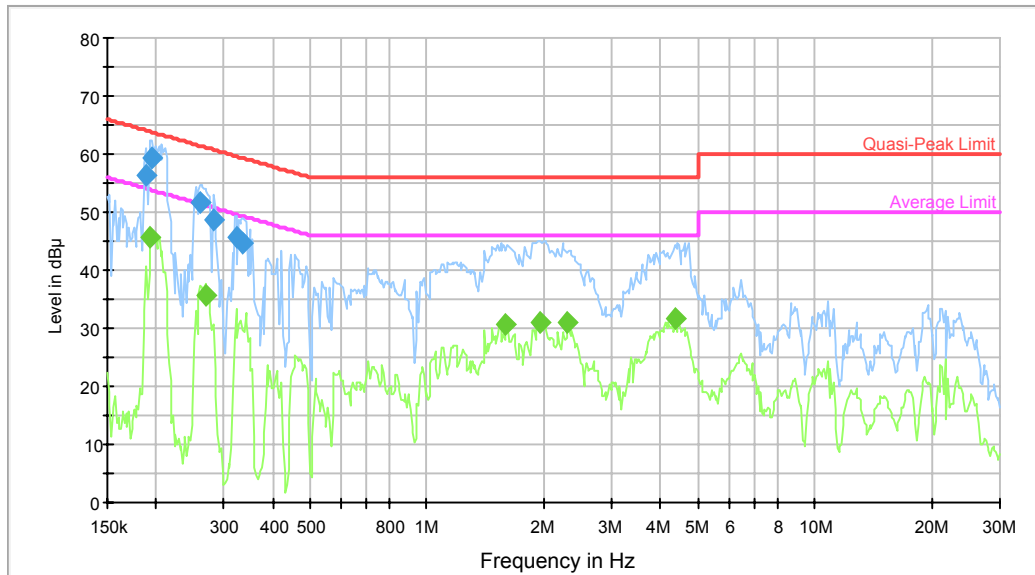
AC120 V, 60 Hz, Line:



Frequency (MHz)	QuasiPeak (dB $\mu$ V)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dB $\mu$ V)	Comment
0.193566	56.0	9.000	L1	10.7	7.9	63.9	Compliance
0.196675	55.6	9.000	L1	10.7	8.1	63.7	Compliance
0.204669	55.4	9.000	L1	10.8	8.0	63.4	Compliance
0.257874	49.0	9.000	L1	10.7	12.5	61.5	Compliance
0.264113	48.2	9.000	L1	10.7	13.1	61.3	Compliance
3.934683	40.1	9.000	L1	10.7	15.9	56.0	Compliance

Frequency (MHz)	Average (dB $\mu$ V)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dB $\mu$ V)	Comment
0.196675	43.6	9.000	L1	10.7	10.1	53.7	Compliance
0.264113	34.3	9.000	L1	10.7	17.0	51.3	Compliance
0.330129	30.0	9.000	L1	10.7	19.4	49.4	Compliance
1.599078	30.7	9.000	L1	10.4	15.3	46.0	Compliance
1.936076	31.0	9.000	L1	10.4	15.0	46.0	Compliance
4.062112	31.3	9.000	L1	10.7	14.7	46.0	Compliance

**AC120 V, 60 Hz, Neutral:**



Frequency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.188994	56.2	9.000	N	11.1	7.9	64.1	Compliance
0.195114	59.3	9.000	N	11.2	4.5	63.8	Compliance
0.259937	51.5	9.000	N	11.2	9.9	61.4	Compliance
0.281497	48.7	9.000	N	11.2	12.1	60.8	Compliance
0.322331	45.5	9.000	N	11.1	14.1	59.6	Compliance
0.335433	44.7	9.000	N	11.1	14.6	59.3	Compliance

Frequency (MHz)	Average (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.193566	45.5	9.000	N	11.2	8.4	53.9	Compliance
0.268355	35.6	9.000	N	11.2	15.6	51.2	Compliance
1.599078	30.8	9.000	N	10.5	15.2	46.0	Compliance
1.951564	31.0	9.000	N	10.5	15.0	46.0	Compliance
2.307034	31.1	9.000	N	10.5	14.9	46.0	Compliance
4.364119	31.7	9.000	N	10.8	14.3	46.0	Compliance

**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  $U_{cispr}$  of Table 2, 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  $U_{cispr}$  of Table 2, then:

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

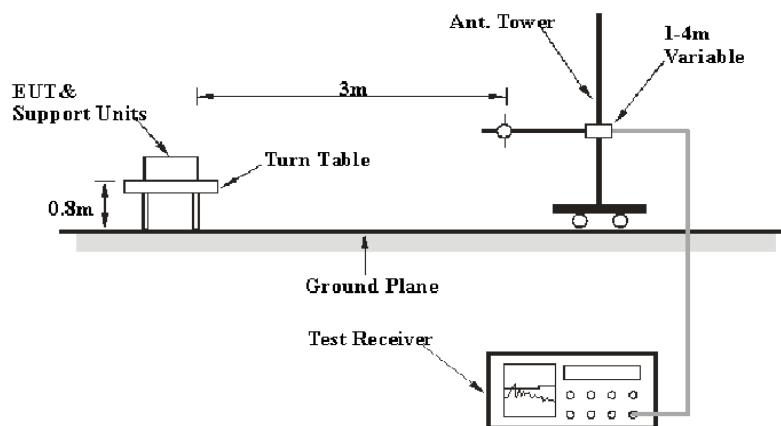
- 30M~200MHz: 5.0 dB
- 200M~1GHz: 6.2 dB
- 1G~6GHz: 4.45 dB
- 6G~18GHz: 5.23 dB

Table 2 – Values of  $U_{cispr}$

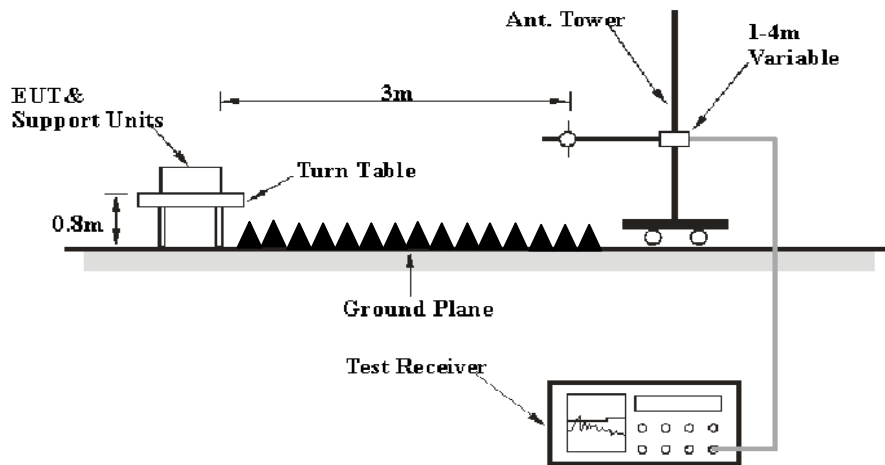
Measurement	$U_{cispr}$
Radiated disturbance (electric field strength at an OATS or in a SAC) (30 MHz to 1000 MHz)	6.3 dB
Radiated disturbance (electric field strength in a FAR) (1 GHz to 6 GHz)	5.2 dB
Radiated disturbance (electric field strength in a FAR) (6 GHz to 18 GHz)	5.5 dB

**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 of laptop 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	IF B/W	Detector
30 MHz – 1000 MHz	120 kHz	300 kHz	120 kHz	QP
Above 1 GHz	1MHz	3 MHz	/	PK
	1MHz	10 Hz	/	Ave.

**Test Procedure**

During the radiated emission test, the adapter of laptop was connected to the first 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 Loss and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

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

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	2014-05-09	2015-05-09
Sunol Sciences	Antenna	JB3	A060611-3	2014-07-28	2017-07-27
HP	Amplifier	8447E	2434A02181	2014-09-01	2015-09-01
R&S	Spectrum Analyzer	FSEM	DE31388	2014-05-09	2015-05-09
ETS-Lindgren	Horn Antenna	3115	000 527 35	2012-09-06	2015-09-06
Mini-Circuit	Amplifier	ZVA-213-S+	054201245	2014-02-19	2015-02-19
R&S	Spectrum Analyzer	FSP 38	100478	2014-05-09	2015-05-09
Ducommun Technologies	Horn Antenna	ARH-4223-02	1007726-01 1304	2014-06-16	2017-06-15
Quinstar	Amplifier	QLW- 18405536-JO	15964001001	2014-09-06	2015-09-06

\* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, 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:

**5.07 dB at 2390MHz in the Vertical polarization for 802.11n20 Mode**

## Test Data

### Environmental Conditions

<b>Temperature:</b>	24.1 °C-25.1°C
<b>Relative Humidity:</b>	51 %-52 %
<b>ATM Pressure:</b>	101.1 kPa-101.3 kPa

The testing was performed by Dean Liu on 2014-11-10 & 2014-11-11.

Test Mode: Transmitting

802.11b Mode

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBµV/m)	Limit (dBµV/m)	Margin (dB)
	Reading (dBµV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)					
Low Channel: 2412 MHz									
2412	66.71	PK	H	25.67	4.42	0.00	96.80	N/A	N/A
2412	62.59	AV	H	25.67	4.42	0.00	92.68	N/A	N/A
2412	69.72	PK	V	25.67	4.42	0.00	99.81	N/A	N/A
2412	66.16	AV	V	25.67	4.42	0.00	96.25	N/A	N/A
2390	26.78	PK	V	25.61	4.39	0.00	56.78	74.00	17.22
2390	14.87	AV	V	25.61	4.39	0.00	44.87	54.00	9.13
4824	26.87	PK	V	30.64	6.03	27.41	36.13	74.00	37.87
4824	20.14	AV	V	30.64	6.03	27.41	29.40	54.00	24.60
7236	25.97	PK	V	34.17	7.47	25.90	41.71	74.00	32.29
7236	19.57	AV	V	34.17	7.47	25.90	35.31	54.00	18.69
9648	24.06	PK	V	36.06	8.81	27.46	41.47	74.00	32.53
9648	17.07	AV	V	36.06	8.81	27.46	34.48	54.00	19.52
2950	29.10	PK	V	27.07	6.91	27.54	35.54	74.00	38.46
2950	20.93	AV	V	27.07	6.91	27.54	27.37	54.00	26.63
119.24	36.83	QP	V	14.07	1.34	21.41	30.83	43.50	12.67
Middle Channel: 2437 MHz									
2437	64.76	PK	H	25.74	4.41	0.00	94.91	N/A	N/A
2437	60.98	AV	H	25.74	4.41	0.00	91.13	N/A	N/A
2437	67.53	PK	V	25.74	4.41	0.00	97.68	N/A	N/A
2437	63.84	AV	V	25.74	4.41	0.00	93.99	N/A	N/A
4874	26.47	PK	V	30.77	6.09	27.42	35.91	74.00	38.09
4874	20.25	AV	V	30.77	6.09	27.42	29.69	54.00	24.31
7311	26.60	PK	V	34.35	7.51	25.88	42.58	74.00	31.42
7311	19.84	AV	V	34.35	7.51	25.88	35.82	54.00	18.18
9748	23.83	PK	V	36.30	8.83	27.24	41.72	74.00	32.28
9748	17.13	AV	V	36.30	8.83	27.24	35.02	54.00	18.98
2950	28.55	PK	V	27.07	6.91	27.54	34.99	74.00	39.01
2950	20.94	AV	V	27.07	6.91	27.54	27.38	54.00	26.62
3610	29.03	PK	V	29.04	5.04	27.28	35.83	74.00	38.17
3610	21.58	AV	V	29.04	5.04	27.28	28.38	54.00	25.62
119.24	36.75	QP	V	14.07	1.34	21.41	30.75	43.50	12.75
High Channel: 2462 MHz									
2462	63.79	PK	H	25.80	4.43	0.00	94.02	N/A	N/A
2462	60.09	AV	H	25.80	4.43	0.00	90.32	N/A	N/A
2462	67.78	PK	V	25.80	4.43	0.00	98.01	N/A	N/A
2462	63.45	AV	V	25.80	4.43	0.00	93.68	N/A	N/A
2483.5	26.28	PK	V	25.86	4.49	0.00	56.63	74.00	17.37
2483.5	15.12	AV	V	25.86	4.49	0.00	45.47	54.00	8.53
4924	28.46	PK	V	30.90	5.97	27.43	37.90	74.00	36.10
4924	24.17	AV	V	30.90	5.97	27.43	33.61	54.00	20.39
7386	30.79	PK	V	34.53	7.55	25.86	47.01	74.00	26.99
7386	29.6	AV	V	34.53	7.55	25.86	45.82	54.00	8.18
9848	24.29	PK	V	36.54	8.85	26.94	42.74	74.00	31.26
9848	17.77	AV	V	36.54	8.85	26.94	36.22	54.00	17.78
2950	28.77	PK	V	27.07	6.91	27.54	35.21	74.00	38.79
2950	20.95	AV	V	27.07	6.91	27.54	27.39	54.00	26.61
119.24	36.78	QP	V	14.07	1.34	21.41	30.78	43.50	12.72

802.11g Mode

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBµV/m)	Limit (dBµV/m)	Margin (dB)
	Reading (dBµV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)					
Low Channel: 2412 MHz									
2412	67.16	PK	H	25.67	4.42	0.00	97.25	N/A	N/A
2412	61.09	AV	H	25.67	4.42	0.00	91.18	N/A	N/A
2412	69.28	PK	V	25.67	4.42	0.00	99.37	N/A	N/A
2412	63.15	AV	V	25.67	4.42	0.00	93.24	N/A	N/A
2390	26.54	PK	V	25.61	4.39	0.00	56.54	74.00	17.46
2390	15.93	AV	V	25.61	4.39	0.00	45.93	54.00	8.07
4824	26.33	PK	V	30.64	6.03	27.41	35.59	74.00	38.41
4824	19.44	AV	V	30.64	6.03	27.41	28.70	54.00	25.30
7236	26.05	PK	V	34.17	7.47	25.90	41.79	74.00	32.21
7236	19.53	AV	V	34.17	7.47	25.90	35.27	54.00	18.73
9648	26.27	PK	V	36.06	8.81	27.46	43.68	74.00	30.32
9648	17.09	AV	V	36.06	8.81	27.46	34.50	54.00	19.50
2950	29.66	PK	V	27.07	6.91	27.54	36.10	74.00	37.90
2950	20.94	AV	V	27.07	6.91	27.54	27.38	54.00	26.62
119.24	36.33	QP	V	14.07	1.34	21.41	30.33	43.50	13.17
Middle Channel: 2437 MHz									
2437	66.15	PK	H	25.74	4.41	0.00	96.30	N/A	N/A
2437	60.44	AV	H	25.74	4.41	0.00	90.59	N/A	N/A
2437	67.92	PK	V	25.74	4.41	0.00	98.07	N/A	N/A
2437	62.62	AV	V	25.74	4.41	0.00	92.77	N/A	N/A
4874	28.14	PK	V	30.77	6.09	27.42	37.58	74.00	36.42
4874	21.27	AV	V	30.77	6.09	27.42	30.71	54.00	23.29
7311	26.71	PK	V	34.35	7.51	25.88	42.69	74.00	31.31
7311	19.83	AV	V	34.35	7.51	25.88	35.81	54.00	18.19
9748	24.82	PK	V	36.30	8.83	27.24	42.71	74.00	31.29
9748	17.14	AV	V	36.30	8.83	27.24	35.03	54.00	18.97
2950	29.84	PK	V	27.07	6.91	27.54	36.28	74.00	37.72
2950	21	AV	V	27.07	6.91	27.54	27.44	54.00	26.56
3610	28.65	PK	V	29.04	5.04	27.28	35.45	74.00	38.55
3610	21.58	AV	V	29.04	5.04	27.28	28.38	54.00	25.62
119.24	36.52	QP	V	14.07	1.34	21.41	30.52	43.50	12.98
High Channel: 2462 MHz									
2462	65.86	PK	H	25.80	4.43	0.00	96.09	N/A	N/A
2462	59.93	AV	H	25.80	4.43	0.00	90.16	N/A	N/A
2462	68.17	PK	V	25.80	4.43	0.00	98.40	N/A	N/A
2462	62.48	AV	V	25.80	4.43	0.00	92.71	N/A	N/A
2483.5	22.99	PK	V	25.86	4.49	0.00	53.34	74.00	20.66
2483.5	14.85	AV	V	25.86	4.49	0.00	45.20	54.00	8.80
4924	26.51	PK	V	30.90	5.97	27.43	35.95	74.00	38.05
4924	19.12	AV	V	30.90	5.97	27.43	28.56	54.00	25.44
7386	27.4	PK	V	34.53	7.55	25.86	43.62	74.00	30.38
7386	19.86	AV	V	34.53	7.55	25.86	36.08	54.00	17.92
9848	23.99	PK	V	36.54	8.85	26.94	42.44	74.00	31.56
9848	17.33	AV	V	36.54	8.85	26.94	35.78	54.00	18.22
2950	28.64	PK	V	27.07	6.91	27.54	35.08	74.00	38.92
2950	20.93	AV	V	27.07	6.91	27.54	27.37	54.00	26.63
119.24	36.47	QP	V	14.07	1.34	21.41	30.47	43.50	13.03

802.11 n ht20 Mode

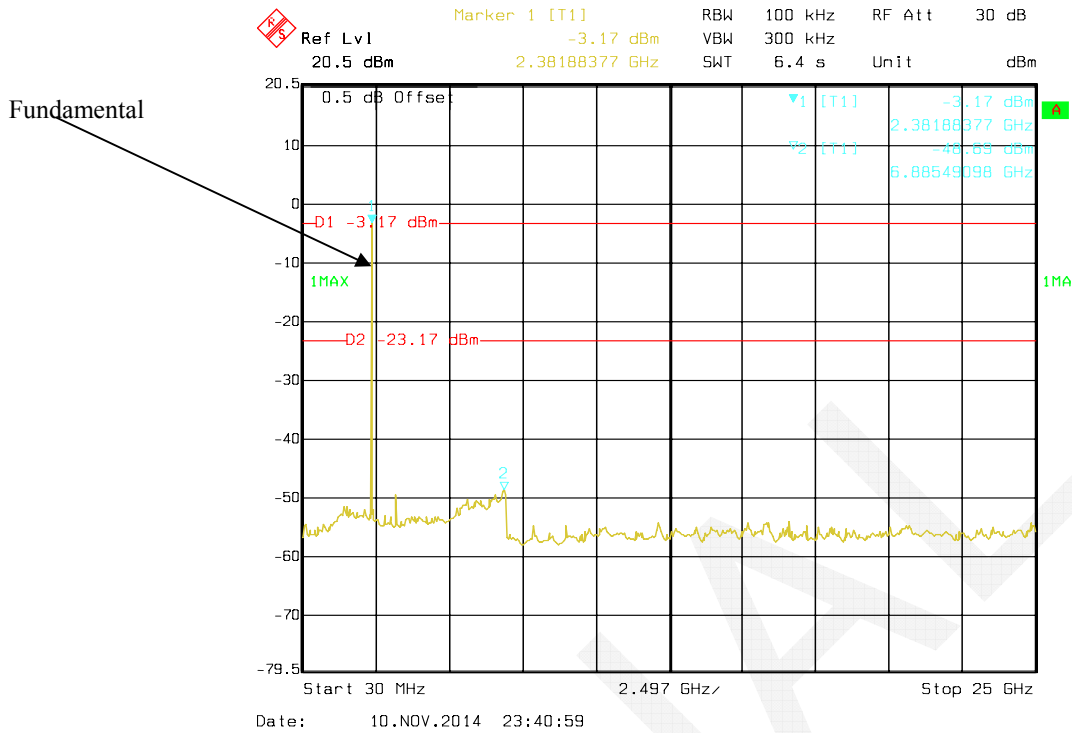
Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBµV/m)	Limit (dBµV/m)	Margin (dB)
	Reading (dBµV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)					
Low Channel: 2412 MHz									
2412	67.79	PK	H	25.67	4.42	0.00	97.88	N/A	N/A
2412	62.25	AV	H	25.67	4.42	0.00	92.34	N/A	N/A
2412	69.56	PK	V	25.67	4.42	0.00	99.65	N/A	N/A
2412	64.09	AV	V	25.67	4.42	0.00	94.18	N/A	N/A
2390	33.48	PK	V	25.61	4.39	0.00	63.48	74.00	10.52
2390	18.93	AV	V	25.61	4.39	0.00	48.93	54.00	5.07
4824	26.15	PK	V	30.64	6.03	27.41	35.41	74.00	38.59
4824	19.44	AV	V	30.64	6.03	27.41	28.70	54.00	25.30
7236	26.11	PK	V	34.17	7.47	25.90	41.85	74.00	32.15
7236	19.52	AV	V	34.17	7.47	25.90	35.26	54.00	18.74
9648	23.36	PK	V	36.06	8.81	27.46	40.77	74.00	33.23
9648	17.17	AV	V	36.06	8.81	27.46	34.58	54.00	19.42
2950	28.45	PK	V	27.07	6.91	27.54	34.89	74.00	39.11
2950	20.94	AV	V	27.07	6.91	27.54	27.38	54.00	26.62
119.24	36.43	QP	V	14.07	1.34	21.41	30.43	43.5	13.07
Middle Channel: 2437 MHz									
2437	6.62	PK	H	25.74	4.41	0.00	36.77	N/A	N/A
2437	62.35	AV	H	25.74	4.41	0.00	92.50	N/A	N/A
2437	70.29	PK	V	25.74	4.41	0.00	100.44	N/A	N/A
2437	64.44	AV	V	25.74	4.41	0.00	94.59	N/A	N/A
4874	27.26	PK	V	30.77	6.09	27.42	36.70	74.00	37.30
4874	20.02	AV	V	30.77	6.09	27.42	29.46	54.00	24.54
7311	26.49	PK	V	34.35	7.51	25.88	42.47	74.00	31.53
7311	19.58	AV	V	34.35	7.51	25.88	35.56	54.00	18.44
9748	24.08	PK	V	36.30	8.83	27.24	41.97	74.00	32.03
9748	17.12	AV	V	36.30	8.83	27.24	35.01	54.00	18.99
2950	29.42	PK	V	27.07	6.91	27.54	35.86	74.00	38.14
2950	20.96	AV	V	27.07	6.91	27.54	27.40	54.00	26.60
3610	28.68	PK	V	29.04	5.04	27.28	35.48	74.00	38.52
3610	21.57	AV	V	29.04	5.04	27.28	28.37	54.00	25.63
119.24	36.52	QP	V	14.07	1.34	21.41	30.52	43.50	12.98
High Channel: 2462 MHz									
2462	64.47	PK	H	25.80	4.43	0.00	94.70	N/A	N/A
2462	59.55	AV	H	25.80	4.43	0.00	89.78	N/A	N/A
2462	68.2	PK	V	25.80	4.43	0.00	98.43	N/A	N/A
2462	62.51	AV	V	25.80	4.43	0.00	92.74	N/A	N/A
2483.5	27.52	PK	V	25.86	4.49	0.00	57.87	74.00	16.13
2483.5	15.75	AV	V	25.86	4.49	0.00	46.10	54.00	7.90
4924	26.51	PK	V	30.90	5.97	27.43	35.95	74.00	38.05
4924	19.12	AV	V	30.90	5.97	27.43	28.56	54.00	25.44
7386	26.87	PK	V	34.53	7.55	25.86	43.09	74.00	30.91
7386	19.84	AV	V	34.53	7.55	25.86	36.06	54.00	17.94
9848	23.71	PK	V	36.54	8.85	26.94	42.16	74.00	31.84
9848	17.33	AV	V	36.54	8.85	26.94	35.78	54.00	18.22
2950	29.16	PK	V	27.07	6.91	27.54	35.60	74.00	38.40
2950	20.93	AV	V	27.07	6.91	27.54	27.37	54.00	26.63
119.24	36.56	QP	V	14.07	1.34	21.41	30.56	43.50	12.94

802.11 n ht40 Mode

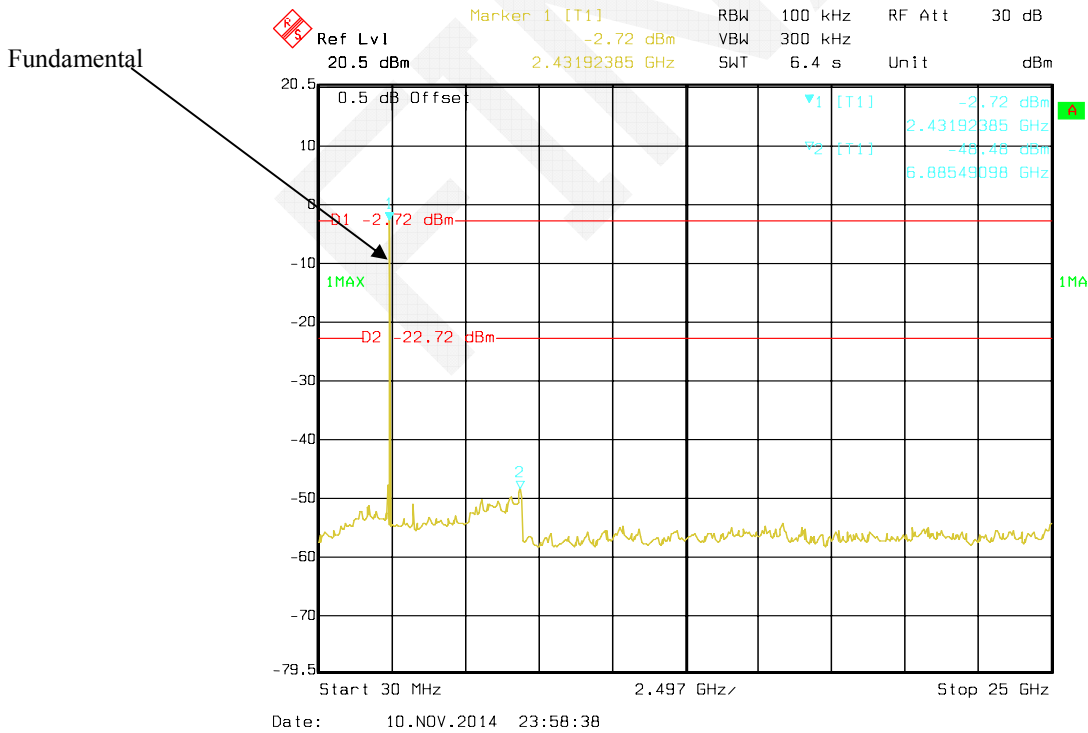
Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBµV/m)	Limit (dBµV/m)	Margin (dB)
	Reading (dBµV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)					
Low Channel: 2422 MHz									
2422	65.21	PK	H	25.70	4.41	0.00	95.32	N/A	N/A
2422	58.29	AV	H	25.70	4.41	0.00	88.40	N/A	N/A
2422	67.28	PK	V	25.70	4.41	0.00	97.39	N/A	N/A
2422	60.74	AV	V	25.70	4.41	0.00	90.85	N/A	N/A
2390	25.02	PK	V	25.61	4.39	0.00	55.02	74.00	18.98
2390	16.64	AV	V	25.61	4.39	0.00	46.64	54.00	7.36
4844	26.46	PK	V	30.69	6.08	27.42	35.81	74.00	38.19
4844	19.27	AV	V	30.69	6.08	27.42	28.62	54.00	25.38
7266	26.82	PK	V	34.24	7.48	25.89	42.65	74.00	31.35
7266	19.6	AV	V	34.24	7.48	25.89	35.43	54.00	18.57
9688	25.82	PK	V	36.15	8.82	27.37	43.42	74.00	30.58
9688	16.91	AV	V	36.15	8.82	27.37	34.51	54.00	19.49
2950	29.51	PK	V	27.07	6.91	27.54	35.95	74.00	38.05
2950	20.64	AV	V	27.07	6.91	27.54	27.08	54.00	26.92
119.24	36.77	QP	V	14.07	1.34	21.41	30.77	43.50	12.73
Middle Channel: 2437 MHz									
2437	65.96	PK	H	25.74	4.41	0.00	96.11	N/A	N/A
2437	59.06	AV	H	25.74	4.41	0.00	89.21	N/A	N/A
2437	67.29	PK	V	25.74	4.41	0.00	97.44	N/A	N/A
2437	61.3	AV	V	25.74	4.41	0.00	91.45	N/A	N/A
4874	26.36	PK	V	30.77	6.09	27.42	35.80	74.00	38.20
4874	19.24	AV	V	30.77	6.09	27.42	28.68	54.00	25.32
7311	26.7	PK	V	34.35	7.51	25.88	42.68	74.00	31.32
7311	19.68	AV	V	34.35	7.51	25.88	35.66	54.00	18.34
9748	23.96	PK	V	36.30	8.83	27.24	41.85	74.00	32.15
9748	17.15	AV	V	36.30	8.83	27.24	35.04	54.00	18.96
2950	29.29	PK	V	27.07	6.91	27.54	35.73	74.00	38.27
2950	20.94	AV	V	27.07	6.91	27.54	27.38	54.00	26.62
3610	30.02	PK	V	29.04	5.04	27.28	36.82	74.00	37.18
3610	21.61	AV	V	29.04	5.04	27.28	28.41	54.00	25.59
119.24	36.68	QP	V	14.07	1.34	21.41	30.68	43.50	12.82
High Channel: 2452 MHz									
2452	58.03	PK	H	25.78	4.41	0.00	88.22	N/A	N/A
2452	50.34	AV	H	25.78	4.41	0.00	80.53	N/A	N/A
2452	60.45	PK	V	25.78	4.41	0.00	90.64	N/A	N/A
2452	54.34	AV	V	25.78	4.41	0.00	84.53	N/A	N/A
2483.5	24.88	PK	V	25.86	4.49	0.00	55.23	74.00	18.77
2483.5	14.96	AV	V	25.86	4.49	0.00	45.31	54.00	8.69
4904	26.2	PK	V	30.85	6.06	27.43	35.68	74.00	38.32
4904	19.26	AV	V	30.85	6.06	27.43	28.74	54.00	25.26
7356	27.48	PK	V	34.45	7.53	25.87	43.59	74.00	30.41
7356	19.96	AV	V	34.45	7.53	25.87	36.07	54.00	17.93
9808	23.57	PK	V	36.44	8.84	27.09	41.76	74.00	32.24
9808	17.62	AV	V	36.44	8.84	27.09	35.81	54.00	18.19
2950	29.81	PK	V	27.07	6.91	27.54	36.25	74.00	37.75
2950	20.64	AV	V	27.07	6.91	27.54	27.08	54.00	26.92
119.24	36.59	QP	V	14.07	1.34	21.41	30.59	43.50	12.91

Conducted Spurious Emissions at Antenna Port

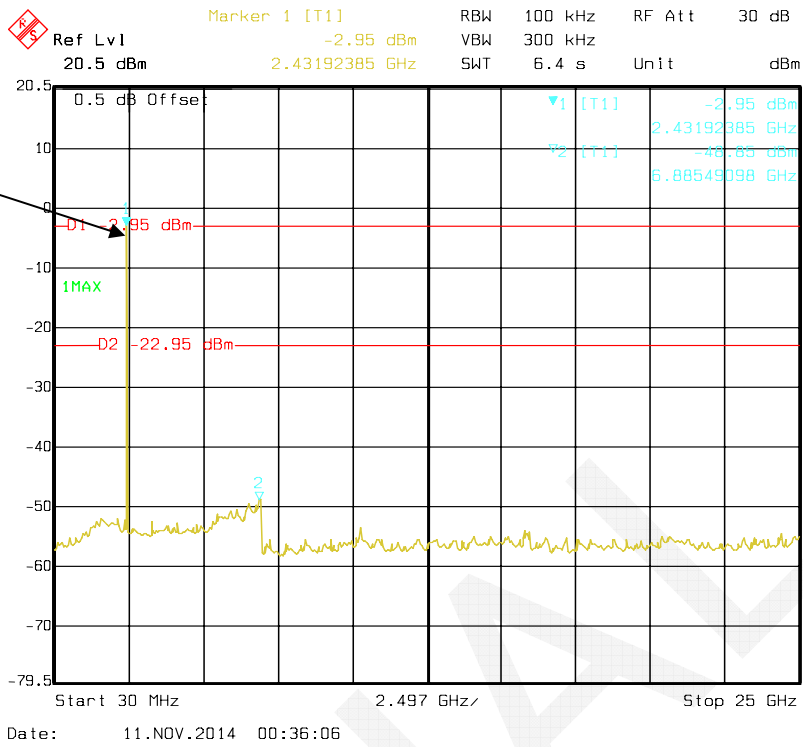
802.11b Low Channel



802.11b Middle Channel

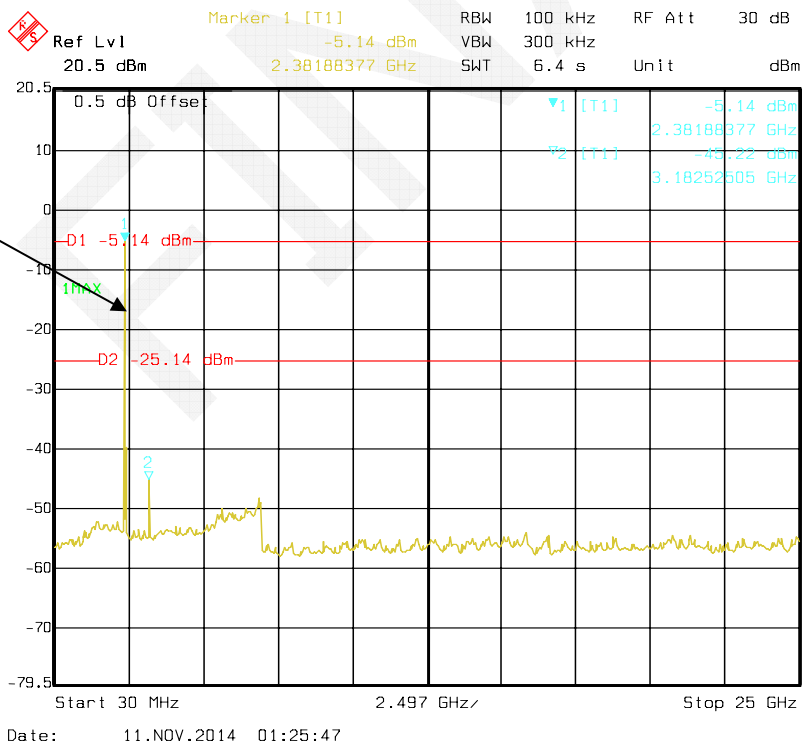


### 802.11b High Channel



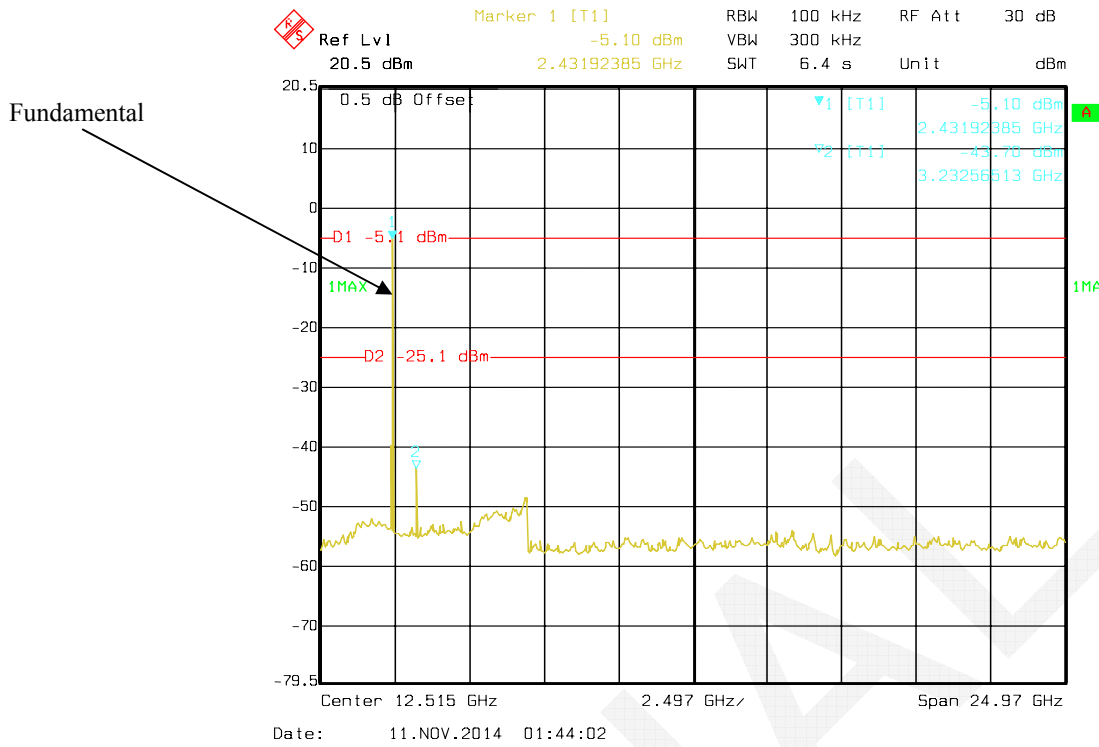
Fundamental

### 802.11g Low Channel

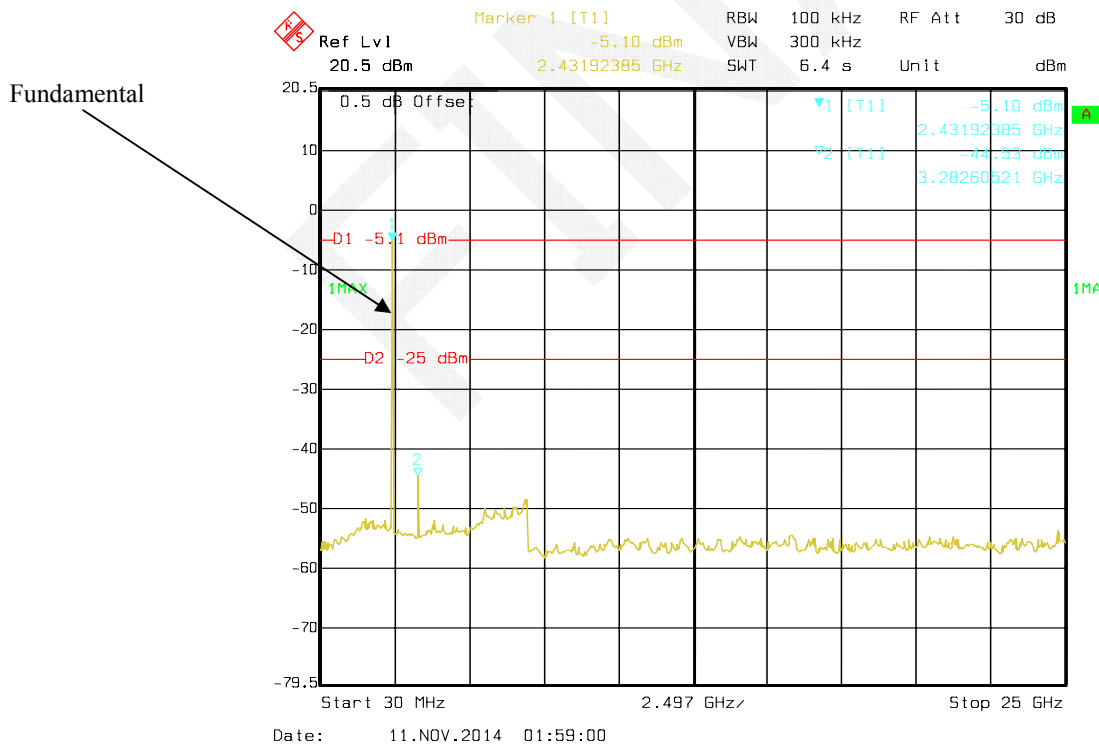


Fundamental

### 802.11g Middle Channel

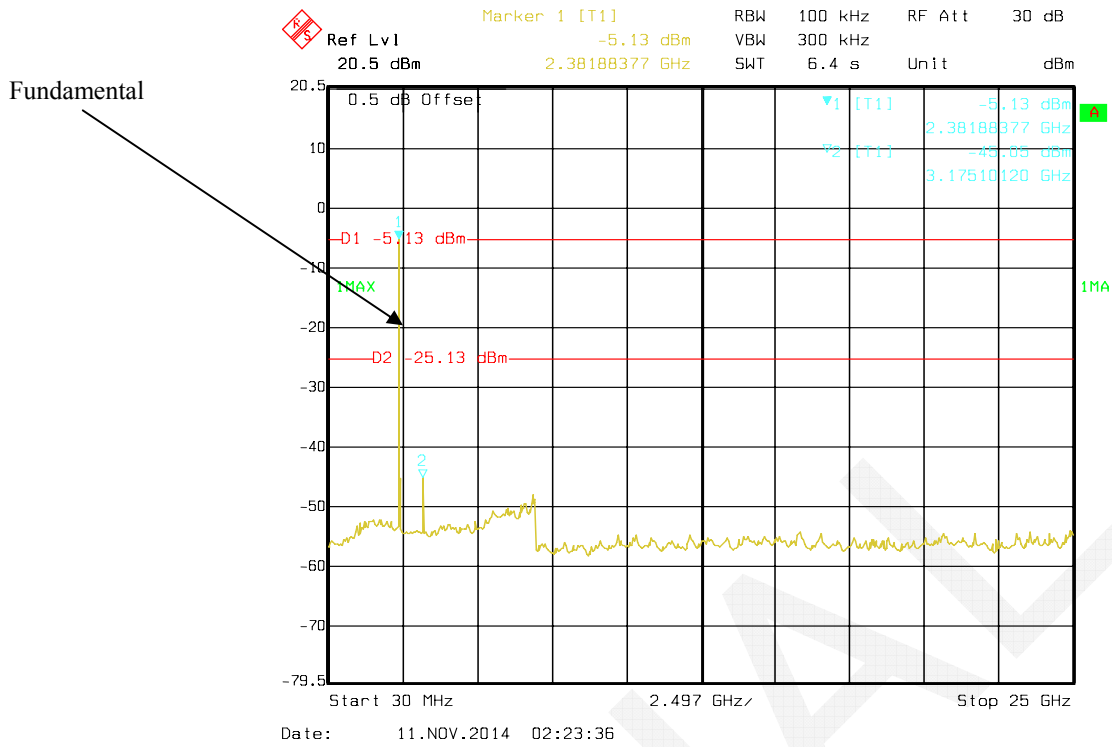


### 802.11g High Channel

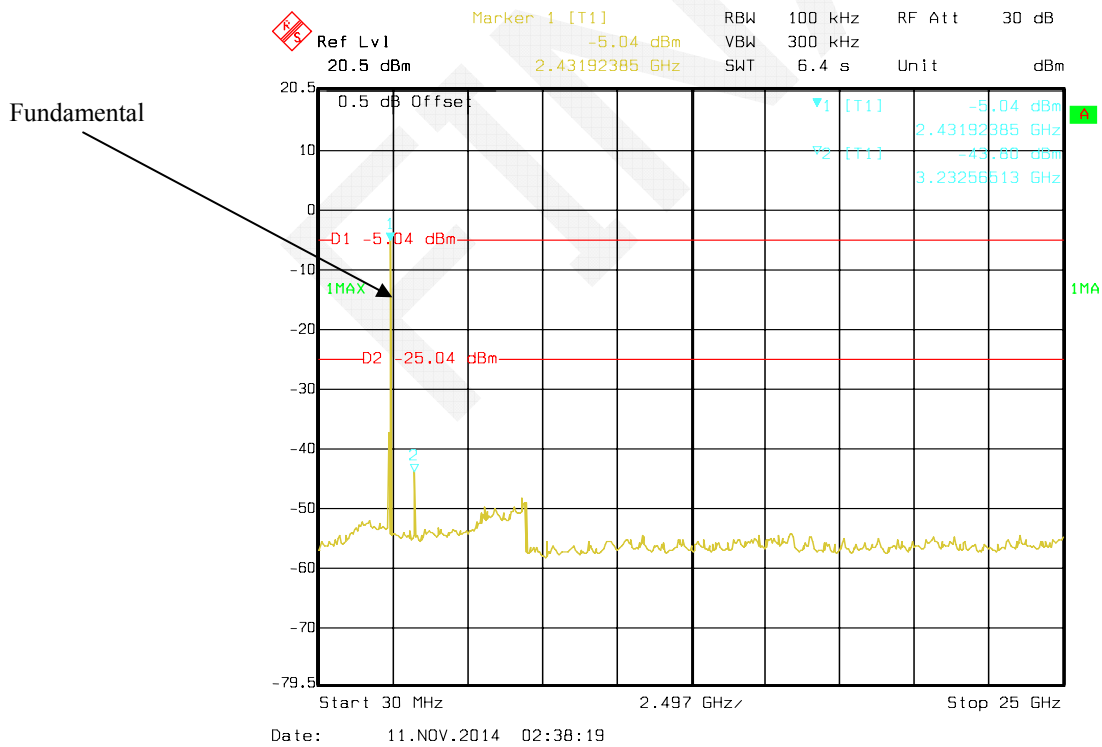




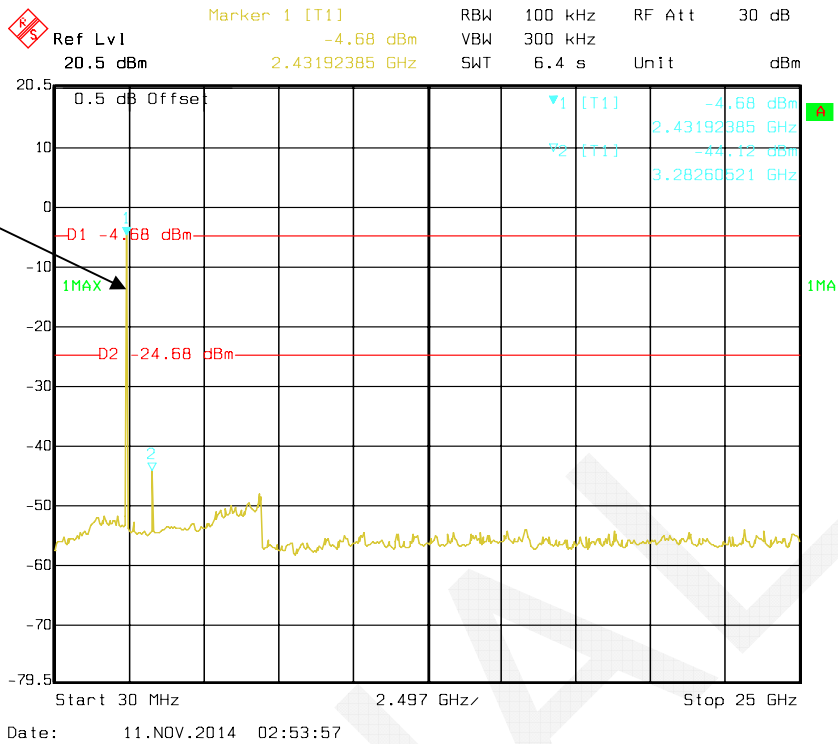
**802.11n ht20 Low Channel**



**802.11n ht20 Middle Channel**

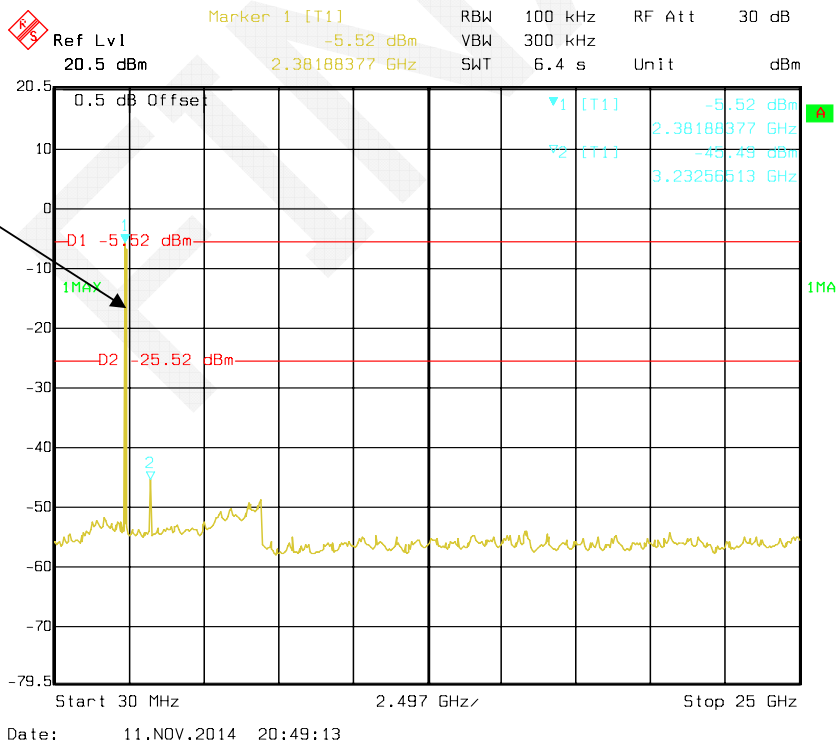


### 802.11n ht20 High Channel



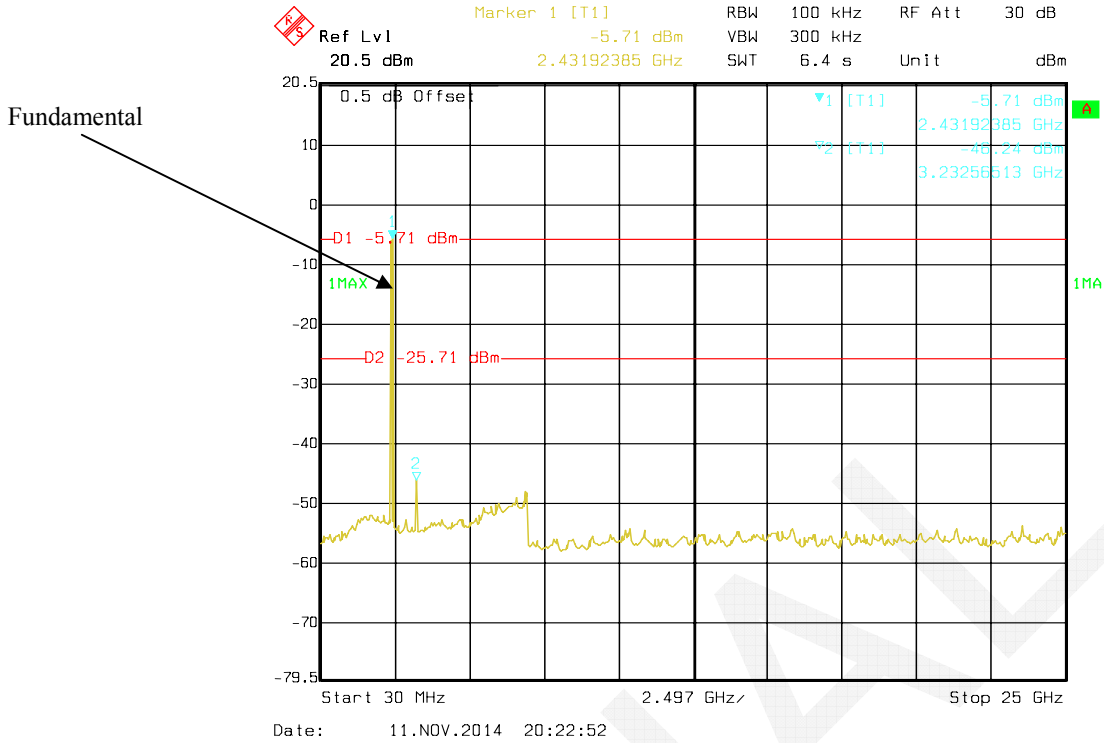
Fundamental

### 802.11n ht40 Low Channel

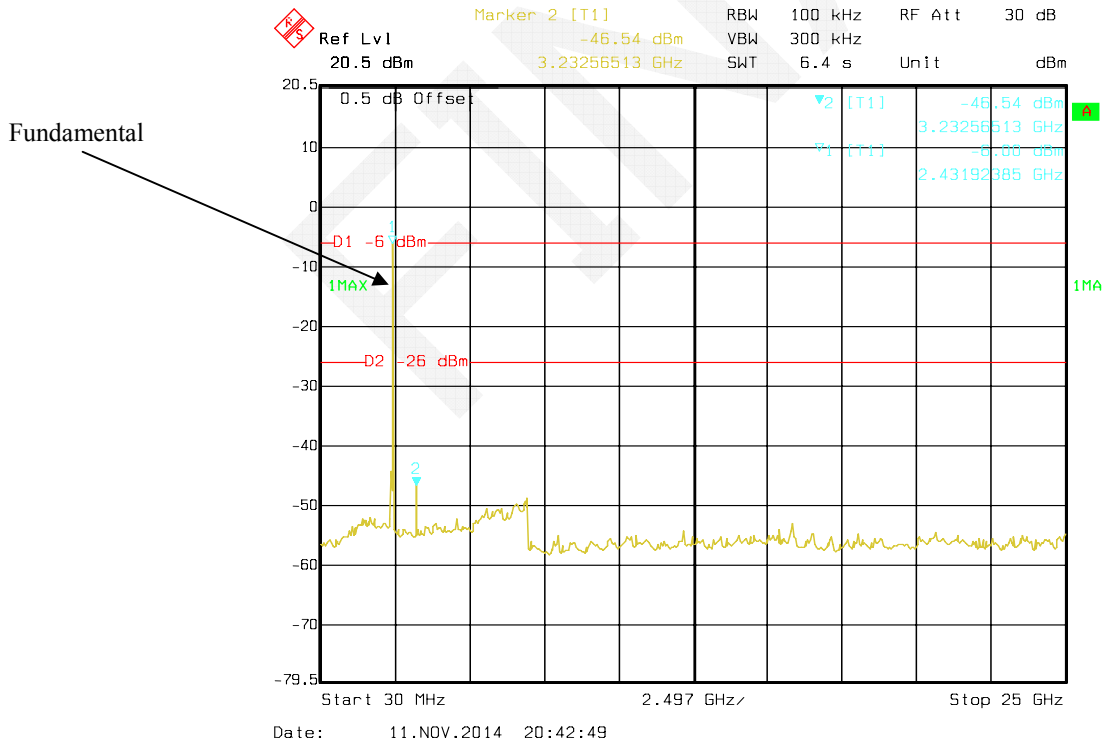


Fundamental

**802.11n ht40 Middle Channel**



**802.11n ht40 High Channel**



## 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

According to KDB 558074 D01 DTS Meas Guidance v03r02 clause8.1 Option 1:

- a) Set RBW = 100 kHz.
- b) Set the video bandwidth (VBW)  $\geq 3 \times$  RBW.
- c) Detector = Peak.
- d) Trace mode = max hold.
- e) Sweep = auto couple.
- f) Allow the trace to stabilize.
- g) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.



### Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSEM	DE31388	2014-05-09	2015-05-09

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

### Test Data

#### Environmental Conditions

Temperature:	25.8 °C-26.6 °C
Relative Humidity:	56 %-58 %
ATM Pressure:	101.1 kPa-101.3 kPa

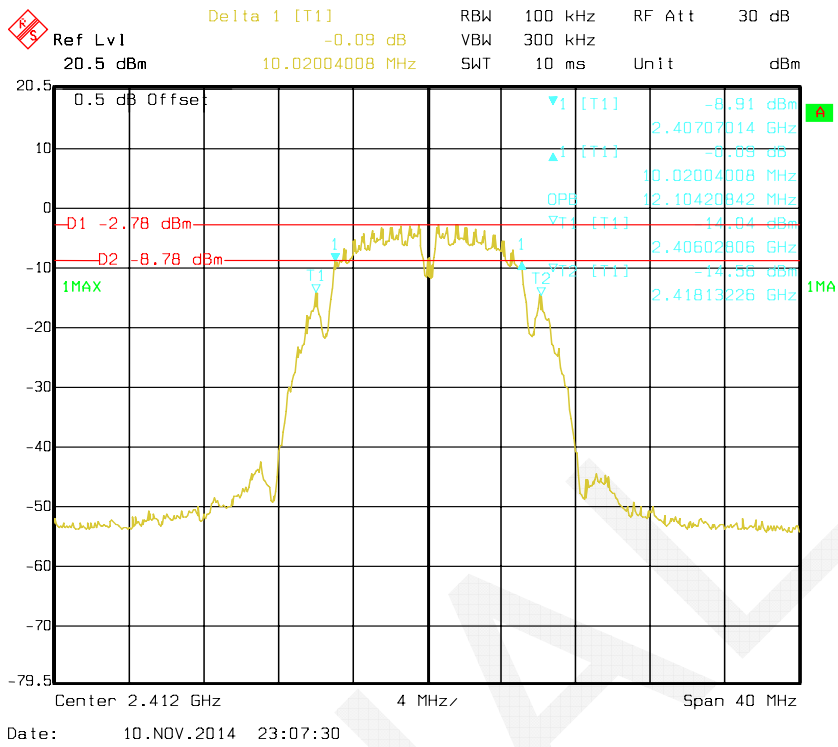
The testing was performed by Dean Liu on 2014-11-10 & 2014-11-11.

*Test Mode: Transmitting*

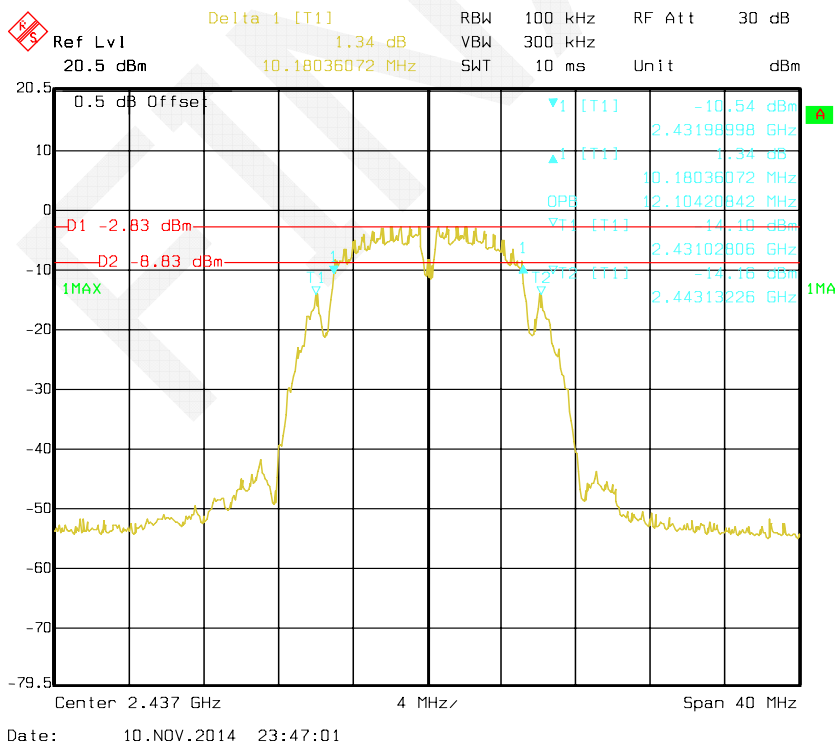
*Test Result: Compliant. Please refer to the following table and plots.*

Mode	Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Limit (MHz)
802.11b	Low	2412	10.02	$\geq 0.5$
	Middle	2437	10.18	$\geq 0.5$
	High	2462	10.18	$\geq 0.5$
802.11g	Low	2412	16.51	$\geq 0.5$
	Middle	2437	16.51	$\geq 0.5$
	High	2462	16.51	$\geq 0.5$
802.11n20	Low	2412	17.15	$\geq 0.5$
	Middle	2437	17.12	$\geq 0.5$
	High	2462	17.23	$\geq 0.5$
802.11n40	Low	2422	35.75	$\geq 0.5$
	Middle	2437	35.91	$\geq 0.5$
	High	2452	35.75	$\geq 0.5$

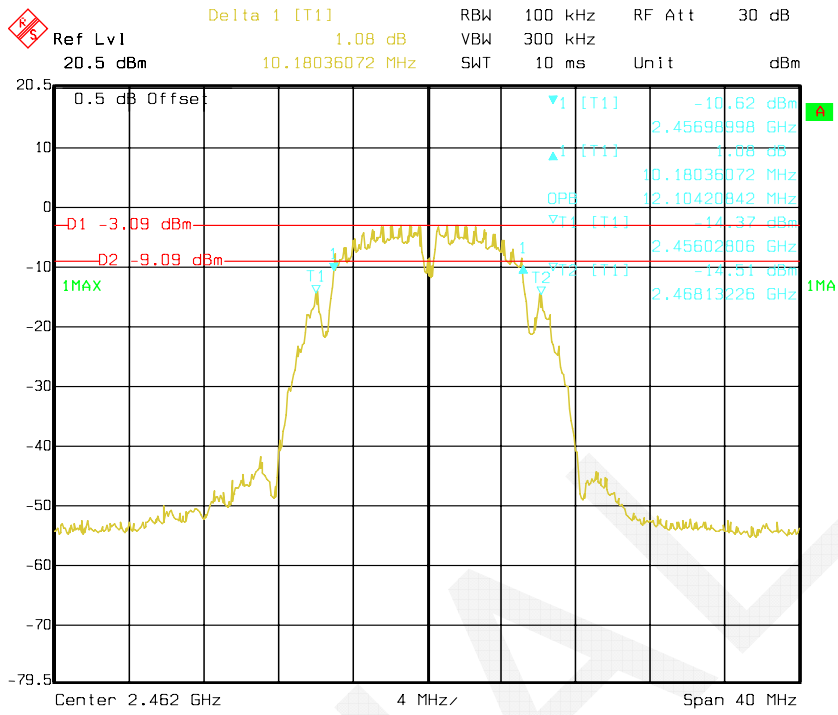
### 802.11b Low Channel



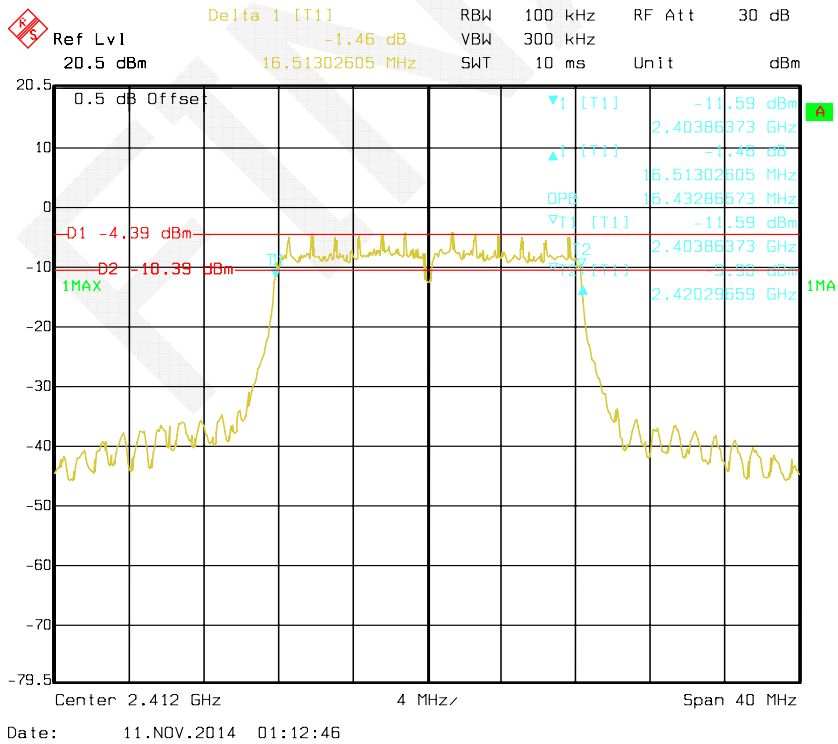
### 802.11b Middle Channel



### 802.11b High Channel



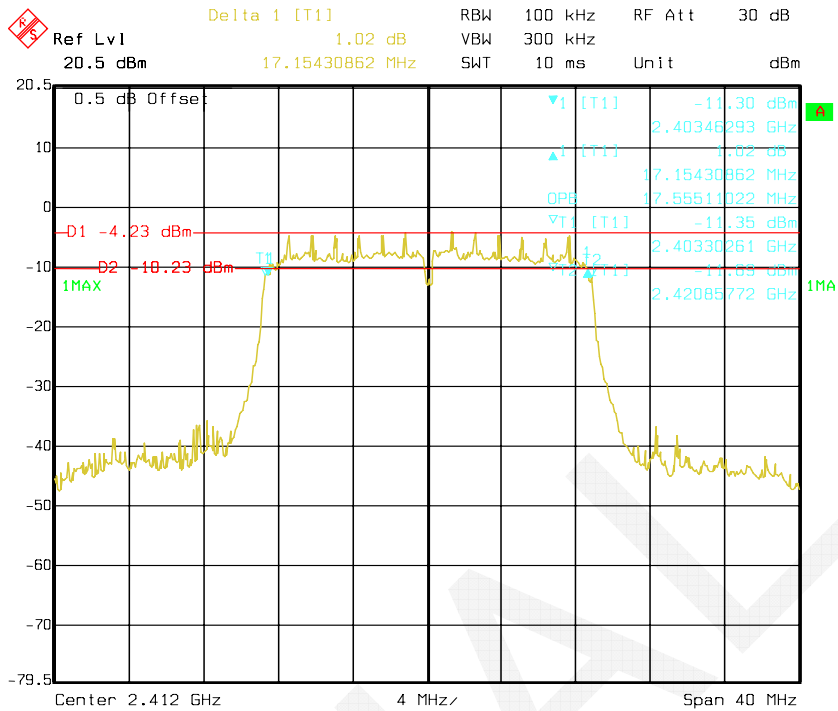
### 802.11g Low Channel



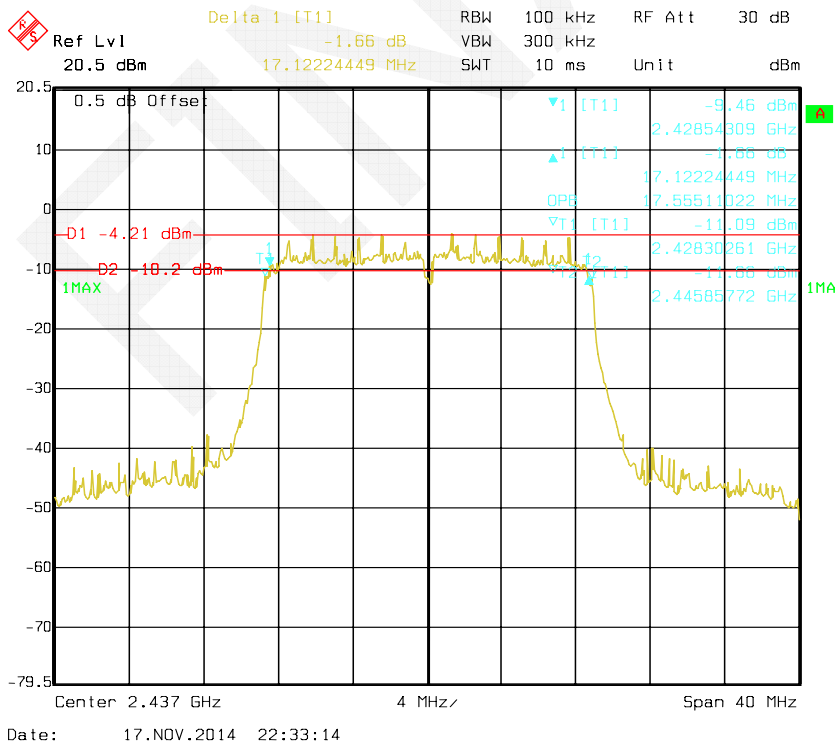




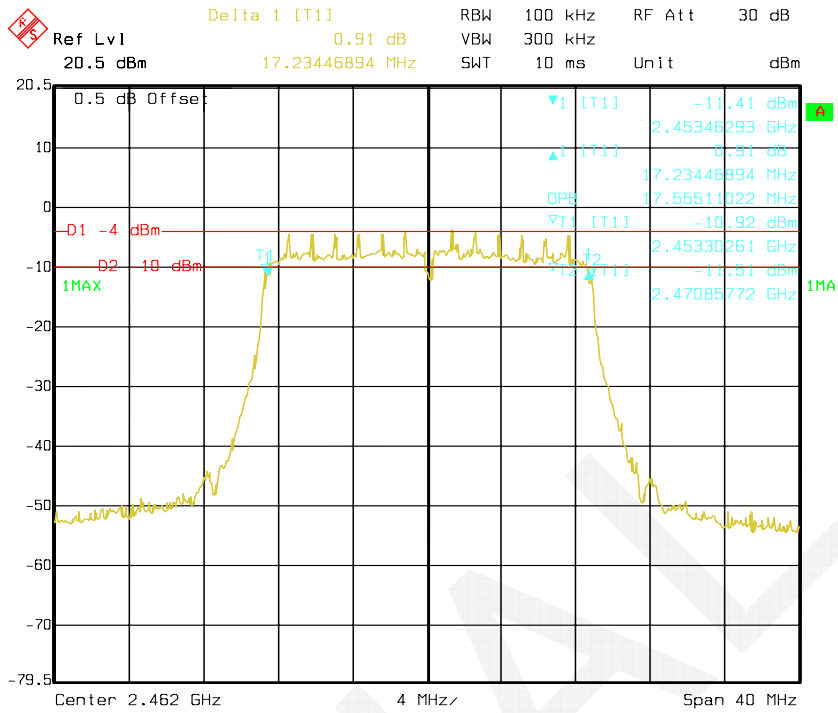
### 802.11n ht20 Low Channel



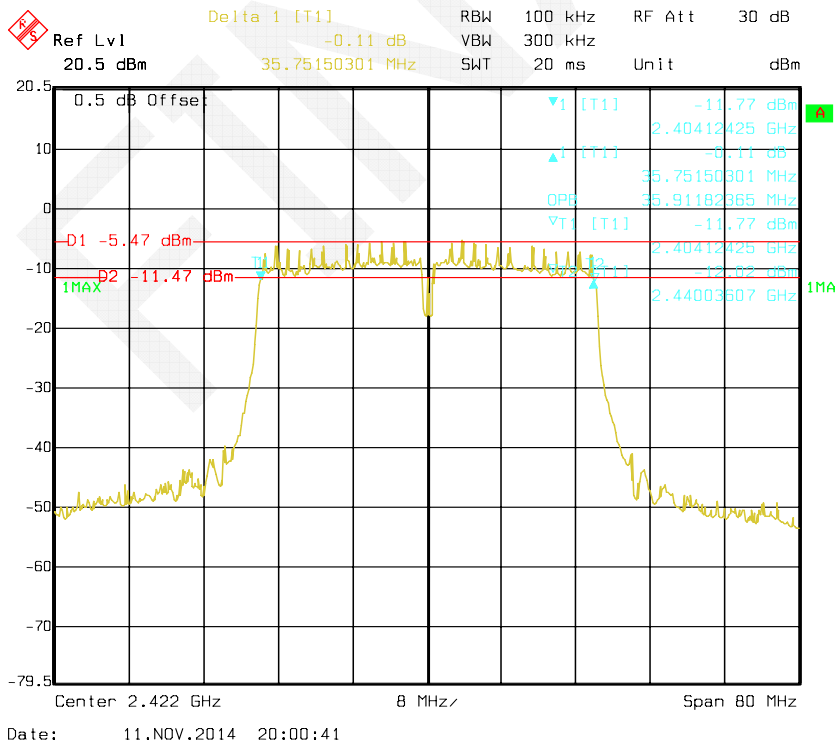
### 802.11n ht20 Middle Channel



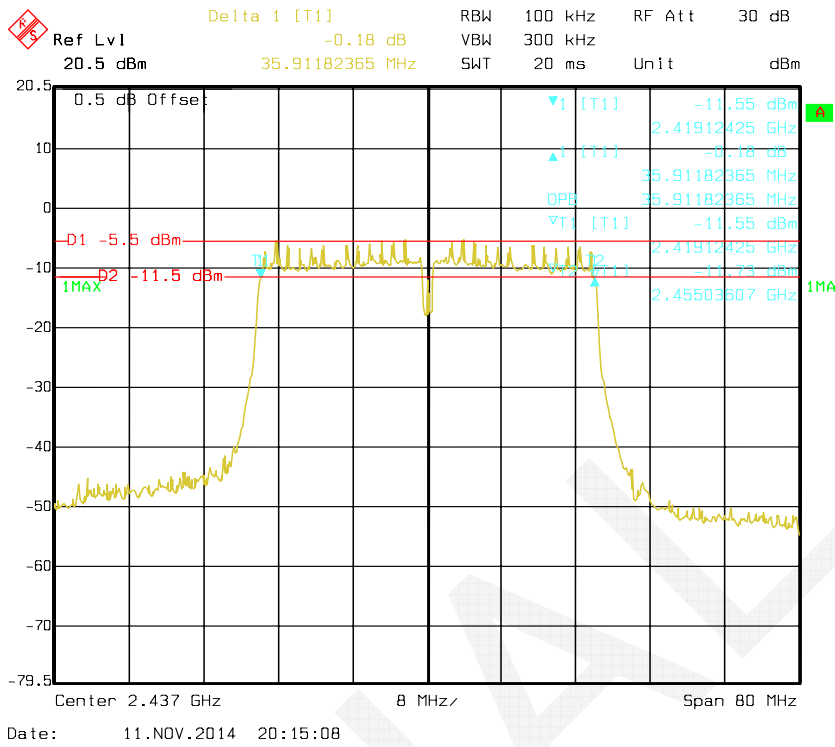
### 802.11n ht20 High Channel



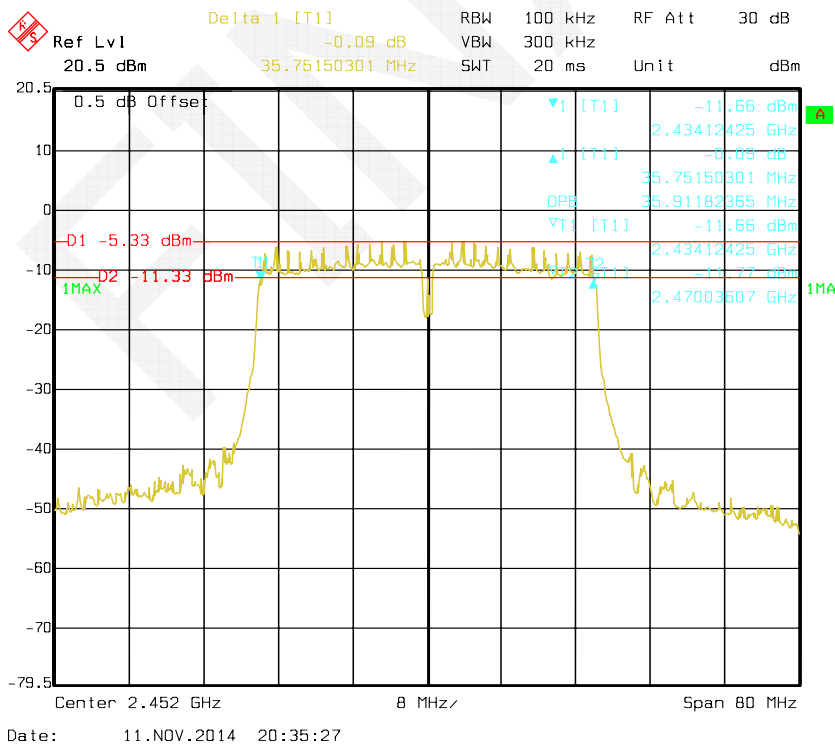
### 802.11n ht40 Low Channel



### 802.11n ht40 Middle Channel



### 802.11n ht40 High Channel



## 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

According to KDB 558074 D01 DTS Meas Guidance v03r02

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 test equipment.
3. Add a correction factor to the display.



### Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Agilent	Wideband Power Sensor	N1921A	MY54210016	2013-12-12	2014-12-12
Agilent	Wideband Power Sensor	N1921A	MY54170013	2013-12-12	2014-12-12
Agilent	P-Series Power Meter	N1912A	MY5000448	2013-12-12	2014-12-12

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

### Test Data

#### Environmental Conditions

Temperature:	25.8 °C-26.6 °C
Relative Humidity:	56 %-58 %
ATM Pressure:	101.1 kPa-101.3 kPa

*The testing was performed by Dean Liu on 2014-11-11.*

*Test Mode: Transmitting*

*Test Result: Compliant. Please refer to the following table.*

*Maximum peak conducted output power:*

Mode	Channel	Frequency MHz	Reading dBm	Limit dBm	Result
802.11b	Low	2412	10.29	30	
	Middle	2437	10.62	30	PASS
	High	2462	10.01	30	PASS
802.11g	Low	2412	10.10	30	PASS
	Middle	2437	10.04	30	PASS
	High	2462	10.26	30	PASS
802.11n20	Low	2412	10.12	30	PASS
	Middle	2437	10.03	30	PASS
	High	2462	10.23	30	PASS
802.11n40	Low	2422	16.59	30	PASS
	Middle	2437	16.74	30	PASS
	High	2452	16.86	30	PASS

*Maximum conducted Average output power:*

Mode	Channel	Frequency MHz	Reading dBm	Limit dBm	Result
802.11b	Low	2412	9.44	30	PASS
	Middle	2437	9.40	30	PASS
	High	2462	9.37	30	PASS
802.11g	Low	2412	9.48	30	PASS
	Middle	2437	9.33	30	PASS
	High	2462	9.42	30	PASS
802.11n20	Low	2412	9.35	30	PASS
	Middle	2437	9.35	30	PASS
	High	2462	9.36	30	PASS
802.11n40	Low	2422	9.46	30	PASS
	Middle	2437	9.45	30	PASS
	High	2452	9.41	30	PASS

## **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**

<b>Manufacturer</b>	<b>Description</b>	<b>Model</b>	<b>Serial Number</b>	<b>Calibration Date</b>	<b>Calibration Due Date</b>
R&S	Spectrum Analyzer	FSEM	DE31388	2014-05-09	2015-05-09

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

### **Test Data**

#### **Environmental Conditions**

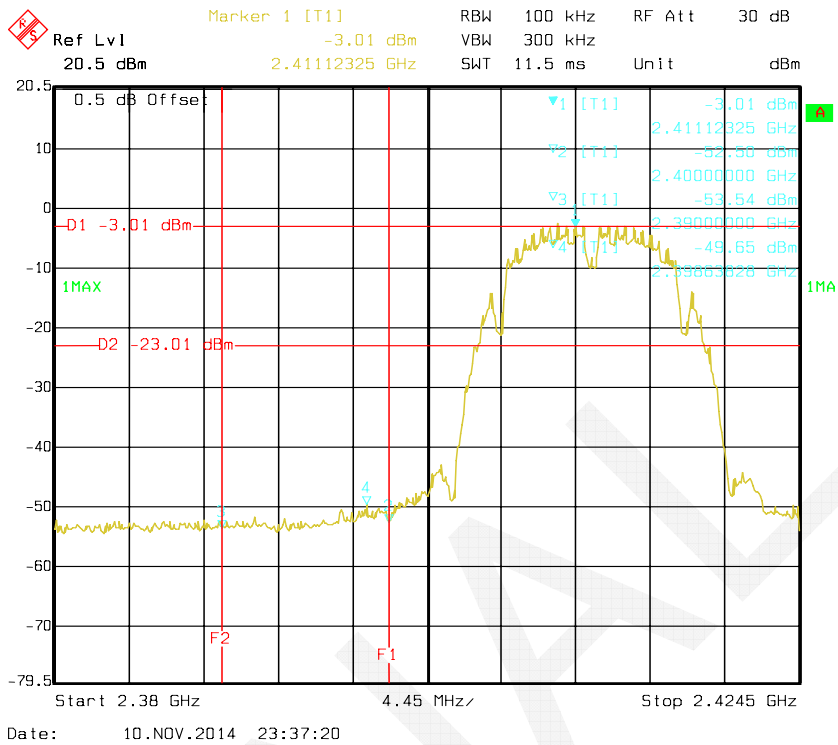
<b>Temperature:</b>	25.8 °C-26.6 °C
<b>Relative Humidity:</b>	56 %-58 %
<b>ATM Pressure:</b>	101.1 kPa-101.3 kPa

*The testing was performed by Dean Liu on 2014-11-10 & 2014-11-11.*

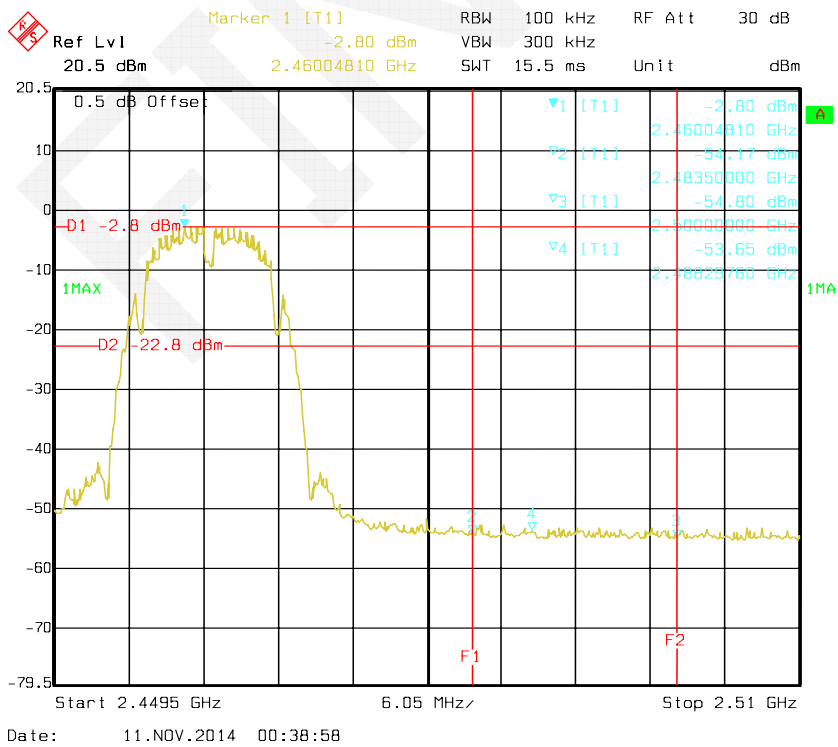
*Test mode: Transmitting*

Test Result: Compliant. Please refer to following plots.

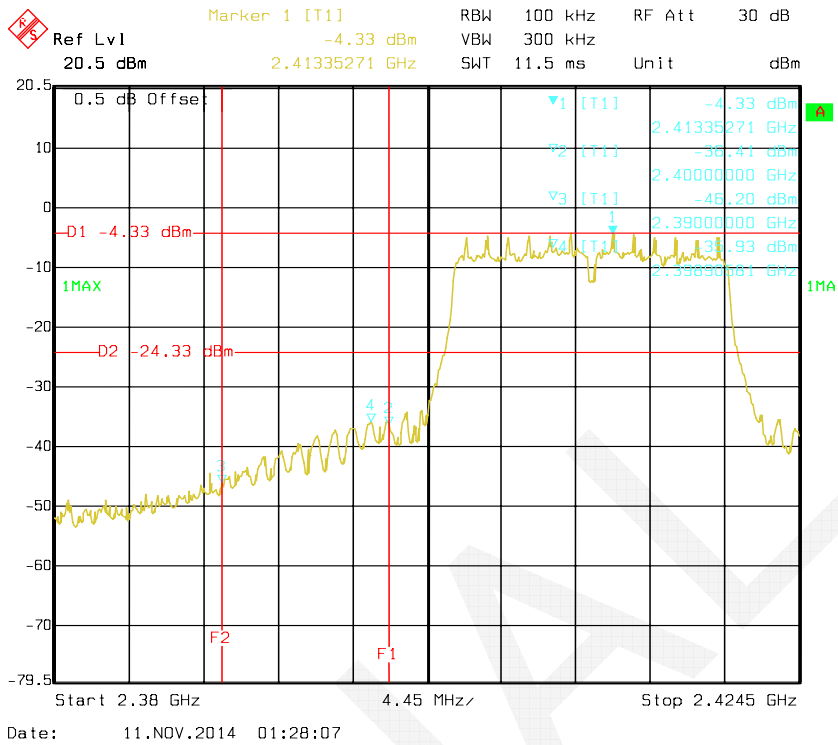
**802.11b: Band Edge, Left Side**



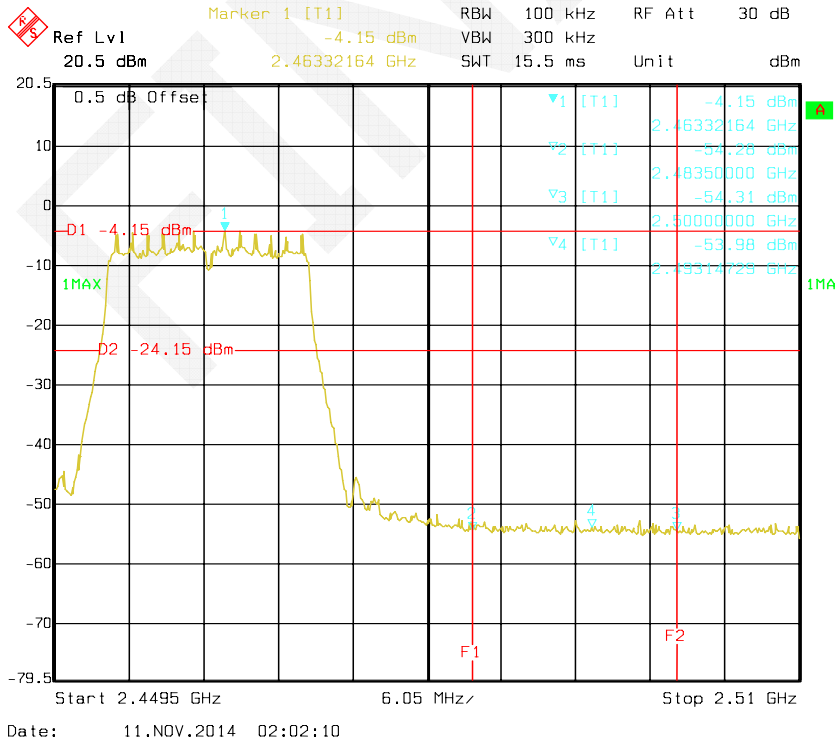
**802.11b: Band Edge, Right Side**



### 802.11g: Band Edge, Left Side

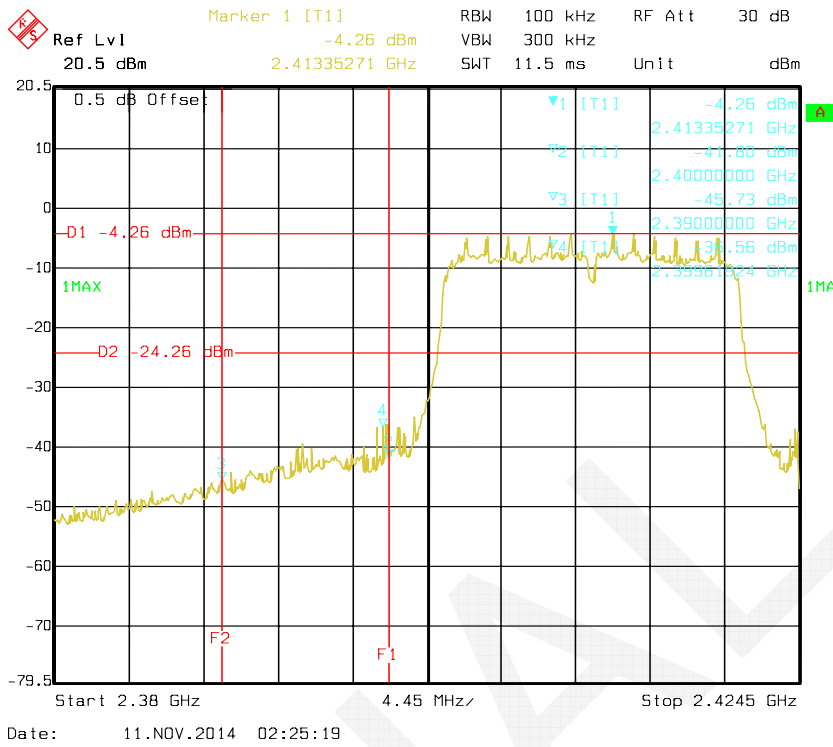


### 802.11g: Band Edge, Right Side

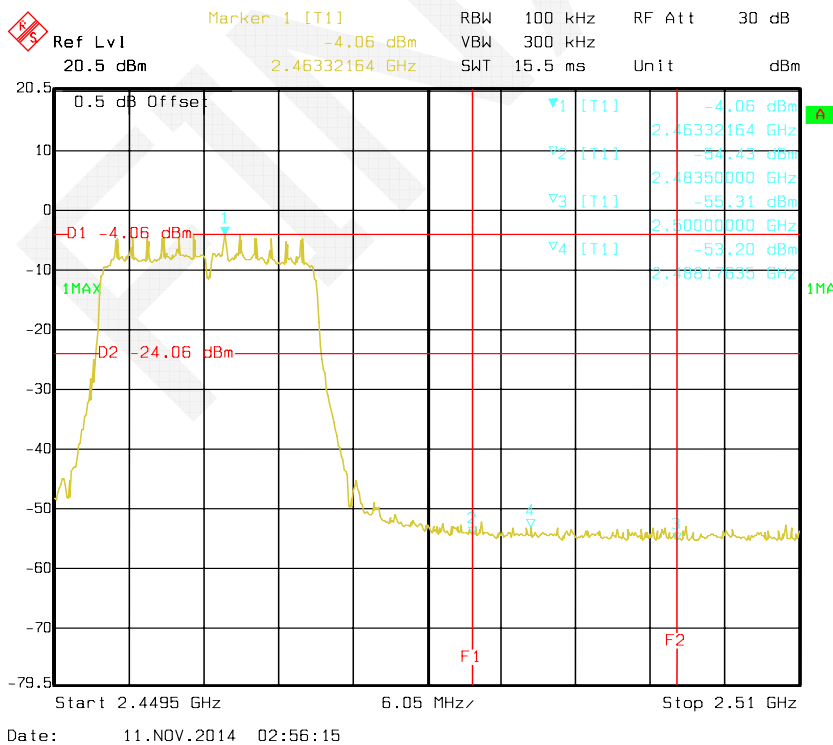




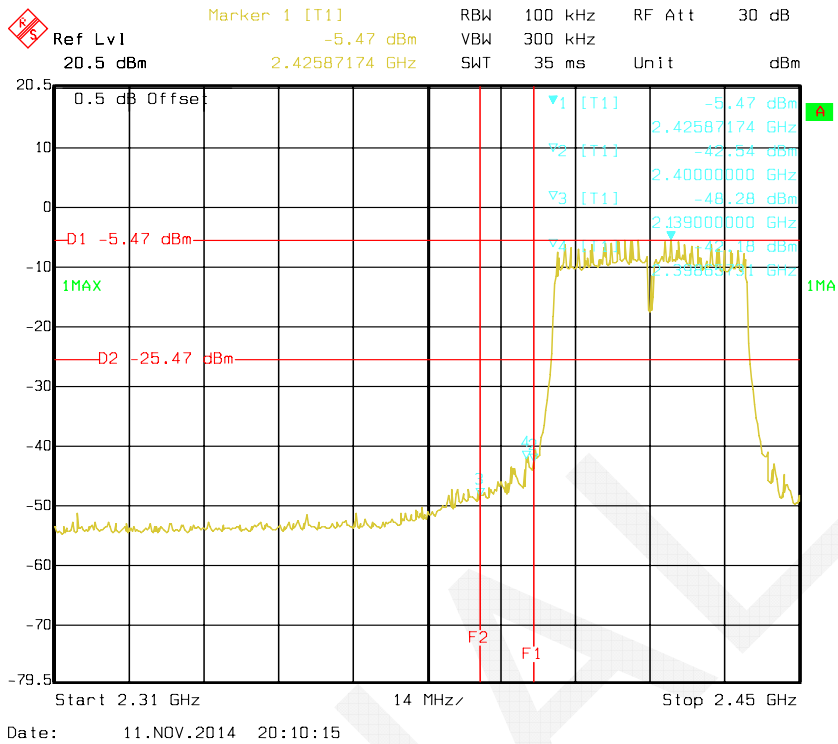
### 802.11n ht20 Band Edge, Left Side



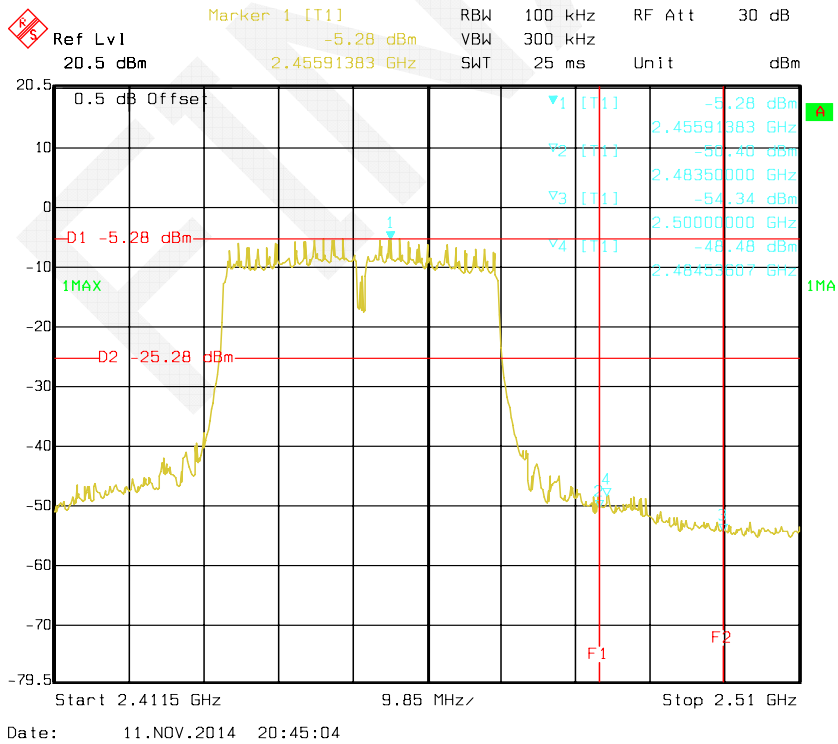
### 802.11n ht20 Band Edge, Right Side



### 802.11n ht40 Band Edge, Left Side



### 802.11n ht40 Band Edge, Right Side



## 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

According to KDB 558074 D01 DTS Meas Guidance v03r02 clause10.2:

- a) Set analyzer center frequency to DTS channel center frequency.
- b) Set the span to 1.5 times the DTS bandwidth.
- c) Set the RBW to:  $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$ .
- d) Set the VBW  $\geq 3 \times \text{RBW}$ .
- e) Detector = peak.
- f) Sweep time = auto couple.
- g) Trace mode = max hold.
- h) Allow trace to fully stabilize.
- i) Use the peak marker function to determine the maximum amplitude level within the RBW.
- j) If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

### Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSEM	DE31388	2014-05-09	2015-05-09

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

### Test Data

#### Environmental Conditions

<b>Temperature:</b>	25.8 °C-26.6 °C
<b>Relative Humidity:</b>	56 %-58 %
<b>ATM Pressure:</b>	101.1 kPa-101.3 kPa

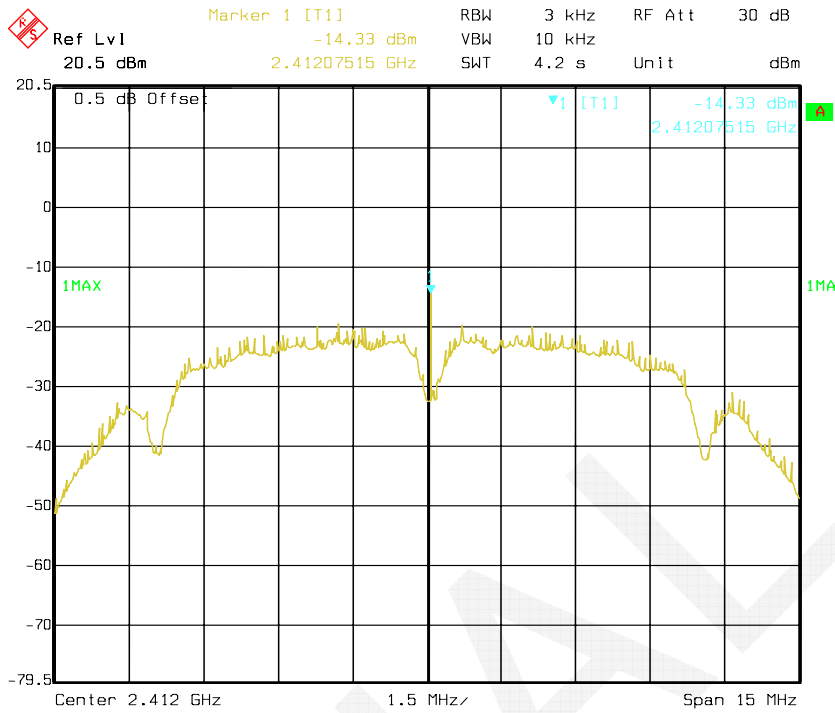
*The testing was performed by Dean Liu on 2014-11-10 & 2014-11-11.*

*Test Mode: Transmitting*

*Test Result: Compliant. Please refer to the following table and plots*

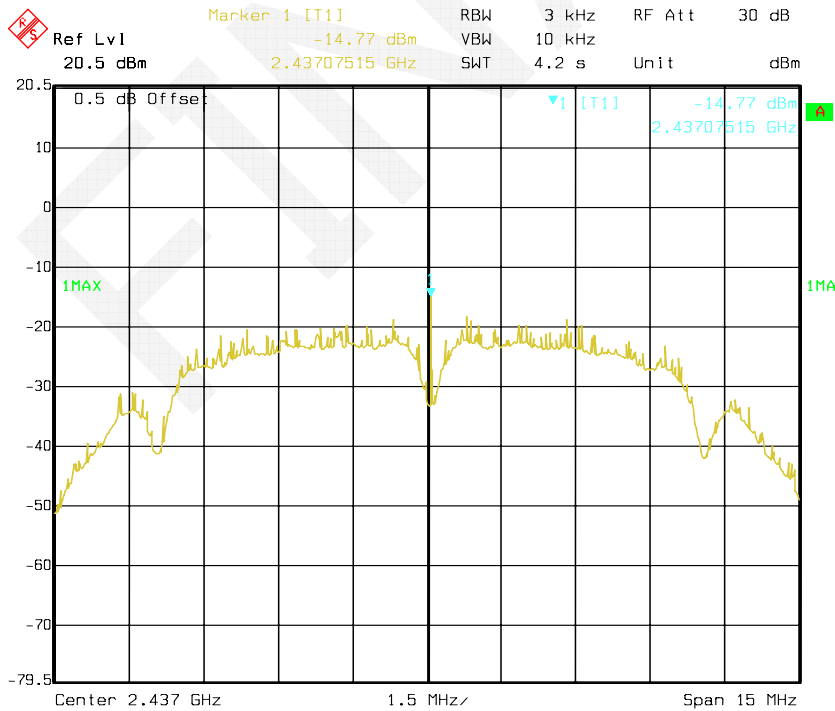
Mode	Channel Channel	Frequency MHz	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Result
802.11b	Low	2412	-14.33	≤8	PASS
	Middle	2437	-14.77	≤8	PASS
	High	2462	-16.35	≤8	PASS
802.11g	Low	2412	-16.04	≤8	PASS
	Middle	2437	-15.92	≤8	PASS
	High	2462	-16.30	≤8	PASS
802.11n20	Low	2412	-16.25	≤8	PASS
	Middle	2437	-15.72	≤8	PASS
	High	2462	-16.30	≤8	PASS
802.11n40	Low	2422	-14.98	≤8	PASS
	Middle	2437	-16.15	≤8	PASS
	High	2452	-15.61	≤8	PASS

### Power Spectral Density, 802.11b Low Channel



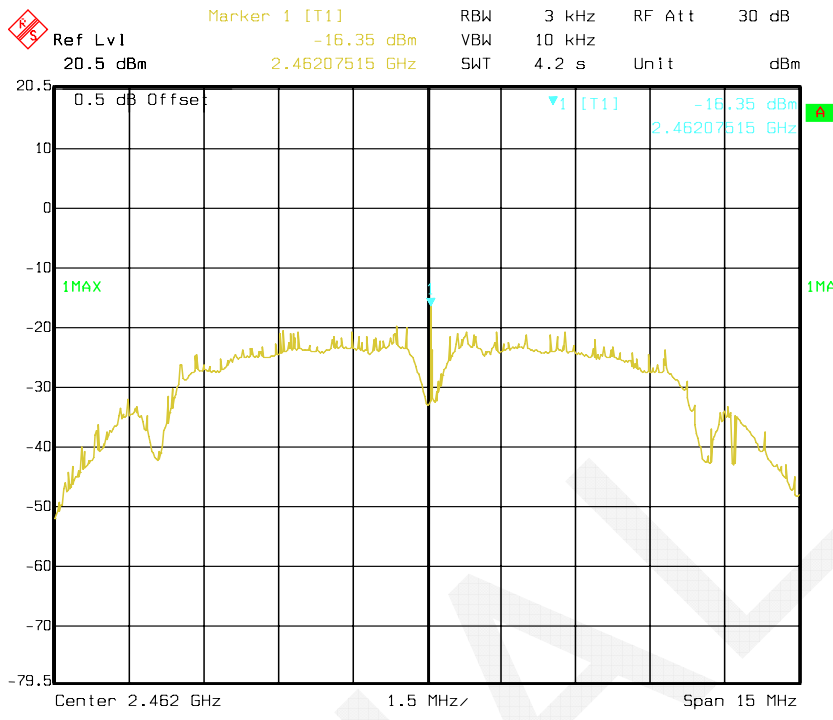
Date: 11.NOV.2014 00:47:28

### Power Spectral Density, 802.11b Middle Channel

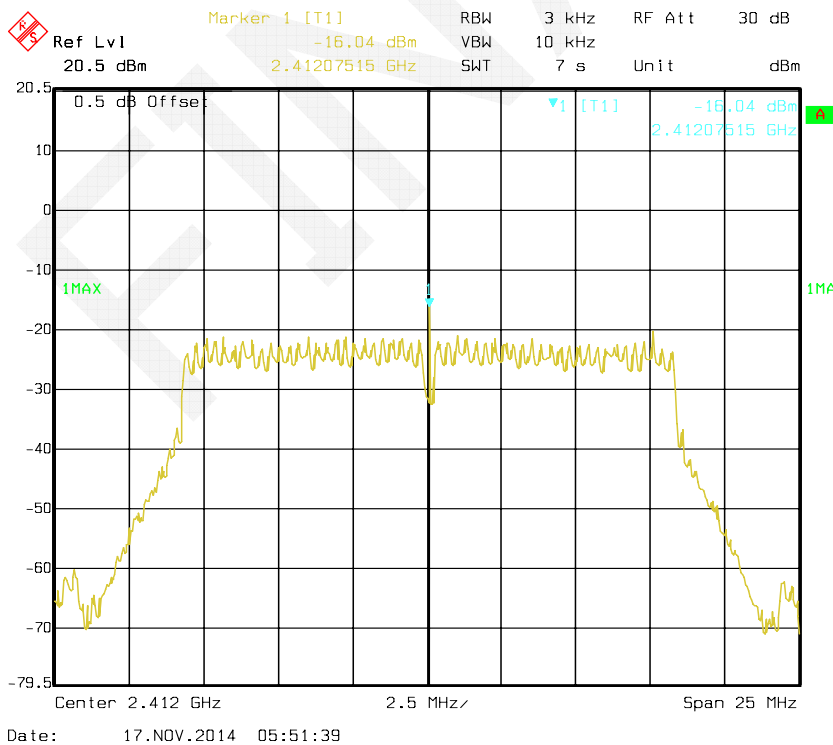


Date: 10.NOV.2014 23:56:30

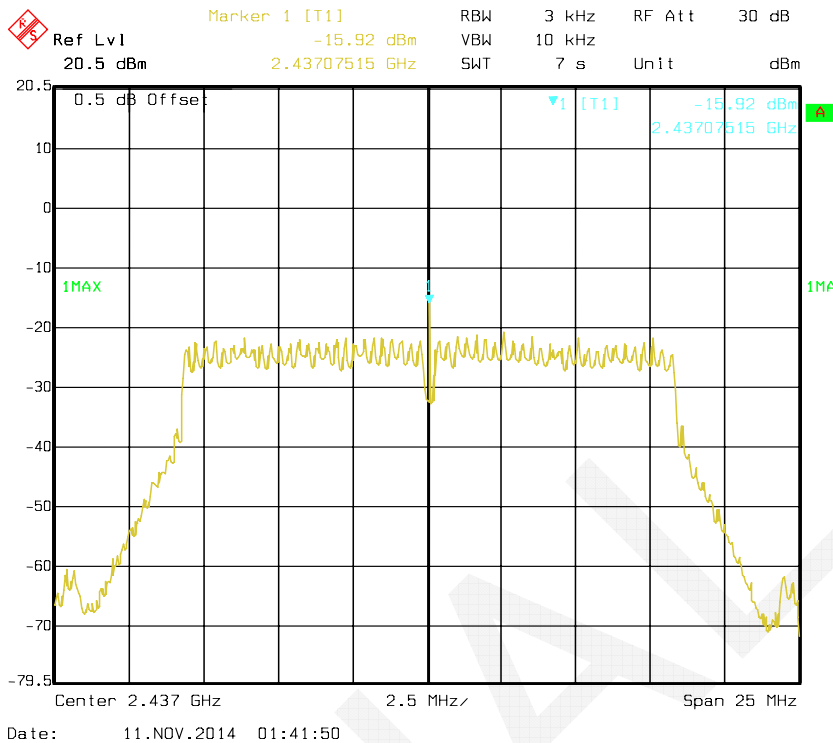
**Power Spectral Density, 802.11b High Channel**



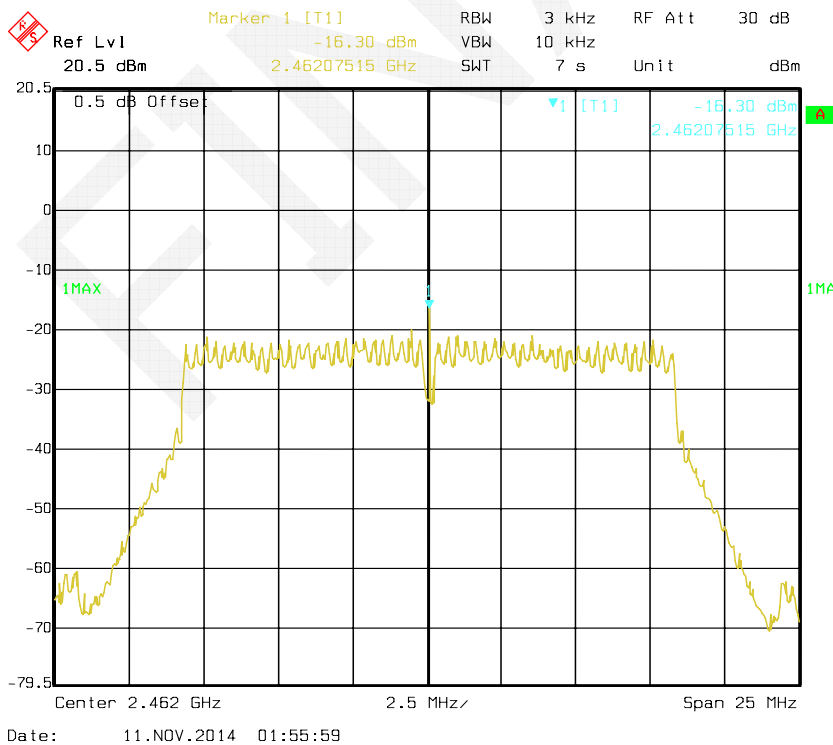
**Power Spectral Density, 802.11g Low Channel**



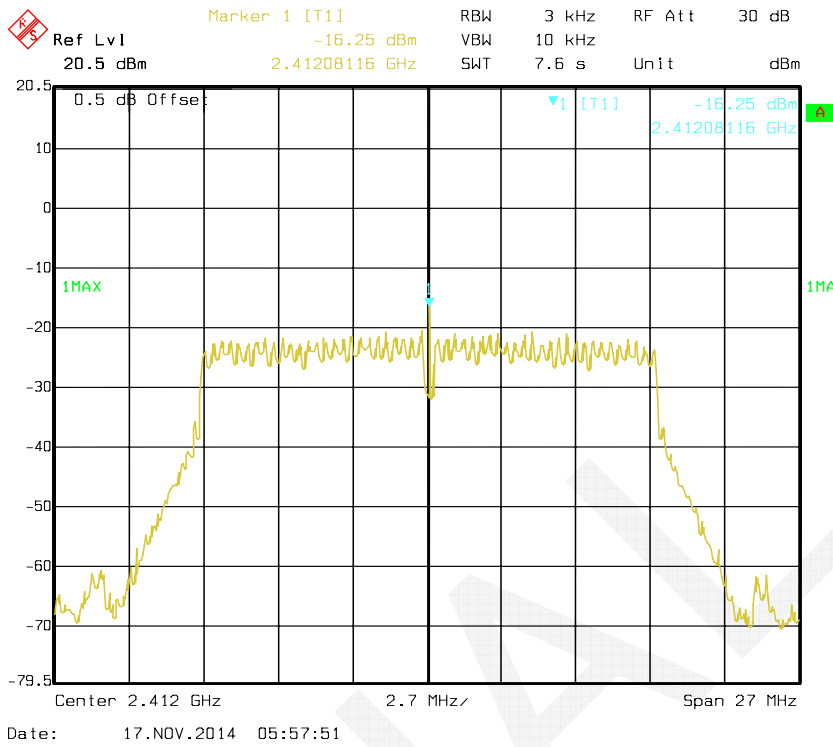
### Power Spectral Density, 802.11g Middle Channel



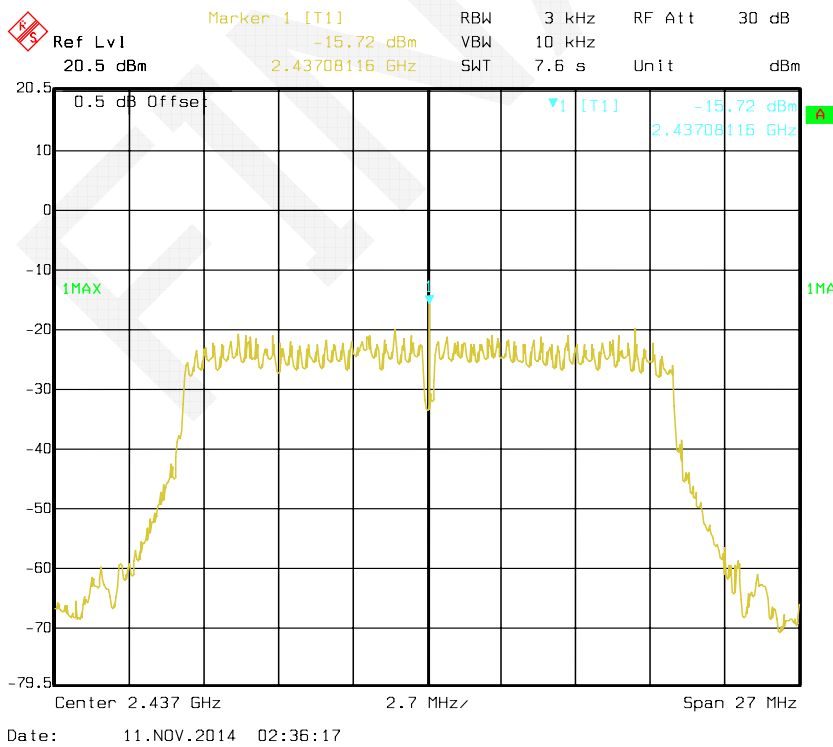
### Power Spectral Density, 802.11g High Channel



### Power Spectral Density, 802.11n ht20 Low Channel

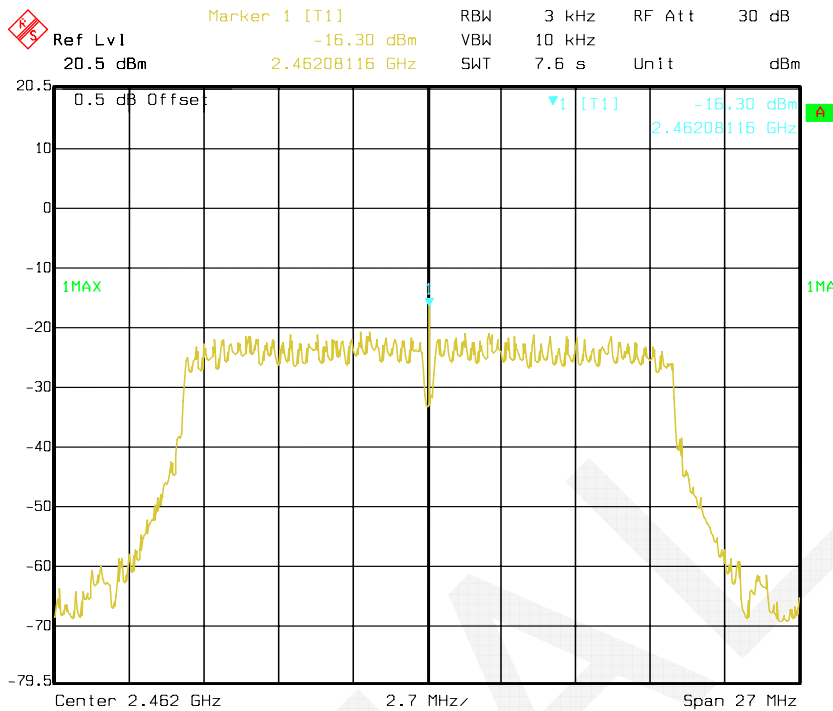


### Power Spectral Density, 802.11n ht20 Middle Channel

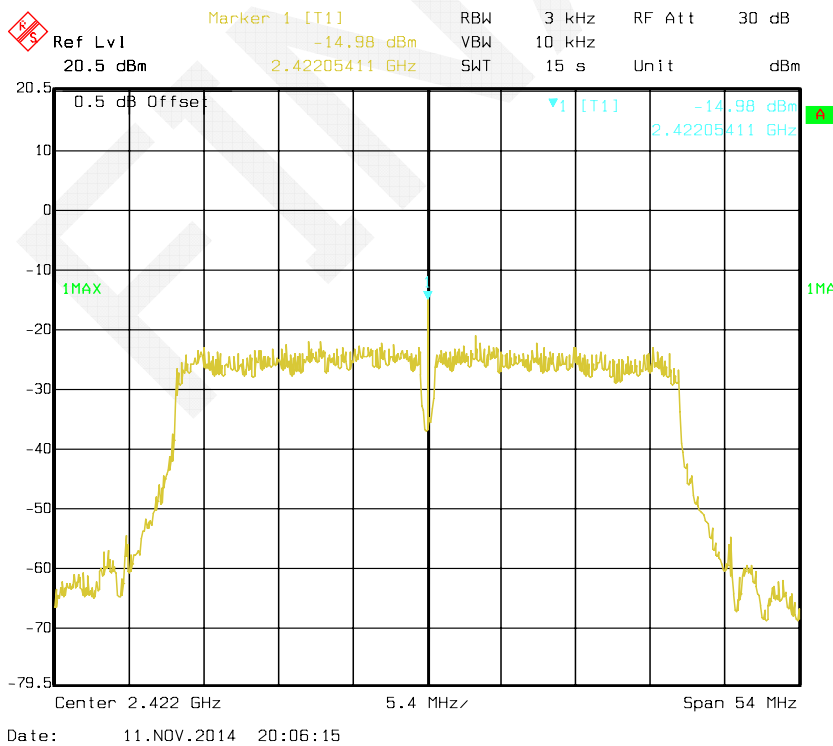




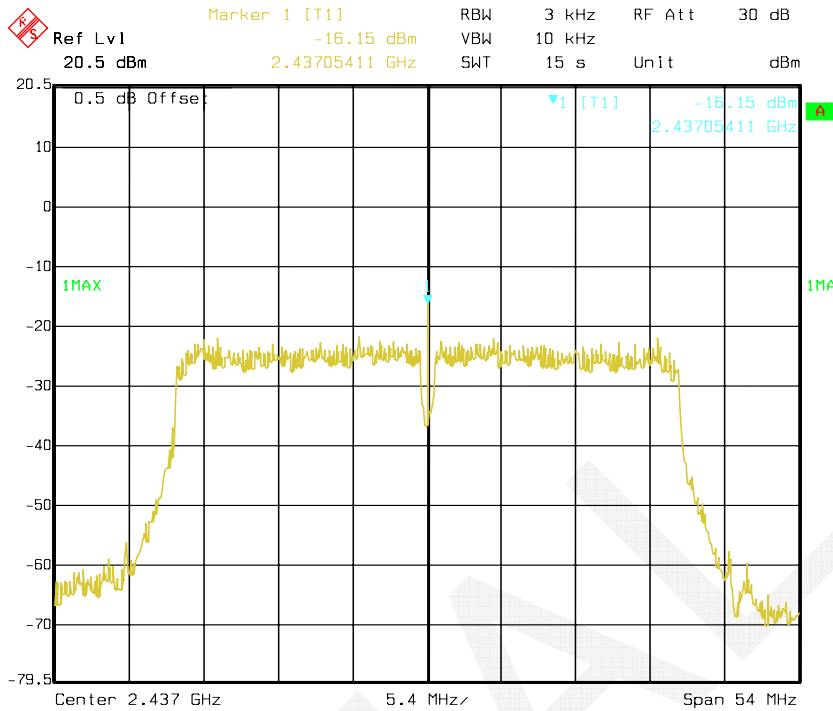
**Power Spectral Density, 802.11n ht20 High Channel**



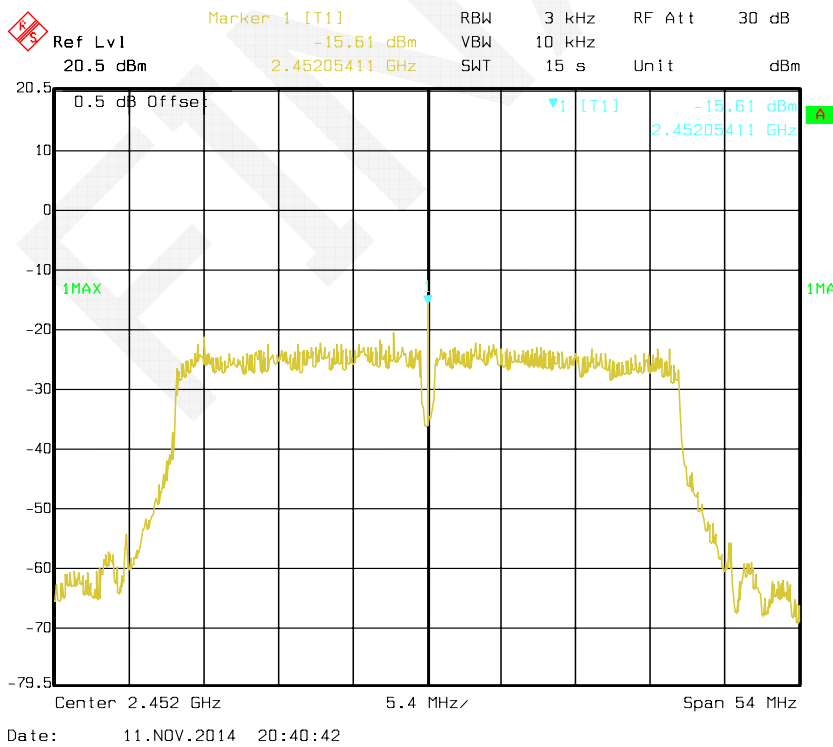
**Power Spectral Density, 802.11n ht40 Low Channel**



**Power Spectral Density, 802.11n ht40 Middle Channel**



**Power Spectral Density, 802.11n ht40 High Channel**



## **DECLARATION LETTER**

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ZIONCOM ELECTRONICS (SHENZHEN) LTD.

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### **Product Similarity Declaration**

Date: 2014-11-18

To Whom It May Concern,

We, ZIONCOM ELECTRONICS (SHENZHEN) LTD., hereby declare that our product AC600 Wireless Dual Band USB Adapter, Model Number: A1000UA, WL0273 are electrically identical with the same electromagnetic emissions and electromagnetic compatibility characteristics. They are certified by BACL. Their only difference is the model name.

The rest are the same.

Please contact me if you have any question.

Signature:

A handwritten signature in black ink, appearing to read "Stone Xu", written over a light gray diagonal watermark.

Stone Xu  
Project Manager

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