

FCC PART 15.247

TEST REPORT

For

**SHUOYING INDUSTRIAL(SHENZHEN)CO.,LTD.**

NO.1 Shuoying Rd.,Hebei Industry Area,Dalang,Longhua Town,Baoan,Shenzhen,China.

**FCC ID: XJN-PR7062X**

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## GENERAL INFORMATION

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

The *SHUOYING INDUSTRIAL(SHENZHEN)CO.,LTD.*'s product, model number: *PR7062(FCC ID: XJN-PR7062X)* (the "EUT") in this report was a *Mobile Internet Devices*, which was measured approximately: 19.1 cm (L) x 11.7 cm (W) x 1.1 cm (H), rated input voltage: DC 3.7 V rechargeable Li-ion battery or DC 5.0V charging from adapter.

Adapter information: FLYPOWER  
Model Name: Switching adapter  
Model: PS14K0502000U5  
Input: AC 100-240V, 50/60Hz, 0.35A  
Output: DC 5.0V, 2000mA

*\* All measurement and test data in this report was gathered from production sample serial number: 140410002 (Assigned by BACL.Dongguan). The EUT was received on 2014-04-10.*

### Objective

This report is prepared on behalf of *SHUOYING INDUSTRIAL (SHENZHEN) CO., 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 15B JBP submissions with FCC ID: XJN-PR7062X

### 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 Communications 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

The system was configured for testing in an engineering mode, which was provided by manufacturer. For 2.4G 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 802.11n20 modes were 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 investigations by measuring the average power and PSD across all data rates bandwidths, and modulations.

### EUT Exercise Software

The engineering mode was a build in software: Engineering mode, which was provided by manufacturer, and the test configured as following table:

Test Mode	Test Software Version	Engineering mode		
802.11b	Test Frequency	2412MHz	2437MHz	2462MHz
	Data Rate	1Mbps	1Mbps	1Mbps
	Power Level Setting	37	37	34
802.11g	Test Frequency	2412MHz	2437MHz	2462MHz
	Data Rate	6Mbps	6Mbps	6Mbps
	Power Level Setting	36	37	35
802.11n ht20	Test Frequency	2412MHz	2437MHz	2462MHz
	Data Rate	MCS0	MCS0	MCS0
	Power Level Setting	36	35	34
802.11n ht40	Test Frequency	2422MHz	2437MHz	2452MHz
	Data Rate	MCS0	MCS0	MCS0
	Power Level Setting	36	35	34

## Equipment Modifications

Modification was made to the EUT by the supplier, details as below:

Main board and the inside back cover were shielded with copper foil. (As shown in the picture below)



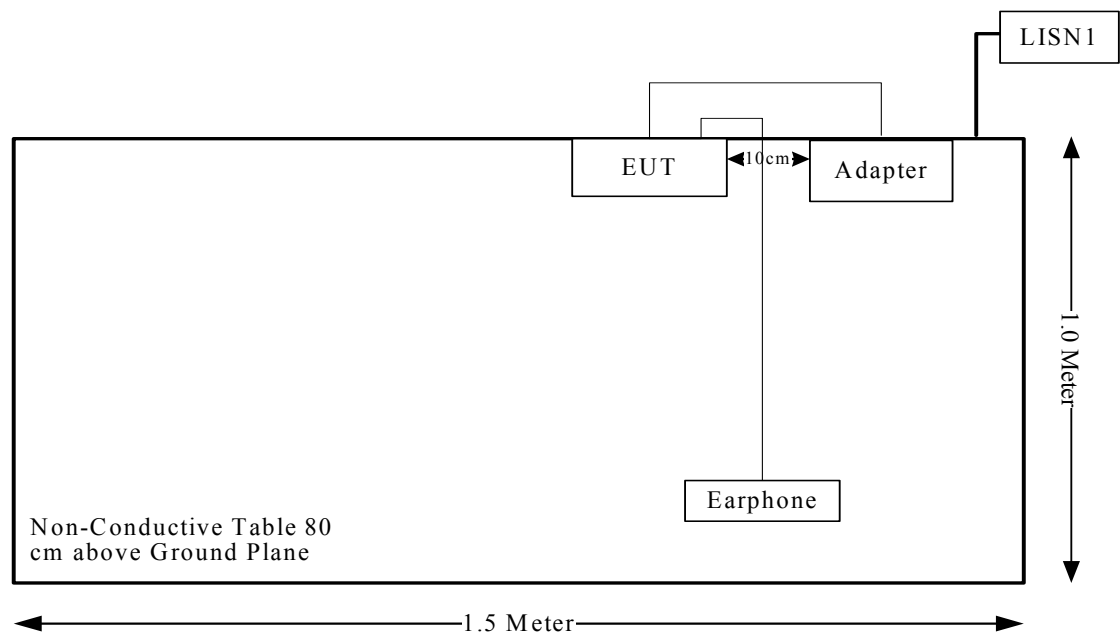
## Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
Kingston	Micro SD card	4 GB	/

## External I/O Cable

Cable Description	Shielding Type	Ferrite Core	Length (m)	From Port	To
Earphone	No	No	1.0	Earphone	EUT
Adapter Cable	No	yes	1.5	Adapter	EUT

Block Diagram of Test Setup





**SUMMARY OF TEST RESULTS**

FCC Rules	Description of Test	Result
§15.247 (i), §1.1307 (b) (1) & §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

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**FCC §15.247 (i) & §2.1093 – RF EXPOSURE**

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**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= 9.78 dBm(9.51 mW) at 2437 MHz  
 $[(\text{max. power of channel, mW})/(\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}]$   
 $= 9.51/5 \cdot (\sqrt{2.437}) = 2.97 < 3.0$

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

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## **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**

The EUT has one integral antenna arrangement for Wi-Fi, and the antenna gain is 2.0 dBi, fulfill the requirement of this section. 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:

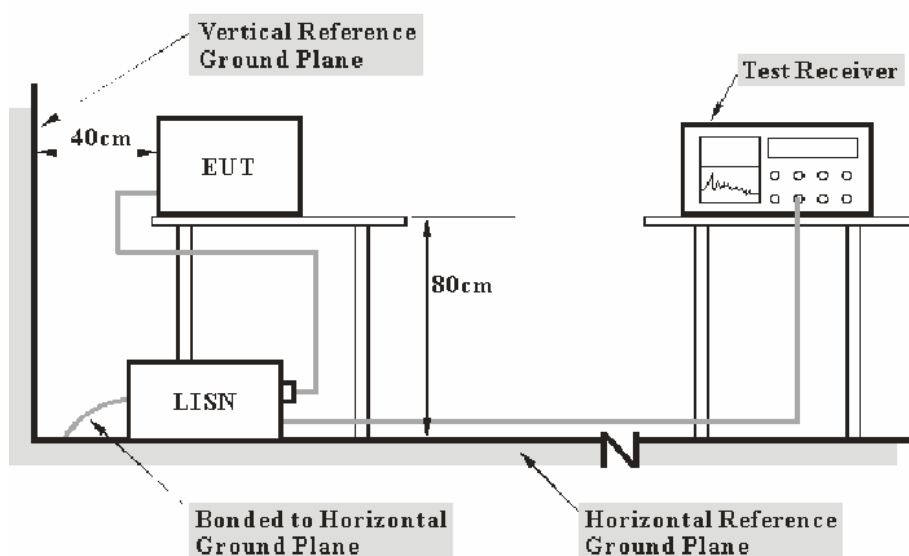
- compliance is deemed to occur if no measured disturbance level, increased by  $(U_{lab} - U_{cisp})$ , exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance level, increased by  $(U_{lab} - U_{cisp})$ , exceeds the disturbance limit.

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 80 cm from other units and other metal planes support units.

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

The spacing between the peripherals was 10 cm.

The adapter was connected to a 120 VAC/60 Hz power source

### EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

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

### Test 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:

$$V_C = V_R + A_C + VDF$$

$$C_f = A_C + VDF$$

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	2013-11-20	2014-11-19
R&S	Two-line V-network	ENV216	3560.6550.12	2014-01-22	2015-01-21
R&S	L.I.S.N	ESH3-Z5	100113	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:

**2.5 dB at 0.281497 MHz** in the **Neutral** conducted mode

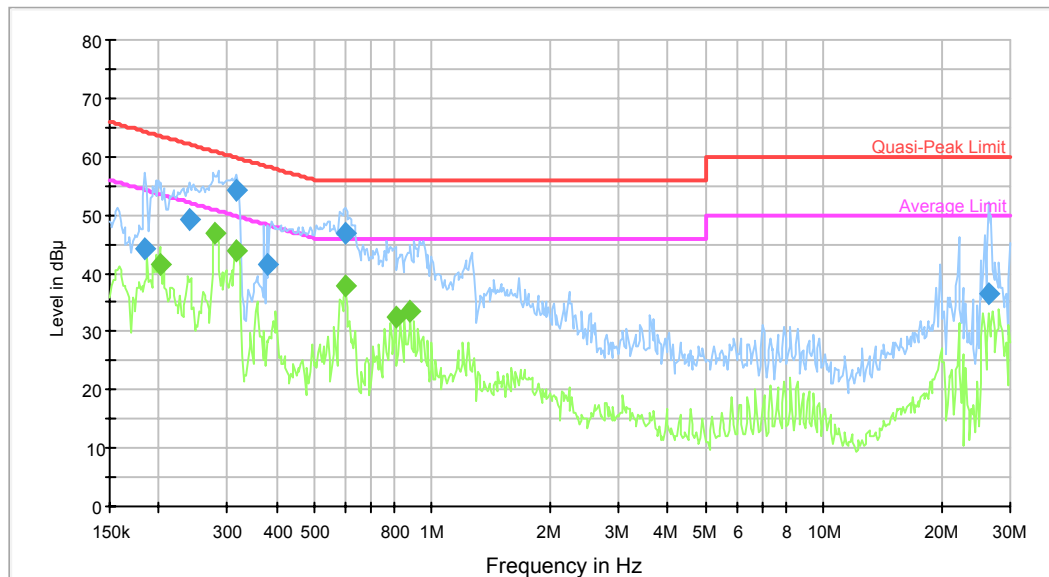
**Test Data****Environmental Conditions**

<b>Temperature:</b>	25.6 °C
<b>Relative Humidity:</b>	64 %
<b>ATM Pressure:</b>	100.8 kPa

*The testing was performed by Dean Liu on 2014-04-14.*

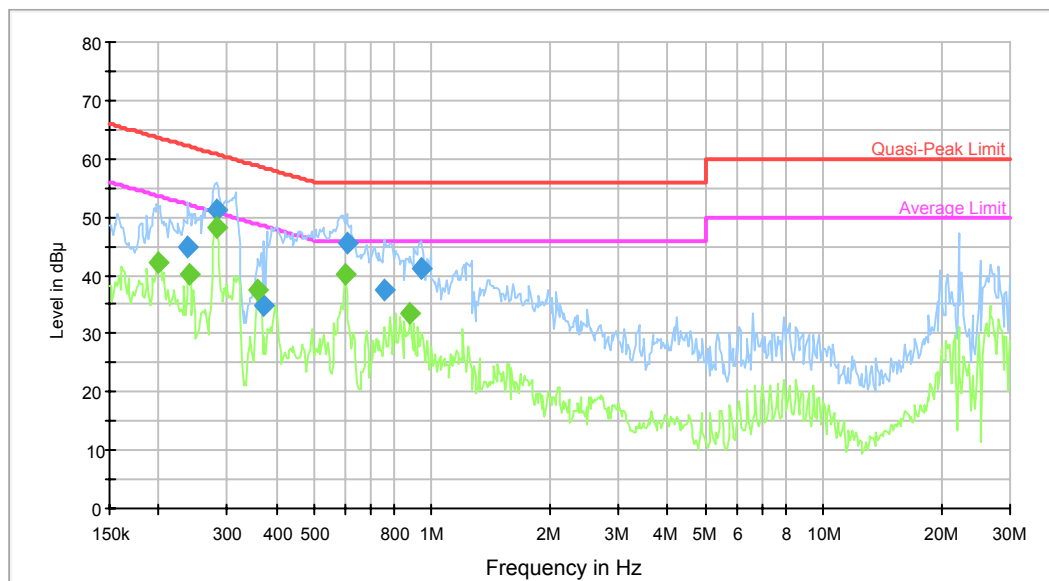
*Test Mode: Charging & Transmitting*

**AC 120 V, 60 Hz, Line:**



Frequency (MHz)	Corrected Quasi-Peak (dBμV)	Bandwidth (kHz)	Line	Corr. Factor (dB)	Margin (dB)	Limit (dBμV)	Comment
0.184529	44.1	9.000	L1	10.0	20.2	64.3	Compliance
0.240029	49.1	9.000	L1	10.2	13.0	62.1	Compliance
0.314718	54.2	9.000	L1	10.1	5.6	59.8	Compliance
0.378019	41.5	9.000	L1	10.1	16.8	58.3	Compliance
0.600101	46.9	9.000	L1	9.9	9.1	56.0	Compliance
26.422681	36.4	9.000	L1	10.1	23.6	60.0	Compliance

Frequency (MHz)	Corrected Average (dBμV)	Bandwidth (kHz)	Line	Corr. Factor (dB)	Margin (dB)	Limit (dBμV)	Comment
0.201433	41.6	9.000	L1	10.2	12.0	53.6	Compliance
0.279263	47.0	9.000	L1	10.1	3.8	50.8	Compliance
0.317235	43.9	9.000	L1	10.1	5.9	49.8	Compliance
0.600101	37.8	9.000	L1	9.9	8.2	46.0	Compliance
0.805868	32.5	9.000	L1	9.8	13.5	46.0	Compliance
0.879690	33.5	9.000	L1	9.8	12.5	46.0	Compliance

**AC 120 V, 60 Hz, Neutral:**

Frequency (MHz)	Corrected Quasi-Peak (dB $\mu$ V)	Bandwidth (kHz)	Line	Corr. Factor (dB)	Margin (dB)	Limit (dB $\mu$ V)	Comment
0.238124	44.9	9.000	N	10.7	17.3	62.2	Compliance
0.281497	51.3	9.000	N	10.6	9.5	60.8	Compliance
0.372042	34.7	9.000	N	10.3	23.8	58.5	Compliance
0.604902	45.7	9.000	N	9.9	10.3	56.0	Compliance
0.756101	37.5	9.000	N	9.8	18.5	56.0	Compliance
0.937592	41.3	9.000	N	9.8	14.7	56.0	Compliance

Frequency (MHz)	Corrected Average (dB $\mu$ V)	Bandwidth (kHz)	Line	Corr. Factor (dB)	Margin (dB)	Limit (dB $\mu$ V)	Comment
0.199835	42.2	9.000	N	10.8	11.4	53.6	Compliance
0.240029	40.0	9.000	N	10.7	12.1	52.1	Compliance
0.281497	48.3	9.000	N	10.6	2.5*	50.8	Compliance
0.357511	37.4	9.000	N	10.4	11.4	48.8	Compliance
0.600101	40.1	9.000	N	9.9	5.9	46.0	Compliance
0.879690	33.6	9.000	N	9.8	12.4	46.0	Compliance

\*Within measurement uncertainty!



## 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 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  $U_{cisp}$  of Table 2, 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

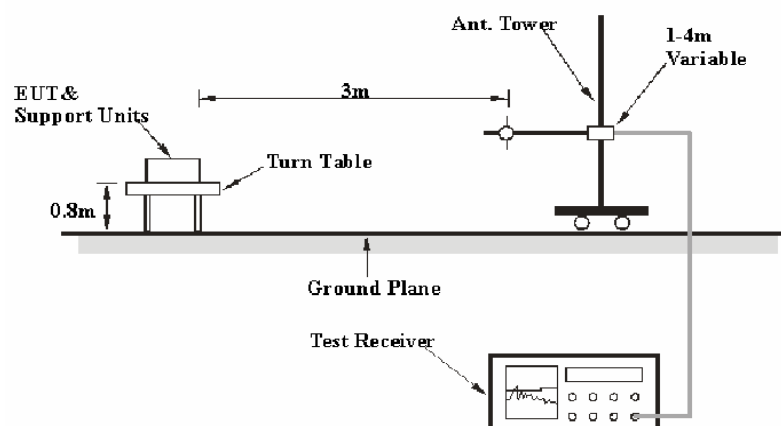
6G~18GHz: 5.23 dB

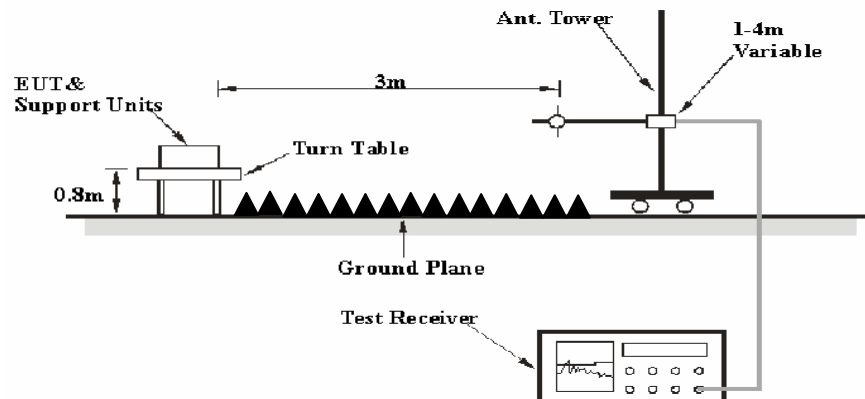
Table 2 – Values of  $U_{cisp}$

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

**Test Procedure**

During the radiated emission test, the adapter 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	2013-05-06	2014-05-05
Sunol Sciences	Antenna	JB3	A060611-1	2011-09-06	2014-09-05
HP	Amplifier	8447E	2434A02181	2013-09-06	2014-09-05
R&S	Spectrum Analyzer	FSEM	DE31388	2013-05-07	2014-05-06
ETS-Lindgren	Horn Antenna	3115	000 527 35	2012-09-06	2015-09-05
Mini-Circuit	Amplifier	ZVA-213-S+	054201245	2014-02-19	2015-02-18
R&S	Spectrum Analyzer	FSP 38	100478	2013-06-16	2014-06-15
Ducommun Technologies	horn antenna	ARH-4223-02	1007726-01 1304	2013-06-16	2014-06-15
Quinstar	Amplifier	QLW-18405536-JO	15964001001	2013-09-06	2014-09-05

\* **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:

**11.12 dB at 9808 MHz in the Horizontal polarization for 802.11n40 Mode**

## Test Data

### Environmental Conditions

Temperature:	25.6 °C
Relative Humidity:	64 %
ATM Pressure:	100.8 kPa

*The testing was performed by Dean Liu on 2014-04-15.*

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/m)				Limit (dBμV/m)	Margin (dB)
Low Channel: 2412 MHz									
2412	86.44	PK	H	25.67	4.42	27.33	89.20	N/A	N/A
2412	81.68	AV	H	25.67	4.42	27.33	84.44	N/A	N/A
2412	84.55	PK	V	25.67	4.42	27.33	87.31	N/A	N/A
2412	79.53	AV	V	25.67	4.42	27.33	82.29	N/A	N/A
2390	39.83	PK	H	25.61	4.39	27.32	42.51	74.00	31.49
2390	26.46	AV	H	25.61	4.39	27.32	29.14	54.00	24.86
4824	34.67	PK	H	30.64	6.03	27.41	43.93	74.00	30.07
4824	27.83	AV	H	30.64	6.03	27.41	37.09	54.00	16.91
7236	31.54	PK	H	34.17	7.47	25.90	47.28	74.00	26.72
7236	17.05	AV	H	34.17	7.47	25.90	32.79	54.00	21.21
9648	30.77	PK	H	36.06	8.81	27.46	48.18	74.00	25.82
9648	18.49	AV	H	36.06	8.81	27.46	35.90	54.00	18.10
1720	31.08	PK	H	24.04	3.51	27.64	30.99	74.00	43.01
1720	14.59	AV	H	24.04	3.51	27.64	14.50	54.00	39.50
265	28.5	QP	H	13.37	1.96	21.50	22.33	46.00	23.67
Middle Channel: 2437 MHz									
2437	85.88	PK	H	25.74	4.41	27.34	88.69	N/A	N/A
2437	80.94	AV	H	25.74	4.41	27.34	83.75	N/A	N/A
2437	84.66	PK	V	25.74	4.41	27.34	87.47	N/A	N/A
2437	79.96	AV	V	25.74	4.41	27.34	82.77	N/A	N/A
4874	35.13	PK	H	30.77	6.09	27.42	44.57	74.00	29.43
4874	30.53	AV	H	30.77	6.09	27.42	39.97	54.00	14.03
7311	30.83	PK	H	34.35	7.51	25.88	46.81	74.00	27.19
7311	18.05	AV	H	34.35	7.51	25.88	34.03	54.00	19.97
9748	31.55	PK	H	36.30	8.83	27.24	49.44	74.00	24.56
9748	19.03	AV	H	36.30	8.83	27.24	36.92	54.00	17.08
1720	30.62	PK	H	24.04	3.51	27.64	30.53	74.00	43.47
1720	14.38	AV	H	24.04	3.51	27.64	14.29	54.00	39.71
7690	31.22	PK	H	34.95	7.57	26.70	47.04	74.00	26.96
7690	17.27	AV	H	34.95	7.57	26.70	33.09	54.00	20.91
265	29.4	QP	H	13.37	1.96	21.50	23.23	46.00	22.77
High Channel: 2462 MHz									
2462	83.79	PK	H	25.80	4.43	27.35	86.67	N/A	N/A
2462	78.96	AV	H	25.80	4.43	27.35	81.84	N/A	N/A
2462	81.95	PK	V	25.80	4.43	27.35	84.83	N/A	N/A
2462	77.29	AV	V	25.80	4.43	27.35	80.17	N/A	N/A
2483.5	40.11	PK	H	25.86	4.49	27.36	43.10	74.00	30.90
2483.5	23.08	AV	H	25.86	4.49	27.36	26.07	54.00	27.93
4924	34.59	PK	H	30.90	5.97	27.43	44.03	74.00	29.97
4924	29.55	AV	H	30.90	5.97	27.43	38.99	54.00	15.01
7386	30.54	PK	H	34.53	7.55	25.86	46.76	74.00	27.24
7386	18.74	AV	H	34.53	7.55	25.86	34.96	54.00	19.04
9848	31.22	PK	H	36.54	8.85	26.94	49.67	74.00	24.33
9848	19.01	AV	H	36.54	8.85	26.94	37.46	54.00	16.54
1720	32.64	PK	H	24.04	3.51	27.64	32.55	74.00	41.45
1720	15.11	AV	H	24.04	3.51	27.64	15.02	54.00	38.98
265	28.7	QP	H	13.37	1.96	21.50	22.53	46.00	23.47

## 802.11g Mode

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB/m)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	FCC 15.247	
	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)				Limit (dBμV/m)	Margin (dB)
Low Channel: 2412 MHz									
2412	83.12	PK	H	25.67	4.42	27.33	85.88	N/A	N/A
2412	69.93	AV	H	25.67	4.42	27.33	72.69	N/A	N/A
2412	80.15	PK	V	25.67	4.42	27.33	82.91	N/A	N/A
2412	87.8	AV	V	25.67	4.42	27.33	90.56	N/A	N/A
2390	39.16	PK	H	25.61	4.39	27.32	41.84	74.00	32.16
2390	24.97	AV	H	25.61	4.39	27.32	27.65	54.00	26.35
4824	32.37	PK	H	30.64	6.03	27.41	41.63	74.00	32.37
4824	23.29	AV	H	30.64	6.03	27.41	32.55	54.00	21.45
7236	31.41	PK	H	34.17	7.47	25.90	47.15	74.00	26.85
7236	18.84	AV	H	34.17	7.47	25.90	34.58	54.00	19.42
9648	30.76	PK	H	36.06	8.81	27.46	48.17	74.00	25.83
9648	18.8	AV	H	36.06	8.81	27.46	36.21	54.00	17.79
1720	36.69	PK	H	24.04	3.51	27.64	36.60	74.00	37.40
1720	23.14	AV	H	24.04	3.51	27.64	23.05	54.00	30.95
265	28.2	QP	H	13.37	1.96	21.50	22.03	46.00	23.97
Middle Channel: 2437 MHz									
2437	82.39	PK	H	25.74	4.41	27.34	85.20	N/A	N/A
2437	70.06	AV	H	25.74	4.41	27.34	72.87	N/A	N/A
2437	80.78	PK	V	25.74	4.41	27.34	83.59	N/A	N/A
2437	67.98	AV	V	25.74	4.41	27.34	70.79	N/A	N/A
4874	33.11	PK	H	30.77	6.09	27.42	42.55	74.00	31.45
4874	22.14	AV	H	30.77	6.09	27.42	31.58	54.00	22.42
7311	31.62	PK	H	34.35	7.51	25.88	47.60	74.00	26.40
7311	19.16	AV	H	34.35	7.51	25.88	35.14	54.00	18.86
9748	31.32	PK	H	36.30	8.83	27.24	49.21	74.00	24.79
9748	18.8	AV	H	36.30	8.83	27.24	36.69	54.00	17.31
1720	37.24	PK	H	24.04	3.51	27.64	37.15	74.00	36.85
1720	22.79	AV	H	24.04	3.51	27.64	22.70	54.00	31.30
7690	31.31	PK	H	34.95	7.57	26.70	47.13	74.00	26.87
7690	18.96	AV	H	34.95	7.57	26.70	34.78	54.00	19.22
265	27.6	QP	H	13.37	1.96	21.50	21.43	46.00	24.57
High Channel: 2462 MHz									
2462	81.06	PK	H	25.80	4.43	27.35	83.94	N/A	N/A
2462	67.26	AV	H	25.80	4.43	27.35	70.14	N/A	N/A
2462	80.22	PK	V	25.80	4.43	27.35	83.10	N/A	N/A
2462	65.95	AV	V	25.80	4.43	27.35	68.83	N/A	N/A
2483.5	40.18	PK	H	25.86	4.49	27.36	43.17	74.00	30.83
2483.5	23.11	AV	H	25.86	4.49	27.36	26.10	54.00	27.90
4924	32.91	PK	H	30.90	5.97	27.43	42.35	74.00	31.65
4924	22.32	AV	H	30.90	5.97	27.43	31.76	54.00	22.24
7386	31.75	PK	H	34.53	7.55	25.86	47.97	74.00	26.03
7386	19.08	AV	H	34.53	7.55	25.86	35.30	54.00	18.70
9848	31.62	PK	H	36.54	8.85	26.94	50.07	74.00	23.93
9848	18.98	AV	H	36.54	8.85	26.94	37.43	54.00	16.57
1720	36.72	PK	H	24.04	3.51	27.64	36.63	74.00	37.37
1720	22.54	AV	H	24.04	3.51	27.64	22.45	54.00	31.55
265	28.4	QP	H	13.37	1.96	21.50	22.23	46.00	23.77

## 802.11 n20 Mode

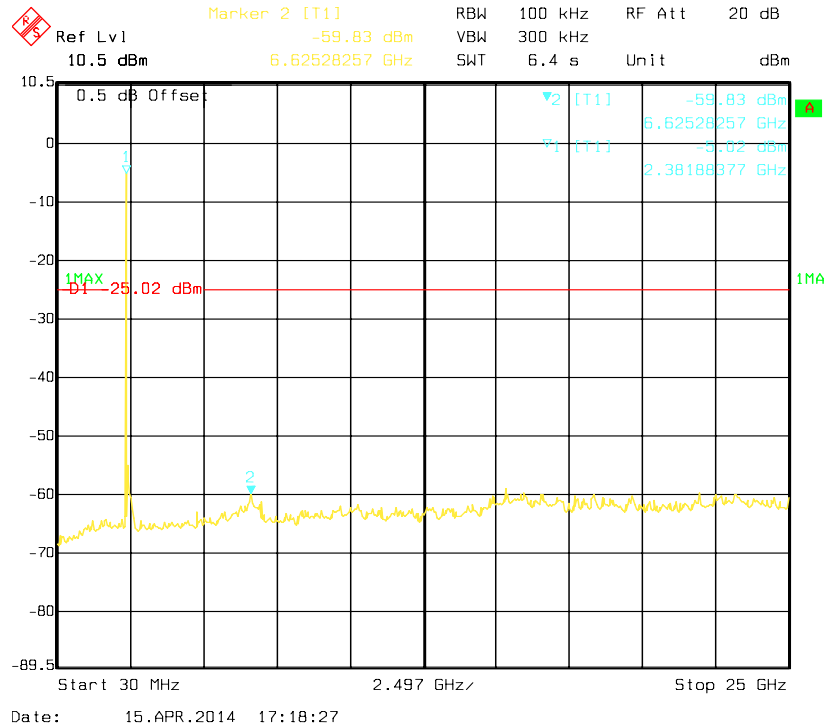
Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	FCC 15.247	
	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB/m)				Limit (dBμV/m)	Margin (dB)
Low Channel: 2412 MHz									
2412	83.55	PK	H	25.67	4.42	27.33	86.31	N/A	N/A
2412	70.13	AV	H	25.67	4.42	27.33	72.89	N/A	N/A
2412	80.91	PK	V	25.67	4.42	27.33	83.67	N/A	N/A
2412	67.86	AV	V	25.67	4.42	27.33	70.62	N/A	N/A
2390	37.23	PK	H	25.61	4.39	27.32	39.91	74.00	34.09
2390	23.3	AV	H	25.61	4.39	27.32	25.98	54.00	28.02
4824	32.08	PK	H	30.64	6.03	27.41	41.34	74.00	32.66
4824	23.1	AV	H	30.64	6.03	27.41	32.36	54.00	21.64
7236	31.32	PK	H	34.17	7.47	25.90	47.06	74.00	26.94
7236	18.66	AV	H	34.17	7.47	25.90	34.40	54.00	19.60
9648	30.65	PK	H	36.06	8.81	27.46	48.06	74.00	25.94
9648	18.78	AV	H	36.06	8.81	27.46	36.19	54.00	17.81
1720	36.51	PK	H	24.04	3.51	27.64	36.42	74.00	37.58
1720	22.91	AV	H	24.04	3.51	27.64	22.82	54.00	31.18
265	27.4	QP	H	13.37	1.96	21.50	21.23	46.00	24.77
Middle Channel: 2437 MHz									
2437	82.13	PK	H	25.74	4.41	27.34	84.94	N/A	N/A
2437	69.36	AV	H	25.74	4.41	27.34	72.17	N/A	N/A
2437	79.68	PK	V	25.74	4.41	27.34	82.49	N/A	N/A
2437	66.95	AV	V	25.74	4.41	27.34	69.76	N/A	N/A
4874	32.85	PK	H	30.77	6.09	27.42	42.29	74.00	31.71
4874	22.09	AV	H	30.77	6.09	27.42	31.53	54.00	22.47
7311	31.48	PK	H	34.35	7.51	25.88	47.46	74.00	26.54
7311	19.06	AV	H	34.35	7.51	25.88	35.04	54.00	18.96
9748	31.24	PK	H	36.30	8.83	27.24	49.13	74.00	24.87
9748	18.78	AV	H	36.30	8.83	27.24	36.67	54.00	17.33
1720	37.05	PK	H	24.04	3.51	27.64	36.96	74.00	37.04
1720	22.67	AV	H	24.04	3.51	27.64	22.58	54.00	31.42
7690	31.24	PK	H	34.95	7.57	26.70	47.06	74.00	26.94
7690	18.78	AV	H	34.95	7.57	26.70	34.60	54.00	19.40
265	28.3	QP	H	13.37	1.96	21.50	22.13	46.00	23.87
High Channel: 2462 MHz									
2462	80.66	PK	H	25.80	4.43	27.35	83.54	N/A	N/A
2462	67.35	AV	H	25.80	4.43	27.35	70.23	N/A	N/A
2462	78.96	PK	V	25.80	4.43	27.35	81.84	N/A	N/A
2462	65.91	AV	V	25.80	4.43	27.35	68.79	N/A	N/A
2483.5	41.87	PK	H	25.86	4.49	27.36	44.86	74.00	29.14
2483.5	26.59	AV	H	25.86	4.49	27.36	29.58	54.00	24.42
4924	32.79	PK	H	30.90	5.97	27.43	42.23	74.00	31.77
4924	22.11	AV	H	30.90	5.97	27.43	31.55	54.00	22.45
7386	31.67	PK	H	34.53	7.55	25.86	47.89	74.00	26.11
7386	18.94	AV	H	34.53	7.55	25.86	35.16	54.00	18.84
9848	31.35	PK	H	36.54	8.85	26.94	49.80	74.00	24.20
9848	18.92	AV	H	36.54	8.85	26.94	37.37	54.00	16.63
1720	36.55	PK	H	24.04	3.51	27.64	36.46	74.00	37.54
1720	22.45	AV	H	24.04	3.51	27.64	22.36	54.00	31.64
265	29	QP	H	13.37	1.96	21.50	22.83	46.00	23.17

## 802.11 n40 Mode

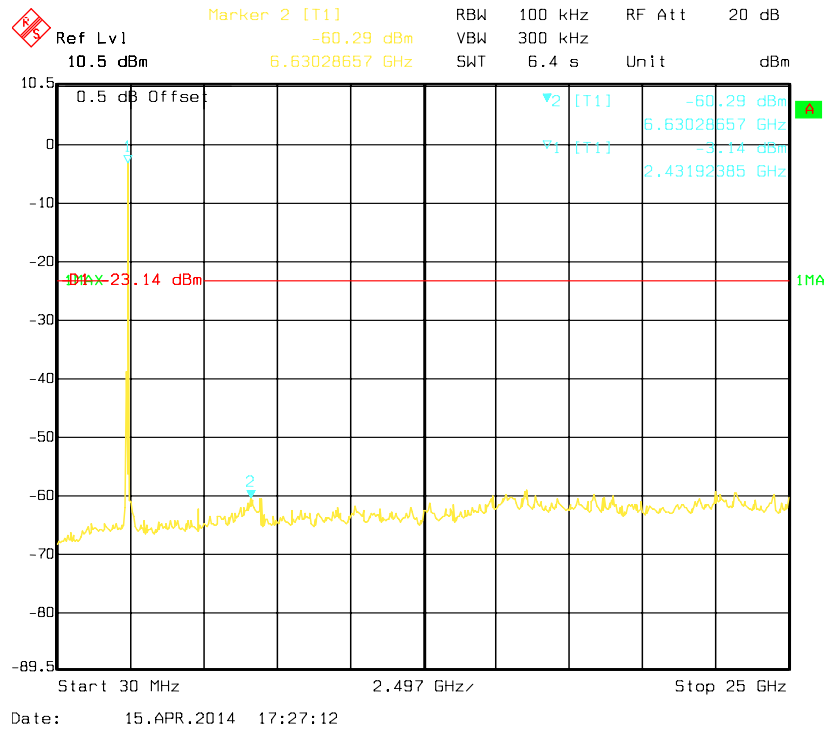
Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	FCC 15.247	
	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB/m)				Limit (dBμV/m)	Margin (dB)
Low Channel: 2422 MHz									
2422	79.98	PK	H	25.70	4.41	27.33	82.76	N/A	N/A
2422	63.71	AV	H	25.70	4.41	27.33	66.49	N/A	N/A
2422	78.22	PK	V	25.70	4.41	27.33	81.00	N/A	N/A
2422	62.37	AV	V	25.70	4.41	27.33	65.15	N/A	N/A
2390	38.56	PK	H	25.61	4.39	27.32	41.24	74.00	32.76
2390	27.23	AV	H	25.61	4.39	27.32	29.91	54.00	24.09
4844	31.21	PK	H	30.69	6.08	27.42	40.56	74.00	33.44
4844	21.29	AV	H	30.69	6.08	27.42	30.64	54.00	23.36
7266	30.19	PK	H	34.24	7.48	25.89	46.02	74.00	27.98
7266	20.08	AV	H	34.24	7.48	25.89	35.91	54.00	18.09
9688	30.12	PK	H	36.15	8.82	27.37	47.72	74.00	26.28
9688	19.27	AV	H	36.15	8.82	27.37	36.87	54.00	17.13
1720	34.96	PK	H	24.04	3.51	27.64	34.87	74.00	39.13
1720	22.69	AV	H	24.04	3.51	27.64	22.60	54.00	31.40
265	29.3	QP	H	13.37	1.96	21.50	23.13	46.00	22.87
Middle Channel: 2437 MHz									
2437	79.96	PK	H	25.74	4.41	27.34	82.77	N/A	N/A
2437	63.13	AV	H	25.74	4.41	27.34	65.94	N/A	N/A
2437	78.06	PK	V	25.74	4.41	27.34	80.87	N/A	N/A
2437	61.23	AV	V	25.74	4.41	27.34	64.04	N/A	N/A
4874	32.17	PK	H	30.77	6.09	27.42	41.61	74.00	32.39
4874	22.13	AV	H	30.77	6.09	27.42	31.57	54.00	22.43
7311	30.67	PK	H	34.35	7.51	25.88	46.65	74.00	27.35
7311	17.89	AV	H	34.35	7.51	25.88	33.87	54.00	20.13
9748	30.67	PK	H	36.30	8.83	27.24	48.56	74.00	25.44
9748	17.89	AV	H	36.30	8.83	27.24	35.78	54.00	18.22
1720	35.61	PK	H	24.04	3.51	27.64	35.52	74.00	38.48
1720	22.63	AV	H	24.04	3.51	27.64	22.54	54.00	31.46
7690	31.52	PK	H	34.95	7.57	26.70	47.34	74.00	26.66
7690	18.43	AV	H	34.95	7.57	26.70	34.25	54.00	19.75
265	28.9	QP	H	13.37	1.96	21.50	22.73	46.00	23.27
High Channel: 2452 MHz									
2452	77.84	PK	H	25.78	4.41	27.35	80.68	N/A	N/A
2452	62.03	AV	H	25.78	4.41	27.35	64.87	N/A	N/A
2452	76.06	PK	V	25.78	4.41	27.35	78.90	N/A	N/A
2452	60.68	AV	V	25.78	4.41	27.35	63.52	N/A	N/A
2483.5	40.75	PK	H	25.86	4.49	27.36	43.74	74.00	30.26
2483.5	27.36	AV	H	25.86	4.49	27.36	30.35	54.00	23.65
4904	31.33	PK	H	30.85	6.06	27.43	40.81	74.00	33.19
4904	21.18	AV	H	30.85	6.06	27.43	30.66	54.00	23.34
7356	30.36	PK	H	34.45	7.53	25.87	46.47	74.00	27.53
7356	18.64	AV	H	34.45	7.53	25.87	34.75	54.00	19.25
9808	37.01	PK	H	36.44	8.84	27.09	55.20	74.00	18.80
9808	24.69	AV	H	36.44	8.84	27.09	42.88	54.00	11.12
1720	30.23	PK	H	24.04	3.51	27.64	30.14	74.00	43.86
1720	16.86	AV	H	24.04	3.51	27.64	16.77	54.00	37.23
265	28.4	QP	V	13.37	1.96	21.50	22.23	46.00	23.77

## Conducted Spurious Emissions at Antenna Port

### 802.11b Low Channel

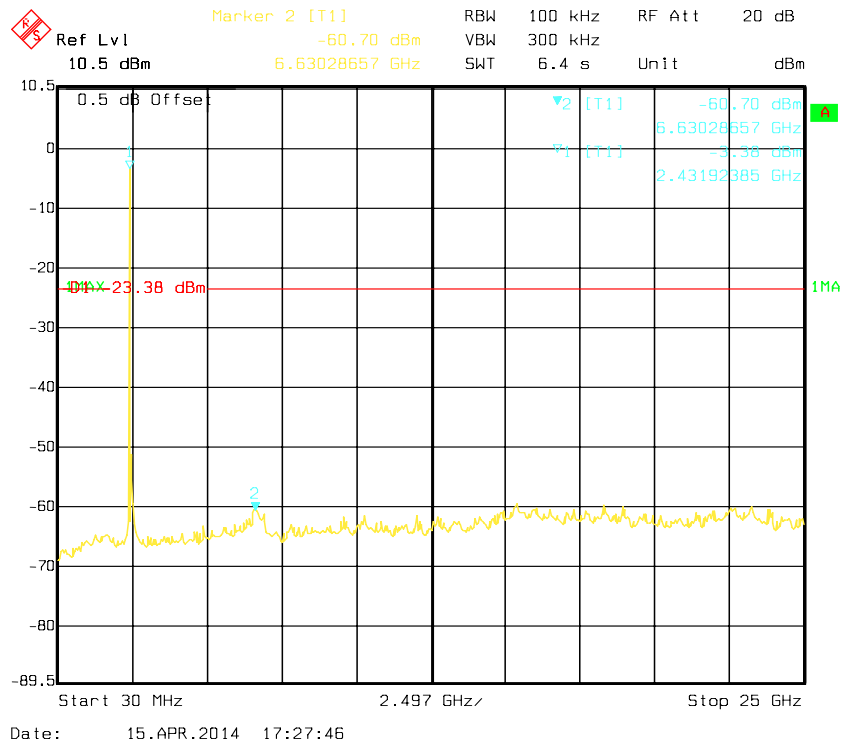


### 802.11b Middle Channel

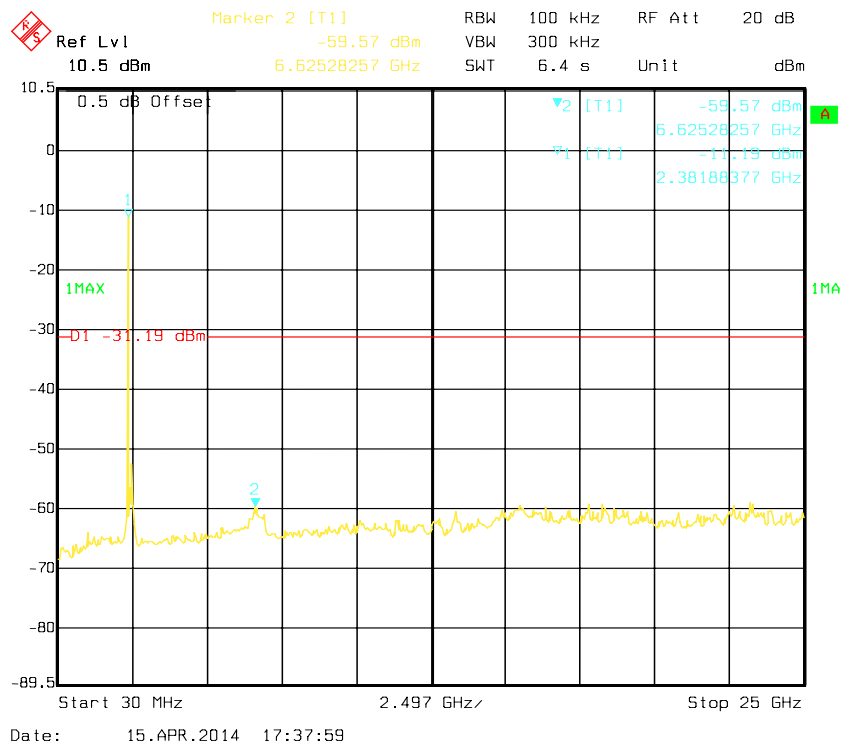




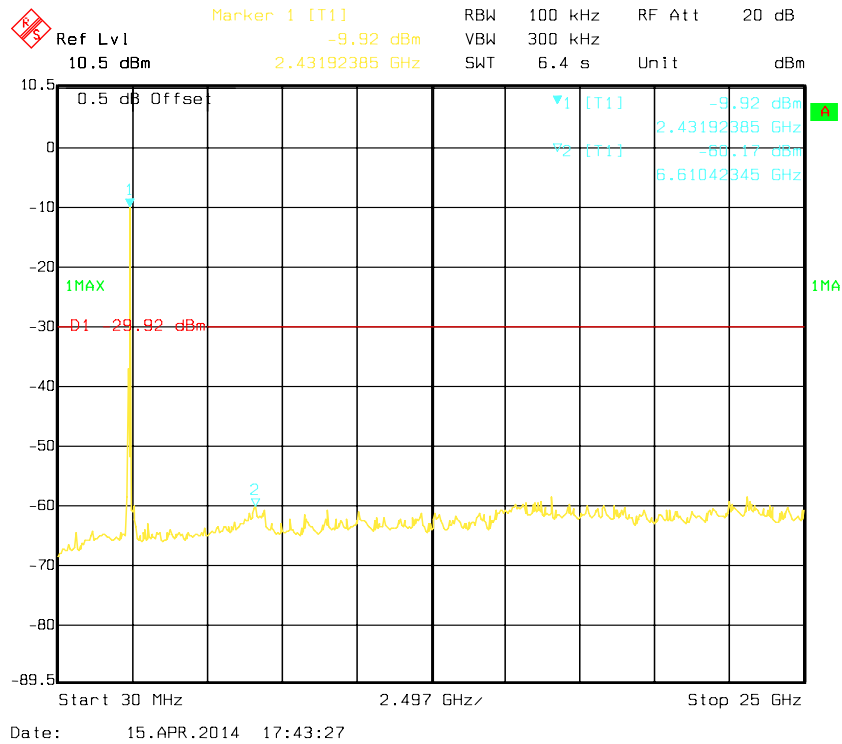
### 802.11b High Channel



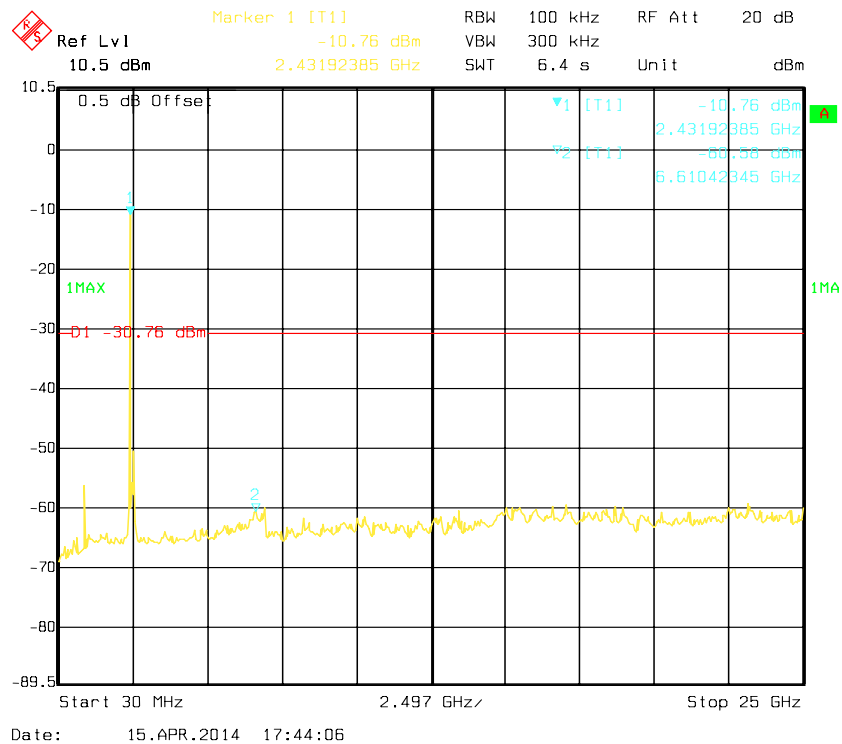
### 802.11g Low Channel



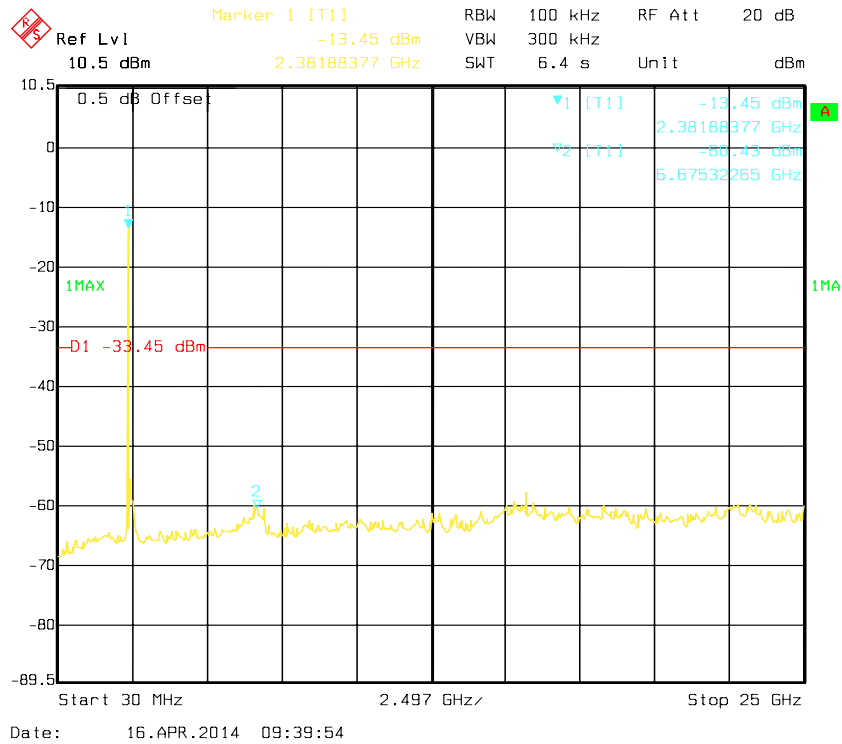
### 802.11g Middle Channel



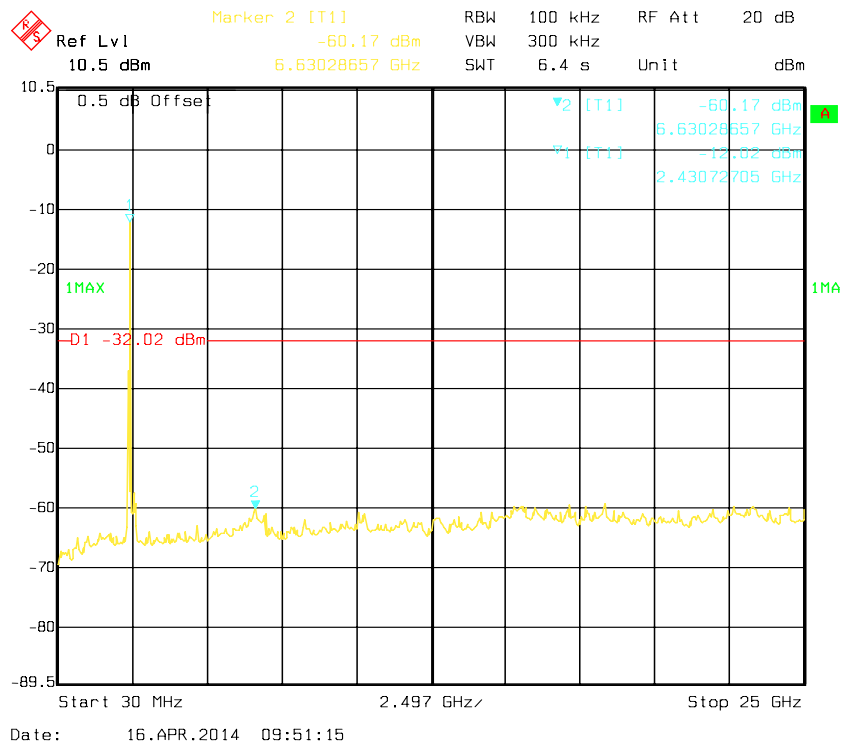
### 802.11g High Channel



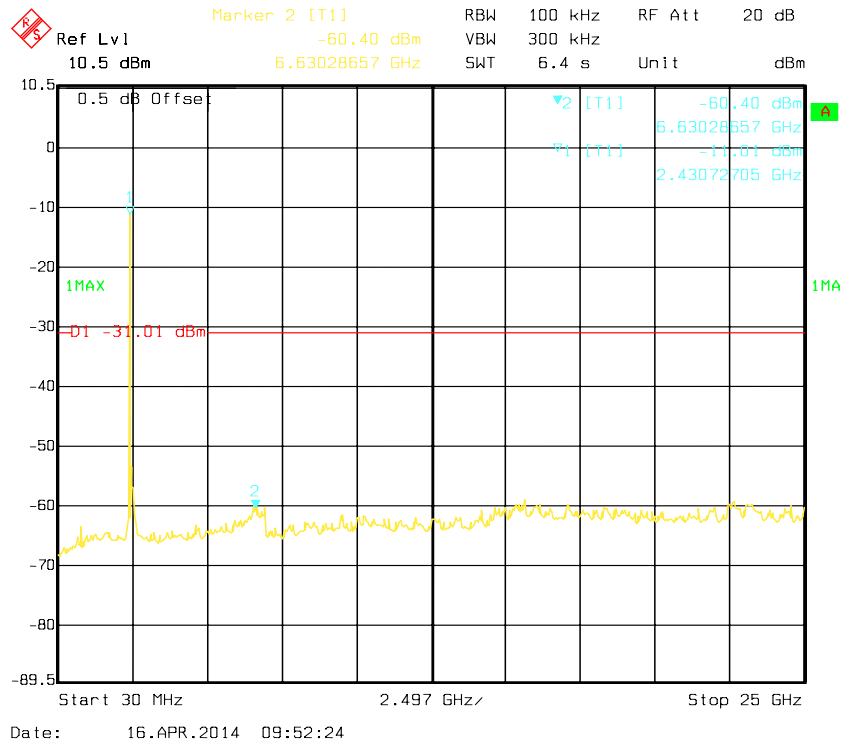
### 802.11n20 Low Channel



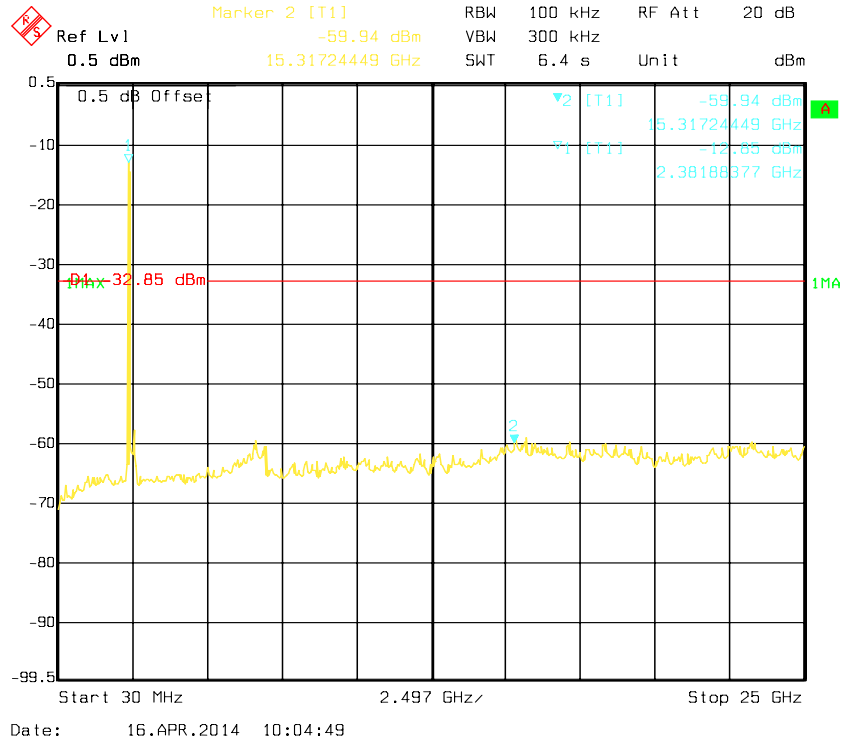
### 802.11n20 Middle Channel



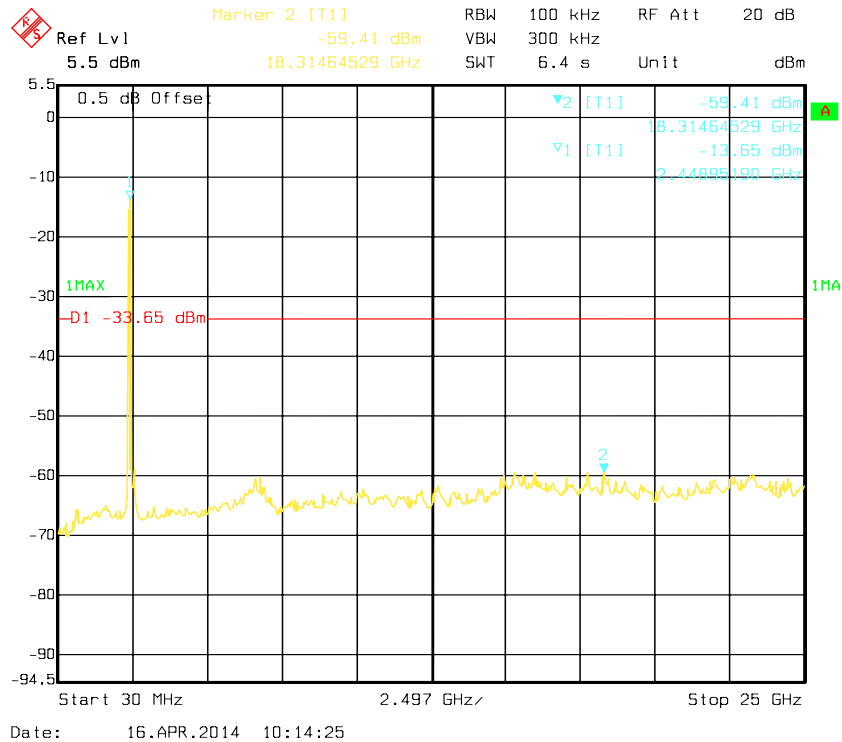
### 802.11n20 High Channel



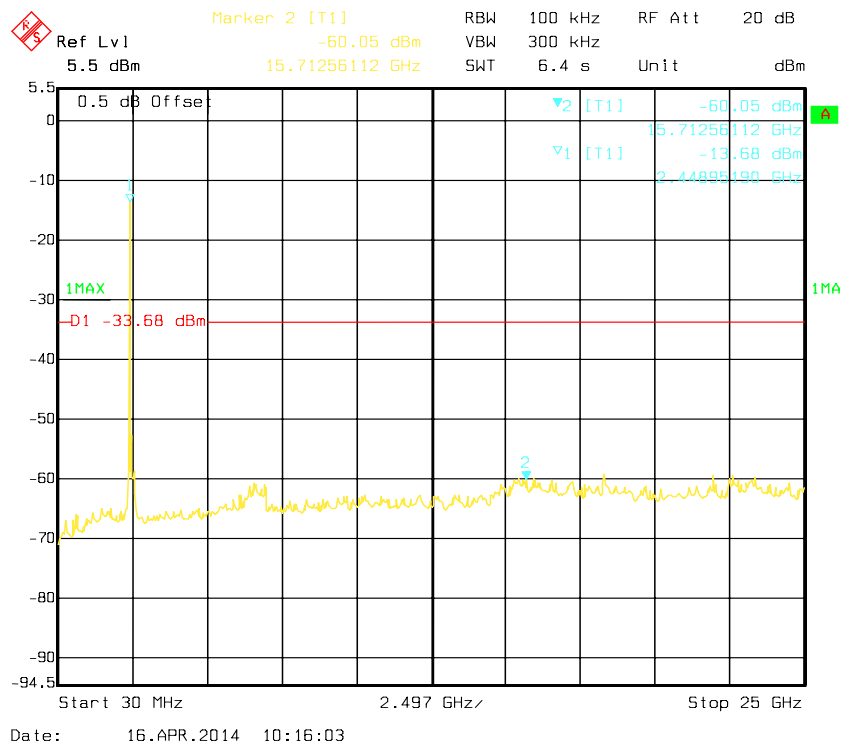
### 802.11n40 Low Channel



### 802.11n40 Middle Channel



### 802.11n40 High Channel

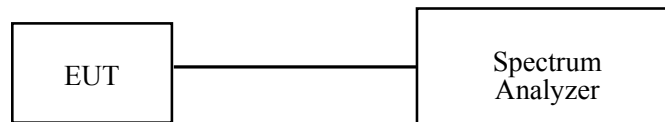


**FCC §15.247(a) (2) – 6 dB EMISSION BANDWIDTH****Applicable Standard**

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**

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:	25.4°C -25.6 °C
Relative Humidity:	62%-66 %
ATM Pressure:	100.8 kPa -101 kPa

\* The testing was performed by Dean Liu on 2014-04-15 & 2014-04-16.

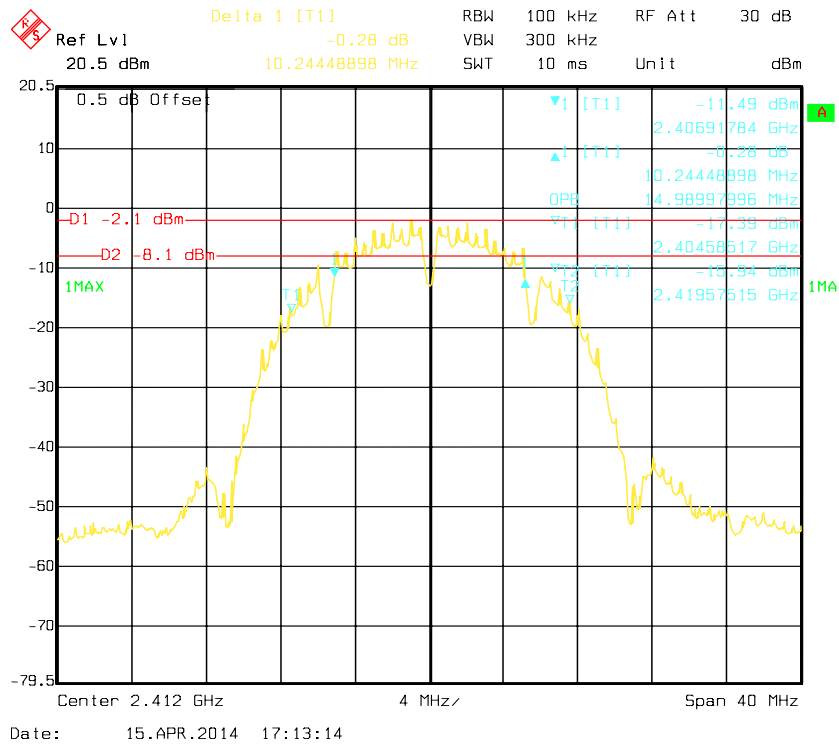
**Test Result:** Pass.

Please refer to the following tables and plots.

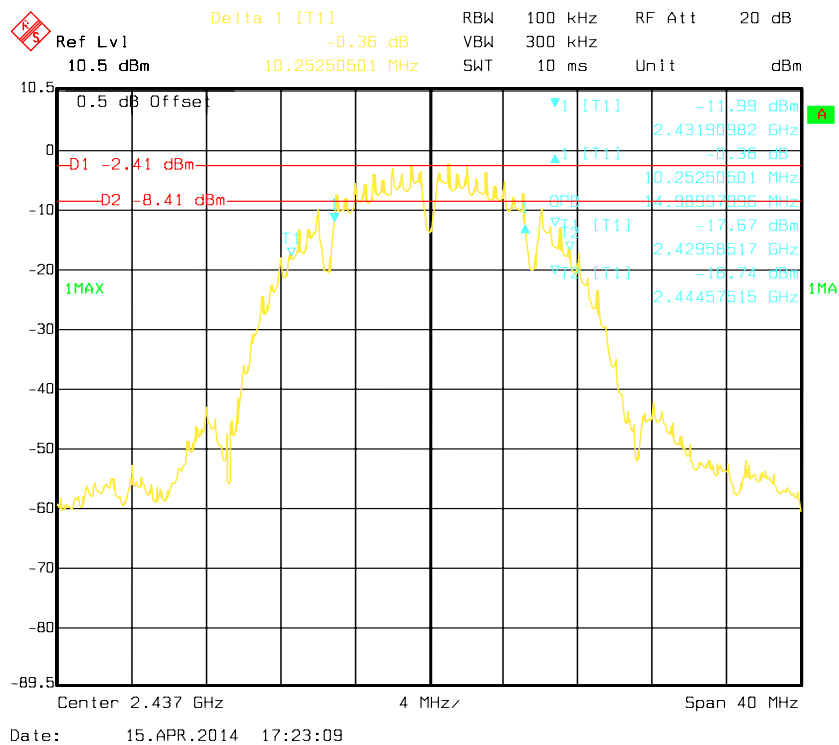
*Test Mode: Transmitting*

Test Mode	Channel	Frequency	6 dB Bandwidth	Limit
		(MHz)	(MHz)	(kHz)
802.11b	Low	2412	10.24	$\geq 500$
	Middle	2437	10.25	$\geq 500$
	High	2462	10.24	$\geq 500$
802.11g	Low	2412	16.48	$\geq 500$
	Middle	2437	16.48	$\geq 500$
	High	2462	16.51	$\geq 500$
802.11n20	Low	2412	17.83	$\geq 500$
	Middle	2437	17.76	$\geq 500$
	High	2462	17.76	$\geq 500$
802.11n 40	Low	2422	36.15	$\geq 500$
	Middle	2437	36.33	$\geq 500$
	High	2452	35.70	$\geq 500$

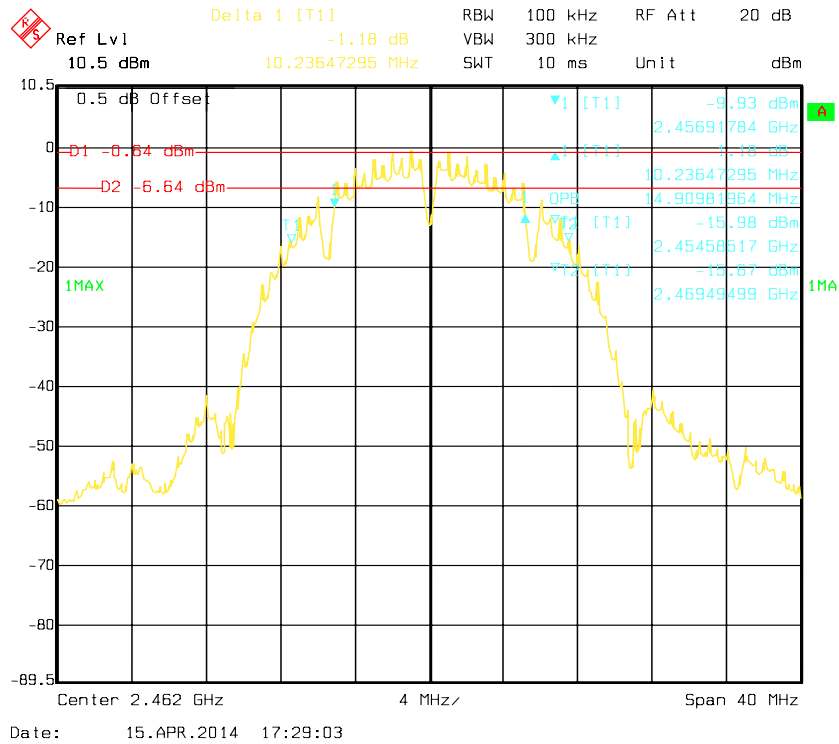
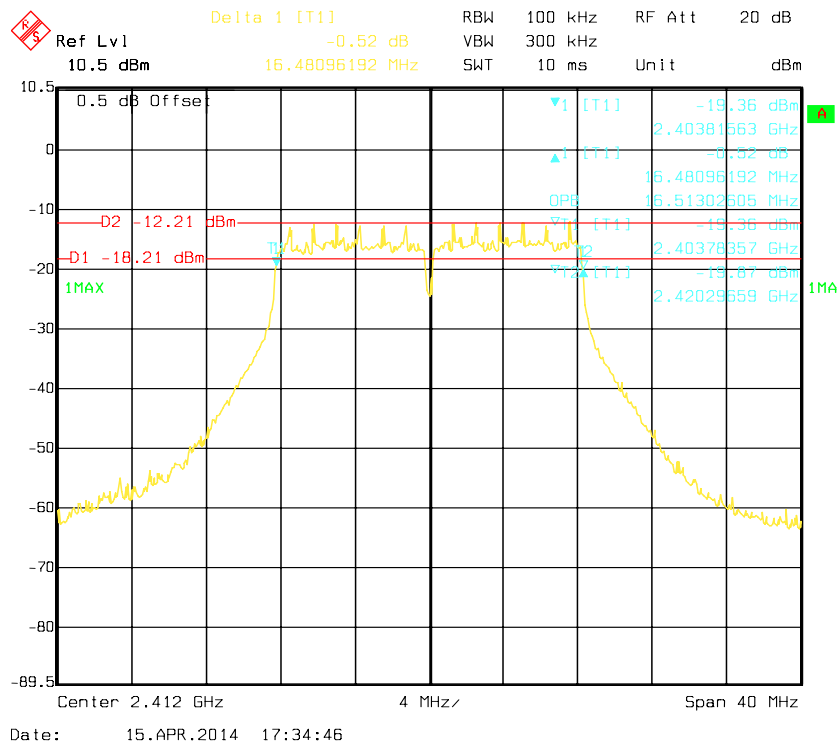
### 802.11b Low Channel

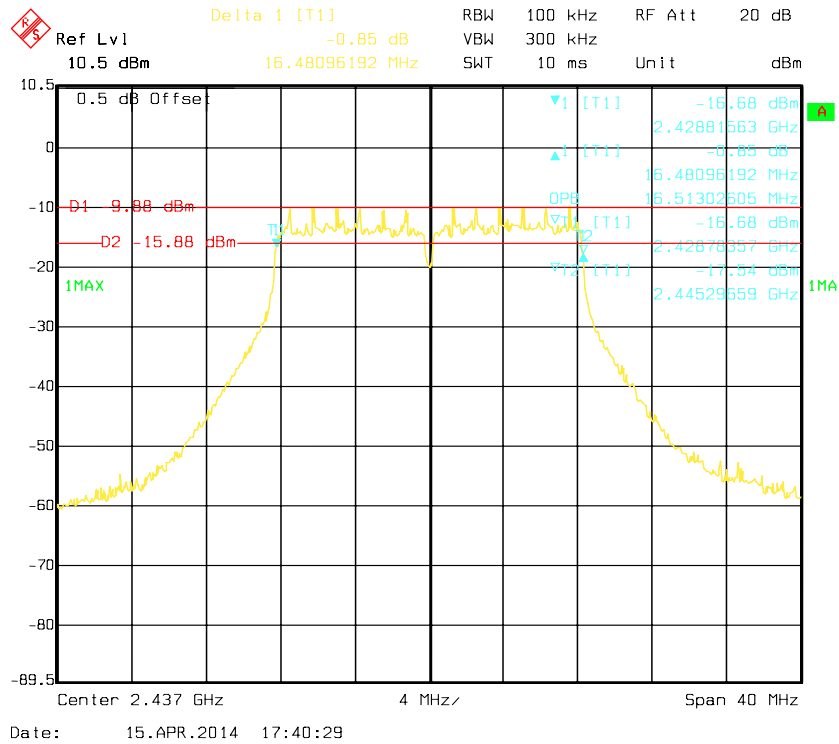
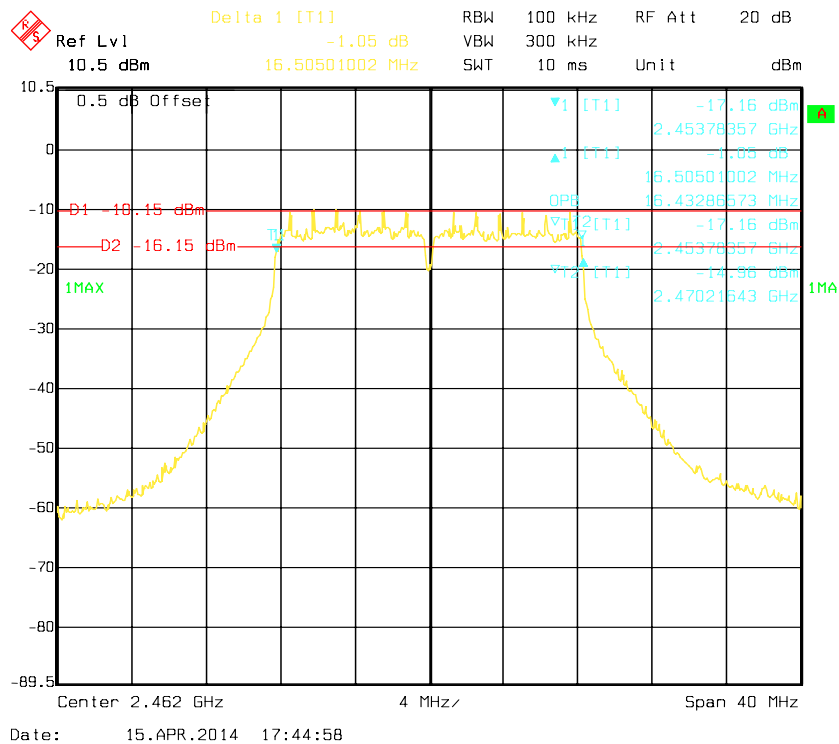


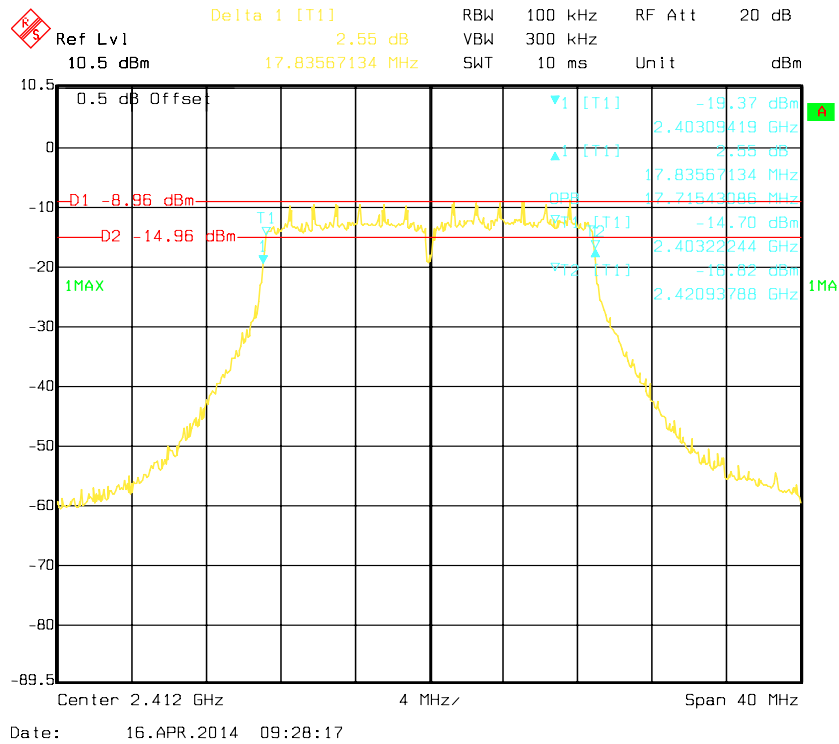
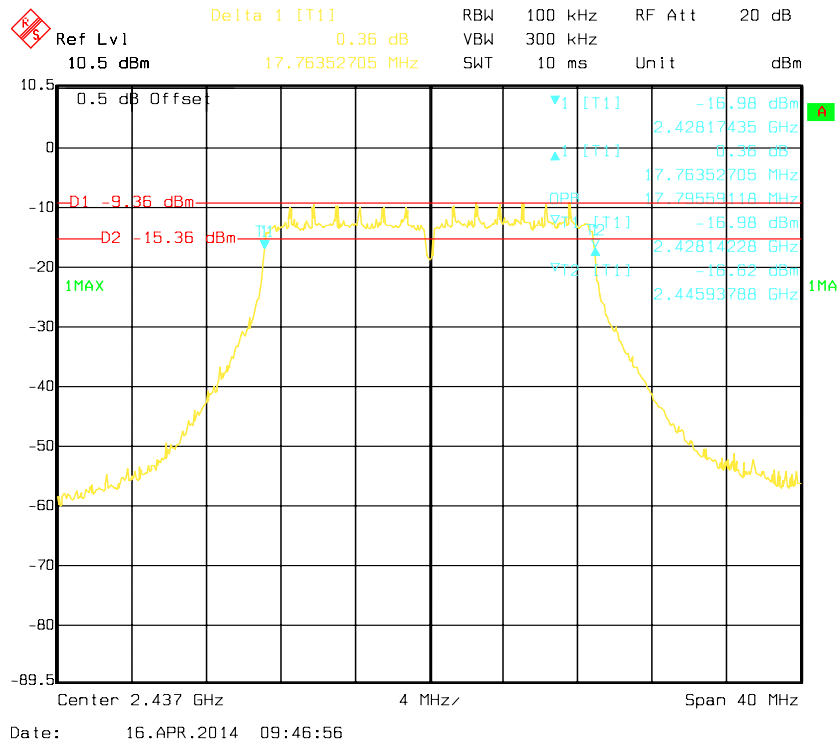
### 802.11b Middle Channel

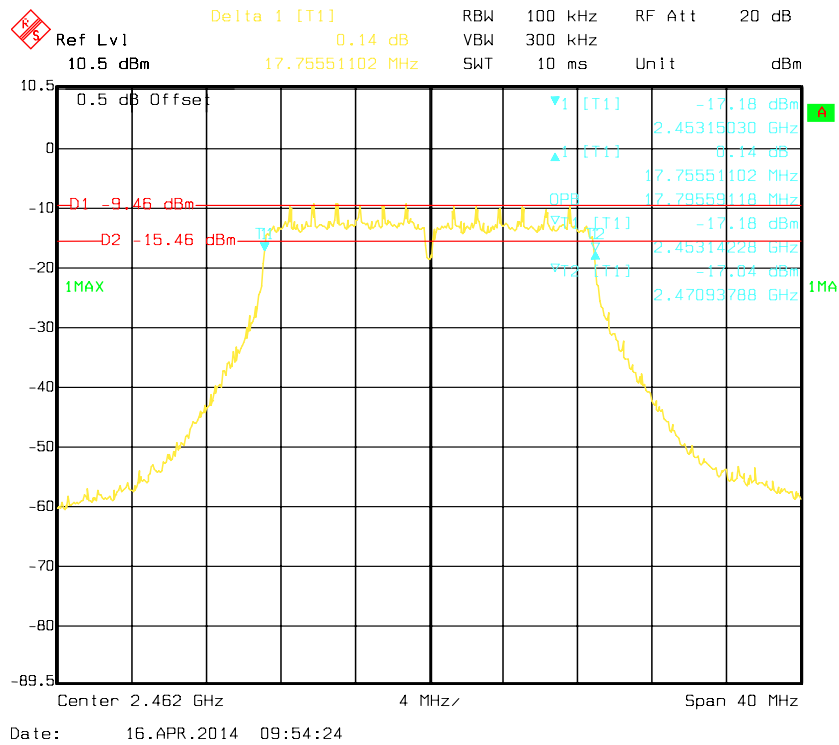
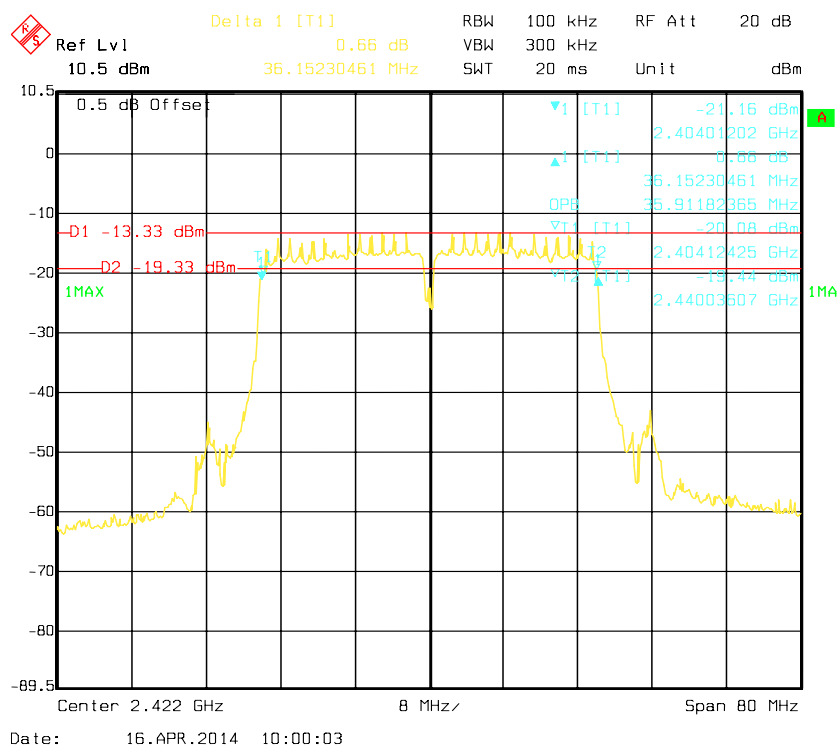


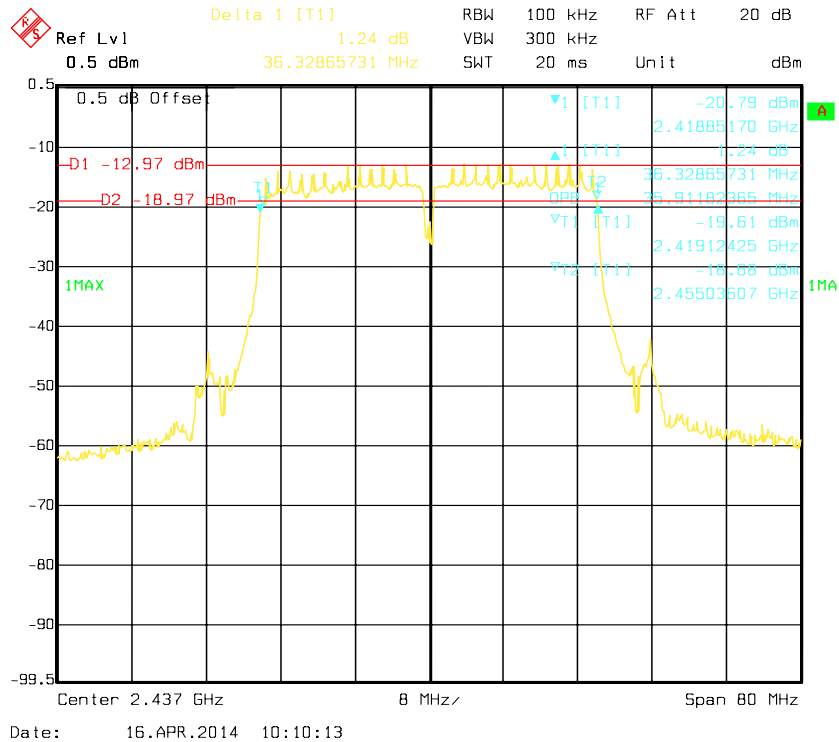
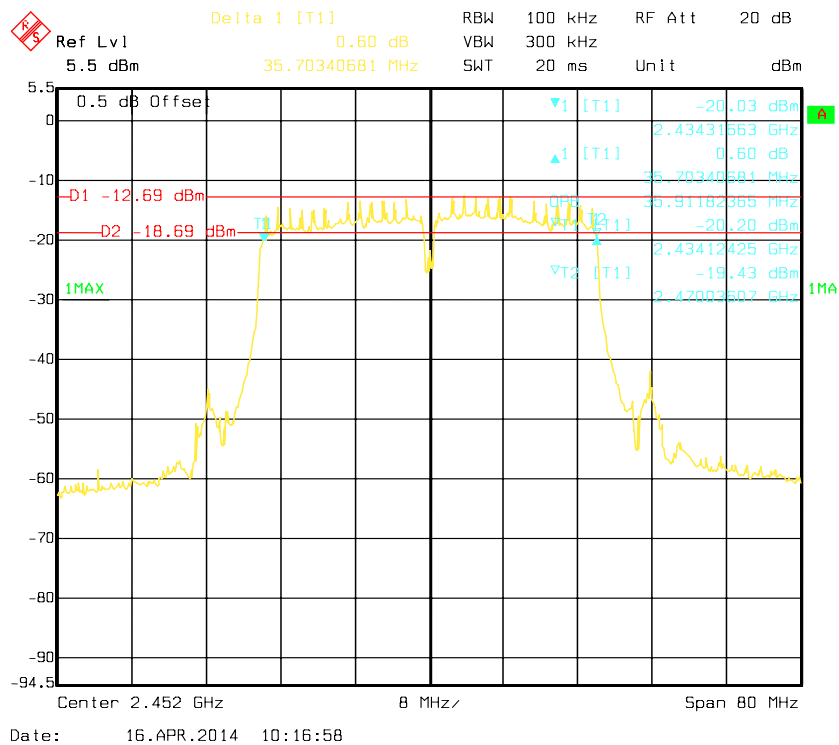


**802.11b High Channel****802.11g Low Channel**

**802.11g Middle Channel****802.11g High Channel**

**802.11n20 Low Channel****802.11n20 Middle Channel**

**802.11n20 High Channel****802.11n40 Low Channel**

**802.11n40 Middle Channel****802.11n40 High Channel**

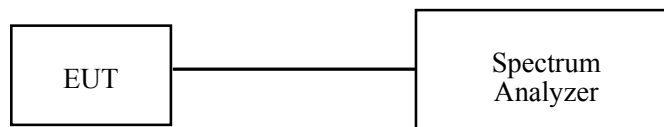
## FCC §15.247(b) (3) - MAXIMUM CONDUCTED OUTPUT POWER

### 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

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 a 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**

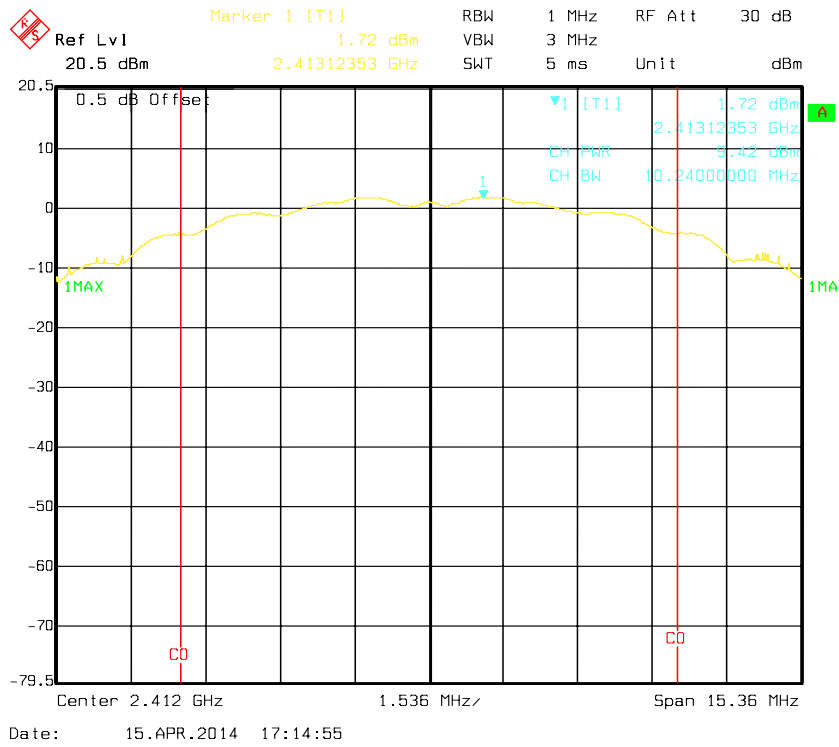
<b>Temperature:</b>	25.6 °C
<b>Relative Humidity:</b>	51 %
<b>ATM Pressure:</b>	101 kPa

\* The testing was performed by Dean Liu on 2014-04-15.

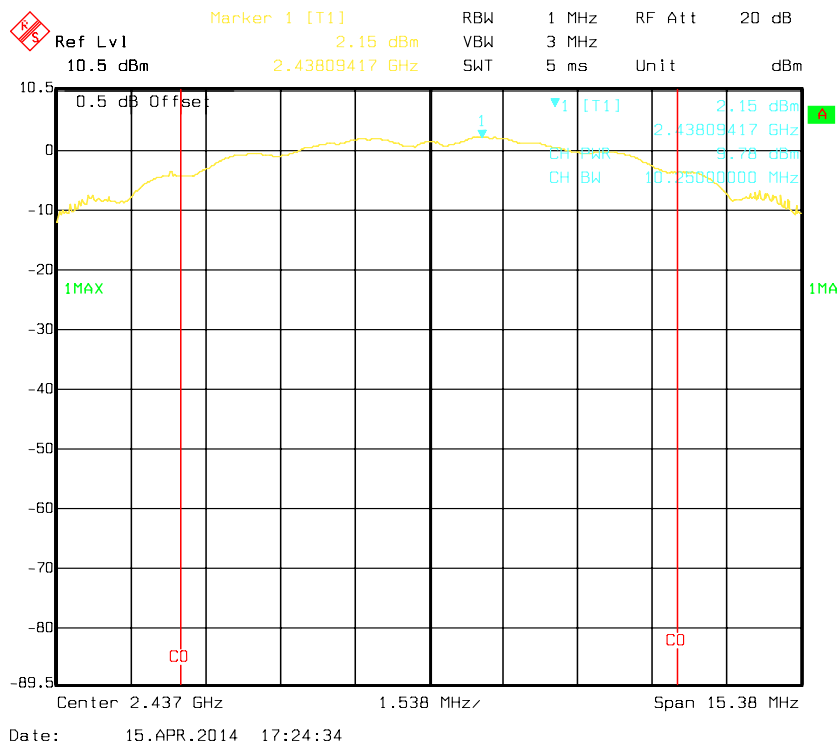
Test Mode: Transmitting

Test Mode	Channel	Frequency	Max Peak Conducted Output Power	Limit	Result
		(MHz)	(dBm)	(dBm)	
802.11b	Low	2412	9.42	30	PASS
	Middle	2437	9.78	30	PASS
	High	2462	9.56	30	PASS
802.11 g	Low	2412	9.54	30	PASS
	Middle	2437	9.48	30	PASS
	High	2462	9.30	30	PASS
802.11n20	Low	2412	9.77	30	PASS
	Middle	2437	9.53	30	PASS
	High	2462	9.70	30	PASS
802.11n40	Low	2422	9.64	30	PASS
	Middle	2437	9.51	30	PASS
	High	2452	9.23	30	PASS

### 802.11b RF Output Power, Low Channel

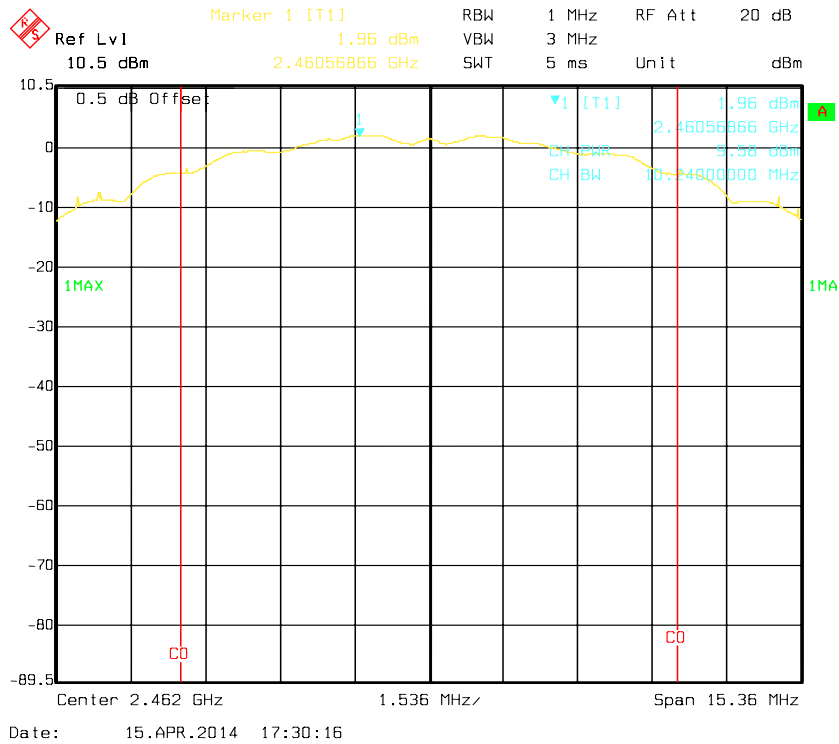


### 802.11b RF Output Power, Middle Channel

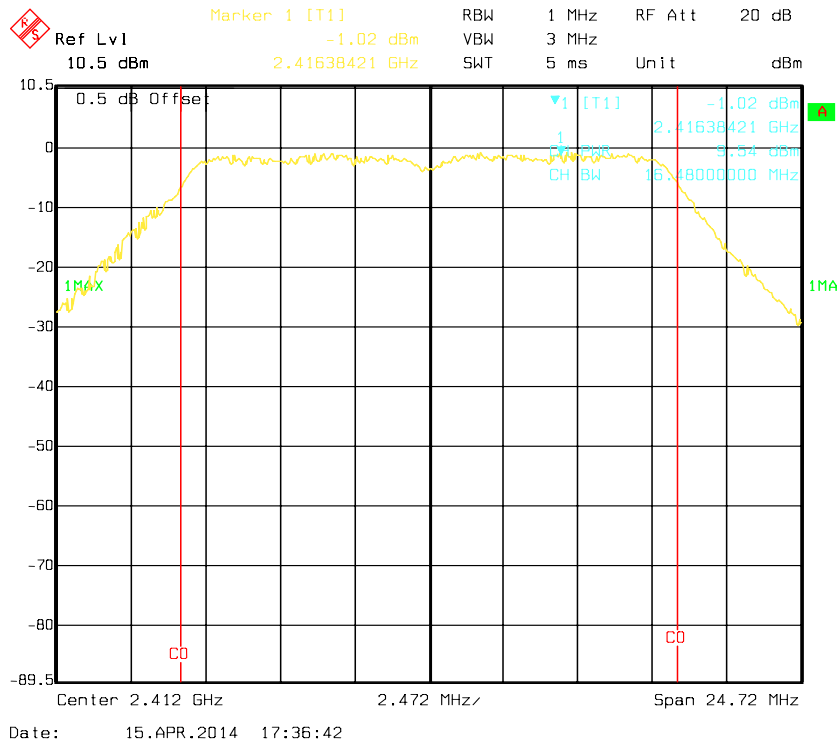




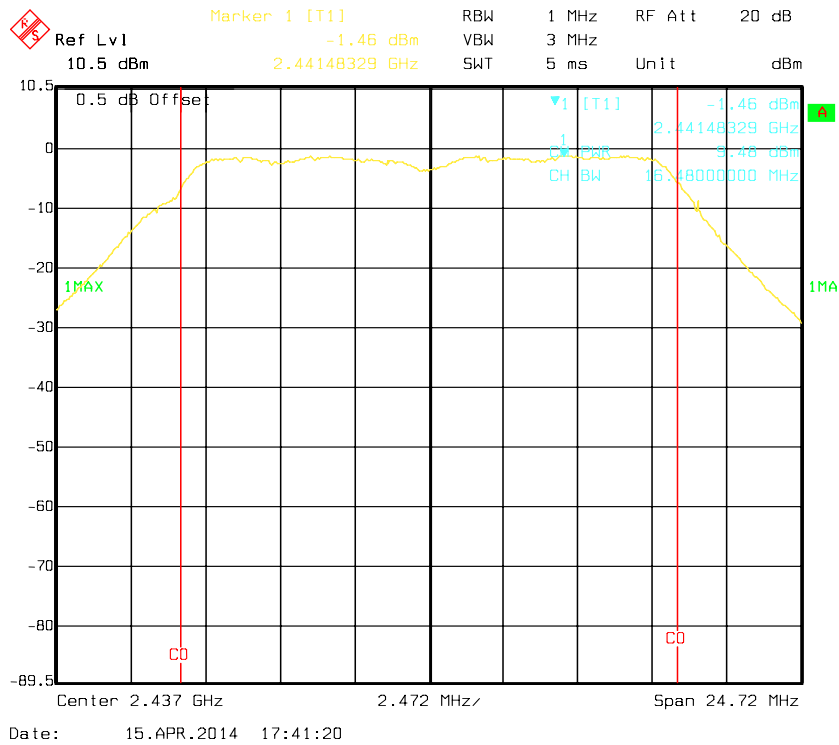
### 802.11b RF Output Power, High Channel



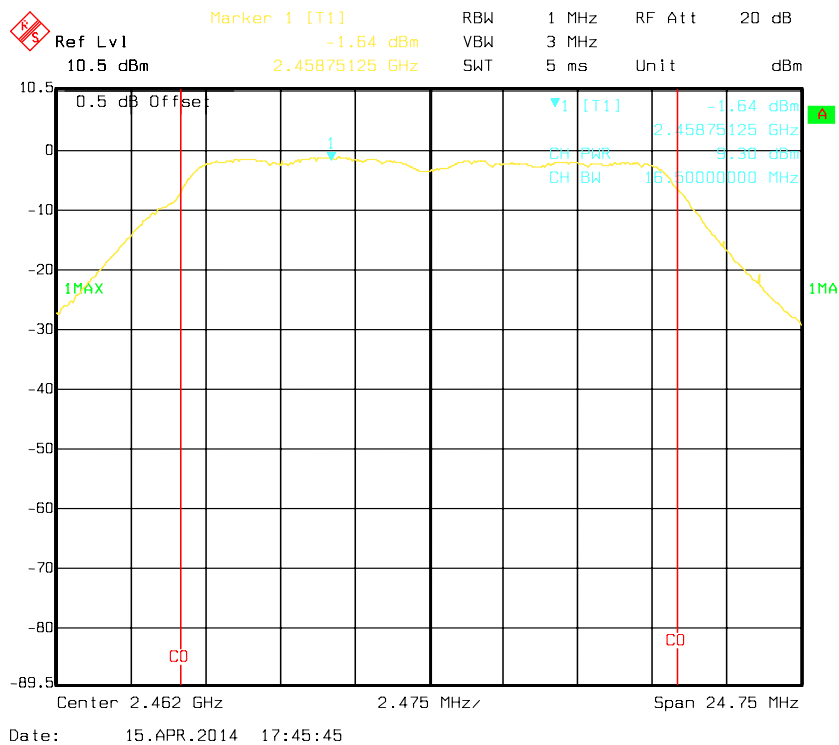
### 802.11g RF Output Power, Low Channel



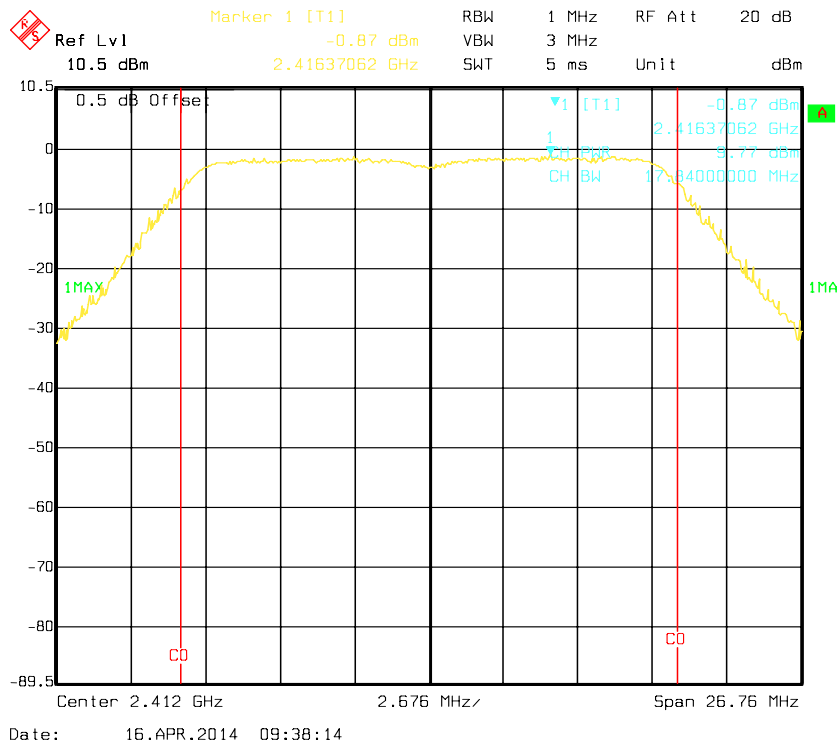
### 802.11g RF Output Power, Middle Channel



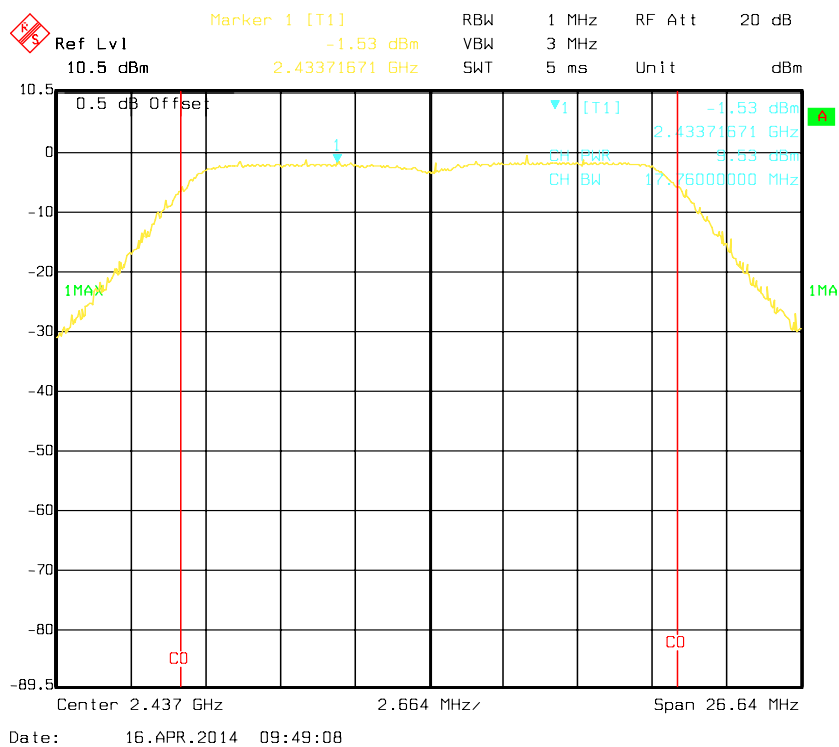
### 802.11g RF Output Power, High Channel



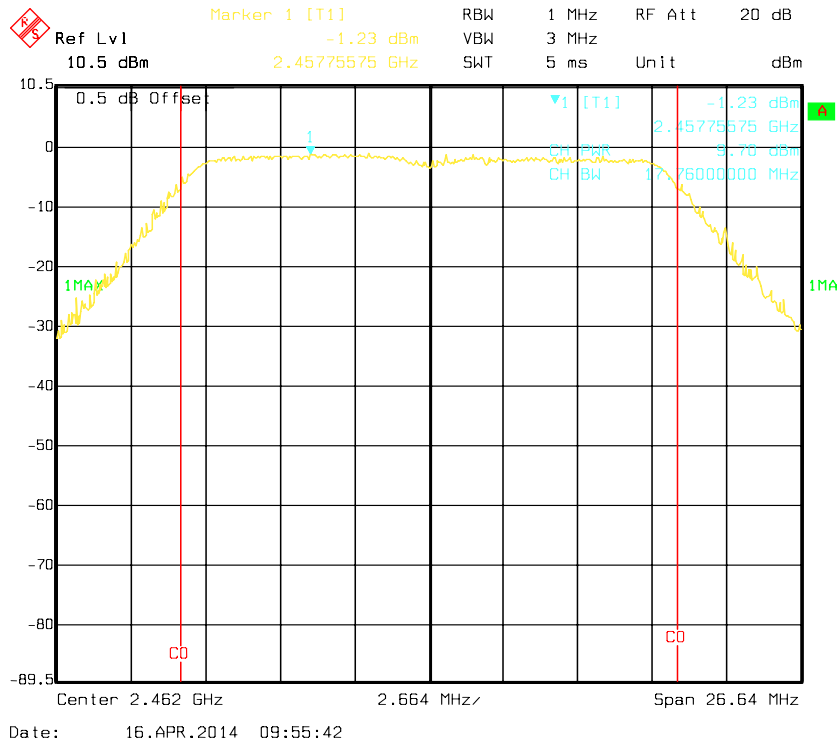
### 802.11n20 RF Output Power, Low Channel



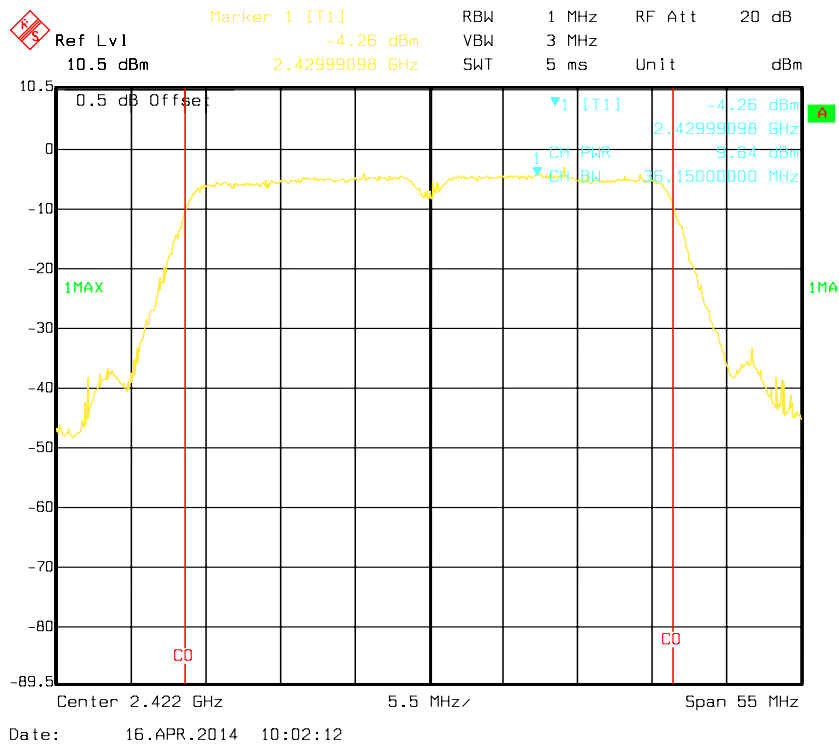
### 802.11n20 RF Output Power, Middle Channel



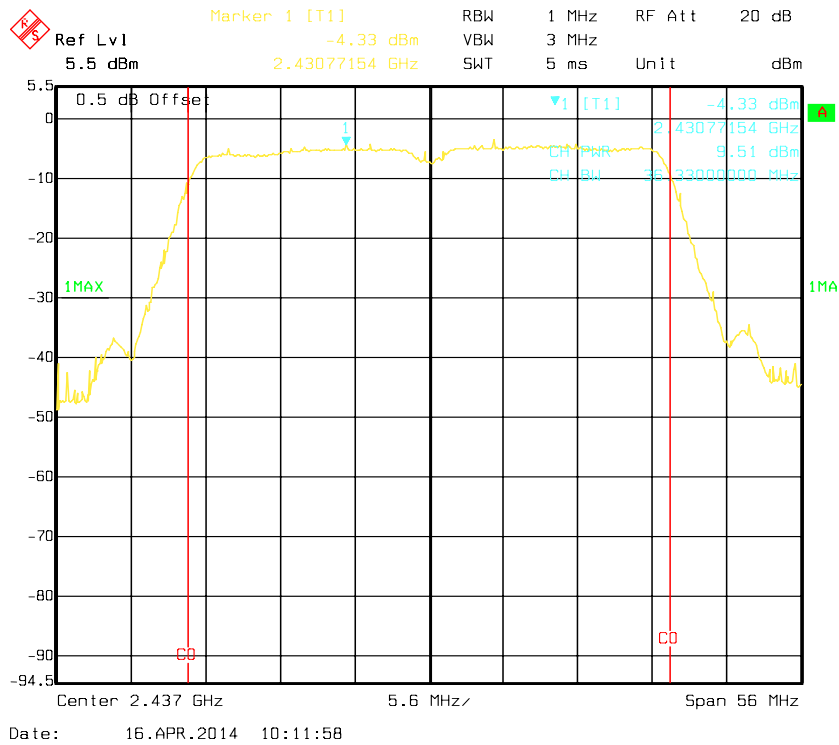
### 802.11n20 RF Output Power, High Channel



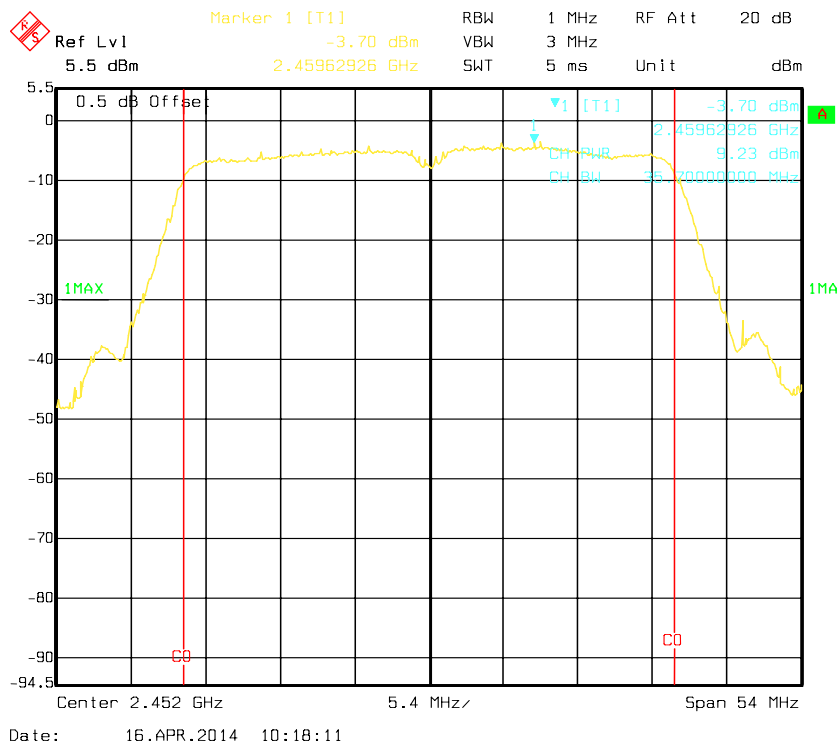
### 802.11n40 RF Output Power, Low Channel



### 802.11n40 RF Output Power, Middle Channel



### 802.11n40 RF Output Power, High Channel



## **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:	25.6 °C
Relative Humidity:	51 %
ATM Pressure:	101 kPa

\* The testing was performed by Dean Liu on 2014-04-15.

#### **Test Result: Compliance**

Please refer to following plots.

Ref Lvl 10.5 dBm

Marker 4 [T1] -46.80 dBm

RBW 100 kHz

VBW 300 kHz

SWT 29 ms

RF Att 20 dB

Unit dBm

0.5 dB Offset

Start 2.31 GHz

Stop 2.425 GHz

11.5 MHz

Date: 15.APR.2014 17:20:25

Ref Lvl 10.5 dBm

Marker 4 [T1] -57.55 dBm

RBW 100 kHz RF Att 20 dB

VBW 300 kHz

SWT 15 ms Unit dBm

0.5 dB Offset

-D1 -2.15 dBm

-22.15 dBm

1MA

1MA

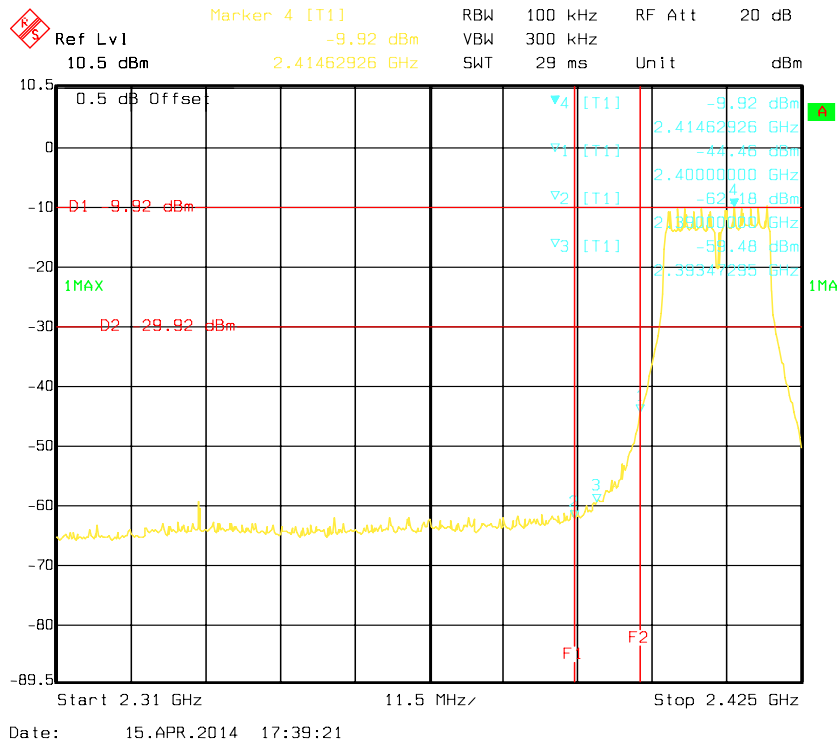
Start 2.45 GHz

6 MHz

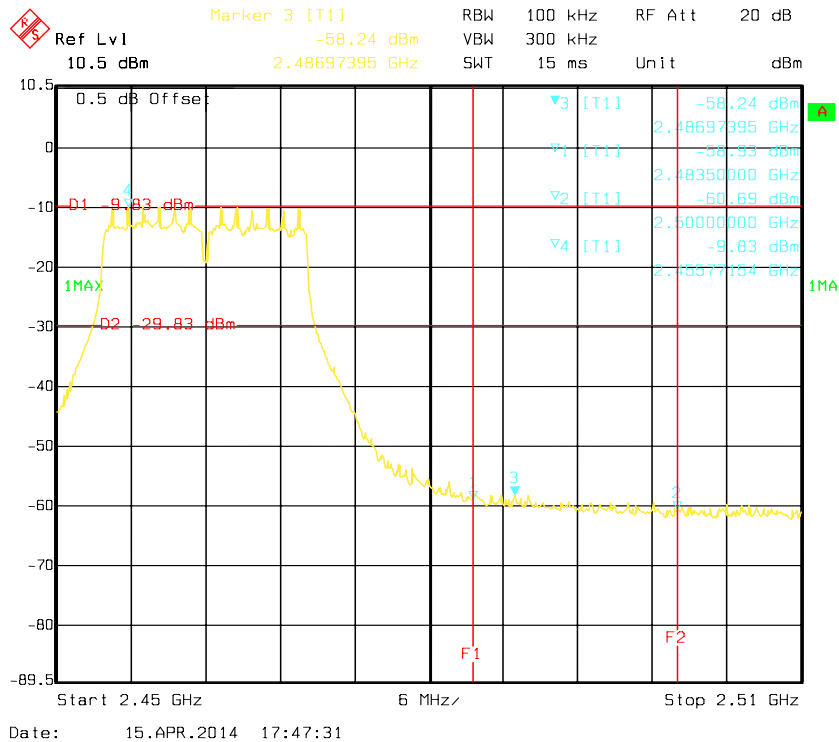
Stop 2.51 GHz

Date: 15.APR.2014 17:32:50

### 802.11g: Band Edge, Left Side

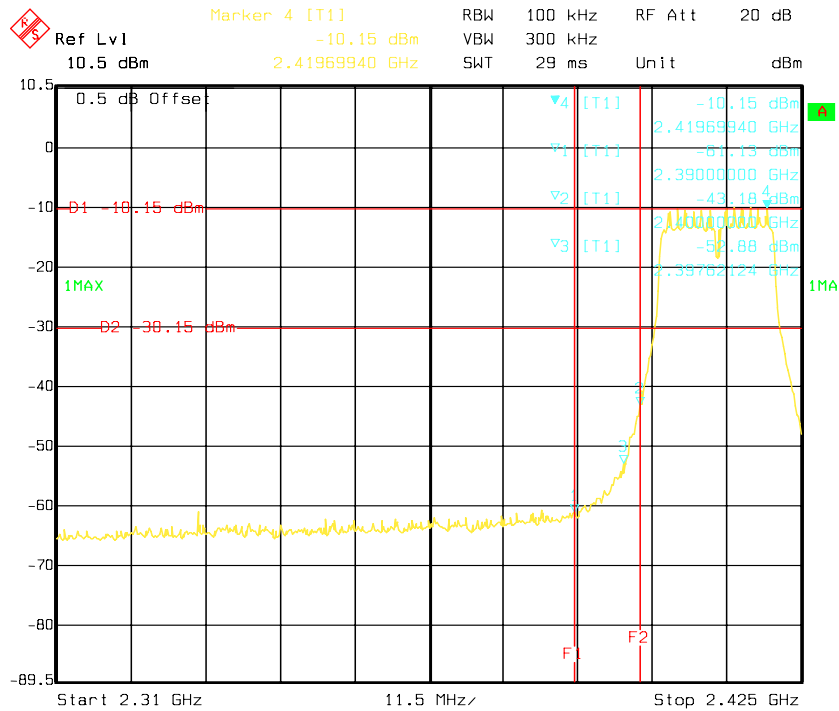


### 802.11g: Band Edge, Right Side

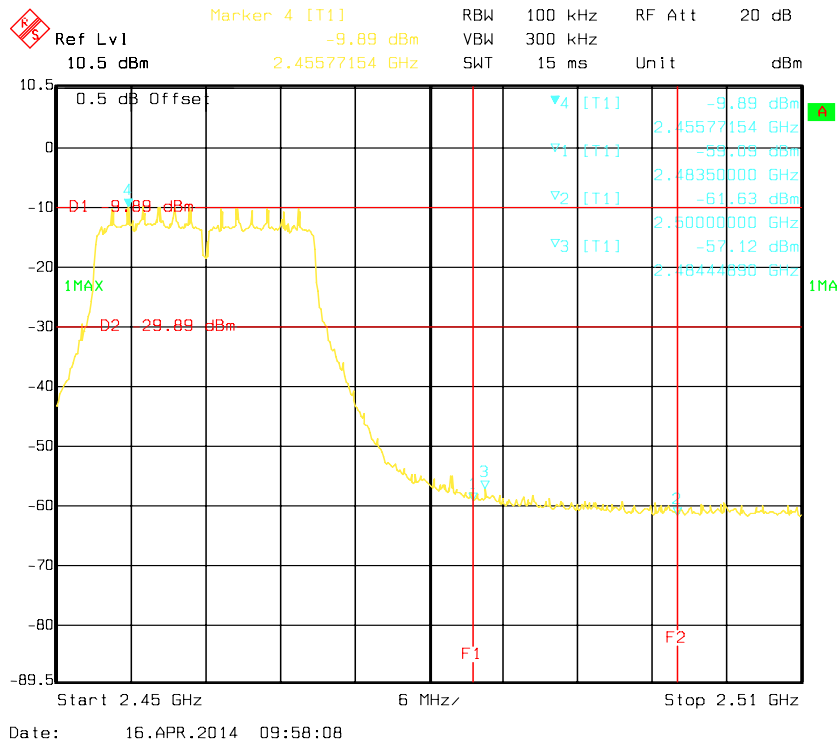




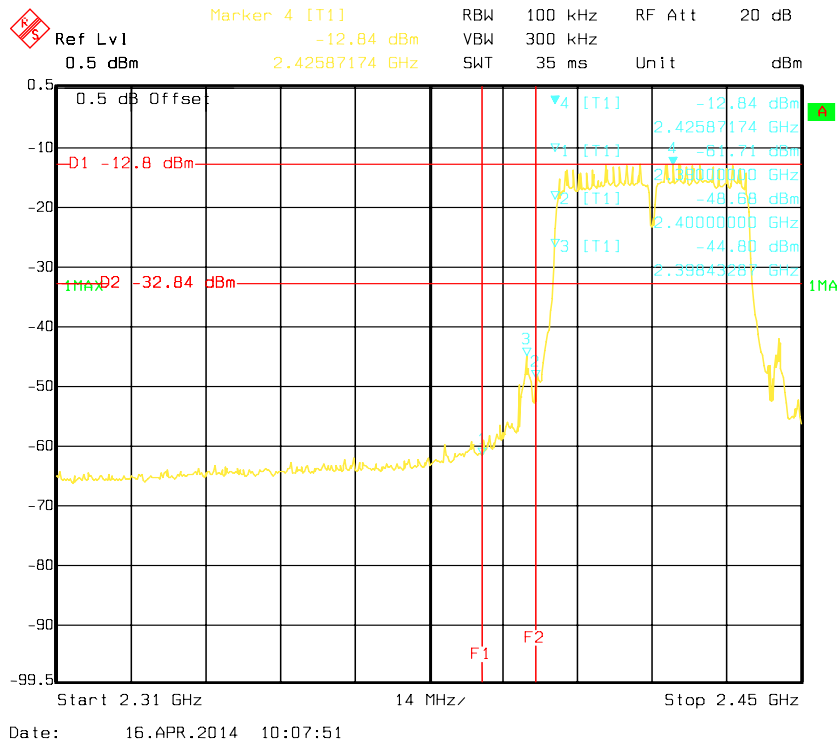
### 802.11n20 Band Edge, Left Side



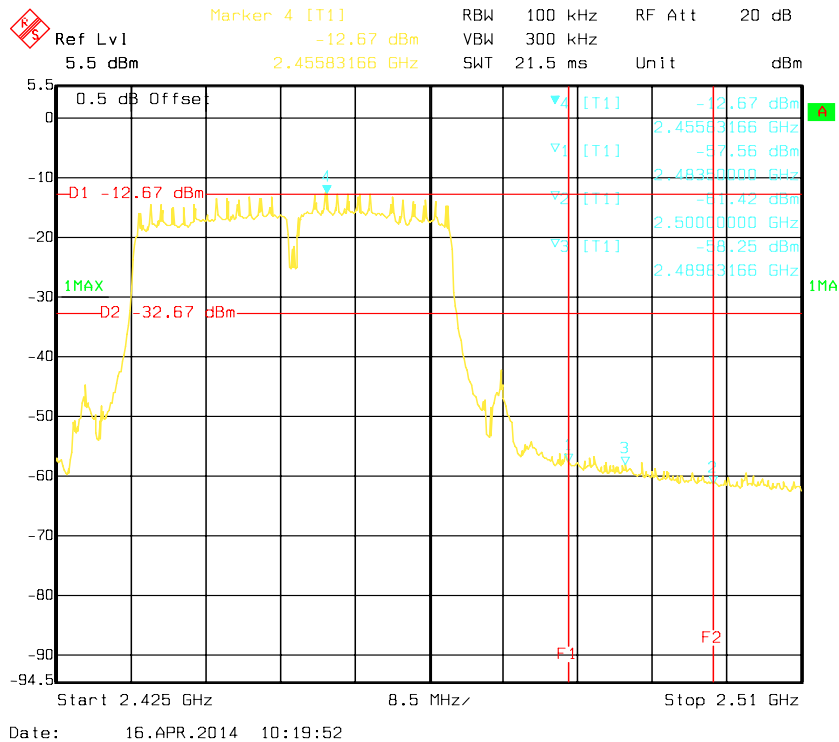
### 802.11n20 Band Edge, Right Side



### 802.11n40 Band Edge, Left Side



### 802.11n40 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**

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. Set the RBW = 3 kHz, VBW = 10 kHz, Set the span to 1.5 times the DTS bandwidth.
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**

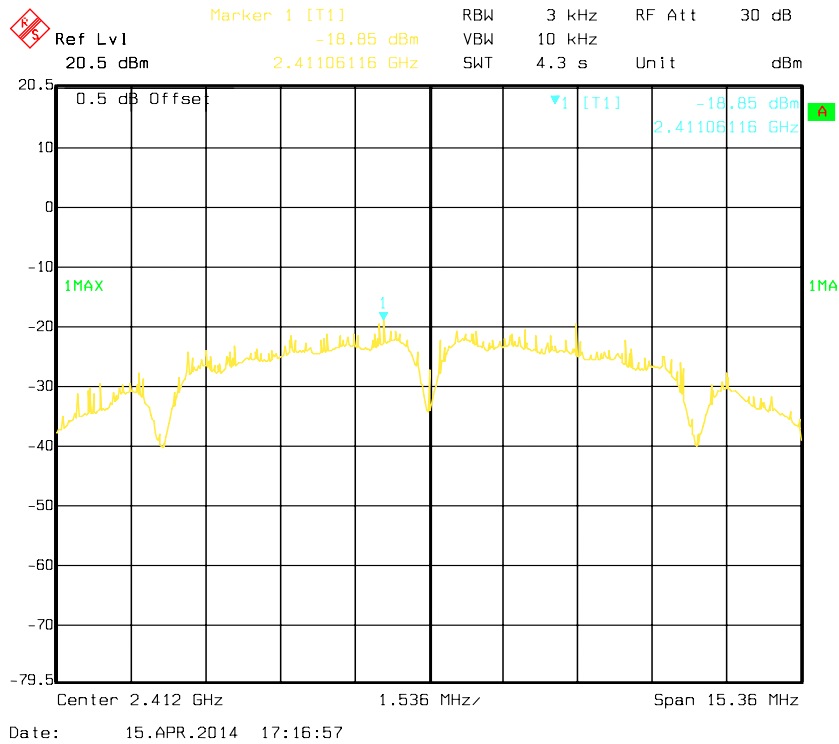
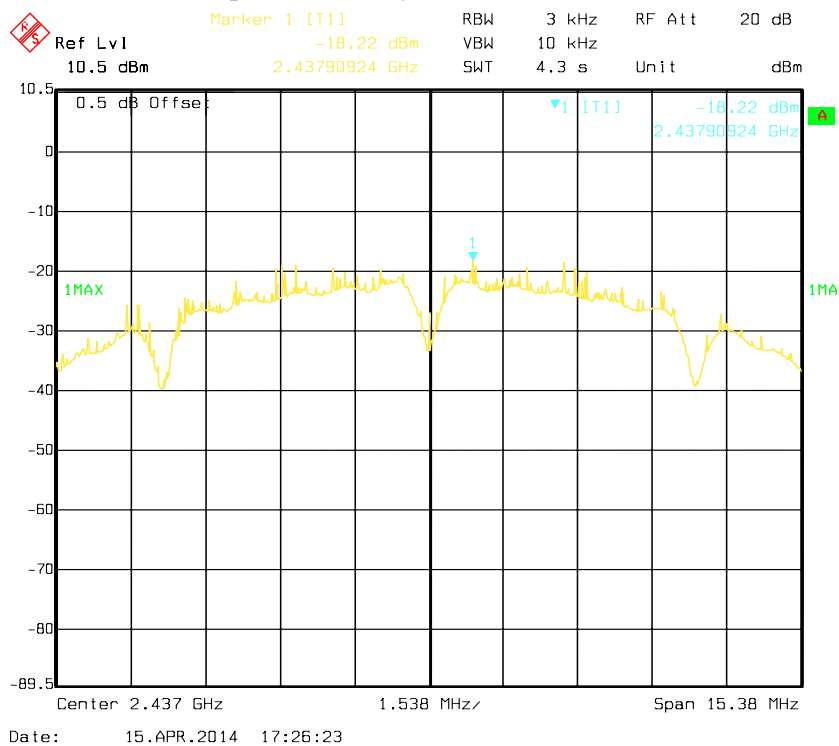
Temperature:	25.6 °C
Relative Humidity:	51 %
ATM Pressure:	101 kPa

\* The testing was performed by Dean Liu on 2014-04-15.

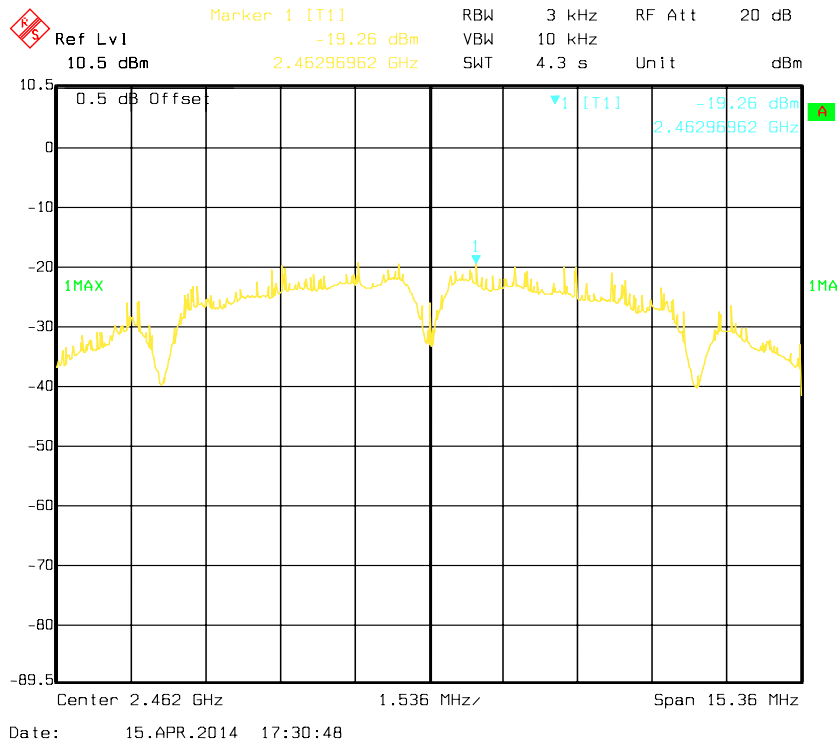
*Test Mode: Transmitting***Test Result: Pass**

Test Mode	Channel	PSD	Limit	Result
		(dBm/3kHz)	(dBm/3kHz)	
802.11b	Low	-18.85	$\leq 8$	PASS
	Middle	-18.22	$\leq 8$	PASS
	High	-19.26	$\leq 8$	PASS
802.11 g	Low	-24.98	$\leq 8$	PASS
	Middle	-25.07	$\leq 8$	PASS
	High	-25.49	$\leq 8$	PASS
802.11n20	Low	-24.12	$\leq 8$	PASS
	Middle	-23.35	$\leq 8$	PASS
	High	-24.06	$\leq 8$	PASS
802.11n40	Low	-26.81	$\leq 8$	PASS
	Middle	-26.59	$\leq 8$	PASS
	High	-26.16	$\leq 8$	PASS

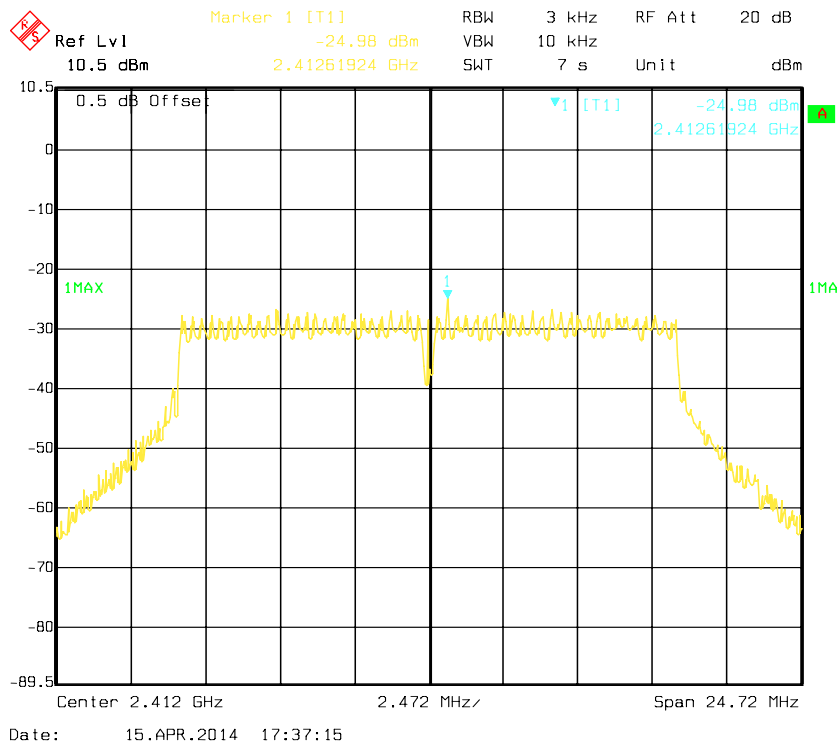
Please refer to the following plots

**Power Spectral Density, 802.11b Low Channel****Power Spectral Density, 802.11b Middle Channel**

### Power Spectral Density, 802.11b High Channel



### Power Spectral Density, 802.11g Low Channel



Ref Lvl 10.5 dBm

Marker 1 [T1] -25.07 dBm

RBW 3 kHz RF Att 20 dBm

VBW 10 kHz

SWT 7 s Unit dBm

0.5 dB Offset

1MAX

1 [T1] -25.07 dBm 2.43761924 GHz

Center 2.437 GHz 2.472 MHz Span 24.72 MHz

Date: 15.APR.2014 17:41:55

Marker 1 [T1] -25.49 dBm  
 Ref Lvl 10.5 dBm 2.46261999 GHz  
 RBW 3 kHz RF Att 20 dB  
 VBW 10 kHz  
 SWT 7 s Unit dBm

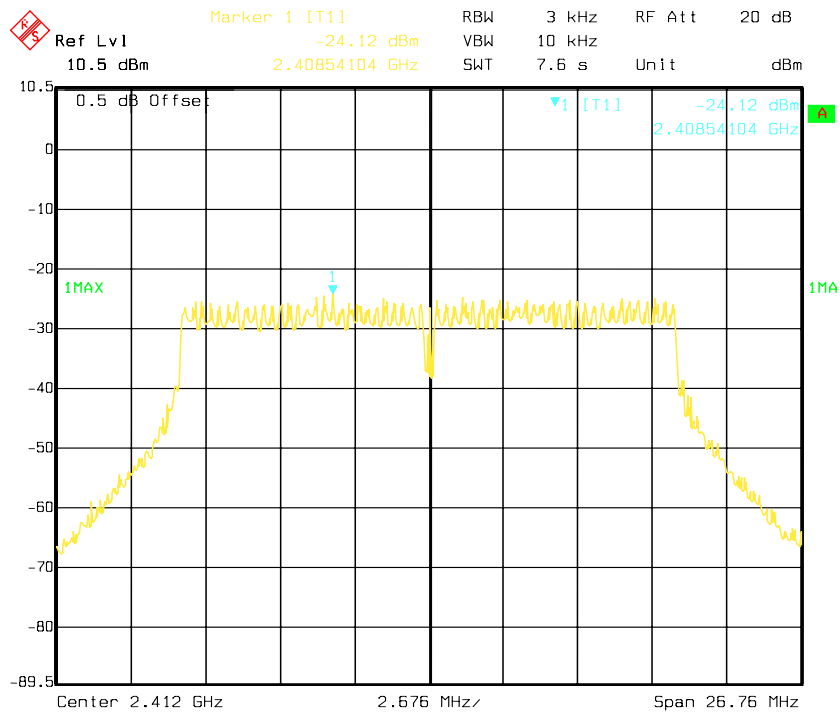
0.5 dB Offset [T1] -25.49 dBm  
 2.46261999 GHz

1MAX

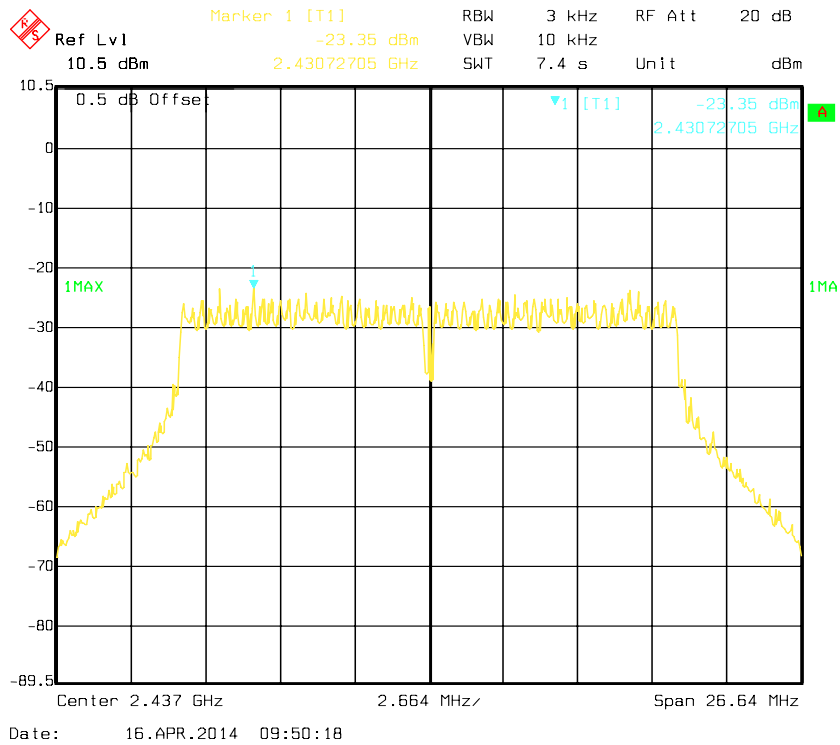
Center 2.462 GHz 2.475 MHz Span 24.75 MHz

Date: 15.APR.2014 17:46:12

### Power Spectral Density, 802.11n20 Low Channel

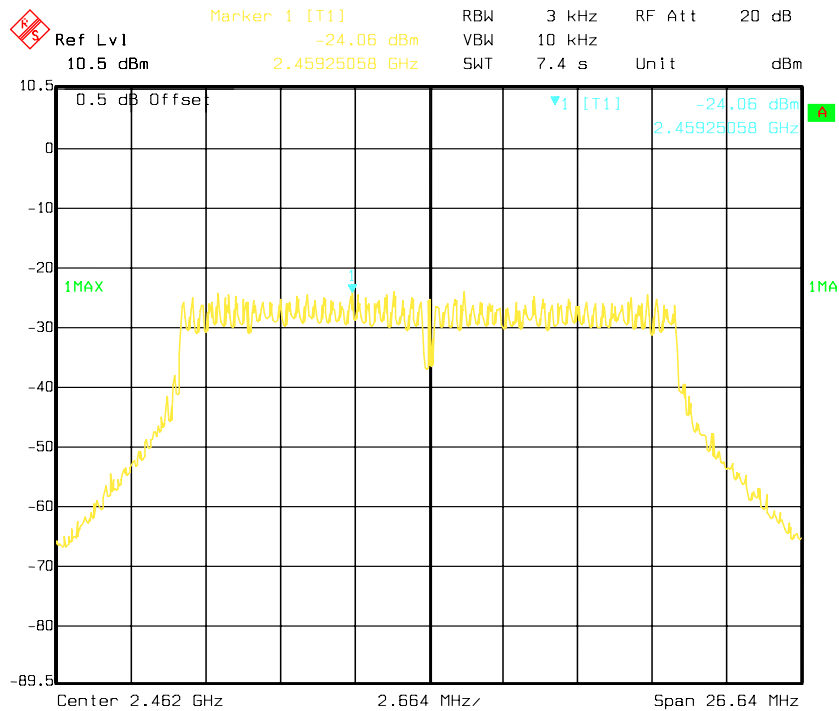


### Power Spectral Density, 802.11n20 Middle Channel

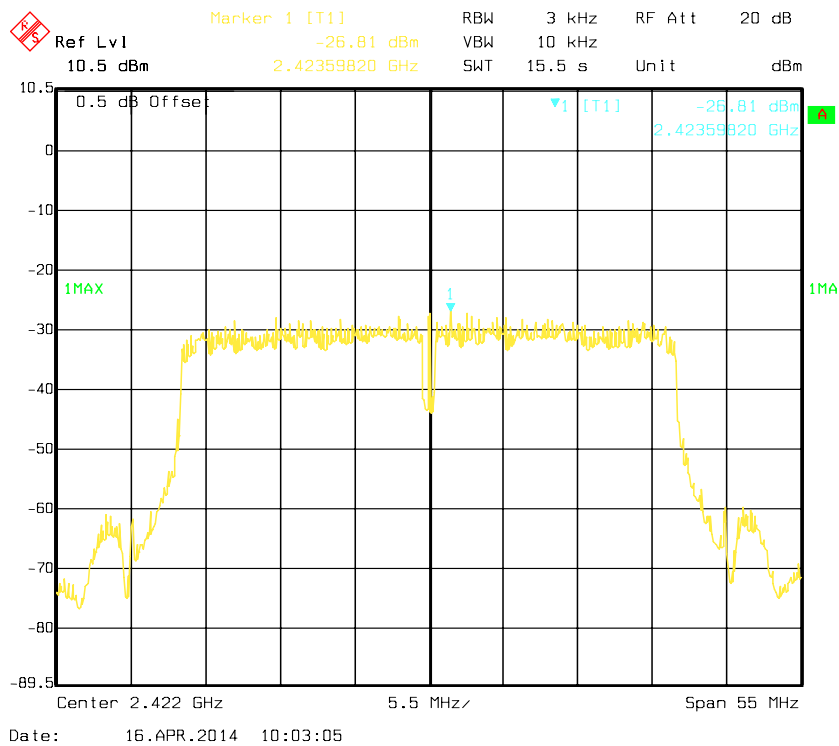




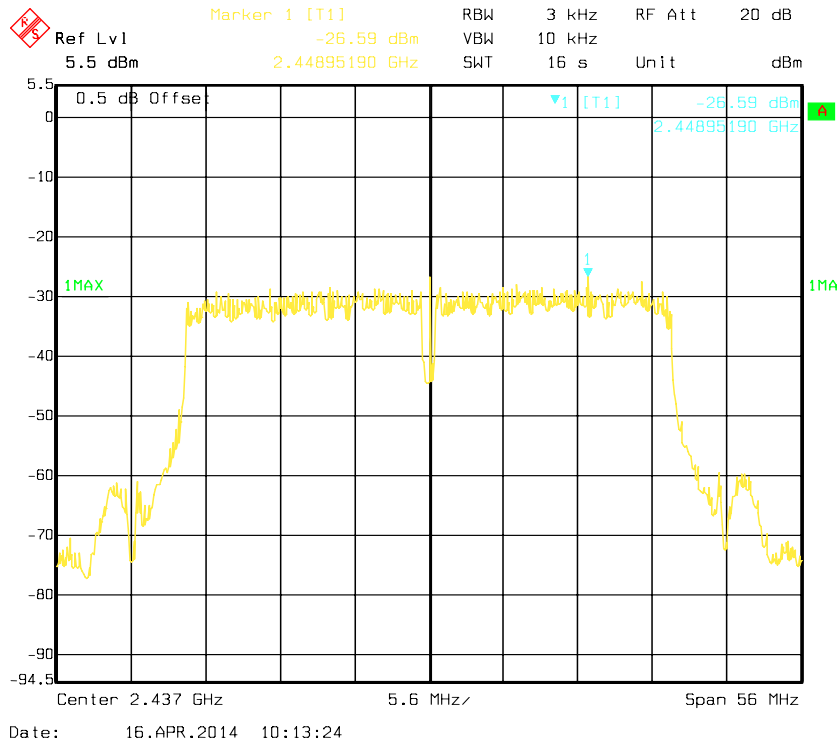
### Power Spectral Density, 802.11n20 High Channel



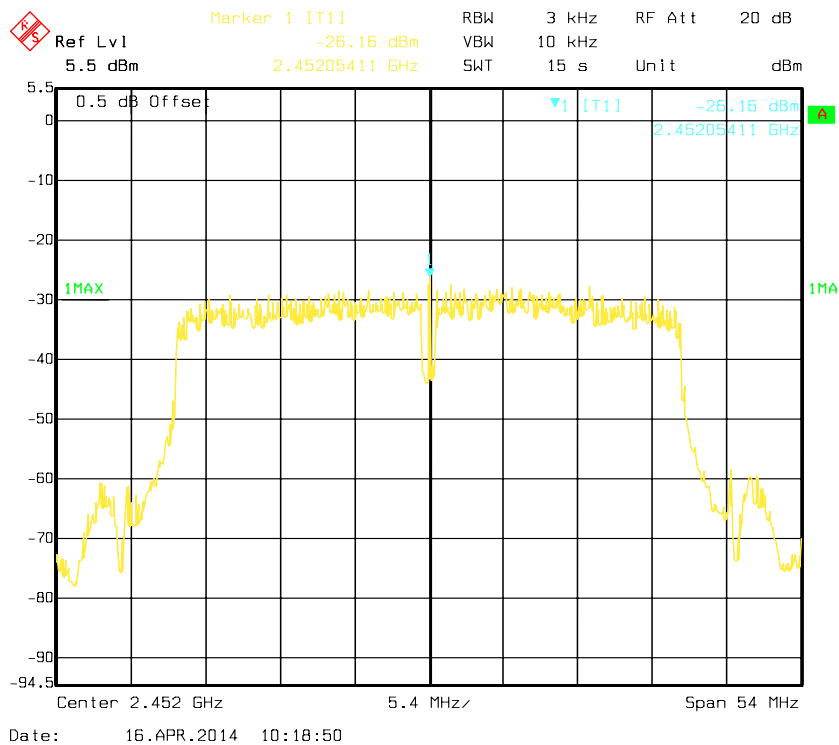
### Power Spectral Density, 802.11n40 Low Channel



### Power Spectral Density, 802.11n40 Middle Channel



### Power Spectral Density, 802.11n40 High Channel



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