



FCC PART 15.247

TEST REPORT

For

Chengdu Xuguang Tech Co., Ltd.

Two Section of Park Road, Longquanyi, Chengdu, Sichuan, China

FCC ID: S5FSDWF-2D

Report Type: Original Report	Product Type: Wi-Fi Module
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TABLE OF CONTENTS

GENERAL INFORMATION.....	4
PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT)	4
OBJECTIVE	4
RELATED SUBMITTAL(S)/GRANT(S).....	4
TEST METHODOLOGY	4
TEST FACILITY	5
SYSTEM TEST CONFIGURATION.....	6
DESCRIPTION OF TEST CONFIGURATION	6
EUT EXERCISE SOFTWARE	7
EQUIPMENT MODIFICATIONS	7
SUPPORT EQUIPMENT LIST AND DETAILS	8
EXTERNAL I/O CABLE.....	8
BLOCK DIAGRAM OF TEST SETUP	9
SUMMARY OF TEST RESULTS	11
FCC §15.247 (i) & §2.1091- MAXIMUM PERMISSIBLE EXPOSURE (MPE).....	12
APPLICABLE STANDARD	12
FCC §15.203 - ANTENNA REQUIREMENT.....	13
APPLICABLE STANDARD	13
ANTENNA CONNECTOR CONSTRUCTION	13
FCC §15.207 (a) – AC LINE CONDUCTED EMISSIONS	14
APPLICABLE STANDARD	14
MEASUREMENT UNCERTAINTY.....	14
EUT SETUP.....	14
EMI TEST RECEIVER SETUP.....	15
TEST PROCEDURE	15
CORRECTED AMPLITUDE & MARGIN CALCULATION	15
TEST EQUIPMENT LIST AND DETAILS.....	16
TEST RESULTS SUMMARY	16
TEST DATA	16
FCC §15.209, §15.205 & §15.247(d) - SPURIOUS EMISSIONS.....	19
APPLICABLE STANDARD	19
MEASUREMENT UNCERTAINTY.....	19
EUT SETUP	19
EMI TEST RECEIVER & SPECTRUM ANALYZER SETUP	20
TEST PROCEDURE	20
CORRECTED AMPLITUDE & MARGIN CALCULATION	21
TEST EQUIPMENT LIST AND DETAILS.....	21
TEST RESULTS SUMMARY	21
TEST DATA	22
FCC §15.247(a) (2) – 6 dB EMISSION BANDWIDTH.....	36
APPLICABLE STANDARD	36
TEST PROCEDURE	36
TEST EQUIPMENT LIST AND DETAILS.....	36
TEST DATA	37
FCC §15.247(b) (3) - MAXIMUM PEAK OUTPUT POWER	47
APPLICABLE STANDARD	47
TEST PROCEDURE	47

TEST EQUIPMENT LIST AND DETAILS.....	47
TEST DATA	48
FCC §15.247(d) – 100 kHz BANDWIDTH OF FREQUENCY BAND EDGE.....	67
APPLICABLE STANDARD	67
TEST PROCEDURE	67
TEST EQUIPMENT LIST AND DETAILS.....	67
TEST DATA	68
FCC §15.247(e) - POWER SPECTRAL DENSITY	75
APPLICABLE STANDARD	75
TEST PROCEDURE	75
TEST EQUIPMENT LIST AND DETAILS.....	75
TEST DATA	76

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *Chengdu Xuguang Tech Co., Ltd.*'s product, model number: *SDWF-2D/HR (FCC ID: S5FSDWF-2D)* (the "EUT") in this report was a *WIFI Module*, which was measured approximately: 13 mm (L) x 12 mm (W) x 2.0 mm (H), rated input voltage: DC 5 V.

**All measurement and test data in this report was gathered from final production sample, serial number: SJ131226 (provided by Applicant). It may have deviation from any other sample. The EUT supplied by the applicant was received on 2013-12-30, and EUT complied with test requirement.*

Objective

This report is prepared on behalf of *Chengdu Xuguang Tech Co., Ltd.* accordance with Part 2-Subpart J, Part 15-Subparts A, B and C of the Federal Communication Commissions rules.

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

Related Submittal(s)/Grant(s)

No Related Submittals.

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

The uncertainty of any RF tests which use conducted method measurement is ± 3.17 dB, the uncertainty of any radiation on emissions measurement is:

30M~200MHz: ± 4.7 dB;
200M~1GHz: ± 6.0 dB;
1G-6GHz: ± 5.13 dB;
6G~25GHz: ± 5.47 dB;

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

Test Facility

The test site used by BACL to collect test data is located in the 5040, HuiLongWan Plaza, No. 1, ShaWan Road, JinNiu District, ChengDu, China

Test site at BACL 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 July 31, 2009. 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.: 560332. 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 test in testing mode, which was provided by manufacturer. 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, PSD across all data rates bandwidths and modulations.

For 802.11b and 802.11g, antenna A & B can not transmit simultaneously, the EUT only transmit with Antenna A or Antenna B, therefore investigated worst case to representative Antenna A in test report.

EUT Exercise Software

The software “00002282-MP_Kit_RTL11n_8192EU_USB_v20.4_20130924” was used for testing, which was provided by manufacturer.

Test Mode	Test Software Version	00002282-MP_Kit_RTL11n_8192EU_USB_v20.4_20130924		
802.11b	Test Frequency	2412MHz	2437MHz	2462MHz
	Data Rate	CCK 1M	CCK 1M	CCK 1M
	Power Level Setting	36	37	37
802.11g	Test Frequency	2412MHz	2437MHz	2462MHz
	Data Rate	OFDM 6M	OFDM 6M	OFDM 6M
	Power Level Setting	38	39	39
802.11n HT20	Test Frequency	2412MHz	2437MHz	2462MHz
	Data Rate	MCS0	MCS0	MCS0
	Power Level Setting Antenna A	32	33	33
	Power Level Setting Antenna B	32	33	33
802.11n HT40	Test Frequency	2422MHz	2437MHz	2452MHz
	Data Rate	MCS0	MCS0	MCS0
	Power Level Setting Antenna A	32	33	33
	Power Level Setting Antenna B	32	33	33

Equipment Modifications

No modification was made to the EUT tested.

Support Equipment List and Details

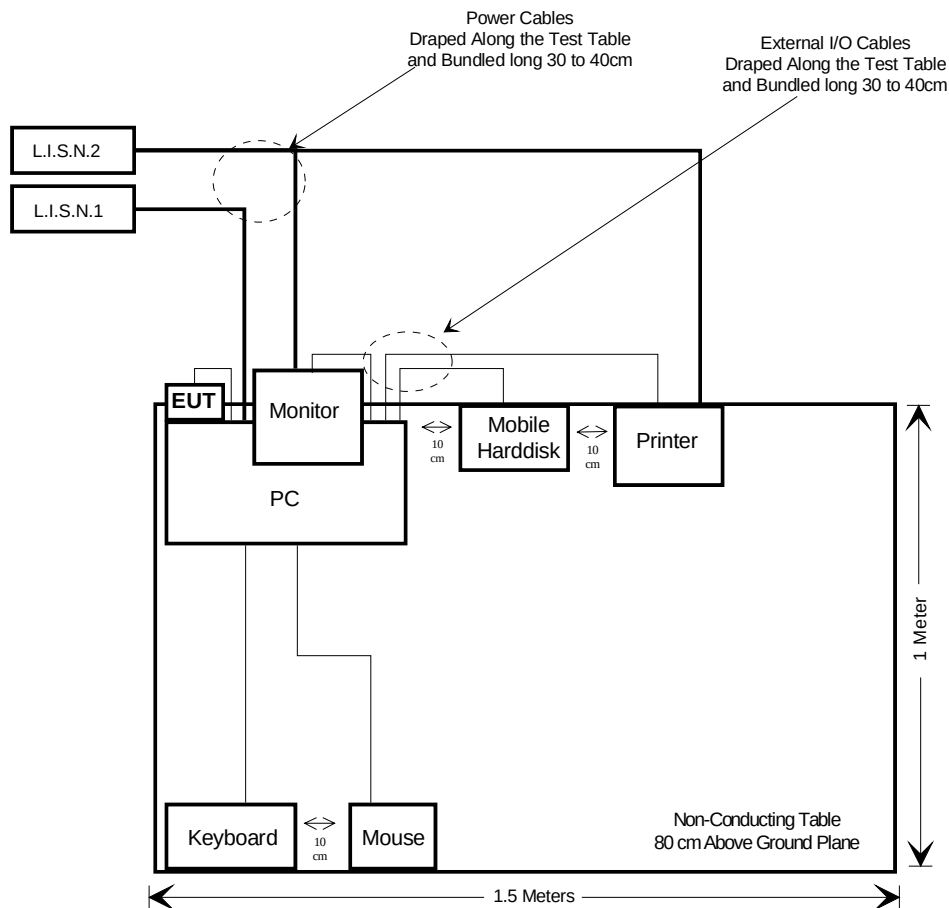
Manufacturer	Description	Model	Serial Number
IBM	PC	8176	99Y7315
DELL	Monitor	SK-8815	9161649
IBM	Keyboard	KM-110X	XBK133000993
Logitech	Mouse	M-U0004	810-001808
TOSHIBA	Mobile Hard Disk	V6700-A500	1297FH0YSRE8
EPSON	Printer	B261A	GXSK285854

External I/O Cable

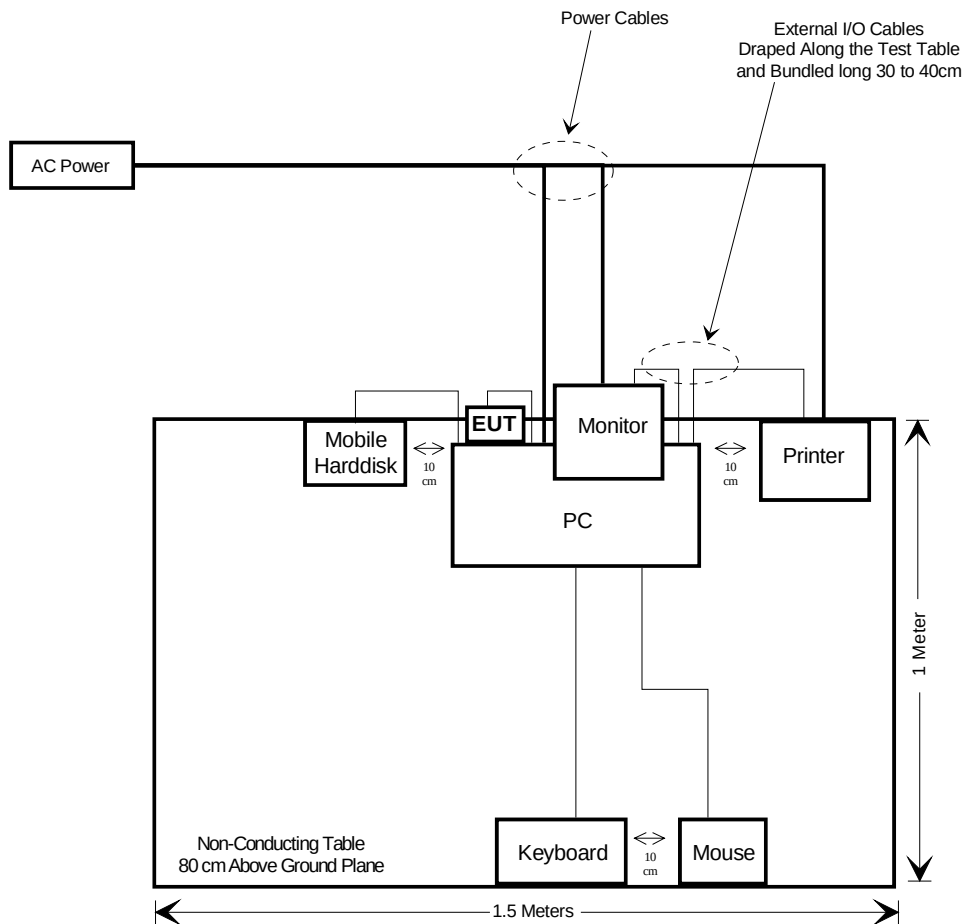
Cable Description	Length (m)	From	To
Shielding VGA Cable	1.5m	PC	Monitor
Shielding USB Cable	0.1m	PC	EUT
Shielding RS232 Cable	1.5m	PC	Printer
Shielding Mouse Cable	1.5m	PC	Mouse
Shielding Keyboard Cable	1.5m	PC	Keyboard
Shielding USB Cable	0.5m	PC	Mobile Hard Disk

Block Diagram of Test Setup

For AC Line Conducted Emissions:



For Spurious Emissions:



SUMMARY OF TEST RESULTS

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

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

Applicable Standard

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

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

(B) Limits for General Population/Uncontrolled Exposure				
Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Averaging Time (minutes)
0.3–1.34	614	1.63	*(100)	30
1.34–30	824/f	2.19/f	*(180/f ²)	30
30–300	27.5	0.073	0.2	30
300–1500	-	-	f/1500	30
1500–100,000	-	-	1.0	30

f = frequency in MHz; * = Plane-wave equivalent power density;

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

Calculated Formulary:

Predication of MPE limit at a given distance

$$S = PG/4\pi R^2$$

Where:

S = power density (in appropriate units, e.g. mW/cm²);

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

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

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

Mode	Frequency (MHz)	Antenna Gain		Conducted Power		Evaluation Distance (cm)	Power Density (mW/cm ²)	MPE Limit (mW/cm ²)
		(dBi)	(numeric)	(dBm)	(mW)			
802.11b	2412	2	1.58	16.25	42.17	20	0.013	1.0
802.11g	2437	2	1.58	14.22	26.42	20	0.008	1.0
802.11n20	2462	2	1.58	13.13	20.56	20	0.006	1.0
802.11n40	2437	2	1.58	12.27	16.87	20	0.005	1.0

Result: The device meet FCC MPE at 20 cm distance.

FCC §15.203 - ANTENNA REQUIREMENT

Applicable Standard

According to FCC §15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the user of a standard antenna jack or electrical connector is prohibited. The structure and application of the EUT were analyzed to determine compliance with section §15.203 of the rules. §15.203 state that the subject device must meet the following criteria:

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

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

Antenna Connector Construction

The Model: SDWF-2D/HR has two PIFA antennas, which was fixed on the PCB, and the maximum gain is 2.0 dBi, 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:

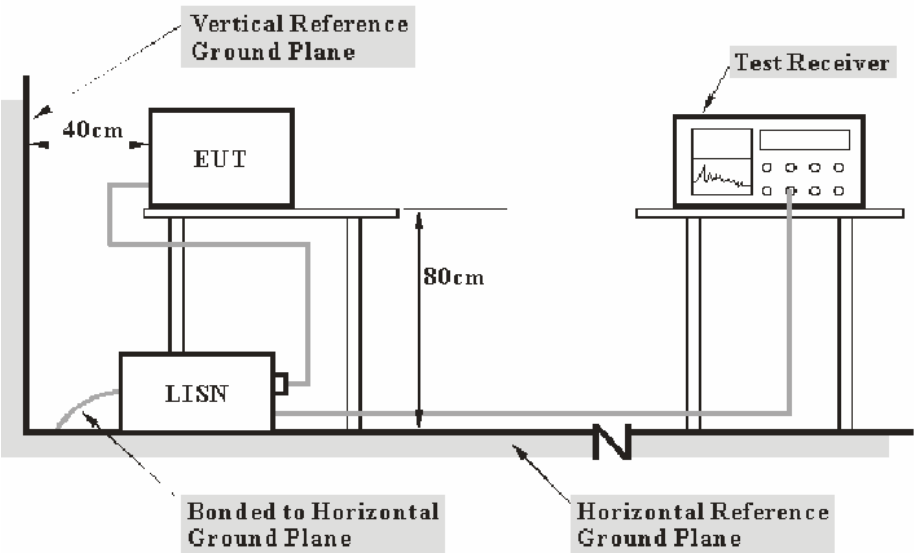
- compliance is deemed to occur if no measured disturbance level, increased by $(U_{lab} - U_{cispr})$, exceeds the disturbance limit;
- non - compliance is deemed to occur if any measured disturbance level, increased by $(U_{lab} - U_{cispr})$, exceeds the disturbance limit.

Based on CISPR 16-4-2: 2011, measurement uncertainty of conducted disturbance at mains port using AMN at Bay Area Compliance Laboratories Corp. (Chengdu) is 3.17 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 30 cm from other units and other metal planes support units.

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

The power cables and 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 EUT was connected to the PC, then PC was connected to a 120 V AC/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:

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

Test Procedure

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

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All data was recorded in the Quasi-peak and average detection mode.

Corrected Amplitude & Margin Calculation

The basic equation is as follows:

$$V_C = V_R + A_C + VDF$$

Herein,

V_C : corrected voltage amplitude

V_R : reading voltage amplitude

A_C : attenuation caused by cable loss

VDF: voltage division factor of AMN or ISN

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

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

Test Equipment List and Details

Description	Manufacturer	Model Number	Serial Number	Calibration Date	Calibration Due Date
EMI Test Receiver	Rohde & Schwarz	ESCI	100028	2013-08-22	2014-08-21
L.I.S.N.	Rohde & Schwarz	ENV216	3560.6550.06	2013-07-31	2014-07-30
L.I.S.N.	Rohde & Schwarz	ENV216	3560.6550.12	2013-02-08	2014-02-07

*** Statement of Traceability:** BACL (Chengdu) 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:

10.23 dB at 1.258 MHz in the **Neutral** conducted mode.

Test Data**Environmental Conditions**

Temperature:	15 °C
Relative Humidity:	60 %
ATM Pressure:	101.5 kPa

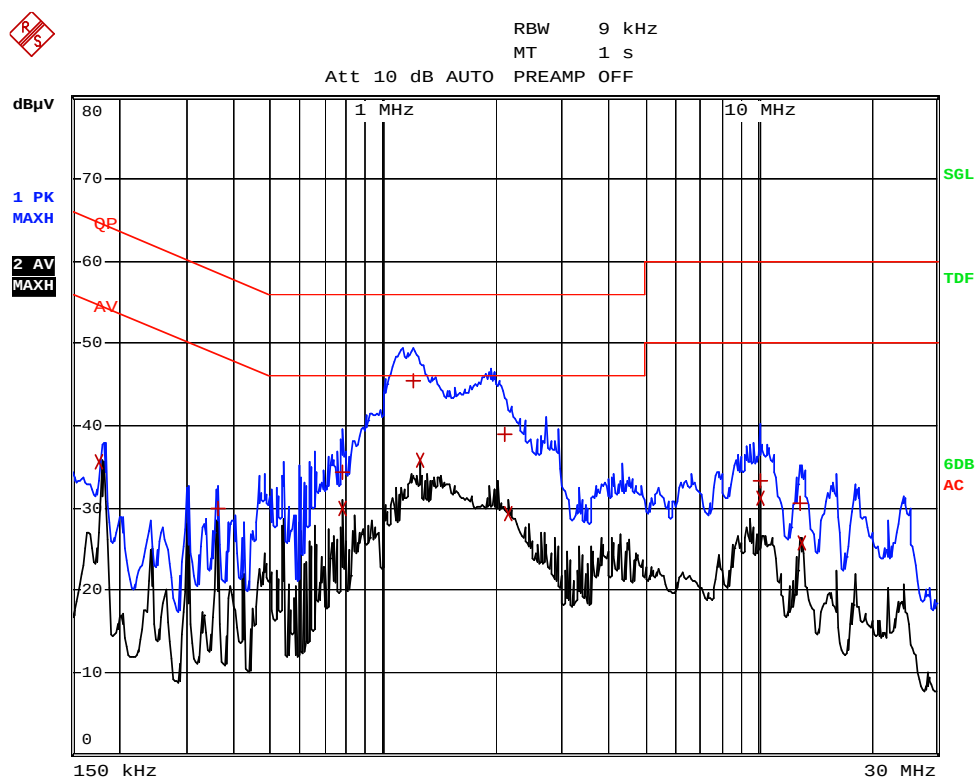
The testing was performed by Toby Ren on 2014-01-06.

AC 120V/60 Hz, Line



AC Line Conducted Emissions				FCC PART 15.207	
Frequency MHz	Corrected Amplitude (dBµV/m)	Detector (QP/AV)	Phase (Line/Neutral)	Limit dBµV	Margin dB
0.358	28.73	QP	Line	58.77	30.04
0.870	35.50	QP	Line	56.00	20.50
1.122	45.47	QP	Line	56.00	10.53
2.174	37.70	QP	Line	56.00	18.30
10.166	35.21	QP	Line	60.00	24.79
12.934	30.20	QP	Line	60.00	29.80
0.362	25.65	AV	Line	48.68	23.03
0.658	27.38	AV	Line	46.00	18.62
1.258	34.81	AV	Line	46.00	11.19
4.318	30.65	AV	Line	46.00	15.35
10.166	27.71	AV	Line	50.00	22.29
13.174	25.75	AV	Line	50.00	24.25

AC 120V/60 Hz, Neutral



AC Line Conducted Emissions				FCC PART 15.207	
Frequency MHz	Corrected Amplitude (dBμV/m)	Detector (QP/AV)	Phase (Line/Neutral)	Limit dBμV	Margin dB
0.362	29.83	QP	Neutral	58.68	28.85
0.778	34.36	QP	Neutral	56.00	21.64
1.202	45.48	QP	Neutral	56.00	10.52
2.122	38.84	QP	Neutral	56.00	17.16
10.170	33.21	QP	Neutral	60.00	26.79
12.942	30.45	QP	Neutral	60.00	29.55
0.178	35.64	AV	Neutral	54.58	18.94
0.778	29.89	AV	Neutral	46.00	16.11
1.258	35.77	AV	Neutral	46.00	10.23
2.154	29.28	AV	Neutral	46.00	16.72
10.166	31.16	AV	Neutral	50.00	18.84
13.170	25.63	AV	Neutral	50.00	24.37

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. (Chengdu) is:

30M~200MHz: ± 4.7 dB ;

200M~1GHz: ± 6.0 dB ;

1G-6GHz: ± 5.13 dB;

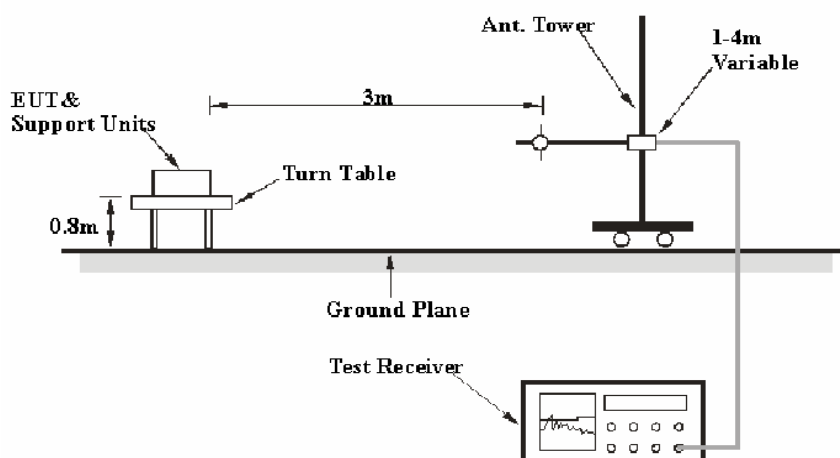
6G~25GHz: ± 5.47 dB;

Table 2 – Values of U_{cispr}

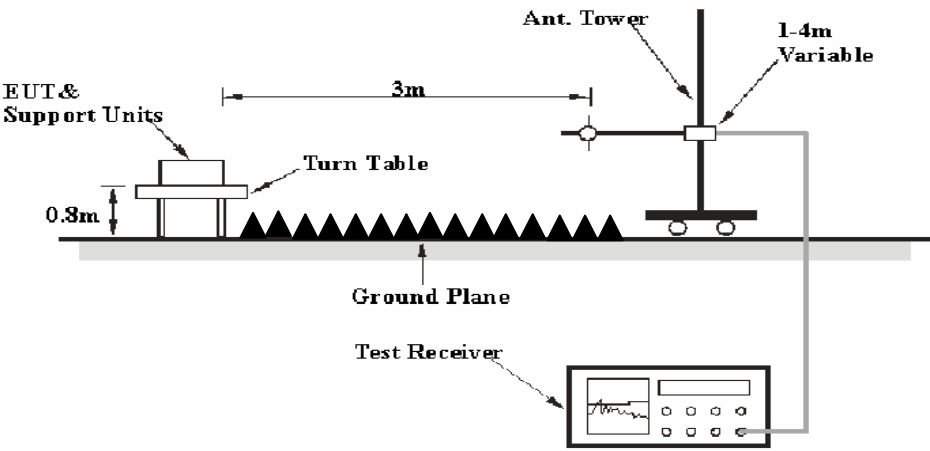
Measurement	U_{cispr}
Radiated disturbance (electric field strength at an OATS or in a SAC) (30 MHz to 1000 MHz)	6.3 dB
Radiated disturbance (electric field strength in a FAR) (1 GHz to 6 GHz)	5.2 dB
Radiated disturbance (electric field strength in a FAR) (6 GHz to 18 GHz)	5.5 dB

EUT Setup

Below 1 GHz:



Above 1 GHz:



The radiated emission tests were performed in the 3 meters Semi-Anechoic Chamber, using the setup in 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 EUT was connected to the PC, then PC 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:

<i>Frequency Range</i>	<i>RBW</i>	<i>Video B/W</i>	<i>Detector</i>
30 MHz – 1000 MHz	120 kHz	300 kHz	QP
1000 MHz – 25 GHz	1 MHz	3 MHz	PK
1000 MHz – 25 GHz	1 MHz	10 Hz	Ave.

Test Procedure

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

Data was recorded in Quasi-peak detection mode for frequency range of 30 MHz-1 GHz, peak and Average detection modes for frequencies above 1 GHz.

Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

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

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

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

Test Equipment List and Details

Description	Manufacturer	Model Number	Serial Number	Calibration Date	Calibration Due Date
Amplifier	Agilent	8447D	2944A10442	2013-07-23	2014-07-22
EMI Test Receiver	Rohde & Schwarz	ESCI	100028	2013-08-22	2014-08-21
Broadband Antenna	Sunol Sciences	JB3	A101808	2013-04-10	2014-04-09
Spectrum Analyzer	Rohde & Schwarz	FSL18	100180	2013-07-31	2014-07-30
Spectrum Analyzer	Rohde & Schwarz	FSEM30	100018	2013-07-31	2014-07-30
Horn Antenna	EM TEST	3115	003-6076	2013-04-09	2014-04-08
Amplifier	HP	8449B	3008A00277	2013-07-31	2014-07-30
Semi-Anechoic Chamber	EMCT	966	N/A	2013-03-13	2016-03-12

*** Statement of Traceability:** BACL (Chengdu) 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:

0.88 dB at 2390 MHz in the **Vertical** polarization for 802.11n HT40 mode

Test Data**Environmental Conditions**

Temperature:	16 °C
Relative Humidity:	59 %
ATM Pressure:	101.9 kPa

The testing was performed by Toby Ren on 2014-01-07.

Temperature:	16 °C
Relative Humidity:	58 %
ATM Pressure:	102.5 kPa

The testing was performed by Toby Ren on 2014-01-09.

Test Mode: Transmitting

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)				Limit (dBμV/m)	Margin (dB)
802.11b mode, Low Channel: 2412 MHz									
2412	69.26	PK	H	23.14	5.75	0.00	98.15	N/A	N/A
2412	65.42	AV	H	23.14	5.75	0.00	94.31	N/A	N/A
2412	72.14	PK	V	23.14	5.75	0.00	101.03	N/A	N/A
2412	66.85	AV	V	23.14	5.75	0.00	95.74	N/A	N/A
2390	34.42	PK	V	23.08	5.68	0.00	63.18	74.00	10.82
2390	24.2	AV	V	23.08	5.68	0.00	52.96	54.00	*1.04
4824	42.65	PK	V	30.76	7.86	26.81	54.46	74.00	19.54
4824	35.25	AV	V	30.76	7.86	26.81	47.06	54.00	6.94
7236	30.25	PK	V	34.35	10.52	26.62	48.50	74.00	25.50
7236	16.36	AV	V	34.35	10.52	26.62	34.61	54.00	19.39
9648	31.14	PK	V	37.08	12.95	26.35	54.82	74.00	19.18
9648	16.25	AV	V	37.08	12.95	26.35	39.93	54.00	14.07
1469.35	38.26	PK	V	23.52	4.48	25.84	40.42	74.00	33.58
1469.35	22.68	AV	V	23.52	4.48	25.84	24.84	54.00	29.16
500.02	52.36	QP	V	18.10	1.26	28.88	42.84	46.00	*3.16
802.11b mode, Middle Channel: 2437 MHz									
2437	68.52	PK	H	23.18	5.79	0.00	97.49	N/A	N/A
2437	64.26	AV	H	23.18	5.79	0.00	93.23	N/A	N/A
2437	71.28	PK	V	23.18	5.79	0.00	100.25	N/A	N/A
2437	65.26	AV	V	23.18	5.79	0.00	94.23	N/A	N/A
4874	43.14	PK	V	30.77	7.90	26.78	55.03	74.00	18.97
4874	37.06	AV	V	30.77	7.90	26.78	48.95	54.00	5.05
7311	30.6	PK	V	34.35	10.57	26.56	48.96	74.00	25.04
7311	15.98	AV	V	34.35	10.57	26.56	34.34	54.00	19.66
9748	26.45	PK	V	36.30	12.98	26.32	49.41	74.00	24.59
9748	14.57	AV	V	36.30	12.98	26.32	37.53	54.00	16.47
6633.52	30.26	PK	V	33.91	10.32	26.81	47.68	74.00	26.32
6633.52	18.56	AV	V	33.91	10.32	26.81	35.98	54.00	18.02
1469.29	37.85	PK	V	23.52	4.48	25.84	40.01	74.00	33.99
1469.29	21.86	AV	V	23.52	4.48	25.84	24.02	54.00	29.98
500.04	52.16	QP	V	18.10	1.26	28.88	42.64	46.00	*3.36
802.11b mode, High Channel: 2462 MHz									
2462	67.14	PK	H	23.29	5.82	0.00	96.25	N/A	N/A
2462	63.85	AV	H	23.29	5.82	0.00	92.96	N/A	N/A
2462	71.06	PK	V	23.29	5.82	0.00	100.17	N/A	N/A
2462	64.93	AV	V	23.29	5.82	0.00	94.04	N/A	N/A
2483.5	24.85	PK	V	25.86	5.83	0.00	56.54	74.00	17.46
2483.5	15.05	AV	V	25.86	5.83	0.00	46.74	54.00	7.26
4924	40.25	PK	V	30.90	7.92	26.71	52.36	74.00	21.64
4924	32.25	AV	V	30.90	7.92	26.71	44.36	54.00	9.64
7386	30.26	PK	V	34.53	10.59	26.53	48.85	74.00	25.15
7386	17.15	AV	V	34.53	10.59	26.53	35.74	54.00	18.26
9848	29.85	PK	V	36.54	13.14	26.30	53.23	74.00	20.77
9848	16.85	AV	V	36.54	13.14	26.30	40.23	54.00	13.77
1469.28	39.54	PK	V	23.52	4.48	25.84	41.70	74.00	32.30
1469.28	23.06	AV	V	23.52	4.48	25.84	25.22	54.00	28.78
500.01	52.35	QP	V	18.10	1.26	28.88	42.83	46.00	*3.17

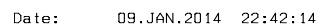
Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	FCC 15.247	
	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)				Limit (dBμV/m)	Margin (dB)
802.11g mode, Low Channel: 2412 MHz									
2412	64.85	PK	H	23.14	5.75	0.00	93.74	N/A	N/A
2412	55.06	AV	H	23.14	5.75	0.00	83.95	N/A	N/A
2412	70.15	PK	V	23.14	5.75	0.00	99.04	N/A	N/A
2412	59.28	AV	V	23.14	5.75	0.00	88.17	N/A	N/A
2390	42.64	PK	V	23.08	5.68	0.00	71.40	74.00	*2.60
2390	22.51	AV	V	23.08	5.68	0.00	51.27	54.00	*2.73
4824	38.58	PK	V	30.76	7.86	26.81	50.39	74.00	23.61
4824	30.26	AV	V	30.76	7.86	26.81	42.07	54.00	11.93
7236	29.86	PK	V	34.35	10.52	26.62	48.11	74.00	25.89
7236	14.85	AV	V	34.35	10.52	26.62	33.10	54.00	20.90
9648	28.59	PK	V	37.08	12.95	26.35	52.27	74.00	21.73
9648	14.26	AV	V	37.08	12.95	26.35	37.94	54.00	16.06
1470.06	39.05	PK	V	23.52	4.48	25.84	41.21	74.00	32.79
1470.06	23.08	AV	V	23.52	4.48	25.84	25.24	54.00	28.76
500.02	52.3	QP	V	18.10	1.26	28.88	42.78	46.00	*3.22
802.11g mode, Middle Channel: 2437 MHz									
2437	64.58	PK	H	23.18	5.79	0.00	93.55	N/A	N/A
2437	55.26	AV	H	23.18	5.79	0.00	84.23	N/A	N/A
2437	69.85	PK	V	23.18	5.79	0.00	98.82	N/A	N/A
2437	58.96	AV	V	23.18	5.79	0.00	87.93	N/A	N/A
4874	39.14	PK	V	30.77	7.90	26.78	51.03	74.00	22.97
4874	28.26	AV	V	30.77	7.90	26.78	40.15	54.00	13.85
7311	30.26	PK	V	34.35	10.57	26.56	48.62	74.00	25.38
7311	15.28	AV	V	34.35	10.57	26.56	33.64	54.00	20.36
9748	27.14	PK	V	36.30	12.98	26.32	50.10	74.00	23.90
9748	15.14	AV	V	36.30	12.98	26.32	38.10	54.00	15.90
6633.59	31.26	PK	V	33.91	10.32	26.81	48.68	74.00	25.32
6633.59	19.25	AV	V	33.91	10.32	26.81	36.67	54.00	17.33
1469.52	38.54	PK	V	23.52	4.48	25.84	40.70	74.00	33.30
1469.52	21.74	AV	V	23.52	4.48	25.84	23.90	54.00	30.10
500.02	51.98	QP	V	18.10	1.26	28.88	42.46	46.00	*3.54
802.11g mode, High Channel: 2462 MHz									
2462	64.19	PK	H	23.29	5.82	0.00	93.30	N/A	N/A
2462	55.09	AV	H	23.29	5.82	0.00	84.20	N/A	N/A
2462	69.85	PK	V	23.29	5.82	0.00	98.96	N/A	N/A
2462	89.48	AV	V	23.29	5.82	0.00	118.59	N/A	N/A
2483.5	25.26	PK	V	25.86	5.83	0.00	56.95	74.00	17.05
2483.5	16.85	AV	V	25.86	5.83	0.00	48.54	54.00	5.46
4924	38.26	PK	V	30.90	7.92	26.71	50.37	74.00	23.63
4924	28.02	AV	V	30.90	7.92	26.71	40.13	54.00	13.87
7386	30.08	PK	V	34.53	10.59	26.53	48.67	74.00	25.33
7386	17.04	AV	V	34.53	10.59	26.53	35.63	54.00	18.37
9848	28.14	PK	V	36.54	13.14	26.30	51.52	74.00	22.48
9848	17.02	AV	V	36.54	13.14	26.30	40.40	54.00	13.60
1470.14	39.52	PK	V	23.52	4.48	25.84	41.68	74.00	32.32
1470.14	22.76	AV	V	23.52	4.48	25.84	24.92	54.00	29.08
500.02	52.03	QP	V	18.10	1.26	28.88	42.51	46.00	*3.49

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)				Limit (dBμV/m)	Margin (dB)
802.11n HT20 mode, Low Channel: 2412 MHz									
2412	64.09	PK	H	23.14	5.75	0.00	92.98	N/A	N/A
2412	54.26	AV	H	23.14	5.75	0.00	83.15	N/A	N/A
2412	70.62	PK	V	23.14	5.75	0.00	99.51	N/A	N/A
2412	59.84	AV	V	23.14	5.75	0.00	88.73	N/A	N/A
2390	40.26	PK	V	23.08	5.68	0.00	69.02	74.00	*4.98
2390	22.65	AV	V	23.08	5.68	0.00	51.41	54.00	*2.59
4824	40.25	PK	V	30.76	7.86	26.81	52.06	74.00	21.94
4824	28.14	AV	V	30.76	7.86	26.81	39.95	54.00	14.05
7236	30.26	PK	V	34.35	10.52	26.62	48.51	74.00	25.49
7236	15.18	AV	V	34.35	10.52	26.62	33.43	54.00	20.57
9648	29.58	PK	V	37.08	12.95	26.35	53.26	74.00	20.74
9648	15.26	AV	V	37.08	12.95	26.35	38.94	54.00	15.06
1469.47	39.05	PK	V	23.52	4.48	25.84	41.21	74.00	32.79
1469.47	23.52	AV	V	23.52	4.48	25.84	25.68	54.00	28.32
500.02	52.09	QP	V	18.10	1.26	28.88	42.57	46.00	*3.43
802.11n HT20mode, Middle Channel: 2437 MHz									
2437	65.05	PK	H	23.18	5.79	0.00	94.02	N/A	N/A
2437	54.18	AV	H	23.18	5.79	0.00	83.15	N/A	N/A
2437	70.05	PK	V	23.18	5.79	0.00	99.02	N/A	N/A
2437	59.41	AV	V	23.18	5.79	0.00	88.38	N/A	N/A
4874	39.52	PK	V	30.77	7.90	26.78	51.41	74.00	22.59
4874	28.15	AV	V	30.77	7.90	26.78	40.04	54.00	13.96
7311	31.69	PK	V	34.35	10.57	26.56	50.05	74.00	23.95
7311	16.58	AV	V	34.35	10.57	26.56	34.94	54.00	19.06
9748	28.74	PK	V	36.30	12.98	26.32	51.70	74.00	22.30
9748	16.05	AV	V	36.30	12.98	26.32	39.01	54.00	14.99
6633.14	30.85	PK	V	33.91	10.32	26.81	48.27	74.00	25.73
6633.14	17.85	AV	V	33.91	10.32	26.81	35.27	54.00	18.73
1469.87	37.45	PK	V	23.52	4.48	25.84	39.61	74.00	34.39
1469.87	22.96	AV	V	23.52	4.48	25.84	25.12	54.00	28.88
500.02	52.41	QP	V	18.10	1.26	28.88	42.89	46.00	*3.11
802.11n HT20 mode, High Channel: 2462 MHz									
2462	64.85	PK	H	23.29	5.82	0.00	93.96	N/A	N/A
2462	54.26	AV	H	23.29	5.82	0.00	83.37	N/A	N/A
2462	70.12	PK	V	23.29	5.82	0.00	99.23	N/A	N/A
2462	59.85	AV	V	23.29	5.82	0.00	88.96	N/A	N/A
2483.5	24.05	PK	V	25.86	5.83	0.00	55.74	74.00	18.26
2483.5	15.68	AV	V	25.86	5.83	0.00	47.37	54.00	6.63
4924	40.14	PK	V	30.90	7.92	26.71	52.25	74.00	21.75
4924	29.25	AV	V	30.90	7.92	26.71	41.36	54.00	12.64
7386	29.85	PK	V	34.53	10.59	26.53	48.44	74.00	25.56
7386	15.25	AV	V	34.53	10.59	26.53	33.84	54.00	20.16
9848	29.85	PK	V	36.54	13.14	26.30	53.23	74.00	20.77
9848	17.06	AV	V	36.54	13.14	26.30	40.44	54.00	13.56
1469.58	38.09	PK	V	23.52	4.48	25.84	40.25	74.00	33.75
1469.58	22.85	AV	V	23.52	4.48	25.84	25.01	54.00	28.99
500.03	52.14	QP	V	18.10	1.26	28.88	42.62	46.00	*3.38

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)				Limit (dBμV/m)	Margin (dB)
802.11n HT40 mode, Low Channel: 2422 MHz									
2422	64.15	PK	H	23.16	5.77	0.00	93.08	N/A	N/A
2422	55.26	AV	H	23.16	5.77	0.00	84.19	N/A	N/A
2422	69.59	PK	V	23.16	5.77	0.00	98.52	N/A	N/A
2422	58.65	AV	V	23.16	5.77	0.00	87.58	N/A	N/A
2390	40.52	PK	V	23.08	5.68	0.00	69.28	74.00	*4.72
2390	24.36	AV	V	23.08	5.68	0.00	53.12	54.00	*0.88
4844	38.04	PK	V	30.82	7.91	26.76	50.01	74.00	23.99
4844	25.85	AV	V	30.82	7.91	26.71	37.87	54.00	16.13
7266	30.36	PK	V	34.38	10.56	26.61	48.69	74.00	25.31
7266	18.47	AV	V	34.38	10.56	26.61	36.80	54.00	17.20
9688	30.09	PK	V	37.15	12.98	26.32	53.90	74.00	20.10
9688	18.47	AV	V	37.18	12.98	26.32	42.31	54.00	11.69
1469.05	37.95	PK	V	23.52	4.48	25.84	40.11	74.00	33.89
1469.07	22.06	AV	V	23.52	4.48	25.84	24.22	54.00	29.78
500.02	52.14	QP	V	18.10	1.26	28.88	42.62	46.00	*3.38
802.11n HT40 mode, Middle Channel: 2437 MHz									
2437	63.54	PK	H	23.18	5.79	0.00	92.51	N/A	N/A
2437	54.87	AV	H	23.18	5.79	0.00	83.84	N/A	N/A
2437	69.54	PK	V	23.18	5.79	0.00	98.51	N/A	N/A
2437	57.85	AV	V	23.18	5.79	0.00	86.82	N/A	N/A
4874	37.25	PK	V	30.77	7.90	26.78	49.14	74.00	24.86
4874	27.85	AV	V	30.77	7.90	26.78	39.74	54.00	14.26
7311	28.58	PK	V	34.35	10.57	26.56	46.94	74.00	27.06
7311	16.25	AV	V	34.35	10.57	26.56	34.61	54.00	19.39
9748	30.25	PK	V	36.30	12.98	26.32	53.21	74.00	20.79
9748	19.52	AV	V	36.30	12.98	26.32	42.48	54.00	11.52
6633.47	31.05	PK	V	33.91	10.32	26.81	48.47	74.00	25.53
6633.47	18.52	AV	V	33.91	10.32	26.81	35.94	54.00	18.06
1470.96	37.58	PK	V	23.52	4.48	25.84	39.74	74.00	34.26
1470.96	22.68	AV	V	23.52	4.48	25.84	24.84	54.00	29.16
500.04	51.96	QP	V	18.10	1.26	28.88	42.44	46.00	*3.56
802.11n HT40 mode, High Channel: 2452 MHz									
2452	64.74	PK	H	23.27	5.79	0.00	93.80	N/A	N/A
2452	53.96	AV	H	23.27	5.79	0.00	83.02	N/A	N/A
2452	69.48	PK	V	23.27	5.79	0.00	98.54	N/A	N/A
2452	58.06	AV	V	23.27	5.79	0.00	87.12	N/A	N/A
2483.5	23.59	PK	V	25.86	5.83	0.00	55.28	74.00	18.72
2483.5	16.26	AV	V	25.86	5.83	0.00	47.95	54.00	6.05
4904	38.25	PK	V	30.85	7.89	26.67	50.32	74.00	23.68
4904	26.59	AV	V	30.85	7.89	26.67	38.66	54.00	15.34
7356	30.27	PK	V	34.45	10.56	26.45	48.83	74.00	25.17
7356	17.47	AV	V	34.45	10.56	26.45	36.03	54.00	17.97
9808	31.58	PK	V	36.44	13.07	25.98	55.11	74.00	18.89
9808	20.14	AV	V	36.44	13.07	25.98	43.67	54.00	10.33
1469.52	37.86	PK	V	23.52	4.48	25.84	40.02	74.00	33.98
1469.52	23.25	AV	V	23.52	4.48	25.84	25.41	54.00	28.59
500.03	52.41	QP	V	18.10	1.26	28.88	42.89	46.00	*3.11

*Within measurement uncertainty!

802.11b Low Channel for Antenna A



Ref Lvl 20 dBm

Marker 1 [T1] 7.58 dBm

2.43192385 GHz

RBW 100 kHz

RF Att 30 dB

VBW 300 kHz

Unit dBm

6.4 s

1.5 dB Offset

12.42 dBm

D1

1MAX

7.58 dBm

2.43192385 GHz

-29.34 dBm

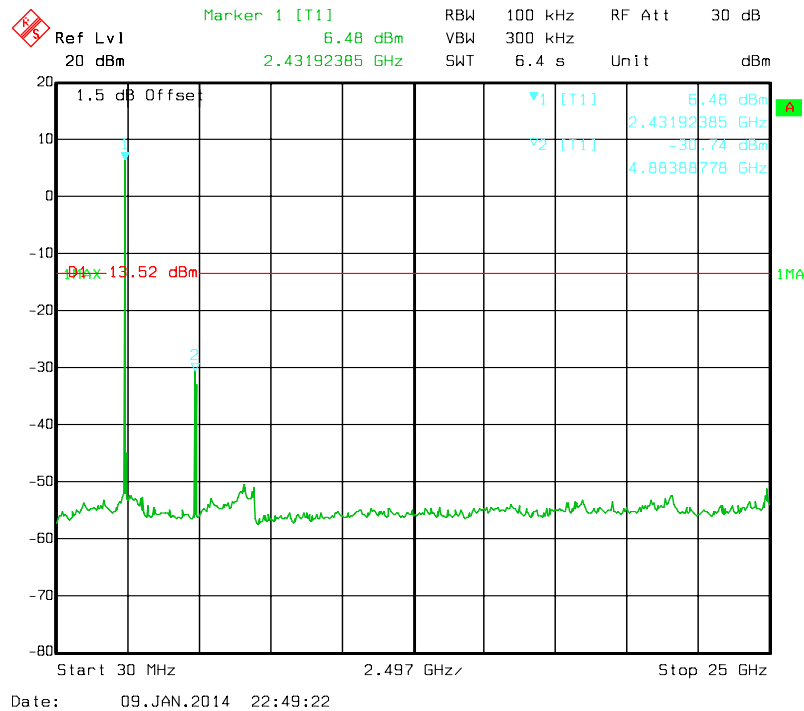
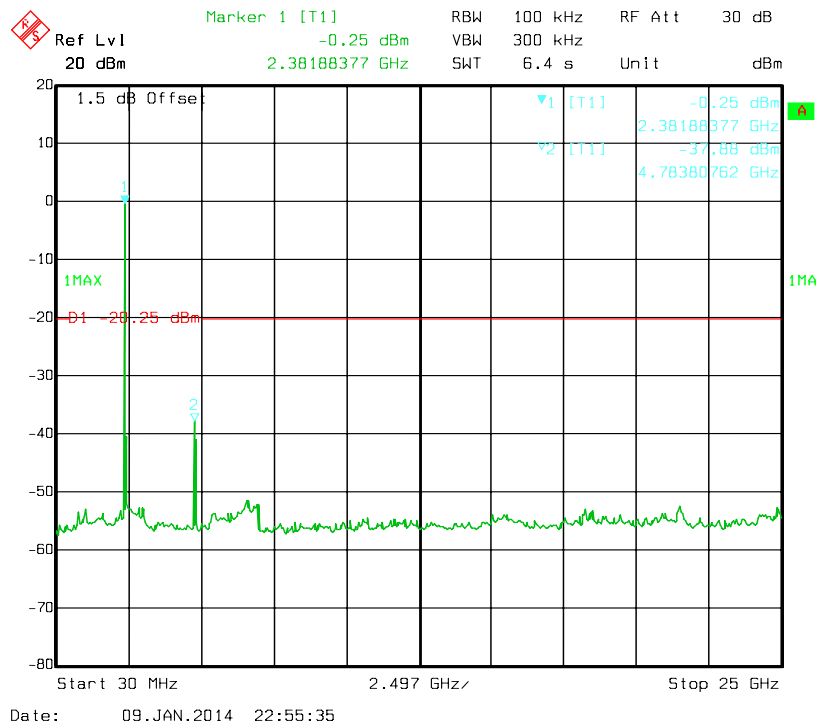
4.83384770 GHz

Start 30 MHz

2.497 GHz

Stop 25 GHz

Date: 09.JAN.2014 22:44:18

802.11b High Channel for Antenna A**802.11g Low Channel for Antenna A**

Ref Lvl 20 dBm

Marker 1 [T1] -0.27 dBm

RBW 100 kHz RF Att 30 dB

VBW 300 kHz

SWT 6.4 s Unit dBm

2.43192385 GHz

1.5 dB Offset

1MAX

-20 dBm

2.43192385 GHz

2.43192385 GHz

Start 30 MHz

2.497 GHz

Stop 25 GHz

Date: 09.JAN.2014 22:53:34

Ref Lvl 20 dBm

Marker 1 [T1] -0.47 dBm

2.43192385 GHz

RBW 100 kHz

VBW 300 kHz

SWT 6.4 s

Unit dBm

30 dB

1.5 dB Offset

1MAX

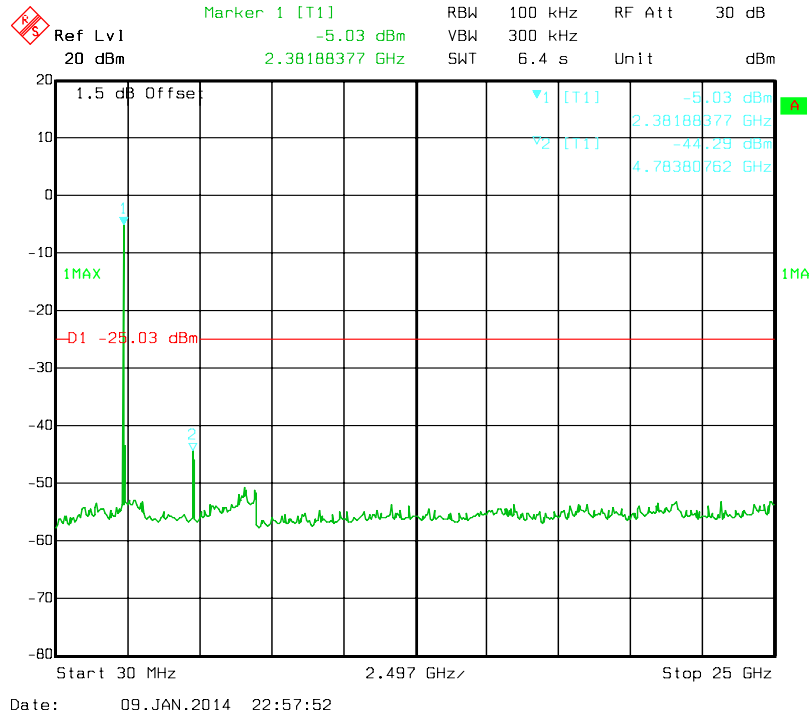
Start 30 MHz

2.497 GHz

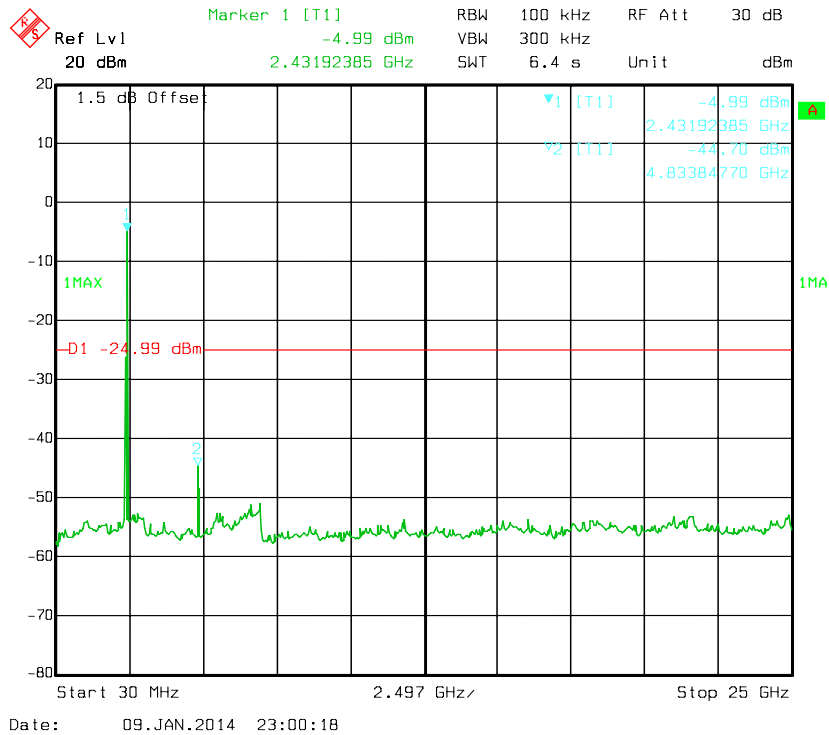
Stop 25 GHz

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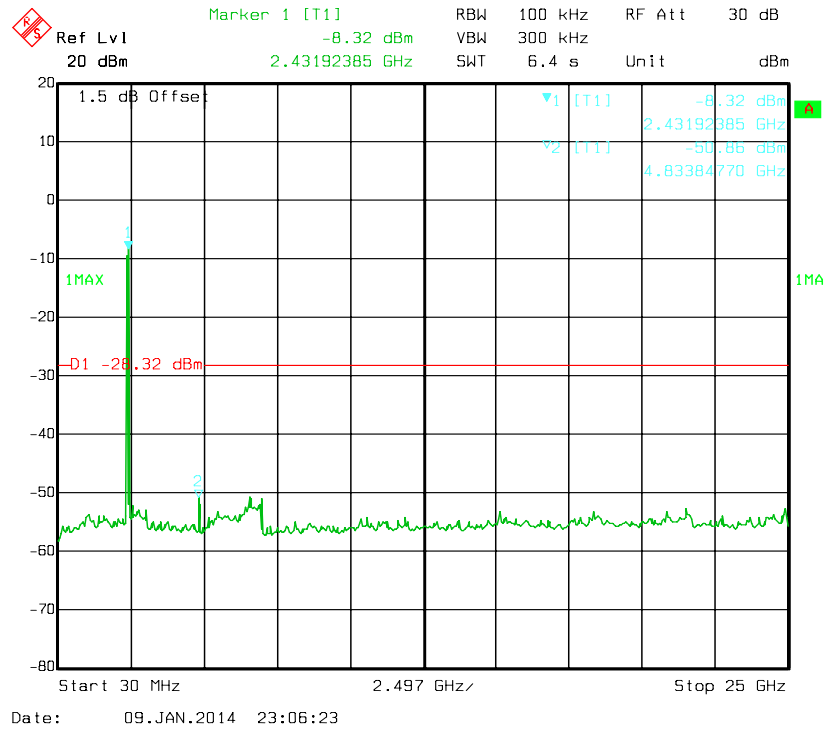
802.11n HT20 Low Channel for Antenna A



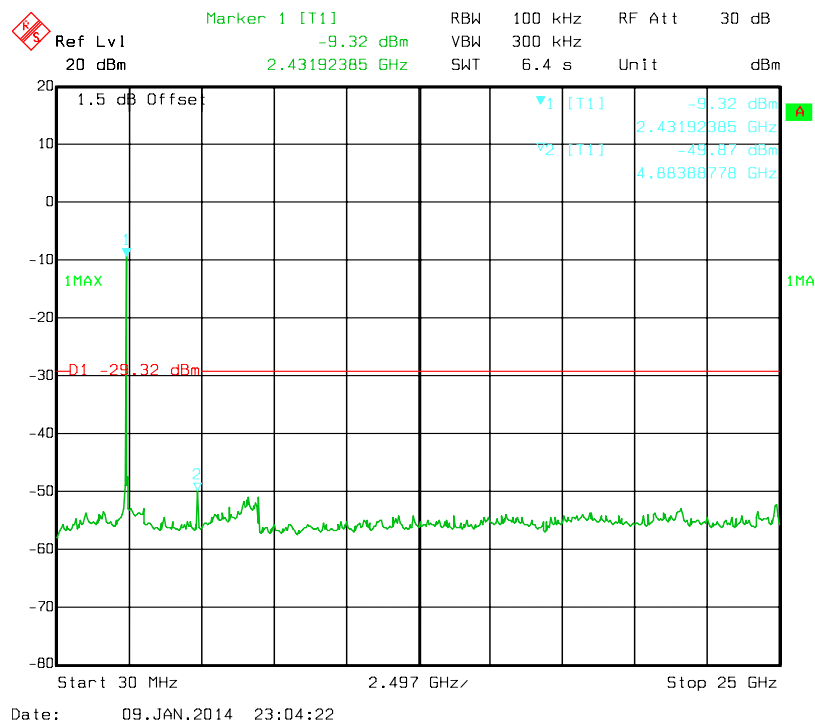
802.11n HT20 Middle Channel for Antenna A



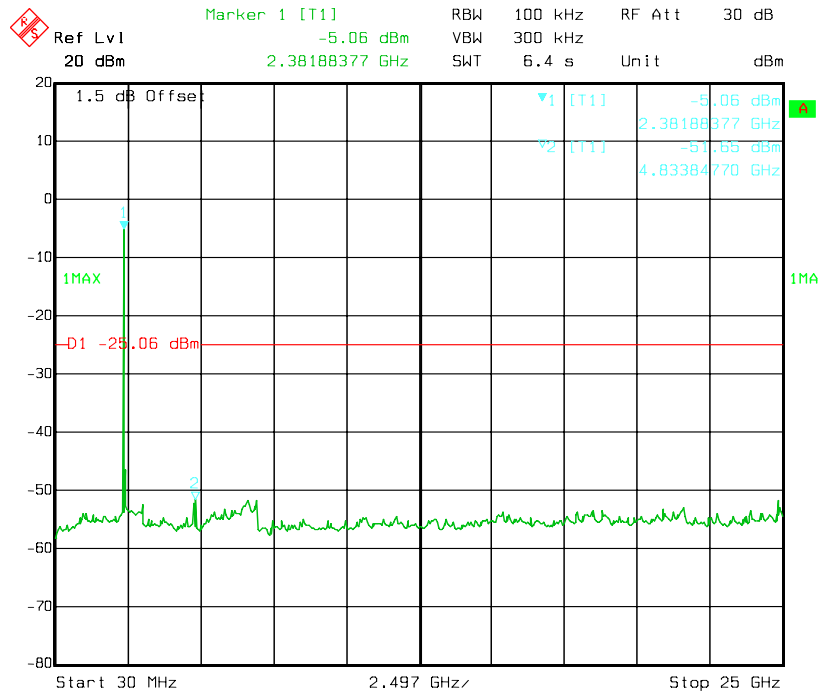
802.11n HT40 Middle Channel for Antenna A



802.11n HT40 High Channel for Antenna A

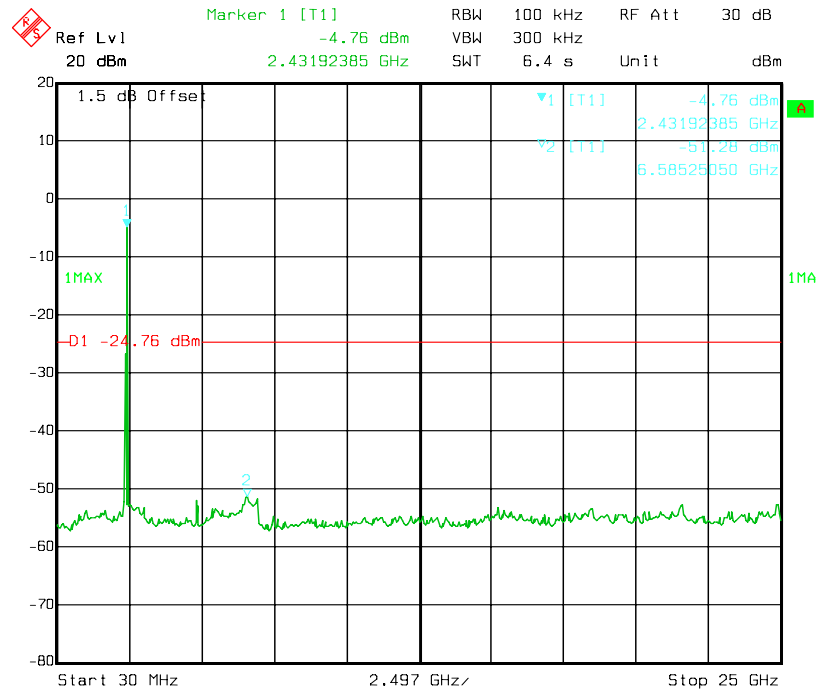


802.11n HT20 Low Channel for Antenna B



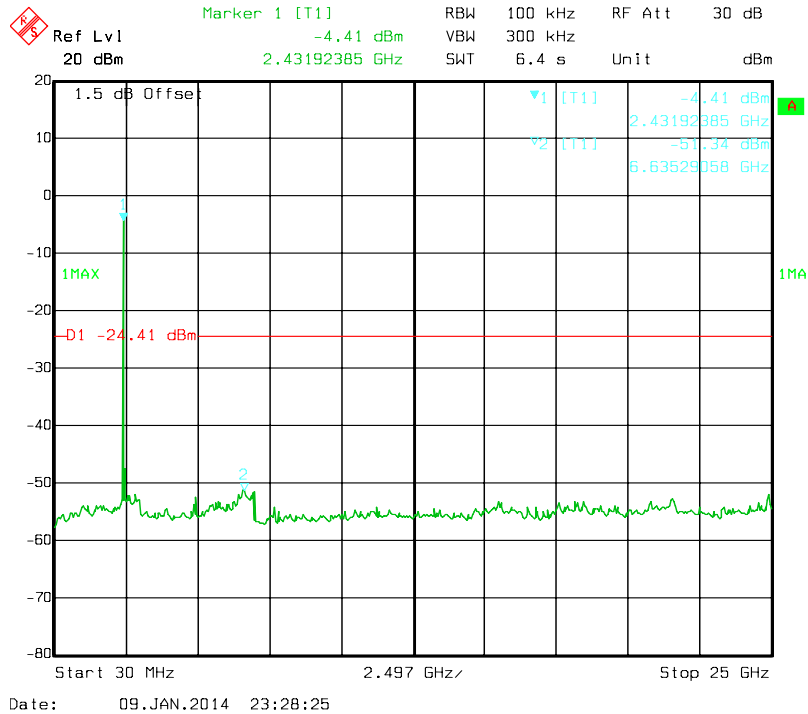
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802.11n HT20 Middle Channel for Antenna B

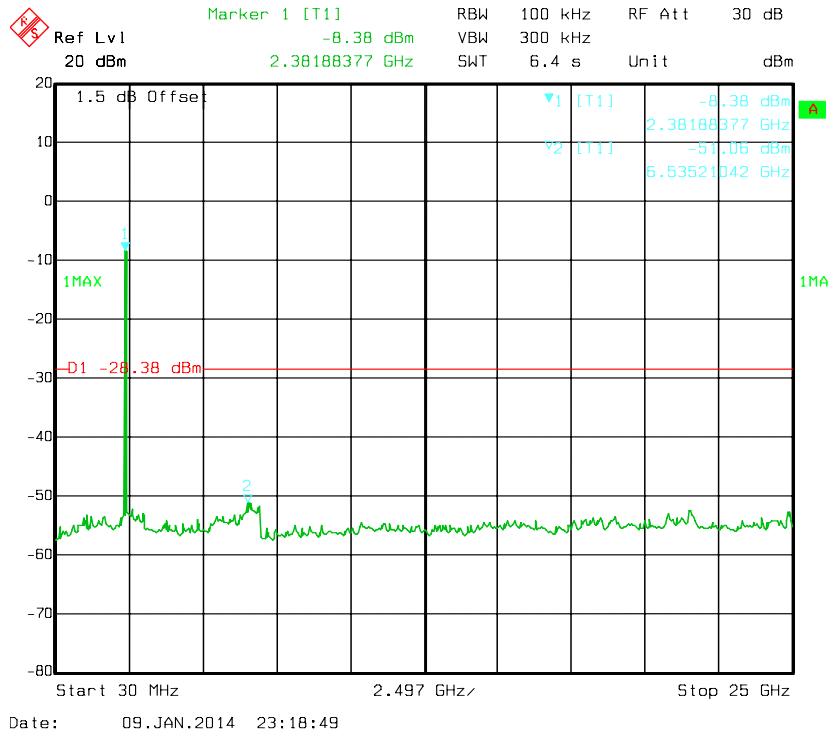


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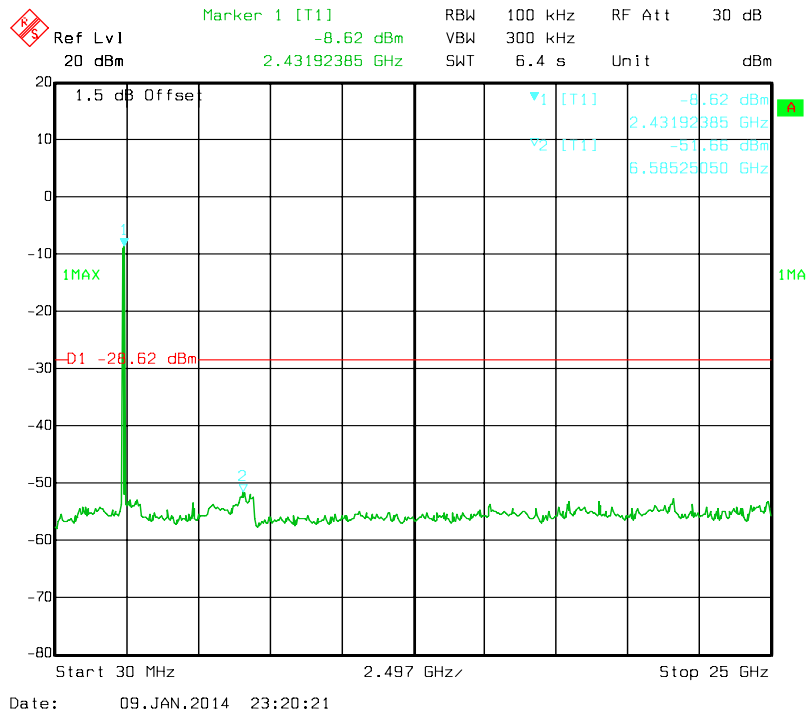
802.11n HT20 High Channel for Antenna B



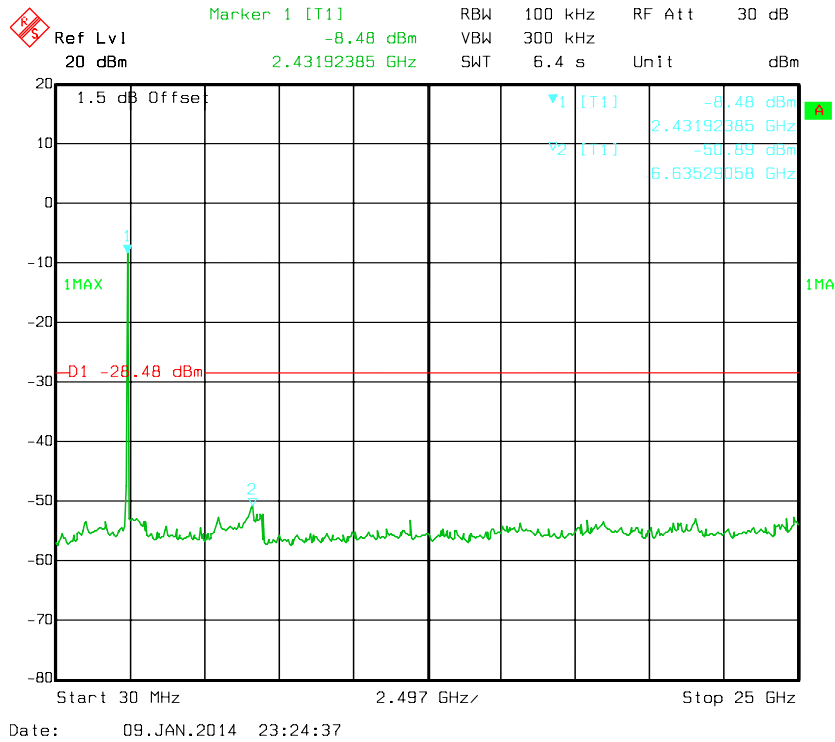
802.11n HT40 Low Channel for Antenna B



802.11n HT40 Middle Channel for Antenna B



802.11n HT40 High Channel for Antenna B

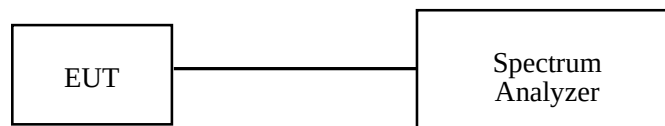


FCC §15.247(a) (2) – 6 dB EMISSION BANDWIDTH**Applicable Standard**

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
EMI Test Receiver	Rohde & Schwarz	ESCI	100028	2013-08-22	2014-08-21

*** Statement of Traceability:** BACL (Chengdu) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Data**Environmental Conditions**

Temperature:	16 °C
Relative Humidity:	59 %
ATM Pressure:	102.5 kPa

The testing was performed by Toby Ren on 2014-01-03.

Temperature:	16 °C
Relative Humidity:	59 %
ATM Pressure:	102.5 kPa

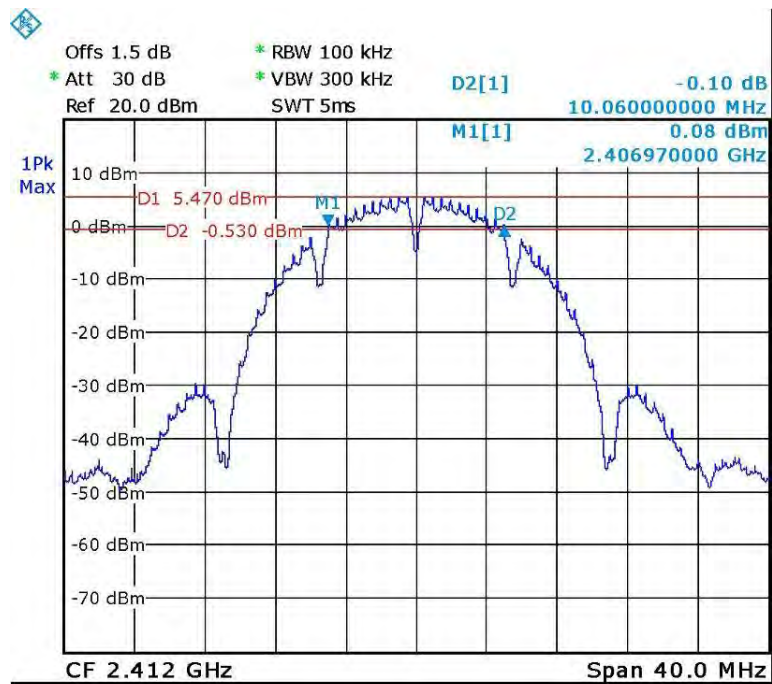
The testing was performed by Toby Ren on 2014-01-09.

Test Mode: Transmitting

Mode	Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		FCC Limit (kHz)
			Antenna A	Antenna B	
2.4 G band 802.11b	Low	2412	10.06	/	> 500
	Middle	2437	10.06	/	> 500
	High	2462	10.06	/	> 500
2.4 G band 802.11 g	Low	2412	16.61	/	> 500
	Middle	2437	16.61	/	> 500
	High	2462	16.53	/	> 500
2.4 G band 802.11nHT20	Low	2412	17.80	17.73	> 500
	Middle	2437	17.73	17.73	> 500
	High	2462	17.80	17.80	> 500
2.4 G band 802.11n HT40	Low	2422	36.41	36.41	> 500
	Middle	2437	36.41	36.41	> 500
	High	2452	36.41	36.41	> 500

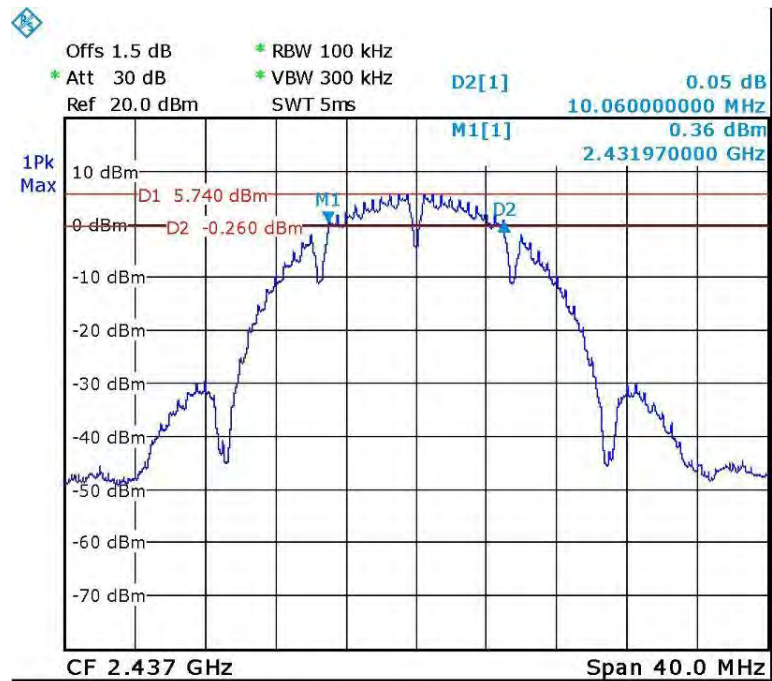
Please refer to the following plots:

802.11b Low Channel for Antenna A



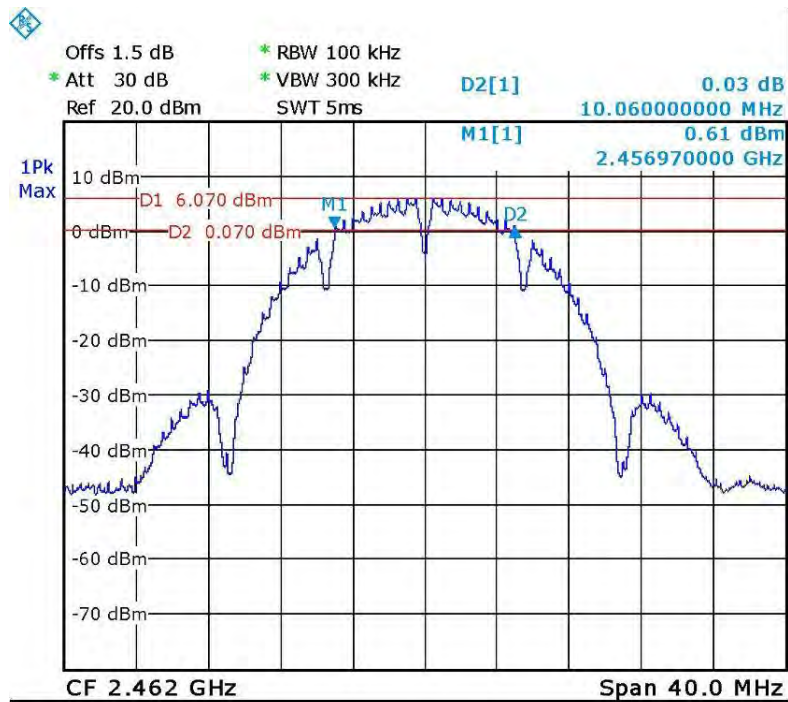
Date: 3.JAN.2014 08:40:41

802.11b Middle Channel for Antenna A



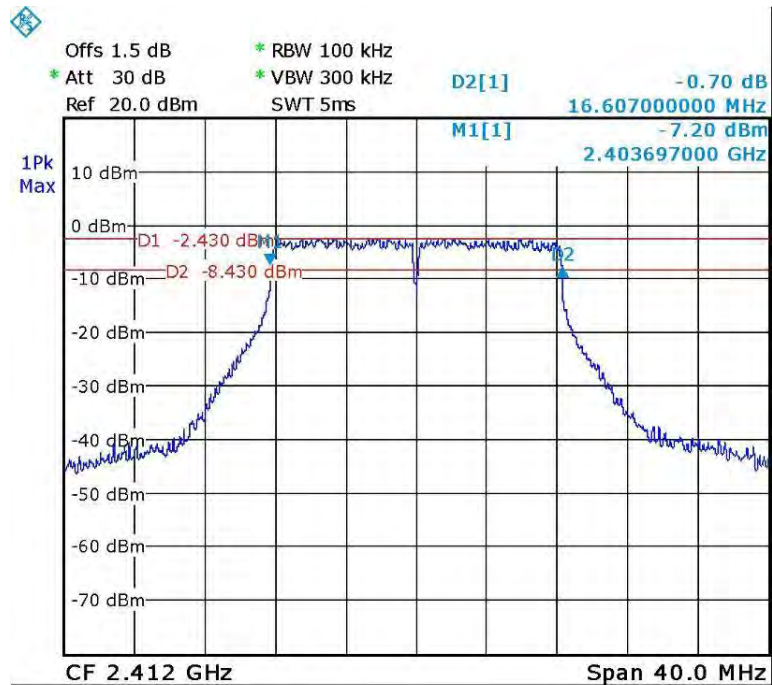
Date: 3.JAN.2014 08:32:13

802.11b High Channel for Antenna A

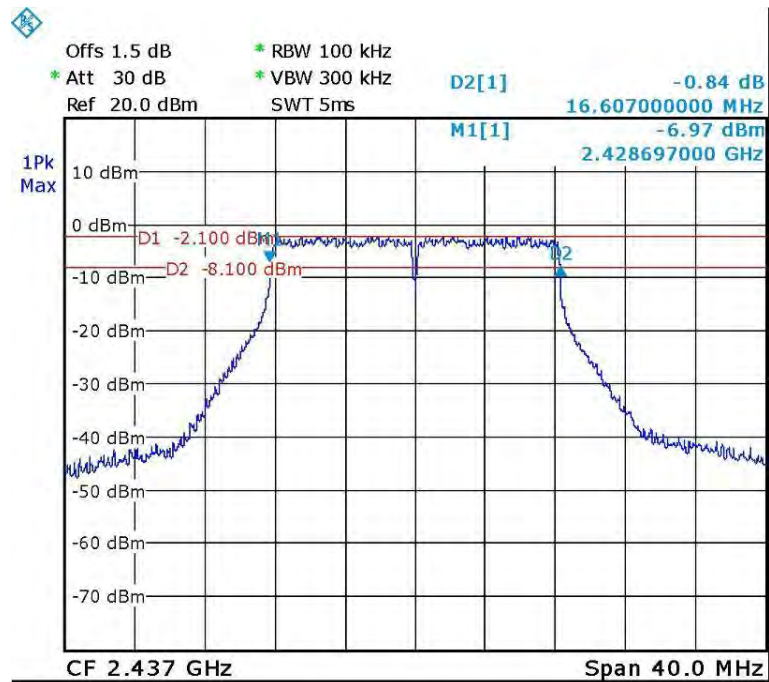


Date: 3.JAN.2014 08:09:52

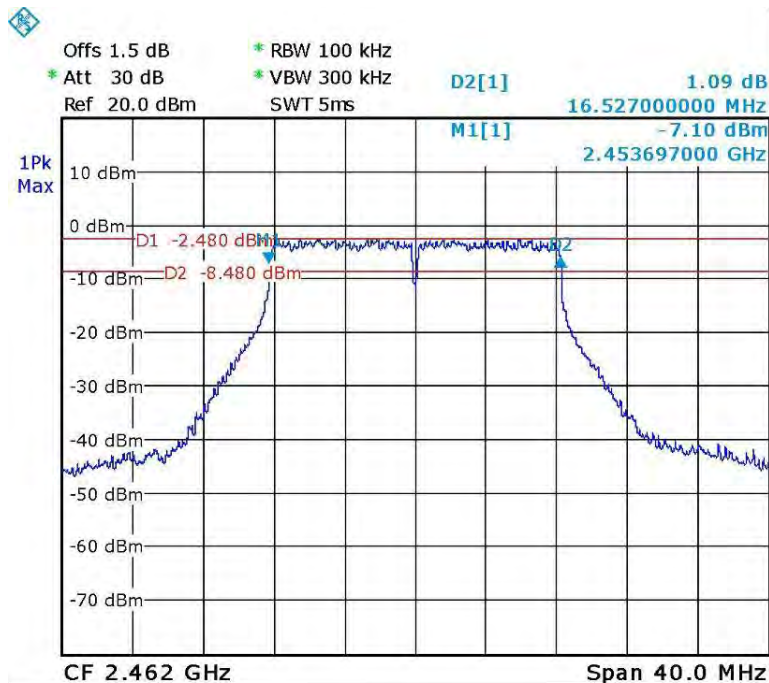
802.11g Low Channel for Antenna A



Date: 3.JAN.2014 09:12:30

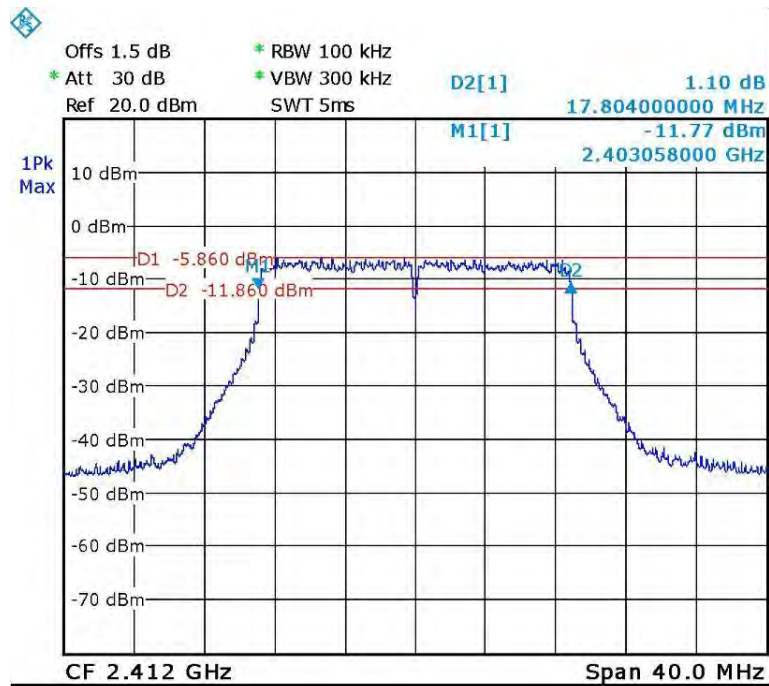
802.11g Middle Channel for Antenna A

Date: 3.JAN.2014 09:38:15

802.11g High Channel for Antenna A

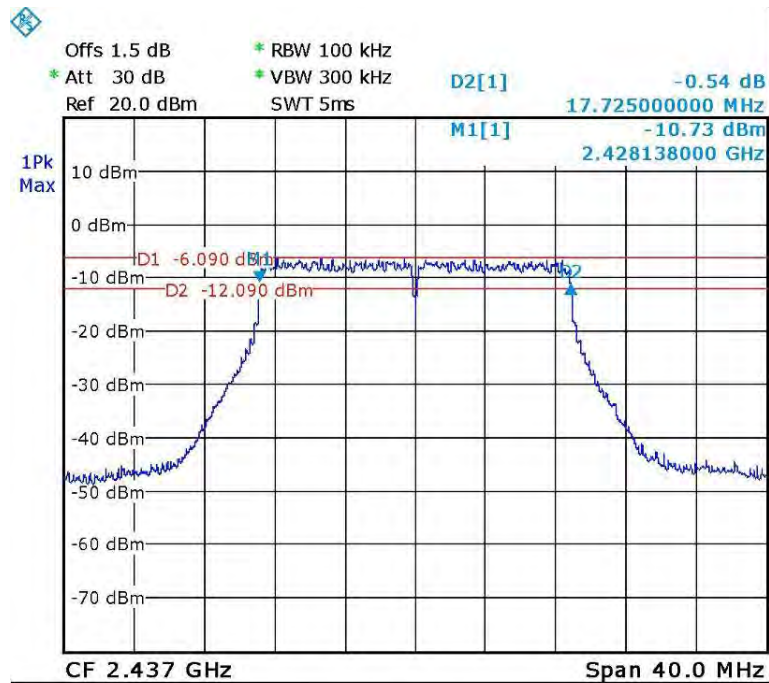
Date: 3.JAN.2014 09:58:53

802.11n HT20 Low Channel for Antenna A



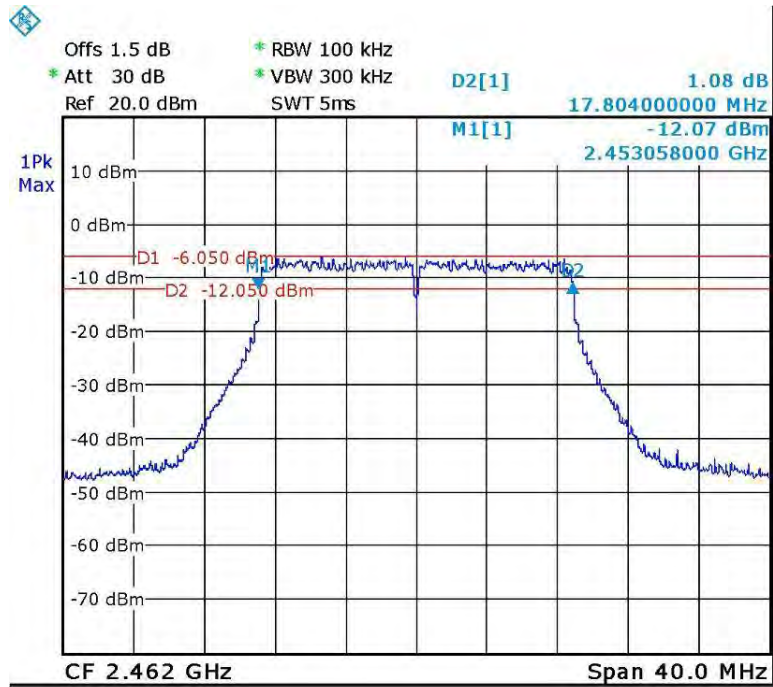
Date: 9.JAN.2014 08:43:59

802.11n HT20 Middle Channel for Antenna A

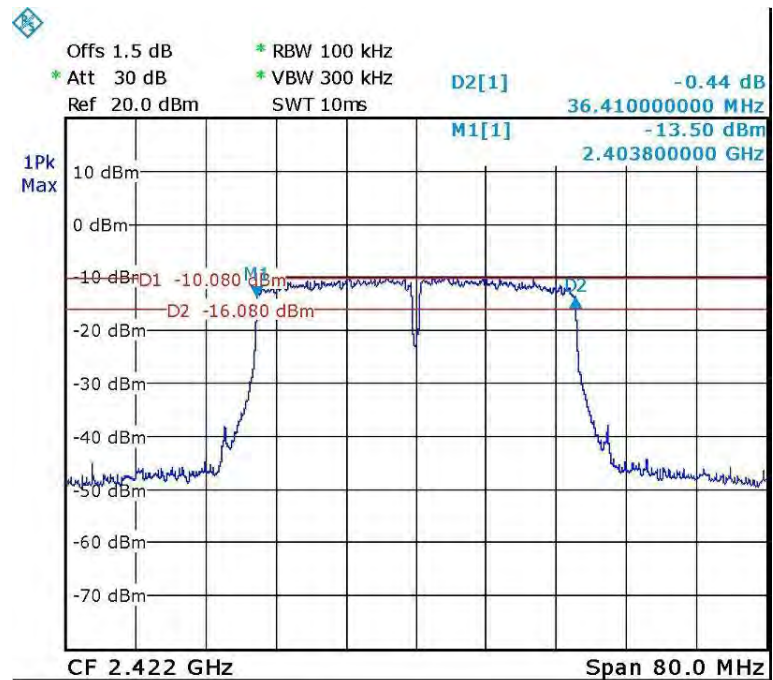


Date: 9.JAN.2014 09:01:34

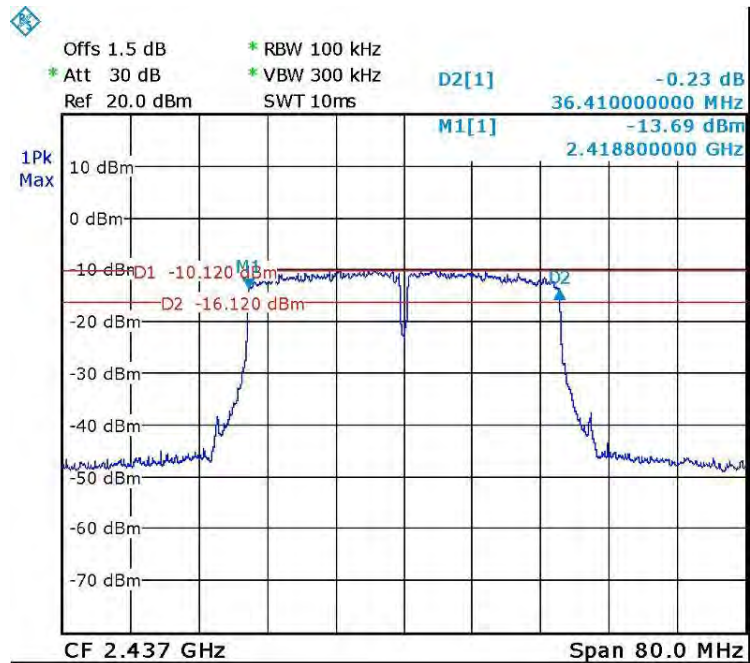
802.11n HT20 High Channel for Antenna A



802.11n HT40 Low Channel for Antenna A

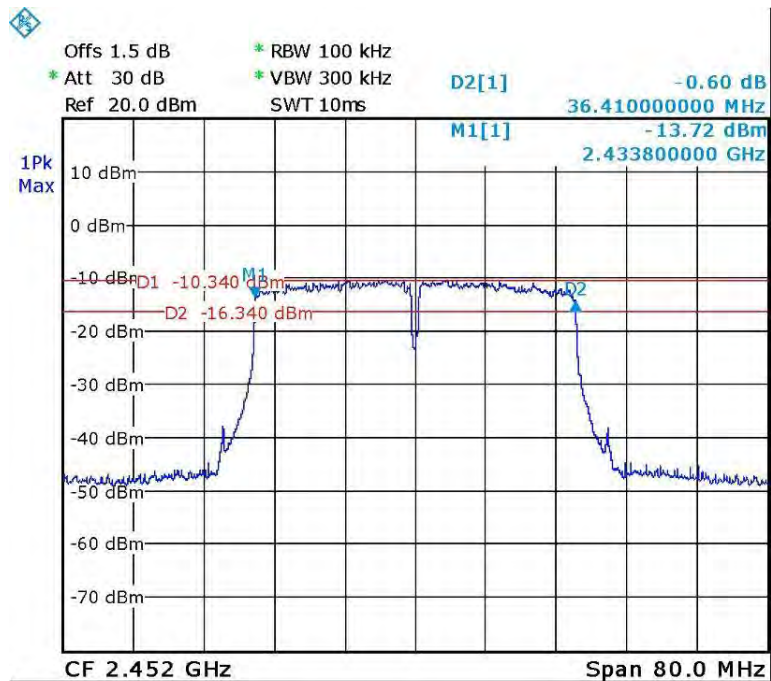


802.11n HT40 Middle Channel for Antenna A



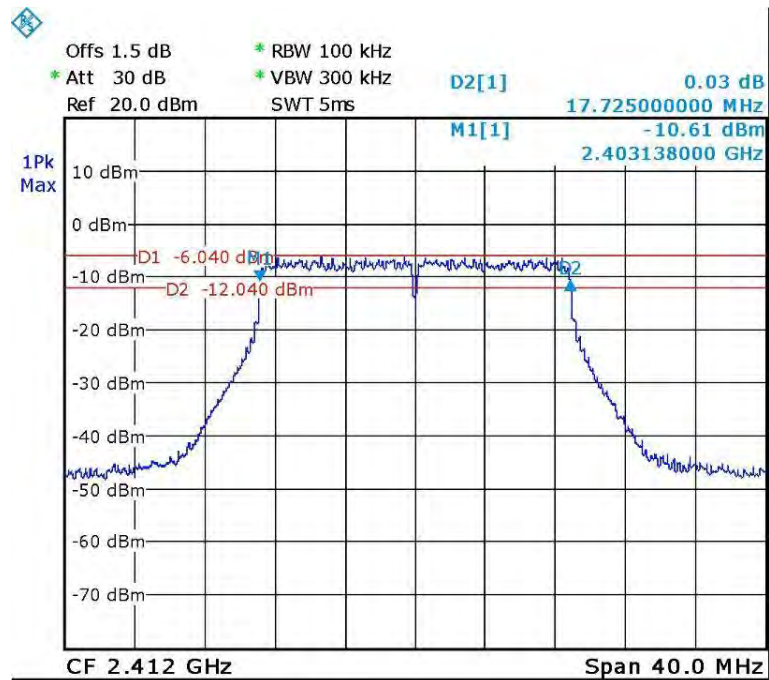
Date: 9.JAN.2014 09:52:12

802.11n HT40 High Channel for Antenna A



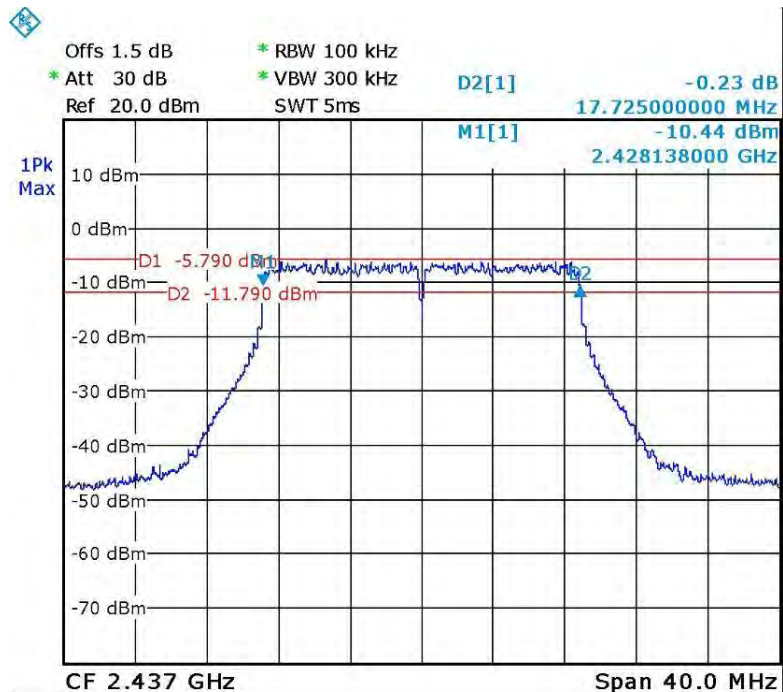
Date: 9.JAN.2014 10:01:18

802.11n HT20 Low Channel for Antenna B



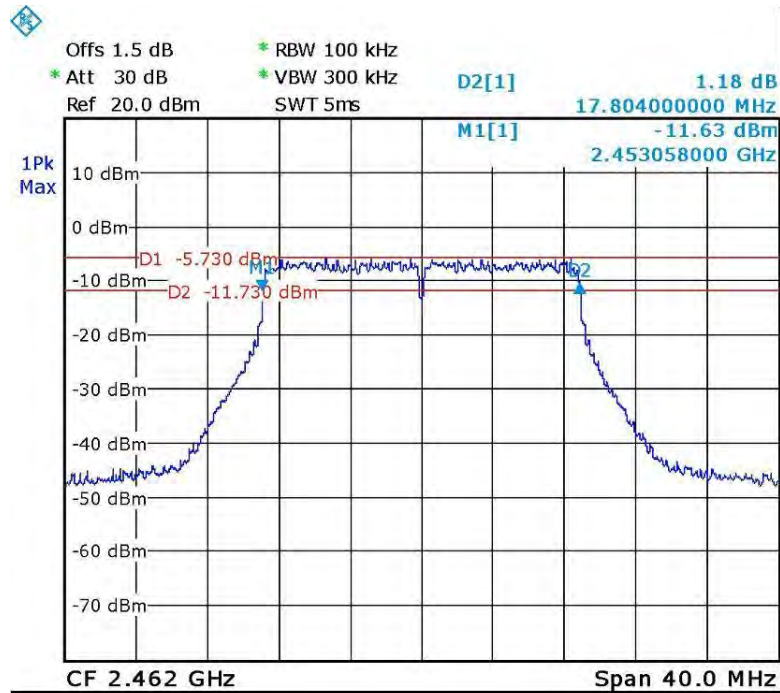
Date: 9.JAN.2014 10:25:51

802.11n HT20 Middle Channel for Antenna B



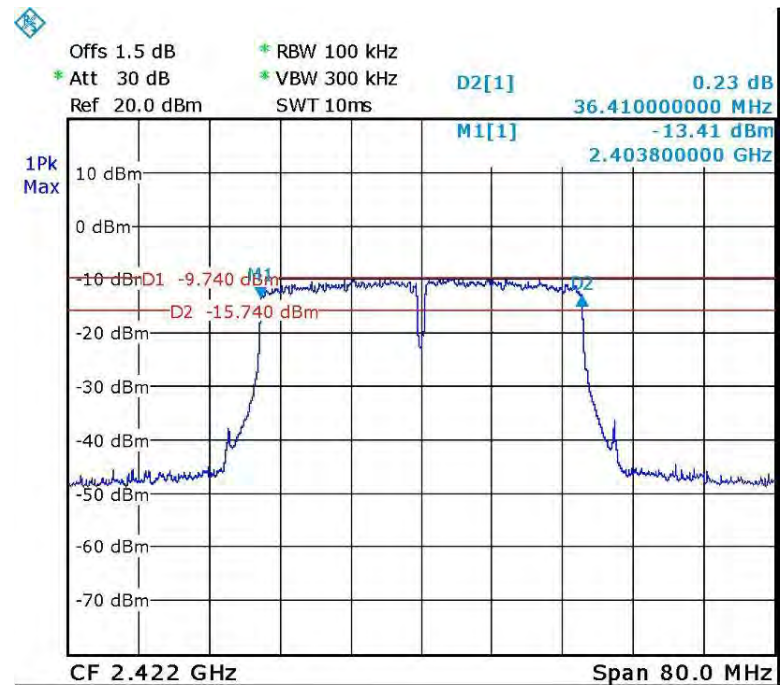
Date: 9.JAN.2014 10:44:03

802.11n HT20 High Channel for Antenna B



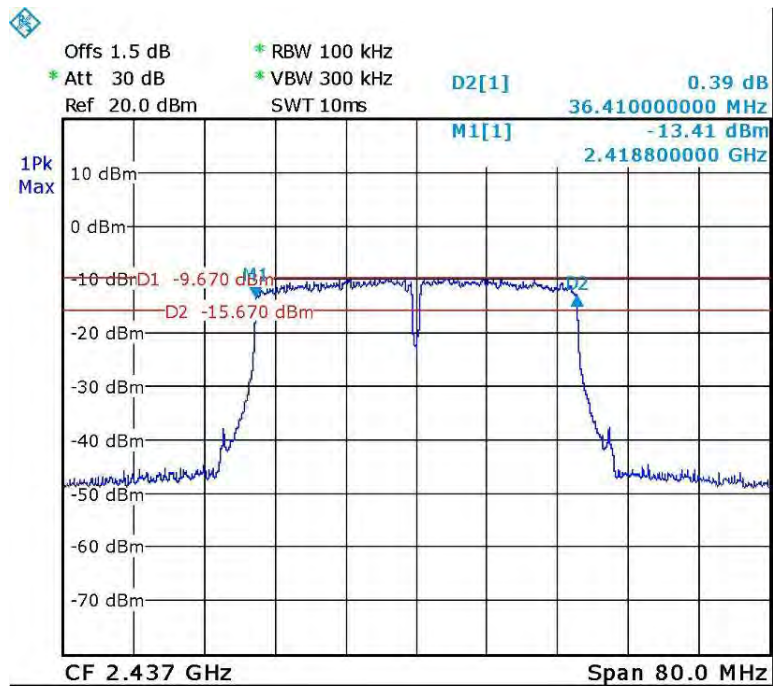
Date: 9.JAN.2014 10:55:57

802.11n HT40 Low Channel for Antenna B



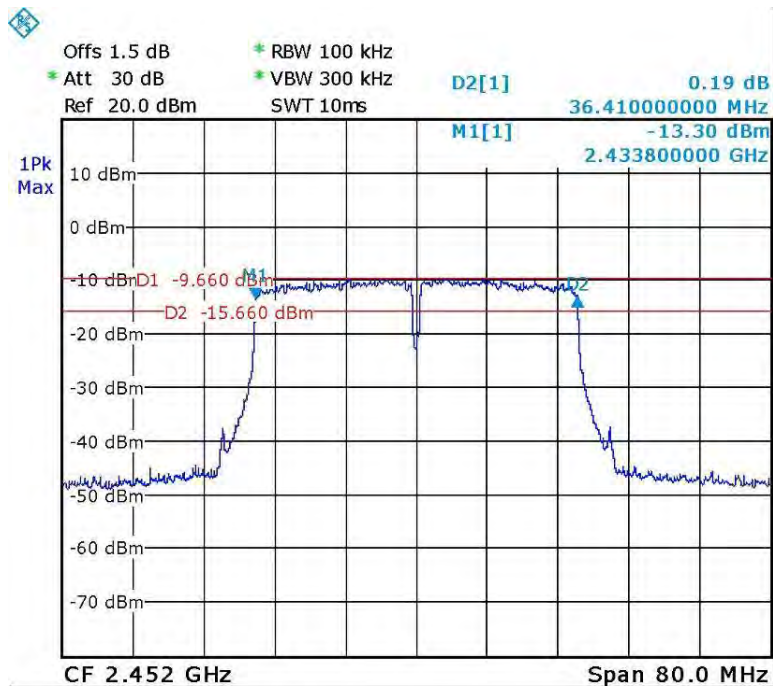
Date: 9.JAN.2014 11:10:58

802.11n HT40 Middle Channel for Antenna B



Date: 9.JAN.2014 11:21:03

802.11n HT40 High Channel for Antenna B



Date: 9.JAN.2014 11:30:43

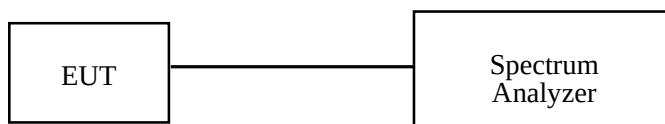
FCC §15.247(b) (3) - MAXIMUM PEAK OUTPUT POWER

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. Place the EUT on a bench and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to an EMI Test Receiver.
3. Add a correction factor to the display.



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
EMI Test Receiver	Rohde & Schwarz	ESCI	100028	2013-08-22	2014-08-21

* **Statement of Traceability:** BACL (Chengdu) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Data**Environmental Conditions**

Temperature:	17 °C
Relative Humidity:	62 %
ATM Pressure:	101.9 kPa

The testing was performed by Toby Ren on 2014-01-02.

Temperature:	16 °C
Relative Humidity:	59 %
ATM Pressure:	102.5 kPa

The testing was performed by Toby Ren on 2014-01-03.

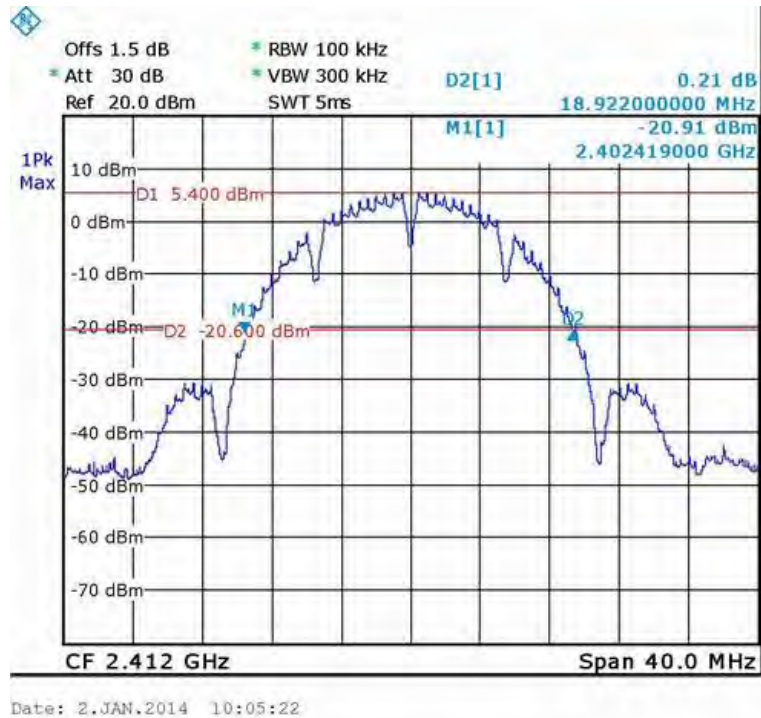
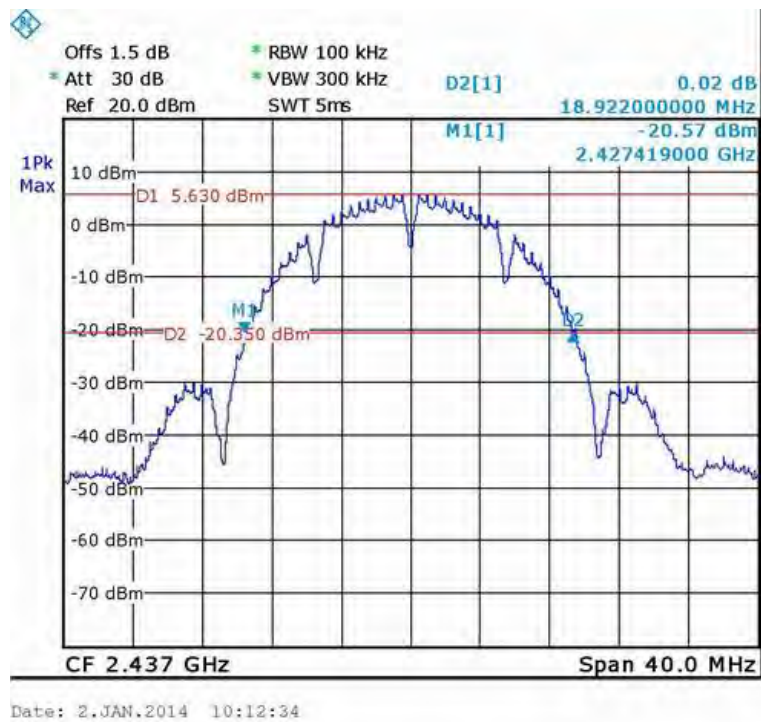
Temperature:	16 °C
Relative Humidity:	59 %
ATM Pressure:	102.5 kPa

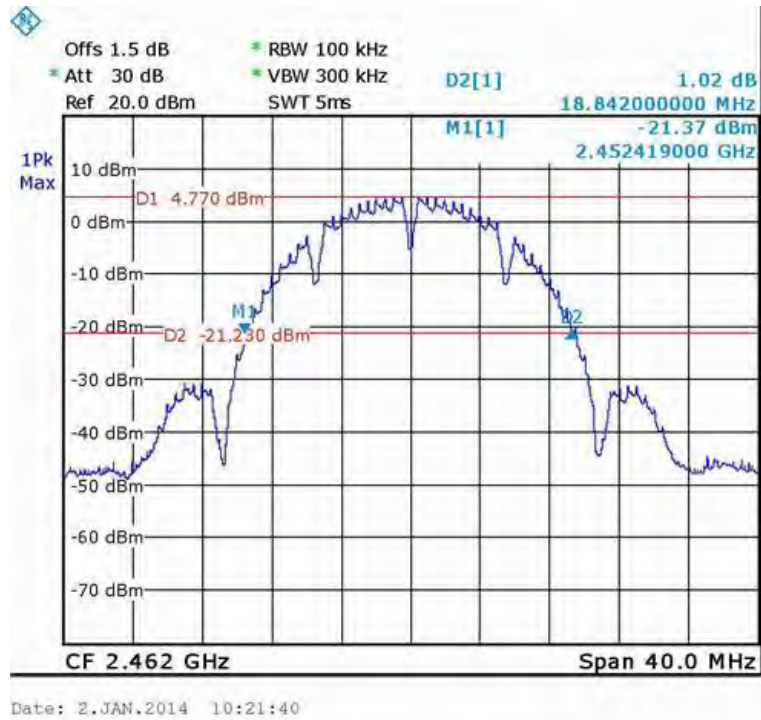
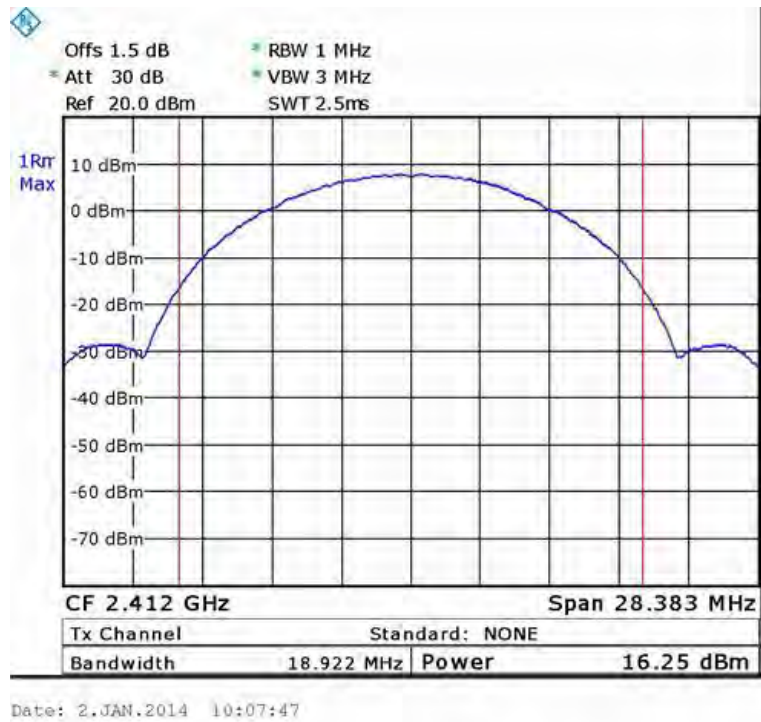
The testing was performed by Toby Ren on 2014-01-09.

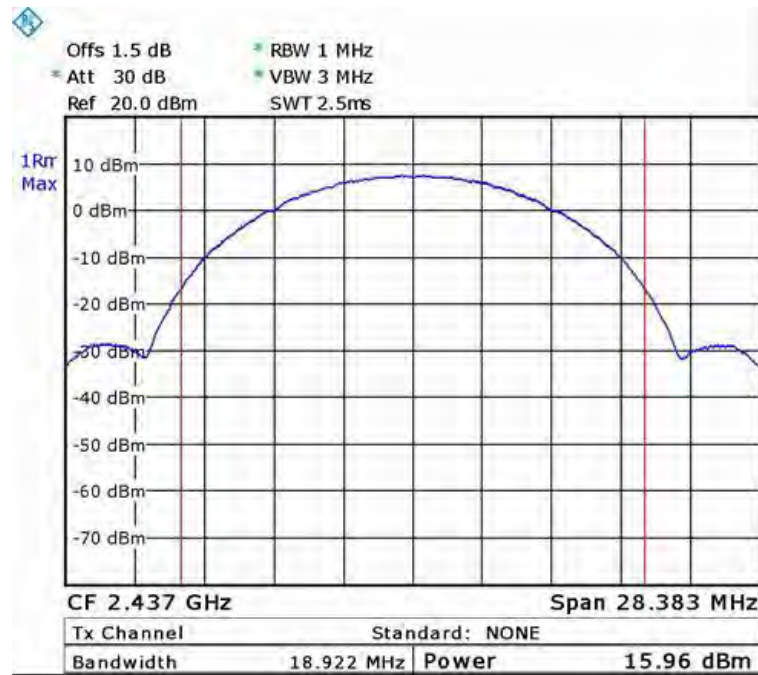
Test Mode: Transmitting

Mode	Channel	Frequency (MHz)	Conducted Output Power (dBm)			Limit (dBm)	Result
			Antenna A	Antenna B	Total		
2.4 G band 802.11b	Low	2412	16.25	/	16.25	30	Pass
	Middle	2437	15.96	/	15.96	30	Pass
	High	2462	16.08	/	16.08	30	Pass
2.4 G band 802.11 g	Low	2412	13.99	/	13.99	30	Pass
	Middle	2437	14.22	/	14.22	30	Pass
	High	2462	13.89	/	13.89	30	Pass
2.4 G band 802.11nHT20	Low	2412	10.13	10.01	13.08	30	Pass
	Middle	2437	9.98	10.16	13.08	30	Pass
	High	2462	10.14	10.09	13.13	30	Pass
2.4 G band 802.11n HT40	Low	2422	9.13	9.22	12.19	30	Pass
	Middle	2437	9.16	9.35	12.27	30	Pass
	High	2452	9.10	9.30	12.21	30	Pass

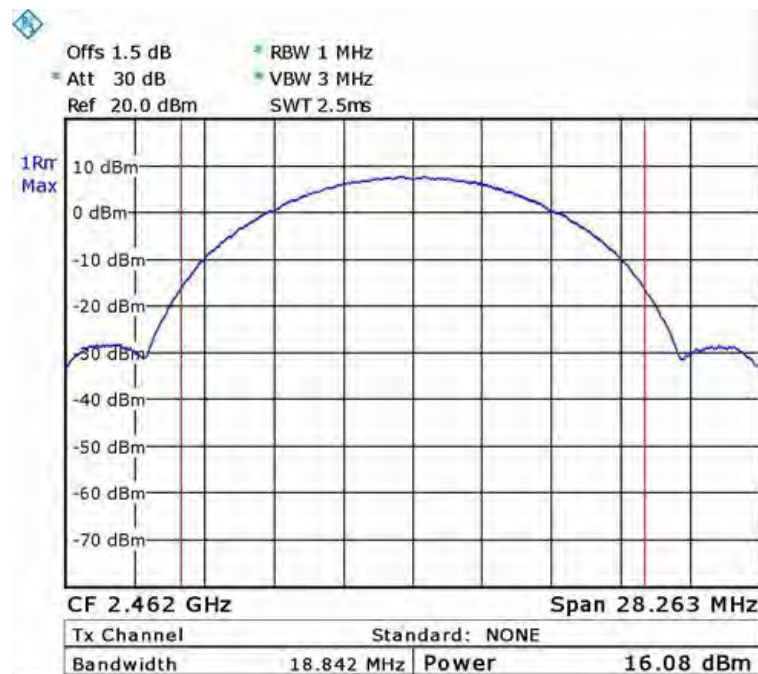
Please refer to the following plots

802.11b 26dB OBW, Low Channel for Antenna A**802.11b 26dB OBW, Middle Channel for Antenna A**

802.11b 26dB OBW, High Channel for Antenna A**802.11b RF Output Power, Low Channel for Antenna A**

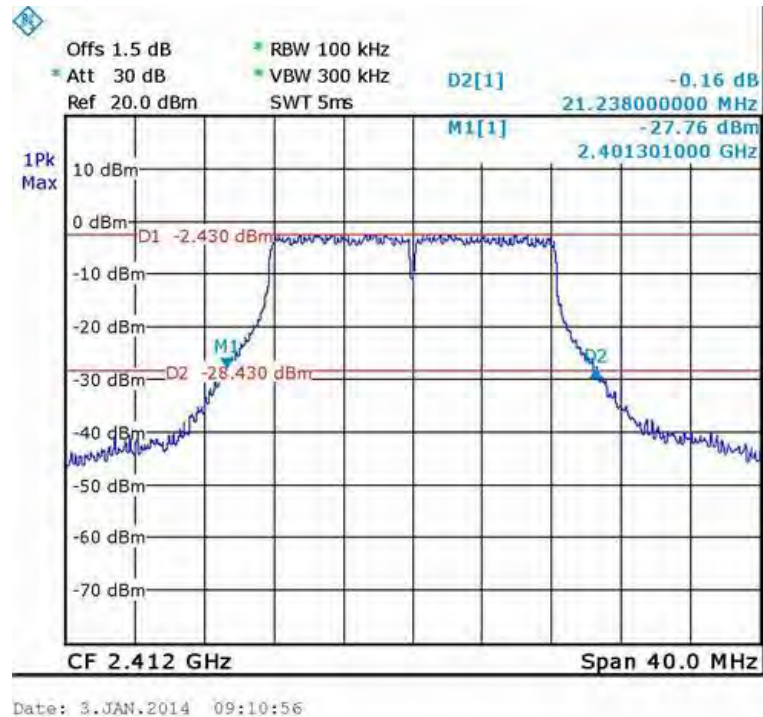
802.11b RF Output Power, Middle Channel for Antenna A

Date: 2.JAN.2014 10:17:58

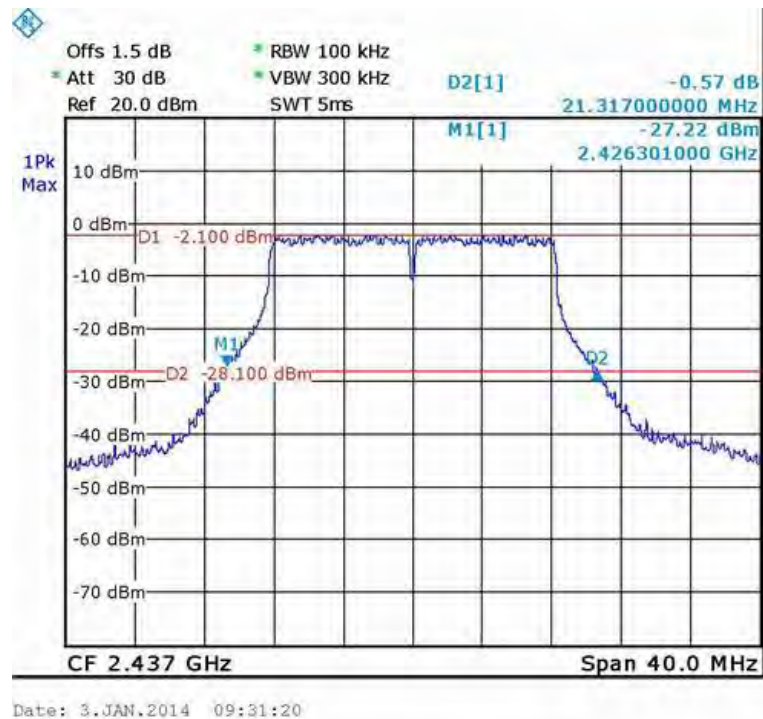
802.11b RF Output Power, High Channel for Antenna A

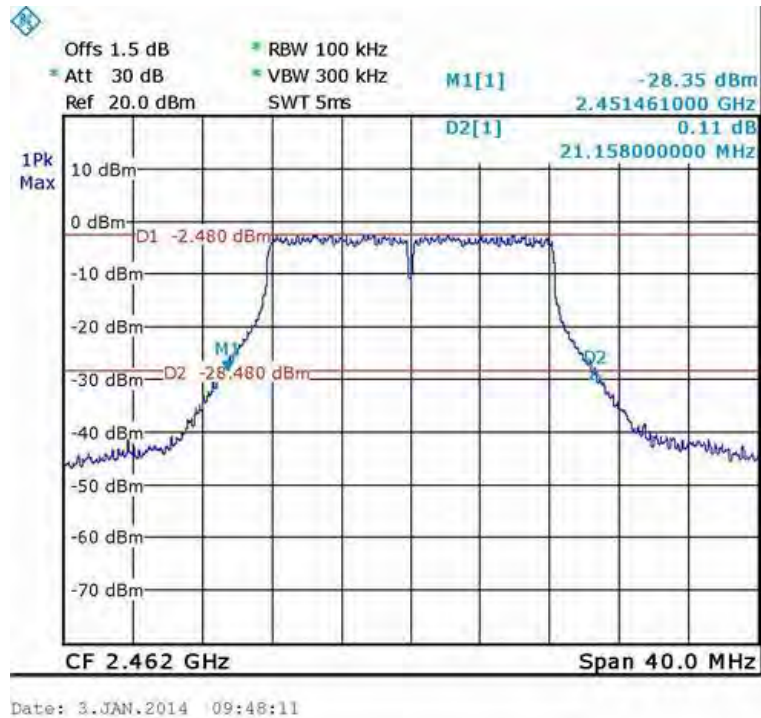
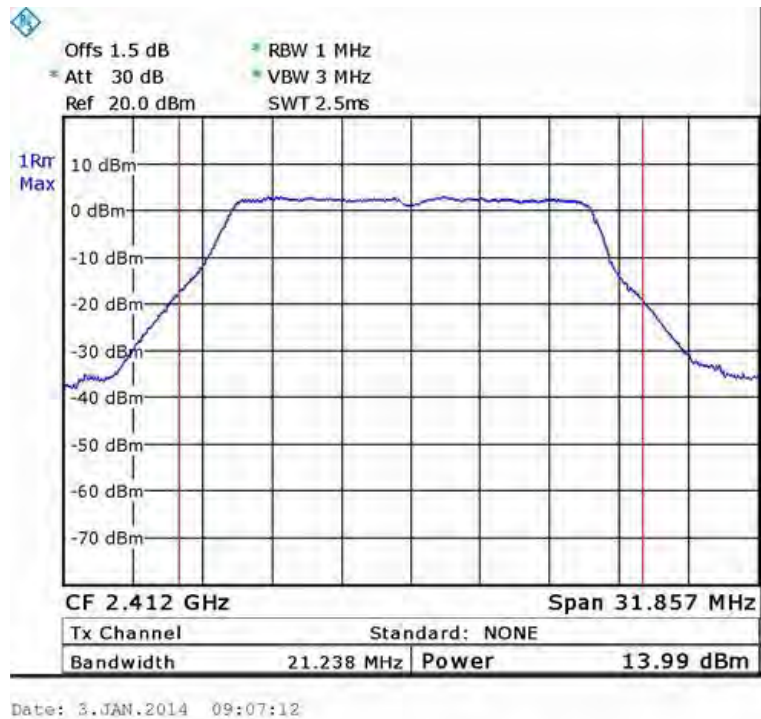
Date: 2.JAN.2014 10:25:38

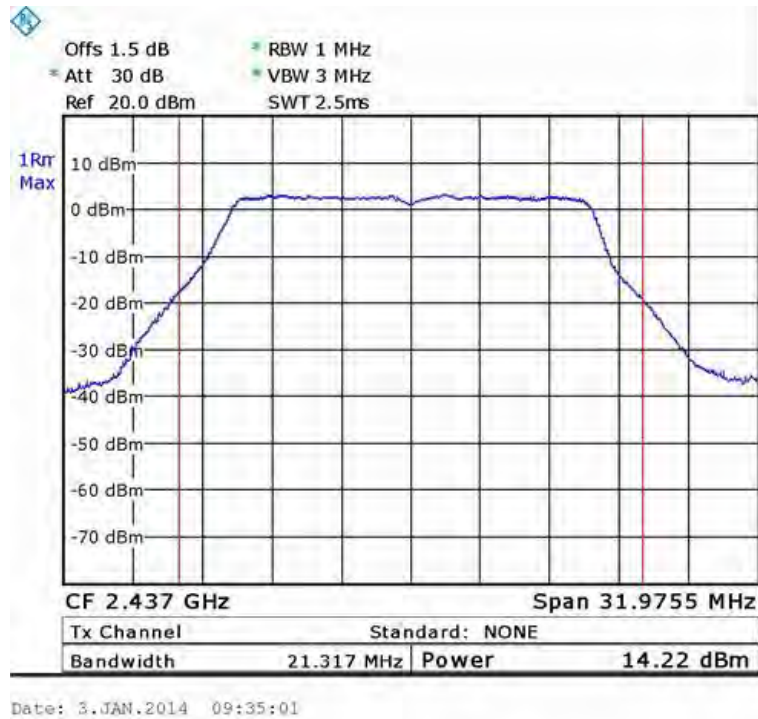
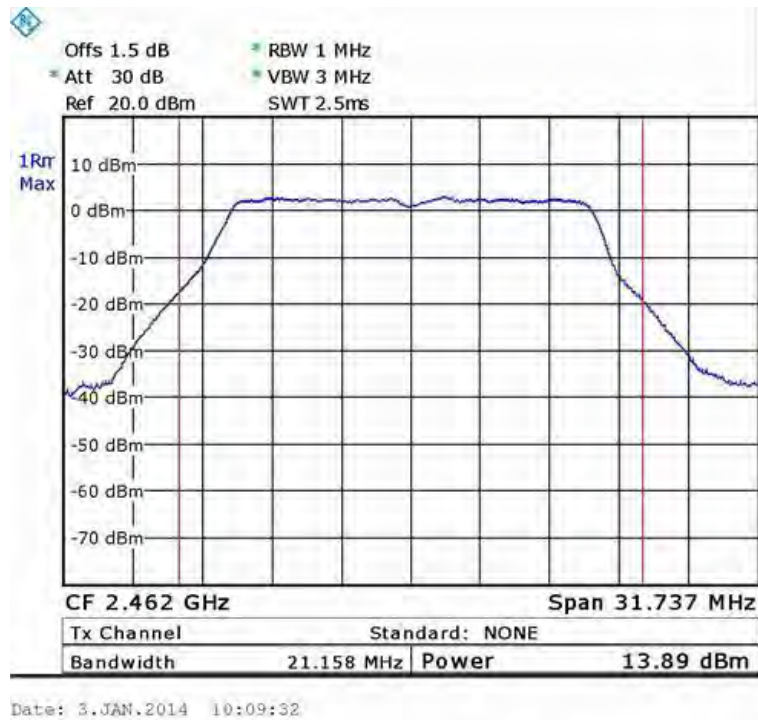
802.11g 26dB OBW, Low Channel for Antenna A

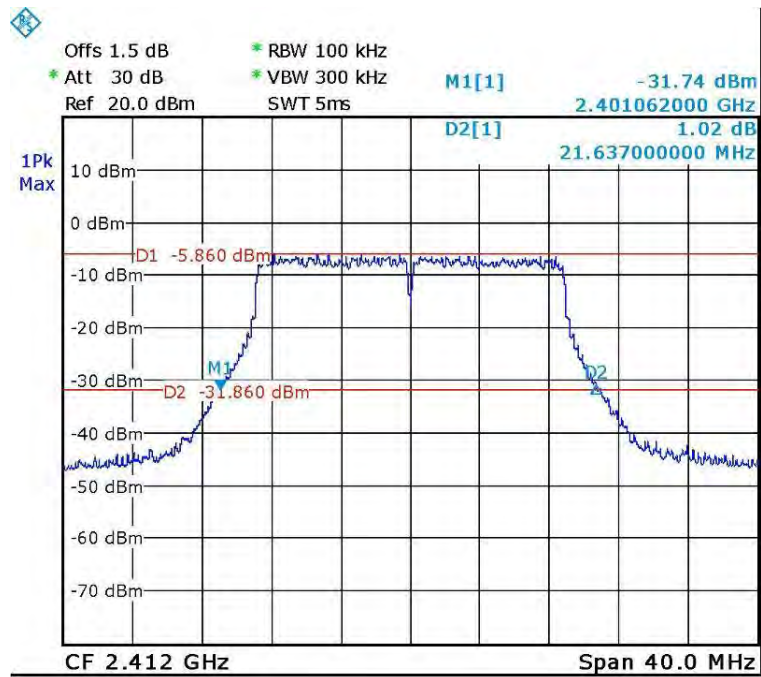


802.11g 26dB OBW, Middle Channel for Antenna A

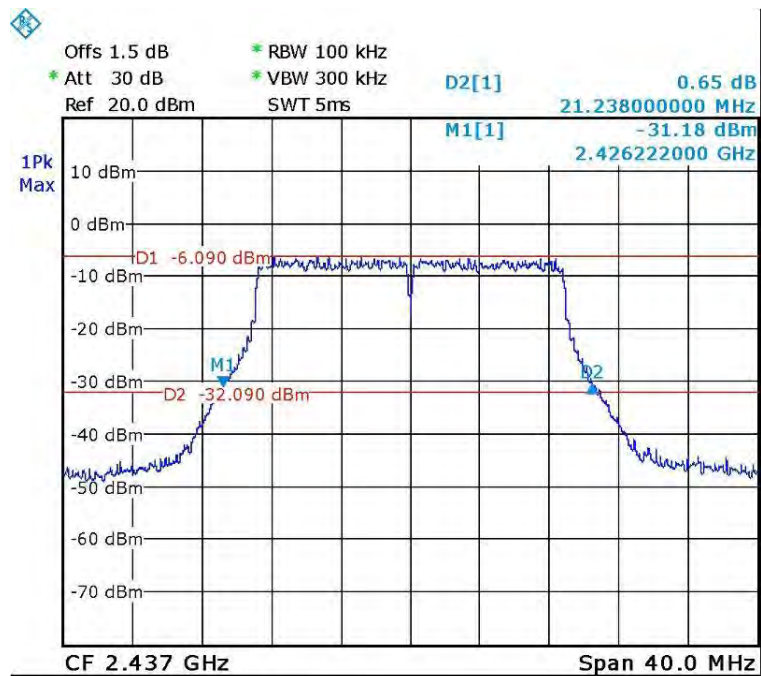


802.11g 26dB OBW, High Channel for Antenna A**802.11g RF Output Power, Low Channel for Antenna A**

802.11g RF Output Power, Middle Channel for Antenna A**802.11g RF Output Power, High Channel for Antenna A**

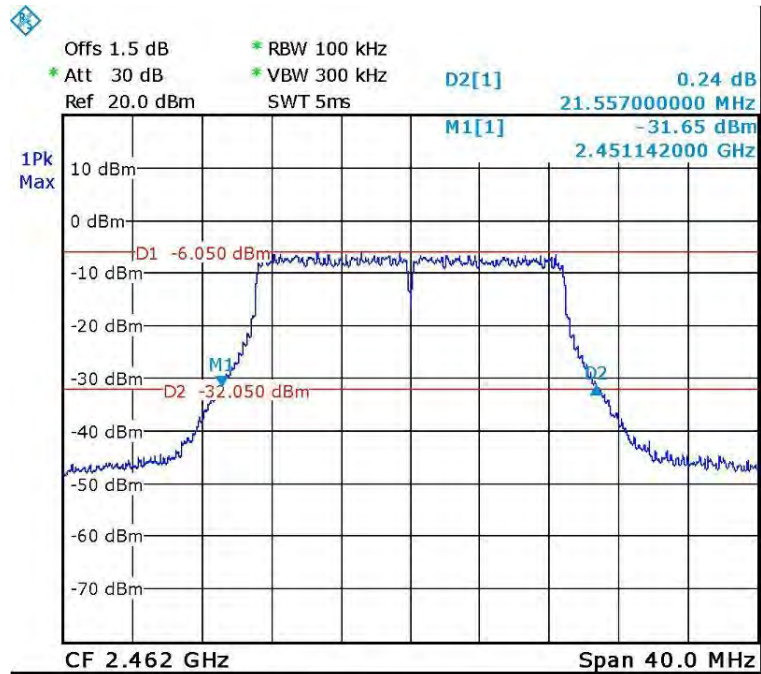
802.11n HT20 26dB OBW, Low Channel for Antenna A

Date: 9.JAN.2014 08:41:10

802.11n HT20 26dB OBW, Middle Channel for Antenna A

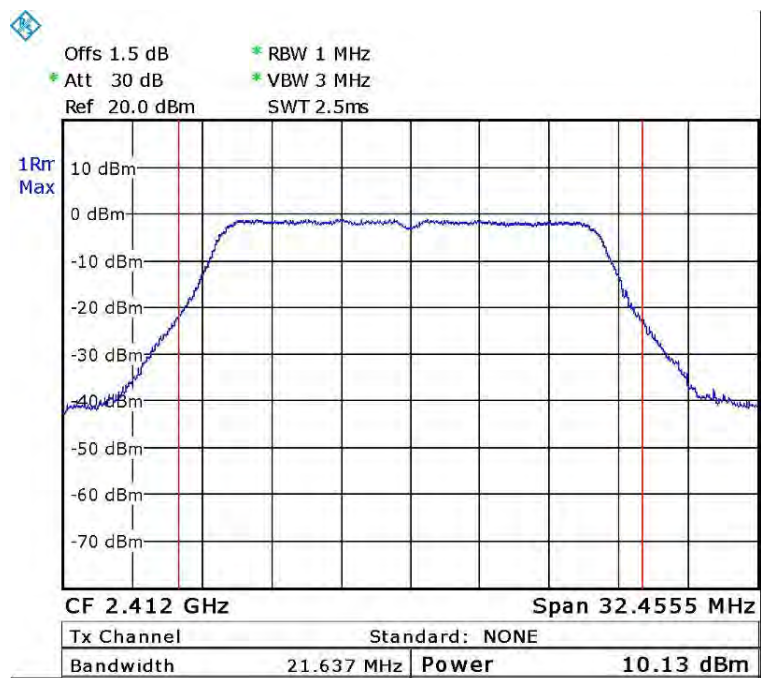
Date: 9.JAN.2014 09:00:34

802.11n HT20 26dB OBW, High Channel for Antenna A

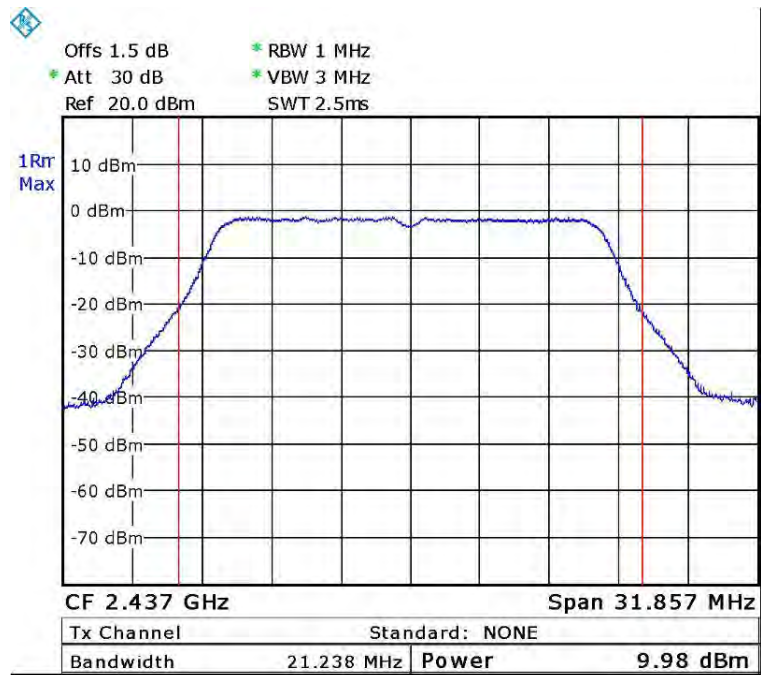


Date: 9.JAN.2014 09:12:32

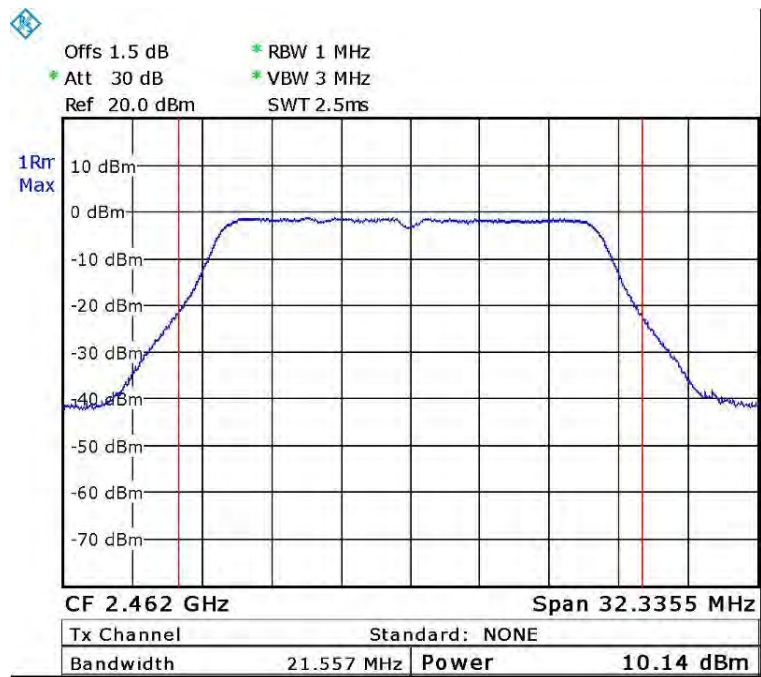
802.11n HT20 RF Output Power, Low Channel for Antenna A



Date: 9.JAN.2014 08:52:24

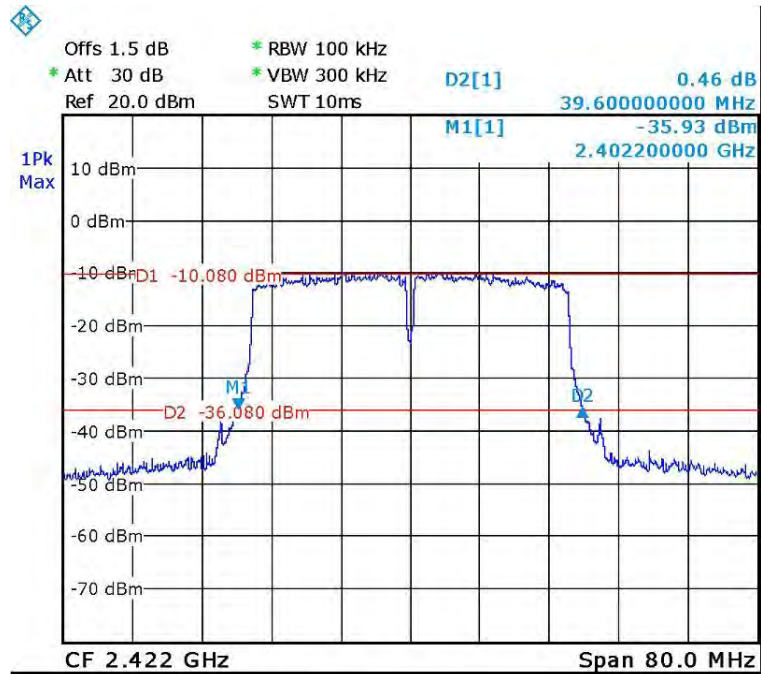
802.11n HT20 RF Output Power, Middle Channel for Antenna A

Date: 9.JAN.2014 09:03:11

802.11n HT20 RF Output Power, High Channel for Antenna A

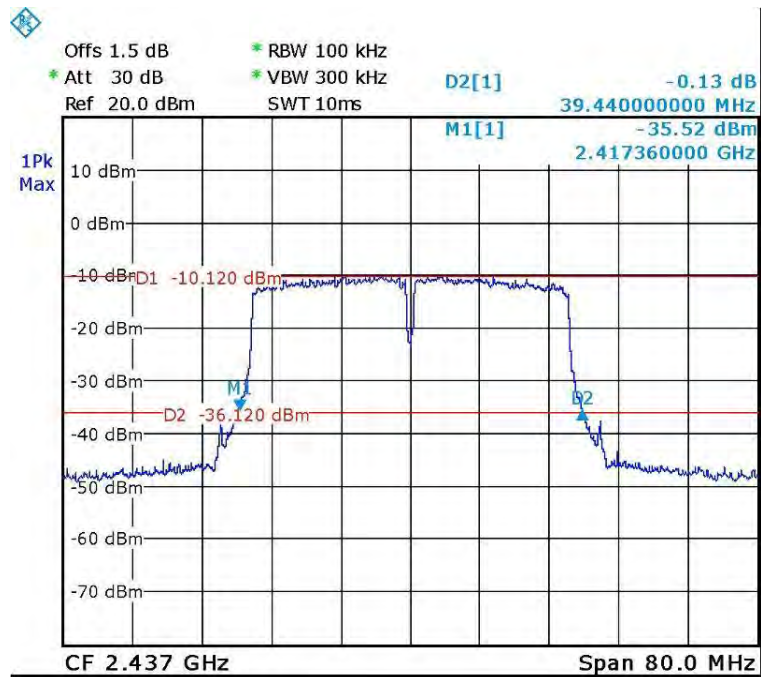
Date: 9.JAN.2014 09:15:18

802.11n HT40 26dB OBW, Low Channel for Antenna A

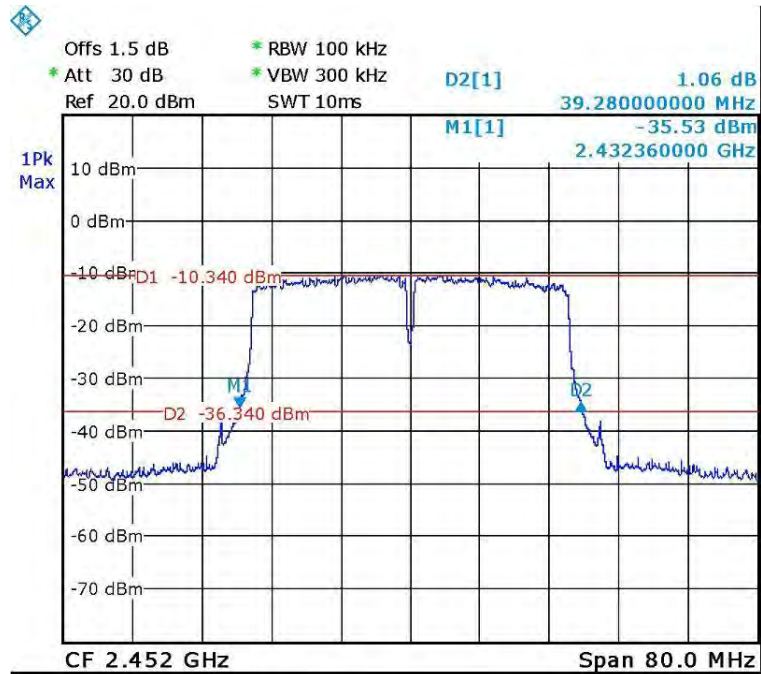


Date: 9.JAN.2014 09:27:17

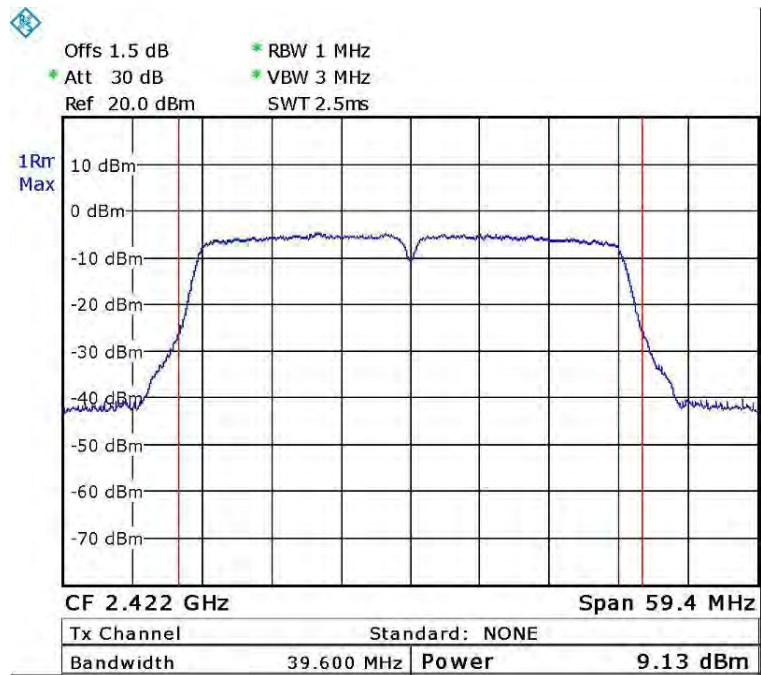
802.11n HT40 26dB OBW, Middle Channel for Antenna A



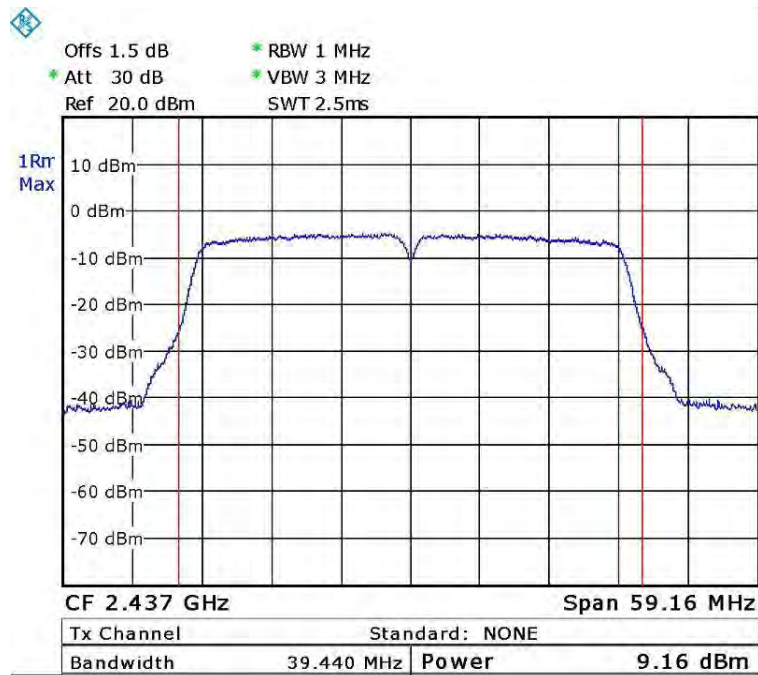
Date: 9.JAN.2014 09:51:25

802.11n HT40 26dB OBW, High Channel for Antenna A

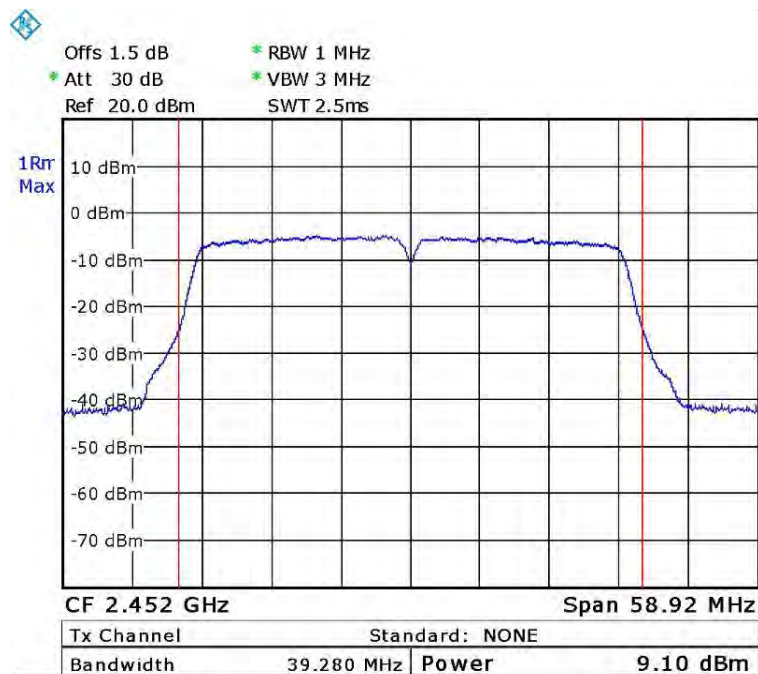
Date: 9.JAN.2014 10:00:38

802.11n HT40 RF Output Power, Low Channel for Antenna A

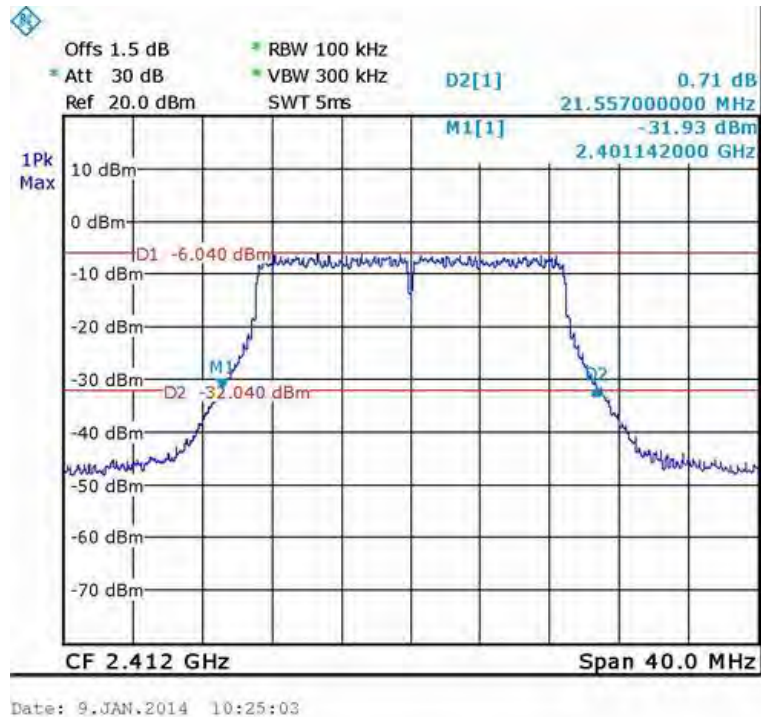
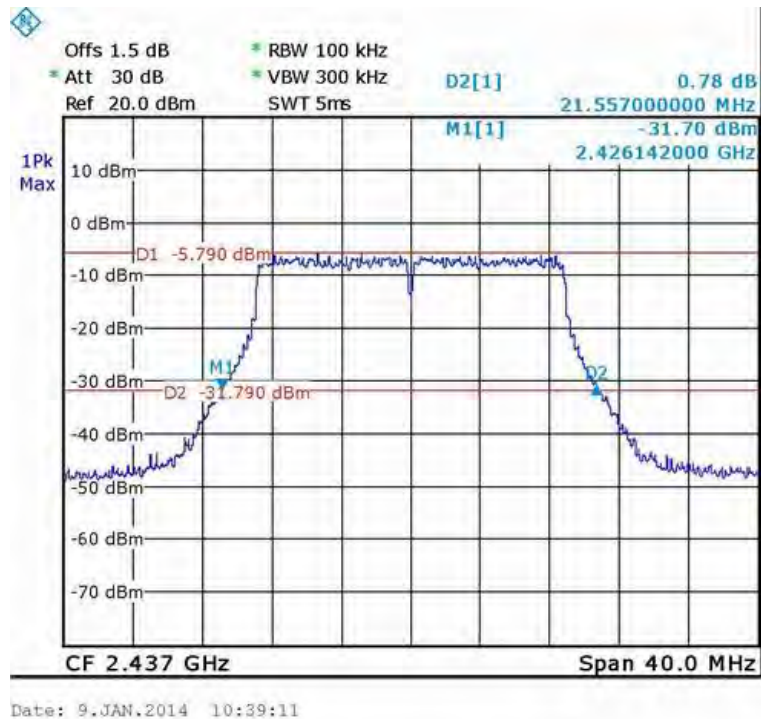
Date: 9.JAN.2014 10:11:09

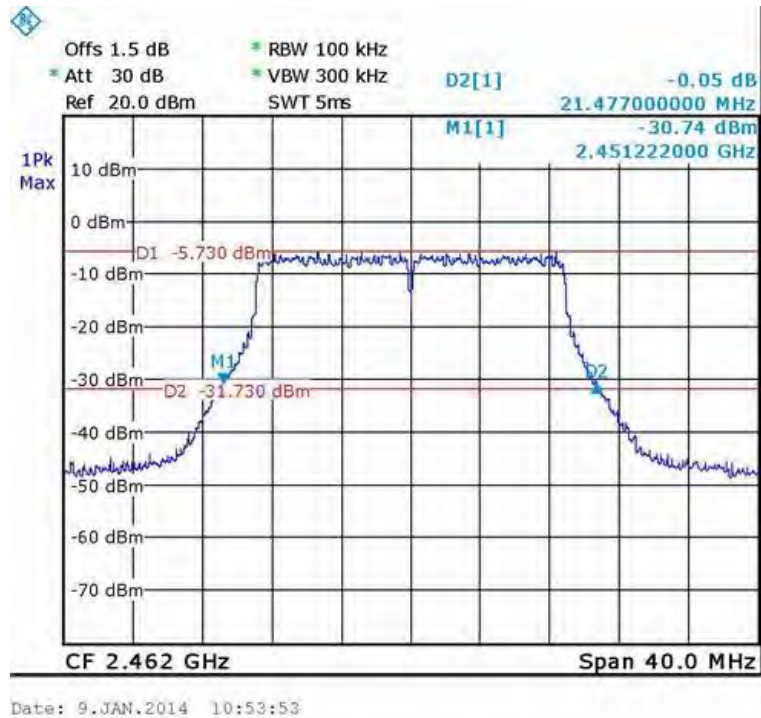
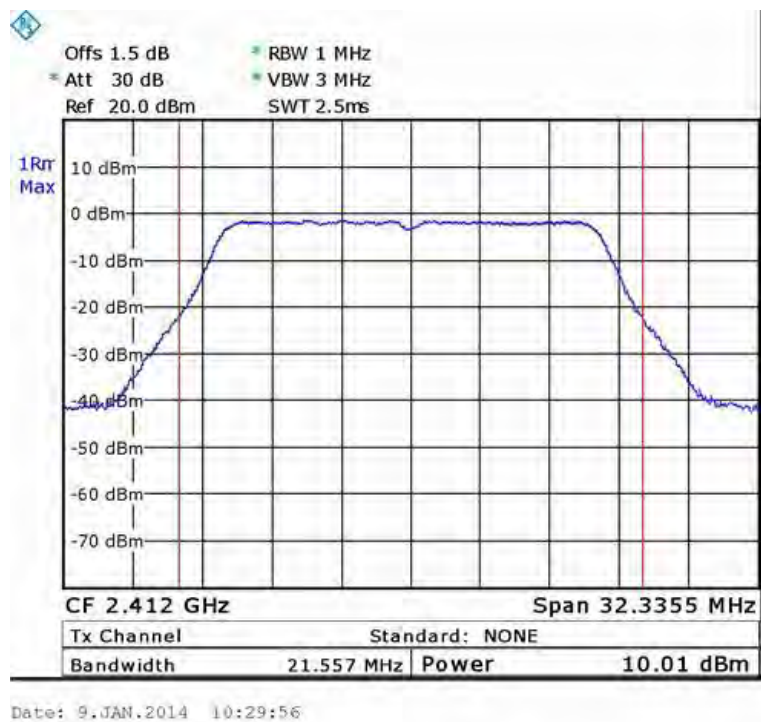
802.11n HT40 RF Output Power, Middle Channel for Antenna A

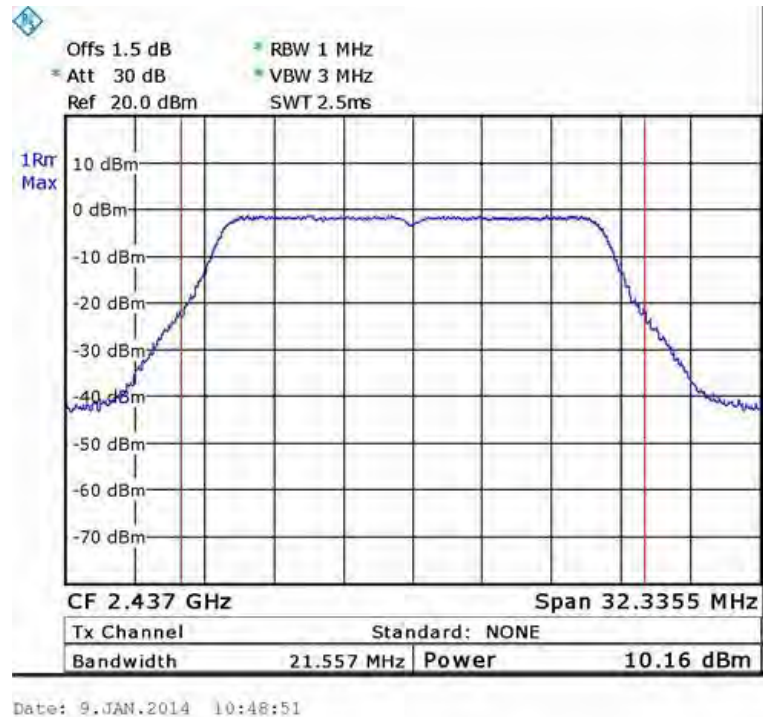
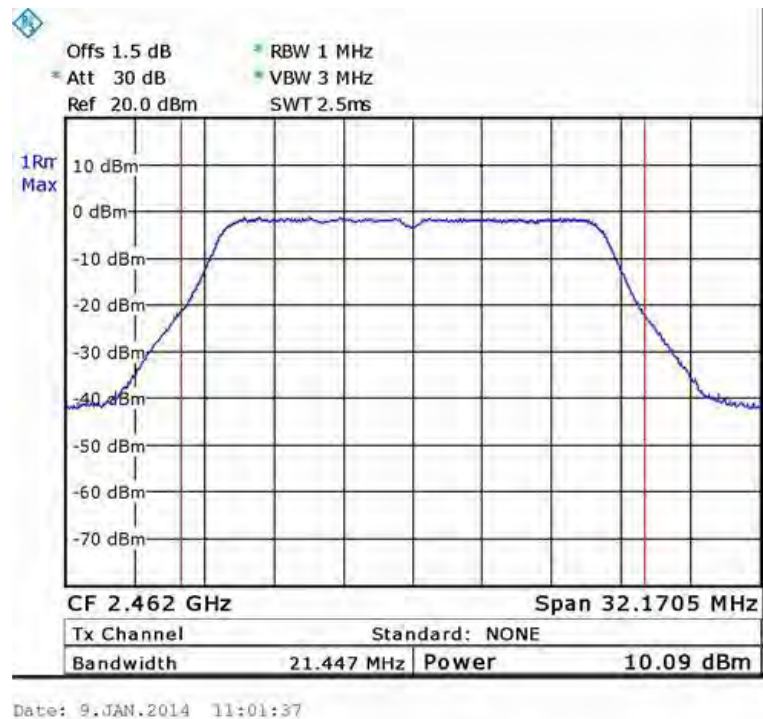
Date: 9.JAN.2014 09:54:50

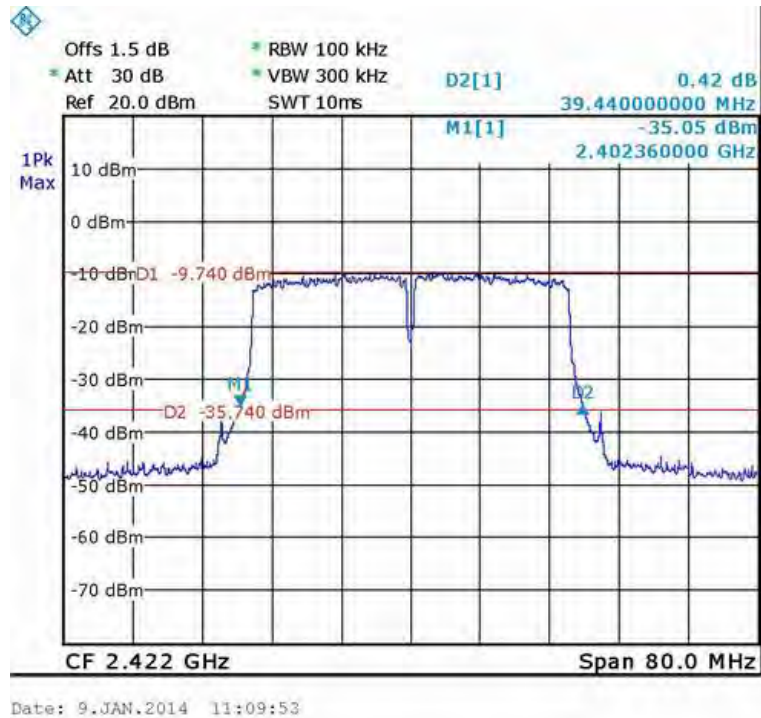
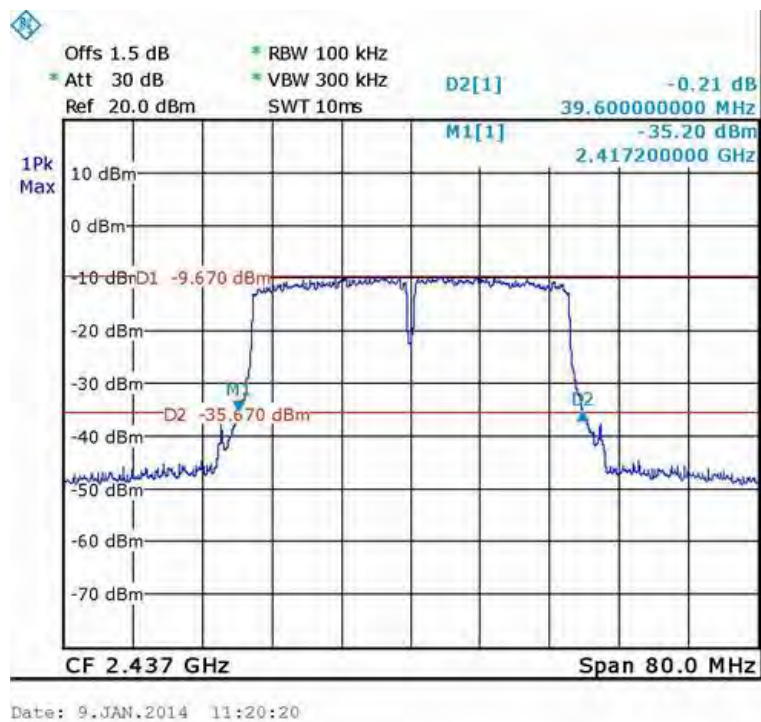
802.11n HT40 RF Output Power, High Channel for Antenna A

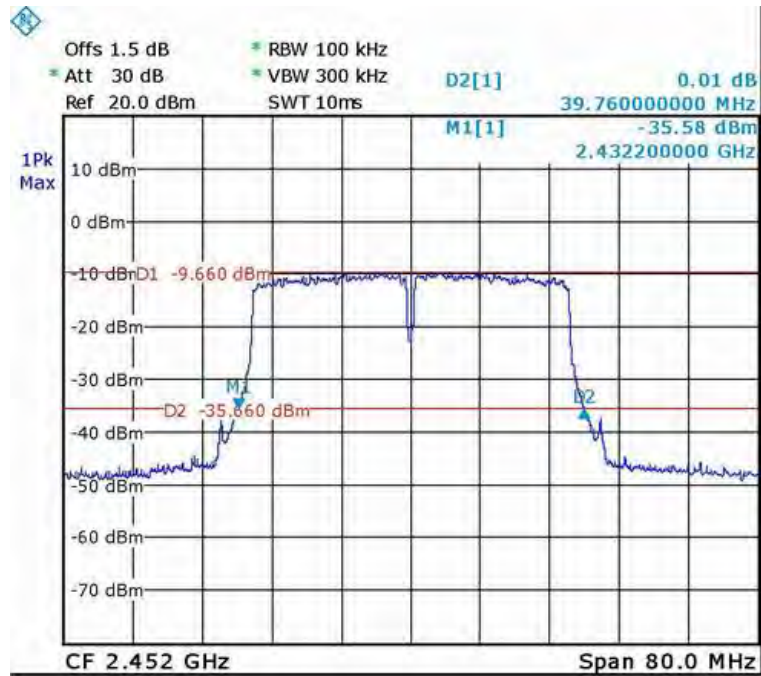
Date: 9.JAN.2014 10:03:58

802.11n HT20 26dB OBW, Low Channel for Antenna B**802.11n HT20 26dB OBW, Middle Channel for Antenna B**

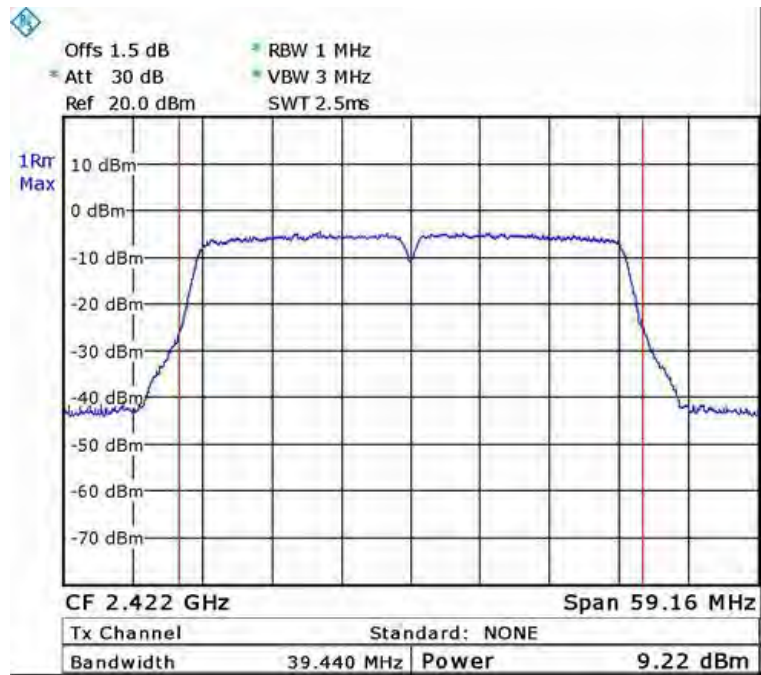
802.11n HT20 26dB OBW, High Channel for Antenna B**802.11n HT20 RF Output Power, Low Channel for Antenna B**

802.11n HT20 RF Output Power, Middle Channel for Antenna B**802.11n HT20 RF Output Power, High Channel for Antenna B**

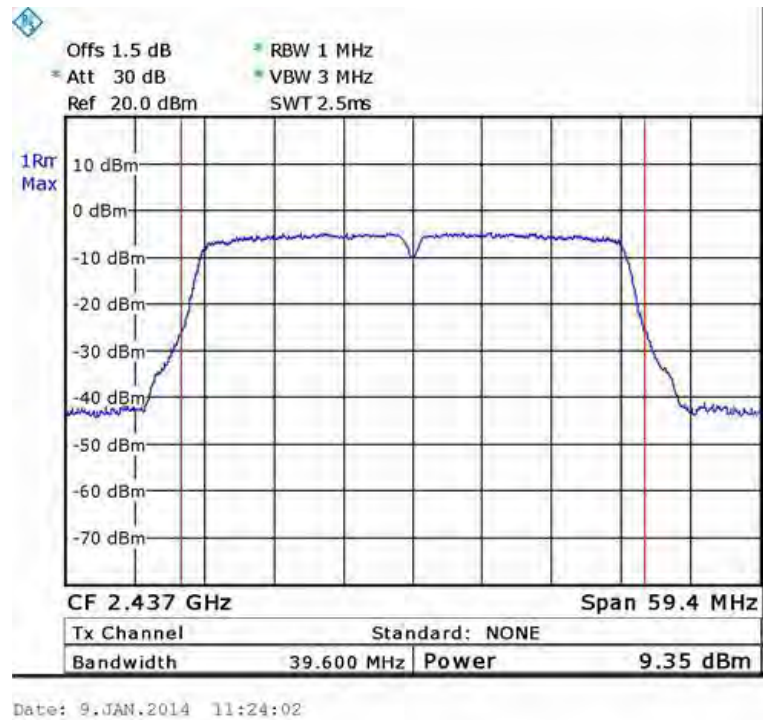
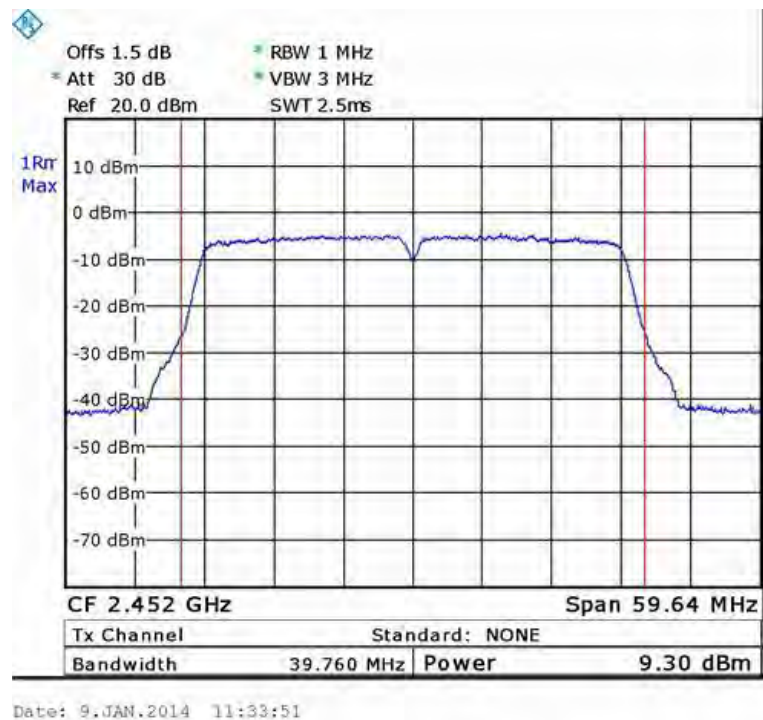
802.11n HT40 26dB OBW, Low Channel for Antenna B**802.11n HT40 26dB OBW, Middle Channel for Antenna B**

802.11n HT40 26dB OBW, High Channel for Antenna B

Date: 9.JAN.2014 11:29:34

802.11n HT40 RF Output Power, Low Channel for Antenna B

Date: 9.JAN.2014 11:14:14

802.11n HT40 RF Output Power, Middle Channel for Antenna B**802.11n HT40 RF Output Power, High Channel for Antenna B**

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
EMI Test Receiver	Rohde & Schwarz	ESCI	100028	2013-08-22	2014-08-21

*** Statement of Traceability:** BACL (Chengdu) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Data

Temperature:	17 °C
Relative Humidity:	60 %
ATM Pressure:	102.5 kPa

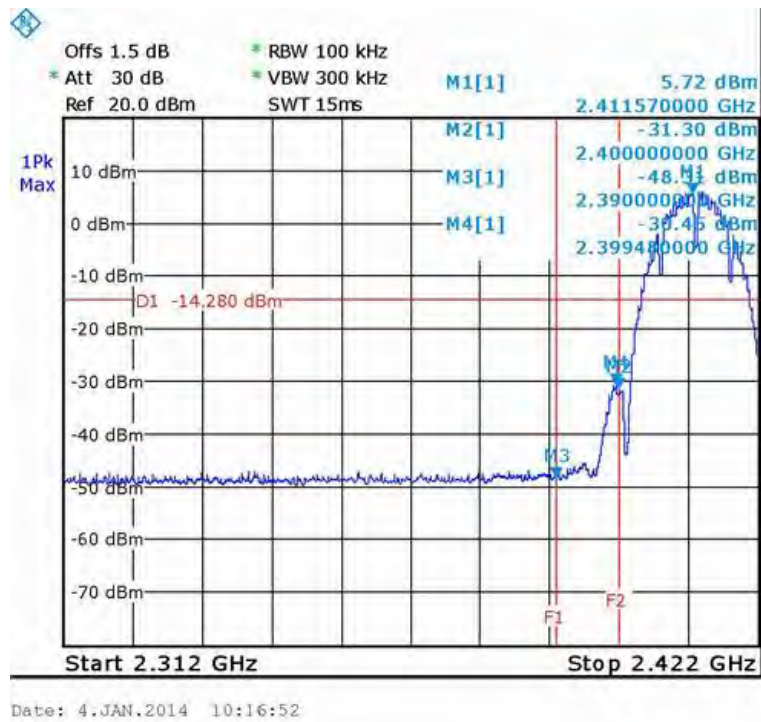
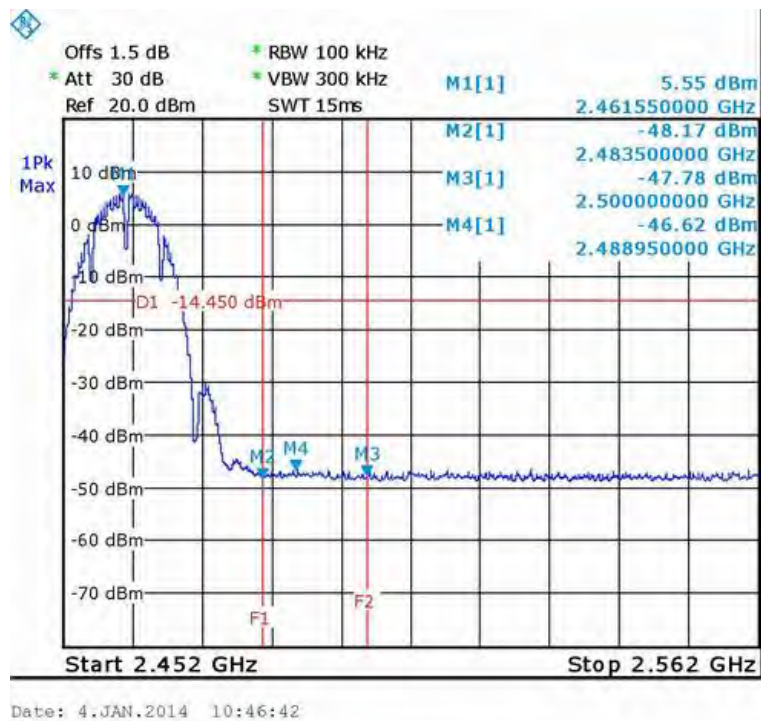
The testing was performed by Toby Ren on 2014-01-04.

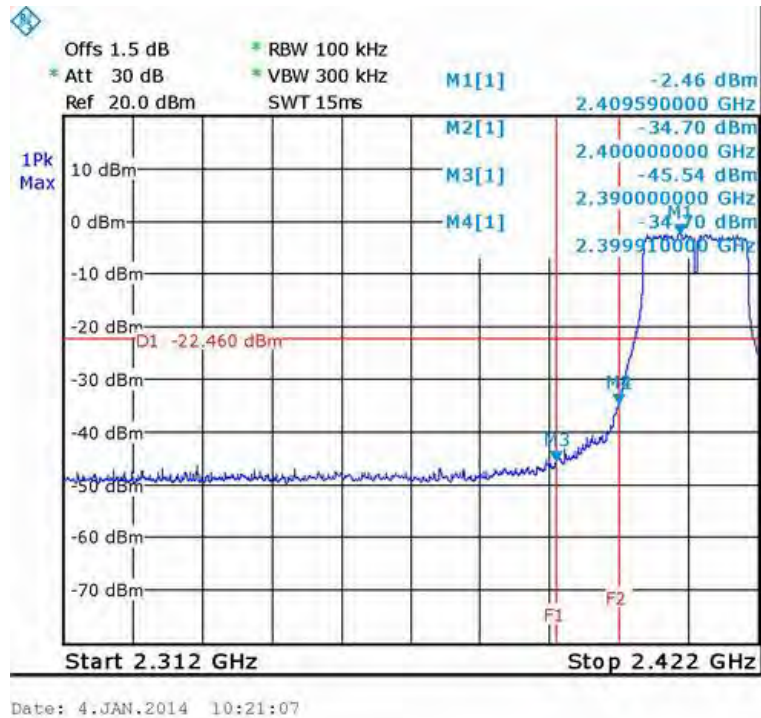
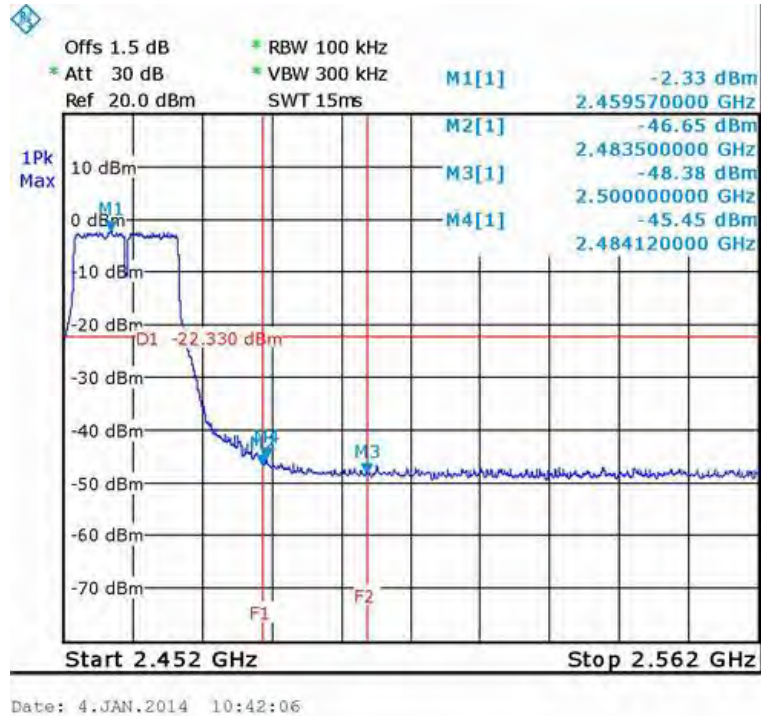
Temperature:	16 °C
Relative Humidity:	59 %
ATM Pressure:	102.5 kPa

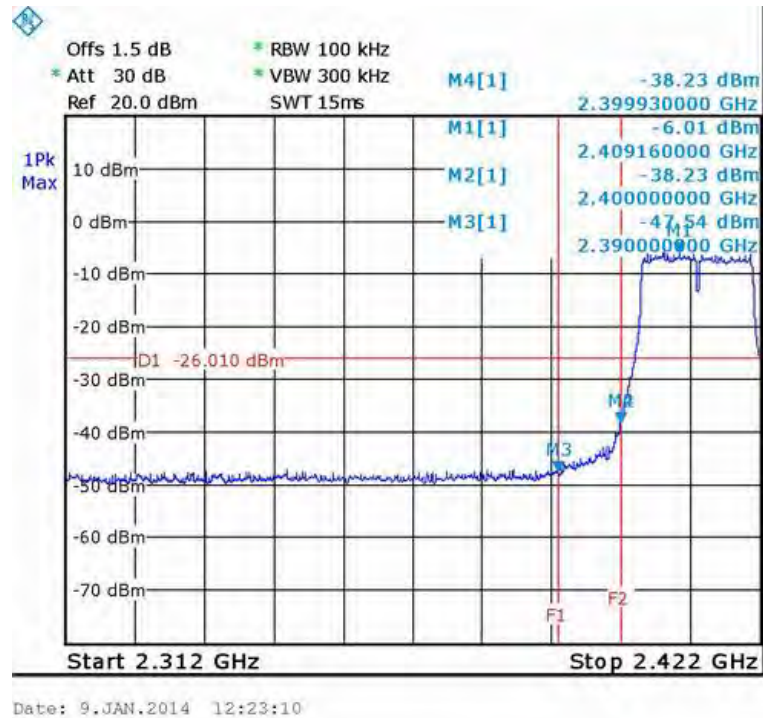
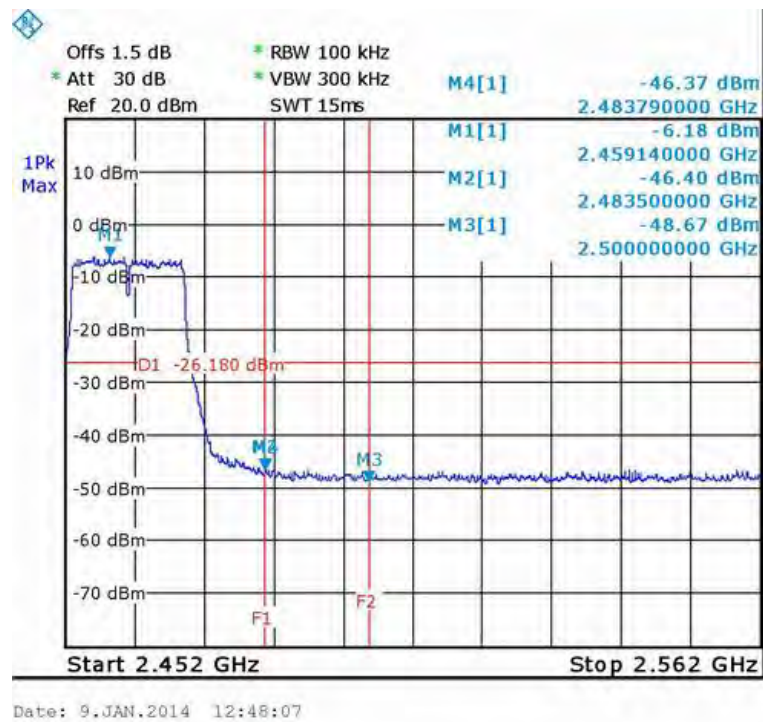
The testing was performed by Toby Ren on 2014-01-09.

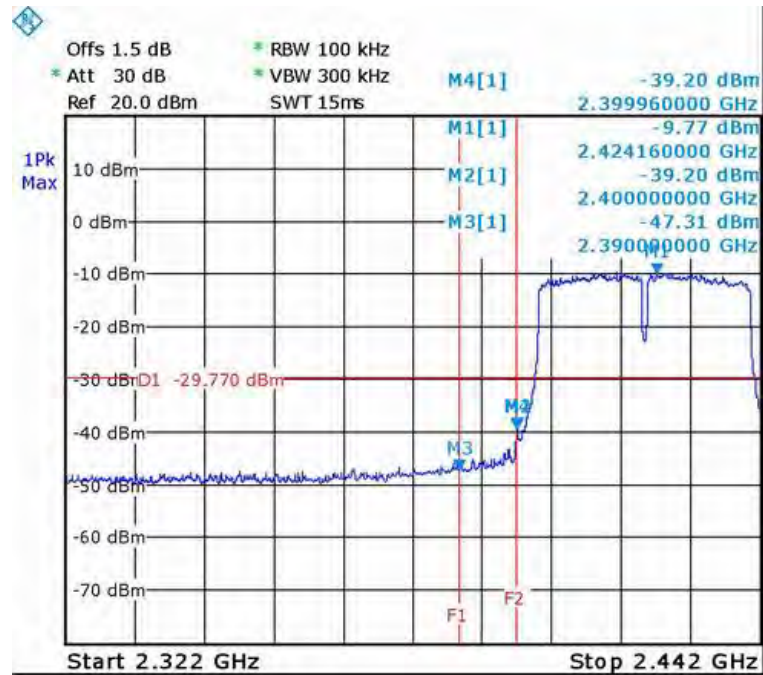
Test Mode: Transmitting

Test Result: Compliance, Please refer to following table and plots.

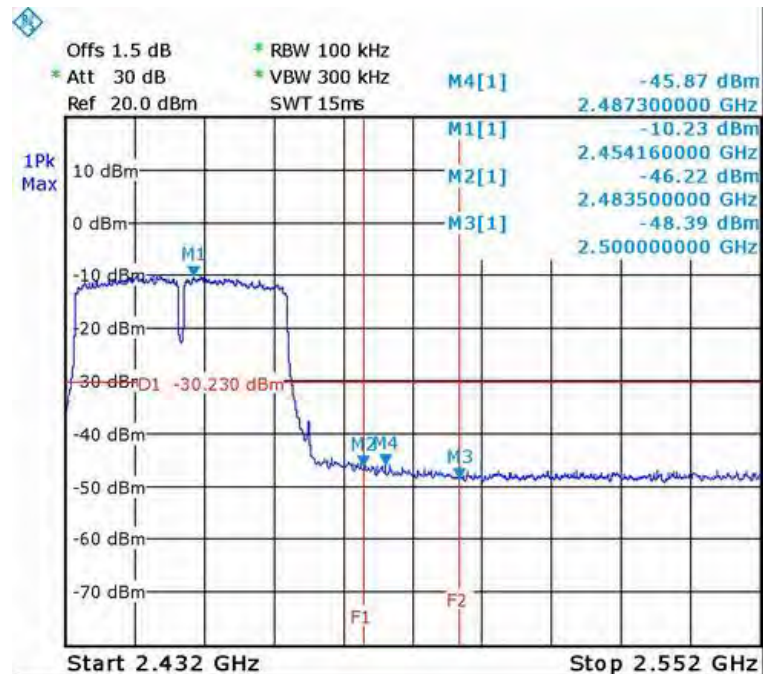
802.11b: Band Edge, Left Side for Antenna A**802.11b: Band Edge, Right Side for Antenna A**

802.11g: Band Edge, Left Side for Antenna A**802.11g: Band Edge, Right Side for Antenna A**

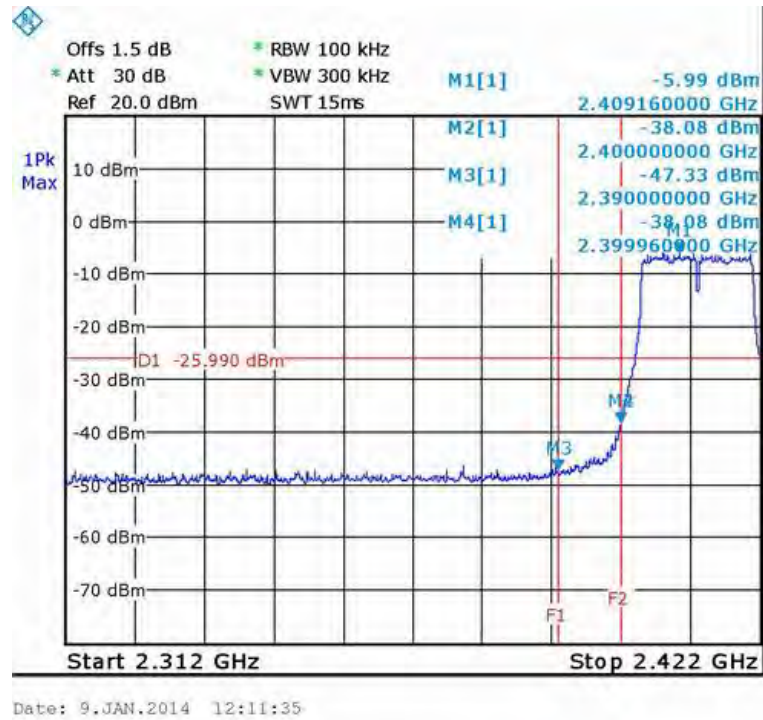
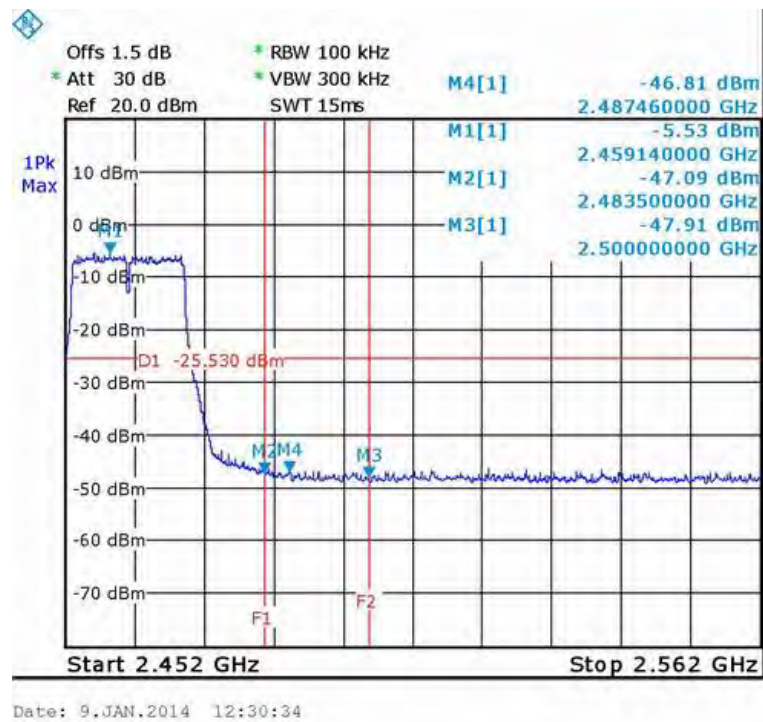
802.11n HT20 Band Edge, Left Side for Antenna A**802.11n HT20 Band Edge, Right Side for Antenna A**

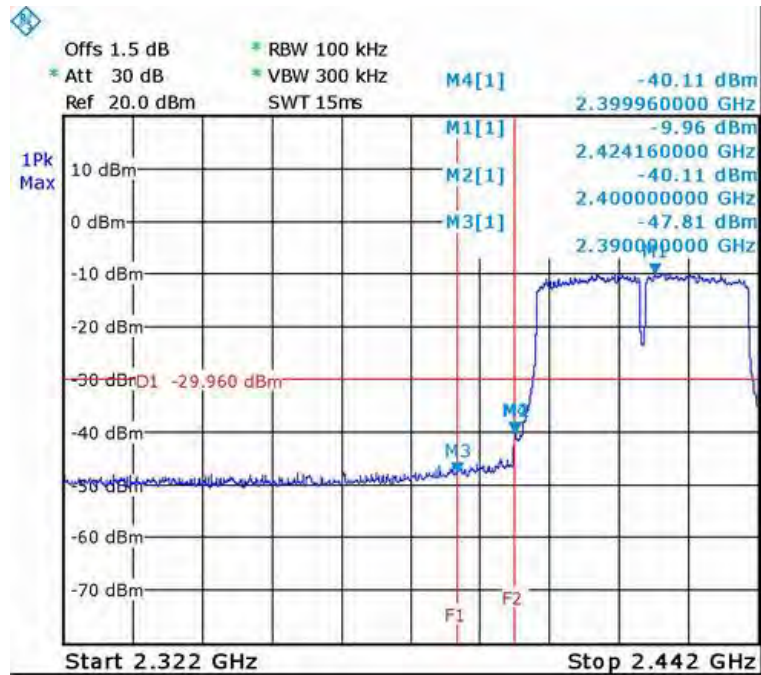
802.11n HT40 Band Edge, Left Side for Antenna A

Date: 9.JAN.2014 12:06:09

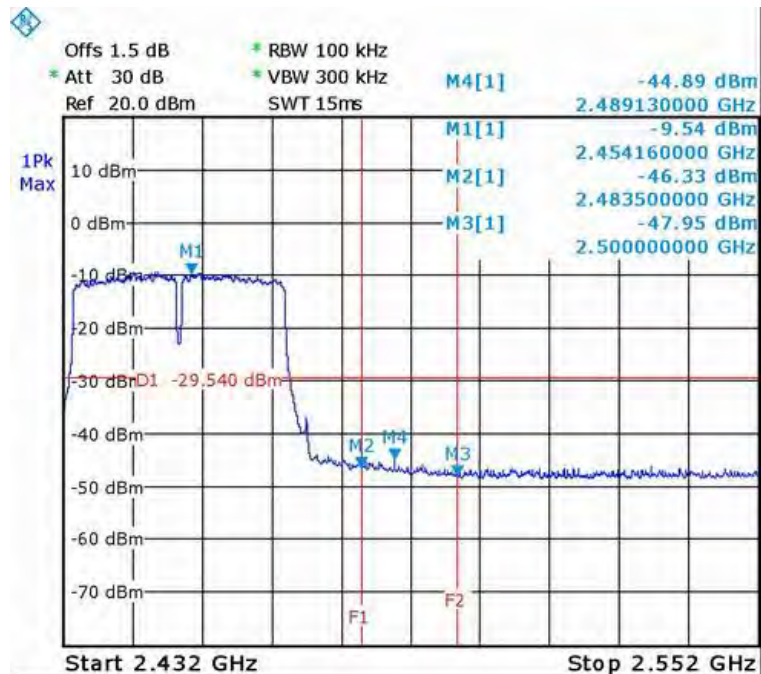
802.11n HT40 Band Edge, Right Side for Antenna A

Date: 9.JAN.2014 12:38:29

802.11n HT20 Band Edge, Left Side for Antenna B**802.11n HT20 Band Edge, Right Side for Antenna B**

802.11n HT40 Band Edge, Left Side for Antenna B

Date: 9.JAN.2014 12:13:15

802.11n HT40 Band Edge, Right Side for Antenna B

Date: 9.JAN.2014 11:52:06

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. According to KDB 558074 D01 DTS Meas Guidance v02, set the RBW = 3 kHz, VBW = 30 kHz, Set the span to 1.5 times the DTS channel bandwidth.
4. Use the peak marker function to determine the maximum power level in any 3 kHz band segment within the fundamental EBW.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
EMI Test Receiver	Rohde & Schwarz	ESCI	100028	2013-08-22	2014-08-21

*** Statement of Traceability:** BACL (Chengdu) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Data**Environmental Conditions**

Temperature:	16 °C
Relative Humidity:	59 %
ATM Pressure:	102.5 kPa

The testing was performed by Toby Ren on 2014-01-03.

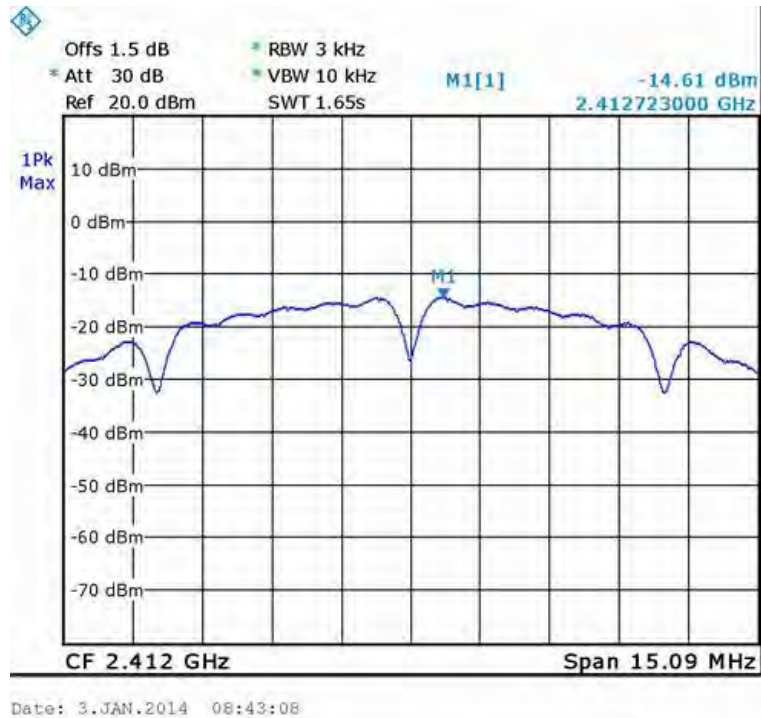
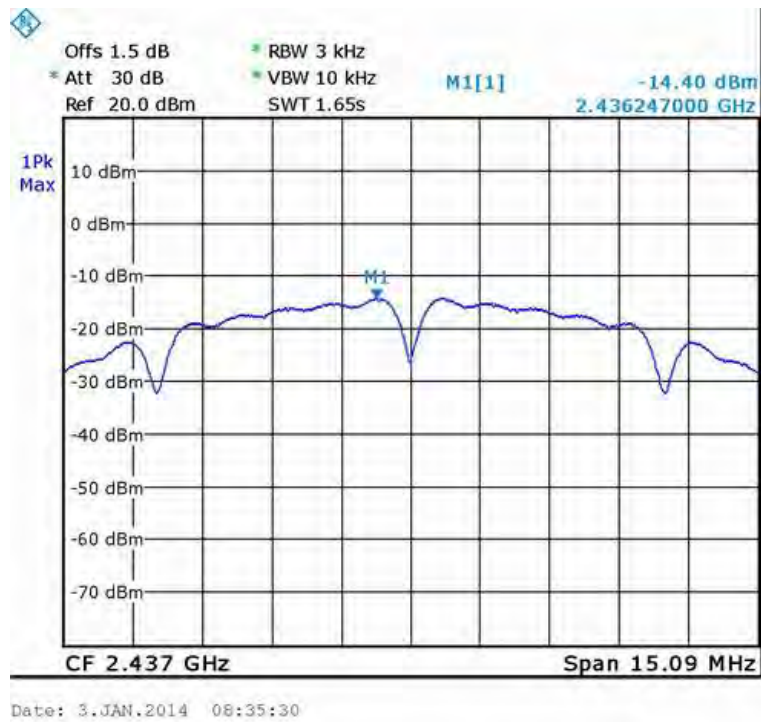
Temperature:	17 °C
Relative Humidity:	60 %
ATM Pressure:	102.5 kPa

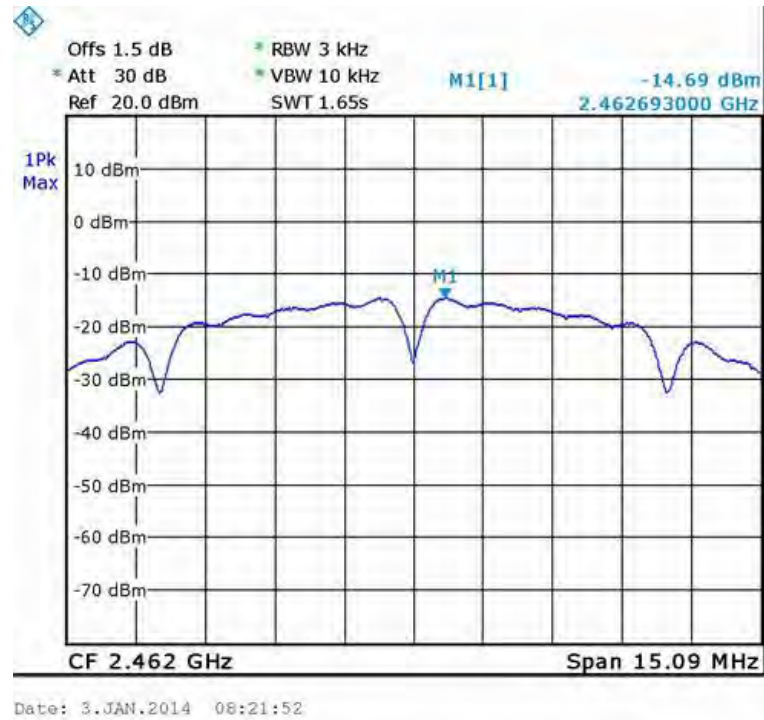
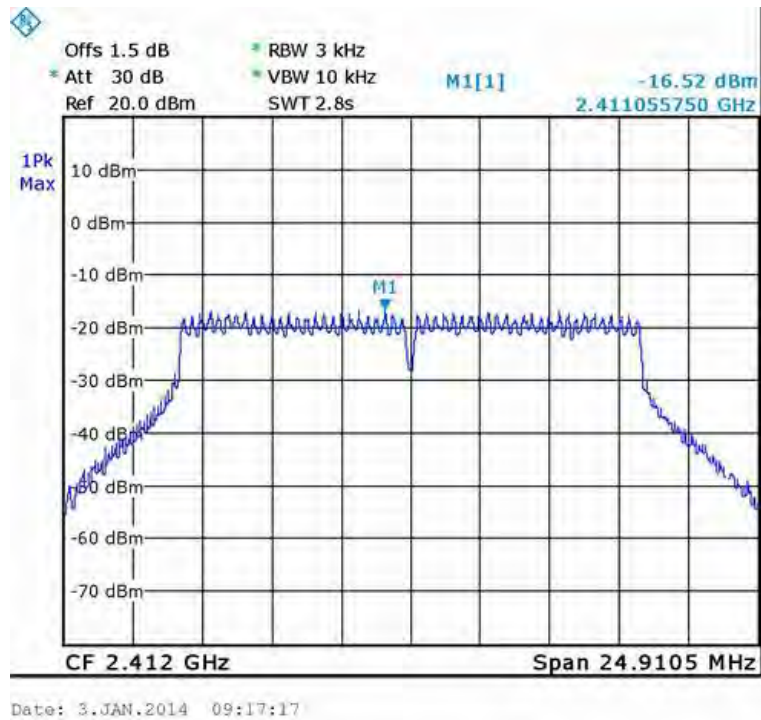
The testing was performed by Toby Ren on 2014-01-04.

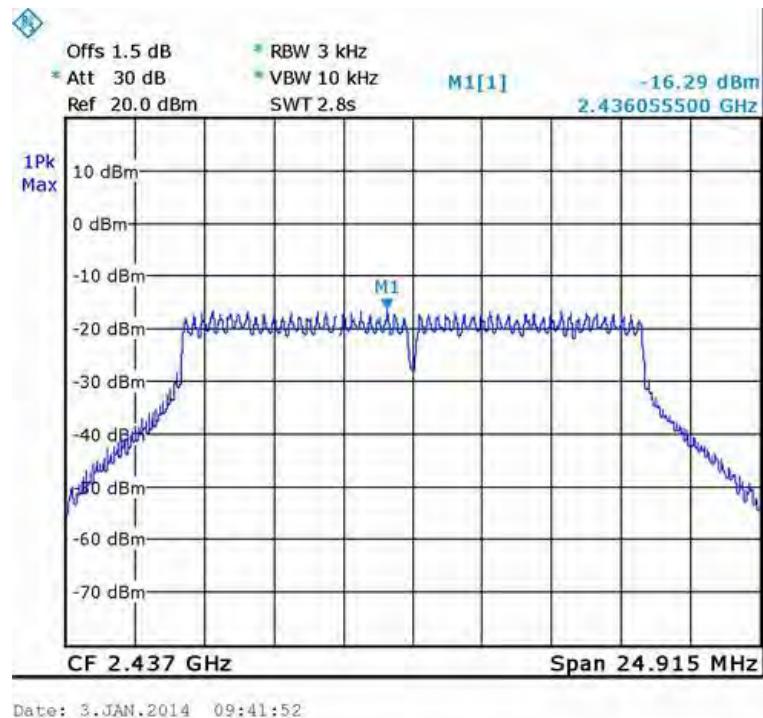
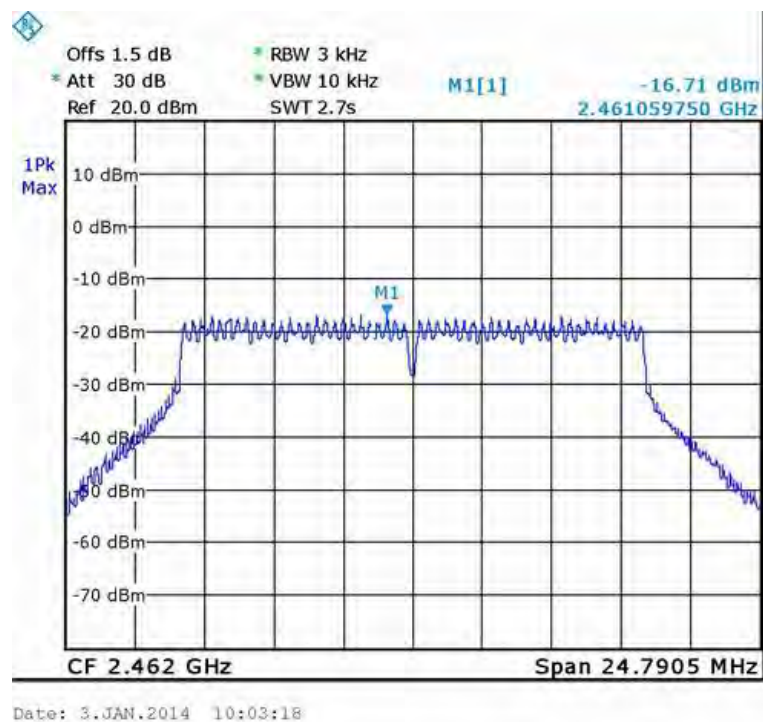
Test Mode: Transmitting

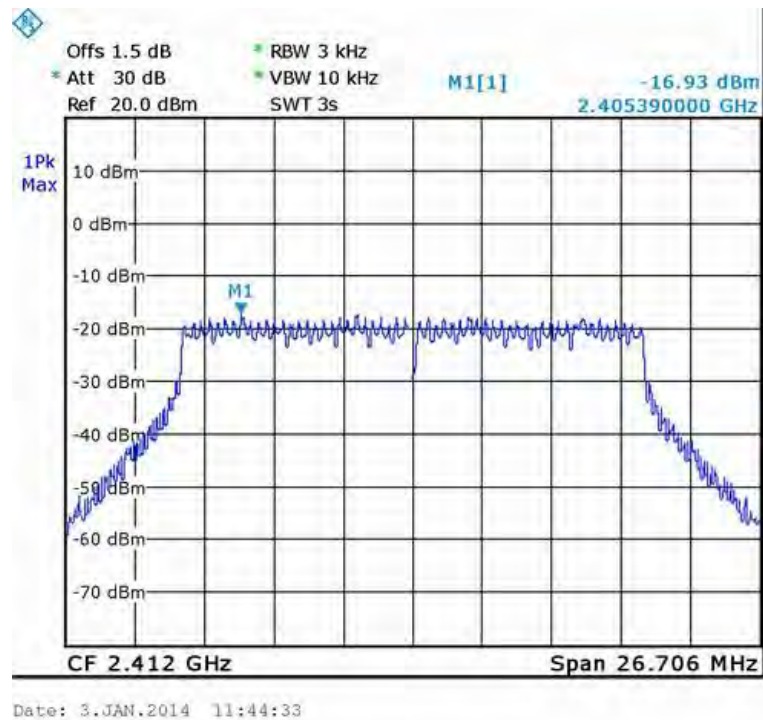
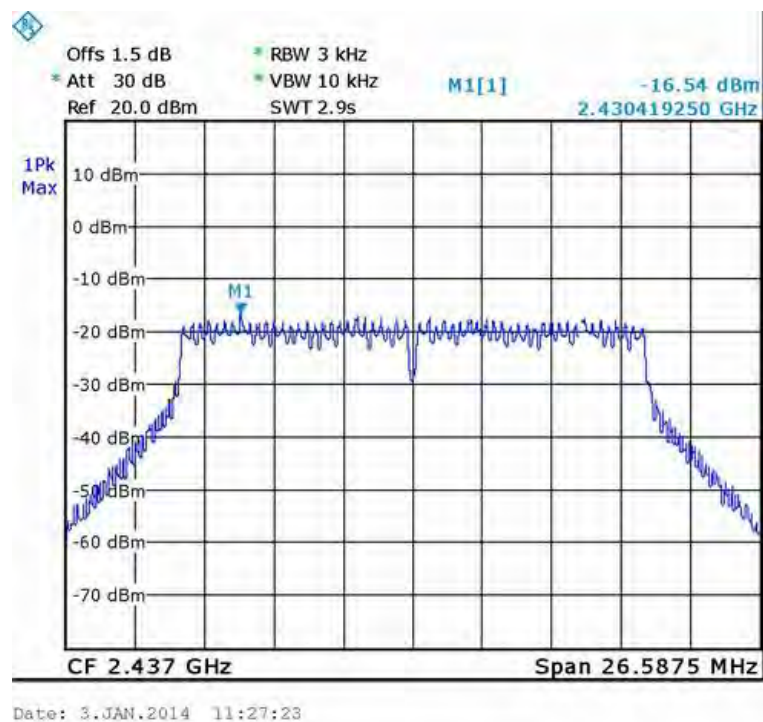
Mode	Channel	Frequency (MHz)	Conducted Output Power (dBm)			Limit (dBm)	Result
			Antenna A	Antenna B	Total		
2.4 G band 802.11b	Low	2412	-14.61	/	-14.61	8	Pass
	Middle	2437	-14.40	/	-14.40	8	Pass
	High	2462	-14.69	/	-14.69	8	Pass
2.4 G band 802.11 g	Low	2412	-16.52	/	-16.52	8	Pass
	Middle	2437	-16.29	/	-16.29	8	Pass
	High	2462	-16.71	/	-16.71	8	Pass
2.4 G band 802.11nHT20	Low	2412	-16.93	-17.07	-13.99	8	Pass
	Middle	2437	-16.54	-16.60	-13.56	8	Pass
	High	2462	-16.90	-16.72	-13.80	8	Pass
2.4 G band 802.11n HT40	Low	2422	-18.85	-18.80	-15.81	8	Pass
	Middle	2437	-18.94	-19.68	-16.28	8	Pass
	High	2452	-18.70	-19.33	-15.99	8	Pass

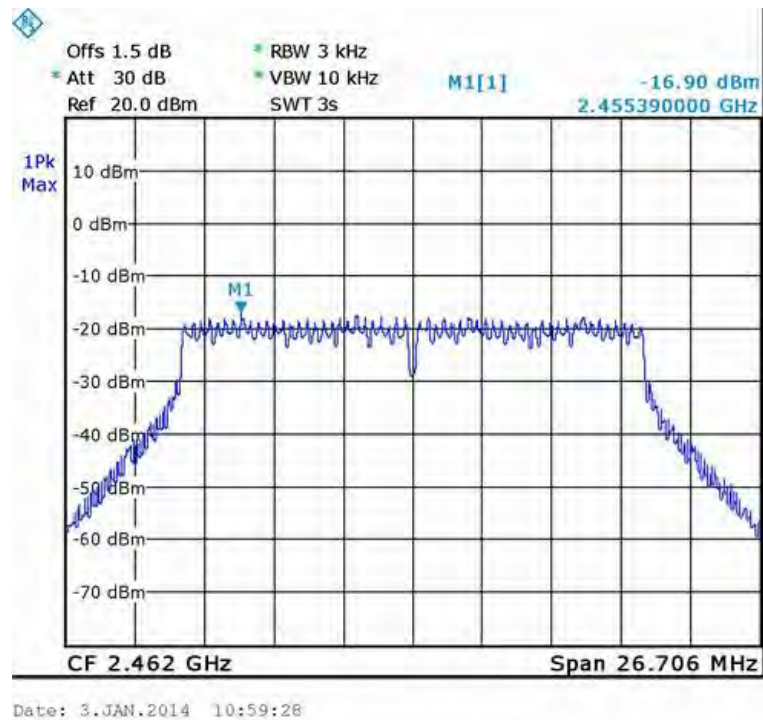
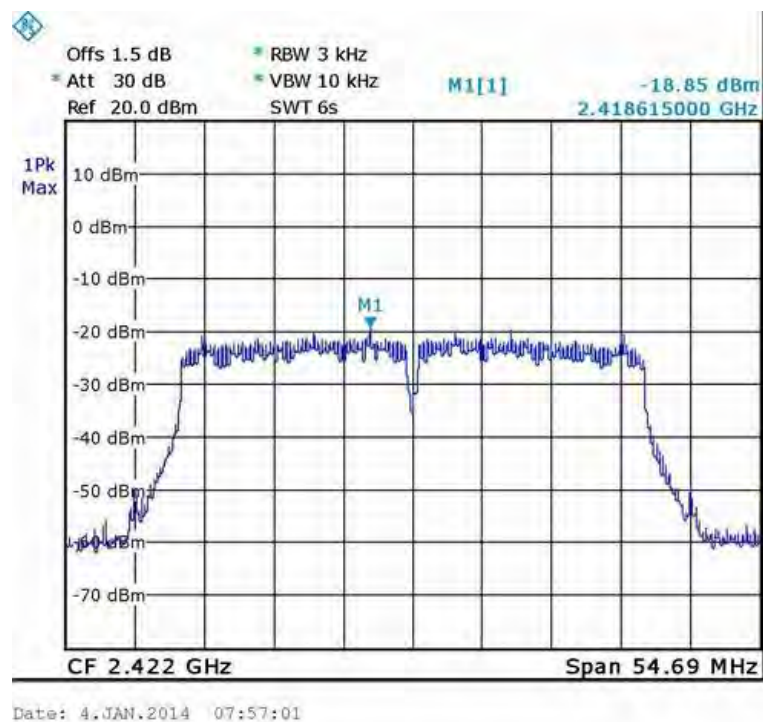
Please refer to the following plots.

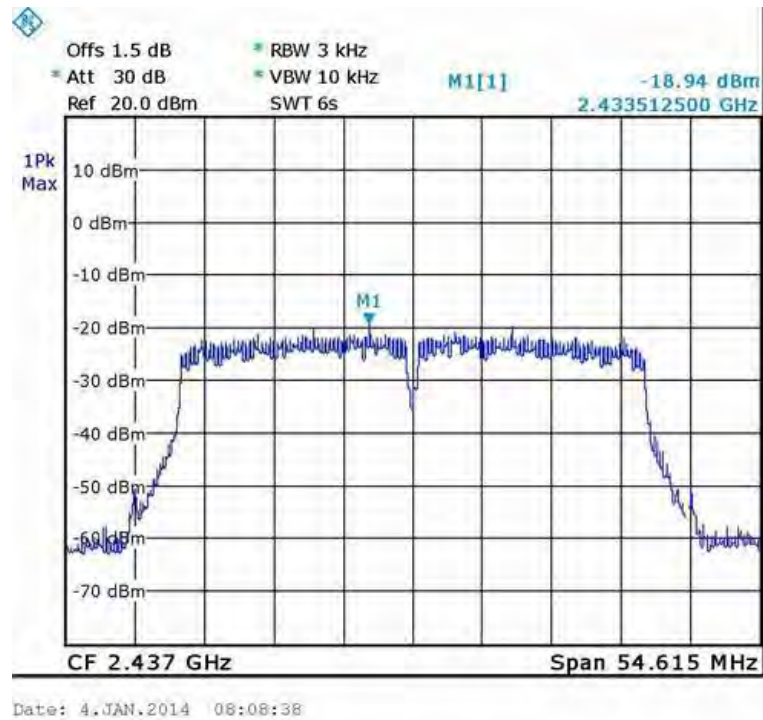
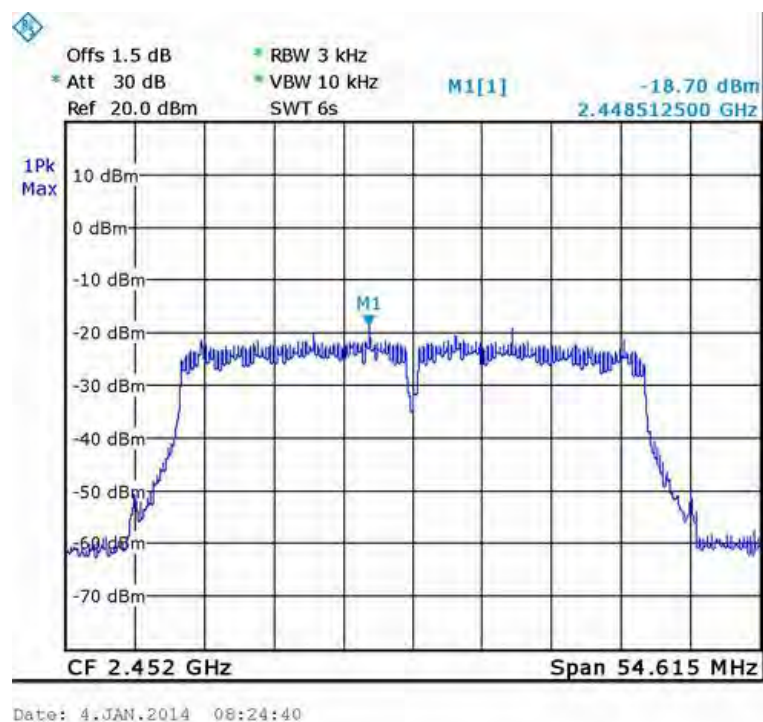
Power Spectral Density, 802.11b Low Channel for Antenna A**Power Spectral Density, 802.11b Middle Channel for Antenna A**

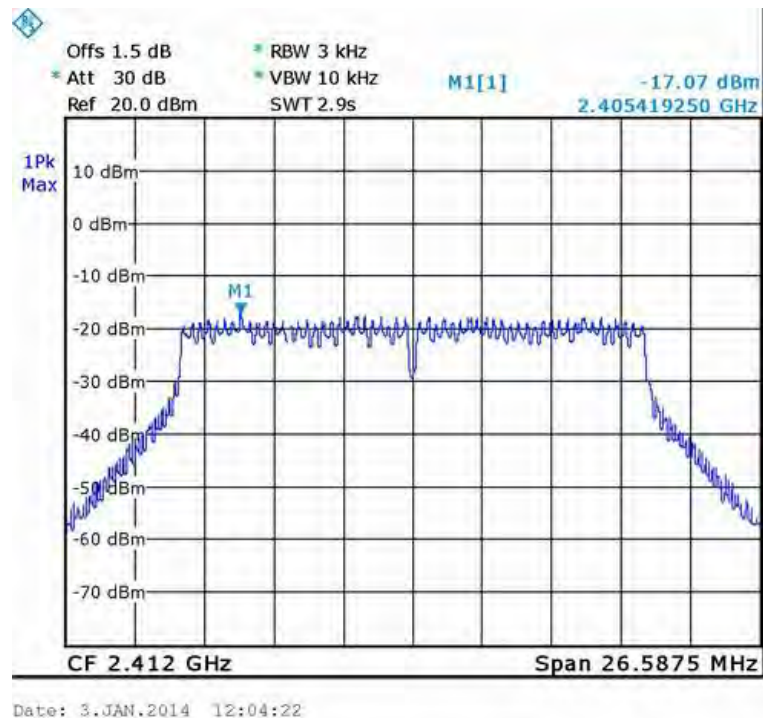
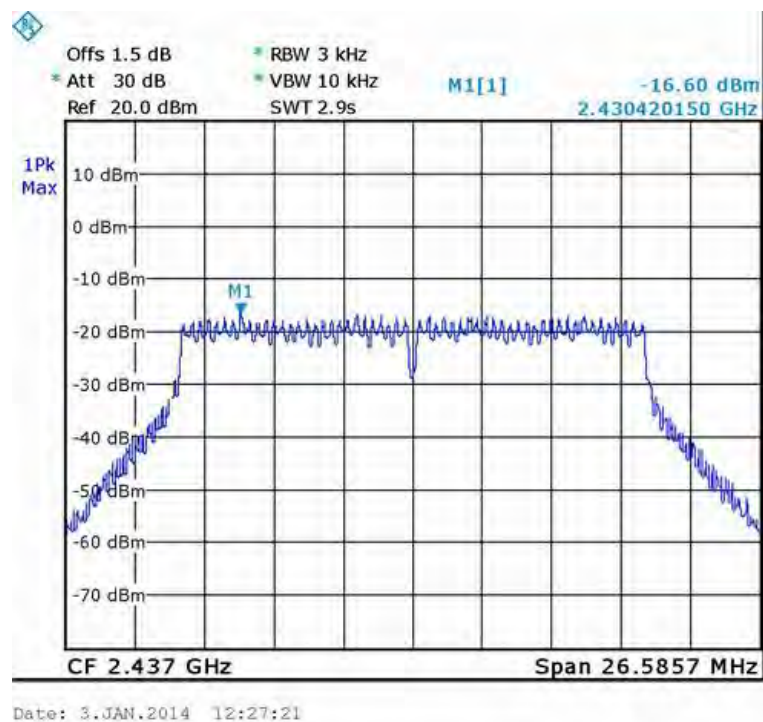
Power Spectral Density, 802.11b High Channel for Antenna A**Power Spectral Density, 802.11g Low Channel for Antenna A**

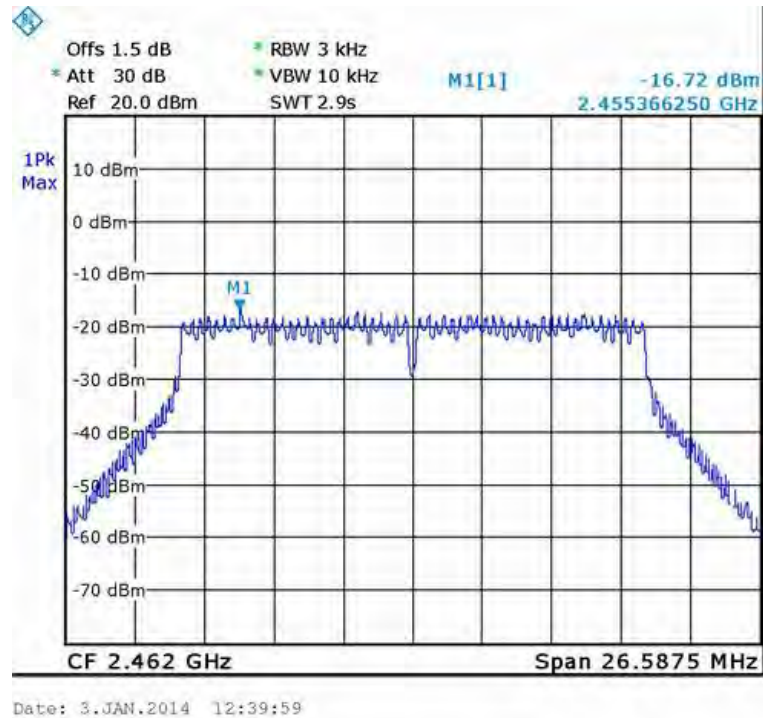
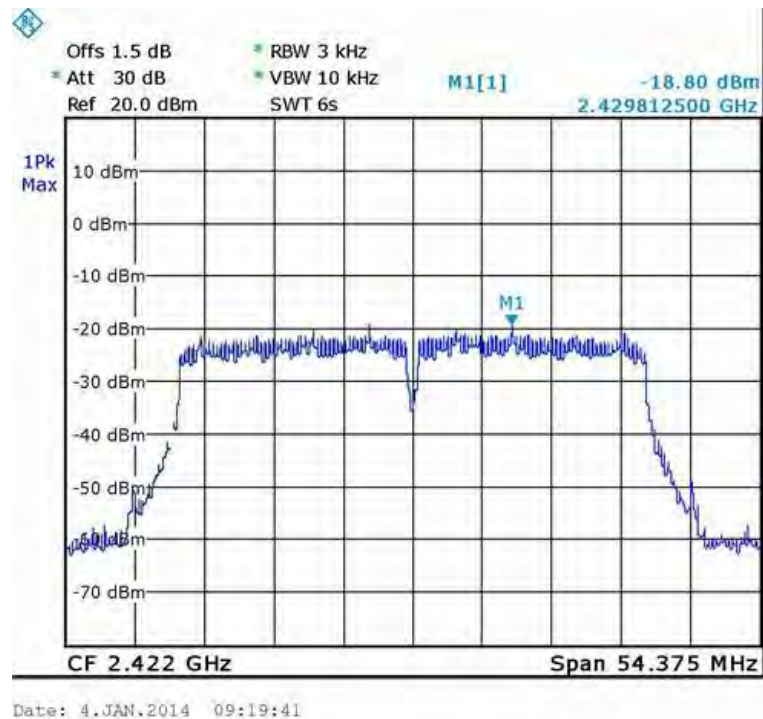
Power Spectral Density, 802.11g Middle Channel for Antenna A**Power Spectral Density, 802.11g High Channel for Antenna A**

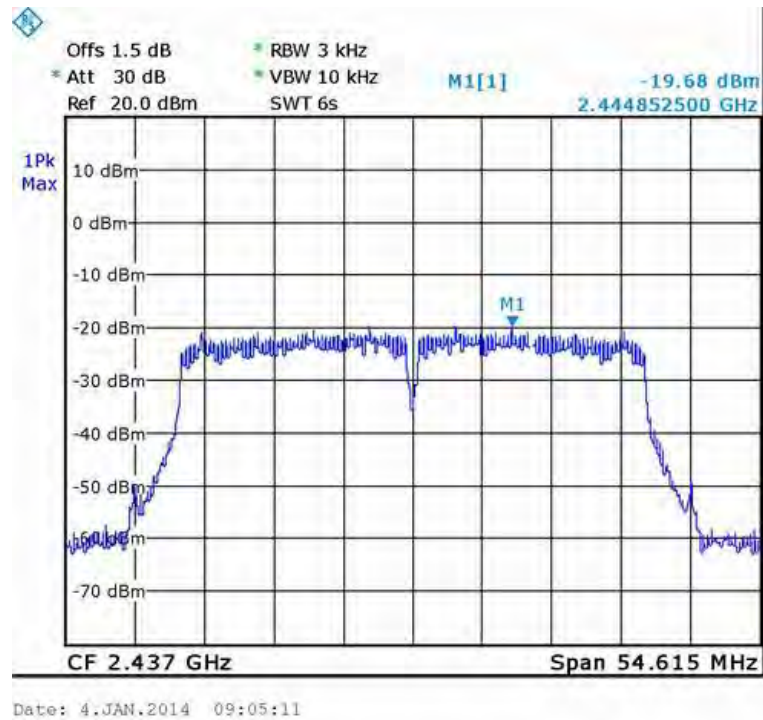
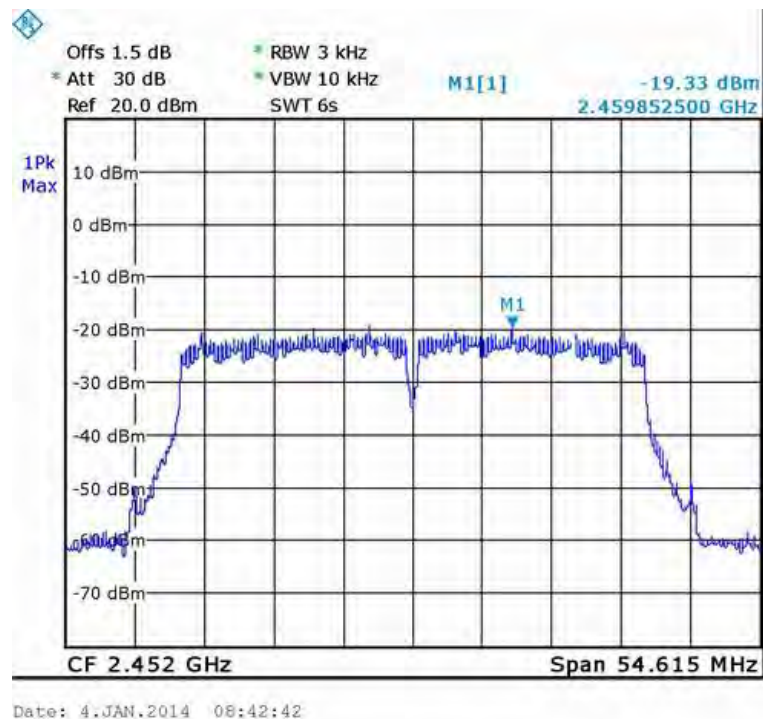
Power Spectral Density, 802.11n HT20 Low Channel for Antenna A**Power Spectral Density, 802.11n HT20 Middle Channel for Antenna A**

Power Spectral Density, 802.11n HT20 High Channel for Antenna A**Power Spectral Density, 802.11n HT40 Low Channel for Antenna A**

Power Spectral Density, 802.11n HT40 Middle Channel for Antenna A**Power Spectral Density, 802.11n HT40 High Channel for Antenna A**

Power Spectral Density, 802.11n HT20 Low Channel for Antenna B**Power Spectral Density, 802.11n HT20 Middle Channel for Antenna B**

Power Spectral Density, 802.11n HT20 High Channel for Antenna B**Power Spectral Density, 802.11n HT40 Low Channel for Antenna B**

Power Spectral Density, 802.11n HT40 Middle Channel for Antenna B**Power Spectral Density, 802.11n HT40 High Channel for Antenna B**

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