



FCC PART 15.247

TEST REPORT

For

Chengdu Xuguang Tech Co., Ltd.

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

FCC ID: S5FSDWF-8B1

Report Type: Original Report	Product Type: Wi-Fi Module
Test Engineer: Bruce Wu <i>Bruce Wu</i>	
Report Number: RSC130912001	
Report Date: 2013-09-24	
Reviewed By: Henry Ding <i>Henry Ding</i>	
Test Laboratory: Bay Area Compliance Laboratories Corp. (Chengdu) 5040, HuiLongWan Plaza, No. 1, ShaWan Road, JinNiu District, ChengDu, China Tel: 028-65523123, Fax: 028-65525125 www.baclcorp.com	

Note: This test report was prepared for the customer shown above and for the device described herein. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp. (Chengdu)
Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. This report was valid only with a valid digital signature. The digital signature may be available only under the Adobe software above version 7.0.

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	6
EQUIPMENT MODIFICATIONS	6
SUPPORT EQUIPMENT LIST AND DETAILS	6
EXTERNAL I/O CABLE.....	7
BLOCK DIAGRAM OF TEST SETUP	8
SUMMARY OF TEST RESULTS	10
FCC §15.247 (i) & §2.1091- MAXIMUM PERMISSIBLE EXPOSURE (MPE).....	11
APPLICABLE STANDARD	11
FCC §15.203 - ANTENNA REQUIREMENT.....	12
APPLICABLE STANDARD	12
ANTENNA CONNECTOR CONSTRUCTION	12
FCC §15.207 (a) – AC LINE CONDUCTED EMISSIONS	13
APPLICABLE STANDARD	13
MEASUREMENT UNCERTAINTY	13
EUT SETUP	13
EMI TEST RECEIVER SETUP.....	14
TEST PROCEDURE	14
CORRECTED AMPLITUDE & MARGIN CALCULATION	14
TEST EQUIPMENT LIST AND DETAILS.....	15
TEST RESULTS SUMMARY	15
TEST DATA	15
FCC §15.209, §15.205 & §15.247(d) - SPURIOUS EMISSIONS.....	18
APPLICABLE STANDARD	18
MEASUREMENT UNCERTAINTY	18
EUT SETUP	18
EMI TEST RECEIVER & SPECTRUM ANALYZER SETUP	19
TEST PROCEDURE	19
CORRECTED AMPLITUDE & MARGIN CALCULATION	20
TEST EQUIPMENT LIST AND DETAILS.....	20
TEST RESULTS SUMMARY	20
TEST DATA	21
FCC §15.247(a) (2) – 6 dB EMISSION BANDWIDTH.....	32
APPLICABLE STANDARD	32
TEST PROCEDURE	32
TEST EQUIPMENT LIST AND DETAILS.....	32
TEST DATA	33
FCC §15.247(b) (3) - MAXIMUM PEAK OUTPUT POWER	40
APPLICABLE STANDARD	40
TEST PROCEDURE	40

TEST EQUIPMENT LIST AND DETAILS.....	40
TEST DATA	41
FCC §15.247(d) – 100 kHz BANDWIDTH OF FREQUENCY BAND EDGE.....	54
APPLICABLE STANDARD	54
TEST PROCEDURE	54
TEST EQUIPMENT LIST AND DETAILS.....	54
TEST DATA	55
FCC §15.247(e) - POWER SPECTRAL DENSITY	60
APPLICABLE STANDARD	60
TEST PROCEDURE	60
TEST EQUIPMENT LIST AND DETAILS.....	60
TEST DATA	61

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *Chengdu Xuguang Tech Co., Ltd.*'s product, model number: *SDWF-8B1/RY*(FCC ID: *S5FSDWF-8B1*) (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 3.3 V.

**All measurement and test data in this report was gathered from final production sample, serial number: SJ20130922 (provided by manufacturer). It may have deviation from any other sample. The EUT supplied by the applicant was received on 2013-09-11, 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~18GHz: ± 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.

EUT Exercise Software

The software “00001980-MP_Kit_RTL11n_8188EUS_USB_v32_20130530, V32” was used for testing, which was provided by manufacturer.

Equipment Modifications

No modification was made to the EUT tested.

Support Equipment List and Details

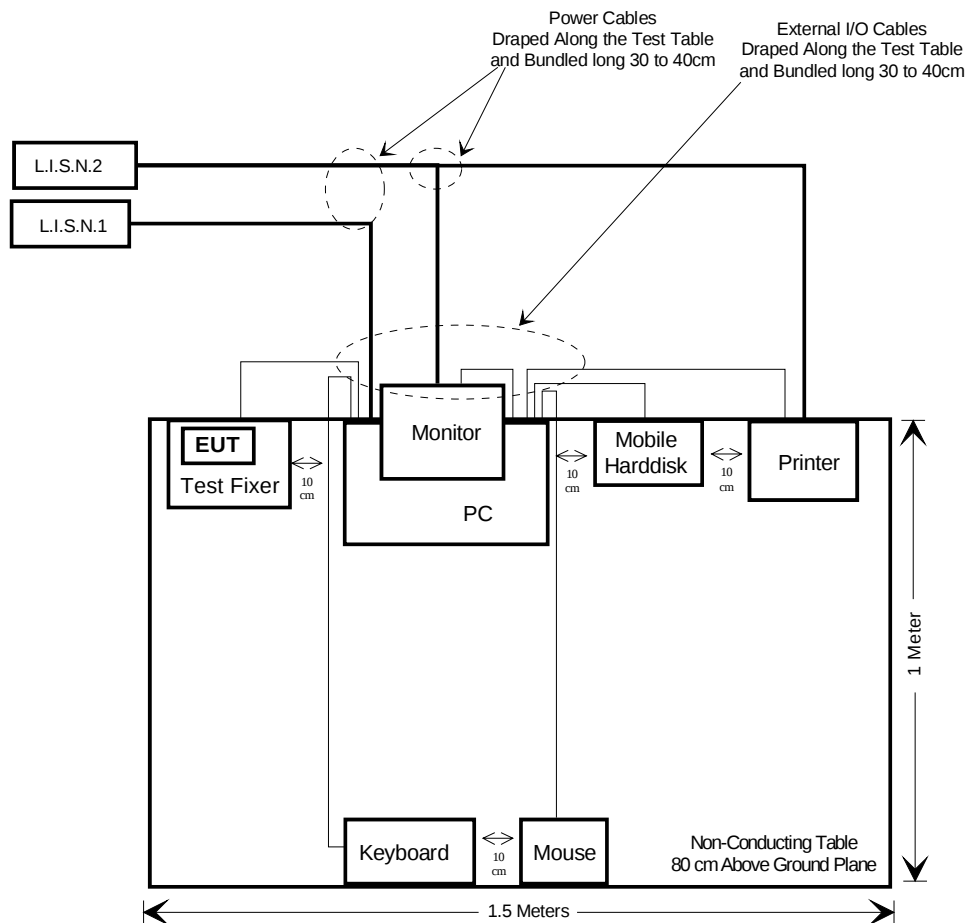
Manufacturer	Description	Model	Serial Number
IBM	PC	8176	99Y7315
DELL	Monitor	E157FPb	-
Genius	keyboard	KM-110X	XBK133000993
Logitech	Mouse	M-U0004	810-001808
TOSHIBA	Mobile Hard Disk	V6700-A500	1297FH0YSRE8
EPSON	Printer	B261A	GXSK285854
Chengdu Xuguang	Test Fixer	-	-

External I/O Cable

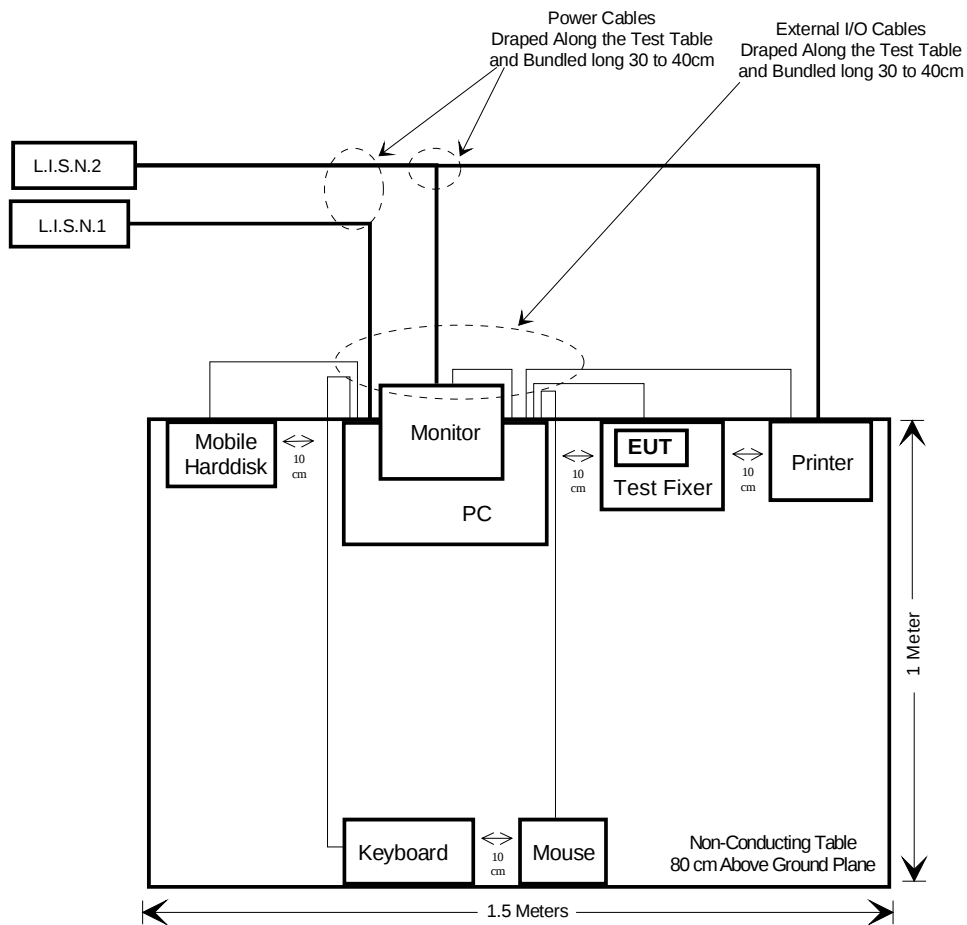
Cable Description	Length (m)	From	To
Unshielded VGA Cable	1.5	PC	Monitor
Unshielded USB Cable	0.5	PC	Test Fixer
Unshielded RS232 Cable	1.5	PC	Printer
Unshielded Mouse Cable	1.5	PC	Mouse
Unshielded Keyboard Cable	1.5	PC	Keyboard
Unshielded USB Cable	0.5	PC	Mobile Hard Disk

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	2437	4	2.51	15.06	32.06	20	0.256	1.0
802.11g	2437	4	2.51	14.27	26.73	20	0.247	1.0
802.11n20	2462	4	2.51	13.12	20.51	20	0.169	1.0
802.11n40	2452	4	2.51	12.34	17.14	20	0.132	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-8B1/R Y has a panel antenna, which was used an SMT connector port, and the maximum gain is 4.0 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:

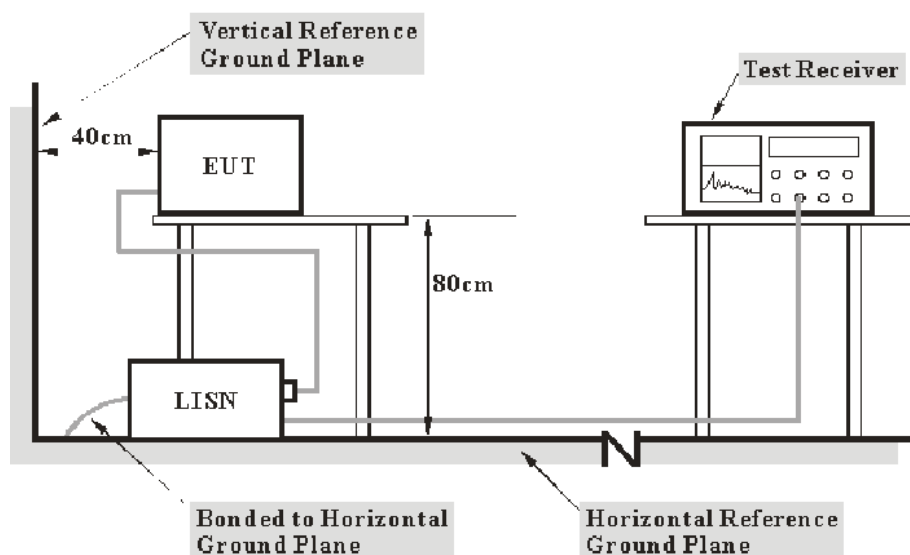
- compliance is deemed to occur if no measured disturbance level, increased by $(U_{lab} - U_{cispr})$, exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance level, increased by $(U_{lab} - U_{cispr})$, exceeds the disturbance limit.

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 test fixer with 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	10028	2013-05-24	2014-05-23
L.I.S.N.	Rohde & Schwarz	ENV216	3560.6550.06	2013-07-31	2014-07-31
L.I.S.N.	Rohde & Schwarz	ENV216	3560.6550.12	2013-02-18	2014-02-17

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

15.91 dB at 1.018 MHz in the **Line** conducted mode.

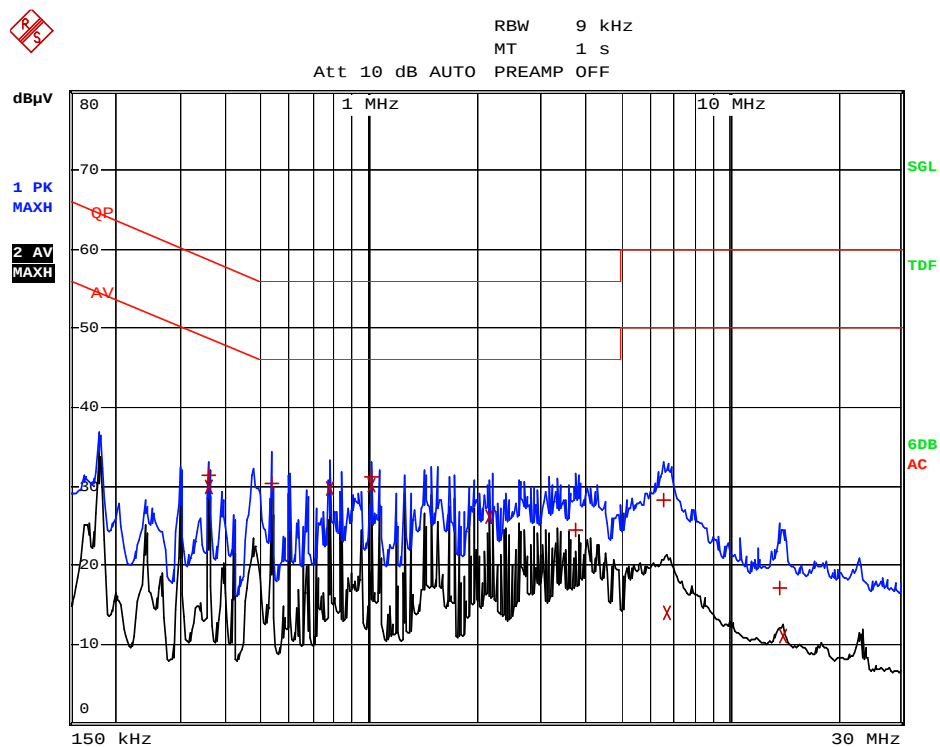
Test Data**Environmental Conditions**

Temperature:	28 ° C
Relative Humidity:	61 %
ATM Pressure:	100.6 kPa

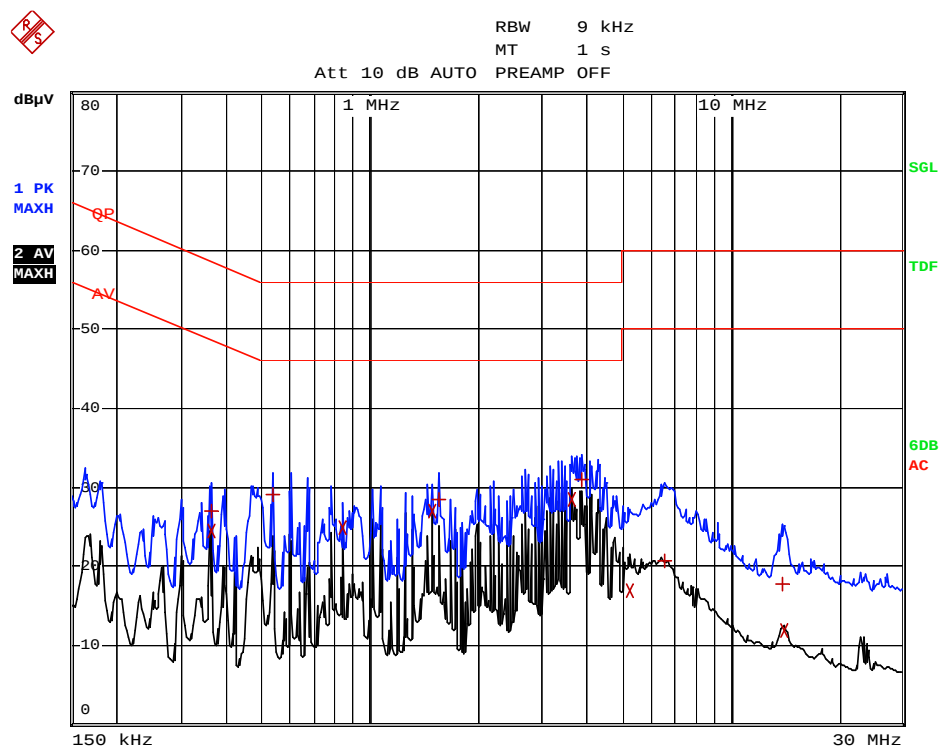
The testing was performed by Bruce Wu on 2013-09-17.

Test Mode: Transmitting

AC 120V/60 Hz, Line



AC Line Conducted Emissions				FCC PART 15.247	
Frequency MHz	Corrected Amplitude (dBμV/m)	Detector (QP/AV)	Phase (Line/Neutral)	Limit dBμV	Margin dB
0.358	31.42	QP	Line	58.77	27.35
0.538	30.30	QP	Line	56.00	25.70
1.018	31.15	QP	Line	56.00	24.85
3.766	24.48	QP	Line	56.00	31.52
6.582	28.22	QP	Line	60.00	31.78
13.850	17.06	QP	Line	60.00	42.94
0.358	29.89	AV	Line	48.77	18.88
0.778	29.76	AV	Line	46.00	16.24
1.018	30.09	AV	Line	46.00	15.91
2.154	26.17	AV	Line	46.00	19.83
6.758	14.00	AV	Line	50.00	36.00
14.118	10.99	AV	Line	50.00	39.01

AC 120V/60 Hz, Neutral

AC Line Conducted Emissions				FCC PART 15.247	
Frequency MHz	Corrected Amplitude (dBμV/m)	Detector (QP/AV)	Phase (Line/Neutral)	Limit dBμV	Margin dB
0.362	27.00	QP	Neutral	58.68	31.68
0.534	29.02	QP	Neutral	56.00	26.98
1.558	28.37	QP	Neutral	56.00	27.63
3.894	31.00	QP	Neutral	56.00	25.00
6.586	20.68	QP	Neutral	60.00	39.32
13.954	17.71	QP	Neutral	60.00	42.29
0.362	24.50	AV	Neutral	48.68	24.18
0.838	24.93	AV	Neutral	46.00	21.07
1.498	27.05	AV	Neutral	46.00	18.95
3.654	28.35	AV	Neutral	46.00	17.65
5.270	16.81	AV	Neutral	50.00	33.19
14.142	11.93	AV	Neutral	50.00	38.07

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.

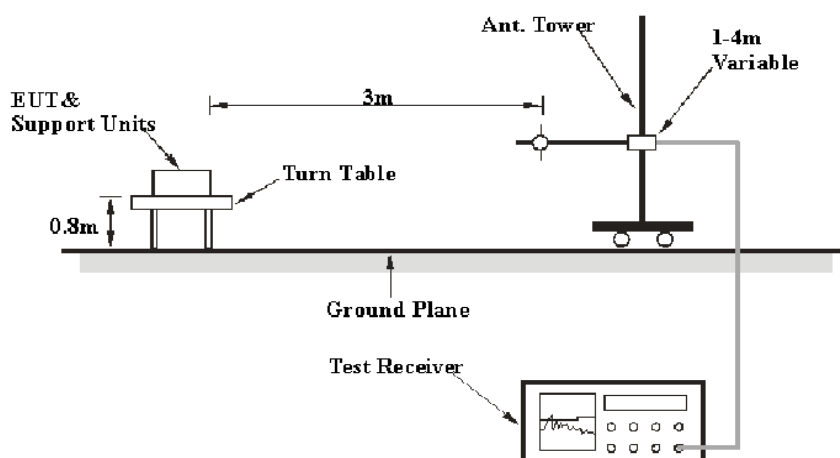
6G~18GHz: ± 5.47 dB

Table 2 – Values of U_{cispr}

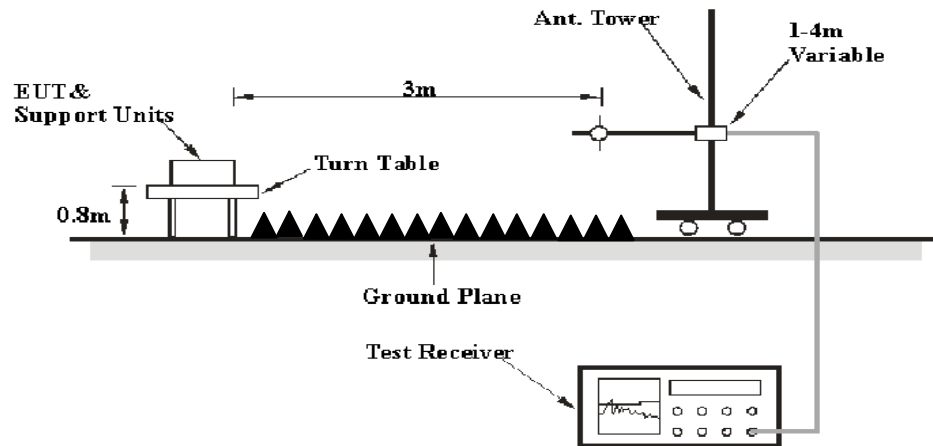
Measurement	U_{cispr}
Radiated disturbance (electric field strength at an OATS or in a SAC) (30 MHz to 1000 MHz)	6.3 dB
Radiated disturbance (electric field strength in a FAR) (1 GHz to 6 GHz)	5.2 dB
Radiated disturbance (electric field strength in a FAR) (6 GHz to 18 GHz)	5.5 dB

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 test fixer with 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 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

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	10028	2013-05-24	2014-05-23
Broadband Antenna	Sunol Sciences	JB3	A101808	2013-04-10	2014-04-09
Spectrum Analyzer	Rohde & Schwarz	FSL18	100180	2013-07-31	2014-07-30
Horn Antenna	EM TEST	3115	0036076	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) attested 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:

2.03 dB at 240.02 MHz in the **Vertical** polarization for 802.11n HT40 mode

Test Data**Environmental Conditions**

Temperature:	28 ° C
Relative Humidity:	60 %
ATM Pressure:	100.7 kPa

The testing was performed by Bruce Wu on 2013-09-16.

Temperature:	28 ° C
Relative Humidity:	62 %
ATM Pressure:	100.6 kPa

The testing was performed by Bruce Wu on 2013-09-17.

Test Mode: Transmitting

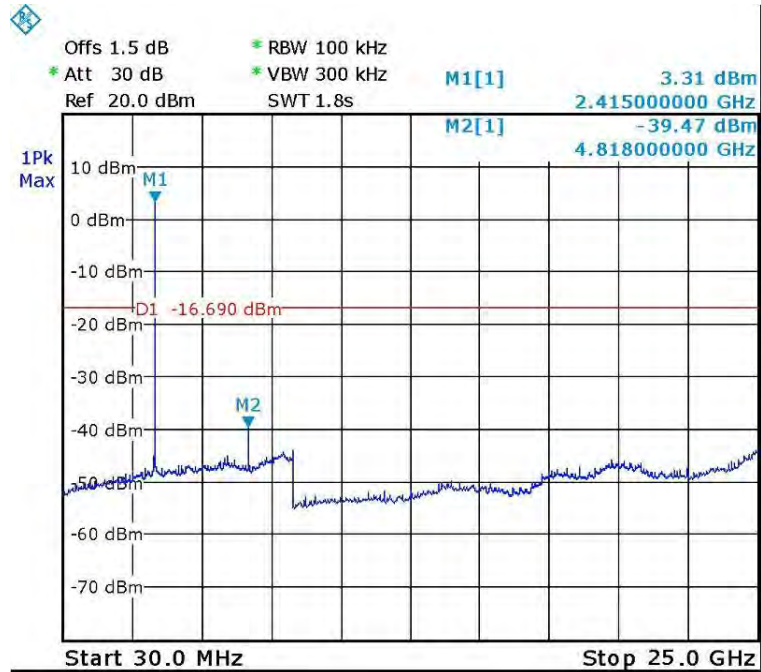
Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	FCC 15.247	
	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)				Limit (dBμV/m)	Margin (dB)
802.11b mode, Low Channel: 2412 MHz									
2412	62.14	PK	H	23.14	5.75	0.00	91.03	N/A	N/A
2412	44.25	AV	H	23.14	5.75	0.00	73.14	N/A	N/A
2412	69.85	PK	V	23.14	5.75	0.00	98.74	N/A	N/A
2412	50.25	AV	V	23.14	5.75	0.00	79.14	N/A	N/A
2390	26.35	PK	V	23.08	5.68	0.00	55.11	74.00	18.89
2390	17.48	AV	V	23.08	5.68	0.00	46.24	54.00	7.76
4824	49.32	PK	V	30.76	7.86	26.81	61.13	74.00	12.87
4824	37.25	AV	V	30.76	7.86	26.81	49.06	54.00	*4.94
7236	38.65	PK	V	34.35	10.52	26.62	56.90	74.00	17.10
7236	20.25	AV	V	34.35	10.52	26.62	38.50	54.00	15.50
9648	24.36	PK	V	37.08	12.95	26.35	48.04	74.00	25.96
9648	15.65	AV	V	37.08	12.95	26.35	39.33	54.00	14.67
2657	34.58	PK	V	26.31	6.05	26.81	40.13	74.00	33.87
2657	21.36	AV	V	26.31	6.05	26.81	26.91	54.00	27.09
240.02	52.1	QP	V	11.71	0.94	21.48	43.27	46.00	*2.73
802.11b mode, Middle Channel: 2437 MHz									
2437	59.68	PK	H	25.74	5.79	0.00	91.21	N/A	N/A
2437	44.36	AV	H	25.74	5.79	0.00	75.89	N/A	N/A
2437	70.28	PK	V	25.74	5.79	0.00	101.81	N/A	N/A
2437	54.25	AV	V	25.74	5.79	0.00	85.78	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
2657	32.58	PK	V	26.31	6.05	26.81	38.13	74.00	35.87
2657	19.35	AV	V	26.31	6.05	26.81	24.90	54.00	29.10
3012	29.14	PK	V	27.24	6.05	26.81	35.62	74.00	38.38
3012	13.25	AV	V	27.24	6.05	26.81	19.73	54.00	34.27
240.02	52.4	QP	V	11.71	0.94	21.48	43.57	46.00	*2.43
802.11b mode, High Channel: 2462 MHz									
2462	60.14	PK	H	25.80	3.93	0.00	89.87	N/A	N/A
2462	43.25	AV	H	25.80	3.93	0.00	72.98	N/A	N/A
2462	69.9	PK	V	25.80	3.93	0.00	99.63	N/A	N/A
2462	48.25	AV	V	25.80	3.93	0.00	77.98	N/A	N/A
2483.5	32.95	PK	V	25.86	3.80	0.00	62.61	74.00	11.39
2483.5	19.8	AV	V	25.86	3.80	0.00	49.46	54.00	*4.54
4924	50.96	PK	V	30.90	4.70	26.71	59.85	74.00	14.15
4924	41.14	AV	V	30.90	4.70	26.71	50.03	54.00	*3.97
7386	30.58	PK	V	34.53	6.84	26.53	45.42	74.00	28.58
7386	18.57	AV	V	34.53	6.84	26.53	33.41	54.00	20.59
9848	23.25	PK	V	36.54	8.49	26.30	41.98	74.00	32.02
9848	15.26	AV	V	36.54	8.49	26.30	33.99	54.00	20.01
2657	32.59	PK	V	26.31	6.05	26.81	38.14	74.00	35.86
2657	18.35	AV	V	26.31	6.05	26.81	23.90	54.00	30.10
240.02	51.9	QP	V	11.71	0.94	21.48	43.07	46.00	*2.93

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	62.52	PK	H	23.14	5.75	0.00	91.41	N/A	N/A
2412	44.26	AV	H	23.14	5.75	0.00	73.15	N/A	N/A
2412	69.25	PK	V	23.14	5.75	0.00	98.14	N/A	N/A
2412	51.02	AV	V	23.14	5.75	0.00	79.91	N/A	N/A
2390	26.36	PK	V	23.08	5.68	0.00	55.12	74.00	18.88
2390	14.8	AV	V	23.08	5.68	0.00	43.56	54.00	10.44
4824	46.58	PK	V	30.76	7.86	26.81	58.39	74.00	15.61
4824	37.85	AV	V	30.76	7.86	26.81	49.66	54.00	*4.34
7236	36.36	PK	V	34.35	10.52	26.62	54.61	74.00	19.39
7236	17.48	AV	V	34.35	10.52	26.62	35.73	54.00	18.27
9648	28.57	PK	V	37.08	12.95	26.35	52.25	74.00	21.75
9648	15.59	AV	V	37.08	12.95	26.35	39.27	54.00	14.73
2657	38.68	PK	V	26.31	6.05	26.81	44.23	74.00	29.77
2657	21.58	AV	V	26.31	6.05	26.81	27.13	54.00	26.87
240.02	51.9	QP	V	11.71	0.94	21.48	43.07	46.00	*2.93
802.11g mode, Middle Channel: 2437 MHz									
2437	57.25	PK	H	25.74	5.79	0.00	88.78	N/A	N/A
2437	43.25	AV	H	25.74	5.79	0.00	74.78	N/A	N/A
2437	70.26	PK	V	25.74	5.79	0.00	101.79	N/A	N/A
2437	44.25	AV	V	25.74	5.79	0.00	75.78	N/A	N/A
4874	47.26	PK	V	30.77	7.90	26.78	59.15	74.00	14.85
4874	34.68	AV	V	30.77	7.90	26.78	46.57	54.00	7.43
7311	28.36	PK	V	34.35	10.57	26.56	46.72	74.00	27.28
7311	16.25	AV	V	34.35	10.57	26.56	34.61	54.00	19.39
9748	23.58	PK	V	36.30	12.98	26.32	46.54	74.00	27.46
9748	13.26	AV	V	36.30	12.98	26.32	36.22	54.00	17.78
2657	40.6	PK	V	26.31	6.05	26.81	46.15	74.00	27.85
2657	26.35	AV	V	26.31	6.05	26.81	31.90	54.00	22.10
3012	28.25	PK	V	27.24	6.05	26.81	34.73	74.00	39.27
3012	13.2	AV	V	27.24	6.05	26.81	19.68	54.00	34.32
240.02	52.7	QP	V	11.71	0.94	21.48	43.87	46.00	*2.13
802.11g mode, High Channel: 2462 MHz									
2462	56.85	PK	H	25.80	3.93	0.00	86.58	N/A	N/A
2462	41.25	AV	H	25.80	3.93	0.00	70.98	N/A	N/A
2462	69.98	PK	V	25.80	3.93	0.00	99.71	N/A	N/A
2462	52.26	AV	V	25.80	3.93	0.00	81.99	N/A	N/A
2483.5	35.58	PK	V	25.86	3.80	0.00	65.24	74.00	8.76
2483.5	19.58	AV	V	25.86	3.80	0.00	49.24	54.00	*4.76
4924	52.26	PK	V	30.90	4.70	26.71	61.15	74.00	12.85
4924	41.59	AV	V	30.90	4.70	26.71	50.48	54.00	*3.52
7386	32.59	PK	V	34.53	6.84	26.53	47.43	74.00	26.57
7386	18.25	AV	V	34.53	6.84	26.53	33.09	54.00	20.91
9848	25.36	PK	V	36.54	8.49	26.30	44.09	74.00	29.91
9848	15.69	AV	V	36.54	8.49	26.30	34.42	54.00	19.58
2657	35.68	PK	V	26.31	6.05	26.81	41.23	74.00	32.77
2657	21.26	AV	V	26.31	6.05	26.81	26.81	54.00	27.19
240.02	52.35	QP	V	11.71	0.94	21.48	43.52	46.00	*2.48

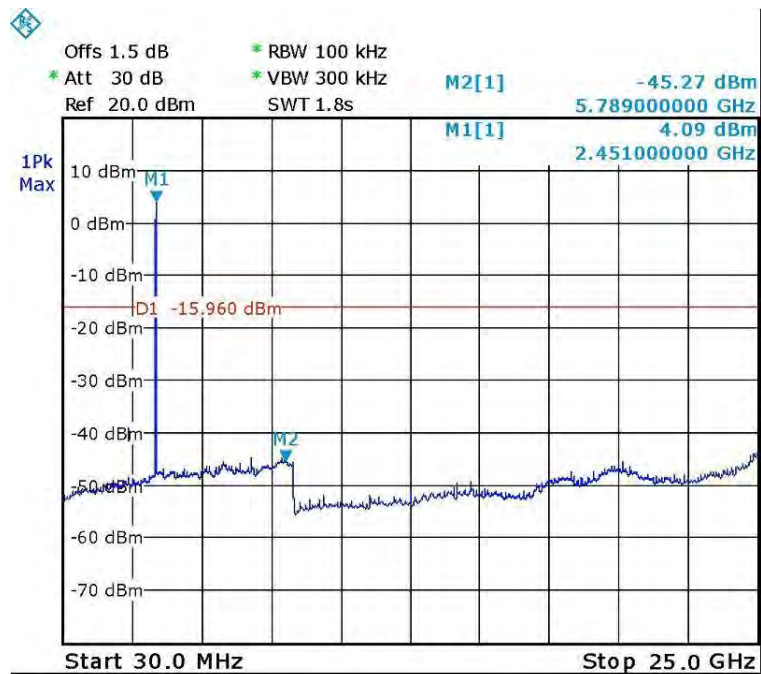
Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	FCC 15.247	
	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)				Limit (dBμV/m)	Margin (dB)
802.11n HT20 mode, Low Channel: 2412 MHz									
2412	63.24	PK	H	23.14	5.75	0.00	92.13	N/A	N/A
2412	45.36	AV	H	23.14	5.75	0.00	74.25	N/A	N/A
2412	68.15	PK	V	23.14	5.75	0.00	97.04	N/A	N/A
2412	52.36	AV	V	23.14	5.75	0.00	81.25	N/A	N/A
2390	25.98	PK	V	23.08	5.68	0.00	54.74	74.00	19.26
2390	15.14	AV	V	23.08	5.68	0.00	43.90	54.00	10.10
4824	48.36	PK	V	30.76	7.86	26.81	60.17	74.00	13.83
4824	37.4	AV	V	30.76	7.86	26.81	49.21	54.00	*4.79
7236	35.25	PK	V	34.35	10.52	26.62	53.50	74.00	20.50
7236	18.65	AV	V	34.35	10.52	26.62	36.90	54.00	17.10
9648	26.98	PK	V	37.08	12.95	26.35	50.66	74.00	23.34
9648	14.85	AV	V	37.08	12.95	26.35	38.53	54.00	15.47
2657	35.85	PK	V	26.31	6.05	26.81	41.40	74.00	32.60
2657	20.38	AV	V	26.31	6.05	26.81	25.93	54.00	28.07
240.02	52	QP	V	11.71	0.94	21.48	43.17	46.00	*2.83
802.11n HT20mode, Middle Channel: 2437 MHz									
2437	60.25	PK	H	25.74	5.79	0.00	91.78	N/A	N/A
2437	45.24	AV	H	25.74	5.79	0.00	76.77	N/A	N/A
2437	69.35	PK	V	25.74	5.79	0.00	100.88	N/A	N/A
2437	55.38	AV	V	25.74	5.79	0.00	86.91	N/A	N/A
4874	45.67	PK	V	30.77	7.90	26.78	57.56	74.00	16.44
4874	37.25	AV	V	30.77	7.90	26.78	49.14	54.00	*4.86
7311	32.1	PK	V	34.35	10.57	26.56	50.46	74.00	23.54
7311	18.54	AV	V	34.35	10.57	26.56	36.90	54.00	17.10
9748	25.68	PK	V	36.30	12.98	26.32	48.64	74.00	25.36
9748	15.47	AV	V	36.30	12.98	26.32	38.43	54.00	15.57
2657	34.25	PK	V	26.31	6.05	26.81	39.80	74.00	34.20
2657	20.2	AV	V	26.31	6.05	26.81	25.75	54.00	28.25
3012	29.87	PK	V	27.24	6.05	26.81	36.35	74.00	37.65
3012	14.14	AV	V	27.24	6.05	26.81	20.62	54.00	33.38
240.02	52.2	QP	V	11.71	0.94	21.48	43.37	46.00	*2.63
802.11n HT20 mode, High Channel: 2462 MHz									
2462	57.57	PK	H	25.80	3.93	0.00	87.30	N/A	#VALUE!
2462	40.28	AV	H	25.80	3.93	0.00	70.01	N/A	#VALUE!
2462	68.25	PK	V	25.80	3.93	0.00	97.98	N/A	#VALUE!
2462	50.38	AV	V	25.80	3.93	0.00	80.11	N/A	#VALUE!
2483.5	34.69	PK	V	25.86	3.80	0.00	64.35	74.00	9.65
2483.5	18.36	AV	V	25.86	3.80	0.00	48.02	54.00	*5.98
4924	51.68	PK	V	30.90	4.70	26.71	60.57	74.00	13.43
4924	40.35	AV	V	30.90	4.70	26.71	49.24	54.00	*4.76
7386	31.58	PK	V	34.53	6.84	26.53	46.42	74.00	27.58
7386	17.47	AV	V	34.53	6.84	26.53	32.31	54.00	21.69
9848	24.59	PK	V	36.54	8.49	26.30	43.32	74.00	30.68
9848	13.6	AV	V	36.54	8.49	26.30	32.33	54.00	21.67
2657	33.57	PK	V	26.31	6.05	26.81	39.12	74.00	34.88
2657	20.3	AV	V	26.31	6.05	26.81	25.85	54.00	28.15
240.02	52.1	QP	V	11.71	0.94	21.48	43.27	46.00	*2.73

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	58.54	PK	H	23.14	5.75	0.00	87.43	N/A	N/A
2422	43.25	AV	H	23.14	5.75	0.00	72.14	N/A	N/A
2422	70.25	PK	V	23.14	5.75	0.00	99.14	N/A	N/A
2422	53.26	AV	V	23.14	5.75	0.00	82.15	N/A	N/A
2390	26.69	PK	V	23.08	5.68	0.00	55.45	74.00	18.55
2390	16.35	AV	V	23.08	5.68	0.00	45.11	54.00	8.89
4844	49.52	PK	V	30.76	7.86	26.81	61.33	74.00	12.67
4844	38.25	AV	V	30.76	7.86	26.81	50.06	54.00	*3.94
7266	36.25	PK	V	34.35	10.52	26.62	54.50	74.00	19.50
7266	17.45	AV	V	34.35	10.52	26.62	35.70	54.00	18.30
9688	25.36	PK	V	37.08	12.95	26.35	49.04	74.00	24.96
9688	12.26	AV	V	37.08	12.95	26.35	35.94	54.00	18.06
2657	37.25	PK	V	26.31	6.05	26.81	42.80	74.00	31.20
2657	18.47	AV	V	26.31	6.05	26.81	24.02	54.00	29.98
240.02	51.9	QP	V	11.71	0.94	21.48	43.07	46.00	*2.93
802.11n HT40 mode, Middle Channel: 2437 MHz									
2437	61.25	PK	H	25.74	5.79	0.00	92.78	N/A	N/A
2437	46.25	AV	H	25.74	5.79	0.00	77.78	N/A	N/A
2437	68.87	PK	V	25.74	5.79	0.00	100.40	N/A	N/A
2437	56.24	AV	V	25.74	5.79	0.00	87.77	N/A	N/A
4874	46.25	PK	V	30.77	7.90	26.78	58.14	74.00	15.86
4874	38.05	AV	V	30.77	7.90	26.78	49.94	54.00	*4.06
7311	33.52	PK	V	34.35	10.57	26.56	51.88	74.00	22.12
7311	20.15	AV	V	34.35	10.57	26.56	38.51	54.00	15.49
9748	27.25	PK	V	36.30	12.98	26.32	50.21	74.00	23.79
9748	16.02	AV	V	36.30	12.98	26.32	38.98	54.00	15.02
2657	35.02	PK	V	26.31	6.05	26.81	40.57	74.00	33.43
2657	19.68	AV	V	26.31	6.05	26.81	25.23	54.00	28.77
3012	28.74	PK	V	27.24	6.05	26.81	35.22	74.00	38.78
3012	12.25	AV	V	27.24	6.05	26.81	18.73	54.00	35.27
240.02	52.8	QP	V	11.71	0.94	21.48	43.97	46.00	*2.03
802.11n HT40 mode, High Channel: 2452 MHz									
2452	56.36	PK	H	25.80	3.93	0.00	86.09	N/A	N/A
2452	39.54	AV	H	25.80	3.93	0.00	69.27	N/A	N/A
2452	70.08	PK	V	25.80	3.93	0.00	99.81	N/A	N/A
2452	52.25	AV	V	25.80	3.93	0.00	81.98	N/A	N/A
2483.5	31.05	PK	V	25.86	3.80	0.00	60.71	74.00	13.29
2483.5	17.25	AV	V	25.86	3.80	0.00	46.91	54.00	7.09
4904	51.12	PK	V	30.90	4.70	26.71	60.01	74.00	13.99
4904	41.02	AV	V	30.90	4.70	26.71	49.91	54.00	*4.09
7356	30.25	PK	V	34.53	6.84	26.53	45.09	74.00	28.91
7356	15.25	AV	V	34.53	6.84	26.53	30.09	54.00	23.91
9808	23.25	PK	V	36.54	8.49	26.30	41.98	74.00	32.02
9808	12.36	AV	V	36.54	8.49	26.30	31.09	54.00	22.91
2657	34.58	PK	V	26.31	6.05	26.81	40.13	74.00	33.87
2657	18.25	AV	V	26.31	6.05	26.81	23.80	54.00	30.20
240.02	52.2	QP	V	11.71	0.94	21.48	43.37	46.00	*2.63

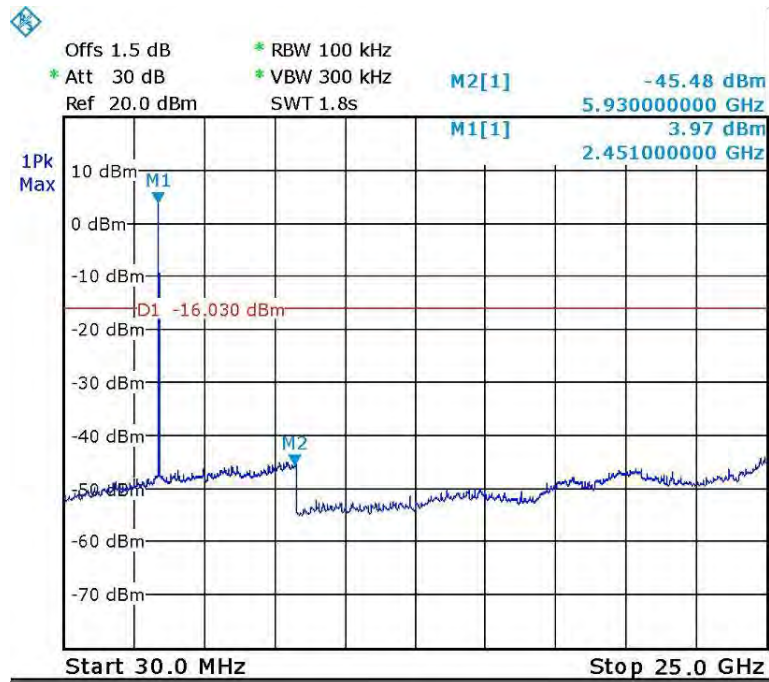
*Within measurement uncertainty!

Conducted Spurious Emissions at Antenna Port**802.11b Low Channel**

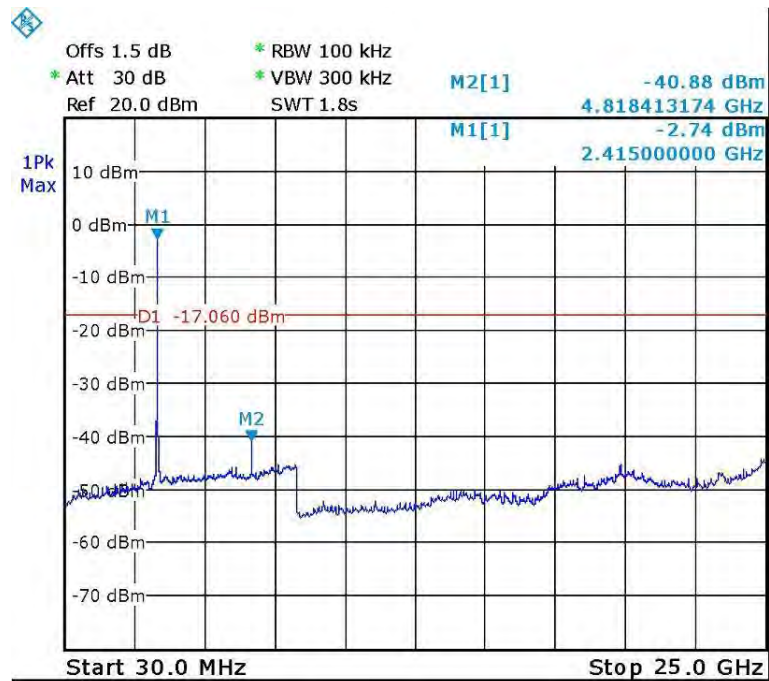
Date: 16.SEP.2013 12:47:08

802.11b Middle Channel

Date: 16.SEP.2013 13:00:30

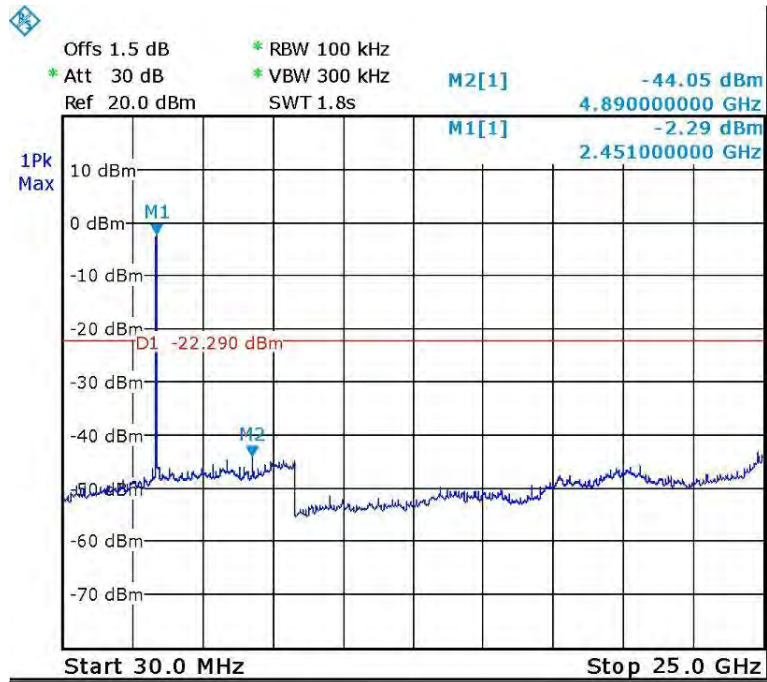
802.11b High Channel

Date: 17.SEP.2013 05:45:46

802.11g Low Channel

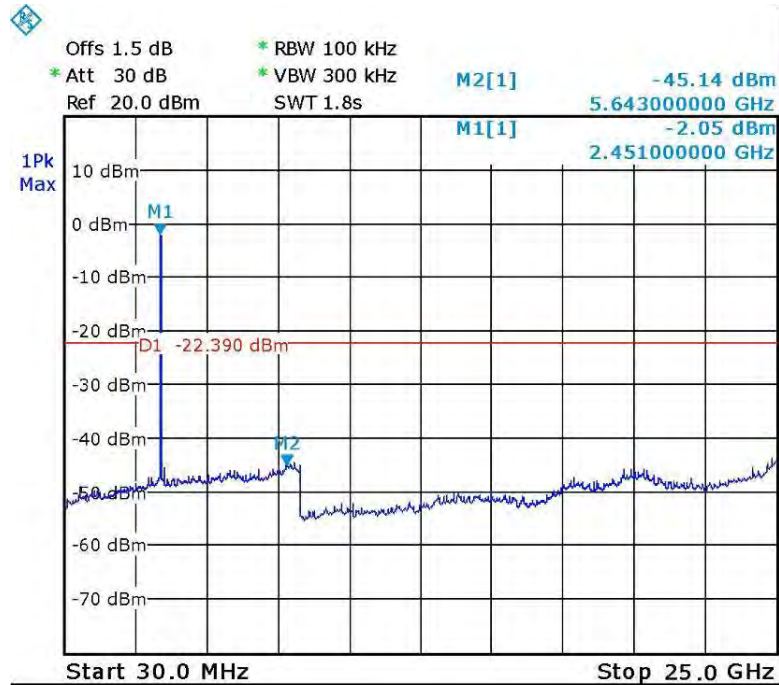
Date: 17.SEP.2013 06:23:34

802.11g Middle Channel



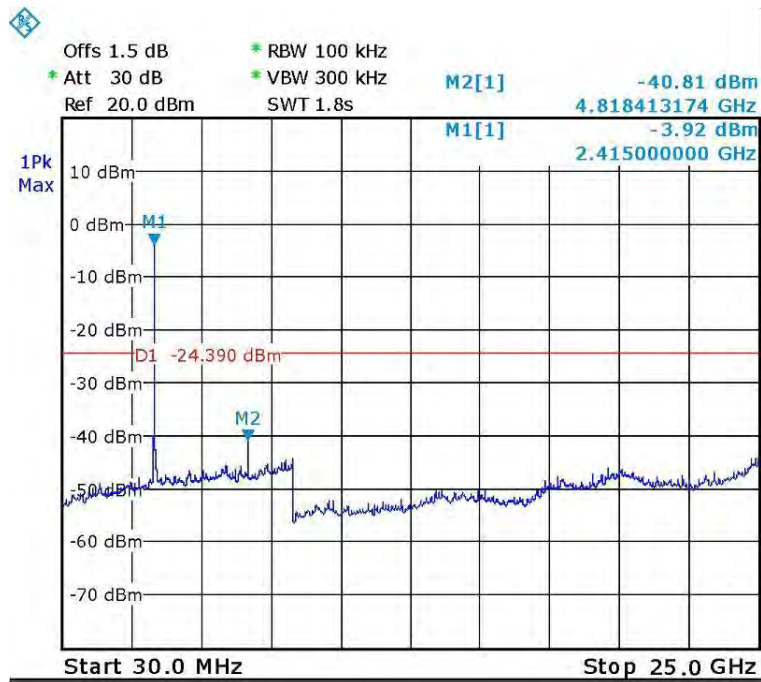
Date: 17.SEP.2013 06:53:13

802.11g High Channel



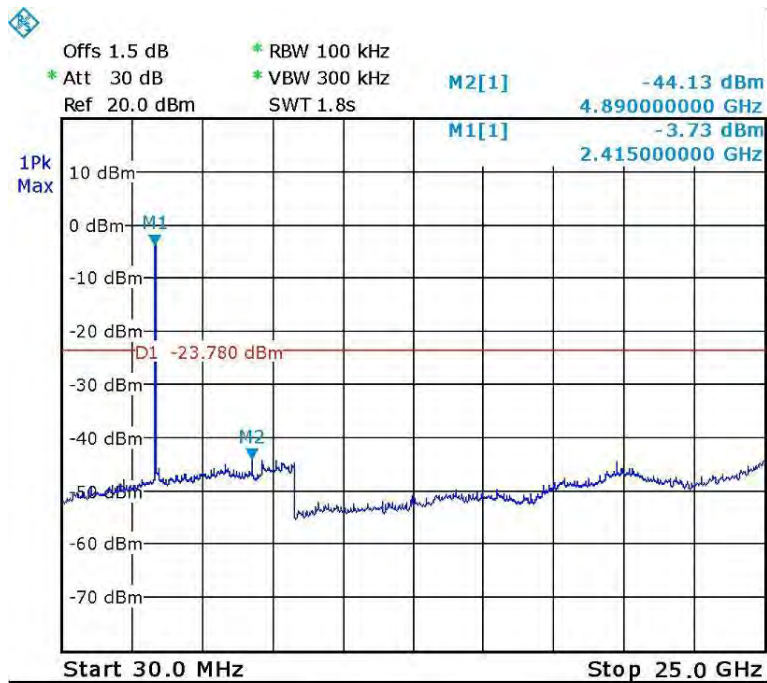
Date: 17.SEP.2013 07:29:02

802.11n HT20 Low Channel



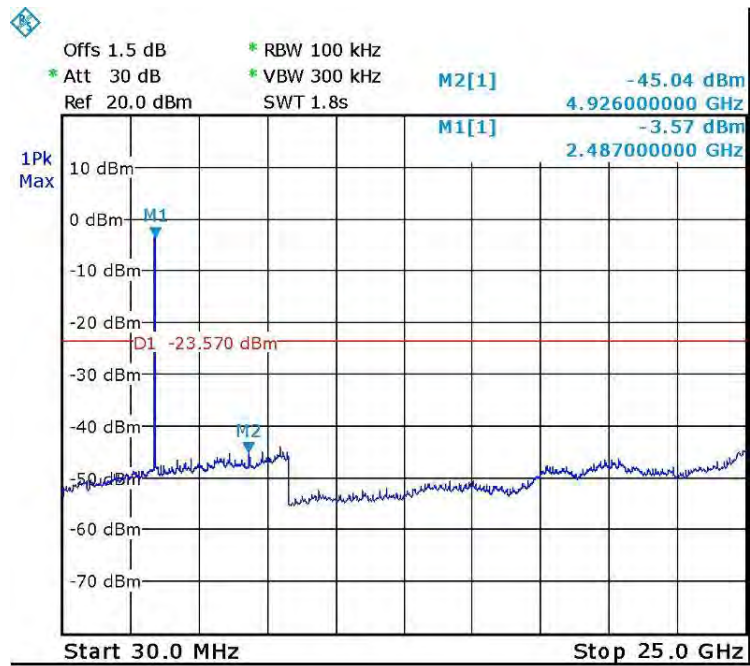
Date: 17.SEP.2013 09:21:50

802.11n HT20 Middle Channel



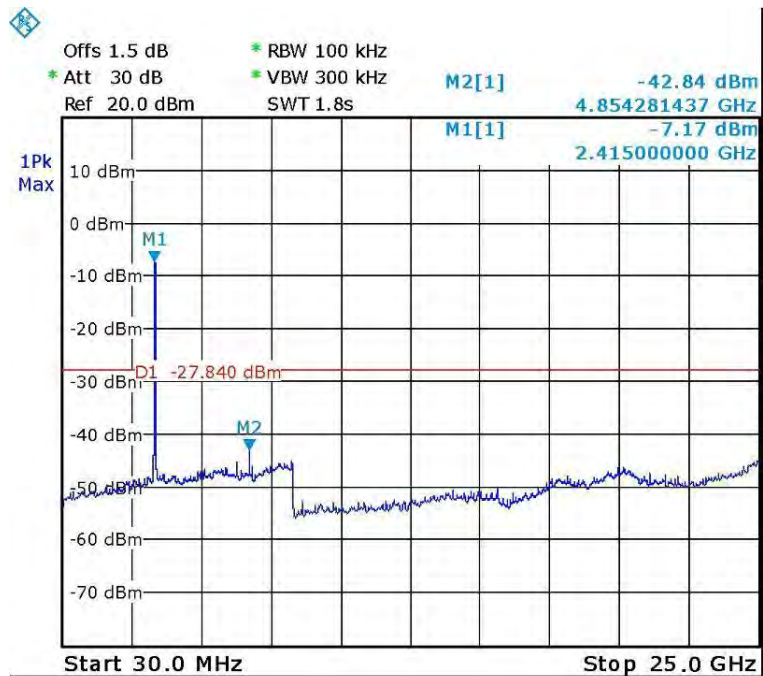
Date: 17.SEP.2013 09:40:41

802.11n HT20 High Channel



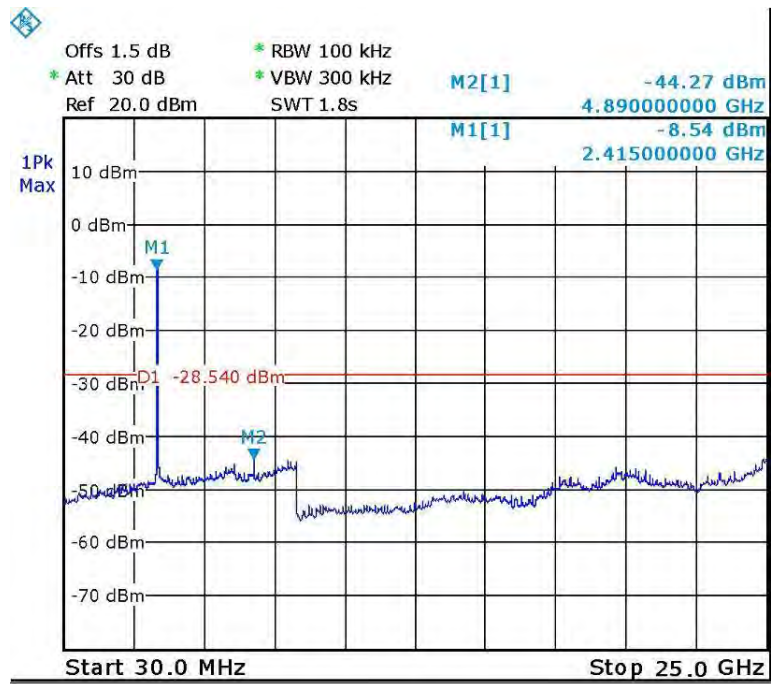
Date: 17.SEP.2013 09:50:33

802.11n HT40 Low Channel



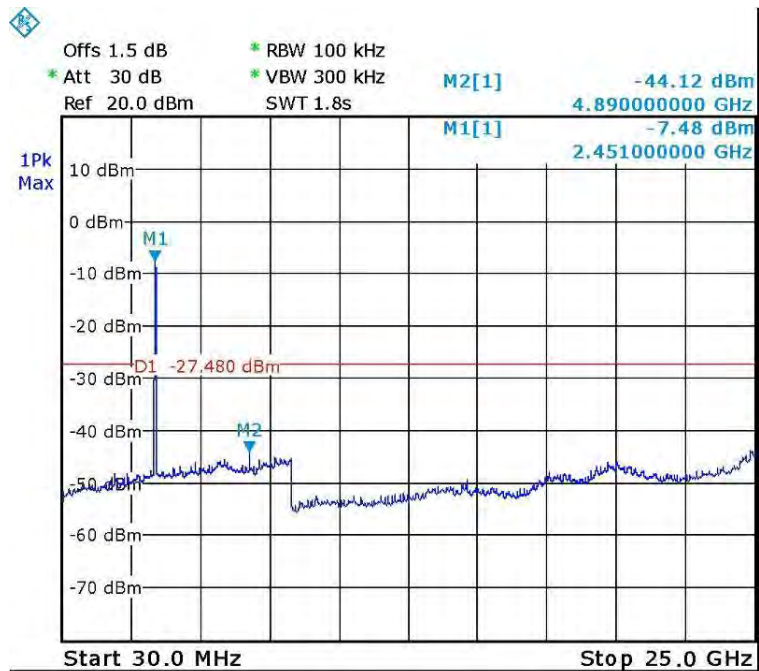
Date: 17.SEP.2013 10:02:20

802.11n HT40 Middle Channel



Date: 17.SEP.2013 10:10:40

802.11n HT40 High Channel



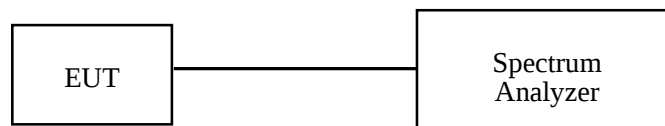
Date: 17.SEP.2013 10:22:21

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
Rohde & Schwarz	Spectrum Analyzer	FSL18	100180	2013-07-31	2014-07-30

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

Test Data**Environmental Conditions**

Temperature:	28 °C
Relative Humidity:	59 %
ATM Pressure:	100.7 kPa

The testing was performed by Bruce Wu on 2013-09-16.

Temperature:	28 °C
Relative Humidity:	61 %
ATM Pressure:	100.6 kPa

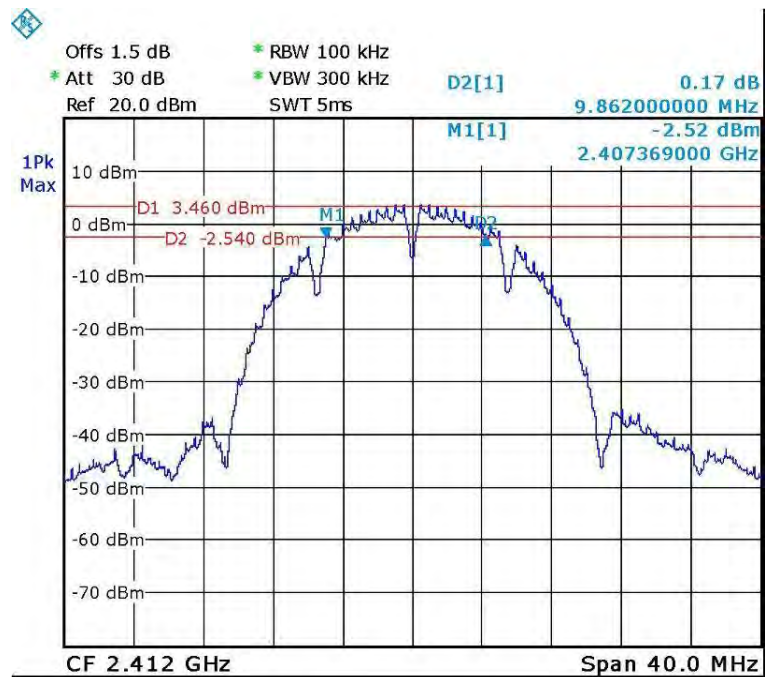
The testing was performed by Bruce Wu on 2013-09-17.

Test Mode: Transmitting

Channel	Frequency (MHz)	6 dB Emission Bandwidth (MHz)	FCC Limit (kHz)
802.11b mode			
Low	2412	9.86	> 500
Middle	2437	9.82	> 500
High	2462	9.74	> 500
802.11g mode			
Low	2412	16.61	> 500
Middle	2437	16.61	> 500
High	2462	16.61	> 500
802.11n HT20 mode			
Low	2412	17.88	> 500
Middle	2437	17.88	> 500
High	2462	17.88	> 500
802.11n HT40 mode			
Low	2422	36.57	> 500
Middle	2437	36.57	> 500
High	2452	36.57	> 500

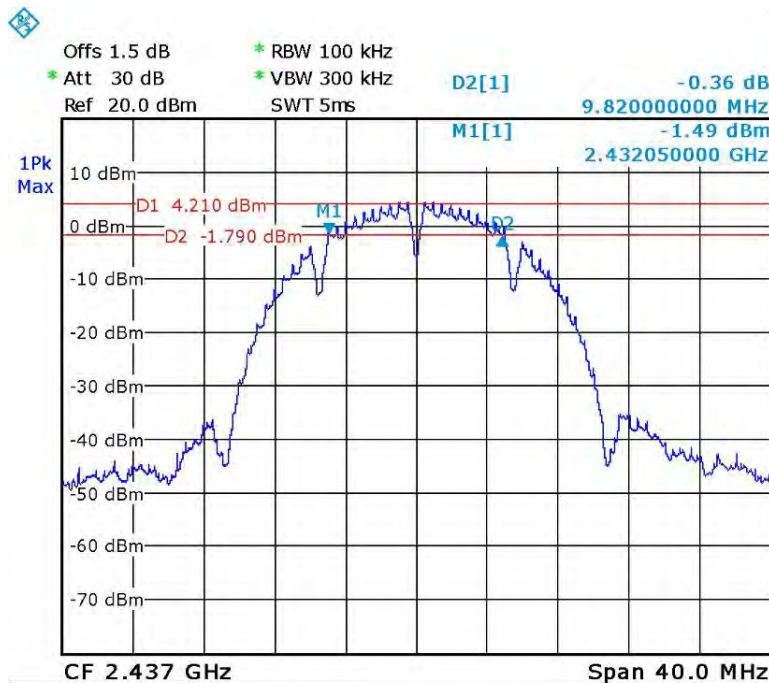
Please refer to the following plots:

802.11b Low Channel



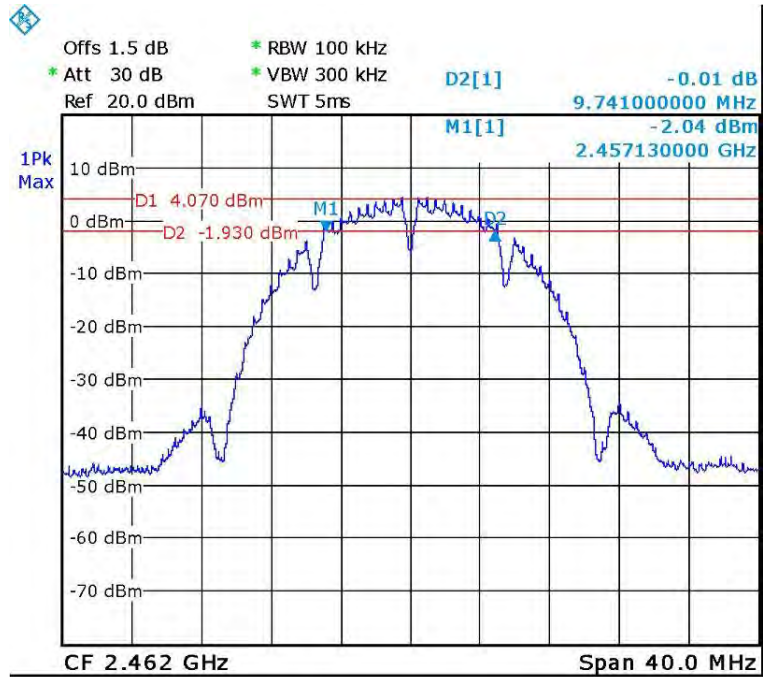
Date: 16.SEP.2013 12:38:31

802.11b Middle Channel



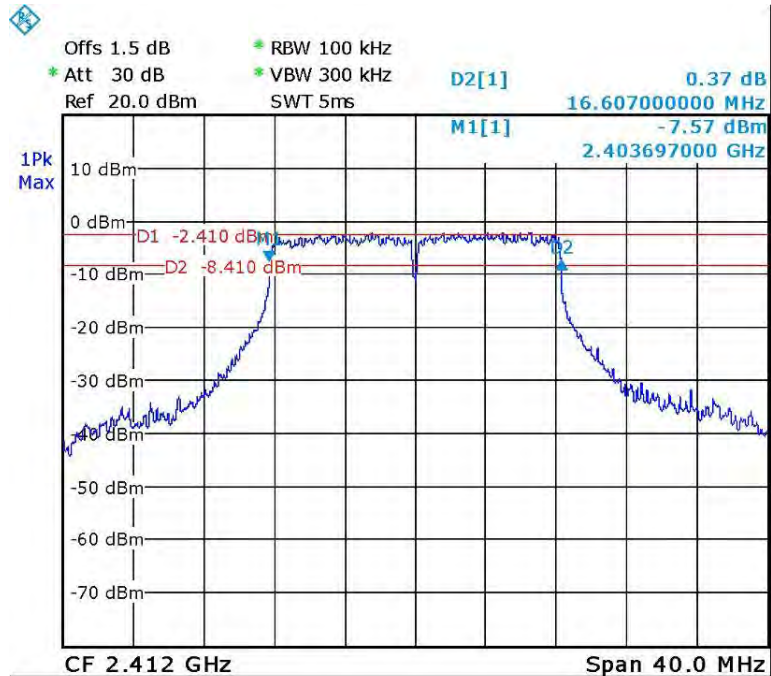
Date: 16.SEP.2013 12:54:48

802.11b High Channel



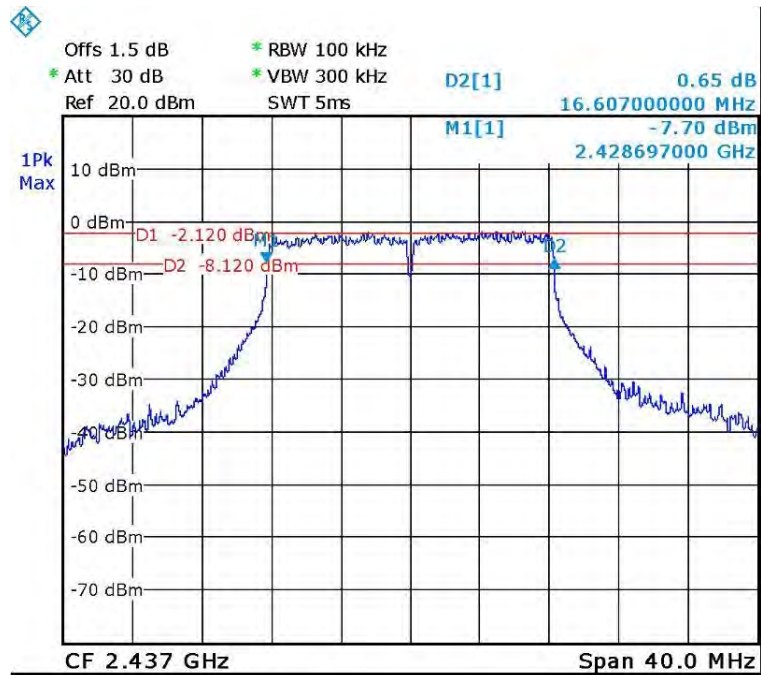
Date: 17.SEP.2013 05:38:54

802.11g Low Channel



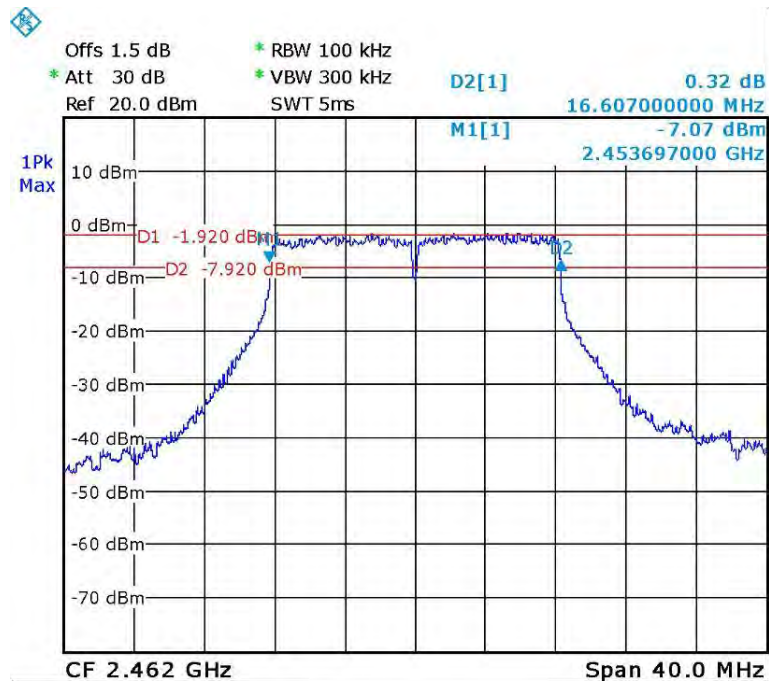
Date: 17.SEP.2013 06:14:47

802.11g Middle Channel



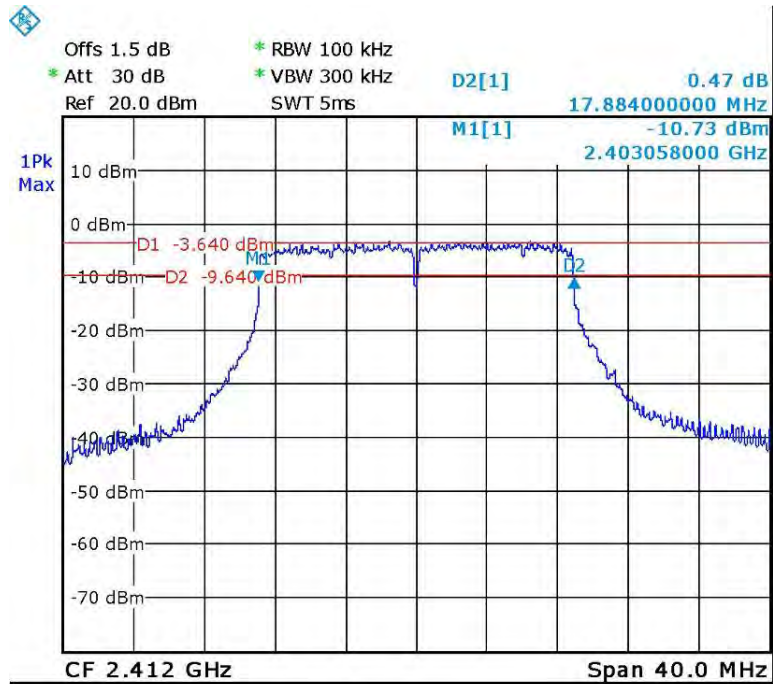
Date: 17.SEP.2013 06:39:05

802.11g High Channel



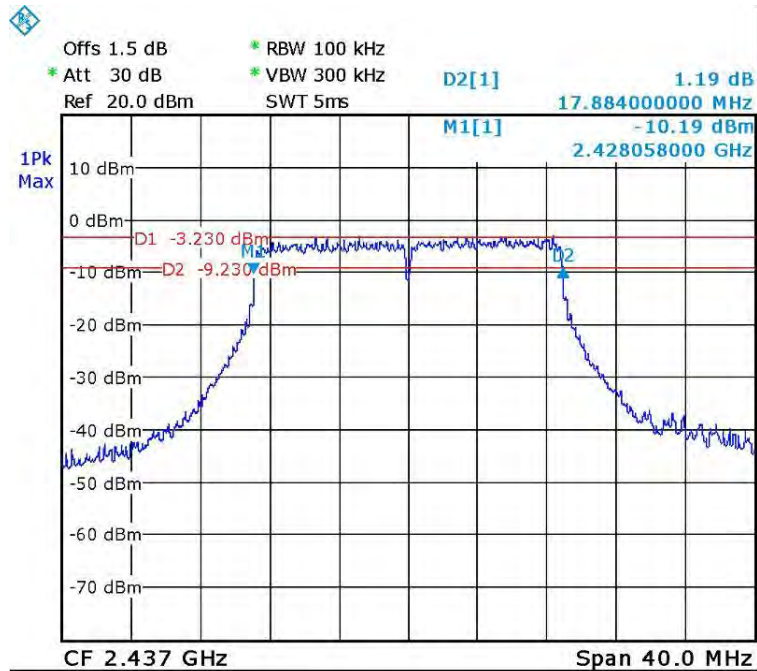
Date: 17.SEP.2013 07:19:35

802.11n HT20 Low Channel



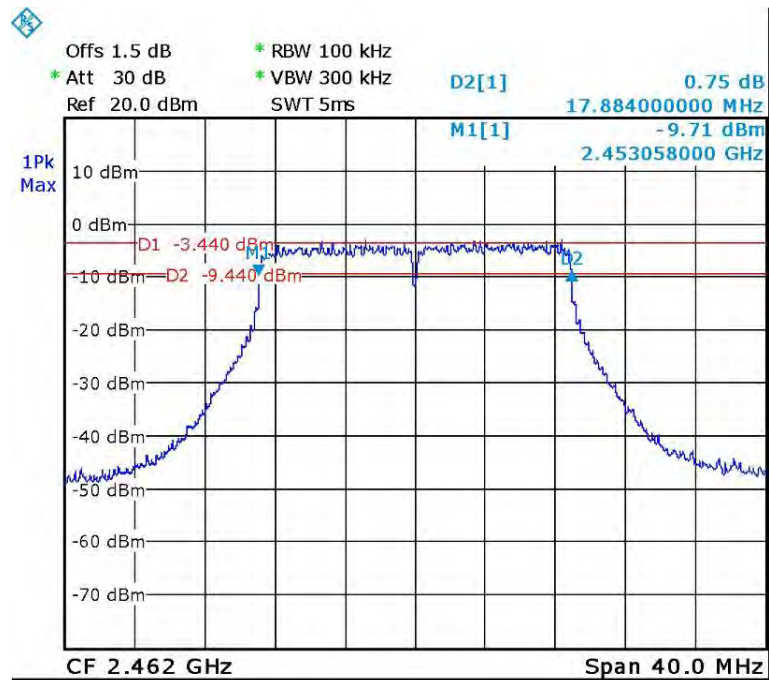
Date: 17.SEP.2013 09:15:31

802.11n HT20 Middle Channel



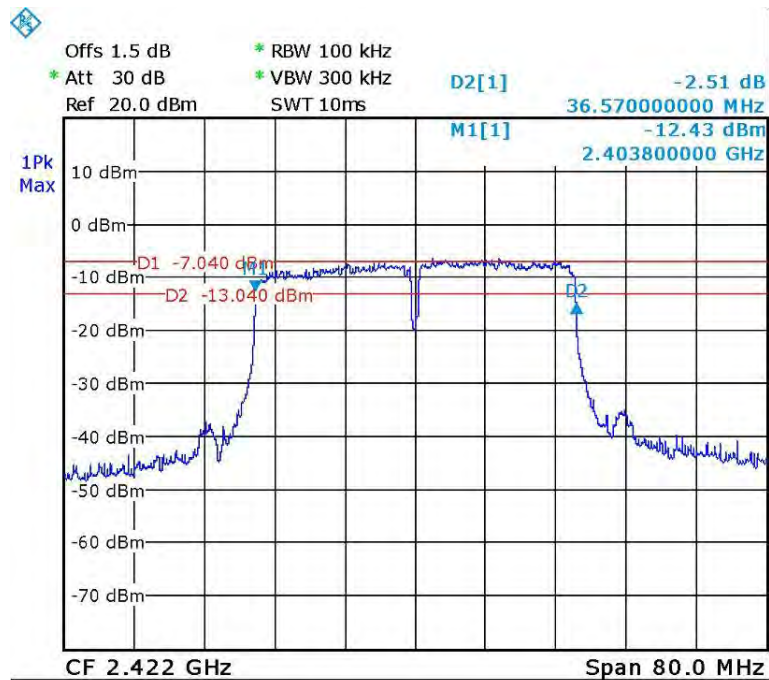
Date: 17.SEP.2013 09:35:32

802.11n HT20 High Channel



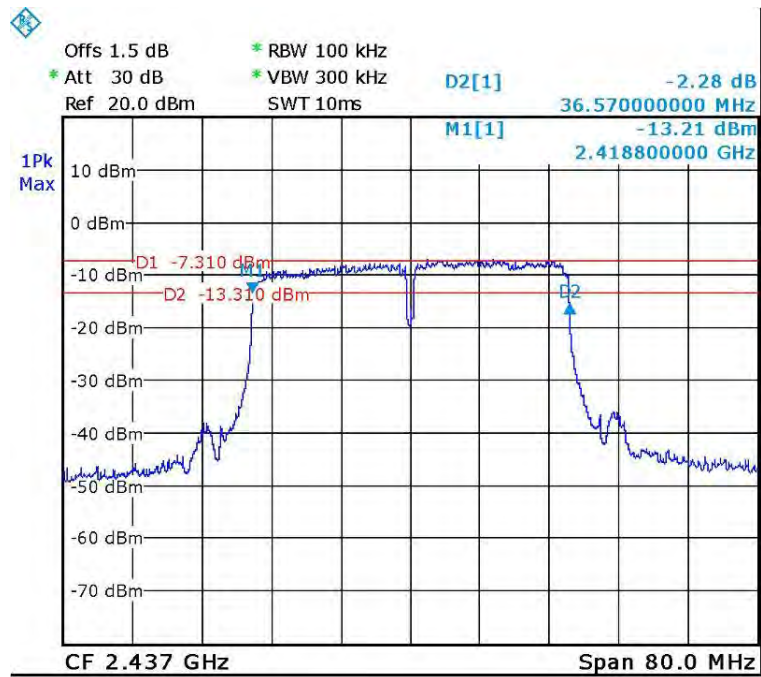
Date: 17.SEP.2013 09:45:50

802.11n HT40 Low Channel



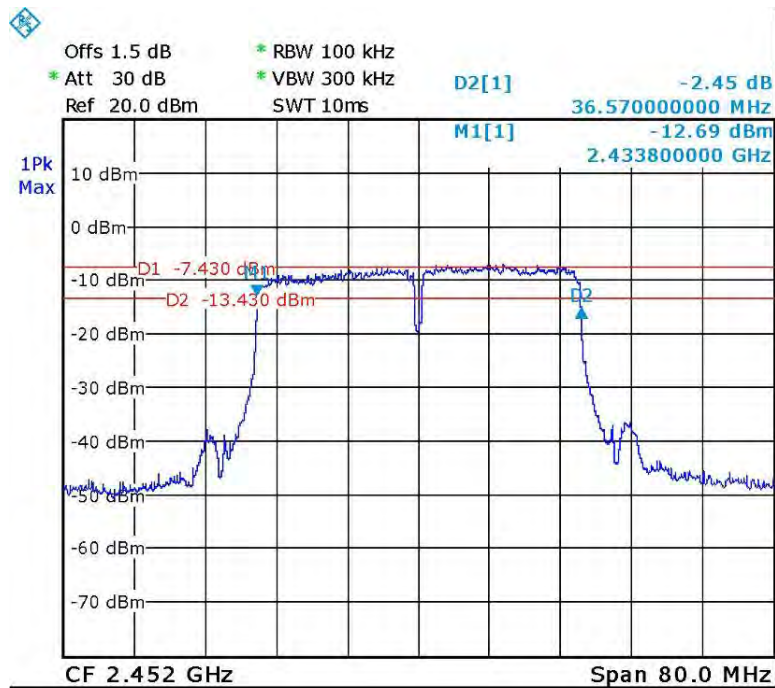
Date: 17.SEP.2013 09:57:15

802.11n HT40 Middle Channel



Date: 17.SEP.2013 10:07:53

802.11n HT40 High Channel



Date: 17.SEP.2013 10:15:27

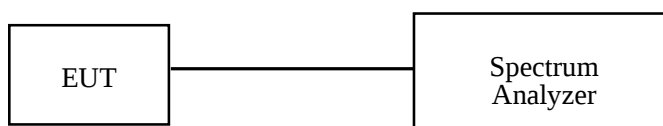
FCC §15.247(b) (3) - MAXIMUM PEAK OUTPUT POWER

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
Rohde & Schwarz	Spectrum Analyzer	FSL18	100180	2013-07-31	2014-07-30

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

Test Data**Environmental Conditions**

Temperature:	28 ° C
Relative Humidity:	59 %
ATM Pressure:	100.7 kPa

The testing was performed by Bruce Wu on 2013-09-16.

Temperature:	28 ° C
Relative Humidity:	61 %
ATM Pressure:	100.6 kPa

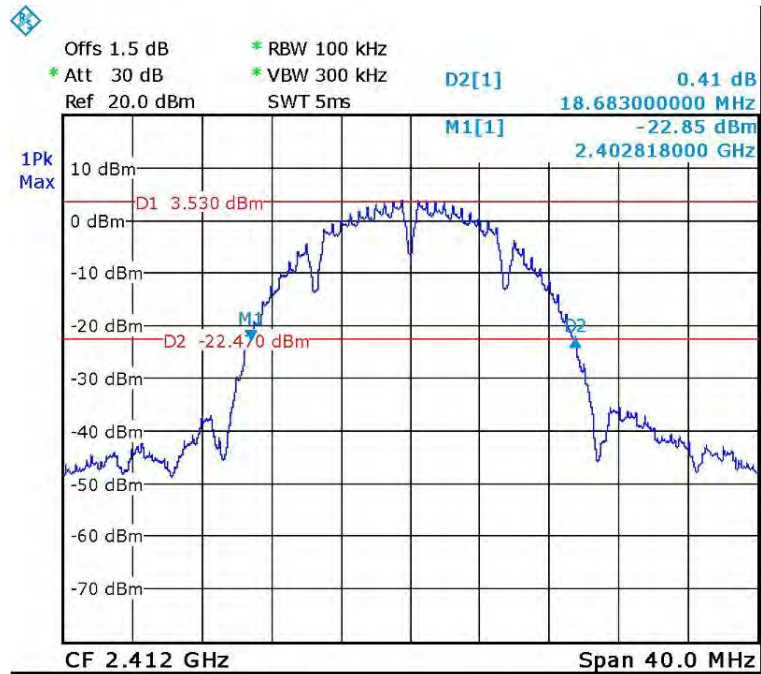
The testing was performed by Bruce Wu on 2013-09-17.

Test Mode: Transmitting

Channel	Frequency (MHz)	Conducted Output Power (dBm)	FCC Limit (dBm)	Result
802.11b mode				
Low	2412	14.84	30	Pass
Middle	2437	15.06	30	Pass
High	2462	15.02	30	Pass
802.11g mode				
Low	2412	14.20	30	Pass
Middle	2437	14.27	30	Pass
High	2462	14.14	30	Pass
802.11n HT20 mode				
Low	2412	13.12	30	Pass
Middle	2437	12.97	30	Pass
High	2462	13.08	30	Pass
802.11n HT40 mode				
Low	2422	12.34	30	Pass
Middle	2437	12.06	30	Pass
High	2452	12.08	30	Pass

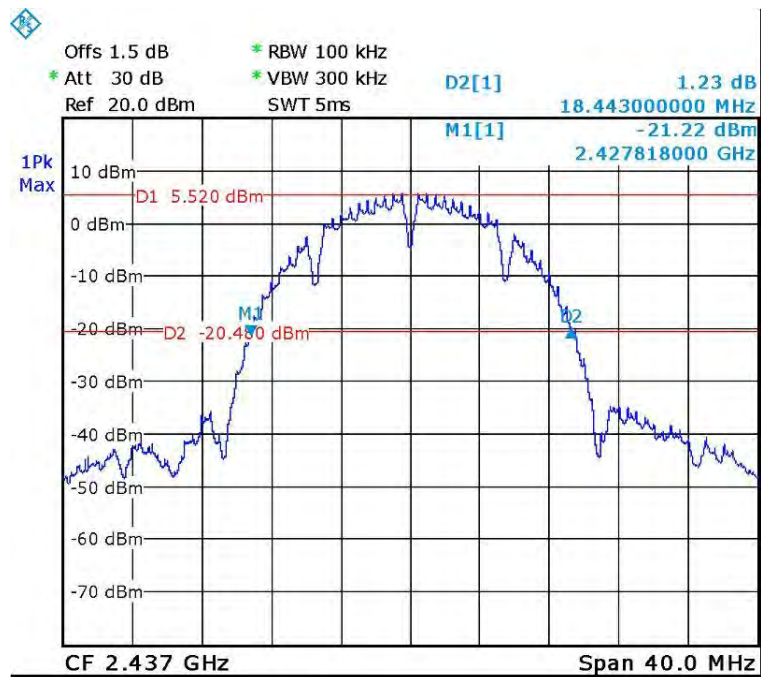
Please refer to the following plots

802.11b 26dB OBW, Low Channel



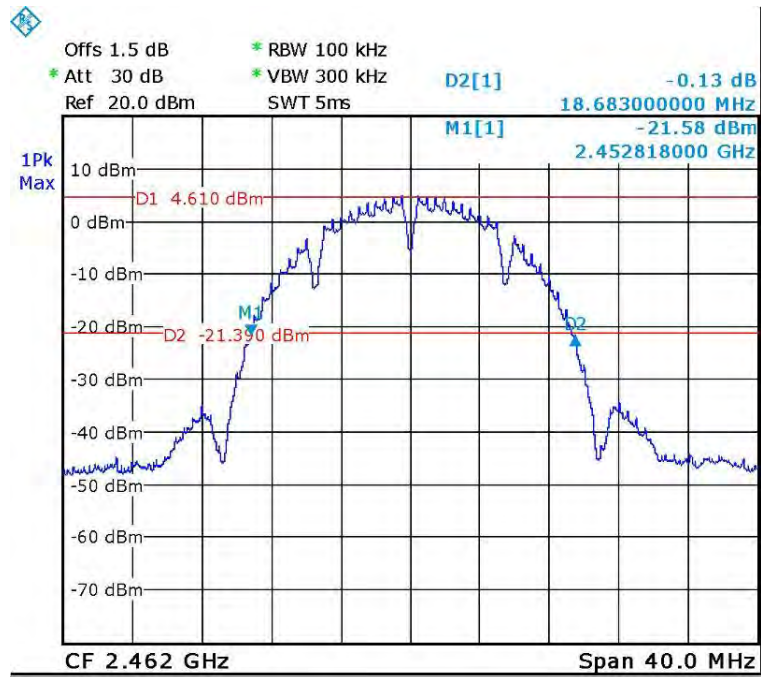
Date: 16.SEP.2013 12:32:30

802.11b 26dB OBW, Middle Channel



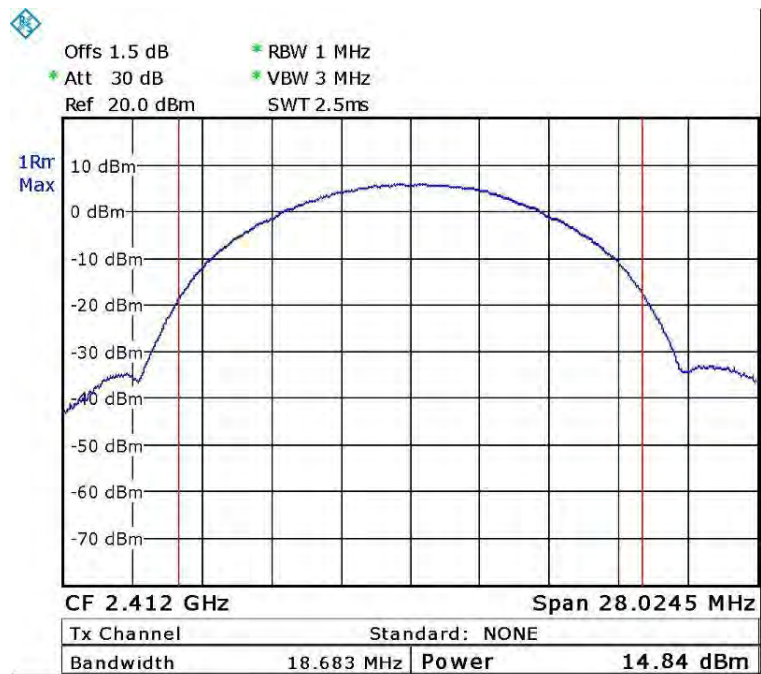
Date: 16.SEP.2013 12:49:51

802.11b 26dB OBW, High Channel

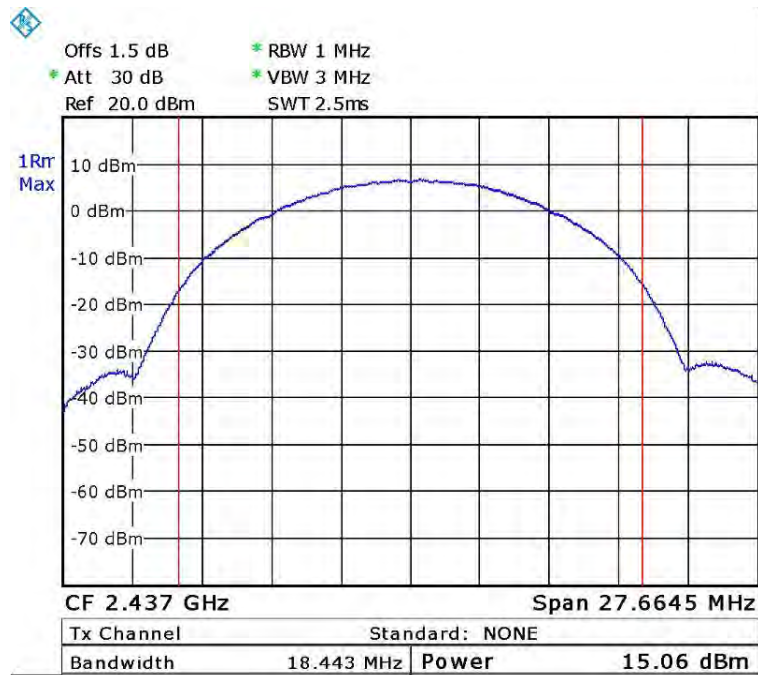


Date: 17.SEP.2013 05:33:17

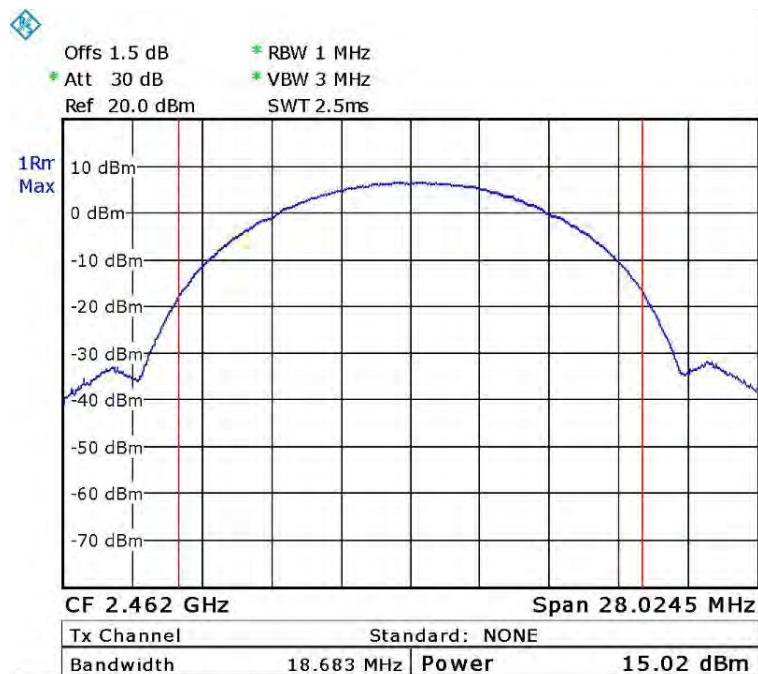
802.11b RF Output Power, Low Channel



Date: 16.SEP.2013 12:35:05

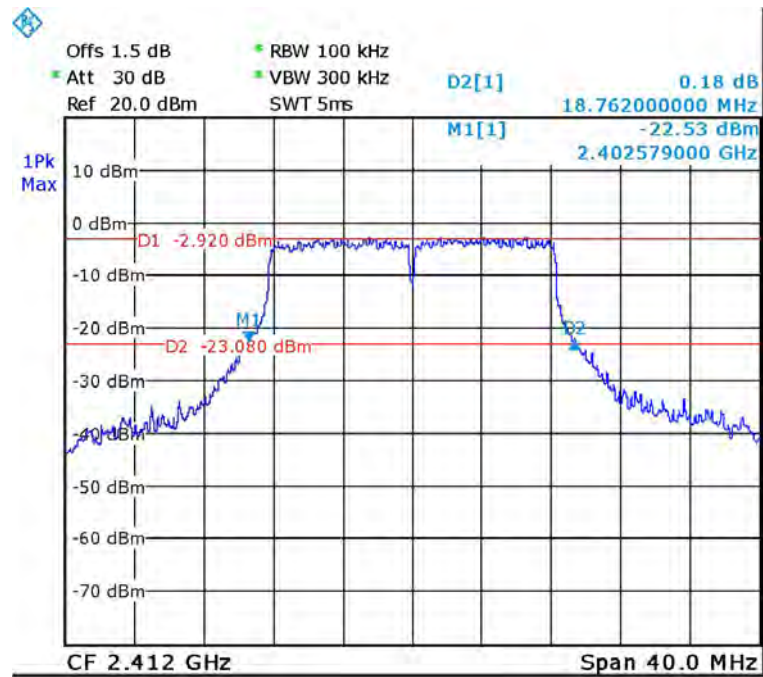
802.11b RF Output Power, Middle Channel

Date: 16.SEP.2013 12:51:51

802.11b RF Output Power, High Channel

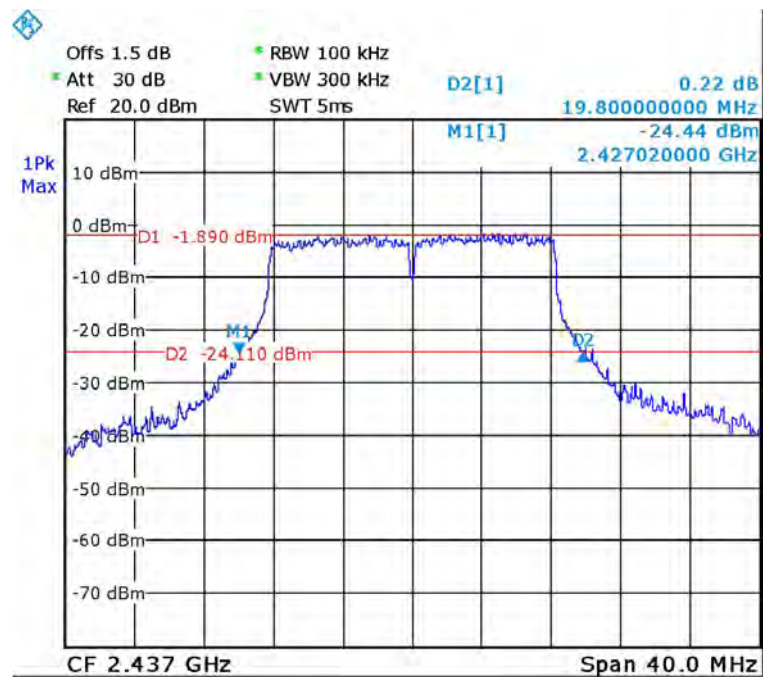
Date: 17.SEP.2013 05:36:11

802.11g 26dB OBW, Low Channel



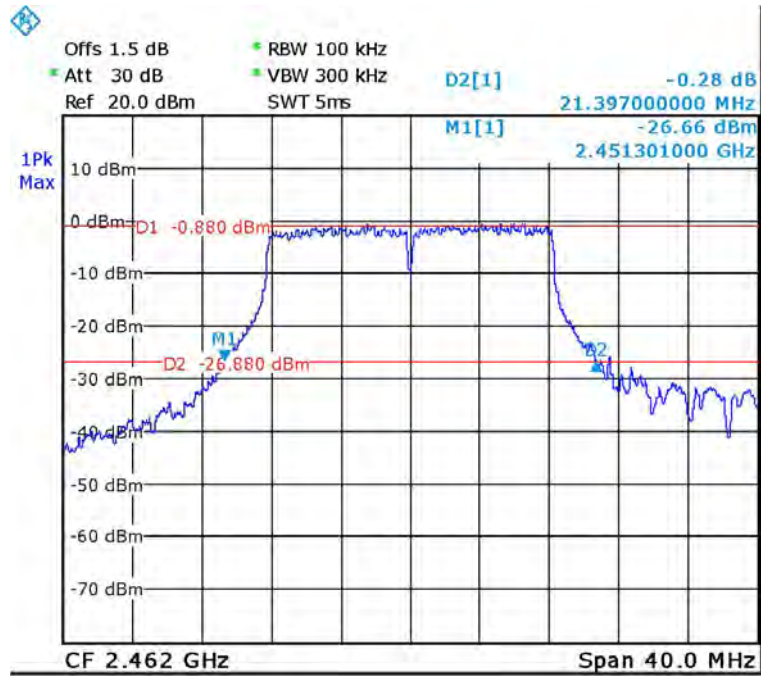
Date: 17.SEP.2013 05:54:32

802.11g 26dB OBW, Middle Channel



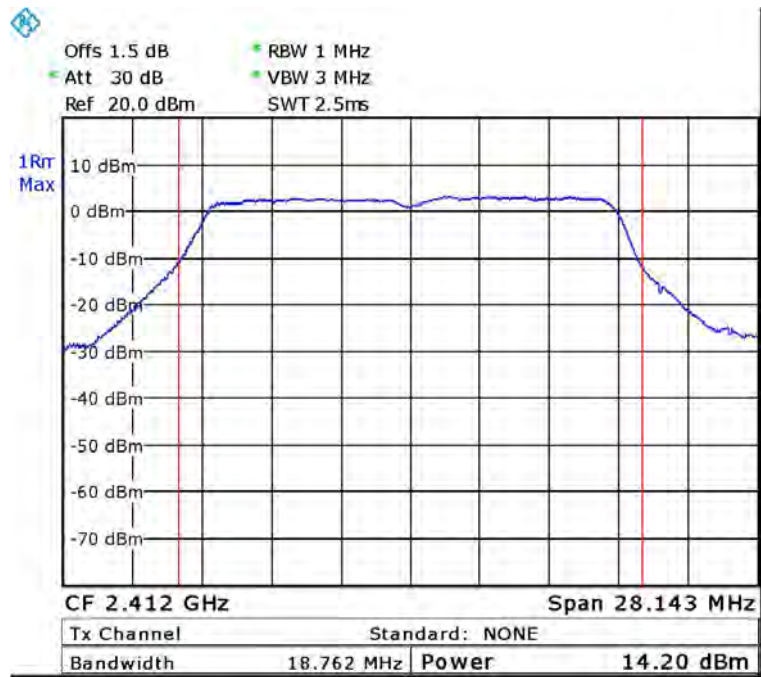
Date: 17.SEP.2013 06:28:08

802.11g 26dB OBW, High Channel

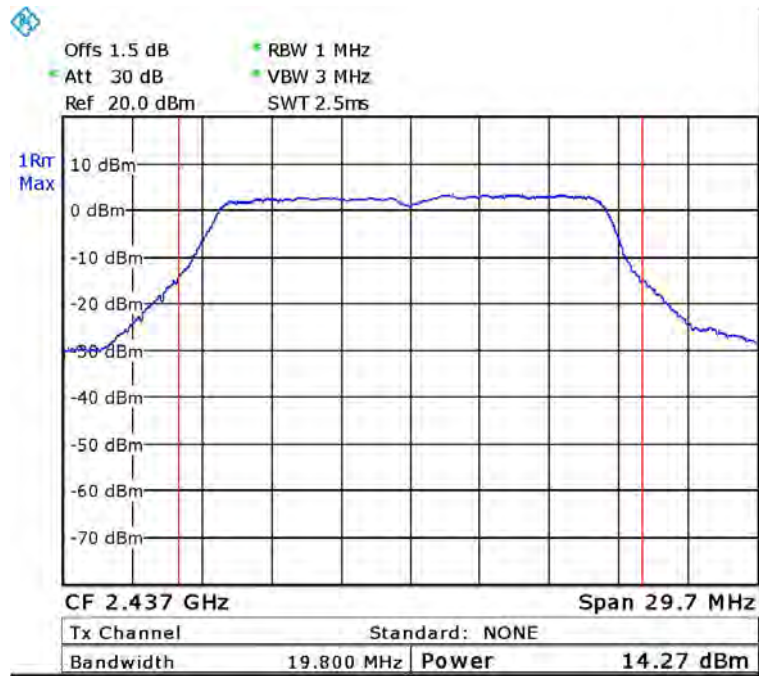


Date: 17.SEP.2013 07:04:52

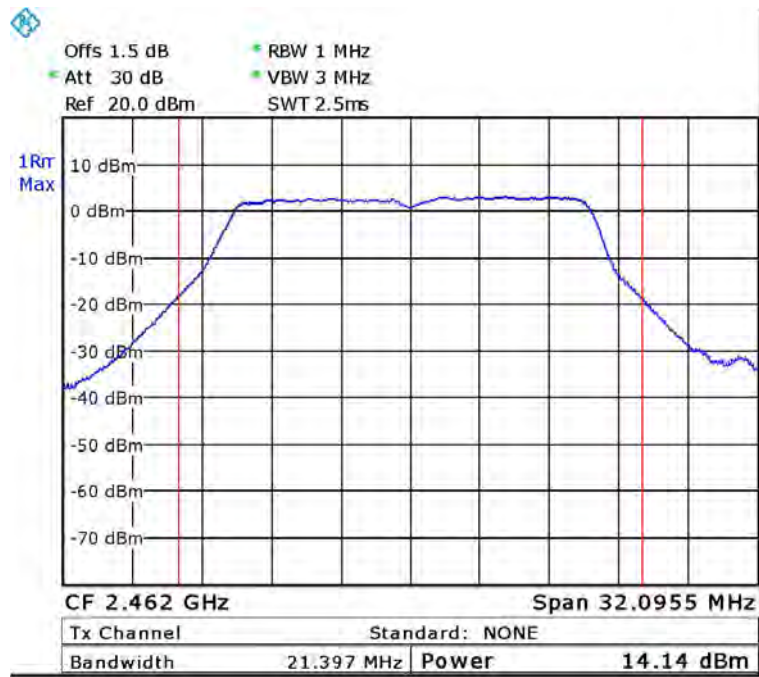
802.11g RF Output Power, Low Channel



Date: 17.SEP.2013 06:11:58

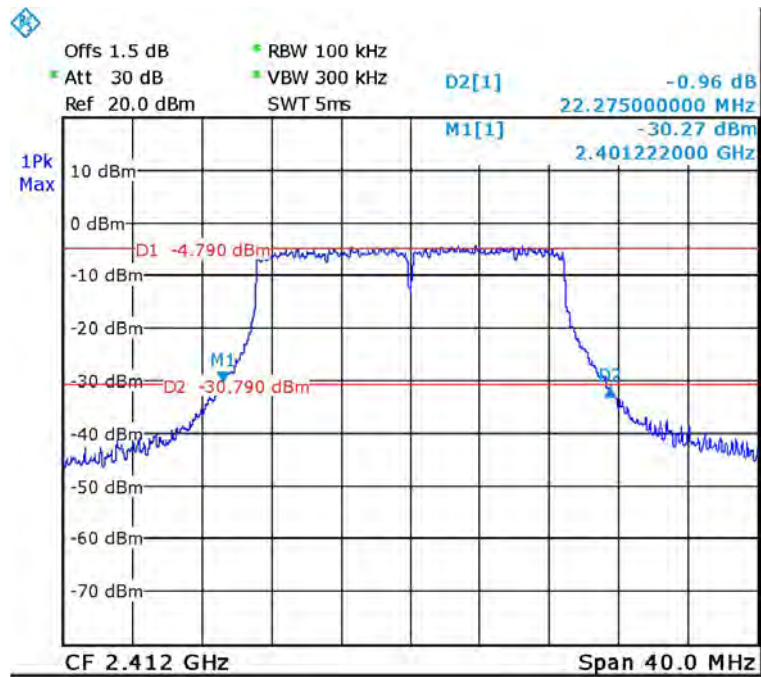
802.11g RF Output Power, Middle Channel

Date: 17.SEP.2013 06:31:13

802.11g RF Output Power, High Channel

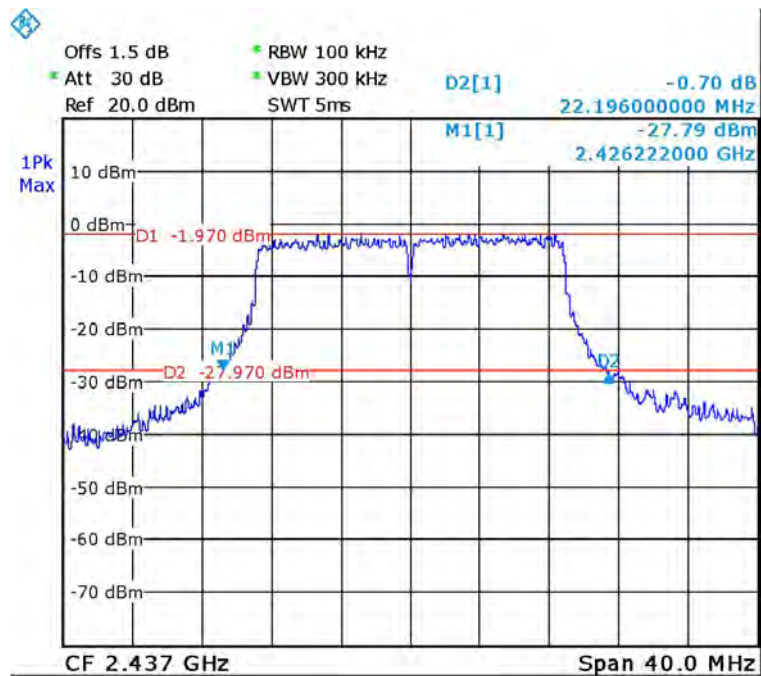
Date: 17.SEP.2013 07:08:45

802.11n HT20 26dB OBW, Low Channel



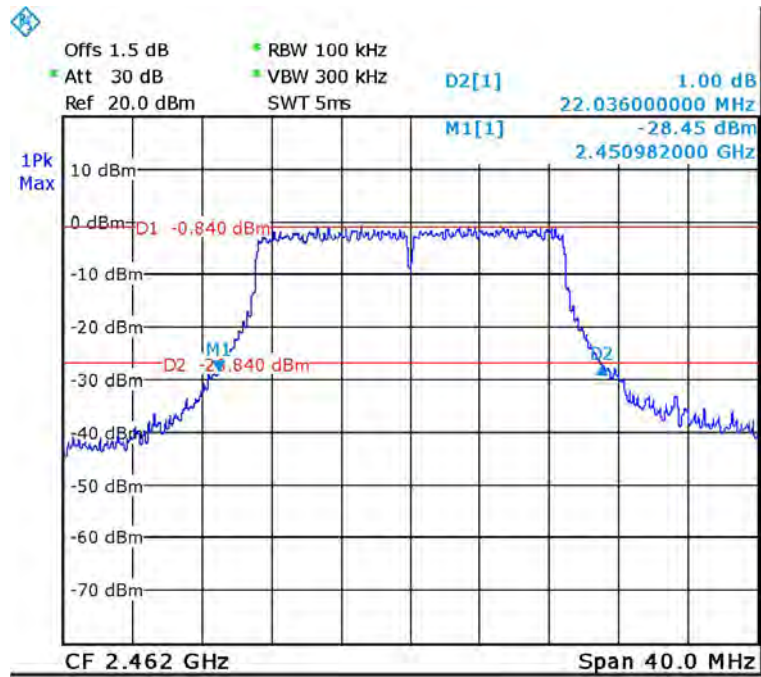
Date: 17.SEP.2013 09:11:56

802.11n HT20 26dB OBW, Middle Channel



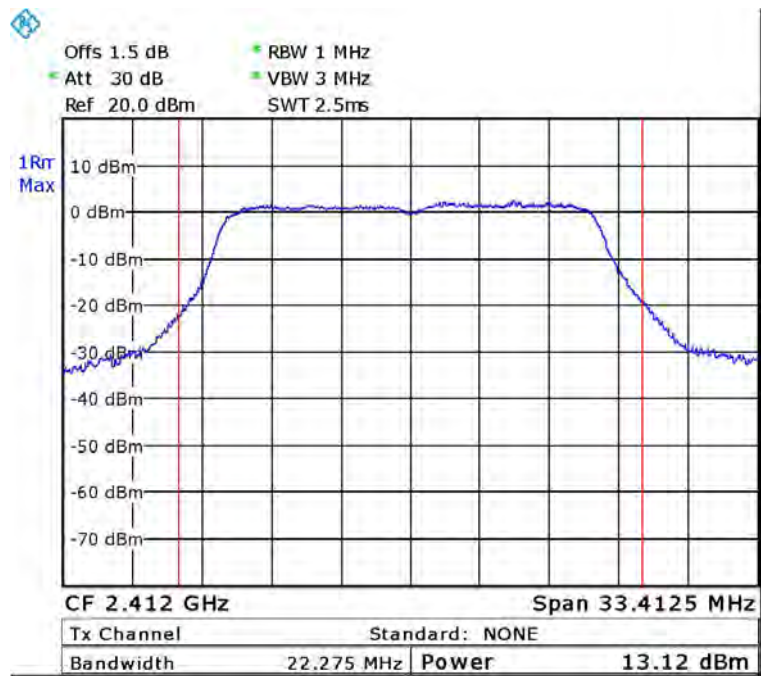
Date: 17.SEP.2013 09:31:54

802.11n HT20 26dB OBW, High Channel

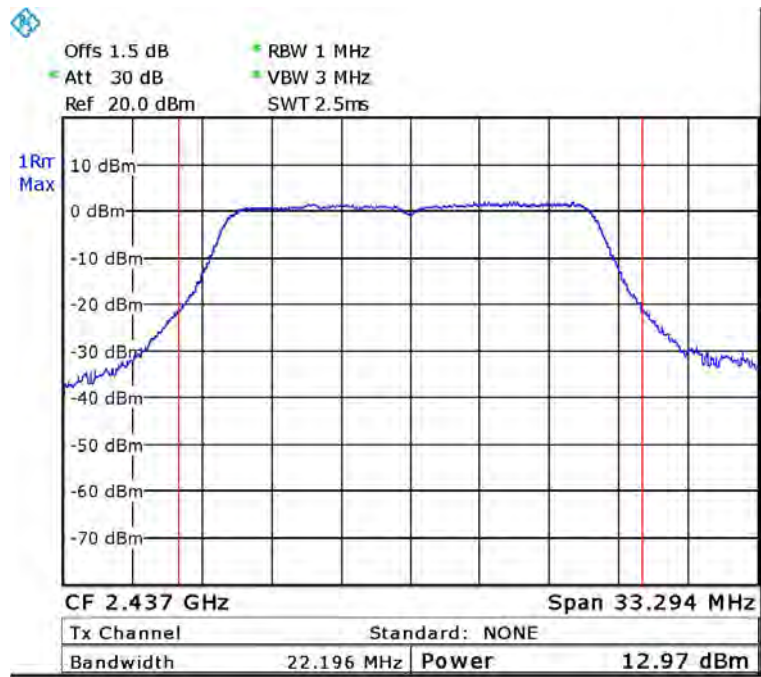


Date: 17.SEP.2013 09:42:11

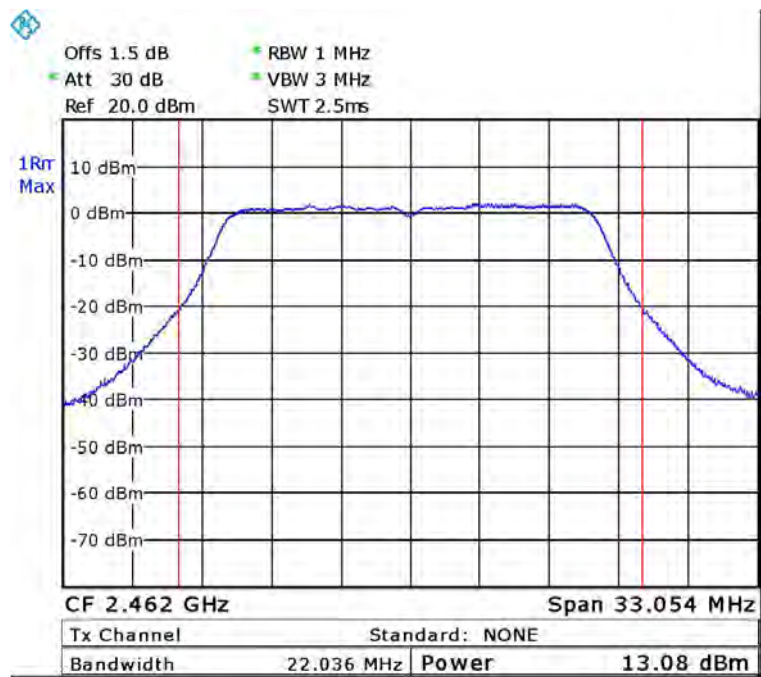
802.11n HT20 RF Output Power, Low Channel



Date: 17.SEP.2013 09:13:55

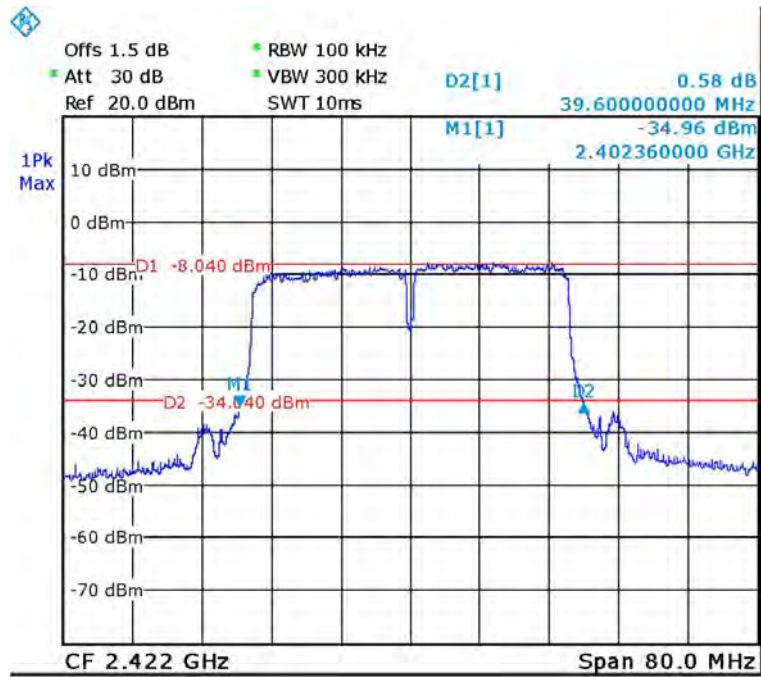
802.11n HT20 RF Output Power, Middle Channel

Date: 17.SEP.2013 09:33:56

802.11n HT20 RF Output Power, High Channel

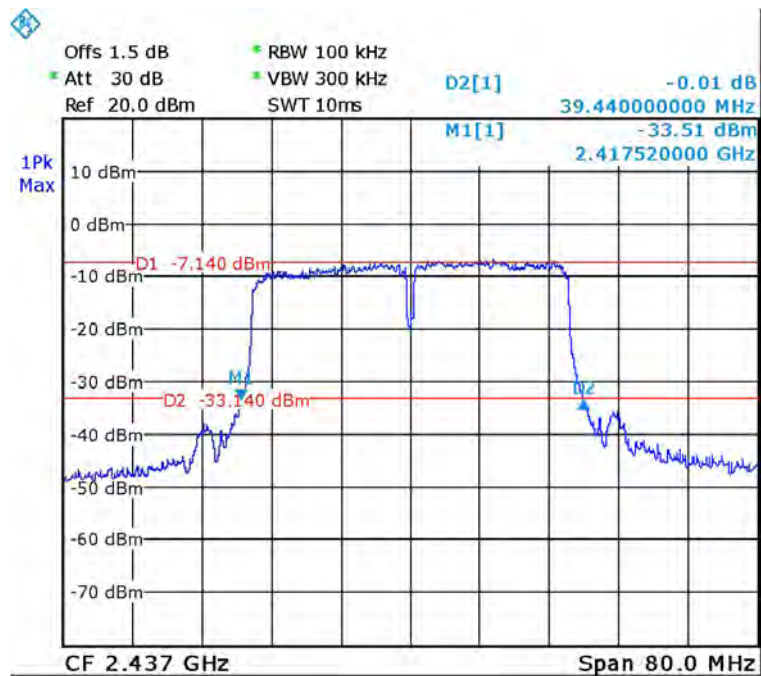
Date: 17.SEP.2013 09:44:24

802.11n HT40 26dB OBW, Low Channel



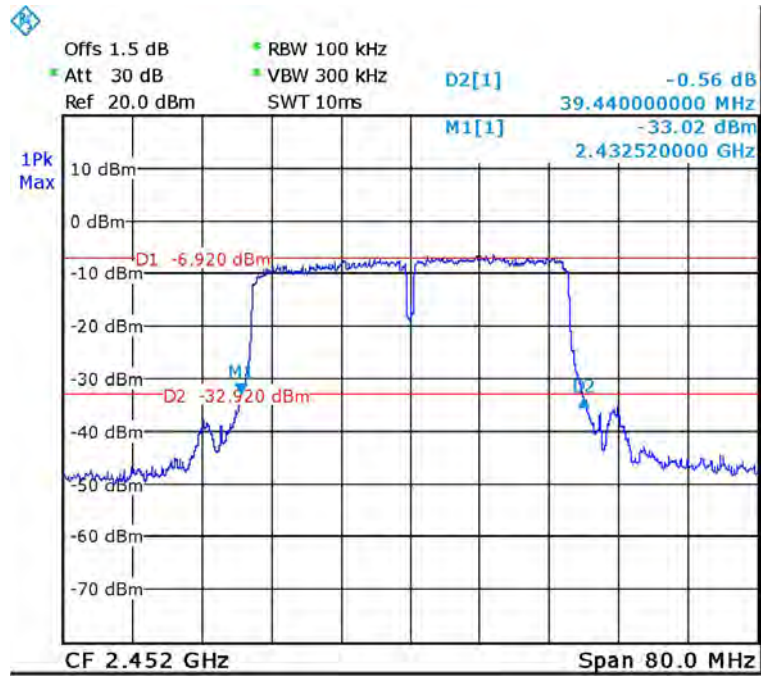
Date: 17.SEP.2013 09:53:18

802.11n HT40 26dB OBW, Middle Channel



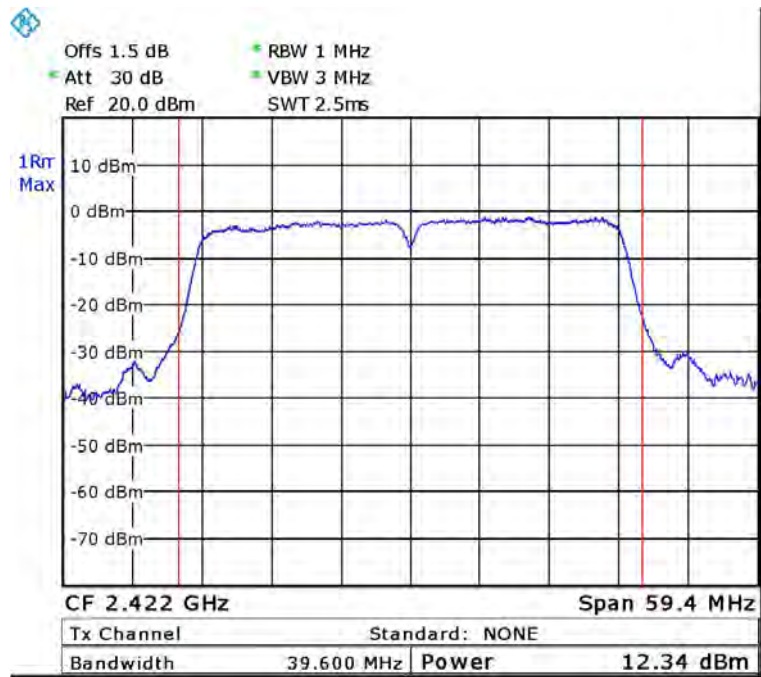
Date: 17.SEP.2013 10:04:48

802.11n HT40 26dB OBW, High Channel

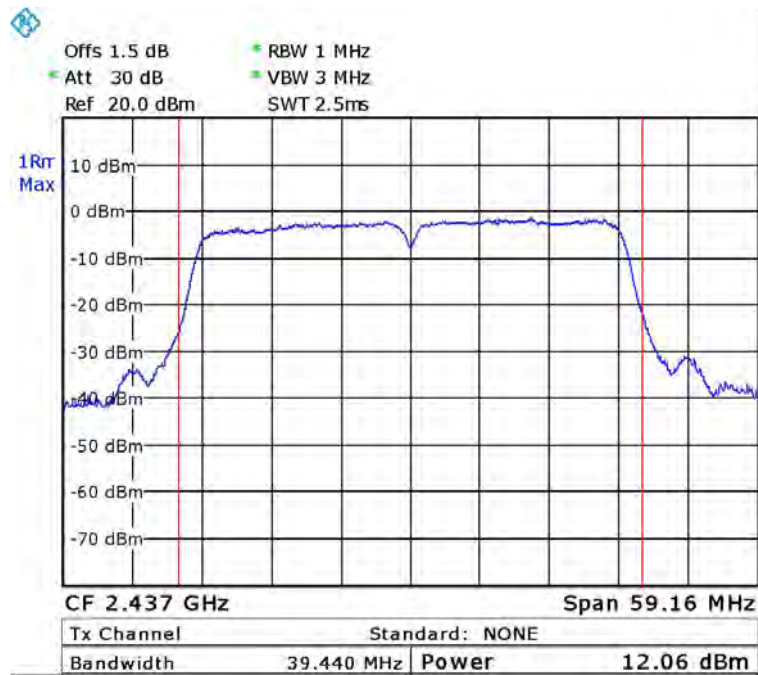


Date: 17.SEP.2013 10:12:40

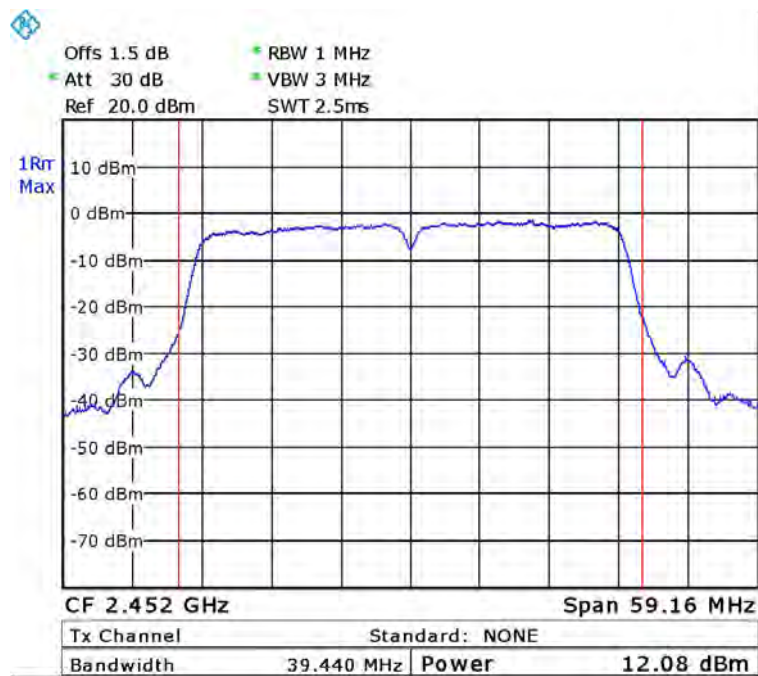
802.11n HT40 RF Output Power, Low Channel



Date: 17.SEP.2013 09:55:05

802.11n HT40 RF Output Power, Middle Channel

Date: 17.SEP.2013 10:06:22

802.11n HT40 RF Output Power, High Channel

Date: 17.SEP.2013 10:14:07

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
Rohde & Schwarz	Spectrum Analyzer	FSL18	100180	2013-07-31	2014-07-30

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

Test Data

Temperature:	28 ° C
Relative Humidity:	61 %
ATM Pressure:	100.6 kPa

The testing was performed by Bruce Wu on 2013-09-17.

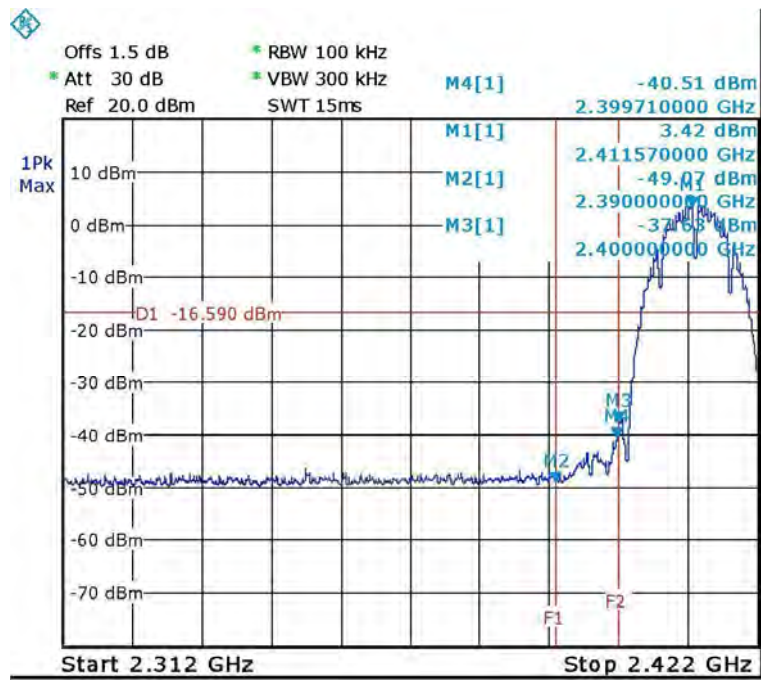
Temperature:	27 ° C
Relative Humidity:	61 %
ATM Pressure:	100.1 kPa

The testing was performed by Bruce Wu on 2013-09-23.

Test Mode: Transmitting

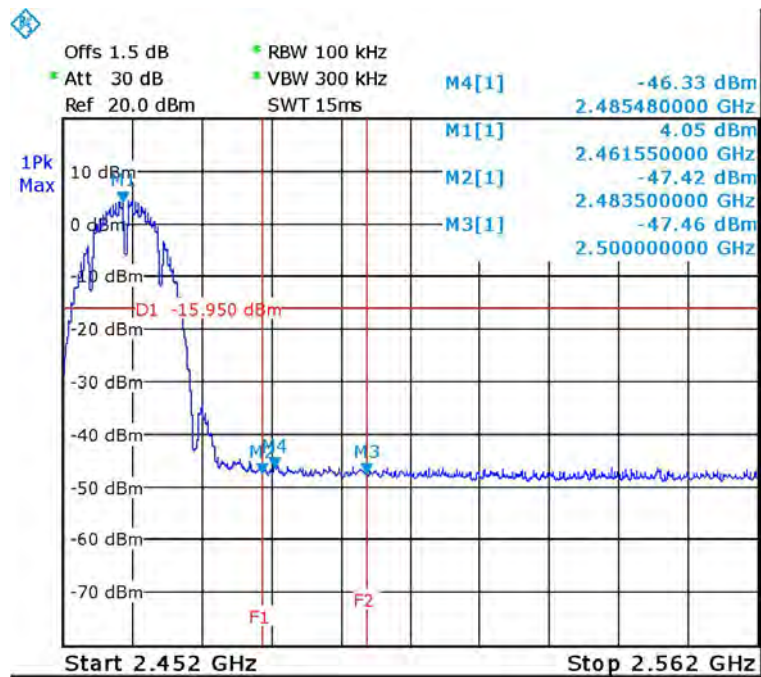
Test Result: Compliance, Please refer to following table and plots.

802.11b: Band Edge, Left Side



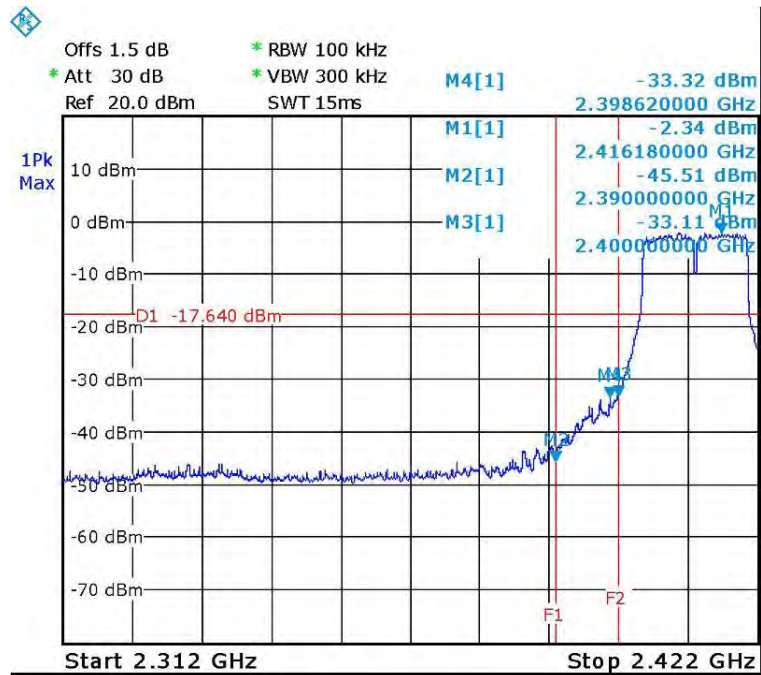
Date: 17.SEP.2013 09:23:45

802.11b: Band Edge, Right Side



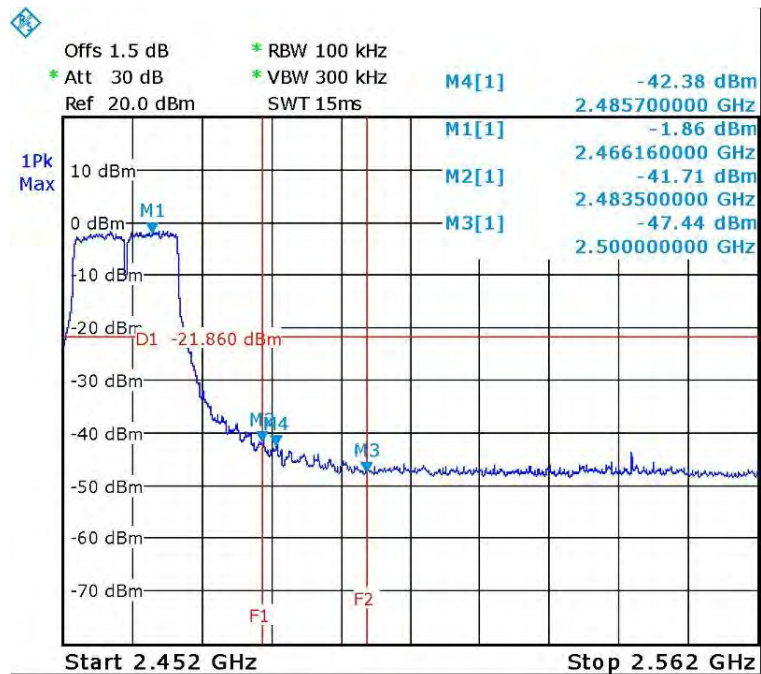
Date: 17.SEP.2013 05:43:58

802.11g: Band Edge, Left Side



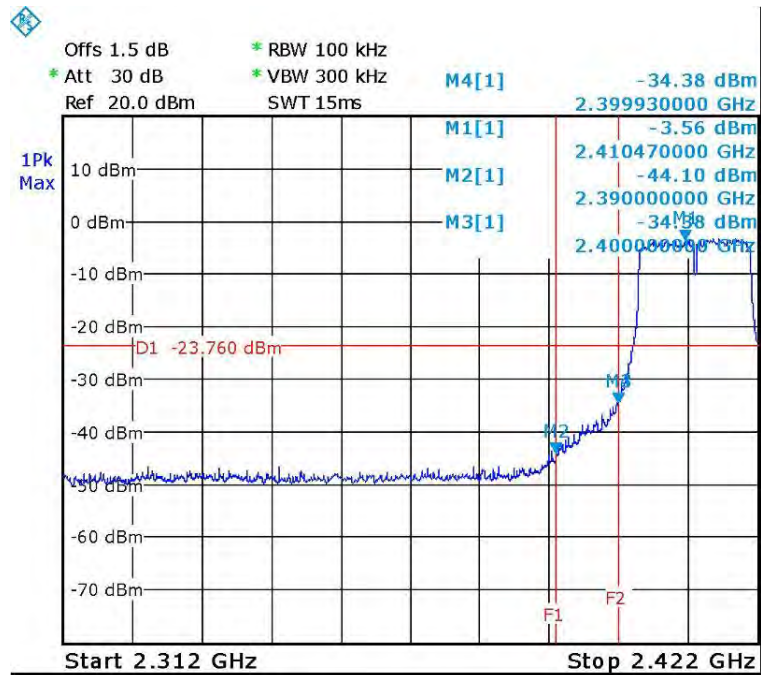
Date: 17.SEP.2013 06:21:54

802.11g: Band Edge, Right Side



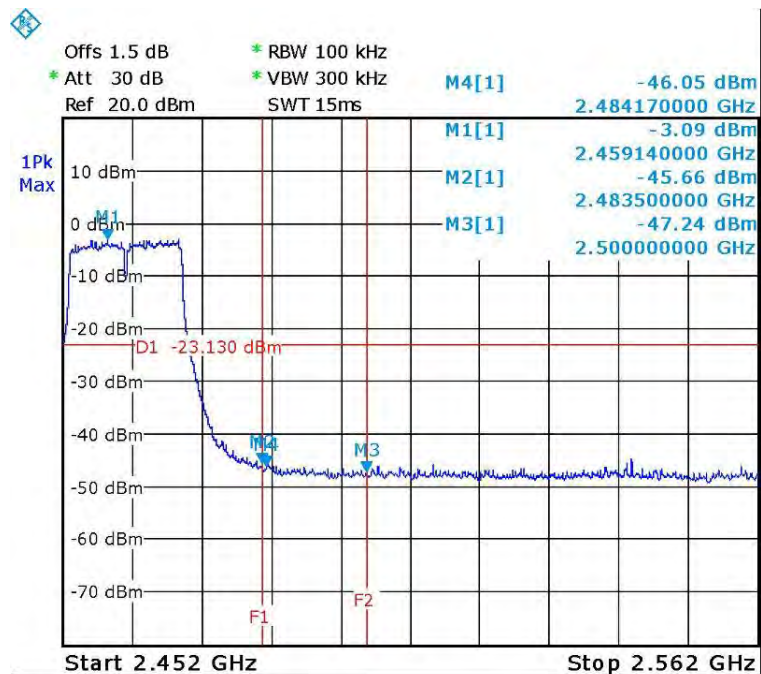
Date: 17.SEP.2013 07:35:15

802.11n HT20 Band Edge, Left Side



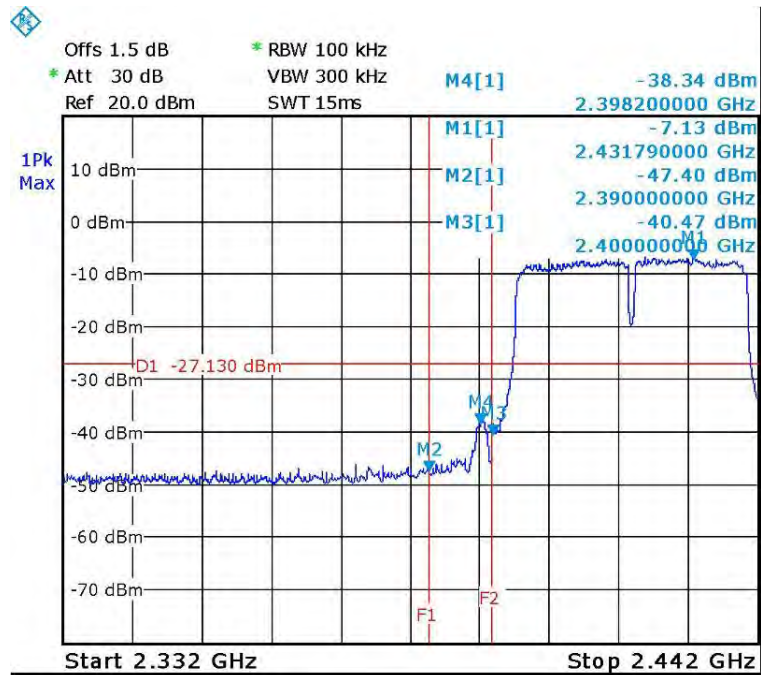
Date: 17.SEP.2013 09:20:45

802.11n HT20 Band Edge, Right Side



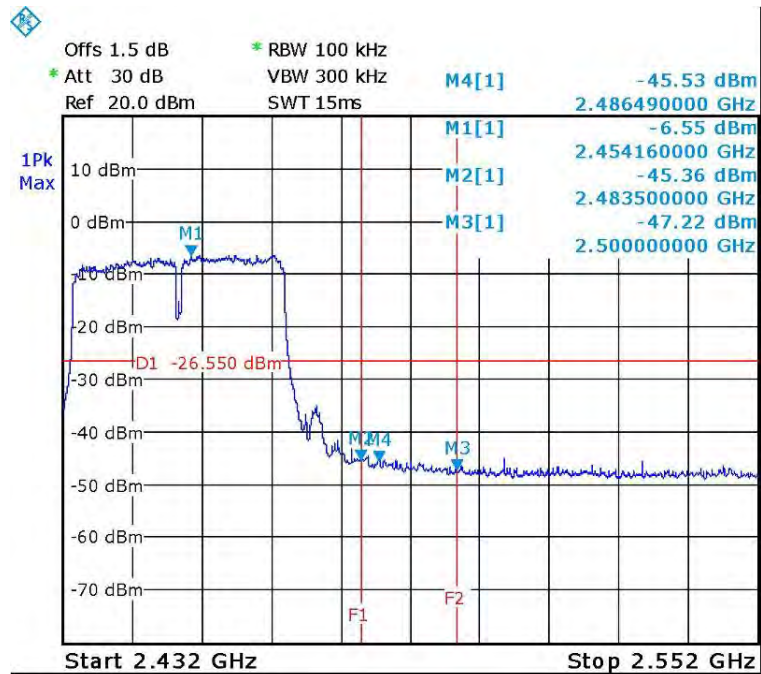
Date: 17.SEP.2013 09:49:31

802.11n HT40 Band Edge, Left Side



Date: 23.SEP.2013 06:02:37

802.11n HT40 Band Edge, Right Side



Date: 23.SEP.2013 05:46:17

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
Rohde & Schwarz	Spectrum Analyzer	FSL18	100180	2013-07-31	2014-07-30

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

Test Data**Environmental Conditions**

Temperature:	28 ° C
Relative Humidity:	61 %
ATM Pressure:	101.5 kPa

The testing was performed by Bruce Wu on 2013-09-13.

Temperature:	28 ° C
Relative Humidity:	59 %
ATM Pressure:	100.7 kPa

The testing was performed by Bruce Wu on 2013-09-16.

Temperature:	28 ° C
Relative Humidity:	61 %
ATM Pressure:	100.6 kPa

The testing was performed by Bruce Wu on 2013-09-17.

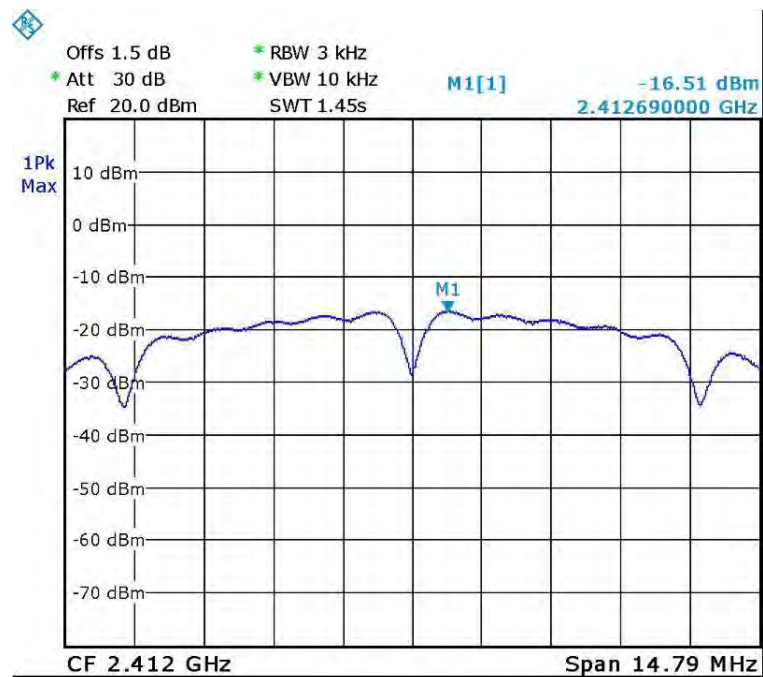
Temperature:	27 ° C
Relative Humidity:	61 %
ATM Pressure:	100.1 kPa

The testing was performed by Bruce Wu on 2013-09-23.

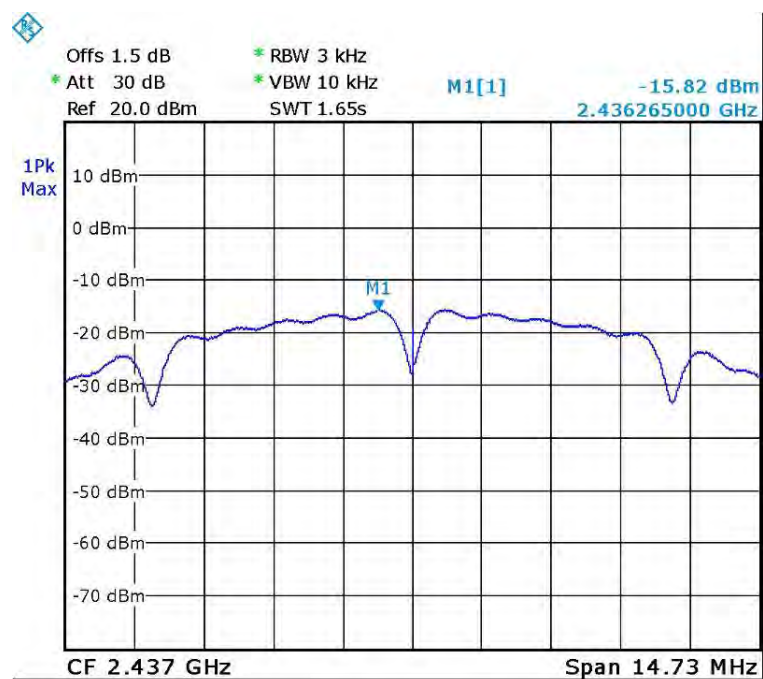
Test Mode: Transmitting

Channel	PSD (dBm/3 kHz)	FCC Limit (dBm/3 kHz)	Result
802.11b mode			
Low	-16.51	8	Pass
Middle	-15.82	8	Pass
High	-15.90	8	Pass
802.11g mode			
Low	-16.69	8	Pass
Middle	-16.44	8	Pass
High	-16.21	8	Pass
802.11n HT20 mode			
Low	-18.20	8	Pass
Middle	-17.61	8	Pass
High	-18.60	8	Pass
802.11n HT40 mode			
Low	-20.02	8	Pass
Middle	-18.93	8	Pass
High	-20.04	8	Pass

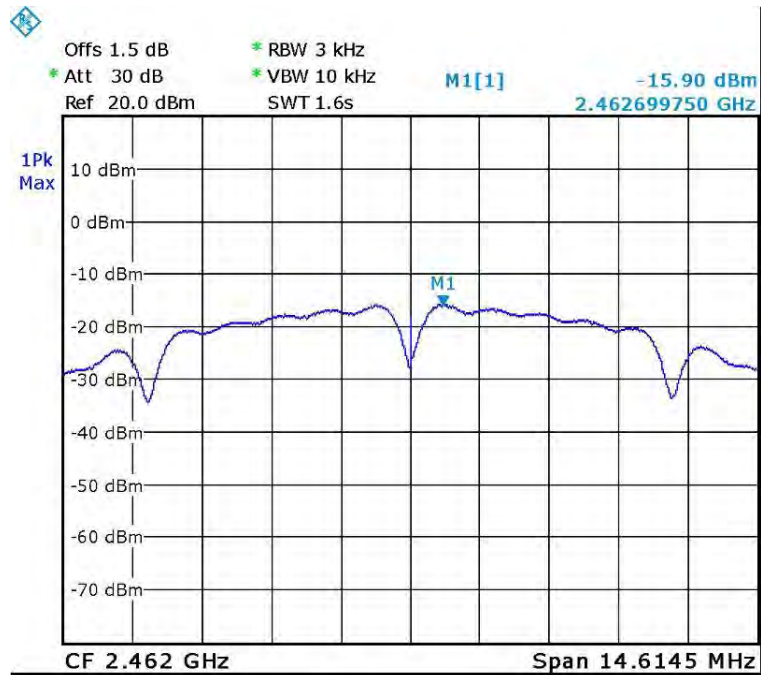
Please refer to the following plots.

Power Spectral Density, 802.11b Low Channel

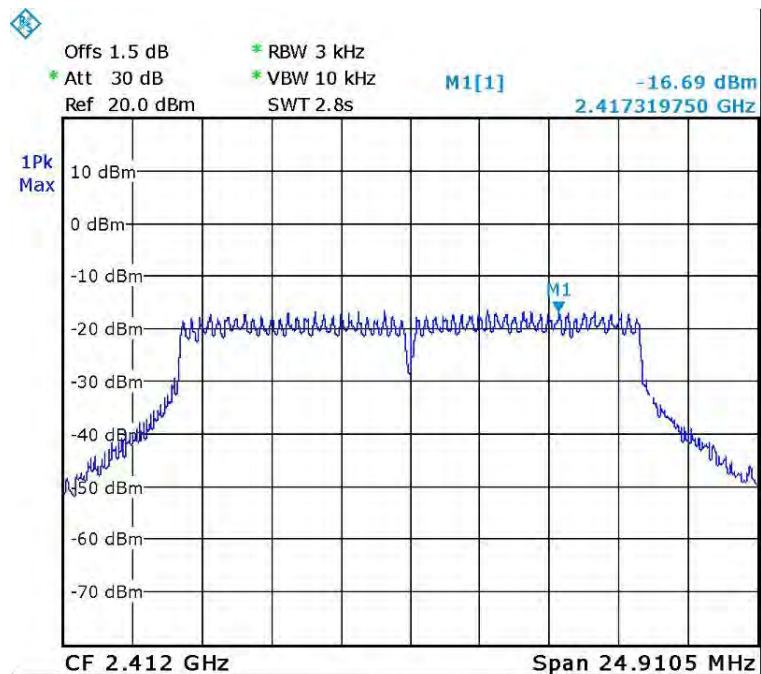
Date: 16.SEP.2013 12:40:01

Power Spectral Density, 802.11b Middle Channel

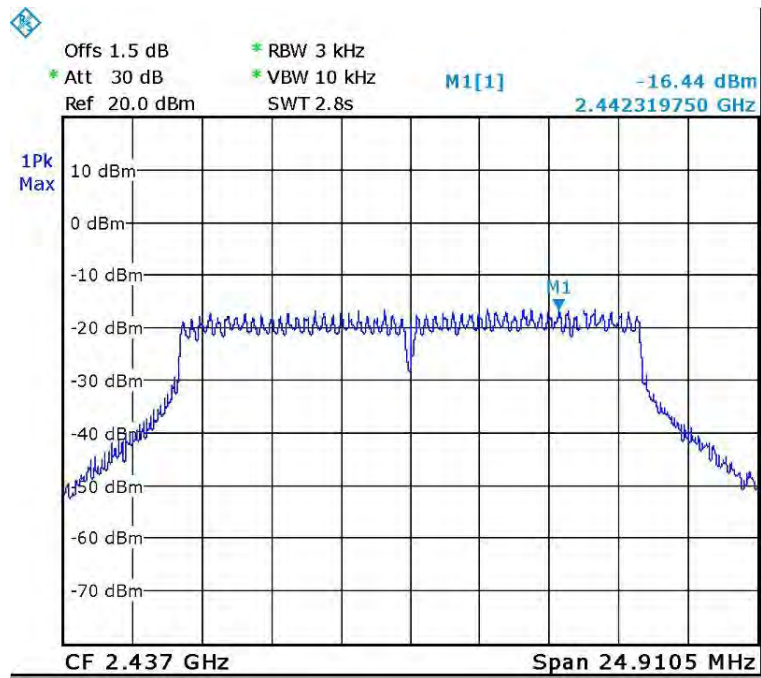
Date: 16.SEP.2013 12:56:13

Power Spectral Density, 802.11b High Channel

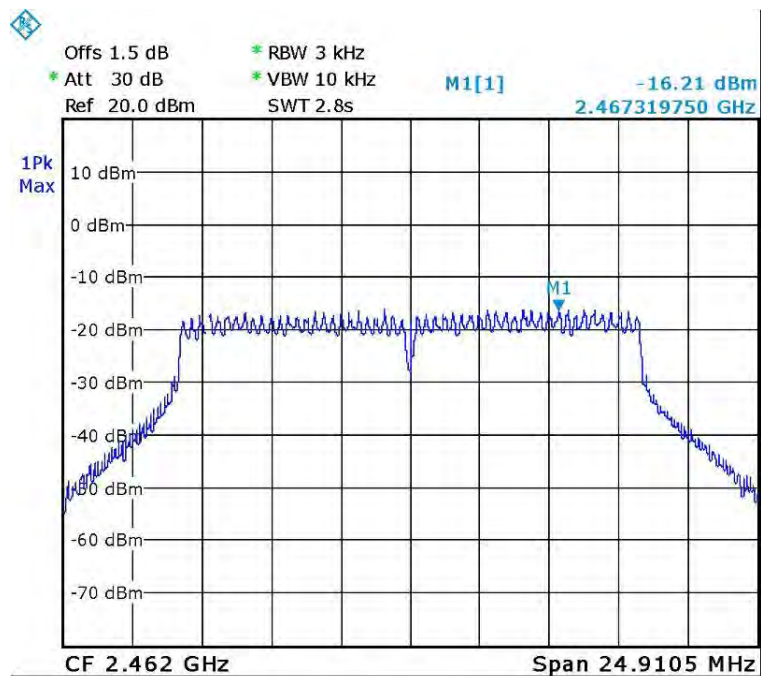
Date: 17.SEP.2013 05:40:07

Power Spectral Density, 802.11g Low Channel

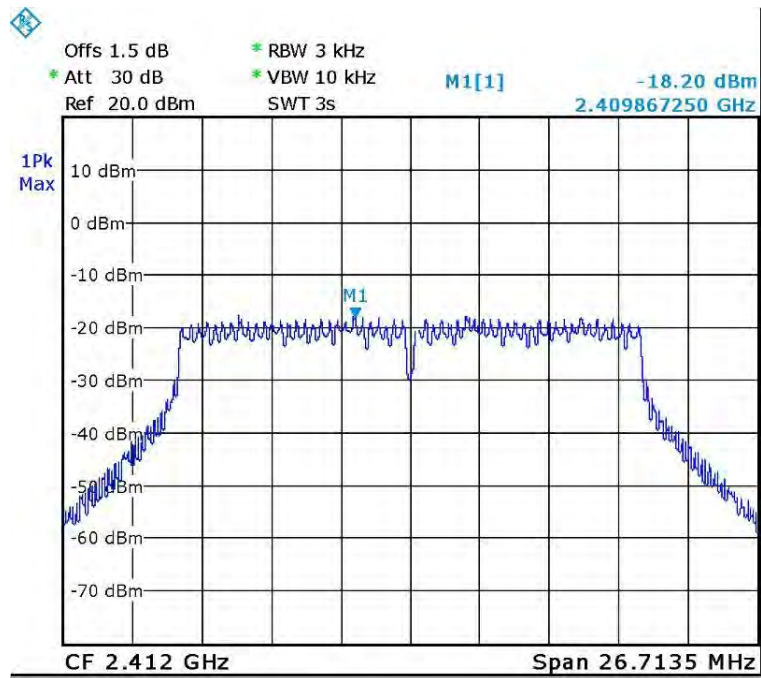
Date: 17.SEP.2013 06:17:24

Power Spectral Density, 802.11g Middle Channel

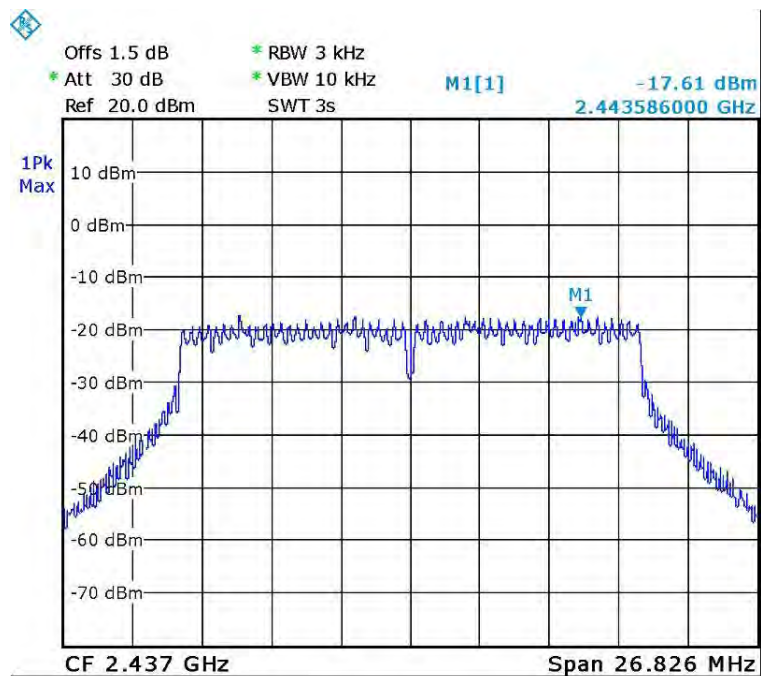
Date: 17.SEP.2013 06:46:30

Power Spectral Density, 802.11g High Channel

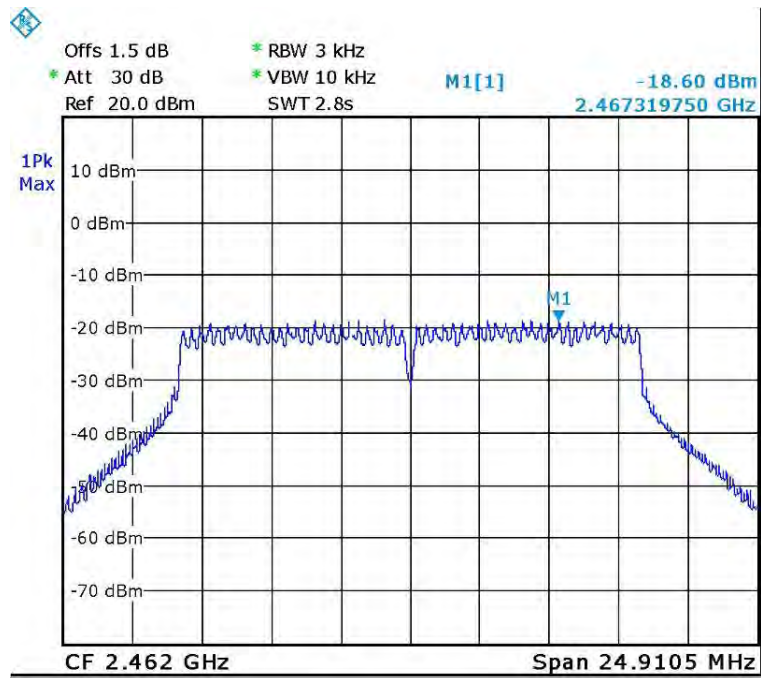
Date: 17.SEP.2013 07:21:04

Power Spectral Density, 802.11n HT20 Low Channel

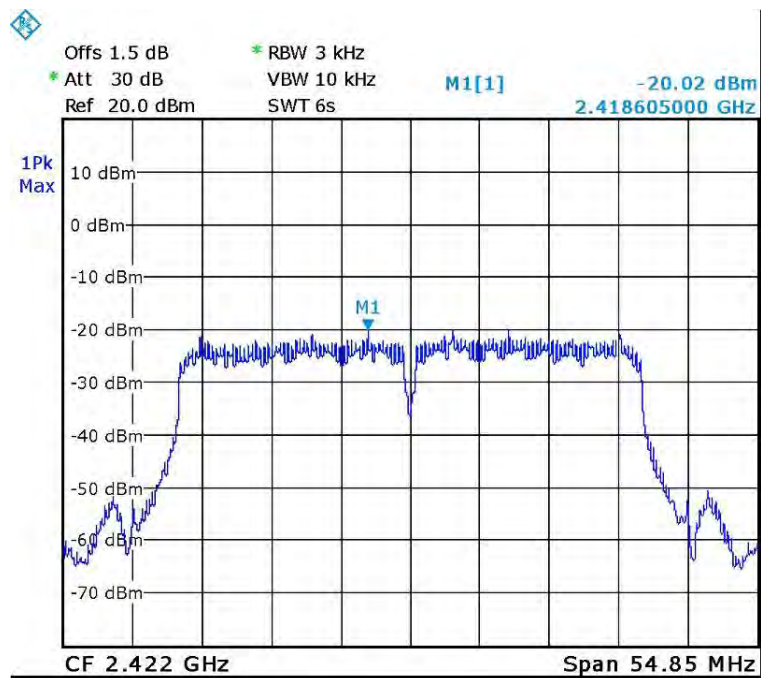
Date: 13.SEP.2013 12:28:45

Power Spectral Density, 802.11n HT20 Middle Channel

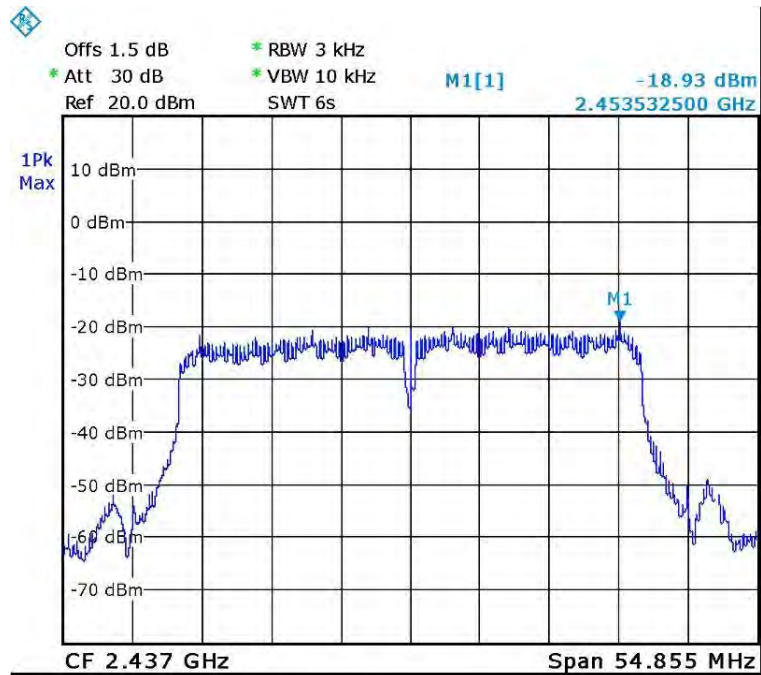
Date: 17.SEP.2013 09:36:38

Power Spectral Density, 802.11n HT20 High Channel

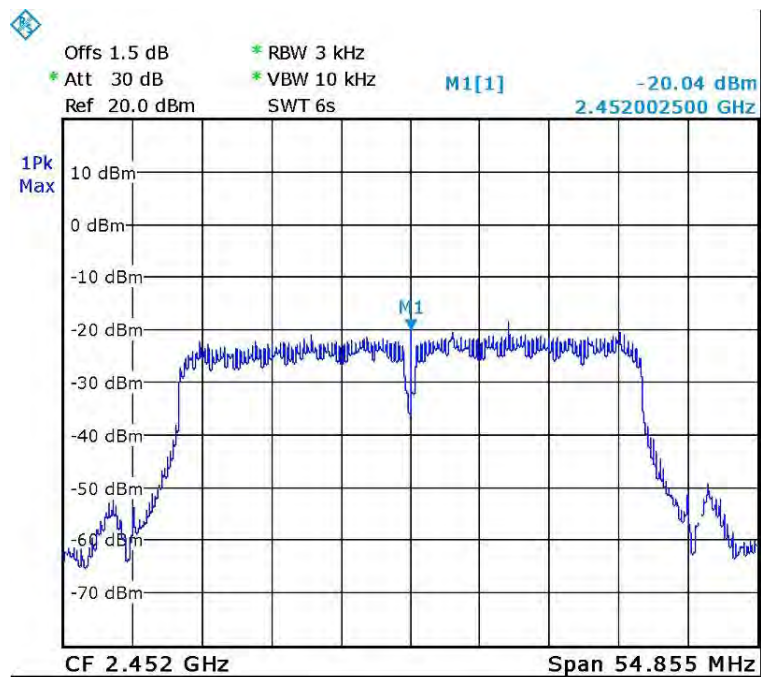
Date: 16.SEP.2013 10:56:46

Power Spectral Density, 802.11n HT40 Low Channel

Date: 23.SEP.2013 08:47:20

Power Spectral Density, 802.11n HT40 Middle Channel

Date: 17.SEP.2013 10:08:55

Power Spectral Density, 802.11n HT40 High Channel

Date: 17.SEP.2013 10:16:42

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