



Engineering Solutions & Electromagnetic Compatibility Services

**FCC Part 15.247 & IC RSS-210
Class II Permissive Change Report**

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**MODEL: XL-200P
Multi-Band Portable Land Mobile Radio**

**FCC ID: OWDTR-0133-E
IC: 3636B-0133**

June 16, 2015

Standards Referenced for this Report	
FCC Classification	DTS – Part 15 Digital Transmission System
FCC Rule Part(s)	FCC Rules Part 15.247: Operation within the bands 920-928 MHz, 2400-2483.5 MHz and 5725-5850 MHz Frequency Hopping System (10-01-14)
IC Standard	RSS-210 Issue 8: Licence-exempt Radio Apparatus (All Frequency Bands): Category I Equipment RSS-Gen Issue 4: General Requirements for Compliance of Radio Apparatus
FCC Procedure	ANSI C63.10-2013: American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices
Digital Interface Information	Digital Interface was found to be compliant

Frequency Range (MHz)	Output Power (W)*	Frequency Tolerance (ppm)	Emission Designator
2412 – 2462	0.234	N/A	1M46FXD

* power is peak conducted

Report Prepared By: Daniel Baltzell

Document Number: 2015029DTS

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1 General Information

1.1 Scope

Applicable Standards:

- FCC Rules Part 15.247: Frequency Hopping, Direct Spread Spectrum and Hybrid Systems that are in operation within the bands of 902-928 MHz, 2400-2483.5 MHz and 5725-5850 MHz.
- RSS-210 Issue 8: Licence-exempt Radio Apparatus (All Frequency Bands): Category I Equipment
- RSS-Gen Issue 4: General Requirements and Information for the Certification of Radio Apparatus

This test report addresses the intentional radiated emissions requirements per FCC 15.247, which are the harmonic/spurious radiated emissions occurring in the restricted bands per FCC 15.205 (against the FCC 15.209 limits).

1.2 Description of EUT

Equipment Under Test	XL200P Multi-Band Portable Radio
Power Supply	7.4 VDC Li-Ion Battery
Modulation Type	DSSS
Frequency Range	2412 – 2462 MHz
Antenna Connector Type	N/A
Antenna Type	Internal chip

1.3 Test Facility

The open area test site and conducted measurement facility used to collect the radiated data is located at 360 Herndon Parkway, Suite 1400, Herndon, Virginia 20170. This site has been fully described in a report and approved by the Federal Communications Commission to perform AC line conducted and radiated emissions testing.

1.4 Modifications

No physical modifications were required for compliance.

2 Test Information

2.1 Description of Test Modes

In accordance with FCC 15.31(m), and because the EUT utilizes an operating band greater than 10 MHz, the following frequencies were tested.

Table 2-1: Channels Tested for DSSS – 802.11b (2 Mbps); 802.11g (12 Mbps)

Channel	Frequency (MHz)
1	2412
6	2437
11	2462

2.2 Exercising the EUT

The EUT was tested in all three orthogonal planes in order to determine worst-case emissions. The EUT was provided with software to continuously transmit during testing. The carrier was also checked to verify that information was being transmitted. There were no deviations from the test standard(s) and/or methods. The test results reported relate only to the item tested.

2.3 Test Result Summary

Table 2-2: Test Result Summary – FCC Part 15, Subpart C (Section 15.247), IC RSS-210/RSS-Gen

FCC Reference	IC Reference	C63.10 Procedure	Test	Pass/Fail or N/A
FCC 15.209	RSS-210 A8.5, RSS-Gen 6.5, A2.9	6.5, 6.6	Radiated Emissions	Pass
FCC 15.207	RSS-Gen 8.8	6.2	AC Power Conducted Emissions	N/A
FCC 15.247(a)(2)	RSS-210 A8.2	11.8	6 dB Bandwidth	Pass
FCC 15.247(b)	RSS-210 A8.4(4), RSS-Gen 6.12	11.9	Maximum Peak Power Output	Pass
FCC 15.247(d)	RSS-210 A8.5, RSS-Gen 6.13	11.12.2	Antenna Conducted Spurious Emissions	Pass
FCC 15.247(e)	RSS-210 A8.2	11.10	Power Spectral Density	Pass
FCC 15.247(d)	RSS-210 A8.5 RSS-210 2.2	11.13	Band Edge Measurement	Pass

2.4 Related Submittal(s)/Grant(s)

This report is to support a Class II application for FCC ID: OWDTR-0133-E, IC: 3636B-0133.

2.5 Test System Details

The test samples were received on February 27, 2014. The FCC identifiers for all applicable equipment, plus descriptions of all cables used in the tested system, are identified in the following tables.

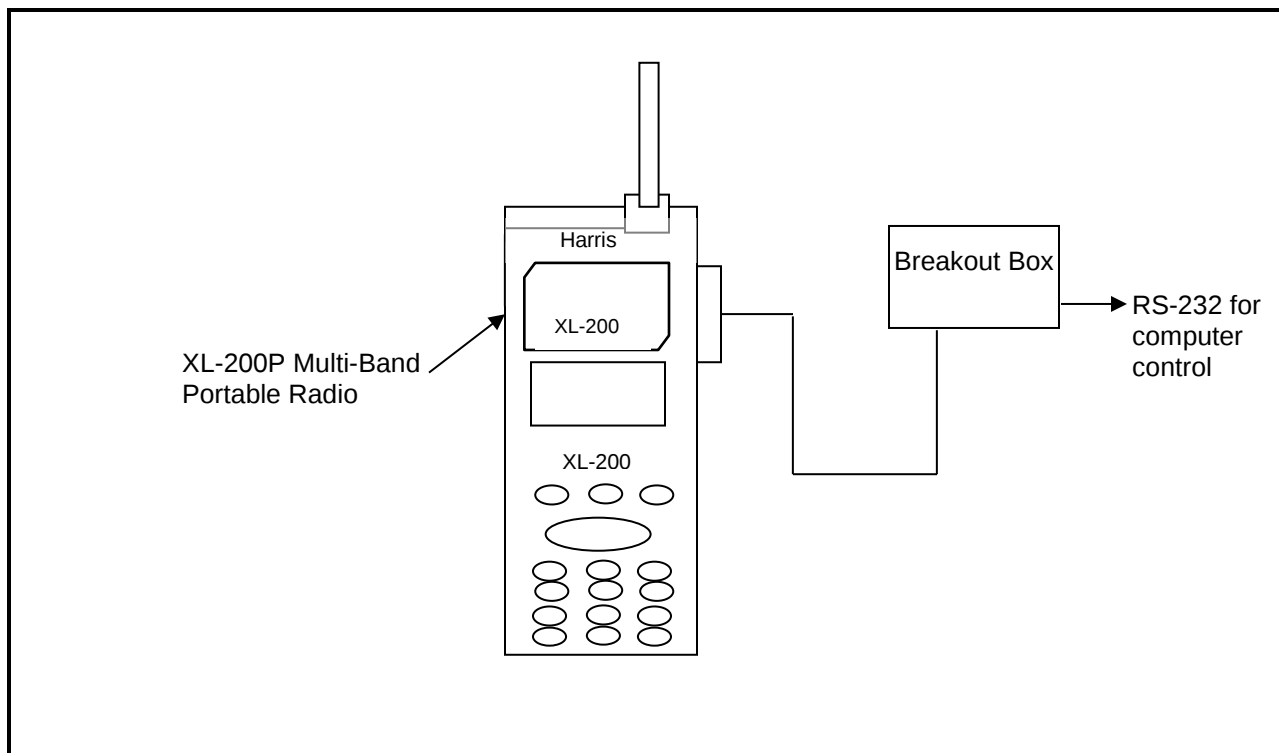
Table 2-3: Equipment Under Test

Part	Manufacturer	Model #	Serial Number	FCC ID	RTL Bar Code
Radio	Harris Corporation	XL-200P (System)	14035-1000-01/E00236	OWDTR-0133-E	21612
Radio (conducted connection)	Harris Corporation	XL-200P (System)	14035-1000-01/0WXD-E00239	OWDTR-0133-E	21614

Table 2-4: Accessory Test Equipment

Part	Manufacturer	Model #	Serial Number	FCC ID	RTL Bar Code
Battery Eliminator	Harris Corporation	14035-4300-01	N/A	N/A	21553
Breakout Box	Harris Corporation	12082-7980-01	N/A	N/A	20599
Battery	Harris Corporation	BAT-L-CASE-R-HR003	Engineering Sample #73	N/A	21552
Laptop	Samsung	NP300E5A-A01UB	HJVF93EB903201D	N/A	901550

Figure 2-1: Configuration of Tested System



3 Peak Output Power – FCC 15.247(b)(1); RSS-210 A8.4(4)

3.1 Power Output Test Procedure

A conducted power measurement of the EUT was taken using a Rohde & Schwarz Spectrum Analyzer.

Table 3-1: Power Output Test Equipment

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
901581	Rohde & Schwarz	FSU	Spectrum Analyzer	1166.1660.50	11/13/15

3.2 Power Output Test Data

Table 3-2: Power Output Test Data – 802.11b

Channel	Frequency (MHz)	Peak Power (dBm)
1	2412	20.3
6	2437	20.7
11	2462	20.0

Table 3-3: Power Output Test Data – 802.11g

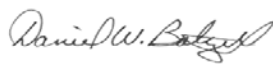
Channel	Frequency (MHz)	Peak Power (dBm)
1	2412	20.9
6	2437	23.7
11	2462	20.8

Table 3-4: Power Output Test Data – 802.11n

Channel	Frequency (MHz)	Peak Power (dBm)
1	2412	21.6
6	2437	23.4
11	2462	21.3

Test Personnel:

Daniel W. Baltzell
Test Engineer


Signature

March 14, 2013
Date of Test

4 Compliance with the Band Edge – FCC 15.247(d); RSS-210 2.2

4.1 Band Edge Test Procedure

The transmitter output was connected to its appropriate antenna. Peak (1 MHz RBW/3 MHz VBW) and average (1 MHz RBW/10 Hz VBW) corrected radiated measurements were taken within the restricted band to show compliance.

Table 4-1: Band Edge Test Equipment

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
900878	Rhein Tech Laboratories, Inc.	AM3-1197-0005	3 meter antenna mast, polarizing	Outdoor Range 1	Not Required
901592	Insulated Wire Inc.	KPS-1503-3600-KPR	SMK RF Cables 20'	NA	9/3/15
901242	Rhein Tech Laboratories, Inc.	WRT-000-0003	Wood rotating table	N/A	Not Required
900772	EMCO	3161-02	Horn Antenna (2 - 4 GHz)	9804-1044	4/09/18
901581	Rohde & Schwarz	FSU	Spectrum Analyzer	1166.1660.50	11/13/15

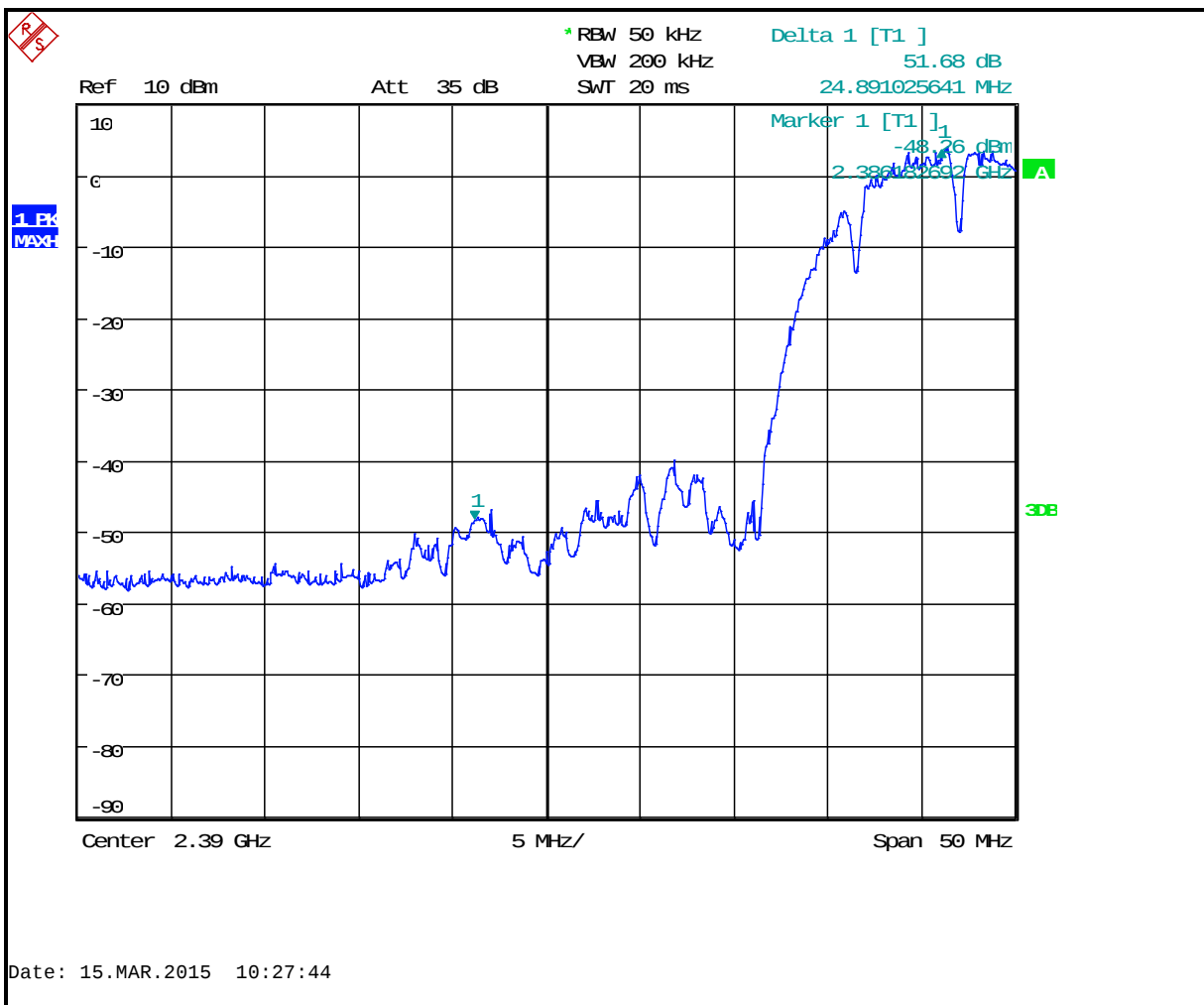
4.1.1 Lower Band Edge – 802.11b

94.6 dBuV/m is the average field strength measurement, from which the delta measurement of 51.7 dB is subtracted (reference plots), resulting in a level 42.9 dB. This level has a margin of 11.1 dB below the limit of 54 dBuV/m.

Calculation: $94.6 \text{ dBuV/m} - 51.7 \text{ dB} - 54 \text{ dBuV/m} = -11.1 \text{ dB}$

Peak Field Strength of Lower Band Edge (1 MHz RBW/3 MHz VBW) = 99.8 dBuV/m
 Average Field Strength of Lower Band Edge (1 MHz RBW/10 Hz VBW) = 94.6 dBuV/m
 Delta measurement = 51.7 dB

Plot 4-1: In Band Emissions - Channel 1 (2412 MHz); 802.11b (2 Mbps)



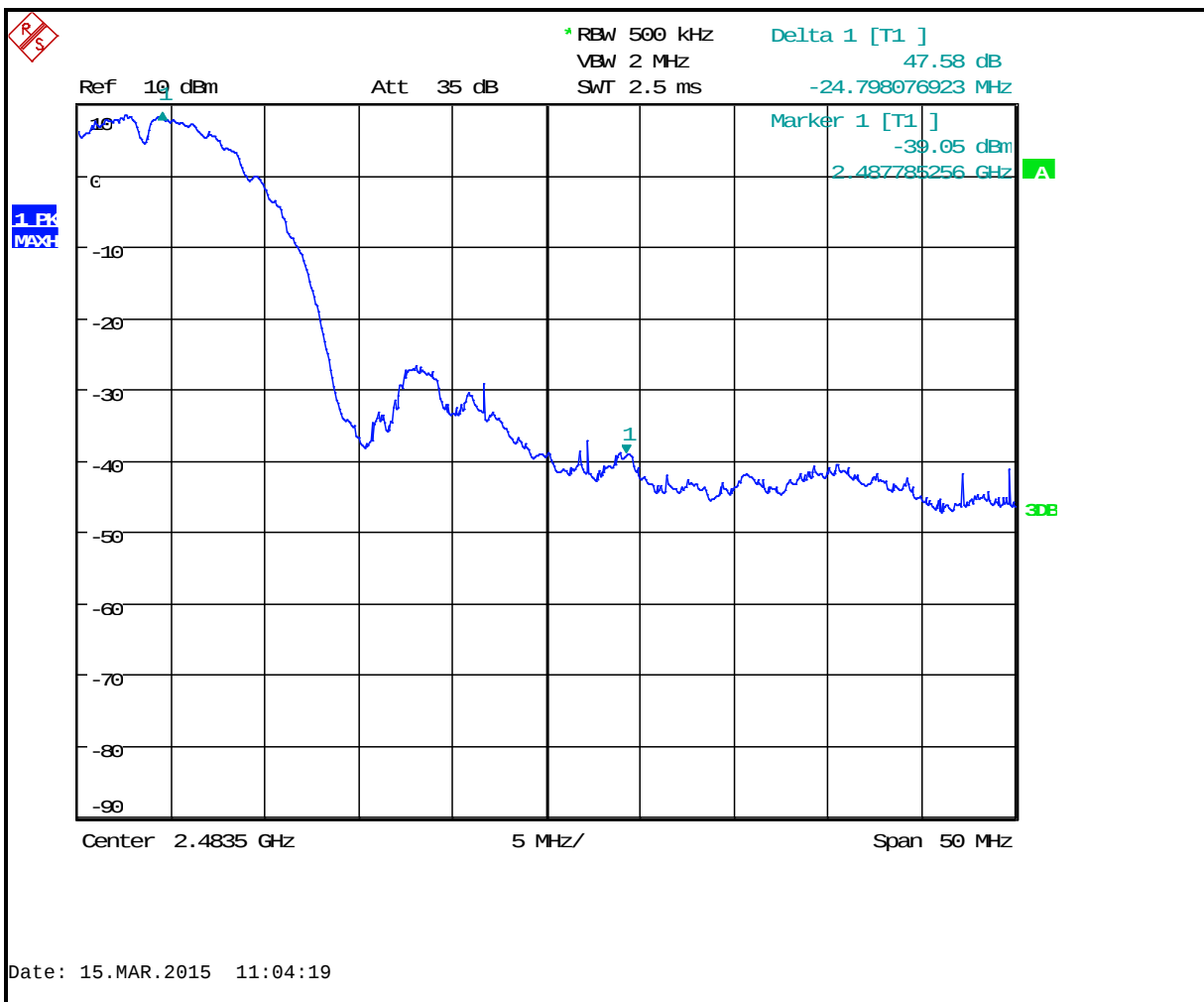
4.1.2 Upper Band Edge – 802.11b

94.8 dBuV/m is the average field strength measurement, from which the delta measurement of 47.6 dB is subtracted (reference plots), resulting in a level 47.2 dB. This level has a margin of 6.8 dB below the limit of 54 dBuV/m.

Calculation: $94.8 \text{ dBuV/m} - 47.6 \text{ dB} - 54 \text{ dBuV/m} = -6.8 \text{ dB}$

Peak Field Strength of Upper Band Edge (1 MHz RBW/1 MHz VBW) = 100.0 dBuV/m
Average Field Strength of Upper Band Edge (1 MHz RBW/10 Hz VBW) = 94.8 dBuV/m
Delta measurement = 47.6 dB

Plot 4-2: In Band Emissions - Channel 11 (2462 MHz); 802.11b (2 Mbps)



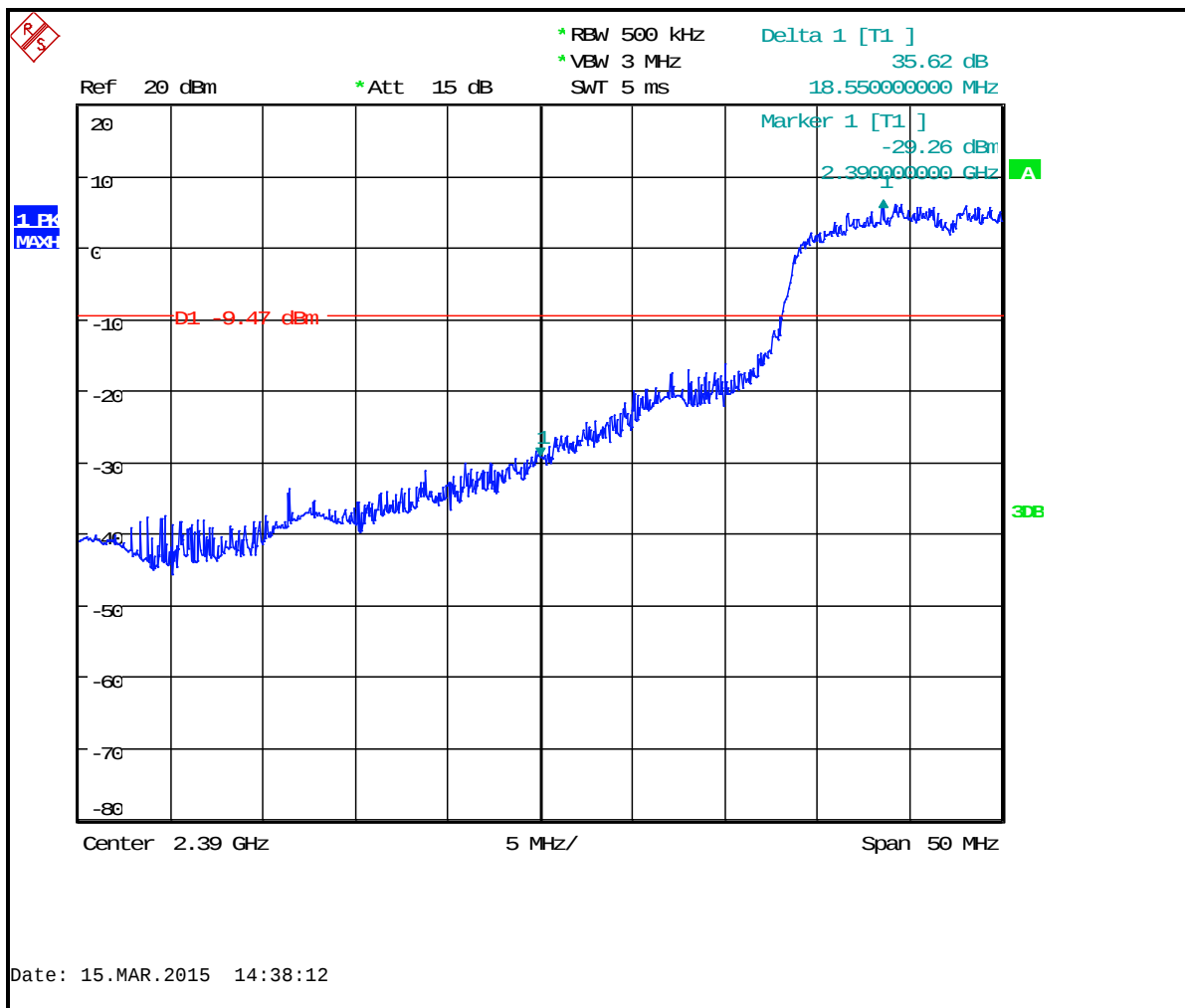
4.1.3 Lower Band Edge – 802.11g

89.1 dBuV/m is the average field strength measurement, from which the delta measurement of 35.6 dB is subtracted (reference plots), resulting in a level 53.5 dB. This level has a margin of 0.5 dB below the limit of 54 dBuV/m.

Calculation: $89.1 \text{ dBuV/m} - 35.6 \text{ dB} - 54 \text{ dBuV/m} = -0.5 \text{ dB}$

Peak Field Strength of Lower Band Edge (1 MHz RBW/3 MHz VBW) = 100.3 dBuV/m
 Average Field Strength of Lower Band Edge (1 MHz RBW/10 Hz VBW) = 89.1 dBuV/m
 Delta measurement = 35.6 dB

Plot 4-3: In Band Emissions - Channel 1 (2412 MHz); 802.11g (12 Mbps)



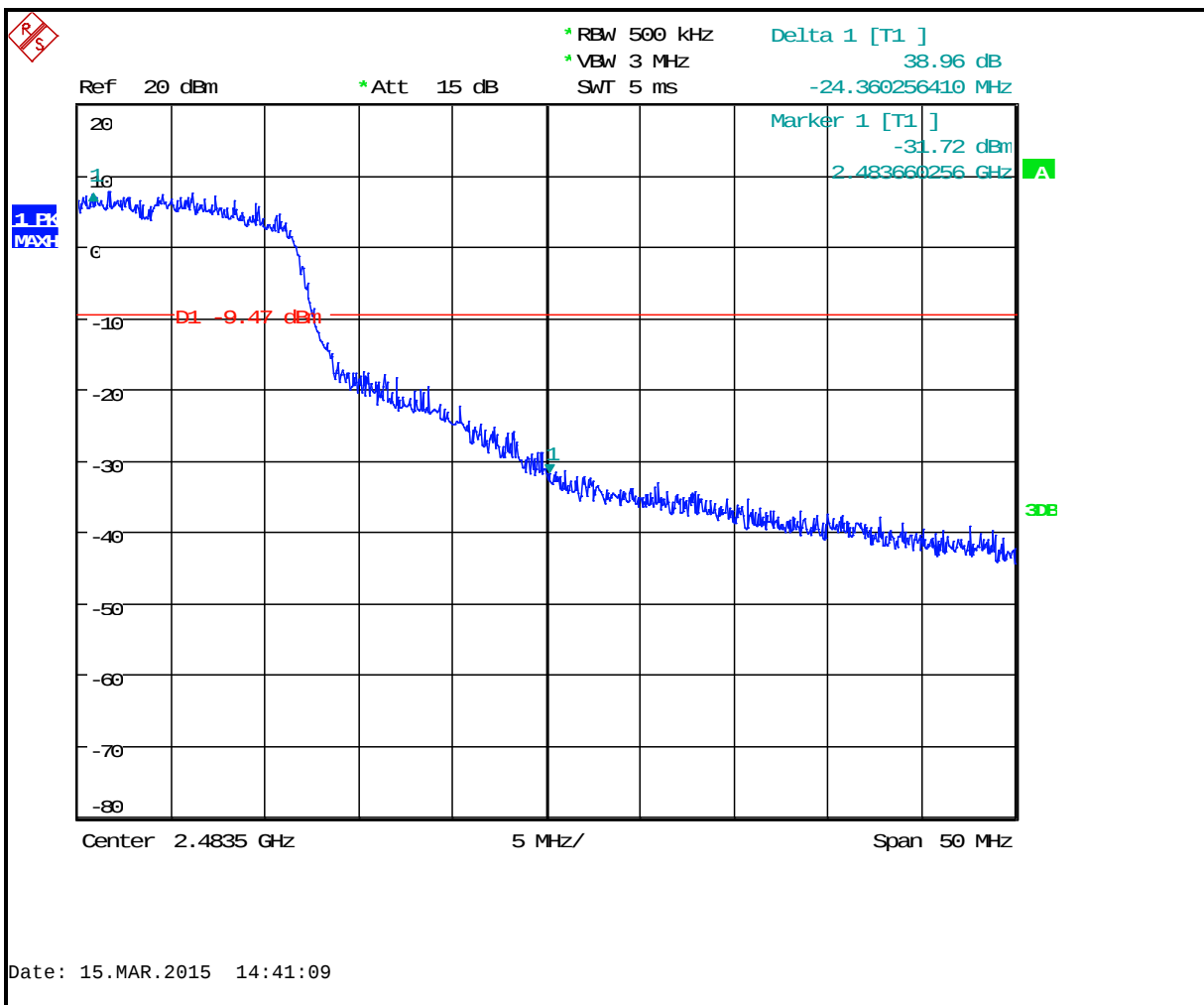
4.1.4 Upper Band Edge – 802.11g

90.9 dBuV/m is the average field strength measurement, from which the delta measurement of 39 dB is subtracted (reference plots), resulting in a level 51.9 dB. This level has a margin of 2.1 dB below the limit of 54 dBuV/m.

Calculation: $90.9 \text{ dBuV/m} - 39.0 \text{ dB} - 54 \text{ dBuV/m} = -2.1 \text{ dB}$

Peak Field Strength of Upper Band Edge (1 MHz RBW/1 MHz VBW) = 101.6 dBuV/m
 Average Field Strength of Upper Band Edge (1 MHz RBW/10 Hz VBW) = 90.9 dBuV/m
 Delta measurement = 39.0 dB

Plot 4-4: In Band Emissions - Channel 11 (2462 MHz); 802.11g (12 Mbps)



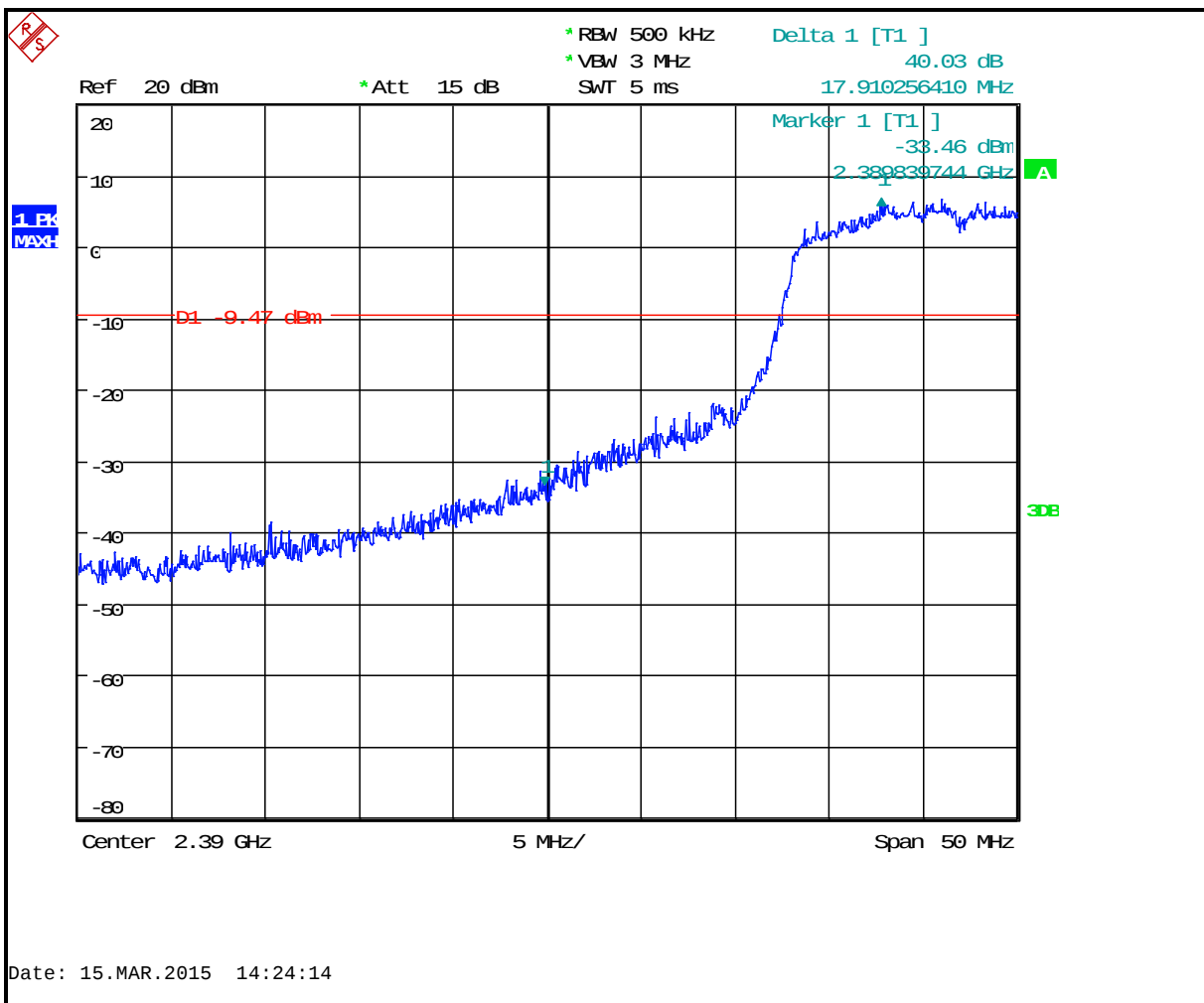
4.1.5 Lower Band Edge – 802.11n

75.4 dBuV/m is the average field strength measurement, from which the delta measurement of 40 dB is subtracted (reference plots), resulting in a level 35.4 dB. This level has a margin of 18.6 dB below the limit of 54 dBuV/m.

Calculation: $75.4 \text{ dBuV/m} - 40 \text{ dB} - 54 \text{ dBuV/m} = -18.6 \text{ dB}$

Peak Field Strength of Lower Band Edge (1 MHz RBW/3 MHz VBW) = 93.9 dBuV/m
Average Field Strength of Lower Band Edge (1 MHz RBW/10 Hz VBW) = 75.4 dBuV/m
Delta measurement = 40 dB

Plot 4-5: In Band Emissions - Channel 1 (2412 MHz); 802.11n (65 Mbps)



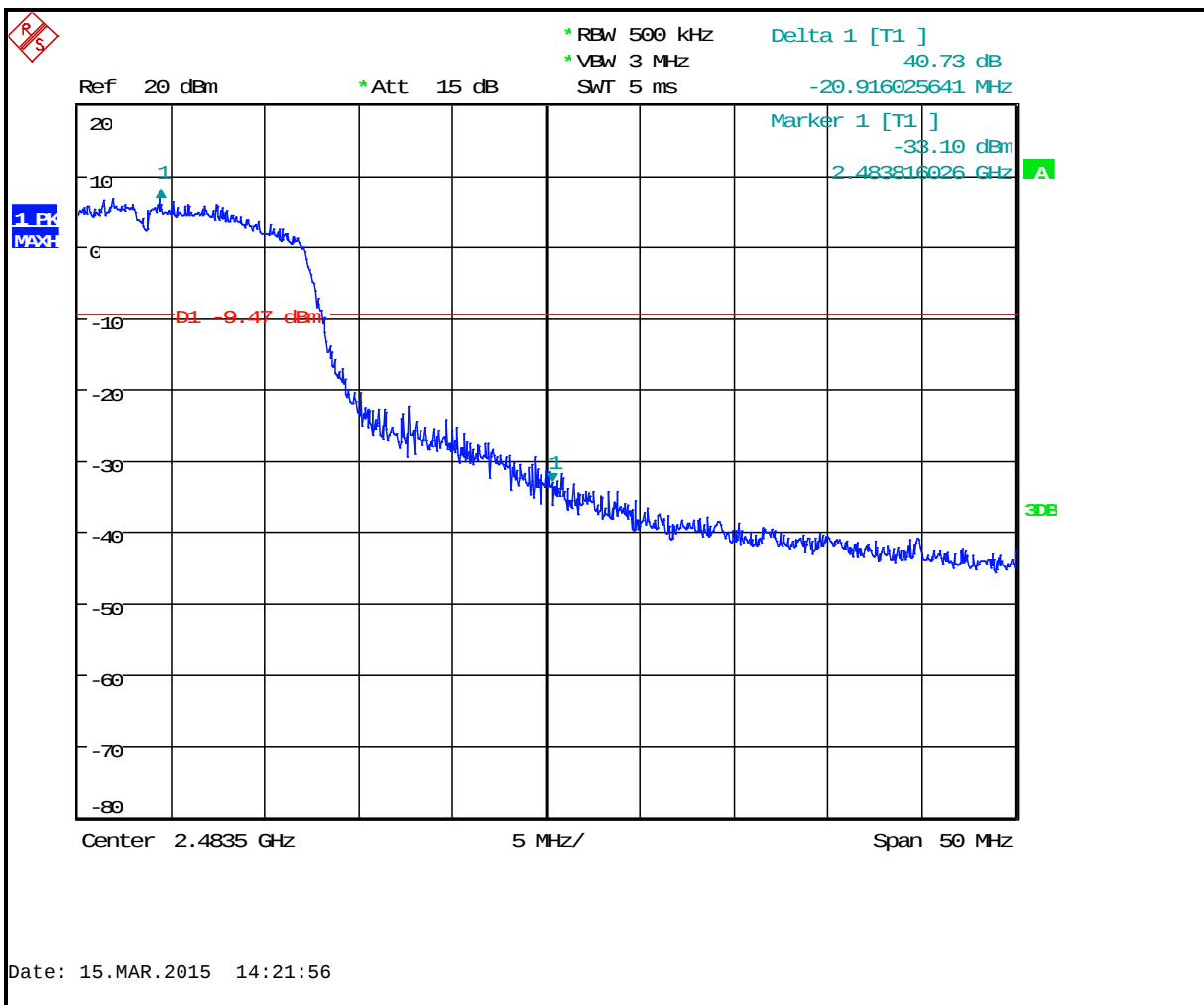
4.1.6 Upper Band Edge – 802.11n

80.5 dBuV/m is the average field strength measurement, from which the delta measurement of 40.7 dB is subtracted (reference plots), resulting in a level 39.8 dB. This level has a margin of 14.2 dB below the limit of 54 dBuV/m.

Calculation: $80.5 \text{ dBuV/m} - 40.7 \text{ dB} - 54 \text{ dBuV/m} = -14.2 \text{ dB}$

Peak Field Strength of Upper Band Edge (1 MHz RBW/1 MHz VBW) = 94.7 dBuV/m
 Average Field Strength of Upper Band Edge (1 MHz RBW/10 Hz VBW) = 80.5 dBuV/m
 Delta measurement = 40.7 dB

Plot 4-6: In Band Emissions - Channel 11 (2462 MHz); 802.11n (65 Mbps)



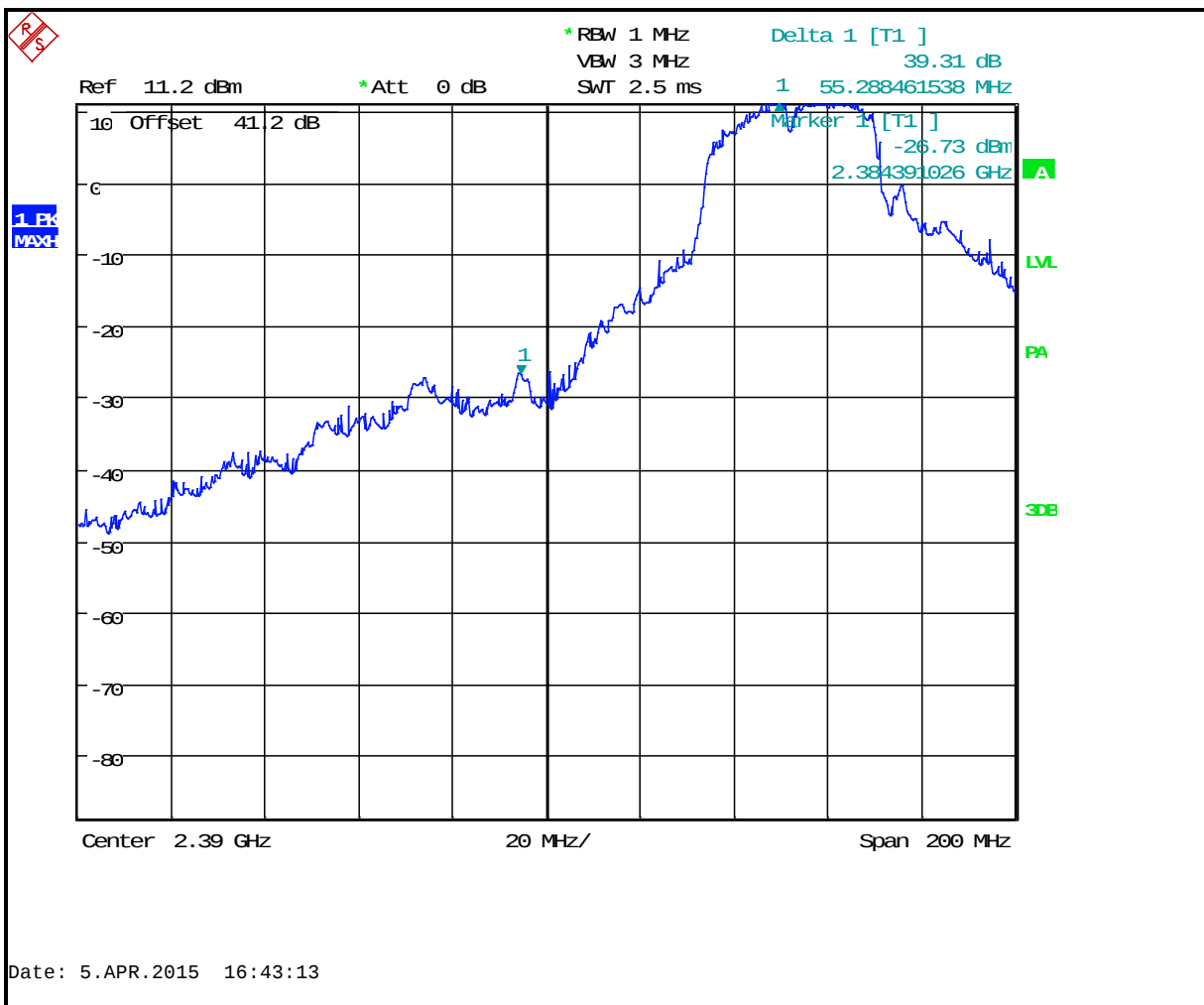
4.1.7 Lower Band Edge – 802.11n (40 MHz BW)

88.2 dBuV/m is the average field strength measurement, from which the delta measurement of 39.3 dB is subtracted (reference plots), resulting in a level 48.9 dB. This level has a margin of 5.1 dB below the limit of 54 dBuV/m.

Calculation: $88.2 \text{ dBuV/m} - 39.3 \text{ dB} - 54 \text{ dBuV/m} = -5.1 \text{ dB}$

Peak Field Strength of Lower Band Edge (1 MHz RBW/3 MHz VBW) = 94.7 dBuV/m
 Average Field Strength of Lower Band Edge (1 MHz RBW/10 Hz VBW) = 88.2 dBuV/m
 Delta measurement = 39.3 dB

Plot 4-7: In Band Emissions - Channel 5 (2422 MHz); 802.11n (65 Mbps)



4.1.8 Upper Band Edge – 802.11n (40 MHz BW)

88.2 dBuV/m is the average field strength measurement, from which the delta measurement of 35.8 dB is subtracted (reference plots), resulting in a level 52.4 dB. This level has a margin of 1.6 dB below the limit of 54 dBuV/m.

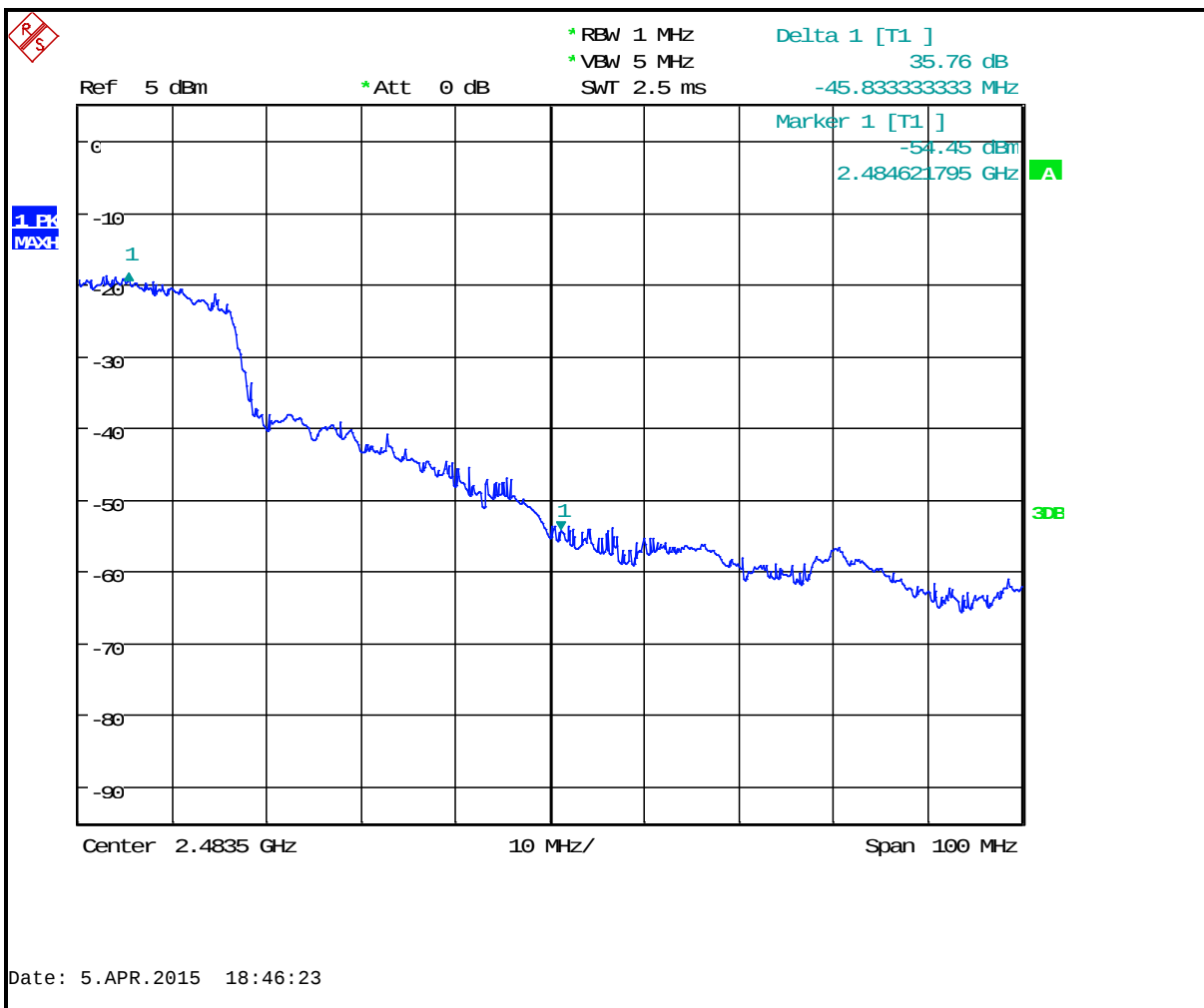
Calculation: $88.2 \text{ dBuV/m} - 35.8 \text{ dB} - 54 \text{ dBuV/m} = -1.6 \text{ dB}$

Peak Field Strength of Lower Band Edge (1 MHz RBW/3 MHz VBW) = 94.7 dBuV/m

Average Field Strength of Lower Band Edge (1 MHz RBW/10 Hz VBW) = 88.2 dBuV/m

Delta measurement = 35.8 dB 23.1@ch9=

Plot 4-8: In Band Emissions - Channel 7 (2432 MHz); 802.11n (40 MHz)



Test Personnel:

Daniel W. Baltzell
 Test Engineer

Daniel W. Baltzell
 Signature

March 15 & April 5, 2015
 Dates of Test

5 Antenna Conducted Spurious Emissions – FCC 15.247(d); RSS-Gen

5.1 Antenna Conducted Spurious Emissions Test Procedures

Antenna spurious emissions per FCC 15.247(d) were measured from the EUT antenna port using a 50-ohm spectrum analyzer with the resolution bandwidth set at 100 kHz, and the video bandwidth set at 300 kHz. The modulated carrier was identified at the following frequencies: 2412 MHz, 2437 MHz and 2462 MHz.

5.2 Antenna Conducted Spurious Emissions Test Results

No harmonics or spurs were found within 20 dB (note that we are reporting power as peak) of the carrier level from the carrier to the 10th harmonic of the carrier frequency. Per FCC 15.31(o), no data is being reported.

Table 5-1: Antenna Conducted Spurious Test Equipment

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
901581	Rohde & Schwarz	FSU	Spectrum Analyzer	1166.1660.50	11/13/15

Test Personnel:

Daniel W. Baltzell		March 15, 2015
Test Engineer	Signature	Date of Test

5.3 6 dB Bandwidth Test Procedure – Minimum 6 dB Bandwidth

The minimum 6 dB bandwidths per FCC 15.247(a)(2) were measured using a 50-ohm spectrum analyzer with the resolution bandwidth set at 100 kHz, and the video bandwidth set at $\geq 3 \times \text{RBW}$. The device was modulated. The minimum 6 dB bandwidths are presented below.

Table 5-2: 6 dB Bandwidth Test Equipment

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
901581	Rohde & Schwarz	FSU	Spectrum Analyzer	1166.1660.50	11/13/15

5.4 6 dB Bandwidth Test Results

Table 5-3: 6 dB Bandwidth Test Data – 802.11b (2 Mbps)

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass/Fail
1	2412	10.1	0.5	Pass
6	2437	10.3	0.5	Pass
11	2462	10.1	0.5	Pass

Table 5-4: 6 dB Bandwidth Test Data – 802.11g (18 Mbps)

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass/Fail
1	2412	14.7	0.5	Pass
6	2437	14.6	0.5	Pass
11	2462	14.4	0.5	Pass

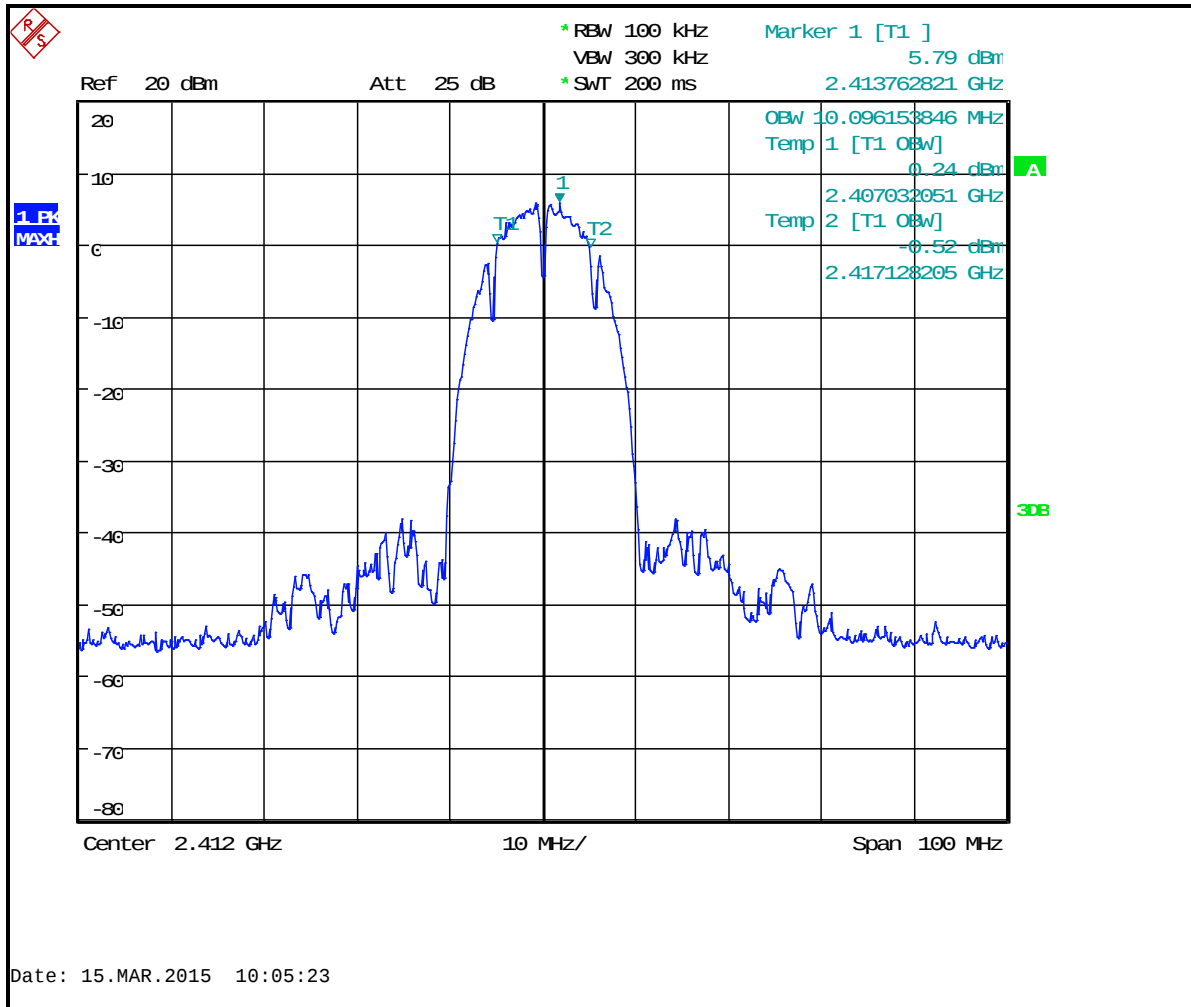
Table 5-5: 6 dB Bandwidth Test Data – 802.11n (6.5 Mbps-20 MHz BW)

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass/Fail
1	2412	14.7	0.5	Pass
6	2437	14.6	0.5	Pass
11	2462	14.6	0.5	Pass

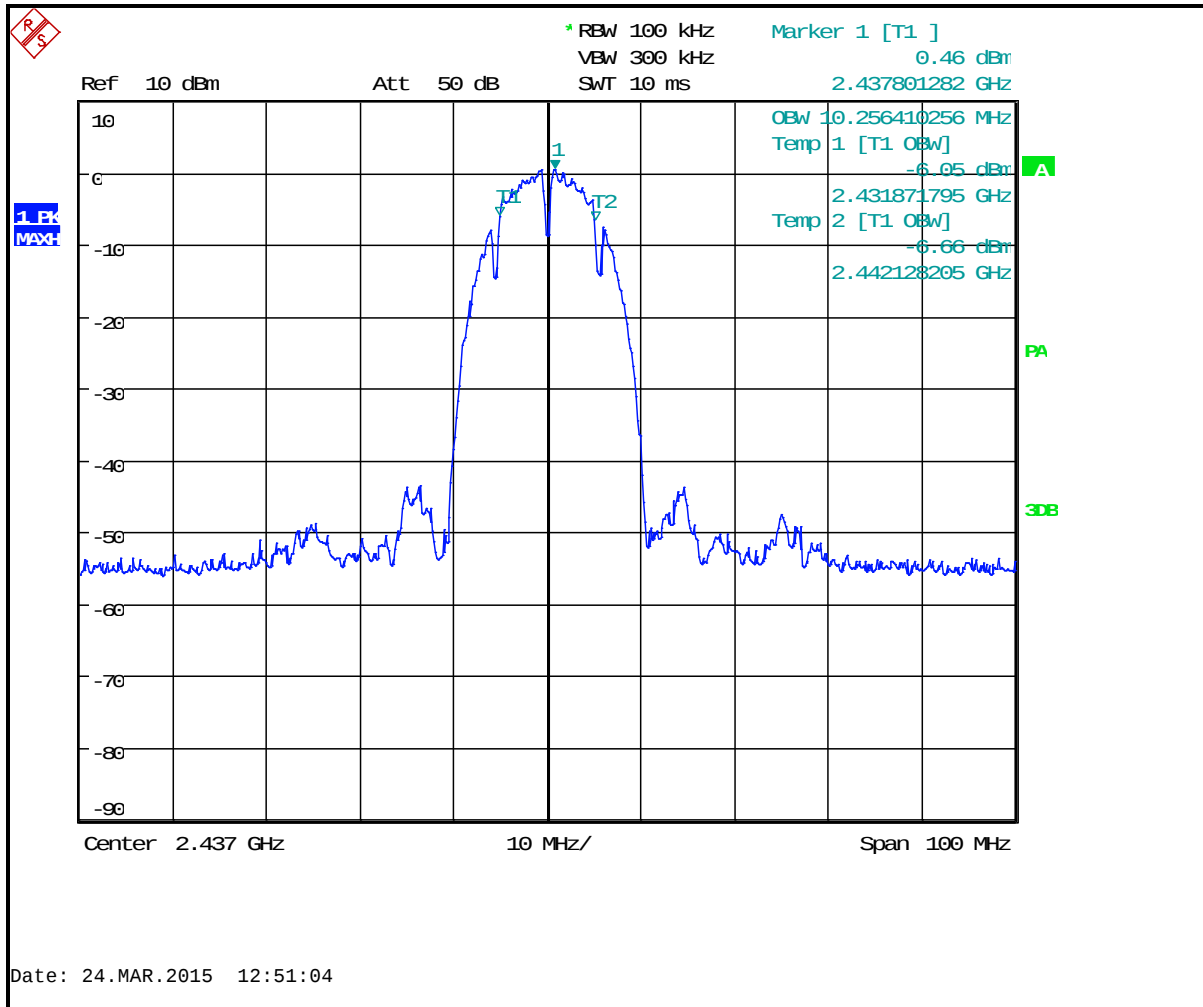
Table 5-6: 6 dB Bandwidth Test Data – 802.11n (40 MHz BW)

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass/Fail
8	2437	35.9	0.5	Pass

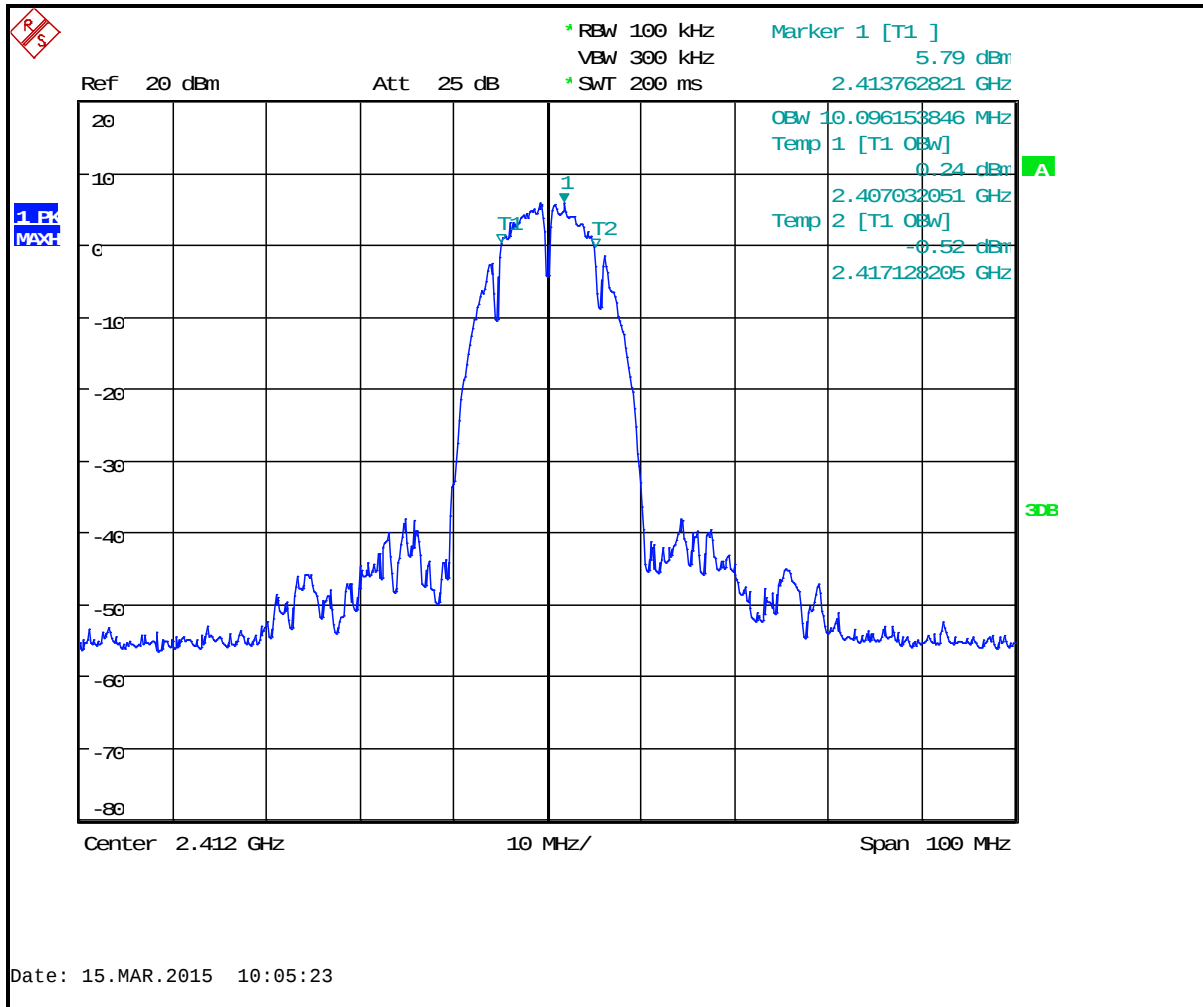
Plot 5-1: 6 dB Bandwidth Channel 1 (TX Frequency 2412 MHz) - 802.11b



Plot 5-2: 6 dB Bandwidth Channel 6 (TX Frequency 2437 MHz) - 802.11b

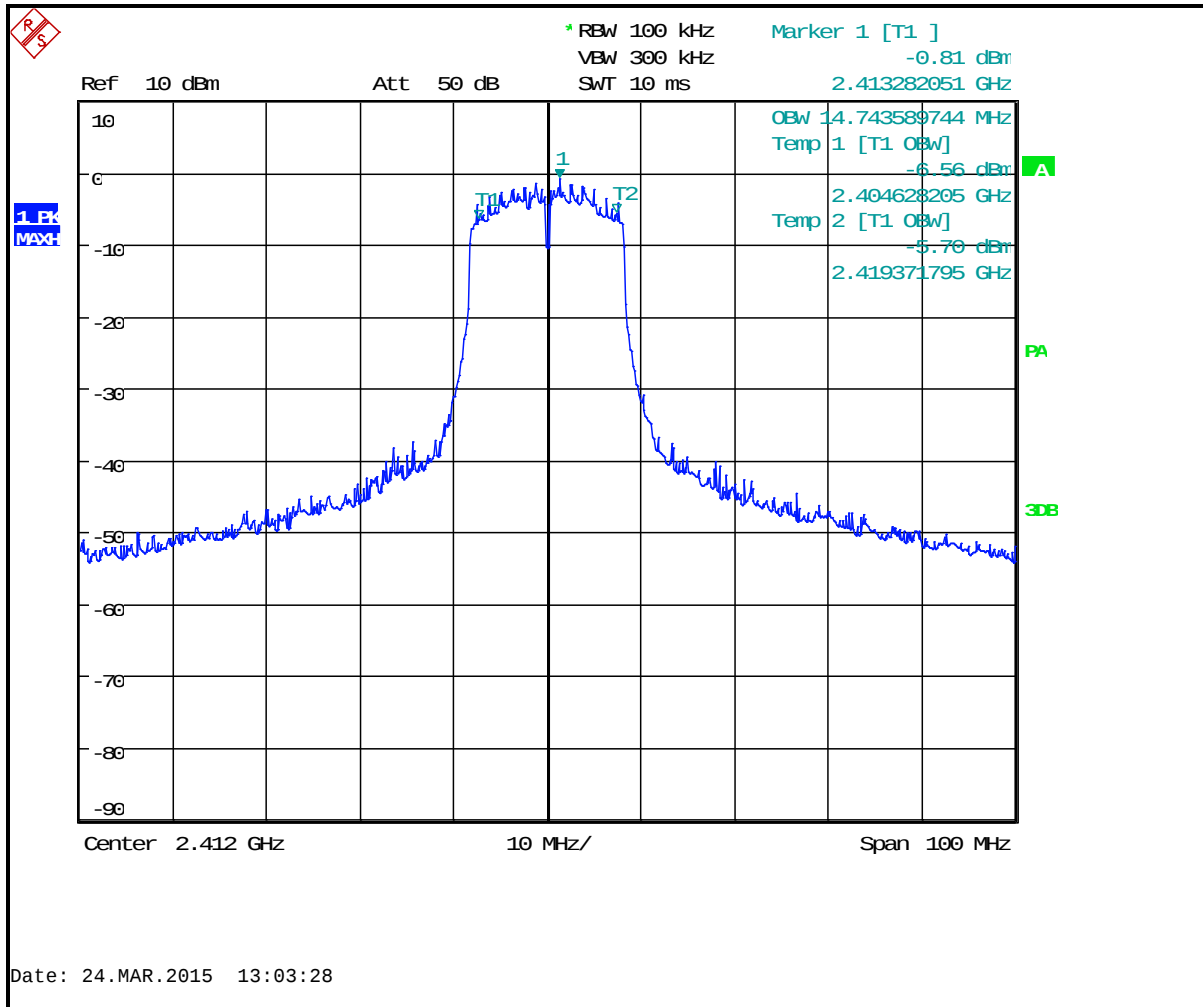


Plot 5-3: 6 dB Bandwidth Channel 11 (TX Frequency 2462 MHz) - 802.11b

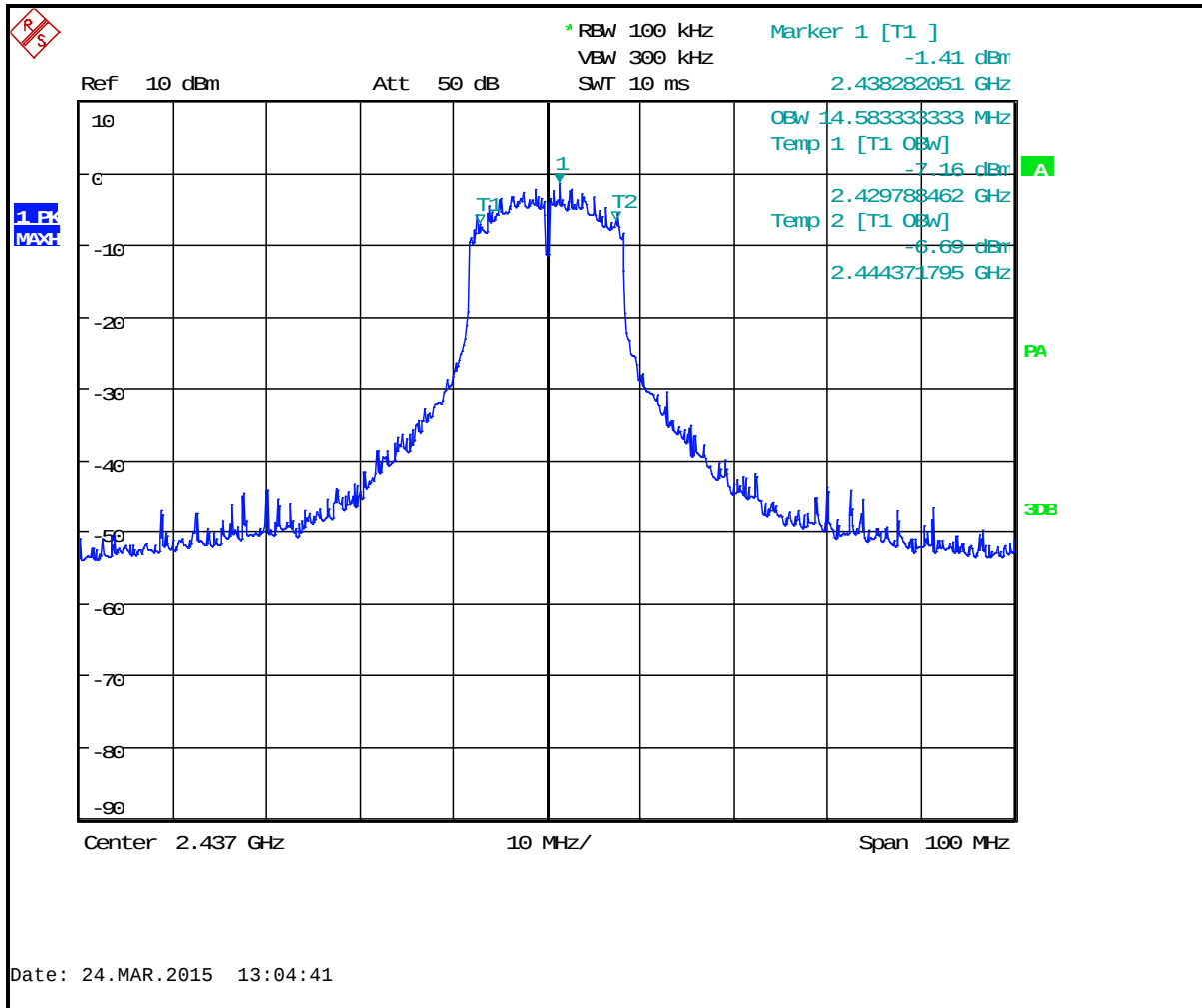


Date: 15.MAR.2015 10:05:23

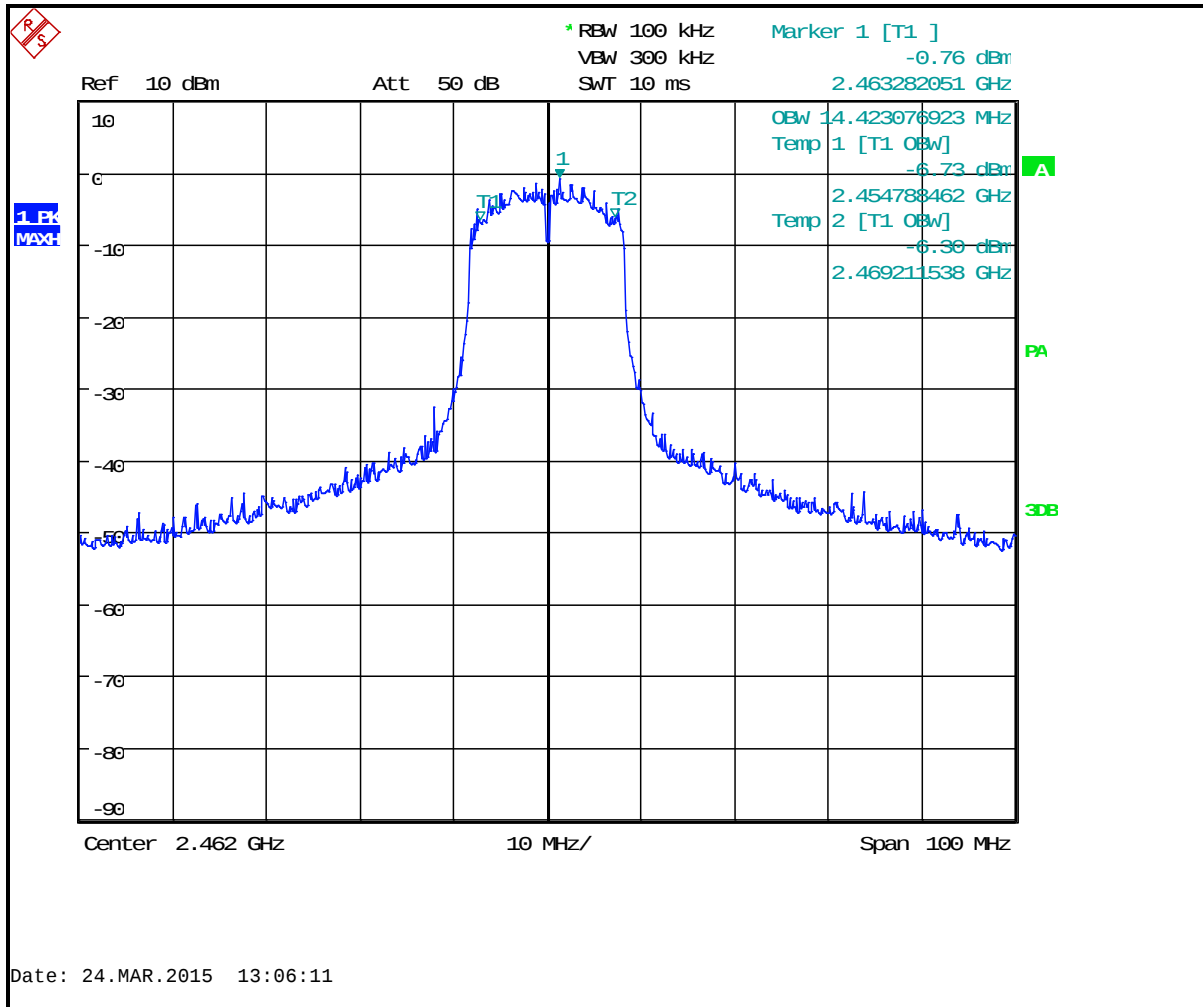
Plot 5-4: 6 dB Bandwidth Channel 1 (TX Frequency 2412 MHz) - 802.11g



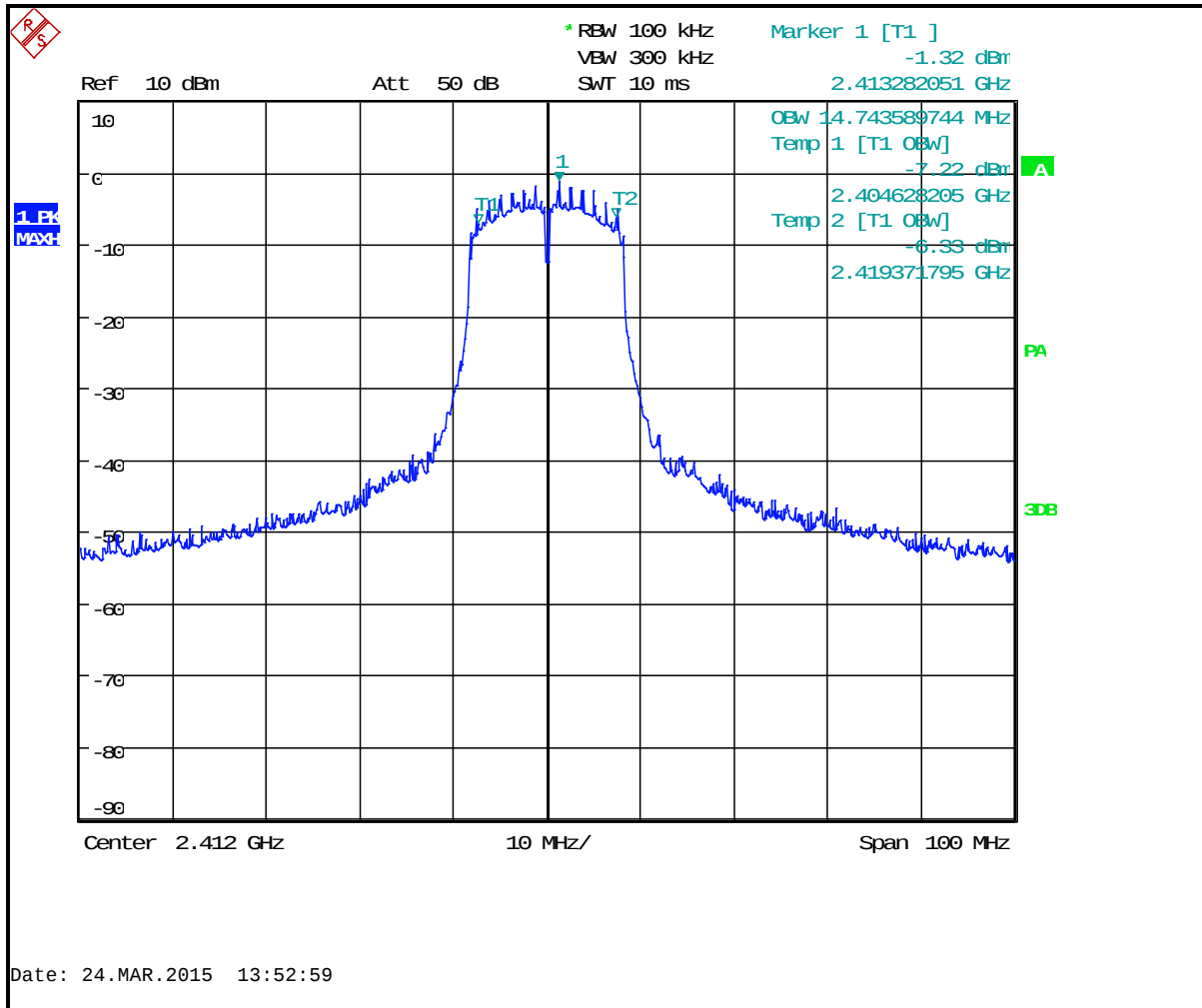
Plot 5-5: 6 dB Bandwidth Channel 6 (TX Frequency 2437 MHz) - 802.11g



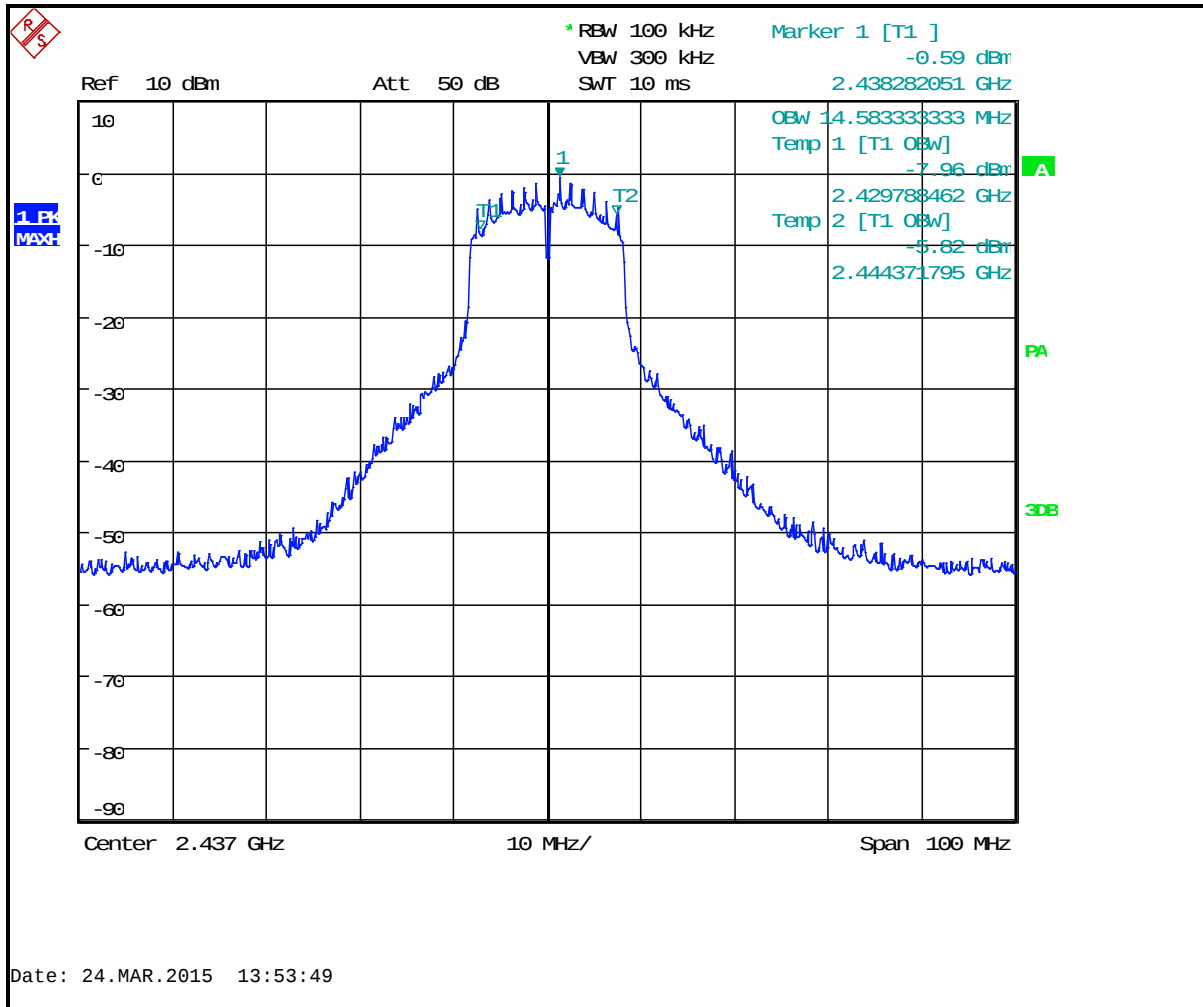
Plot 5-6: 6 dB Bandwidth Channel 11 (TX Frequency 2462 MHz) - 802.11g



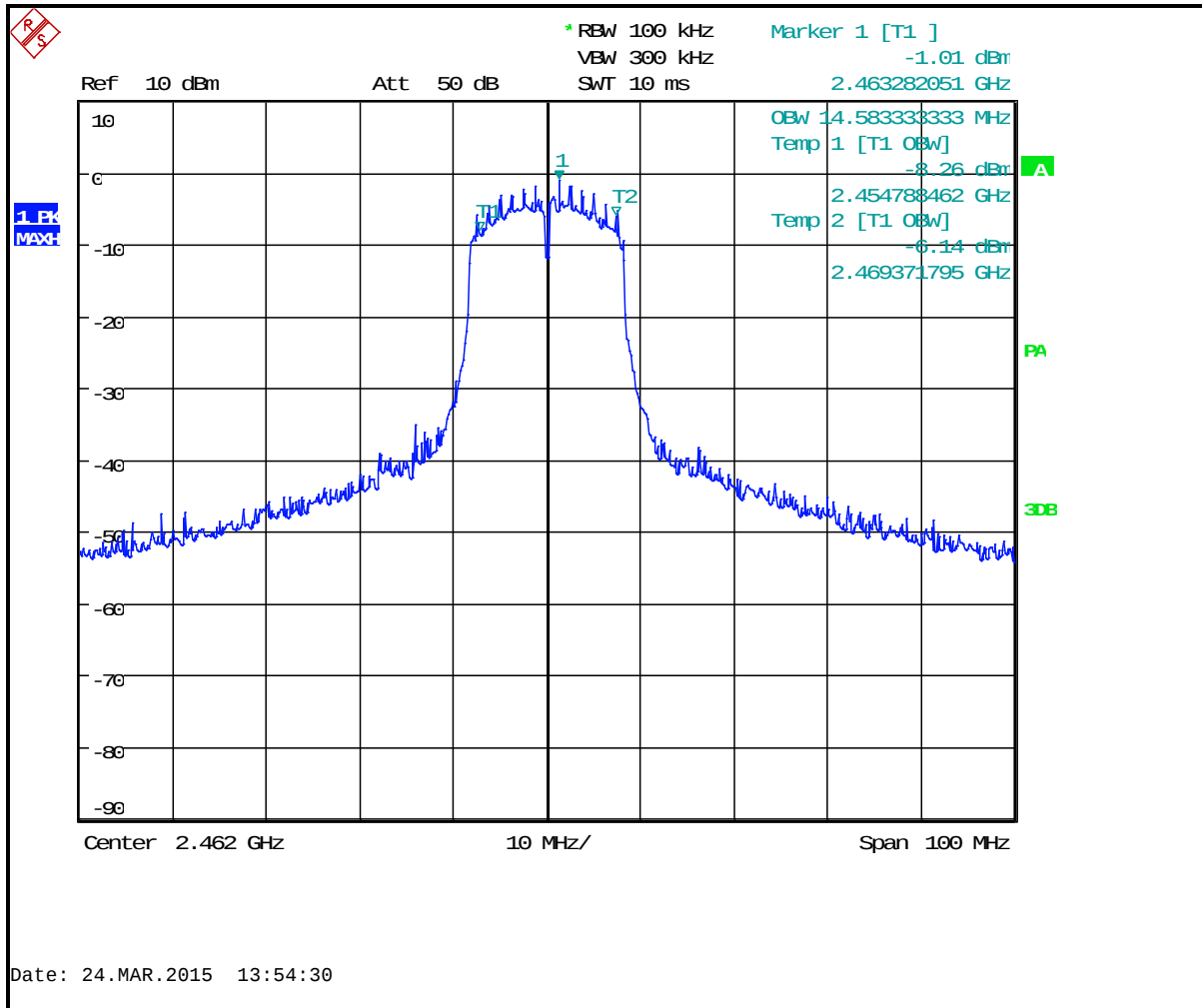
Plot 5-7: 6 dB Bandwidth Channel 1 (TX Frequency 2412 MHz-20 MHz BW) - 802.11n



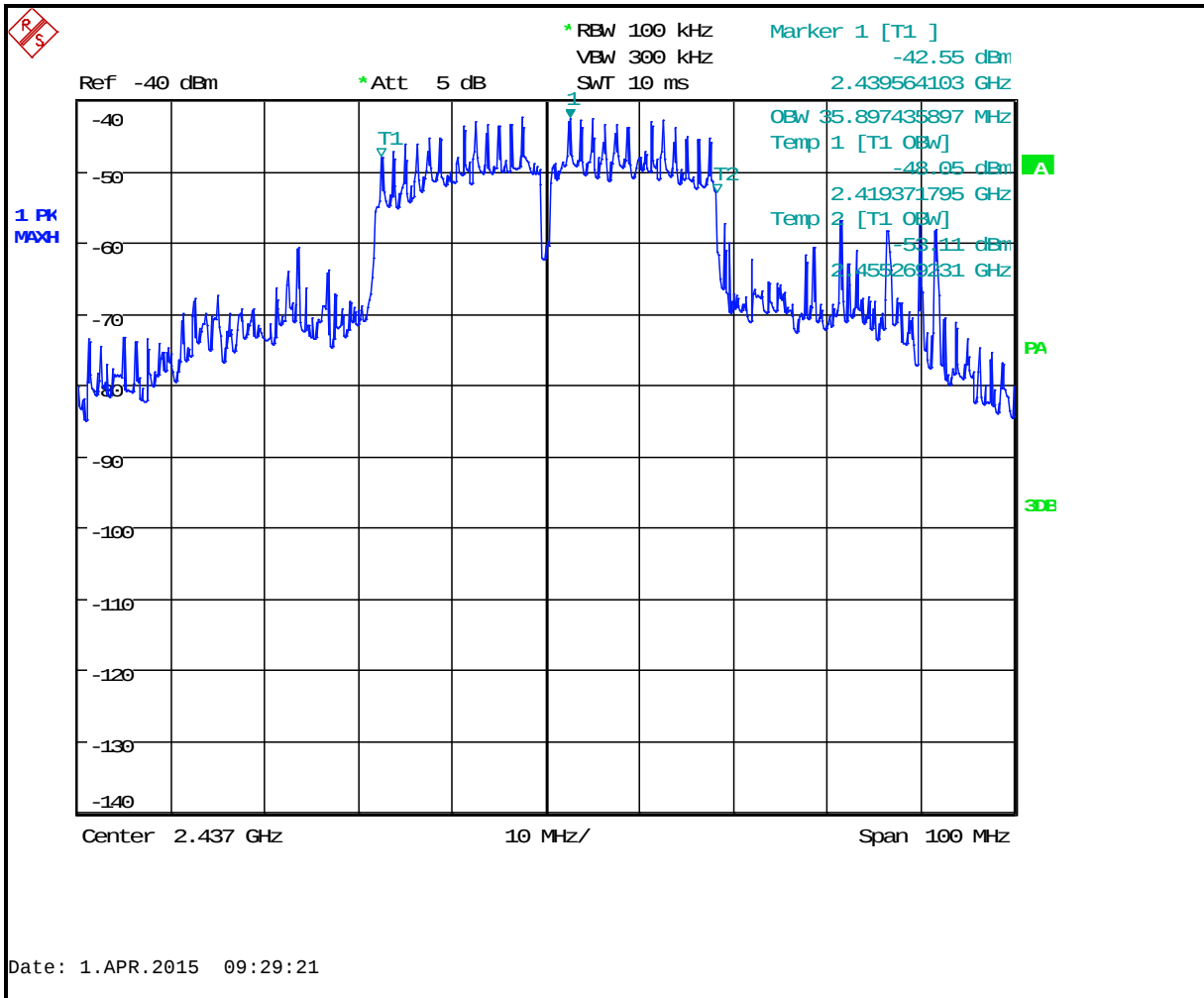
Plot 5-8: 6 dB Bandwidth Channel 6 (TX Frequency 2437 MHz-20 MHz BW) - 802.11n



Plot 5-9: 6 dB Bandwidth Channel 11 (TX Frequency 2462 MHz-20 MHz BW) - 802.11n



Plot 5-10: 6 dB Bandwidth Channel 8 (TX Frequency 2437 MHz-40 MHz BW) - 802.11n



Test Personnel:

Daniel W. Baltzell
 Test Engineer

Daniel W. Baltzell
 Signature

March 15 - April 1, 2015
 Dates of Test

6 Power Spectral Density – FCC 15.247(e); RSS-210 A8.2

6.1 Power Spectral Density Test Procedure

The power spectral density per FCC 15.247(e) was measured using a 50-ohm spectrum analyzer with the resolution bandwidth set at 3 kHz, the video bandwidth set at 10 kHz, and the auto sweep time. The spectral lines were resolved for the modulated carriers at 2412 MHz, 2437 MHz, 2462 MHz, 5745 MHz, 5785 MHz, and 5825 MHz respectively. These levels are below the +8 dBm limit. See the power spectral density table and plots.

Table 6-1: Power Spectral Density Test Equipment

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
901581	Rohde & Schwarz	FSU	Spectrum Analyzer	1166.1660.50	11/13/15

6.2 Power Spectral Density Test Data – DSSS WLAN

Table 6-2: Power Spectral Density Test Data – 802.11b (2 Mbps)

Channel	Frequency (MHz)	RF Power Level (dBm)	Maximum Limit +8dBm	Pass/Fail
1	2412	-6.6	8	Pass
6	2437	-8.2	8	Pass
11	2462	-7.7	8	Pass

Table 6-3: Power Spectral Density Test Data – 802.11g (18 Mbps)

Channel	Frequency (MHz)	RF Power Level (dBm)	Maximum Limit +8dBm	Pass/Fail
1	2412	-14.5	8	Pass
6	2437	-18.1	8	Pass
11	2462	-17.2	8	Pass

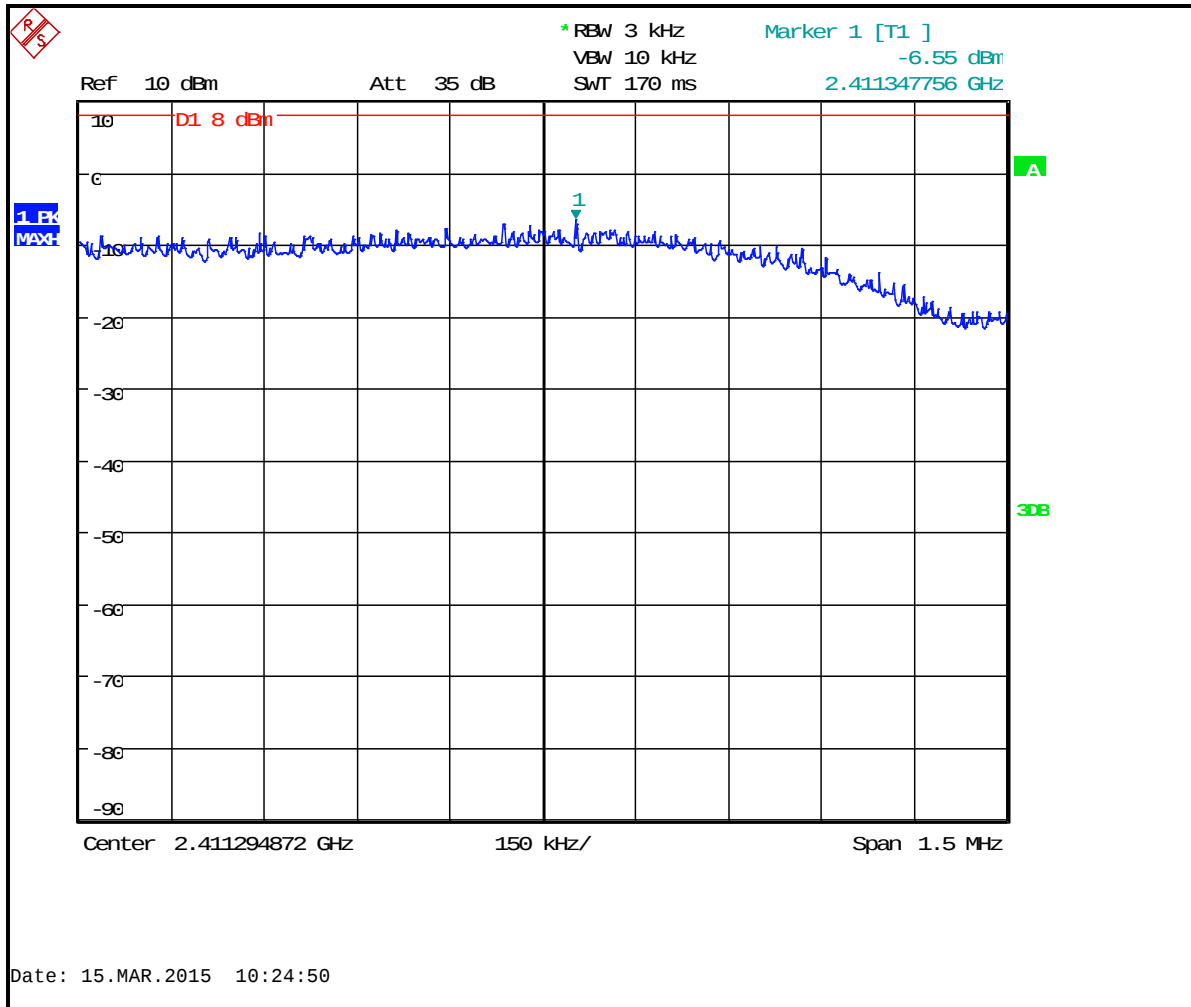
Table 6-4: Power Spectral Density Test Data – 802.11n (13 Mbps-20MHz BW)

Channel	Frequency (MHz)	RF Power Level (dBm)	Maximum Limit +8dBm	Pass/Fail
1	2412	-17.0	8	Pass
6	2437	-15.3	8	Pass
11	2462	-17.6	8	Pass

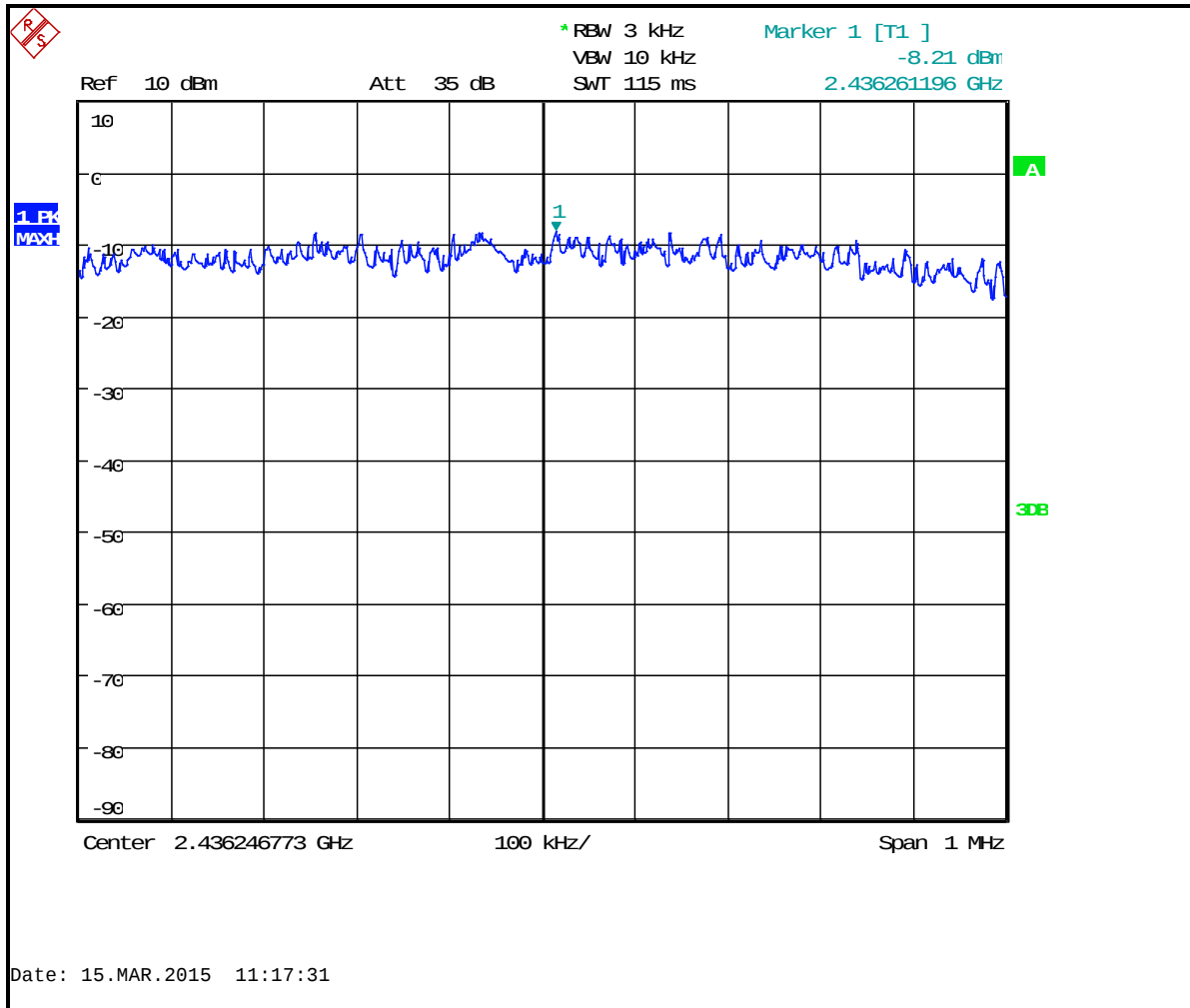
Table 6-5: Power Spectral Density Test Data – 802.11n (40 MHz BW)

Channel	Frequency (MHz)	RF Power Level (dBm)	Maximum Limit +8dBm	Pass/Fail
5	2442	-18.2	8	Pass

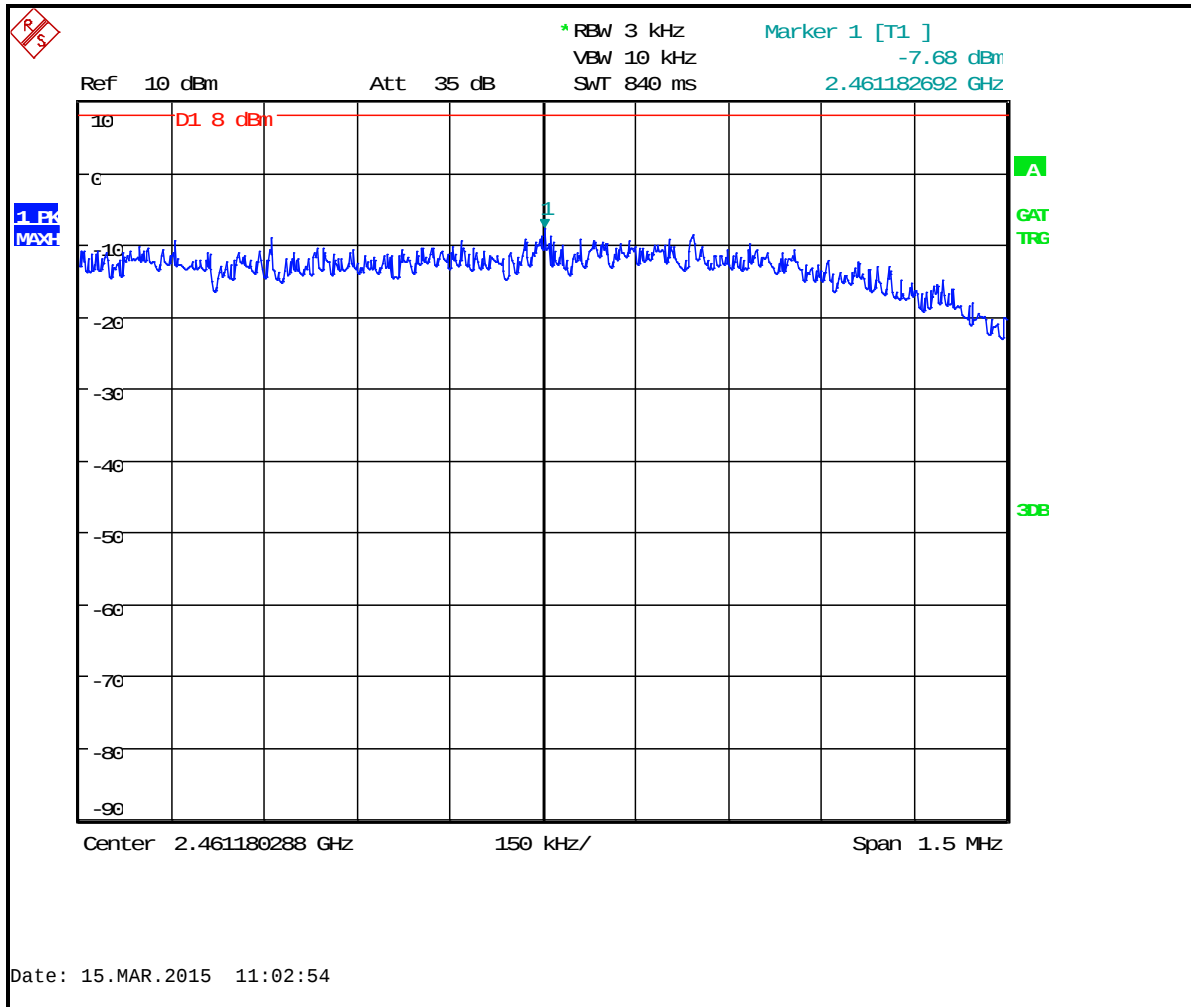
Plot 6-1: Power Spectral Density: Channel 1 (2412 MHz); 802.11b (2 Mbps)



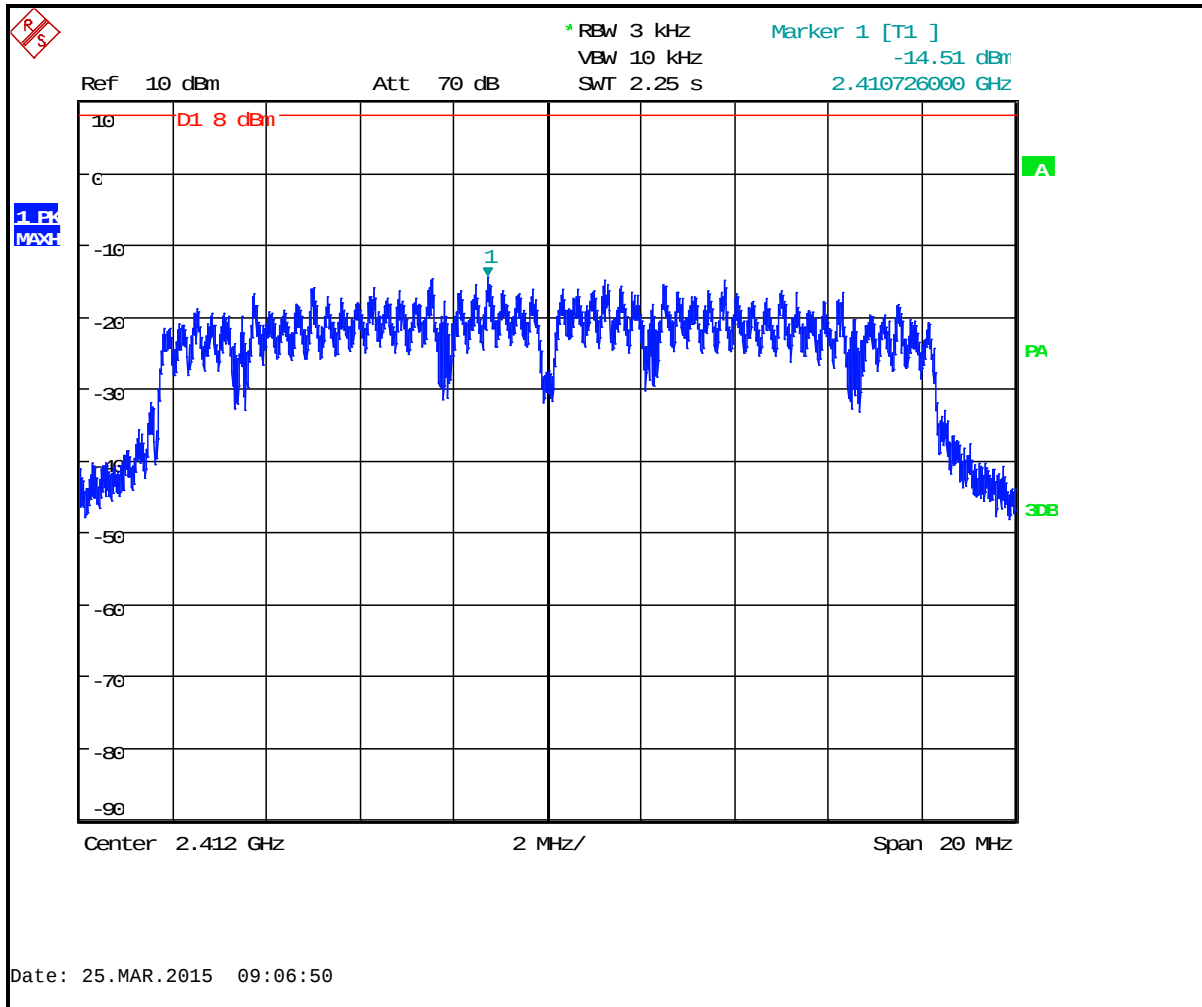
Plot 6-2: Power Spectral Density: Channel 6 (2437 MHz); 802.11b (2 Mbps)



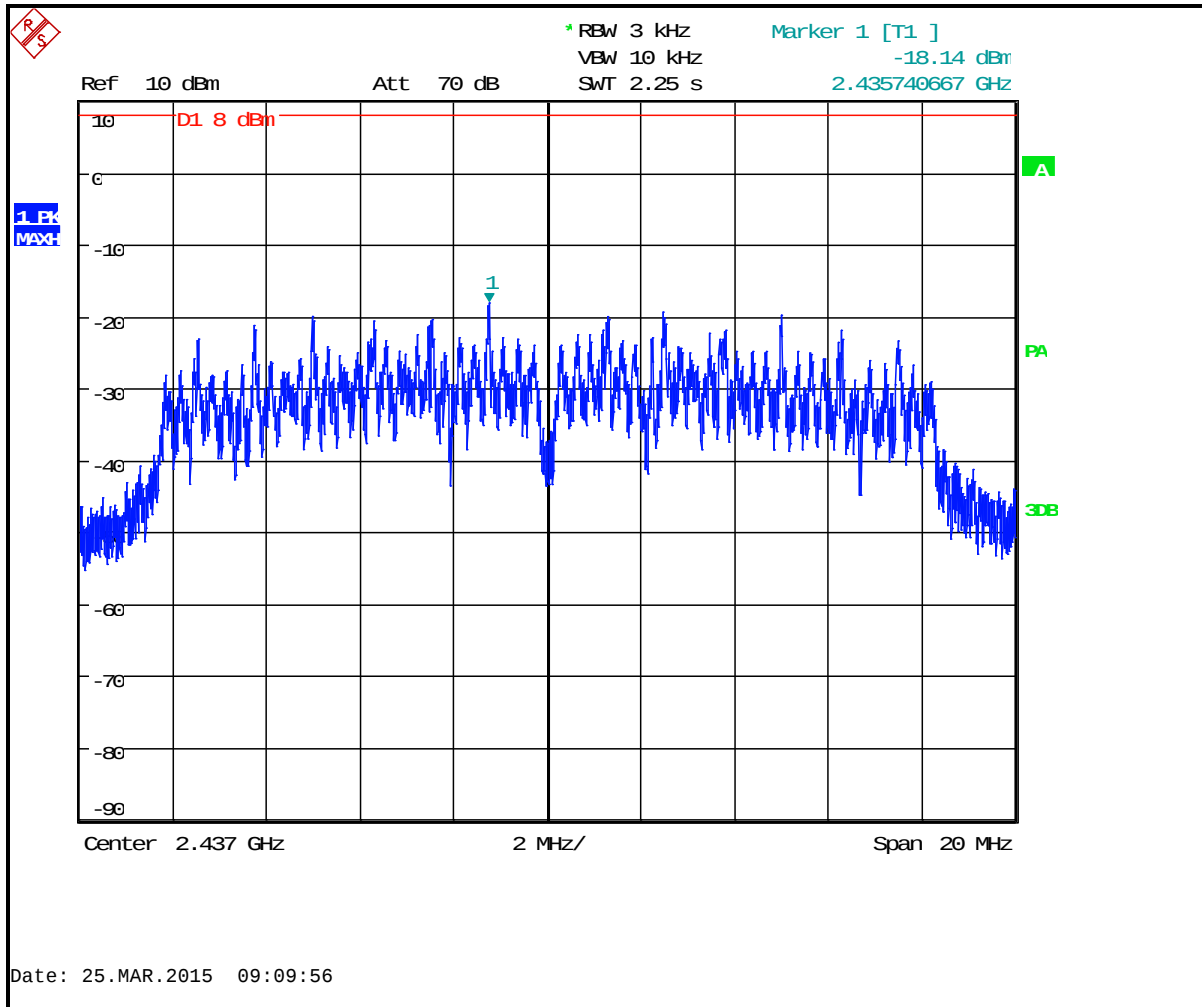
Plot 6-3: Power Spectral Density: Channel 11 (2462 MHz); 802.11b (2 Mbps)



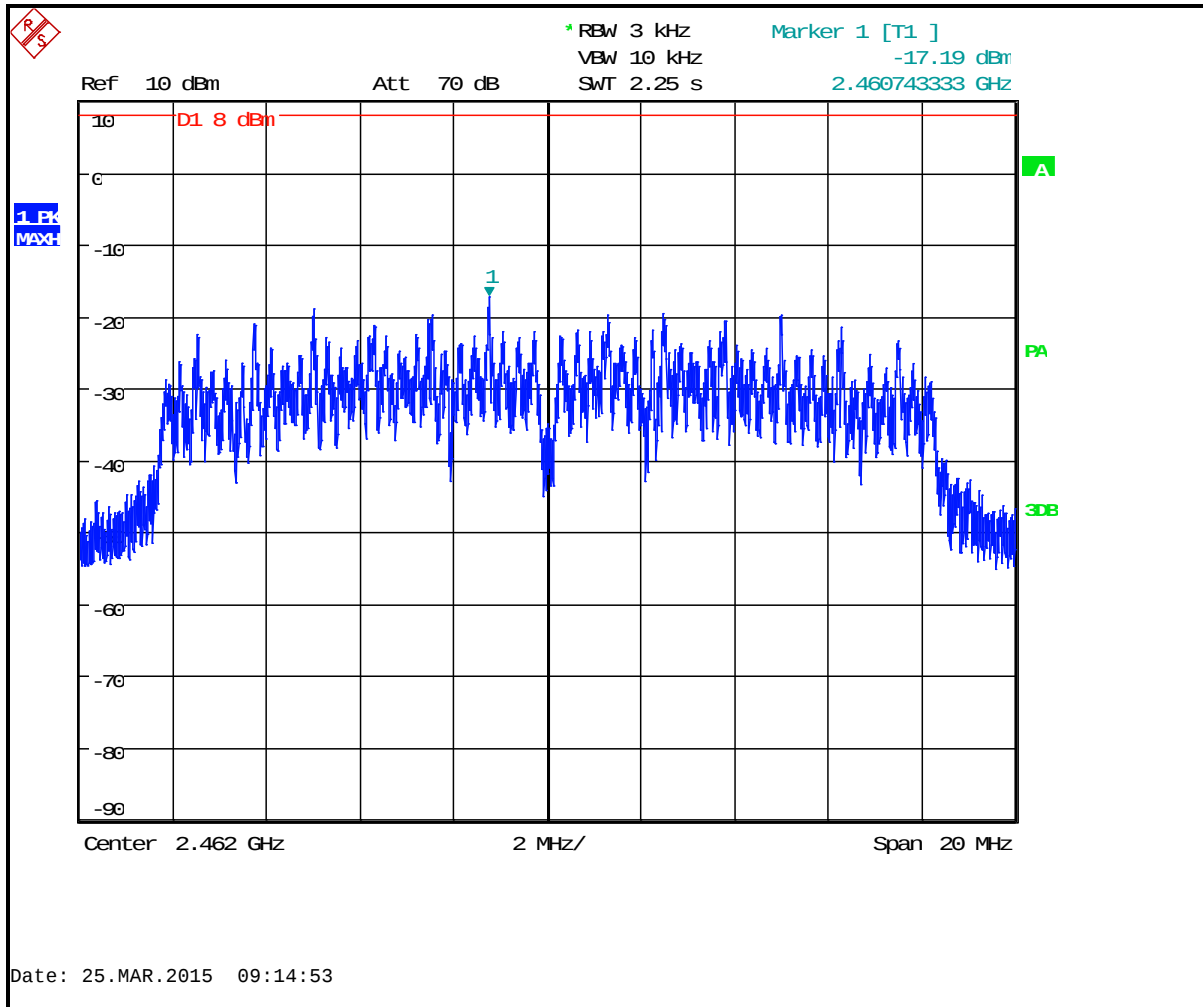
Plot 6-4: Power Spectral Density: Channel 1 (2412 MHz); 802.11g (18 Mbps)



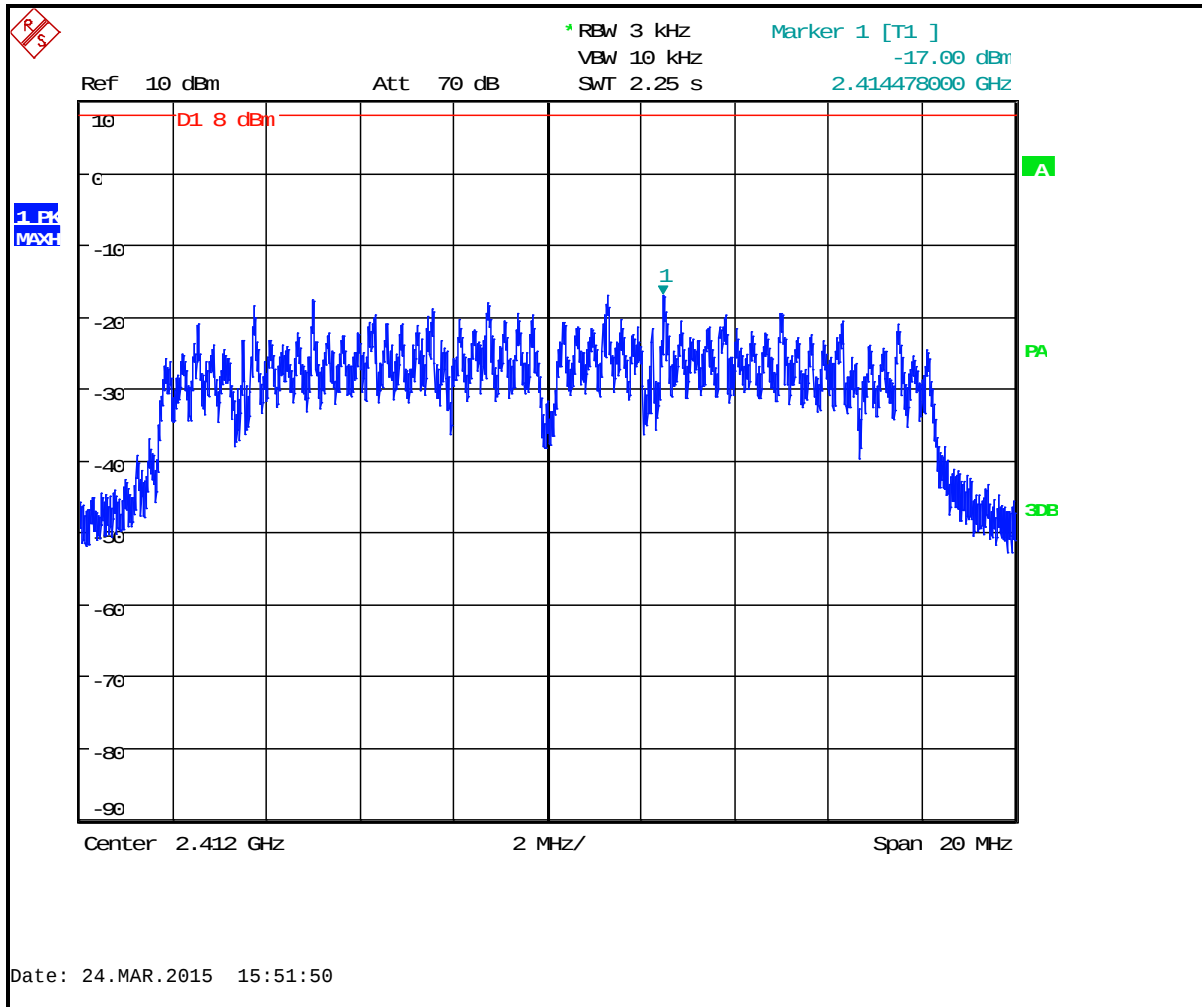
Plot 6-5: Power Spectral Density: Channel 6 (2437 MHz); 802.11g (18 Mbps)



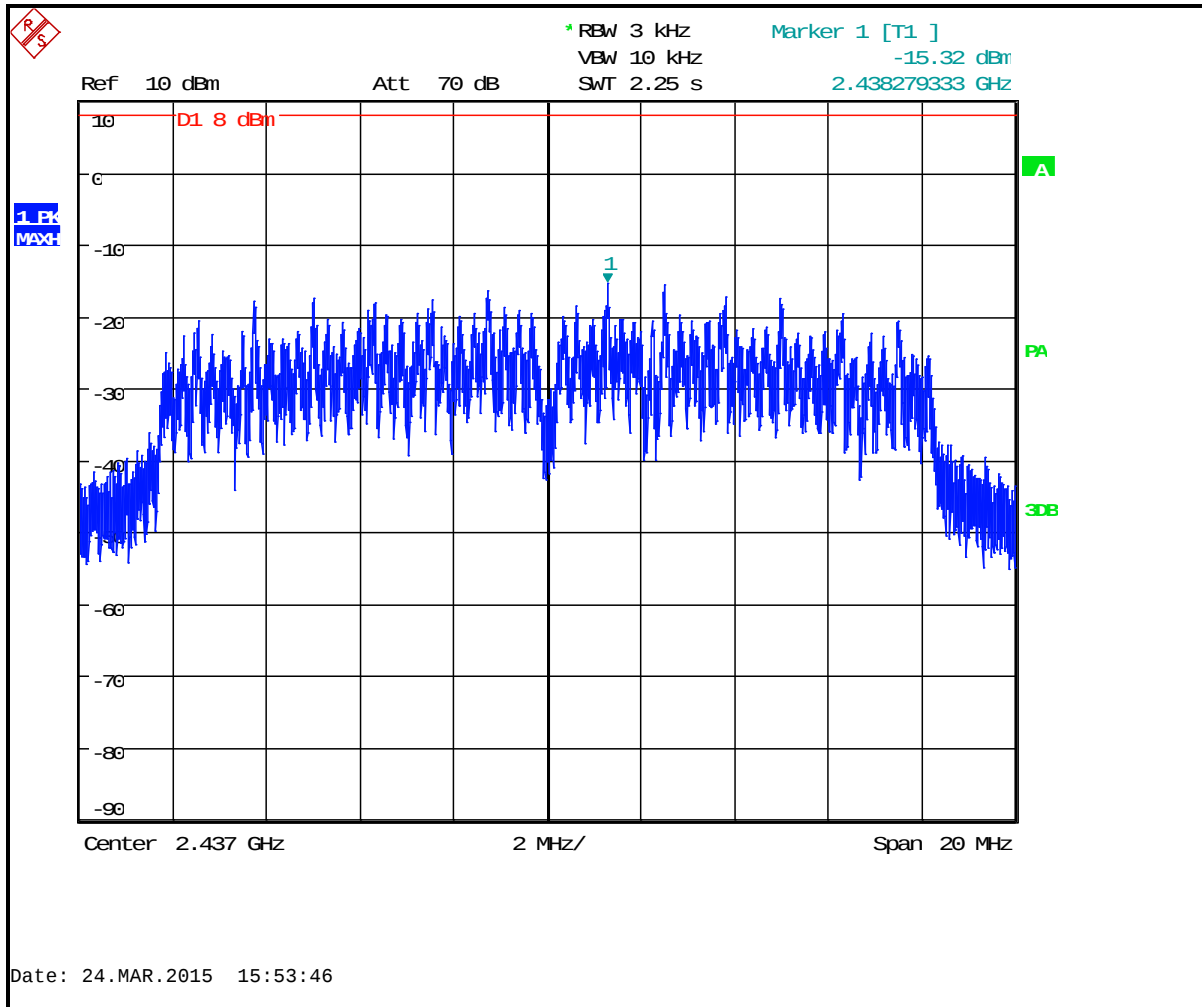
Plot 6-6: Power Spectral Density: Channel 11 (2462 MHz); 802.11g (18 Mbps)

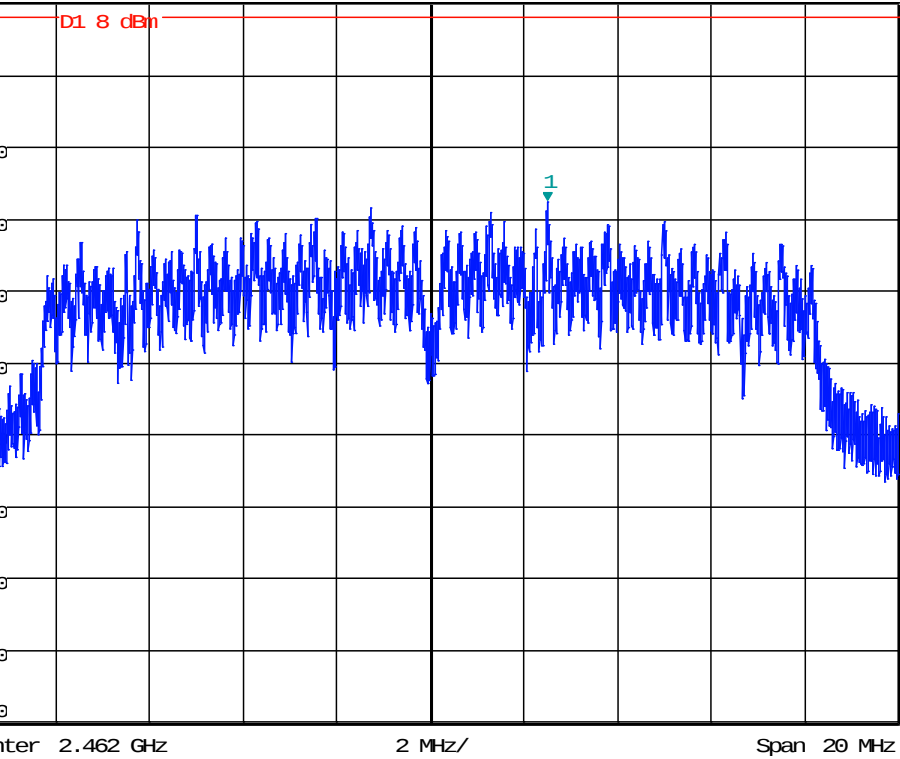


Plot 6-7: Power Spectral Density: Channel 1 (2412 MHz); 802.11n (13 Mbps)



Plot 6-8: Power Spectral Density: Channel 6 (2437 MHz); 802.11n (13 Mbps)





Ref 10 dBm Att 70 dB SWT 2.25 s

* RBW 3 kHz VBW 10 kHz

Marker 1 [T1]

-17.56 dBm

2.464484000 GHz

10

0

-10

-20

-30

-40

-50

-60

-70

-80

-90

D1 8 dBm

1

1_Pk MAX

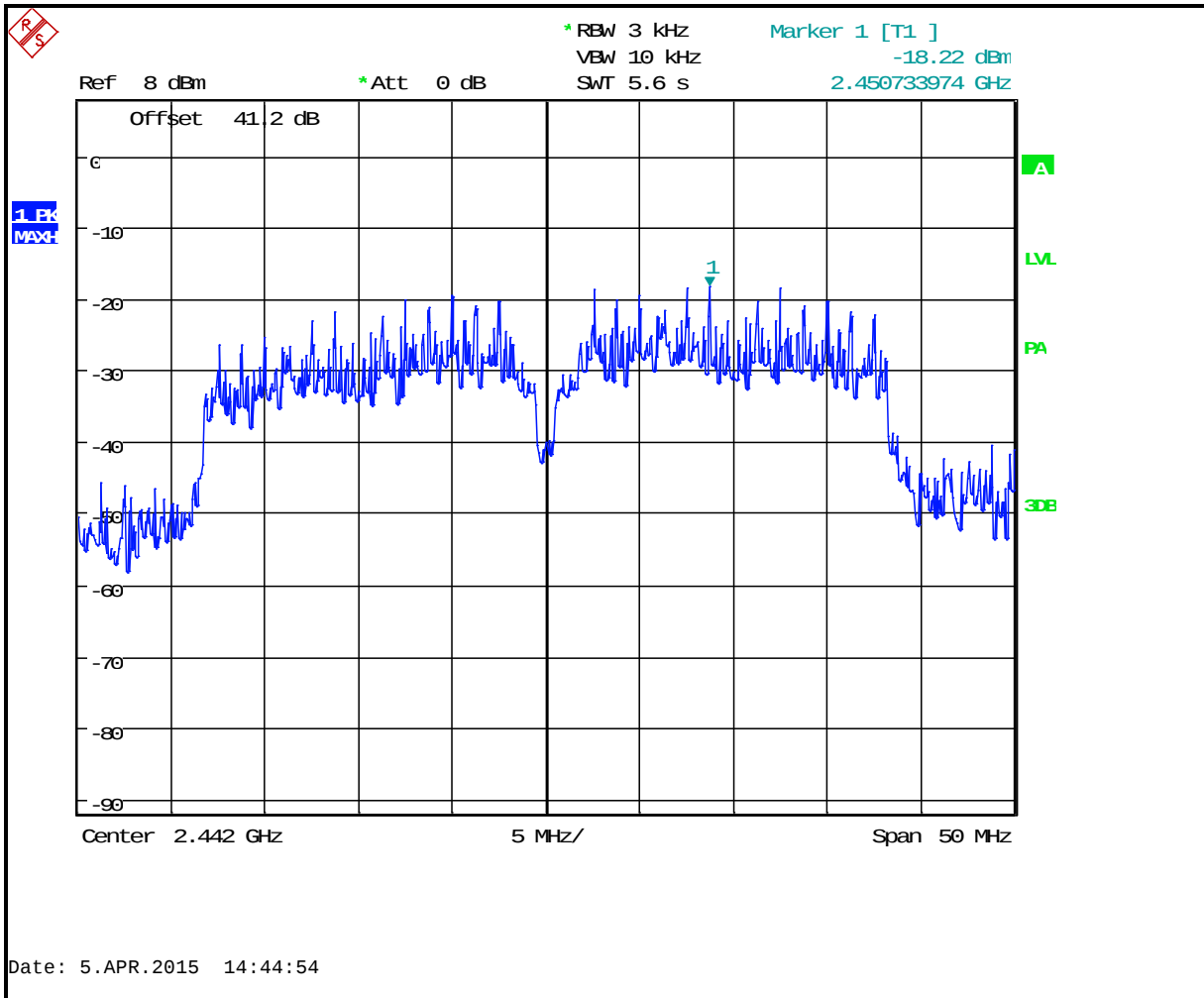
A

PA

30B

Center 2.462 GHz 2 MHz/ Span 20 MHz

Plot 6-10: Power Spectral Density: Channel 5 (2442 MHz); 802.11n (40MHz BW)



Test Personnel:

Daniel W. Baltzell
 Test Engineer

Daniel W. Baltzell
 Signature

March 15-April 5, 2015
 Dates of Test

7 Radiated Emissions – FCC 15.209; RSS-210 A8.5 and RSS-Gen

7.1 Limits of Radiated Emissions Measurement

Frequency (MHz)	Field Strength (uV/m)	Measurement Distance (m)
0.009-0.490	2400/f (kHz)	300
0.490-1.705	2400/f (kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

As shown in 15.35(b), for frequencies above 1000 MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20 dB under any circumstances of modulation.

7.2 Radiated Emissions Measurement Test Procedure

Procedure: C63.10-2013 6.5, 6.6

Before final measurements of radiated emissions were made on the open-field three/ten meter range, the EUT was scanned indoors at one and three meter distances. This was done in order to determine its emissions spectrum signature. The physical arrangement of the test system and associated cabling was varied in order to determine the effect on the EUT's emissions in amplitude, direction and frequency. This process was repeated during final radiated emissions measurements on the open-field range, at each frequency, in order to ensure that maximum emission amplitudes were attained.

Final radiated emissions measurements were made on the three/ten-meter, open-field test site. The EUT was placed on a nonconductive turntable 0.8 meters above the ground plane. The spectrum was examined from 9 kHz to the 10th harmonic of the highest fundamental transmitter frequency (24.8 GHz).

At each frequency, the EUT was rotated 360°, and the antenna was raised and lowered from 1 to 4 meters in order to determine the emission's maximum level. Measurements were taken using both horizontal and vertical antenna polarizations. For frequencies between 30 and 1000 MHz, the spectrum analyzer's 6 dB bandwidth was set to 120 kHz, and the analyzer was operated in the CISPR quasi-peak detection mode. For emissions above 1,000 MHz, emissions are measured using the average detector function with a minimum resolution bandwidth of 1 MHz. No video filter less than 10 times the resolution bandwidth was used. The highest emission amplitudes relative to the appropriate limit were measured and recorded in this report.

Table 7-1: Radiated Emissions Test Equipment

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
900878	Rhein Tech Laboratories, Inc.	AM3-1197-0005	3 meter antenna mast, polarizing	OATS1	N/A
901592	Insulated Wire Inc.	KPS-1503-3600-KPR	SMK RF Cables 20'	NA	9/3/15
901593	Insulated Wire Inc.	KPS-1503-360-KPR	SMK RF Cables 36"	NA	9/3/15
901594	Insulated Wire Inc.	KPS-1503-360-KPR	SMK RF Cables 36"	NA	9/3/15
901242	Rhein Tech Laboratories, Inc.	WRT-000-0003	Wood rotating table	N/A	N/A
900791	Chase	CBL6111B	Bilog Antenna (30 MHz – 2000 MHz)	N/A	6/11/17
901218	EMCO	3160-09	Horn Antenna (18 - 26.5 GHz)	960281-003	4/14/18
900772	EMCO	3161-02	Horn Antenna (2 - 4 GHz)	9804-1044	4/09/18
900321	EMCO	3161-03	Horn Antennas (4 – 8.2 GHz)	9508-1020	4/09/18
900323	EMCO	3160-07	Horn Antennas (8.2 – 12.4 GHz)	9605-1054	4/09/18
900356	EMCO	3160-08	Horn Antennas (12.4 – 18 GHz)	9607-1044	4/09/18
901581	Rohde & Schwarz	FSU	Spectrum Analyzer	1166.1660.50	11/13/15

7.3 Radiated Emissions Test Results

7.3.1 Radiated Emissions Harmonics/Spurious

Table 7-2: 2412 MHz; 802.11b; 2 Mbps; Channel 1; Average Mode

Frequency (MHz)	Spectrum Analyzer Average Level (1 MHz RBW/ 10 Hz VBW) (dBuV)	Site Correction Factor (dB/m)	Corrected Average Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
4824	17.7	33.2	50.9	54.0	-3.1
12060	-7.9	44.0	36.1	54.0	-17.9
14472	-14.8	47.9	33.1	54.0	-20.9
19296	-9.7	52.9	43.2	54.0	-10.8

Table 7-3: 2437 MHz; 802.11b; 2 Mbps; Channel 6; Average Mode

Frequency (MHz)	Spectrum Analyzer Average Level (1 MHz RBW/ 10 Hz VBW) (dBuV)	Site Correction Factor (dB/m)	Corrected Average Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
4874	11.1	33.3	44.4	54.0	-9.6
7311	0.6	35.7	36.3	54.0	-17.7
12185	-8.7	44.0	35.3	54.0	-18.7
19496	-10.2	53.0	42.8	54.0	-11.2

Table 7-4: 2462 MHz; 802.11b; 2 Mbps; Channel 11; Average Mode

Frequency (MHz)	Spectrum Analyzer Average Level (1 MHz RBW/ 10 Hz VBW) (dBuV)	Site Correction Factor (dB/m)	Corrected Average Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
4924	6.9	33.4	40.3	54.0	-13.7
7386	0.2	35.7	35.9	54.0	-18.1
12310	-8.6	44.0	35.4	54.0	-18.6
19696	-9.9	53.1	43.2	54.0	-10.8
22158	-11.7	54.2	42.5	54.0	-11.5

Table 7-5: 2412 MHz; 802.11g; 11 Mbps; Channel 1; Average Mode

Frequency (MHz)	Spectrum Analyzer Average Level (1 MHz RBW/ 10 Hz VBW) (dBuV)	Site Correction Factor (dB/m)	Corrected Average Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
4824	5.6	33.2	38.8	54.0	-15.2
12060	0.3	44.0	44.3	54.0	-9.7
14472	-4.1	47.9	43.8	54.0	-10.2
19296	-6.7	52.9	46.2	54.0	-7.8

Table 7-6: 2437 MHz; 802.11g; 11 Mbps; Channel 6; Average Mode

Frequency (MHz)	Spectrum Analyzer Average Level (1 MHz RBW/ 10 Hz VBW) (dBuV)	Site Correction Factor (dB/m)	Corrected Average Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
4874	5.7	33.3	39.0	54.0	-15.0
7311	0.1	35.7	35.8	54.0	-18.2
12185	0.5	44.0	44.5	54.0	-9.5
19496	-9.3	53.0	43.7	54.0	-10.3

Table 7-7: 2462 MHz; 802.11g; 11 Mbps; Channel 11; Average Mode

Frequency (MHz)	Spectrum Analyzer Average Level (1 MHz RBW/ 10 Hz VBW) (dBuV)	Site Correction Factor (dB/m)	Corrected Average Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
4924	3.0	33.4	36.4	54.0	-17.6
7386	0.1	35.7	35.8	54.0	-18.2
12310	0.1	44.0	44.1	54.0	-9.9
19696	-9.3	53.1	43.8	54.0	-10.2
22158	-8.2	54.2	46.0	54.0	-8.0

Table 7-8: 2412 MHz; 802.11n; 65 Mbps; Channel 1; Average Mode

Frequency (MHz)	Spectrum Analyzer Average Level (1 MHz RBW/ 10 Hz VBW) (dBuV)	Site Correction Factor (dB/m)	Corrected Average Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
4824	1.9	33.2	35.1	54.0	-18.9
12060	0.3	44.0	44.3	54.0	-9.7
14472	-9.8	47.9	38.1	54.0	-15.9
19296	-9.4	52.9	43.5	54.0	-10.5

Table 7-9: 2437 MHz; 802.11n; 65 Mbps; Channel 6; Average Mode

Frequency (MHz)	Spectrum Analyzer Average Level (1 MHz RBW/ 10 Hz VBW) (dBuV)	Site Correction Factor (dB/m)	Corrected Average Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
4874	1.8	33.3	35.1	54.0	-18.9
7311	-0.2	35.7	35.5	54.0	-18.5
12185	-0.3	44.0	43.7	54.0	-10.3
19496	-9.2	53.0	43.8	54.0	-10.2

Table 7-10: 2462 MHz; 802.11n; 65 Mbps; Channel 11; Average Mode

Frequency (MHz)	Spectrum Analyzer Average Level (1 MHz RBW/ 10 Hz VBW) (dBuV)	Site Correction Factor (dB/m)	Corrected Average Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
4924	1.4	33.4	34.8	54.0	-19.2
7386	0.0	35.7	35.7	54.0	-18.3
12310	-0.6	44.0	43.4	54.0	-10.6
19696	-9.2	53.1	43.9	54.0	-10.1
22158	-8.4	54.2	45.8	54.0	-8.2
4924	1.4	33.4	34.8	54.0	-19.2

Table 7-11: 2412 MHz; 802.11b; 2 Mbps; Channel 1; Peak Mode

Frequency (MHz)	Spectrum Analyzer Peak Level (1 MHz RBW/ 3 MHz VBW) (dBuV)	Site Correction Factor (dB/m)	Corrected Peak Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
4824	21.6	33.2	54.8	74.0	-19.2
12060	4.4	44.0	48.4	74.0	-25.6
14472	4.8	47.9	52.7	74.0	-21.3
19296	2.4	52.9	55.3	74.0	-18.7

Table 7-12: 2437 MHz; 802.11b; 2 Mbps; Channel 6; Peak Mode

Frequency (MHz)	Spectrum Analyzer Peak Level (1 MHz RBW/ 3 MHz VBW) (dBuV)	Site Correction Factor (dB/m)	Corrected Peak Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
4874	17.7	33.3	51.0	74.0	-23.0
7311	12.8	35.7	48.5	74.0	-25.5
12185	1.2	44.0	45.2	74.0	-28.8
19496	1.2	53.0	54.2	74.0	-19.8

Table 7-13: 2462 MHz; 802.11b; 2 Mbps; Channel 11; Peak Mode

Frequency (MHz)	Spectrum Analyzer Peak Level (1 MHz RBW/ 3 MHz VBW) (dBuV)	Site Correction Factor (dB/m)	Corrected Peak Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
4924	15.1	33.4	48.5	74.0	-25.5
7386	13.6	35.7	49.3	74.0	-24.7
12310	1.3	44.0	45.3	74.0	-28.7
19696	0.4	53.1	53.5	74.0	-20.5
22158	-2.0	54.2	52.2	74.0	-21.8

Table 7-14: 2412 MHz; 802.11g; 11 Mbps; Channel 1; Peak Mode

Frequency (MHz)	Spectrum Analyzer Peak Level (1 MHz RBW/ 3 MHz VBW) (dBuV)	Site Correction Factor (dB/m)	Corrected Peak Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
4824	17.8	33.2	51.0	74.0	-23.0
12060	13.5	44.0	57.5	74.0	-16.5
14472	6.2	47.9	54.1	74.0	-19.9
19296	5.3	52.9	58.2	74.0	-15.8

Table 7-15: 2437 MHz; 802.11g; 11 Mbps; Channel 6; Peak Mode

Frequency (MHz)	Spectrum Analyzer Peak Level (1 MHz RBW/ 3 MHz VBW) (dBuV)	Site Correction Factor (dB/m)	Corrected Peak Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
4874	18.0	33.3	51.3	74.0	-22.7
7311	13.5	35.7	49.2	74.0	-24.8
12185	13.3	44.0	57.3	74.0	-16.7
19496	4.0	53.0	57.0	74.0	-17.0

Table 7-16: 2462 MHz; 802.11g; 11 Mbps; Channel 11; Peak Mode

Frequency (MHz)	Spectrum Analyzer Peak Level (1 MHz RBW/ 3 MHz VBW) (dBuV)	Site Correction Factor (dB/m)	Corrected Peak Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
4924	13.5	33.4	46.9	74.0	-27.1
7386	13.4	35.7	49.1	74.0	-24.9
12310	13.1	44.0	57.1	74.0	-16.9
19696	4.0	53.1	57.1	74.0	-16.9
22158	5.3	54.2	59.5	74.0	-14.5

Table 7-17: 2412 MHz; 802.11n; 65 Mbps; Channel 1; Peak Mode

Frequency (MHz)	Spectrum Analyzer Peak Level (1 MHz RBW/ 3 MHz VBW) (dBuV)	Site Correction Factor (dB/m)	Corrected Peak Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
4824	16.5	33.2	49.7	74.0	-24.3
12060	13.3	44.0	57.3	74.0	-16.7
14472	3.3	47.9	51.2	74.0	-22.8
19296	3.8	52.9	56.7	74.0	-17.3

Table 7-18: 2437 MHz; 802.11n; 65 Mbps; Channel 6; Peak Mode

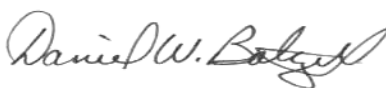
Frequency (MHz)	Spectrum Analyzer Peak Level (1 MHz RBW/ 3 MHz VBW) (dBuV)	Site Correction Factor (dB/m)	Corrected Peak Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
4874	14.6	33.3	47.9	74.0	-26.1
7311	13.2	35.7	48.9	74.0	-25.1
12185	12.6	44.0	56.6	74.0	-17.4
19496	3.9	53.0	56.9	74.0	-17.1

Table 7-19: 2462 MHz; 802.11n; 65 Mbps; Channel 11; Peak Mode

Frequency (MHz)	Spectrum Analyzer Peak Level (1 MHz RBW/ 3 MHz VBW) (dBuV)	Site Correction Factor (dB/m)	Corrected Peak Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
4924	13.1	33.4	46.5	74.0	-27.5
7386	13.1	35.7	48.8	74.0	-25.2
12310	11.8	44.0	55.8	74.0	-18.2
19696	4.1	53.1	57.2	74.0	-16.8
22158	4.9	54.2	59.1	74.0	-14.9

Test Personnel:

Daniel W. Baltzell
EMC Test Engineer



Signature

March 29, 2015
Date of Test

8 Conclusion

The data in this measurement report shows that the Harris Corporation Model XL-200P Multi-Band Portable Radio, FCC ID: OWDTR-0133-E, IC: 3636B-0133, complies with the applicable intentional radiated requirements of FCC Parts 2 and 15 and Industry Canada RSS-Gen and RSS-210.

Appendix A: Test Photographs



Photograph 1: Radiated Testing – Front View



Photograph 2: Radiated Testing – Back View