LSR
a Laird Business
ACCREDITED TESTING CERT #1255.01
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TEST REPORT #: 315364
LSR Job #: C-2386

Compliance Testing of:

IoT Gateway Module

Test Date(s):

1/26/16 – 2/16/16
8/11/16

Prepared For:

Kim Cannon:
Georgia-Pacific
1915 Marathon Avenue
Neenah, WI 54956

This Test Report is issued under the Authority of:
Michael Hintzke, EMC Engineer

Signature:  Date: 3/21/16

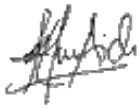
Test Report Reviewed by:	Project Engineer:
Khairul Aidi Zainal, Engineering Manager-Test Services	Michael Hintzke, EMC Engineer
Signature:  Date: 3/21/16	Signature:  Date: 3/21/16

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EXHIBIT 1 INTRODUCTION

1.1 Scope

References:	FCC Part 15, Subpart C, Section 15.247 RSS GEN issue 4 and RSS 247 issue 1
Title:	FCC: Telecommunication – Code of Federal Regulations, CFR 47, Part 15. IC: Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices
Purpose of Test:	To gain FCC and IC Certification Authorization for Low-Power License-Exempt Transmitters.
Test Procedures:	FCC KDB 558074 D01 DTS Measurement Guidance v03r04 ANSI C63.10

1.2 Normative References

Publication	Year	Title
FCC CFR Parts 0-15	2016	Code of Federal Regulations – Telecommunications
ANSI C63.4	2014	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.
RSS-247 Issue 1	2015	Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices
RSS-GEN Issue 4	2014	General Requirements and Information for the Certification of Radio Apparatus
ANSI C63.10	2013	American National Standard for Testing Unlicensed Wireless Devices
FCC KDB 558074 D01 DTS Measurement Guidance v03r04	2016	Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247

1.3 LS Research, LLC Test Facility

LS Research, LLC is accredited by A2LA (American Association for Laboratory Accreditation) as conforming to ISO/IEC 17025, 2005 “General Requirements for the Competence of Calibration and Testing Laboratories”.

LS Research, LLC’s scope of accreditation includes all test methods listed herein, unless otherwise noted. Accreditation status can be verified at A2LA’s web site: www.a2la2.net.

1.4 Location of Testing

All testing was performed at the following location utilizing the facilities listed below, unless otherwise noted.

LS Research, LLC
W66 N220 Commerce Court
Cedarburg, Wisconsin, 53012 USA,

List of Facilities Located at LS Research, LLC:

Semi-Anechoic Chamber

1.5 Test Equipment Utilized

A complete list of equipment utilized in testing is provided in Appendix A of this test report. Calibration dates are indicated in Appendix A. All test equipment is calibrated by a calibration laboratory accredited to the requirements of ISO/IEC 17025, and traceable to the SI standard.

EXHIBIT 2 PERFORMANCE ASSESSMENT

2.1 Client Information

Manufacturer Name:	Georgia-Pacific
Address:	1915 Marathon Avenue
Contact Name:	Kim Cannon
E-mail:	kim.cannon@gapac.com

2.2 Equipment Under Test (EUT) Information

The following information has been supplied by the applicant.

Product Name:	IoT Gateway
Model Number:	A-100278
Serial Number:	Engineering Sample

2.3 Associated Antenna Descriptions

WiFi: Ceramic Chip Antenna , 0.5 dBi gain
BLE: PCB Trace, -4.2 dBi gain

2.4 EUT'S Technical Specifications

EUT Frequency Range (in MHz)	2412MHz – 2462MHz (WLAN)
Conducted Output Power, average (in dBm)	2.4GHz WLAN 802.11 b: Maximum = 0.066 W Minimum = 0.049 W 802.11 g: Maximum = 0.047 W Minimum = 0.028 W 802.11 n: Maximum = 0.030 W (HT20) Minimum = 0.022 W
Field Strength at 3 meters (Maximum)	Peak: 64.4 dBµV/m @ 2388.7 MHz Average: 49.5 dBµV/m @ 2390.0 MHz
99% Bandwidth	2.4GHz WLAN: 802.11 b: 11.2 MHz 802.11 g: 17.2 MHz 802.11 n (HT20): 18.3 MHz
Type of Modulation	OFDM (WLAN), DSSS(WLAN)
DTS Bandwidth (6dB BW)	2.4GHz WLAN: 802.11 b: 8.1 MHz 802.11 g: 16.4 MHz 802.11 n (HT20): 17.8 MHz
Transmitter Spurious (worst case) at 3 meters	55.3 dBµV/m at 7386 MHz
Frequency Tolerance %, Hz, ppm	Better than 100 ppm
Antenna Information	
Detachable/non-detachable	Non-detachable
Type	Ceramic Chip
Gain	Peak Gain in 2.4GHz band = 0.5 dBi
EUT will be operated under FCC Rule Part(s)	Title 47 part 15.247
EUT will be operated under RSS Rule Part(s)	RSS 247
Modular Filing	☒ Yes ☐ No
Portable or Mobile?	Mobile
FCC ID / IC ID	2AALY-528GP / 21620-528GP

2.5 Product Description

The Georgia Pacific daughter card is a communication gateway for transporting data between a proprietary Bluetooth network and a WiFi network. It consists of a certified Bluetooth module, a certified WiFi module, and a voltage regulator. Data and power are supplied by a proprietary connection to a host product.

EXHIBIT 3 EUT OPERATING CONDITIONS & TEST CONFIGURATIONS

3.1 Climate Test Conditions

Temperature:	70 -71° F
Humidity:	32-42%
Pressure:	728-741mmHg

3.2 Applicability & Summary of EMC Emission Test Results

FCC Reference	Test Requirements	Compliance
FCC: 15.207	Conducted AC Line Emissions	Yes
FCC:15.247 (a)(2)	DTS Bandwidth	Yes
FCC: 15.247(b) FCC 1.1310	Maximum Output Power	Yes
FCC :15.247(d)	RF Conducted Transmitter Spurious Emissions at the Antenna Terminal	Yes
FCC:15.247 (d) IC: RSS 247 5.2	Power Spectral Density of a Digital Modulation System	Yes
FCC: 15.247(c) FCC: 15.209 FCC: 15.205	Transmitter Radiated Emissions	Yes

3.3 Modifications Incorporated In The EUT For Compliance Purposes

☒ None ☐ Yes (explain below)

3.4 Deviations & Exclusions From Test Specifications

☒ None ☐ Yes (explain below)

EXHIBIT 4 DECLARATION OF CONFORMITY

The EUT was found to MEET the requirements as described within the specification of FCC Title 47, CFR Part 15.247, and Industry Canada RSS-247, Issue 1.

Note: If some emissions are seen to be within 3 dB of their respective limits; as these levels are within the tolerances of the test equipment and site employed, there is a possibility that this unit, or a similar unit selected out of production may not meet the required limit specification if tested by another agency.

LS Research, LLC certifies that the data contained herein was taken under conditions that meet or exceed the requirements of the test specifications. The results in this Test Report apply only to the item(s) tested on the above-specified dates. Any modifications made to the EUT subsequent to the indicated test date(s) will invalidate the data herein, and void this certification.

EXHIBIT 5 OCCUPIED BANDWIDTH

Manufacturer	Georgia-Pacific
Date	1/27/16, 1/28/16
Operator	Michael Hintzke
Temp. / R.H.	20 - 25º C / 30-60% R.H.
Rule Part	FCC 15.247 (a)(2) RSS-247 sect. 5.2
Additional Notes	• Peak detector used • Continuous transmit modulated used for this test. • Sample Calculation: Margin (dB) = Limit – Measured level

5.1 Measurement Procedure

ANSI C63.10-2013 Sections 6.9.2 and 11.8.2
FCC KDB 558074 DTS Meas Guidance v03r04 Section 8.2
RSS-Gen Sect. 6.6

5.2 Measurement Limit

The minimum 6 dB bandwidth shall be at least 500 kHz for systems using digital modulation techniques.

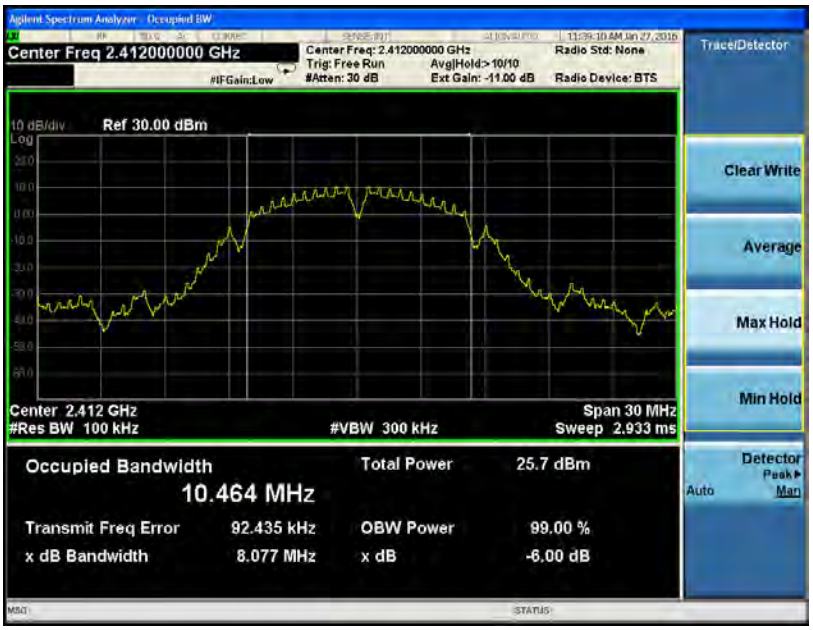
5.3 Test Data

802.11 Standard	Data Rate (MBPS)	Channel	6dB Bandwidth (MHz)	99% Bandwidth (MHz)	20dB Bandwidth (MHz)	6dB Bandwidth minimum limit (MHz)
b	1 (DBPSK)	1	8.1	10.7	12.8	0.5
		6	8.1	10.8	12.8	0.5
		11	8.1	10.7	12.8	0.5
b	11 (8QPSK)	1	7.6	11.2	13.0	0.5
		6	7.8	11.2	12.9	0.5
		11	7.9	11.2	12.9	0.5
g	6 (BPSK)	1	16.4	17.2	20.4	0.5
		6	16.4	17.2	20.4	0.5
		11	16.4	17.1	20.5	0.5
g	54 (64QAM)	1	16.4	16.7	19.3	0.5
		6	16.4	16.7	19.3	0.5
		11	16.4	16.7	19.2	0.5
n	MCS0 (BPSK)	1	17.6	18.3	21.0	0.5
		6	17.6	18.3	21.1	0.5
		11	17.6	18.3	21.1	0.5
n	MCS7 (64QAM)	1	17.8	18.0	20.5	0.5
		6	17.8	18.0	20.5	0.5
		11	17.8	18.0	20.4	0.5

5.4 Screen Captures

802.11b – 1 Mbps

Low Channel

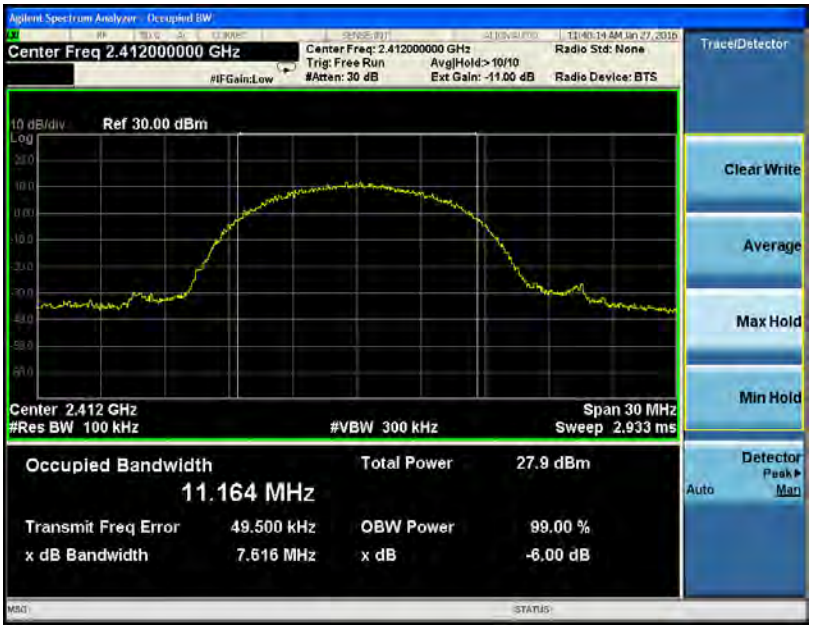


6 dB OBW

-20 dB & 99 % OBW

802.11b – 11 Mbps

Low Channel



6 dB OBW

-20 dB & 99 % OBW

802.11g – 6 Mbps

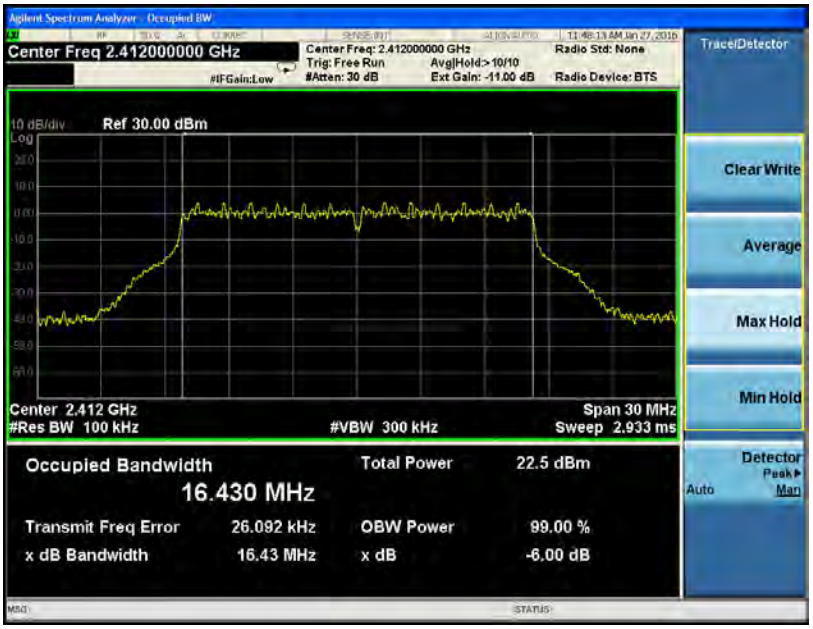
Low Channel

6 dB OBW

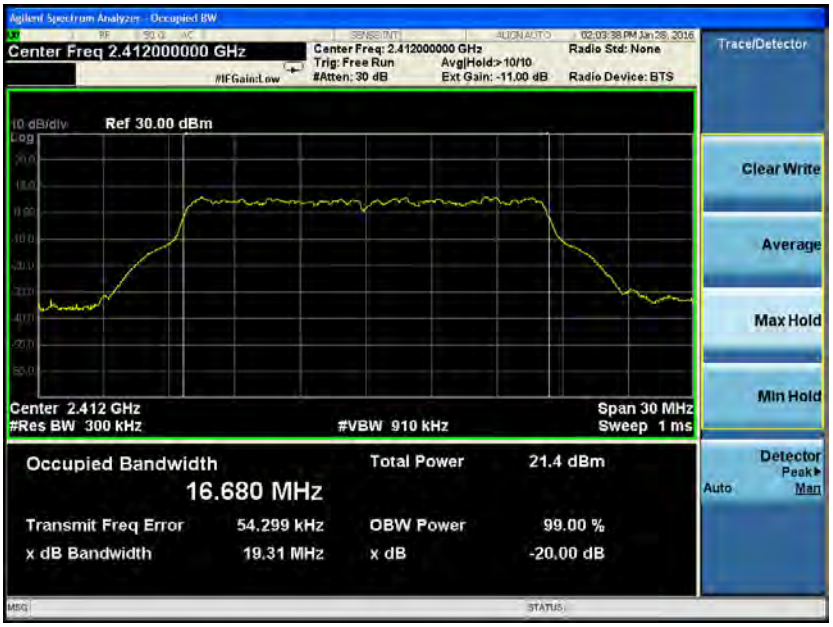
-20 dB & 99 % OBW

802.11g – 54 Mbps

Low Channel



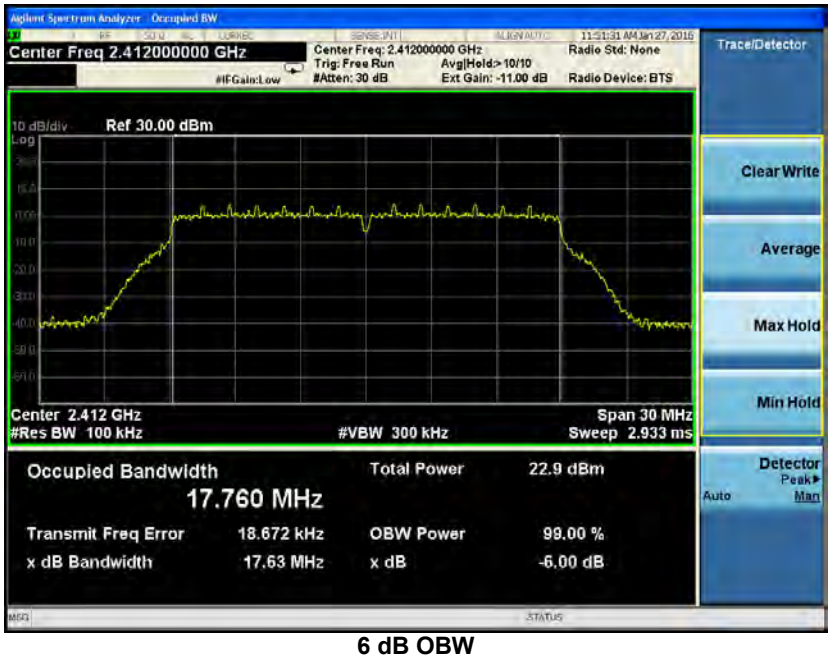
6 dB OBW



-20 dB & 99 % OBW

802.11n – MCS0

Low Channel

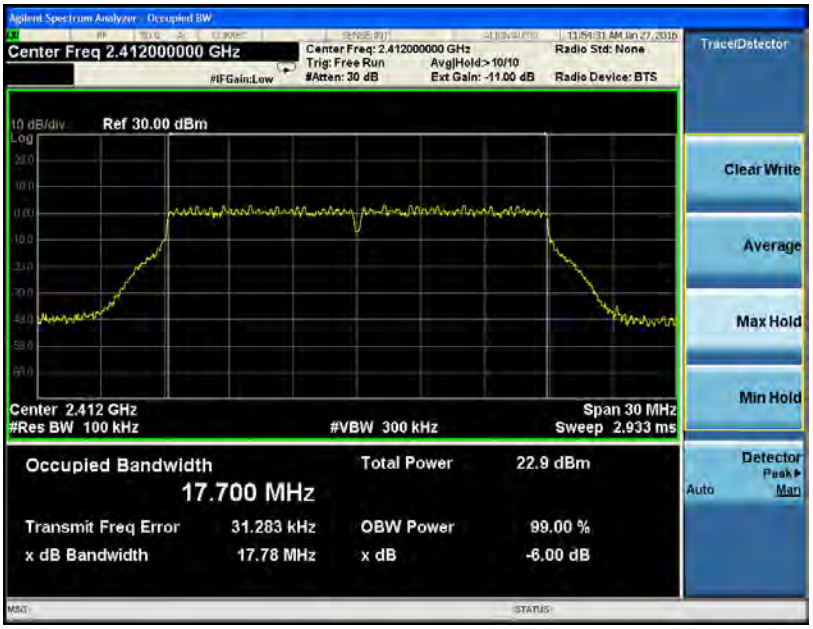


6 dB OBW

-20 dB & 99 % OBW

802.11n – MCS7

Low Channel

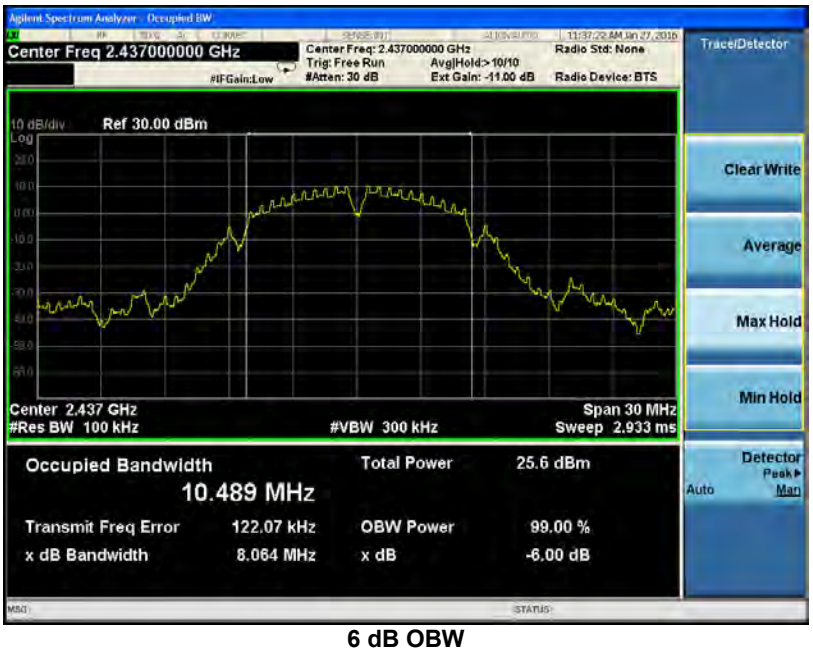


6 dB OBW

-20 dB & 99 % OBW

802.11b – 1 Mbps

Middle Channel

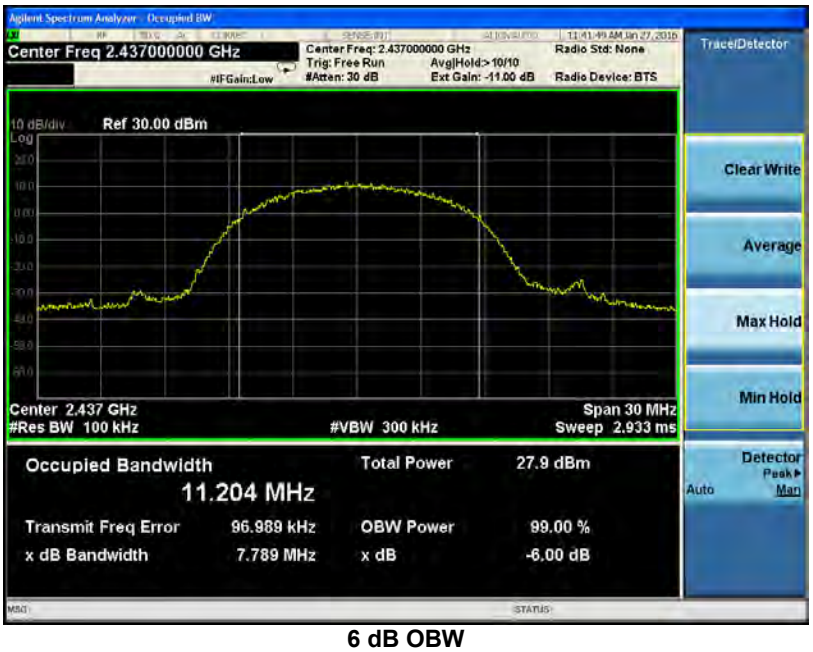


6 dB OBW

-20 dB & 99 % OBW

802.11b – 11 Mbps

Middle Channel

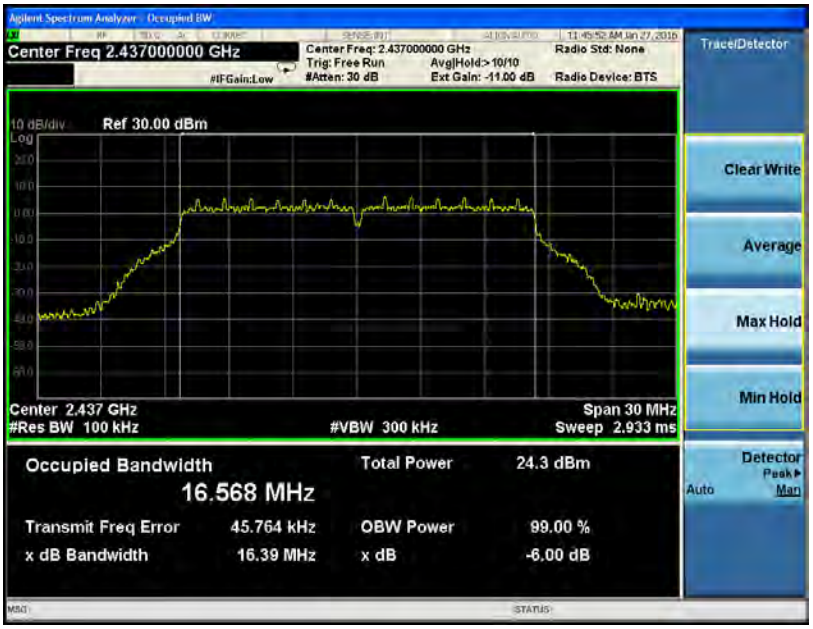


6 dB OBW

-20 dB & 99 % OBW

802.11g – 6 Mbps

Middle Channel

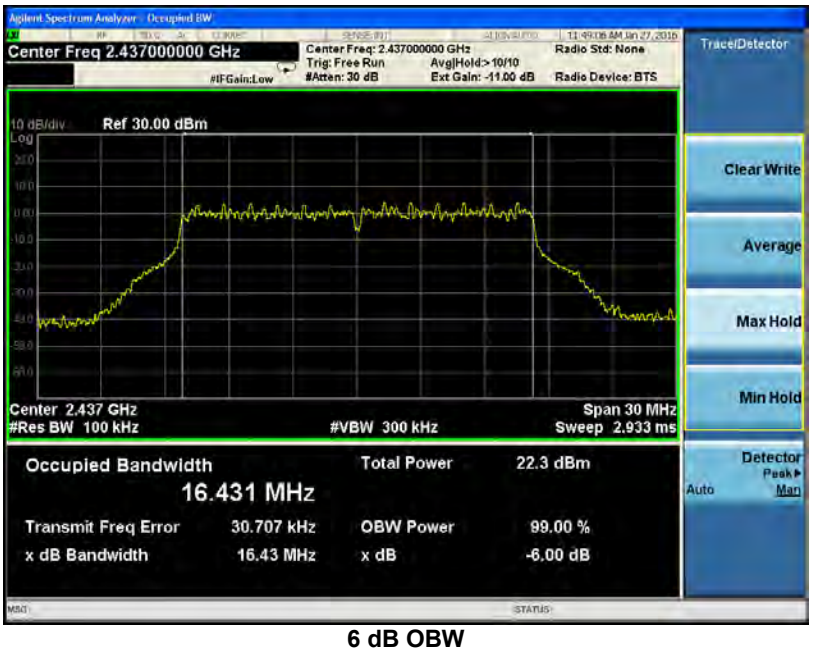


6 dB OBW

-20 dB & 99 % OBW

802.11g – 54 Mbps

Middle Channel

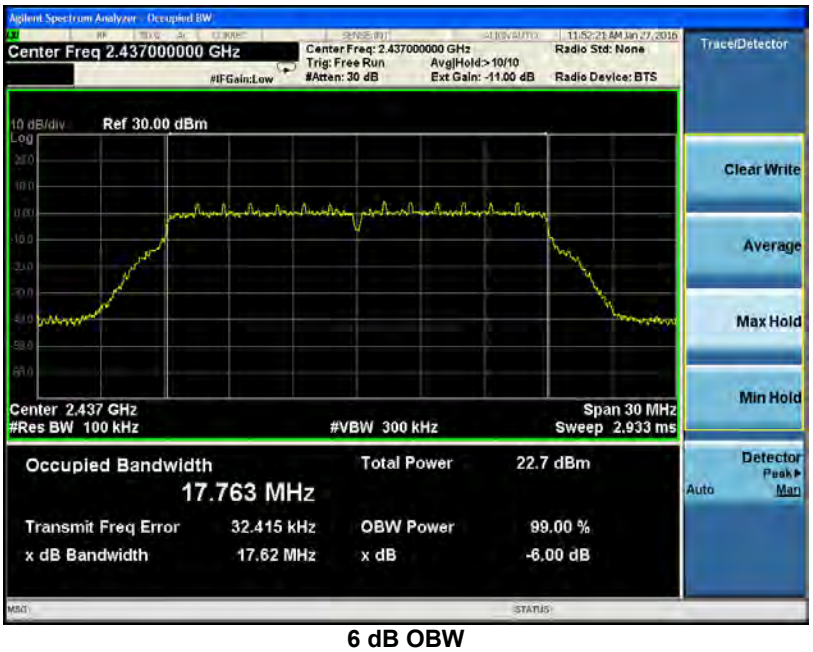


6 dB OBW

-20 dB & 99 % OBW

802.11n – MCS0

Middle Channel

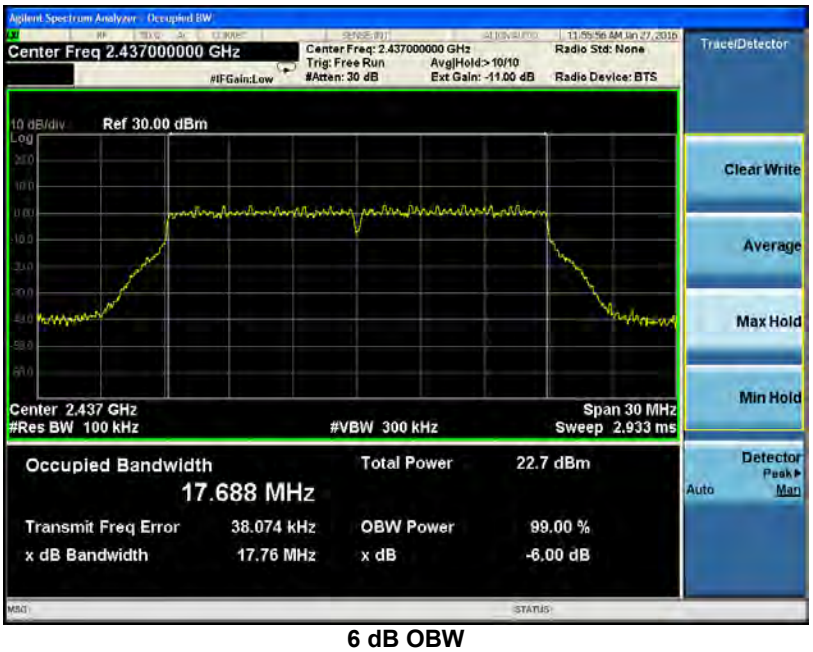


6 dB OBW

-20 dB & 99 % OBW

802.11n – MCS7

Middle Channel



6 dB OBW

-20 dB & 99 % OBW

802.11b – 1 Mbps

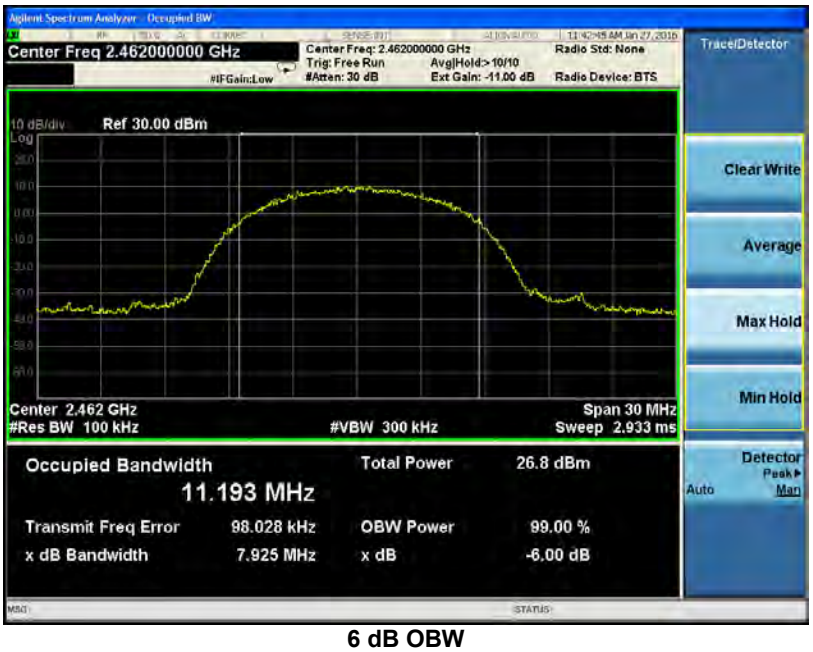
High Channel

6 dB OBW

-20 dB & 99 % OBW

802.11b – 11 Mbps

High Channel

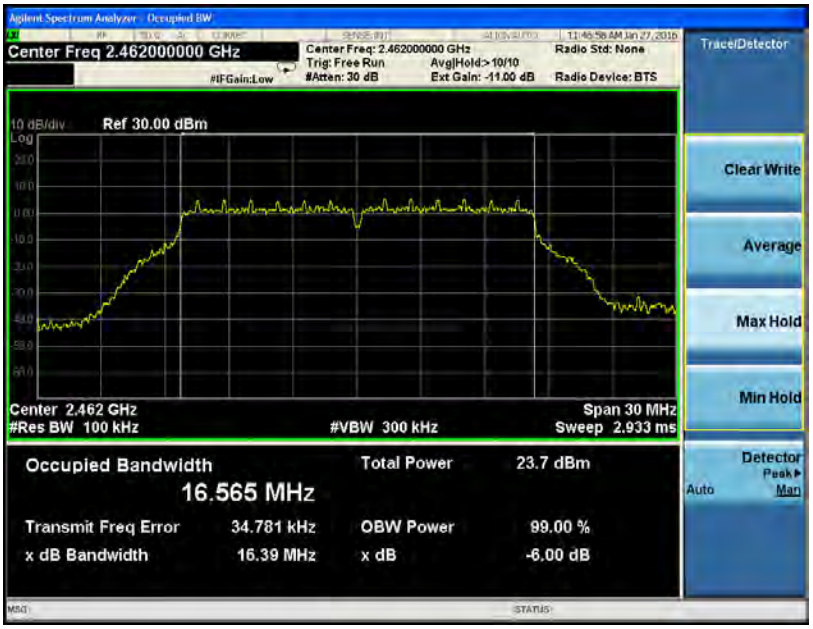


6 dB OBW

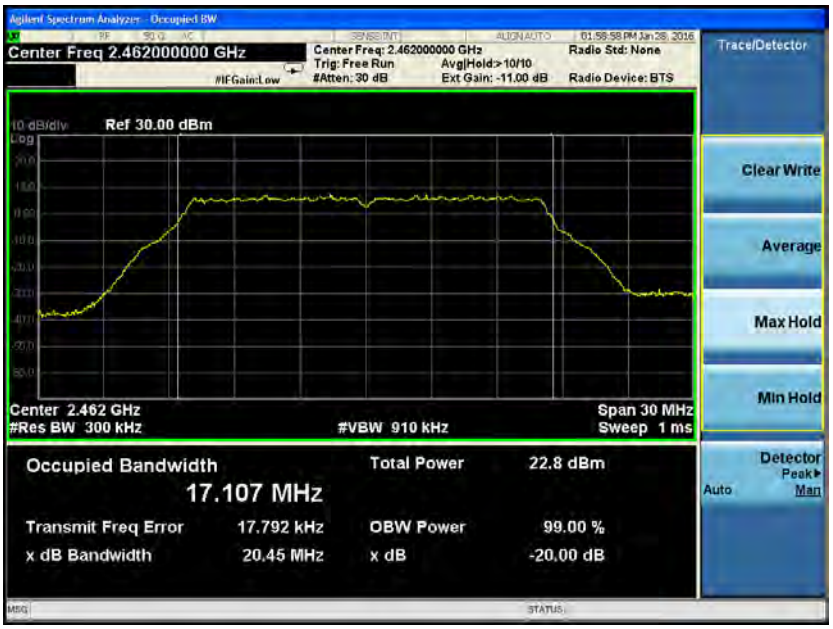
-20 dB & 99 % OBW

802.11g – 6 Mbps

High Channel



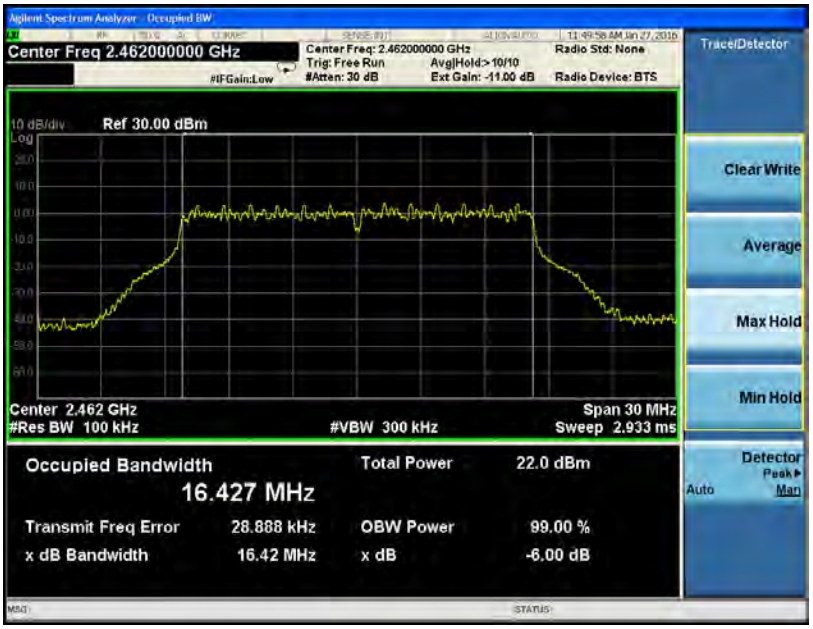
6 dB OBW



-20 dB & 99 % OBW

802.11g – 54 Mbps

High Channel

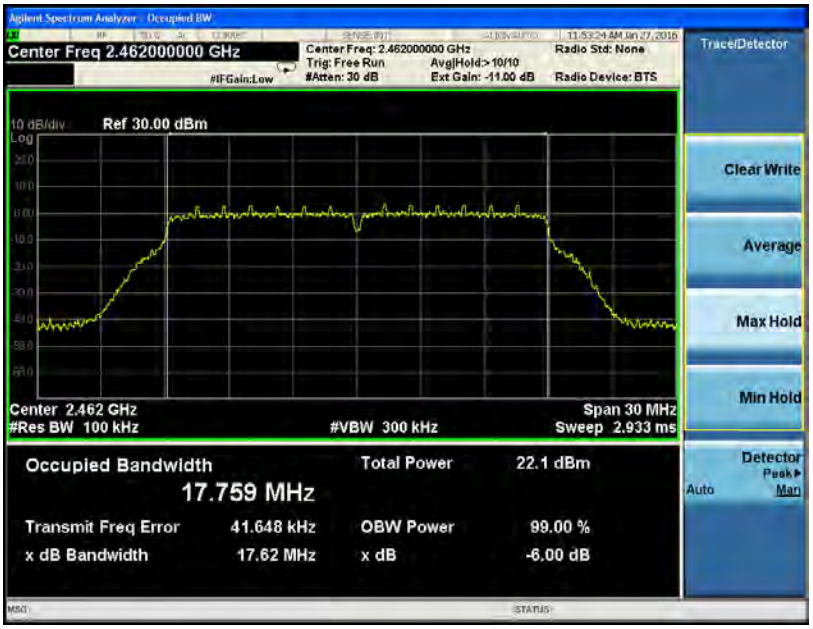


6 dB OBW

-20 dB & 99 % OBW

802.11n – MCS0

High Channel

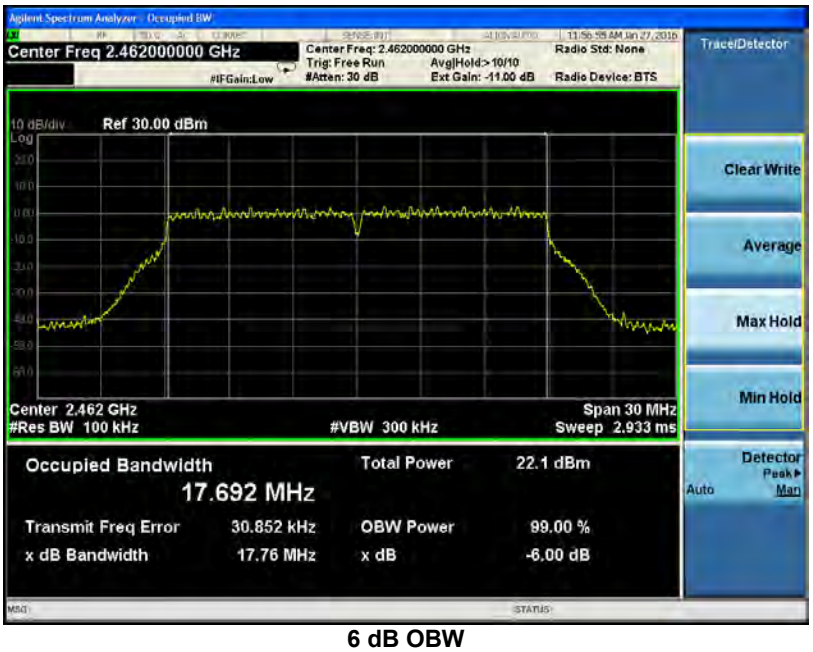


6 dB OBW

-20 dB & 99 % OBW

802.11n – MCS7

High Channel



6 dB OBW

-20 dB & 99 % OBW

EXHIBIT 6 MAXIMUM CONDUCTED (AVERAGE) OUTPUT POWER

Manufacturer	Georgia-Pacific
Date	1/27/16
Test Engineer	Michael Hintzke
Temp. / R.H.	20 - 25º C / 30-60% R.H.
Rule Part	FCC 15.247 (b) RSS-247 Sect. 5.4
Additional Notes	• Averagedetector used • Continuous transmit modulated used for this test. • Sample Calculation: Margin (dB) = Limit – Measured level

6.1 Measurement Procedure

ANSI C63.10-2013 Section 11.9.1.3
FCC KDB 558074 DTS Meas Guidance v03r04 Section 9.1.2
RSS-Gen Section 6.12

6.2 Limit

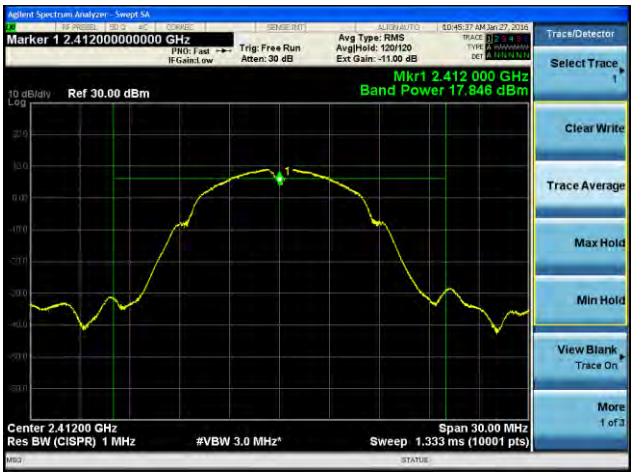
The maximum peak conducted output power for systems using digital modulation shall not exceed 1 Watt (30 dBm).

6.3 Test Data

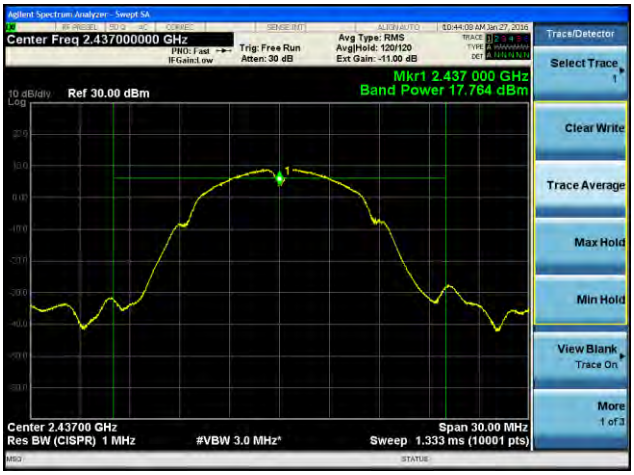
802.11 Standard	Data Rate (MBPS)	Channel	Max (Avg) Conducted Power (dBm)	D.C correction (dB)	Corrected Maximum Conducted Power (dBm)	Power Limit (dBm)	Power margin (dB)
b	1 (DBPSK)	1	17.8	0.02	17.9	30.0	12.2
		6	17.8	0.02	17.8	30.0	12.2
		11	16.9	0.02	16.9	30.0	13.1
b	11 (8QPSK)	1	18.0	0.18	18.2	30.0	12.0
		6	17.8	0.18	18.0	30.0	12.2
		11	17.0	0.18	17.2	30.0	13.0
g	6 (BPSK)	1	16.6	0.12	16.7	30.0	13.4
		6	16.6	0.12	16.7	30.0	13.4
		11	15.8	0.12	15.9	30.0	14.2
g	54 (64QAM)	1	14.3	0.87	15.1	30.0	15.7
		6	14.3	0.87	15.2	30.0	15.7
		11	13.6	0.87	14.4	30.0	16.4
n	MCS0 (BPSK)	1	14.7	0.13	14.8	30.0	15.3
		6	14.7	0.13	14.8	30.0	15.3
		11	14.1	0.13	14.2	30.0	15.9
n	MCS7 (64QAM)	1	13.3	0.93	14.2	30.0	16.7
		6	13.3	0.93	14.3	30.0	16.7
		11	12.4	0.93	13.4	30.0	17.6

6.4 Conducted (Average) Output Power Screen Captures

1 Mbps



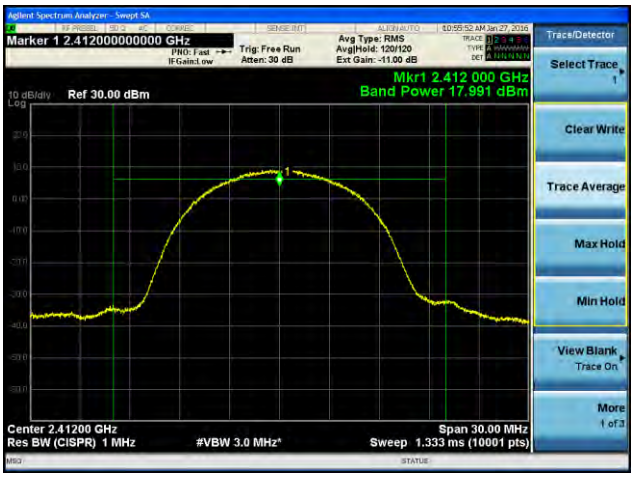
Low Channel



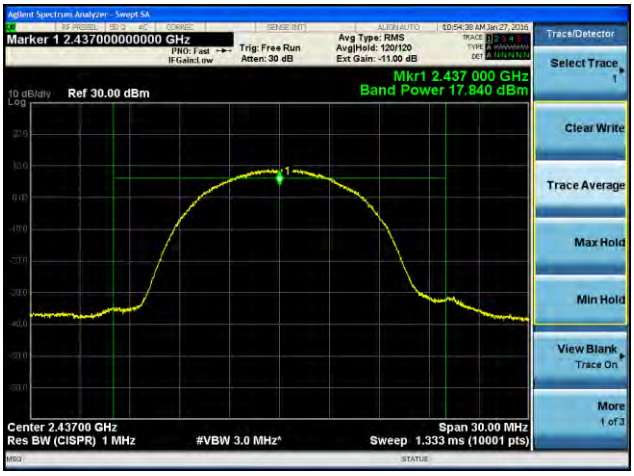
Middle Channel

High Channel

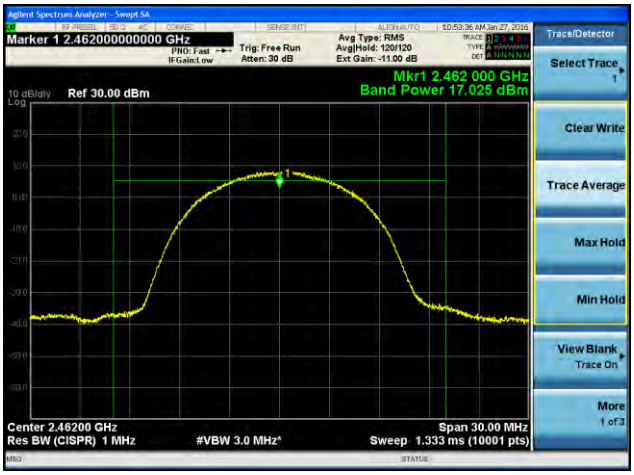
11 Mbps



Low Channel

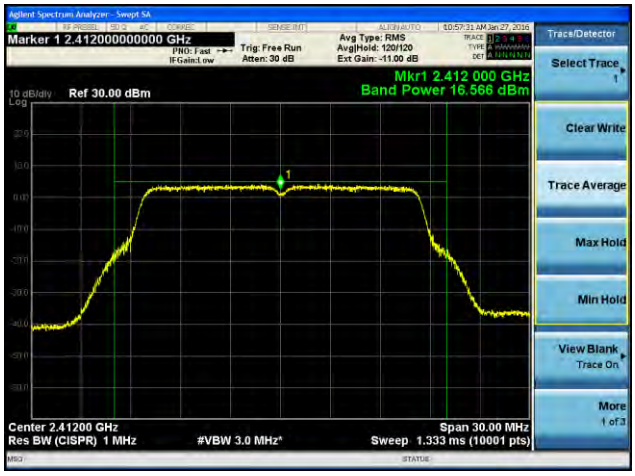


Middle Channel



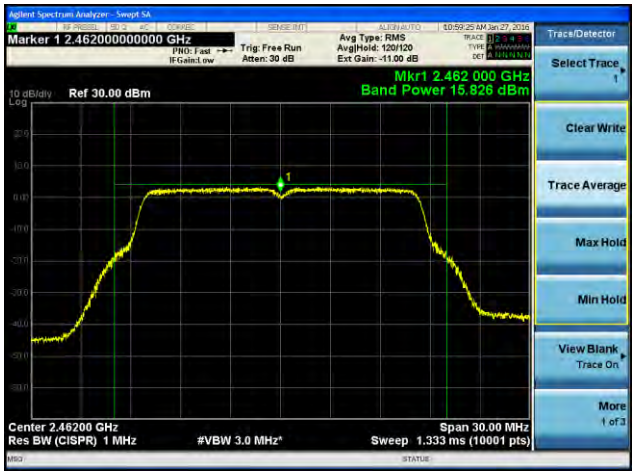
High Channel

6 Mbps



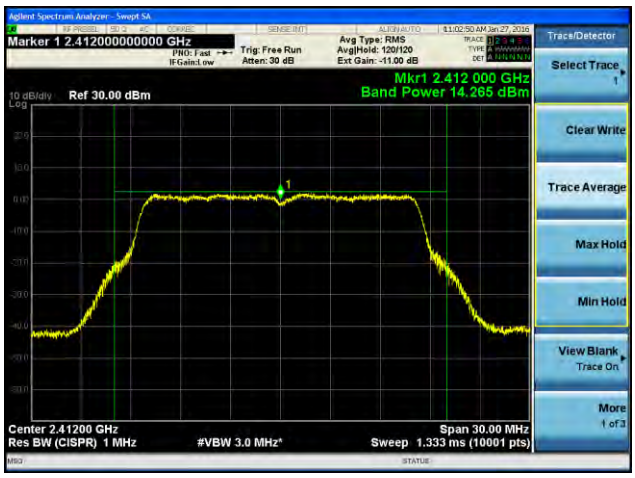
Low Channel

Middle Channel

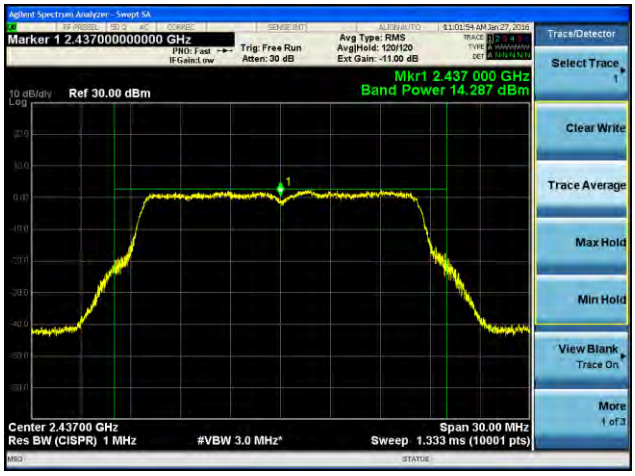


High Channel

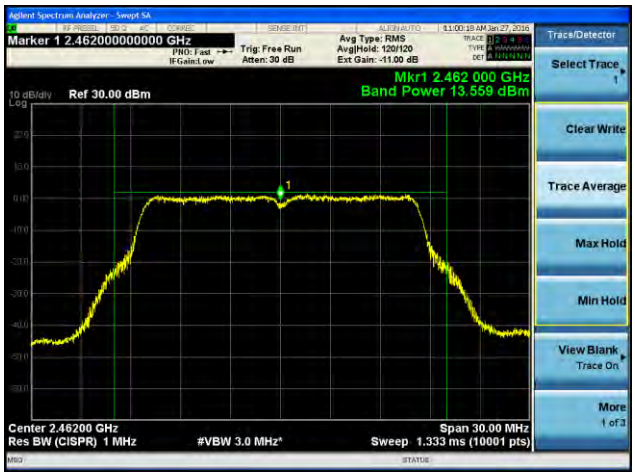
54 Mbps



Low Channel

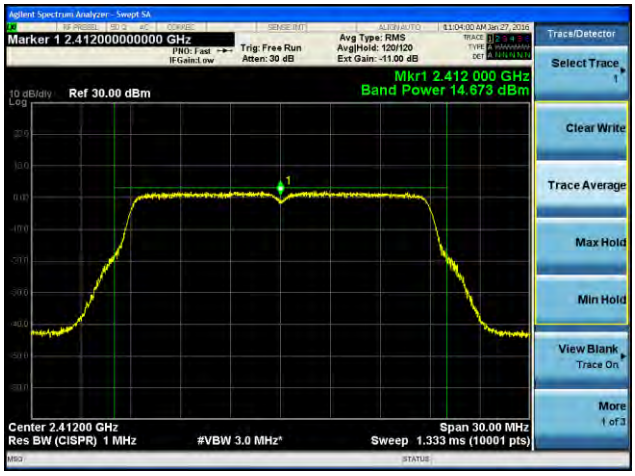


Middle Channel

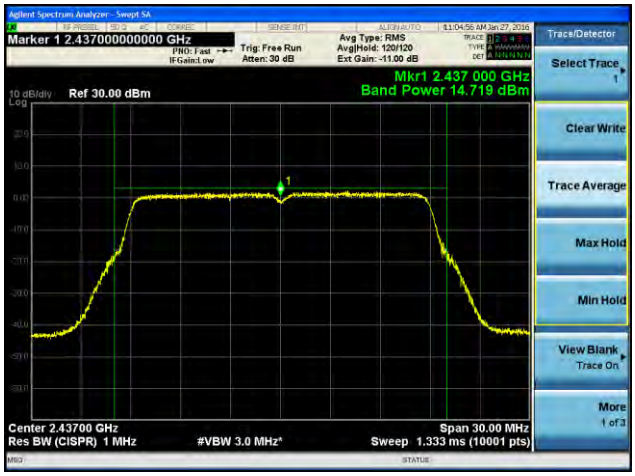


High Channel

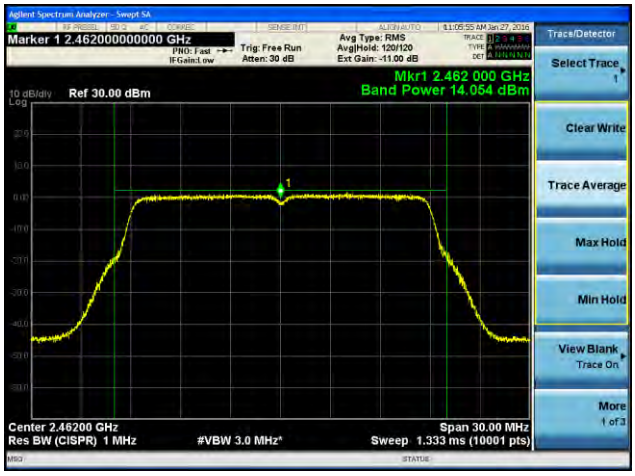
MCS0



Low Channel

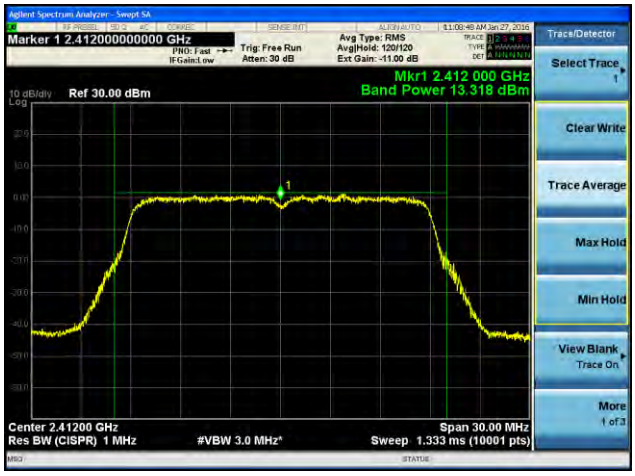


Middle Channel

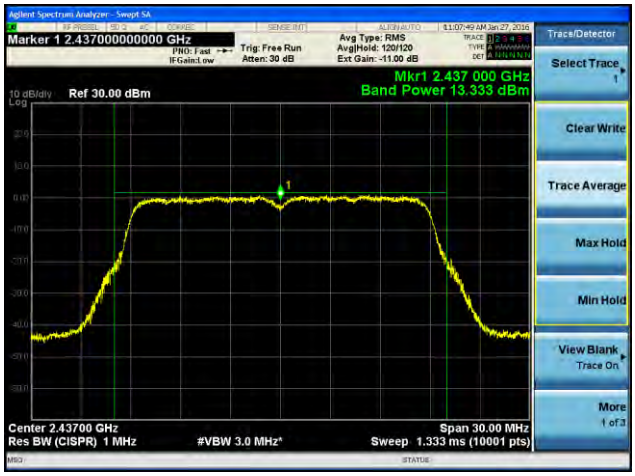


High Channel

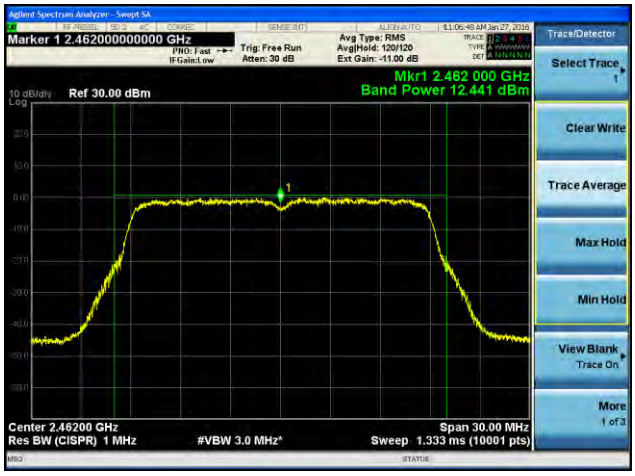
MCS7



Low Channel

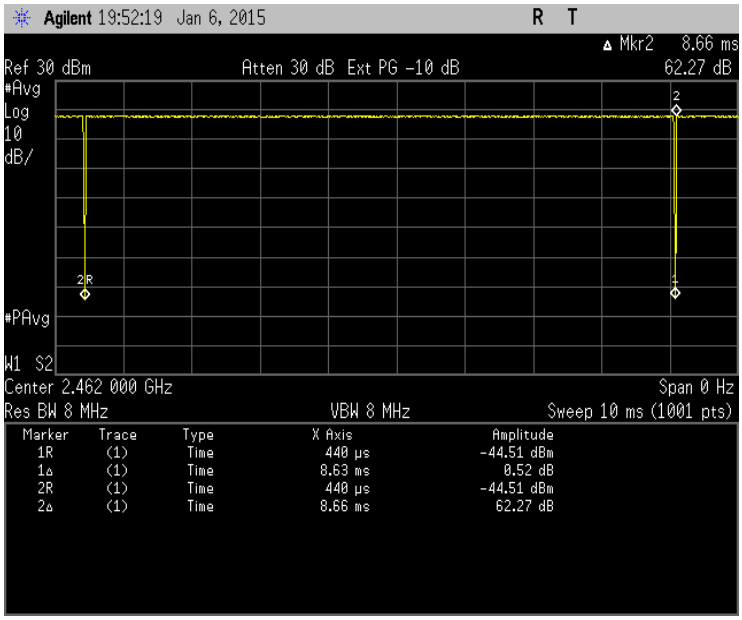


Middle Channel

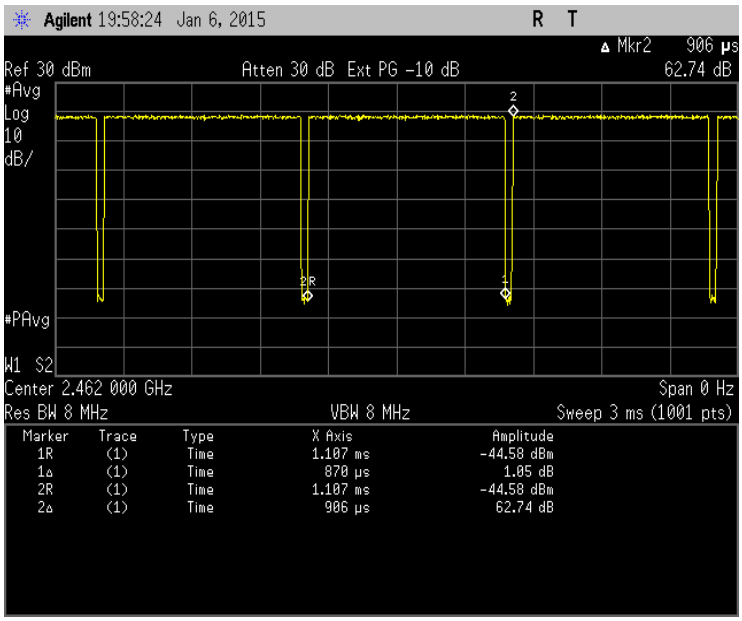


High Channel

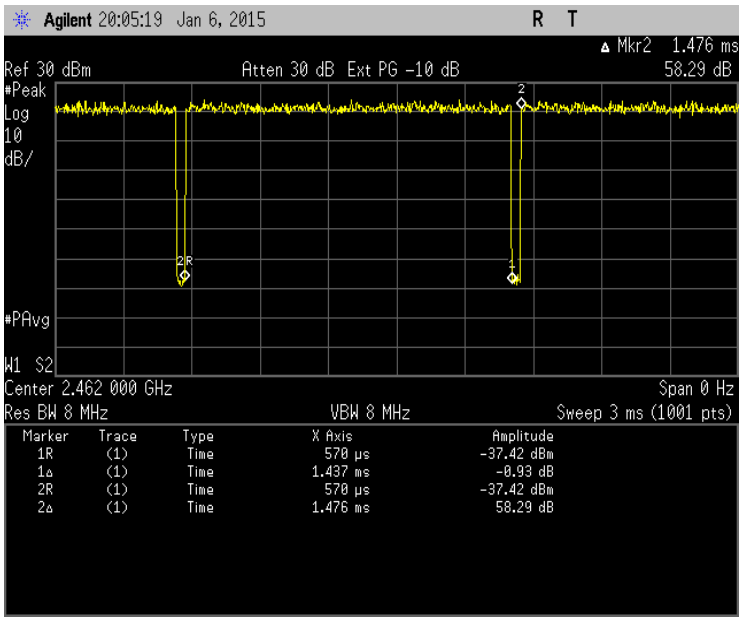
6.5 Duty Cycle Screen Captures



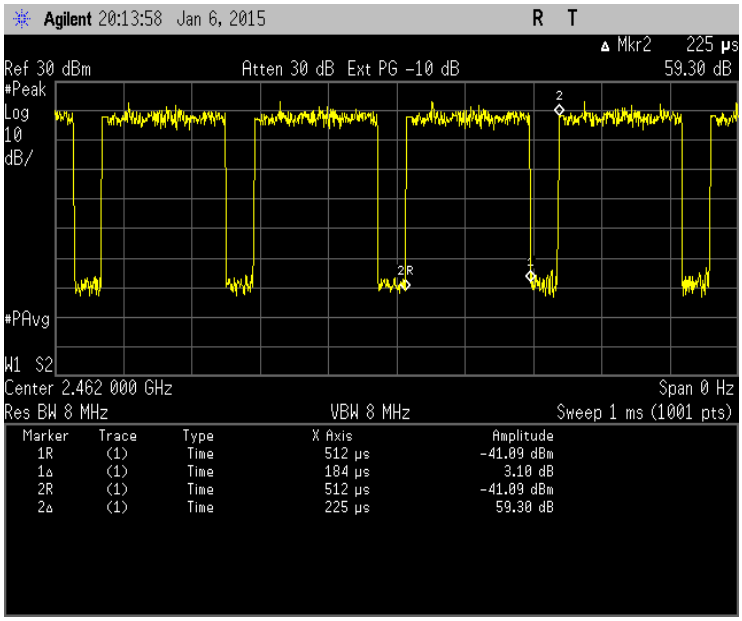
1 Mbps



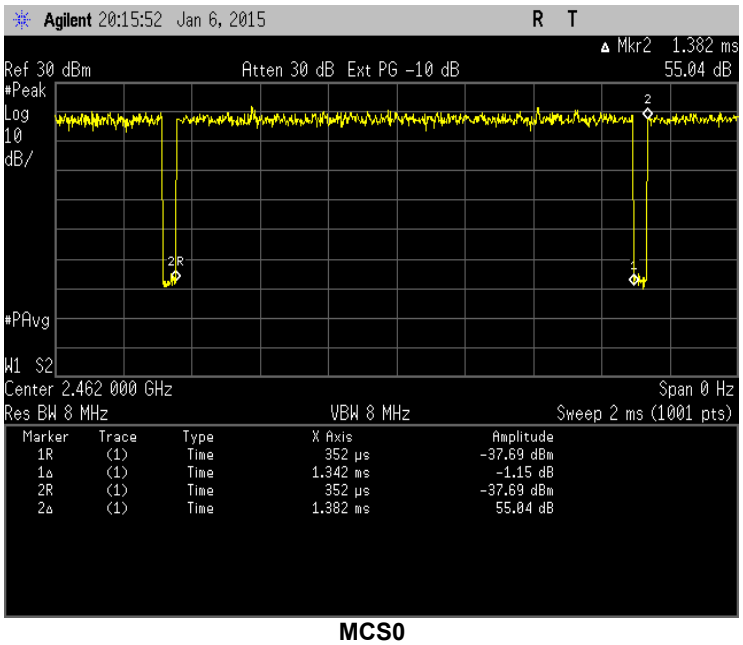
11 Mbps



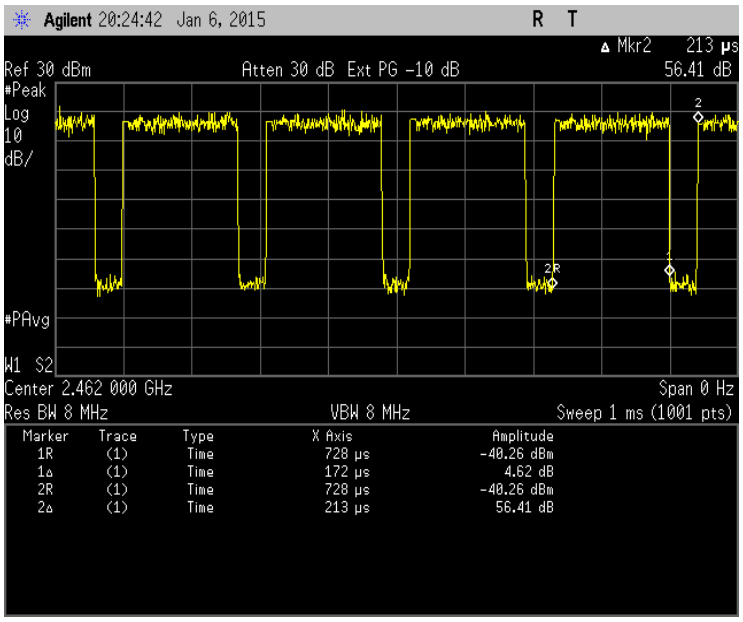
6 Mbps



54 Mbps


Agilent 20:15:52 Jan 6, 2015
R T
Mkr2 1.382 ms
Ref 30 dBm
Atten 30 dB Ext PG -10 dB
55.04 dB
#Peak
Log
10
dB/
#PAvg
W1 S2
Center 2.462 000 GHz
Span 0 Hz
Res BW 8 MHz
VBW 8 MHz
Sweep 2 ms (1001 pts)
Marker Trace Type X Axis Amplitude
1R (1) Time 352 µs -37.69 dBm
1Δ (1) Time 1.342 ms -1.15 dB
2R (1) Time 352 µs -37.69 dBm
2Δ (1) Time 1.382 ms 55.04 dB

MCS0


Agilent 20:24:42 Jan 6, 2015
R T
Mkr2 213 µs
Ref 30 dBm
Atten 30 dB Ext PG -10 dB
56.41 dB
#Peak
Log
10
dB/
#PAvg
W1 S2
Center 2.462 000 GHz
Span 0 Hz
Res BW 8 MHz
VBW 8 MHz
Sweep 1 ms (1001 pts)
Marker Trace Type X Axis Amplitude
1R (1) Time 728 µs -40.26 dBm
1Δ (1) Time 172 µs 4.62 dB
2R (1) Time 728 µs -40.26 dBm
2Δ (1) Time 213 µs 56.41 dB

MCS7

EXHIBIT 7 POWER SPECTRAL DENSITY

Manufacturer	Georgia-Pacific
Date	1/28/16
Operator	Michael Hintzke
Temp. / R.H.	20 - 25º C / 30-60% R.H.
Rule Part	FCC 15.247 (e) RSS-247 Sect.5.2
Additional Notes	• Average detector used • Continuous transmit modulated used for this test. • Sample Calculation: Margin (dB) = Limit – Measured level • Measurement utilized • RBW=100 kHz (conducted)

7.1 Measurement Procedure

ANSI C63.10-2013 Section 11.10.2
FCC KDB 558074 DTS Meas Guidance v03r04 Section 10.2

7.2 Limit

For digitally modulated systems, the conducted power spectral density shall not be greater than 8 dBm in any 3 kHz band.

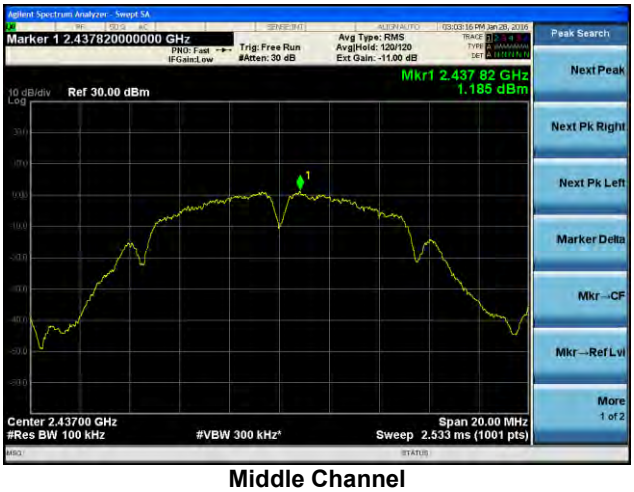
7.3 Test Data

802.11 Standard	Data Rate (MBPS)	Channel	Peak PSD in 100kHz Minimum BW (dBm)	Corrected PSD (dBm)	PSD in 3kHz limit(dBm)	PSD margin (dBm)
b	1 (DBPSK)	1	1.2	1.2	8.0	6.8
		6	1.2	1.2	8.0	6.8
		11	0.1	0.1	8.0	7.9
b	11 (8QPSK)	1	0.4	0.4	8.0	7.6
		6	0.5	0.5	8.0	7.5
		11	-0.7	-0.7	8.0	8.7
g	6 (BPSK)	1	-3.8	-3.8	8.0	11.8
		6	-3.8	-3.8	8.0	11.8
		11	-4.3	-4.3	8.0	12.3
g	54 (64QAM)	1	-4.8	-4.8	8.0	12.8
		6	-5.0	-5.0	8.0	13.0
		11	-5.8	-5.8	8.0	13.8
n	MCS0 (BPSK)	1	-6.8	-6.8	8.0	14.8
		6	-6.1	-6.1	8.0	14.1
		11	-6.9	-6.9	8.0	14.9
n	MCS7 (64QAM)	1	-6.3	-6.3	8.0	14.3
		6	-6.4	-6.4	8.0	14.4
		11	-7.3	-7.3	8.0	15.3

7.4 Screen Captures

802.11b – 1 Mbps

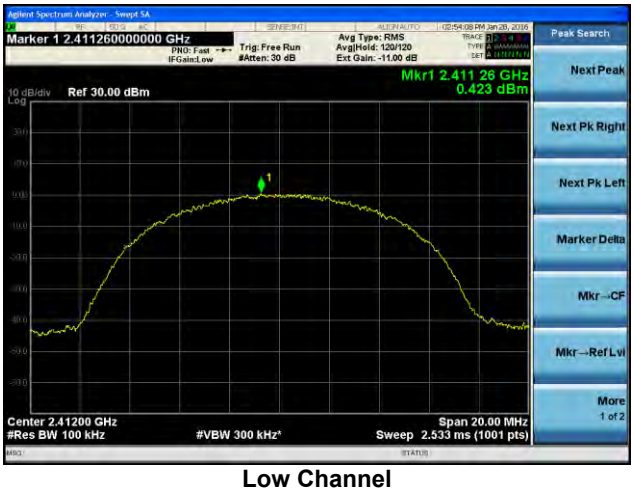
Low Channel



Middle Channel

High Channel

802.11b – 11 Mbps

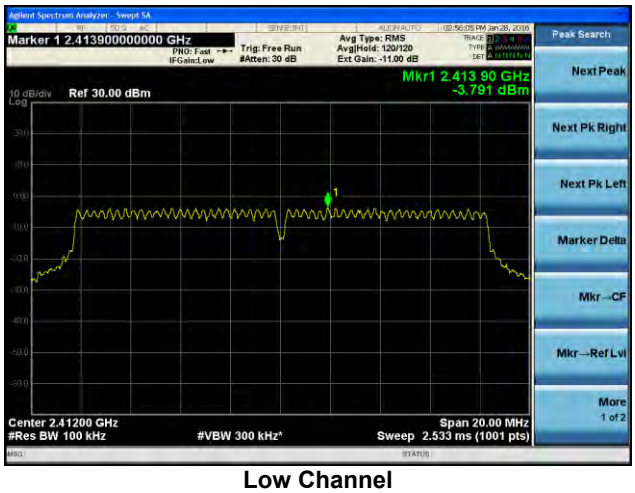


Low Channel

Middle Channel

High Channel

802.11g – 6 Mbps

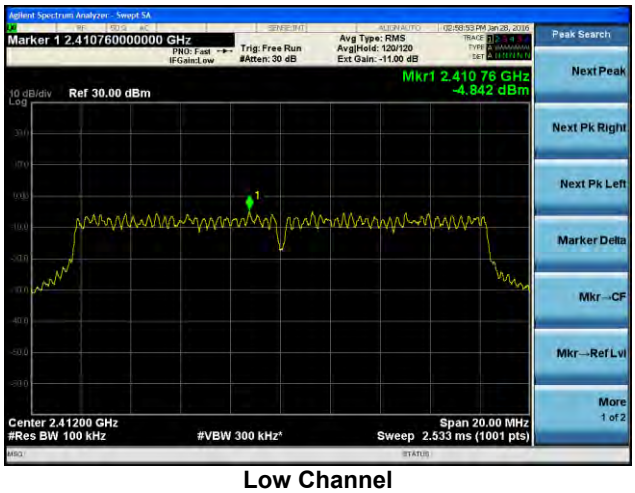


Low Channel

Middle Channel

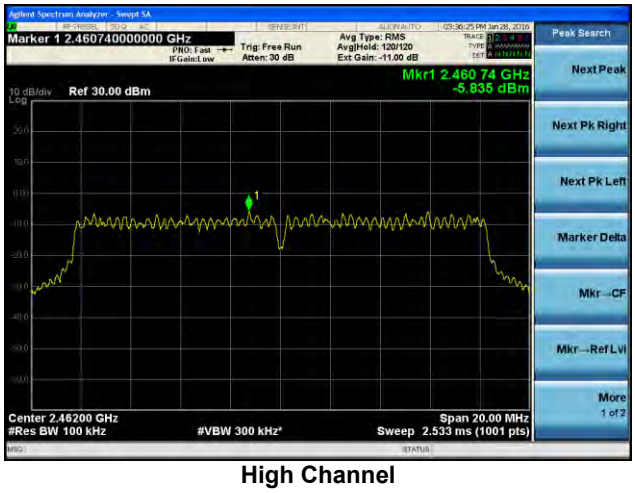
High Channel

802.11g – 54 Mbps



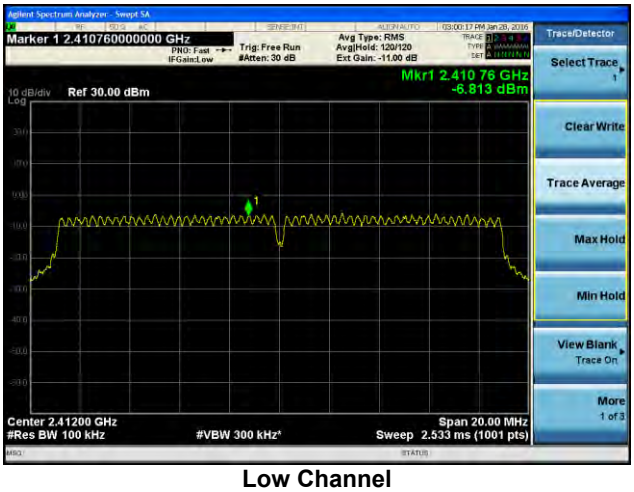
Low Channel

Middle Channel



High Channel

802.11n – MCS0

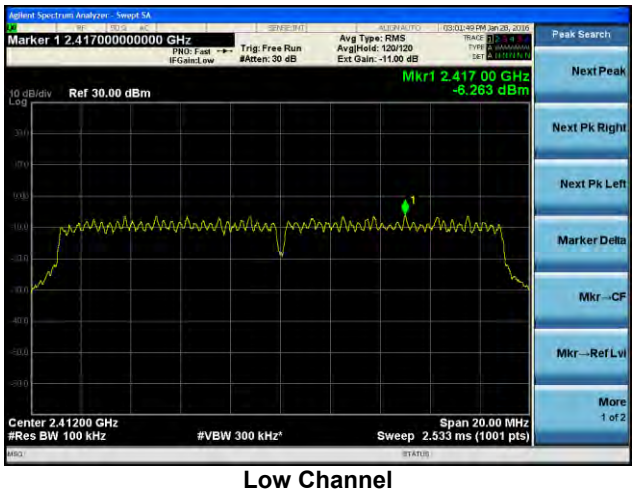


Low Channel

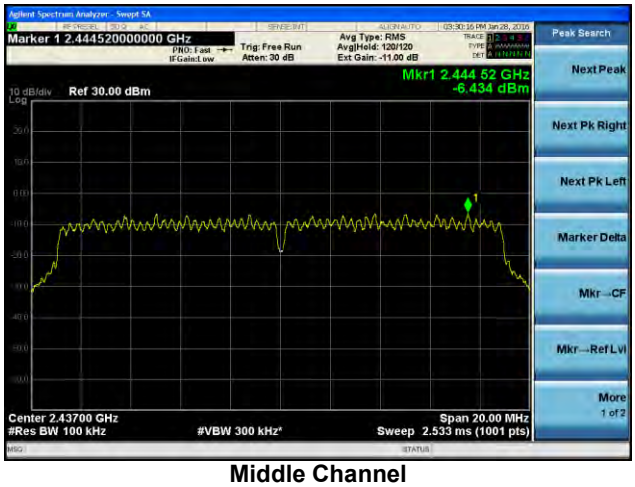
Middle Channel

High Channel

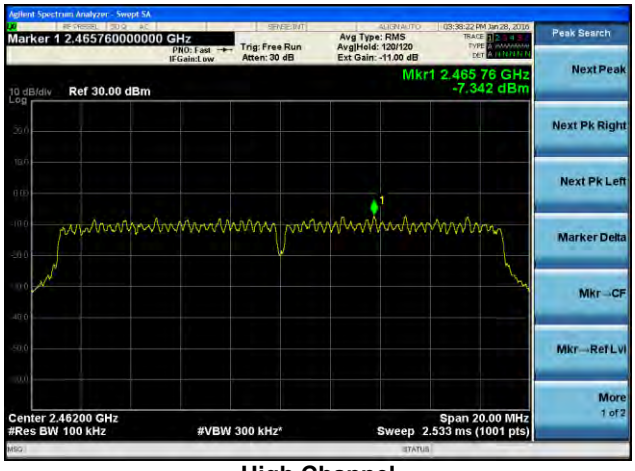
802.11n – MCS7



Low Channel



Middle Channel



High Channel

EXHIBIT 8 FREQUENCY STABILITY

Manufacturer	Georgia-Pacific
Date	2/16/15
Operator	Adam Alger
Temp. / R.H.	20 - 25º C / 30-60% R.H.
Rule Part	FCC 2.1055 (d)
Additional Notes	• Peak detector used • Continuous transmit un-modulated used for this test.

8.1 Measurement Procedure

ANSI C63.10-2013 Section 6.8.2
RSS-Gen Section 6.11

8.2 Test Data

Channel	3.13 VDC		3.3 VDC		3.46 VDC		
	Power (dBm)	Frequency (Hz)	Power (dBm)	Frequency (Hz)	Power (dBm)	Frequency (Hz)	Drift (Hz)
Low	10.9	2411988305	10.9	2411988290	10.9	2411988540	250
Mid	10.7	2436987660	10.7	2436987440	10.7	2436987590	220
High	10.6	2461987250	10.6	2461987450	10.6	2461987150	300

EXHIBIT 9 BAND EDGE MEASUREMENTS

Manufacturer	Georgia-Pacific	
Date	1/27/16, 1/29/16, 2/8/16	
Operator	Michael Hintzke	
Temp. / R.H.	20 - 25º C / 30-60% R.H.	
Rule Part	FCC 15.247 (d) / RSS-247 Sect 5.5 FCC 15.209 (a) / RSS-Gen Sect 8.9 FCC 15.205 (a) / RSS-Gen Sect 8.10	
Measurement Detectors	Conducted: RBW = 100 kHz VBW = ≥ 300 kHz	Radiated: RBW = 1 MHz VBW = ≥ 3 MHz
Description of Radiated Measurements	1. The antenna, cable, pre-amp, and other necessary measurement system correction factors are loaded onto the EMI receiver / spectrum analyzer when the measurements are performed. The data is gathered and reported as the corrected values. 2. The EUT is placed on a 150 cm non-conductive pedestal centered on a turn-table in the test location with the antenna 3 meters from the EUT. 3. Maximum radiated RF emissions are determined by rotation of azimuth and scanning the sense antenna between 1 and 4 meters in height using both horizontal and vertical antenna polarities. Maximized levels are manually noted at degree values of azimuth and at sense antenna height.	
Example Calculations	Reported Measurement data = Raw receiver measurement + Antenna Correction Factor + Cable factor (dB) - amplification factor (when applicable) + Additional factor (when applicable)	

9.1 Method of Measurements

ANSI C63.10-2013 Section 11.13.2
FCC KDB 558074 DTS Meas Guidance v03r04 Section 13.2

9.2 Limit(s)

Conducted Measurement:

The spurious emissions produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth that contains the highest level of the desired power.

Radiated Measurement:

Frequency (MHz)	3 m Limit (μV/m)	3 m Limit (dBμV/m)	Detector Type
Above 960	500	54.0	Average (>1 GHz)
Above 960	-	74.0	Peak(>1 GHz)

9.3 Test Data

9.3.1 Bandedges in 100 kHz Bandwidth

802.11b – 1 Mbps

Lower Bandedge

Upper Bandedge

802.11b – 11 Mbps

Lower Bandedge

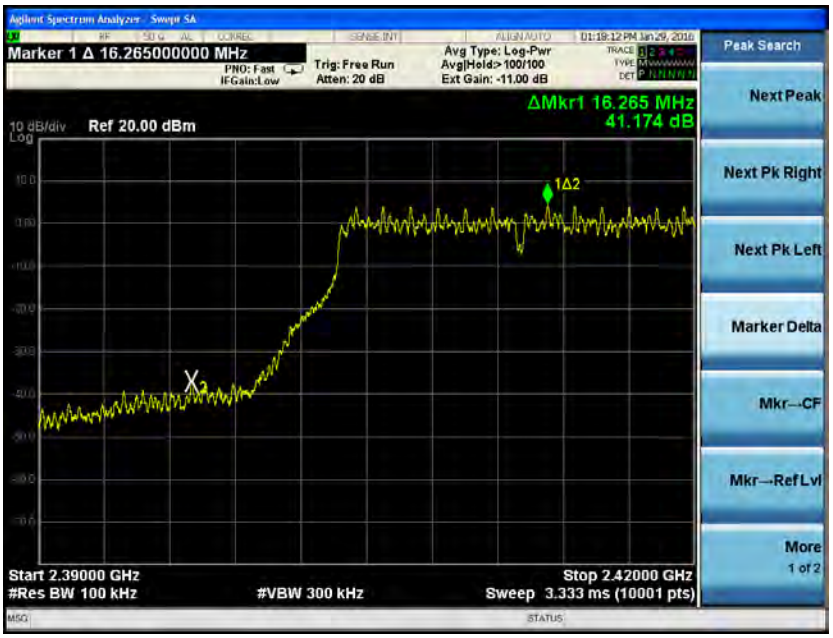
Upper Bandedge

802.11g – 6 Mbps

Lower Bandedge

Upper Bandedge

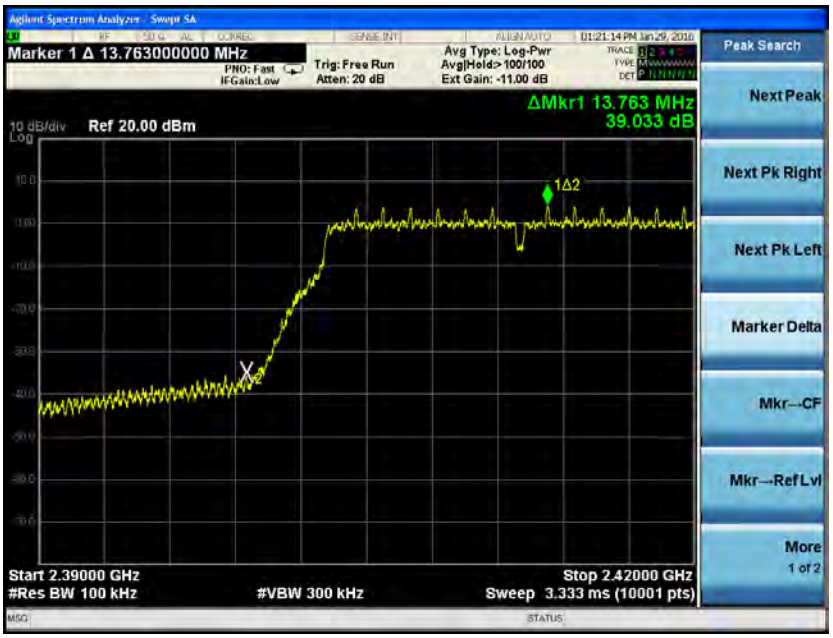
802.11g – 54 Mbps



Lower Bandedge

Upper Bandedge

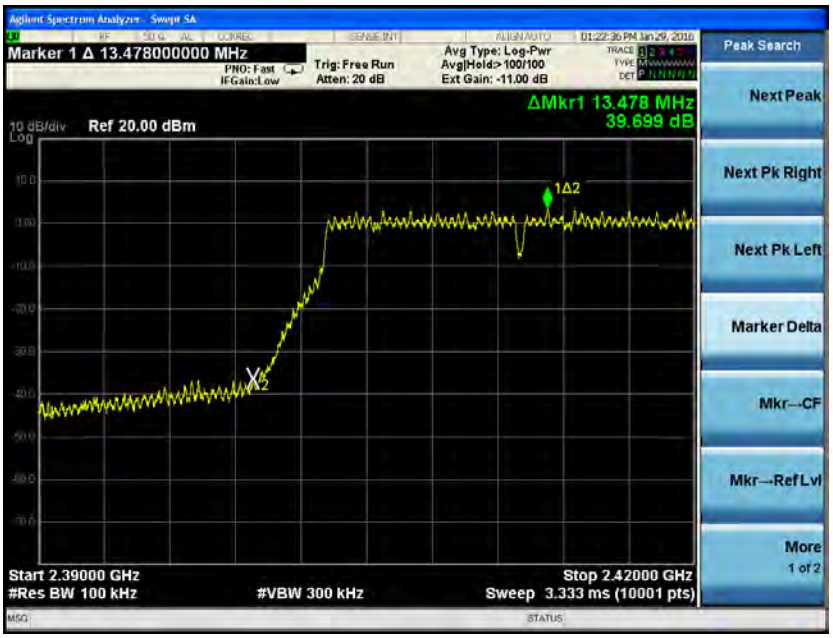
802.11n – MCS0



Lower Bandedge

Upper Bandedge

802.11n – MCS7

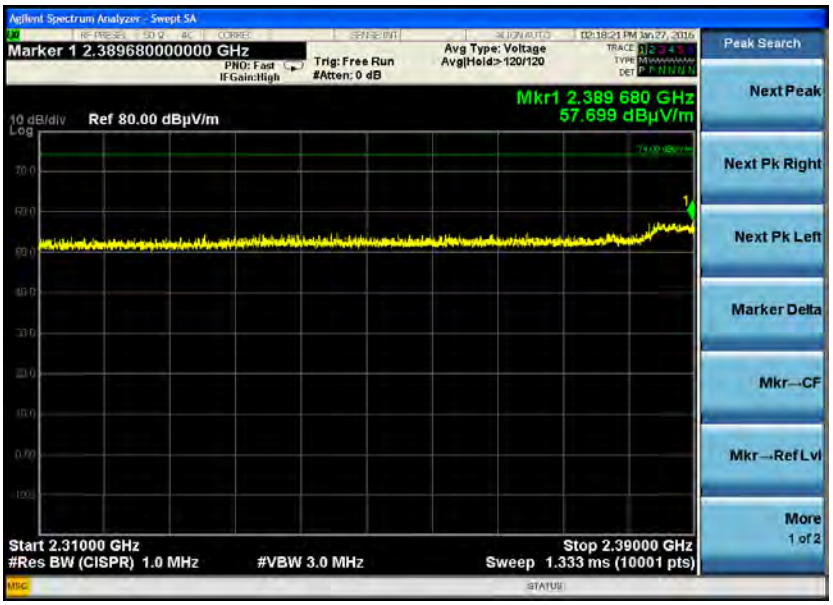


Lower Bandedge

Upper Bandedge

9.3.2 Bandedges in the 2310 MHz – 2390 MHz Restricted Band – Radiated Measurements

802.11b – 1 Mbps

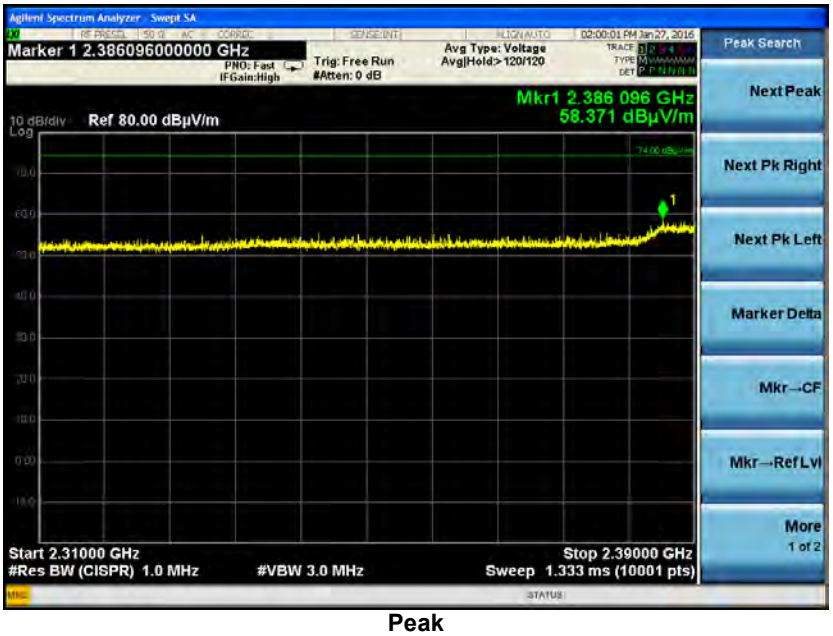


Peak

Average

Peak Frequency (MHz)	Peak (dBuV/m)	Peak limit (dBuV/m)	Peak Margin (B)	Average Frequency (MHz)	Average (dBuV/m)	Average limit (dBuV/m)	Average Margin (B)
2389.7	57.7	74.0	16.3	2390.0	49.3	54.0	4.7

802.11b – 11 Mbps

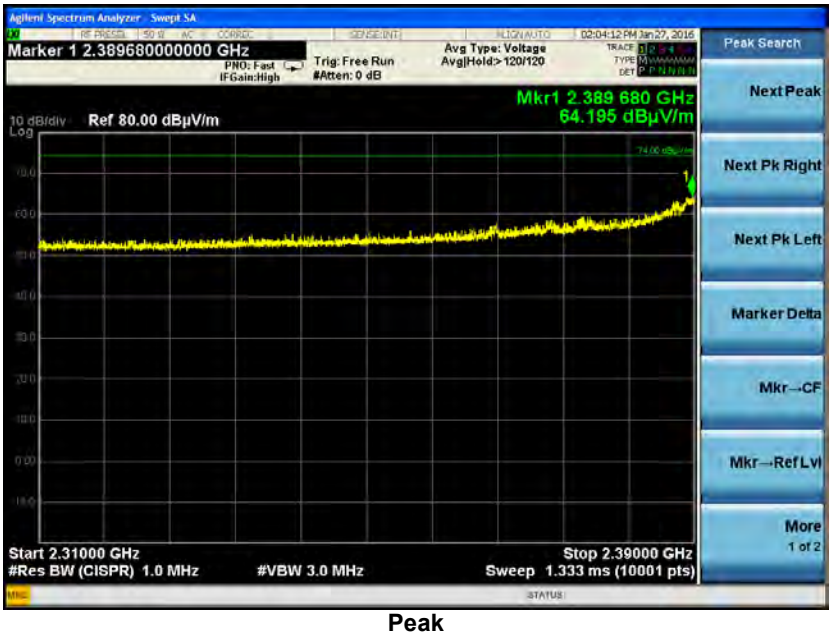


Peak

Average

Peak Frequency (MHz)	Peak (dBuV/m)	Peak limit (dBuV/m)	Peak Margin (B)	Average Frequency (MHz)	Average (dBuV/m)	Average limit (dBuV/m)	Average Margin (B)
2386.1	58.4	74.0	15.6	2487.5	46.7	54.0	7.3

802.11g – 6 Mbps

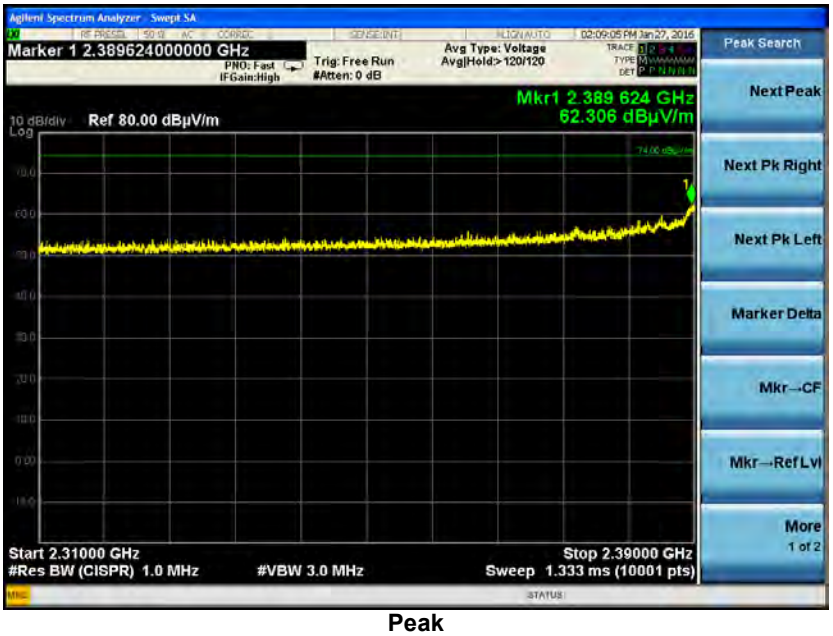


Peak

Average

Peak Frequency (MHz)	Peak (dBuV/m)	Peak limit (dBuV/m)	Peak Margin (B)	Average Frequency (MHz)	Average (dBuV/m)	Average limit (dBuV/m)	Average Margin (B)
2389.7	64.2	74.0	9.8	2390.0	51.3	54.0	2.7

802.11g – 54 Mbps

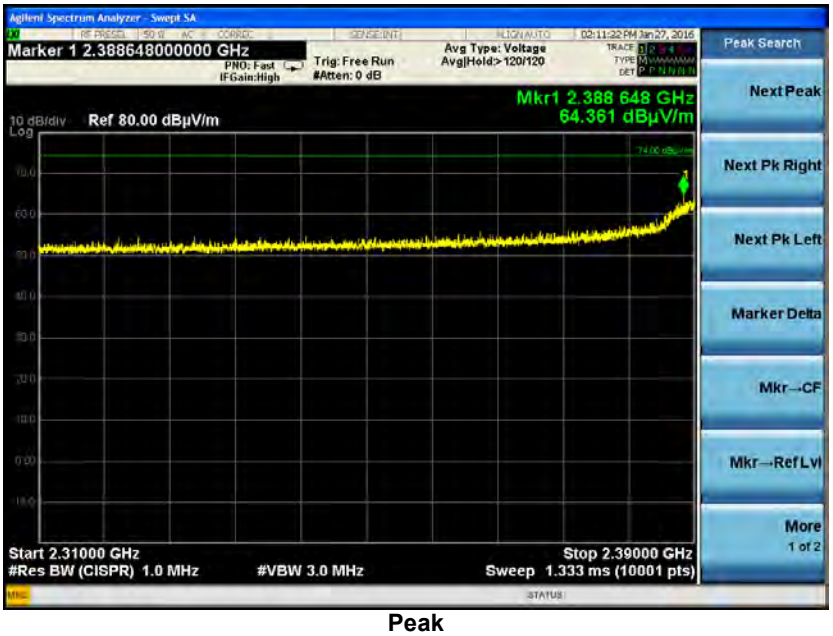


Peak

Average

Peak Frequency (MHz)	Peak (dBuV/m)	Peak limit (dBuV/m)	Peak Margin (B)	Average Frequency (MHz)	Average (dBuV/m)	Average limit (dBuV/m)	Average Margin (B)
2389.6	62.3	74.0	11.7	2390.0	47.6	54.0	6.4

802.11n – MCS0

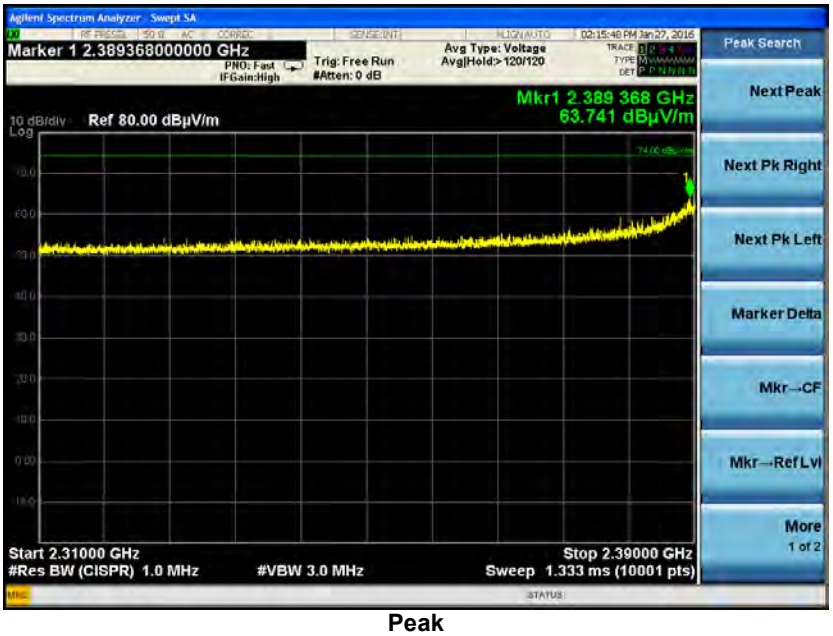


Peak

Average

Peak Frequency (MHz)	Peak (dBuV/m)	Peak limit (dBuV/m)	Peak Margin (B)	Average Frequency (MHz)	Average (dBuV/m)	Average limit (dBuV/m)	Average Margin (B)
2388.7	64.4	74.0	9.6	2390.0	49.6	54.0	4.4

802.11n – MCS7



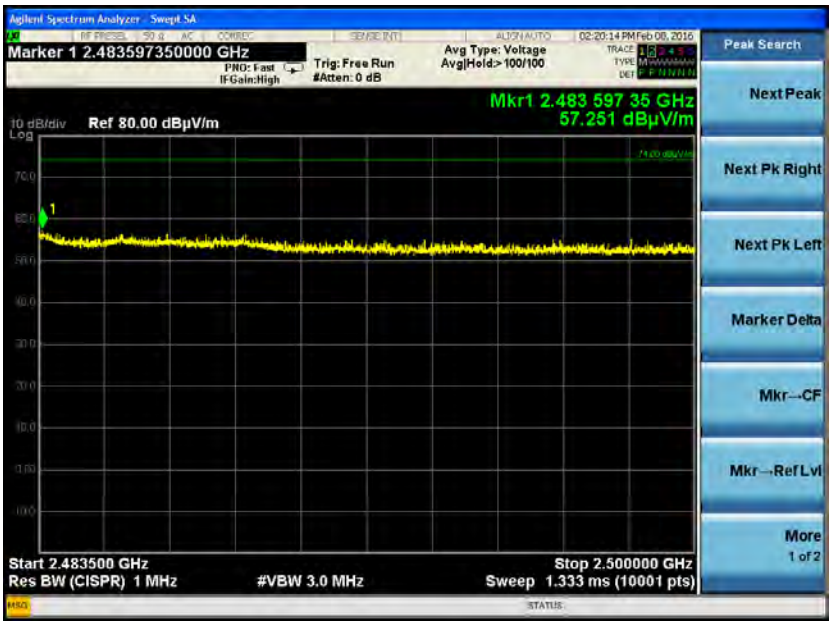
Peak

Average

Peak Frequency (MHz)	Peak (dBuV/m)	Peak limit (dBuV/m)	Peak Margin (B)	Average Frequency (MHz)	Average (dBuV/m)	Average limit (dBuV/m)	Average Margin (B)
2389.4	63.7	74.0	10.3	2390.0	47.9	54.0	6.1

9.3.2 Bandedges in the 2483.5 MHz – 2500 MHz Restricted Band – Radiated Measurements

802.11b – 1 Mbps

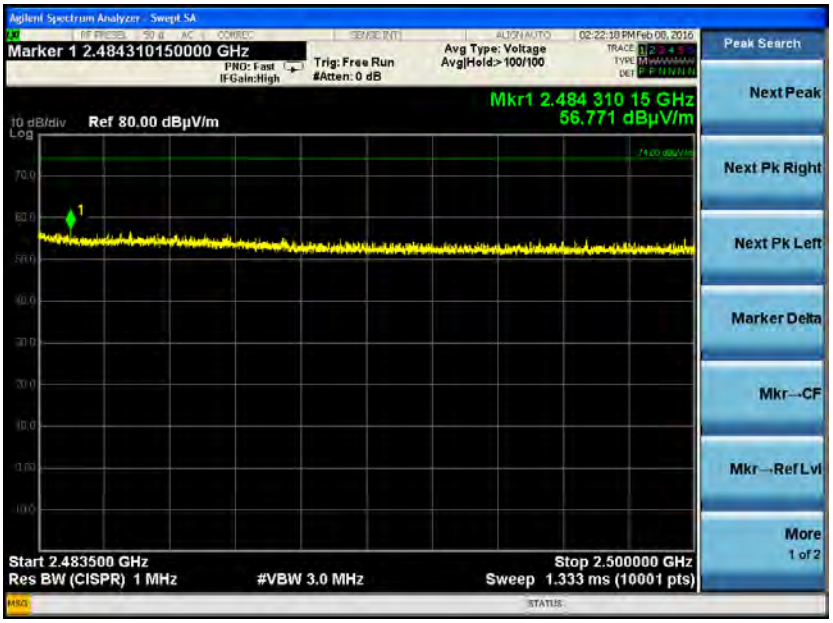


Peak

Average

Peak Frequency (MHz)	Peak (dBuV/m)	Peak limit (dBuV/m)	Peak Margin (B)	Average Frequency (MHz)	Average (dBuV/m)	Average limit (dBuV/m)	Average Margin (B)
2483.6	57.3	74.0	16.8	2483.5	49.4	54.0	4.6

802.11b – 11 Mbps



Peak

Average

Peak Frequency (MHz)	Peak (dBuV/m)	Peak limit (dBuV/m)	Peak Margin (B)	Average Frequency (MHz)	Average (dBuV/m)	Average limit (dBuV/m)	Average Margin (B)
2484.3	56.8	74.0	17.2	2483.5	46.0	54.0	8.0

802.11g – 6 Mbps

Peak

Average

Peak Frequency (MHz)	Peak (dBuV/m)	Peak limit (dBuV/m)	Peak Margin (B)	Average Frequency (MHz)	Average (dBuV/m)	Average limit (dBuV/m)	Average Margin (B)
2483.5	61.7	74.0	12.3	2483.5	49.0	54.0	5.0

802.11g – 54 Mbps

Pe ak

Average

Peak Frequency (MHz)	Peak (dBuV/m)	Peak limit (dBuV/m)	Peak Margin (B)	Average Frequency (MHz)	Average (dBuV/m)	Average limit (dBuV/m)	Average Margin (B)
2483.6	60.2	74.0	13.8	2483.5	46.8	54.0	7.2

802.11n – MCS0

Peak

Average

Peak Frequency (MHz)	Peak (dBuV/m)	Peak limit (dBuV/m)	Peak Margin (B)	Average Frequency (MHz)	Average (dBuV/m)	Average limit (dBuV/m)	Average Margin (B)
2483.8	62.2	74.0	11.8	2483.5	47.9	54.0	6.1

802.11n – MCS7

Peak

Average

Peak Frequency (MHz)	Peak (dBuV/m)	Peak limit (dBuV/m)	Peak Margin (B)	Average Frequency (MHz)	Average (dBuV/m)	Average limit (dBuV/m)	Average Margin (B)
2483.8	61.0	74.0	13.0	2483.5	46.6	54.0	7.4

EXHIBIT 10 Transmitter Spurious Emissions

<table>
<tr><td>Manufacturer</td><td colspan="4">Georgia-Pacific</td></tr>
<tr><td>Date(s)</td><td colspan="4">1/29/16, 2/1/15, 2/5/15</td></tr>
<tr><td>Test Engineer(s)</td><td colspan="4">Michael Hintzke
Coty Hammerer</td></tr>
<tr><td>Temp. / R.H.</td><td colspan="4">20 - 25º C / 30-60% R.H.</td></tr>
<tr><td>Rule Part</td><td colspan="4">FCC 15.247 (d) / RSS-247 Sect 5.5
FCC 15.209 / RSS-Gen Sect 8.9</td></tr>
<tr><td>Measurement Detectors</td><td>Conducted:
RBW = 100 kHz
VBW = ≥ 300 kHz</td><td colspan="2">Radiated:
30 MHz -1000 MHz
RBW = 120 kHz
VBW = ≥ 300 kHz</td><td>Radiated:
1 GHz -40 GHz
RBW = 1 MHz
VBW = ≥ 3 MHz</td></tr>
<tr><td rowspan="3">Description of Radiated Measurements</td><td colspan="2"><u>EUT Placement > 1 GHz</u>
150 cm height non-conductive table above reference ground plane covered with absorbers</td><td colspan="2"><u>EUT Placement > 1 GHz</u>
80 cm height non-conductive table above reference ground plane</td></tr>
<tr><td colspan="4">1. The antenna, cable, pre-amp, and other necessary measurement system correction factors are loaded onto the EMI receiver / spectrum analyzer when the measurements are performed. The data is gathered and reported as the corrected values.
2. The EUT is placed on a 150 cm non-conductive pedestal centered on a turn-table in the test location with the antenna 3 meters from the EUT.
3. Maximum radiated RF emissions are determined by rotation of azimuth and scanning the sense antenna between 1 and 4 meters in height using both horizontal and vertical antenna polarities. Maximized levels are manually noted at degree values of azimuth and at sense antenna height.</td></tr>
<tr><td>Biconical
30 MHz- 300 MHz</td><td>Log Periodic Dipole Array:
300 MHz -1000 MHz</td><td>Double-Ridged Waveguide Horn:
1 GHz -18 GHz</td><td>Standard Gain Horn:
18 GHz – 25 GHz</td></tr>
<tr><td>Example Calculations</td><td colspan="4">Reported Measurement data = Raw receiver measurement + Antenna Correction Factor + Cable factor (dB) - amplification factor (when applicable) + Additional factor (when applicable)</td></tr>
<tr><td>Additional Notes:</td><td colspan="4">• Continuous transmit, modulated EUT operation.
• The EUT was positioned in 3 orthogonal orientations.
• The EUT was measured at thermal equilibrium.
• The data rate of 1 Mbps was utilized for measurements in the following frequency ranges:
  • 30 MHz – 2310 MHz
  • 2500 MHz – 25 GHz
• The radiated screen captures provided are representative of the low, mid and high channels.</td></tr>
</table>

10.1 Method of Measurements

ANSI C63.10-2013 Sections 6.5 and 6.6
FCC KDB 558074 DTS Meas Guidance v03r04 Section 11

10.2 Limit

Conducted Measurement:

In any 100 kHz bandwidth outside the frequency band in which the digitally modulated intentional radiator is operating, the radio power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth that contains the highest level of the desired power.

Radiated Measurement:

The emissions from an intentional radiator shall not exceed the field strength levels of FCC 15.209.

Frequency (MHz)	3 m Limit (μV/m)	3 m Limit (dBμV/m)	Detector Type
30-88	100	40.0	Quasi-Peak
88-216	150	43.5	Quasi-Peak
216-960	200	46.0	Quasi-Peak
Above 960	500	54.0	Average (>1 GHz)

10.3 Test Data

10.3.1 Fundamental Emission in 100 kHz Bandwidth

Note: The fundamental emission measured in 100 kHz bandwidth is used to establish the limit of the conducted spurious emissions in 100 kHz bandwidth. These emissions were measured using the 1 Mbps data since produced the greatest output power.

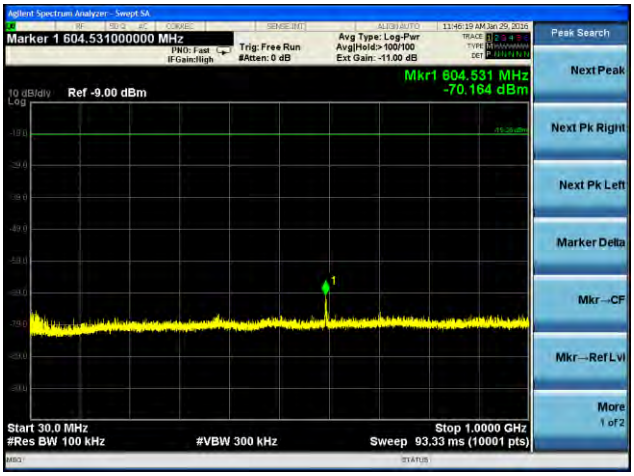
Low Channel

Middle Channel

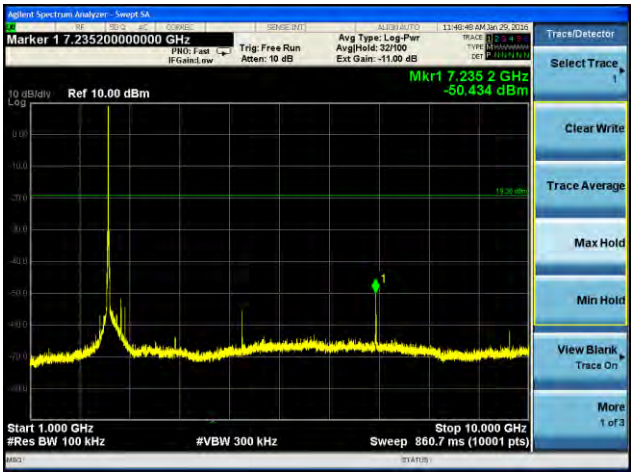
High Channel

10.3.2 Conducted Spurious Emissions in 100 kHz Bandwidth

Low Channel:



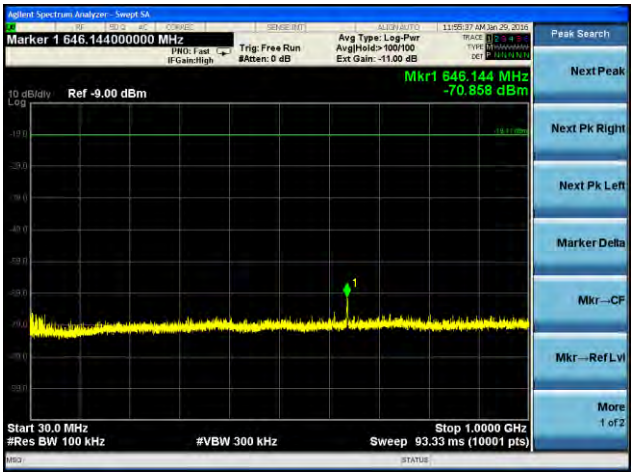
30 MHz – 1000 MHz



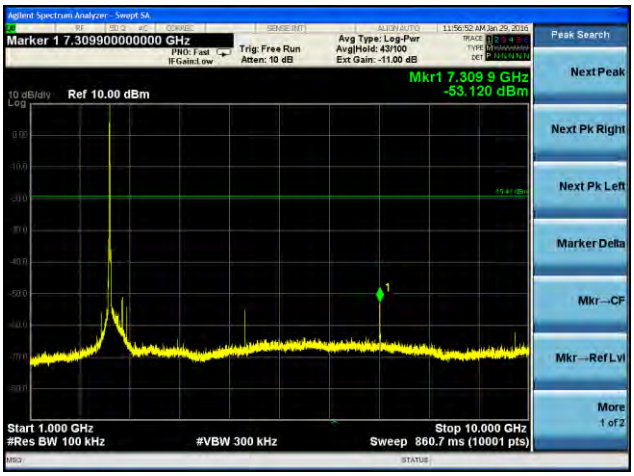
1000 MHz - 10000 MHz

10000 MHz – 25000 MHz

Middle Channel:



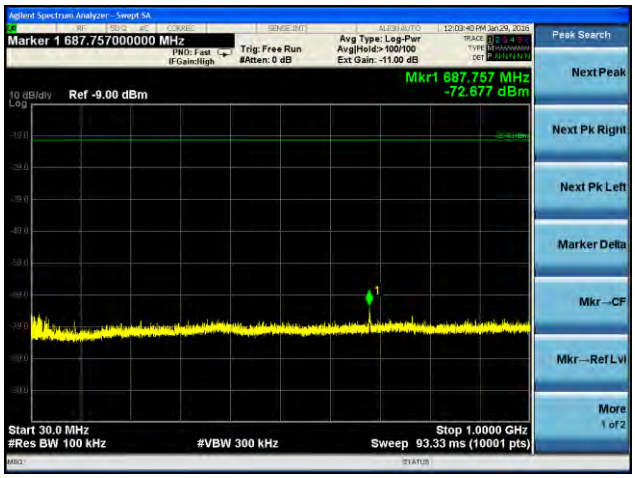
30 MHz – 1000 MHz



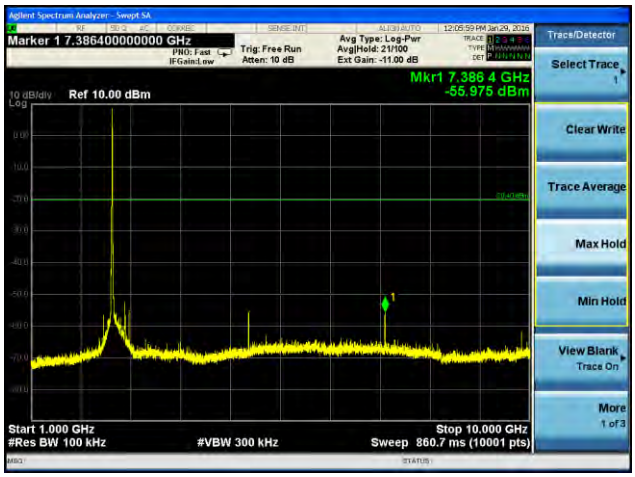
1000 MHz – 100 MHz

10000 MHz – 25000 MHz

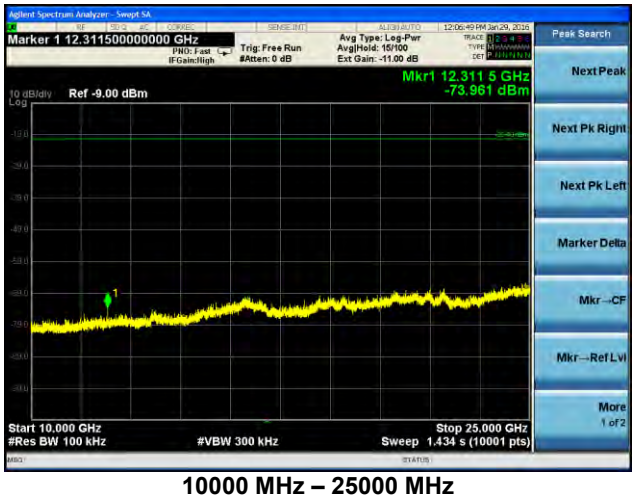
High Channel:



30 MHz – 1000 MHz



1000 MHz – 100 MHz



10000 MHz – 25000 MHz

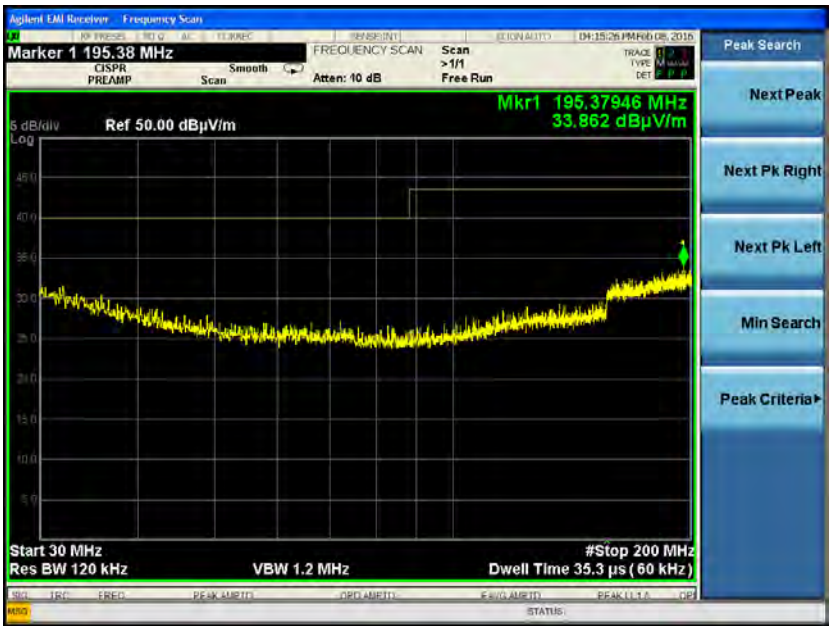
10.3.2 Radiated Spurious Emissions – 802.11

Data

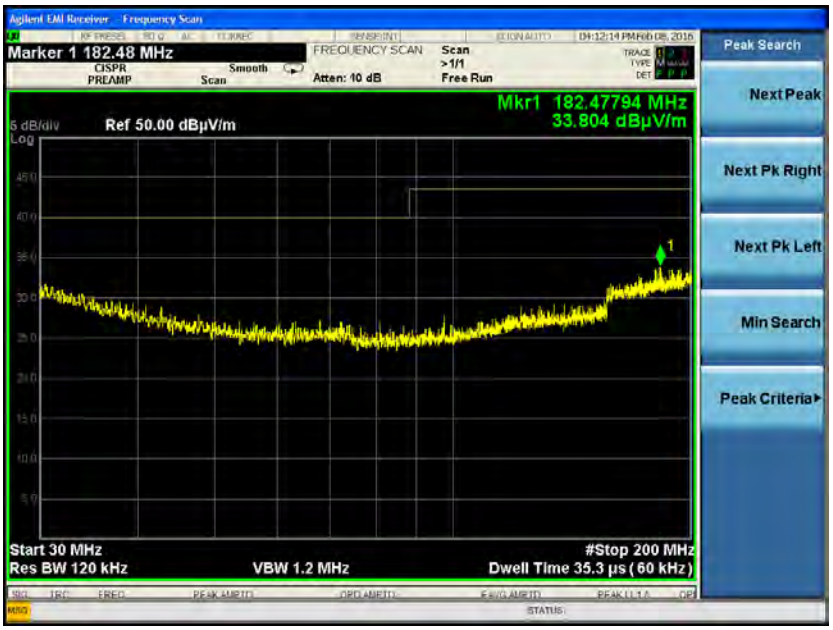
Frequency (MHz)	Height (m)	Azimuth (degree)	Peak Reading (dBµV/m)	Avg Reading (dBµV/m)	Avg Limit (dBµV/m)	Margin (dB)	Antenna Polarity	EUT orientation
4824	1.00	240	40.9	39.3	54	14.7	Horizontal	Flat
4874	1.09	142	49	42.7	54	11.3	Vertical	Vertical
4924	1.13	258	47.8	41.1	54	12.9	Horizontal	Flat
7311	2.98	158	54.5	48.6	54	5.4	Vertical	Flat
7386	1.05	138	55.3	49.4	54	4.6	Horizontal	Side
12060	2.30	275	50.5	48.7	54	5.3	Horizontal	Vertical
12185	1.98	222	53.2	44.6	54	9.4	Horizontal	Side
12310	2.00	113	51.4	40.5	54	13.5	Vertical	Vertical

Screen Captures

30 MHz - 200 MHz

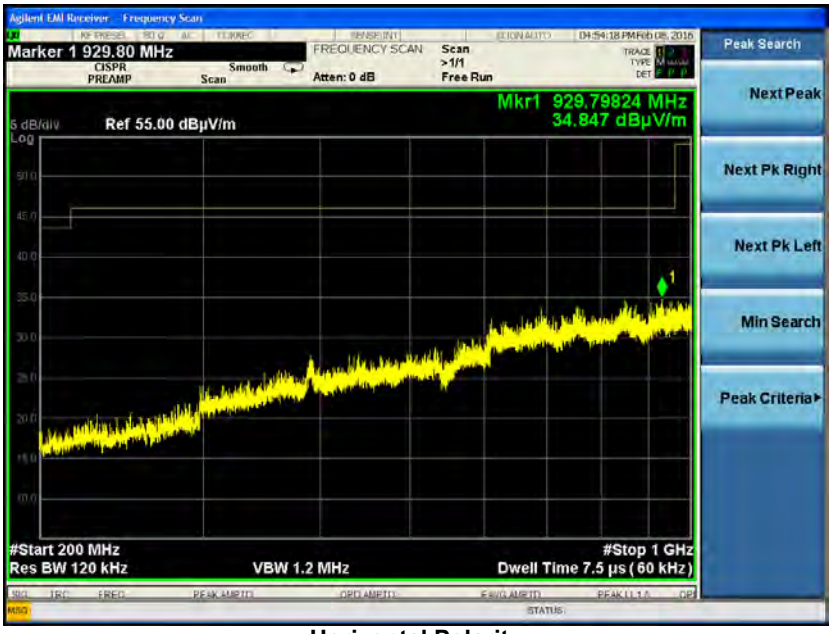


Horizontal Polarity

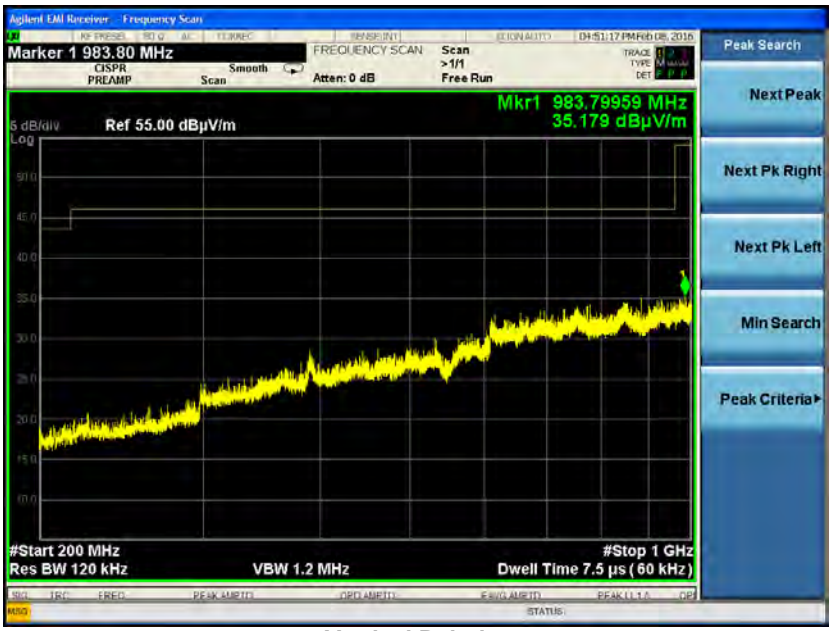


Vertical Polarity

200 MHz - 1000 MHz



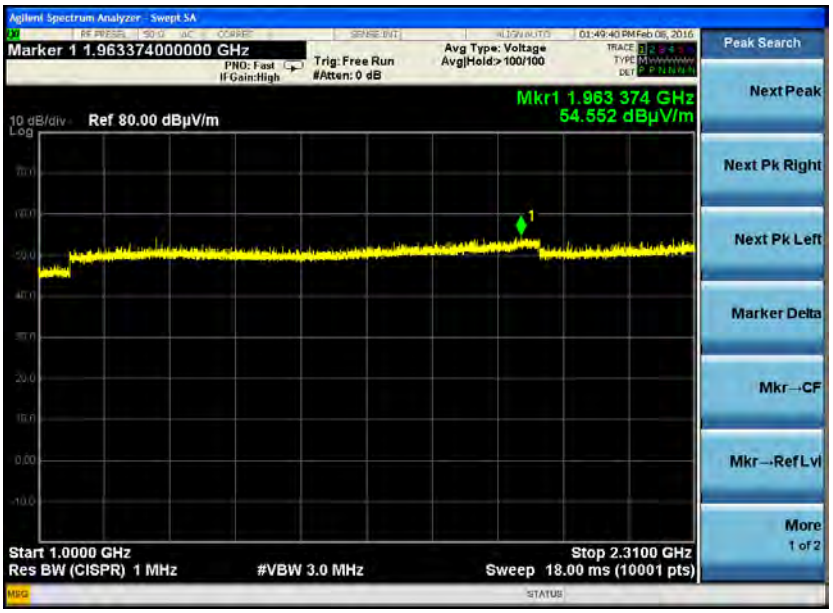
Horizontal Polarity



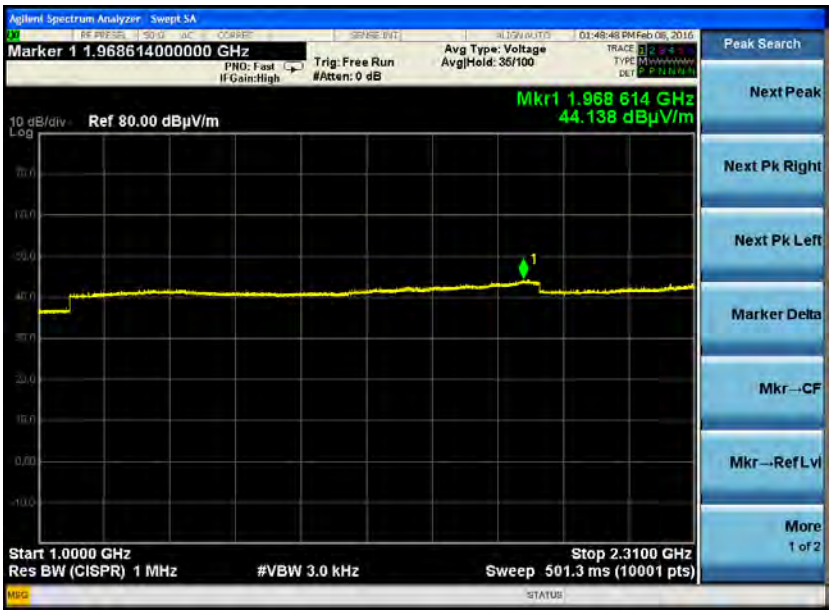
Vertical Polarity

Note: The screen captures above utilize the peak detector of the analyzer and were determined to be an appropriate representation of the spectrum scan. The plots shown below are not plots of maximized emissions.

1000 MHz - 2310 MHz



Peak



Reduced VBW

4000 MHz - 18000 MHz

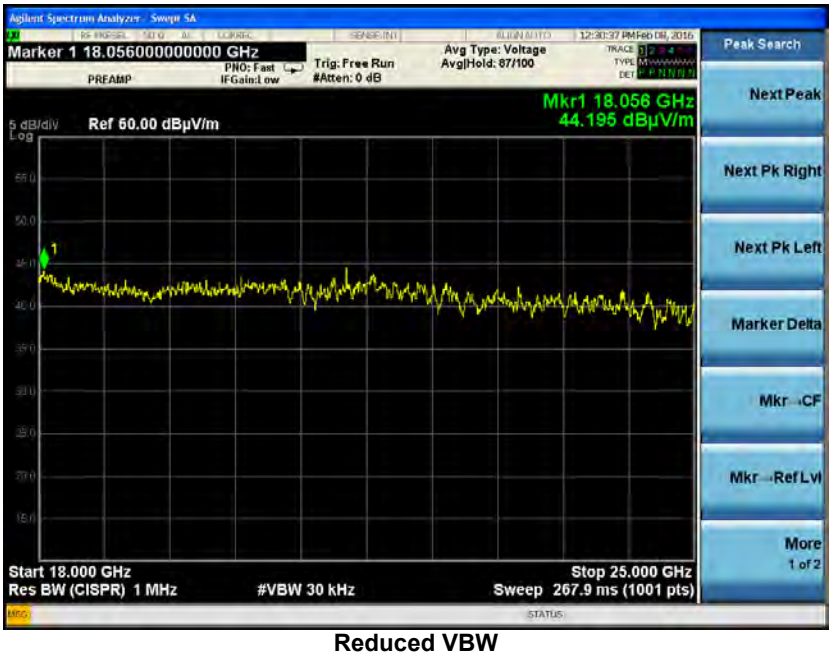
Low Channel

Mid Channel

High Channel

18000 MHz - 25000 MHz

1 Mbps

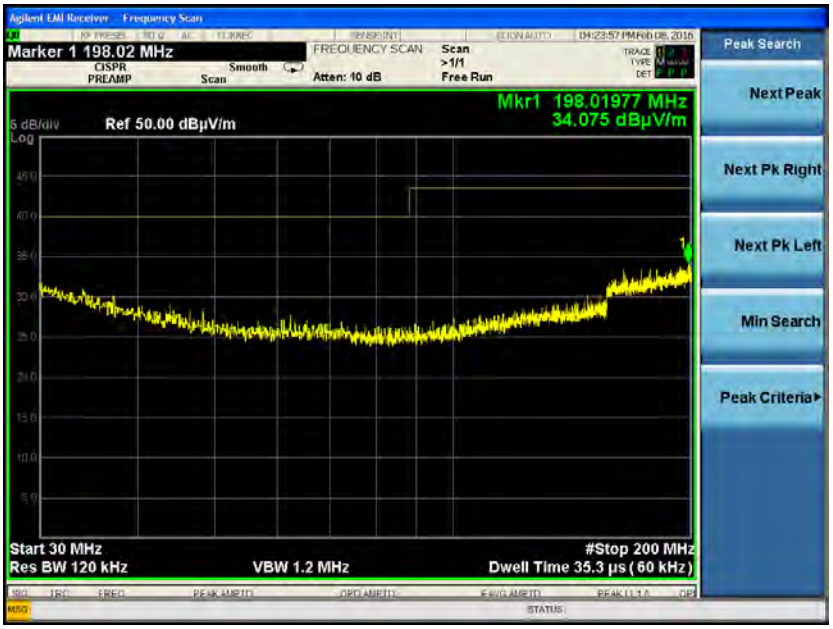


Reduced VBW

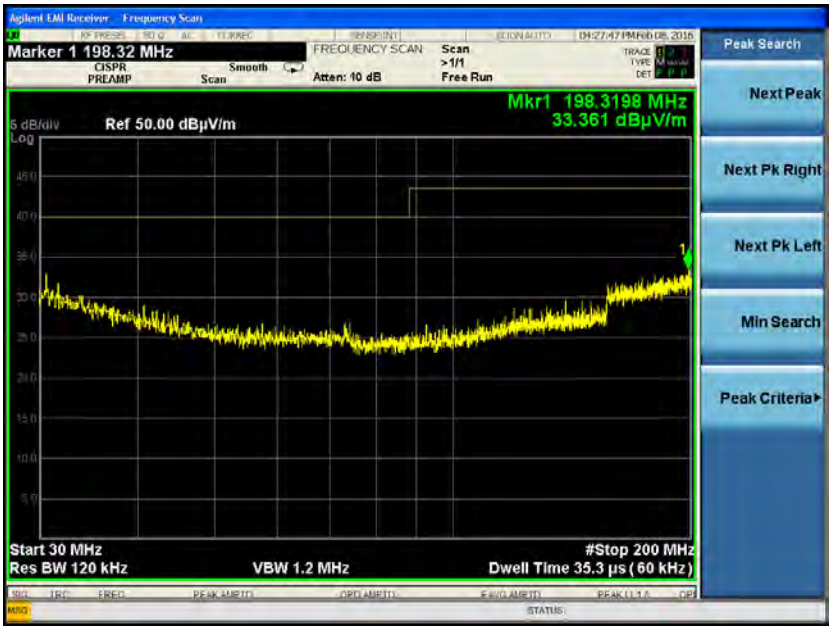
10.3.2 Radiated Spurious Emissions – BLE

Screen Captures

30 MHz - 200 MHz

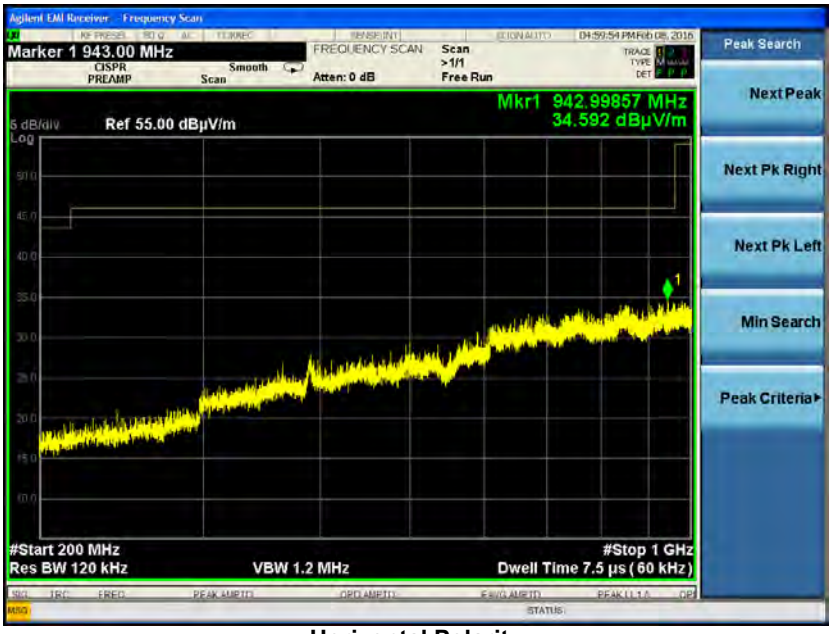


Horizontal Polarity

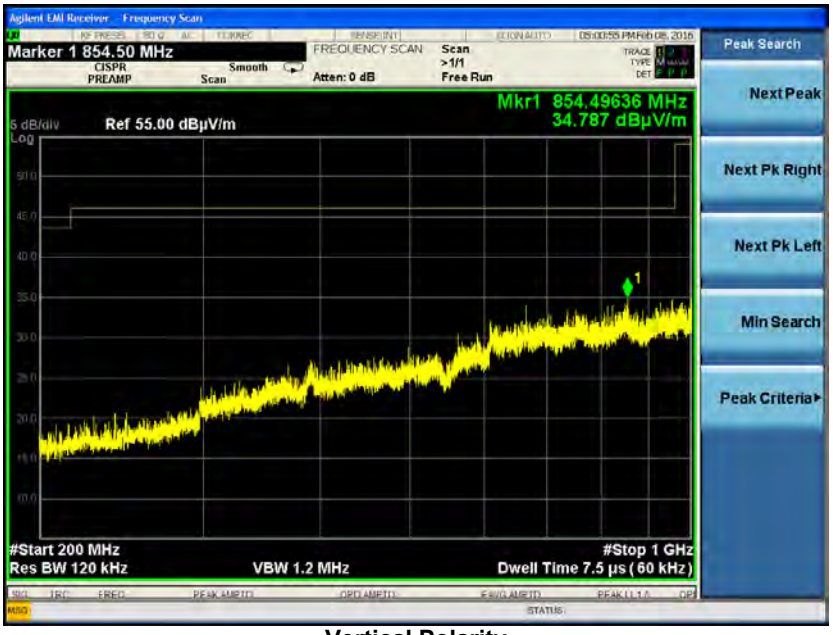


Vertical Polarity

200 MHz - 1000 MHz



Horizontal Polarity



Vertical Polarity

EXHIBIT 11 CONDUCTED AC LINE EMISSIONS

Manufacturer	Georgia-Pacific
Date	2/15/16, 2/16/16
Test Engineer	Michael Hintzke Shane Dock
Temp. / R.H.	20 - 25º C / 30-60% R.H.
Rule Part	FCC 15.207 RSS-Gen Sect 8.8
Measurement Procedure	ANSI C63.4 - 2014 ANSI C63.10 - 2013 Section 6.2
Test Voltage	3.3 VDC (BLE), 6.4 VDC (802.11)
EUT Placement	80 cm height non-conductive table, 40 cm from vertical ground plane
Detectors	Peak, Quasi-Peak, Average RBW = 9 kHz; VBW ≥ 27 kHz
Description of Measurement	• The LISN, cable, limiter, and other necessary measurement system correction factors are loaded onto the EMI receiver / spectrum analyzer when the measurements are performed. The data is gathered and reported as the corrected values. • The EUT is placed on a non-conductive pedestal at appropriate distance from ground planes and plugged into LISN. The LISN used has the ability to terminate the unused port with a 50Ω (ohm) load when switched to either L1 (line) or L2 (neutral). • Maximum emissions are determined with peak detector and measurements at select points are made with quasi-peak and average detectors. Results are recorded and compared to limit.
Example Calculations	Reported Measurement data = Raw receiver measurement + LISN Factor + Cable factor (dB) + Additional factor (when applicable)
Additional Notes	• Continuous transmit modulated EUT operation • There was no significant difference between transmit channels

11.1 - Method of Measurements

ANSI C63.4 - 2014
ANSI C63.10 - 2013 Section 6.2

11.2 Limits

Frequency Range (MHz)	Class B Limits (dBµV)	
	Quasi-Peak	Average
0.150 -0.50 *	66-56	56-46
0.5 – 5.0	56	46
5.0 – 30	60	50
* The limit decreases linearly with the logarithm of the frequency in this range.		

11.3 Test Data

Note: The emissions listed are characteristic of the EUT power supply used and not that of the transmitter. Changing transmit channels did not change the emissions.

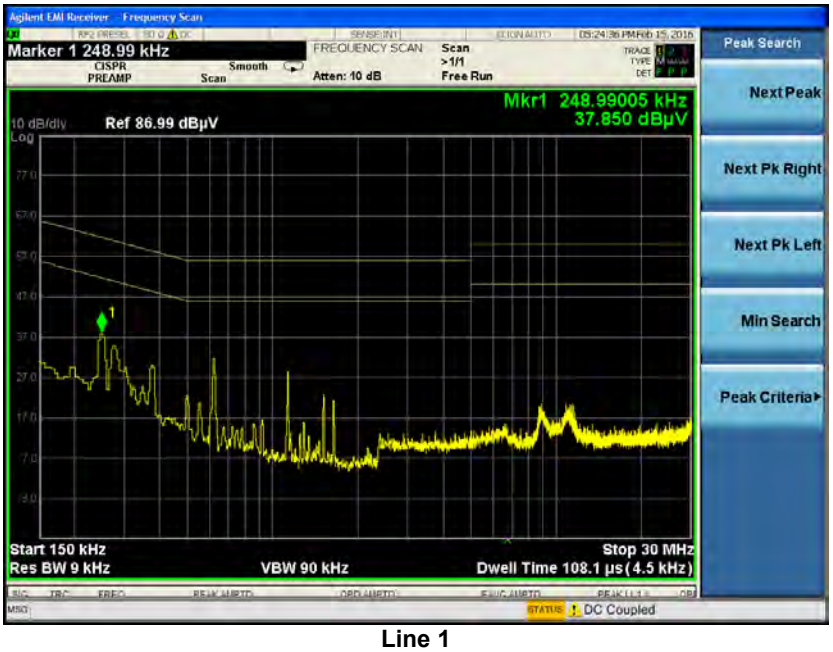
Line	Frequency (MHz)	Q-Peak Reading (dBµV)	Q-Peak Limit (dBµV)	Quasi-Peak Margin (dB)	Average Reading (dBµV)	Average Limit (dBµV)	Average Margin (dB)
1	0.250	39.0	61.8	22.8	36.2	51.8	15.6
1	0.275	36.3	61.0	24.7	31.5	51.0	19.5
1	0.622	31.0	56.0	25.0	25.2	46.0	20.8
2	0.248	28.6	61.8	33.2	25.3	51.8	26.5
2	0.275	25.8	61.0	35.2	23.2	51.0	27.8
2	0.622	31.5	56.0	24.5	25.5	46.0	20.5

3.3 VDC

Line	Frequency (MHz)	Q-Peak Reading (dBµV)	Q-Peak Limit (dBµV)	Quasi-Peak Margin (dB)	Average Reading (dBµV)	Average Limit (dBµV)	Average Margin (dB)
1	0.150	38.3	66.0	27.7	26.4	56.0	29.6
1	0.271	32.6	61.1	28.5	23.6	51.1	27.5
1	1.000	38.2	56.0	17.8	36.6	46.0	9.4
2	0.181	45.3	64.4	19.1	33.8	54.4	20.6
2	0.195	42.5	63.8	21.3	33.4	53.8	20.4
2	1.000	44.7	56.0	11.3	43.1	46.0	2.9

6.4 VDC

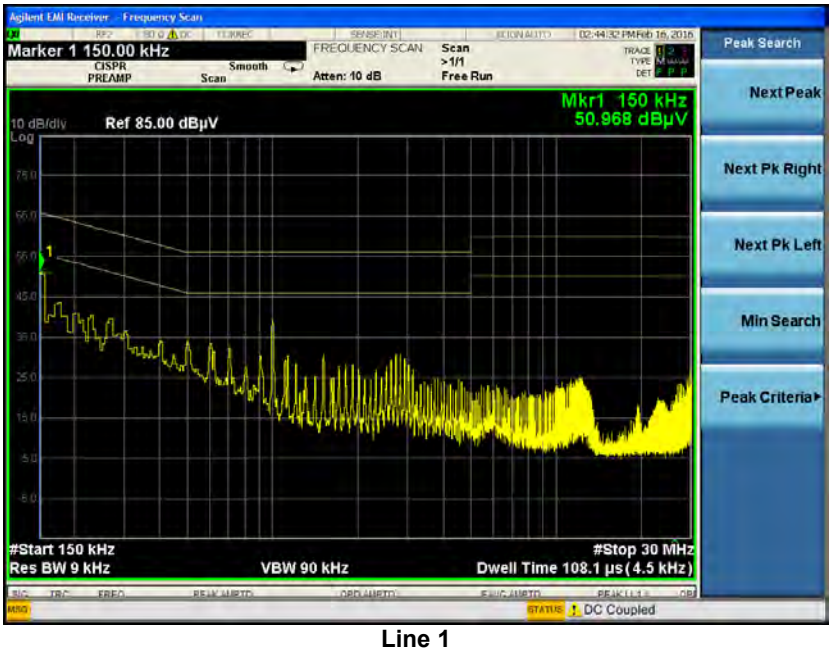
3.3 VDC



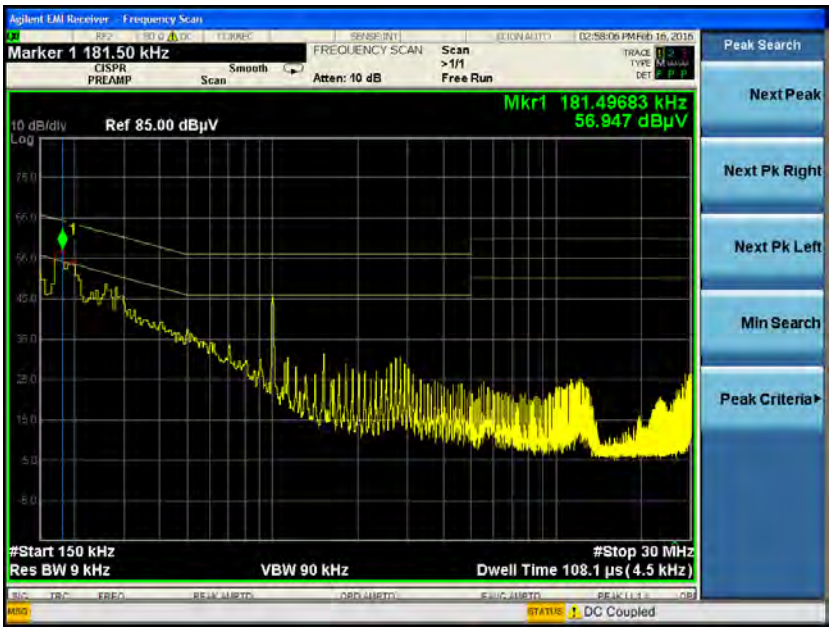
Line 1

Line 2

6.4 VDC



Line 1



Line 2

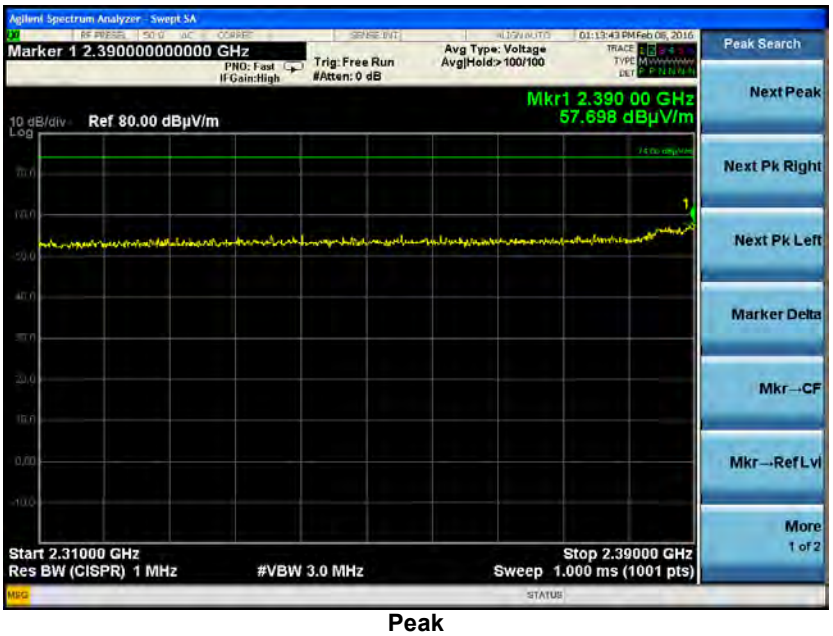
EXHIBIT 12 CO-EXISTENCE MEASUREMENTS

Manufacturer	Georgia-Pacific
Date	2/5/16, 2/8/16
Test Engineer	Michael Hintzke Coty Hammerer
Temp. / R.H.	20 - 25º C / 30-60% R.H.
Rule Part	FCC 15.209 FCC 15.205
Measurement Detectors	Radiated: RBW = 1 MHz VBW = ≥ 3 MHz
Description of Radiated Measurements	1. The antenna, cable, pre-amp, and other necessary measurement system correction factors are loaded onto the EMI receiver / spectrum analyzer when the measurements are performed. The data is gathered and reported as the corrected values. 2. The EUT is placed on a 150 cm non-conductive pedestal centered on a turn-table in the test location with the antenna 3 meters from the EUT. 3. Maximum radiated RF emissions are determined by rotation of azimuth and scanning the sense antenna between 1 and 4 meters in height using both horizontal and vertical antenna polarities. Maximized levels are manually noted at degree values of azimuth and at sense antenna height.
Example Calculations	Reported Measurement data = Raw receiver measurement + Antenna Correction Factor + Cable factor (dB) - amplification factor (when applicable) + Additional factor (when applicable)
Additional Notes	• Co-existence measurements were performed when both 802.11 and Bluetooth transmitters were programmed to operate simultaneously at the same frequency. • Radiated bandedge measurements were performed at the following data rates: 1 Mbps, 6 Mbps and MCS0. • Radiated transmitter spurious emissions within the FCC 15.205 restricted bands were investigated at 1 Mbps.

12.1 Test Data

12.1.1 2310 MHz – 2390 Restricted Band Test Data

1 Mbps

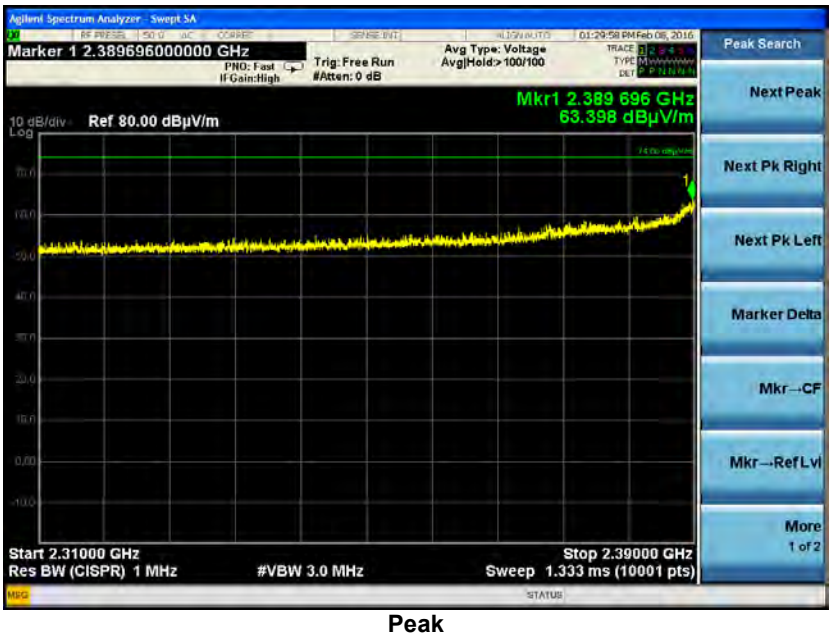


Peak

Average

Peak Frequency (MHz)	Peak (dBuV/m)	Peak limit (dBuV/m)	Peak Margin (dB)	Average Frequency (MHz)	Average (dBuV/m)	Average limit (dBuV/m)	Average Margin (dB)
2390.0	57.7	74.0	16.3	2390.0	47.5	54.0	6.5

6 Mbps

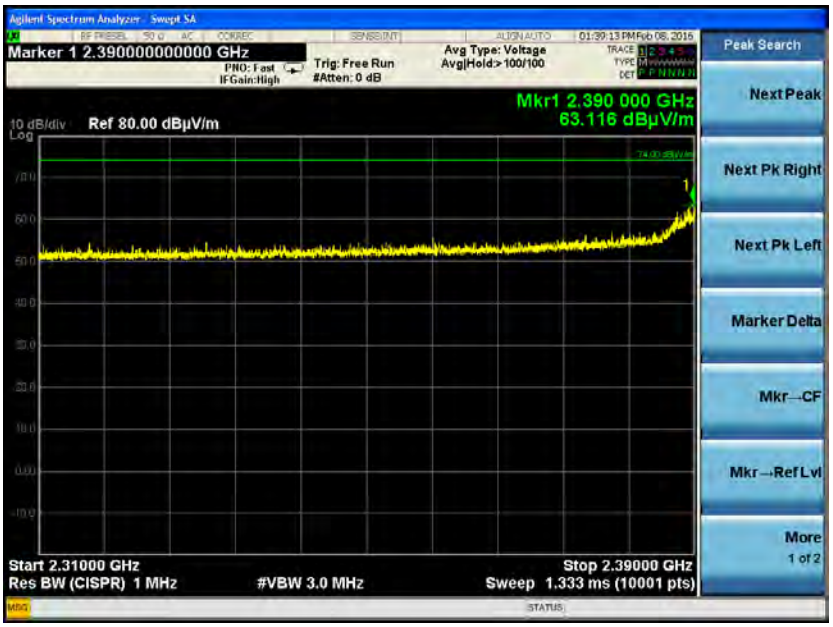


Peak

Average

Peak Frequency (MHz)	Peak (dBuV/m)	Peak limit (dBuV/m)	Peak Margin (dB)	Average Frequency (MHz)	Average (dBuV/m)	Average limit (dBuV/m)	Average Margin (dB)
2389.7	63.4	74.0	10.6	2390.0	50.4	54.0	3.6

MCS0



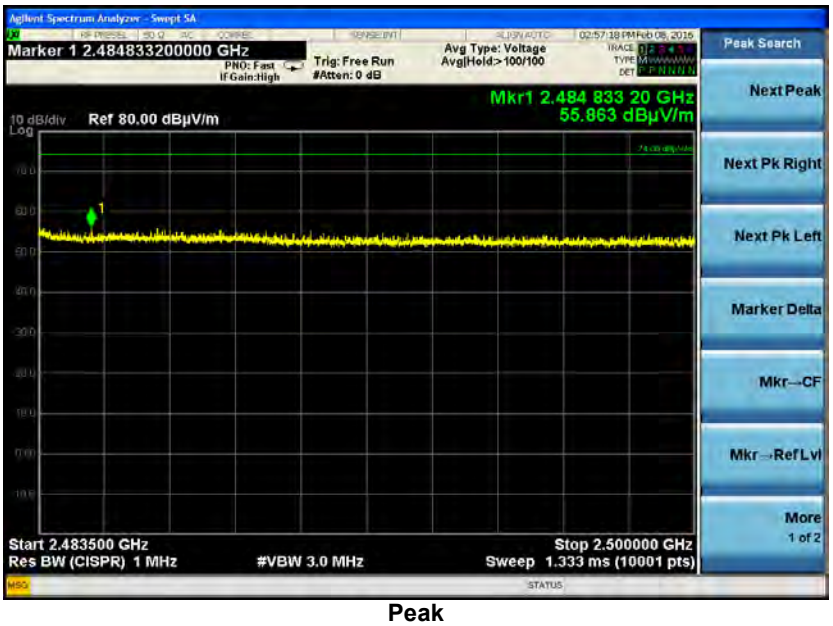
Peak

Average

Peak Frequency (MHz)	Peak (dBuV/m)	Peak limit (dBuV/m)	Peak Margin (dB)	Average Frequency (MHz)	Average (dBuV/m)	Average limit (dBuV/m)	Average Margin (dB)
2390.0	63.1	74.0	10.9	2390.0	48.1	54.0	5.9

12.1.2 2483.5 MHz – 2500 Restricted Band Test Data

1 Mbps

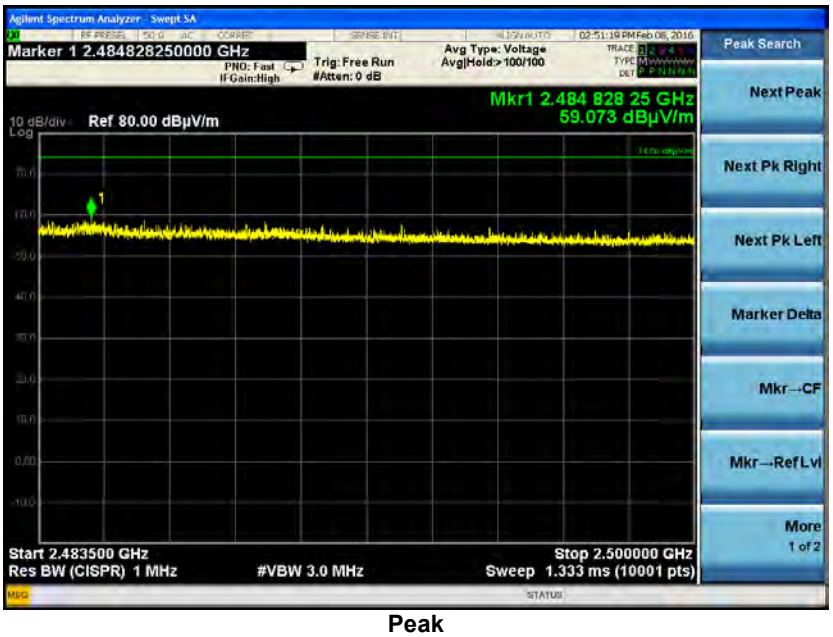


Peak

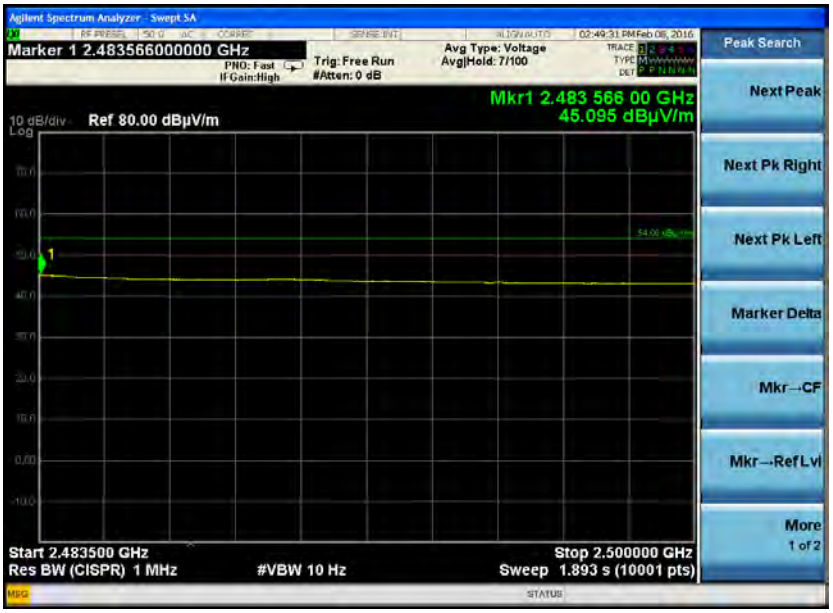
Average

Peak Frequency (MHz)	Peak (dBuV/m)	Peak limit (dBuV/m)	Peak Margin (dB)	Average Frequency (MHz)	Average (dBuV/m)	Average limit (dBuV/m)	Average Margin (dB)
2483.8	55.9	74.0	18.1	2483.5	46.3	54.0	7.7

6 Mbps



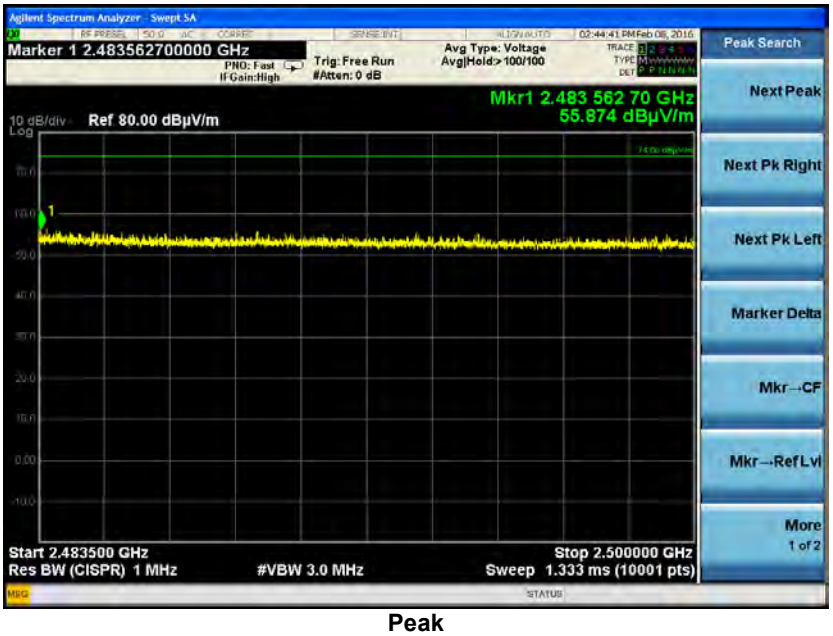
Peak



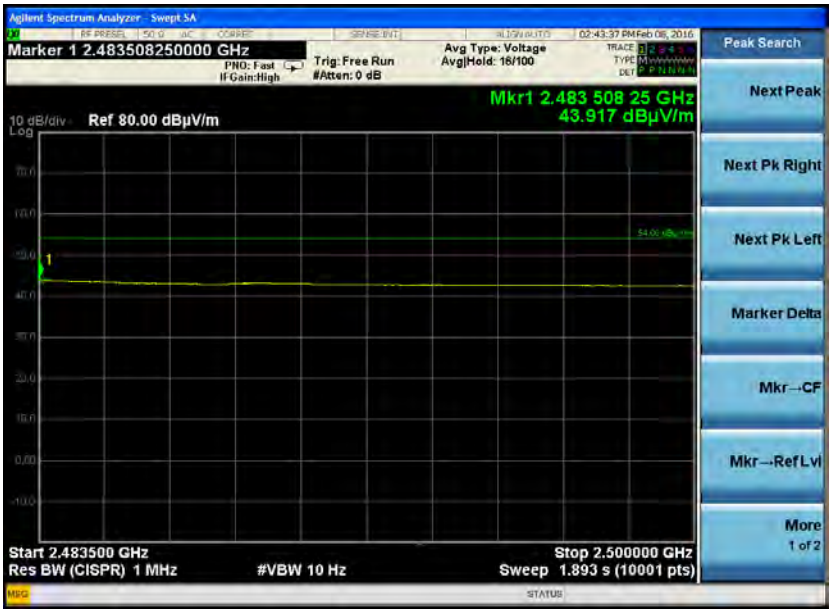
Average

Peak Frequency (MHz)	Peak (dBuV/m)	Peak limit (dBuV/m)	Peak Margin (dB)	Average Frequency (MHz)	Average (dBuV/m)	Average limit (dBuV/m)	Average Margin (dB)
2484.8	59.1	74.0	14.9	2483.6	45.1	54.0	8.9

MCS0 Mbps



Peak



Average

Peak Frequency (MHz)	Peak (dBuV/m)	Peak limit (dBuV/m)	Peak Margin (dB)	Average Frequency (MHz)	Average (dBuV/m)	Average limit (dBuV/m)	Average Margin (dB)
2483.6	55.9	74.0	18.1	2483.5	43.9	54.0	10.1

12.1.2 Transmitter Radiated Spurious Emissions

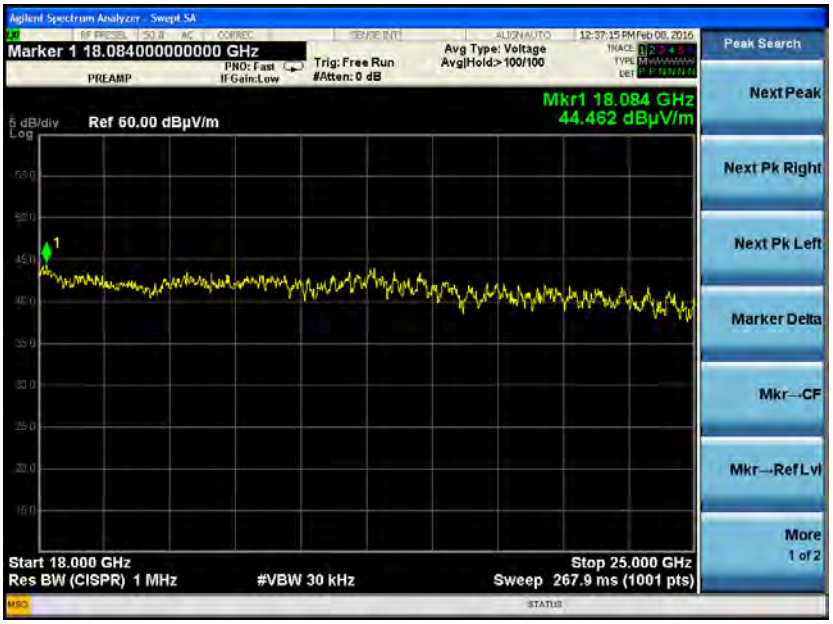
Low Channel – 2412 MHz

4 GHz – 18 GHz

18 GHz – 25 GHz

High Channel – 2462 MHz

4 GHz – 18 GHz



18 GHz – 25 GHz

EXHIBIT 13 BLE TRANSMITTER RADIATED SPURIOUS EMISSIONS

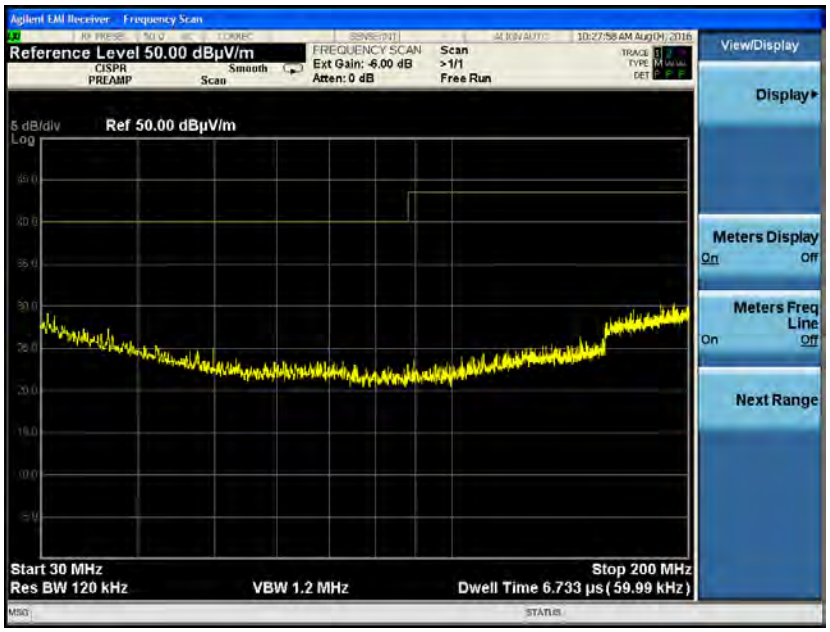
Manufacturer	Georgia-Pacific
Date	2/8/16, 8/4/16, 8/11/16
Test Engineer	Michael Hintzke Kim Bay
Temp. / R.H.	20 - 25º C / 30-60% R.H.
Rule Part	FCC 15.209 FCC 15.205
Measurement Detectors	Radiated: RBW = 1 MHz VBW = ≥ 3 MHz
Description of Radiated Measurements	4. The antenna, cable, pre-amp, and other necessary measurement system correction factors are loaded onto the EMI receiver / spectrum analyzer when the measurements are performed. The data is gathered and reported as the corrected values. 5. The EUT is placed on a non-conductive pedestal (80 cm for f < 1GHz; 150 cm for f > 1GHz) centered on a turn-table in the test location with the antenna 3 meters from the EUT. 6. Maximum radiated RF emissions are determined by rotation of azimuth and scanning the sense antenna between 1 and 4 meters in height using both horizontal and vertical antenna polarities. Maximized levels are manually noted at degree values of azimuth and at sense antenna height.
Example Calculations	Reported Measurement data = Raw receiver measurement + Antenna Correction Factor + Cable factor (dB) - amplification factor (when applicable) + Additional factor (when applicable)
Additional Notes	• Radiated spurious emissions were investigated in 3 orthogonal EUT orientations at the low, middle and high channels of the transmitter operation. • Radiated bandedge measurements were performed to demonstrate compliance to the restricted bands of operation specified in 15.205.

13.1 Test Data

Frequency (MHz)	Height (m)	Azimuth (degree)	Peak Reading (dBµV/m)	Avg Reading (dBµV/m)	Avg Limit (dBµV/m)	Margin (dB)	Antenna Polarity	EUT orientation
4806	2.59	0	45.2	36.5	54.0	17.5	Horizontal	Side
4882	2.52	0	44.7	36.5	54.0	17.5	Horizontal	Side
4958	1.57	0	45.4	37.6	54.0	16.4	Horizontal	Side

13.2 Screen Captures

13.2.1 30 MHz – 200 MHz

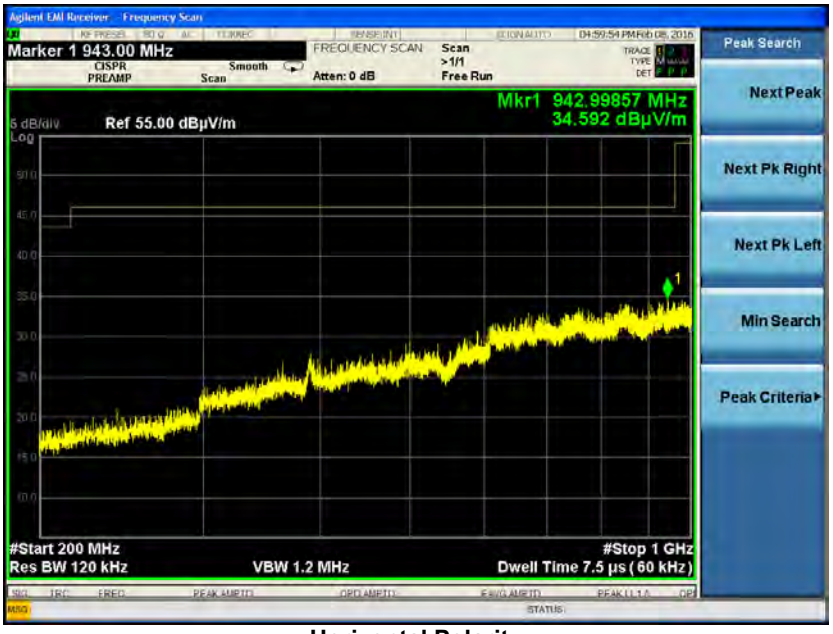


Horizontal Polarity

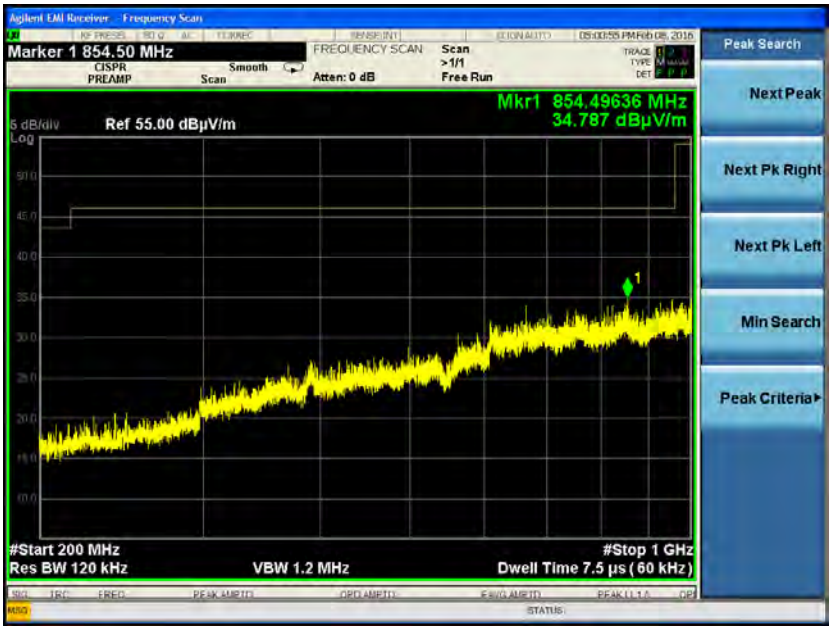
Vertical Polarity

Note: The above screen captures are representative of each channel and EUT orientation investigated.

13.2.2 200 MHz – 1000 MHz



Horizontal Polarity



Vertical Polarity

Note: The above screen captures are representative of each channel and EUT orientation investigated.

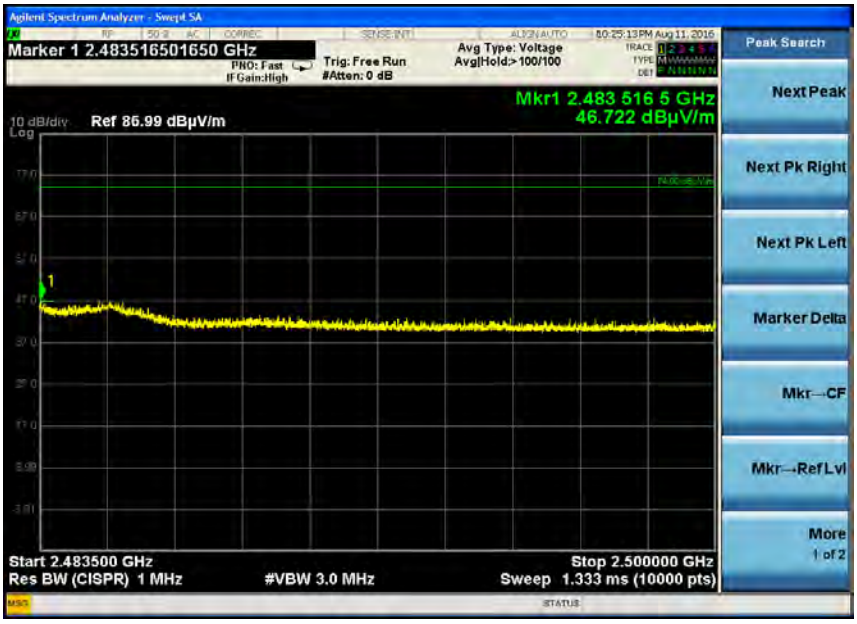
13.2.3 1000 MHz – 2310 MHz

Horizontal Polarity

Vertical Polarity

Note: The above screen captures are representative of each channel and EUT orientation investigated.

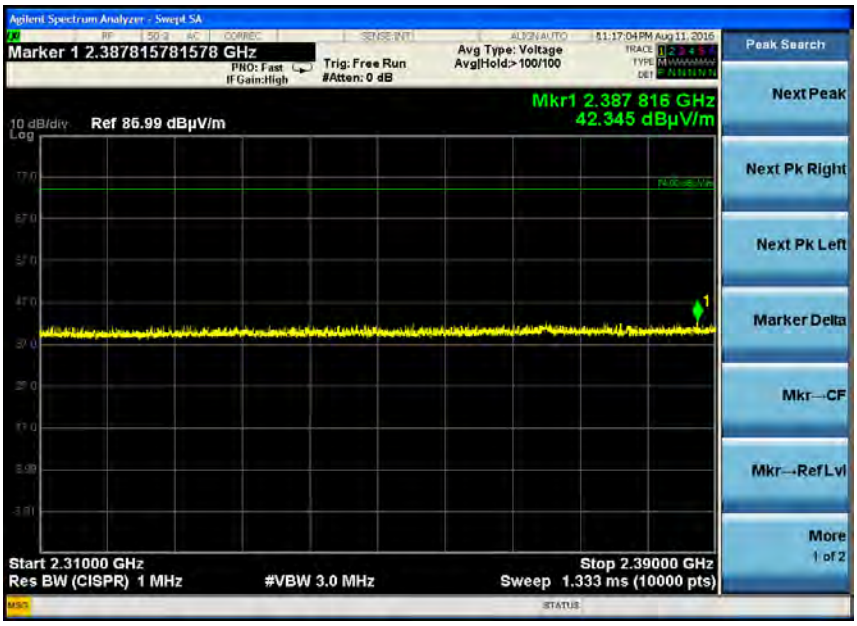
13.2.4 2310 MHz - 2390 MHz Restricted Band



Peak

Average

13.2.5 2483.5 MHz - 2500 MHz Restricted Band

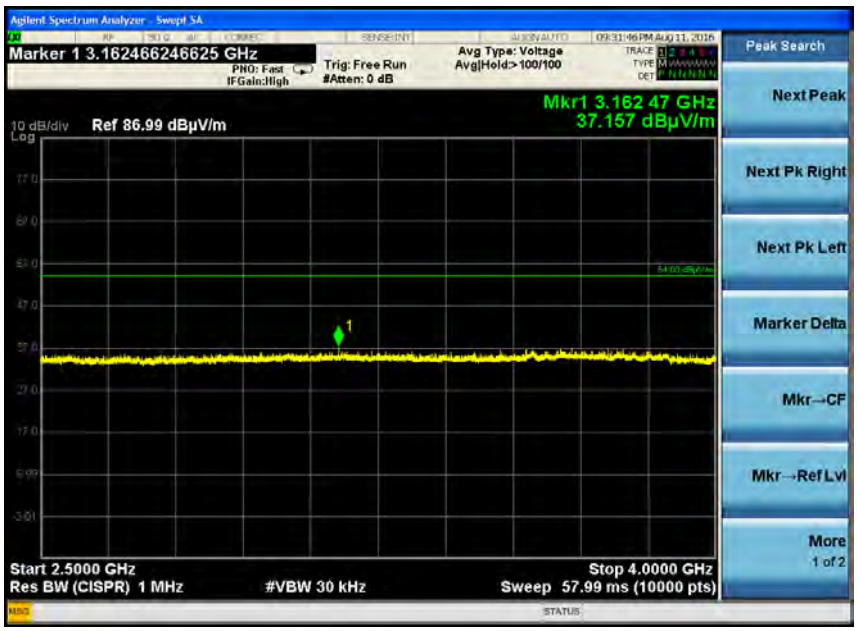


Peak

Average

13.2.6 2500 MHz - 4000 MHz

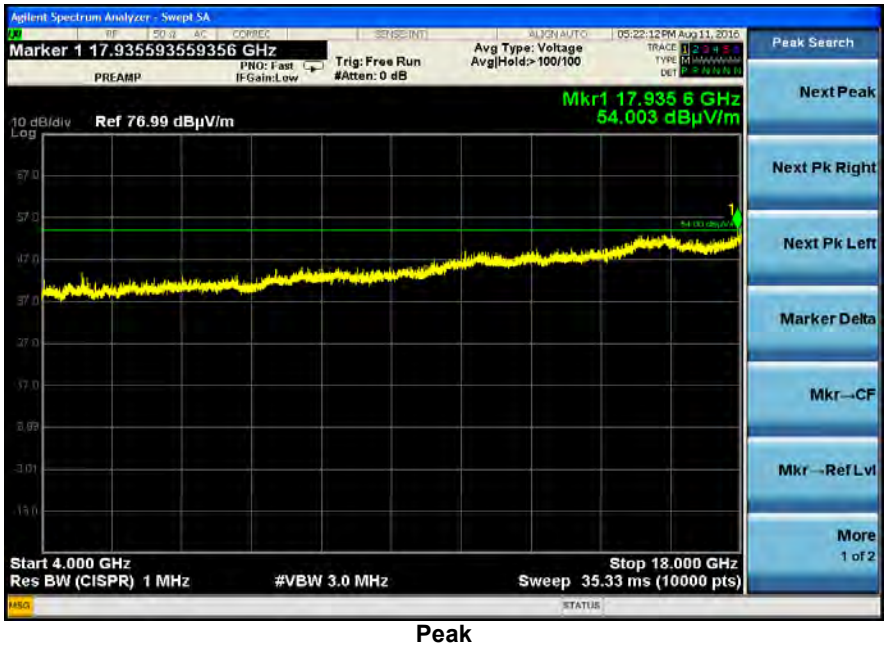
Horizontal Polarity



Vertical Polarity

Note: The above screen captures are representative of each channel and EUT orientation investigated.

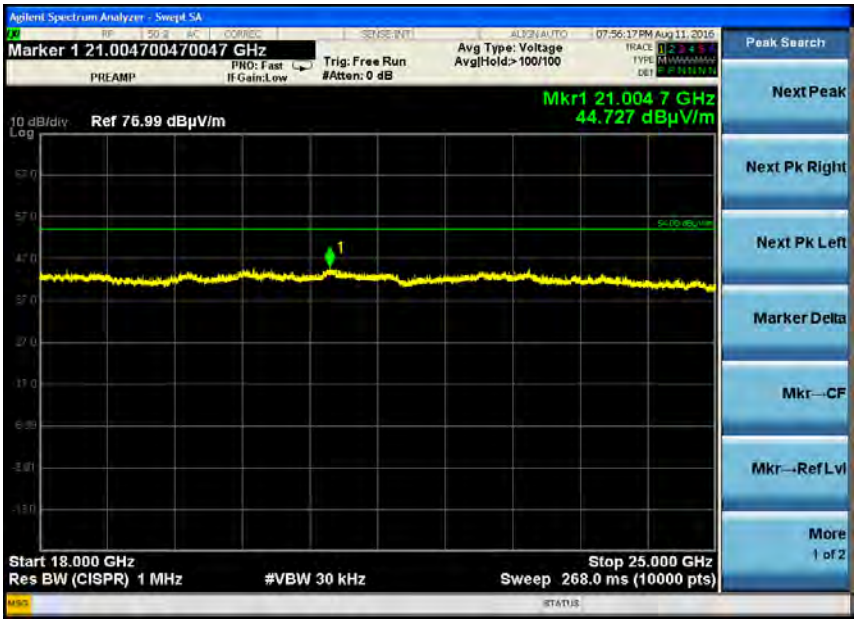
13.2.7 4000 MHz - 18000 MHz



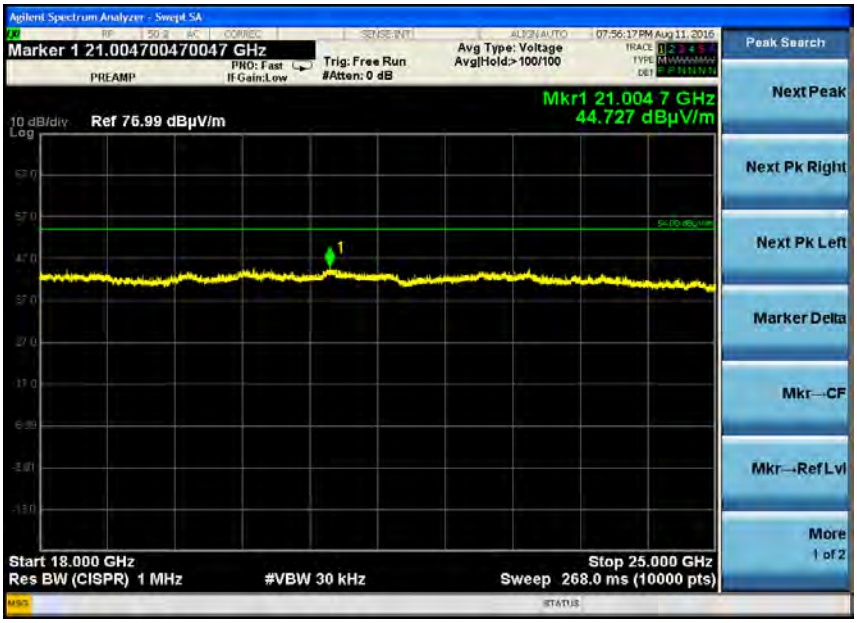
Peak

Reduced VBW

13.2.8 18000 MHz - 25000 MHz



Peak



Reduced VBW

Note: The above screen captures are representative of each channel and EUT orientation investigated.

APPENDIX A Test Equipment List

LS RESEARCH LLC
Wireless Product Development
Equipment Calibration

Date: 26-Jan-2016 Type Test: Conducted Measurements Job #: C-2368

Prepared By: Mike Hintzke Customer: Georgia-Pacific Quote #: 315364

No.	Asset #	Description	Manufacturer	Model #	Serial #	Cal Date	Cal Due Date	Equipment Status
1	EE 960085	N9038A MXE 26.5GHz Receiver	Agilent	N9038A	MY51210148	5/12/2016	5/12/2017	Active Calibration
2	AA 960143	Phaseflex	Gore	EKD01D01048.0	5546519	6/26/2015	6/26/2017	Active Calibration

Project Engineer: Quality Assurance:

LS RESEARCH LLC
Wireless Product Development
Equipment Calibration

Date: 26-Jan-2016 Type Test: Radiated/ Conducted Emissions Job #: C-2368

Prepared By: Mike Hintzke Customer: Georgia-Pacific Quote #: 315364

No.	Asset #	Description	Manufacturer	Model #	Serial #	Cal Date	Cal Due Date	Equipment Status
1	AA 960081	Double Ridge Horn Antenna	EMCO	3115	6907	3/7/2016	3/7/2017	Active Calibration
2	EE 960096	0.8 - 21GHz LNA	Mini-Circuits	ZVA-213X-S+	40201429	3/7/2016	3/7/2017	Active Calibration
3	AA 960154	2.4GHz High Pass Filter	KWM	HPF-L-14186	7272-02	7/25/2016	7/25/2017	Active Calibration
4	EE 960087	44GHz EXA Spectrum Analyzer	Agilent	N9010A	MY53400296	12/19/2015	12/19/2016	Active Calibration
5	EE 960085	N9038A MXE 26.5GHz Receiver	Agilent	N9038A	MY51210148	5/12/2016	5/12/2017	Active Calibration
6	RE 16001	Horn Antenna 18-40 GHz	A.H. Systems, Inc	SAS-574	193	11/30/2015	11/30/2016	Active Calibration
7	AA 960144	Phaseflex	Gore	EKD01D010720	5800373	Verification	Verification	System
8	AA 960143	Phaseflex	Gore	EKD01D01048.0	5546519	6/26/2015	6/26/2017	Active Calibration
9	AA 960005	Biconical Antenna	EMCO	93110B	9601-2280	1/14/2016	1/14/2017	Active Calibration
10	AA 960163	Log Periodic Antenna	A.H. Systems, Inc	SAS-512-2	500	3/18/2016	3/18/2017	Active Calibration
11	EE 960089	LISN - 15A	COM-POWER	LI-215A	191943	3/9/2016	3/8/2017	Active Calibration
12	AA 960162	EM Series Cable	MegaPhase	EM26-S151-120	12024301 001	6/23/2016	6/23/2017	Active Verification
13	EE 960085	N9038A MXE 26.5GHz Receiver	Agilent	N9038A	MY51210148	5/12/2016	5/12/2017	Active Calibration
14	AA 960158	Double Ridge Horn Antenna	ETS Lindgren	3117	109300	2/4/2016	2/4/2017	Active Calibration
15	EE 960159	0.8 - 21GHz LNA	Mini-Circuits	ZVA-213X-S+	40201429	2/4/2016	2/4/2017	Active Calibration
16	AA 960174	Small Horn Antenna 18-40 GHz	ETS-Lindgren	3116C-PA	00206880	4/23/2016	4/23/2017	Active Calibration

Project Engineer: Quality Assurance:

APPENDIX B Current Standard Publication Dates

STANDARD	DATE
ANSI C63.4	2014
ANSI C63.10	2013
FCC 47 CFR, Parts 0-15, 18, 90, 95	2016
RSS-247	2015
RSS-Gen	2014

APPENDIX C Uncertainty Statement

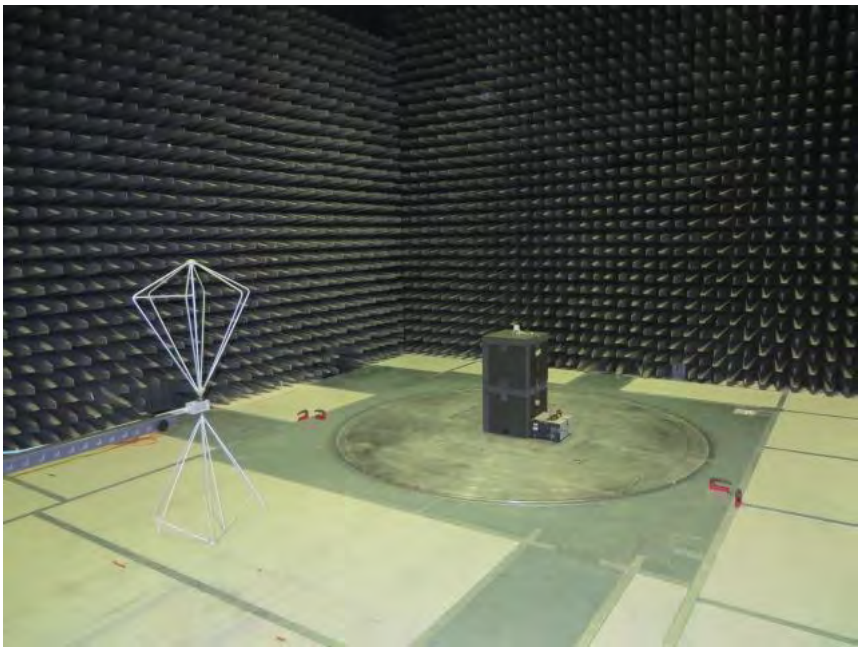
Table of Expanded Uncertainty Values, (K=2) for Specified Measurements

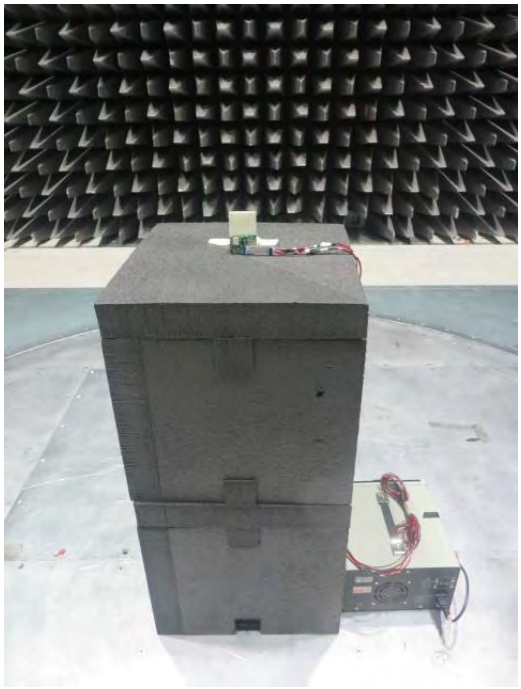
Measurement Type	*Particular Configuration*	*Uncertainty Values*
Radiated Emissions	*3 – Meter chamber, Biconical Antenna*	*4.82 dB*
Radiated Emissions	*3-Meter Chamber, Log Periodic Antenna*	*4.88 dB*
Radiated Emissions	*3-Meter Chamber, Horn Antenna*	*4.85 dB*
Radiated Emissions	*10-Meter OATS, Biconical Antenna*	*4.32 dB*
Radiated Emissions	*10-Meter OATS, Log Periodic Antenna*	*3.63 dB*
Absolute Conducted Emissions	*Agilent PSA/ESA Series*	*1.38 dB*
AC Line Conducted Emissions	*Shielded Room/EMCO LISN*	*3.20 dB*
Radiated Immunity	*3 Volts/Meter in 3-Meter Chamber*	*2.05 Volts/Meter*
Conducted Immunity	*3 Volts level*	*2.33 V*
EFT Burst, Surge, VDI	*230 VAC*	*54.4 V*
ESD Immunity	*Discharge at 15kV*	*3200 V*
Temperature/Humidity	*Thermo-hygrometer*	*0.64° / 2.88 %RH*

APPENDIX D Test Setup Photos

Radiated Measurements

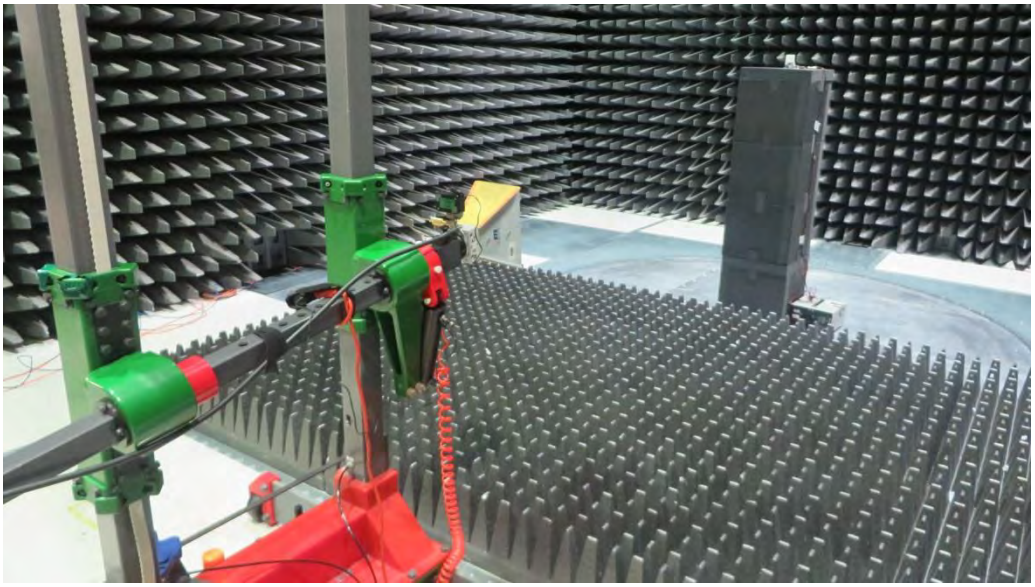
30 MHz – 1000 MHz

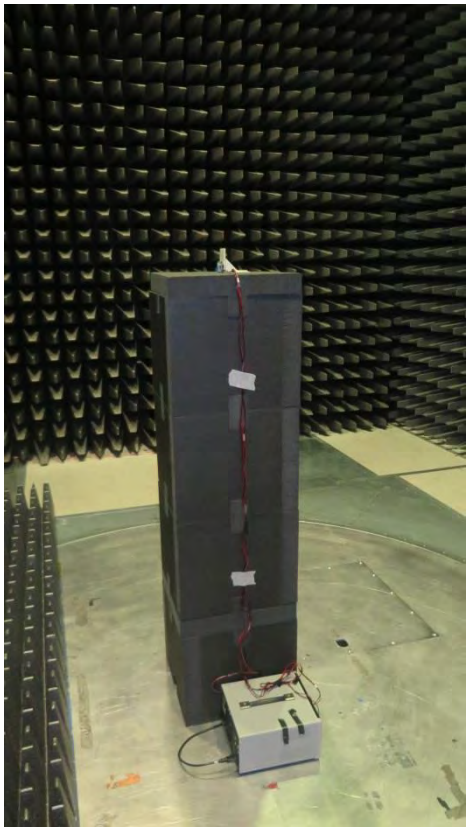




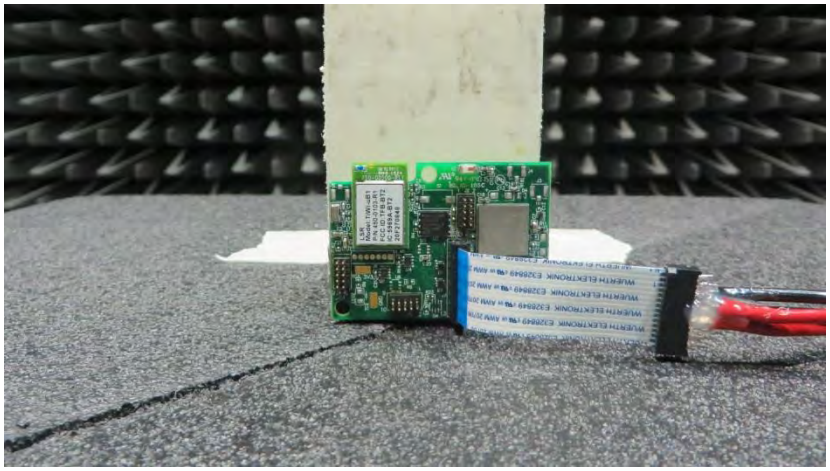
Radiated Measurements

1000 MHz – 25000 MHz

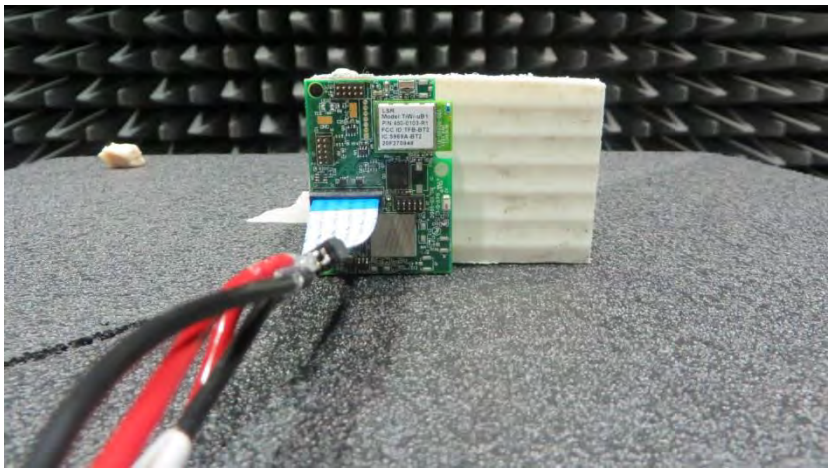




EUT Orientations



Vertical

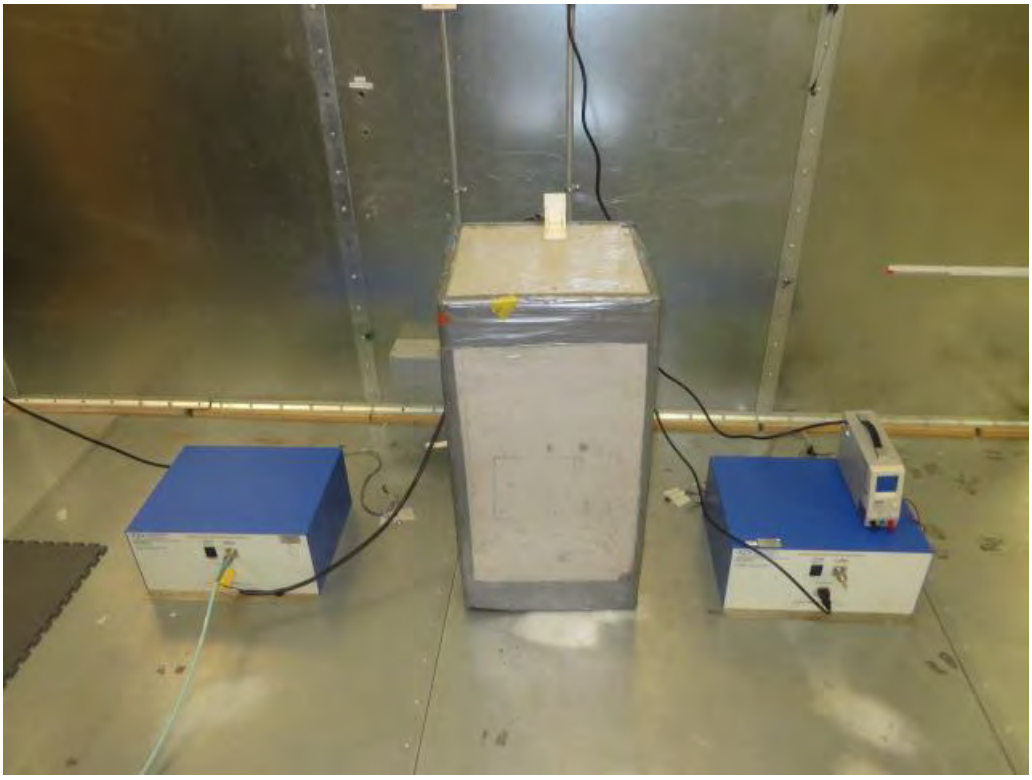


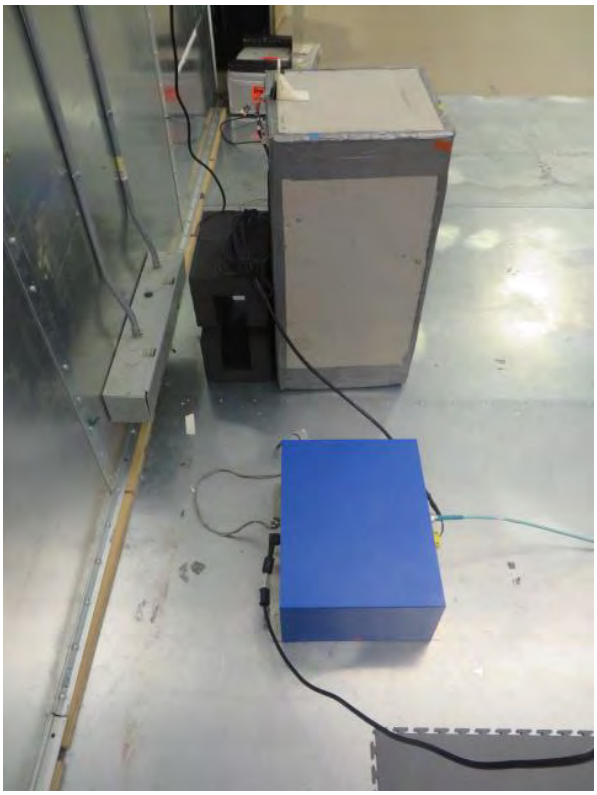
Side

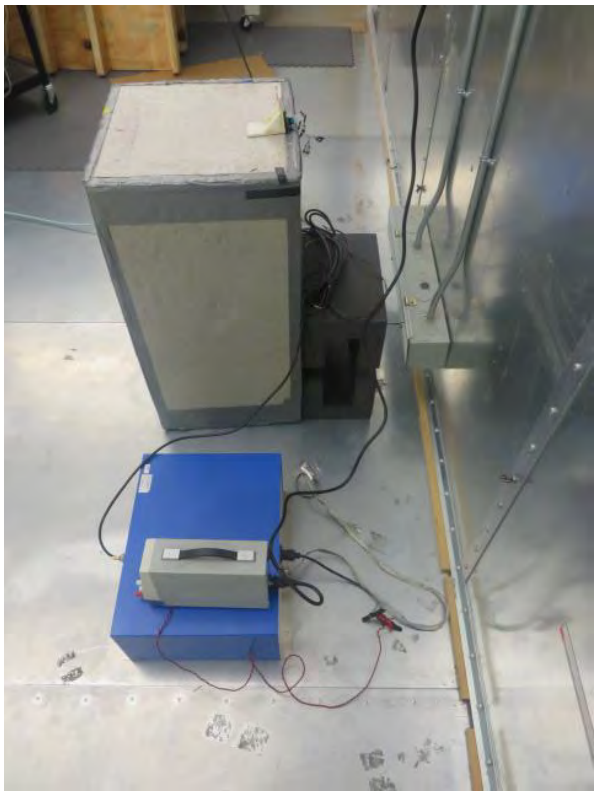
Flat

Prepared For: Georgia-Pacific	Model #: A-100278	Report #: 315364
EUT: IoT Gateway	Serial #: Engineering Sample	LSR Job #: C-2368

Conducted Line Emissions







Prepared For: Georgia-Pacific	Model #: A-100278	Report #: 315364
EUT: IoT Gateway	Serial #: Engineering Sample	LSR Job #: C-2368