NORTHWEST EMC

Electronic Technologies, LLC

Marcum RT-9

FCC 15.207:2015
FCC 15.247:2015
802.11 bgn Radio

Report # ELTL0004.1

NVLAP Lab Code: 200881-0

CERTIFICATE OF TEST

NORTHWEST EMC
2014-12-10

Last Date of Test: December 08, 2015
Electronic Technologies, LLC
Model: Marcum RT-9

Radio Equipment Testing

Standards

Specification	Method
FCC 15.207:2015	ANSI C63.10:2013
FCC 15.247:2015	

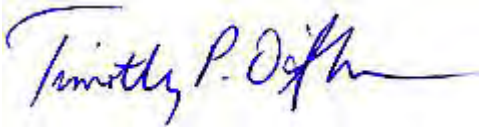
Results

Method Clause	Test Description	Applied	Results	Comments
6.2	AC Powerline Conducted Emissions	Yes	Pass	
6.5, 6.6	Spurious Radiated Emissions	Yes	Pass	
6.7	Spurious Conducted Emissions	Yes	Pass	
6.7	Band Edge Compliance	Yes	Pass	
6.9.1	Occupied Bandwidth	Yes	Pass	
6.10.2	Output Power	Yes	Pass	
6.11.2	Power Spectral Density	Yes	Pass	
7.5	Duty Cycle	Yes	N/A	

Deviations From Test Standards

None

Approved By:



Tim OShea, Operations Manager

Product compliance is the responsibility of the client; therefore, the tests and equipment modes of operation represented in this report were agreed upon by the client, prior to testing. The results of this test pertain only to the sample(s) tested. The specific description is noted in each of the individual sections of the test report supporting this certificate of test.

REVISION HISTORY

NORTHWEST EMC
REV 2014.10.14

Revision Number	Description	Date	Page Number
00	None		

ACCREDITATIONS AND AUTHORIZATIONS

REV 2015.2.19

United States

FCC - Designated by the FCC as a Telecommunications Certification Body (TCB). Certification chambers, Open Area Test Sites, and conducted measurement facilities are listed with the FCC.

A2LA - Accredited by A2LA to ISO / IEC 17065 as a product certifier. This allows Northwest EMC to certify transmitters to FCC and IC specifications.

NVLAP - Each laboratory is accredited by NVLAP to ISO 17025

Canada

IC - Recognized by Industry Canada as a Certification Body (CB). Certification chambers and Open Area Test Sites are filed with IC.

European Union

European Commission – Validated by the European Commission as a Conformity Assessment Body (CAB) under the EMC directive and as a Notified Body under the R&TTE Directive.

Australia/New Zealand

ACMA - Recognized by ACMA as a CAB for the acceptance of test data.

Korea

MSIP / RRA - Recognized by KCC's RRA as a CAB for the acceptance of test data.

Japan

VCCI - Associate Member of the VCCI. Conducted and radiated measurement facilities are registered.

Taiwan

BSMI – Recognized by BSMI as a CAB for the acceptance of test data.

NCC - Recognized by NCC as a CAB for the acceptance of test data.

Singapore

IDA – Recognized by IDA as a CAB for the acceptance of test data.

Israel

MOC – Recognized by MOC as a CAB for the acceptance of test data.

Hong Kong

OFCA – Recognized by OFCA as a CAB for the acceptance of test data.

Vietnam

MIC – Recognized by MIC as a CAB for the acceptance of test data.

SCOPE

For details on the Scopes of our Accreditations, please visit:
http://www.nwemc.com/accreditations/
http://gsi.nist.gov/global/docs/cabs/designations.html

MEASUREMENT UNCERTAINTY

TMU.2015.07.10

Measurement Uncertainty

When a measurement is made, the result will be different from the true or theoretically correct value. The difference is the result of tolerances in the measurement system that cannot be completely eliminated. To the extent that technology allows us, it has been our aim to minimize this error. Measurement uncertainty is a statistical expression of measurement error qualified by a probability distribution.

A measurement uncertainty estimation has been performed for each test per our internal quality document WP 342. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty (K=2) for each test is on each data sheet. Our measurement data meets or exceeds the measurement uncertainty requirements of the applicable specification; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for estimating measurement uncertainty are based upon ETSI TR 100 028 (or CISPR 16-4-2 as applicable), and are available upon request.

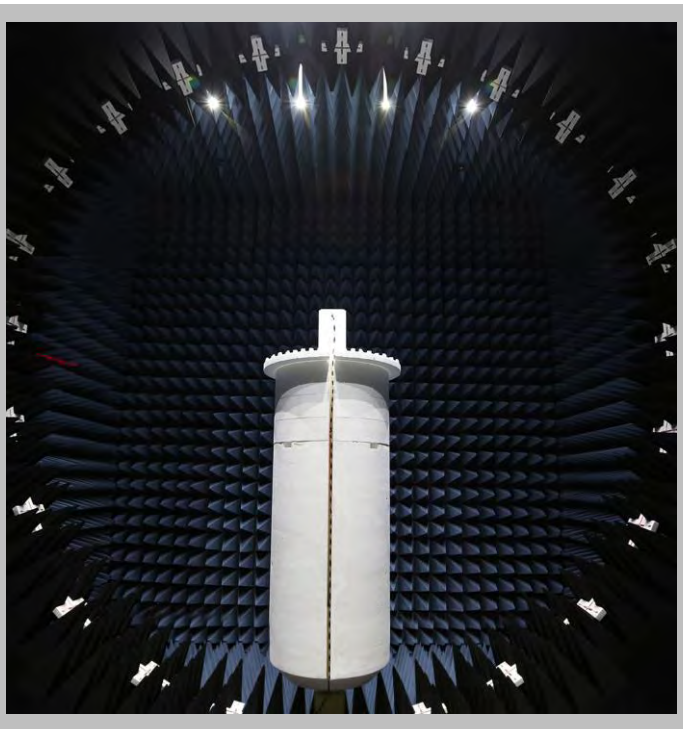
The following table represents the Measurement Uncertainty (MU) budgets for each of the tests that may be contained in this report.

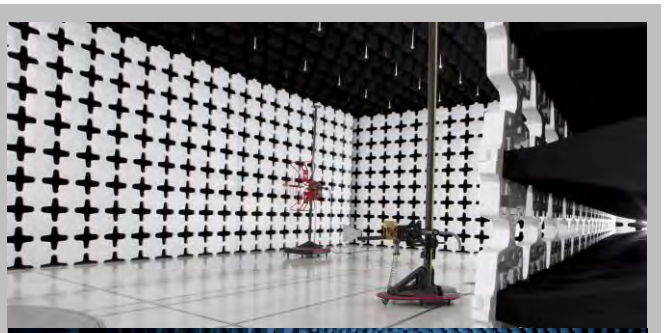
Test	+ MU	- MU
Frequency Accuracy (Hz)	0.0007%	-0.0007%
Amplitude Accuracy (dB)	1.2 dB	-1.2 dB
Conducted Power (dB)	0.3 dB	-0.3 dB
Radiated Power via Substitution (dB)	0.7 dB	-0.7 dB
Temperature (degrees C)	0.7°C	-0.7°C
Humidity (% RH)	2.5% RH	-2.5% RH
Voltage (AC)	1.0%	-1.0%
Voltage (DC)	0.7%	-0.7%
Field Strength (dB)	5.2 dB	-5.2 dB
AC Powerline Conducted Emissions (dB)	2.4 dB	-2.4 dB

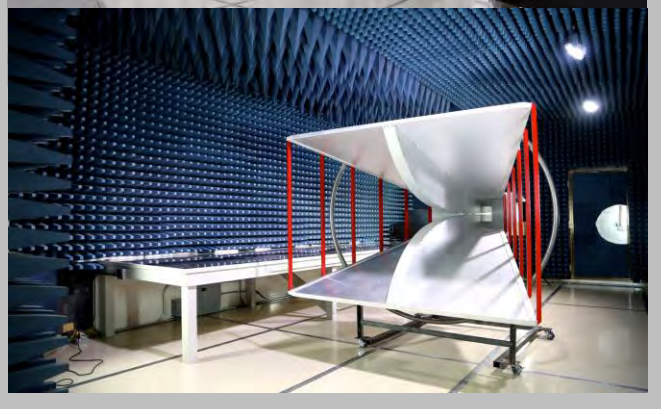
FACILITIES

NORTHWEST EMC
REV 2015.2.19

California	Minnesota	New York	Oregon	Texas	Washington
Labs OC01-13 41 Tesla Irvine, CA 92618 (949) 861-8918	Labs MN01-08, MN10 9349 W Broadway Ave. Brooklyn Park, MN 55445 (612)-638-5136	Labs NY01-04 4939 Jordan Rd. Elbridge, NY 13060 (315) 554-8214	Labs EV01-12 22975 NW Evergreen Pkwy Hillsboro, OR 97124 (503) 844-4066	Labs TX01-09 3801 E Plano Pkwy Plano, TX 75074 (469) 304-5255	Labs NC01-05 19201 120th Ave NE Bothell, WA 9801 (425)984-6600
NVLAP					
NVLAP Lab Code: 200676-0	NVLAP Lab Code: 200881-0	NVLAP Lab Code: 200761-0	NVLAP Lab Code: 200630-0	NVLAP Lab Code:201049-0	NVLAP Lab Code: 200629-0
Industry Canada					
2834B-1, 2834B-3	2834E-1	N/A	2834D-1, 2834D-*2*	2834G-1	2834F-1
BSMI					
SL2-IN-E-1154R	SL2-IN-E-1152R	N/A	SL2-IN-E-1017	SL2-IN-E-1158R	SL2-IN-E-1153R
VCCI					
A-0029	A-0109	N/A	A-0108	A-0201	A-0110
Recognized Phase I CAB for ACMA, BSMI, IDA, KCC/RRA, MIC, MOC, NCC, OFCA					
US0158	US0175	N/A	US0017	US0191	US0157







PRODUCT DESCRIPTION

2014-12-10

Client and Equipment Under Test (EUT) Information

Company Name:	Electronic Technologies, LLC
Address:	3943 Quebec Ave North
City, State, Zip:	New Hope, MN 55427
Test Requested By:	Deb See
Model:	Marcum RT-9
First Date of Test:	December 02, 2015
Last Date of Test:	December 04, 2015
Receipt Date of Samples:	November 18, 2015
Equipment Design Stage:	Production
Equipment Condition:	No Damage

Information Provided by the Party Requesting the Test

Functional Description of the EUT:
The RT9 is a ruggedized Android tablet. It has normal Android behavior and an ice fishing application. The RT9 can be used on its own as a tablet, or mounted in a docking station for recharge/mount. The tablet is powered by an internal Li-Ion battery and will also ship with a standard 12 V battery that is the recharging station. The 12V battery has an external wall charger. The external battery should not be recharged while operating the tablet and documentation will state that. The tablet has 3 mounting attachment locations on its back where accessories for underwater cameras, ice fishing sonar, and open water sonars. Connectors are custom to the modules. The unit may operate with a maximum of 3 modules. The unit contains a GPS receiver, Wifi transmitter (2.4 GHz only is enabled). It has connections for HDMI, audio out, mini USB in for keyboard accessory, speakers, backlight, touchscreen LCD.

Testing Objective:
To demonstrate compliance of the 802.11 radio under FCC 15.247 for operation in the 2.4 GHz band

CONFIGURATIONS

NORTHWEST EMC 2014-12-10

Configuration ELTL0004- 1

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Ruggedized Tablet	Electronic Technologies, LLC	Marcum RT-9	RTS0123456805

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Manta Camera (x2)	Electronic Technologies, LLC	None	None
Camera Panner (x2)	Electronic Technologies, LLC	None	None
Ice Transducer	Electronic Technologies, LLC	None	None
Earbud Headphones	Unknown	None	None

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
Manta Camera Cable (x2)	No	24.5m	Yes	Ruggedized Tablet	Manta Camera (x2)
Camera Panner Cable (x2)	No	3.5m	No	Ruggedized Tablet	Camera Panner (x2)
Ice Transducer Cable	No	2.5m	Yes	Ruggedized Tablet	Ice Transducer
Headphone Cable	No	2.0m	No	Earbud Headphones	Ruggedized Tablet
HDMI Cable	Yes	1.8m	No	Unterminated	Ruggedized Tablet
USB Cale	Yes	1.0m	No	Unterminated	Ruggedized Tablet

CONFIGURATIONS

NORTHWEST EMC 2014-12-10

Configuration ELTL0004- 3

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Ruggedized Tablet	Electronic Technologies, LLC	Marcum RT-9	RTS0123456811

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Manta Camera (x2)	Electronic Technologies, LLC	None	None
Camera Panner (x2)	Electronic Technologies, LLC	None	None
AC Adapter	Universal Power Group, Inc.	12BC0500D-1	None
Ice Transducer	Electronic Technologies, LLC	None	None
Keyboard	Dell	0U473D	CN-0U473D-44751-162-02NT-A02
Earbud Headphones	Unknown	None	None

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
DC Power Cable	No	1.95m	Yes	AC Adapter	Ruggedized Tablet
Manta Camera Cable (x2)	No	24.5m	Yes	Ruggedized Tablet	Manta Camera (x2)
Camera Panner Cable (x2)	No	3.5m	No	Ruggedized Tablet	Camera Panner (x2)
Ice Transducer Cable	No	2.5m	Yes	Ruggedized Tablet	Ice Transducer
USB Cable (Keyboard)	Yes	2.0m	Yes	Ruggedized Tablet	Keyboard
Headphone Cable	No	2.0m	No	Earbud Headphones	Ruggedized Tablet
HDMI Cable	Yes	1.8m	No	Unterminated	Ruggedized Tablet

CONFIGURATIONS

NORTHWEST EMC 2014-12-10

Configuration ELTL0004- 5

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Ruggedized Tablet	Electronic Technologies, LLC	Marcum RT-9	RTS0123456811
AC Adapter	Universal Power Group, Inc.	12BC0500D-1	None

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Keyboard	Dell	0U473D	CN-0U473D-44751-162-02NT-A02

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
DC Power Cable	No	1.95m	Yes	AC Adapter	Ruggedized Tablet
USB Cable (Keyboard)	Yes	2.0m	Yes	Ruggedized Tablet	Keyboard

MODIFICATIONS

NORTHWEST EMC 2014-12-10

Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	12/2/2015	Spurious Radiated Emissions	Tested as delivered to Test Station.	Shield U1 top and bottom, U8 and U12 , ferrite on sonar module, ferrite on camera and internal ferrite camera module.	EUT was taken home by the client before the next scheduled test.
2	12/3/2015	Powerline Conducted Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
3	12/4/2015	Duty Cycle	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
4	12/4/2015	Occupied Bandwidth	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
5	12/4/2015	Output Power	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
6	12/4/2015	Power Spectral Density	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
7	12/4/2015	Band Edge Compliance	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
8	12/4/2015	Spurious Conducted Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

DUTY CYCLE

XMit 2015.01.14

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Cable	ESM Cable Corp.	TTBJ141 KMKM-72	MNU	9/18/2015	12
Attenuator	S.M. Electronics	SA26B-20	RFW	3/10/2015	12
Block - DC	Fairview Microwave	SD3379	AMI	9/18/2015	12
Generator - Signal	Agilent	N5183A	TIK	10/17/2014	36
Analyzer - Spectrum Analyzer	Agilent	E4440A	AAX	4/20/2015	12

TEST DESCRIPTION

The Duty Cycle (x) of the single channel operation of the radio as controlled by the provided test software was measured for each of the EUT operating modes.

There is no compliance requirement to be met by this test, so therefore no Pass / Fail criteria.

The measurements were made using a zero span on the spectrum analyzer to see the pulses in the time domain. The transmit power was set to its default maximum. A direct connection was made between the RF output of the EUT and a spectrum analyzer. Attenuation and a DC block were used.

The duty cycle was calculated by dividing the transmission pulse duration (T) by the total period of a single on and total off time.

If the transmit duty cycle < 98 percent, burst gating may have been used during some of the other tests in this report to only take the measurement during the burst duration.

DUTY CYCLE

NORTHWEST EMC

XMit 2015.01.14

EUT:	Marcum RT-9			**Work Order:**	ELTL0004
Serial Number:	RTS0123456811			**Date:**	12/04/15
Customer:	Electronic Technologies, LLC			**Temperature:**	22.2°C
Attendees:	Rocky Holmes, Deb See			**Humidity:**	25%
Project:	None			**Barometric Pres.:**	998.9
Tested by:	Trevor Buls	**Power:**	110VAC/60Hz	**Job Site:**	MN08

TEST SPECIFICATIONS	Test Method
FCC 15.247:2015	ANSI C63.10:2013

COMMENTS

None

DEVIATIONS FROM TEST STANDARD

None

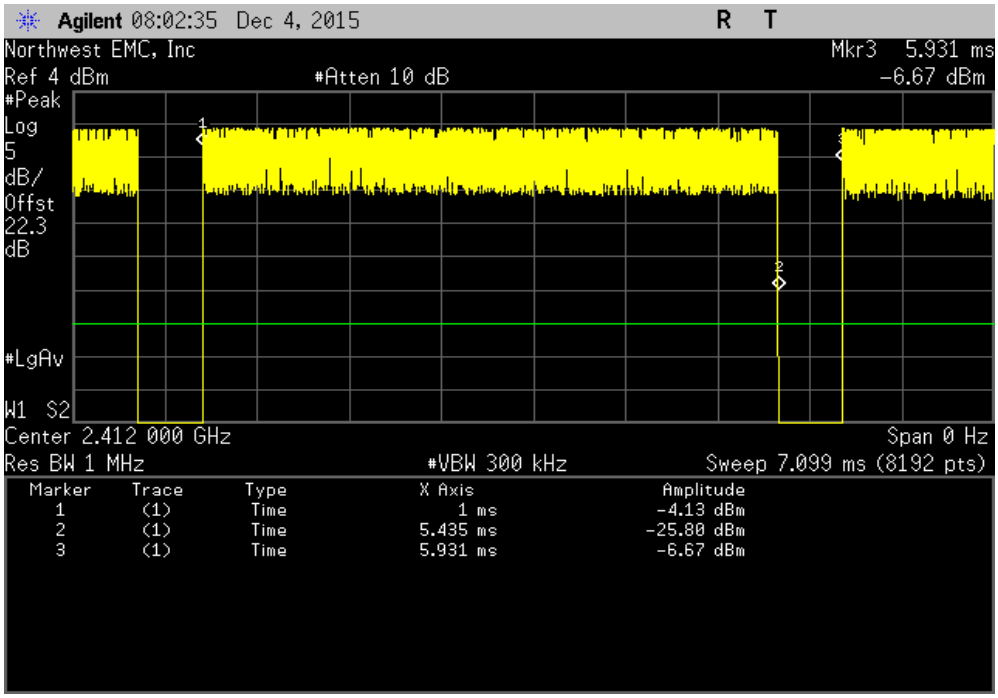
Configuration #	5	Signature	Trevor Buls

		Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
Chain A							
20 MHz							
802.11(b) 1 Mbps							
	Low Channel 1, 2412 MHz	4.435 ms	4.931 ms	1	89.9	N/A	N/A
	Low Channel 1, 2412 MHz	N/A	N/A	5	N/A	N/A	N/A
	Mid Channel 6, 2437 MHz	4.435 ms	4.931 ms	1	89.9	N/A	N/A
	Mid Channel 6, 2437 MHz	N/A	N/A	5	N/A	N/A	N/A
	High Channel 11, 2462 MHz	4.435 ms	4.922 ms	1	90.1	N/A	N/A
	High Channel 11, 2462 MHz	N/A	N/A	5	N/A	N/A	N/A
802.11(b) 11 Mbps							
	Low Channel 1, 2412 MHz	580.1 us	1.067 ms	1	54.4	N/A	N/A
	Low Channel 1, 2412 MHz	N/A	N/A	5	N/A	N/A	N/A
	Mid Channel 6, 2437 MHz	579.8 us	1.067 ms	1	54.3	N/A	N/A
	Mid Channel 6, 2437 MHz	N/A	N/A	5	N/A	N/A	N/A
	High Channel 11, 2462 MHz	580.1 us	1.076 ms	1	53.9	N/A	N/A
	High Channel 11, 2462 MHz	N/A	N/A	5	N/A	N/A	N/A
802.11(g) 6 Mbps							
	Low Channel 1, 2412 MHz	727 us	1.225 ms	1	59.3	N/A	N/A
	Low Channel 1, 2412 MHz	N/A	N/A	5	N/A	N/A	N/A
	Mid Channel 6, 2437 MHz	727.1 us	1.234 ms	1	58.9	N/A	N/A
	Mid Channel 6, 2437 MHz	N/A	N/A	5	N/A	N/A	N/A
	High Channel 11, 2462 MHz	727 us	1.225 ms	1	59.3	N/A	N/A
	High Channel 11, 2462 MHz	N/A	N/A	5	N/A	N/A	N/A
802.11(g) 36 Mbps							
	Low Channel 1, 2412 MHz	135 us	642.2 us	1	21	N/A	N/A
	Low Channel 1, 2412 MHz	N/A	N/A	5	N/A	N/A	N/A
	Mid Channel 6, 2437 MHz	135 us	642.1 us	1	21	N/A	N/A
	Mid Channel 6, 2437 MHz	N/A	N/A	5	N/A	N/A	N/A
	High Channel 11, 2462 MHz	135 us	642.1 us	1	21	N/A	N/A
	High Channel 11, 2462 MHz	N/A	N/A	5	N/A	N/A	N/A
802.11(g) 54 Mbps							
	Low Channel 1, 2412 MHz	95.2 us	593.1 us	1	16.1	N/A	N/A
	Low Channel 1, 2412 MHz	N/A	N/A	5	N/A	N/A	N/A
	Mid Channel 6, 2437 MHz	95.3 us	593.4 us	1	16.1	N/A	N/A
	Mid Channel 6, 2437 MHz	N/A	N/A	5	N/A	N/A	N/A
	High Channel 11, 2462 MHz	95.3 us	593.4 us	1	16.1	N/A	N/A
	High Channel 11, 2462 MHz	N/A	N/A	5	N/A	N/A	N/A
802.11(n) MCS0							
	Low Channel 1, 2412 MHz	621.5 us	1.12 ms	1	55.5	N/A	N/A
	Low Channel 1, 2412 MHz	N/A	N/A	5	N/A	N/A	N/A
	Mid Channel 6, 2437 MHz	621.5 us	1.12 ms	1	55.5	N/A	N/A
	Mid Channel 6, 2437 MHz	N/A	N/A	5	N/A	N/A	N/A
	High Channel 11, 2462 MHz	621.2 us	1.128 ms	1	55.1	N/A	N/A
	High Channel 11, 2462 MHz	N/A	N/A	5	N/A	N/A	N/A
802.11(n) MCS7							
	Low Channel 1, 2412 MHz	92.3 us	590.4 us	1	15.6	N/A	N/A
	Low Channel 1, 2412 MHz	N/A	N/A	5	N/A	N/A	N/A
	Mid Channel 6, 2437 MHz	92.3 us	590.4 us	1	15.6	N/A	N/A
	Mid Channel 6, 2437 MHz	N/A	N/A	5	N/A	N/A	N/A
	High Channel 11, 2462 MHz	92.3 us	590.2 us	1	15.6	N/A	N/A
	High Channel 11, 2462 MHz	N/A	N/A	5	N/A	N/A	N/A
40 MHz							
802.11(n) MCS0							
	Low Channel 1/5, 2422 MHz	1.093 ms	1.454 ms	1	75.2	N/A	N/A
	Low Channel 1/5, 2422 MHz	N/A	N/A	6	N/A	N/A	N/A
	Mid Channel 4/8, 2437 MHz	1.093 ms	1.454 ms	1	75.2	N/A	N/A
	Mid Channel 4/8, 2437 MHz	N/A	N/A	6	N/A	N/A	N/A
	High Channel 7/11, 2452 MHz	1.093 ms	1.454 ms	1	75.2	N/A	N/A
	High Channel 7/11, 2452 MHz	N/A	N/A	6	N/A	N/A	N/A
802.11(n) MCS7							
	Low Channel 1/5, 2422 MHz	117.5 us	478.6 us	1	24.6	N/A	N/A
	Low Channel 1/5, 2422 MHz	N/A	N/A	6	N/A	N/A	N/A
	Mid Channel 4/8, 2437 MHz	117.5 us	478.6 us	1	24.6	N/A	N/A
	Mid Channel 4/8, 2437 MHz	N/A	N/A	6	N/A	N/A	N/A
	High Channel 7/11, 2452 MHz	117.2 us	478.6 us	1	24.5	N/A	N/A
	High Channel 7/11, 2452 MHz	N/A	N/A	6	N/A	N/A	N/A

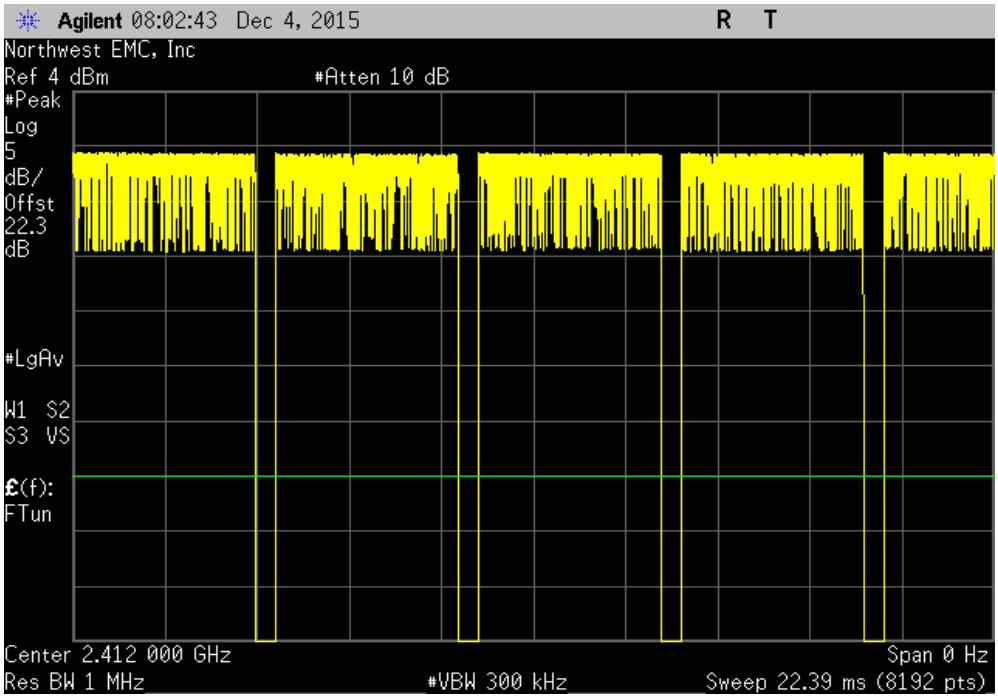
DUTY CYCLE

XMit 2015.01.14

Chain A, 20 MHz, 802.11(b) 1 Mbps, Low Channel 1, 2412 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	4.435 ms	4.931 ms	1	89.9	N/A	N/A



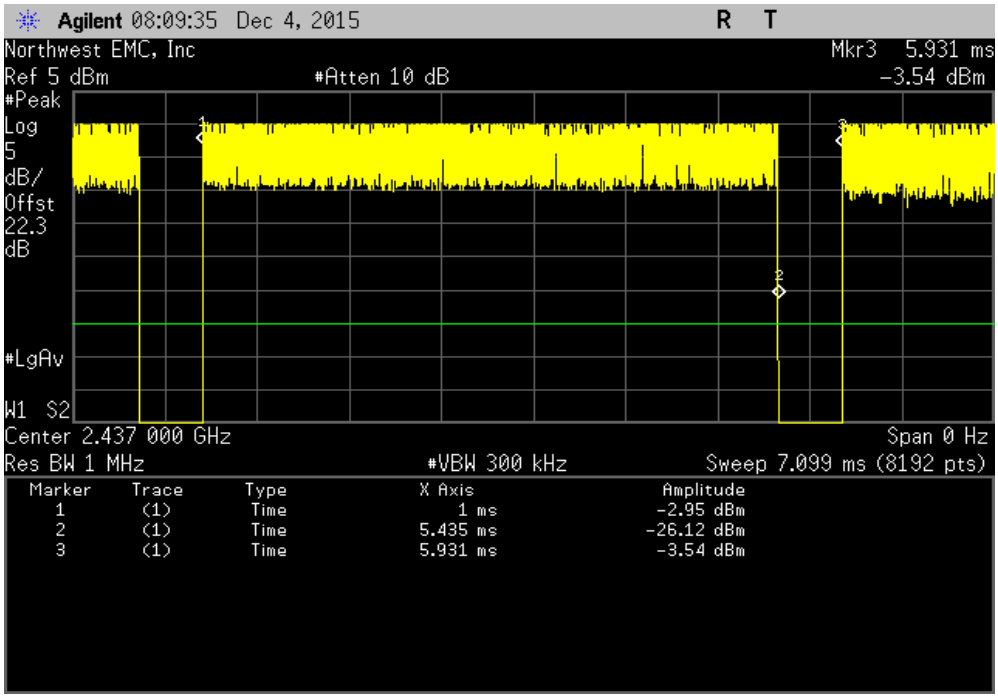
Chain A, 20 MHz, 802.11(b) 1 Mbps, Low Channel 1, 2412 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



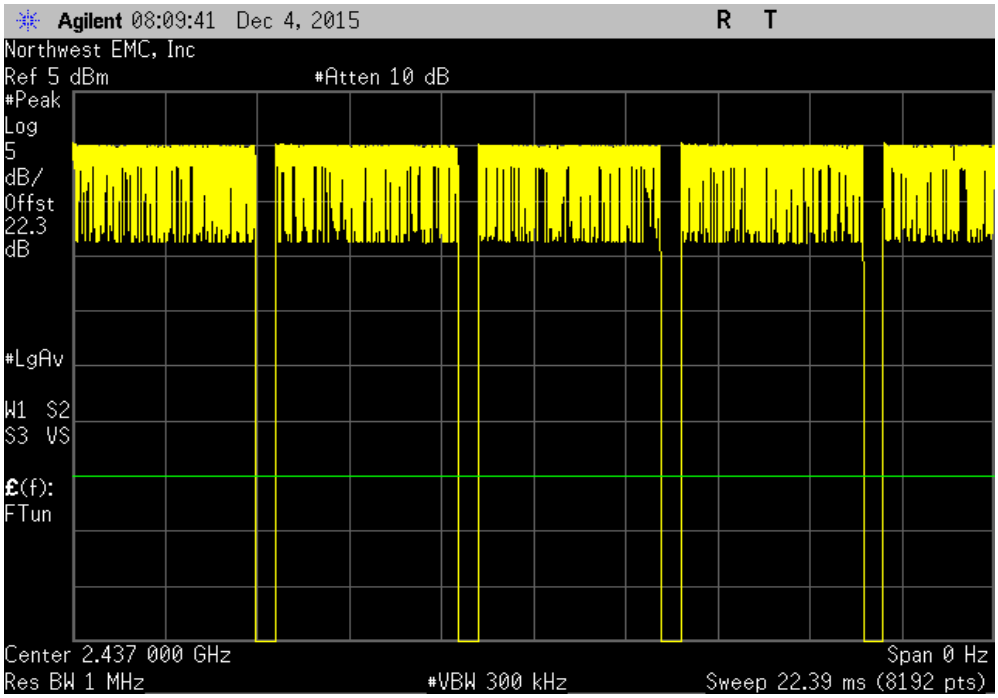
DUTY CYCLE

XMit 2015.01.14

Chain A, 20 MHz, 802.11(b) 1 Mbps, Mid Channel 6, 2437 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	4.435 ms	4.931 ms	1	89.9	N/A	N/A



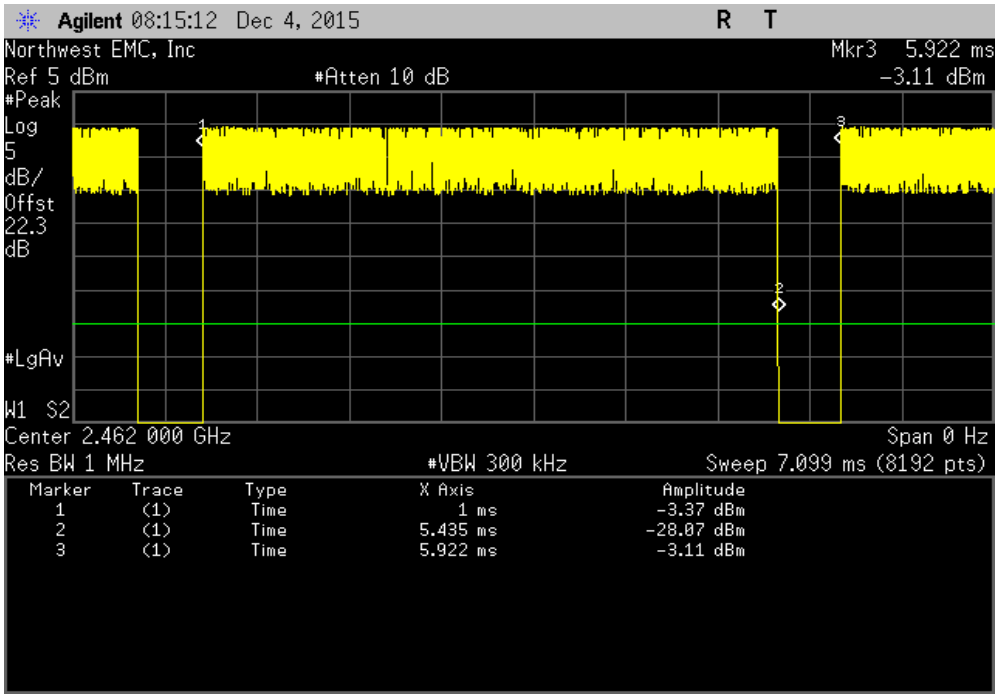
Chain A, 20 MHz, 802.11(b) 1 Mbps, Mid Channel 6, 2437 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



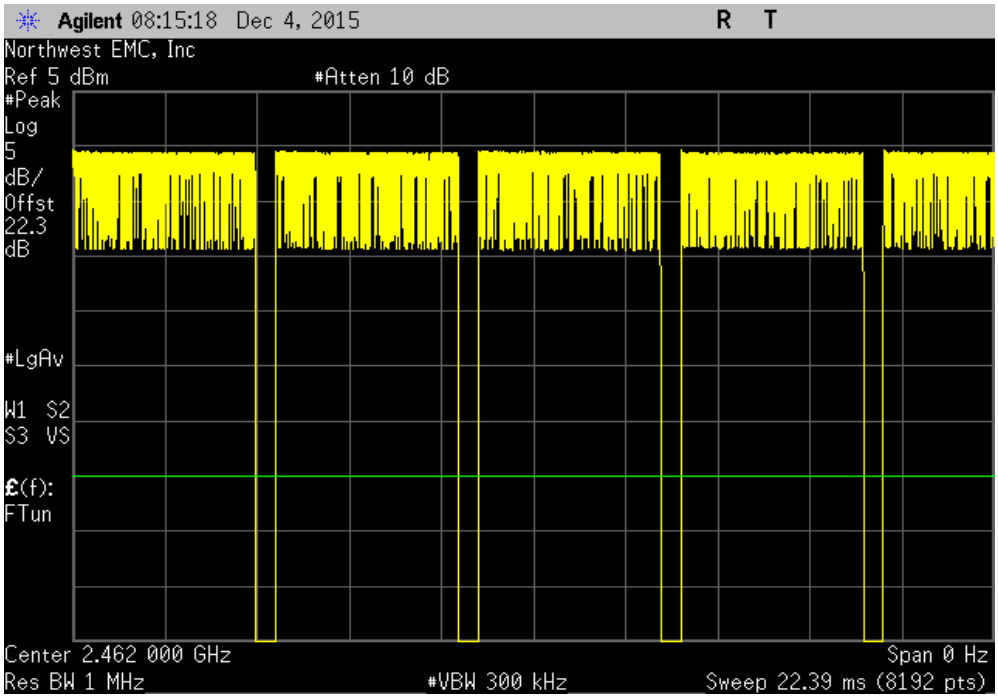
DUTY CYCLE

XMit 2015.01.14

Chain A, 20 MHz, 802.11(b) 1 Mbps, High Channel 11, 2462 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	4.435 ms	4.922 ms	1	90.1	N/A	N/A



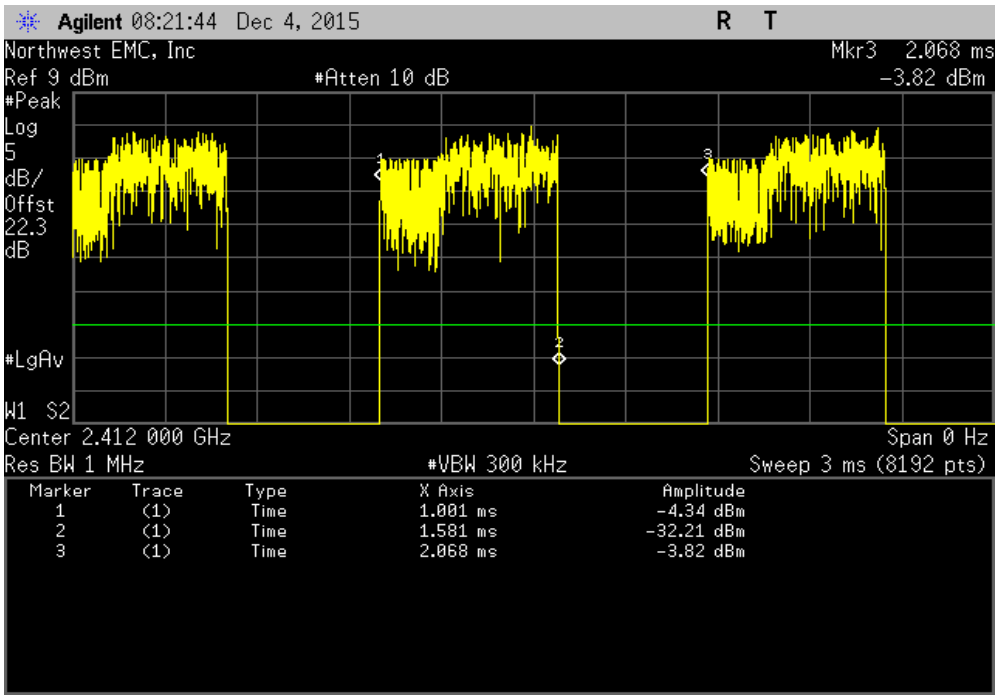
Chain A, 20 MHz, 802.11(b) 1 Mbps, High Channel 11, 2462 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



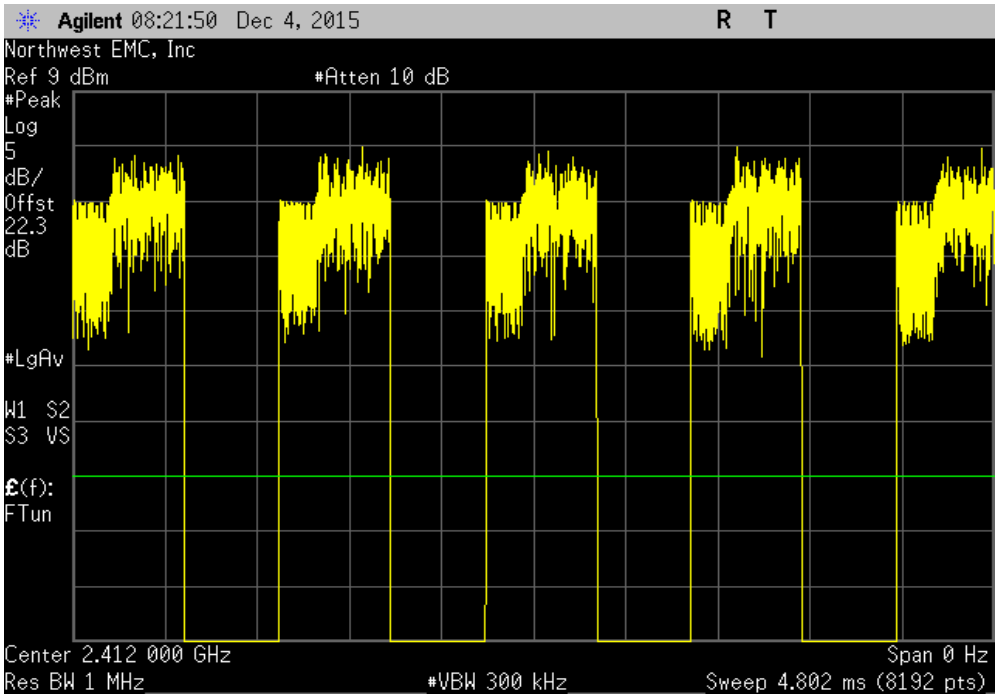
DUTY CYCLE

XMit 2015.01.14

Chain A, 20 MHz, 802.11(b) 11 Mbps, Low Channel 1, 2412 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	580.1 us	1.067 ms	1	54.4	N/A	N/A



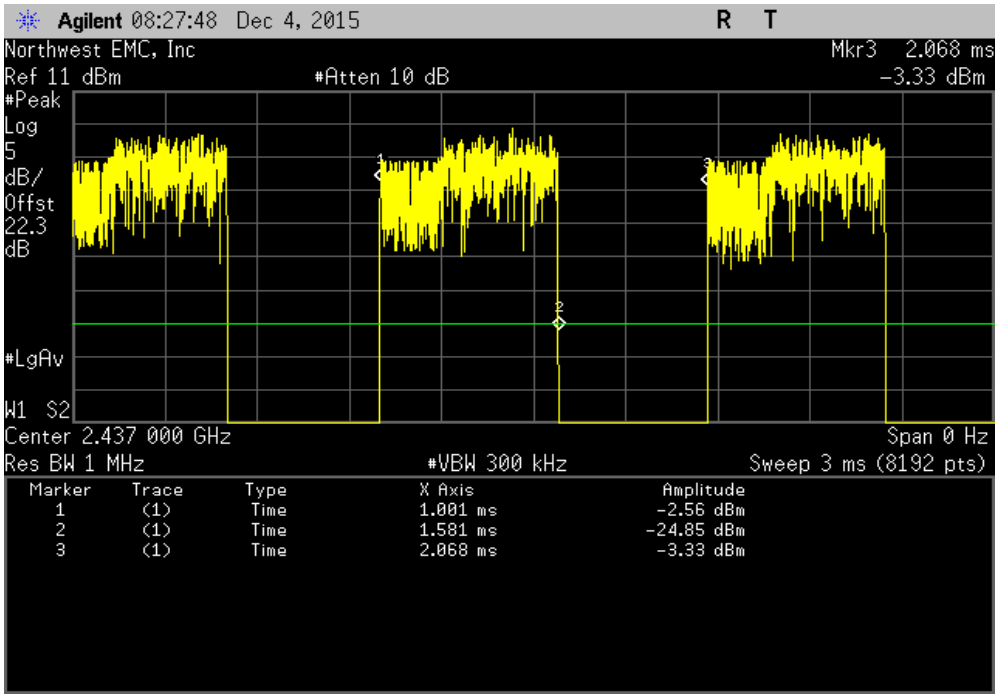
Chain A, 20 MHz, 802.11(b) 11 Mbps, Low Channel 1, 2412 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



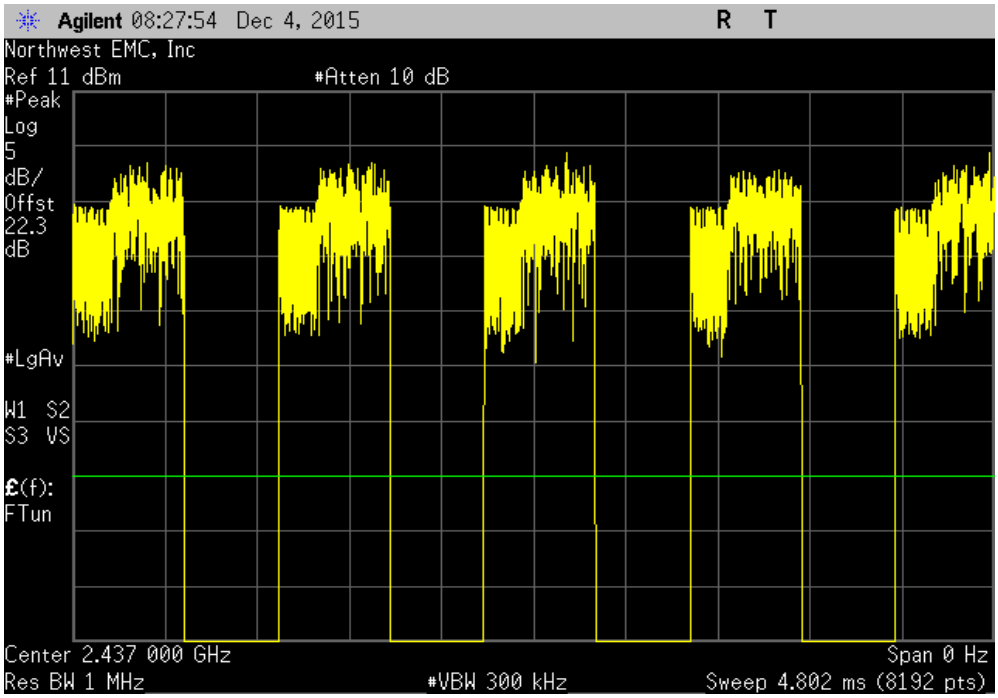
DUTY CYCLE

XMit 2015.01.14

Chain A, 20 MHz, 802.11(b) 11 Mbps, Mid Channel 6, 2437 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	579.8 us	1.067 ms	1	54.3	N/A	N/A



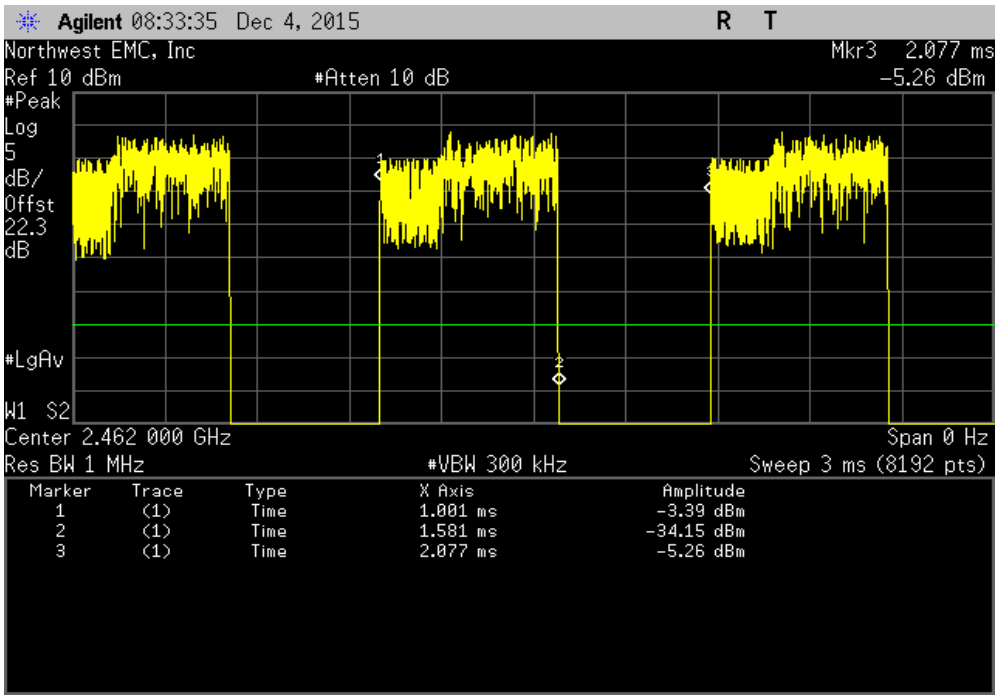
Chain A, 20 MHz, 802.11(b) 11 Mbps, Mid Channel 6, 2437 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



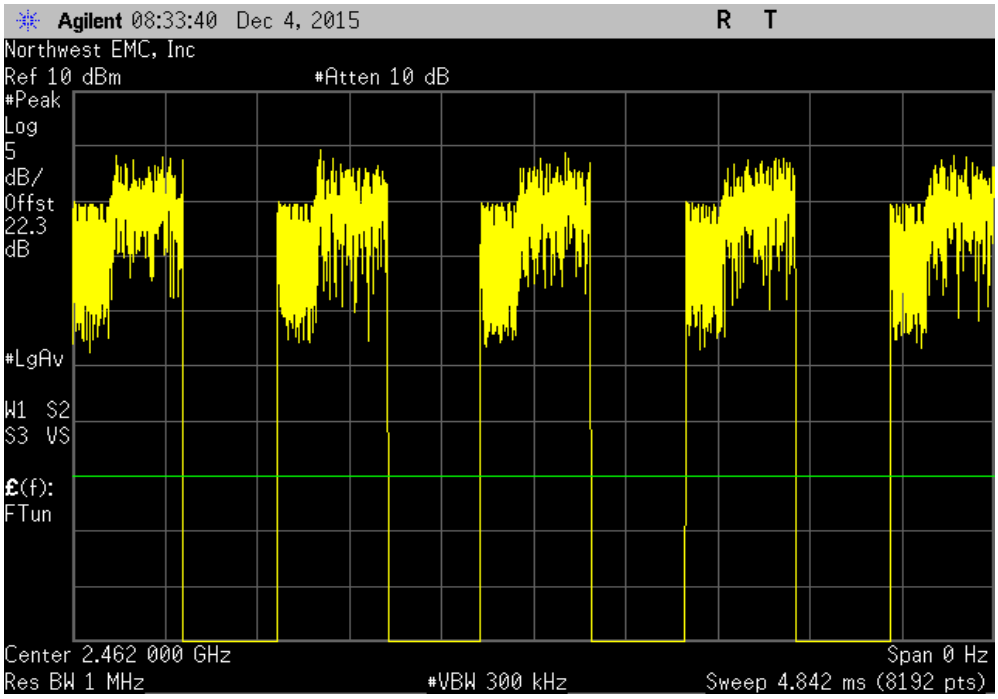
DUTY CYCLE

XMit 2015.01.14

Chain A, 20 MHz, 802.11(b) 11 Mbps, High Channel 11, 2462 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	580.1 us	1.076 ms	1	53.9	N/A	N/A



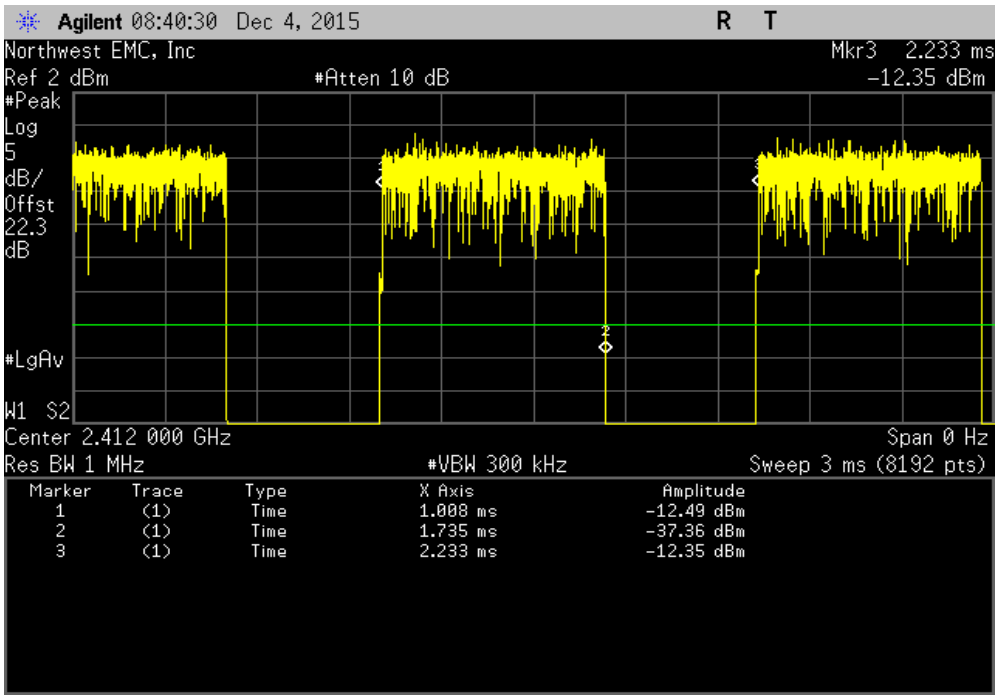
Chain A, 20 MHz, 802.11(b) 11 Mbps, High Channel 11, 2462 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



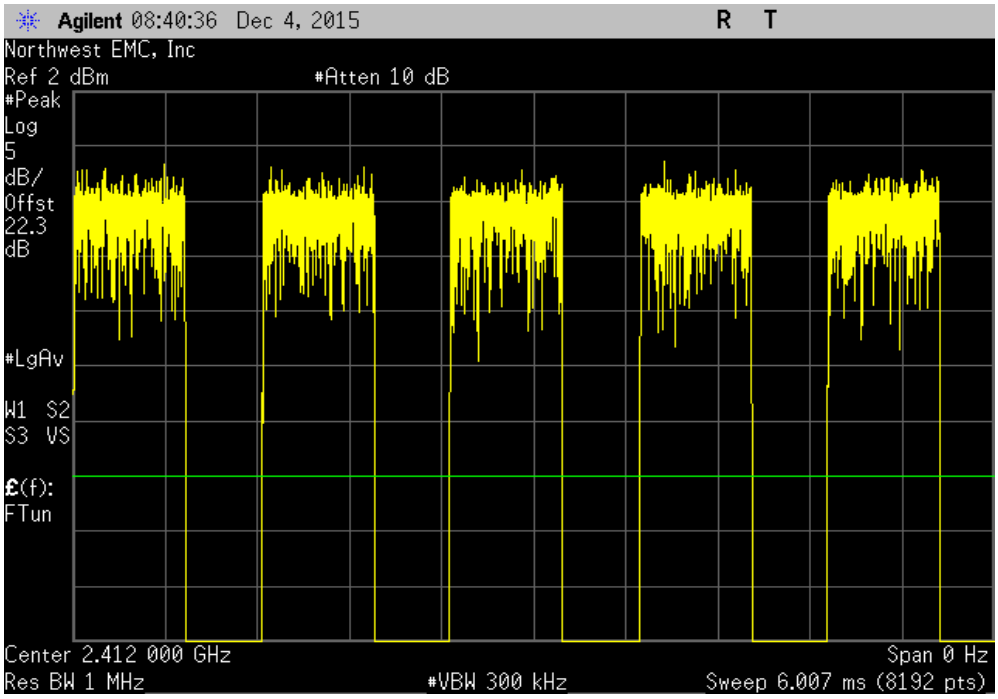
DUTY CYCLE

XMit 2015.01.14

Chain A, 20 MHz, 802.11(g) 6 Mbps, Low Channel 1, 2412 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	727 us	1.225 ms	1	59.3	N/A	N/A



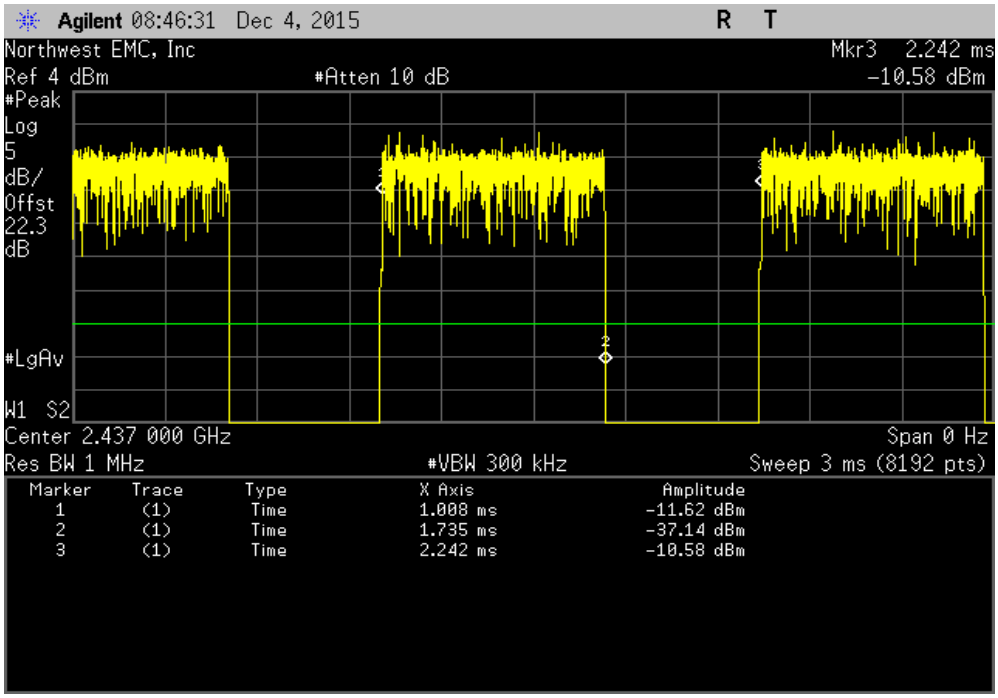
Chain A, 20 MHz, 802.11(g) 6 Mbps, Low Channel 1, 2412 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



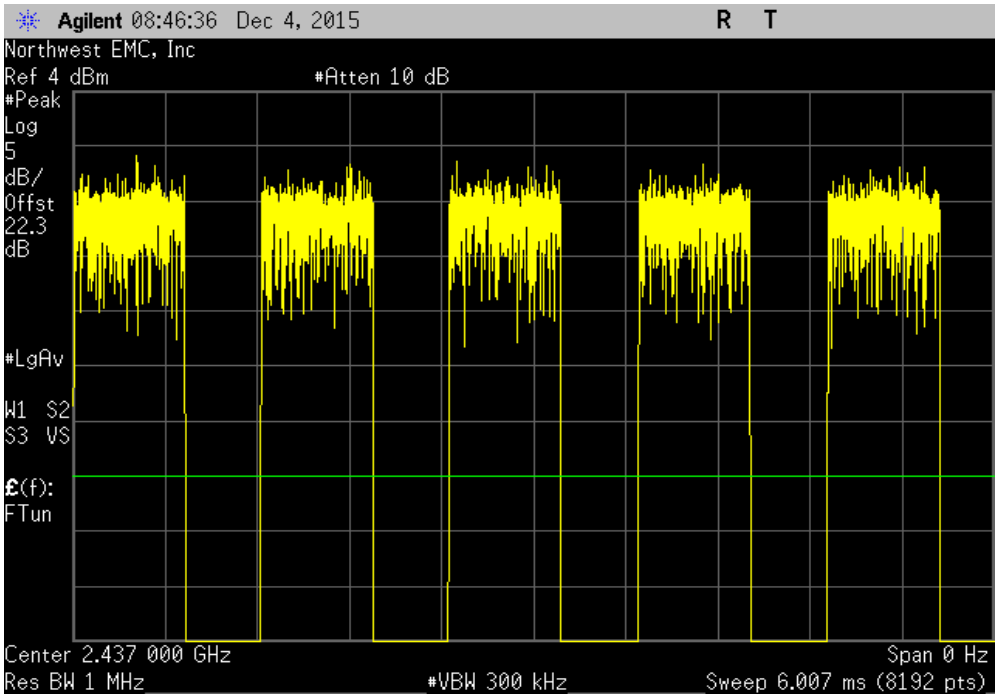
DUTY CYCLE

XMit 2015.01.14

Chain A, 20 MHz, 802.11(g) 6 Mbps, Mid Channel 6, 2437 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	727.1 us	1.234 ms	1	58.9	N/A	N/A



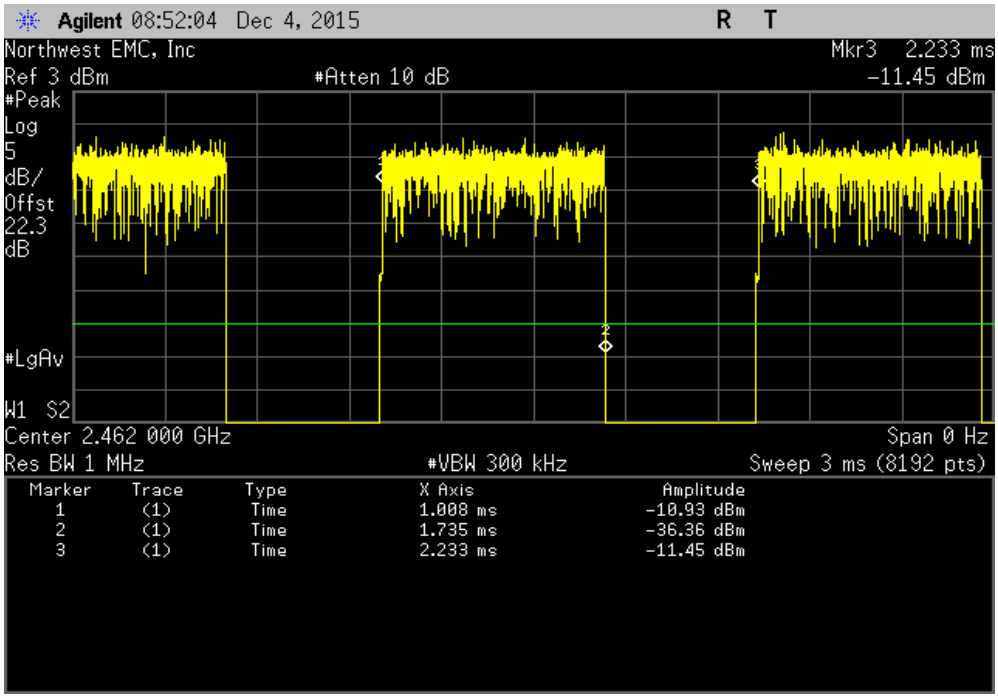
Chain A, 20 MHz, 802.11(g) 6 Mbps, Mid Channel 6, 2437 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



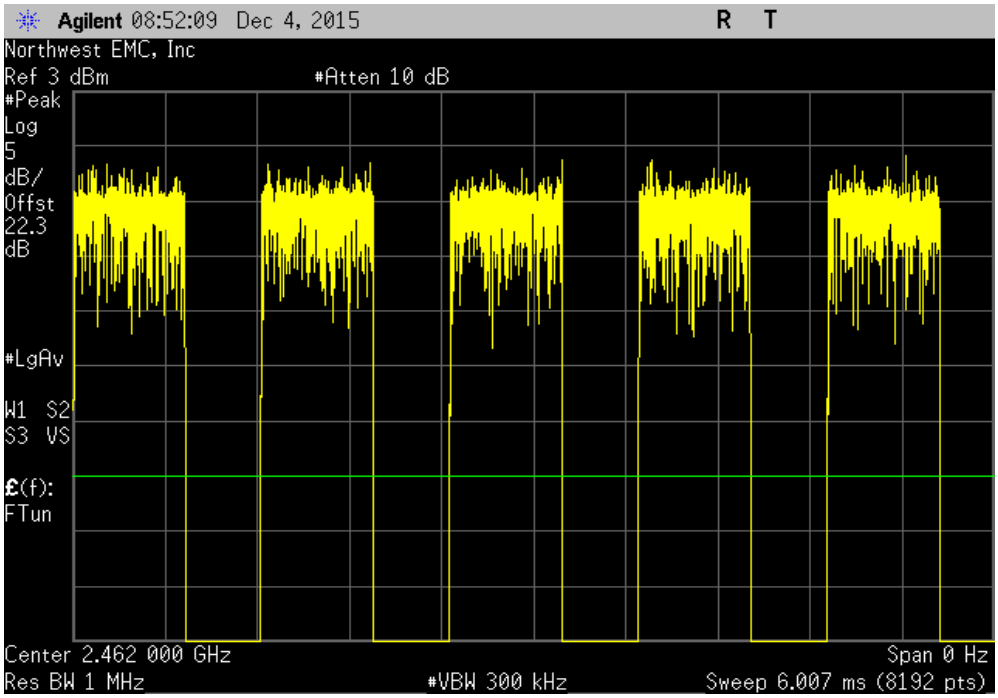
DUTY CYCLE

XMit 2015.01.14

Chain A, 20 MHz, 802.11(g) 6 Mbps, High Channel 11, 2462 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	727 us	1.225 ms	1	59.3	N/A	N/A



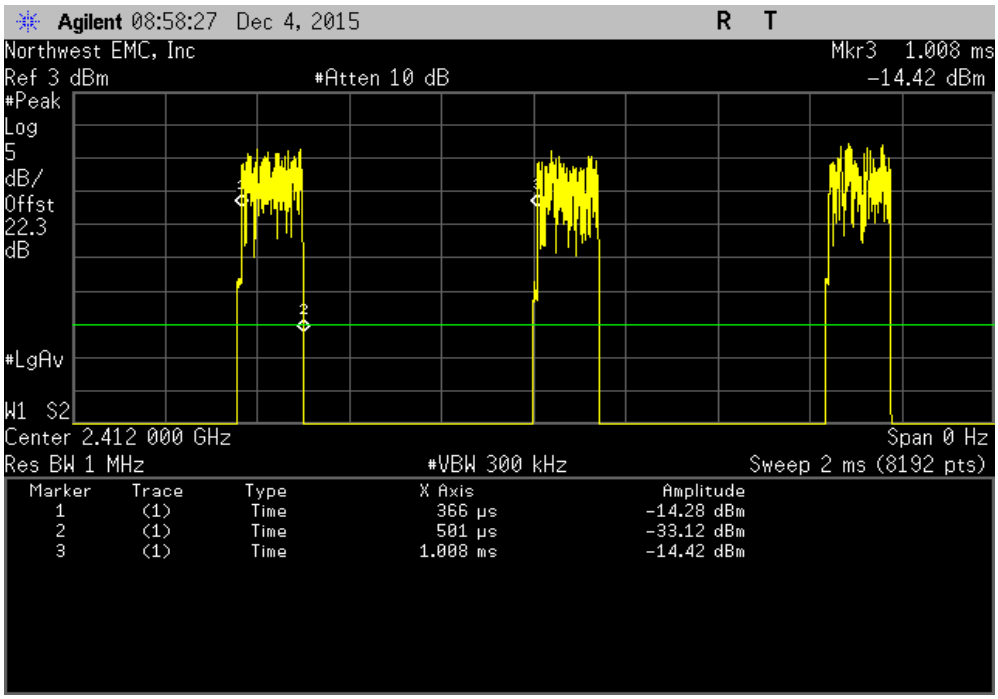
Chain A, 20 MHz, 802.11(g) 6 Mbps, High Channel 11, 2462 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



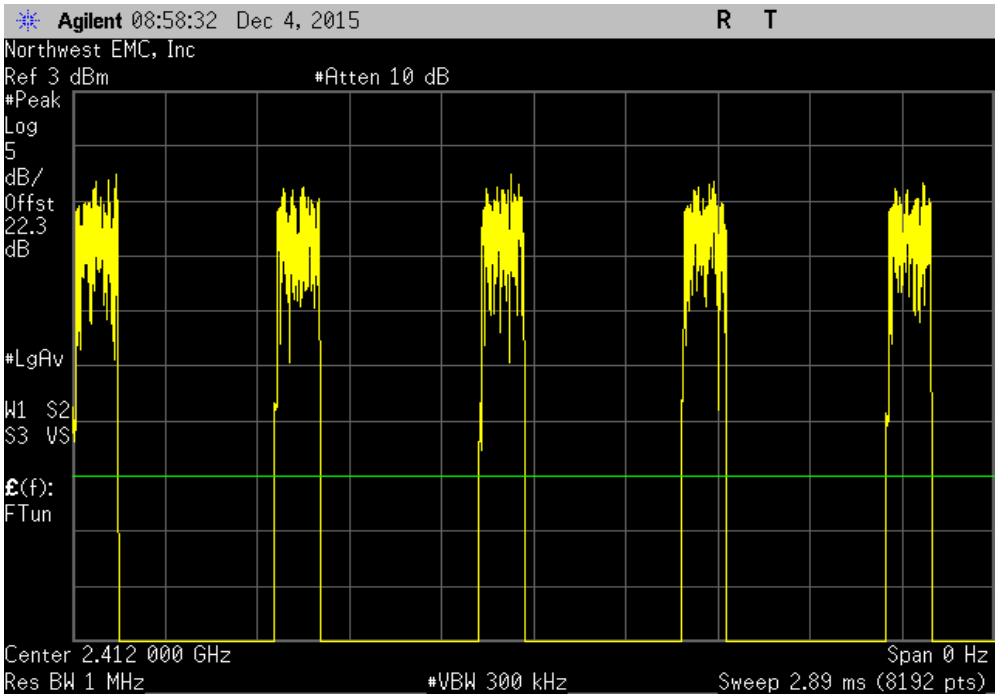
DUTY CYCLE

XMit 2015.01.14

Chain A, 20 MHz, 802.11(g) 36 Mbps, Low Channel 1, 2412 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	135 us	642.2 us	1	21	N/A	N/A



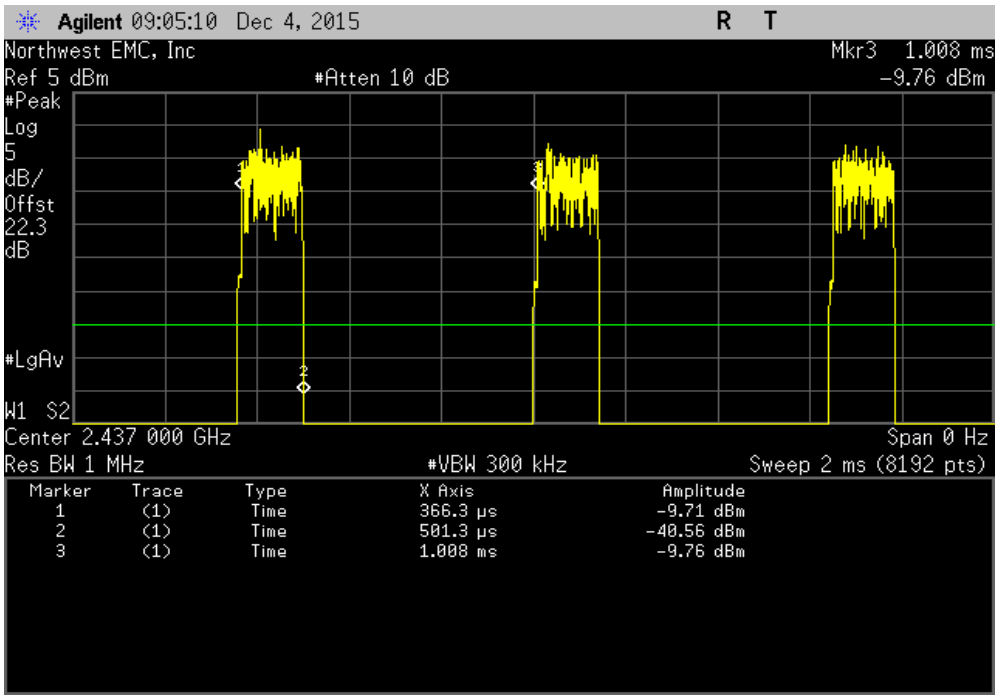
Chain A, 20 MHz, 802.11(g) 36 Mbps, Low Channel 1, 2412 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



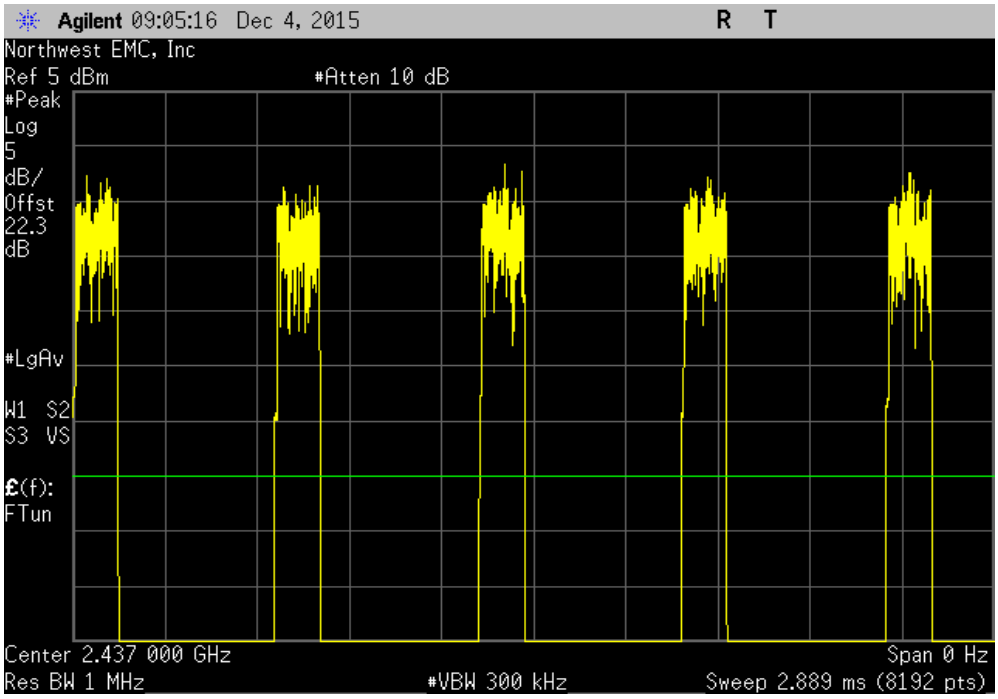
DUTY CYCLE

XMit 2015.01.14

Chain A, 20 MHz, 802.11(g) 36 Mbps, Mid Channel 6, 2437 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	135 us	642.1 us	1	21	N/A	N/A



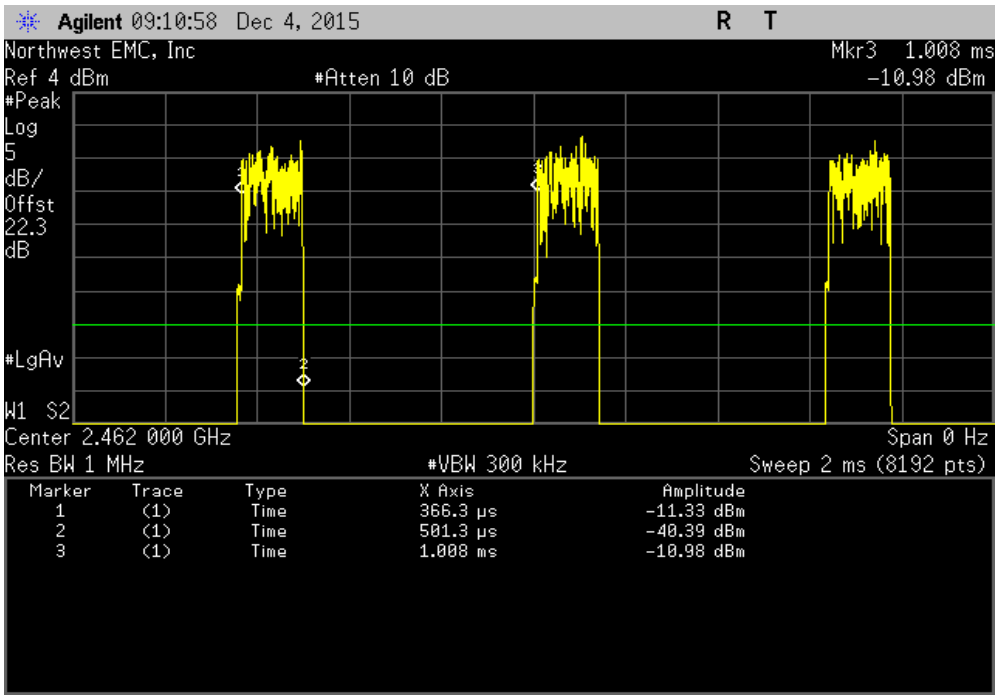
Chain A, 20 MHz, 802.11(g) 36 Mbps, Mid Channel 6, 2437 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



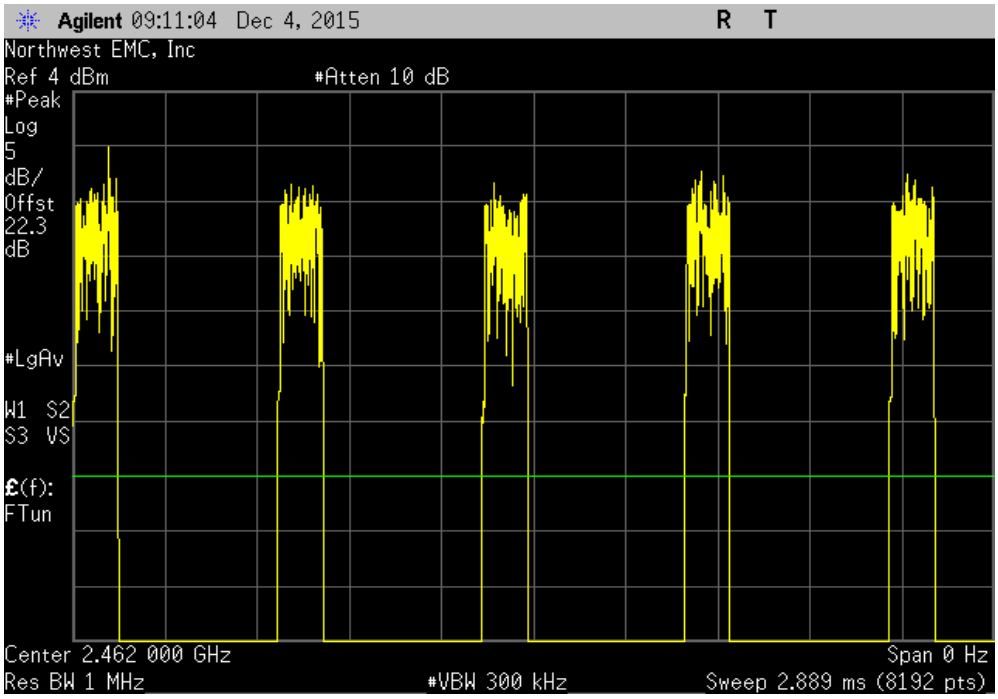
DUTY CYCLE

XMit 2015.01.14

Chain A, 20 MHz, 802.11(g) 36 Mbps, High Channel 11, 2462 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	135 us	642.1 us	1	21	N/A	N/A



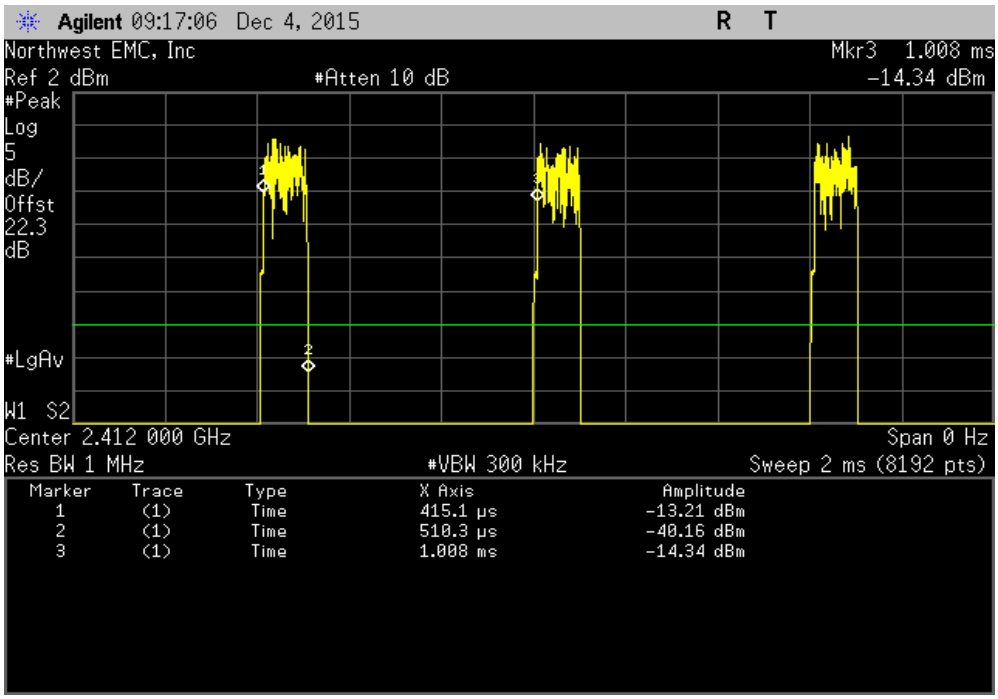
Chain A, 20 MHz, 802.11(g) 36 Mbps, High Channel 11, 2462 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



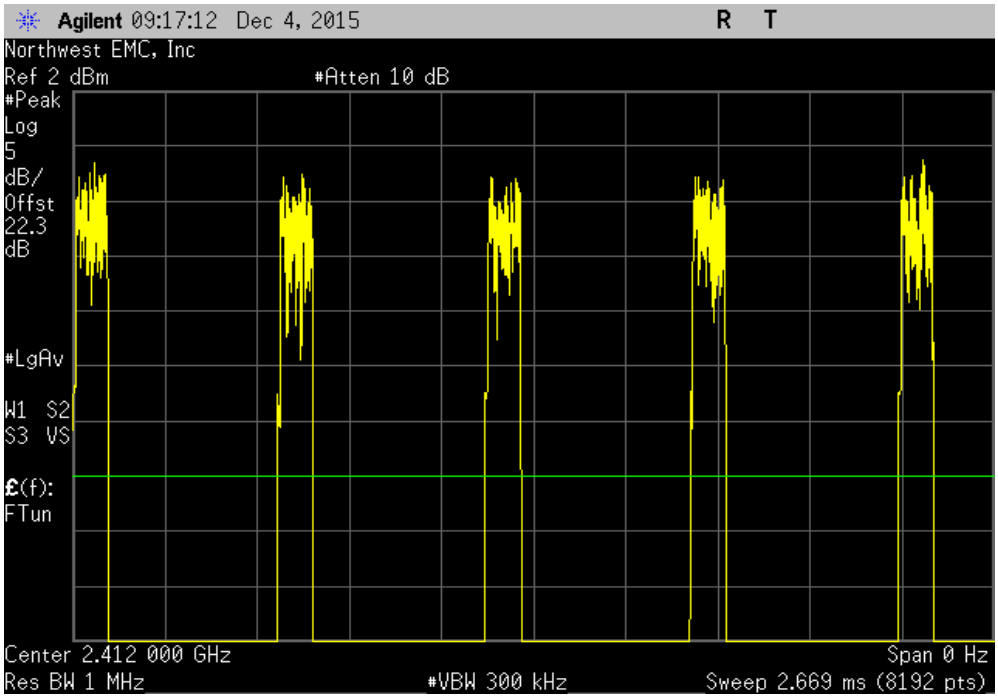
DUTY CYCLE

XMit 2015.01.14

Chain A, 20 MHz, 802.11(g) 54 Mbps, Low Channel 1, 2412 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	95.2 us	593.1 us	1	16.1	N/A	N/A



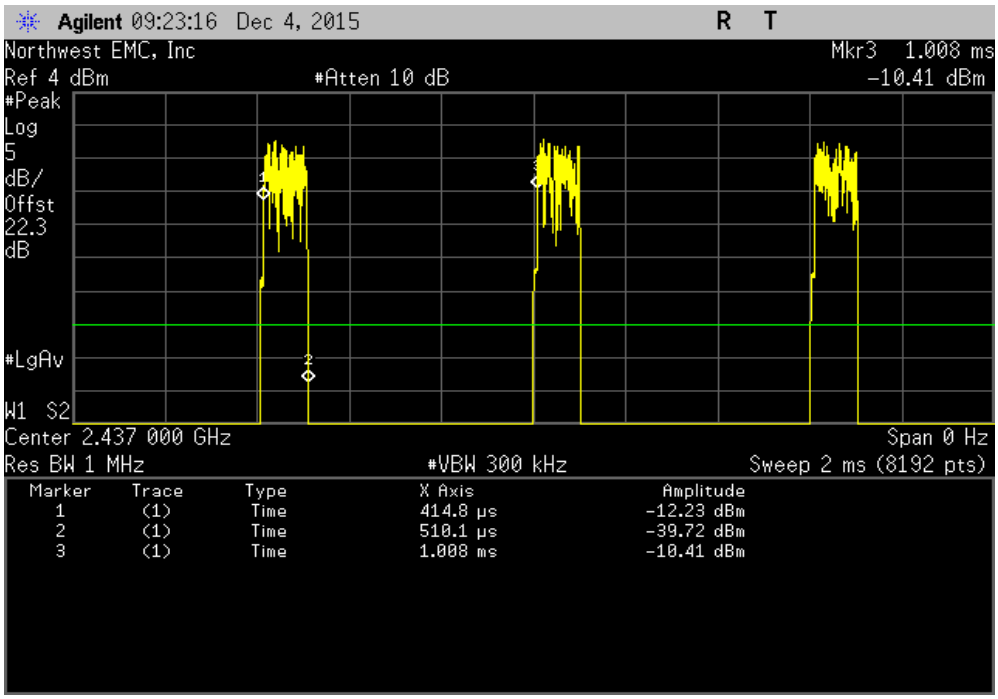
Chain A, 20 MHz, 802.11(g) 54 Mbps, Low Channel 1, 2412 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



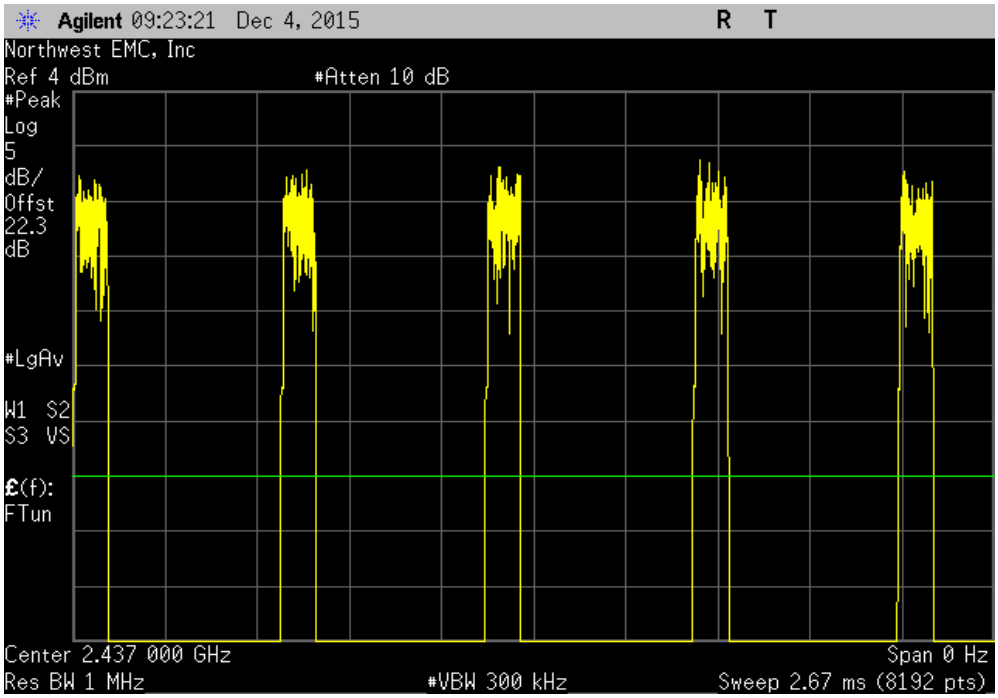
DUTY CYCLE

XMit 2015.01.14

Chain A, 20 MHz, 802.11(g) 54 Mbps, Mid Channel 6, 2437 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	95.3 us	593.4 us	1	16.1	N/A	N/A



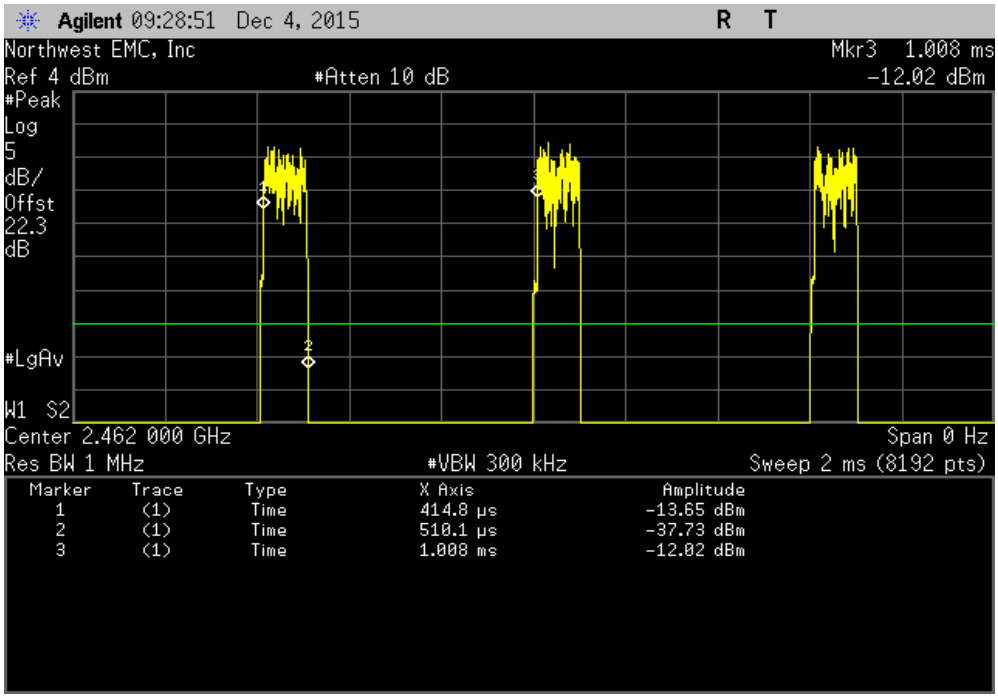
Chain A, 20 MHz, 802.11(g) 54 Mbps, Mid Channel 6, 2437 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



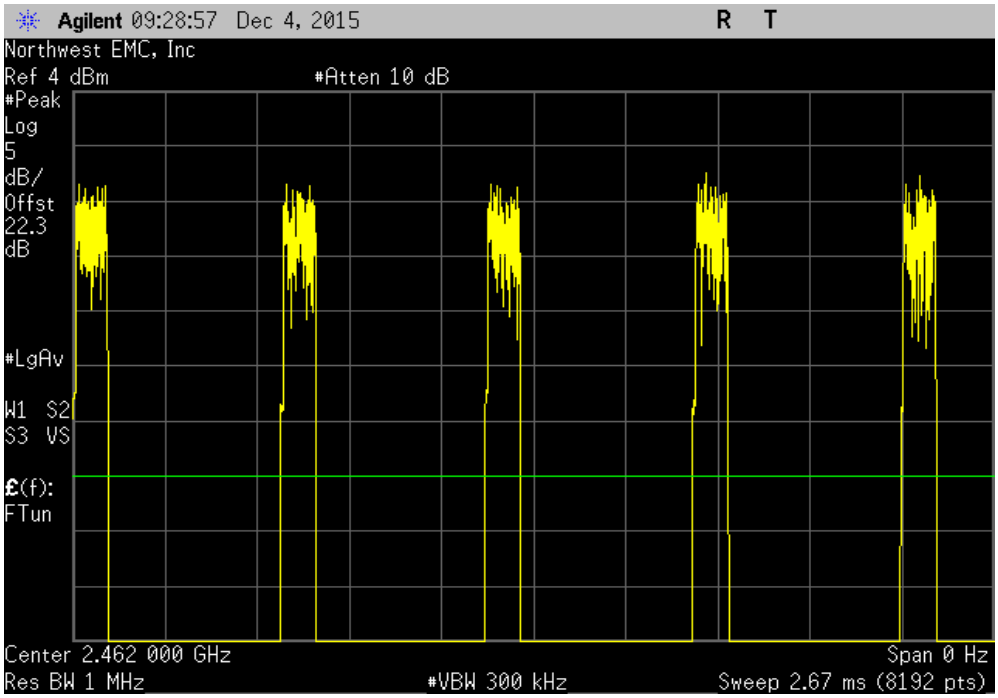
DUTY CYCLE

XMit 2015.01.14

Chain A, 20 MHz, 802.11(g) 54 Mbps, High Channel 11, 2462 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	95.3 us	593.4 us	1	16.1	N/A	N/A



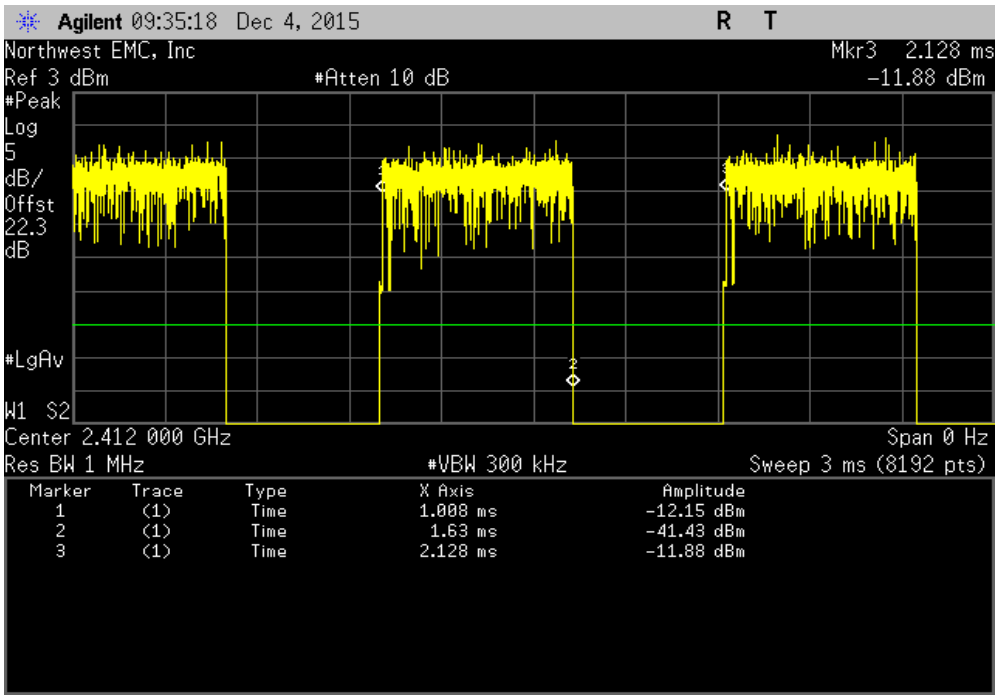
Chain A, 20 MHz, 802.11(g) 54 Mbps, High Channel 11, 2462 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



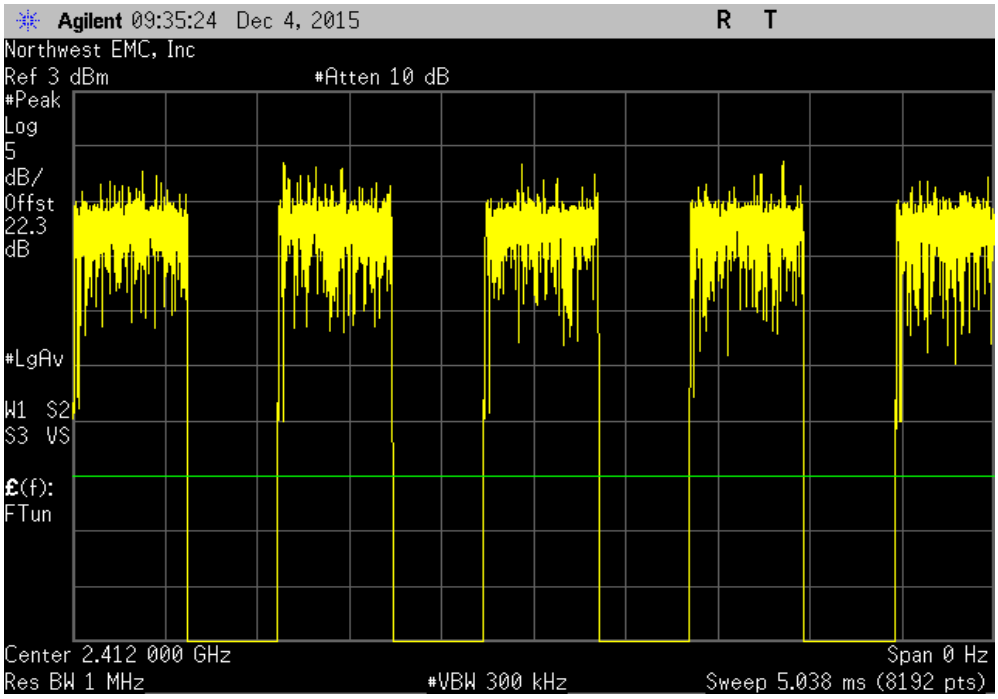
DUTY CYCLE

XMit 2015.01.14

Chain A, 20 MHz, 802.11(n) MCS0, Low Channel 1, 2412 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	621.5 us	1.12 ms	1	55.5	N/A	N/A



Chain A, 20 MHz, 802.11(n) MCS0, Low Channel 1, 2412 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A

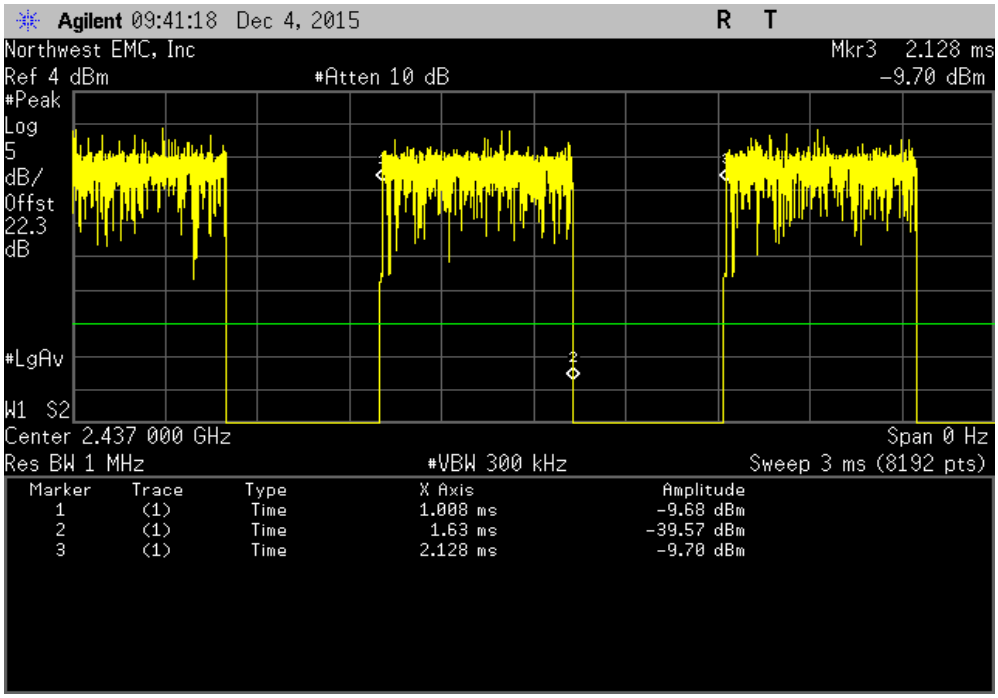


DUTY CYCLE

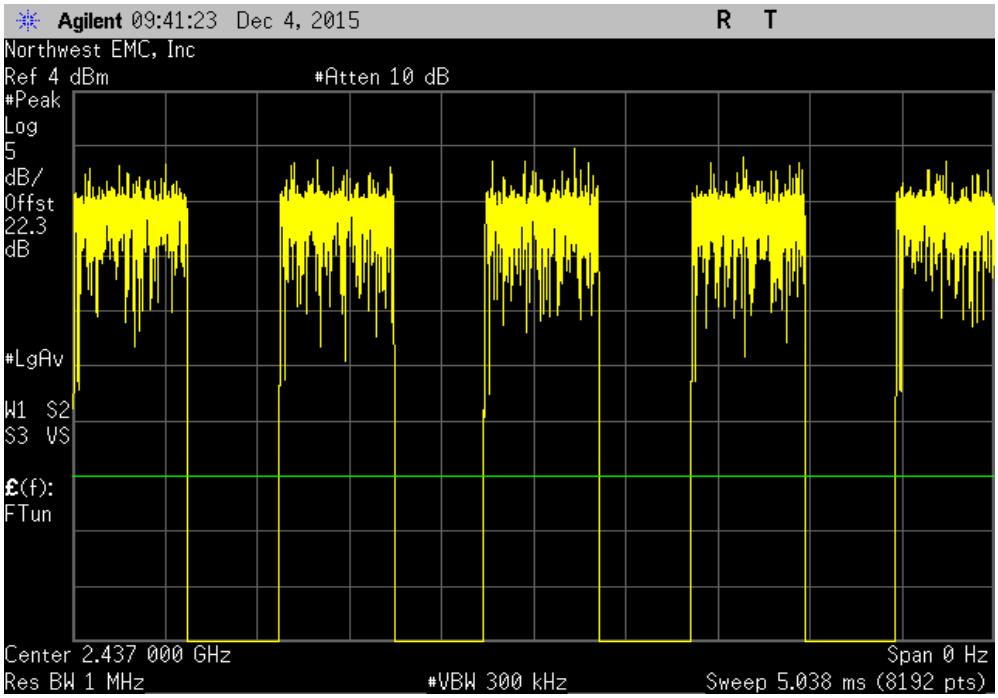
NORTHWEST EMC

XMit 2015.01.14

Chain A, 20 MHz, 802.11(n) MCS0, Mid Channel 6, 2437 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	621.5 us	1.12 ms	1	55.5	N/A	N/A



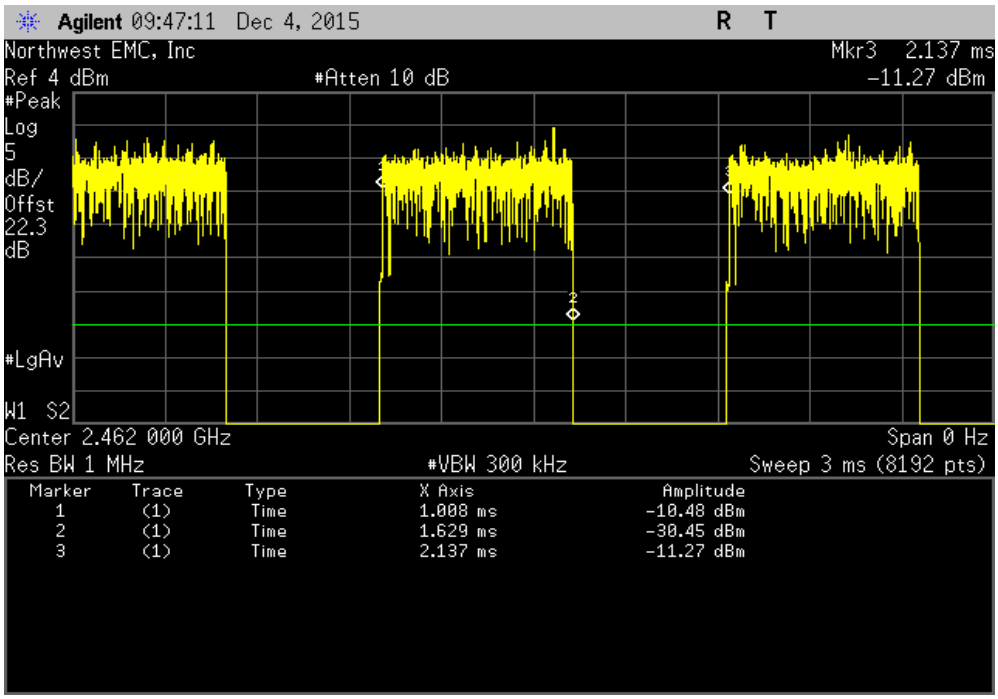
Chain A, 20 MHz, 802.11(n) MCS0, Mid Channel 6, 2437 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



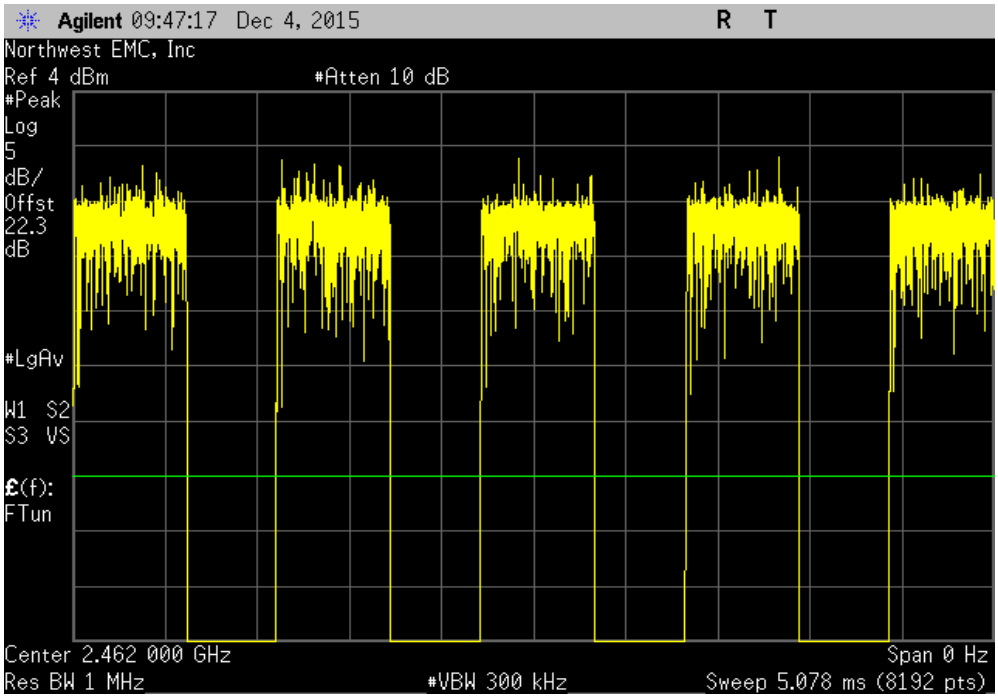
DUTY CYCLE

XMit 2015.01.14

Chain A, 20 MHz, 802.11(n) MCS0, High Channel 11, 2462 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	621.2 us	1.128 ms	1	55.1	N/A	N/A



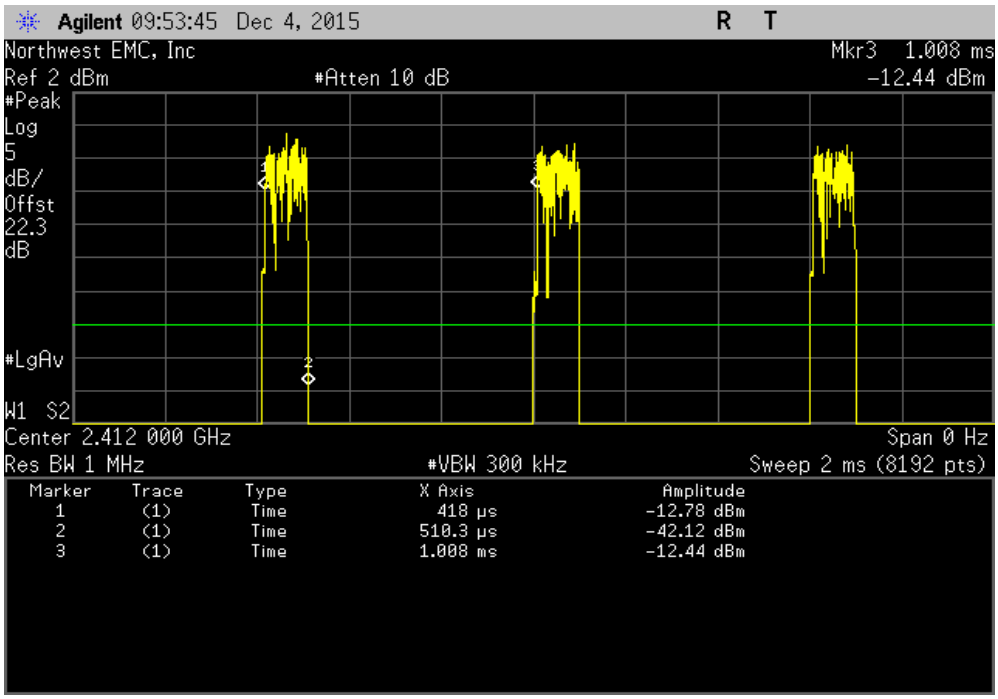
Chain A, 20 MHz, 802.11(n) MCS0, High Channel 11, 2462 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



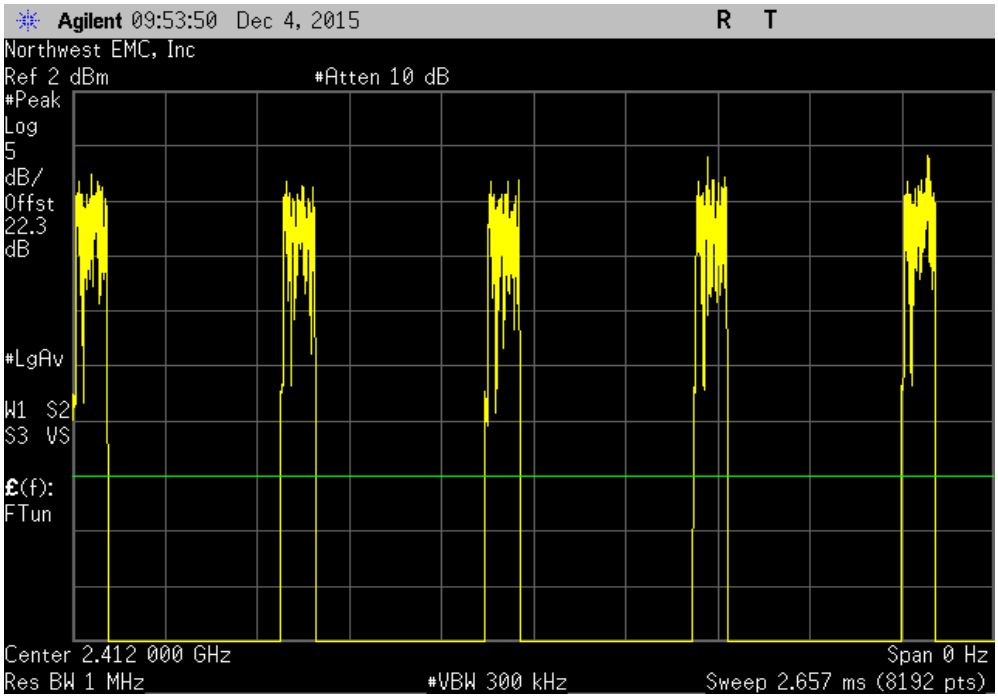
DUTY CYCLE

XMit 2015.01.14

Chain A, 20 MHz, 802.11(n) MCS7, Low Channel 1, 2412 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	92.3 us	590.4 us	1	15.6	N/A	N/A



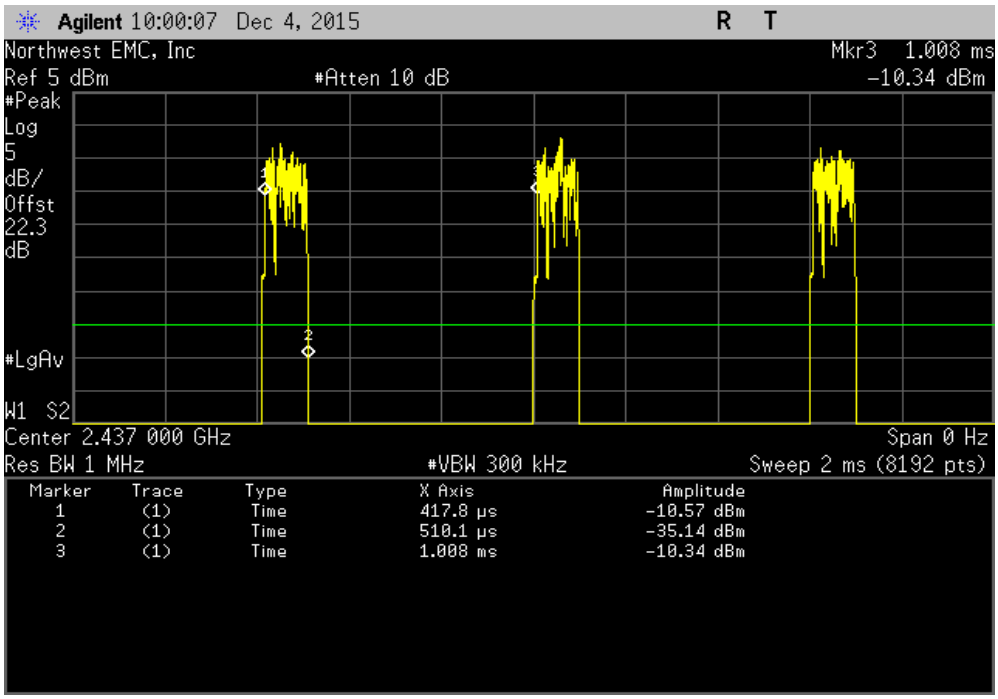
Chain A, 20 MHz, 802.11(n) MCS7, Low Channel 1, 2412 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



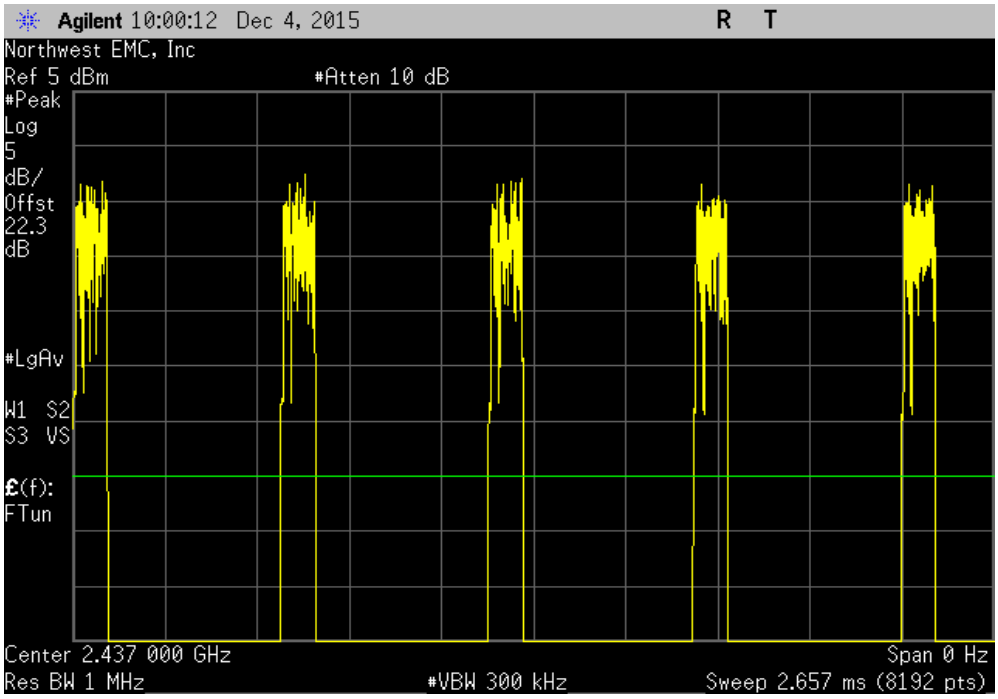
DUTY CYCLE

XMit 2015.01.14

Chain A, 20 MHz, 802.11(n) MCS7, Mid Channel 6, 2437 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	92.3 us	590.4 us	1	15.6	N/A	N/A



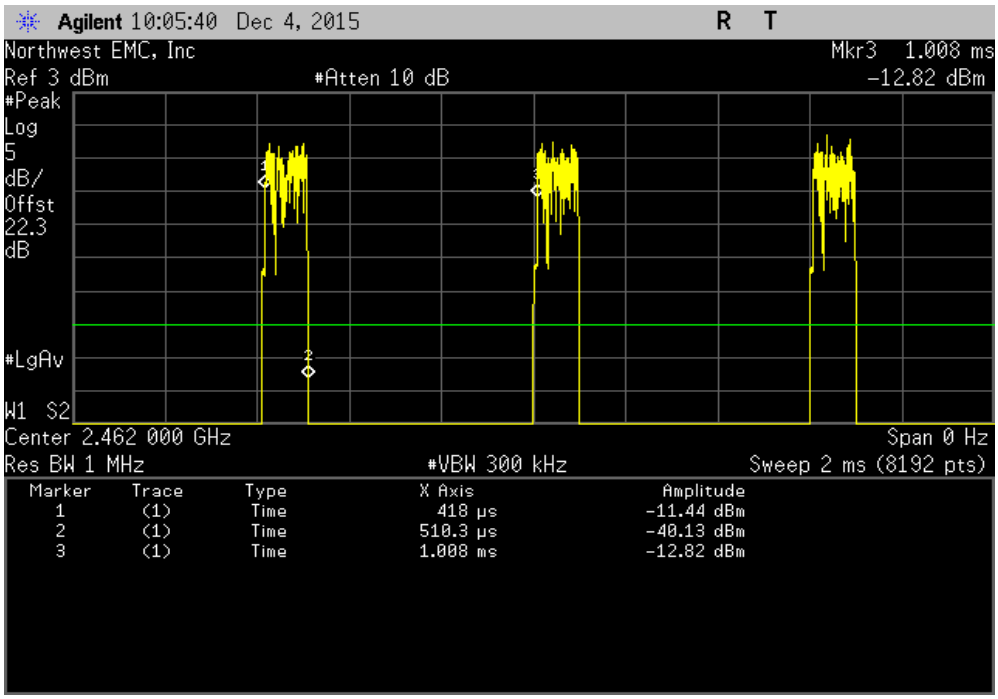
Chain A, 20 MHz, 802.11(n) MCS7, Mid Channel 6, 2437 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



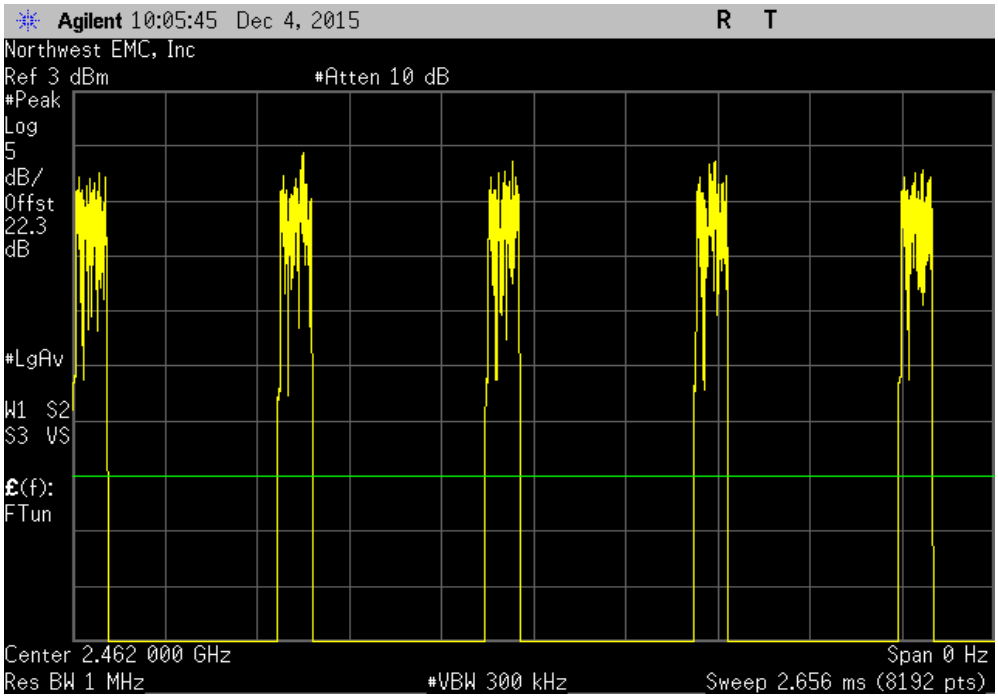
DUTY CYCLE

XMit 2015.01.14

Chain A, 20 MHz, 802.11(n) MCS7, High Channel 11, 2462 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	92.3 us	590.2 us	1	15.6	N/A	N/A

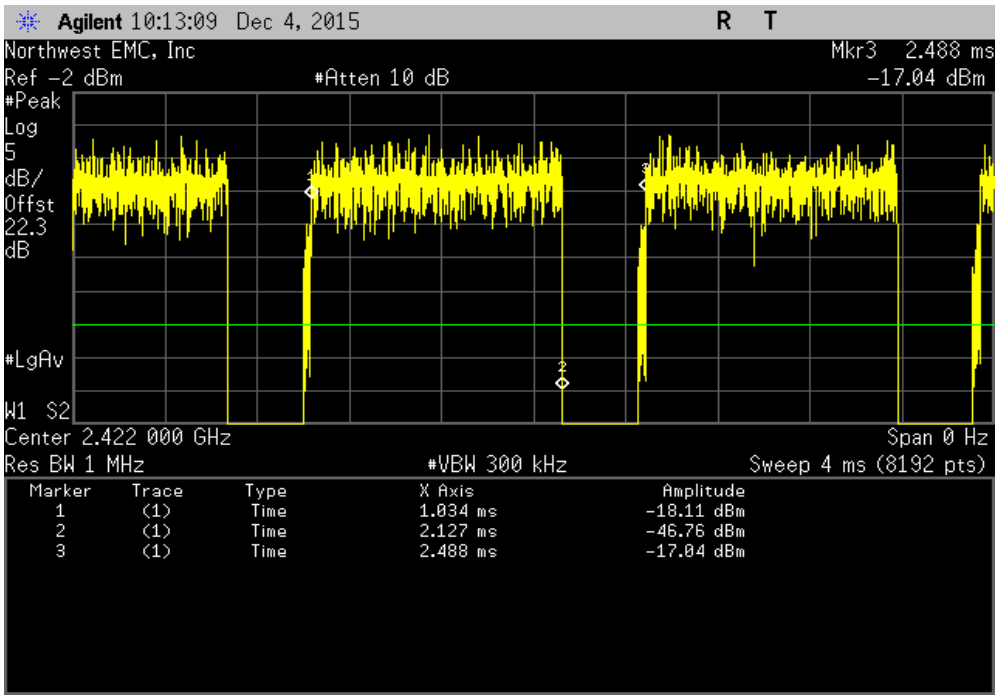


Chain A, 20 MHz, 802.11(n) MCS7, High Channel 11, 2462 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A

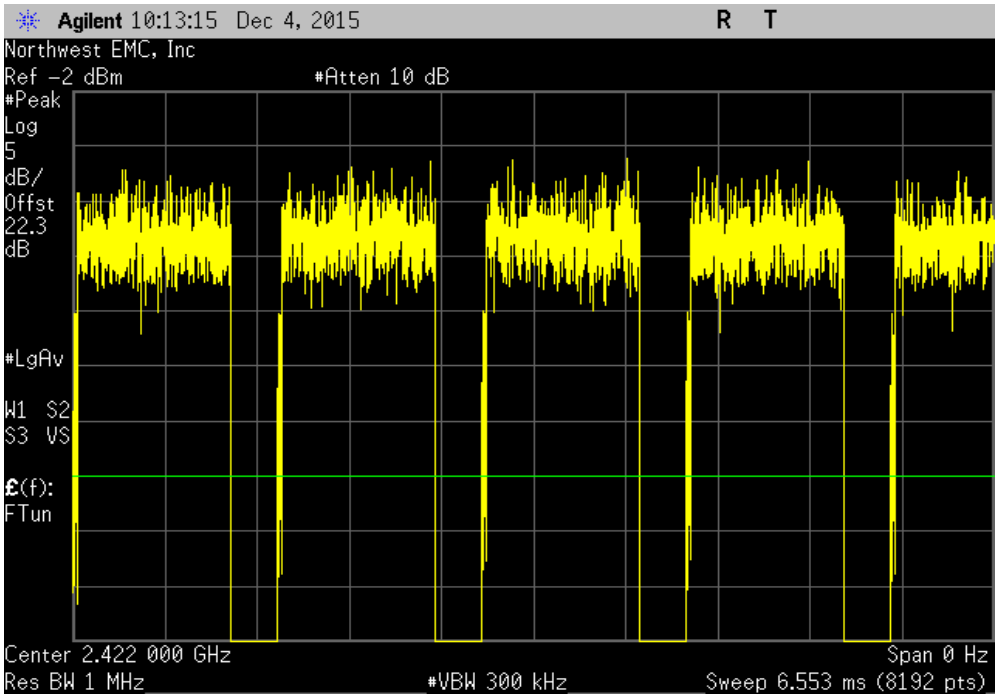


DUTY CYCLE

Chain A, 40 MHz, 802.11(n) MCS0, Low Channel 1/5, 2422 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	1.093 ms	1.454 ms	1	75.2	N/A	N/A



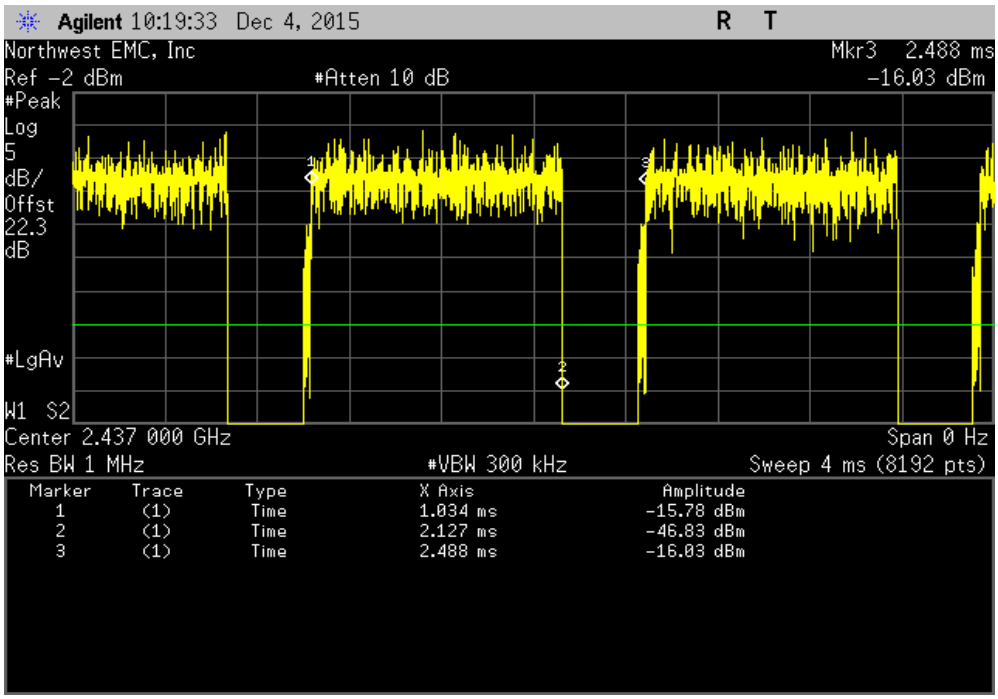
Chain A, 40 MHz, 802.11(n) MCS0, Low Channel 1/5, 2422 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	6	N/A	N/A	N/A



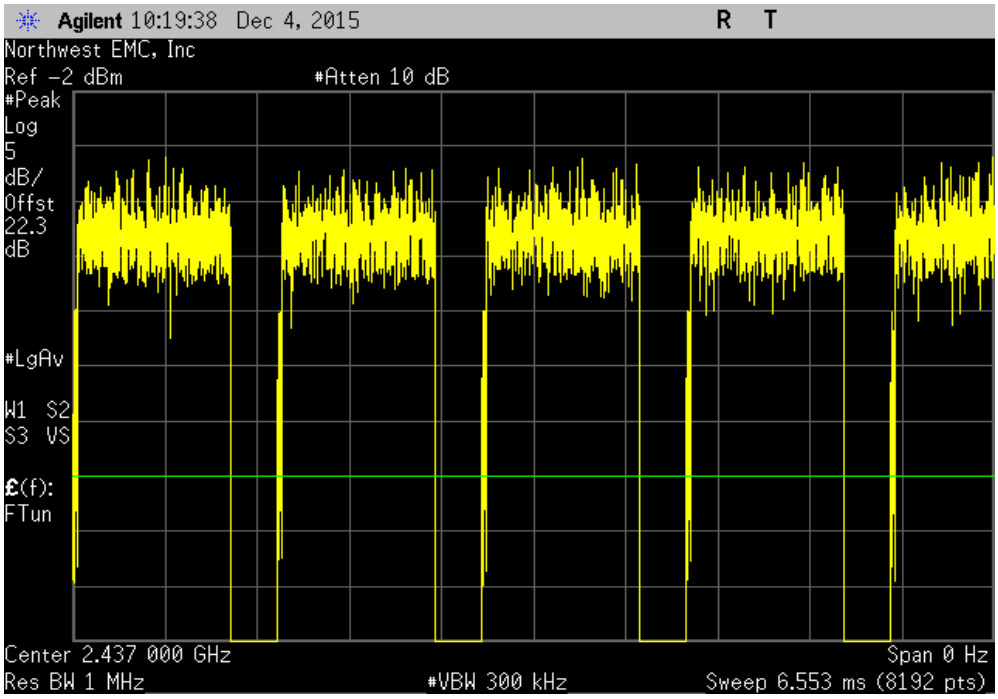
DUTY CYCLE

XMit 2015.01.14

Chain A, 40 MHz, 802.11(n) MCS0, Mid Channel 4/8, 2437 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	1.093 ms	1.454 ms	1	75.2	N/A	N/A



Chain A, 40 MHz, 802.11(n) MCS0, Mid Channel 4/8, 2437 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	6	N/A	N/A	N/A

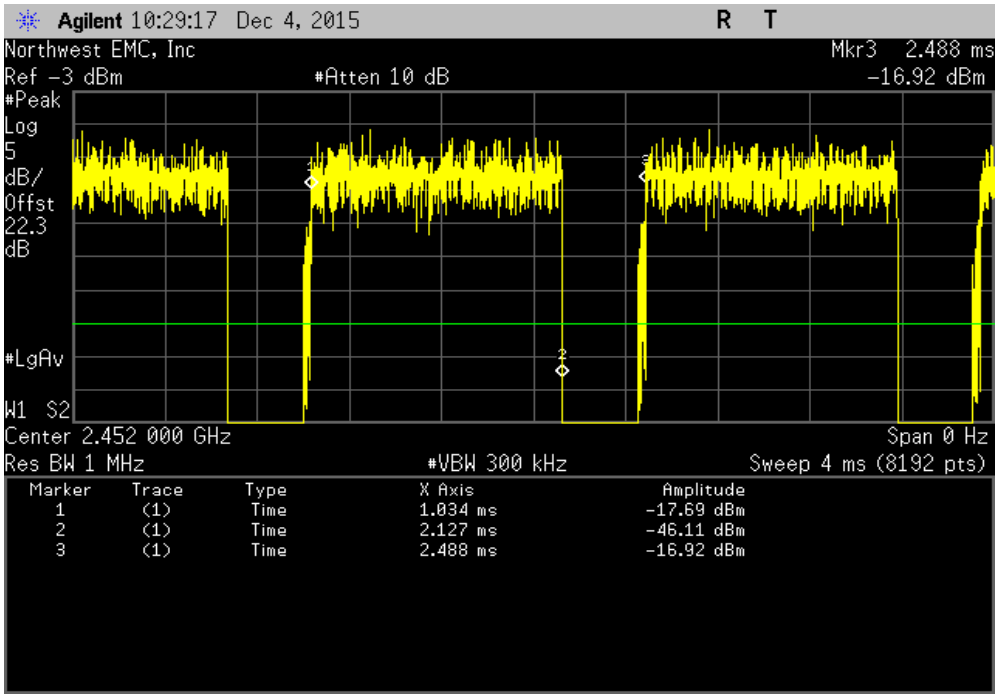


DUTY CYCLE

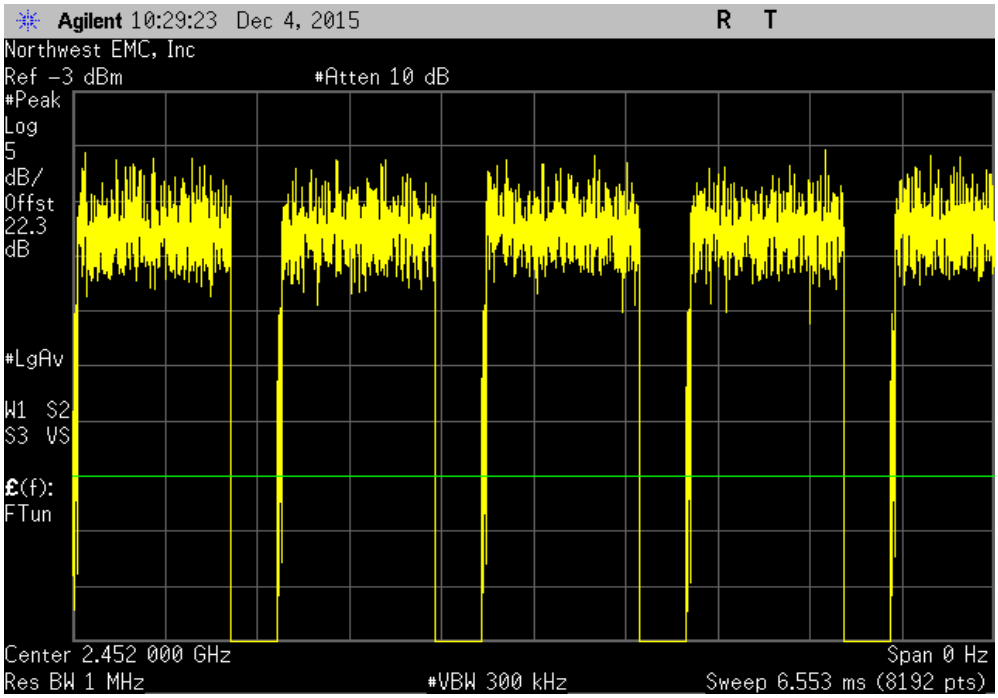
NORTHWEST EMC

XMit 2015.01.14

Chain A, 40 MHz, 802.11(n) MCS0, High Channel 7/11, 2452 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	1.093 ms	1.454 ms	1	75.2	N/A	N/A



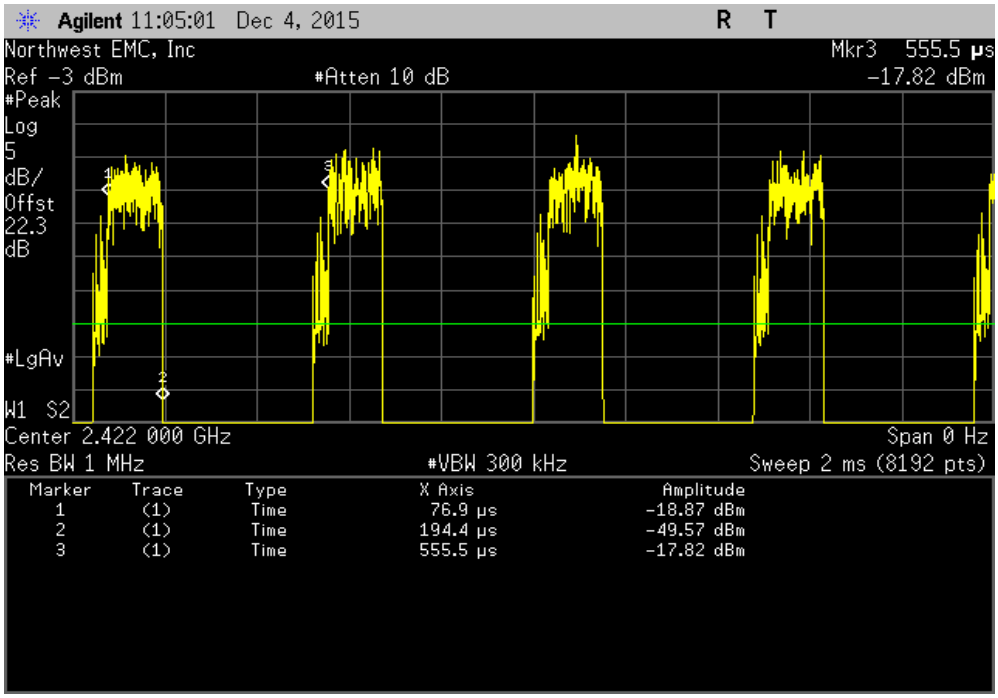
Chain A, 40 MHz, 802.11(n) MCS0, High Channel 7/11, 2452 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	6	N/A	N/A	N/A



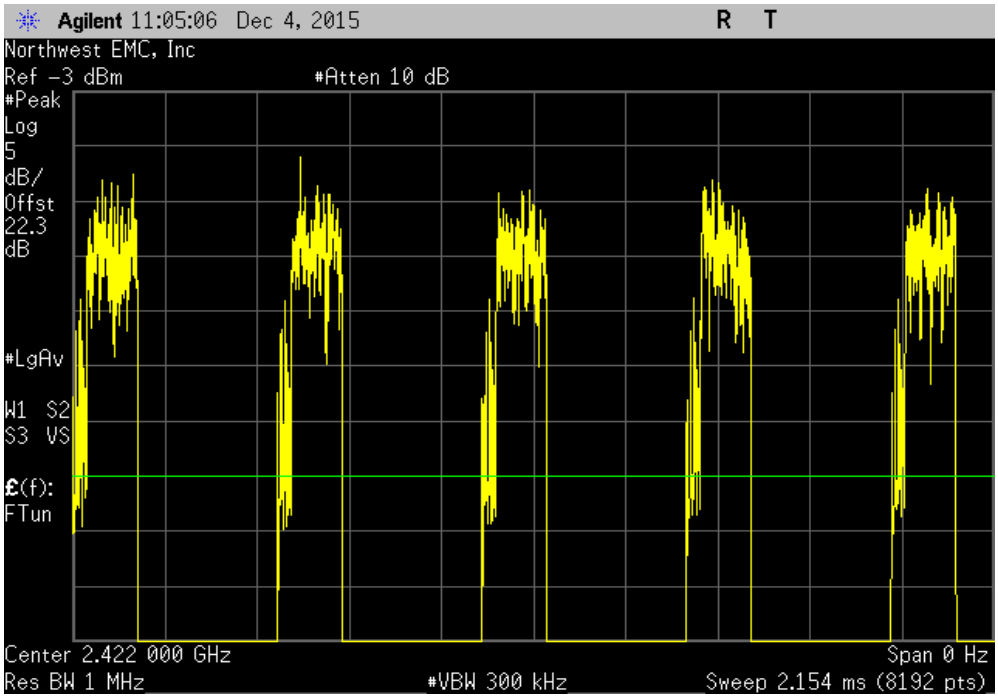
DUTY CYCLE

XMit 2015.01.14

Chain A, 40 MHz, 802.11(n) MCS7, Low Channel 1/5, 2422 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	117.5 us	478.6 us	1	24.6	N/A	N/A



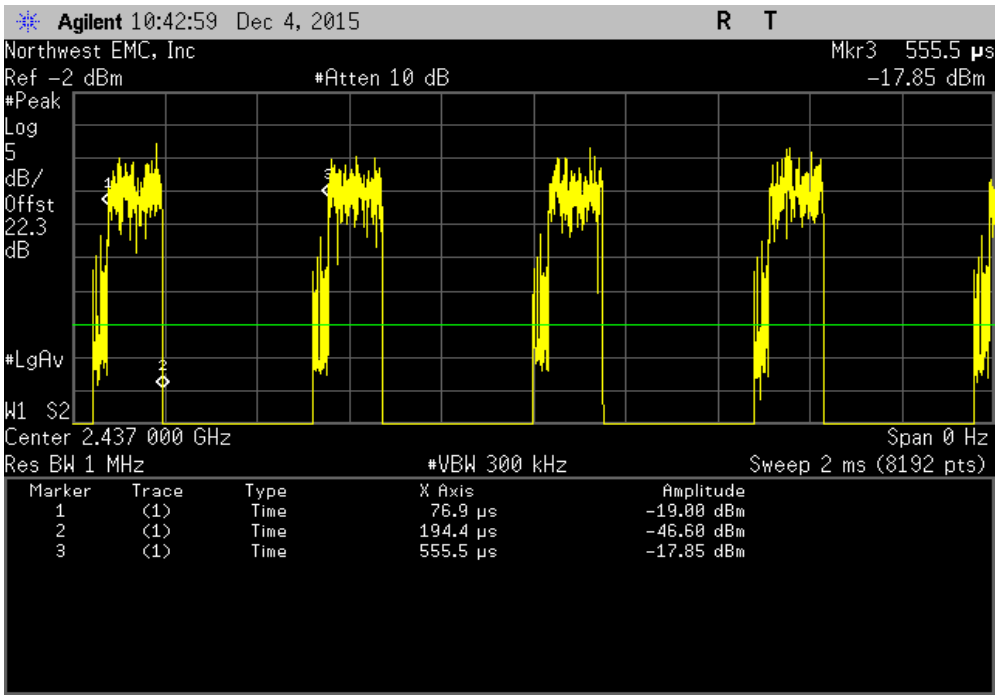
Chain A, 40 MHz, 802.11(n) MCS7, Low Channel 1/5, 2422 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	6	N/A	N/A	N/A



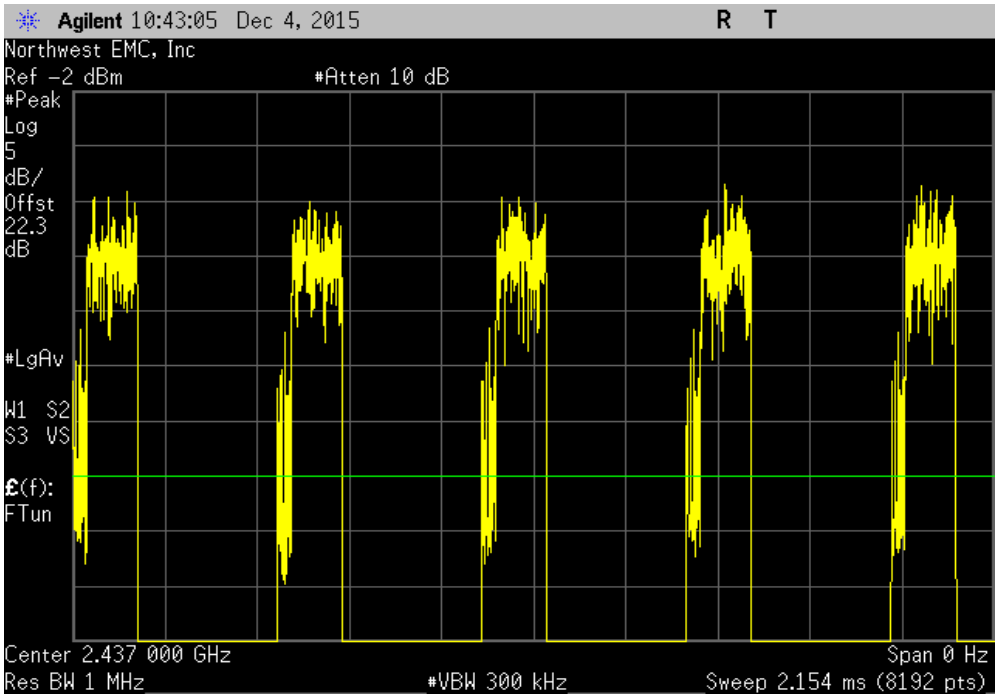
DUTY CYCLE

XMit 2015.01.14

Chain A, 40 MHz, 802.11(n) MCS7, Mid Channel 4/8, 2437 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	117.5 us	478.6 us	1	24.6	N/A	N/A



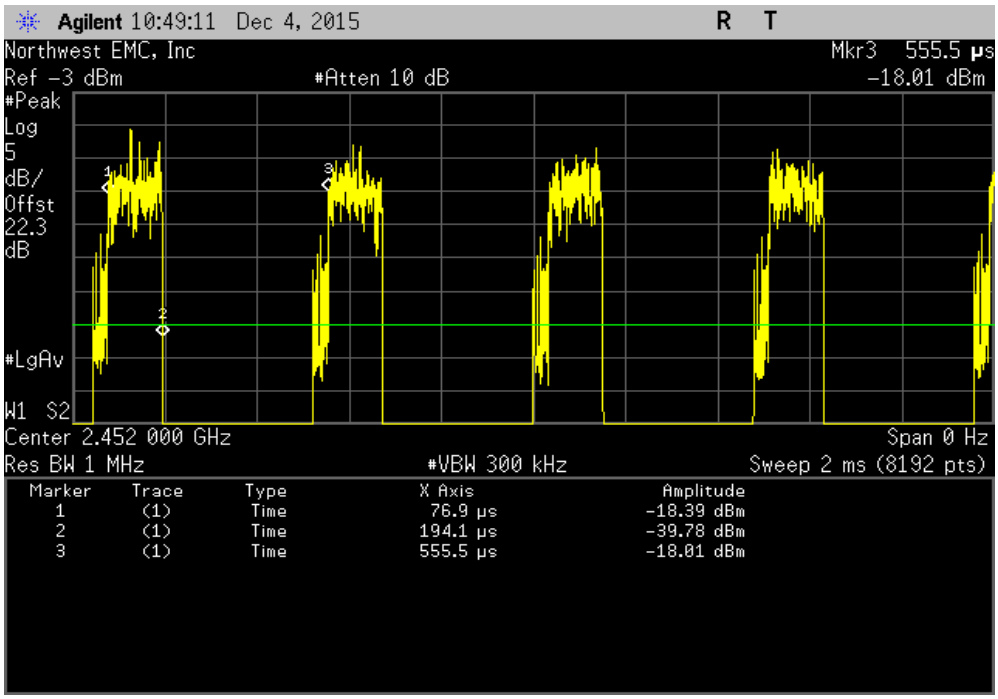
Chain A, 40 MHz, 802.11(n) MCS7, Mid Channel 4/8, 2437 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	6	N/A	N/A	N/A



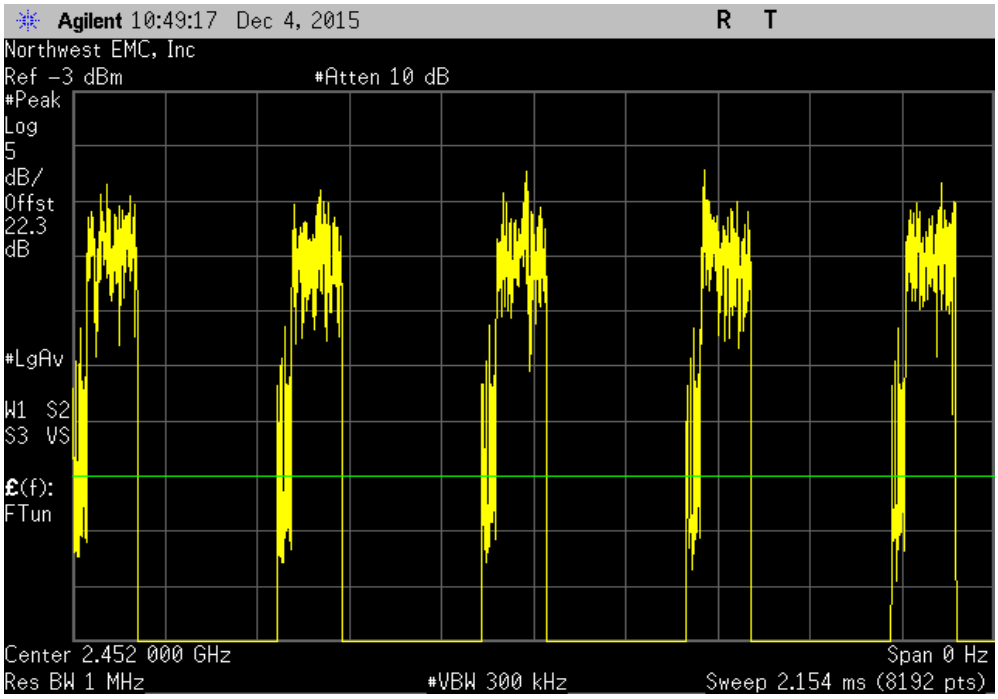
DUTY CYCLE

XMit 2015.01.14

Chain A, 40 MHz, 802.11(n) MCS7, High Channel 7/11, 2452 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	117.2 us	478.6 us	1	24.5	N/A	N/A



Chain A, 40 MHz, 802.11(n) MCS7, High Channel 7/11, 2452 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	6	N/A	N/A	N/A



DUTY CYCLE 2x2

XMit 2015.01.14

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Cable	ESM Cable Corp.	TTBJ141 KMKM-72	MNU	9/18/2015	12
Attenuator	S.M. Electronics	SA26B-20	RFW	3/10/2015	12
Block - DC	Fairview Microwave	SD3379	AMI	9/18/2015	12
Generator - Signal	Agilent	N5183A	TIK	10/17/2014	36
Analyzer - Spectrum Analyzer	Agilent	E4440A	AAX	4/20/2015	12

TEST DESCRIPTION

The Duty Cycle (x) of the single channel operation of the radio as controlled by the provided test software was measured for each of the EUT operating modes.

There is no compliance requirement to be met by this test, so therefore no Pass / Fail criteria.

The measurements were made using a zero span on the spectrum analyzer to see the pulses in the time domain. The transmit power was set to its default maximum. A direct connection was made between the RF output of the EUT and a spectrum analyzer. Attenuation and a DC block were used.

The duty cycle was calculated by dividing the transmission pulse duration (T) by the total period of a single on and total off time.

If the transmit duty cycle < 98 percent, burst gating may have been used during some of the other tests in this report to only take the measurement during the burst duration.

DUTY CYCLE 2x2

NORTHWEST EMC

XMit 2015.01.14

EUT:	Marcum RT-9			**Work Order:**	ELTL0004
Serial Number:	RTS0123456811			**Date:**	12/04/15
Customer:	Electronic Technologies, LLC			**Temperature:**	22.2°C
Attendees:	Rocky Holmes, Deb See			**Humidity:**	25%
Project:	None			**Barometric Pres.:**	998.9
Tested by:	Trevor Buls	**Power:**	110VAC/60Hz	**Job Site:**	MN08

TEST SPECIFICATIONS	**Test Method**
FCC 15.247:2015	ANSI C63.10:2013

COMMENTS

None

DEVIATIONS FROM TEST STANDARD

None

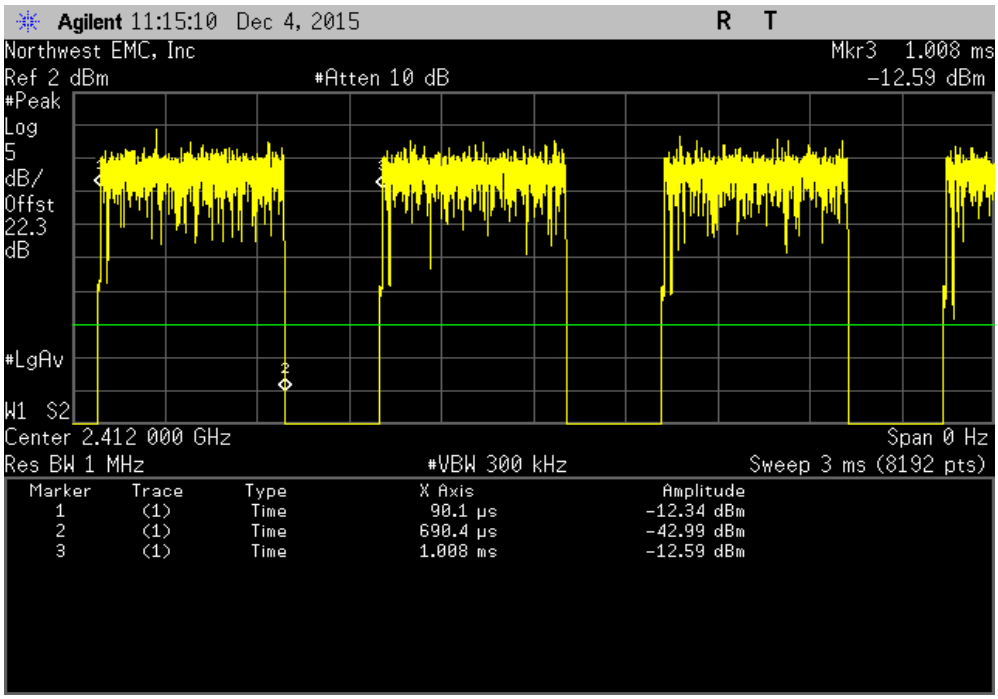
Configuration #	5	*Signature* Trevor Buls

	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
Chain A						
20 MHz						
2400 MHz - 2483.5 MHz Band						
802.11(n) MCS8						
Low Channel 1, 2412 MHz	600.3 us	918.2 us	1	65.4	N/A	N/A
Low Channel 1, 2412 MHz	N/A	N/A	5	N/A	N/A	N/A
Mid Channel 6, 2437 MHz	599.9 us	918.2 us	1	65.3	N/A	N/A
Mid Channel 6, 2437 MHz	N/A	N/A	5	N/A	N/A	N/A
High Channel 11, 2462 MH	600.3 us	918.2 us	1	65.4	N/A	N/A
High Channel 11, 2462 MH	N/A	N/A	5	N/A	N/A	N/A
802.11(n) MCS15						
Low Channel 1, 2412 MHz	150.4 us	468.1 us	1	32.1	N/A	N/A
Low Channel 1, 2412 MHz	N/A	N/A	5	N/A	N/A	N/A
Mid Channel 6, 2437 MHz	150.4 us	468.1 us	1	32.1	N/A	N/A
Mid Channel 6, 2437 MHz	N/A	N/A	5	N/A	N/A	N/A
High Channel 11, 2462 MH	150.4 us	468.1 us	1	32.1	N/A	N/A
High Channel 11, 2462 MH	N/A	N/A	5	N/A	N/A	N/A
Chain B						
20 MHz						
2400 MHz - 2483.5 MHz Band						
802.11(n) MCS8						
Low Channel 1, 2412 MHz	598.8 us	918.2 us	1	65.2	N/A	N/A
Low Channel 1, 2412 MHz	N/A	N/A	5	N/A	N/A	N/A
Mid Channel 6, 2437 MHz	598.4 us	917.8 us	1	65.2	N/A	N/A
Mid Channel 6, 2437 MHz	N/A	N/A	5	N/A	N/A	N/A
High Channel 11, 2462 MH	599.2 us	918.2 us	1	65.3	N/A	N/A
High Channel 11, 2462 MH	N/A	N/A	5	N/A	N/A	N/A
802.11(n) MCS15						
Low Channel 1, 2412 MHz	149.7 us	468.3 us	1	32	N/A	N/A
Low Channel 1, 2412 MHz	N/A	N/A	5	N/A	N/A	N/A
Mid Channel 6, 2437 MHz	149.7 us	468 us	1	32	N/A	N/A
Mid Channel 6, 2437 MHz	N/A	N/A	5	N/A	N/A	N/A
High Channel 11, 2462 MH	149.7 us	468.1 us	1	32	N/A	N/A
High Channel 11, 2462 MH	N/A	N/A	5	N/A	N/A	N/A

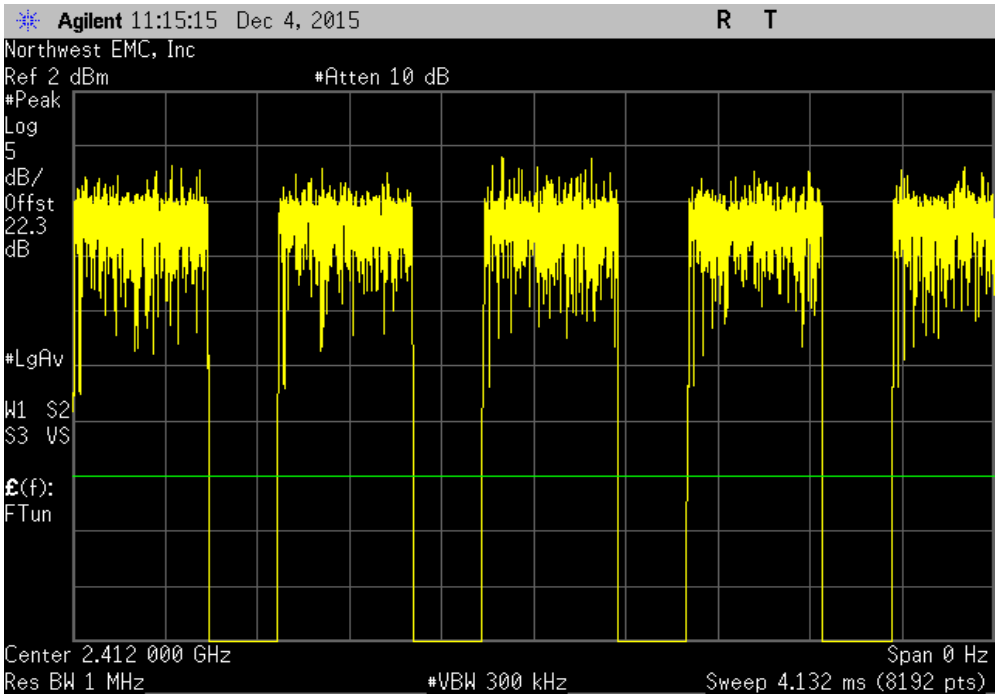
DUTY CYCLE 2x2

XMit 2015.01.14

Chain A, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, Low Channel 1, 2412 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	600.3 us	918.2 us	1	65.4	N/A	N/A



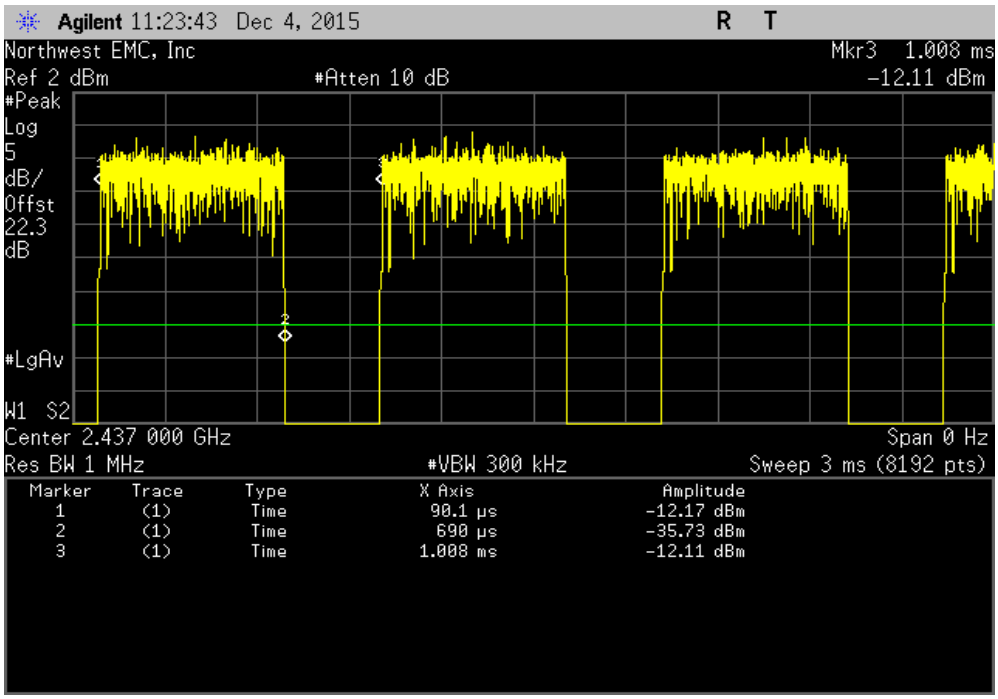
Chain A, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, Low Channel 1, 2412 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



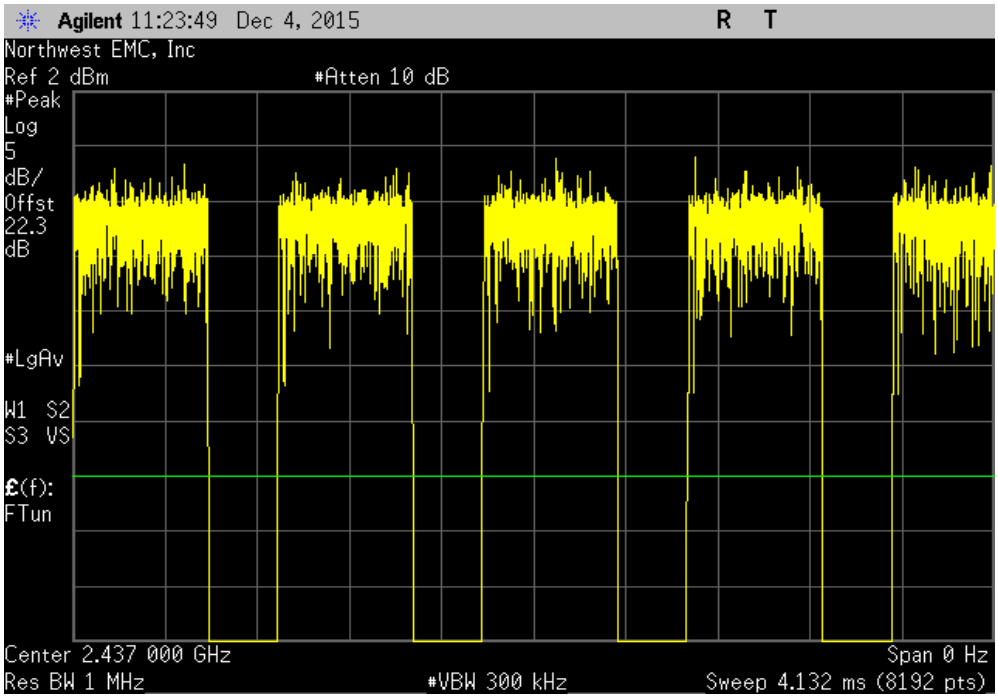
DUTY CYCLE 2x2

XMit 2015.01.14

Chain A, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, Mid Channel 6, 2437 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	599.9 us	918.2 us	1	65.3	N/A	N/A



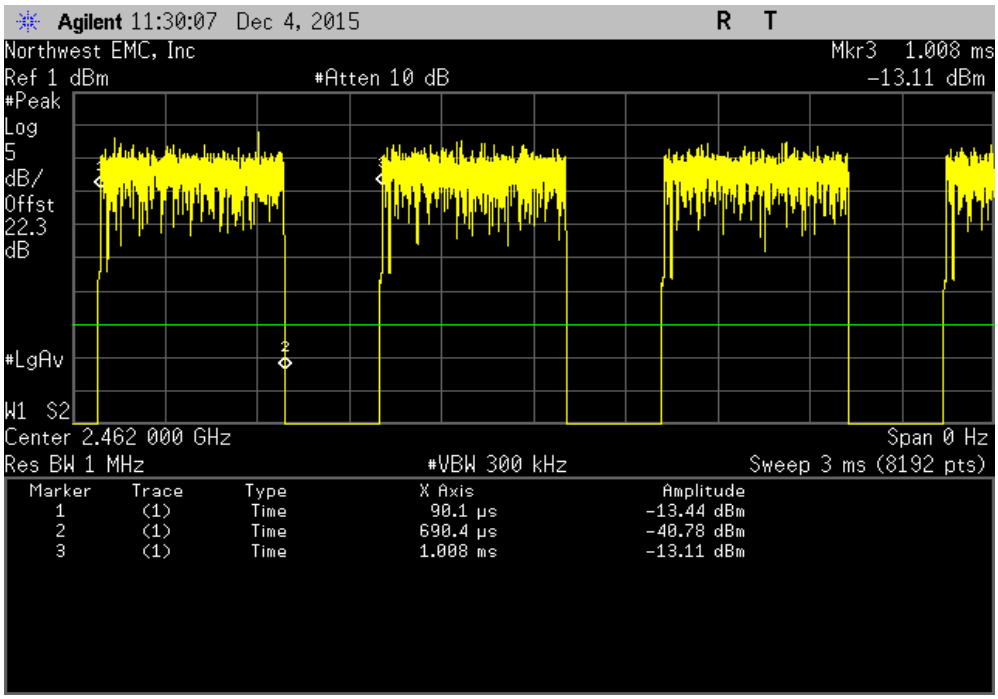
Chain A, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, Mid Channel 6, 2437 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



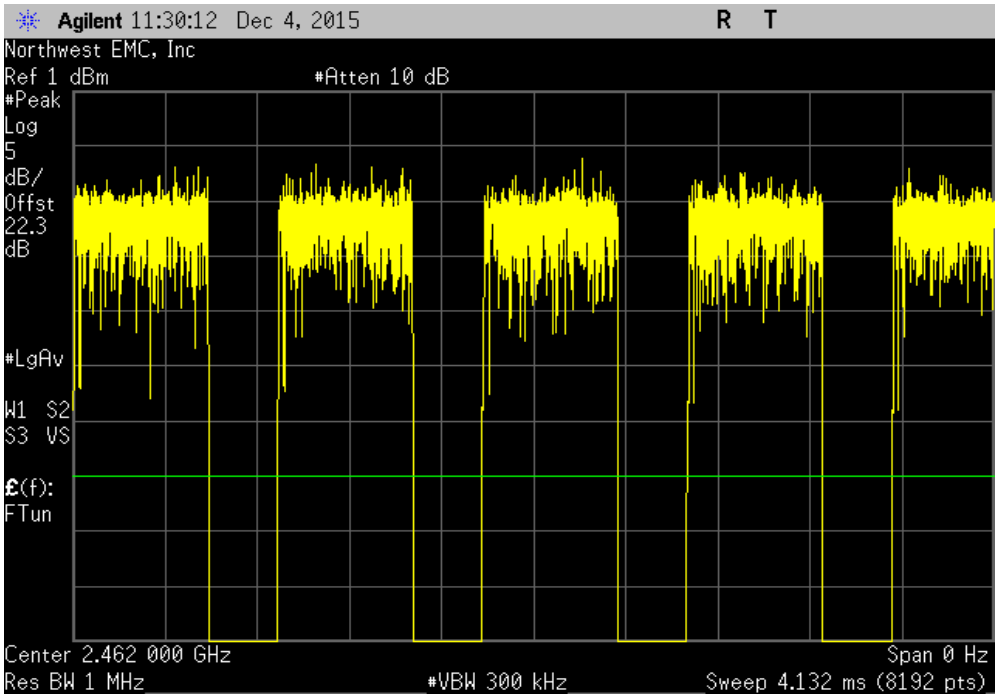
DUTY CYCLE 2x2

XMit 2015.01.14

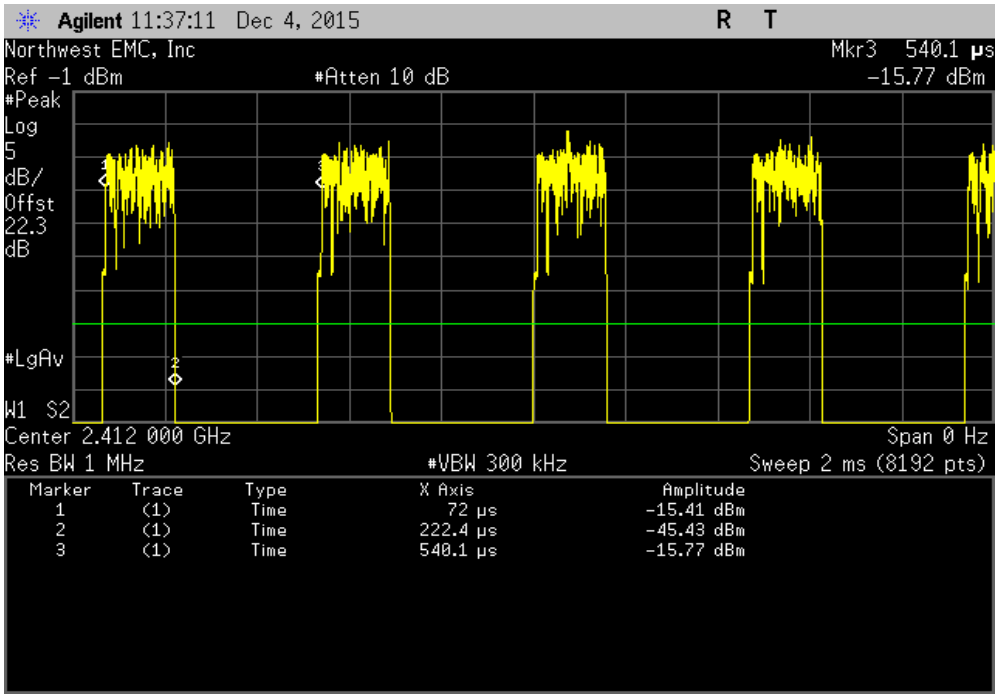
Chain A, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, High Channel 11, 2462 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	600.3 us	918.2 us	1	65.4	N/A	N/A



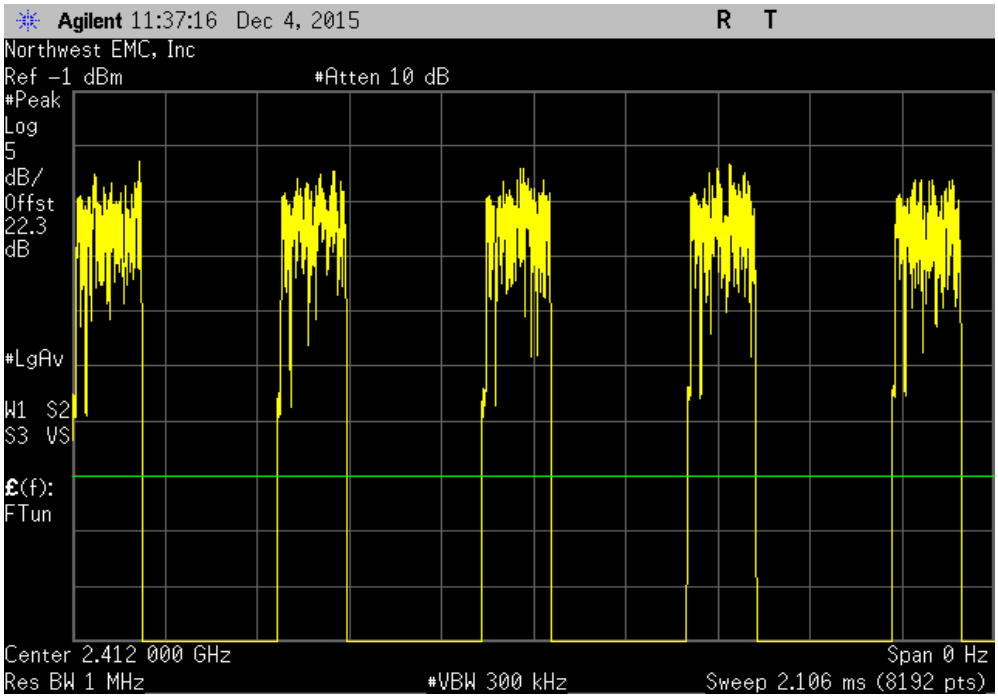
Chain A, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, High Channel 11, 2462 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



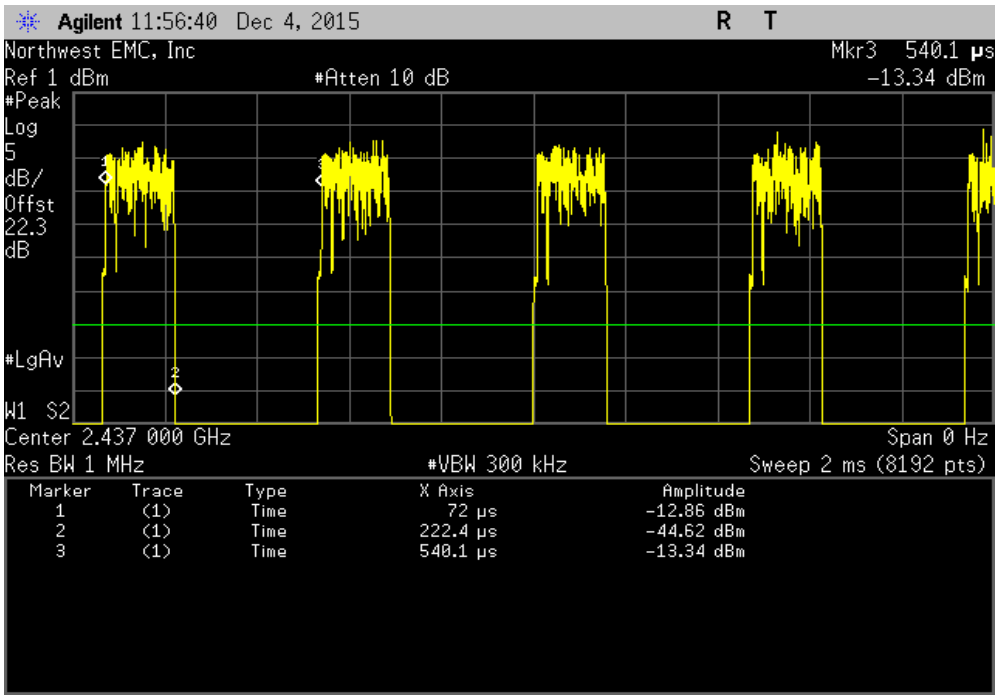
Chain A, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, Low Channel 1, 2412 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	150.4 us	468.1 us	1	32.1	N/A	N/A



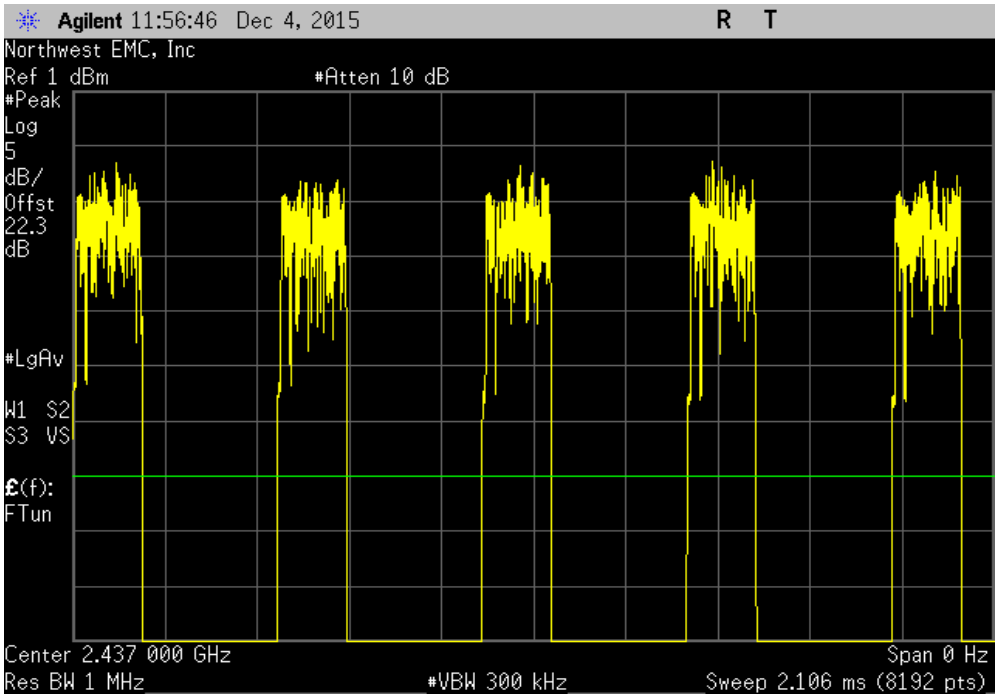
Chain A, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, Low Channel 1, 2412 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



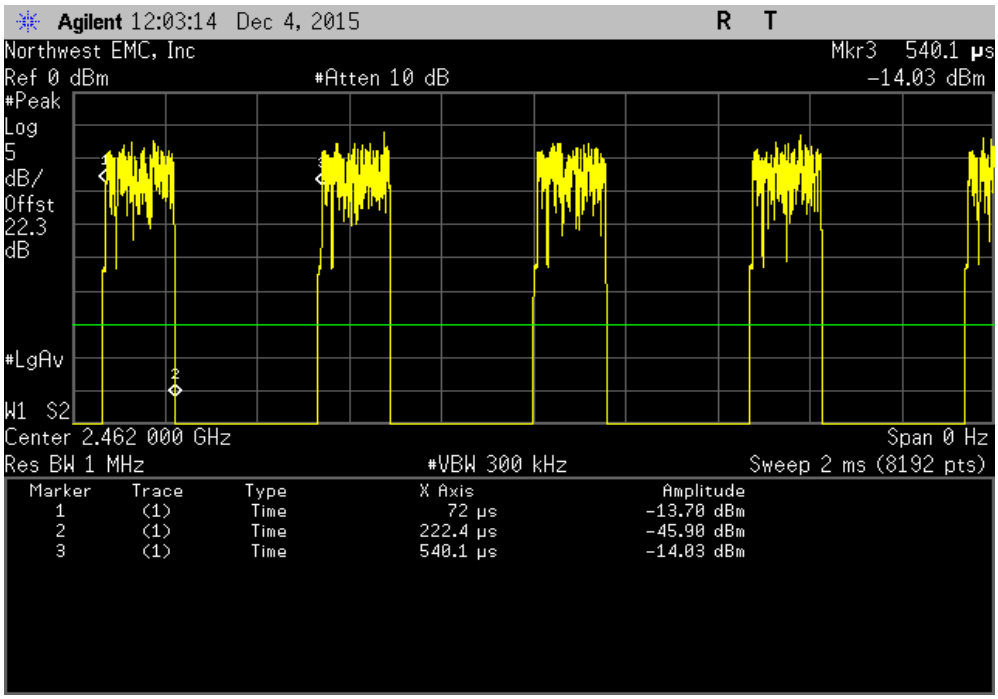
Chain A, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, Mid Channel 6, 2437 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	150.4 us	468.1 us	1	32.1	N/A	N/A



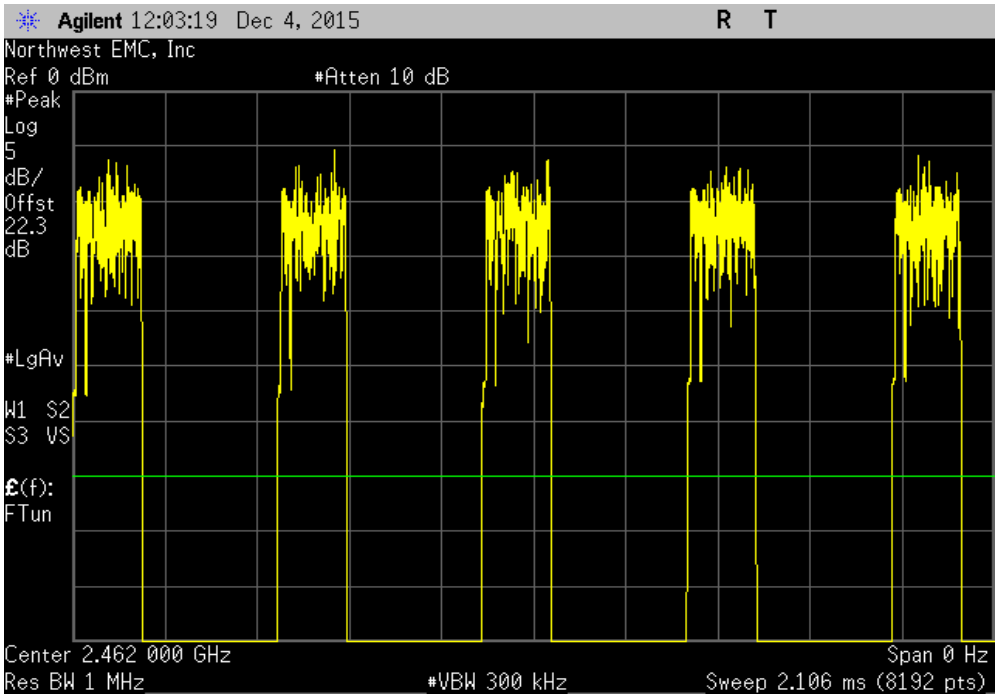
Chain A, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, Mid Channel 6, 2437 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



Chain A, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, High Channel 11, 2462 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	150.4 us	468.1 us	1	32.1	N/A	N/A



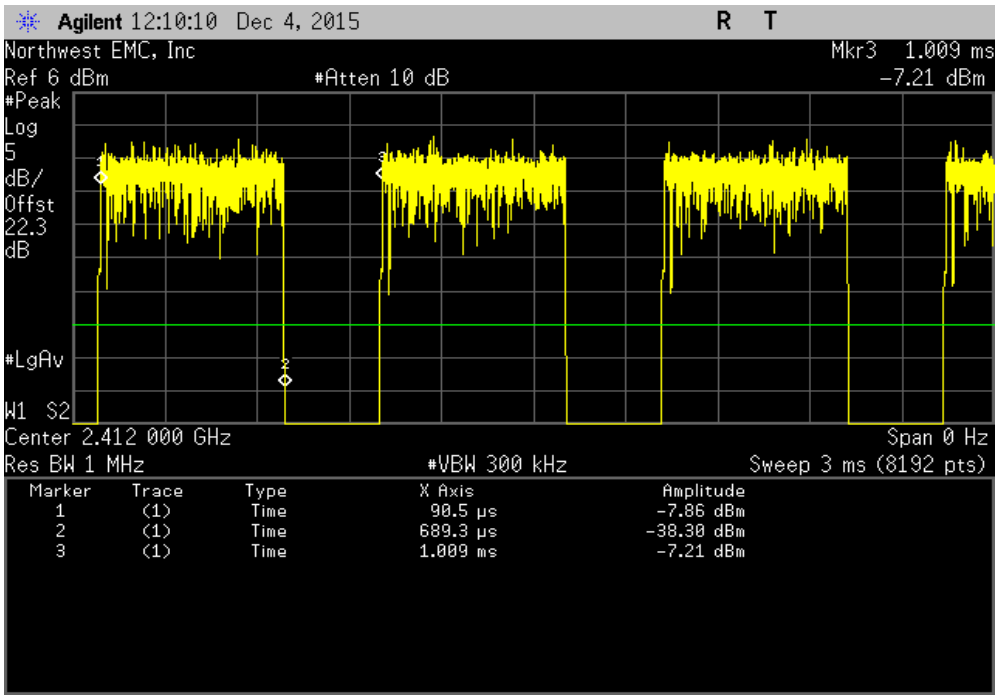
Chain A, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, High Channel 11, 2462 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



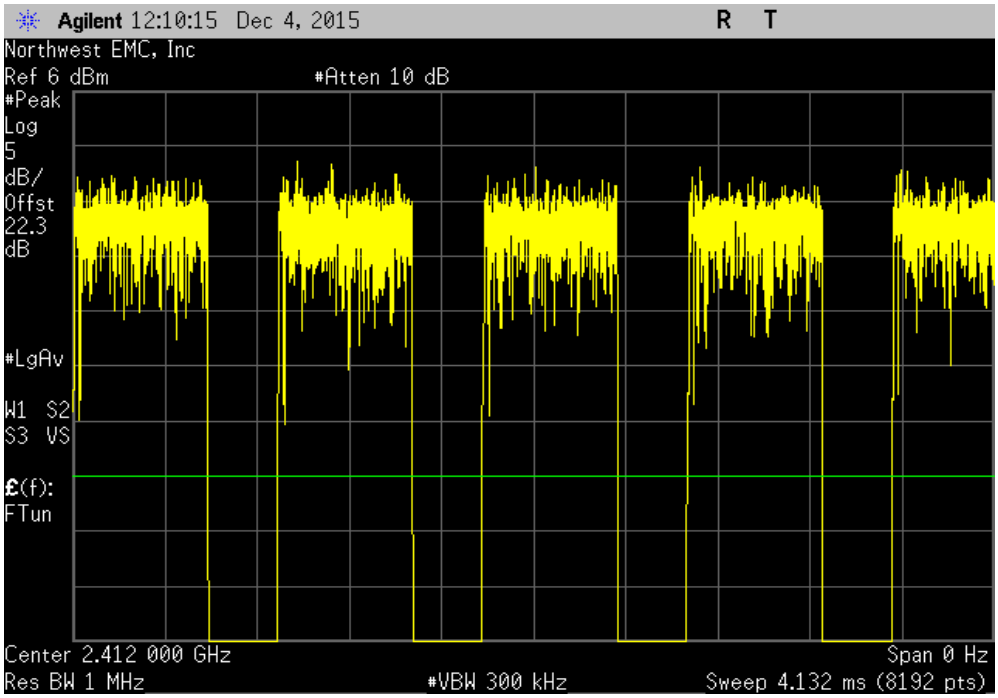
DUTY CYCLE 2x2

XMit 2015.01.14

Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, Low Channel 1, 2412 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	598.8 us	918.2 us	1	65.2	N/A	N/A



Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, Low Channel 1, 2412 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A

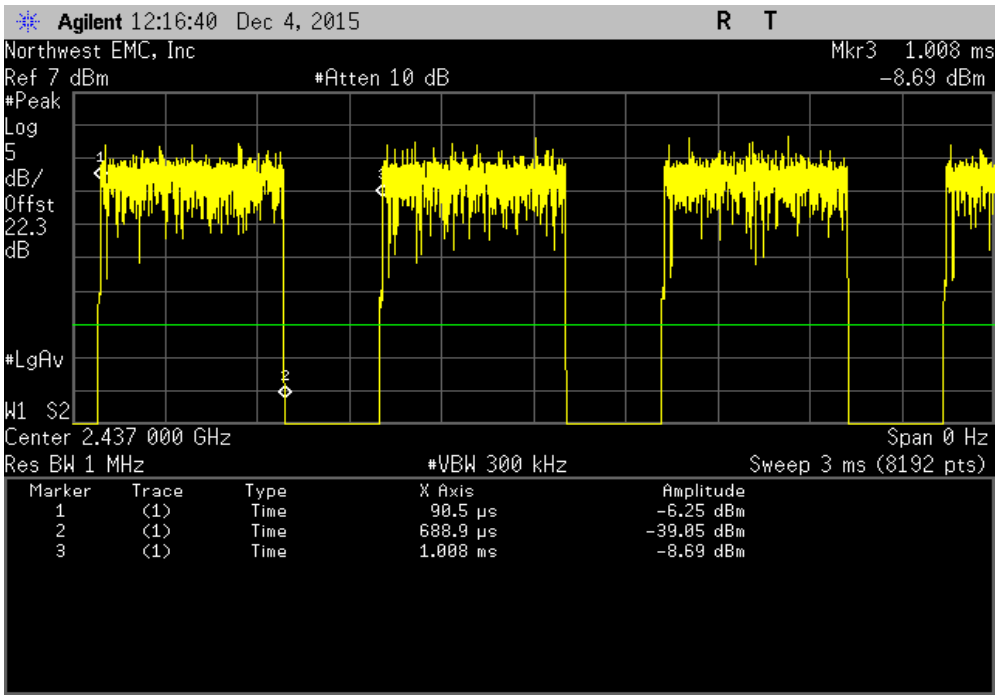


DUTY CYCLE 2x2

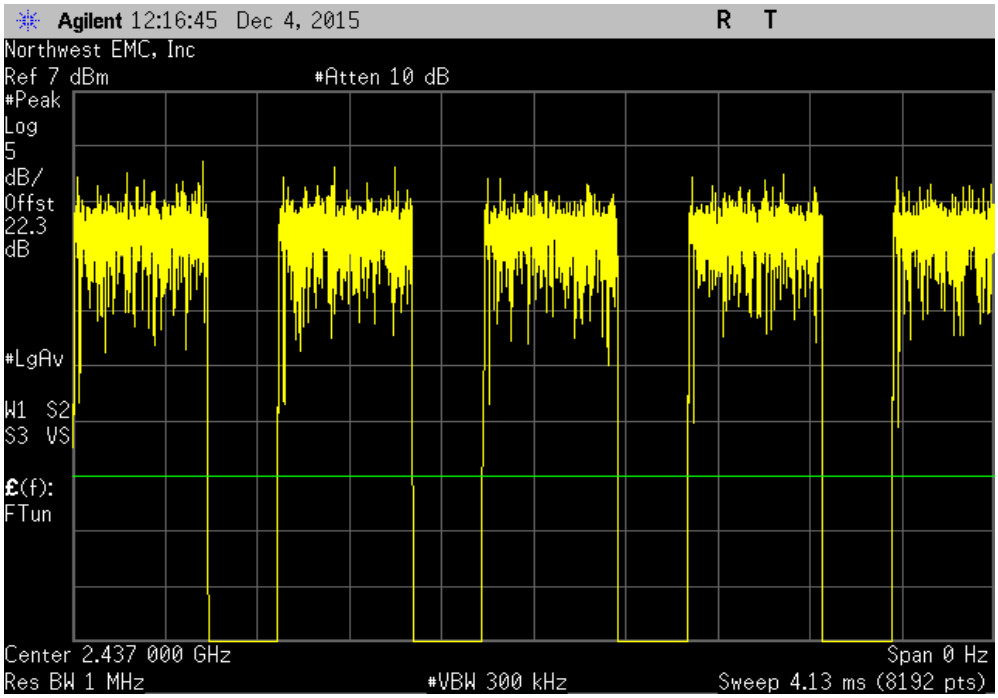
NORTHWEST EMC

XMit 2015.01.14

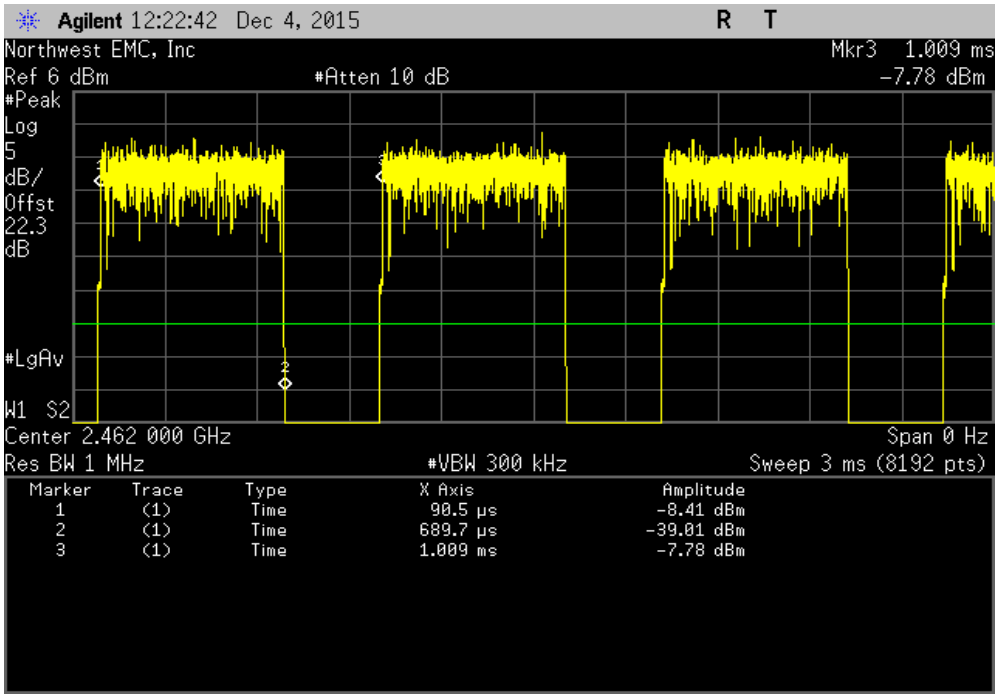
Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, Mid Channel 6, 2437 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	598.4 us	917.8 us	1	65.2	N/A	N/A



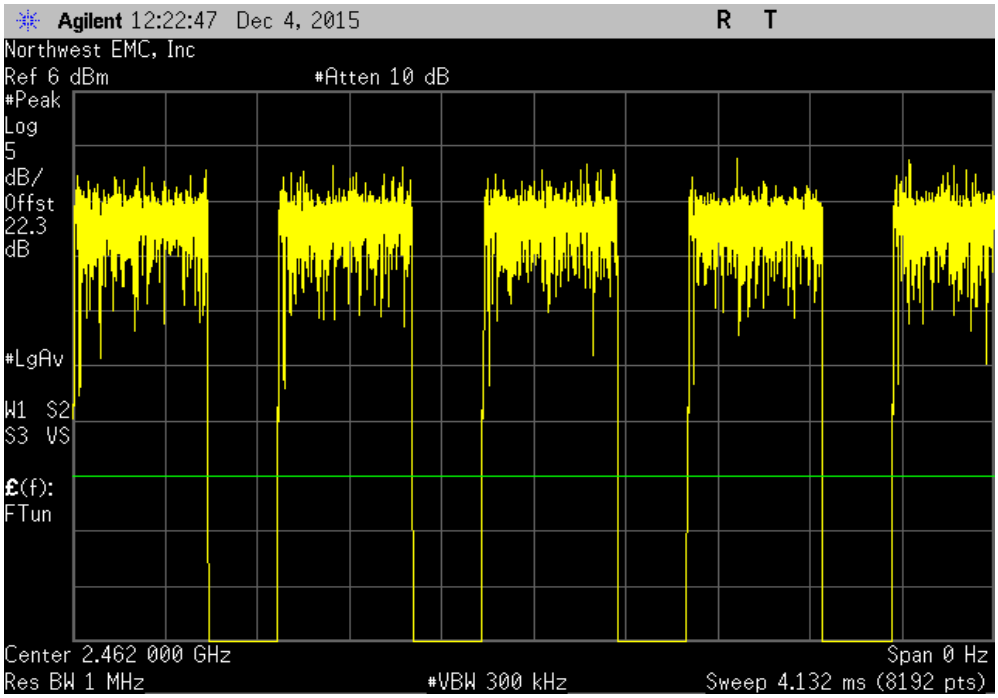
Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, Mid Channel 6, 2437 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



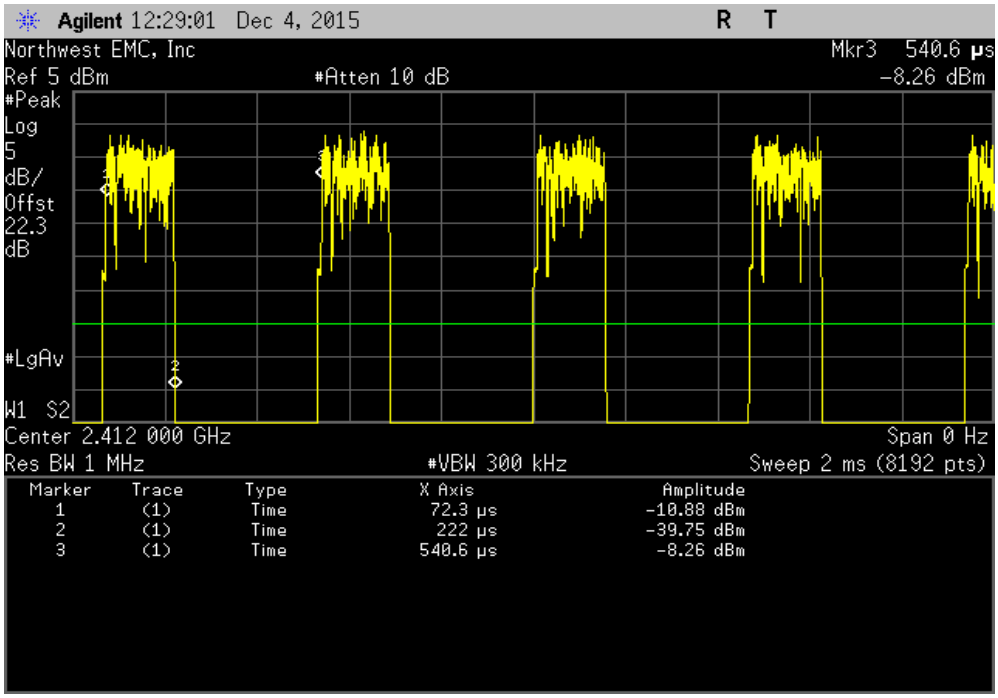
Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, High Channel 11, 2462 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	599.2 us	918.2 us	1	65.3	N/A	N/A



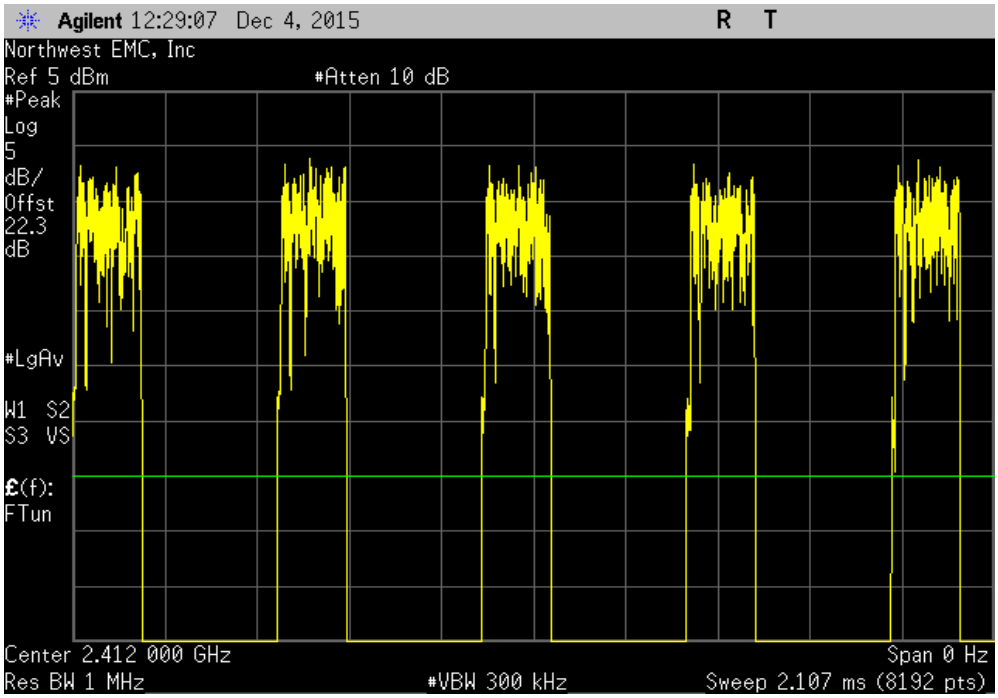
Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, High Channel 11, 2462 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



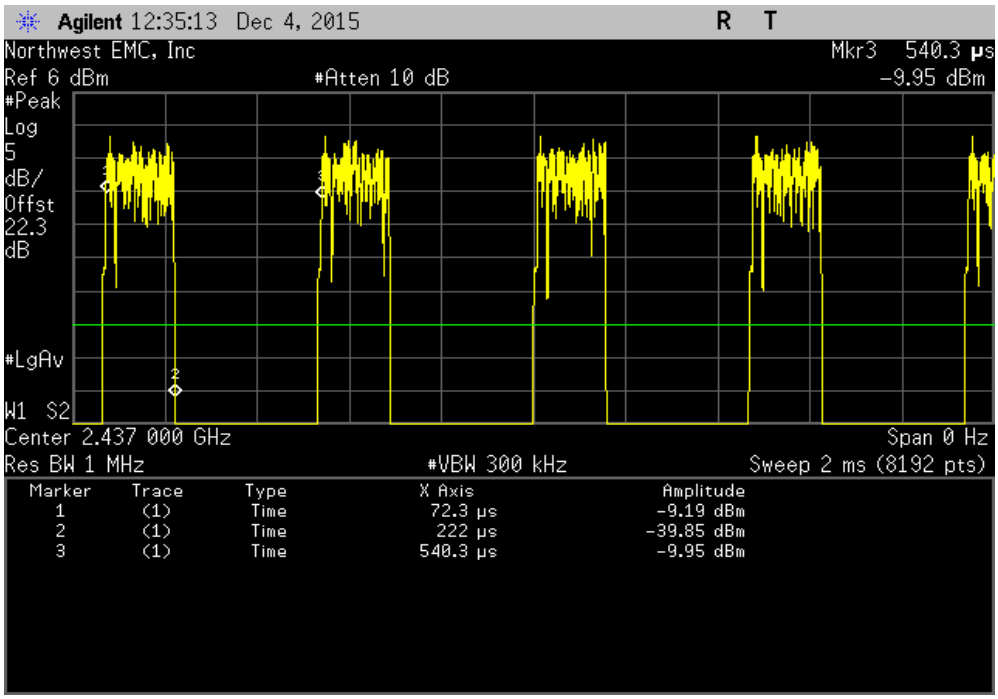
Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, Low Channel 1, 2412 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	149.7 us	468.3 us	1	32	N/A	N/A



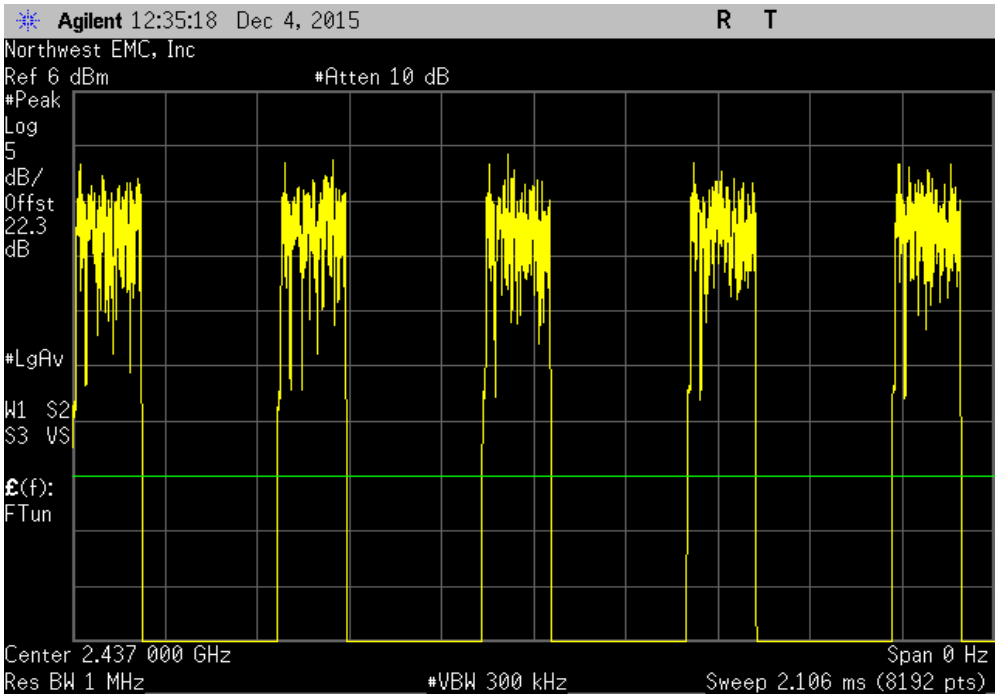
Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, Low Channel 1, 2412 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



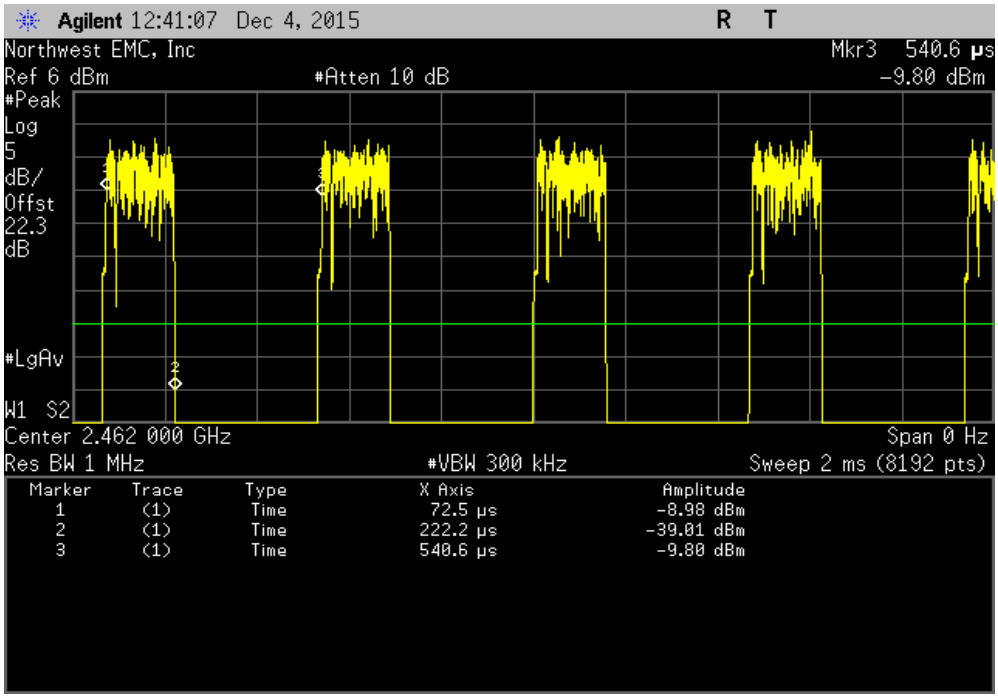
Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, Mid Channel 6, 2437 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	149.7 us	468 us	1	32	N/A	N/A



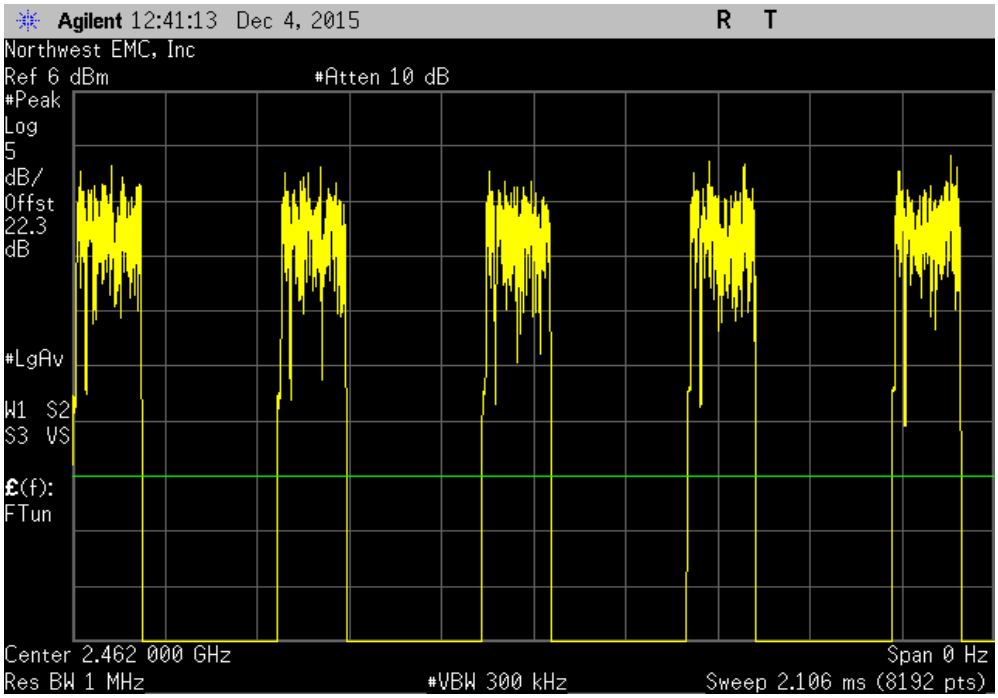
Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, Mid Channel 6, 2437 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, High Channel 11, 2462 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	149.7 us	468.1 us	1	32	N/A	N/A



Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, High Channel 11, 2462 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



OCCUPIED BANDWIDTH

XMit 2015.01.14

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Cable	ESM Cable Corp.	TTBJ141 KMKM-72	MNU	9/18/2015	12
Attenuator	S.M. Electronics	SA26B-20	RFW	3/10/2015	12
Block - DC	Fairview Microwave	SD3379	AMI	9/18/2015	12
Generator - Signal	Agilent	N5183A	TIK	10/17/2014	36
Analyzer - Spectrum Analyzer	Agilent	E4440A	AAX	4/20/2015	12

TEST DESCRIPTION

The 6dB occupied bandwidth was measured using 100 kHz resolution bandwidth and 300 kHz video bandwidth. The 99.9% (approximate 26 dB) emission bandwidth (EBW) was also measured at the same time.

The EUT was set to the channels and modes listed in the datasheet. The measurement was made using a direct connection between the RF output of the EUT and the spectrum analyzer.

OCCUPIED BANDWIDTH

NORTHWEST EMC

XMit 2015.01.14

EUT:	Marcum RT-9			**Work Order:**	ELTL0004
Serial Number:	RTS0123456811			**Date:**	12/04/15
Customer:	Electronic Technologies, LLC			**Temperature:**	22.2°C
Attendees:	Rocky Holmes, Deb See			**Humidity:**	25%
Project:	None			**Barometric Pres.:**	998.9
Tested by:	Trevor Buls	**Power:**	110VAC/60Hz	**Job Site:**	MN08

TEST SPECIFICATIONS	Test Method
FCC 15.247:2015	ANSI C63.10:2013

COMMENTS

None

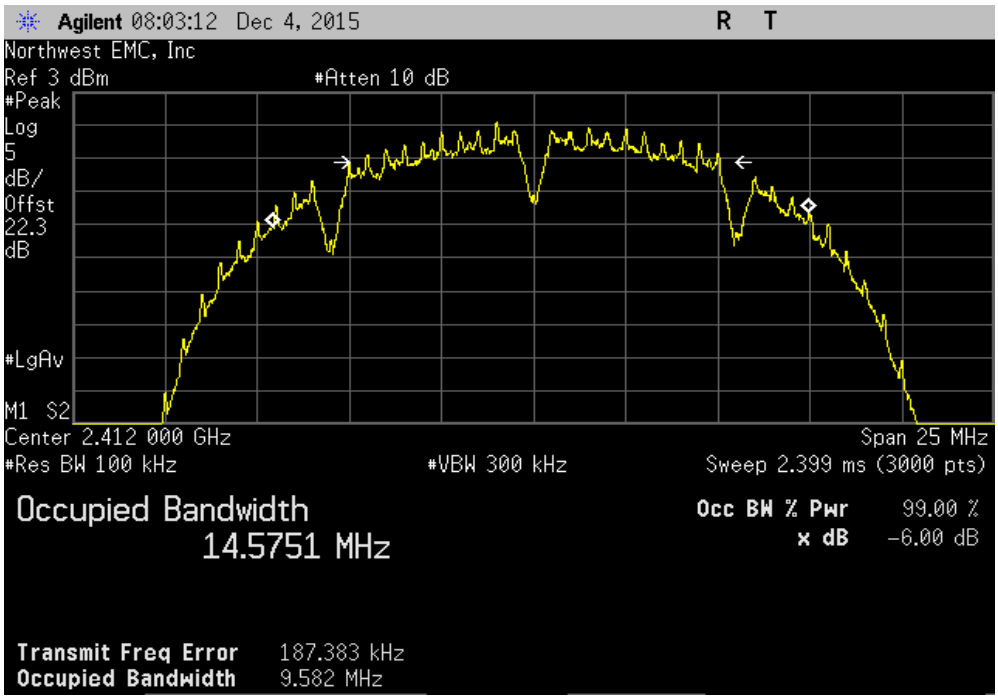
DEVIATIONS FROM TEST STANDARD

None

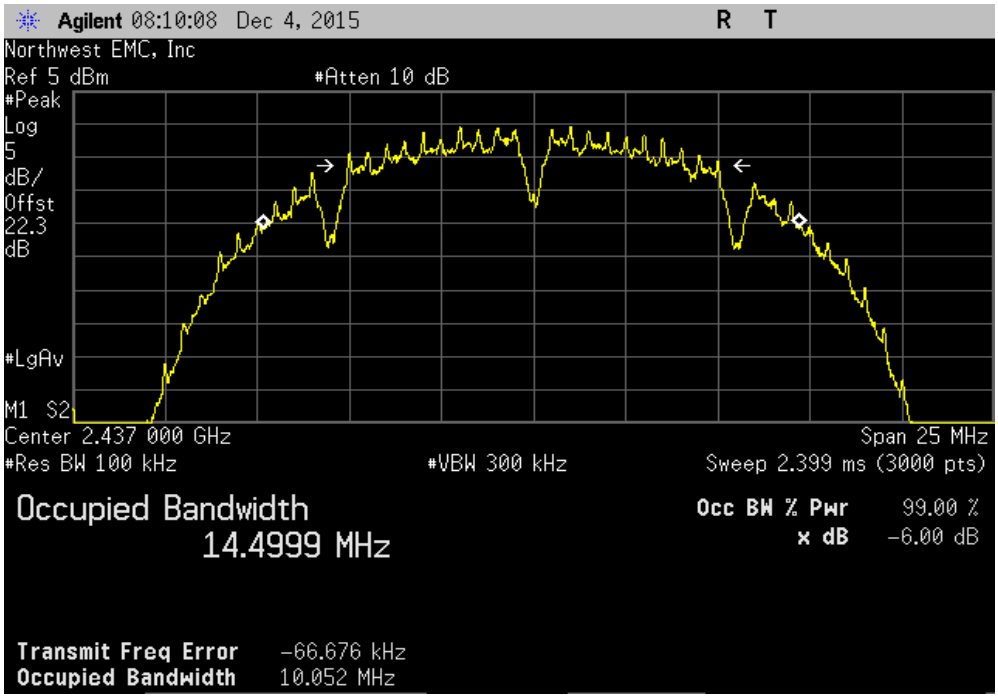
Configuration #	5	Signature	Trevor Buls

				Value	Limit (>)	Result
Chain A						
	20 MHz					
		802.11(b) 1 Mbps				
			Low Channel 1, 2412 MHz	9.582 MHz	500 kHz	Pass
			Mid Channel 6, 2437 MHz	10.052 MHz	500 kHz	Pass
			High Channel 11, 2462 MHz	9.863 MHz	500 kHz	Pass
		802.11(b) 11 Mbps				
			Low Channel 1, 2412 MHz	10.103 MHz	500 kHz	Pass
			Mid Channel 6, 2437 MHz	9.995 MHz	500 kHz	Pass
			High Channel 11, 2462 MHz	9.856 MHz	500 kHz	Pass
		802.11(g) 6 Mbps				
			Low Channel 1, 2412 MHz	14.999 MHz	500 kHz	Pass
			Mid Channel 6, 2437 MHz	13.862 MHz	500 kHz	Pass
			High Channel 11, 2462 MHz	13.8 MHz	500 kHz	Pass
		802.11(g) 36 Mbps				
			Low Channel 1, 2412 MHz	14.742 MHz	500 kHz	Pass
			Mid Channel 6, 2437 MHz	15.023 MHz	500 kHz	Pass
			High Channel 11, 2462 MHz	14.951 MHz	500 kHz	Pass
		802.11(g) 54 Mbps				
			Low Channel 1, 2412 MHz	15.269 MHz	500 kHz	Pass
			Mid Channel 6, 2437 MHz	15.325 MHz	500 kHz	Pass
			High Channel 11, 2462 MHz	15.092 MHz	500 kHz	Pass
		802.11(n) MCS0				
			Low Channel 1, 2412 MHz	13.98 MHz	500 kHz	Pass
			Mid Channel 6, 2437 MHz	14.623 MHz	500 kHz	Pass
			High Channel 11, 2462 MHz	14.81 MHz	500 kHz	Pass
		802.11(n) MCS7				
			Low Channel 1, 2412 MHz	15.47 MHz	500 kHz	Pass
			Mid Channel 6, 2437 MHz	15.032 MHz	500 kHz	Pass
			High Channel 11, 2462 MHz	14.895 MHz	500 kHz	Pass
	40 MHz					
		802.11(n) MCS0				
			Low Channel 1/5, 2422 MHz	28.923 MHz	500 kHz	Pass
			Mid Channel 4/8, 2437 MHz	33.344 MHz	500 kHz	Pass
			High Channel 7/11, 2452 MHz	33.099 MHz	500 kHz	Pass
		802.11(n) MCS7				
			Low Channel 1/5, 2422 MHz	33.419 MHz	500 kHz	Pass
			Mid Channel 4/8, 2437 MHz	34.67 MHz	500 kHz	Pass
			High Channel 7/11, 2452 MHz	35.053 MHz	500 kHz	Pass

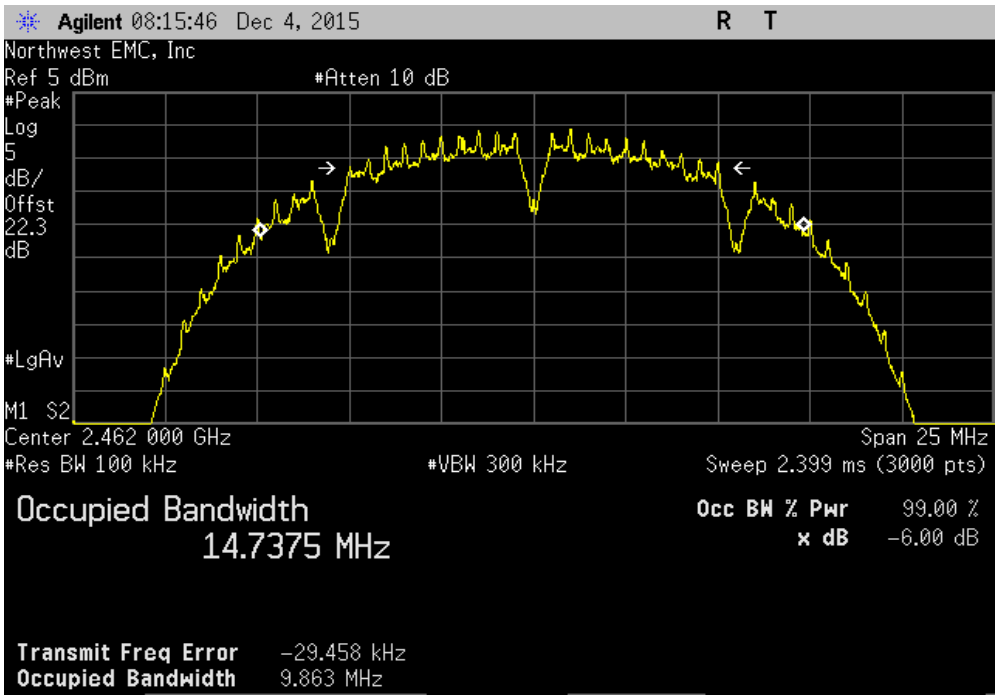
Chain A, 20 MHz, 802.11(b) 1 Mbps, Low Channel 1, 2412 MHz						
				Value	Limit (>)	Result
				9.582 MHz	500 kHz	Pass



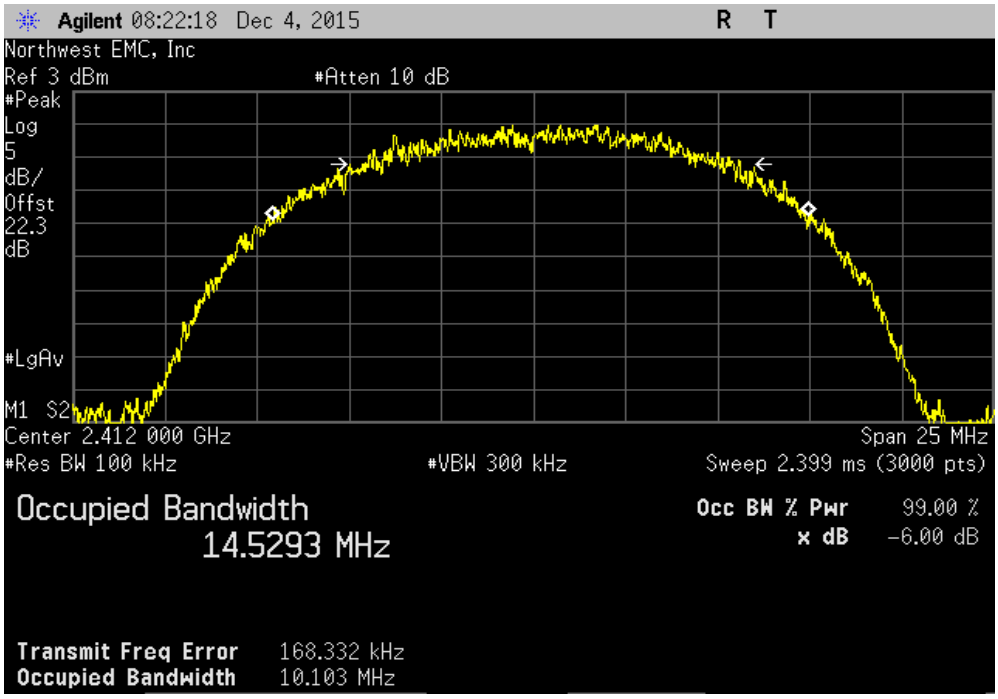
Chain A, 20 MHz, 802.11(b) 1 Mbps, Mid Channel 6, 2437 MHz						
				Value	Limit (>)	Result
				10.052 MHz	500 kHz	Pass



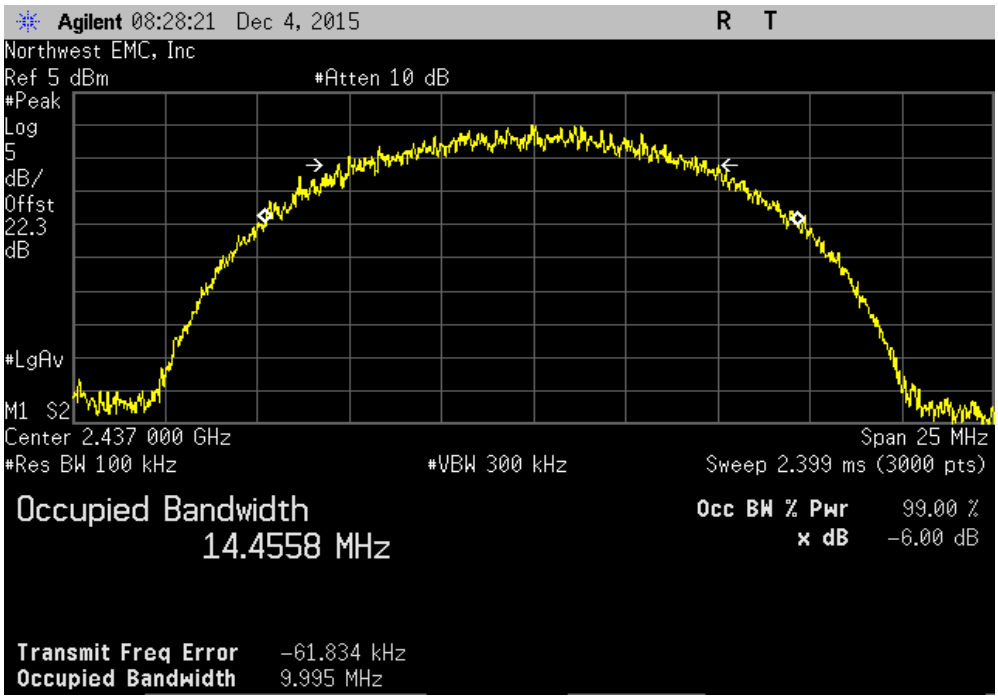
Chain A, 20 MHz, 802.11(b) 1 Mbps, High Channel 11, 2462 MHz						
				Value	Limit (>)	Result
				9.863 MHz	500 kHz	Pass



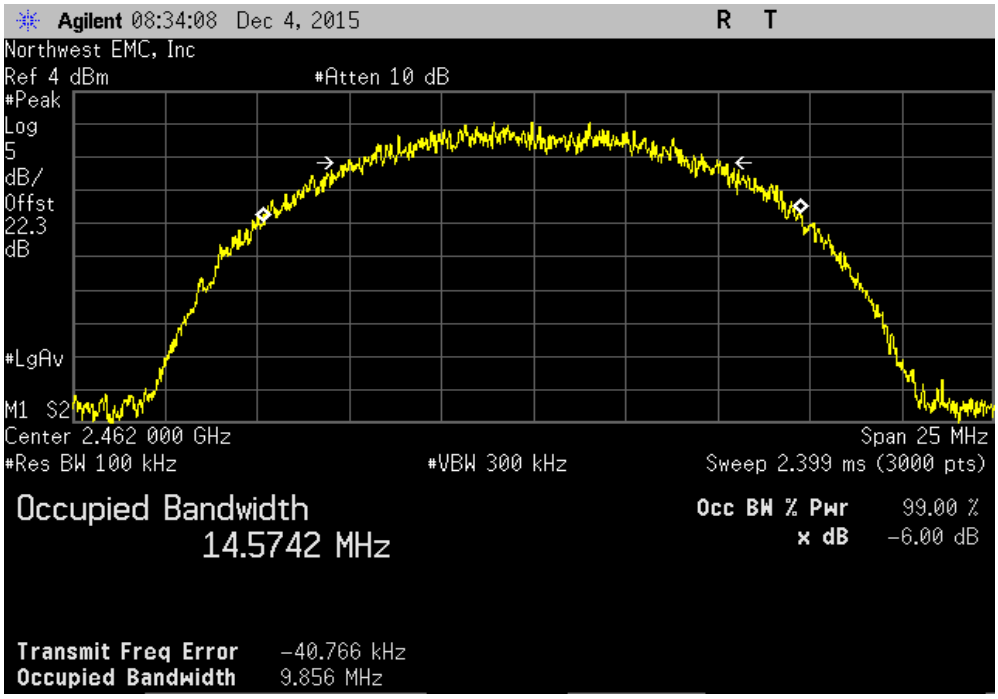
Chain A, 20 MHz, 802.11(b) 11 Mbps, Low Channel 1, 2412 MHz						
				Value	Limit (>)	Result
				10.103 MHz	500 kHz	Pass



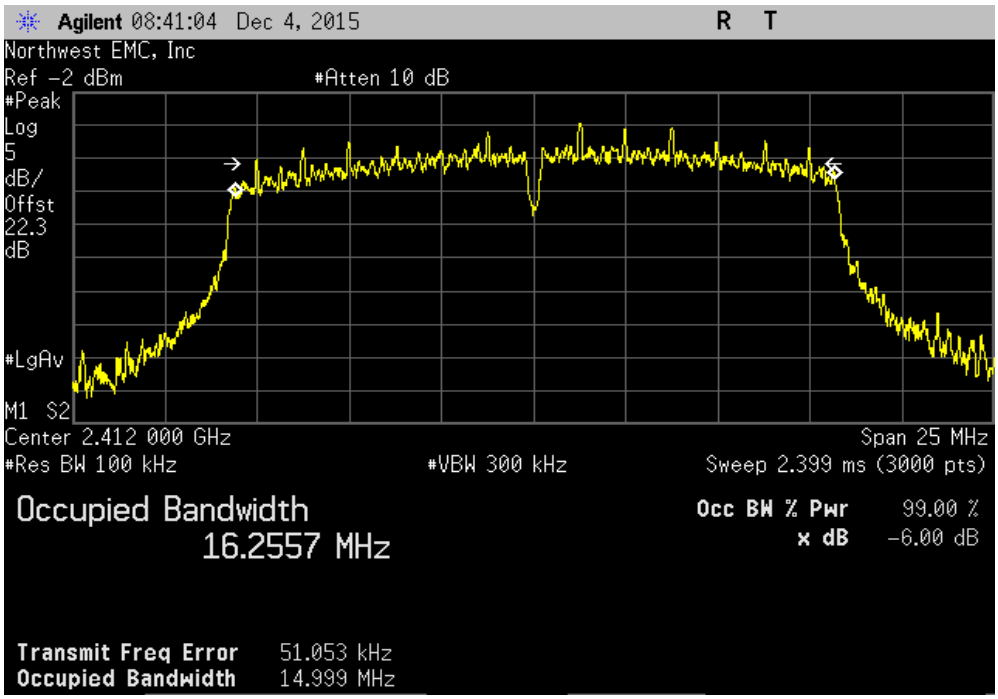
Chain A, 20 MHz, 802.11(b) 11 Mbps, Mid Channel 6, 2437 MHz						
				Value	Limit (>)	Result
				9.995 MHz	500 kHz	Pass



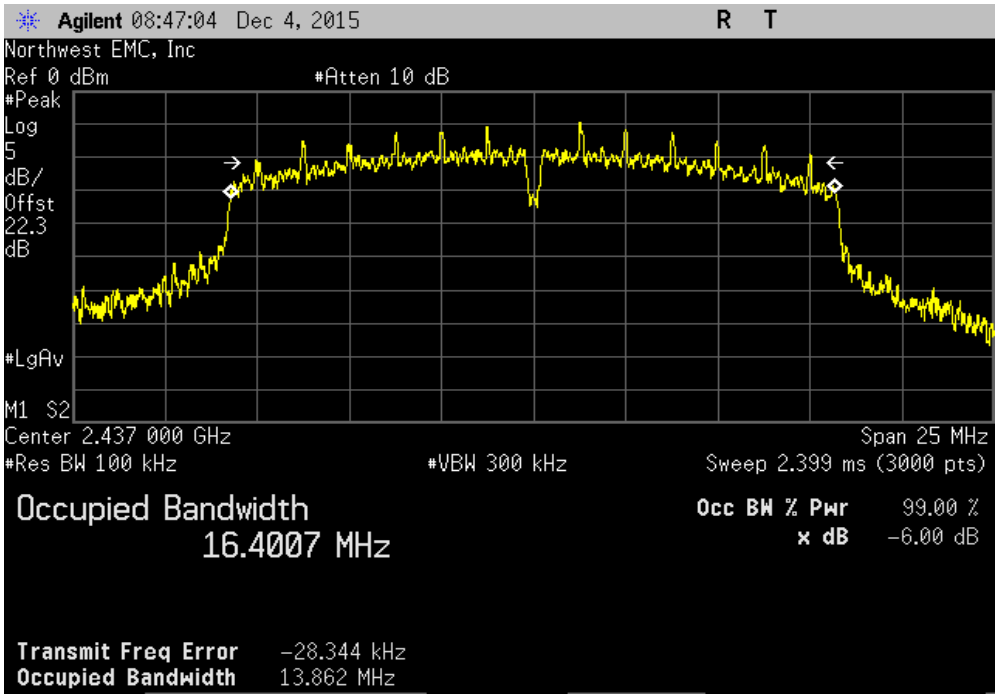
Chain A, 20 MHz, 802.11(b) 11 Mbps, High Channel 11, 2462 MHz						
				Value	Limit (>)	Result
				9.856 MHz	500 kHz	Pass



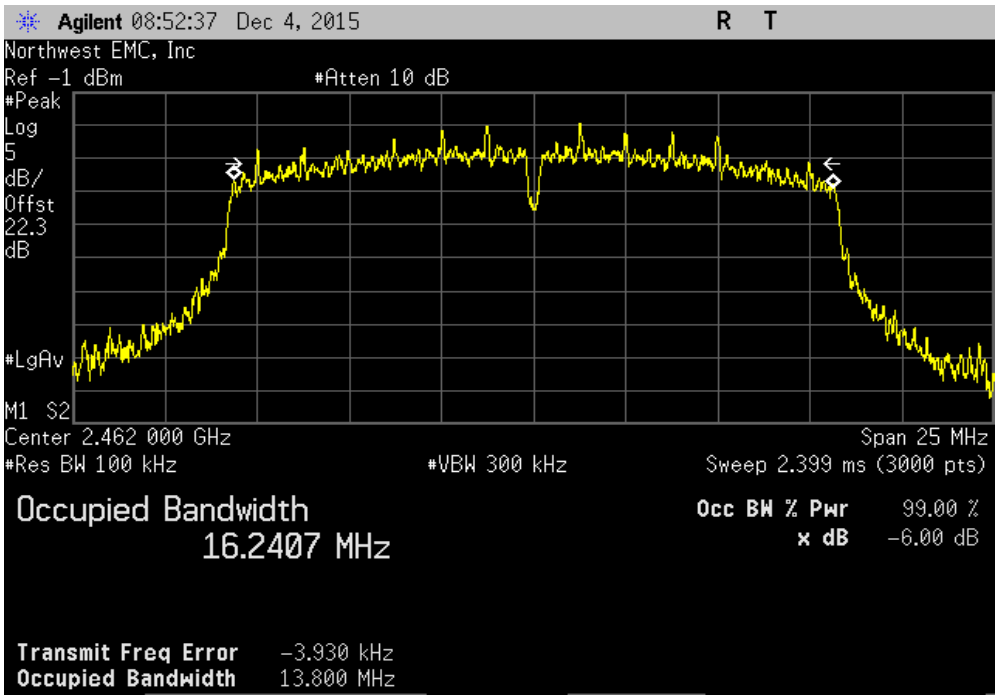
Chain A, 20 MHz, 802.11(g) 6 Mbps, Low Channel 1, 2412 MHz						
				Value	Limit (>)	Result
				14.999 MHz	500 kHz	Pass



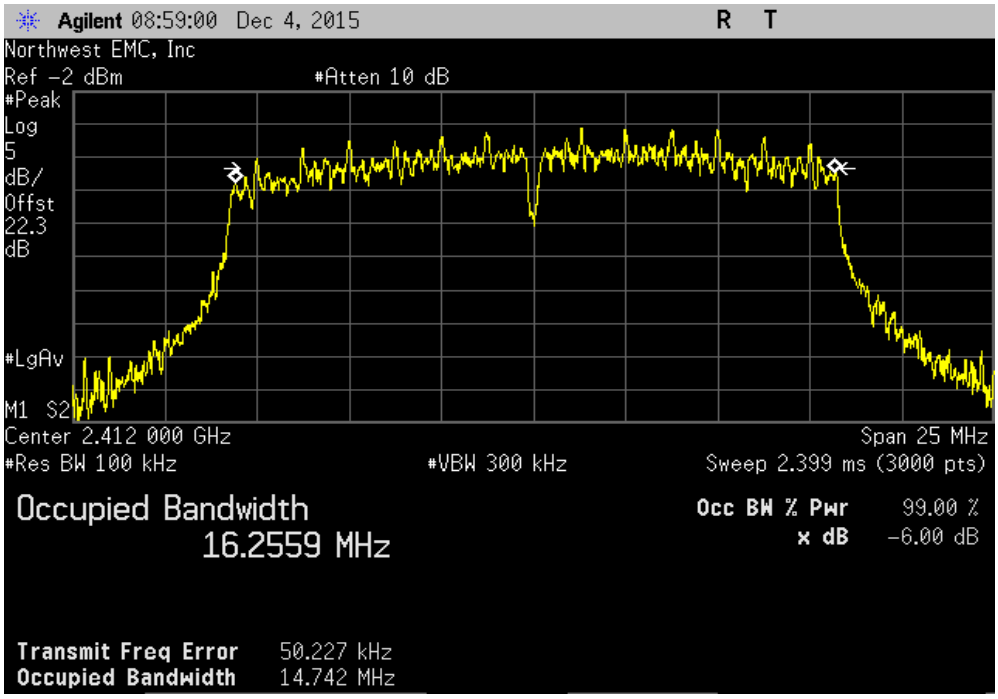
Chain A, 20 MHz, 802.11(g) 6 Mbps, Mid Channel 6, 2437 MHz						
				Value	Limit (>)	Result
				13.862 MHz	500 kHz	Pass



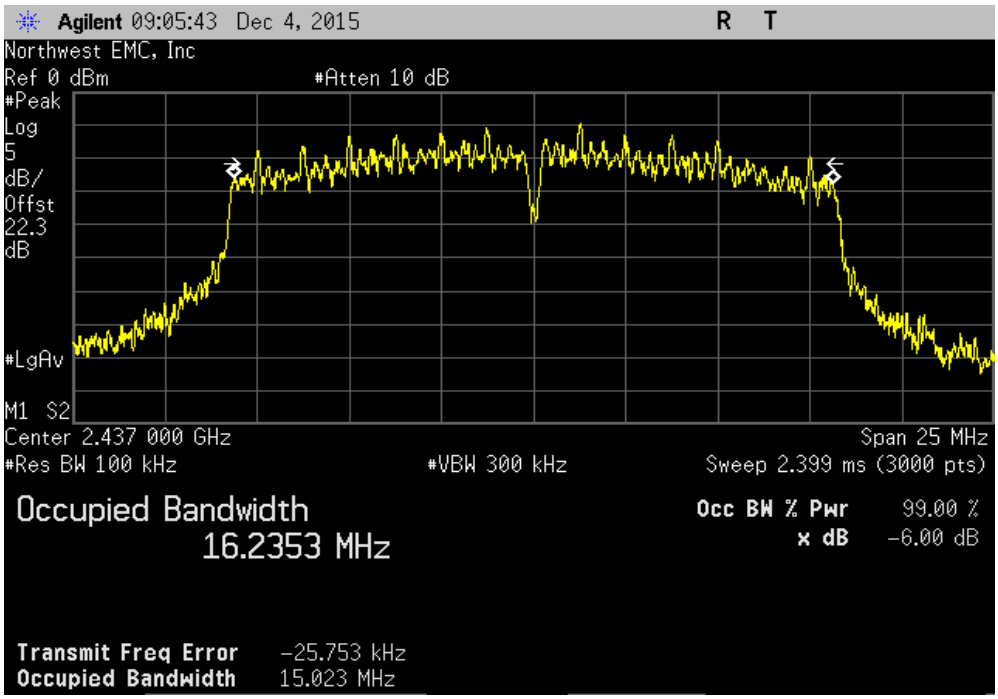
Chain A, 20 MHz, 802.11(g) 6 Mbps, High Channel 11, 2462 MHz						
				Value	Limit (>)	Result
				13.8 MHz	500 kHz	Pass



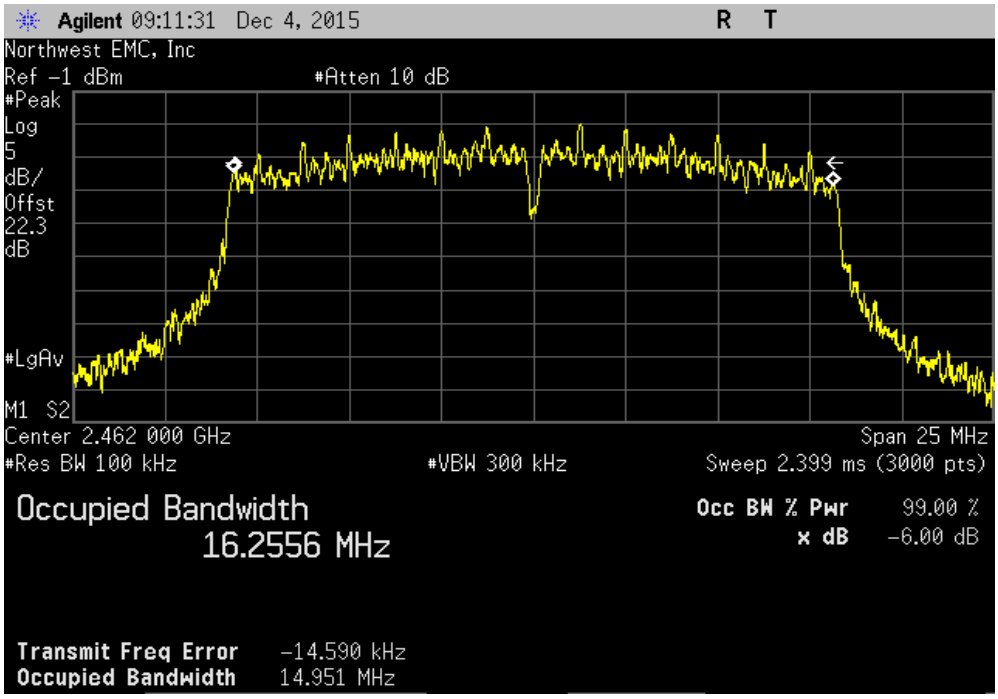
Chain A, 20 MHz, 802.11(g) 36 Mbps, Low Channel 1, 2412 MHz						
				Value	Limit (>)	Result
				14.742 MHz	500 kHz	Pass



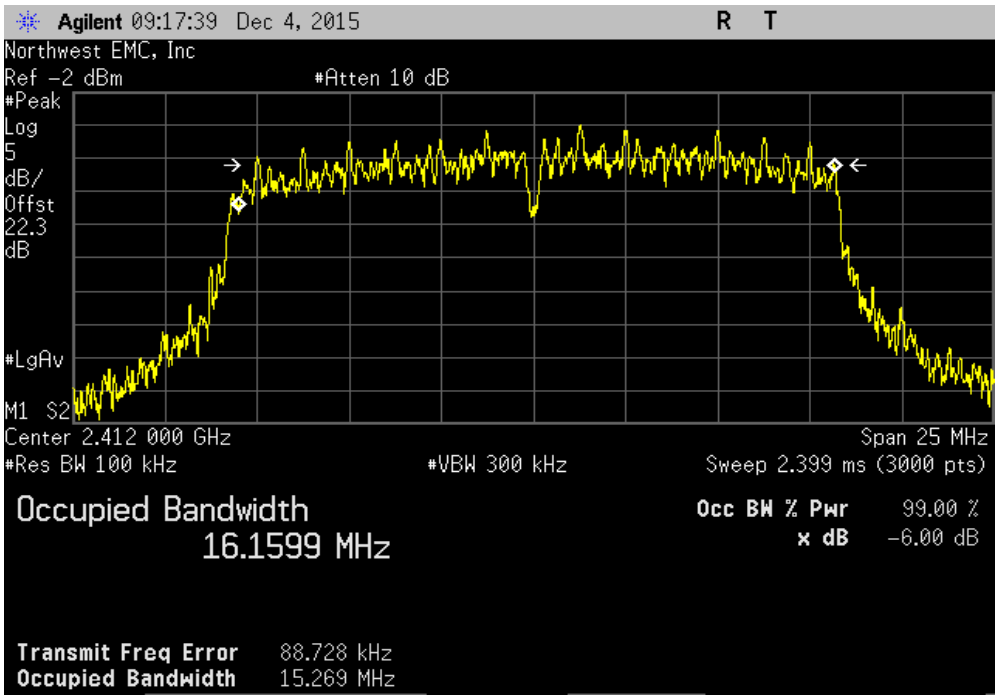
Chain A, 20 MHz, 802.11(g) 36 Mbps, Mid Channel 6, 2437 MHz						
				Value	Limit (>)	Result
				15.023 MHz	500 kHz	Pass



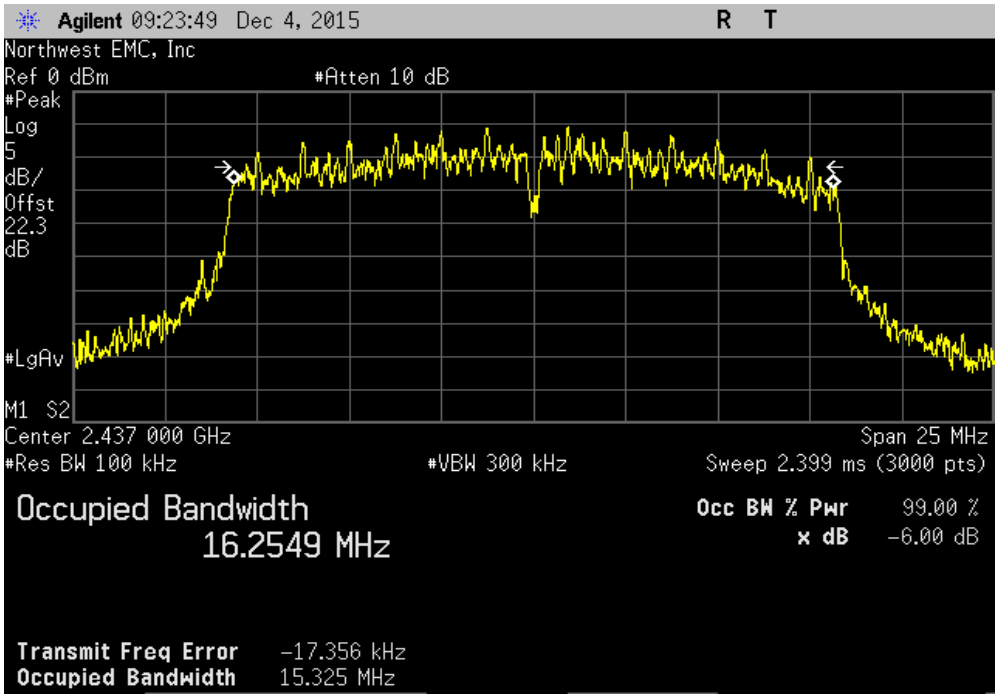
Chain A, 20 MHz, 802.11(g) 36 Mbps, High Channel 11, 2462 MHz						
				Value	Limit (>)	Result
				14.951 MHz	500 kHz	Pass



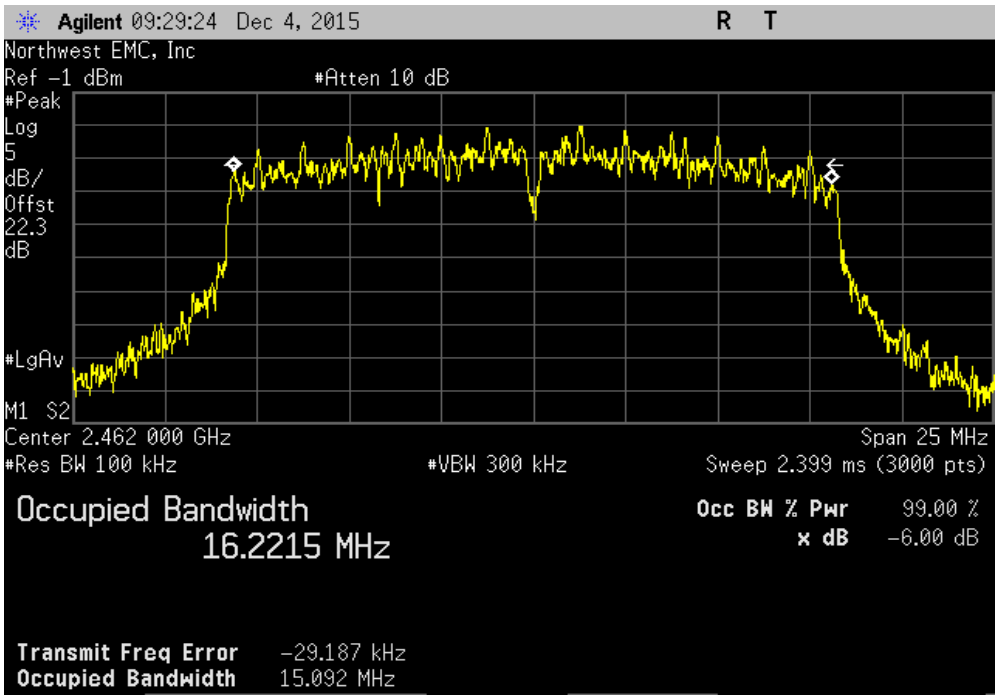
Chain A, 20 MHz, 802.11(g) 54 Mbps, Low Channel 1, 2412 MHz						
				Value	Limit (>)	Result
				15.269 MHz	500 kHz	Pass



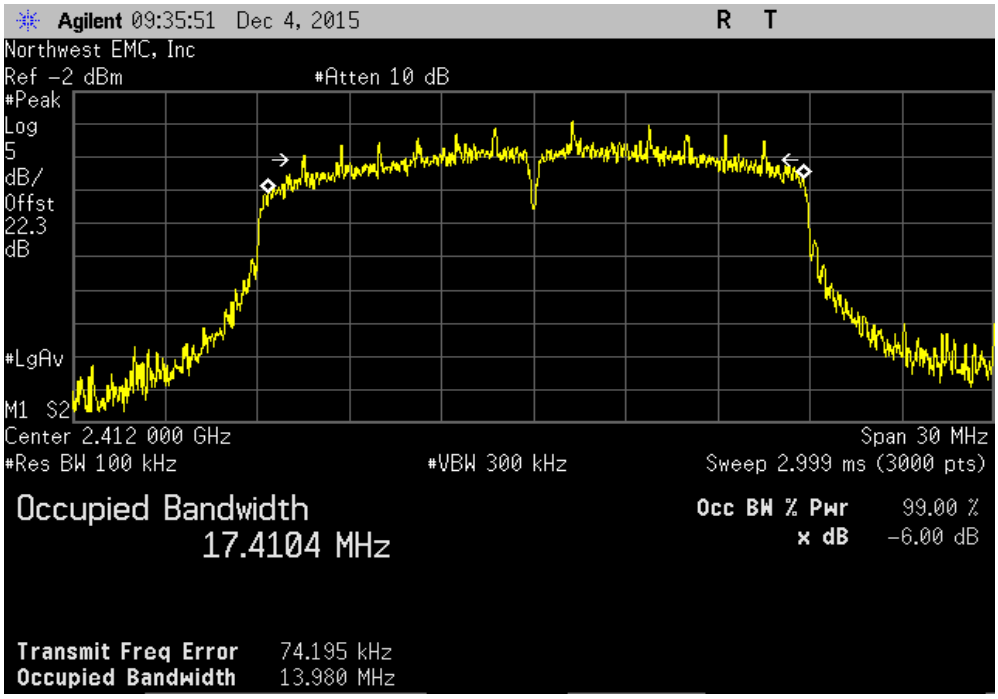
Chain A, 20 MHz, 802.11(g) 54 Mbps, Mid Channel 6, 2437 MHz						
				Value	Limit (>)	Result
				15.325 MHz	500 kHz	Pass



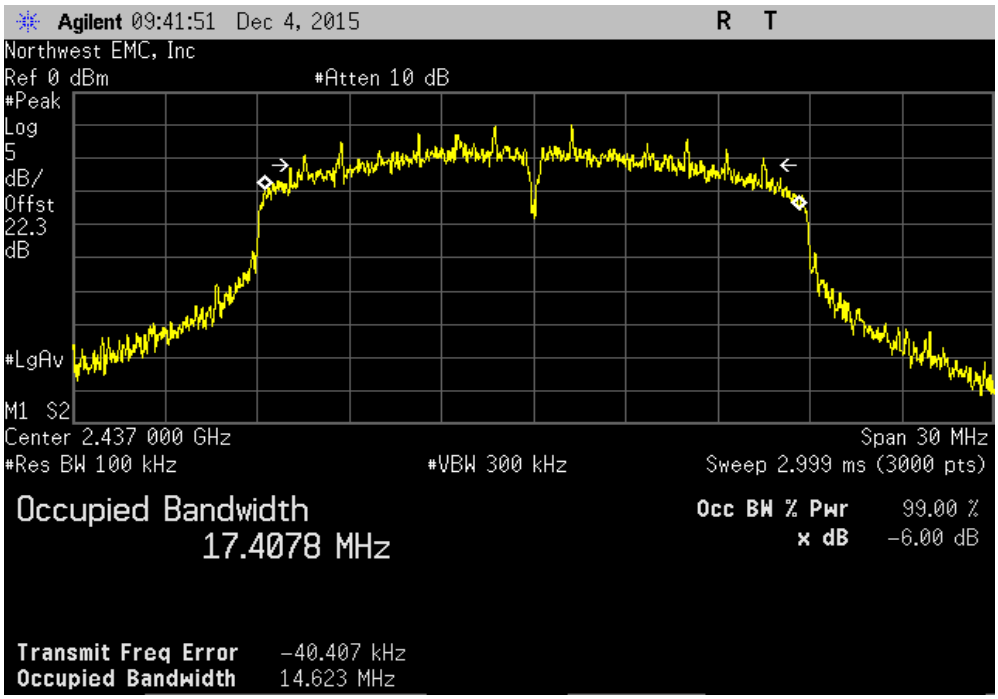
Chain A, 20 MHz, 802.11(g) 54 Mbps, High Channel 11, 2462 MHz						
				Value	Limit (>)	Result
				15.092 MHz	500 kHz	Pass



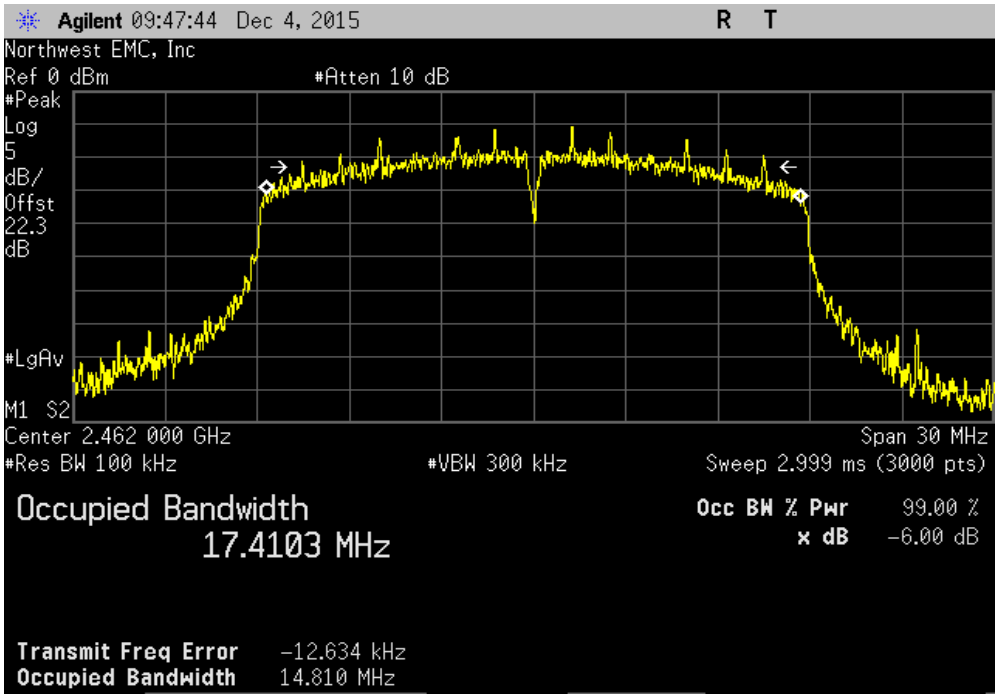
Chain A, 20 MHz, 802.11(n) MCS0, Low Channel 1, 2412 MHz						
				Value	Limit (>)	Result
				13.98 MHz	500 kHz	Pass



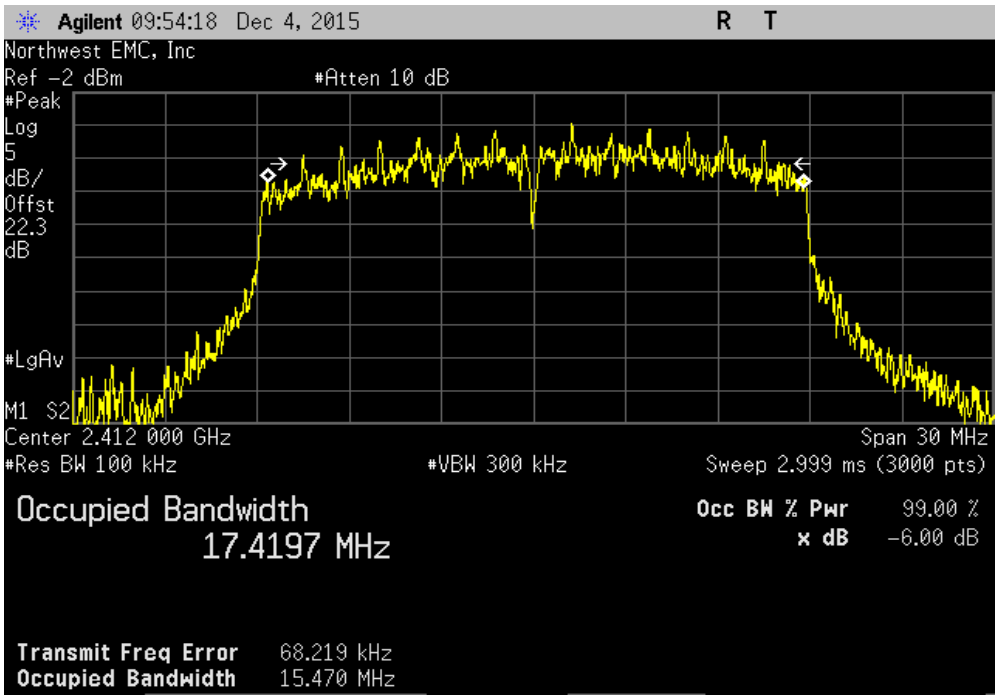
Chain A, 20 MHz, 802.11(n) MCS0, Mid Channel 6, 2437 MHz						
				Value	Limit (>)	Result
				14.623 MHz	500 kHz	Pass



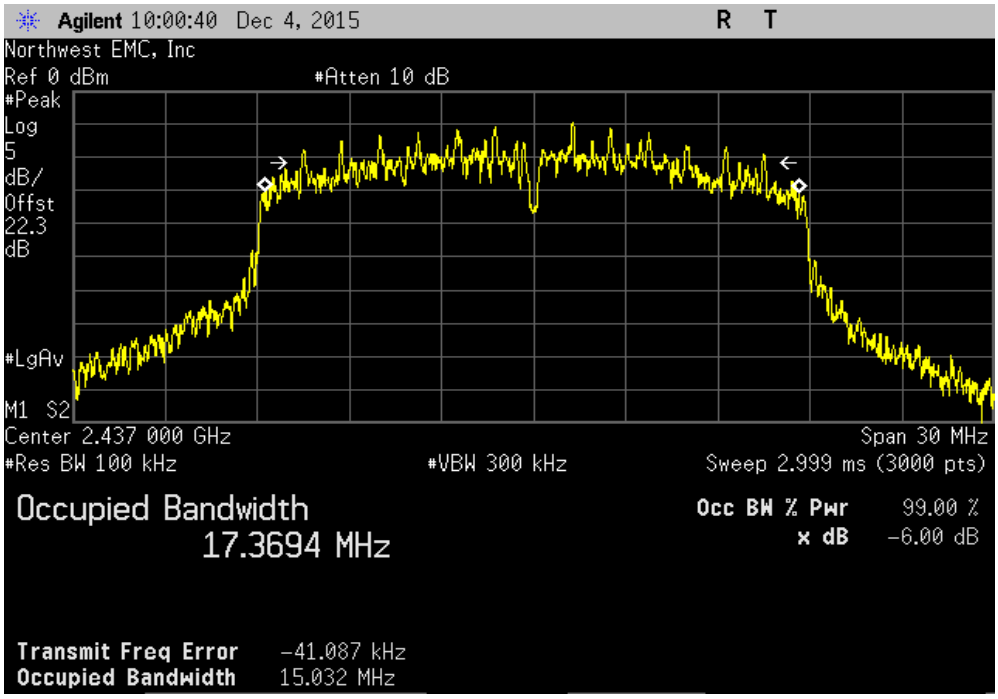
Chain A, 20 MHz, 802.11(n) MCS0, High Channel 11, 2462 MHz						
				Value	Limit (>)	Result
				14.81 MHz	500 kHz	Pass



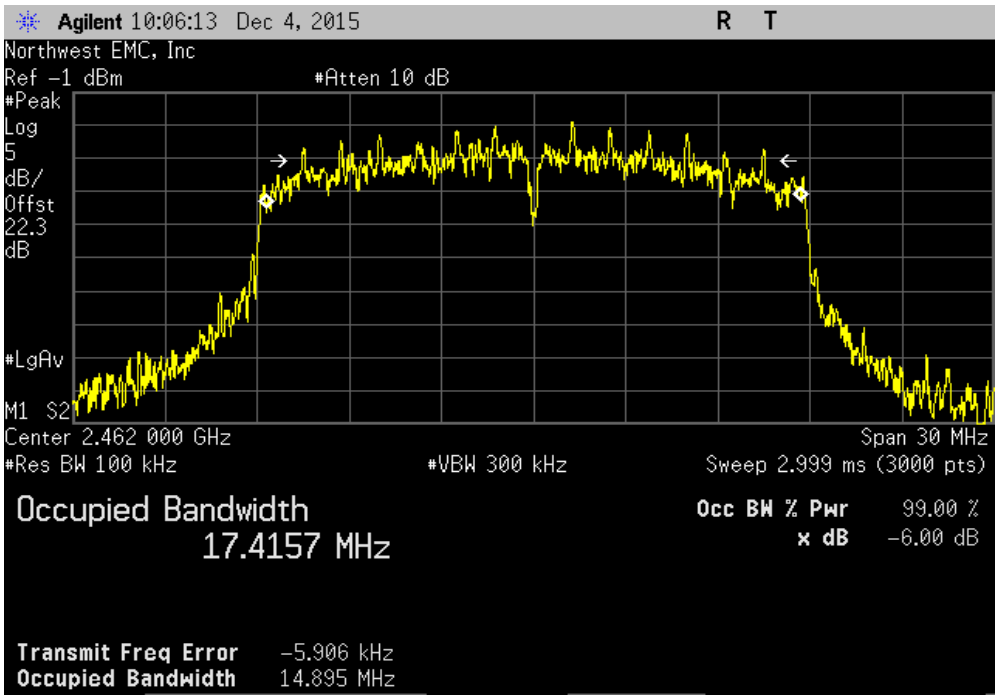
Chain A, 20 MHz, 802.11(n) MCS7, Low Channel 1, 2412 MHz						
				Value	Limit (>)	Result
				15.47 MHz	500 kHz	Pass



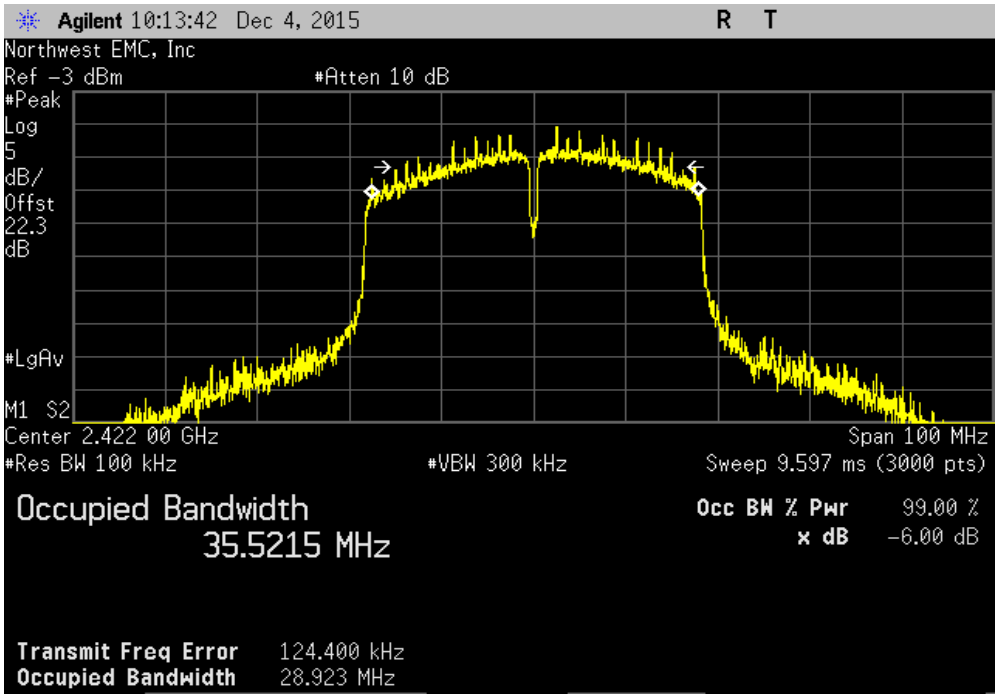
Chain A, 20 MHz, 802.11(n) MCS7, Mid Channel 6, 2437 MHz						
				Value	Limit (>)	Result
				15.032 MHz	500 kHz	Pass



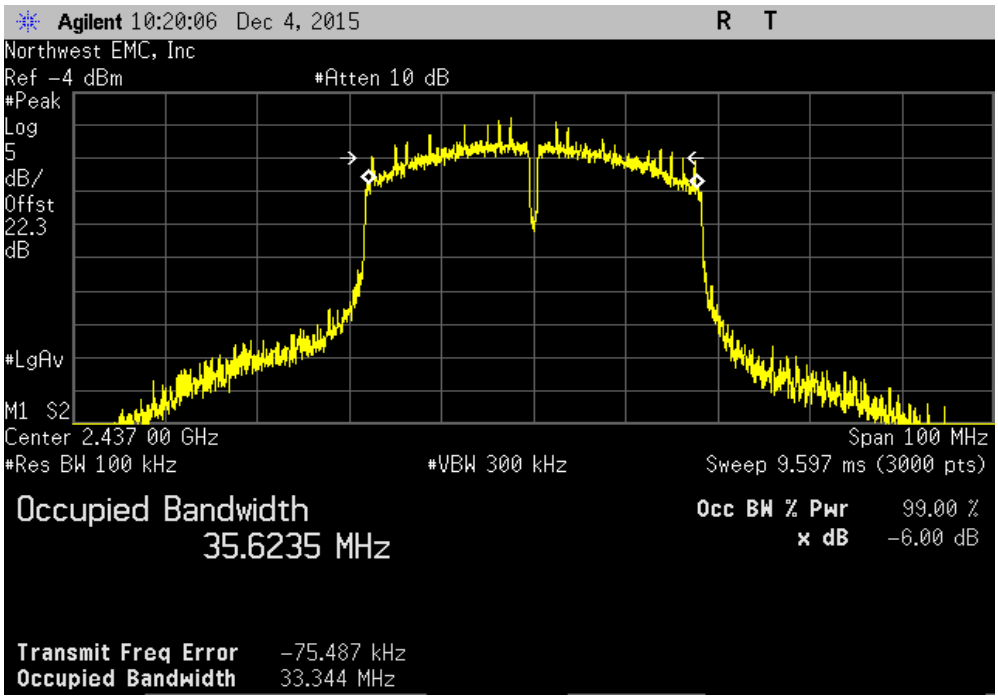
Chain A, 20 MHz, 802.11(n) MCS7, High Channel 11, 2462 MHz						
				Value	Limit (>)	Result
				14.895 MHz	500 kHz	Pass



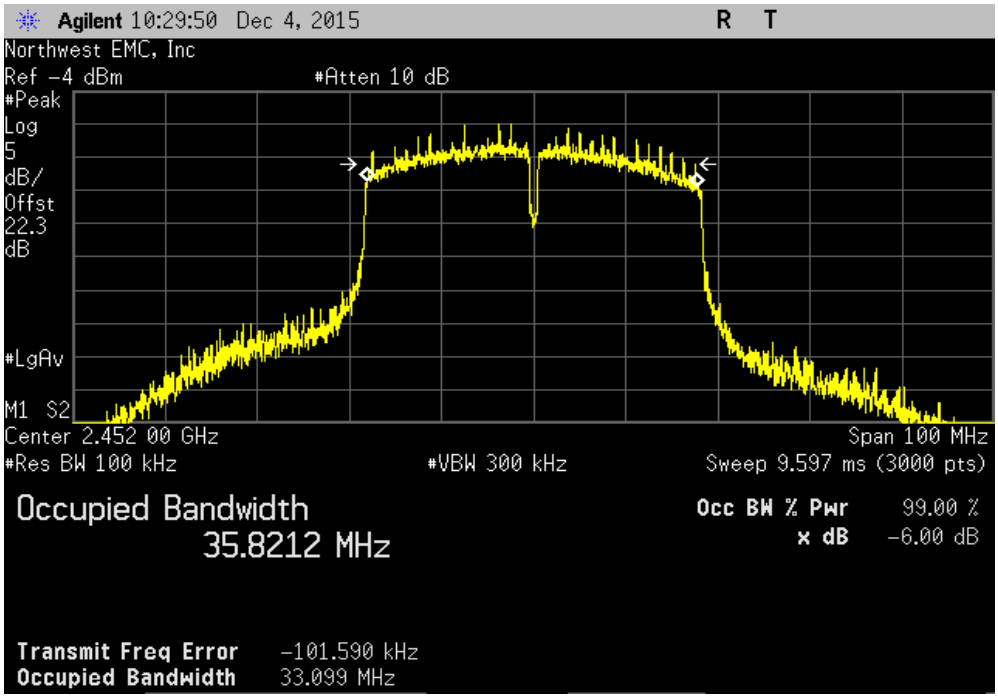
Chain A, 40 MHz, 802.11(n) MCS0, Low Channel 1/5, 2422 MHz						
				Value	Limit (>)	Result
				28.923 MHz	500 kHz	Pass



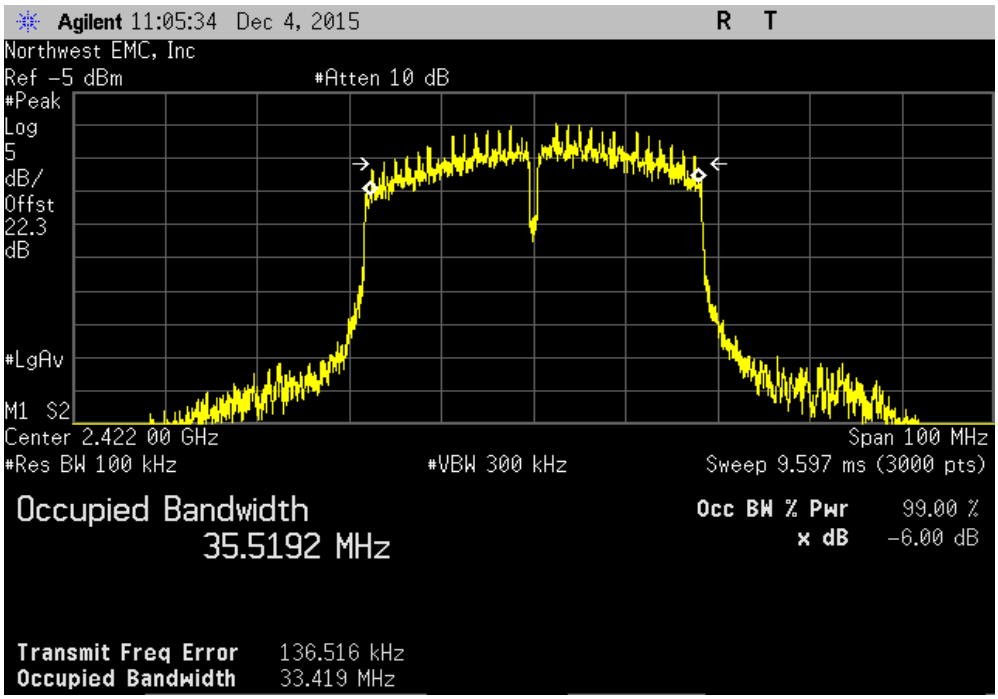
Chain A, 40 MHz, 802.11(n) MCS0, Mid Channel 4/8, 2437 MHz						
				Value	Limit (>)	Result
				33.344 MHz	500 kHz	Pass



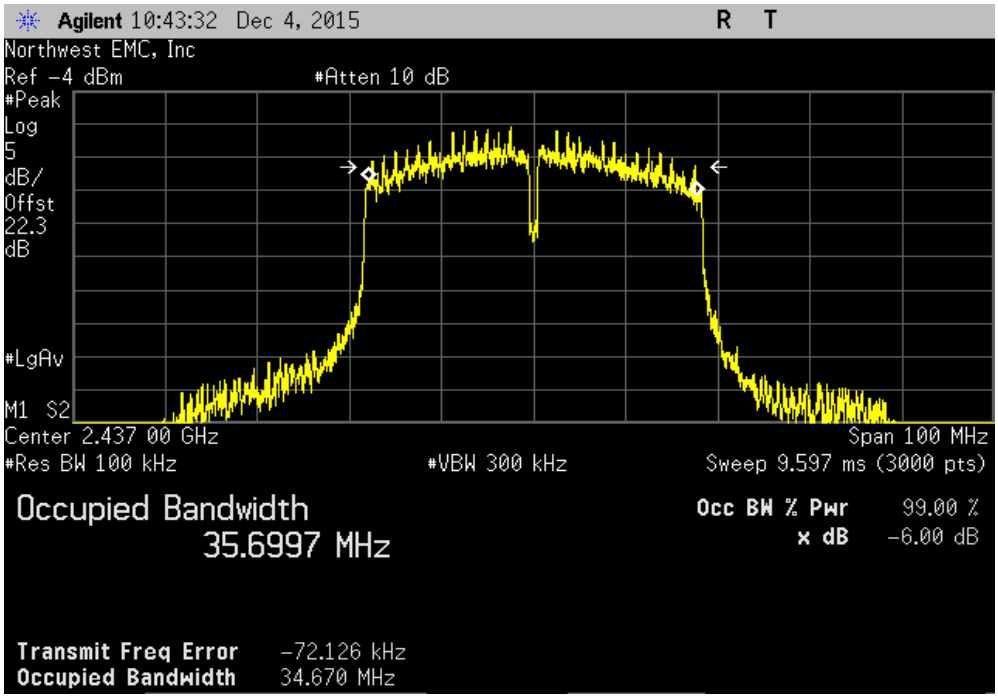
Chain A, 40 MHz, 802.11(n) MCS0, High Channel 7/11, 2452 MHz						
				Value	Limit (>)	Result
				33.099 MHz	500 kHz	Pass



Chain A, 40 MHz, 802.11(n) MCS7, Low Channel 1/5, 2422 MHz						
				Value	Limit (>)	Result
				33.419 MHz	500 kHz	Pass



Chain A, 40 MHz, 802.11(n) MCS7, Mid Channel 4/8, 2437 MHz						
				Value	Limit (>)	Result
				34.67 MHz	500 kHz	Pass



OCCUPIED BANDWIDTH

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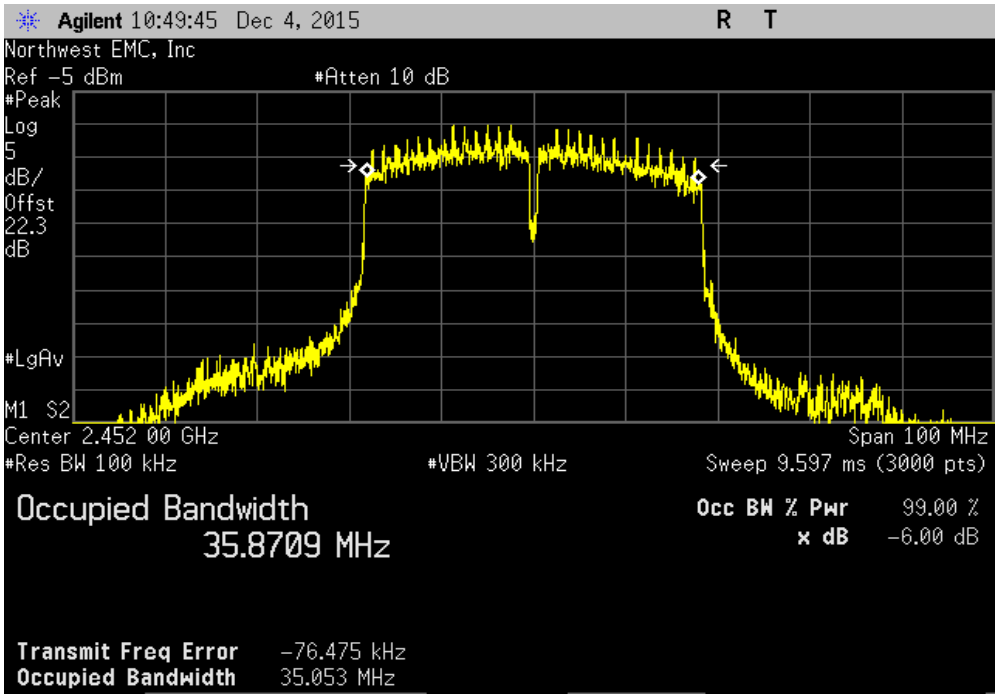
Chain A, 40 MHz, 802.11(n) MCS7, High Channel 7/11, 2452 MHz						
				Value	Limit (>)	Result
				35.053 MHz	500 kHz	Pass



OCCUPIED BANDWIDTH 2x2

XMit 2015.01.14

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Cable	ESM Cable Corp.	TTBJ141 KMKM-72	MNU	9/18/2015	12
Attenuator	S.M. Electronics	SA26B-20	RFW	3/10/2015	12
Block - DC	Fairview Microwave	SD3379	AMI	9/18/2015	12
Generator - Signal	Agilent	N5183A	TIK	10/17/2014	36
Analyzer - Spectrum Analyzer	Agilent	E4440A	AAX	4/20/2015	12

TEST DESCRIPTION

The 6dB occupied bandwidth was measured using 100 kHz resolution bandwidth and 300 kHz video bandwidth. The 99.9% (approximate 26 dB) emission bandwidth (EBW) was also measured at the same time.

The EUT was set to the channels and modes listed in the datasheet. The measurement was made using a direct connection between the RF output of the EUT and the spectrum analyzer.

OCCUPIED BANDWIDTH 2x2

NORTHWEST EMC

XMit 2015.01.14

EUT:	Marcum RT-9			**Work Order:**	ELTL0004
Serial Number:	RTS0123456811			**Date:**	12/04/15
Customer:	Electronic Technologies, LLC			**Temperature:**	22.2°C
Attendees:	Rocky Holmes, Deb See			**Humidity:**	25%
Project:	None			**Barometric Pres.:**	998.9
Tested by:	Trevor Buls	**Power:**	110VAC/60Hz	**Job Site:**	MN08

TEST SPECIFICATIONS	Test Method
FCC 15.247:2015	ANSI C63.10:2013

COMMENTS

None

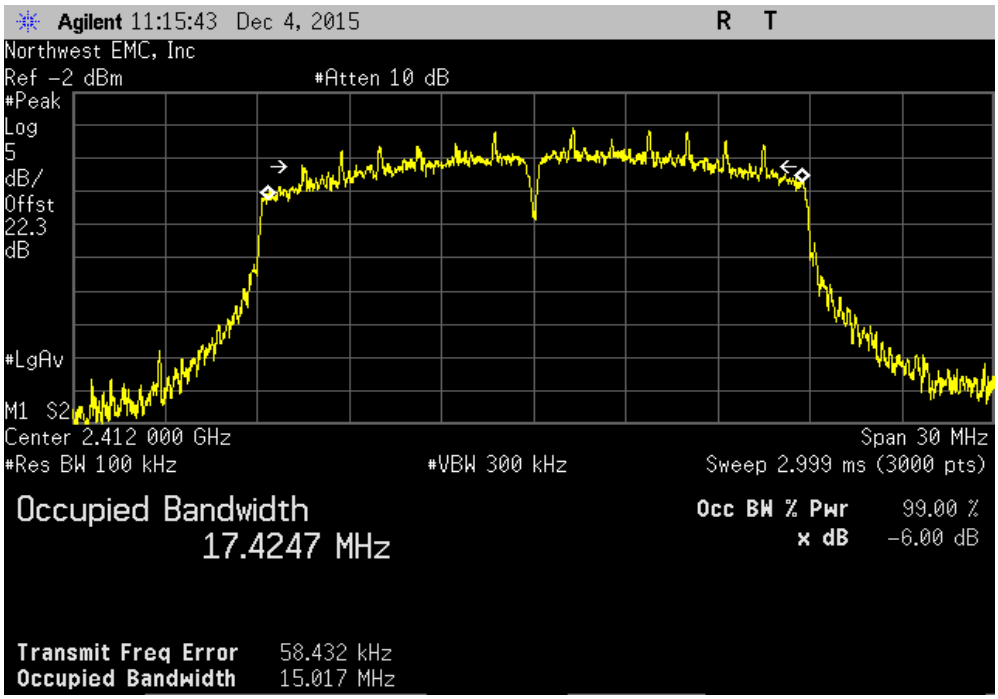
DEVIATIONS FROM TEST STANDARD

None

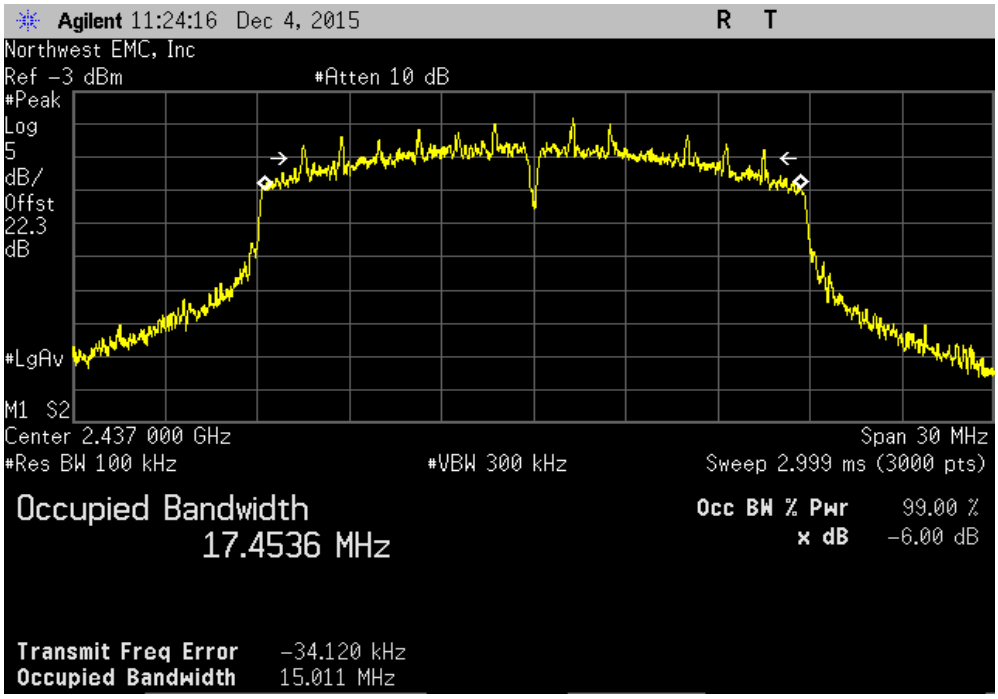
Configuration #	5	Signature	Trevor Buls

	Value	Limit (>)	Result
Chain A			
20 MHz			
2400 MHz - 2483.5 MHz Band			
802.11(n) MCS8			
Low Channel 1, 2412 MHz	15.017 MHz	500 kHz	Pass
Mid Channel 6, 2437 MHz	15.011 MHz	500 kHz	Pass
High Channel 11, 2462 MH	15.006 MHz	500 kHz	Pass
802.11(n) MCS15			
Low Channel 1, 2412 MHz	15.336 MHz	500 kHz	Pass
Mid Channel 6, 2437 MHz	15.057 MHz	500 kHz	Pass
High Channel 11, 2462 MH	15.122 MHz	500 kHz	Pass
Chain B			
20 MHz			
2400 MHz - 2483.5 MHz Band			
802.11(n) MCS8			
Low Channel 1, 2412 MHz	15.055 MHz	500 kHz	Pass
Mid Channel 6, 2437 MHz	14.888 MHz	500 kHz	Pass
High Channel 11, 2462 MH	15.019 MHz	500 kHz	Pass
802.11(n) MCS15			
Low Channel 1, 2412 MHz	15.183 MHz	500 kHz	Pass
Mid Channel 6, 2437 MHz	15.088 MHz	500 kHz	Pass
High Channel 11, 2462 MH	15.04 MHz	500 kHz	Pass

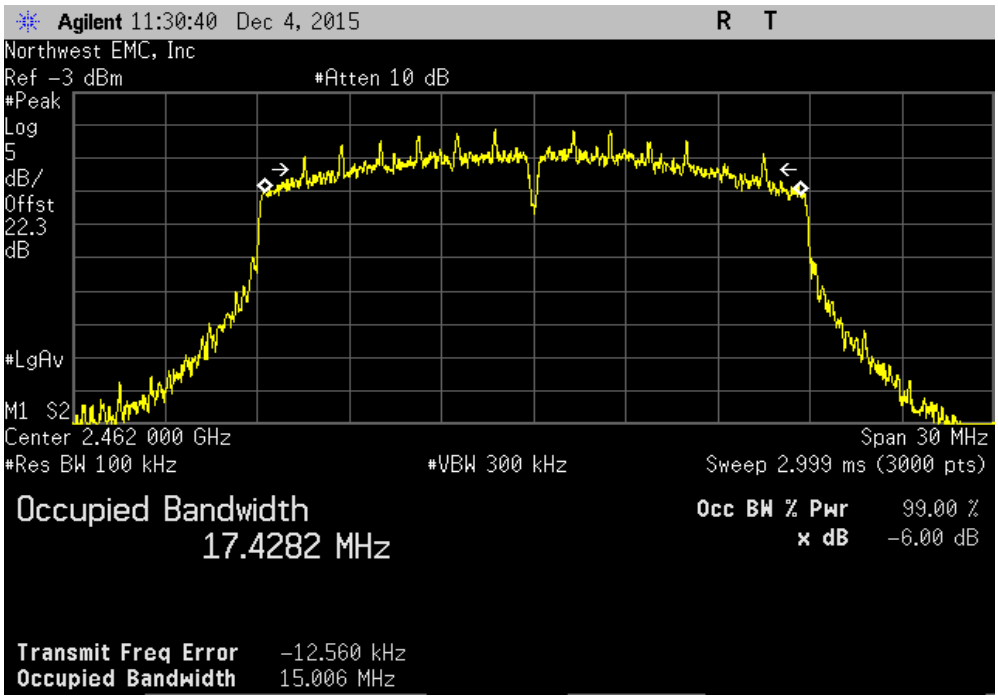
Chain A, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, Low Channel 1, 2412 MHz						
				Value	Limit (>)	Result
				15.017 MHz	500 kHz	Pass



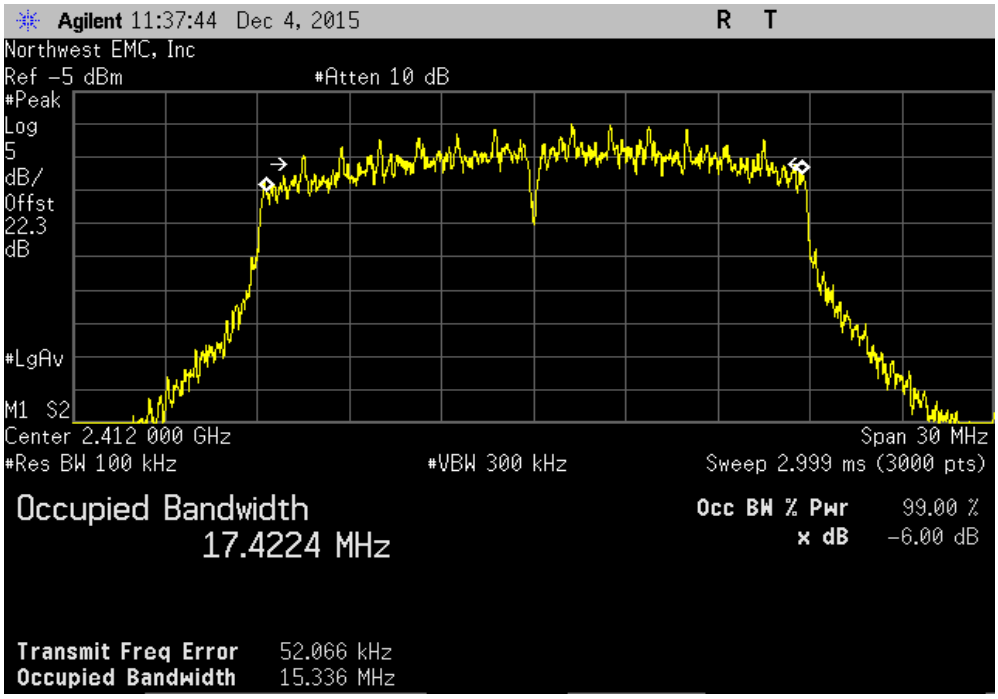
Chain A, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, Mid Channel 6, 2437 MHz						
				Value	Limit (>)	Result
				15.011 MHz	500 kHz	Pass



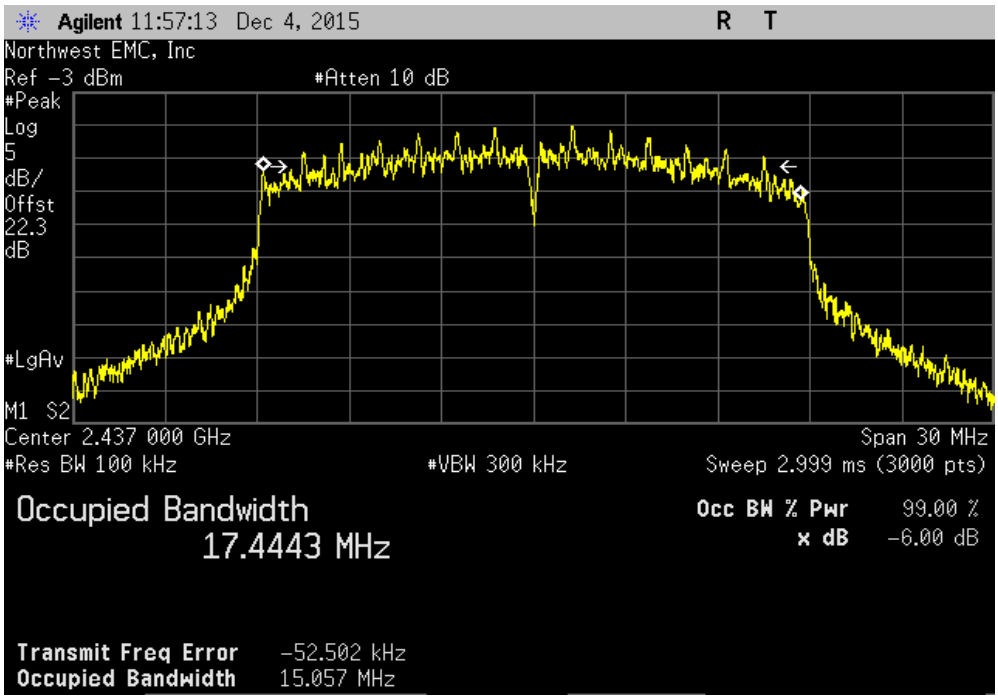
Chain A, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, High Channel 11, 2462 MHz						
				Value	Limit (>)	Result
				15.006 MHz	500 kHz	Pass



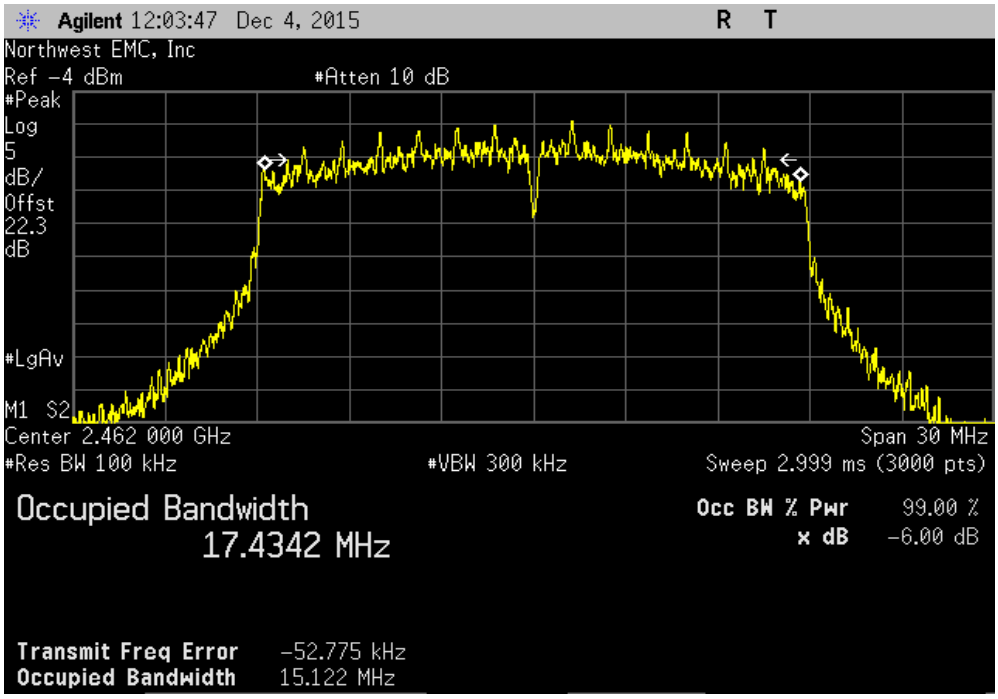
Chain A, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, Low Channel 1, 2412 MHz						
				Value	Limit (>)	Result
				15.336 MHz	500 kHz	Pass



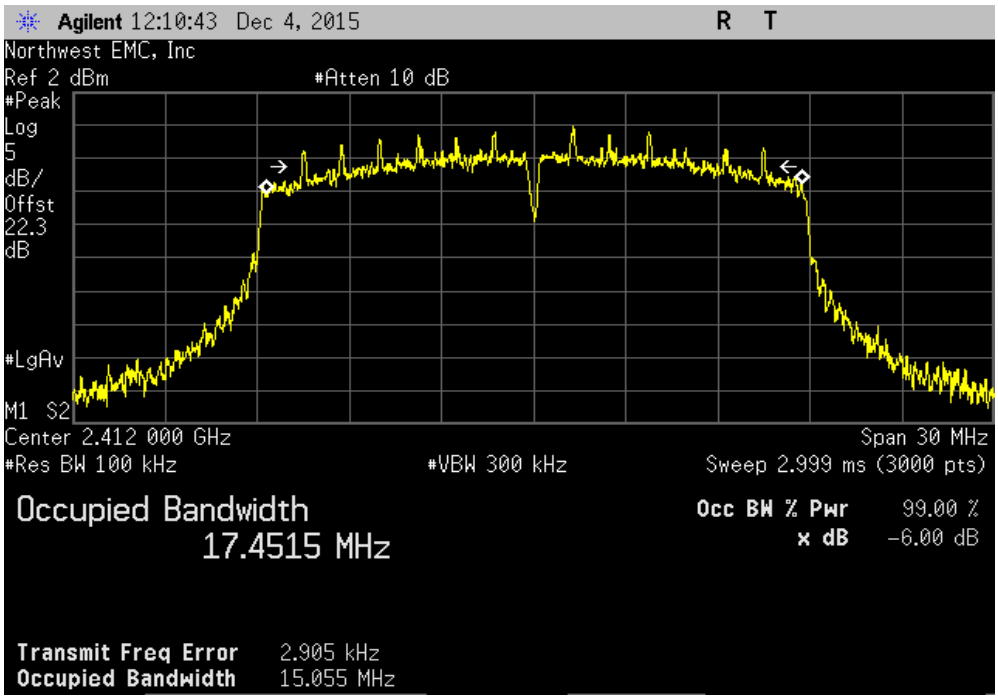
Chain A, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, Mid Channel 6, 2437 MHz						
				Value	Limit (>)	Result
				15.057 MHz	500 kHz	Pass



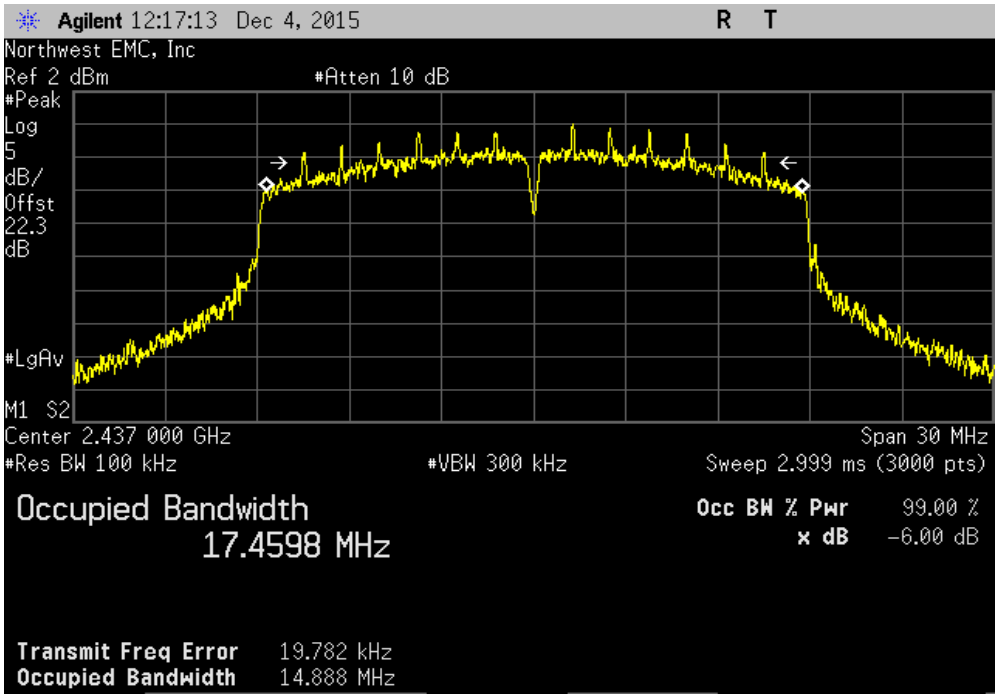
Chain A, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, High Channel 11, 2462 MHz						
				Value	Limit (>)	Result
				15.122 MHz	500 kHz	Pass



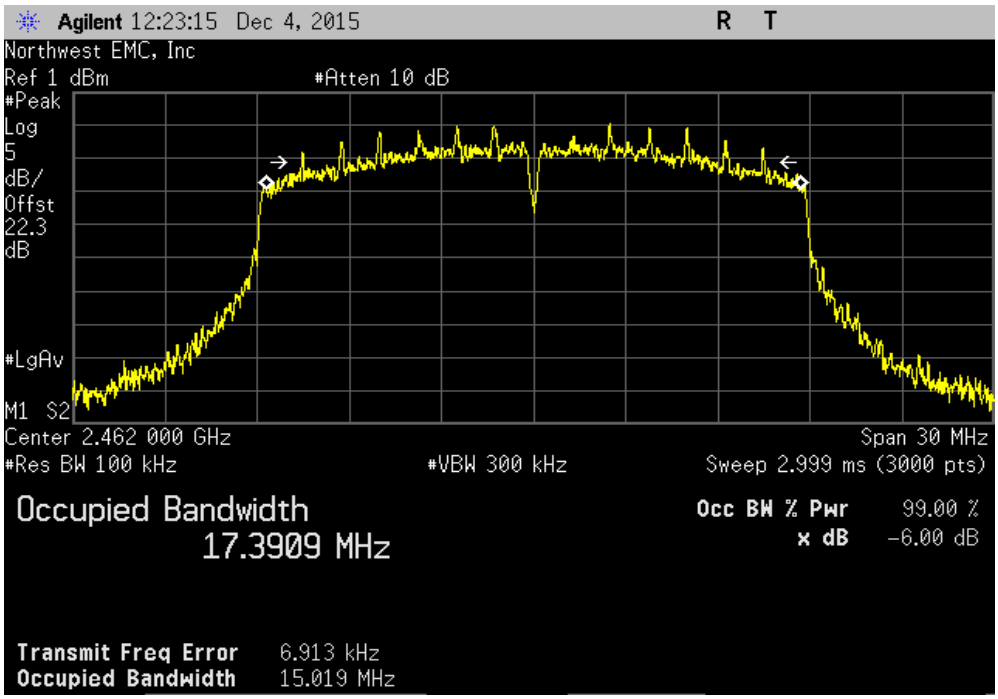
Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, Low Channel 1, 2412 MHz						
				Value	Limit (>)	Result
				15.055 MHz	500 kHz	Pass



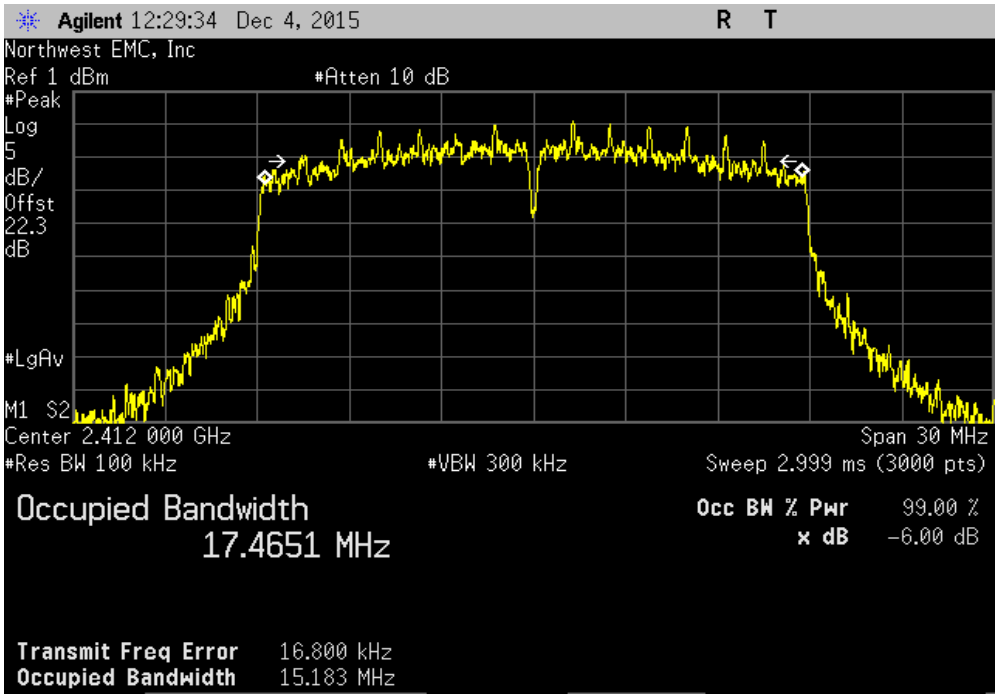
Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, Mid Channel 6, 2437 MHz						
				Value	Limit (>)	Result
				14.888 MHz	500 kHz	Pass



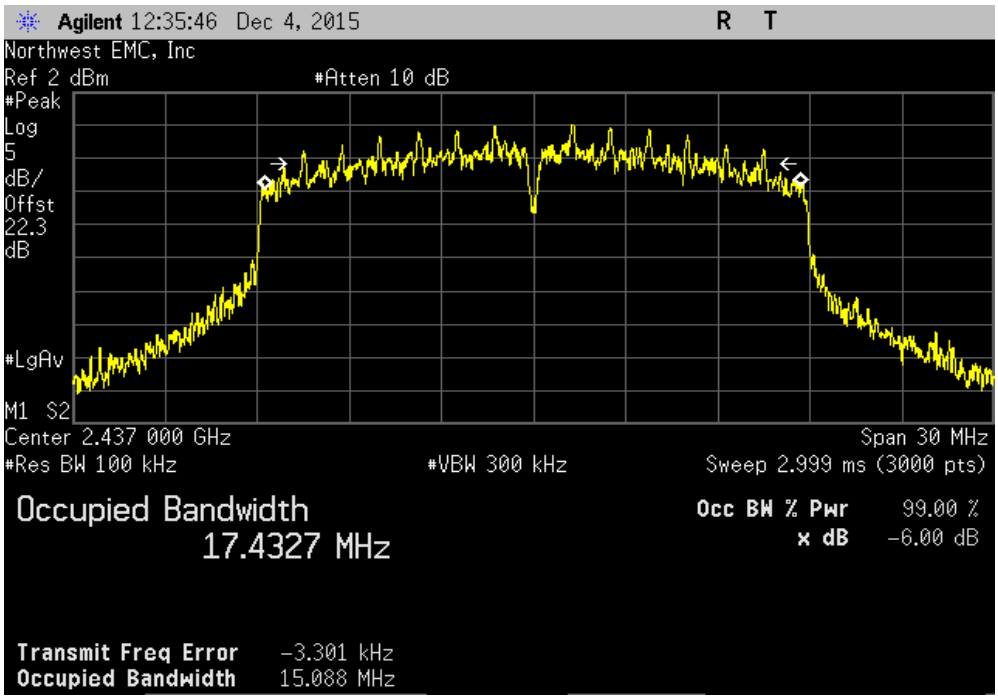
Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, High Channel 11, 2462 MHz						
				Value	Limit (>)	Result
				15.019 MHz	500 kHz	Pass



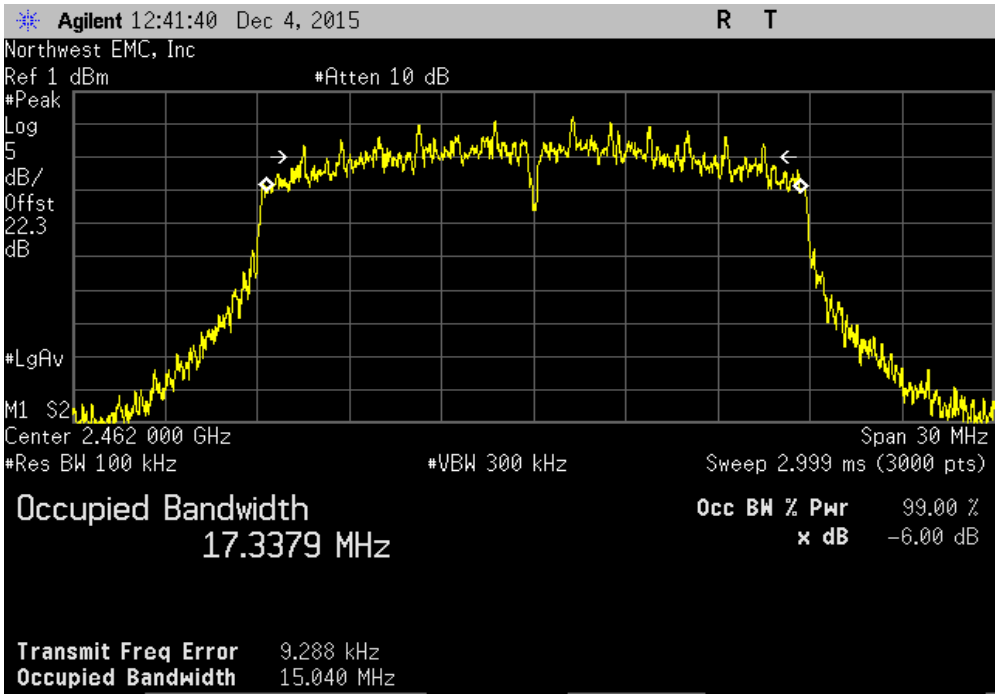
Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, Low Channel 1, 2412 MHz						
				Value	Limit (>)	Result
				15.183 MHz	500 kHz	Pass



Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, Mid Channel 6, 2437 MHz						
				Value	Limit (>)	Result
				15.088 MHz	500 kHz	Pass



Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, High Channel 11, 2462 MHz						
				Value	Limit (>)	Result
				15.04 MHz	500 kHz	Pass



OUTPUT POWER

XMit 2015.01.14

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Cable	ESM Cable Corp.	TTBJ141 KMKM-72	MNU	9/18/2015	12
Attenuator	S.M. Electronics	SA26B-20	RFW	3/10/2015	12
Block - DC	Fairview Microwave	SD3379	AMI	9/18/2015	12
Generator - Signal	Agilent	N5183A	TIK	10/17/2014	36
Analyzer - Spectrum Analyzer	Agilent	E4440A	AAX	4/20/2015	12

TEST DESCRIPTION

The fundamental emission output power (maximum average conducted output power) was measured using the channels and modes as called out on the following data sheets. The transmit power was set to its default maximum.

A direct connection was made between the RF output of the EUT and a spectrum analyzer. External attenuation and a DC block were used. The reference level offset on the spectrum analyzer was adjusted to compensate for cable loss and the external attenuation used between the RF output and the spectrum analyzer input.

Prior to measuring output power; the emission bandwidth (B) and the transmission pulse duration (T) were measured. Both are required to determine the method of measuring Maximum Conducted Output Power. The transmission pulse duration (T) was measured using a zero span on the spectrum analyzer to see the pulses in the time domain.

The method AVGSA-2 in section 11.9.2.2.4 of ANSI C63.10:2013 was used to make the measurement. This method uses trace averaging across ON and OFF times of the EUT transmissions in the spectrum analyzer channel power function using an RMS detector. Following the measurement a duty cycle correction was applied by adding [10 log (1 / D)], where D is the duty cycle, to the measured power to compute the average power during the actual transmission times.

De Facto EIRP Limit: Per 47 CFR 15.247 (b)(1-3), the EUT meets the de facto EIRP limit of +36 dBm.

OUTPUT POWER

NORTHWEST EMC

XMit 2015.01.14

EUT:	Marcum RT-9			**Work Order:**	ELTL0004
Serial Number:	RTS0123456811			**Date:**	12/04/15
Customer:	Electronic Technologies, LLC			**Temperature:**	22.2°C
Attendees:	Rocky Holmes, Deb See			**Humidity:**	25%
Project:	None			**Barometric Pres.:**	998.9
Tested by:	Trevor Buls	**Power:**	110VAC/60Hz	**Job Site:**	MN08

TEST SPECIFICATIONS	Test Method
FCC 15.247:2015	ANSI C63.10:2013

COMMENTS

None

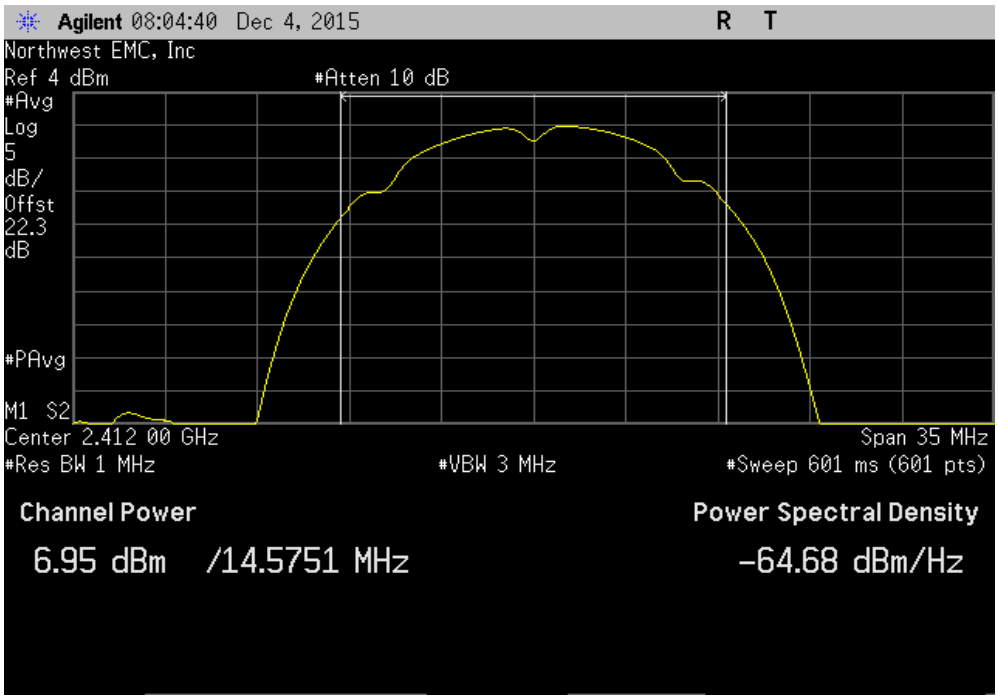
DEVIATIONS FROM TEST STANDARD

None

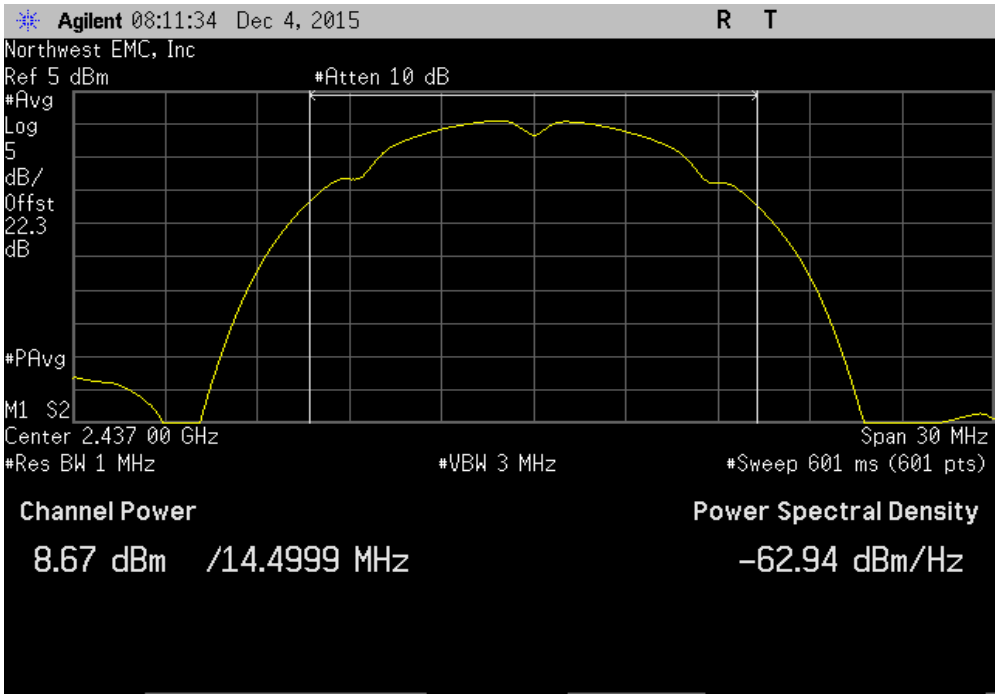
Configuration #	5	Signature	Trevor Buls

		Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Value (dBm)	Limit (dBm)	Results
Chain A						
20 MHz						
	802.11(b) 1 Mbps					
	Low Channel 1, 2412 MHz	6.953	0.5	7.4	30	Pass
	Mid Channel 6, 2437 MHz	8.674	0.5	9.1	30	Pass
	High Channel 11, 2462 MHz	8.053	0.5	8.5	30	Pass
	802.11(b) 11 Mbps					
	Low Channel 1, 2412 MHz	5.449	2.6	8.1	30	Pass
	Mid Channel 6, 2437 MHz	6.812	2.7	9.5	30	Pass
	High Channel 11, 2462 MHz	6.227	2.7	8.9	30	Pass
	802.11(g) 6 Mbps					
	Low Channel 1, 2412 MHz	1.068	2.3	3.3	30	Pass
	Mid Channel 6, 2437 MHz	2.609	2.3	4.9	30	Pass
	High Channel 11, 2462 MHz	2.014	2.3	4.3	30	Pass
	802.11(g) 36 Mbps					
	Low Channel 1, 2412 MHz	-3.382	6.8	3.4	30	Pass
	Mid Channel 6, 2437 MHz	-1.453	6.8	5.3	30	Pass
	High Channel 11, 2462 MHz	-2.357	6.8	4.4	30	Pass
	802.11(g) 54 Mbps					
	Low Channel 1, 2412 MHz	-4.548	7.9	3.4	30	Pass
	Mid Channel 6, 2437 MHz	-2.811	7.9	5.1	30	Pass
	High Channel 11, 2462 MHz	-3.416	7.9	4.5	30	Pass
	802.11(n) MCS0					
	Low Channel 1, 2412 MHz	0.836	2.6	3.4	30	Pass
	Mid Channel 6, 2437 MHz	2.485	2.6	5	30	Pass
	High Channel 11, 2462 MHz	1.893	2.6	4.5	30	Pass
	802.11(n) MCS7					
	Low Channel 1, 2412 MHz	-4.426	8.1	3.6	30	Pass
	Mid Channel 6, 2437 MHz	-2.765	8.1	5.3	30	Pass
	High Channel 11, 2462 MHz	-3.389	8.1	4.7	30	Pass
40 MHz						
	802.11(n) MCS0					
	Low Channel 1/5, 2422 MHz	3.204	1.2	4.4	30	Pass
	Mid Channel 4/8, 2437 MHz	3.597	1.2	4.8	30	Pass
	High Channel 7/11, 2452 MHz	3.288	1.2	4.5	30	Pass
	802.11(n) MCS7					
	Low Channel 1/5, 2422 MHz	-1.95	6.1	4.1	30	Pass
	Mid Channel 4/8, 2437 MHz	-1.58	6.1	4.5	30	Pass
	High Channel 7/11, 2452 MHz	-1.892	6.1	4.2	30	Pass

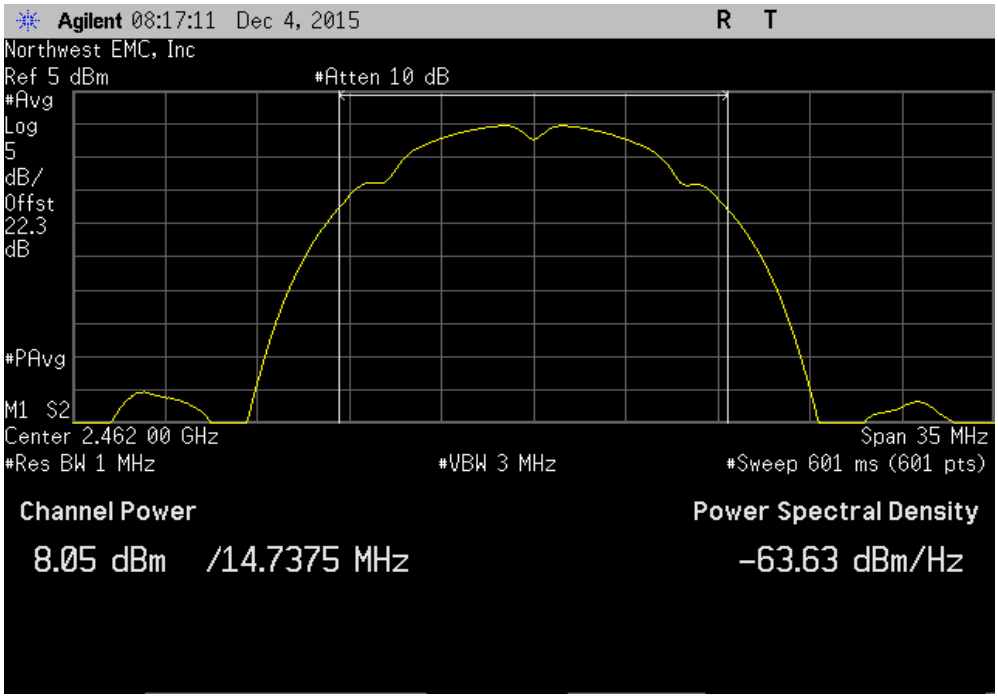
Chain A, 20 MHz, 802.11(b) 1 Mbps, Low Channel 1, 2412 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)		Value (dBm)	Limit (dBm)	Results
	6.953	0.5		7.4	30	Pass



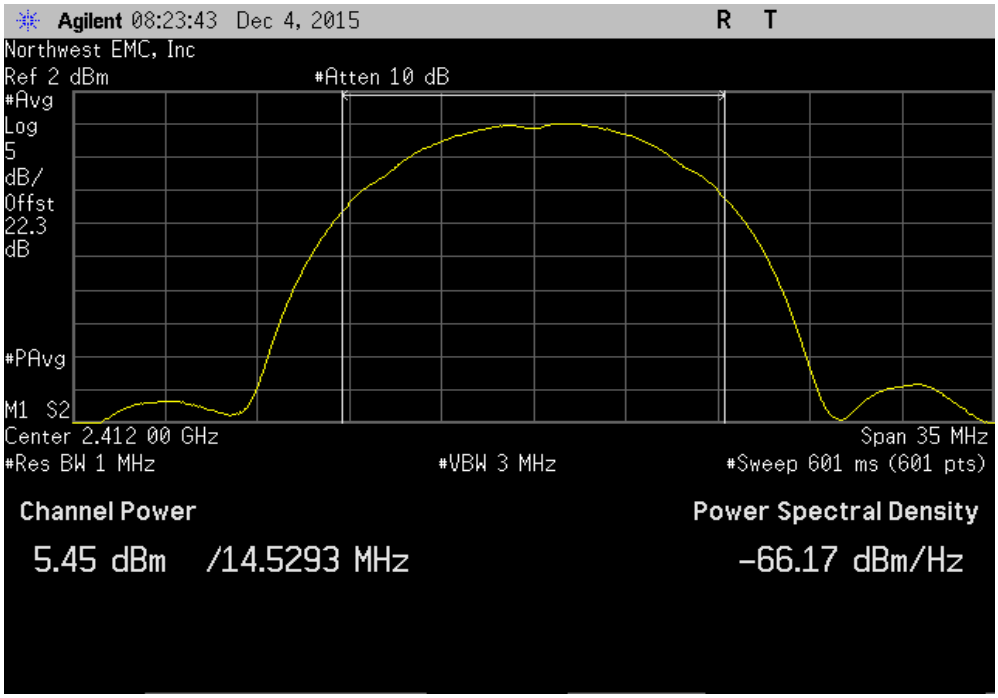
Chain A, 20 MHz, 802.11(b) 1 Mbps, Mid Channel 6, 2437 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)		Value (dBm)	Limit (dBm)	Results
	8.674	0.5		9.1	30	Pass



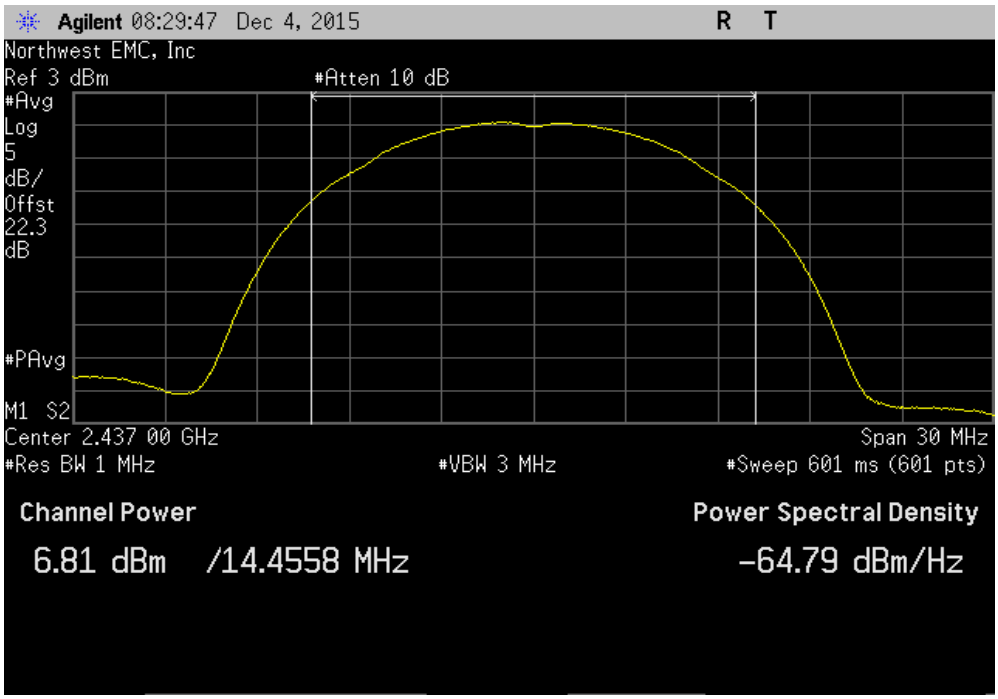
Chain A, 20 MHz, 802.11(b) 1 Mbps, High Channel 11, 2462 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)		Value (dBm)	Limit (dBm)	Results
	8.053	0.5		8.5	30	Pass



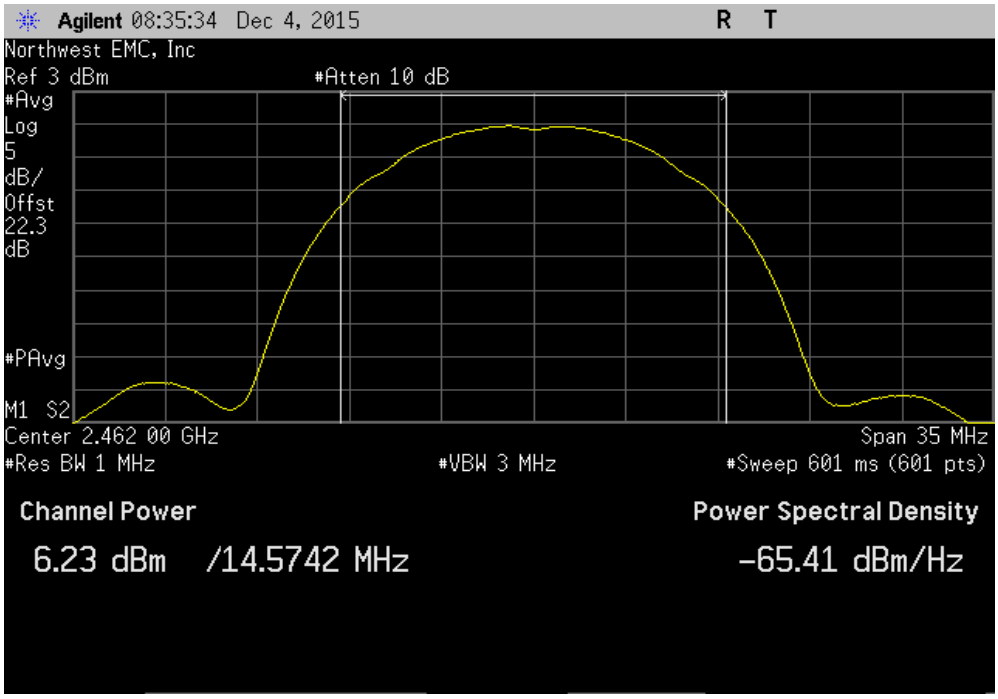
Chain A, 20 MHz, 802.11(b) 11 Mbps, Low Channel 1, 2412 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)		Value (dBm)	Limit (dBm)	Results
	5.449	2.6		8.1	30	Pass



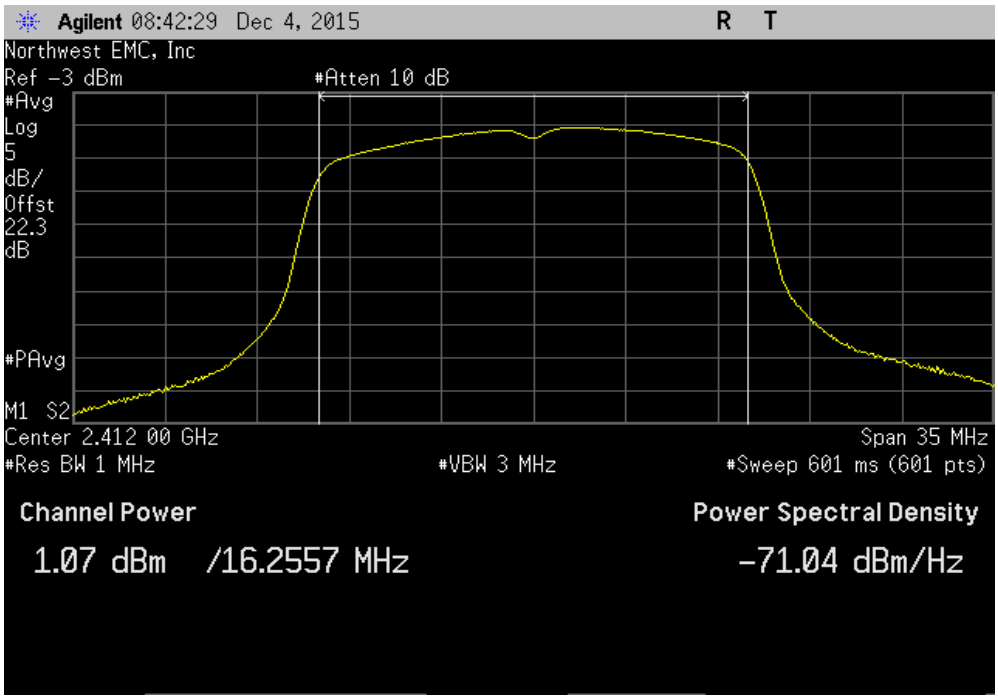
Chain A, 20 MHz, 802.11(b) 11 Mbps, Mid Channel 6, 2437 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)		Value (dBm)	Limit (dBm)	Results
	6.812	2.7		9.5	30	Pass



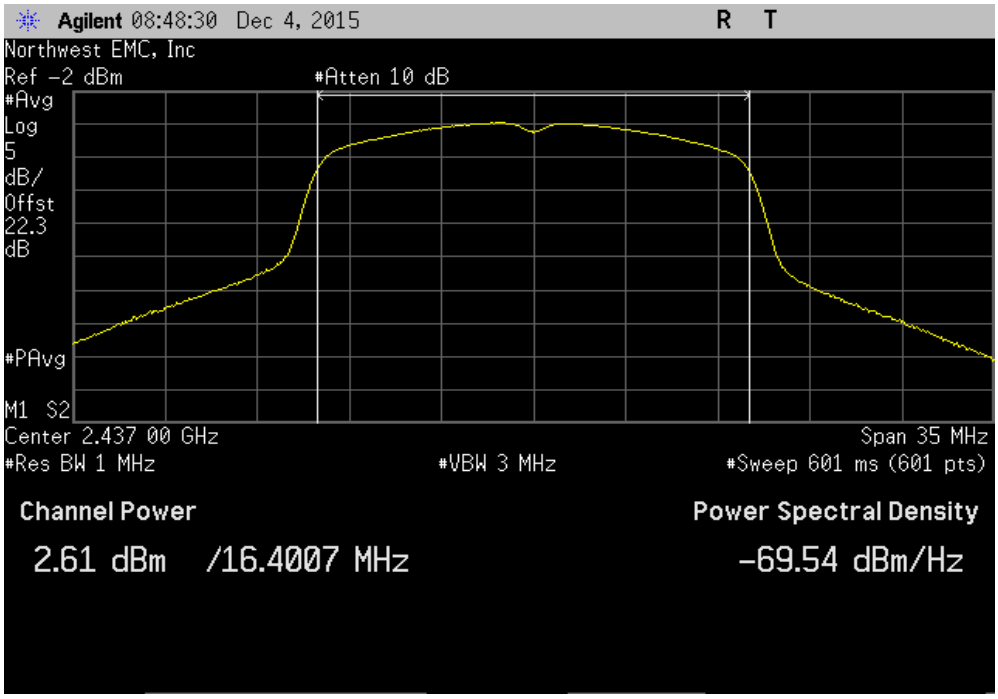
Chain A, 20 MHz, 802.11(b) 11 Mbps, High Channel 11, 2462 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)		Value (dBm)	Limit (dBm)	Results
	6.227	2.7		8.9	30	Pass



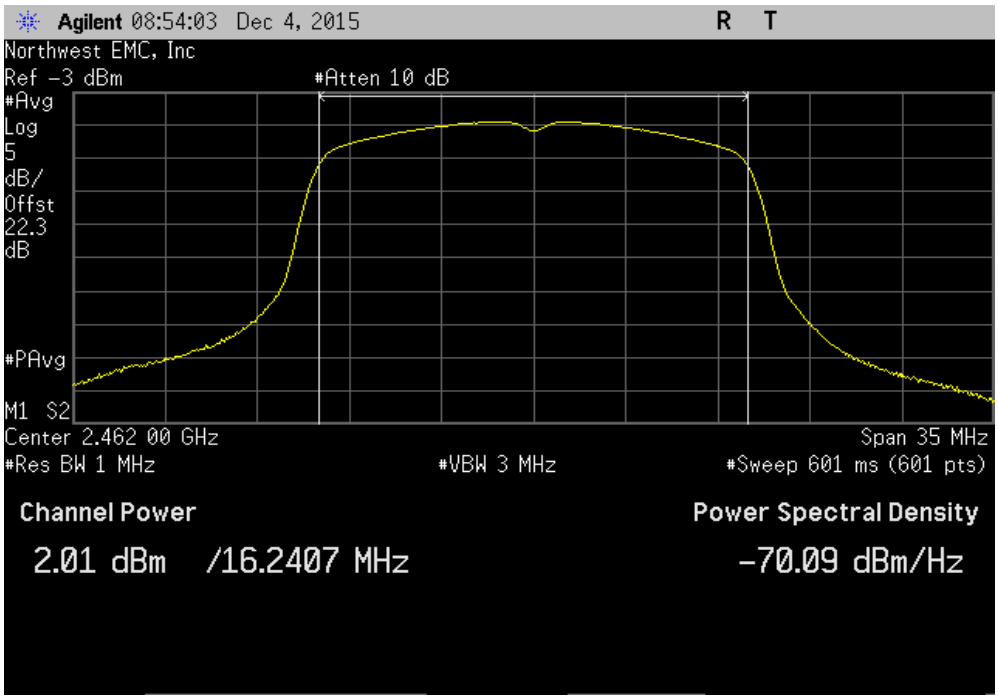
Chain A, 20 MHz, 802.11(g) 6 Mbps, Low Channel 1, 2412 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)		Value (dBm)	Limit (dBm)	Results
	1.068	2.3		3.3	30	Pass



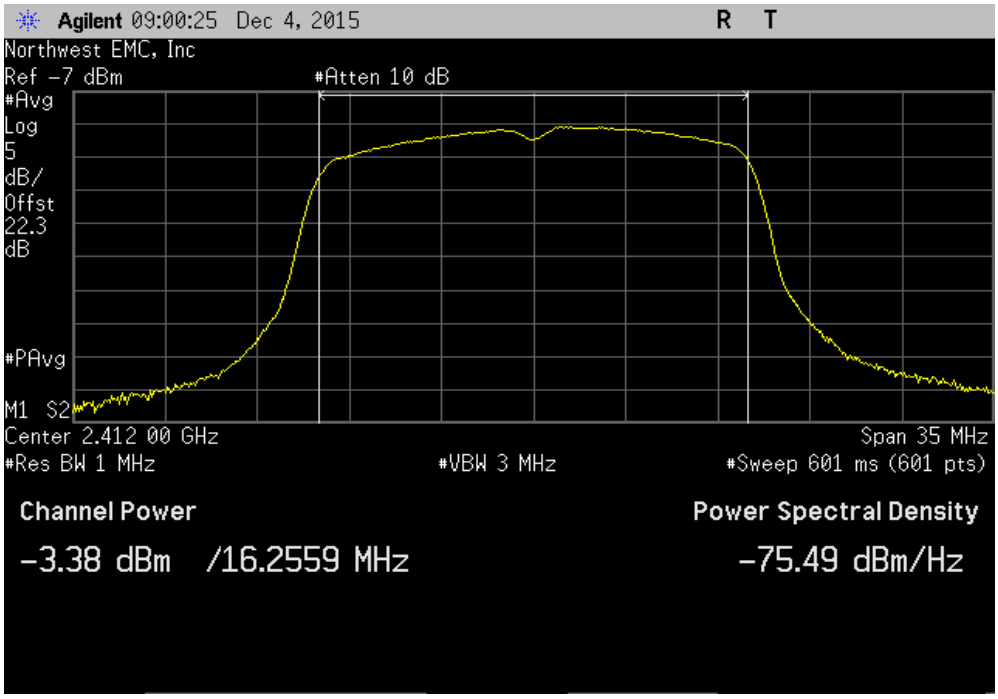
Chain A, 20 MHz, 802.11(g) 6 Mbps, Mid Channel 6, 2437 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)		Value (dBm)	Limit (dBm)	Results
	2.609	2.3		4.9	30	Pass



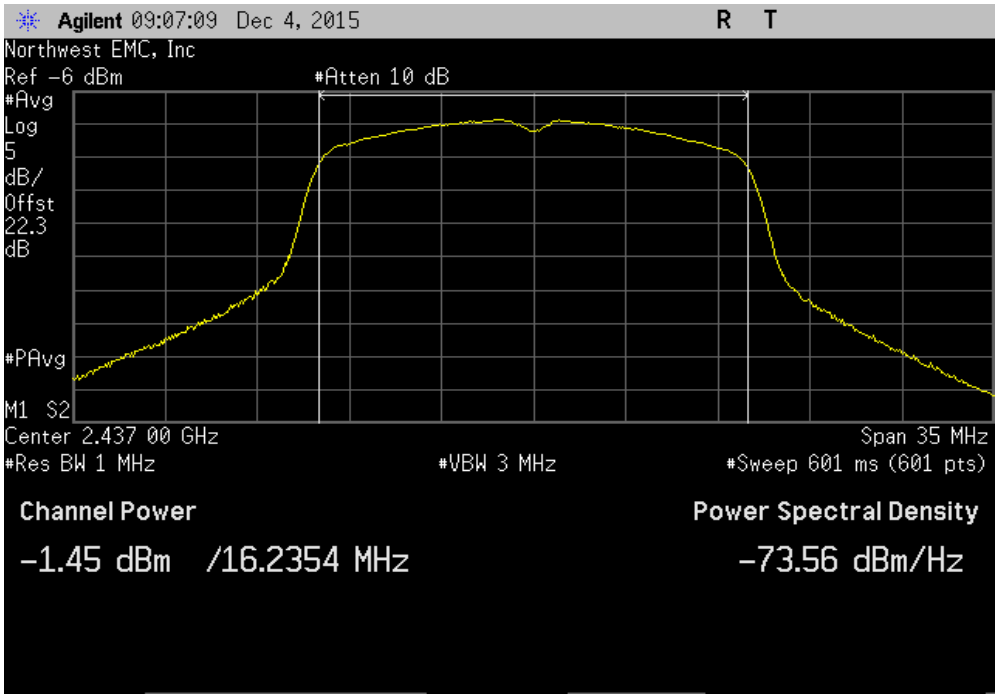
Chain A, 20 MHz, 802.11(g) 6 Mbps, High Channel 11, 2462 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)		Value (dBm)	Limit (dBm)	Results
	2.014	2.3		4.3	30	Pass



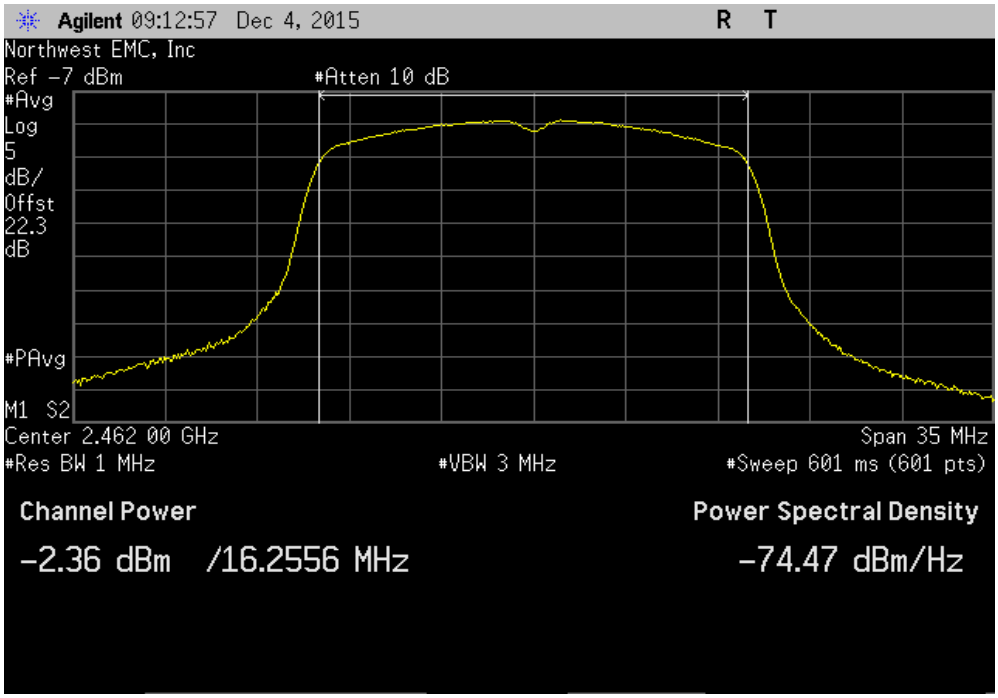
Chain A, 20 MHz, 802.11(g) 36 Mbps, Low Channel 1, 2412 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)		Value (dBm)	Limit (dBm)	Results
	-3.382	6.8		3.4	30	Pass



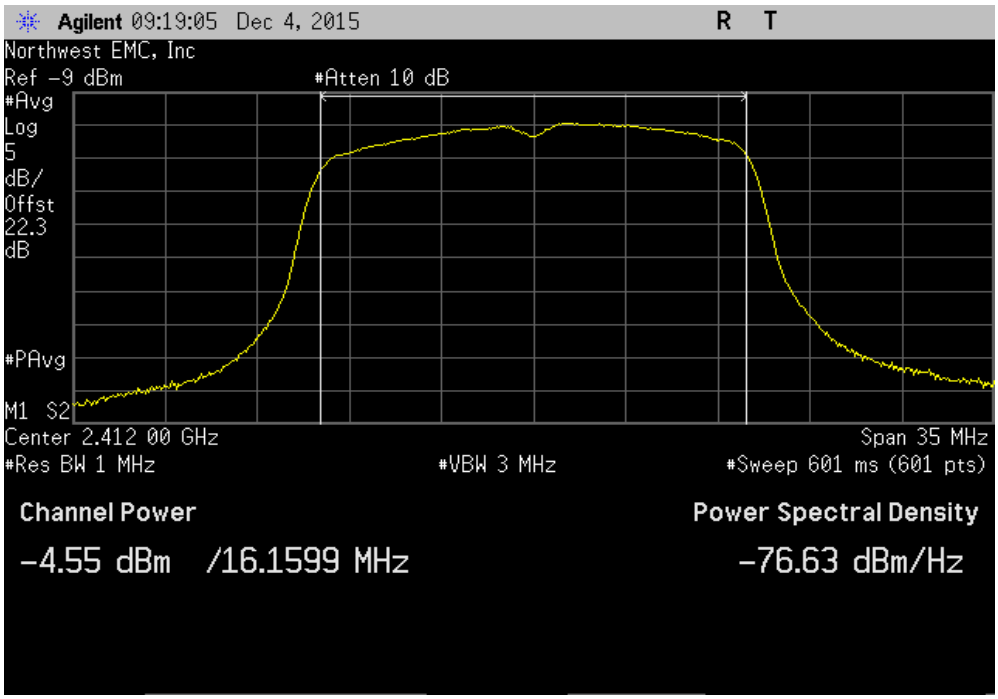
Chain A, 20 MHz, 802.11(g) 36 Mbps, Mid Channel 6, 2437 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)		Value (dBm)	Limit (dBm)	Results
	-1.453	6.8		5.3	30	Pass



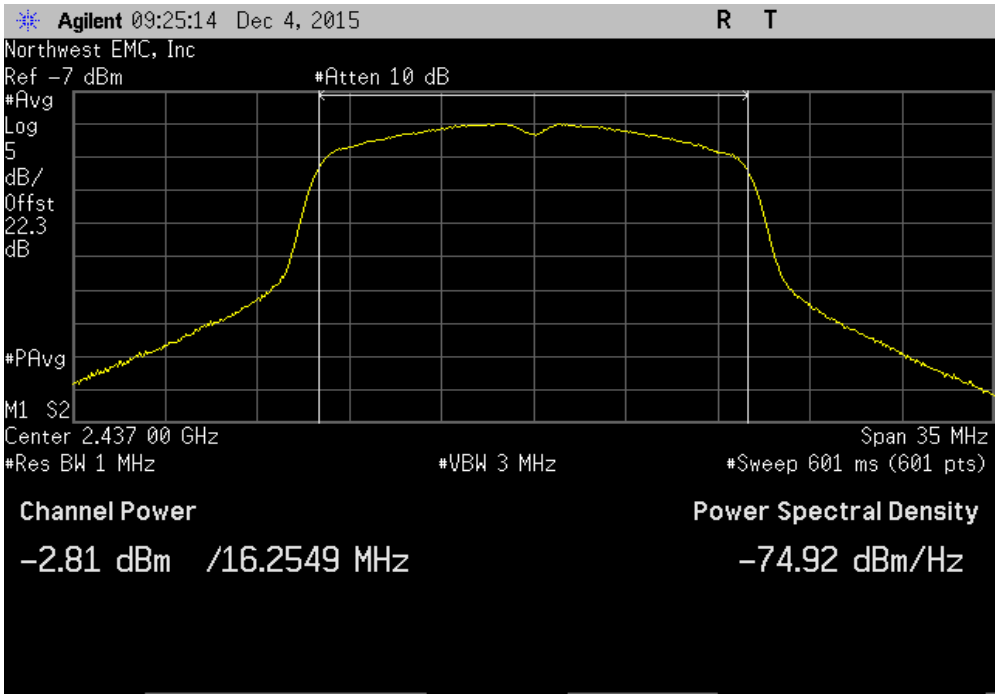
Chain A, 20 MHz, 802.11(g) 36 Mbps, High Channel 11, 2462 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)		Value (dBm)	Limit (dBm)	Results
	-2.357	6.8		4.4	30	Pass



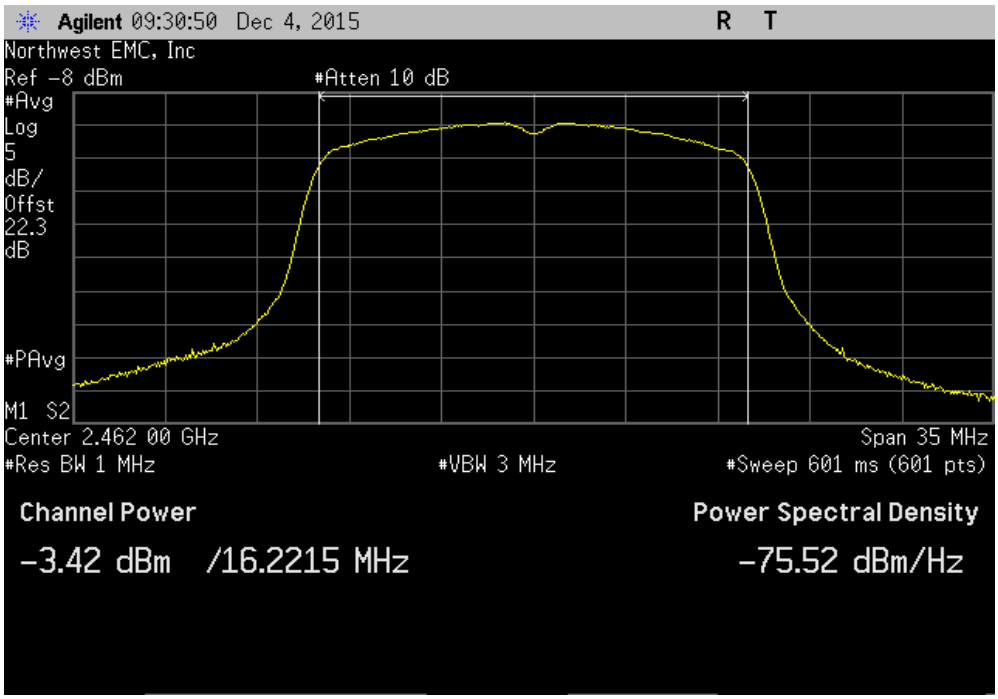
Chain A, 20 MHz, 802.11(g) 54 Mbps, Low Channel 1, 2412 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)		Value (dBm)	Limit (dBm)	Results
	-4.548	7.9		3.4	30	Pass



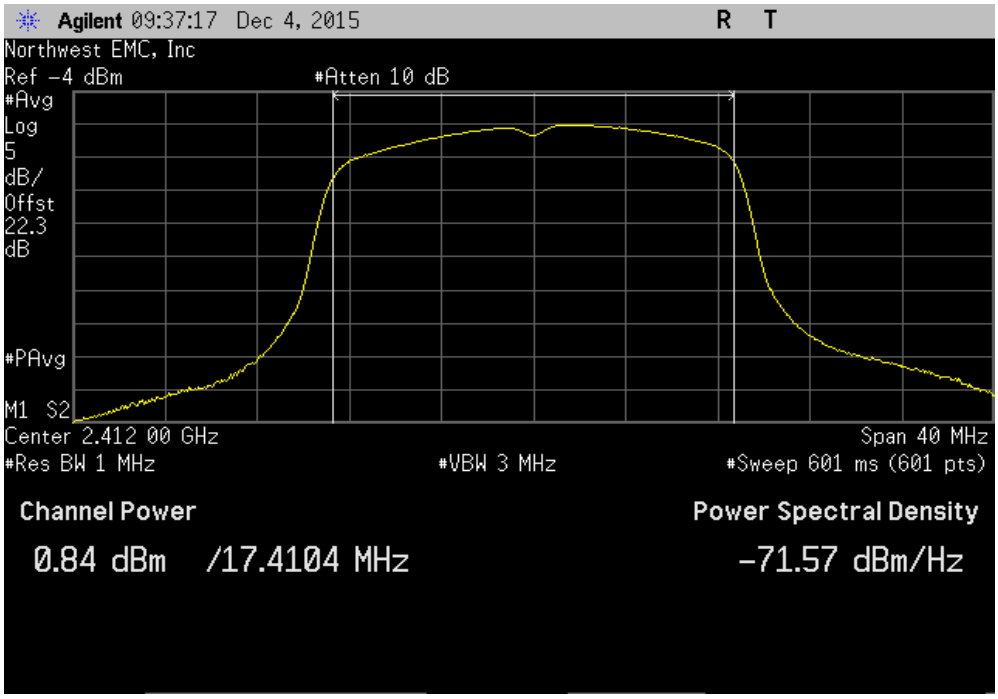
Chain A, 20 MHz, 802.11(g) 54 Mbps, Mid Channel 6, 2437 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)		Value (dBm)	Limit (dBm)	Results
	-2.811	7.9		5.1	30	Pass



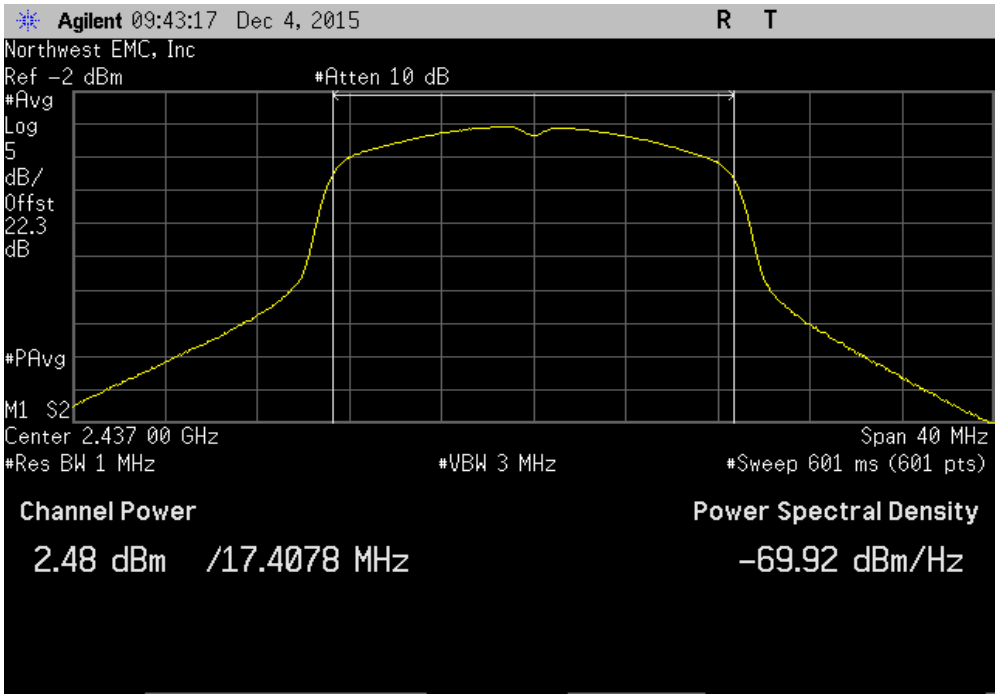
Chain A, 20 MHz, 802.11(g) 54 Mbps, High Channel 11, 2462 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)		Value (dBm)	Limit (dBm)	Results
	-3.416	7.9		4.5	30	Pass



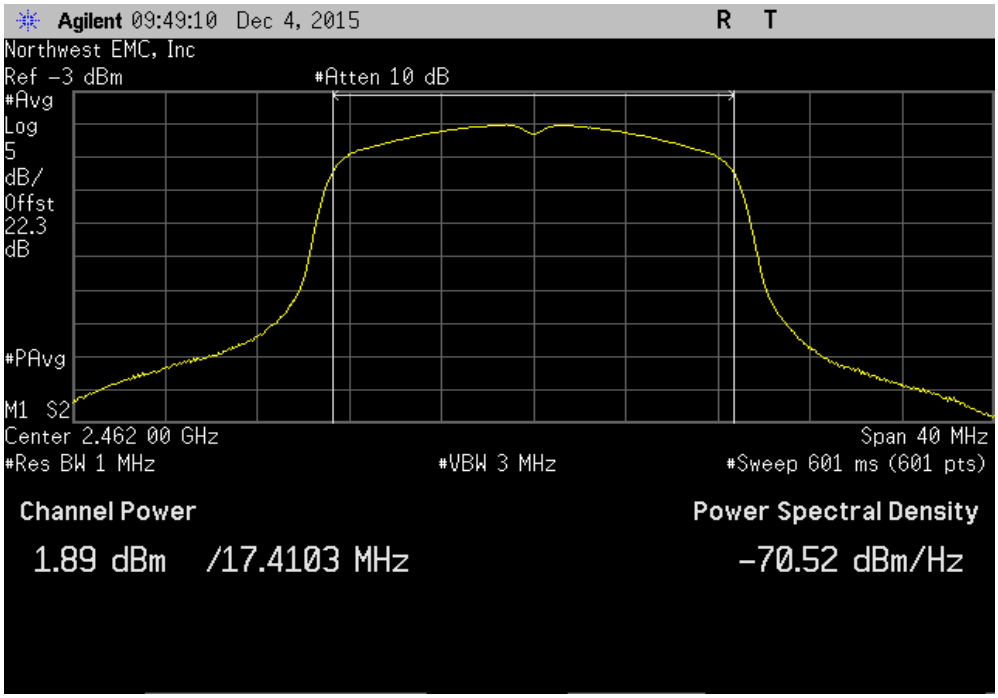
Chain A, 20 MHz, 802.11(n) MCS0, Low Channel 1, 2412 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)		Value (dBm)	Limit (dBm)	Results
	0.836	2.6		3.4	30	Pass



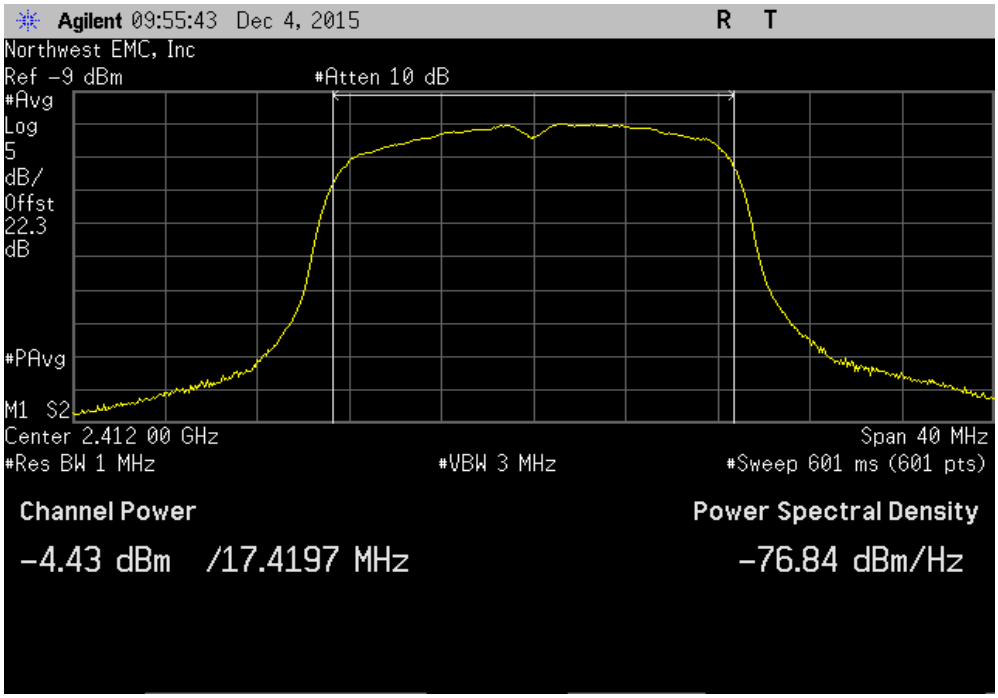
Chain A, 20 MHz, 802.11(n) MCS0, Mid Channel 6, 2437 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)		Value (dBm)	Limit (dBm)	Results
	2.485	2.6		5	30	Pass



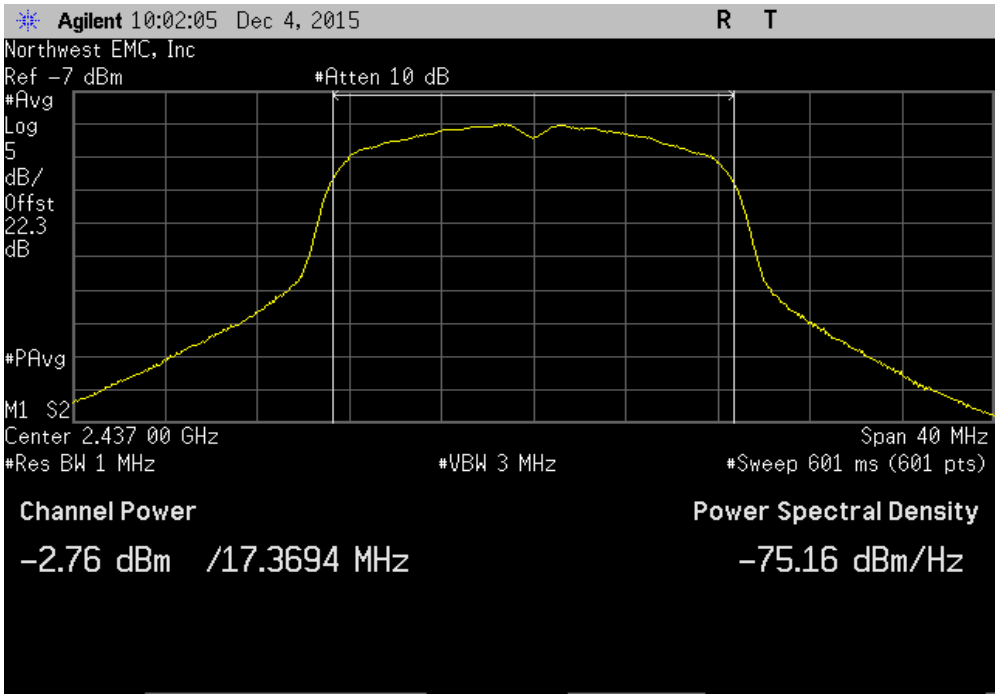
Chain A, 20 MHz, 802.11(n) MCS0, High Channel 11, 2462 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)		Value (dBm)	Limit (dBm)	Results
	1.893	2.6		4.5	30	Pass



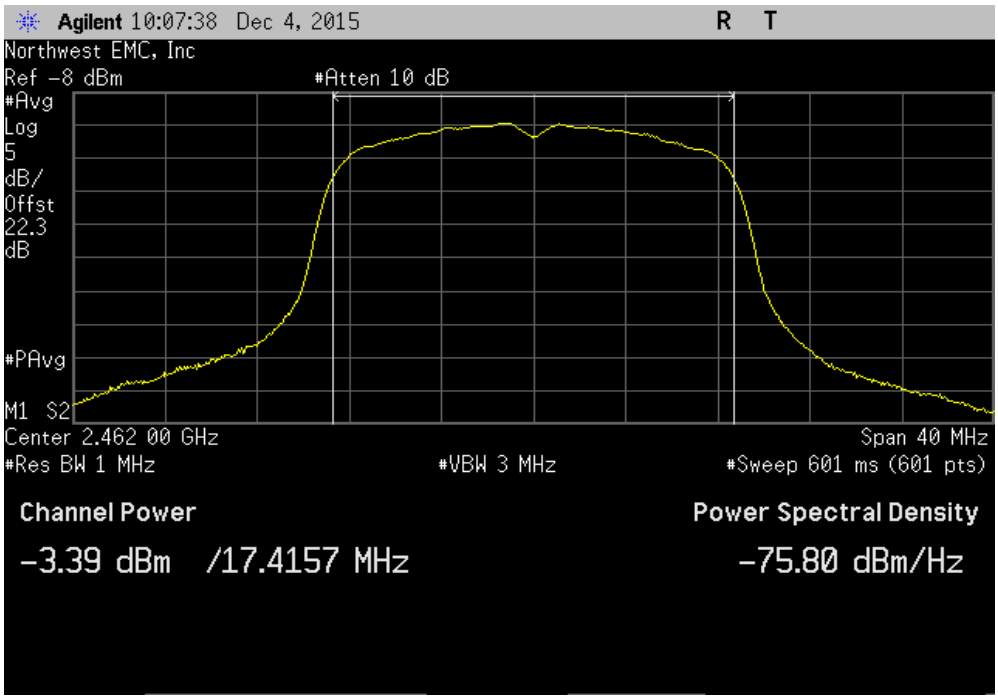
Chain A, 20 MHz, 802.11(n) MCS7, Low Channel 1, 2412 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)		Value (dBm)	Limit (dBm)	Results
	-4.426	8.1		3.6	30	Pass



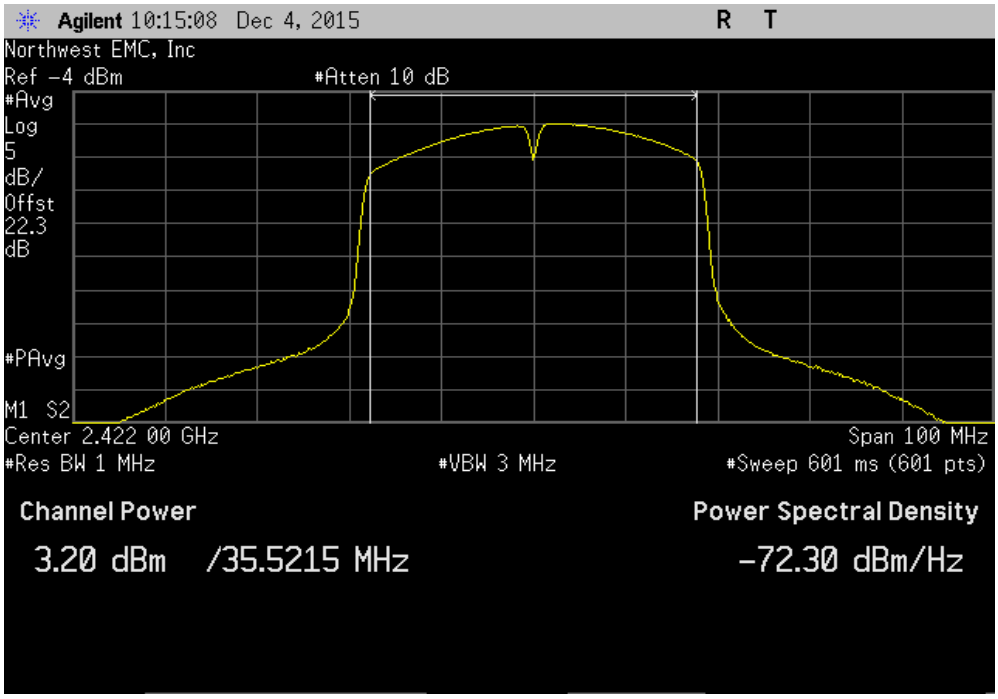
Chain A, 20 MHz, 802.11(n) MCS7, Mid Channel 6, 2437 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)		Value (dBm)	Limit (dBm)	Results
	-2.765	8.1		5.3	30	Pass



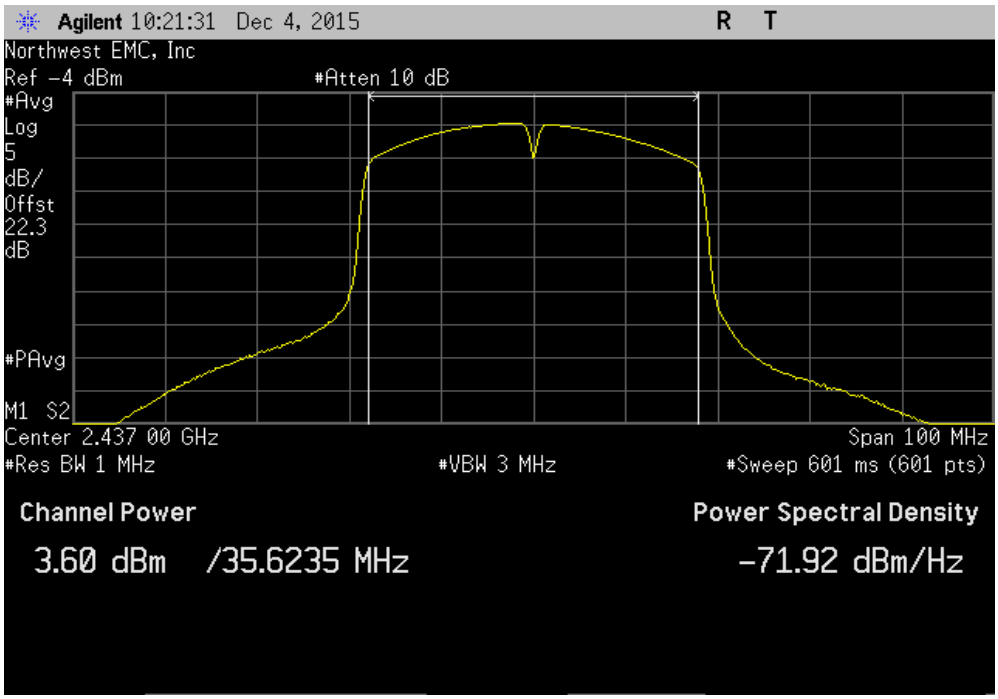
Chain A, 20 MHz, 802.11(n) MCS7, High Channel 11, 2462 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)		Value (dBm)	Limit (dBm)	Results
	-3.389	8.1		4.7	30	Pass



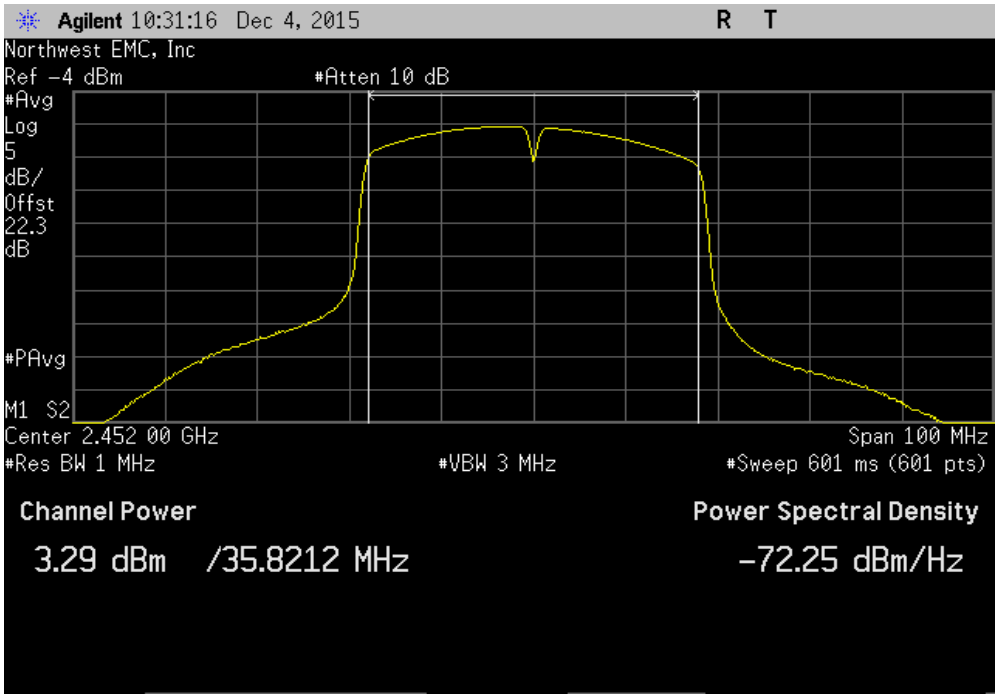
Chain A, 40 MHz, 802.11(n) MCS0, Low Channel 1/5, 2422 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)		Value (dBm)	Limit (dBm)	Results
	3.204	1.2		4.4	30	Pass



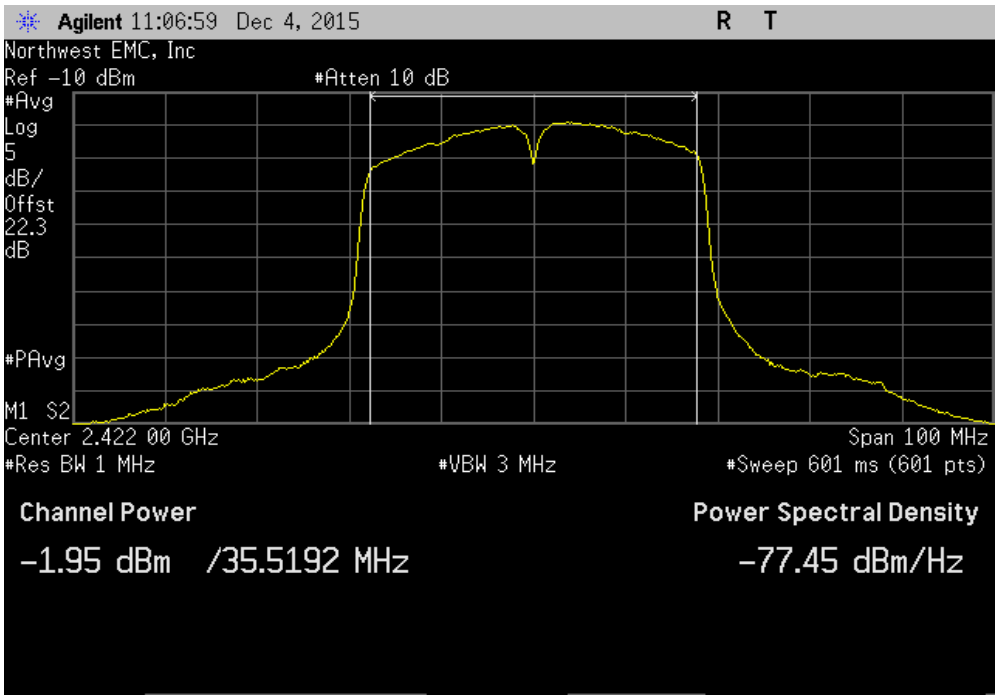
Chain A, 40 MHz, 802.11(n) MCS0, Mid Channel 4/8, 2437 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)		Value (dBm)	Limit (dBm)	Results
	3.597	1.2		4.8	30	Pass



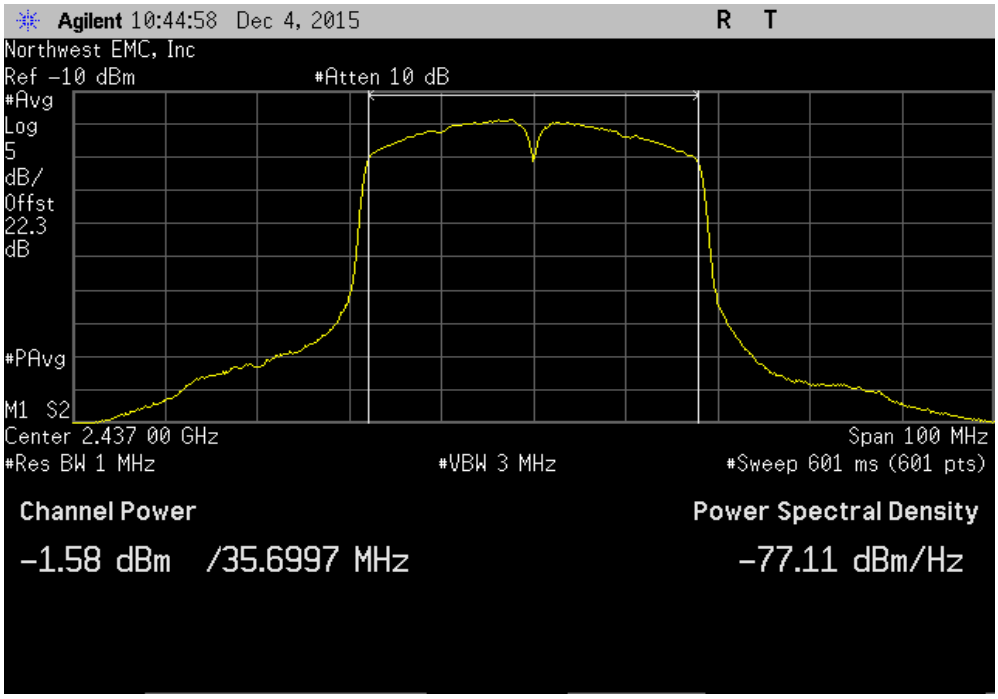
Chain A, 40 MHz, 802.11(n) MCS0, High Channel 7/11, 2452 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)		Value (dBm)	Limit (dBm)	Results
	3.288	1.2		4.5	30	Pass



Chain A, 40 MHz, 802.11(n) MCS7, Low Channel 1/5, 2422 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)		Value (dBm)	Limit (dBm)	Results
	-1.95	6.1		4.1	30	Pass



Chain A, 40 MHz, 802.11(n) MCS7, Mid Channel 4/8, 2437 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)		Value (dBm)	Limit (dBm)	Results
	-1.58	6.1		4.5	30	Pass



OUTPUT POWER

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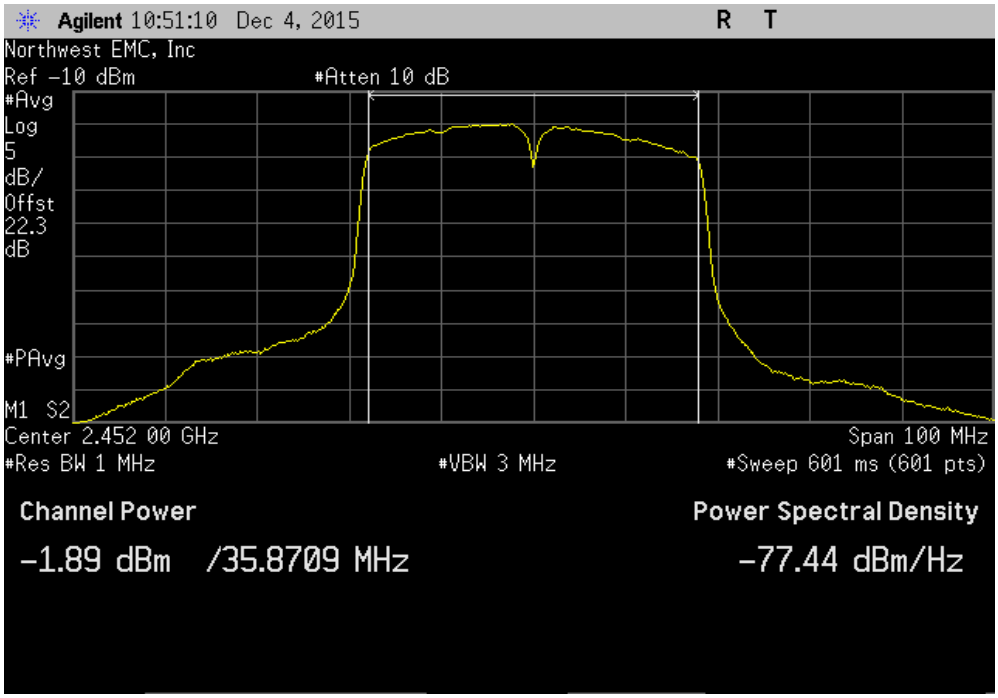
Chain A, 40 MHz, 802.11(n) MCS7, High Channel 7/11, 2452 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)		Value (dBm)	Limit (dBm)	Results
	-1.892	6.1		4.2	30	Pass



OUTPUT POWER 2x2

XMit 2015.01.14

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Cable	ESM Cable Corp.	TTBJ141 KMKM-72	MNU	9/18/2015	12
Attenuator	S.M. Electronics	SA26B-20	RFW	3/10/2015	12
Block - DC	Fairview Microwave	SD3379	AMI	9/18/2015	12
Generator - Signal	Agilent	N5183A	TIK	10/17/2014	36
Analyzer - Spectrum Analyzer	Agilent	E4440A	AAX	4/20/2015	12

TEST DESCRIPTION

The fundamental emission output power (maximum average conducted output power) was measured using the channels and modes as called out on the following data sheets. The transmit power was set to its default maximum.

A direct connection was made between the RF output of the EUT and a spectrum analyzer. External attenuation and a DC block were used. The reference level offset on the spectrum analyzer was adjusted to compensate for cable loss and the external attenuation used between the RF output and the spectrum analyzer input.

Prior to measuring output power; the emission bandwidth (B) and the transmission pulse duration (T) were measured. Both are required to determine the method of measuring Maximum Conducted Output Power. The transmission pulse duration (T) was measured using a zero span on the spectrum analyzer to see the pulses in the time domain.

The method AVGSA-2 in section 11.9.2.2.4 of ANSI C63.10:2013 was used to make the measurement. This method uses trace averaging across ON and OFF times of the EUT transmissions in the spectrum analyzer channel power function using an RMS detector. Following the measurement a duty cycle correction was applied by adding [10 log (1 / D)], where D is the duty cycle, to the measured power to compute the average power during the actual transmission times.

De Facto EIRP Limit: Per 47 CFR 15.247 (b)(1-3), the EUT meets the de facto EIRP limit of +36 dBm.

OUTPUT POWER 2x2

NORTHWEST EMC

XMit 2015.01.14

EUT:	Marcum RT-9			**Work Order:**	ELTL0004
Serial Number:	RTS0123456811			**Date:**	12/04/15
Customer:	Electronic Technologies, LLC			**Temperature:**	22.2°C
Attendees:	Rocky Holmes, Deb See			**Humidity:**	25%
Project:	None			**Barometric Pres.:**	998.9
Tested by:	Trevor Buls	**Power:**	110VAC/60Hz	**Job Site:**	MN08

TEST SPECIFICATIONS	**Test Method**
FCC 15.247:2015	ANSI C63.10:2013

COMMENTS

None

DEVIATIONS FROM TEST STANDARD

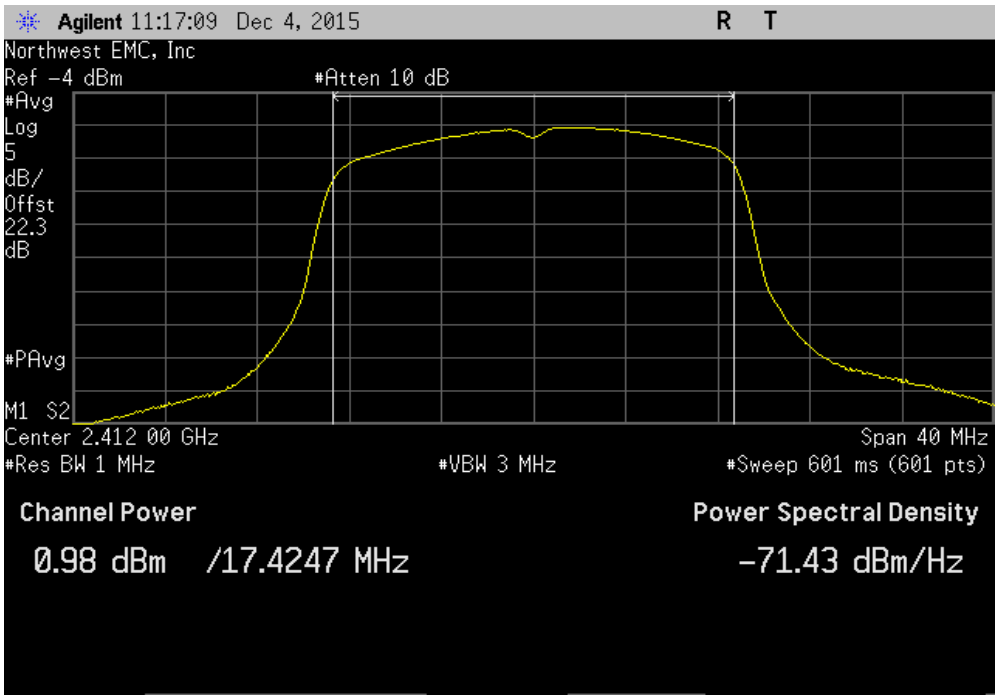
None

Configuration #	5	*Signature* Trevor Buls

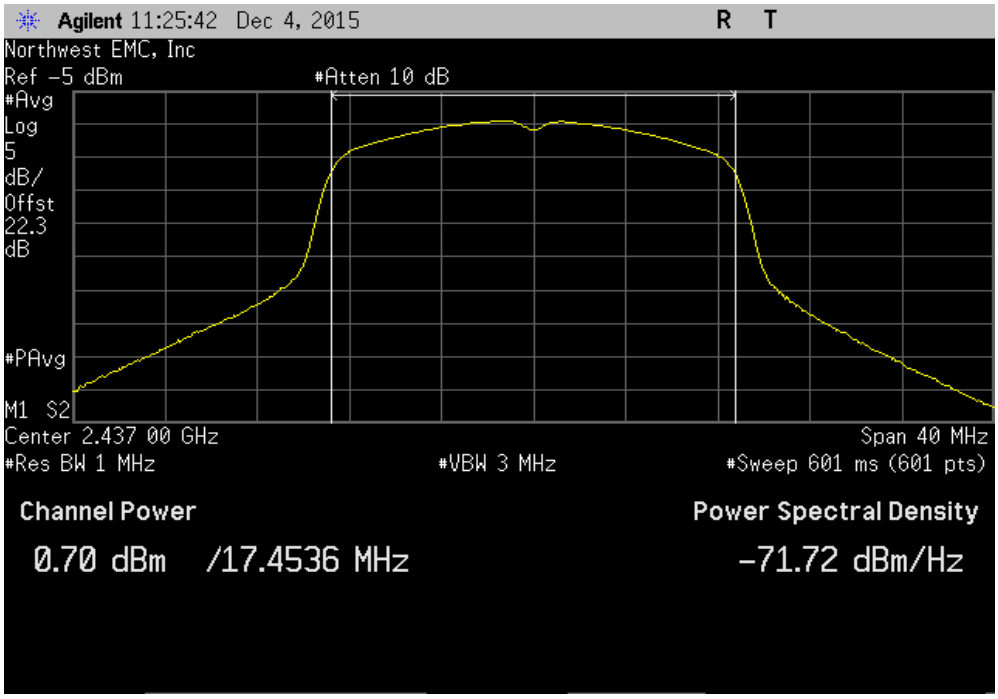
			Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Value (dBm)	Limit (dBm)	Results
Chain A							
	20 MHz						
		2400 MHz - 2483.5 MHz Band					
		802.11(n) MCS8					
		Low Channel 1, 2412 MHz	0.979	1.8	2.8	30	Pass
		Mid Channel 6, 2437 MHz	0.695	1.9	2.5	30	Pass
		High Channel 11, 2462 MHz	-0.072	1.8	1.8	30	Pass
		802.11(n) MCS15					
		Low Channel 1, 2412 MHz	-4.62	4.9	0.3	30	Pass
		Mid Channel 6, 2437 MHz	-2.915	4.9	2	30	Pass
		High Channel 11, 2462 MHz	-3.392	4.9	1.5	30	Pass
Chain B							
	20 MHz						
		2400 MHz - 2483.5 MHz Band					
		802.11(n) MCS8					
		Low Channel 1, 2412 MHz	4.874	1.9	6.7	30	Pass
		Mid Channel 6, 2437 MHz	4.951	1.9	6.8	30	Pass
		High Channel 11, 2462 MHz	4.886	1.9	6.7	30	Pass
		802.11(n) MCS15					
		Low Channel 1, 2412 MHz	1.937	4.9	6.9	30	Pass
		Mid Channel 6, 2437 MHz	2.352	4.9	7.3	30	Pass
		High Channel 11, 2462 MHz	1.99	4.9	6.9	30	Pass

Chain AB			Chain A Avg Cond Pwr (mW)	Chain B Avg Cond Pwr (mW)	Chain AB Avg Cond Pwr (mW)	Chain AB Avg Cond Pwr (dBm)	Limit (dBm)	Results
	20 MHz							
		2400 MHz - 2483.5 MHz Band						
		802.11(n) MCS8						
		Low Channel 1, 2412 MHz	1.90	4.76	6.65	8.2	30	Pass
		Mid Channel 6, 2437 MHz	1.82	4.84	6.66	8.2	30	Pass
		High Channel 11, 2462 MHz	1.49	4.77	6.26	8.0	30	Pass
		802.11(n) MCS15						
		Low Channel 1, 2412 MHz	1.07	4.83	5.89	7.7	30	Pass
		Mid Channel 6, 2437 MHz	1.58	5.31	6.89	8.4	30	Pass
		High Channel 11, 2462 MHz	1.42	4.89	6.30	8.0	30	Pass

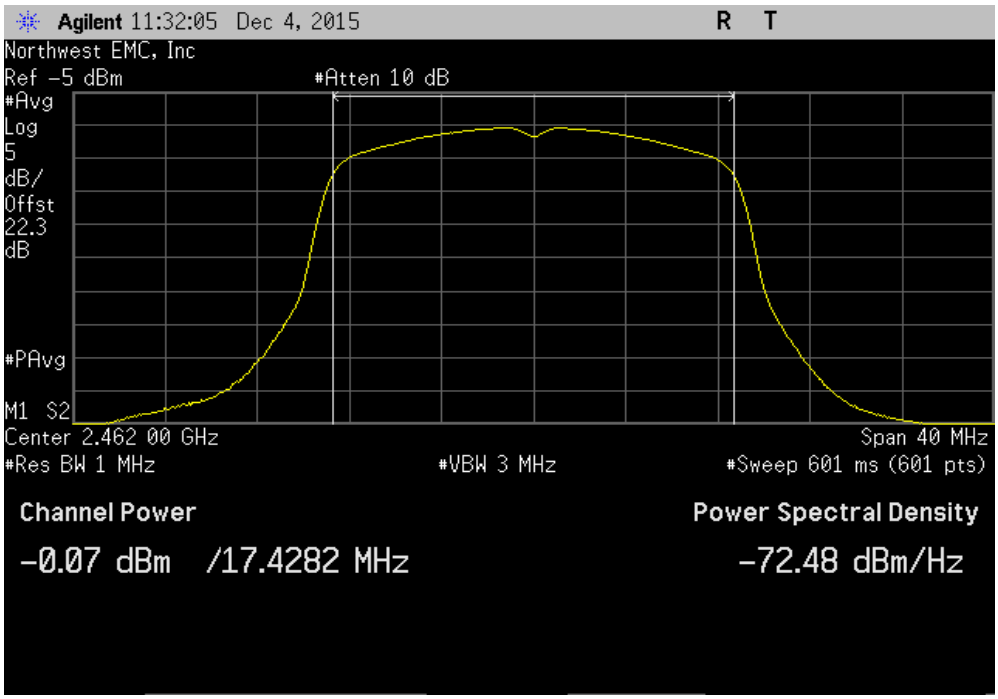
Chain A, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, Low Channel 1, 2412 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)		Value (dBm)	Limit (dBm)	Results
	0.979	1.8		2.8	30	Pass



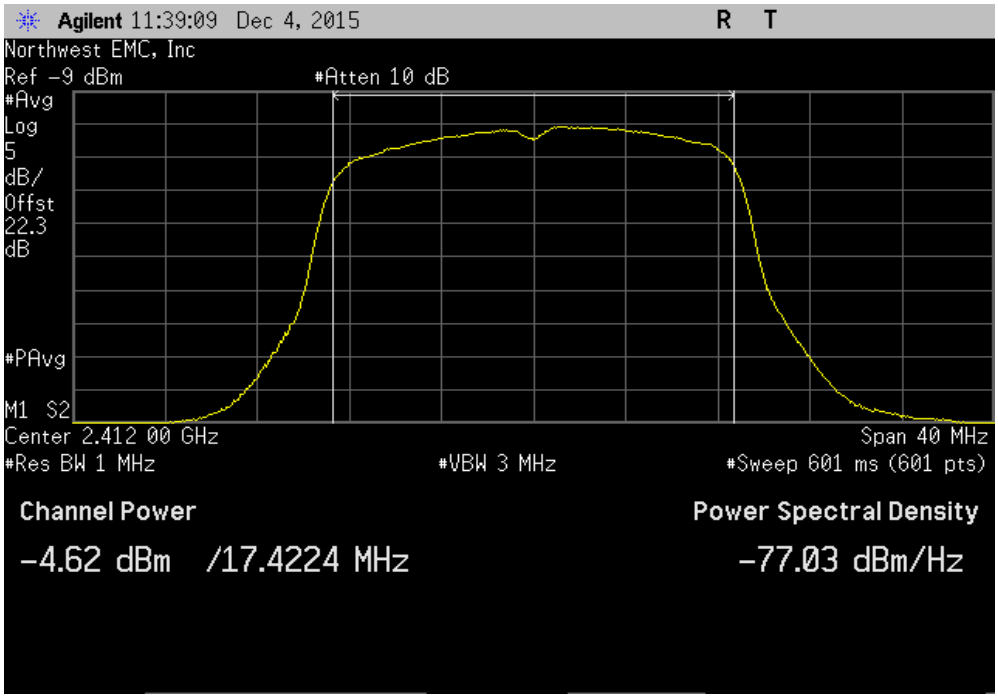
Chain A, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, Mid Channel 6, 2437 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)		Value (dBm)	Limit (dBm)	Results
	0.695	1.9		2.5	30	Pass



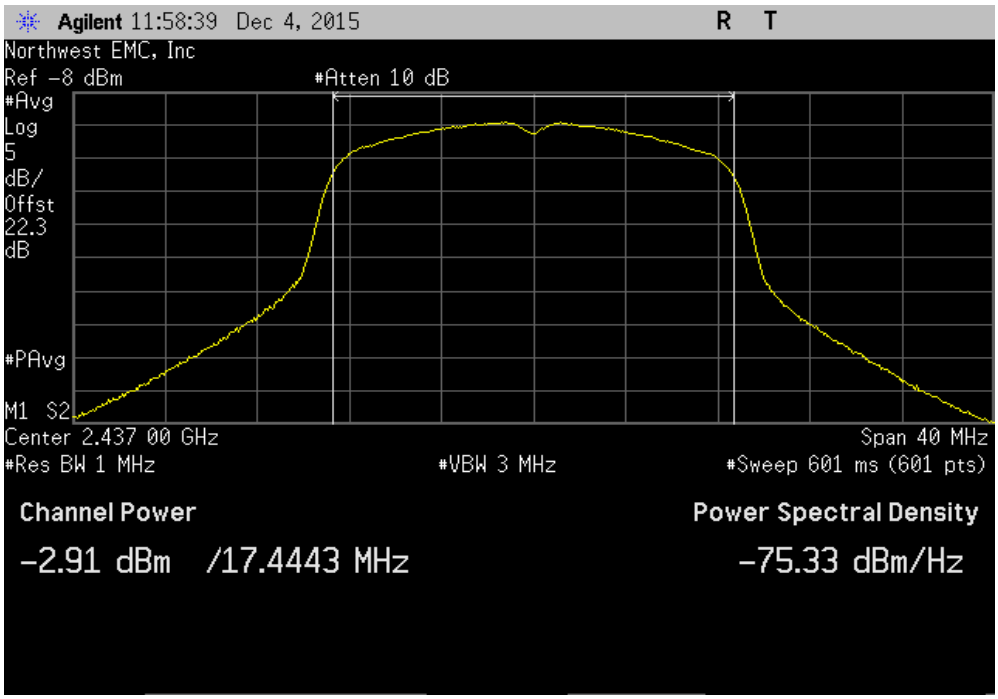
Chain A, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, High Channel 11, 2462 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)		Value (dBm)	Limit (dBm)	Results
	-0.072	1.8		1.8	30	Pass



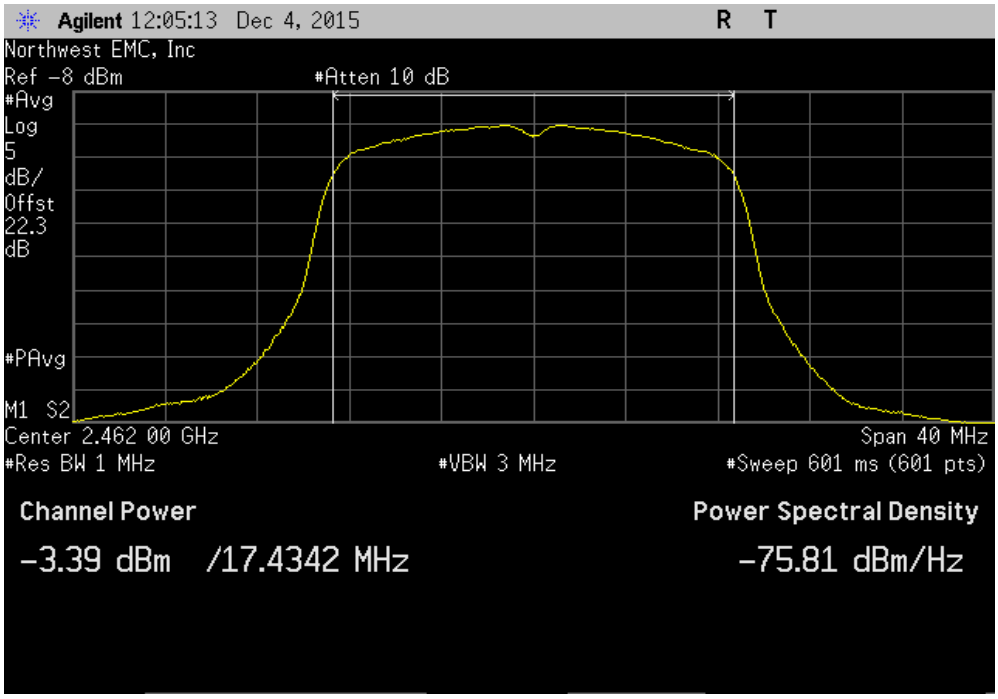
Chain A, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, Low Channel 1, 2412 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)		Value (dBm)	Limit (dBm)	Results
	-4.62	4.9		0.3	30	Pass



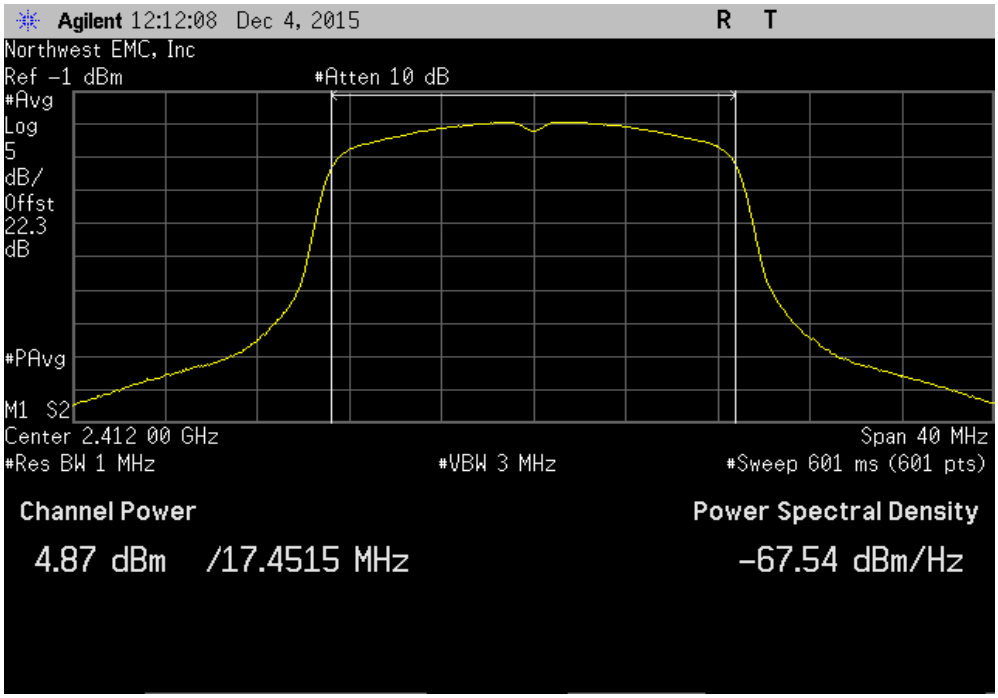
Chain A, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, Mid Channel 6, 2437 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)		Value (dBm)	Limit (dBm)	Results
	-2.915	4.9		2	30	Pass



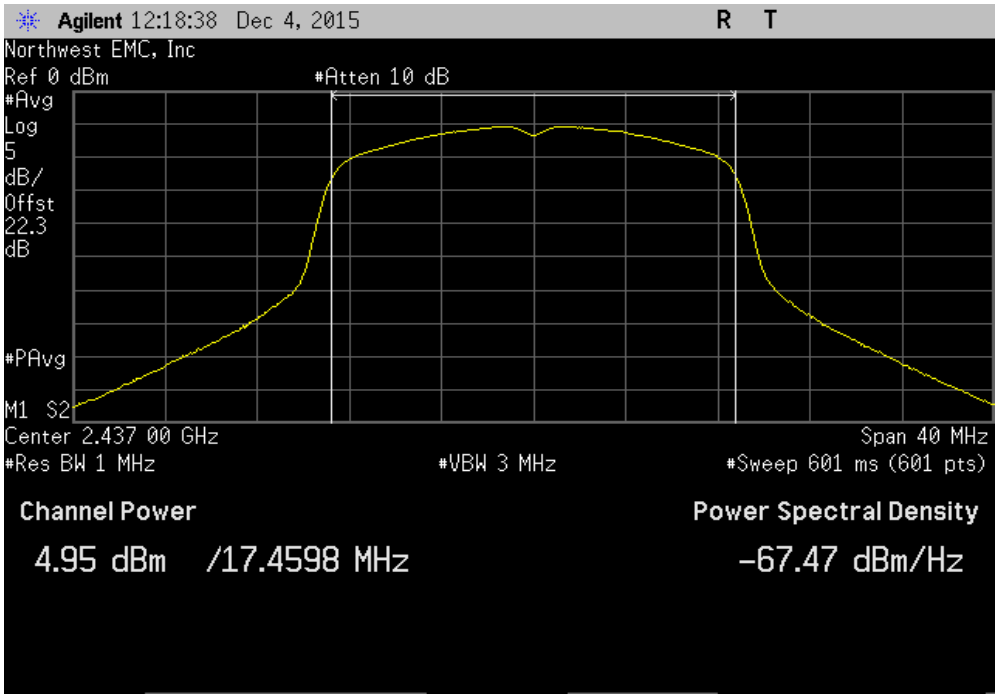
Chain A, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, High Channel 11, 2462 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)		Value (dBm)	Limit (dBm)	Results
	-3.392	4.9		1.5	30	Pass



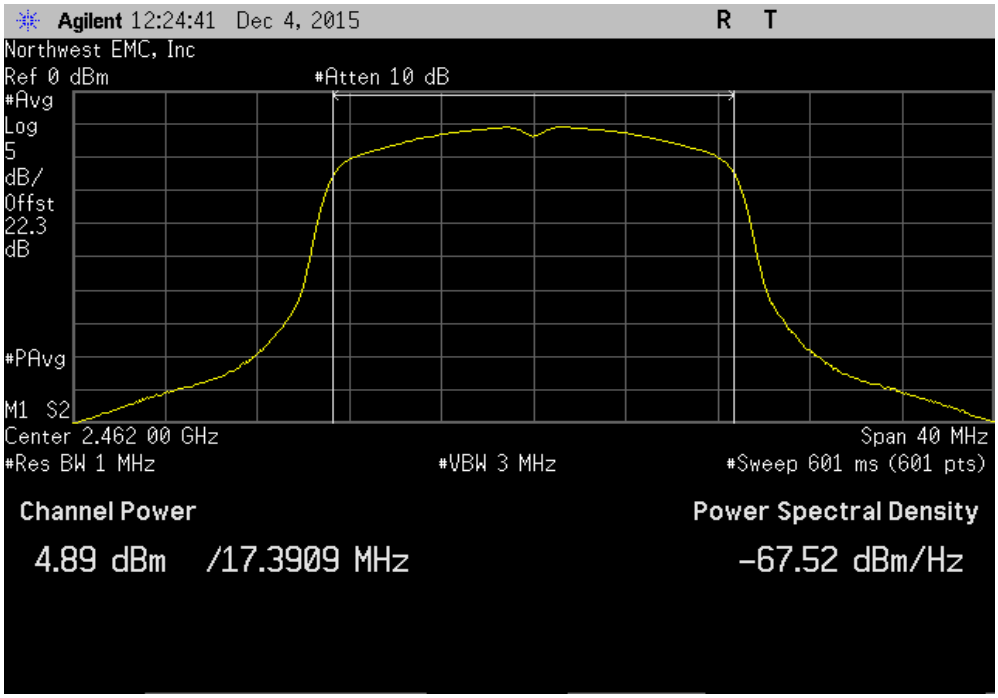
Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, Low Channel 1, 2412 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)		Value (dBm)	Limit (dBm)	Results
	4.874	1.9		6.7	30	Pass



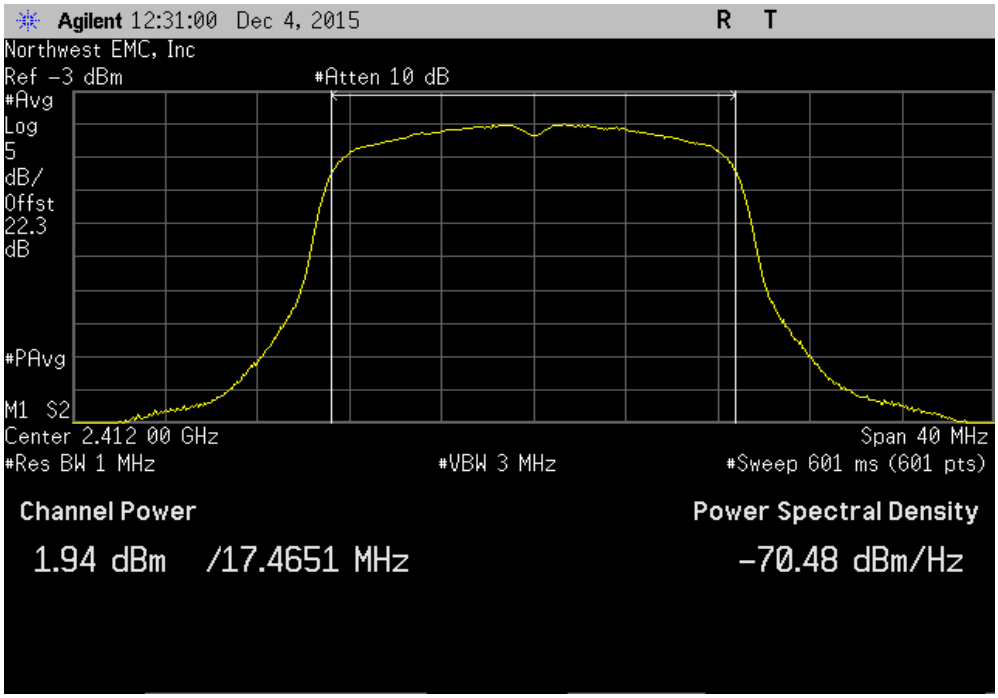
Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, Mid Channel 6, 2437 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)		Value (dBm)	Limit (dBm)	Results
	4.951	1.9		6.8	30	Pass



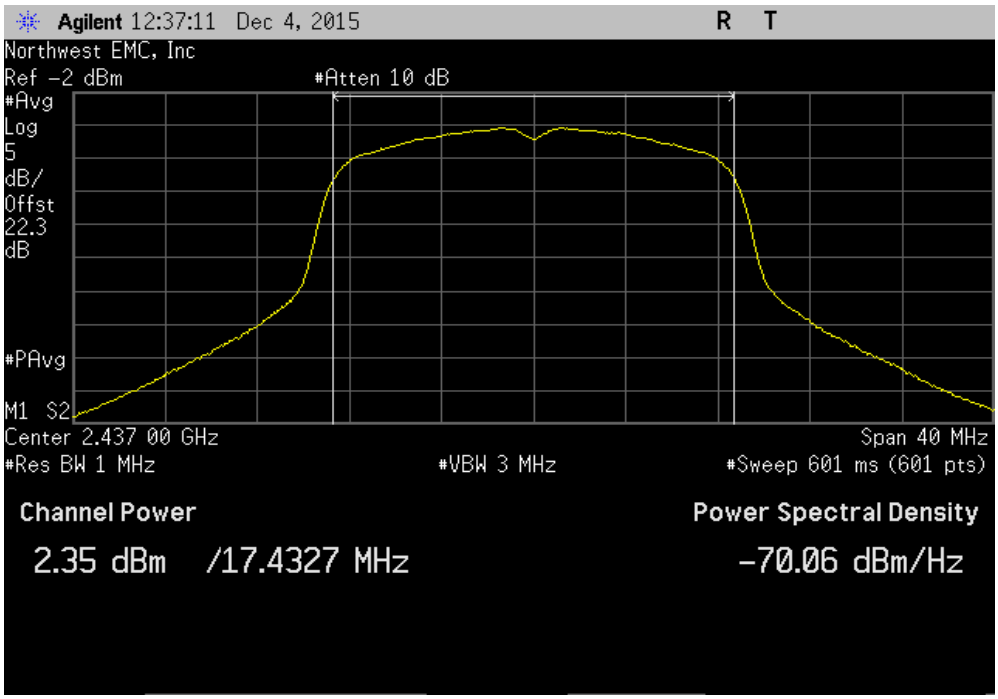
Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, High Channel 11, 2462 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)		Value (dBm)	Limit (dBm)	Results
	4.886	1.9		6.7	30	Pass



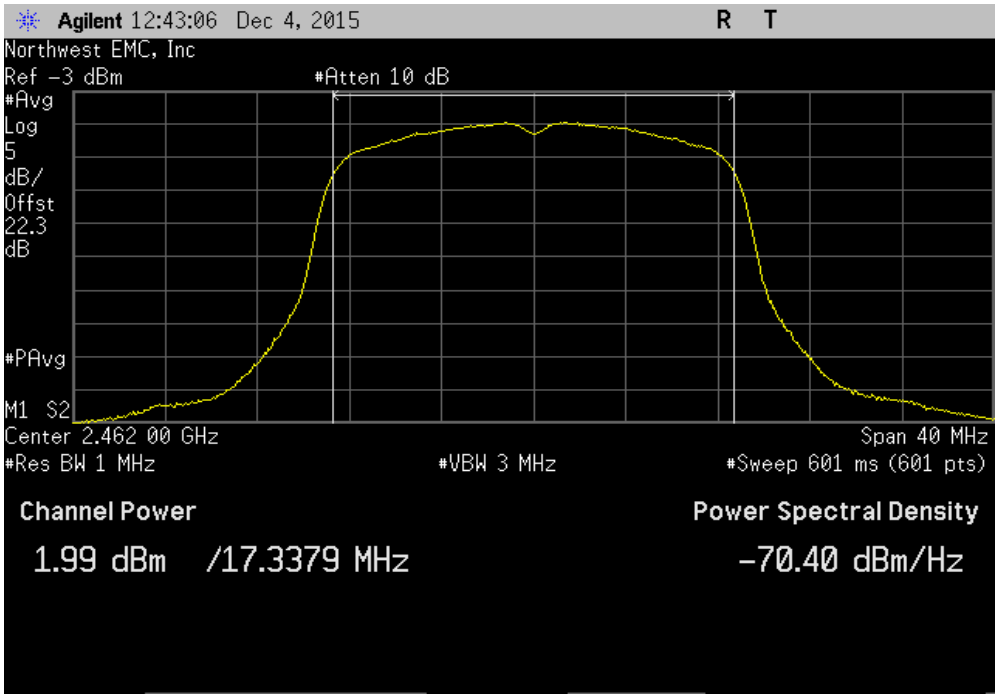
Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, Low Channel 1, 2412 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)		Value (dBm)	Limit (dBm)	Results
	1.937	4.9		6.9	30	Pass



Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, Mid Channel 6, 2437 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)		Value (dBm)	Limit (dBm)	Results
	2.352	4.9		7.3	30	Pass



Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, High Channel 11, 2462 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)		Value (dBm)	Limit (dBm)	Results
	1.99	4.9		6.9	30	Pass



POWER SPECTRAL DENSITY

XMit 2015.01.14

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Cable	ESM Cable Corp.	TTBJ141 KMKM-72	MNU	9/18/2015	12
Attenuator	S.M. Electronics	SA26B-20	RFW	3/10/2015	12
Block - DC	Fairview Microwave	SD3379	AMI	9/18/2015	12
Generator - Signal	Agilent	N5183A	TIK	10/17/2014	36
Analyzer - Spectrum Analyzer	Agilent	E4440A	AAX	4/20/2015	12

TEST DESCRIPTION

The maximum power spectral density measurements was measured using the channels and modes as called out on the following data sheets.

A direct connection was made between the RF output of the EUT and a spectrum analyzer. External attenuation and a DC block were used. The reference level offset on the spectrum analyzer was adjusted to compensate for cable loss and the external attenuation used between the RF output and the spectrum analyzer input.

Per the procedure outlined in ANSI C63.10 the peak power spectral density was measured in a 3 kHz RBW.

POWER SPECTRAL DENSITY

NORTHWEST EMC

XMit 2015.01.14

EUT:	Marcum RT-9			**Work Order:**	ELTL0004
Serial Number:	RTS0123456811			**Date:**	12/04/15
Customer:	Electronic Technologies, LLC			**Temperature:**	22.2°C
Attendees:	Rocky Holmes, Deb See			**Humidity:**	25%
Project:	None			**Barometric Pres.:**	998.9
Tested by:	Trevor Buls	**Power:**	110VAC/60Hz	**Job Site:**	MN08

TEST SPECIFICATIONS	**Test Method**
FCC 15.247:2015	ANSI C63.10:2013

COMMENTS

None

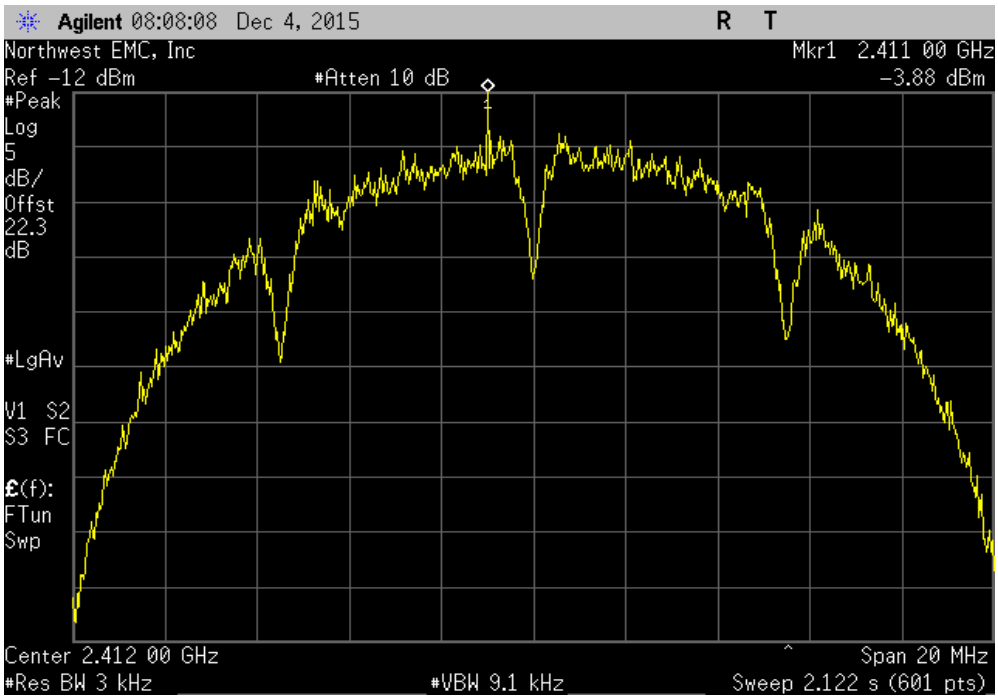
DEVIATIONS FROM TEST STANDARD

None

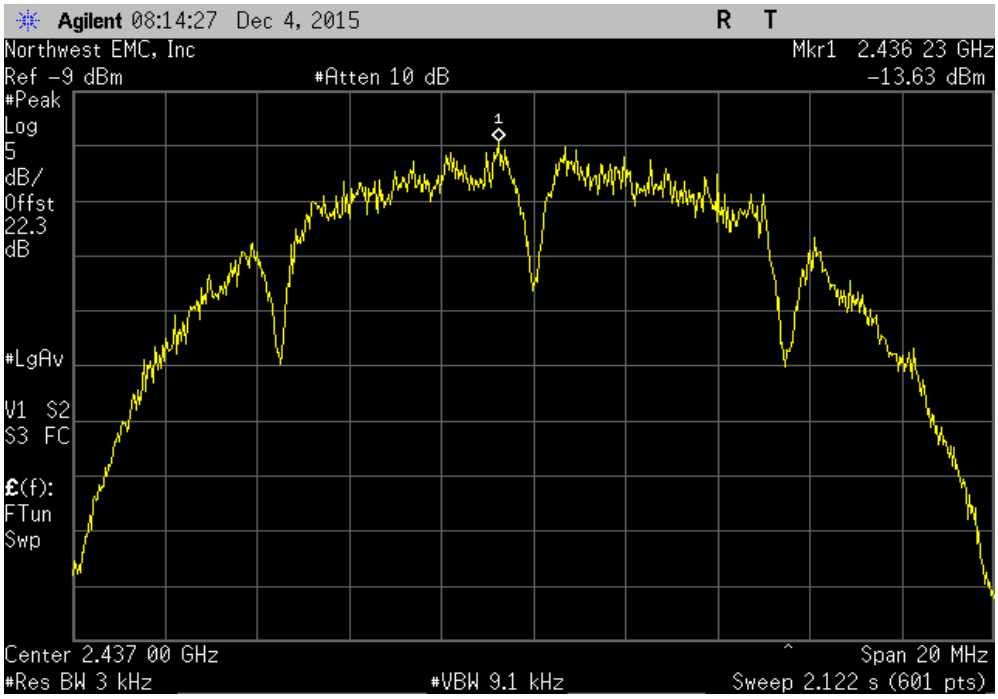
Configuration #	5	*Signature* Trevor Buls

			Value dBm/3kHz	Limit < dBm/3kHz	Results
Chain A					
	20 MHz				
		802.11(b) 1 Mbps			
		Low Channel 1, 2412 MHz	-3.883	8	Pass
		Mid Channel 6, 2437 MHz	-13.633	8	Pass
		High Channel 11, 2462 MHz	-14.429	8	Pass
		802.11(b) 11 Mbps			
		Low Channel 1, 2412 MHz	-14.681	8	Pass
		Mid Channel 6, 2437 MHz	-13.863	8	Pass
		High Channel 11, 2462 MHz	-14.78	8	Pass
		802.11(g) 6 Mbps			
		Low Channel 1, 2412 MHz	-21.481	8	Pass
		Mid Channel 6, 2437 MHz	-19.048	8	Pass
		High Channel 11, 2462 MHz	-20.079	8	Pass
		802.11(g) 36 Mbps			
		Low Channel 1, 2412 MHz	-22.763	8	Pass
		Mid Channel 6, 2437 MHz	-21.239	8	Pass
		High Channel 11, 2462 MHz	-22.103	8	Pass
		802.11(g) 54 Mbps			
		Low Channel 1, 2412 MHz	-24.215	8	Pass
		Mid Channel 6, 2437 MHz	-21.707	8	Pass
		High Channel 11, 2462 MHz	-23.099	8	Pass
		802.11(n) MCS0			
		Low Channel 1, 2412 MHz	-20.272	8	Pass
		Mid Channel 6, 2437 MHz	-19.887	8	Pass
		High Channel 11, 2462 MHz	-20.134	8	Pass
		802.11(n) MCS7			
		Low Channel 1, 2412 MHz	-22.72	8	Pass
		Mid Channel 6, 2437 MHz	-21.377	8	Pass
		High Channel 11, 2462 MHz	-22.574	8	Pass
	40 MHz				
		802.11(n) MCS0			
		Low Channel 1/5, 2422 MHz	-24.276	8	Pass
		Mid Channel 4/8, 2437 MHz	-23.686	8	Pass
		High Channel 7/11, 2452 MHz	-23.923	8	Pass
		802.11(n) MCS7			
		Low Channel 1/5, 2422 MHz	-26.42	8	Pass
		Mid Channel 4/8, 2437 MHz	-25.192	8	Pass
		High Channel 7/11, 2452 MHz	-25.146	8	Pass

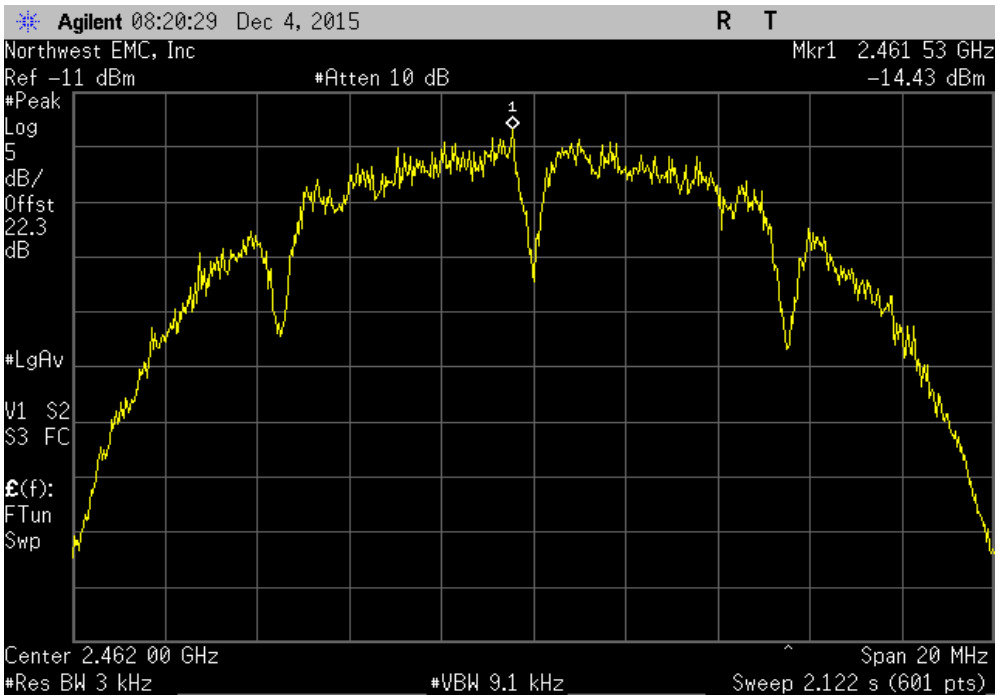
Chain A, 20 MHz, 802.11(b) 1 Mbps, Low Channel 1, 2412 MHz						
				Value dBm/3kHz	Limit < dBm/3kHz	Results
				-3.883	8	Pass



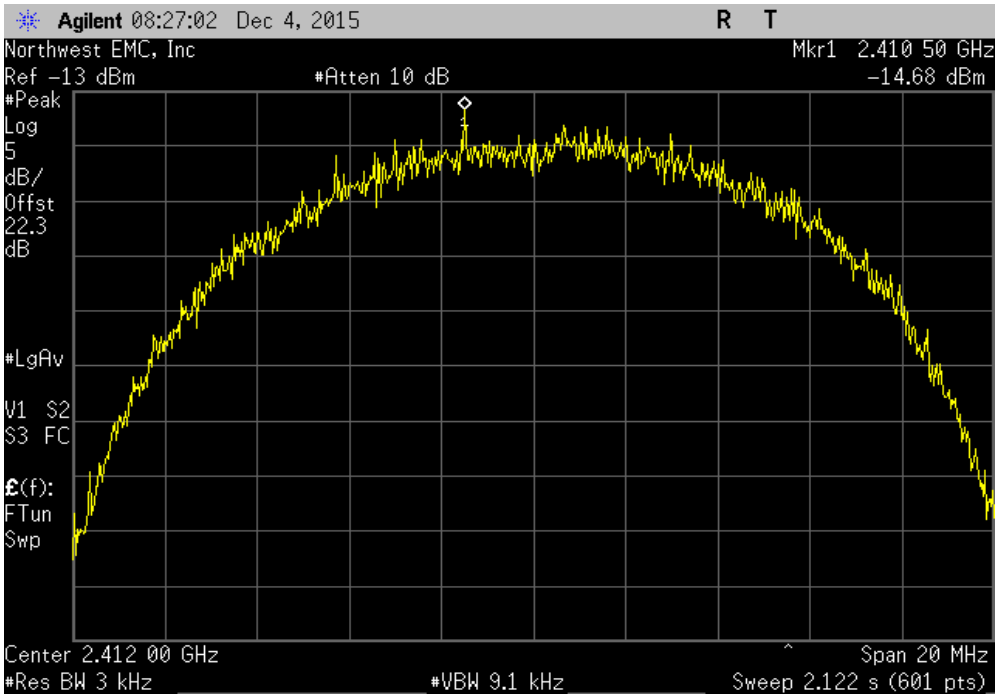
Chain A, 20 MHz, 802.11(b) 1 Mbps, Mid Channel 6, 2437 MHz						
				Value dBm/3kHz	Limit < dBm/3kHz	Results
				-13.633	8	Pass



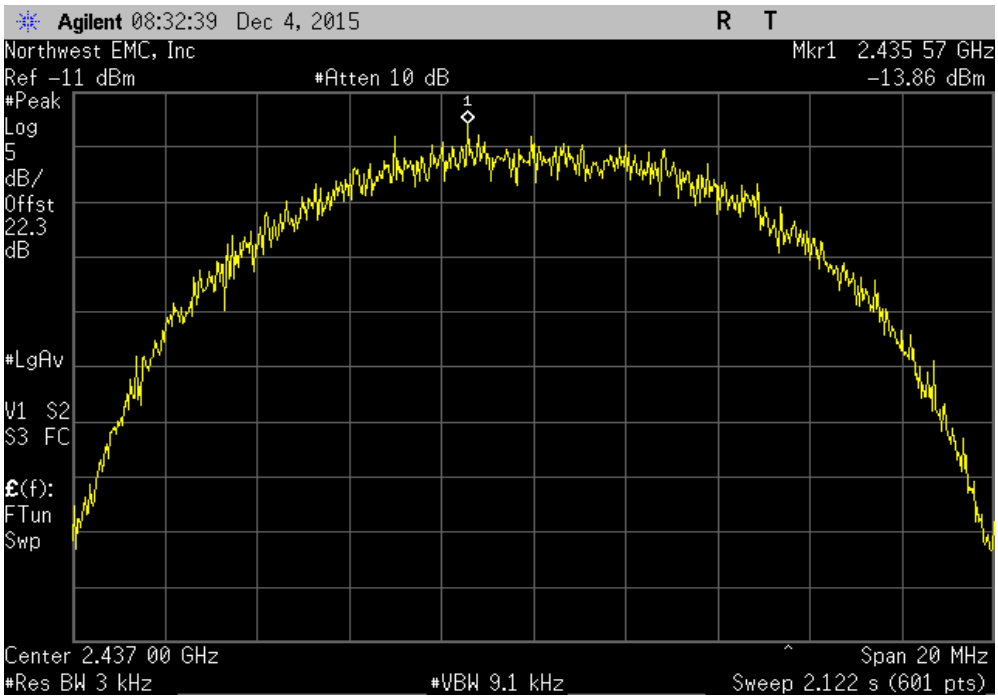
Chain A, 20 MHz, 802.11(b) 1 Mbps, High Channel 11, 2462 MHz						
				Value dBm/3kHz	Limit < dBm/3kHz	Results
				-14.429	8	Pass



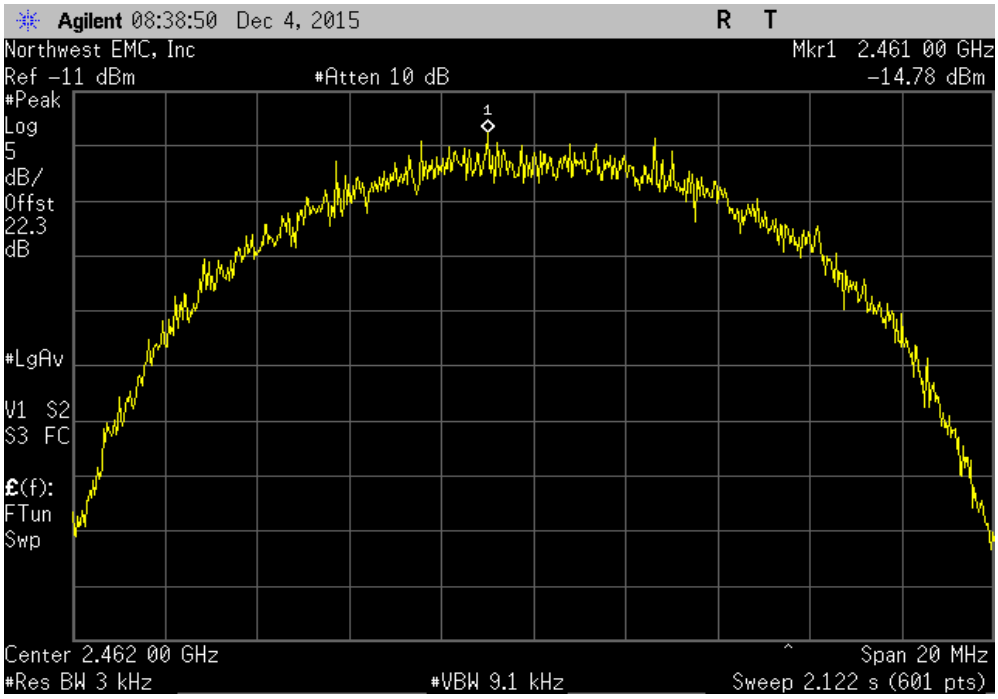
Chain A, 20 MHz, 802.11(b) 11 Mbps, Low Channel 1, 2412 MHz						
				Value dBm/3kHz	Limit < dBm/3kHz	Results
				-14.681	8	Pass



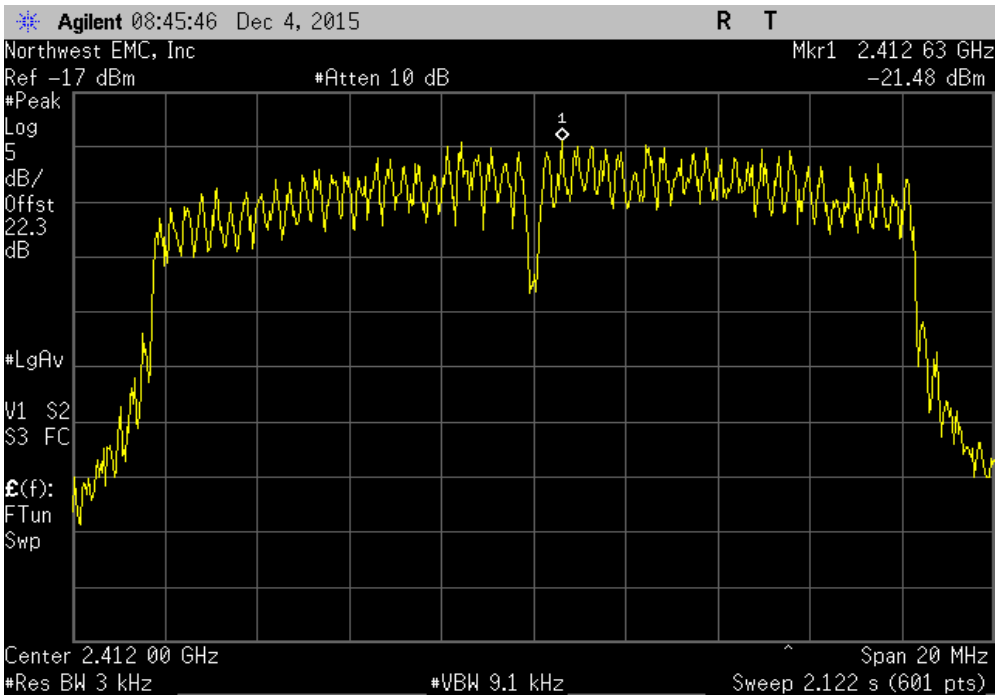
Chain A, 20 MHz, 802.11(b) 11 Mbps, Mid Channel 6, 2437 MHz						
				Value dBm/3kHz	Limit < dBm/3kHz	Results
				-13.863	8	Pass



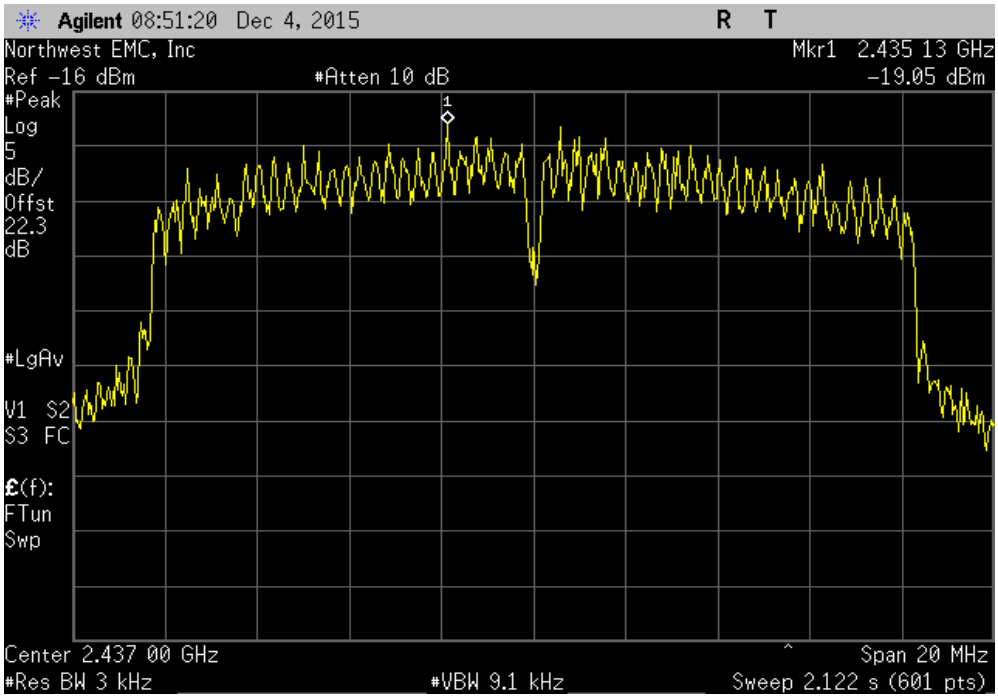
Chain A, 20 MHz, 802.11(b) 11 Mbps, High Channel 11, 2462 MHz						
				Value dBm/3kHz	Limit < dBm/3kHz	Results
				-14.78	8	Pass



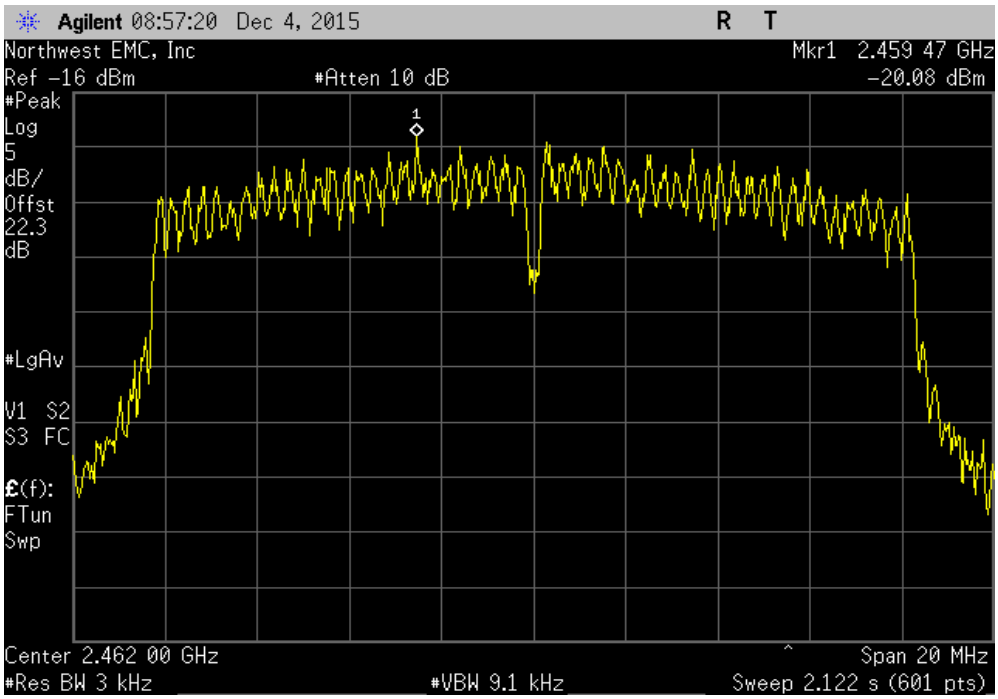
Chain A, 20 MHz, 802.11(g) 6 Mbps, Low Channel 1, 2412 MHz						
				Value dBm/3kHz	Limit < dBm/3kHz	Results
				-21.481	8	Pass



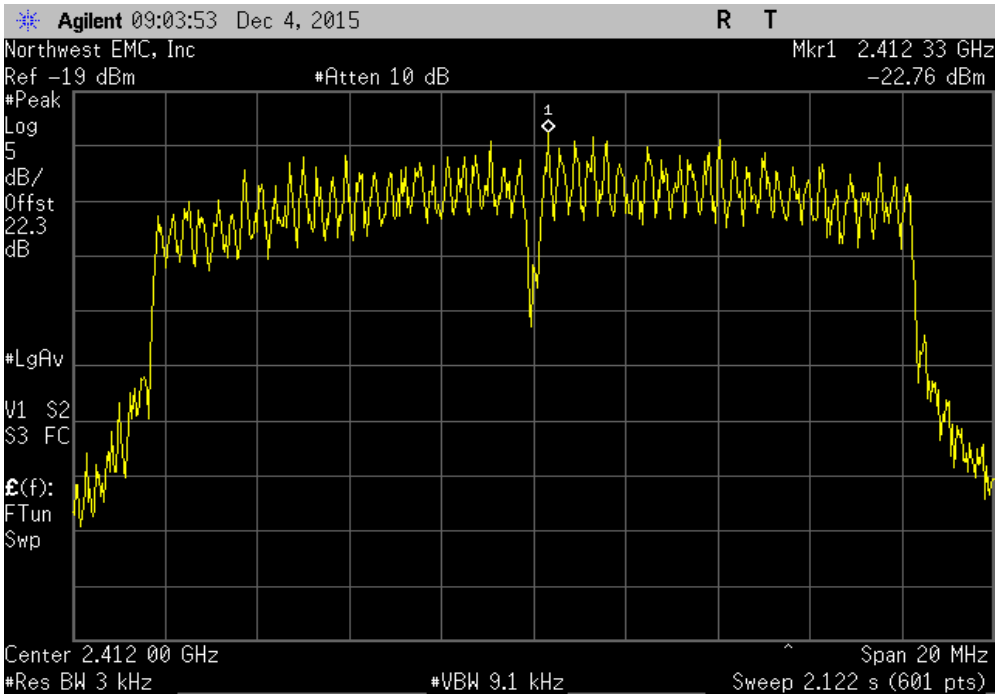
Chain A, 20 MHz, 802.11(g) 6 Mbps, Mid Channel 6, 2437 MHz						
				Value dBm/3kHz	Limit < dBm/3kHz	Results
				-19.048	8	Pass



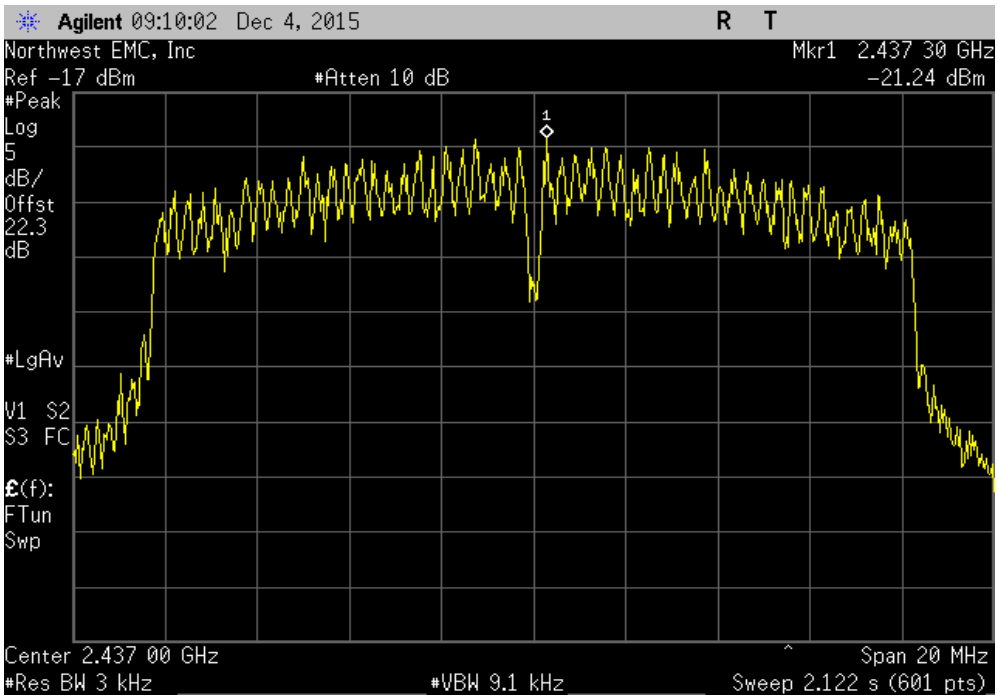
Chain A, 20 MHz, 802.11(g) 6 Mbps, High Channel 11, 2462 MHz						
				Value dBm/3kHz	Limit < dBm/3kHz	Results
				-20.079	8	Pass



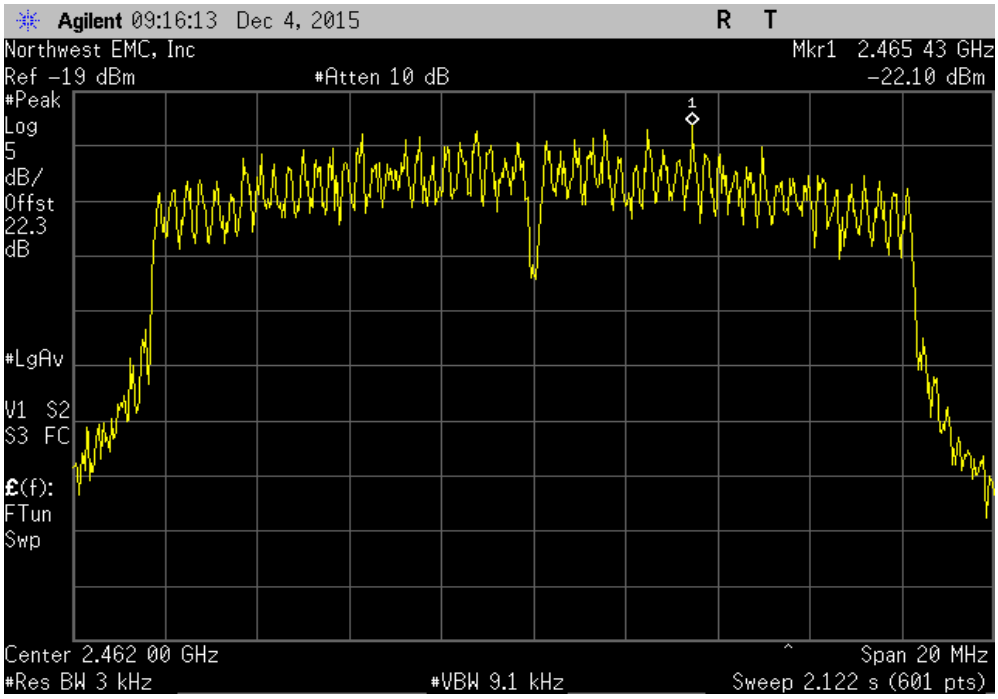
Chain A, 20 MHz, 802.11(g) 36 Mbps, Low Channel 1, 2412 MHz						
				Value dBm/3kHz	Limit < dBm/3kHz	Results
				-22.763	8	Pass



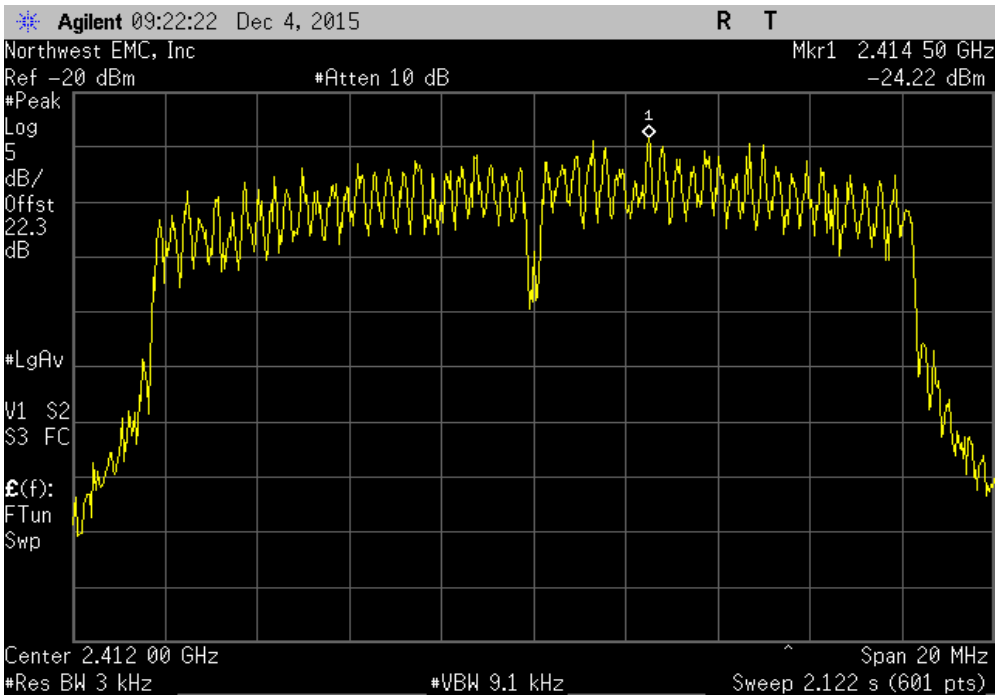
Chain A, 20 MHz, 802.11(g) 36 Mbps, Mid Channel 6, 2437 MHz						
				Value dBm/3kHz	Limit < dBm/3kHz	Results
				-21.239	8	Pass



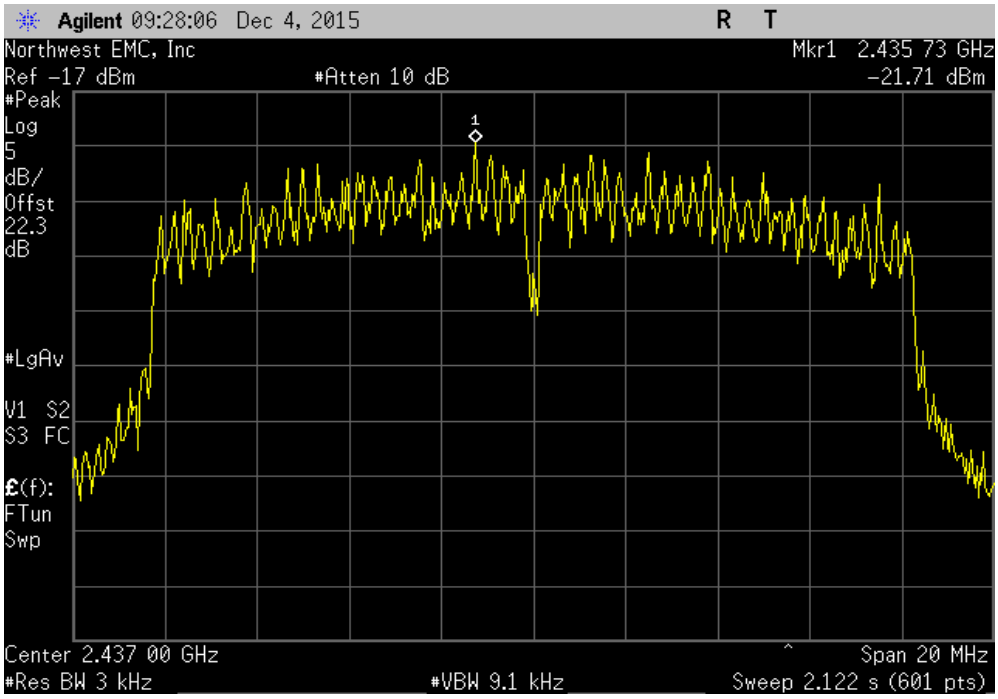
Chain A, 20 MHz, 802.11(g) 36 Mbps, High Channel 11, 2462 MHz						
				Value dBm/3kHz	Limit < dBm/3kHz	Results
				-22.103	8	Pass



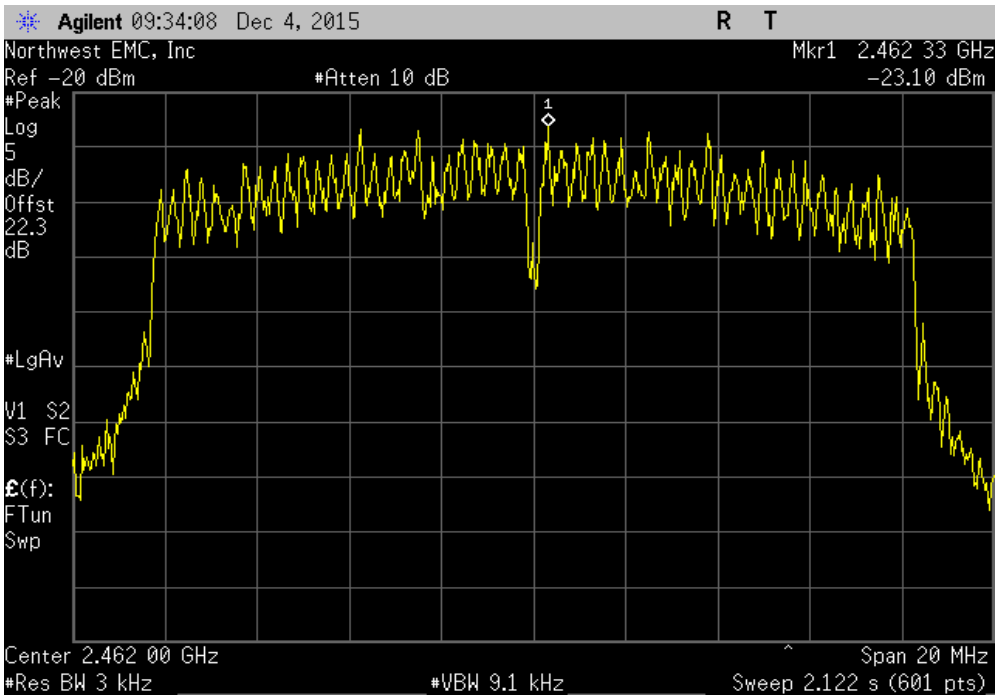
Chain A, 20 MHz, 802.11(g) 54 Mbps, Low Channel 1, 2412 MHz						
				Value dBm/3kHz	Limit < dBm/3kHz	Results
				-24.215	8	Pass



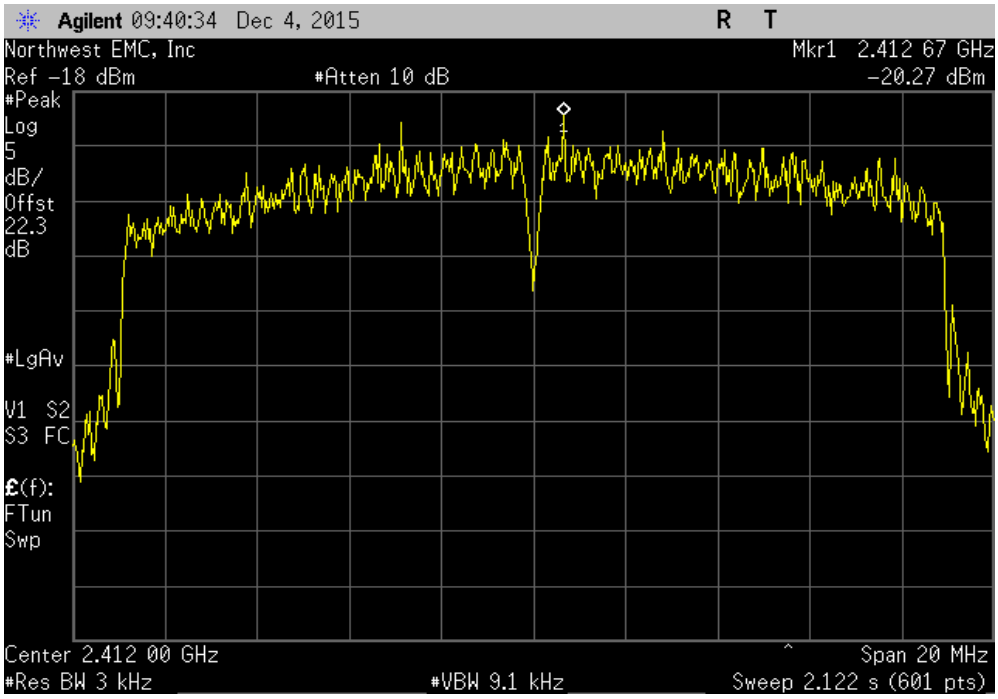
Chain A, 20 MHz, 802.11(g) 54 Mbps, Mid Channel 6, 2437 MHz						
				Value dBm/3kHz	Limit < dBm/3kHz	Results
				-21.707	8	Pass



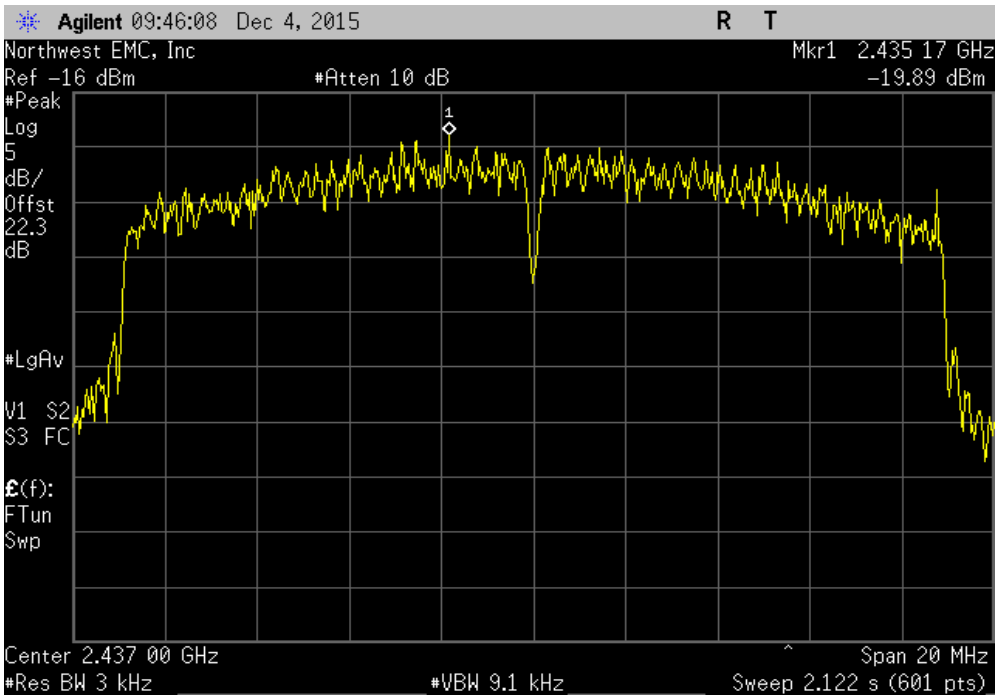
Chain A, 20 MHz, 802.11(g) 54 Mbps, High Channel 11, 2462 MHz						
				Value dBm/3kHz	Limit < dBm/3kHz	Results
				-23.099	8	Pass



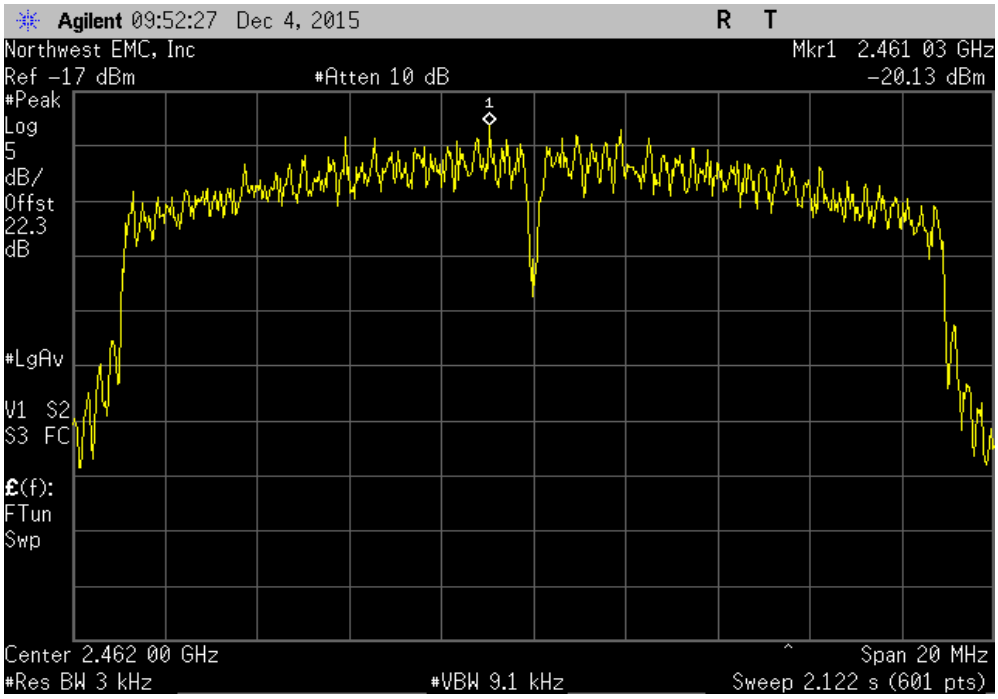
Chain A, 20 MHz, 802.11(n) MCS0, Low Channel 1, 2412 MHz						
				Value dBm/3kHz	Limit < dBm/3kHz	Results
				-20.272	8	Pass



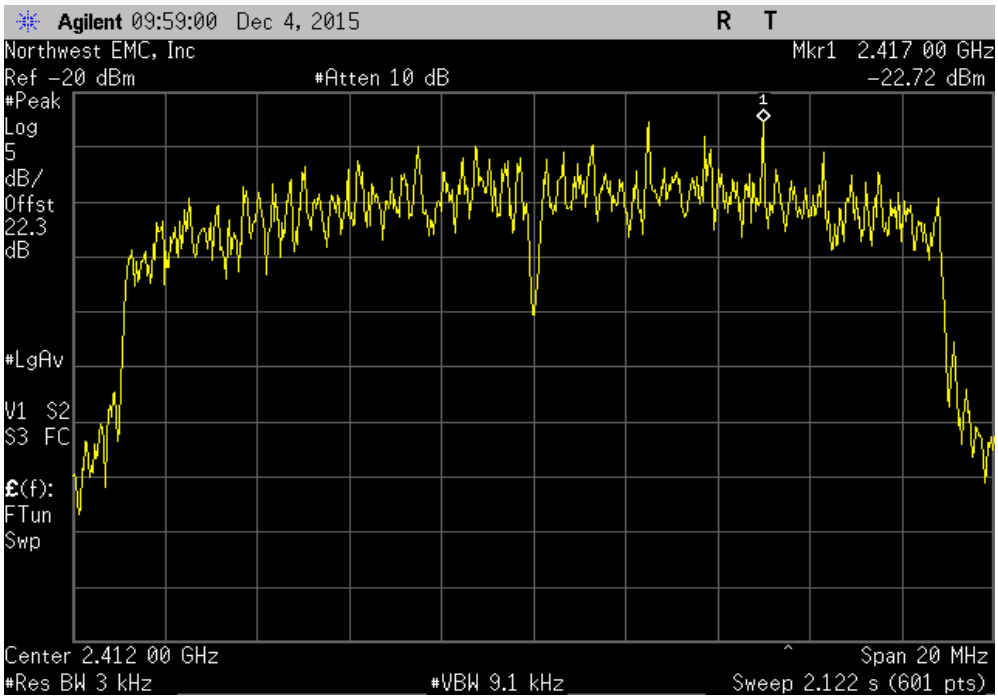
Chain A, 20 MHz, 802.11(n) MCS0, Mid Channel 6, 2437 MHz						
				Value dBm/3kHz	Limit < dBm/3kHz	Results
				-19.887	8	Pass



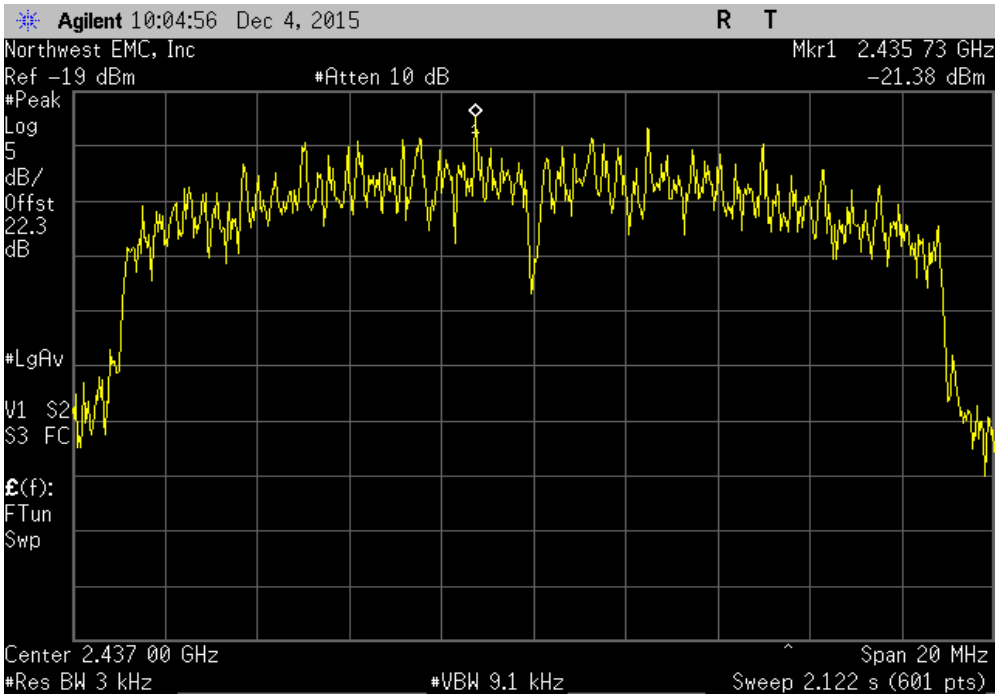
Chain A, 20 MHz, 802.11(n) MCS0, High Channel 11, 2462 MHz						
				Value dBm/3kHz	Limit < dBm/3kHz	Results
				-20.134	8	Pass



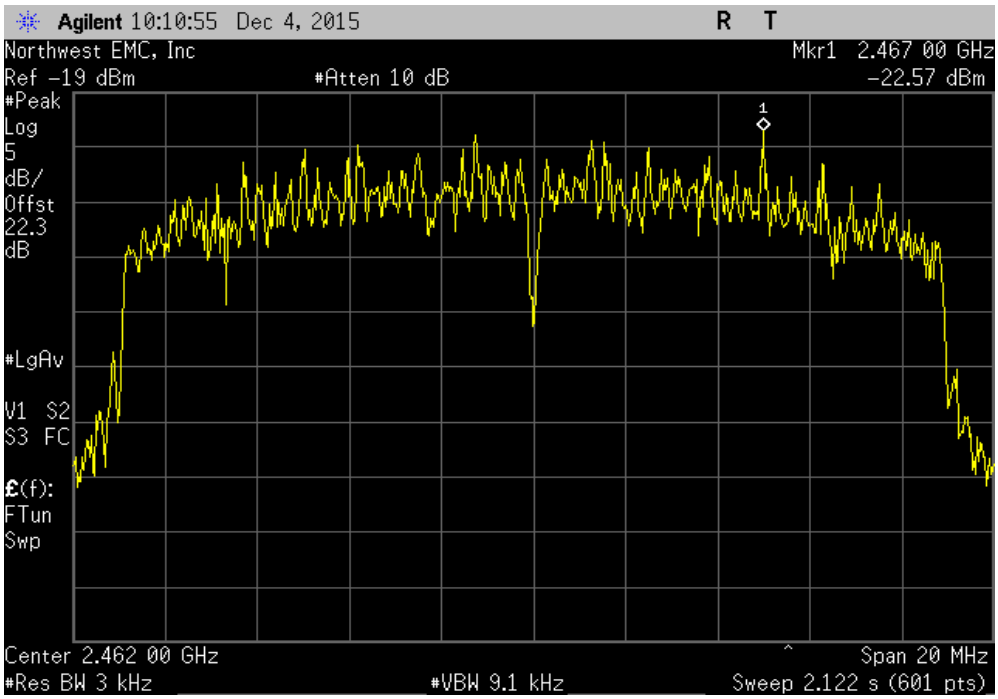
Chain A, 20 MHz, 802.11(n) MCS7, Low Channel 1, 2412 MHz						
				Value dBm/3kHz	Limit < dBm/3kHz	Results
				-22.72	8	Pass



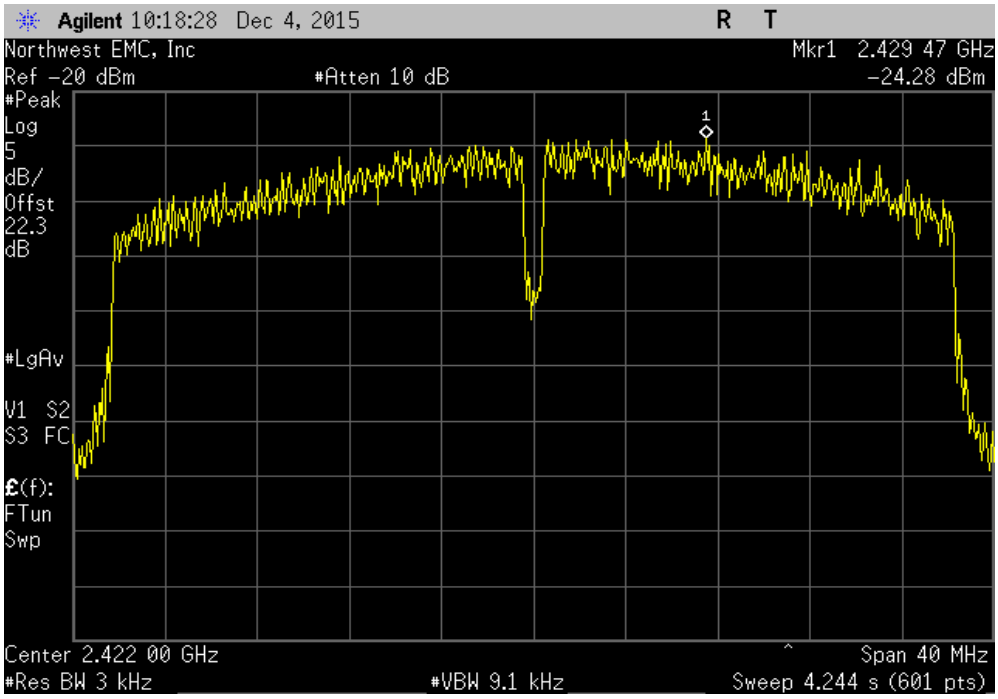
Chain A, 20 MHz, 802.11(n) MCS7, Mid Channel 6, 2437 MHz						
				Value dBm/3kHz	Limit < dBm/3kHz	Results
				-21.377	8	Pass



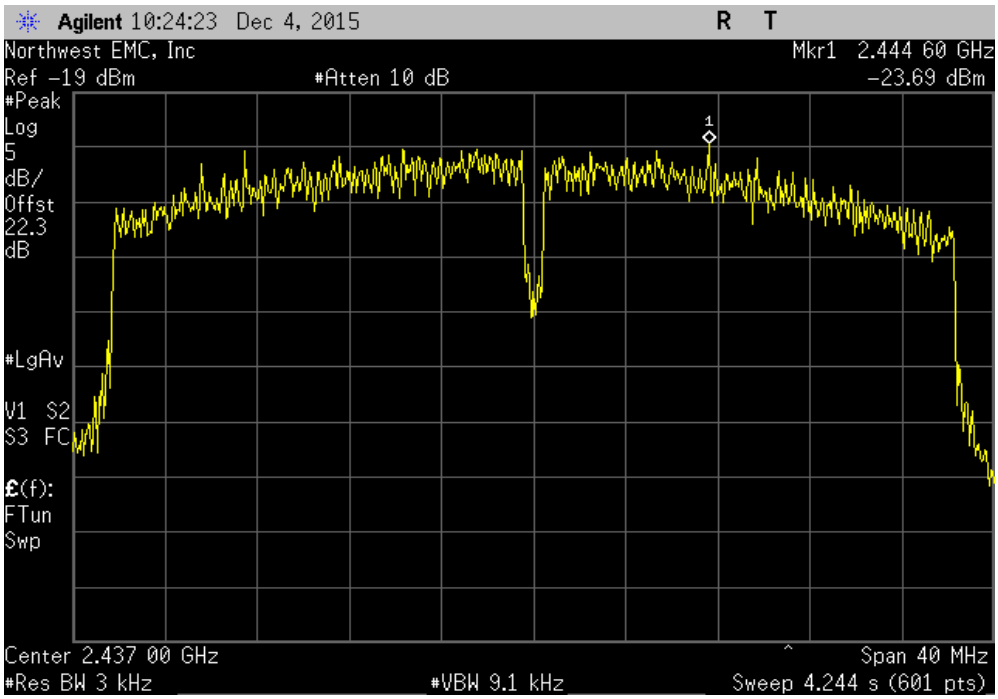
Chain A, 20 MHz, 802.11(n) MCS7, High Channel 11, 2462 MHz						
				Value dBm/3kHz	Limit < dBm/3kHz	Results
				-22.574	8	Pass



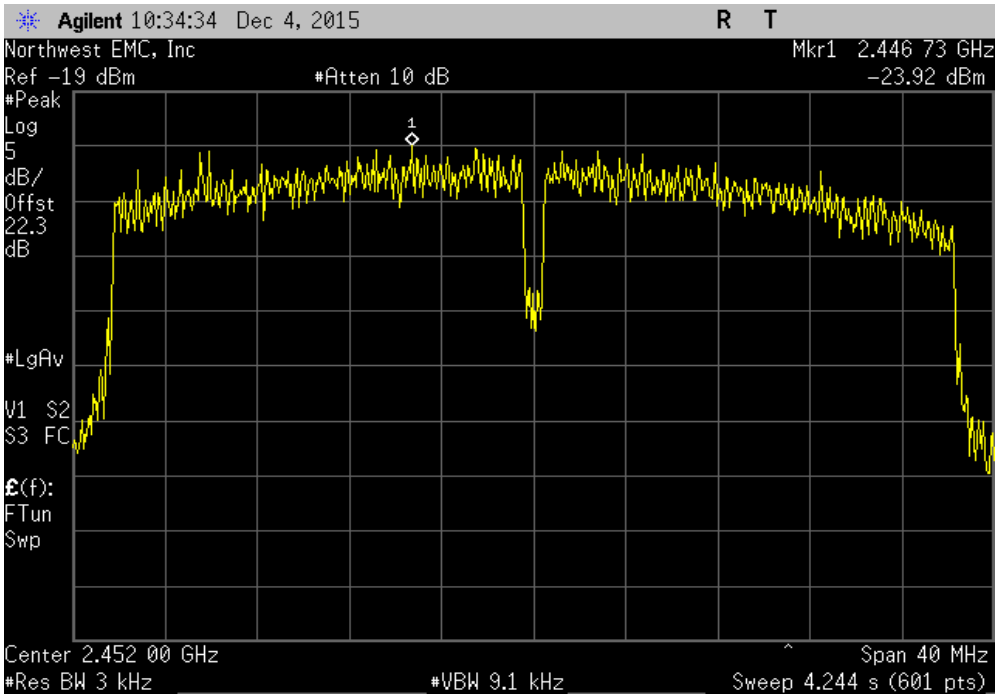
Chain A, 40 MHz, 802.11(n) MCS0, Low Channel 1/5, 2422 MHz						
				Value dBm/3kHz	Limit < dBm/3kHz	Results
				-24.276	8	Pass



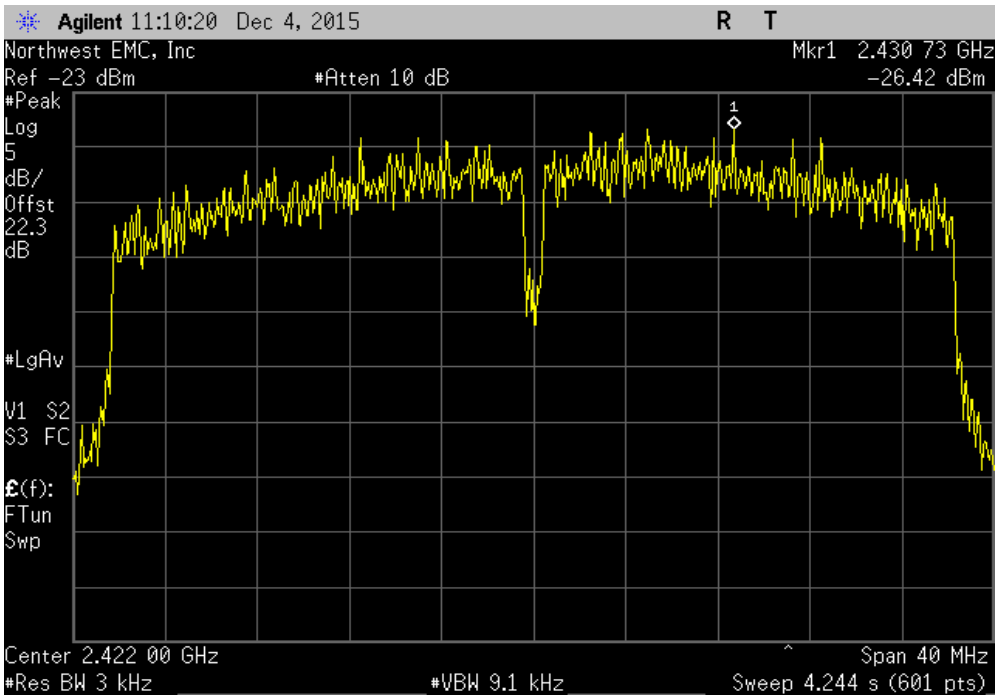
Chain A, 40 MHz, 802.11(n) MCS0, Mid Channel 4/8, 2437 MHz						
				Value dBm/3kHz	Limit < dBm/3kHz	Results
				-23.686	8	Pass



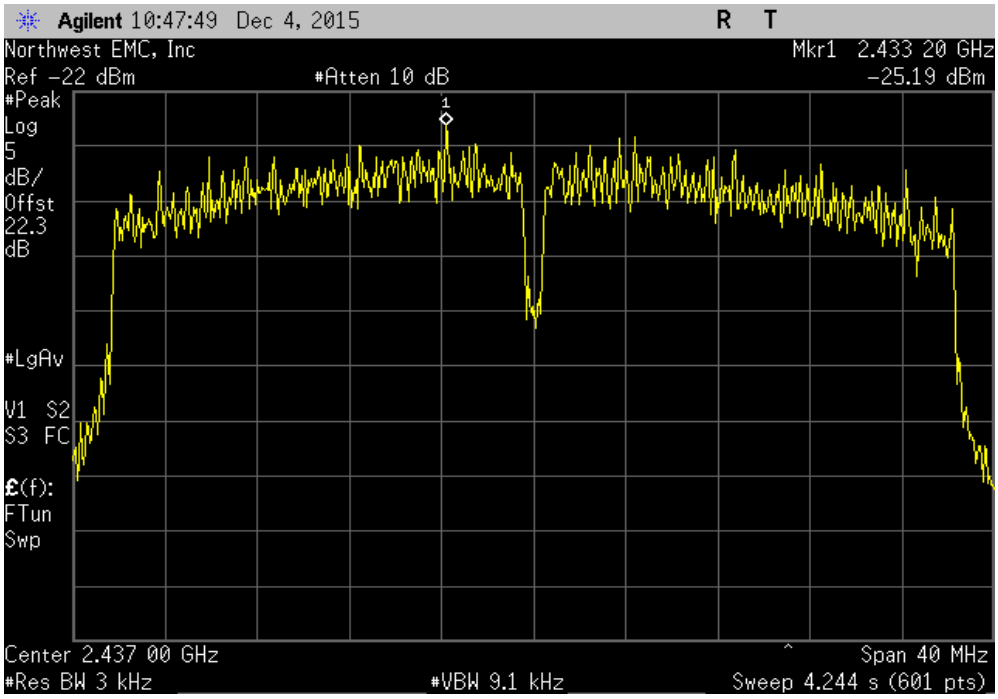
Chain A, 40 MHz, 802.11(n) MCS0, High Channel 7/11, 2452 MHz						
				Value dBm/3kHz	Limit < dBm/3kHz	Results
				-23.923	8	Pass



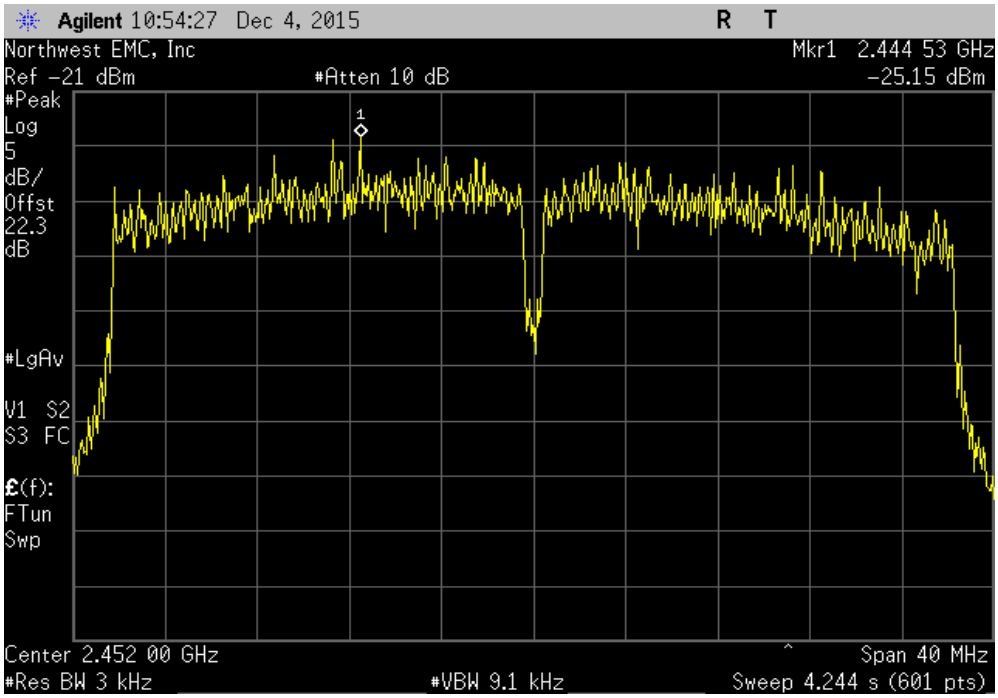
Chain A, 40 MHz, 802.11(n) MCS7, Low Channel 1/5, 2422 MHz						
				Value dBm/3kHz	Limit < dBm/3kHz	Results
				-26.42	8	Pass



Chain A, 40 MHz, 802.11(n) MCS7, Mid Channel 4/8, 2437 MHz						
				Value dBm/3kHz	Limit < dBm/3kHz	Results
				-25.192	8	Pass



Chain A, 40 MHz, 802.11(n) MCS7, High Channel 7/11, 2452 MHz						
				Value dBm/3kHz	Limit < dBm/3kHz	Results
				-25.146	8	Pass



POWER SPECTRAL DENSITY 2x2

XMit 2015.01.14

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Cable	ESM Cable Corp.	TTBJ141 KMKM-72	MNU	9/18/2015	12
Attenuator	S.M. Electronics	SA26B-20	RFW	3/10/2015	12
Block - DC	Fairview Microwave	SD3379	AMI	9/18/2015	12
Generator - Signal	Agilent	N5183A	TIK	10/17/2014	36
Analyzer - Spectrum Analyzer	Agilent	E4440A	AAX	4/20/2015	12

TEST DESCRIPTION

The maximum power spectral density measurements was measured using the channels and modes as called out on the following data sheets.

A direct connection was made between the RF output of the EUT and a spectrum analyzer. External attenuation and a DC block were used. The reference level offset on the spectrum analyzer was adjusted to compensate for cable loss and the external attenuation used between the RF output and the spectrum analyzer input.

Per the procedure outlined in ANSI C63.10 the peak power spectral density was measured in a 3 kHz RBW.

POWER SPECTRAL DENSITY 2x2

NORTHWEST EMC

XMit 2015.01.14

EUT:	Marcum RT-9			**Work Order:**	ELTL0004
Serial Number:	RTS0123456811			**Date:**	12/04/15
Customer:	Electronic Technologies, LLC			**Temperature:**	22.2°C
Attendees:	Rocky Holmes, Deb See			**Humidity:**	25%
Project:	None			**Barometric Pres.:**	998.9
Tested by:	Trevor Buls	**Power:**	110VAC/60Hz	**Job Site:**	MN08

TEST SPECIFICATIONS	**Test Method**
FCC 15.247:2015	ANSI C63.10:2013

COMMENTS

None

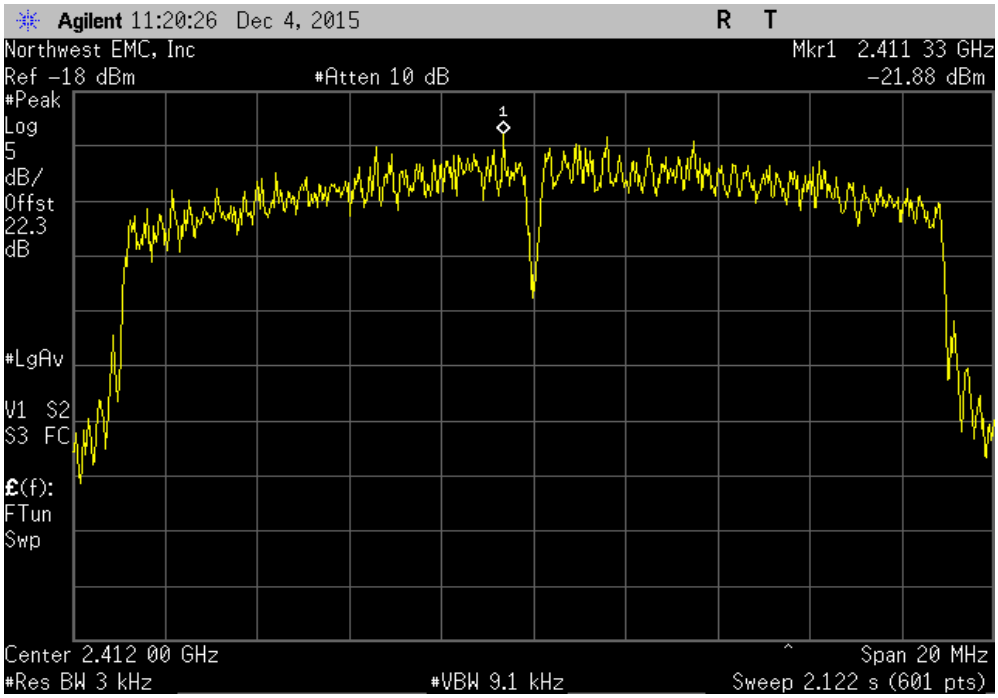
DEVIATIONS FROM TEST STANDARD

None

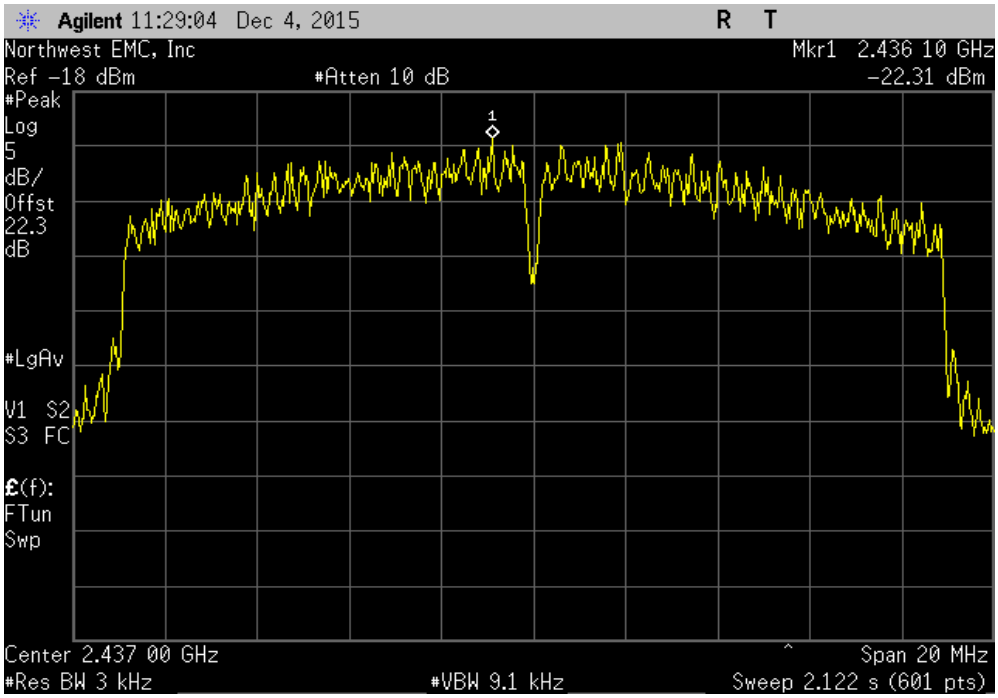
Configuration #	5	*Signature* Trevor Buls

	Value dBm/3kHz	2x2 MIMO Factor (dB)	Summed Value dBm/3kHz	Limit < dBm/3kHz	Results
Chain A					
20 MHz					
2400 MHz - 2483.5 MHz Band					
802.11(n) MCS8					
Low Channel 1, 2412 MHz	-21.879	3.0	-18.9	8	Pass
Mid Channel 6, 2437 MHz	-22.308	3.0	-19.3	8	Pass
High Channel 11, 2462 MH	-23.577	3.0	-20.6	8	Pass
802.11(n) MCS15					
Low Channel 1, 2412 MHz	-25.458	3.0	-22.4	8	Pass
Mid Channel 6, 2437 MHz	-24.801	3.0	-21.8	8	Pass
High Channel 11, 2462 MH	-25.35	3.0	-22.3	8	Pass
Chain B					
20 MHz					
2400 MHz - 2483.5 MHz Band					
802.11(n) MCS8					
Low Channel 1, 2412 MHz	-17.927	3.0	-14.9	8	Pass
Mid Channel 6, 2437 MHz	-16.781	3.0	-13.8	8	Pass
High Channel 11, 2462 MH	-17.308	3.0	-14.3	8	Pass
802.11(n) MCS15					
Low Channel 1, 2412 MHz	-17.992	3.0	-15.0	8	Pass
Mid Channel 6, 2437 MHz	-18.801	3.0	-15.8	8	Pass
High Channel 11, 2462 MH	-18.535	3.0	-15.5	8	Pass

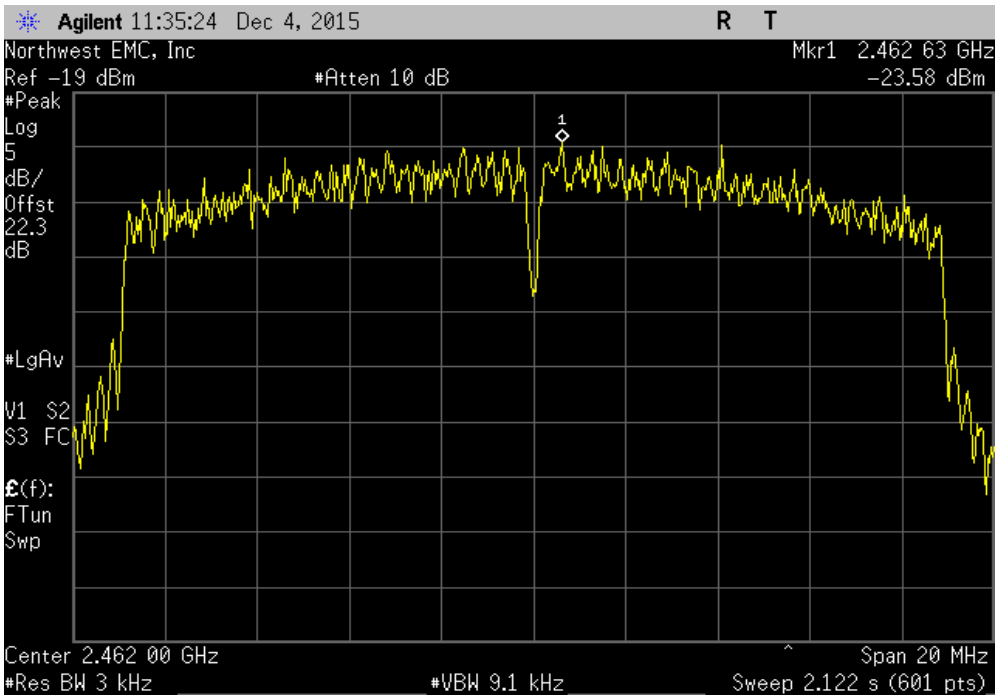
Chain A, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, Low Channel 1, 2412 MHz						
		Value dBm/3kHz	2x2 MIMO Factor (dB)	Summed Value dBm/3kHz	Limit < dBm/3kHz	Results
		-21.879	3.0	-18.9	8	Pass



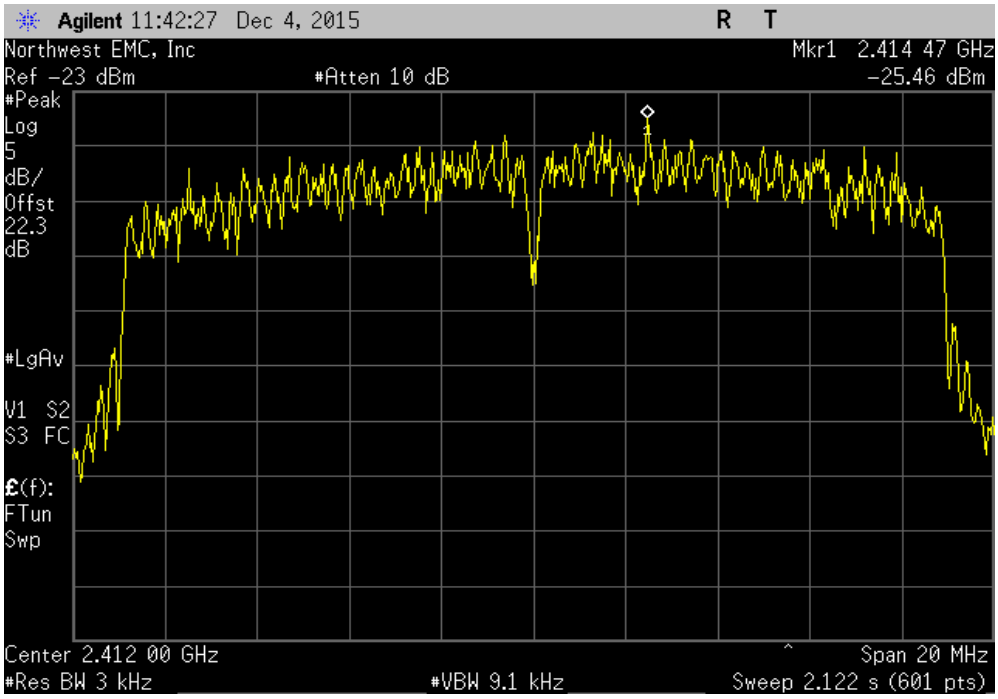
Chain A, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, Mid Channel 6, 2437 MHz						
		Value dBm/3kHz	2x2 MIMO Factor (dB)	Summed Value dBm/3kHz	Limit < dBm/3kHz	Results
		-22.308	3.0	-19.3	8	Pass



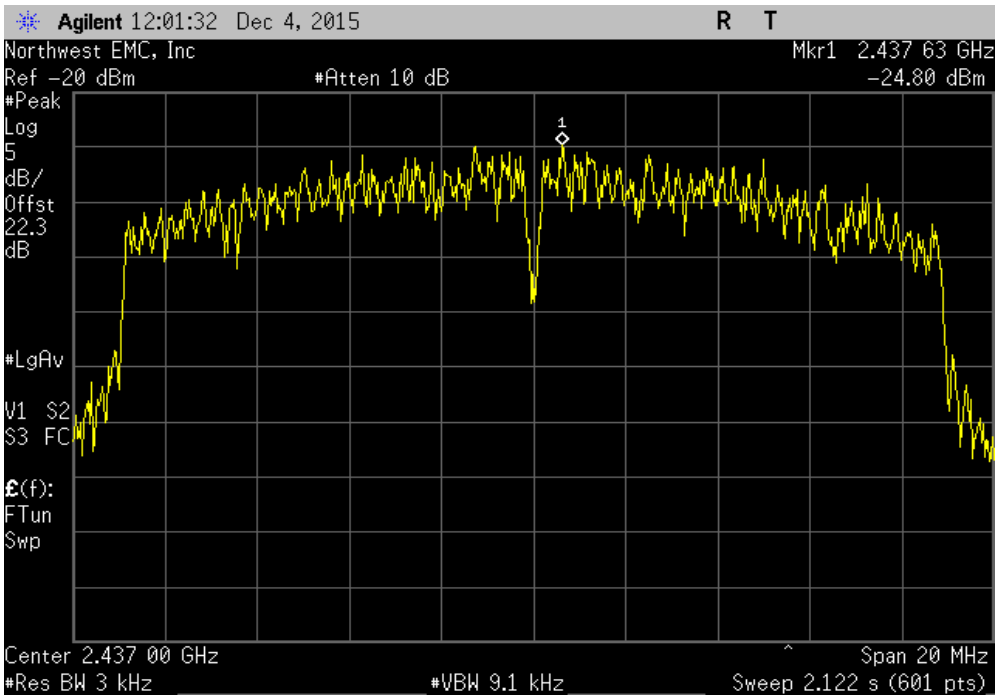
Chain A, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, High Channel 11, 2462 MHz						
		Value dBm/3kHz	2x2 MIMO Factor (dB)	Summed Value dBm/3kHz	Limit < dBm/3kHz	Results
		-23.577	3.0	-20.6	8	Pass



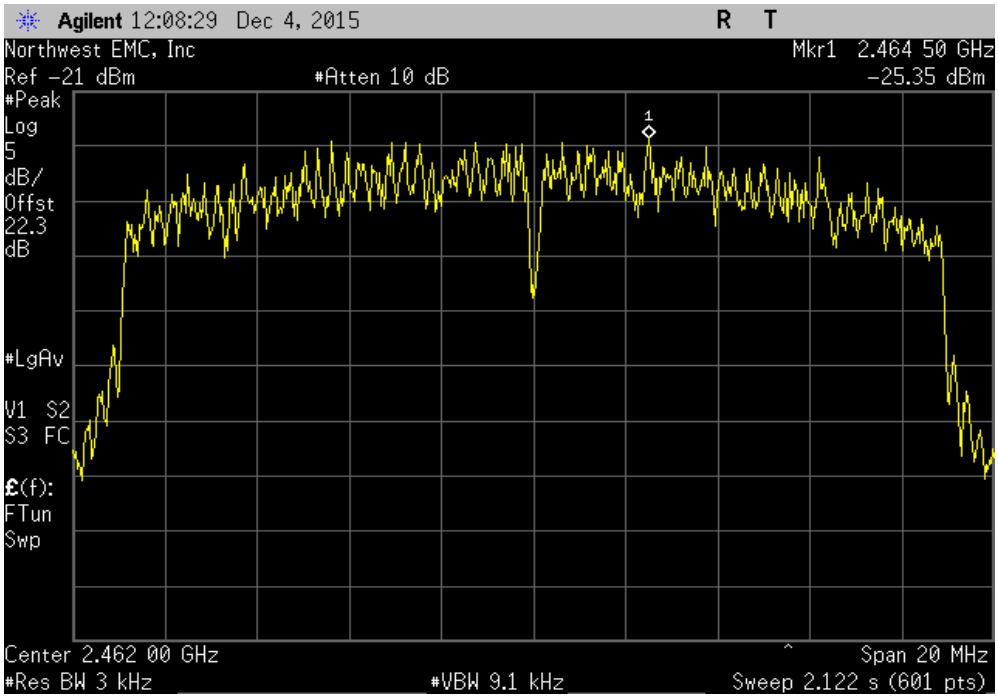
Chain A, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, Low Channel 1, 2412 MHz						
		Value dBm/3kHz	2x2 MIMO Factor (dB)	Summed Value dBm/3kHz	Limit < dBm/3kHz	Results
		-25.458	3.0	-22.4	8	Pass



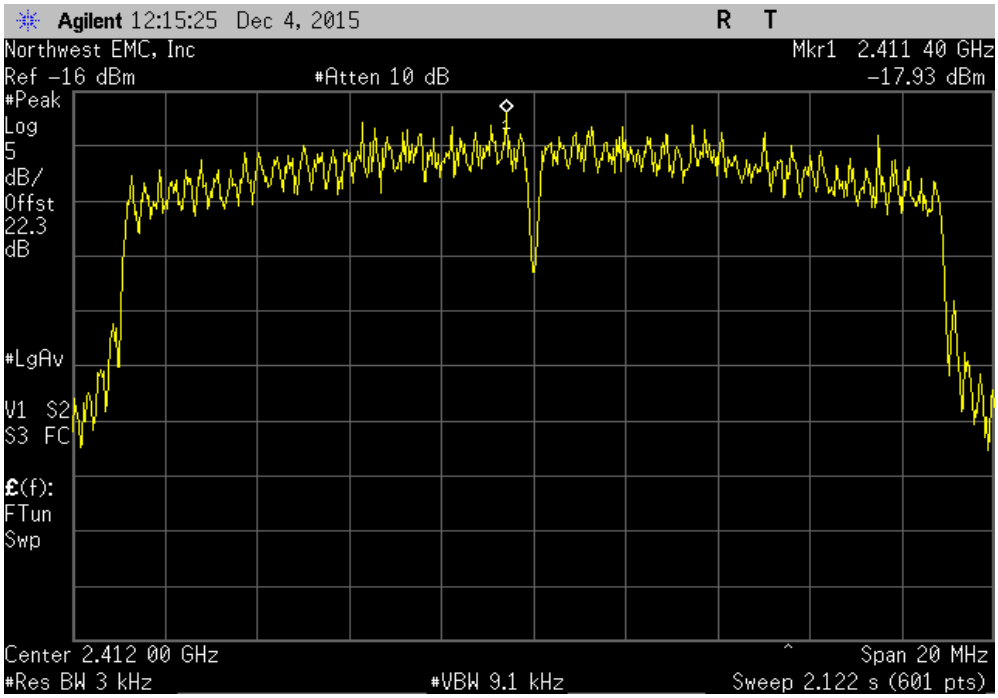
Chain A, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, Mid Channel 6, 2437 MHz						
		Value dBm/3kHz	2x2 MIMO Factor (dB)	Summed Value dBm/3kHz	Limit < dBm/3kHz	Results
		-24.801	3.0	-21.8	8	Pass



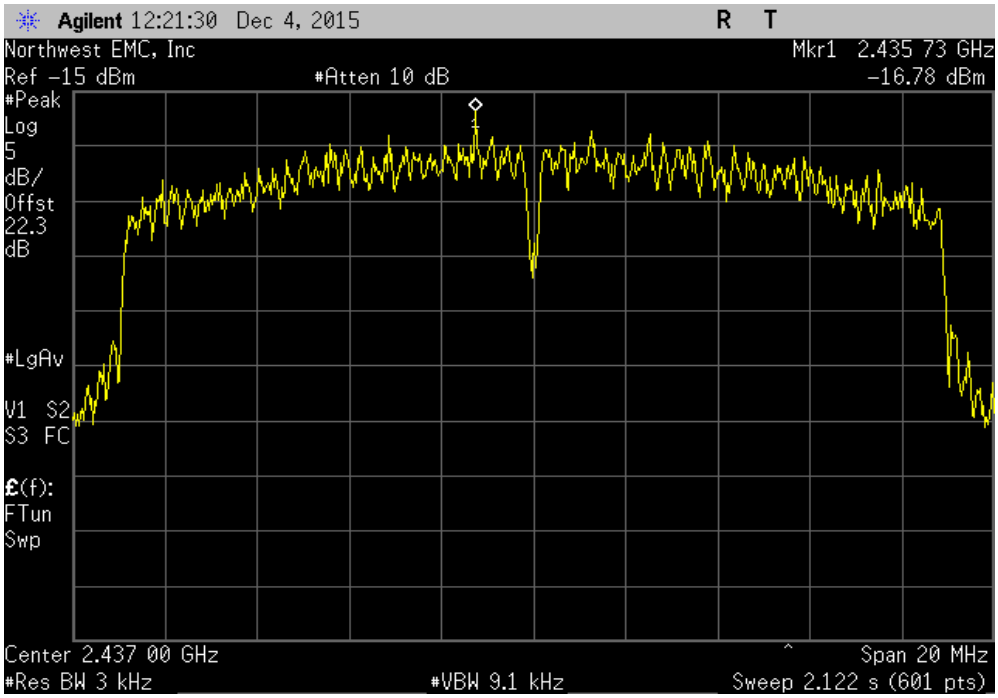
Chain A, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, High Channel 11, 2462 MHz						
		Value dBm/3kHz	2x2 MIMO Factor (dB)	Summed Value dBm/3kHz	Limit < dBm/3kHz	Results
		-25.35	3.0	-22.3	8	Pass



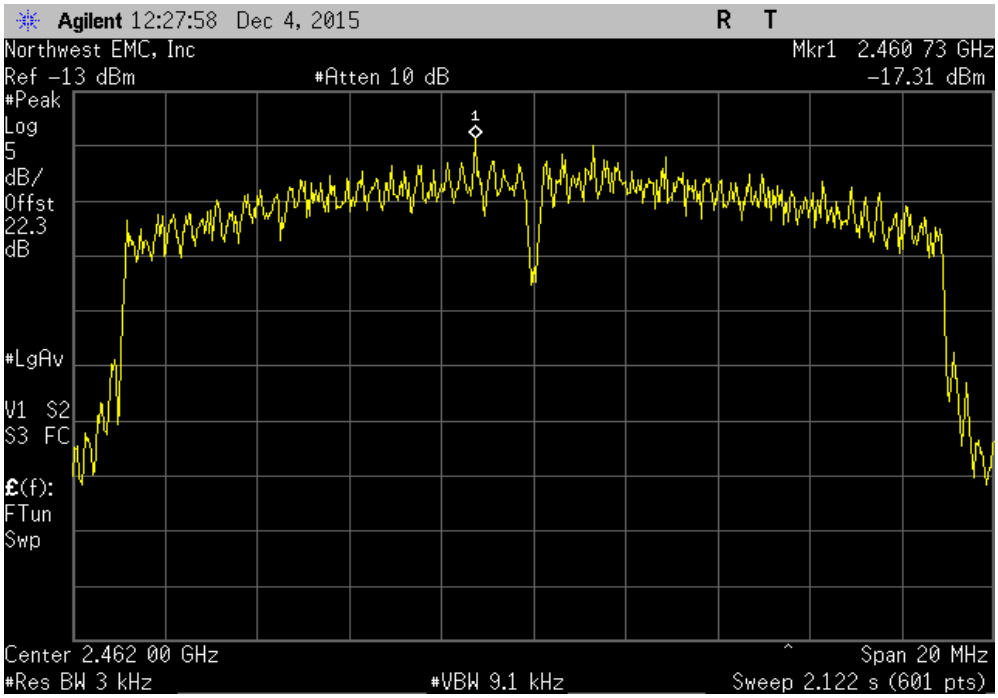
Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, Low Channel 1, 2412 MHz						
		Value dBm/3kHz	2x2 MIMO Factor (dB)	Summed Value dBm/3kHz	Limit < dBm/3kHz	Results
		-17.927	3.0	-14.9	8	Pass



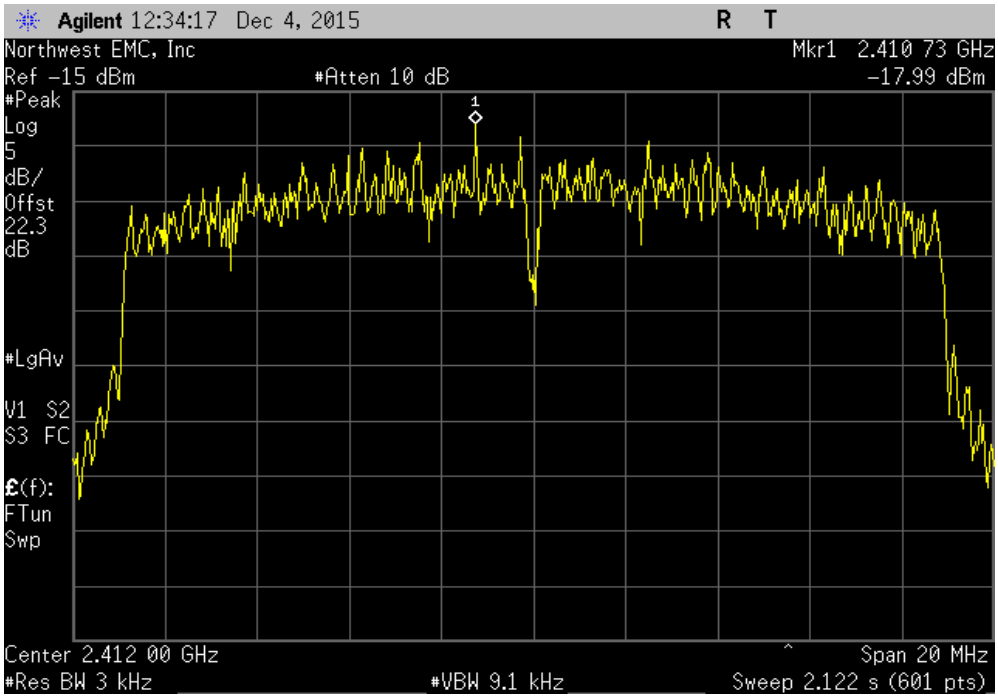
Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, Mid Channel 6, 2437 MHz						
		Value dBm/3kHz	2x2 MIMO Factor (dB)	Summed Value dBm/3kHz	Limit < dBm/3kHz	Results
		-16.781	3.0	-13.8	8	Pass



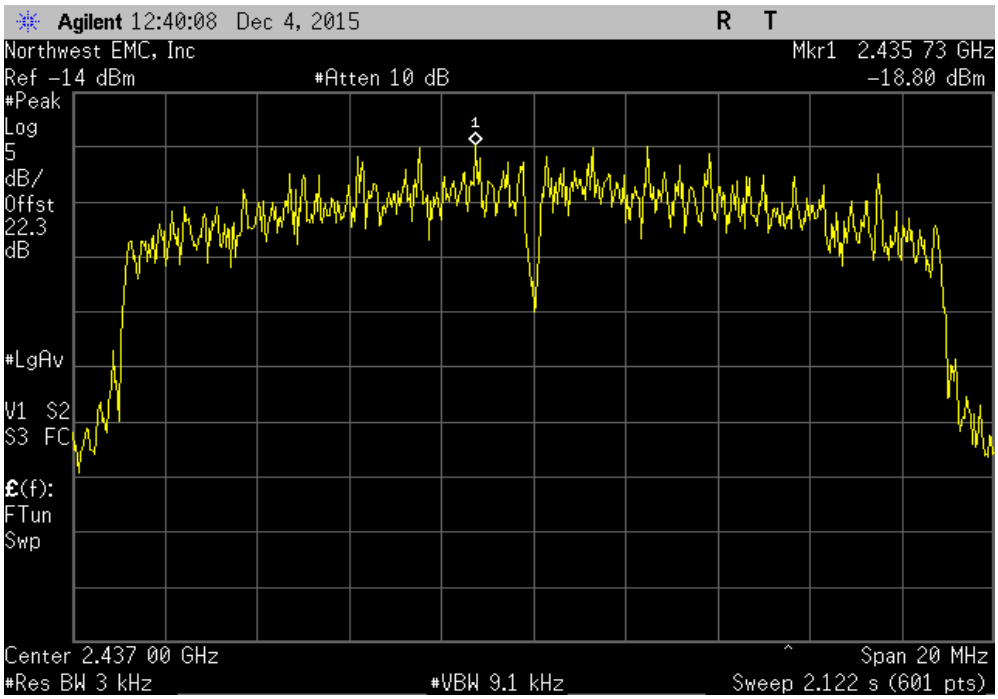
Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, High Channel 11, 2462 MHz						
		Value dBm/3kHz	2x2 MIMO Factor (dB)	Summed Value dBm/3kHz	Limit < dBm/3kHz	Results
		-17.308	3.0	-14.3	8	Pass



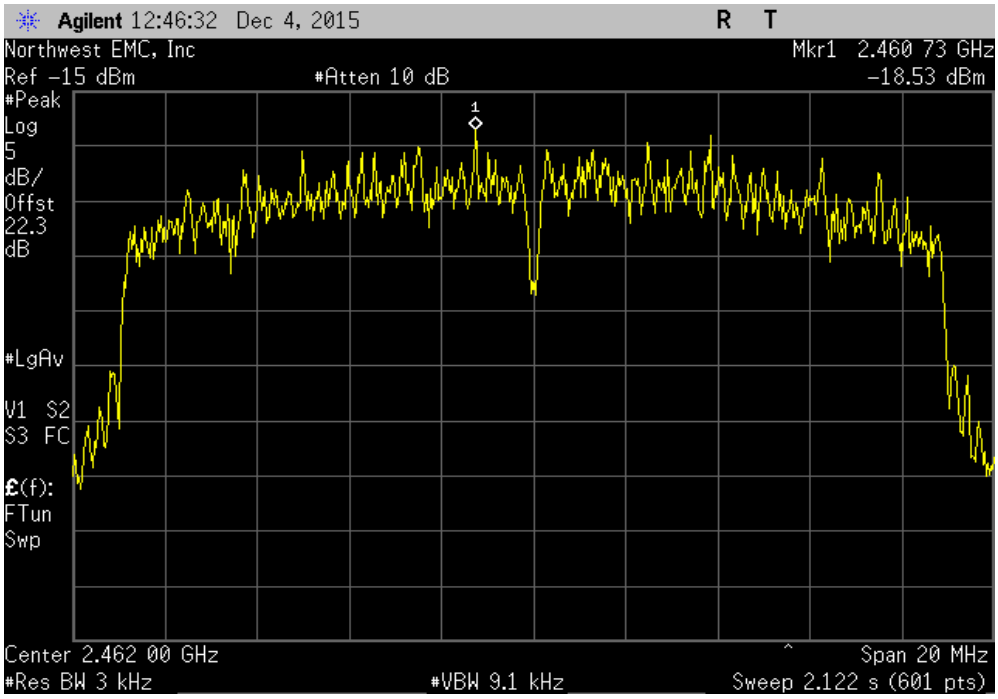
Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, Low Channel 1, 2412 MHz						
		Value dBm/3kHz	2x2 MIMO Factor (dB)	Summed Value dBm/3kHz	Limit < dBm/3kHz	Results
		-17.992	3.0	-15.0	8	Pass



Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, Mid Channel 6, 2437 MHz						
		Value dBm/3kHz	2x2 MIMO Factor (dB)	Summed Value dBm/3kHz	Limit < dBm/3kHz	Results
		-18.801	3.0	-15.8	8	Pass



Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, High Channel 11, 2462 MHz						
		Value dBm/3kHz	2x2 MIMO Factor (dB)	Summed Value dBm/3kHz	Limit < dBm/3kHz	Results
		-18.535	3.0	-15.5	8	Pass



BAND EDGE COMPLIANCE

NORTHWEST EMC

XMit 2015.01.14

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Cable	ESM Cable Corp.	TTBJ141 KMKM-72	MNU	9/18/2015	12
Attenuator	S.M. Electronics	SA26B-20	RFW	3/10/2015	12
Block - DC	Fairview Microwave	SD3379	AMI	9/18/2015	12
Generator - Signal	Agilent	N5183A	TIK	10/17/2014	36
Analyzer - Spectrum Analyzer	Agilent	E4440A	AAX	4/20/2015	12

TEST DESCRIPTION

The spurious RF conducted emissions at the edges of the authorized bands were measured with the EUT set to low and high transmit frequencies in each available band. The channels closest to the band edges were selected. The measurement was made using a direct connection between the RF output of the EUT and the spectrum analyzer. The EUT was transmitting at the data rate(s) listed in the datasheet.

The spectrum was scanned below the lower band edge and above the higher band edge.

An RMS detector was used to match the method called out for Output Power. Because the reference level was taken with an RMS detector, the attenuation requirement is -30 dBc.

BAND EDGE COMPLIANCE

NORTHWEST EMC

XMit 2015.01.14

EUT:	Marcum RT-9			**Work Order:**	ELTL0004
Serial Number:	RTS0123456811			**Date:**	12/04/15
Customer:	Electronic Technologies, LLC			**Temperature:**	22.2°C
Attendees:	Rocky Holmes, Deb See			**Humidity:**	25%
Project:	None			**Barometric Pres.:**	998.9
Tested by:	Trevor Buls	**Power:**	110VAC/60Hz	**Job Site:**	MN08

TEST SPECIFICATIONS	Test Method
FCC 15.247:2015	ANSI C63.10:2013

COMMENTS

None

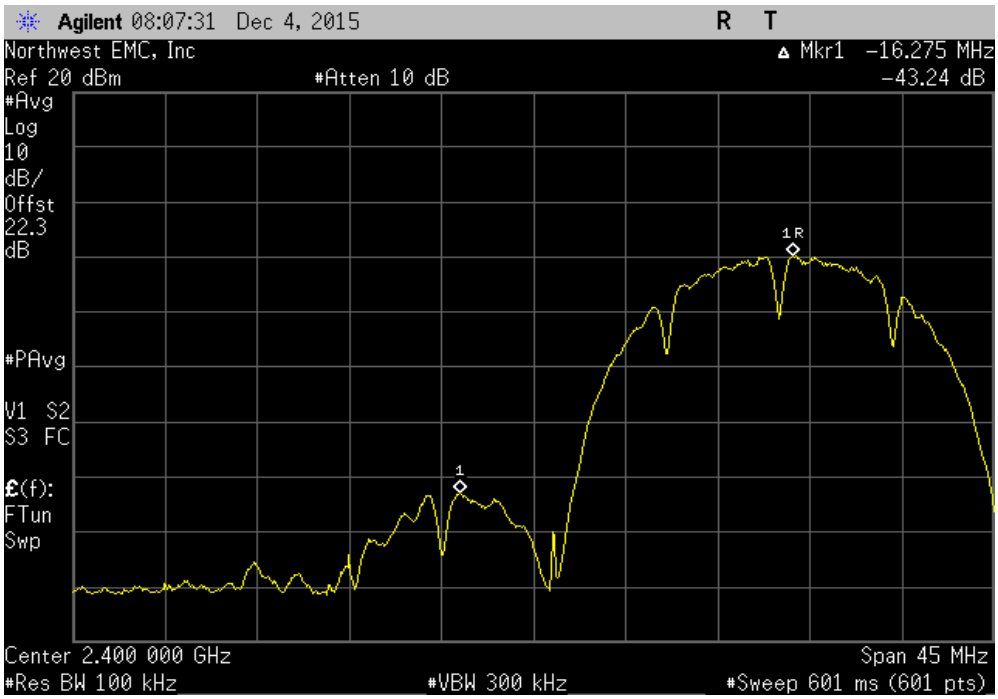
DEVIATIONS FROM TEST STANDARD

None

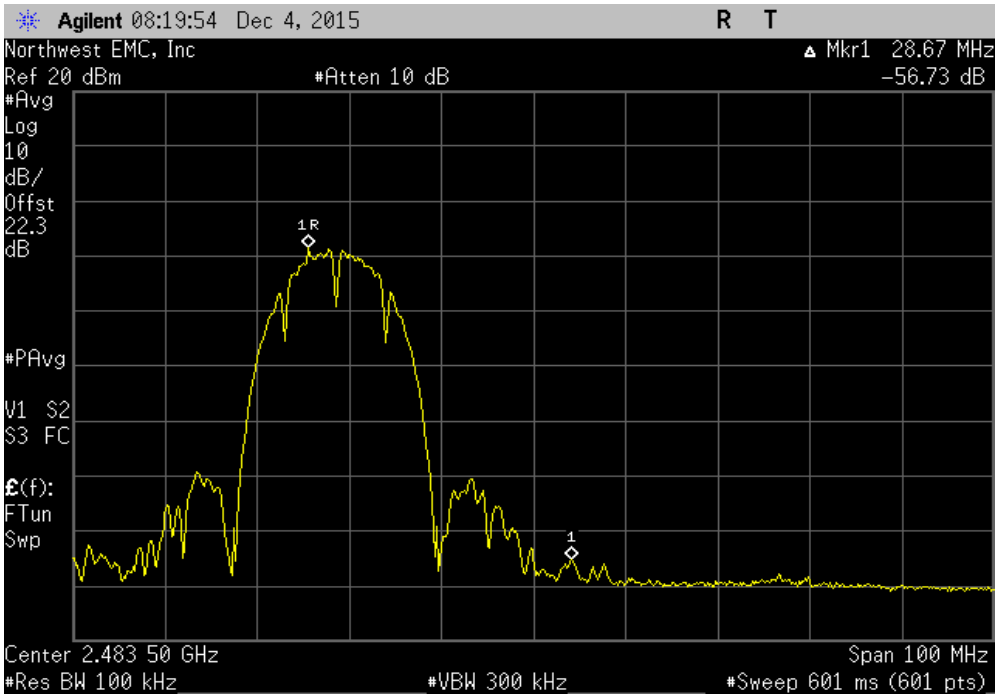
Configuration #	5	Signature	Trevor Buls

				Value (dBc)	Limit ≤ (dBc)	Result
Chain A						
	20 MHz					
		802.11(b) 1 Mbps				
			Low Channel 1, 2412 MHz	-43.24	-30	Pass
			High Channel 11, 2462 MHz	-56.73	-30	Pass
		802.11(b) 11 Mbps				
			Low Channel 1, 2412 MHz	-41.44	-30	Pass
			High Channel 11, 2462 MHz	-54.18	-30	Pass
		802.11(g) 6 Mbps				
			Low Channel 1, 2412 MHz	-38.18	-30	Pass
			High Channel 11, 2462 MHz	-48.86	-30	Pass
		802.11(g) 36 Mbps				
			Low Channel 1, 2412 MHz	-38.99	-30	Pass
			High Channel 11, 2462 MHz	-47.41	-30	Pass
		802.11(g) 54 Mbps				
			Low Channel 1, 2412 MHz	-39.7	-30	Pass
			High Channel 11, 2462 MHz	-47.08	-30	Pass
		802.11(n) MCS0				
			Low Channel 1, 2412 MHz	-36.38	-30	Pass
			High Channel 11, 2462 MHz	-47.55	-30	Pass
		802.11(n) MCS7				
			Low Channel 1, 2412 MHz	-39.03	-30	Pass
			High Channel 11, 2462 MHz	-47.11	-30	Pass
	40 MHz					
		802.11(n) MCS0				
			Low Channel 1/5, 2422 MHz	-32.76	-30	Pass
			High Channel 7/11, 2452 MHz	-37.89	-30	Pass
		802.11(n) MCS7				
			Low Channel 1/5, 2422 MHz	-35.27	-30	Pass
			High Channel 7/11, 2452 MHz	-38.97	-30	Pass

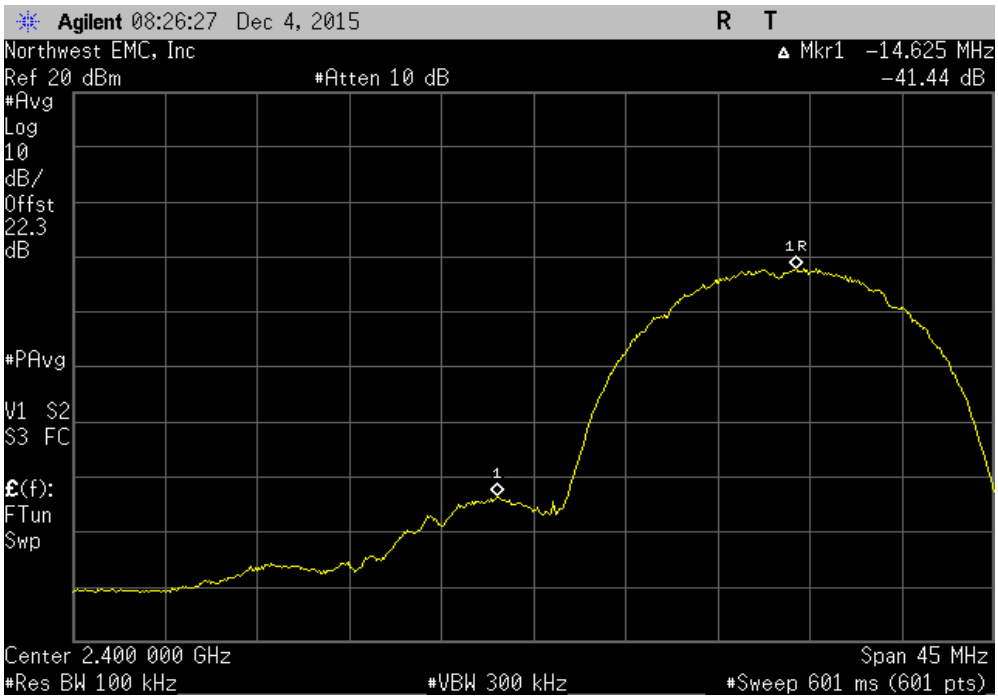
Chain A, 20 MHz, 802.11(b) 1 Mbps, Low Channel 1, 2412 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-43.24	-30	Pass



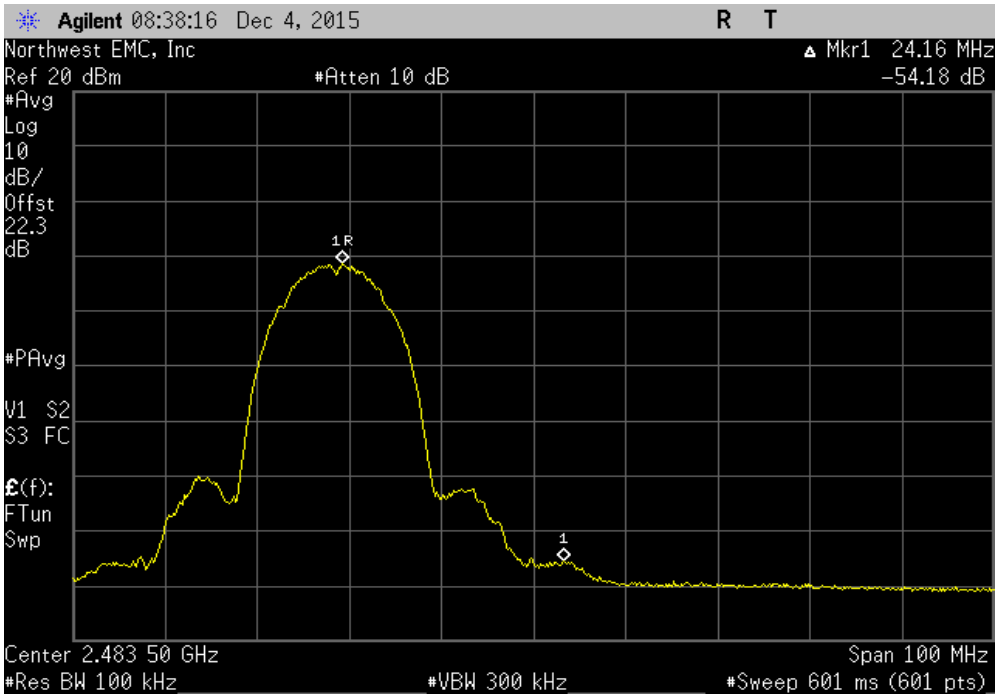
Chain A, 20 MHz, 802.11(b) 1 Mbps, High Channel 11, 2462 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-56.73	-30	Pass



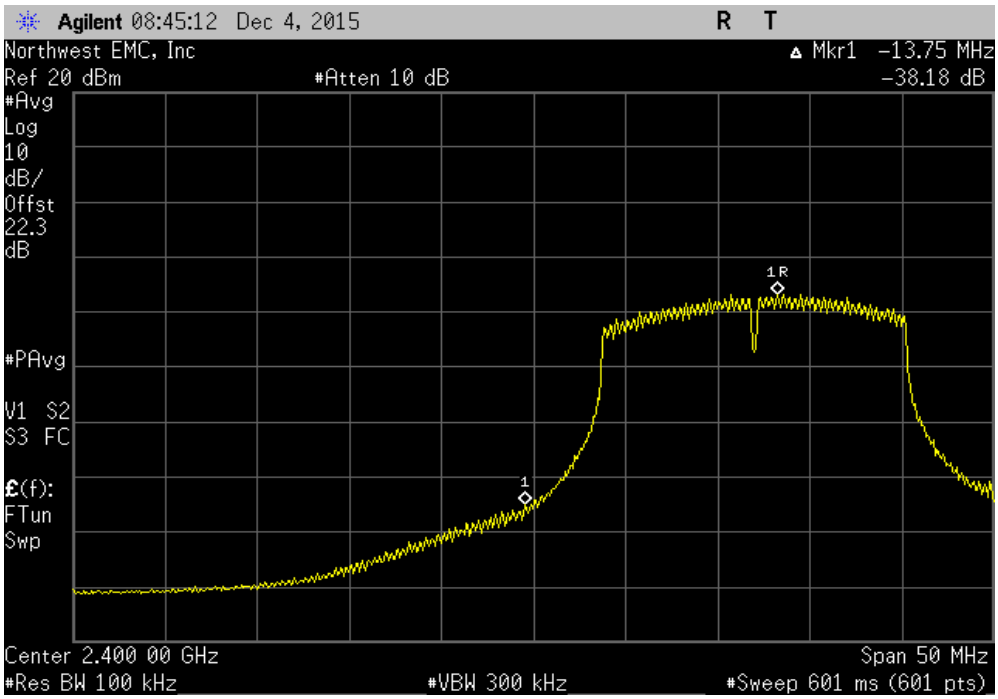
Chain A, 20 MHz, 802.11(b) 11 Mbps, Low Channel 1, 2412 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-41.44	-30	Pass



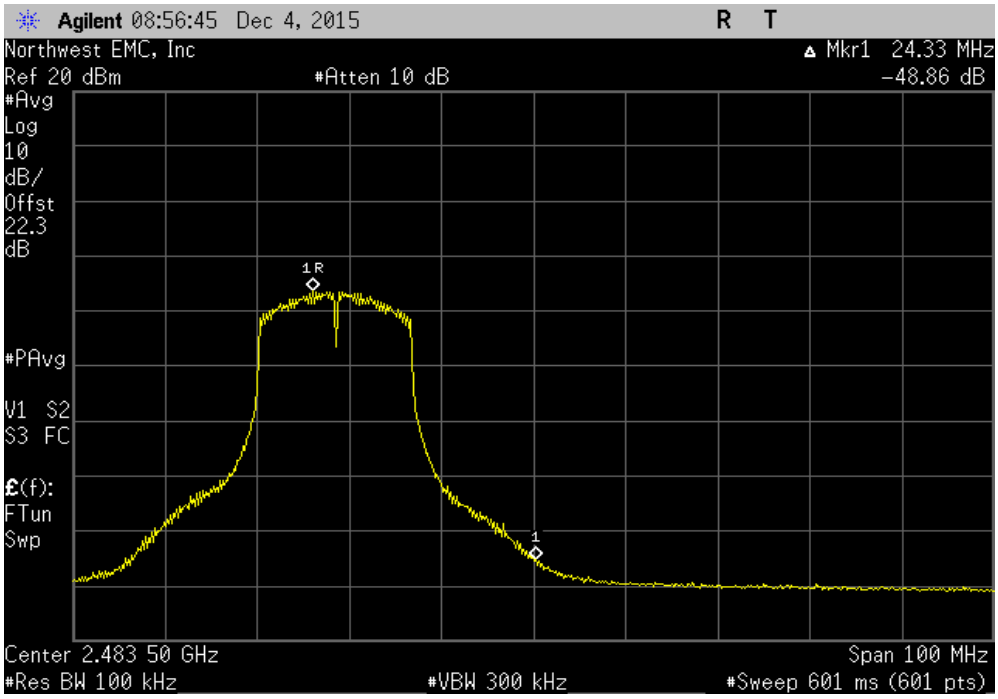
Chain A, 20 MHz, 802.11(b) 11 Mbps, High Channel 11, 2462 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-54.18	-30	Pass



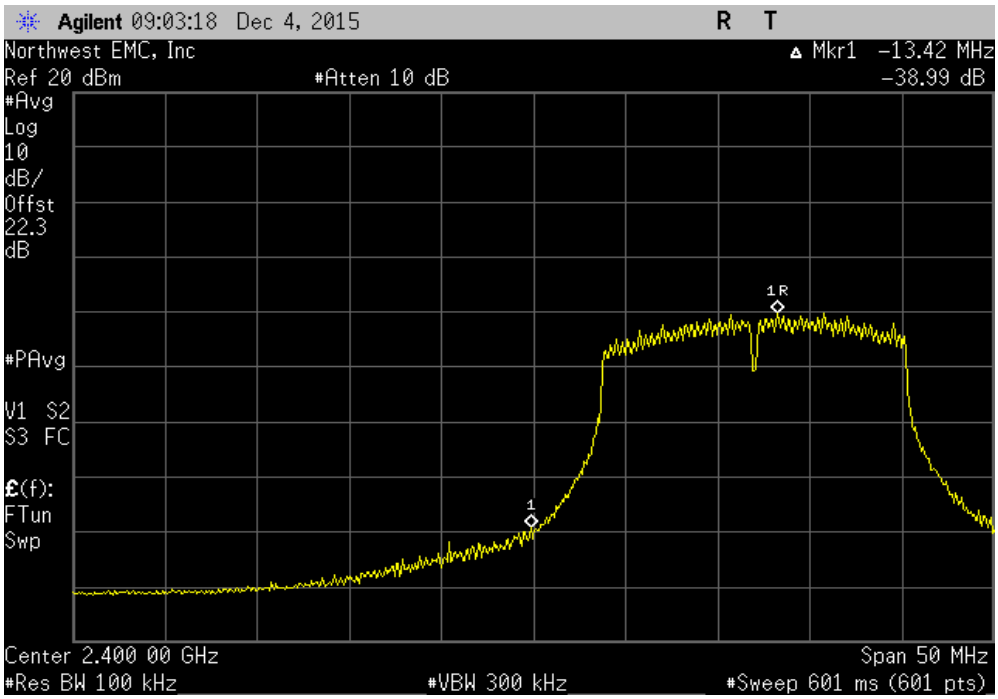
Chain A, 20 MHz, 802.11(g) 6 Mbps, Low Channel 1, 2412 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-38.18	-30	Pass



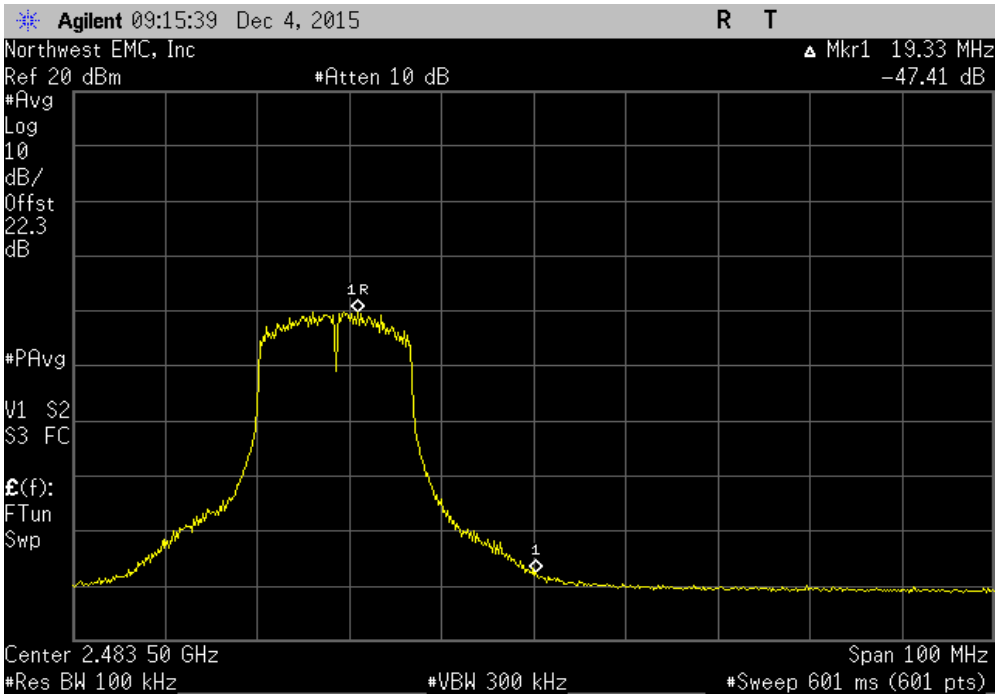
Chain A, 20 MHz, 802.11(g) 6 Mbps, High Channel 11, 2462 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-48.86	-30	Pass



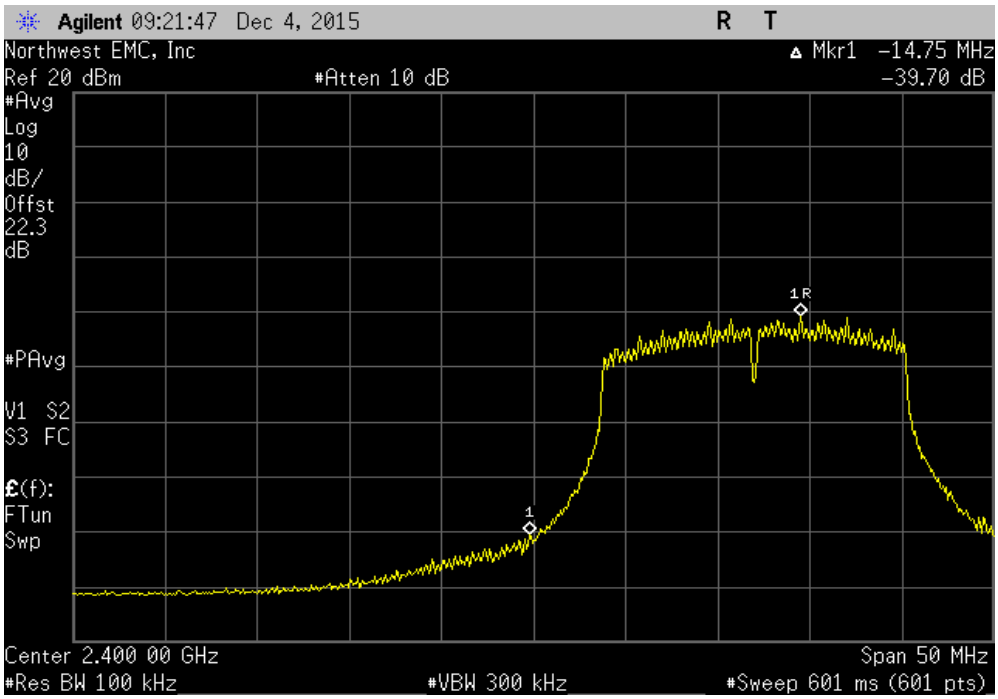
Chain A, 20 MHz, 802.11(g) 36 Mbps, Low Channel 1, 2412 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-38.99	-30	Pass



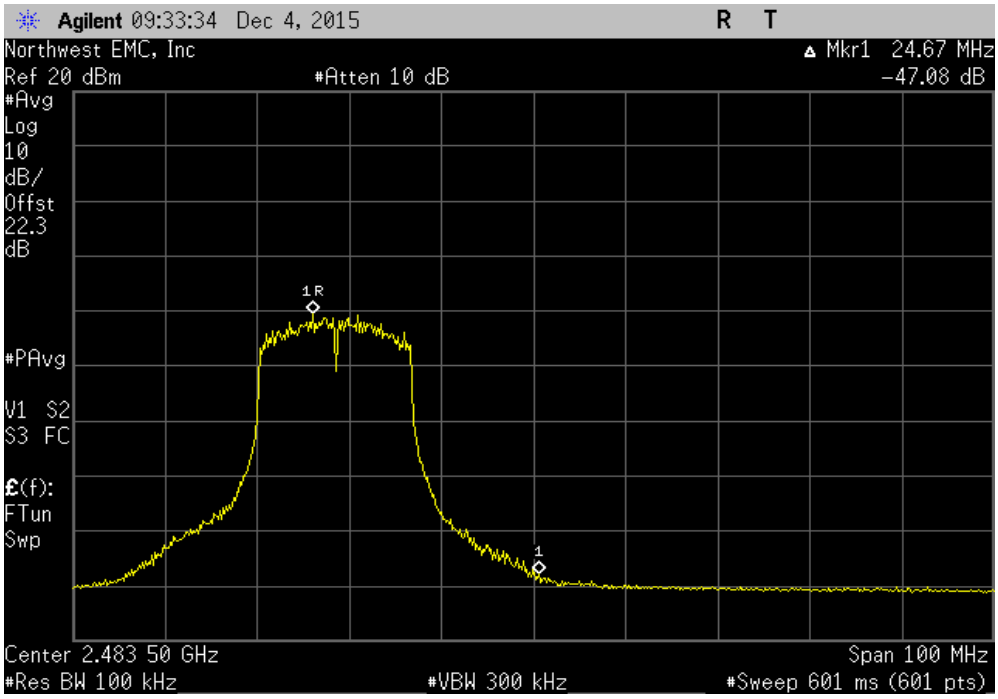
Chain A, 20 MHz, 802.11(g) 36 Mbps, High Channel 11, 2462 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-47.41	-30	Pass



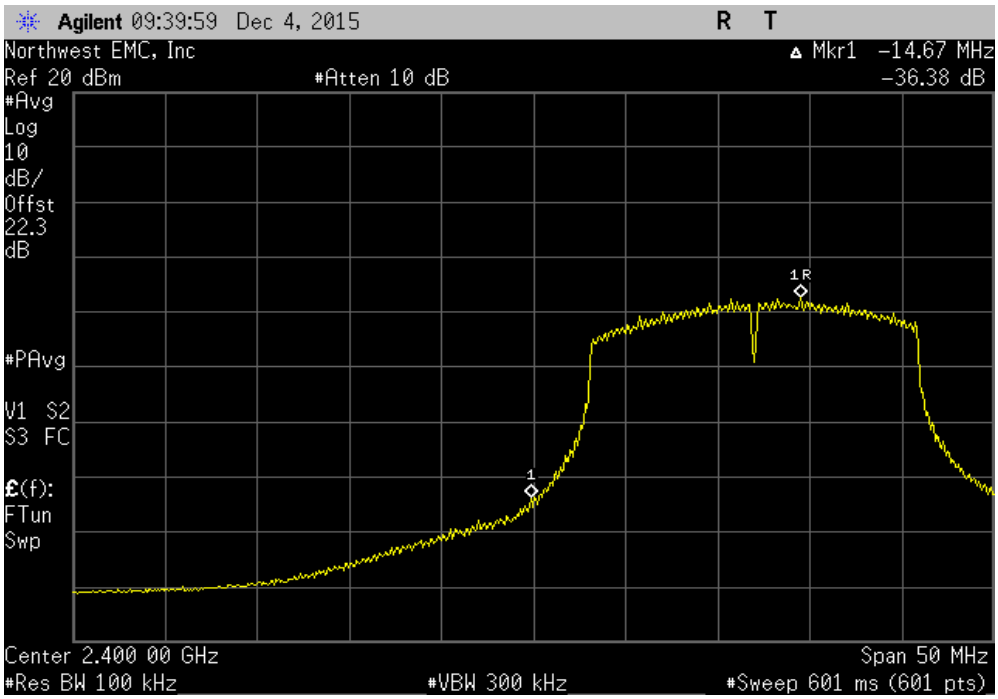
Chain A, 20 MHz, 802.11(g) 54 Mbps, Low Channel 1, 2412 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-39.7	-30	Pass



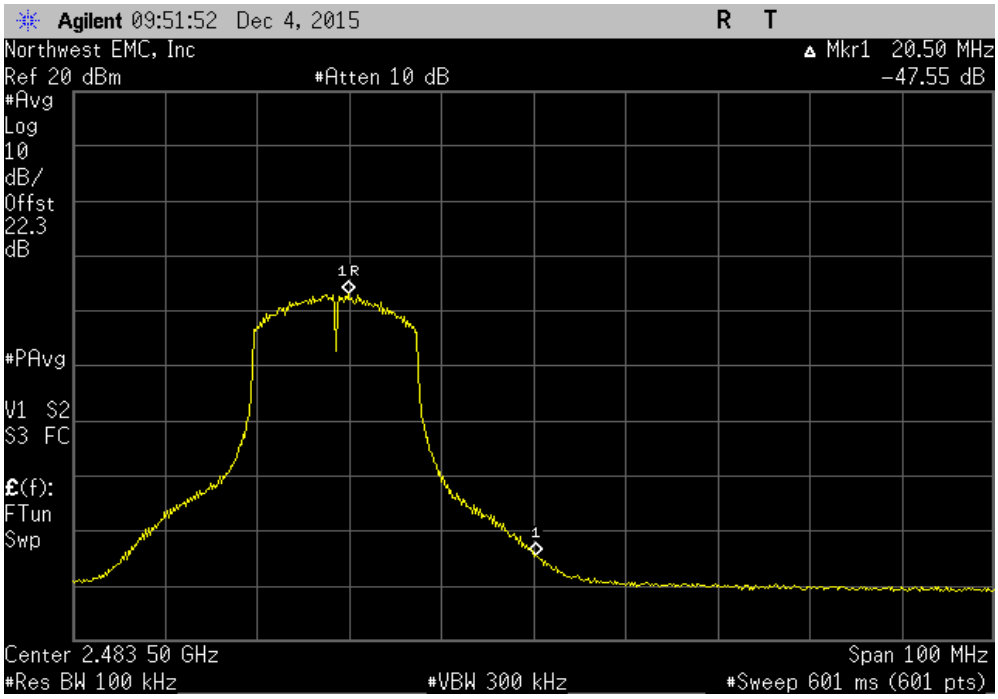
Chain A, 20 MHz, 802.11(g) 54 Mbps, High Channel 11, 2462 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-47.08	-30	Pass



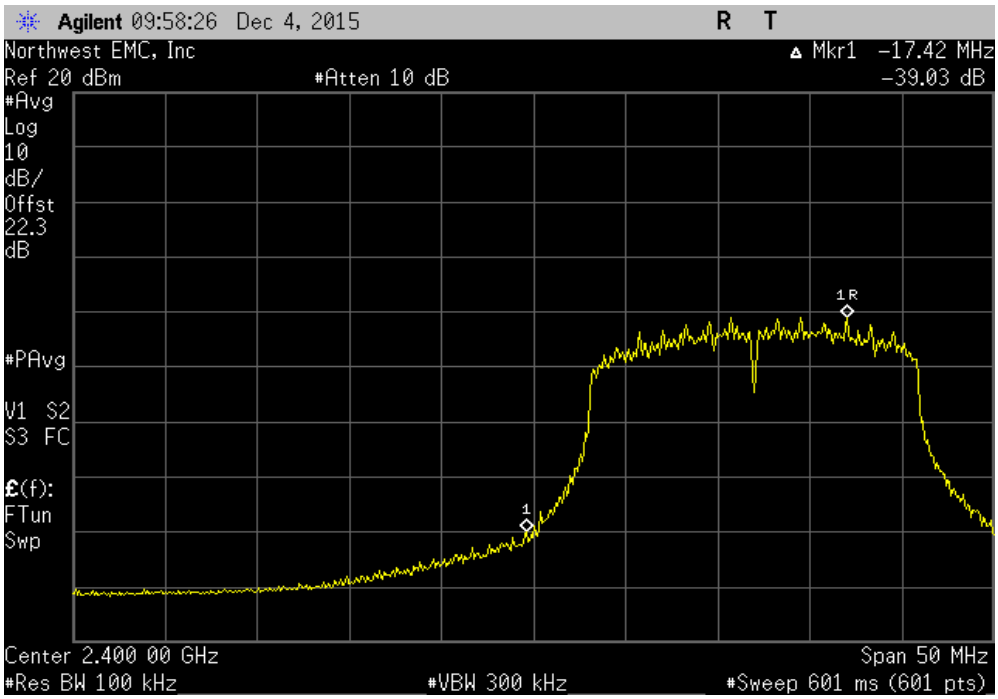
Chain A, 20 MHz, 802.11(n) MCS0, Low Channel 1, 2412 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-36.38	-30	Pass



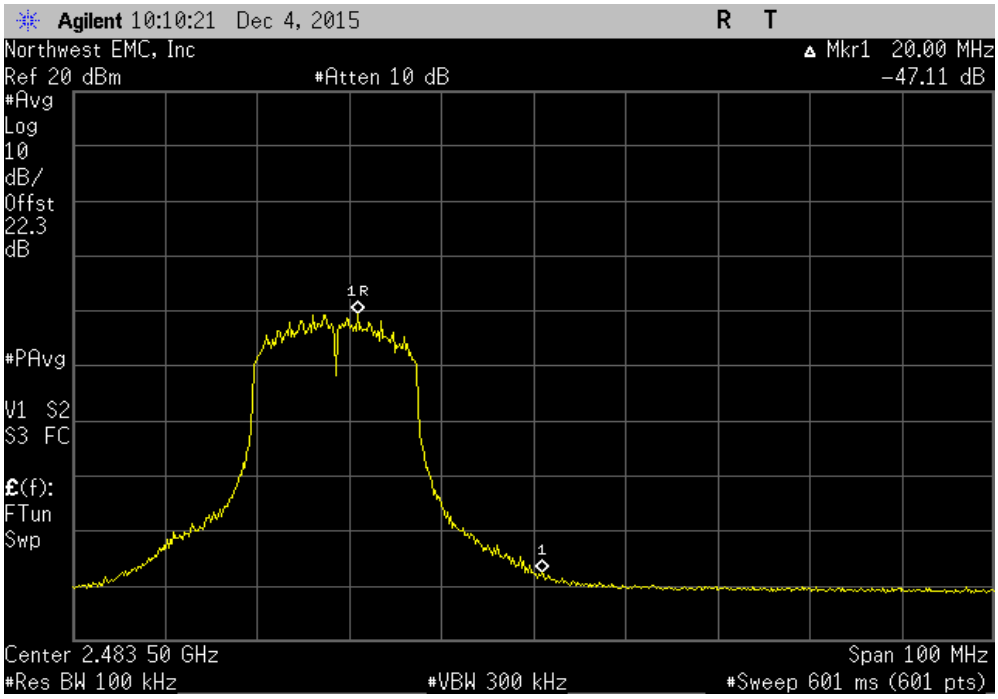
Chain A, 20 MHz, 802.11(n) MCS0, High Channel 11, 2462 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-47.55	-30	Pass



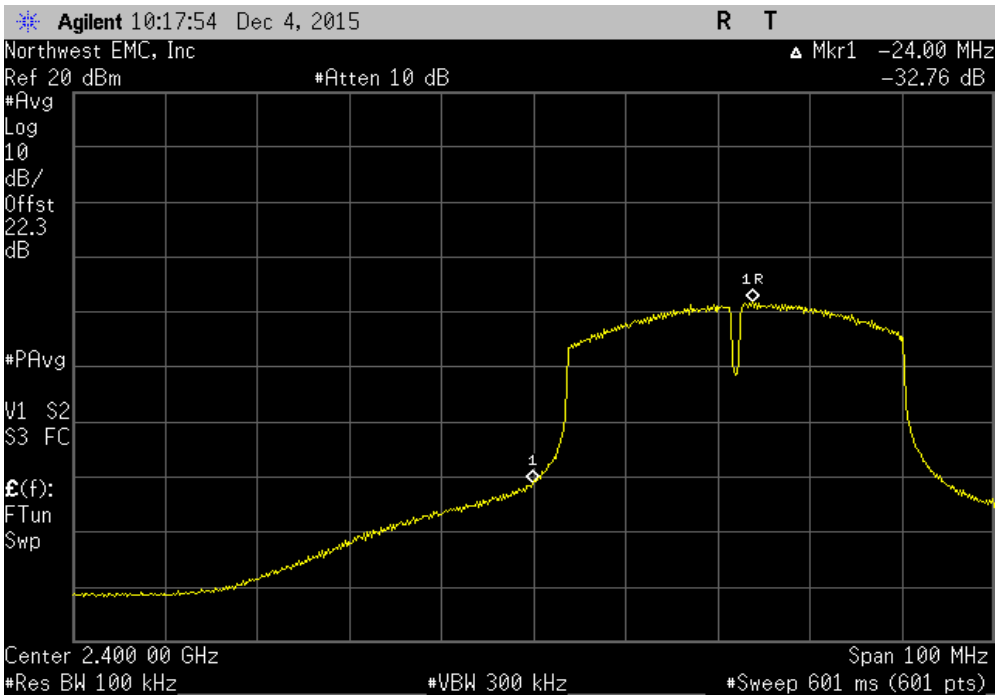
Chain A, 20 MHz, 802.11(n) MCS7, Low Channel 1, 2412 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-39.03	-30	Pass



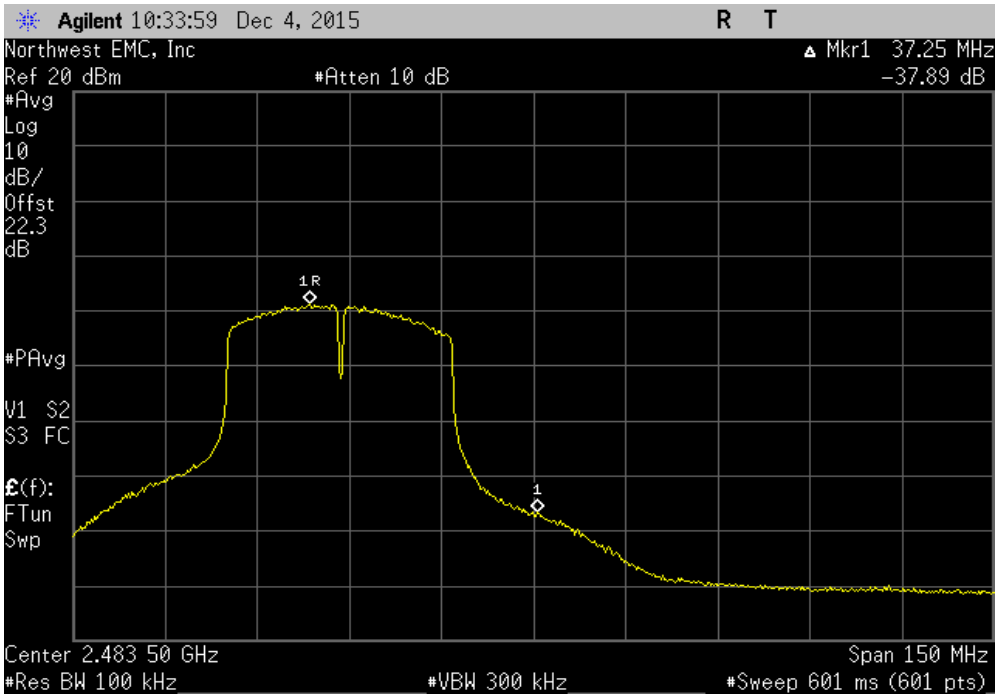
Chain A, 20 MHz, 802.11(n) MCS7, High Channel 11, 2462 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-47.11	-30	Pass



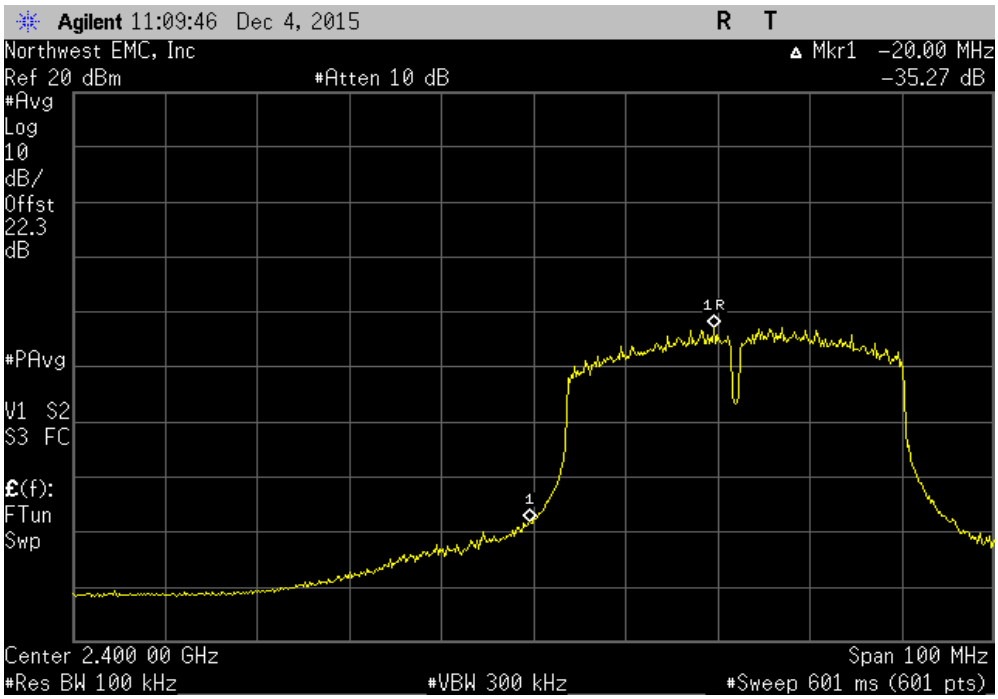
Chain A, 40 MHz, 802.11(n) MCS0, Low Channel 1/5, 2422 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-32.76	-30	Pass



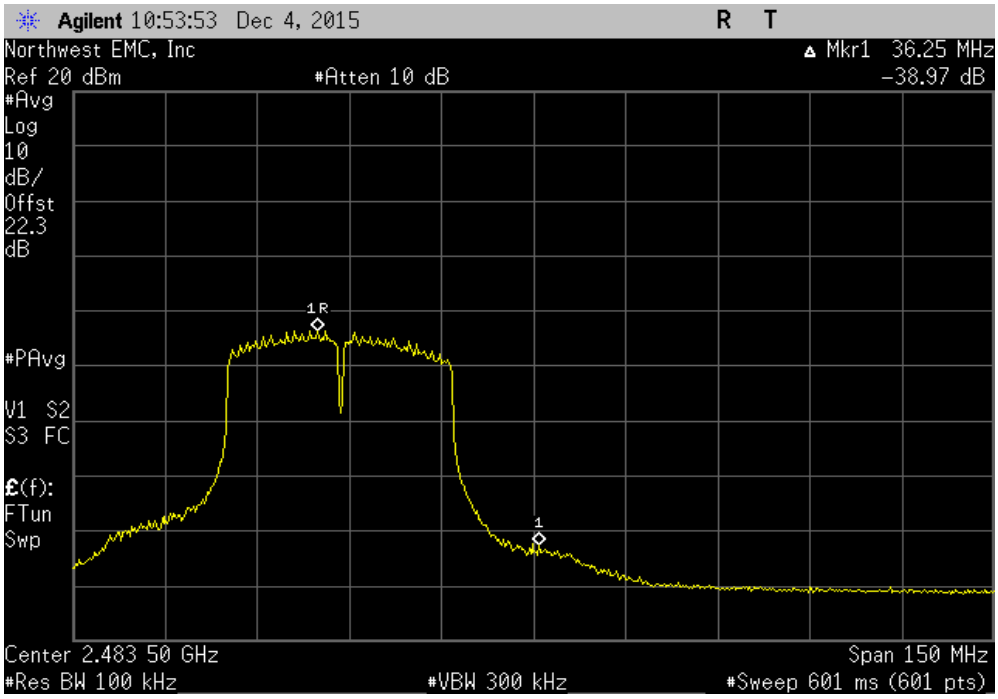
Chain A, 40 MHz, 802.11(n) MCS0, High Channel 7/11, 2452 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-37.89	-30	Pass



Chain A, 40 MHz, 802.11(n) MCS7, Low Channel 1/5, 2422 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-35.27	-30	Pass



Chain A, 40 MHz, 802.11(n) MCS7, High Channel 7/11, 2452 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-38.97	-30	Pass



BAND EDGE COMPLIANCE 2x2

XMit 2015.01.14

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Cable	ESM Cable Corp.	TTBJ141 KMKM-72	MNU	9/18/2015	12
Attenuator	S.M. Electronics	SA26B-20	RFW	3/10/2015	12
Block - DC	Fairview Microwave	SD3379	AMI	9/18/2015	12
Generator - Signal	Agilent	N5183A	TIK	10/17/2014	36
Analyzer - Spectrum Analyzer	Agilent	E4440A	AAX	4/20/2015	12

TEST DESCRIPTION

The spurious RF conducted emissions at the edges of the authorized bands were measured with the EUT set to low and high transmit frequencies in each available band. The channels closest to the band edges were selected. The measurement was made using a direct connection between the RF output of the EUT and the spectrum analyzer. The EUT was transmitting at the data rate(s) listed in the datasheet.

The spectrum was scanned below the lower band edge and above the higher band edge.

An RMS detector was used to match the method called out for Output Power. Because the reference level was taken with an RMS detector, the attenuation requirement is -30 dBc.

BAND EDGE COMPLIANCE 2x2

NORTHWEST EMC

XMit 2015.01.14

EUT:	Marcum RT-9			**Work Order:**	ELTL0004
Serial Number:	RTS0123456811			**Date:**	12/04/15
Customer:	Electronic Technologies, LLC			**Temperature:**	22.2°C
Attendees:	Rocky Holmes, Deb See			**Humidity:**	25%
Project:	None			**Barometric Pres.:**	998.9
Tested by:	Trevor Buls	**Power:**	110VAC/60Hz	**Job Site:**	MN08

TEST SPECIFICATIONS	Test Method
FCC 15.247:2015	ANSI C63.10:2013

COMMENTS

None

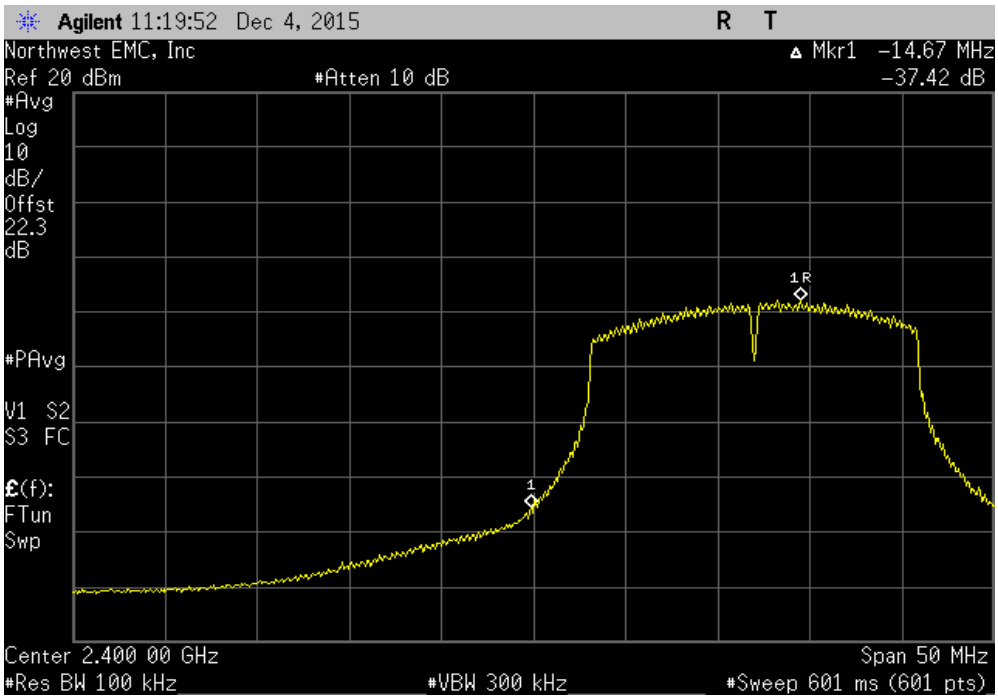
DEVIATIONS FROM TEST STANDARD

None

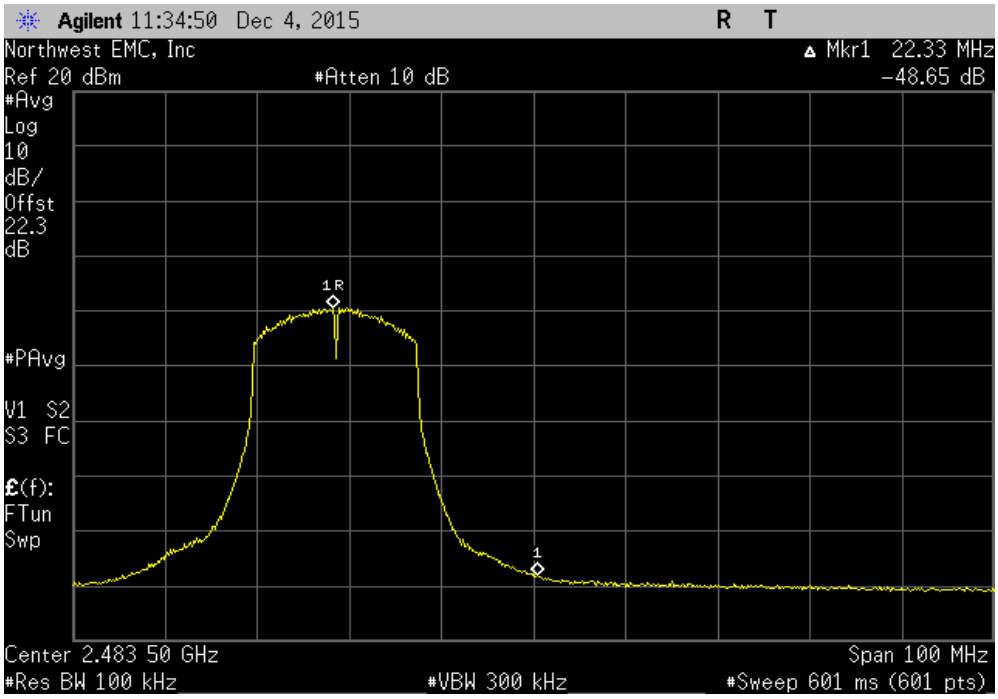
Configuration #	5	Signature	Trevor Buls

	Value (dBc)	Limit ≤ (dBc)	Result
Chain A			
20 MHz			
2400 MHz - 2483.5 MHz Band			
802.11(n) MCS8			
Low Channel 1, 2412 MHz	-37.42	-30	Pass
High Channel 11, 2462 MH	-48.65	-30	Pass
802.11(n) MCS15			
Low Channel 1, 2412 MHz	-40.22	-30	Pass
High Channel 11, 2462 MH	-47.07	-30	Pass
Chain B			
20 MHz			
2400 MHz - 2483.5 MHz Band			
802.11(n) MCS8			
Low Channel 1, 2412 MHz	-34.58	-30	Pass
High Channel 11, 2462 MH	-46.85	-30	Pass
802.11(n) MCS15			
Low Channel 1, 2412 MHz	-39.41	-30	Pass
High Channel 11, 2462 MH	-45.79	-30	Pass

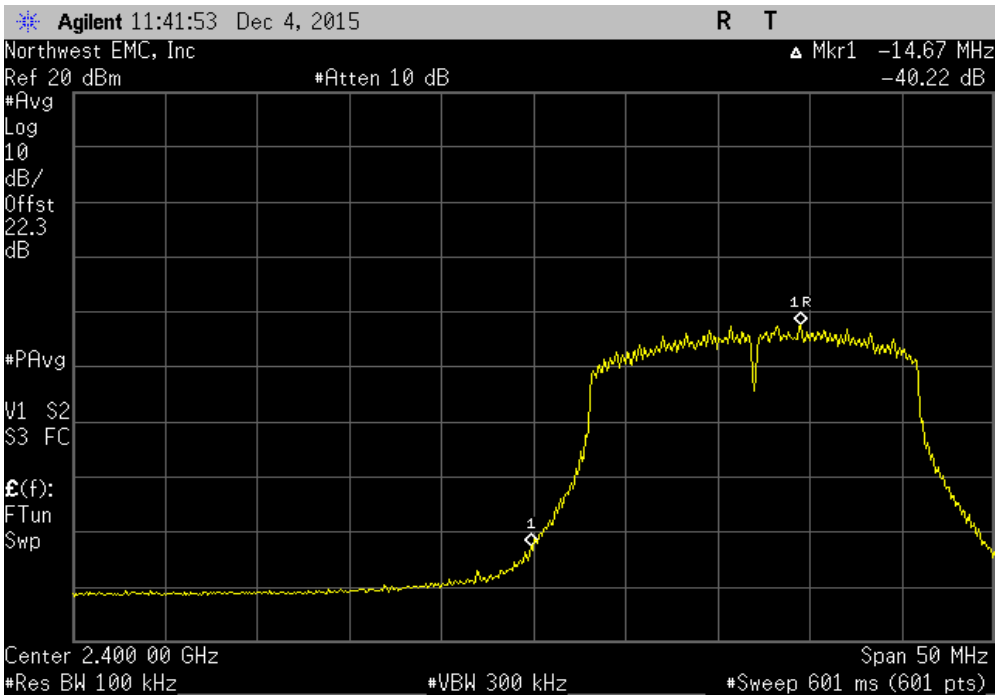
Chain A, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, Low Channel 1, 2412 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-37.42	-30	Pass



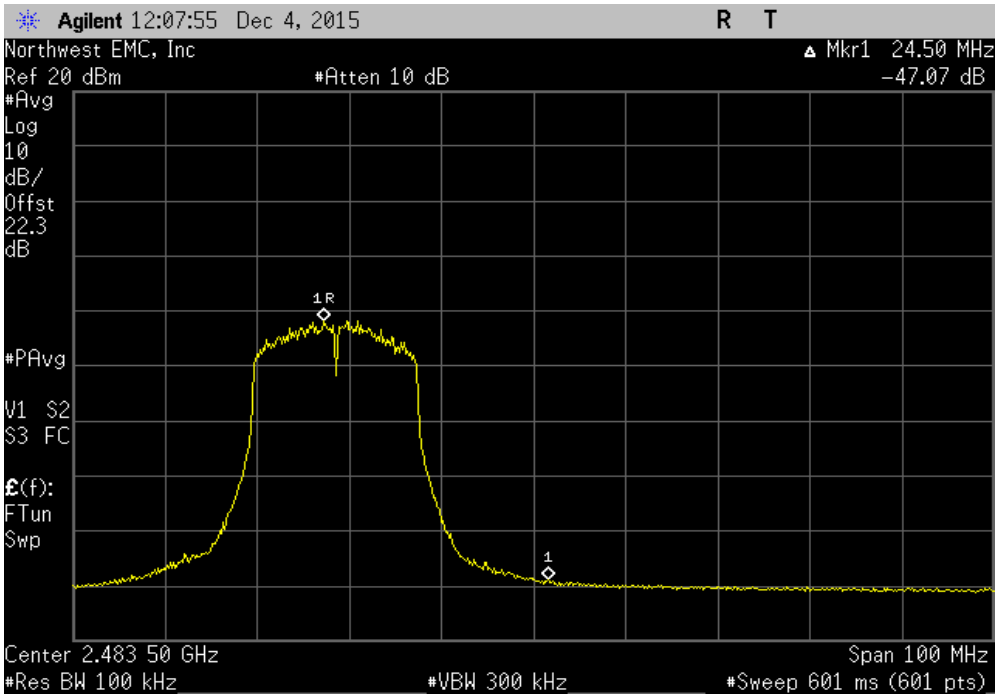
Chain A, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, High Channel 11, 2462 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-48.65	-30	Pass



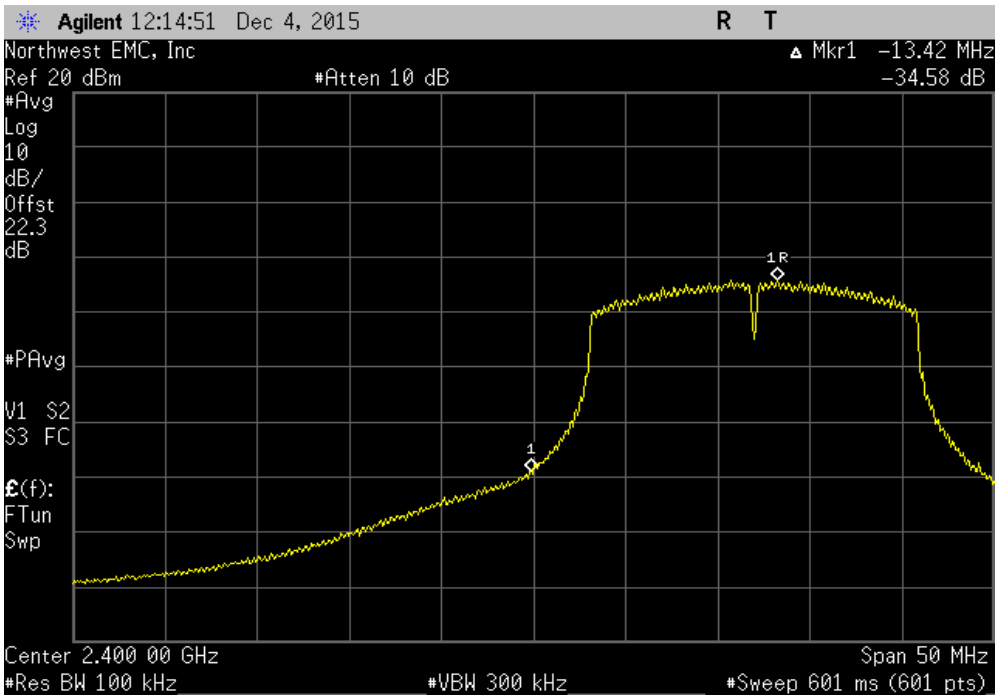
Chain A, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, Low Channel 1, 2412 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-40.22	-30	Pass



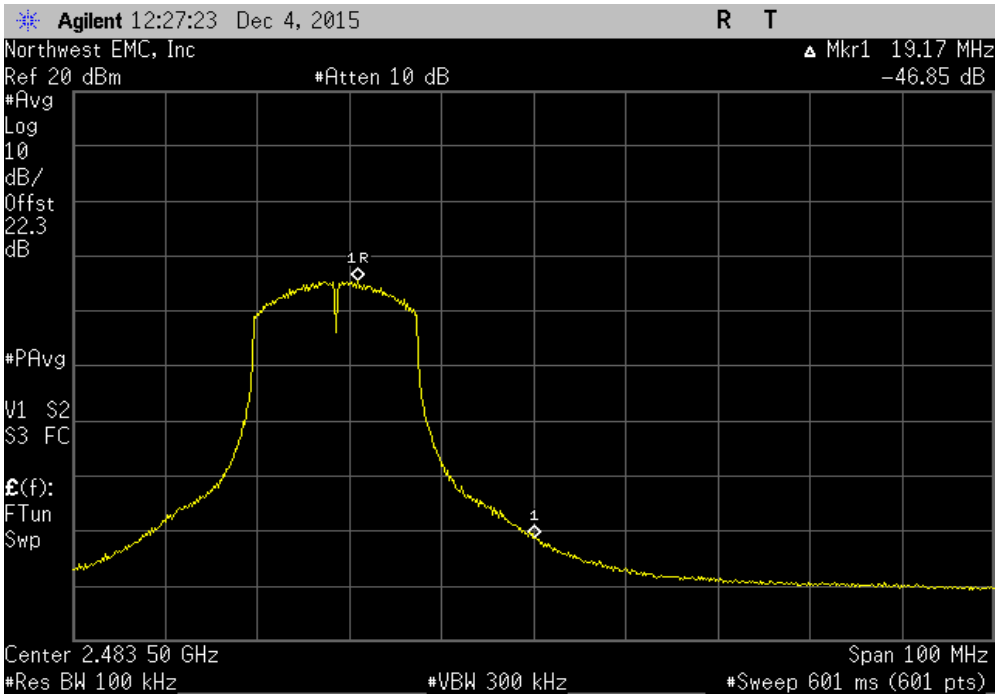
Chain A, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, High Channel 11, 2462 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-47.07	-30	Pass



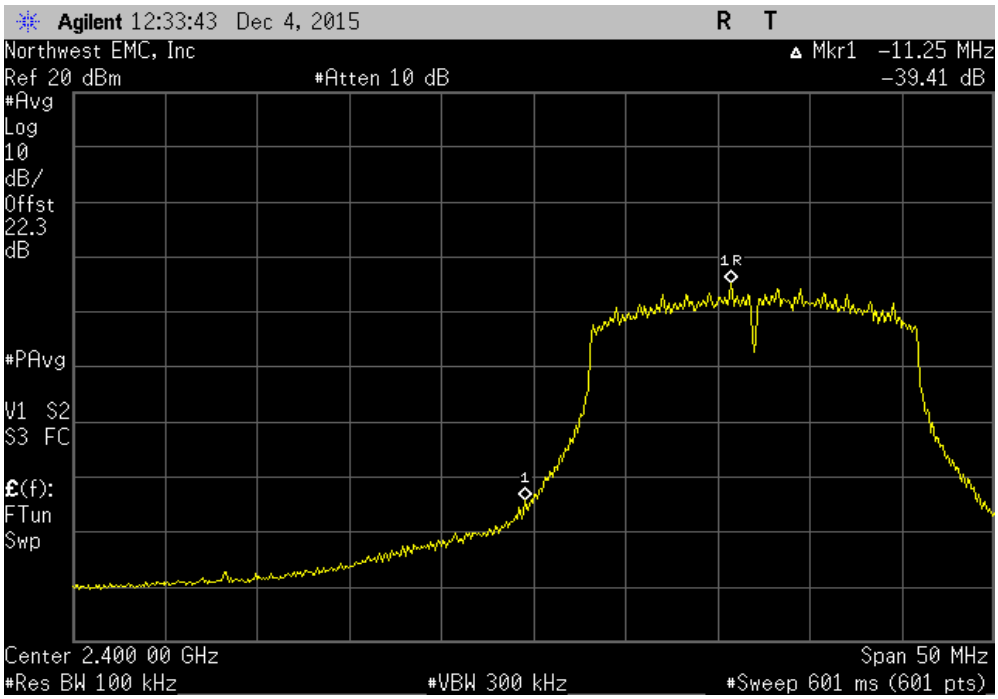
Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, Low Channel 1, 2412 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-34.58	-30	Pass



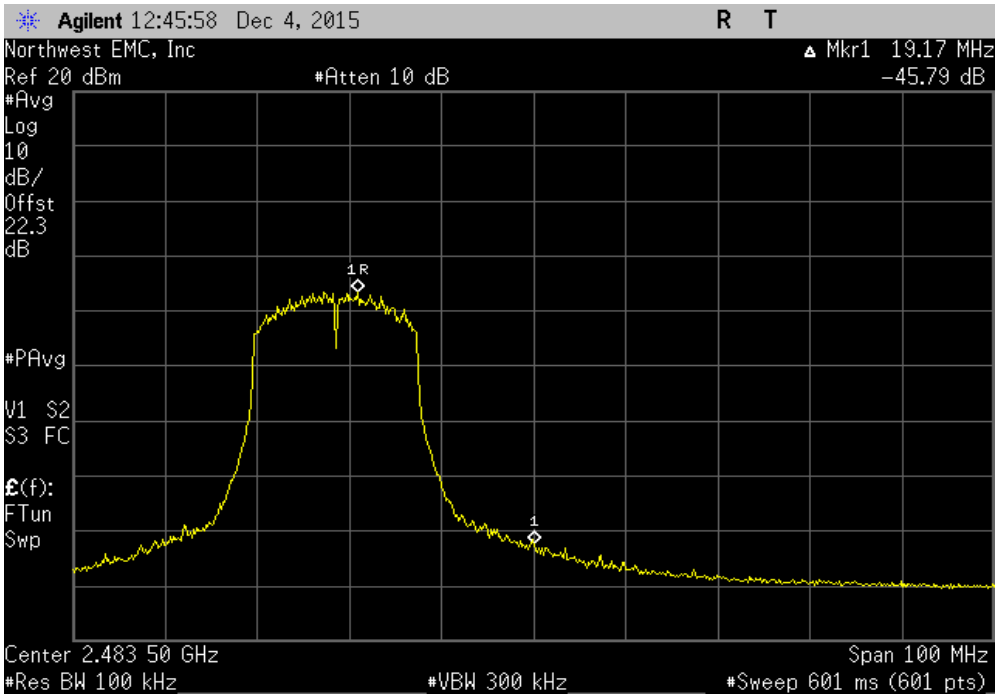
Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, High Channel 11, 2462 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-46.85	-30	Pass



Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, Low Channel 1, 2412 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-39.41	-30	Pass



Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, High Channel 11, 2462 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-45.79	-30	Pass



SPURIOUS CONDUCTED EMISSIONS

XMit 2015.01.14

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Cable	ESM Cable Corp.	TTBJ141 KMKM-72	MNU	9/18/2015	12
Attenuator	S.M. Electronics	SA26B-20	RFW	3/10/2015	12
Block - DC	Fairview Microwave	SD3379	AMI	9/18/2015	12
Generator - Signal	Agilent	N5183A	TIK	10/17/2014	36
Analyzer - Spectrum Analyzer	Agilent	E4440A	AAX	4/20/2015	12

TEST DESCRIPTION

The spurious RF conducted emissions were measured with the EUT set to low, medium and high transmit frequencies. The measurements were made using a direct connection between the RF output of the EUT and the spectrum analyzer. The EUT was transmitting at the data rate(s) listed in the datasheet. For each transmit frequency, the spectrum was scanned throughout the specified frequency range.

SPURIOUS CONDUCTED EMISSIONS

NORTHWEST EMC

XMit 2015.01.14

EUT:	Marcum RT-9			**Work Order:**	ELTL0004
Serial Number:	RTS0123456811			**Date:**	12/04/15
Customer:	Electronic Technologies, LLC			**Temperature:**	22.2°C
Attendees:	Rocky Holmes, Deb See			**Humidity:**	25%
Project:	None			**Barometric Pres.:**	998.9
Tested by:	Trevor Buls	**Power:**	110VAC/60Hz	**Job Site:**	MN08

TEST SPECIFICATIONS	**Test Method**
FCC 15.247:2015	ANSI C63.10:2013

COMMENTS

None

DEVIATIONS FROM TEST STANDARD

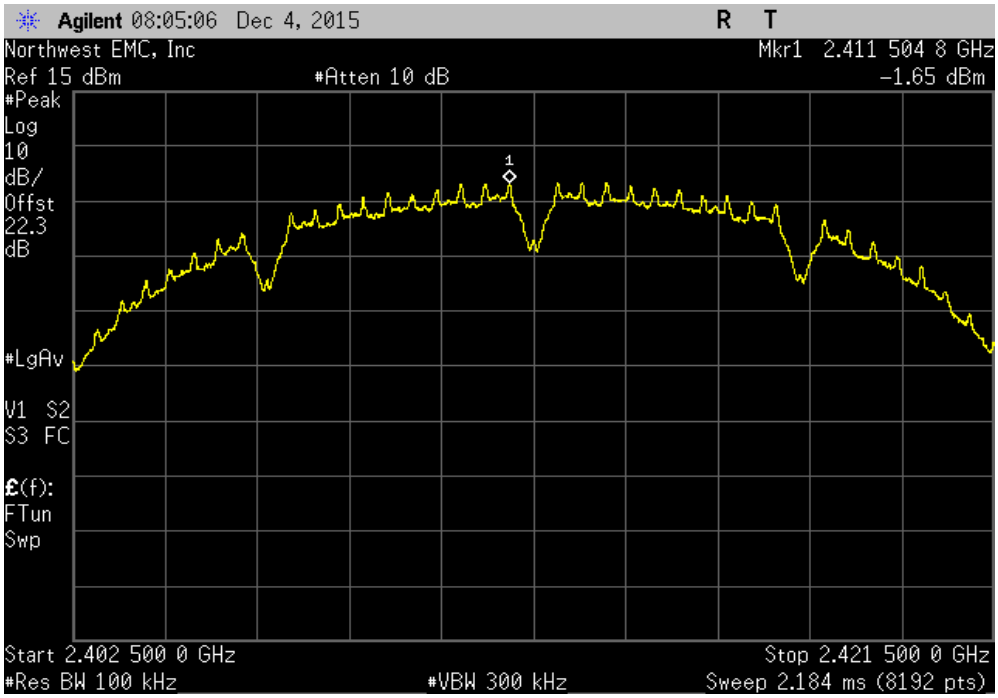
None

Configuration #	5	*Signature* Trevor Buls

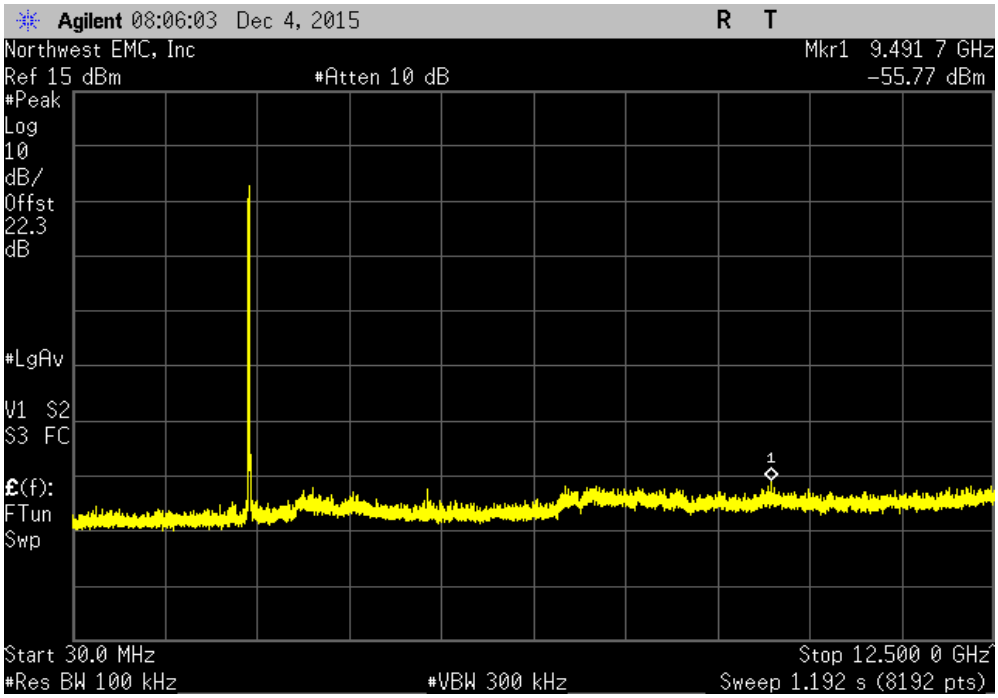
			Frequency Range	Max Value (dBc)	Limit ≤ (dBc)	Result
Chain A						
	20 MHz					
		802.11(b) 1 Mbps				
			Low Channel 1, 2412 MHz	Fundamental	N/A	N/A	N/A
			Low Channel 1, 2412 MHz	30 MHz - 12.5 GHz	-54.12	-20	Pass
			Low Channel 1, 2412 MHz	12.5 GHz - 25 GHz	-50.02	-20	Pass
			Mid Channel 6, 2437 MHz	Fundamental	N/A	N/A	N/A
			Mid Channel 6, 2437 MHz	30 MHz - 12.5 GHz	-56.74	-20	Pass
			Mid Channel 6, 2437 MHz	12.5 GHz - 25 GHz	-52.9	-20	Pass
			High Channel 11, 2462 MHz	Fundamental	N/A	N/A	N/A
			High Channel 11, 2462 MHz	30 MHz - 12.5 GHz	-53.2	-20	Pass
			High Channel 11, 2462 MHz	12.5 GHz - 25 GHz	-51.84	-20	Pass
		802.11(b) 11 Mbps				
			Low Channel 1, 2412 MHz	Fundamental	N/A	N/A	N/A
			Low Channel 1, 2412 MHz	30 MHz - 12.5 GHz	-54.88	-20	Pass
			Low Channel 1, 2412 MHz	12.5 GHz - 25 GHz	-51.03	-20	Pass
			Mid Channel 6, 2437 MHz	Fundamental	N/A	N/A	N/A
			Mid Channel 6, 2437 MHz	30 MHz - 12.5 GHz	-56.49	-20	Pass
			Mid Channel 6, 2437 MHz	12.5 GHz - 25 GHz	-52.28	-20	Pass
			High Channel 11, 2462 MHz	Fundamental	N/A	N/A	N/A
			High Channel 11, 2462 MHz	30 MHz - 12.5 GHz	-53.1	-20	Pass
			High Channel 11, 2462 MHz	12.5 GHz - 25 GHz	-51.35	-20	Pass
		802.11(g) 6 Mbps				
			Low Channel 1, 2412 MHz	Fundamental	N/A	N/A	N/A
			Low Channel 1, 2412 MHz	30 MHz - 12.5 GHz	-49.46	-20	Pass
			Low Channel 1, 2412 MHz	12.5 GHz - 25 GHz	-44.11	-20	Pass
			Mid Channel 6, 2437 MHz	Fundamental	N/A	N/A	N/A
			Mid Channel 6, 2437 MHz	30 MHz - 12.5 GHz	-51.3	-20	Pass
			Mid Channel 6, 2437 MHz	12.5 GHz - 25 GHz	-47.08	-20	Pass
			High Channel 11, 2462 MHz	Fundamental	N/A	N/A	N/A
			High Channel 11, 2462 MHz	30 MHz - 12.5 GHz	-50.23	-20	Pass
			High Channel 11, 2462 MHz	12.5 GHz - 25 GHz	-46.4	-20	Pass
		802.11(g) 36 Mbps				
			Low Channel 1, 2412 MHz	Fundamental	N/A	N/A	N/A
			Low Channel 1, 2412 MHz	30 MHz - 12.5 GHz	-48.57	-20	Pass
			Low Channel 1, 2412 MHz	12.5 GHz - 25 GHz	-44.38	-20	Pass
			Mid Channel 6, 2437 MHz	Fundamental	N/A	N/A	N/A
			Mid Channel 6, 2437 MHz	30 MHz - 12.5 GHz	-51.57	-20	Pass
			Mid Channel 6, 2437 MHz	12.5 GHz - 25 GHz	-46.85	-20	Pass
			High Channel 11, 2462 MHz	Fundamental	N/A	N/A	N/A
			High Channel 11, 2462 MHz	30 MHz - 12.5 GHz	-49.97	-20	Pass
			High Channel 11, 2462 MHz	12.5 GHz - 25 GHz	-45.17	-20	Pass
		802.11(g) 54 Mbps				
			Low Channel 1, 2412 MHz	Fundamental	N/A	N/A	N/A
			Low Channel 1, 2412 MHz	30 MHz - 12.5 GHz	-48.68	-20	Pass
			Low Channel 1, 2412 MHz	12.5 GHz - 25 GHz	-45.5	-20	Pass
			Mid Channel 6, 2437 MHz	Fundamental	N/A	N/A	N/A
			Mid Channel 6, 2437 MHz	30 MHz - 12.5 GHz	-51.24	-20	Pass
			Mid Channel 6, 2437 MHz	12.5 GHz - 25 GHz	-47.57	-20	Pass
			High Channel 11, 2462 MHz	Fundamental	N/A	N/A	N/A
			High Channel 11, 2462 MHz	30 MHz - 12.5 GHz	-49.97	-20	Pass
			High Channel 11, 2462 MHz	12.5 GHz - 25 GHz	-45.4	-20	Pass
		802.11(n) MCS0				
			Low Channel 1, 2412 MHz	Fundamental	N/A	N/A	N/A
			Low Channel 1, 2412 MHz	30 MHz - 12.5 GHz	-49.67	-20	Pass
			Low Channel 1, 2412 MHz	12.5 GHz - 25 GHz	-45.75	-20	Pass
			Mid Channel 6, 2437 MHz	Fundamental	N/A	N/A	N/A
			Mid Channel 6, 2437 MHz	30 MHz - 12.5 GHz	-51.06	-20	Pass
			Mid Channel 6, 2437 MHz	12.5 GHz - 25 GHz	-47.05	-20	Pass
			High Channel 11, 2462 MHz	Fundamental	N/A	N/A	N/A
			High Channel 11, 2462 MHz	30 MHz - 12.5 GHz	-50.87	-20	Pass
			High Channel 11, 2462 MHz	12.5 GHz - 25 GHz	-46.41	-20	Pass
		802.11(n) MCS7				
			Low Channel 1, 2412 MHz	Fundamental	N/A	N/A	N/A
			Low Channel 1, 2412 MHz	30 MHz - 12.5 GHz	-49.88	-20	Pass
			Low Channel 1, 2412 MHz	12.5 GHz - 25 GHz	-45.31	-20	Pass
			Mid Channel 6, 2437 MHz	Fundamental	N/A	N/A	N/A
			Mid Channel 6, 2437 MHz	30 MHz - 12.5 GHz	-51.28	-20	Pass
			Mid Channel 6, 2437 MHz	12.5 GHz - 25 GHz	-46.62	-20	Pass
			High Channel 11, 2462 MHz	Fundamental	N/A	N/A	N/A
			High Channel 11, 2462 MHz	30 MHz - 12.5 GHz	-50.8	-20	Pass
			High Channel 11, 2462 MHz	12.5 GHz - 25 GHz	-46.63	-20	Pass

40 MHz					
	802.11(n) MCS0				
	Low Channel 1/5, 2422 MHz	Fundamental	N/A	N/A	N/A
	Low Channel 1/5, 2422 MHz	30 MHz - 12.5 GHz	-46.01	-20	Pass
	Low Channel 1/5, 2422 MHz	12.5 GHz - 25 GHz	-43.46	-20	Pass
	Mid Channel 4/8, 2437 MHz	Fundamental	N/A	N/A	N/A
	Mid Channel 4/8, 2437 MHz	30 MHz - 12.5 GHz	-48.34	-20	Pass
	Mid Channel 4/8, 2437 MHz	12.5 GHz - 25 GHz	-43.74	-20	Pass
	High Channel 7/11, 2452 MHz	Fundamental	N/A	N/A	N/A
	High Channel 7/11, 2452 MHz	30 MHz - 12.5 GHz	-32.16	-20	Pass
	High Channel 7/11, 2452 MHz	12.5 GHz - 25 GHz	-43.45	-20	Pass
	802.11(n) MCS7				
	Low Channel 1/5, 2422 MHz	Fundamental	N/A	N/A	N/A
	Low Channel 1/5, 2422 MHz	30 MHz - 12.5 GHz	-45.78	-20	Pass
	Low Channel 1/5, 2422 MHz	12.5 GHz - 25 GHz	-41.62	-20	Pass
	Mid Channel 4/8, 2437 MHz	Fundamental	N/A	N/A	N/A
	Mid Channel 4/8, 2437 MHz	30 MHz - 12.5 GHz	-46.93	-20	Pass
	Mid Channel 4/8, 2437 MHz	12.5 GHz - 25 GHz	-42.63	-20	Pass
	High Channel 7/11, 2452 MHz	Fundamental	N/A	N/A	N/A
	High Channel 7/11, 2452 MHz	30 MHz - 12.5 GHz	-45.97	-20	Pass
	High Channel 7/11, 2452 MHz	12.5 GHz - 25 GHz	-41.42	-20	Pass

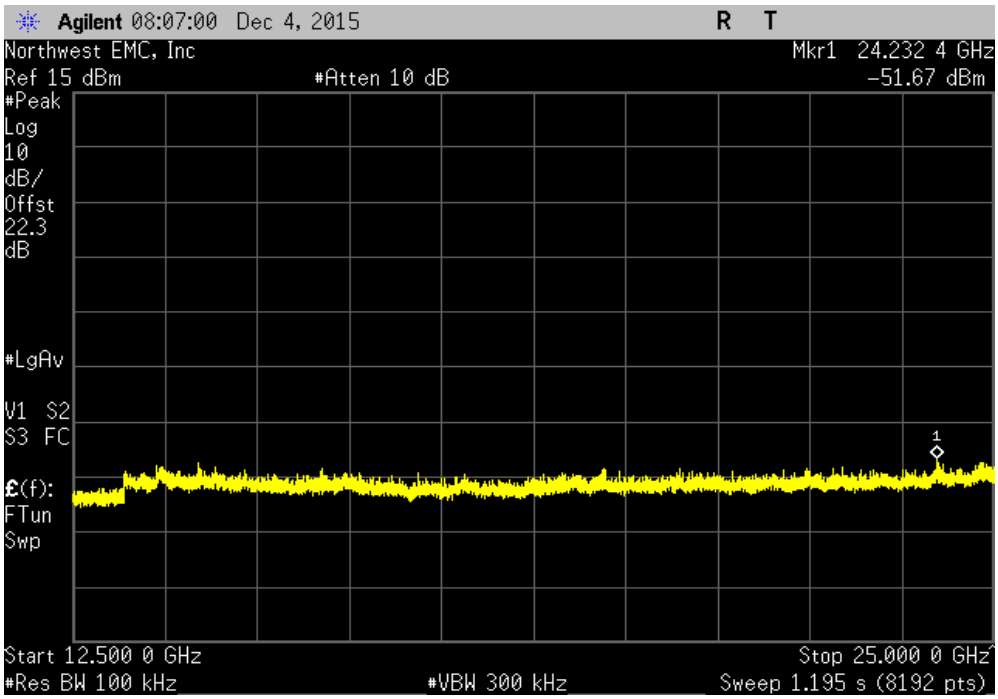
Chain A, 20 MHz, 802.11(b) 1 Mbps, Low Channel 1, 2412 MHz						
	Frequency Range			Max Value (dBc)	Limit ≤ (dBc)	Result
	Fundamental			N/A	N/A	N/A



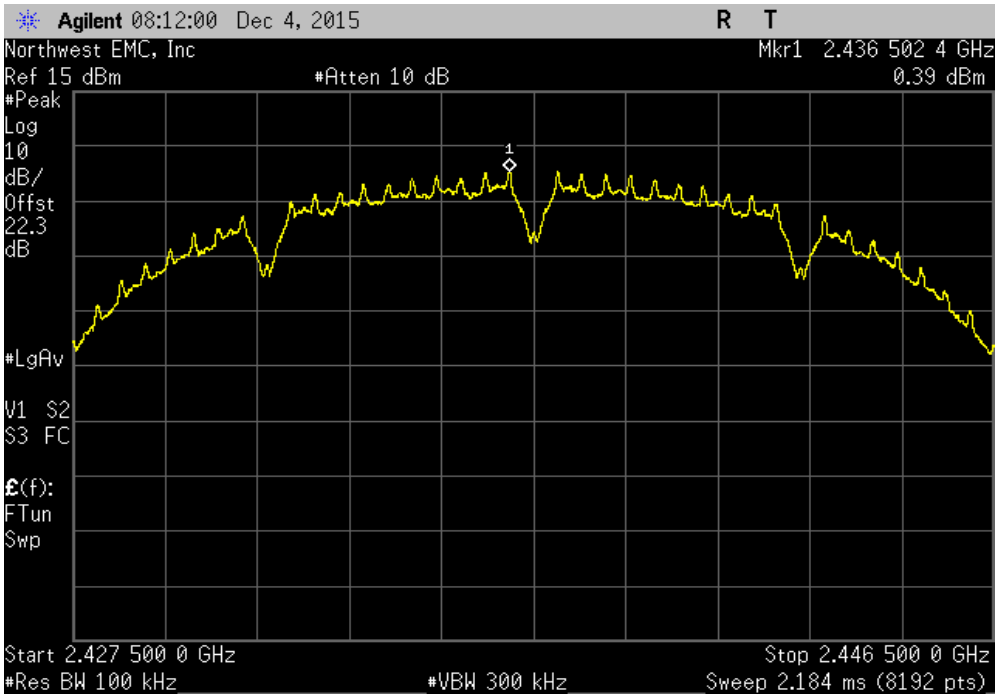
Chain A, 20 MHz, 802.11(b) 1 Mbps, Low Channel 1, 2412 MHz					
Frequency Range		Max Value (dBc)	Limit ≤ (dBc)	Result
30 MHz - 12.5 GHz		-54.12	-20	Pass



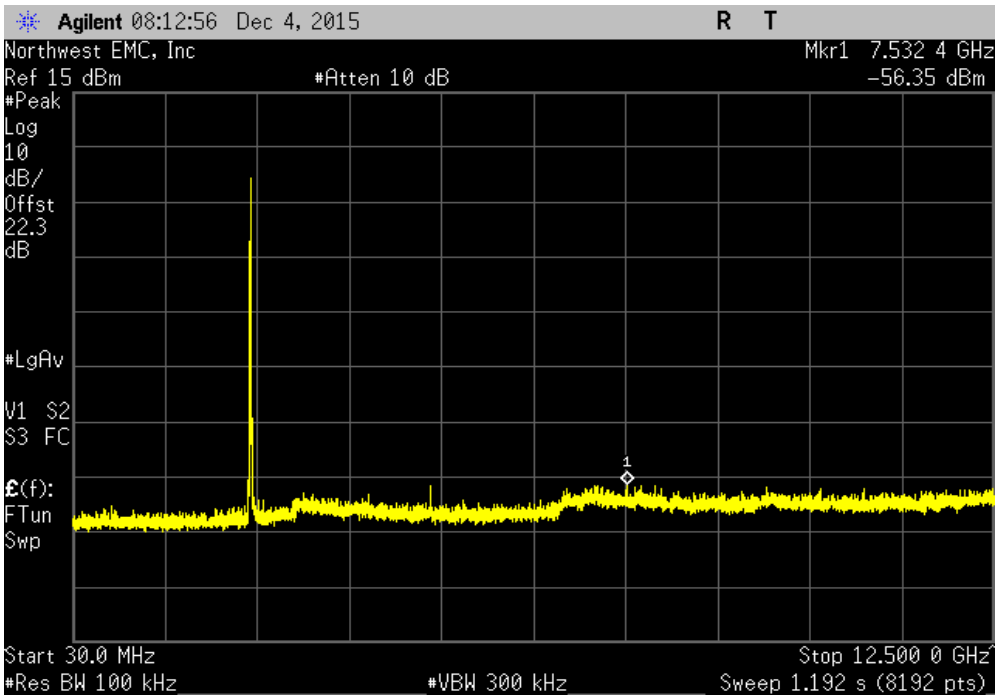
Chain A, 20 MHz, 802.11(b) 1 Mbps, Low Channel 1, 2412 MHz				
Frequency Range		Max Value (dBc)	Limit ≤ (dBc)	Result
12.5 GHz - 25 GHz		-50.02	-20	Pass



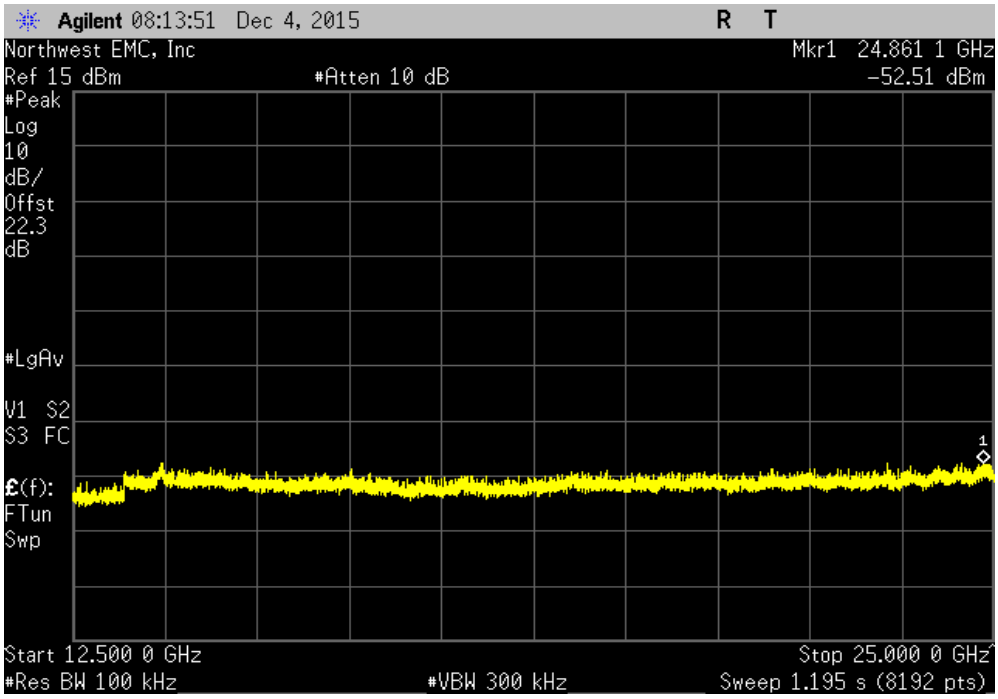
Chain A, 20 MHz, 802.11(b) 1 Mbps, Mid Channel 6, 2437 MHz						
Frequency Range				Max Value (dBc)	Limit ≤ (dBc)	Result
	Fundamental			N/A	N/A	N/A



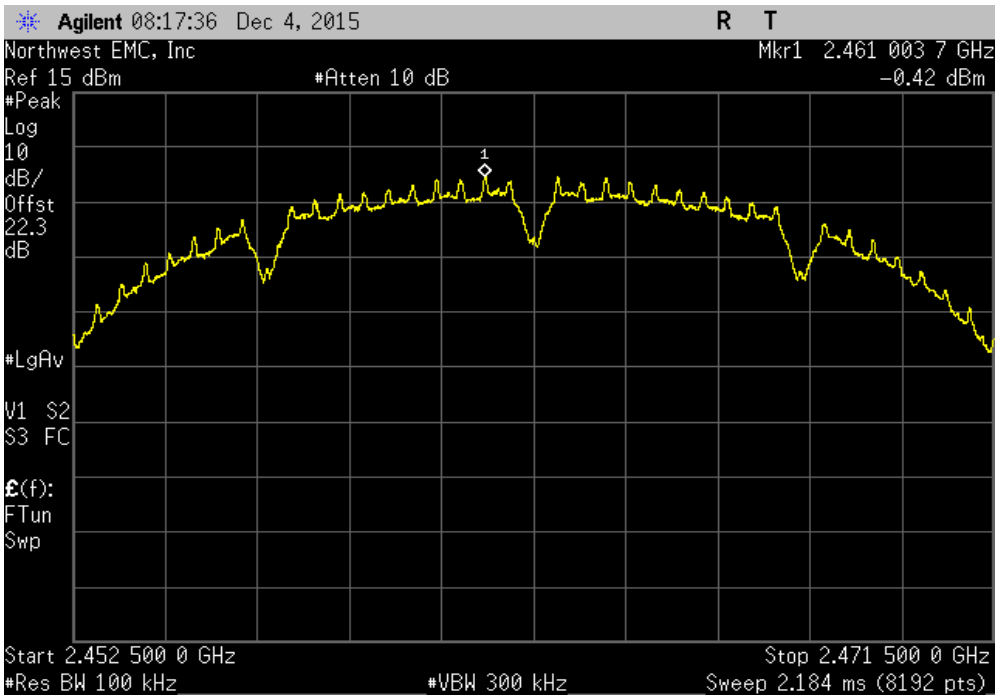
Chain A, 20 MHz, 802.11(b) 1 Mbps, Mid Channel 6, 2437 MHz				
Frequency Range		**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
30 MHz - 12.5 GHz		-56.74	-20	Pass



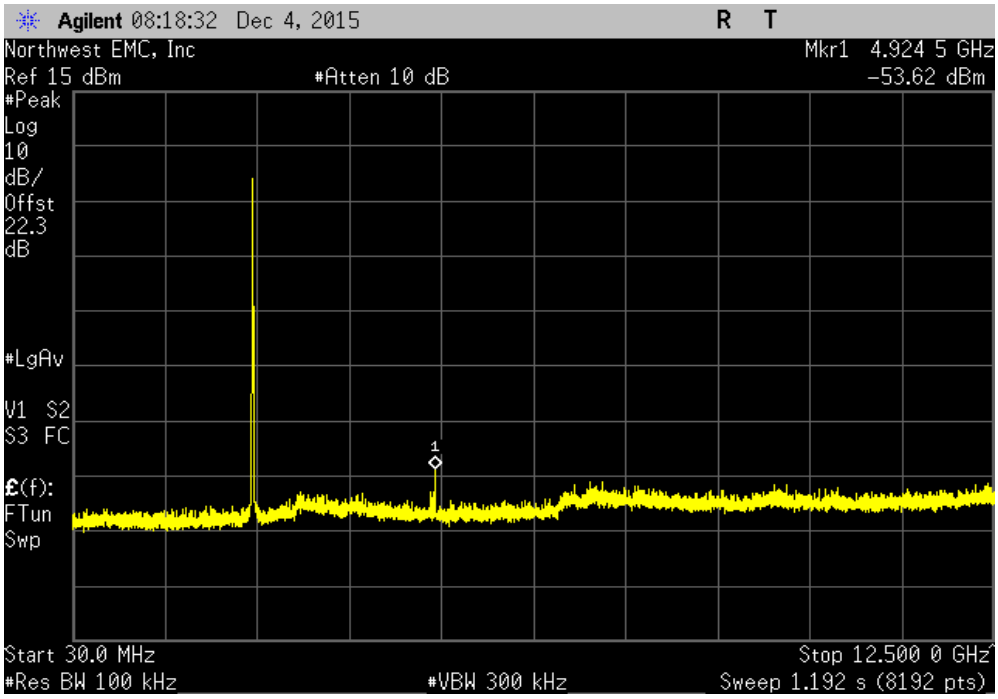
Chain A, 20 MHz, 802.11(b) 1 Mbps, Mid Channel 6, 2437 MHz				
Frequency Range		**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
12.5 GHz - 25 GHz		-52.9	-20	Pass



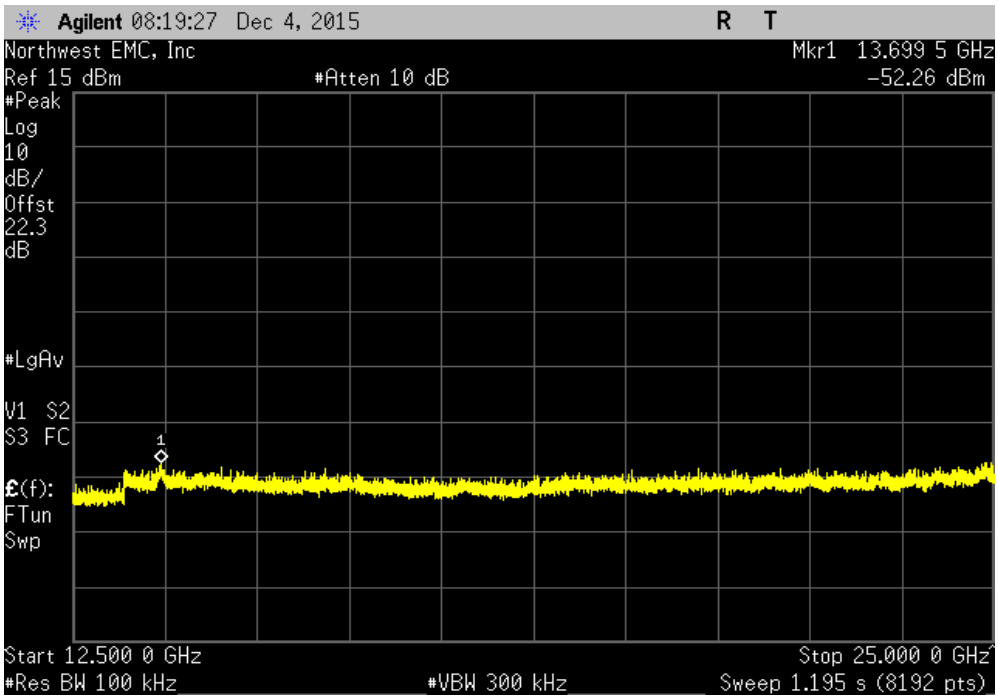
Chain A, 20 MHz, 802.11(b) 1 Mbps, High Channel 11, 2462 MHz						
	Frequency Range			Max Value (dBc)	Limit ≤ (dBc)	Result
	Fundamental			N/A	N/A	N/A



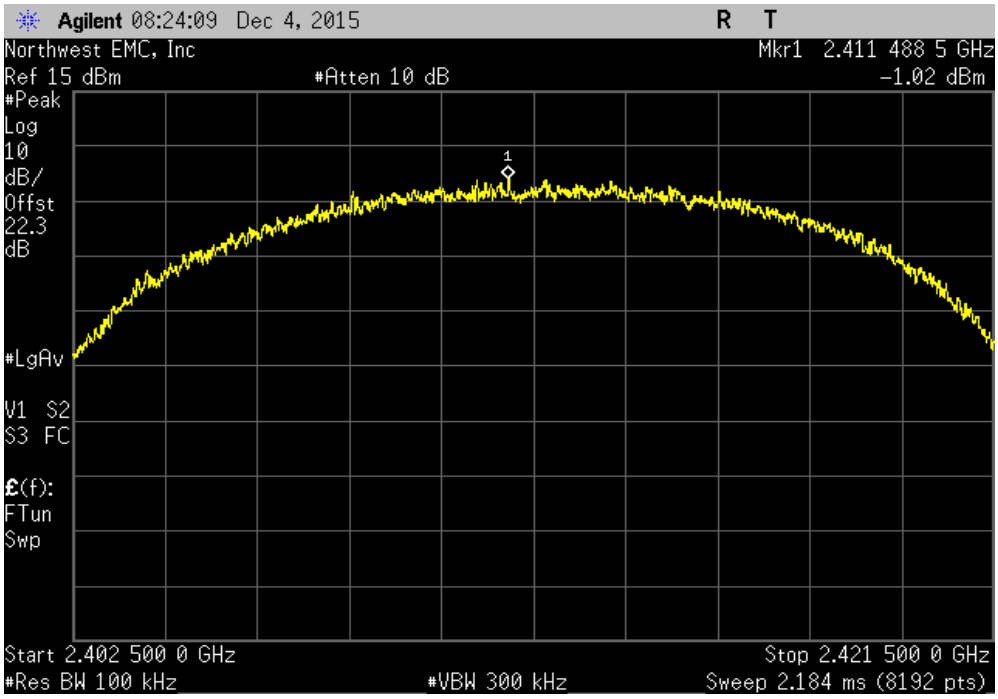
Chain A, 20 MHz, 802.11(b) 1 Mbps, High Channel 11, 2462 MHz					
Frequency Range		Max Value (dBc)	Limit ≤ (dBc)	Result
30 MHz - 12.5 GHz		-53.2	-20	Pass



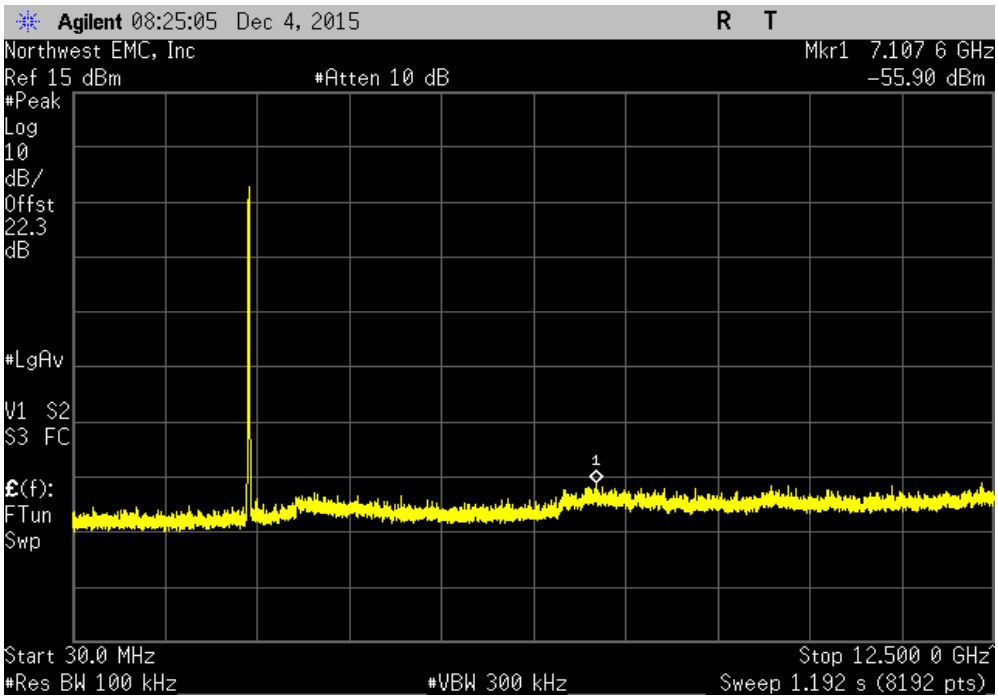
Chain A, 20 MHz, 802.11(b) 1 Mbps, High Channel 11, 2462 MHz				
Frequency Range		Max Value (dBc)	Limit ≤ (dBc)	Result
12.5 GHz - 25 GHz		-51.84	-20	Pass



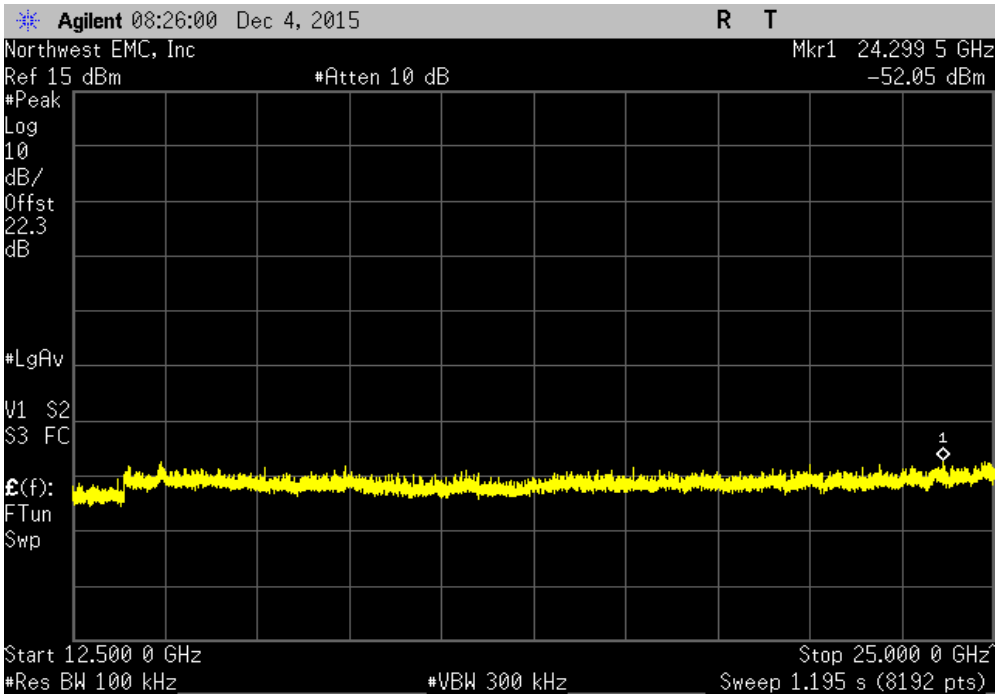
Chain A, 20 MHz, 802.11(b) 11 Mbps, Low Channel 1, 2412 MHz						
Frequency Range				Max Value (dBc)	Limit ≤ (dBc)	Result
	Fundamental			N/A	N/A	N/A



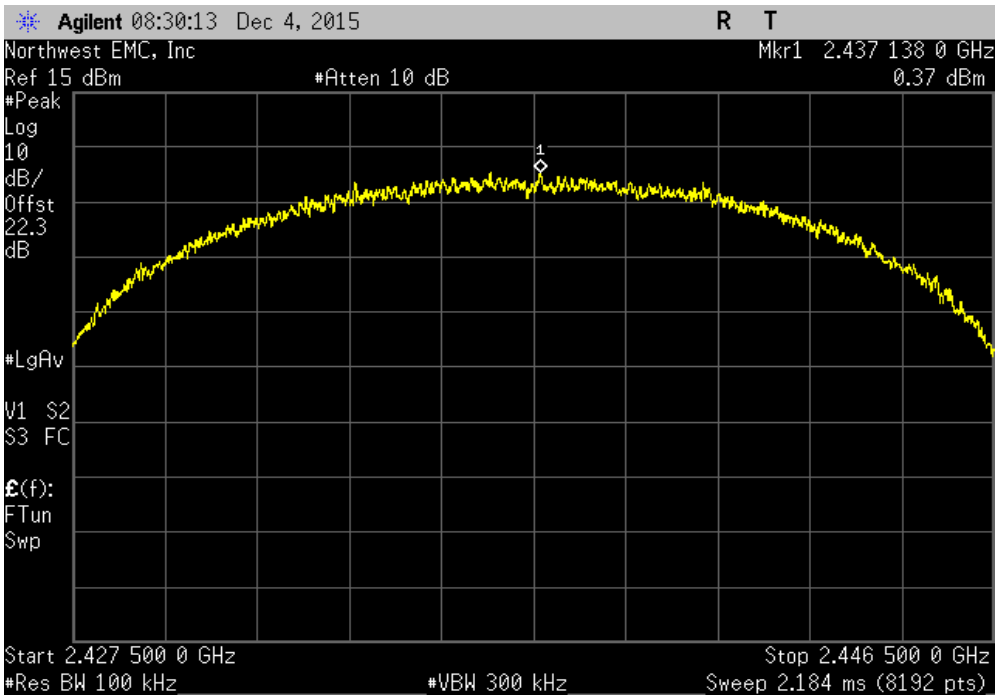
Chain A, 20 MHz, 802.11(b) 11 Mbps, Low Channel 1, 2412 MHz				
Frequency Range		Max Value (dBc)	Limit ≤ (dBc)	Result
30 MHz - 12.5 GHz		-54.88	-20	Pass



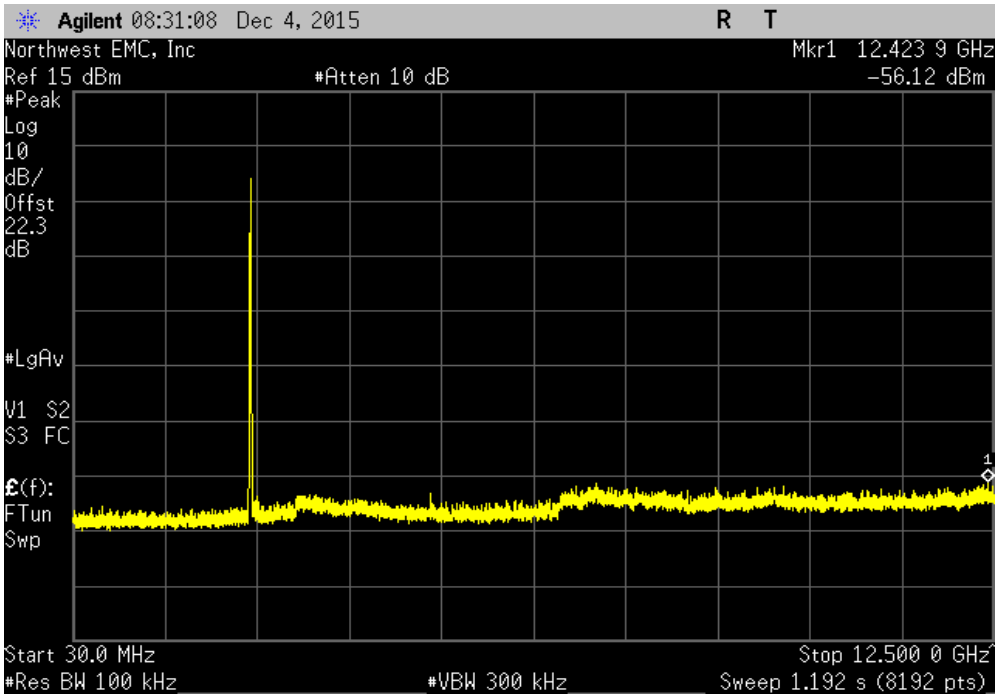
Chain A, 20 MHz, 802.11(b) 11 Mbps, Low Channel 1, 2412 MHz				
Frequency Range		Max Value (dBc)	Limit ≤ (dBc)	Result
12.5 GHz - 25 GHz		-51.03	-20	Pass



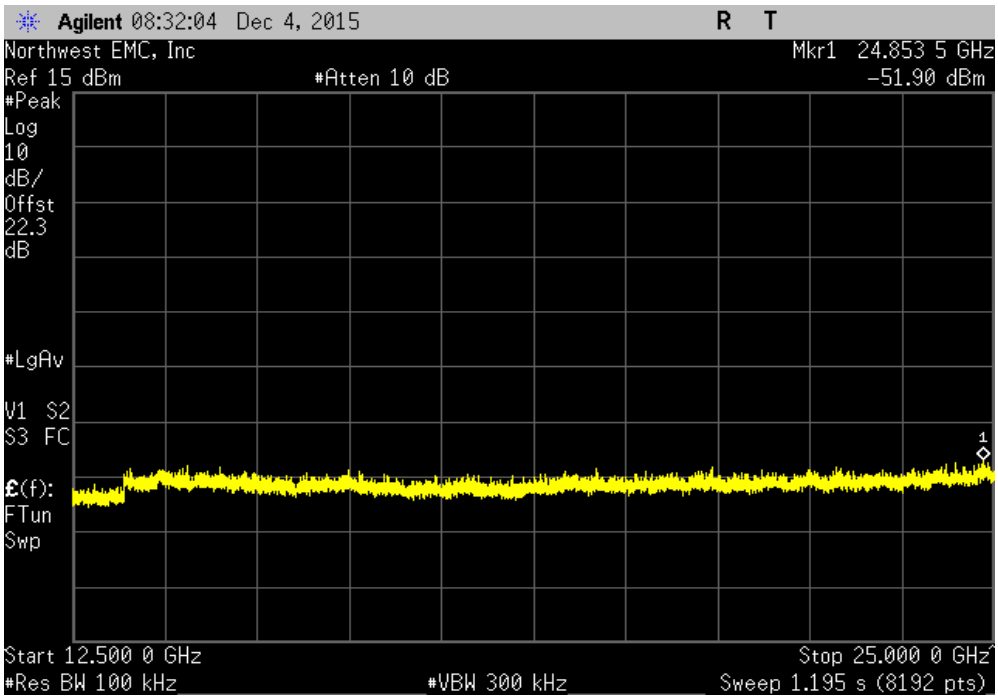
Chain A, 20 MHz, 802.11(b) 11 Mbps, Mid Channel 6, 2437 MHz						
	Frequency Range			Max Value (dBc)	Limit ≤ (dBc)	Result
	Fundamental			N/A	N/A	N/A



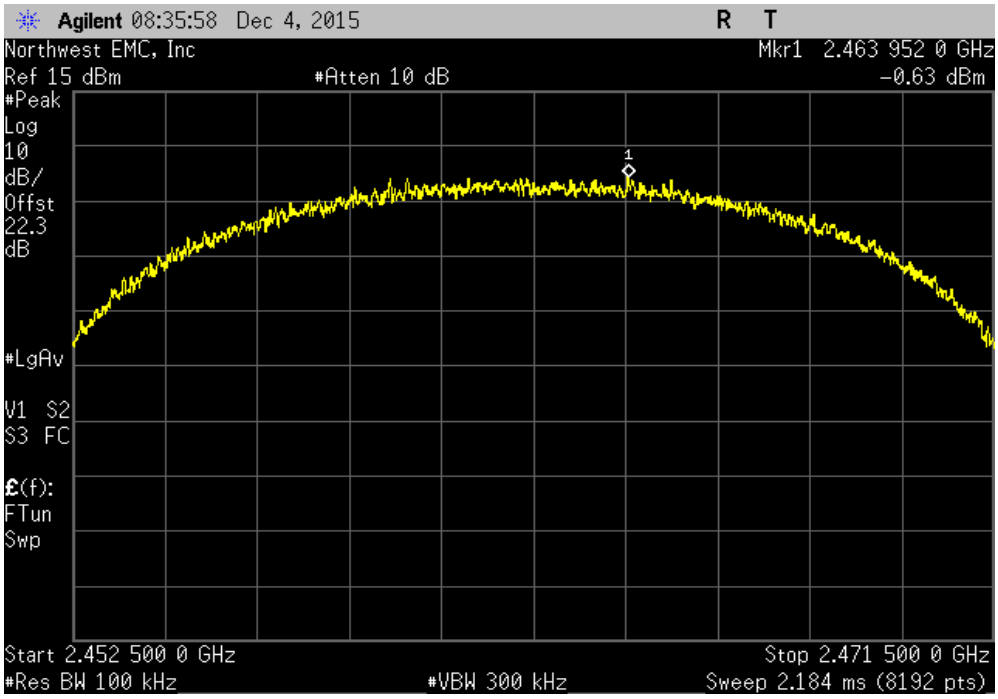
Chain A, 20 MHz, 802.11(b) 11 Mbps, Mid Channel 6, 2437 MHz					
Frequency Range		Max Value (dBc)	Limit ≤ (dBc)	Result	
30 MHz - 12.5 GHz		-56.49	-20	Pass	



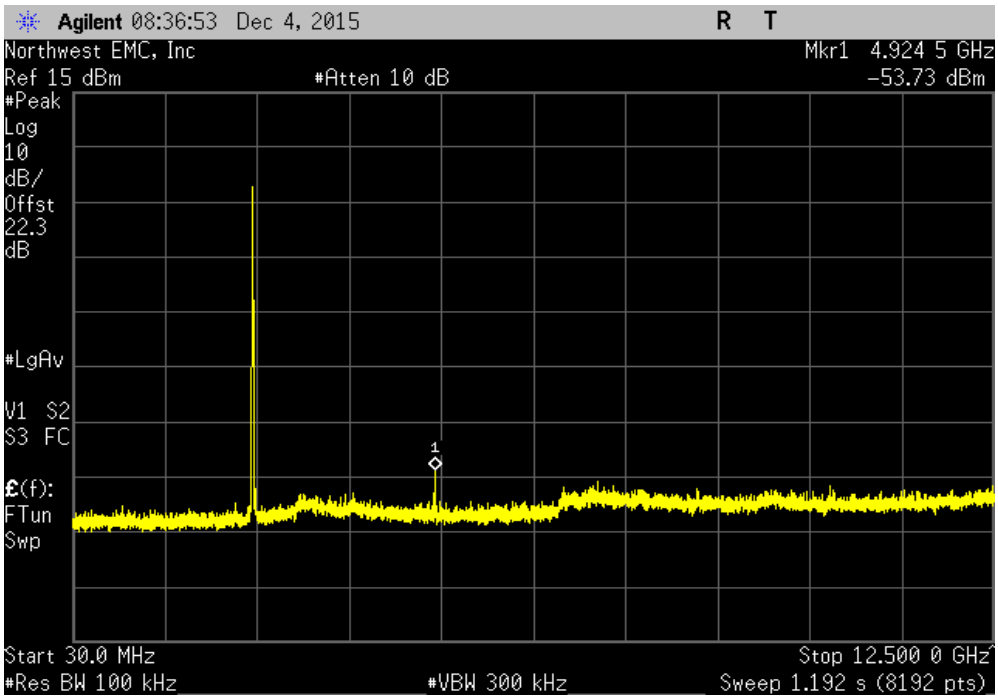
Chain A, 20 MHz, 802.11(b) 11 Mbps, Mid Channel 6, 2437 MHz				
Frequency Range		Max Value (dBc)	Limit ≤ (dBc)	Result
12.5 GHz - 25 GHz		-52.28	-20	Pass



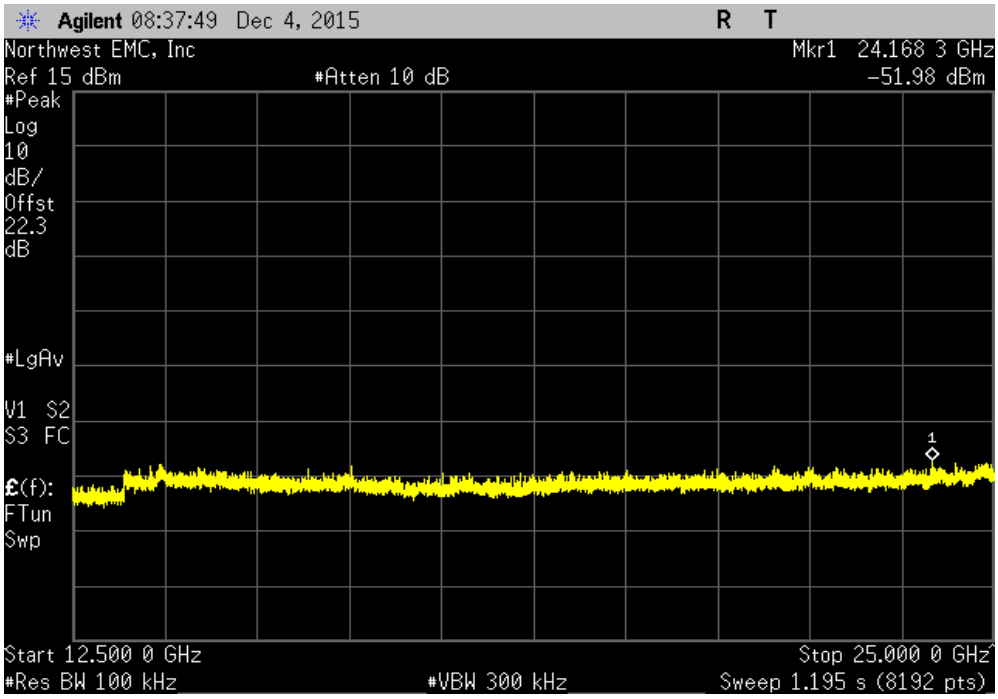
Chain A, 20 MHz, 802.11(b) 11 Mbps, High Channel 11, 2462 MHz						
Frequency Range				Max Value (dBc)	Limit ≤ (dBc)	Result
	Fundamental			N/A	N/A	N/A



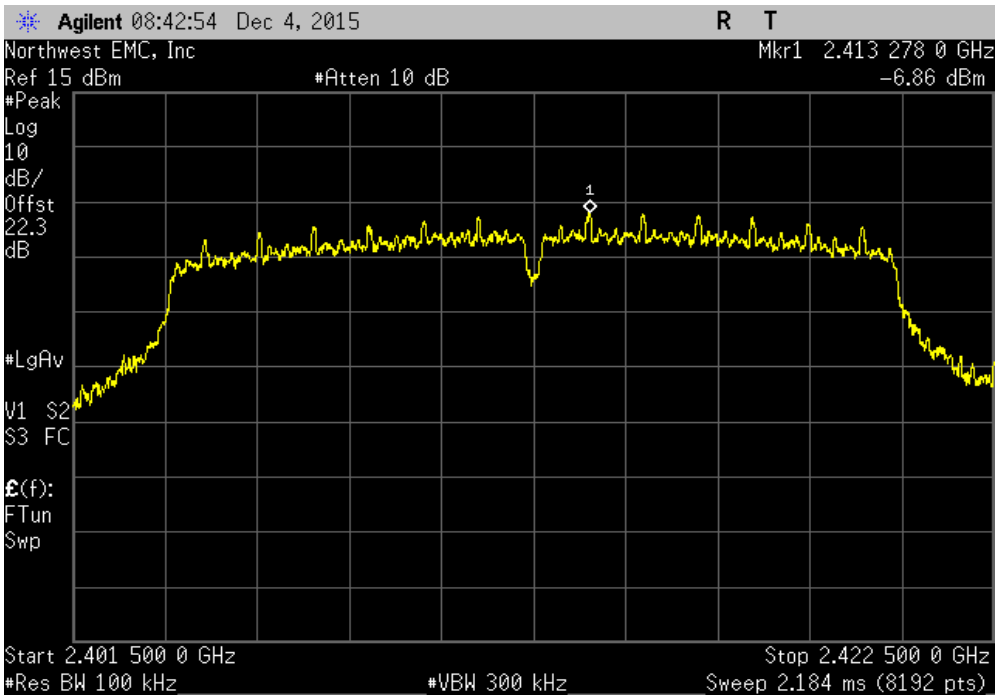
Chain A, 20 MHz, 802.11(b) 11 Mbps, High Channel 11, 2462 MHz				
Frequency Range		**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
30 MHz - 12.5 GHz		-53.1	-20	Pass



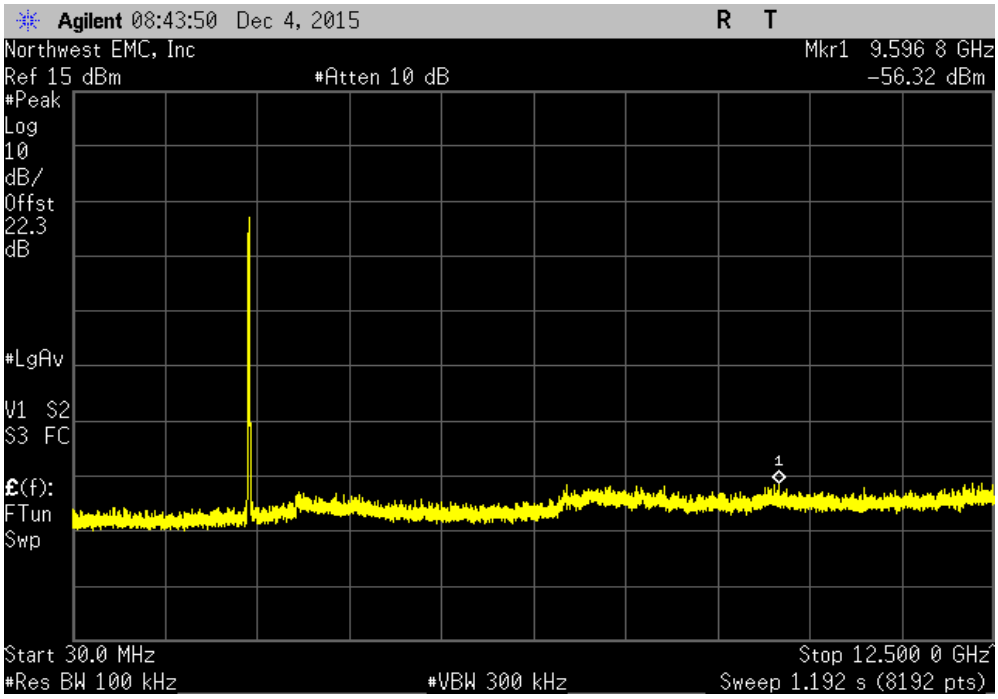
Chain A, 20 MHz, 802.11(b) 11 Mbps, High Channel 11, 2462 MHz				
Frequency Range		**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
12.5 GHz - 25 GHz		-51.35	-20	Pass



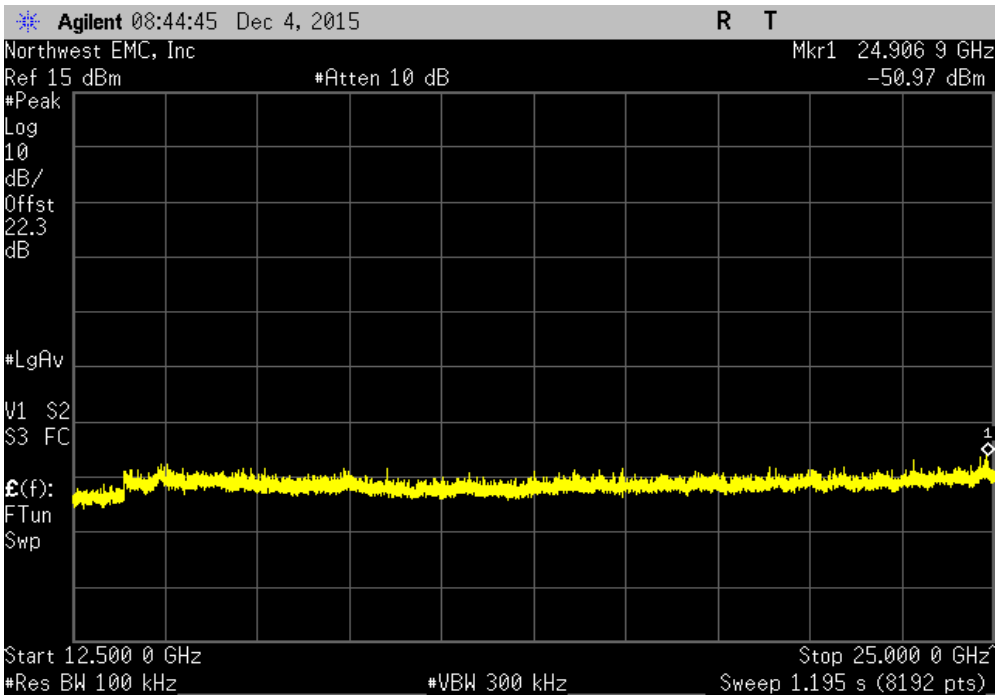
Chain A, 20 MHz, 802.11(g) 6 Mbps, Low Channel 1, 2412 MHz						
	Frequency Range			Max Value (dBc)	Limit ≤ (dBc)	Result
	Fundamental			N/A	N/A	N/A



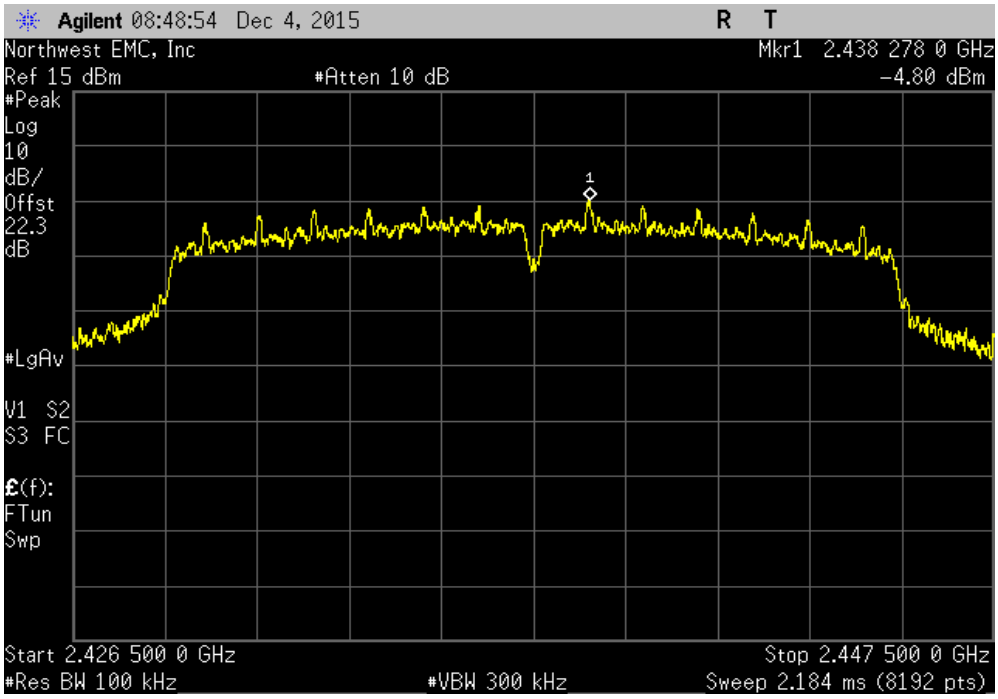
Chain A, 20 MHz, 802.11(g) 6 Mbps, Low Channel 1, 2412 MHz					
Frequency Range		Max Value (dBc)	Limit ≤ (dBc)	Result	
30 MHz - 12.5 GHz		-49.46	-20	Pass	



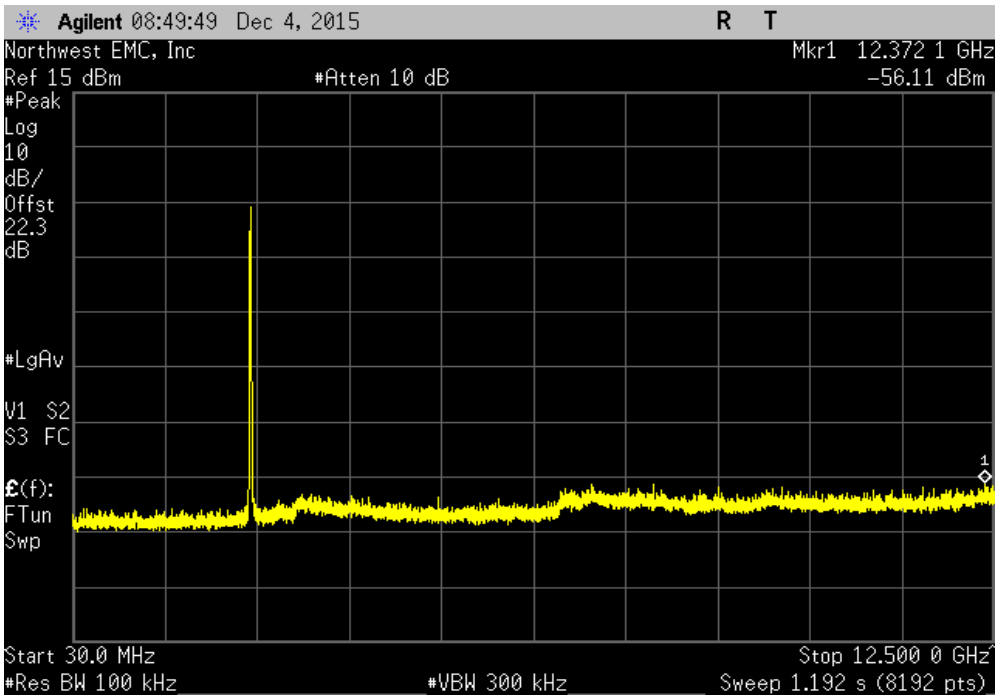
Chain A, 20 MHz, 802.11(g) 6 Mbps, Low Channel 1, 2412 MHz				
Frequency Range		Max Value (dBc)	Limit ≤ (dBc)	Result
12.5 GHz - 25 GHz		-44.11	-20	Pass



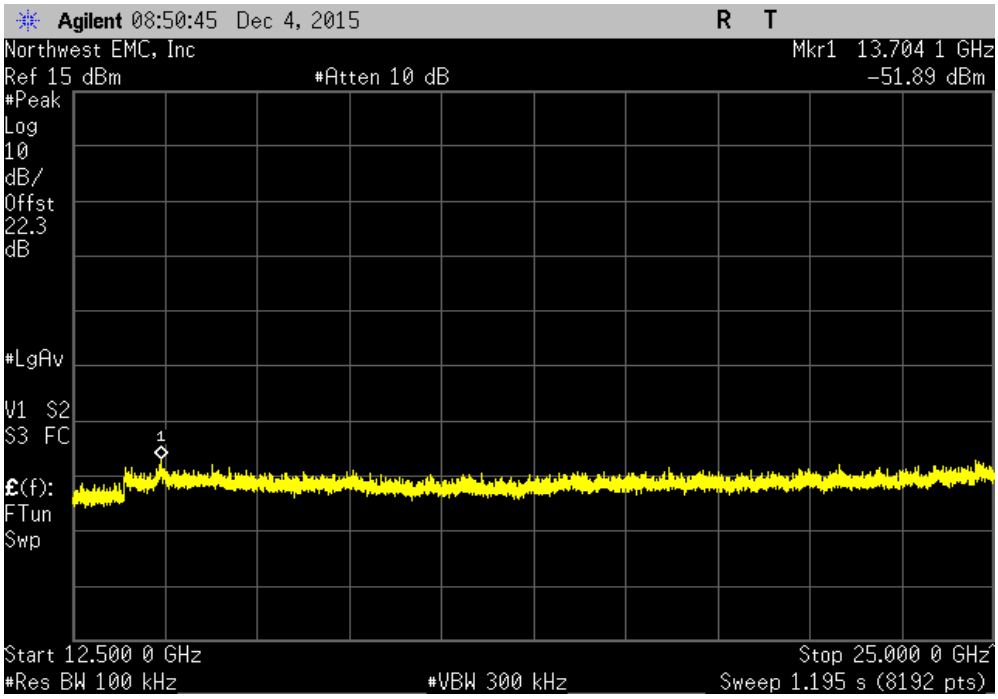
Chain A, 20 MHz, 802.11(g) 6 Mbps, Mid Channel 6, 2437 MHz						
Frequency Range				Max Value (dBc)	Limit ≤ (dBc)	Result
	Fundamental			N/A	N/A	N/A



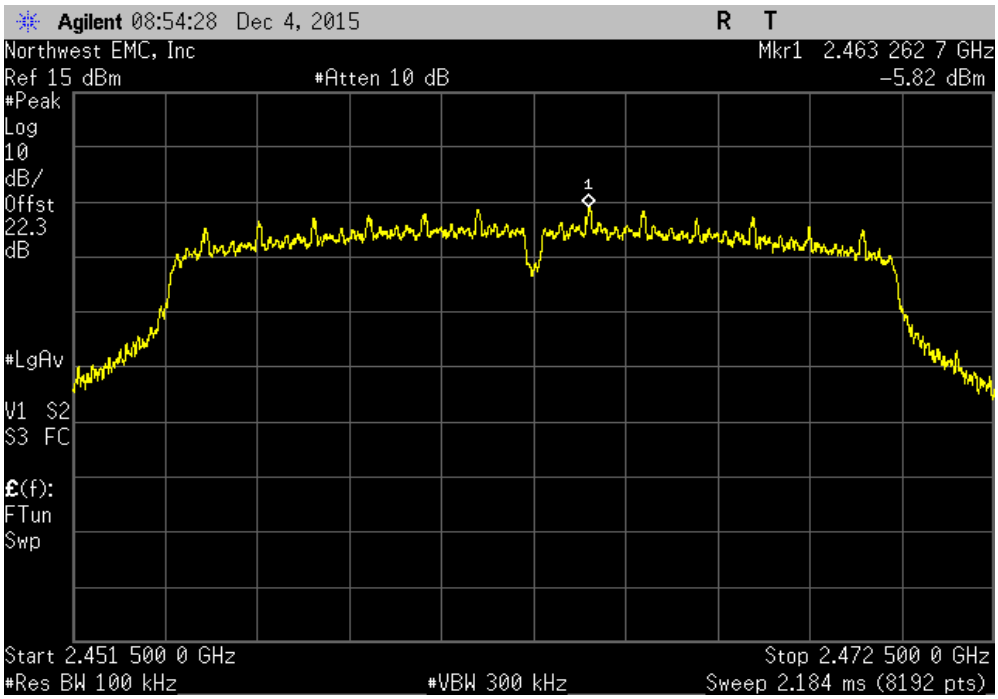
Chain A, 20 MHz, 802.11(g) 6 Mbps, Mid Channel 6, 2437 MHz				
Frequency Range		**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
30 MHz - 12.5 GHz		-51.3	-20	Pass



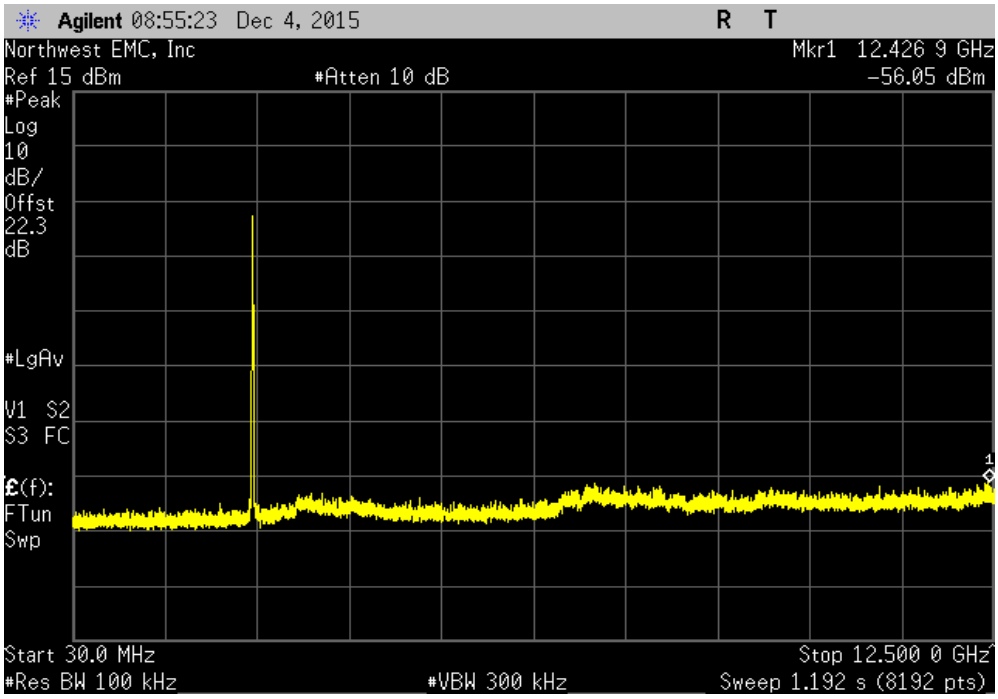
Chain A, 20 MHz, 802.11(g) 6 Mbps, Mid Channel 6, 2437 MHz				
Frequency Range		**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
12.5 GHz - 25 GHz		-47.08	-20	Pass



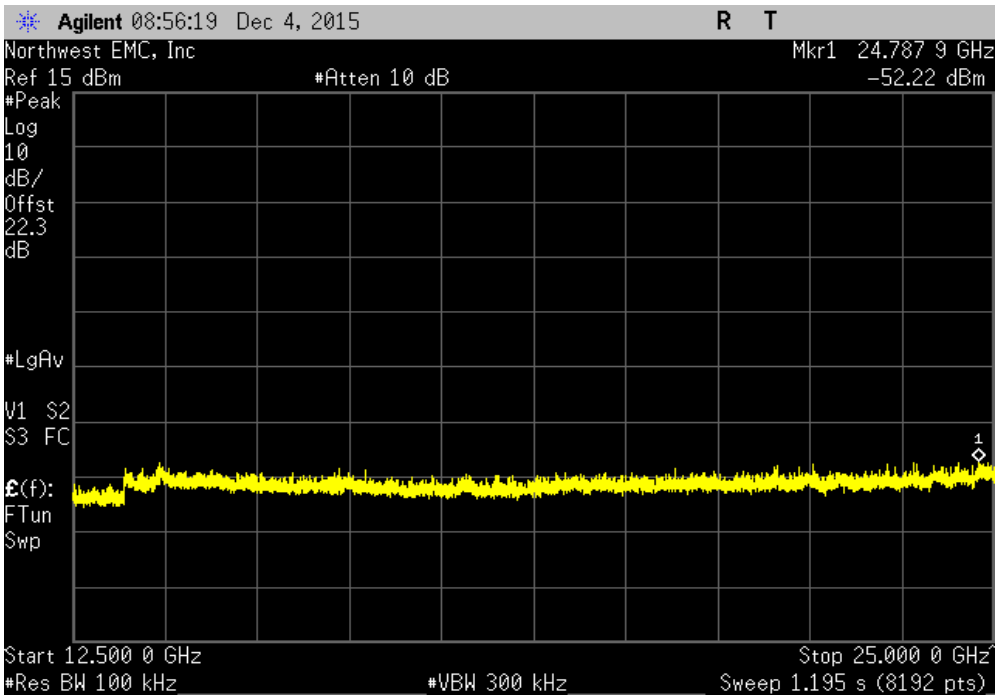
Chain A, 20 MHz, 802.11(g) 6 Mbps, High Channel 11, 2462 MHz						
	Frequency Range			Max Value (dBc)	Limit ≤ (dBc)	Result
	Fundamental			N/A	N/A	N/A



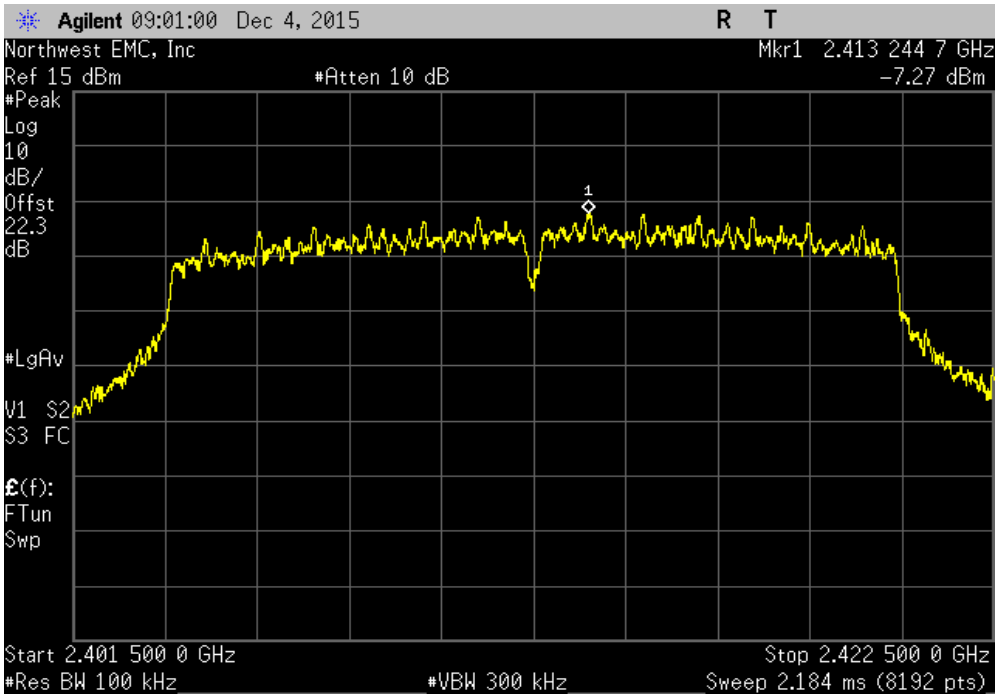
Chain A, 20 MHz, 802.11(g) 6 Mbps, High Channel 11, 2462 MHz					
Frequency Range		Max Value (dBc)	Limit ≤ (dBc)	Result	
30 MHz - 12.5 GHz		-50.23	-20	Pass	



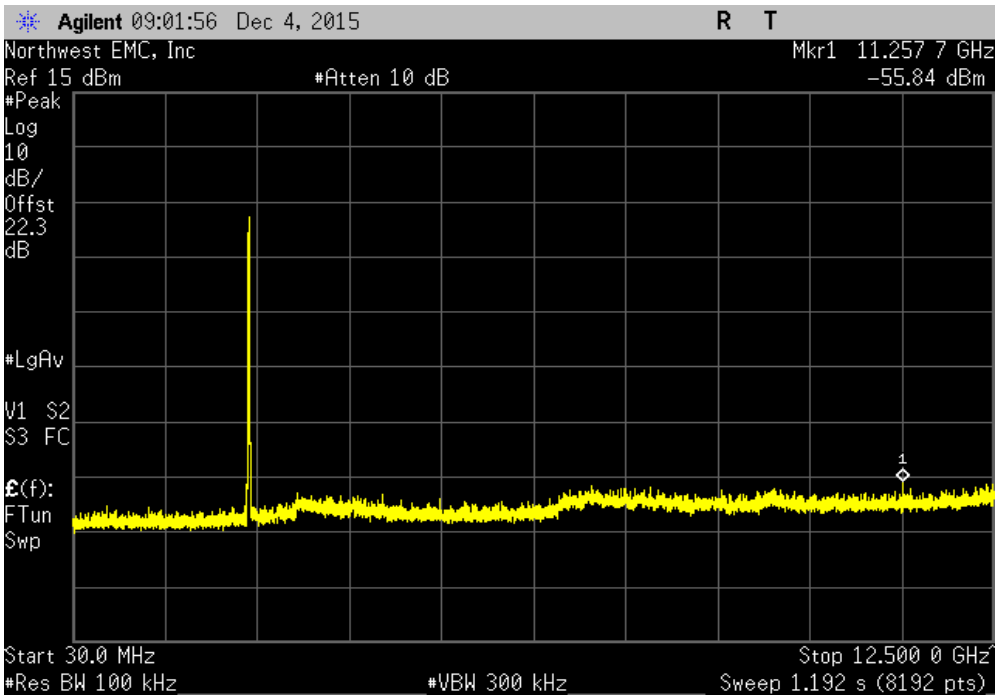
Chain A, 20 MHz, 802.11(g) 6 Mbps, High Channel 11, 2462 MHz				
Frequency Range		Max Value (dBc)	Limit ≤ (dBc)	Result
12.5 GHz - 25 GHz		-46.4	-20	Pass



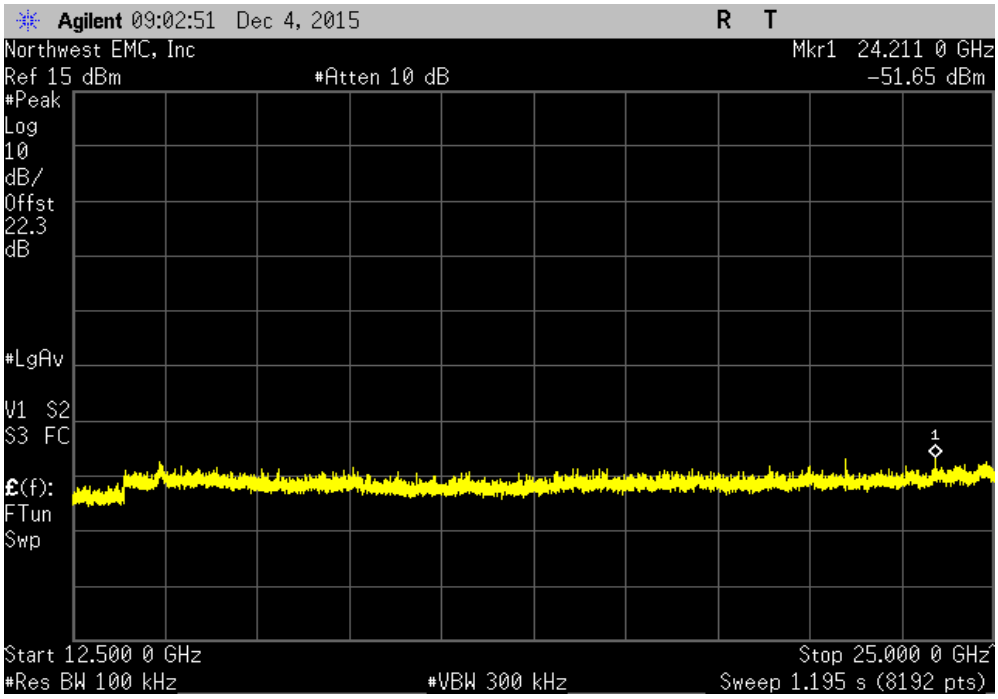
Chain A, 20 MHz, 802.11(g) 36 Mbps, Low Channel 1, 2412 MHz						
	Frequency Range			Max Value (dBc)	Limit ≤ (dBc)	Result
	Fundamental			N/A	N/A	N/A



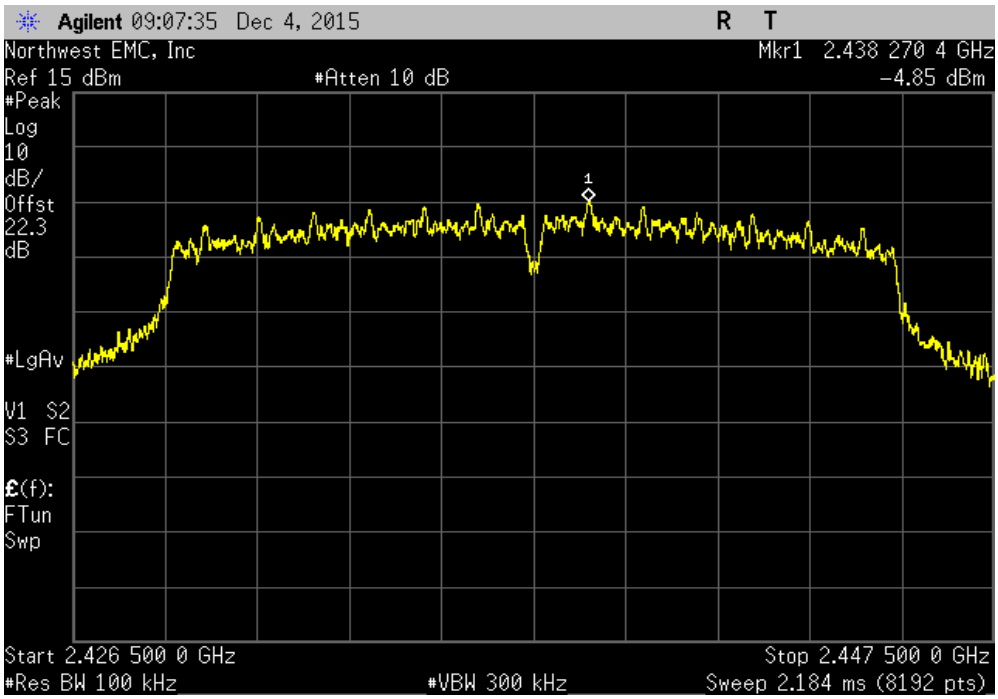
Chain A, 20 MHz, 802.11(g) 36 Mbps, Low Channel 1, 2412 MHz				
Frequency Range		**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
30 MHz - 12.5 GHz		-48.57	-20	Pass



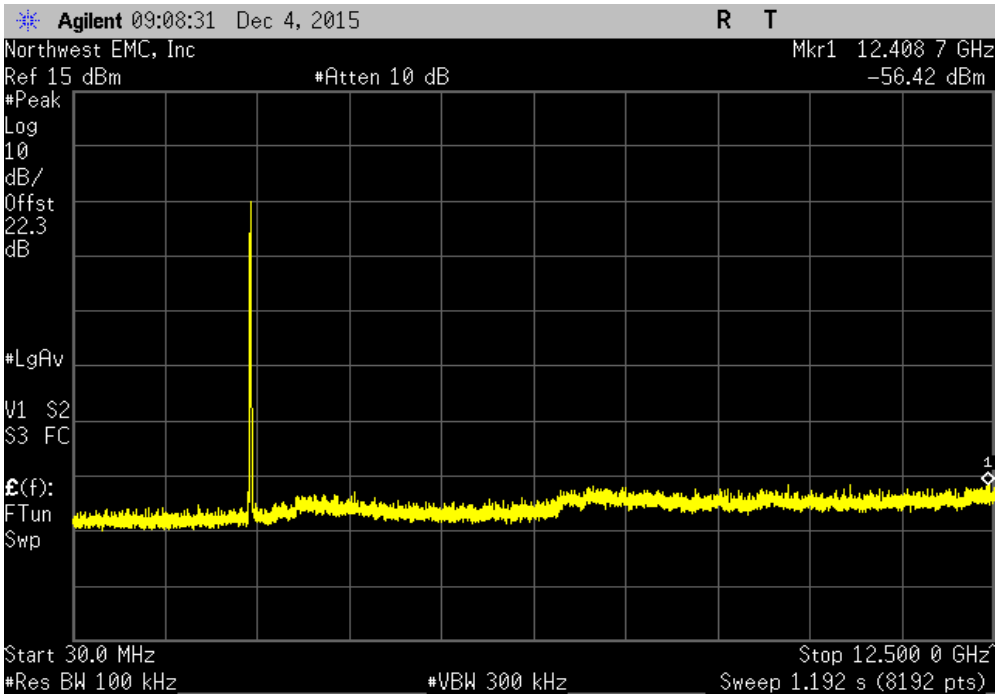
Chain A, 20 MHz, 802.11(g) 36 Mbps, Low Channel 1, 2412 MHz				
Frequency Range		**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
12.5 GHz - 25 GHz		-44.38	-20	Pass



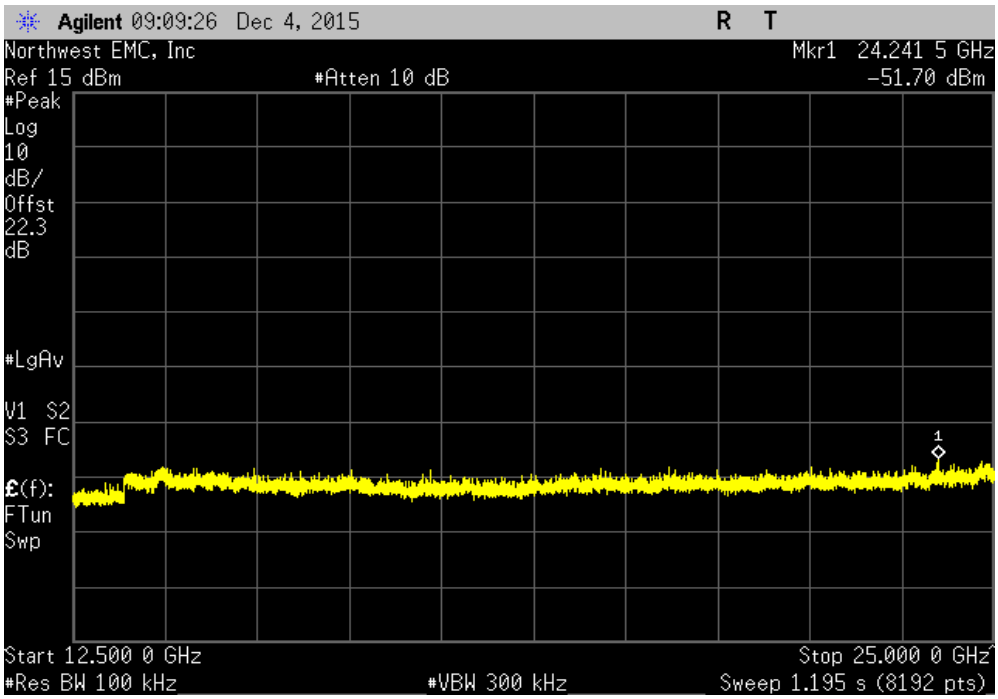
Chain A, 20 MHz, 802.11(g) 36 Mbps, Mid Channel 6, 2437 MHz						
	Frequency Range			Max Value (dBc)	Limit ≤ (dBc)	Result
	Fundamental			N/A	N/A	N/A



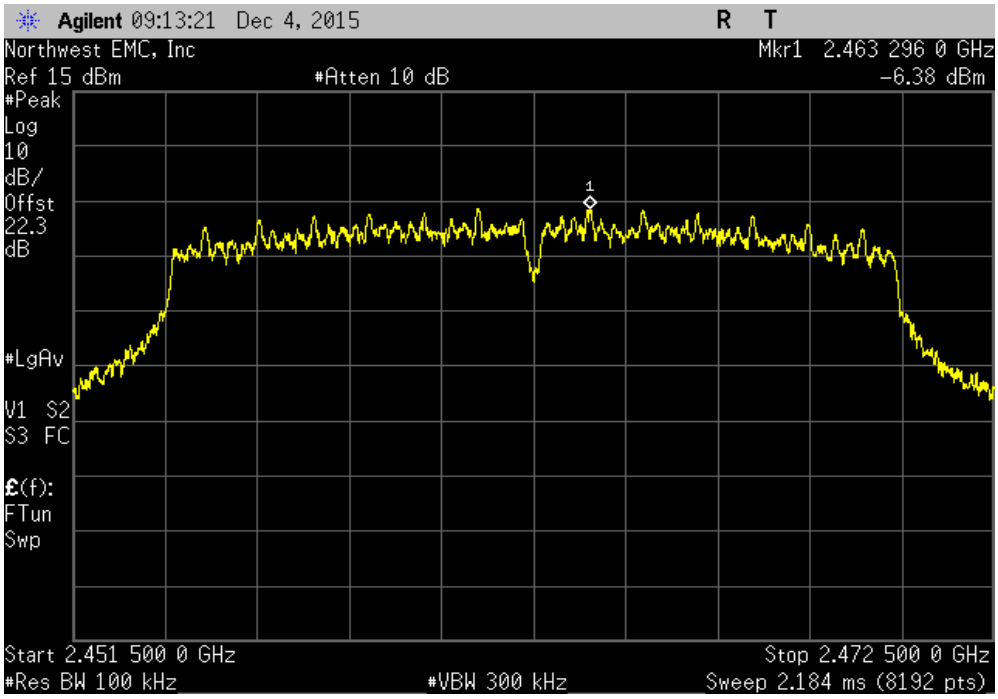
Chain A, 20 MHz, 802.11(g) 36 Mbps, Mid Channel 6, 2437 MHz					
Frequency Range		Max Value (dBc)	Limit ≤ (dBc)	Result
30 MHz - 12.5 GHz		-51.57	-20	Pass



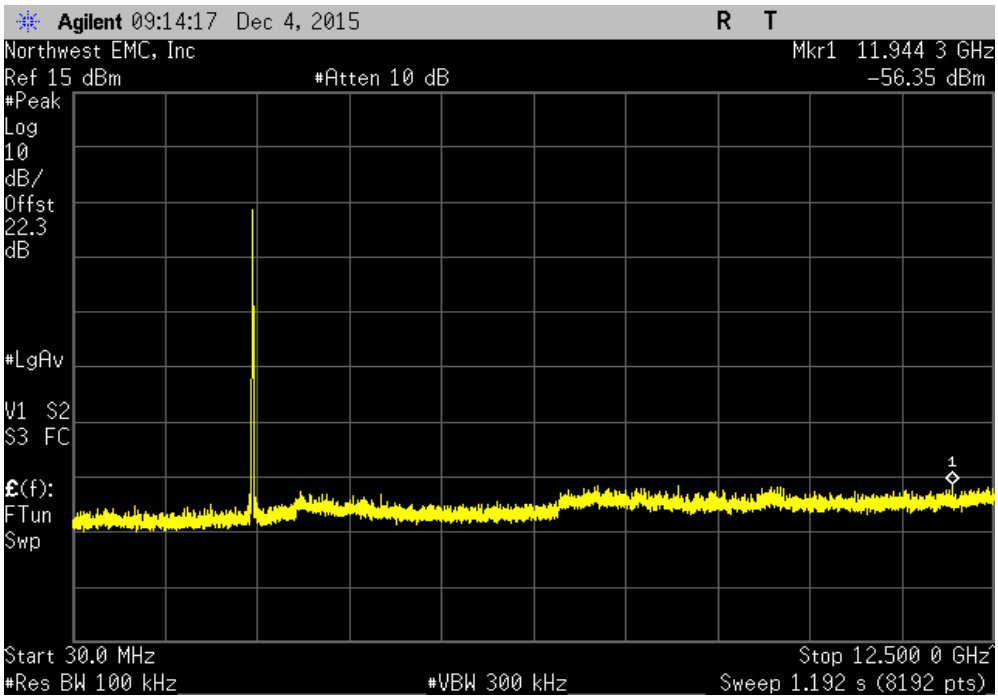
Chain A, 20 MHz, 802.11(g) 36 Mbps, Mid Channel 6, 2437 MHz				
Frequency Range		Max Value (dBc)	Limit ≤ (dBc)	Result
12.5 GHz - 25 GHz		-46.85	-20	Pass



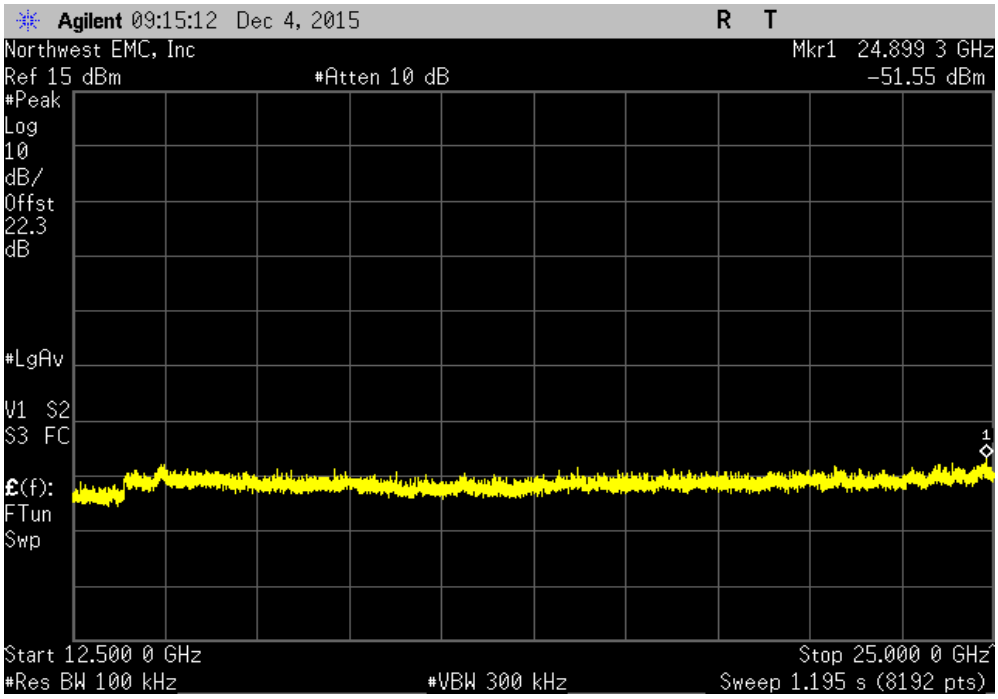
Chain A, 20 MHz, 802.11(g) 36 Mbps, High Channel 11, 2462 MHz						
	Frequency Range			Max Value (dBc)	Limit ≤ (dBc)	Result
	Fundamental			N/A	N/A	N/A



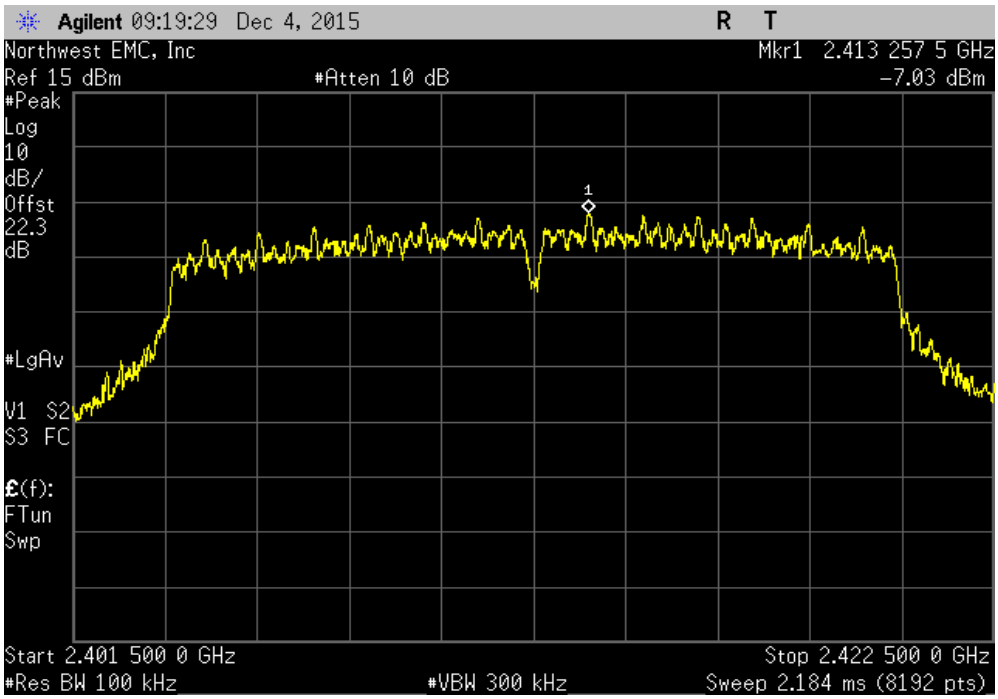
Chain A, 20 MHz, 802.11(g) 36 Mbps, High Channel 11, 2462 MHz				
Frequency Range		Max Value (dBc)	Limit ≤ (dBc)	Result
30 MHz - 12.5 GHz		-49.97	-20	Pass



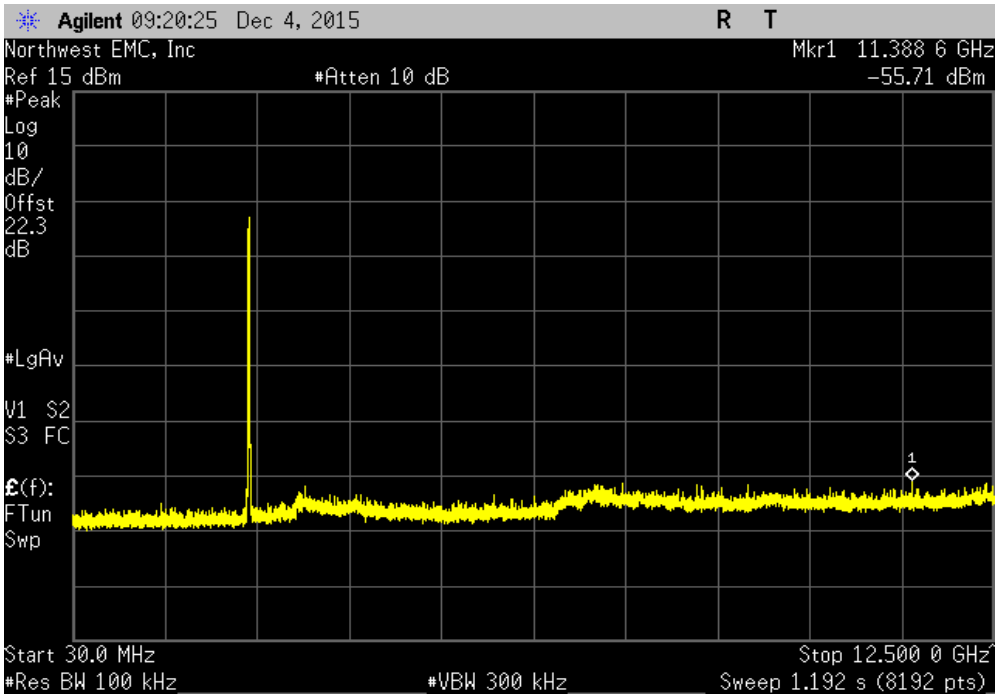
Chain A, 20 MHz, 802.11(g) 36 Mbps, High Channel 11, 2462 MHz				
Frequency Range		Max Value (dBc)	Limit ≤ (dBc)	Result
12.5 GHz - 25 GHz		-45.17	-20	Pass



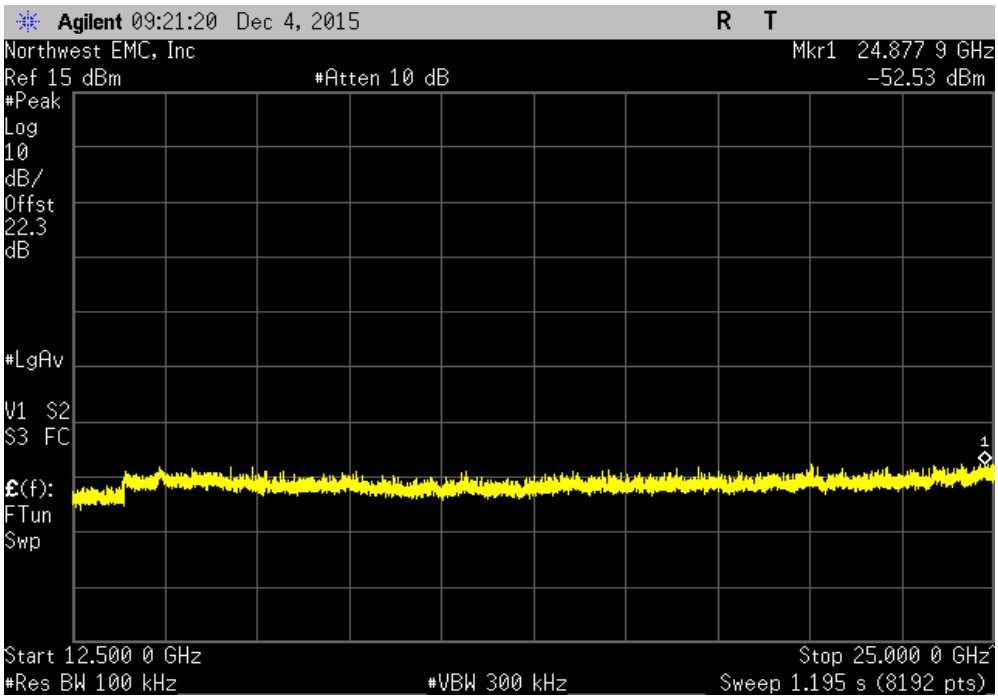
Chain A, 20 MHz, 802.11(g) 54 Mbps, Low Channel 1, 2412 MHz						
	Frequency Range			Max Value (dBc)	Limit ≤ (dBc)	Result
	Fundamental			N/A	N/A	N/A



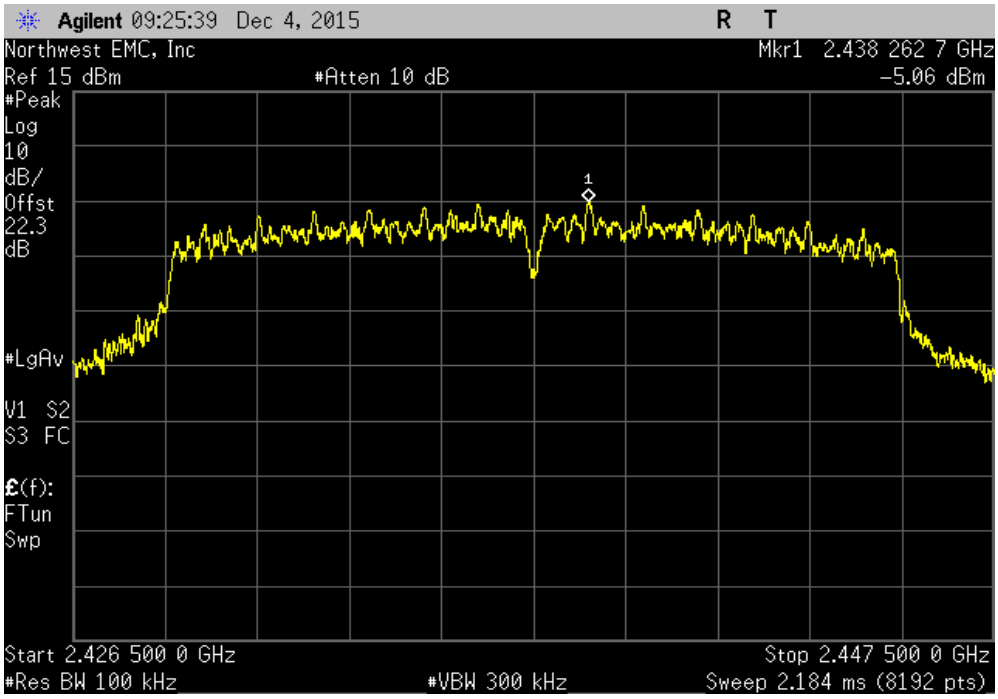
Chain A, 20 MHz, 802.11(g) 54 Mbps, Low Channel 1, 2412 MHz					
Frequency Range		Max Value (dBc)	Limit ≤ (dBc)	Result	
30 MHz - 12.5 GHz		-48.68	-20	Pass	



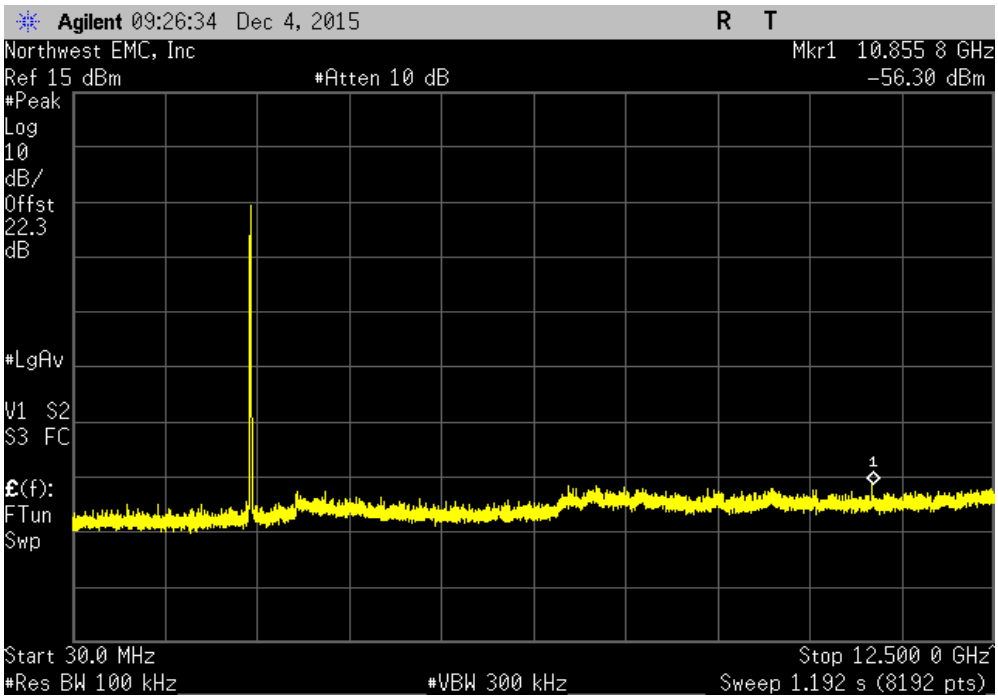
Chain A, 20 MHz, 802.11(g) 54 Mbps, Low Channel 1, 2412 MHz				
Frequency Range		Max Value (dBc)	Limit ≤ (dBc)	Result
12.5 GHz - 25 GHz		-45.5	-20	Pass



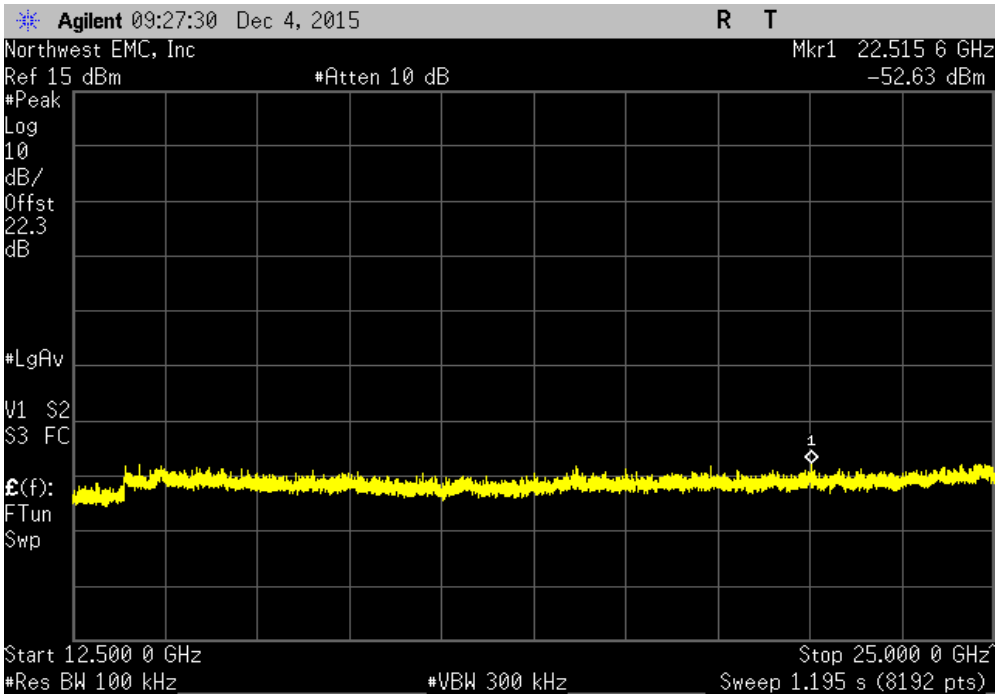
Chain A, 20 MHz, 802.11(g) 54 Mbps, Mid Channel 6, 2437 MHz						
Frequency Range				Max Value (dBc)	Limit ≤ (dBc)	Result
	Fundamental			N/A	N/A	N/A



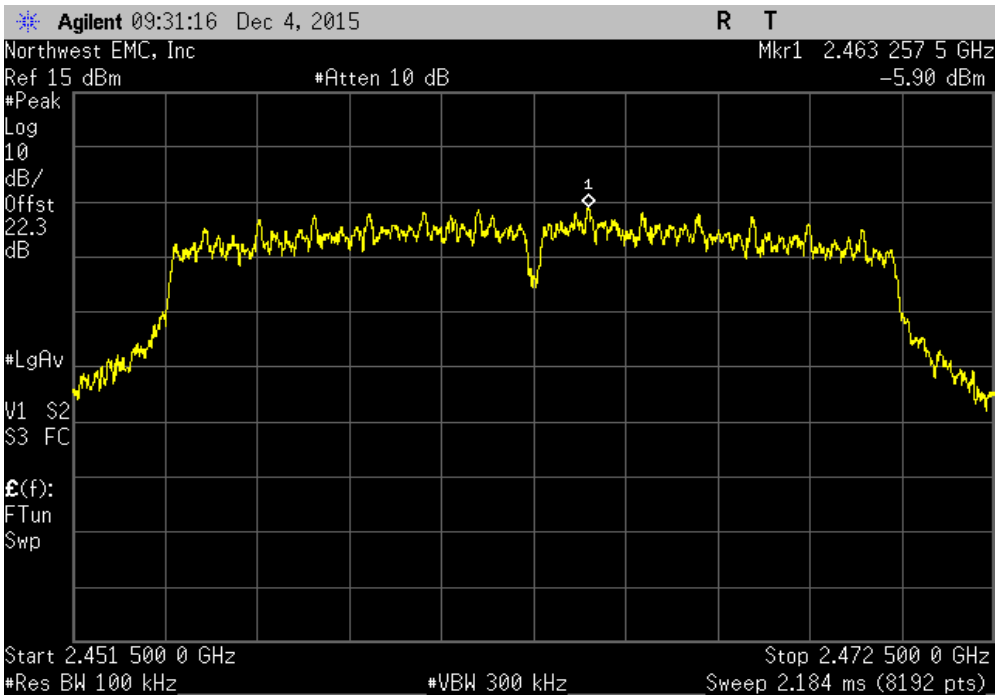
Chain A, 20 MHz, 802.11(g) 54 Mbps, Mid Channel 6, 2437 MHz				
Frequency Range		**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
30 MHz - 12.5 GHz		-51.24	-20	Pass



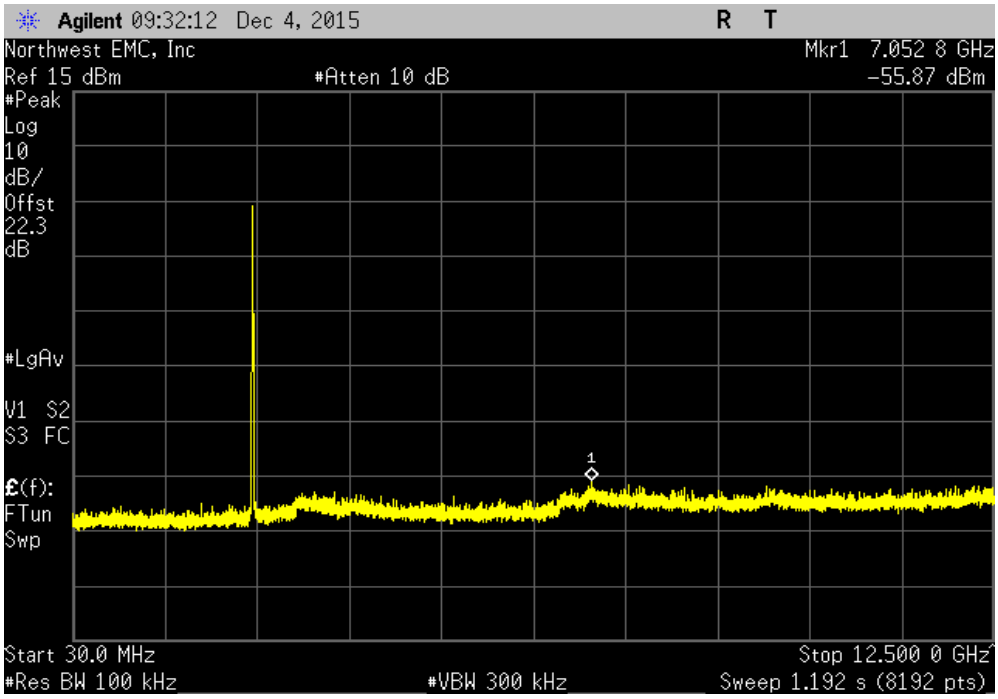
Chain A, 20 MHz, 802.11(g) 54 Mbps, Mid Channel 6, 2437 MHz				
Frequency Range		**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
12.5 GHz - 25 GHz		-47.57	-20	Pass



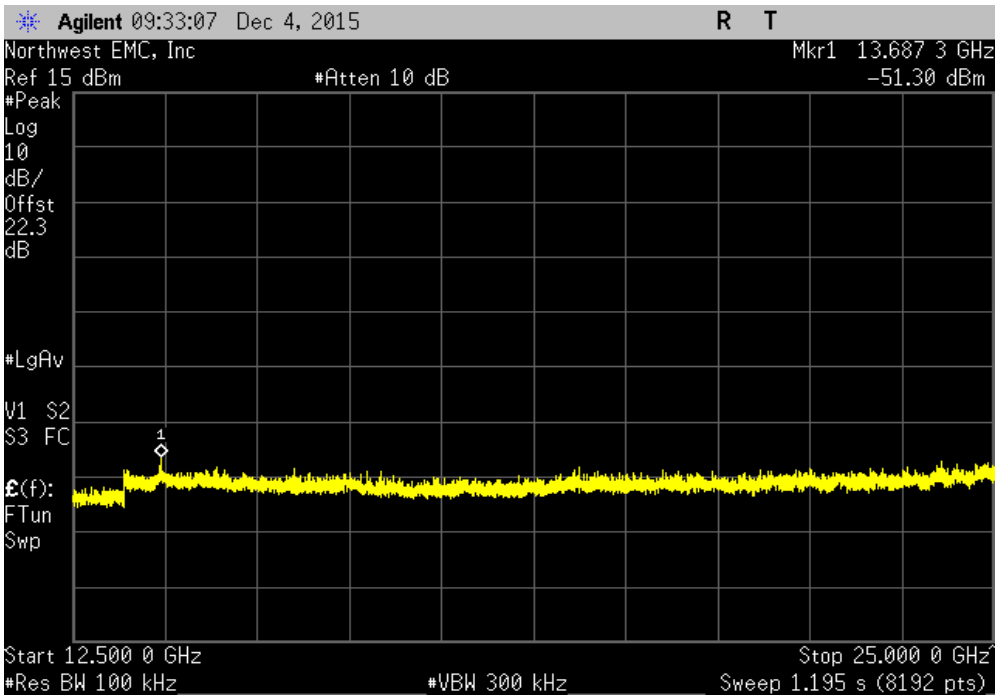
Chain A, 20 MHz, 802.11(g) 54 Mbps, High Channel 11, 2462 MHz						
	Frequency Range			Max Value (dBc)	Limit ≤ (dBc)	Result
	Fundamental			N/A	N/A	N/A



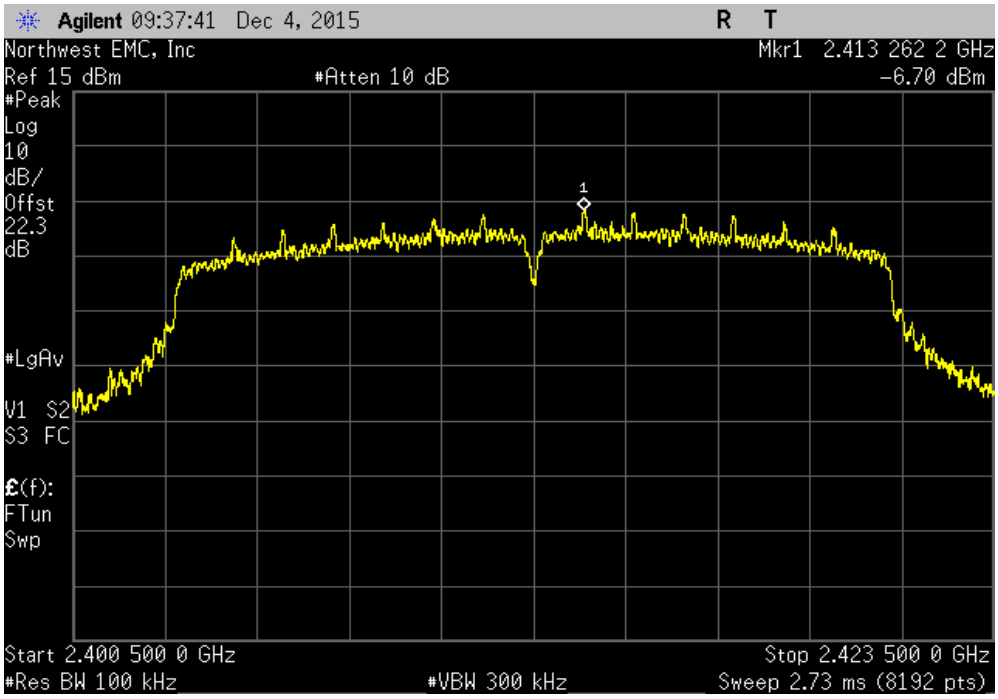
Chain A, 20 MHz, 802.11(g) 54 Mbps, High Channel 11, 2462 MHz					
Frequency Range		Max Value (dBc)	Limit ≤ (dBc)	Result
30 MHz - 12.5 GHz		-49.97	-20	Pass



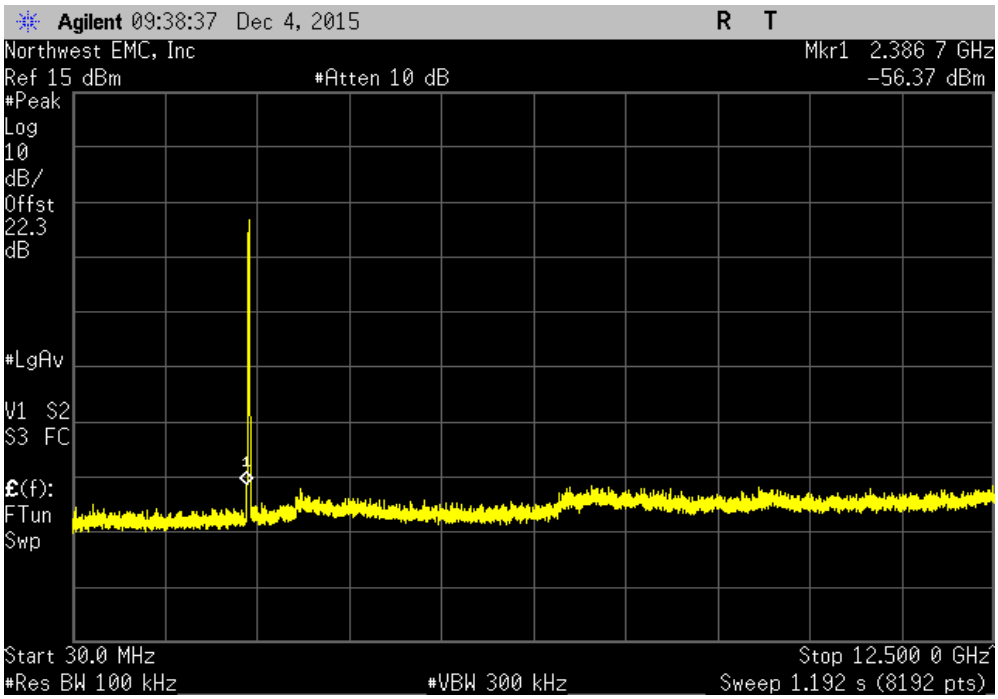
Chain A, 20 MHz, 802.11(g) 54 Mbps, High Channel 11, 2462 MHz				
Frequency Range		Max Value (dBc)	Limit ≤ (dBc)	Result
12.5 GHz - 25 GHz		-45.4	-20	Pass



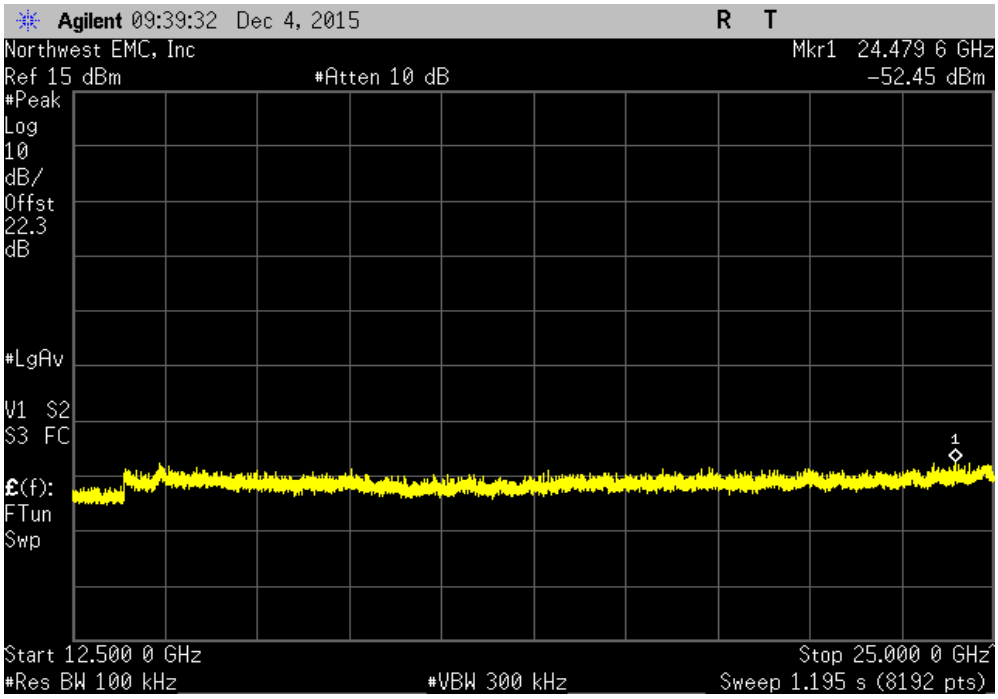
Chain A, 20 MHz, 802.11(n) MCS0, Low Channel 1, 2412 MHz						
Frequency Range				Max Value (dBc)	Limit ≤ (dBc)	Result
	Fundamental			N/A	N/A	N/A



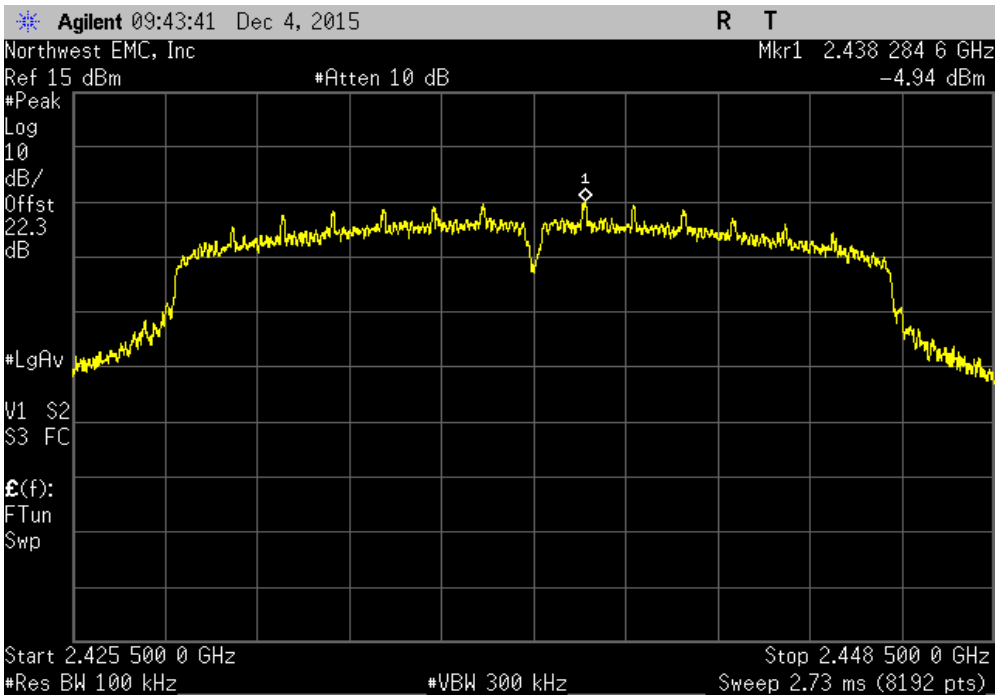
Chain A, 20 MHz, 802.11(n) MCS0, Low Channel 1, 2412 MHz				
Frequency Range		**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
30 MHz - 12.5 GHz		-49.67	-20	Pass



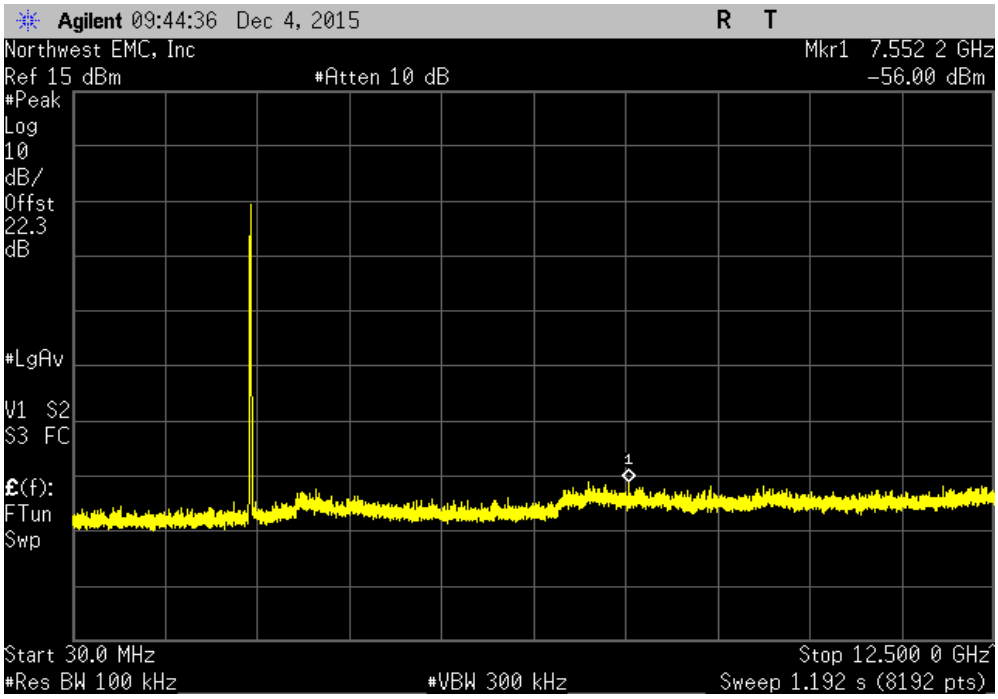
Chain A, 20 MHz, 802.11(n) MCS0, Low Channel 1, 2412 MHz				
Frequency Range		**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
12.5 GHz - 25 GHz		-45.75	-20	Pass



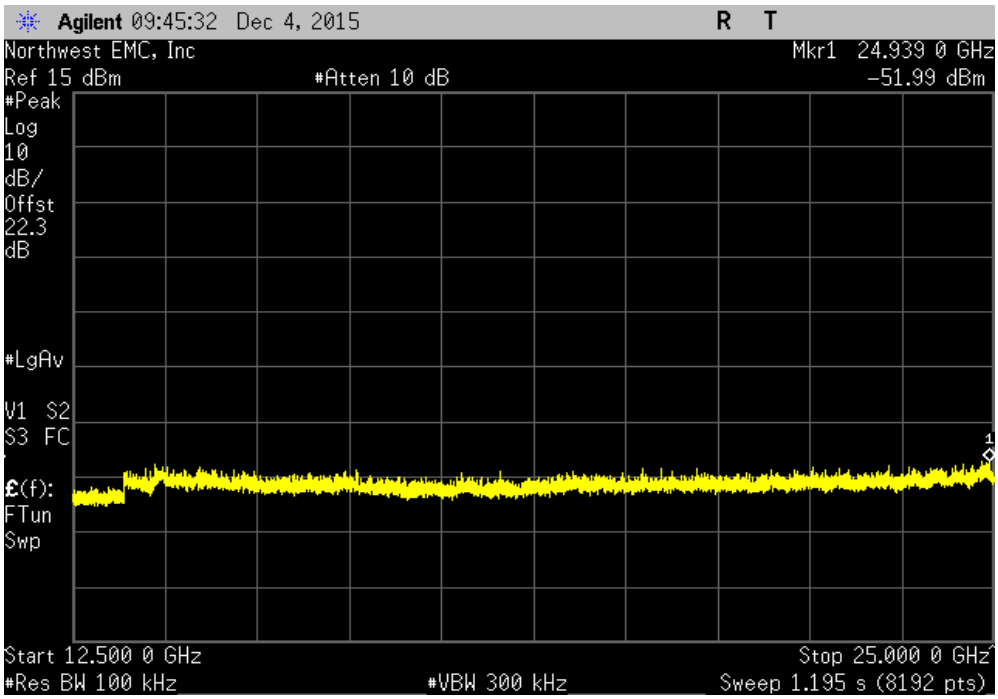
Chain A, 20 MHz, 802.11(n) MCS0, Mid Channel 6, 2437 MHz						
	Frequency Range			Max Value (dBc)	Limit ≤ (dBc)	Result
	Fundamental			N/A	N/A	N/A



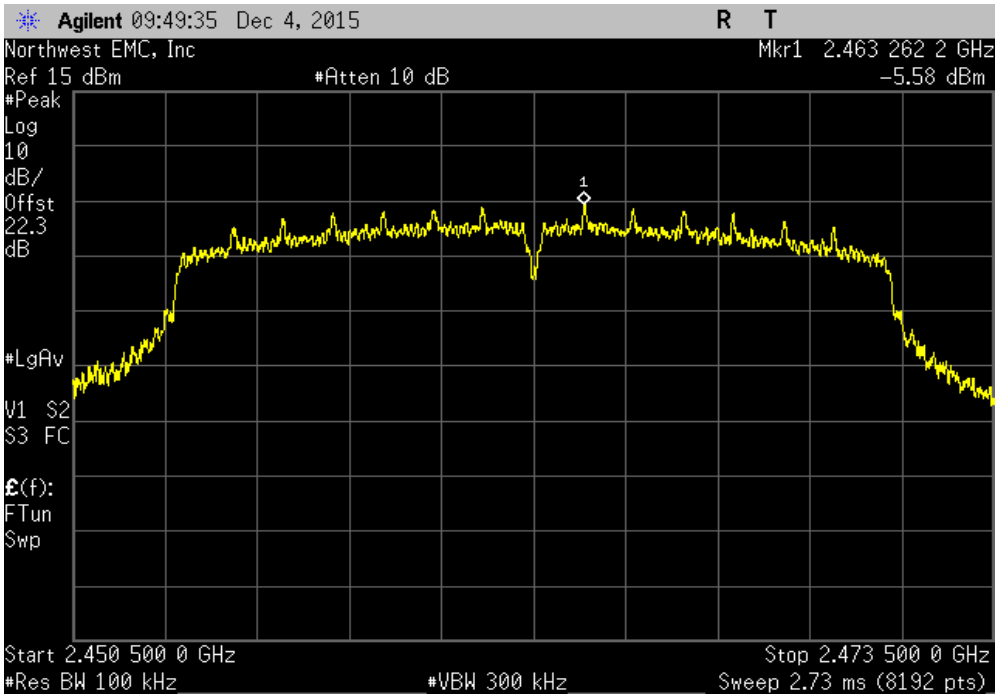
Chain A, 20 MHz, 802.11(n) MCS0, Mid Channel 6, 2437 MHz					
Frequency Range		Max Value (dBc)	Limit ≤ (dBc)	Result	
30 MHz - 12.5 GHz		-51.06	-20	Pass	



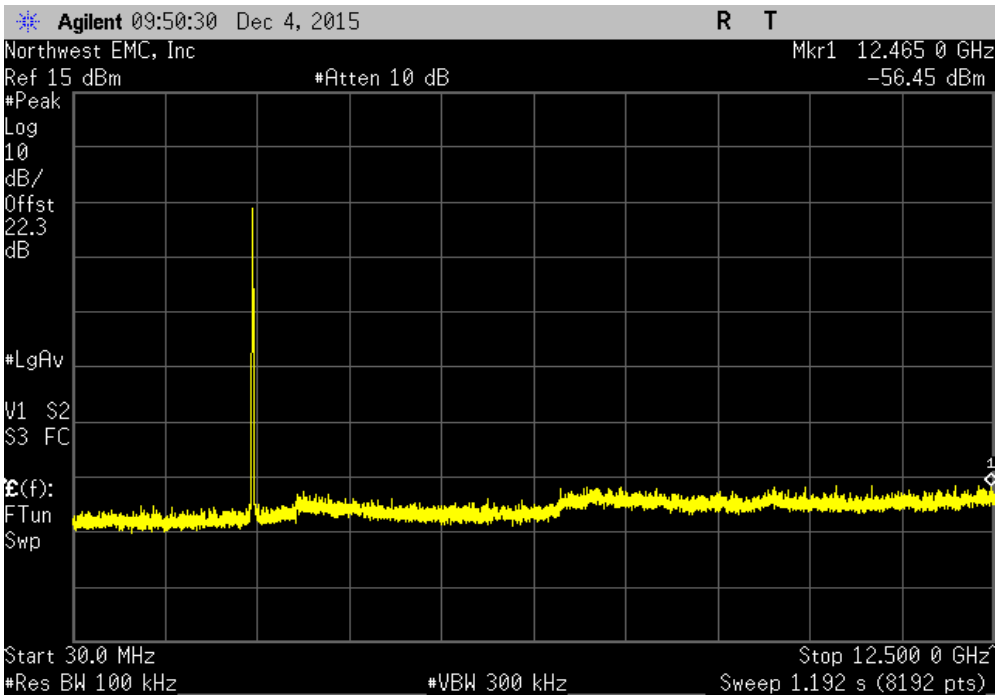
Chain A, 20 MHz, 802.11(n) MCS0, Mid Channel 6, 2437 MHz				
Frequency Range		Max Value (dBc)	Limit ≤ (dBc)	Result
12.5 GHz - 25 GHz		-47.05	-20	Pass



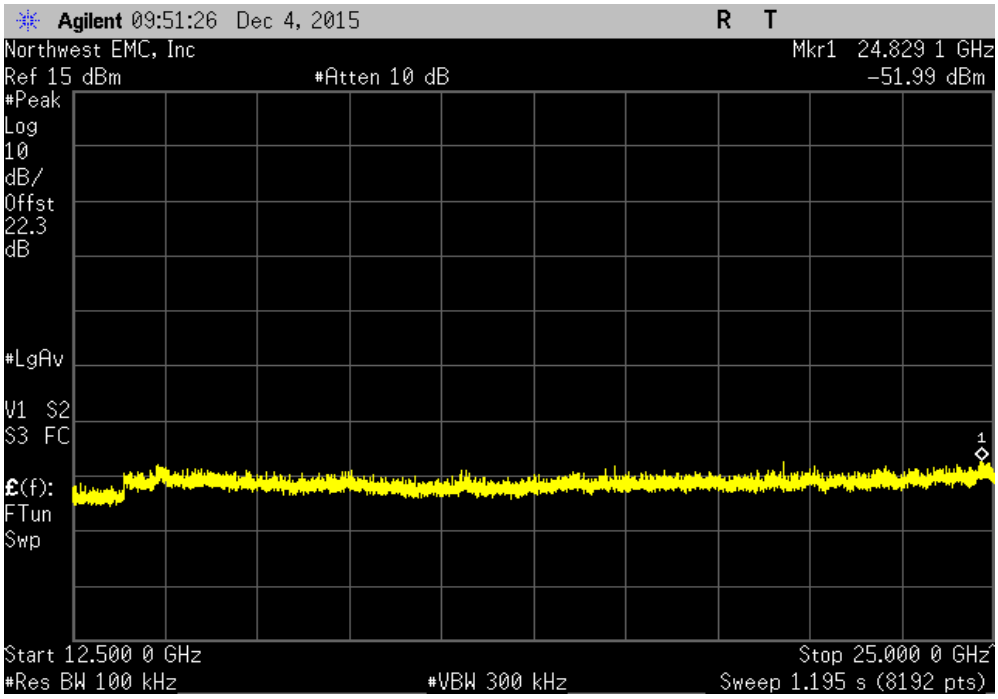
Chain A, 20 MHz, 802.11(n) MCS0, High Channel 11, 2462 MHz						
	Frequency Range			Max Value (dBc)	Limit ≤ (dBc)	Result
	Fundamental			N/A	N/A	N/A



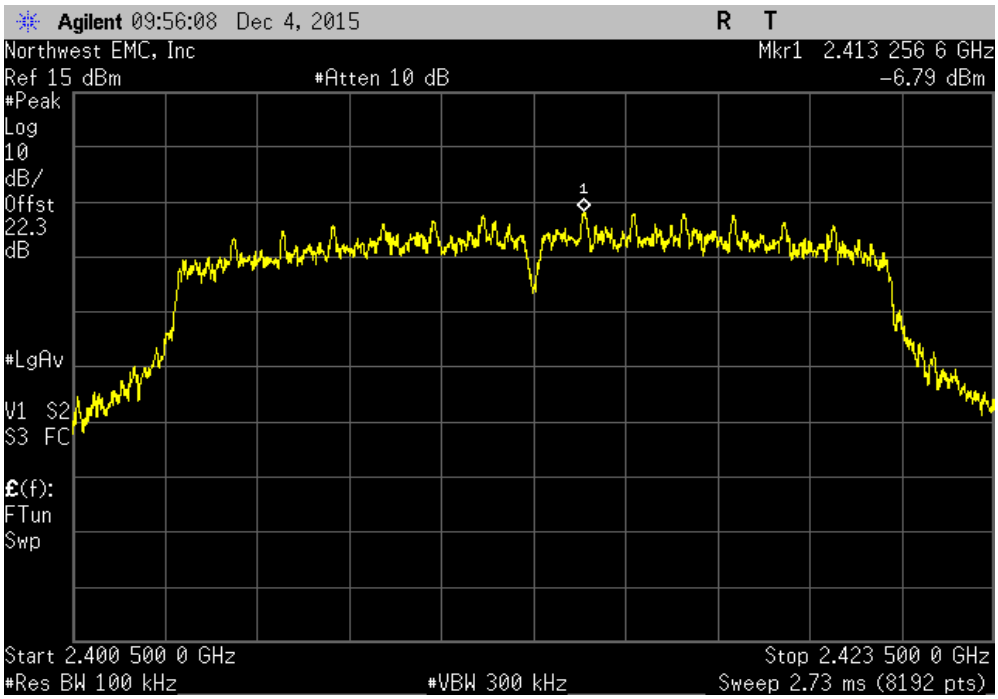
Chain A, 20 MHz, 802.11(n) MCS0, High Channel 11, 2462 MHz				
Frequency Range		Max Value (dBc)	Limit ≤ (dBc)	Result
30 MHz - 12.5 GHz		-50.87	-20	Pass



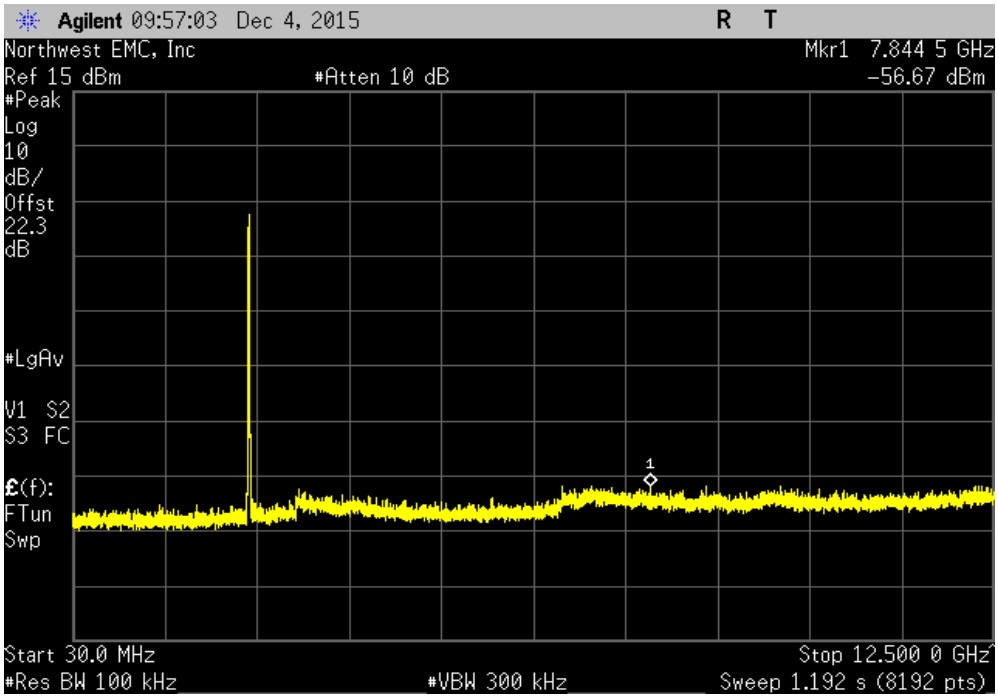
Chain A, 20 MHz, 802.11(n) MCS0, High Channel 11, 2462 MHz				
Frequency Range		Max Value (dBc)	Limit ≤ (dBc)	Result
12.5 GHz - 25 GHz		-46.41	-20	Pass



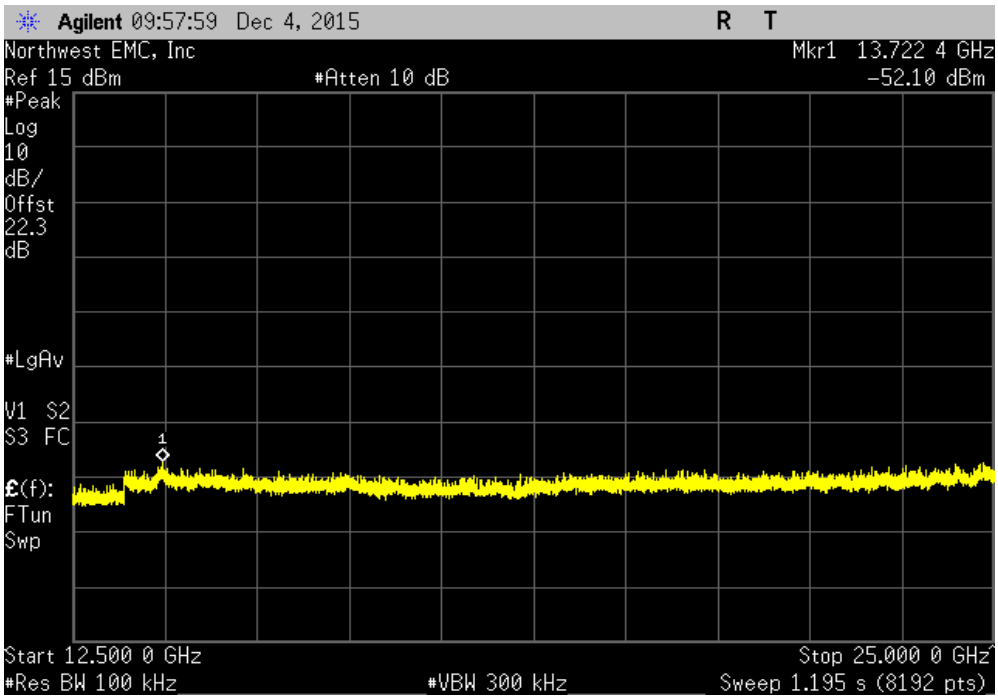
Chain A, 20 MHz, 802.11(n) MCS7, Low Channel 1, 2412 MHz						
	Frequency Range			Max Value (dBc)	Limit ≤ (dBc)	Result
	Fundamental			N/A	N/A	N/A



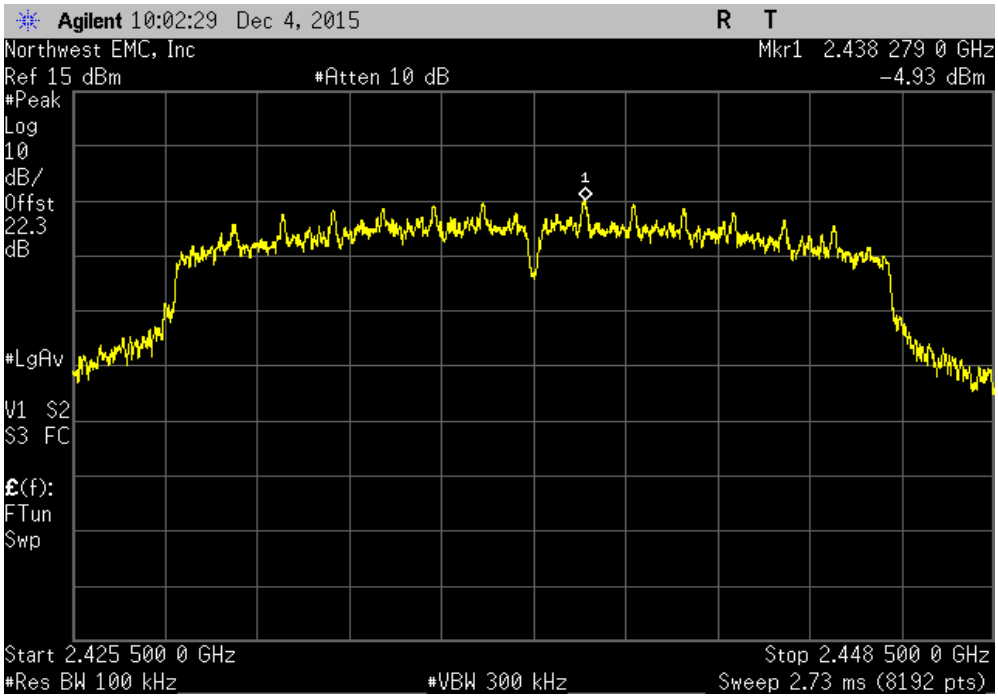
Chain A, 20 MHz, 802.11(n) MCS7, Low Channel 1, 2412 MHz					
Frequency Range		Max Value (dBc)	Limit ≤ (dBc)	Result
30 MHz - 12.5 GHz		-49.88	-20	Pass



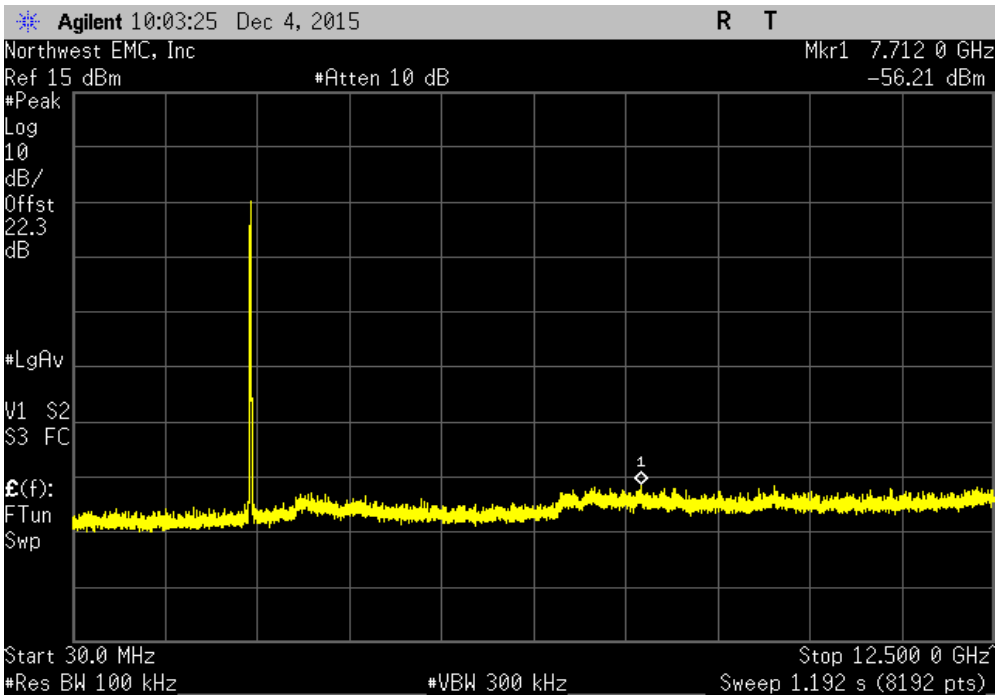
Chain A, 20 MHz, 802.11(n) MCS7, Low Channel 1, 2412 MHz				
Frequency Range		Max Value (dBc)	Limit ≤ (dBc)	Result
12.5 GHz - 25 GHz		-45.31	-20	Pass



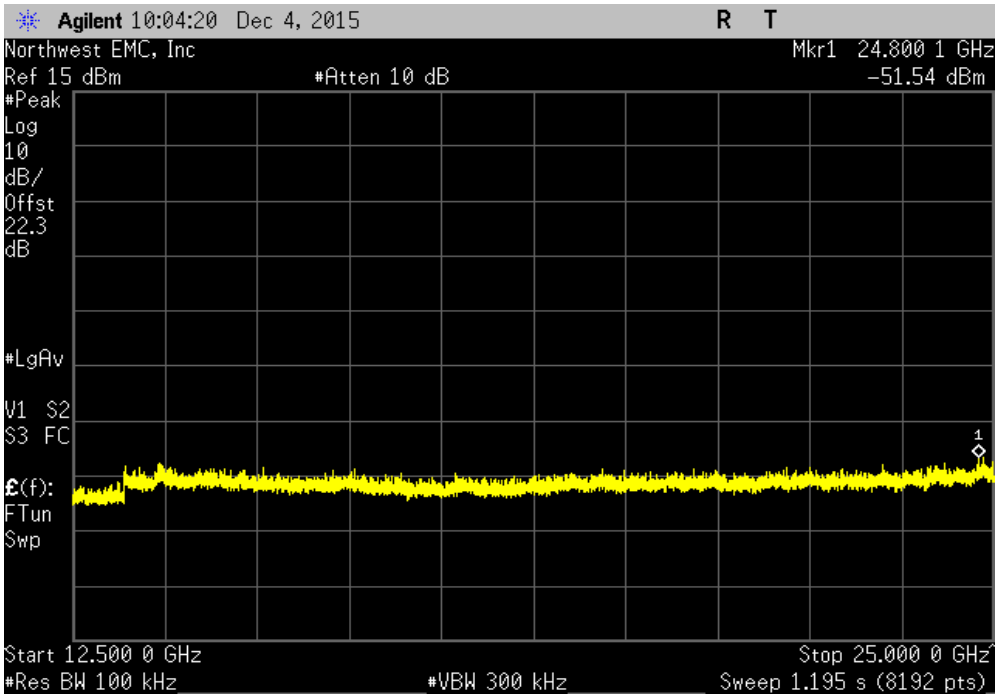
Chain A, 20 MHz, 802.11(n) MCS7, Mid Channel 6, 2437 MHz						
Frequency Range				Max Value (dBc)	Limit ≤ (dBc)	Result
	Fundamental			N/A	N/A	N/A



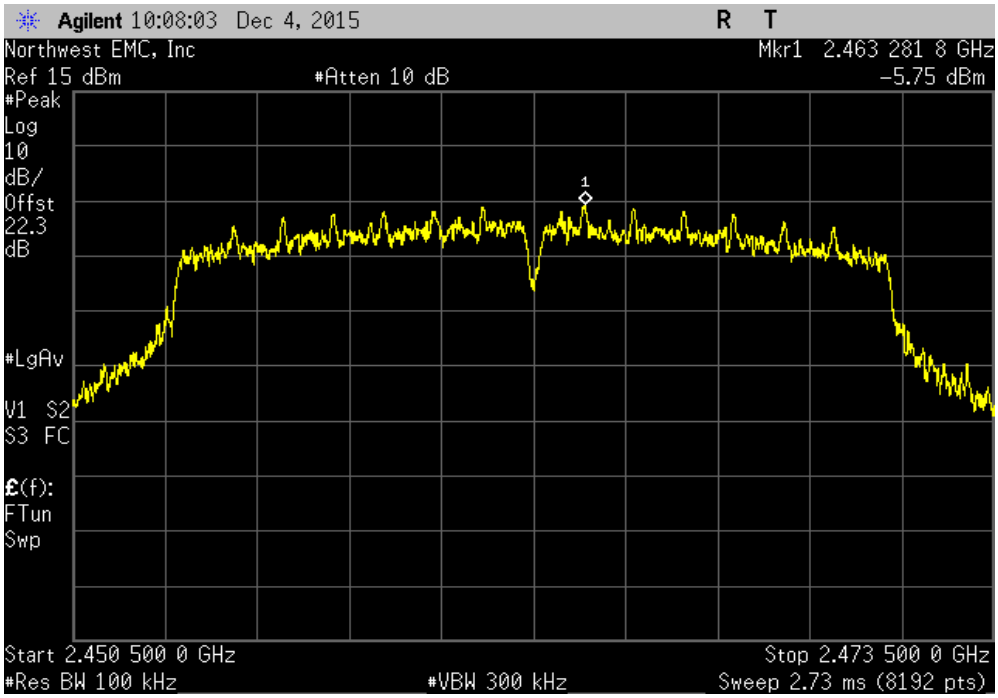
Chain A, 20 MHz, 802.11(n) MCS7, Mid Channel 6, 2437 MHz				
Frequency Range		Max Value (dBc)	Limit ≤ (dBc)	Result
30 MHz - 12.5 GHz		-51.28	-20	Pass



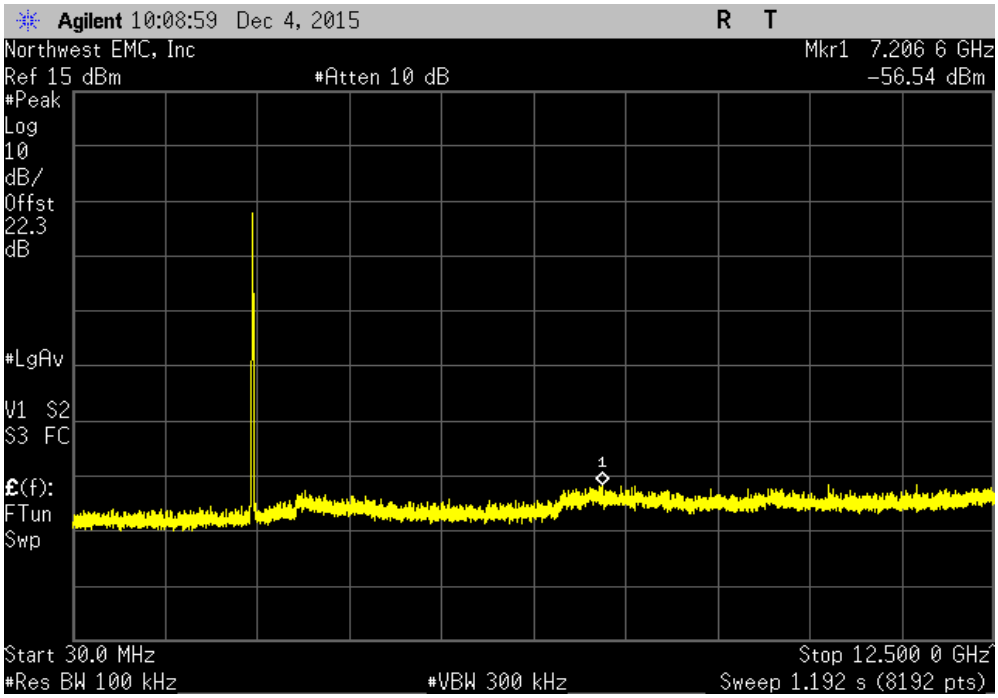
Chain A, 20 MHz, 802.11(n) MCS7, Mid Channel 6, 2437 MHz				
Frequency Range		Max Value (dBc)	Limit ≤ (dBc)	Result
12.5 GHz - 25 GHz		-46.62	-20	Pass



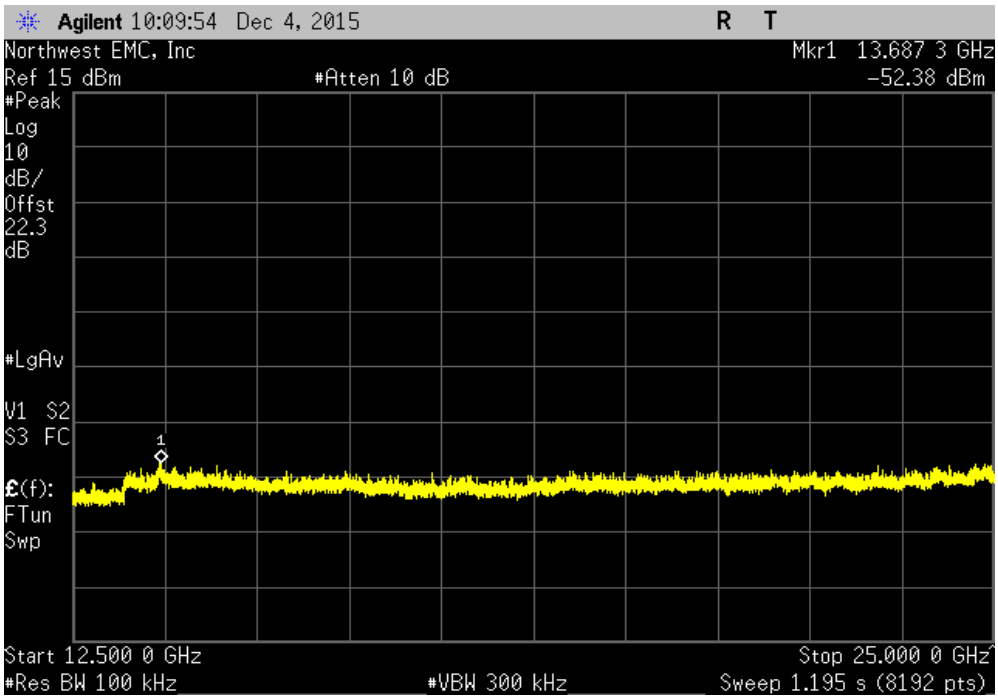
Chain A, 20 MHz, 802.11(n) MCS7, High Channel 11, 2462 MHz						
	Frequency Range			Max Value (dBc)	Limit ≤ (dBc)	Result
	Fundamental			N/A	N/A	N/A



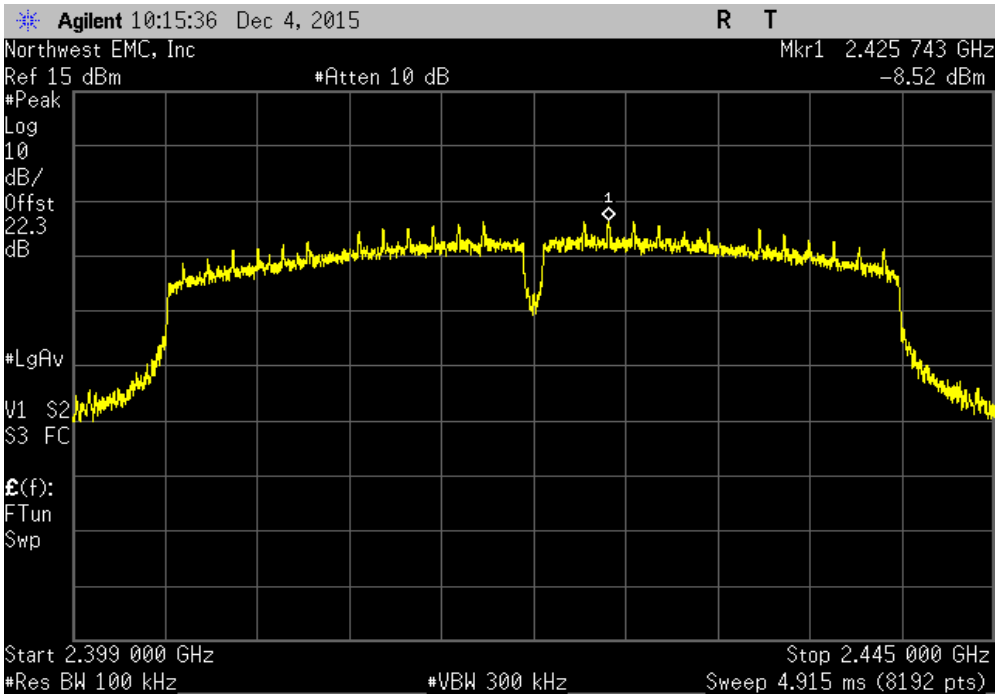
Chain A, 20 MHz, 802.11(n) MCS7, High Channel 11, 2462 MHz					
Frequency Range		Max Value (dBc)	Limit ≤ (dBc)	Result
30 MHz - 12.5 GHz		-50.8	-20	Pass



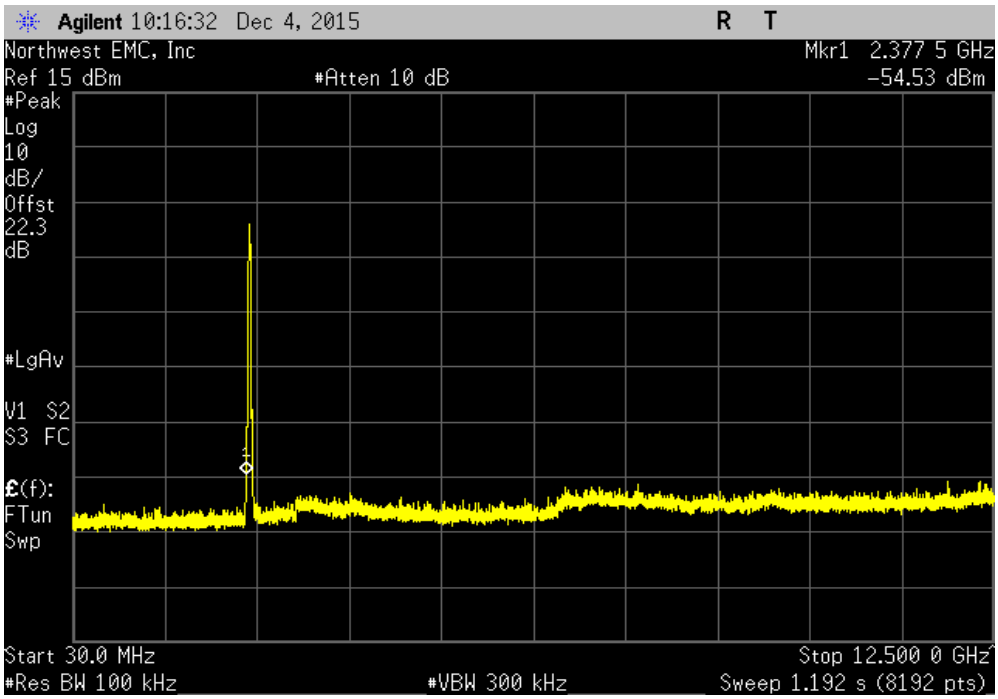
Chain A, 20 MHz, 802.11(n) MCS7, High Channel 11, 2462 MHz				
Frequency Range		Max Value (dBc)	Limit ≤ (dBc)	Result
12.5 GHz - 25 GHz		-46.63	-20	Pass



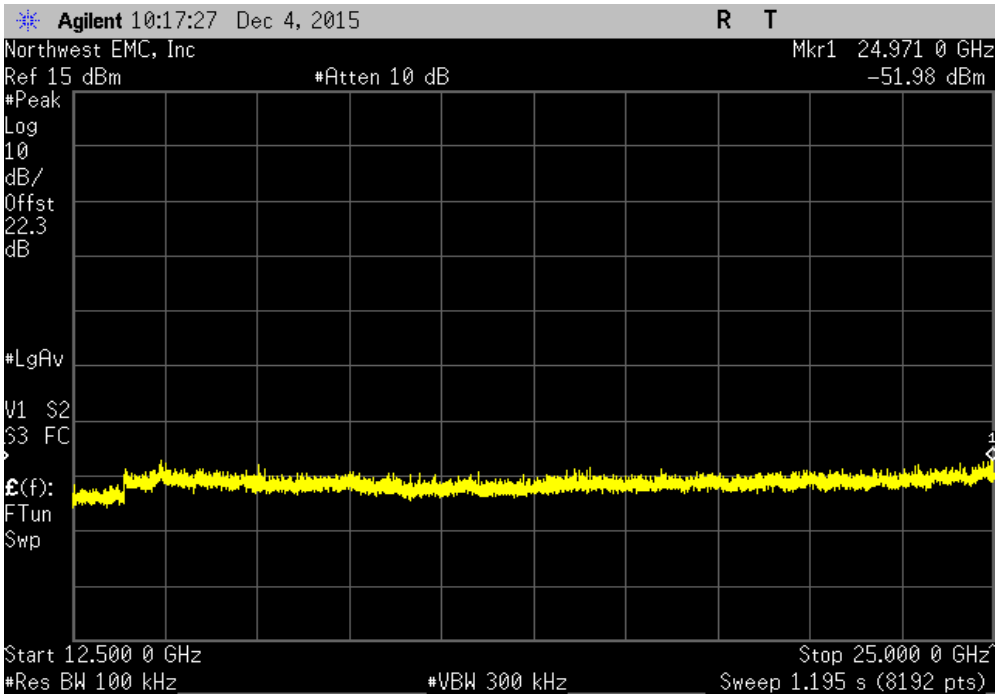
Chain A, 40 MHz, 802.11(n) MCS0, Low Channel 1/5, 2422 MHz						
Frequency Range				Max Value (dBc)	Limit ≤ (dBc)	Result
	Fundamental			N/A	N/A	N/A



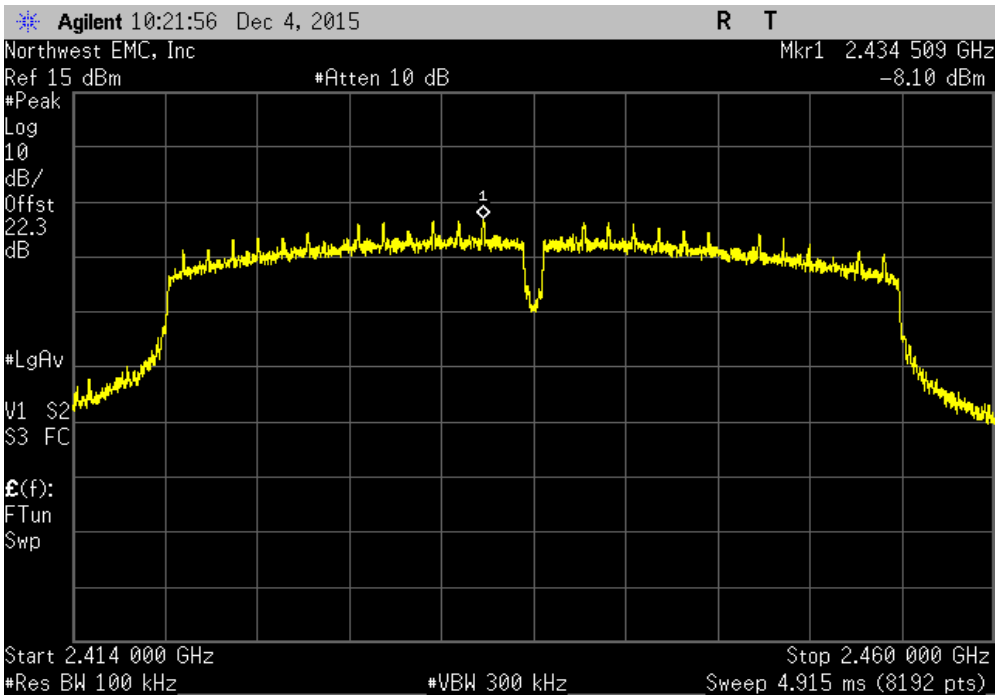
Chain A, 40 MHz, 802.11(n) MCS0, Low Channel 1/5, 2422 MHz				
Frequency Range		**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
30 MHz - 12.5 GHz		-46.01	-20	Pass



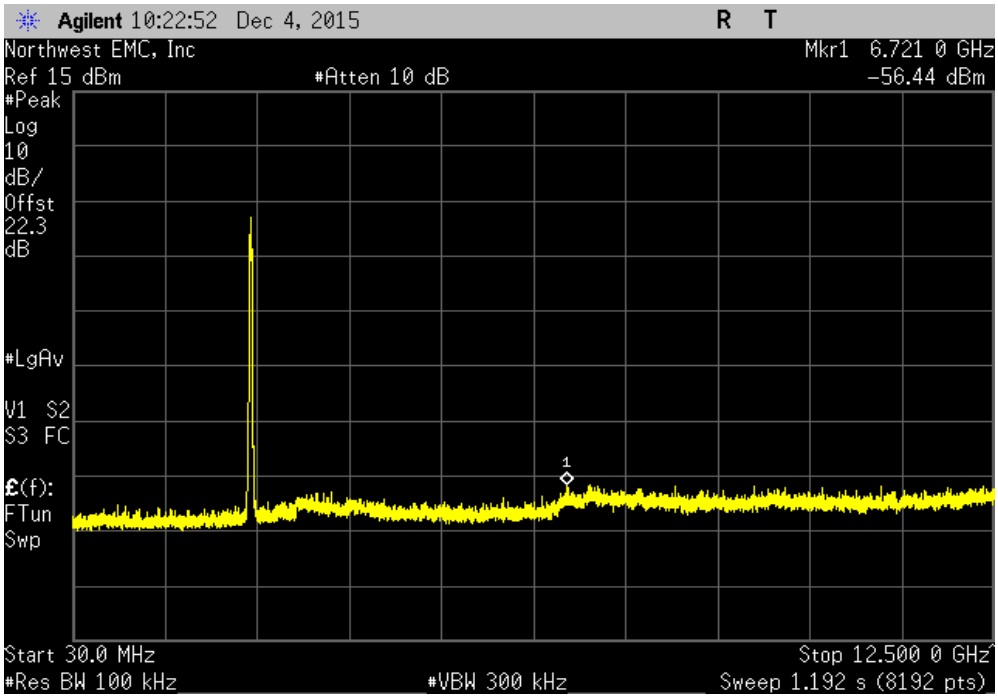
Chain A, 40 MHz, 802.11(n) MCS0, Low Channel 1/5, 2422 MHz				
Frequency Range		**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
12.5 GHz - 25 GHz		-43.46	-20	Pass



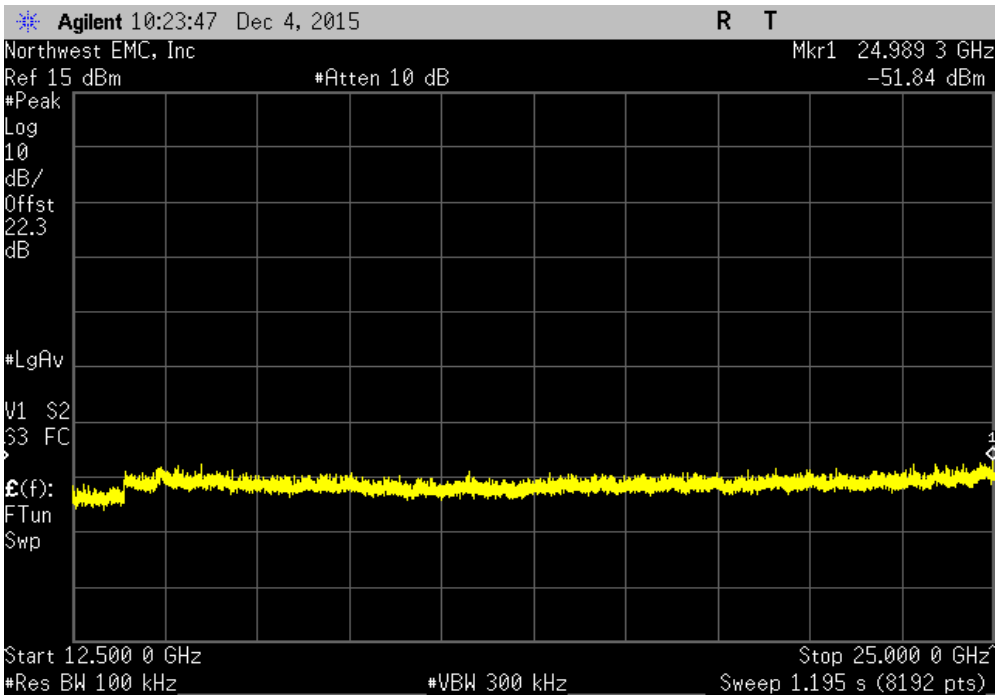
Chain A, 40 MHz, 802.11(n) MCS0, Mid Channel 4/8, 2437 MHz						
	Frequency Range			Max Value (dBc)	Limit ≤ (dBc)	Result
	Fundamental			N/A	N/A	N/A



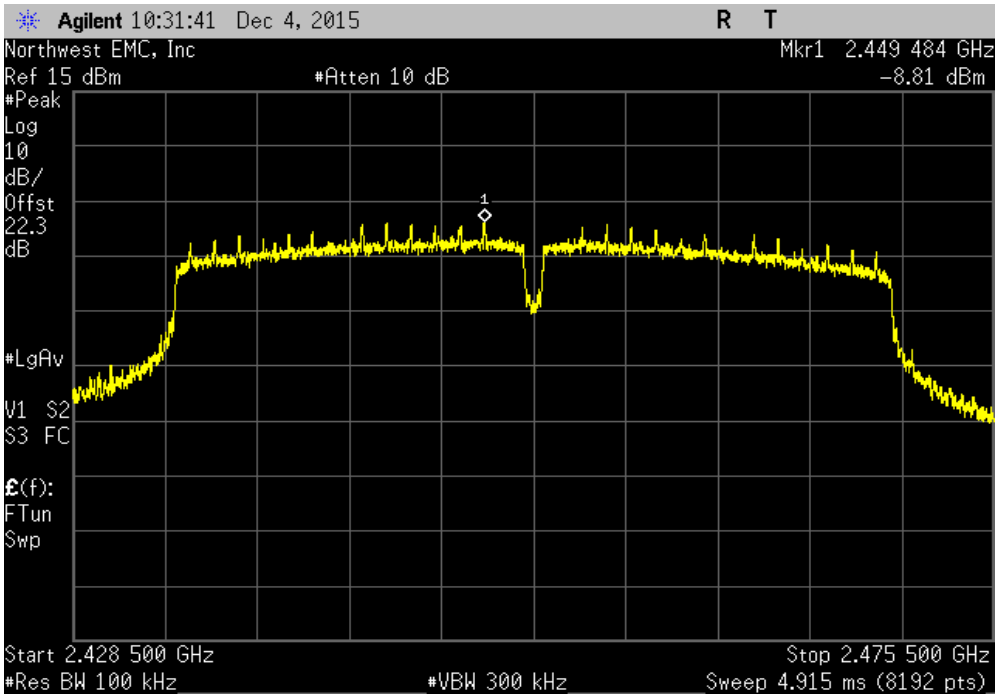
Chain A, 40 MHz, 802.11(n) MCS0, Mid Channel 4/8, 2437 MHz					
Frequency Range		Max Value (dBc)	Limit ≤ (dBc)	Result
30 MHz - 12.5 GHz		-48.34	-20	Pass



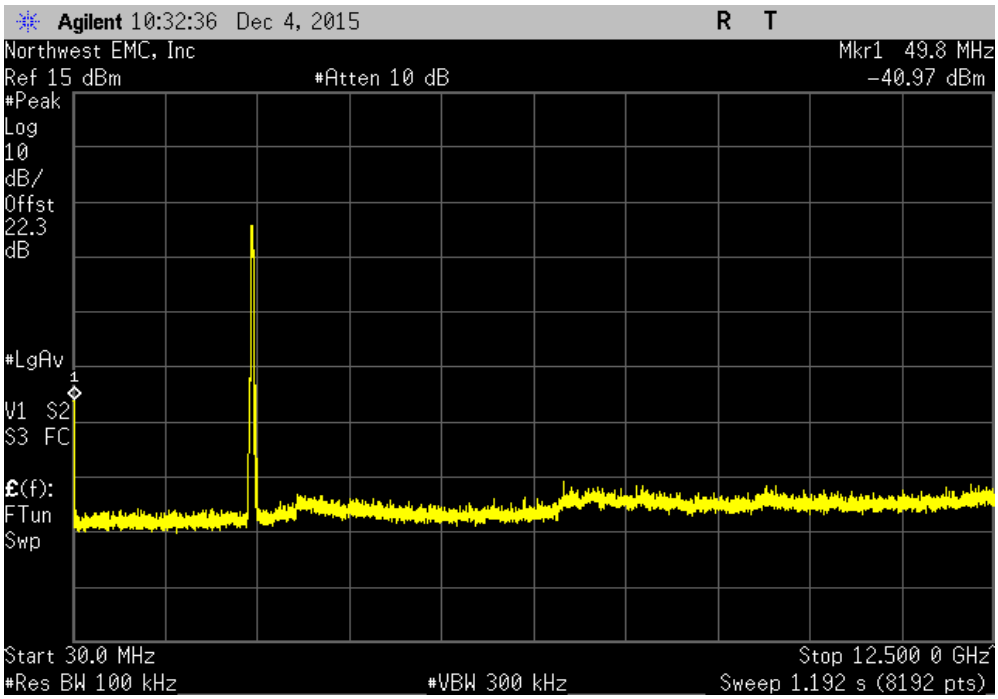
Chain A, 40 MHz, 802.11(n) MCS0, Mid Channel 4/8, 2437 MHz				
Frequency Range		Max Value (dBc)	Limit ≤ (dBc)	Result
12.5 GHz - 25 GHz		-43.74	-20	Pass



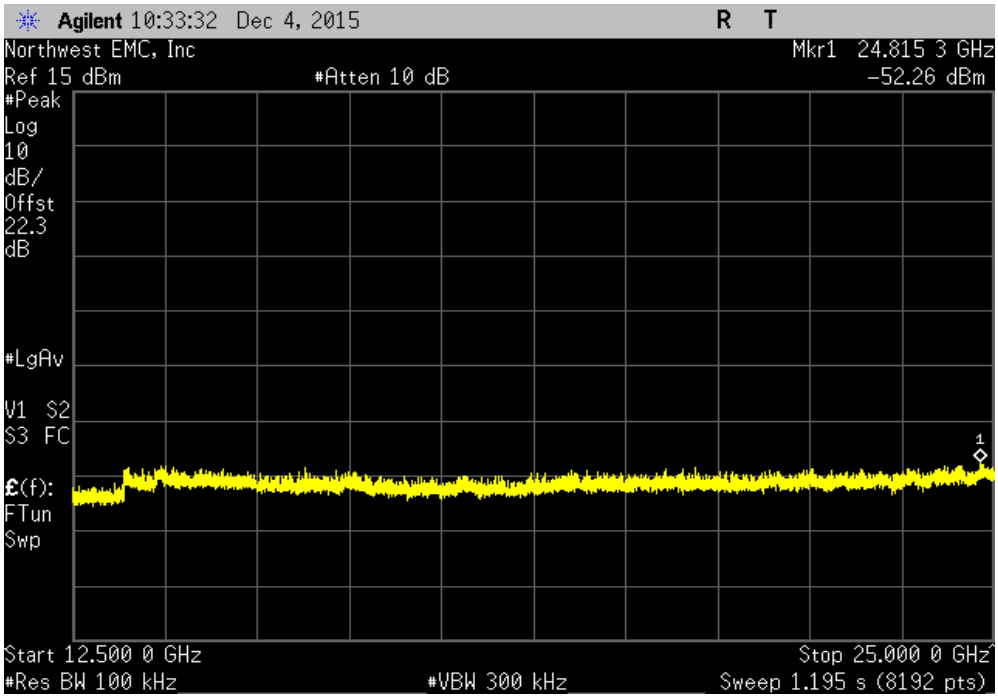
Chain A, 40 MHz, 802.11(n) MCS0, High Channel 7/11, 2452 MHz						
Frequency Range				Max Value (dBc)	Limit ≤ (dBc)	Result
	Fundamental			N/A	N/A	N/A



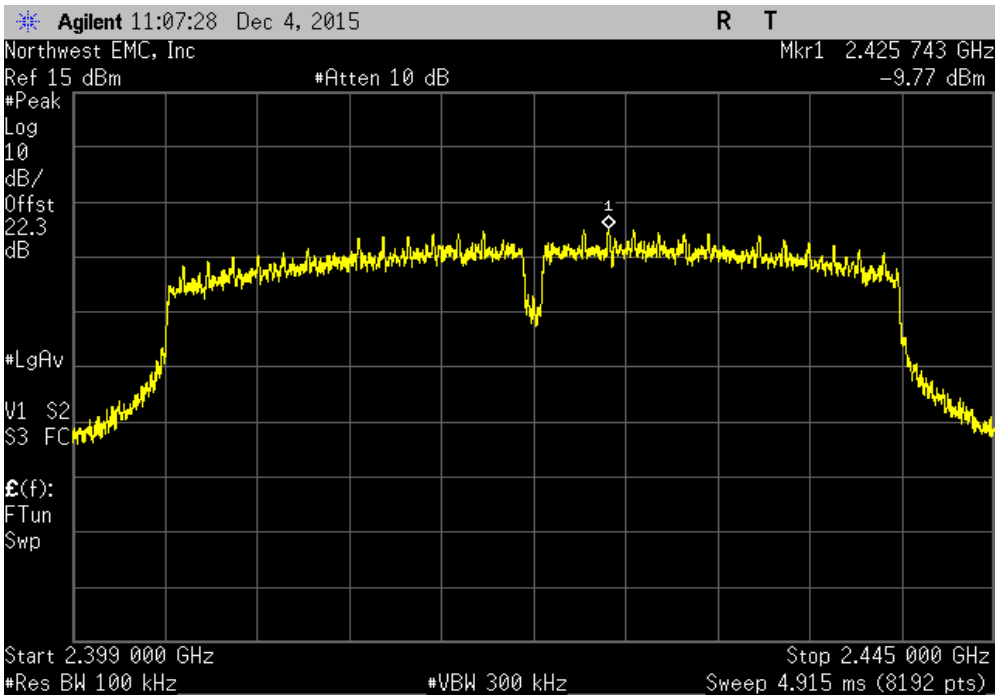
Chain A, 40 MHz, 802.11(n) MCS0, High Channel 7/11, 2452 MHz				
Frequency Range		Max Value (dBc)	Limit ≤ (dBc)	Result
30 MHz - 12.5 GHz		-32.16	-20	Pass



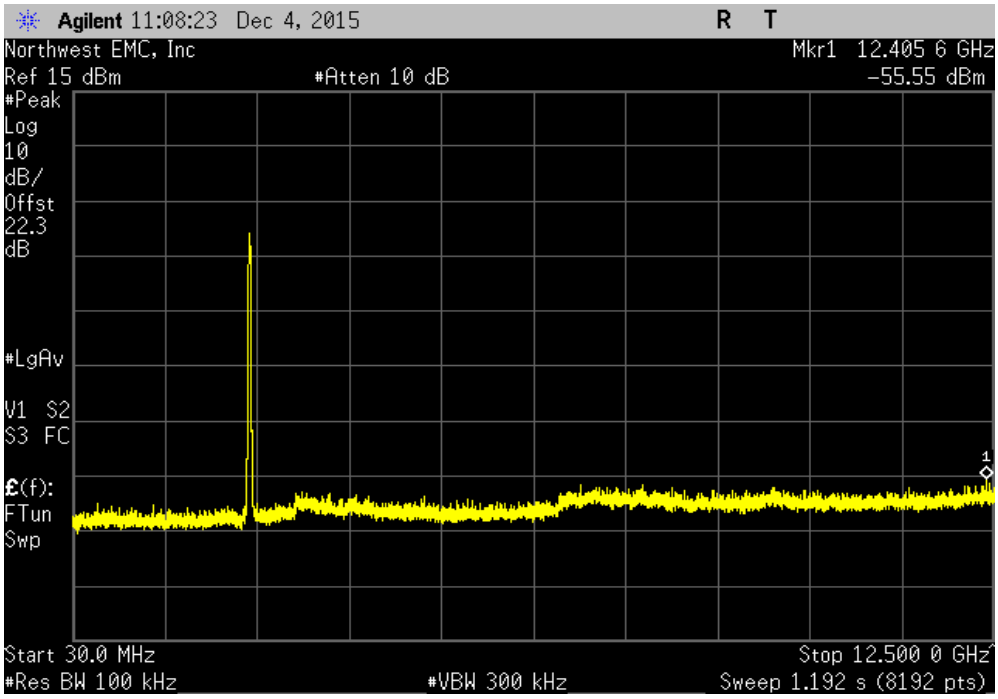
Chain A, 40 MHz, 802.11(n) MCS0, High Channel 7/11, 2452 MHz				
Frequency Range		Max Value (dBc)	Limit ≤ (dBc)	Result
12.5 GHz - 25 GHz		-43.45	-20	Pass



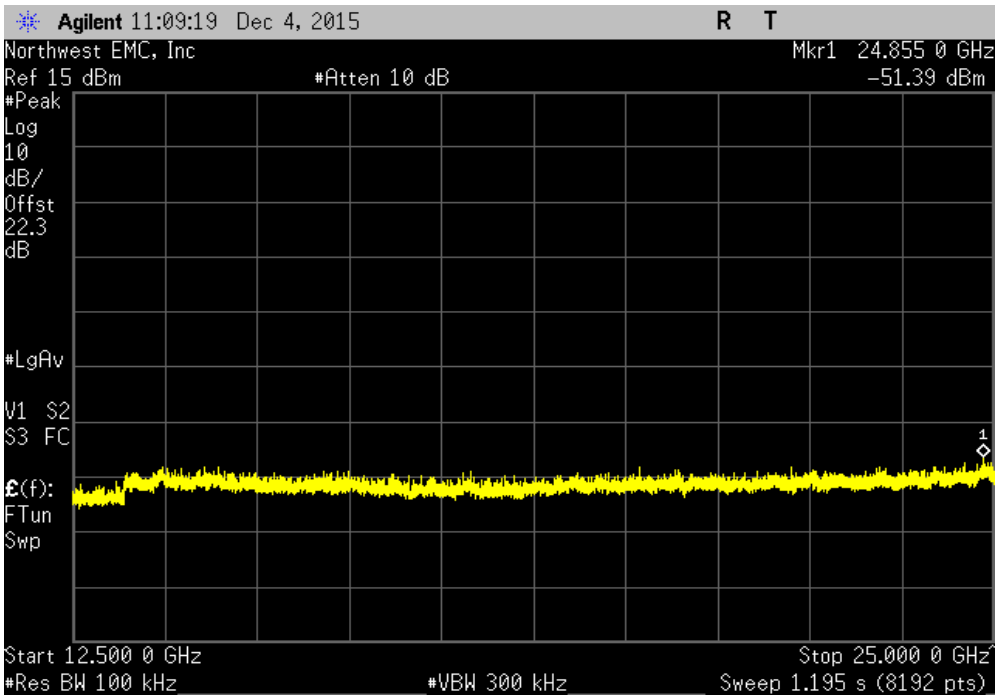
Chain A, 40 MHz, 802.11(n) MCS7, Low Channel 1/5, 2422 MHz						
	Frequency Range			Max Value (dBc)	Limit ≤ (dBc)	Result
	Fundamental			N/A	N/A	N/A



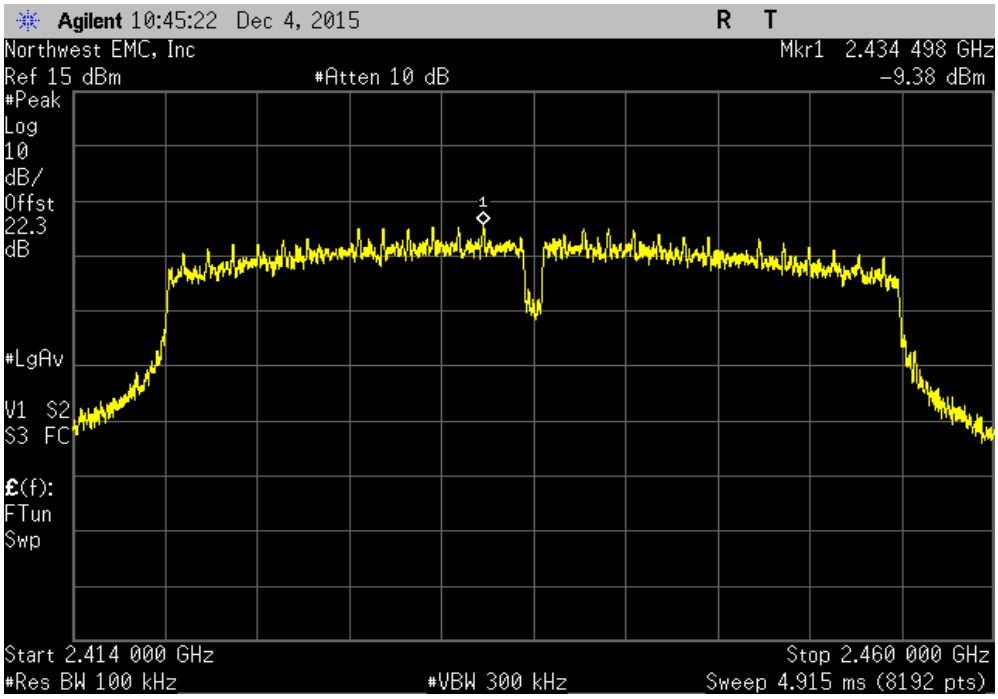
Chain A, 40 MHz, 802.11(n) MCS7, Low Channel 1/5, 2422 MHz					
Frequency Range			Max Value (dBc)	Limit ≤ (dBc)	Result
30 MHz - 12.5 GHz			-45.78	-20	Pass



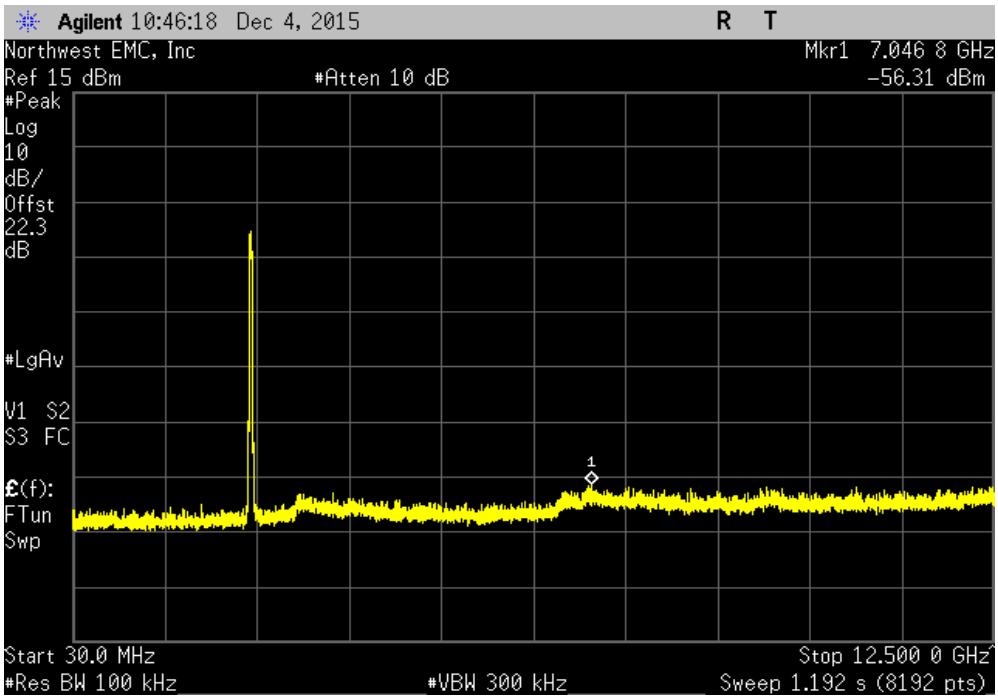
Chain A, 40 MHz, 802.11(n) MCS7, Low Channel 1/5, 2422 MHz				
Frequency Range		Max Value (dBc)	Limit ≤ (dBc)	Result
12.5 GHz - 25 GHz		-41.62	-20	Pass



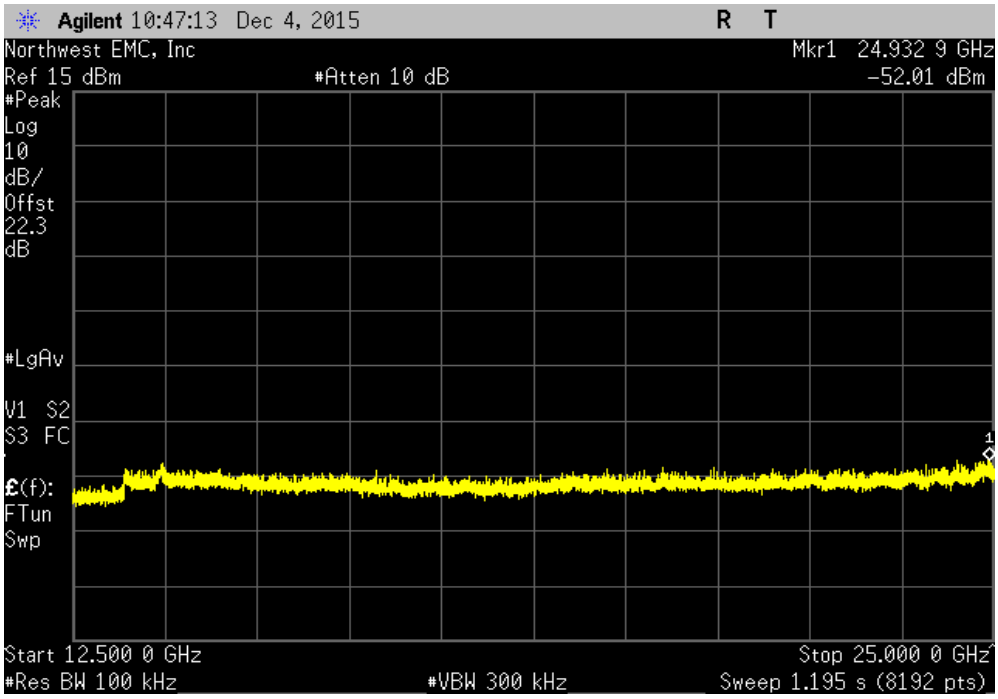
Chain A, 40 MHz, 802.11(n) MCS7, Mid Channel 4/8, 2437 MHz						
Frequency Range				Max Value (dBc)	Limit ≤ (dBc)	Result
	Fundamental			N/A	N/A	N/A



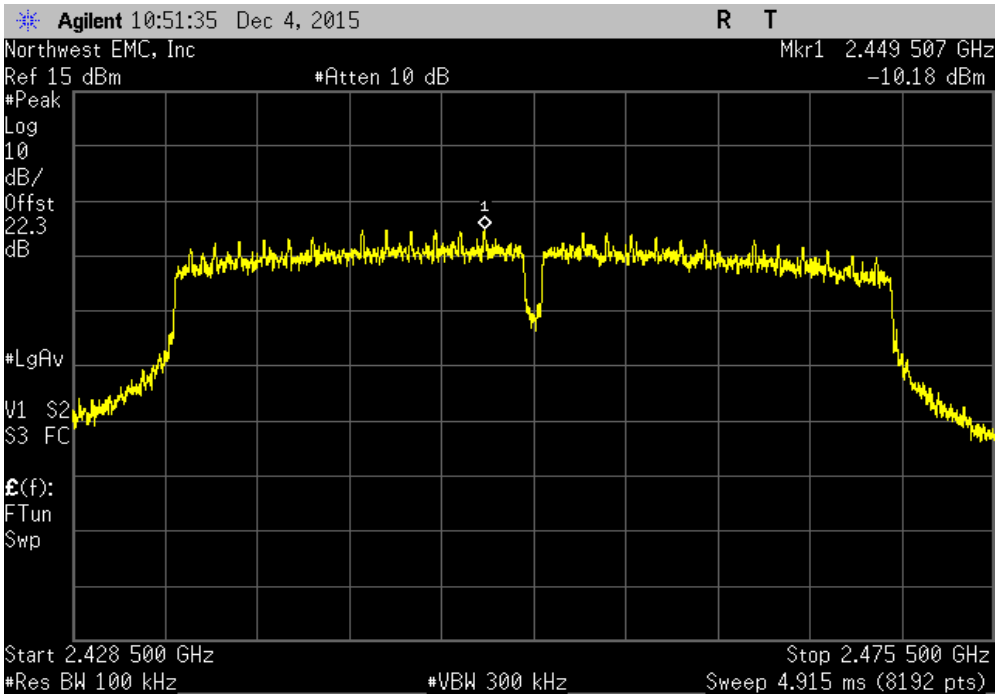
Chain A, 40 MHz, 802.11(n) MCS7, Mid Channel 4/8, 2437 MHz				
Frequency Range		**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
30 MHz - 12.5 GHz		-46.93	-20	Pass



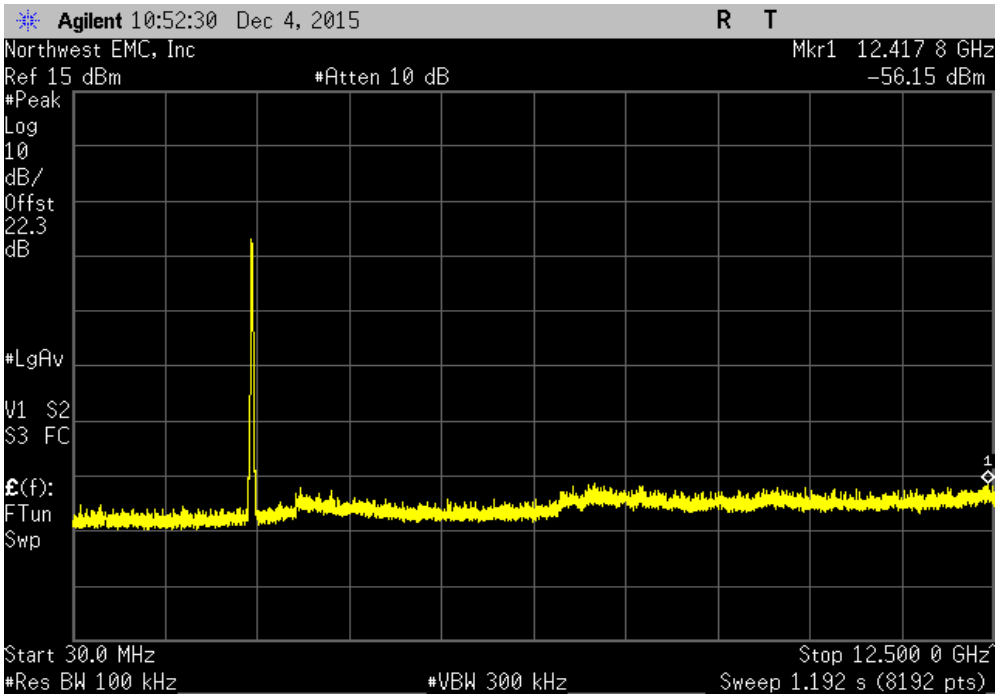
Chain A, 40 MHz, 802.11(n) MCS7, Mid Channel 4/8, 2437 MHz				
Frequency Range		**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
12.5 GHz - 25 GHz		-42.63	-20	Pass



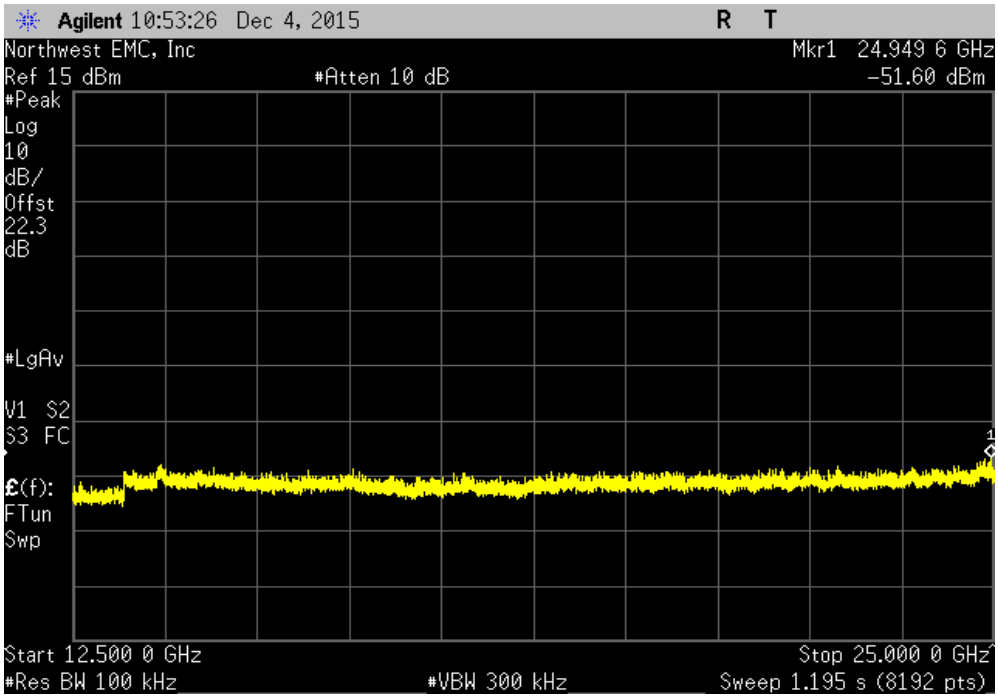
Chain A, 40 MHz, 802.11(n) MCS7, High Channel 7/11, 2452 MHz						
	Frequency Range			Max Value (dBc)	Limit ≤ (dBc)	Result
	Fundamental			N/A	N/A	N/A



Chain A, 40 MHz, 802.11(n) MCS7, High Channel 7/11, 2452 MHz					
Frequency Range			Max Value (dBc)	Limit ≤ (dBc)	Result
30 MHz - 12.5 GHz			-45.97	-20	Pass



Chain A, 40 MHz, 802.11(n) MCS7, High Channel 7/11, 2452 MHz				
Frequency Range		**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
12.5 GHz - 25 GHz		-41.42	-20	Pass



SPURIOUS CONDUCTED EMISSIONS 2x2

XMit 2015.01.14

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Cable	ESM Cable Corp.	TTBJ141 KMKM-72	MNU	9/18/2015	12
Attenuator	S.M. Electronics	SA26B-20	RFW	3/10/2015	12
Block - DC	Fairview Microwave	SD3379	AMI	9/18/2015	12
Generator - Signal	Agilent	N5183A	TIK	10/17/2014	36
Analyzer - Spectrum Analyzer	Agilent	E4440A	AAX	4/20/2015	12

TEST DESCRIPTION

The spurious RF conducted emissions were measured with the EUT set to low, medium and high transmit frequencies. The measurements were made using a direct connection between the RF output of the EUT and the spectrum analyzer. The EUT was transmitting at the data rate(s) listed in the datasheet. For each transmit frequency, the spectrum was scanned throughout the specified frequency range.

SPURIOUS CONDUCTED EMISSIONS 2x2

NORTHWEST EMC

XMit 2015.01.14

EUT:	Marcum RT-9			**Work Order:**	ELTL0004
Serial Number:	RTS0123456811			**Date:**	12/04/15
Customer:	Electronic Technologies, LLC			**Temperature:**	22.2°C
Attendees:	Rocky Holmes, Deb See			**Humidity:**	25%
Project:	None			**Barometric Pres.:**	998.9
Tested by:	Trevor Buls	**Power:**	110VAC/60Hz	**Job Site:**	MN08

TEST SPECIFICATIONS	**Test Method**
FCC 15.247:2015	ANSI C63.10:2013

COMMENTS

None

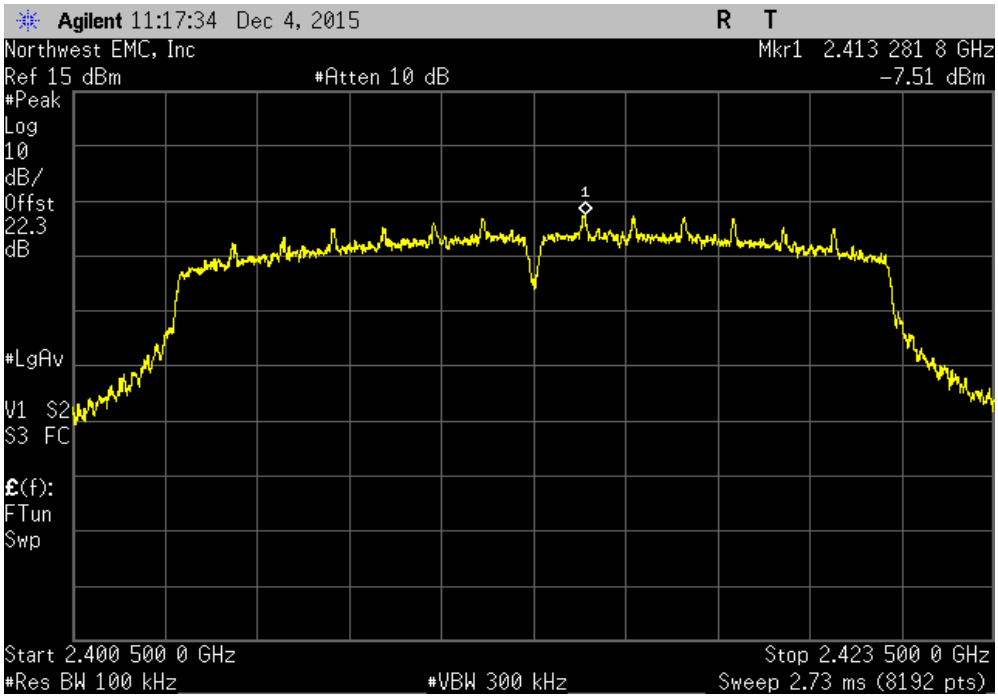
DEVIATIONS FROM TEST STANDARD

None

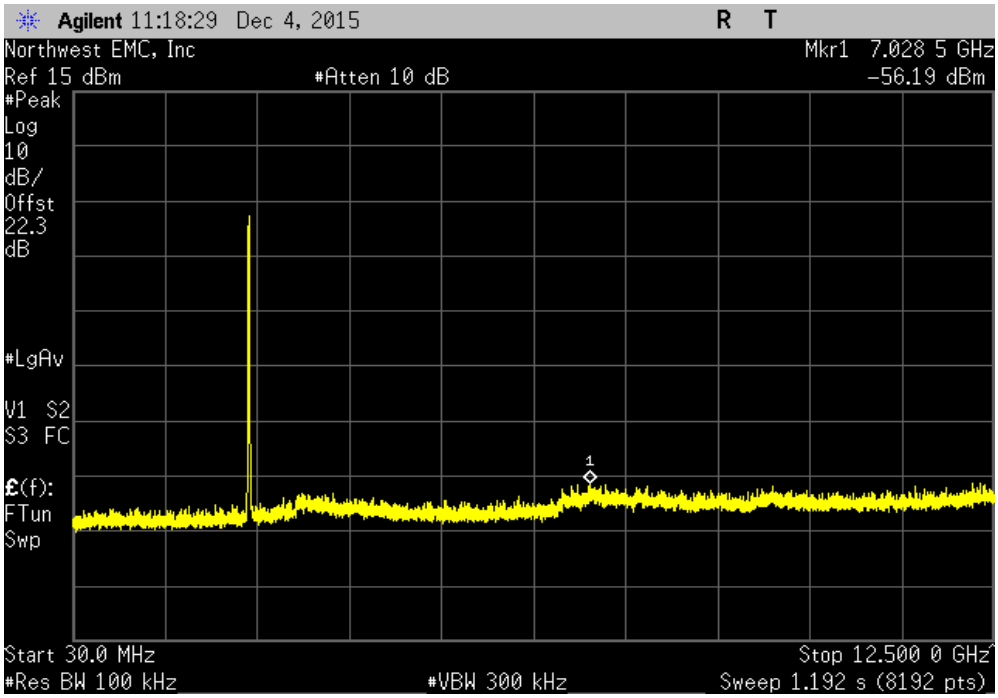
Configuration #	5	*Signature* Trevor Buls

			Frequency Range	Max Value (dBc)	Limit ≤ (dBc)	Result
Chain A						
	20 MHz					
		2400 MHz - 2483.5 MHz Band				
			802.11(n) MCS8			
			Low Channel 1, 2412 MHz	Fundamental	N/A	N/A	N/A
			Low Channel 1, 2412 MHz	30 MHz - 12.5 GHz	-48.68	-20	Pass
			Low Channel 1, 2412 MHz	12.5 GHz - 25 GHz	-44.42	-20	Pass
			Mid Channel 6, 2437 MHz	Fundamental	N/A	N/A	N/A
			Mid Channel 6, 2437 MHz	30 MHz - 12.5 GHz	-48.39	-20	Pass
			Mid Channel 6, 2437 MHz	12.5 GHz - 25 GHz	-45.03	-20	Pass
			High Channel 11, 2462 MH	Fundamental	N/A	N/A	N/A
			High Channel 11, 2462 MH	30 MHz - 12.5 GHz	-48.26	-20	Pass
			High Channel 11, 2462 MH	12.5 GHz - 25 GHz	-43.29	-20	Pass
			802.11(n) MCS15			
			Low Channel 1, 2412 MHz	Fundamental	N/A	N/A	N/A
			Low Channel 1, 2412 MHz	30 MHz - 12.5 GHz	-46.19	-20	Pass
			Low Channel 1, 2412 MHz	12.5 GHz - 25 GHz	-41.87	-20	Pass
			Mid Channel 6, 2437 MHz	Fundamental	N/A	N/A	N/A
			Mid Channel 6, 2437 MHz	30 MHz - 12.5 GHz	-47.78	-20	Pass
			Mid Channel 6, 2437 MHz	12.5 GHz - 25 GHz	-44.34	-20	Pass
			High Channel 11, 2462 MH	Fundamental	N/A	N/A	N/A
			High Channel 11, 2462 MH	30 MHz - 12.5 GHz	-47.84	-20	Pass
			High Channel 11, 2462 MH	12.5 GHz - 25 GHz	-43.12	-20	Pass
Chain B						
	20 MHz					
		2400 MHz - 2483.5 MHz Band				
			802.11(n) MCS8			
			Low Channel 1, 2412 MHz	Fundamental	N/A	N/A	N/A
			Low Channel 1, 2412 MHz	30 MHz - 12.5 GHz	-38.6	-20	Pass
			Low Channel 1, 2412 MHz	12.5 GHz - 25 GHz	-48.77	-20	Pass
			Mid Channel 6, 2437 MHz	Fundamental	N/A	N/A	N/A
			Mid Channel 6, 2437 MHz	30 MHz - 12.5 GHz	-38.48	-20	Pass
			Mid Channel 6, 2437 MHz	12.5 GHz - 25 GHz	-48.75	-20	Pass
			High Channel 11, 2462 MH	Fundamental	N/A	N/A	N/A
			High Channel 11, 2462 MH	30 MHz - 12.5 GHz	-39.46	-20	Pass
			High Channel 11, 2462 MH	12.5 GHz - 25 GHz	-48.81	-20	Pass
			802.11(n) MCS15			
			Low Channel 1, 2412 MHz	Fundamental	N/A	N/A	N/A
			Low Channel 1, 2412 MHz	30 MHz - 12.5 GHz	-39.54	-20	Pass
			Low Channel 1, 2412 MHz	12.5 GHz - 25 GHz	-48.74	-20	Pass
			Mid Channel 6, 2437 MHz	Fundamental	N/A	N/A	N/A
			Mid Channel 6, 2437 MHz	30 MHz - 12.5 GHz	-38.51	-20	Pass
			Mid Channel 6, 2437 MHz	12.5 GHz - 25 GHz	-49.34	-20	Pass
			High Channel 11, 2462 MH	Fundamental	N/A	N/A	N/A
			High Channel 11, 2462 MH	30 MHz - 12.5 GHz	-36.65	-20	Pass
			High Channel 11, 2462 MH	12.5 GHz - 25 GHz	-48.76	-20	Pass

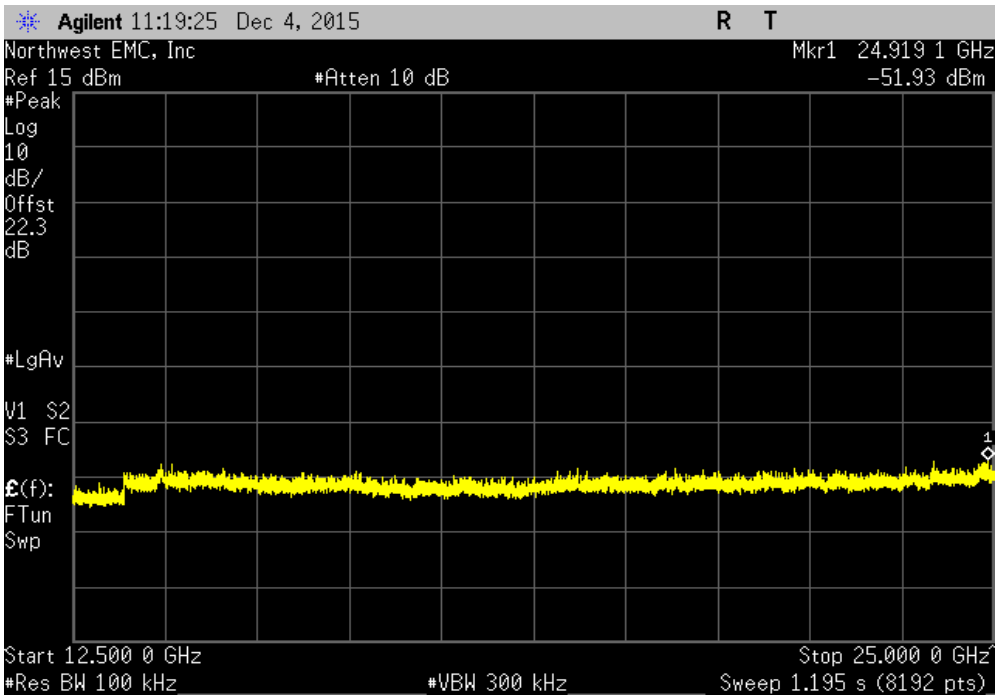
Chain A, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, Low Channel 1, 2412 MHz						
	Frequency Range			Max Value (dBc)	Limit ≤ (dBc)	Result
	Fundamental			N/A	N/A	N/A



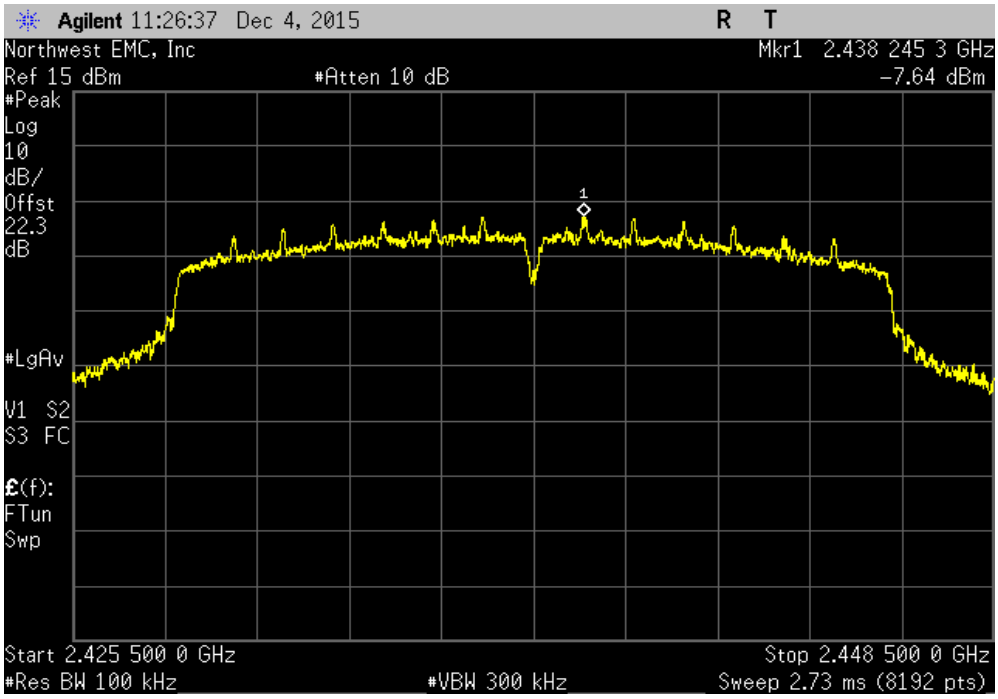
Chain A, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, Low Channel 1, 2412 MHz					
Frequency Range			Max Value (dBc)	Limit ≤ (dBc)	Result
30 MHz - 12.5 GHz			-48.68	-20	Pass



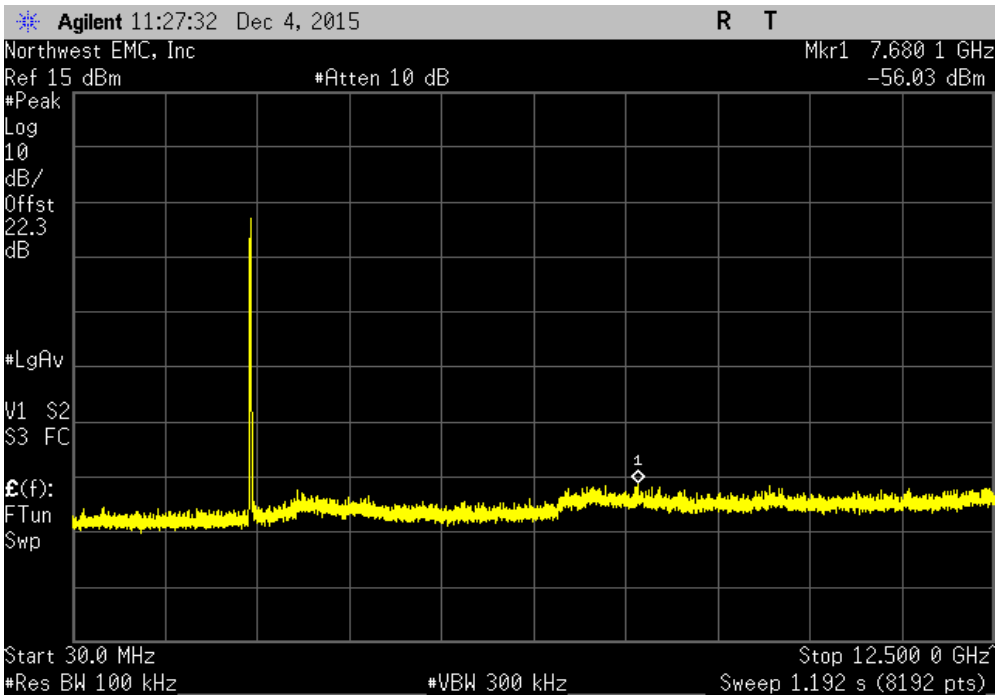
Chain A, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, Low Channel 1, 2412 MHz				
Frequency Range		**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
12.5 GHz - 25 GHz		-44.42	-20	Pass



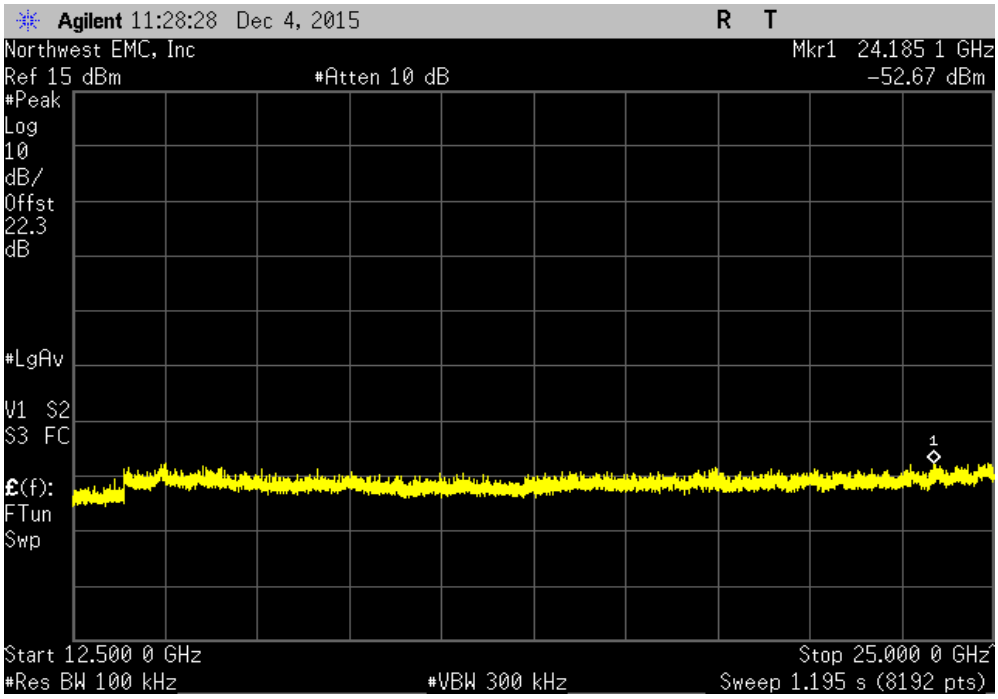
Chain A, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, Mid Channel 6, 2437 MHz						
	Frequency Range			**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
	Fundamental			N/A	N/A	N/A



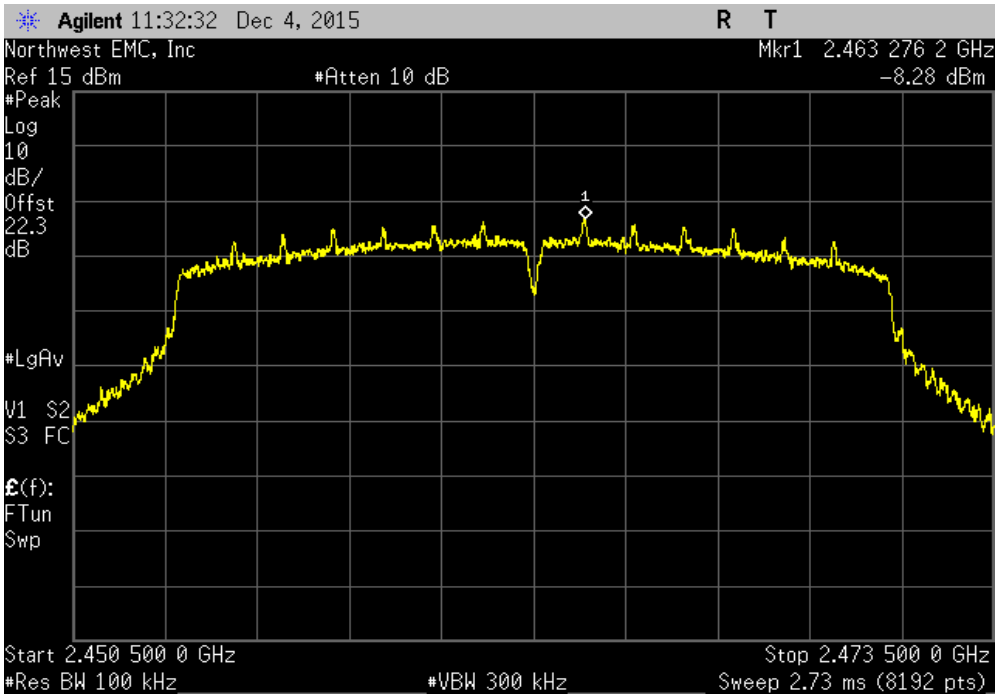
Chain A, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, Mid Channel 6, 2437 MHz				
Frequency Range		**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
30 MHz - 12.5 GHz		-48.39	-20	Pass



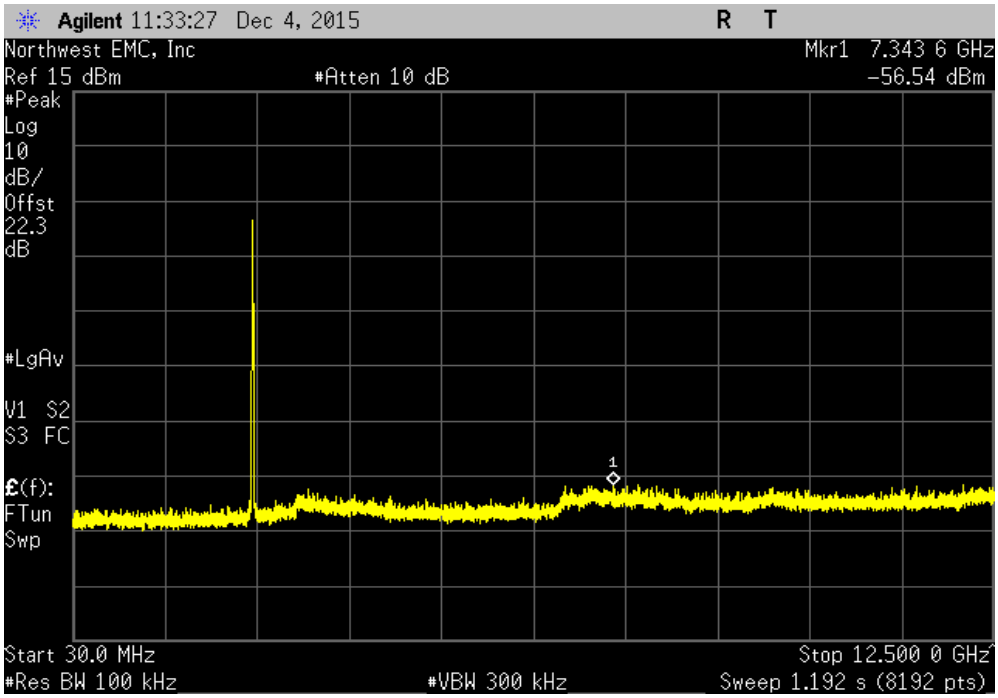
Chain A, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, Mid Channel 6, 2437 MHz				
Frequency Range		**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
12.5 GHz - 25 GHz		-45.03	-20	Pass



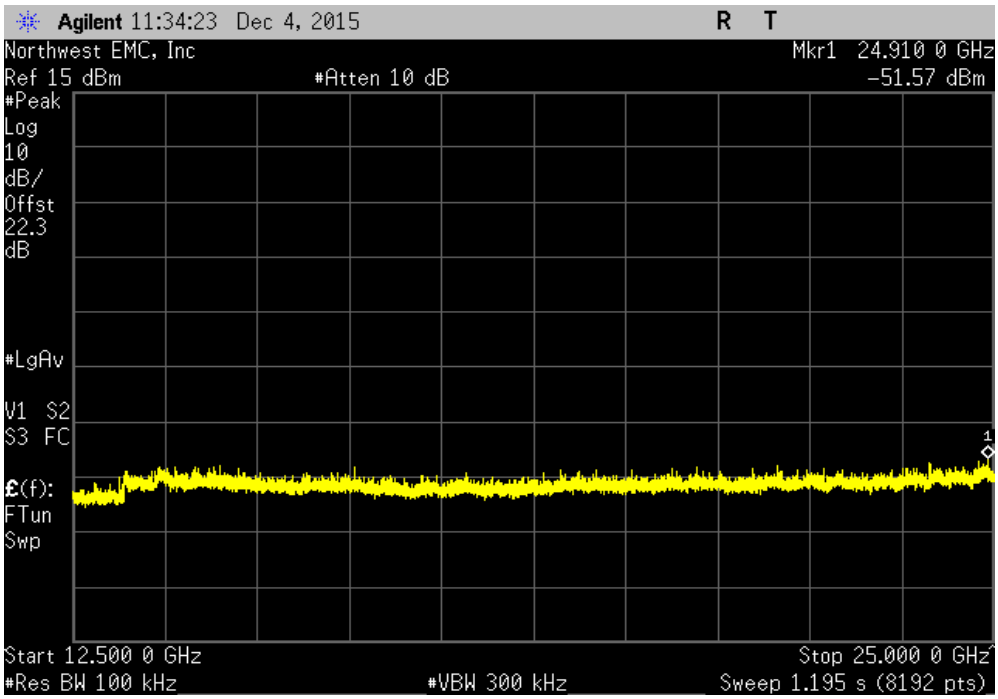
Chain A, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, High Channel 11, 2462 MHz						
	Frequency Range			Max Value (dBc)	Limit ≤ (dBc)	Result
	Fundamental			N/A	N/A	N/A



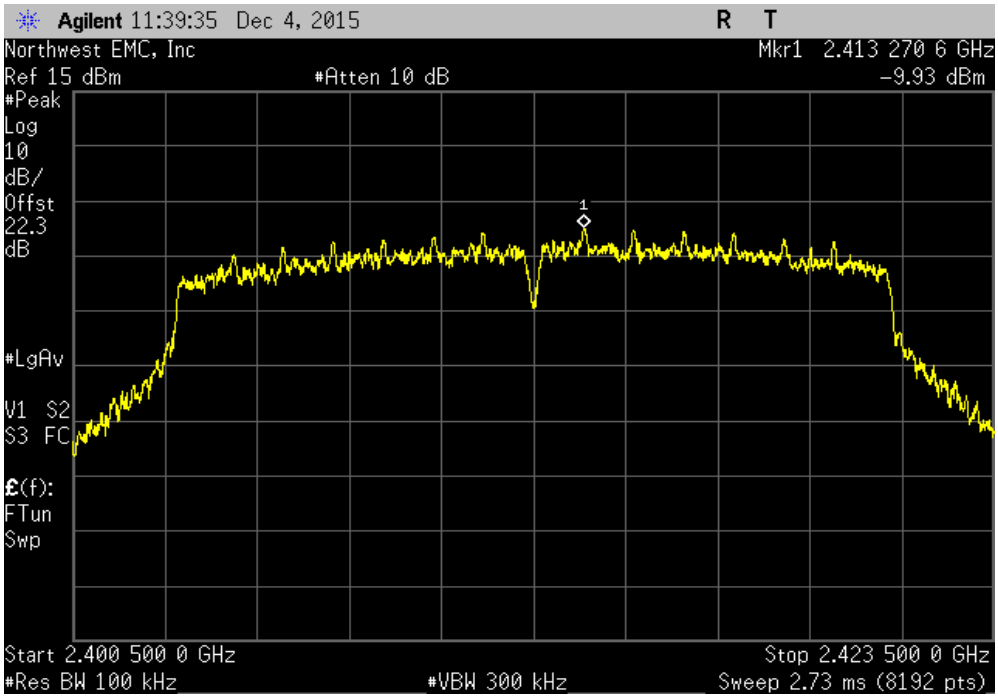
Chain A, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, High Channel 11, 2462 MHz					
Frequency Range			Max Value (dBc)	Limit ≤ (dBc)	Result
30 MHz - 12.5 GHz			-48.26	-20	Pass



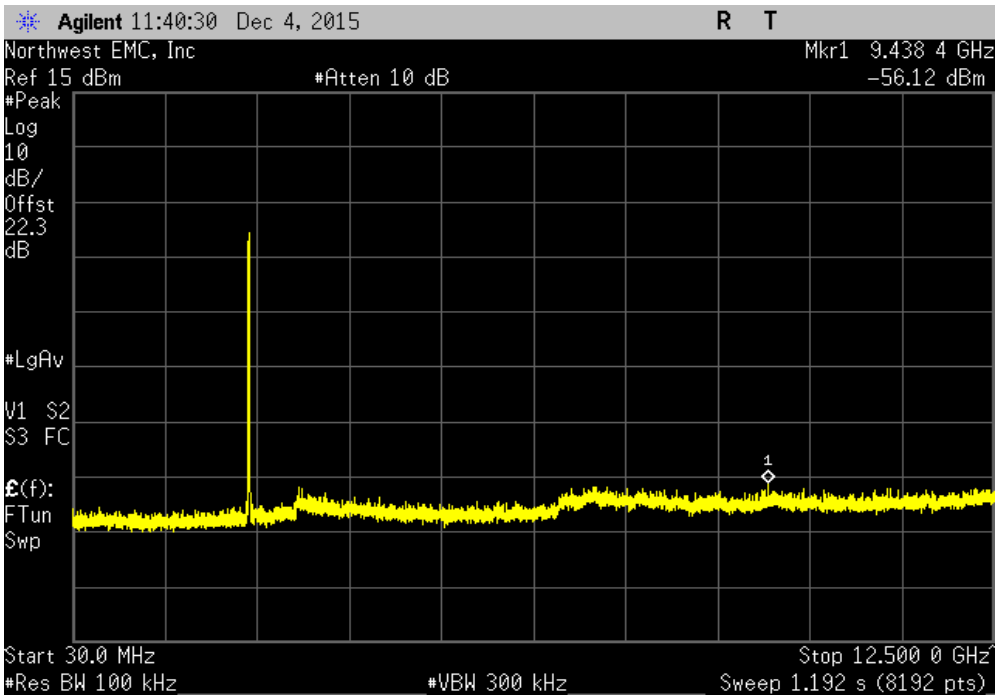
Chain A, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, High Channel 11, 2462 MHz				
Frequency Range		Max Value (dBc)	Limit ≤ (dBc)	Result
12.5 GHz - 25 GHz		-43.29	-20	Pass



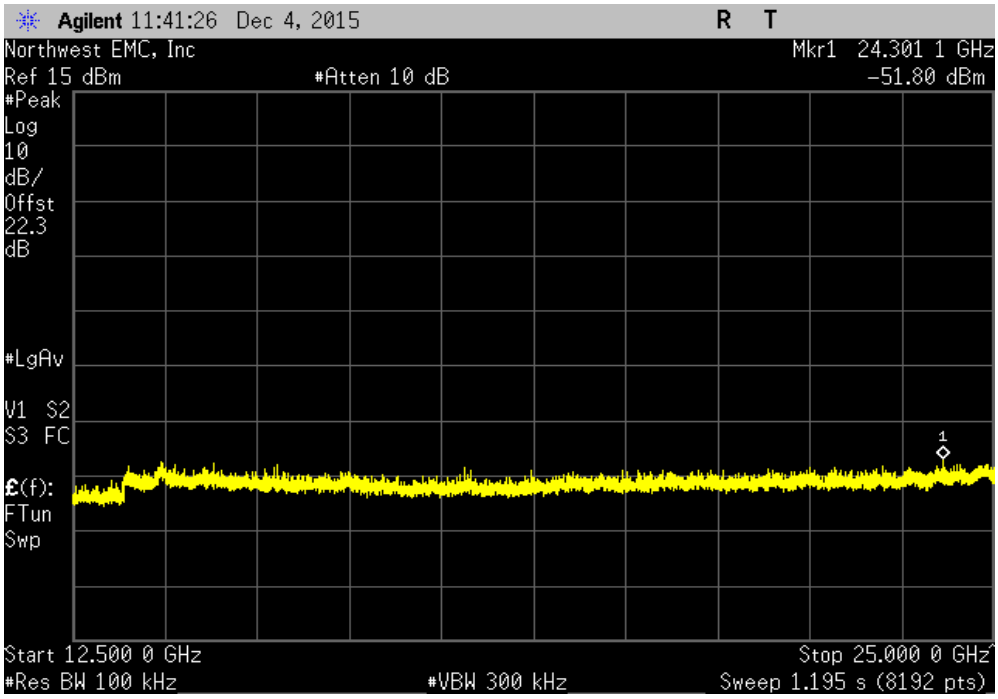
Chain A, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, Low Channel 1, 2412 MHz						
	Frequency Range			Max Value (dBc)	Limit ≤ (dBc)	Result
	Fundamental			N/A	N/A	N/A



Chain A, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, Low Channel 1, 2412 MHz				
Frequency Range		**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
30 MHz - 12.5 GHz		-46.19	-20	Pass

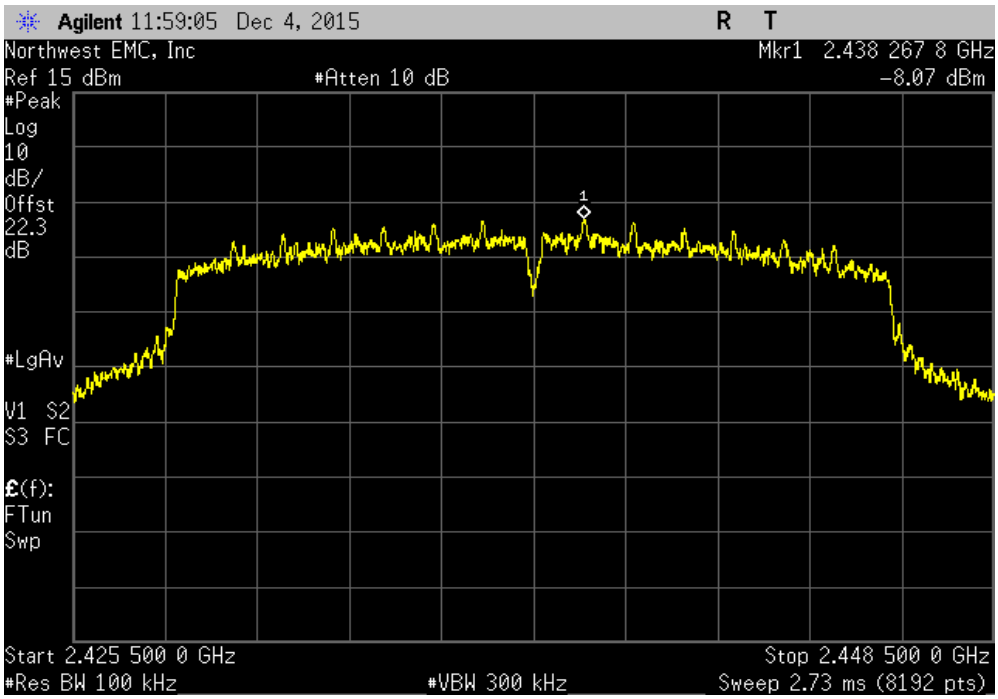


Chain A, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, Low Channel 1, 2412 MHz				
Frequency Range		**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
12.5 GHz - 25 GHz		-41.87	-20	Pass



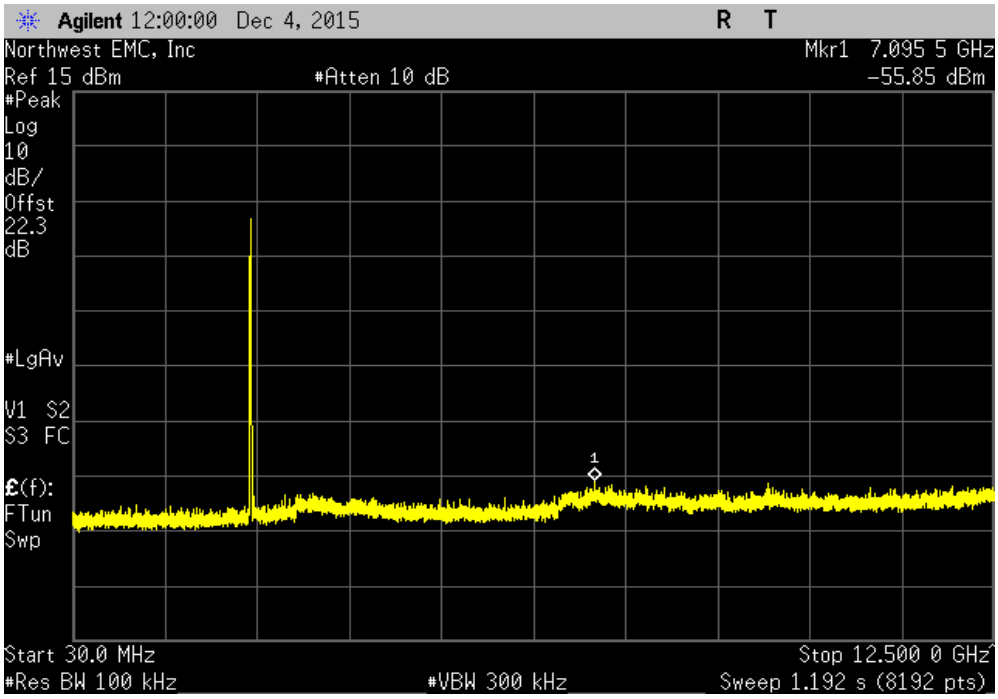
Chain A, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, Mid Channel 6, 2437 MHz

Frequency Range				Max Value (dBc)	Limit ≤ (dBc)	Result
	Fundamental			N/A	N/A	N/A

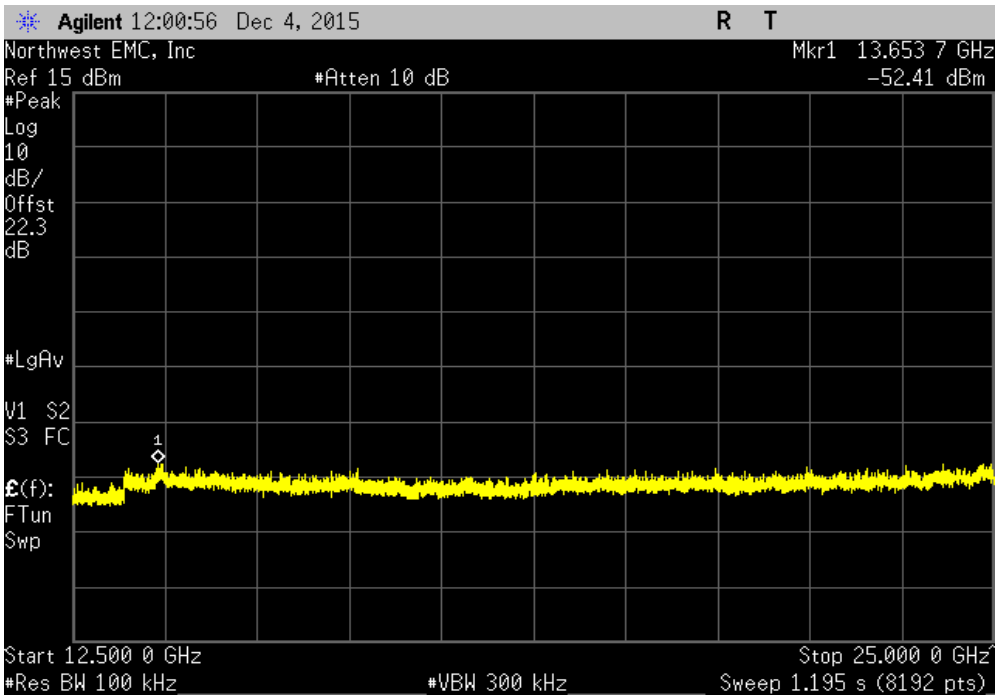


Chain A, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, Mid Channel 6, 2437 MHz

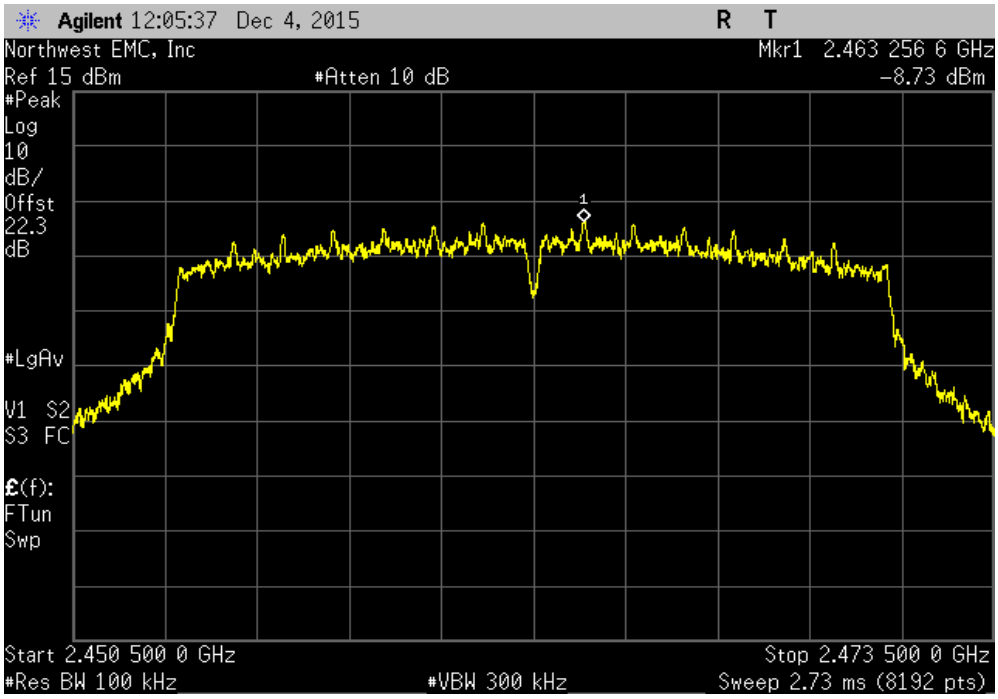
Frequency Range		Max Value (dBc)	Limit ≤ (dBc)	Result
30 MHz - 12.5 GHz		-47.78	-20	Pass



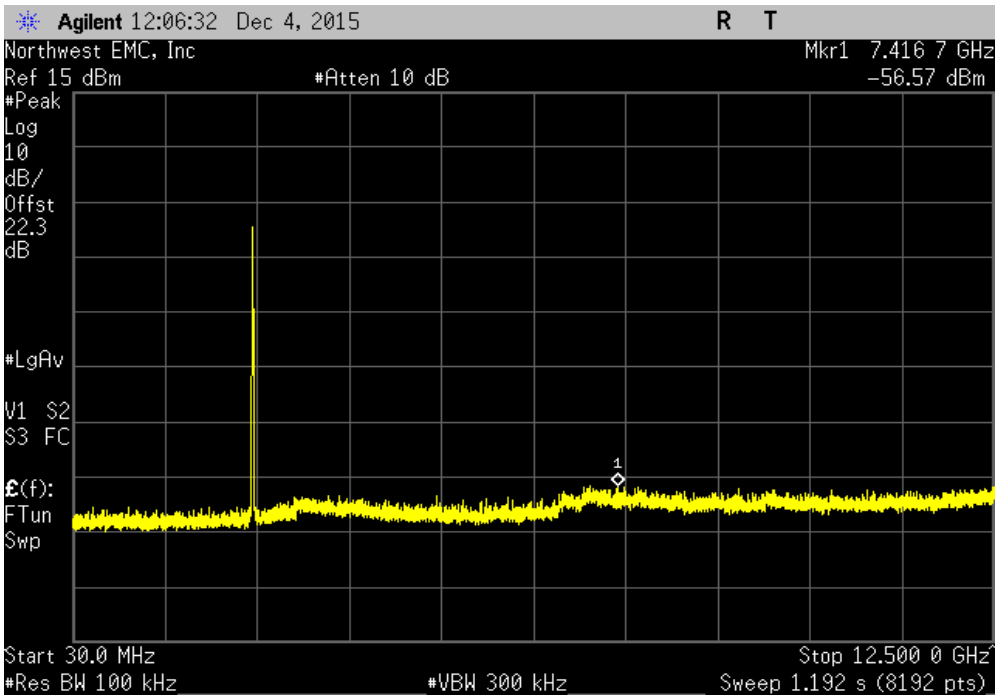
Chain A, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, Mid Channel 6, 2437 MHz				
Frequency Range		Max Value (dBc)	Limit ≤ (dBc)	Result
12.5 GHz - 25 GHz		-44.34	-20	Pass



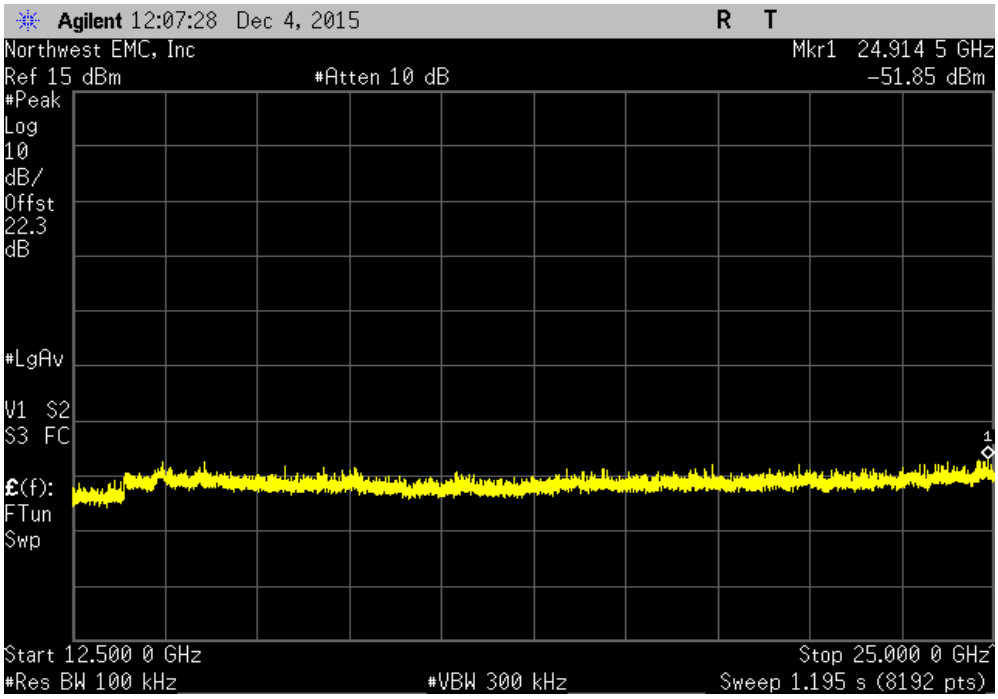
Chain A, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, High Channel 11, 2462 MHz						
Frequency Range				Max Value (dBc)	Limit ≤ (dBc)	Result
	Fundamental			N/A	N/A	N/A



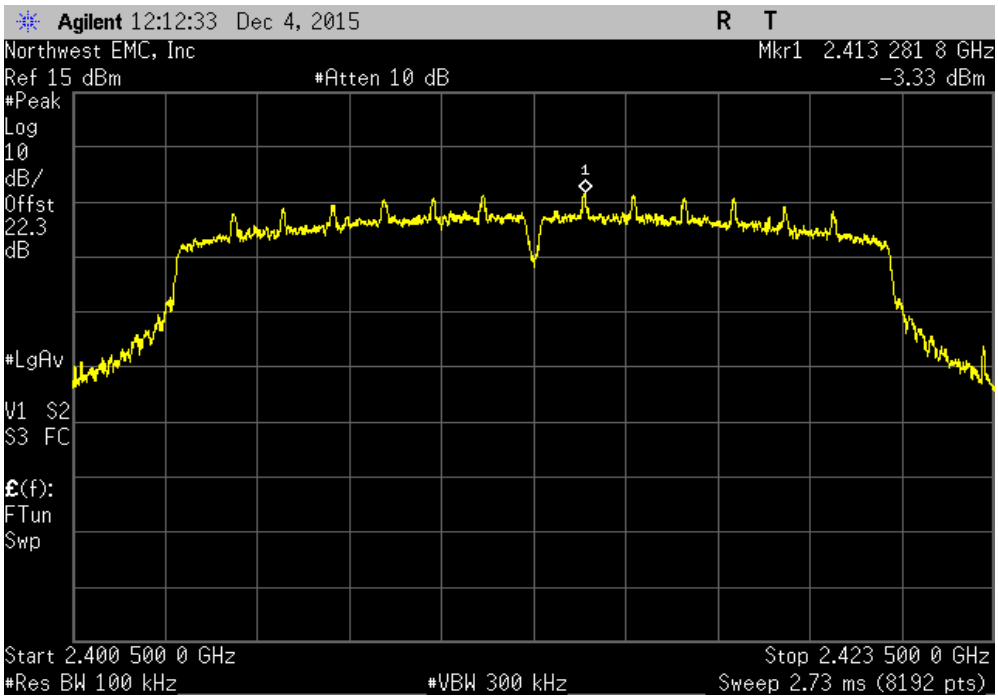
Chain A, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, High Channel 11, 2462 MHz				
Frequency Range		**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
30 MHz - 12.5 GHz		-47.84	-20	Pass



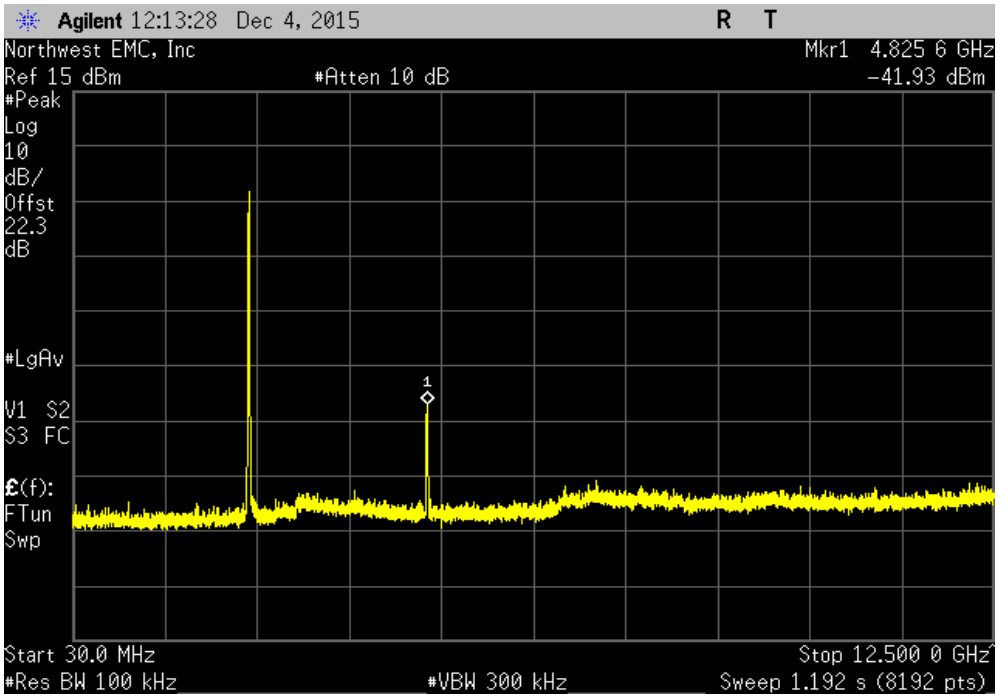
Chain A, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, High Channel 11, 2462 MHz				
Frequency Range		**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
12.5 GHz - 25 GHz		-43.12	-20	Pass



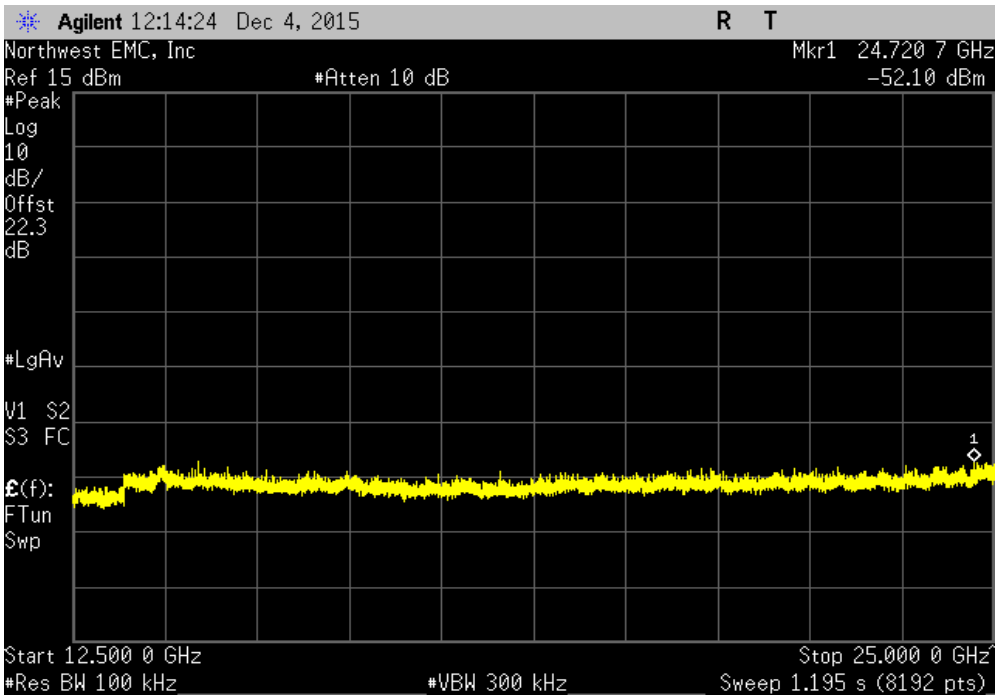
Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, Low Channel 1, 2412 MHz						
	Frequency Range			**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
	Fundamental			N/A	N/A	N/A



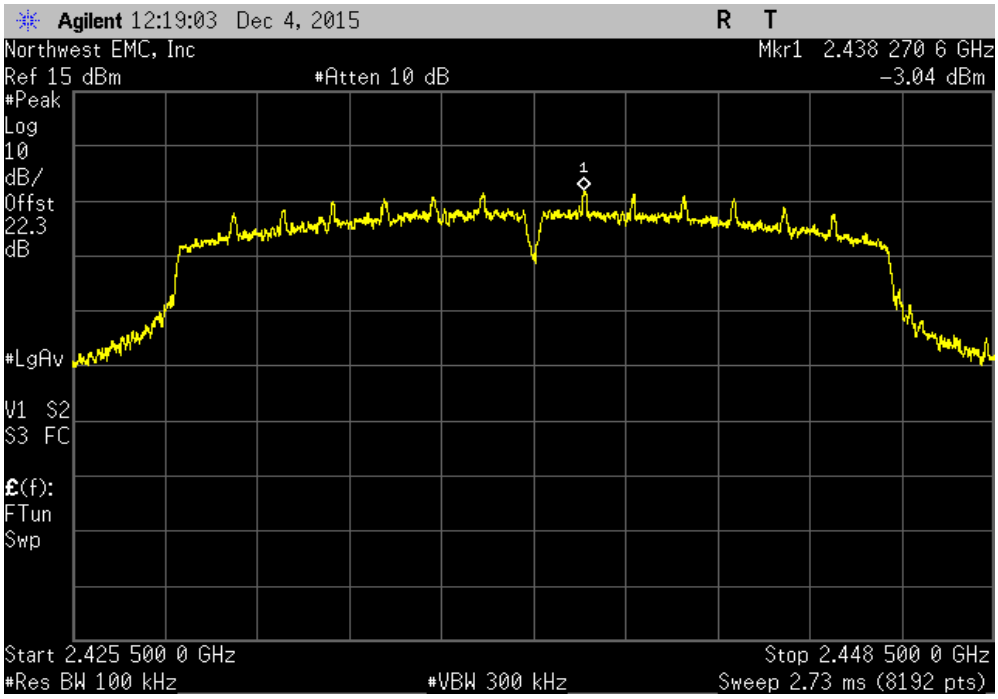
Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, Low Channel 1, 2412 MHz				
Frequency Range		**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
30 MHz - 12.5 GHz		-38.6	-20	Pass



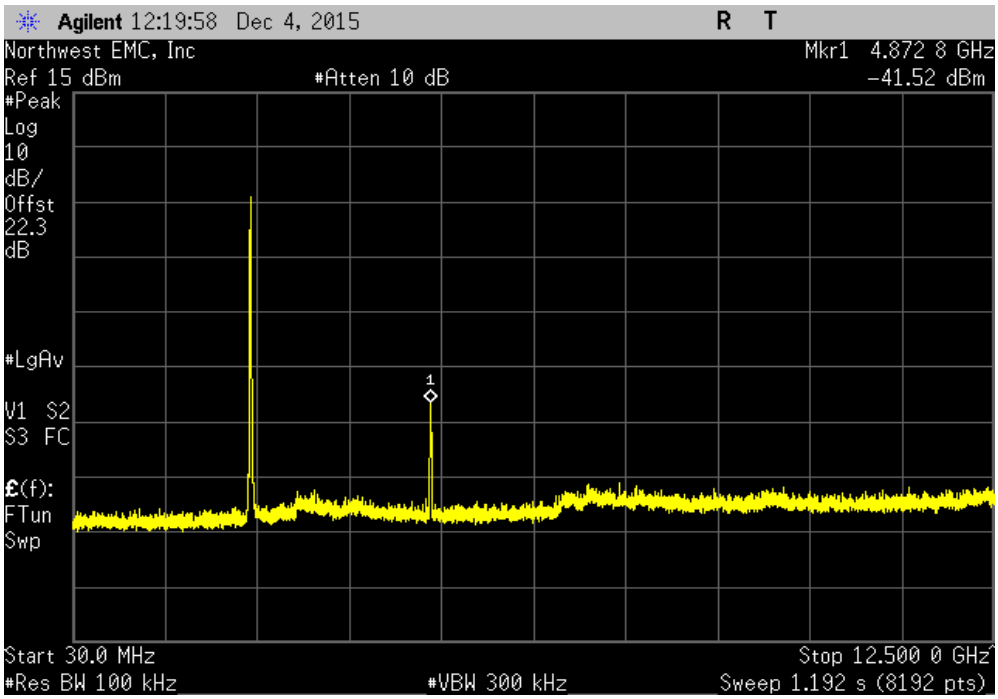
Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, Low Channel 1, 2412 MHz				
Frequency Range		Max Value (dBc)	Limit ≤ (dBc)	Result
12.5 GHz - 25 GHz		-48.77	-20	Pass



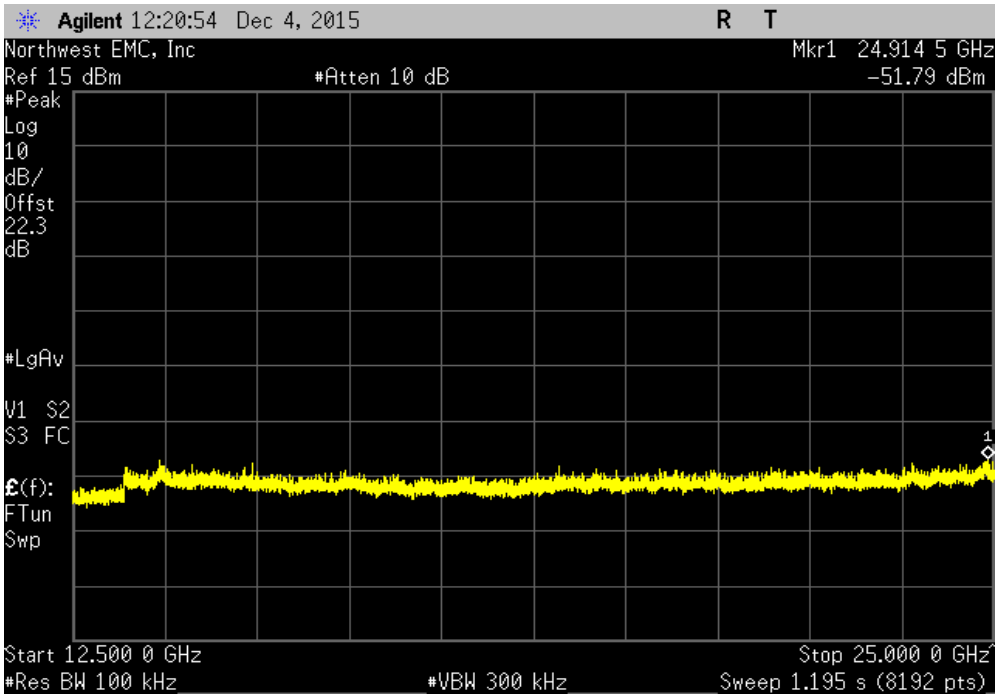
Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, Mid Channel 6, 2437 MHz						
	Frequency Range			Max Value (dBc)	Limit ≤ (dBc)	Result
	Fundamental			N/A	N/A	N/A



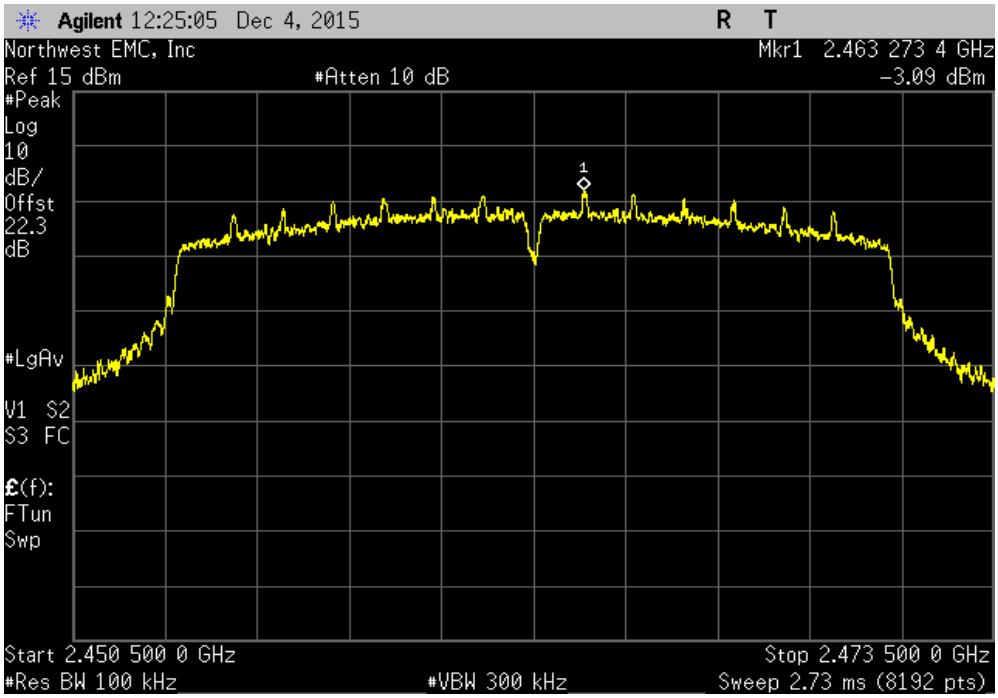
Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, Mid Channel 6, 2437 MHz				
Frequency Range		**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
30 MHz - 12.5 GHz		-38.48	-20	Pass



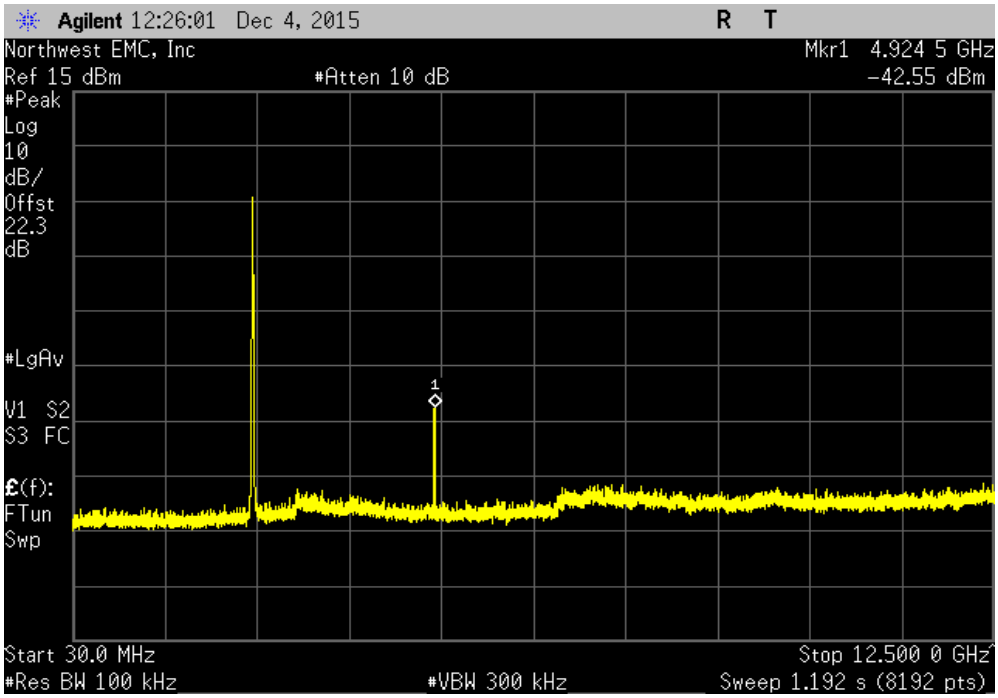
Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, Mid Channel 6, 2437 MHz				
Frequency Range		**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
12.5 GHz - 25 GHz		-48.75	-20	Pass



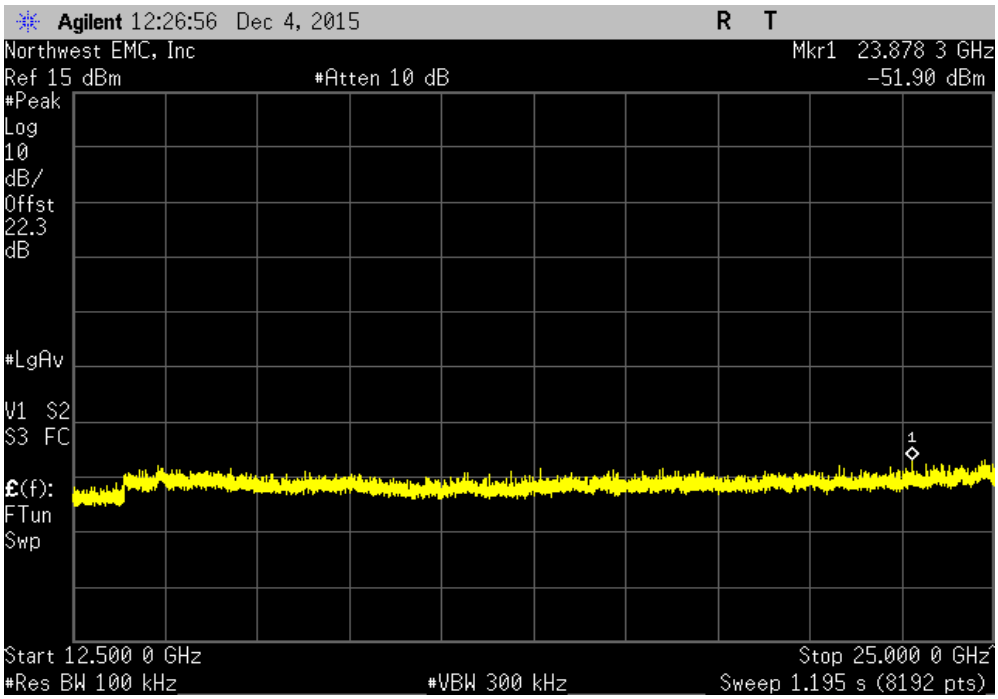
Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, High Channel 11, 2462 MHz						
	Frequency Range			Max Value (dBc)	Limit ≤ (dBc)	Result
	Fundamental			N/A	N/A	N/A



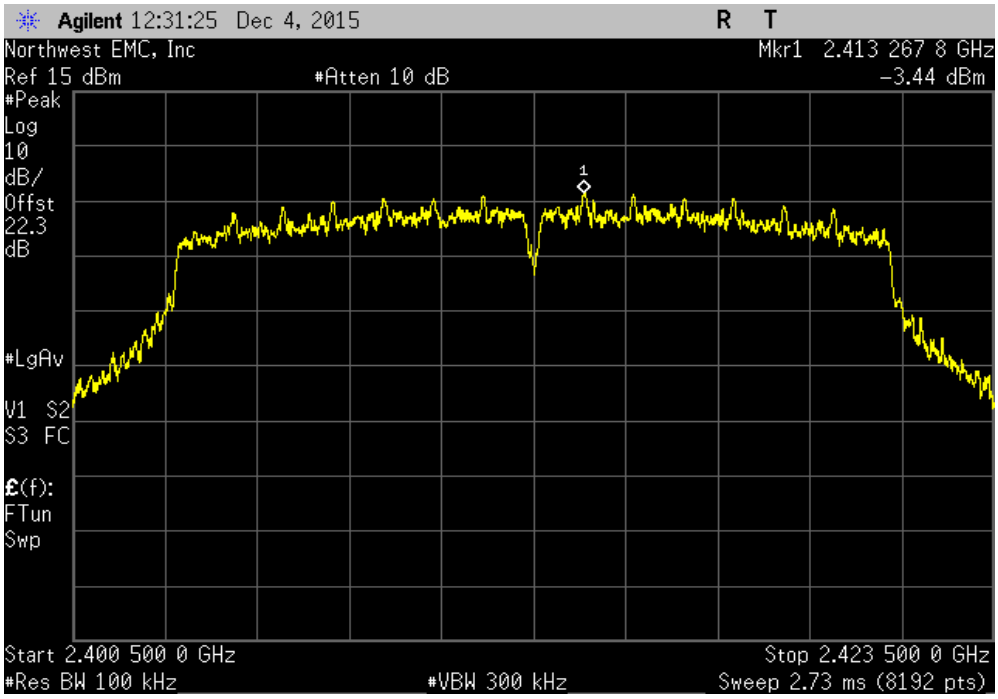
Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, High Channel 11, 2462 MHz					
Frequency Range			Max Value (dBc)	Limit ≤ (dBc)	Result
30 MHz - 12.5 GHz			-39.46	-20	Pass



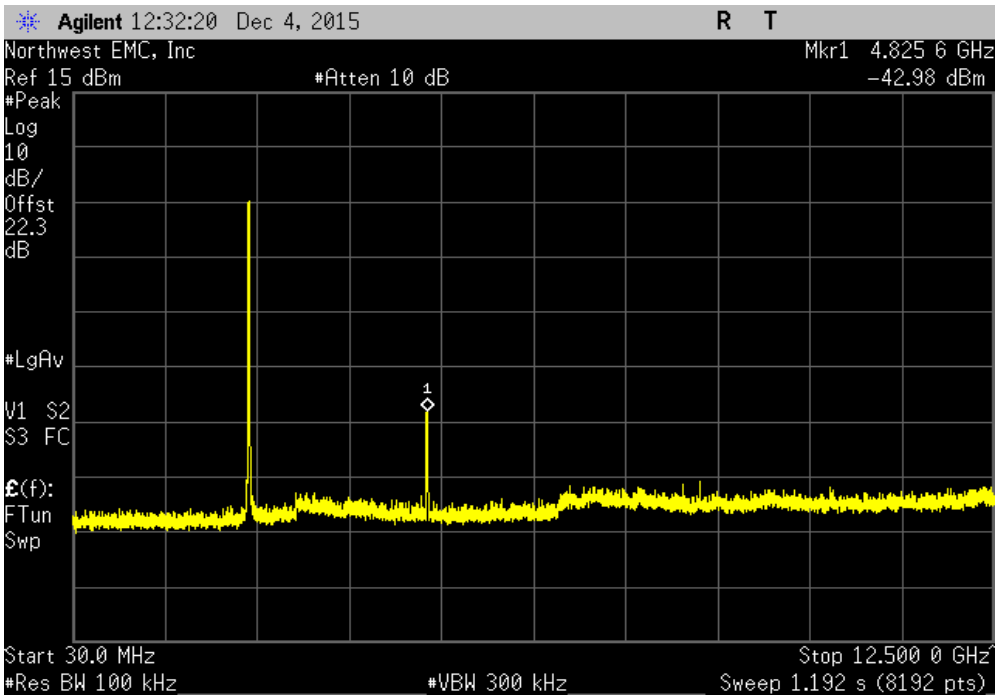
Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, High Channel 11, 2462 MHz				
Frequency Range		Max Value (dBc)	Limit ≤ (dBc)	Result
12.5 GHz - 25 GHz		-48.81	-20	Pass



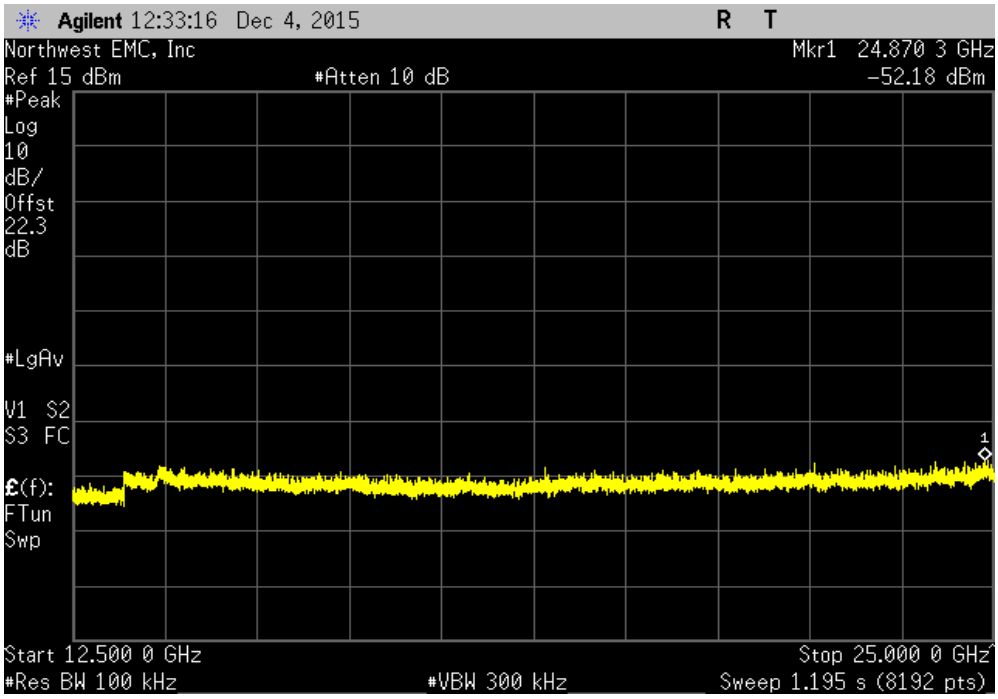
Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, Low Channel 1, 2412 MHz						
Frequency Range				Max Value (dBc)	Limit ≤ (dBc)	Result
	Fundamental			N/A	N/A	N/A



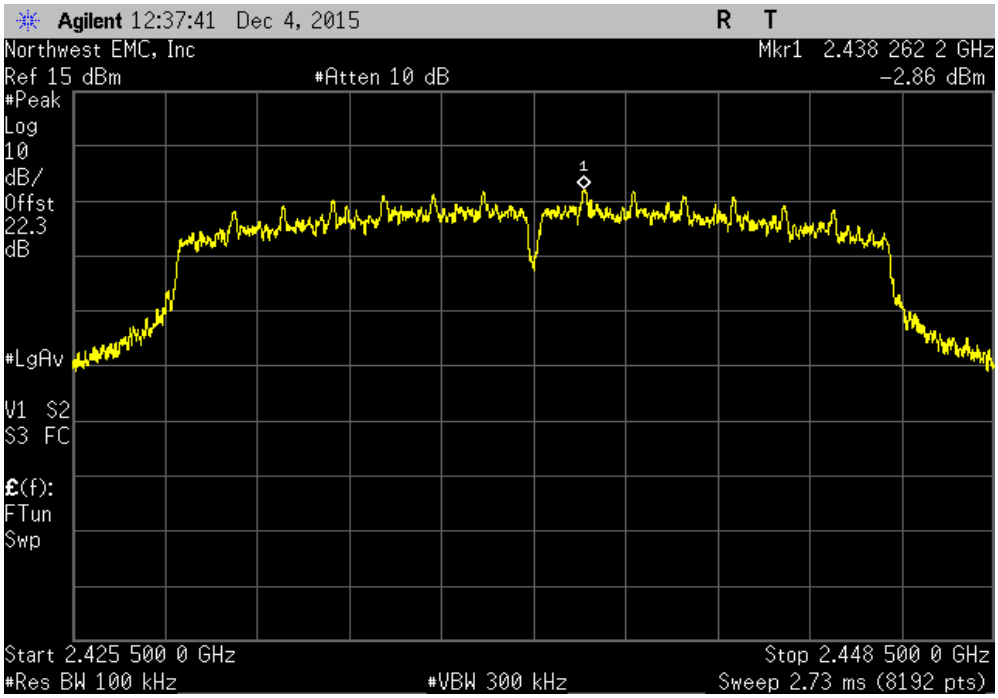
Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, Low Channel 1, 2412 MHz				
Frequency Range		**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
30 MHz - 12.5 GHz		-39.54	-20	Pass



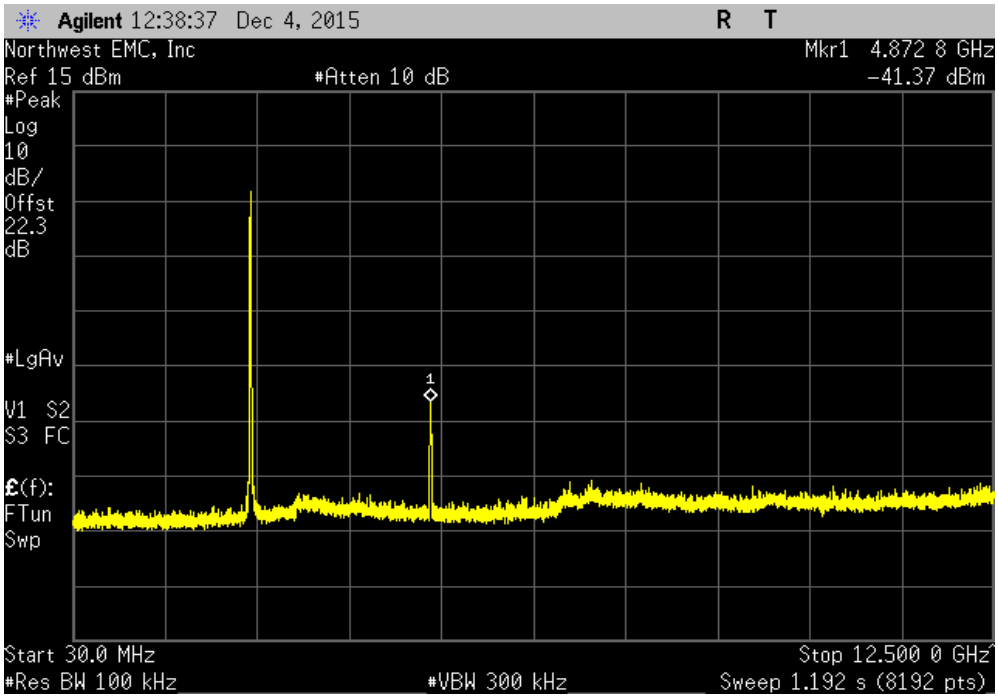
Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, Low Channel 1, 2412 MHz				
Frequency Range		**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
12.5 GHz - 25 GHz		-48.74	-20	Pass



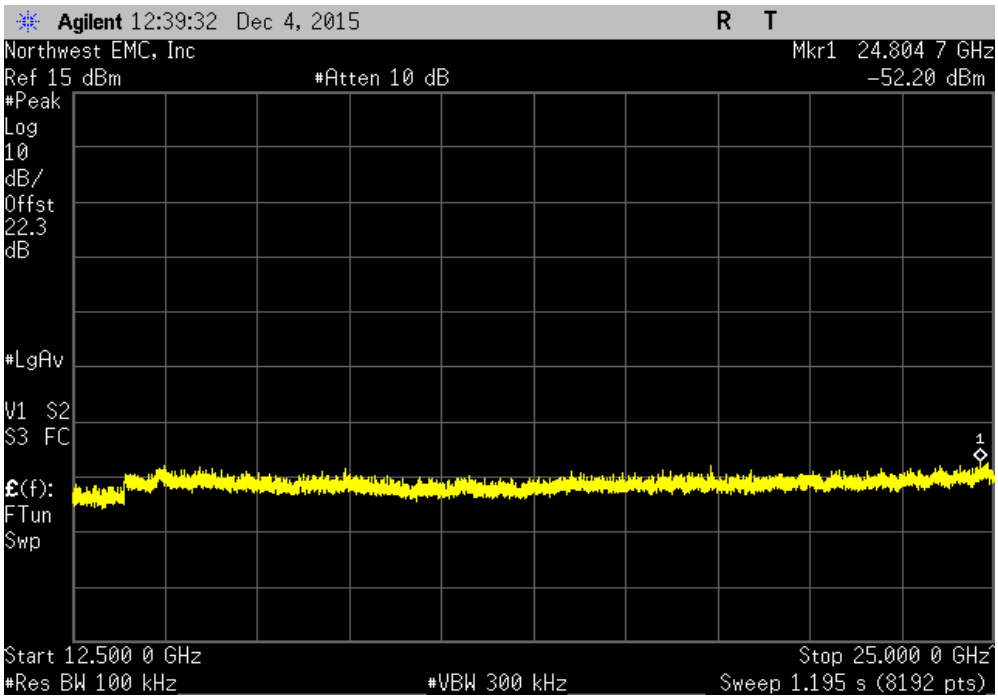
Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, Mid Channel 6, 2437 MHz						
	Frequency Range			Max Value (dBc)	Limit ≤ (dBc)	Result
	Fundamental			N/A	N/A	N/A



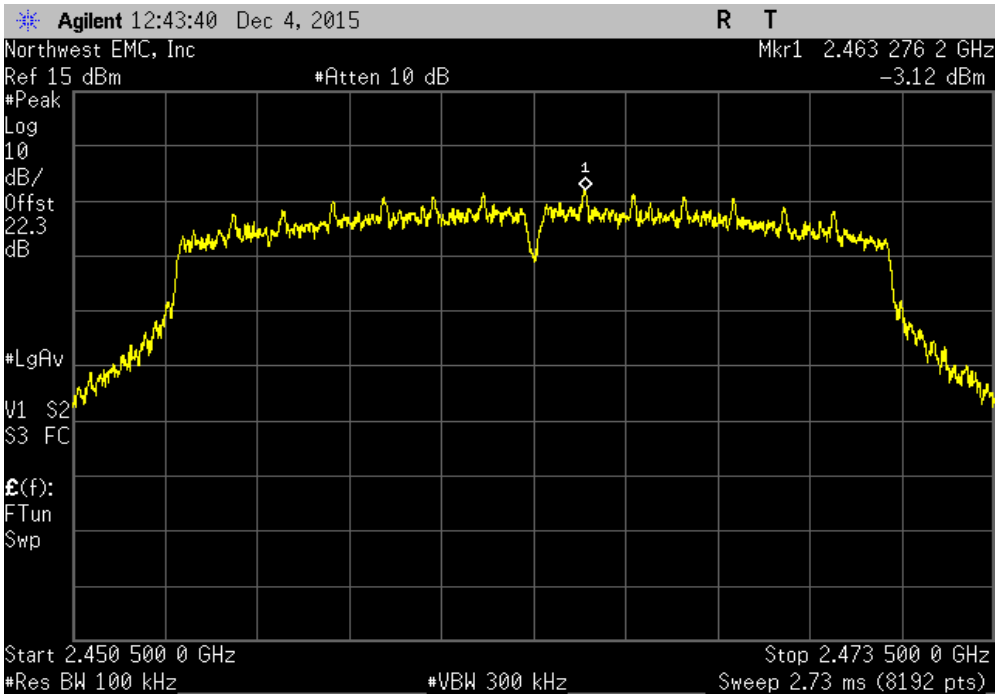
Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, Mid Channel 6, 2437 MHz					
Frequency Range			Max Value (dBc)	Limit ≤ (dBc)	Result
30 MHz - 12.5 GHz			-38.51	-20	Pass



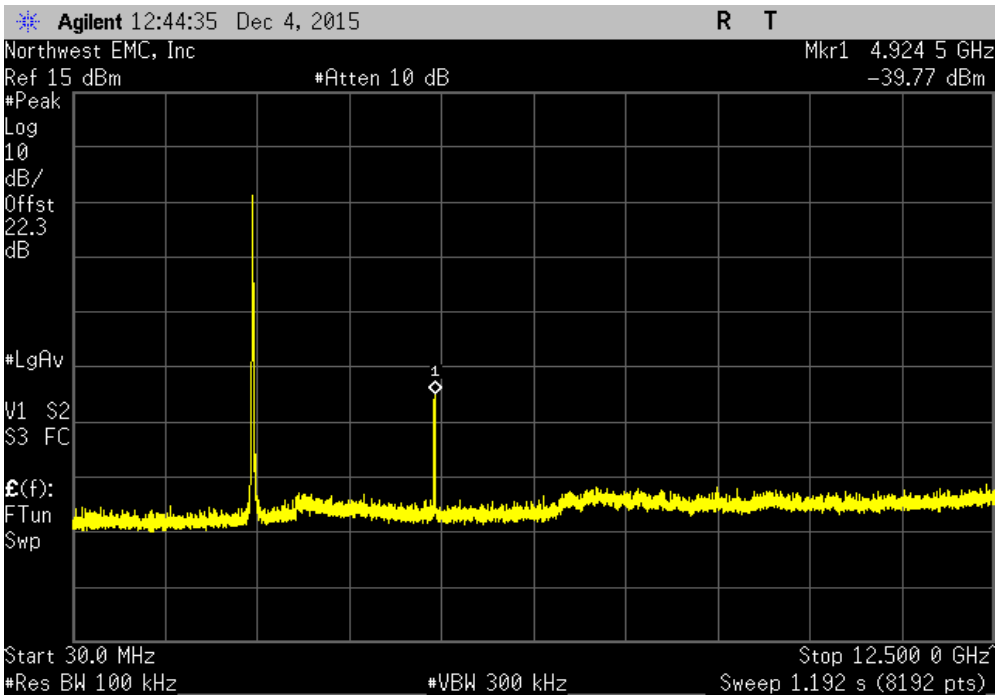
Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, Mid Channel 6, 2437 MHz				
Frequency Range		Max Value (dBc)	Limit ≤ (dBc)	Result
12.5 GHz - 25 GHz		-49.34	-20	Pass



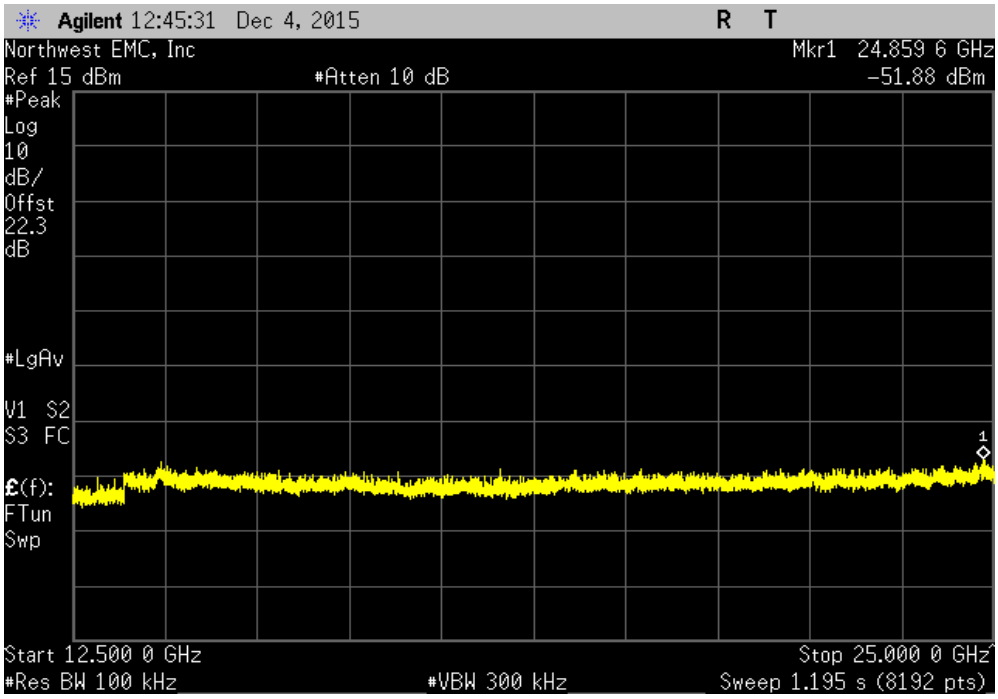
Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, High Channel 11, 2462 MHz						
	Frequency Range			Max Value (dBc)	Limit ≤ (dBc)	Result
	Fundamental			N/A	N/A	N/A



Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, High Channel 11, 2462 MHz				
Frequency Range		**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
30 MHz - 12.5 GHz		-36.65	-20	Pass



Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, High Channel 11, 2462 MHz				
Frequency Range		**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
12.5 GHz - 25 GHz		-48.76	-20	Pass



SPURIOUS RADIATED EMISSIONS

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

MODES OF OPERATION

Transmitting 802.11 - low channel (2412 MHz), mid channel (2437 MHz), and high channel (2462 MHz); 1 Mbps, 6 Mbps, 11 Mbps, 36 Mbps, 54 Mbps, MCS0, MCS7, MCS8, and MCS15 at 20 MHz bandwidth; low channel (2422 MHz), mid channel (2437 MHz), and high channel (2452 MHz) with MCS0 and MCS7 data rates at 40 MHz bandwidth.

POWER SETTINGS INVESTIGATED

12VDC

CONFIGURATIONS INVESTIGATED

ELTL0004 - 1

FREQUENCY RANGE INVESTIGATED

Start Frequency	30 MHz	Stop Frequency	26500 MHz

SAMPLE CALCULATIONS

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Filter - Low Pass	Micro-Tronics	LPM50004	HGK	3/2/2015	12 mo
Filter - High Pass	Micro-Tronics	HPM50111	HGQ	3/2/2015	12 mo
Attenuator	S.M. Electronics	SA6-20	REO	3/2/2015	12 mo
Amplifier - Pre-Amplifier	Miteq	JSD4-18002600-26-8P	APU	9/18/2015	12 mo
Cable	Northwest EMC	18-26GHz Standard Gain Horn Cable	MNP	9/18/2015	12 mo
Antenna - Standard Gain	ETS Lindgren	3160-09	AHG	NCR	0 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	AVW	3/2/2015	12 mo
Antenna - Standard Gain	ETS Lindgren	3160-08	AIQ	NCR	0 mo
Cable	ESM Cable Corp.	Standard Gain Horn Cables	MNJ	11/13/2015	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AVV	3/2/2015	12 mo
Antenna - Standard Gain	ETS Lindgren	3160-07	AXP	NCR	0 mo
Amplifier - Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	AVX	3/2/2015	12 mo
Cable	ESM Cable Corp.	Double Ridge Guide Horn Cables	MNI	5/5/2015	12 mo
Antenna - Double Ridge	ETS Lindgren	3115	AJA	6/3/2014	24 mo
Amplifier - Pre-Amplifier	Miteq	AM-1616-1000	PAD	3/2/2015	12 mo
Cable	ESM Cable Corp.	Bilog Cables	MNH	3/30/2015	12 mo
Antenna - Biconilog	Teseq	CBL 6141B	AYD	12/17/2013	24 mo
Analyzer - Spectrum Analyzer	Agilent	N9010A	AFI	1/27/2015	12 mo

MEASUREMENT BANDWIDTHS

Frequency Range (MHz)	Peak Data (kHz)	Quasi-Peak Data (kHz)	Average Data (kHz)
0.01 - 0.15	1.0	0.2	0.2
0.15 - 30.0	10.0	9.0	9.0
30.0 - 1000	100.0	120.0	120.0
Above 1000	1000.0	N/A	1000.0

TEST DESCRIPTION

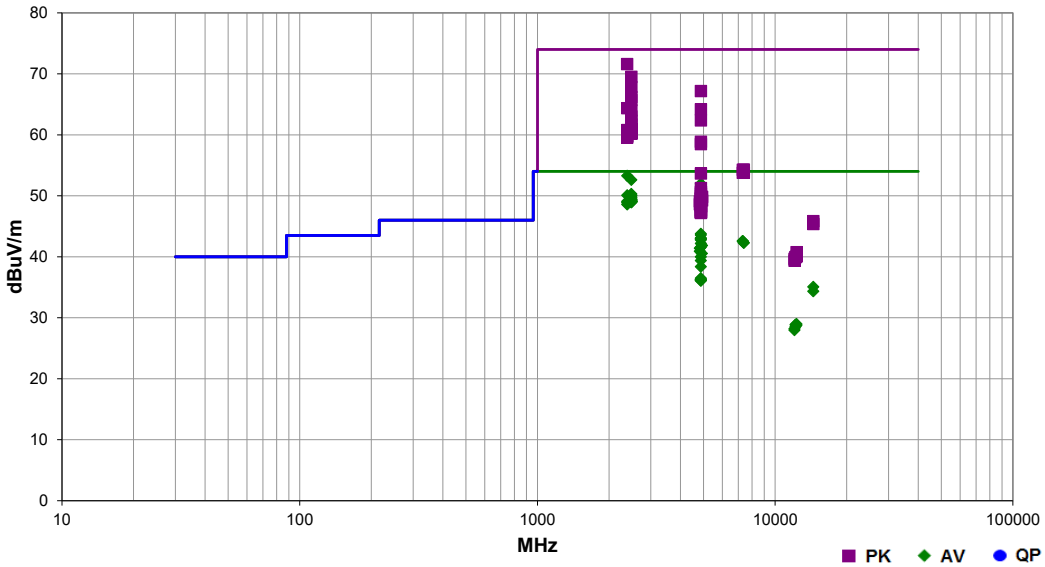
The highest gain of each type of antenna to be used with the EUT was tested. The EUT was configured for low, mid, and high band transmit frequencies. For each configuration, the spectrum was scanned throughout the specified range. In addition, measurements were made in the restricted bands to verify compliance. While scanning, emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and the EUT antenna in three orthogonal axis, and adjusting measurement antenna height and polarization. A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

SPURIOUS RADIATED EMISSIONS

Work Order:	ELTL0004	**Date:**	12/02/15		
Project:	None	**Temperature:**	21.8 °C		
Job Site:	MN05	**Humidity:**	26.5% RH		
Serial Number:	RTS0123456811	**Barometric Pres.:**	980.4 mbar	**Tested by:**	Dustin Sparks
EUT:	Marcum RT-9				
Configuration:	1				
Customer:	Electronic Technologies, LLC				
Attendees:	Rocky Holmes, Deb See				
EUT Power:	12VDC				
Operating Mode:	Transmitting 802.11 - low channel (2412 MHz), mid channel (2437 MHz), and high channel (2462 MHz); 1 Mbps, 6 Mbps, 11 Mbps, 36 Mbps, 54 Mbps, MCS0, MCS7, MCS8, and MCS15 at 20 MHz bandwidth; low channel (2422 MHz), mid channel (2437 MHz), and high channel (2452 MHz) with MCS0 and MCS7 data rates at 40 MHz bandwidth.				
Deviations:	None				
Comments:	Shield U1 top and bottom, U12, and U8, ferrite on sonar module, ferrite on camera and internal ferrite camera module				

Test Specifications	**N/A**	**Test Method**	
FCC 15.247:2015		ANSI C63.10:2013	

Run #	19	**Test Distance (m)**	3	**Antenna Height(s)**	1 to 4(m)	**Results**	Pass



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
2389.575	35.5	-2.2	1.5	197.0	3.0	20.0	Horz	AV	0.0	53.3	54.0	-0.7	Low ch, EUT horz, MCS0, 40MHz BW
2483.725	34.5	-1.9	1.3	168.0	3.0	20.0	Horz	AV	0.0	52.6	54.0	-1.4	High ch, EUT horz, MCS0, 40MHz BW
4875.167	45.5	6.5	2.3	125.0	3.0	0.0	Horz	AV	0.0	52.0	54.0	-2.0	Mid ch, EUT horz, MCS8, 20MHz BW
2385.225	53.8	-2.2	1.5	197.0	3.0	20.0	Horz	PK	0.0	71.6	74.0	-2.4	Low ch, EUT horz, MCS0, 40MHz BW
2483.508	32.2	-1.9	1.0	137.1	3.0	20.0	Horz	AV	0.0	50.3	54.0	-3.7	High ch, EUT horz, MCS8, 20MHz BW
2483.575	32.0	-1.9	1.4	196.1	3.0	20.0	Horz	AV	0.0	50.1	54.0	-3.9	High ch, EUT horz, MCS0, 20MHz BW
2389.917	32.3	-2.2	1.3	115.0	3.0	20.0	Horz	AV	0.0	50.1	54.0	-3.9	Low ch, EUT horz, MCS8, 20MHz BW
2484.142	31.9	-1.9	1.3	168.0	3.0	20.0	Horz	AV	0.0	50.0	54.0	-4.0	High ch, EUT horz, MCS7, 40MHz BW
2483.500	31.7	-1.9	3.5	27.0	3.0	20.0	Horz	AV	0.0	49.8	54.0	-4.2	High ch, EUT vert, MCS8, 20MHz BW
2483.550	31.6	-1.9	1.0	153.0	3.0	20.0	Vert	AV	0.0	49.7	54.0	-4.3	High ch, EUT on side, MCS8, 20MHz BW
2484.892	51.4	-1.9	1.3	168.0	3.0	20.0	Horz	PK	0.0	69.5	74.0	-4.5	High ch, EUT horz, MCS0, 40MHz BW
2487.267	31.3	-1.9	1.4	196.1	3.0	20.0	Horz	AV	0.0	49.4	54.0	-4.6	High ch, EUT horz, 1 Mbps, 20MHz BW
2483.742	31.3	-1.9	1.0	176.0	3.0	20.0	Horz	AV	0.0	49.4	54.0	-4.6	High ch, EUT horz, 6 Mbps, 20MHz BW
2483.675	31.3	-1.9	1.4	196.1	3.0	20.0	Horz	AV	0.0	49.4	54.0	-4.6	High ch, EUT horz, 54 Mbps, 20MHz BW
4875.000	42.9	6.5	1.1	15.1	3.0	0.0	Horz	AV	0.0	49.4	54.0	-4.6	Mid ch, EUT on side, MCS8, 20MHz BW
2483.908	31.1	-1.9	2.6	348.9	3.0	20.0	Horz	AV	0.0	49.2	54.0	-4.8	High ch, EUT on side, MCS8, 20MHz BW
2483.633	31.1	-1.9	1.4	196.1	3.0	20.0	Horz	AV	0.0	49.2	54.0	-4.8	High ch, EUT horz, 36 Mbps, 20MHz BW
2485.783	31.0	-1.9	1.0	66.1	3.0	20.0	Horz	AV	0.0	49.1	54.0	-4.9	High ch, EUT horz, MCS7, 20MHz BW
2485.658	31.0	-1.9	2.9	193.0	3.0	20.0	Horz	AV	0.0	49.1	54.0	-4.9	High ch, EUT horz, MCS15, 20MHz BW
2484.733	31.0	-1.9	1.0	272.9	3.0	20.0	Vert	AV	0.0	49.1	54.0	-4.9	High ch, EUT horz, MCS8, 20MHz BW
2484.175	31.0	-1.9	2.9	193.0	3.0	20.0	Vert	AV	0.0	49.1	54.0	-4.9	High ch, EUT vert, MCS8, 20MHz BW
2483.850	31.0	-1.9	1.0	301.9	3.0	20.0	Vert	AV	0.0	49.1	54.0	-4.9	High ch, EUT on side, 6 Mbps, 20MHz BW
2388.883	31.3	-2.2	1.3	115.0	3.0	20.0	Horz	AV	0.0	49.1	54.0	-4.9	Low ch, EUT horz, MCS15, 20MHz BW
2488.317	30.9	-1.9	2.3	195.1	3.0	20.0	Vert	AV	0.0	49.0	54.0	-5.0	High ch, EUT vert, 6 Mbps, 20MHz BW
2487.958	30.9	-1.9	2.2	139.0	3.0	20.0	Horz	AV	0.0	49.0	54.0	-5.0	High ch, EUT vert, 6 Mbps, 20MHz BW
2486.050	30.9	-1.9	1.0	48.1	3.0	20.0	Vert	AV	0.0	49.0	54.0	-5.0	High ch, EUT horz, 6 Mbps, 20MHz BW
2483.533	30.9	-1.9	1.0	250.9	3.0	20.0	Horz	AV	0.0	49.0	54.0	-5.0	High ch, EUT on side, 6 Mbps, 20MHz BW
2483.683	30.8	-1.9	1.4	196.1	3.0	20.0	Horz	AV	0.0	48.9	54.0	-5.1	High ch, EUT horz, 11 Mbps, 20MHz BW
2386.383	31.1	-2.2	1.0	161.0	3.0	20.0	Horz	AV	0.0	48.9	54.0	-5.1	Low ch, EUT horz, 1 Mbps, 20MHz BW
2389.967	30.8	-2.2	1.0	161.0	3.0	20.0	Horz	AV	0.0	48.6	54.0	-5.4	Low ch, EUT horz, 6 Mbps, 20MHz BW
4875.308	41.6	6.5	1.7	165.0	3.0	0.0	Vert	AV	0.0	48.1	54.0	-5.9	Mid ch, EUT vert, MCS8, 20MHz BW
2484.675	49.7	-1.9	1.3	168.0	3.0	20.0	Horz	PK	0.0	67.8	74.0	-6.2	High ch, EUT horz, MCS7, 40MHz BW
4874.242	60.7	6.5	2.3	125.0	3.0	0.0	Horz	PK	0.0	67.2	74.0	-6.8	Mid ch, EUT horz, MCS8, 20MHz BW

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
2483.583	48.1	-1.9	1.0	137.1	3.0	20.0	Horz	PK	0.0	66.2	74.0	-7.8	High ch, EUT horz, MCS8, 20MHz BW
2483.750	47.6	-1.9	1.4	196.1	3.0	20.0	Horz	PK	0.0	65.7	74.0	-8.3	High ch, EUT horz, MCS0, 20MHz BW
2388.167	46.6	-2.2	1.3	115.0	3.0	20.0	Horz	PK	0.0	64.4	74.0	-9.6	Low ch, EUT horz, MCS8, 20MHz BW
4874.092	57.7	6.5	1.1	15.1	3.0	0.0	Horz	PK	0.0	64.2	74.0	-9.8	Mid ch, EUT on side, MCS8, 20MHz BW
2484.575	45.9	-1.9	1.4	196.1	3.0	20.0	Horz	PK	0.0	64.0	74.0	-10.0	High ch, EUT horz, 54 Mbps, 20MHz BW
4875.100	37.3	6.5	1.0	211.0	3.0	0.0	Horz	AV	0.0	43.8	54.0	-10.2	Mid ch, EUT vert, MCS8, 20MHz BW
4874.000	37.1	6.5	1.0	17.0	3.0	0.0	Horz	AV	0.0	43.6	54.0	-10.4	Mid ch, EUT on side, 1 Mbps, 20MHz BW
4875.017	36.6	6.5	1.7	165.0	3.0	0.0	Horz	AV	0.0	43.1	54.0	-10.9	Mid ch, EUT horz, MCS15, 20MHz BW
2483.867	44.9	-1.9	3.5	27.0	3.0	20.0	Horz	PK	0.0	63.0	74.0	-11.0	High ch, EUT vert, MCS8, 20MHz BW
4873.983	36.5	6.5	2.6	16.1	3.0	0.0	Horz	AV	0.0	43.0	54.0	-11.0	Mid ch, EUT vert, 1 Mbps, 20MHz BW
4873.983	36.4	6.5	1.0	13.0	3.0	0.0	Horz	AV	0.0	42.9	54.0	-11.1	Mid ch, EUT on side, 1 Mbps, 20MHz BW
4873.950	36.3	6.5	1.0	145.1	3.0	0.0	Vert	AV	0.0	42.8	54.0	-11.2	Mid ch, EUT vert, 1 Mbps, 20MHz BW
7312.100	28.4	14.2	1.0	315.0	3.0	0.0	Vert	AV	0.0	42.6	54.0	-11.4	Mid ch, EUT vert, 1 Mbps, 20MHz BW
7310.992	28.4	14.2	1.0	235.9	3.0	0.0	Horz	AV	0.0	42.6	54.0	-11.4	Mid ch, EUT on side, 1 Mbps, 20MHz BW
4873.858	55.9	6.5	1.7	165.0	3.0	0.0	Vert	PK	0.0	62.4	74.0	-11.6	Mid ch, EUT vert, MCS8, 20MHz BW
2483.533	44.2	-1.9	1.0	176.0	3.0	20.0	Horz	PK	0.0	62.3	74.0	-11.7	High ch, EUT horz, 6 Mbps, 20MHz BW
7383.817	27.8	14.5	1.0	149.1	3.0	0.0	Vert	AV	0.0	42.3	54.0	-11.7	High ch, EUT vert, 1 Mbps, 20MHz BW
7383.658	27.8	14.5	1.0	144.0	3.0	0.0	Horz	AV	0.0	42.3	54.0	-11.7	High ch, EUT on side, 1 Mbps, 20MHz BW
4873.975	35.7	6.5	1.0	135.0	3.0	0.0	Horz	AV	0.0	42.2	54.0	-11.8	Mid ch, EUT horz, 1 Mbps, 20MHz BW
4924.083	35.2	6.6	1.3	15.1	3.0	0.0	Horz	AV	0.0	41.8	54.0	-12.2	High ch, EUT on side, 1 Mbps, 20MHz BW
2483.633	43.6	-1.9	1.0	153.0	3.0	20.0	Vert	PK	0.0	61.7	74.0	-12.3	High ch, EUT on side, MCS8, 20MHz BW
4874.008	35.1	6.5	1.7	315.9	3.0	0.0	Vert	AV	0.0	41.6	54.0	-12.4	Mid ch, EUT on side, 1 Mbps, 20MHz BW
4824.033	35.0	6.4	2.1	42.0	3.0	0.0	Horz	AV	0.0	41.4	54.0	-12.6	Low ch, EUT on side, 1 Mbps, 20MHz BW
2486.642	42.9	-1.9	1.0	301.9	3.0	20.0	Vert	PK	0.0	61.0	74.0	-13.0	High ch, EUT on side, 6 Mbps, 20MHz BW
2485.850	42.8	-1.9	1.4	196.1	3.0	20.0	Horz	PK	0.0	60.9	74.0	-13.1	High ch, EUT horz, 1 Mbps, 20MHz BW
4824.000	34.5	6.4	2.0	142.1	3.0	0.0	Vert	AV	0.0	40.9	54.0	-13.1	Low ch, EUT vert, 1 Mbps, 20MHz BW
2486.183	42.7	-1.9	1.0	66.1	3.0	20.0	Horz	PK	0.0	60.8	74.0	-13.2	High ch, EUT horz, MCS7, 20MHz BW
2387.500	43.0	-2.2	1.3	115.0	3.0	20.0	Horz	PK	0.0	60.8	74.0	-13.2	Low ch, EUT horz, MCS15, 20MHz BW
2484.267	42.6	-1.9	2.2	139.0	3.0	20.0	Horz	PK	0.0	60.7	74.0	-13.3	High ch, EUT vert, 6 Mbps, 20MHz BW
2483.608	42.6	-1.9	1.4	196.1	3.0	20.0	Horz	PK	0.0	60.7	74.0	-13.3	High ch, EUT horz, 36 Mbps, 20MHz BW
2485.925	42.5	-1.9	2.6	348.9	3.0	20.0	Horz	PK	0.0	60.6	74.0	-13.4	High ch, EUT on side, MCS8, 20MHz BW
2485.558	42.5	-1.9	1.4	196.1	3.0	20.0	Horz	PK	0.0	60.6	74.0	-13.4	High ch, EUT horz, 11 Mbps, 20MHz BW
2485.275	42.5	-1.9	2.9	193.0	3.0	20.0	Vert	PK	0.0	60.6	74.0	-13.4	High ch, EUT vert, MCS8, 20MHz BW
4923.992	33.9	6.6	1.0	203.1	3.0	0.0	Vert	AV	0.0	40.5	54.0	-13.5	High ch, EUT vert, 1 Mbps, 20MHz BW
2486.475	42.4	-1.9	1.0	250.9	3.0	20.0	Horz	PK	0.0	60.5	74.0	-13.5	High ch, EUT on side, 6 Mbps, 20MHz BW
2484.858	42.4	-1.9	2.3	195.1	3.0	20.0	Vert	PK	0.0	60.5	74.0	-13.5	High ch, EUT vert, 6 Mbps, 20MHz BW
2484.692	42.3	-1.9	1.0	272.9	3.0	20.0	Vert	PK	0.0	60.4	74.0	-13.6	High ch, EUT horz, MCS8, 20MHz BW
2486.458	42.1	-1.9	1.0	48.1	3.0	20.0	Vert	PK	0.0	60.2	74.0	-13.8	High ch, EUT horz, 6 Mbps, 20MHz BW
2484.117	42.1	-1.9	2.9	193.0	3.0	20.0	Horz	PK	0.0	60.2	74.0	-13.8	High ch, EUT horz, MCS15, 20MHz BW
4873.075	33.5	6.5	1.3	205.0	3.0	0.0	Vert	AV	0.0	40.0	54.0	-14.0	Mid ch, EUT horz, MCS8, 20MHz BW
2387.000	42.0	-2.2	1.0	161.0	3.0	20.0	Horz	PK	0.0	59.8	74.0	-14.2	Low ch, EUT horz, 1 Mbps, 20MHz BW
2389.617	41.8	-2.2	1.0	161.0	3.0	20.0	Horz	PK	0.0	59.6	74.0	-14.4	Low ch, EUT horz, 6 Mbps, 20MHz BW
4873.992	32.9	6.5	1.0	13.0	3.0	0.0	Horz	AV	0.0	39.4	54.0	-14.6	Mid ch, EUT on side, 11 Mbps, 20MHz BW
4873.575	52.4	6.5	1.7	165.0	3.0	0.0	Horz	PK	0.0	58.9	74.0	-15.1	Mid ch, EUT horz, MCS15, 20MHz BW
4873.958	52.0	6.5	1.0	211.0	3.0	0.0	Horz	PK	0.0	58.5	74.0	-15.5	Mid ch, EUT vert, MCS8, 20MHz BW
4874.033	31.9	6.5	1.0	113.1	3.0	0.0	Vert	AV	0.0	38.4	54.0	-15.6	Mid ch, EUT horz, 1 Mbps, 20MHz BW
4873.900	30.0	6.5	1.0	13.0	3.0	0.0	Horz	AV	0.0	36.5	54.0	-17.5	Mid ch, EUT on side, MCS0, 20MHz BW
4873.833	29.8	6.5	1.0	13.0	3.0	0.0	Horz	AV	0.0	36.3	54.0	-17.7	Mid ch, EUT on side, MCS7, 20MHz BW
4873.500	29.8	6.5	1.0	11.1	3.0	0.0	Horz	AV	0.0	36.3	54.0	-17.7	Mid ch, EUT on side, MCS0, 40MHz BW
4874.875	29.7	6.5	1.0	13.0	3.0	0.0	Horz	AV	0.0	36.2	54.0	-17.8	Mid ch, EUT on side, 36 Mbps, 20MHz BW
4872.933	29.7	6.5	1.9	147.0	3.0	0.0	Horz	AV	0.0	36.2	54.0	-17.8	Mid ch, EUT on side, 6 Mbps, 20MHz BW
4871.583	29.7	6.5	1.0	13.0	3.0	0.0	Horz	AV	0.0	36.2	54.0	-17.8	Mid ch, EUT on side, 54 Mbps, 20MHz BW
4874.442	29.6	6.5	1.0	11.1	3.0	0.0	Horz	AV	0.0	36.1	54.0	-17.9	Mid ch, EUT on side, MCS7, 40MHz BW
14471.910	29.9	5.2	1.0	15.1	3.0	0.0	Horz	AV	0.0	35.1	54.0	-18.9	Low ch, EUT on side, 1 Mbps, 20MHz BW
14473.280	29.2	5.1	1.0	303.0	3.0	0.0	Vert	AV	0.0	34.3	54.0	-19.7	Low ch, EUT vert, 1 Mbps, 20MHz BW
7386.500	39.8	14.5	1.0	144.0	3.0	0.0	Horz	PK	0.0	54.3	74.0	-19.7	High ch, EUT on side, 1 Mbps, 20MHz BW
7309.442	40.1	14.2	1.0	235.9	3.0	0.0	Horz	PK	0.0	54.3	74.0	-19.7	Mid ch, EUT on side, 1 Mbps, 20MHz BW
7386.433	39.3	14.5	1.0	149.1	3.0	0.0	Vert	PK	0.0	53.8	74.0	-20.2	High ch, EUT vert, 1 Mbps, 20MHz BW
7309.500	39.6	14.2	1.0	315.0	3.0	0.0	Vert	PK	0.0	53.8	74.0	-20.2	Mid ch, EUT vert, 1 Mbps, 20MHz BW
4874.500	47.2	6.5	1.3	205.0	3.0	0.0	Vert	PK	0.0	53.7	74.0	-20.3	Mid ch, EUT horz, MCS8, 20MHz BW
4874.025	44.8	6.5	1.0	17.0	3.0	0.0	Horz	PK	0.0	51.3	74.0	-22.7	Mid ch, EUT on side, 1 Mbps, 20MHz BW
4873.892	44.2	6.5	1.0	13.0	3.0	0.0	Horz	PK	0.0	50.7	74.0	-23.3	Mid ch, EUT on side, 1 Mbps, 20MHz BW
4874.058	43.9	6.5	1.0	145.1	3.0	0.0	Vert	PK	0.0	50.4	74.0	-23.6	Mid ch, EUT vert, 1 Mbps, 20MHz BW
4874.275	43.5	6.5	2.6	16.1	3.0	0.0	Horz	PK	0.0	50.0	74.0	-24.0	Mid ch, EUT vert, 1 Mbps, 20MHz BW
4924.000	43.2	6.6	1.3	15.1	3.0	0.0	Horz	PK	0.0	49.8	74.0	-24.2	High ch, EUT on side, 1 Mbps, 20MHz BW
4874.283	43.1	6.5	1.0	135.0	3.0	0.0	Horz	PK	0.0	49.6	74.0	-24.4	Mid ch, EUT horz, 1 Mbps, 20MHz BW
4873.975	43.1	6.5	1.7	315.9	3.0	0.0	Vert	PK	0.0	49.6	74.0	-24.4	Mid ch, EUT on side, 1 Mbps, 20MHz BW
4873.817	43.0	6.5	1.0	13.0	3.0	0.0	Horz	PK	0.0	49.5	74.0	-24.5	Mid ch, EUT on side, 11 Mbps, 20MHz BW
4924.033	42.6	6.6	1.0	203.1	3.0	0.0	Vert	PK	0.0	49.2	74.0	-24.8	High ch, EUT vert, 1 Mbps, 20MHz BW
4823.708	42.7	6.4	2.1	42.0	3.0	0.0	Horz	PK	0.0	49.1	74.0	-24.9	Low ch, EUT on side, 1 Mbps, 20MHz BW
12309.190	31.2	-2.2	1.0	293.9	3.0	0.0	Vert	AV	0.0	29.0	54.0	-25.0	High ch, EUT vert, 1 Mbps, 20MHz BW
12187.370	31.6	-2.7	1.0	172.0	3.0	0.0	Vert	AV	0.0	28.9	54.0	-25.1	Mid ch, EUT vert, 1 Mbps, 20MHz BW
12310.600	31.0	-2.2	1.0	183.0	3.0	0.0	Horz	AV	0.0	28.8	54.0	-25.2	High ch, EUT on side, 1 Mbps, 20MHz BW
4824.275	42.2	6.4	2.0	142.1	3.0	0.0	Vert	PK	0.0	48.6	74.0	-25.4	Low ch, EUT vert, 1 Mbps, 20MHz BW
12187.240	31.3	-2.7	1.0	301.9	3.0	0.0	Horz	AV	0.0	28.6	54.0	-25.4	Mid ch, EUT on side, 1 Mbps, 20MHz BW
4876.050	41.8	6.5	1.0	113.1	3.0	0.0	Vert	PK	0.0	48.3	74.0	-25.7	Mid ch, EUT horz, 1 Mbps, 20MHz BW
4873.008	41.8	6.5	1.0	13.0	3.0	0.0	Horz	PK	0.0	48.3	74.0	-25.7	Mid ch, EUT on side, 54 Mbps, 20MHz BW
12059.100	31.4	-3.2	1.0	191.1	3.0	0.0	Vert	AV	0.0	28.2	54.0	-25.8	Low ch, EUT vert, 1 Mbps, 20MHz BW
12058.630	31.2	-3.2	1.0	297.9	3.0	0.0	Horz	AV	0.0	28.0	54.0	-26.0	Low ch, EUT on side, 1 Mbps, 20MHz BW
4874.183	41.2	6.5	1.0	13.0	3.0	0.0	Horz	PK	0.0	47.7	74.0	-26.3	Mid ch, EUT on side, 36 Mbps, 20MHz BW
4874.467	40.9	6.5	1.0	13.0	3.0	0.0	Horz	PK	0.0	47.4	74.0	-26.6	Mid ch, EUT on side, MCS7, 20MHz BW
4872.050	40.9	6.5	1.0	13.0	3.0	0.0	Horz	PK	0.0	47.4	74.0	-26.6	Mid ch, EUT on side, MCS0, 20MHz BW
4875.025	40.8	6.5	1.0	11.1	3.0	0.0	Horz	PK	0.0	47.3	74.0	-26.7	Mid ch, EUT on side, MCS0, 40MHz BW
4872.458	40.8	6.5	1.9	147.0	3.0	0.0	Horz	PK	0.0	47.3	74.0	-26.7	Mid ch, EUT on side, 6 Mbps, 20MHz BW
4875.558	40.7	6.5	1.0	11.1	3.0	0.0	Horz	PK	0.0	47.2	74.0	-26.8	Mid ch, EUT on side, MCS7, 40MHz BW
14472.290	40.7	5.2	1.0	15.1	3.0	0.0	Horz	PK	0.0	45.9	74.0	-28.1	Low ch, EUT on side, 1 Mbps, 20MHz BW
14470.940	40.2	5.2	1.0	303.0	3.0	0.0	Vert	PK	0.0	45.4	74.0	-28.6	Low ch, EUT vert, 1 Mbps, 20MHz BW
12309.510	43.0	-2.2	1.0	293.9	3.0	0.0	Vert	PK	0.0	40.8	74.0	-33.2	High ch, EUT vert, 1 Mbps, 20MHz BW
12311.630	42.3	-2.2	1.0	183.0	3.0	0.0	Horz	PK	0.0	40.1	74.0	-33.9	High ch, EUT on side, 1 Mbps, 20MHz BW
12186.500	42.7	-2.8	1.0	301.9	3.0	0.0	Horz	PK	0.0	39.9	74.0	-34.1	Mid ch, EUT on side, 1 Mbps, 20MHz BW
12182.700	42.7	-2.8	1.0	172.0	3.0	0.0	Vert	PK	0.0	39.9	74.0	-34.1	Mid ch, EUT vert, 1 Mbps, 20MHz BW
12059.660	42.9	-3.2	1.0	191.1	3.0	0.0	Vert	PK	0.0	39.7	74.0	-34.3	Low ch, EUT vert, 1 Mbps, 20MHz BW
12058.540	42.6	-3.2	1.0	297.9	3.0	0.0	Horz	PK	0.0	39.4	74.0	-34.6	Low ch, EUT on side, 1 Mbps, 20MHz BW

POWERLINE CONDUCTED EMISSIONS

NORTHWEST EMC

WTD.2015.10.28
PSA-ESCI 2015.07.01, EmiR5 2015.11.03

TEST DESCRIPTION

Using the mode of operation and configuration noted within this report, conducted emissions tests were performed. The frequency range investigated (scanned), is also noted in this report. Conducted power line measurements are made, unless otherwise specified, over the frequency range from 150 kHz to 30 MHz to determine the line-to-ground radio-noise voltage that is conducted from the EUT power-input terminals that are directly (or indirectly via separate transformer or power supplies) connected to a public power network. Per the standard, an insulating material was also added to ground plane between the EUT's power and remote I/O cables. Equipment is tested with power cords that are normally used or that have electrical or shielding characteristics that are the same as those cords normally used. Typically those measurements are made using a LISN (Line Impedance Stabilization Network), the 50ohm measuring port is terminated by a 50ohm EMI meter or a 50ohm resistive load. All 50ohm measuring ports of the LISN are terminated by 50ohm. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Receiver	Rohde & Schwarz	ESR7	ARI	5/21/2015	5/21/2016
LISN	Solar Electronics	9252-50-R-24-BNC	LIY	3/23/2015	3/23/2016
Cable - Conducted Cable Assembly	Northwest EMC	MNC, HGN, AQP	MNCA	5/13/2015	5/13/2016

MEASUREMENT UNCERTAINTY

Description		
Expanded k=2	2.4 dB	-2.4 dB

CONFIGURATIONS INVESTIGATED

ELTL0004-3

MODES INVESTIGATED

Transmitting 802.11 high channel 1 Mbps
Transmitting 802.11 low channel 1 Mbps
Transmitting 802.11 mid channel 1 Mbps

POWERLINE CONDUCTED EMISSIONS

NORTHWEST EMC
WTD.2015.10.28
PSA-ESCI 2015.07.01, EmiR5 2015.11.03

EUT:	Marcum RT-9	Work Order:	ELTL0004
Serial Number:	RTS0123456811	Date:	12/03/2015
Customer:	Electronic Technologies, LLC	Temperature:	22.1°C
Attendees:	Rocky Holmes, Deb See	Relative Humidity:	25.4%
Customer Project:	None	Bar. Pressure:	994.1 mb
Tested By:	Dustin Sparks	Job Site:	MN03
Power:	12VDC	Configuration:	ELTL0004-3

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2015	ANSI C63.10:2013

TEST PARAMETERS

Run #:	17	Line:	High Line	Add. Ext. Attenuation (dB):	0

COMMENTS

Shield U1 top and bottom, U8 and U12 , ferrite on sonar module, ferrite on camera and internal ferrite camera module

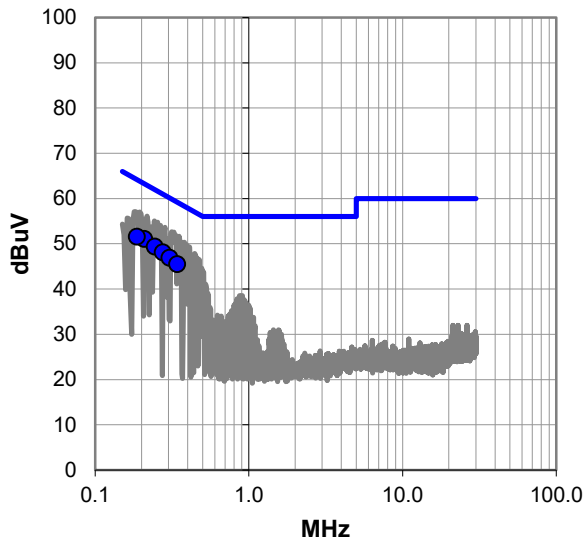
EUT OPERATING MODES

Transmitting 802.11 low channel 1 Mbps

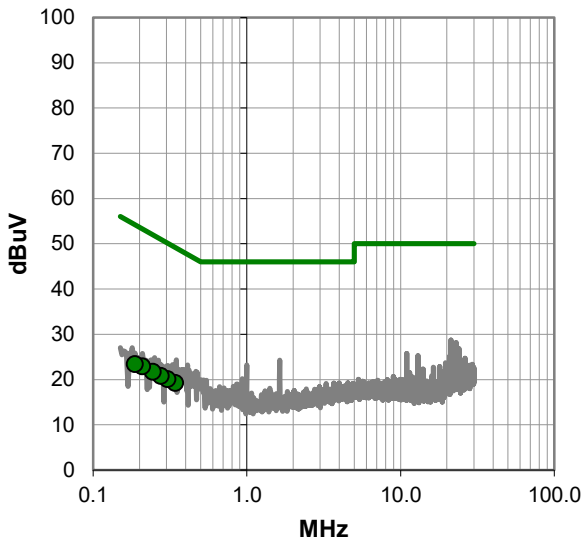
DEVIATIONS FROM TEST STANDARD

None

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



POWERLINE CONDUCTED EMISSIONS

NORTHWEST EMC

WTD.2015.10.28
PSA-ESCI 2015.07.01, EmiR5 2015.11.03

RESULTS - Run #17

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.209	30.8	20.3	51.1	63.3	-12.2
0.245	29.1	20.3	49.4	61.9	-12.6
0.187	31.2	20.4	51.6	64.2	-12.6
0.275	27.8	20.3	48.1	61.0	-12.9
0.305	26.6	20.3	46.9	60.1	-13.3
0.342	25.2	20.2	45.4	59.2	-13.7

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.342	-1.0	20.2	19.2	49.2	-29.9
0.305	-0.2	20.3	20.1	50.1	-30.1
0.275	0.5	20.3	20.8	51.0	-30.2
0.245	1.4	20.3	21.7	51.9	-30.3
0.209	2.6	20.3	22.9	53.3	-30.4
0.187	3.0	20.4	23.4	54.2	-30.8

CONCLUSION

Pass

Tested By

POWERLINE CONDUCTED EMISSIONS

NORTHWEST EMC
WTD.2015.10.28
PSA-ESCI 2015.07.01, EmiR5 2015.11.03

EUT:	Marcum RT-9	Work Order:	ELTL0004
Serial Number:	RTS0123456811	Date:	12/03/2015
Customer:	Electronic Technologies, LLC	Temperature:	22.1°C
Attendees:	Rocky Holmes, Deb See	Relative Humidity:	25.4%
Customer Project:	None	Bar. Pressure:	994.1 mb
Tested By:	Dustin Sparks	Job Site:	MN03
Power:	12VDC	Configuration:	ELTL0004-3

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2015	ANSI C63.10:2013

TEST PARAMETERS

Run #:	18	Line:	Neutral	Add. Ext. Attenuation (dB):	0

COMMENTS

Shield U1 top and bottom, U8 and U12 , ferrite on sonar module, ferrite on camera and internal ferrite camera module

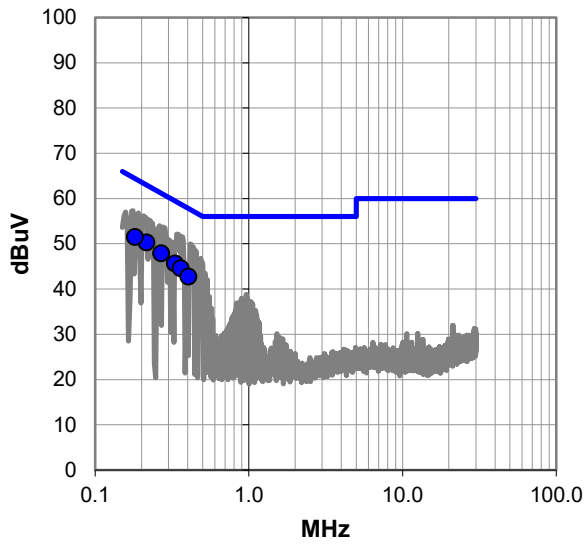
EUT OPERATING MODES

Transmitting 802.11 low channel 1 Mbps

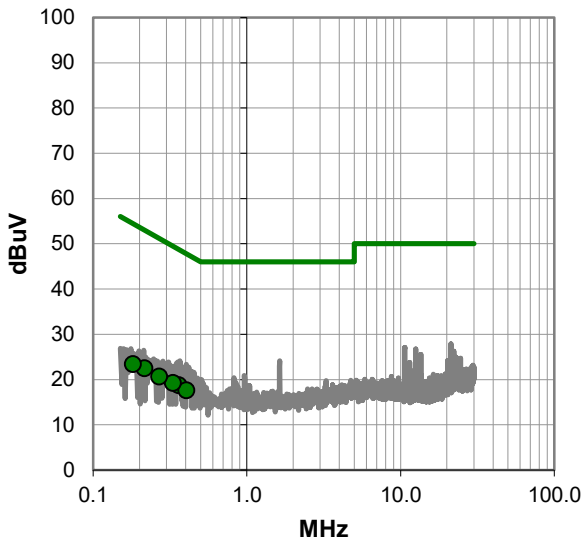
DEVIATIONS FROM TEST STANDARD

None

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



POWERLINE CONDUCTED EMISSIONS

NORTHWEST EMC

WTD.2015.10.28
PSA-ESCI 2015.07.01, EmiR5 2015.11.03

RESULTS - Run #18

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.216	30.0	20.3	50.3	63.0	-12.7
0.181	31.1	20.4	51.5	64.4	-12.9
0.269	27.6	20.3	47.9	61.2	-13.3
0.331	25.4	20.2	45.6	59.4	-13.8
0.360	24.3	20.2	44.5	58.7	-14.2
0.405	22.5	20.2	42.7	57.7	-15.0

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.360	-1.5	20.2	18.7	48.7	-30.0
0.405	-2.6	20.2	17.6	47.7	-30.1
0.331	-1.0	20.2	19.2	49.4	-30.2
0.216	2.2	20.3	22.5	53.0	-30.5
0.269	0.4	20.3	20.7	51.2	-30.5
0.181	3.0	20.4	23.4	54.4	-31.0

CONCLUSION

Pass

Tested By

POWERLINE CONDUCTED EMISSIONS

NORTHWEST EMC
WTD.2015.10.28
PSA-ESCI 2015.07.01, EmiR5 2015.11.03

EUT:	Marcum RT-9	Work Order:	ELTL0004
Serial Number:	RTS0123456811	Date:	12/03/2015
Customer:	Electronic Technologies, LLC	Temperature:	22.1°C
Attendees:	Rocky Holmes, Deb See	Relative Humidity:	25.4%
Customer Project:	None	Bar. Pressure:	994.1 mb
Tested By:	Dustin Sparks	Job Site:	MN03
Power:	12VDC	Configuration:	ELTL0004-3

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2015	ANSI C63.10:2013

TEST PARAMETERS

Run #:	19	Line:	Neutral	Add. Ext. Attenuation (dB):	0

COMMENTS

Shield U1 top and bottom, U8 and U12 , ferrite on sonar module, ferrite on camera and internal ferrite camera module

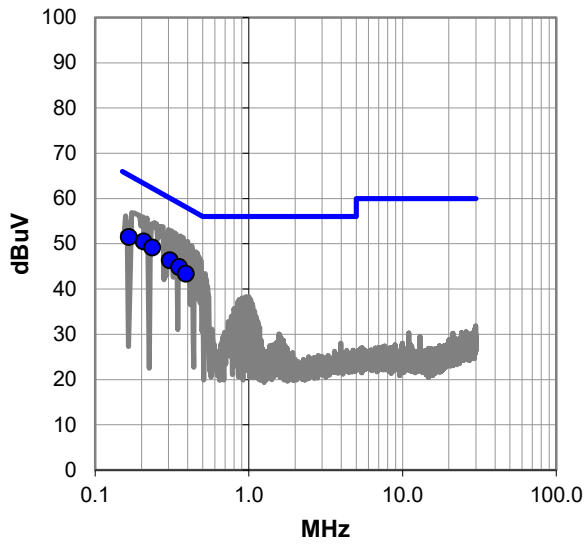
EUT OPERATING MODES

Transmitting 802.11 mid channel 1 Mbps

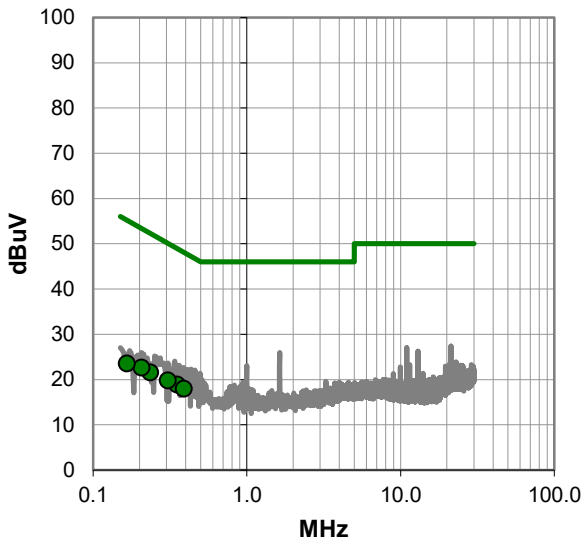
DEVIATIONS FROM TEST STANDARD

None

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



POWERLINE CONDUCTED EMISSIONS

NORTHWEST EMC

WTD.2015.10.28
PSA-ESCI 2015.07.01, EmiR5 2015.11.03

RESULTS - Run #19

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.207	30.2	20.3	50.5	63.3	-12.8
0.235	28.9	20.3	49.2	62.3	-13.1
0.166	31.1	20.4	51.5	65.2	-13.7
0.306	26.1	20.3	46.4	60.1	-13.7
0.352	24.6	20.2	44.8	58.9	-14.1
0.390	23.1	20.2	43.3	58.1	-14.7

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.352	-1.4	20.2	18.8	48.9	-30.1
0.390	-2.3	20.2	17.9	48.1	-30.1
0.306	-0.5	20.3	19.8	50.1	-30.3
0.235	1.3	20.3	21.6	52.3	-30.7
0.207	2.3	20.3	22.6	53.3	-30.7
0.166	3.1	20.4	23.5	55.2	-31.7

CONCLUSION

Pass

Tested By

POWERLINE CONDUCTED EMISSIONS

NORTHWEST EMC
WTD.2015.10.28
PSA-ESCI 2015.07.01, EmiR5 2015.11.03

EUT:	Marcum RT-9	Work Order:	ELTL0004
Serial Number:	RTS0123456811	Date:	12/03/2015
Customer:	Electronic Technologies, LLC	Temperature:	22.1°C
Attendees:	Rocky Holmes, Deb See	Relative Humidity:	25.4%
Customer Project:	None	Bar. Pressure:	994.1 mb
Tested By:	Dustin Sparks	Job Site:	MN03
Power:	12VDC	Configuration:	ELTL0004-3

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2015	ANSI C63.10:2013

TEST PARAMETERS

Run #:	20	Line:	High Line	Add. Ext. Attenuation (dB):	0

COMMENTS

Shield U1 top and bottom, U8 and U12 , ferrite on sonar module, ferrite on camera and internal ferrite camera module

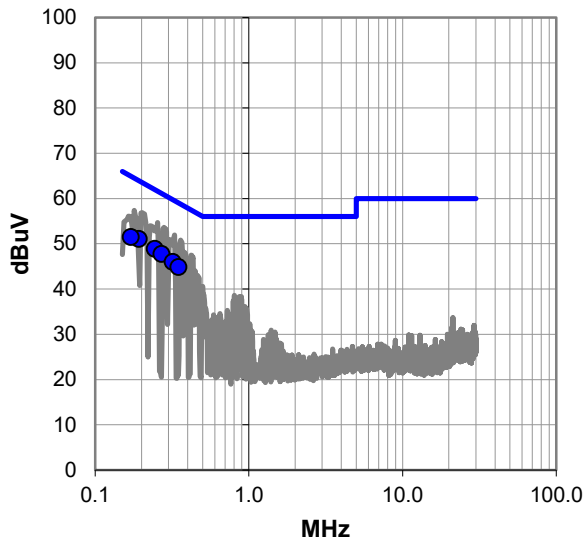
EUT OPERATING MODES

Transmitting 802.11 mid channel 1 Mbps

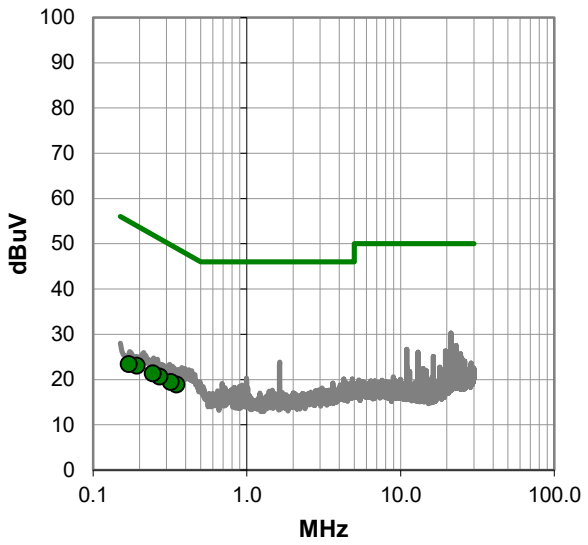
DEVIATIONS FROM TEST STANDARD

None

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



POWERLINE CONDUCTED EMISSIONS

NORTHWEST EMC

WTD.2015.10.28
PSA-ESCI 2015.07.01, EmiR5 2015.11.03

RESULTS - Run #20

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.192	30.7	20.3	51.0	63.9	-12.9
0.245	28.6	20.3	48.9	61.9	-13.1
0.271	27.5	20.3	47.8	61.1	-13.3
0.171	31.1	20.4	51.5	64.9	-13.4
0.319	25.7	20.3	46.0	59.7	-13.8
0.349	24.6	20.2	44.8	59.0	-14.1

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.349	-1.4	20.2	18.8	49.0	-30.1
0.319	-0.8	20.3	19.5	49.7	-30.3
0.271	0.4	20.3	20.7	51.1	-30.4
0.245	1.1	20.3	21.4	51.9	-30.6
0.192	2.7	20.3	23.0	53.9	-30.9
0.171	3.0	20.4	23.4	54.9	-31.5

CONCLUSION

Pass

Tested By

POWERLINE CONDUCTED EMISSIONS

NORTHWEST EMC
WTD.2015.10.28
PSA-ESCI 2015.07.01, EmiR5 2015.11.03

EUT:	Marcum RT-9	Work Order:	ELTL0004
Serial Number:	RTS0123456811	Date:	12/03/2015
Customer:	Electronic Technologies, LLC	Temperature:	22.1°C
Attendees:	Rocky Holmes, Deb See	Relative Humidity:	25.4%
Customer Project:	None	Bar. Pressure:	994.1 mb
Tested By:	Dustin Sparks	Job Site:	MN03
Power:	12VDC	Configuration:	ELTL0004-3

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2015	ANSI C63.10:2013

TEST PARAMETERS

Run #:	21	Line:	High Line	Add. Ext. Attenuation (dB):	0

COMMENTS

Shield U1 top and bottom, U8 and U12 , ferrite on sonar module, ferrite on camera and internal ferrite camera module

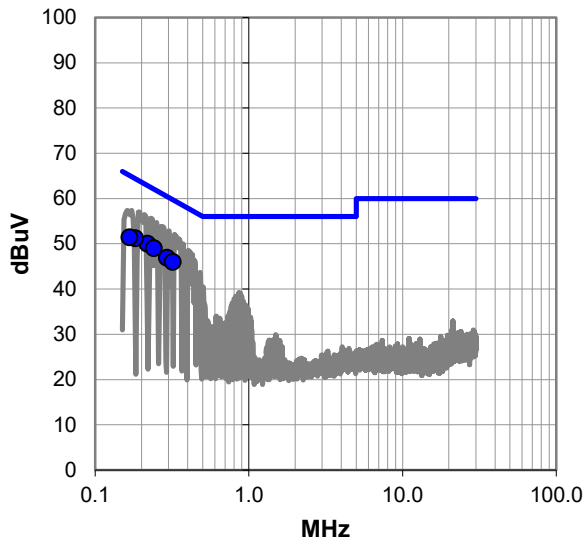
EUT OPERATING MODES

Transmitting 802.11 high channel 1 Mbps

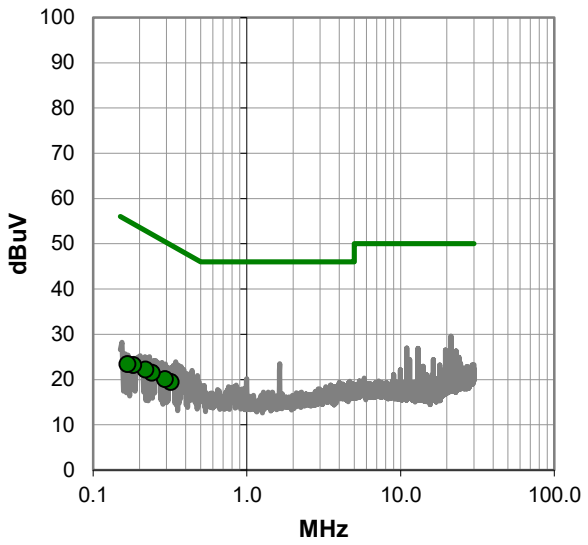
DEVIATIONS FROM TEST STANDARD

None

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



POWERLINE CONDUCTED EMISSIONS

NORTHWEST EMC

WTD.2015.10.28
PSA-ESCI 2015.07.01, EmiR5 2015.11.03

RESULTS - Run #21

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.219	29.7	20.3	50.0	62.9	-12.9
0.241	28.7	20.3	49.0	62.1	-13.1
0.182	30.8	20.4	51.2	64.4	-13.2
0.293	26.6	20.3	46.9	60.4	-13.6
0.168	31.0	20.4	51.4	65.1	-13.7
0.319	25.7	20.3	46.0	59.7	-13.8

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.319	-0.8	20.3	19.5	49.7	-30.3
0.293	-0.2	20.3	20.1	50.4	-30.4
0.241	1.2	20.3	21.5	52.1	-30.6
0.219	1.9	20.3	22.2	52.9	-30.7
0.182	2.8	20.4	23.2	54.4	-31.2
0.168	3.0	20.4	23.4	55.1	-31.7

CONCLUSION

Pass

Tested By

POWERLINE CONDUCTED EMISSIONS

NORTHWEST EMC
WTD.2015.10.28
PSA-ESCI 2015.07.01, EmiR5 2015.11.03

EUT:	Marcum RT-9	Work Order:	ELTL0004
Serial Number:	RTS0123456811	Date:	12/03/2015
Customer:	Electronic Technologies, LLC	Temperature:	22.1°C
Attendees:	Rocky Holmes, Deb See	Relative Humidity:	25.4%
Customer Project:	None	Bar. Pressure:	994.1 mb
Tested By:	Dustin Sparks	Job Site:	MN03
Power:	12VDC	Configuration:	ELTL0004-3

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2015	ANSI C63.10:2013

TEST PARAMETERS

Run #:	22	Line:	Neutral	Add. Ext. Attenuation (dB):	0

COMMENTS

Shield U1 top and bottom, U8 and U12 , ferrite on sonar module, ferrite on camera and internal ferrite camera module

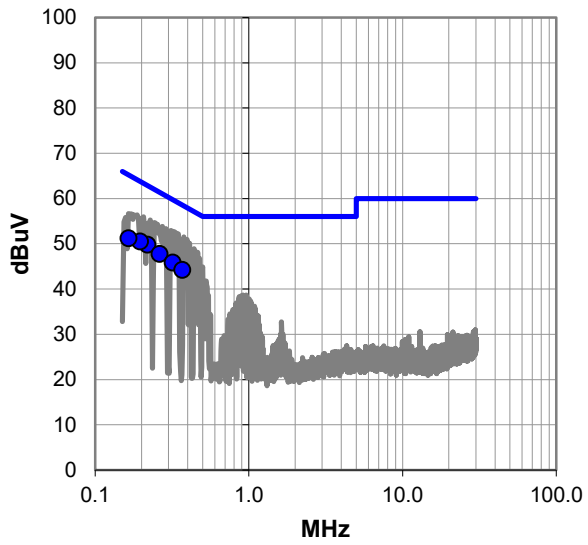
EUT OPERATING MODES

Transmitting 802.11 high channel 1 Mbps

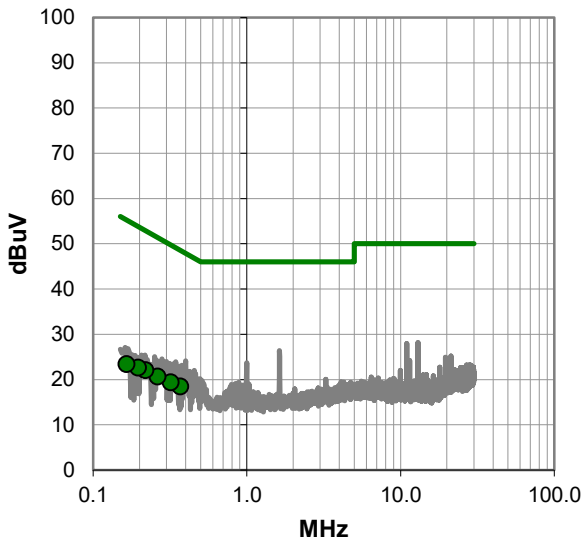
DEVIATIONS FROM TEST STANDARD

None

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



POWERLINE CONDUCTED EMISSIONS

NORTHWEST EMC

WTD.2015.10.28
PSA-ESCI 2015.07.01, EmiR5 2015.11.03

RESULTS - Run #22

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.219	29.5	20.3	49.8	62.9	-13.1
0.196	30.2	20.3	50.5	63.8	-13.3
0.263	27.5	20.3	47.8	61.3	-13.6
0.320	25.6	20.3	45.9	59.7	-13.9
0.165	30.8	20.4	51.2	65.2	-14.0
0.369	24.0	20.2	44.2	58.5	-14.3

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.369	-1.8	20.2	18.4	48.5	-30.1
0.320	-0.9	20.3	19.4	49.7	-30.4
0.263	0.4	20.3	20.7	51.3	-30.7
0.219	1.8	20.3	22.1	52.9	-30.8
0.196	2.3	20.3	22.6	53.8	-31.2
0.165	3.0	20.4	23.4	55.2	-31.8

CONCLUSION

Pass

Tested By