Digi International

ConnectPort X2e Wi-Fi

Report #: DGII0036

Report Prepared By Northwest EMC Inc.

NORTHWEST EMC – (888) 364-2378 – www.nwemc.com

California – Minnesota – Oregon – New York – Washington

22975 NW Evergreen Parkway
Suite 400
Hillsboro, Oregon 97124

Certificate of Test

Last Date of Test: January 13, 2012
Digi International
Model: ConnectPort X2e Wi-Fi

Emissions

Test Description	Specification	Test Method	Pass/Fail
Occupied Bandwidth	FCC 15.247:2012	ANSI C63.10:2009	**Pass**
Output Power	FCC 15.247:2012	ANSI C63.10:2009	**Pass**
Band Edge Compliance	FCC 15.247:2012	ANSI C63.10:2009	**Pass**
Spurious Conducted Emissions	FCC 15.247:2012	ANSI C63.10:2009	**Pass**
Power Spectral Density	FCC 15.247:2012	ANSI C63.10:2009	**Pass**
Spurious Radiated Emissions	FCC 15.247:2012	ANSI C63.10:2009	**Pass**
AC Powerline Conducted Emissions	FCC 15.207:2012	ANSI C63.10:2009	**Pass**

Deviations From Test Standards

None

Approved By:

Tim O'Shea, Operations Manager

NVLAP Lab Code: 200881-0

Test Facility

The measurement facility used to collect the data is located at:

Northwest EMC, Inc.
9349 W Broadway Ave.
Brooklyn Park, MN 55445

Phone: (763) 425-2281 Fax: (763) 424-3469

This site has been fully described in a report filed with and accepted by the FCC (Federal Communications Commission) and Industry Canada (Site filing #2834E-1).

Revision History

Revision Number	Description	Date	Page Number
00	None		

Accreditations and Authorizations

FCC

Accredited by NVLAP for performance of FCC radio, digital, and ISM device testing. Our Open Area Test Sites, certification chambers, and conducted measurement facilities have been fully described in reports filed with the FCC and accepted by the FCC in letters maintained in our files. Northwest EMC has been accredited by ANSI to ISO / IEC Guide 65 as a product certifier. We have been designated by the FCC as a Telecommunications Certification Body (TCB). This allows Northwest EMC to certify transmitters to FCC specifications in accordance with 47 CFR 2.960 and 2.962.

NVLAP

Northwest EMC, Inc. is accredited under the National Voluntary Laboratory Accreditation Program (NVLAP) for satisfactory compliance with the requirements of ISO/IEC 17025 for Testing Laboratories. NVLAP is administered by the National Institute of Standards and Technology (NIST), an agency of the U.S. Commerce Department. The NVLAP accreditation encompasses Electromagnetic Compatibility Testing in accordance with the European Union EMC Directive 2004/108/EC, and ANSI C63.4. Additionally, Northwest EMC is accredited by NVLAP to perform radio testing in accordance with the European Union R&TTE Directive 1999/5/EEC, the requirements of FCC, and the RSS radio standards for Industry Canada.

Industry Canada

Accredited by NVLAP for performance of Industry Canada RSS and ICES testing. Our Open Area Test Sites and certification chambers comply with RSS-Gen, Issue 2 and have been filed with Industry Canada and accepted. Northwest EMC has been accredited by ANSI to ISO / IEC Guide 65 as a product certifier. We have been designated by NIST and recognized by Industry Canada as a Certification Body (CB) per the APEC Mutual Recognition Arrangement (MRA). This allows Northwest EMC to certify transmitters to Industry Canada technical requirements. (*Site Filing Numbers - Hillsboro: 2834D-1, 2834D-2, Sultan: 2834C-1, Irvine: 2834B-1, 2834B-2, Brooklyn Park: 2834E-1)*

CAB

Designated by NIST and validated by the European Commission as a Conformity Assessment Body (CAB) to conduct tests and approve products to the EMC directive and transmitters to the R&TTE directive, as described in the U.S. - EU Mutual Recognition Agreement.

Australia/New Zealand

The National Association of Testing Authorities (NATA), Australia has been appointed by the ACA as an accreditation body to accredit test laboratories and competent bodies for EMC standards. Accredited test reports or assessments by competent bodies must carry the NATA logo. Test reports made by an overseas laboratory that has been accredited for the relevant standards by an overseas accreditation body that has a Mutual Recognition Agreement (MRA) with NATA are also accepted as technical grounds for product conformity. The report should be endorsed with the respective logo of the accreditation body (NVLAP).

Accreditations and Authorizations

VCCI

Accepted as an Associate Member to the VCCI, Acceptance No. 564. Conducted and radiated measurement facilities have been registered in accordance with Regulations for Voluntary Control Measures, Article 8. *(Registration Numbers. - Hillsboro: C-1071, R-1025, G-84, C-2687, T-1658, and R-2318, Irvine: R-1943, G-85, C-2766, and T-1659, Sultan: R-871, G-83, C-3265, and T-1511, Brooklyn Park: R-3125, G-86, G-141, C-3464, and T-1634).*

BSMI

Northwest EMC has been designated by NIST and validated by C-Taipei (BSMI) as a CAB to conduct tests as described in the APEC Mutual Recognition Agreement (US0017).

GOST

Northwest EMC, Inc. has been assessed and accredited by the Russian Certification bodies Certinform VNIINMASH, CERTINFO, SAMTES, and Federal CHEC, to perform EMC and Hygienic testing for Information Technology Products. As a result of their laboratory assessment, they will accept test results from Northwest EMC, Inc. for product certification

KCC

Northwest EMC, Inc is a CAB designated by MRA partners and recognized by Korea. (*Assigned Lab Numbers: Hillsboro: US0017, Irvine: US0158, Sultan: US0157, Brooklyn Park: US0175)*

VIETNAM

Vietnam MIC has approved Northwest EMC as an accredited test lab. Per Decision No. 194/QD-QLCL (dated December 15, 2009), Northwest EMC test reports can be used for Vietnam approval submissions.

SCOPE

For details on the Scopes of our Accreditations, please visit:
http://www.nwemc.com/accreditations/

Locations

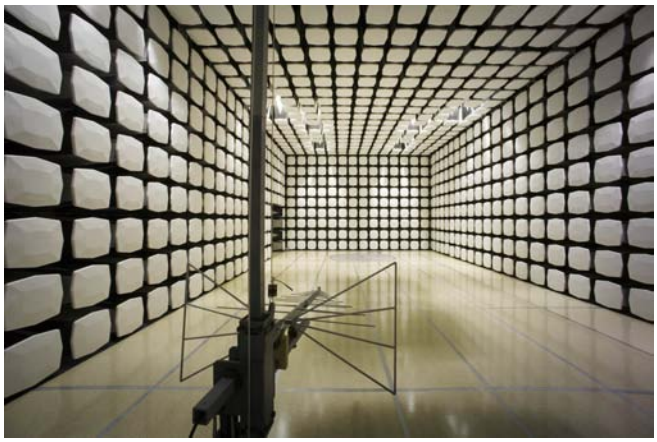
Oregon
Labs EV01-EV12
22975 NW Evergreen Pkwy
Suite 400
Hillsboro, OR 97124
(503) 844-4066

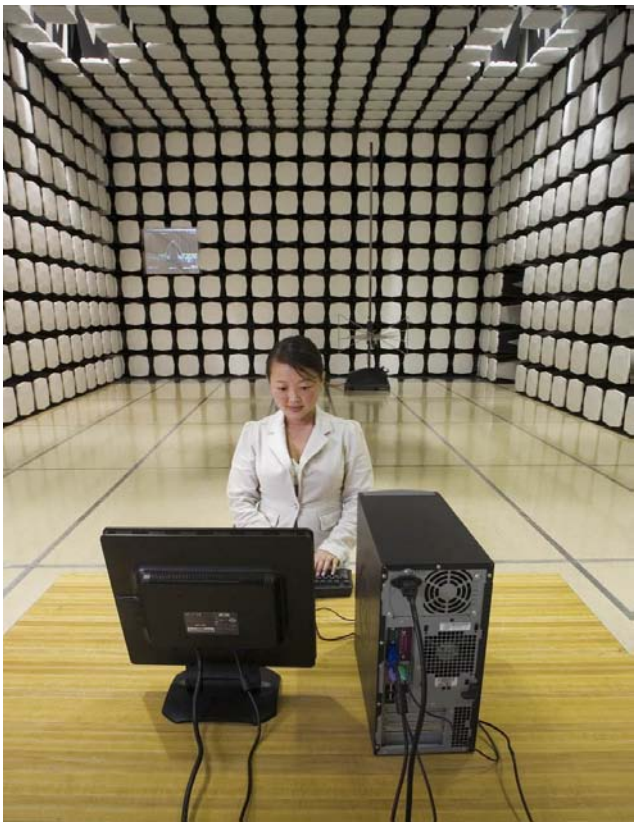
California
Labs OC01-OC13
41 Tesla
Irvine, CA 92618
(949) 861-8918

Minnesota
Labs MN01-MN08
9349 W Broadway Ave.
Brooklyn Park,
MN 55445
(763) 425-2281

Washington
Labs SU01-SU07
14128 339th Ave. SE
Sultan, WA 98294
(360) 793-8675

New York
Labs WA01-WA04
4939 Jordan Rd.
Elbridge, NY 13060
(315) 685-0796





Product Description

Client and Equipment Under Test (EUT) Information

Company Name:	Digi International
Address:	11001 Bren Road East
City, State, Zip:	Minnetonka, MN 55343
Test Requested By:	Bradley Ferguson
Model:	ConnectPort X2e Wi-Fi
First Date of Test:	January 09, 2012
Last Date of Test:	January 13, 2012
Receipt Date of Samples:	January 09, 2012
Equipment Design Stage:	Prototype
Equipment Condition:	No Damage

Information Provided by the Party Requesting the Test

Functional Description of the EUT (Equipment Under Test):
Connect Port

Testing Objective:
To demonstrate compliance under FCC 15.247

Configurations

Configuration 1 DGII0036

Software/Firmware Running during test	
Description	**Version**
Firmware	3.0.1.17 SA2

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
ConnectPort	Digi International	55001639-02 04	1201-003
DC Adapter	Bec	WRG05F-050A	1004

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Laptop	Hp	Pavilion G Series	584037-001
DC Adapter Laptop	Hp	1803062603	CT: WBGST0A1R1ANMQ

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
AC Power	No	1.0m	No	DC Adapter Laptop	AC Mains
DC Power	No	1.8m	No	Laptop	DC Adapter Laptop
DC Power	No	1.5m	No	ConnectPort	DC Adapter
Ethernet	Yes	2.0m	No	ConnectPort	Laptop
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

Configuration 2 DGII0036

Software/Firmware Running during test	
Description	**Version**
Firmware	3.0.1.17 SA2

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
ConnectPort	Digi International	55001639-02 04	1201-003
DC Adapter	Bec	WRG05F-050A	1004

Remote Equipment Outside of Test Setup Boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Laptop	Hp	Pavilion G Series	584037-001
DC Adapter Laptop	Hp	1803062603	CT: WBGST0A1R1ANMQ

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
AC Power	No	1.0m	No	DC Adapter Laptop	AC Mains
DC Power	No	1.8m	No	Laptop	DC Adapter Laptop
DC Power	No	1.5m	No	ConnectPort	DC Adapter
Ethernet	No	7.6m	No	ConnectPort	LAN
Ethernet	Yes	2.0m	No	Laptop	LAN
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

Configurations

Configuration 3 DGII0036

Software/Firmware Running during test	
Description	**Version**
Firmware	3.0.1.17 SA2

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
ConnectPort	Digi International	55001639-02 04	1201-003
DC Adapter	Bec	DSC-6PFA-05 FUS 050109	None

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Laptop	Hp	Pavilion G Series	584037-001
DC Adapter Laptop	Hp	1803062603	CT: WBGST0A1R1ANMQ

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
AC Power	No	1.0m	No	DC Adapter Laptop	AC Mains
DC Power	No	1.8m	No	Laptop	DC Adapter Laptop
DC Power	No	1.5m	No	ConnectPort	DC Adapter
Ethernet	Yes	2.0m	No	ConnectPort	Laptop
Ethernet	No	7.6m	No	ConnectPort	LAN
Ethernet	Yes	2.0m	No	Laptop	LAN
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

Modifications

Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	1/9/2012	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.
2	1/9/2012	Spurious 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	1/9/2012	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.
4	1/9/2012	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.
5	1/9/2012	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.
6	1/9/2012	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.
7	1/10/2012	Spurious Radiated 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.
8	1/13/2012	AC Powerline Conducted Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

Occupied Bandwidth

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
Signal Generator	Agilent	N5183A	TIA	1/18/2011	12
Attenuator - 20db, 'SMA'	SM Electronics	SA26B-20	RFW	6/2/2011	12
40 GHz DC block	Fairview Microwave	SD3379	AMI	10/12/2011	12
Spectrum Analyzer	Agilent	E4440A	AAX	5/23/2011	12

MEASUREMENT UNCERTAINTY

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 for radiated emissions measurements is less than +/- 4 dB, and for conducted emissions measurements is less than +/- 2.7 dB. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for measurement uncertainty are available upon request.

TEST DESCRIPTION

The occupied bandwidth was measured with the EUT set to low, medium, and high transmit frequencies in the ISM band. 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 required data rates available in 802.11(b)/(g)/(n).

Occupied Bandwidth

EUT:	ConnectPort X2e Wi-Fi			**Work Order:**	DGII0036
Serial Number:	1201-003			**Date:**	01/09/12
Customer:	Digi International			**Temperature:**	24.09°C
Attendees:	Bradley Ferguson			**Humidity:**	18%
Project:	None			**Barometric Pres.:**	1013.3
Tested by:	Trevor Buls	**Power:**	5VDC	**Job Site:**	MN08

TEST SPECIFICATIONS	TEST METHOD
FCC 15.247:2012	ANSI C63.10:2009

COMMENTS

1.5 dB was added to the Reference Level Offset to compensate for the customer's adapter cable.

DEVIATIONS FROM TEST STANDARD

None

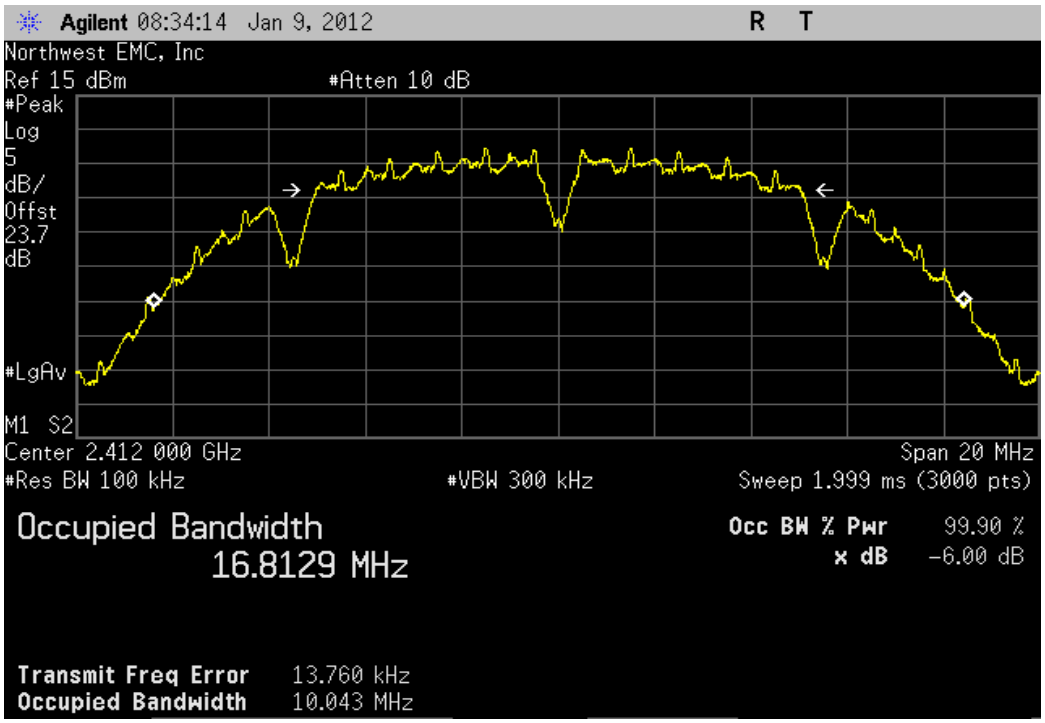
Configuration #	1	Signature	Trevor Buls

	Value	Limit	Result
2400 MHz - 2483.5 MHz Band			
802.11(b) 1 Mbps			
Low Channel 1, 2412 MHz	10.043 MHz	> 500 kHz	Pass
Mid Channel 6, 2437 MHz	10.041 MHz	> 500 kHz	Pass
High Channel 11, 2462 MHz	10.102 MHz	> 500 kHz	Pass
802.11(b) 11 Mbps			
Low Channel 1, 2412 MHz	10.408 MHz	> 500 kHz	Pass
Mid Channel 6, 2437 MHz	10.41 MHz	> 500 kHz	Pass
High Channel 11, 2462 MHz	10.393 MHz	> 500 kHz	Pass
802.11(g) 6 Mbps			
Low Channel 1, 2412 MHz	16.306 MHz	> 500 kHz	Pass
Mid Channel 6, 2437 MHz	16.286 MHz	> 500 kHz	Pass
High Channel 11, 2462 MHz	16.315 MHz	> 500 kHz	Pass
802.11(g) 36 Mbps			
Low Channel 1, 2412 MHz	16.413 MHz	> 500 kHz	Pass
Mid Channel 6, 2437 MHz	16.401 MHz	> 500 kHz	Pass
High Channel 11, 2462 MHz	16.396 MHz	> 500 kHz	Pass
802.11(g) 54 Mbps			
Low Channel 1, 2412 MHz	16.418 MHz	> 500 kHz	Pass
Mid Channel 6, 2437 MHz	16.384 MHz	> 500 kHz	Pass
High Channel 11, 2462 MHz	16.451 MHz	> 500 kHz	Pass
802.11(n) MCS0			
Low Channel 1, 2412 MHz	17.068 MHz	> 500 kHz	Pass
Mid Channel 6, 2437 MHz	17.048 MHz	> 500 kHz	Pass
High Channel 11, 2462 MHz	16.913 MHz	> 500 kHz	Pass
802.11(n) MCS7			
Low Channel 1, 2412 MHz	17.592 MHz	> 500 kHz	Pass
Mid Channel 6, 2437 MHz	17.516 MHz	> 500 kHz	Pass
High Channel 11, 2462 MHz	17.613 MHz	> 500 kHz	Pass

Occupied Bandwidth

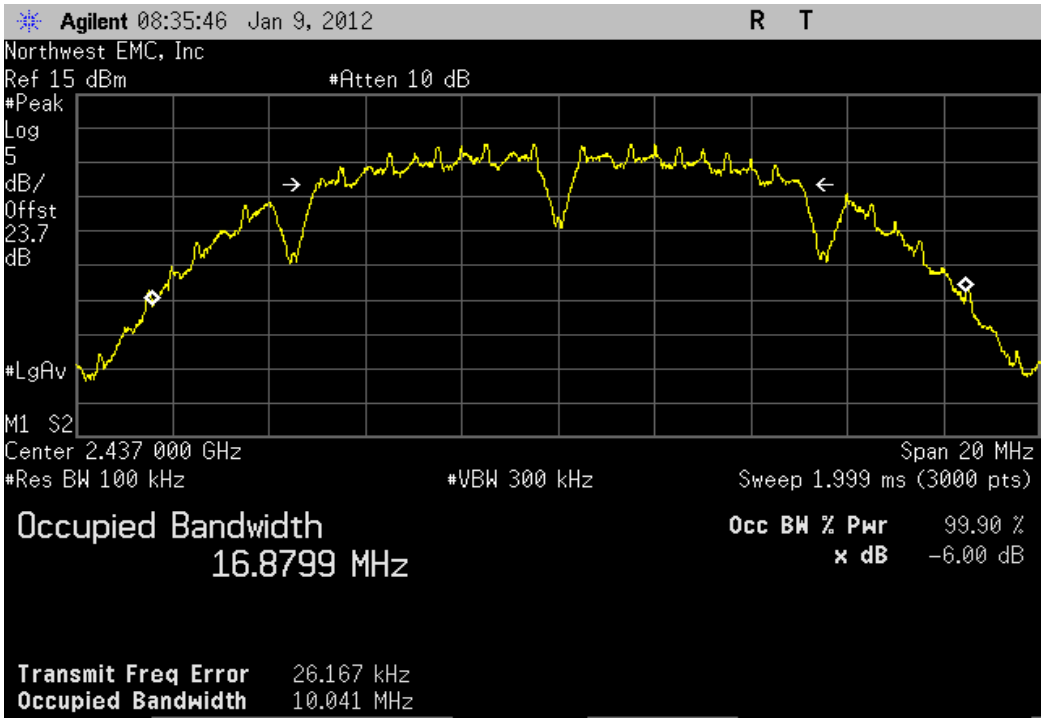
2400 MHz - 2483.5 MHz Band, 802.11(b) 1 Mbps, Low Channel 1, 2412 MHz

				Value	Limit	Result
				10.043 MHz	> 500 kHz	Pass



2400 MHz - 2483.5 MHz Band, 802.11(b) 1 Mbps, Mid Channel 6, 2437 MHz

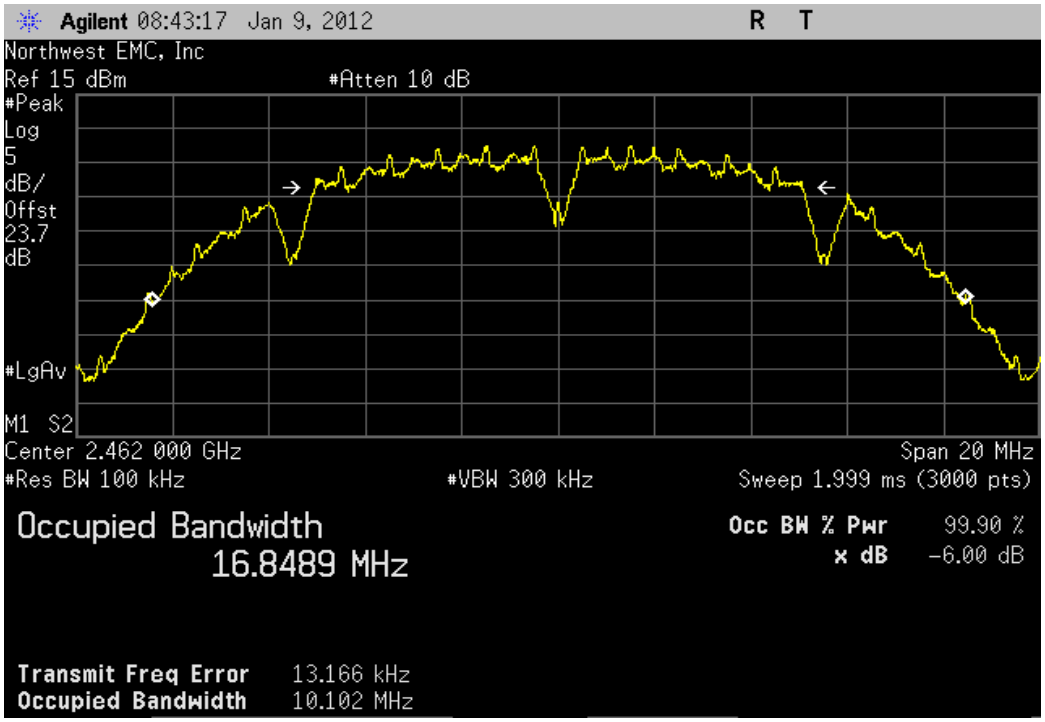
				Value	Limit	Result
				10.041 MHz	> 500 kHz	Pass



Occupied Bandwidth

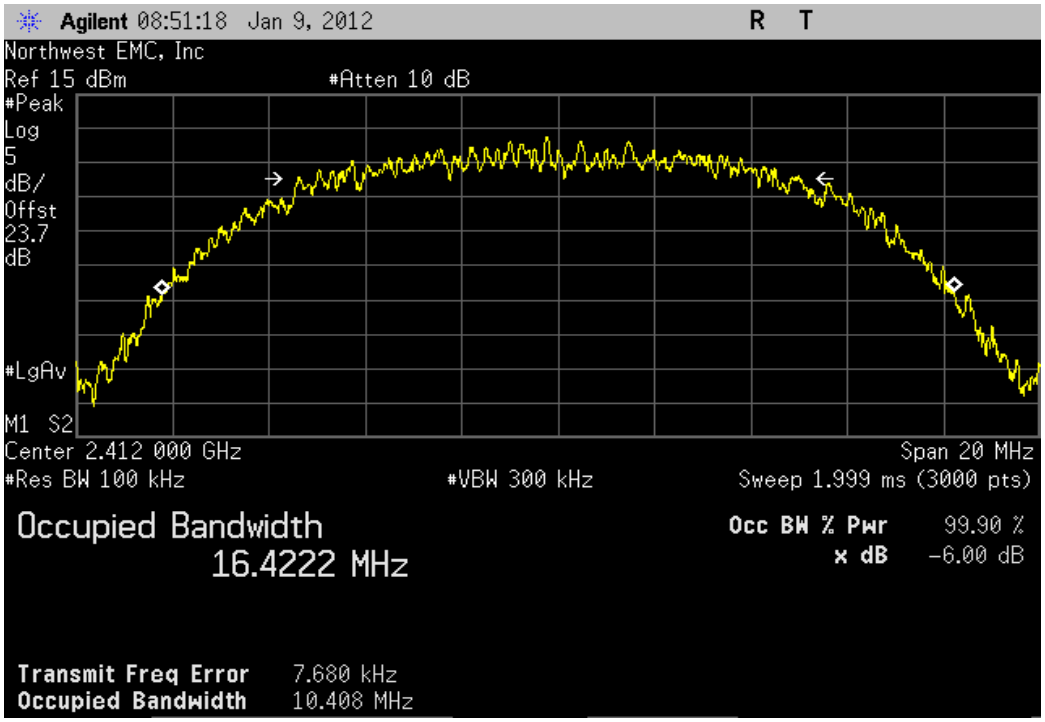
2400 MHz - 2483.5 MHz Band, 802.11(b) 1 Mbps, High Channel 11, 2462 MHz

				Value	Limit	Result
				10.102 MHz	> 500 kHz	Pass



2400 MHz - 2483.5 MHz Band, 802.11(b) 11 Mbps, Low Channel 1, 2412 MHz

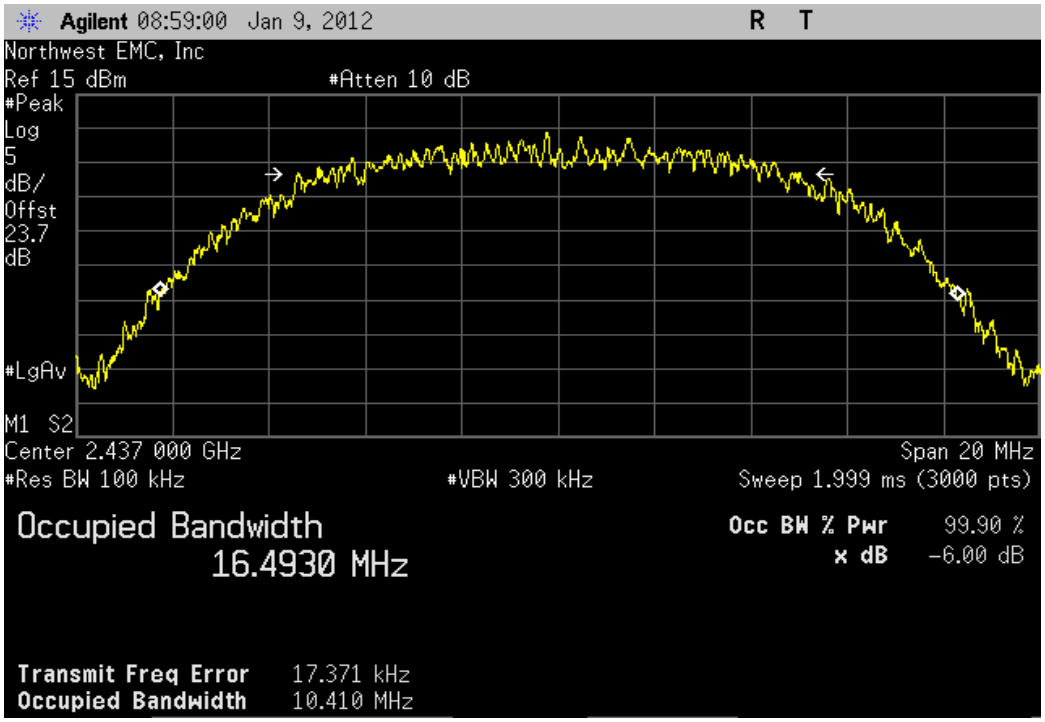
				Value	Limit	Result
				10.408 MHz	> 500 kHz	Pass



Occupied Bandwidth

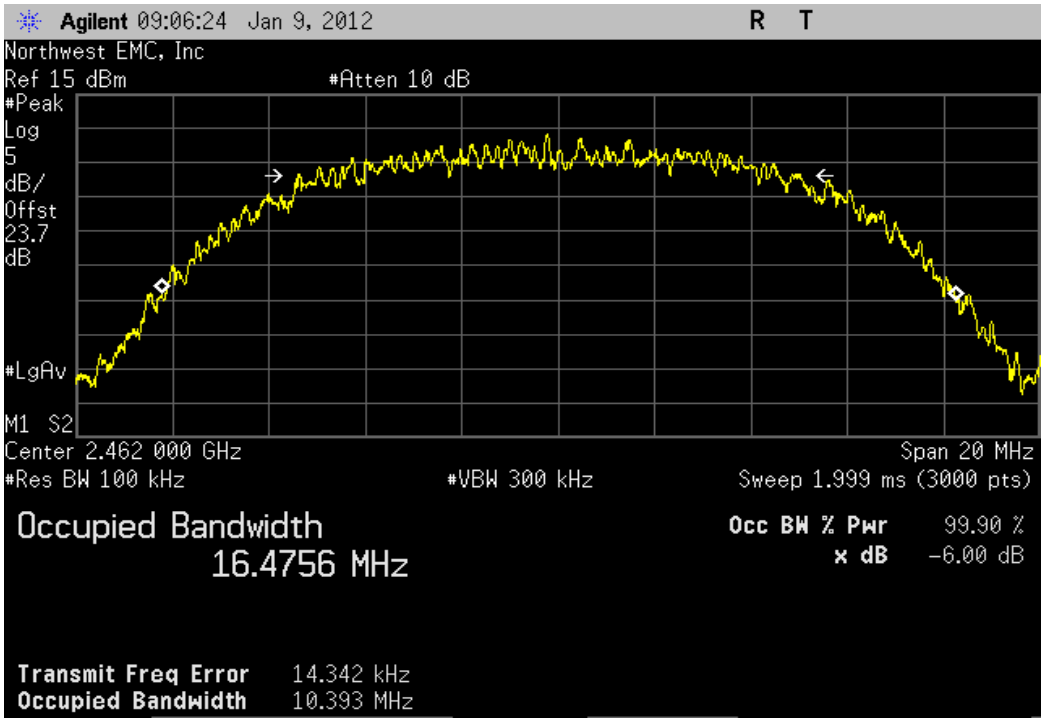
2400 MHz - 2483.5 MHz Band, 802.11(b) 11 Mbps, Mid Channel 6, 2437 MHz

				Value	Limit	Result
				10.41 MHz	> 500 kHz	Pass



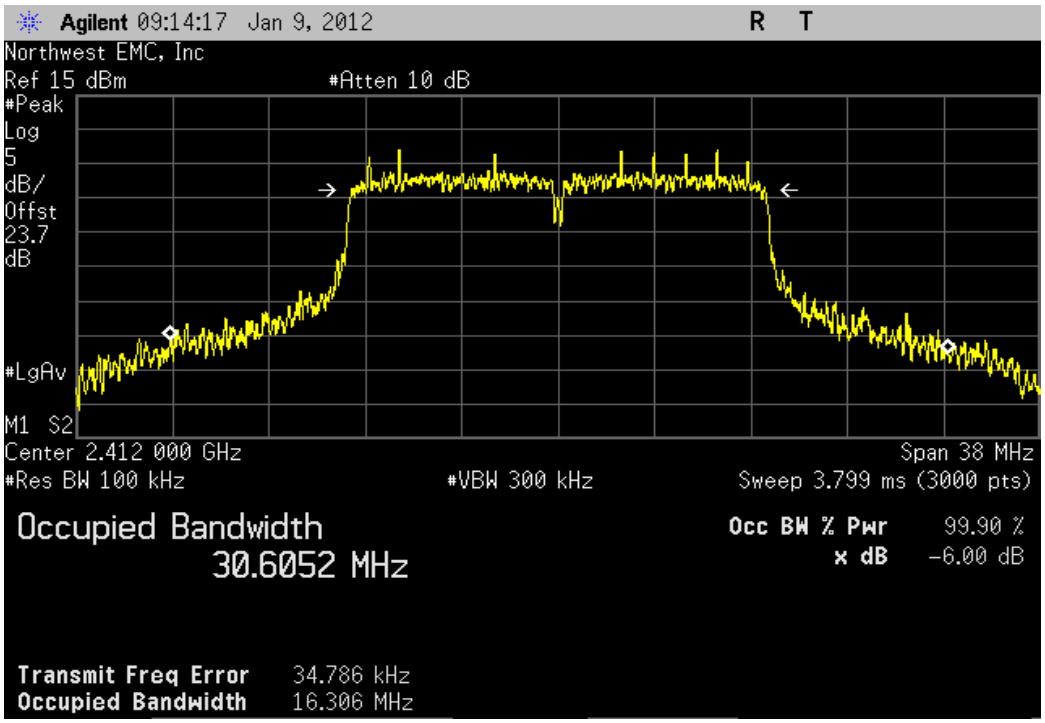
2400 MHz - 2483.5 MHz Band, 802.11(b) 11 Mbps, High Channel 11, 2462 MHz

				Value	Limit	Result
				10.393 MHz	> 500 kHz	Pass



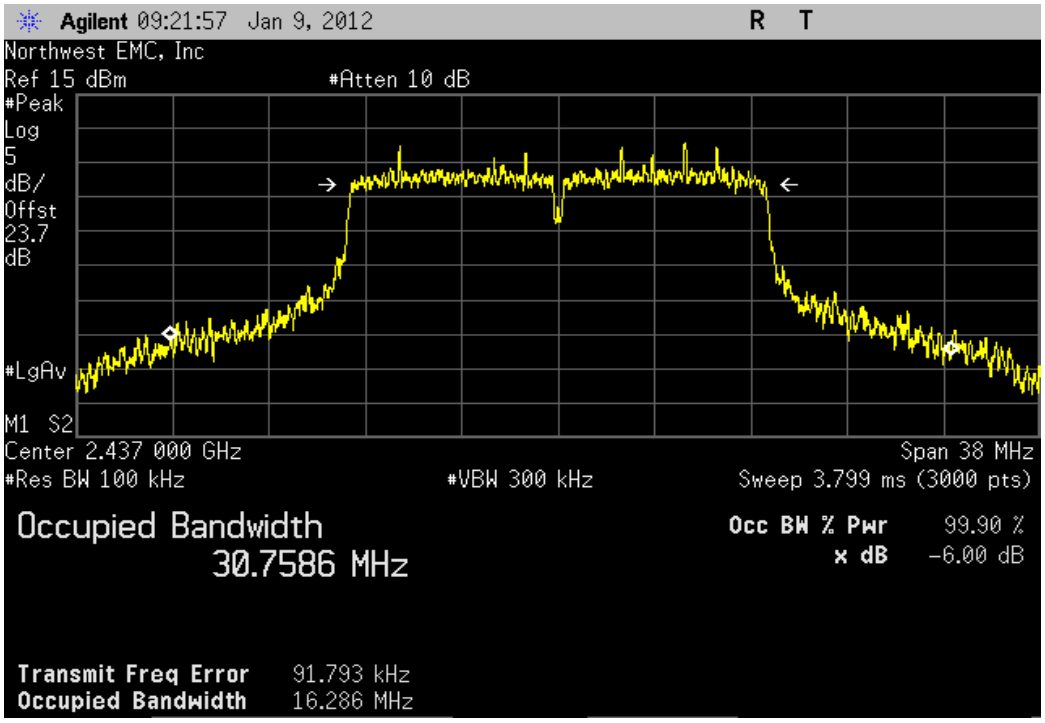
2400 MHz - 2483.5 MHz Band, 802.11(g) 6 Mbps, Low Channel 1, 2412 MHz

				Value	Limit	Result
				16.306 MHz	> 500 kHz	Pass



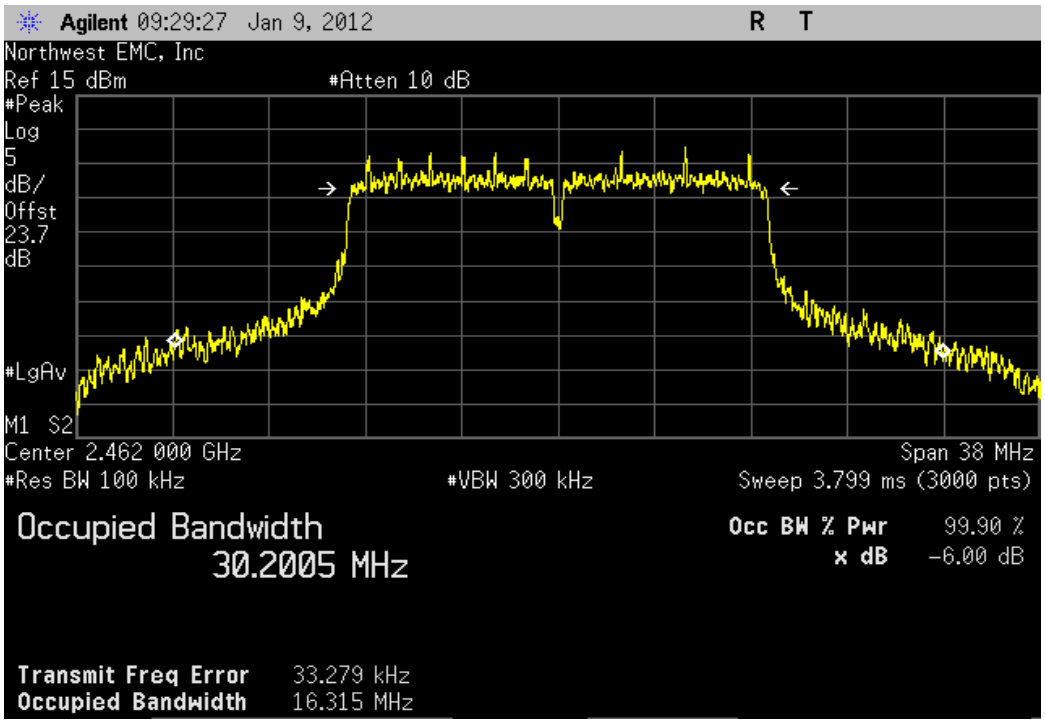
2400 MHz - 2483.5 MHz Band, 802.11(g) 6 Mbps, Mid Channel 6, 2437 MHz

				Value	Limit	Result
				16.286 MHz	> 500 kHz	Pass



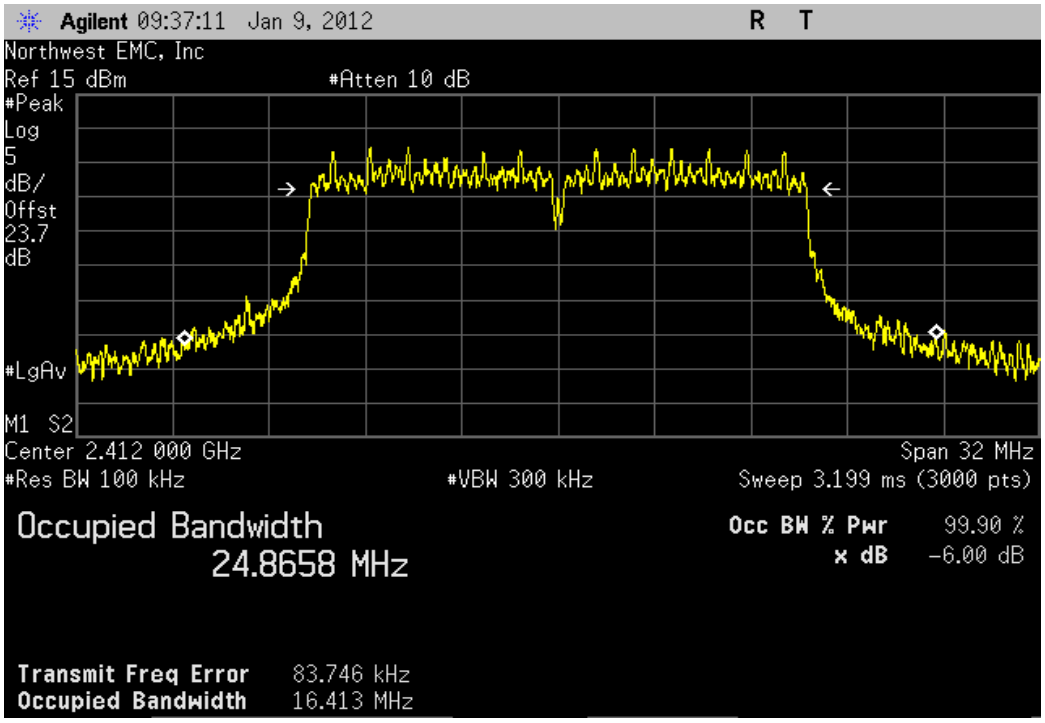
2400 MHz - 2483.5 MHz Band, 802.11(g) 6 Mbps, High Channel 11, 2462 MHz

				Value	Limit	Result
				16.315 MHz	> 500 kHz	Pass

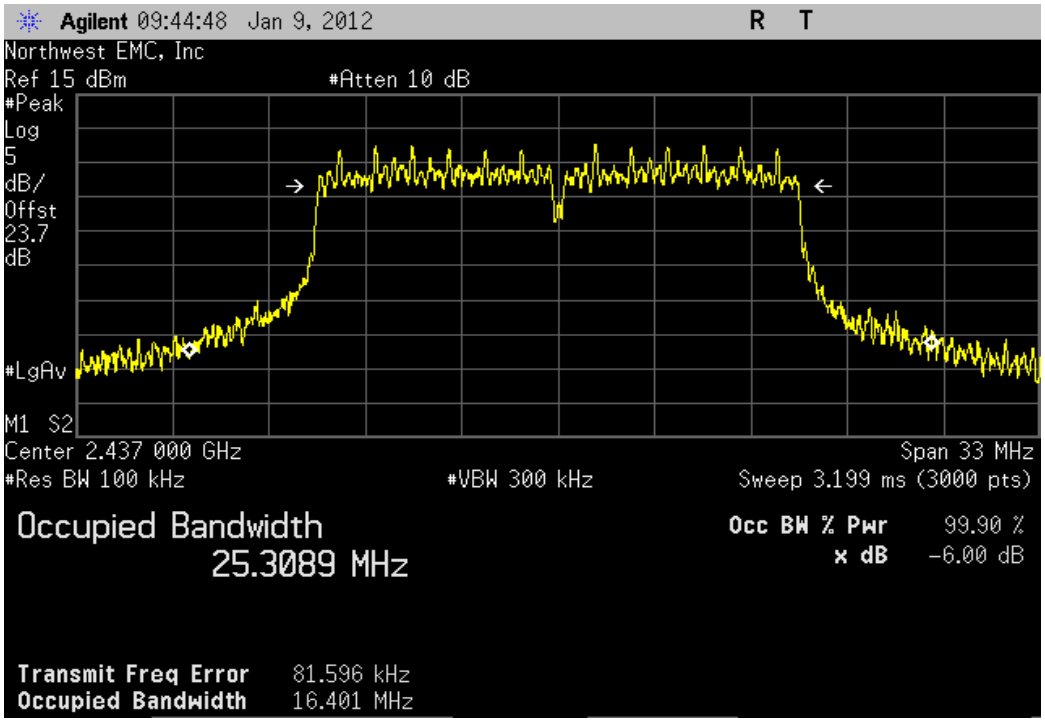


2400 MHz - 2483.5 MHz Band, 802.11(g) 36 Mbps, Low Channel 1, 2412 MHz

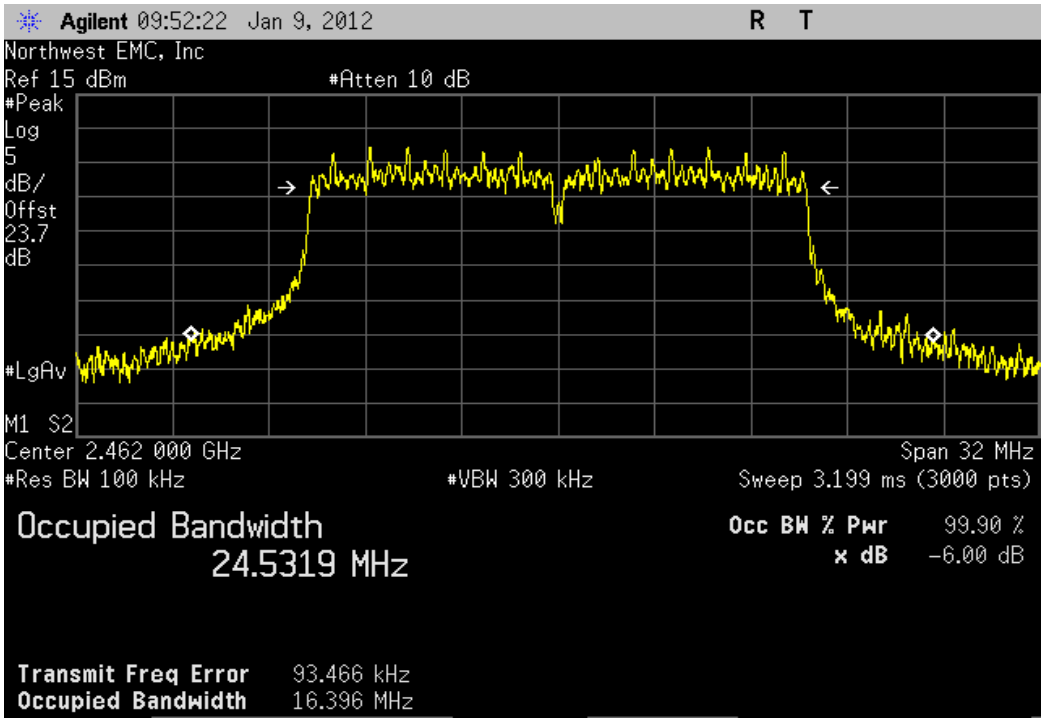
				Value	Limit	Result
				16.413 MHz	> 500 kHz	Pass



2400 MHz - 2483.5 MHz Band, 802.11(g) 36 Mbps, Mid Channel 6, 2437 MHz							
					Value	Limit	Result
					16.401 MHz	> 500 kHz	Pass

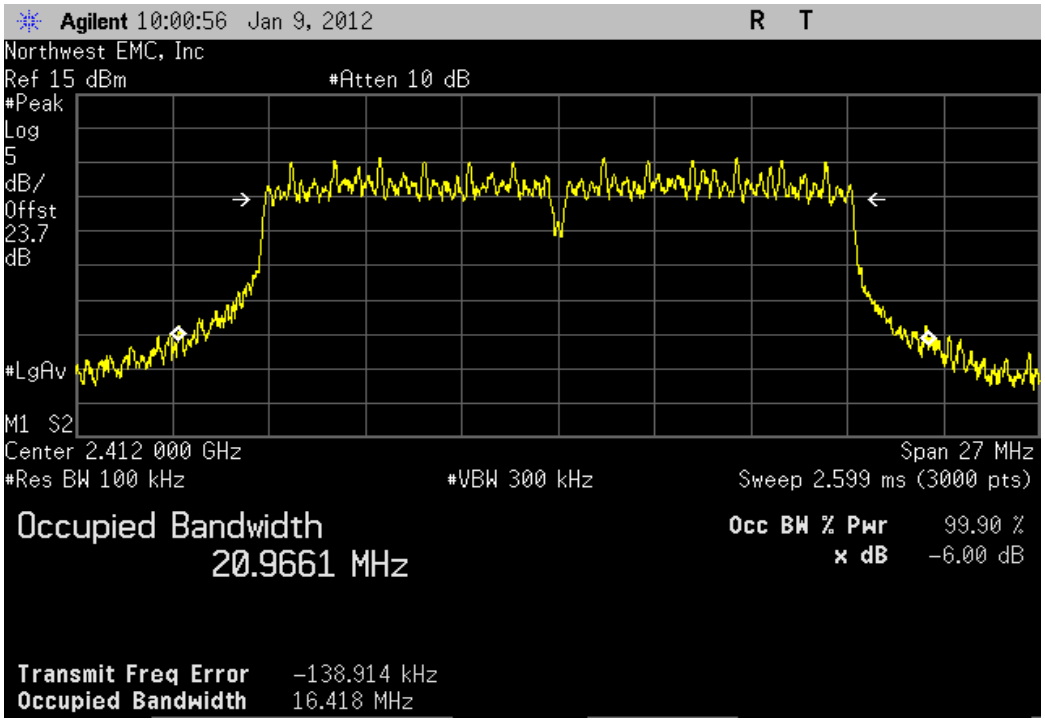


2400 MHz - 2483.5 MHz Band, 802.11(g) 36 Mbps, High Channel 11, 2462 MHz							
					Value	Limit	Result
					16.396 MHz	> 500 kHz	Pass



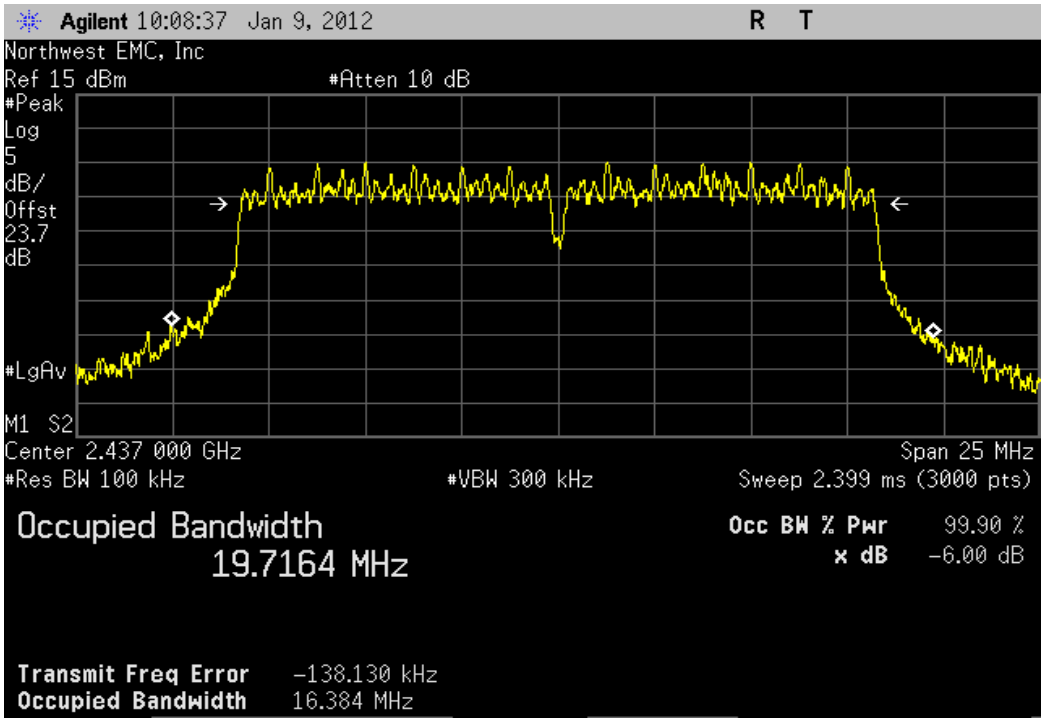
2400 MHz - 2483.5 MHz Band, 802.11(g) 54 Mbps, Low Channel 1, 2412 MHz

				Value	Limit	Result
				16.418 MHz	> 500 kHz	Pass



2400 MHz - 2483.5 MHz Band, 802.11(g) 54 Mbps, Mid Channel 6, 2437 MHz

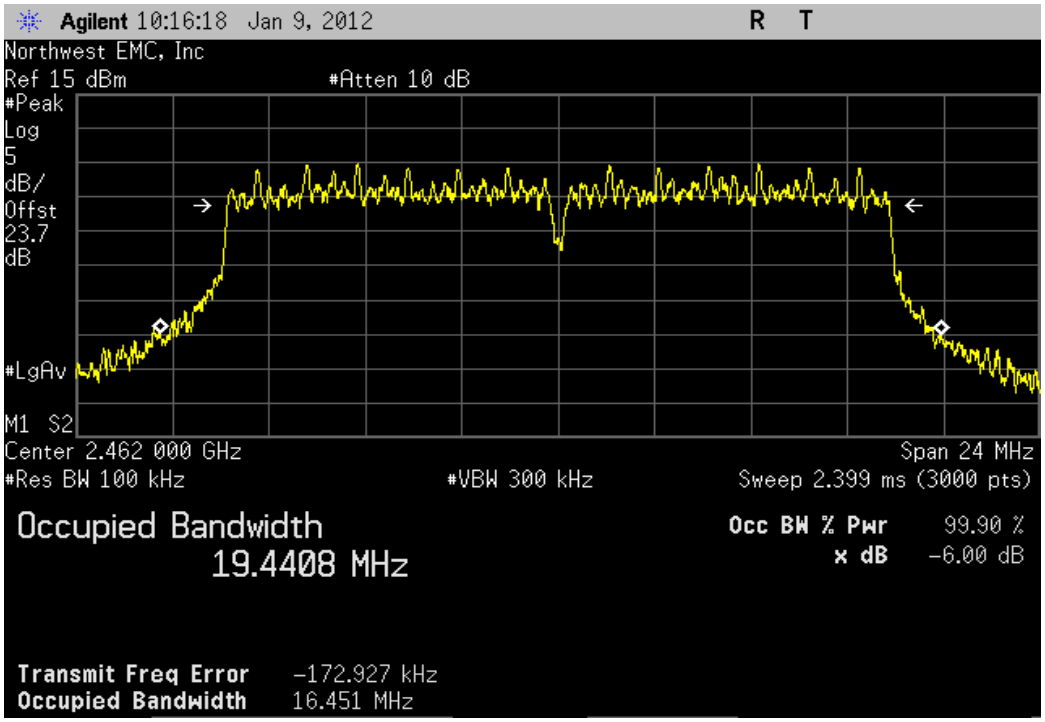
				Value	Limit	Result
				16.384 MHz	> 500 kHz	Pass



Occupied Bandwidth

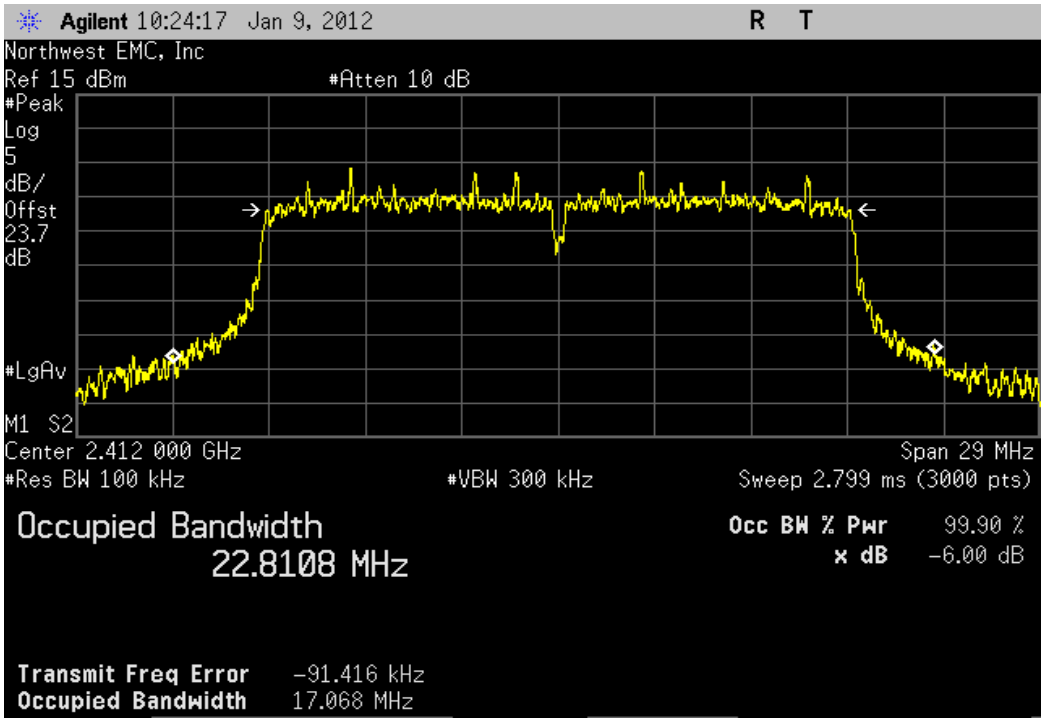
2400 MHz - 2483.5 MHz Band, 802.11(g) 54 Mbps, High Channel 11, 2462 MHz

				Value	Limit	Result
				16.451 MHz	> 500 kHz	Pass



2400 MHz - 2483.5 MHz Band, 802.11(n) MCS0, Low Channel 1, 2412 MHz

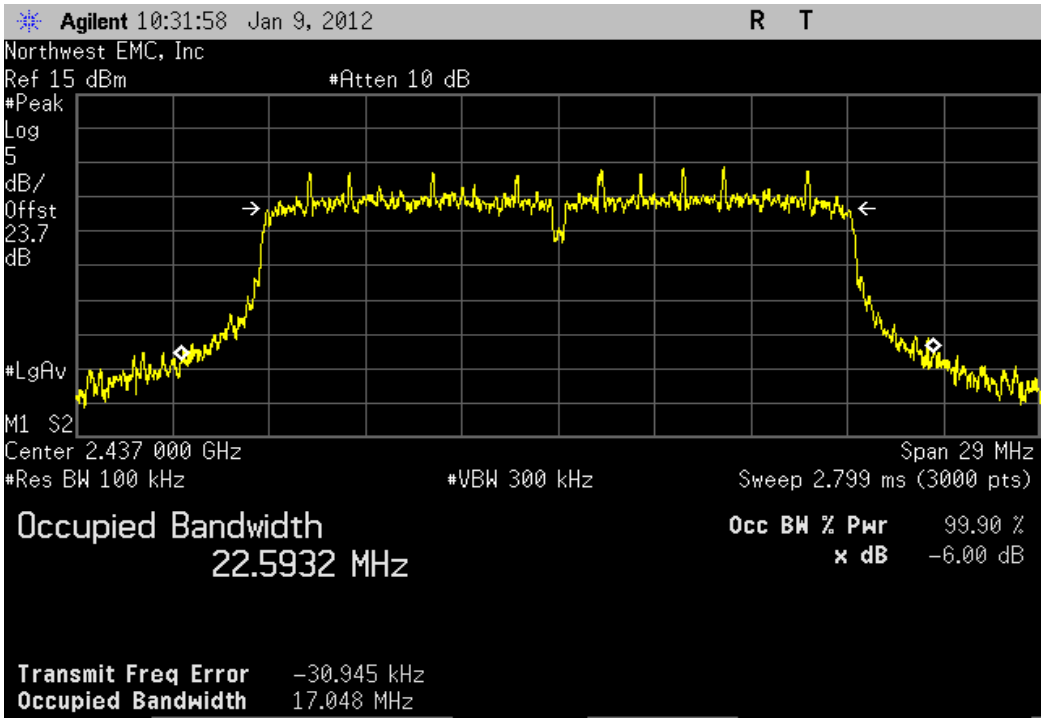
				Value	Limit	Result
				17.068 MHz	> 500 kHz	Pass



Occupied Bandwidth

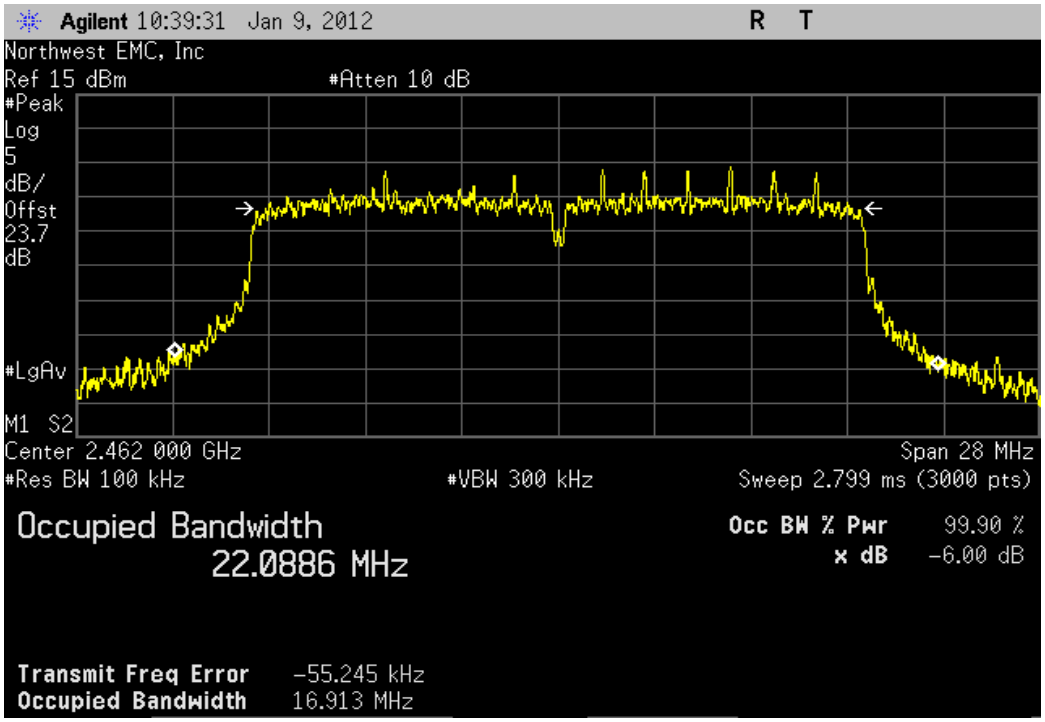
2400 MHz - 2483.5 MHz Band, 802.11(n) MCS0, Mid Channel 6, 2437 MHz

				Value	Limit	Result
				17.048 MHz	> 500 kHz	Pass



2400 MHz - 2483.5 MHz Band, 802.11(n) MCS0, High Channel 11, 2462 MHz

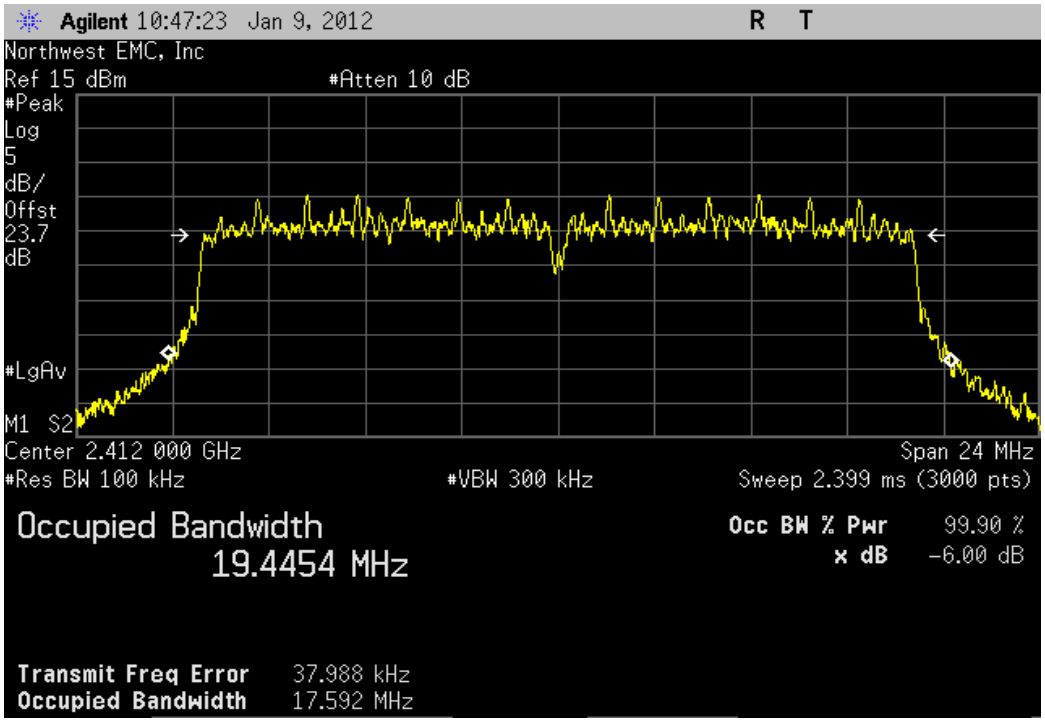
				Value	Limit	Result
				16.913 MHz	> 500 kHz	Pass



Occupied Bandwidth

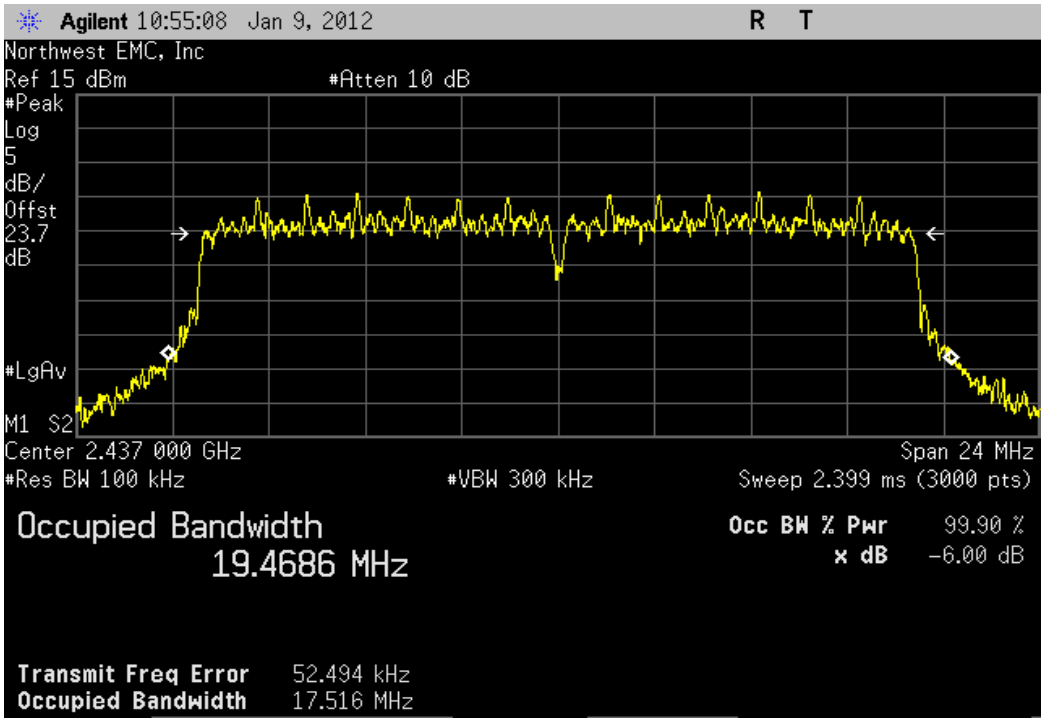
2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, Low Channel 1, 2412 MHz

				Value	Limit	Result
				17.592 MHz	> 500 kHz	Pass



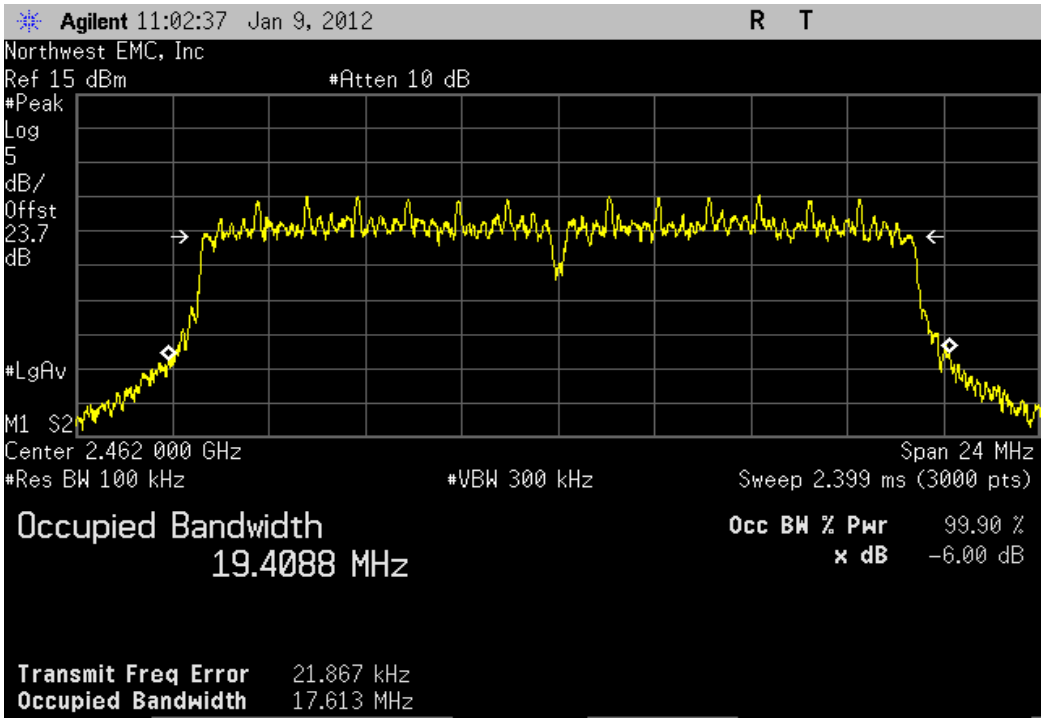
2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, Mid Channel 6, 2437 MHz

				Value	Limit	Result
				17.516 MHz	> 500 kHz	Pass



Occupied Bandwidth

2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, High Channel 11, 2462 MHz						
				Value	Limit	Result
				17.613 MHz	> 500 kHz	Pass



Output Power

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
Attenuator - 20db, 'SMA'	SM Electronics	SA26B-20	RFW	6/2/2011	12
40 GHz DC block	Fairview Microwave	SD3379	AMI	10/12/2011	12
Signal Generator	Agilent	N5183A	TIA	1/18/2011	12
Spectrum Analyzer	Agilent	E4440A	AAX	5/23/2011	12

MEASUREMENT UNCERTAINTY

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 for radiated emissions measurements is less than +/- 4 dB, and for conducted emissions measurements is less than +/- 2.7 dB. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for measurement uncertainty are available upon request.

TEST DESCRIPTION

The transmit frequency was set to the required channels in each band. 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 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. The amplitude accuracy of the spectrum analyzer was further enhanced by calibrating the setup using the power meter and synthesized signal generator.

Prior to measuring peak transmit 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.

Method #3 found in ANSI C63.10 section 6.10.2.2 was used because the analyzer sweep time was greater than T for the operating mode which has the shortest transmission pulse duration and the Emission Bandwidth was greater than the largest RBW on the analyzer.

The spectrum analyzer settings were as follows:

- The span was set to encompass entire emission bandwidth (B), centered on the transmit channel.
- The RBW = 1 MHz, VBW = 3 MHz
- Sample detector mode because the bin width (span / number of spectral points) < 0.5 RBW.
- Power was integrated across “B”, by using the channel power function of the analyzer.

Output Power

EUT:	ConnectPort X2e Wi-Fi			**Work Order:**	DGII0036
Serial Number:	1201-003			**Date:**	01/09/12
Customer:	Digi International			**Temperature:**	24.09°C
Attendees:	Bradley Ferguson			**Humidity:**	18%
Project:	None			**Barometric Pres.:**	1013.3
Tested by:	Trevor Buls	**Power:**	5VDC	**Job Site:**	MN08

TEST SPECIFICATIONS	TEST METHOD
FCC 15.247:2012	ANSI C63.10:2009

COMMENTS

1.5 dB was added to the Reference Level Offset to compensate for the customer's adapter cable. Low and High channels for 6 Mbps, 36 Mbps, 54 Mbps will use PL setting of 14, MCS0 will use PL setting of 12, all others will use PL setting of 18.

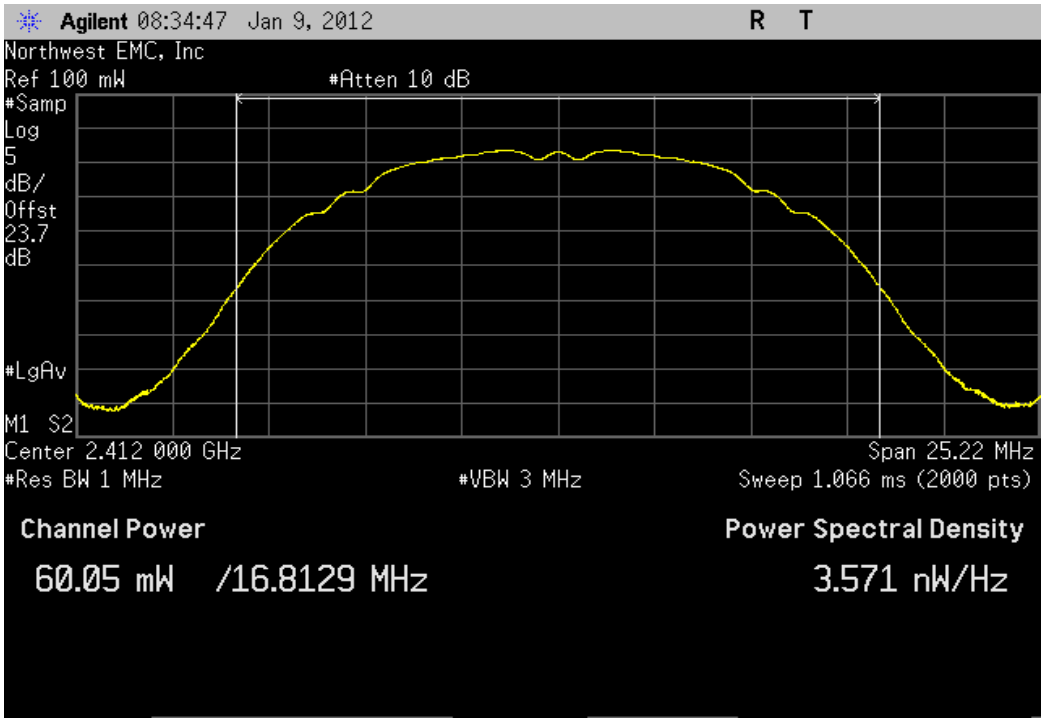
DEVIATIONS FROM TEST STANDARD

None

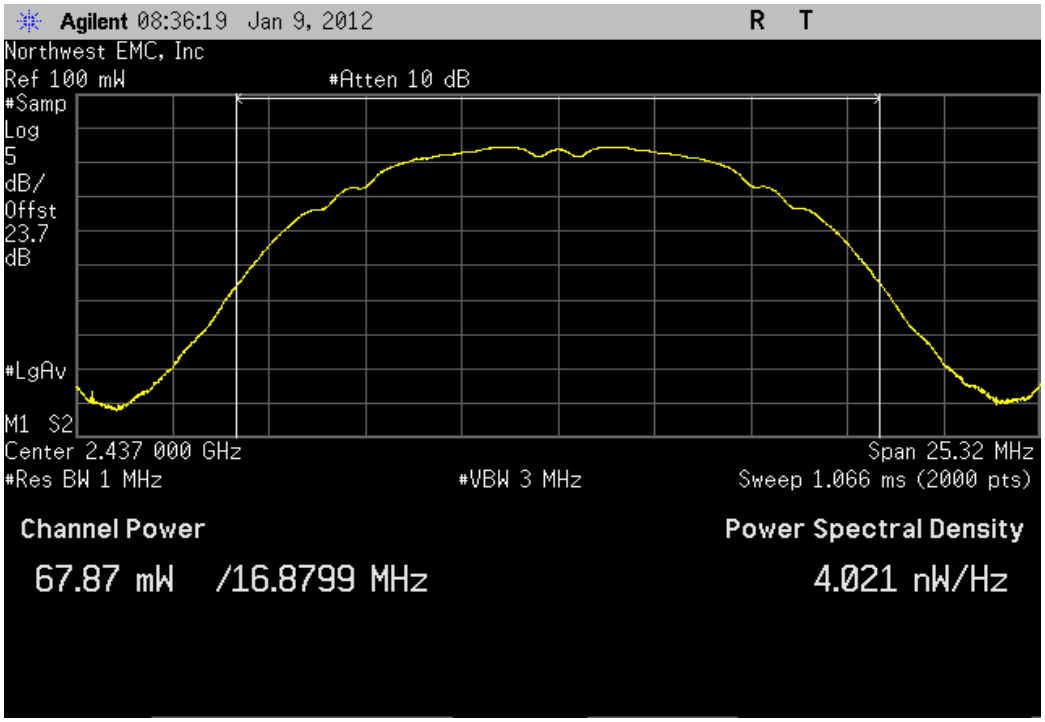
Configuration #	1	Signature	Trevor Buls

	Value	Limit	Result
2400 MHz - 2483.5 MHz Band			
802.11(b) 1 Mbps			
Low Channel 1, 2412 MHz	60.046 mW	< 1 W	Pass
Mid Channel 6, 2437 MHz	67.868 mW	< 1 W	Pass
High Channel 11, 2462 MHz	64.586 mW	< 1 W	Pass
802.11(b) 11 Mbps			
Low Channel 1, 2412 MHz	60.184 mW	< 1 W	Pass
Mid Channel 6, 2437 MHz	67.161 mW	< 1 W	Pass
High Channel 11, 2462 MHz	65.857 mW	< 1 W	Pass
802.11(g) 6 Mbps			
Low Channel 1, 2412 MHz	33.817 mW	< 1 W	Pass
Mid Channel 6, 2437 MHz	70.834 mW	< 1 W	Pass
High Channel 11, 2462 MHz	32.338 mW	< 1 W	Pass
802.11(g) 36 Mbps			
Low Channel 1, 2412 MHz	30.5 mW	< 1 W	Pass
Mid Channel 6, 2437 MHz	62.532 mW	< 1 W	Pass
High Channel 11, 2462 MHz	27.191 mW	< 1 W	Pass
802.11(g) 54 Mbps			
Low Channel 1, 2412 MHz	30.366 mW	< 1 W	Pass
Mid Channel 6, 2437 MHz	34.633 mW	< 1 W	Pass
High Channel 11, 2462 MHz	26.417 mW	< 1 W	Pass
802.11(n) MCS0			
Low Channel 1, 2412 MHz	22.021 mW	< 1 W	Pass
Mid Channel 6, 2437 MHz	34.067 mW	< 1 W	Pass
High Channel 11, 2462 MHz	21.73 mW	< 1 W	Pass
802.11(n) MCS7			
Low Channel 1, 2412 MHz	11.053 mW	< 1 W	Pass
Mid Channel 6, 2437 MHz	12.466 mW	< 1 W	Pass
High Channel 11, 2462 MHz	10.979 mW	< 1 W	Pass

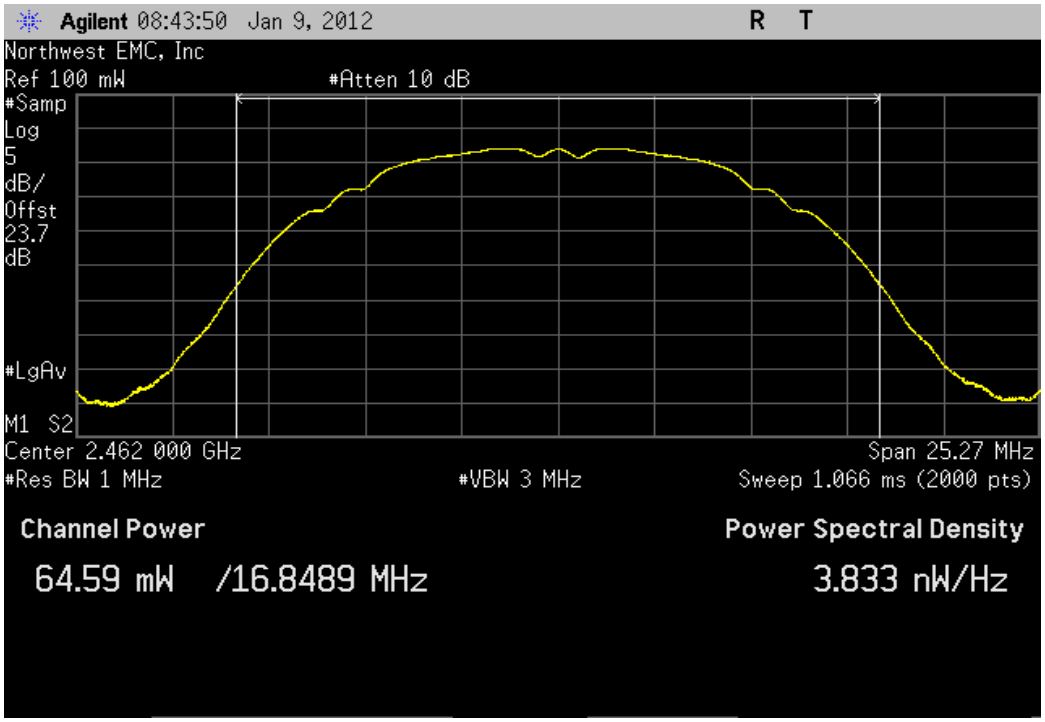
2400 MHz - 2483.5 MHz Band, 802.11(b) 1 Mbps, Low Channel 1, 2412 MHz						
				Value	Limit	Result
				60.046 mW	< 1 W	Pass



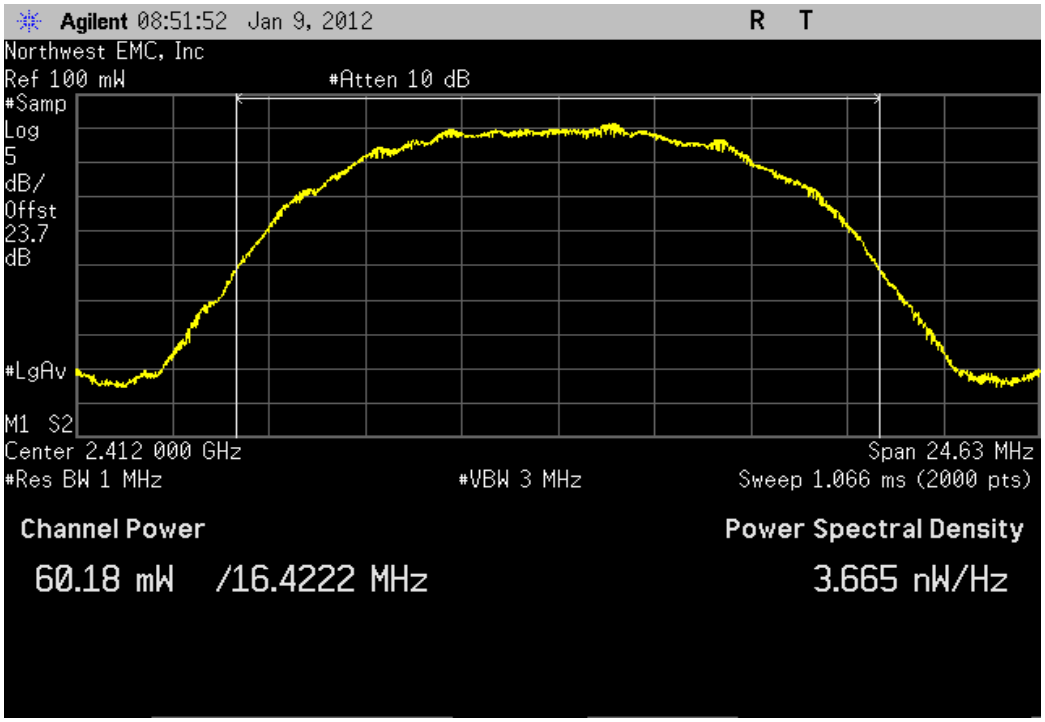
2400 MHz - 2483.5 MHz Band, 802.11(b) 1 Mbps, Mid Channel 6, 2437 MHz						
				Value	Limit	Result
				67.868 mW	< 1 W	Pass



2400 MHz - 2483.5 MHz Band, 802.11(b) 1 Mbps, High Channel 11, 2462 MHz						
				Value	Limit	Result
				64.586 mW	< 1 W	Pass

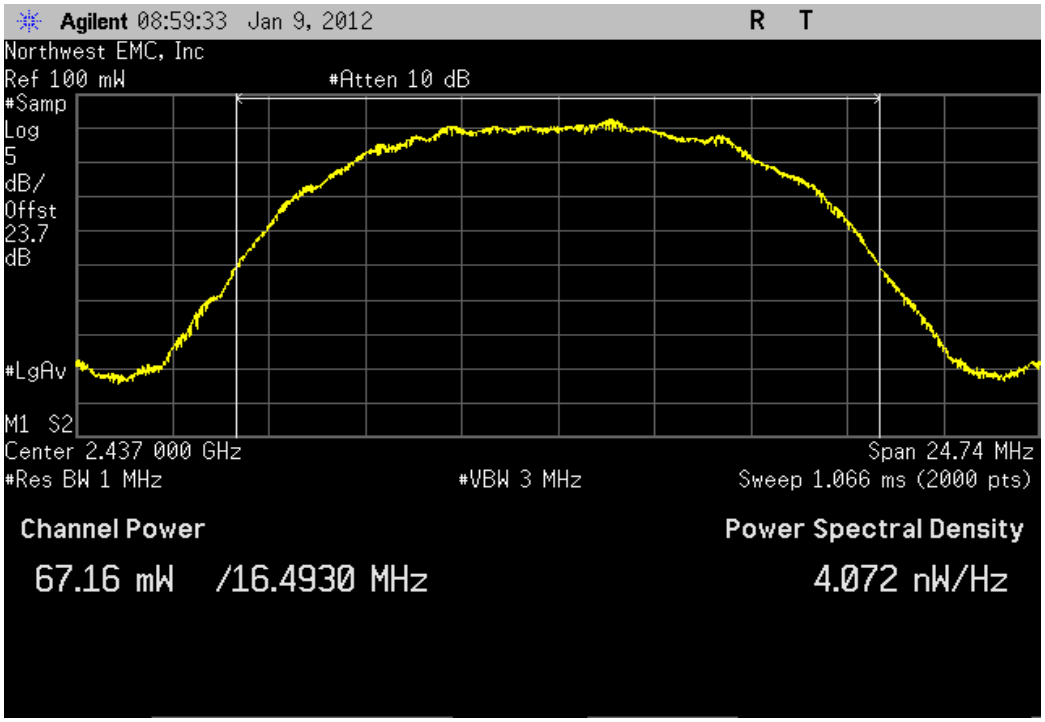


2400 MHz - 2483.5 MHz Band, 802.11(b) 11 Mbps, Low Channel 1, 2412 MHz						
				Value	Limit	Result
				60.184 mW	< 1 W	Pass

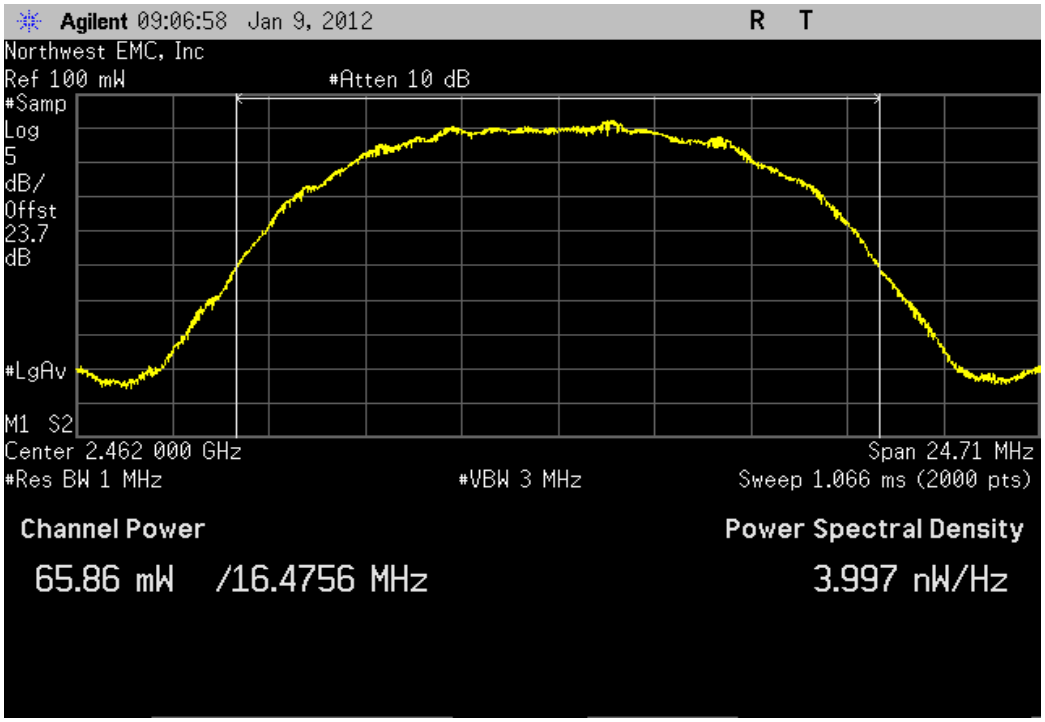


Output Power

2400 MHz - 2483.5 MHz Band, 802.11(b) 11 Mbps, Mid Channel 6, 2437 MHz						
				Value	Limit	Result
				67.161 mW	< 1 W	Pass

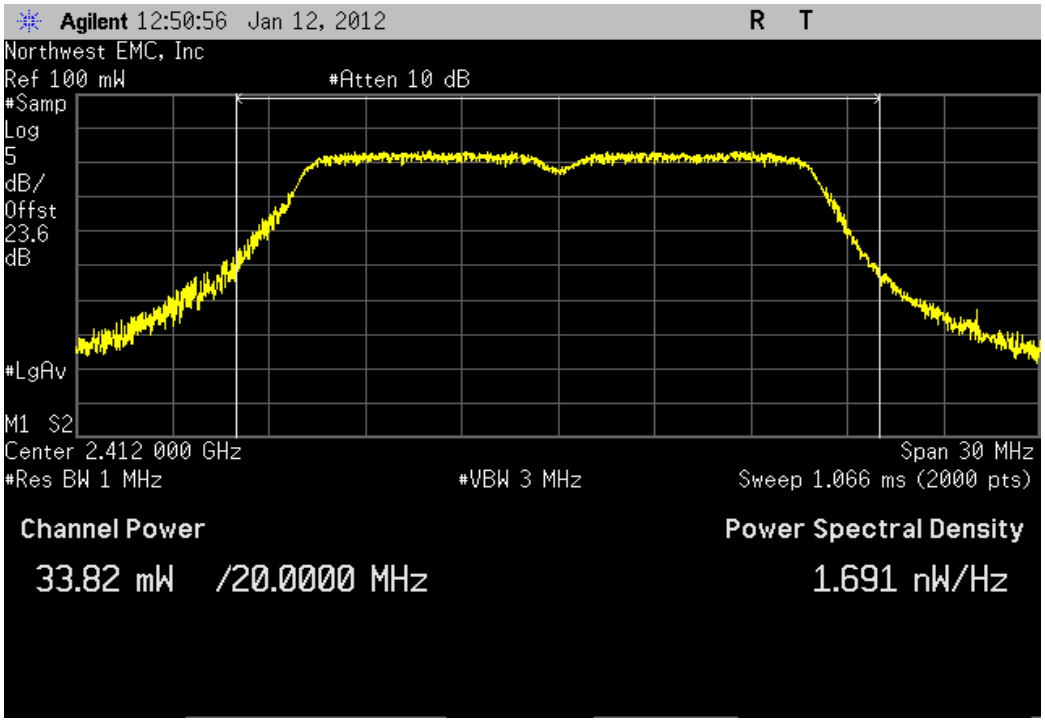


2400 MHz - 2483.5 MHz Band, 802.11(b) 11 Mbps, High Channel 11, 2462 MHz						
				Value	Limit	Result
				65.857 mW	< 1 W	Pass

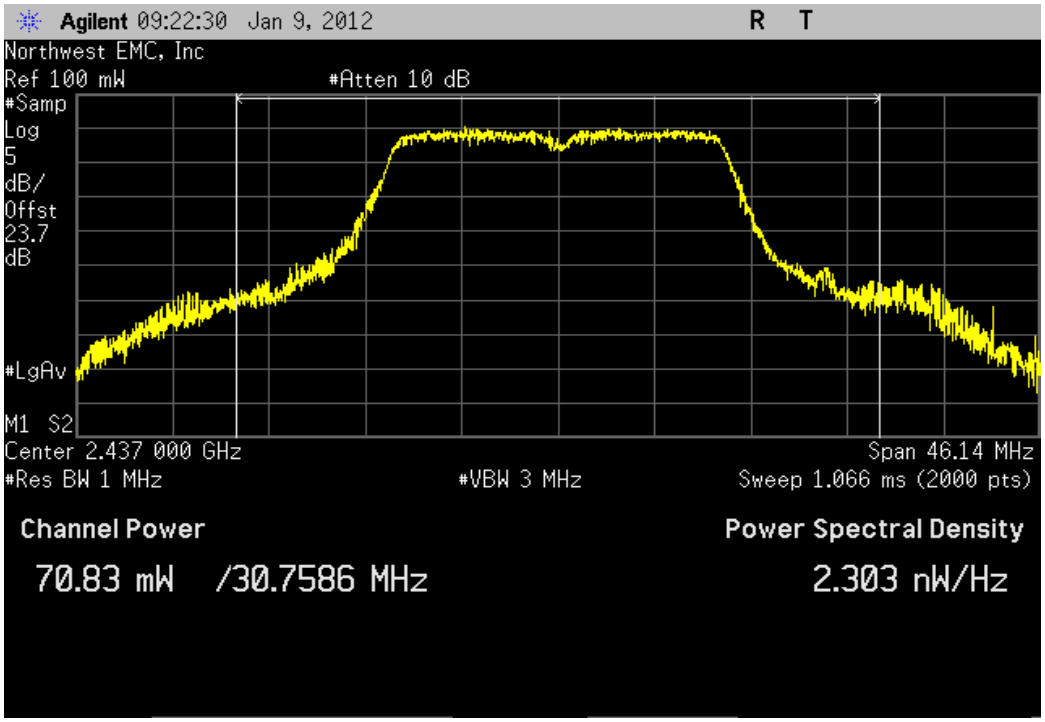


Output Power

2400 MHz - 2483.5 MHz Band, 802.11(g) 6 Mbps, Low Channel 1, 2412 MHz						
				Value	Limit	Result
				33.817 mW	< 1 W	Pass

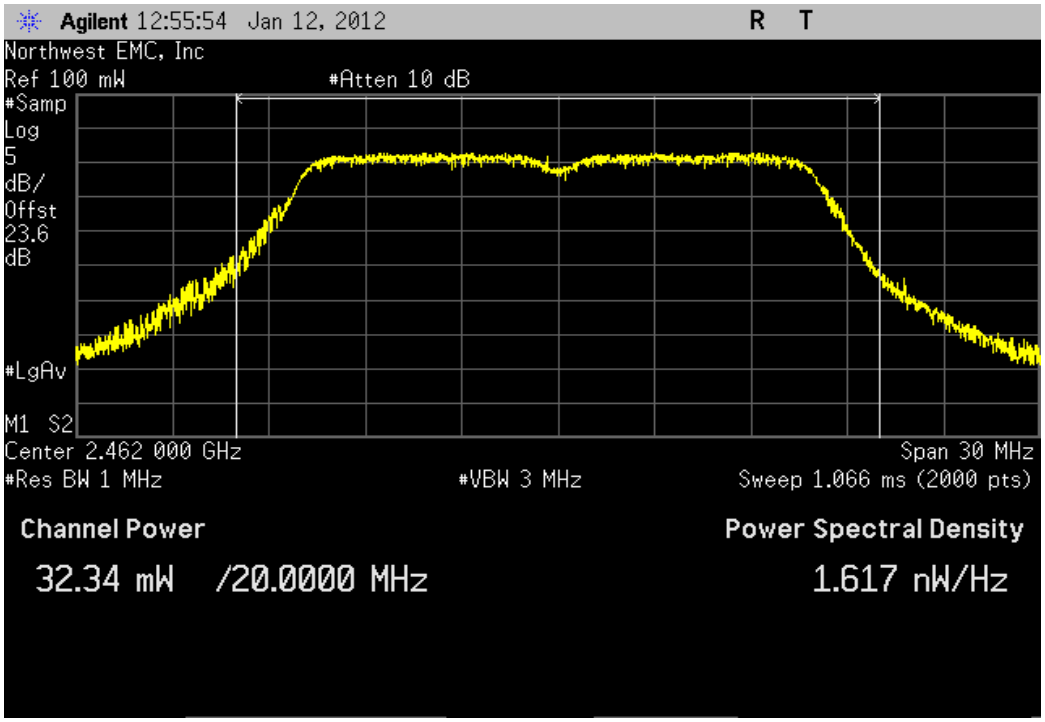


2400 MHz - 2483.5 MHz Band, 802.11(g) 6 Mbps, Mid Channel 6, 2437 MHz						
				Value	Limit	Result
				70.834 mW	< 1 W	Pass



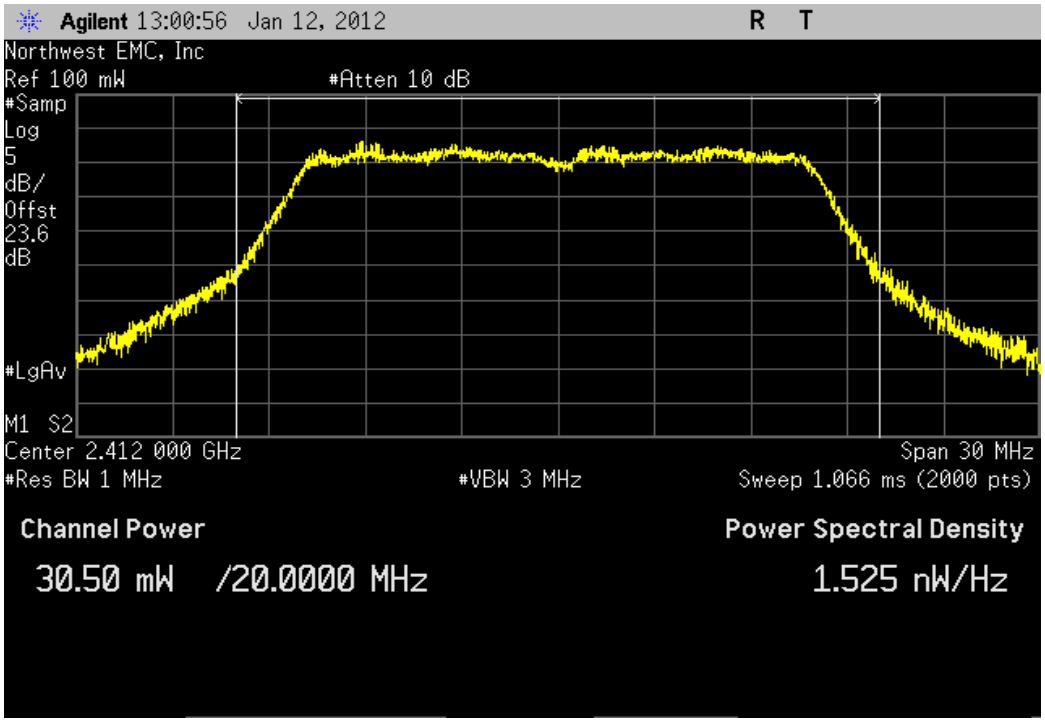
2400 MHz - 2483.5 MHz Band, 802.11(g) 6 Mbps, High Channel 11, 2462 MHz

				Value	Limit	Result
				32.338 mW	< 1 W	Pass



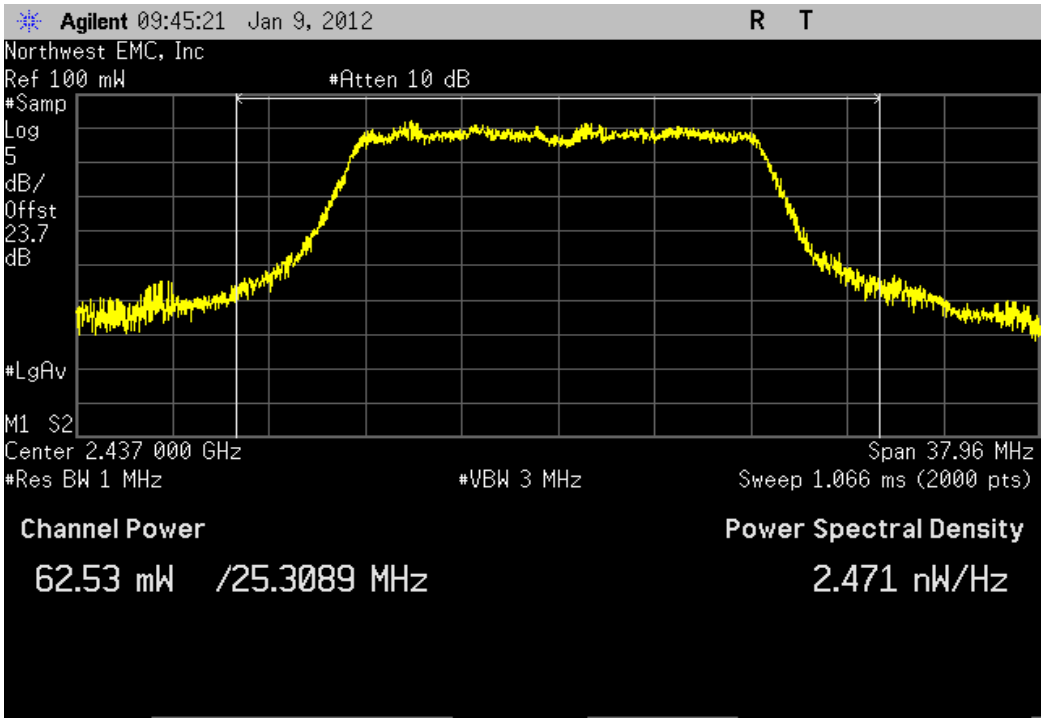
2400 MHz - 2483.5 MHz Band, 802.11(g) 36 Mbps, Low Channel 1, 2412 MHz

				Value	Limit	Result
				30.5 mW	< 1 W	Pass



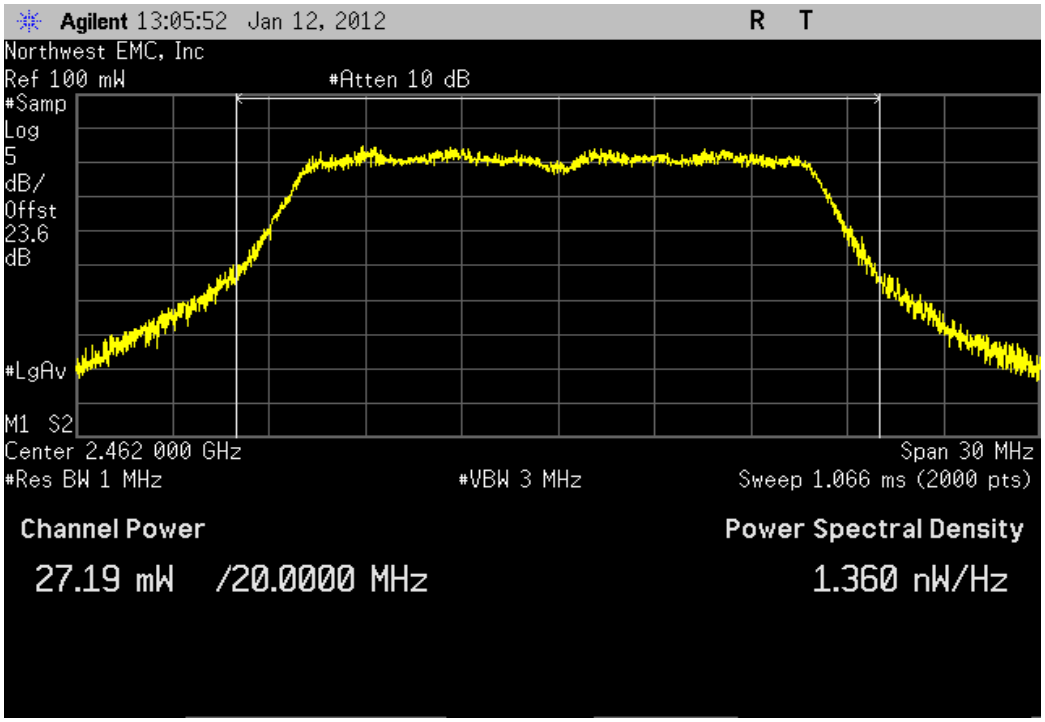
2400 MHz - 2483.5 MHz Band, 802.11(g) 36 Mbps, Mid Channel 6, 2437 MHz

				Value	Limit	Result
				62.532 mW	< 1 W	Pass



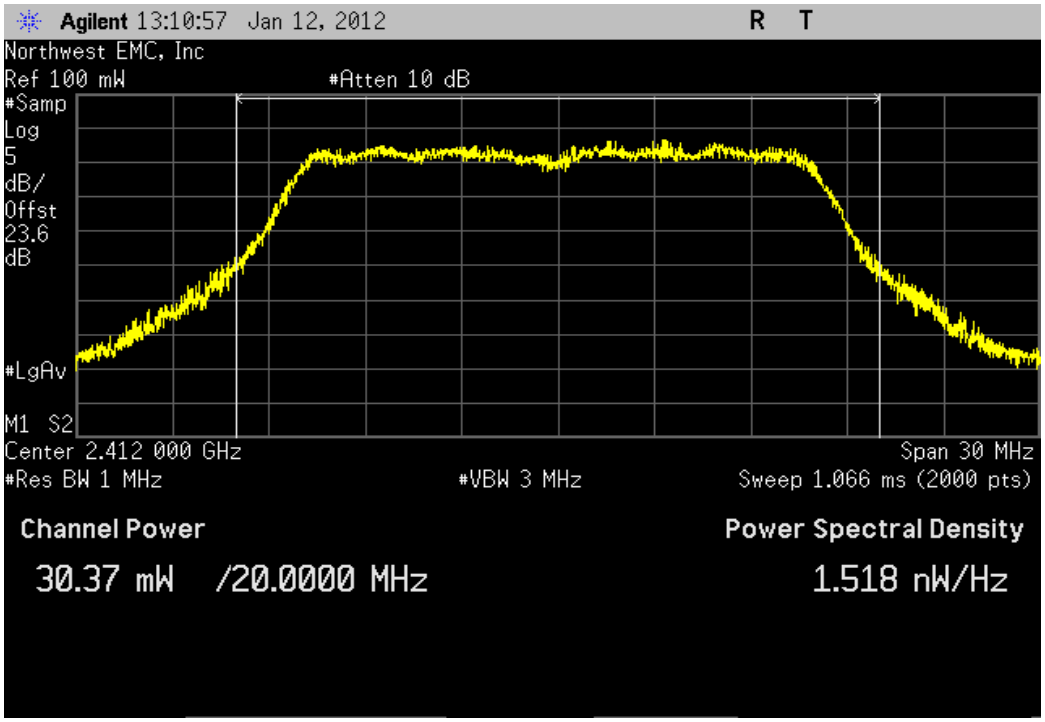
2400 MHz - 2483.5 MHz Band, 802.11(g) 36 Mbps, High Channel 11, 2462 MHz

				Value	Limit	Result
				27.191 mW	< 1 W	Pass

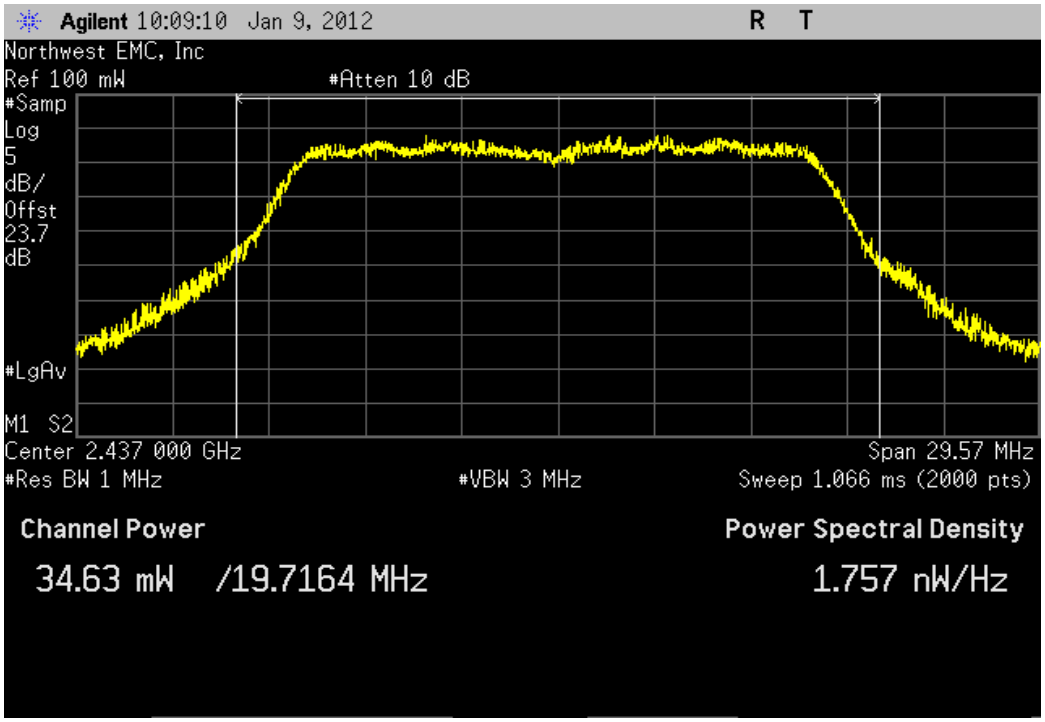


Output Power

2400 MHz - 2483.5 MHz Band, 802.11(g) 54 Mbps, Low Channel 1, 2412 MHz						
				Value	Limit	Result
				30.366 mW	< 1 W	Pass

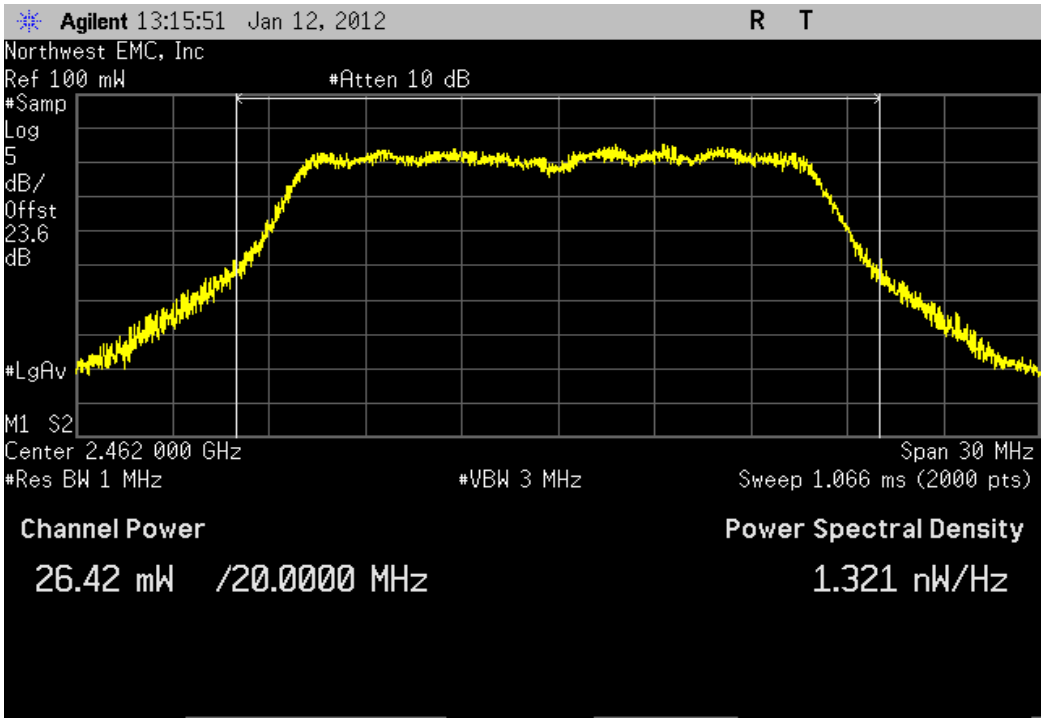


2400 MHz - 2483.5 MHz Band, 802.11(g) 54 Mbps, Mid Channel 6, 2437 MHz						
				Value	Limit	Result
				34.633 mW	< 1 W	Pass



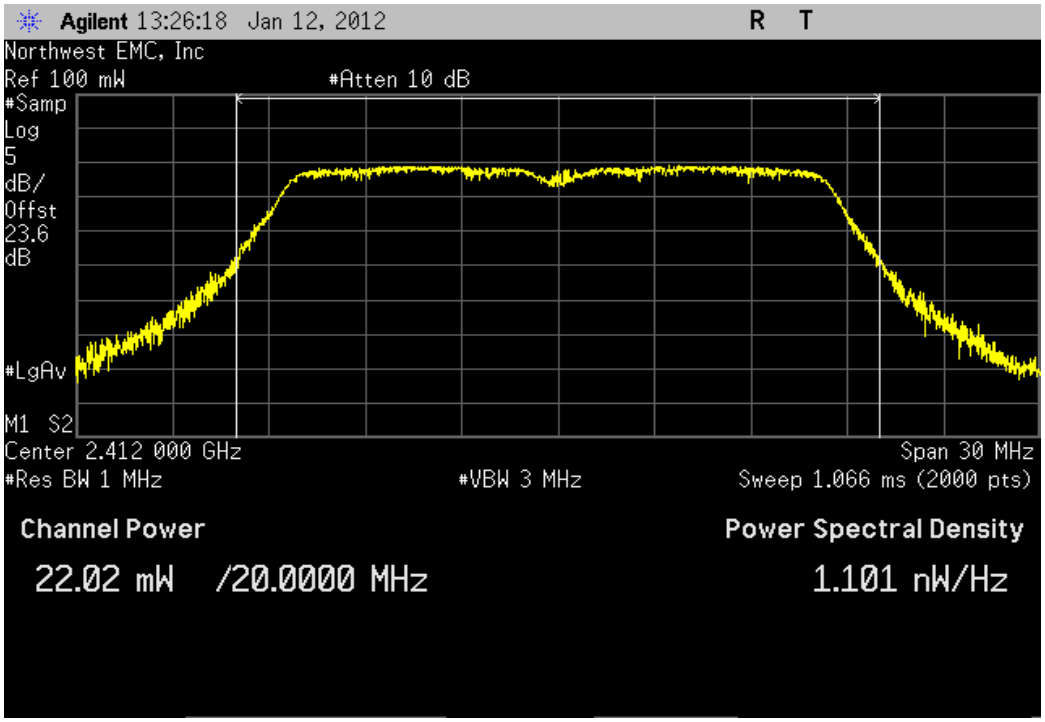
2400 MHz - 2483.5 MHz Band, 802.11(g) 54 Mbps, High Channel 11, 2462 MHz

				Value	Limit	Result
				26.417 mW	< 1 W	Pass

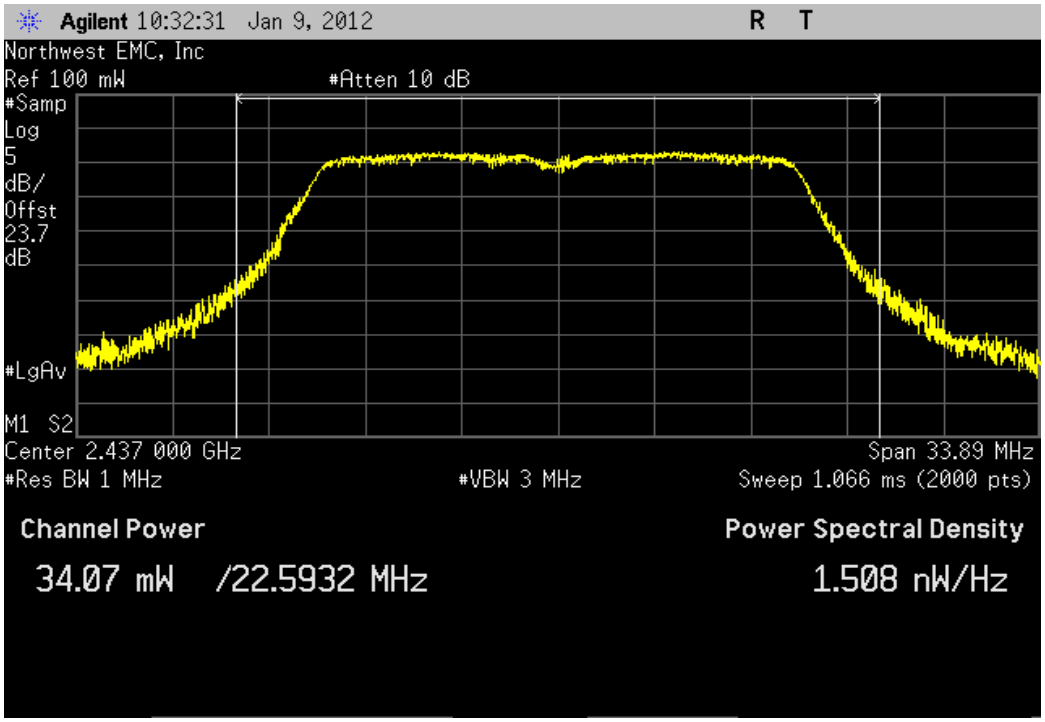


2400 MHz - 2483.5 MHz Band, 802.11(n) MCS0, Low Channel 1, 2412 MHz

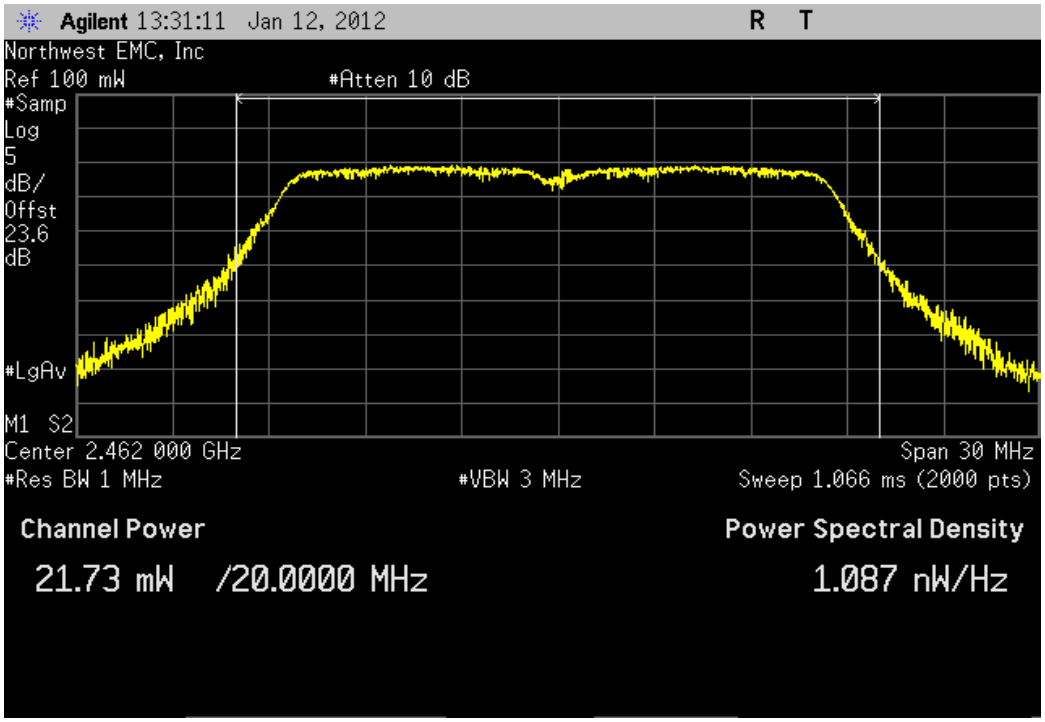
				Value	Limit	Result
				22.021 mW	< 1 W	Pass



2400 MHz - 2483.5 MHz Band, 802.11(n) MCS0, Mid Channel 6, 2437 MHz						
				Value	Limit	Result
				34.067 mW	< 1 W	Pass

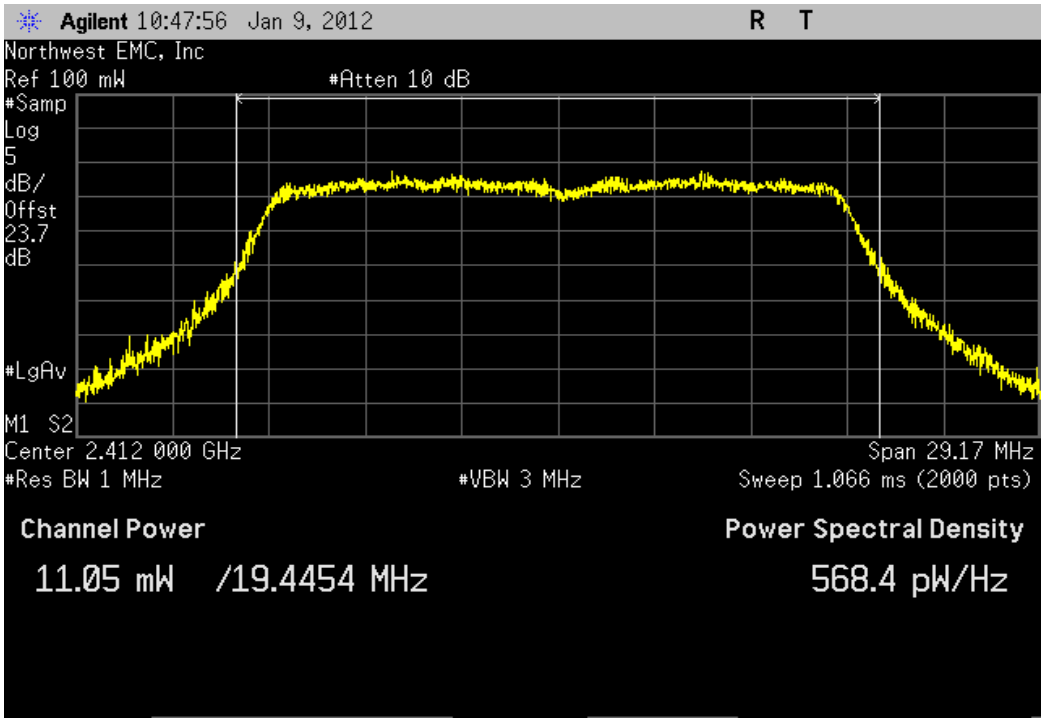


2400 MHz - 2483.5 MHz Band, 802.11(n) MCS0, High Channel 11, 2462 MHz						
				Value	Limit	Result
				21.73 mW	< 1 W	Pass

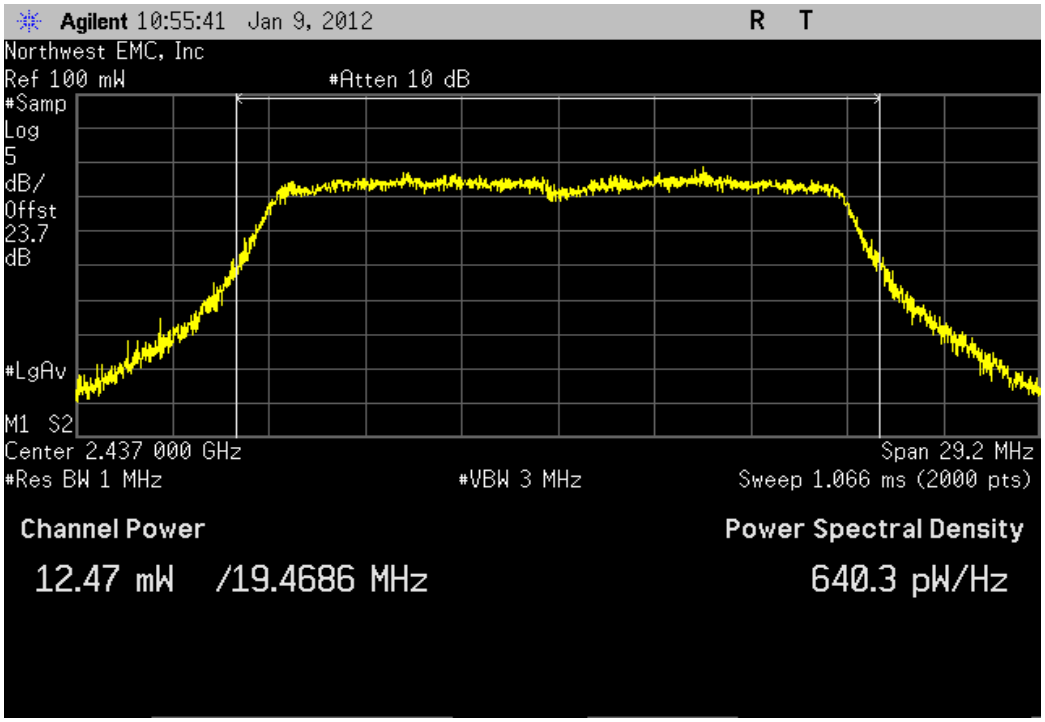


Output Power

2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, Low Channel 1, 2412 MHz						
				Value	Limit	Result
				11.053 mW	< 1 W	Pass



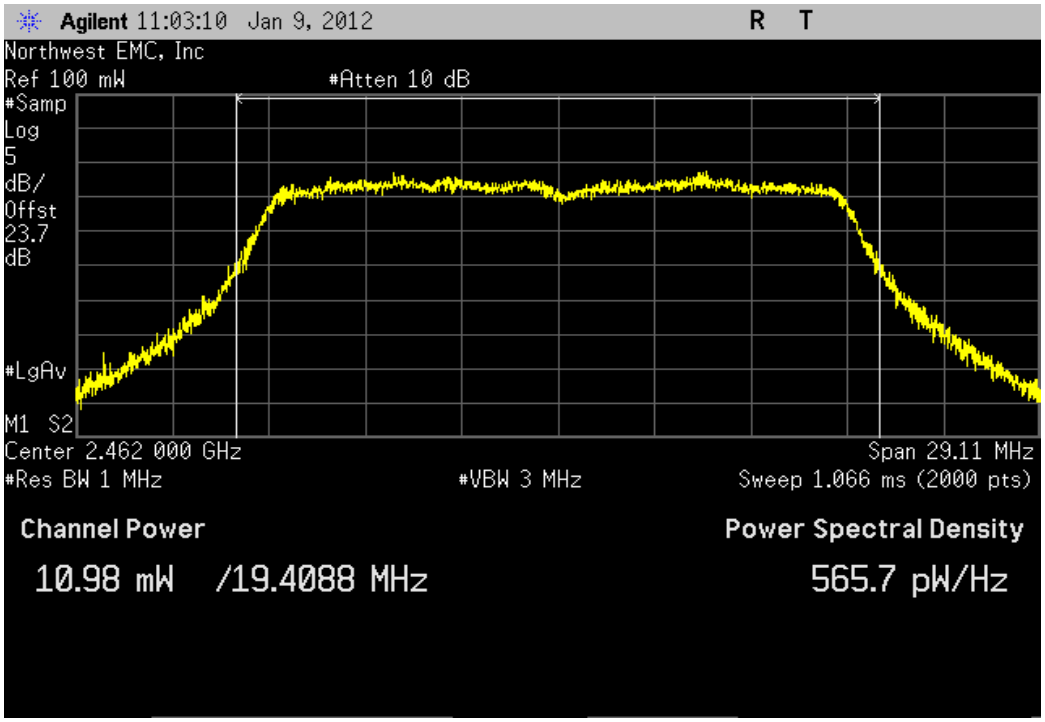
2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, Mid Channel 6, 2437 MHz						
				Value	Limit	Result
				12.466 mW	< 1 W	Pass



Output Power

2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, High Channel 11, 2462 MHz

				Value	Limit	Result
				10.979 mW	< 1 W	Pass



Band Edge Compliance

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
40 GHz DC block	Fairview Microwave	SD3379	AMI	10/12/2011	12
Attenuator - 20db, 'SMA'	SM Electronics	SA26B-20	RFW	6/2/2011	12
Signal Generator	Agilent	N5183A	TIA	1/18/2011	12
Spectrum Analyzer	Agilent	E4440A	AAX	5/23/2011	12

MEASUREMENT UNCERTAINTY

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 for radiated emissions measurements is less than +/- 4 dB, and for conducted emissions measurements is less than +/- 2.7 dB. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for measurement uncertainty are available upon request.

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 the ISM 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 required data rates available in 802.11(b)/(g)/(n).

The spectrum was scanned across each band edge.

Band Edge Compliance

EUT:	ConnectPort X2e Wi-Fi			**Work Order:**	DGII0036
Serial Number:	1201-003			**Date:**	01/09/12
Customer:	Digi International			**Temperature:**	24.09°C
Attendees:	Bradley Ferguson			**Humidity:**	18%
Project:	None			**Barometric Pres.:**	1013.3
Tested by:	Trevor Buls	**Power:**	5VDC	**Job Site:**	MN08

TEST SPECIFICATIONS	TEST METHOD
FCC 15.247:2012	ANSI C63.10:2009

COMMENTS

1.5 dB was added to the Reference Level Offset to compensate for the customer's adapter cable. Low and High channels for 6 Mbps, 36 Mbps, 54 Mbps will use PL setting of 14, MCS0 will use PL setting of 12, all others will use PL setting of 18.

DEVIATIONS FROM TEST STANDARD

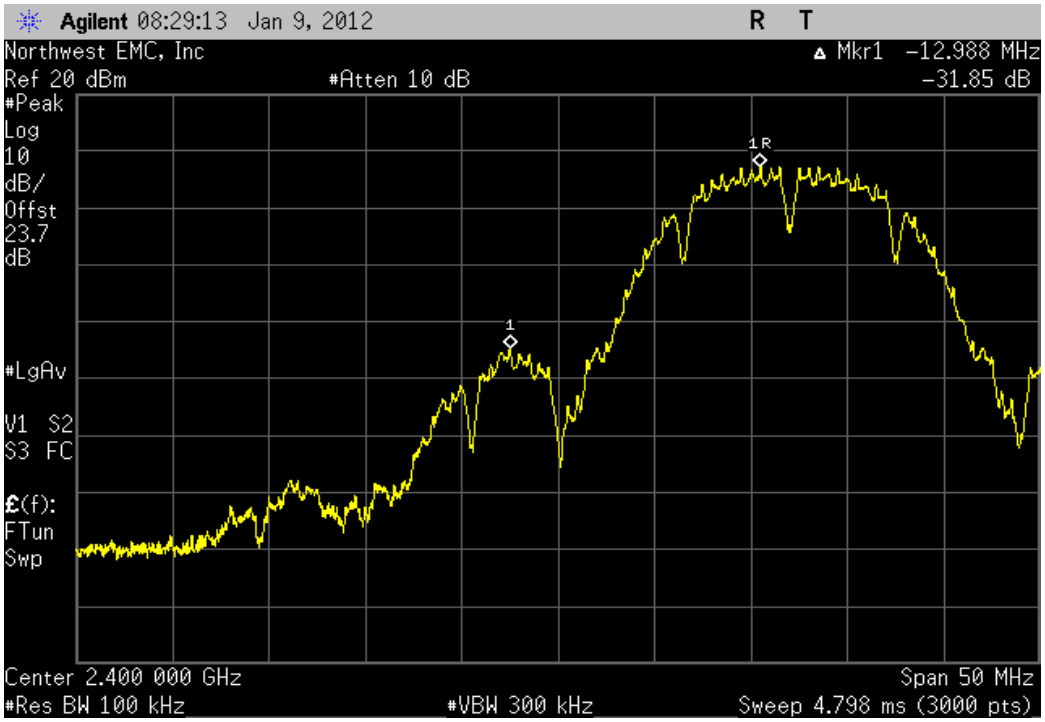
None

Configuration #	1	Signature	Trevor Buls

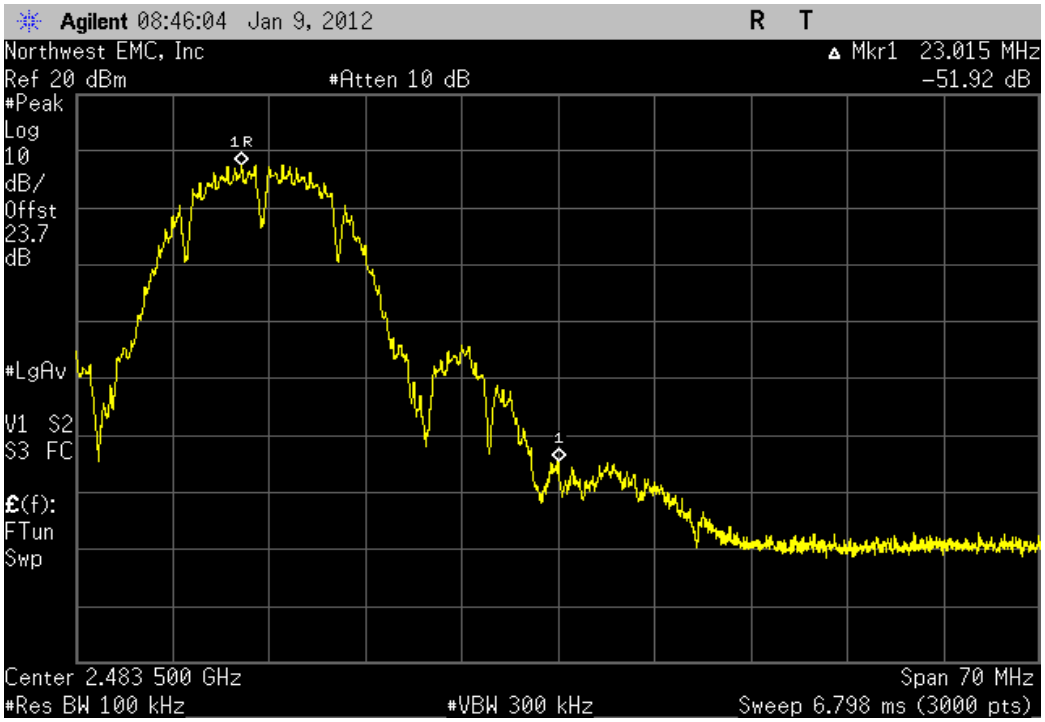
	Value	Limit	Result
2400 MHz - 2483.5 MHz Band			
802.11(b) 1 Mbps			
Low Channel 1, 2412 MHz	-31.85 dBc	≤ -20 dBc	Pass
High Channel 11, 2462 MHz	-51.92 dBc	≤ -20 dBc	Pass
802.11(b) 11 Mbps			
Low Channel 1, 2412 MHz	-33.61 dBc	≤ -20 dBc	Pass
High Channel 11, 2462 MHz	-53.85 dBc	≤ -20 dBc	Pass
802.11(g) 6 Mbps			
Low Channel 1, 2412 MHz	-27.8 dBc	≤ -20 dBc	Pass
High Channel 11, 2462 MHz	-39.2 dBc	≤ -20 dBc	Pass
802.11(g) 36 Mbps			
Low Channel 1, 2412 MHz	-28.42 dBc	≤ -20 dBc	Pass
High Channel 11, 2462 MHz	-41.7 dBc	≤ -20 dBc	Pass
802.11(g) 54 Mbps			
Low Channel 1, 2412 MHz	-29.15 dBc	≤ -20 dBc	Pass
High Channel 11, 2462 MHz	-43.17 dBc	≤ -20 dBc	Pass
802.11(n) MCS0			
Low Channel 1, 2412 MHz	-28.11 dBc	≤ -20 dBc	Pass
High Channel 11, 2462 MHz	-41.18 dBc	≤ -20 dBc	Pass
802.11(n) MCS7			
Low Channel 1, 2412 MHz	-30.84 dBc	≤ -20 dBc	Pass
High Channel 11, 2462 MHz	-43.83 dBc	≤ -20 dBc	Pass

Band Edge Compliance

2400 MHz - 2483.5 MHz Band, 802.11(b) 1 Mbps, Low Channel 1, 2412 MHz							
					Value	Limit	Result
					-31.85 dBc	≤ -20 dBc	Pass

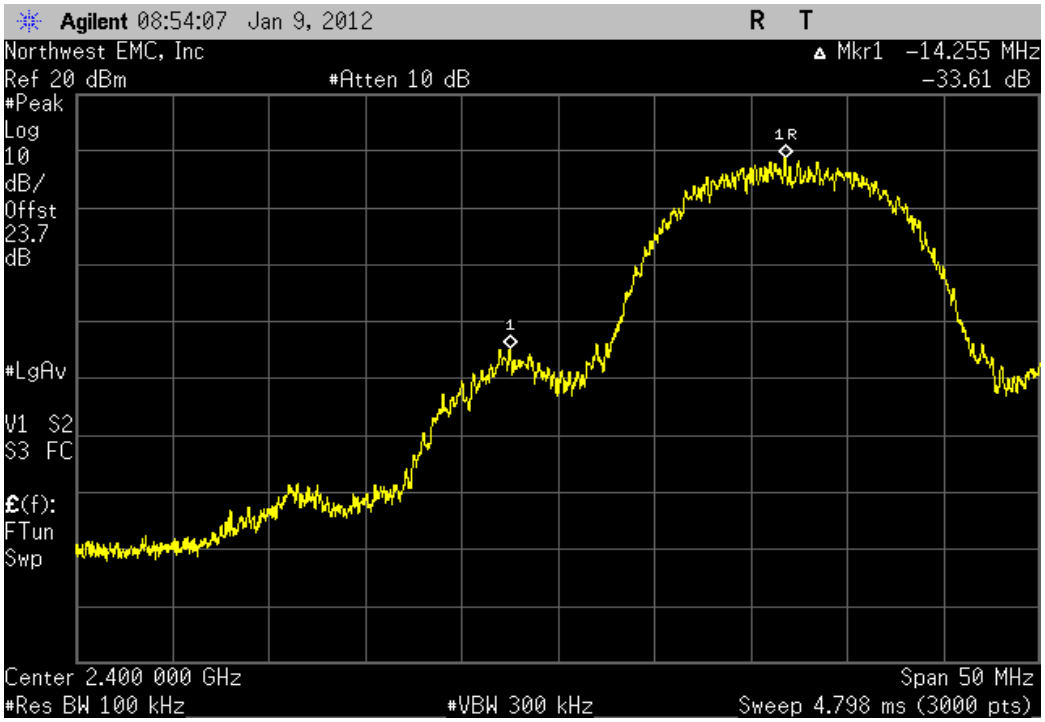


2400 MHz - 2483.5 MHz Band, 802.11(b) 1 Mbps, High Channel 11, 2462 MHz							
					Value	Limit	Result
					-51.92 dBc	≤ -20 dBc	Pass

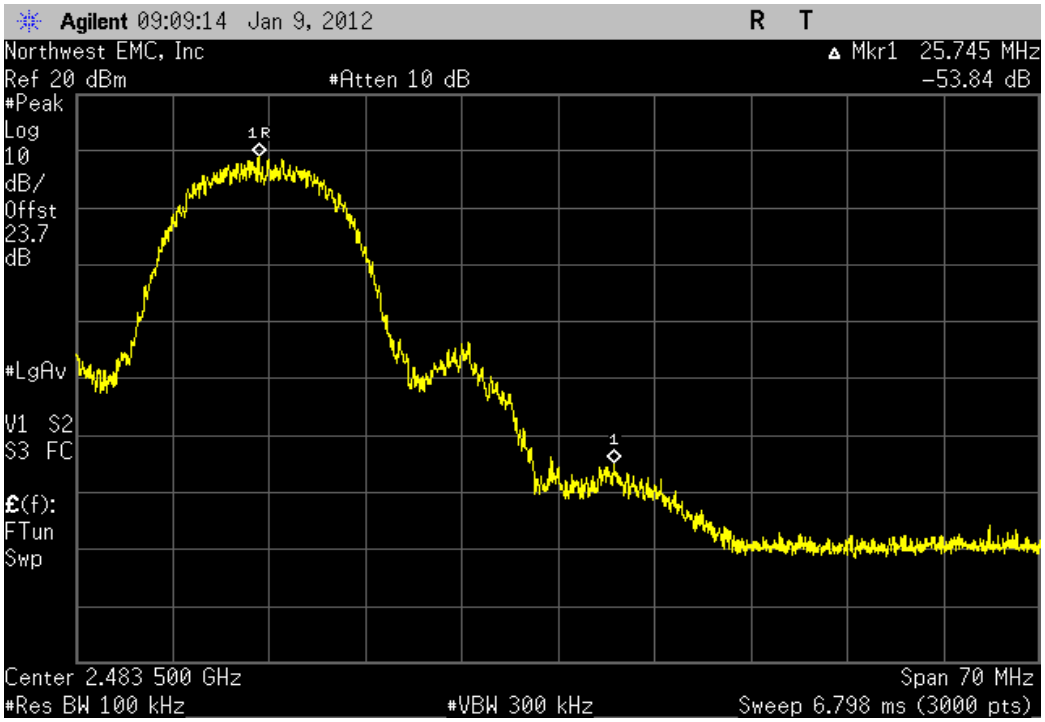


Band Edge Compliance

2400 MHz - 2483.5 MHz Band, 802.11(b) 11 Mbps, Low Channel 1, 2412 MHz							
					Value	Limit	Result
					-33.61 dBc	≤ -20 dBc	Pass

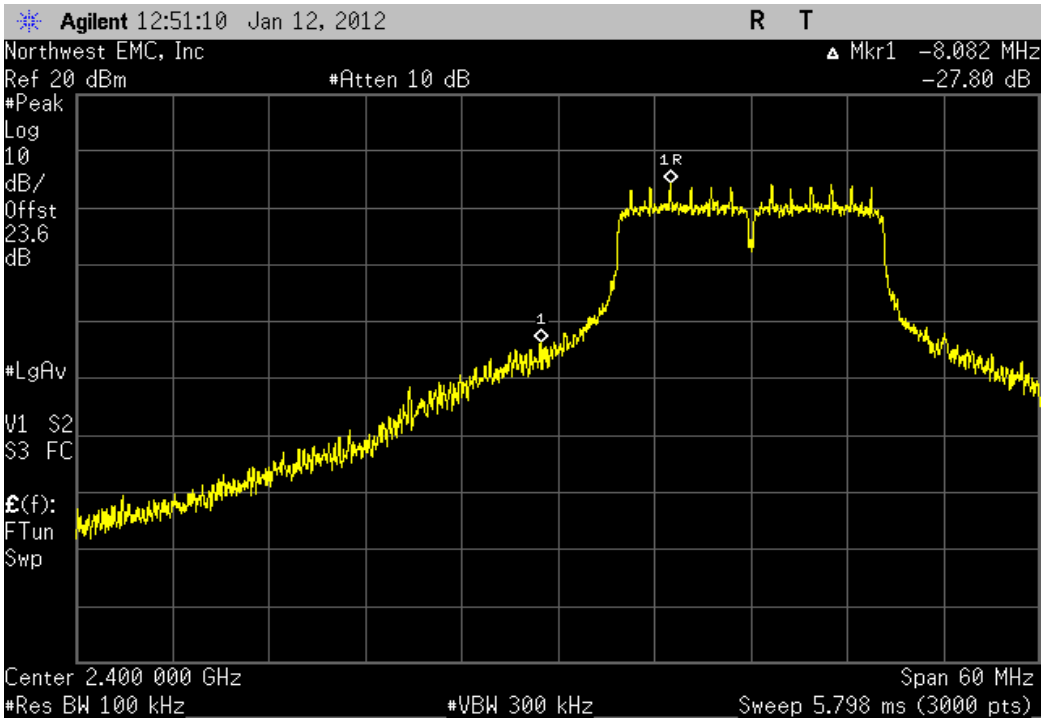


2400 MHz - 2483.5 MHz Band, 802.11(b) 11 Mbps, High Channel 11, 2462 MHz							
					Value	Limit	Result
					-53.85 dBc	≤ -20 dBc	Pass

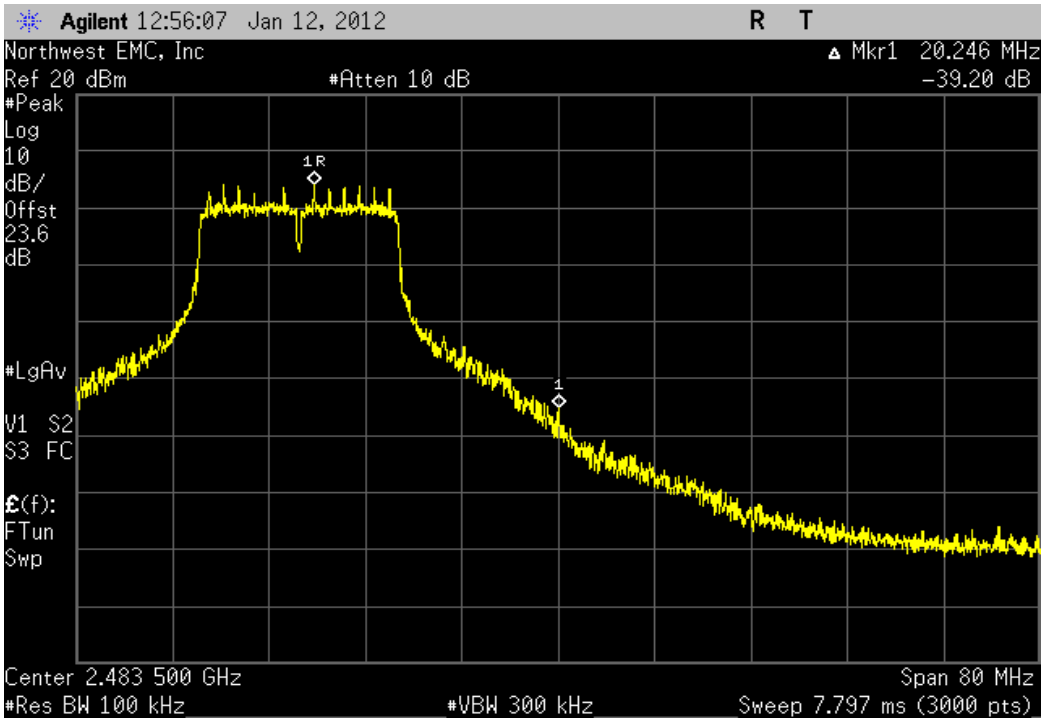


Band Edge Compliance

2400 MHz - 2483.5 MHz Band, 802.11(g) 6 Mbps, Low Channel 1, 2412 MHz							
					Value	Limit	Result
					-27.8 dBc	≤ -20 dBc	Pass



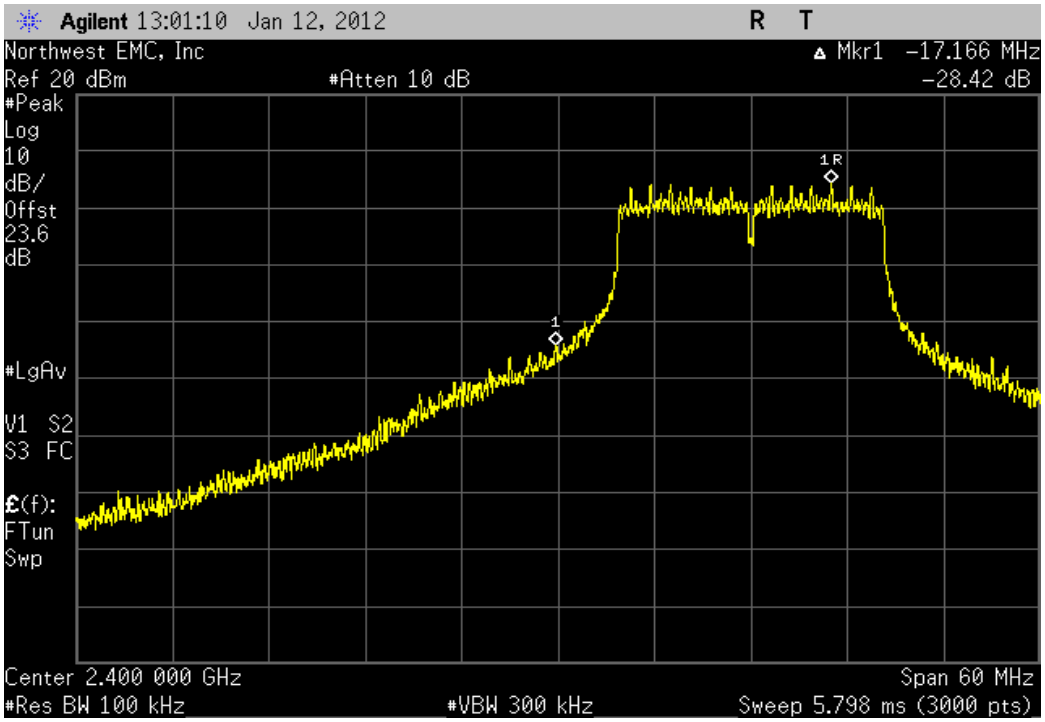
2400 MHz - 2483.5 MHz Band, 802.11(g) 6 Mbps, High Channel 11, 2462 MHz							
					Value	Limit	Result
					-39.2 dBc	≤ -20 dBc	Pass



Band Edge Compliance

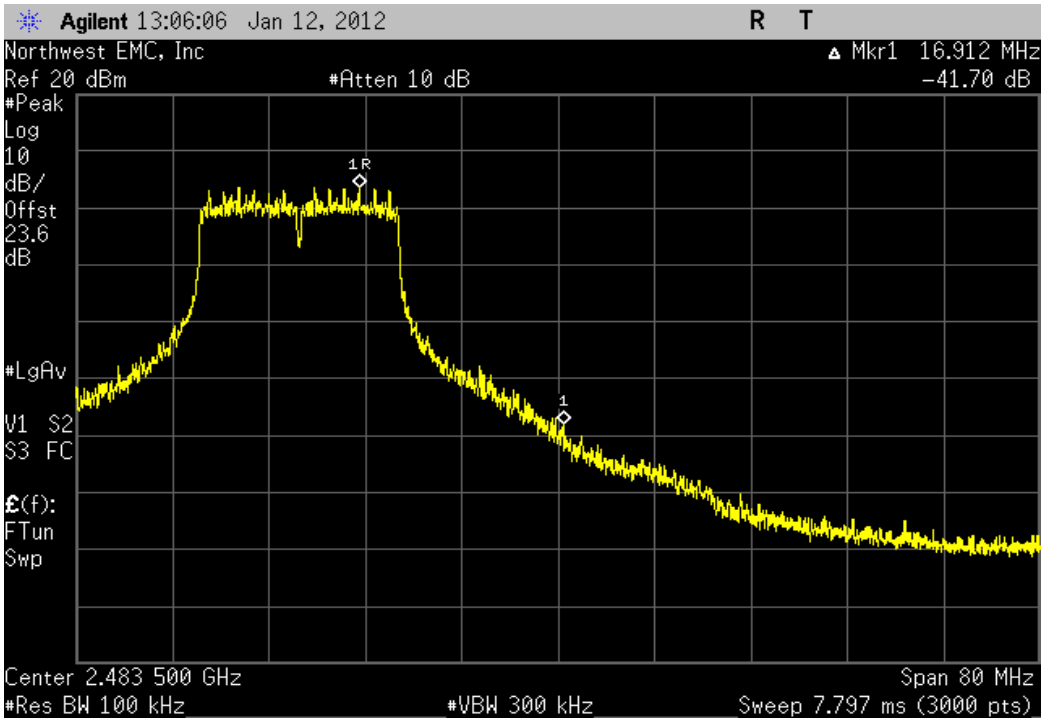
2400 MHz - 2483.5 MHz Band, 802.11(g) 36 Mbps, Low Channel 1, 2412 MHz

				Value	Limit	Result
				-28.42 dBc	≤ -20 dBc	Pass



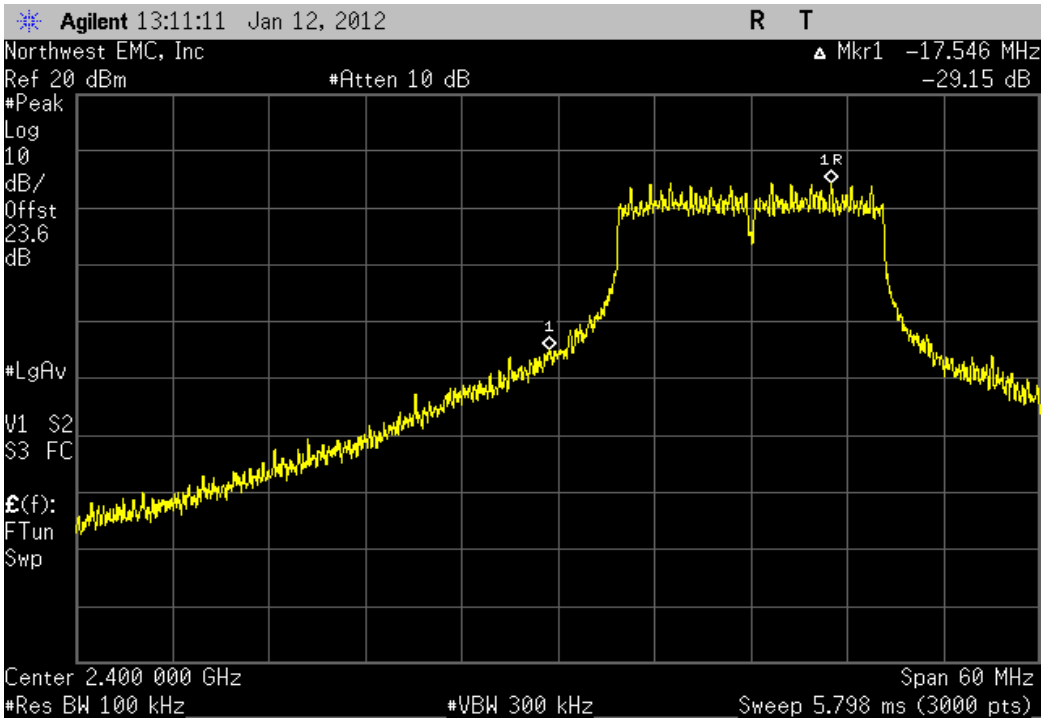
2400 MHz - 2483.5 MHz Band, 802.11(g) 36 Mbps, High Channel 11, 2462 MHz

				Value	Limit	Result
				-41.7 dBc	≤ -20 dBc	Pass

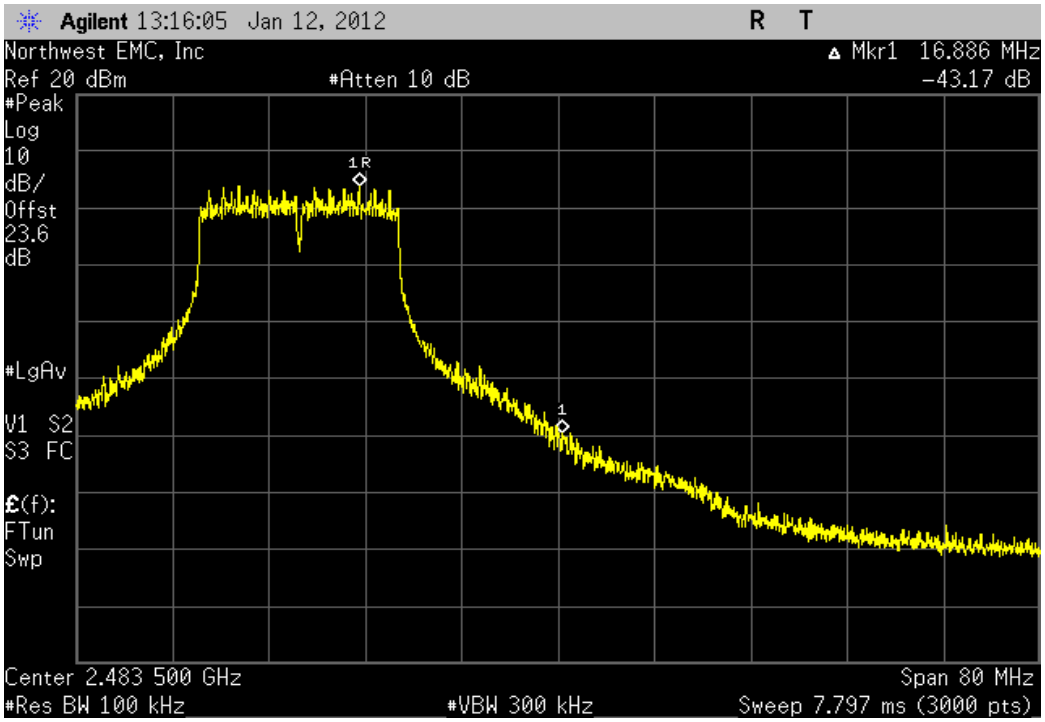


Band Edge Compliance

2400 MHz - 2483.5 MHz Band, 802.11(g) 54 Mbps, Low Channel 1, 2412 MHz							
					Value	Limit	Result
					-29.15 dBc	≤ -20 dBc	Pass

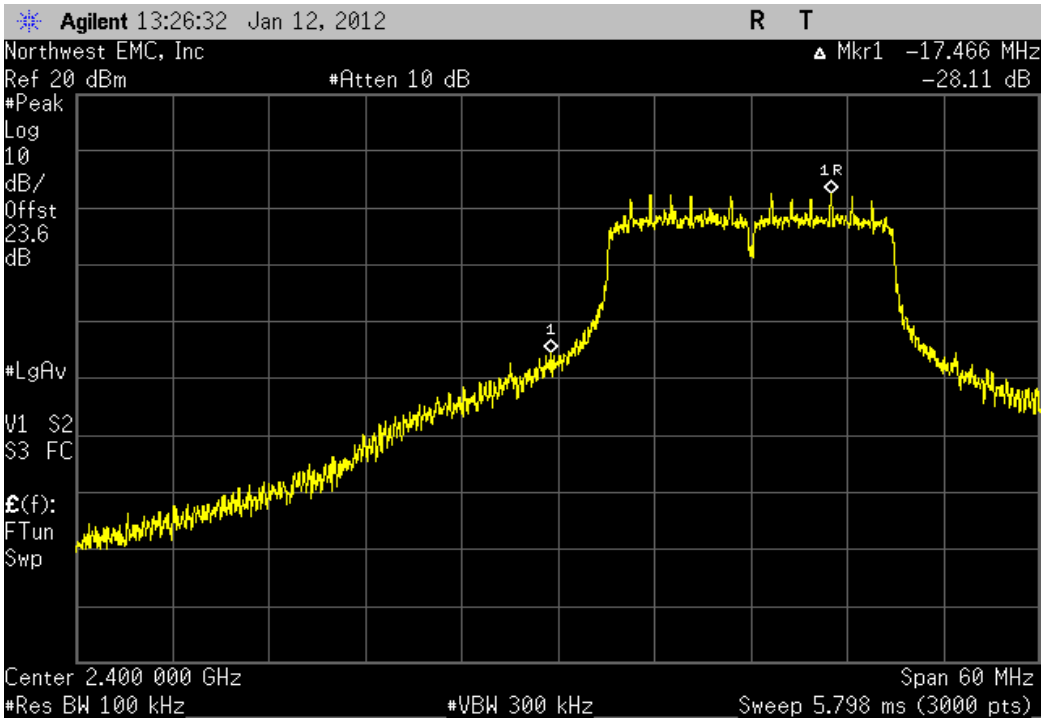


2400 MHz - 2483.5 MHz Band, 802.11(g) 54 Mbps, High Channel 11, 2462 MHz							
					Value	Limit	Result
					-43.17 dBc	≤ -20 dBc	Pass

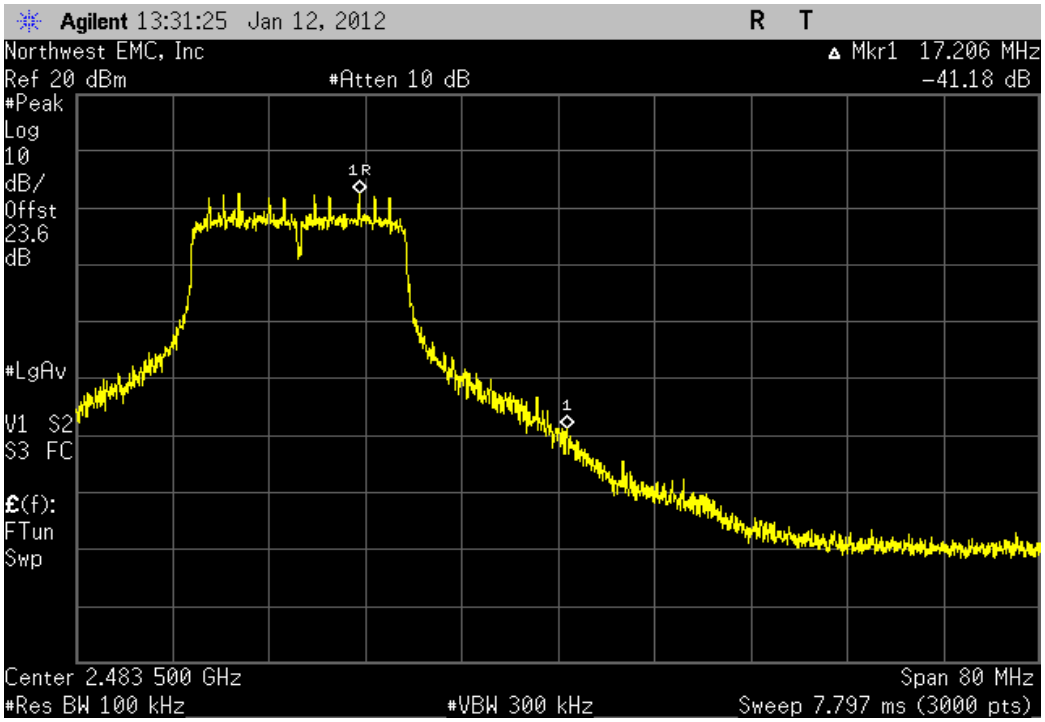


Band Edge Compliance

2400 MHz - 2483.5 MHz Band, 802.11(n) MCS0, Low Channel 1, 2412 MHz							
					Value	Limit	Result
					-28.11 dBc	≤ -20 dBc	Pass

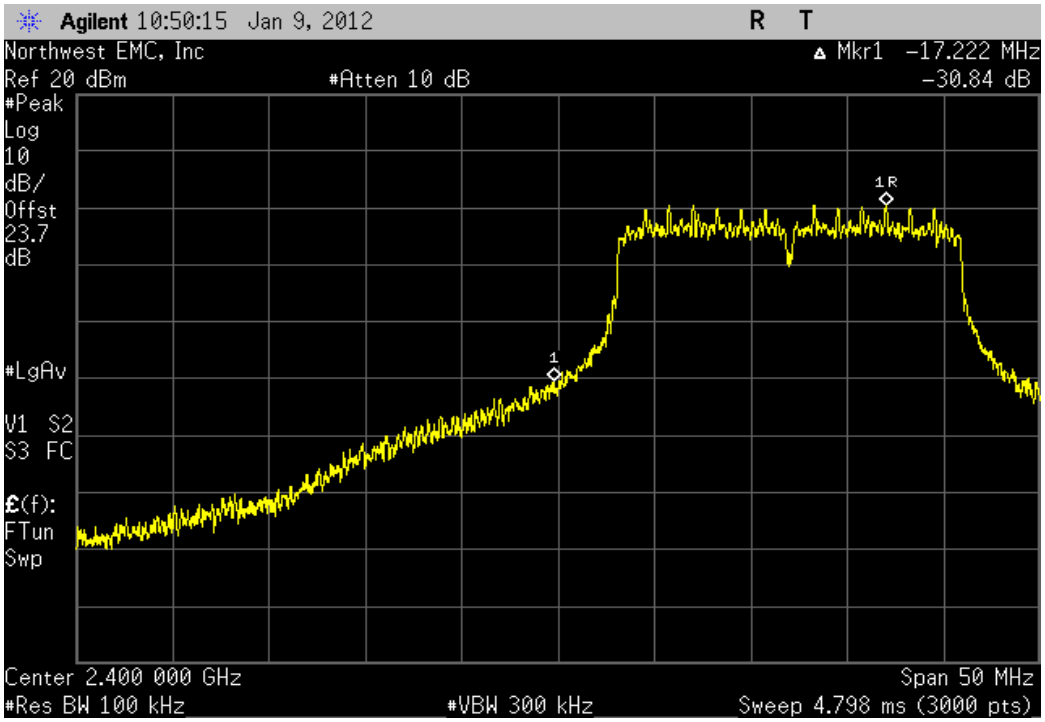


2400 MHz - 2483.5 MHz Band, 802.11(n) MCS0, High Channel 11, 2462 MHz							
					Value	Limit	Result
					-41.18 dBc	≤ -20 dBc	Pass

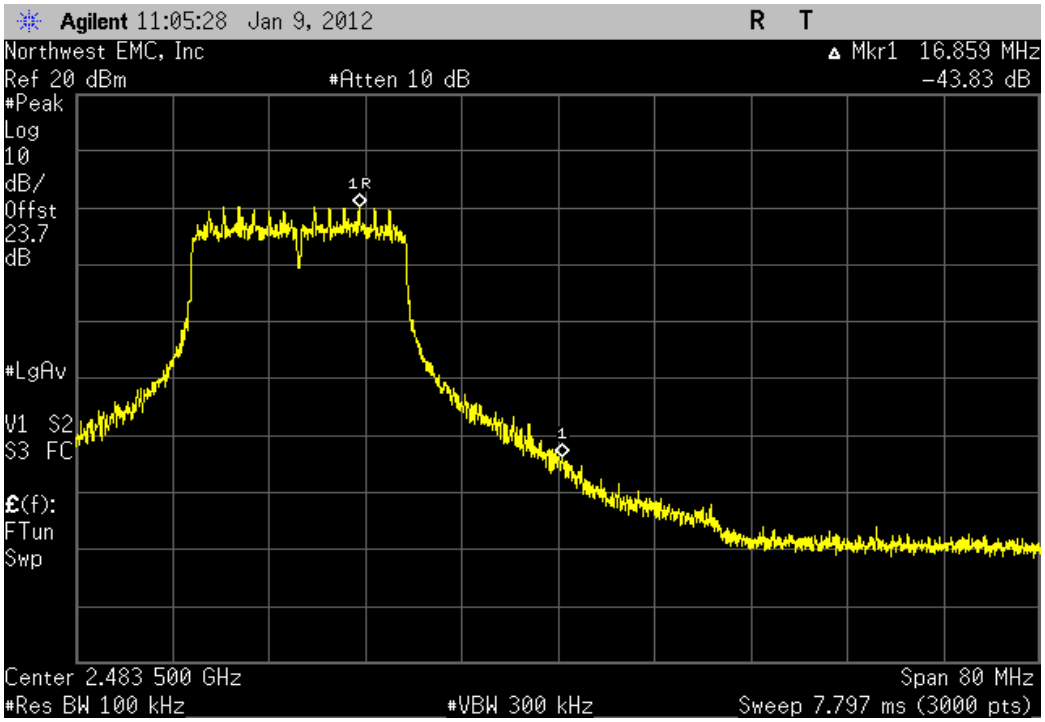


Band Edge Compliance

2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, Low Channel 1, 2412 MHz							
					Value	Limit	Result
					-30.84 dBc	≤ -20 dBc	Pass



2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, High Channel 11, 2462 MHz							
					Value	Limit	Result
					-43.83 dBc	≤ -20 dBc	Pass



Spurious Conducted 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.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Attenuator - 20db, 'SMA'	SM Electronics	SA26B-20	RFW	6/2/2011	12
40 GHz DC block	Fairview Microwave	SD3379	AMI	10/12/2011	12
Signal Generator	Agilent	N5183A	TIA	1/18/2011	12
Spectrum Analyzer	Agilent	E4440A	AAX	5/23/2011	12

MEASUREMENT UNCERTAINTY

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 for radiated emissions measurements is less than +/- 4 dB, and for conducted emissions measurements is less than +/- 2.7 dB. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for measurement uncertainty are available upon request.

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 its maximum data rate using direct sequence modulation. For each transmit frequency, the spectrum was scanned throughout the specified frequency range.

Spurious Conducted Emissions

EUT:	ConnectPort X2e Wi-Fi			**Work Order:**	DGII0036
Serial Number:	1201-003			**Date:**	01/09/12
Customer:	Digi International			**Temperature:**	24.09°C
Attendees:	Bradley Ferguson			**Humidity:**	18%
Project:	None			**Barometric Pres.:**	1013.3
Tested by:	Trevor Buls	**Power:**	5VDC	**Job Site:**	MN08

TEST SPECIFICATIONS	TEST METHOD
FCC 15.247:2012	ANSI C63.10:2009

COMMENTS

1.5 dB was added to the Reference Level Offset to compensate for the customer's adapter cable.

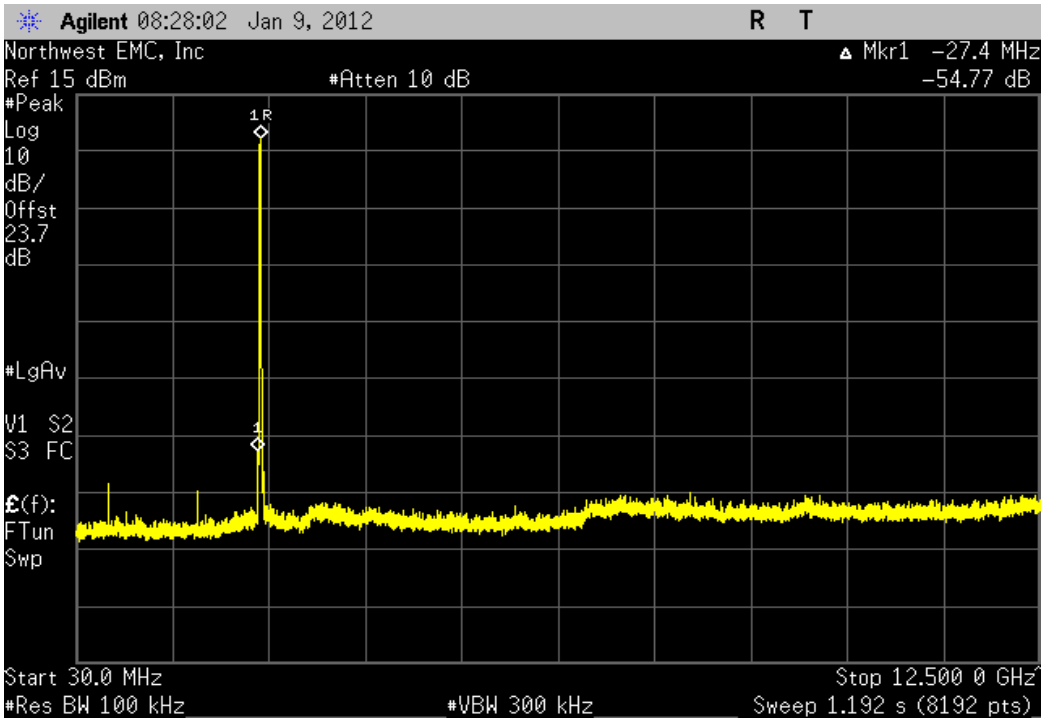
DEVIATIONS FROM TEST STANDARD

None

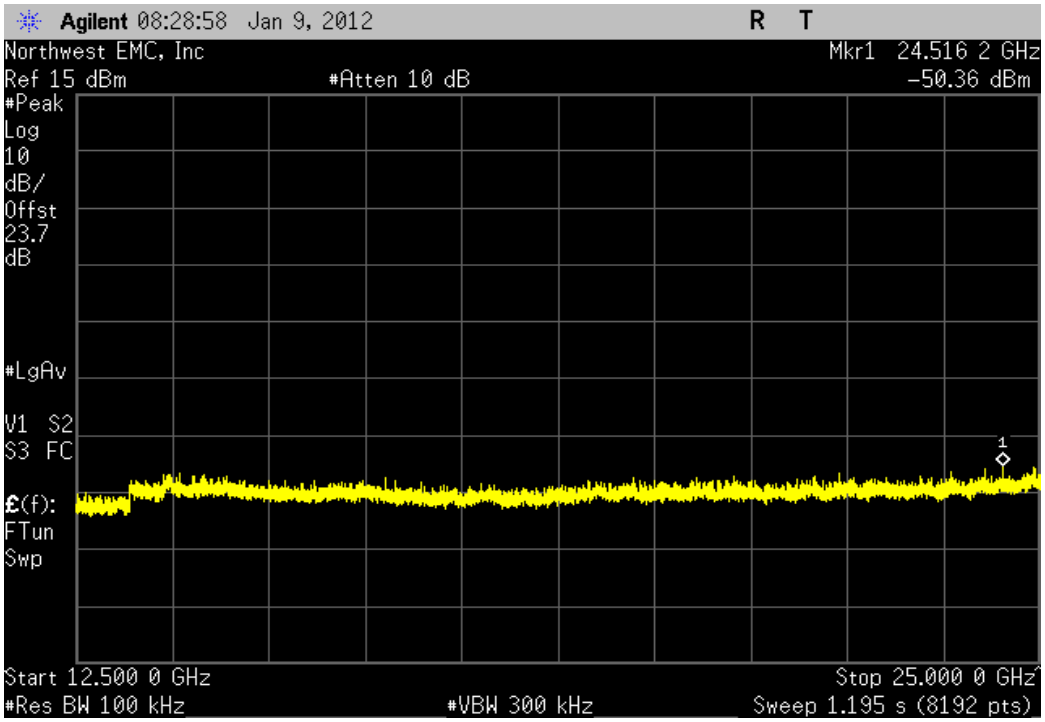
Configuration #	1	Signature	Trevor Buls

		Frequency Range	Value	Limit	Result
2400 MHz - 2483.5 MHz Band					
	802.11(b) 1 Mbps				
	Low Channel 1, 2412 MHz	30 MHz - 12.5 GHz	-54.77 dBc	≤ -20 dBc	Pass
	Low Channel 1, 2412 MHz	12.5 GHz - 25 GHz	-57.58 dBc	≤ -20 dBc	Pass
	Mid Channel 6, 2437 MHz	30 MHz - 12.5 GHz	-62.05 dBc	≤ -20 dBc	Pass
	Mid Channel 6, 2437 MHz	12.5 GHz - 25 GHz	-58.9 dBc	≤ -20 dBc	Pass
	High Channel 11, 2462 MHz	30 MHz - 12.5 GHz	-62.12 dBc	≤ -20 dBc	Pass
	High Channel 11, 2462 MHz	12.5 GHz - 25 GHz	-58.25 dBc	≤ -20 dBc	Pass
	802.11(b) 11 Mbps				
	Low Channel 1, 2412 MHz	30 MHz - 12.5 GHz	-56.04 dBc	≤ -20 dBc	Pass
	Low Channel 1, 2412 MHz	12.5 GHz - 25 GHz	-59.25 dBc	≤ -20 dBc	Pass
	Mid Channel 6, 2437 MHz	30 MHz - 12.5 GHz	-64.12 dBc	≤ -20 dBc	Pass
	Mid Channel 6, 2437 MHz	12.5 GHz - 25 GHz	-59.96 dBc	≤ -20 dBc	Pass
	High Channel 11, 2462 MHz	30 MHz - 12.5 GHz	-63.07 dBc	≤ -20 dBc	Pass
	High Channel 11, 2462 MHz	12.5 GHz - 25 GHz	-58.02 dBc	≤ -20 dBc	Pass
	802.11(g) 6 Mbps				
	Low Channel 1, 2412 MHz	30 MHz - 12.5 GHz	-36.14 dBc	≤ -20 dBc	Pass
	Low Channel 1, 2412 MHz	12.5 GHz - 25 GHz	-54.6 dBc	≤ -20 dBc	Pass
	Mid Channel 6, 2437 MHz	30 MHz - 12.5 GHz	-62.03 dBc	≤ -20 dBc	Pass
	Mid Channel 6, 2437 MHz	12.5 GHz - 25 GHz	-57.86 dBc	≤ -20 dBc	Pass
	High Channel 11, 2462 MHz	30 MHz - 12.5 GHz	-57.86 dBc	≤ -20 dBc	Pass
	High Channel 11, 2462 MHz	12.5 GHz - 25 GHz	-57.63 dBc	≤ -20 dBc	Pass
	802.11(g) 36 Mbps				
	Low Channel 1, 2412 MHz	30 MHz - 12.5 GHz	-42.46 dBc	≤ -20 dBc	Pass
	Low Channel 1, 2412 MHz	12.5 GHz - 25 GHz	-58.14 dBc	≤ -20 dBc	Pass
	Mid Channel 6, 2437 MHz	30 MHz - 12.5 GHz	-61.13 dBc	≤ -20 dBc	Pass
	Mid Channel 6, 2437 MHz	12.5 GHz - 25 GHz	-58.17 dBc	≤ -20 dBc	Pass
	High Channel 11, 2462 MHz	30 MHz - 12.5 GHz	-57.26 dBc	≤ -20 dBc	Pass
	High Channel 11, 2462 MHz	12.5 GHz - 25 GHz	-56.95 dBc	≤ -20 dBc	Pass
	802.11(g) 54 Mbps				
	Low Channel 1, 2412 MHz	30 MHz - 12.5 GHz	-44.18 dBc	≤ -20 dBc	Pass
	Low Channel 1, 2412 MHz	12.5 GHz - 25 GHz	-56.66 dBc	≤ -20 dBc	Pass
	Mid Channel 6, 2437 MHz	30 MHz - 12.5 GHz	-59.62 dBc	≤ -20 dBc	Pass
	Mid Channel 6, 2437 MHz	12.5 GHz - 25 GHz	-56.27 dBc	≤ -20 dBc	Pass
	High Channel 11, 2462 MHz	30 MHz - 12.5 GHz	-58.07 dBc	≤ -20 dBc	Pass
	High Channel 11, 2462 MHz	12.5 GHz - 25 GHz	-55.7 dBc	≤ -20 dBc	Pass
	802.11(n) MCS0				
	Low Channel 1, 2412 MHz	30 MHz - 12.5 GHz	-44.61 dBc	≤ -20 dBc	Pass
	Low Channel 1, 2412 MHz	12.5 GHz - 25 GHz	-54.66 dBc	≤ -20 dBc	Pass
	Mid Channel 6, 2437 MHz	30 MHz - 12.5 GHz	-57.79 dBc	≤ -20 dBc	Pass
	Mid Channel 6, 2437 MHz	12.5 GHz - 25 GHz	-53.65 dBc	≤ -20 dBc	Pass
	High Channel 11, 2462 MHz	30 MHz - 12.5 GHz	-58.58 dBc	≤ -20 dBc	Pass
	High Channel 11, 2462 MHz	12.5 GHz - 25 GHz	-54.13 dBc	≤ -20 dBc	Pass
	802.11(n) MCS7				
	Low Channel 1, 2412 MHz	30 MHz - 12.5 GHz	-48.85 dBc	≤ -20 dBc	Pass
	Low Channel 1, 2412 MHz	12.5 GHz - 25 GHz	-50.97 dBc	≤ -20 dBc	Pass
	Mid Channel 6, 2437 MHz	30 MHz - 12.5 GHz	-54.2 dBc	≤ -20 dBc	Pass
	Mid Channel 6, 2437 MHz	12.5 GHz - 25 GHz	-51.78 dBc	≤ -20 dBc	Pass
	High Channel 11, 2462 MHz	30 MHz - 12.5 GHz	-53.88 dBc	≤ -20 dBc	Pass
	High Channel 11, 2462 MHz	12.5 GHz - 25 GHz	-50.02 dBc	≤ -20 dBc	Pass

2400 MHz - 2483.5 MHz Band, 802.11(b) 1 Mbps, Low Channel 1, 2412 MHz				
Frequency Range		Value	Limit	Result
30 MHz - 12.5 GHz		-54.77 dBc	≤ -20 dBc	Pass

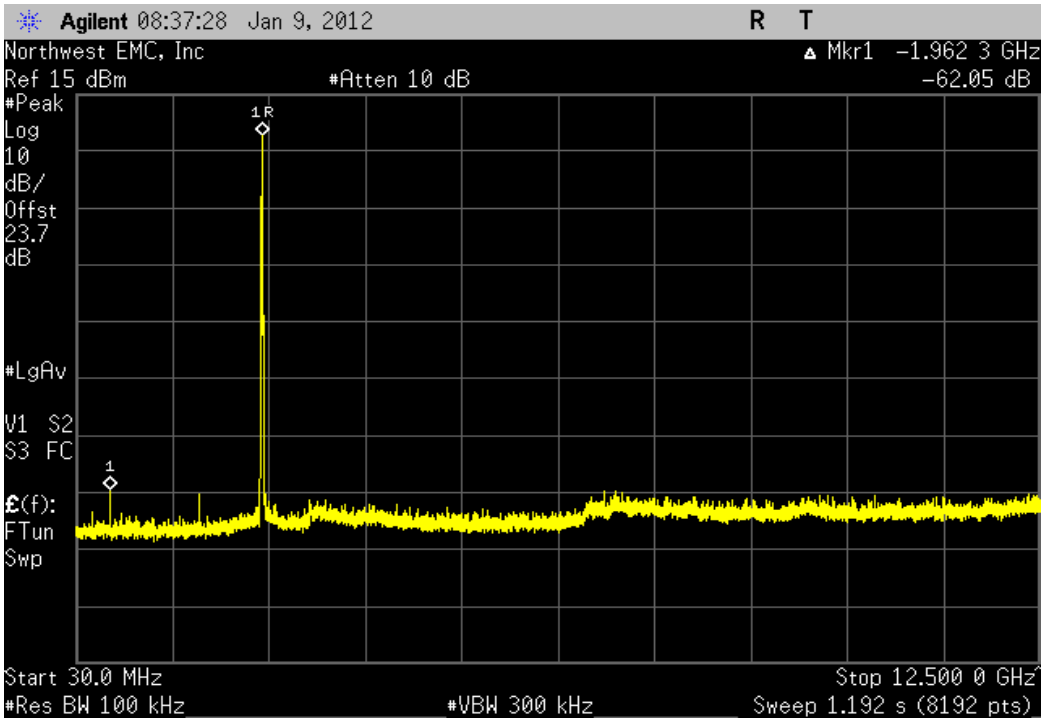


2400 MHz - 2483.5 MHz Band, 802.11(b) 1 Mbps, Low Channel 1, 2412 MHz				
Frequency Range		Value	Limit	Result
12.5 GHz - 25 GHz		-57.58 dBc	≤ -20 dBc	Pass

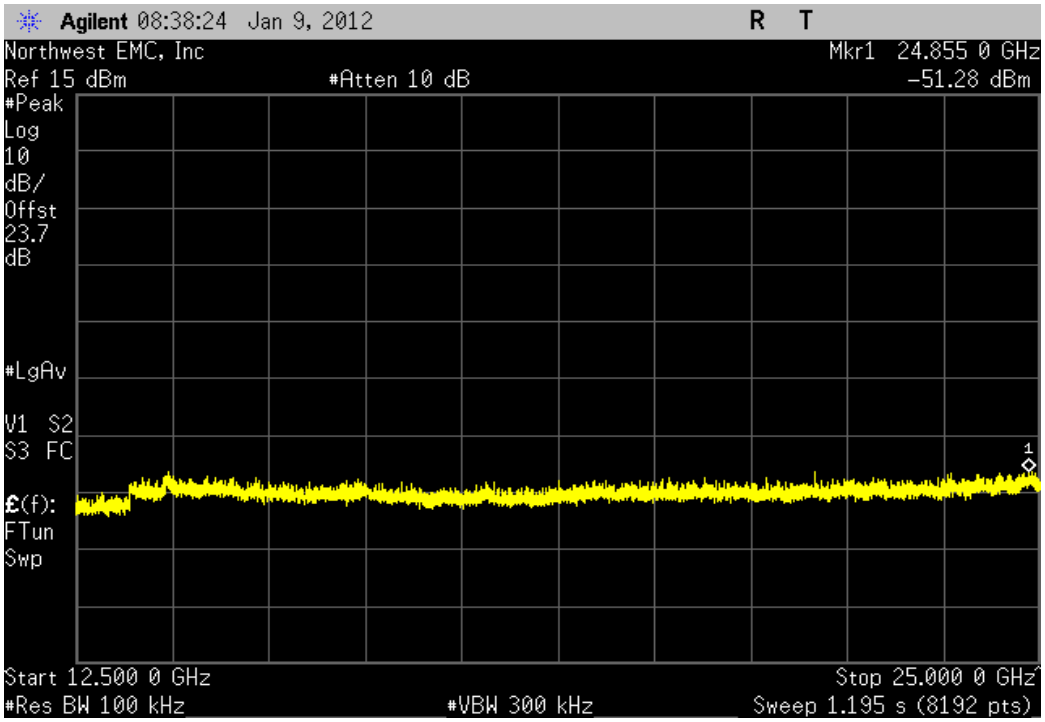


Spurious Conducted Emissions

2400 MHz - 2483.5 MHz Band, 802.11(b) 1 Mbps, Mid Channel 6, 2437 MHz				
Frequency Range		**Value**	**Limit**	**Result**
30 MHz - 12.5 GHz		-62.05 dBc	≤ -20 dBc	Pass

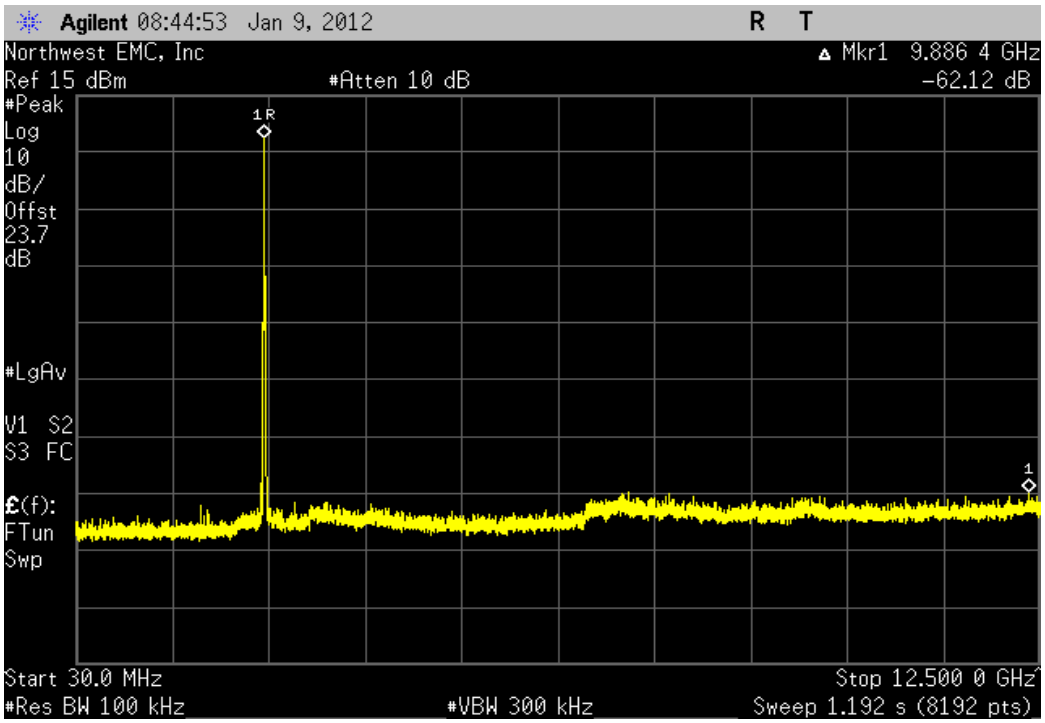


2400 MHz - 2483.5 MHz Band, 802.11(b) 1 Mbps, Mid Channel 6, 2437 MHz				
Frequency Range		**Value**	**Limit**	**Result**
12.5 GHz - 25 GHz		-58.9 dBc	≤ -20 dBc	Pass

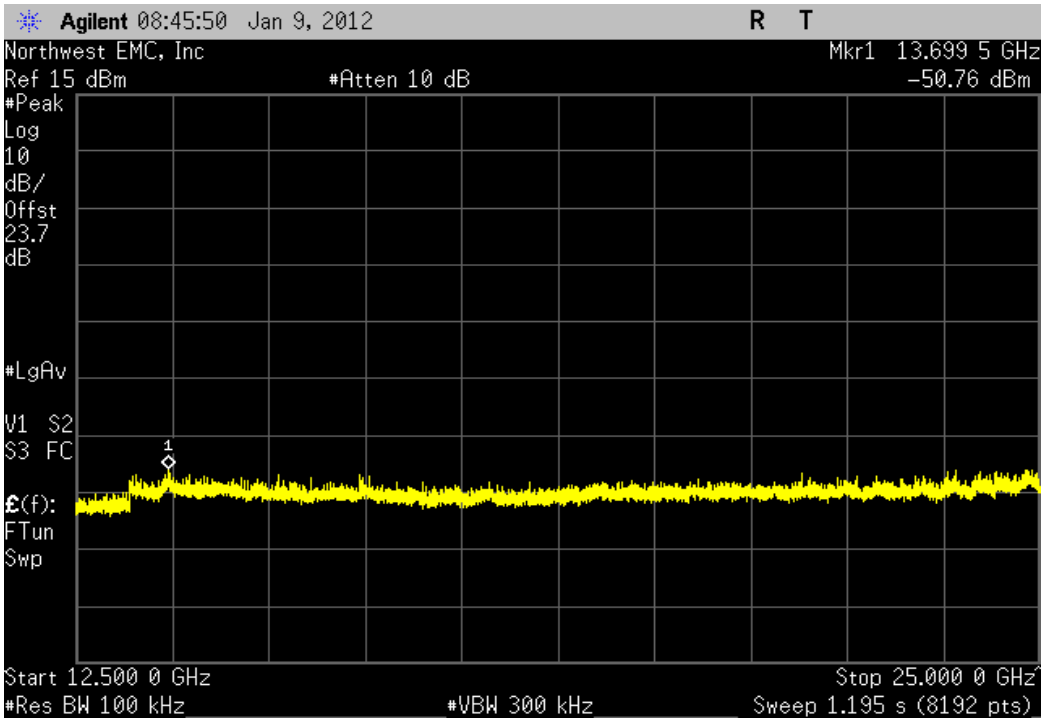


Spurious Conducted Emissions

2400 MHz - 2483.5 MHz Band, 802.11(b) 1 Mbps, High Channel 11, 2462 MHz				
Frequency Range		**Value**	**Limit**	**Result**
30 MHz - 12.5 GHz		-62.12 dBc	≤ -20 dBc	Pass

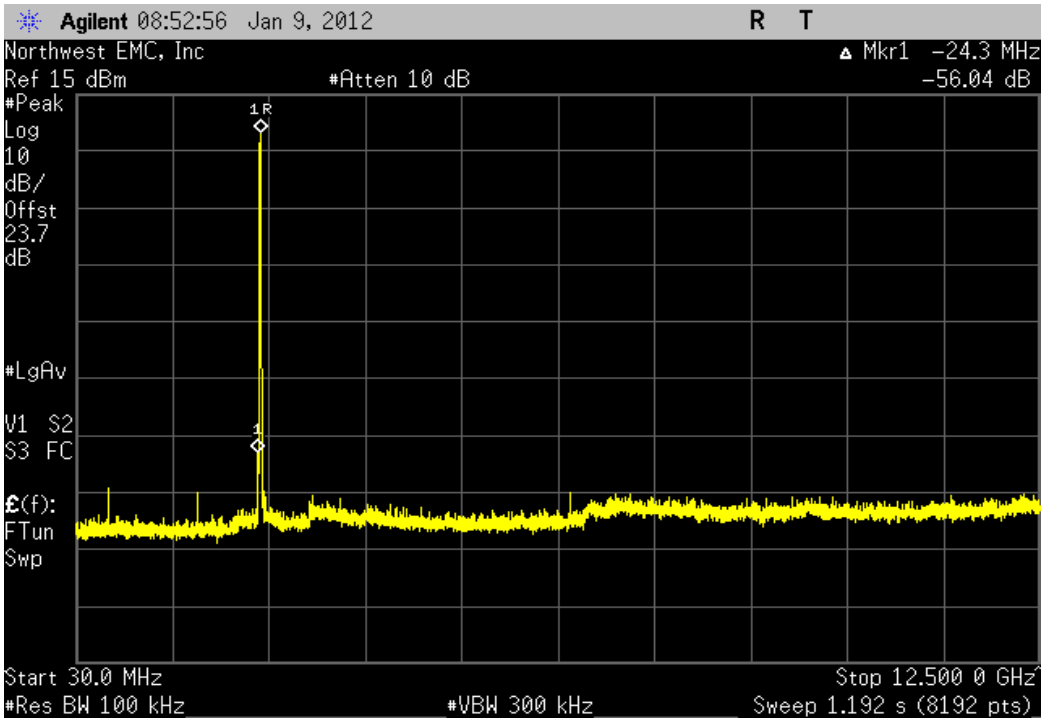


2400 MHz - 2483.5 MHz Band, 802.11(b) 1 Mbps, High Channel 11, 2462 MHz				
Frequency Range		**Value**	**Limit**	**Result**
12.5 GHz - 25 GHz		-58.25 dBc	≤ -20 dBc	Pass

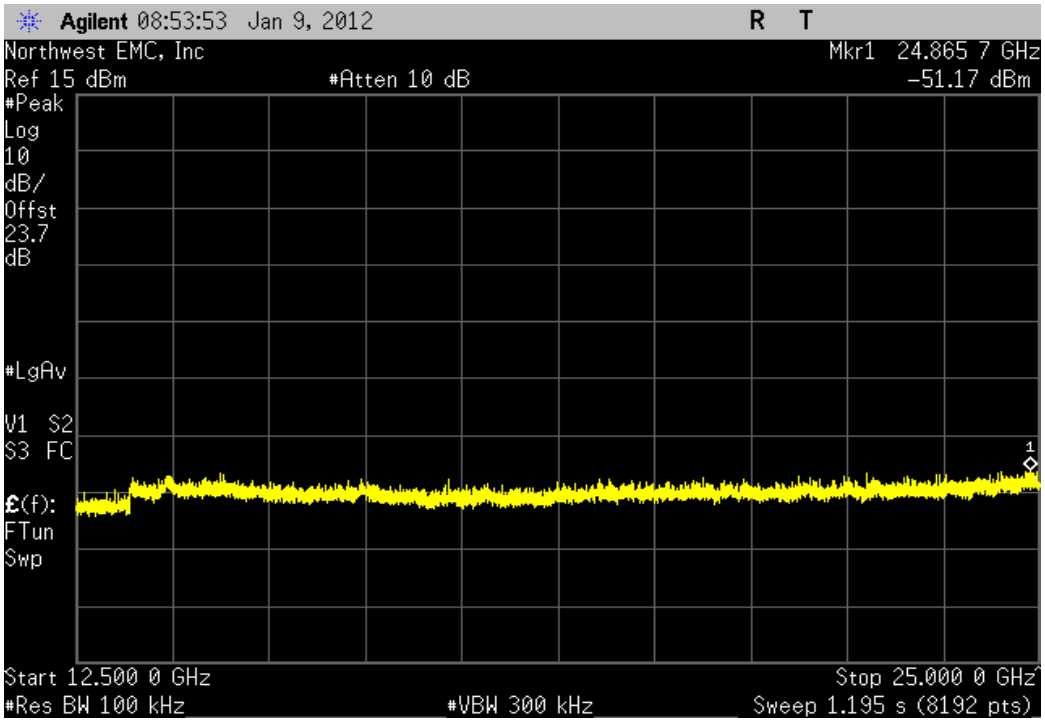


Spurious Conducted Emissions

2400 MHz - 2483.5 MHz Band, 802.11(b) 11 Mbps, Low Channel 1, 2412 MHz				
Frequency Range		**Value**	**Limit**	**Result**
30 MHz - 12.5 GHz		-56.04 dBc	≤ -20 dBc	Pass

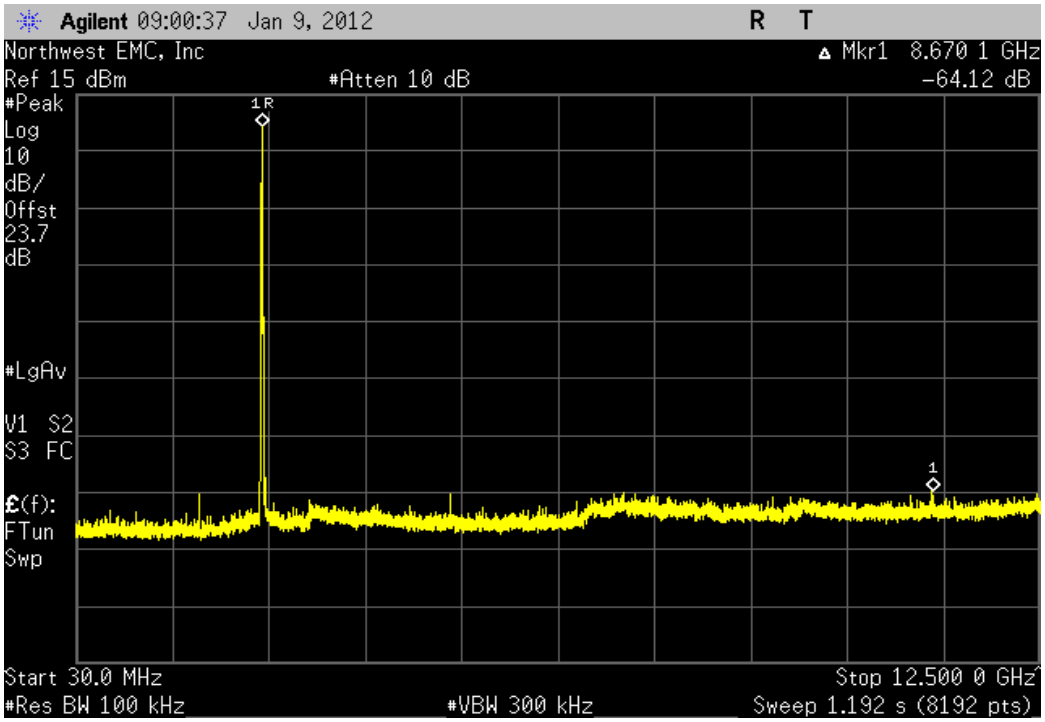


2400 MHz - 2483.5 MHz Band, 802.11(b) 11 Mbps, Low Channel 1, 2412 MHz				
Frequency Range		**Value**	**Limit**	**Result**
12.5 GHz - 25 GHz		-59.25 dBc	≤ -20 dBc	Pass

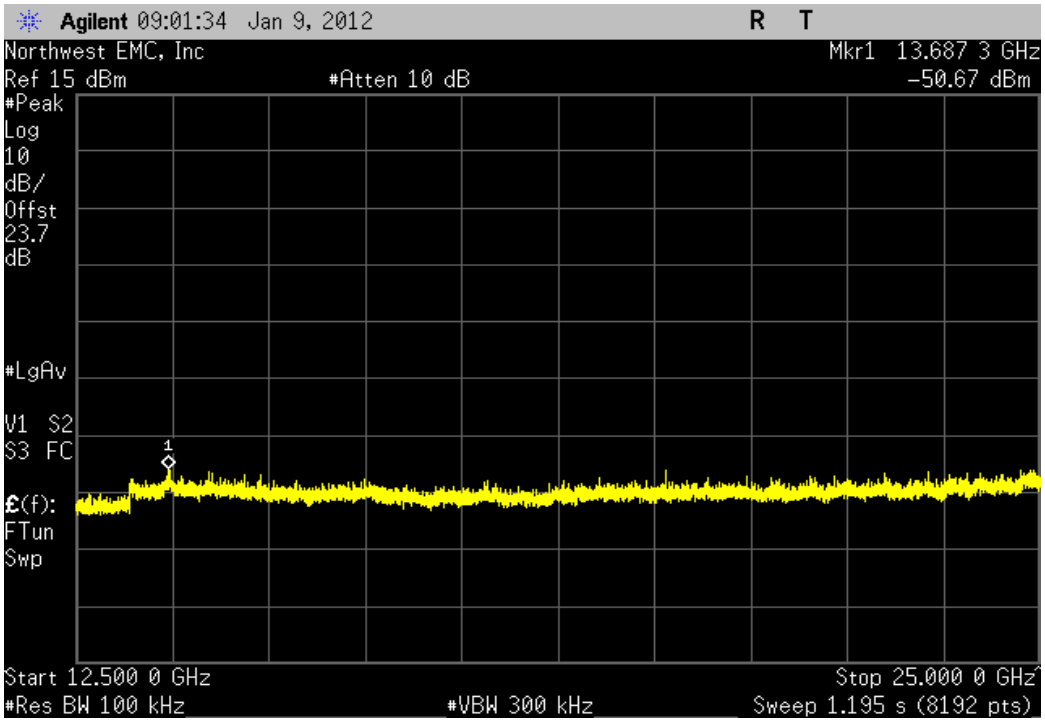


Spurious Conducted Emissions

2400 MHz - 2483.5 MHz Band, 802.11(b) 11 Mbps, Mid Channel 6, 2437 MHz				
Frequency Range		**Value**	**Limit**	**Result**
30 MHz - 12.5 GHz		-64.12 dBc	≤ -20 dBc	Pass

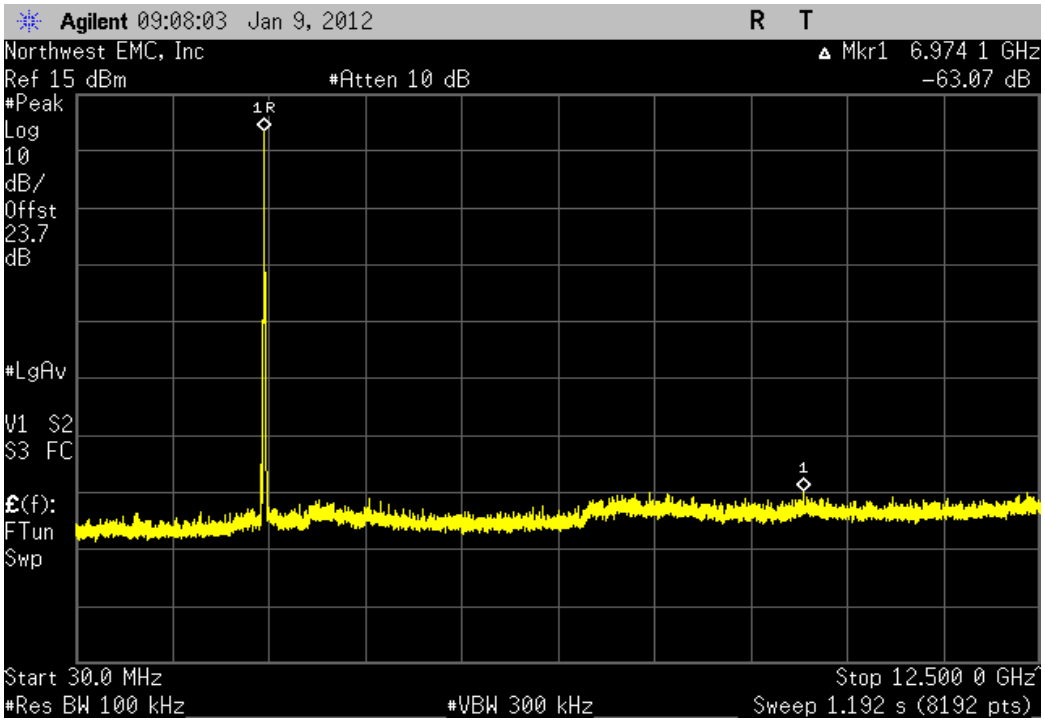


2400 MHz - 2483.5 MHz Band, 802.11(b) 11 Mbps, Mid Channel 6, 2437 MHz				
Frequency Range		**Value**	**Limit**	**Result**
12.5 GHz - 25 GHz		-59.96 dBc	≤ -20 dBc	Pass

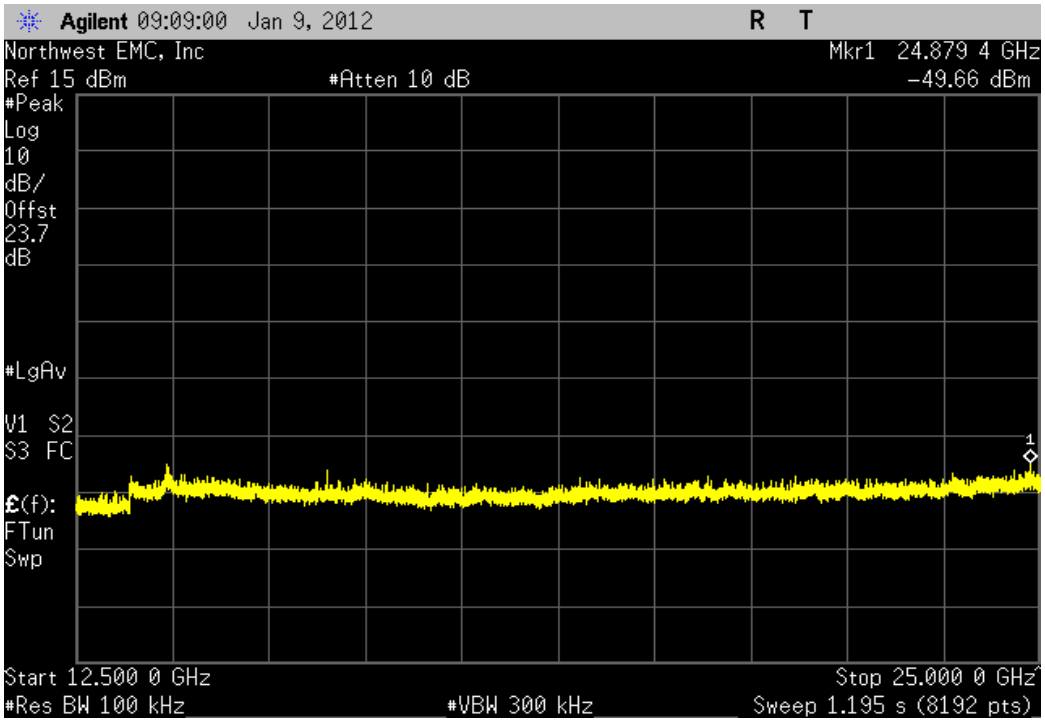


Spurious Conducted Emissions

2400 MHz - 2483.5 MHz Band, 802.11(b) 11 Mbps, High Channel 11, 2462 MHz				
Frequency Range		**Value**	**Limit**	**Result**
30 MHz - 12.5 GHz		-63.07 dBc	≤ -20 dBc	Pass

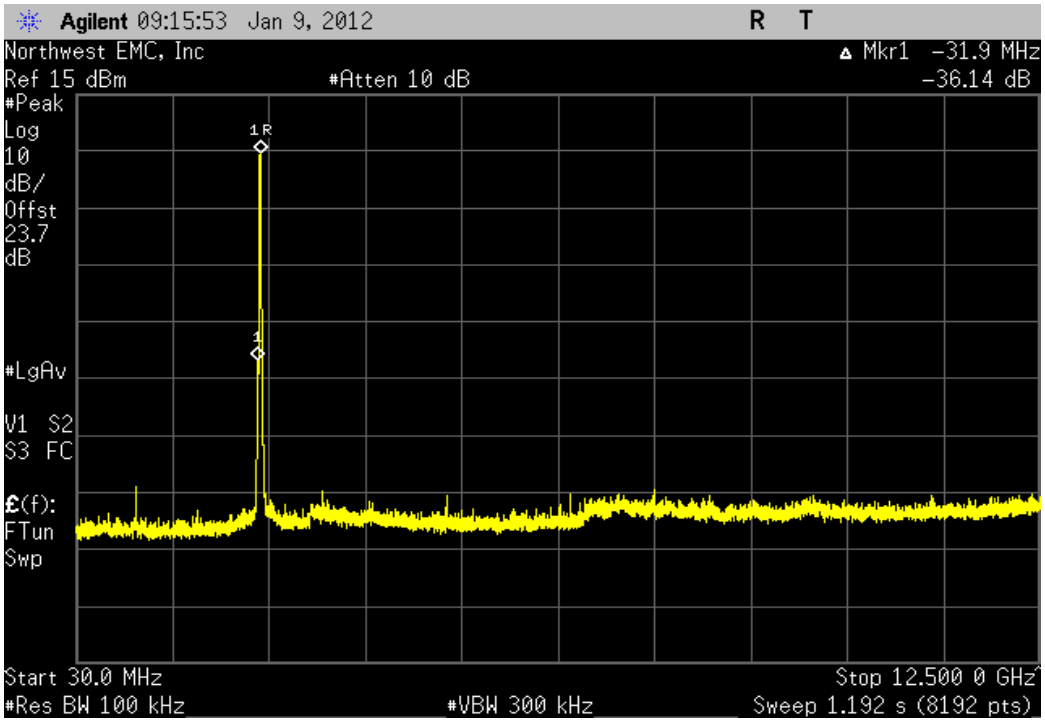


2400 MHz - 2483.5 MHz Band, 802.11(b) 11 Mbps, High Channel 11, 2462 MHz				
Frequency Range		**Value**	**Limit**	**Result**
12.5 GHz - 25 GHz		-58.02 dBc	≤ -20 dBc	Pass

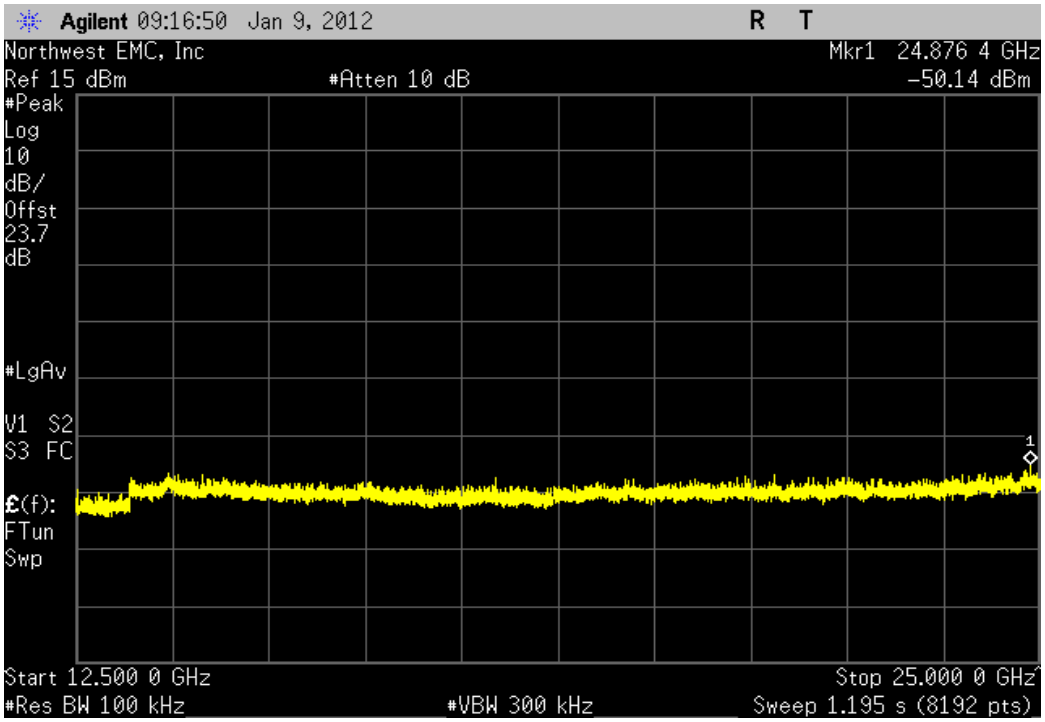


Spurious Conducted Emissions

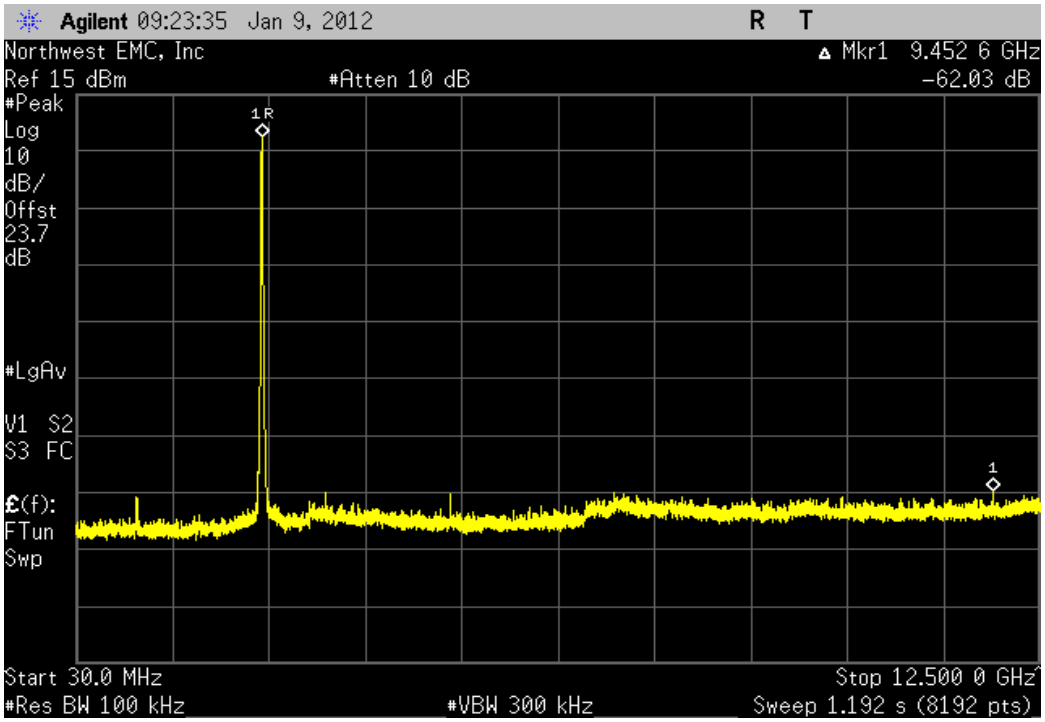
2400 MHz - 2483.5 MHz Band, 802.11(g) 6 Mbps, Low Channel 1, 2412 MHz				
Frequency Range		**Value**	**Limit**	**Result**
30 MHz - 12.5 GHz		-36.14 dBc	≤ -20 dBc	Pass



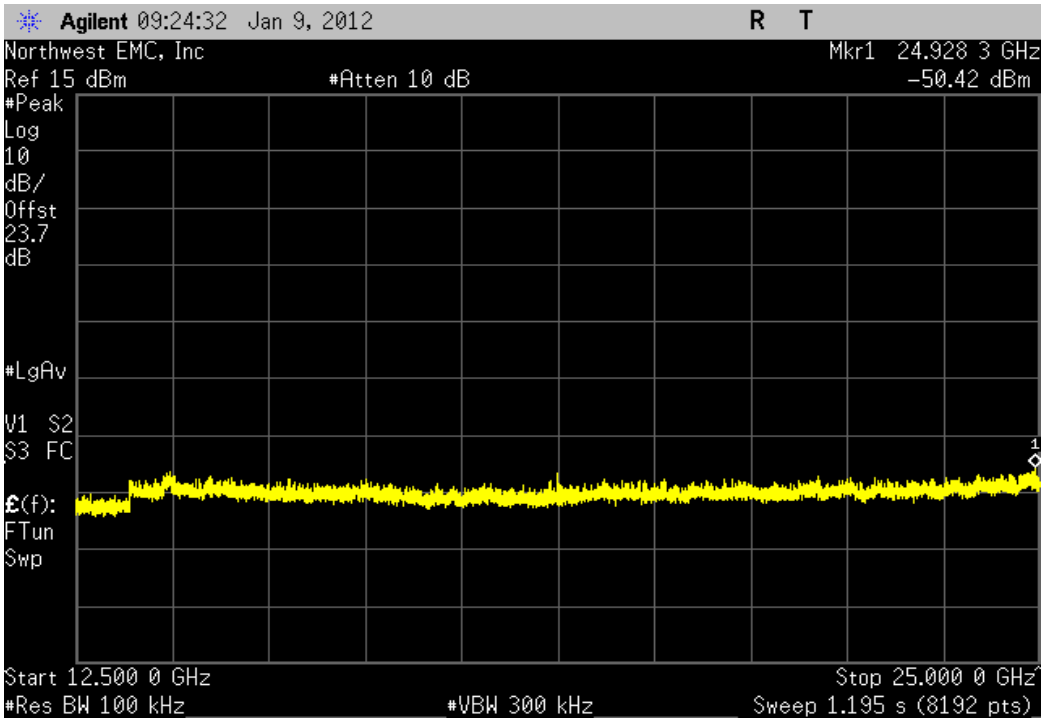
2400 MHz - 2483.5 MHz Band, 802.11(g) 6 Mbps, Low Channel 1, 2412 MHz				
Frequency Range		**Value**	**Limit**	**Result**
12.5 GHz - 25 GHz		-54.6 dBc	≤ -20 dBc	Pass



2400 MHz - 2483.5 MHz Band, 802.11(g) 6 Mbps, Mid Channel 6, 2437 MHz				
Frequency Range		**Value**	**Limit**	**Result**
30 MHz - 12.5 GHz		-62.03 dBc	≤ -20 dBc	Pass

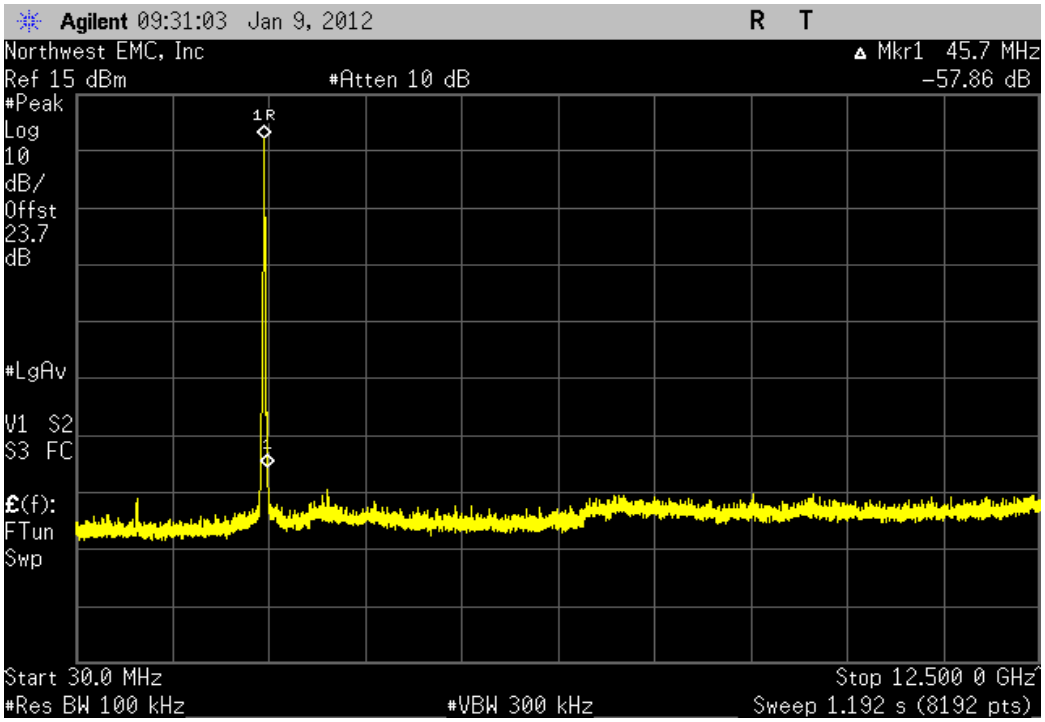


2400 MHz - 2483.5 MHz Band, 802.11(g) 6 Mbps, Mid Channel 6, 2437 MHz				
Frequency Range		**Value**	**Limit**	**Result**
12.5 GHz - 25 GHz		-57.86 dBc	≤ -20 dBc	Pass

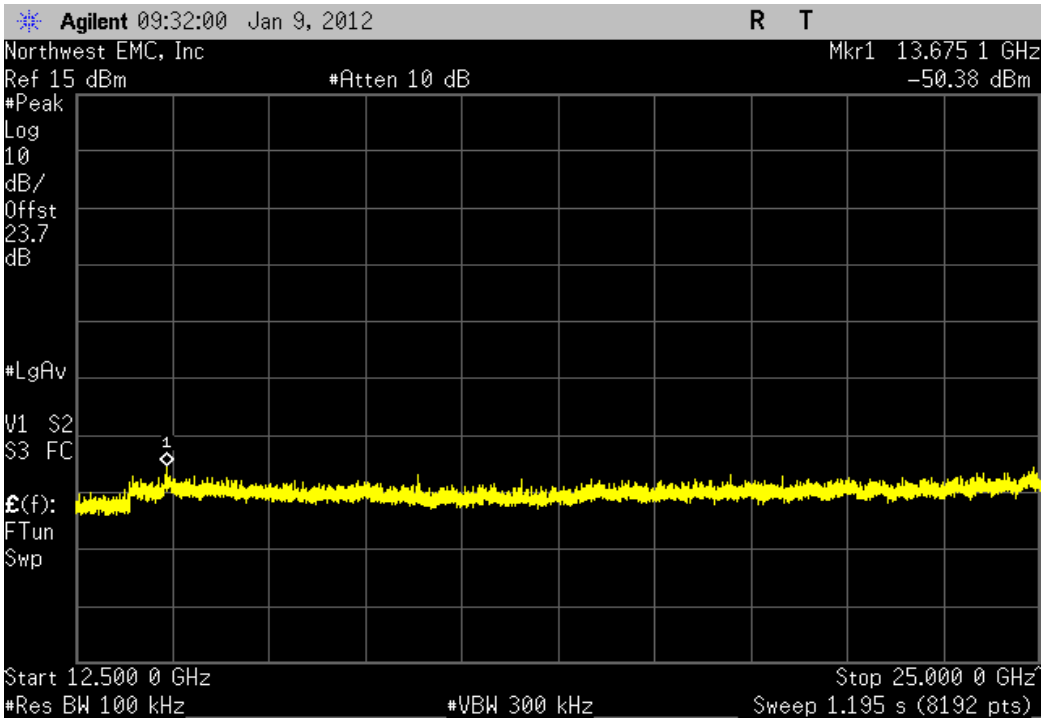


Spurious Conducted Emissions

2400 MHz - 2483.5 MHz Band, 802.11(g) 6 Mbps, High Channel 11, 2462 MHz				
Frequency Range		**Value**	**Limit**	**Result**
30 MHz - 12.5 GHz		-57.86 dBc	≤ -20 dBc	Pass

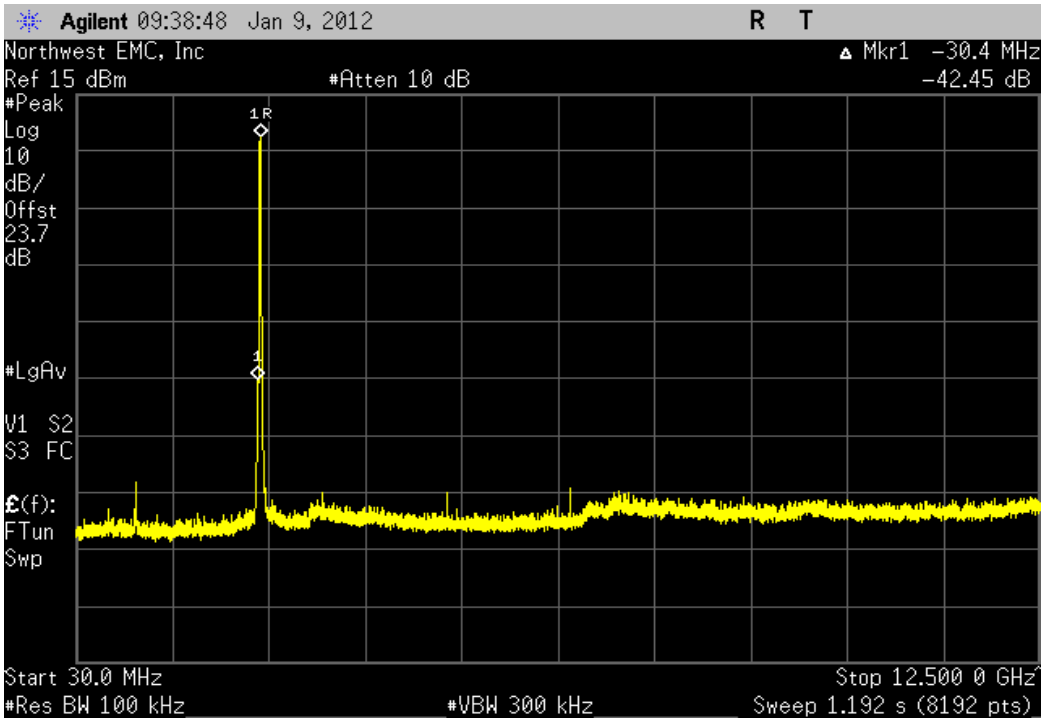


2400 MHz - 2483.5 MHz Band, 802.11(g) 6 Mbps, High Channel 11, 2462 MHz				
Frequency Range		**Value**	**Limit**	**Result**
12.5 GHz - 25 GHz		-57.63 dBc	≤ -20 dBc	Pass

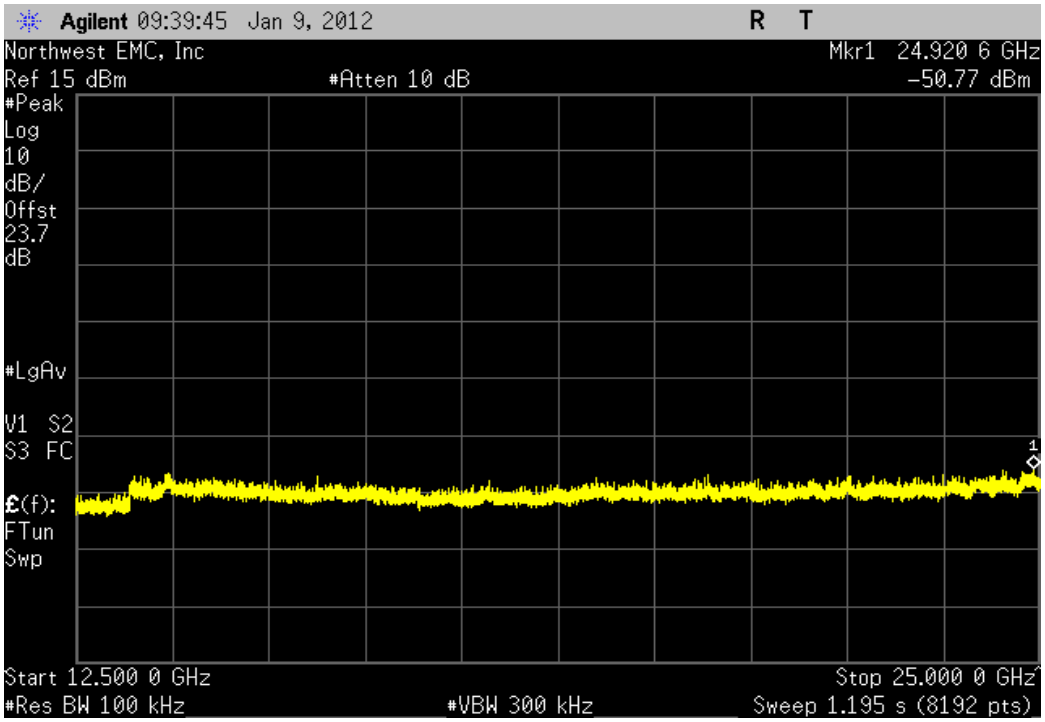


Spurious Conducted Emissions

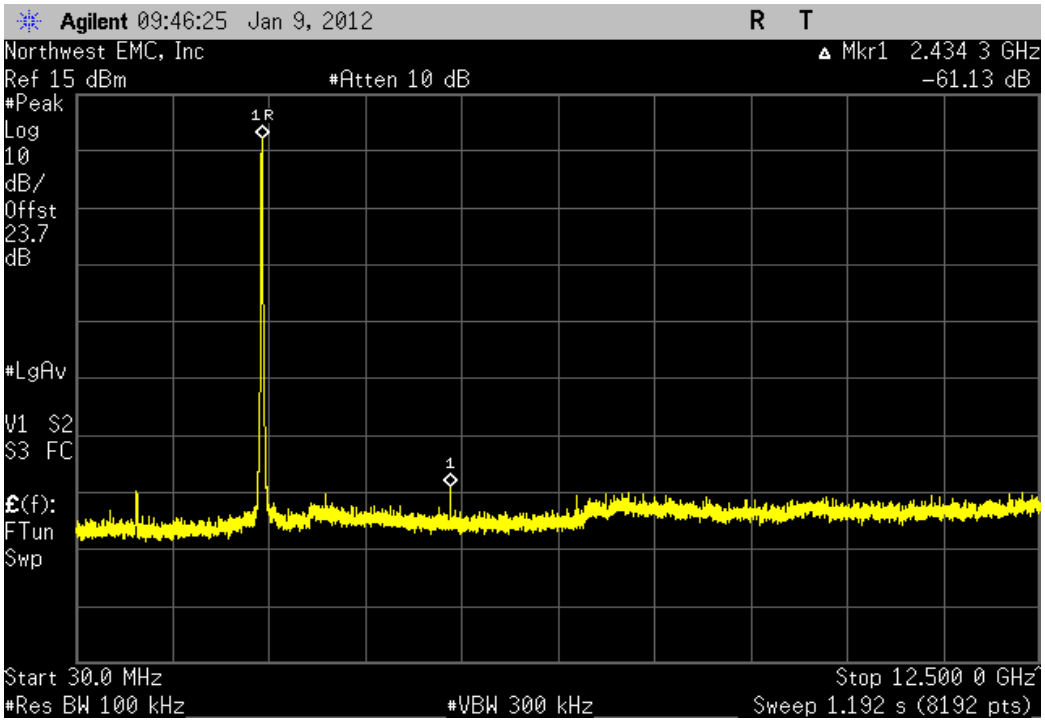
2400 MHz - 2483.5 MHz Band, 802.11(g) 36 Mbps, Low Channel 1, 2412 MHz				
Frequency Range		**Value**	**Limit**	**Result**
30 MHz - 12.5 GHz		-42.46 dBc	≤ -20 dBc	Pass



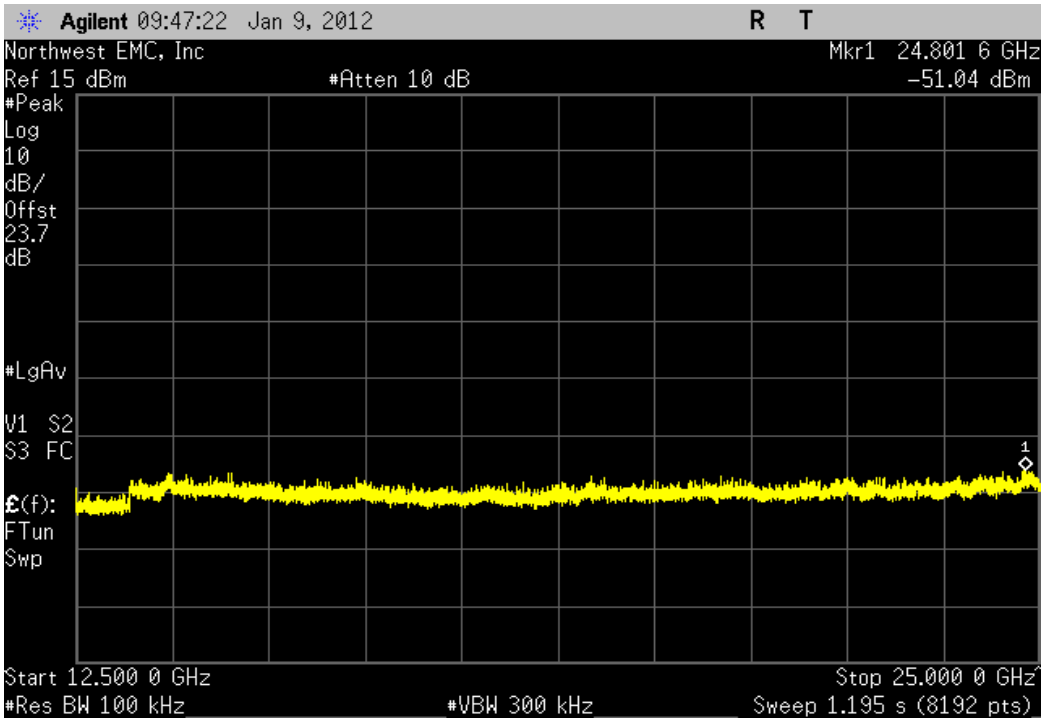
2400 MHz - 2483.5 MHz Band, 802.11(g) 36 Mbps, Low Channel 1, 2412 MHz				
Frequency Range		**Value**	**Limit**	**Result**
12.5 GHz - 25 GHz		-58.14 dBc	≤ -20 dBc	Pass



2400 MHz - 2483.5 MHz Band, 802.11(g) 36 Mbps, Mid Channel 6, 2437 MHz				
Frequency Range		**Value**	**Limit**	**Result**
30 MHz - 12.5 GHz		-61.13 dBc	≤ -20 dBc	Pass

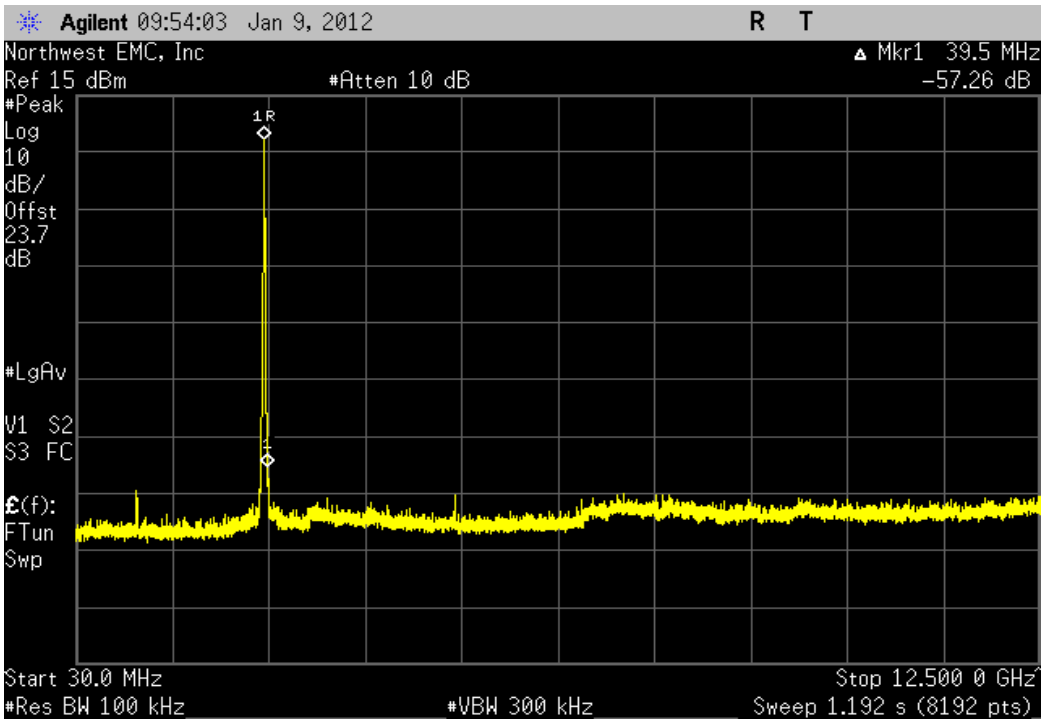


2400 MHz - 2483.5 MHz Band, 802.11(g) 36 Mbps, Mid Channel 6, 2437 MHz				
Frequency Range		**Value**	**Limit**	**Result**
12.5 GHz - 25 GHz		-58.17 dBc	≤ -20 dBc	Pass

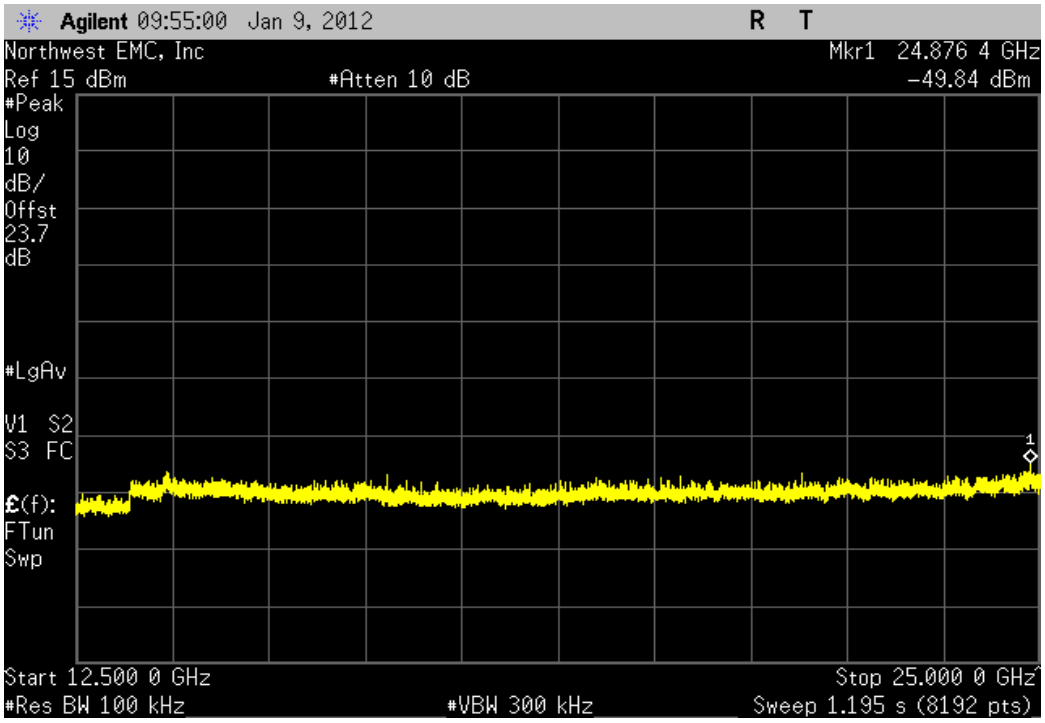


Spurious Conducted Emissions

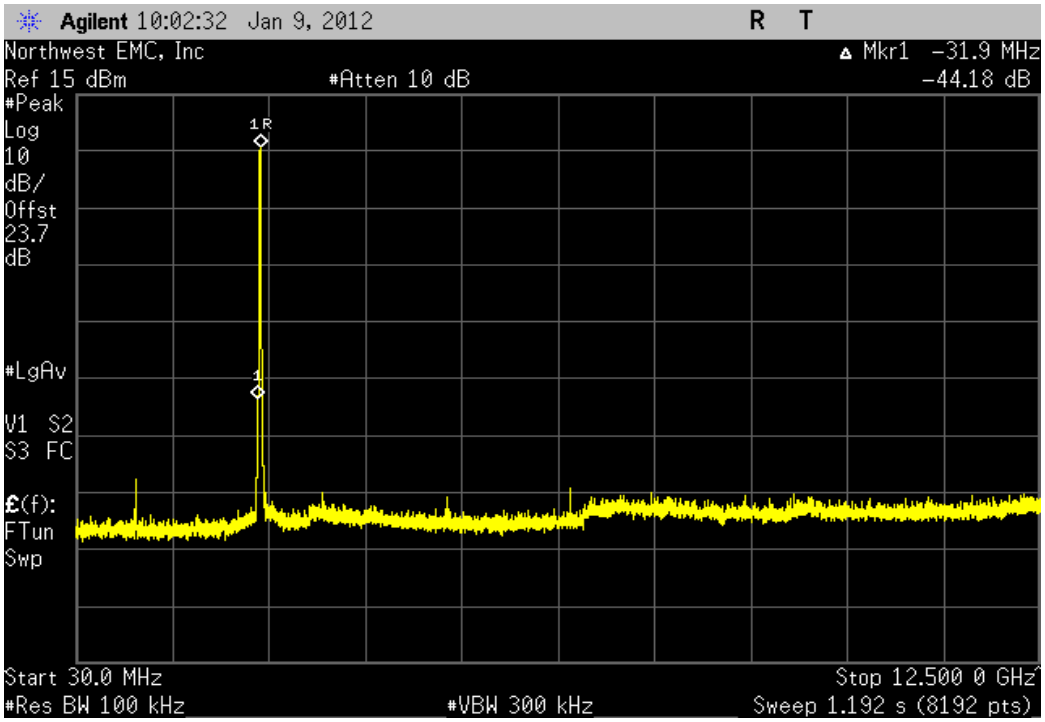
2400 MHz - 2483.5 MHz Band, 802.11(g) 36 Mbps, High Channel 11, 2462 MHz				
Frequency Range		**Value**	**Limit**	**Result**
30 MHz - 12.5 GHz		-57.26 dBc	≤ -20 dBc	Pass



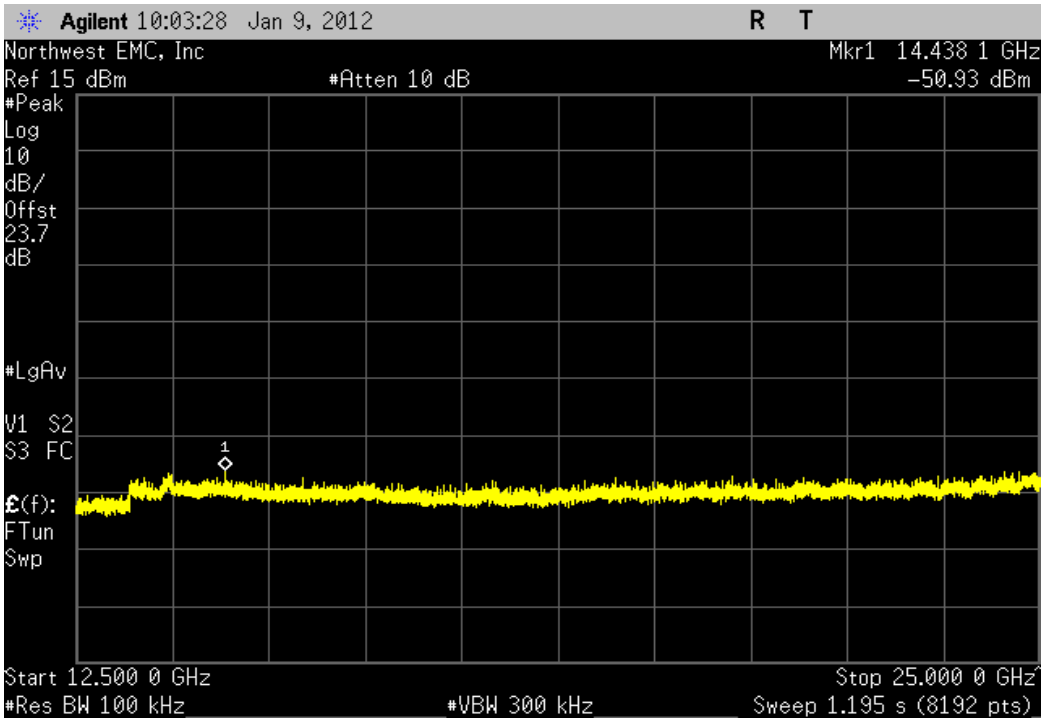
2400 MHz - 2483.5 MHz Band, 802.11(g) 36 Mbps, High Channel 11, 2462 MHz				
Frequency Range		**Value**	**Limit**	**Result**
12.5 GHz - 25 GHz		-56.95 dBc	≤ -20 dBc	Pass



2400 MHz - 2483.5 MHz Band, 802.11(g) 54 Mbps, Low Channel 1, 2412 MHz				
Frequency Range		Value	Limit	Result
30 MHz - 12.5 GHz		-44.18 dBc	≤ -20 dBc	Pass

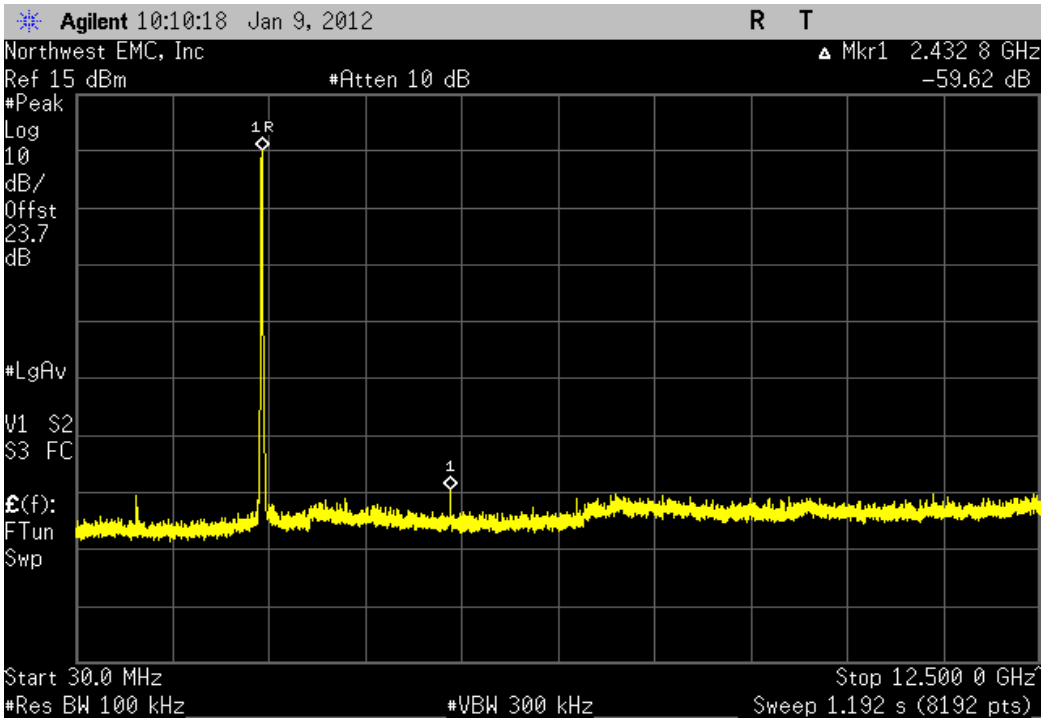


2400 MHz - 2483.5 MHz Band, 802.11(g) 54 Mbps, Low Channel 1, 2412 MHz				
Frequency Range		Value	Limit	Result
12.5 GHz - 25 GHz		-56.66 dBc	≤ -20 dBc	Pass

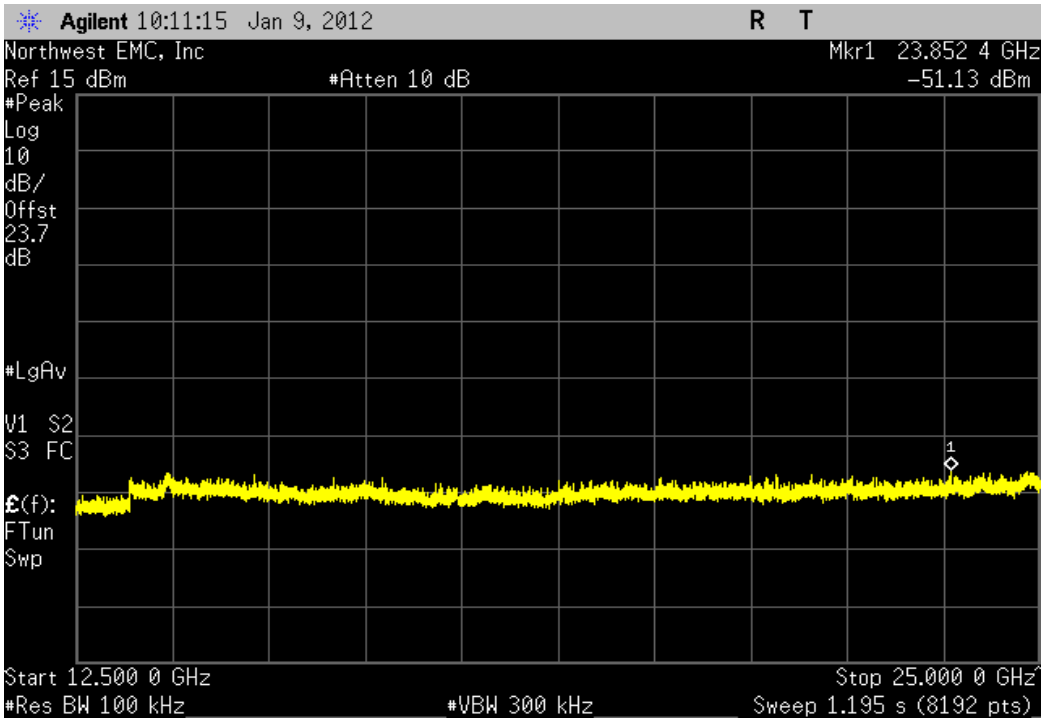


Spurious Conducted Emissions

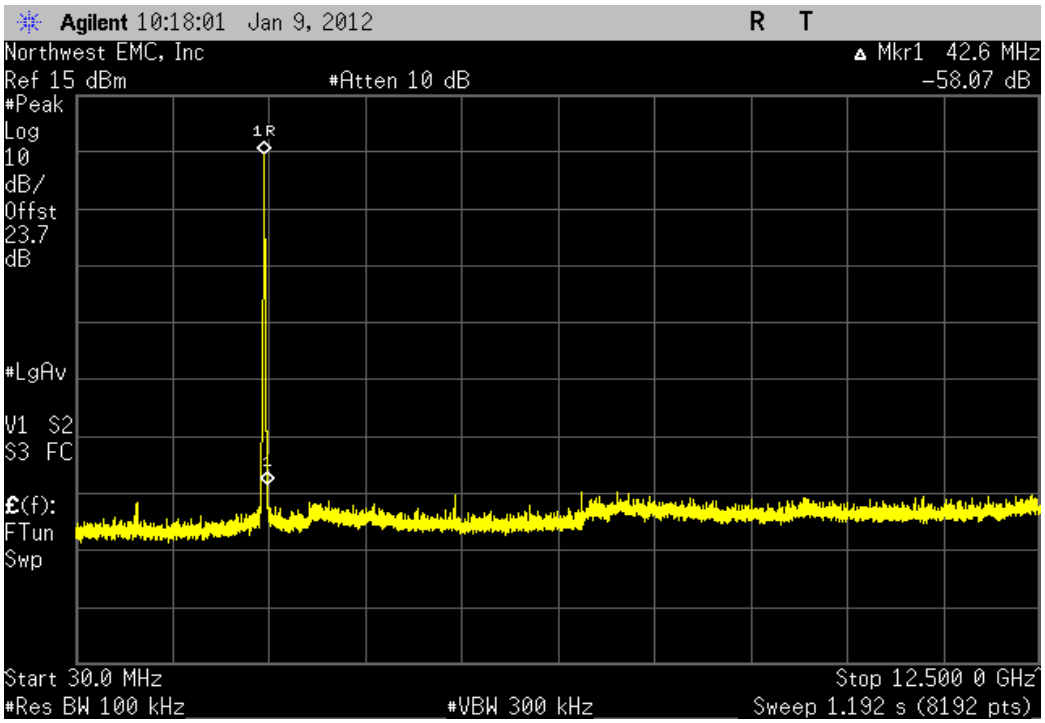
2400 MHz - 2483.5 MHz Band, 802.11(g) 54 Mbps, Mid Channel 6, 2437 MHz				
Frequency Range		**Value**	**Limit**	**Result**
30 MHz - 12.5 GHz		-59.62 dBc	≤ -20 dBc	Pass



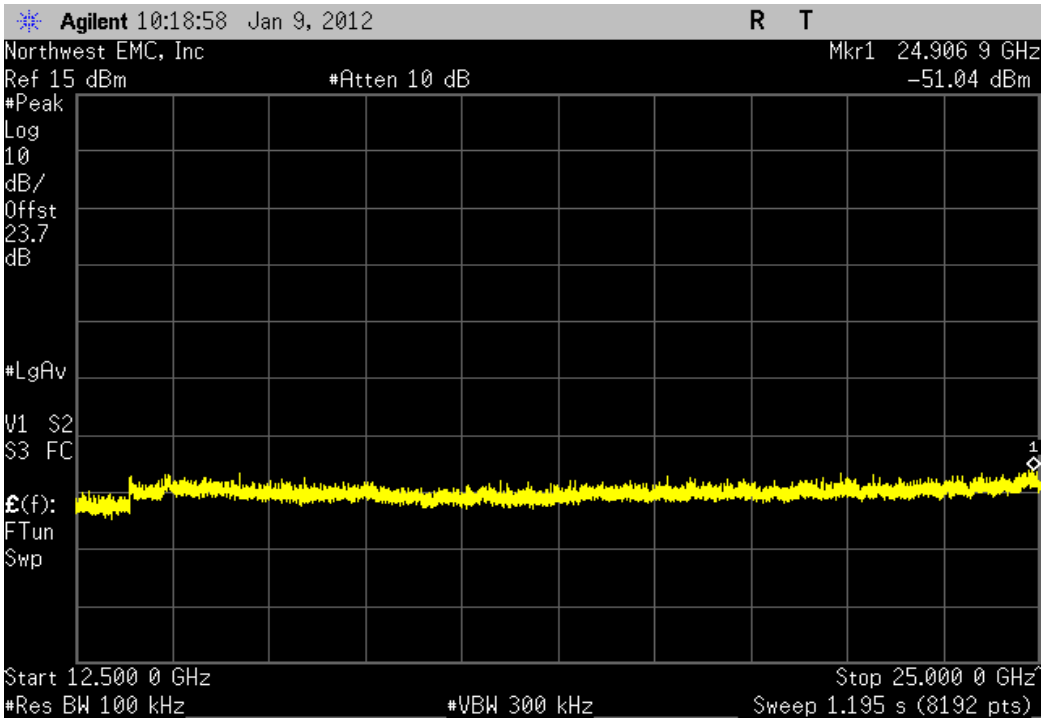
2400 MHz - 2483.5 MHz Band, 802.11(g) 54 Mbps, Mid Channel 6, 2437 MHz				
Frequency Range		**Value**	**Limit**	**Result**
12.5 GHz - 25 GHz		-56.27 dBc	≤ -20 dBc	Pass



2400 MHz - 2483.5 MHz Band, 802.11(g) 54 Mbps, High Channel 11, 2462 MHz				
Frequency Range		**Value**	**Limit**	**Result**
30 MHz - 12.5 GHz		-58.07 dBc	≤ -20 dBc	Pass

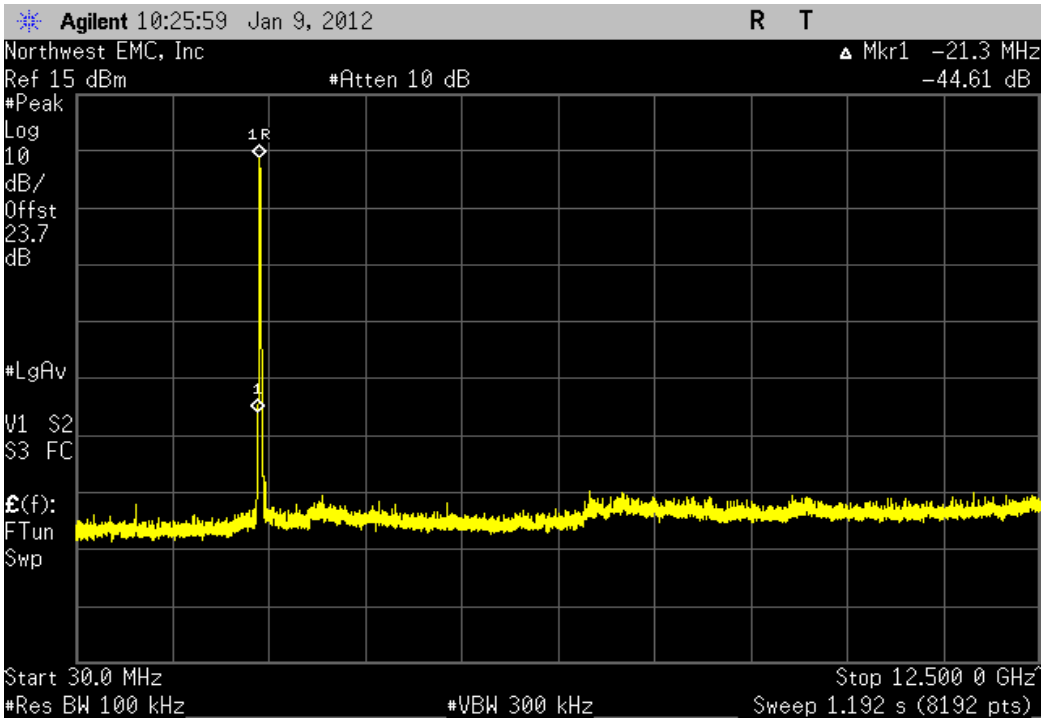


2400 MHz - 2483.5 MHz Band, 802.11(g) 54 Mbps, High Channel 11, 2462 MHz				
Frequency Range		**Value**	**Limit**	**Result**
12.5 GHz - 25 GHz		-55.7 dBc	≤ -20 dBc	Pass

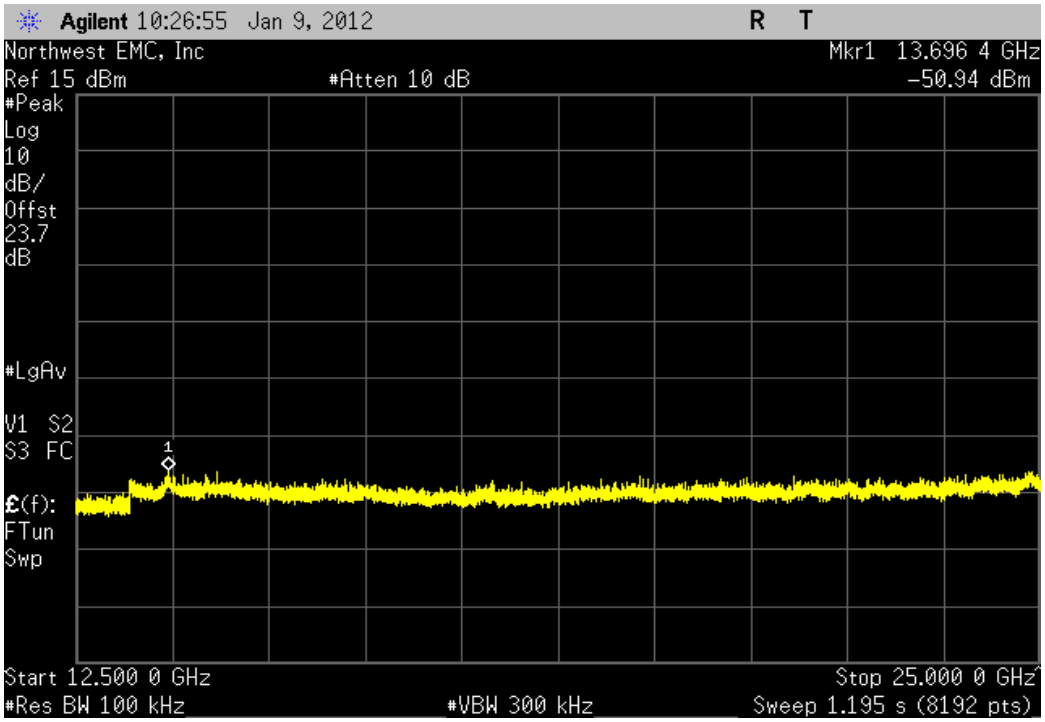


Spurious Conducted Emissions

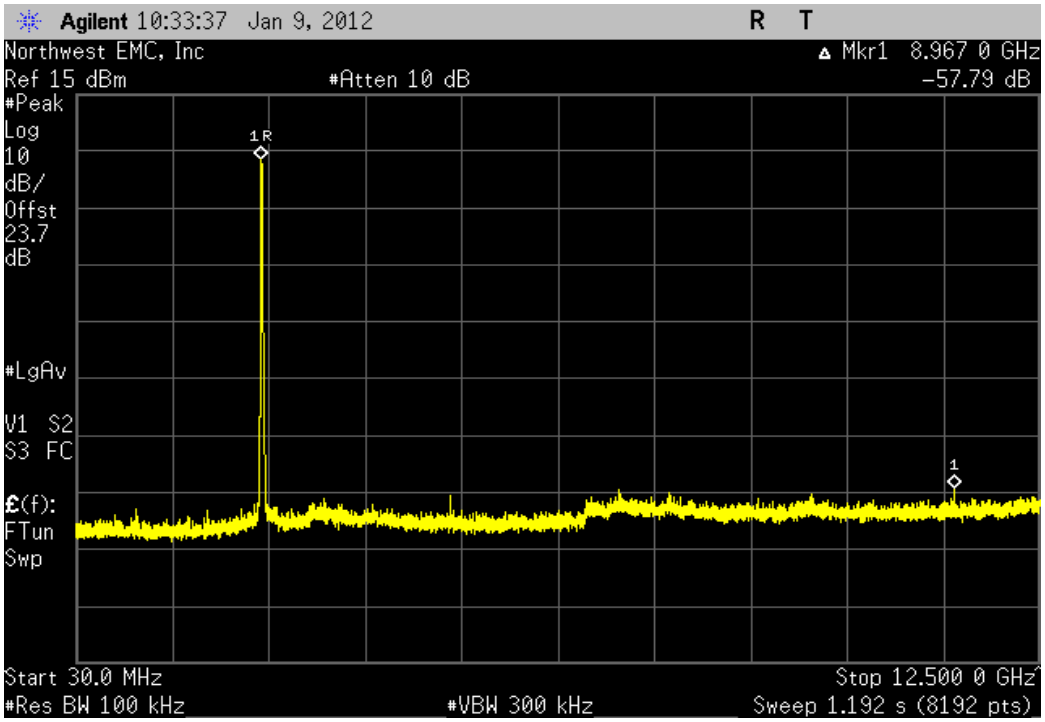
2400 MHz - 2483.5 MHz Band, 802.11(n) MCS0, Low Channel 1, 2412 MHz				
Frequency Range		**Value**	**Limit**	**Result**
30 MHz - 12.5 GHz		-44.61 dBc	≤ -20 dBc	Pass



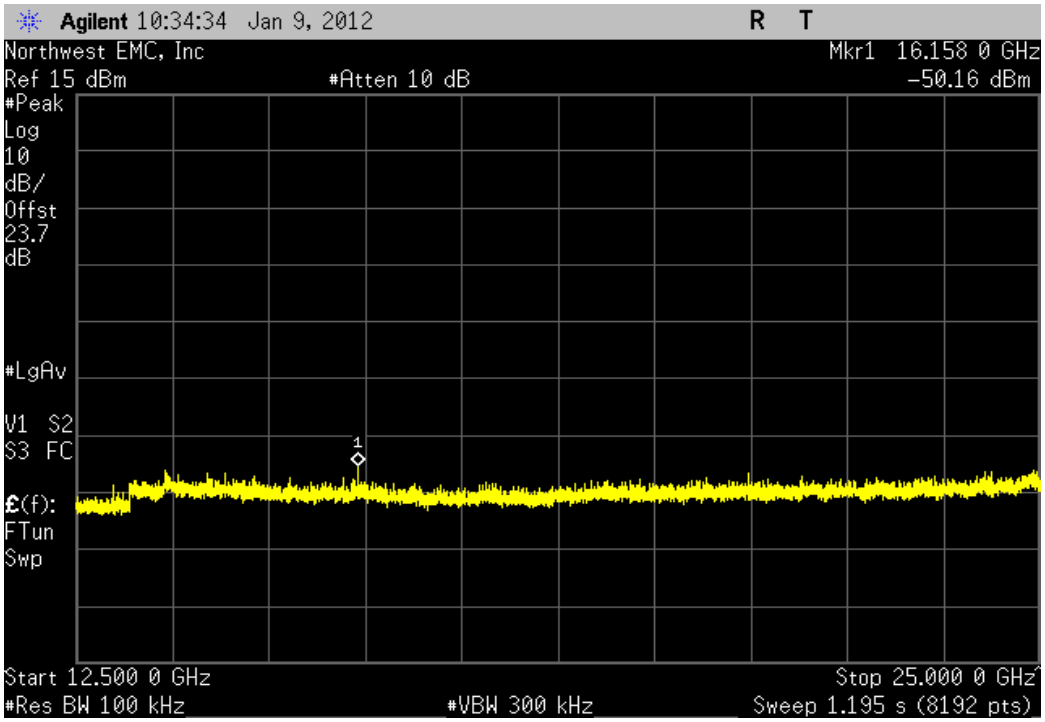
2400 MHz - 2483.5 MHz Band, 802.11(n) MCS0, Low Channel 1, 2412 MHz				
Frequency Range		**Value**	**Limit**	**Result**
12.5 GHz - 25 GHz		-54.66 dBc	≤ -20 dBc	Pass



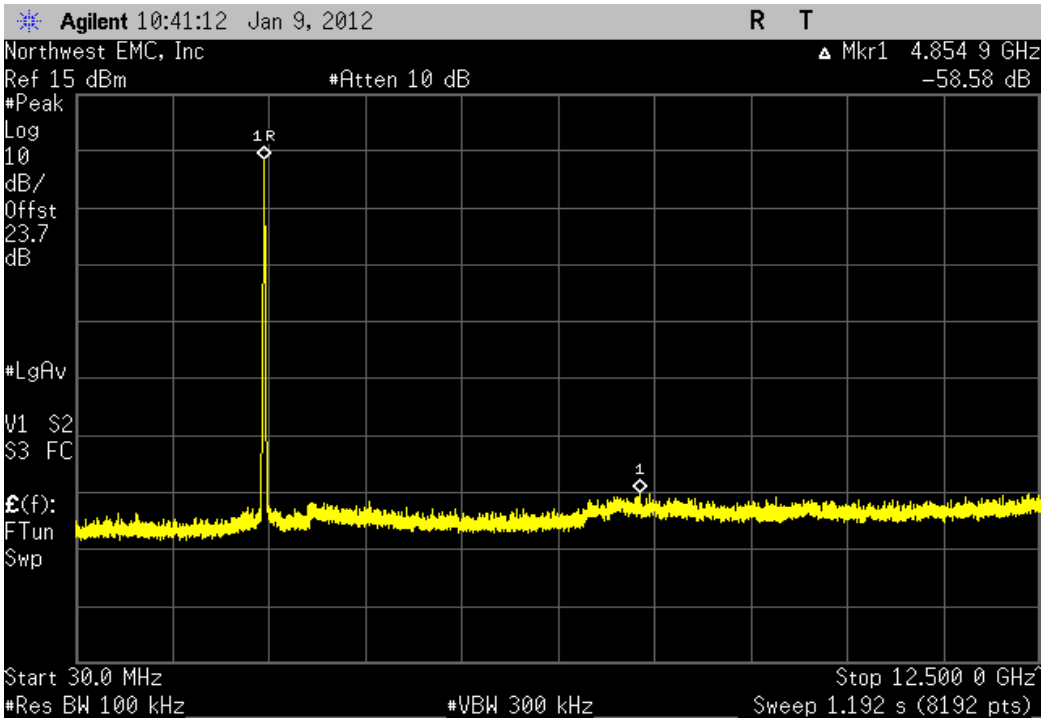
2400 MHz - 2483.5 MHz Band, 802.11(n) MCS0, Mid Channel 6, 2437 MHz				
Frequency Range		**Value**	**Limit**	**Result**
30 MHz - 12.5 GHz		-57.79 dBc	≤ -20 dBc	Pass



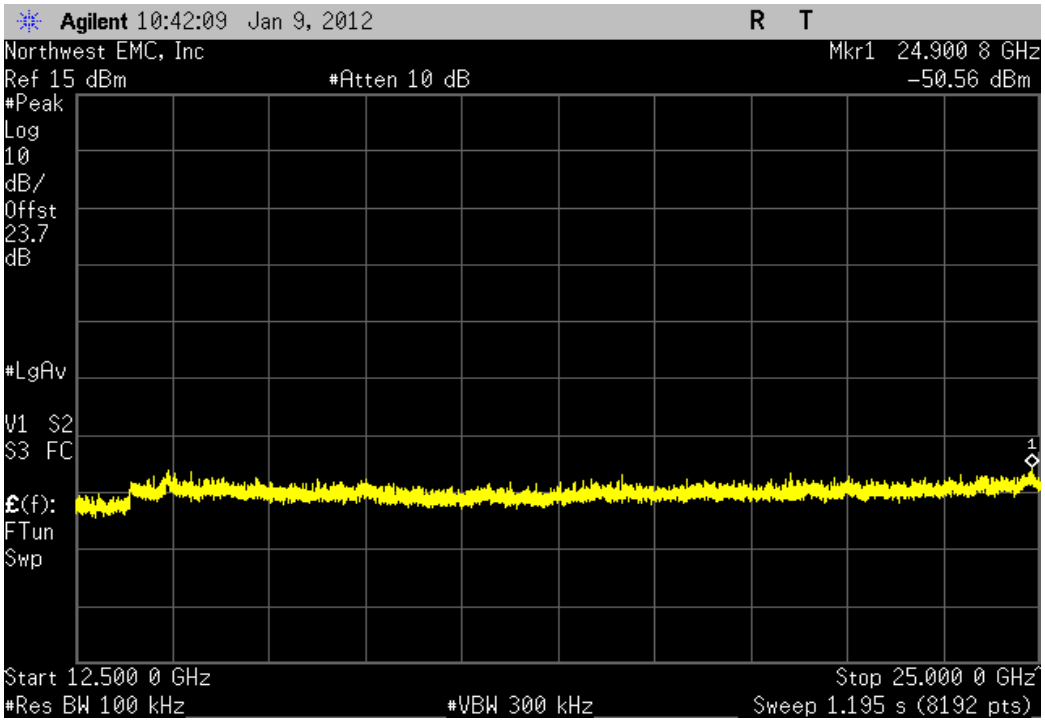
2400 MHz - 2483.5 MHz Band, 802.11(n) MCS0, Mid Channel 6, 2437 MHz				
Frequency Range		**Value**	**Limit**	**Result**
12.5 GHz - 25 GHz		-53.65 dBc	≤ -20 dBc	Pass



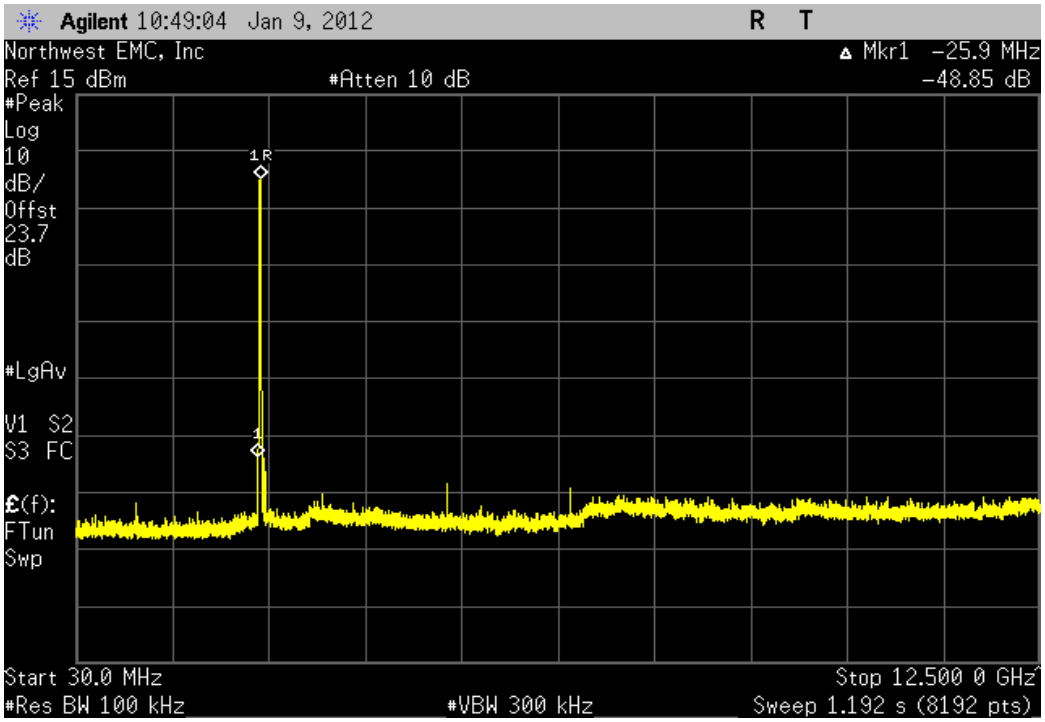
2400 MHz - 2483.5 MHz Band, 802.11(n) MCS0, High Channel 11, 2462 MHz				
Frequency Range		**Value**	**Limit**	**Result**
30 MHz - 12.5 GHz		-58.58 dBc	≤ -20 dBc	Pass



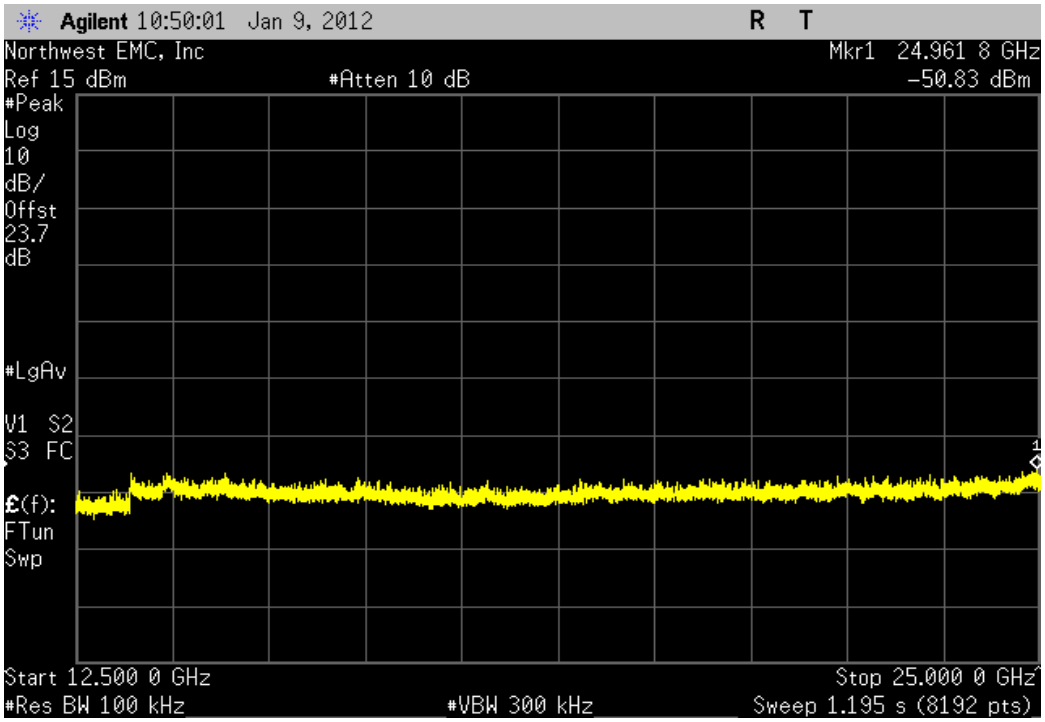
2400 MHz - 2483.5 MHz Band, 802.11(n) MCS0, High Channel 11, 2462 MHz				
Frequency Range		**Value**	**Limit**	**Result**
12.5 GHz - 25 GHz		-54.13 dBc	≤ -20 dBc	Pass



2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, Low Channel 1, 2412 MHz				
Frequency Range		**Value**	**Limit**	**Result**
30 MHz - 12.5 GHz		-48.85 dBc	≤ -20 dBc	Pass

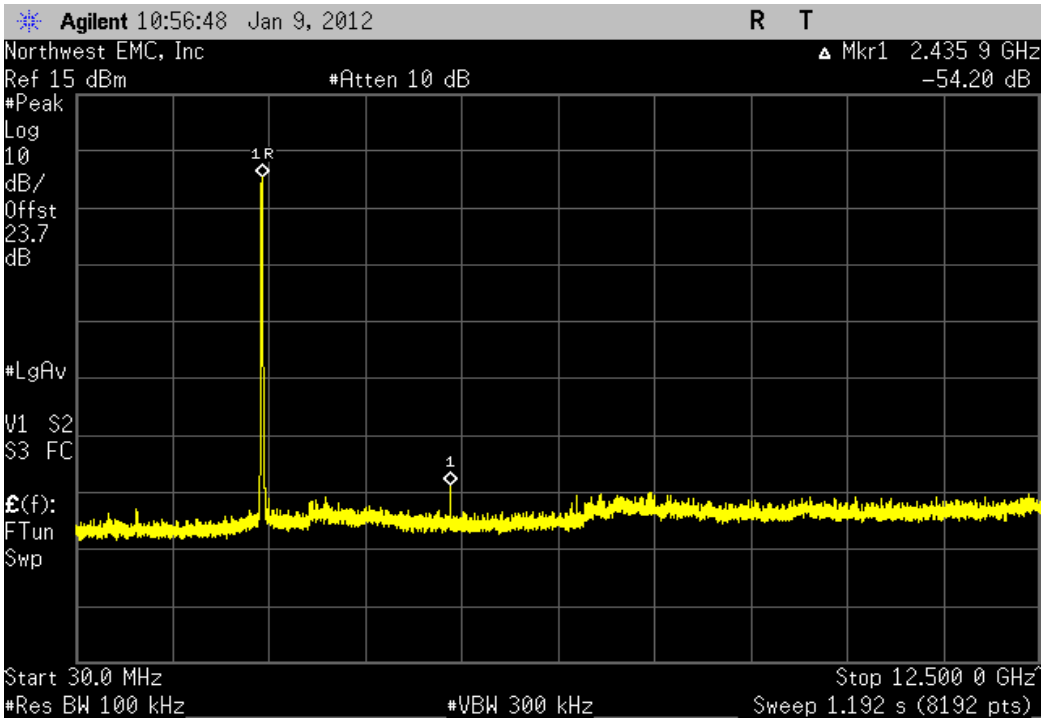


2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, Low Channel 1, 2412 MHz				
Frequency Range		**Value**	**Limit**	**Result**
12.5 GHz - 25 GHz		-50.97 dBc	≤ -20 dBc	Pass

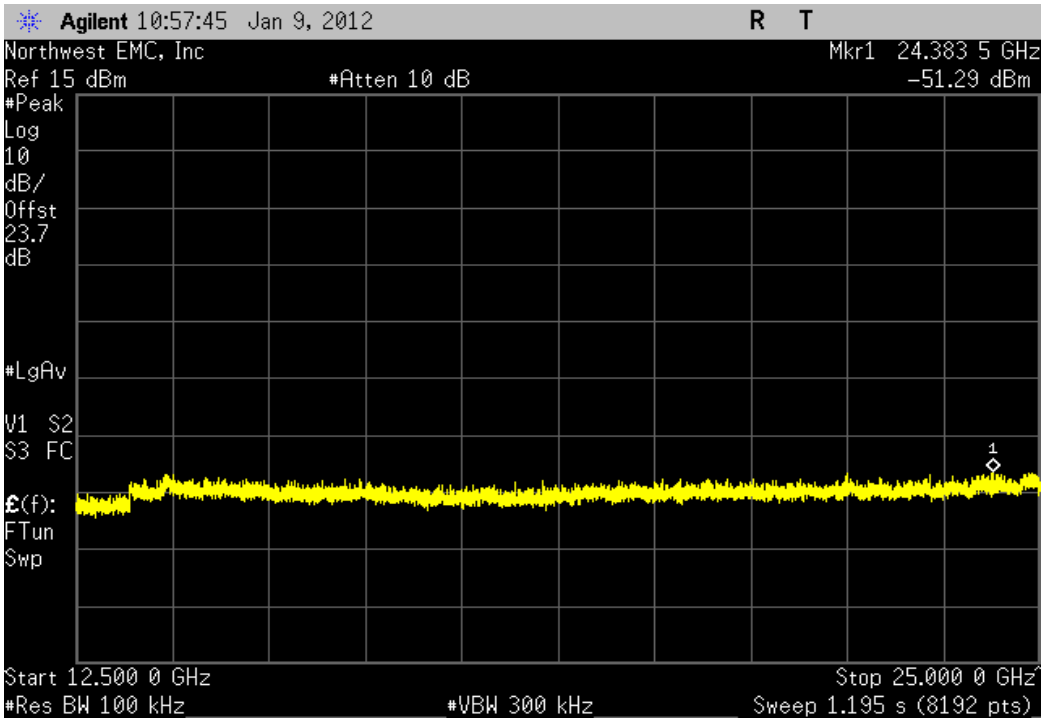


Spurious Conducted Emissions

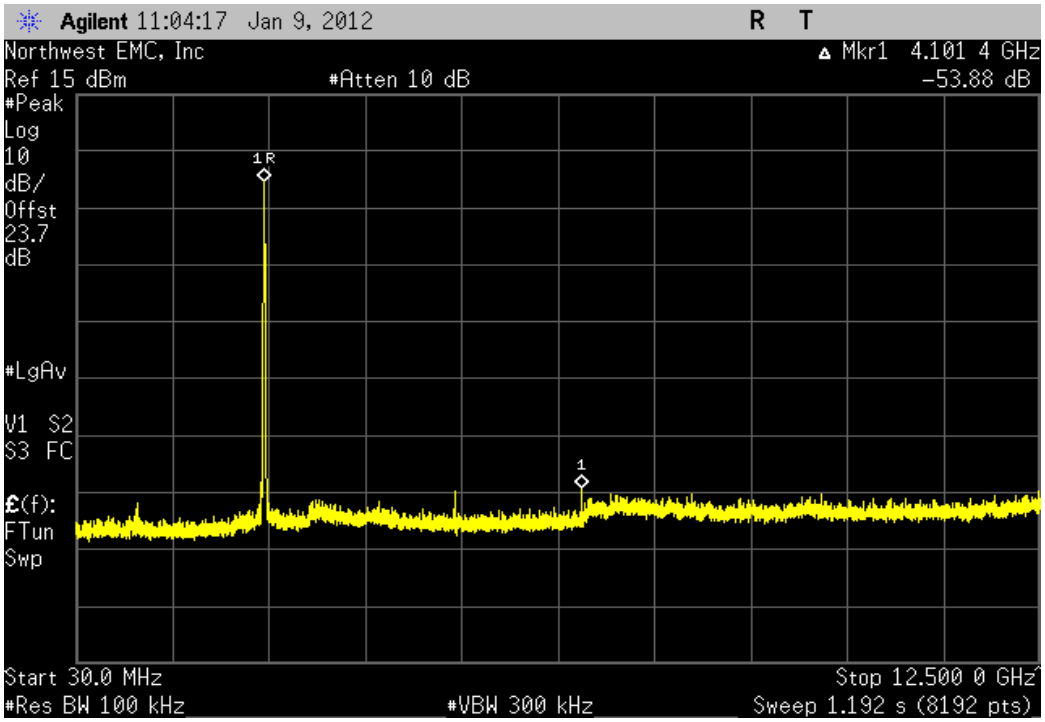
2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, Mid Channel 6, 2437 MHz				
Frequency Range		**Value**	**Limit**	**Result**
30 MHz - 12.5 GHz		-54.2 dBc	≤ -20 dBc	Pass



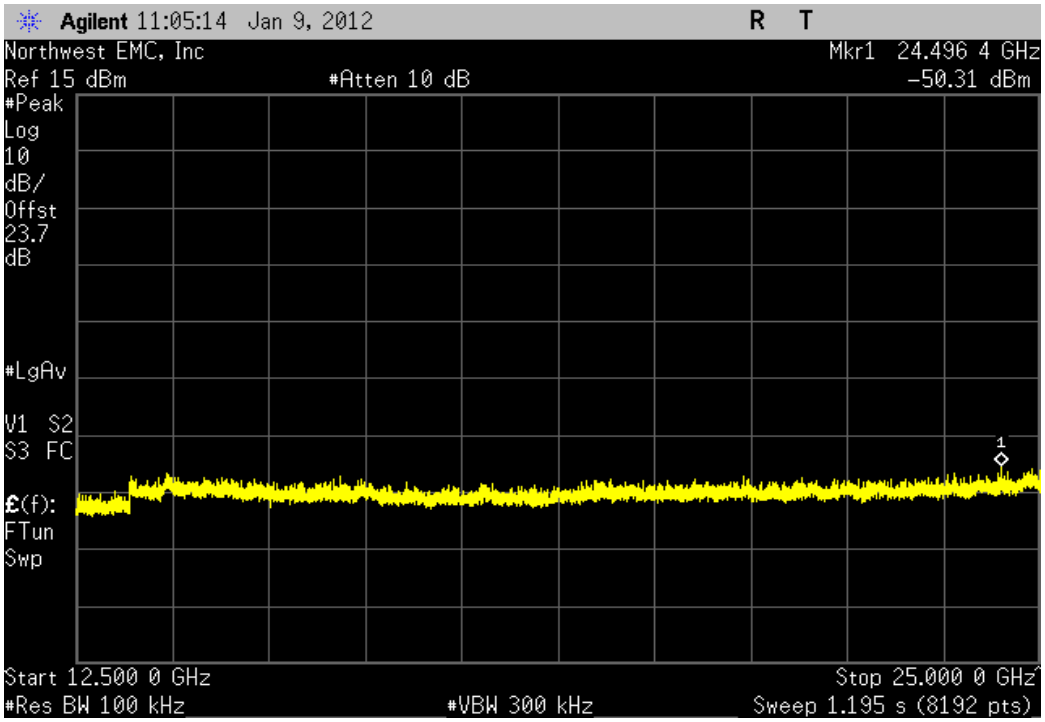
2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, Mid Channel 6, 2437 MHz				
Frequency Range		**Value**	**Limit**	**Result**
12.5 GHz - 25 GHz		-51.78 dBc	≤ -20 dBc	Pass



2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, High Channel 11, 2462 MHz				
Frequency Range		Value	Limit	Result
30 MHz - 12.5 GHz		-53.88 dBc	≤ -20 dBc	Pass



2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, High Channel 11, 2462 MHz				
Frequency Range		Value	Limit	Result
12.5 GHz - 25 GHz		-50.02 dBc	≤ -20 dBc	Pass



Power Spectral Density

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
Attenuator - 20db, 'SMA'	SM Electronics	SA26B-20	RFW	6/2/2011	12
40 GHz DC block	Fairview Microwave	SD3379	AMI	10/12/2011	12
Signal Generator	Agilent	N5183A	TIA	1/18/2011	12
Spectrum Analyzer	Agilent	E4440A	AAX	5/23/2011	12

MEASUREMENT UNCERTAINTY

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 for radiated emissions measurements is less than +/- 4 dB, and for conducted emissions measurements is less than +/- 2.7 dB. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for measurement uncertainty are available upon request.

TEST DESCRIPTION

The peak power spectral density measurements were measured with the EUT set to the required transmit frequencies in each band. 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 lowest, middle, and maximum data rate for each modulation type available. Per the procedure outlined in FCC KDB 558074, March 23, 2005, the spectrum analyzer was used as follows:

> The emission peak(s) were located and zoom in on within the passband. The resolution bandwidth was set to 3 kHz, the video bandwidth was set to greater than or equal to the resolution bandwidth. The sweep speed was set equal to the span divided by 3 kHz (sweep = (SPAN/3 kHz)). For example, given a span of 1.5 MHz, the sweep should be 1.5 x 10^6 ÷ 3 x 10^3 = 500 seconds. External attenuation was used and added to the reading. The following FCC procedure was used for modifying the power spectral density measurements:

"If the spectrum line spacing cannot be resolved on the available spectrum analyzer, the noise density function on most modern conventional spectrum analyzers will directly measure the noise power density normalized to a 1 Hz noise power bandwidth. Add 34.8 dB for correction to 3 kHz."

Power Spectral Density

EUT:	ConnectPort X2e Wi-Fi			**Work Order:**	DGII0036
Serial Number:	1201-003			**Date:**	01/09/12
Customer:	Digi International			**Temperature:**	24.09°C
Attendees:	Bradley Ferguson			**Humidity:**	18%
Project:	None			**Barometric Pres.:**	1013.3
Tested by:	Trevor Buls	**Power:**	5VDC	**Job Site:**	MN08

TEST SPECIFICATIONS	TEST METHOD
FCC 15.247:2012	ANSI C63.10:2009

COMMENTS

1.5 dB was added to the Reference Level Offset to compensate for the customer's adapter cable. Low and High channels for 6 Mbps, 36 Mbps, 54 Mbps will use PL setting of 14, MCS0 will use PL setting of 12, all others will use PL setting of 18.

DEVIATIONS FROM TEST STANDARD

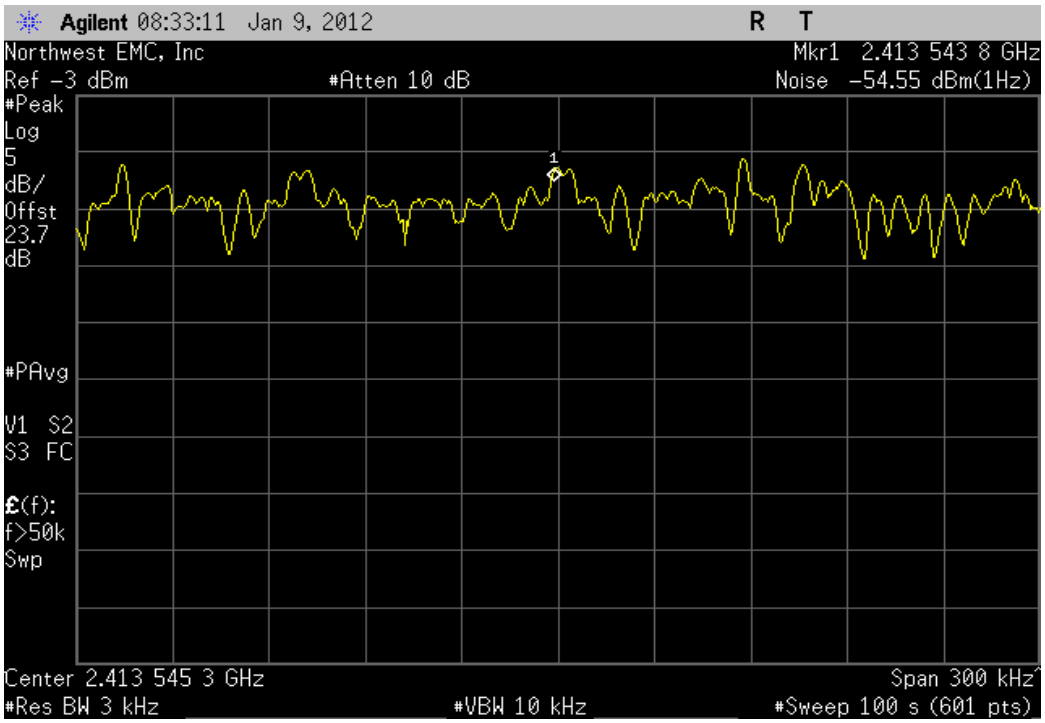
None

Configuration #	1	Signature	Trevor Buls

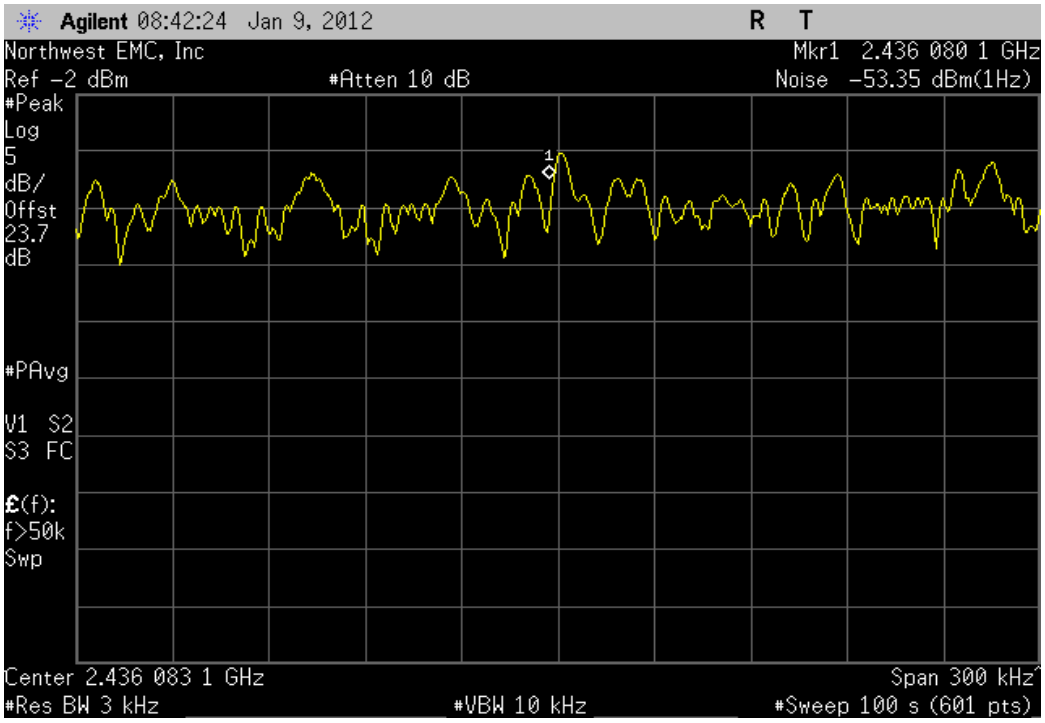
	Value (dBm / Hz)	(dBm / Hz) To (dBm / 3 kHz)	Value (dBm / 3 kHz)	Limit (dBm / 3 kHz)	Result
2400 MHz - 2483.5 MHz Band					
802.11(b) 1 Mbps					
Low Channel 1, 2412 MHz	-54.551	34.8	-19.751	8	Pass
Mid Channel 6, 2437 MHz	-53.347	34.8	-18.547	8	Pass
High Channel 11, 2462 MHz	-53.576	34.8	-18.776	8	Pass
802.11(b) 11 Mbps					
Low Channel 1, 2412 MHz	-52.838	34.8	-18.038	8	Pass
Mid Channel 6, 2437 MHz	-52.255	34.8	-17.455	8	Pass
High Channel 11, 2462 MHz	-52.498	34.8	-17.698	8	Pass
802.11(g) 6 Mbps					
Low Channel 1, 2412 MHz	-56.789	34.8	-21.989	8	Pass
Mid Channel 6, 2437 MHz	-53.147	34.8	-18.347	8	Pass
High Channel 11, 2462 MHz	-55.963	34.8	-21.163	8	Pass
802.11(g) 36 Mbps					
Low Channel 1, 2412 MHz	-55.744	34.8	-20.944	8	Pass
Mid Channel 6, 2437 MHz	-52.538	34.8	-17.738	8	Pass
High Channel 11, 2462 MHz	-56.33	34.8	-21.53	8	Pass
802.11(g) 54 Mbps					
Low Channel 1, 2412 MHz	-55.813	34.8	-21.013	8	Pass
Mid Channel 6, 2437 MHz	-54.605	34.8	-19.805	8	Pass
High Channel 11, 2462 MHz	-56.924	34.8	-22.124	8	Pass
802.11(n) MCS0					
Low Channel 1, 2412 MHz	-56.116	34.8	-21.316	8	Pass
Mid Channel 6, 2437 MHz	-54.081	34.8	-19.281	8	Pass
High Channel 11, 2462 MHz	-56.217	34.8	-21.417	8	Pass
802.11(n) MCS7					
Low Channel 1, 2412 MHz	-57.221	34.8	-22.421	8	Pass
Mid Channel 6, 2437 MHz	-57.005	34.8	-22.205	8	Pass
High Channel 11, 2462 MHz	-57.48	34.8	-22.68	8	Pass

Power Spectral Density

2400 MHz - 2483.5 MHz Band, 802.11(b) 1 Mbps, Low Channel 1, 2412 MHz						
		Value (dBm / Hz)	(dBm / Hz) To (dBm / 3 kHz)	Value (dBm / 3 kHz)	Limit (dBm / 3 kHz)	Result
		-54.551	34.8	-19.751	8	Pass

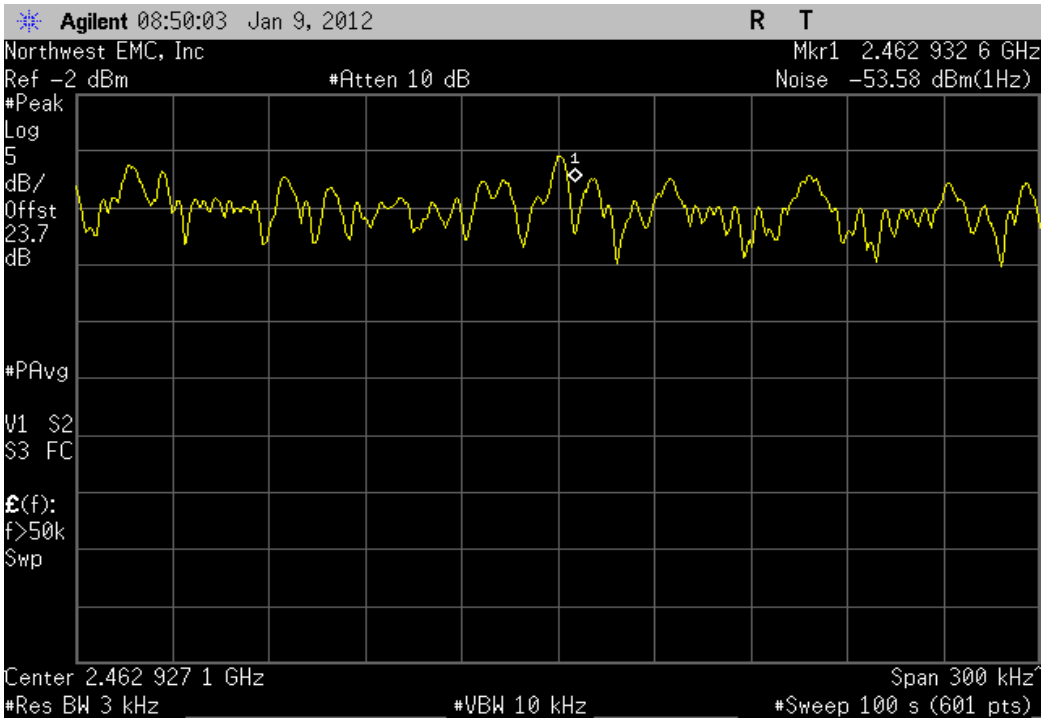


2400 MHz - 2483.5 MHz Band, 802.11(b) 1 Mbps, Mid Channel 6, 2437 MHz						
		Value (dBm / Hz)	(dBm / Hz) To (dBm / 3 kHz)	Value (dBm / 3 kHz)	Limit (dBm / 3 kHz)	Result
		-53.347	34.8	-18.547	8	Pass

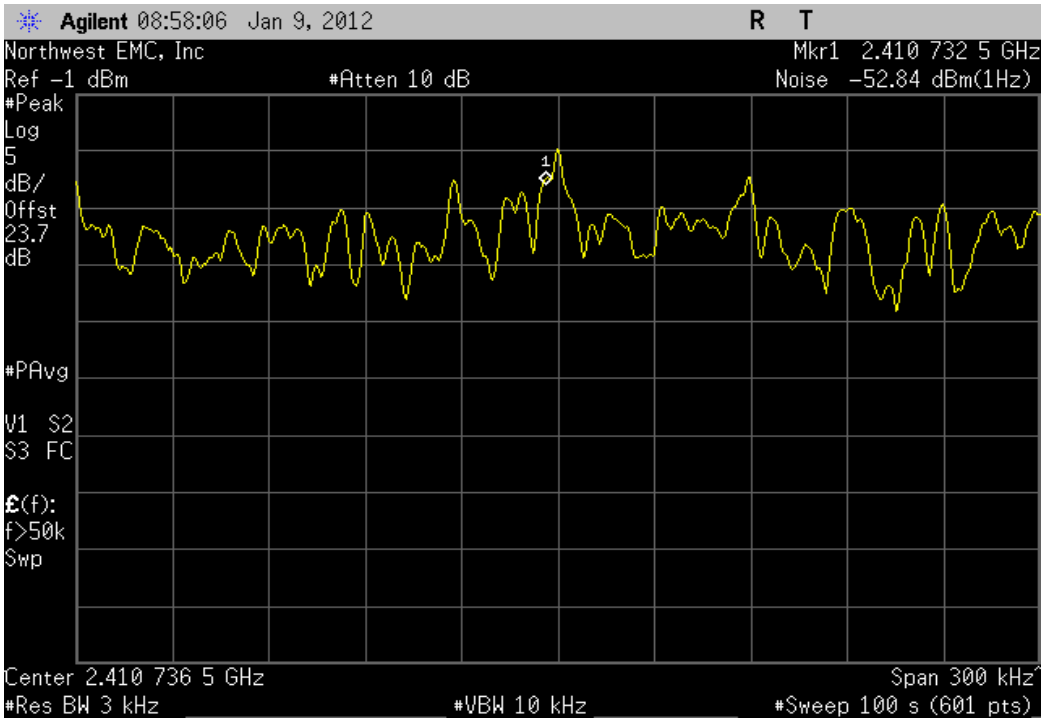


Power Spectral Density

2400 MHz - 2483.5 MHz Band, 802.11(b) 1 Mbps, High Channel 11, 2462 MHz						
		Value (dBm / Hz)	(dBm / Hz) To (dBm / 3 kHz)	Value (dBm / 3 kHz)	Limit (dBm / 3 kHz)	Result
		-53.576	34.8	-18.776	8	Pass

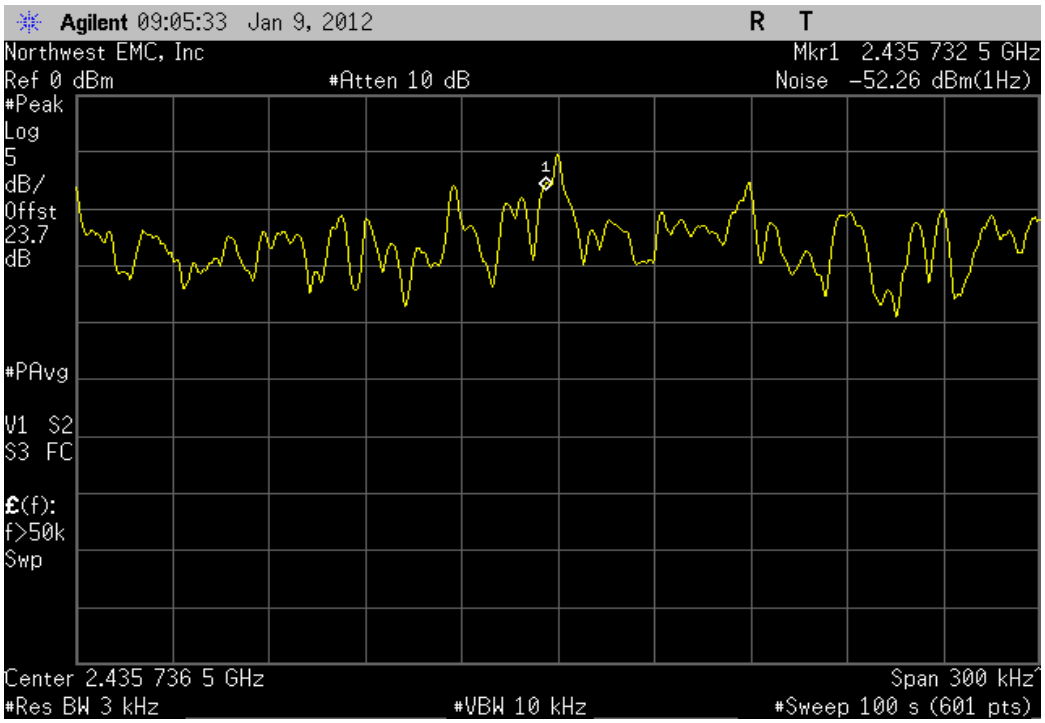


2400 MHz - 2483.5 MHz Band, 802.11(b) 11 Mbps, Low Channel 1, 2412 MHz						
		Value (dBm / Hz)	(dBm / Hz) To (dBm / 3 kHz)	Value (dBm / 3 kHz)	Limit (dBm / 3 kHz)	Result
		-52.838	34.8	-18.038	8	Pass

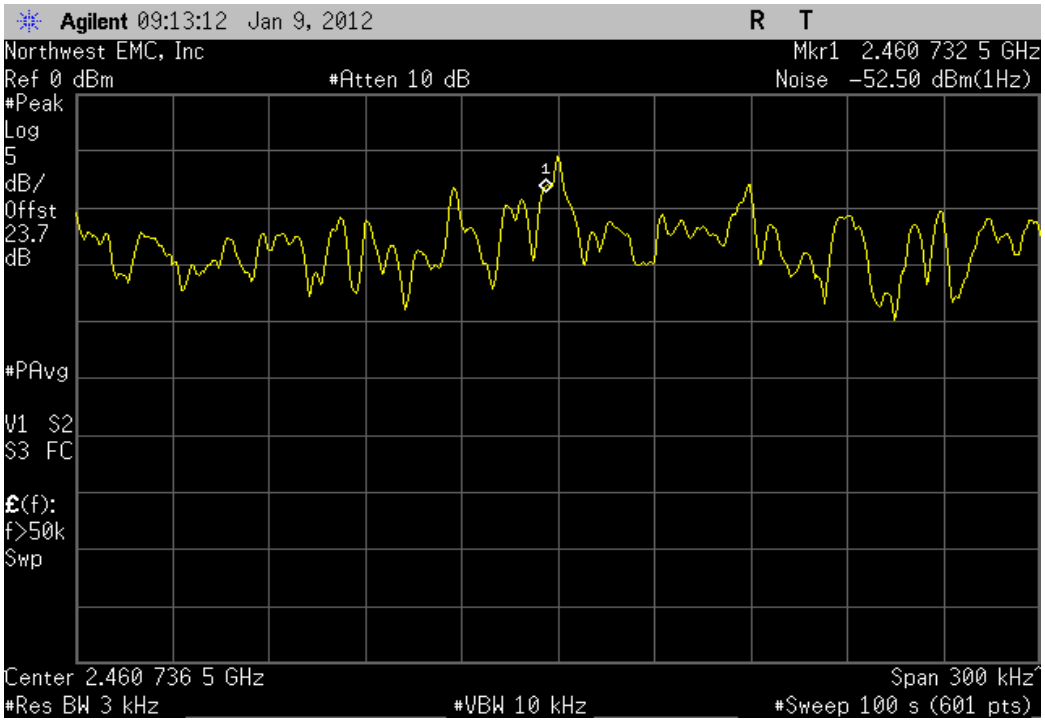


Power Spectral Density

2400 MHz - 2483.5 MHz Band, 802.11(b) 11 Mbps, Mid Channel 6, 2437 MHz						
		Value (dBm / Hz)	(dBm / Hz) To (dBm / 3 kHz)	Value (dBm / 3 kHz)	Limit (dBm / 3 kHz)	Result
		-52.255	34.8	-17.455	8	Pass

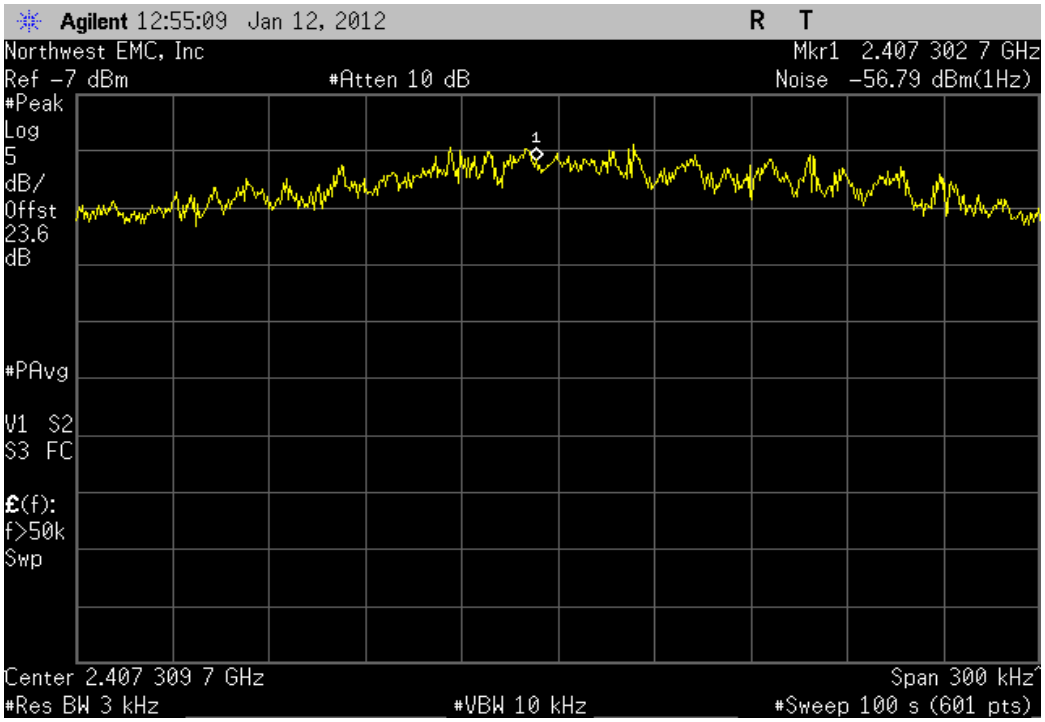


2400 MHz - 2483.5 MHz Band, 802.11(b) 11 Mbps, High Channel 11, 2462 MHz						
		Value (dBm / Hz)	(dBm / Hz) To (dBm / 3 kHz)	Value (dBm / 3 kHz)	Limit (dBm / 3 kHz)	Result
		-52.498	34.8	-17.698	8	Pass

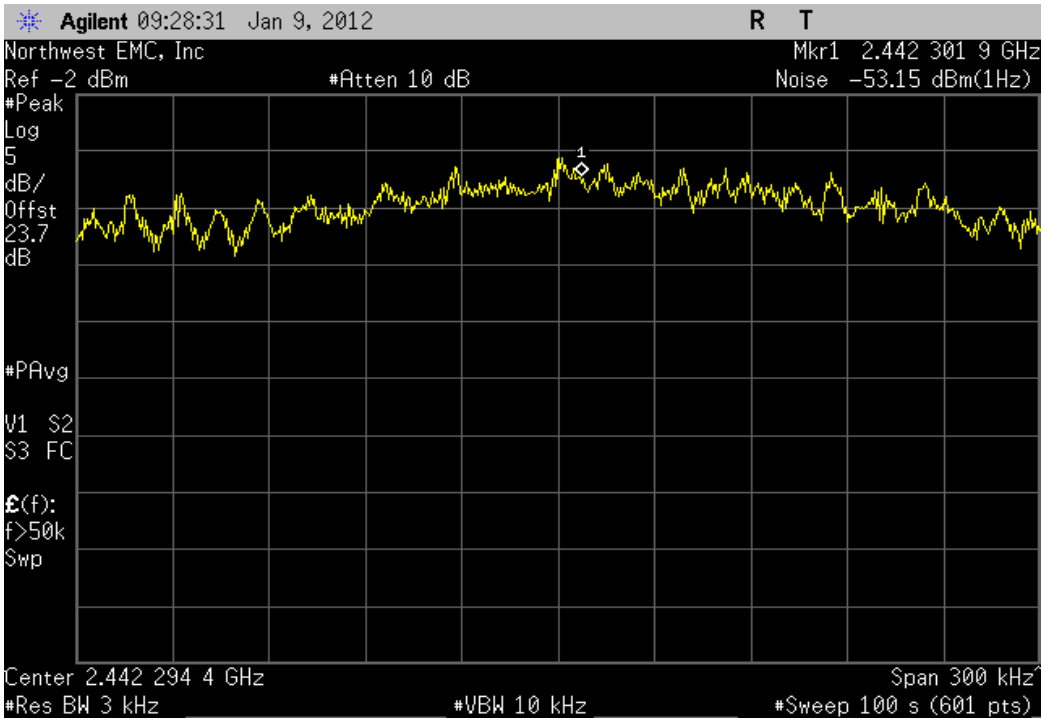


Power Spectral Density

2400 MHz - 2483.5 MHz Band, 802.11(g) 6 Mbps, Low Channel 1, 2412 MHz						
		Value (dBm / Hz)	(dBm / Hz) To (dBm / 3 kHz)	Value (dBm / 3 kHz)	Limit (dBm / 3 kHz)	Result
		-56.789	34.8	-21.989	8	Pass

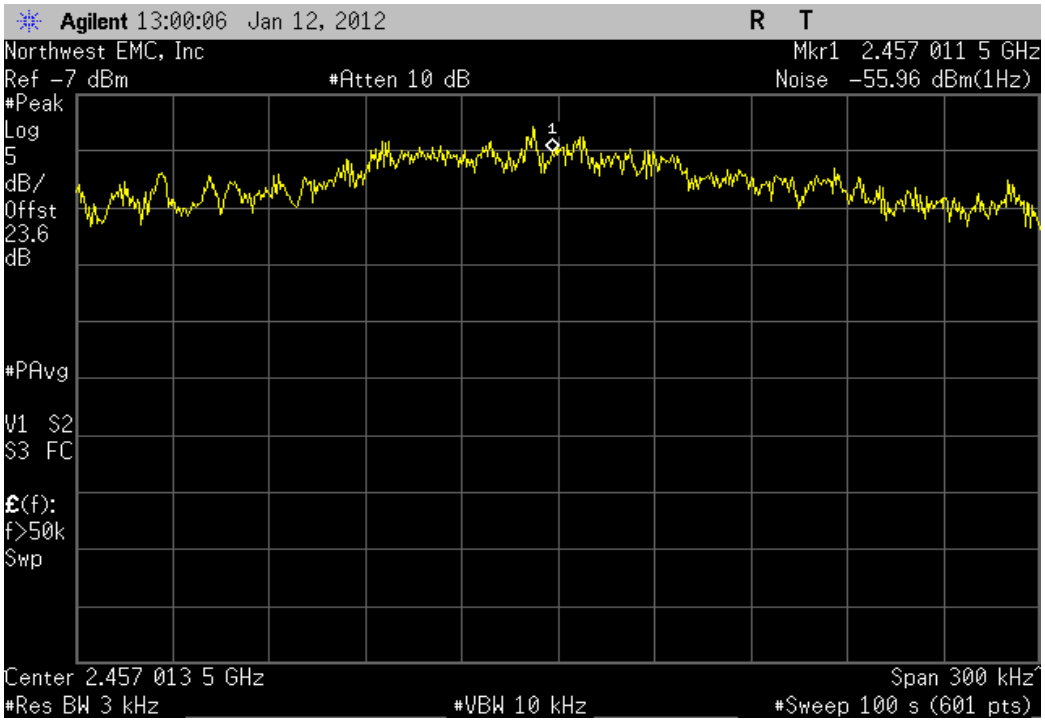


2400 MHz - 2483.5 MHz Band, 802.11(g) 6 Mbps, Mid Channel 6, 2437 MHz						
		Value (dBm / Hz)	(dBm / Hz) To (dBm / 3 kHz)	Value (dBm / 3 kHz)	Limit (dBm / 3 kHz)	Result
		-53.147	34.8	-18.347	8	Pass

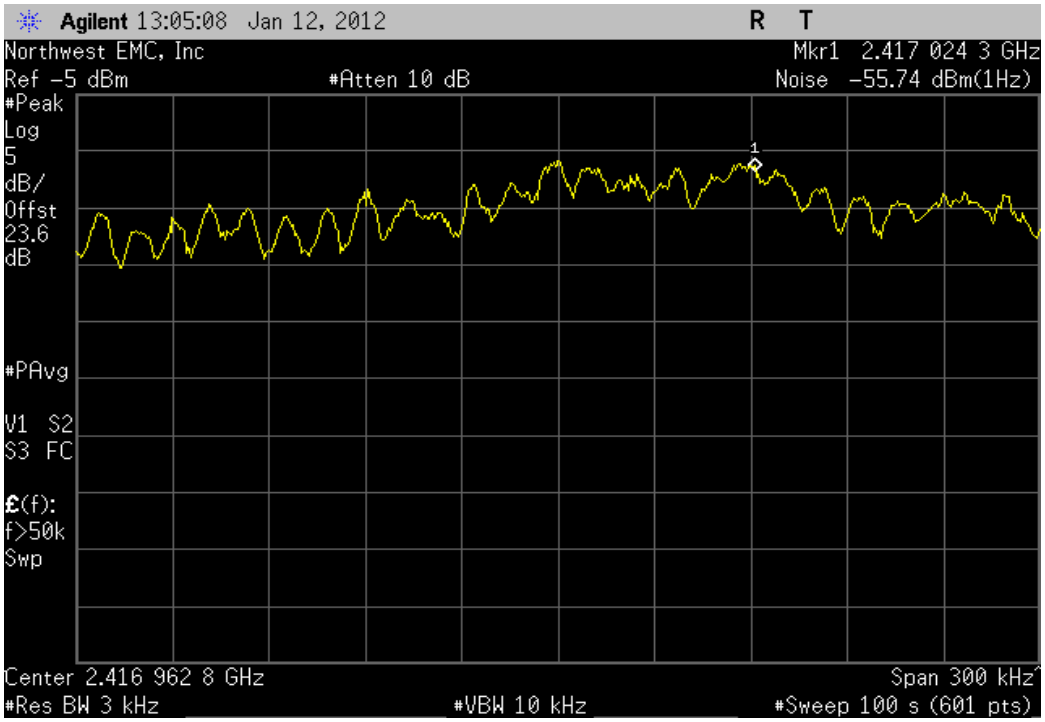


Power Spectral Density

2400 MHz - 2483.5 MHz Band, 802.11(g) 6 Mbps, High Channel 11, 2462 MHz						
		Value (dBm / Hz)	(dBm / Hz) To (dBm / 3 kHz)	Value (dBm / 3 kHz)	Limit (dBm / 3 kHz)	Result
		-55.963	34.8	-21.163	8	Pass

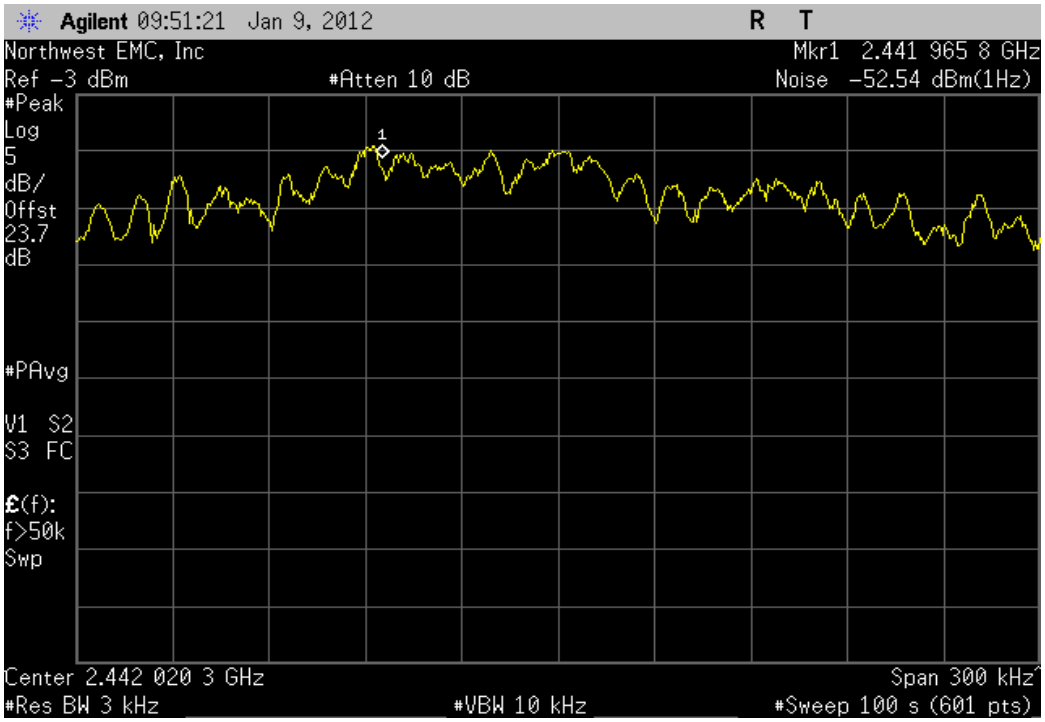


2400 MHz - 2483.5 MHz Band, 802.11(g) 36 Mbps, Low Channel 1, 2412 MHz						
		Value (dBm / Hz)	(dBm / Hz) To (dBm / 3 kHz)	Value (dBm / 3 kHz)	Limit (dBm / 3 kHz)	Result
		-55.744	34.8	-20.944	8	Pass

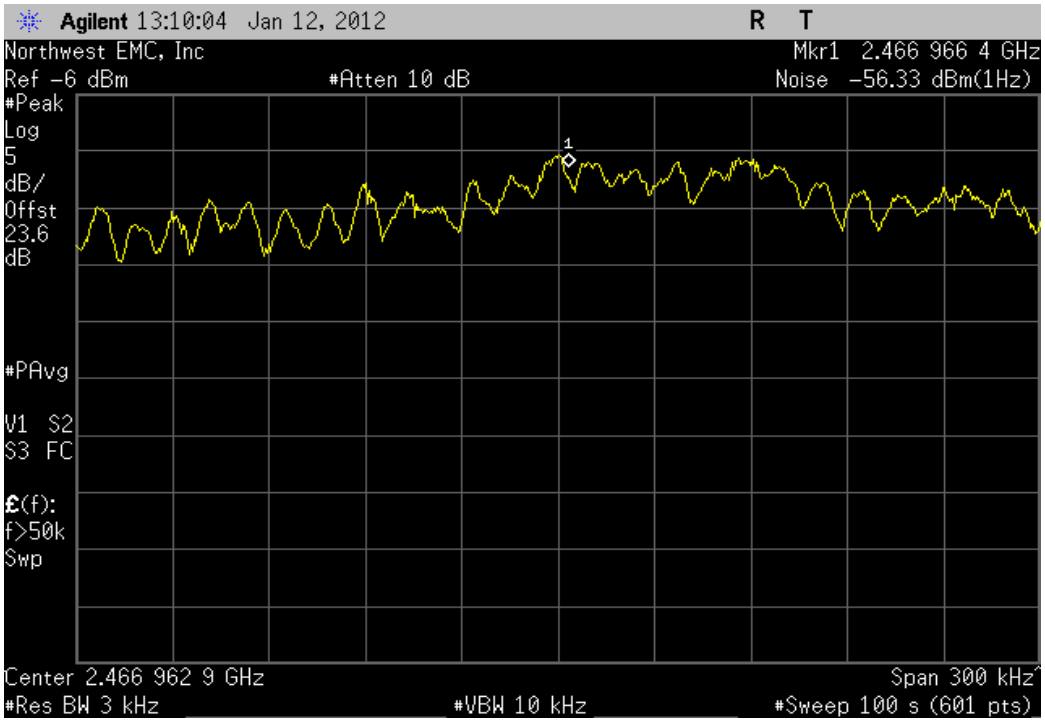


Power Spectral Density

2400 MHz - 2483.5 MHz Band, 802.11(g) 36 Mbps, Mid Channel 6, 2437 MHz						
		Value (dBm / Hz)	(dBm / Hz) To (dBm / 3 kHz)	Value (dBm / 3 kHz)	Limit (dBm / 3 kHz)	Result
		-52.538	34.8	-17.738	8	Pass

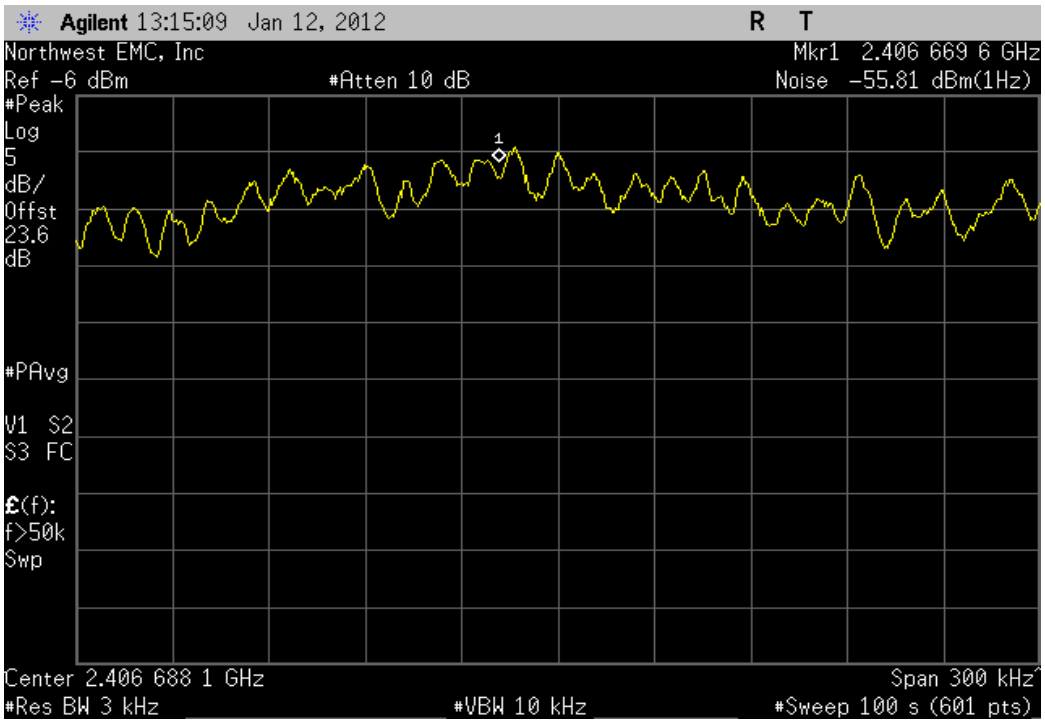


2400 MHz - 2483.5 MHz Band, 802.11(g) 36 Mbps, High Channel 11, 2462 MHz						
		Value (dBm / Hz)	(dBm / Hz) To (dBm / 3 kHz)	Value (dBm / 3 kHz)	Limit (dBm / 3 kHz)	Result
		-56.33	34.8	-21.53	8	Pass

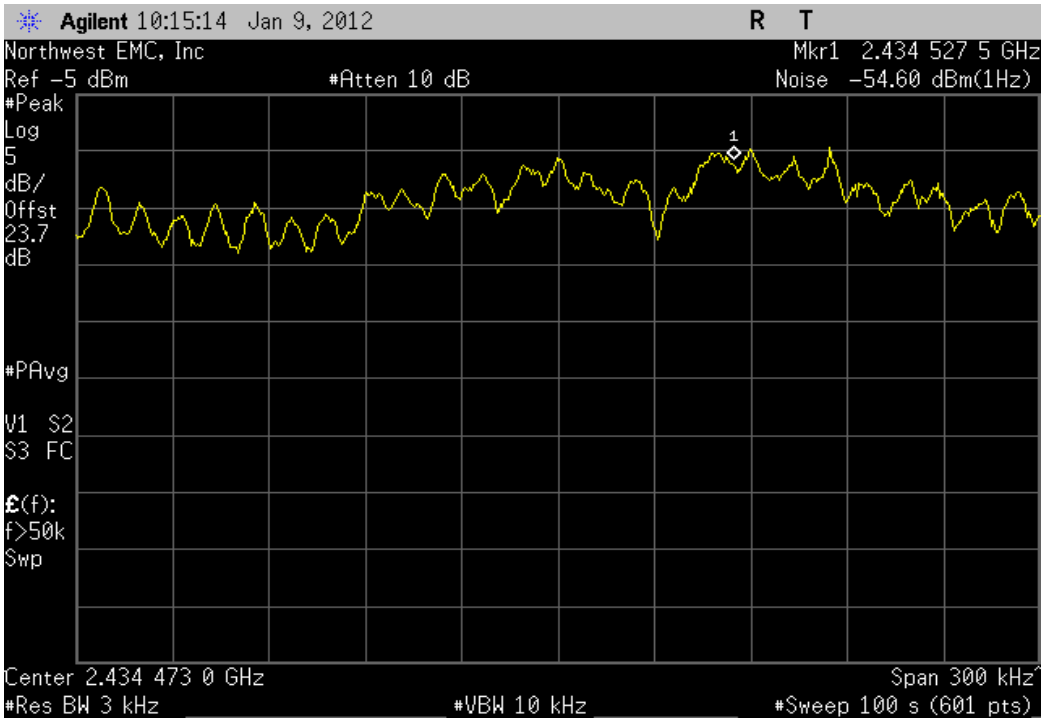


Power Spectral Density

2400 MHz - 2483.5 MHz Band, 802.11(g) 54 Mbps, Low Channel 1, 2412 MHz						
		Value (dBm / Hz)	(dBm / Hz) To (dBm / 3 kHz)	Value (dBm / 3 kHz)	Limit (dBm / 3 kHz)	Result
		-55.813	34.8	-21.013	8	Pass

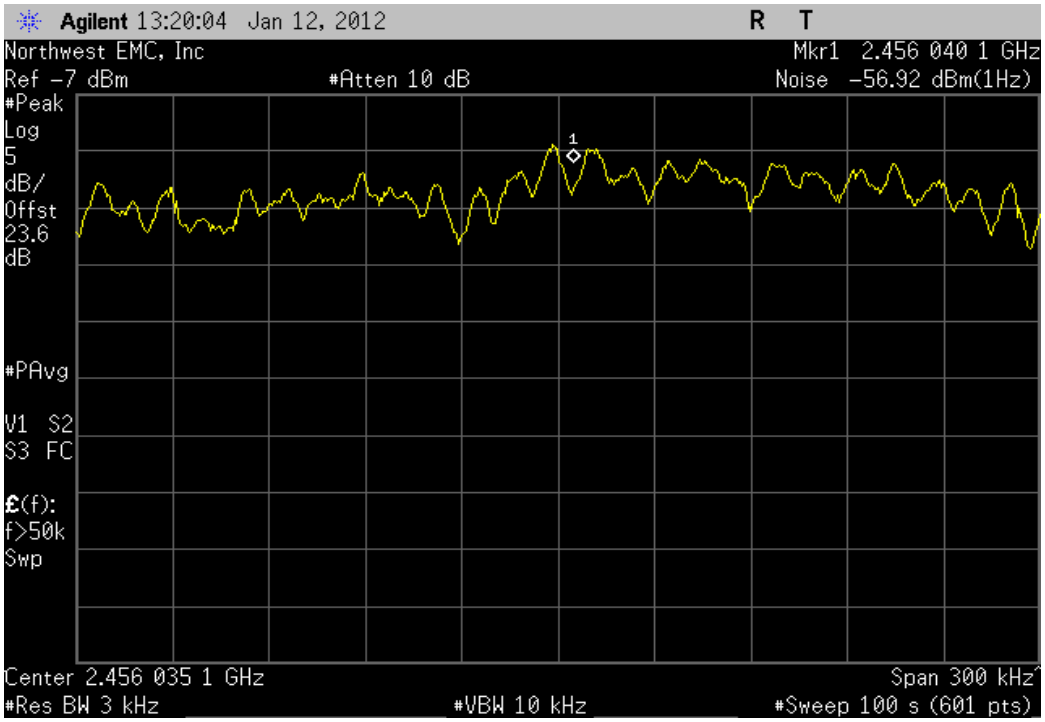


2400 MHz - 2483.5 MHz Band, 802.11(g) 54 Mbps, Mid Channel 6, 2437 MHz						
		Value (dBm / Hz)	(dBm / Hz) To (dBm / 3 kHz)	Value (dBm / 3 kHz)	Limit (dBm / 3 kHz)	Result
		-54.605	34.8	-19.805	8	Pass

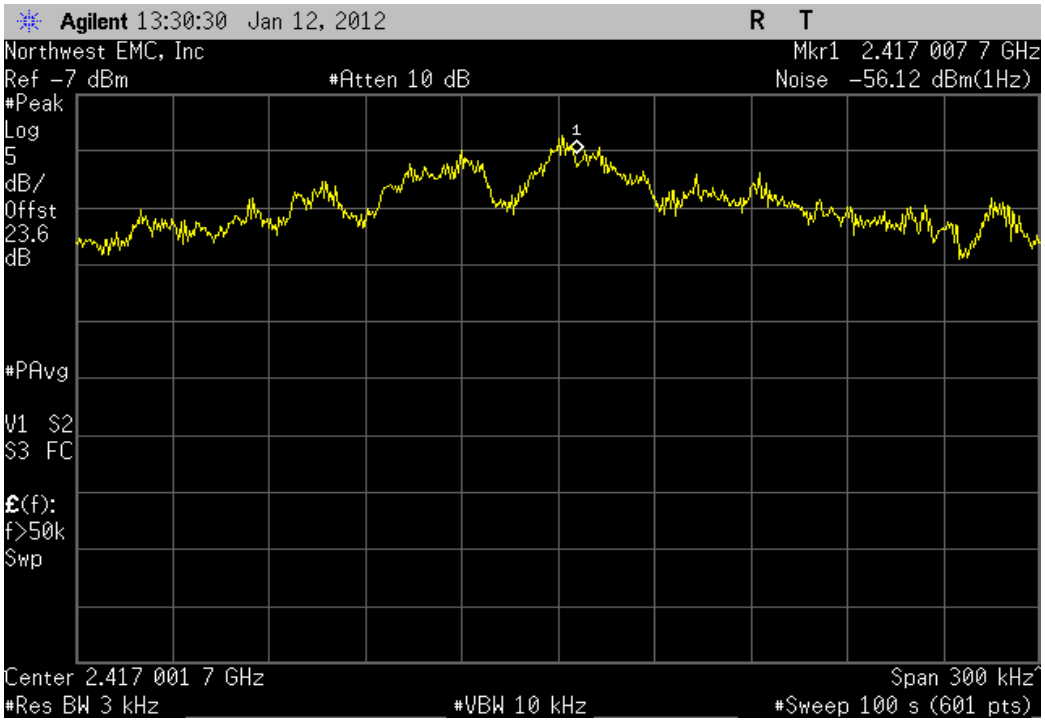


Power Spectral Density

2400 MHz - 2483.5 MHz Band, 802.11(g) 54 Mbps, High Channel 11, 2462 MHz						
		Value (dBm / Hz)	(dBm / Hz) To (dBm / 3 kHz)	Value (dBm / 3 kHz)	Limit (dBm / 3 kHz)	Result
		-56.924	34.8	-22.124	8	Pass

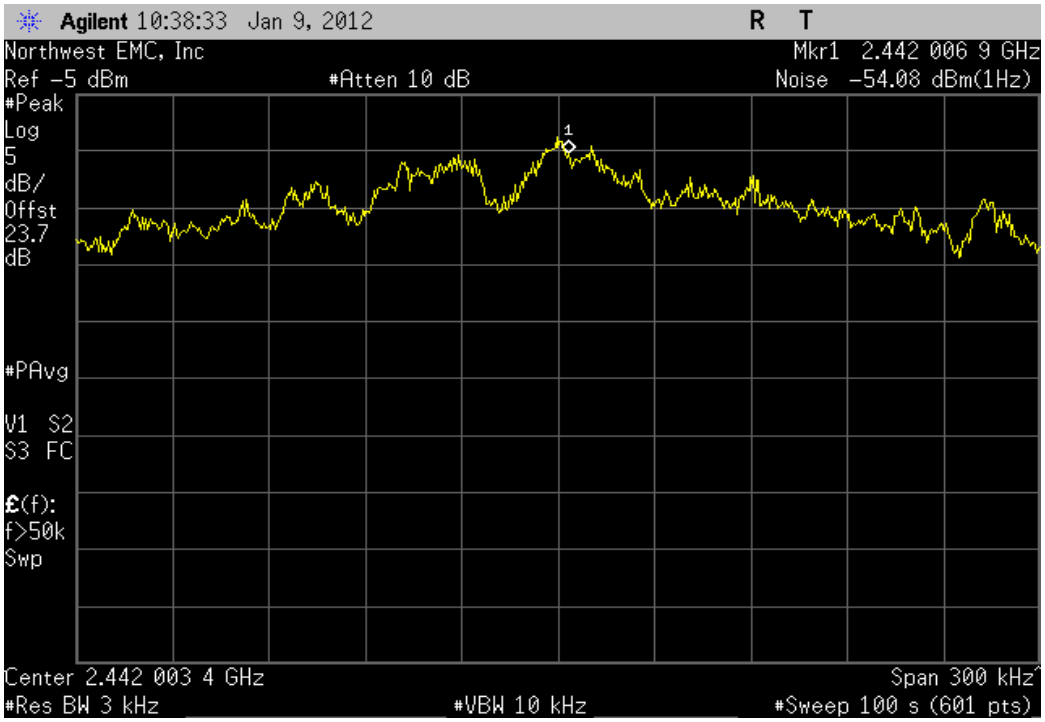


2400 MHz - 2483.5 MHz Band, 802.11(n) MCS0, Low Channel 1, 2412 MHz						
		Value (dBm / Hz)	(dBm / Hz) To (dBm / 3 kHz)	Value (dBm / 3 kHz)	Limit (dBm / 3 kHz)	Result
		-56.116	34.8	-21.316	8	Pass

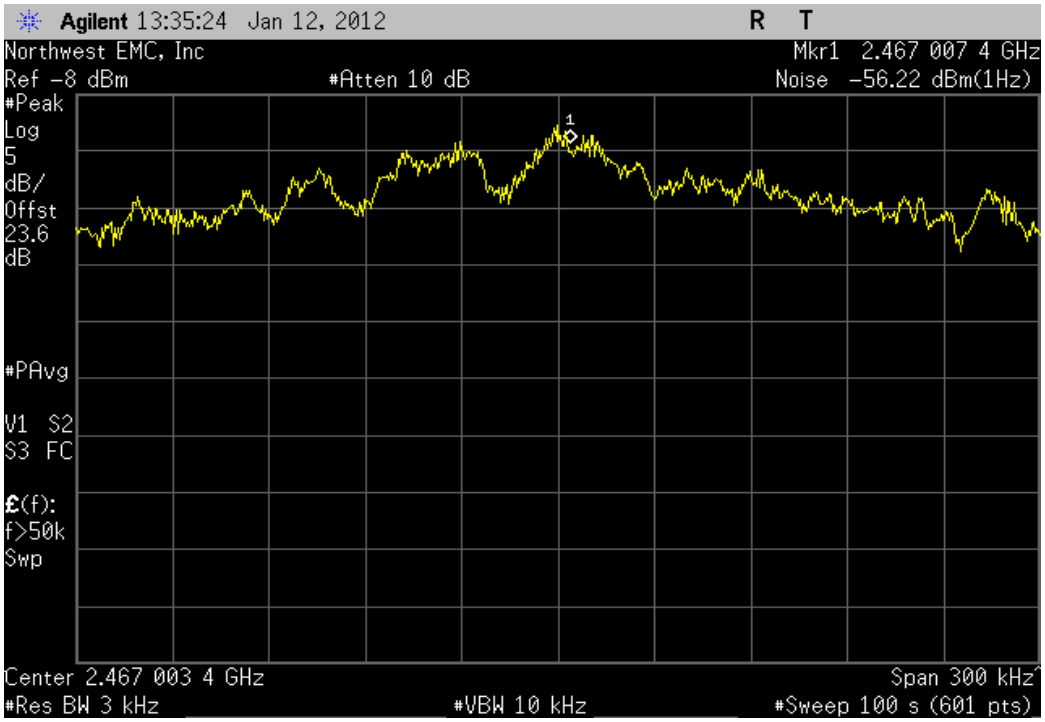


Power Spectral Density

2400 MHz - 2483.5 MHz Band, 802.11(n) MCS0, Mid Channel 6, 2437 MHz						
		Value (dBm / Hz)	(dBm / Hz) To (dBm / 3 kHz)	Value (dBm / 3 kHz)	Limit (dBm / 3 kHz)	Result
		-54.081	34.8	-19.281	8	Pass

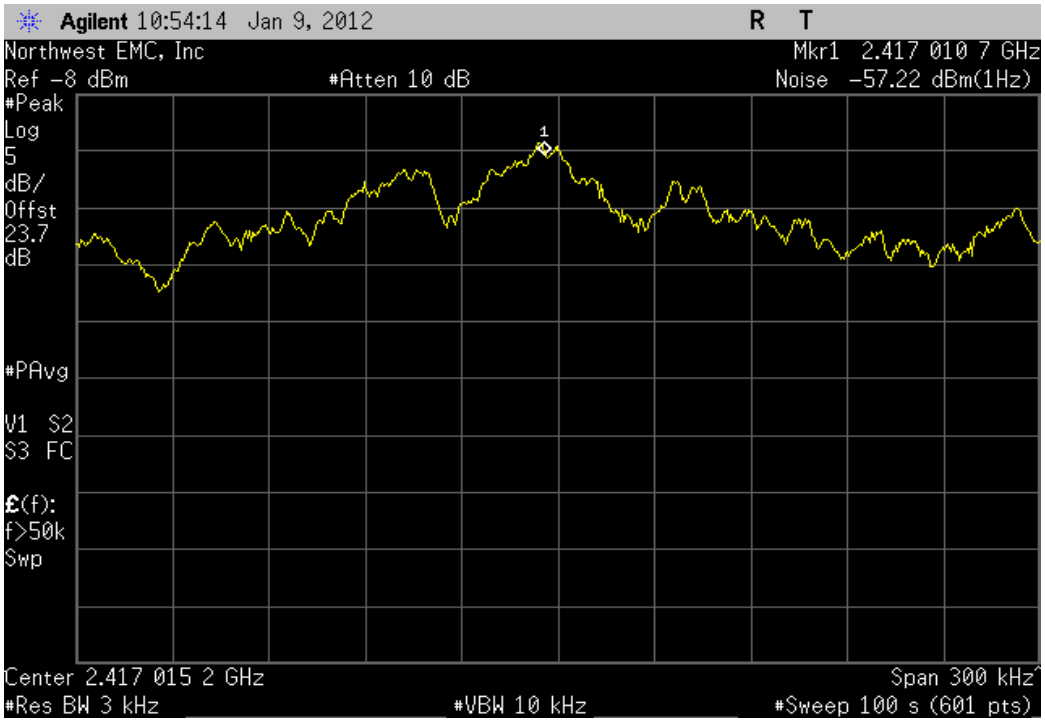


2400 MHz - 2483.5 MHz Band, 802.11(n) MCS0, High Channel 11, 2462 MHz						
		Value (dBm / Hz)	(dBm / Hz) To (dBm / 3 kHz)	Value (dBm / 3 kHz)	Limit (dBm / 3 kHz)	Result
		-56.217	34.8	-21.417	8	Pass

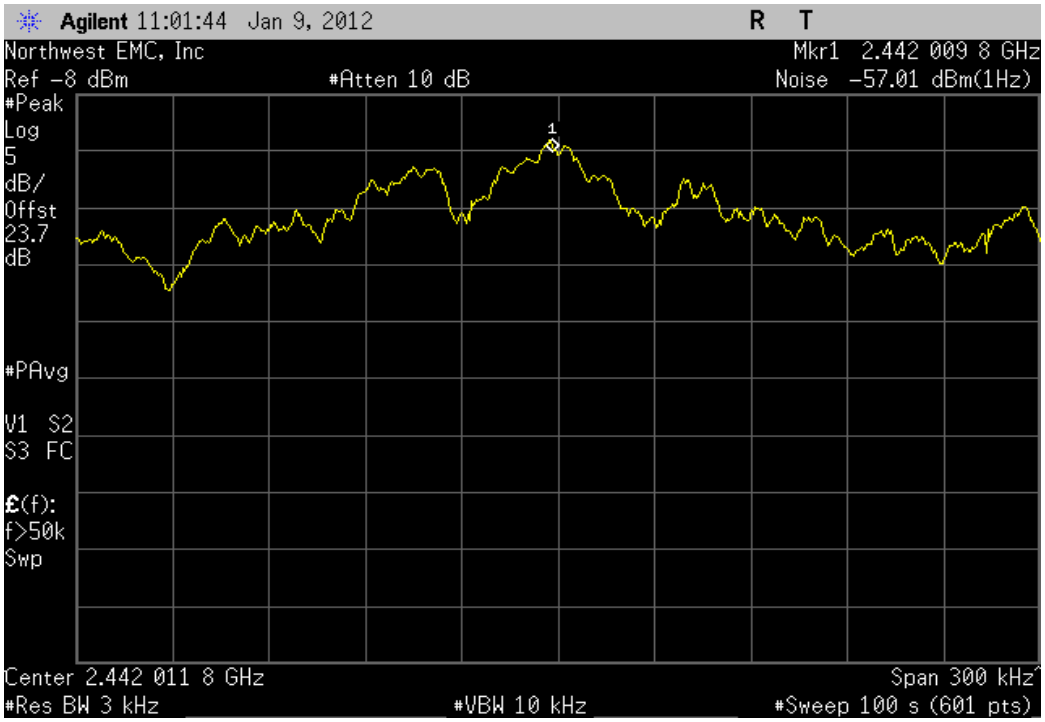


Power Spectral Density

2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, Low Channel 1, 2412 MHz						
		Value (dBm / Hz)	(dBm / Hz) To (dBm / 3 kHz)	Value (dBm / 3 kHz)	Limit (dBm / 3 kHz)	Result
		-57.221	34.8	-22.421	8	Pass

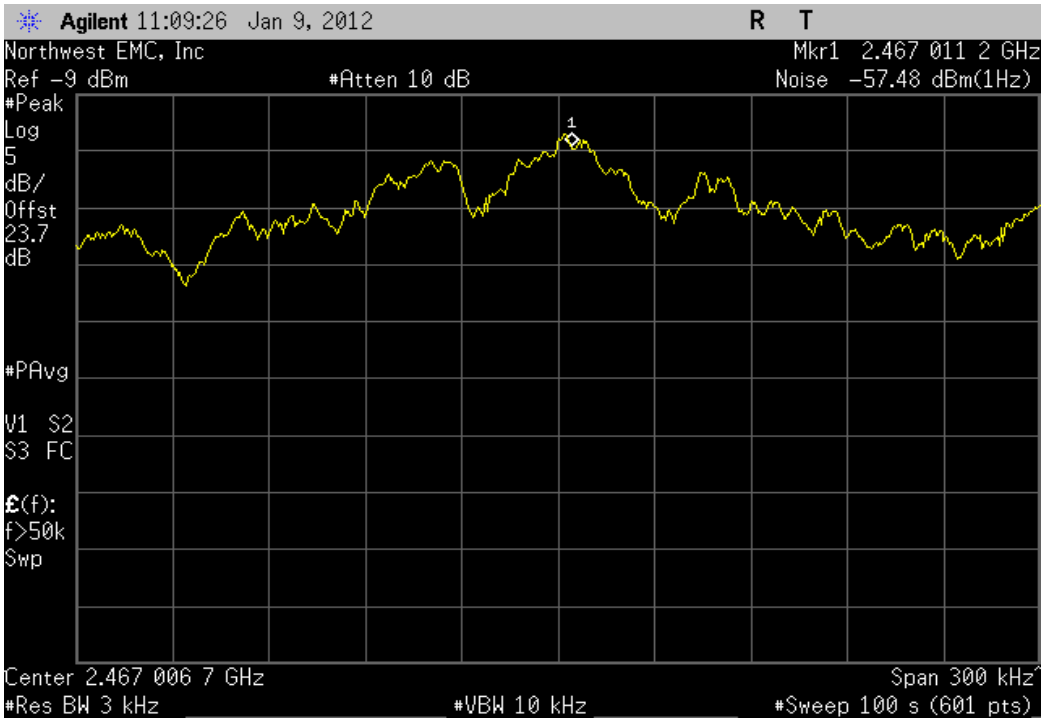


2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, Mid Channel 6, 2437 MHz						
		Value (dBm / Hz)	(dBm / Hz) To (dBm / 3 kHz)	Value (dBm / 3 kHz)	Limit (dBm / 3 kHz)	Result
		-57.005	34.8	-22.205	8	Pass



Power Spectral Density

2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, High Channel 11, 2462 MHz						
		Value (dBm / Hz)	(dBm / Hz) To (dBm / 3 kHz)	Value (dBm / 3 kHz)	Limit (dBm / 3 kHz)	Result
		-57.48	34.8	-22.68	8	Pass



Duty Cycle

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
Attenuator - 20db, 'SMA'	SM Electronics	SA26B-20	RFW	6/2/2011	12
40 GHz DC block	Fairview Microwave	SD3379	AMI	10/12/2011	12
Signal Generator	Agilent	N5183A	TIA	1/18/2011	12
Spectrum Analyzer	Agilent	E4440A	AAX	5/23/2011	12

MEASUREMENT UNCERTAINTY

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 for radiated emissions measurements is less than +/- 4 dB, and for conducted emissions measurements is less than +/- 2.7 dB. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for measurement uncertainty are available upon request.

TEST DESCRIPTION

For transmitters which are not operated at a continuous transmission of 100% duty cycle, a duty cycle correction must be measured and calculated to add to the data taken in other tests in this report.

The observed duty cycle is expressed in terms of a percentage and is calculated as:

Duty Cycle = (Tx on / (Tx on + Tx off))

For adding into the calculations required in the specific tests the observed duty cycle is converted to a value in dB as follows:

Duty Cycle Correction = 10 log (1 / x)

The observed duty cycle was measured for each available modulation and data rate

Duty Cycle

EUT:	ConnectPort X2e Wi-Fi			**Work Order:**	DGII0036
Serial Number:	1201-003			**Date:**	01/09/12
Customer:	Digi International			**Temperature:**	24.09°C
Attendees:	Bradley Ferguson			**Humidity:**	18%
Project:	None			**Barometric Pres.:**	1013.3
Tested by:	Trevor Buls	**Power:**	5VDC	**Job Site:**	MN08

TEST SPECIFICATIONS	TEST METHOD
FCC 15.247:2012	ANSI C63.10:2009

COMMENTS

1.5 dB was added to the Reference Level Offset to compensate for the customer's adapter cable.

DEVIATIONS FROM TEST STANDARD

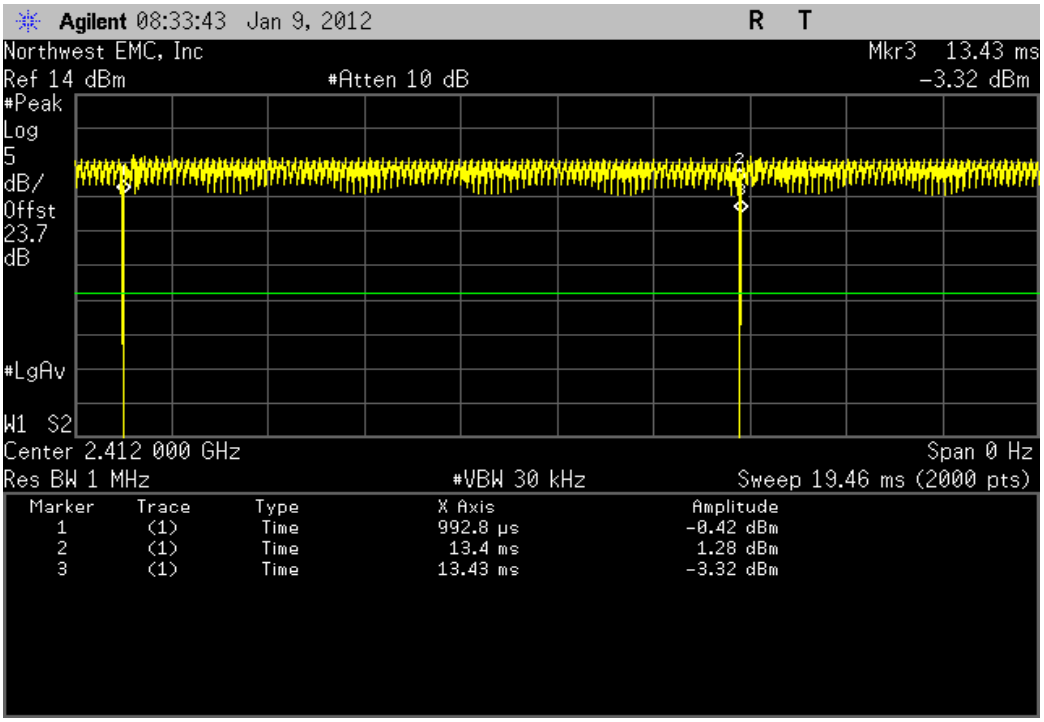
None

Configuration #	1	Signature	Trevor Buls

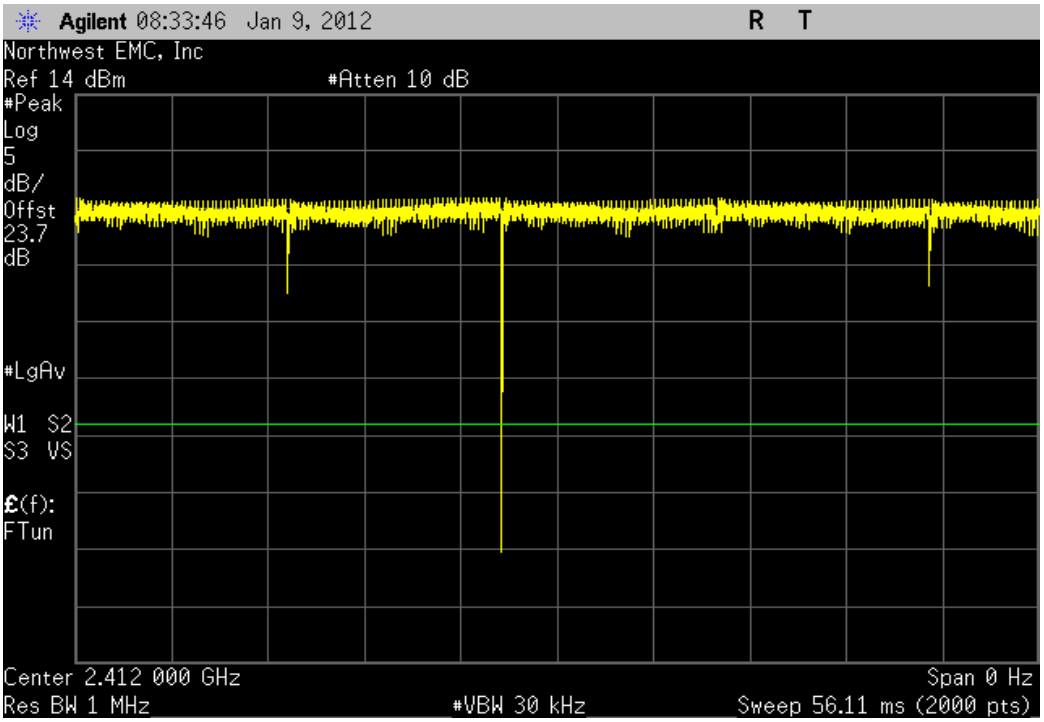
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
2400 MHz - 2483.5 MHz Band						
802.11(b) 1 Mbps						
Low Channel 1, 2412 MHz	12.41 mS	12.439 mS	1	0.998	N/A	N/A
Low Channel 1, 2412 MHz			2		N/A	N/A
Mid Channel 6, 2437 MHz	12.4 mS	12.439 mS	1	0.997	N/A	N/A
Mid Channel 6, 2437 MHz			2		N/A	N/A
High Channel 11, 2462 MHz	12.41 mS	12.449 mS	1	0.997	N/A	N/A
High Channel 11, 2462 MHz			1		N/A	N/A
802.11(b) 11 Mbps						
Low Channel 1, 2412 MHz	1.289 mS	1.326 mS	1	0.972	N/A	N/A
Low Channel 1, 2412 MHz			5		N/A	N/A
Mid Channel 6, 2437 MHz	1.293 mS	1.598 mS	1	0.809	N/A	N/A
Mid Channel 6, 2437 MHz			6		N/A	N/A
High Channel 11, 2462 MHz	1.293 mS	1.33 mS	1	0.972	N/A	N/A
High Channel 11, 2462 MHz			5		N/A	N/A
802.11(g) 6 Mbps						
Low Channel 1, 2412 MHz	2.054 mS	2.098 mS	1	0.979	N/A	N/A
Low Channel 1, 2412 MHz			5		N/A	N/A
Mid Channel 6, 2437 MHz	2.052 mS	2.093 mS	1	0.981	N/A	N/A
Mid Channel 6, 2437 MHz			5		N/A	N/A
High Channel 11, 2462 MHz	2.054 mS	2.094 mS	1	0.981	N/A	N/A
High Channel 11, 2462 MHz			5		N/A	N/A
802.11(g) 36 Mbps						
Low Channel 1, 2412 MHz	351.3 uS	394.7 uS	1	0.89	N/A	N/A
Low Channel 1, 2412 MHz			4		N/A	N/A
Mid Channel 6, 2437 MHz	351.3 uS	394.7 uS	1	0.89	N/A	N/A
Mid Channel 6, 2437 MHz			5		N/A	N/A
High Channel 11, 2462 MHz	353.4 uS	396.8 uS	1	0.891	N/A	N/A
High Channel 11, 2462 MHz			5		N/A	N/A
802.11(g) 54 Mbps						
Low Channel 1, 2412 MHz	235.6 uS	279 uS	1	0.844	N/A	N/A
Low Channel 1, 2412 MHz			5		N/A	N/A
Mid Channel 6, 2437 MHz	235.6 uS	281.1 uS	1	0.838	N/A	N/A
Mid Channel 6, 2437 MHz			5		N/A	N/A
High Channel 11, 2462 MHz	237.7 uS	281.1 uS	1	0.846	N/A	N/A
High Channel 11, 2462 MHz			5		N/A	N/A
802.11(n) MCS0						
Low Channel 1, 2412 MHz	1.907 mS	1.952 mS	1	0.977	N/A	N/A
Low Channel 1, 2412 MHz			5		N/A	N/A
Mid Channel 6, 2437 MHz	1.907 mS	1.952 mS	1	0.977	N/A	N/A
Mid Channel 6, 2437 MHz			5		N/A	N/A
High Channel 11, 2462 MHz	1.907 mS	1.952 mS	1	0.977	N/A	N/A
High Channel 11, 2462 MHz			5		N/A	N/A
802.11(n) MCS7						
Low Channel 1, 2412 MHz	217 uS	260.4 uS	1	0.833	N/A	N/A
Low Channel 1, 2412 MHz			5		N/A	N/A
Mid Channel 6, 2437 MHz	217 uS	260.4 uS	1	0.833	N/A	N/A
Mid Channel 6, 2437 MHz			5		N/A	N/A
High Channel 11, 2462 MHz	214.9 uS	258.3 uS	1	0.832	N/A	N/A
High Channel 11, 2462 MHz			5		N/A	N/A

Duty Cycle

2400 MHz - 2483.5 MHz Band, 802.11(b) 1 Mbps, Low Channel 1, 2412 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	12.41 mS	12.439 mS	1	0.998	N/A	N/A

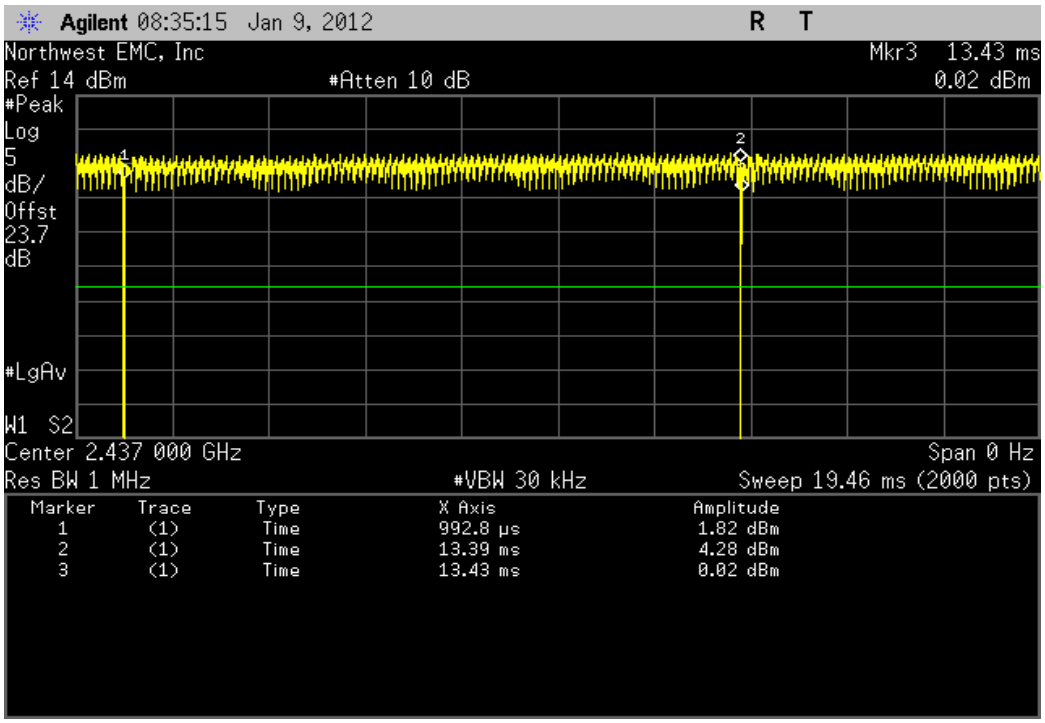


2400 MHz - 2483.5 MHz Band, 802.11(b) 1 Mbps, Low Channel 1, 2412 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
			2		N/A	N/A

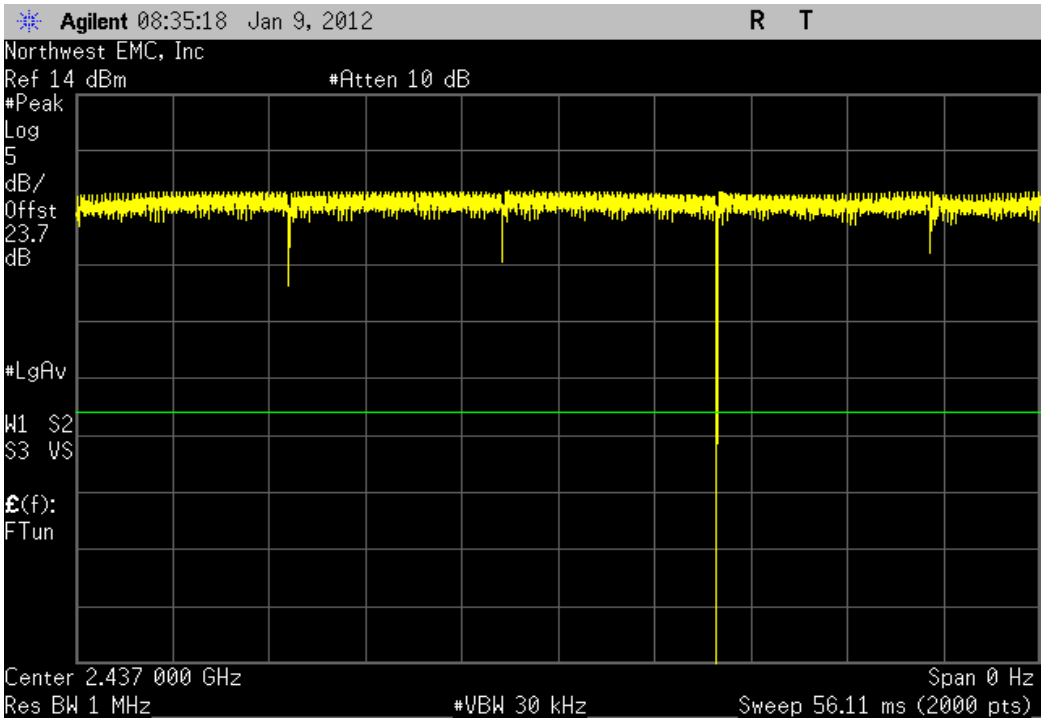


Duty Cycle

2400 MHz - 2483.5 MHz Band, 802.11(b) 1 Mbps, Mid Channel 6, 2437 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	12.4 mS	12.439 mS	1	0.997	N/A	N/A

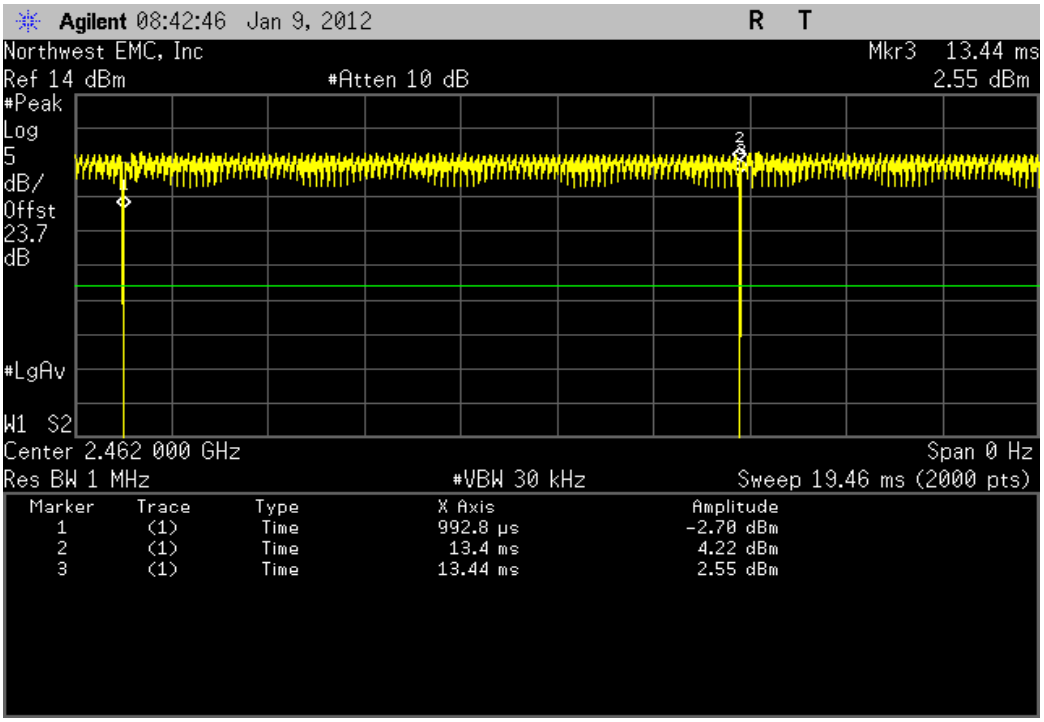


2400 MHz - 2483.5 MHz Band, 802.11(b) 1 Mbps, Mid Channel 6, 2437 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
			2		N/A	N/A

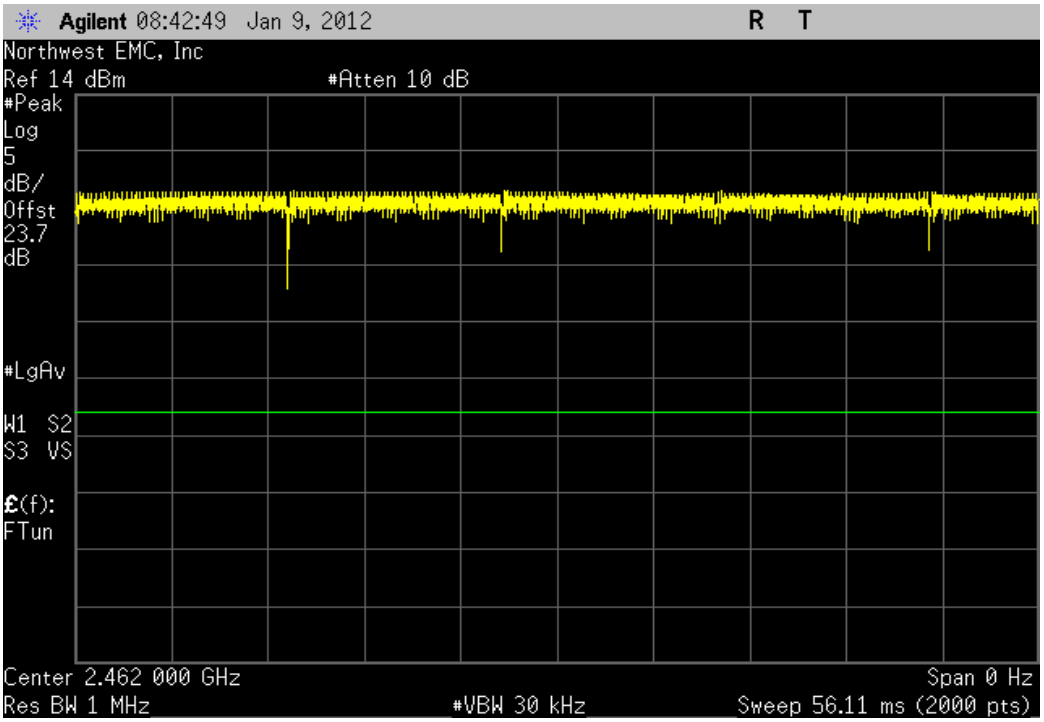


Duty Cycle

2400 MHz - 2483.5 MHz Band, 802.11(b) 1 Mbps, High Channel 11, 2462 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	12.41 mS	12.449 mS	1	0.997	N/A	N/A

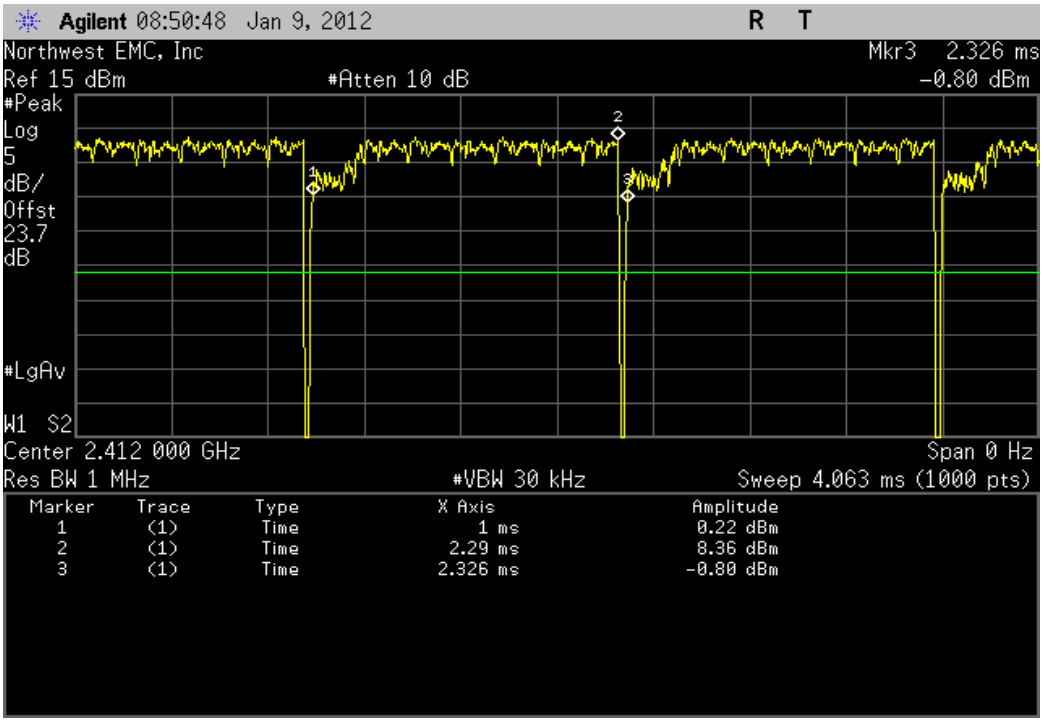


2400 MHz - 2483.5 MHz Band, 802.11(b) 1 Mbps, High Channel 11, 2462 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
			1		N/A	N/A

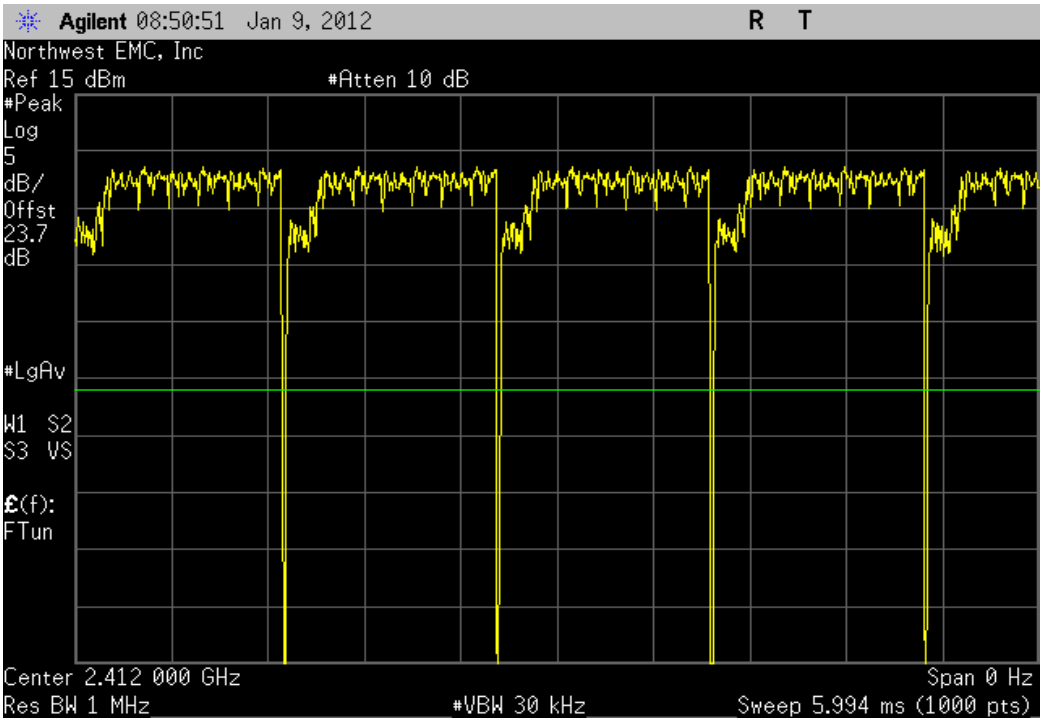


Duty Cycle

2400 MHz - 2483.5 MHz Band, 802.11(b) 11 Mbps, Low Channel 1, 2412 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	1.289 mS	1.326 mS	1	0.972	N/A	N/A

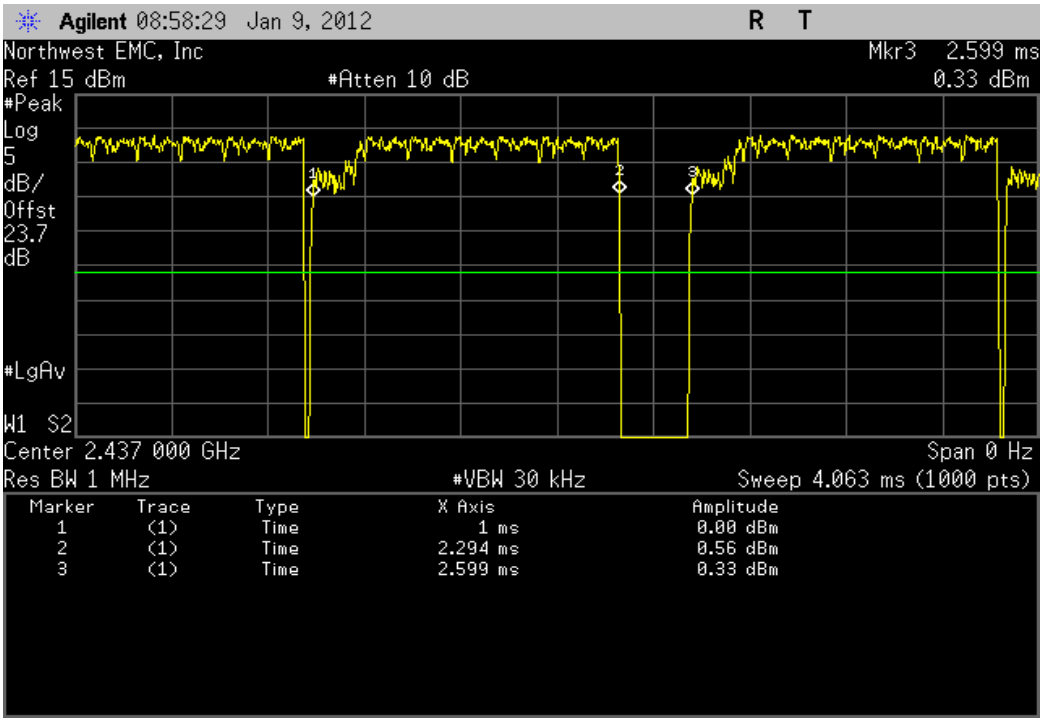


2400 MHz - 2483.5 MHz Band, 802.11(b) 11 Mbps, Low Channel 1, 2412 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
			5		N/A	N/A

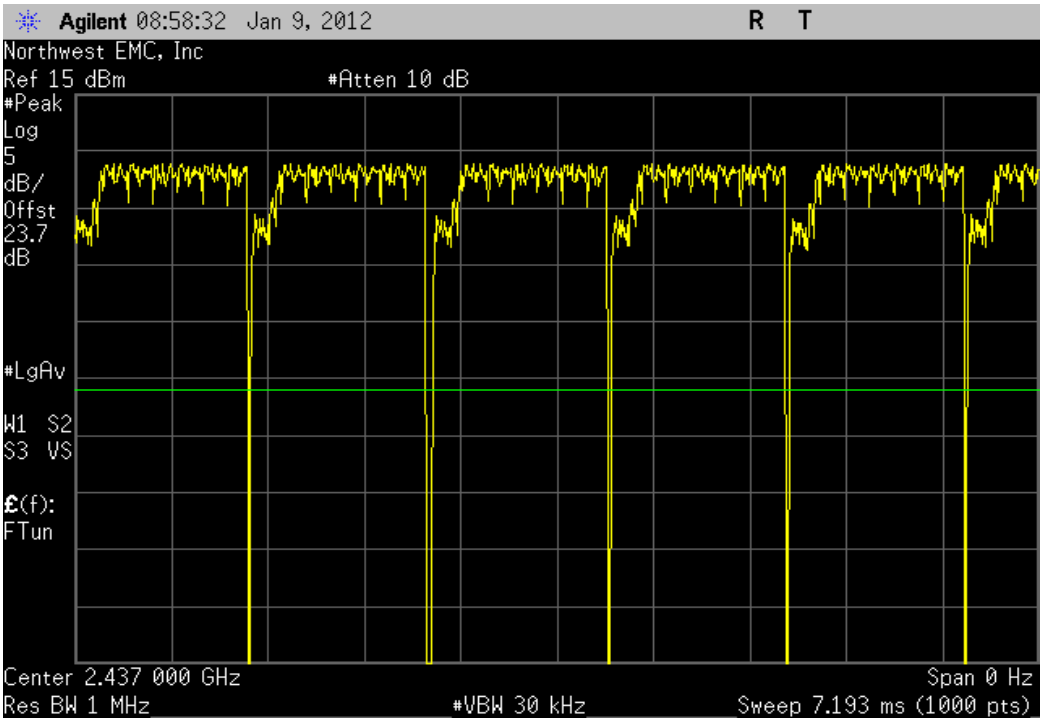


Duty Cycle

2400 MHz - 2483.5 MHz Band, 802.11(b) 11 Mbps, Mid Channel 6, 2437 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	1.293 mS	1.598 mS	1	0.809	N/A	N/A

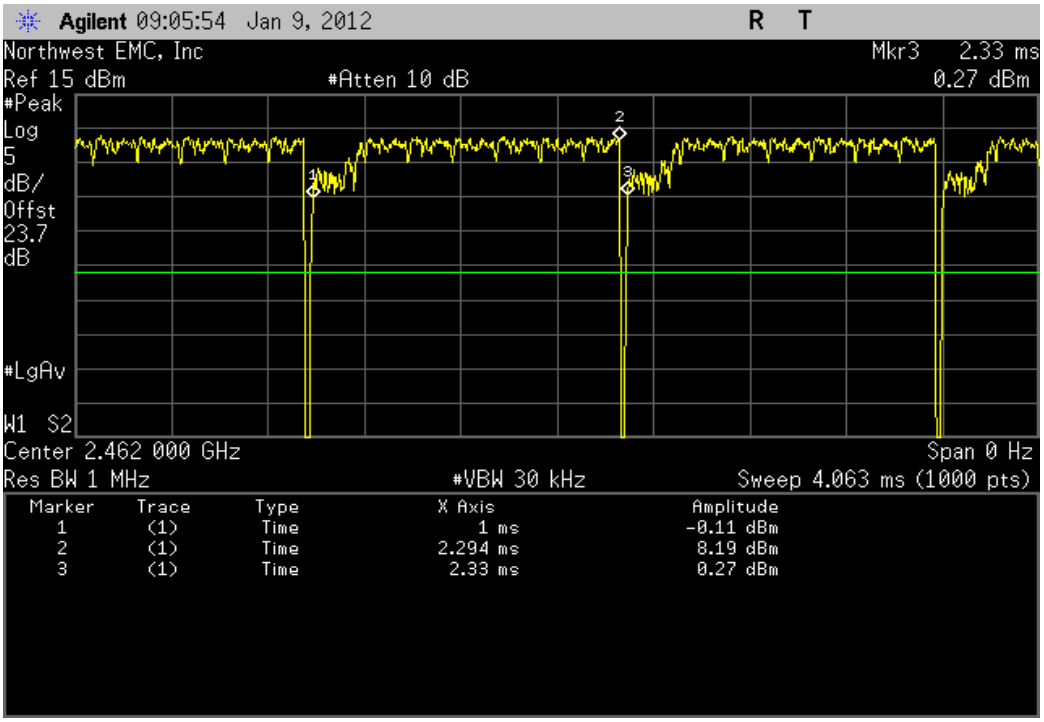


2400 MHz - 2483.5 MHz Band, 802.11(b) 11 Mbps, Mid Channel 6, 2437 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
			6		N/A	N/A

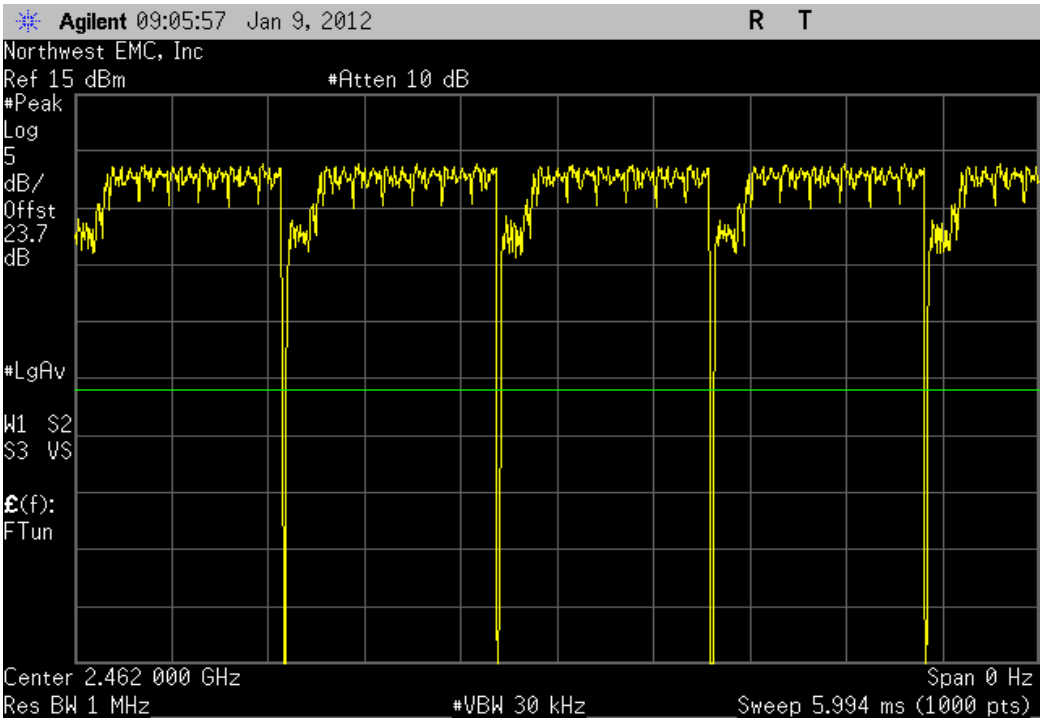


Duty Cycle

2400 MHz - 2483.5 MHz Band, 802.11(b) 11 Mbps, High Channel 11, 2462 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	1.293 mS	1.33 mS	1	0.972	N/A	N/A

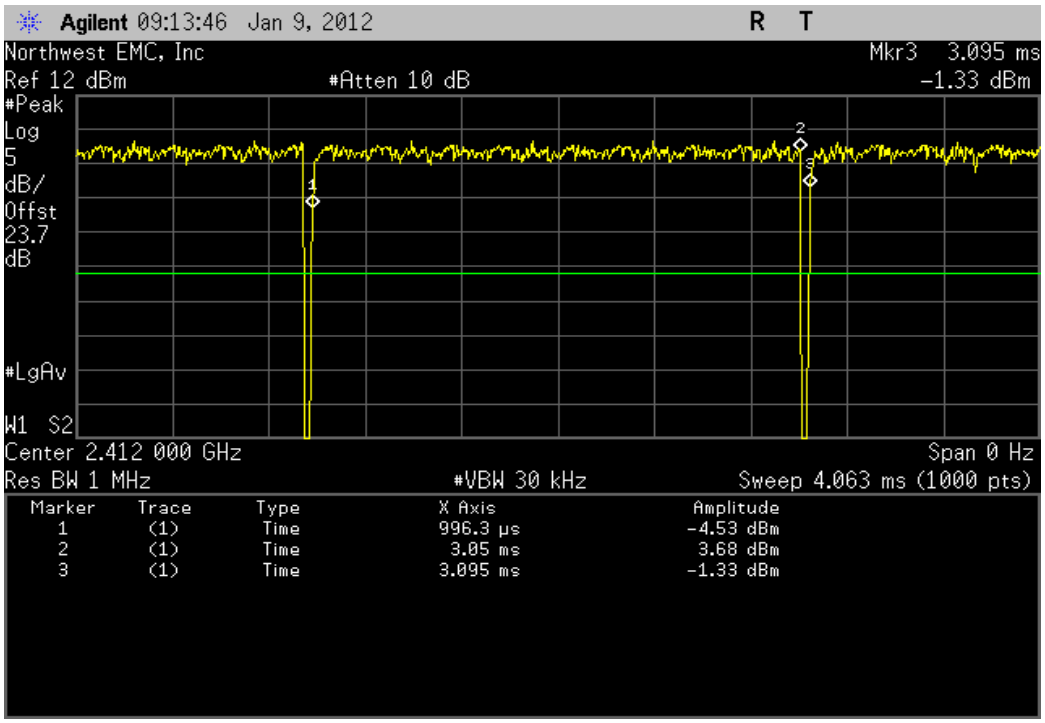


2400 MHz - 2483.5 MHz Band, 802.11(b) 11 Mbps, High Channel 11, 2462 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
			5		N/A	N/A

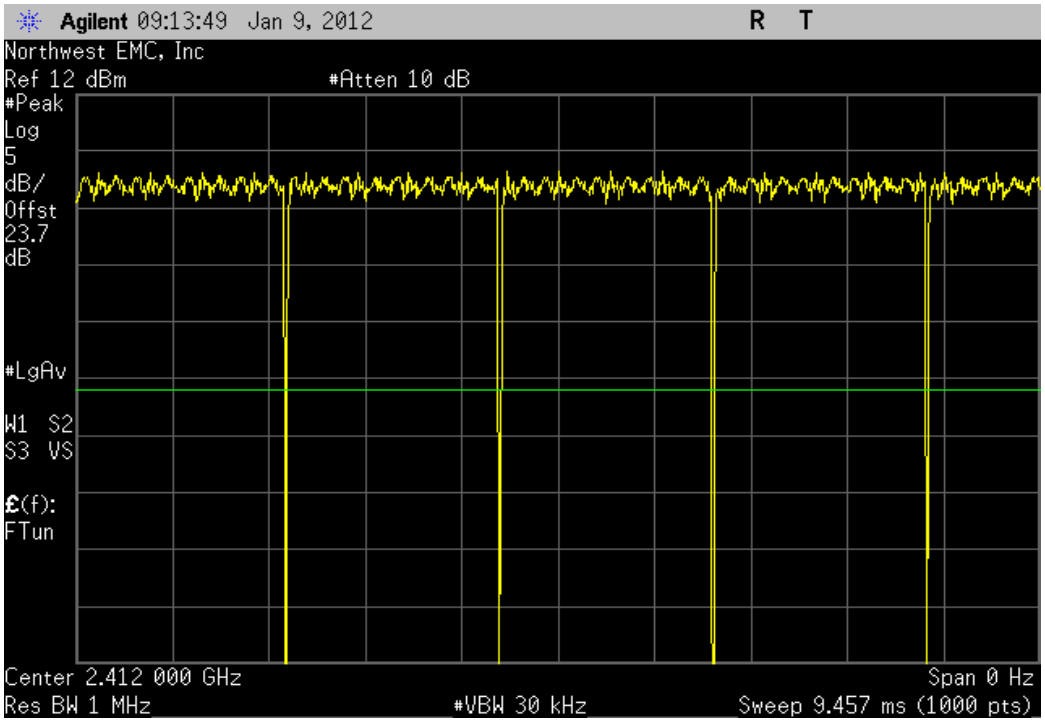


Duty Cycle

2400 MHz - 2483.5 MHz Band, 802.11(g) 6 Mbps, Low Channel 1, 2412 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	2.054 mS	2.098 mS	1	0.979	N/A	N/A

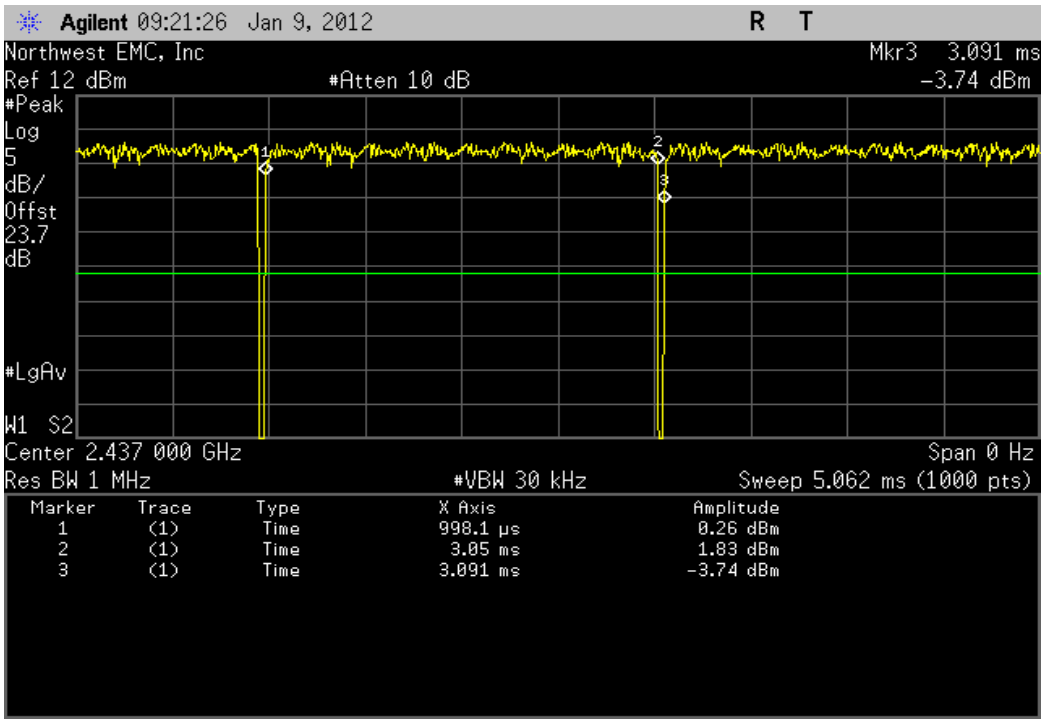


2400 MHz - 2483.5 MHz Band, 802.11(g) 6 Mbps, Low Channel 1, 2412 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
			5		N/A	N/A

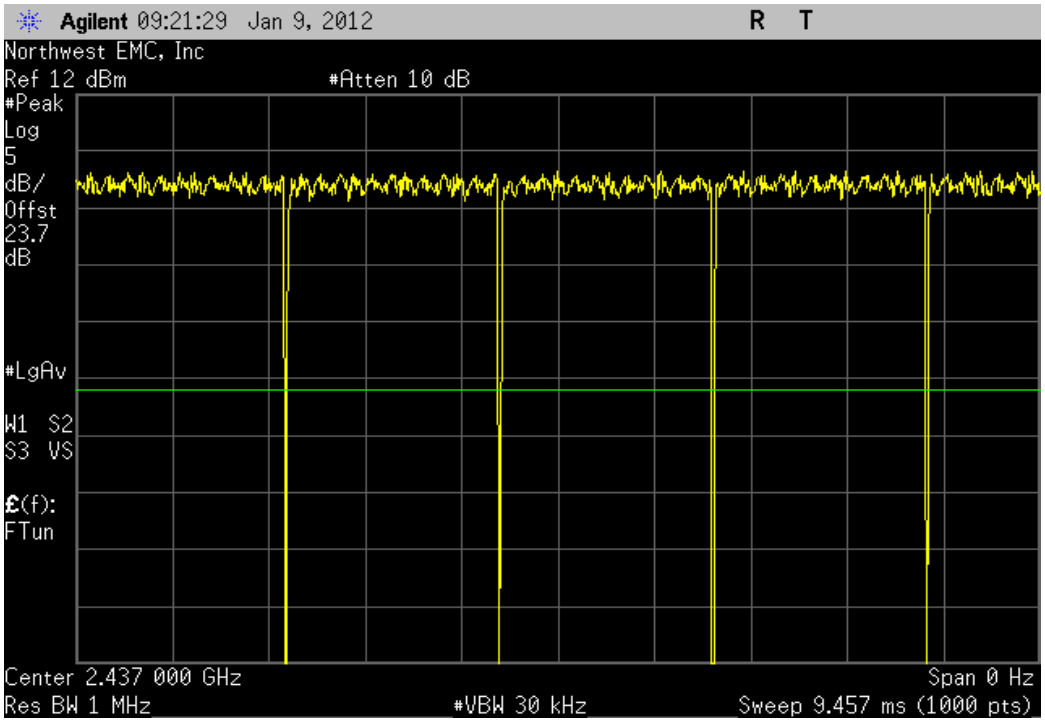


Duty Cycle

2400 MHz - 2483.5 MHz Band, 802.11(g) 6 Mbps, Mid Channel 6, 2437 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	2.052 mS	2.093 mS	1	0.981	N/A	N/A

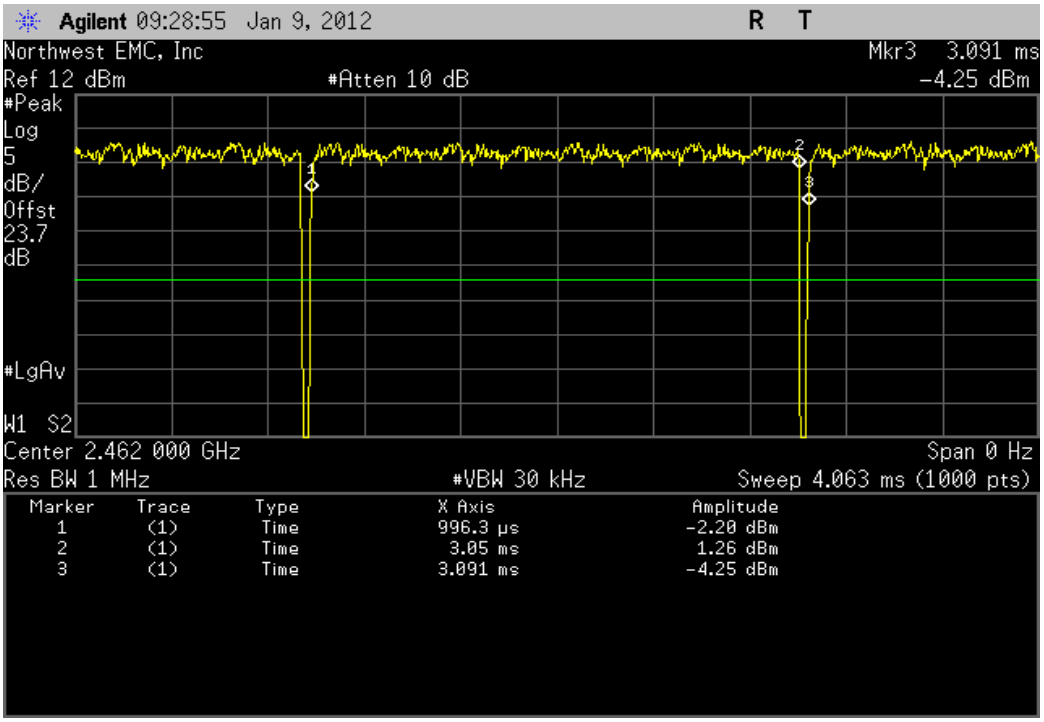


2400 MHz - 2483.5 MHz Band, 802.11(g) 6 Mbps, Mid Channel 6, 2437 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
			5		N/A	N/A

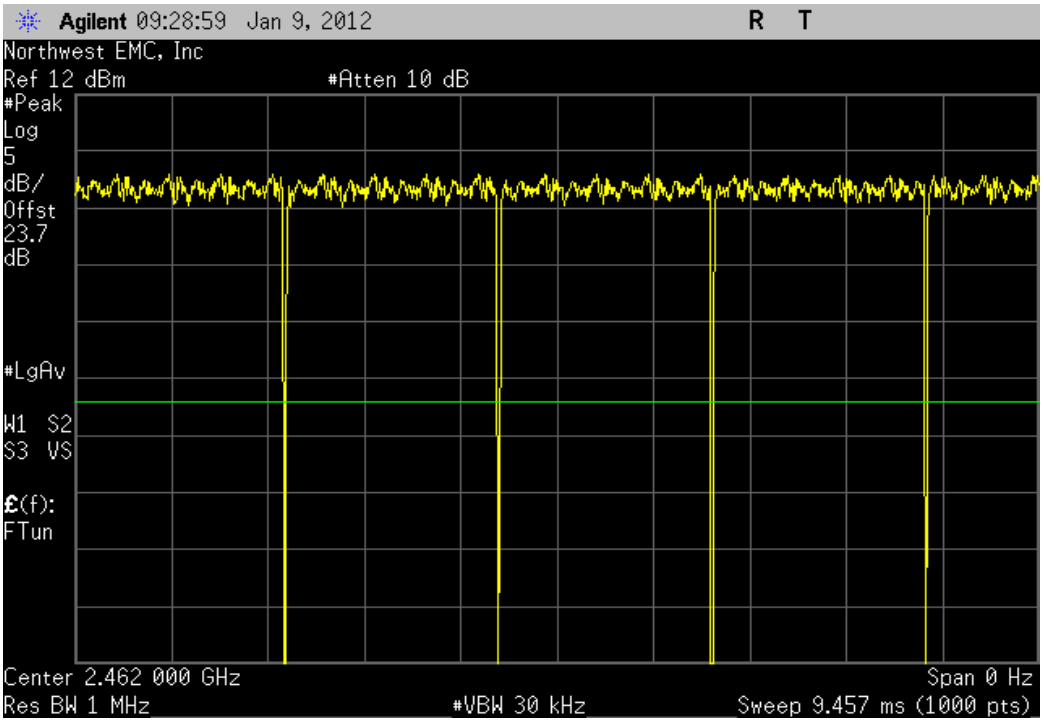


Duty Cycle

2400 MHz - 2483.5 MHz Band, 802.11(g) 6 Mbps, High Channel 11, 2462 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	2.054 mS	2.094 mS	1	0.981	N/A	N/A

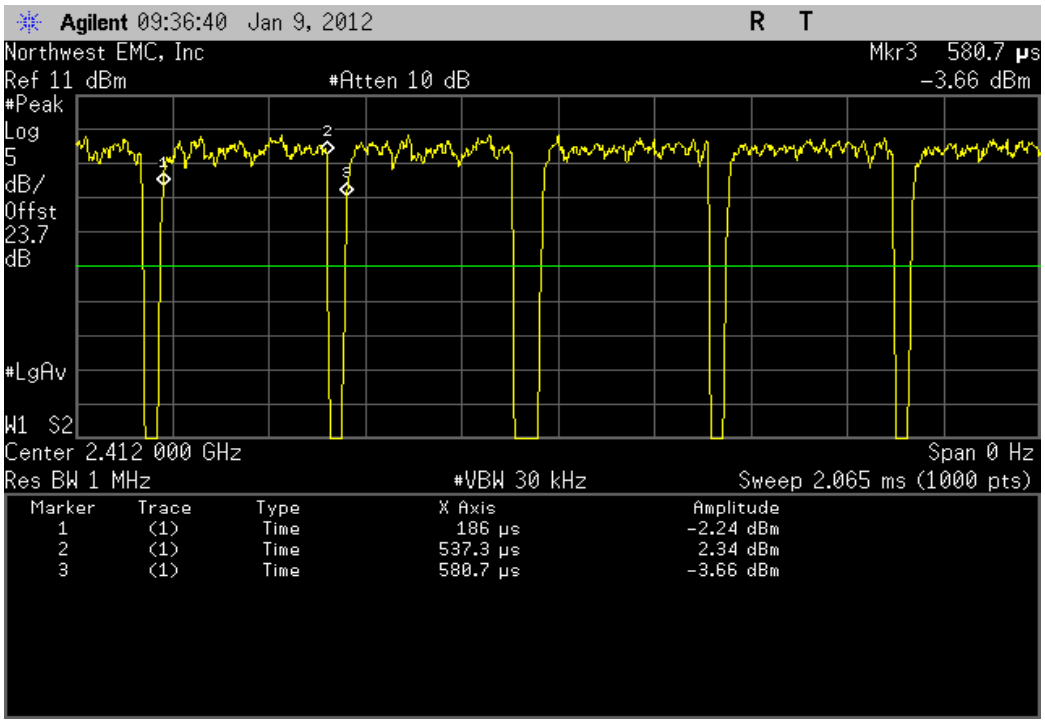


2400 MHz - 2483.5 MHz Band, 802.11(g) 6 Mbps, High Channel 11, 2462 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
			5		N/A	N/A

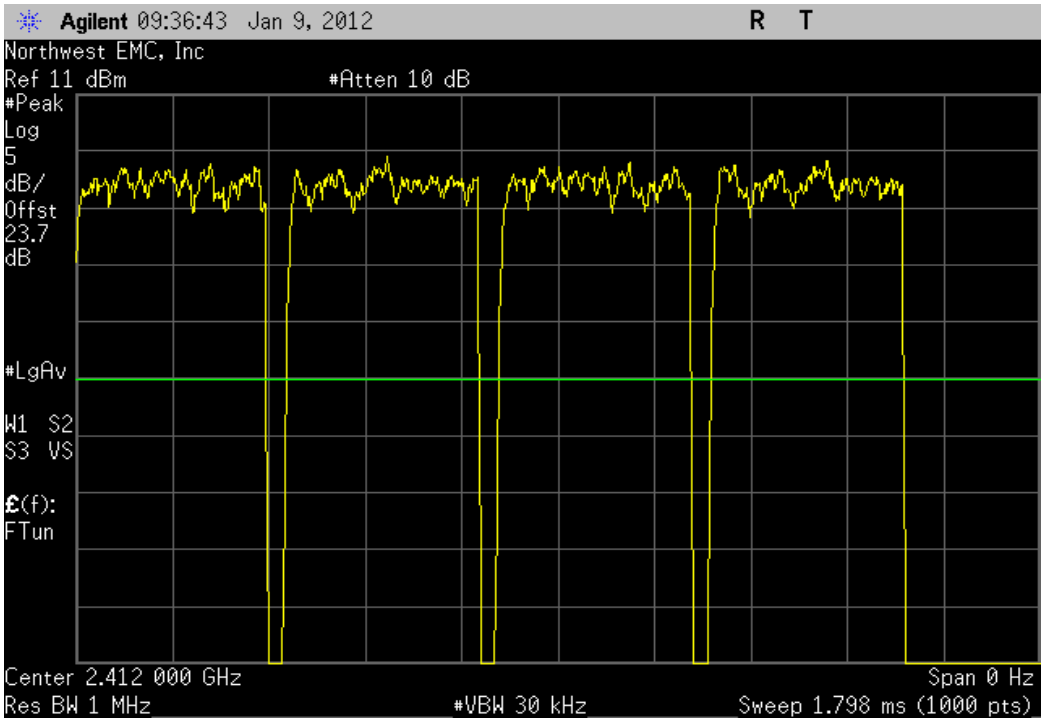


Duty Cycle

2400 MHz - 2483.5 MHz Band, 802.11(g) 36 Mbps, Low Channel 1, 2412 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	351.3 uS	394.7 uS	1	0.89	N/A	N/A

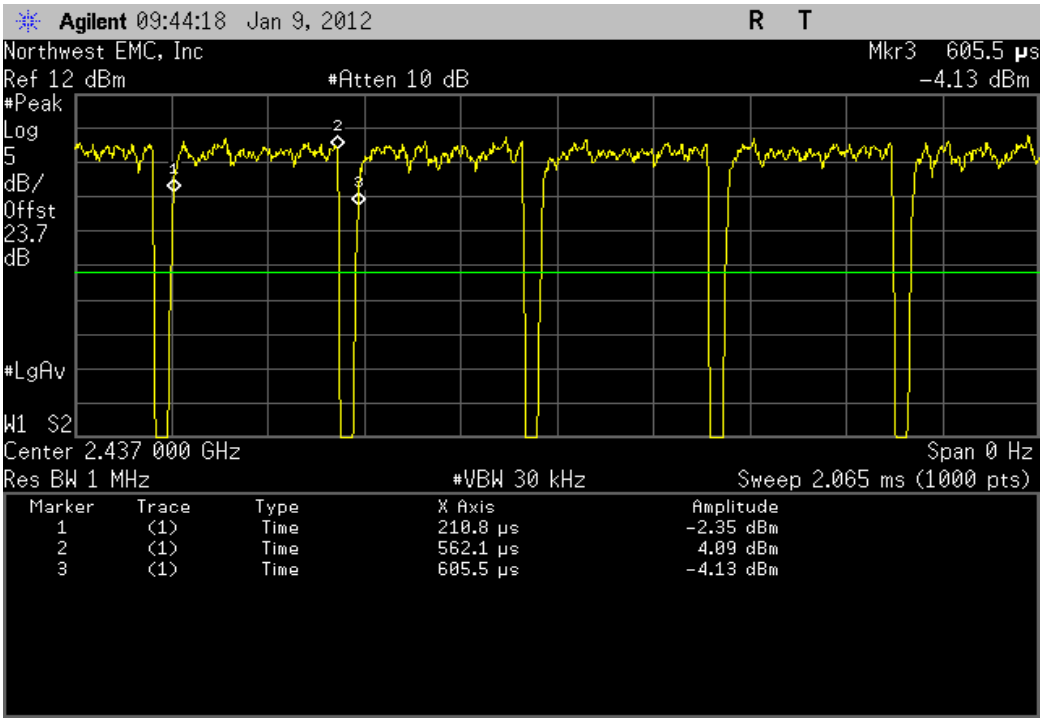


2400 MHz - 2483.5 MHz Band, 802.11(g) 36 Mbps, Low Channel 1, 2412 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
			4		N/A	N/A

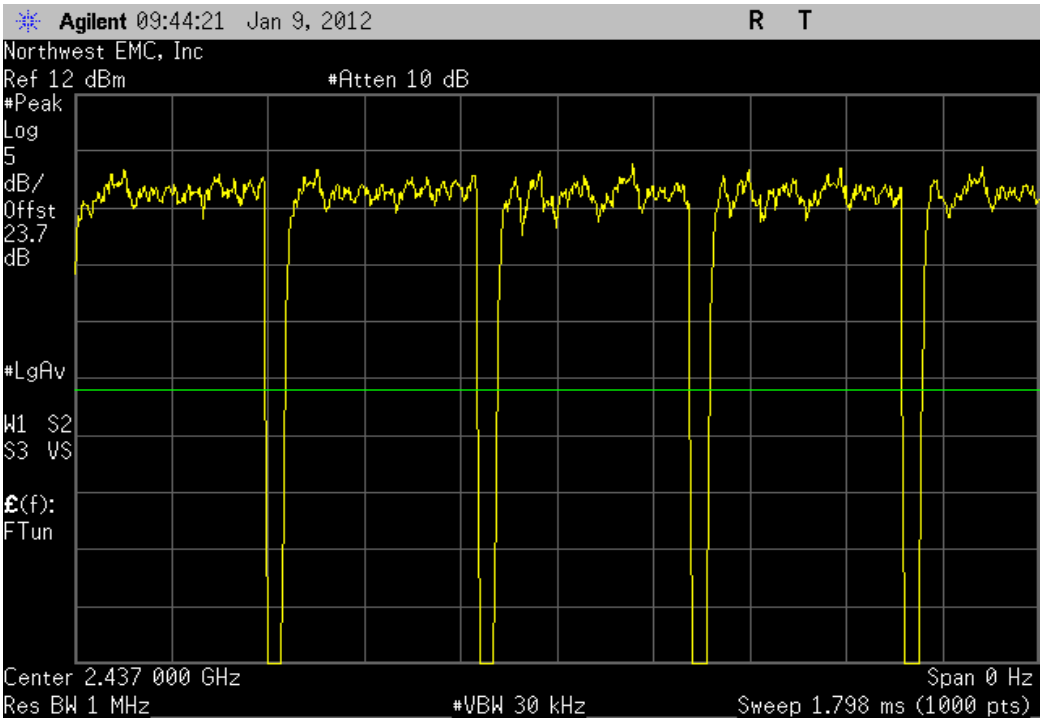


Duty Cycle

2400 MHz - 2483.5 MHz Band, 802.11(g) 36 Mbps, Mid Channel 6, 2437 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	351.3 uS	394.7 uS	1	0.89	N/A	N/A

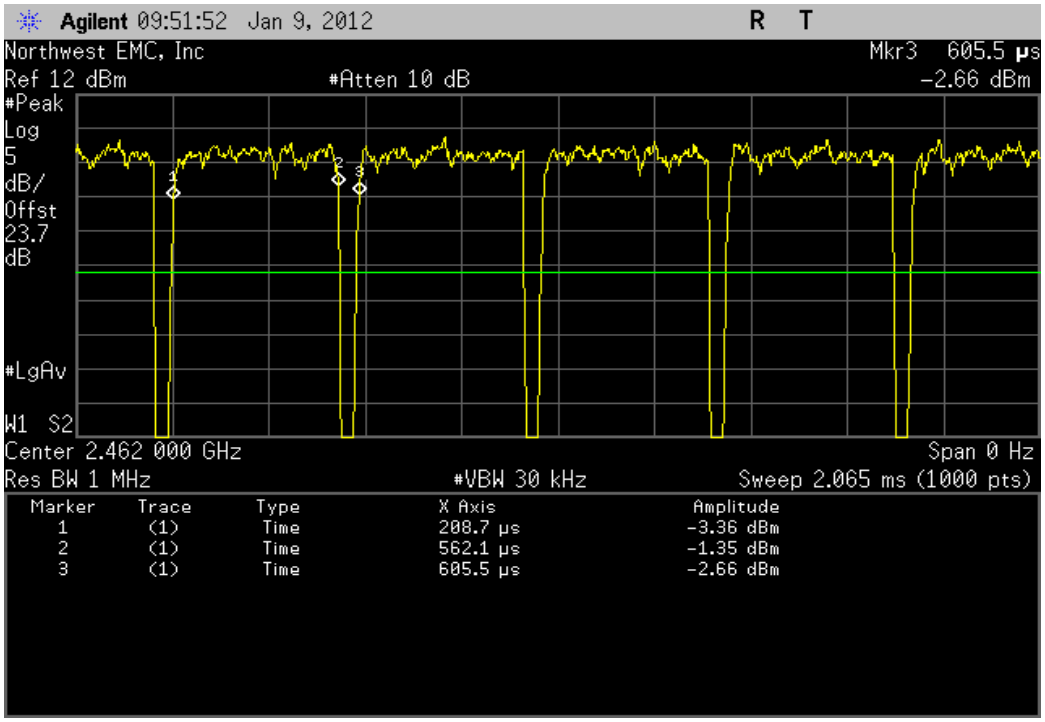


2400 MHz - 2483.5 MHz Band, 802.11(g) 36 Mbps, Mid Channel 6, 2437 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
			5		N/A	N/A

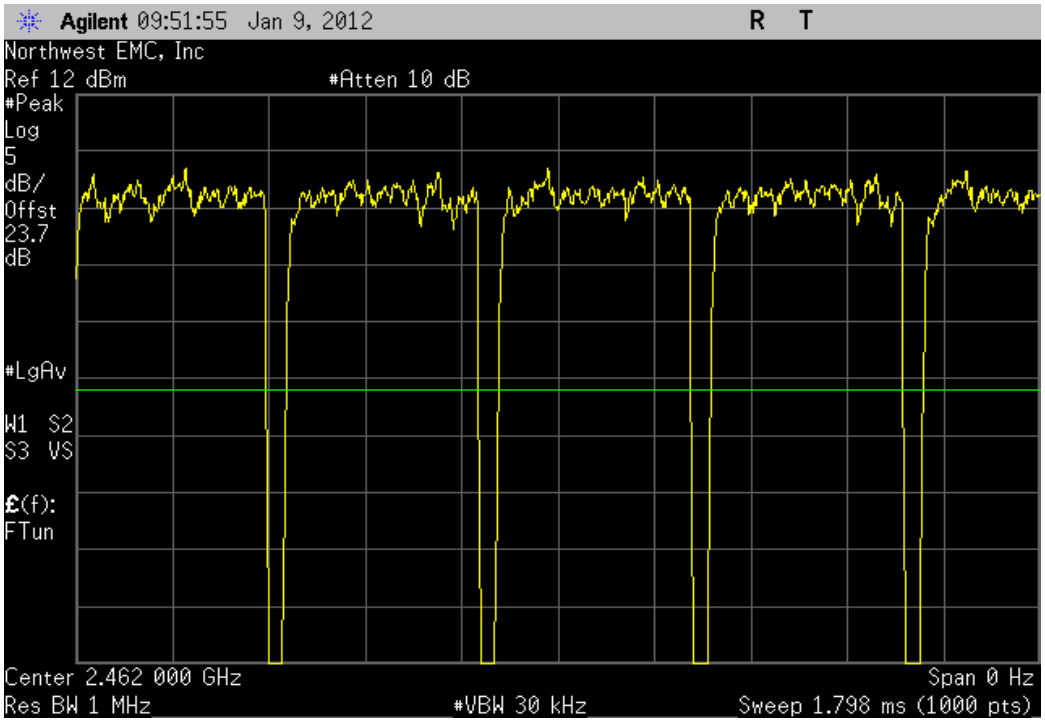


Duty Cycle

2400 MHz - 2483.5 MHz Band, 802.11(g) 36 Mbps, High Channel 11, 2462 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	353.4 uS	396.8 uS	1	0.891	N/A	N/A

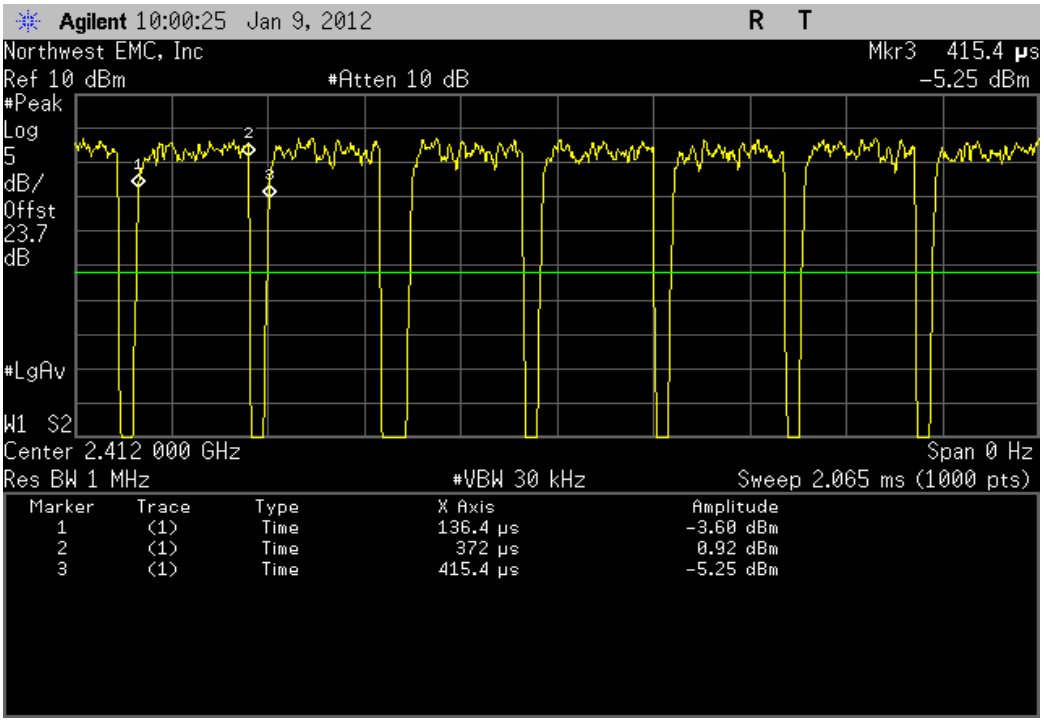


2400 MHz - 2483.5 MHz Band, 802.11(g) 36 Mbps, High Channel 11, 2462 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
			5		N/A	N/A

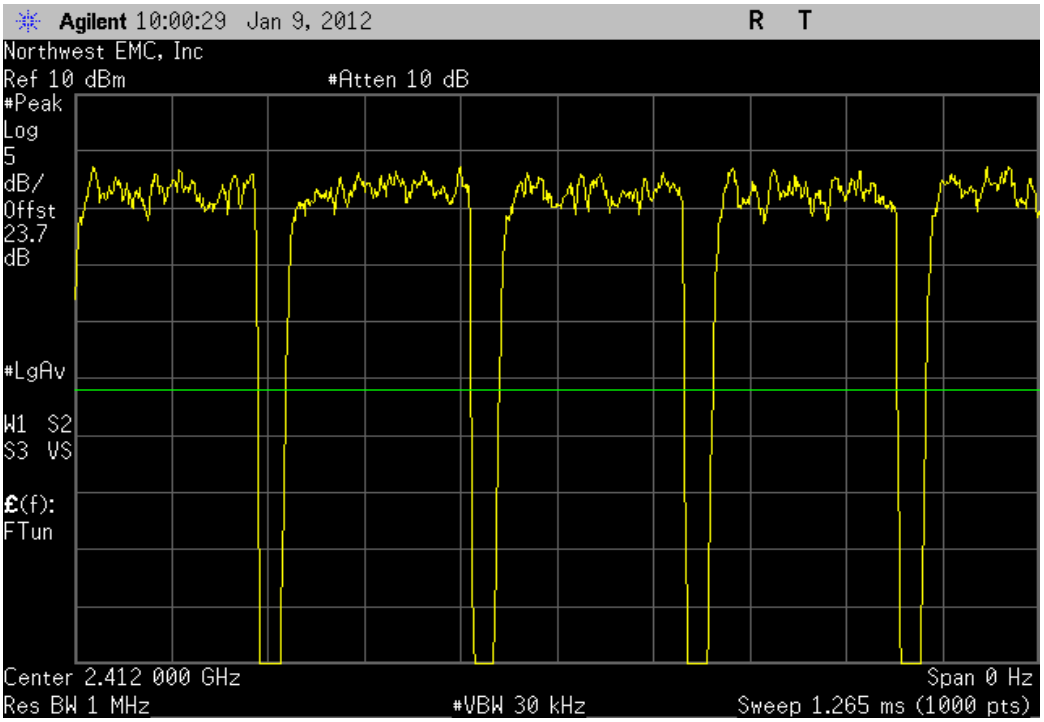


Duty Cycle

2400 MHz - 2483.5 MHz Band, 802.11(g) 54 Mbps, Low Channel 1, 2412 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	235.6 uS	279 uS	1	0.844	N/A	N/A

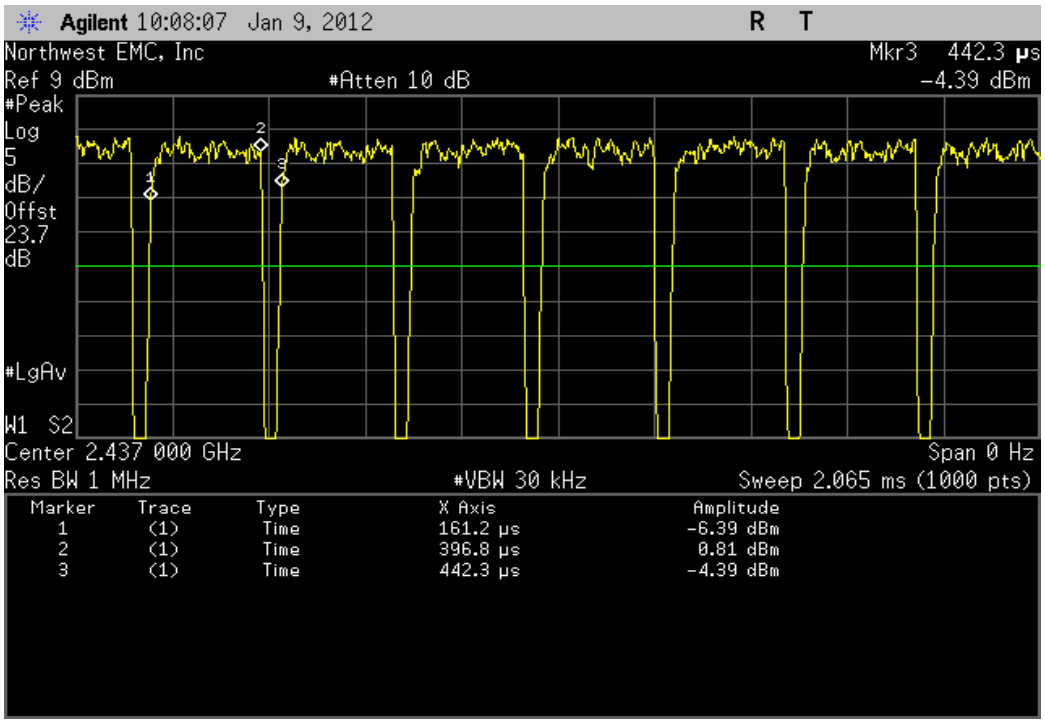


2400 MHz - 2483.5 MHz Band, 802.11(g) 54 Mbps, Low Channel 1, 2412 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
			5		N/A	N/A

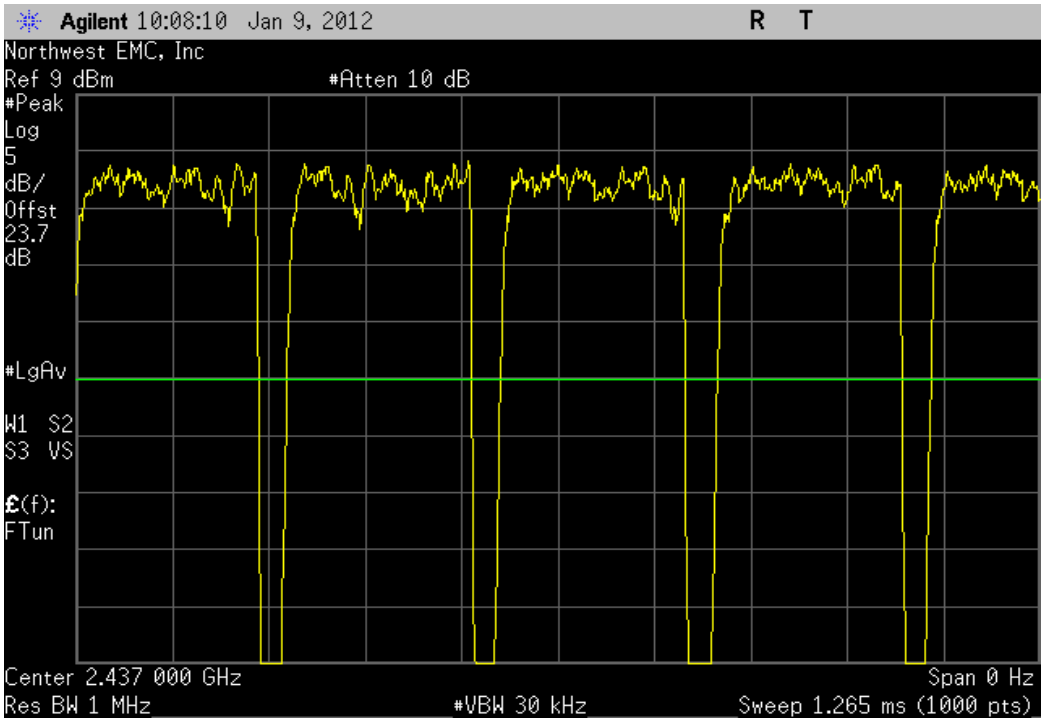


Duty Cycle

2400 MHz - 2483.5 MHz Band, 802.11(g) 54 Mbps, Mid Channel 6, 2437 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	235.6 uS	281.1 uS	1	0.838	N/A	N/A

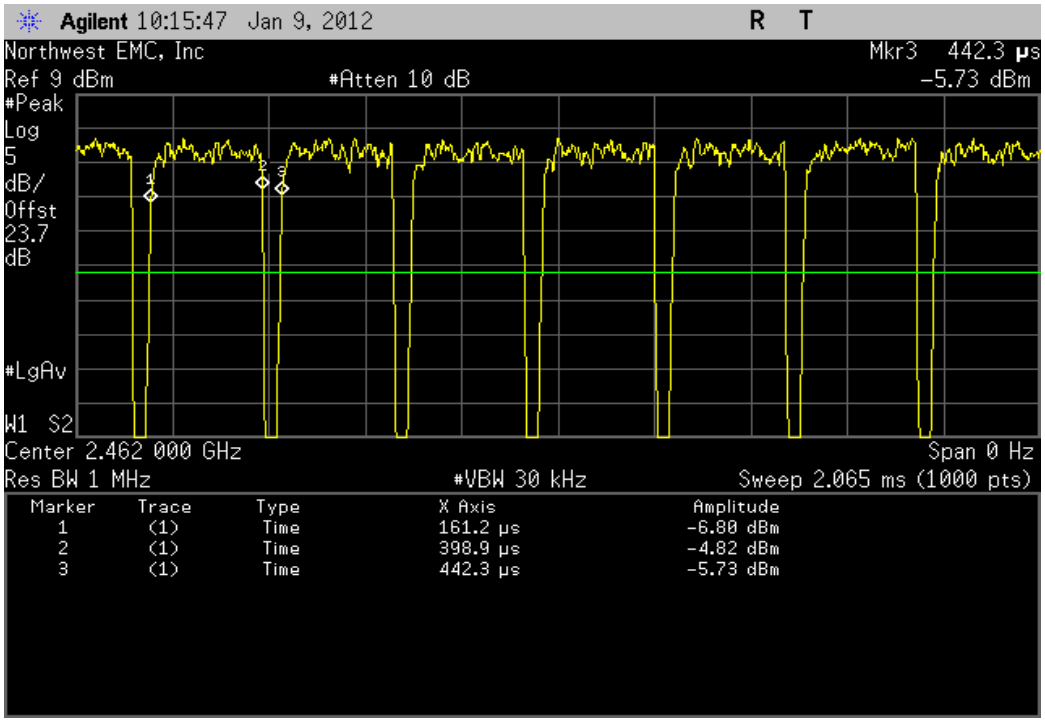


2400 MHz - 2483.5 MHz Band, 802.11(g) 54 Mbps, Mid Channel 6, 2437 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
			5		N/A	N/A

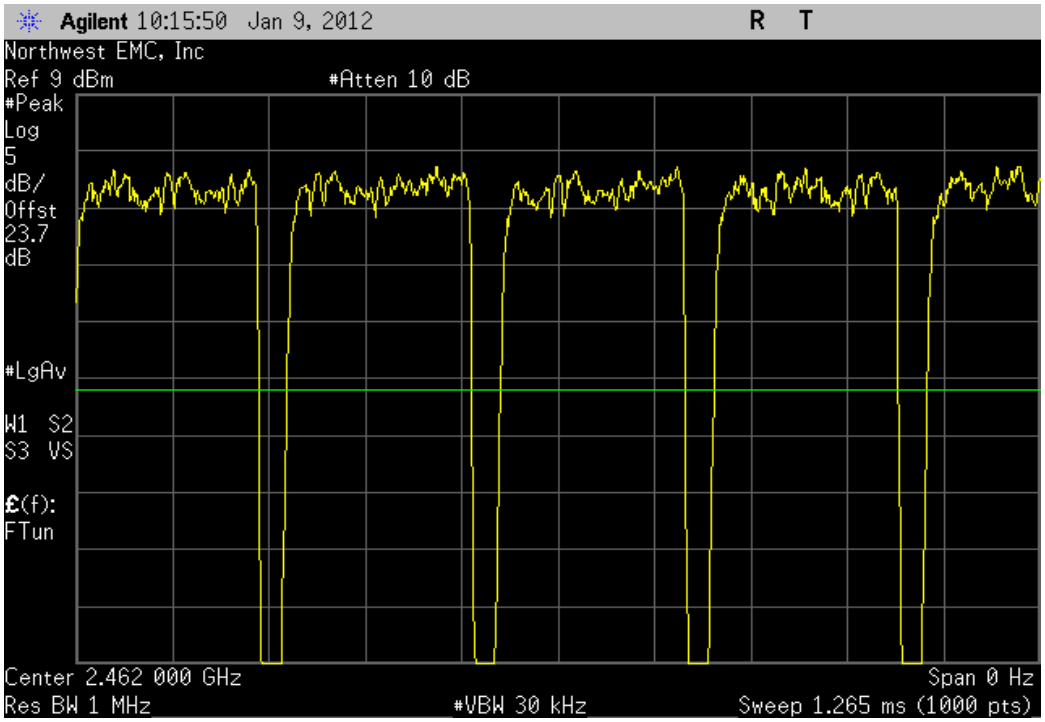


Duty Cycle

2400 MHz - 2483.5 MHz Band, 802.11(g) 54 Mbps, High Channel 11, 2462 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	237.7 uS	281.1 uS	1	0.846	N/A	N/A

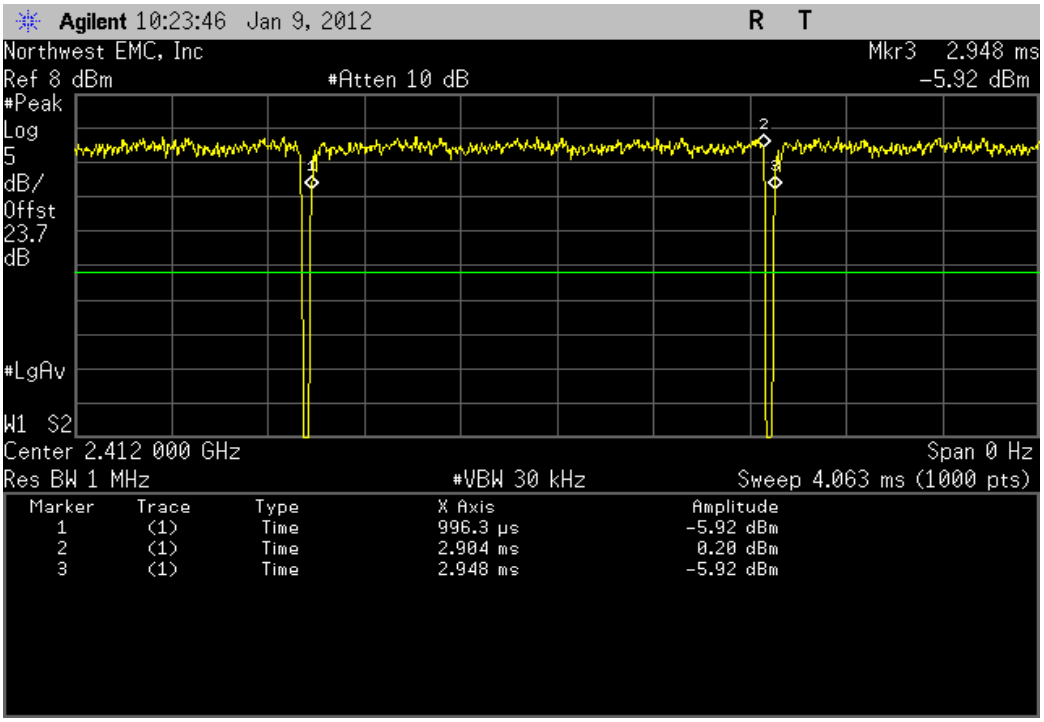


2400 MHz - 2483.5 MHz Band, 802.11(g) 54 Mbps, High Channel 11, 2462 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
			5		N/A	N/A

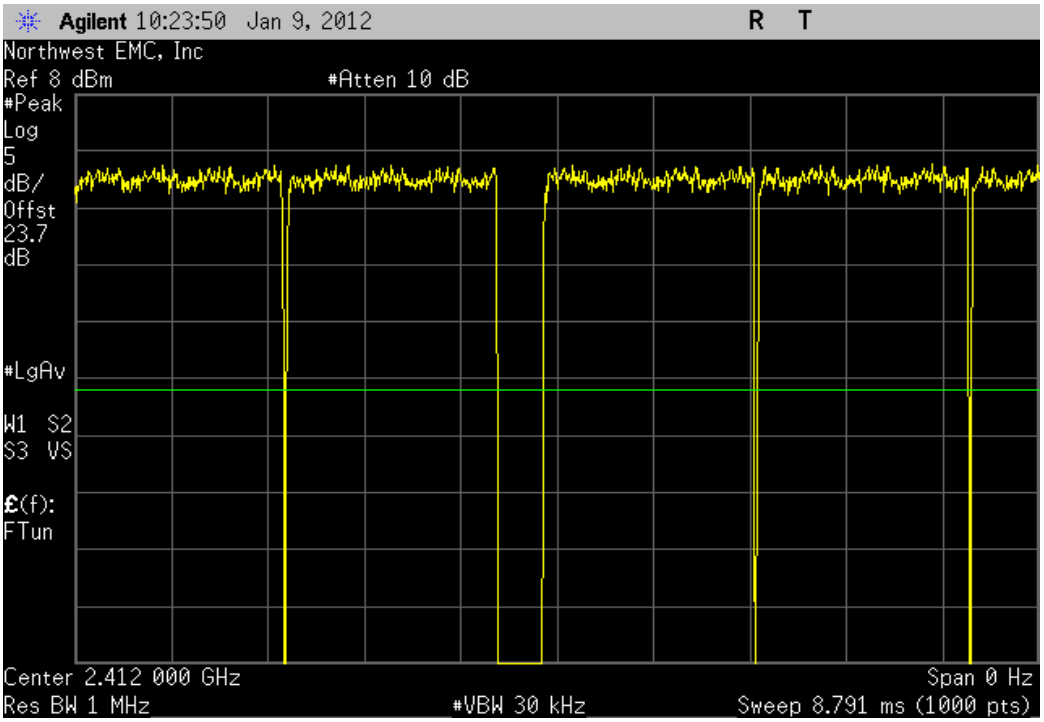


Duty Cycle

2400 MHz - 2483.5 MHz Band, 802.11(n) MCS0, Low Channel 1, 2412 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	1.907 mS	1.952 mS	1	0.977	N/A	N/A

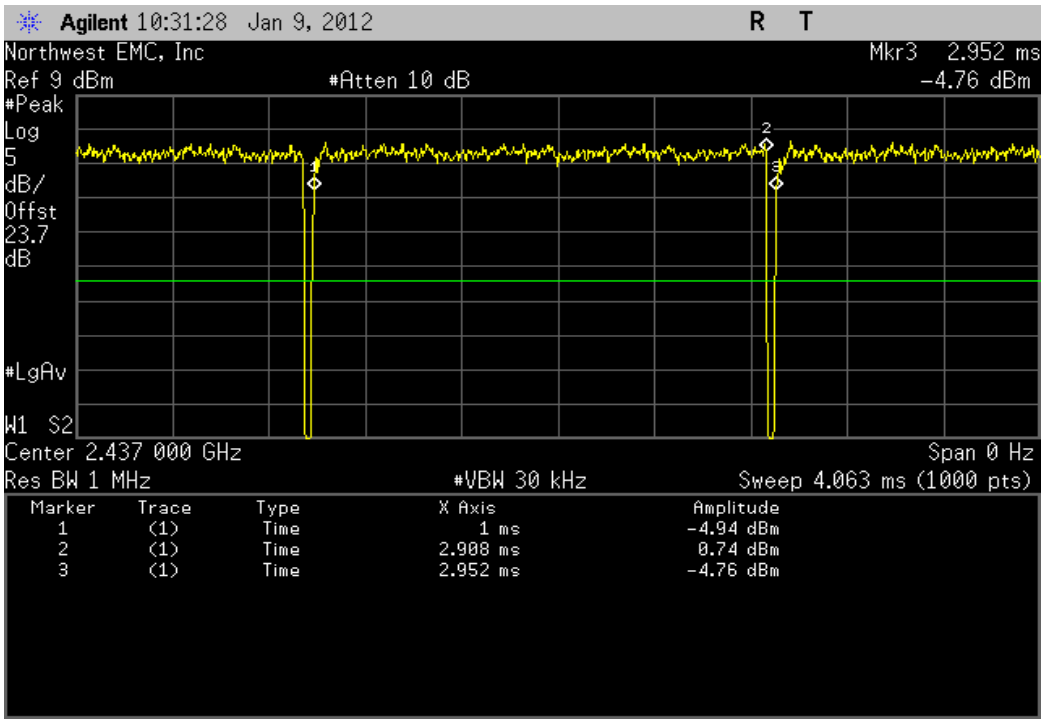


2400 MHz - 2483.5 MHz Band, 802.11(n) MCS0, Low Channel 1, 2412 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
			5		N/A	N/A

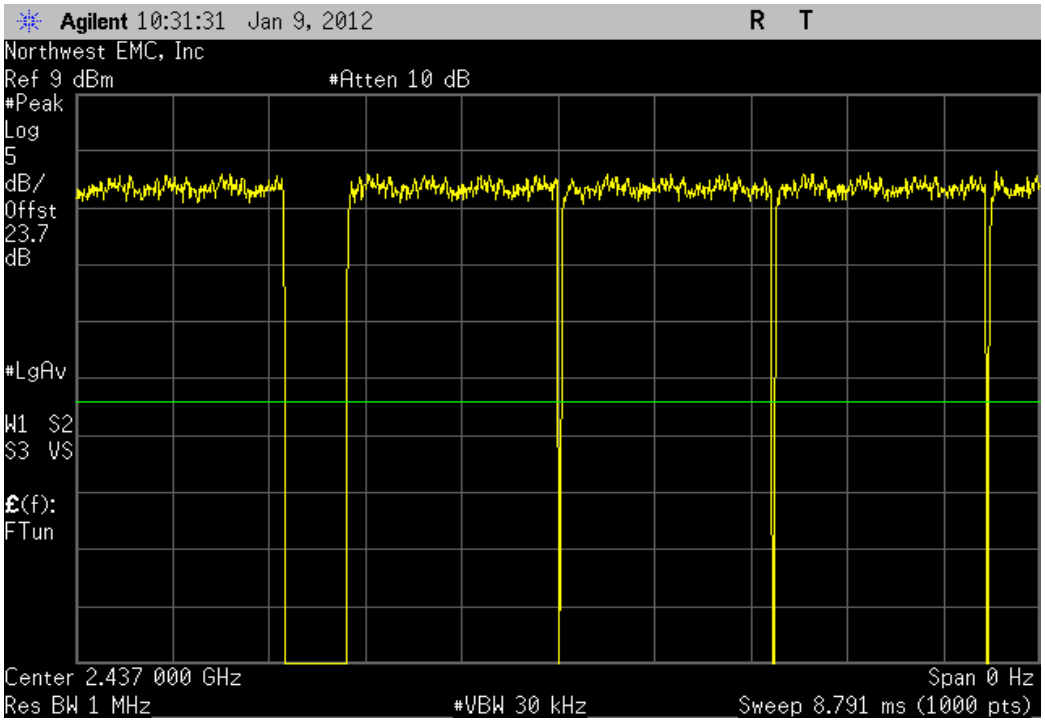


Duty Cycle

2400 MHz - 2483.5 MHz Band, 802.11(n) MCS0, Mid Channel 6, 2437 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	1.907 mS	1.952 mS	1	0.977	N/A	N/A

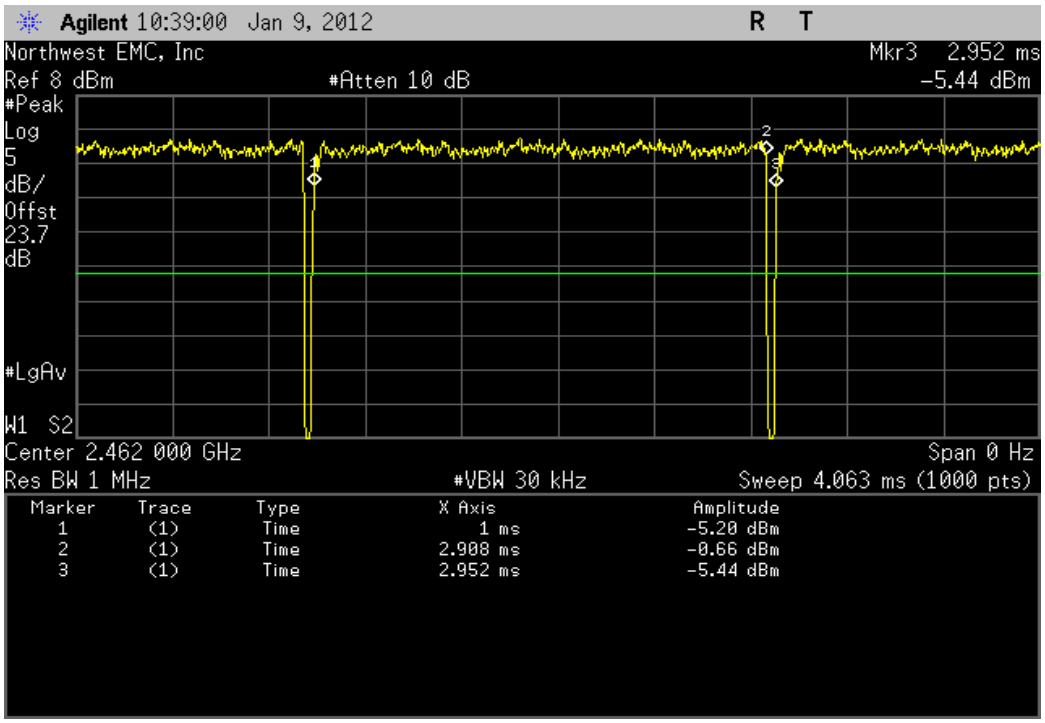


2400 MHz - 2483.5 MHz Band, 802.11(n) MCS0, Mid Channel 6, 2437 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
			5		N/A	N/A

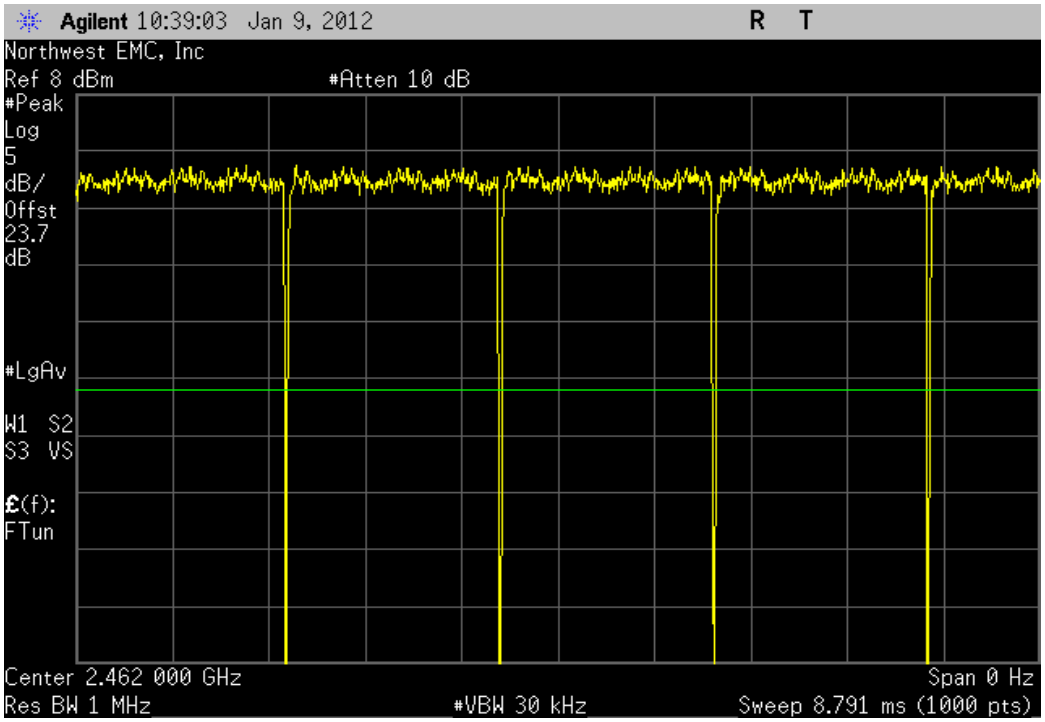


Duty Cycle

2400 MHz - 2483.5 MHz Band, 802.11(n) MCS0, High Channel 11, 2462 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	1.907 mS	1.952 mS	1	0.977	N/A	N/A

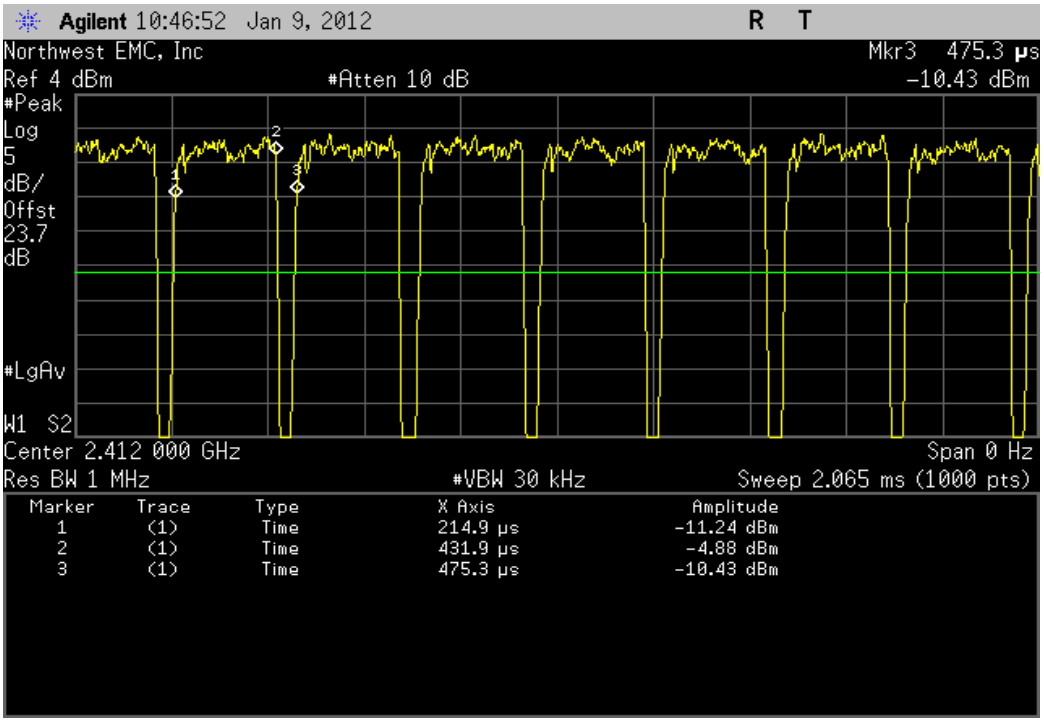


2400 MHz - 2483.5 MHz Band, 802.11(n) MCS0, High Channel 11, 2462 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
			5		N/A	N/A

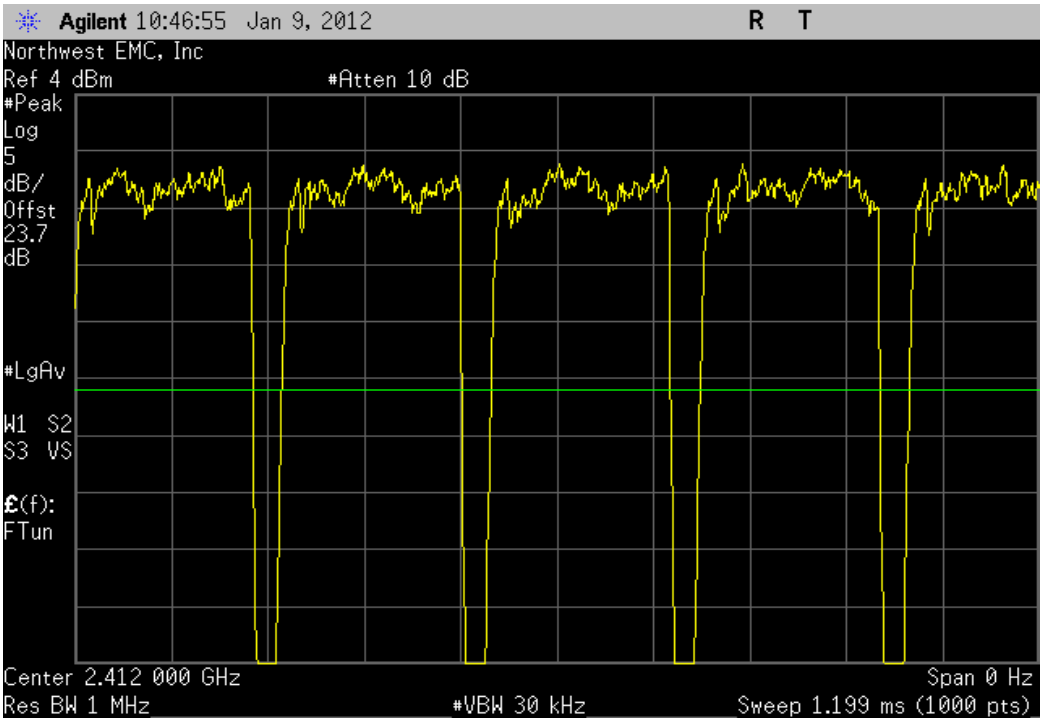


Duty Cycle

2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, Low Channel 1, 2412 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	217 uS	260.4 uS	1	0.833	N/A	N/A

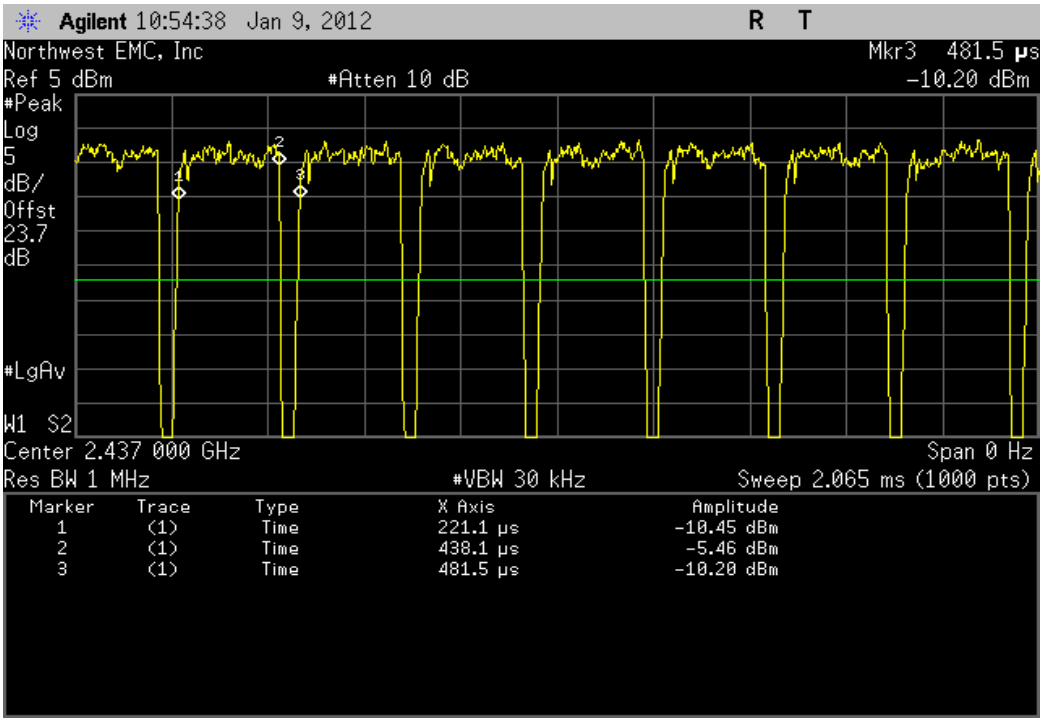


2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, Low Channel 1, 2412 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
			5		N/A	N/A

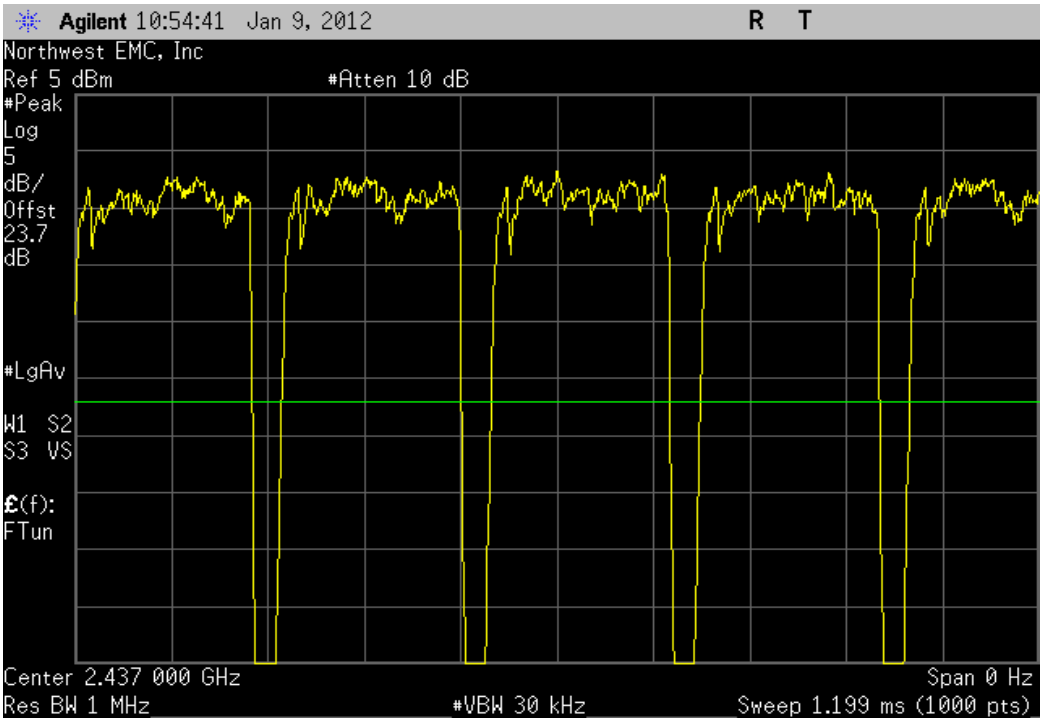


Duty Cycle

2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, Mid Channel 6, 2437 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	217 uS	260.4 uS	1	0.833	N/A	N/A

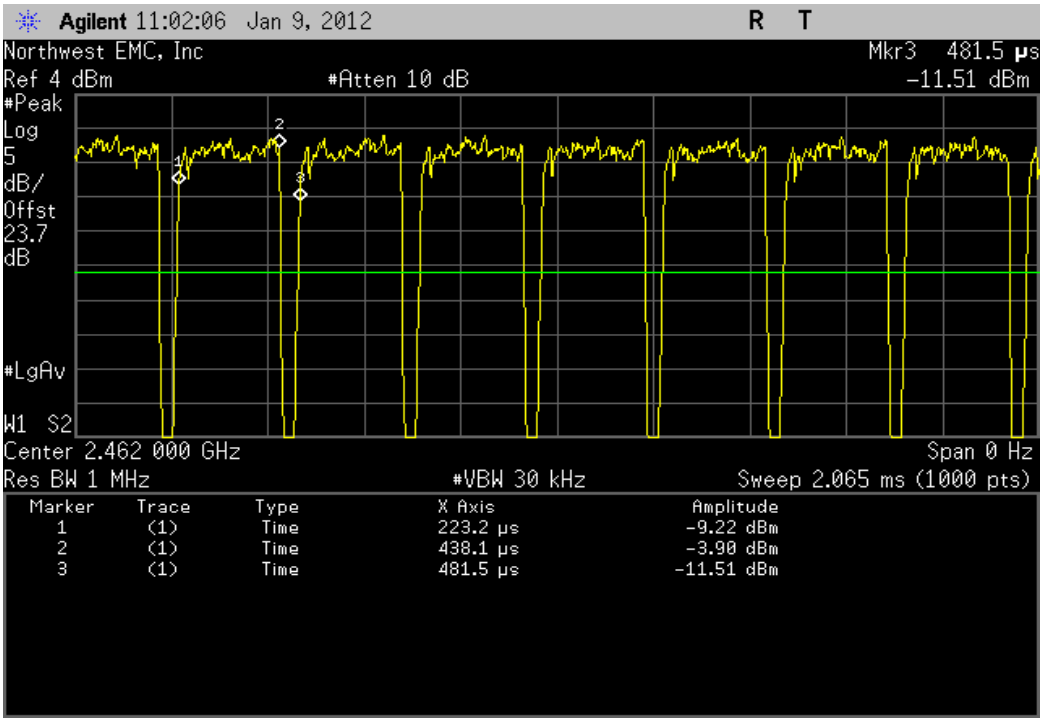


2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, Mid Channel 6, 2437 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
			5		N/A	N/A

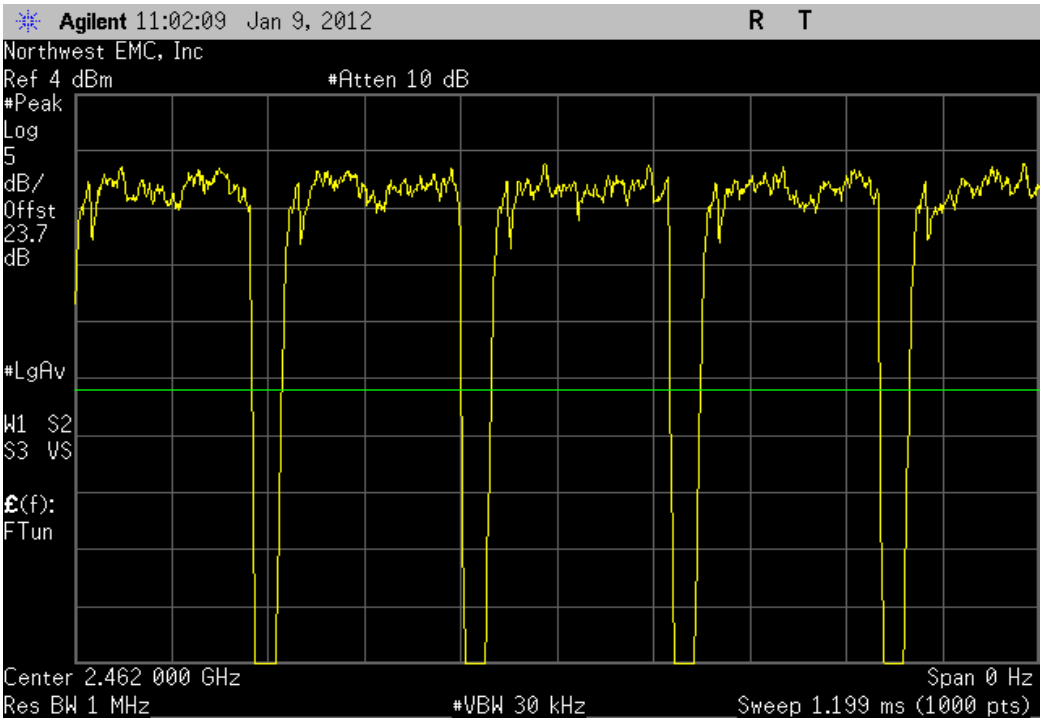


Duty Cycle

2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, High Channel 11, 2462 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	214.9 uS	258.3 uS	1	0.832	N/A	N/A



2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, High Channel 11, 2462 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
			5		N/A	N/A



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 low channel 2412, mid channel 2437, high channel 2462, modulation types 1, 11, 6, 36, 54 MBps, MCS0, MCS7.

POWER SETTINGS INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

DGII0036 - 2

FREQUENCY RANGE INVESTIGATED

Start Frequency	30 MHz	Stop Frequency	25000 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
Spectrum Analyzer	Agilent	E4446A	AAT	2/15/2011	12 mo
Pre-Amplifier	Miteq	JSD4-18002600-26-8P	APU	4/15/2011	12 mo
MN05 Cables	N/A	18-26GHz Standard Gain Horn Cable	EVD	4/15/2011	12 mo
Antenna, Horn	ETS	3160-09	AHG	NCR	0 mo
Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	AVW	7/1/2011	12 mo
Antenna, Horn	ETS Lindgren	3160-08	AIQ	NCR	0 mo
MN05 Cables	ESM Cable Corp.	Standard Gain Horn Cables	MNJ	7/1/2011	12 mo
Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AVV	7/1/2011	12 mo
Antenna, Horn	ETS	3160-07	AXP	NCR	0 mo
Pre-Amplifier	Miteq	AM-1616-1000	AVY	7/1/2011	12 mo
MN05 Cables	ESM Cable Corp.	Bilog Cables	MNH	2/2/2011	12 mo
Antenna X-Wing Bilog 30MHZ-2GHz	Teseq	CBL 6141B	AYD	12/19/2011	12 mo
Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	AVX	7/1/2011	12 mo
MN05 Cables	ESM Cable Corp.	Double Ridge Guide Horn Cables	MNI	10/18/2011	12 mo
Antenna, Horn (DRG)	ETS Lindgren	3115	AIP	6/29/2011	24 mo
High Pass Filter	Micro-Tronics	HPM50111	HGQ	7/9/2010	24 mo
Low Pass Filter	Micro-Tronics	LPM50004	HGK	7/9/2010	24 mo
Attenuator, 20 dB, 'SMA'	SM Electronics	SA6-20	REO	7/1/2011	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

Measurements were made using the IF bandwidths and detectors specified. No video filter was used, except in the case of the FCC Average Measurements above 1GHz. In that case, a peak detector with a 10Hz video bandwidth was used.

MEASUREMENT UNCERTAINTY

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 for radiated emissions measurements is less than +/- 4 dB, and for conducted emissions measurements is less than +/- 2.7 dB. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for measurement uncertainty are available upon request.

TEST DESCRIPTION

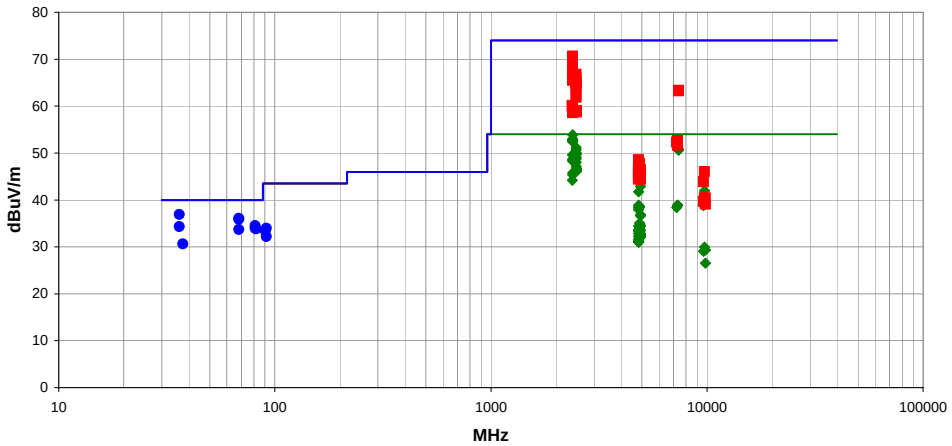
The highest gain of each type of antenna to be used with the EUT was tested. The EUT was configured for low, mid, and high band transmit frequencies. For each configuration, the spectrum was scanned throughout the specified range. In addition, measurements were made in the restricted bands to verify 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, and manipulating the EUT antenna in 3 orthogonal planes (per ANSI C63.10:2009). A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

Spurious Radiated Emissions

Work Order:	DGII0036	**Date:**	01/10/12		
Project:	None	**Temperature:**	23.97 °C		
Job Site:	MN05	**Humidity:**	18.36% RH		
Serial Number:	1201-003	**Barometric Pres.:**	1012.5 mbar	**Tested by:**	Johnathan Lee
EUT:	ConnectPort X2e Wi-Fi				
Configuration:	2				
Customer:	Digi International				
Attendees:	Bradley Ferguson				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting Low Channel 2412, mid channel 2437, high channel 2462, modulation types 1, 11, 6, 36, 54 MBps, MCS0, MCS7.				
Deviations:	None				
Comments:	Unless stated below in data comments power level (PL) is 18.				

Test Specifications	**Test Method**
FCC 15.247:2012	ANSI C63.10:2009

Run #	15	**Test Distance (m)**	3	**Antenna Height(s)**	1-4m	**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
2389.500	37.6	-3.7	1.1	185.0	3.0	20.0	Horz	AV	0.0	53.9	54.0	-0.1	EUT on Side Low channel, 6Mb/s PL 14
2389.493	36.7	-3.7	1.4	188.0	3.0	20.0	Horz	AV	0.0	53.0	54.0	-1.0	EUT on Side Low channel, 36Mb/s PL 14
2389.500	36.7	-3.7	1.1	181.0	3.0	20.0	Horz	AV	0.0	53.0	54.0	-1.0	EUT on Side Low channel, 54Mb/s PL 14
2389.500	36.4	-3.7	1.0	182.0	3.0	20.0	Horz	AV	0.0	52.7	54.0	-1.3	EUT on Side Low channel, MCS0 PL 12
2389.500	36.2	-3.7	1.1	107.0	3.0	20.0	Vert	AV	0.0	52.5	54.0	-1.5	EUT on Side Low channel, 36Mb/s PL 14
2389.500	36.2	-3.7	1.0	105.0	3.0	20.0	Vert	AV	0.0	52.5	54.0	-1.5	EUT on Side Low channel, 54Mb/s PL 14
2484.000	34.6	-3.5	1.0	183.0	3.0	20.0	Horz	AV	0.0	51.1	54.0	-2.9	EUT on side, High channel, 6Mb/s PL 14
36.139	35.1	1.8	1.0	186.0	3.0	0.0	Vert	QP	0.0	36.9	40.0	-3.1	EUT on side, Mid channel, 1Mb/s
7387.053	38.4	12.4	1.0	77.0	3.0	0.0	Horz	AV	0.0	50.8	54.0	-3.2	EUT on side, High channel, 1Mb/s
2484.013	34.2	-3.5	1.0	187.0	3.0	20.0	Horz	AV	0.0	50.7	54.0	-3.3	EUT on side, High channel, 36Mb/s PL 14
2389.433	54.4	-3.7	1.1	181.0	3.0	20.0	Horz	PK	0.0	70.7	74.0	-3.3	EUT on Side Low channel, 54Mb/s PL 14
7387.013	38.2	12.4	3.7	74.0	3.0	0.0	Vert	AV	0.0	50.6	54.0	-3.4	EUT on side, High channel, 1Mb/s
2389.413	54.1	-3.7	1.0	105.0	3.0	20.0	Vert	PK	0.0	70.4	74.0	-3.6	EUT on Side Low channel, 54Mb/s PL 14
2389.360	54.0	-3.7	1.1	185.0	3.0	20.0	Horz	PK	0.0	70.3	74.0	-3.7	EUT on Side Low channel, 6Mb/s PL 14
2389.447	54.0	-3.7	1.0	182.0	3.0	20.0	Horz	PK	0.0	70.3	74.0	-3.7	EUT on Side Low channel, MCS0 PL 12
68.241	45.7	-9.6	1.2	340.0	3.0	0.0	Vert	QP	0.0	36.1	40.0	-3.9	EUT on side, Low channel, 1Mb/s
2484.007	33.5	-3.5	1.6	115.0	3.0	20.0	Vert	AV	0.0	50.0	54.0	-4.0	EUT on side, High channel, 36Mb/s PL 14
68.233	45.5	-9.6	1.2	308.0	3.0	0.0	Vert	QP	0.0	35.9	40.0	-4.1	EUT on side, High channel, 1Mb/s
2484.000	33.3	-3.5	1.0	192.0	3.0	20.0	Vert	AV	0.0	49.8	54.0	-4.2	EUT on side, High channel, 6Mb/s PL 14
2389.500	33.4	-3.7	1.8	196.0	3.0	20.0	Vert	AV	0.0	49.7	54.0	-4.3	EUT on Side Low channel, MCS0 PL 12
2484.000	33.1	-3.5	1.0	53.0	3.0	20.0	Vert	AV	0.0	49.6	54.0	-4.4	EUT on side, High channel, 54Mb/s PL 14
2389.500	33.3	-3.7	1.0	74.0	3.0	20.0	Vert	AV	0.0	49.6	54.0	-4.4	EUT on Side Low channel, 6Mb/s PL 14
2389.300	52.9	-3.7	1.4	188.0	3.0	20.0	Horz	PK	0.0	69.2	74.0	-4.8	EUT on Side Low channel, 36Mb/s PL 14
2484.000	32.5	-3.5	1.0	218.0	3.0	20.0	Vert	AV	0.0	49.0	54.0	-5.0	EUT on side, High channel, MCS0 PL 12
2484.000	32.2	-3.5	1.0	39.0	3.0	20.0	Horz	AV	0.0	48.7	54.0	-5.3	EUT on side, High channel, MCS0 PL 12
2386.273	32.4	-3.7	1.0	193.0	3.0	20.0	Horz	AV	0.0	48.7	54.0	-5.3	EUT on Side Low channel, 1Mb/s
2386.287	32.3	-3.7	1.0	104.0	3.0	20.0	Vert	AV	0.0	48.6	54.0	-5.4	EUT on Side Low channel, 1Mb/s
81.209	44.3	-9.8	1.0	356.0	3.0	0.0	Vert	QP	0.0	34.5	40.0	-5.5	EUT on side, Low channel, 1Mb/s
36.147	32.5	1.8	1.0	204.0	3.0	0.0	Vert	QP	0.0	34.3	40.0	-5.7	EUT on side, High channel, 1Mb/s
2389.500	32.0	-3.7	1.1	191.0	3.0	20.0	Horz	AV	0.0	48.3	54.0	-5.7	EUT on Side Low channel, MCS7
2484.000	31.5	-3.5	1.0	200.0	3.0	20.0	Horz	AV	0.0	48.0	54.0	-6.0	EUT on side, High channel, 54Mb/s PL 14
81.218	43.8	-9.8	1.2	25.0	3.0	0.0	Vert	QP	0.0	34.0	40.0	-6.0	EUT on side, Mid channel, 1Mb/s
82.049	43.6	-9.8	1.0	0.0	3.0	0.0	Vert	QP	0.0	33.8	40.0	-6.2	EUT on side, High channel, 1Mb/s
2389.493	51.5	-3.7	1.1	107.0	3.0	20.0	Vert	PK	0.0	67.8	74.0	-6.2	EUT on Side Low channel, 36Mb/s PL 14
68.238	43.3	-9.6	1.6	340.0	3.0	0.0	Vert	QP	0.0	33.7	40.0	-6.3	EUT on side, Mid channel, 1Mb/s
2484.020	30.6	-3.5	1.0	193.0	3.0	20.0	Horz	AV	0.0	47.1	54.0	-6.9	EUT on side, High channel, MCS7
2487.540	30.2	-3.4	1.0	158.0	3.0	20.0	Vert	AV	0.0	46.8	54.0	-7.2	EUT on side, High channel, 1Mb/s
2484.533	50.2	-3.5	1.0	183.0	3.0	20.0	Horz	PK	0.0	66.7	74.0	-7.3	EUT on side, High channel, 6Mb/s PL 14
2389.487	50.2	-3.7	1.8	196.0	3.0	20.0	Vert	PK	0.0	66.5	74.0	-7.5	EUT on Side Low channel, MCS0 PL 12
2389.360	50.1	-3.7	1.0	74.0	3.0	20.0	Vert	PK	0.0	66.4	74.0	-7.6	EUT on Side Low channel, 6Mb/s PL 14
2487.540	29.8	-3.4	1.0	161.0	3.0	20.0	Horz	AV	0.0	46.4	54.0	-7.6	EUT on side, High channel, 1Mb/s
2487.253	29.7	-3.5	1.1	215.0	3.0	20.0	Horz	AV	0.0	46.2	54.0	-7.8	EUT on side, High channel, 11Mb/s
2487.000	29.7	-3.5	1.6	82.0	3.0	20.0	Vert	AV	0.0	46.2	54.0	-7.8	EUT on side, High channel, 11Mb/s
2484.300	49.5	-3.5	1.0	187.0	3.0	20.0	Horz	PK	0.0	66.0	74.0	-8.0	EUT on side, High channel, 36Mb/s PL 14
2484.000	29.5	-3.5	1.0	142.0	3.0	20.0	Vert	AV	0.0	46.0	54.0	-8.0	EUT on side, High channel, MCS7
2387.280	29.5	-3.7	1.0	87.0	3.0	20.0	Vert	AV	0.0	45.8	54.0	-8.2	EUT on Side Low channel, 11Mb/s

AC Powerline Conducted 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.

MODES OF OPERATION

Pinging LAN, Transmitting 802.11 Low channel, 2412 MHz.
Pinging LAN, Transmitting 802.11 Mid channel, 2437 MHz.
Pinging LAN, Transmitting 802.11 High channel, 2463 MHz.
Pinging LAN, Receiving 802.11 Mid channel, 2437 MHz.

POWER SETTINGS INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

DGII0036 - 1
DGII0036 - 3

SAMPLE CALCULATIONS

Conducted Emissions: Adjusted Level = Measured Level + Transducer Factor + Cable Attenuation Factor + External Attenuator

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
ISN adapter	Teseq	N/A	NIMF	12/8/2010	24 mo
ISN adapter	Teseq	N/A	NIMD	12/8/2010	24 mo
ISN	Teseq	T8000	NIM	12/8/2010	24 mo
LISN	Solar Electronics	9252-50-R-24-BNC	LIY	7/5/2011	12 mo
MN03 Cables	ESM Cable Corp.	Conducted Cables	MNC	5/18/2011	12 mo
High Pass Filter	TTE	H97-100K-50-720B	HGN	6/28/2010	24 mo
Attenuator, 20 dB	SM Electronics	SA01B-20	REF	12/21/2011	12 mo
Receiver	Rohde & Schwarz	ESCI	ARG	3/22/2011	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

Measurements were made using the bandwidths and detectors specified. No video filter was used.

MEASUREMENT UNCERTAINTY

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 for radiated emissions measurements is less than +/- 4 dB, and for conducted emissions measurements is less than +/- 2.7 dB. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for measurement uncertainty are available upon request.

TEST DESCRIPTION

The EUT will be powered either directly or indirectly from the AC power line. Therefore, conducted emissions measurements were made on the AC input of the EUT, or on the AC input of the device used to power the EUT. The AC power line conducted emissions were measured with the EUT operating at the lowest, the highest, and a middle channel in the operational band. The EUT was transmitting at its maximum data rate. For each mode, the spectrum was scanned from 150 kHz to 30 MHz. The test setup and procedures were in accordance with ANSI C63.10:2009.

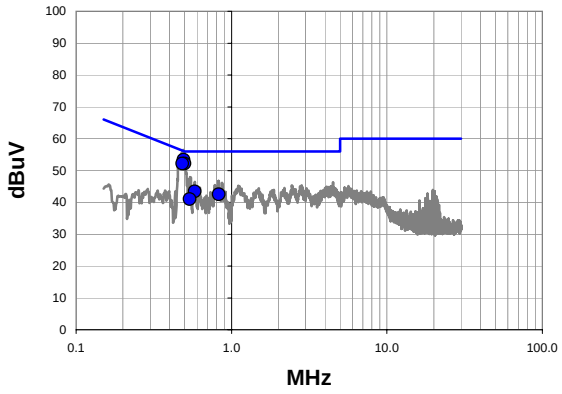
AC Powerline Conducted Emissions

Work Order:	DGII0036	**Date:**	01/13/12		
Project:	None	**Temperature:**	24.21 °C		
Job Site:	MN03	**Humidity:**	10.89% RH		
Serial Number:	1201-003	**Barometric Pres.:**	1017 mbar	**Tested by:**	Johnathan Lee
EUT:	ConnectPort X2e Wi-Fi				
Configuration:	1				
Customer:	Digi International				
Attendees:	Bradley Ferguson				
EUT Power:	110VAC/60Hz				
Operating Mode:	Pinging LAN. Transmitting 802.11 Low channel, 2412 MHz.				
Deviations:	None				
Comments:	Power supply part number (1P)24000095 A				

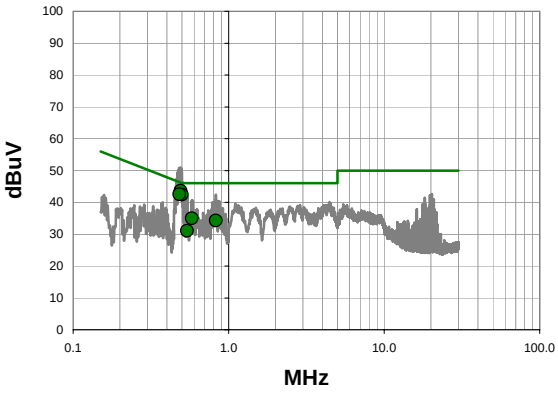
Test Specifications	**Test Method**
FCC 15.207:2012	ANSI C63.10:2009

Run #	2	**Line:**	Neutral	**Ext. Attenuation:**	20	**Results**	Pass

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.492	33.2	20.2	53.4	56.1	-2.7
0.500	32.0	20.2	52.2	56.0	-3.8
0.482	32.0	20.2	52.2	56.3	-4.1
0.580	23.2	20.2	43.4	56.0	-12.6
0.828	22.3	20.2	42.5	56.0	-13.5
0.539	20.8	20.2	41.0	56.0	-15.0

Average Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.492	23.4	20.2	43.6	46.1	-2.5
0.500	22.2	20.2	42.4	46.0	-3.6
0.482	22.3	20.2	42.5	46.3	-3.8
0.580	14.8	20.2	35.0	46.0	-11.0
0.828	14.1	20.2	34.3	46.0	-11.7
0.539	10.9	20.2	31.1	46.0	-14.9

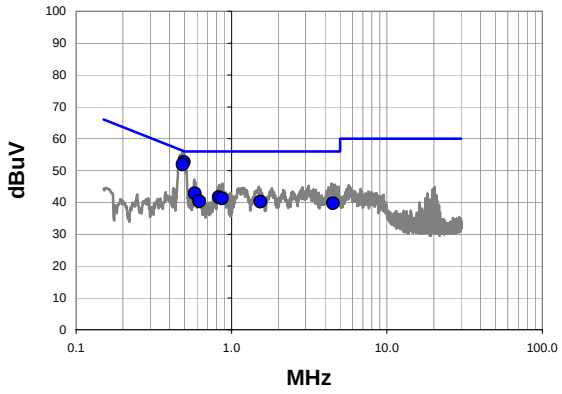
AC Powerline Conducted Emissions

Work Order:	DGII0036	**Date:**	01/13/12		
Project:	None	**Temperature:**	24.21 °C		
Job Site:	MN03	**Humidity:**	10.89% RH		
Serial Number:	1201-003	**Barometric Pres.:**	1017 mbar	**Tested by:**	Johnathan Lee
EUT:	ConnectPort X2e Wi-Fi				
Configuration:	1				
Customer:	Digi International				
Attendees:	Bradley Ferguson				
EUT Power:	110VAC/60Hz				
Operating Mode:	Pinging LAN. Transmitting 802.11 Low channel, 2412 MHz.				
Deviations:	None				
Comments:	Power supply part number (1P)24000095 A				

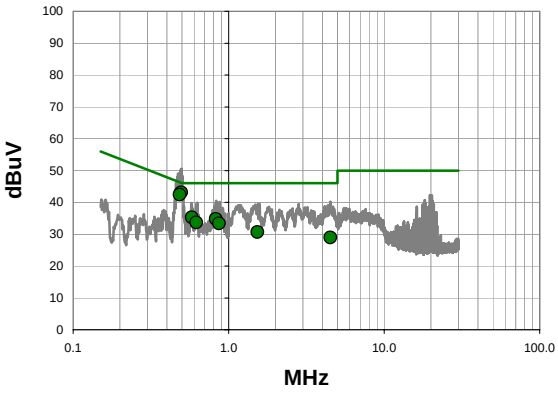
Test Specifications	**Test Method**
FCC 15.207:2012	ANSI C63.10:2009

Run #	3	**Line:**	High Line	**Ext. Attenuation:**	20	**Results**	Pass

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.495	32.5	20.2	52.7	56.1	-3.4
0.485	31.7	20.2	51.9	56.3	-4.4
0.581	22.6	20.2	42.8	56.0	-13.2
0.828	21.4	20.2	41.6	56.0	-14.4
0.868	21.0	20.2	41.2	56.0	-14.8
0.620	20.1	20.2	40.3	56.0	-15.7
1.532	19.9	20.3	40.2	56.0	-15.8
4.508	19.2	20.5	39.7	56.0	-16.3

Average Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.495	22.9	20.2	43.1	46.1	-3.0
0.485	22.2	20.2	42.4	46.3	-3.9
0.581	15.1	20.2	35.3	46.0	-10.7
0.828	14.6	20.2	34.8	46.0	-11.2
0.620	13.5	20.2	33.7	46.0	-12.3
0.868	13.2	20.2	33.4	46.0	-12.6
1.532	10.4	20.3	30.7	46.0	-15.3
4.508	8.5	20.5	29.0	46.0	-17.0

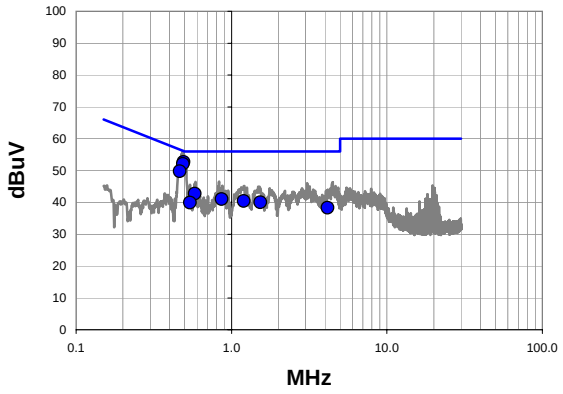
AC Powerline Conducted Emissions

Work Order:	DGII0036	**Date:**	01/13/12		
Project:	None	**Temperature:**	24.21 °C		
Job Site:	MN03	**Humidity:**	10.89% RH		
Serial Number:	1201-003	**Barometric Pres.:**	1017 mbar	**Tested by:**	Johnathan Lee
EUT:	ConnectPort X2e Wi-Fi				
Configuration:	1				
Customer:	Digi International				
Attendees:	Bradley Ferguson				
EUT Power:	110VAC/60Hz				
Operating Mode:	Pinging LAN. Transmitting 802.11 Mid channel, 2437 MHz.				
Deviations:	None				
Comments:	Power supply part number (1P)24000095 A				

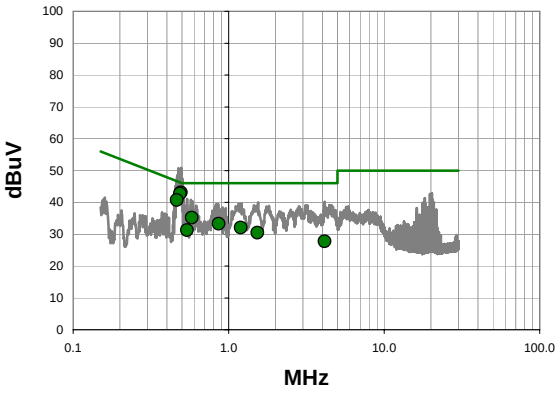
Test Specifications	**Test Method**
FCC 15.207:2012	ANSI C63.10:2009

Run #	4	**Line:**	High Line	**Ext. Attenuation:**	20	**Results**	Pass

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.493	32.5	20.2	52.7	56.1	-3.4
0.487	31.9	20.2	52.1	56.2	-4.1
0.465	29.5	20.2	49.7	56.6	-6.9
0.580	22.5	20.2	42.7	56.0	-13.3
0.865	20.8	20.2	41.0	56.0	-15.0
1.200	20.2	20.2	40.4	56.0	-15.6
1.532	19.7	20.3	40.0	56.0	-16.0
0.541	19.7	20.2	39.9	56.0	-16.1
4.152	17.8	20.5	38.3	56.0	-17.7

Average Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.493	22.9	20.2	43.1	46.1	-3.0
0.487	22.5	20.2	42.7	46.2	-3.5
0.465	20.5	20.2	40.7	46.6	-5.9
0.580	15.0	20.2	35.2	46.0	-10.8
0.865	13.1	20.2	33.3	46.0	-12.7
1.200	11.8	20.2	32.0	46.0	-14.0
0.541	11.1	20.2	31.3	46.0	-14.7
1.532	10.2	20.3	30.5	46.0	-15.5
4.152	7.3	20.5	27.8	46.0	-18.2

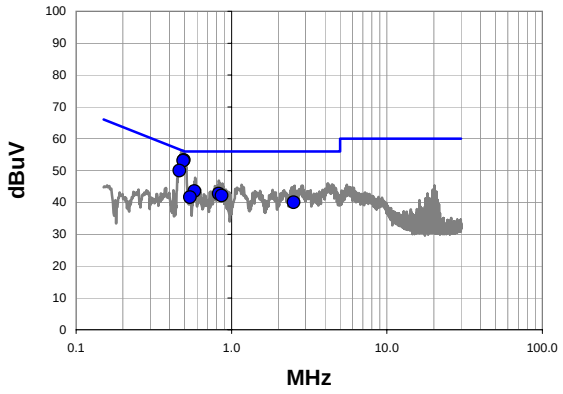
AC Powerline Conducted Emissions

Work Order:	DGII0036	**Date:**	01/13/12		
Project:	None	**Temperature:**	24.21 °C		
Job Site:	MN03	**Humidity:**	10.89% RH		
Serial Number:	1201-003	**Barometric Pres.:**	1017 mbar	**Tested by:**	Johnathan Lee
EUT:	ConnectPort X2e Wi-Fi				
Configuration:	1				
Customer:	Digi International				
Attendees:	Bradley Ferguson				
EUT Power:	110VAC/60Hz				
Operating Mode:	Pinging LAN. Transmitting 802.11 Mid channel, 2437 MHz.				
Deviations:	None				
Comments:	Power supply part number (1P)24000095 A				

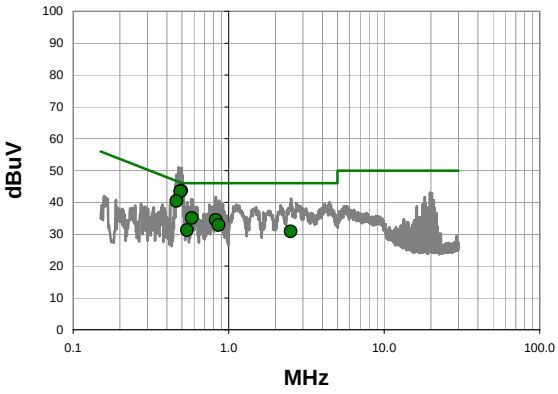
Test Specifications	**Test Method**
FCC 15.207:2012	ANSI C63.10:2009

Run #	5	**Line:**	Neutral	**Ext. Attenuation:**	20	**Results**	Pass

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.495	33.1	20.2	53.3	56.1	-2.8
0.490	32.9	20.2	53.1	56.2	-3.1
0.463	29.8	20.2	50.0	56.6	-6.6
0.579	23.3	20.2	43.5	56.0	-12.5
0.828	22.5	20.2	42.7	56.0	-13.3
0.863	21.9	20.2	42.1	56.0	-13.9
0.540	21.4	20.2	41.6	56.0	-14.4
2.512	19.7	20.3	40.0	56.0	-16.0

Average Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.495	23.4	20.2	43.6	46.1	-2.5
0.490	23.2	20.2	43.4	46.2	-2.8
0.463	20.2	20.2	40.4	46.6	-6.2
0.579	14.9	20.2	35.1	46.0	-10.9
0.828	14.3	20.2	34.5	46.0	-11.5
0.863	12.7	20.2	32.9	46.0	-13.1
0.540	11.1	20.2	31.3	46.0	-14.7
2.512	10.5	20.3	30.8	46.0	-15.2

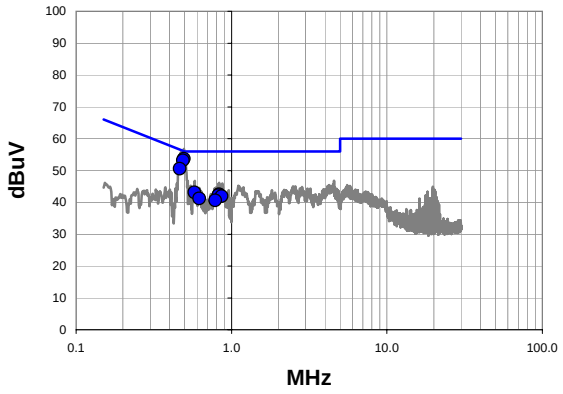
AC Powerline Conducted Emissions

Work Order:	DGII0036	**Date:**	01/13/12		
Project:	None	**Temperature:**	24.21 °C		
Job Site:	MN03	**Humidity:**	10.89% RH		
Serial Number:	1201-003	**Barometric Pres.:**	1017 mbar	**Tested by:**	Johnathan Lee
EUT:	ConnectPort X2e Wi-Fi				
Configuration:	1				
Customer:	Digi International				
Attendees:	Bradley Ferguson				
EUT Power:	110VAC/60Hz				
Operating Mode:	Pinging LAN. Transmitting 802.11 High channel, 2462 MHz.				
Deviations:	None				
Comments:	Power supply part number (1P)24000095 A				

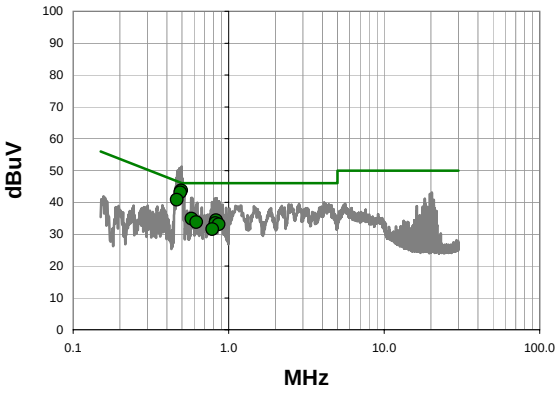
Test Specifications	**Test Method**
FCC 15.207:2012	ANSI C63.10:2009

Run #	6	**Line:**	Neutral	**Ext. Attenuation:**	20	**Results**	Pass

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.495	33.5	20.2	53.7	56.1	-2.4
0.488	33.0	20.2	53.2	56.2	-3.0
0.465	30.4	20.2	50.6	56.6	-6.0
0.577	22.9	20.2	43.1	56.0	-12.9
0.831	22.3	20.2	42.5	56.0	-13.5
0.825	22.0	20.2	42.2	56.0	-13.8
0.863	21.7	20.2	41.9	56.0	-14.1
0.620	21.0	20.2	41.2	56.0	-14.8
0.786	20.4	20.2	40.6	56.0	-15.4

Average Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.495	23.5	20.2	43.7	46.1	-2.4
0.488	22.9	20.2	43.1	46.2	-3.1
0.465	20.6	20.2	40.8	46.6	-5.8
0.577	14.7	20.2	34.9	46.0	-11.1
0.831	14.2	20.2	34.4	46.0	-11.6
0.620	13.6	20.2	33.8	46.0	-12.2
0.825	13.3	20.2	33.5	46.0	-12.5
0.863	12.9	20.2	33.1	46.0	-12.9
0.786	11.4	20.2	31.6	46.0	-14.4

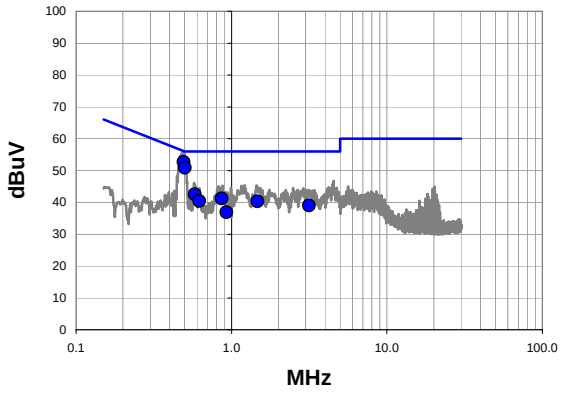
AC Powerline Conducted Emissions

Work Order:	DGII0036	**Date:**	01/13/12		
Project:	None	**Temperature:**	24.21 °C		
Job Site:	MN03	**Humidity:**	10.89% RH		
Serial Number:	1201-003	**Barometric Pres.:**	1017 mbar	**Tested by:**	Johnathan Lee
EUT:	ConnectPort X2e Wi-Fi				
Configuration:	1				
Customer:	Digi International				
Attendees:	Bradley Ferguson				
EUT Power:	110VAC/60Hz				
Operating Mode:	Pinging LAN. Transmitting 802.11 High channel, 2462 MHz.				
Deviations:	None				
Comments:	Power supply part number (1P)24000095 A				

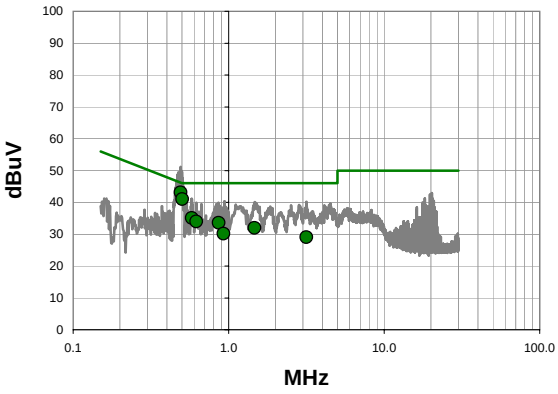
Test Specifications	**Test Method**
FCC 15.207:2012	ANSI C63.10:2009

Run #	7	**Line:**	High Line	**Ext. Attenuation:**	20	**Results**	Pass

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.492	32.5	20.2	52.7	56.1	-3.4
0.502	30.7	20.2	50.9	56.0	-5.1
0.581	22.3	20.2	42.5	56.0	-13.5
0.865	21.0	20.2	41.2	56.0	-14.8
0.621	20.2	20.2	40.4	56.0	-15.6
1.468	20.1	20.2	40.3	56.0	-15.7
3.156	18.7	20.3	39.0	56.0	-17.0
0.928	16.7	20.2	36.9	56.0	-19.1

Average Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.492	22.9	20.2	43.1	46.1	-3.0
0.502	20.8	20.2	41.0	46.0	-5.0
0.581	14.9	20.2	35.1	46.0	-10.9
0.621	13.8	20.2	34.0	46.0	-12.0
0.865	13.4	20.2	33.6	46.0	-12.4
1.468	11.7	20.2	31.9	46.0	-14.1
0.928	10.0	20.2	30.2	46.0	-15.8
3.156	8.7	20.3	29.0	46.0	-17.0

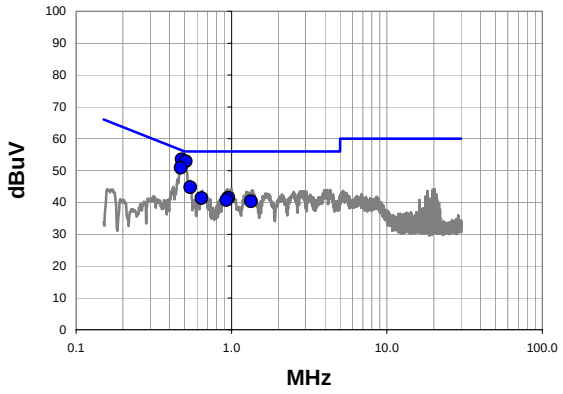
AC Powerline Conducted Emissions

Work Order:	DGII0036	**Date:**	01/13/12		
Project:	None	**Temperature:**	24.21 °C		
Job Site:	MN03	**Humidity:**	10.89% RH		
Serial Number:	1201-003	**Barometric Pres.:**	1017 mbar	**Tested by:**	Johnathan Lee
EUT:	ConnectPort X2e Wi-Fi				
Configuration:	1				
Customer:	Digi International				
Attendees:	Bradley Ferguson				
EUT Power:	110VAC/60Hz				
Operating Mode:	Pinging LAN, Receiving 802.11 Mid channel, 2437 MHz.				
Deviations:	None				
Comments:	Power supply part number (1P)24000095 A				

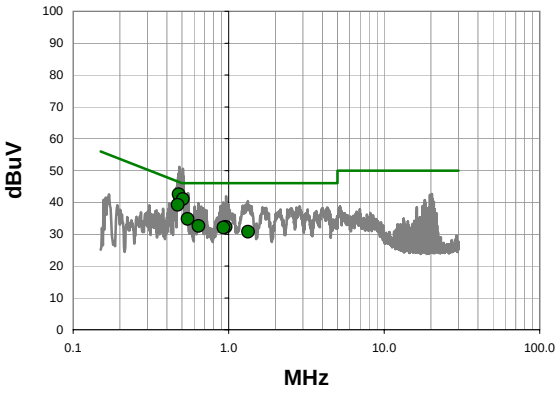
Test Specifications	**Test Method**
FCC 15.207:2012	ANSI C63.10:2009

Run #	8	**Line:**	High Line	**Ext. Attenuation:**	20	**Results**	Pass

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.478	33.3	20.2	53.5	56.4	-2.9
0.509	32.7	20.2	52.9	56.0	-3.1
0.471	30.7	20.2	50.9	56.5	-5.6
0.544	24.5	20.2	44.7	56.0	-11.3
0.956	21.2	20.2	41.4	56.0	-14.6
0.640	21.1	20.2	41.3	56.0	-14.7
0.927	20.5	20.2	40.7	56.0	-15.3
1.336	20.1	20.2	40.3	56.0	-15.7

Average Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.478	22.3	20.2	42.5	46.4	-3.9
0.509	20.8	20.2	41.0	46.0	-5.0
0.471	19.0	20.2	39.2	46.5	-7.3
0.544	14.6	20.2	34.8	46.0	-11.2
0.640	12.4	20.2	32.6	46.0	-13.4
0.956	12.1	20.2	32.3	46.0	-13.7
0.927	11.9	20.2	32.1	46.0	-13.9
1.336	10.5	20.2	30.7	46.0	-15.3

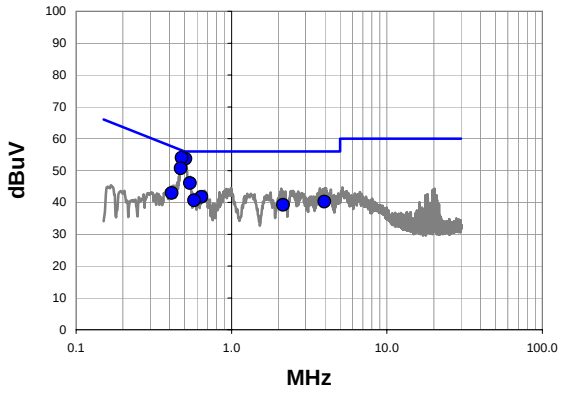
AC Powerline Conducted Emissions

Work Order:	DGII0036	**Date:**	01/13/12		
Project:	None	**Temperature:**	24.21 °C		
Job Site:	MN03	**Humidity:**	10.89% RH		
Serial Number:	1201-003	**Barometric Pres.:**	1017 mbar	**Tested by:**	Johnathan Lee
EUT:	ConnectPort X2e Wi-Fi				
Configuration:	1				
Customer:	Digi International				
Attendees:	Bradley Ferguson				
EUT Power:	110VAC/60Hz				
Operating Mode:	Pinging LAN, Receiving 802.11 Mid channel, 2437 MHz.				
Deviations:	None				
Comments:	Power supply part number (1P)24000095 A				

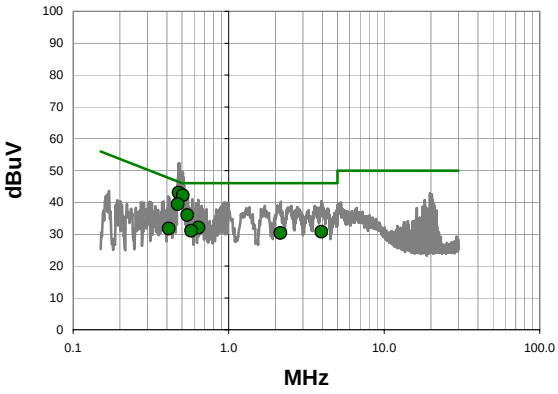
Test Specifications	**Test Method**
FCC 15.207:2012	ANSI C63.10:2009

Run #	9	**Line:**	Neutral	**Ext. Attenuation:**	20	**Results**	Pass

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.507	33.5	20.2	53.7	56.0	-2.3
0.478	33.8	20.2	54.0	56.4	-2.4
0.471	30.5	20.2	50.7	56.5	-5.8
0.542	25.8	20.2	46.0	56.0	-10.0
0.640	21.5	20.2	41.7	56.0	-14.3
0.412	22.7	20.2	42.9	57.6	-14.7
0.574	20.4	20.2	40.6	56.0	-15.4
3.952	19.7	20.5	40.2	56.0	-15.8
2.152	18.9	20.3	39.2	56.0	-16.8

Average Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.478	22.8	20.2	43.0	46.4	-3.4
0.507	22.0	20.2	42.2	46.0	-3.8
0.471	19.2	20.2	39.4	46.5	-7.1
0.542	15.8	20.2	36.0	46.0	-10.0
0.640	11.9	20.2	32.1	46.0	-13.9
0.574	10.9	20.2	31.1	46.0	-14.9
3.952	10.3	20.5	30.8	46.0	-15.2
2.152	10.0	20.3	30.3	46.0	-15.7
0.412	11.6	20.2	31.8	47.6	-15.8

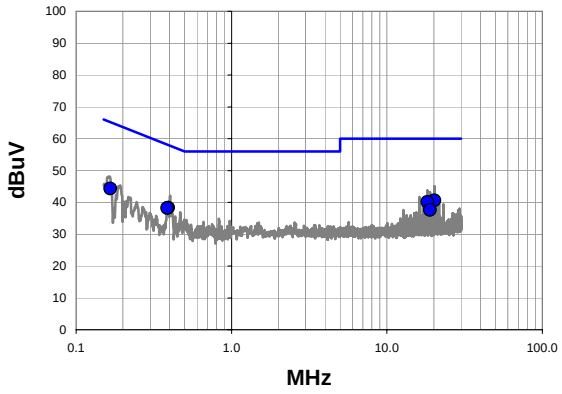
AC Powerline Conducted Emissions

Work Order:	DGII0036	**Date:**	01/13/12		
Project:	None	**Temperature:**	24.21 °C		
Job Site:	MN03	**Humidity:**	10.89% RH		
Serial Number:	1201-003	**Barometric Pres.:**	1017 mbar	**Tested by:**	Johnathan Lee
EUT:	ConnectPort X2e Wi-Fi				
Configuration:	3				
Customer:	Digi International				
Attendees:	Bradley Ferguson				
EUT Power:	110VAC/60Hz				
Operating Mode:	Pinging LAN, Transmitting 802.11 Low channel, 2412 MHz.				
Deviations:	None				
Comments:	Power supply part number (1P)24000105 A				

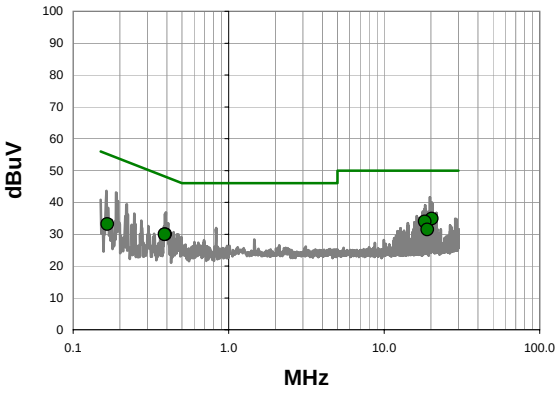
Test Specifications	**Test Method**
FCC 15.207:2012	ANSI C63.10:2009

Run #	10	**Line:**	Neutral	**Ext. Attenuation:**	20	**Results**	Pass

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
20.260	19.1	21.5	40.6	60.0	-19.4
0.391	18.1	20.2	38.3	58.0	-19.7
0.387	18.0	20.2	38.2	58.1	-19.9
18.242	18.7	21.4	40.1	60.0	-19.9
0.166	24.1	20.2	44.3	65.2	-20.9
18.916	16.2	21.4	37.6	60.0	-22.4

Average Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
20.260	13.3	21.5	34.8	50.0	-15.2
18.242	12.6	21.4	34.0	50.0	-16.0
0.391	9.8	20.2	30.0	48.0	-18.0
0.387	9.8	20.2	30.0	48.1	-18.1
18.916	10.0	21.4	31.4	50.0	-18.6
0.166	13.0	20.2	33.2	55.2	-22.0

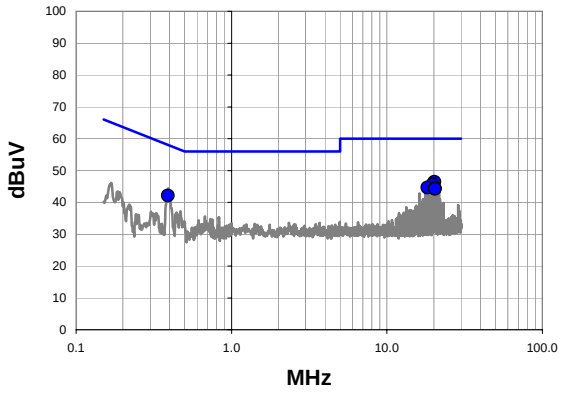
AC Powerline Conducted Emissions

Work Order:	DGII0036	**Date:**	01/13/12		
Project:	None	**Temperature:**	24.21 °C		
Job Site:	MN03	**Humidity:**	10.89% RH		
Serial Number:	1201-003	**Barometric Pres.:**	1017 mbar	**Tested by:**	Johnathan Lee
EUT:	ConnectPort X2e Wi-Fi				
Configuration:	3				
Customer:	Digi International				
Attendees:	Bradley Ferguson				
EUT Power:	110VAC/60Hz				
Operating Mode:	Pinging LAN, Transmitting 802.11 Low channel, 2412 MHz.				
Deviations:	None				
Comments:	Power supply part number (1P)24000105 A				

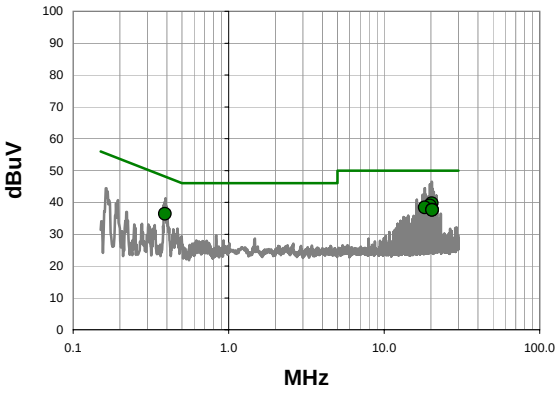
Test Specifications	**Test Method**
FCC 15.207:2012	ANSI C63.10:2009

Run #	11	**Line:**	High Line	**Ext. Attenuation:**	20	**Results**	Pass

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
20.258	24.9	21.5	46.4	60.0	-13.6
19.710	24.1	21.5	45.6	60.0	-14.4
18.244	23.3	21.4	44.7	60.0	-15.3
20.320	22.9	21.5	44.4	60.0	-15.6
20.380	22.7	21.5	44.2	60.0	-15.8
0.389	21.9	20.2	42.1	58.1	-16.0

Average Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
20.258	18.2	21.5	39.7	50.0	-10.3
19.710	17.5	21.5	39.0	50.0	-11.0
18.244	17.0	21.4	38.4	50.0	-11.6
0.389	16.2	20.2	36.4	48.1	-11.7
20.320	16.2	21.5	37.7	50.0	-12.3
20.380	16.1	21.5	37.6	50.0	-12.4

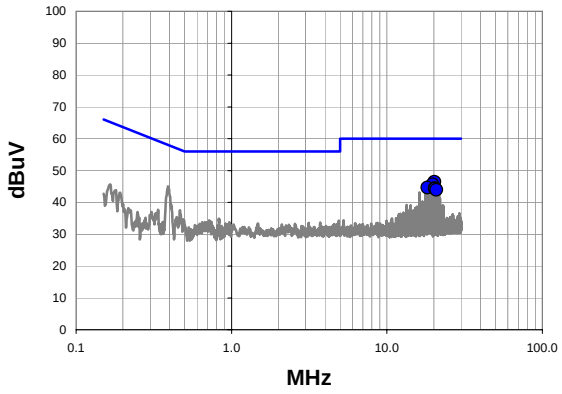
AC Powerline Conducted Emissions

Work Order:	DGII0036	**Date:**	01/13/12		
Project:	None	**Temperature:**	24.21 °C		
Job Site:	MN03	**Humidity:**	10.89% RH		
Serial Number:	1201-003	**Barometric Pres.:**	1017 mbar	**Tested by:**	Johnathan Lee
EUT:	ConnectPort X2e Wi-Fi				
Configuration:	3				
Customer:	Digi International				
Attendees:	Bradley Ferguson				
EUT Power:	110VAC/60Hz				
Operating Mode:	Pinging LAN, Transmitting 802.11 Mid channel, 2437 MHz.				
Deviations:	None				
Comments:	Power supply part number (1P)24000105 A				

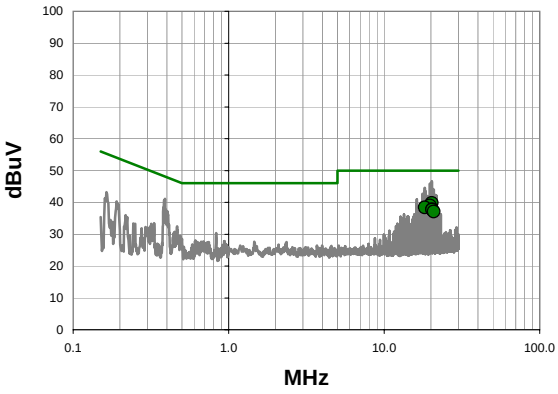
Test Specifications	**Test Method**
FCC 15.207:2012	ANSI C63.10:2009

Run #	12	**Line:**	High Line	**Ext. Attenuation:**	20	**Results**	Pass

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
20.258	24.9	21.5	46.4	60.0	-13.6
19.710	24.1	21.5	45.6	60.0	-14.4
18.244	23.3	21.4	44.7	60.0	-15.3
20.320	22.9	21.5	44.4	60.0	-15.6
20.380	22.8	21.5	44.3	60.0	-15.7
20.808	22.4	21.6	44.0	60.0	-16.0

Average Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
20.258	18.3	21.5	39.8	50.0	-10.2
19.710	17.5	21.5	39.0	50.0	-11.0
18.244	17.0	21.4	38.4	50.0	-11.6
20.320	16.3	21.5	37.8	50.0	-12.2
20.380	16.2	21.5	37.7	50.0	-12.3
20.808	15.5	21.6	37.1	50.0	-12.9

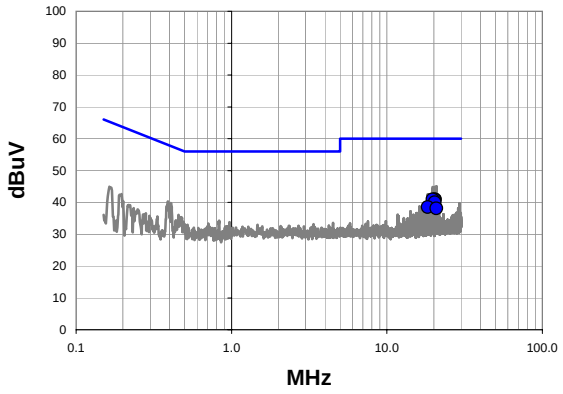
AC Powerline Conducted Emissions

Work Order:	DGII0036	**Date:**	01/13/12		
Project:	None	**Temperature:**	24.21 °C		
Job Site:	MN03	**Humidity:**	10.89% RH		
Serial Number:	1201-003	**Barometric Pres.:**	1017 mbar	**Tested by:**	Johnathan Lee
EUT:	ConnectPort X2e Wi-Fi				
Configuration:	3				
Customer:	Digi International				
Attendees:	Bradley Ferguson				
EUT Power:	110VAC/60Hz				
Operating Mode:	Pinging LAN, Transmitting 802.11 Mid channel, 2437 MHz.				
Deviations:	None				
Comments:	Power supply part number (1P)24000105 A				

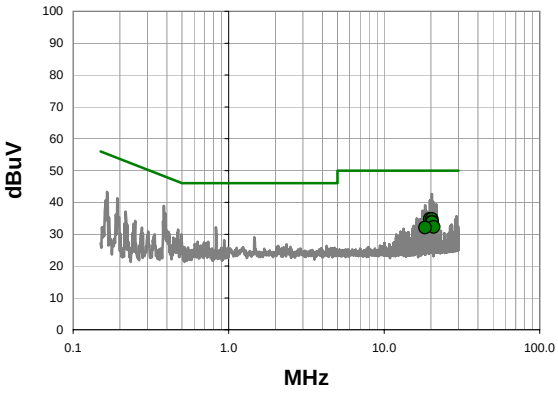
Test Specifications	**Test Method**
FCC 15.207:2012	ANSI C63.10:2009

Run #	13	**Line:**	Neutral	**Ext. Attenuation:**	20	**Results**	Pass

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
20.380	19.4	21.5	40.9	60.0	-19.1
20.260	19.4	21.5	40.9	60.0	-19.1
19.710	19.4	21.5	40.9	60.0	-19.1
20.320	18.5	21.5	40.0	60.0	-20.0
18.306	17.1	21.4	38.5	60.0	-21.5
20.806	16.5	21.6	38.1	60.0	-21.9

Average Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
19.710	13.3	21.5	34.8	50.0	-15.2
20.260	13.2	21.5	34.7	50.0	-15.3
20.320	12.3	21.5	33.8	50.0	-16.2
20.380	12.2	21.5	33.7	50.0	-16.3
20.806	10.7	21.6	32.3	50.0	-17.7
18.306	10.7	21.4	32.1	50.0	-17.9

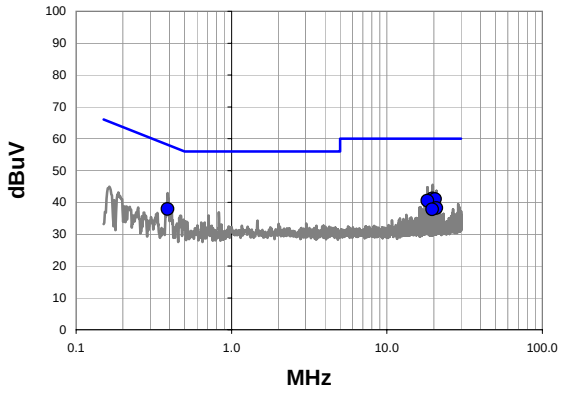
AC Powerline Conducted Emissions

Work Order:	DGII0036	**Date:**	01/13/12		
Project:	None	**Temperature:**	24.21 °C		
Job Site:	MN03	**Humidity:**	10.89% RH		
Serial Number:	1201-003	**Barometric Pres.:**	1017 mbar	**Tested by:**	Johnathan Lee
EUT:	ConnectPort X2e Wi-Fi				
Configuration:	3				
Customer:	Digi International				
Attendees:	Bradley Ferguson				
EUT Power:	110VAC/60Hz				
Operating Mode:	Pinging LAN, Transmitting 802.11 High channel, 2462 MHz.				
Deviations:	None				
Comments:	Power supply part number (1P)24000105 A				

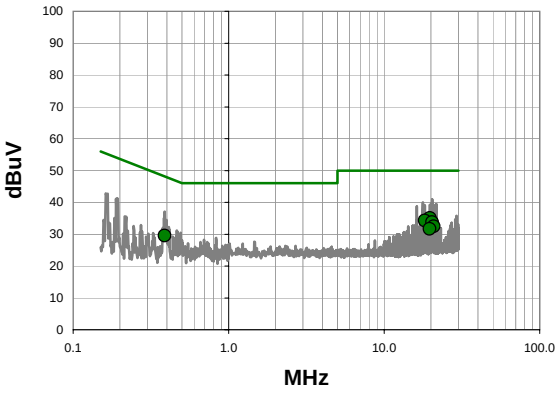
Test Specifications	**Test Method**
FCC 15.207:2012	ANSI C63.10:2009

Run #	14	**Line:**	Neutral	**Ext. Attenuation:**	20	**Results**	Pass

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
19.710	19.7	21.5	41.2	60.0	-18.8
20.380	19.5	21.5	41.0	60.0	-19.0
18.242	19.1	21.4	40.5	60.0	-19.5
0.388	17.7	20.2	37.9	58.1	-20.2
20.806	16.6	21.6	38.2	60.0	-21.8
19.586	16.3	21.5	37.8	60.0	-22.2

Average Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
19.710	13.6	21.5	35.1	50.0	-14.9
18.242	12.9	21.4	34.3	50.0	-15.7
20.380	12.2	21.5	33.7	50.0	-16.3
20.806	10.9	21.6	32.5	50.0	-17.5
19.586	10.2	21.5	31.7	50.0	-18.3
0.388	9.3	20.2	29.5	48.1	-18.6

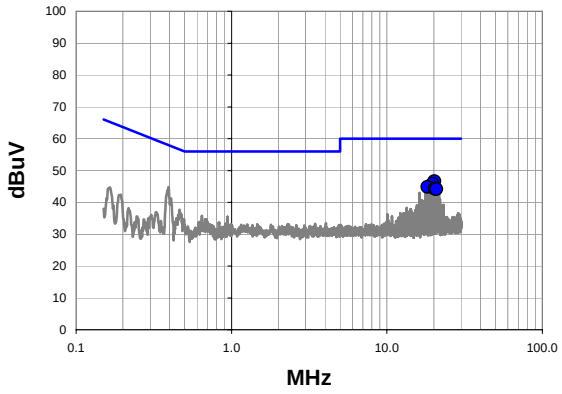
AC Powerline Conducted Emissions

Work Order:	DGII0036	**Date:**	01/13/12		
Project:	None	**Temperature:**	24.21 °C		
Job Site:	MN03	**Humidity:**	10.89% RH		
Serial Number:	1201-003	**Barometric Pres.:**	1017 mbar	**Tested by:**	Johnathan Lee
EUT:	ConnectPort X2e Wi-Fi				
Configuration:	3				
Customer:	Digi International				
Attendees:	Bradley Ferguson				
EUT Power:	110VAC/60Hz				
Operating Mode:	Pinging LAN, Transmitting 802.11 High channel, 2462 MHz.				
Deviations:	None				
Comments:	Power supply part number (1P)24000105 A				

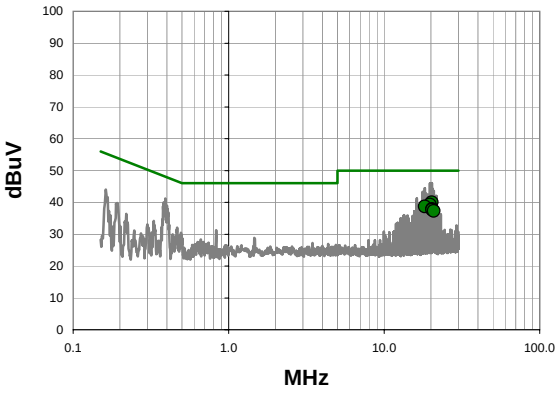
Test Specifications	**Test Method**
FCC 15.207:2012	ANSI C63.10:2009

Run #	15	**Line:**	High Line	**Ext. Attenuation:**	20	**Results**	Pass

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
20.258	25.1	21.5	46.6	60.0	-13.4
19.710	24.3	21.5	45.8	60.0	-14.2
18.244	23.5	21.4	44.9	60.0	-15.1
20.380	22.9	21.5	44.4	60.0	-15.6
20.318	22.7	21.5	44.2	60.0	-15.8
20.808	22.6	21.6	44.2	60.0	-15.8

Average Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
20.258	18.5	21.5	40.0	50.0	-10.0
19.710	17.8	21.5	39.3	50.0	-10.7
18.244	17.3	21.4	38.7	50.0	-11.3
20.380	16.4	21.5	37.9	50.0	-12.1
20.318	16.2	21.5	37.7	50.0	-12.3
20.808	15.7	21.6	37.3	50.0	-12.7

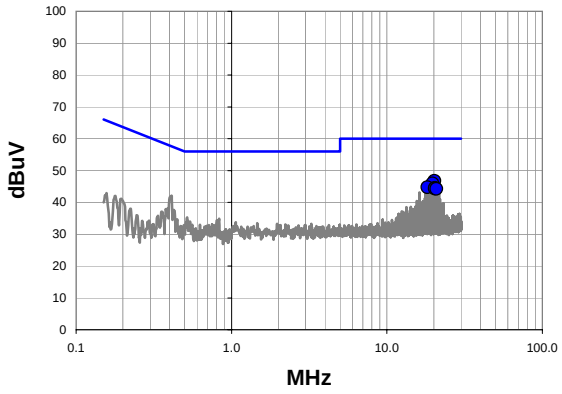
AC Powerline Conducted Emissions

Work Order:	DGII0036	**Date:**	01/13/12		
Project:	None	**Temperature:**	24.21 °C		
Job Site:	MN03	**Humidity:**	10.89% RH		
Serial Number:	1201-003	**Barometric Pres.:**	1017 mbar	**Tested by:**	Johnathan Lee
EUT:	ConnectPort X2e Wi-Fi				
Configuration:	3				
Customer:	Digi International				
Attendees:	Bradley Ferguson				
EUT Power:	110VAC/60Hz				
Operating Mode:	Pinging LAN, Receiving 802.11 Mid channel, 2437 MHz.				
Deviations:	None				
Comments:	Power supply part number (1P)24000105 A				

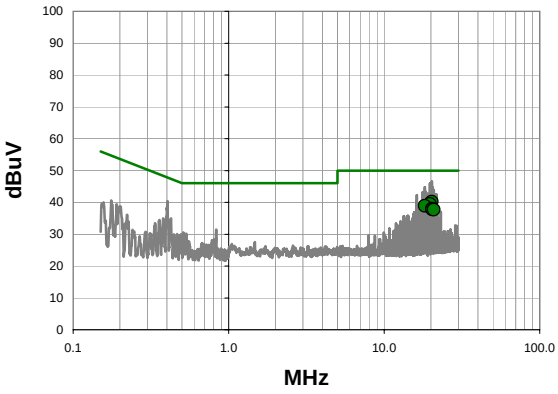
Test Specifications	**Test Method**
FCC 15.207:2012	ANSI C63.10:2009

Run #	16	**Line:**	High Line	**Ext. Attenuation:**	20	**Results**	Pass

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
20.258	25.2	21.5	46.7	60.0	-13.3
19.710	24.4	21.5	45.9	60.0	-14.1
18.242	23.4	21.4	44.8	60.0	-15.2
20.380	23.0	21.5	44.5	60.0	-15.5
20.318	22.8	21.5	44.3	60.0	-15.7
20.808	22.7	21.6	44.3	60.0	-15.7

Average Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
20.258	18.7	21.5	40.2	50.0	-9.8
19.710	18.0	21.5	39.5	50.0	-10.5
18.242	17.5	21.4	38.9	50.0	-11.1
20.380	16.5	21.5	38.0	50.0	-12.0
20.318	16.3	21.5	37.8	50.0	-12.2
20.808	16.1	21.6	37.7	50.0	-12.3

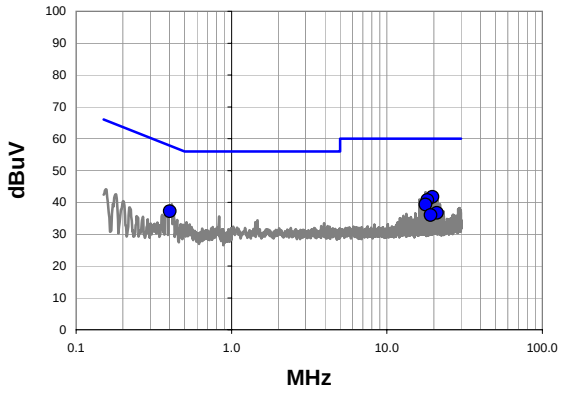
AC Powerline Conducted Emissions

Work Order:	DGII0036	**Date:**	01/13/12		
Project:	None	**Temperature:**	24.21 °C		
Job Site:	MN03	**Humidity:**	10.89% RH		
Serial Number:	1201-003	**Barometric Pres.:**	1017 mbar	**Tested by:**	Johnathan Lee
EUT:	ConnectPort X2e Wi-Fi				
Configuration:	3				
Customer:	Digi International				
Attendees:	Bradley Ferguson				
EUT Power:	110VAC/60Hz				
Operating Mode:	Pinging LAN, Receiving 802.11 Mid channel, 2437 MHz.				
Deviations:	None				
Comments:	Power supply part number (1P)24000105 A				

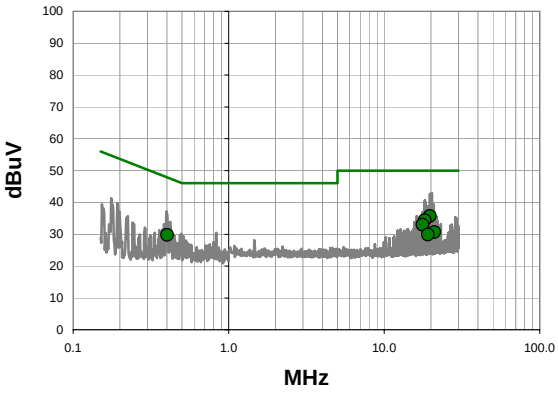
Test Specifications	**Test Method**
FCC 15.207:2012	ANSI C63.10:2009

Run #	17	**Line:**	Neutral	**Ext. Attenuation:**	20	**Results**	Pass

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
19.708	20.2	21.5	41.7	60.0	-18.3
18.242	19.3	21.4	40.7	60.0	-19.3
0.402	17.0	20.2	37.2	57.8	-20.6
17.694	18.0	21.3	39.3	60.0	-20.7
21.054	15.1	21.6	36.7	60.0	-23.3
19.160	14.5	21.4	35.9	60.0	-24.1

Average Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
19.708	14.2	21.5	35.7	50.0	-14.3
18.242	13.0	21.4	34.4	50.0	-15.6
17.694	11.7	21.3	33.0	50.0	-17.0
0.402	9.5	20.2	29.7	47.8	-18.1
21.054	9.1	21.6	30.7	50.0	-19.3
19.160	8.4	21.4	29.8	50.0	-20.2