Microsoft Corporation

1514

FCC 15.247:2012

FCC 15.207:2012

Report #: MCSO1631

Report Prepared By Northwest EMC Inc.

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

California – Minnesota – Oregon – New York – Washington

CERTIFICATE OF TEST

WTD 12.5.23

Last Date of Test: December 14, 2012
Microsoft Corporation
Model: 1514

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: 200630-0

Test Facility

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

Northwest EMC, Inc.
22975 NW Evergreen Parkway, Suite 400
Hillsboro, OR 97124

Phone: (503) 844-4066 Fax: 844-3826

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

This report must not be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government of the United States of America.

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

NORTHWEST EMC
REV 2012.08.02

REVISION HISTORY

Revision Number	Description	Date	Page Number
00	None		

Barometric Pressure

The recorded barometric pressure has been normalized to sea level.

NORTHWEST EMC

REV 2012.05.24

ACCREDITATIONS AND AUTHORIZATIONS

United States

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

A2LA - Accredited by A2LA to ISO / IEC Guide 65 as a product certifier. This allows Northwest EMC to certify transmitters to FCC and IC specifications.

NVLAP - Each laboratory is accredited by NVLAP to ISO 17025

Canada

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

European Union

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

Australia/New Zealand

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

Korea

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

Japan

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

Taiwan

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

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

Singapore

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

Hong Kong

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

Vietnam

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

Russia

GOST – Accredited by Certinform VNIINMASH, CERTINFO, SAMTES, and Federal CHEC to perform EMC and Hygienic testing for Information Technology products to GOST standards.

SCOPE

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

MEASUREMENT UNCERTAINTY

Measurement Uncertainty

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

A measurement uncertainty estimation has been performed for each test per our internal quality document WP 342. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty (K=2) for each test is on each data sheet. Our measurement data meets or exceeds the measurement uncertainty requirements of the applicable specification; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for estimating measurement uncertainty are based upon ETSI TR 100 028 (or CISPR 16-4-1 as applicable), and are available upon request.

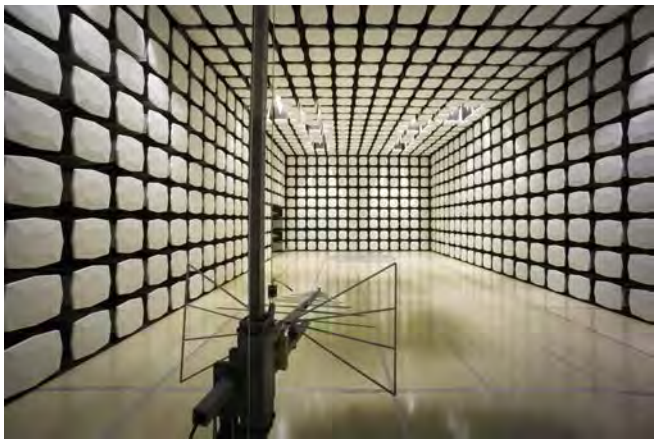
The following table represents the Measurement Uncertainty (MU) budgets for each of the tests that may be contained in this report.

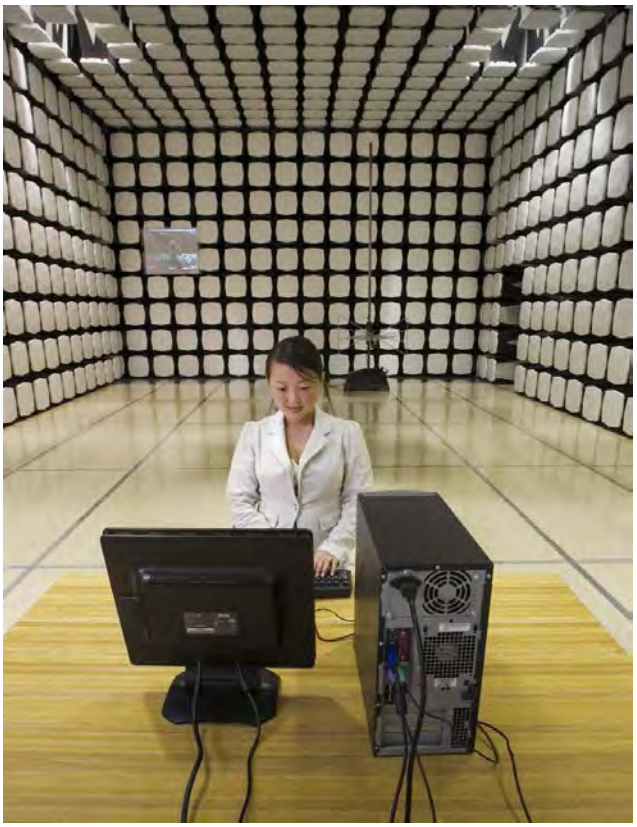
Test	+ MU	- MU
Frequency Accuracy (Hz)	0.12	-0.01
Amplitude Accuracy (dB)	0.49	-0.49
Conducted Power (dB)	0.41	-0.41
Radiated Power via Substitution (dB)	0.69	-0.68
Temperature (degrees C)	0.81	-0.81
Humidity (% RH)	2.89	-2.89
Field Strength (dB)	4.00	-4.00
AC Powerline Conducted Emissions (dB)	2.70	-2.70

LOCATIONS

REV 2012.08.03

Oregon	California	New York	Minnesota	Washington
Labs EV01-EV12 22975 NW Evergreen Pkwy, #400 Hillsboro, OR 97124 (503) 844-4066	Labs OC01-OC13 41 Tesla Irvine, CA 92618 (949) 861-8918	Labs WA01-WA04 4939 Jordan Rd. Elbridge, NY 13060 (315) 685-0796	Labs MN01-MN08 9349 W Broadway Ave. Brooklyn Park, MN 55445 (763) 425-2281	Labs SU01-SU07 14128 339th Ave. SE Sultan, WA 98294 (360) 793-8675
VCCI				
A-0108	A-0029		A-0109	A-0110
Industry Canada				
2834D-1, 2834D-*2*	2834B-1, 2834B-2, 2834B-3		2834E-1	2834C-1





PRODUCT DESCRIPTION

WTD 12.5.23

Client and Equipment Under Test (EUT) Information

Company Name:	Microsoft Corporation
Address:	One Microsoft Way
City, State, Zip:	Redmond, WA 98052-6399
Test Requested By:	Mike Boucher
Model:	1514
First Date of Test:	November 1, 2012
Last Date of Test:	December 14, 2012
Receipt Date of Samples:	October 29, 2012
Equipment Design Stage:	Production
Equipment Condition:	No Damage

Information Provided by the Party Requesting the Test

Functional Description of the EUT (Equipment Under Test):
A Hand held computing device with 802.11b/g/a/n and Bluetooth radios.

Testing Objective:
To demonstrate compliance under FCC 15.247 for operation in the 2.4 GHz and 5.8 GHz bands.

CONFIGURATIONS

Configuration MCSO1631- 1

Software/Firmware Running during test	
Description	**Version**
MS Windows	8
Wifi Tool	1.0.8.24

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Hand held computing device	Microsoft Corporation	1514	000012424053

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
AC Adapter	Microsoft Corporation	PA-2480-06MX	0D21033282239
USB Ethernet Adapter	Cisco	USB300M	CU906M703795

Remote Equipment Outside of Test Setup Boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Remote Laptop	Lenovo	ThinkPad T420s	R9-PMLAF

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
Headphone	No	1.2m	No	Hand held computing device	Earbuds
AC Power	No	0.5m	No	AC Adapter	AC Mains
DC Power	No	1.5m	No	AC Adapter	Hand held computing device
USB	Yes	0.1m	No	USB Ethernet Adapter	Hand held computing device
HD Video Cable	Yes	1.9m	No	Hand held computing device	Unterminated
Ethernet	No	1.0m	No	SB Ethernet Adapter	Remote Laptop
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

CONFIGURATIONS

Configuration MCSO1631- 2

Software/Firmware Running during test	
Description	**Version**
MS Windows	8
Wifi Tool	1.0.8.24

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Hand held computing device	Microsoft Corporation	1514	000092324253

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
AC Adapter	Microsoft Corporation	PA-2480-06MX	0D21033282239
USB Ethernet Adapter	Cisco	USB300M	CU906M703795

Remote Equipment Outside of Test Setup Boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Remote Laptop	Lenovo	ThinkPad T420s	R9-PMLAF

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
Headphone	No	1.2m	No	Hand held computing device	Earbuds
AC Power	No	0.5m	No	AC Adapter	AC Mains
DC Power	No	1.5m	No	AC Adapter	Hand held computing device
USB	Yes	0.1m	No	USB Ethernet Adapter	Hand held computing device
HD Video Cable	Yes	1.9m	No	Hand held computing device	Unterminated
Ethernet	No	1.0m	No	SB Ethernet Adapter	Remote Laptop
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

CONFIGURATIONS

Configuration MCSO1638- 1

Software/Firmware Running during test	
Description	**Version**
Wifi Tool	1.0.8.24
MS Windows	8

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Hand held computing device	Microsoft Corporation	1514	000109423753
Keyboard	Microsoft Corporation	11468626	000570221351

Remote Equipment Outside of Test Setup Boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Remote PC	Lenovo	L420	7854CT0

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
AC mains	Yes	1.0m	No	AC Mains	Hand held computing device
USB adapter	Yes	.2m	No	Hand held computing device	Ethernet CAT 5 Cable
Ethernet CAT 5 Cable	No	1.0m	No	USB adapter	Remote PC
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

CONFIGURATIONS

Configuration MCSO1638- 2

Software/Firmware Running during test	
Description	**Version**
Wifi Tool	1.0.8.24
MS Windows	8

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Hand held computing device	Microsoft Corporation	1514	000109423753
Keyboard	Microsoft Corporation	11468626	000570221351

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
DC Power Supply	Topward Electric	TPS-2000	946425
Remote PC	Lenovo	L420	7854CT0

Remote Equipment Outside of Test Setup Boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Digital Multi-Meter	Tektronix	DMM912	AL2807

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
AC mains	Yes	1.0m	No	AC Mains	Hand held computing device
USB adapter	Yes	.2m	No	Hand held computing device	Ethernet CAT 5 Cable
Ethernet CAT 5 Cable	No	2.5m	No	USB adapter	Remote PC
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

CONFIGURATIONS

Configuration MCSO1638- 3

Software/Firmware Running during test	
Description	**Version**
Wifi Tool	1.0.8.24
MS Windows	8

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Hand held computing device	Microsoft Corporation	1514	000109423753
Keyboard	Microsoft Corporation	11468626	000570221351
Hand held computing device	Microsoft Corporation	1514	000070724253

Remote Equipment Outside of Test Setup Boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Remote PC	Lenovo	L420	7854CT0

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
AC mains	Yes	1.0m	No	AC Mains	Hand held computing device
USB adapter	Yes	.2m	No	Hand held computing device	Ethernet CAT 5 Cable
Ethernet CAT 5 Cable	No	1.0m	No	USB adapter	Remote PC
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

MODIFICATIONS

WTD 12.5.23

Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	11/1/2012	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.
2	11/1/2012	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.
3	11/2/2012	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	11/12/2012	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.
5	11/13/2012	AC Powerline Conducted Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
6	12/14/2012	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.
7	12/14/2012	Output Power	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

Duty Cycle

TEST DESCRIPTION

The Duty Cycle (x) were measured for each of the EUT operating modes. The measurements were made using a zero span on the spectrum analyzer to see the pulses in the time domain. The transmit power was set to its default maximum. A direct connection was made between the RF output of the EUT and a spectrum analyzer. Attenuation and a DC block were used

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

The EUT operates at 100% Duty Cycle.

Power Table

This power table represents the power level settings used in the customer provided radio control test software during testing.

FCC 15.247		Test Description						
		Radiated Spurious	Output Power	Power Spectral Density	Occupied Bandwidth	Band Edge Compliance	Spurious Conducted Emissions	AC Powerline Conducted
Frequency Band	Channel	Power (dBm)	Power (dBm)	Power (dBm)	Power (dBm)	Power (dBm)	Power (dBm)	Power (dBm)
2400 to 2483.5 MHz	Ch 1	16	16	16	16	16	16	16
	Ch 6	16	16	16	16	16	16	16
	Ch 11	16	16	16	16	16	16	16
	Ch 1/5 - 40 MHz	11	11	11	16	16	16	16
	Ch 4/8 - 40 MHz	16	16	16	16	16	16	16
	Ch 7/11 - 40 MHz	12	11	11	16	16	16	16
5.725 to 5.85 GHz	Ch 149	13	12	12	13	13	13	13
	Ch 157	13	12	12	13	13	13	13
	Ch 165	13	12	12	13	13	13	13
	Ch 149/153-40 MHz	13	12	12	13	13	13	13
	Ch 157/161-40 MHz	13	12	12	13	13	13	13

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
EV06 Direct Connect Cable	ESM Cable Corp.	TT	ECA	NCR	0
40GHz DC Block	Miteq	DCB4000	AMD	6/25/2012	12
Attenuator 20 dB, SMA M/F 26GHz	S.M. Electronics	SA26B-20	AUY	8/2/2012	12
Power Meter	Gigatronics	8651A	SPM	1/9/2012	24
MXG Vector Signal Generator	Agilent	N5182A	TIF	NCR	0
Attenuator, 'Precision N'	S.M. Electronics	SA18N-06/SM4032	REE	12/15/2011	12
Power Sensor	Gigatronics	80701A	SPL	7/8/2011	24
Spectrum Analyzer	Agilent	E4440A	AFD	7/5/2012	12

TEST DESCRIPTION

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

The EUT was set to low, medium and high transmit frequencies. The measurement was made using a direct connection between the RF output of the EUT and the spectrum analyzer. The EUT was transmitting at the data rate(s) listed in the datasheet.

Please refer to the Power Table located elsewhere in this report for radio power operating level during testing.

The EUT was operating on antenna port A only.

Occupied Bandwidth

EUT:	1514	Work Order:	MCSO1638
Serial Number:	000109423753	Date:	11/01/12
Customer:	Microsoft Corporation	Temperature:	22.3°C
Attendees:	None	Humidity:	52%
Project:	None	Barometric Pres.:	1013
Tested by:	Brandon Hobbs Rod Peloquin Sabrina Sanders	Power: 110VAC/60Hz	Job Site: EV06

TEST SPECIFICATIONS	Test Method
FCC 15.247:2012	ANSI C63.10:2009

COMMENTS

The EUT is operating at 100% duty cycle. All cable losses for 2.4GHz and 5.0GHz bands are accounted for in the analyzer offset calculations. Testing was completed using the modulation that produced the highest conducted output power for b, g and n modes

DEVIATIONS FROM TEST STANDARD

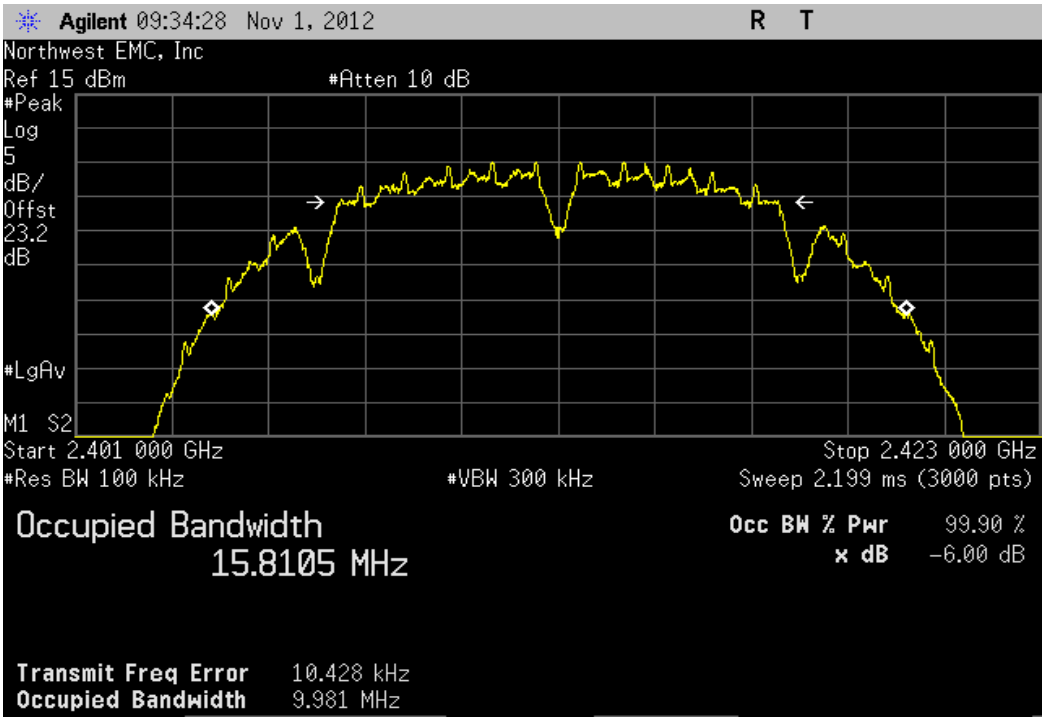
None

Configuration #	1	Signature

	Value	Limit	Result
20 MHz			
2400 MHz - 2483.5 MHz Band			
802.11(b) 1 Mbps			
Low Channel 1, 2412 MHz	9.981 MHz	> 500 kHz	Pass
Mid Channel 6, 2437 MHz	9.928 MHz	> 500 kHz	Pass
High Channel 11, 2462 MHz	9.967 MHz	> 500 kHz	Pass
802.11(b) 11 Mbps			
Low Channel 1, 2412 MHz	9.53 MHz	> 500 kHz	Pass
Mid Channel 6, 2437 MHz	9.604 MHz	> 500 kHz	Pass
High Channel 11, 2462 MHz	9.636 MHz	> 500 kHz	Pass
802.11(g) 6 Mbps			
Low Channel 1, 2412 MHz	16.339 MHz	> 500 kHz	Pass
Mid Channel 6, 2437 MHz	16.348 MHz	> 500 kHz	Pass
High Channel 11, 2462 MHz	16.36 MHz	> 500 kHz	Pass
802.11(g) 36 Mbps			
Low Channel 1, 2412 MHz	16.424 MHz	> 500 kHz	Pass
Mid Channel 6, 2437 MHz	16.401 MHz	> 500 kHz	Pass
High Channel 11, 2462 MHz	16.408 MHz	> 500 kHz	Pass
802.11(g) 54 Mbps			
Low Channel 1, 2412 MHz	16.453 MHz	> 500 kHz	Pass
Mid Channel 6, 2437 MHz	16.447 MHz	> 500 kHz	Pass
High Channel 11, 2462 MHz	16.444 MHz	> 500 kHz	Pass
802.11(n) MCS0			
Low Channel 1, 2412 MHz	17.383 MHz	> 500 kHz	Pass
Mid Channel 6, 2437 MHz	16.355 MHz	> 500 kHz	Pass
High Channel 11, 2462 MHz	15.902 MHz	> 500 kHz	Pass
802.11(n) MCS7			
Low Channel 1, 2412 MHz	15.957 MHz	> 500 kHz	Pass
Mid Channel 6, 2437 MHz	15.813 MHz	> 500 kHz	Pass
High Channel 11, 2462 MHz	15.743 MHz	> 500 kHz	Pass
5725 MHz - 5850 MHz Band			
802.11(a) 6 Mbps			
Low Channel 149, 5745 MHz	16.365 MHz	> 500 kHz	Pass
Mid Channel 157, 5785 MHz	16.376 MHz	> 500 kHz	Pass
High Channel 165, 5825 MHz	16.393 MHz	> 500 kHz	Pass
802.11(a) 36 Mbps			
Low Channel 149, 5745 MHz	16.352 MHz	> 500 kHz	Pass
Mid Channel 157, 5785 MHz	16.379 MHz	> 500 kHz	Pass
High Channel 165, 5825 MHz	16.359 MHz	> 500 kHz	Pass
802.11(a) 54 Mbps			
Low Channel 149, 5745 MHz	16.383 MHz	> 500 kHz	Pass
Mid Channel 157, 5785 MHz	16.416 MHz	> 500 kHz	Pass
High Channel 165, 5825 MHz	16.259 MHz	> 500 kHz	Pass
802.11(n) MCS0 - UNII			
Low Channel 149, 5745 MHz	15.816 MHz	> 500 kHz	Pass
Mid Channel 157, 5785 MHz	15.975 MHz	> 500 kHz	Pass
High Channel 165, 5825 MHz	17.402 MHz	> 500 kHz	Pass
802.11(n) MCS7 - UNII			
Low Channel 149, 5745 MHz	15.804 MHz	> 500 kHz	Pass
Mid Channel 157, 5785 MHz	17.403 MHz	> 500 kHz	Pass
High Channel 165, 5825 MHz	16.951 MHz	> 500 kHz	Pass
40 MHz			
2400 MHz - 2483.5 MHz Band			
802.11(n) MCS0			
Mid Channel 6, 2437 MHz	36.303 MHz	> 500 kHz	Pass
Low Channel 1/5, 2422 MHz	36.307 MHz	> 500 kHz	Pass
High Channel 7/11 2452 MHz	36.306 MHz	> 500 kHz	Pass
802.11(n) MCS7			
Mid Channel 6, 2437 MHz	35.774 MHz	> 500 kHz	Pass
Low Channel 1/5, 2422 MHz	35.901 MHz	> 500 kHz	Pass
High Channel 7/11 2452 MHz	35.83 MHz	> 500 kHz	Pass
5725 MHz - 5850 MHz Band			
802.11(n) MCS0 - UNII			
Low Channel 149/153, 5755 MHz	35.96 MHz	> 500 kHz	Pass
High Channe 157/161, 5795 MHz	35.935 MHz	> 500 kHz	Pass
802.11(n) MCS7 - UNII			
Low Channel 149/153, 5755 MHz	35.4 MHz	> 500 kHz	Pass
High Channe 157/161, 5795 MHz	35.504 MHz	> 500 kHz	Pass

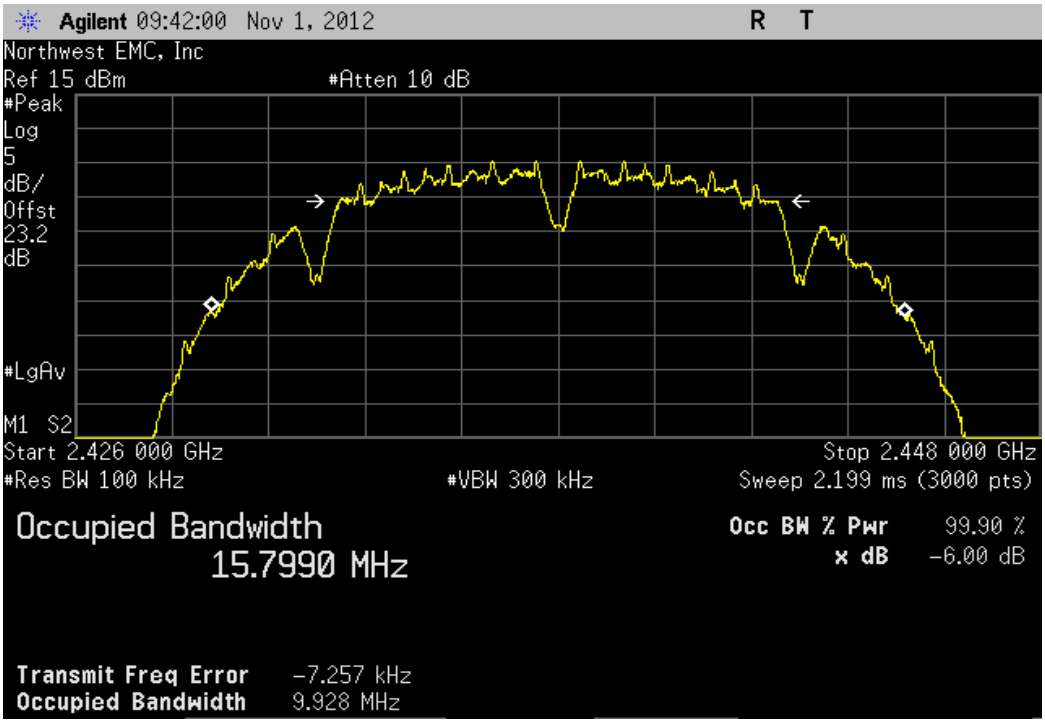
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(b) 1 Mbps, Low Channel 1, 2412 MHz

				Value	Limit	Result
				9.981 MHz	> 500 kHz	Pass



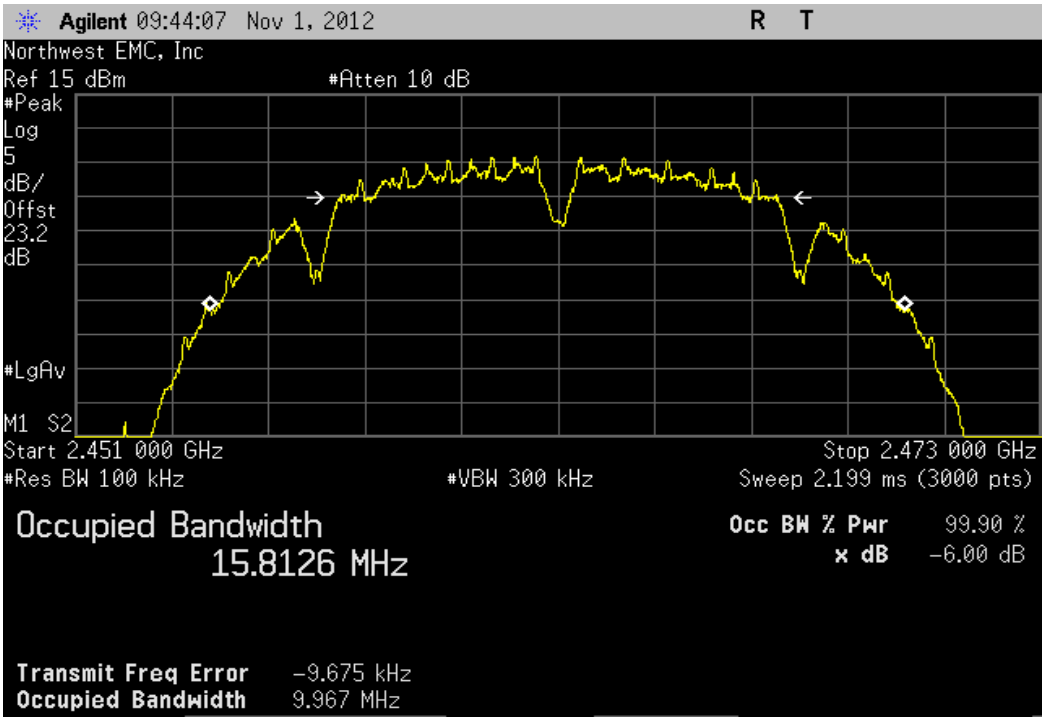
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(b) 1 Mbps, Mid Channel 6, 2437 MHz

				Value	Limit	Result
				9.928 MHz	> 500 kHz	Pass



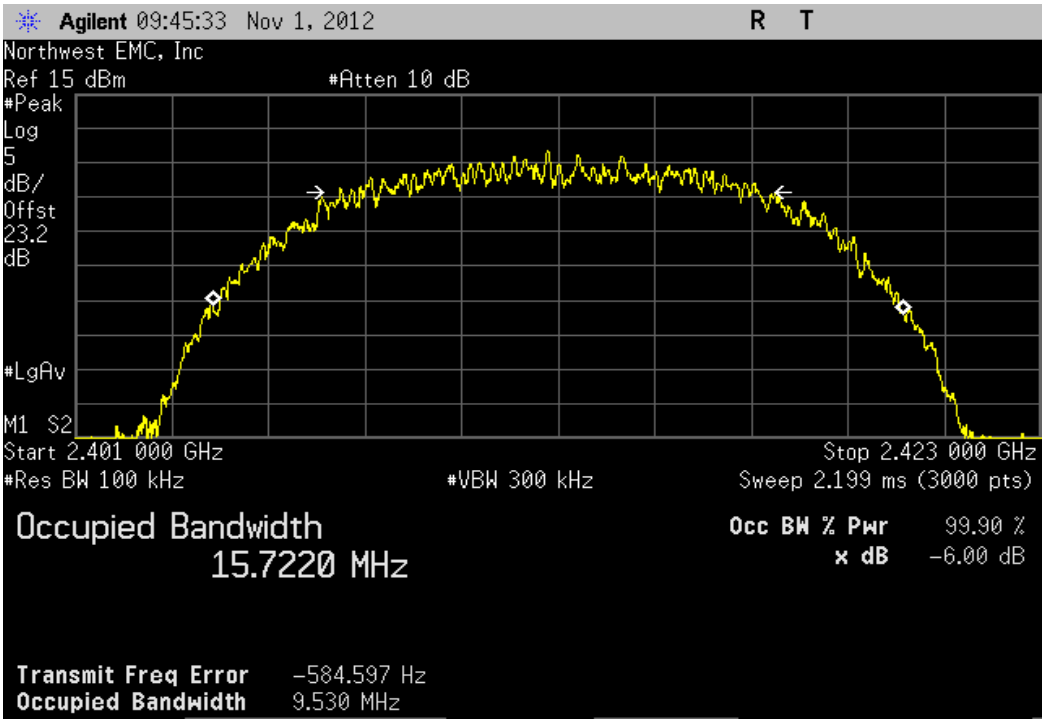
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(b) 1 Mbps, High Channel 11, 2462 MHz

				Value	Limit	Result
				9.967 MHz	> 500 kHz	Pass



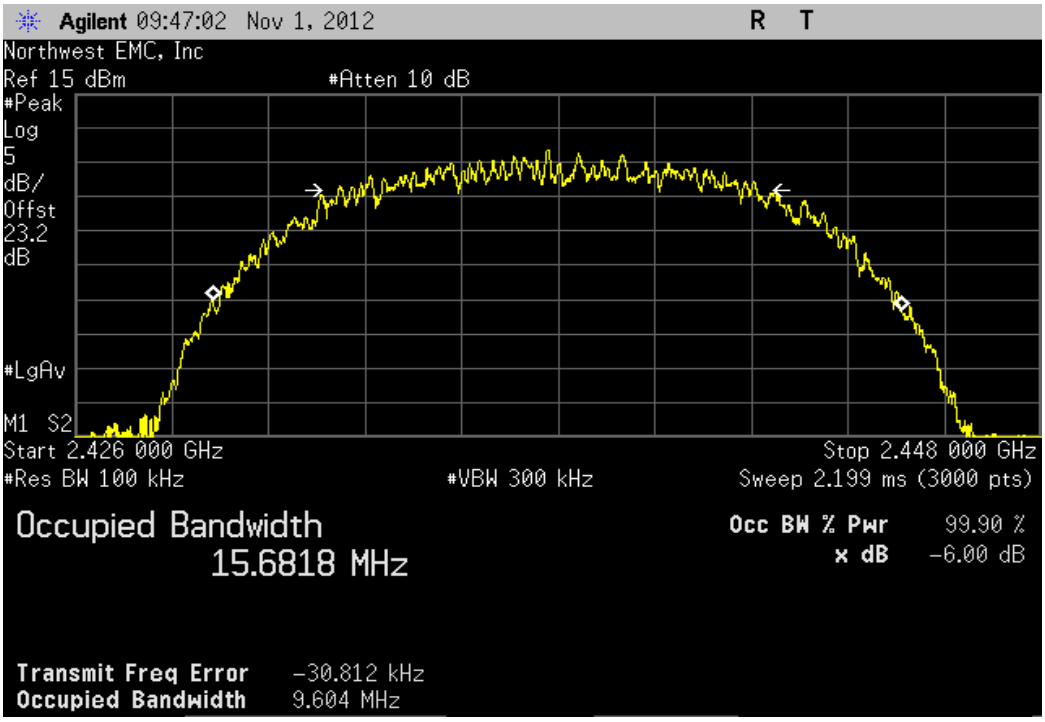
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(b) 11 Mbps, Low Channel 1, 2412 MHz

				Value	Limit	Result
				9.53 MHz	> 500 kHz	Pass



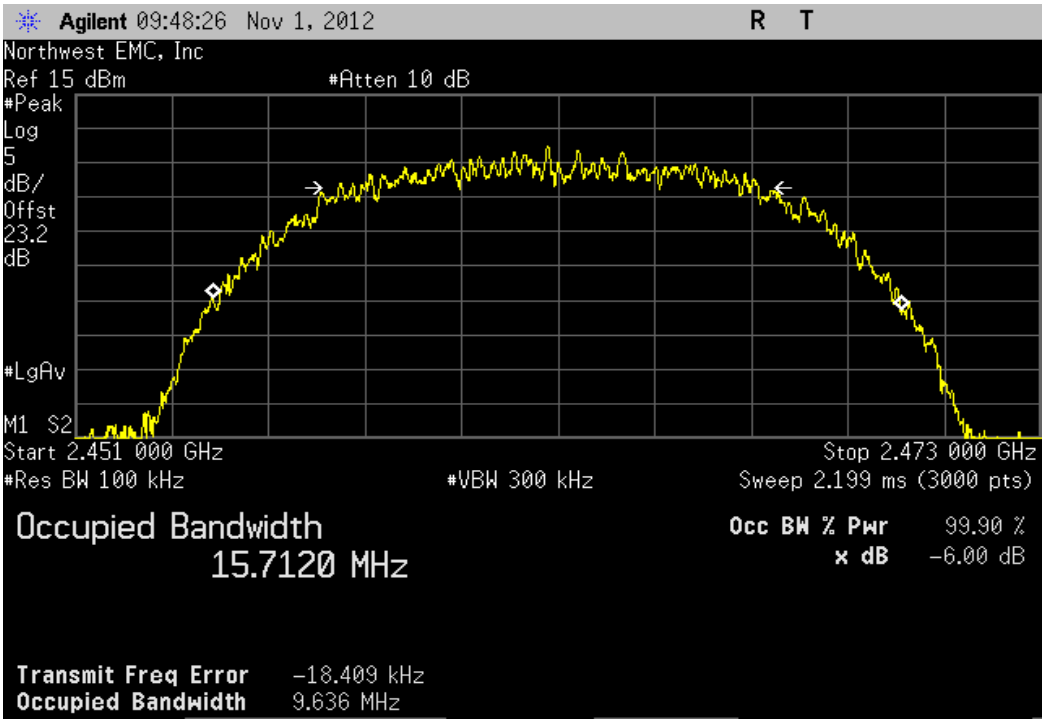
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(b) 11 Mbps, Mid Channel 6, 2437 MHz

				Value	Limit	Result
				9.604 MHz	> 500 kHz	Pass



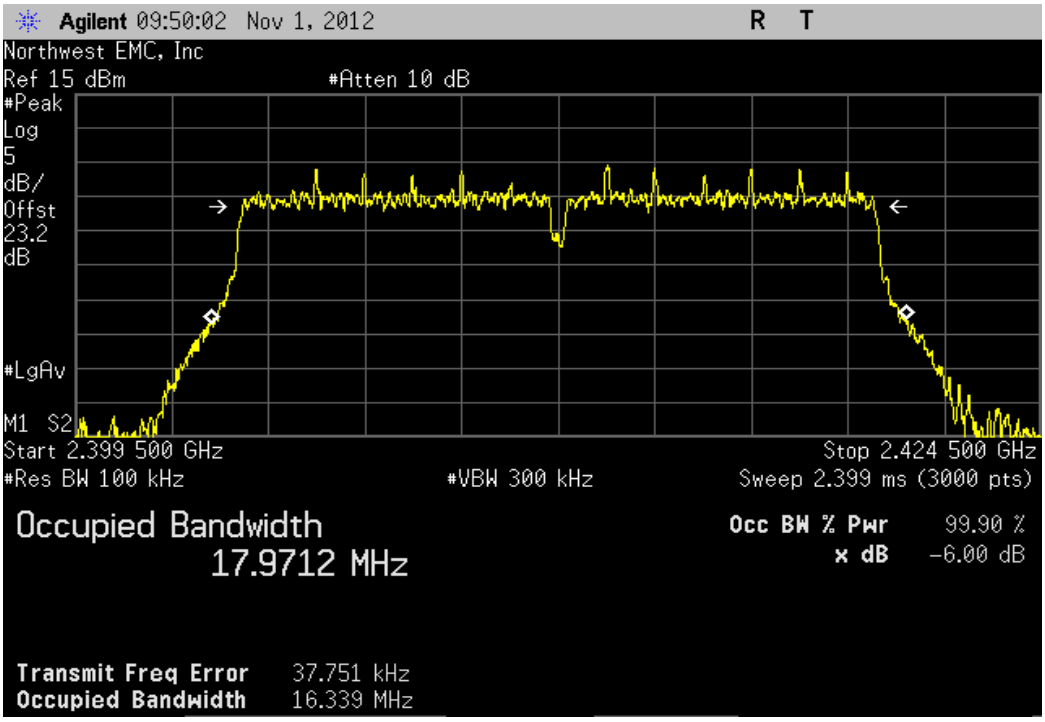
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(b) 11 Mbps, High Channel 11, 2462 MHz

				Value	Limit	Result
				9.636 MHz	> 500 kHz	Pass



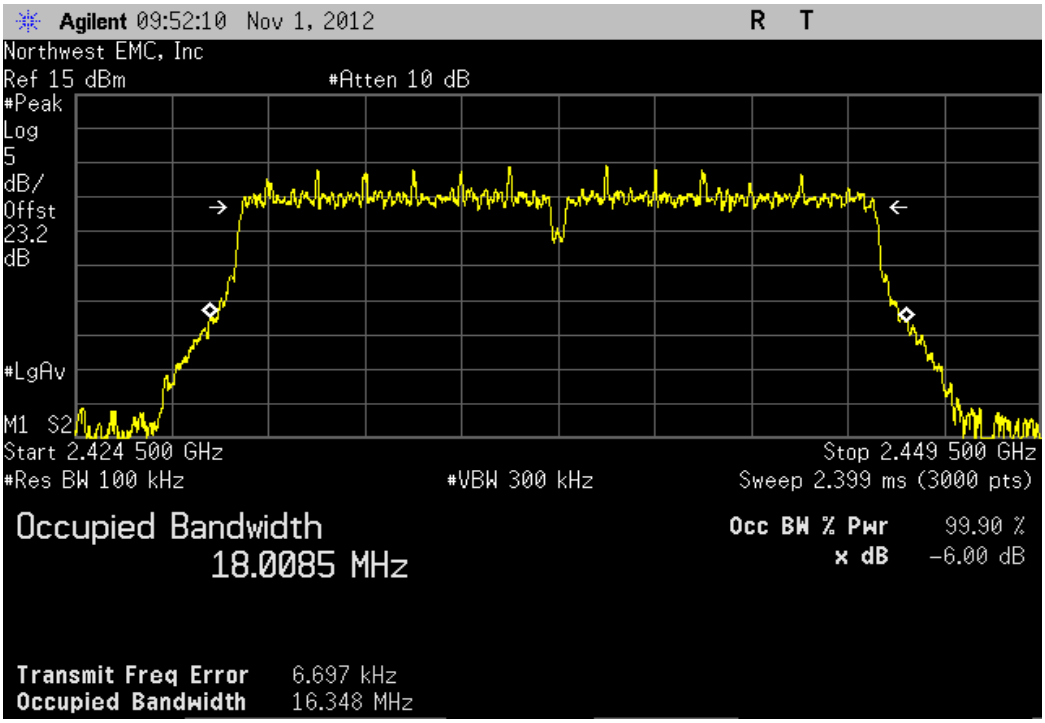
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(g) 6 Mbps, Low Channel 1, 2412 MHz

				Value	Limit	Result
				16.339 MHz	> 500 kHz	Pass



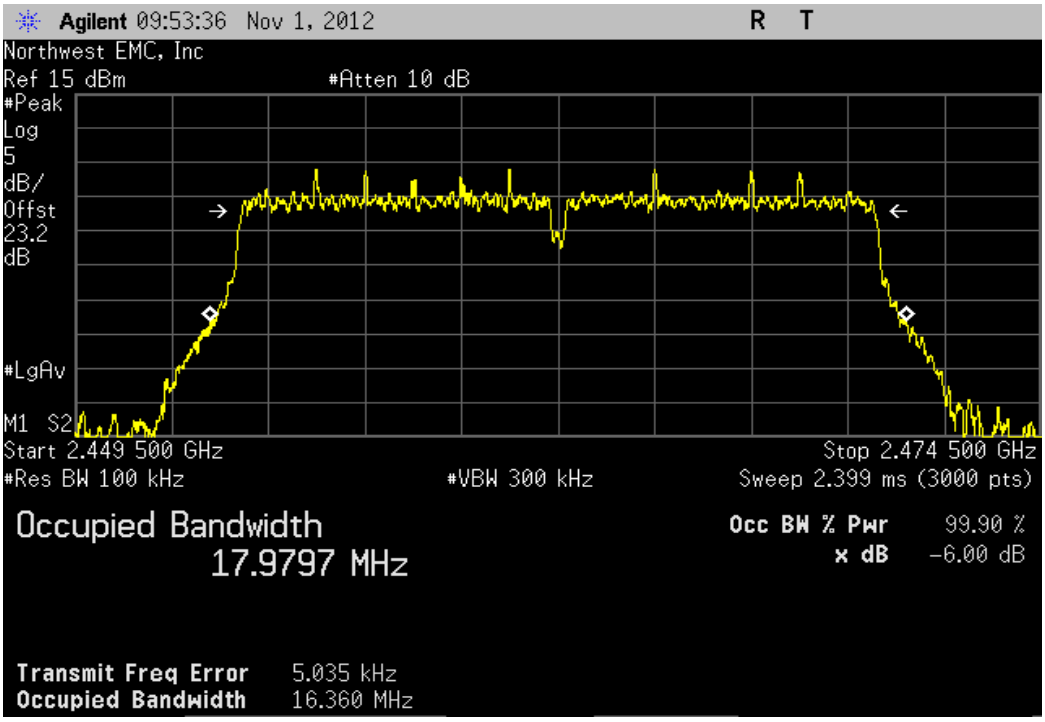
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(g) 6 Mbps, Mid Channel 6, 2437 MHz

				Value	Limit	Result
				16.348 MHz	> 500 kHz	Pass



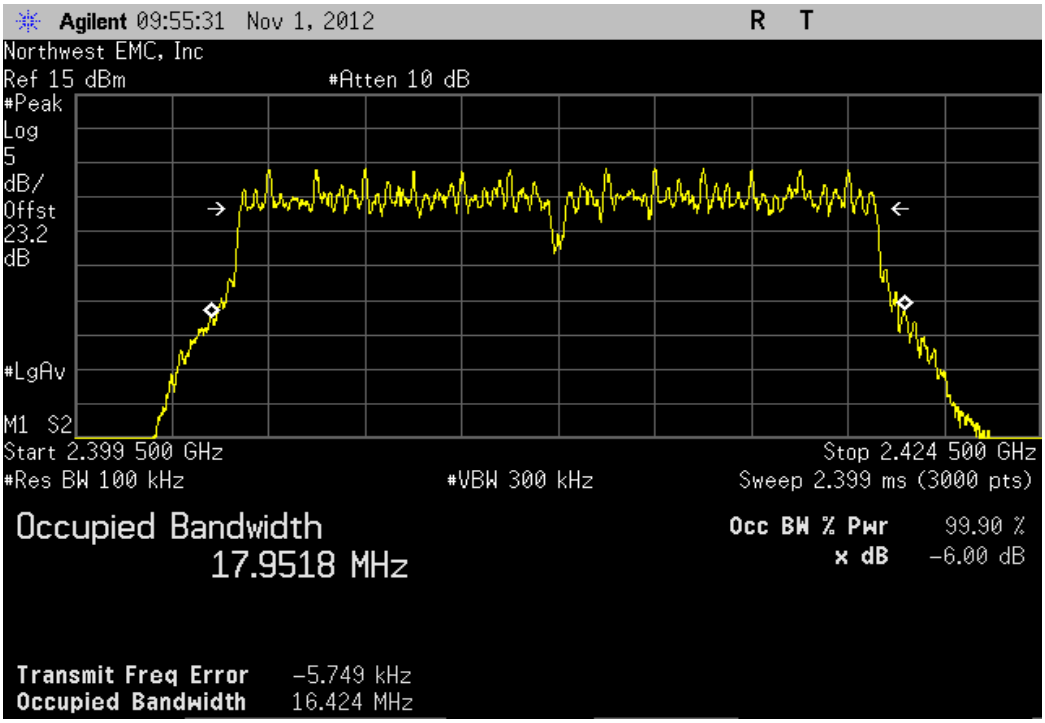
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(g) 6 Mbps, High Channel 11, 2462 MHz

				Value	Limit	Result
				16.36 MHz	> 500 kHz	Pass



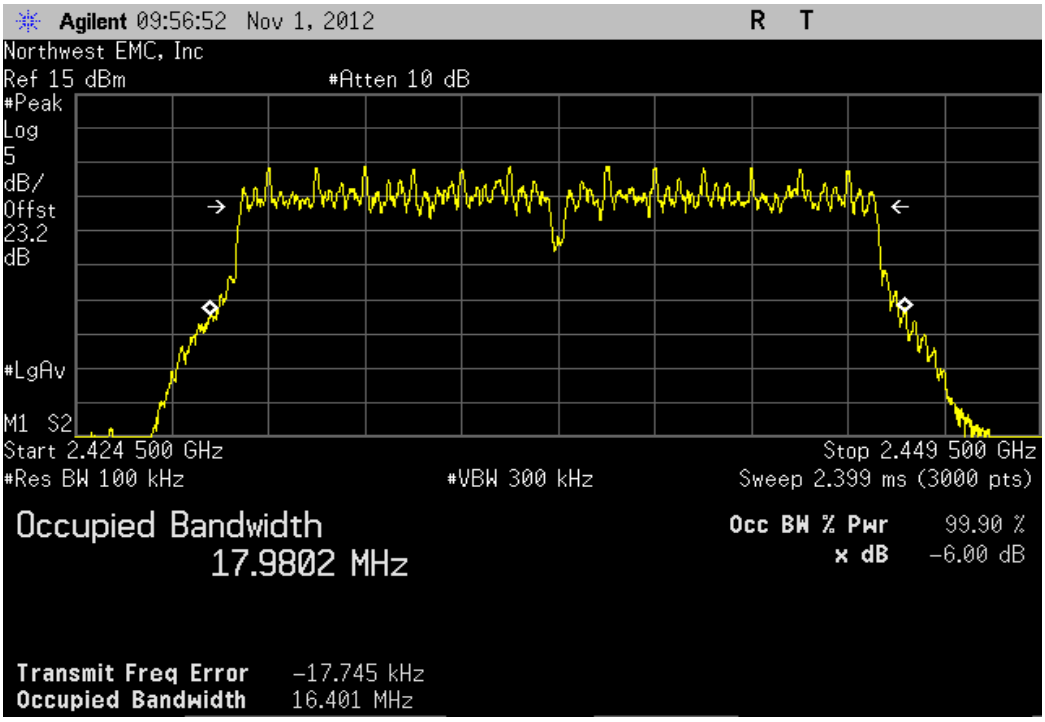
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(g) 36 Mbps, Low Channel 1, 2412 MHz

				Value	Limit	Result
				16.424 MHz	> 500 kHz	Pass



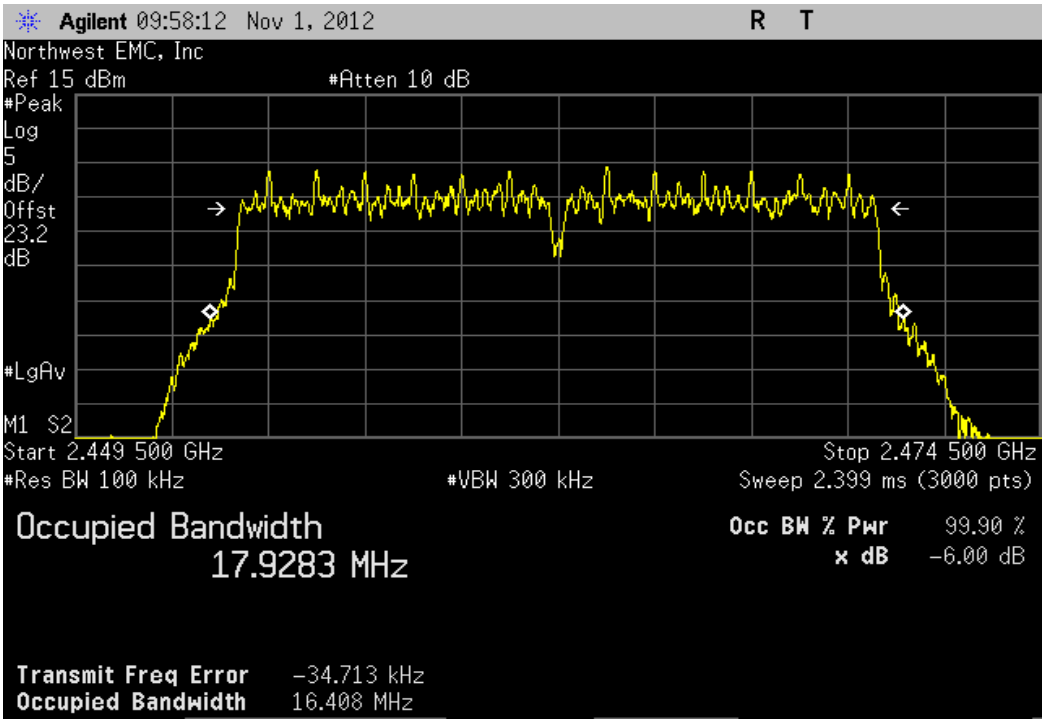
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(g) 36 Mbps, Mid Channel 6, 2437 MHz

				Value	Limit	Result
				16.401 MHz	> 500 kHz	Pass



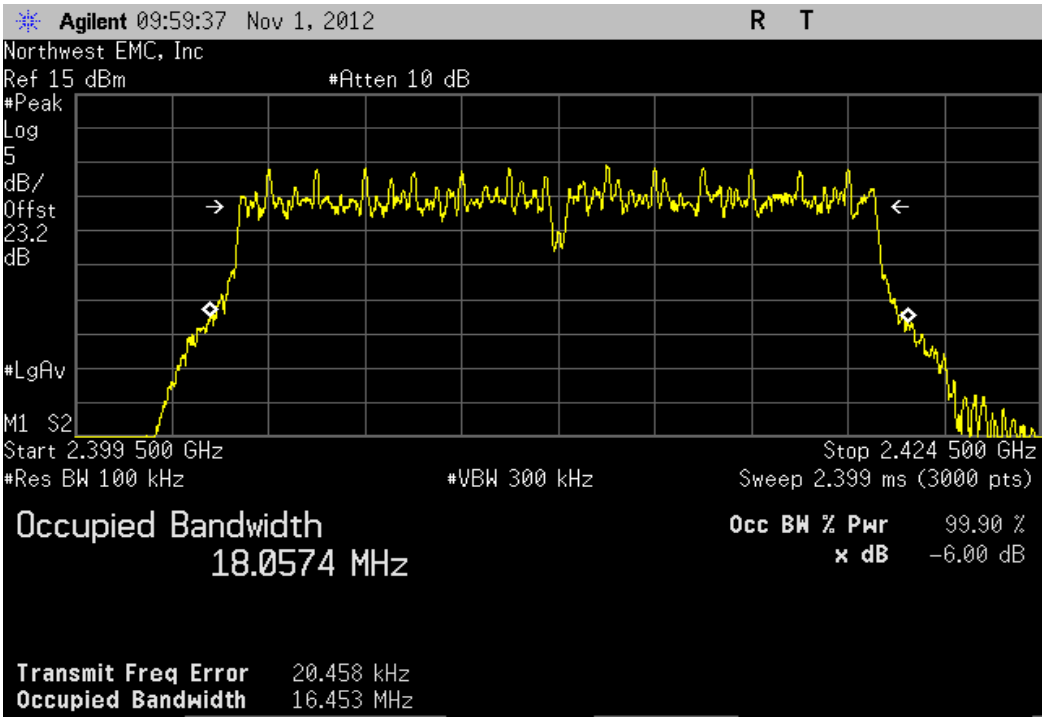
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(g) 36 Mbps, High Channel 11, 2462 MHz

				Value	Limit	Result
				16.408 MHz	> 500 kHz	Pass



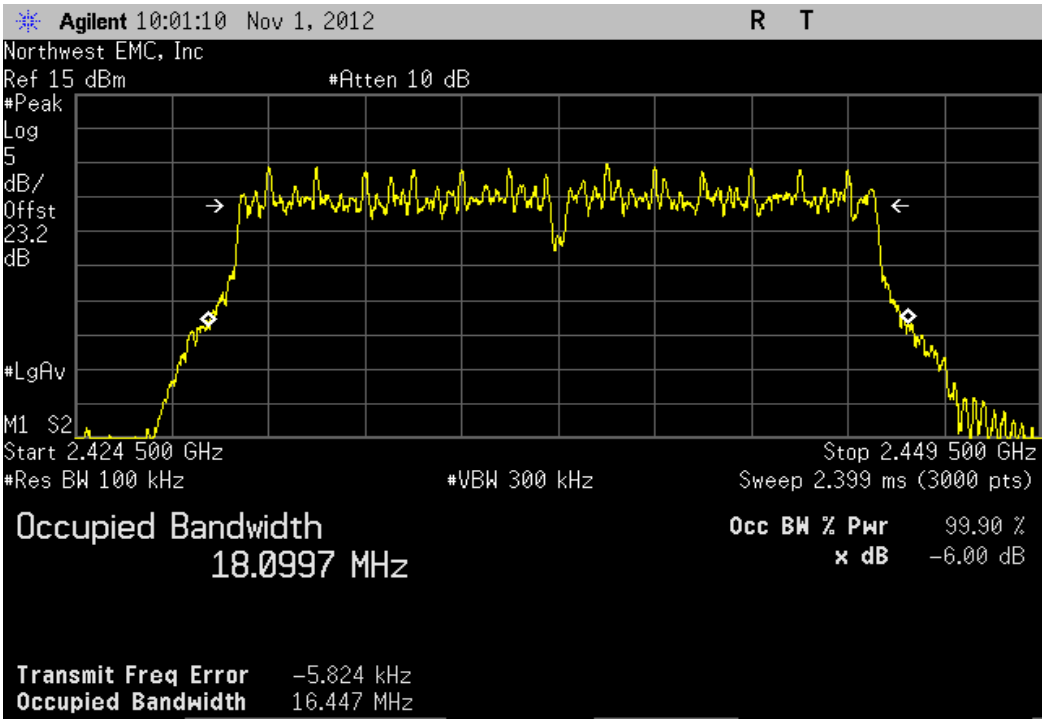
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(g) 54 Mbps, Low Channel 1, 2412 MHz

				Value	Limit	Result
				16.453 MHz	> 500 kHz	Pass



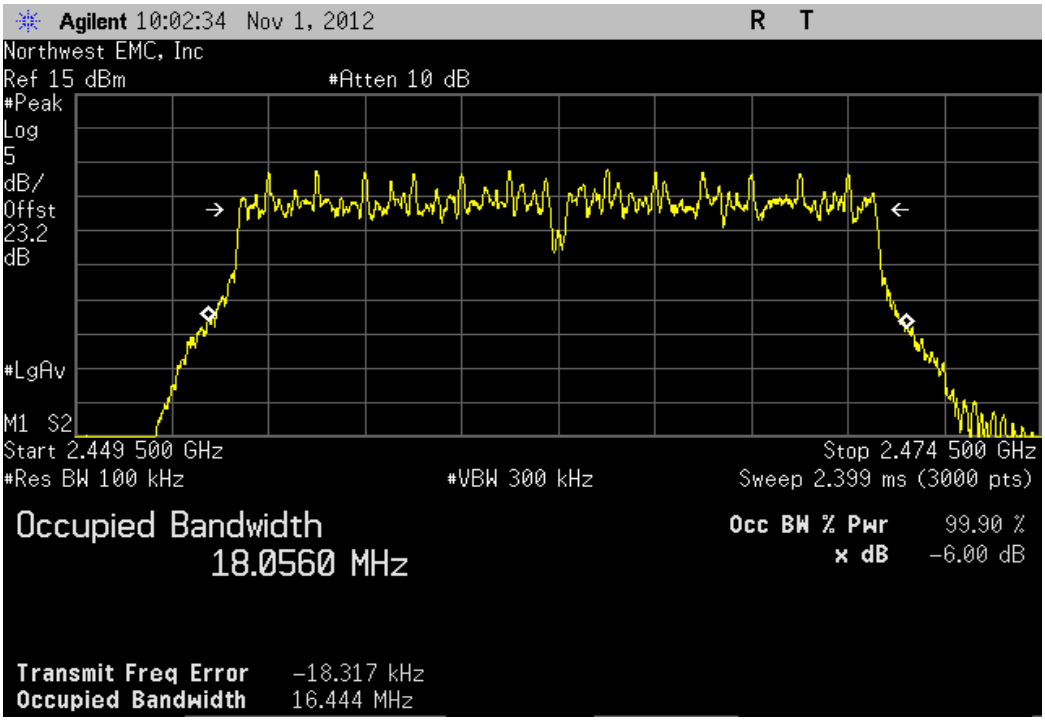
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(g) 54 Mbps, Mid Channel 6, 2437 MHz

				Value	Limit	Result
				16.447 MHz	> 500 kHz	Pass



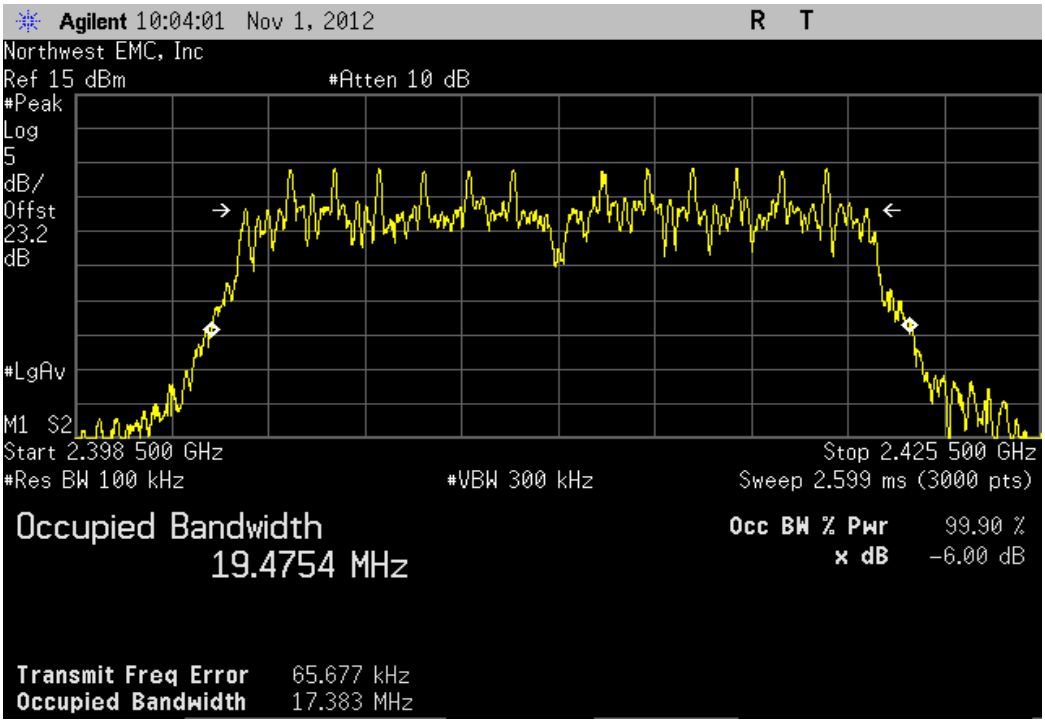
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(g) 54 Mbps, High Channel 11, 2462 MHz

				Value	Limit	Result
				16.444 MHz	> 500 kHz	Pass



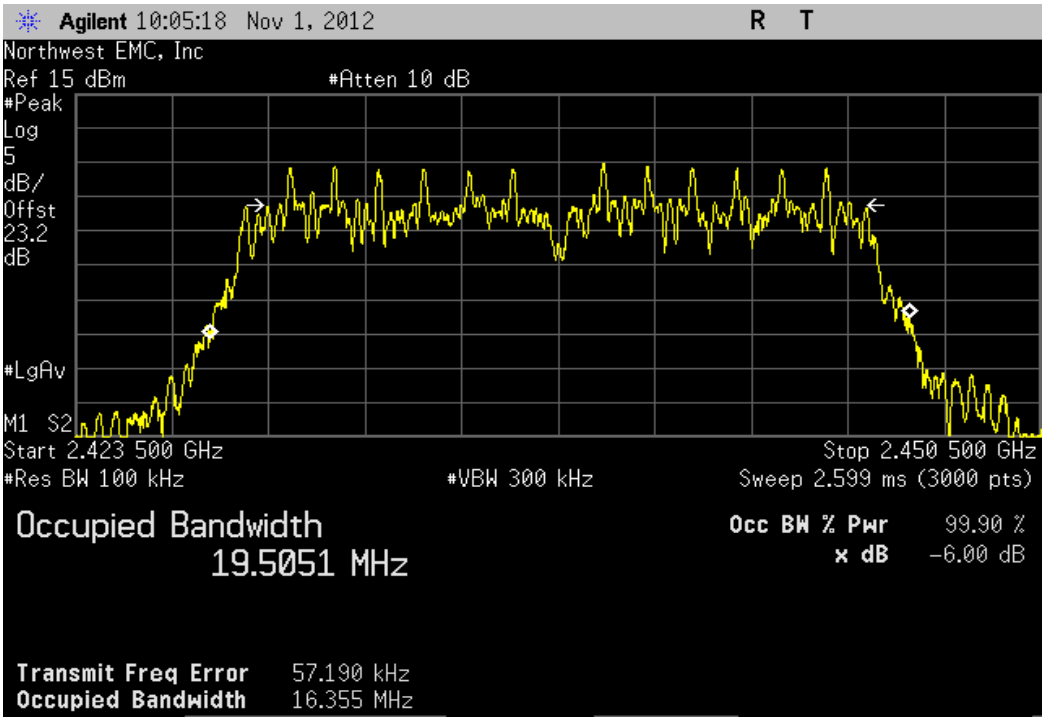
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS0, Low Channel 1, 2412 MHz

				Value	Limit	Result
				17.383 MHz	> 500 kHz	Pass



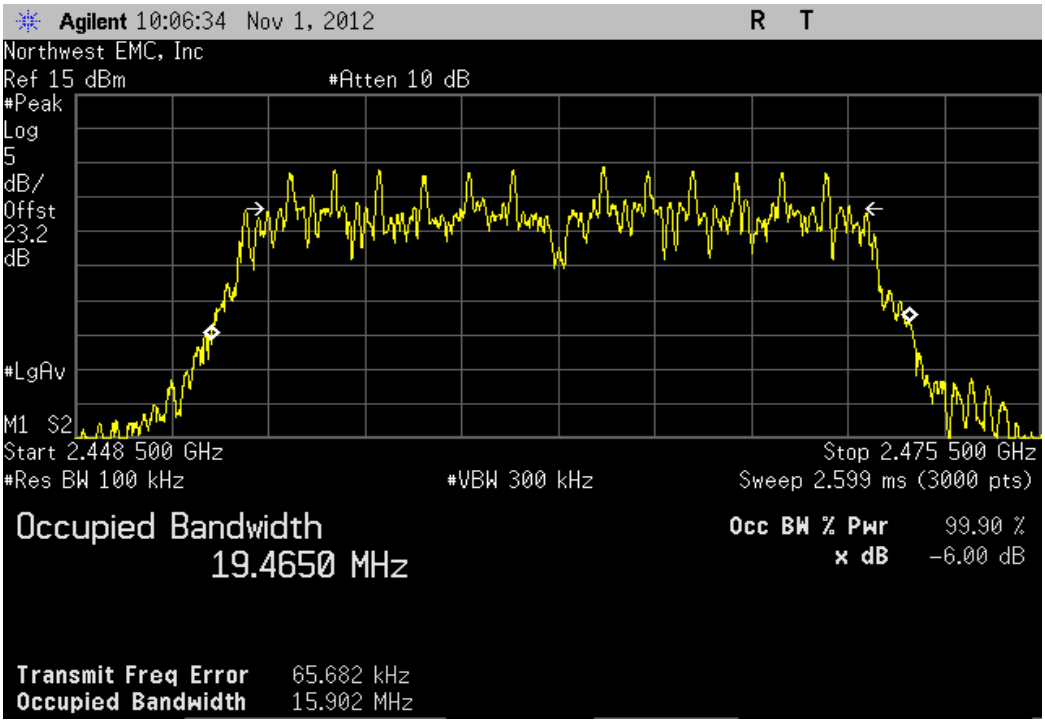
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS0, Mid Channel 6, 2437 MHz

				Value	Limit	Result
				16.355 MHz	> 500 kHz	Pass



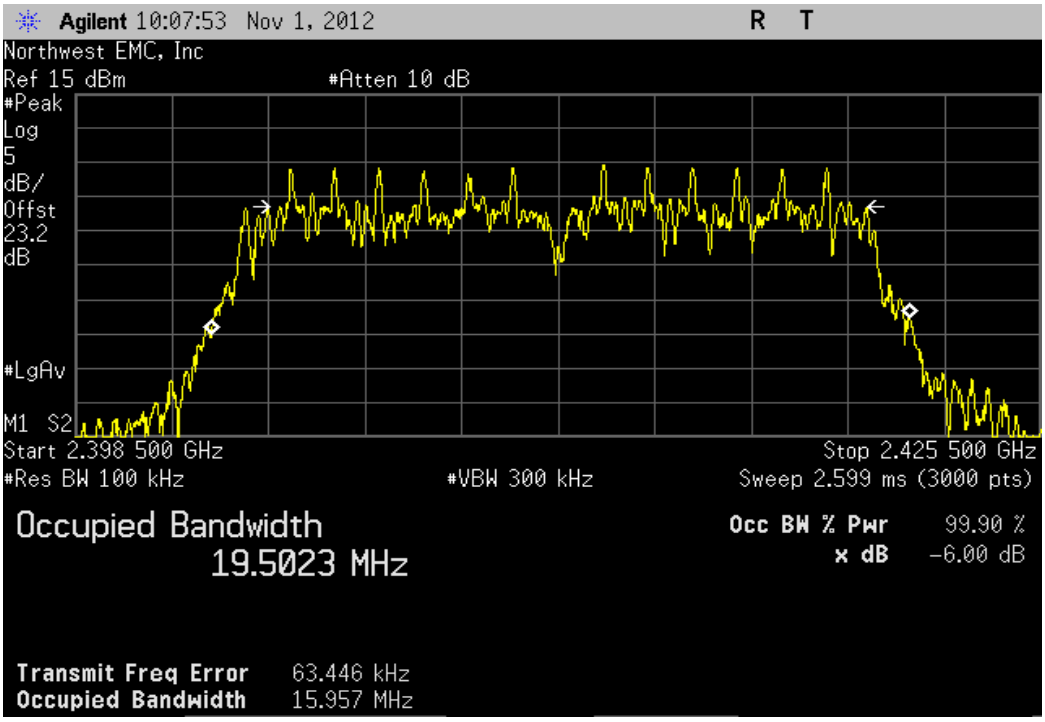
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS0, High Channel 11, 2462 MHz

				Value	Limit	Result
				15.902 MHz	> 500 kHz	Pass



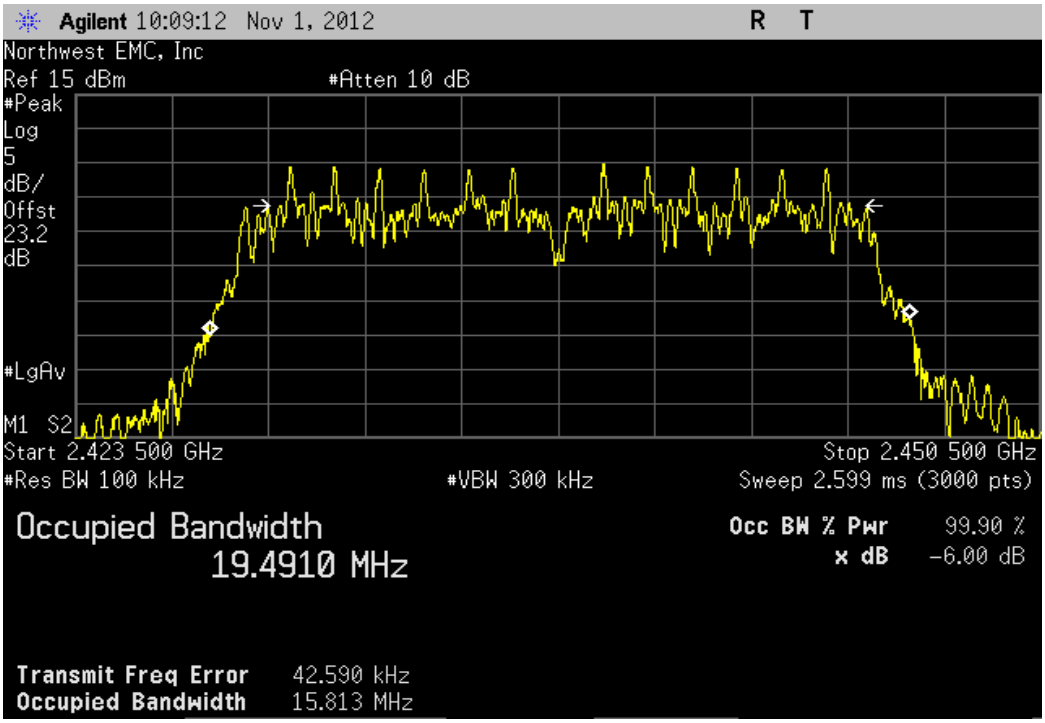
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, Low Channel 1, 2412 MHz

				Value	Limit	Result
				15.957 MHz	> 500 kHz	Pass



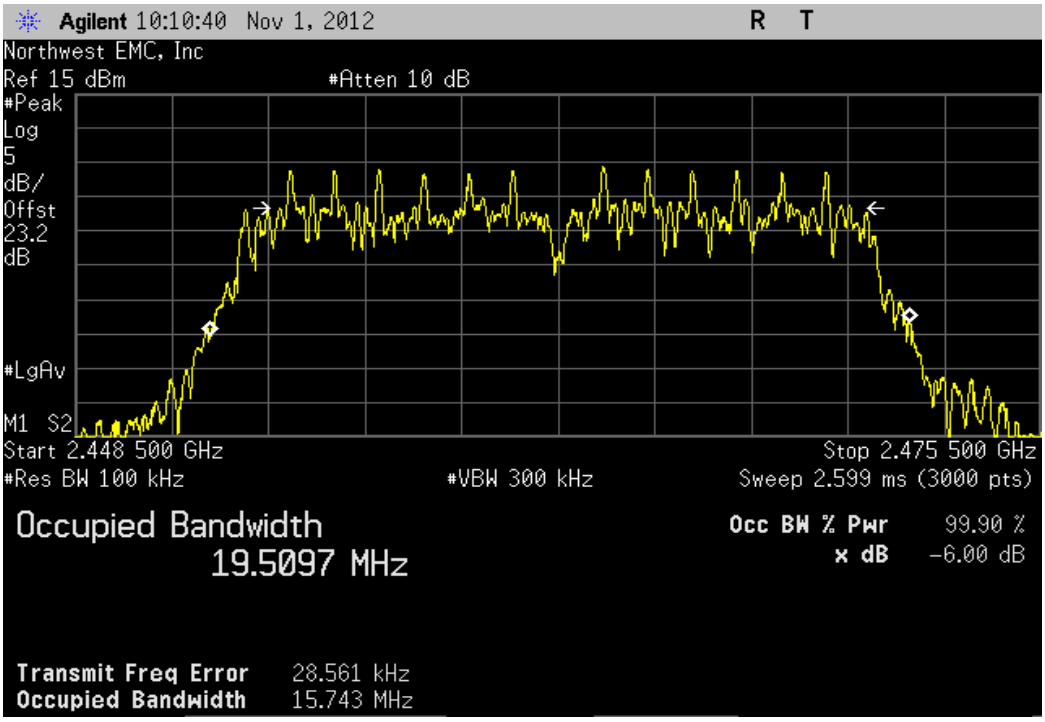
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, Mid Channel 6, 2437 MHz

				Value	Limit	Result
				15.813 MHz	> 500 kHz	Pass



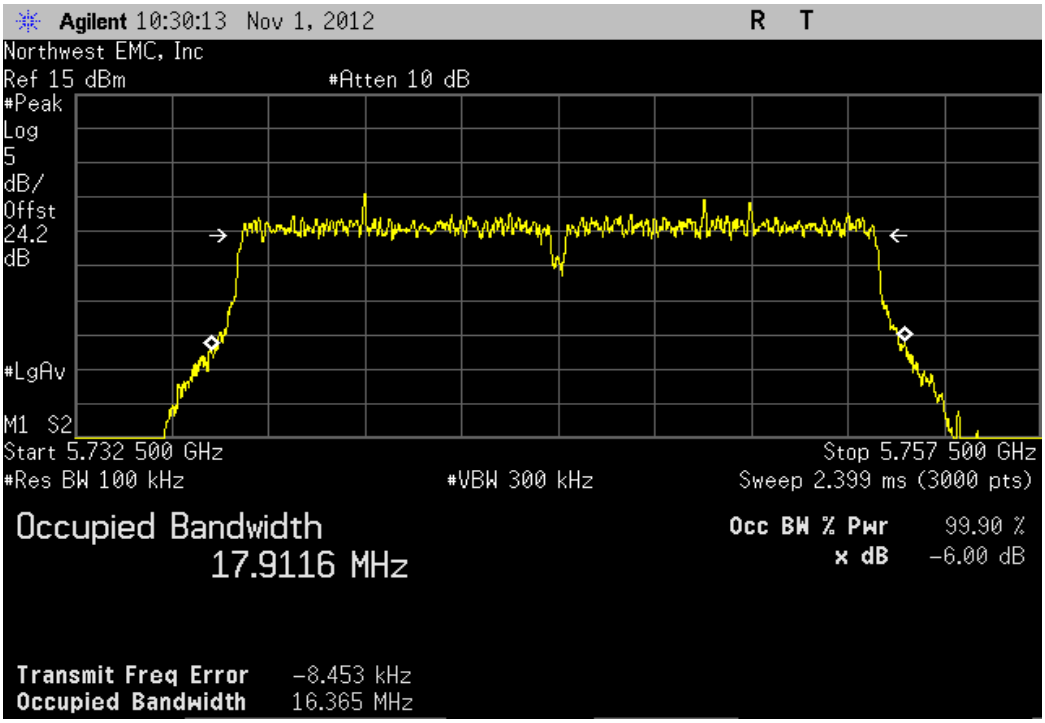
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, High Channel 11, 2462 MHz

				Value	Limit	Result
				15.743 MHz	> 500 kHz	Pass



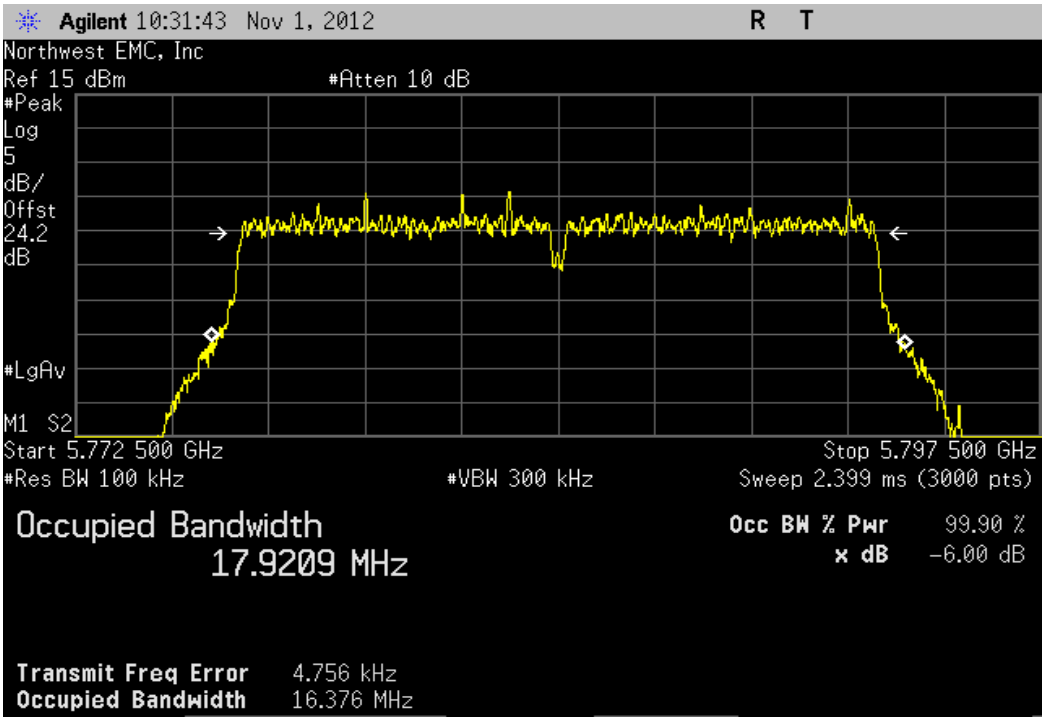
20 MHz, 5725 MHz - 5850 MHz Band, 802.11(a) 6 Mbps, Low Channel 149, 5745 MHz

				Value	Limit	Result
				16.365 MHz	> 500 kHz	Pass



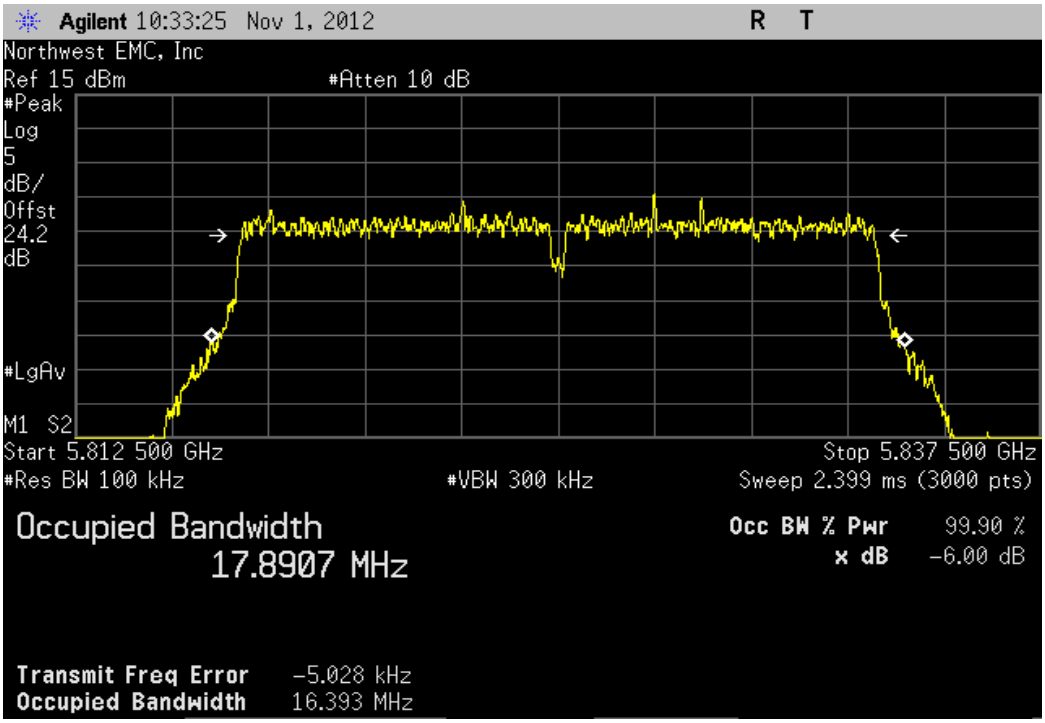
20 MHz, 5725 MHz - 5850 MHz Band, 802.11(a) 6 Mbps, Mid Channel 157, 5785 MHz

				Value	Limit	Result
				16.376 MHz	> 500 kHz	Pass



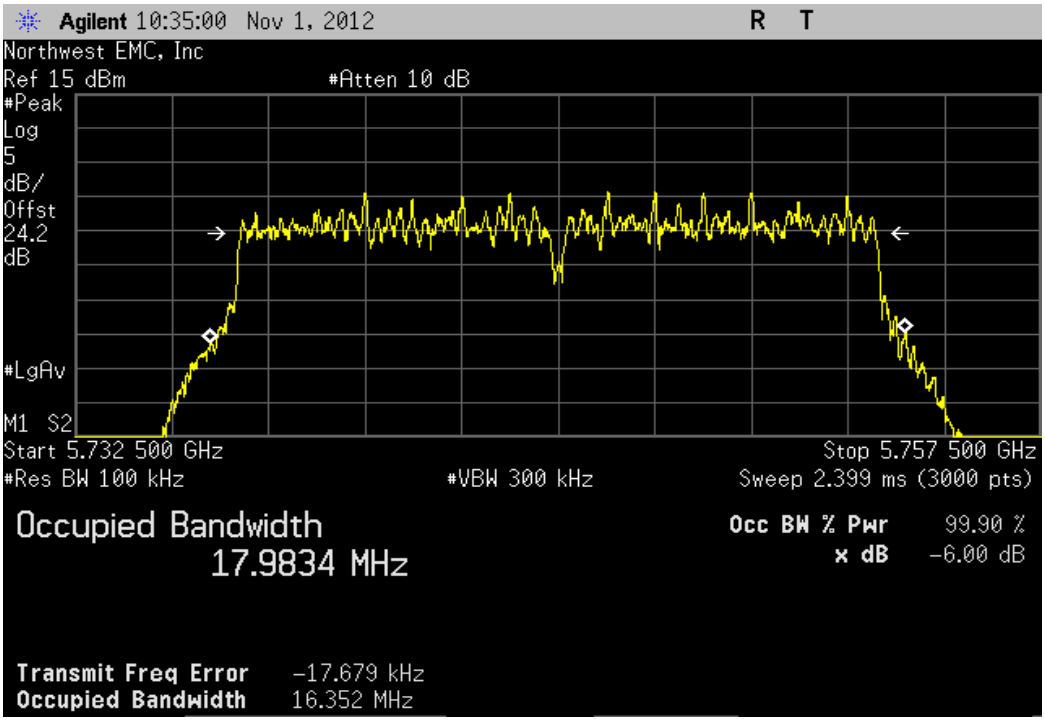
20 MHz, 5725 MHz - 5850 MHz Band, 802.11(a) 6 Mbps, High Channel 165, 5825 MHz

				Value	Limit	Result
				16.393 MHz	> 500 kHz	Pass



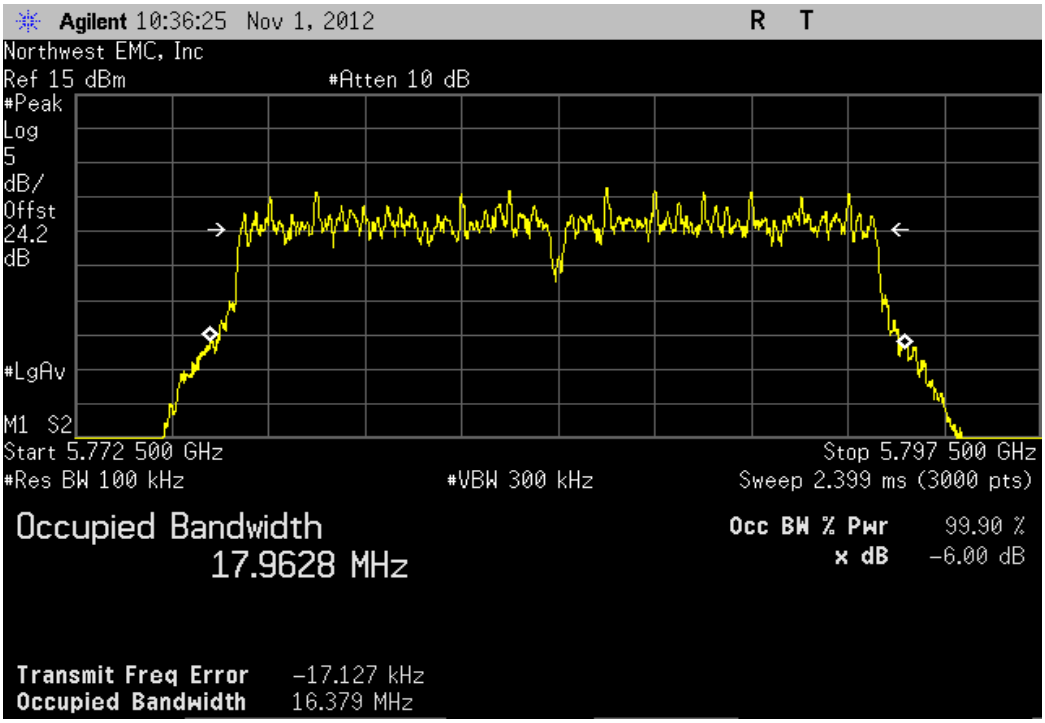
20 MHz, 5725 MHz - 5850 MHz Band, 802.11(a) 36 Mbps, Low Channel 149, 5745 MHz

				Value	Limit	Result
				16.352 MHz	> 500 kHz	Pass



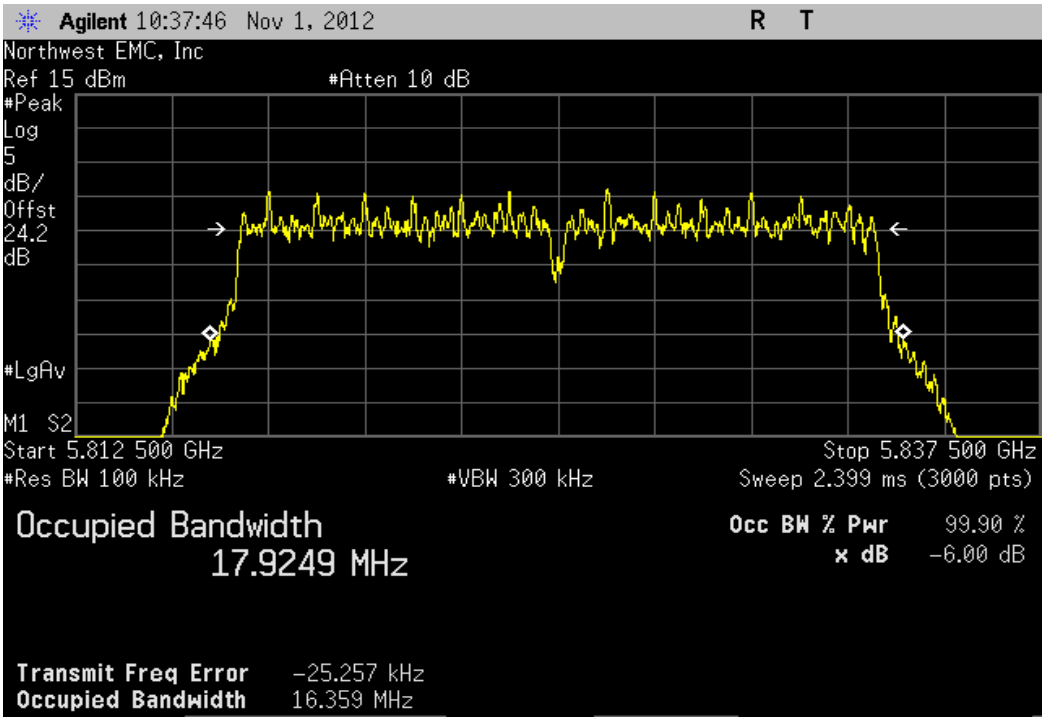
20 MHz, 5725 MHz - 5850 MHz Band, 802.11(a) 36 Mbps, Mid Channel 157, 5785 MHz

				Value	Limit	Result
				16.379 MHz	> 500 kHz	Pass



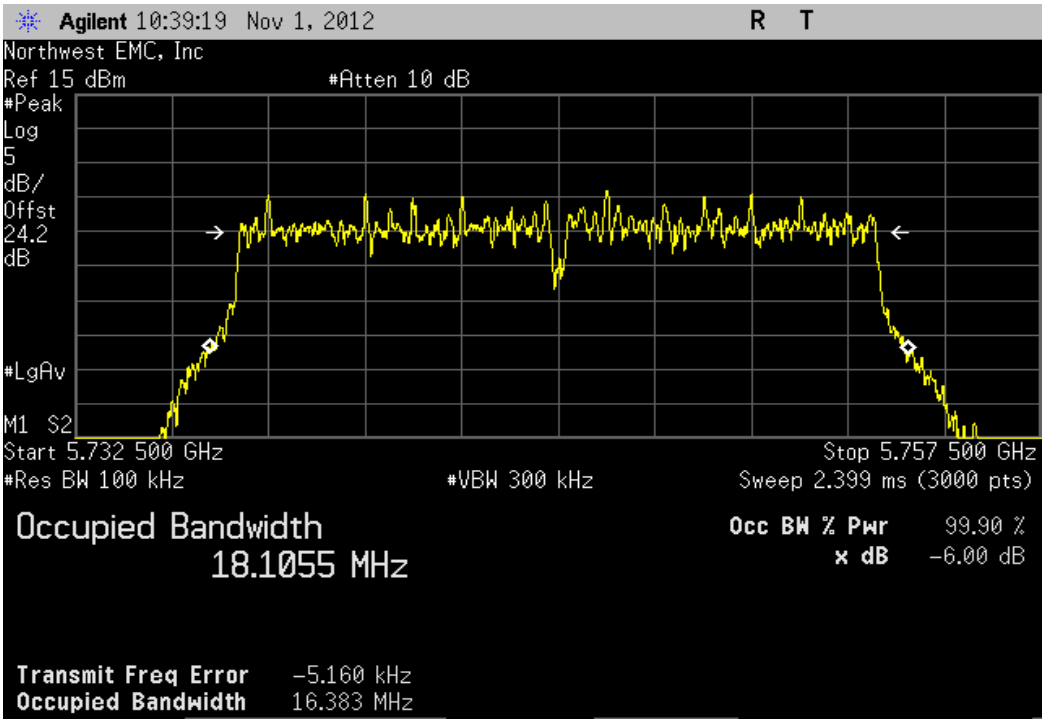
20 MHz, 5725 MHz - 5850 MHz Band, 802.11(a) 36 Mbps, High Channel 165, 5825 MHz

				Value	Limit	Result
				16.359 MHz	> 500 kHz	Pass



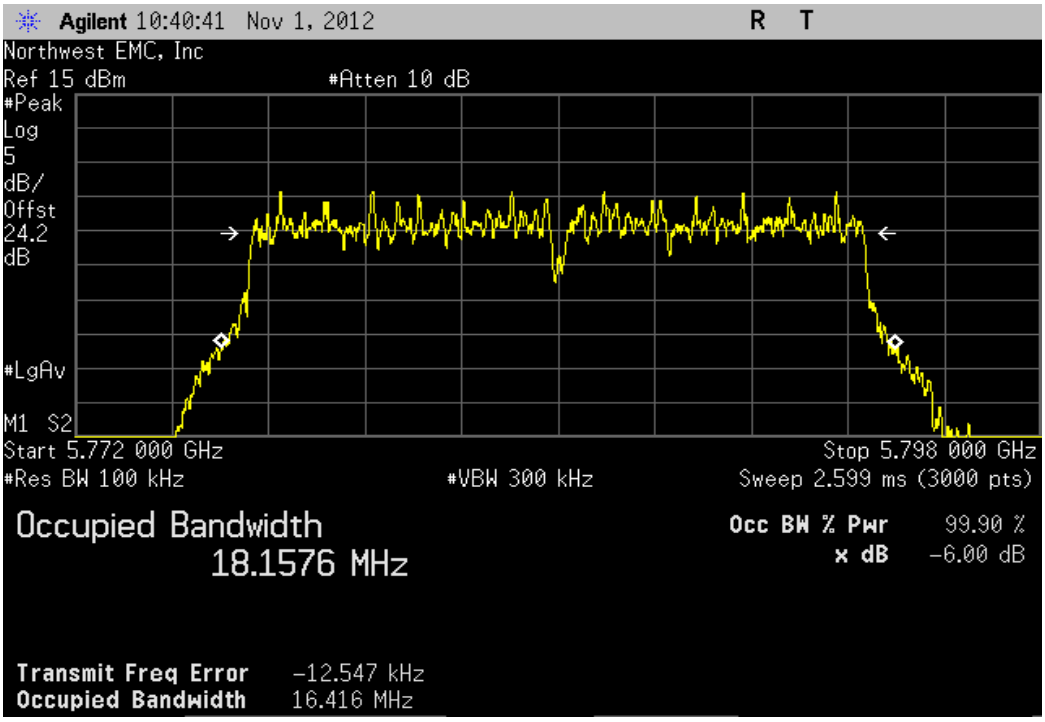
20 MHz, 5725 MHz - 5850 MHz Band, 802.11(a) 54 Mbps, Low Channel 149, 5745 MHz

				Value	Limit	Result
				16.383 MHz	> 500 kHz	Pass



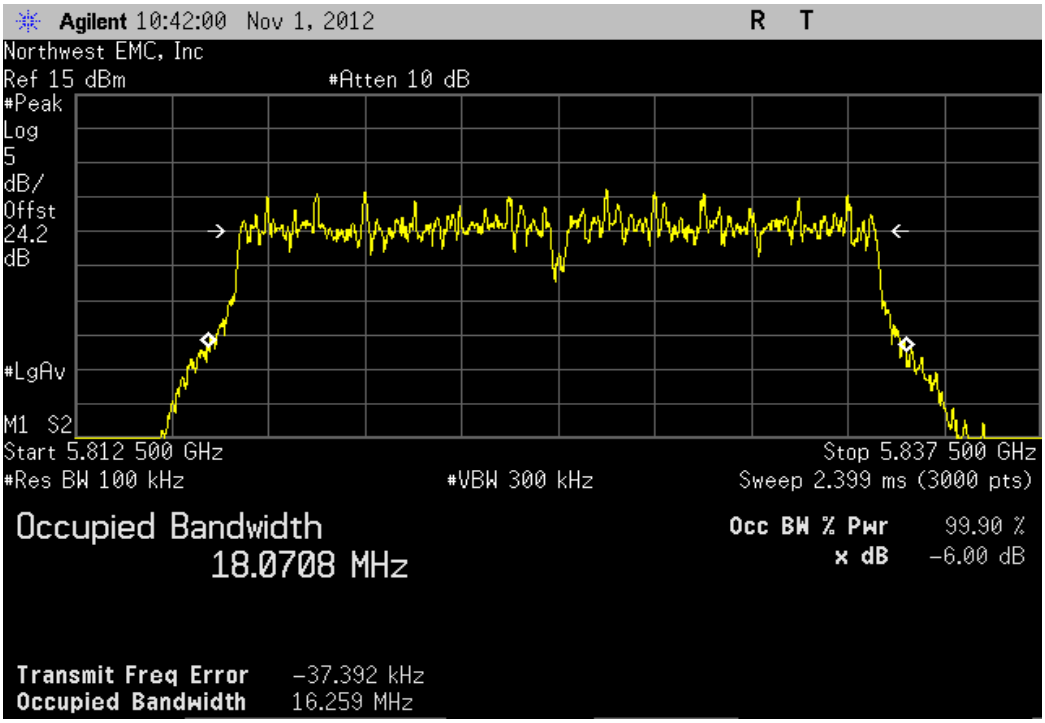
20 MHz, 5725 MHz - 5850 MHz Band, 802.11(a) 54 Mbps, Mid Channel 157, 5785 MHz

				Value	Limit	Result
				16.416 MHz	> 500 kHz	Pass



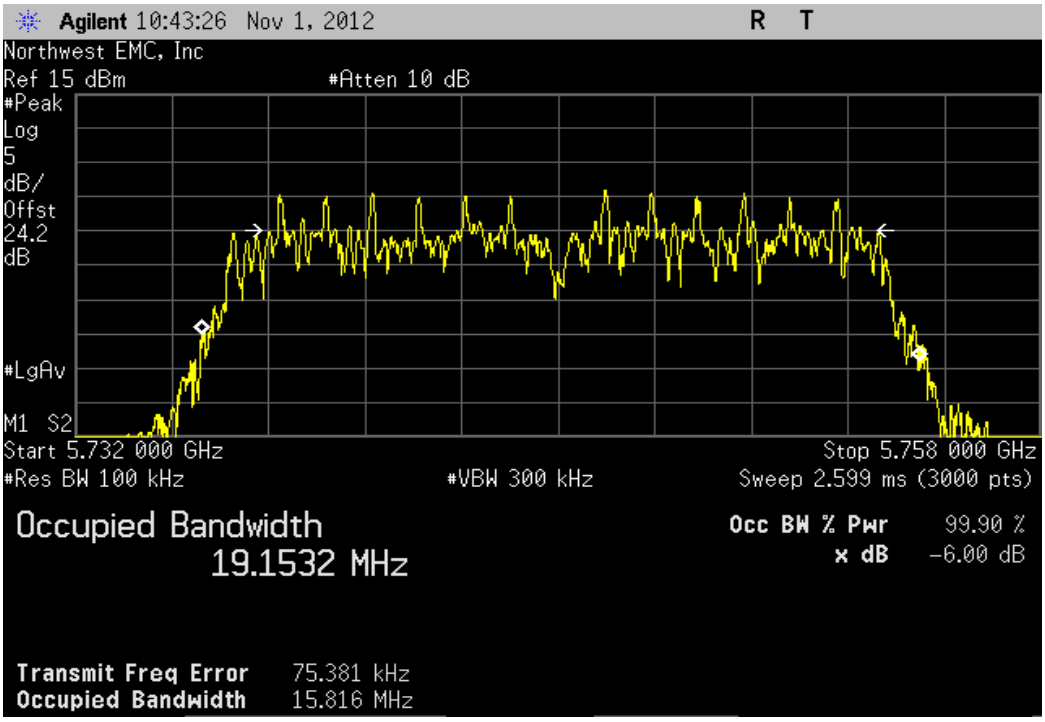
20 MHz, 5725 MHz - 5850 MHz Band, 802.11(a) 54 Mbps, High Channel 165, 5825 MHz

				Value	Limit	Result
				16.259 MHz	> 500 kHz	Pass



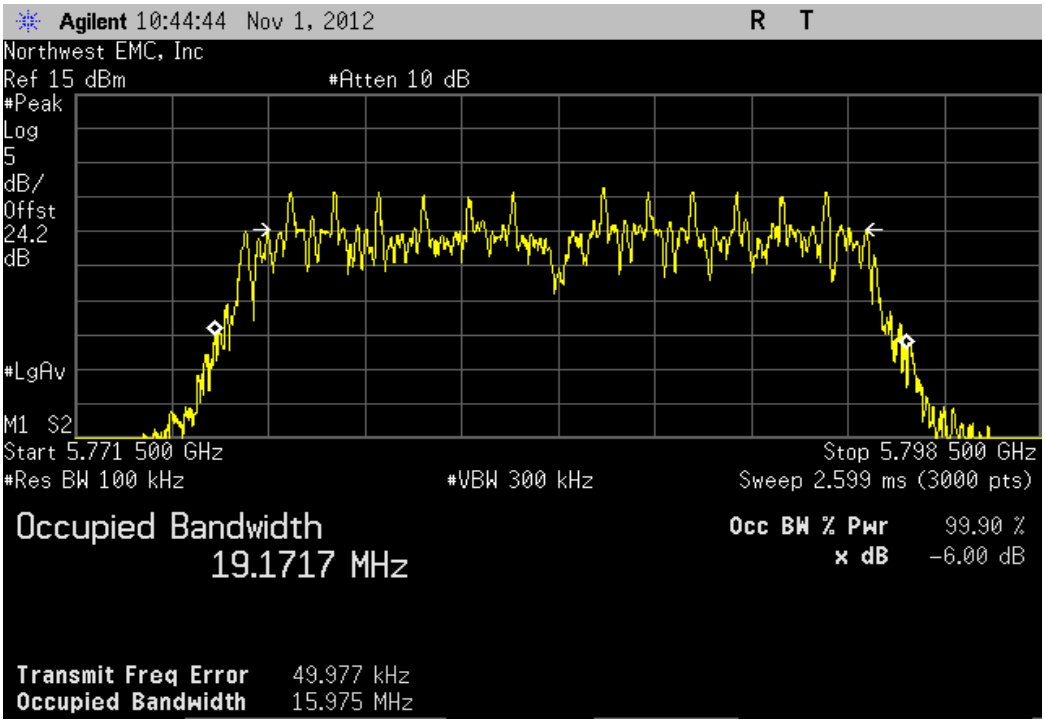
20 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS0 - UNII, Low Channel 149, 5745 MHz

				Value	Limit	Result
				15.816 MHz	> 500 kHz	Pass



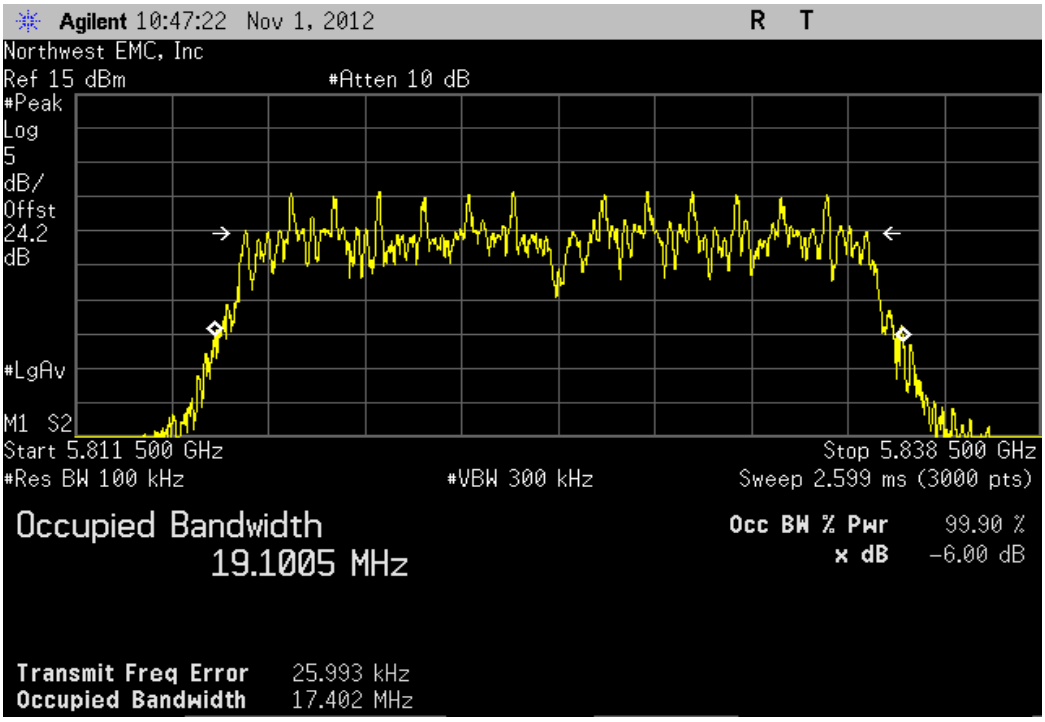
20 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS0 - UNII, Mid Channel 157, 5785 MHz

				Value	Limit	Result
				15.975 MHz	> 500 kHz	Pass



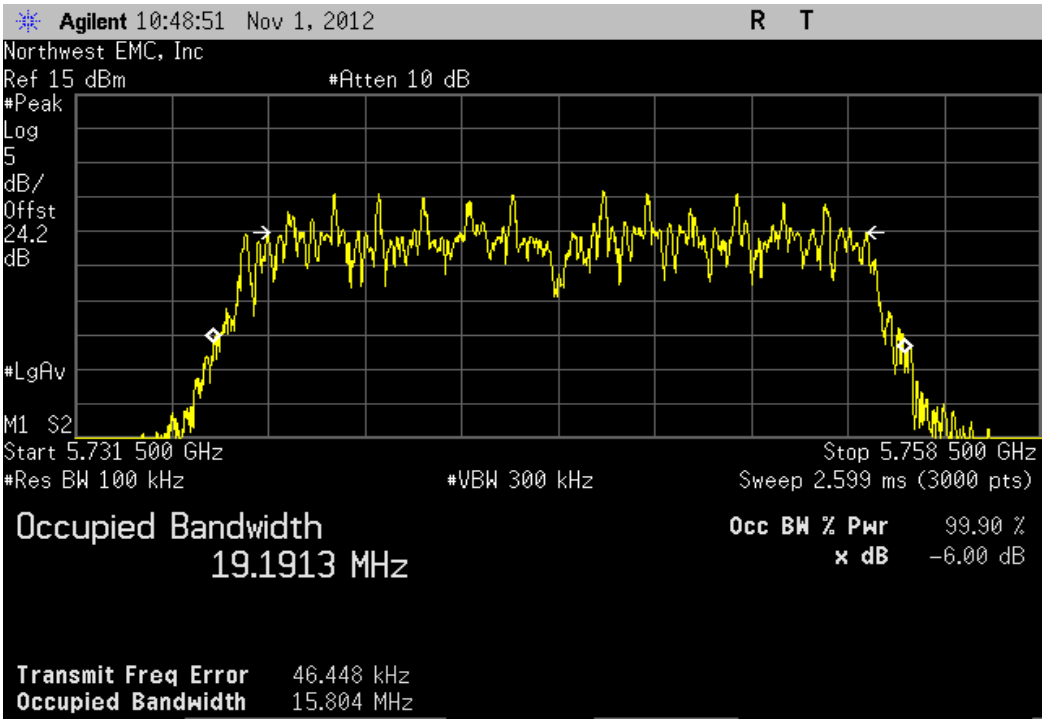
20 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS0 - UNII, High Channel 165, 5825 MHz

				Value	Limit	Result
				17.402 MHz	> 500 kHz	Pass



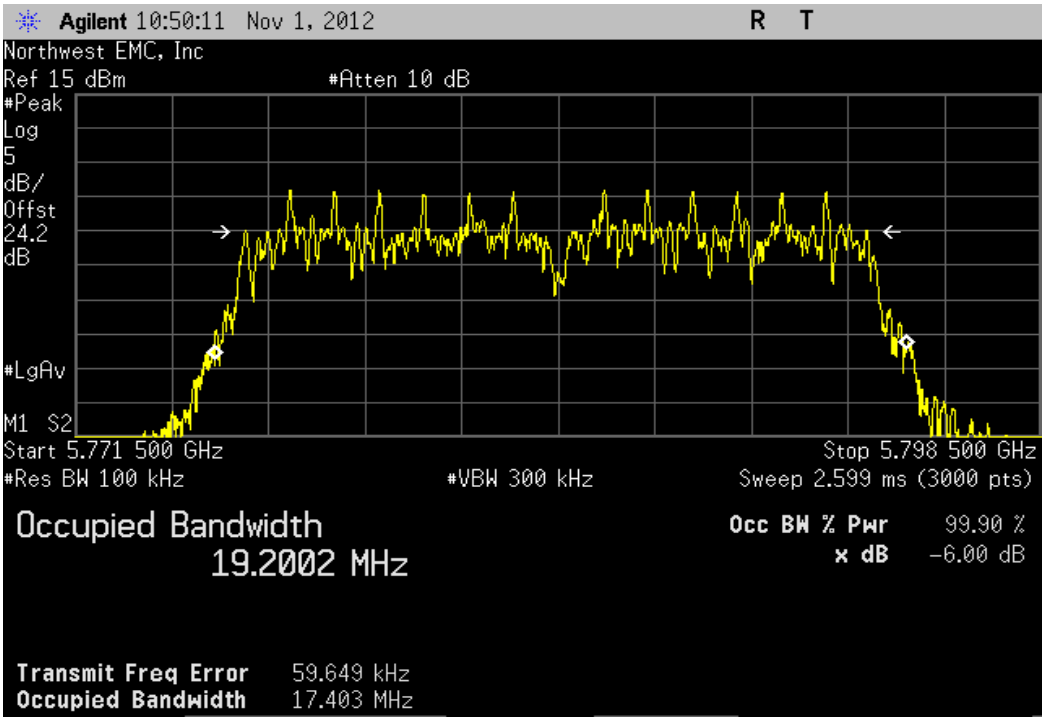
20 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS7 - UNII, Low Channel 149, 5745 MHz

				Value	Limit	Result
				15.804 MHz	> 500 kHz	Pass



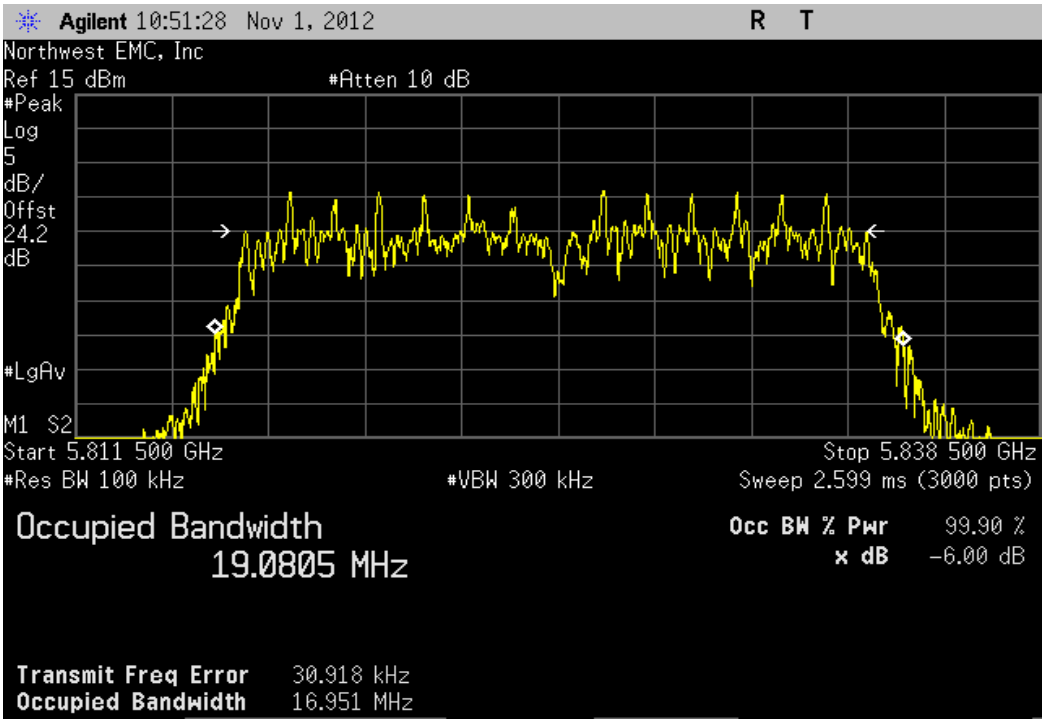
20 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS7 - UNII, Mid Channel 157, 5785 MHz

				Value	Limit	Result
				17.403 MHz	> 500 kHz	Pass



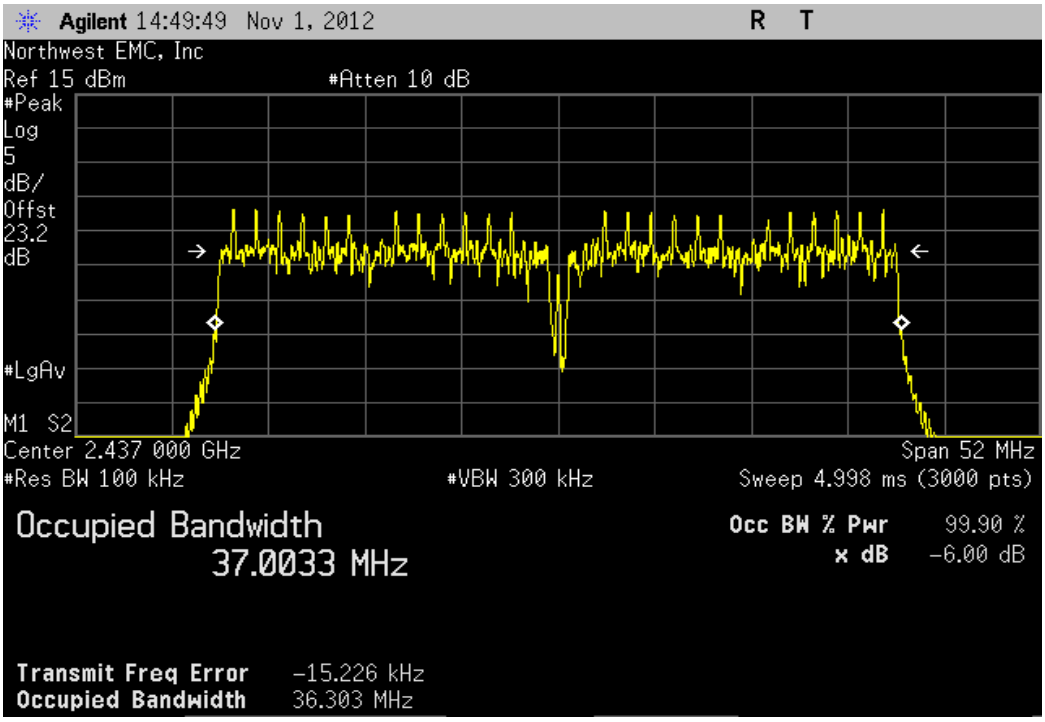
20 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS7 - UNII, High Channel 165, 5825 MHz

				Value	Limit	Result
				16.951 MHz	> 500 kHz	Pass



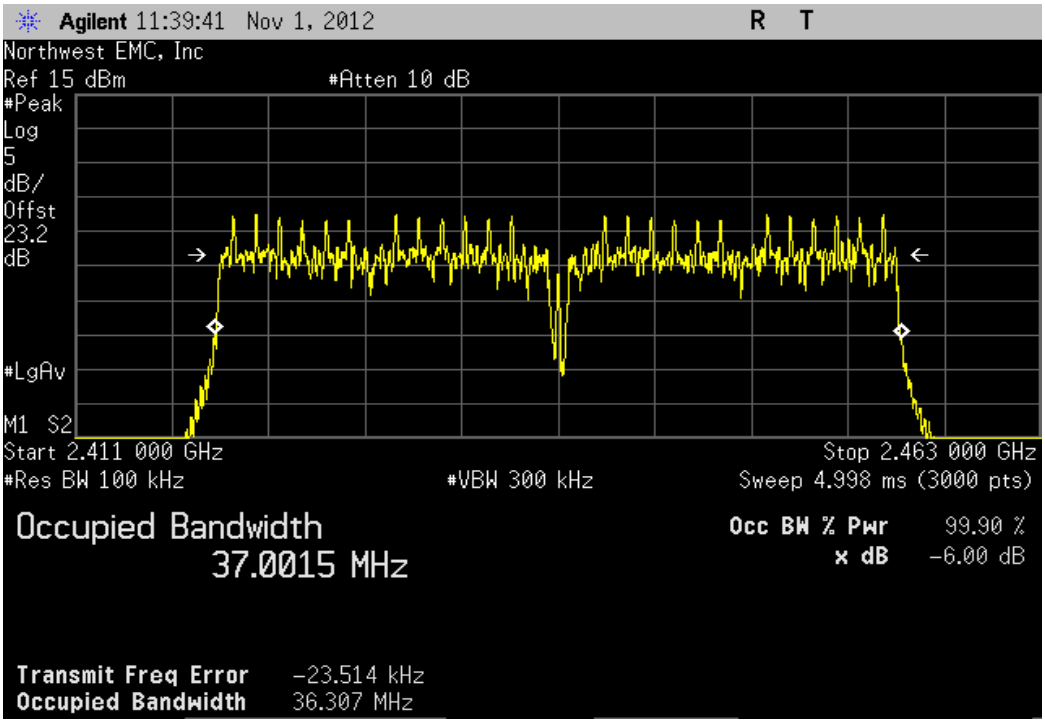
40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS0, Mid Channel 6, 2437 MHz

				Value	Limit	Result
				36.303 MHz	> 500 kHz	Pass



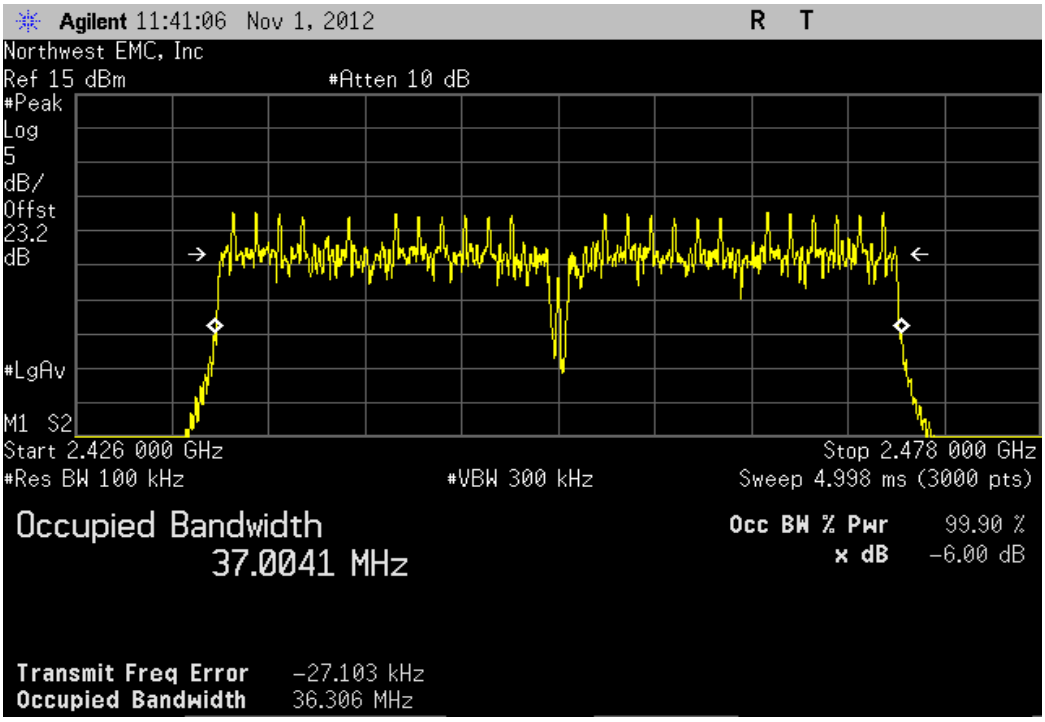
40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS0, Low Channel 1/5, 2422 MHz

				Value	Limit	Result
				36.307 MHz	> 500 kHz	Pass



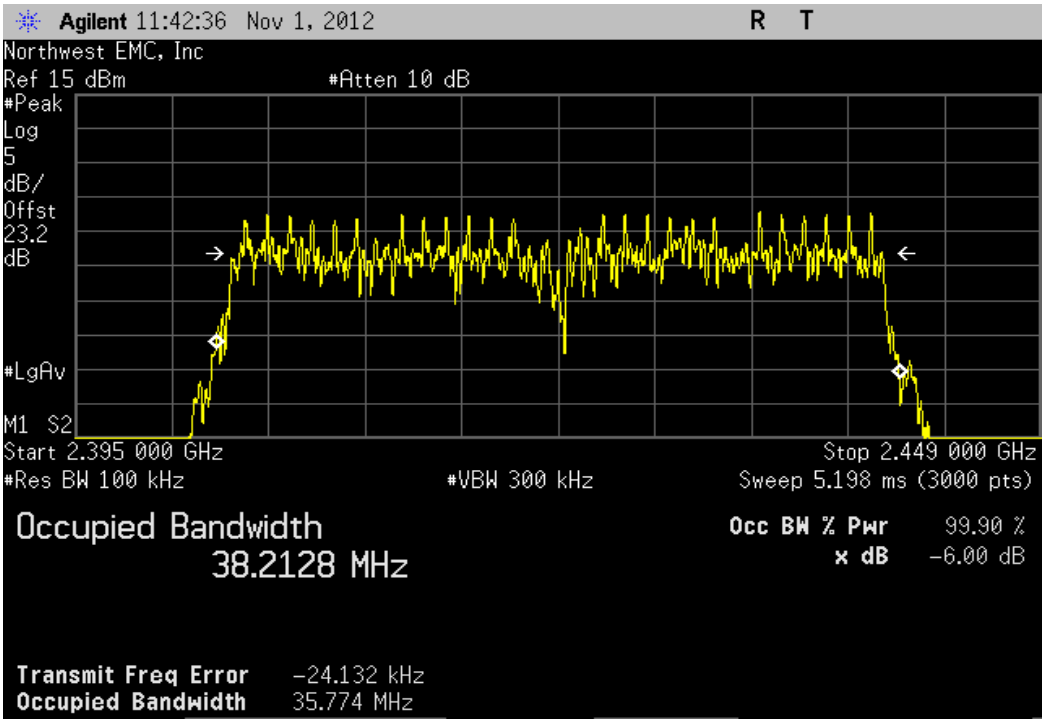
40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS0, High Channel 7/11 2452 MHz

				Value	Limit	Result
				36.306 MHz	> 500 kHz	Pass



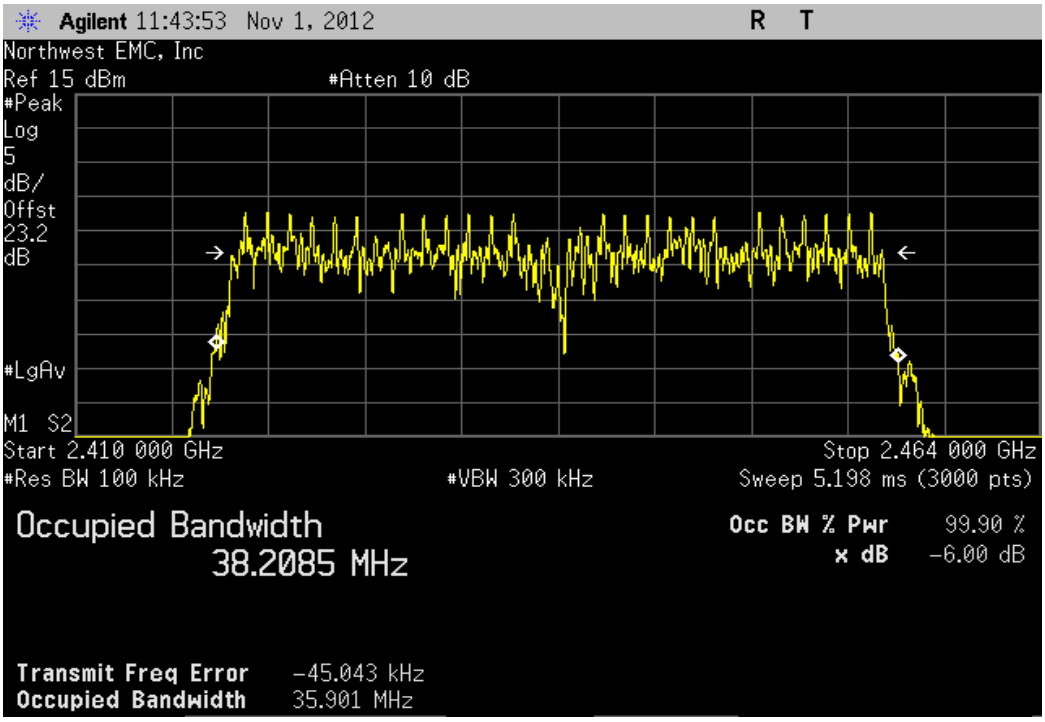
40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, Mid Channel 6, 2437 MHz

				Value	Limit	Result
				35.774 MHz	> 500 kHz	Pass



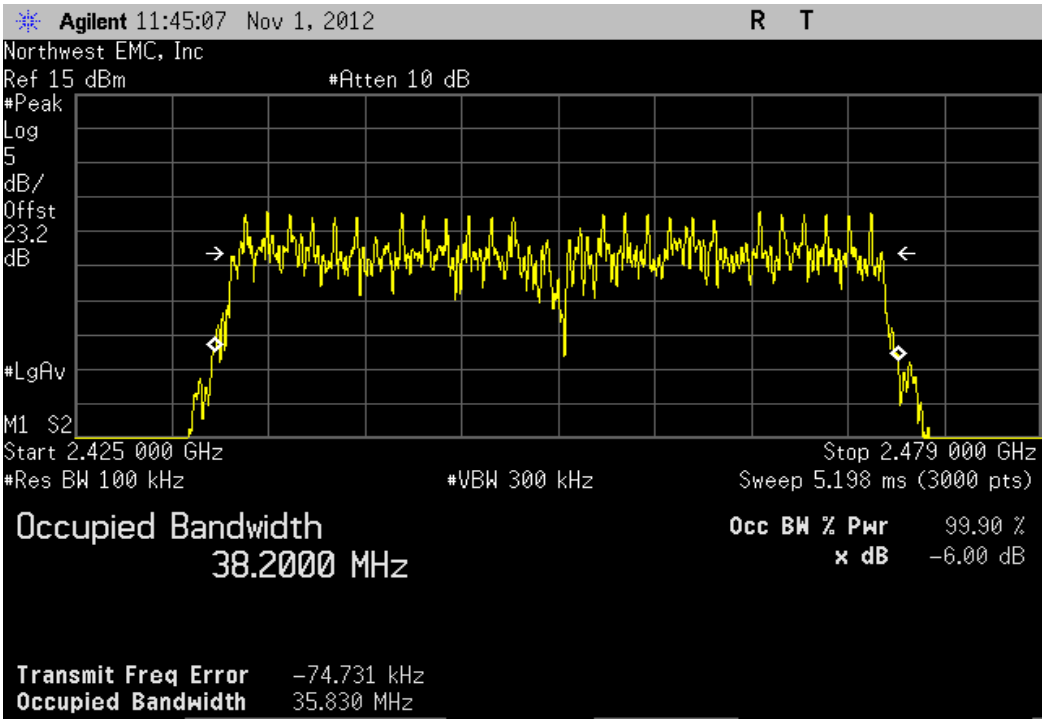
40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, Low Channel 1/5, 2422 MHz

				Value	Limit	Result
				35.901 MHz	> 500 kHz	Pass



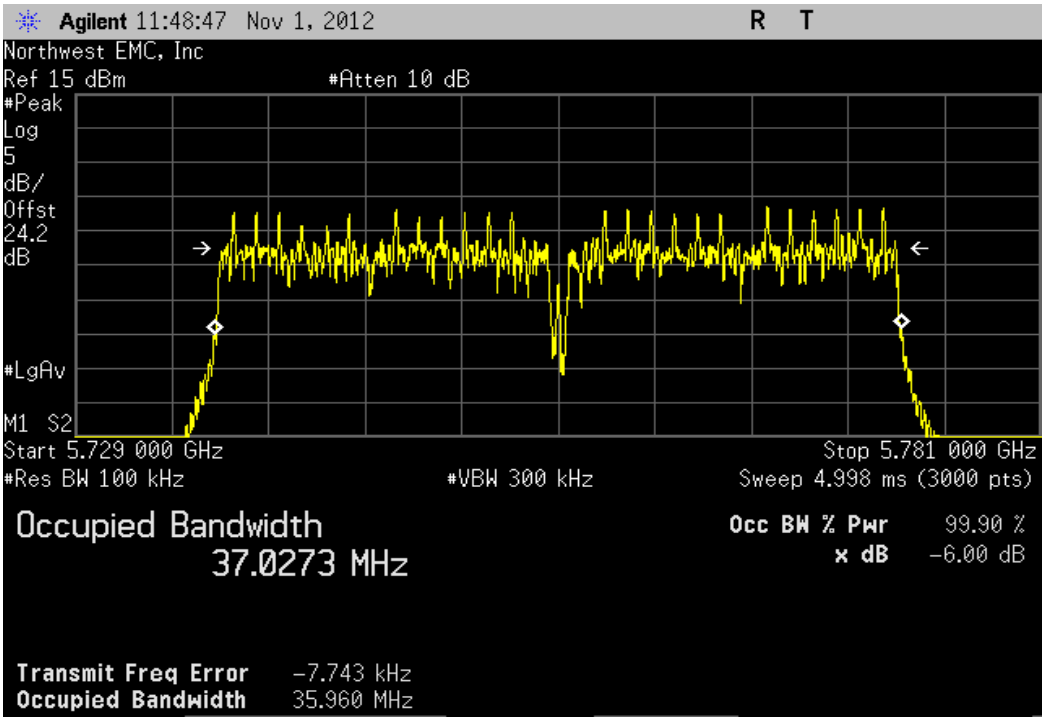
40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, High Channel 7/11 2452 MHz

				Value	Limit	Result
				35.83 MHz	> 500 kHz	Pass



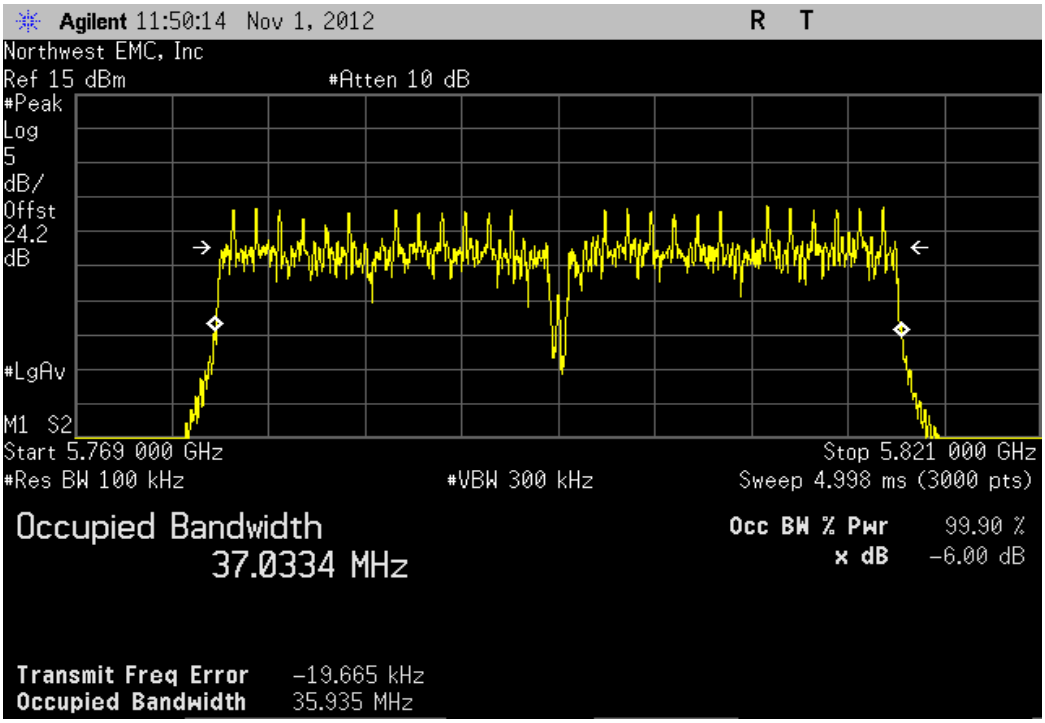
40 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS0 - UNII, Low Channel 149/153, 5755 MHz

				Value	Limit	Result
				35.96 MHz	> 500 kHz	Pass



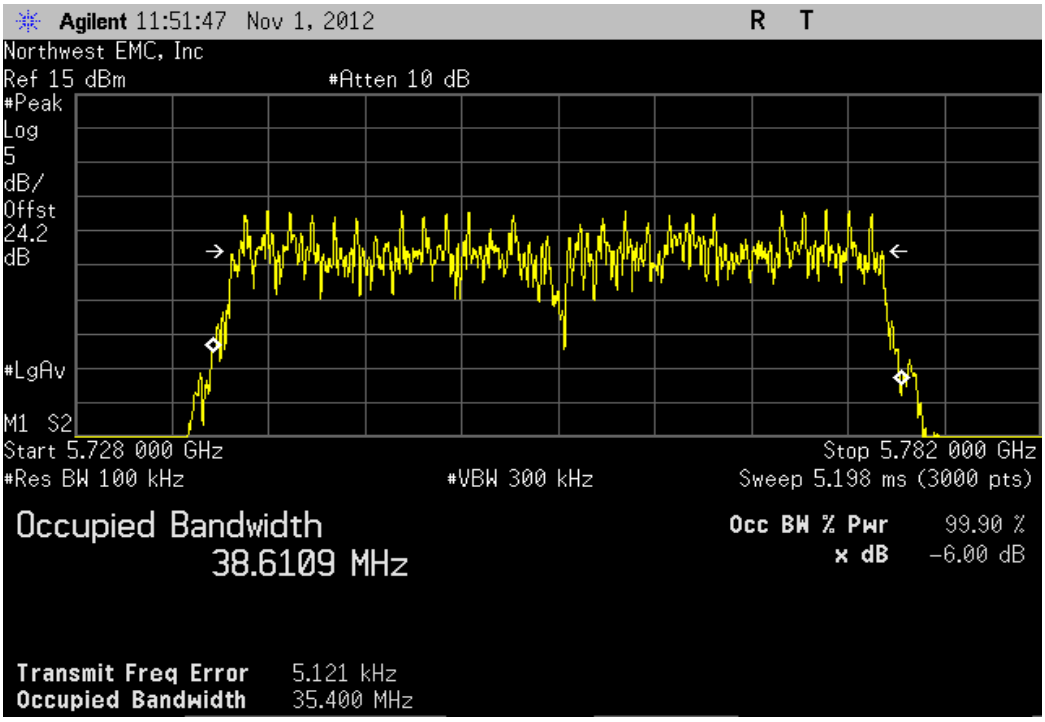
40 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS0 - UNII, High Channe 157/161, 5795 MHz

				Value	Limit	Result
				35.935 MHz	> 500 kHz	Pass



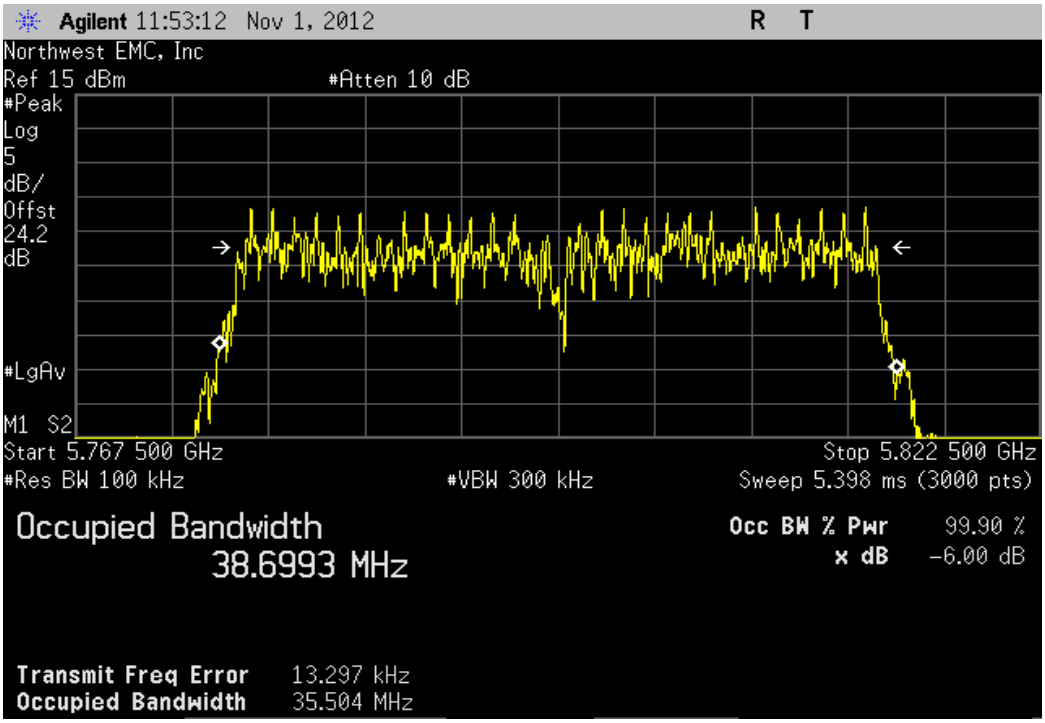
40 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS7 - UNII, Low Channel 149/153, 5755 MHz

				Value	Limit	Result
				35.4 MHz	> 500 kHz	Pass



40 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS7 - UNII, High Channe 157/161, 5795 MHz

				Value	Limit	Result
				35.504 MHz	> 500 kHz	Pass



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
40GHz DC Block	Miteq	DCB4000	AMD	6/25/2012	12
Attenuator 20 dB, SMA M/F 26GHz	S.M. Electronics	SA26B-20	AUY	8/2/2012	12
Power Meter	Gigatronics	8651A	SPM	1/9/2012	24
MXG Vector Signal Generator	Agilent	N5182A	TIF	NCR	0
Attenuator, 'Precision N'	S.M. Electronics	SA18N-06/SM4032	REE	12/15/2011	12
Power Sensor	Gigatronics	80701A	SPL	7/8/2011	24
Spectrum Analyzer	Agilent	E4440A	AFD	7/5/2012	12
EV06 Direct Connect Cable	ESM Cable Corp.	TT	ECA	NCR	0

TEST DESCRIPTION

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

The EUT was set to low, medium and high transmit frequencies. The measurement was made using a direct connection between the RF output of the EUT and the spectrum analyzer. The EUT was transmitting at the data rate(s) listed in the datasheet.

Please refer to the Power Table located elsewhere in this report for radio power operating level during testing.

The EUT is operating on antenna port A and B.

Occupied Bandwidth

EUT:	1514			**Work Order:**	MCSO1638
Serial Number:	000109423753			**Date:**	11/01/12
Customer:	Microsoft Corporation			**Temperature:**	22.3°C
Attendees:	None			**Humidity:**	52%
Project:	None			**Barometric Pres.:**	1013
Tested by:	Brandon Hobbs Rod Peloquin Sabrina Sanders	**Power:**	110VAC/60Hz	**Job Site:**	EV06

TEST SPECIFICATIONS	Test Method
FCC 15.247:2012	ANSI C63.10:2009

COMMENTS

The EUT is operating at 100% duty cycle. All cable losses for 2.4GHz and 5.0GHz bands are accounted for in the analyzer offset calculations. Testing was completed using the modulation that produced the highest conducted output power for n modes.

DEVIATIONS FROM TEST STANDARD

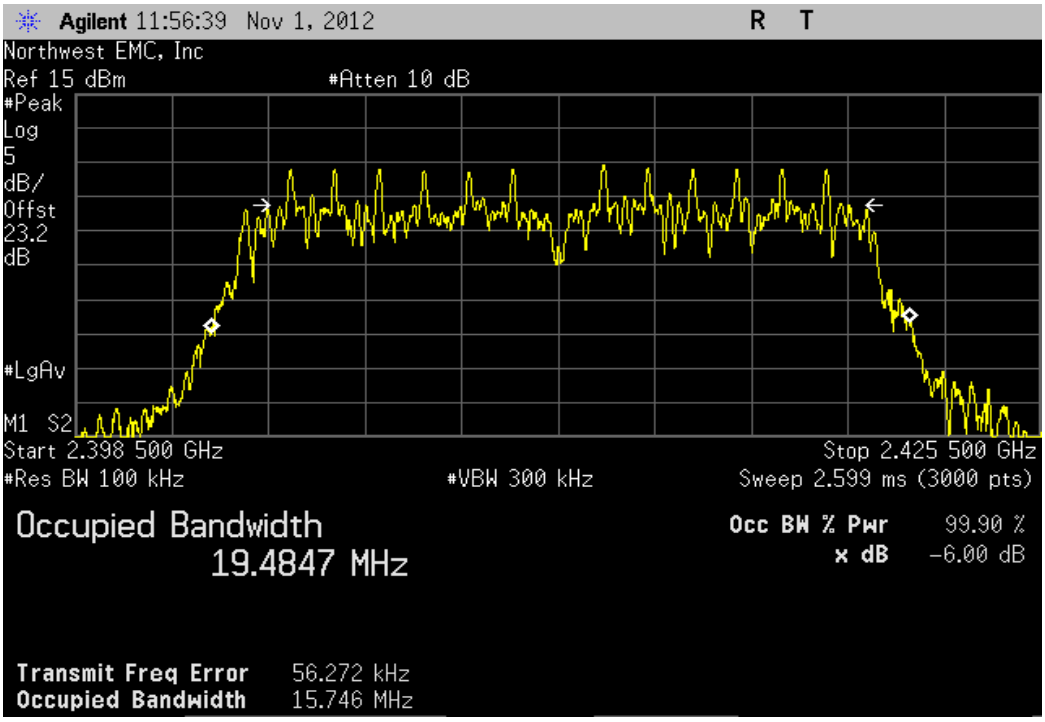
None

Configuration #	1	Signature

		Value	Limit	Result
Chain A				
20 MHz				
2400 MHz - 2483.5 MHz Band				
802.11(n) MCS8				
	Low Channel 1, 2412 MHz	15.746 MHz	> 500 kHz	Pass
	Mid Channel 6, 2437 MHz	16.292 MHz	> 500 kHz	Pass
	High Channel 11, 2462 MHz	15.949 MHz	> 500 kHz	Pass
802.11(n) MCS15				
	Low Channel 1, 2412 MHz	15.732 MHz	> 500 kHz	Pass
	Mid Channel 6, 2437 MHz	15.96 MHz	> 500 kHz	Pass
	High Channel 11, 2462 MHz	15.747 MHz	> 500 kHz	Pass
5725 MHz - 5850 MHz Band				
802.11(n) MCS8				
	Low Channel 149, 5745 MHz	15.554 MHz	> 500 kHz	Pass
	Mid Channel 157, 5785 MHz	16.387 MHz	> 500 kHz	Pass
	High Channel 165, 5825 MHz	16.538 MHz	> 500 kHz	Pass
802.11(n) MCS15				
	Low Channel 149, 5745 MHz	16.408 MHz	> 500 kHz	Pass
	Mid Channel 157, 5785 MHz	16.479 MHz	> 500 kHz	Pass
	High Channel 165, 5825 MHz	16.551 MHz	> 500 kHz	Pass
40 MHz				
2400 MHz - 2483.5 MHz Band				
802.11(n) MCS8				
	Low Channel 1/5, 2422 MHz	36.08 MHz	> 500 kHz	Pass
	Mid Channel 4/8, 2437 MHz	36.092 MHz	> 500 kHz	Pass
	High Channel 7/11 2452 MHz	36.082 MHz	> 500 kHz	Pass
802.11(n) MCS15				
	Low Channel 1/5, 2422 MHz	35.992 MHz	> 500 kHz	Pass
	Mid Channel 4/8, 2437 MHz	35.988 MHz	> 500 kHz	Pass
	High Channel 7/11 2452 MHz	35.985 MHz	> 500 kHz	Pass
5725 MHz - 5850 MHz Band				
802.11(n) MCS8				
	Low Channel 151, 5755 MHz	36.073 MHz	> 500 kHz	Pass
	High Channel 159, 5795 MHz	35.843 MHz	> 500 kHz	Pass
802.11(n) MCS15				
	Low Channel 151, 5755 MHz	35.986 MHz	> 500 kHz	Pass
	High Channel 159, 5795 MHz	36.016 MHz	> 500 kHz	Pass
Chain B				
20 MHz				
2400 MHz - 2483.5 MHz Band				
802.11(n) MCS8				
	Low Channel 1, 2412 MHz	15.927 MHz	> 500 kHz	Pass
	Mid Channel 6, 2437 MHz	16.7 MHz	> 500 kHz	Pass
	High Channel 11, 2462 MHz	16.705 MHz	> 500 kHz	Pass
802.11(n) MCS15				
	Low Channel 1, 2412 MHz	16.007 MHz	> 500 kHz	Pass
	Mid Channel 6, 2437 MHz	16.928 MHz	> 500 kHz	Pass
	High Channel 11, 2462 MHz	16.862 MHz	> 500 kHz	Pass
5725 MHz - 5850 MHz Band				
802.11(n) MCS8				
	Low Channel 149, 5745 MHz	16.885 MHz	> 500 kHz	Pass
	Mid Channel 157, 5785 MHz	16.738 MHz	> 500 kHz	Pass
	High Channel 165, 5825 MHz	16.737 MHz	> 500 kHz	Pass
802.11(n) MCS15				
	Low Channel 149, 5745 MHz	16.794 MHz	> 500 kHz	Pass
	Mid Channel 157, 5785 MHz	17.062 MHz	> 500 kHz	Pass
	High Channel 165, 5825 MHz	16.744 MHz	> 500 kHz	Pass
40 MHz				
2400 MHz - 2483.5 MHz Band				
802.11(n) MCS8				
	Low Channel 1/5, 2422 MHz	36.102 MHz	> 500 kHz	Pass
	Mid Channel 4/8, 2437 MHz	36.105 MHz	> 500 kHz	Pass
	High Channel 7/11 2452 MHz	36.148 MHz	> 500 kHz	Pass
802.11(n) MCS15				
	Low Channel 1/5, 2422 MHz	35.858 MHz	> 500 kHz	Pass
	Mid Channel 4/8, 2437 MHz	35.652 MHz	> 500 kHz	Pass
	High Channel 7/11 2452 MHz	35.629 MHz	> 500 kHz	Pass
5725 MHz - 5850 MHz Band				
802.11(n) MCS8				
	Low Channel 151, 5755 MHz	36.303 MHz	> 500 kHz	Pass
	High Channel 159, 5795 MHz	36.116 MHz	> 500 kHz	Pass
802.11(n) MCS15				
	Low Channel 151, 5755 MHz	35.491 MHz	> 500 kHz	Pass
	High Channel 159, 5795 MHz	35.578 MHz	> 500 kHz	Pass

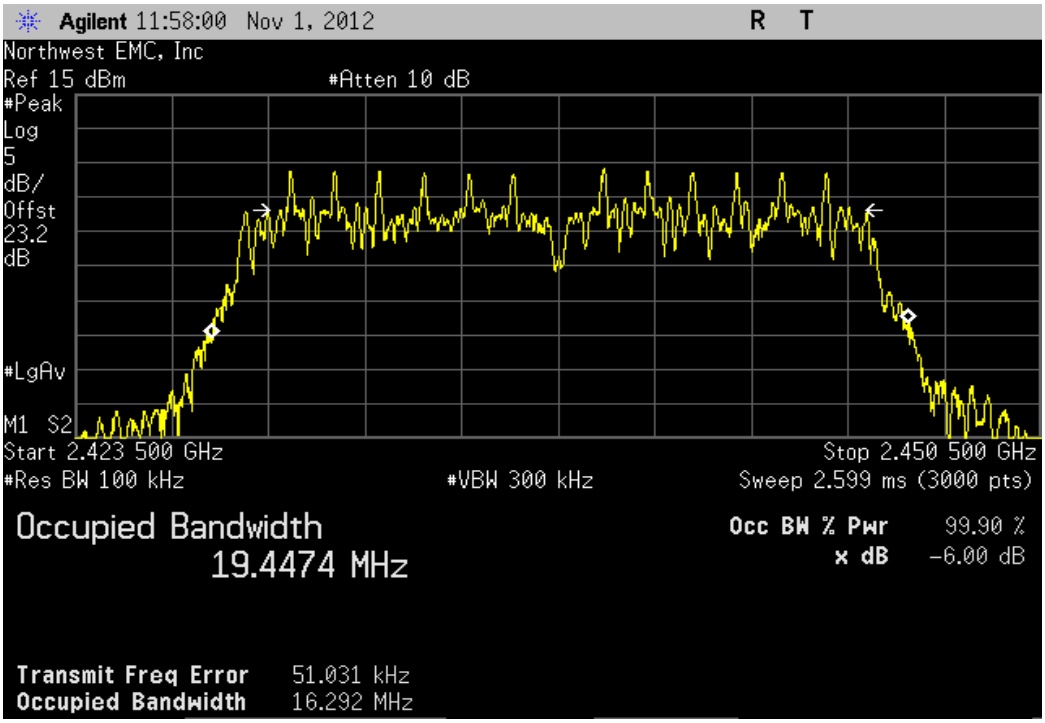
Chain A, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, Low Channel 1, 2412 MHz

				Value	Limit	Result
				15.746 MHz	> 500 kHz	Pass



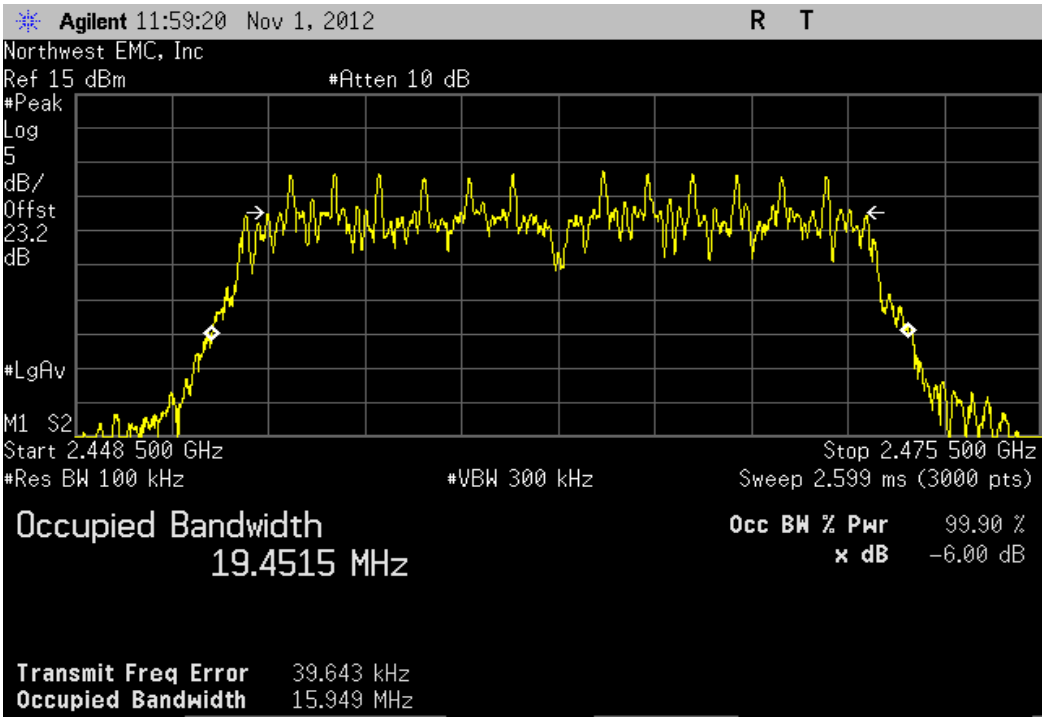
Chain A, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, Mid Channel 6, 2437 MHz

				Value	Limit	Result
				16.292 MHz	> 500 kHz	Pass



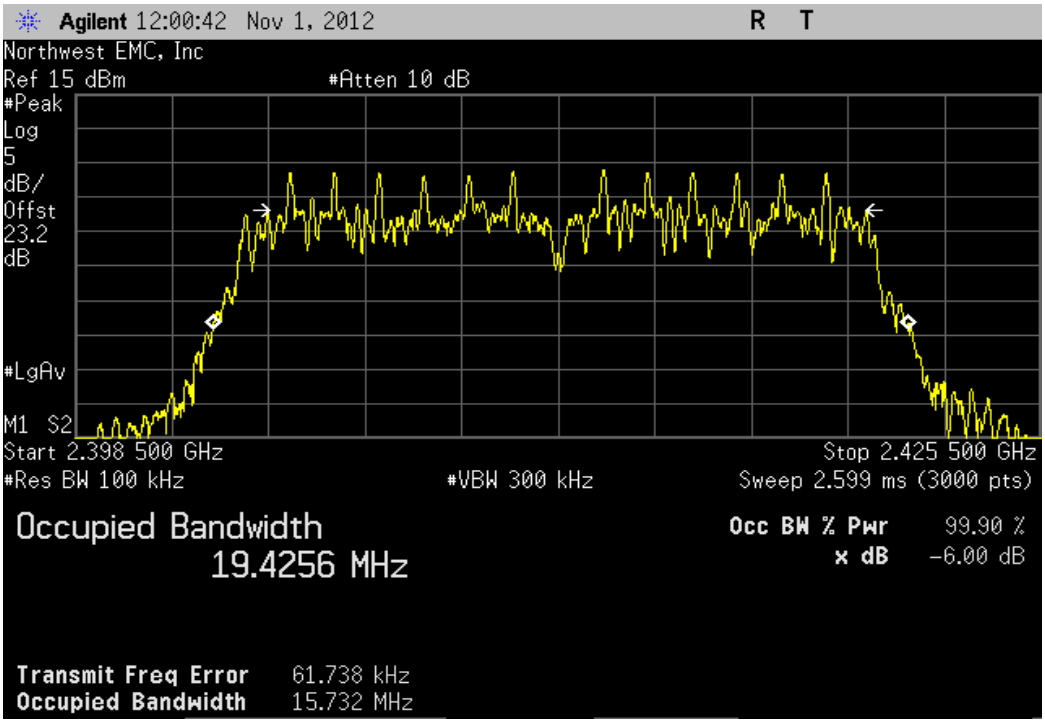
Chain A, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, High Channel 11, 2462 MHz

				Value	Limit	Result
				15.949 MHz	> 500 kHz	Pass



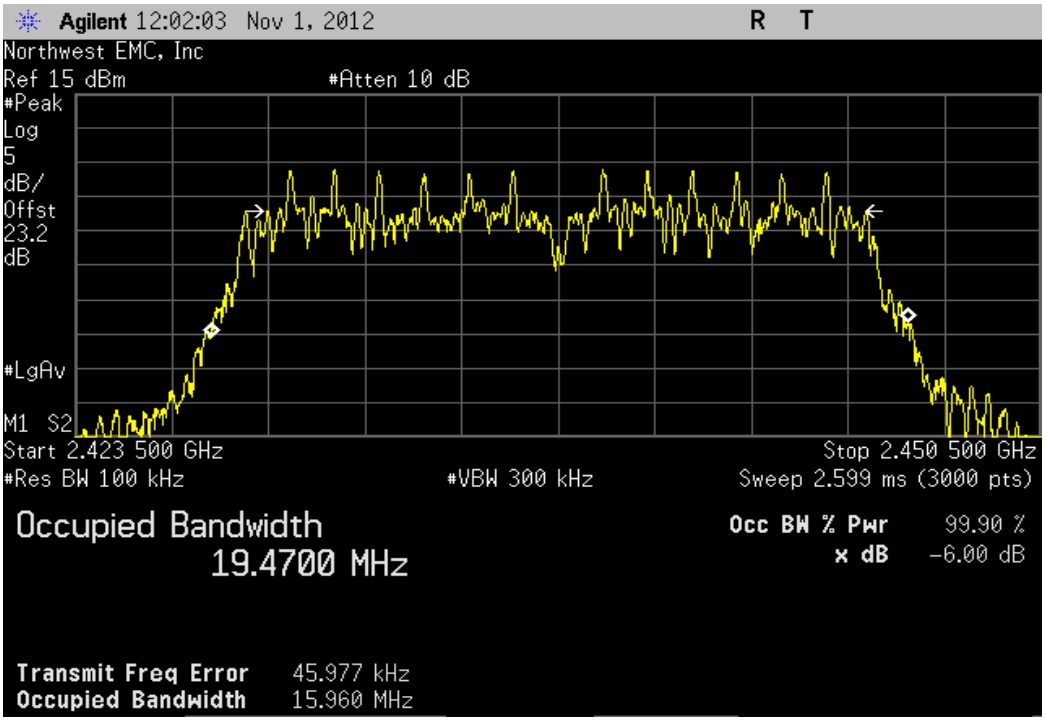
Chain A, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, Low Channel 1, 2412 MHz

				Value	Limit	Result
				15.732 MHz	> 500 kHz	Pass



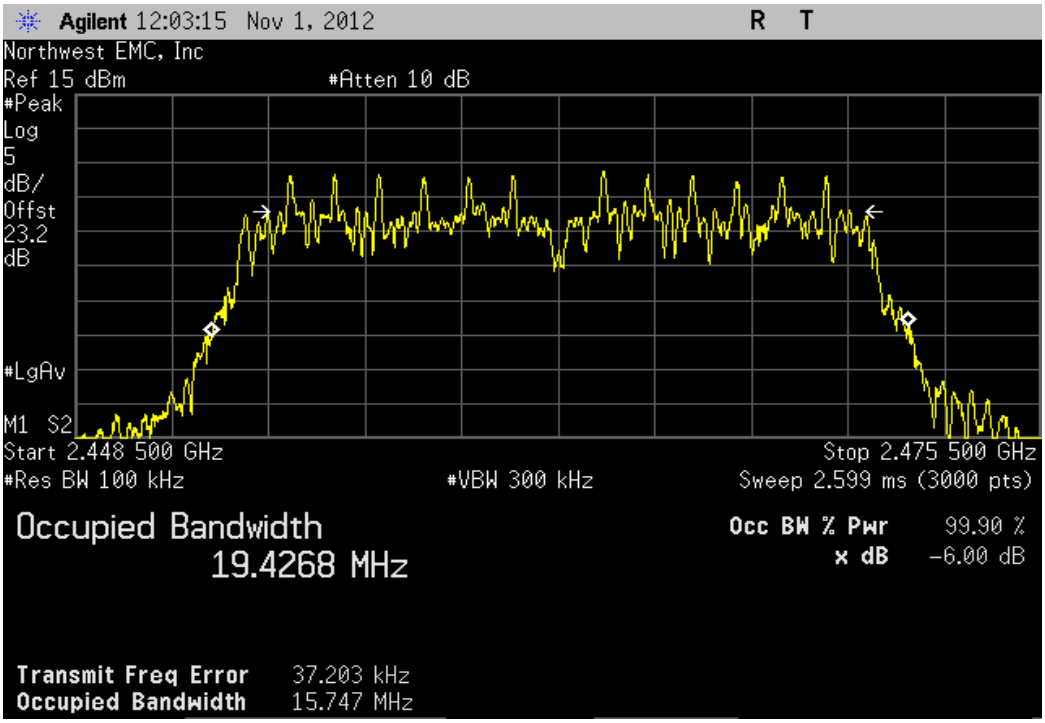
Chain A, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, Mid Channel 6, 2437 MHz

				Value	Limit	Result
				15.96 MHz	> 500 kHz	Pass



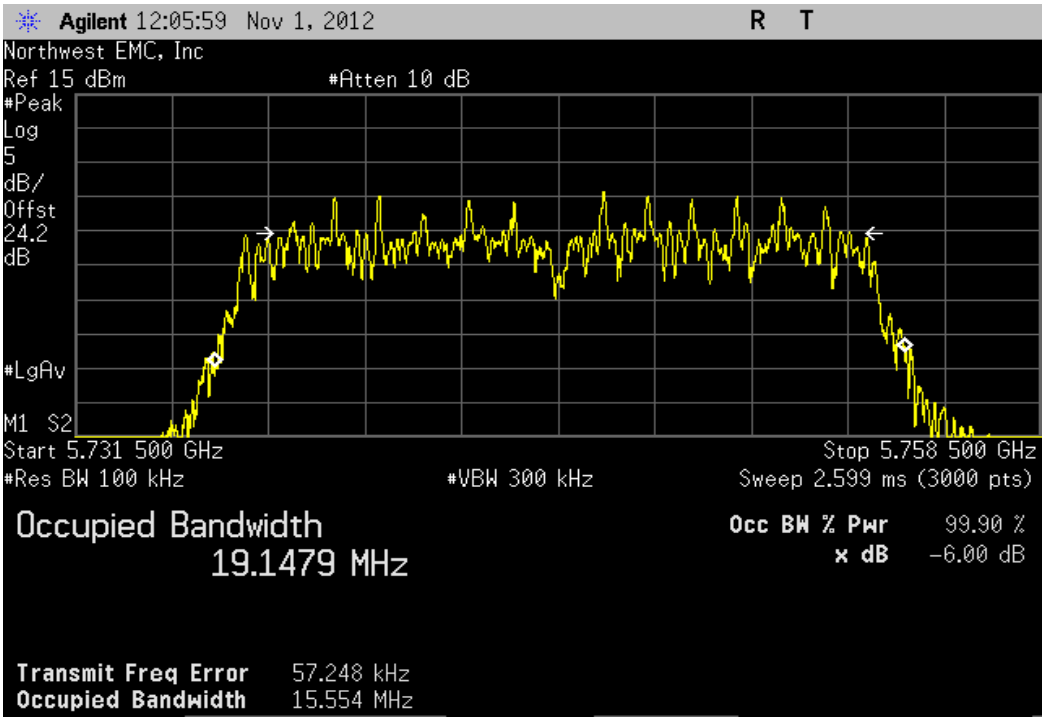
Chain A, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, High Channel 11, 2462 MHz

				Value	Limit	Result
				15.747 MHz	> 500 kHz	Pass



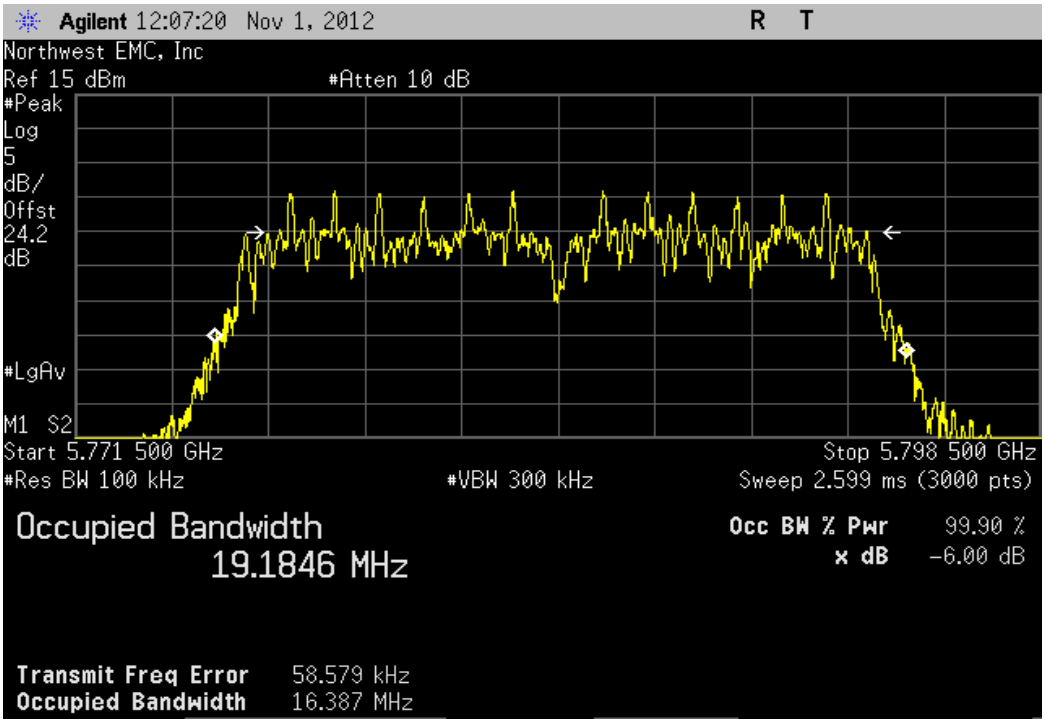
Chain A, 20 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS8, Low Channel 149, 5745 MHz

				Value	Limit	Result
				15.554 MHz	> 500 kHz	Pass



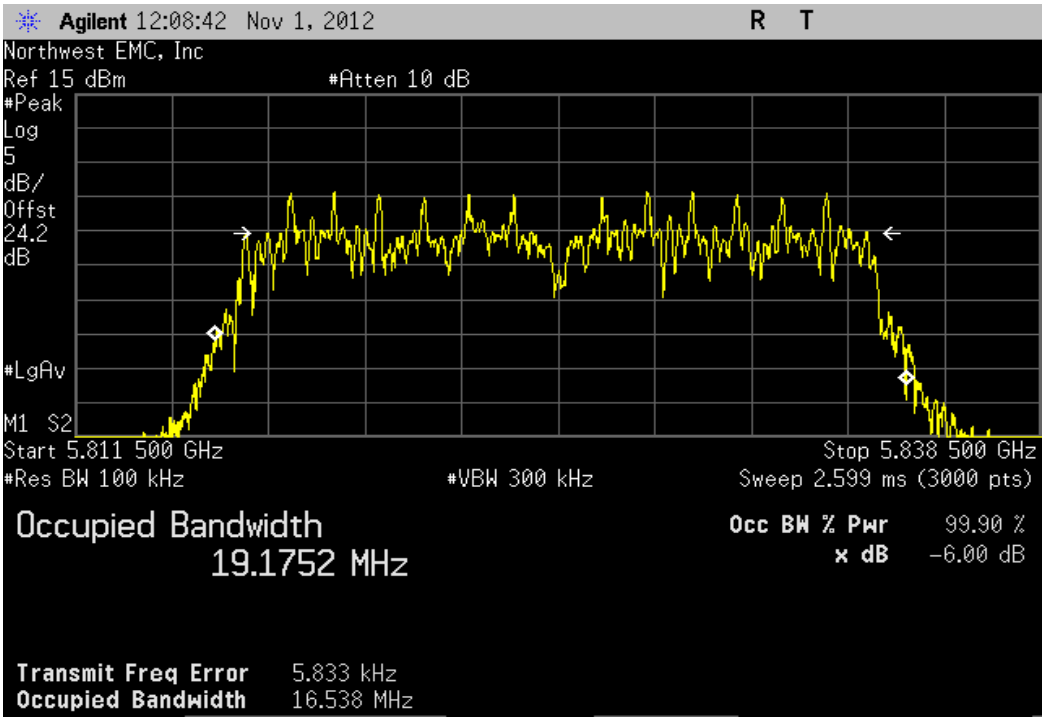
Chain A, 20 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS8, Mid Channel 157, 5785 MHz

				Value	Limit	Result
				16.387 MHz	> 500 kHz	Pass



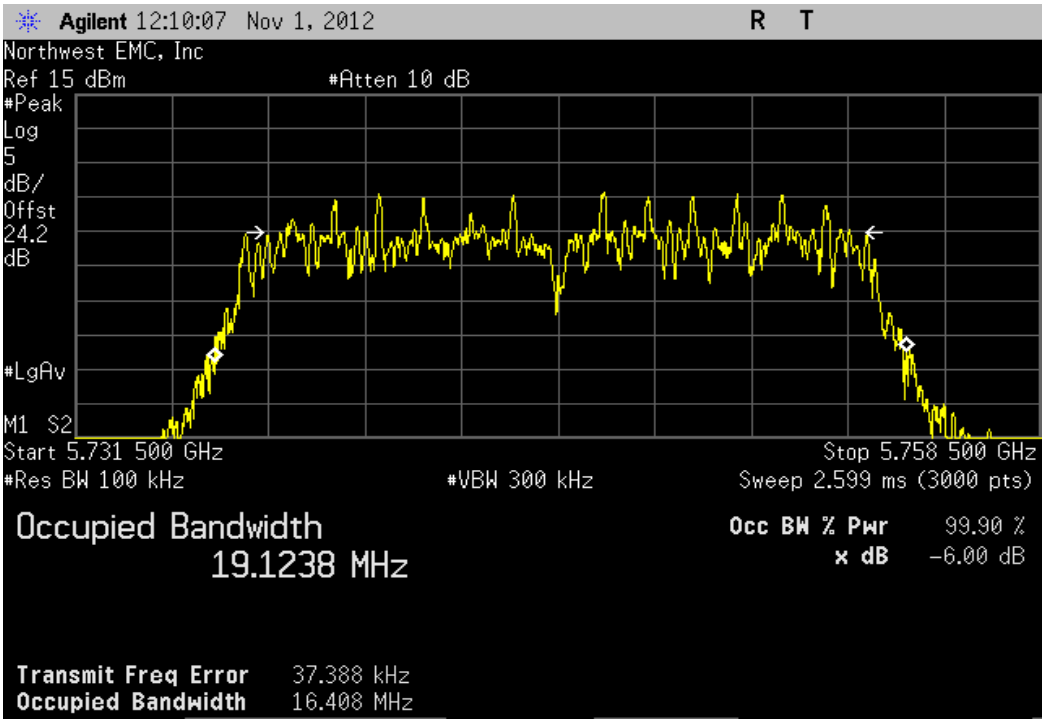
Chain A, 20 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS8, High Channel 165, 5825 MHz

				Value	Limit	Result
				16.538 MHz	> 500 kHz	Pass



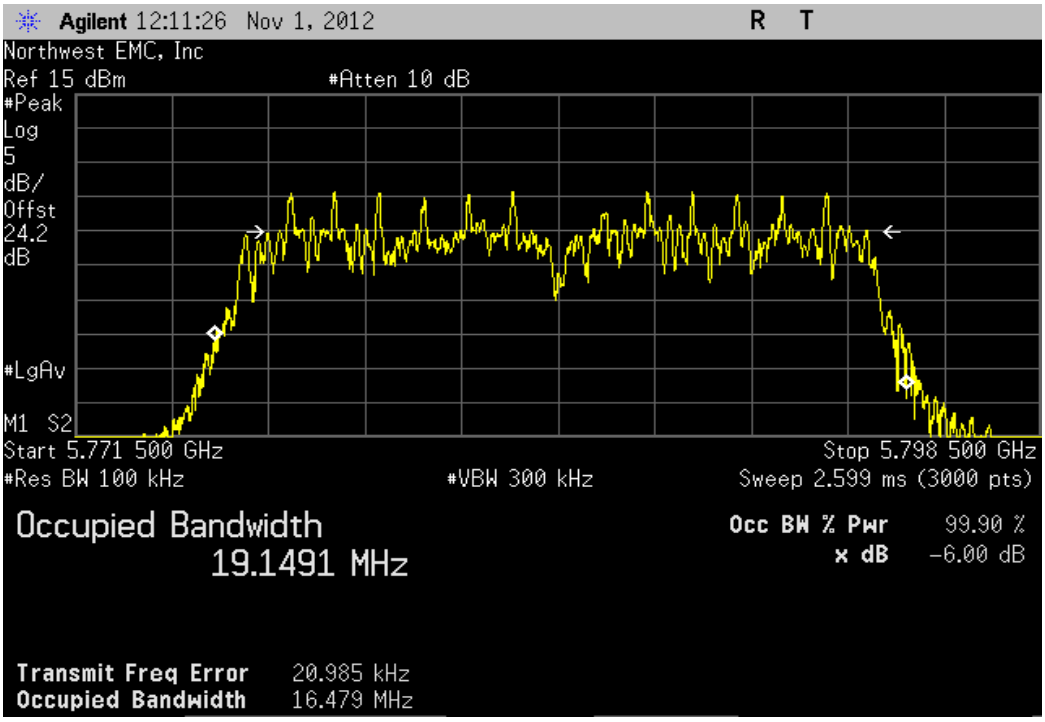
Chain A, 20 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS15, Low Channel 149, 5745 MHz

				Value	Limit	Result
				16.408 MHz	> 500 kHz	Pass



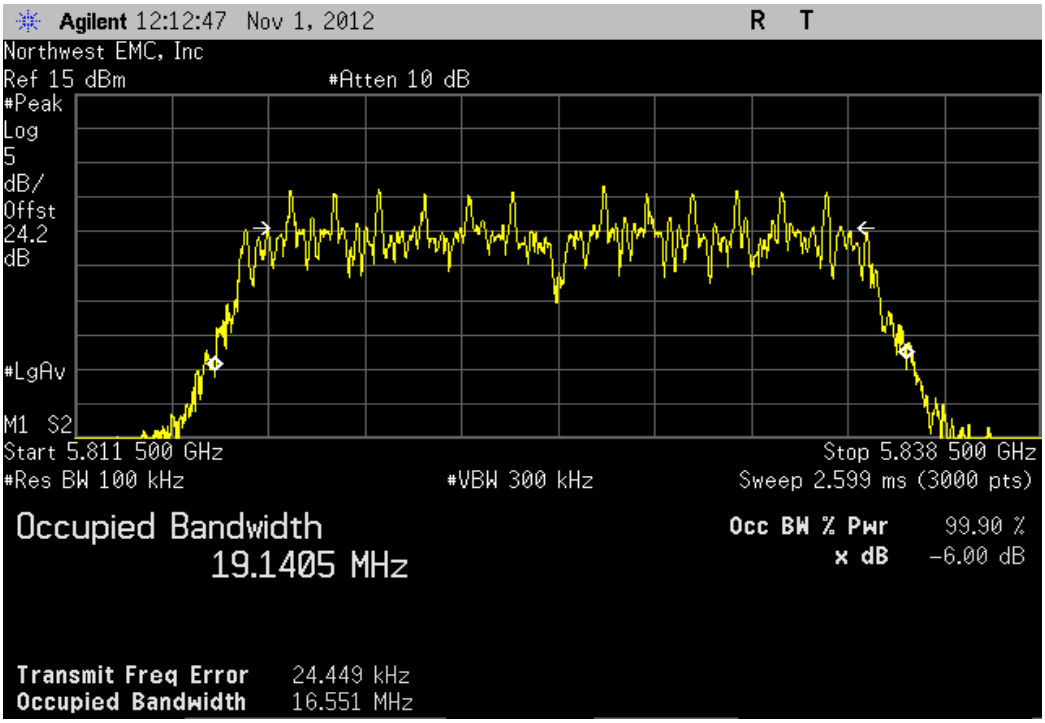
Chain A, 20 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS15, Mid Channel 157, 5785 MHz

				Value	Limit	Result
				16.479 MHz	> 500 kHz	Pass



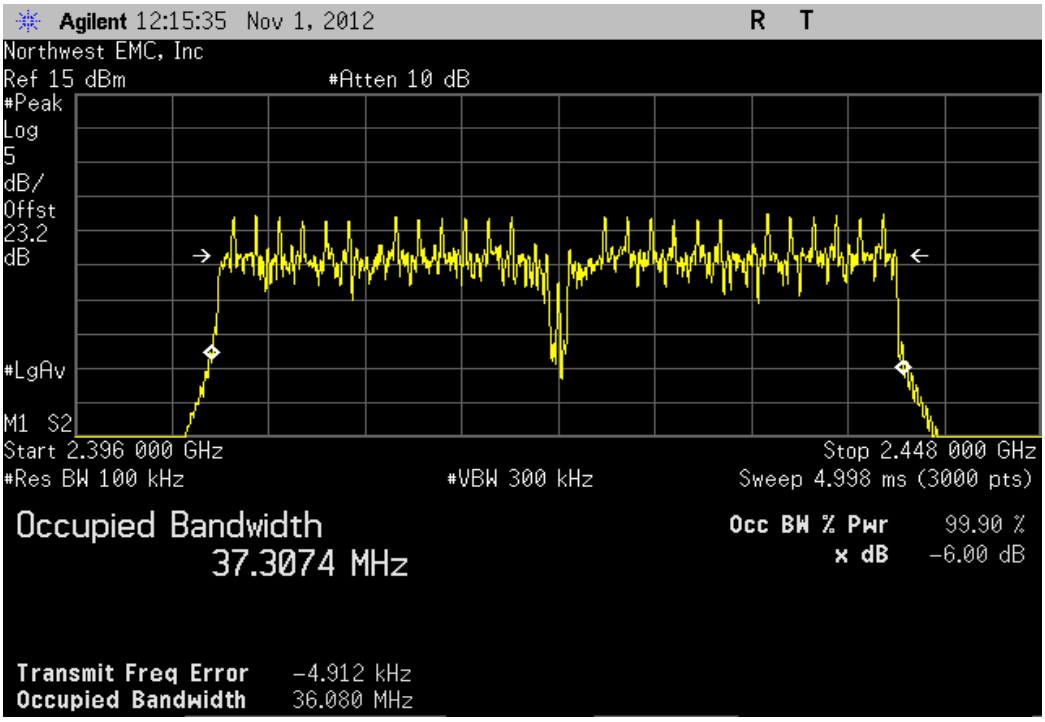
Chain A, 20 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS15, High Channel 165, 5825 MHz

				Value	Limit	Result
				16.551 MHz	> 500 kHz	Pass



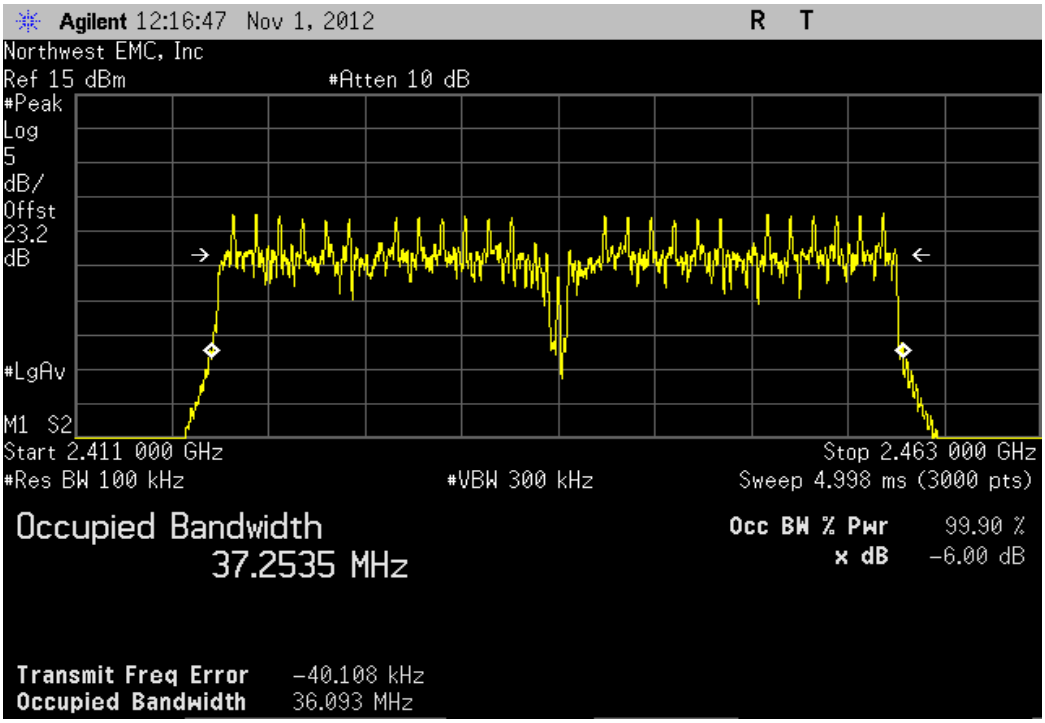
Chain A, 40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, Low Channel 1/5, 2422 MHz

				Value	Limit	Result
				36.08 MHz	> 500 kHz	Pass



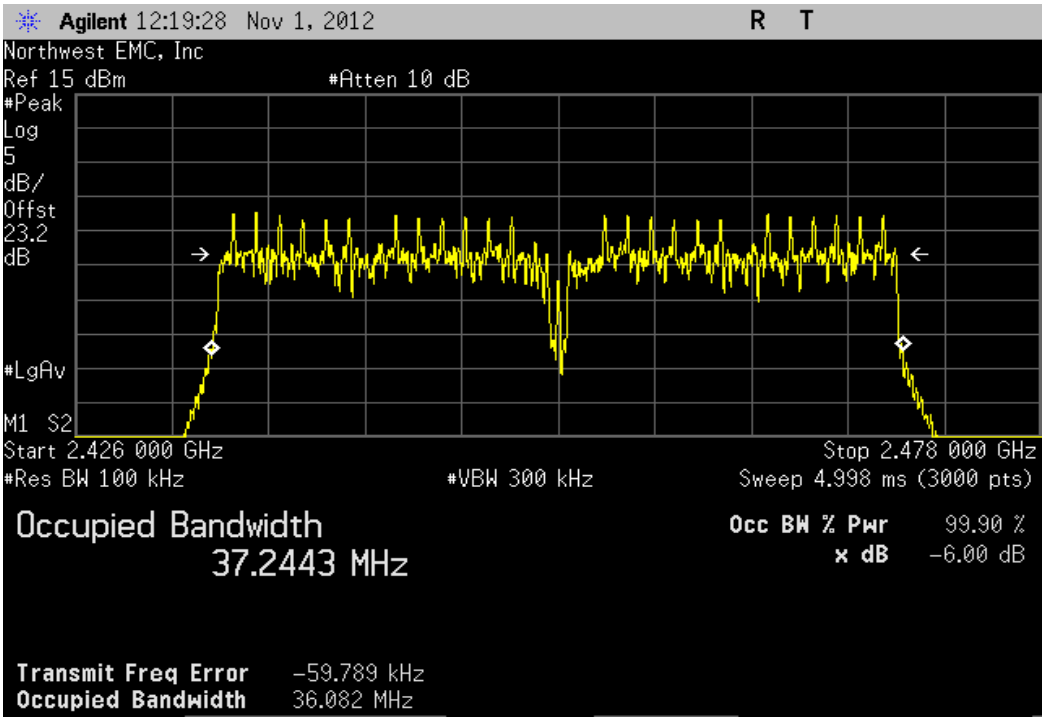
Chain A, 40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, Mid Channel 4/8, 2437 MHz

				Value	Limit	Result
				36.092 MHz	> 500 kHz	Pass



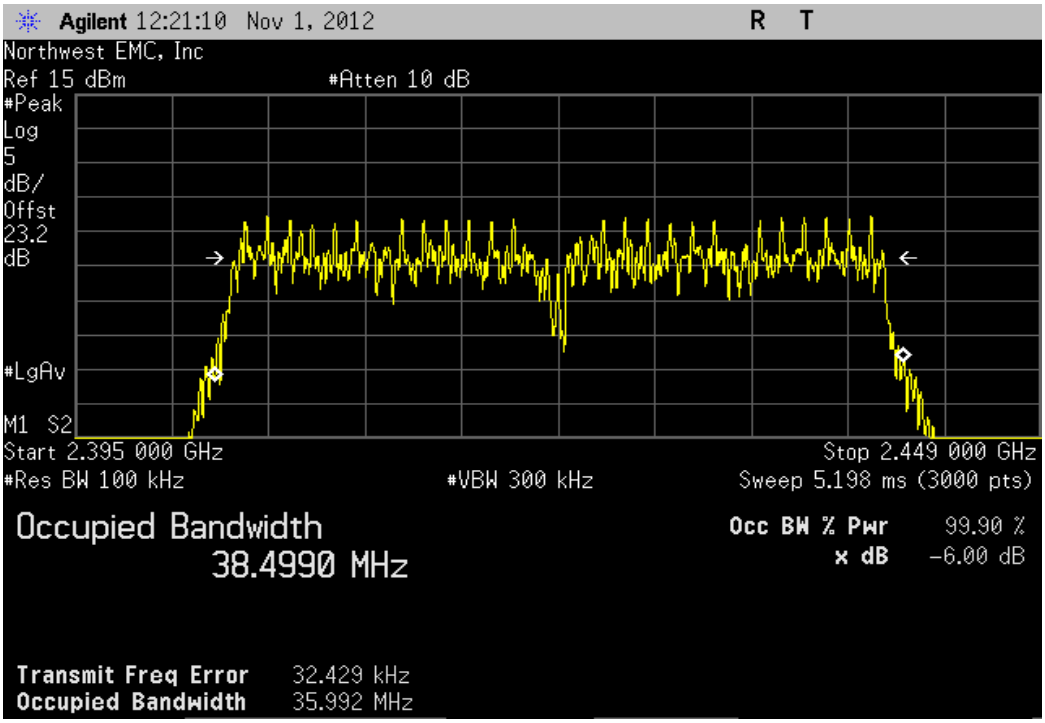
Chain A, 40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, High Channel 7/11 2452 MHz

				Value	Limit	Result
				36.082 MHz	> 500 kHz	Pass



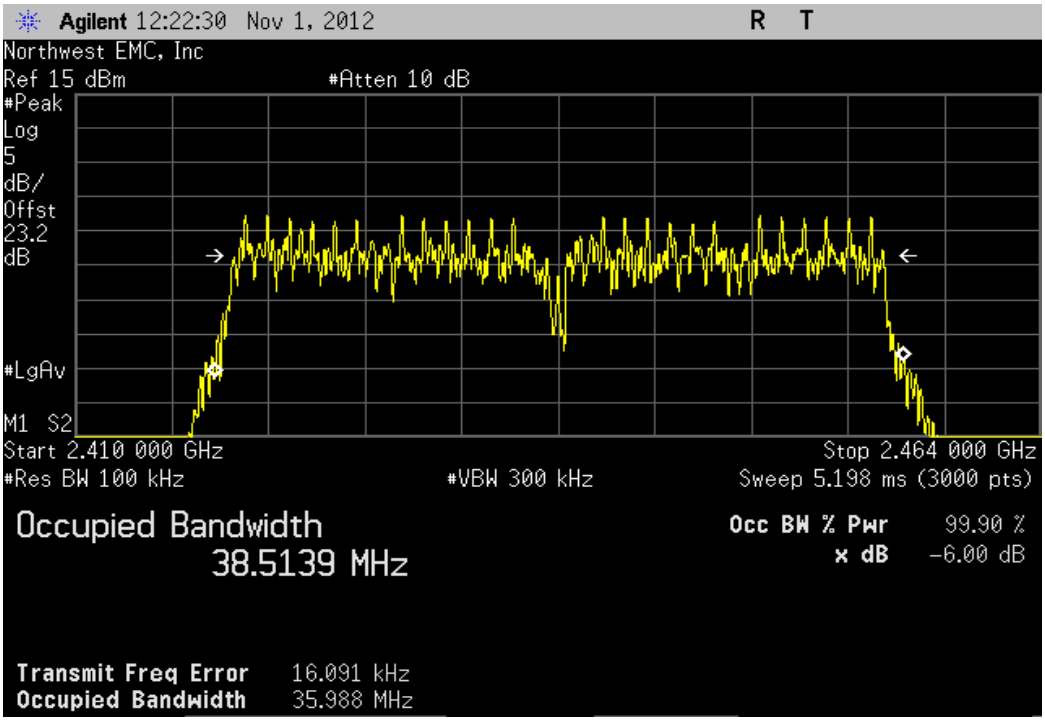
Chain A, 40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, Low Channel 1/5, 2422 MHz

				Value	Limit	Result
				35.992 MHz	> 500 kHz	Pass



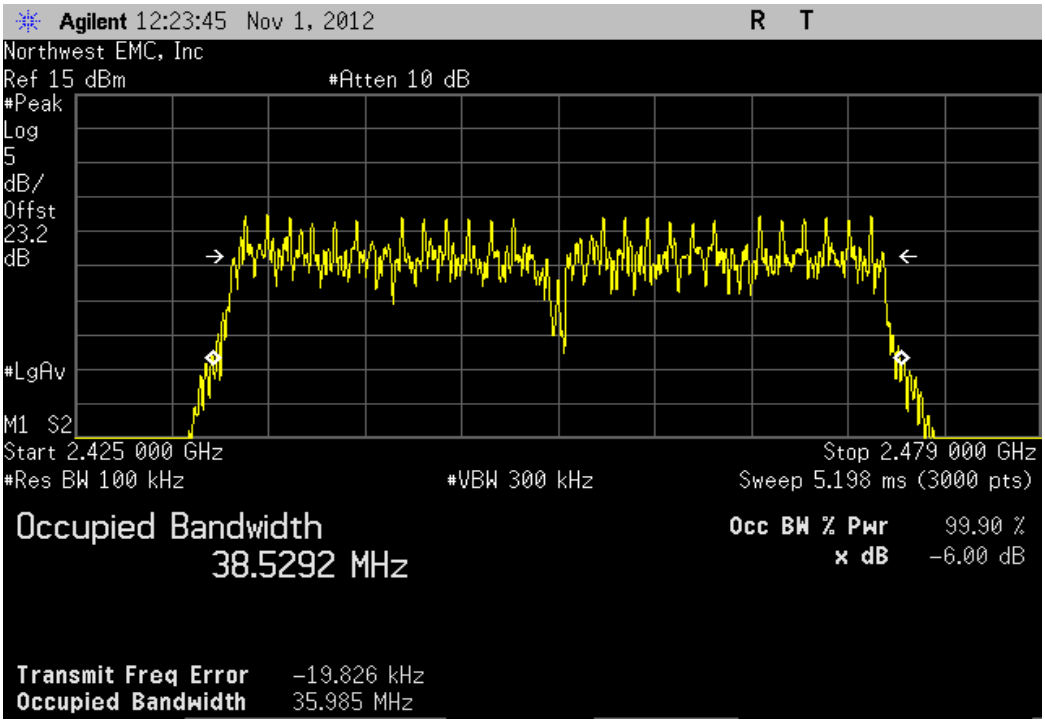
Chain A, 40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, Mid Channel 4/8, 2437 MHz3

				Value	Limit	Result
				35.988 MHz	> 500 kHz	Pass



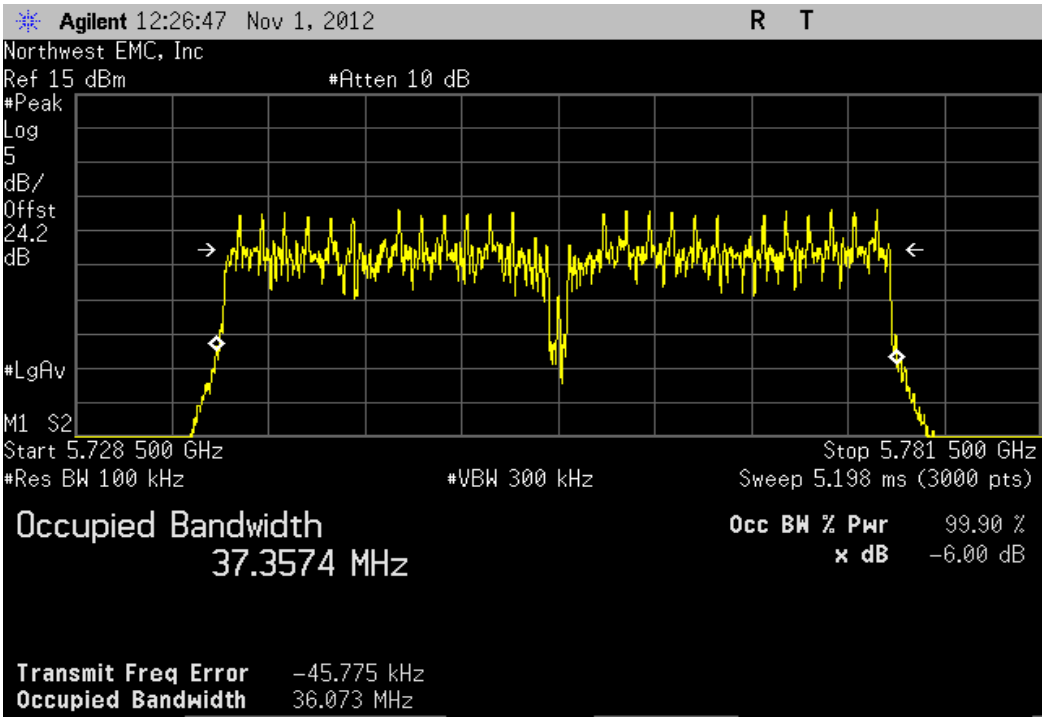
Chain A, 40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, High Channel 7/11 2452 MHz

				Value	Limit	Result
				35.985 MHz	> 500 kHz	Pass



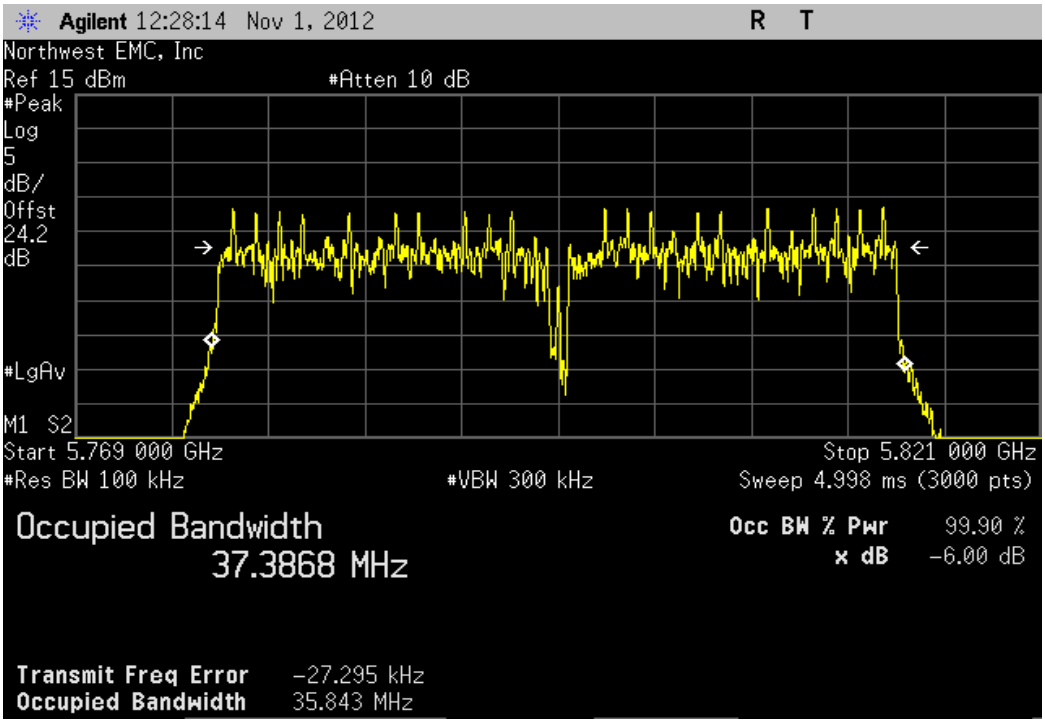
Chain A, 40 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS8, Low Channel 151, 5755 MHz

				Value	Limit	Result
				36.073 MHz	> 500 kHz	Pass



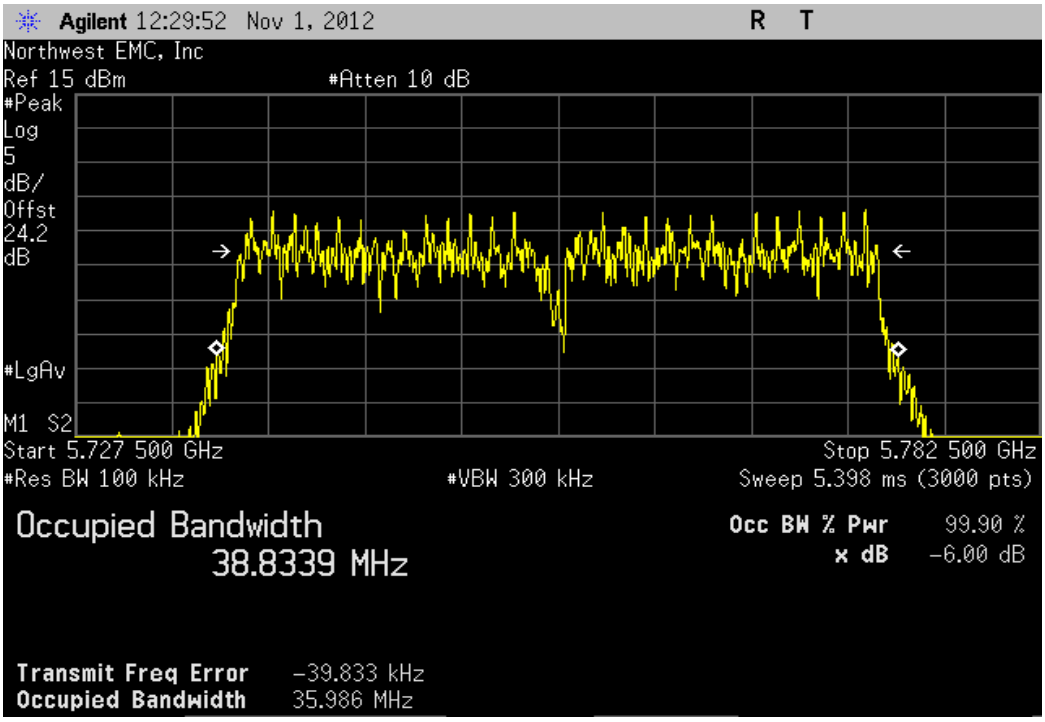
Chain A, 40 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS8, High Channel 159, 5795 MHz

				Value	Limit	Result
				35.843 MHz	> 500 kHz	Pass



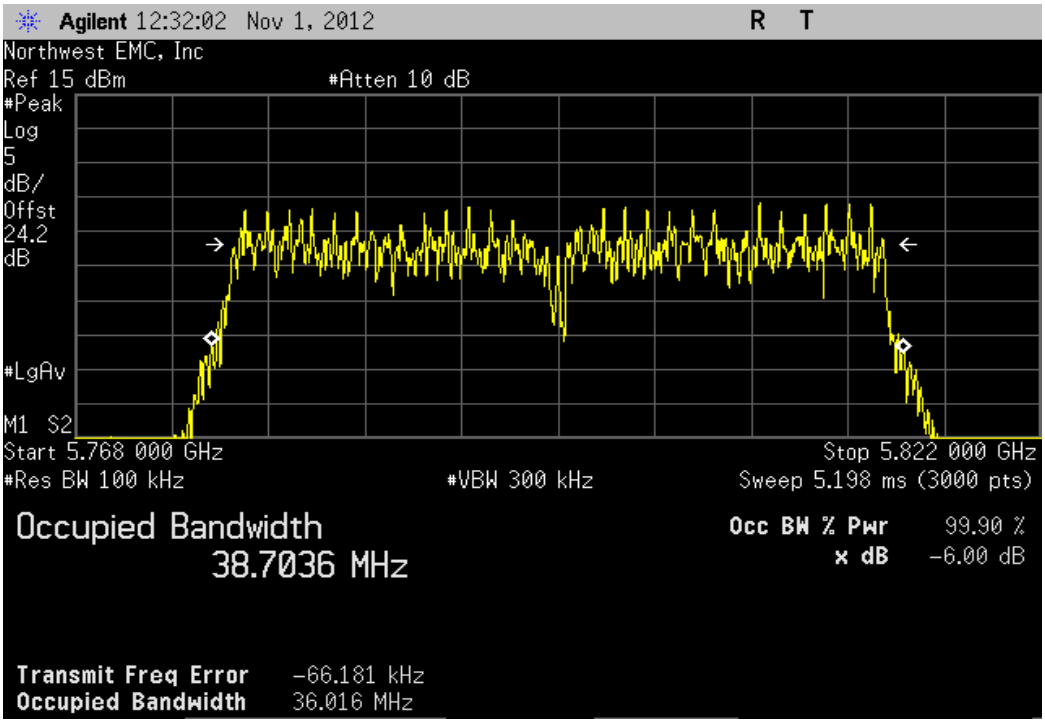
Chain A, 40 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS15, Low Channel 151, 5755 MHz

				Value	Limit	Result
				35.986 MHz	> 500 kHz	Pass



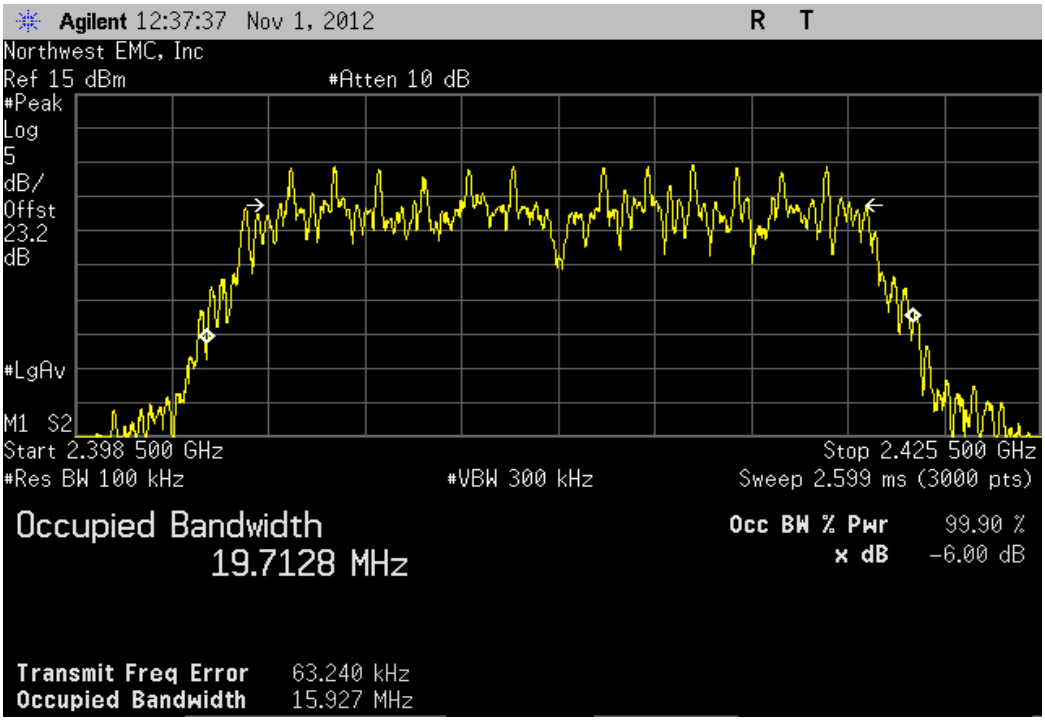
Chain A, 40 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS15, High Channel 159, 5795 MHz

				Value	Limit	Result
				36.016 MHz	> 500 kHz	Pass



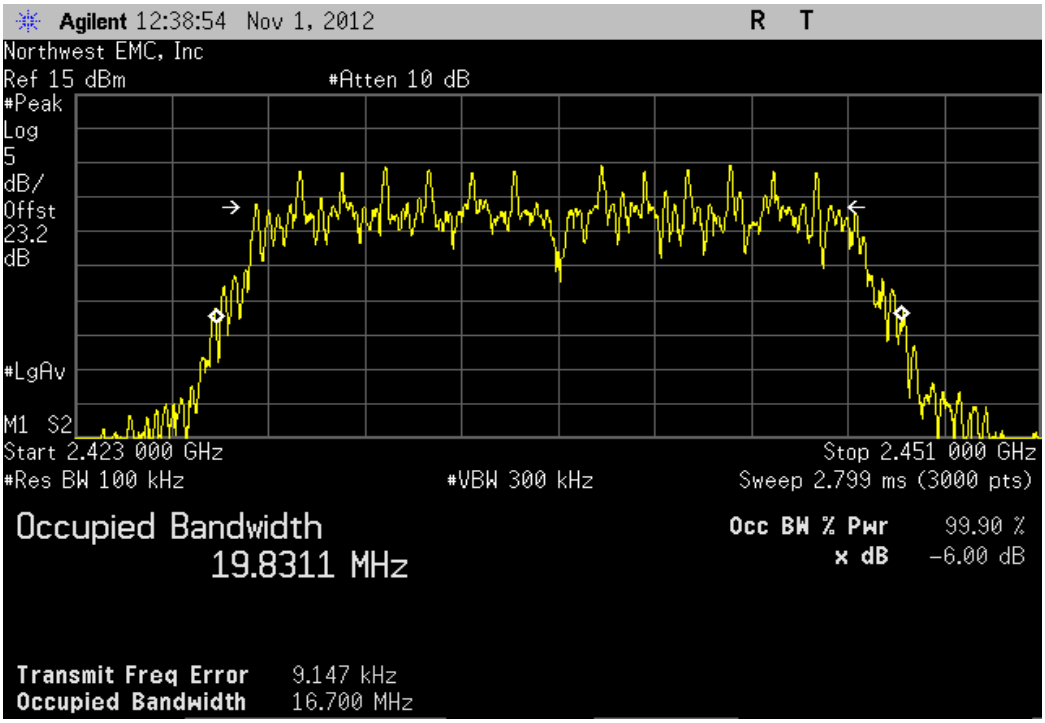
Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, Low Channel 1, 2412 MHz

				Value	Limit	Result
				15.927 MHz	> 500 kHz	Pass



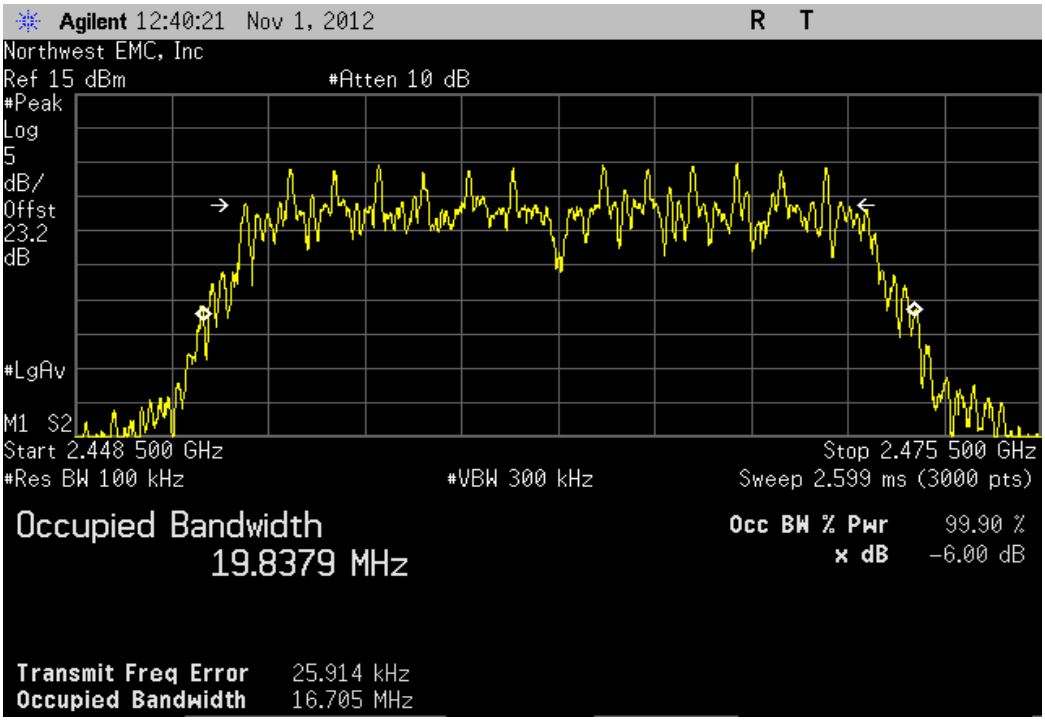
Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, Mid Channel 6, 2437 MHz

				Value	Limit	Result
				16.7 MHz	> 500 kHz	Pass



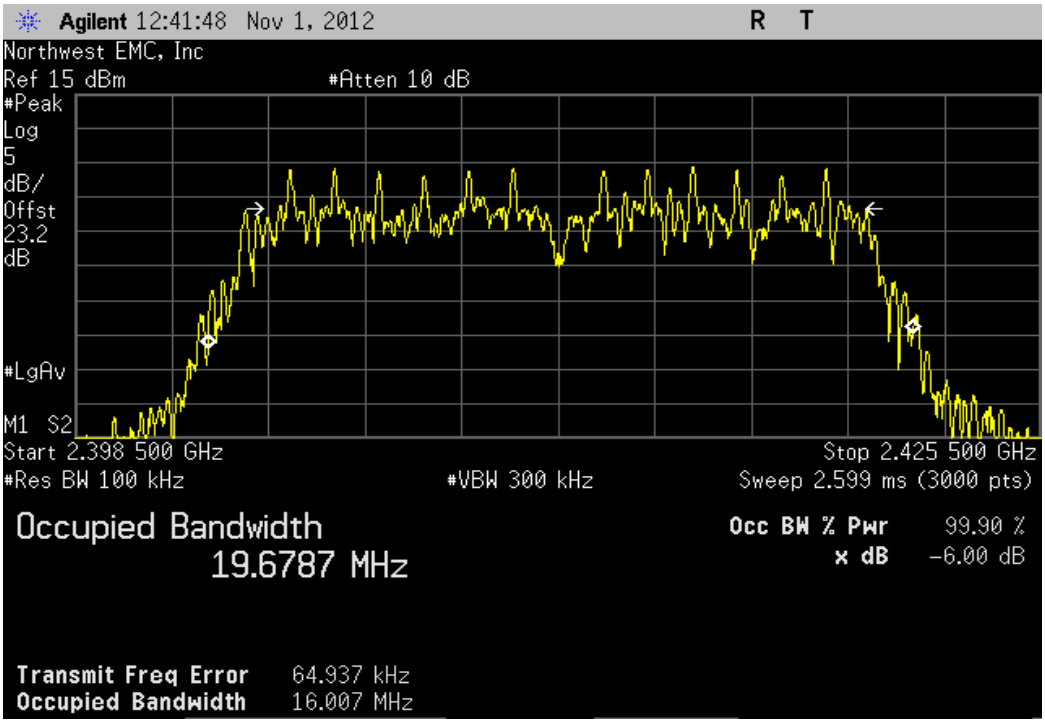
Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, High Channel 11, 2462 MHz

				Value	Limit	Result
				16.705 MHz	> 500 kHz	Pass



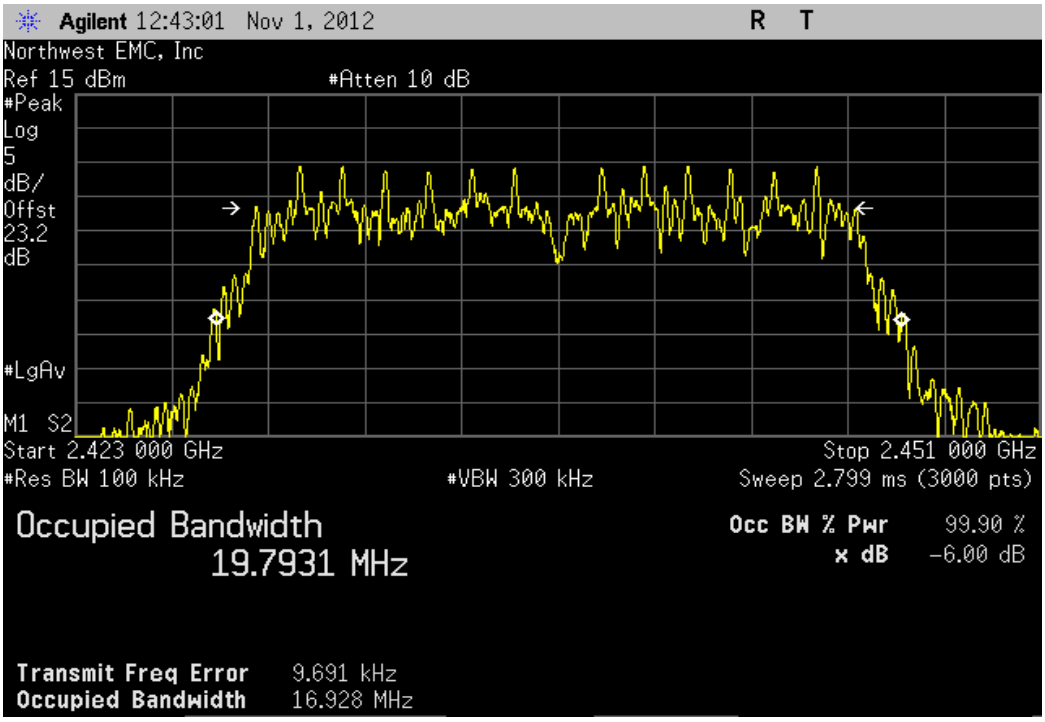
Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, Low Channel 1, 2412 MHz

				Value	Limit	Result
				16.007 MHz	> 500 kHz	Pass



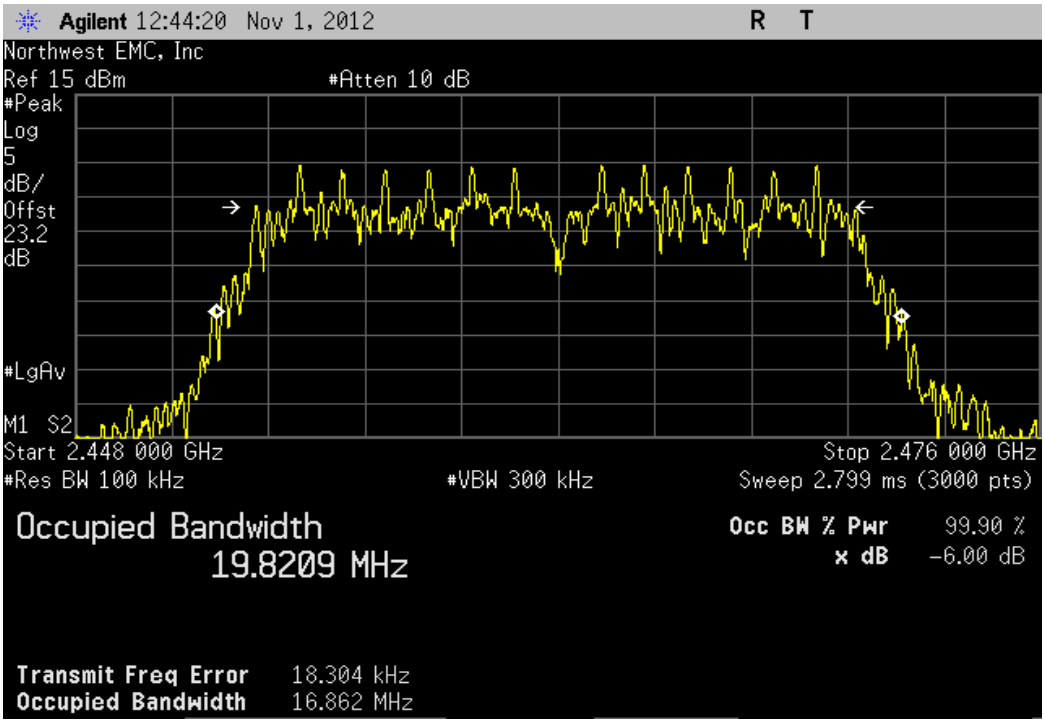
Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, Mid Channel 6, 2437 MHz

				Value	Limit	Result
				16.928 MHz	> 500 kHz	Pass



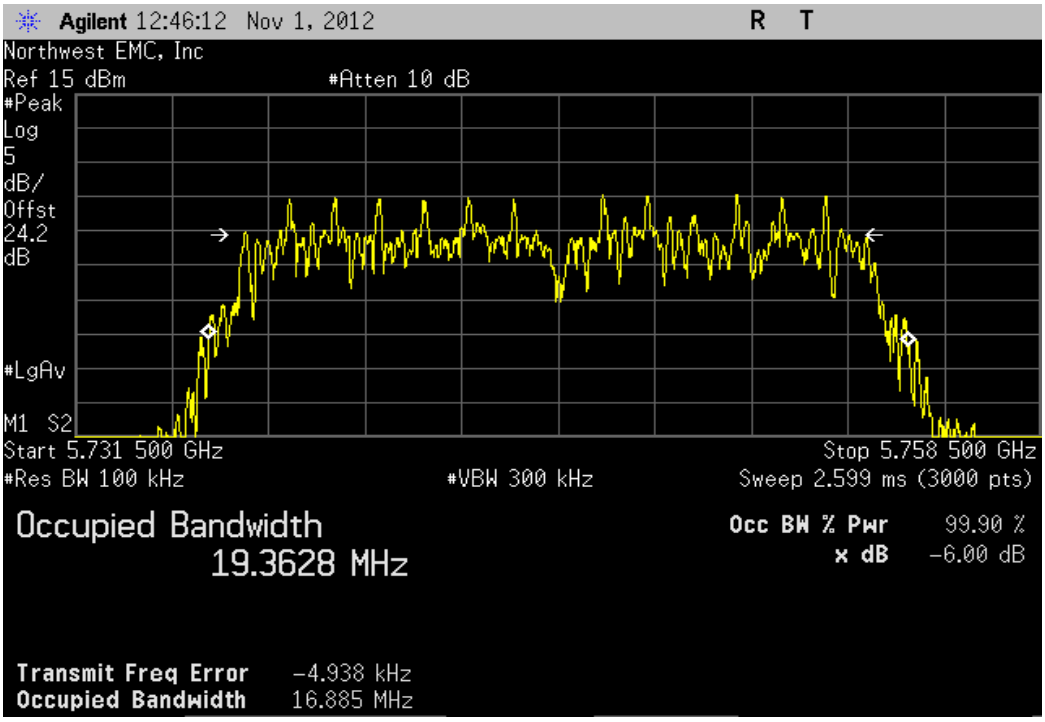
Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, High Channel 11, 2462 MHz

				Value	Limit	Result
				16.862 MHz	> 500 kHz	Pass



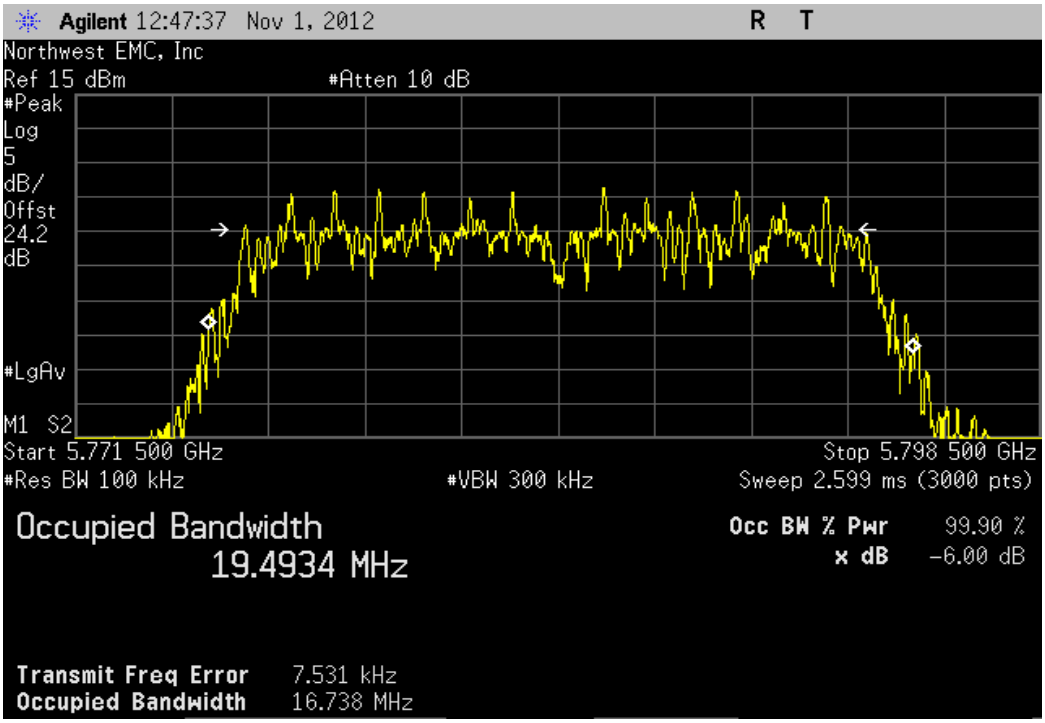
Chain B, 20 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS8, Low Channel 149, 5745 MHz

				Value	Limit	Result
				16.885 MHz	> 500 kHz	Pass



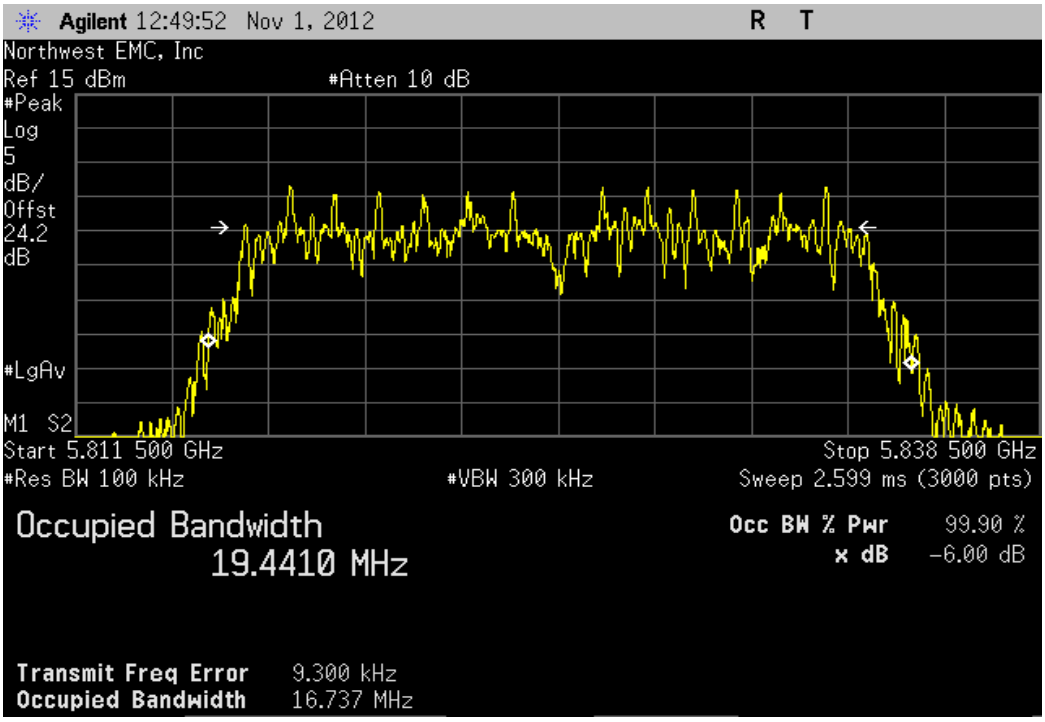
Chain B, 20 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS8, Mid Channel 157, 5785 MHz

				Value	Limit	Result
				16.738 MHz	> 500 kHz	Pass



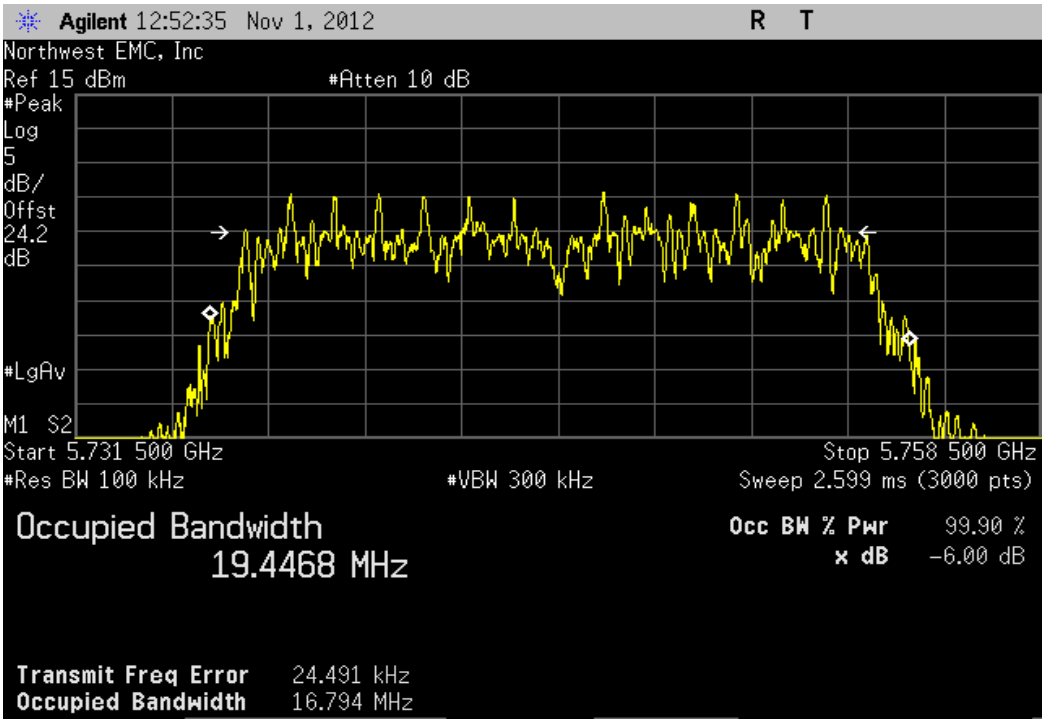
Chain B, 20 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS8, High Channel 165, 5825 MHz

				Value	Limit	Result
				16.737 MHz	> 500 kHz	Pass



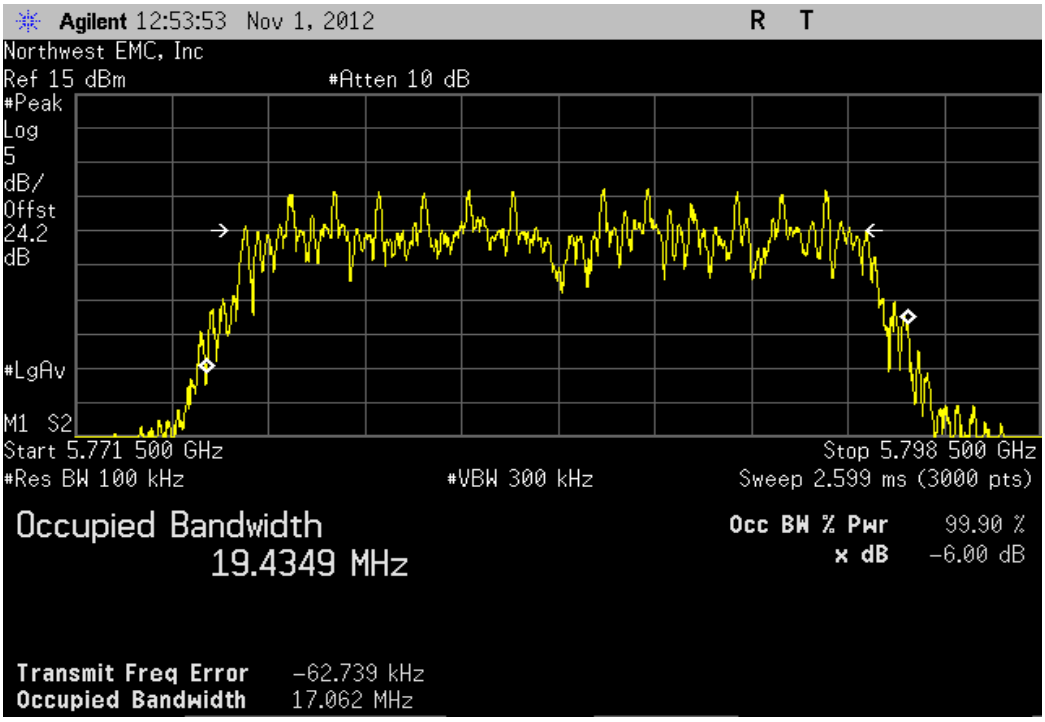
Chain B, 20 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS15, Low Channel 149, 5745 MHz

				Value	Limit	Result
				16.794 MHz	> 500 kHz	Pass



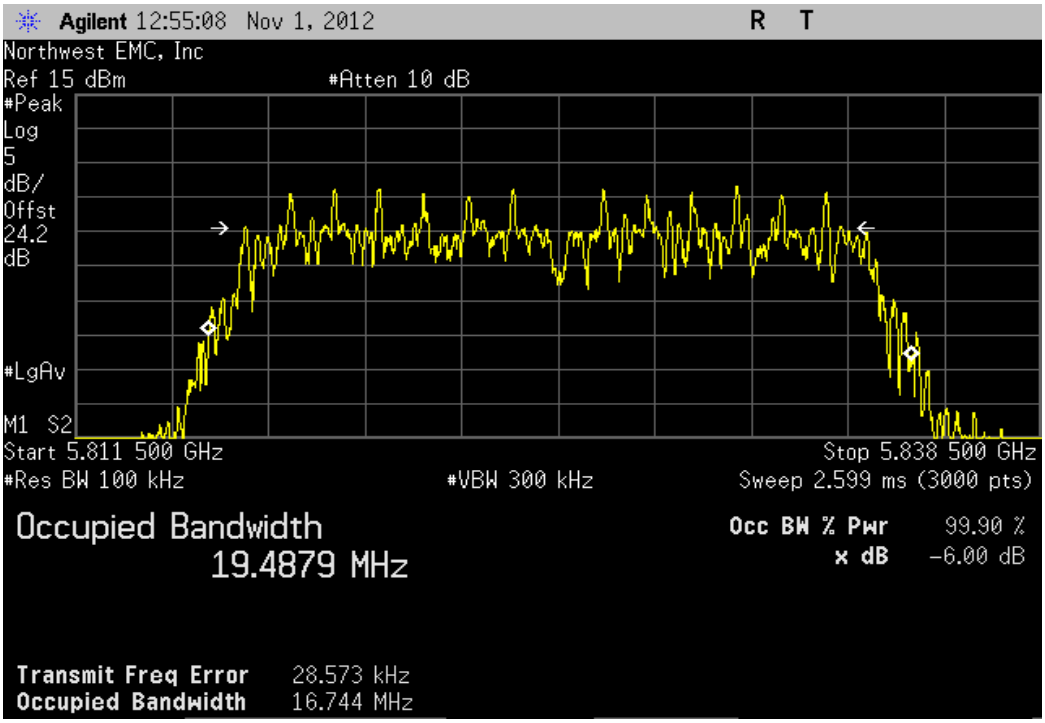
Chain B, 20 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS15, Mid Channel 157, 5785 MHz

				Value	Limit	Result
				17.062 MHz	> 500 kHz	Pass



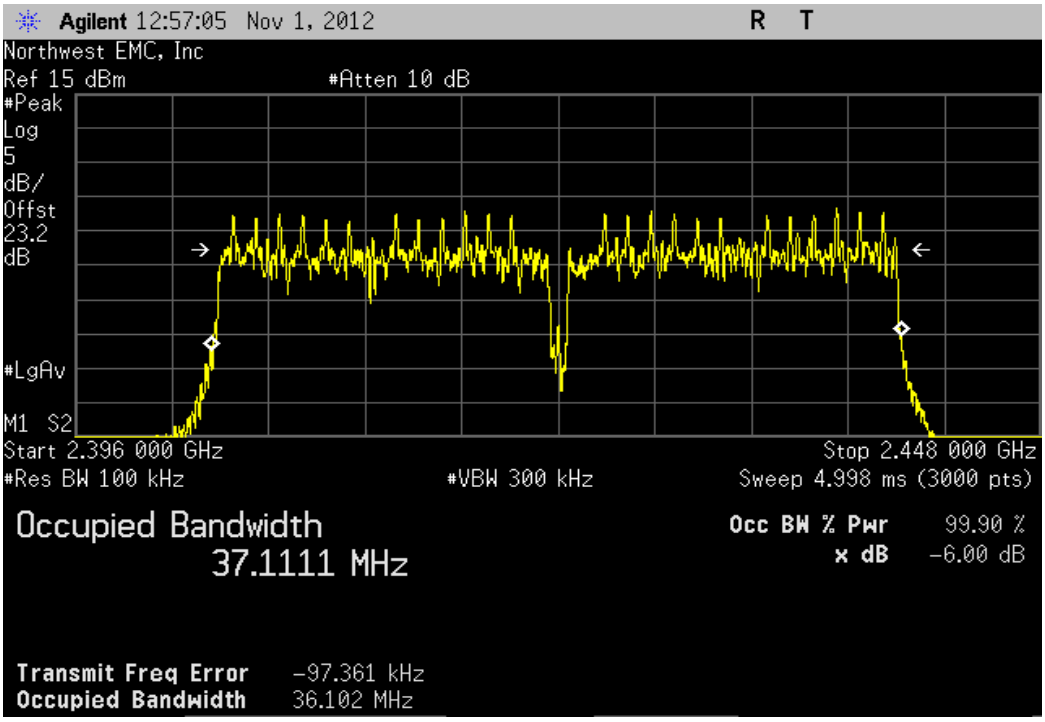
Chain B, 20 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS15, High Channel 165, 5825 MHz

				Value	Limit	Result
				16.744 MHz	> 500 kHz	Pass



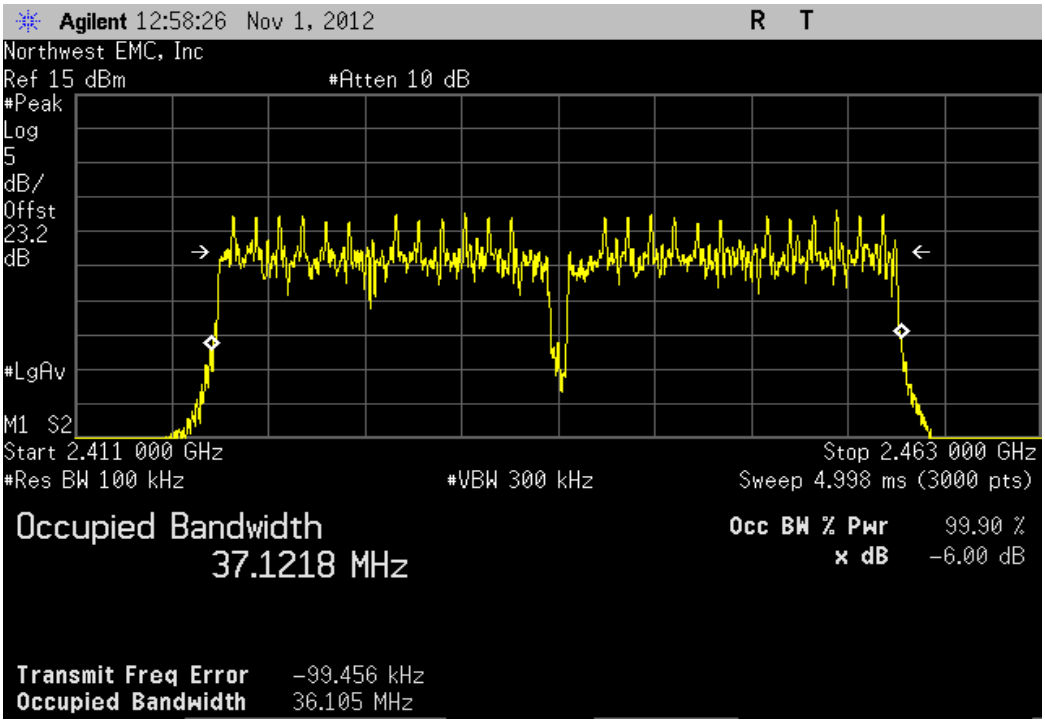
Chain B, 40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, Low Channel 1/5, 2422 MHz

				Value	Limit	Result
				36.102 MHz	> 500 kHz	Pass



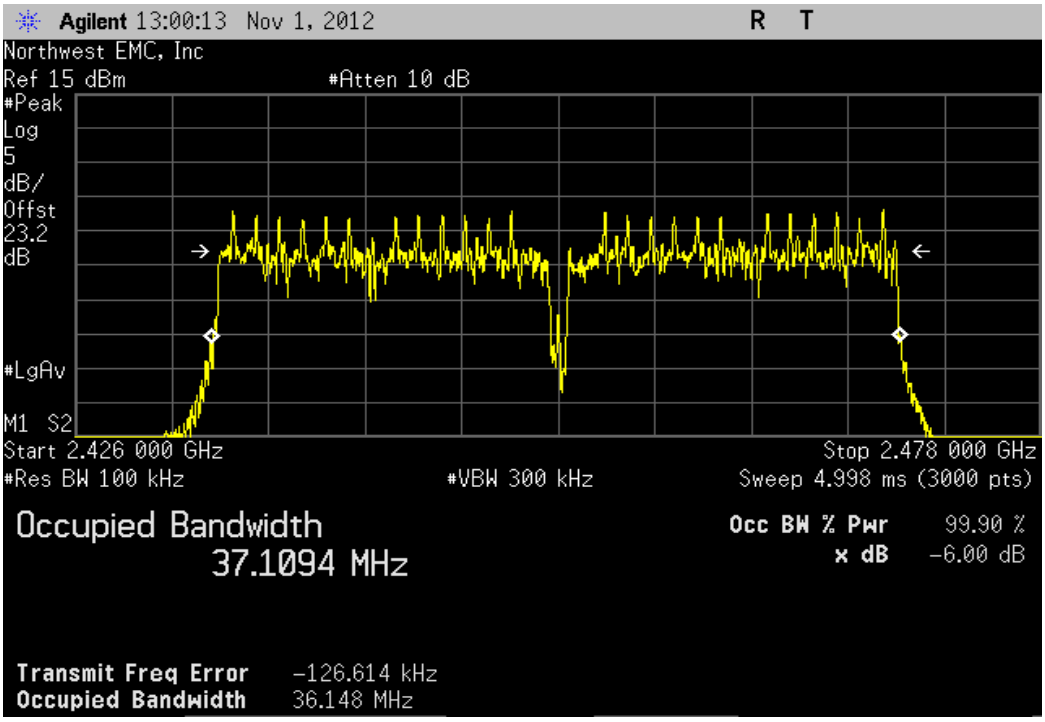
Chain B, 40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, Mid Channel 4/8, 2437 MHz

				Value	Limit	Result
				36.105 MHz	> 500 kHz	Pass



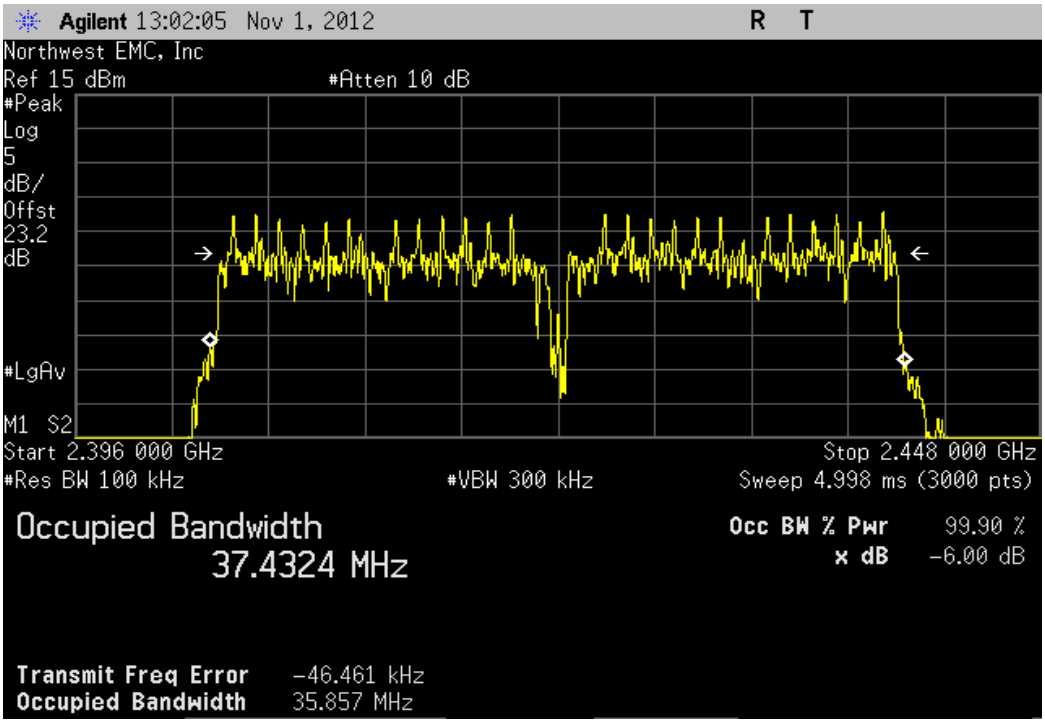
Chain B, 40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, High Channel 7/11 2452 MHz

				Value	Limit	Result
				36.148 MHz	> 500 kHz	Pass



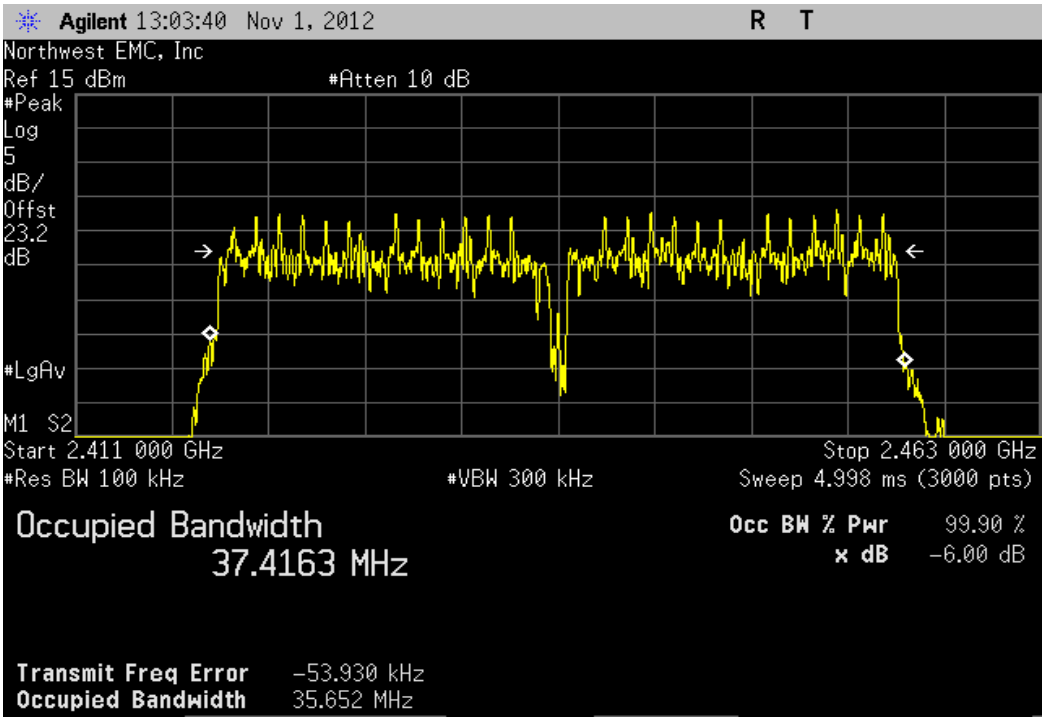
Chain B, 40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, Low Channel 1/5, 2422 MHz

				Value	Limit	Result
				35.858 MHz	> 500 kHz	Pass



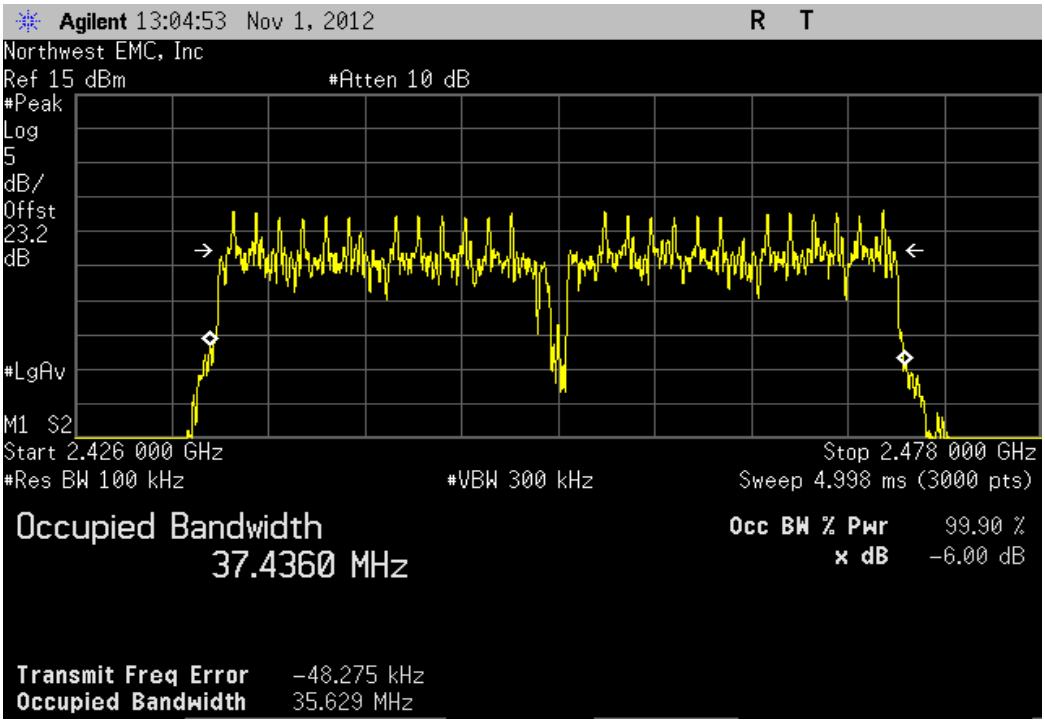
Chain B, 40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, Mid Channel 4/8, 2437 MHz

				Value	Limit	Result
				35.652 MHz	> 500 kHz	Pass



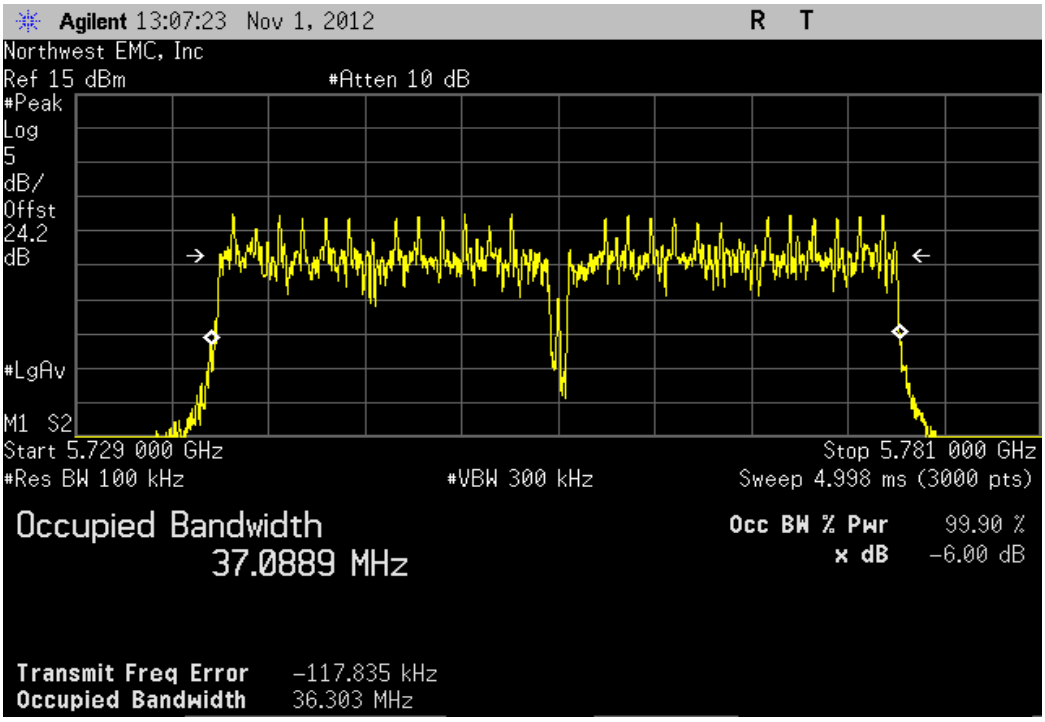
Chain B, 40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, High Channel 7/11 2452 MHz

				Value	Limit	Result
				35.629 MHz	> 500 kHz	Pass



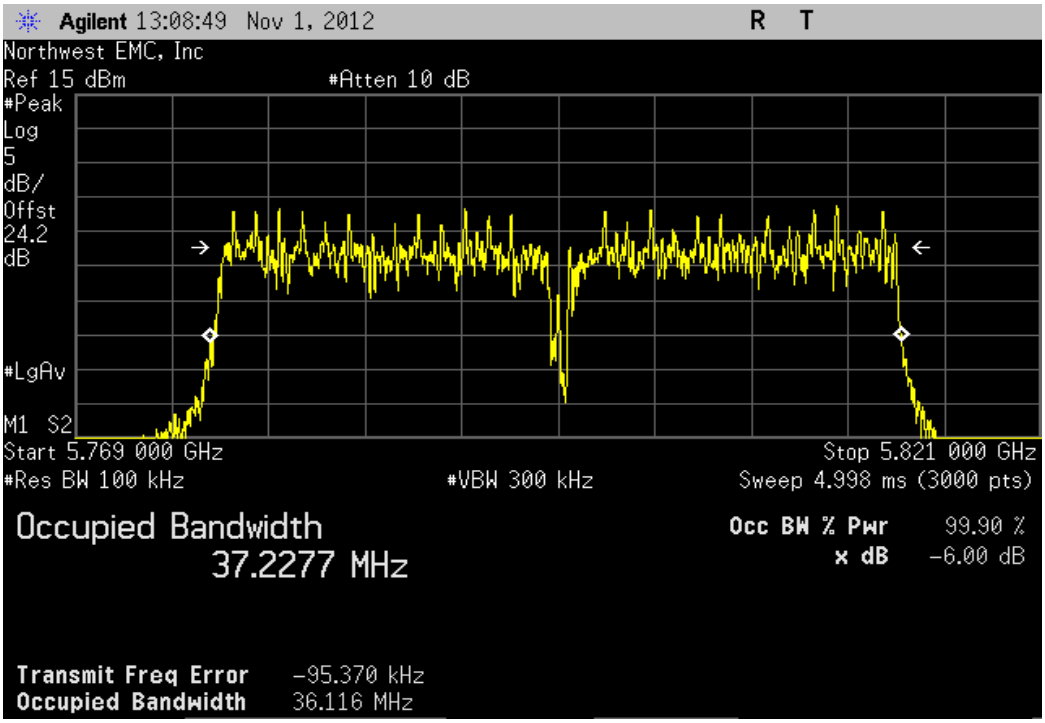
Chain B, 40 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS8, Low Channel 151, 5755 MHz

				Value	Limit	Result
				36.303 MHz	> 500 kHz	Pass



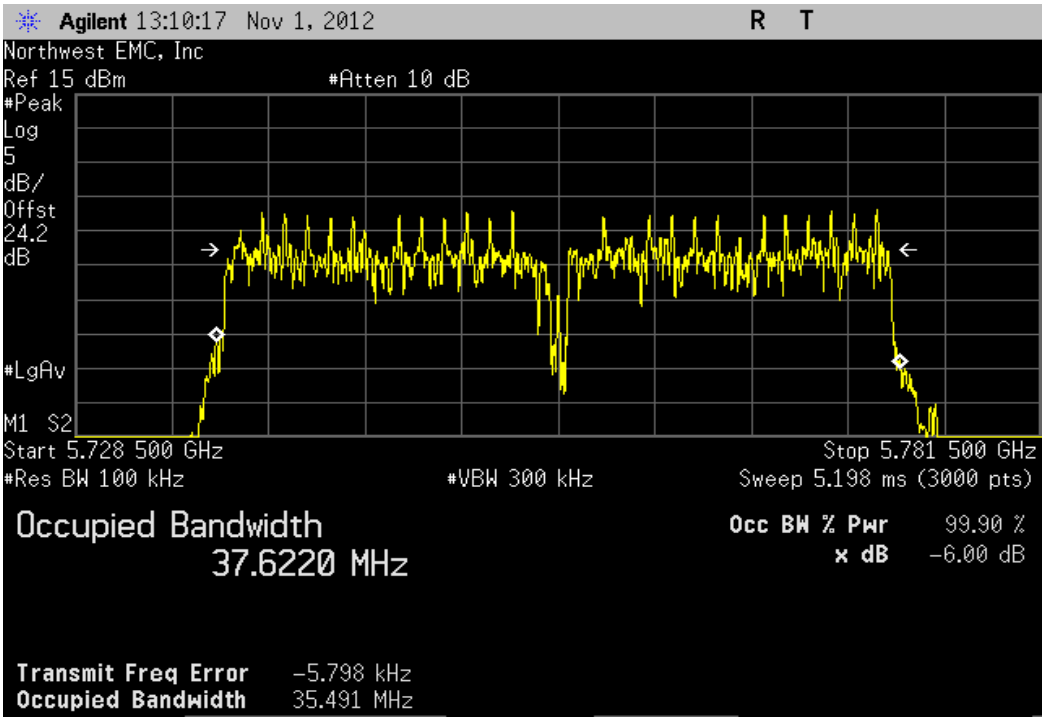
Chain B, 40 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS8, High Channel 159, 5795 MHz

				Value	Limit	Result
				36.116 MHz	> 500 kHz	Pass



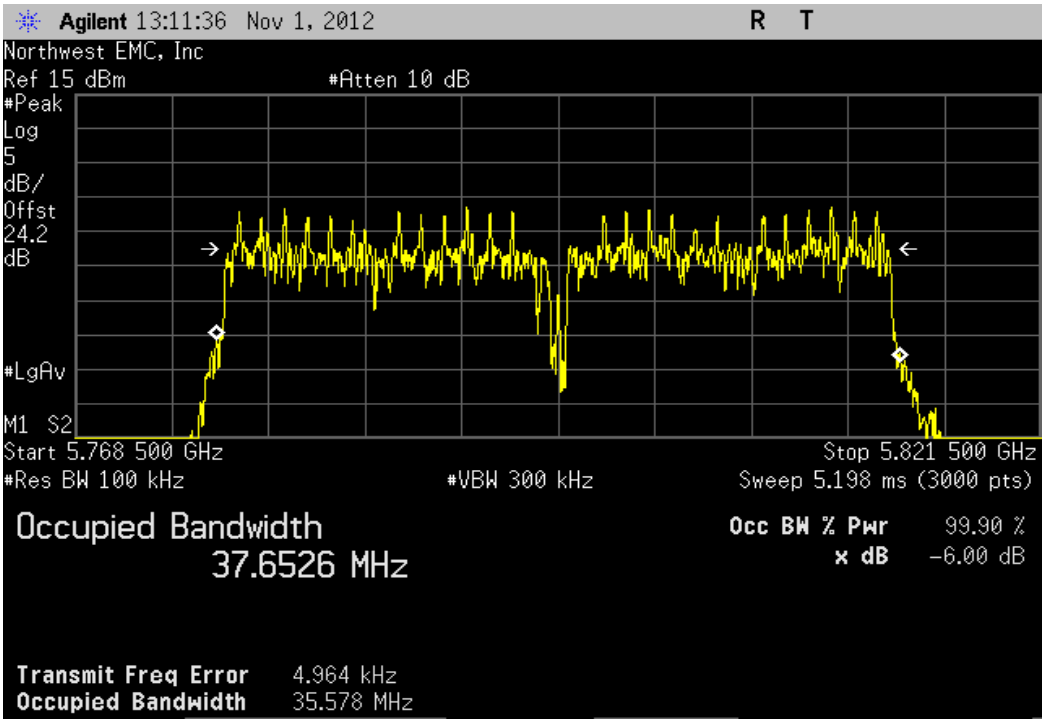
Chain B, 40 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS15, Low Channel 151, 5755 MHz

				Value	Limit	Result
				35.491 MHz	> 500 kHz	Pass



Chain B, 40 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS15, High Channel 159, 5795 MHz

				Value	Limit	Result
				35.578 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
40GHz DC Block	Miteq	DCB4000	AMD	6/25/2012	12
Attenuator 20 dB, SMA M/F 26GHz	S.M. Electronics	SA26B-20	AUY	8/2/2012	12
Power Meter	Gigatronics	8651A	SPM	1/9/2012	24
MXG Vector Signal Generator	Agilent	N5182A	TIF	NCR	0
Attenuator, 'Precision N'	S.M. Electronics	SA18N-06/SM4032	REE	12/11/2012	12
Power Sensor	Gigatronics	80701A	SPL	7/8/2011	24
Spectrum Analyzer	Agilent	E4440A	AFD	7/5/2012	12
EV06 Direct Connect Cable	ESM Cable Corp.	TT	ECA	NCR	0

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.

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 PK2 found in KDB 558074 DTS D01 Measurement Section 5.2.1.2 was used because 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.
- Peak detector mode
- Power was integrated across “B”, by using the channel power function of the analyzer.

Please refer to the Power Table located elsewhere in this report for radio power operating level during testing.

The EUT is operating on antenna port A only

Output Power

EUT:	1514			**Work Order:**	MCS01638
Serial Number:	000109423753			**Date:**	12/14/12
Customer:	Microsoft Corporation			**Temperature:**	22°C
Attendees:	None			**Humidity:**	35%
Project:	None			**Barometric Pres.:**	1011
Tested by:	Brandon Hobbs Rod Peloquin	**Power:**	110VAC/60Hz	**Job Site:**	EV06

TEST SPECIFICATIONS	Test Method
FCC 15.247:2012	ANSI C63.10:2009

COMMENTS

The EUT is operating at 100% duty cycle. All cable losses for 2.4GHz and 5.0GHz bands are accounted for in the analyzer offset calculations. The EUT with S/N 000070724253 was used to test all of the 5GHz band.

DEVIATIONS FROM TEST STANDARD

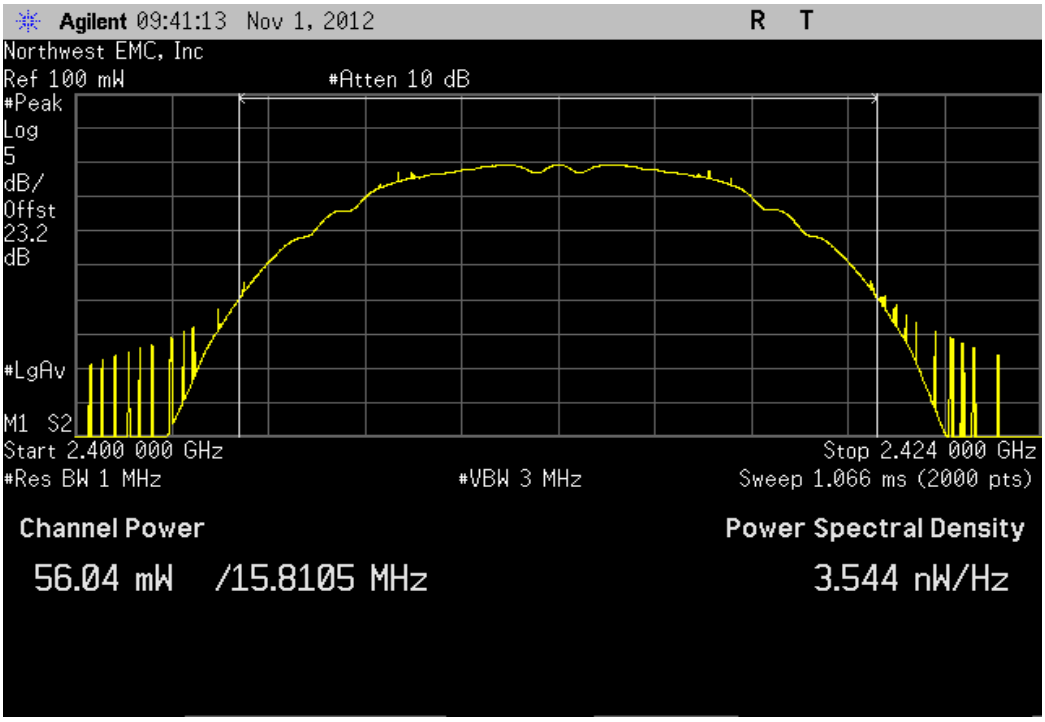
None

Configuration #	3	Signature

	Value	Limit	Result
20 MHz			
2400 MHz - 2483.5 MHz Band			
802.11(b) 1 Mbps			
Low Channel 1, 2412 MHz	56.035 mW	< 1 W	Pass
Mid Channel 6, 2437 MHz	58.466 mW	< 1 W	Pass
High Channel 11, 2462 MHz	65.976 mW	< 1 W	Pass
802.11(b) 11 Mbps			
Low Channel 1, 2412 MHz	52.752 mW	< 1 W	Pass
Mid Channel 6, 2437 MHz	55.857 mW	< 1 W	Pass
High Channel 11, 2462 MHz	63.551 mW	< 1 W	Pass
802.11(g) 6 Mbps			
Low Channel 1, 2412 MHz	55.276 mW	< 1 W	Pass
Mid Channel 6, 2437 MHz	57.76 mW	< 1 W	Pass
High Channel 11, 2462 MHz	51.988 mW	< 1 W	Pass
802.11(g) 36 Mbps			
Low Channel 1, 2412 MHz	54.182 mW	< 1 W	Pass
Mid Channel 6, 2437 MHz	57.163 mW	< 1 W	Pass
High Channel 11, 2462 MHz	51.121 mW	< 1 W	Pass
802.11(g) 54 Mbps			
Low Channel 1, 2412 MHz	52.728 mW	< 1 W	Pass
Mid Channel 6, 2437 MHz	55.058 mW	< 1 W	Pass
High Channel 11, 2462 MHz	49.809 mW	< 1 W	Pass
802.11(n) MCS0			
Low Channel 1, 2412 MHz	52.568 mW	< 1 W	Pass
Mid Channel 6, 2437 MHz	54.455 mW	< 1 W	Pass
High Channel 11, 2462 MHz	48.782 mW	< 1 W	Pass
802.11(n) MCS7			
Low Channel 1, 2412 MHz	52.587 mW	< 1 W	Pass
Mid Channel 6, 2437 MHz	55.108 mW	< 1 W	Pass
High Channel 11, 2462 MHz	48.667 mW	< 1 W	Pass
5725 MHz - 5850 MHz Band			
802.11(a) 6 Mbps			
Low Channel 149, 5745 MHz	20.633 mW	< 1 W	Pass
Mid Channel 157, 5785 MHz	20.342 mW	< 1 W	Pass
High Channel 165, 5825 MHz	20.887 mW	< 1 W	Pass
802.11(a) 36 Mbps			
Low Channel 149, 5745 MHz	21.06 mW	< 1 W	Pass
Mid Channel 157, 5785 MHz	22.014 mW	< 1 W	Pass
High Channel 165, 5825 MHz	20.739 mW	< 1 W	Pass
802.11(a) 54 Mbps			
Low Channel 149, 5745 MHz	19.896 mW	< 1 W	Pass
Mid Channel 157, 5785 MHz	21.296 mW	< 1 W	Pass
High Channel 165, 5825 MHz	19.827 mW	< 1 W	Pass
802.11(n) MCS0 - UNII			
Low Channel 149, 5745 MHz	20.407 mW	< 1 W	Pass
Mid Channel 157, 5785 MHz	21.525 mW	< 1 W	Pass
High Channel 165, 5825 MHz	19.951 mW	< 1 W	Pass
802.11(n) MCS7 - UNII			
Low Channel 149, 5745 MHz	20.023 mW	< 1 W	Pass
Mid Channel 157, 5785 MHz	19.676 mW	< 1 W	Pass
High Channel 165, 5825 MHz	18.362 mW	< 1 W	Pass
40 MHz			
2400 MHz - 2483.5 MHz Band			
802.11(n) MCS0			
Low Channel 1/5, 2422 MHz	23.473 mW	< 1 W	Pass
Mid Channel 4/8, 2437 MHz	21.35 mW	< 1 W	Pass
High Channel 7/11 2452 MHz	23.192 mW	< 1 W	Pass
802.11(n) MCS7			
Low Channel 1/5, 2422 MHz	27.874 mW	< 1 W	Pass
Mid Channel 4/8, 2437 MHz	28.483 mW	< 1 W	Pass
High Channel 7/11 2452 MHz	28.94 mW	< 1 W	Pass
5725 MHz - 5850 MHz Band			
802.11(n) MCS0 - UNII			
Low Channel 149/153, 5755 MHz	21.045 mW	< 1 W	Pass
High Channe 157/161, 5795 MHz	21.933 mW	< 1 W	Pass
802.11(n) MCS7 - UNII			
Low Channel 149/153, 5755 MHz	25.595 mW	< 1 W	Pass
High Channe 157/161, 5795 MHz	26.503 mW	< 1 W	Pass

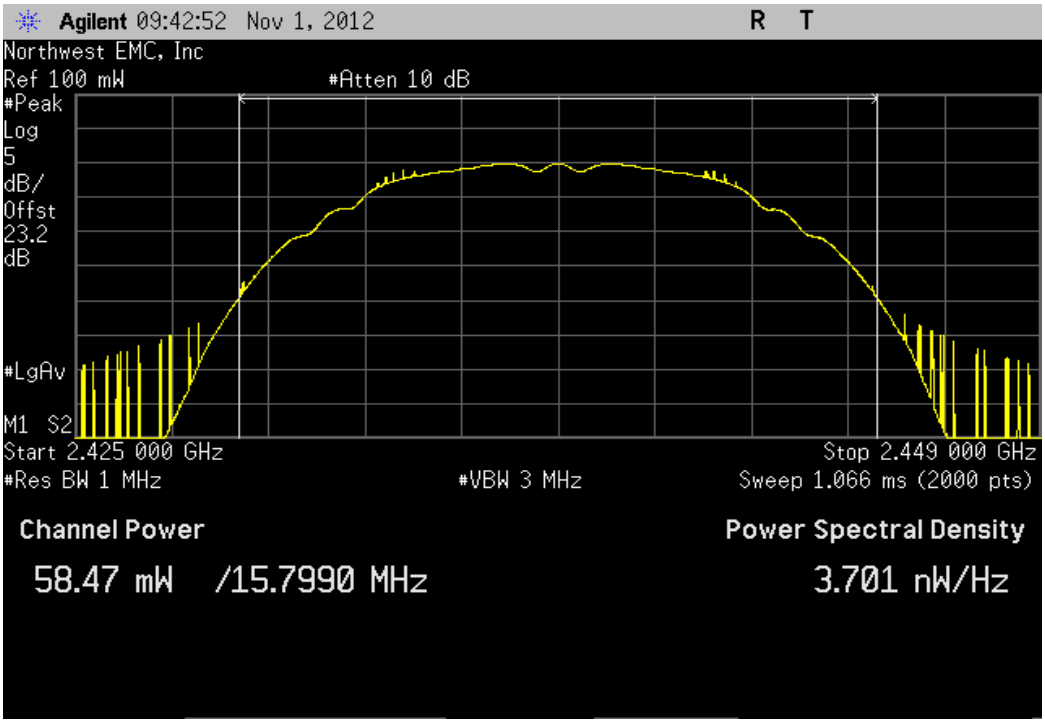
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(b) 1 Mbps, Low Channel 1, 2412 MHz

				Value	Limit	Result
				56.035 mW	< 1 W	Pass



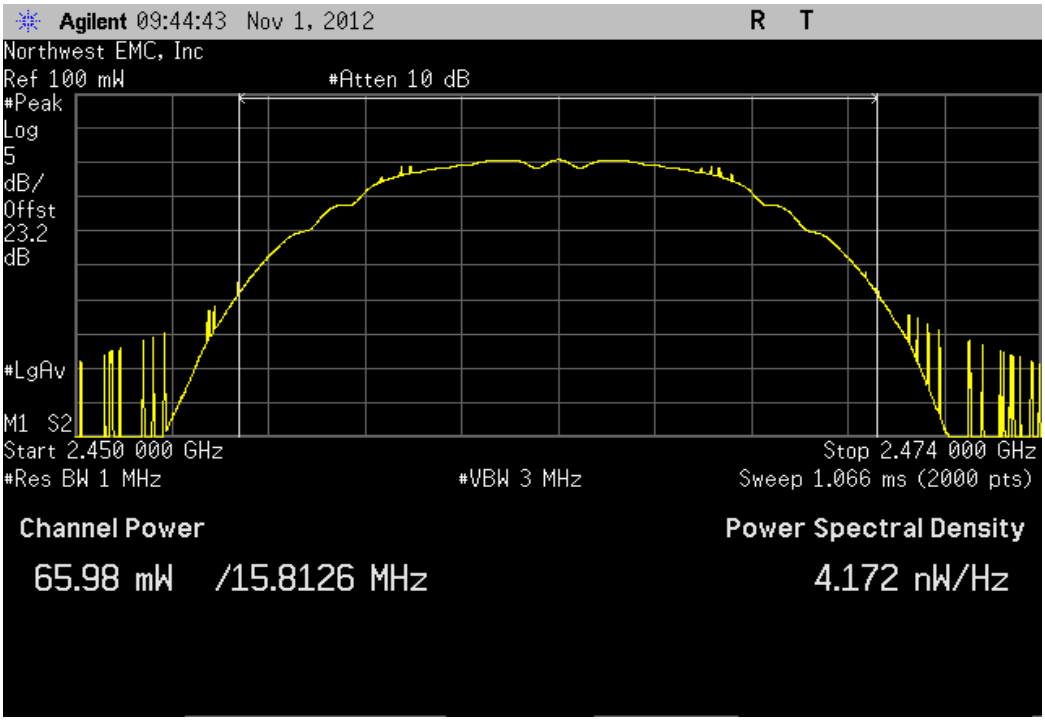
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(b) 1 Mbps, Mid Channel 6, 2437 MHz

				Value	Limit	Result
				58.466 mW	< 1 W	Pass



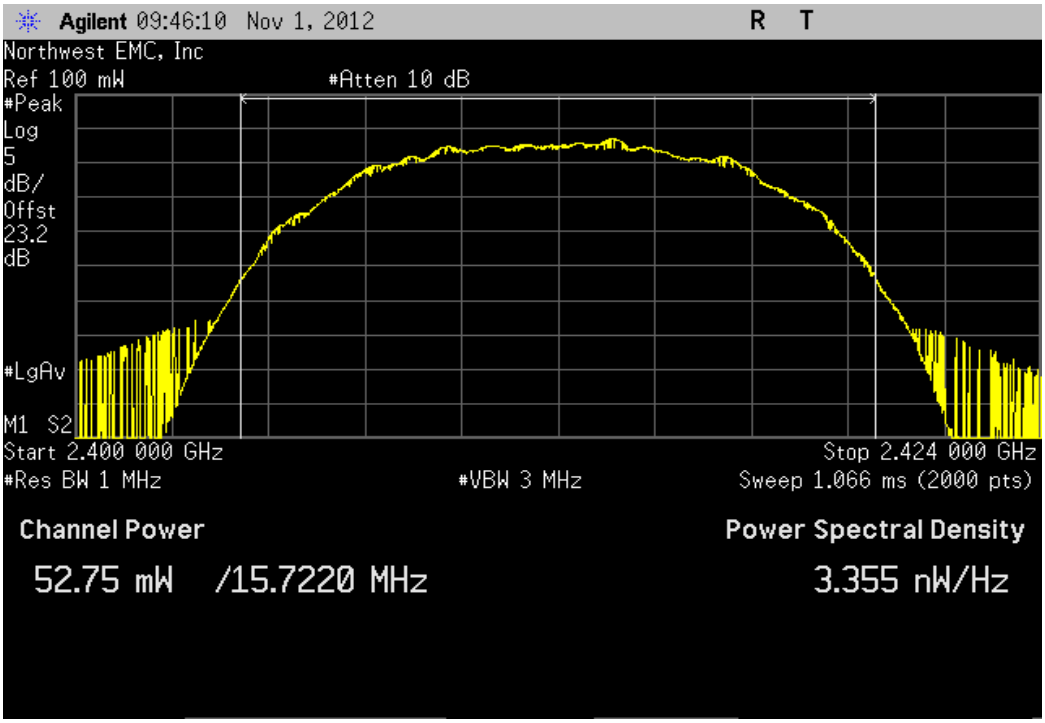
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(b) 1 Mbps, High Channel 11, 2462 MHz

				Value	Limit	Result
				65.976 mW	< 1 W	Pass



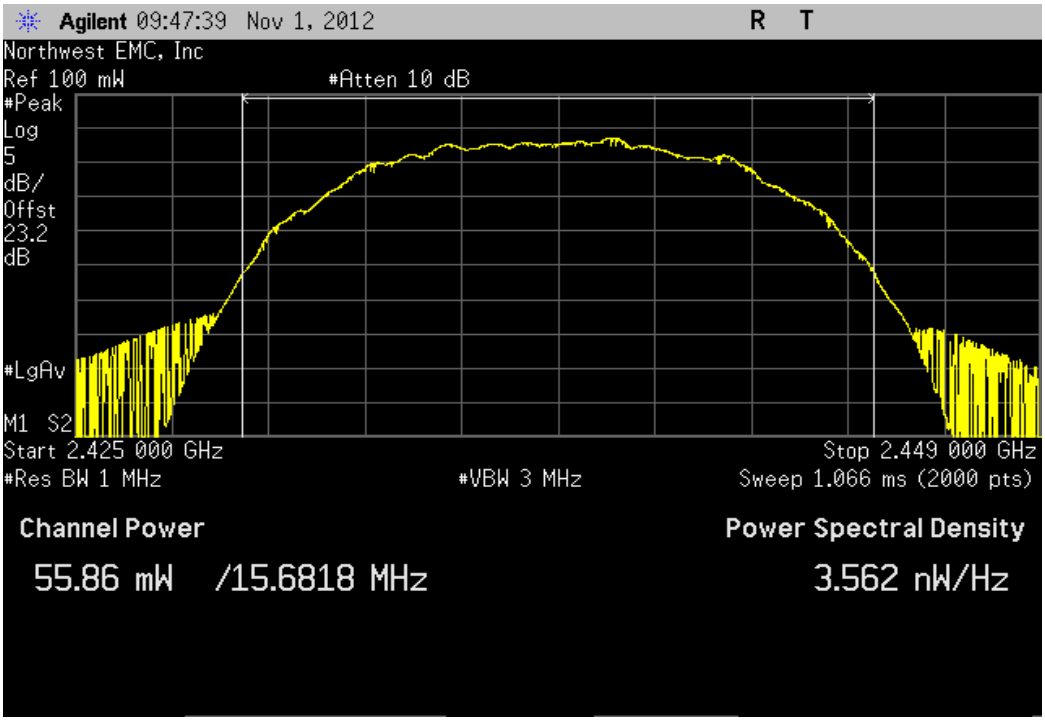
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(b) 11 Mbps, Low Channel 1, 2412 MHz

				Value	Limit	Result
				52.752 mW	< 1 W	Pass



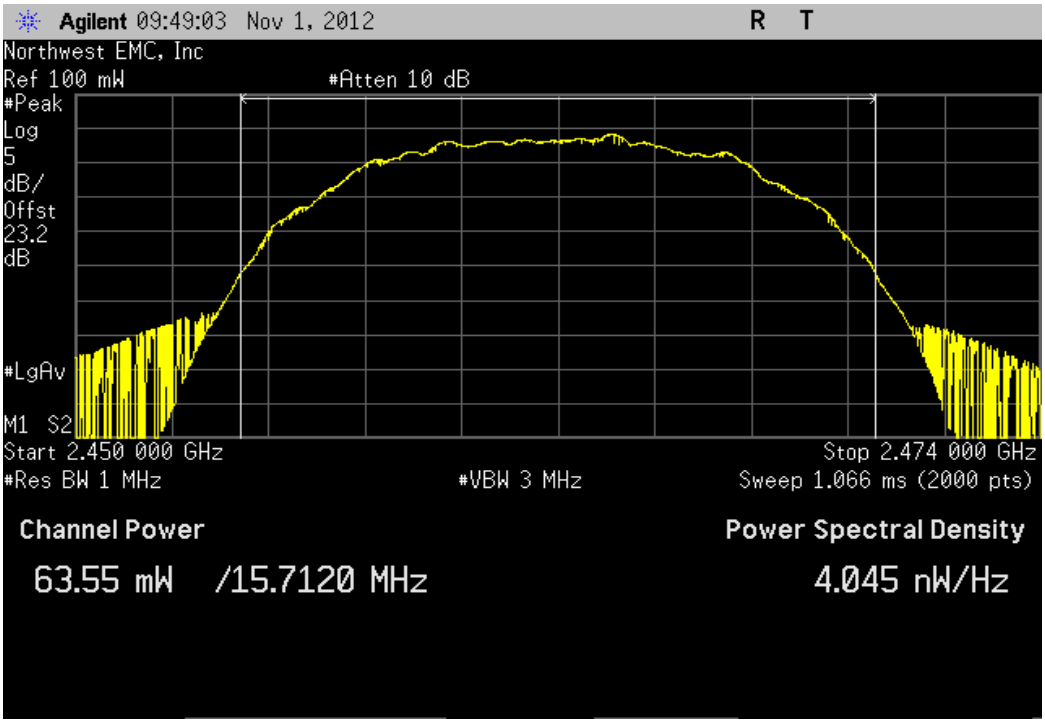
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(b) 11 Mbps, Mid Channel 6, 2437 MHz

				Value	Limit	Result
				55.857 mW	< 1 W	Pass



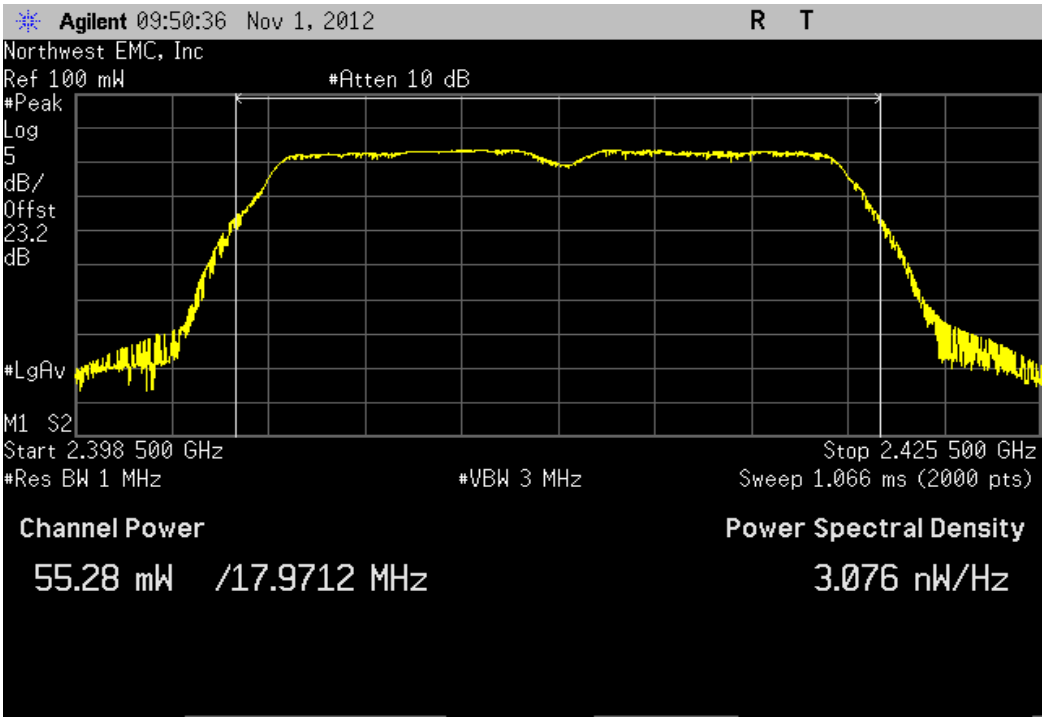
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(b) 11 Mbps, High Channel 11, 2462 MHz

				Value	Limit	Result
				63.551 mW	< 1 W	Pass



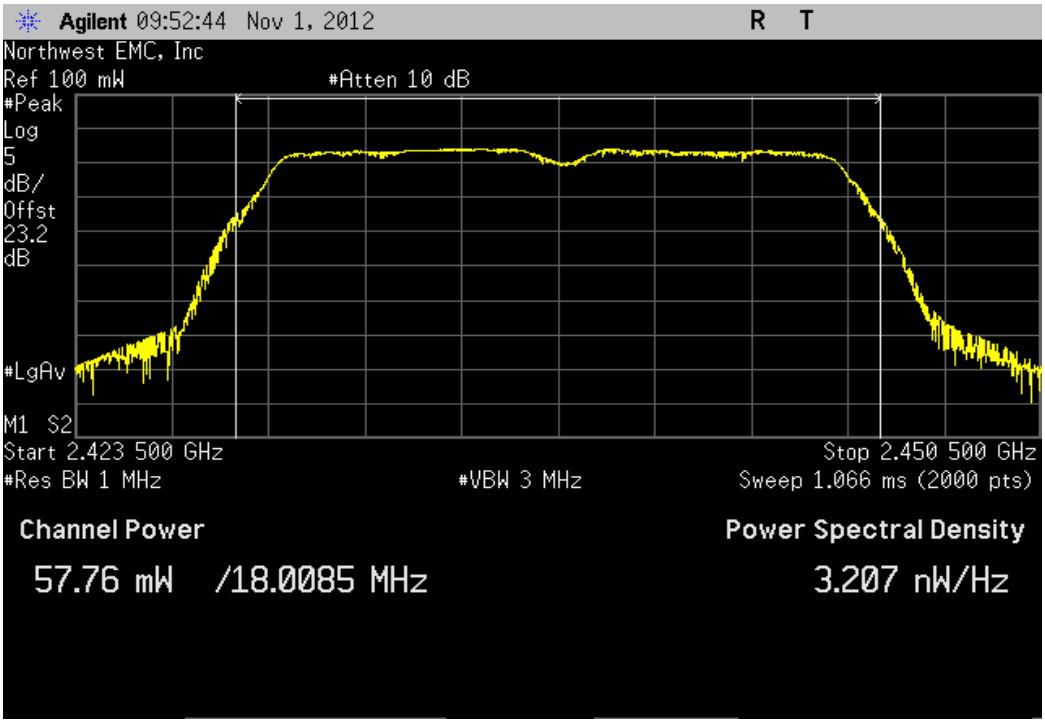
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(g) 6 Mbps, Low Channel 1, 2412 MHz

				Value	Limit	Result
				55.276 mW	< 1 W	Pass



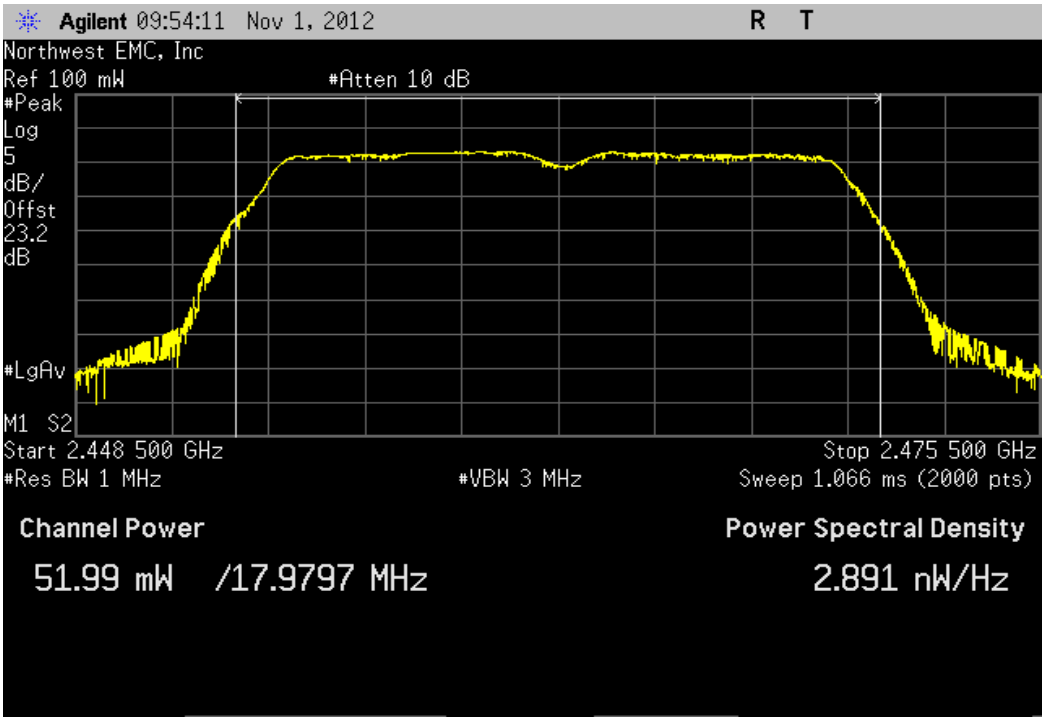
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(g) 6 Mbps, Mid Channel 6, 2437 MHz

				Value	Limit	Result
				57.76 mW	< 1 W	Pass



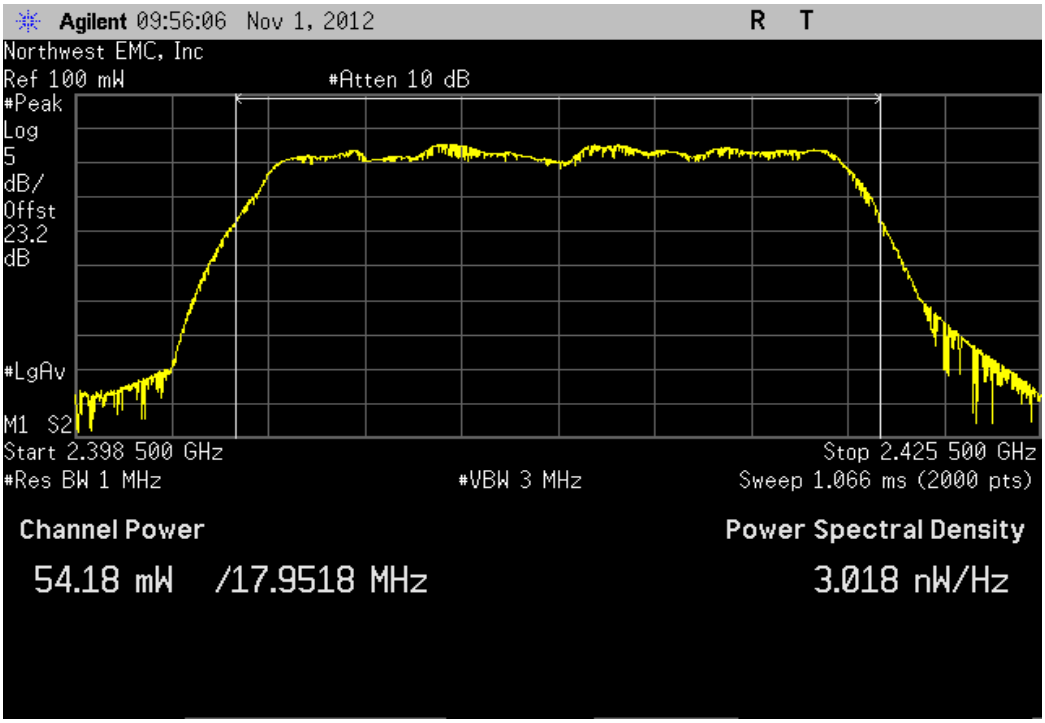
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(g) 6 Mbps, High Channel 11, 2462 MHz

				Value	Limit	Result
				51.988 mW	< 1 W	Pass



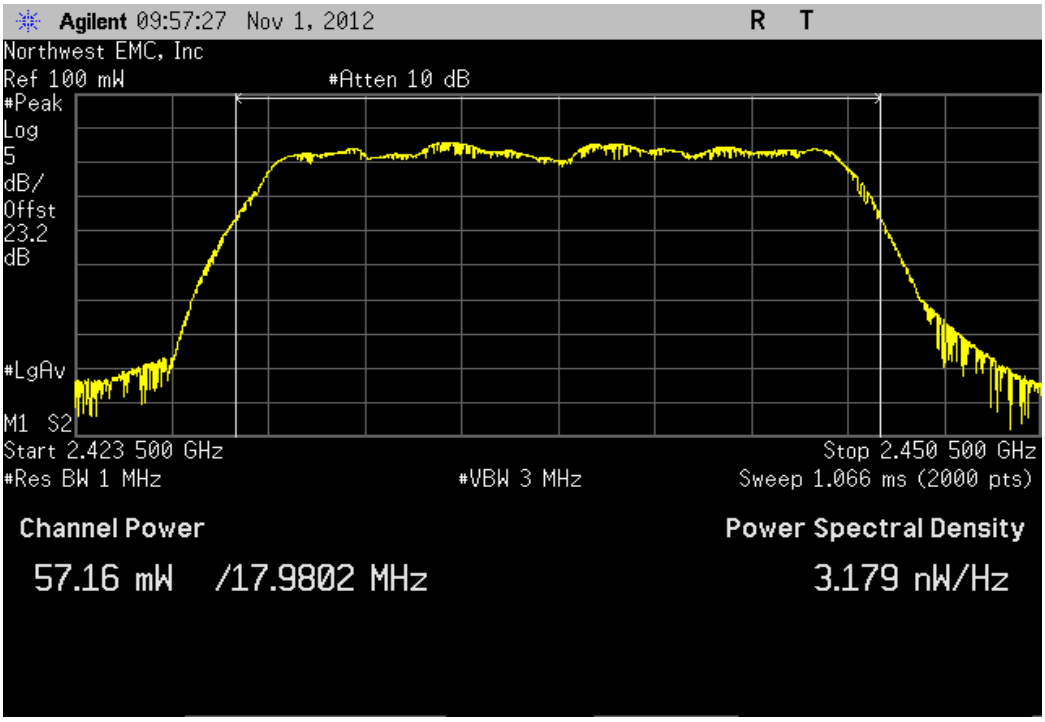
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(g) 36 Mbps, Low Channel 1, 2412 MHz

				Value	Limit	Result
				54.182 mW	< 1 W	Pass



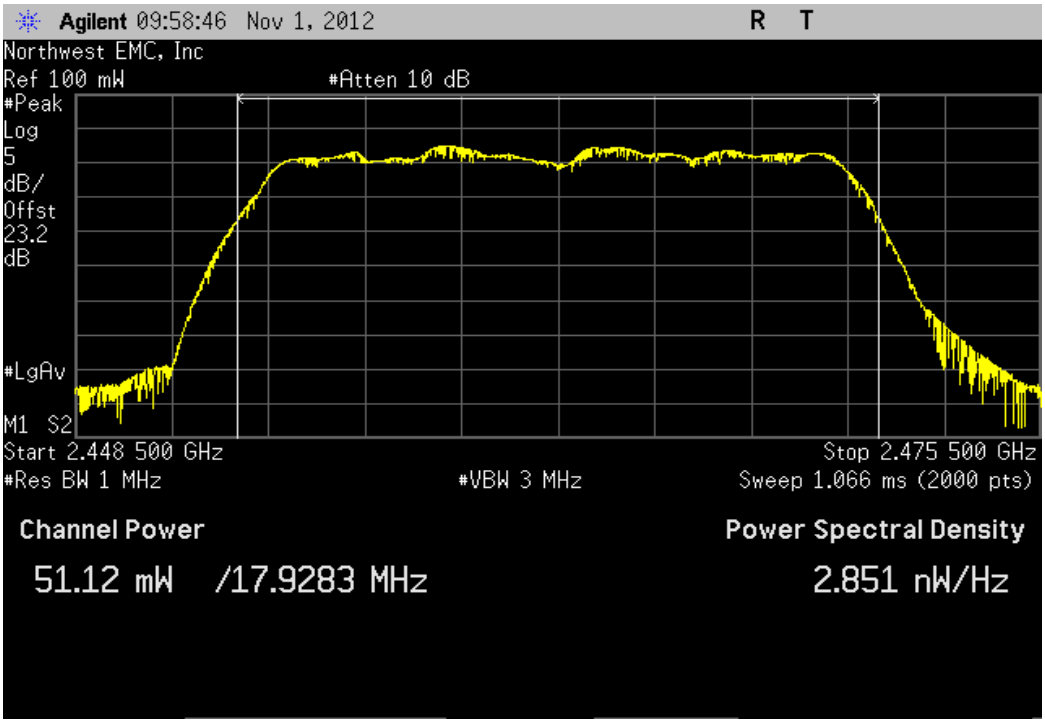
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(g) 36 Mbps, Mid Channel 6, 2437 MHz

				Value	Limit	Result
				57.163 mW	< 1 W	Pass



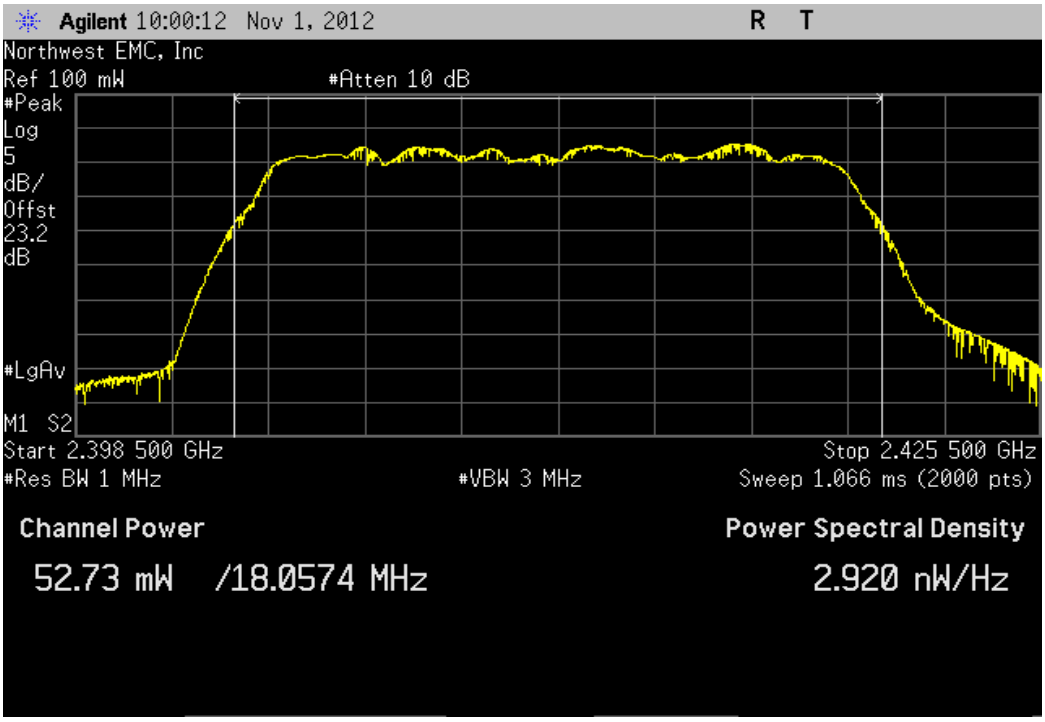
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(g) 36 Mbps, High Channel 11, 2462 MHz

				Value	Limit	Result
				51.121 mW	< 1 W	Pass



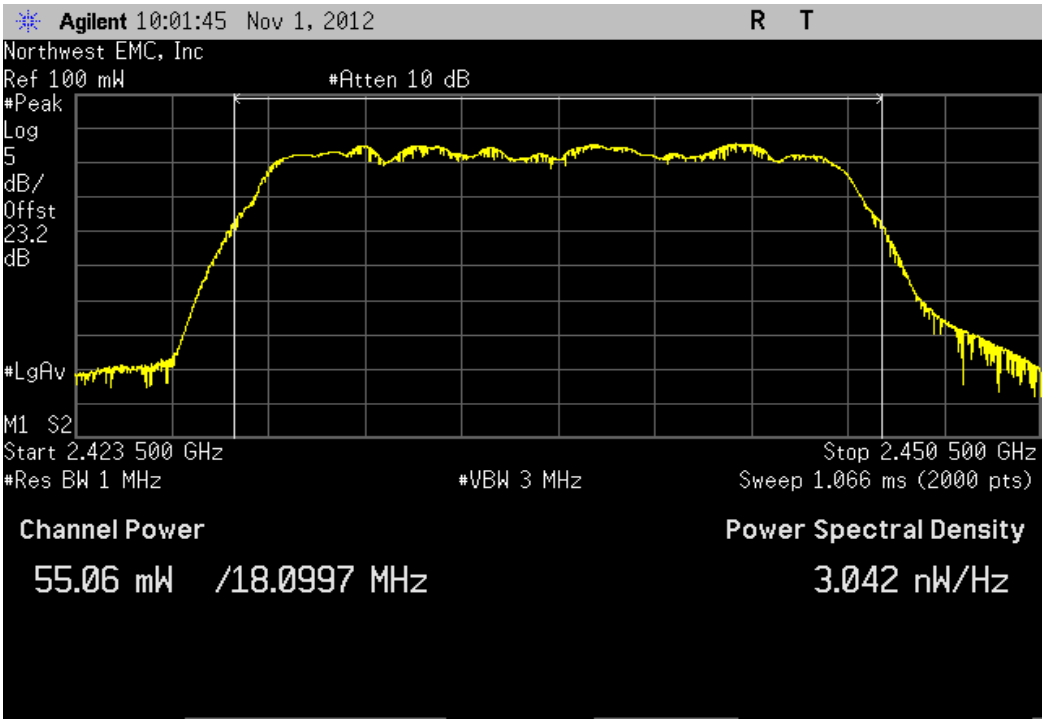
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(g) 54 Mbps, Low Channel 1, 2412 MHz

				Value	Limit	Result
				52.728 mW	< 1 W	Pass



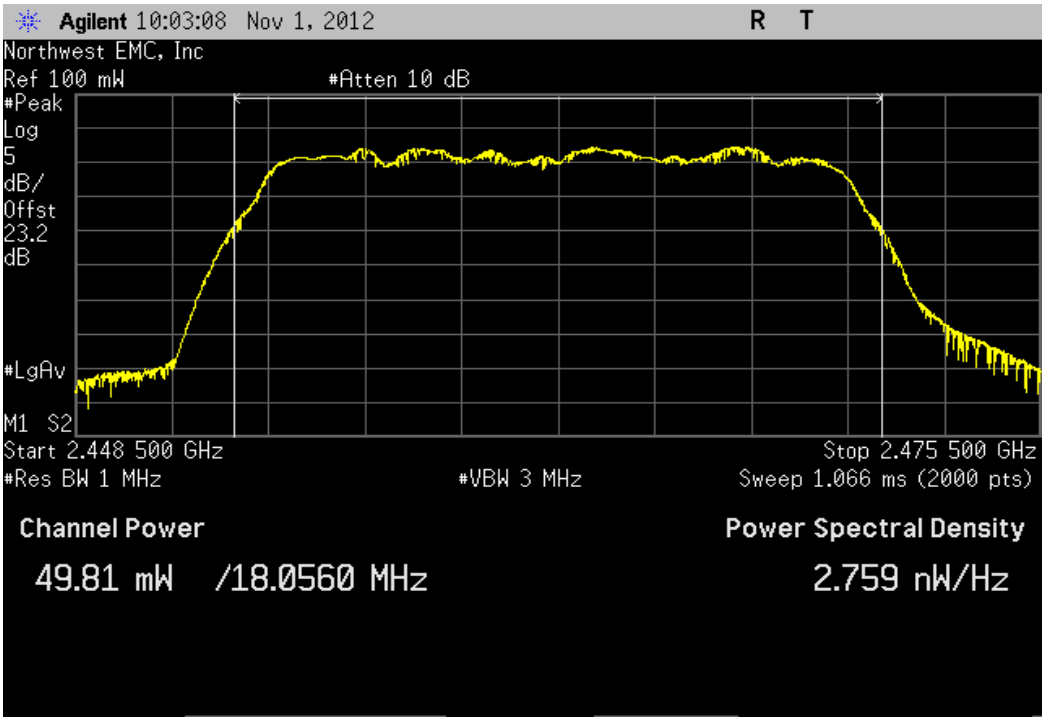
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(g) 54 Mbps, Mid Channel 6, 2437 MHz

				Value	Limit	Result
				55.058 mW	< 1 W	Pass



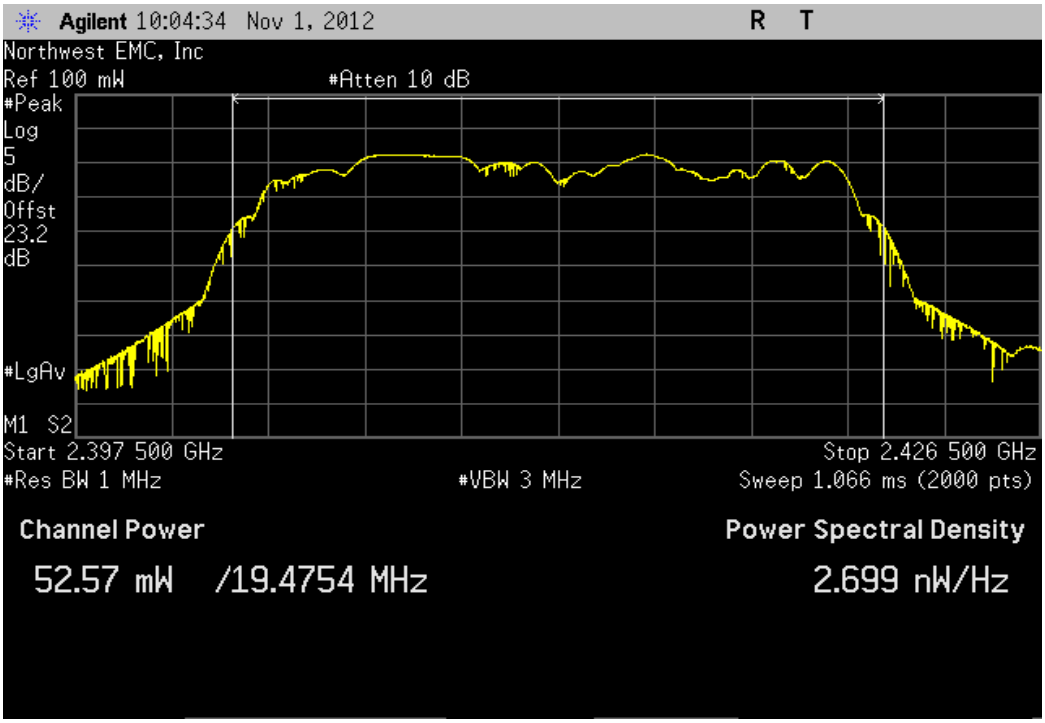
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(g) 54 Mbps, High Channel 11, 2462 MHz

				Value	Limit	Result
				49.809 mW	< 1 W	Pass



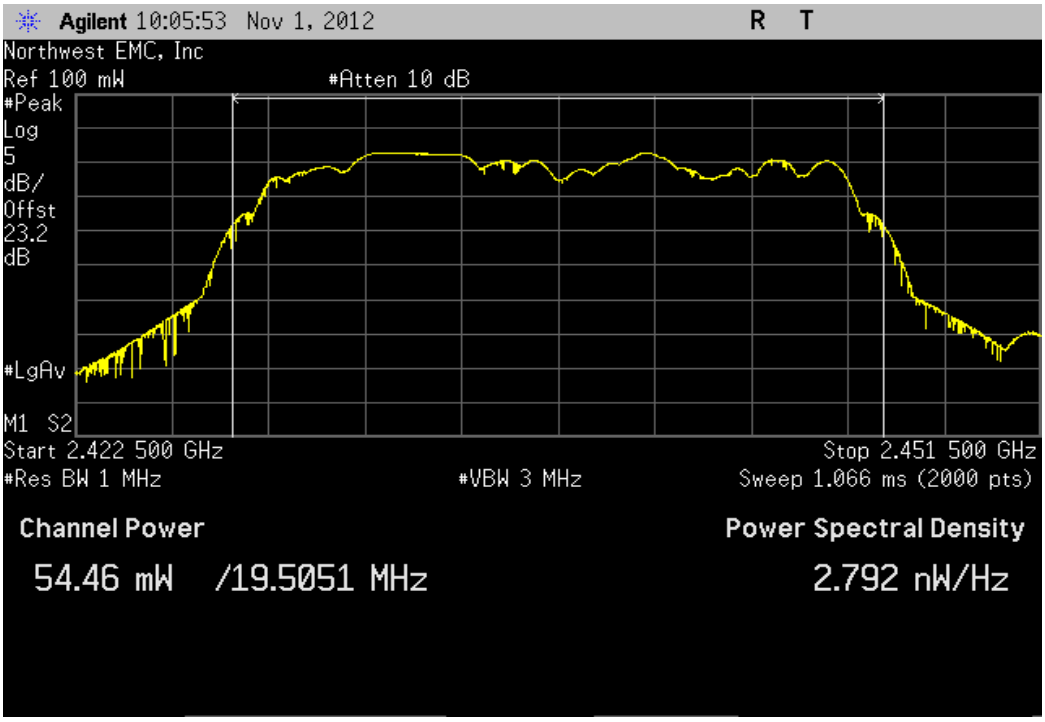
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS0, Low Channel 1, 2412 MHz

				Value	Limit	Result
				52.568 mW	< 1 W	Pass



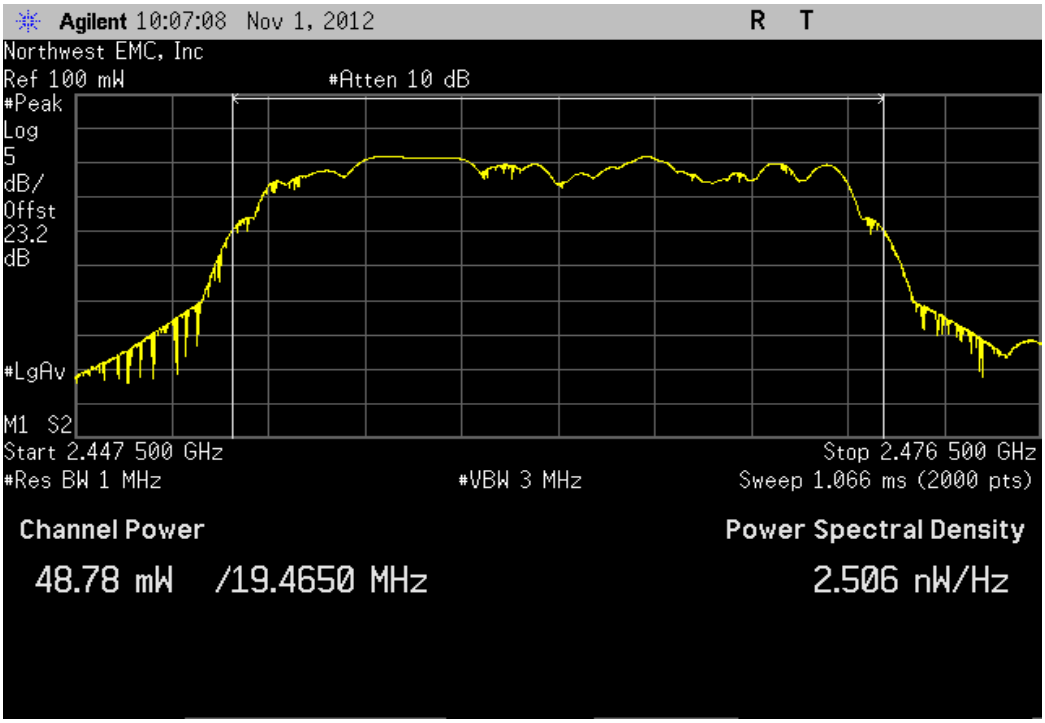
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS0, Mid Channel 6, 2437 MHz

				Value	Limit	Result
				54.455 mW	< 1 W	Pass



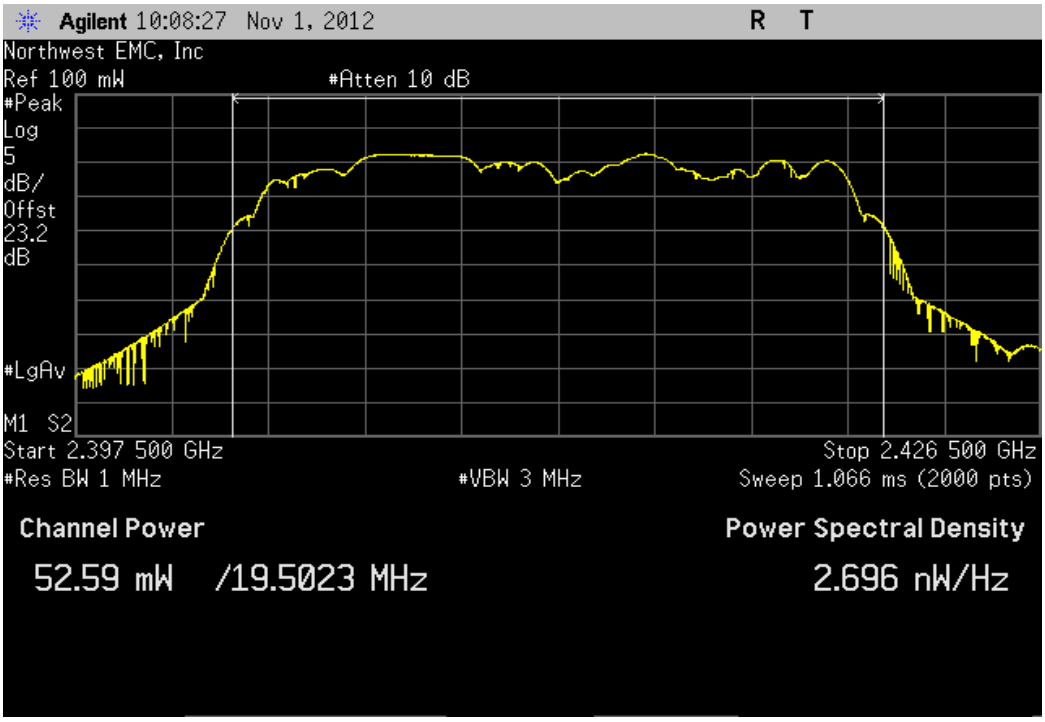
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS0, High Channel 11, 2462 MHz

				Value	Limit	Result
				48.782 mW	< 1 W	Pass



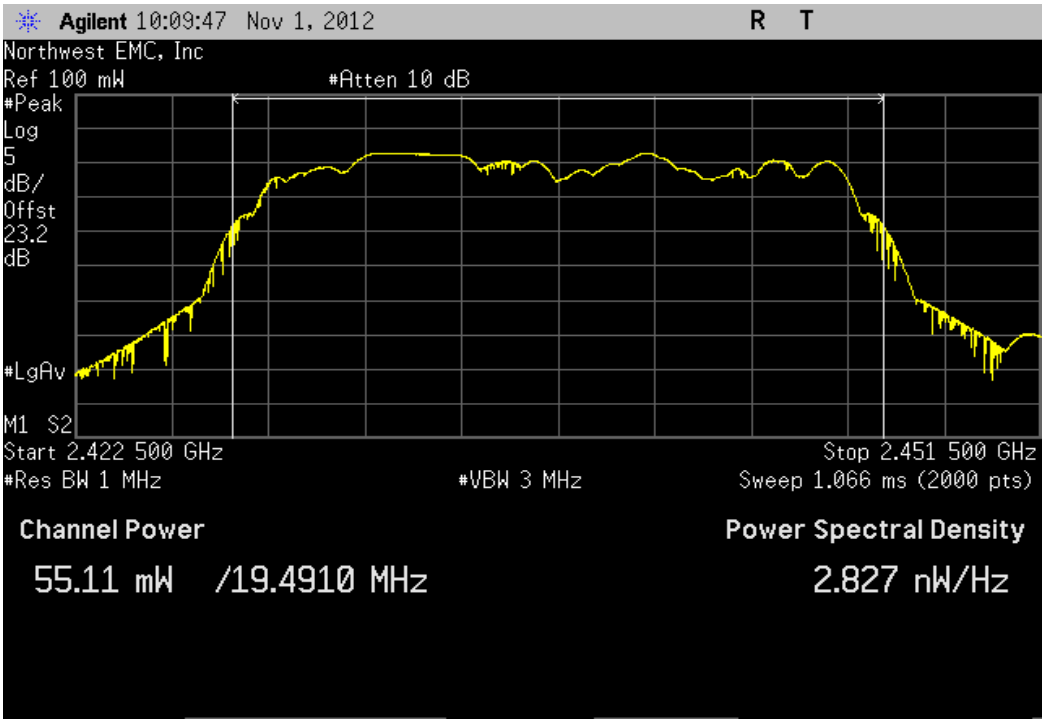
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, Low Channel 1, 2412 MHz

				Value	Limit	Result
				52.587 mW	< 1 W	Pass



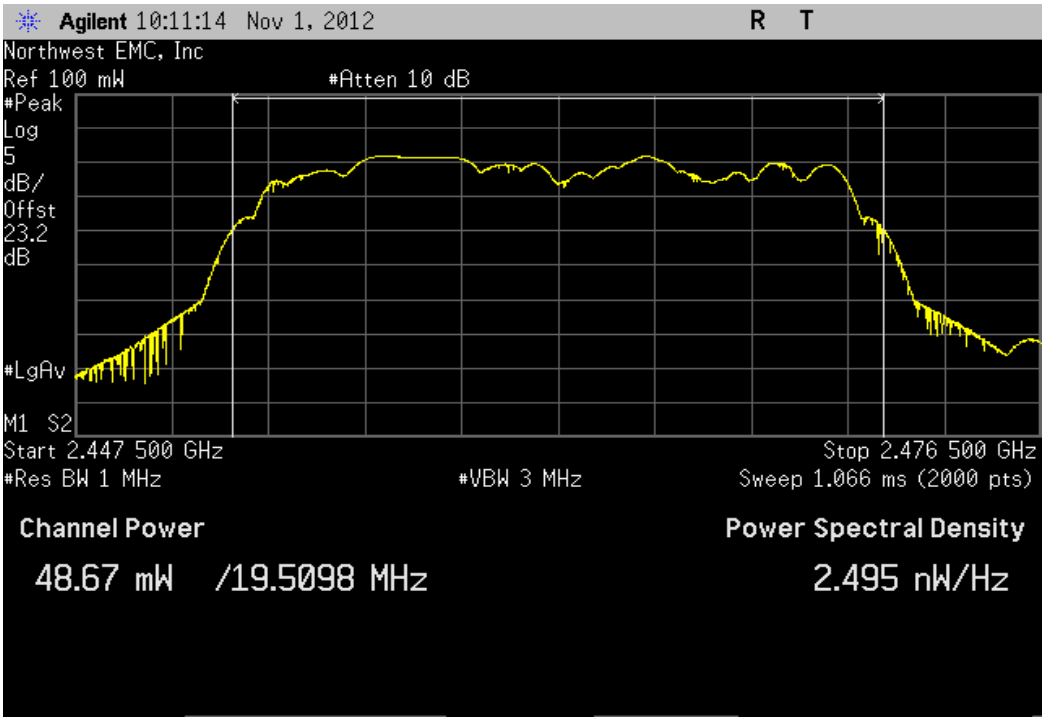
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, Mid Channel 6, 2437 MHz

				Value	Limit	Result
				55.108 mW	< 1 W	Pass



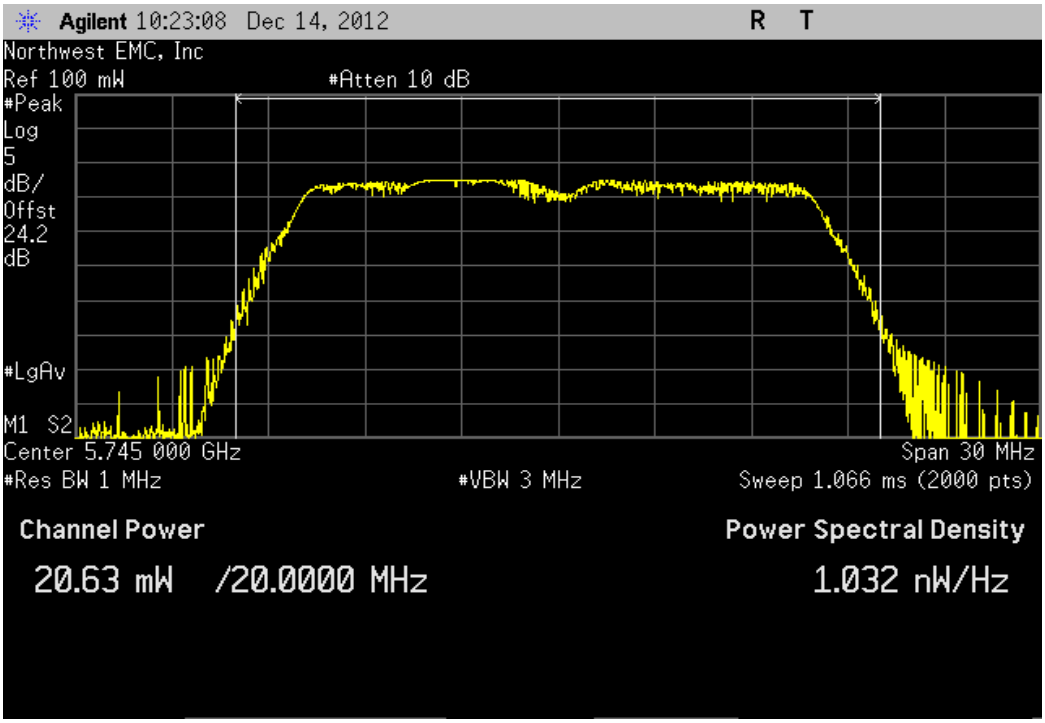
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, High Channel 11, 2462 MHz

				Value	Limit	Result
				48.667 mW	< 1 W	Pass



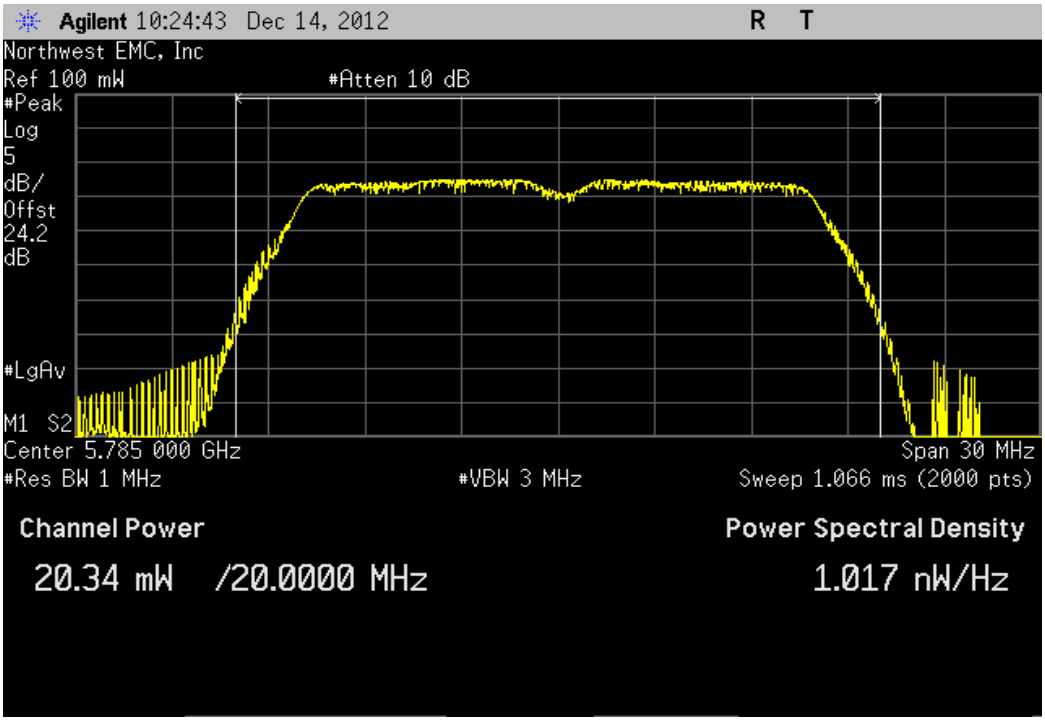
20 MHz, 5725 MHz - 5850 MHz Band, 802.11(a) 6 Mbps, Low Channel 149, 5745 MHz

				Value	Limit	Result
				20.633 mW	< 1 W	Pass

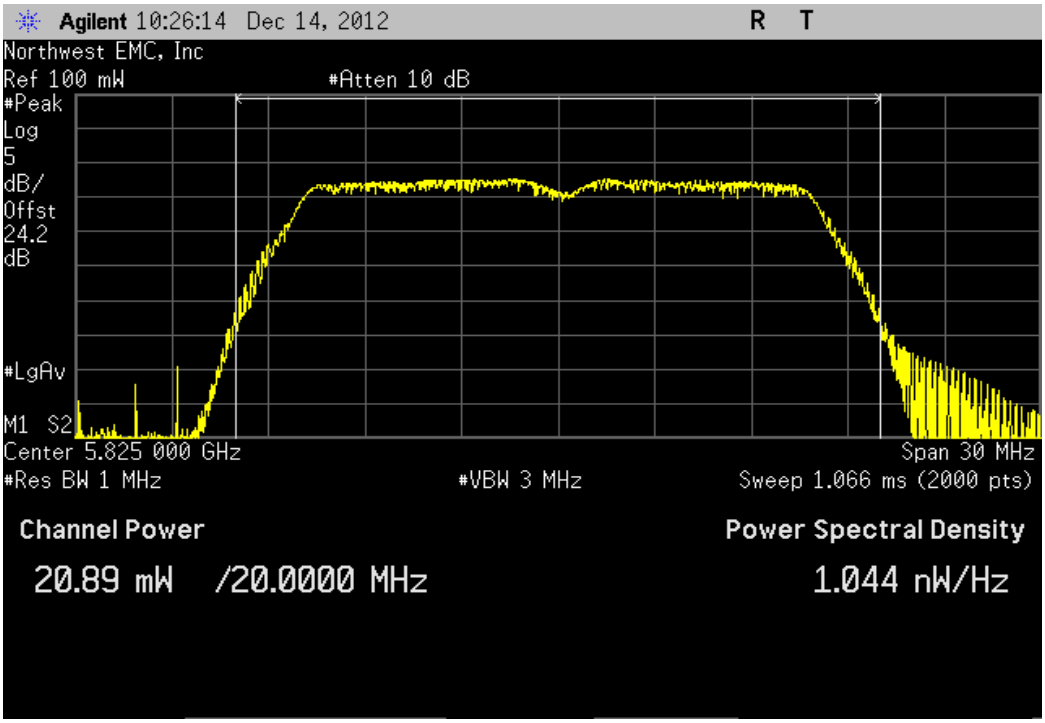


Output Power

20 MHz, 5725 MHz - 5850 MHz Band, 802.11(a) 6 Mbps, Mid Channel 157, 5785 MHz							
					Value	Limit	Result
					20.342 mW	< 1 W	Pass

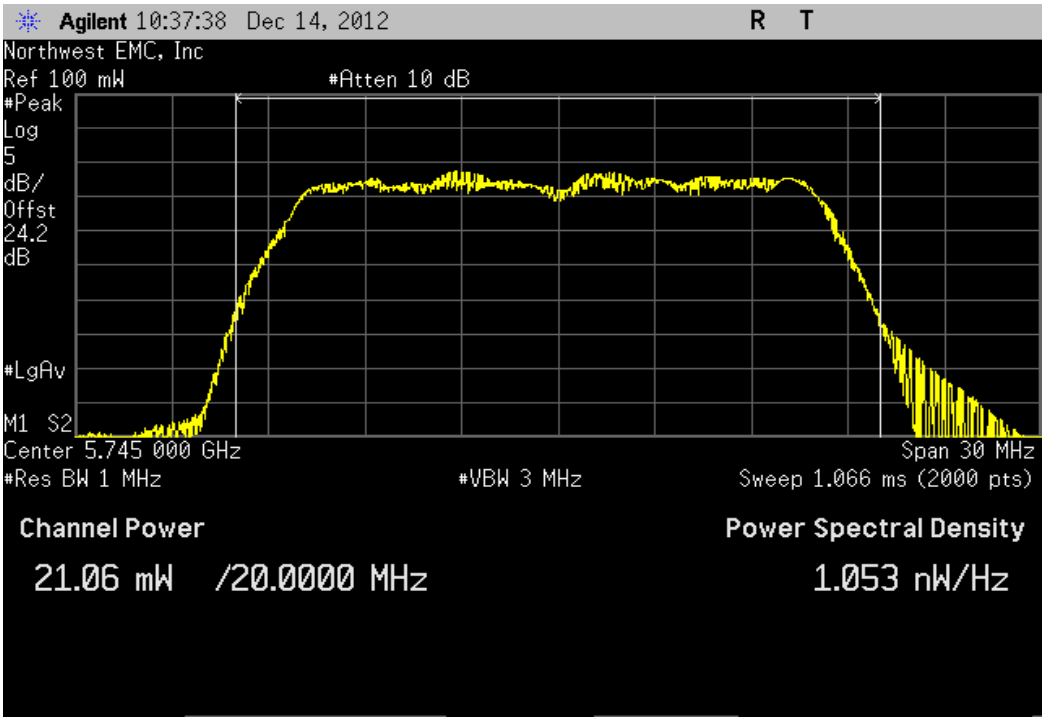


20 MHz, 5725 MHz - 5850 MHz Band, 802.11(a) 6 Mbps, High Channel 165, 5825 MHz							
					Value	Limit	Result
					20.887 mW	< 1 W	Pass



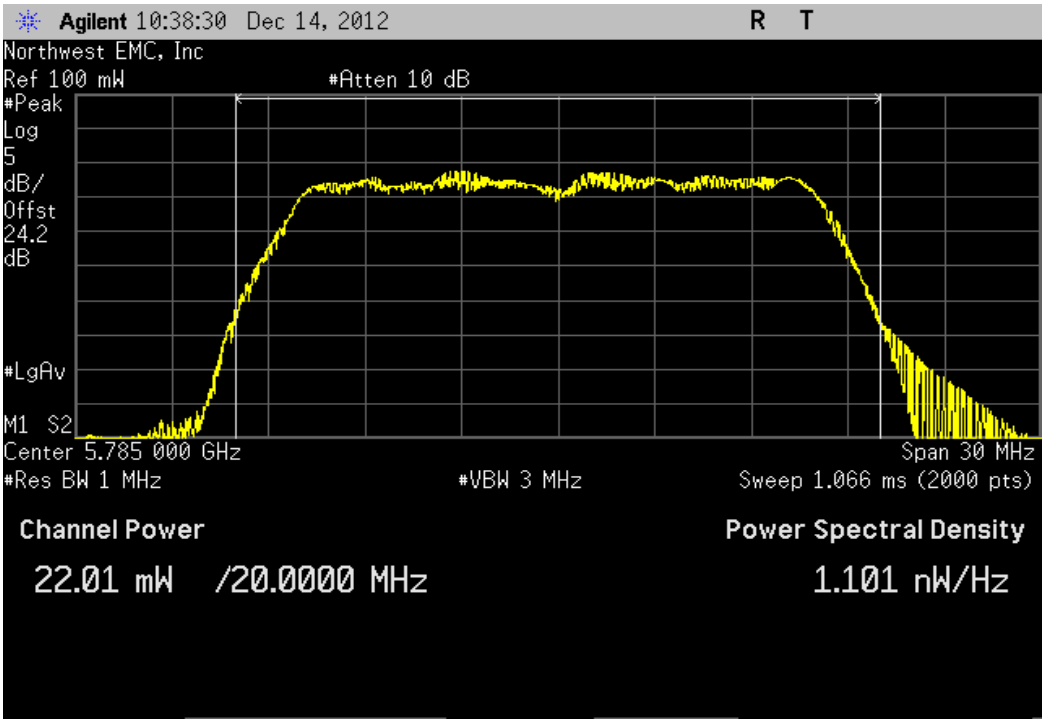
20 MHz, 5725 MHz - 5850 MHz Band, 802.11(a) 36 Mbps, Low Channel 149, 5745 MHz

				Value	Limit	Result
				21.06 mW	< 1 W	Pass



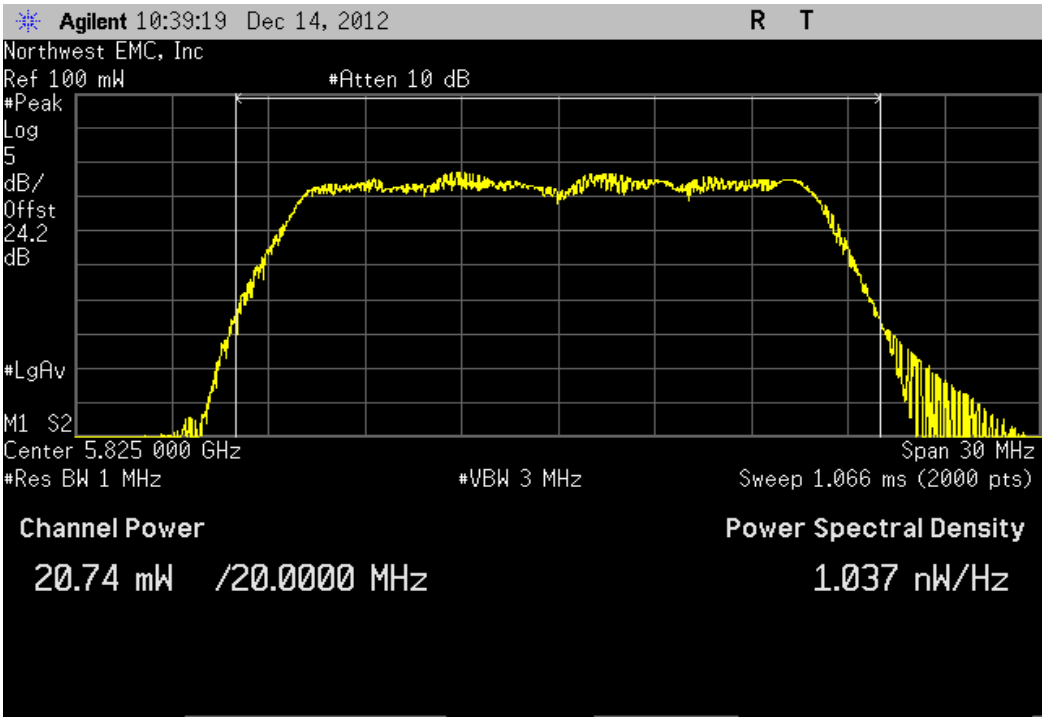
20 MHz, 5725 MHz - 5850 MHz Band, 802.11(a) 36 Mbps, Mid Channel 157, 5785 MHz

				Value	Limit	Result
				22.014 mW	< 1 W	Pass



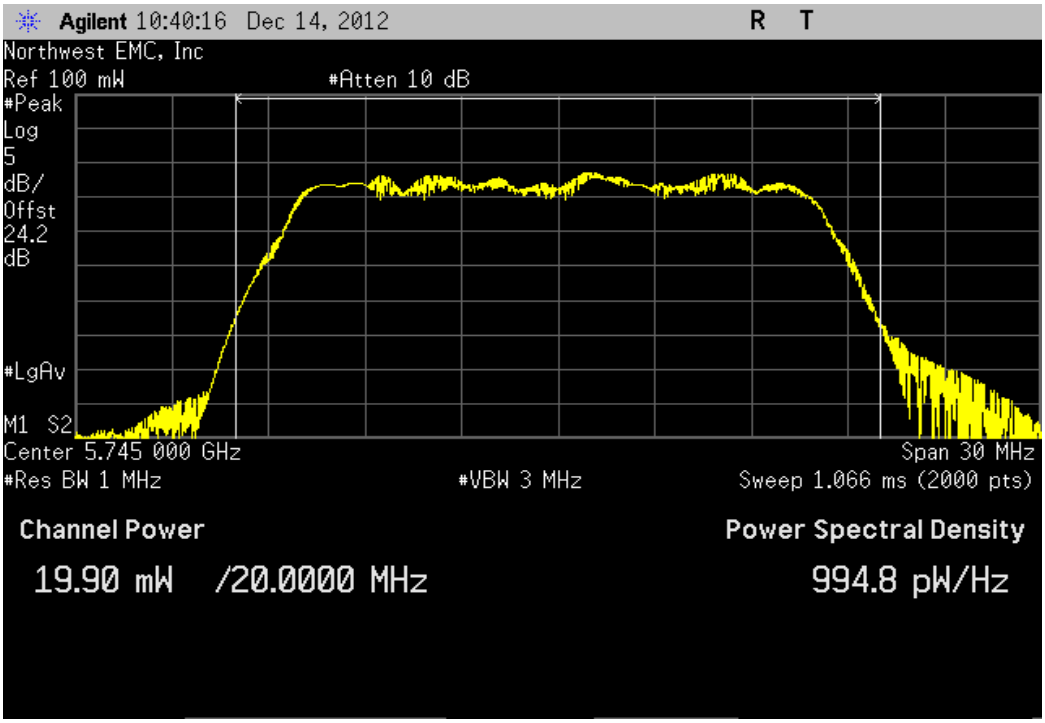
20 MHz, 5725 MHz - 5850 MHz Band, 802.11(a) 36 Mbps, High Channel 165, 5825 MHz

				Value	Limit	Result
				20.739 mW	< 1 W	Pass



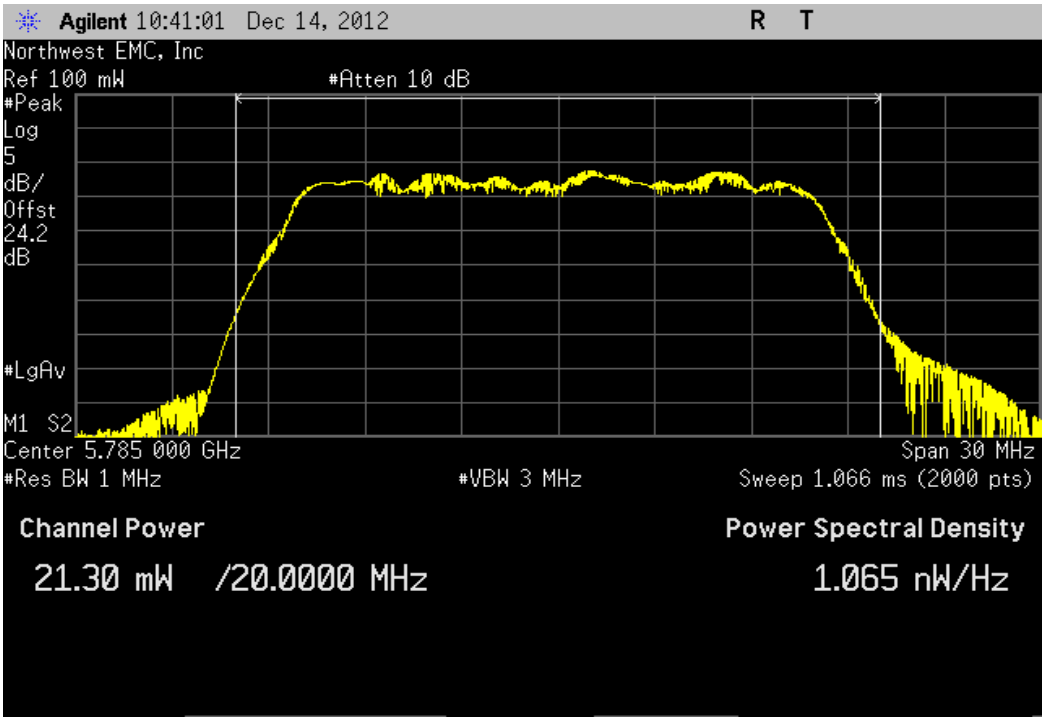
20 MHz, 5725 MHz - 5850 MHz Band, 802.11(a) 54 Mbps, Low Channel 149, 5745 MHz

				Value	Limit	Result
				19.896 mW	< 1 W	Pass



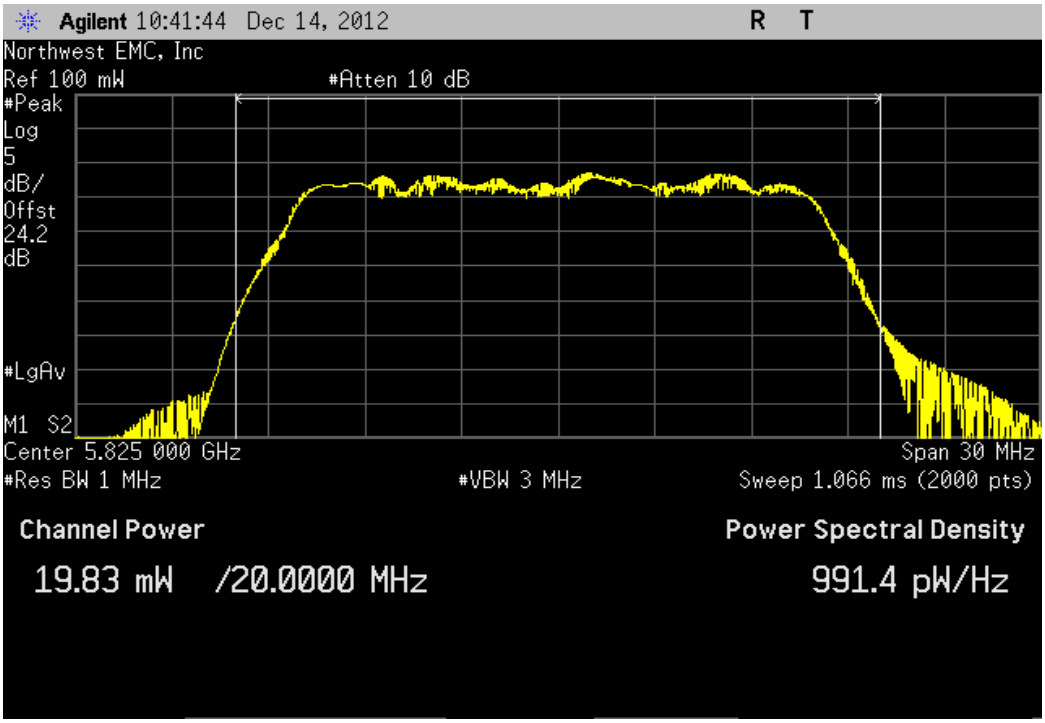
20 MHz, 5725 MHz - 5850 MHz Band, 802.11(a) 54 Mbps, Mid Channel 157, 5785 MHz

				Value	Limit	Result
				21.296 mW	< 1 W	Pass



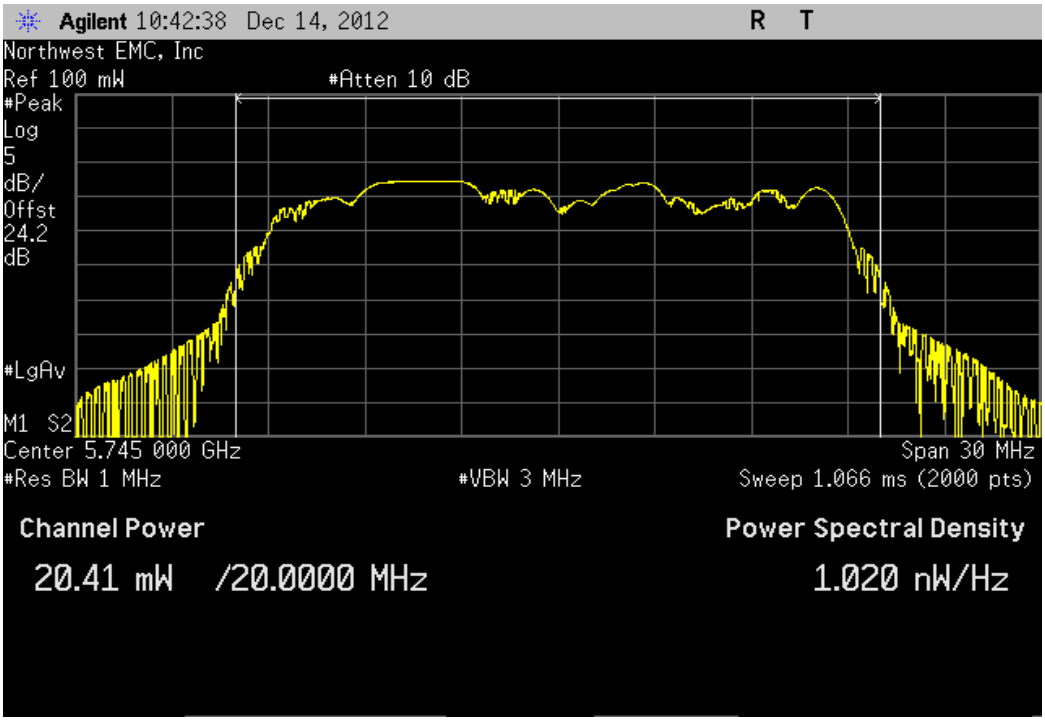
20 MHz, 5725 MHz - 5850 MHz Band, 802.11(a) 54 Mbps, High Channel 165, 5825 MHz

				Value	Limit	Result
				19.827 mW	< 1 W	Pass



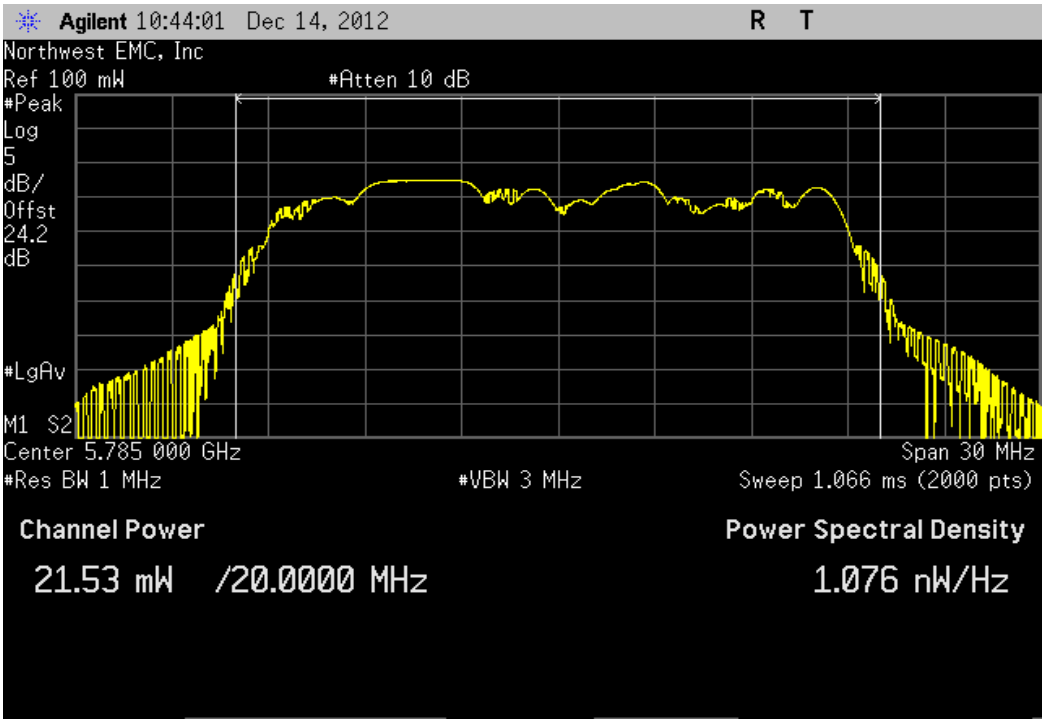
20 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS0 - UNII, Low Channel 149, 5745 MHz

				Value	Limit	Result
				20.407 mW	< 1 W	Pass



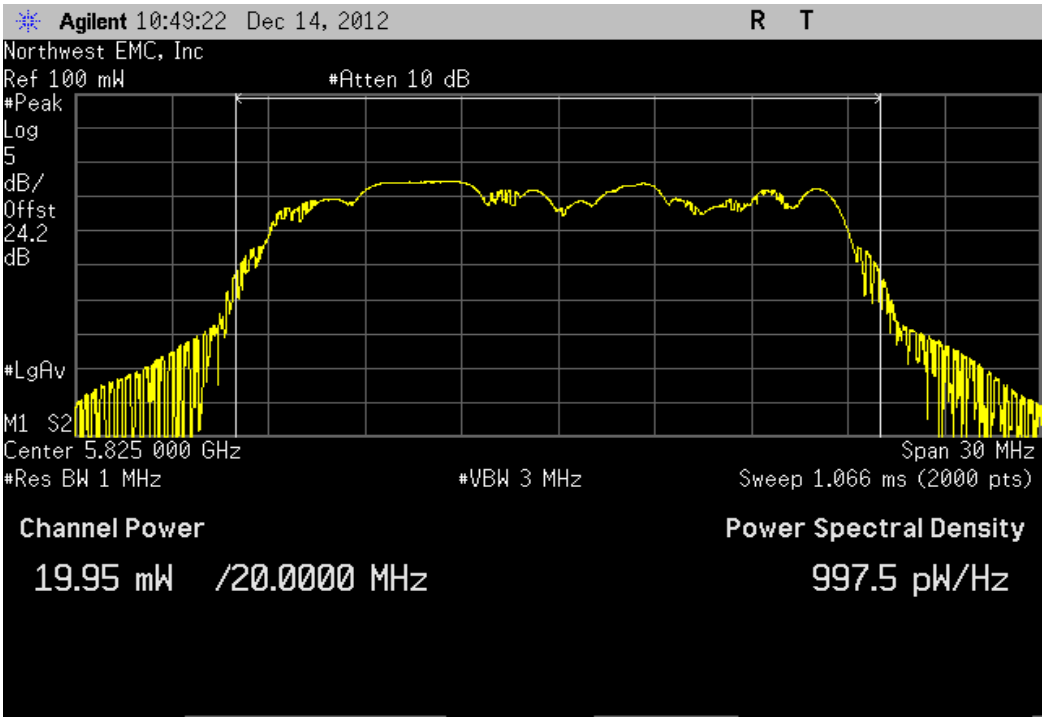
20 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS0 - UNII, Mid Channel 157, 5785 MHz

				Value	Limit	Result
				21.525 mW	< 1 W	Pass



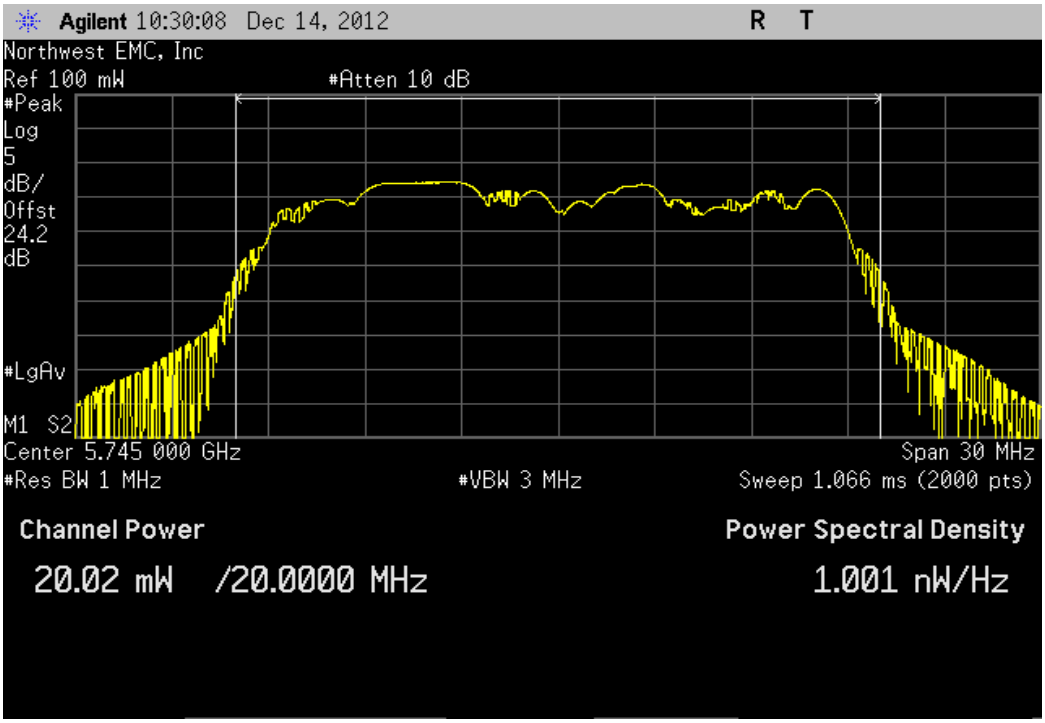
20 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS0 - UNII, High Channel 165, 5825 MHz

				Value	Limit	Result
				19.951 mW	< 1 W	Pass



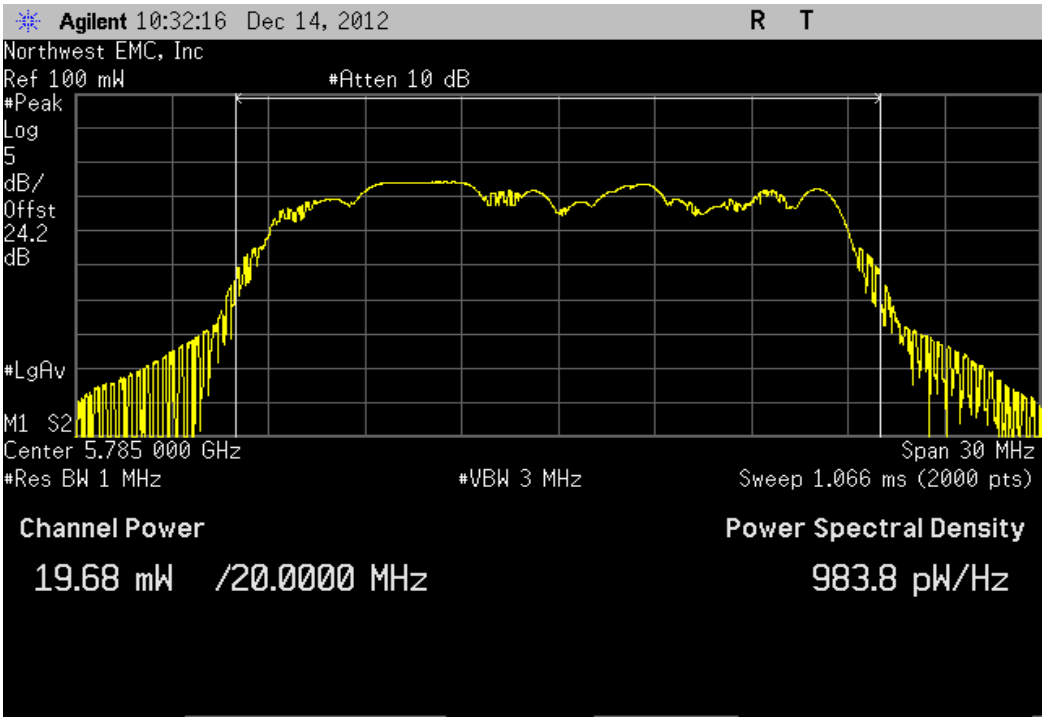
20 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS7 - UNII, Low Channel 149, 5745 MHz

				Value	Limit	Result
				20.023 mW	< 1 W	Pass



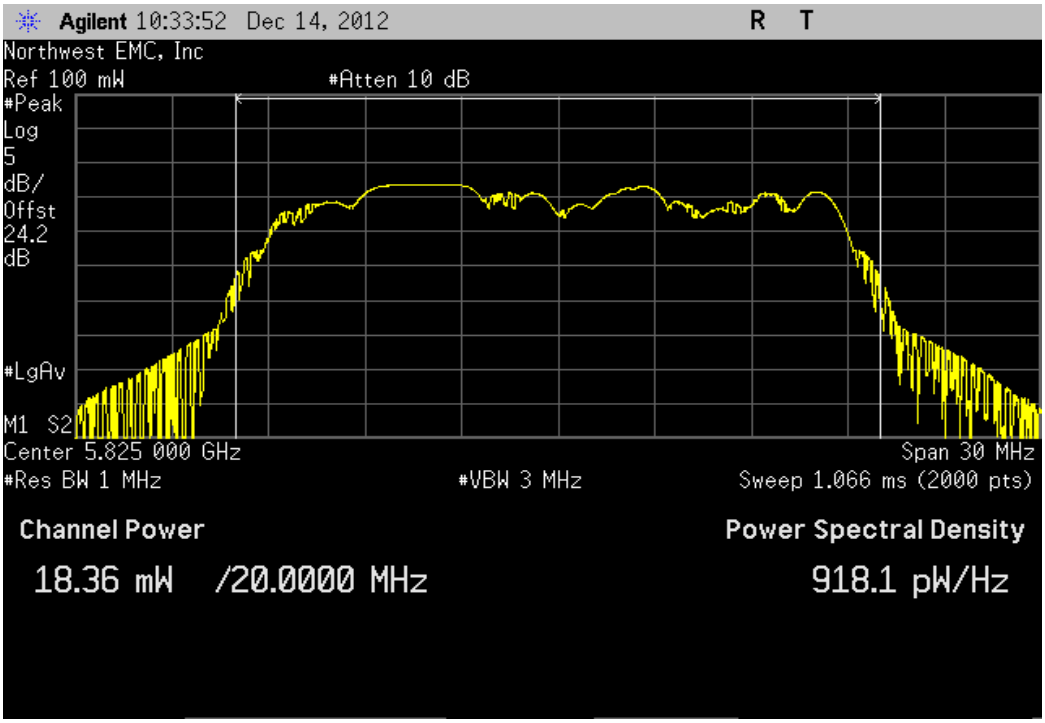
20 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS7 - UNII, Mid Channel 157, 5785 MHz

				Value	Limit	Result
				19.676 mW	< 1 W	Pass



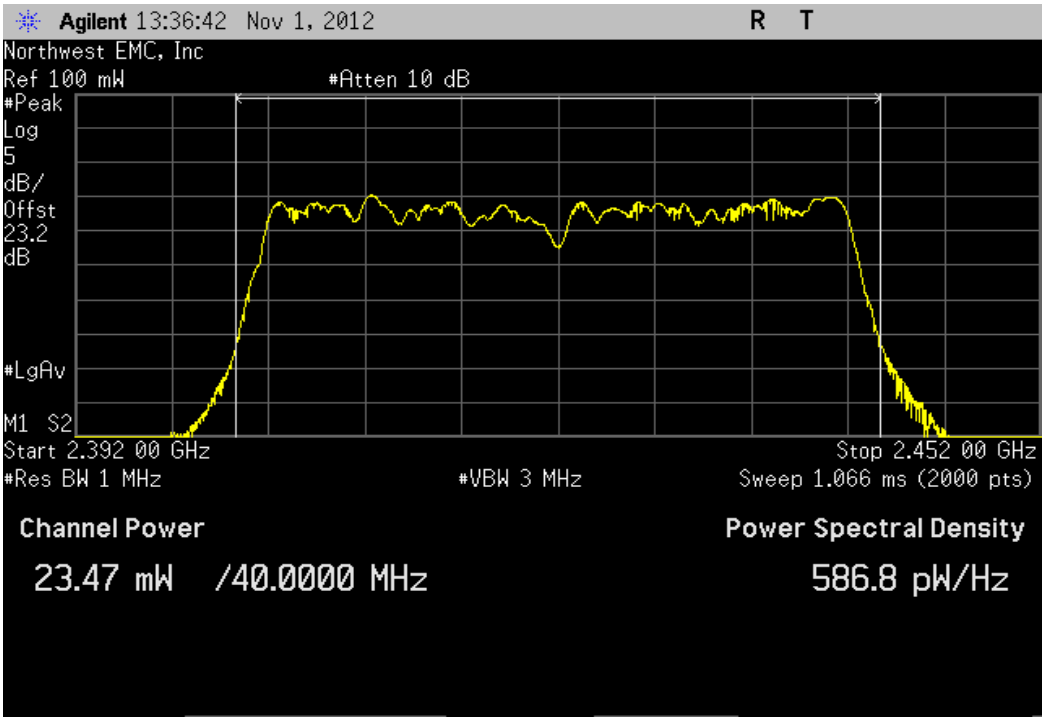
20 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS7 - UNII, High Channel 165, 5825 MHz

				Value	Limit	Result
				18.362 mW	< 1 W	Pass



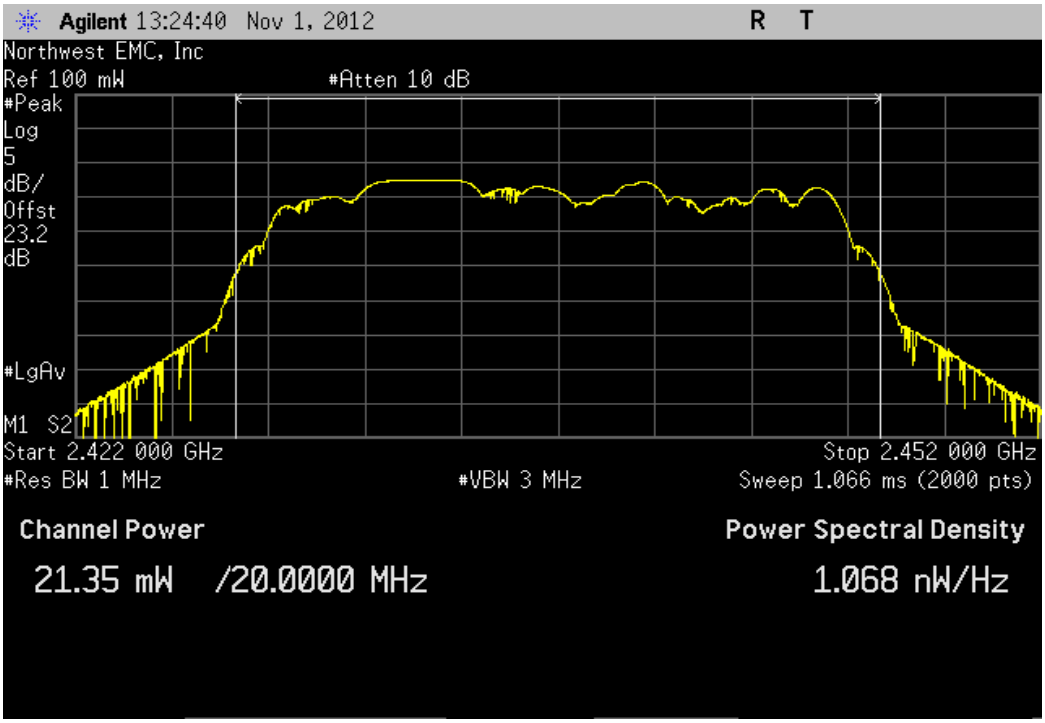
40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS0, Low Channel 1/5, 2422 MHz

				Value	Limit	Result
				23.473 mW	< 1 W	Pass



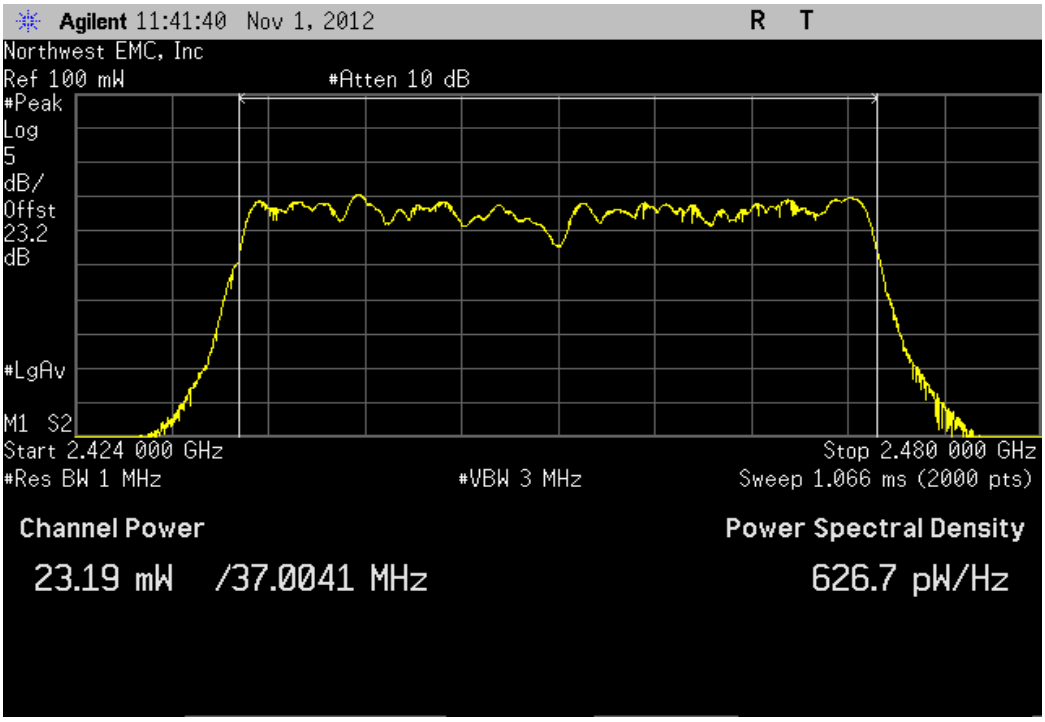
40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS0, Mid Channel 4/8, 2437 MHz

				Value	Limit	Result
				21.35 mW	< 1 W	Pass



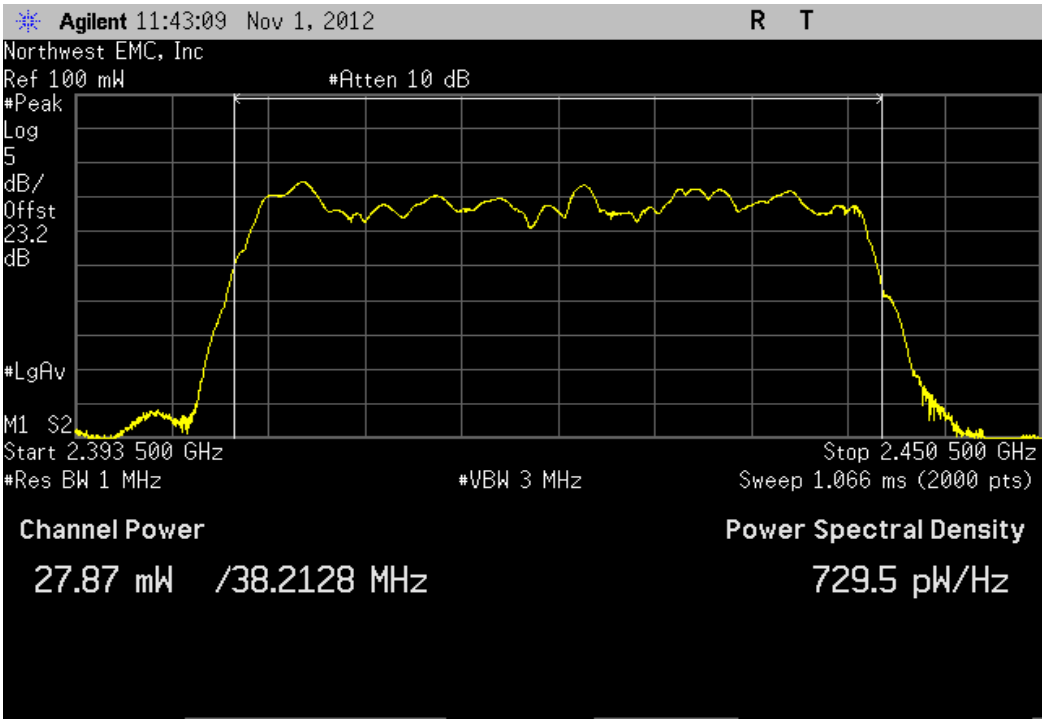
40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS0, High Channel 7/11 2452 MHz

				Value	Limit	Result
				23.192 mW	< 1 W	Pass



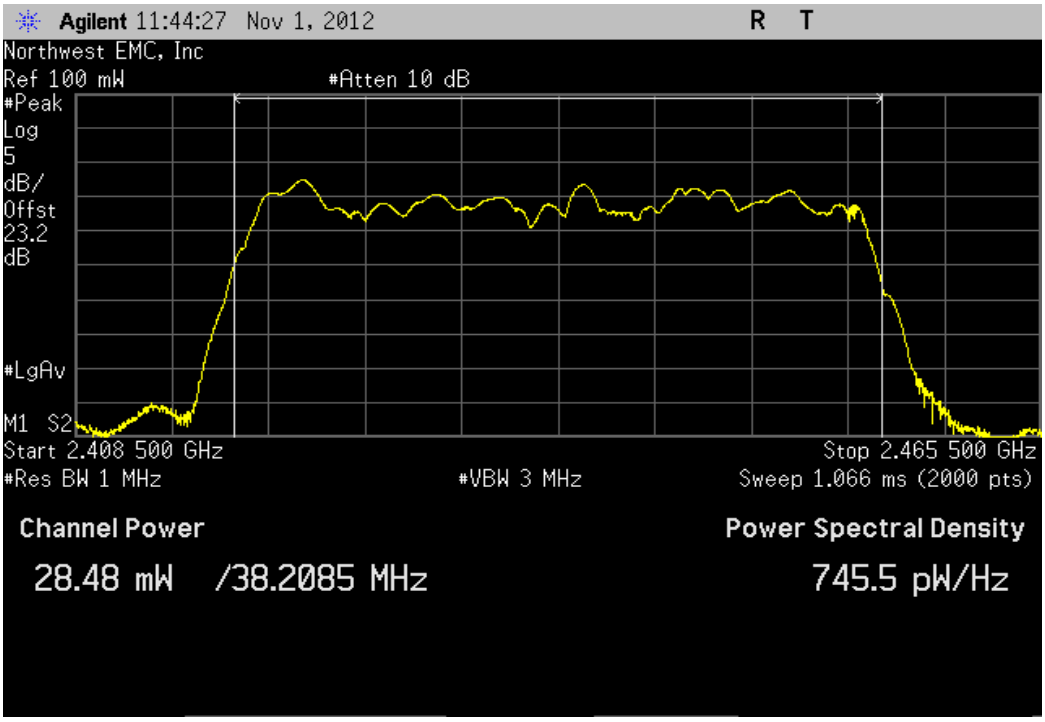
40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, Low Channel 1/5, 2422 MHz

				Value	Limit	Result
				27.874 mW	< 1 W	Pass



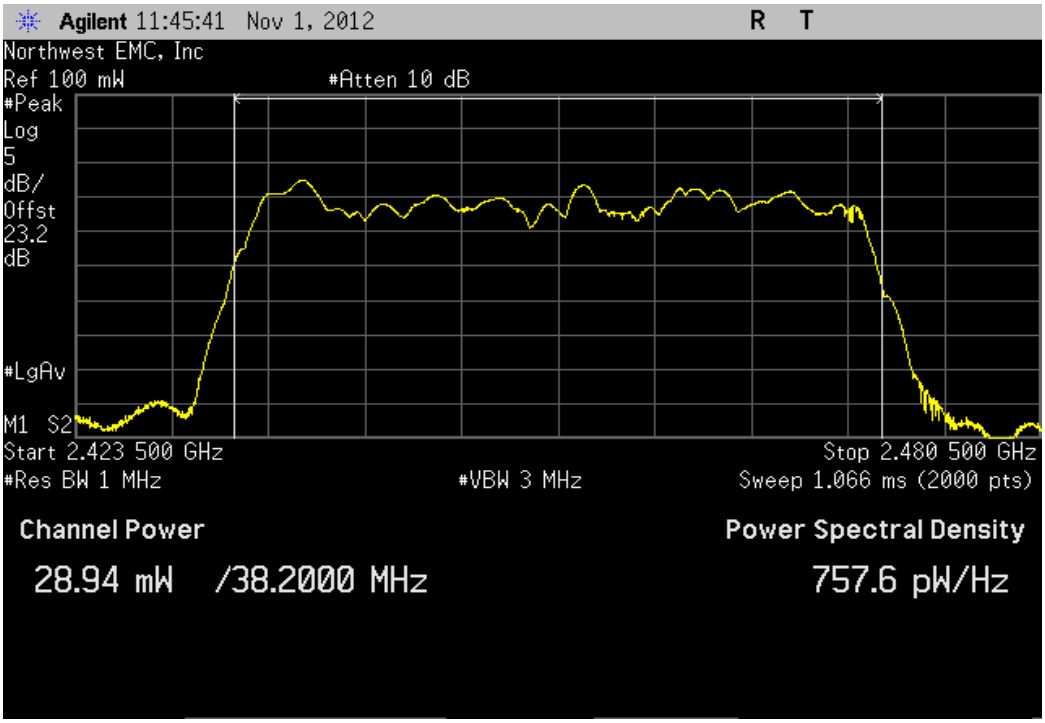
40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, Mid Channel 4/8, 2437 MHz

				Value	Limit	Result
				28.483 mW	< 1 W	Pass



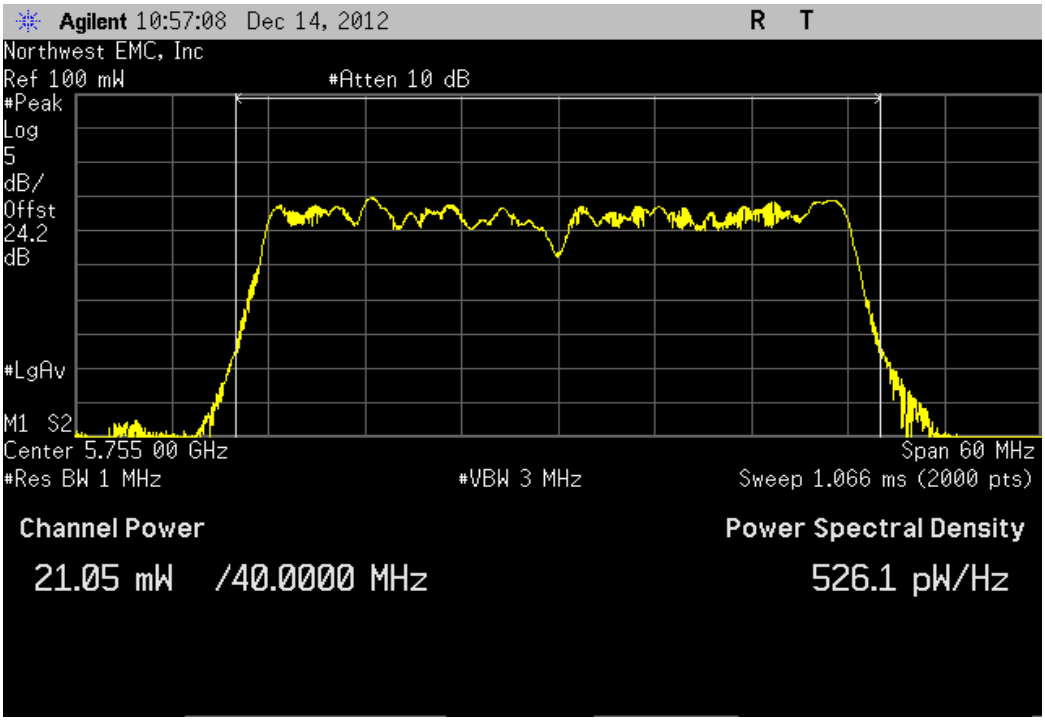
40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, High Channel 7/11 2452 MHz

				Value	Limit	Result
				28.94 mW	< 1 W	Pass



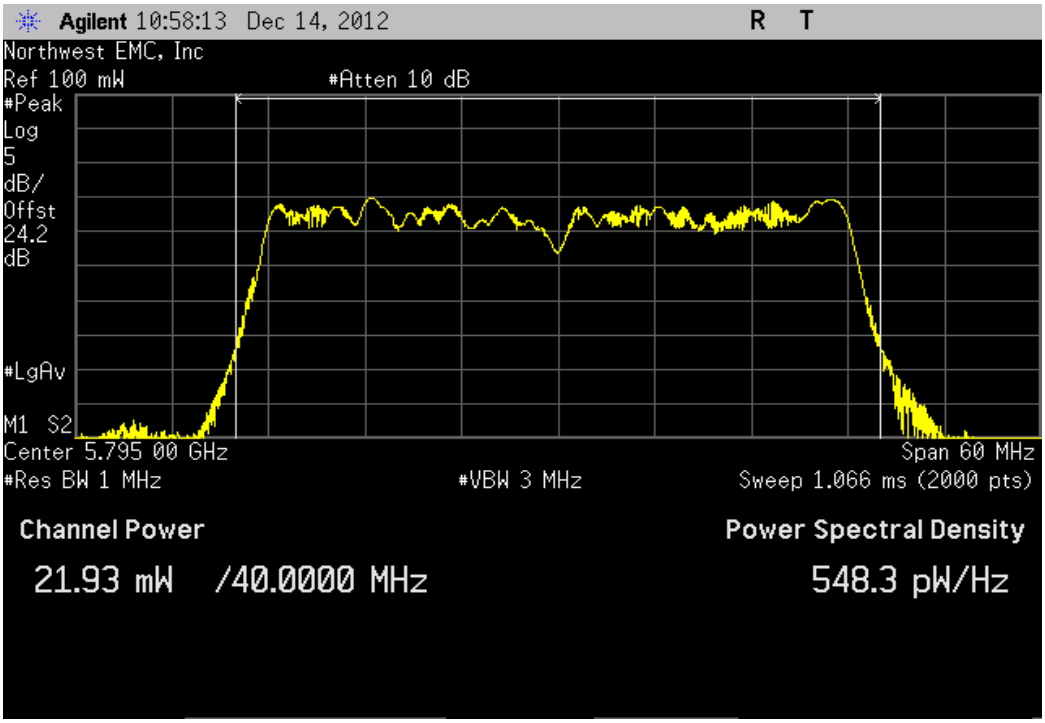
40 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS0 - UNII, Low Channel 149/153, 5755 MHz

				Value	Limit	Result
				21.045 mW	< 1 W	Pass



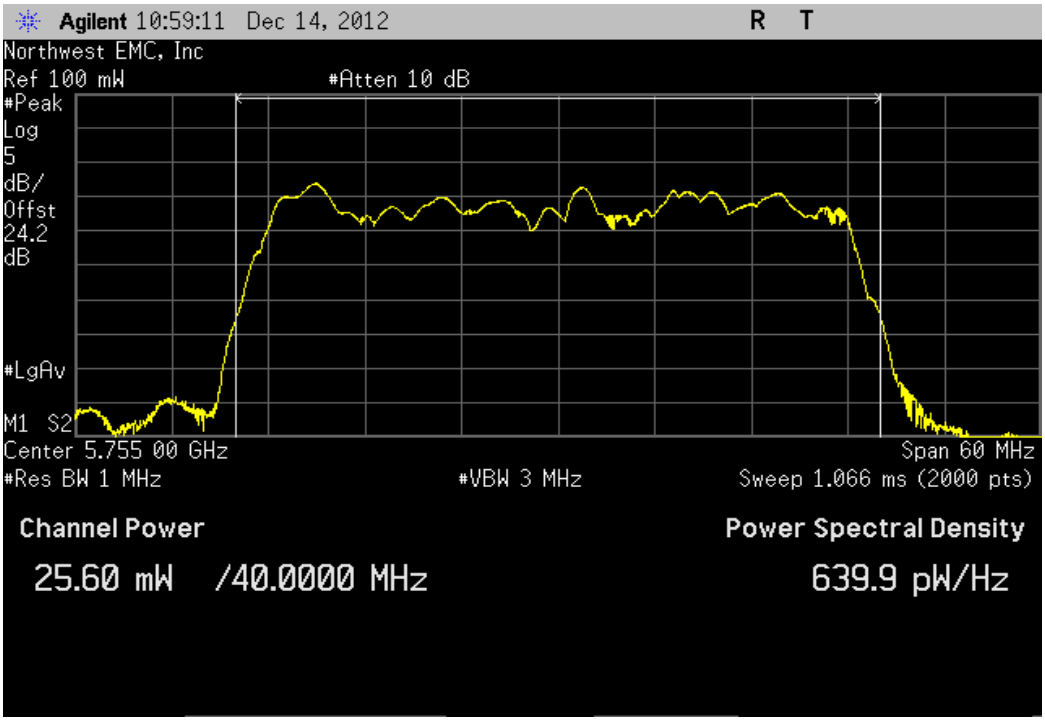
40 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS0 - UNII, High Channe 157/161, 5795 MHz

				Value	Limit	Result
				21.933 mW	< 1 W	Pass



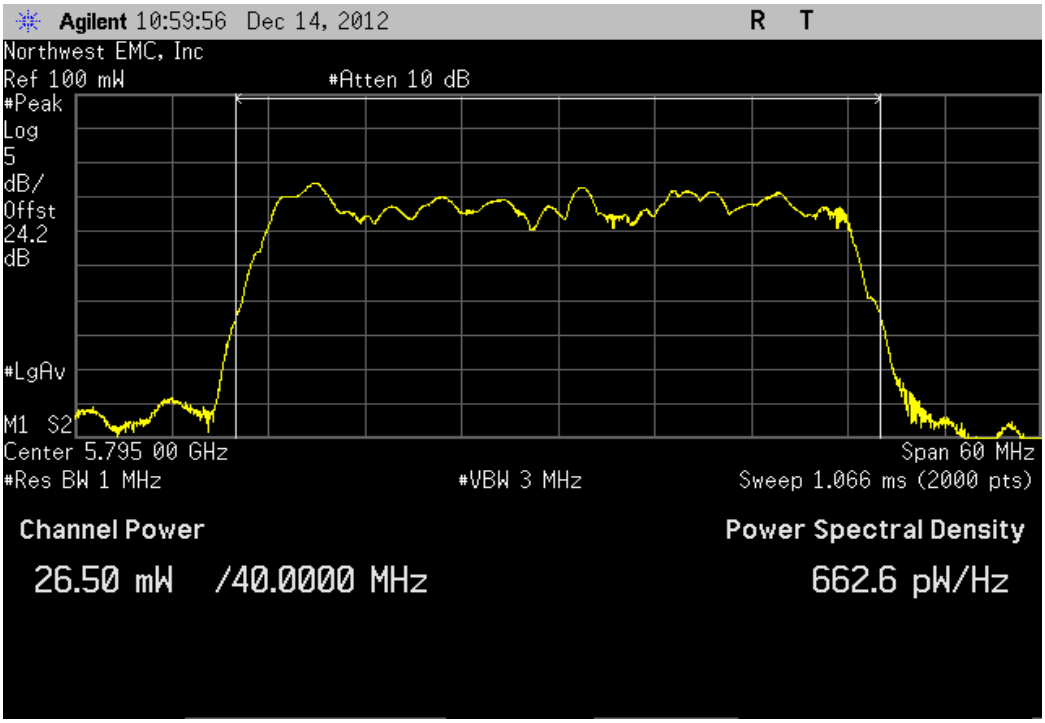
40 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS7 - UNII, Low Channel 149/153, 5755 MHz

				Value	Limit	Result
				25.595 mW	< 1 W	Pass



40 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS7 - UNII, High Channe 157/161, 5795 MHz

				Value	Limit	Result
				26.503 mW	< 1 W	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
40GHz DC Block	Miteq	DCB4000	AMD	6/25/2012	12
Attenuator 20 dB, SMA M/F 26GHz	S.M. Electronics	SA26B-20	AUY	8/2/2012	12
Power Meter	Gigatronics	8651A	SPM	1/9/2012	24
MXG Vector Signal Generator	Agilent	N5182A	TIF	NCR	0
Attenuator, 'Precision N'	S.M. Electronics	SA18N-06/SM4032	REE	12/11/2012	12
Power Sensor	Gigatronics	80701A	SPL	7/8/2011	24
Spectrum Analyzer	Agilent	E4440A	AFD	7/5/2012	12
EV06 Direct Connect Cable	ESM Cable Corp.	TT	ECA	NCR	0

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.

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 PK2 found in KDB 558074 DTS D01 Measurement Section 5.2.1.2 was used because 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.
- Peak detector mode
- Power was integrated across “B”, by using the channel power function of the analyzer.

Please refer to the Power Table located elsewhere in this report for radio power operating level during testing.

Output Power

EUT:	1514	Work Order:	MCSO1638
Serial Number:	000109423753	Date:	12/14/12
Customer:	Microsoft Corporation	Temperature:	22°C
Attendees:	None	Humidity:	35%
Project:	None	Barometric Pres.:	1011
Tested by:	Brandon Hobbs Rod Peloquin	Power: 110VAC/60Hz	Job Site: EV06

TEST SPECIFICATIONS	Test Method
FCC 15.247:2012	ANSI C63.10:2009

COMMENTS

The EUT is operating at 100% duty cycle. All cable losses for 2.4GHz and 5.0GHz bands are accounted for in the analyzer offset calculations. The EUT with S/N 000070724253 was used for Power level changes on the 2.4GHz points reflected on the Power Table Page as well as the whole 5GHz band.

DEVIATIONS FROM TEST STANDARD

None

Configuration #	3	Signature

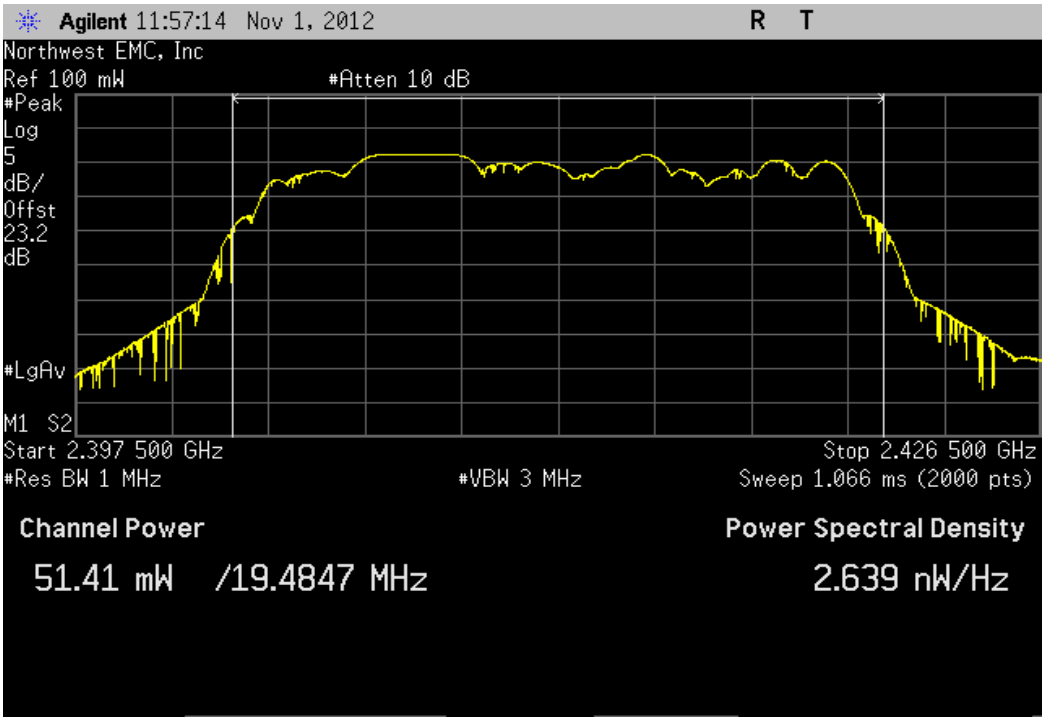
	Value	Limit	Result
Chain A			
20 MHz			
2400 MHz - 2483.5 MHz Band			
802.11(n) MCS8			
Low Channel 1, 2412 MHz	51.415 mW	< 1 W	Pass
Mid Channel 6, 2437 MHz	47.558 mW	< 1 W	Pass
High Channel 11, 2462 MHz	42.12 mW	< 1 W	Pass
802.11(n) MCS15			
Low Channel 1, 2412 MHz	45.909 mW	< 1 W	Pass
Mid Channel 6, 2437 MHz	47.083 mW	< 1 W	Pass
High Channel 11, 2462 MHz	42.454 mW	< 1 W	Pass
5725 MHz - 5850 MHz Band			
802.11(n) MCS8			
Low Channel 149, 5745 MHz	20.648 mW	< 1 W	Pass
Mid Channel 157, 5785 MHz	19.215 mW	< 1 W	Pass
High Channel 165, 5825 MHz	18.208 mW	< 1 W	Pass
802.11(n) MCS15			
Low Channel 149, 5745 MHz	21.183 mW	< 1 W	Pass
Mid Channel 157, 5785 MHz	19.292 mW	< 1 W	Pass
High Channel 165, 5825 MHz	20.325 mW	< 1 W	Pass
40 MHz			
2400 MHz - 2483.5 MHz Band			
802.11(n) MCS8			
Mid Channel 6, 2437 MHz	19.234 mW	< 1 W	Pass
Mid Channel 4/8 , 2437 MHz	20.24 mW	< 1 W	Pass
High Channel 7/11, 2452 MHz	20.133 mW	< 1 W	Pass
802.11(n) MCS15			
Low Channel 1/5, 2422 MHz	20.704 mW	< 1 W	Pass
Mid Channel 4/8 , 2437 MHz	68.648 mW	< 1 W	Pass
High Channel 7/11, 2452 MHz	24.267 mW	< 1 W	Pass
5725 MHz - 5850 MHz Band			
802.11(n) MCS8			
Low Channel 149/153, 5755 MH	18.306 mW	< 1 W	Pass
High Channe 157/161, 5795 MH	22.752 mW	< 1 W	Pass
802.11(n) MCS15			
Low Channel 149/153, 5755 MH	26.985 mW	< 1 W	Pass
High Channe 157/161, 5795 MH	27.65 mW	< 1 W	Pass
Chain B			
20 MHz			
2400 MHz - 2483.5 MHz Band			
802.11(n) MCS8			
Low Channel 1, 2412 MHz	54.521 mW	< 1 W	Pass
Mid Channel 6, 2437 MHz	51.8 mW	< 1 W	Pass
High Channel 11, 2462 MHz	53.774 mW	< 1 W	Pass
802.11(n) MCS15			
Low Channel 1, 2412 MHz	49.546 mW	< 1 W	Pass
Mid Channel 6, 2437 MHz	53.344 mW	< 1 W	Pass
High Channel 11, 2462 MHz	54.769 mW	< 1 W	Pass
5725 MHz - 5850 MHz Band			
802.11(n) MCS8			
Low Channel 149, 5745 MHz	18.889 mW	< 1 W	Pass
Mid Channel 157, 5785 MHz	21.286 mW	< 1 W	Pass
High Channel 165, 5825 MHz	21.58 mW	< 1 W	Pass
802.11(n) MCS15			
Low Channel 149, 5745 MHz	21.018 mW	< 1 W	Pass
Mid Channel 157, 5785 MHz	21.121 mW	< 1 W	Pass
High Channel 165, 5825 MHz	21.717 mW	< 1 W	Pass
40 MHz			
2400 MHz - 2483.5 MHz Band			
802.11(n) MCS8			
Low Channel 1/5, 2422 MHz	23.221 mW	< 1 W	Pass
Mid Channel 4/8 , 2437 MHz	22.032 mW	< 1 W	Pass
High Channel 7/11, 2452 MHz	22.521 mW	< 1 W	Pass
802.11(n) MCS15			
Low Channel 1/5, 2422 MHz	18.795 mW	< 1 W	Pass
Mid Channel 4/8 , 2437 MHz	51.861 mW	< 1 W	Pass
High Channel 7/11, 2452 MHz	21.64 mW	< 1 W	Pass
5725 MHz - 5850 MHz Band			
802.11(n) MCS8			
Low Channel 149/153, 5755 MH	22.401 mW	< 1 W	Pass
High Channe 157/161, 5795 MH	25.248 mW	< 1 W	Pass
802.11(n) MCS15			
Low Channel 149/153, 5755 MH	27.357 mW	< 1 W	Pass
High Channe 157/161, 5795 MH	30.031 mW	< 1 W	Pass
Chain AB			
20 MHz			

2400 MHz - 2483.5 MHz Band	Chain A		Chain B		Summed Power	
802.11(n) MCS8	(dBm)	(mw)	(dBm)	(mw)	(mW)	
Low Channel 1, 2412 MHz	N/A	51.4	N/A	54.5	105.9	Pass
Mid Channel 6, 2437 MHz	N/A	47.6	N/A	51.8	99.4	Pass
High Channel 11, 2462 MHz	N/A	42.1	N/A	53.8	95.9	Pass
802.11(n) MCS15						

			Low Channel 1, 2412 MHz	N/A	45.9	N/A	49.5	95.5	Pass
			Mid Channel 6, 2437 MHz	N/A	47.1	N/A	53.3	100.4	Pass
			High Channel 11, 2462 MHz	N/A	42.5	N/A	54.8	97.2	Pass
		5725 MHz - 5850 MHz Band							
			802.11(n) MCS8						
			Low Channel 149, 5745 MHz	N/A	20.6	N/A	18.9	39.5	Pass
			Mid Channel 157, 5785 MHz	N/A	19.2	N/A	21.3	40.5	Pass
			High Channel 165, 5825 MHz	N/A	18.2	N/A	21.6	39.8	Pass
			802.11(n) MCS15						
			Low Channel 149, 5745 MHz	N/A	21.2	N/A	21.0	42.2	Pass
			Mid Channel 157, 5785 MHz	N/A	19.3	N/A	21.1	40.4	Pass
			High Channel 165, 5825 MHz	N/A	20.3	N/A	21.7	42.0	Pass
Chain AB									
	40 MHz								
		2400 MHz - 2483.5 MHz Band		Chain A		Chain B		Summed Power	
			802.11(n) MCS8	(dBm)	(mw)	(dBm)	(mw)	(mW)	
			Low Channel 1/5, 2422 MHz	N/A	19.234	N/A	23.221	42.455	Pass
			Mid Channel 4/8 , 2437 MHz	N/A	20.24	N/A	22.032	42.272	Pass
			High Channel 7/11, 2452 MHz	N/A	20.133	N/A	22.521	42.654	Pass
			802.11(n) MCS15						
			Low Channel 1/5, 2422 MHz	N/A	20.704	N/A	18.795	39.499	Pass
			Mid Channel 4/8 , 2437 MHz	N/A	68.648	N/A	51.861	120.509	Pass
			High Channel 7/11, 2452 MHz	N/A	24.267	N/A	21.64	45.907	Pass
		5725 MHz - 5850 MHz Band							
			802.11(n) MCS8						
			Low Channel 149/153, 5755 MH	N/A	18.306	N/A	22.401	40.707	Pass
			High Channe 157/161, 5795 MH	N/A	22.752	N/A	25.248	48	Pass
			802.11(n) MCS15						
			Low Channel 149/153, 5755 MH	N/A	26.985	N/A	27.357	54.342	Pass
			High Channe 157/161, 5795 MH	N/A	27.65	N/A	30.031	57.681	Pass

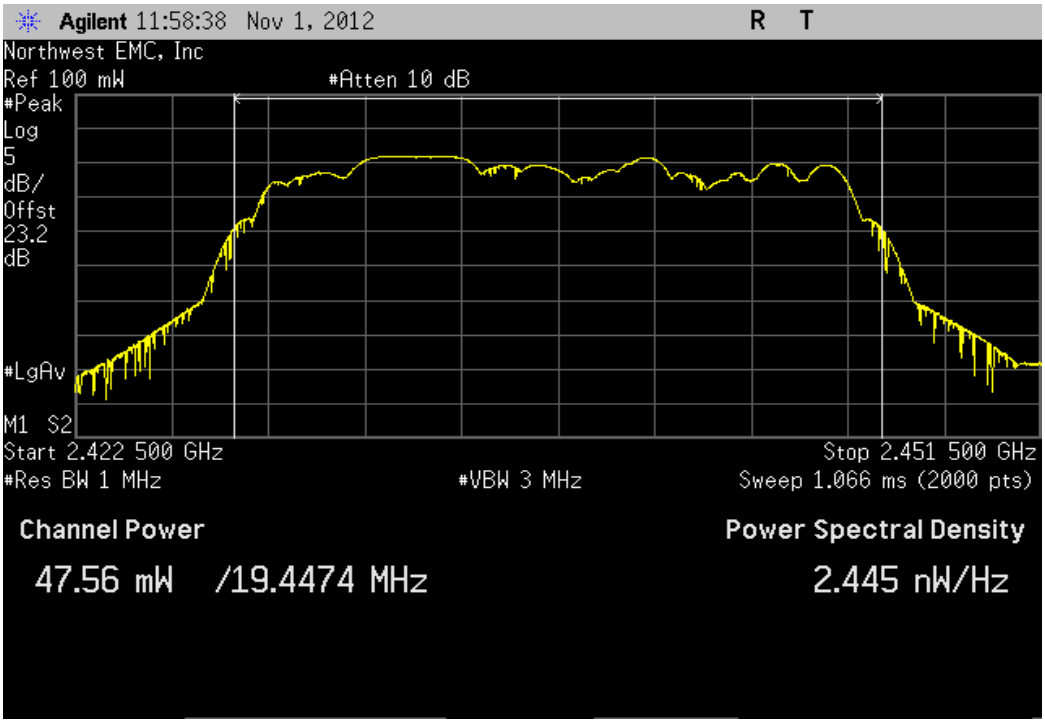
Chain A, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, Low Channel 1, 2412 MHz

				Value	Limit	Result
				51.415 mW	< 1 W	Pass



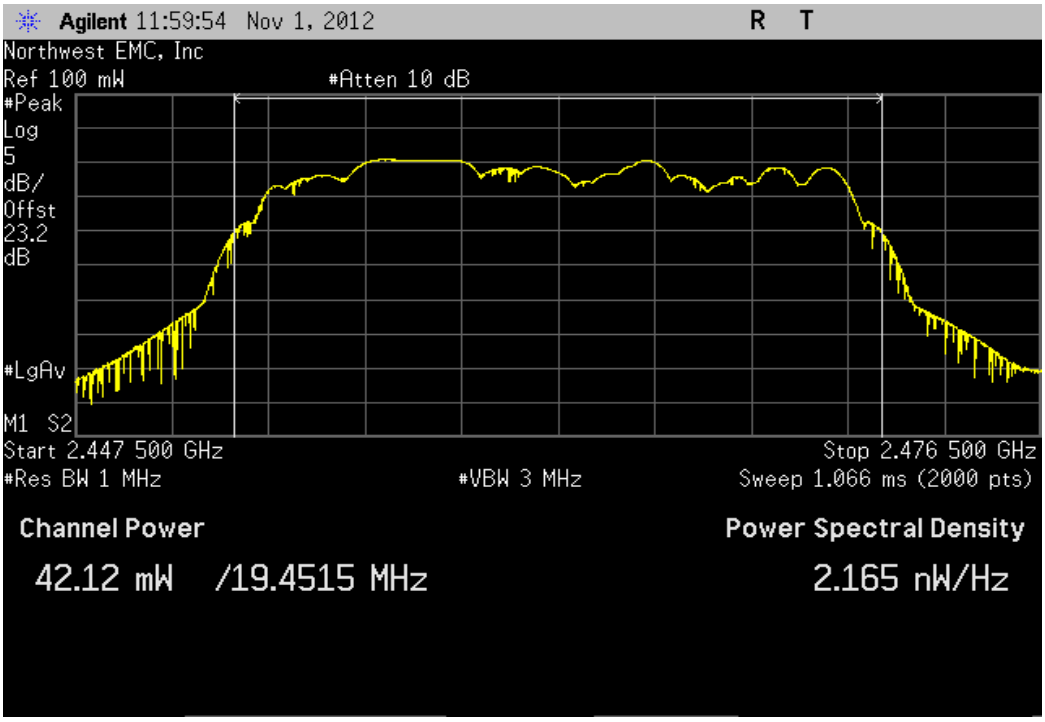
Chain A, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, Mid Channel 6, 2437 MHz

				Value	Limit	Result
				47.558 mW	< 1 W	Pass



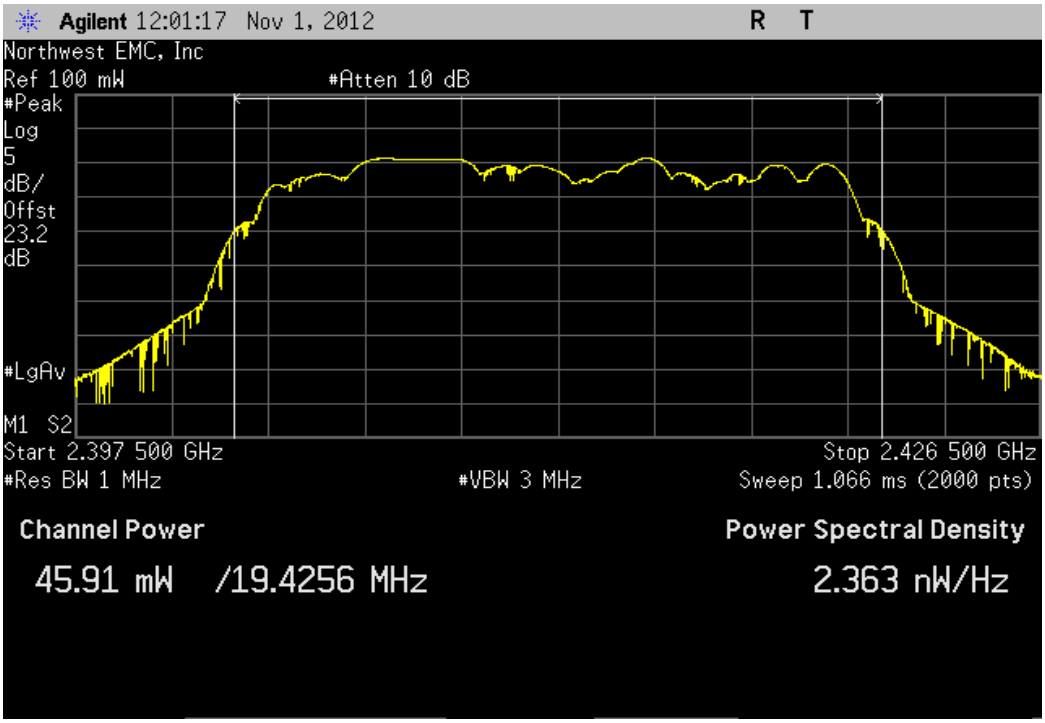
Chain A, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, High Channel 11, 2462 MHz

				Value	Limit	Result
				42.12 mW	< 1 W	Pass



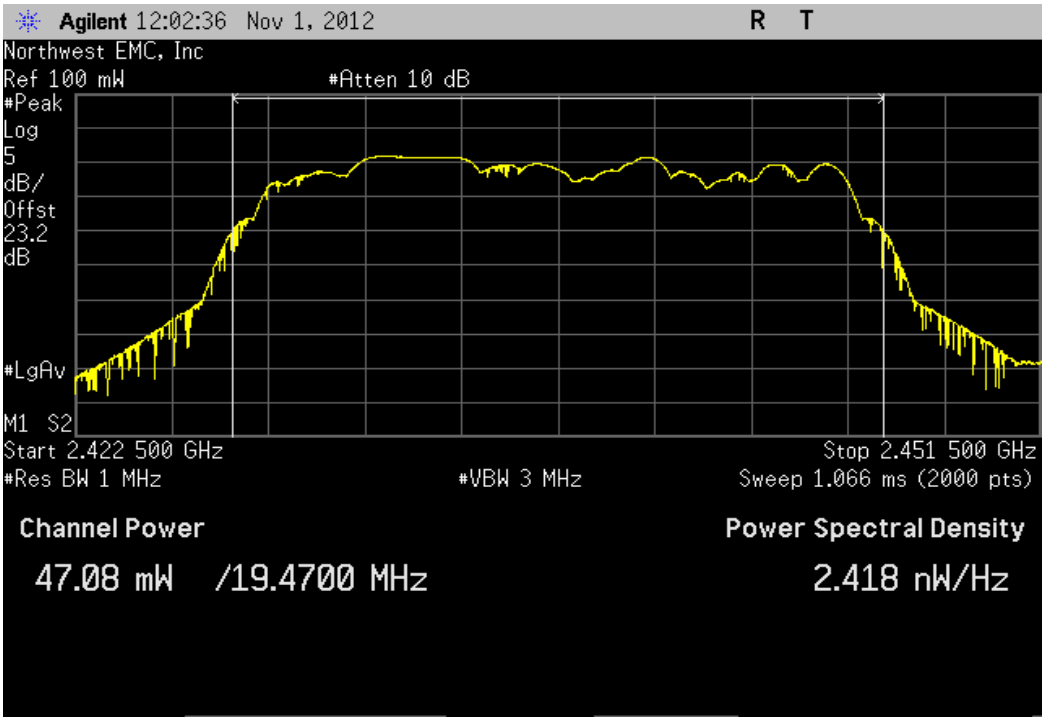
Chain A, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, Low Channel 1, 2412 MHz

				Value	Limit	Result
				45.909 mW	< 1 W	Pass



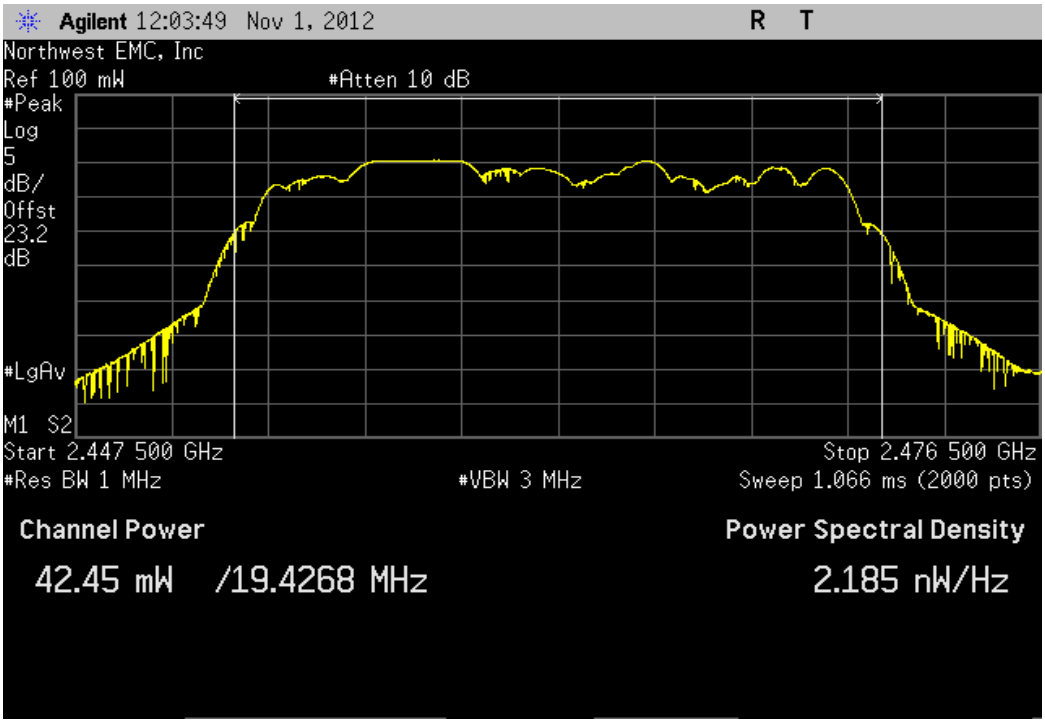
Chain A, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, Mid Channel 6, 2437 MHz

				Value	Limit	Result
				47.083 mW	< 1 W	Pass



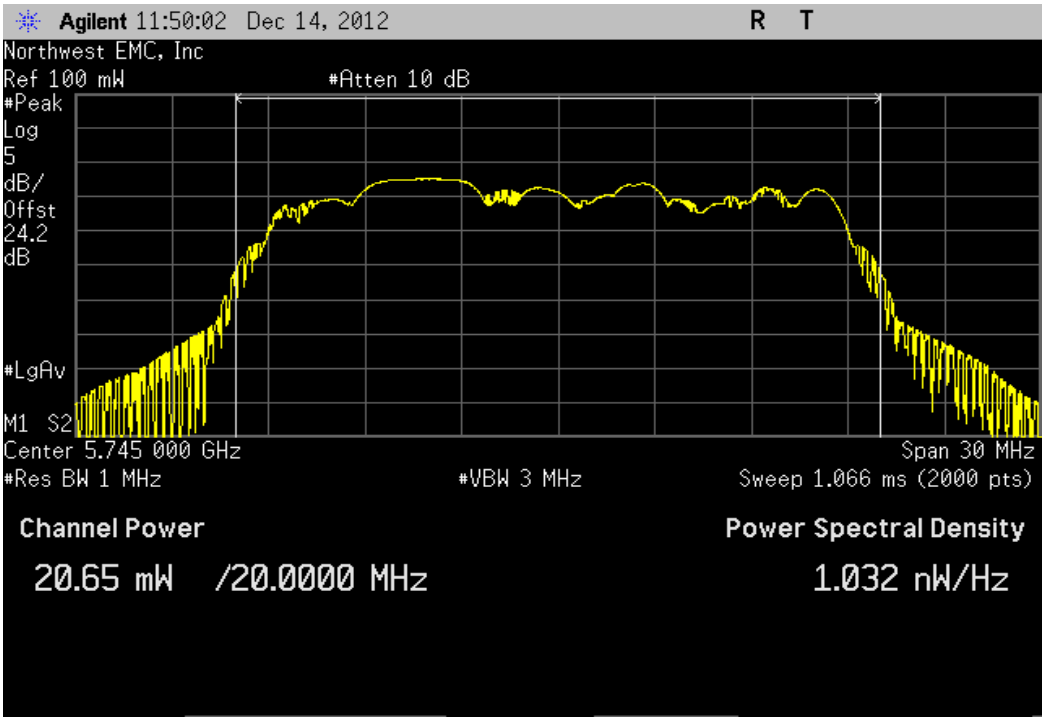
Chain A, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, High Channel 11, 2462 MHz

				Value	Limit	Result
				42.454 mW	< 1 W	Pass



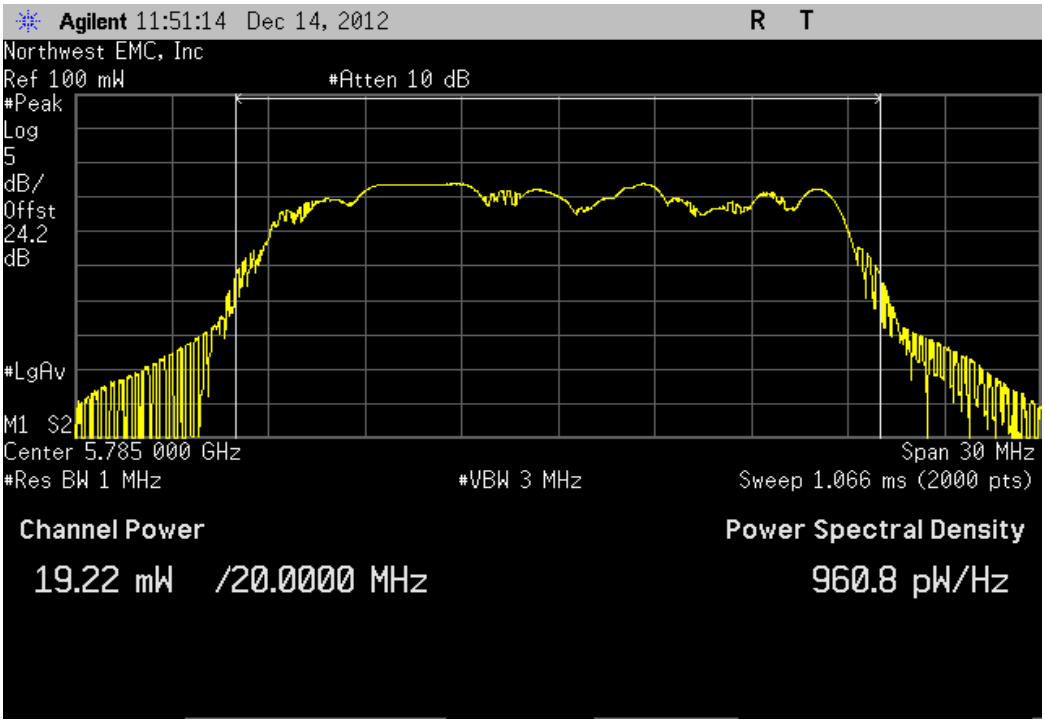
Chain A, 20 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS8, Low Channel 149, 5745 MHz

				Value	Limit	Result
				20.648 mW	< 1 W	Pass



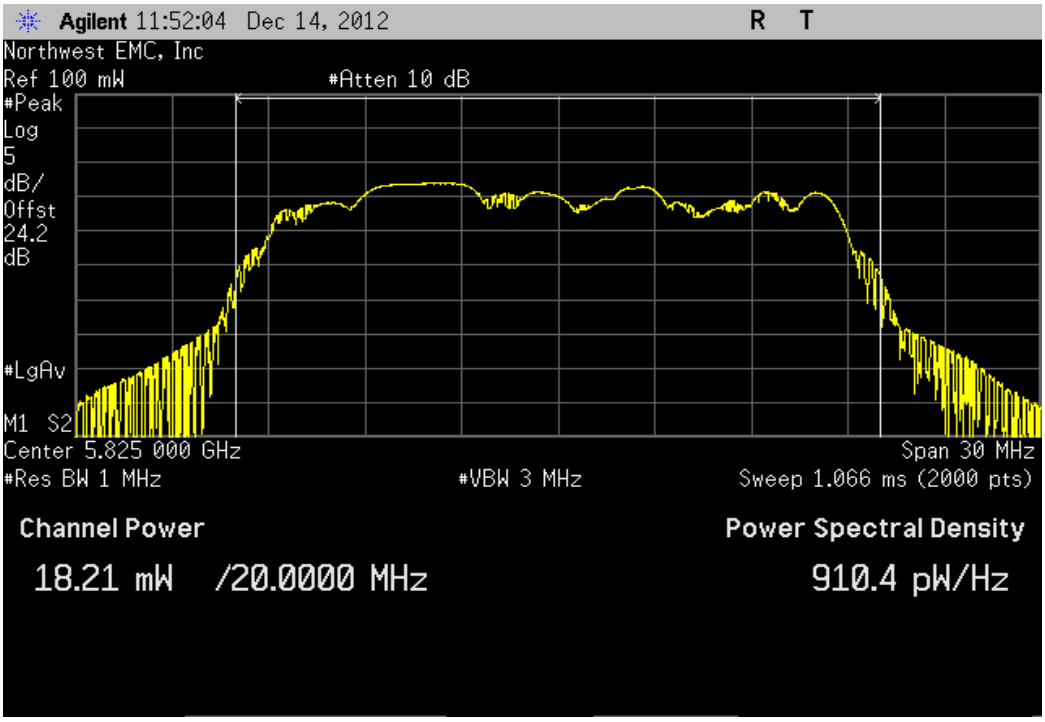
Chain A, 20 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS8, Mid Channel 157, 5785 MHz

				Value	Limit	Result
				19.215 mW	< 1 W	Pass



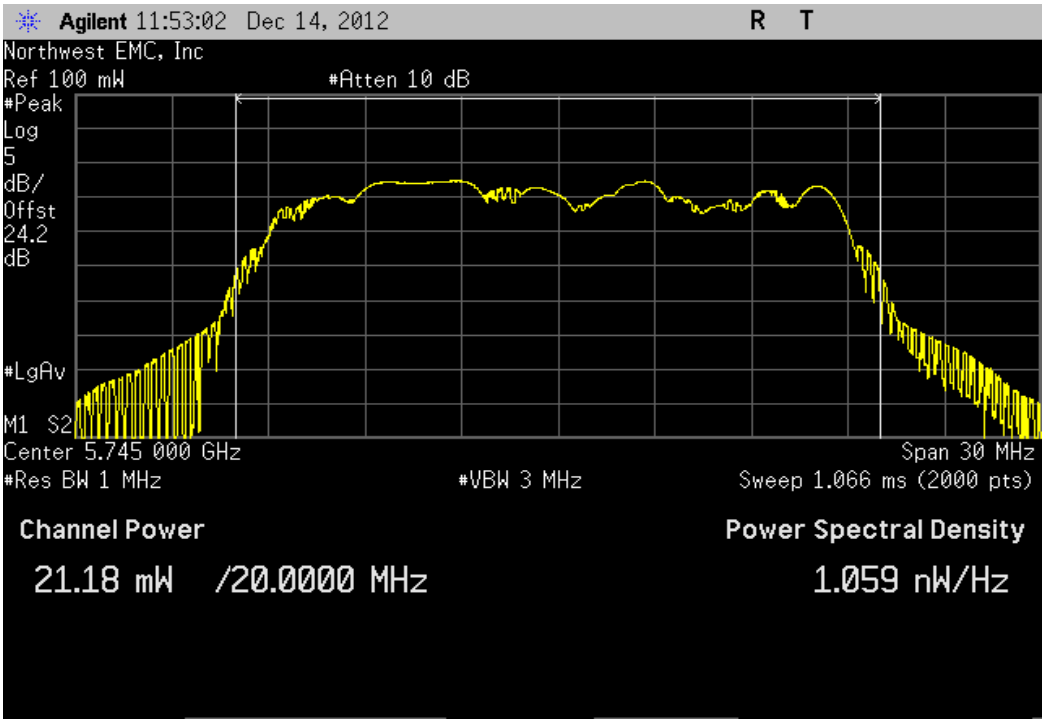
Chain A, 20 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS8, High Channel 165, 5825 MHz

				Value	Limit	Result
				18.208 mW	< 1 W	Pass



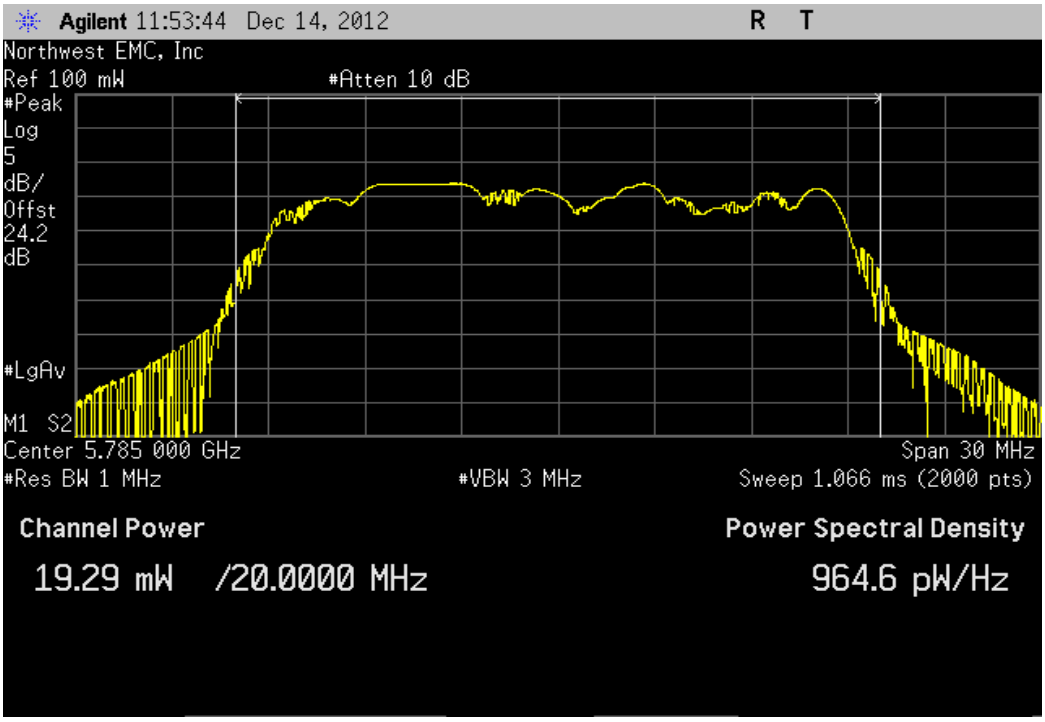
Chain A, 20 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS15, Low Channel 149, 5745 MHz

				Value	Limit	Result
				21.183 mW	< 1 W	Pass



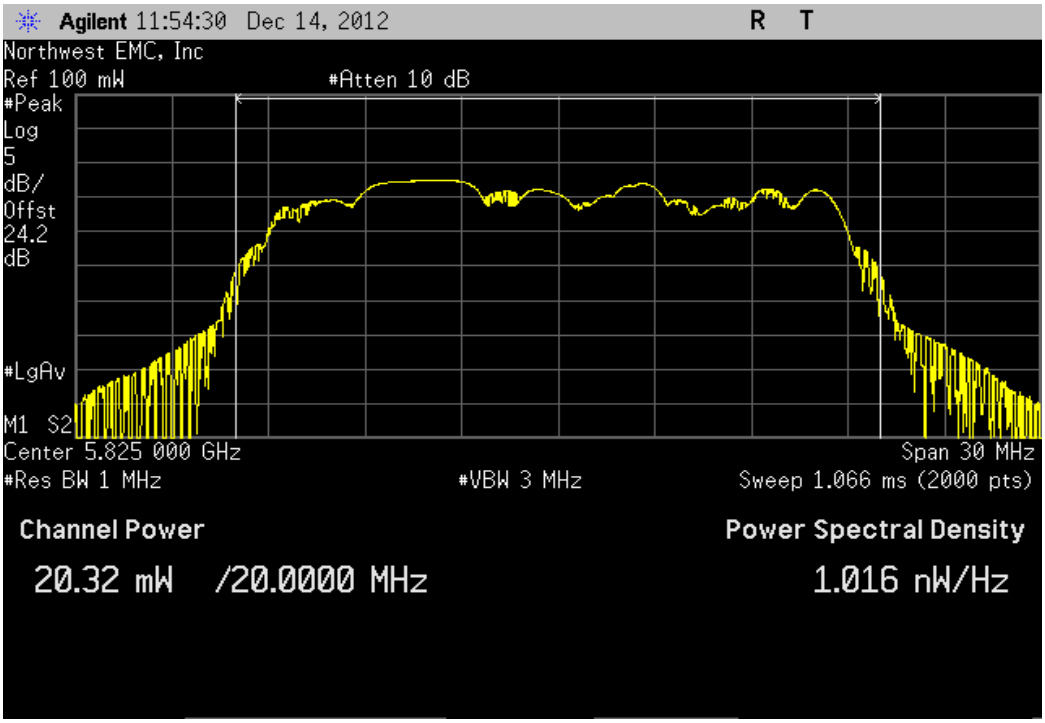
Chain A, 20 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS15, Mid Channel 157, 5785 MHz

				Value	Limit	Result
				19.292 mW	< 1 W	Pass



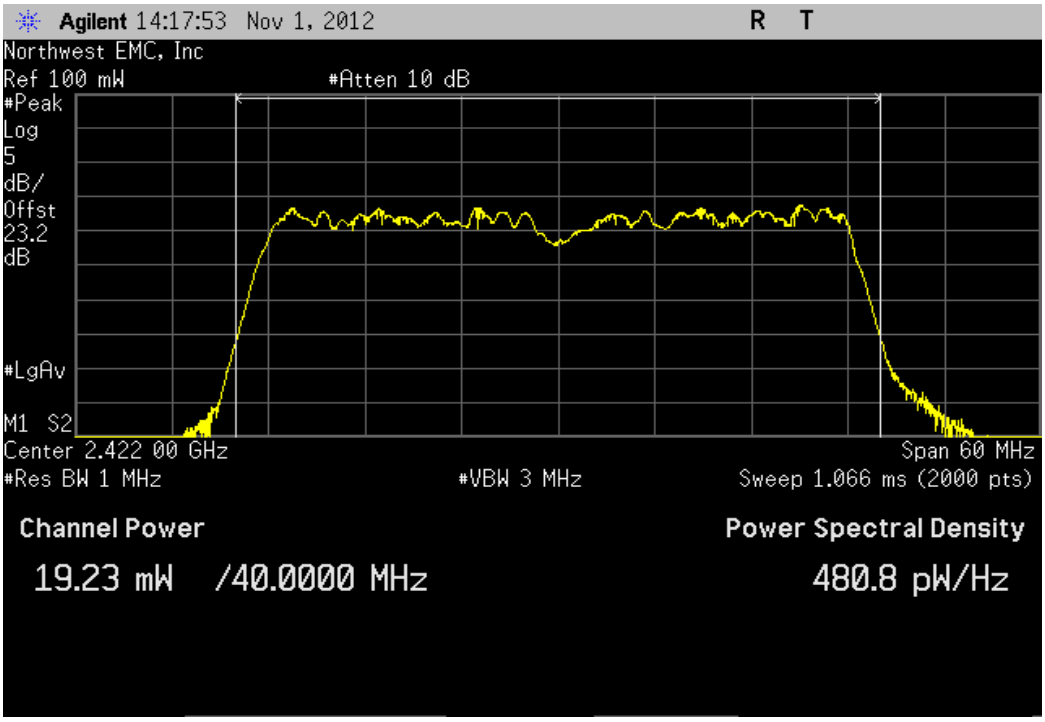
Chain A, 20 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS15, High Channel 165, 5825 MHz

				Value	Limit	Result
				20.325 mW	< 1 W	Pass



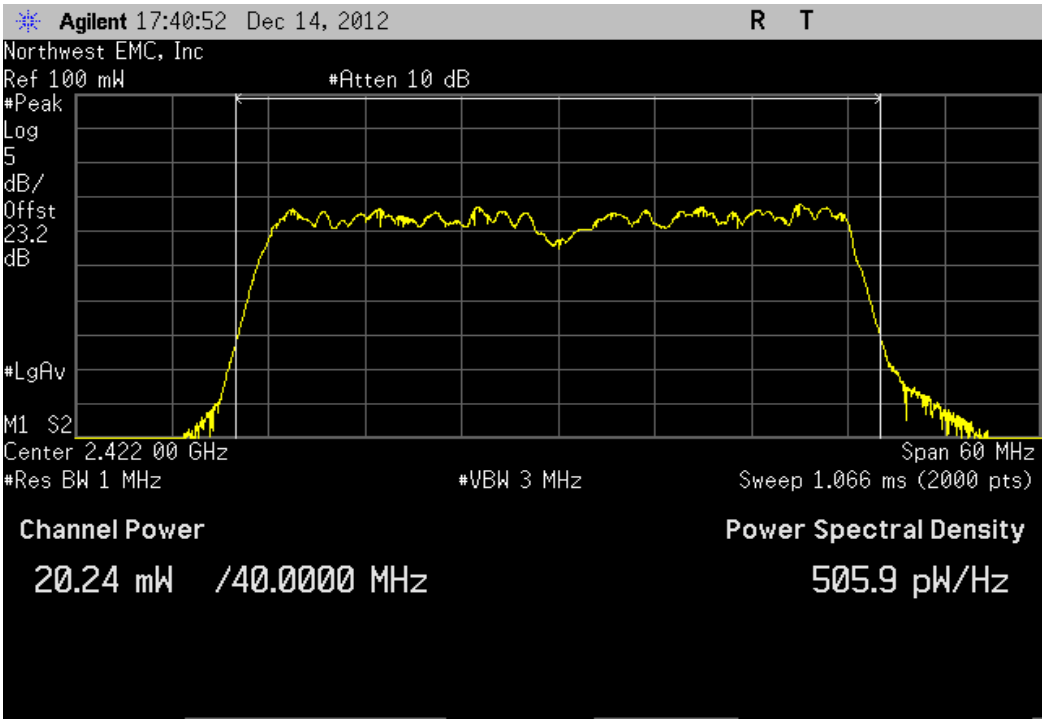
Chain A, 40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, Mid Channel 6, 2437 MHz

				Value	Limit	Result
				19.234 mW	< 1 W	Pass



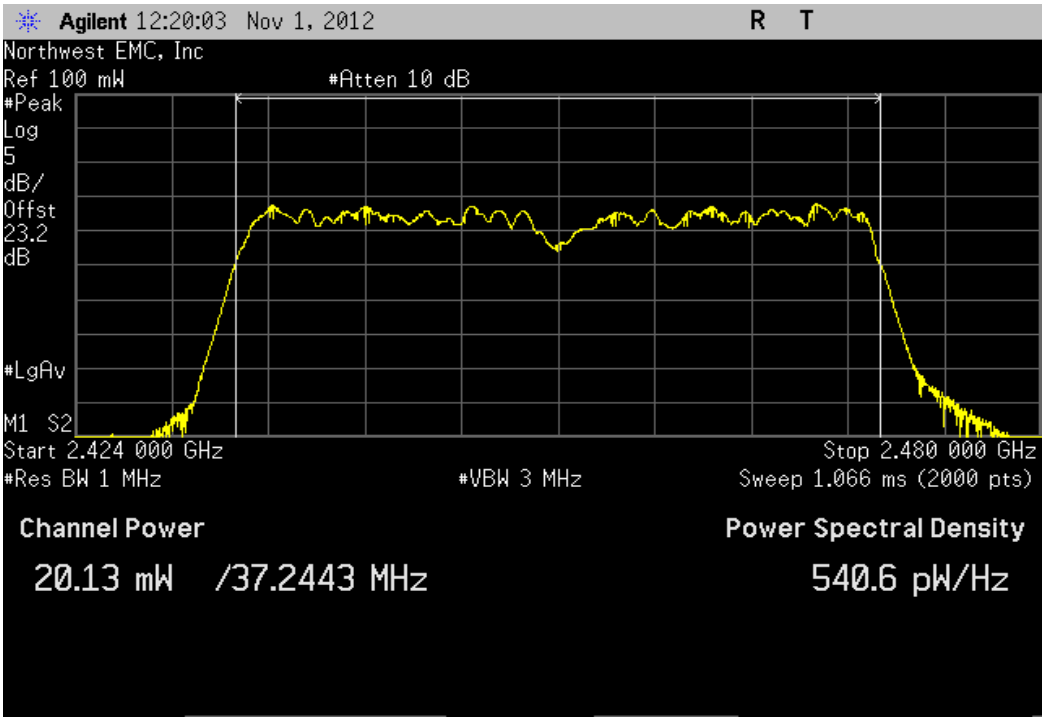
Chain A, 40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, Low Channel 1/5, 2422 MHz

				Value	Limit	Result
				20.24 mW	< 1 W	Pass



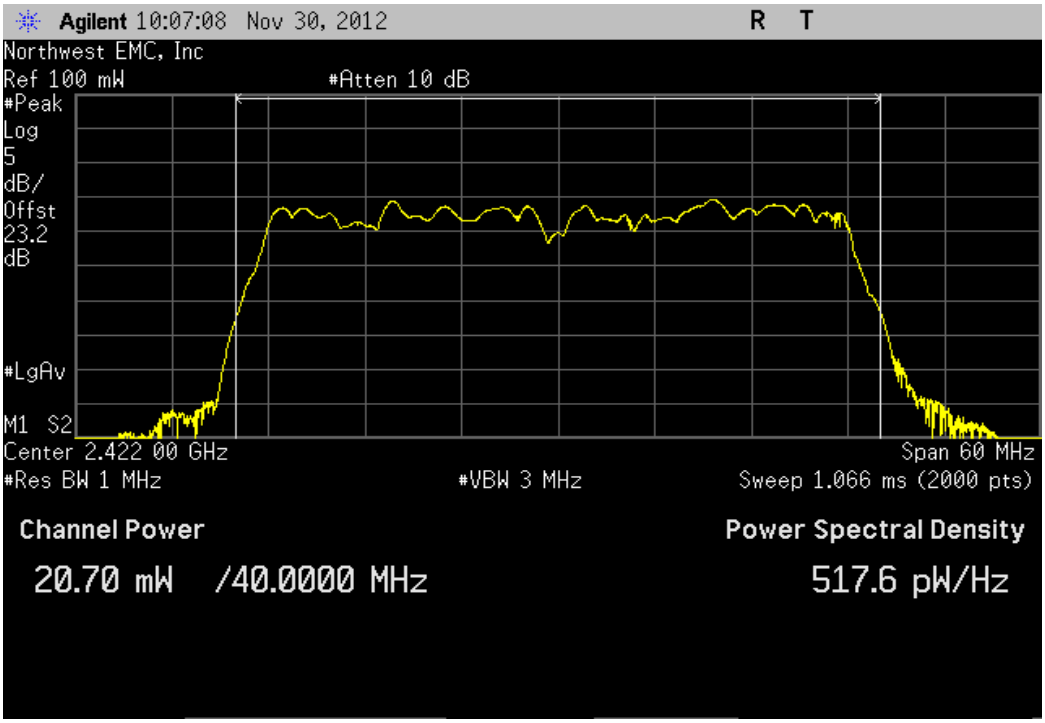
Chain A, 40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, High Channel 7/11, 2452 MHz

				Value	Limit	Result
				20.133 mW	< 1 W	Pass



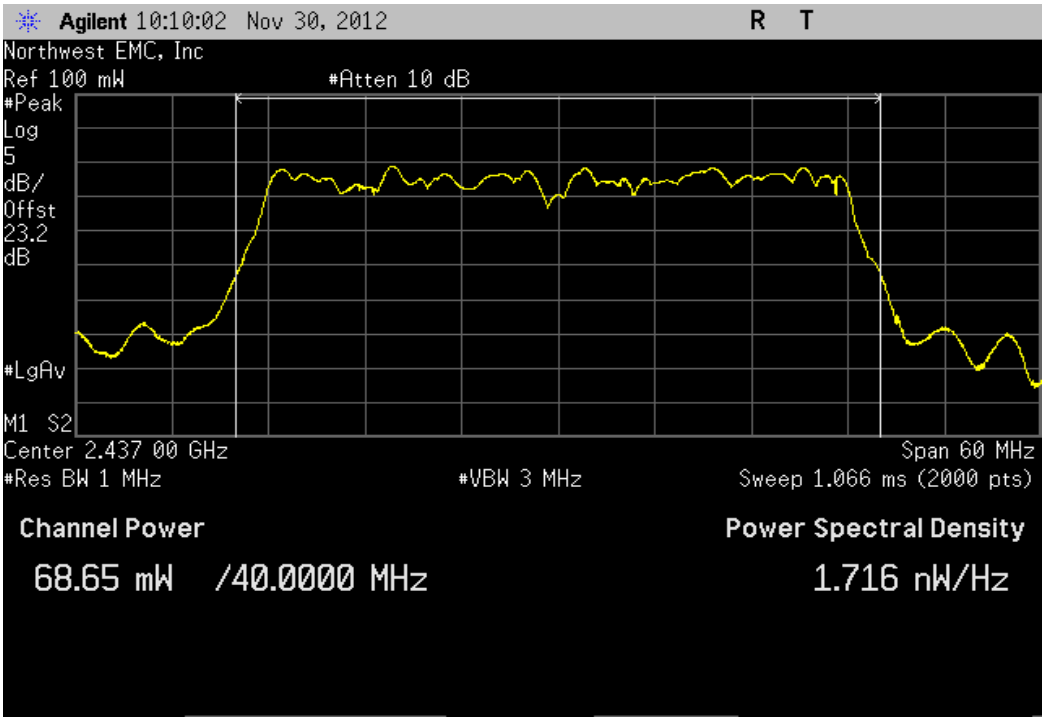
Chain A, 40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, Low Channel 1/5, 2422 MHz

				Value	Limit	Result
				20.704 mW	< 1 W	Pass



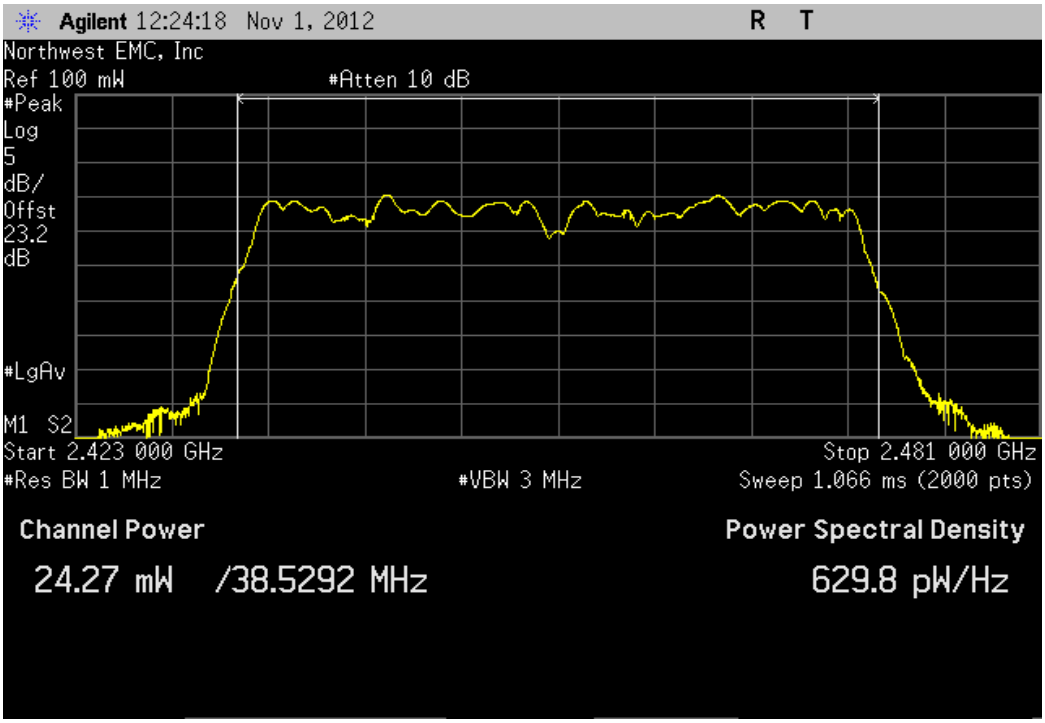
Chain A, 40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, Low Channel 1/5, 2422 MHz

				Value	Limit	Result
				68.648 mW	< 1 W	Pass



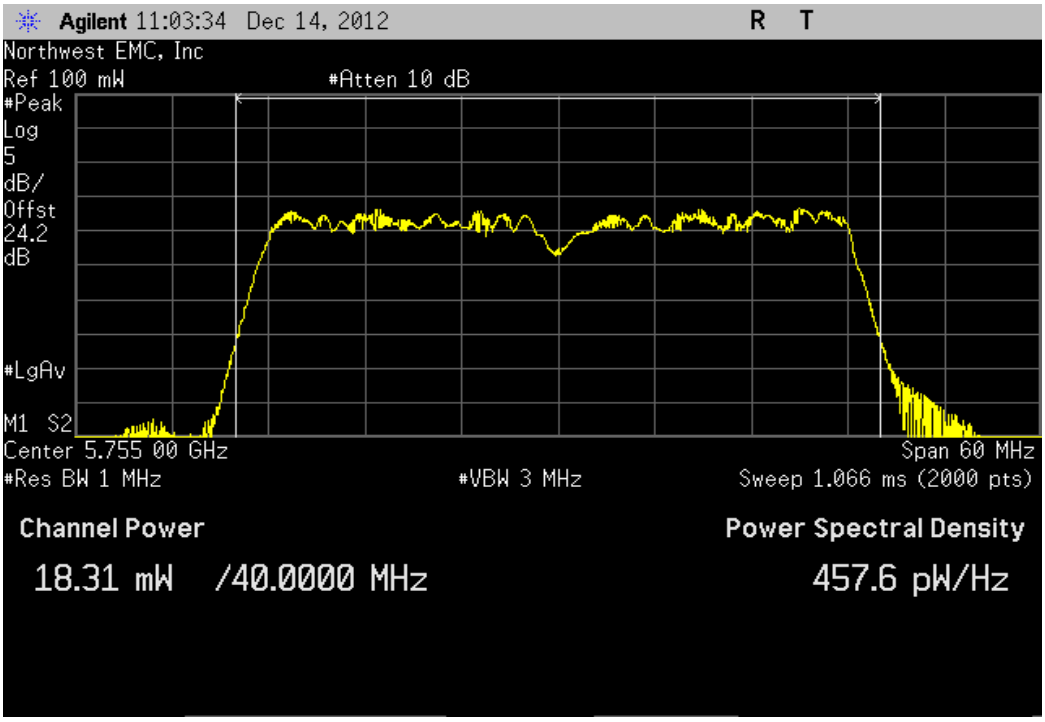
Chain A, 40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, High Channel 7/11, 2452 MHz

				Value	Limit	Result
				24.267 mW	< 1 W	Pass



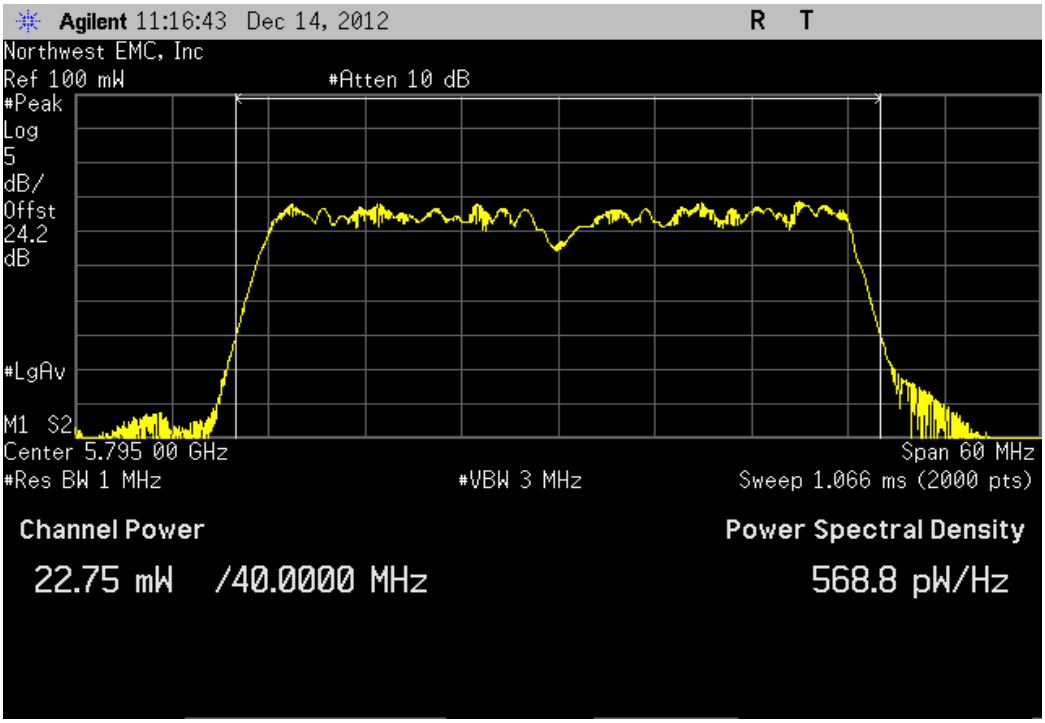
Chain A, 40 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS8, Low Channel 149/153, 5755 MHz

				Value	Limit	Result
				18.306 mW	< 1 W	Pass



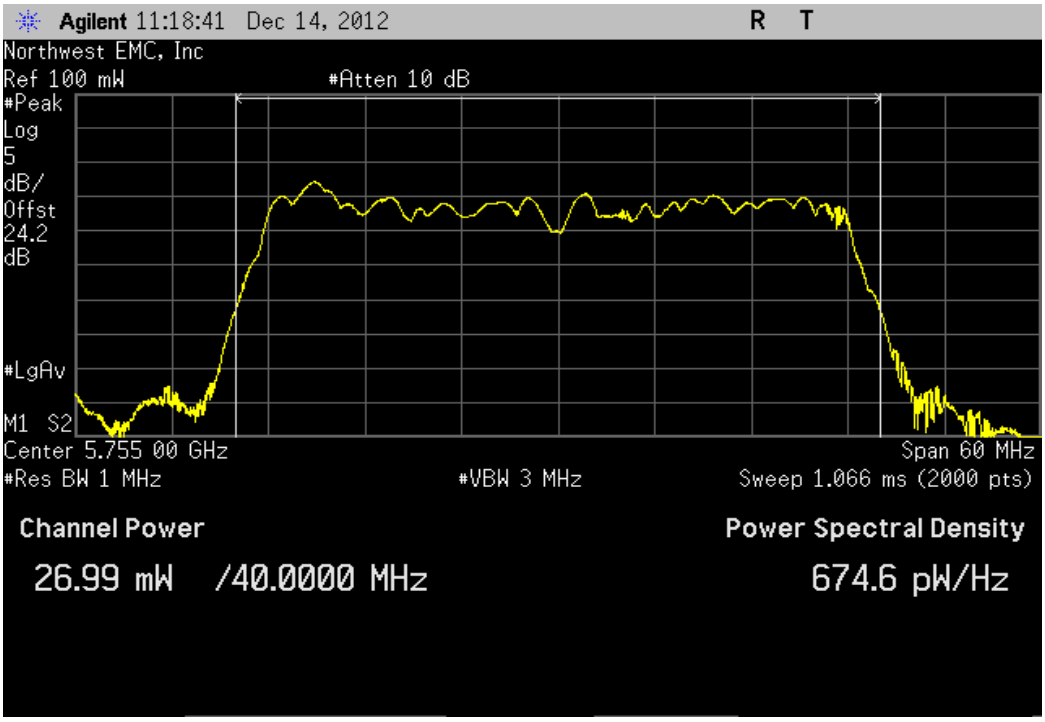
Chain A, 40 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS8, High Channe 157/161, 5795 MHz

				Value	Limit	Result
				22.752 mW	< 1 W	Pass



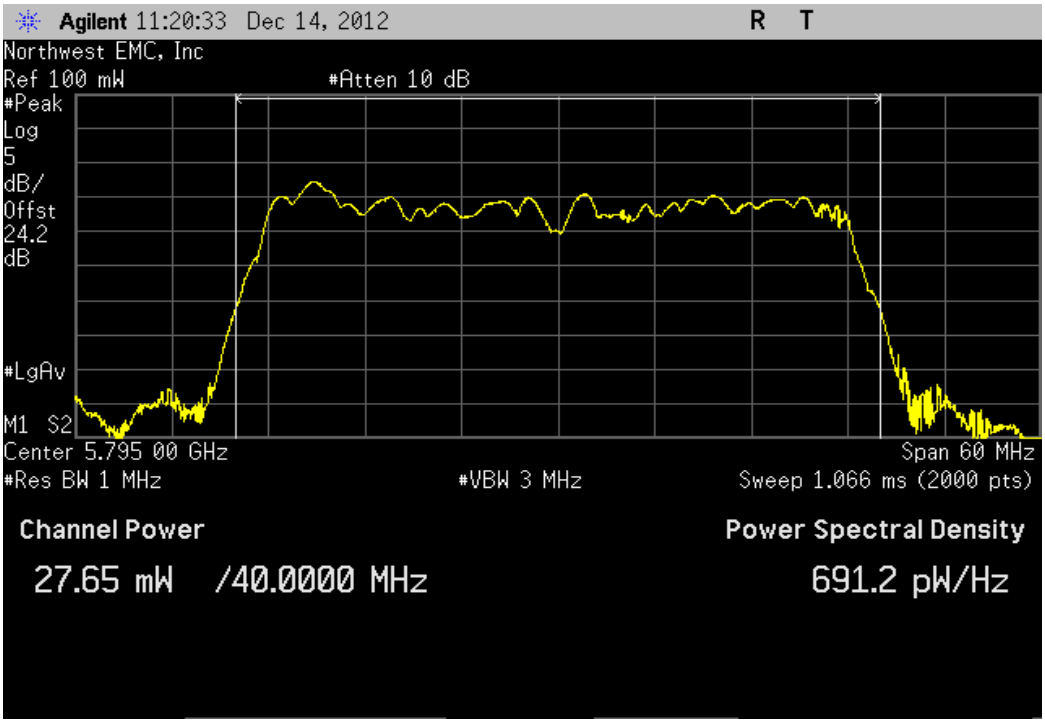
Chain A, 40 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS15, Low Channel 149/153, 5755 MHz

				Value	Limit	Result
				26.985 mW	< 1 W	Pass



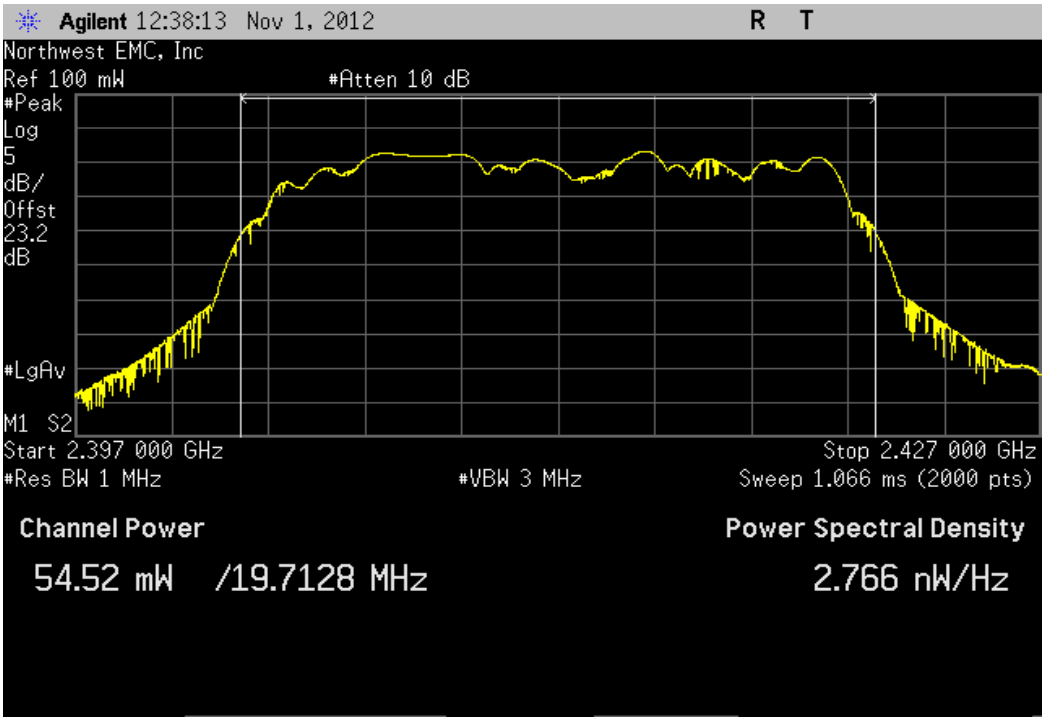
Chain A, 40 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS15, High Channe 157/161, 5795 MHz

				Value	Limit	Result
				27.65 mW	< 1 W	Pass



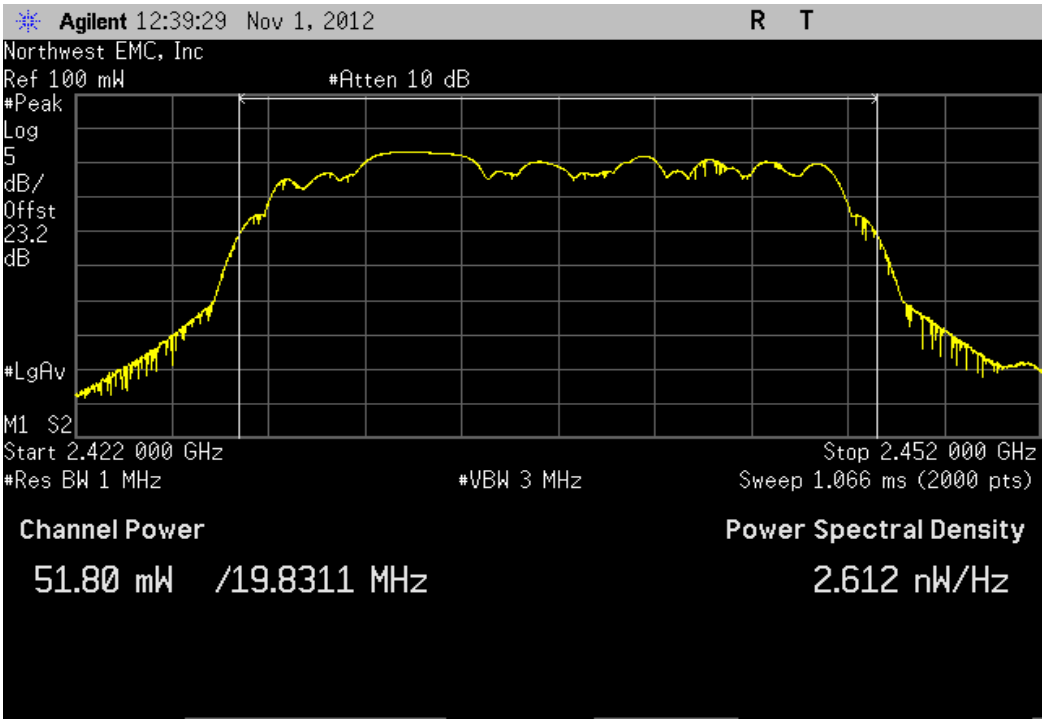
Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, Low Channel 1, 2412 MHz

				Value	Limit	Result
				54.521 mW	< 1 W	Pass



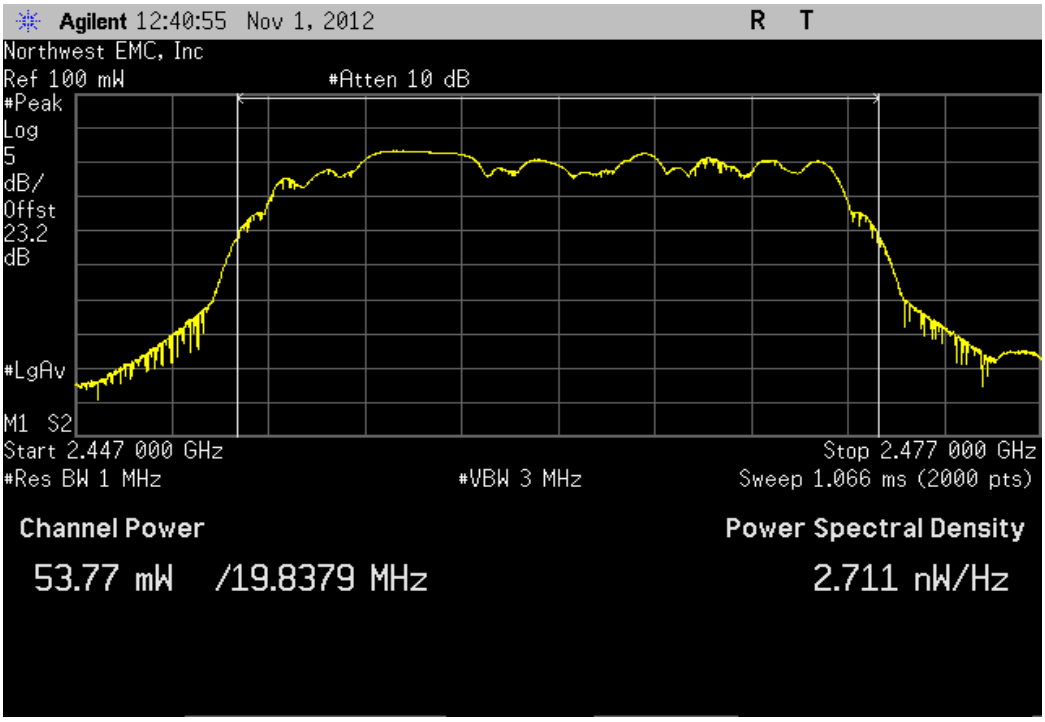
Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, Mid Channel 6, 2437 MHz

				Value	Limit	Result
				51.8 mW	< 1 W	Pass



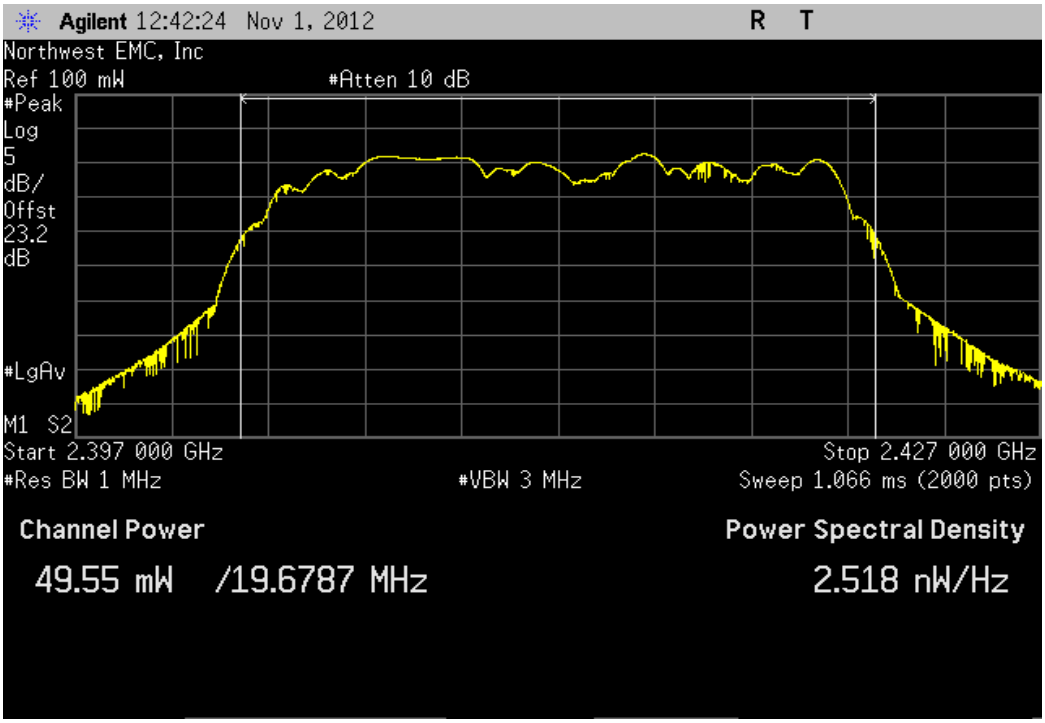
Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, High Channel 11, 2462 MHz

				Value	Limit	Result
				53.774 mW	< 1 W	Pass



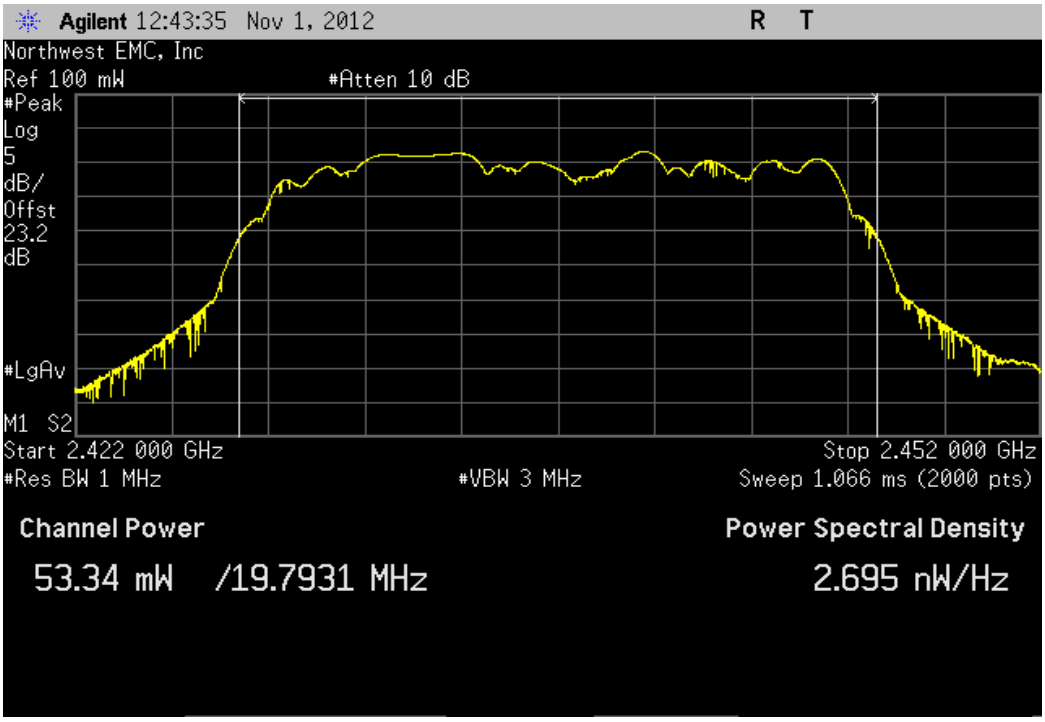
Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, Low Channel 1, 2412 MHz

				Value	Limit	Result
				49.546 mW	< 1 W	Pass



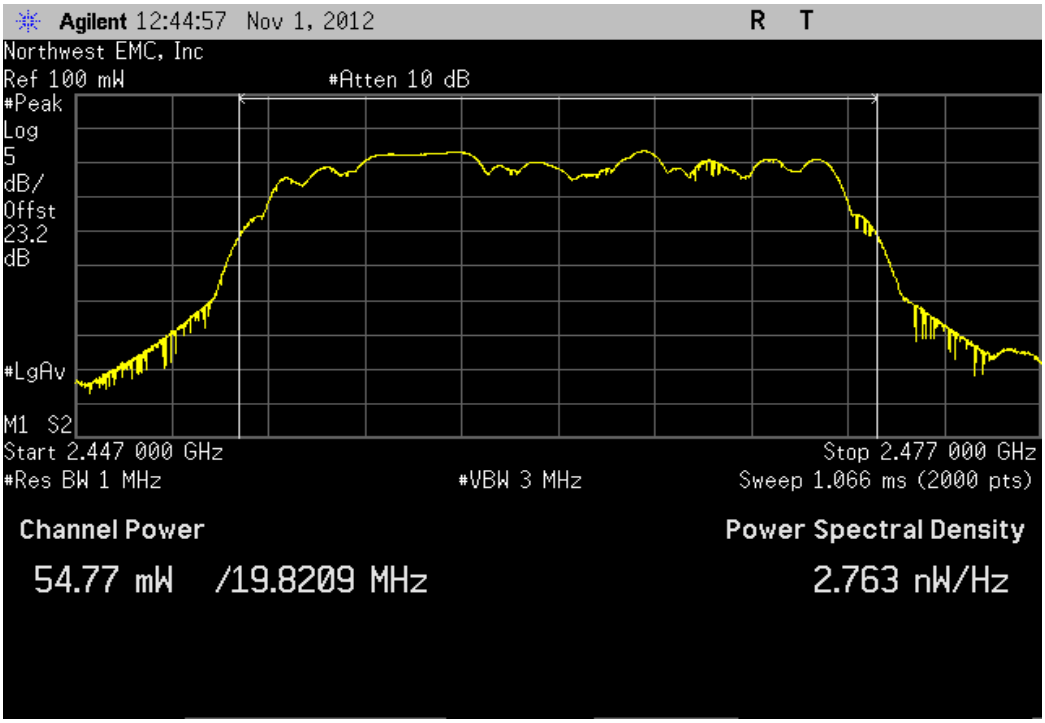
Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, Mid Channel 6, 2437 MHz

				Value	Limit	Result
				53.344 mW	< 1 W	Pass



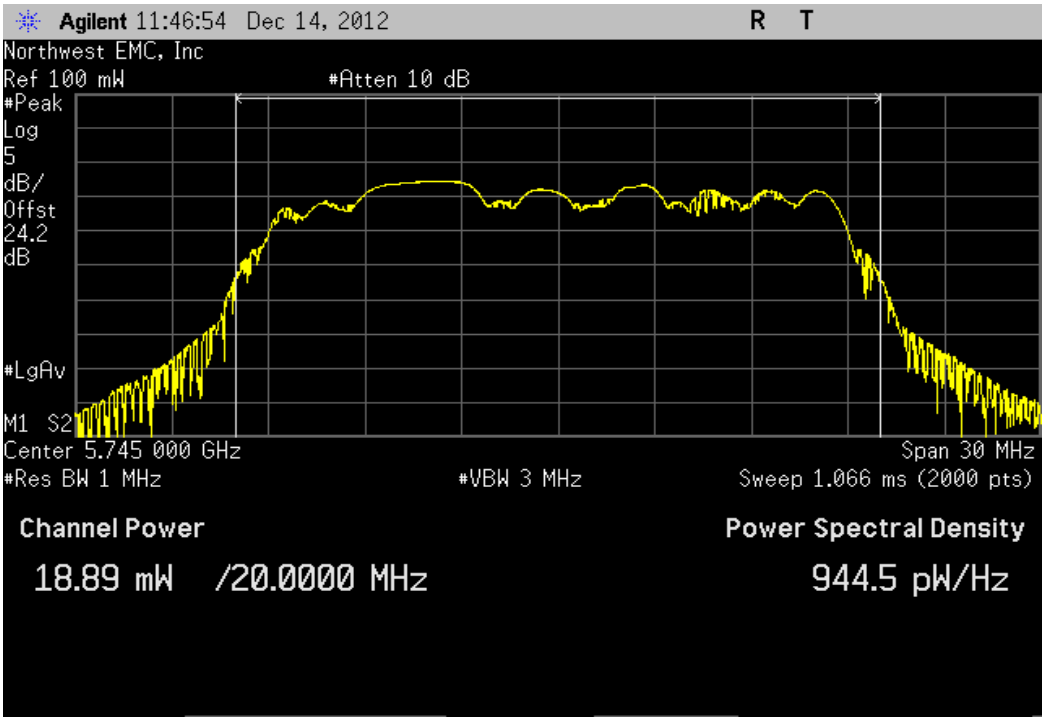
Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, High Channel 11, 2462 MHz

				Value	Limit	Result
				54.769 mW	< 1 W	Pass



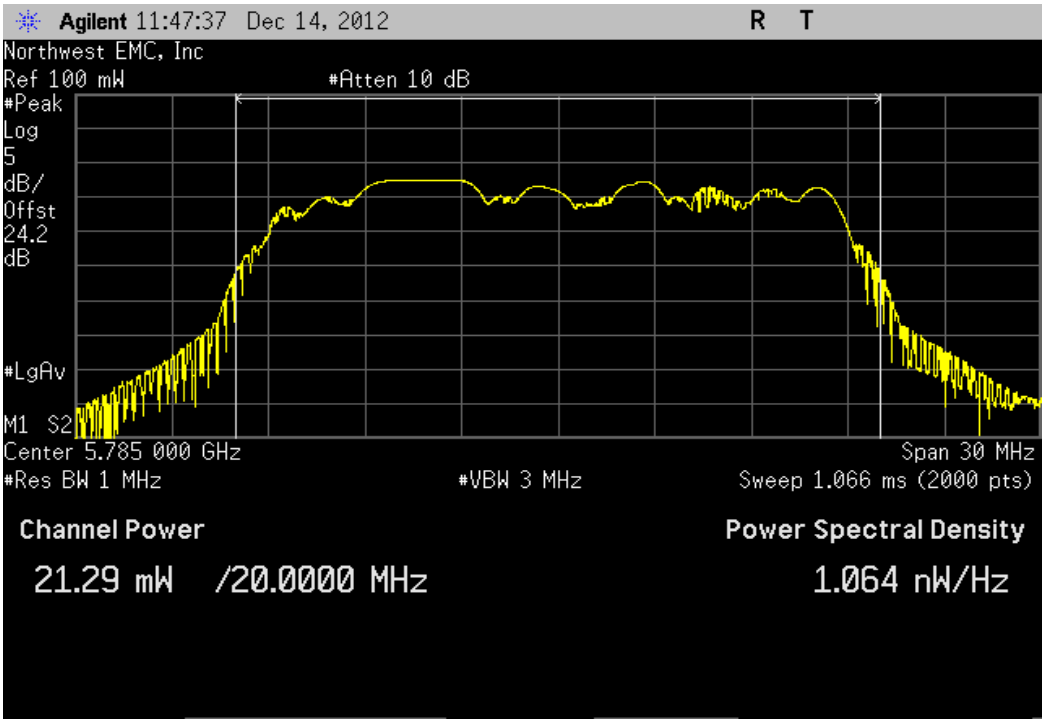
Chain B, 20 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS8, Low Channel 149, 5745 MHz

				Value	Limit	Result
				18.889 mW	< 1 W	Pass



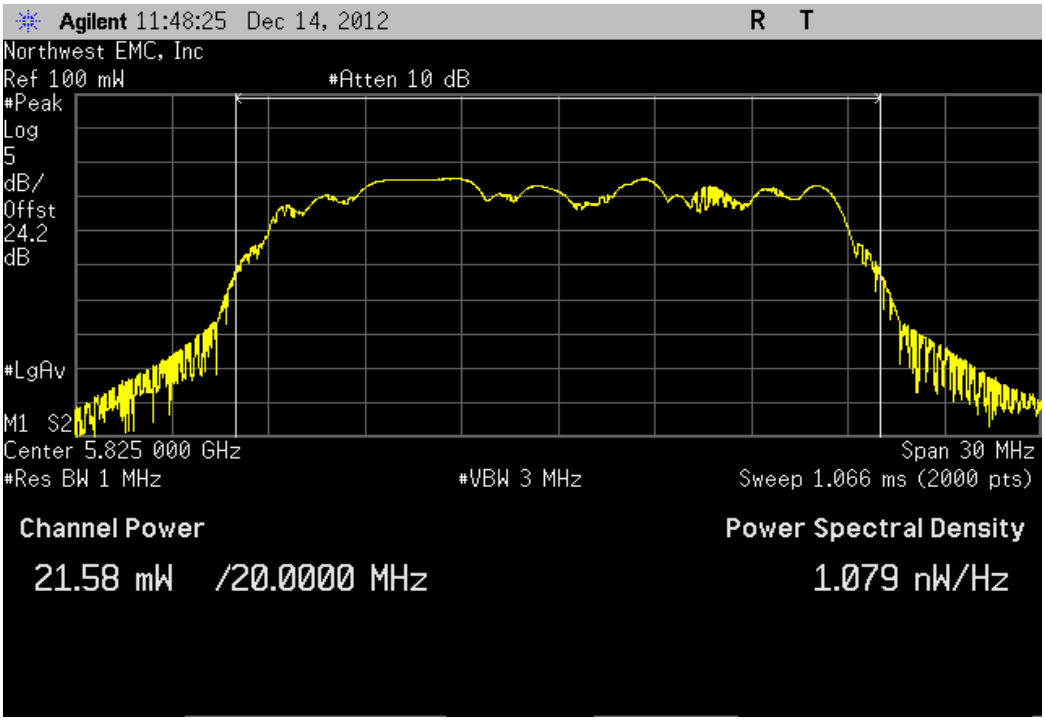
Chain B, 20 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS8, Mid Channel 157, 5785 MHz

				Value	Limit	Result
				21.286 mW	< 1 W	Pass



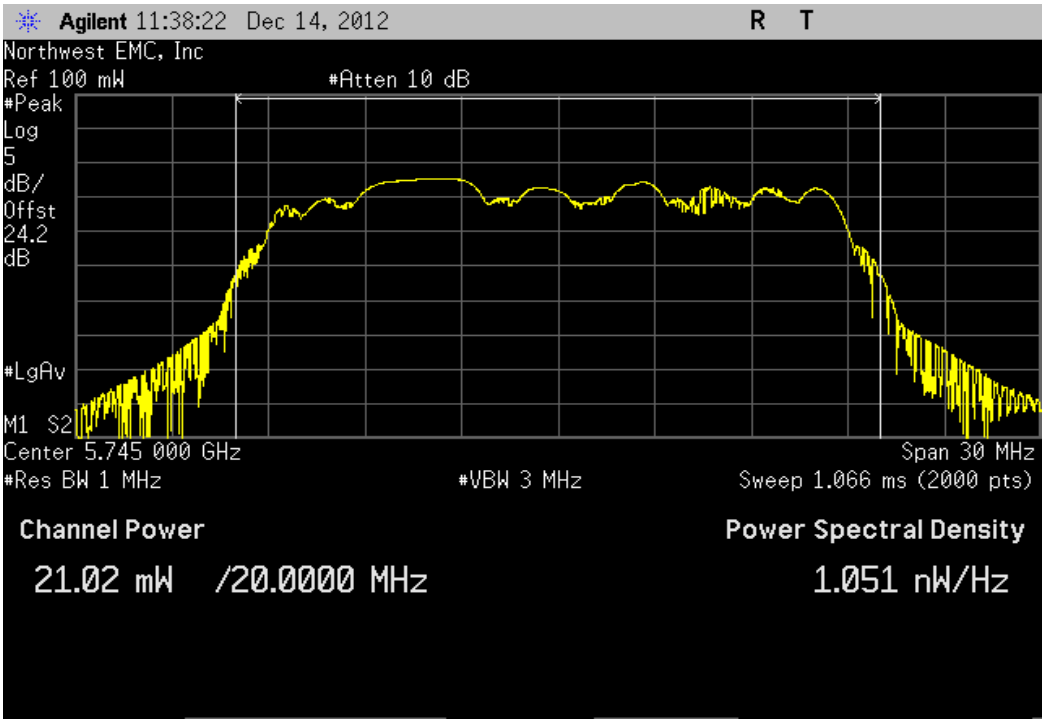
Chain B, 20 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS8, High Channel 165, 5825 MHz

				Value	Limit	Result
				21.58 mW	< 1 W	Pass



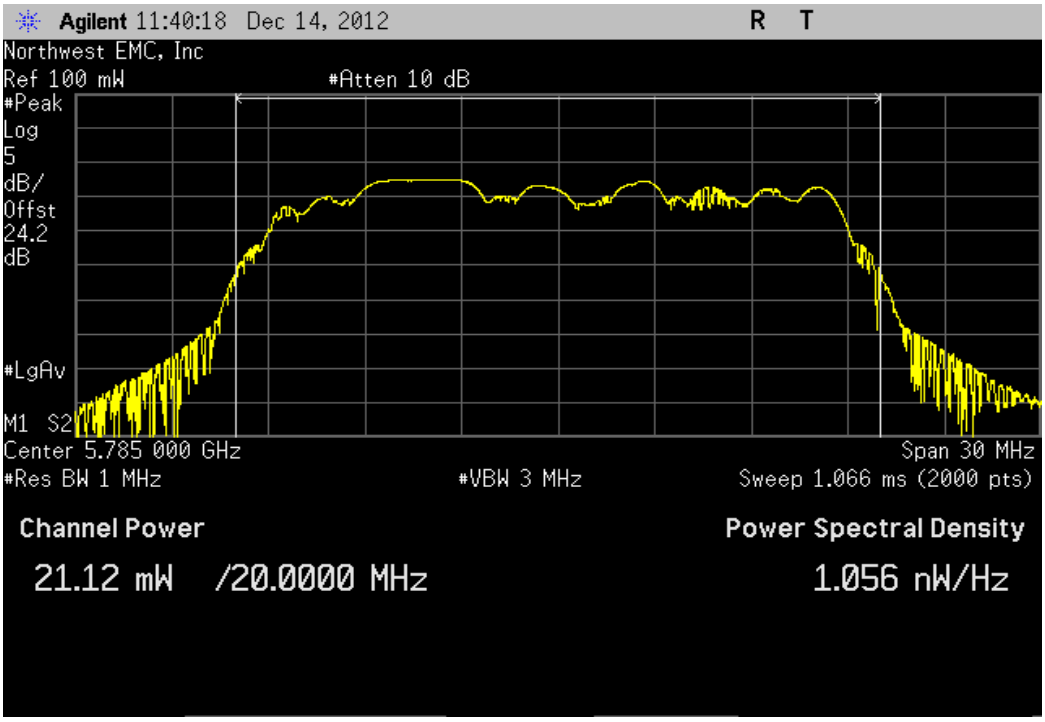
Chain B, 20 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS15, Low Channel 149, 5745 MHz

				Value	Limit	Result
				21.018 mW	< 1 W	Pass



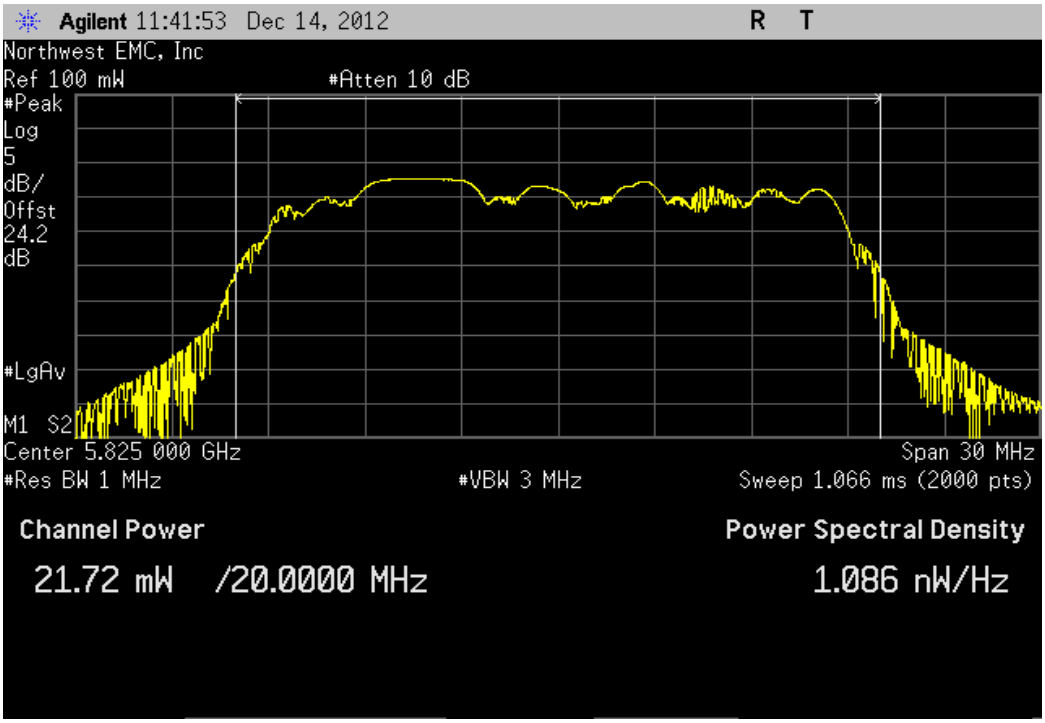
Chain B, 20 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS15, Mid Channel 157, 5785 MHz

				Value	Limit	Result
				21.121 mW	< 1 W	Pass



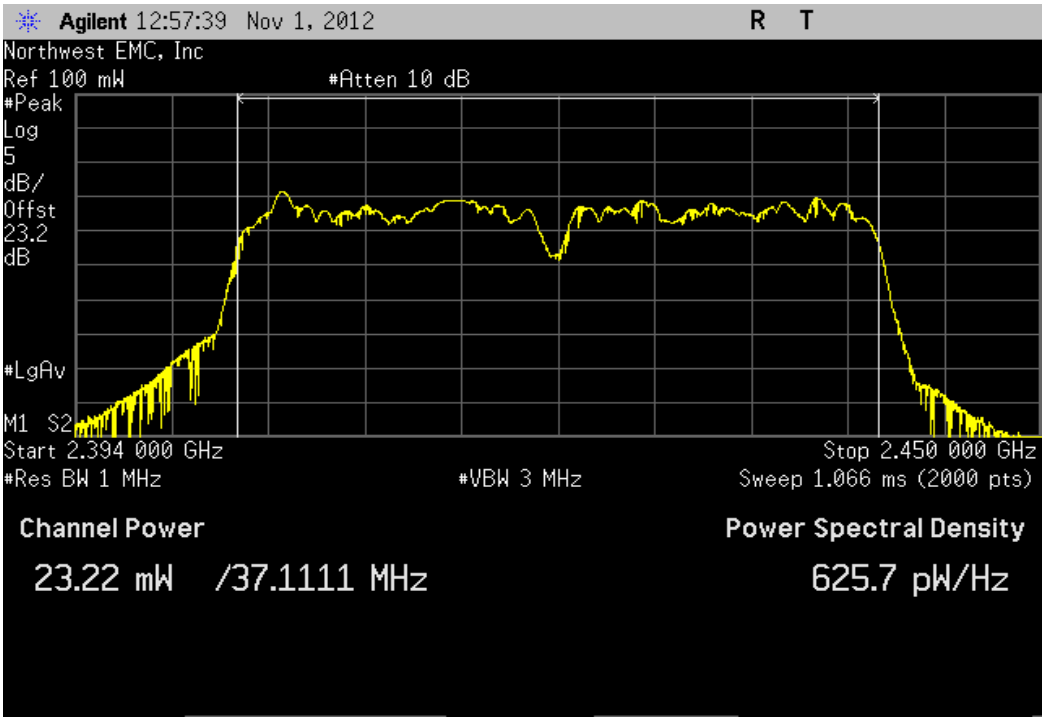
Chain B, 20 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS15, High Channel 165, 5825 MHz

				Value	Limit	Result
				21.717 mW	< 1 W	Pass



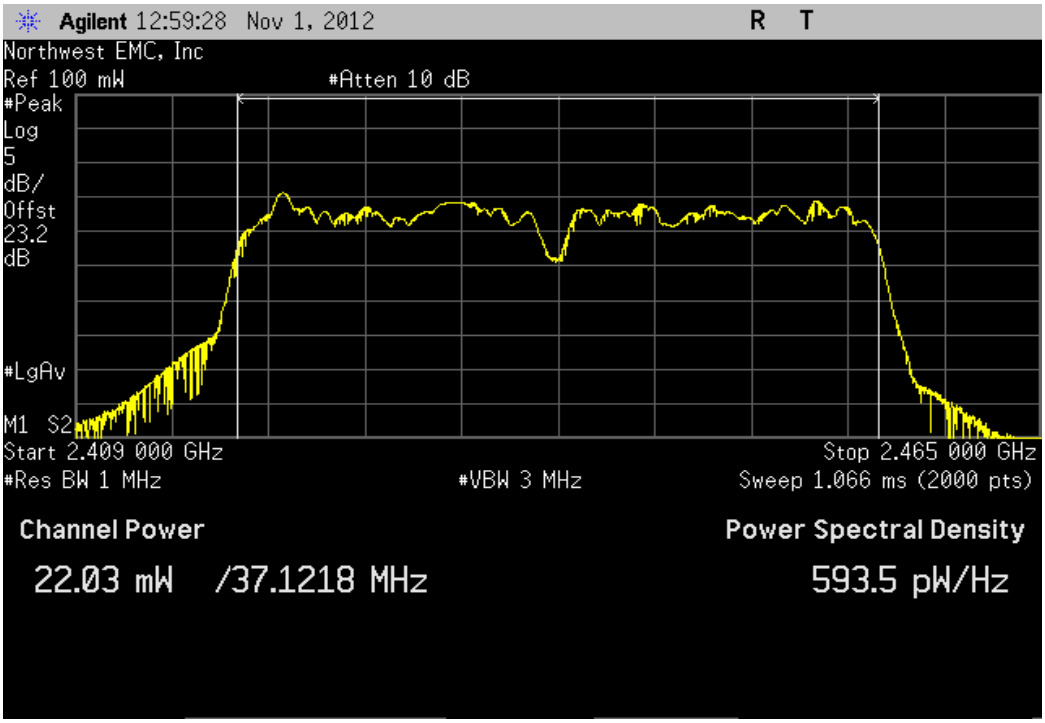
Chain B, 40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, Low Channel 1/5, 2422 MHz

				Value	Limit	Result
				23.221 mW	< 1 W	Pass



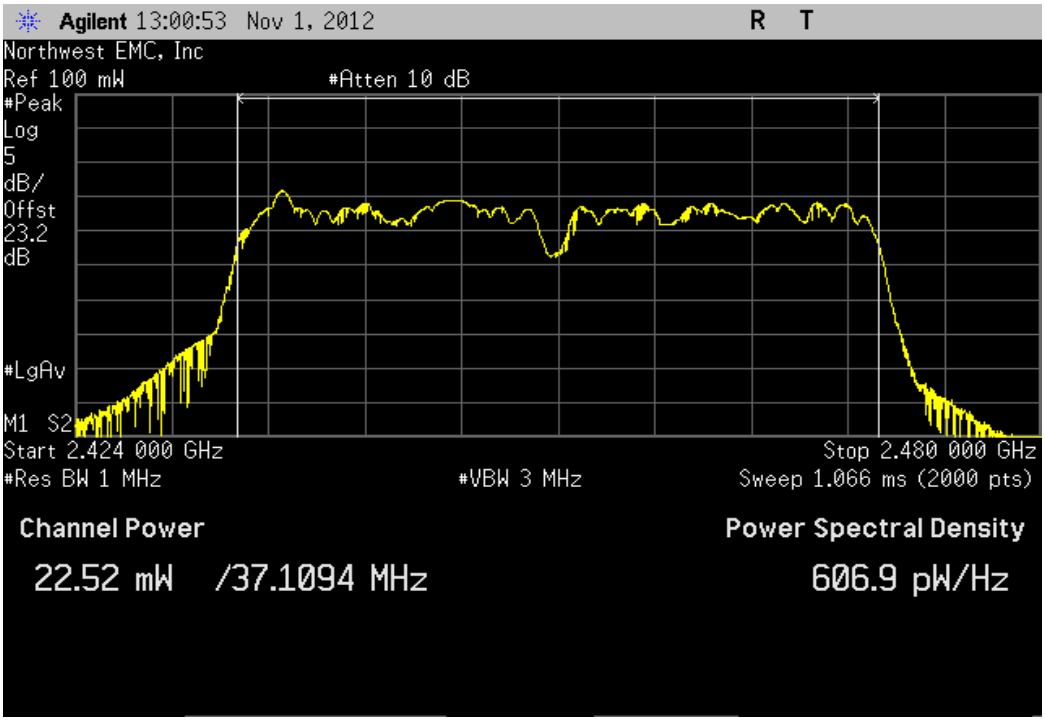
Chain B, 40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, Mid Channel 6, 2437 MHz

				Value	Limit	Result
				22.032 mW	< 1 W	Pass



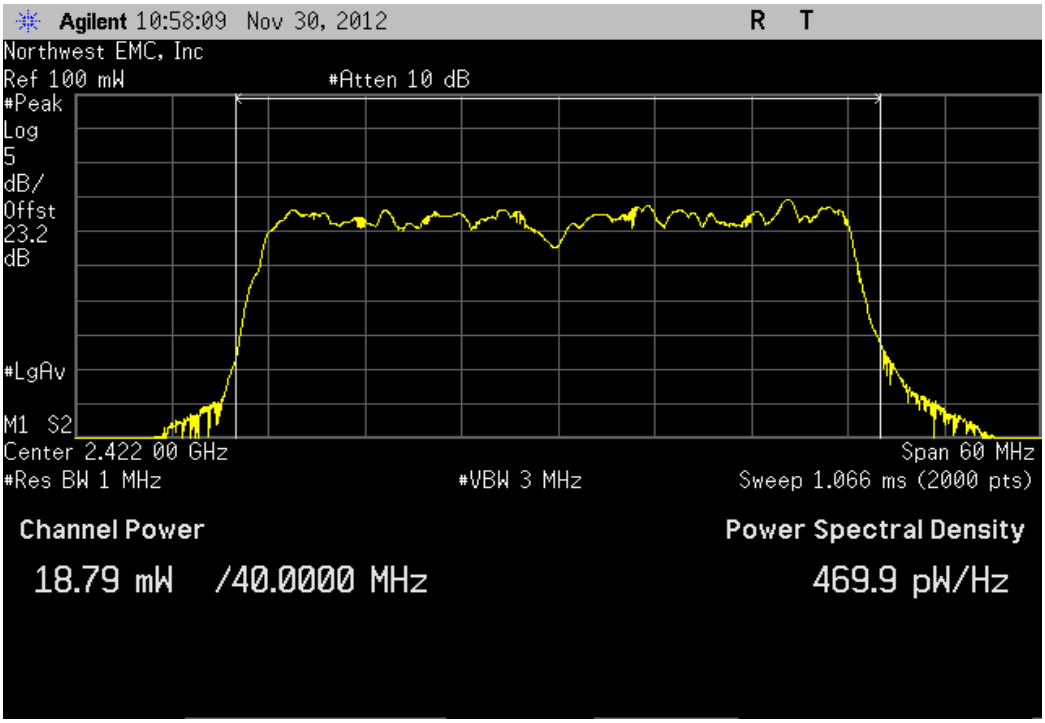
Chain B, 40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, High Channel 7/11, 2452 MHz

				Value	Limit	Result
				22.521 mW	< 1 W	Pass



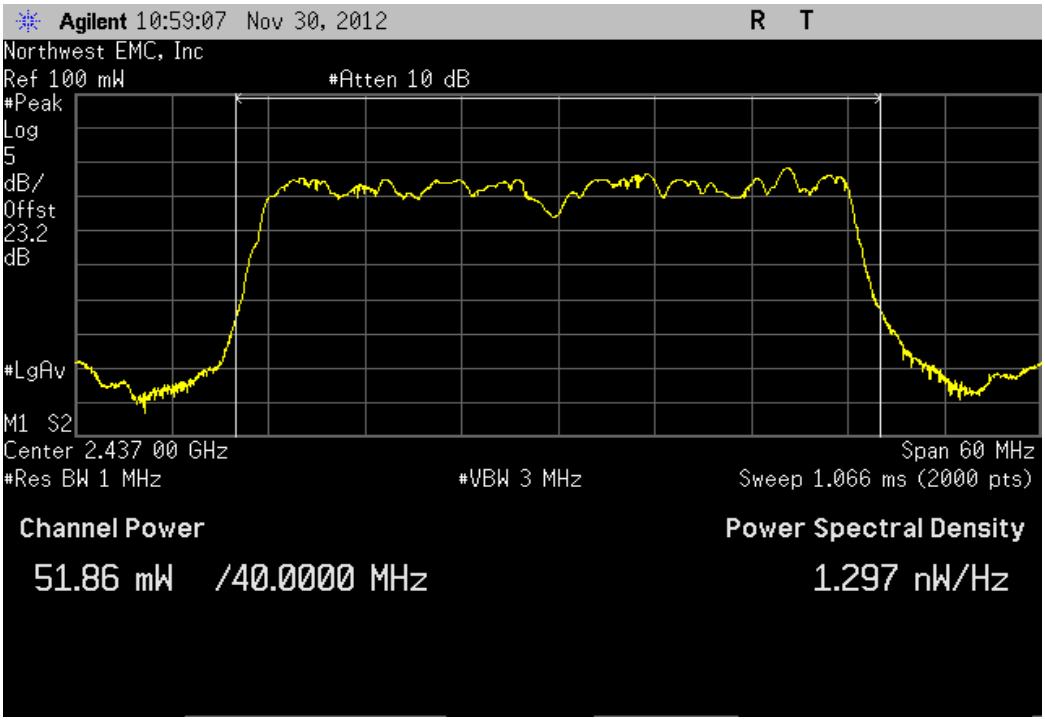
Chain B, 40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, Low Channel 1/5, 2422 MHz

				Value	Limit	Result
				18.795 mW	< 1 W	Pass



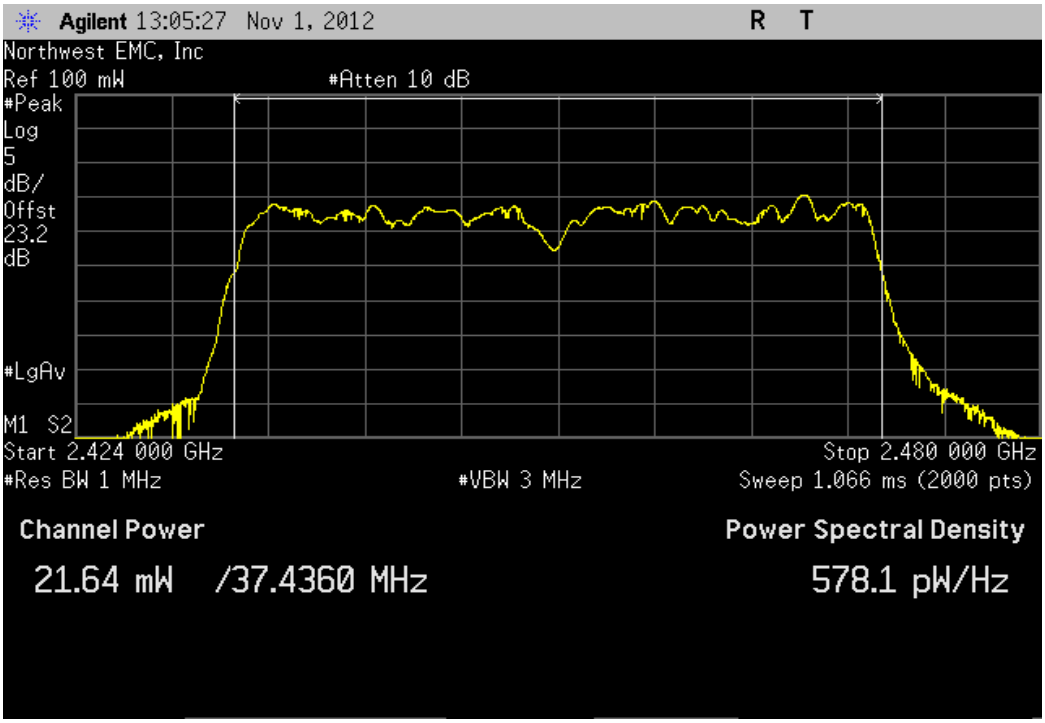
Chain B, 40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, Mid Channel 6, 2437 MHz

				Value	Limit	Result
				51.861 mW	< 1 W	Pass



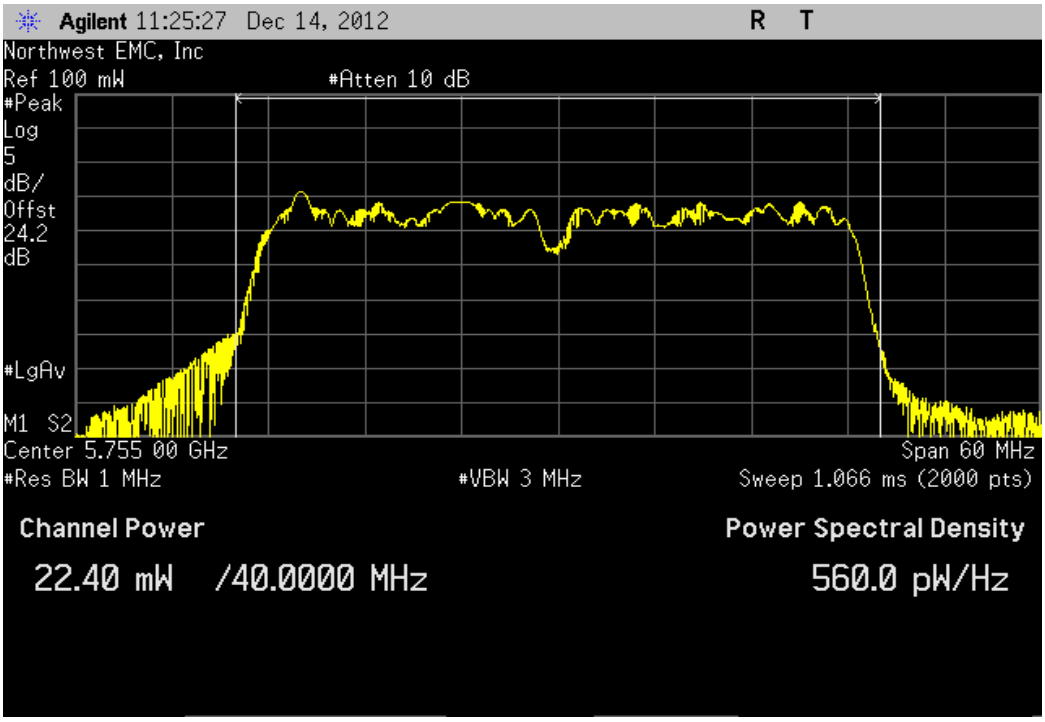
Chain B, 40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, High Channel 7/11, 2452 MHz

				Value	Limit	Result
				21.64 mW	< 1 W	Pass



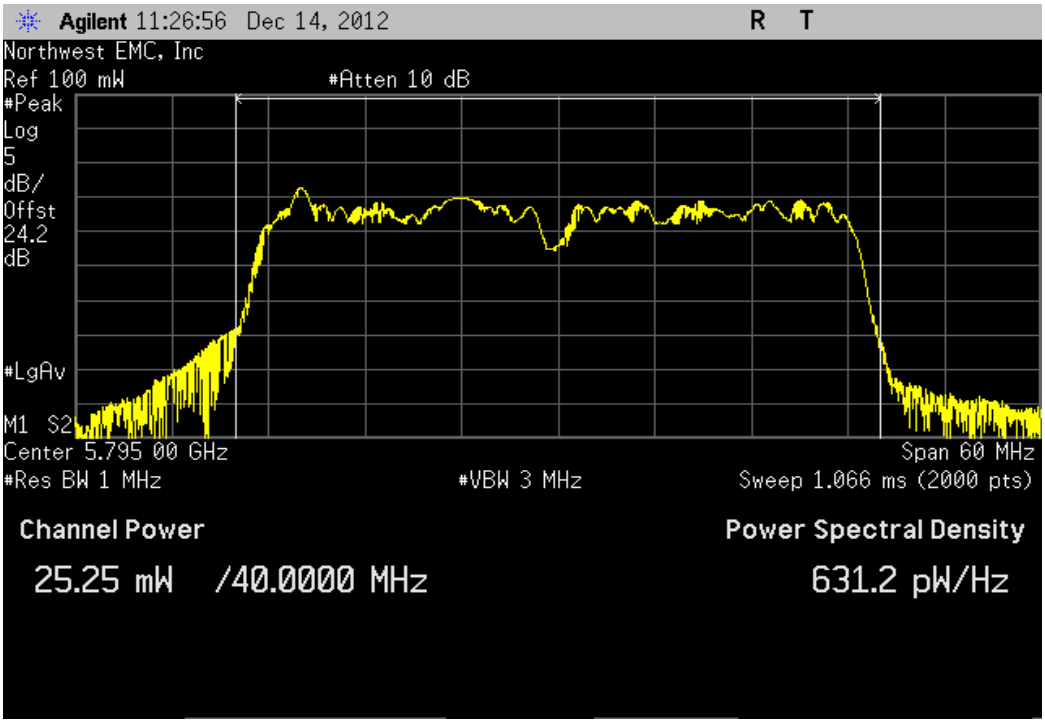
Chain B, 40 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS8, Low Channel 149/153, 5755 MHz

				Value	Limit	Result
				22.401 mW	< 1 W	Pass



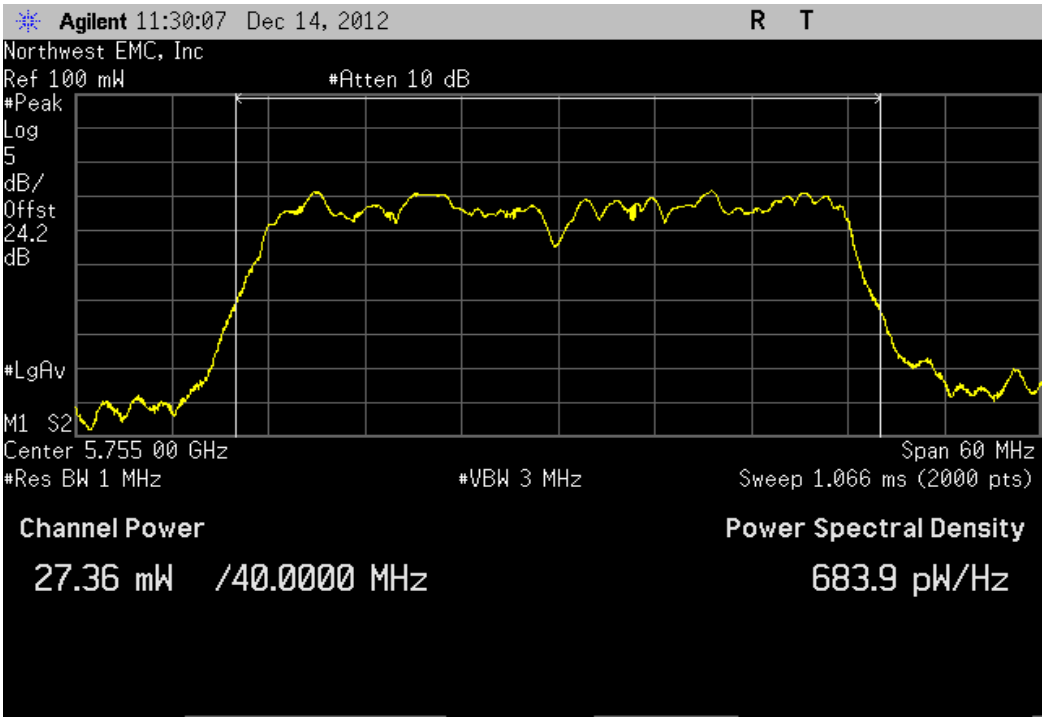
Chain B, 40 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS8, High Channe 157/161, 5795 MHz

				Value	Limit	Result
				25.248 mW	< 1 W	Pass



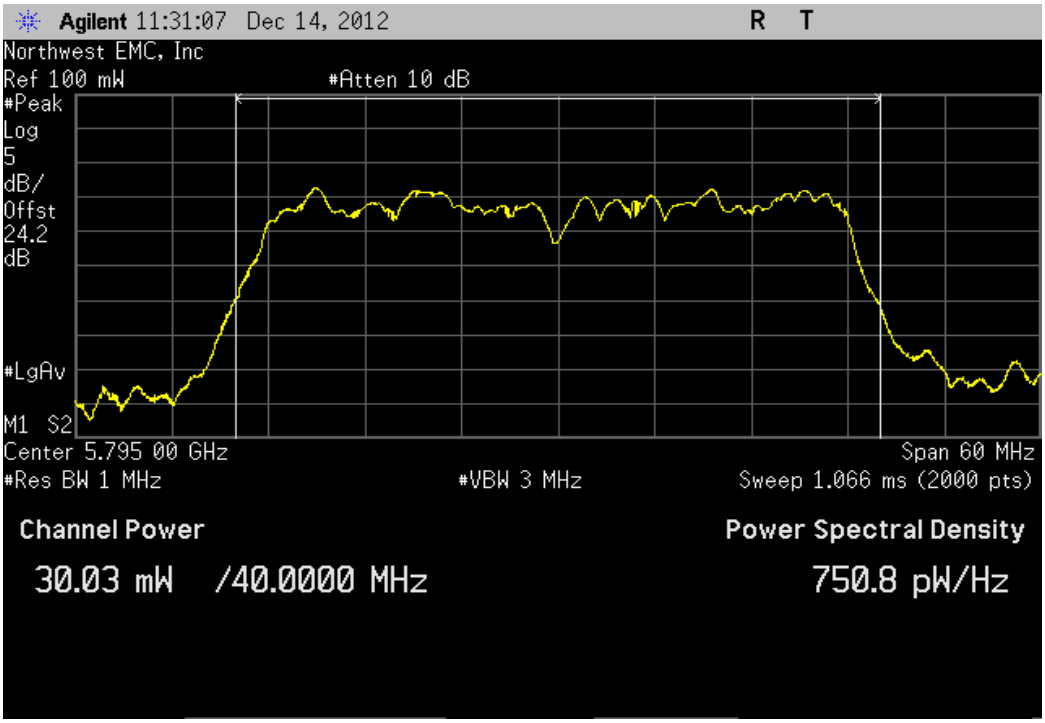
Chain B, 40 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS15, Low Channel 149/153, 5755 MHz

				Value	Limit	Result
				27.357 mW	< 1 W	Pass



Chain B, 40 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS15, High Channe 157/161, 5795 MHz

				Value	Limit	Result
				30.031 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
40GHz DC Block	Miteq	DCB4000	AMD	6/25/2012	12
Attenuator 20 dB, SMA M/F 26GHz	S.M. Electronics	SA26B-20	AUY	8/2/2012	12
Power Meter	Gigatronics	8651A	SPM	1/9/2012	24
MXG Vector Signal Generator	Agilent	N5182A	TIF	NCR	0
Attenuator, 'Precision N'	S.M. Electronics	SA18N-06/SM4032	REE	12/15/2011	12
Power Sensor	Gigatronics	80701A	SPL	7/8/2011	24
Spectrum Analyzer	Agilent	E4440A	AFD	7/5/2012	12
EV06 Direct Connect Cable	ESM Cable Corp.	TT	ECA	NCR	0

TEST DESCRIPTION

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

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

Please refer to the Power Table located elsewhere in this report for radio power operating level during testing.

The EUT is transmitting on Antenna Port A only.

Band Edge Compliance

EUT:	1514			**Work Order:**	MCSO1638
Serial Number:	000109423753			**Date:**	11/02/12
Customer:	Microsoft Corporation			**Temperature:**	22.3°C
Attendees:	None			**Humidity:**	52%
Project:	None			**Barometric Pres.:**	1013
Tested by:	Brandon Hobbs Rod Peloquin Sabrina Sanders	**Power:**	110VAC/60Hz	**Job Site:**	EV06

TEST SPECIFICATIONS	Test Method
FCC 15.247:2012	ANSI C63.10:2009

COMMENTS

The EUT is operating at 100% duty cycle. All cable losses for 2.4GHz and 5.0GHz bands are accounted for in the analyzer offset calculations. Testing was completed using the modulation that produced the highes conducted output power for b, g and n modes

DEVIATIONS FROM TEST STANDARD

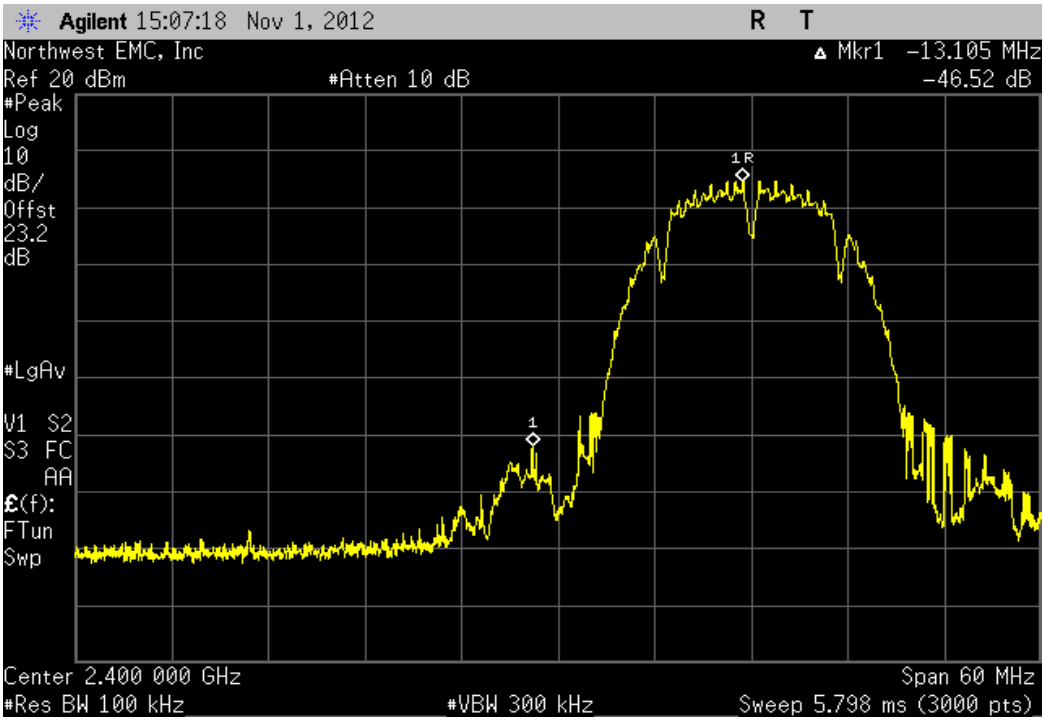
None

Configuration #	1	Signature

	Value	Limit	Result
20 MHz			
2400 MHz - 2483.5 MHz Band			
802.11(b) 1 Mbps			
Low Channel 1, 2412 MHz	-46.52 dBc	≤ -20 dBc	Pass
High Channel 11, 2462 MHz	-62.9 dBc	≤ -20 dBc	Pass
802.11(g) 6 Mbps			
Low Channel 1, 2412 MHz	-35.7 dBc	≤ -20 dBc	Pass
High Channel 11, 2462 MHz	-49.6 dBc	≤ -20 dBc	Pass
802.11(n) MCS7			
Low Channel 1, 2412 MHz	-36.11 dBc	≤ -20 dBc	Pass
High Channel 11, 2462 MHz	-47.33 dBc	≤ -20 dBc	Pass
5725 MHz - 5850 MHz Band			
802.11(a) 6 Mbps			
Low Channel 149, 5745 MHz	-45.66 dBc	≤ -20 dBc	Pass
High Channel 165, 5825 MHz	-53.02 dBc	≤ -20 dBc	Pass
802.11(n) MCS7 - UNII			
Low Channel 149, 5745 MHz	-44.43 dBc	≤ -20 dBc	Pass
High Channel 165, 5825 MHz	-52.55 dBc	≤ -20 dBc	Pass

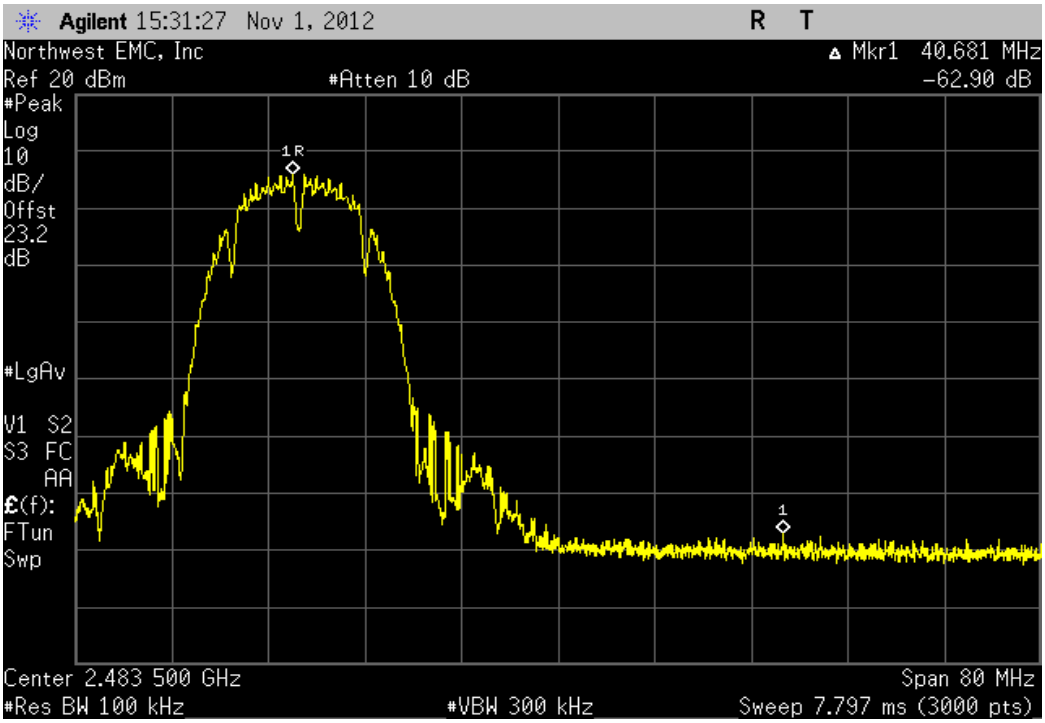
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(b) 1 Mbps, Low Channel 1, 2412 MHz

Value	Limit	Result
-46.52 dBc	≤ -20 dBc	Pass



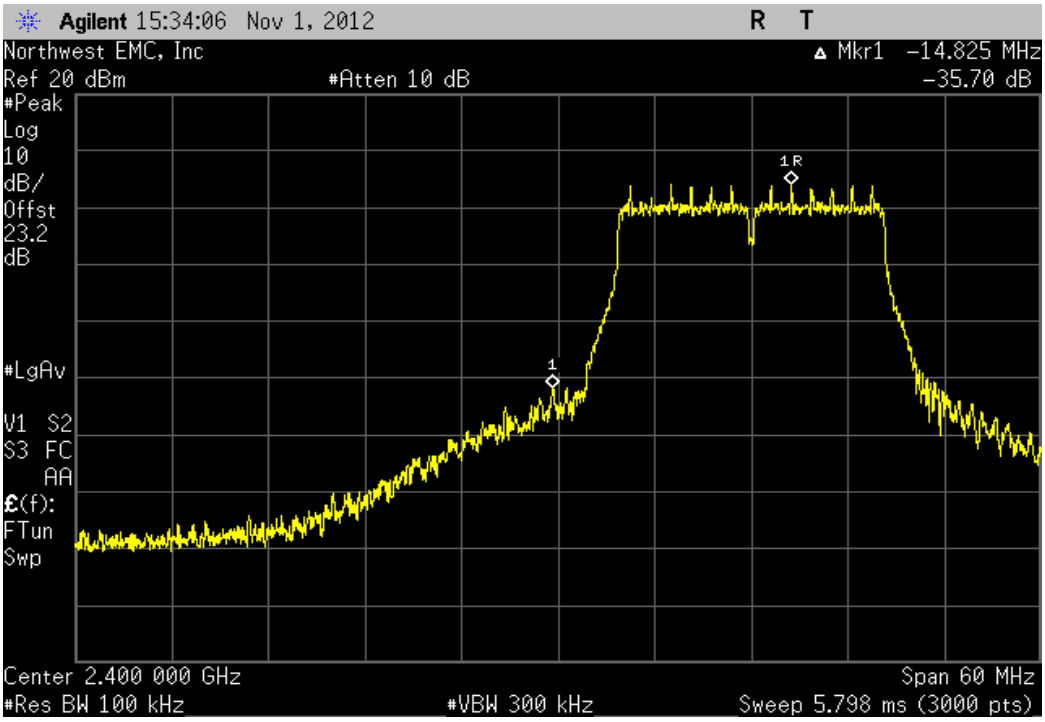
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(b) 1 Mbps, High Channel 11, 2462 MHz

Value	Limit	Result
-62.9 dBc	≤ -20 dBc	Pass



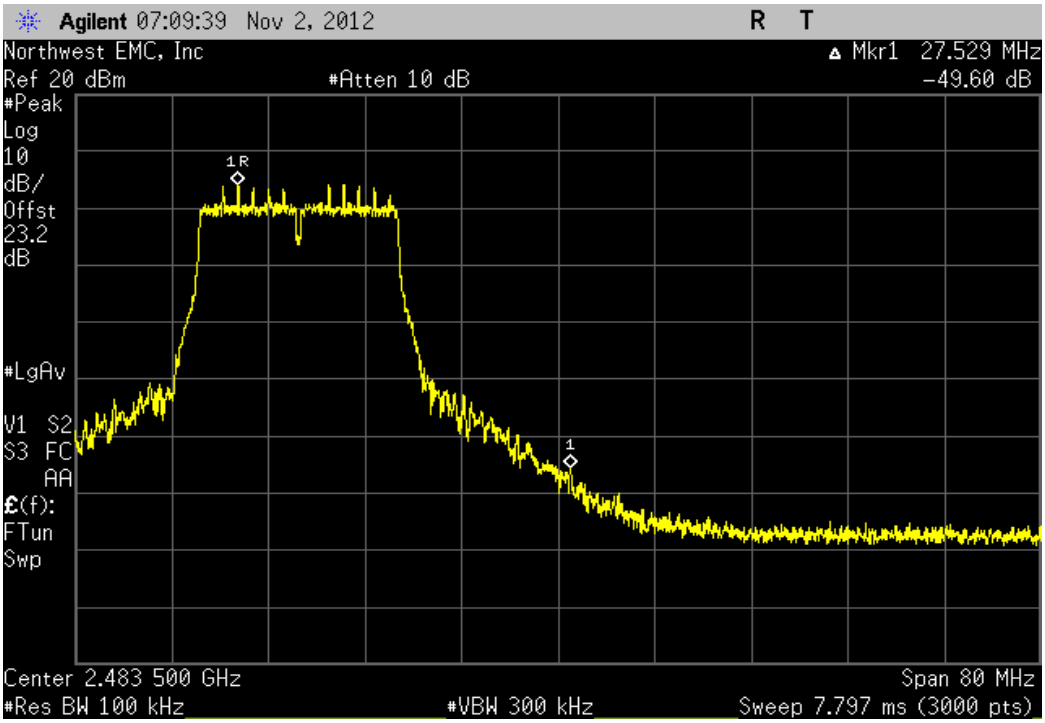
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(g) 6 Mbps, Low Channel 1, 2412 MHz

				Value	Limit	Result
				-35.7 dBc	≤ -20 dBc	Pass



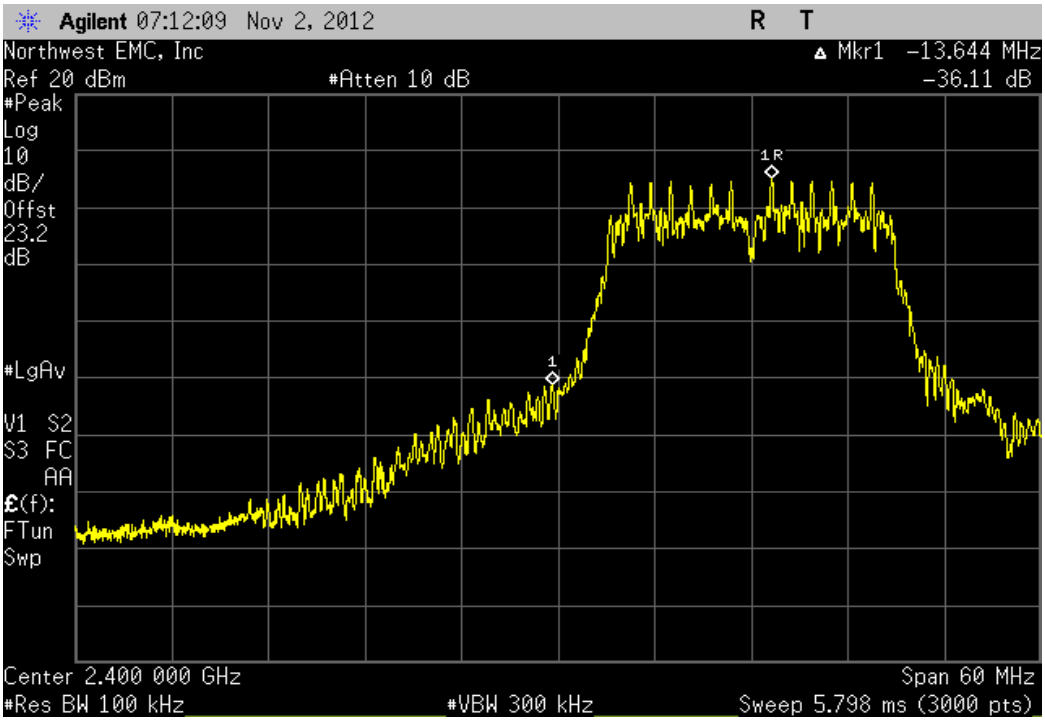
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(g) 6 Mbps, High Channel 11, 2462 MHz

				Value	Limit	Result
				-49.6 dBc	≤ -20 dBc	Pass



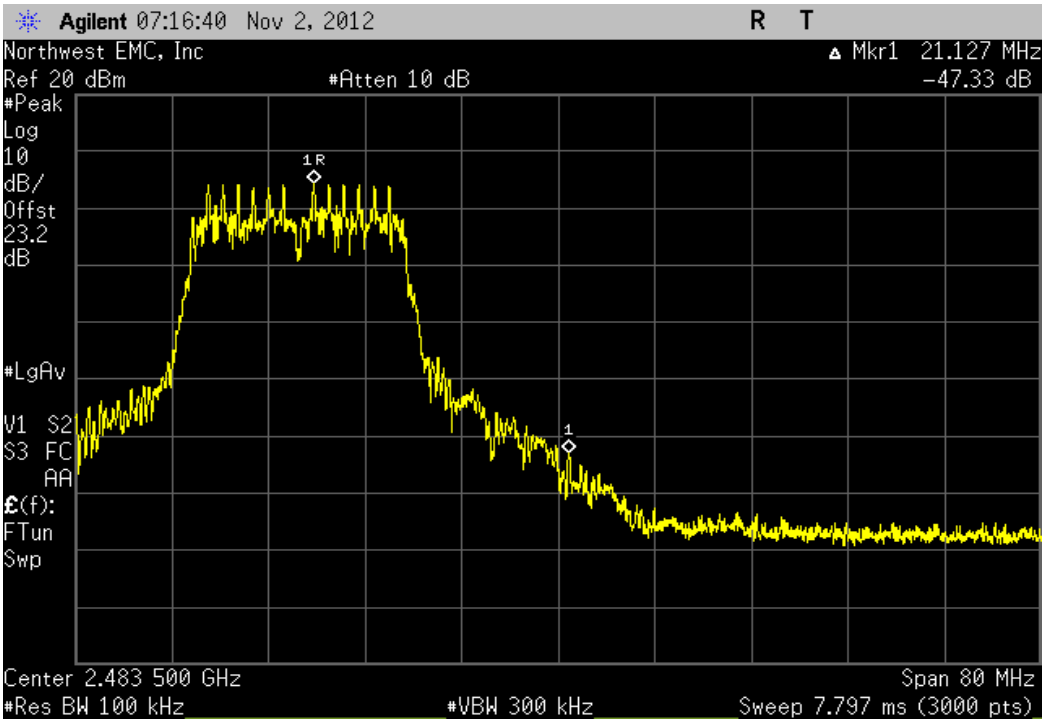
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, Low Channel 1, 2412 MHz

				Value	Limit	Result
				-36.11 dBc	≤ -20 dBc	Pass



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

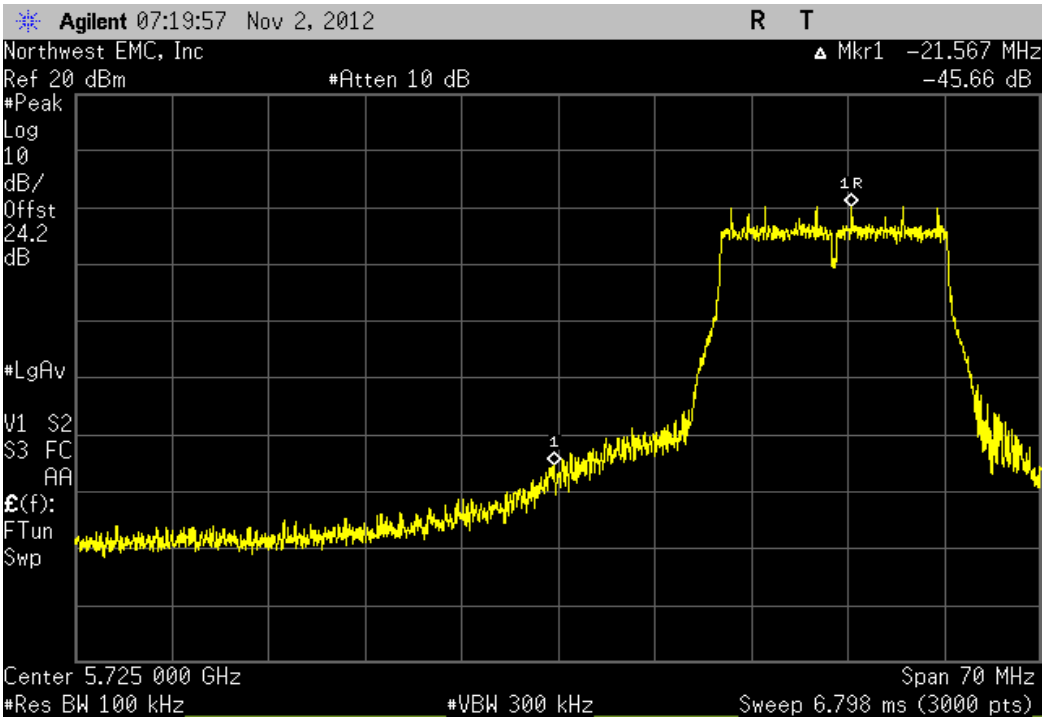
				Value	Limit	Result
				-47.33 dBc	≤ -20 dBc	Pass



Band Edge Compliance

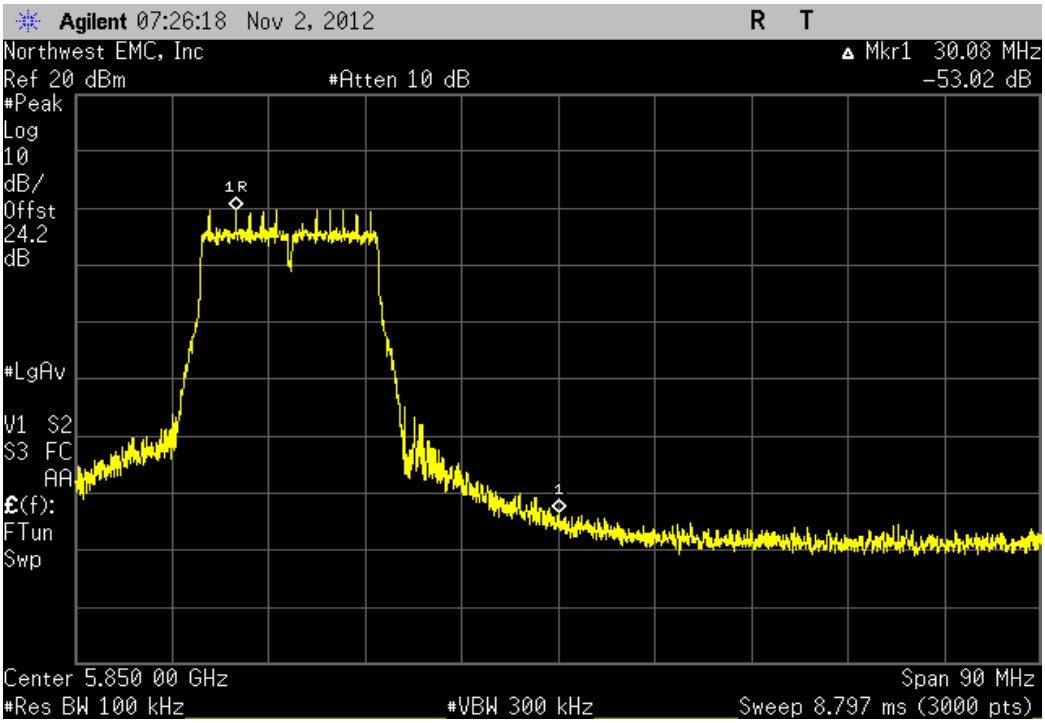
20 MHz, 5725 MHz - 5850 MHz Band, 802.11(a) 6 Mbps, Low Channel 149, 5745 MHz

				Value	Limit	Result
				-45.66 dBc	≤ -20 dBc	Pass



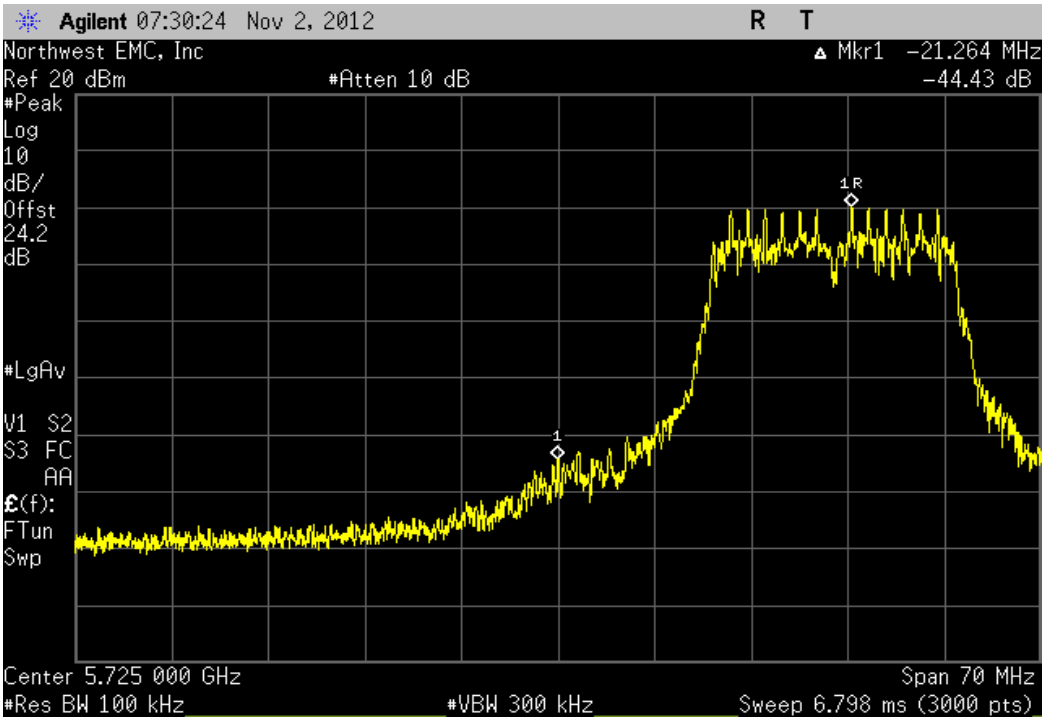
20 MHz, 5725 MHz - 5850 MHz Band, 802.11(a) 6 Mbps, High Channel 165, 5825 MHz

				Value	Limit	Result
				-53.02 dBc	≤ -20 dBc	Pass



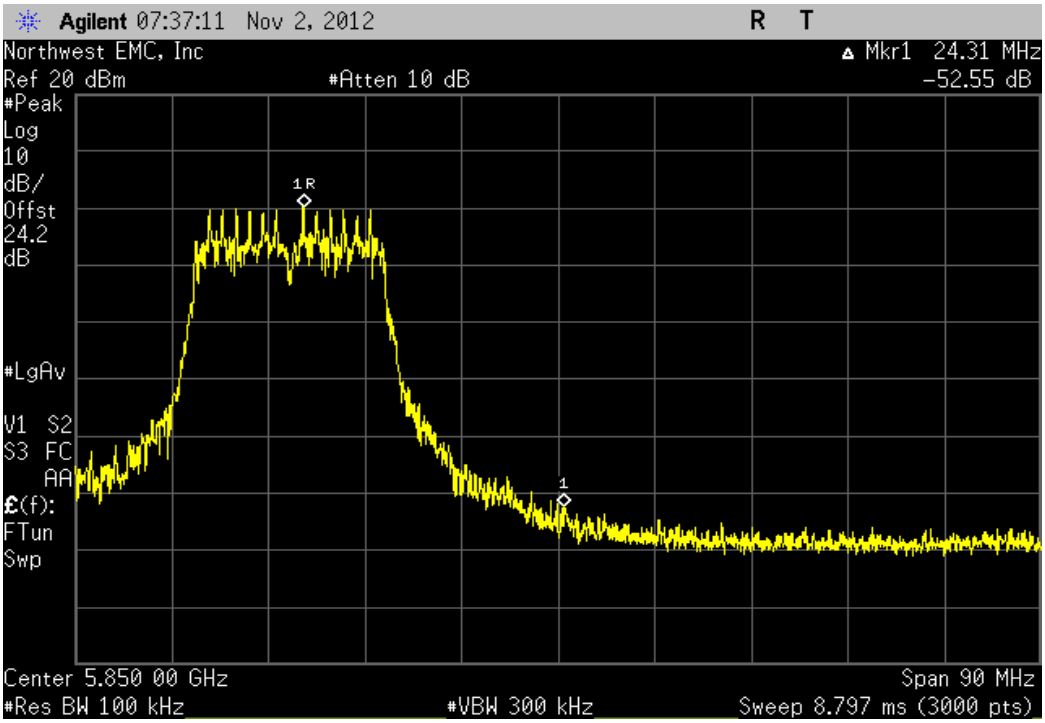
20 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS7 - UNII, Low Channel 149, 5745 MHz

				Value	Limit	Result
				-44.43 dBc	≤ -20 dBc	Pass



20 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS7 - UNII, High Channel 165, 5825 MHz

				Value	Limit	Result
				-52.55 dBc	≤ -20 dBc	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
40GHz DC Block	Miteq	DCB4000	AMD	6/25/2012	12
Attenuator 20 dB, SMA M/F 26GHz	S.M. Electronics	SA26B-20	AUY	8/2/2012	12
Power Meter	Gigatronics	8651A	SPM	1/9/2012	24
MXG Vector Signal Generator	Agilent	N5182A	TIF	NCR	0
Attenuator, 'Precision N'	S.M. Electronics	SA18N-06/SM4032	REE	12/15/2011	12
Power Sensor	Gigatronics	80701A	SPL	7/8/2011	24
Spectrum Analyzer	Agilent	E4440A	AFD	7/5/2012	12
EV06 Direct Connect Cable	ESM Cable Corp.	TT	ECA	NCR	0

TEST DESCRIPTION

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

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

Please refer to the Power Table located elsewhere in this report for radio power operating level during testing

The EUT is operating on antenna port A and B.

Band Edge Compliance

EUT:	1514			**Work Order:**	MCSO1638
Serial Number:	000109423753			**Date:**	11/02/12
Customer:	Microsoft Corporation			**Temperature:**	22.3°C
Attendees:	None			**Humidity:**	52%
Project:	None			**Barometric Pres.:**	1013
Tested by:	Brandon Hobbs Rod Peloquin Sabrina Sanders	**Power:**	110VAC/60Hz	**Job Site:**	EV06

TEST SPECIFICATIONS	Test Method
FCC 15.247:2012	ANSI C63.10:2009

COMMENTS

The EUT is operating at 100% duty cycle. All cable losses for 2.4GHz and 5.0GHz bands are accounted for in the analyzer offset calculations. Testing was completed using the modulation that produced the highest conducted output power for n modes.

DEVIATIONS FROM TEST STANDARD

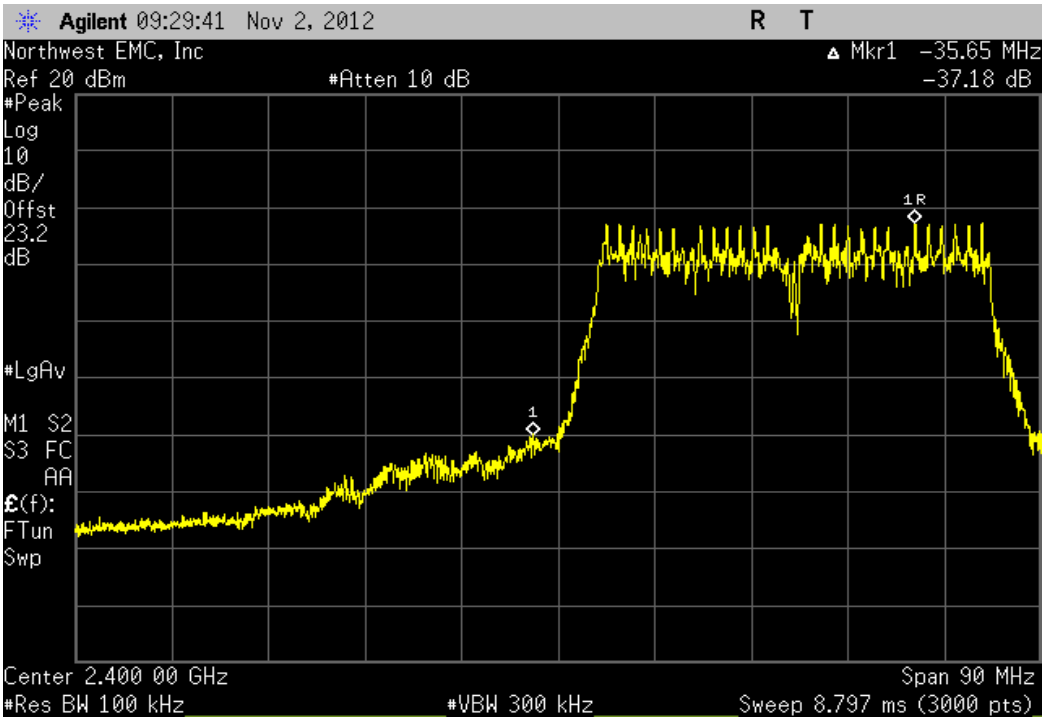
None

Configuration #	1	Signature

			Value	Limit	Result
Chain A					
	40 MHz				
		2400 MHz - 2483.5 MHz Band			
		802.11(n) MCS15			
		Low Channel 2, 2422 MHz	-37.18 dBc	≤ -20 dBc	Pass
		High Channel 9, 2452 MHz	-43.28 dBc	≤ -20 dBc	Pass
		5725 MHz - 5850 MHz Band			
		802.11(n) MCS15			
		Low Channel 151, 5755 MHz	-36.11 dBc	≤ -20 dBc	Pass
		High Channel 159, 5795 MHz	-52.07 dBc	≤ -20 dBc	Pass
Chain B					
	20 MHz				
		2400 MHz - 2483.5 MHz Band			
		802.11(n) MCS15			
		Low Channel 1, 2412 MHz	-37.03 dBc	≤ -20 dBc	Pass
		High Channel 11, 2462 MHz	-50.53 dBc	≤ -20 dBc	Pass
		5725 MHz - 5850 MHz Band			
		802.11(n) MCS15			
		Low Channel 149, 5745 MHz	-46.43 dBc	≤ -20 dBc	Pass
		High Channel 165, 5825 MHz	-53.87 dBc	≤ -20 dBc	Pass
	40 MHz				
		2400 MHz - 2483.5 MHz Band			
		802.11(n) MCS8			
		Low Channel 2, 2422 MHz	-34.66 dBc	≤ -20 dBc	Pass
		High Channel 9, 2452 MHz	-45.37 dBc	≤ -20 dBc	Pass
		5725 MHz - 5850 MHz Band			
		802.11(n) MCS8			
		Low Channel 151, 5755 MHz	-37.35 dBc	≤ -20 dBc	Pass
		High Channel 159, 5795 MHz	-51.87 dBc	≤ -20 dBc	Pass

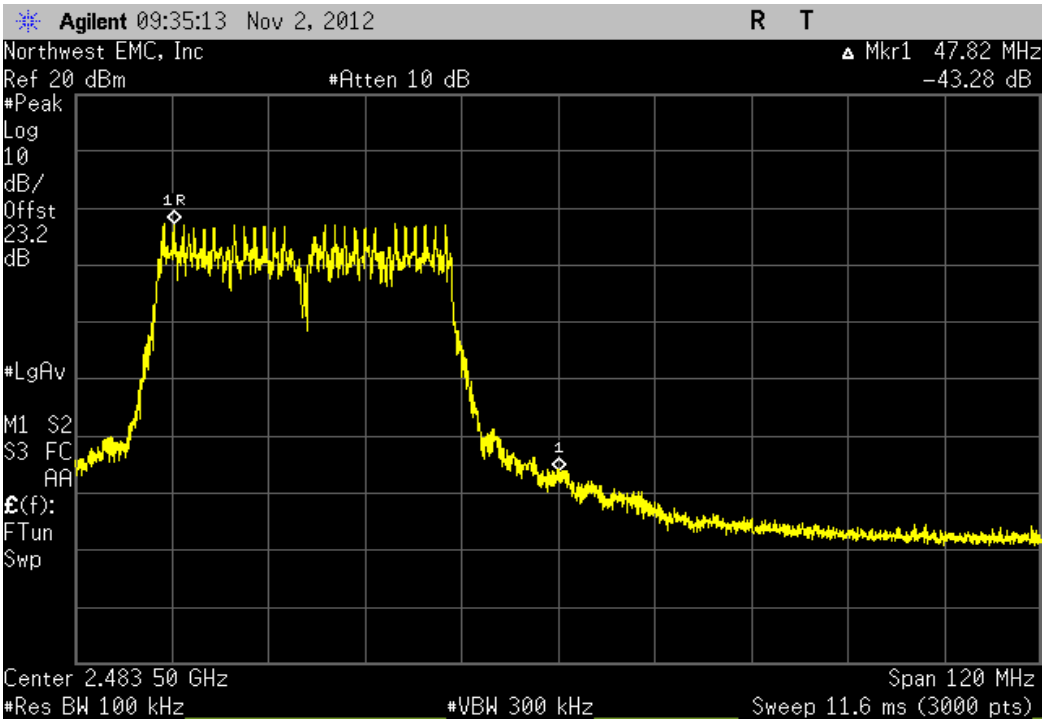
Chain A, 40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, Low Channel 2, 2422 MHz

				Value	Limit	Result
				-37.18 dBc	≤ -20 dBc	Pass



Chain A, 40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, High Channel 9, 2452 MHz

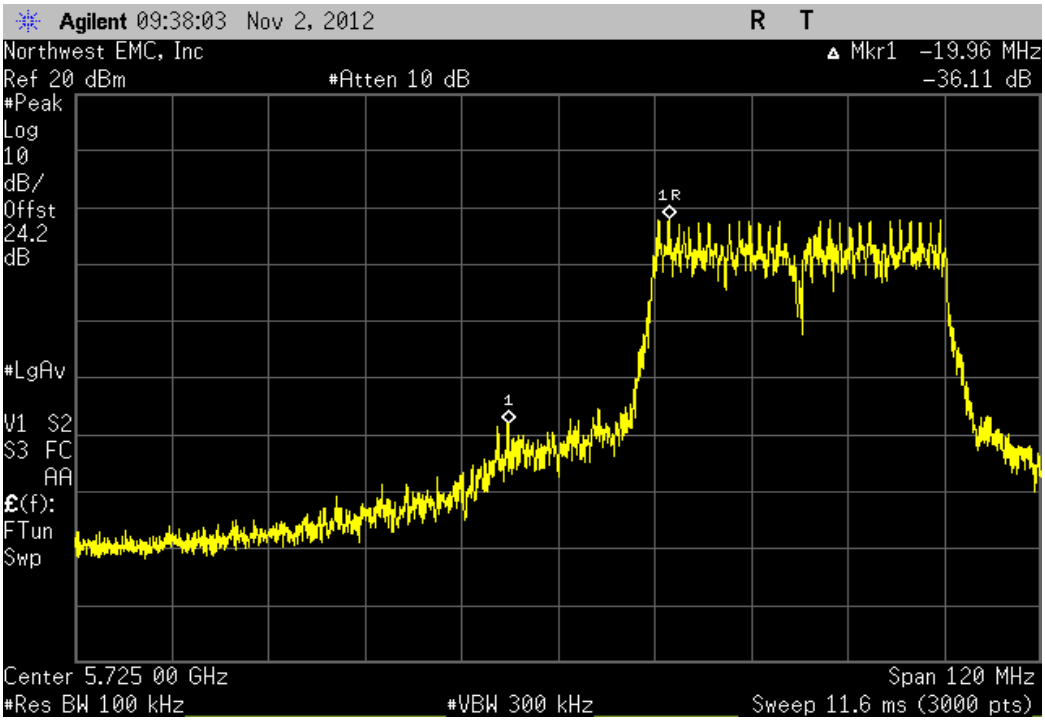
				Value	Limit	Result
				-43.28 dBc	≤ -20 dBc	Pass



Band Edge Compliance

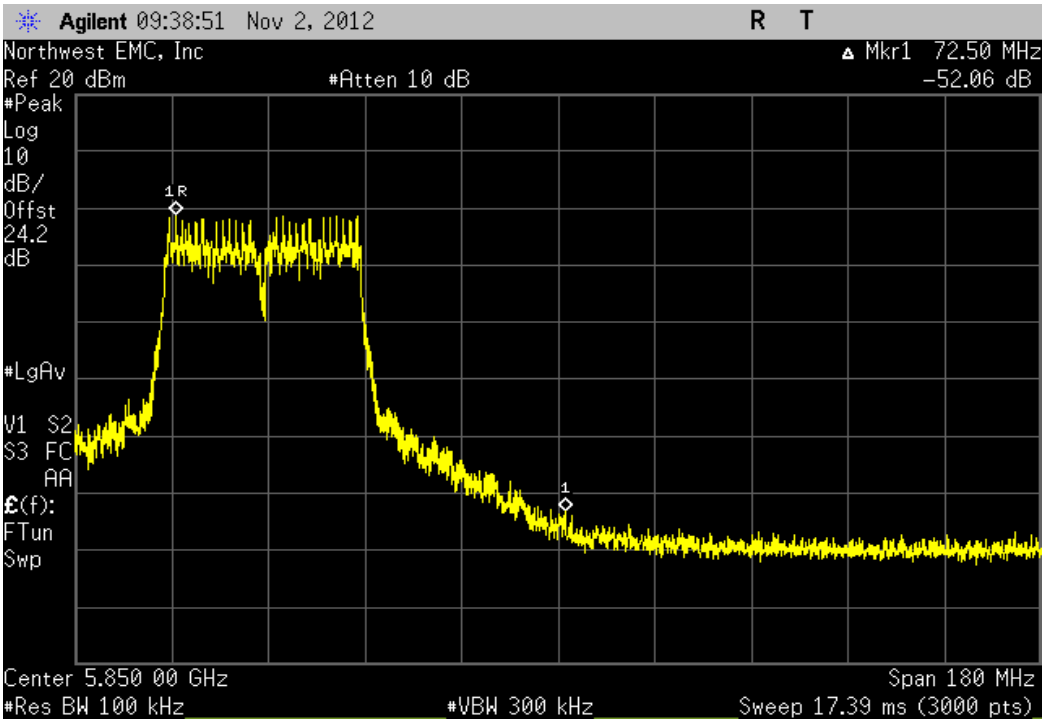
Chain A, 40 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS15, Low Channel 151, 5755 MHz

				Value	Limit	Result
				-36.11 dBc	≤ -20 dBc	Pass



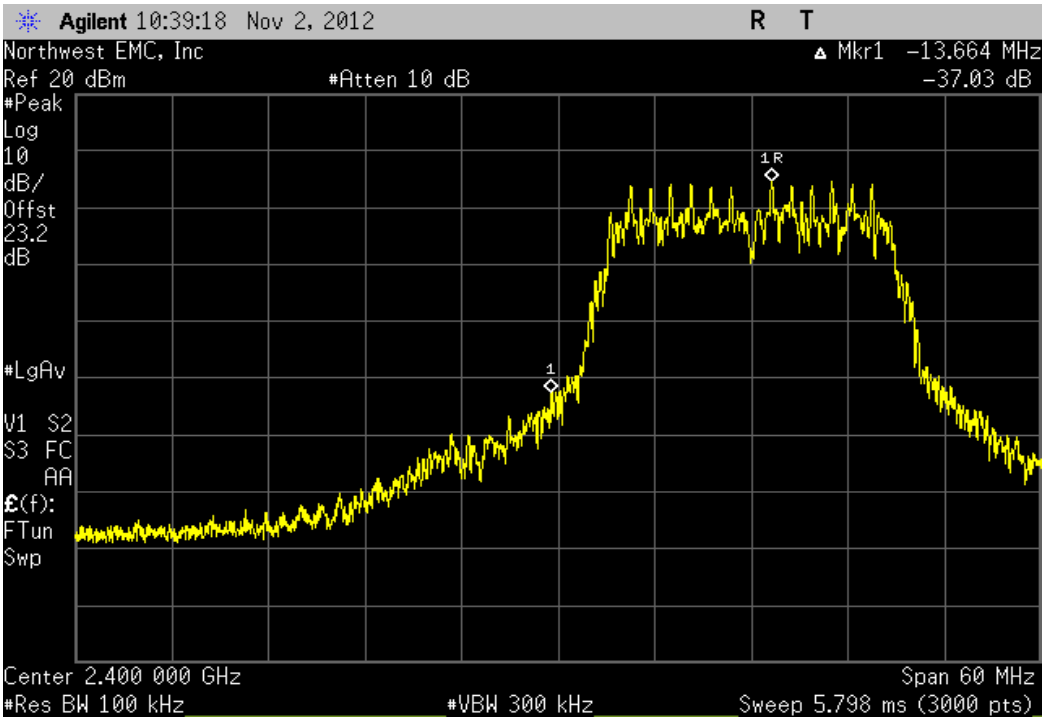
Chain A, 40 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS15, High Channel 159, 5795 MHz

				Value	Limit	Result
				-52.07 dBc	≤ -20 dBc	Pass



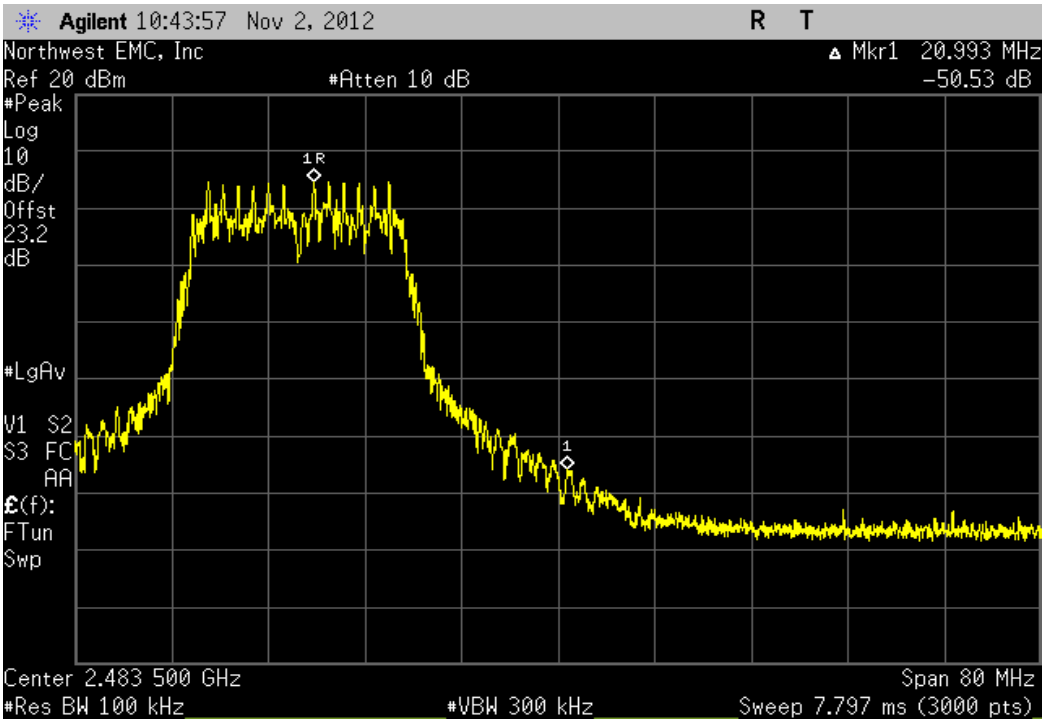
Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, Low Channel 1, 2412 MHz

				Value	Limit	Result
				-37.03 dBc	≤ -20 dBc	Pass



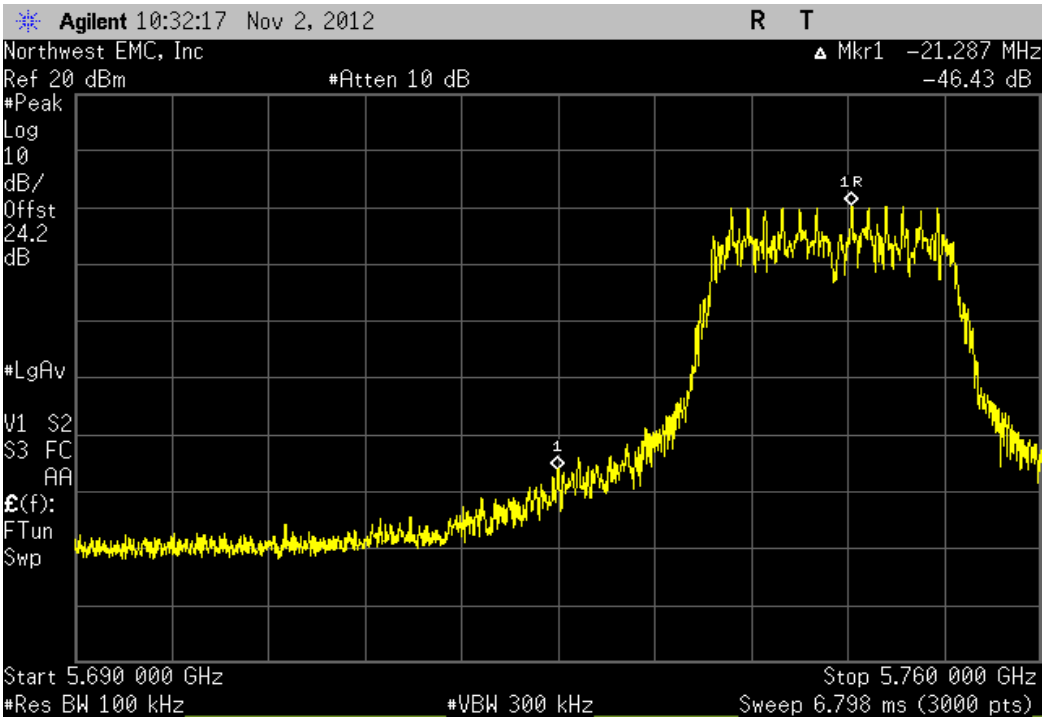
Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, High Channel 11, 2462 MHz

				Value	Limit	Result
				-50.53 dBc	≤ -20 dBc	Pass



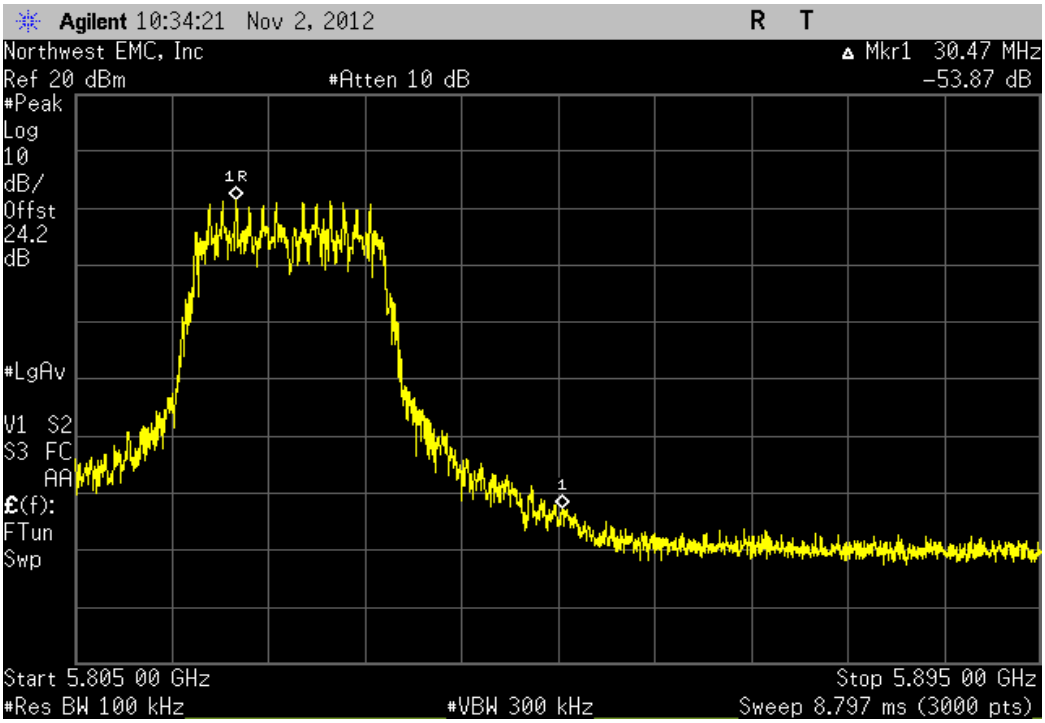
Chain B, 20 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS15, Low Channel 149, 5745 MHz

				Value	Limit	Result
				-46.43 dBc	≤ -20 dBc	Pass



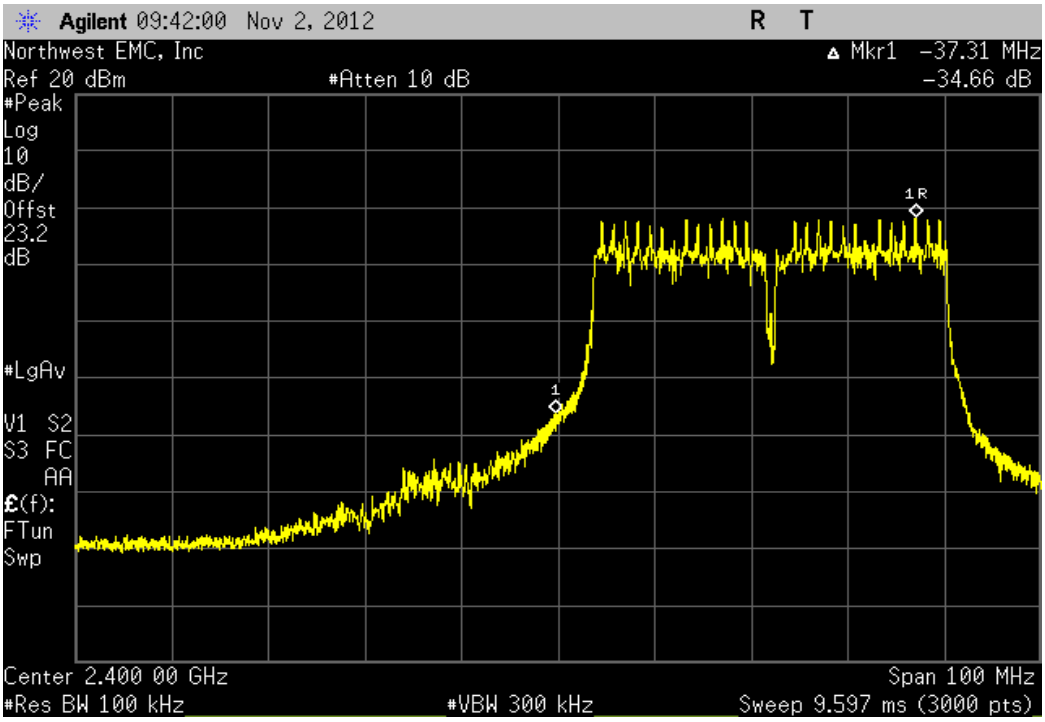
Chain B, 20 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS15, High Channel 165, 5825 MHz

				Value	Limit	Result
				-53.87 dBc	≤ -20 dBc	Pass



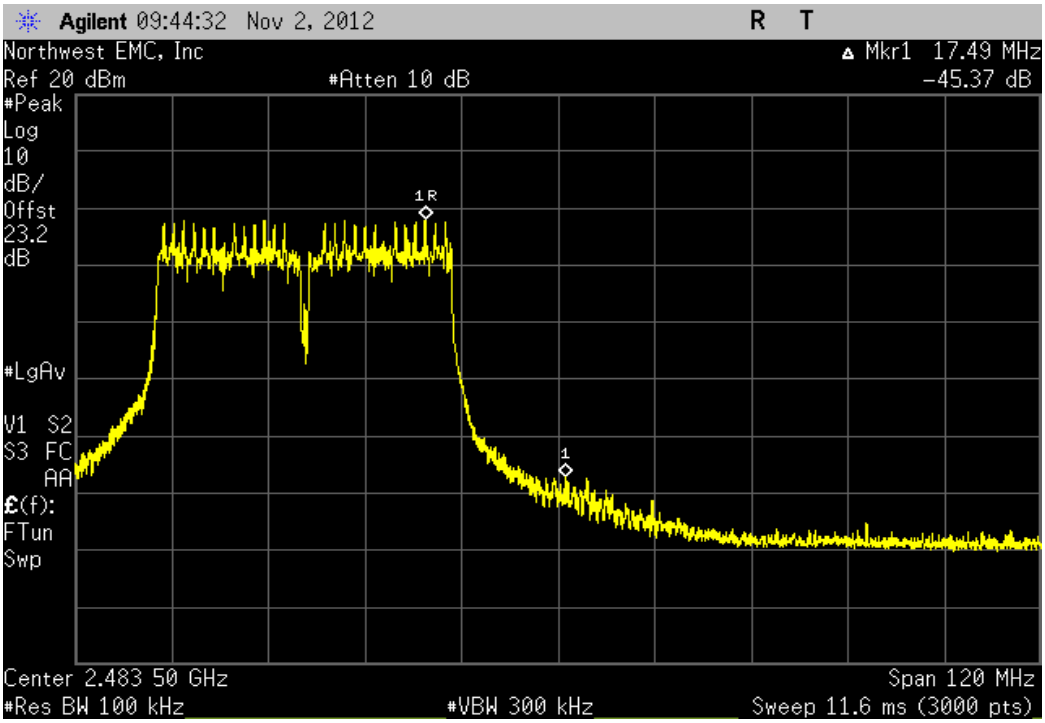
Chain B, 40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, Low Channel 2, 2422 MHz

				Value	Limit	Result
				-34.66 dBc	≤ -20 dBc	Pass



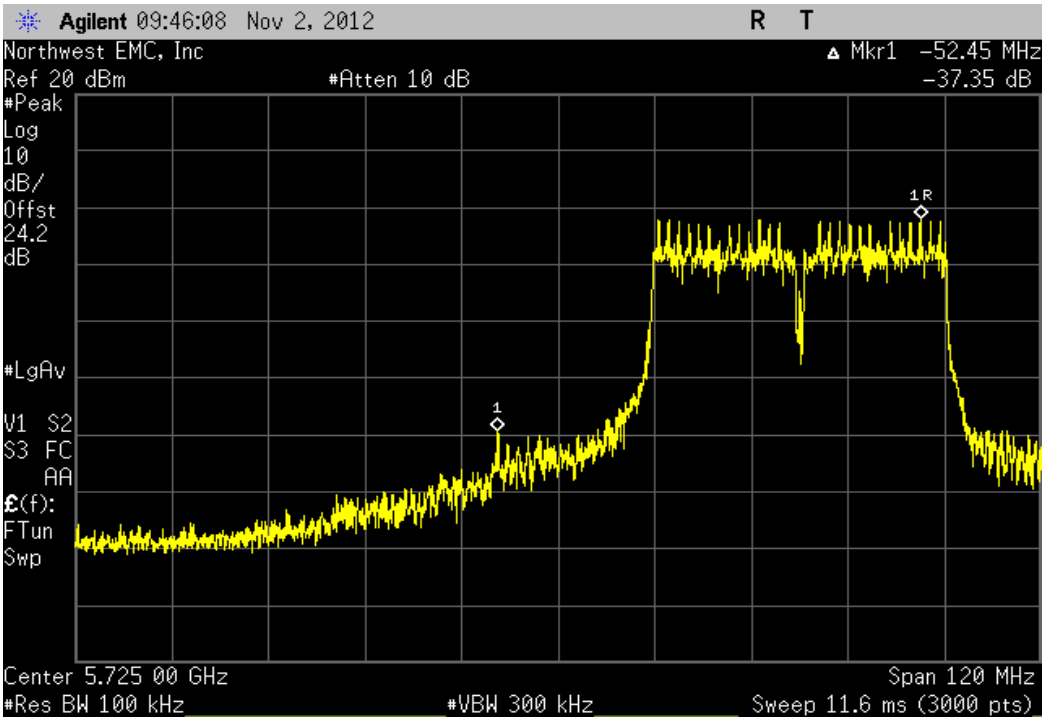
Chain B, 40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, High Channel 9, 2452 MHz

				Value	Limit	Result
				-45.37 dBc	≤ -20 dBc	Pass



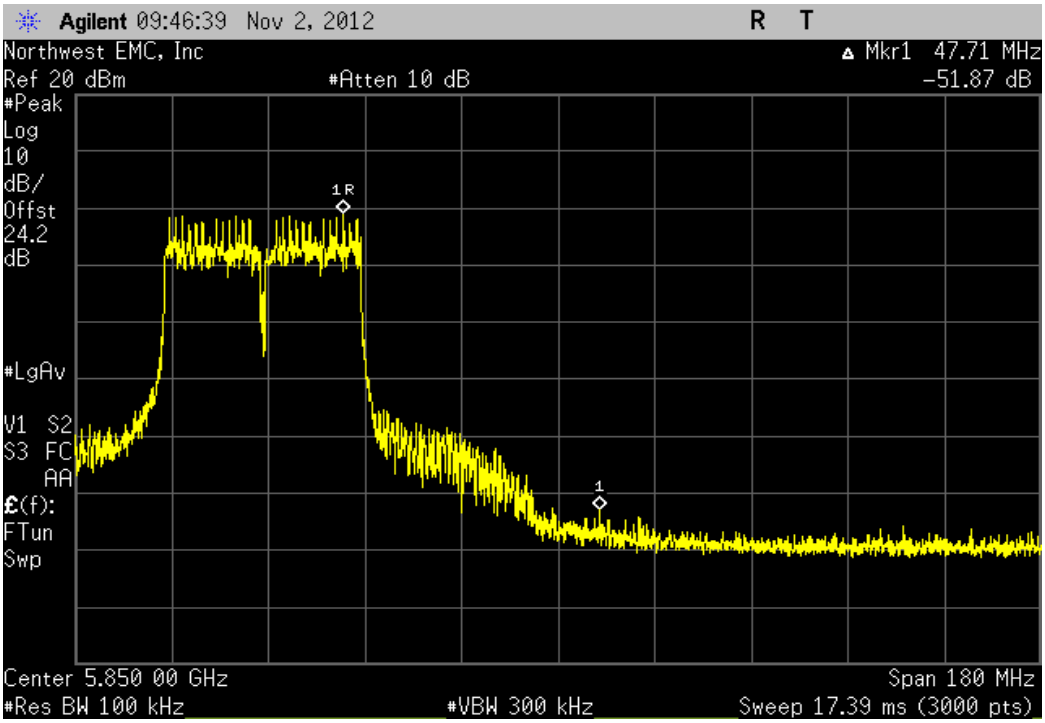
Chain B, 40 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS8, Low Channel 151, 5755 MHz

				Value	Limit	Result
				-37.35 dBc	≤ -20 dBc	Pass



Chain B, 40 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS8, High Channel 159, 5795 MHz

				Value	Limit	Result
				-51.87 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
Spectrum Analyzer	Agilent	E4446A	AAQ	2/7/2012	12
40GHz DC Block	Miteq	DCB4000	AMD	6/25/2012	12
Attenuator 20 dB, SMA M/F 26GHz	S.M. Electronics	SA26B-20	AUY	8/2/2012	12
Power Meter	Gigatronics	8651A	SPM	1/9/2012	24
MXG Vector Signal Generator	Agilent	N5182A	TIF	NCR	0
Attenuator, 'Precision N'	S.M. Electronics	SA18N-06/SM4032	REE	12/15/2011	12
Power Sensor	Gigatronics	80701A	SPL	7/8/2011	24
Spectrum Analyzer	Agilent	E4440A	AFD	7/5/2012	12
EV06 Direct Connect Cable	ESM Cable Corp.	TT	ECA	NCR	0

TEST DESCRIPTION

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

Please refer to the Power Table located elsewhere in this report for radio power operating level during testing.

The EUT is transmitting on Antenna Port A only.

Spurious Conducted Emissions

EUT:	1514			**Work Order:**	MCSO1638
Serial Number:	000109423753			**Date:**	11/02/12
Customer:	Microsoft Corporation			**Temperature:**	22.3°C
Attendees:	None			**Humidity:**	52%
Project:	None			**Barometric Pres.:**	1013
Tested by:	Brandon Hobbs Rod Peloquin Sabrina Sanders	**Power:**	110VAC/60Hz	**Job Site:**	EV06

TEST SPECIFICATIONS	Test Method
FCC 15.247:2012	ANSI C63.10:2009

COMMENTS

The EUT is operating at 100% duty cycle. All cable losses for 2.4GHz and 5.0GHz bands are accounted for in the analyzer offset calculations. Testing was completed using the modulation that produced the highes conducted output power for b, g and n modes

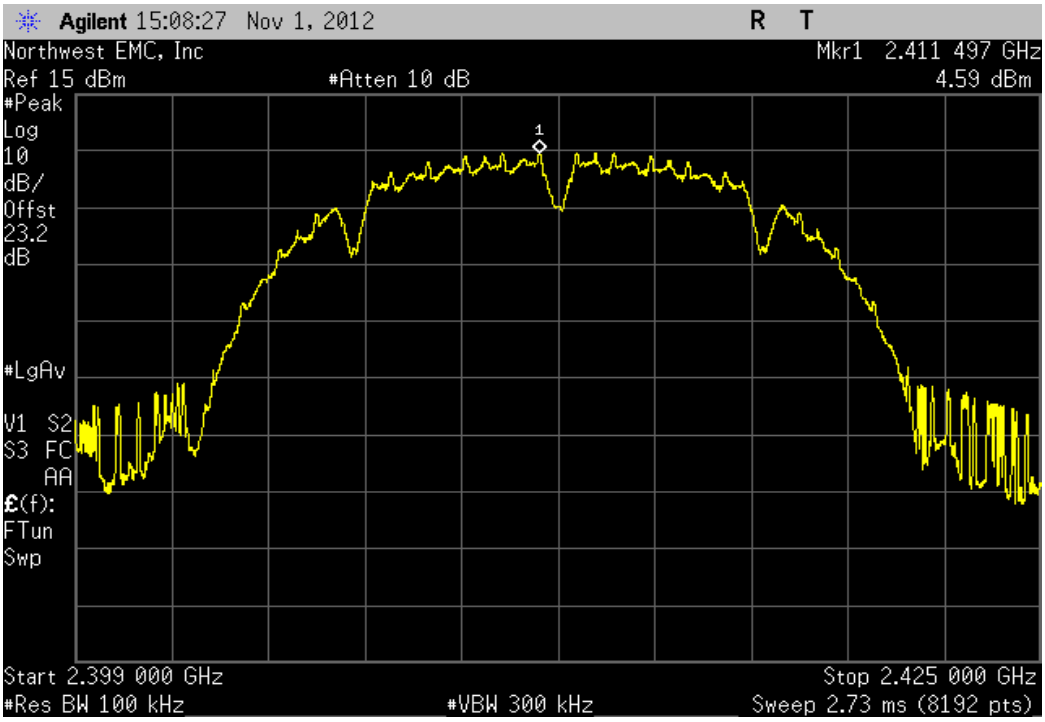
DEVIATIONS FROM TEST STANDARD

None

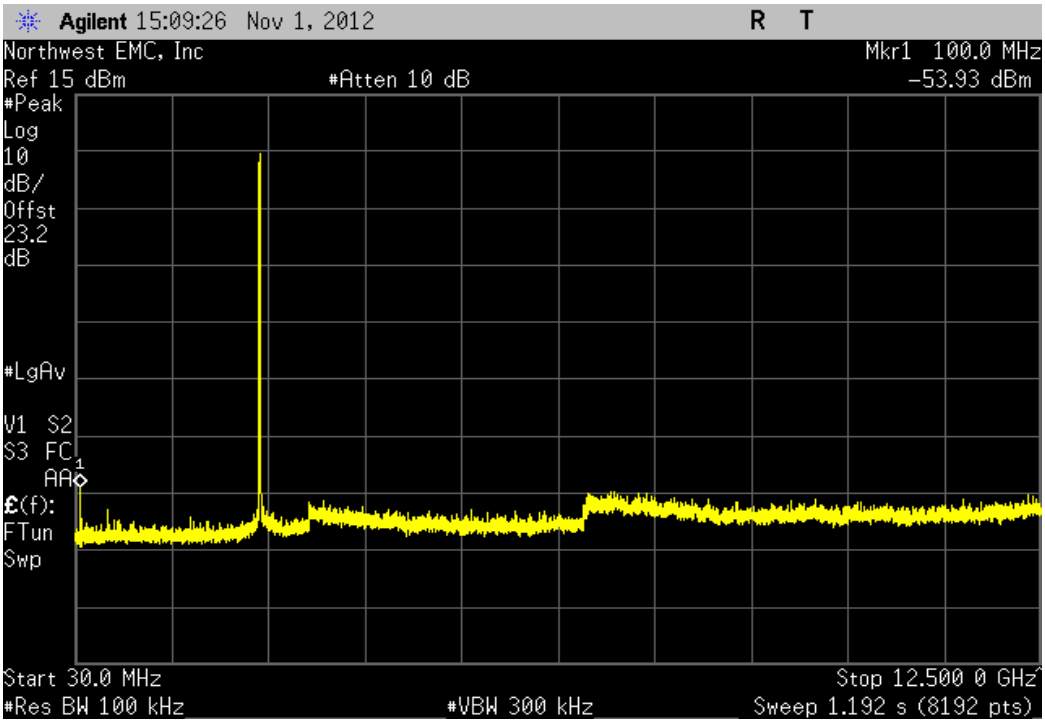
Configuration #	1	Signature

		Frequency Range	Value	Limit	Result
20 MHz					
	2400 MHz - 2483.5 MHz Band				
	802.11(b) 1 Mbps				
	Low Channel 1, 2412 MHz	Fundamental	N/A	N/A	N/A
	Low Channel 1, 2412 MHz	30 MHz - 12.5 GHz	-58.53 dBc	≤ -20 dBc	Pass
	Low Channel 1, 2412 MHz	12.5 GHz - 25 GHz	-55.85 dBc	≤ -20 dBc	Pass
	Mid Channel 6, 2437 MHz	Fundamental	N/A	N/A	N/A
	Mid Channel 6, 2437 MHz	30 MHz - 12.5 GHz	-58.98 dBc	≤ -20 dBc	Pass
	Mid Channel 6, 2437 MHz	12.5 GHz - 25 GHz	-57.39 dBc	≤ -20 dBc	Pass
	High Channel 11, 2462 MHz	Fundamental	N/A	N/A	N/A
	High Channel 11, 2462 MHz	30 MHz - 12.5 GHz	-58.02 dBc	≤ -20 dBc	Pass
	High Channel 11, 2462 MHz	12.5 GHz - 25 GHz	-58.01 dBc	≤ -20 dBc	Pass
	802.11(g) 6 Mbps				
	Low Channel 1, 2412 MHz	Fundamental	N/A	N/A	N/A
	Low Channel 1, 2412 MHz	30 MHz - 12.5 GHz	-55.94 dBc	≤ -20 dBc	Pass
	Low Channel 1, 2412 MHz	12.5 GHz - 25 GHz	-56.92 dBc	≤ -20 dBc	Pass
	Mid Channel 6, 2437 MHz	Fundamental	N/A	N/A	N/A
	Mid Channel 6, 2437 MHz	30 MHz - 12.5 GHz	-58.55 dBc	≤ -20 dBc	Pass
	Mid Channel 6, 2437 MHz	12.5 GHz - 25 GHz	-50.91 dBc	≤ -20 dBc	Pass
	High Channel 11, 2462 MHz	Fundamental	N/A	N/A	N/A
	High Channel 11, 2462 MHz	30 MHz - 12.5 GHz	-57.83 dBc	≤ -20 dBc	Pass
	High Channel 11, 2462 MHz	12.5 GHz - 25 GHz	-51.24 dBc	≤ -20 dBc	Pass
	802.11(n) MCS7				
	Low Channel 1, 2412 MHz	Fundamental	N/A	N/A	N/A
	Low Channel 1, 2412 MHz	30 MHz - 12.5 GHz	-52.74 dBc	≤ -20 dBc	Pass
	Low Channel 1, 2412 MHz	12.5 GHz - 25 GHz	-51.06 dBc	≤ -20 dBc	Pass
	Mid Channel 6, 2437 MHz	Fundamental	N/A	N/A	N/A
	Mid Channel 6, 2437 MHz	30 MHz - 12.5 GHz	-58.81 dBc	≤ -20 dBc	Pass
	Mid Channel 6, 2437 MHz	12.5 GHz - 25 GHz	-51.98 dBc	≤ -20 dBc	Pass
	High Channel 11, 2462 MHz	Fundamental	N/A	N/A	N/A
	High Channel 11, 2462 MHz	30 MHz - 12.5 GHz	-57.7 dBc	≤ -20 dBc	Pass
	High Channel 11, 2462 MHz	12.5 GHz - 25 GHz	-50.77 dBc	≤ -20 dBc	Pass
	5725 MHz - 5850 MHz Band				
	802.11(a) 6 Mbps				
	Low Channel 149, 5745 MHz	Fundamental	N/A	N/A	N/A
	Low Channel 149, 5745 MHz	30 MHz - 12.5 GHz	-51.01 dBc	≤ -20 dBc	Pass
	Low Channel 149, 5745 MHz	12.5 GHz - 25 GHz	-46.36 dBc	≤ -20 dBc	Pass
	Low Channel 149, 5745 MHz	25 GHz - 32 GHz	-44.94 dBc	≤ -20 dBc	Pass
	Low Channel 149, 5745 MHz	32 GHz - 40 GHz	-35.16 dBc	≤ -20 dBc	Pass
	Mid Channel 157, 5785 MHz	Fundamental	N/A	N/A	N/A
	Mid Channel 157, 5785 MHz	30 MHz - 12.5 GHz	-51.16 dBc	≤ -20 dBc	Pass
	Mid Channel 157, 5785 MHz	12.5 GHz - 25 GHz	-45 dBc	≤ -20 dBc	Pass
	Mid Channel 157, 5785 MHz	25 GHz - 32 GHz	-44.74 dBc	≤ -20 dBc	Pass
	Mid Channel 157, 5785 MHz	32 GHz - 40 GHz	-34.41 dBc	≤ -20 dBc	Pass
	High Channel 165, 5825 MHz	Fundamental	N/A	N/A	N/A
	High Channel 165, 5825 MHz	30 MHz - 12.5 GHz	-51.68 dBc	≤ -20 dBc	Pass
	High Channel 165, 5825 MHz	12.5 GHz - 25 GHz	-45.81 dBc	≤ -20 dBc	Pass
	High Channel 165, 5825 MHz	25 GHz - 32 GHz	-44.5 dBc	≤ -20 dBc	Pass
	High Channel 165, 5825 MHz	32 GHz - 40 GHz	-34.79 dBc	≤ -20 dBc	Pass
	802.11(n) MCS7 - UNII				
	Low Channel 149, 5745 MHz	Fundamental	N/A	N/A	N/A
	Low Channel 149, 5745 MHz	30 MHz - 12.5 GHz	-50.8 dBc	≤ -20 dBc	Pass
	Low Channel 149, 5745 MHz	12.5 GHz - 25 GHz	-45.58 dBc	≤ -20 dBc	Pass
	Low Channel 149, 5745 MHz	25 GHz - 32 GHz	-44.43 dBc	≤ -20 dBc	Pass
	Low Channel 149, 5745 MHz	32 GHz - 40 GHz	-35.49 dBc	≤ -20 dBc	Pass
	Mid Channel 157, 5785 MHz	Fundamental	N/A	N/A	N/A
	Mid Channel 157, 5785 MHz	30 MHz - 12.5 GHz	-51.37 dBc	≤ -20 dBc	Pass
	Mid Channel 157, 5785 MHz	12.5 GHz - 25 GHz	-45.42 dBc	≤ -20 dBc	Pass
	Mid Channel 157, 5785 MHz	25 GHz - 32 GHz	-44.38 dBc	≤ -20 dBc	Pass
	Mid Channel 157, 5785 MHz	32 GHz - 40 GHz	-35.18 dBc	≤ -20 dBc	Pass
	High Channel 165, 5825 MHz	Fundamental	N/A	N/A	N/A
	High Channel 165, 5825 MHz	30 MHz - 12.5 GHz	-52.02 dBc	≤ -20 dBc	Pass
	High Channel 165, 5825 MHz	12.5 GHz - 25 GHz	-46.12 dBc	≤ -20 dBc	Pass
	High Channel 165, 5825 MHz	25 GHz - 32 GHz	-44.07 dBc	≤ -20 dBc	Pass
	High Channel 165, 5825 MHz	32 GHz - 40 GHz	-34.97 dBc	≤ -20 dBc	Pass

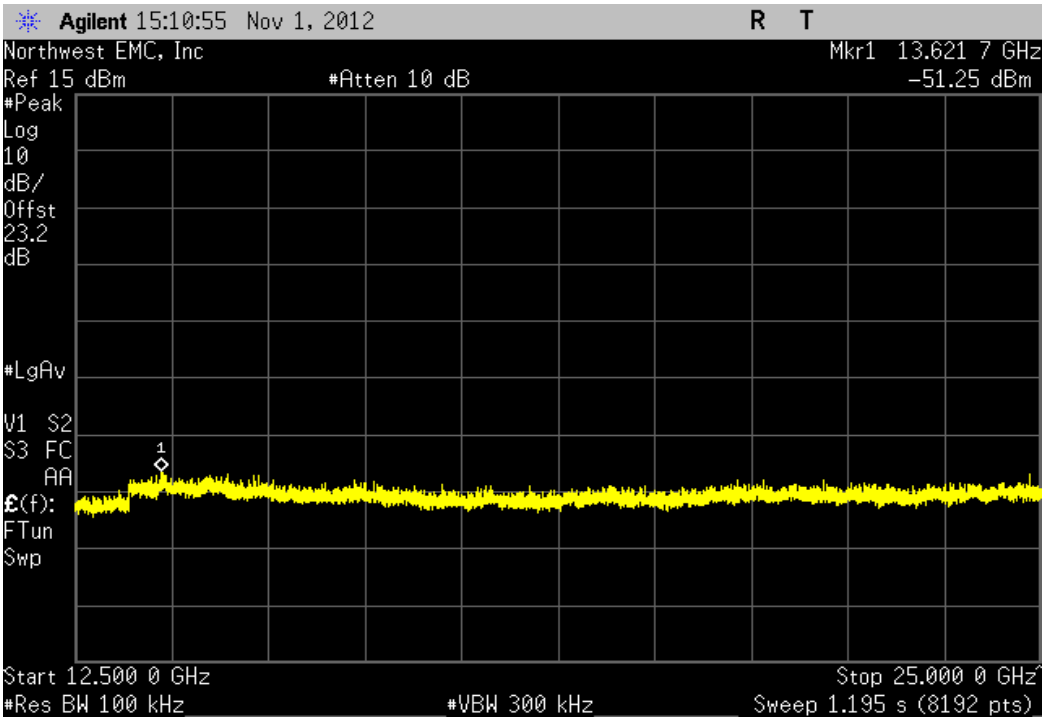
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(b) 1 Mbps, Low Channel 1, 2412 MHz						
	Frequency Range			Value	Limit	Result
	Fundamental			N/A	N/A	N/A



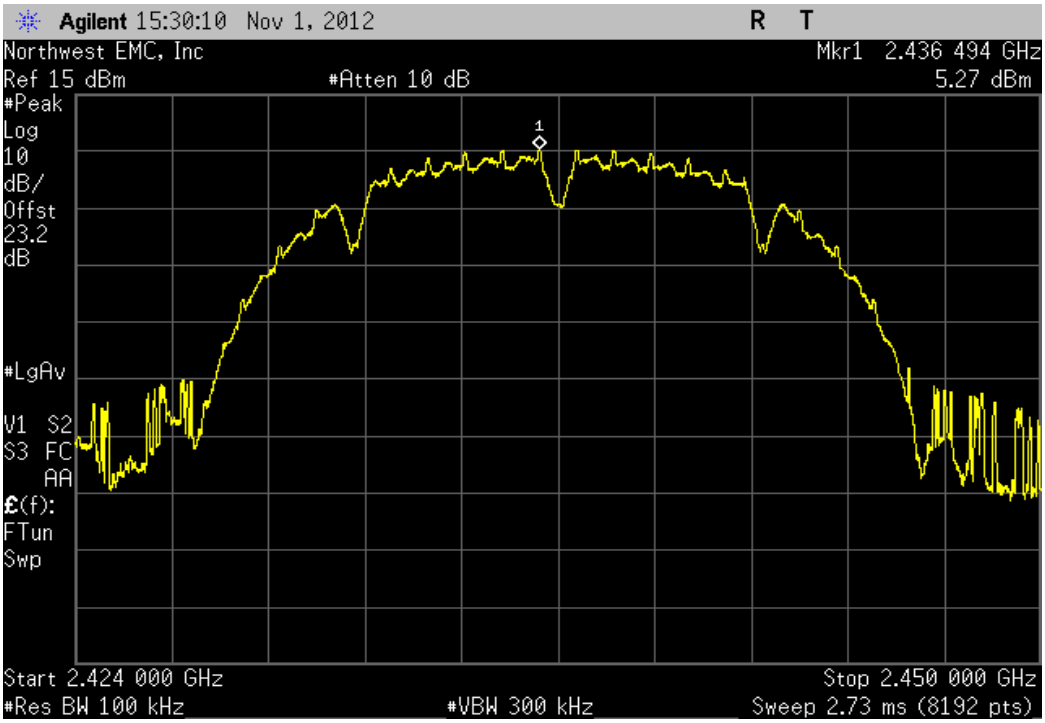
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(b) 1 Mbps, Low Channel 1, 2412 MHz					
	Frequency Range		Value	Limit	Result
	30 MHz - 12.5 GHz		-58.53 dBc	≤ -20 dBc	Pass



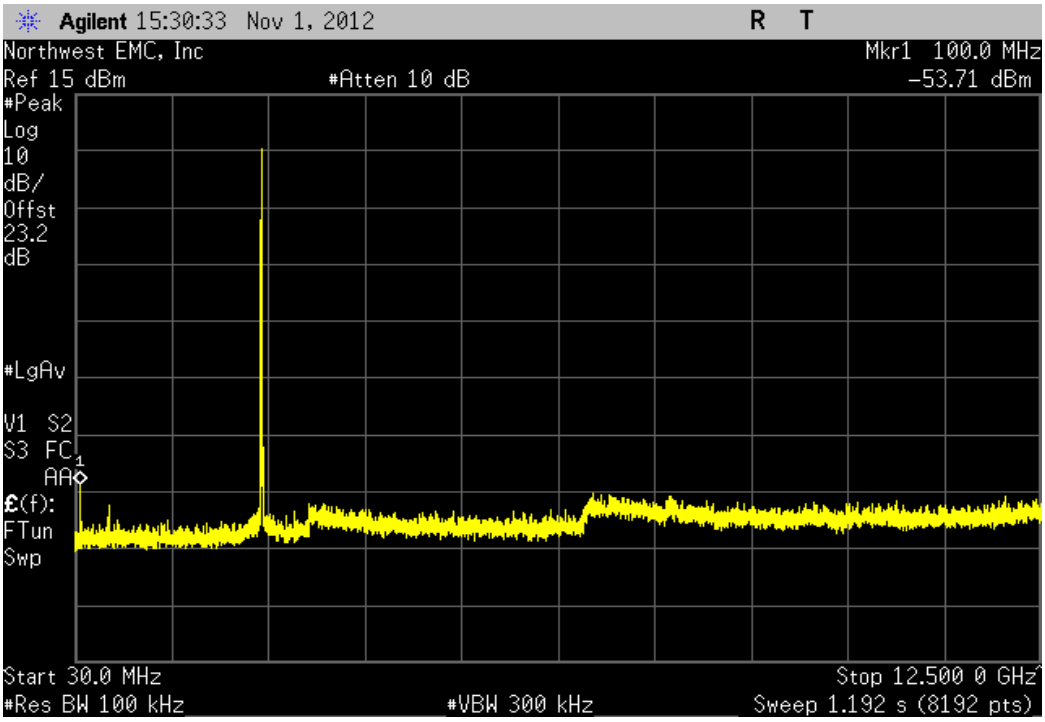
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(b) 1 Mbps, Low Channel 1, 2412 MHz				
Frequency Range		**Value**	**Limit**	**Result**
12.5 GHz - 25 GHz		-55.85 dBc	≤ -20 dBc	Pass



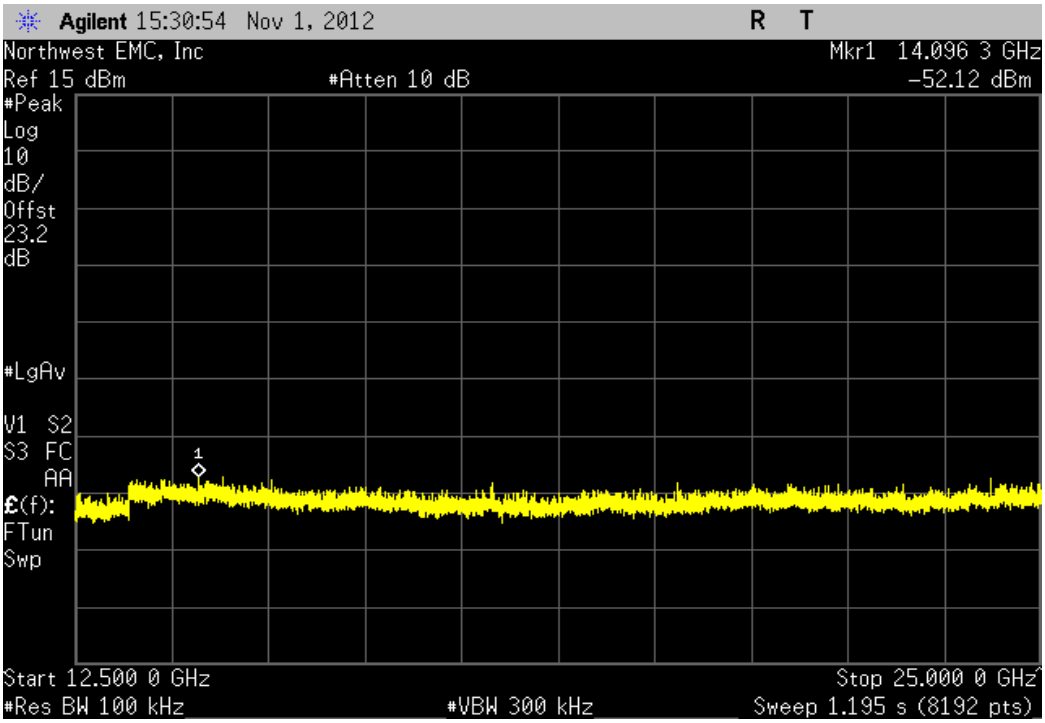
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(b) 1 Mbps, Mid Channel 6, 2437 MHz						
	Frequency Range			**Value**	**Limit**	**Result**
	Fundamental			N/A	N/A	N/A



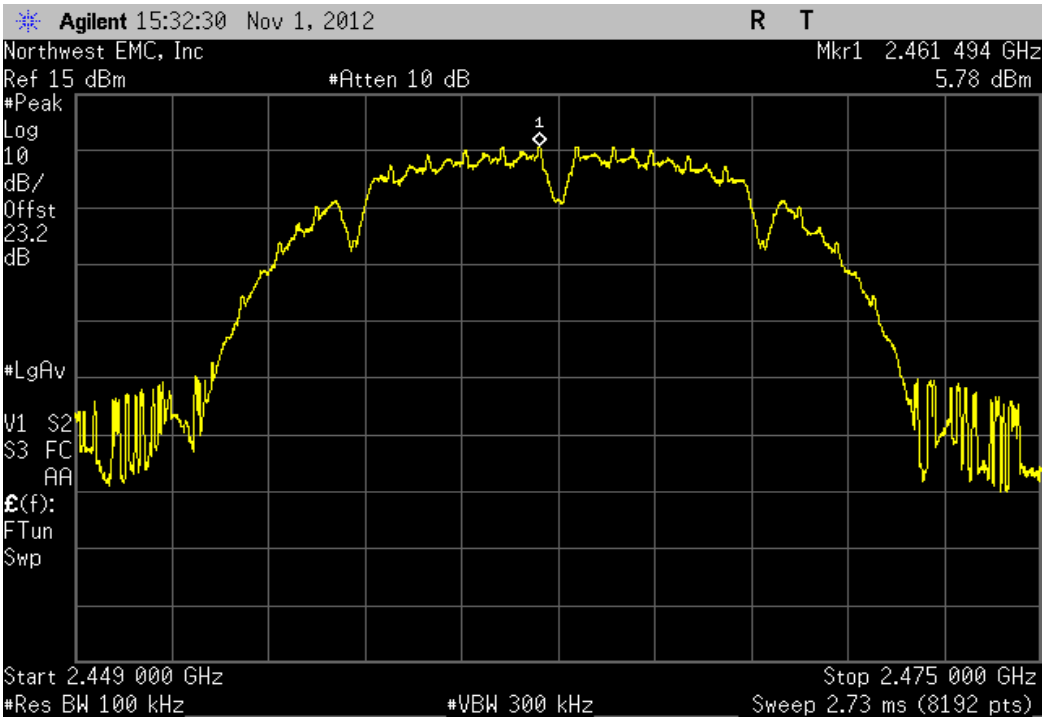
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(b) 1 Mbps, Mid Channel 6, 2437 MHz				
Frequency Range		**Value**	**Limit**	**Result**
30 MHz - 12.5 GHz		-58.98 dBc	≤ -20 dBc	Pass



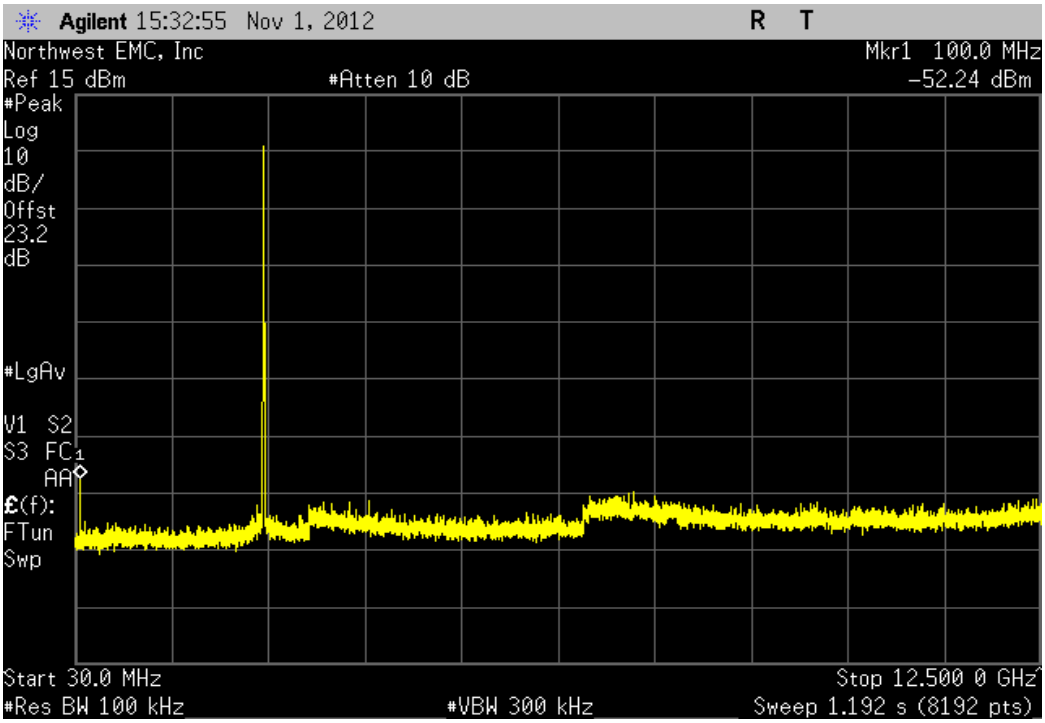
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(b) 1 Mbps, Mid Channel 6, 2437 MHz				
Frequency Range		**Value**	**Limit**	**Result**
12.5 GHz - 25 GHz		-57.39 dBc	≤ -20 dBc	Pass



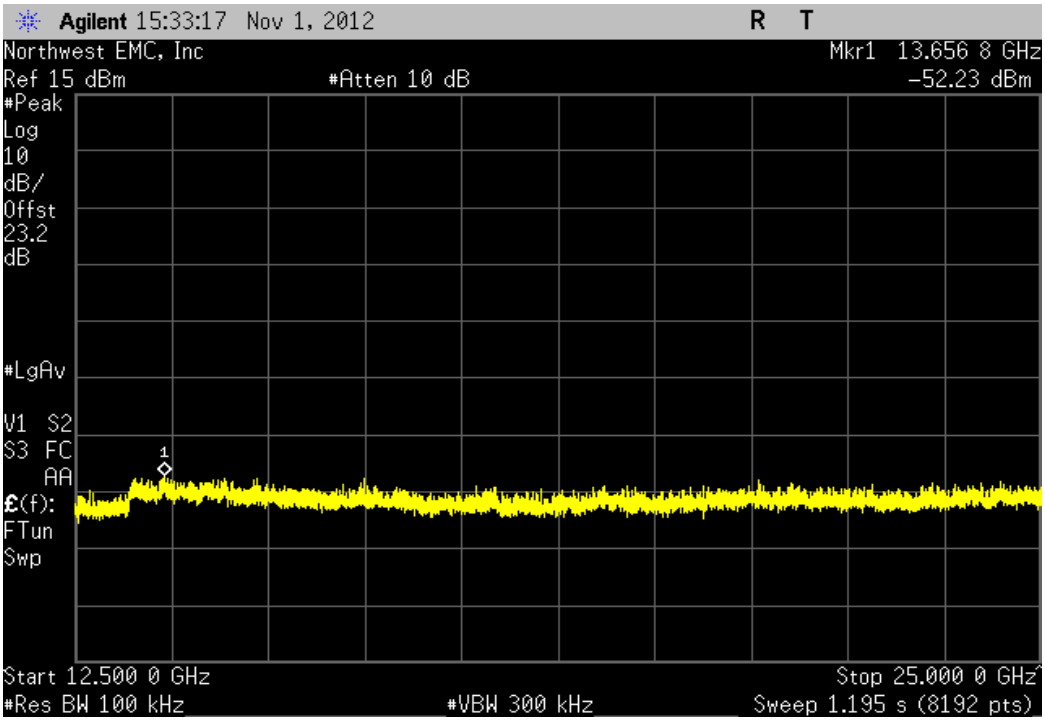
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(b) 1 Mbps, High Channel 11, 2462 MHz						
	Frequency Range			Value	Limit	Result
	Fundamental			N/A	N/A	N/A



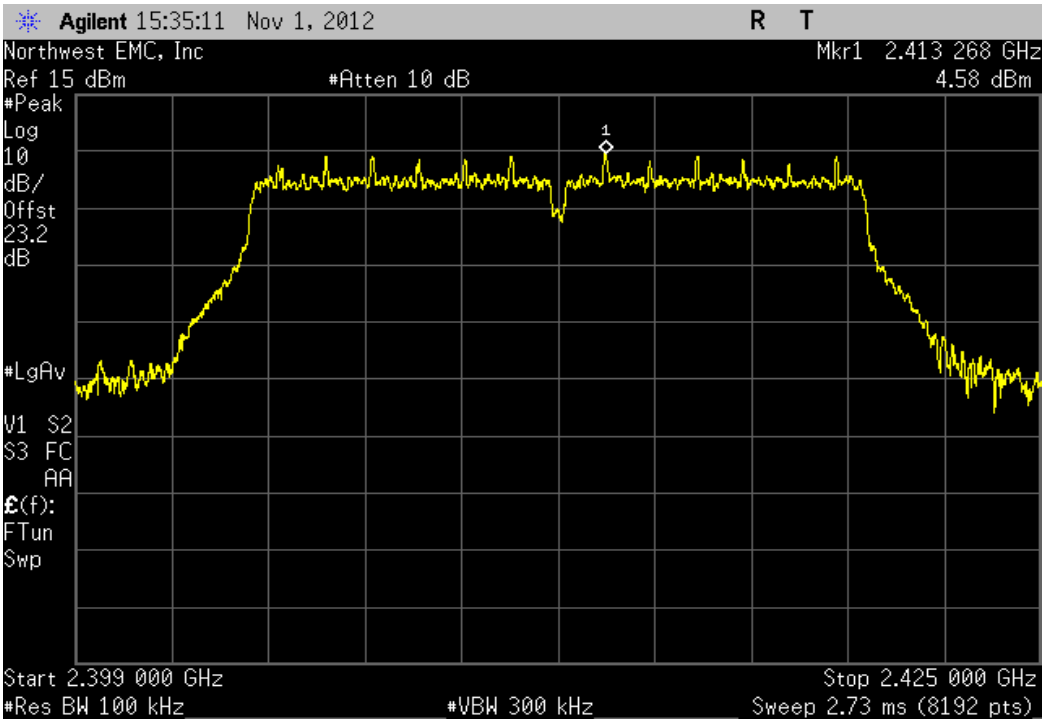
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(b) 1 Mbps, High Channel 11, 2462 MHz					
	Frequency Range		Value	Limit	Result
	30 MHz - 12.5 GHz		-58.02 dBc	≤ -20 dBc	Pass



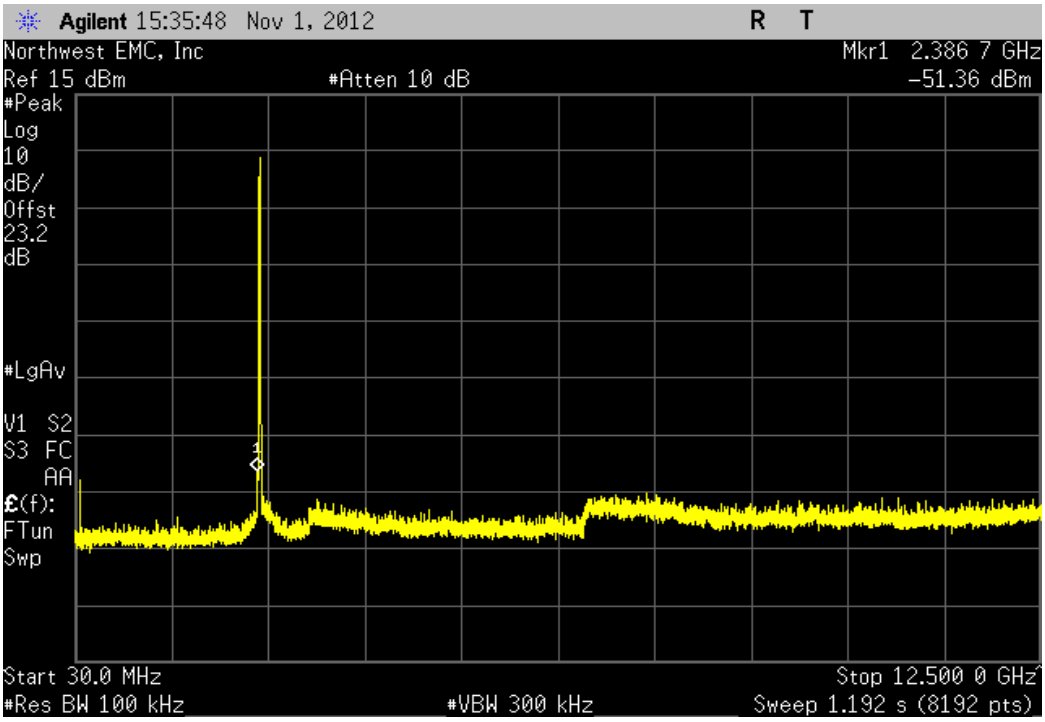
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(b) 1 Mbps, High Channel 11, 2462 MHz					
Frequency Range			Value	Limit	Result
12.5 GHz - 25 GHz			-58.01 dBc	≤ -20 dBc	Pass



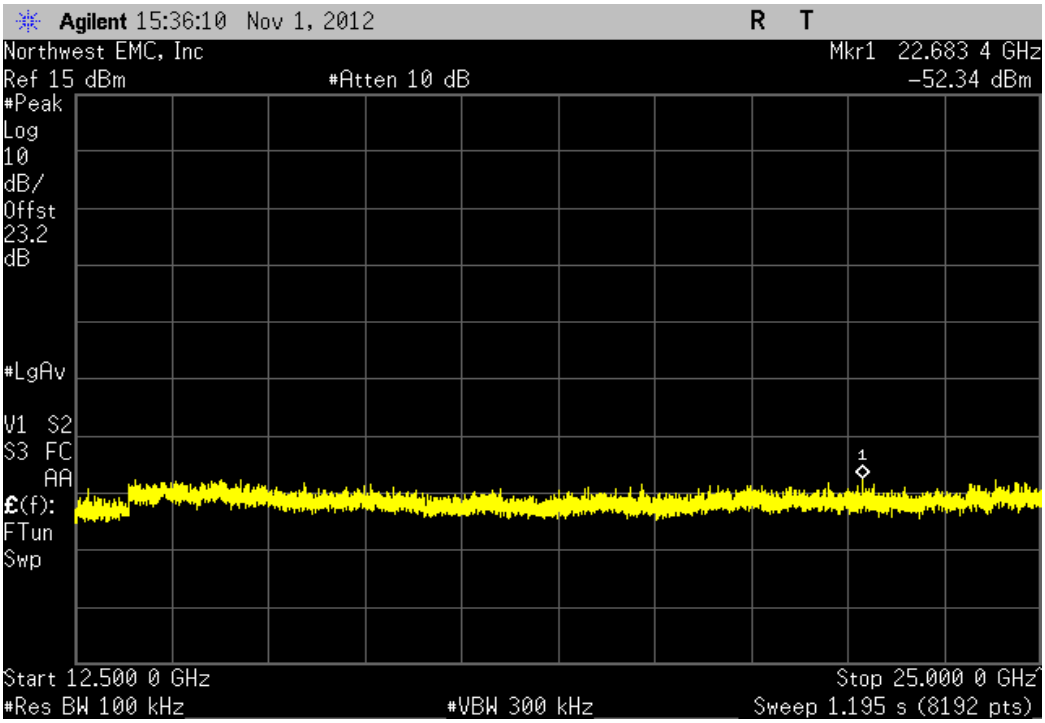
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(g) 6 Mbps, Low Channel 1, 2412 MHz						
	Frequency Range			Value	Limit	Result
	Fundamental			N/A	N/A	N/A



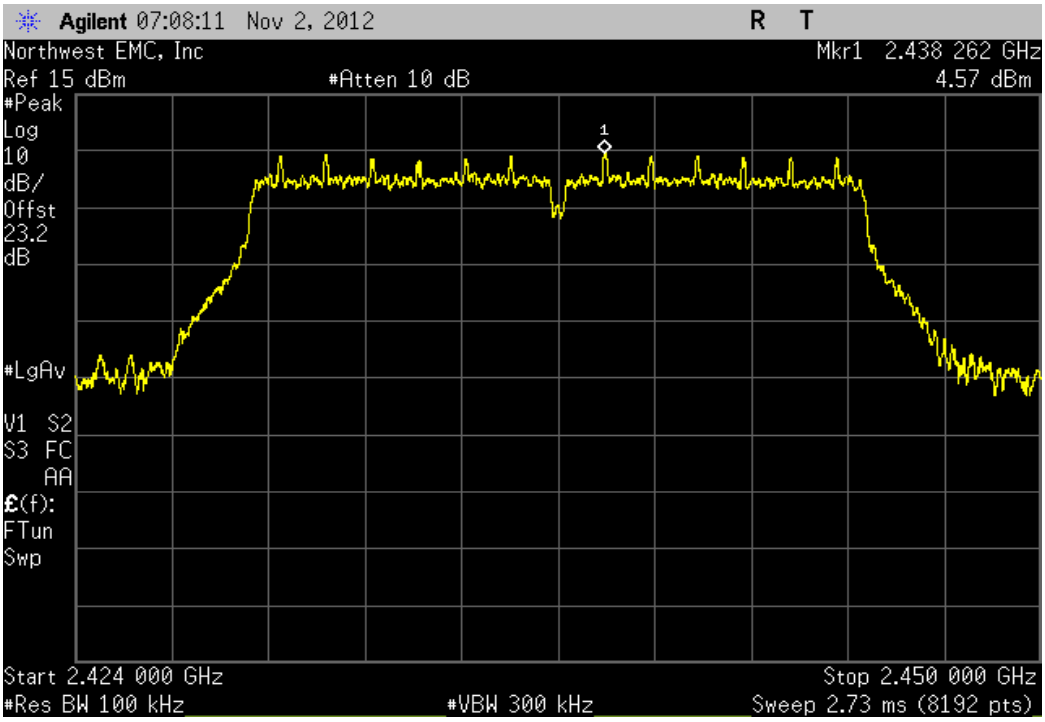
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(g) 6 Mbps, Low Channel 1, 2412 MHz				
Frequency Range		**Value**	**Limit**	**Result**
30 MHz - 12.5 GHz		-55.94 dBc	≤ -20 dBc	Pass



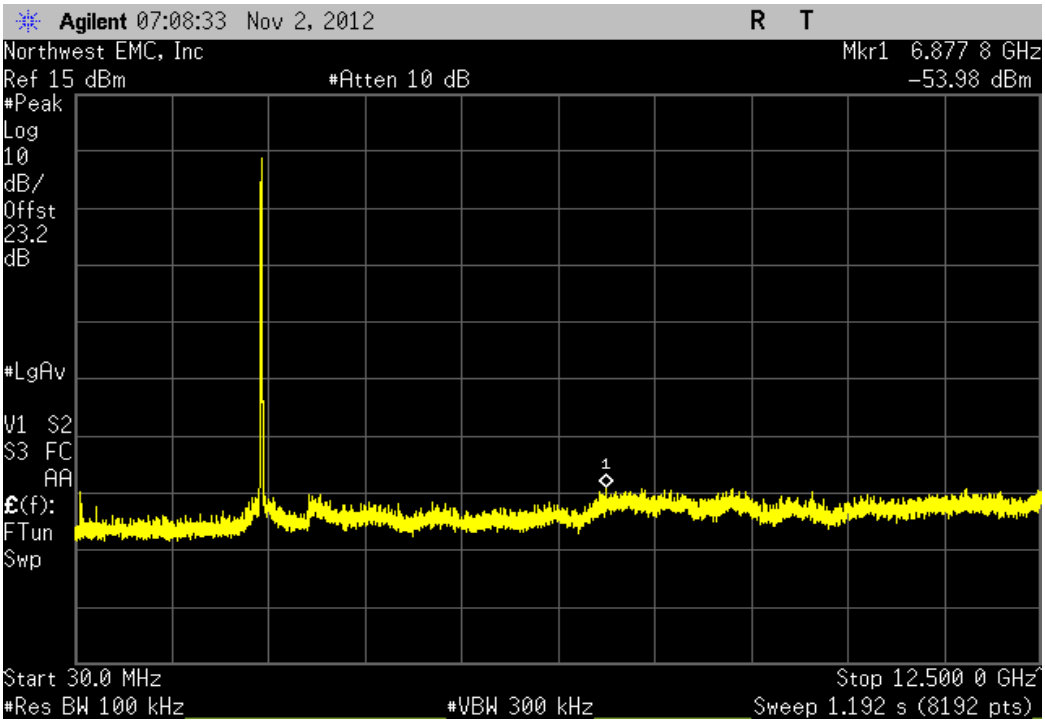
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(g) 6 Mbps, Low Channel 1, 2412 MHz				
Frequency Range		**Value**	**Limit**	**Result**
12.5 GHz - 25 GHz		-56.92 dBc	≤ -20 dBc	Pass



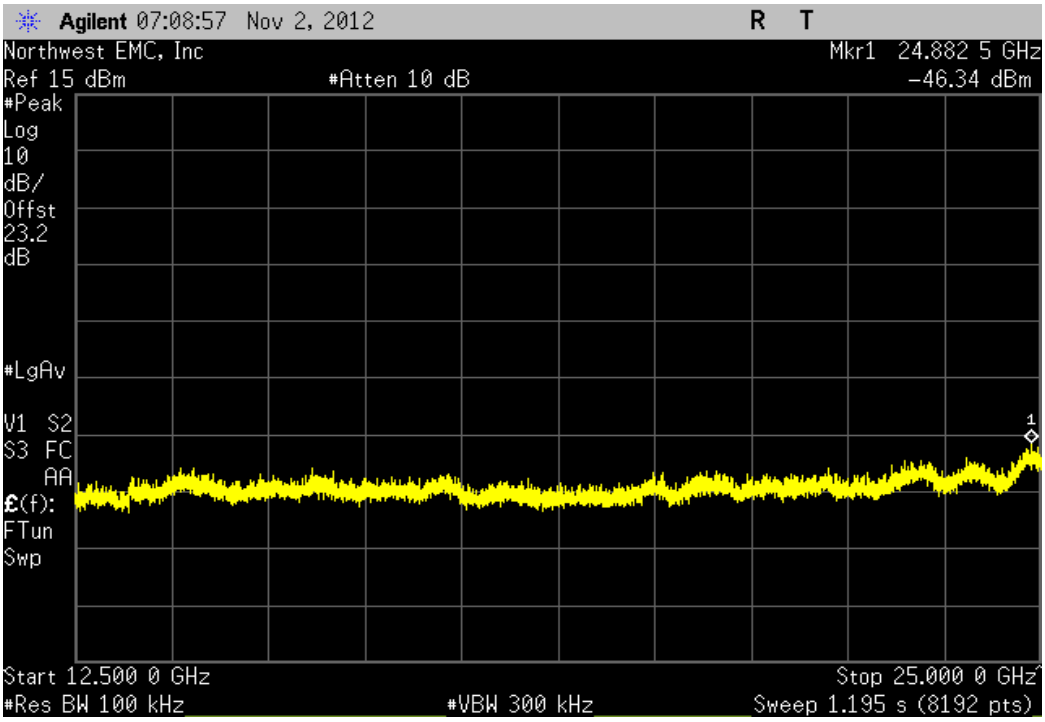
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(g) 6 Mbps, Mid Channel 6, 2437 MHz						
	Frequency Range			Value	Limit	Result
	Fundamental			N/A	N/A	N/A



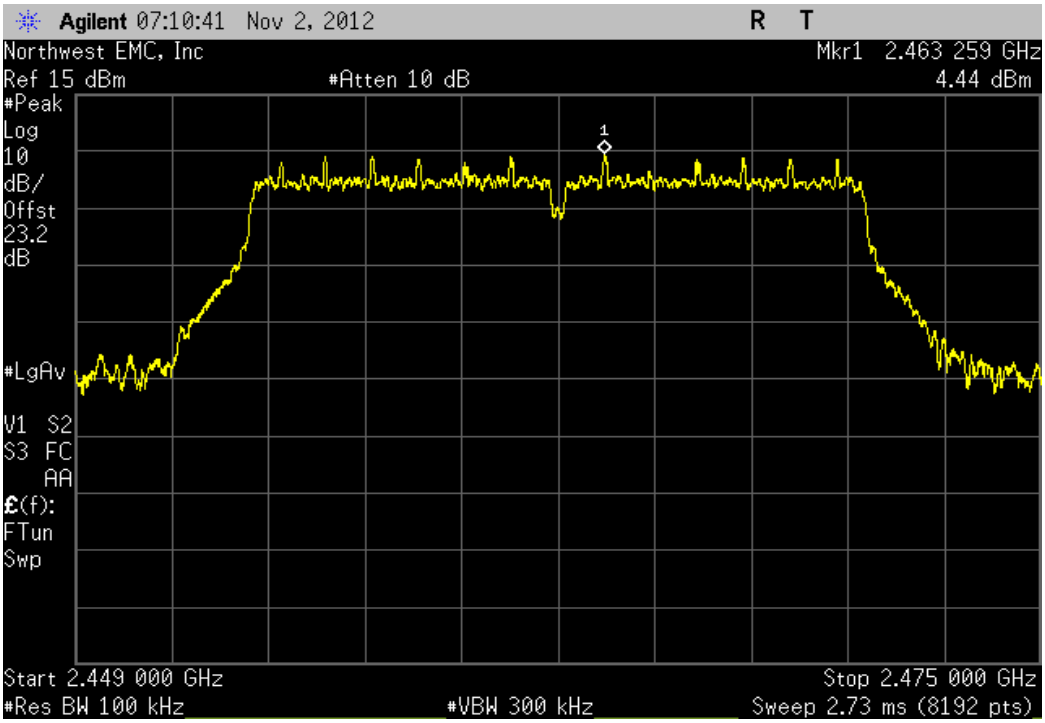
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(g) 6 Mbps, Mid Channel 6, 2437 MHz					
	Frequency Range		Value	Limit	Result
	30 MHz - 12.5 GHz		-58.55 dBc	≤ -20 dBc	Pass



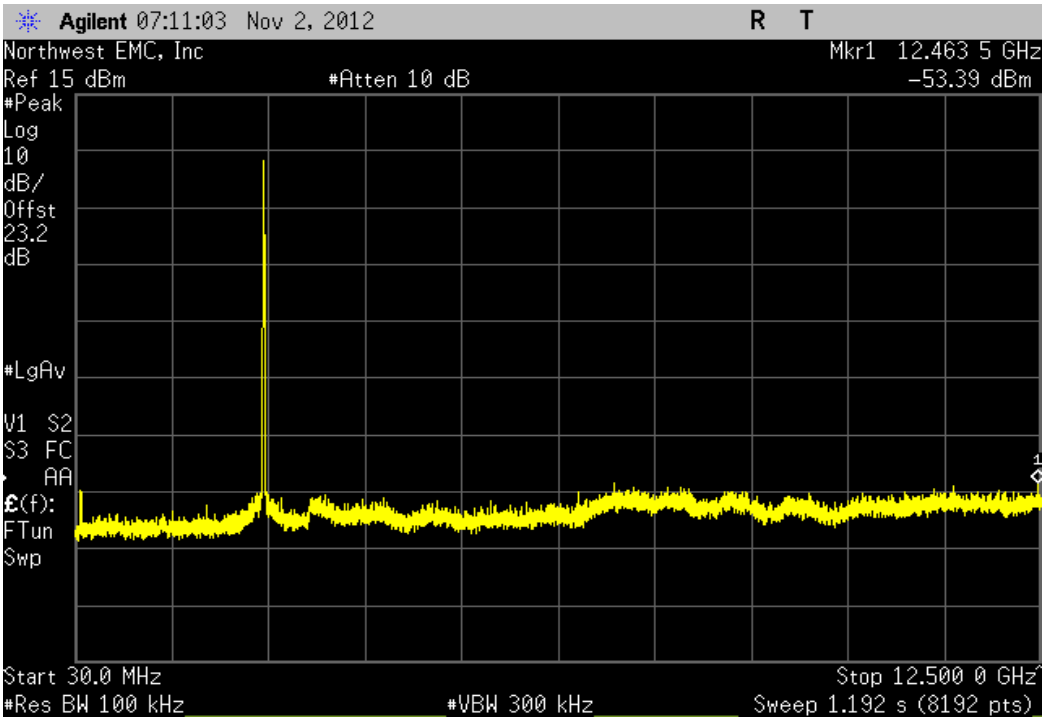
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(g) 6 Mbps, Mid Channel 6, 2437 MHz				
Frequency Range		Value	Limit	Result
12.5 GHz - 25 GHz		-50.91 dBc	≤ -20 dBc	Pass



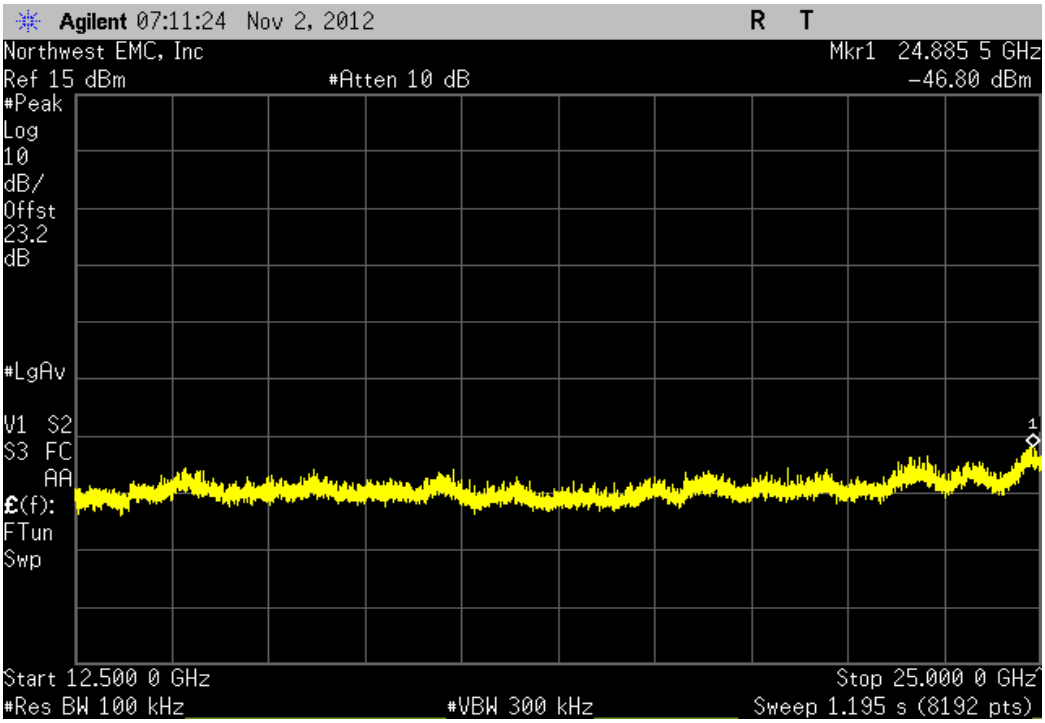
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(g) 6 Mbps, High Channel 11, 2462 MHz						
	Frequency Range			Value	Limit	Result
	Fundamental			N/A	N/A	N/A



20 MHz, 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		-57.83 dBc	≤ -20 dBc	Pass

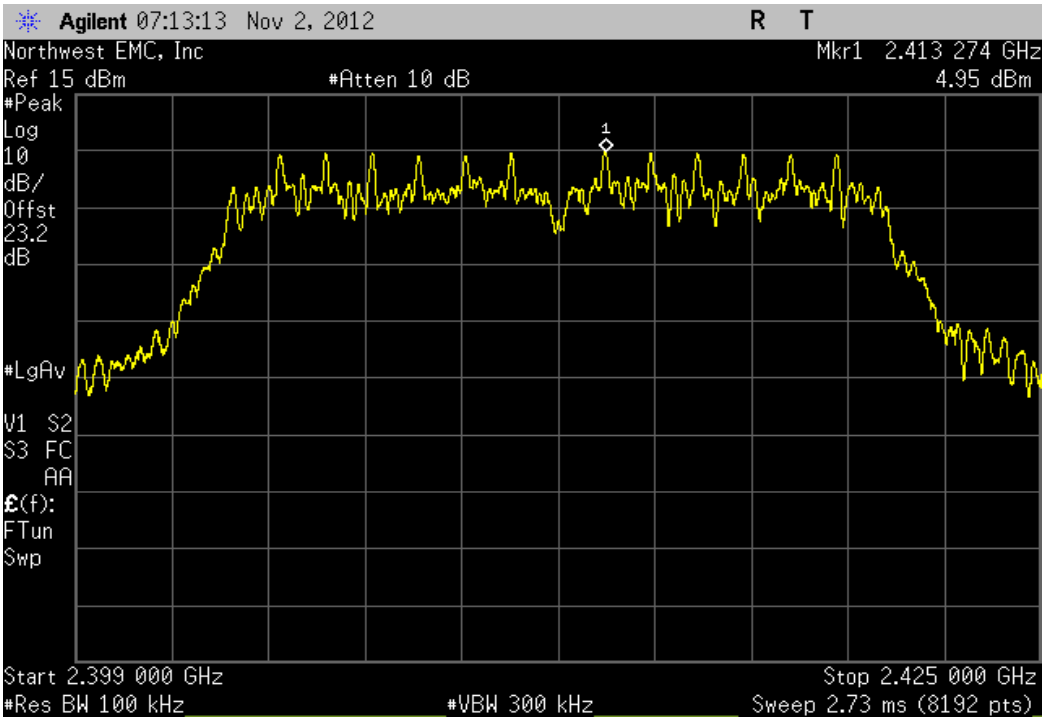


20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(g) 6 Mbps, High Channel 11, 2462 MHz				
Frequency Range		**Value**	**Limit**	**Result**
12.5 GHz - 25 GHz		-51.24 dBc	≤ -20 dBc	Pass



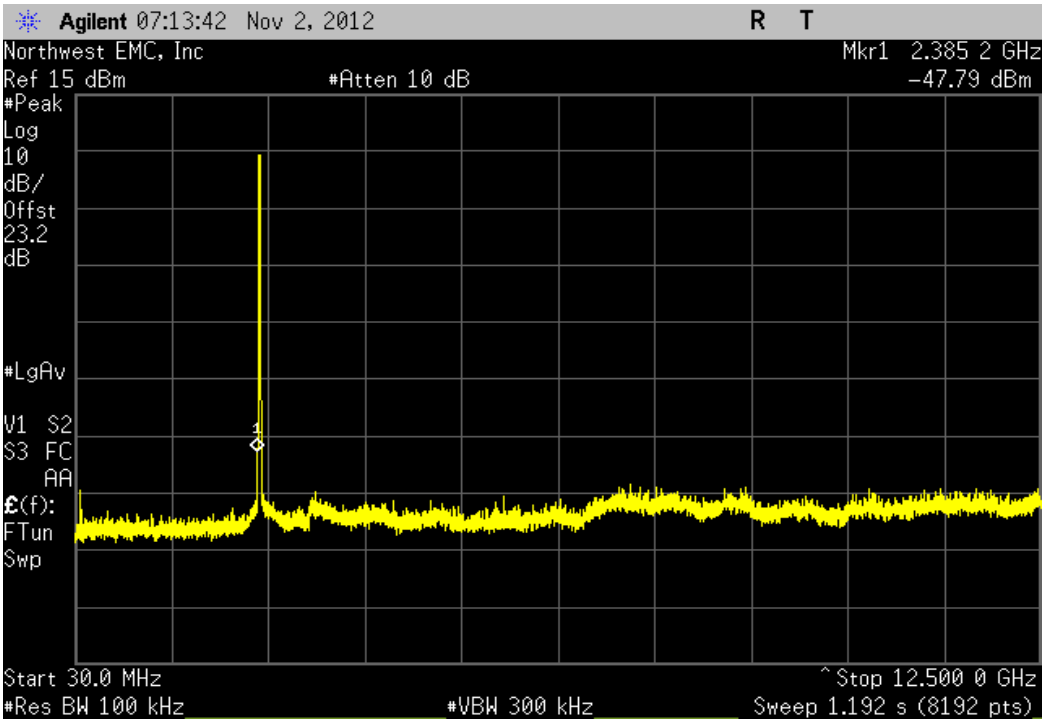
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, Low Channel 1, 2412 MHz

Frequency Range			Value	Limit	Result
Fundamental			N/A	N/A	N/A

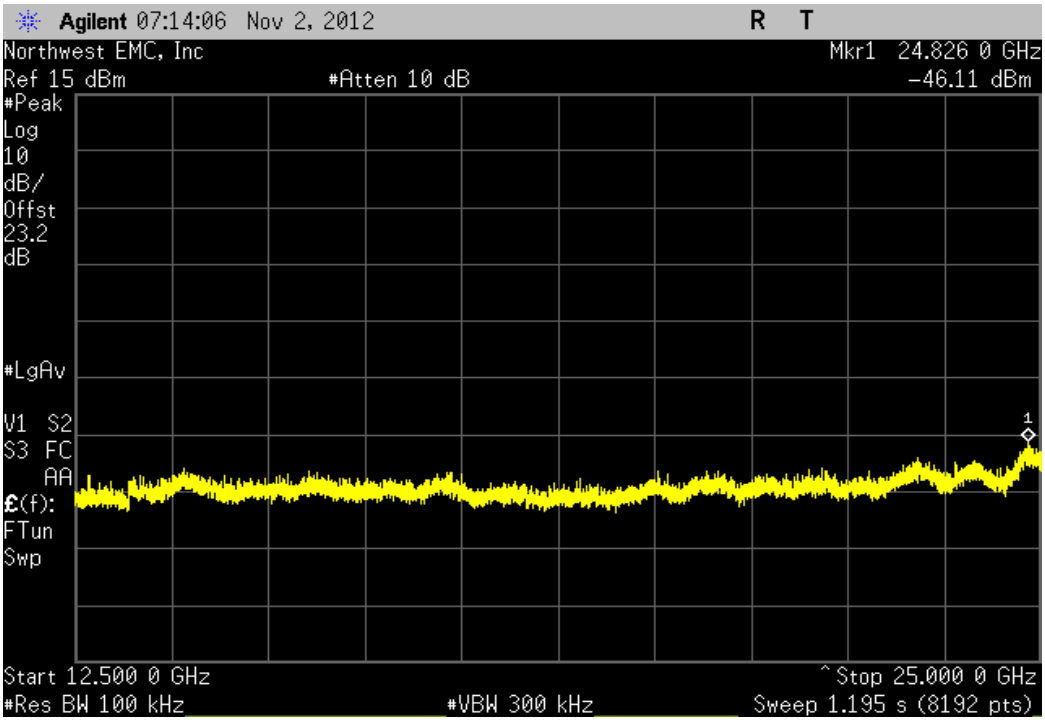


20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, Low Channel 1, 2412 MHz

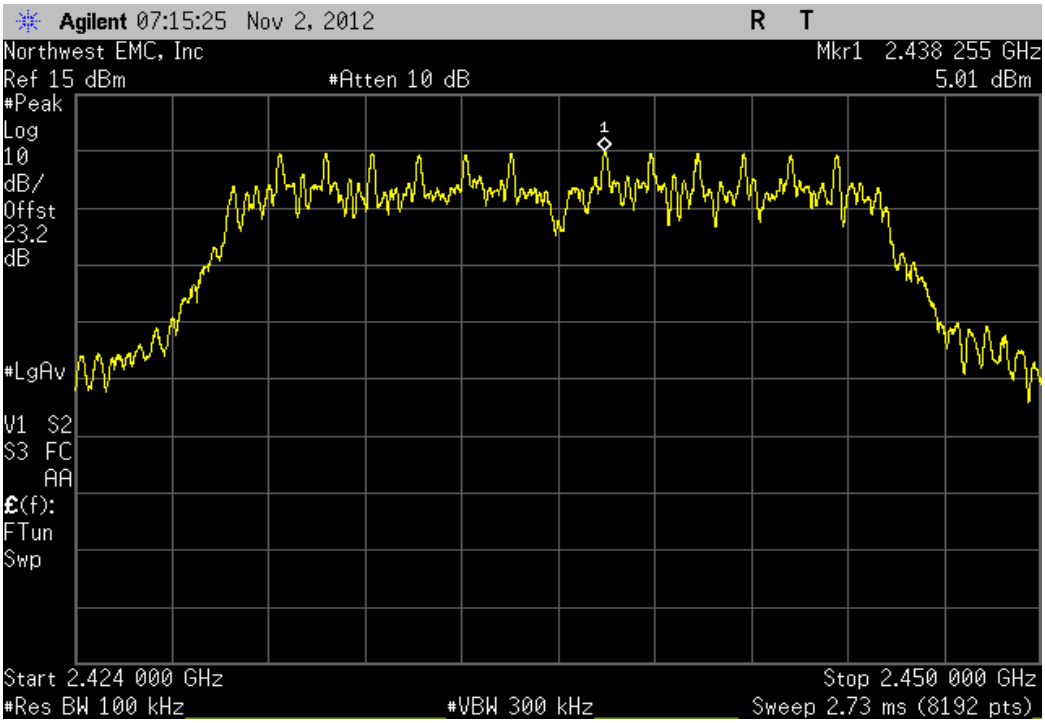
Frequency Range		Value	Limit	Result
30 MHz - 12.5 GHz		-52.74 dBc	≤ -20 dBc	Pass



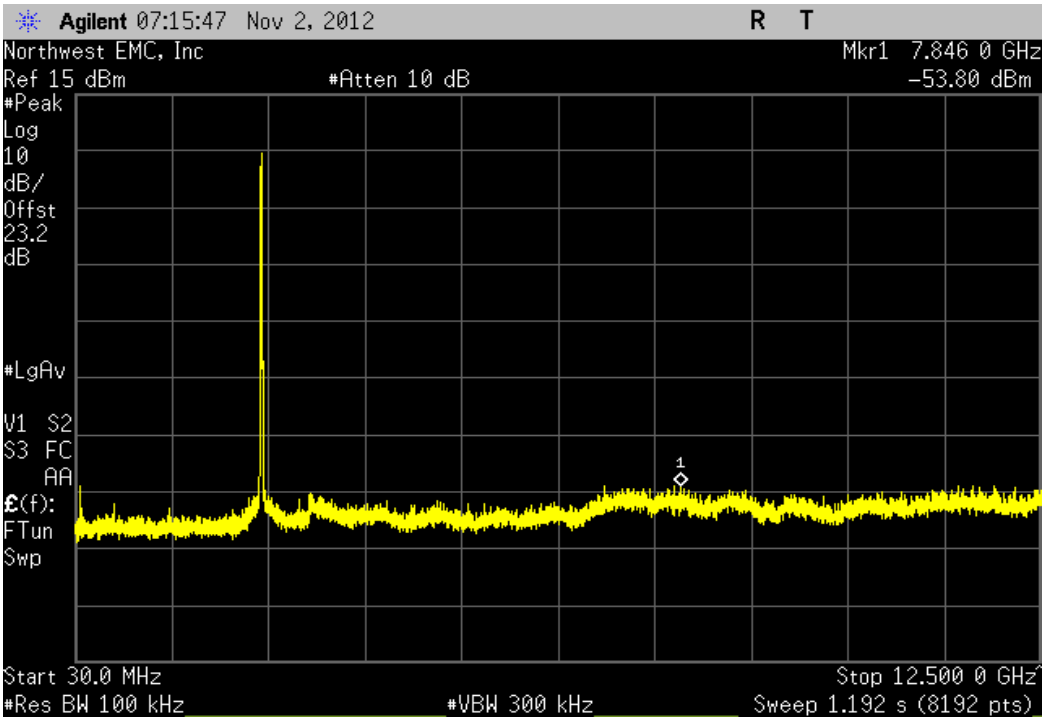
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, Low Channel 1, 2412 MHz					
Frequency Range			Value	Limit	Result
12.5 GHz - 25 GHz			-51.06 dBc	≤ -20 dBc	Pass



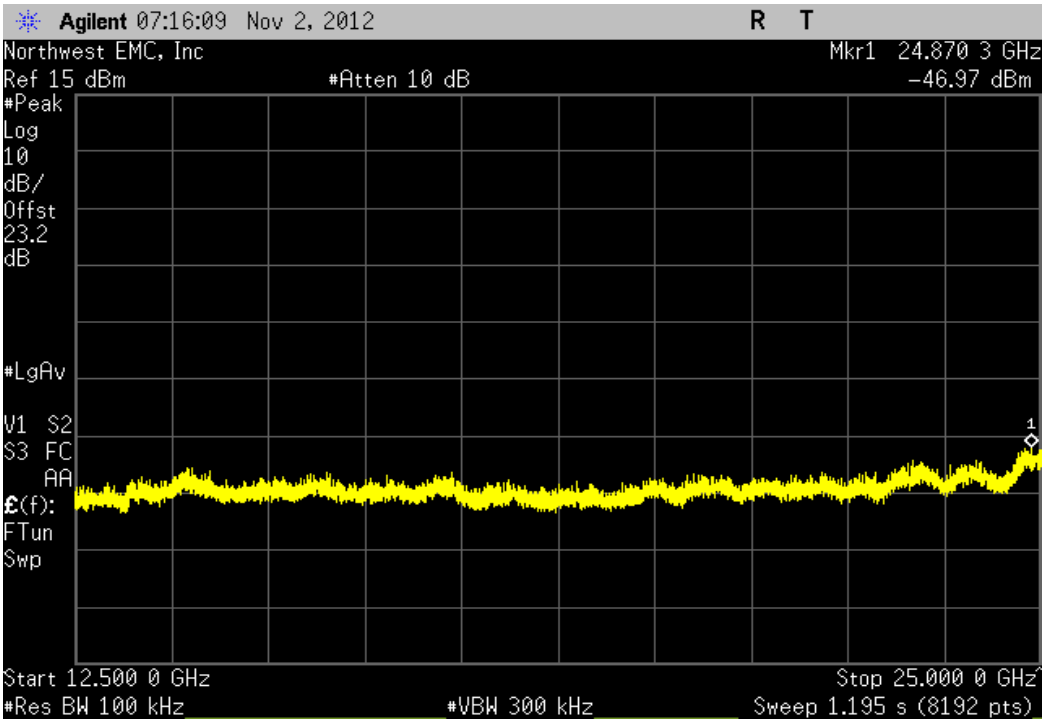
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, Mid Channel 6, 2437 MHz						
	Frequency Range			Value	Limit	Result
	Fundamental			N/A	N/A	N/A



20 MHz, 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		-58.81 dBc	≤ -20 dBc	Pass



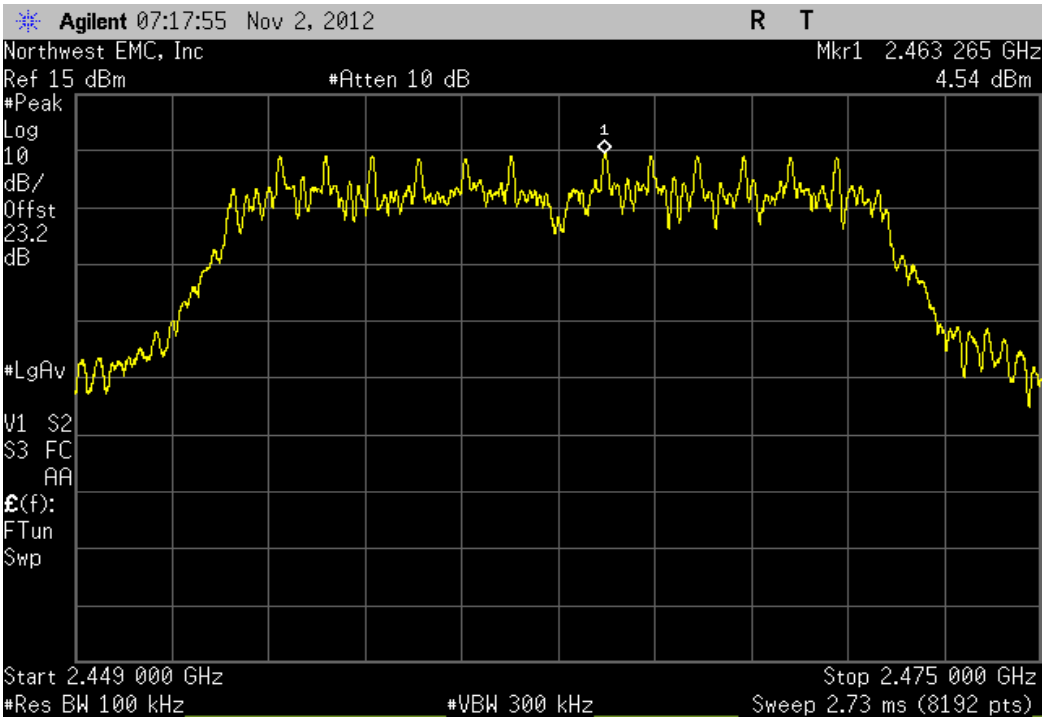
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, Mid Channel 6, 2437 MHz				
Frequency Range		Value	Limit	Result
12.5 GHz - 25 GHz		-51.98 dBc	≤ -20 dBc	Pass



Spurious Conducted Emissions

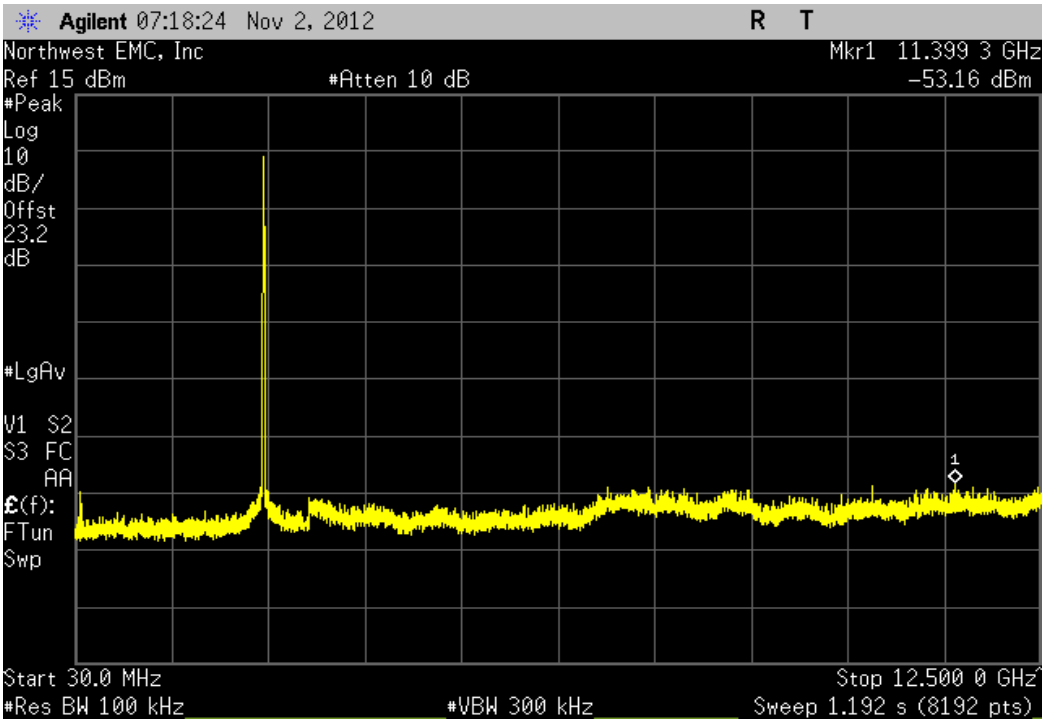
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, High Channel 11, 2462 MHz

Frequency Range			Value	Limit	Result
Fundamental			N/A	N/A	N/A



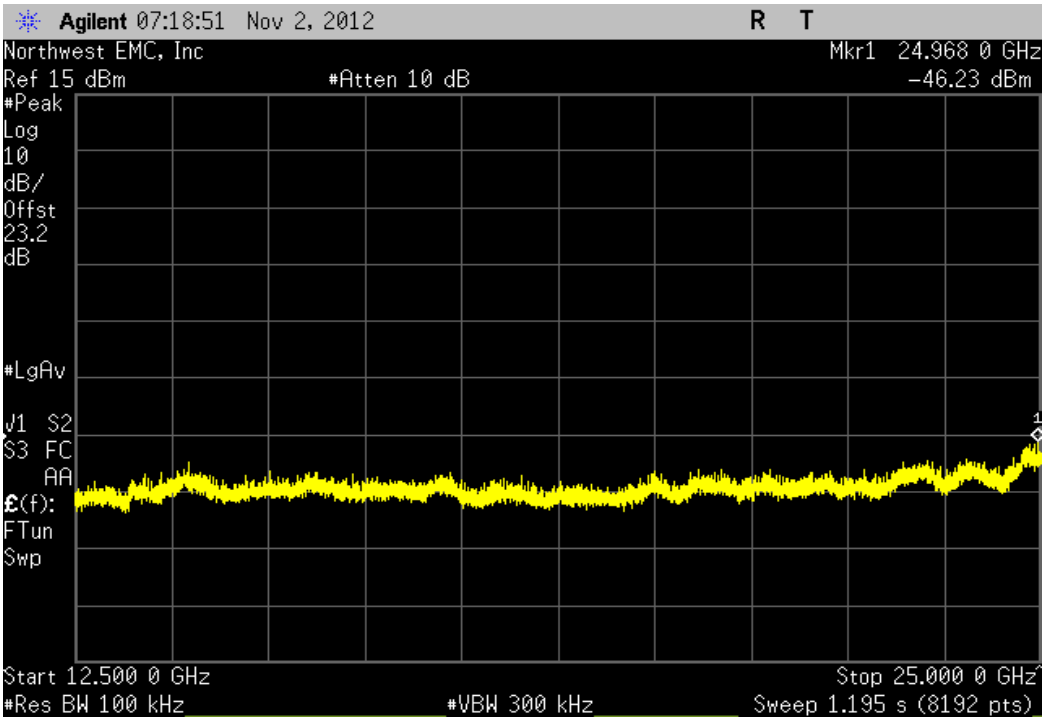
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, High Channel 11, 2462 MHz

Frequency Range		Value	Limit	Result
30 MHz - 12.5 GHz		-57.7 dBc	≤ -20 dBc	Pass



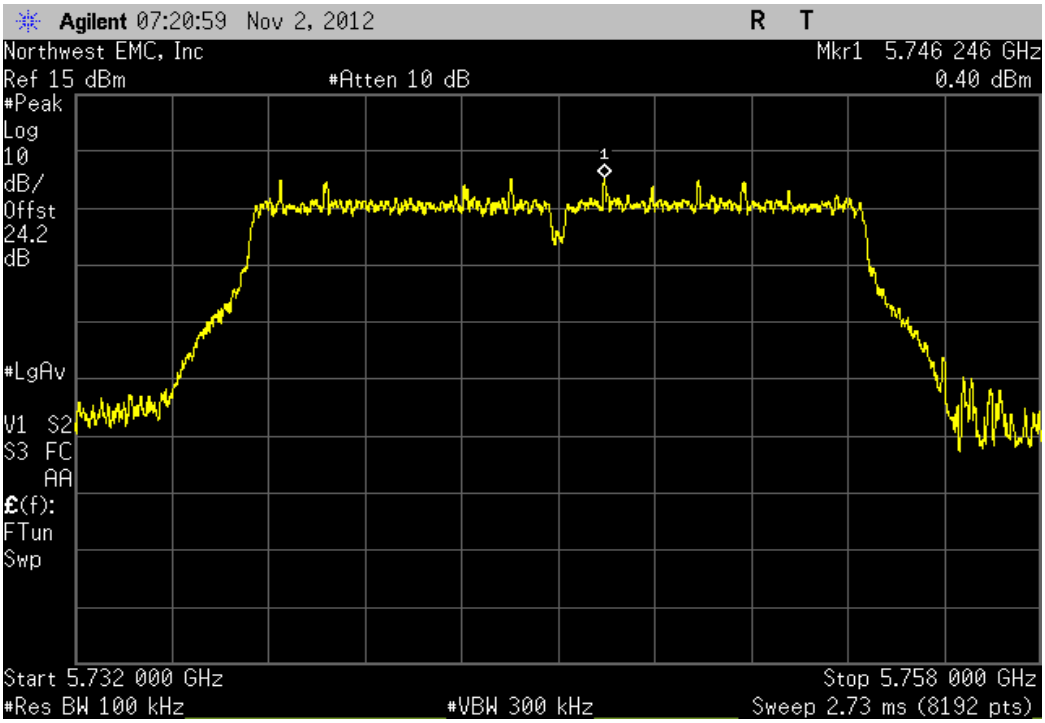
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, High Channel 11, 2462 MHz

Frequency Range		Value	Limit	Result
12.5 GHz - 25 GHz		-50.77 dBc	≤ -20 dBc	Pass

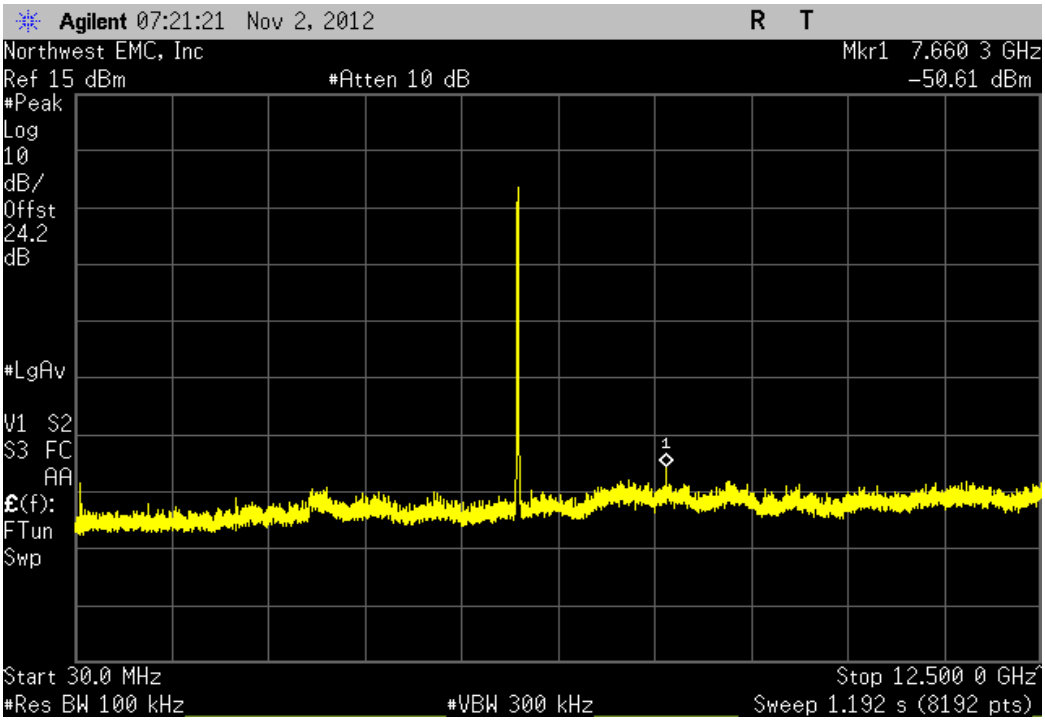


20 MHz, 5725 MHz - 5850 MHz Band, 802.11(a) 6 Mbps, Low Channel 149, 5745 MHz

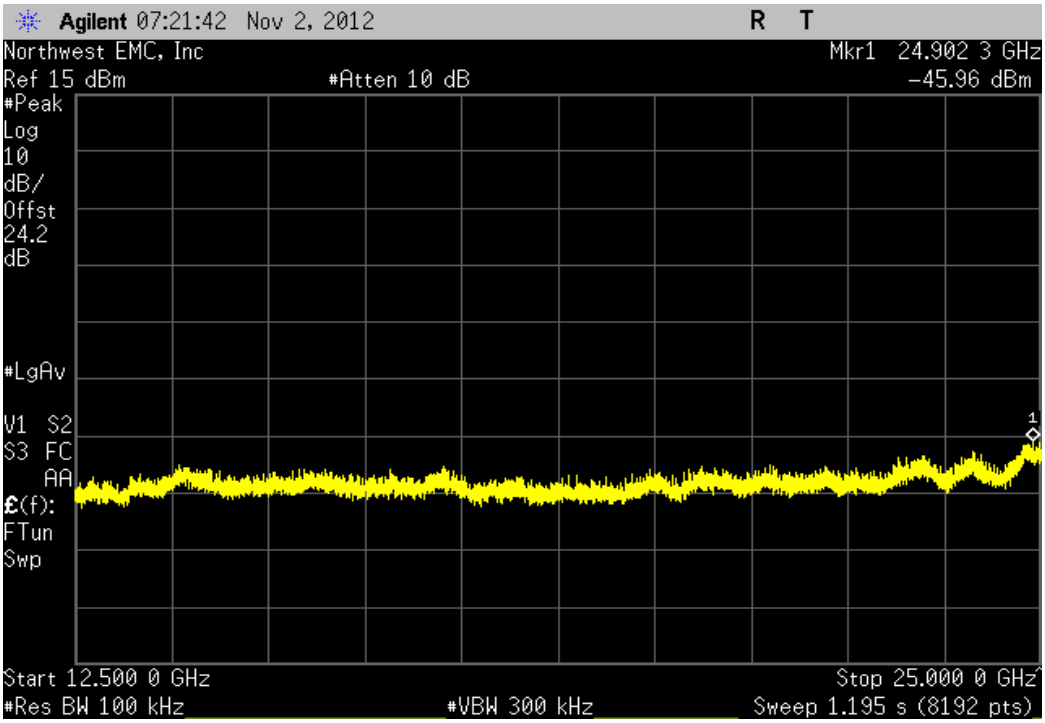
Frequency Range				Value	Limit	Result
	Fundamental			N/A	N/A	N/A



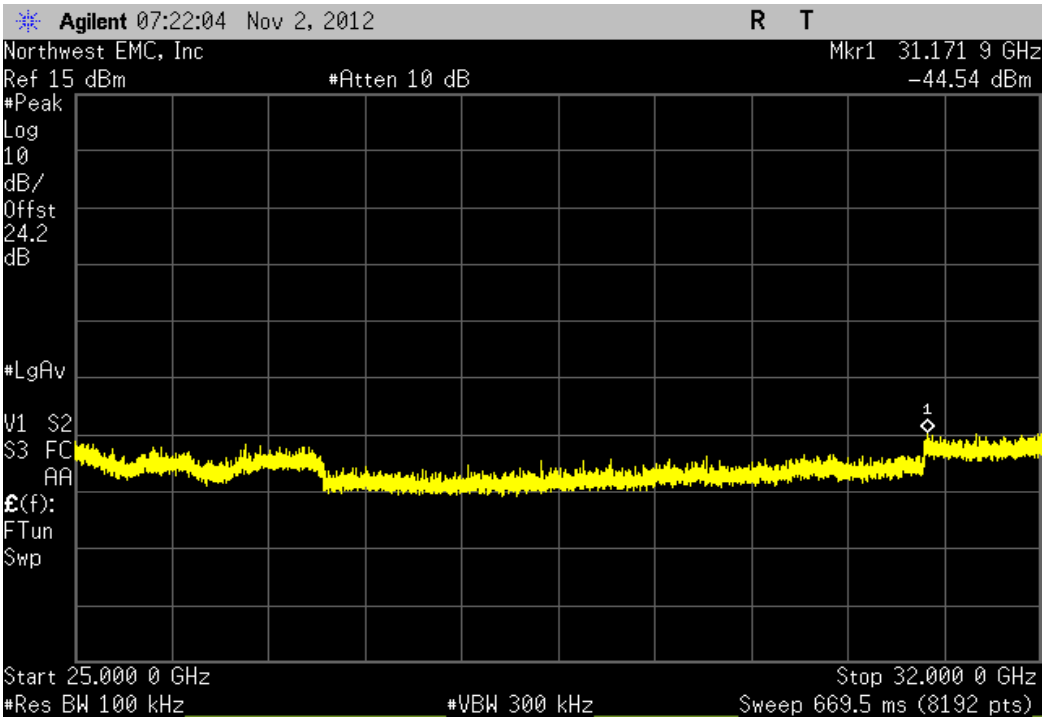
20 MHz, 5725 MHz - 5850 MHz Band, 802.11(a) 6 Mbps, Low Channel 149, 5745 MHz				
Frequency Range		**Value**	**Limit**	**Result**
30 MHz - 12.5 GHz		-51.01 dBc	≤ -20 dBc	Pass



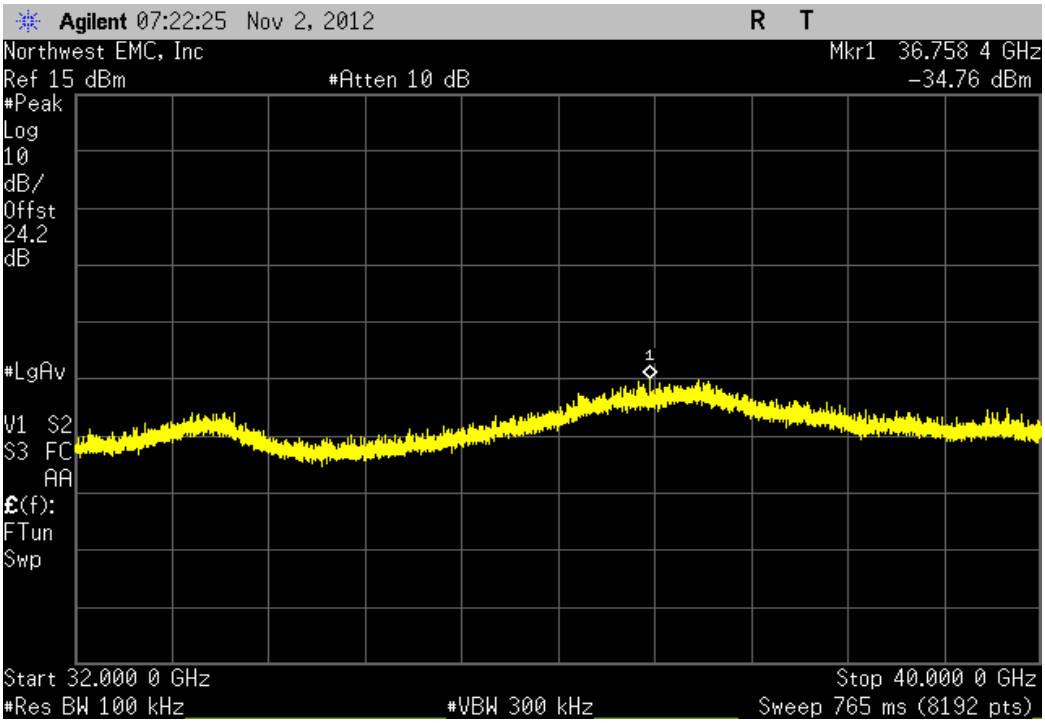
20 MHz, 5725 MHz - 5850 MHz Band, 802.11(a) 6 Mbps, Low Channel 149, 5745 MHz				
Frequency Range		**Value**	**Limit**	**Result**
12.5 GHz - 25 GHz		-46.36 dBc	≤ -20 dBc	Pass



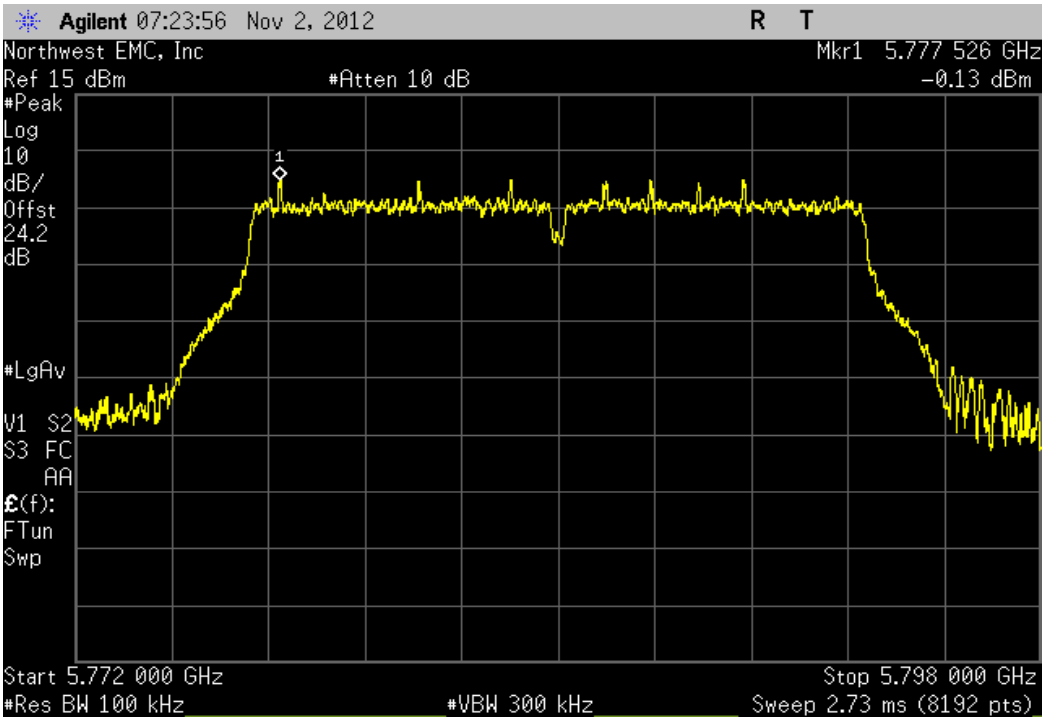
20 MHz, 5725 MHz - 5850 MHz Band, 802.11(a) 6 Mbps, Low Channel 149, 5745 MHz				
Frequency Range		**Value**	**Limit**	**Result**
25 GHz - 32 GHz		-44.94 dBc	≤ -20 dBc	Pass



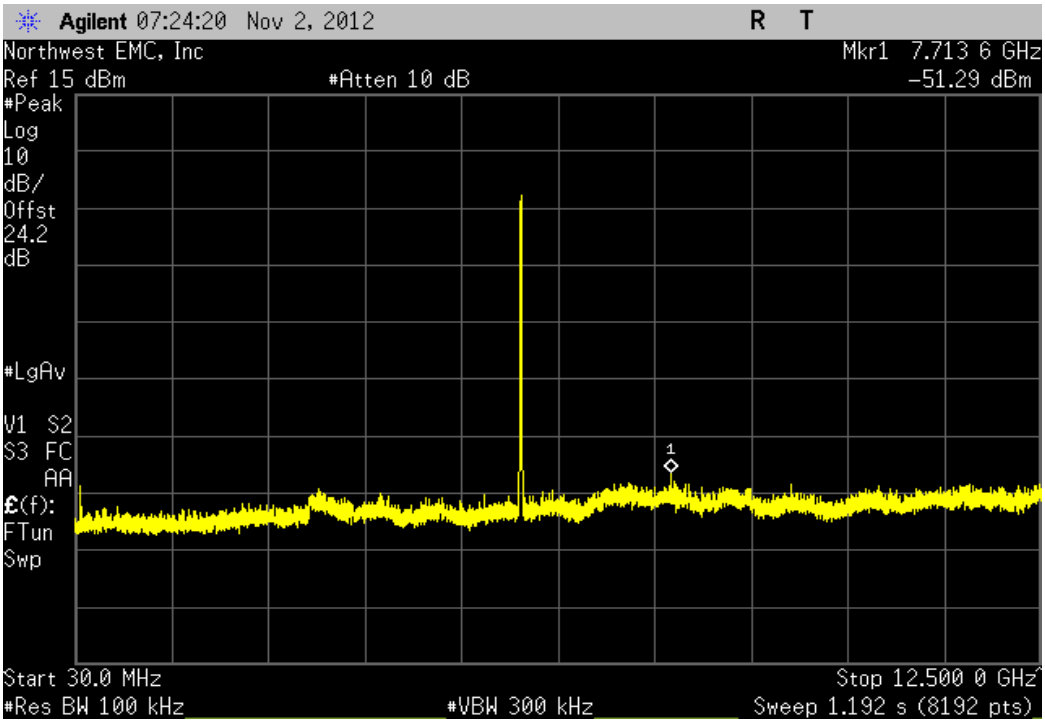
20 MHz, 5725 MHz - 5850 MHz Band, 802.11(a) 6 Mbps, Low Channel 149, 5745 MHz				
Frequency Range		**Value**	**Limit**	**Result**
32 GHz - 40 GHz		-35.16 dBc	≤ -20 dBc	Pass



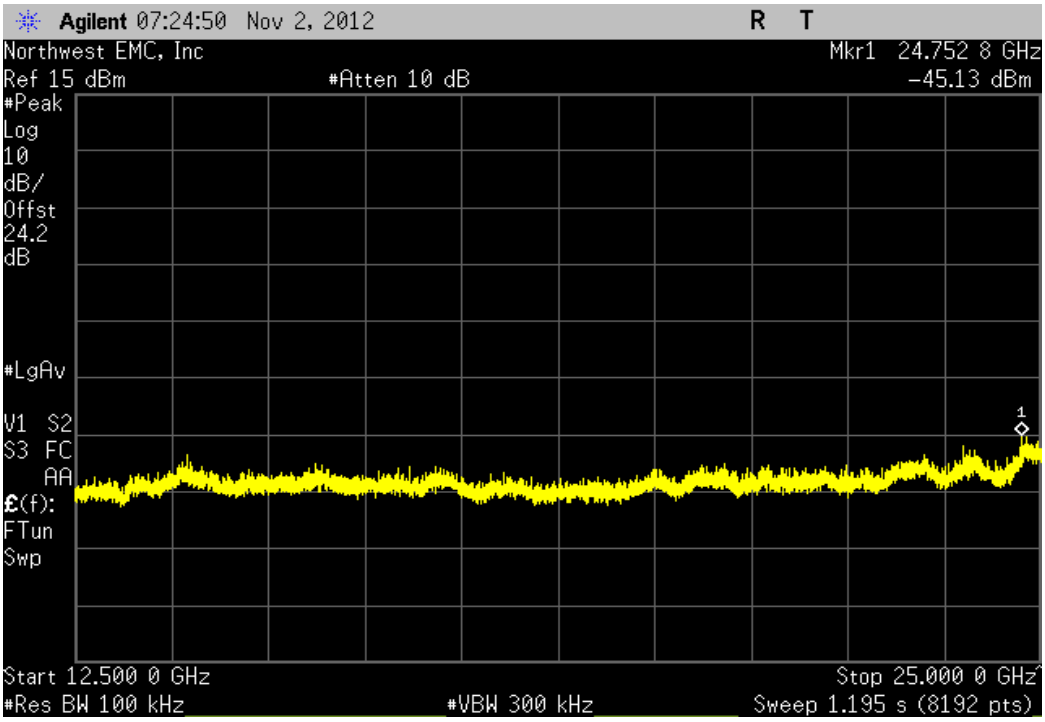
20 MHz, 5725 MHz - 5850 MHz Band, 802.11(a) 6 Mbps, Mid Channel 157, 5785 MHz						
	Frequency Range			Value	Limit	Result
	Fundamental			N/A	N/A	N/A



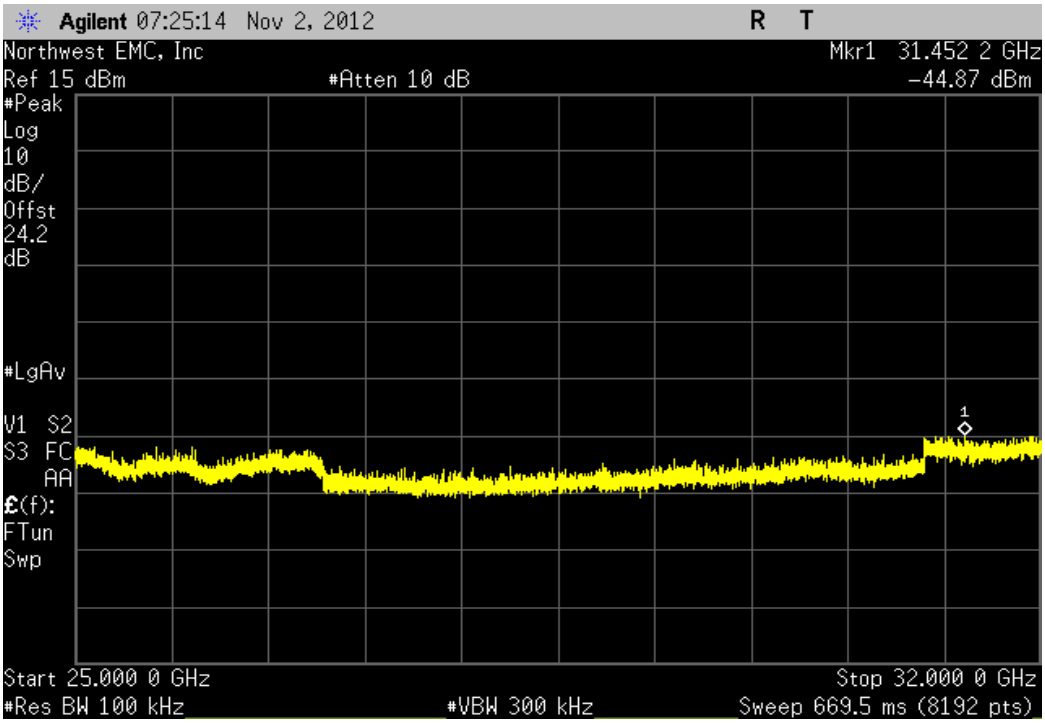
20 MHz, 5725 MHz - 5850 MHz Band, 802.11(a) 6 Mbps, Mid Channel 157, 5785 MHz					
	Frequency Range		Value	Limit	Result
	30 MHz - 12.5 GHz		-51.16 dBc	≤ -20 dBc	Pass



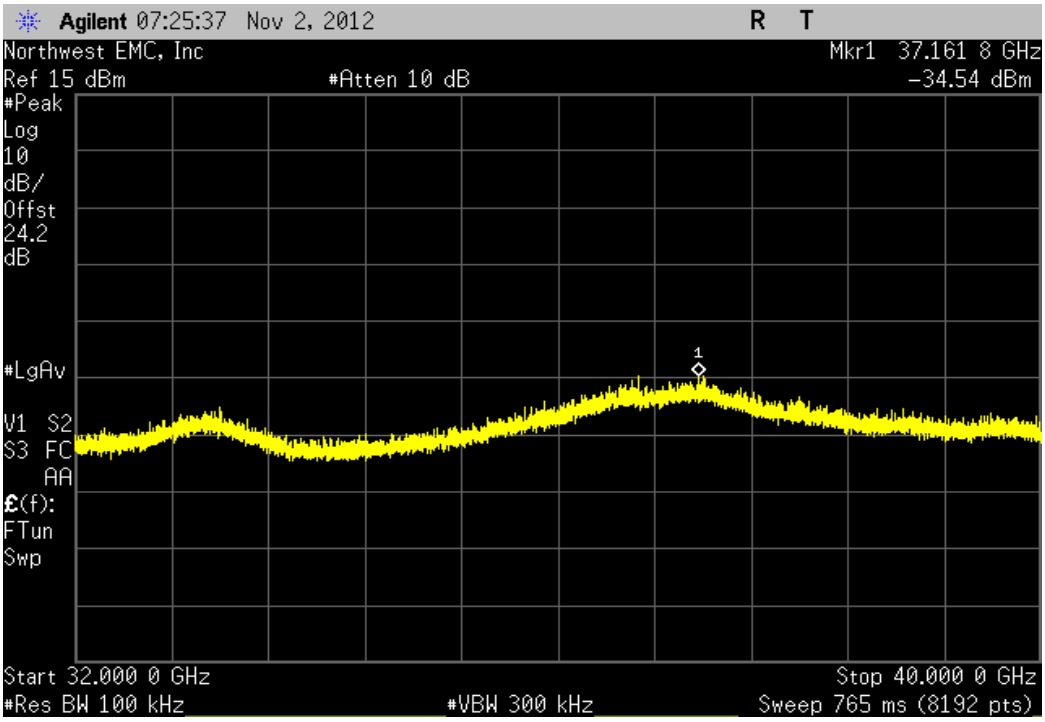
20 MHz, 5725 MHz - 5850 MHz Band, 802.11(a) 6 Mbps, Mid Channel 157, 5785 MHz				
Frequency Range		**Value**	**Limit**	**Result**
12.5 GHz - 25 GHz		-45 dBc	≤ -20 dBc	Pass



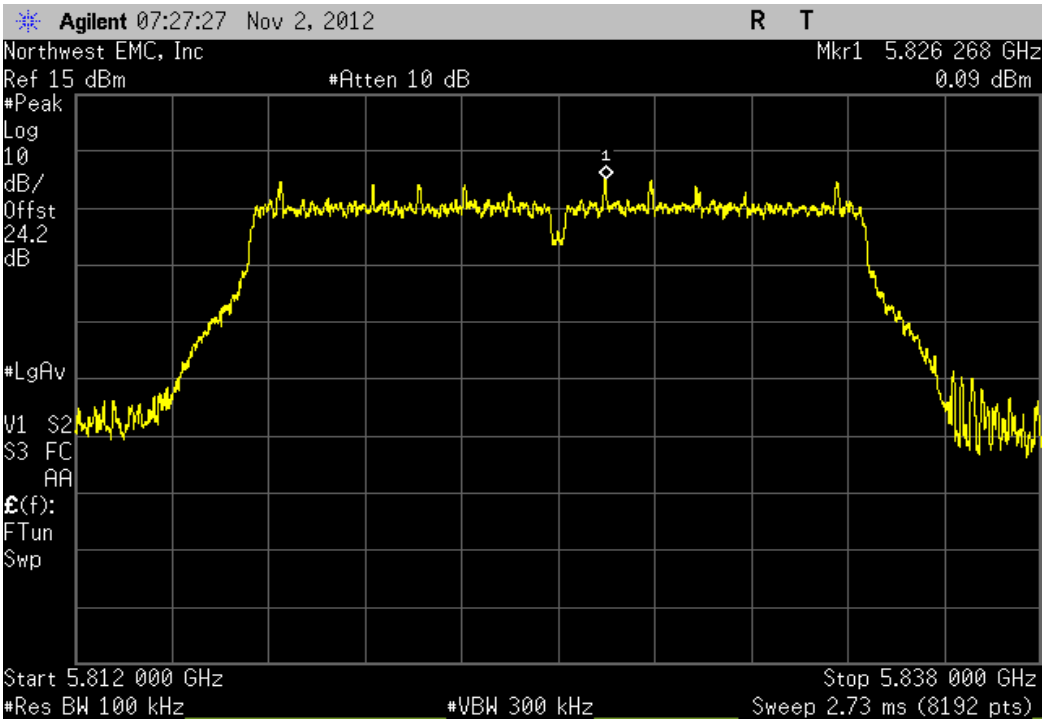
20 MHz, 5725 MHz - 5850 MHz Band, 802.11(a) 6 Mbps, Mid Channel 157, 5785 MHz				
Frequency Range		**Value**	**Limit**	**Result**
25 GHz - 32 GHz		-44.74 dBc	≤ -20 dBc	Pass



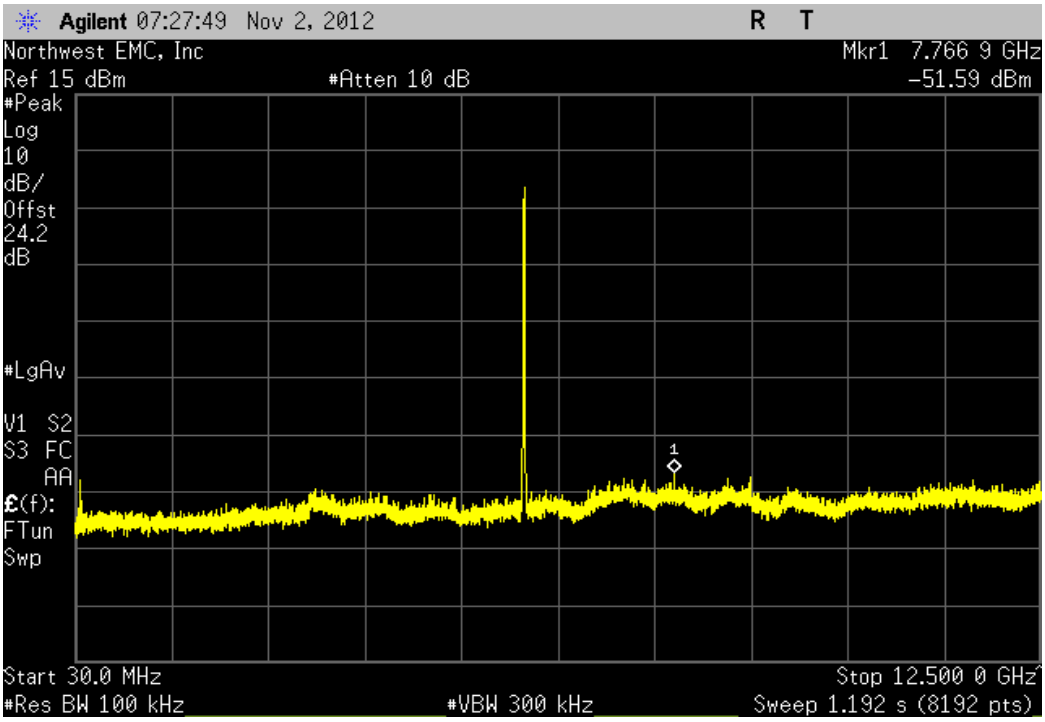
20 MHz, 5725 MHz - 5850 MHz Band, 802.11(a) 6 Mbps, Mid Channel 157, 5785 MHz				
Frequency Range		Value	Limit	Result
32 GHz - 40 GHz		-34.41 dBc	≤ -20 dBc	Pass



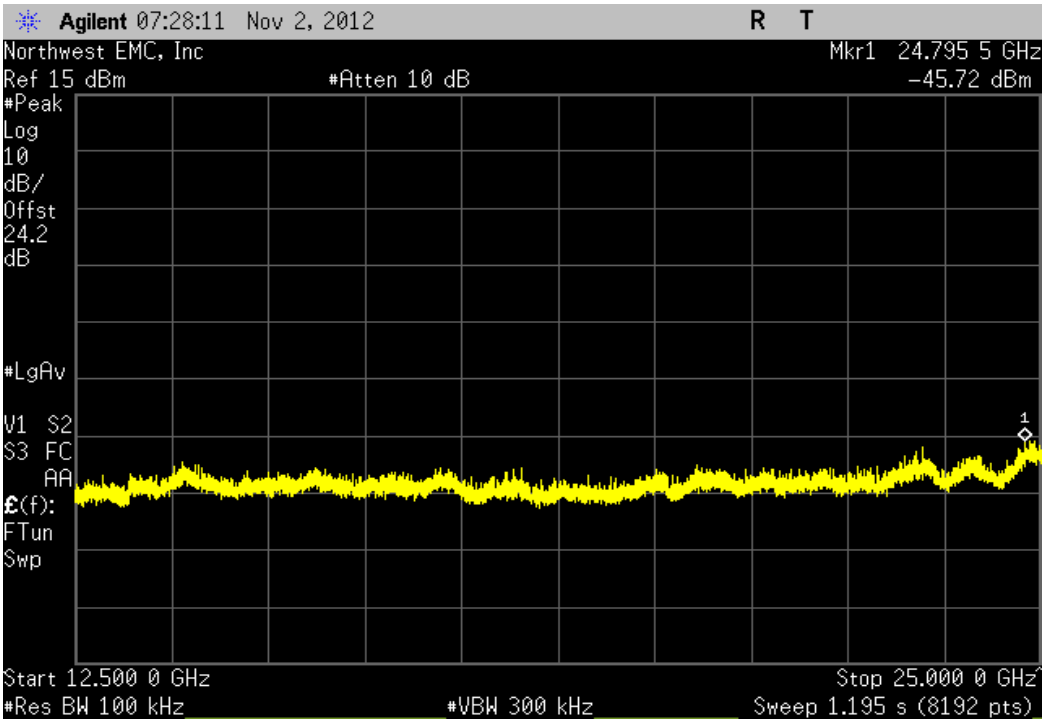
20 MHz, 5725 MHz - 5850 MHz Band, 802.11(a) 6 Mbps, High Channel 165, 5825 MHz						
	Frequency Range			Value	Limit	Result
	Fundamental			N/A	N/A	N/A



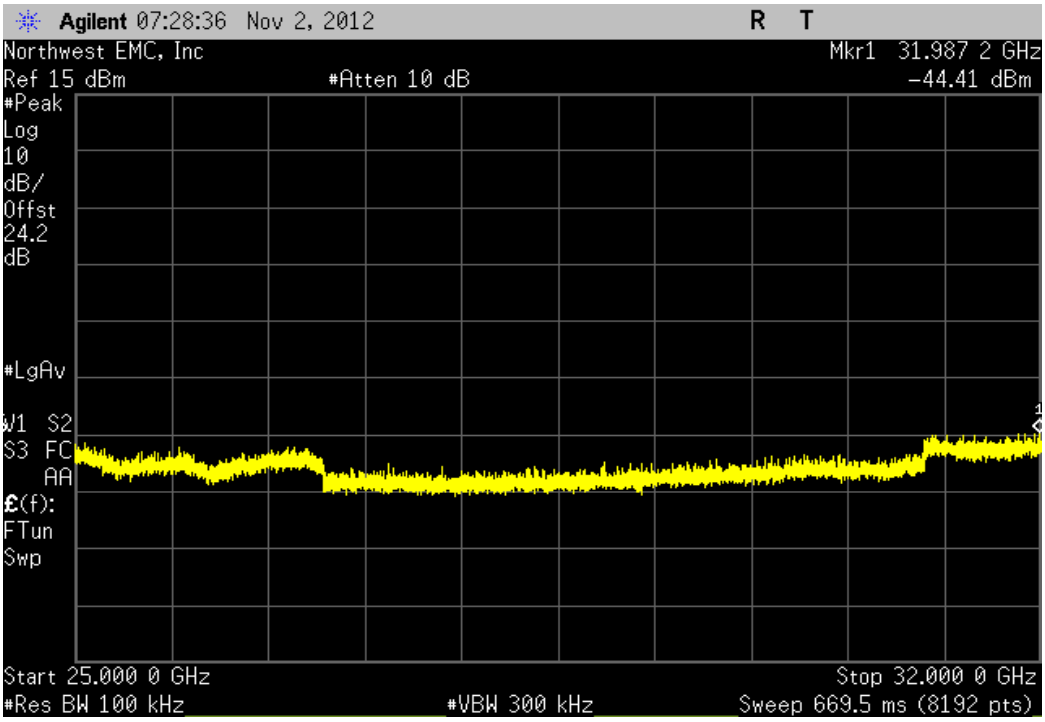
20 MHz, 5725 MHz - 5850 MHz Band, 802.11(a) 6 Mbps, High Channel 165, 5825 MHz				
Frequency Range		**Value**	**Limit**	**Result**
30 MHz - 12.5 GHz		-51.68 dBc	≤ -20 dBc	Pass



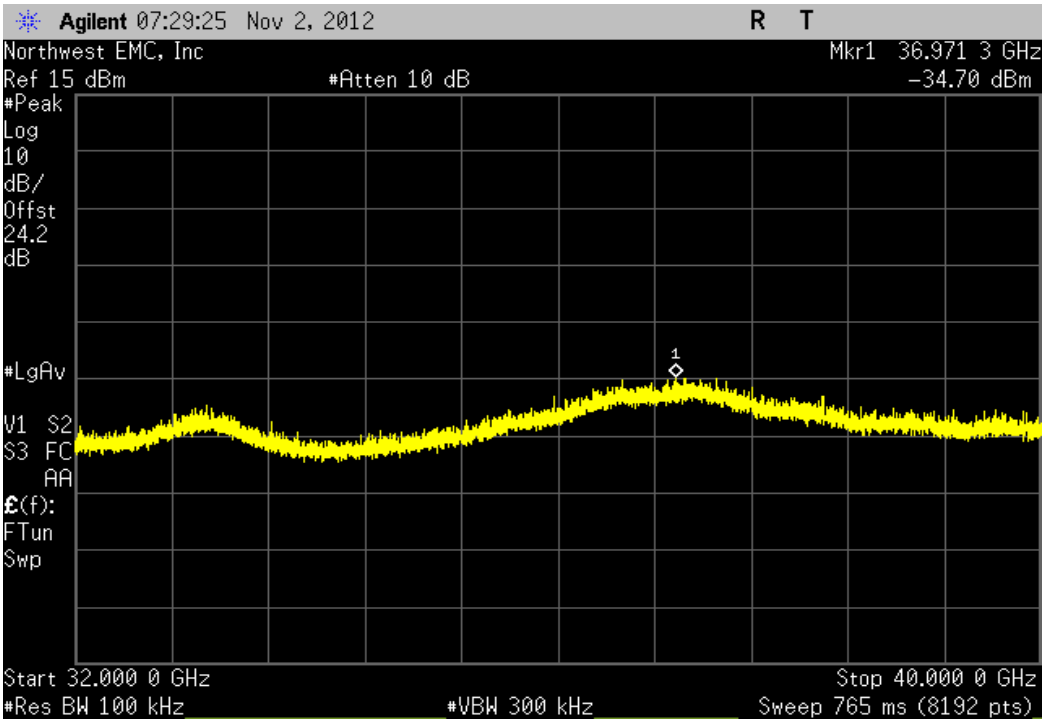
20 MHz, 5725 MHz - 5850 MHz Band, 802.11(a) 6 Mbps, High Channel 165, 5825 MHz				
Frequency Range		**Value**	**Limit**	**Result**
12.5 GHz - 25 GHz		-45.81 dBc	≤ -20 dBc	Pass



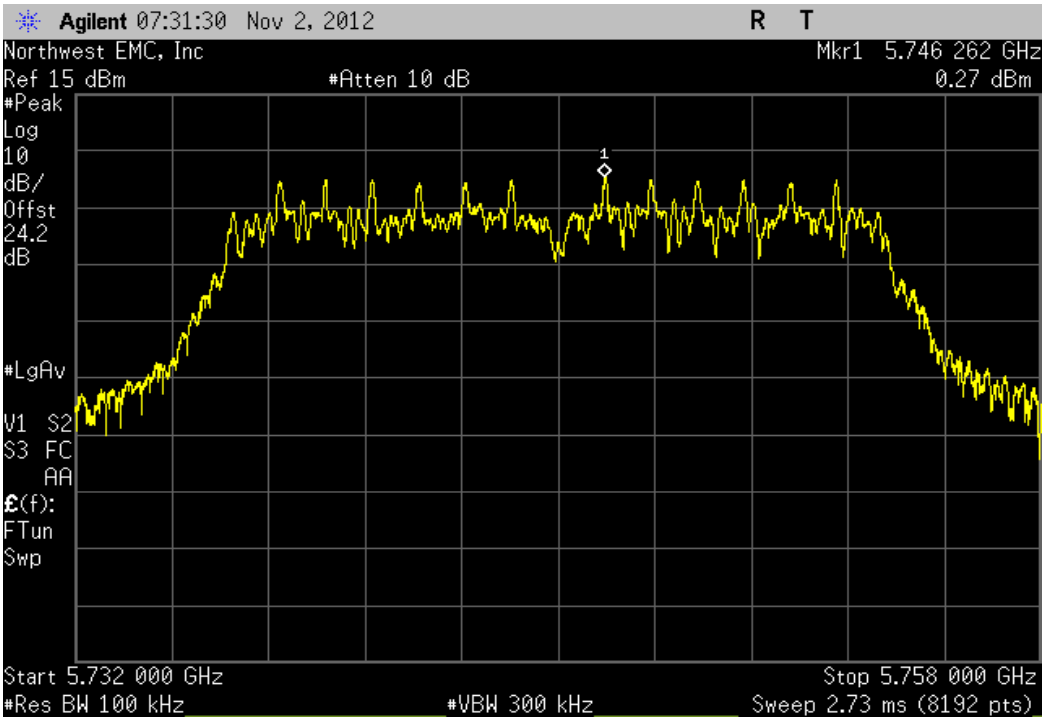
20 MHz, 5725 MHz - 5850 MHz Band, 802.11(a) 6 Mbps, High Channel 165, 5825 MHz				
Frequency Range		**Value**	**Limit**	**Result**
25 GHz - 32 GHz		-44.5 dBc	≤ -20 dBc	Pass



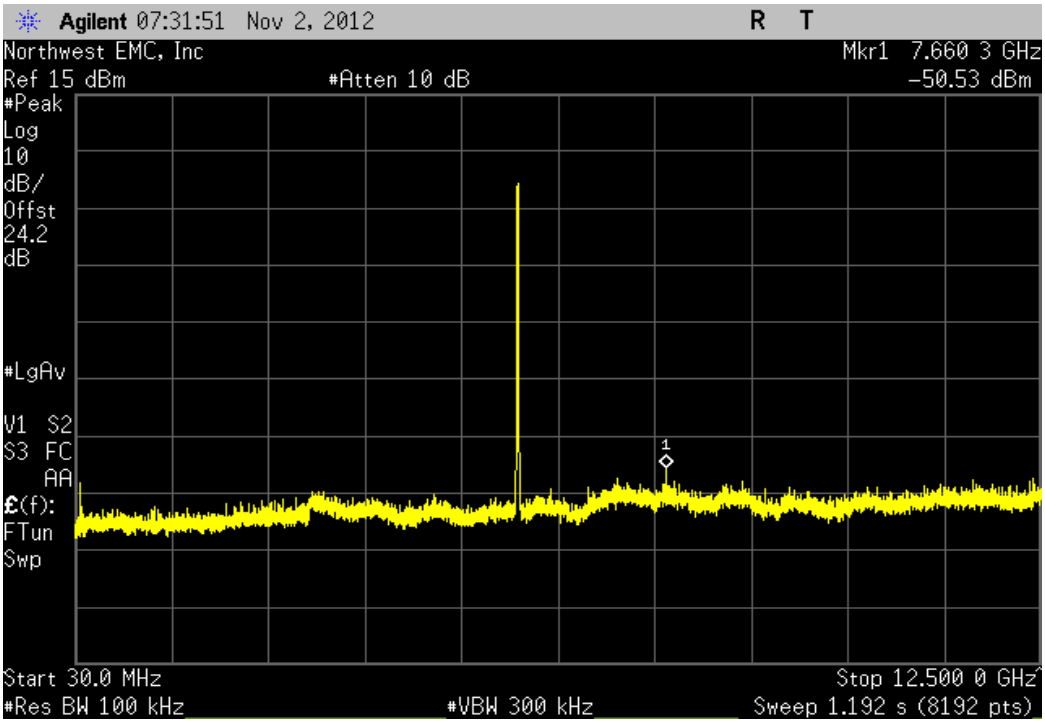
20 MHz, 5725 MHz - 5850 MHz Band, 802.11(a) 6 Mbps, High Channel 165, 5825 MHz				
Frequency Range		**Value**	**Limit**	**Result**
32 GHz - 40 GHz		-34.79 dBc	≤ -20 dBc	Pass



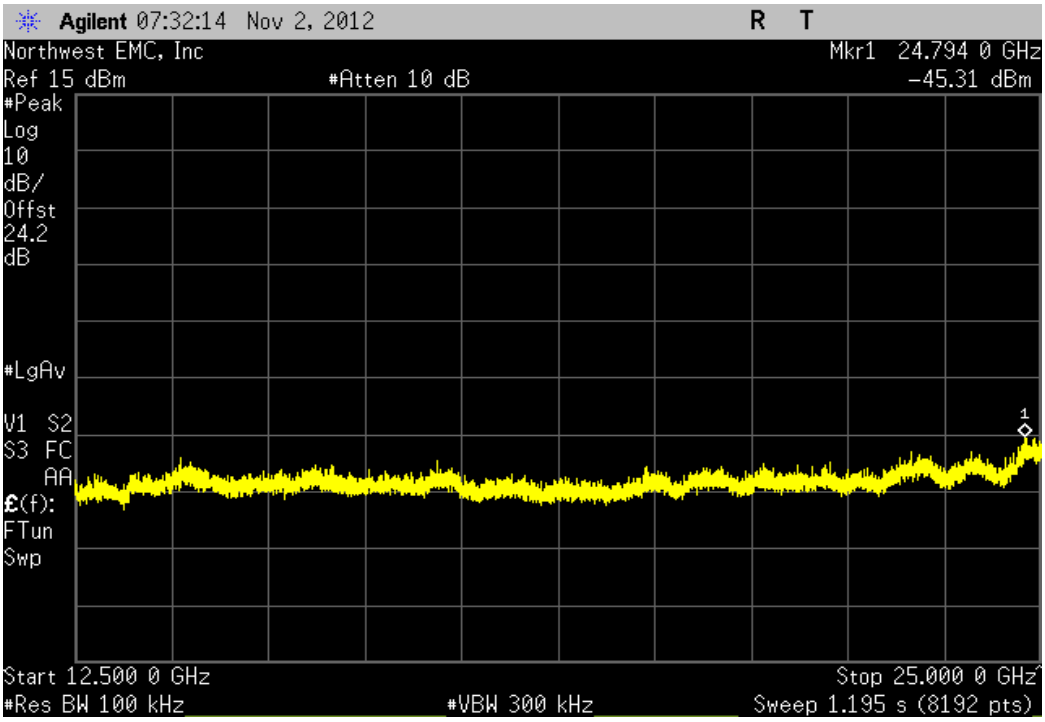
20 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS7 - UNII, Low Channel 149, 5745 MHz						
	Frequency Range			Value	Limit	Result
	Fundamental			N/A	N/A	N/A



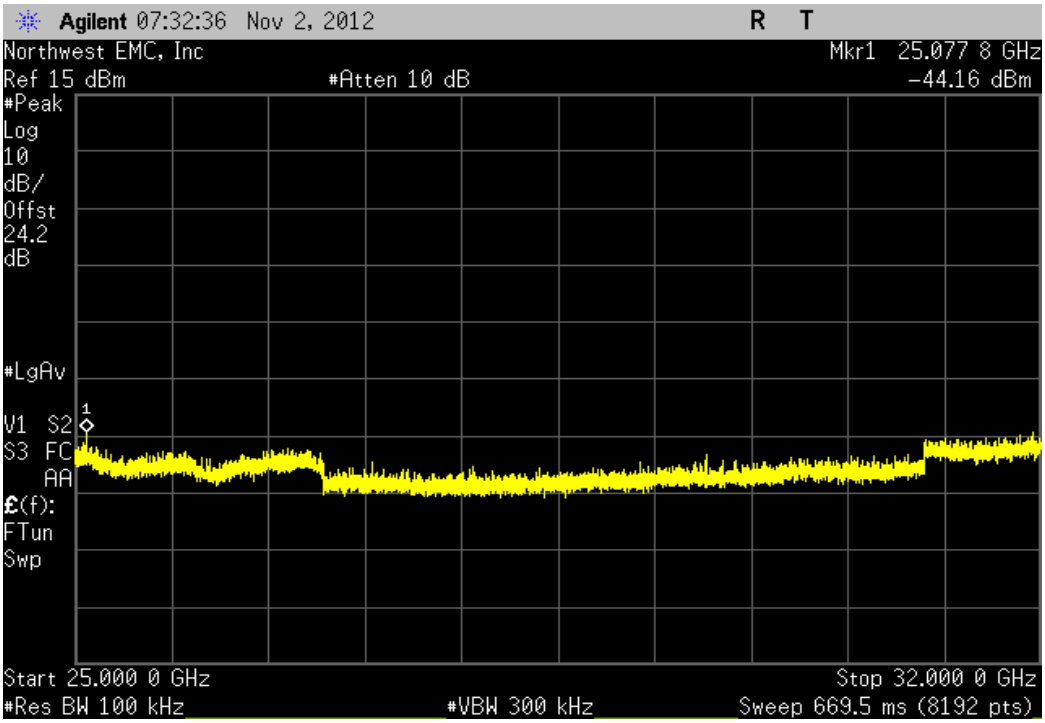
20 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS7 - UNII, Low Channel 149, 5745 MHz					
Frequency Range			Value	Limit	Result
30 MHz - 12.5 GHz			-50.8 dBc	≤ -20 dBc	Pass



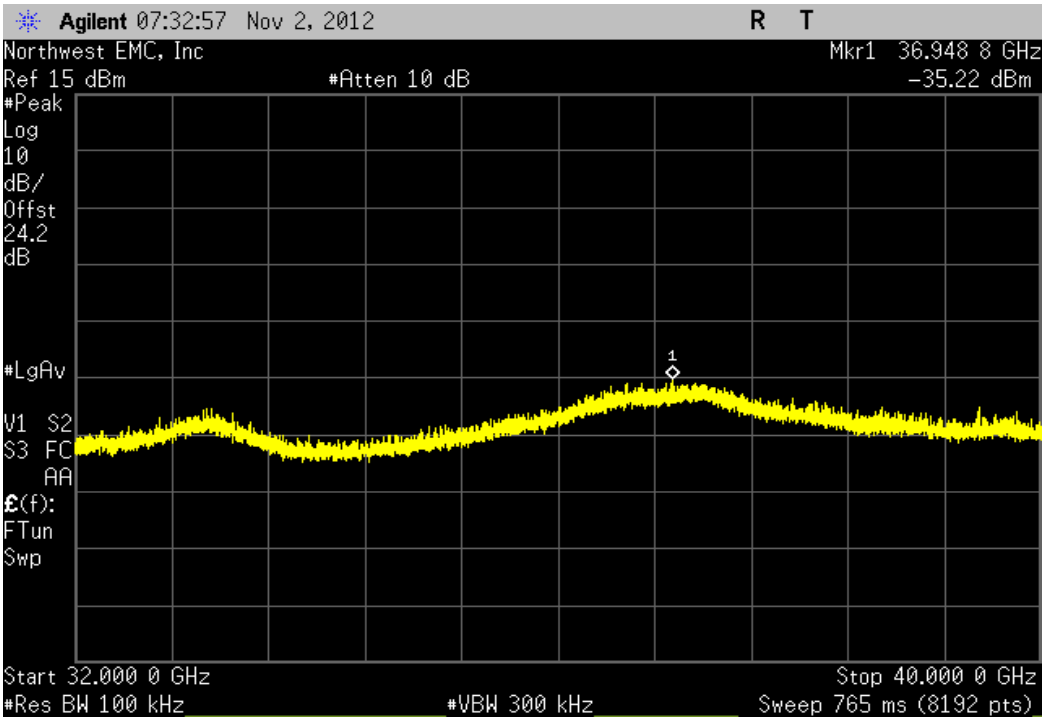
20 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS7 - UNII, Low Channel 149, 5745 MHz				
Frequency Range		**Value**	**Limit**	**Result**
12.5 GHz - 25 GHz		-45.58 dBc	≤ -20 dBc	Pass



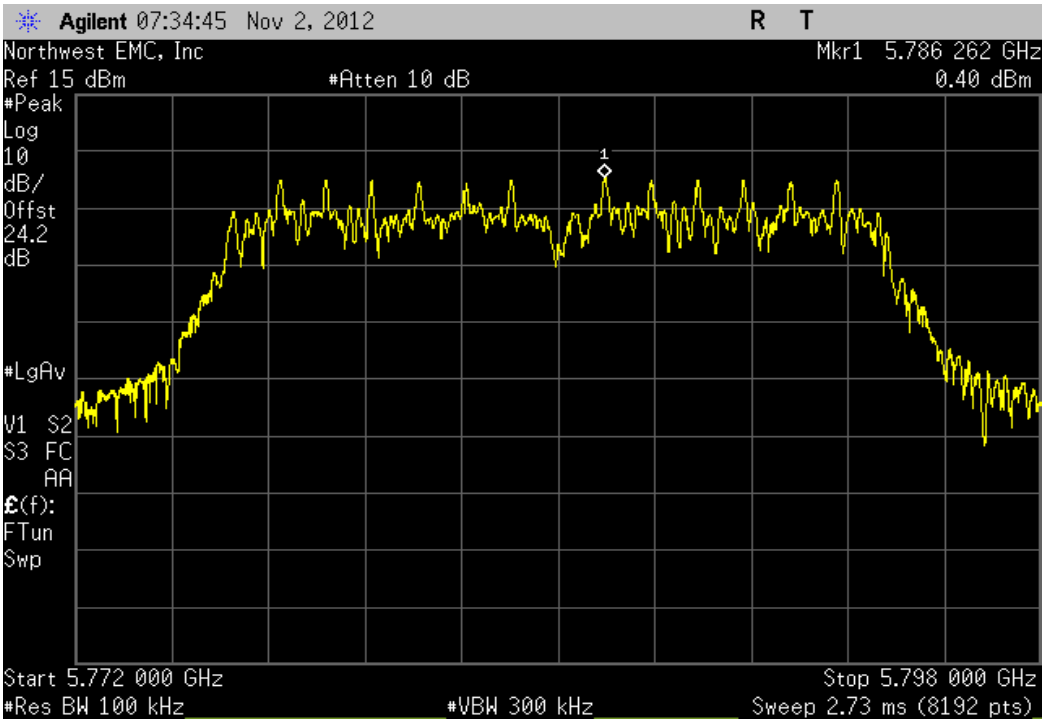
20 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS7 - UNII, Low Channel 149, 5745 MHz				
Frequency Range		**Value**	**Limit**	**Result**
25 GHz - 32 GHz		-44.43 dBc	≤ -20 dBc	Pass



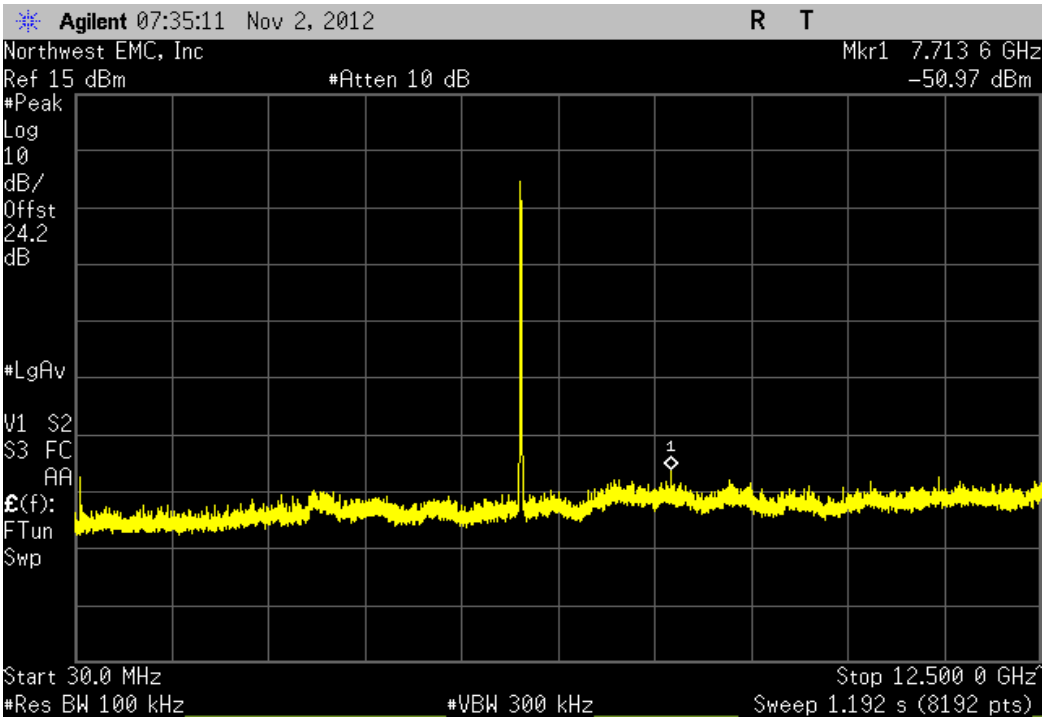
20 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS7 - UNII, Low Channel 149, 5745 MHz				
Frequency Range		**Value**	**Limit**	**Result**
32 GHz - 40 GHz		-35.49 dBc	≤ -20 dBc	Pass



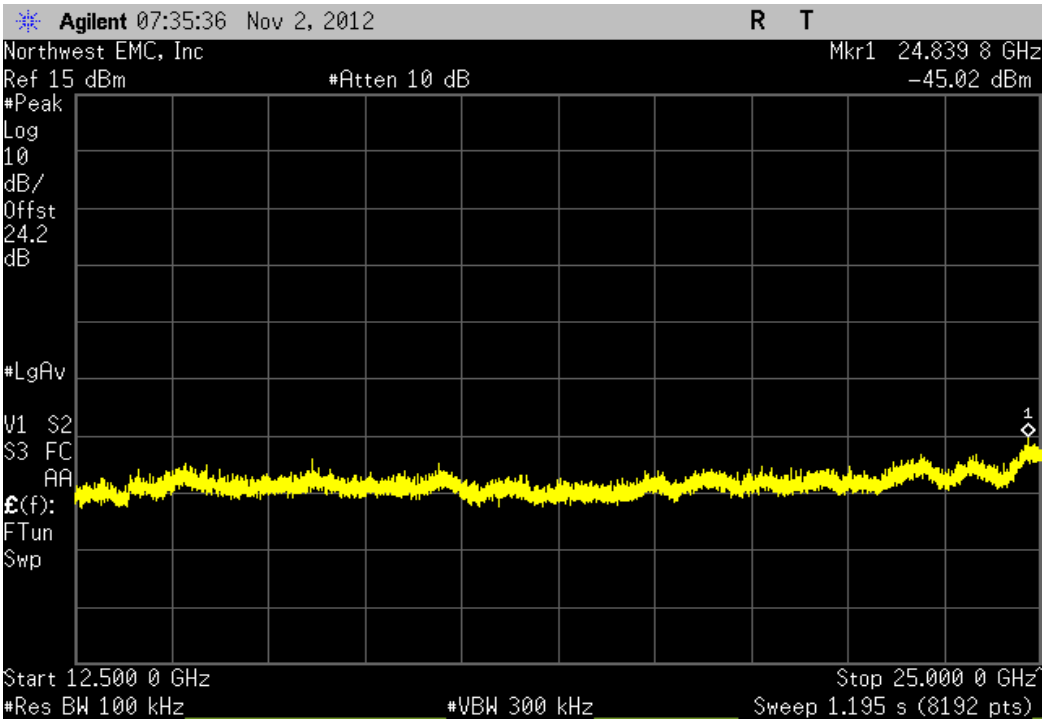
20 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS7 - UNII, Mid Channel 157, 5785 MHz						
	Frequency Range			**Value**	**Limit**	**Result**
	Fundamental			N/A	N/A	N/A



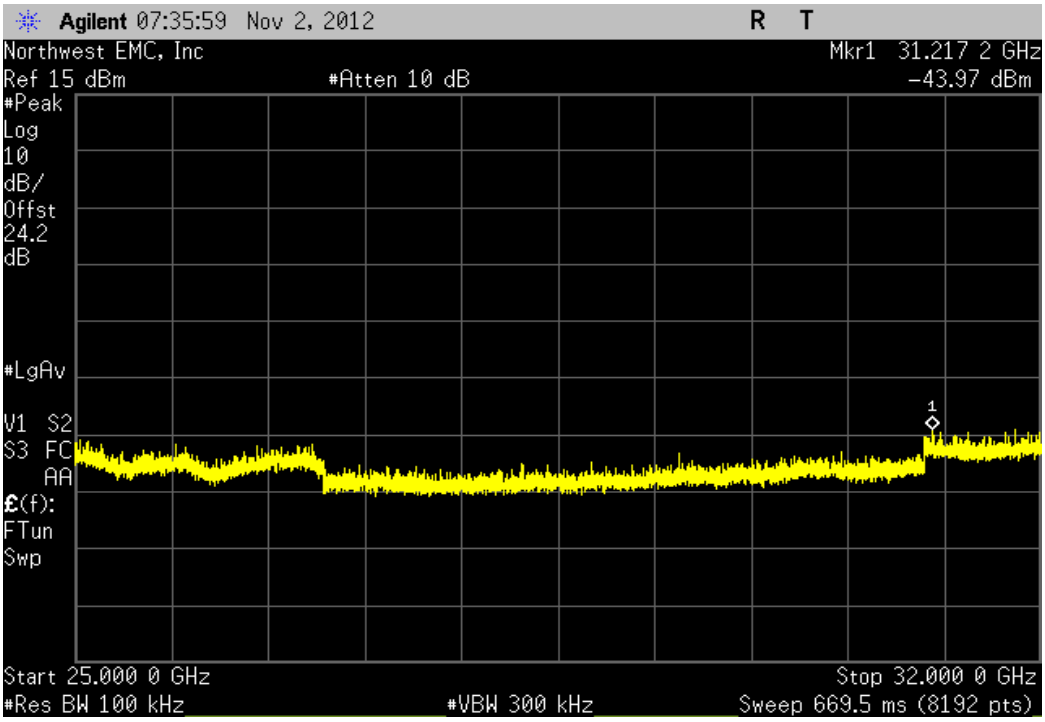
20 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS7 - UNII, Mid Channel 157, 5785 MHz				
Frequency Range		**Value**	**Limit**	**Result**
30 MHz - 12.5 GHz		-51.37 dBc	≤ -20 dBc	Pass



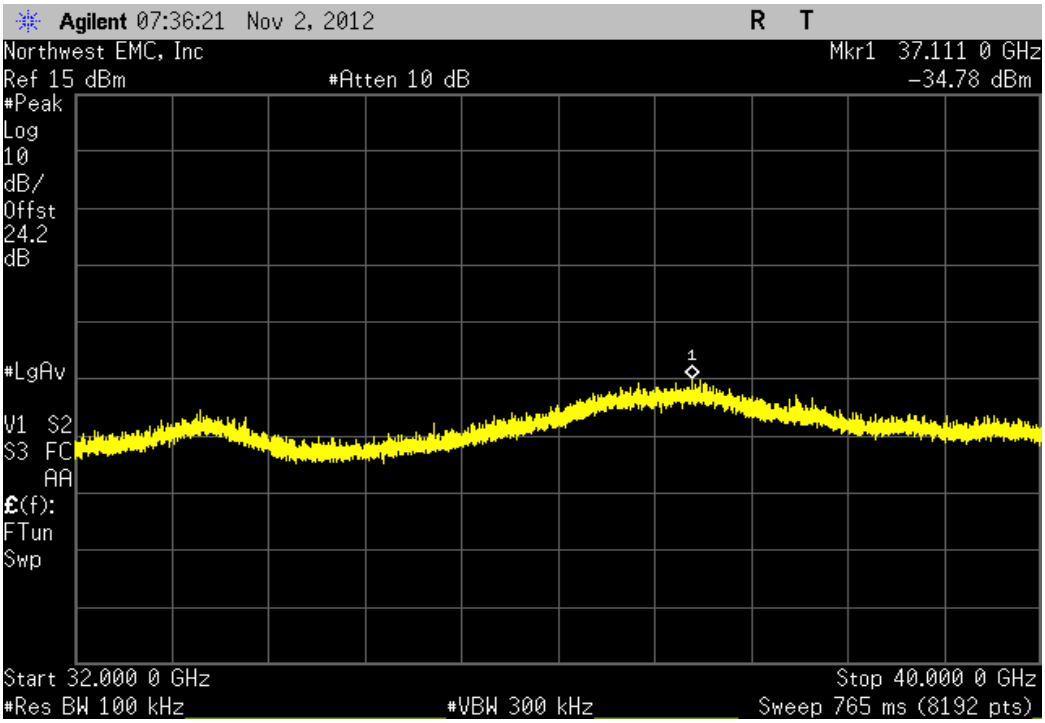
20 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS7 - UNII, Mid Channel 157, 5785 MHz				
Frequency Range		**Value**	**Limit**	**Result**
12.5 GHz - 25 GHz		-45.42 dBc	≤ -20 dBc	Pass



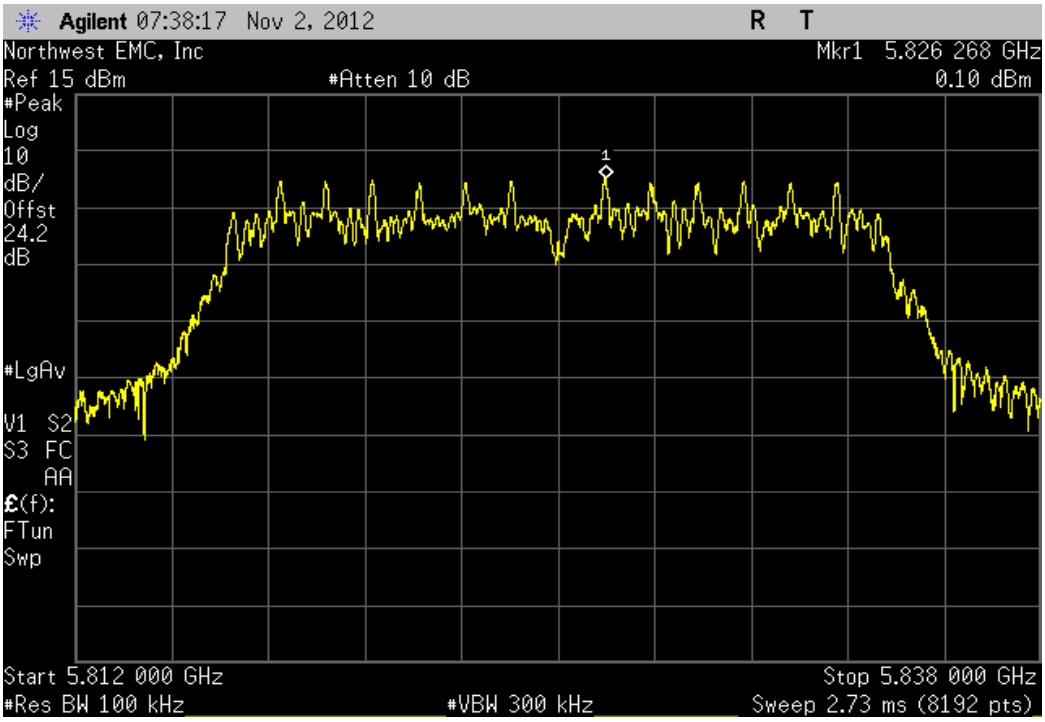
20 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS7 - UNII, Mid Channel 157, 5785 MHz				
Frequency Range		**Value**	**Limit**	**Result**
25 GHz - 32 GHz		-44.38 dBc	≤ -20 dBc	Pass



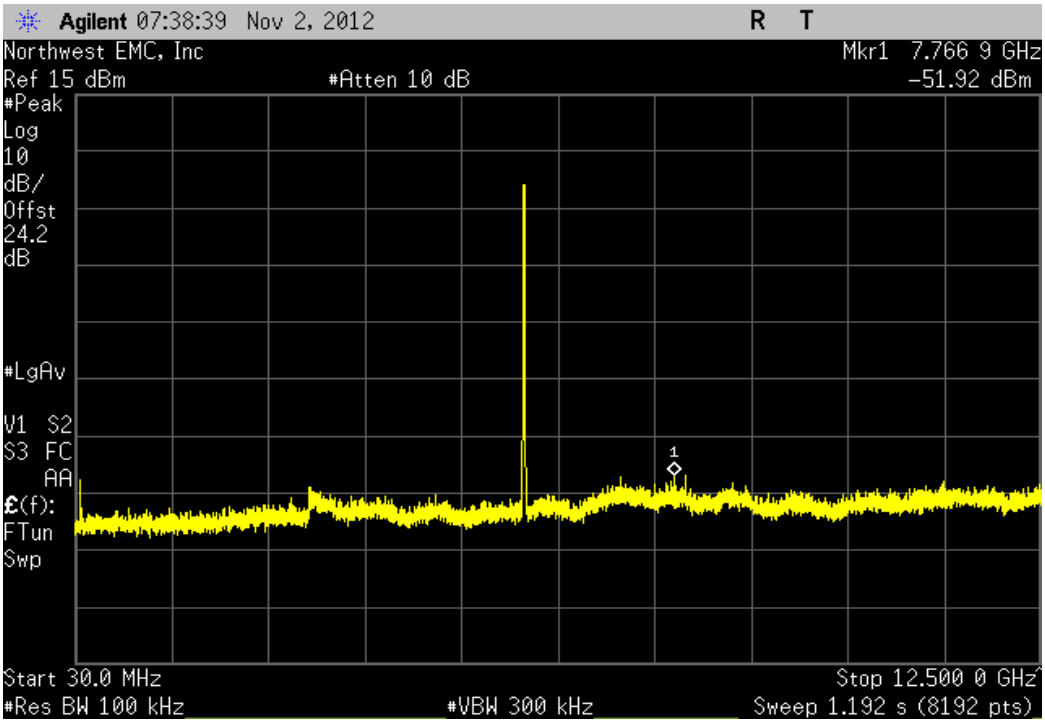
20 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS7 - UNII, Mid Channel 157, 5785 MHz				
Frequency Range		**Value**	**Limit**	**Result**
32 GHz - 40 GHz		-35.18 dBc	≤ -20 dBc	Pass



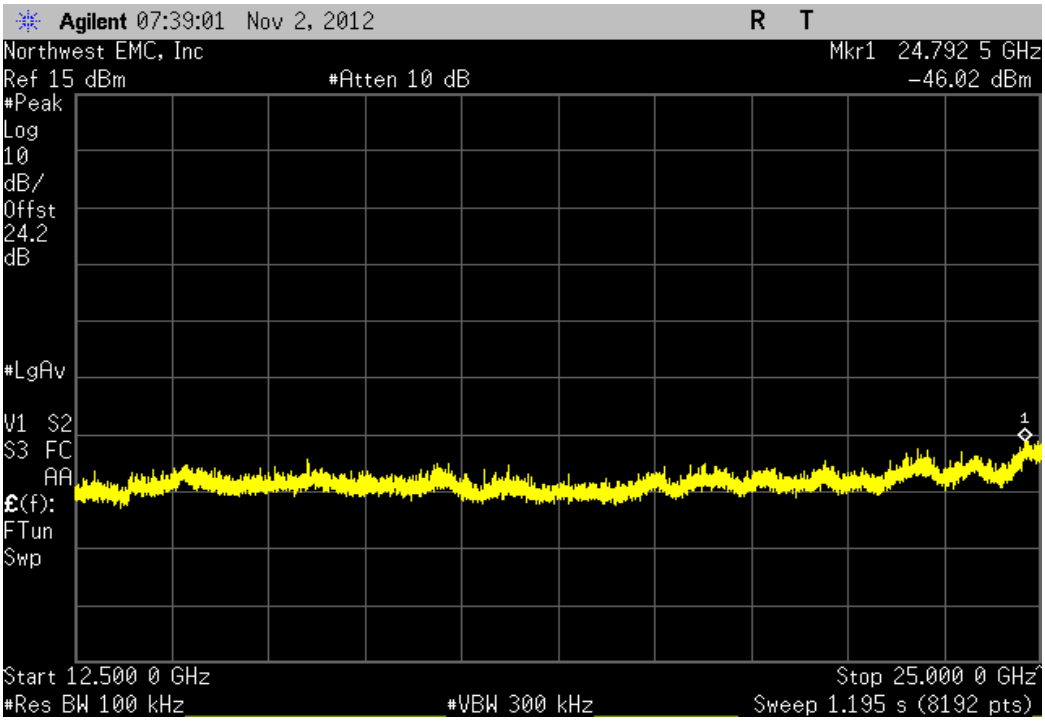
20 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS7 - UNII, High Channel 165, 5825 MHz						
	Frequency Range			Value	Limit	Result
	Fundamental			N/A	N/A	N/A



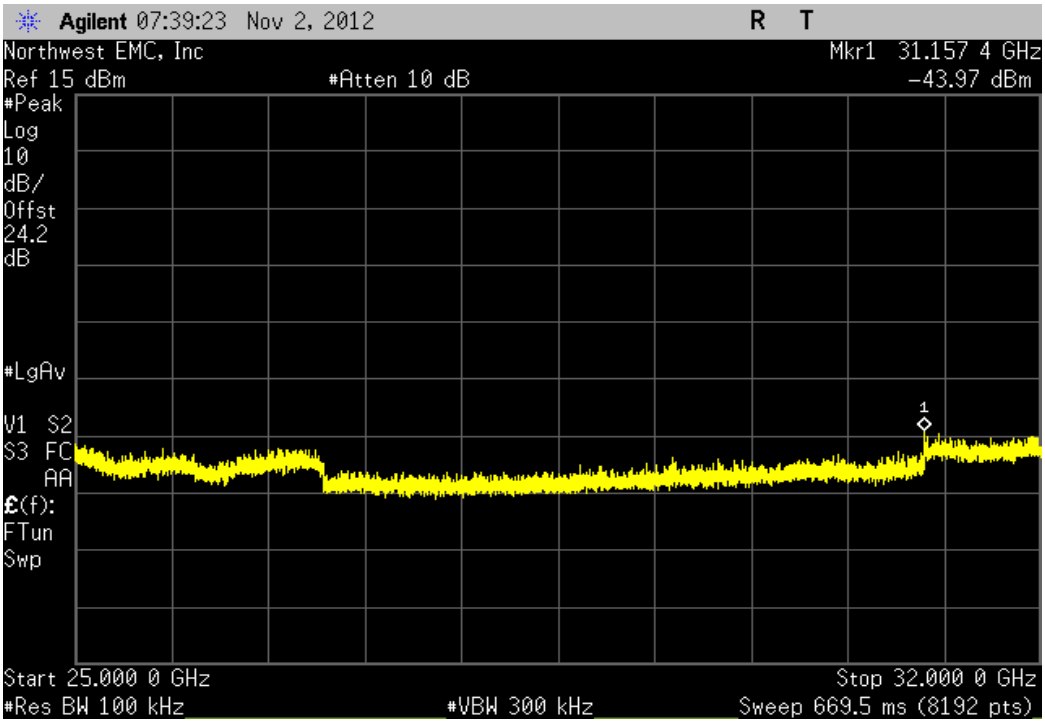
20 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS7 - UNII, High Channel 165, 5825 MHz					
Frequency Range			Value	Limit	Result
30 MHz - 12.5 GHz			-52.02 dBc	≤ -20 dBc	Pass



20 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS7 - UNII, High Channel 165, 5825 MHz				
Frequency Range		**Value**	**Limit**	**Result**
12.5 GHz - 25 GHz		-46.12 dBc	≤ -20 dBc	Pass

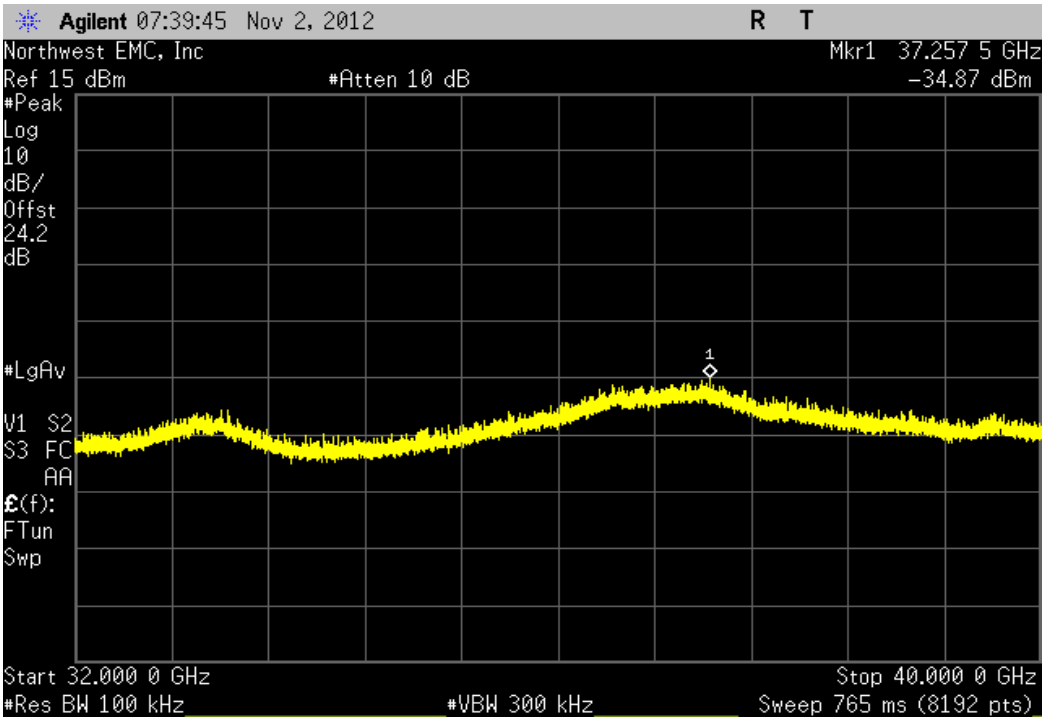


20 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS7 - UNII, High Channel 165, 5825 MHz				
Frequency Range		**Value**	**Limit**	**Result**
25 GHz - 32 GHz		-44.07 dBc	≤ -20 dBc	Pass



Spurious Conducted Emissions

20 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS7 - UNII, High Channel 165, 5825 MHz				
Frequency Range		**Value**	**Limit**	**Result**
32 GHz - 40 GHz		-34.97 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
Spectrum Analyzer	Agilent	E4446A	AAQ	2/7/2012	12
40GHz DC Block	Miteq	DCB4000	AMD	6/25/2012	12
Pre-Amplifier	Miteq	AM-1616-1000	AVY	5/31/2012	12
Power Meter	Gigatronics	8651A	SPM	1/9/2012	24
MXG Vector Signal Generator	Agilent	N5182A	TIF	NCR	0
Attenuator, 'Precision N'	S.M. Electronics	SA18N-06/SM4032	REE	12/15/2011	12
Power Sensor	Gigatronics	80701A	SPL	7/8/2011	24
Spectrum Analyzer	Agilent	E4440A	AFD	7/5/2012	12
EV06 Direct Connect Cable	ESM Cable Corp.	TT	ECA	NCR	0

TEST DESCRIPTION

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

Please refer to the Power Table located elsewhere in this report for radio power operating level during testing.
The EUT is operating on antenna port A and B.

Spurious Conducted Emissions

EUT:	1514	**Work Order:**	MCSO1638
Serial Number:	000109423753	**Date:**	11/02/12
Customer:	Microsoft Corporation	**Temperature:**	22.3°C
Attendees:	None	**Humidity:**	52%
Project:	None	**Barometric Pres.:**	1013
Tested by:	Brandon Hobbs Rod Peloquin Sabrina Sanders	**Power:** 110VAC/60Hz	**Job Site:** EV06

TEST SPECIFICATIONS	Test Method
FCC 15.247:2012	ANSI C63.10:2009

COMMENTS

The EUT is operating at 100% duty cycle. All cable losses for 2.4GHz and 5.0GHz bands are accounted for in the analyzer offset calculations. Testing was completed using the modulation that produced the highest conducted output power for n modes.

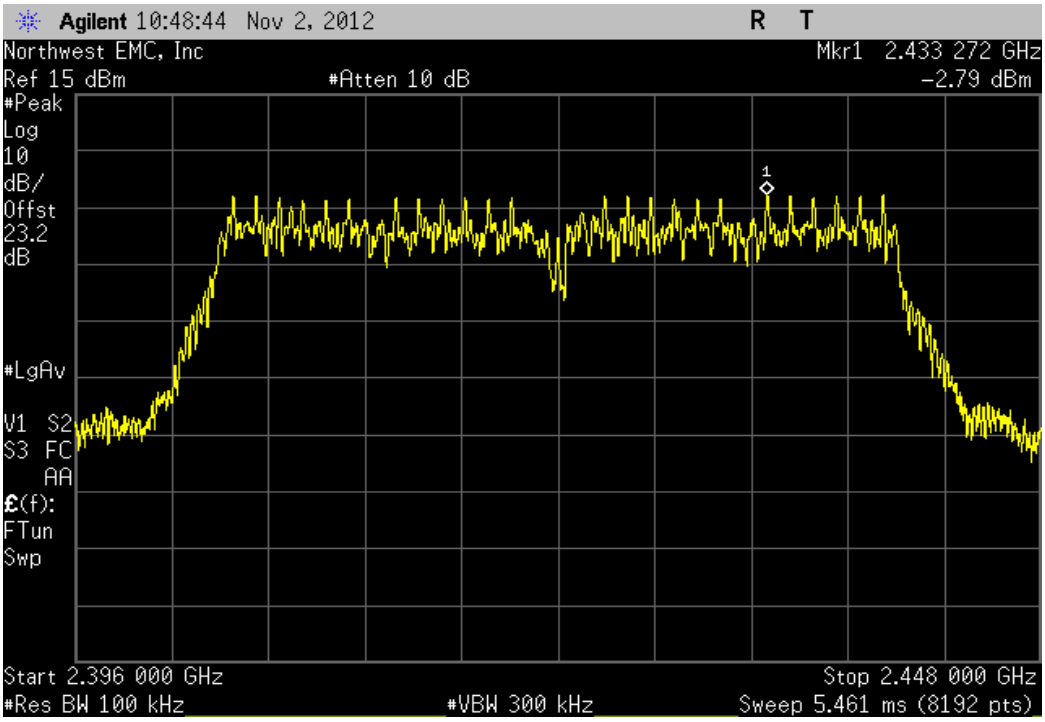
DEVIATIONS FROM TEST STANDARD

None

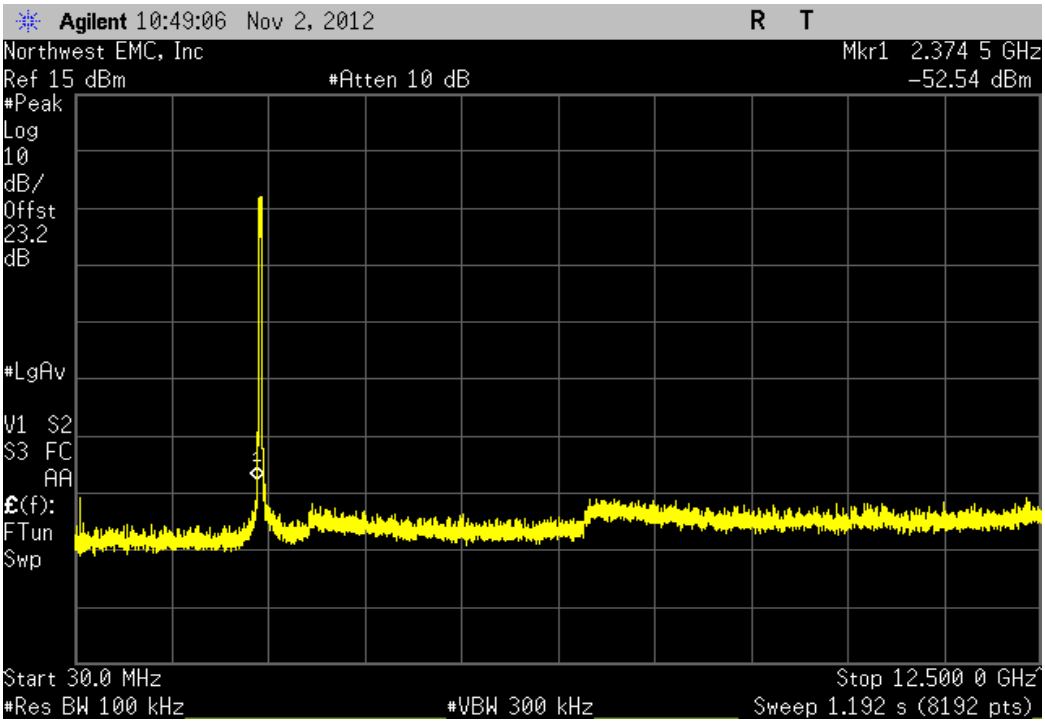
Configuration #	1	Signature

	Frequency Range	Value	Limit	Result
Chain A				
40 MHz				
2400 MHz - 2483.5 MHz Band				
802.11(n) MCS15				
Low Channel 1/5, 2422 MH	Fundamental	N/A	N/A	N/A
Low Channel 1/5, 2422 MH	30 MHz - 12.5 GHz	-49.76 dBc	≤ -20 dBc	Pass
Low Channel 1/5, 2422 MH	12.5 GHz - 25 GHz	-49.35 dBc	≤ -20 dBc	Pass
Mid Channel 4/8, 2437 MH	Fundamental	N/A	N/A	N/A
Mid Channel 4/8, 2437 MH	30 MHz - 12.5 GHz	-51.28 dBc	≤ -20 dBc	Pass
Mid Channel 4/8, 2437 MH	12.5 GHz - 25 GHz	-48.82 dBc	≤ -20 dBc	Pass
High Channel 7/11 2452 M	Fundamental	N/A	N/A	N/A
High Channel 7/11 2452 M	30 MHz - 12.5 GHz	-51.76 dBc	≤ -20 dBc	Pass
High Channel 7/11 2452 M	12.5 GHz - 25 GHz	-49.64 dBc	≤ -20 dBc	Pass
5725 MHz - 5850 MHz Band				
802.11(n) MCS15				
Low Channel 149/153, 575	Fundamental	N/A	N/A	N/A
Low Channel 149/153, 575	30 MHz - 12.5 GHz	-47.33 dBc	≤ -20 dBc	Pass
Low Channel 149/153, 575	12.5 GHz - 25 GHz	-42.64 dBc	≤ -20 dBc	Pass
Low Channel 149/153, 575	25 GHz - 32 GHz	-42 dBc	≤ -20 dBc	Pass
Low Channel 149/153, 575	32 GHz - 40 GHz	-32.34 dBc	≤ -20 dBc	Pass
High Channel 157/161, 57	Fundamental	N/A	N/A	N/A
High Channel 157/161, 57	30 MHz - 12.5 GHz	-48.91 dBc	≤ -20 dBc	Pass
High Channel 157/161, 57	12.5 GHz - 25 GHz	-42.75 dBc	≤ -20 dBc	Pass
High Channel 157/161, 57	25 GHz - 32 GHz	-41.78 dBc	≤ -20 dBc	Pass
High Channel 157/161, 57	32 GHz - 40 GHz	-32.73 dBc	≤ -20 dBc	Pass
Chain B				
20 MHz				
2400 MHz - 2483.5 MHz Band				
802.11(n) MCS15				
Low Channel 1, 2412 MHz	Fundamental	N/A	N/A	N/A
Low Channel 1, 2412 MHz	30 MHz - 12.5 GHz	-56.61 dBc	≤ -20 dBc	Pass
Low Channel 1, 2412 MHz	12.5 GHz - 25 GHz	-56.77 dBc	≤ -20 dBc	Pass
Mid Channel 6, 2437 MHz	Fundamental	N/A	N/A	N/A
Mid Channel 6, 2437 MHz	30 MHz - 12.5 GHz	-59.7 dBc	≤ -20 dBc	Pass
Mid Channel 6, 2437 MHz	12.5 GHz - 25 GHz	-56.55 dBc	≤ -20 dBc	Pass
High Channel 11, 2462 MH	Fundamental	N/A	N/A	N/A
High Channel 11, 2462 MH	30 MHz - 12.5 GHz	-58.39 dBc	≤ -20 dBc	Pass
High Channel 11, 2462 MH	12.5 GHz - 25 GHz	-56.31 dBc	≤ -20 dBc	Pass
5725 MHz - 5850 MHz Band				
802.11(n) MCS15				
Low Channel 149, 5745 M	Fundamental	N/A	N/A	N/A
Low Channel 149, 5745 M	30 MHz - 12.5 GHz	-51.69 dBc	≤ -20 dBc	Pass
Low Channel 149, 5745 M	12.5 GHz - 25 GHz	-45.59 dBc	≤ -20 dBc	Pass
Low Channel 149, 5745 M	25 GHz - 32 GHz	-44.29 dBc	≤ -20 dBc	Pass
Low Channel 149, 5745 M	32 GHz - 40 GHz	-34.87 dBc	≤ -20 dBc	Pass
Mid Channel 157, 5785 MI	Fundamental	N/A	N/A	N/A
Mid Channel 157, 5785 MI	30 MHz - 12.5 GHz	-53 dBc	≤ -20 dBc	Pass
Mid Channel 157, 5785 MI	12.5 GHz - 25 GHz	-46.34 dBc	≤ -20 dBc	Pass
Mid Channel 157, 5785 MI	25 GHz - 32 GHz	-44.95 dBc	≤ -20 dBc	Pass
Mid Channel 157, 5785 MI	32 GHz - 40 GHz	-35.8 dBc	≤ -20 dBc	Pass
High Channel 165, 5825 M	Fundamental	N/A	N/A	N/A
High Channel 165, 5825 M	30 MHz - 12.5 GHz	-52.64 dBc	≤ -20 dBc	Pass
High Channel 165, 5825 M	12.5 GHz - 25 GHz	-45.03 dBc	≤ -20 dBc	Pass
High Channel 165, 5825 M	25 GHz - 32 GHz	-45.36 dBc	≤ -20 dBc	Pass
High Channel 165, 5825 M	32 GHz - 40 GHz	-35.31 dBc	≤ -20 dBc	Pass
40 MHz				
2400 MHz - 2483.5 MHz Band				
802.11(n) MCS8				
Low Channel 1/5, 2422 MH	Fundamental	N/A	N/A	N/A
Low Channel 1/5, 2422 MH	30 MHz - 12.5 GHz	-52.08 dBc	≤ -20 dBc	Pass
Low Channel 1/5, 2422 MH	12.5 GHz - 25 GHz	-50.52 dBc	≤ -20 dBc	Pass
Mid Channel 4/8, 2437 MH	Fundamental	N/A	N/A	N/A
Mid Channel 4/8, 2437 MH	30 MHz - 12.5 GHz	-53.46 dBc	≤ -20 dBc	Pass
Mid Channel 4/8, 2437 MH	12.5 GHz - 25 GHz	-50.58 dBc	≤ -20 dBc	Pass
High Channel 7/11 2452 M	Fundamental	N/A	N/A	N/A
High Channel 7/11 2452 M	30 MHz - 12.5 GHz	-53.06 dBc	≤ -20 dBc	Pass
High Channel 7/11 2452 M	12.5 GHz - 25 GHz	-50.2 dBc	≤ -20 dBc	Pass
5725 MHz - 5850 MHz Band				
802.11(n) MCS8				
Low Channel 149/153, 575	Fundamental	N/A	N/A	N/A
Low Channel 149/153, 575	30 MHz - 12.5 GHz	-49.41 dBc	≤ -20 dBc	Pass
Low Channel 149/153, 575	12.5 GHz - 25 GHz	-43.13 dBc	≤ -20 dBc	Pass
Low Channel 149/153, 575	25 GHz - 32 GHz	-42.04 dBc	≤ -20 dBc	Pass
Low Channel 149/153, 575	32 GHz - 40 GHz	-33.16 dBc	≤ -20 dBc	Pass
High Channel 157/161, 57	Fundamental	N/A	N/A	N/A
High Channel 157/161, 57	30 MHz - 12.5 GHz	-50.31 dBc	≤ -20 dBc	Pass
High Channel 157/161, 57	12.5 GHz - 25 GHz	-43.92 dBc	≤ -20 dBc	Pass
High Channel 157/161, 57	25 GHz - 32 GHz	-42.91 dBc	≤ -20 dBc	Pass
High Channel 157/161, 57	32 GHz - 40 GHz	-33.74 dBc	≤ -20 dBc	Pass

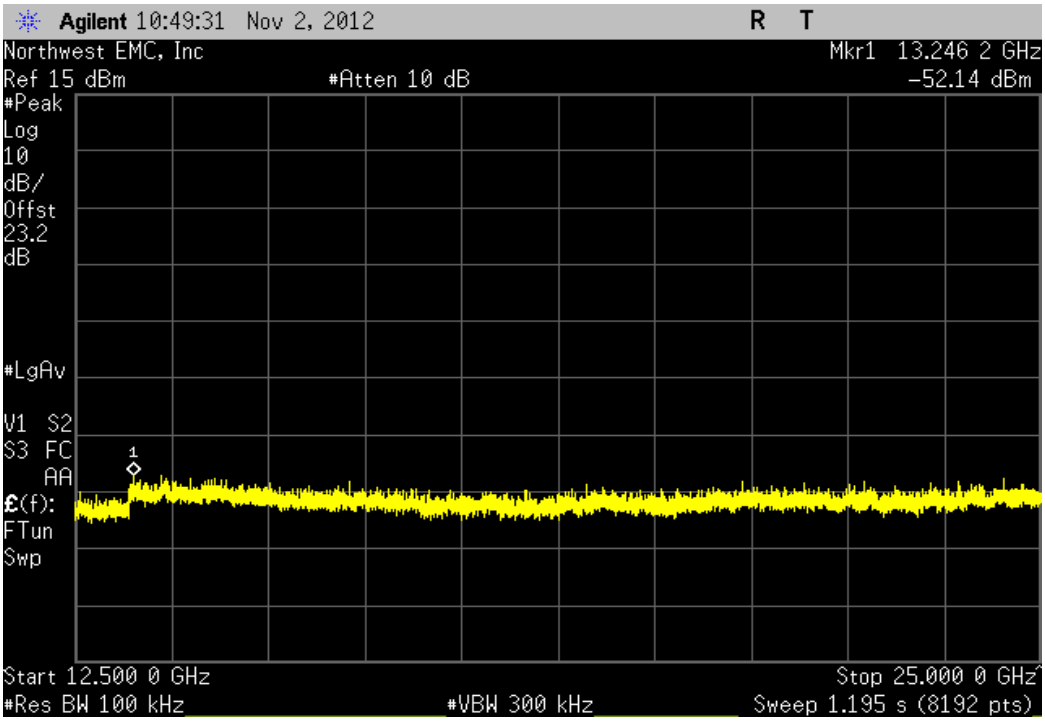
Chain A, 40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, Low Channel 1/5, 2422 MHz						
	Frequency Range			Value	Limit	Result
	Fundamental			N/A	N/A	N/A



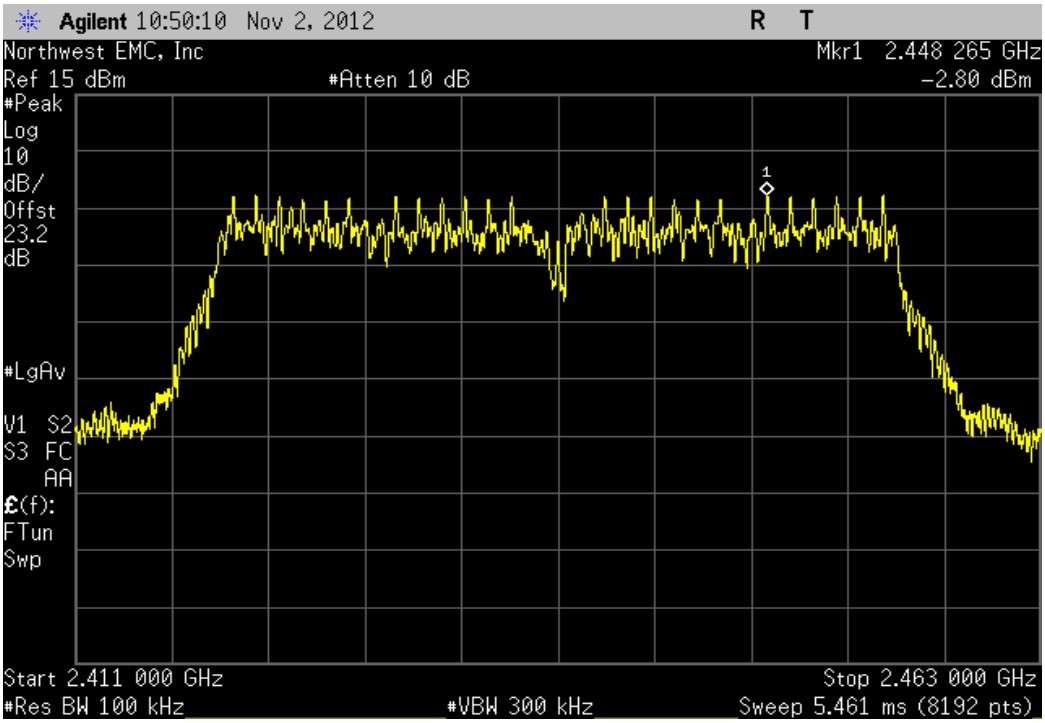
Chain A, 40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, Low Channel 1/5, 2422 MHz					
Frequency Range			Value	Limit	Result
30 MHz - 12.5 GHz			-49.76 dBc	≤ -20 dBc	Pass



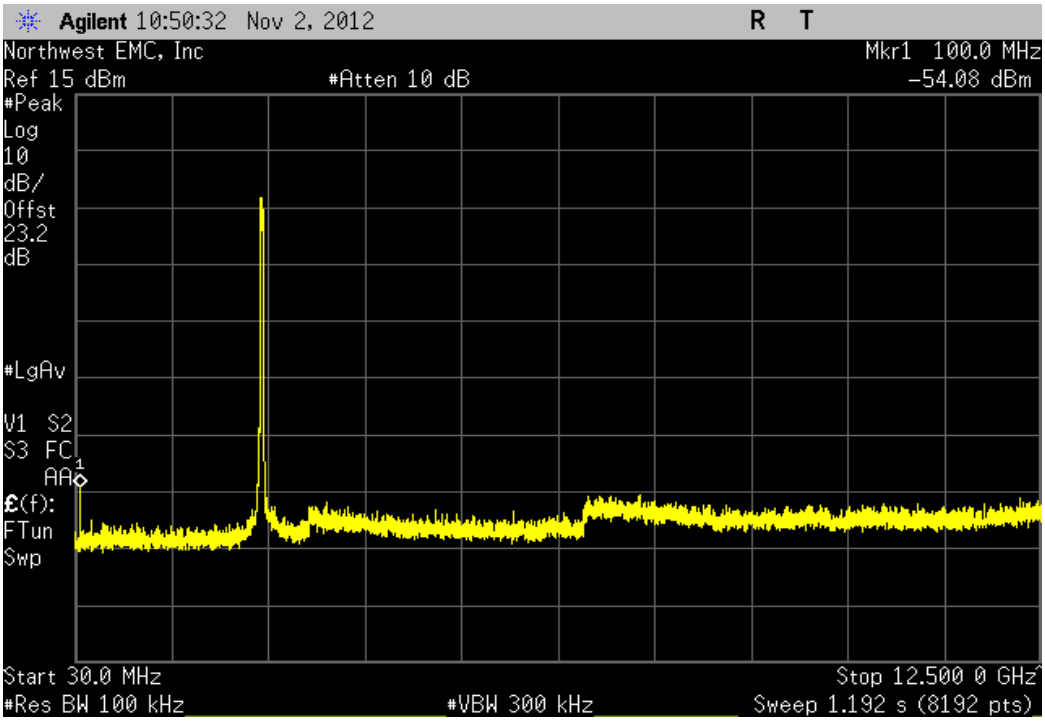
Chain A, 40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, Low Channel 1/5, 2422 MHz				
Frequency Range		Value	Limit	Result
12.5 GHz - 25 GHz		-49.35 dBc	≤ -20 dBc	Pass



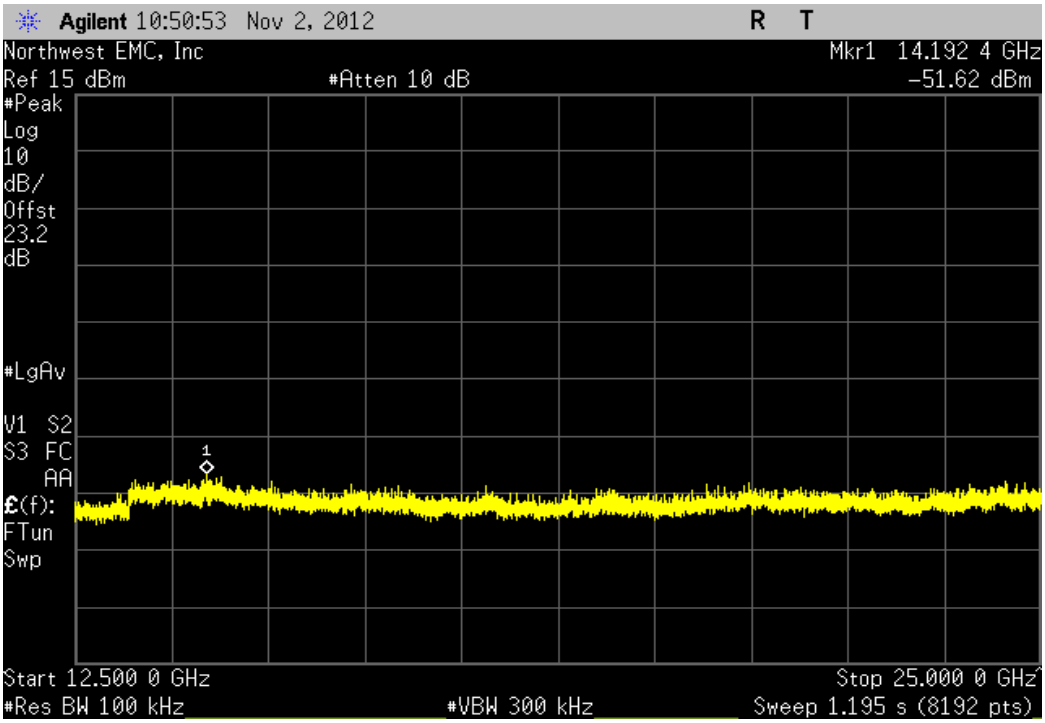
Chain A, 40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, Mid Channel 4/8, 2437 MHz						
	Frequency Range			Value	Limit	Result
	Fundamental			N/A	N/A	N/A



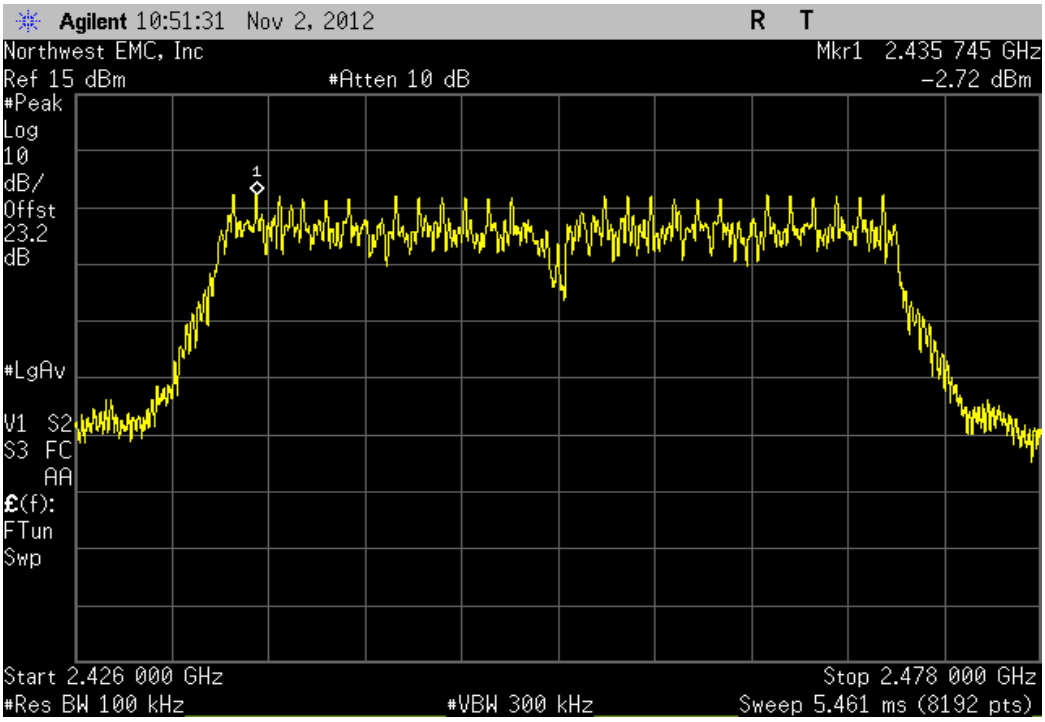
Chain A, 40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, Mid Channel 4/8, 2437 MHz				
Frequency Range		**Value**	**Limit**	**Result**
30 MHz - 12.5 GHz		-51.28 dBc	≤ -20 dBc	Pass



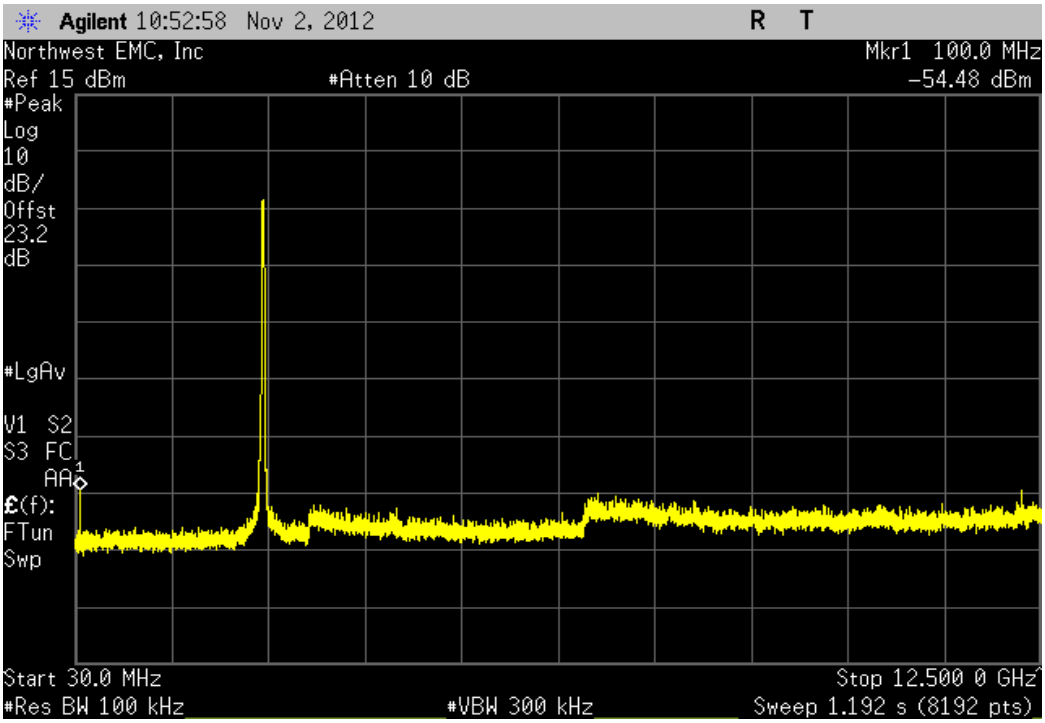
Chain A, 40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, Mid Channel 4/8, 2437 MHz				
Frequency Range		**Value**	**Limit**	**Result**
12.5 GHz - 25 GHz		-48.82 dBc	≤ -20 dBc	Pass



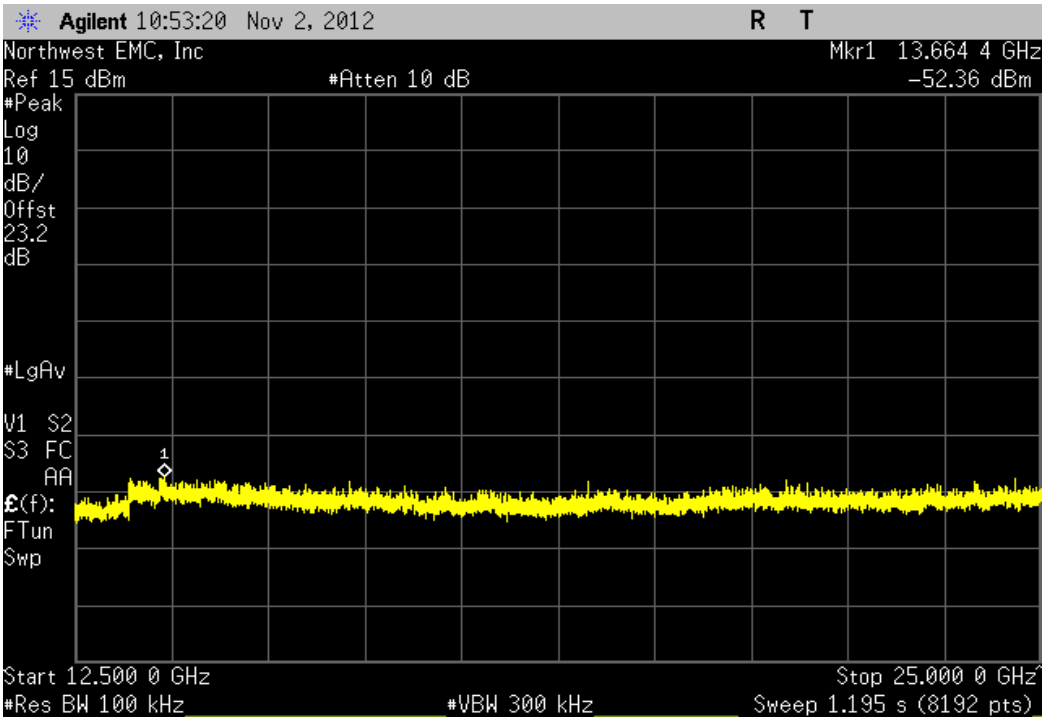
Chain A, 40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, High Channel 7/11 2452 MHz						
	Frequency Range			Value	Limit	Result
	Fundamental			N/A	N/A	N/A



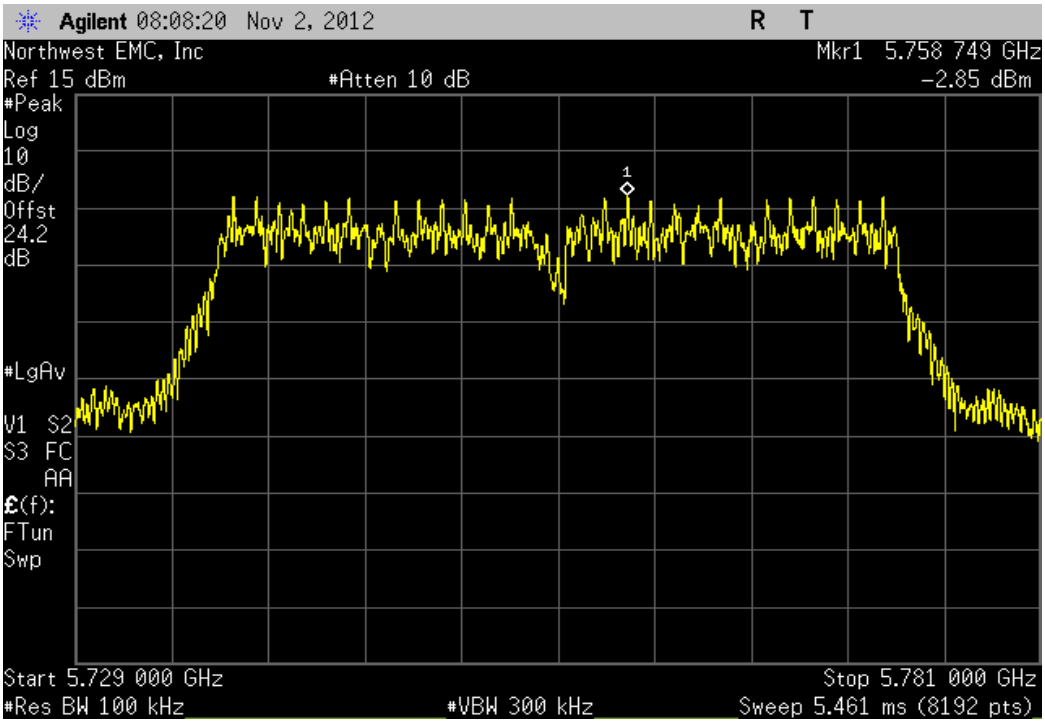
Chain A, 40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, High Channel 7/11 2452 MHz					
	Frequency Range		Value	Limit	Result
	30 MHz - 12.5 GHz		-51.76 dBc	≤ -20 dBc	Pass



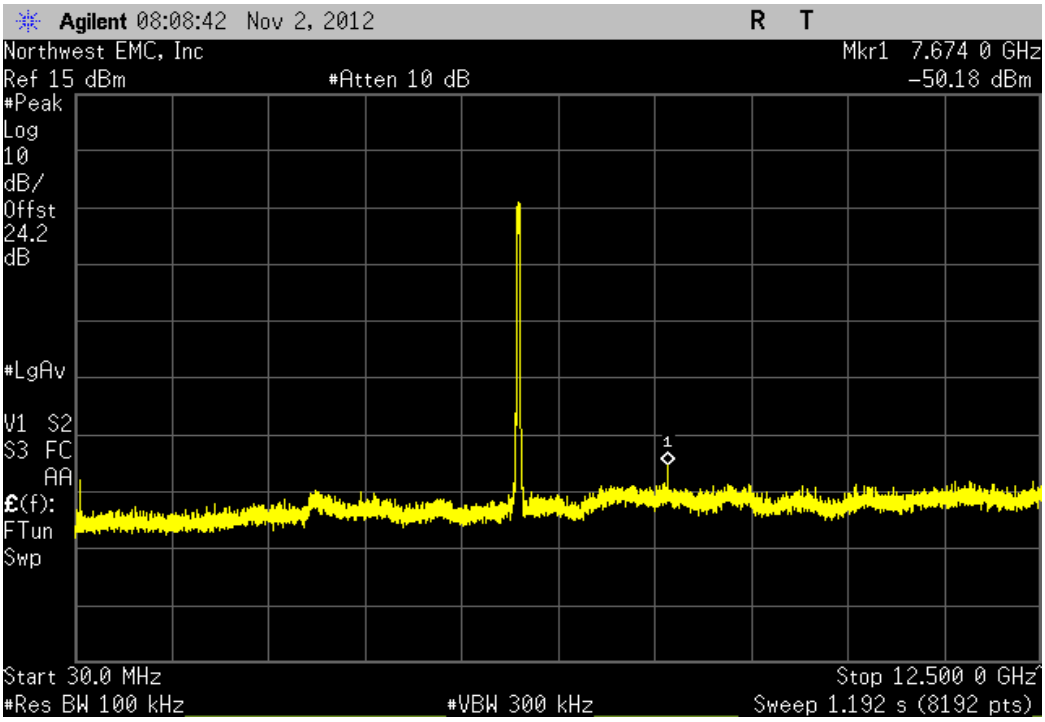
Chain A, 40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, High Channel 7/11 2452 MHz				
Frequency Range		Value	Limit	Result
12.5 GHz - 25 GHz		-49.64 dBc	≤ -20 dBc	Pass



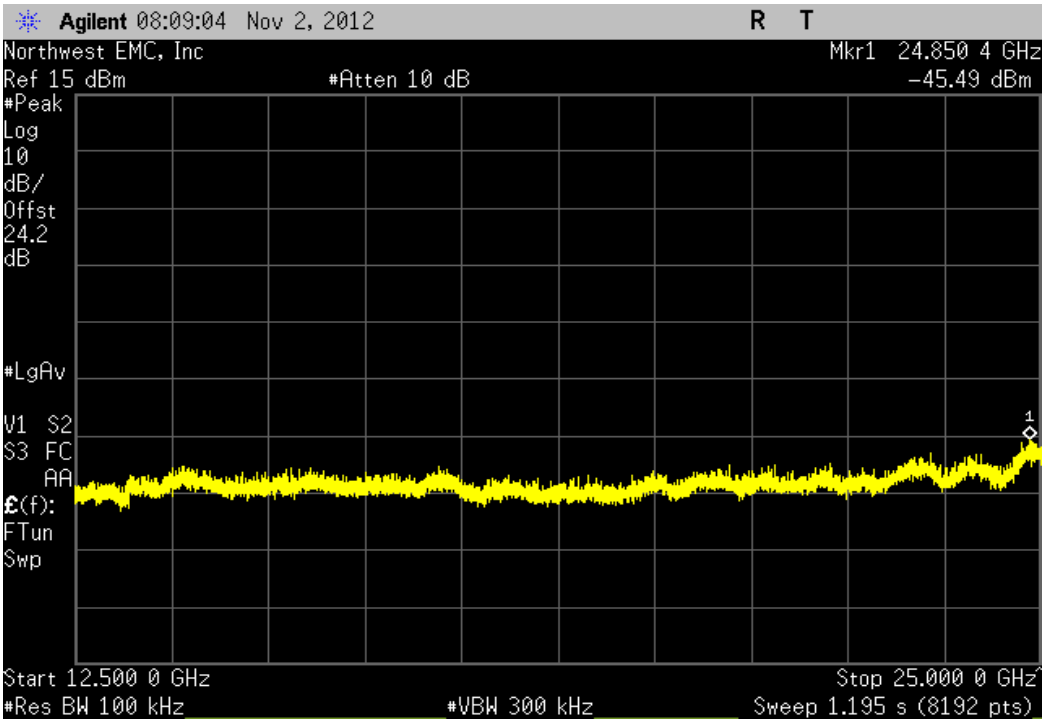
Chain A, 40 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS15, Low Channel 149/153, 5755 MHz						
	Frequency Range			Value	Limit	Result
	Fundamental			N/A	N/A	N/A



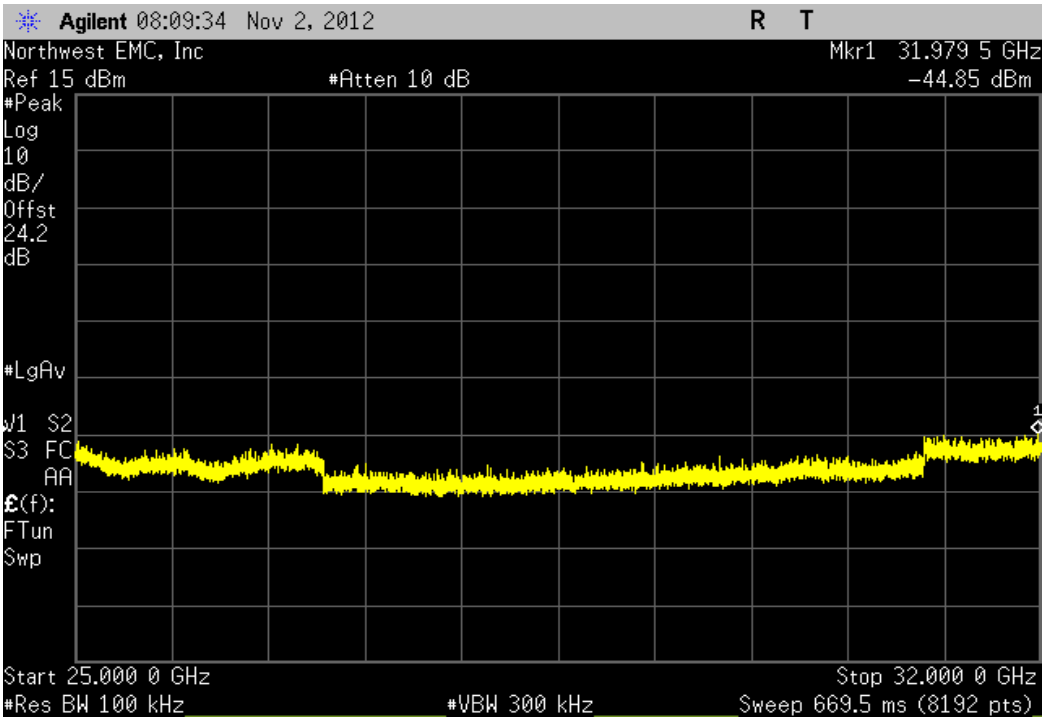
Chain A, 40 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS15, Low Channel 149/153, 5755 MHz				
Frequency Range		**Value**	**Limit**	**Result**
30 MHz - 12.5 GHz		-47.33 dBc	≤ -20 dBc	Pass



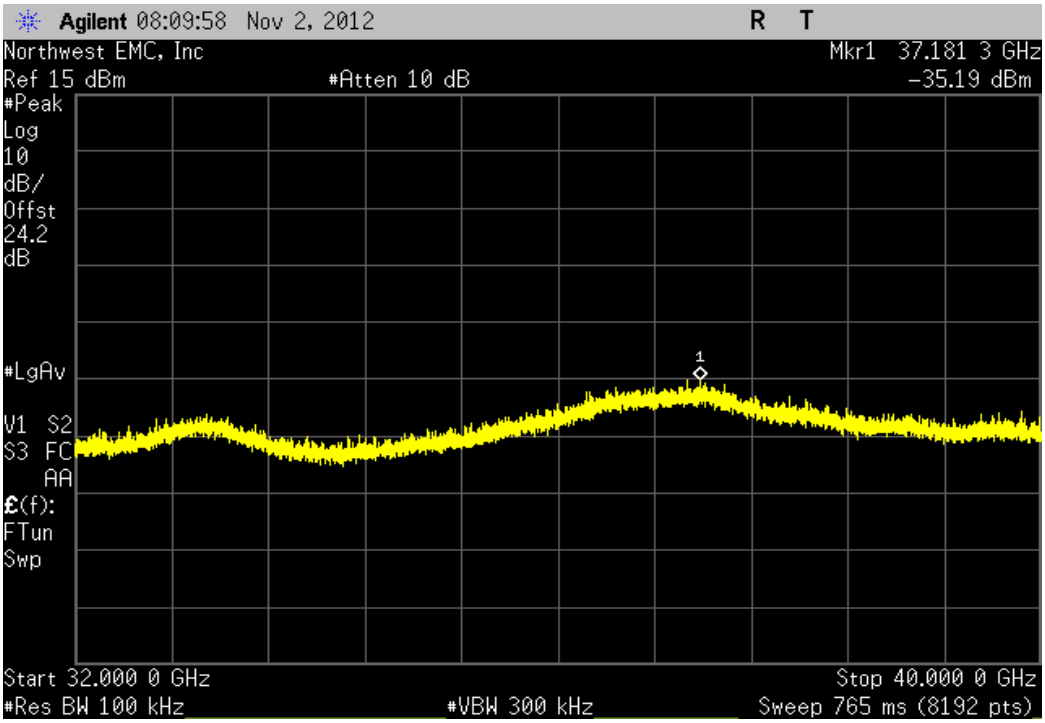
Chain A, 40 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS15, Low Channel 149/153, 5755 MHz				
Frequency Range		**Value**	**Limit**	**Result**
12.5 GHz - 25 GHz		-42.64 dBc	≤ -20 dBc	Pass



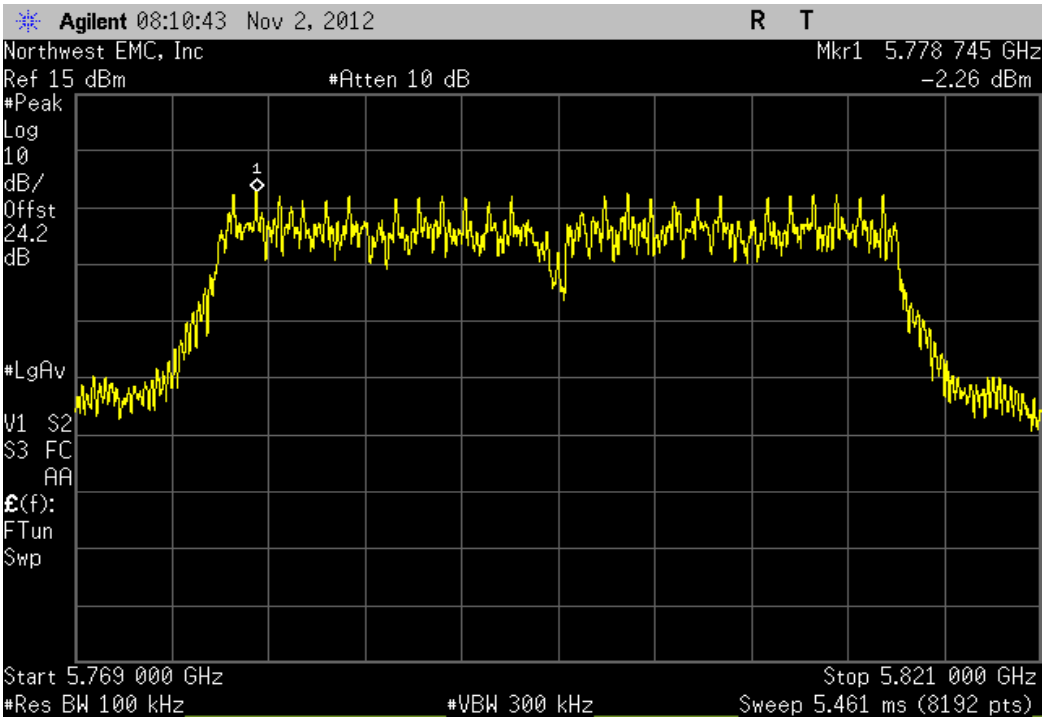
Chain A, 40 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS15, Low Channel 149/153, 5755 MHz				
Frequency Range		**Value**	**Limit**	**Result**
25 GHz - 32 GHz		-42 dBc	≤ -20 dBc	Pass



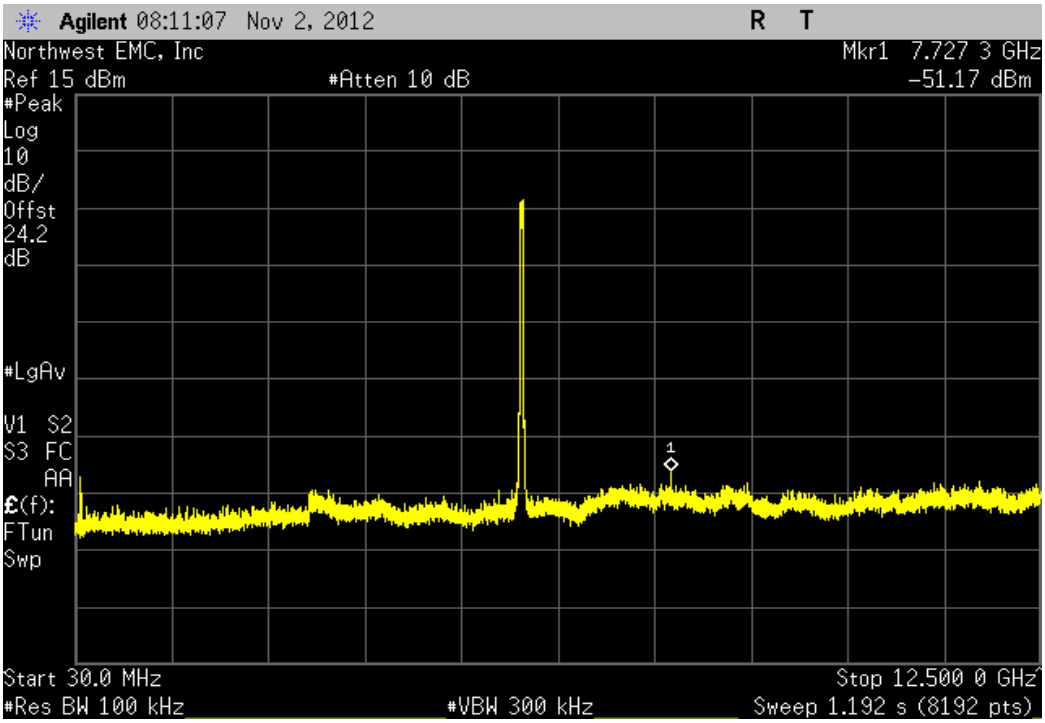
Chain A, 40 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS15, Low Channel 149/153, 5755 MHz				
Frequency Range		**Value**	**Limit**	**Result**
32 GHz - 40 GHz		-32.34 dBc	≤ -20 dBc	Pass



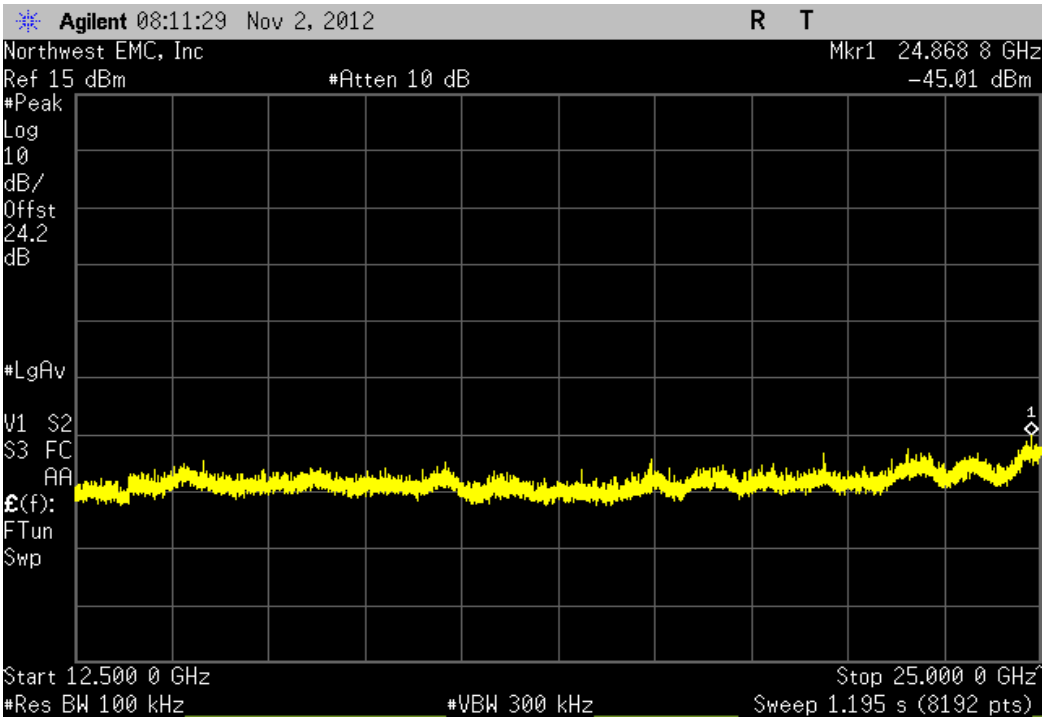
Chain A, 40 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS15, High Channel 157/161, 5795 MHz						
	Frequency Range			Value	Limit	Result
	Fundamental			N/A	N/A	N/A



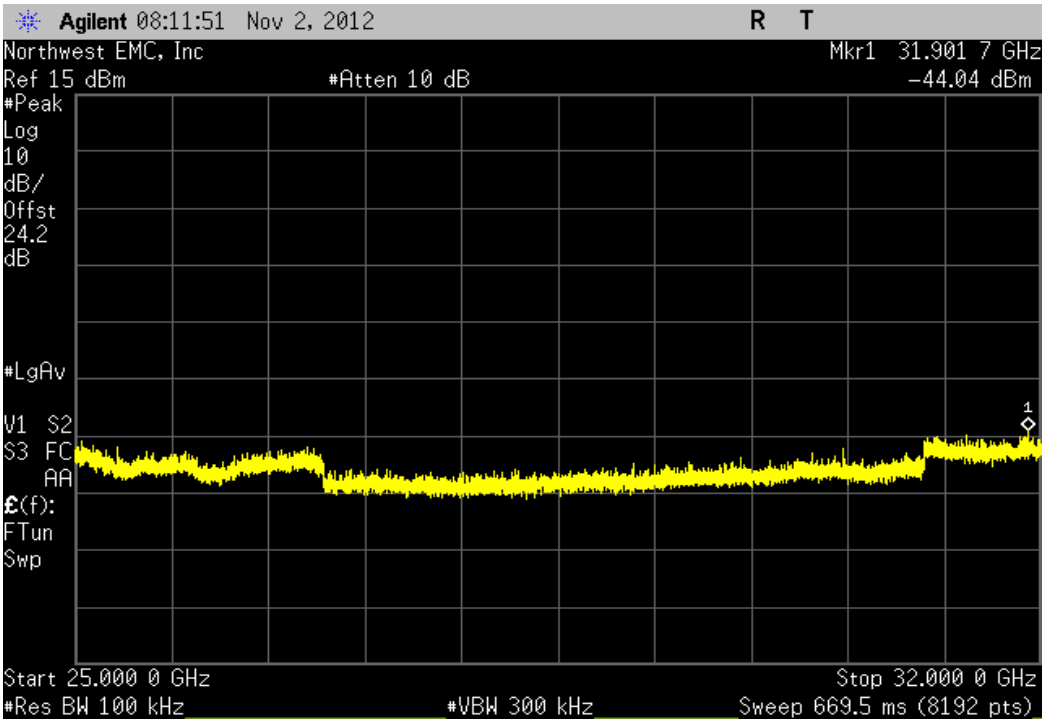
Chain A, 40 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS15, High Channel 157/161, 5795 MHz					
Frequency Range			Value	Limit	Result
30 MHz - 12.5 GHz			-48.91 dBc	≤ -20 dBc	Pass



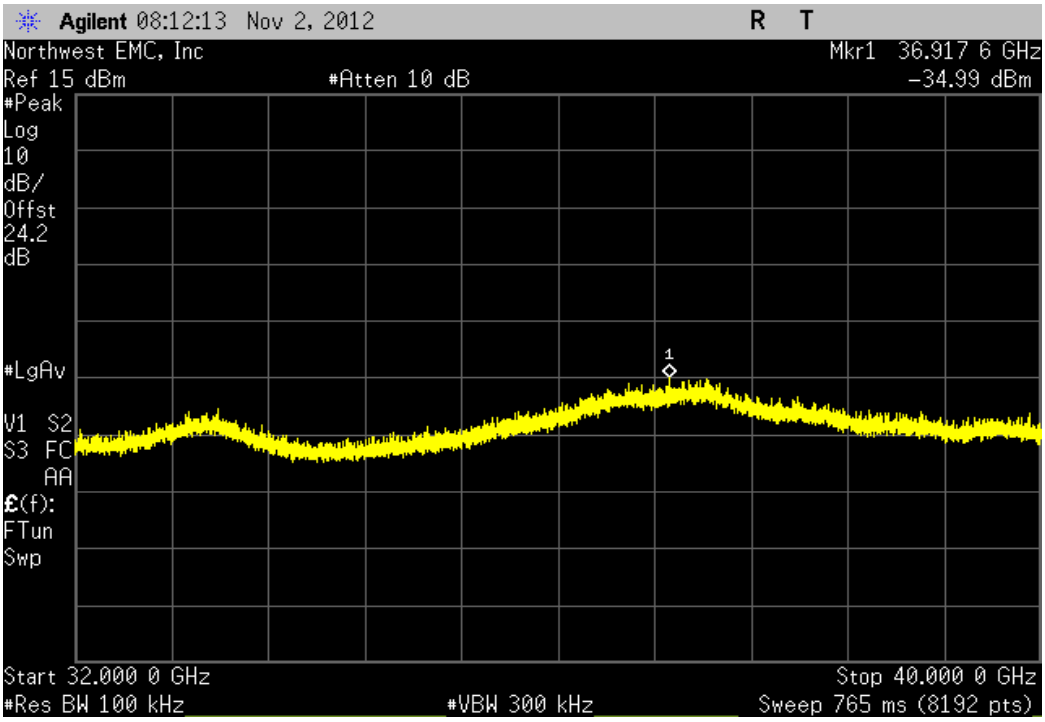
Chain A, 40 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS15, High Channel 157/161, 5795 MHz				
Frequency Range		**Value**	**Limit**	**Result**
12.5 GHz - 25 GHz		-42.75 dBc	≤ -20 dBc	Pass



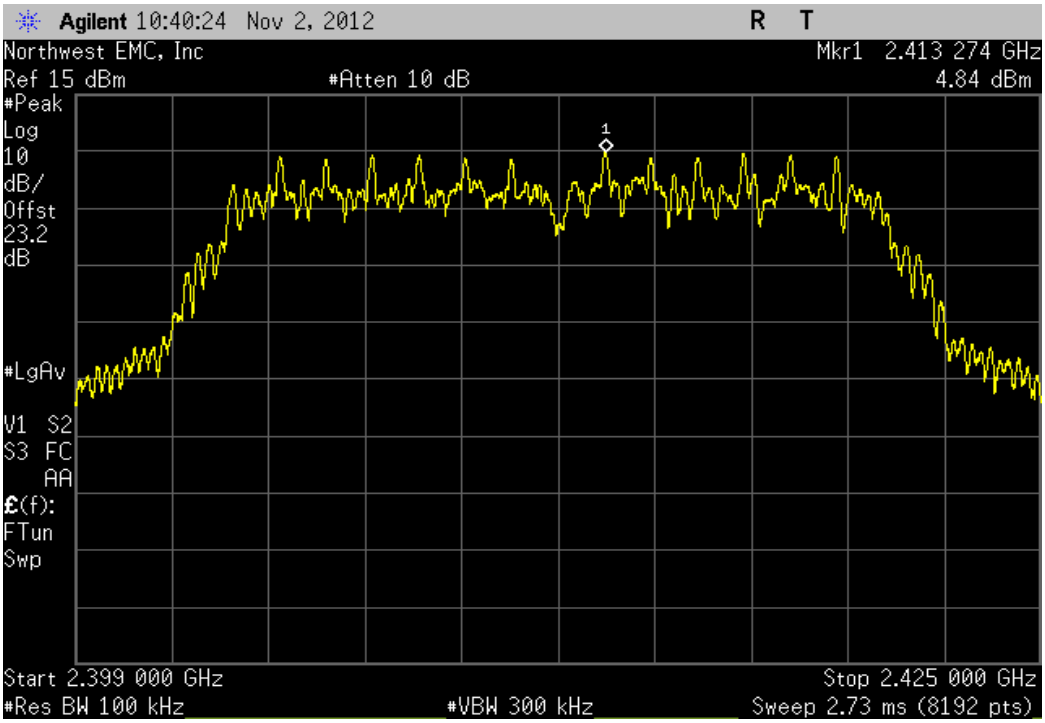
Chain A, 40 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS15, High Channel 157/161, 5795 MHz				
Frequency Range		**Value**	**Limit**	**Result**
25 GHz - 32 GHz		-41.78 dBc	≤ -20 dBc	Pass



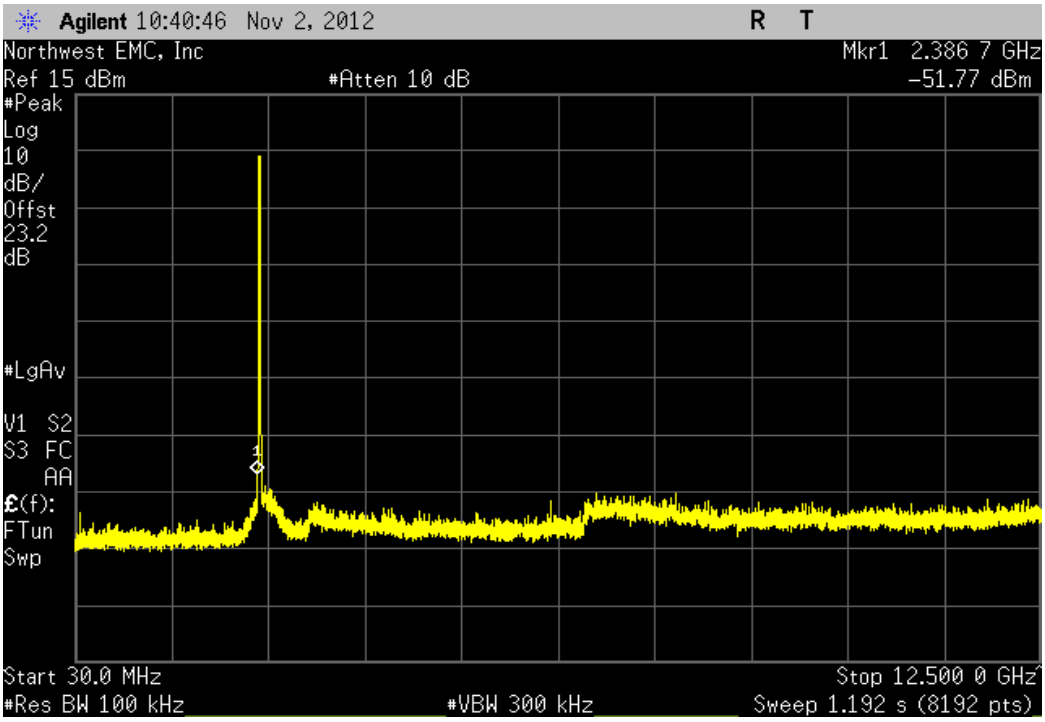
Chain A, 40 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS15, High Channel 157/161, 5795 MHz				
Frequency Range		Value	Limit	Result
32 GHz - 40 GHz		-32.73 dBc	≤ -20 dBc	Pass



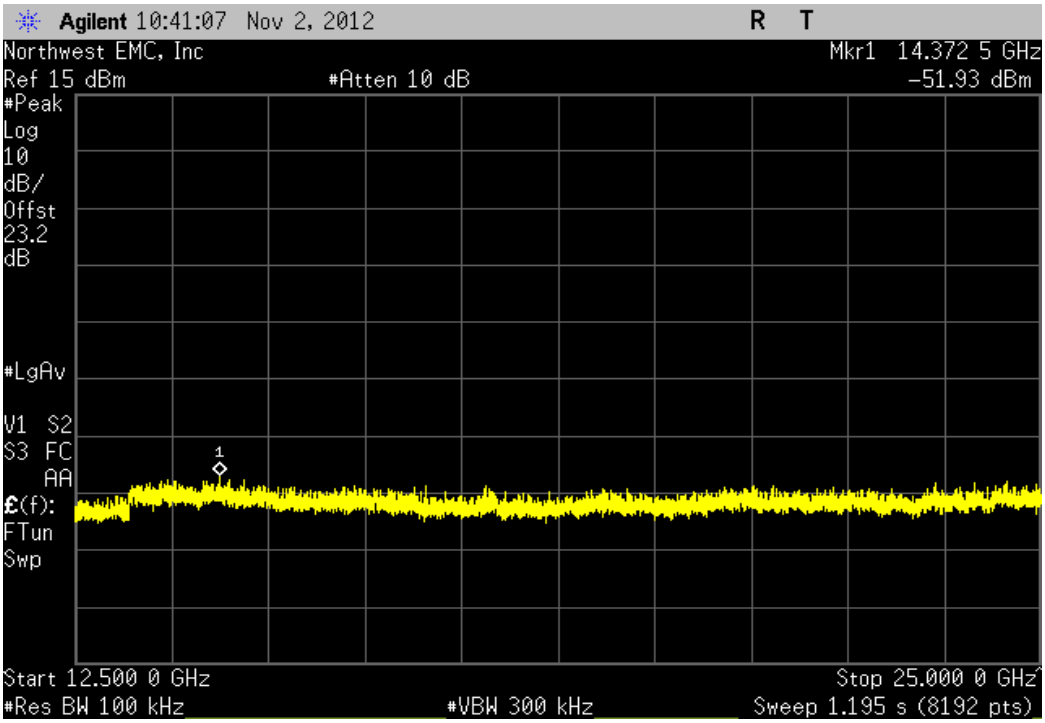
Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, Low Channel 1, 2412 MHz						
	Frequency Range			Value	Limit	Result
	Fundamental			N/A	N/A	N/A



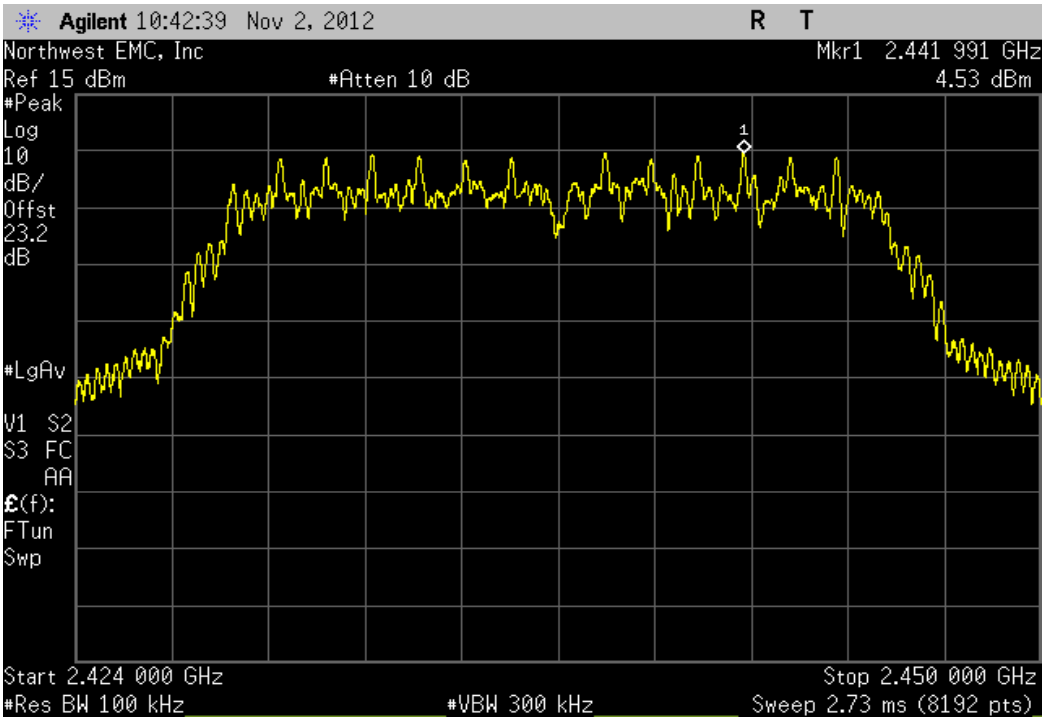
Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, Low Channel 1, 2412 MHz				
Frequency Range		**Value**	**Limit**	**Result**
30 MHz - 12.5 GHz		-56.61 dBc	≤ -20 dBc	Pass



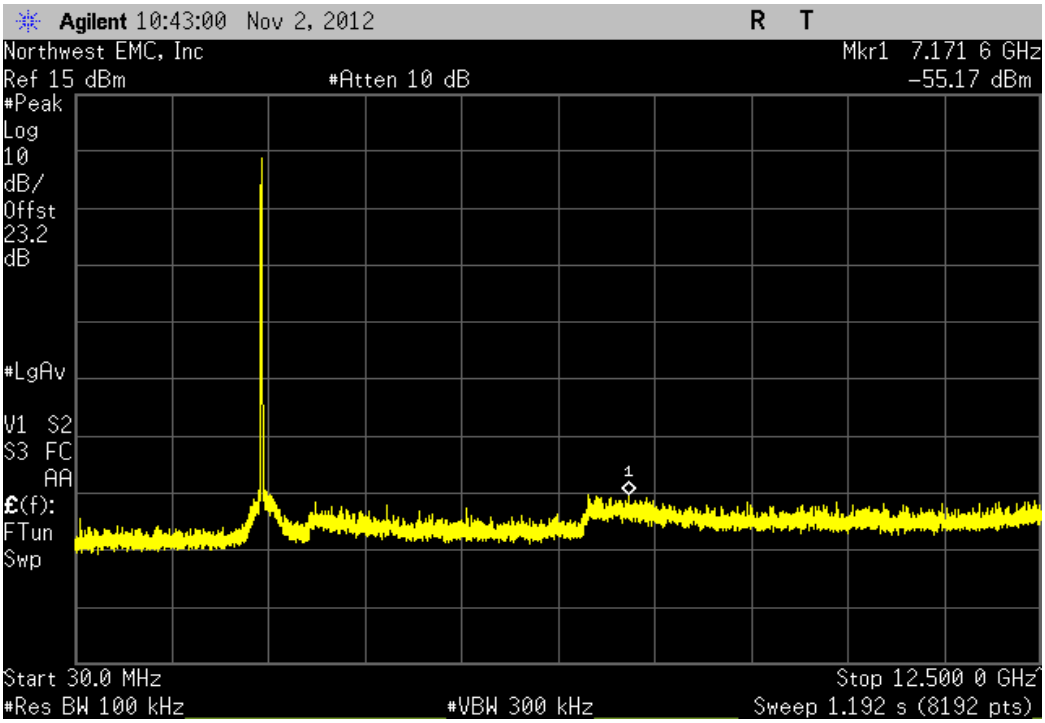
Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, Low Channel 1, 2412 MHz				
Frequency Range		**Value**	**Limit**	**Result**
12.5 GHz - 25 GHz		-56.77 dBc	≤ -20 dBc	Pass



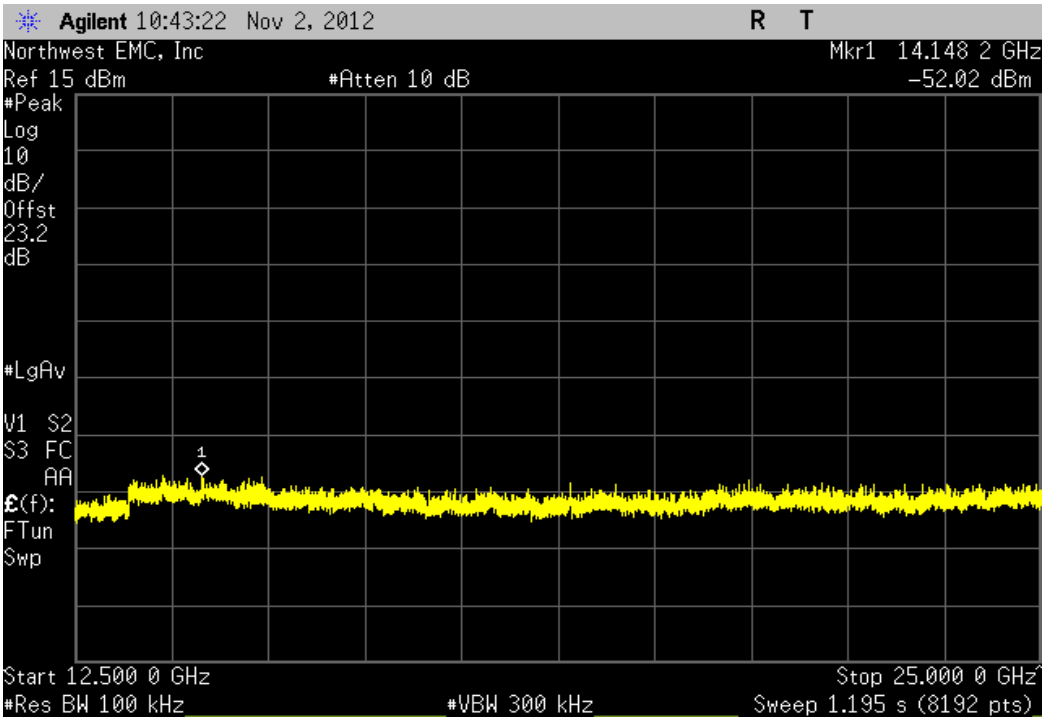
Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, Mid Channel 6, 2437 MHz						
	Frequency Range			Value	Limit	Result
	Fundamental			N/A	N/A	N/A



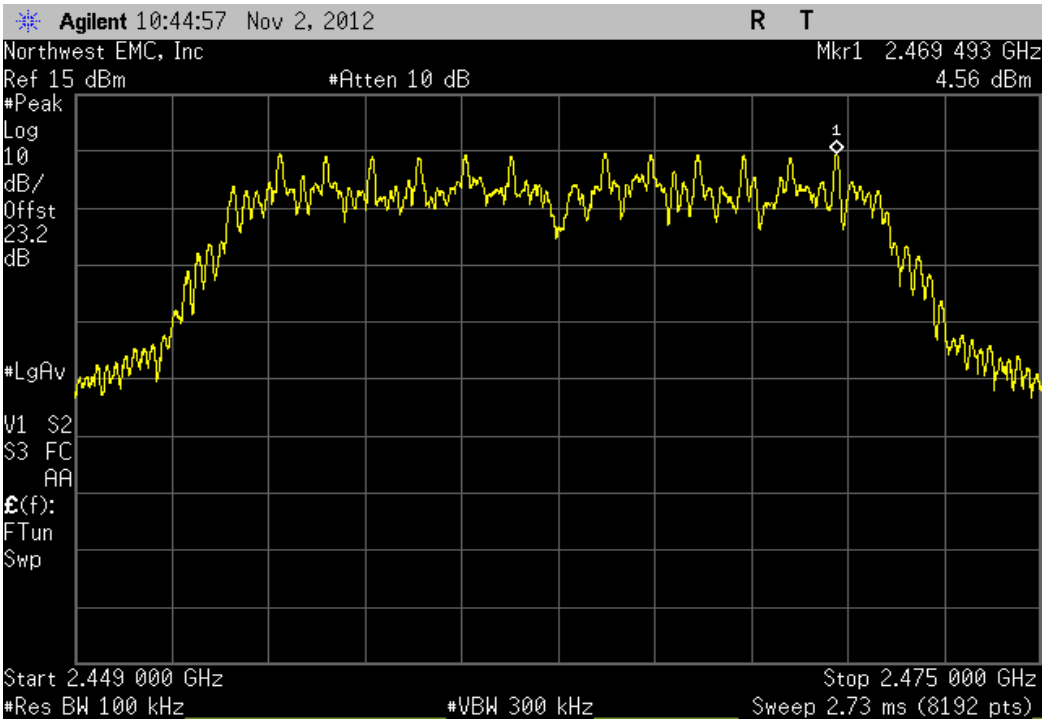
Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, Mid Channel 6, 2437 MHz					
Frequency Range			Value	Limit	Result
30 MHz - 12.5 GHz			-59.7 dBc	≤ -20 dBc	Pass



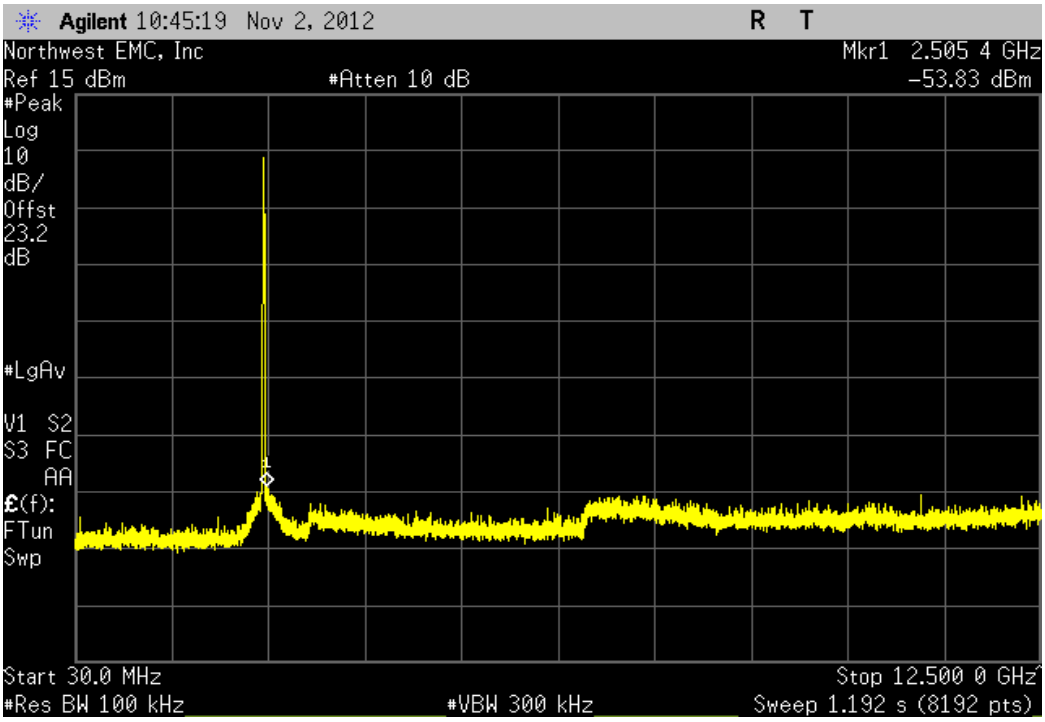
Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, Mid Channel 6, 2437 MHz				
Frequency Range		Value	Limit	Result
12.5 GHz - 25 GHz		-56.55 dBc	≤ -20 dBc	Pass



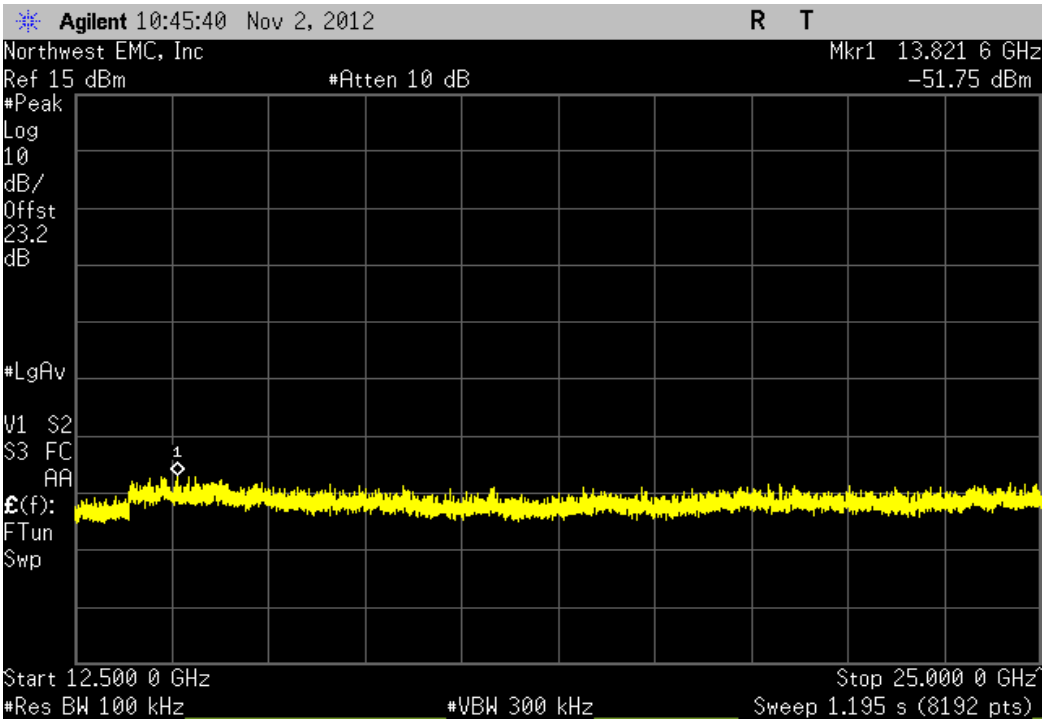
Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, High Channel 11, 2462 MHz						
	Frequency Range			Value	Limit	Result
	Fundamental			N/A	N/A	N/A



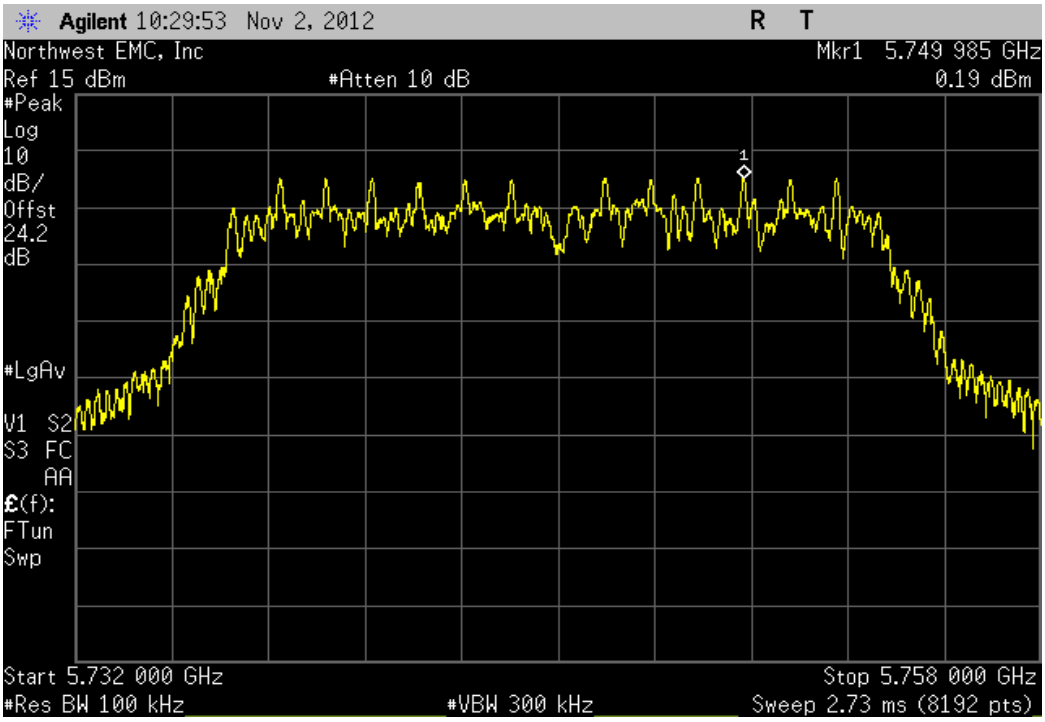
Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, High Channel 11, 2462 MHz				
Frequency Range		**Value**	**Limit**	**Result**
30 MHz - 12.5 GHz		-58.39 dBc	≤ -20 dBc	Pass



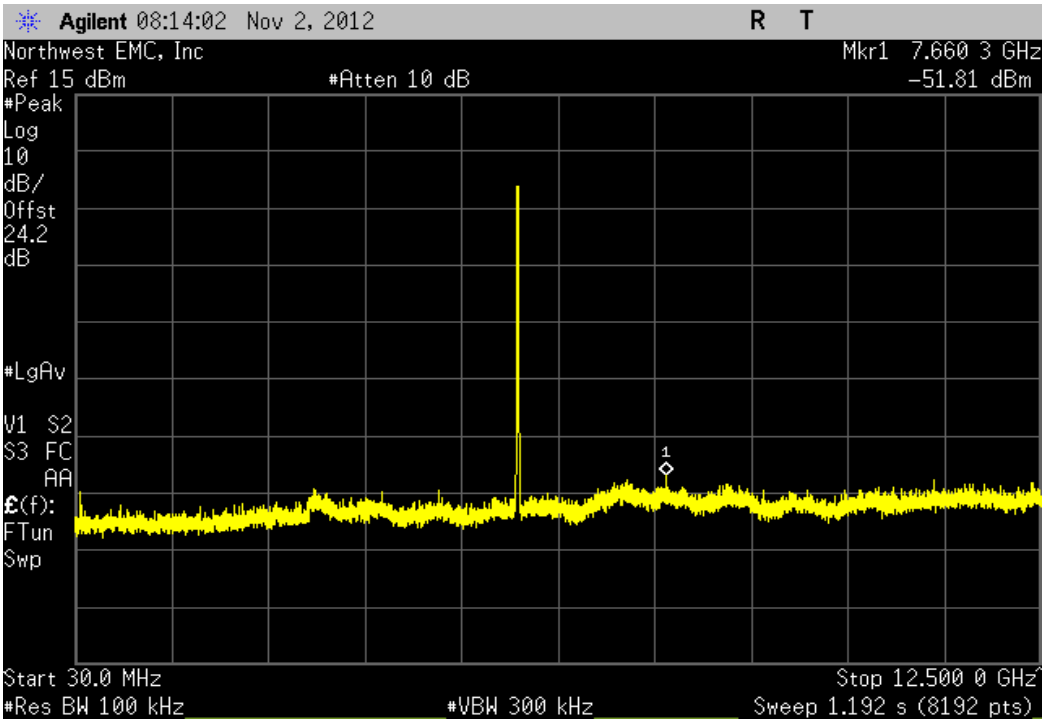
Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, High Channel 11, 2462 MHz				
Frequency Range		**Value**	**Limit**	**Result**
12.5 GHz - 25 GHz		-56.31 dBc	≤ -20 dBc	Pass



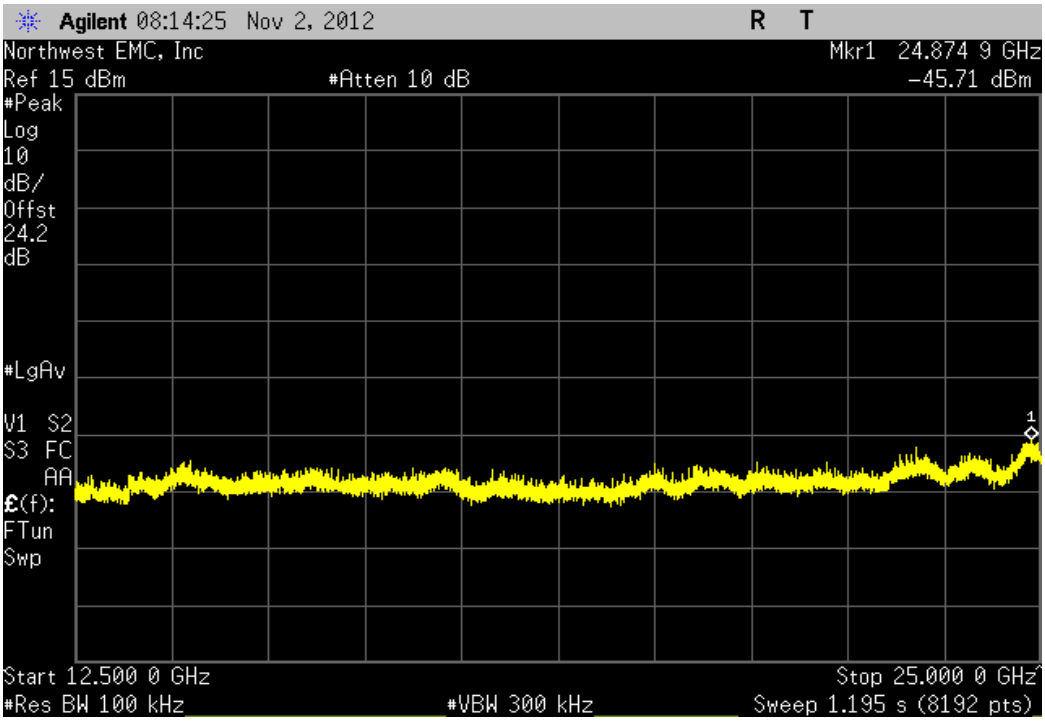
Chain B, 20 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS15, Low Channel 149, 5745 MHz						
	Frequency Range			Value	Limit	Result
	Fundamental			N/A	N/A	N/A



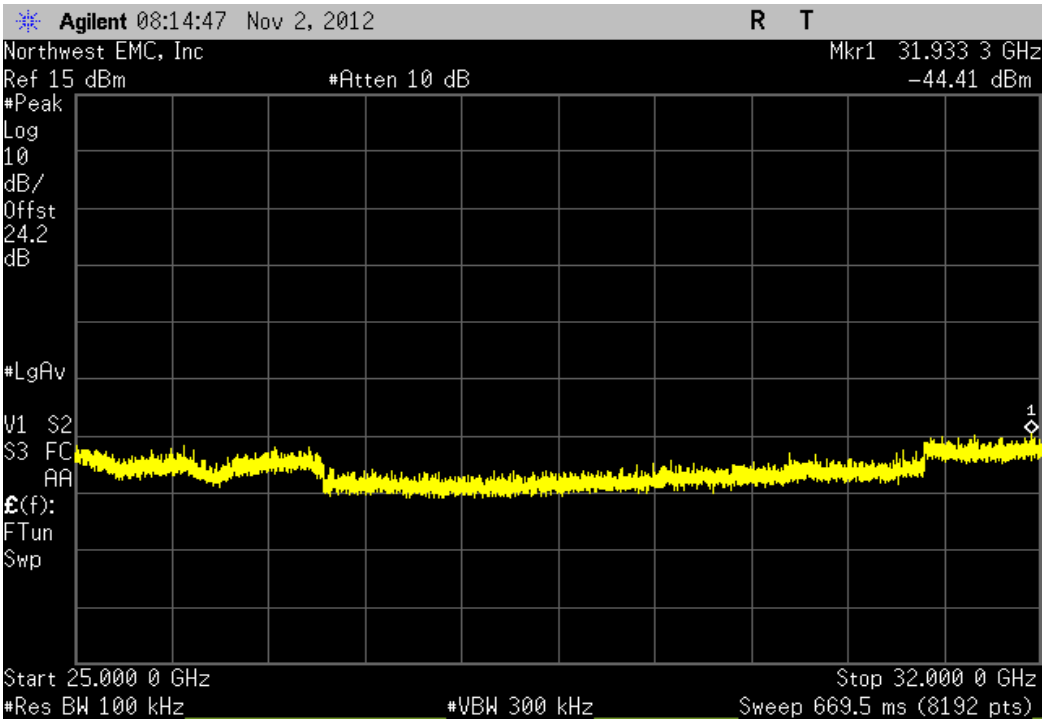
Chain B, 20 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS15, Low Channel 149, 5745 MHz					
Frequency Range			Value	Limit	Result
30 MHz - 12.5 GHz			-51.69 dBc	≤ -20 dBc	Pass



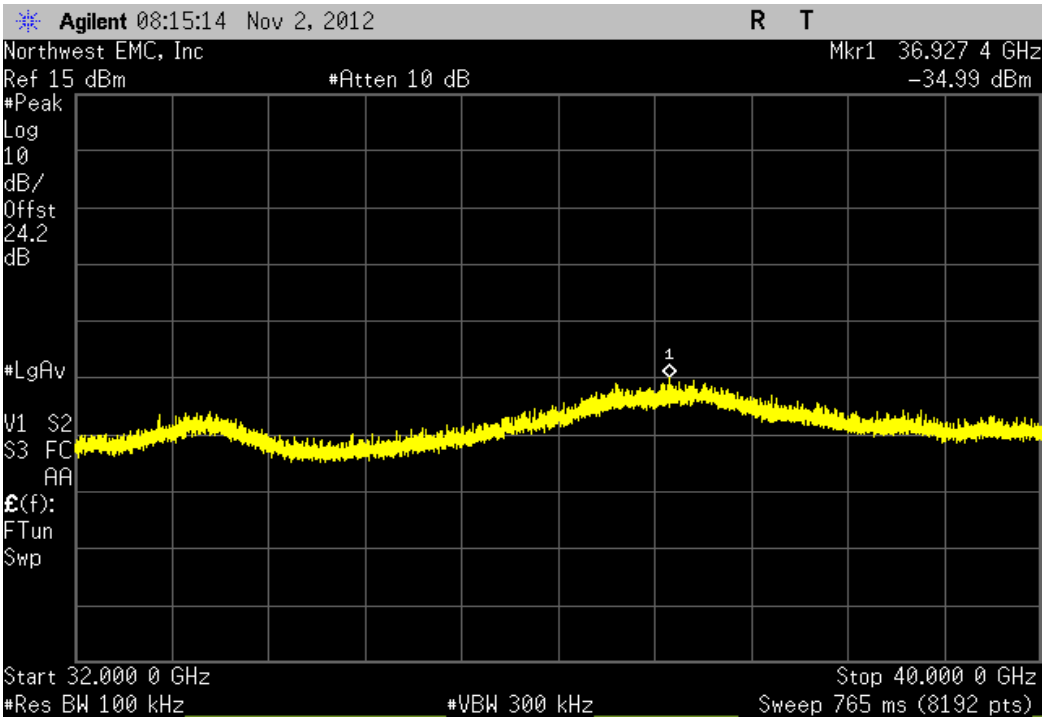
Chain B, 20 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS15, Low Channel 149, 5745 MHz				
Frequency Range		**Value**	**Limit**	**Result**
12.5 GHz - 25 GHz		-45.59 dBc	≤ -20 dBc	Pass



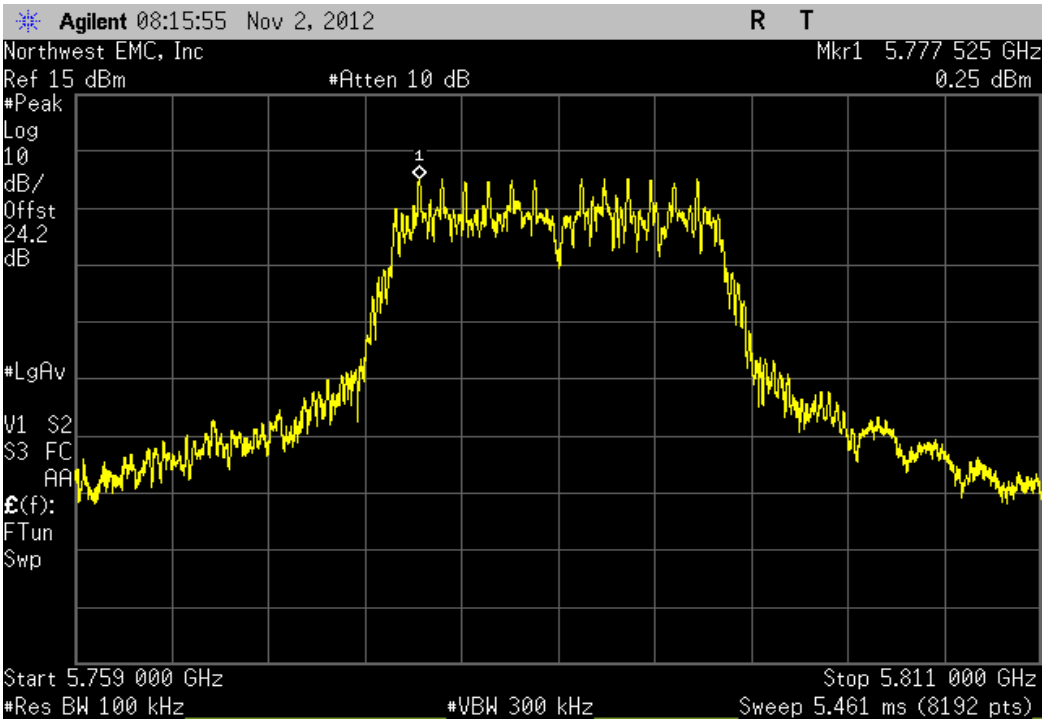
Chain B, 20 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS15, Low Channel 149, 5745 MHz				
Frequency Range		**Value**	**Limit**	**Result**
25 GHz - 32 GHz		-44.29 dBc	≤ -20 dBc	Pass



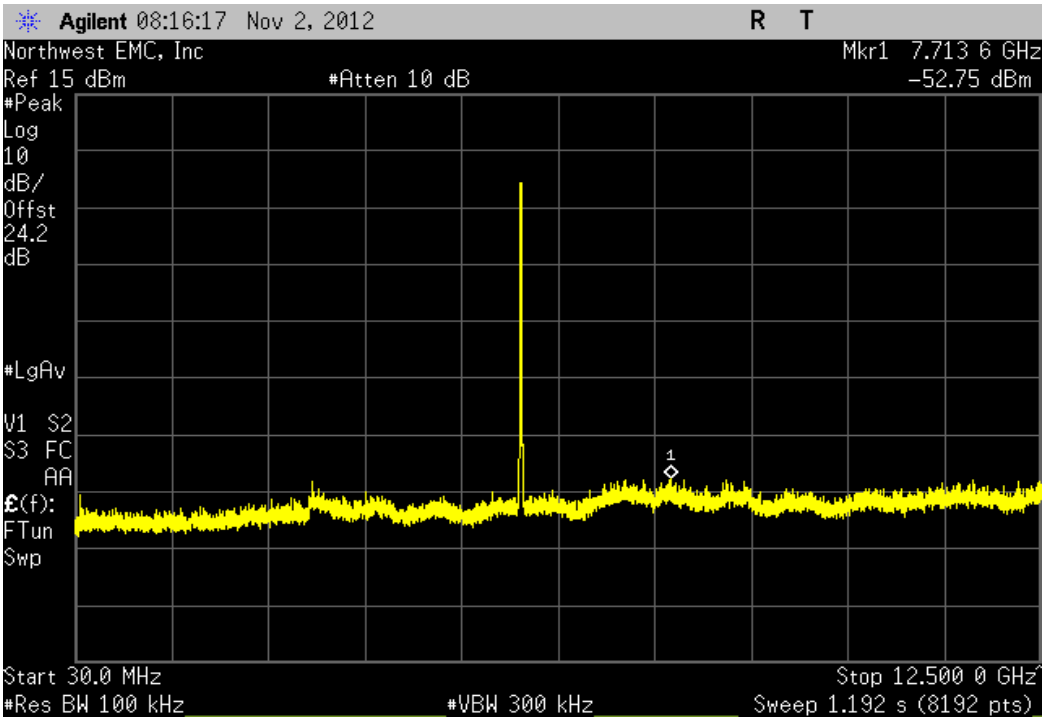
Chain B, 20 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS15, Low Channel 149, 5745 MHz				
Frequency Range		**Value**	**Limit**	**Result**
32 GHz - 40 GHz		-34.87 dBc	≤ -20 dBc	Pass



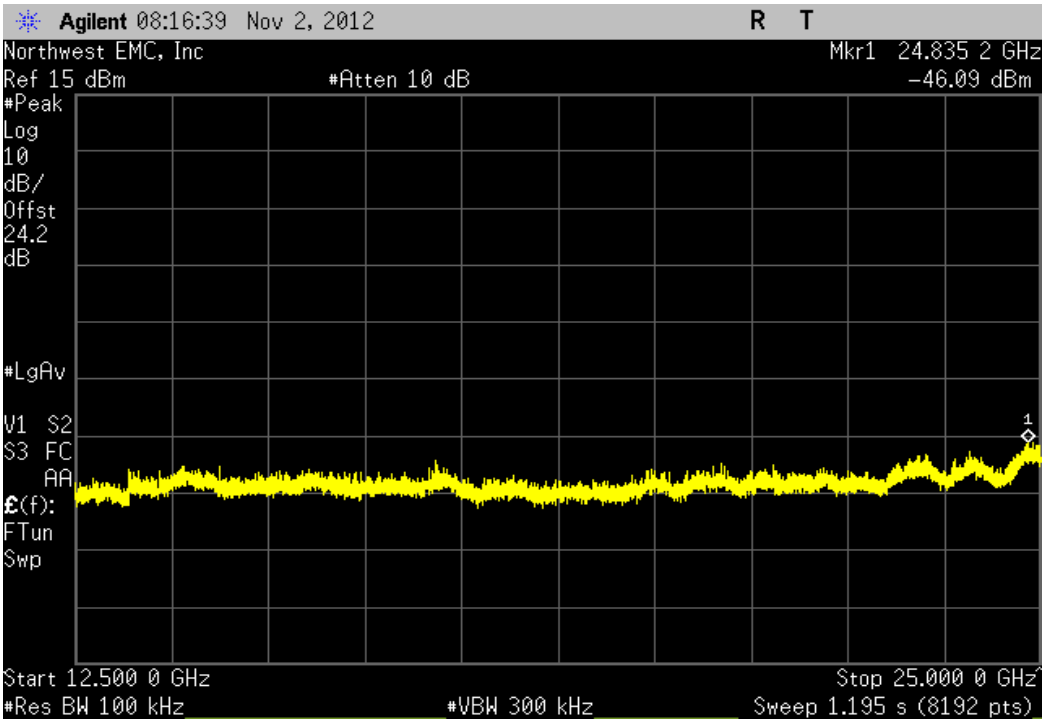
Chain B, 20 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS15, Mid Channel 157, 5785 MHz						
	Frequency Range			**Value**	**Limit**	**Result**
	Fundamental			N/A	N/A	N/A



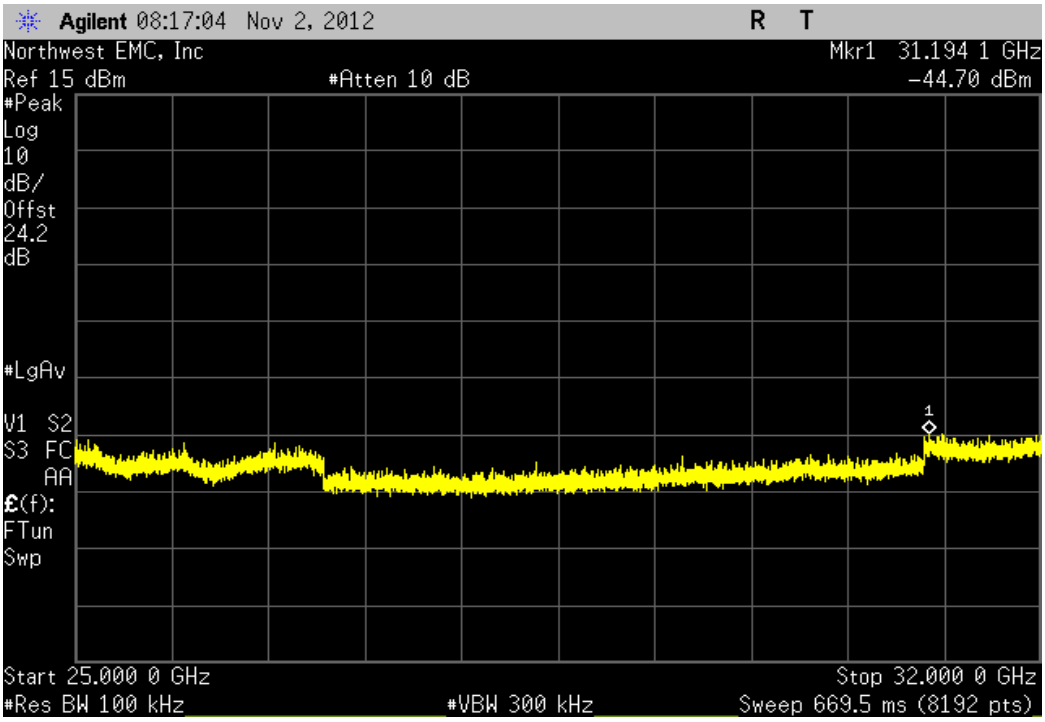
Chain B, 20 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS15, Mid Channel 157, 5785 MHz				
Frequency Range		**Value**	**Limit**	**Result**
30 MHz - 12.5 GHz		-53 dBc	≤ -20 dBc	Pass



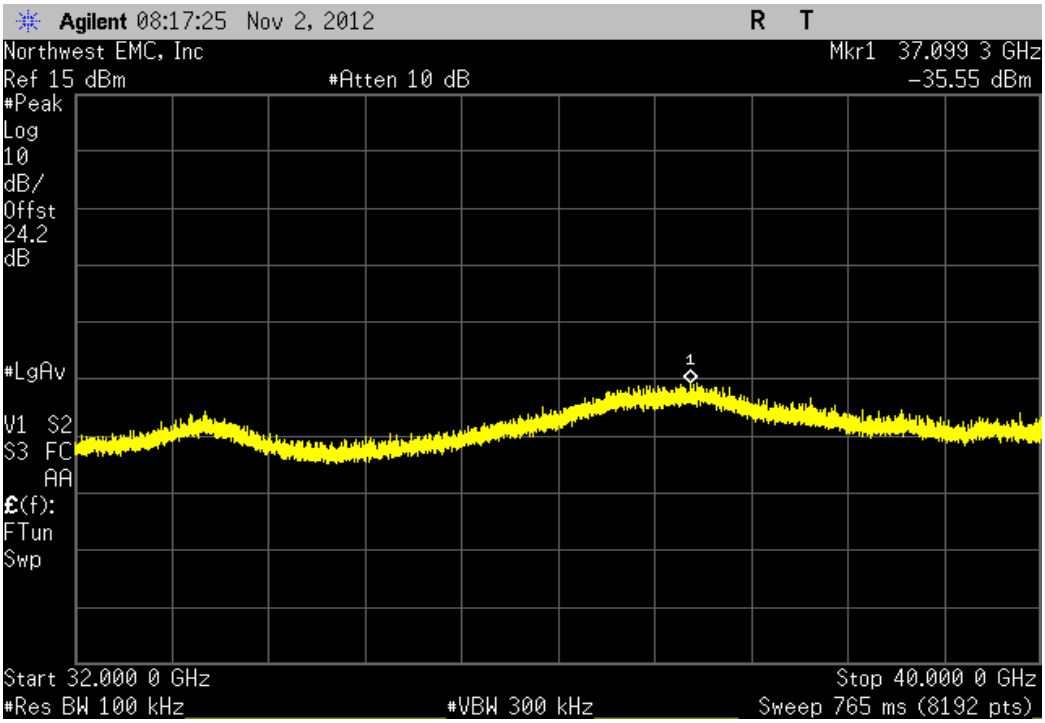
Chain B, 20 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS15, Mid Channel 157, 5785 MHz				
Frequency Range		**Value**	**Limit**	**Result**
12.5 GHz - 25 GHz		-46.34 dBc	≤ -20 dBc	Pass



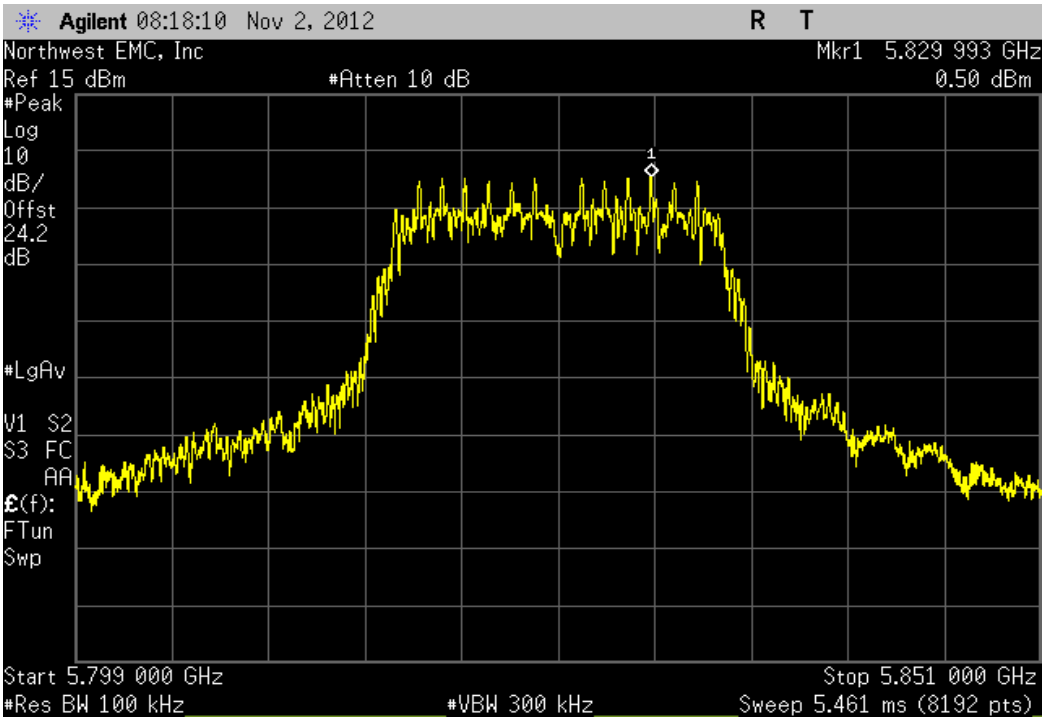
Chain B, 20 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS15, Mid Channel 157, 5785 MHz				
Frequency Range		**Value**	**Limit**	**Result**
25 GHz - 32 GHz		-44.95 dBc	≤ -20 dBc	Pass



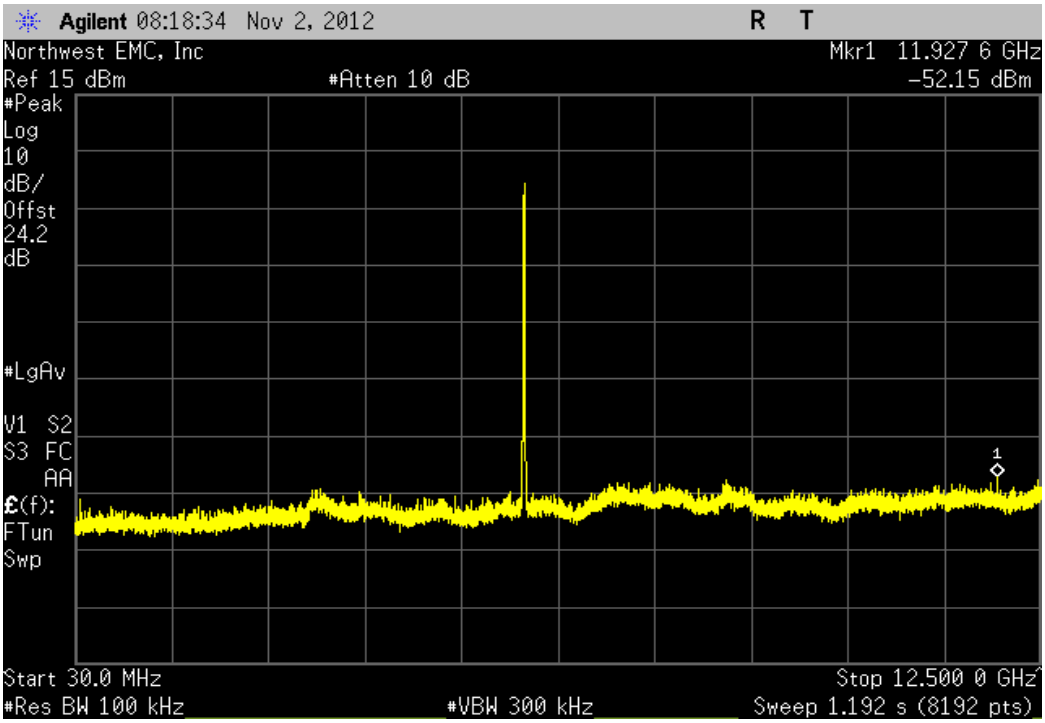
Chain B, 20 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS15, Mid Channel 157, 5785 MHz				
Frequency Range		**Value**	**Limit**	**Result**
32 GHz - 40 GHz		-35.8 dBc	≤ -20 dBc	Pass



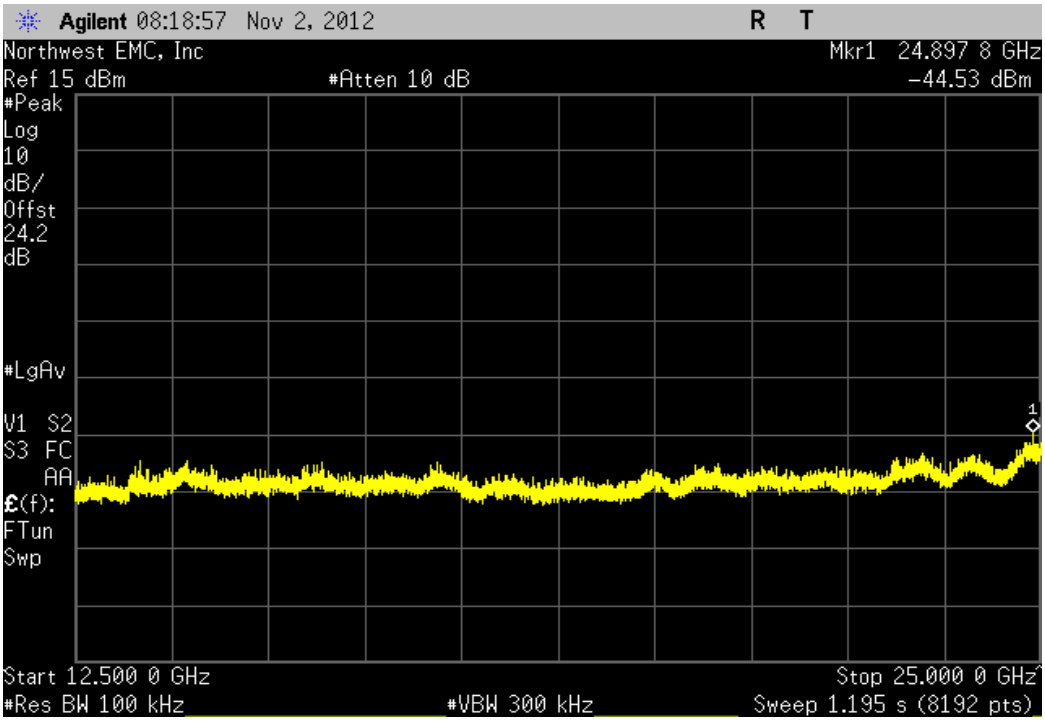
Chain B, 20 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS15, High Channel 165, 5825 MHz						
	Frequency Range			Value	Limit	Result
	Fundamental			N/A	N/A	N/A



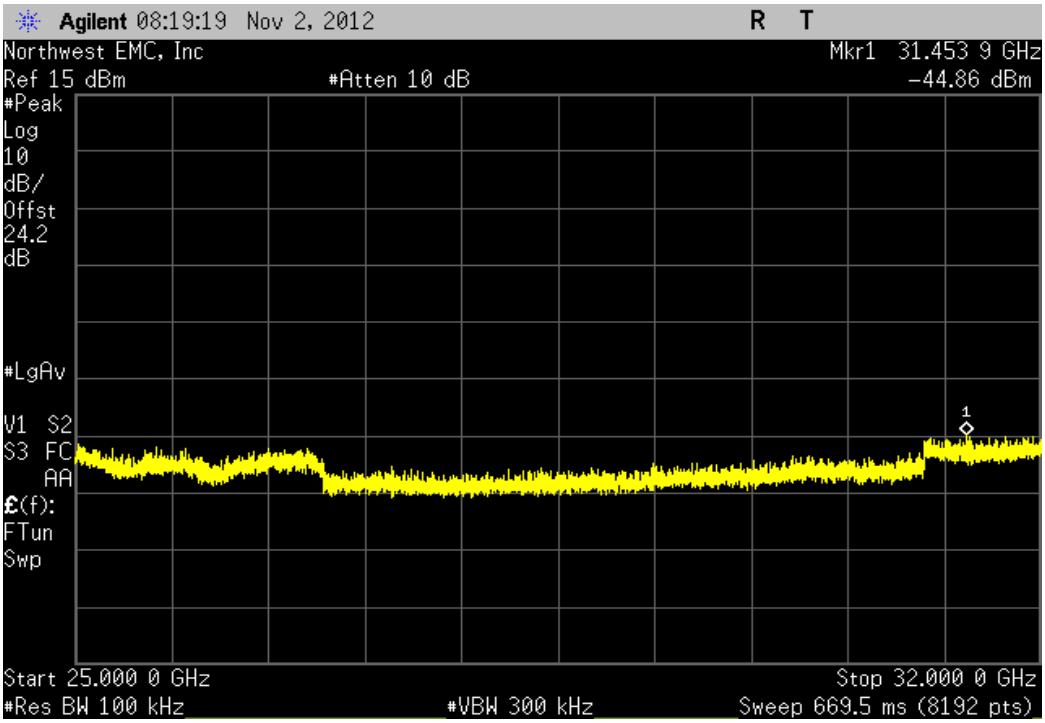
Chain B, 20 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS15, High Channel 165, 5825 MHz					
Frequency Range			Value	Limit	Result
30 MHz - 12.5 GHz			-52.64 dBc	≤ -20 dBc	Pass



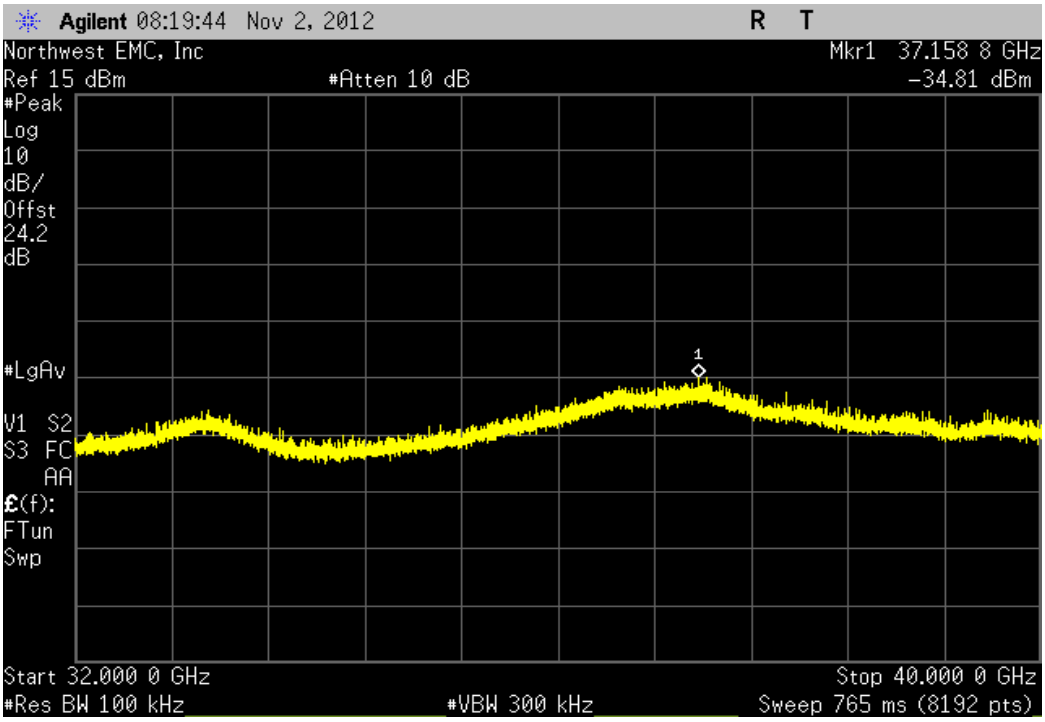
Chain B, 20 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS15, High Channel 165, 5825 MHz				
Frequency Range		**Value**	**Limit**	**Result**
12.5 GHz - 25 GHz		-45.03 dBc	≤ -20 dBc	Pass



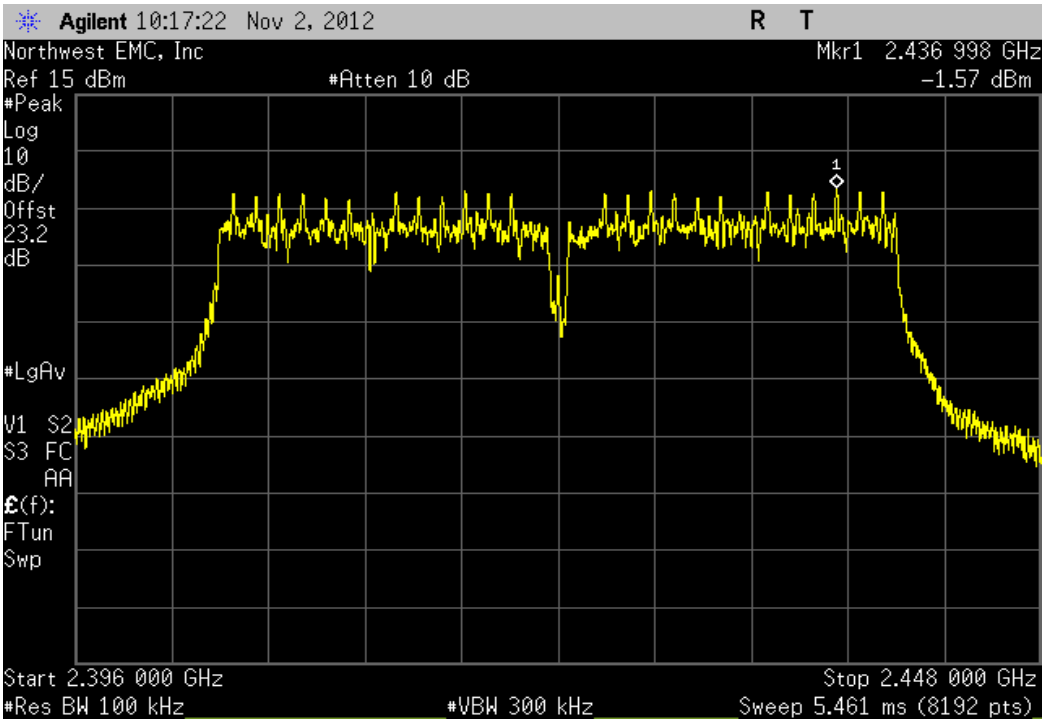
Chain B, 20 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS15, High Channel 165, 5825 MHz				
Frequency Range		**Value**	**Limit**	**Result**
25 GHz - 32 GHz		-45.36 dBc	≤ -20 dBc	Pass



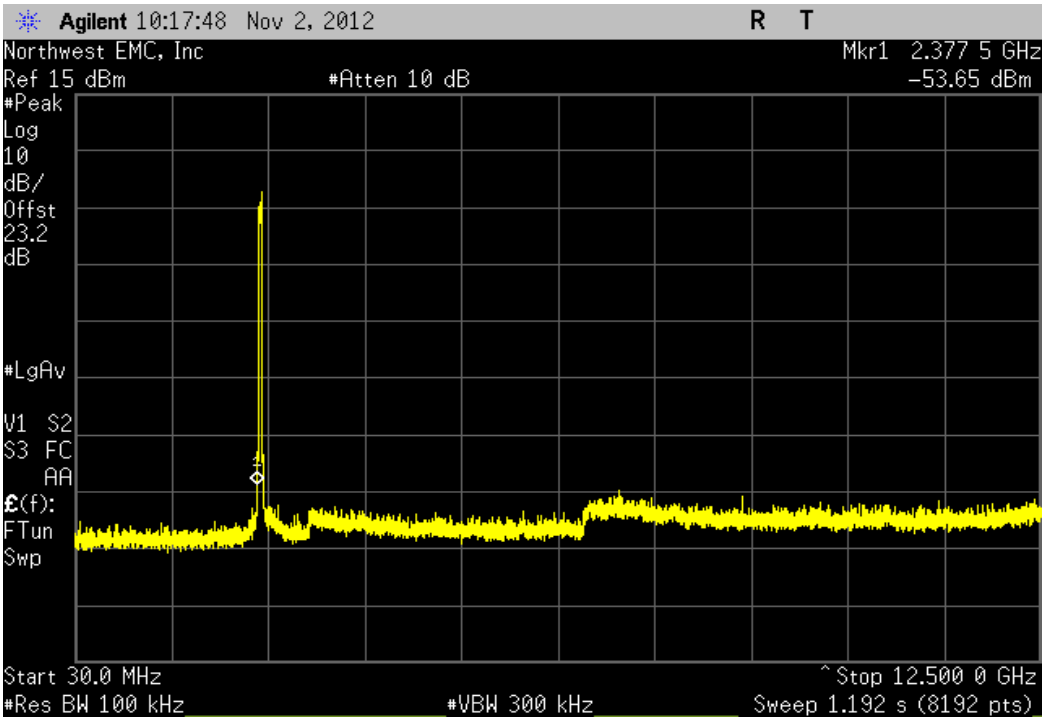
Chain B, 20 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS15, High Channel 165, 5825 MHz				
Frequency Range		Value	Limit	Result
32 GHz - 40 GHz		-35.31 dBc	≤ -20 dBc	Pass



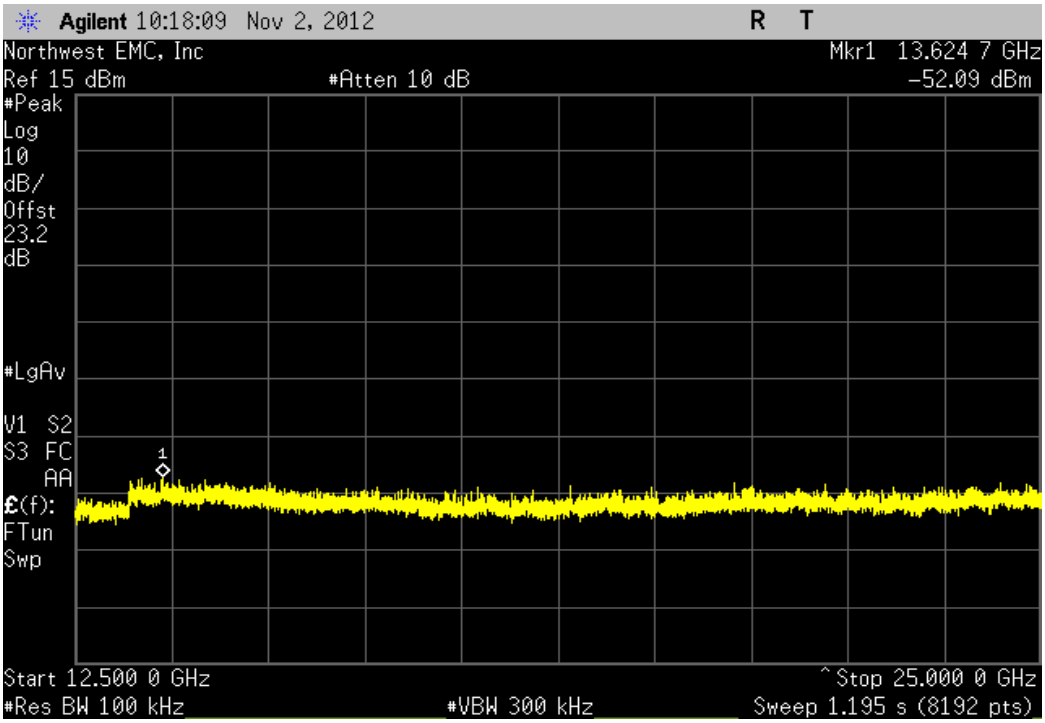
Chain B, 40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, Low Channel 1/5, 2422 MHz						
	Frequency Range			Value	Limit	Result
	Fundamental			N/A	N/A	N/A



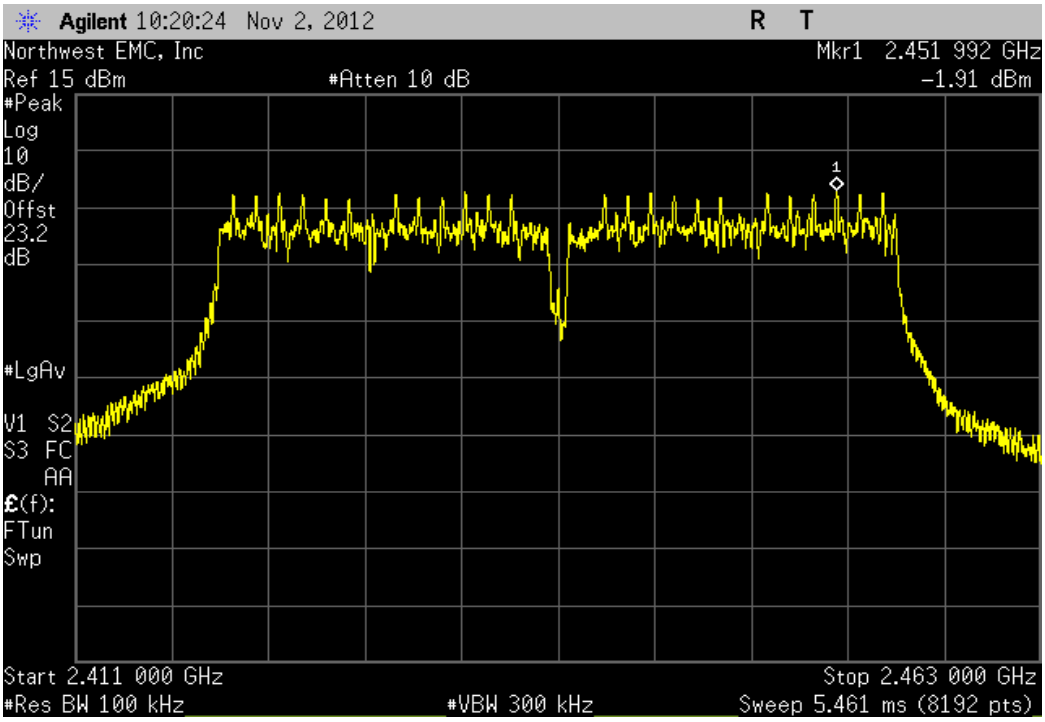
Chain B, 40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, Low Channel 1/5, 2422 MHz				
Frequency Range		**Value**	**Limit**	**Result**
30 MHz - 12.5 GHz		-52.08 dBc	≤ -20 dBc	Pass



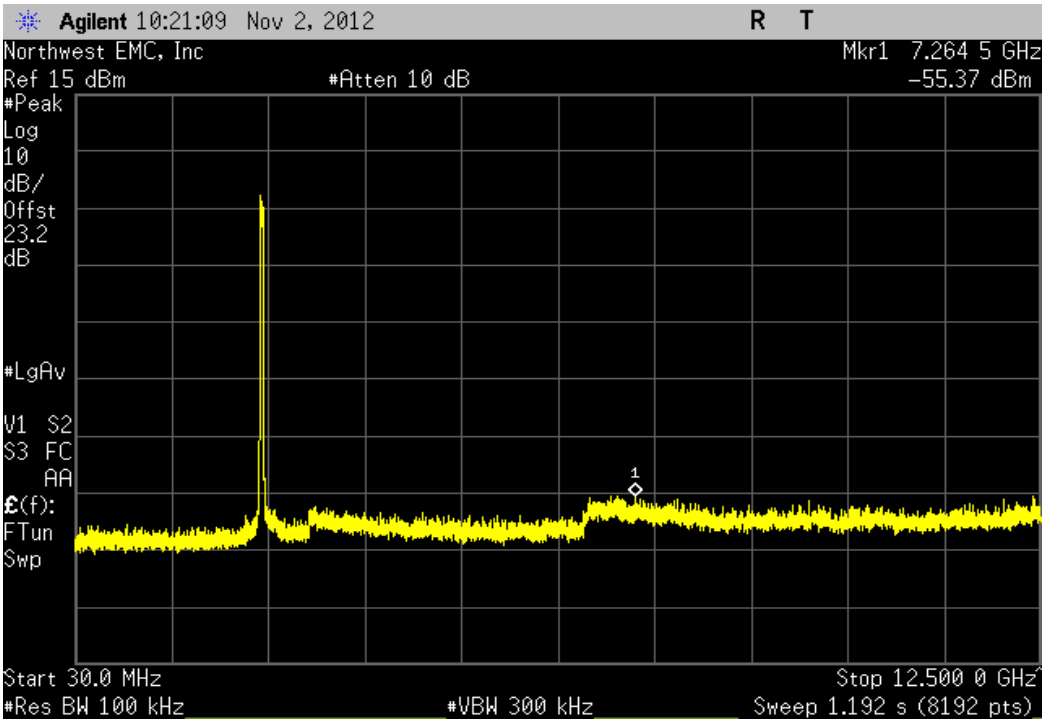
Chain B, 40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, Low Channel 1/5, 2422 MHz				
Frequency Range		**Value**	**Limit**	**Result**
12.5 GHz - 25 GHz		-50.52 dBc	≤ -20 dBc	Pass



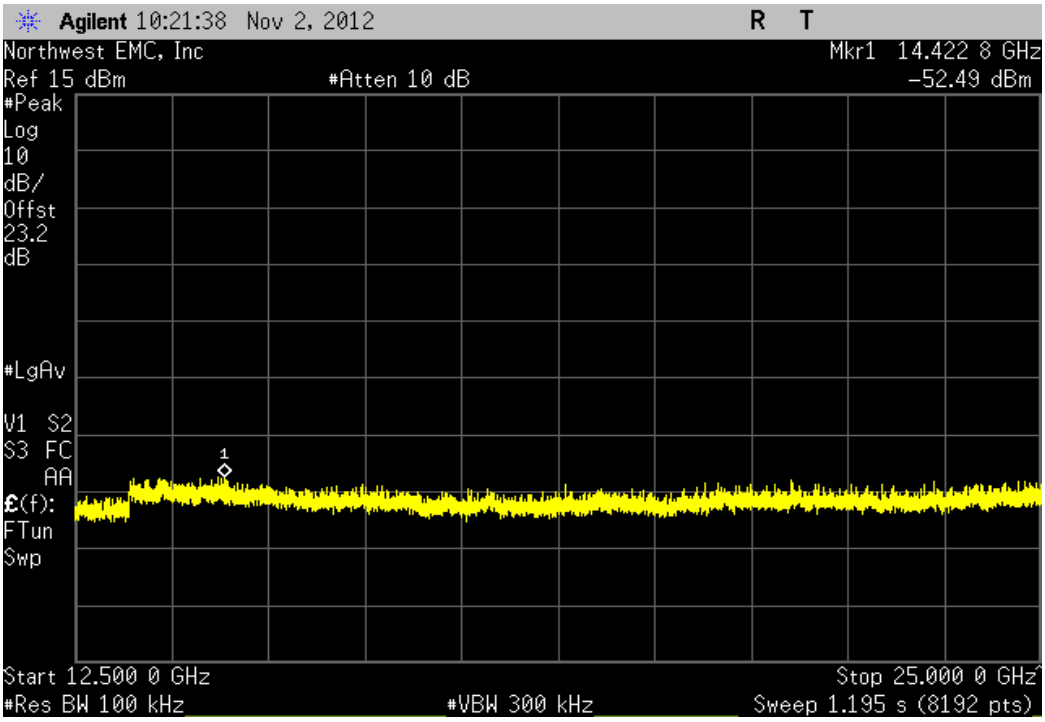
Chain B, 40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, Mid Channel 4/8, 2437 MHz						
	Frequency Range			Value	Limit	Result
	Fundamental			N/A	N/A	N/A



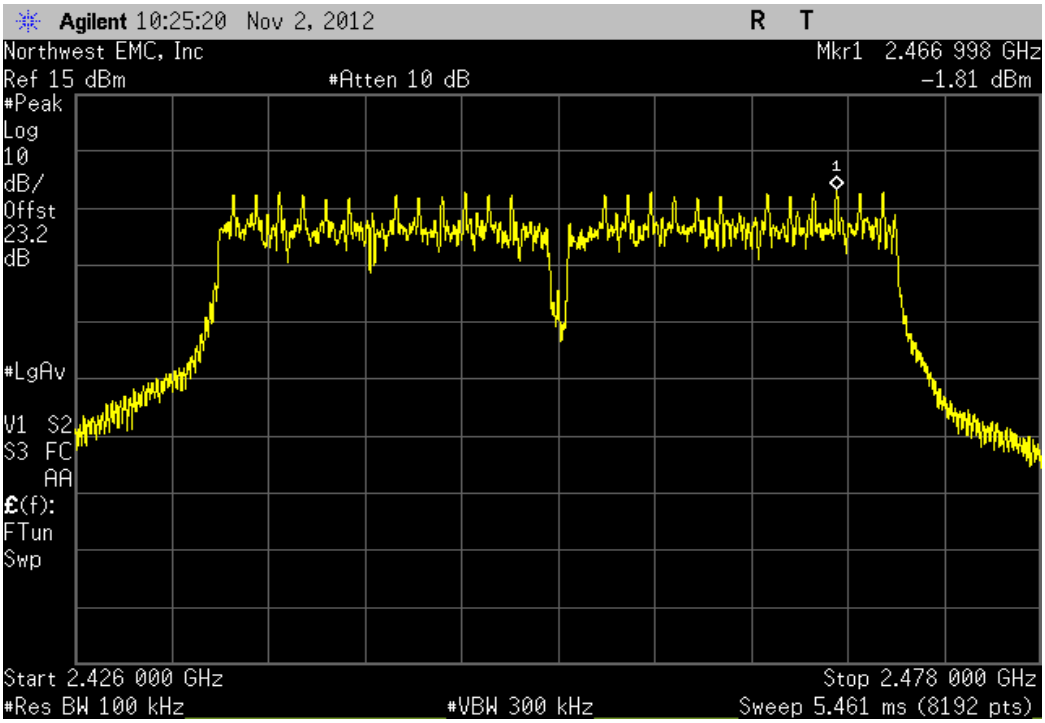
Chain B, 40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, Mid Channel 4/8, 2437 MHz				
Frequency Range		Value	Limit	Result
30 MHz - 12.5 GHz		-53.46 dBc	≤ -20 dBc	Pass



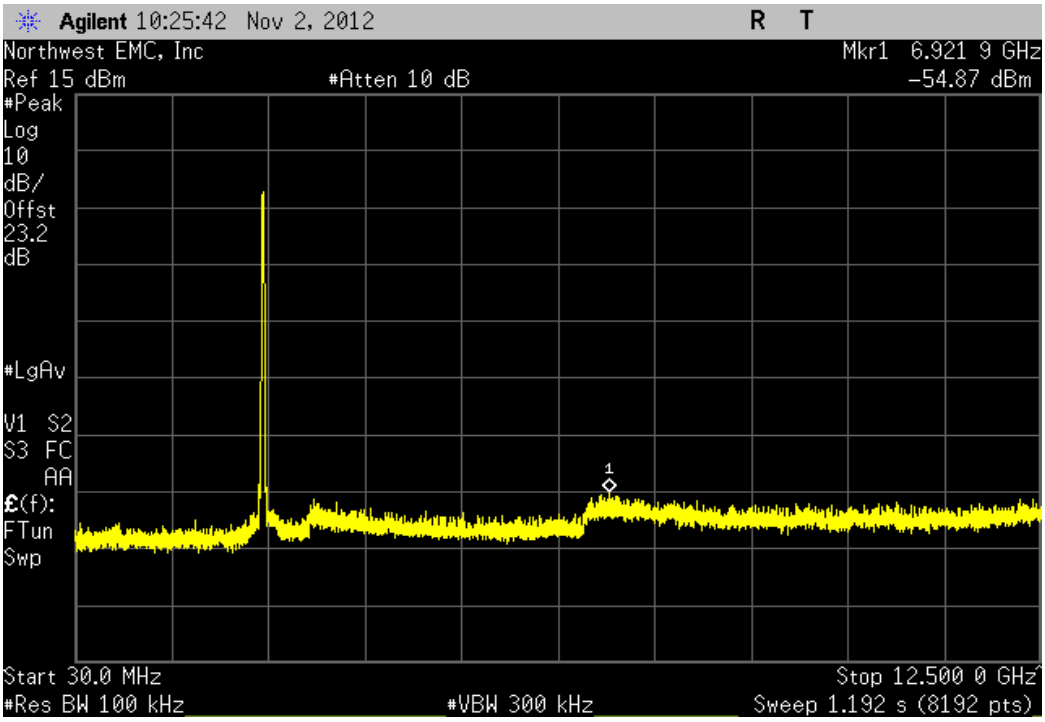
Chain B, 40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, Mid Channel 4/8, 2437 MHz				
Frequency Range		Value	Limit	Result
12.5 GHz - 25 GHz		-50.58 dBc	≤ -20 dBc	Pass



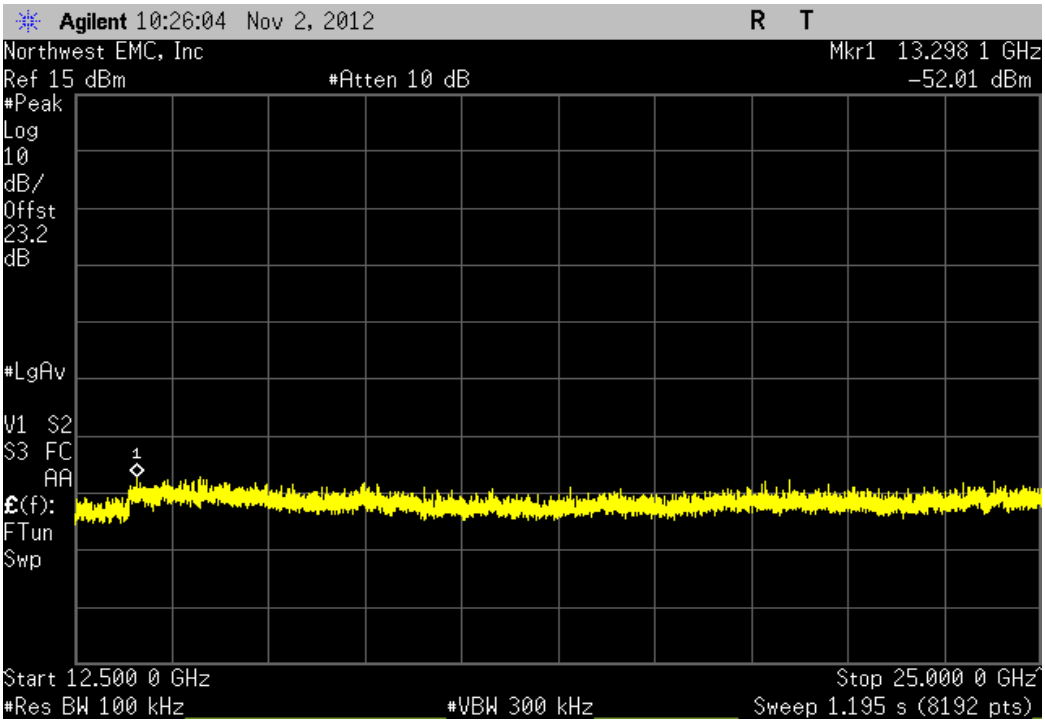
Chain B, 40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, High Channel 7/11 2452 MHz						
	Frequency Range			Value	Limit	Result
	Fundamental			N/A	N/A	N/A



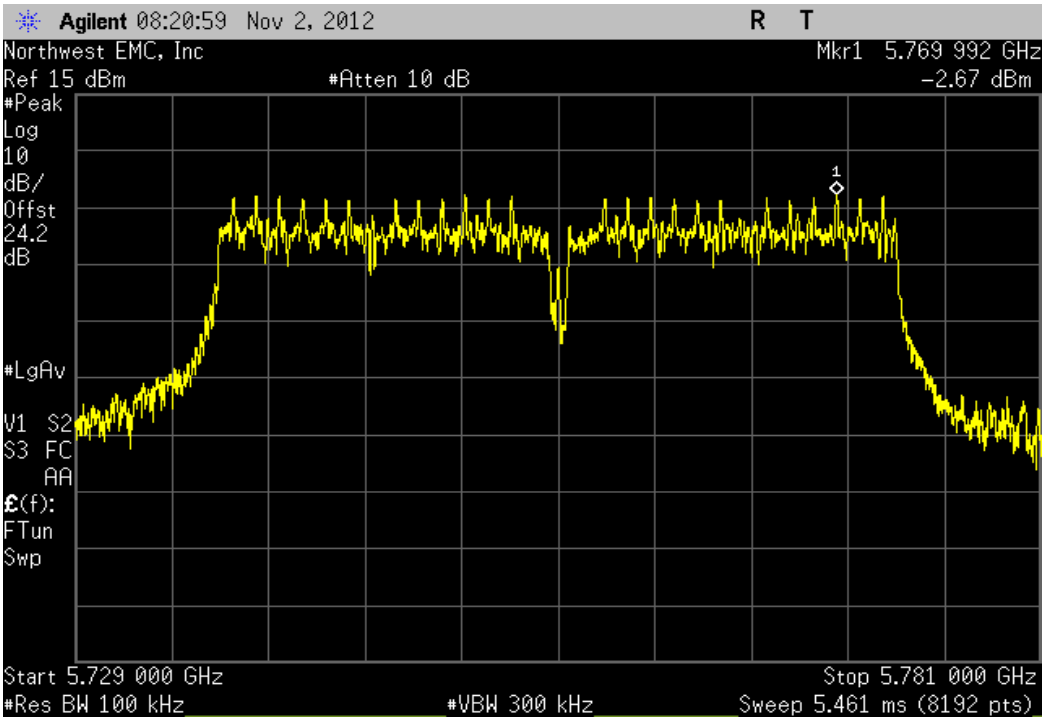
Chain B, 40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, High Channel 7/11 2452 MHz				
Frequency Range		**Value**	**Limit**	**Result**
30 MHz - 12.5 GHz		-53.06 dBc	≤ -20 dBc	Pass



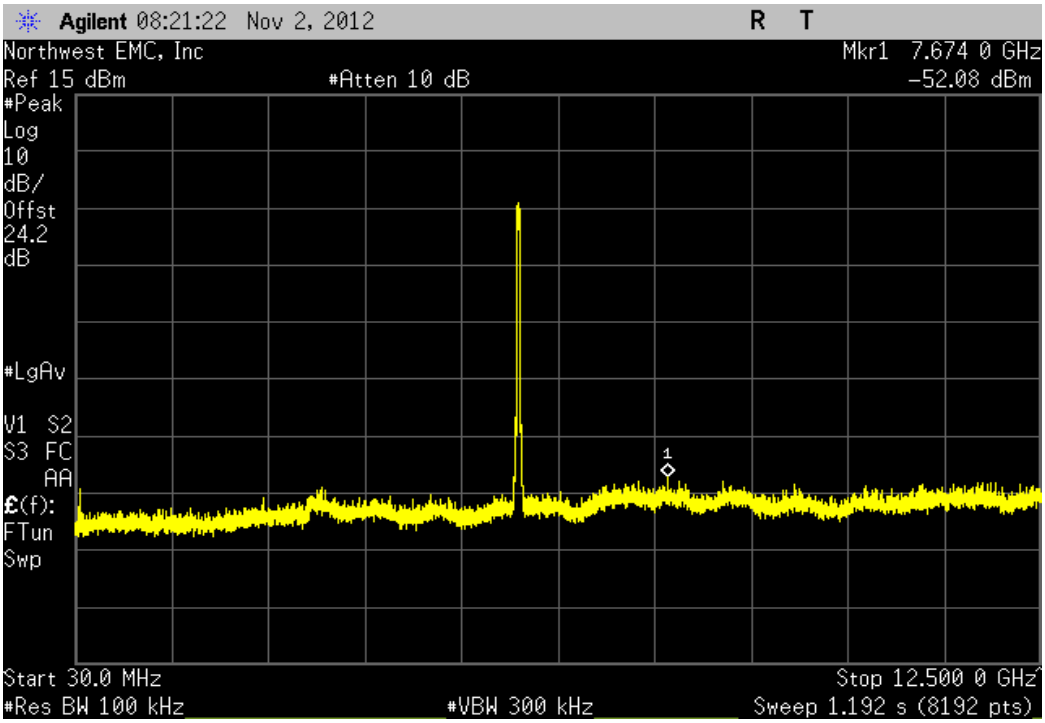
Chain B, 40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, High Channel 7/11 2452 MHz				
Frequency Range		**Value**	**Limit**	**Result**
12.5 GHz - 25 GHz		-50.2 dBc	≤ -20 dBc	Pass



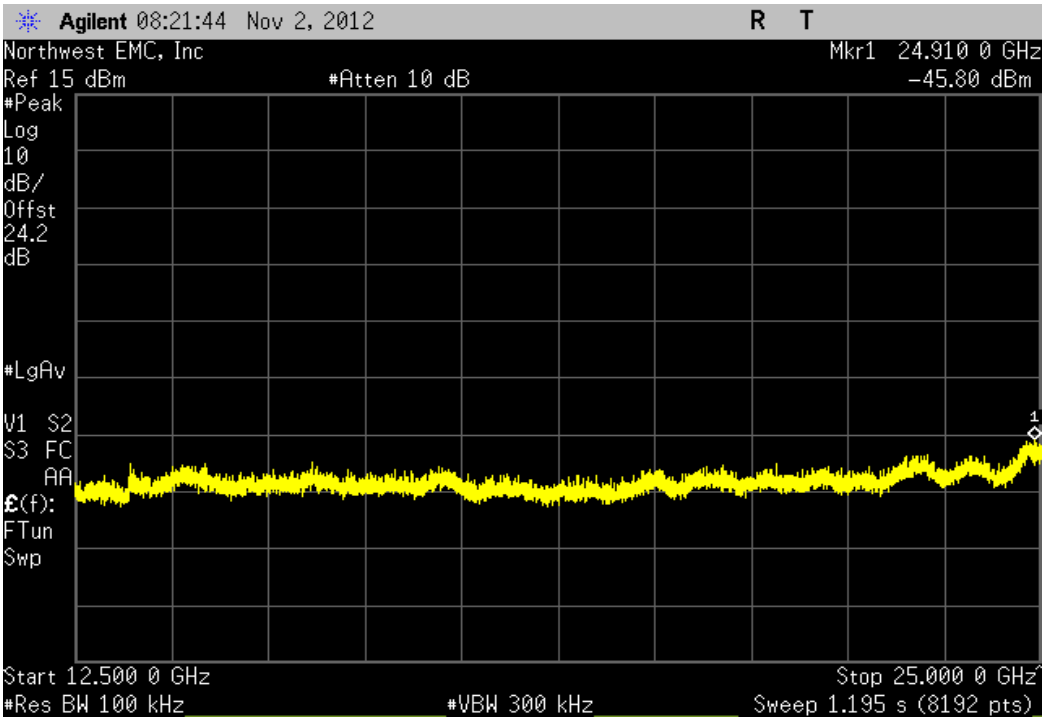
Chain B, 40 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS8, Low Channel 149/153, 5755 MHz						
	Frequency Range			Value	Limit	Result
	Fundamental			N/A	N/A	N/A



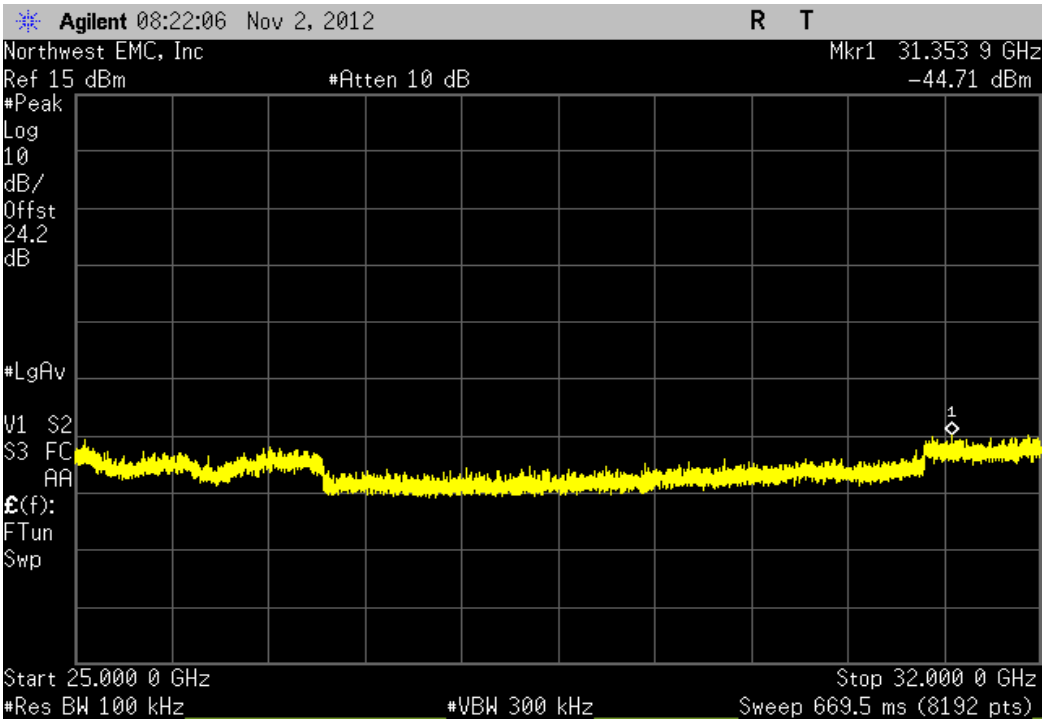
Chain B, 40 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS8, Low Channel 149/153, 5755 MHz					
	Frequency Range		Value	Limit	Result
	30 MHz - 12.5 GHz		-49.41 dBc	≤ -20 dBc	Pass



Chain B, 40 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS8, Low Channel 149/153, 5755 MHz				
Frequency Range		**Value**	**Limit**	**Result**
12.5 GHz - 25 GHz		-43.13 dBc	≤ -20 dBc	Pass

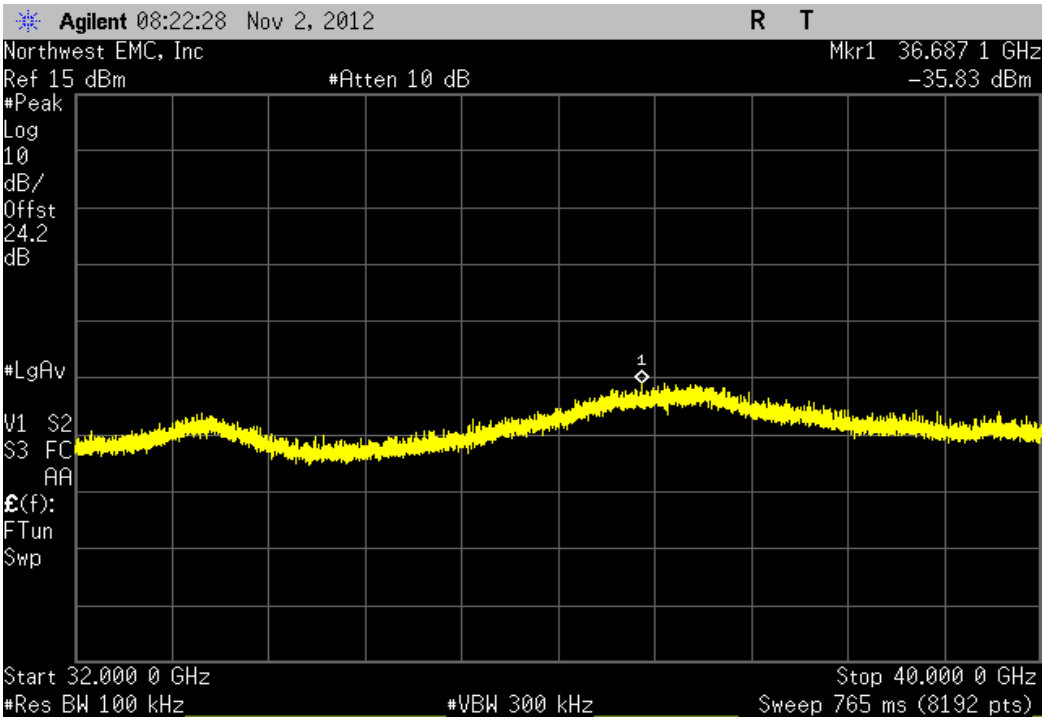


Chain B, 40 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS8, Low Channel 149/153, 5755 MHz				
Frequency Range		**Value**	**Limit**	**Result**
25 GHz - 32 GHz		-42.04 dBc	≤ -20 dBc	Pass



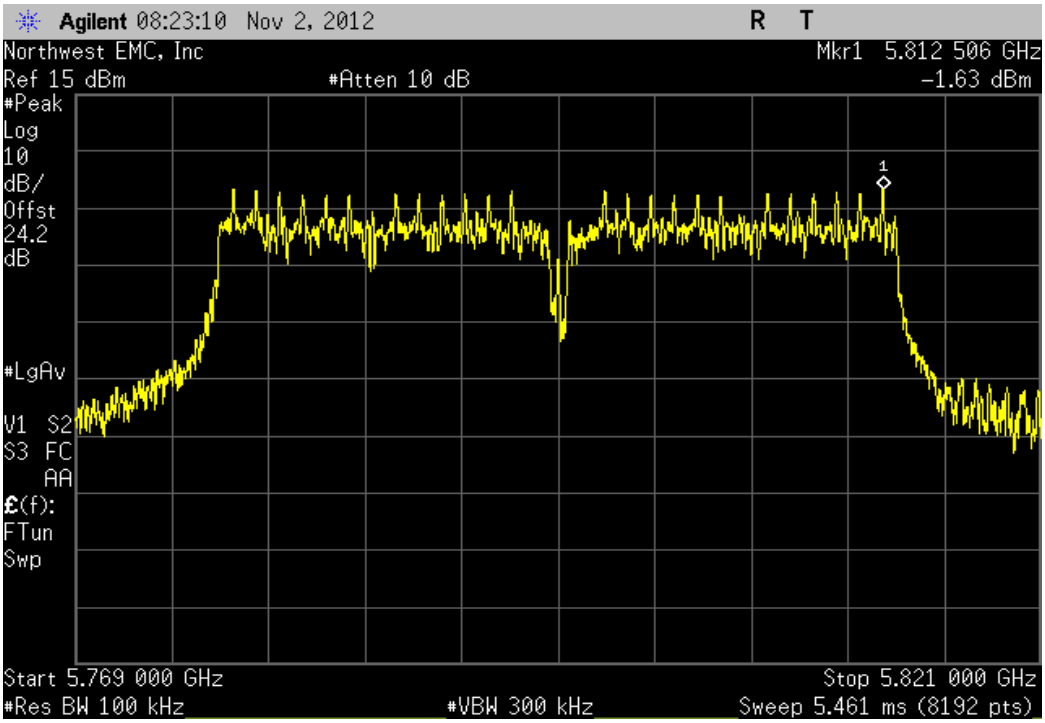
Chain B, 40 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS8, Low Channel 149/153, 5755 MHz

Frequency Range		Value	Limit	Result
32 GHz - 40 GHz		-33.16 dBc	≤ -20 dBc	Pass

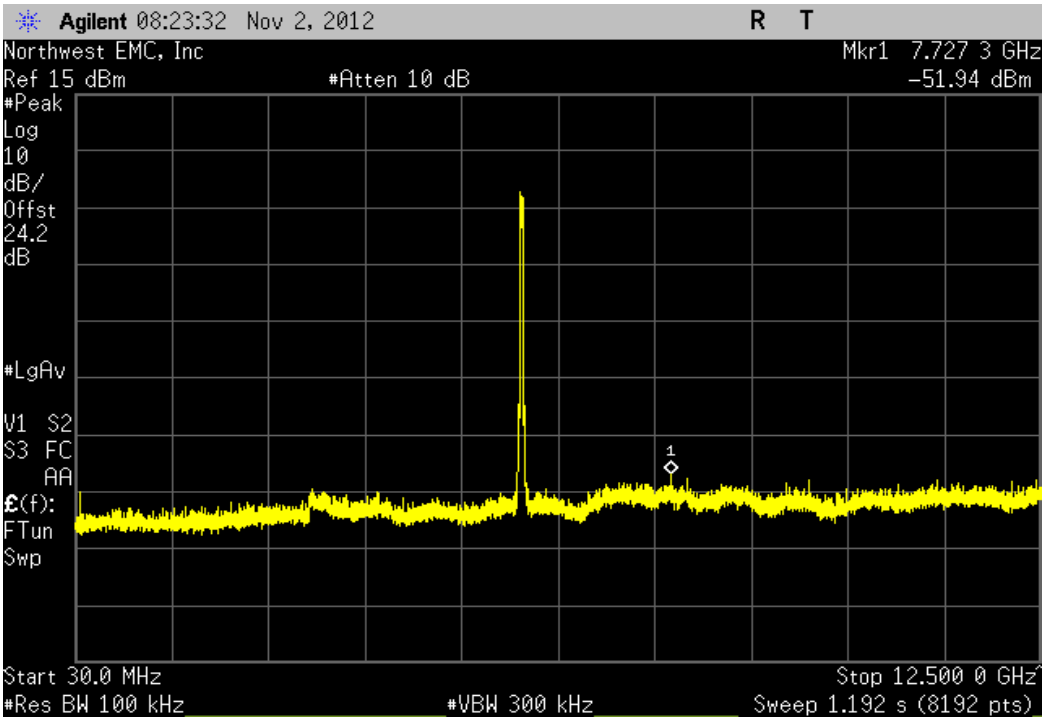


Chain B, 40 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS8, High Channel 157/161, 5795 MHz

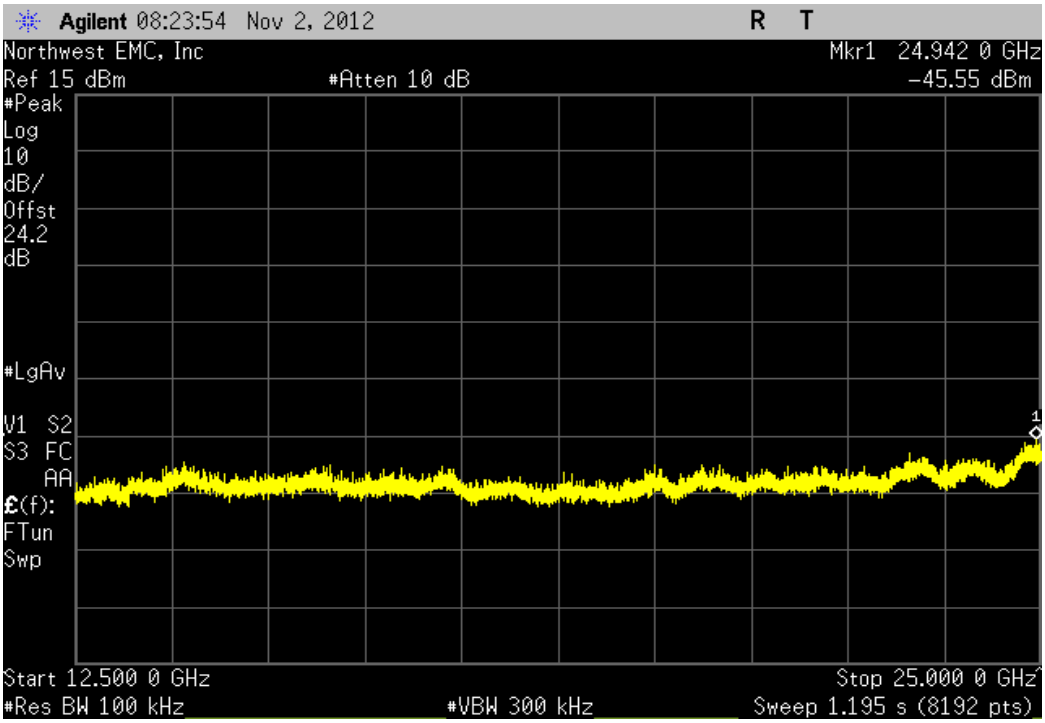
Frequency Range				Value	Limit	Result
	Fundamental			N/A	N/A	N/A



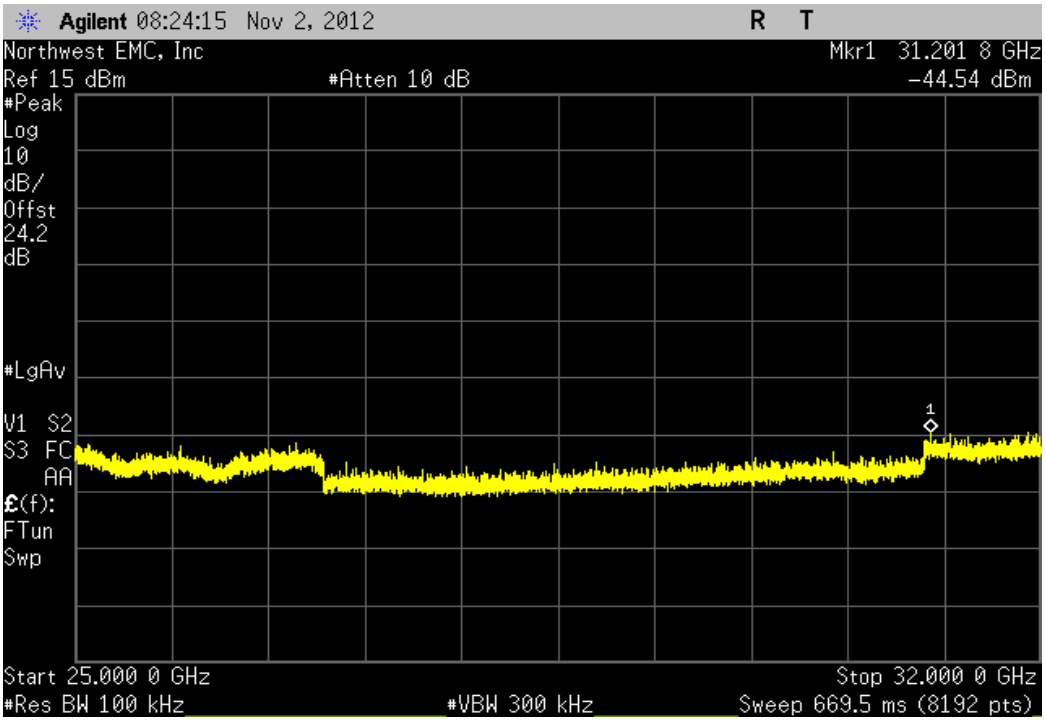
Chain B, 40 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS8, High Channel 157/161, 5795 MHz				
Frequency Range		**Value**	**Limit**	**Result**
30 MHz - 12.5 GHz		-50.31 dBc	≤ -20 dBc	Pass



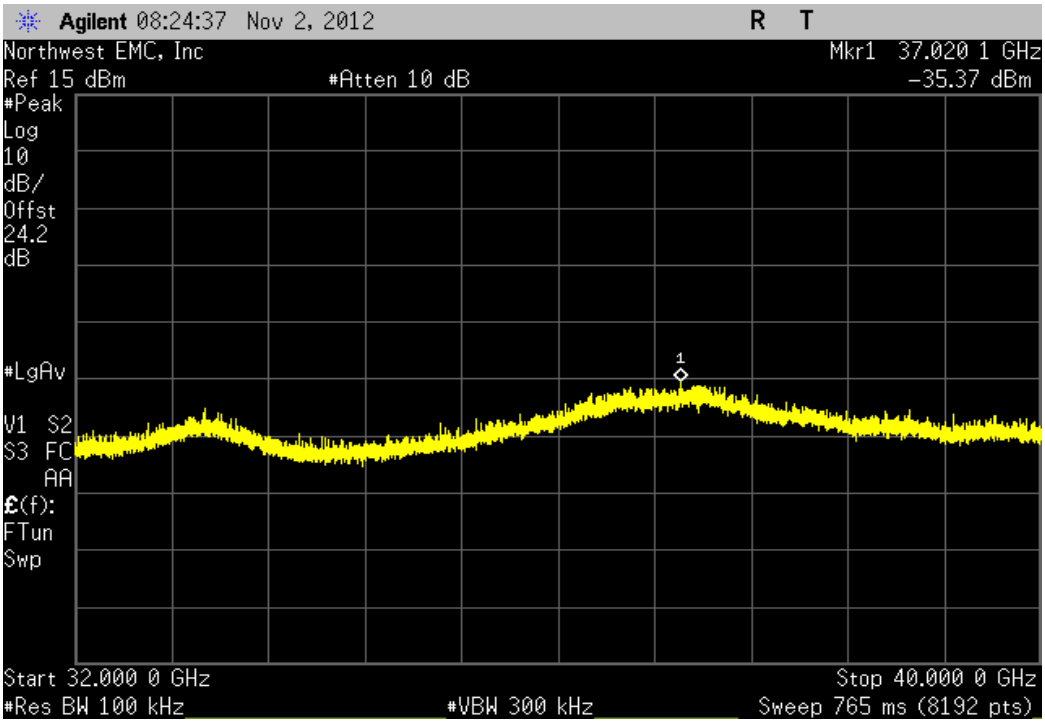
Chain B, 40 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS8, High Channel 157/161, 5795 MHz				
Frequency Range		**Value**	**Limit**	**Result**
12.5 GHz - 25 GHz		-43.92 dBc	≤ -20 dBc	Pass



Chain B, 40 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS8, High Channel 157/161, 5795 MHz				
Frequency Range		**Value**	**Limit**	**Result**
25 GHz - 32 GHz		-42.91 dBc	≤ -20 dBc	Pass



Chain B, 40 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS8, High Channel 157/161, 5795 MHz				
Frequency Range		**Value**	**Limit**	**Result**
32 GHz - 40 GHz		-33.74 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
40GHz DC Block	Miteq	DCB4000	AMD	6/25/2012	12
Attenuator 20 dB, SMA M/F 26GHz	S.M. Electronics	SA26B-20	AUY	8/2/2012	12
Power Meter	Gigatronics	8651A	SPM	1/9/2012	24
MXG Vector Signal Generator	Agilent	N5182A	TIF	NCR	0
Attenuator, 'Precision N'	S.M. Electronics	SA18N-06/SM4032	REE	12/11/2012	12
Power Sensor	Gigatronics	80701A	SPL	7/8/2011	24
Spectrum Analyzer	Agilent	E4440A	AFD	7/5/2012	12
EV06 Direct Connect Cable	ESM Cable Corp.	TT	ECA	NCR	0

TEST DESCRIPTION

The maximum 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 D01 DTS Measurement Section 5.3.1, the spectrum analyzer was used as follows:

- RBW = 100 kHz
- VBW = 300 kHz
- Detector = Peak (to match method used for power measurement)
- Trace = Max hold

The observed power level is then scaled to an equivalent value in 3 kHz by adding a Bandwidth Correction Factor (BWCF) where: BWCF = 10*LOG (3 kHz / 100 kHz) = -15.2 dB

Please refer to the Power Table located elsewhere in this report for radio power operating level during testing.

The EUT is operating on antenna port A only

Power Spectral Density

EUT:	1514			**Work Order:**	MCSO1638
Serial Number:	000109423753			**Date:**	12/14/12
Customer:	Microsoft Corporation			**Temperature:**	22°C
Attendees:	None			**Humidity:**	35%
Project:	None			**Barometric Pres.:**	1011
Tested by:	Brandon Hobbs Rod Peloquin	**Power:**	110VAC/60Hz	**Job Site:**	EV06

TEST SPECIFICATIONS	Test Method
FCC 15.247:2012	ANSI C63.10:2009

COMMENTS

The EUT is operating at 100% duty cycle. All cable losses for 2.4GHz and 5.0GHz bands are accounted for in the analyzer offset calculations. The EUT S/N 000070724253 was used to test all of the 5GHz band.

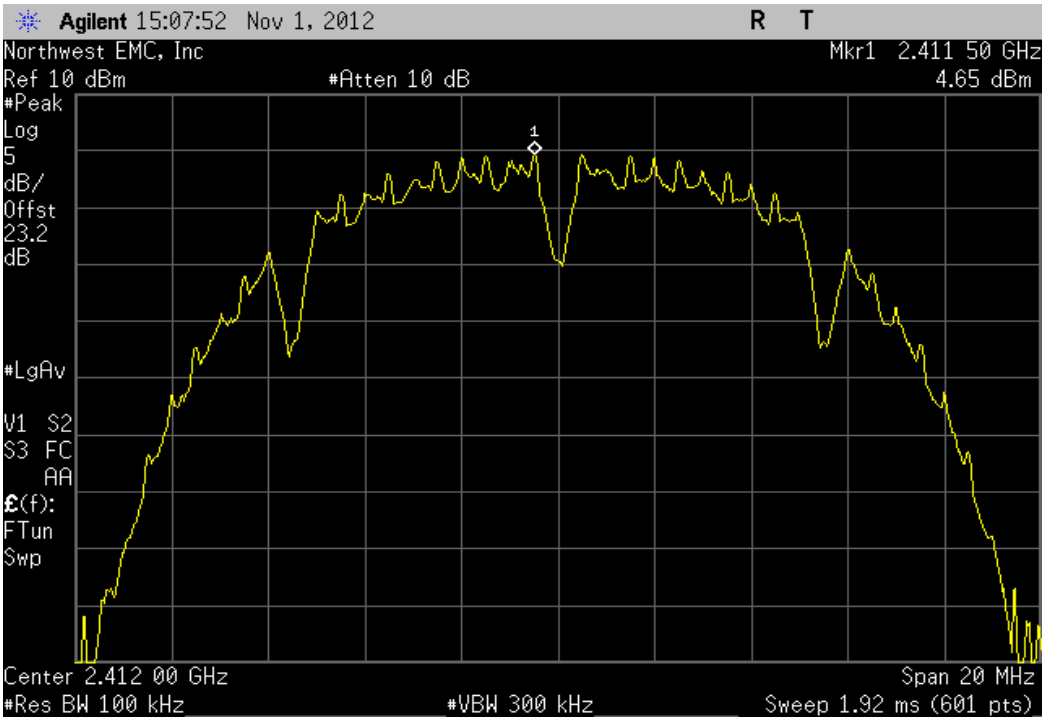
DEVIATIONS FROM TEST STANDARD

None

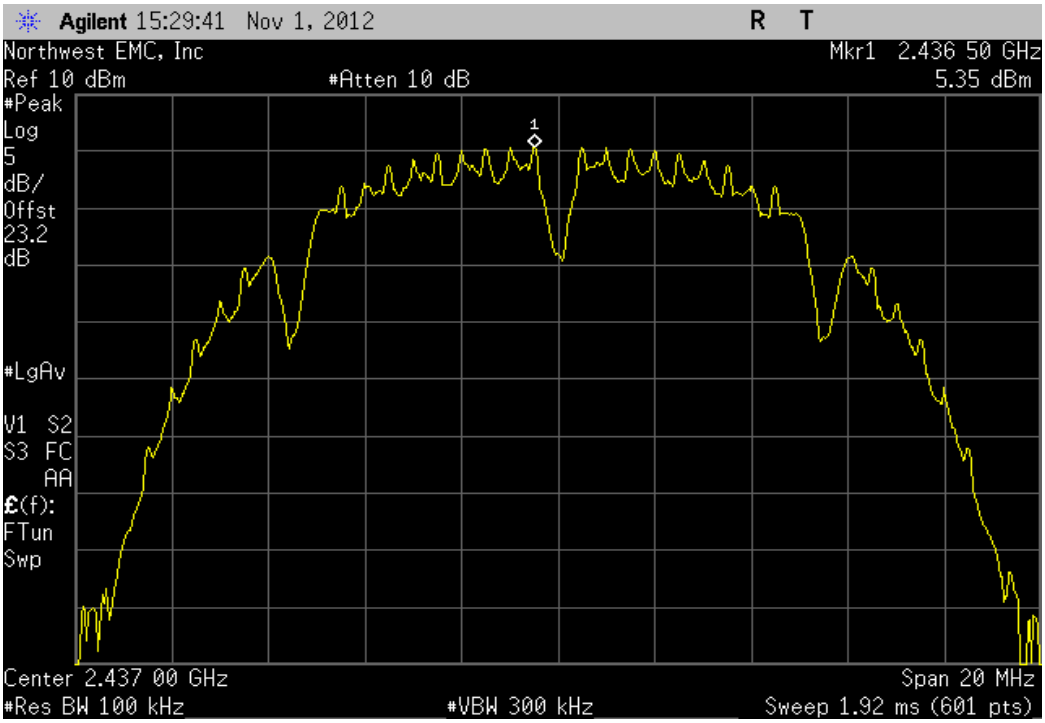
Configuration #	3	Signature

	Value dBm/100kHz	dBm/100kHz To dBm/3kHz	Value dBm/3kHz	Limit dBm/3kHz	Result
20 MHz					
2400 MHz - 2483.5 MHz Band					
802.11(b) 1 Mbps					
Low Channel 1, 2412 MHz	4.652	-15.2	-10.548	8	Pass
Mid Channel 6, 2437 MHz	5.353	-15.2	-9.847	8	Pass
High Channel 11, 2462 MHz	5.866	-15.2	-9.334	8	Pass
802.11(g) 6 Mbps					
Low Channel 1, 2412 MHz	4.66	-15.2	-10.54	8	Pass
Mid Channel 6, 2437 MHz	4.756	-15.2	-10.444	8	Pass
High Channel 11, 2462 MHz	4.488	-15.2	-10.712	8	Pass
802.11(n) MCS7					
Low Channel 1, 2412 MHz	5.03	-15.2	-10.17	8	Pass
Mid Channel 6, 2437 MHz	5.125	-15.2	-10.075	8	Pass
High Channel 11, 2462 MHz	4.585	-15.2	-10.615	8	Pass
5725 MHz - 5850 MHz Band					
802.11(a) 6 Mbps					
Low Channel 149, 5745 MHz	0.24	-15.2	-14.96	8	Pass
Mid Channel 157, 5785 MHz	0.024	-15.2	-15.176	8	Pass
High Channel 165, 5825 MHz	-0.083	-15.2	-15.283	8	Pass
802.11(n) MCS7 - UNII					
Low Channel 149, 5745 MHz	0.197	-15.2	-15.003	8	Pass
Mid Channel 157, 5785 MHz	0.208	-15.2	-14.992	8	Pass
High Channel 165, 5825 MHz	0.004	-15.2	-15.196	8	Pass

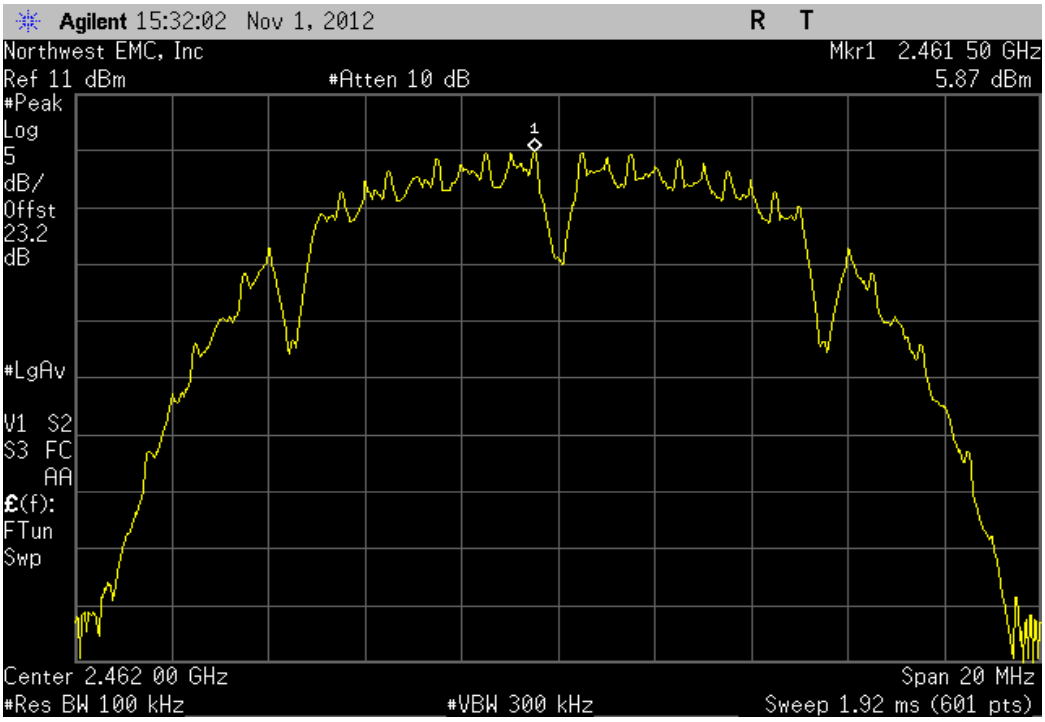
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(b) 1 Mbps, Low Channel 1, 2412 MHz						
		Value dBm/100kHz	dBm/100kHz To dBm/3kHz	Value dBm/3kHz	Limit dBm/3kHz	Result
		4.652	-15.2	-10.548	8	Pass



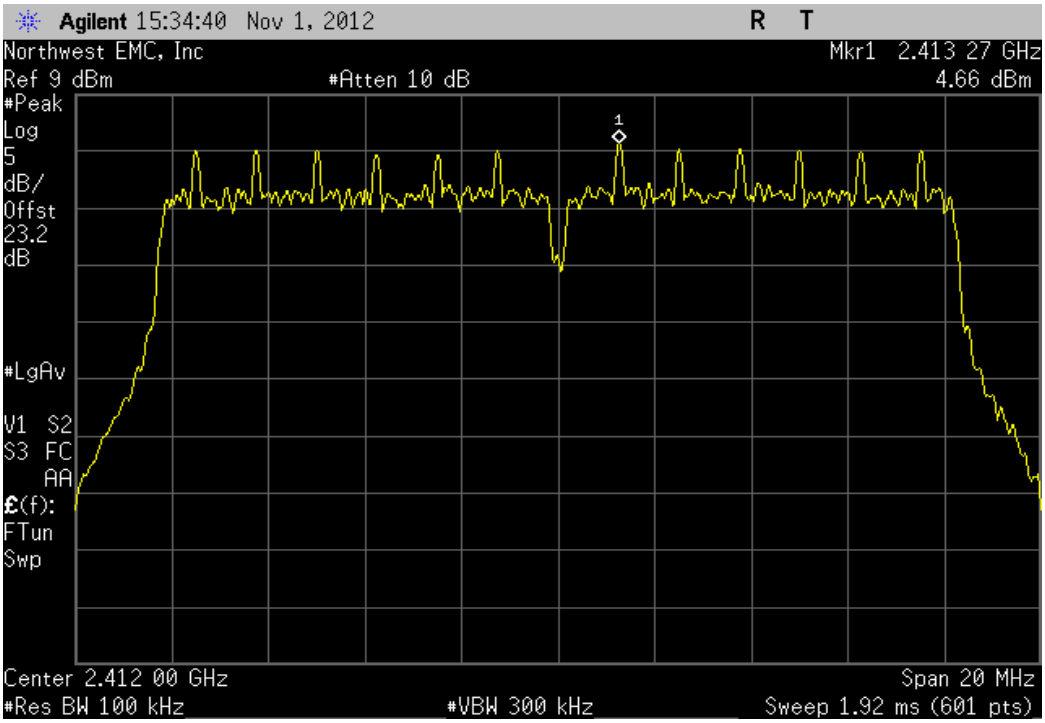
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(b) 1 Mbps, Mid Channel 6, 2437 MHz						
		Value dBm/100kHz	dBm/100kHz To dBm/3kHz	Value dBm/3kHz	Limit dBm/3kHz	Result
		5.353	-15.2	-9.847	8	Pass



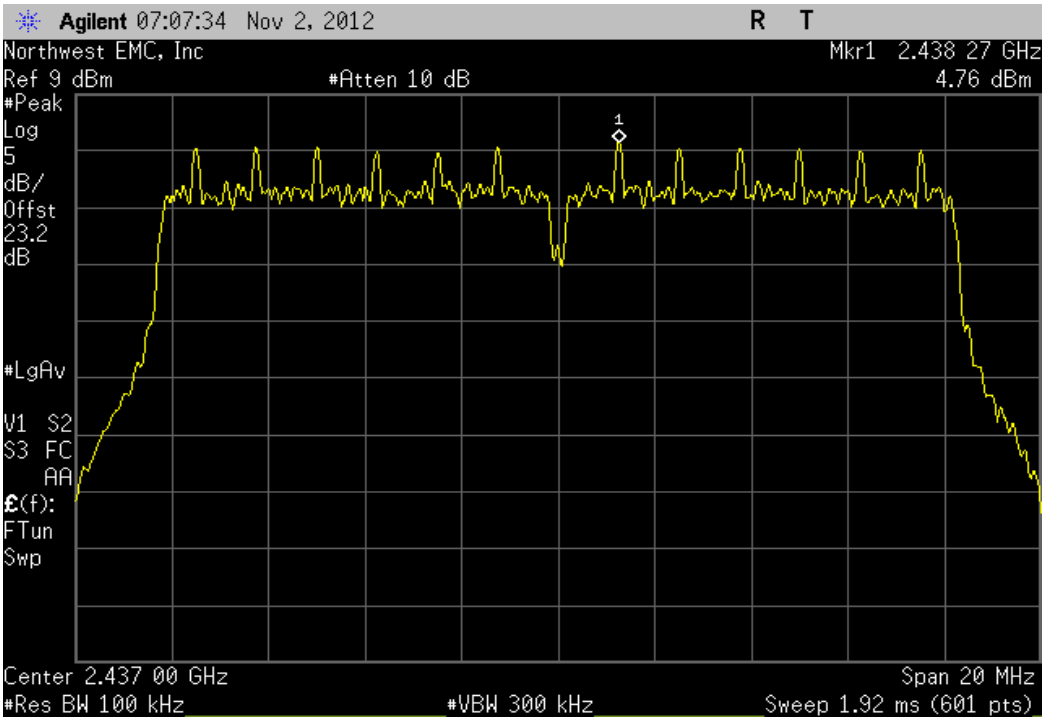
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(b) 1 Mbps, High Channel 11, 2462 MHz						
		Value dBm/100kHz	dBm/100kHz To dBm/3kHz	Value dBm/3kHz	Limit dBm/3kHz	Result
		5.866	-15.2	-9.334	8	Pass



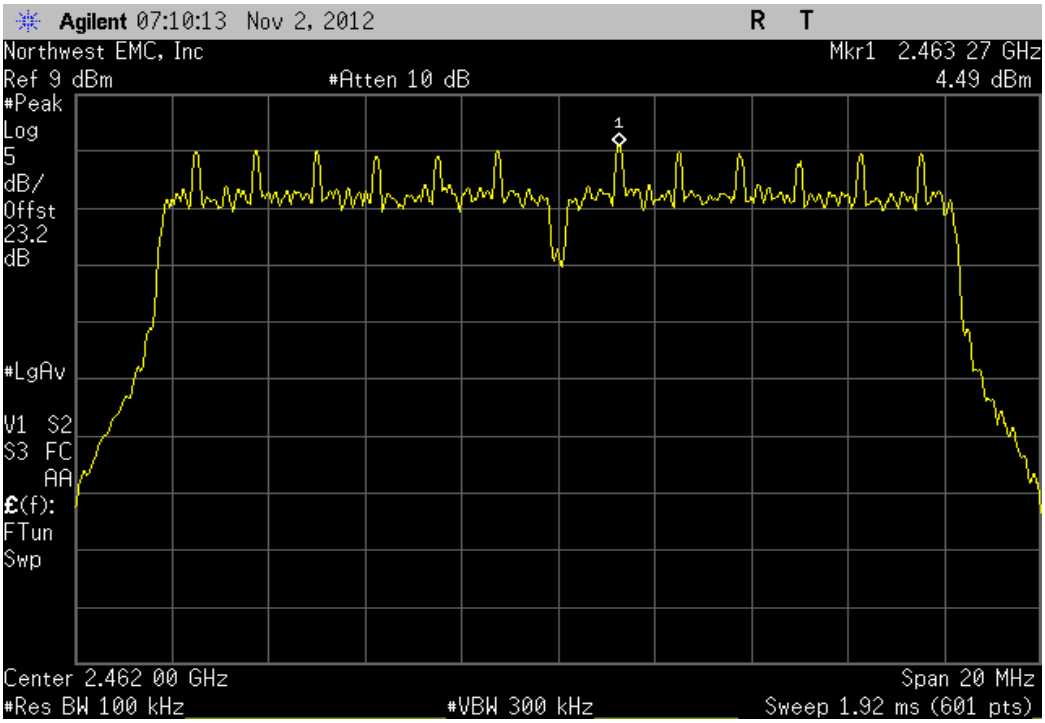
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(g) 6 Mbps, Low Channel 1, 2412 MHz						
		Value dBm/100kHz	dBm/100kHz To dBm/3kHz	Value dBm/3kHz	Limit dBm/3kHz	Result
		4.66	-15.2	-10.54	8	Pass



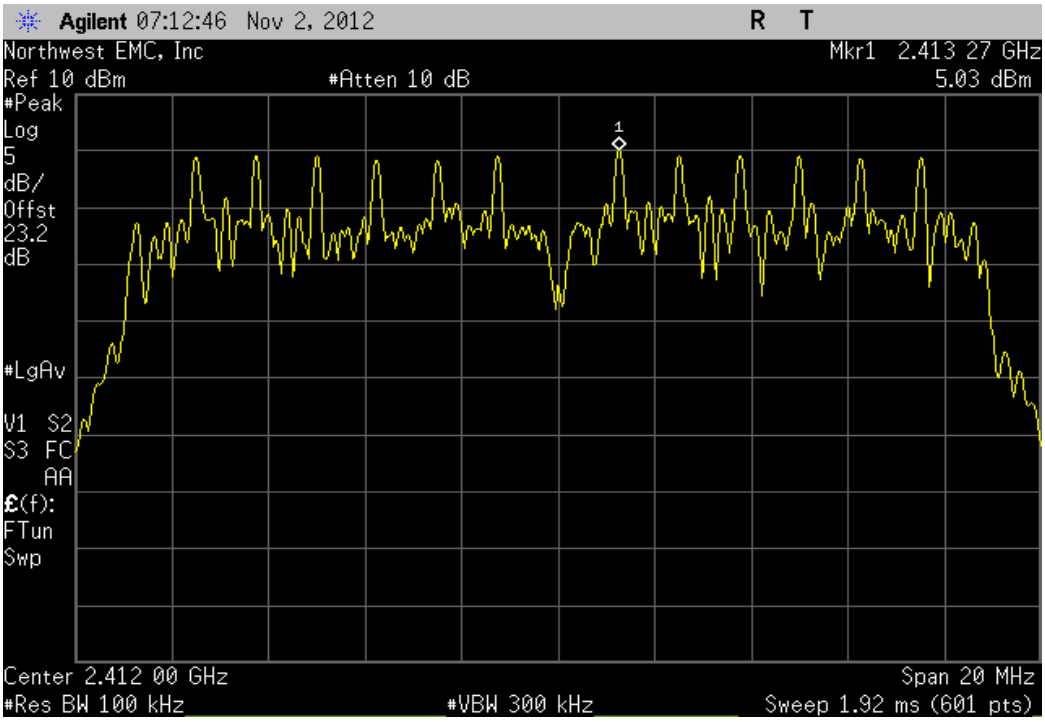
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(g) 6 Mbps, Mid Channel 6, 2437 MHz						
		Value dBm/100kHz	dBm/100kHz To dBm/3kHz	Value dBm/3kHz	Limit dBm/3kHz	Result
		4.756	-15.2	-10.444	8	Pass



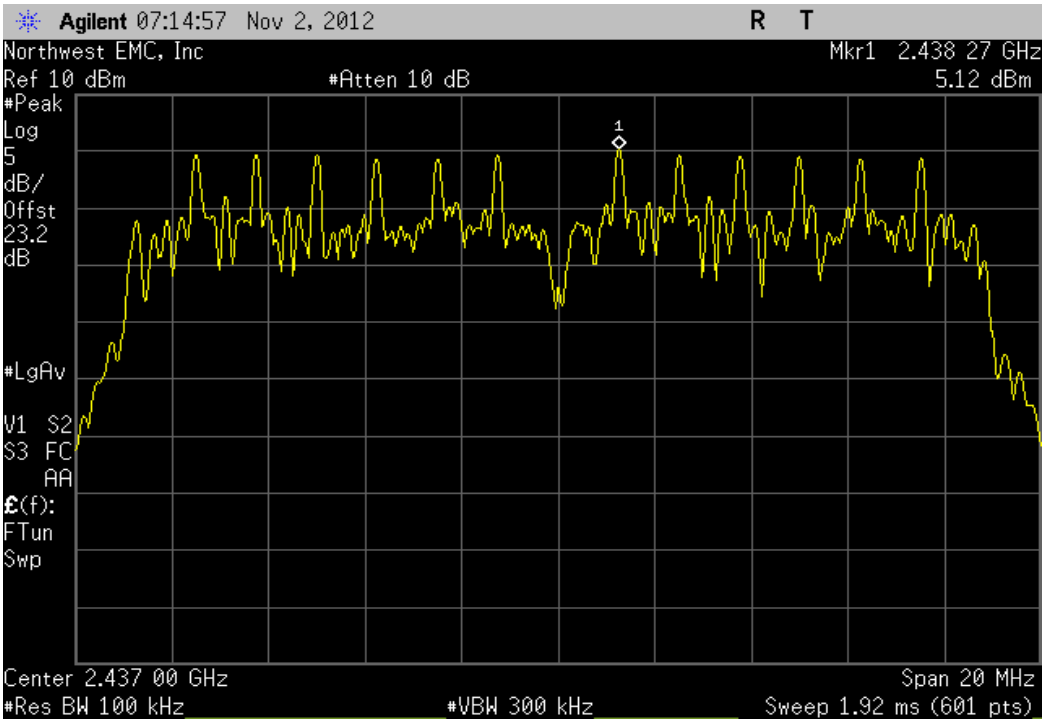
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(g) 6 Mbps, High Channel 11, 2462 MHz						
		Value dBm/100kHz	dBm/100kHz To dBm/3kHz	Value dBm/3kHz	Limit dBm/3kHz	Result
		4.488	-15.2	-10.712	8	Pass



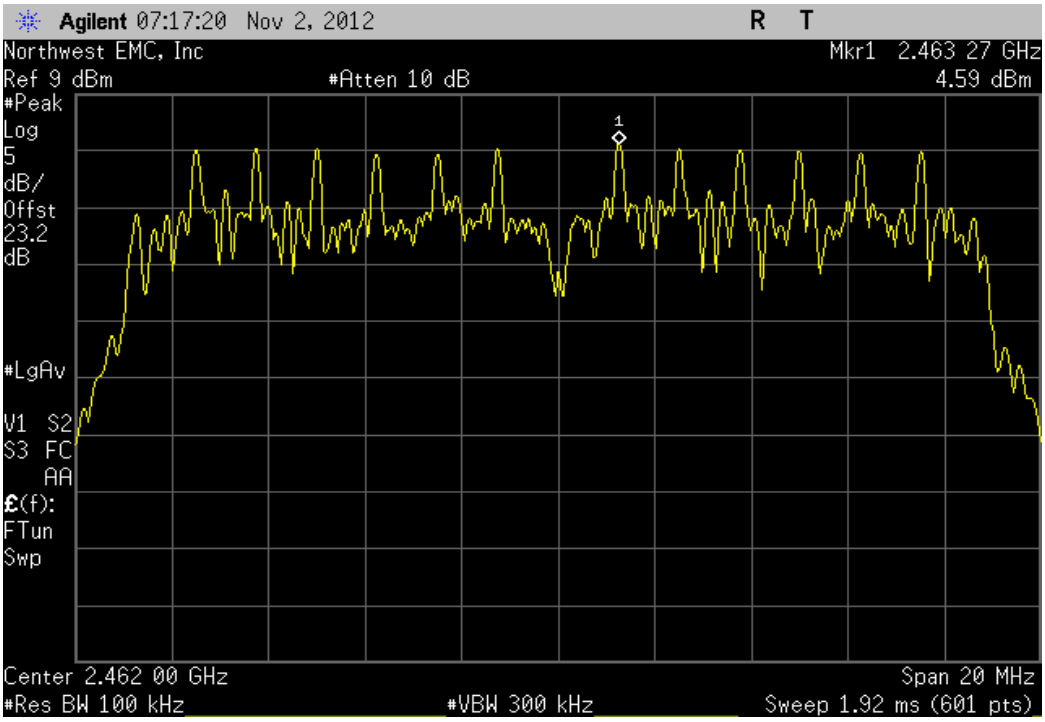
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, Low Channel 1, 2412 MHz						
		Value dBm/100kHz	dBm/100kHz To dBm/3kHz	Value dBm/3kHz	Limit dBm/3kHz	Result
		5.03	-15.2	-10.17	8	Pass



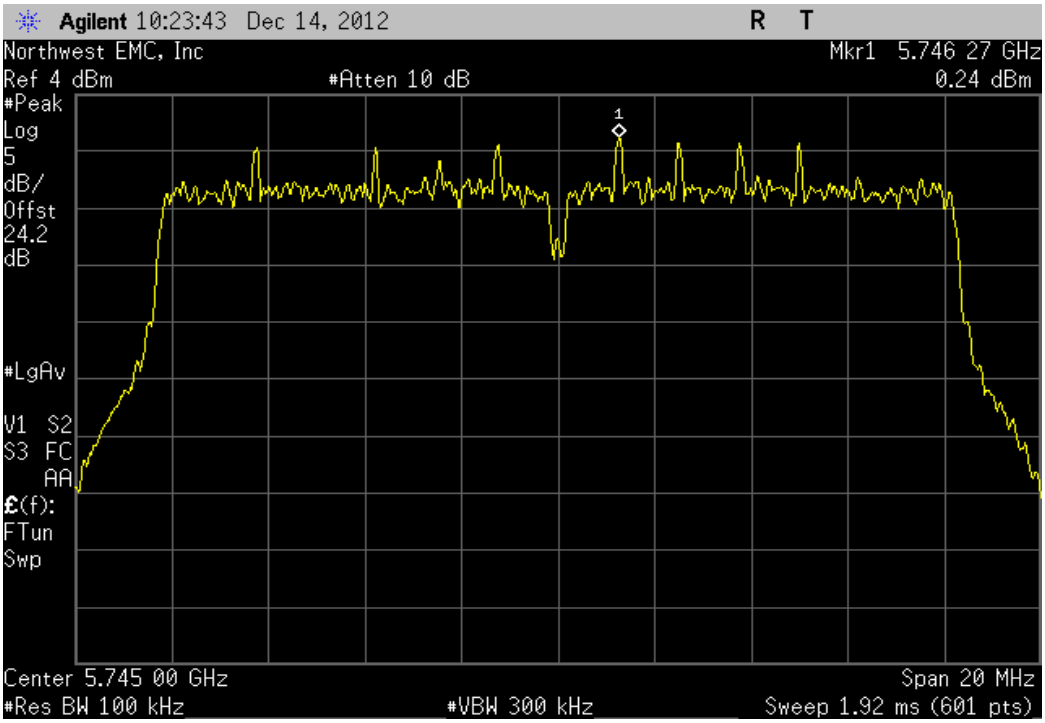
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, Mid Channel 6, 2437 MHz						
		Value dBm/100kHz	dBm/100kHz To dBm/3kHz	Value dBm/3kHz	Limit dBm/3kHz	Result
		5.125	-15.2	-10.075	8	Pass



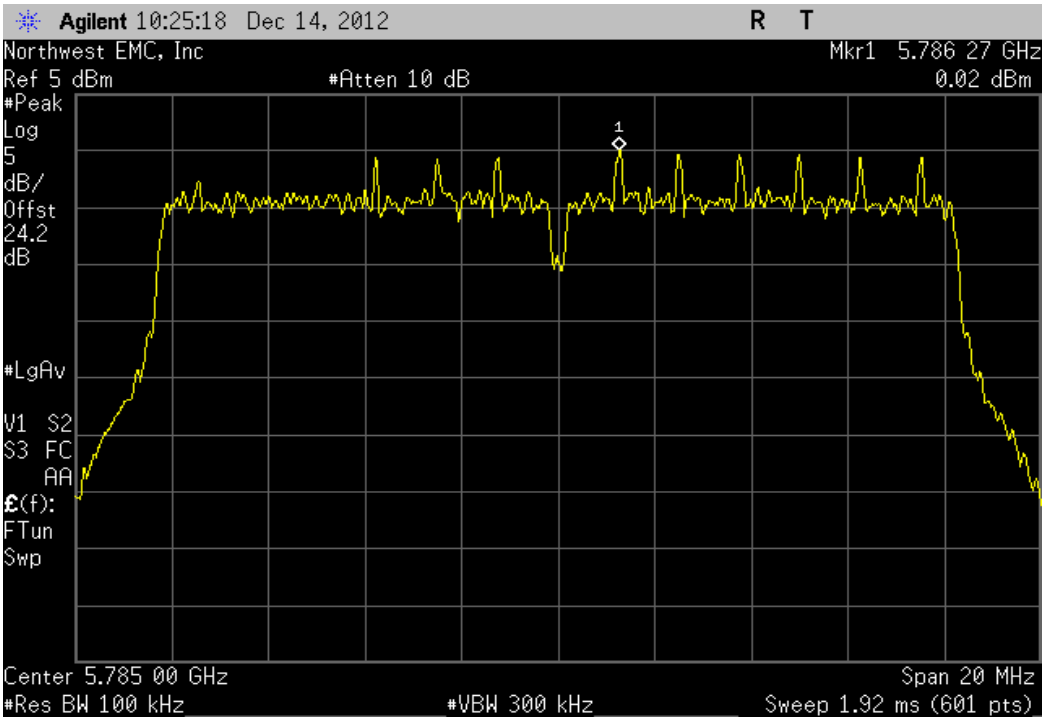
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, High Channel 11, 2462 MHz						
		Value dBm/100kHz	dBm/100kHz To dBm/3kHz	Value dBm/3kHz	Limit dBm/3kHz	Result
		4.585	-15.2	-10.615	8	Pass



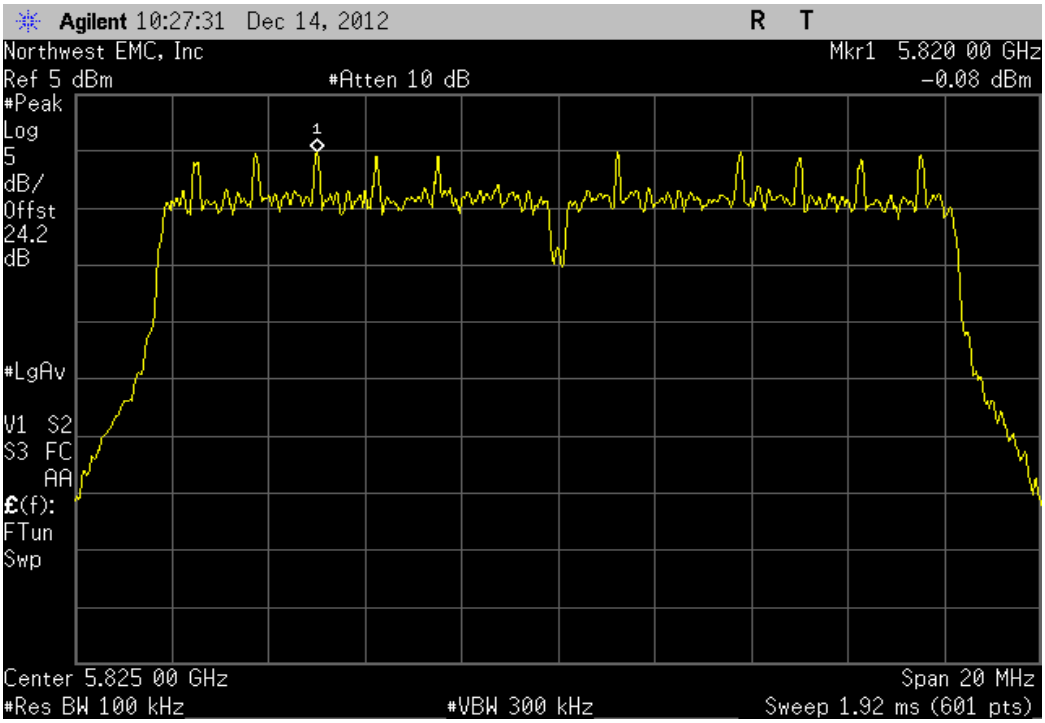
20 MHz, 5725 MHz - 5850 MHz Band, 802.11(a) 6 Mbps, Low Channel 149, 5745 MHz						
		Value dBm/100kHz	dBm/100kHz To dBm/3kHz	Value dBm/3kHz	Limit dBm/3kHz	Result
		0.24	-15.2	-14.96	8	Pass



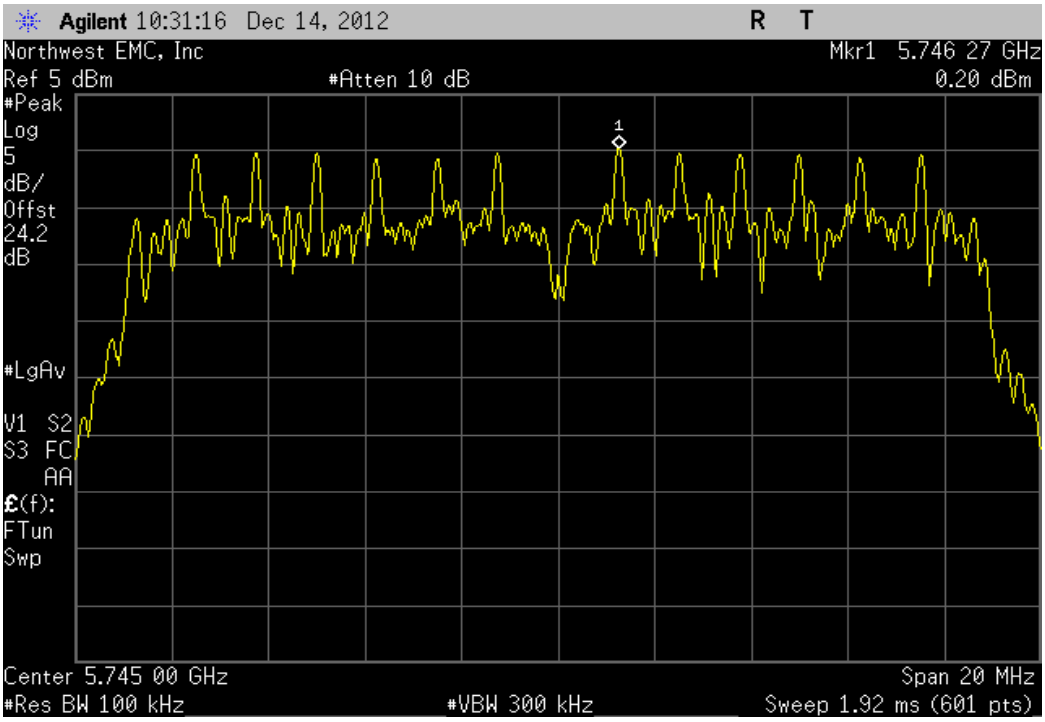
20 MHz, 5725 MHz - 5850 MHz Band, 802.11(a) 6 Mbps, Mid Channel 157, 5785 MHz						
		Value dBm/100kHz	dBm/100kHz To dBm/3kHz	Value dBm/3kHz	Limit dBm/3kHz	Result
		0.024	-15.2	-15.176	8	Pass



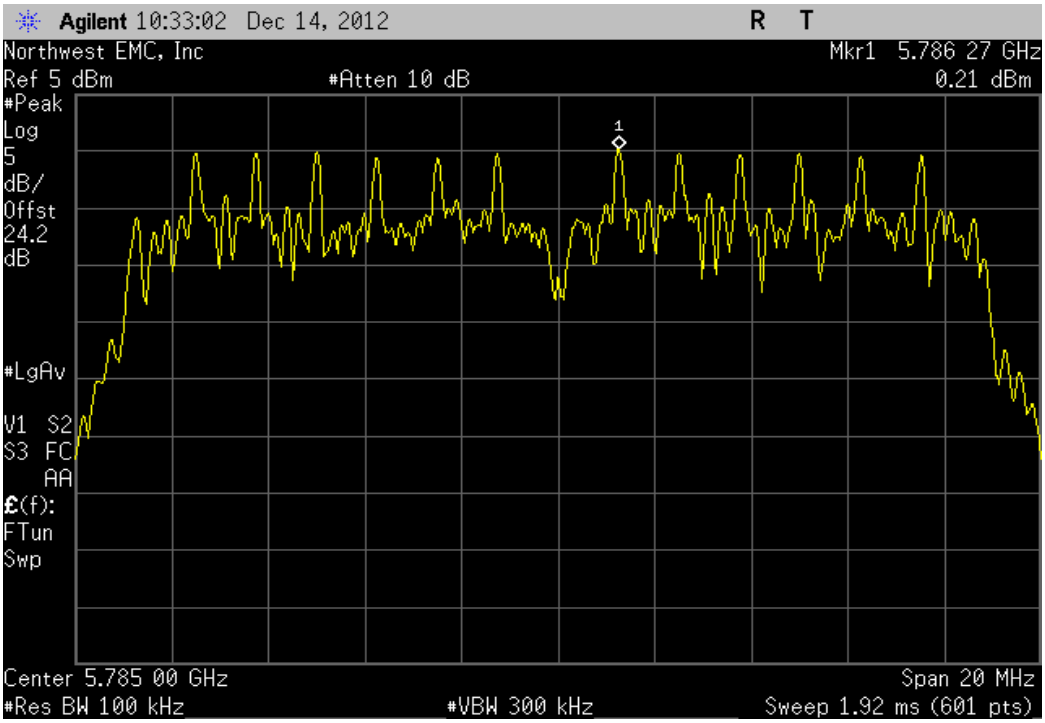
20 MHz, 5725 MHz - 5850 MHz Band, 802.11(a) 6 Mbps, High Channel 165, 5825 MHz						
		Value dBm/100kHz	dBm/100kHz To dBm/3kHz	Value dBm/3kHz	Limit dBm/3kHz	Result
		-0.083	-15.2	-15.283	8	Pass



20 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS7 - UNII, Low Channel 149, 5745 MHz						
		Value dBm/100kHz	dBm/100kHz To dBm/3kHz	Value dBm/3kHz	Limit dBm/3kHz	Result
		0.197	-15.2	-15.003	8	Pass

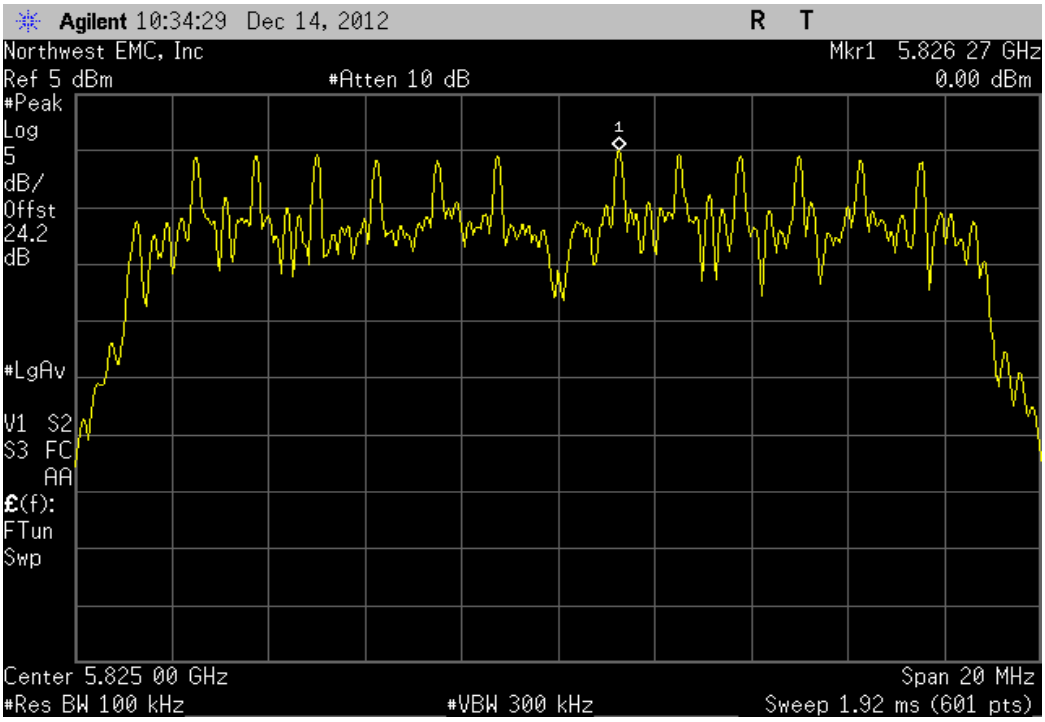


20 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS7 - UNII, Mid Channel 157, 5785 MHz						
		Value dBm/100kHz	dBm/100kHz To dBm/3kHz	Value dBm/3kHz	Limit dBm/3kHz	Result
		0.208	-15.2	-14.992	8	Pass



Power Spectral Density

20 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS7 - UNII, High Channel 165, 5825 MHz						
		Value dBm/100kHz	dBm/100kHz To dBm/3kHz	Value dBm/3kHz	Limit dBm/3kHz	Result
		0.004	-15.2	-15.196	8	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
40GHz DC Block	Miteq	DCB4000	AMD	6/25/2012	12
Attenuator 20 dB, SMA M/F 26GHz	S.M. Electronics	SA26B-20	AUY	8/2/2012	12
Power Meter	Gigatronics	8651A	SPM	1/9/2012	24
MXG Vector Signal Generator	Agilent	N5182A	TIF	NCR	0
Attenuator, 'Precision N'	S.M. Electronics	SA18N-06/SM4032	REE	12/11/2012	12
Power Sensor	Gigatronics	80701A	SPL	7/8/2011	24
Spectrum Analyzer	Agilent	E4440A	AFD	7/5/2012	12
EV06 Direct Connect Cable	ESM Cable Corp.	TT	ECA	NCR	0

TEST DESCRIPTION

The maximum 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 D01 DTS Measurement Section 5.3.1, the spectrum analyzer was used as follows:

- RBW = 100 kHz
- VBW = 300 kHz
- Detector = Peak (to match method used for power measurement)
- Trace = Max hold

The observed power level is then scaled to an equivalent value in 3 kHz by adding a Bandwidth Correction Factor (BWCF) where: BWCF = 10*LOG (3 kHz / 100 kHz) = -15.2 dB

Please refer to the Power Table located elsewhere in this report for radio power operating level during testing.

Power Spectral Density

EUT:	1514	Work Order:	MCSO1638
Serial Number:	000109423753	Date:	12/14/12
Customer:	Microsoft Corporation	Temperature:	22°C
Attendees:	None	Humidity:	35%
Project:	None	Barometric Pres.:	1011
Tested by:	Brandon Hobbs Rod Peloquin	Power: 110VAC/60Hz	Job Site: EV06

TEST SPECIFICATIONS	Test Method
FCC 15.247:2012	ANSI C63.10:2009

COMMENTS

The EUT is operating at 100% duty cycle. All cable losses for 2.4GHz and 5.0GHz bands are accounted for in the analyzer offset calculations. The EUT with S/N 000070724253 was used for Power level changes on the 2.4GHz points reflected on the Power Table Page as well as the whole 5GHz band.

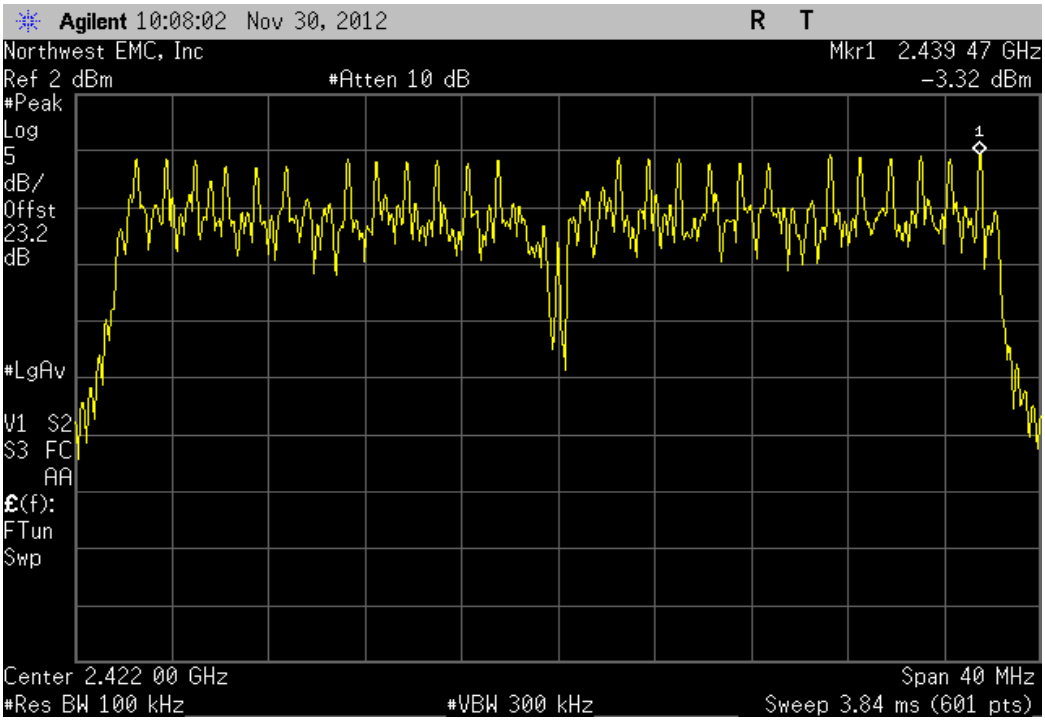
DEVIATIONS FROM TEST STANDARD

None

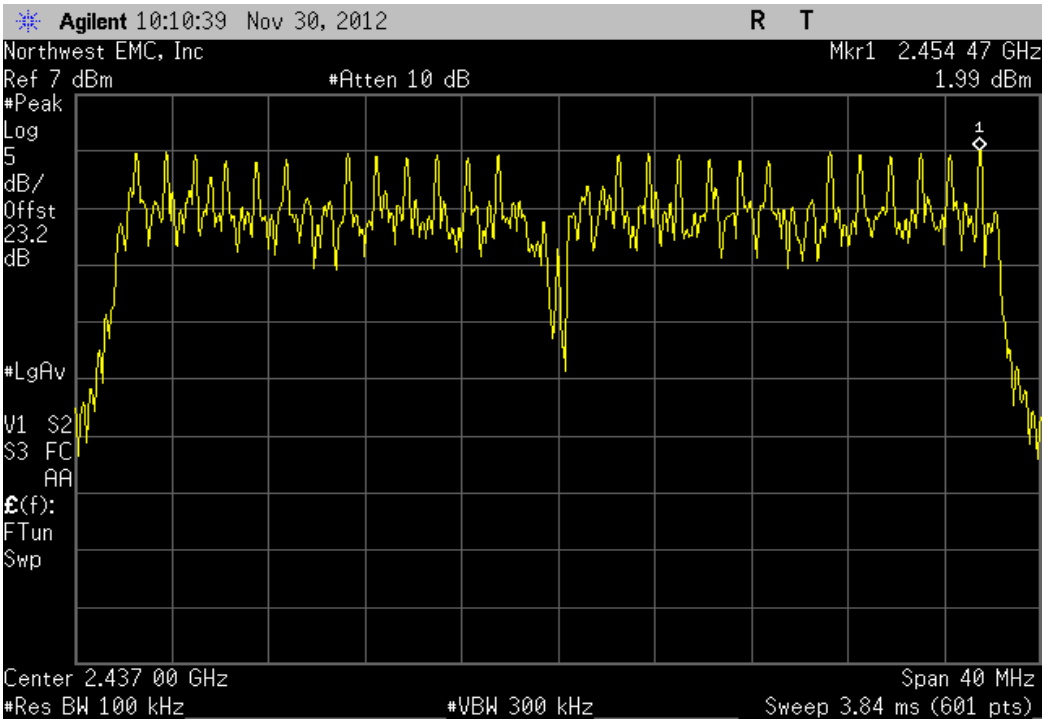
Configuration #	3	Signature

		Value dBm/100kHz	dBm/100kHz To dBm/3kHz	Value dBm/3kHz	Limit dBm/3kHz	Result
Chain A						
40 MHz						
2400 MHz - 2483.5 MHz Band						
802.11(n) MCS15						
	Low Channel 1/5, 2422 MHz	-3.316	-15.2	-18.516	8	Pass
	Mid Channel 4/8, 2437 MHz	1.989	-15.2	-13.211	8	Pass
	High Channel 7/11 2452 MHz	-2.756	-15.2	-17.956	8	Pass
5725 MHz - 5850 MHz Band						
802.11(n) MCS15						
	Low Channel 149/153, 5755 M	-2.158	-15.2	-17.358	8	Pass
	High Channe 157/161, 5795 M	-2.033	-15.2	-17.233	8	Pass
Chain B						
20 MHz						
2400 MHz - 2483.5 MHz Band						
802.11(n) MCS15						
	Low Channel 1, 2412 MHz	4.875	-15.2	-10.325	8	Pass
	Mid Channel 6, 2437 MHz	4.621	-15.2	-10.579	8	Pass
	High Channel 11, 2462 MHz	4.627	-15.2	-10.573	8	Pass
5725 MHz - 5850 MHz Band						
802.11(n) MCS15						
	Low Channel 149, 5745 MHz	0.645	-15.2	-14.555	8	Pass
	Mid Channel 157, 5785 MHz	0.286	-15.2	-14.914	8	Pass
	High Channel 165, 5825 MHz	0.599	-15.2	-14.601	8	Pass
40 MHz						
2400 MHz - 2483.5 MHz Band						
802.11(n) MCS8						
	Low Channel 1/5, 2422 MHz	-1.515	-15.2	-16.715	8	Pass
	Mid Channel 4/8, 2437 MHz	-1.851	-15.2	-17.051	8	Pass
	High Channel 7/11 2452 MHz	-1.77	-15.2	-16.97	8	Pass
5725 MHz - 5850 MHz Band						
802.11(n) MCS8						
	Low Channel 149/153, 5755 M	-2.237	-15.2	-17.437	8	Pass
	High Channe 157/161, 5795 M	-1.584	-15.2	-16.784	8	Pass

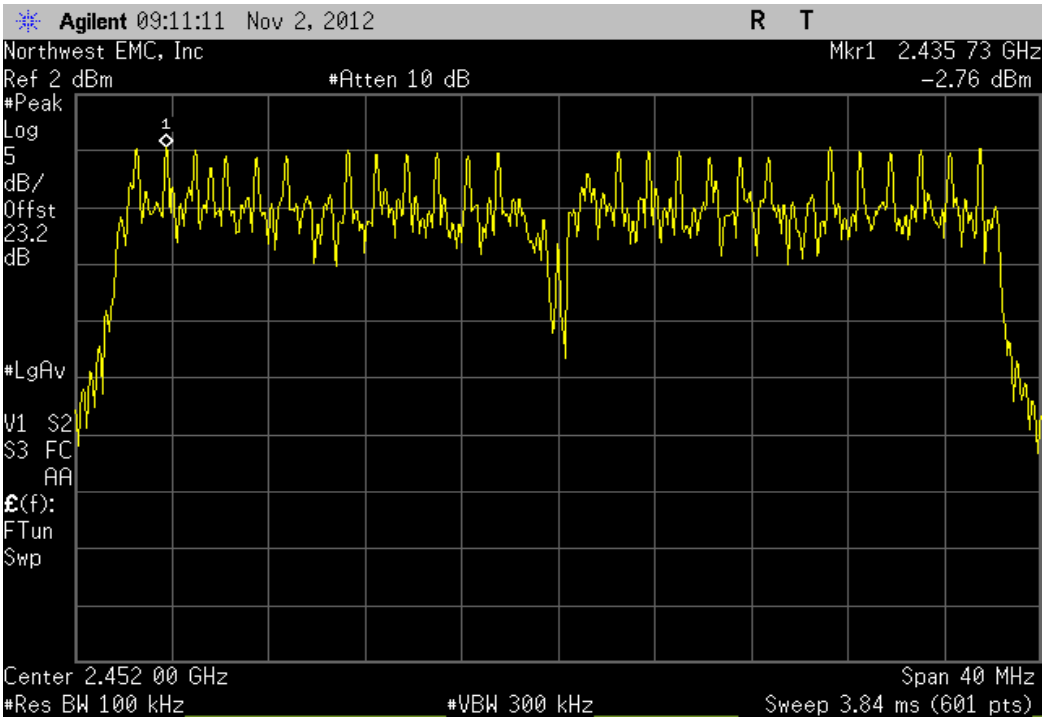
Chain A, 40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, Low Channel 1/5, 2422 MHz						
		Value dBm/100kHz	dBm/100kHz To dBm/3kHz	Value dBm/3kHz	Limit dBm/3kHz	Result
		-3.316	-15.2	-18.516	8	Pass



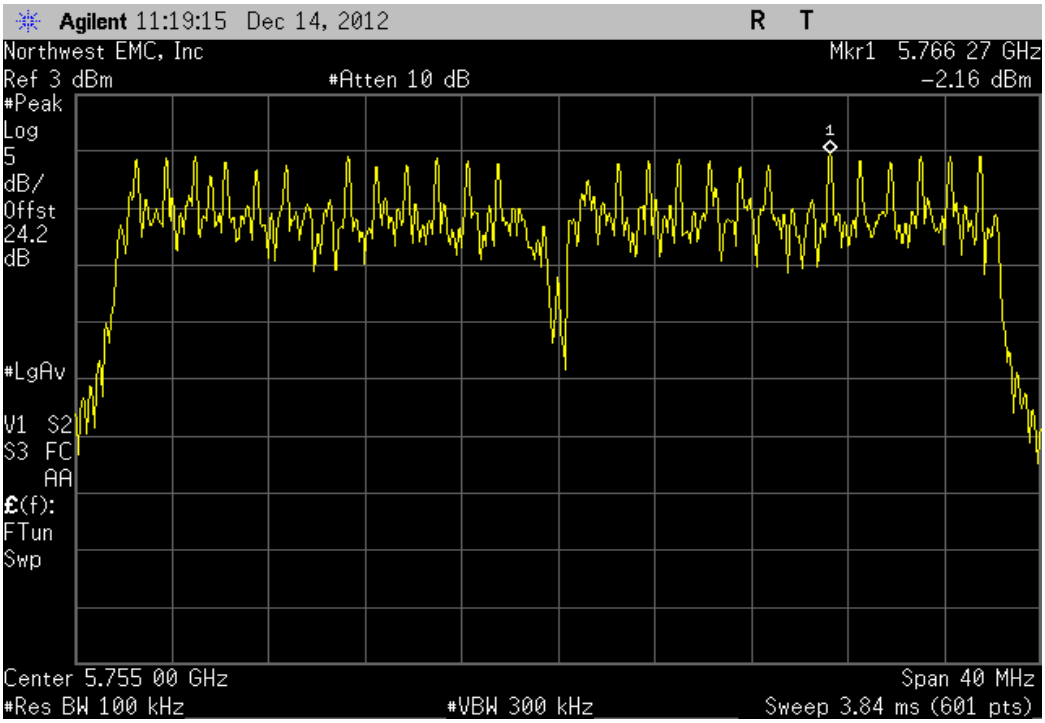
Chain A, 40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, Mid Channel 4/8, 2437 MHz						
		Value dBm/100kHz	dBm/100kHz To dBm/3kHz	Value dBm/3kHz	Limit dBm/3kHz	Result
		1.989	-15.2	-13.211	8	Pass



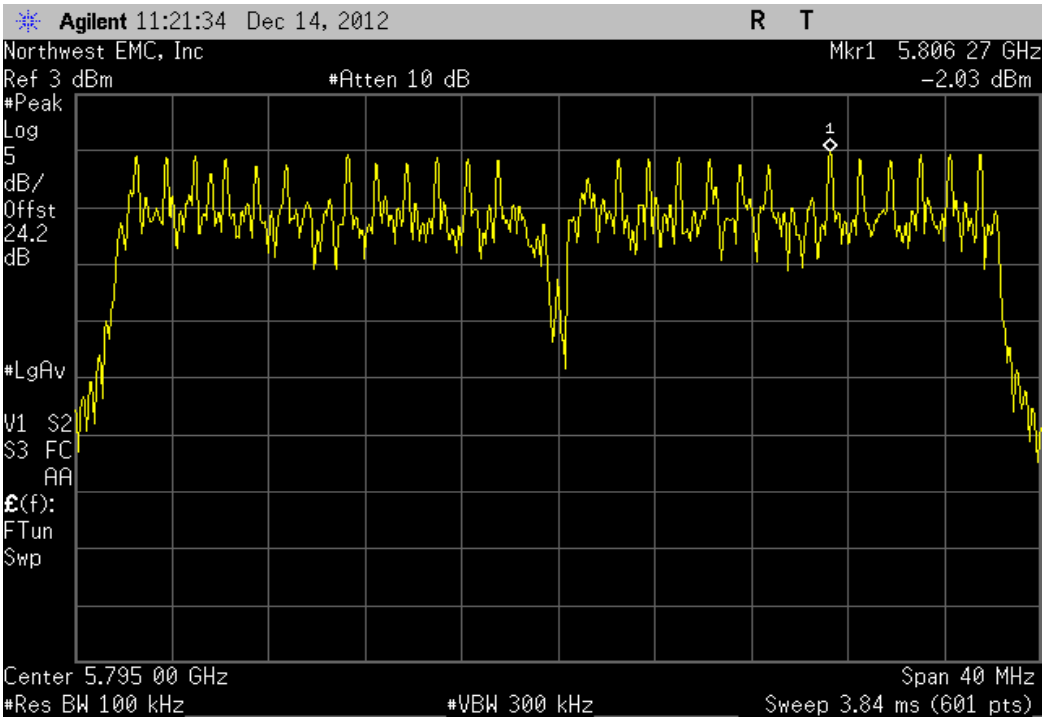
Chain A, 40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, High Channel 7/11 2452 MHz						
		Value dBm/100kHz	dBm/100kHz To dBm/3kHz	Value dBm/3kHz	Limit dBm/3kHz	Result
		-2.756	-15.2	-17.956	8	Pass



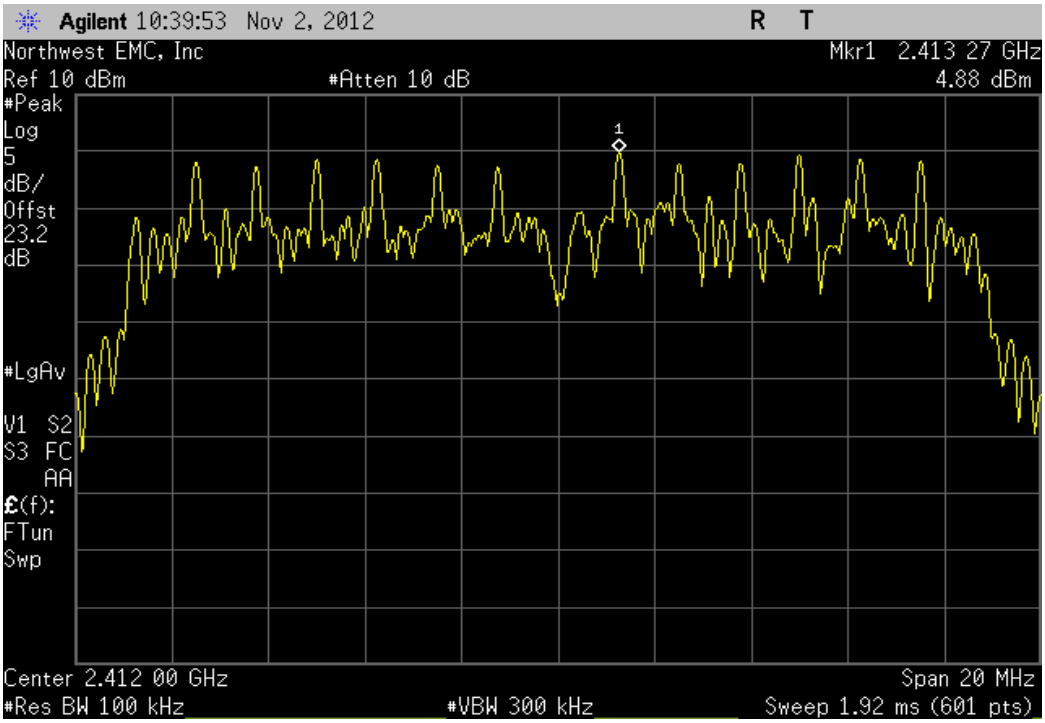
Chain A, 40 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS15, Low Channel 149/153, 5755 MHz						
		Value dBm/100kHz	dBm/100kHz To dBm/3kHz	Value dBm/3kHz	Limit dBm/3kHz	Result
		-2.158	-15.2	-17.358	8	Pass



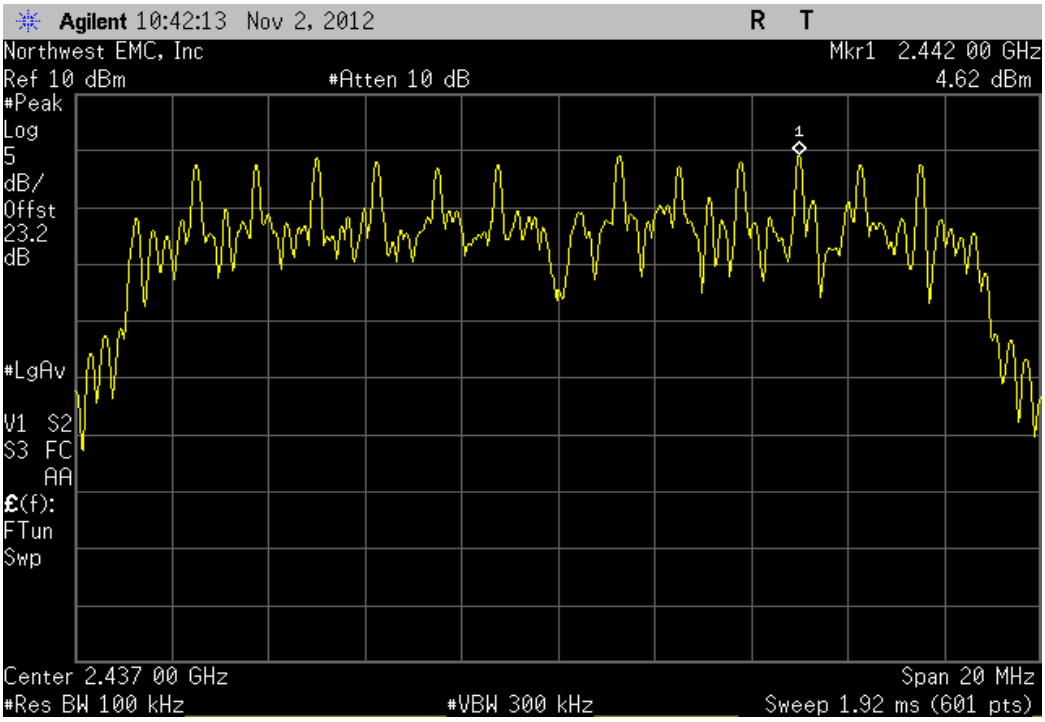
Chain A, 40 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS15, High Channe 157/161, 5795 MHz						
		Value dBm/100kHz	dBm/100kHz To dBm/3kHz	Value dBm/3kHz	Limit dBm/3kHz	Result
		-2.033	-15.2	-17.233	8	Pass



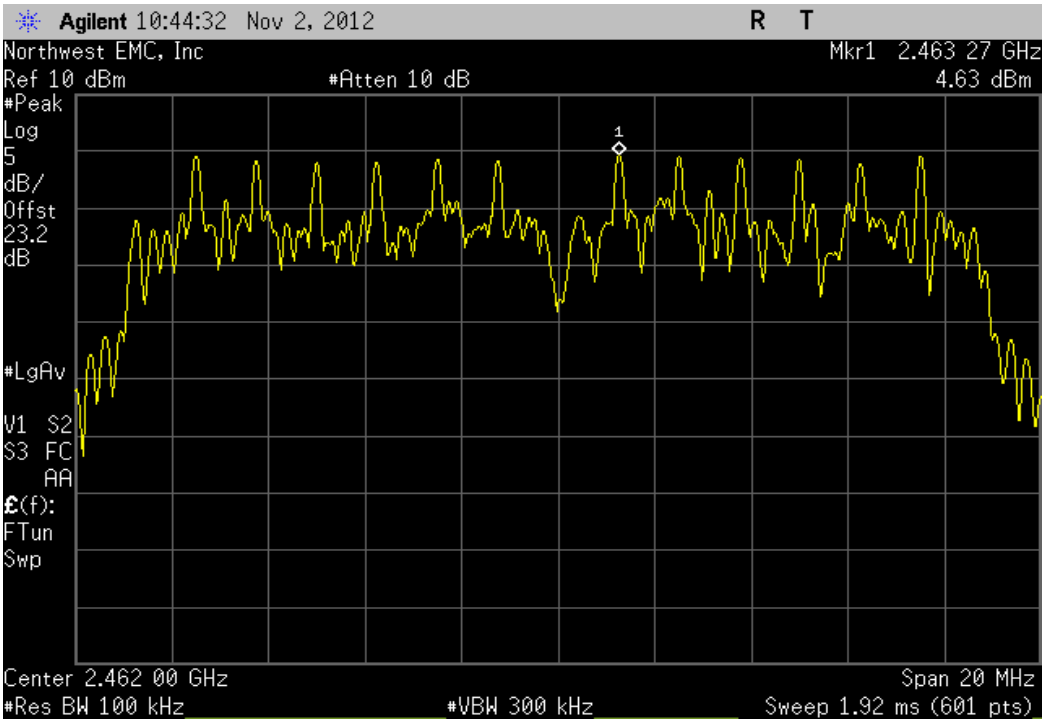
Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, Low Channel 1, 2412 MHz						
		Value dBm/100kHz	dBm/100kHz To dBm/3kHz	Value dBm/3kHz	Limit dBm/3kHz	Result
		4.875	-15.2	-10.325	8	Pass



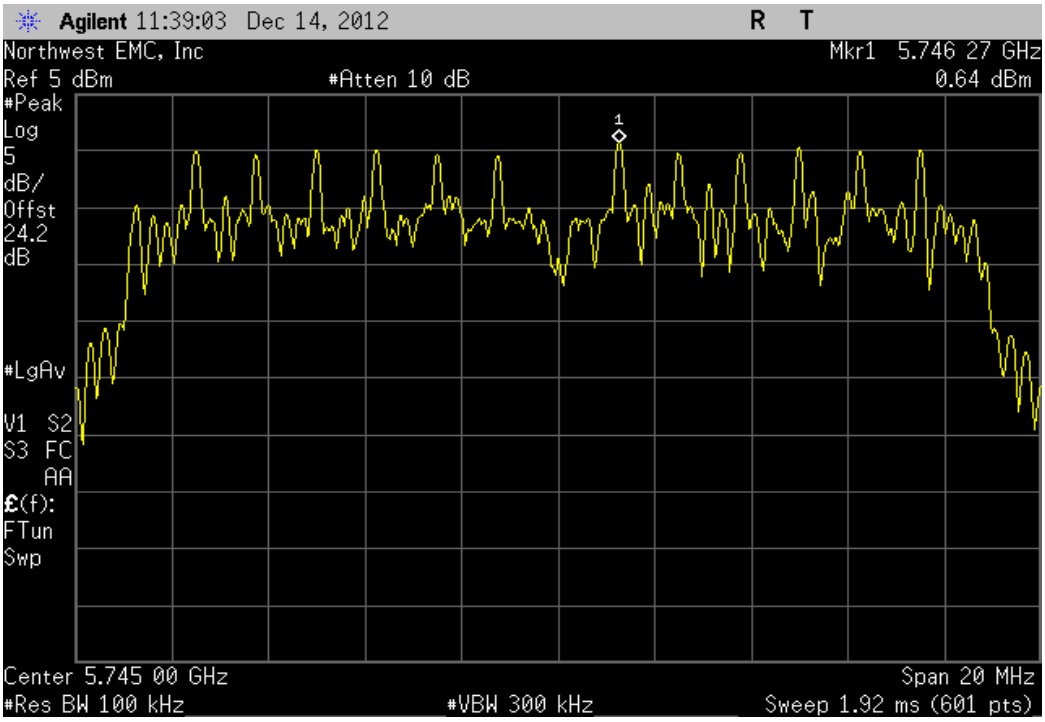
Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, Mid Channel 6, 2437 MHz						
		Value dBm/100kHz	dBm/100kHz To dBm/3kHz	Value dBm/3kHz	Limit dBm/3kHz	Result
		4.621	-15.2	-10.579	8	Pass



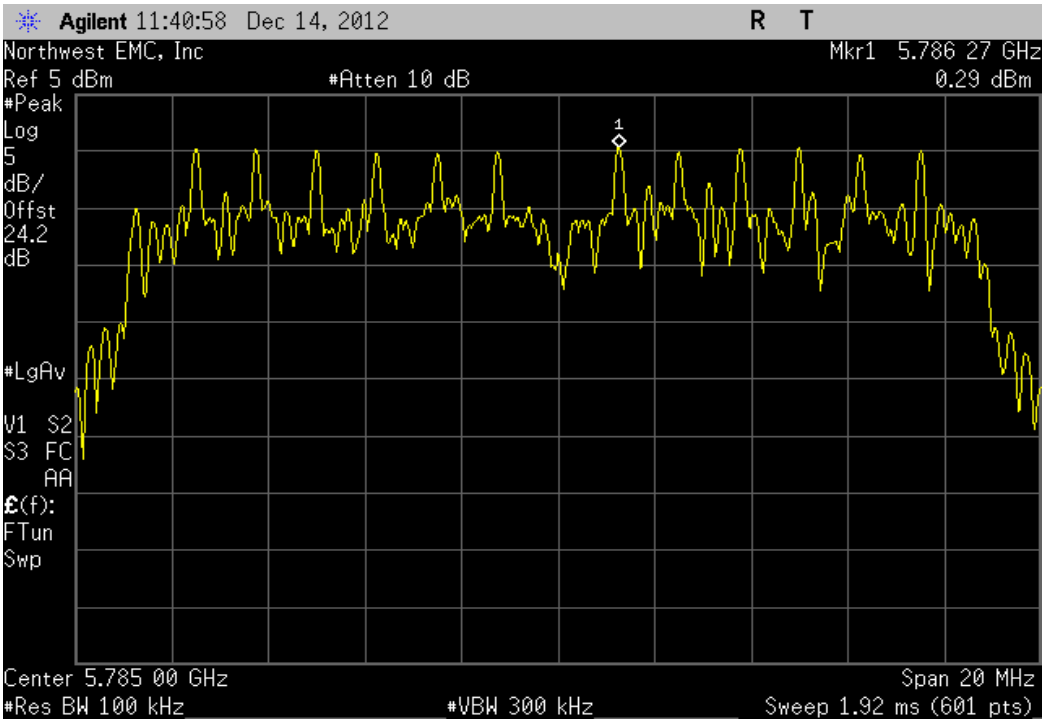
Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, High Channel 11, 2462 MHz						
		Value dBm/100kHz	dBm/100kHz To dBm/3kHz	Value dBm/3kHz	Limit dBm/3kHz	Result
		4.627	-15.2	-10.573	8	Pass



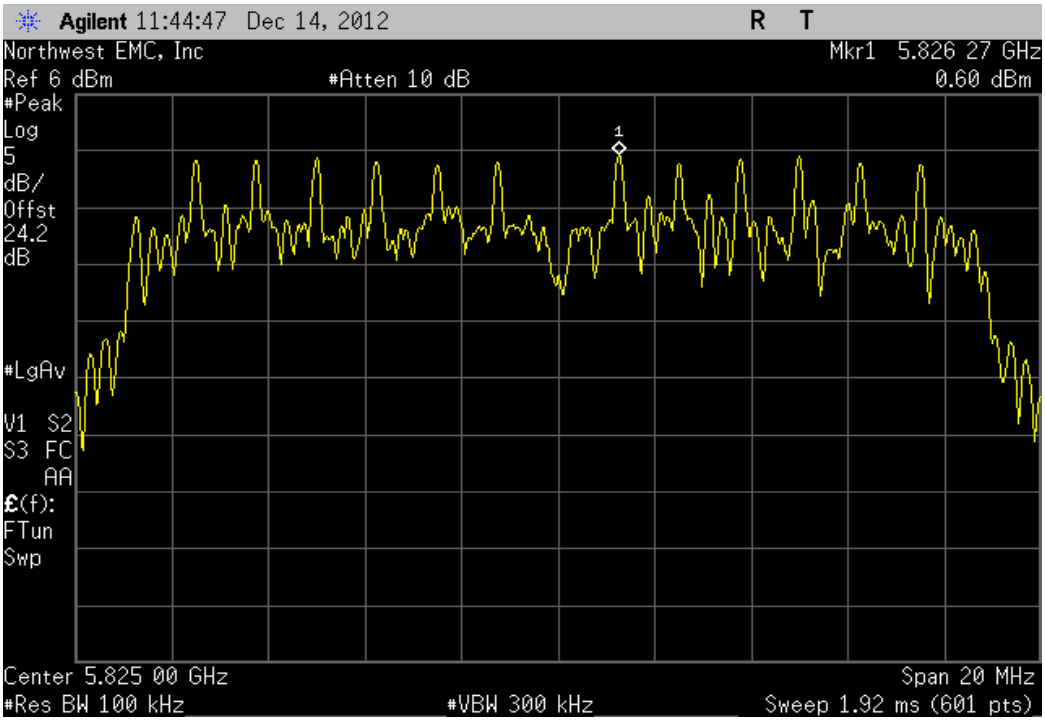
Chain B, 20 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS15, Low Channel 149, 5745 MHz						
		Value dBm/100kHz	dBm/100kHz To dBm/3kHz	Value dBm/3kHz	Limit dBm/3kHz	Result
		0.645	-15.2	-14.555	8	Pass



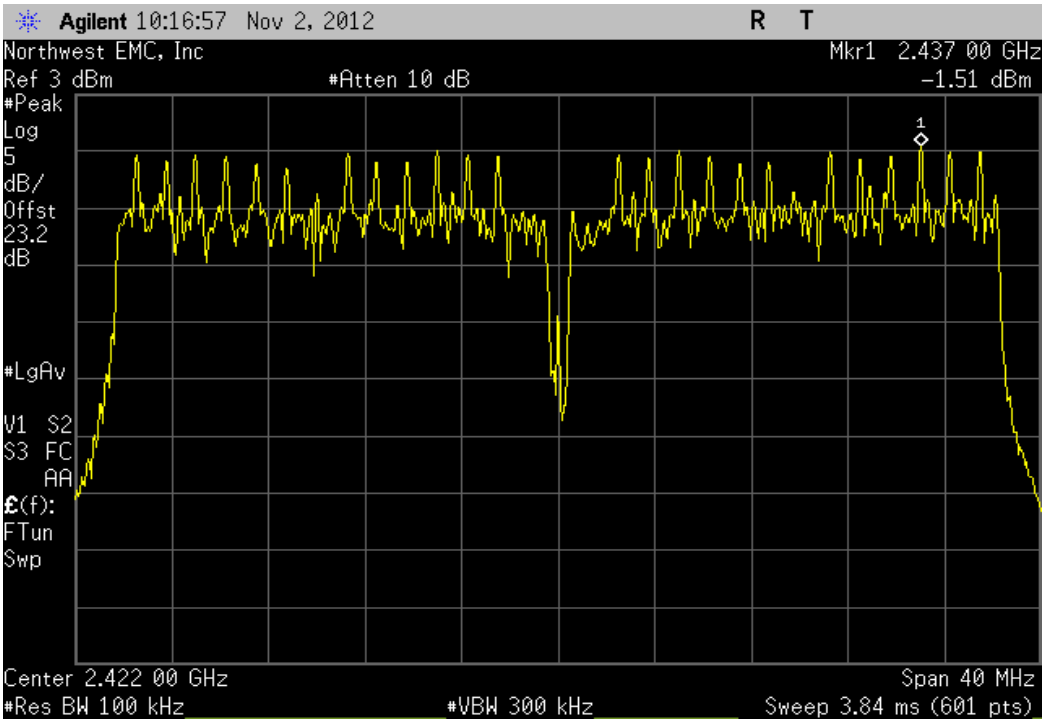
Chain B, 20 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS15, Mid Channel 157, 5785 MHz						
		Value dBm/100kHz	dBm/100kHz To dBm/3kHz	Value dBm/3kHz	Limit dBm/3kHz	Result
		0.286	-15.2	-14.914	8	Pass



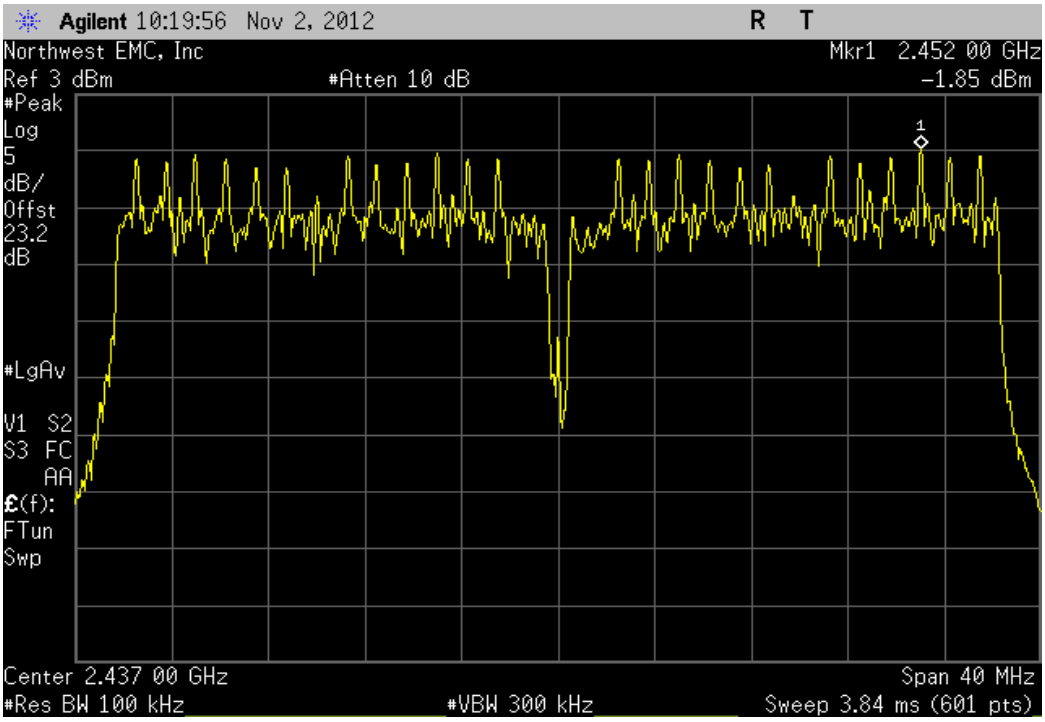
Chain B, 20 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS15, High Channel 165, 5825 MHz						
		Value dBm/100kHz	dBm/100kHz To dBm/3kHz	Value dBm/3kHz	Limit dBm/3kHz	Result
		0.599	-15.2	-14.601	8	Pass



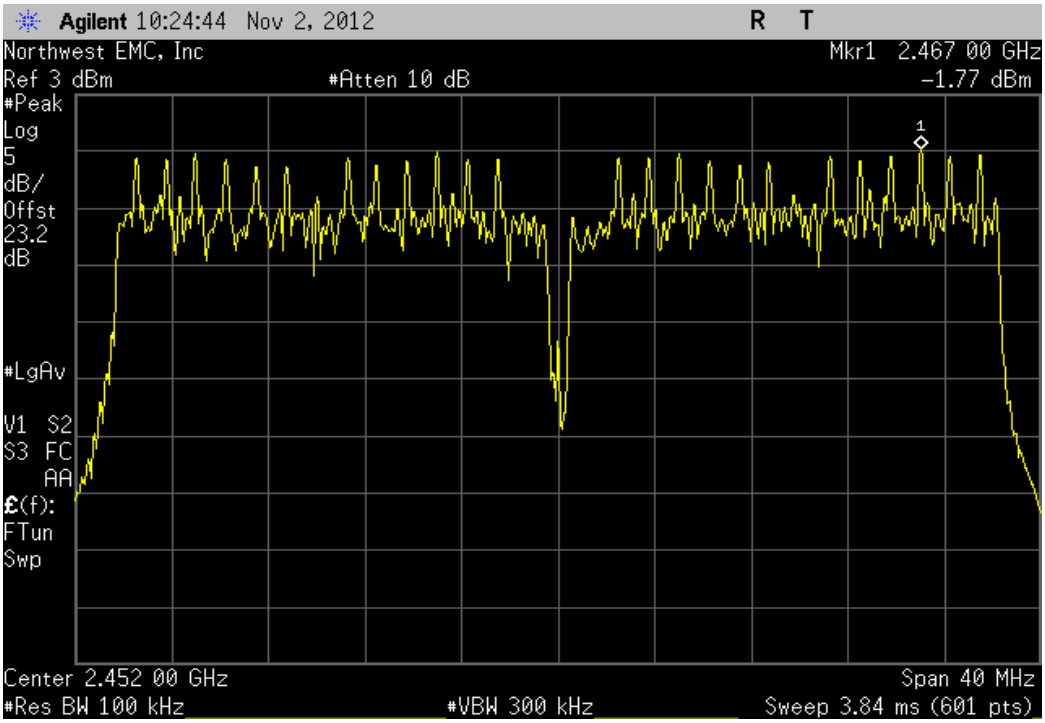
Chain B, 40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, Low Channel 1/5, 2422 MHz						
		Value dBm/100kHz	dBm/100kHz To dBm/3kHz	Value dBm/3kHz	Limit dBm/3kHz	Result
		-1.515	-15.2	-16.715	8	Pass



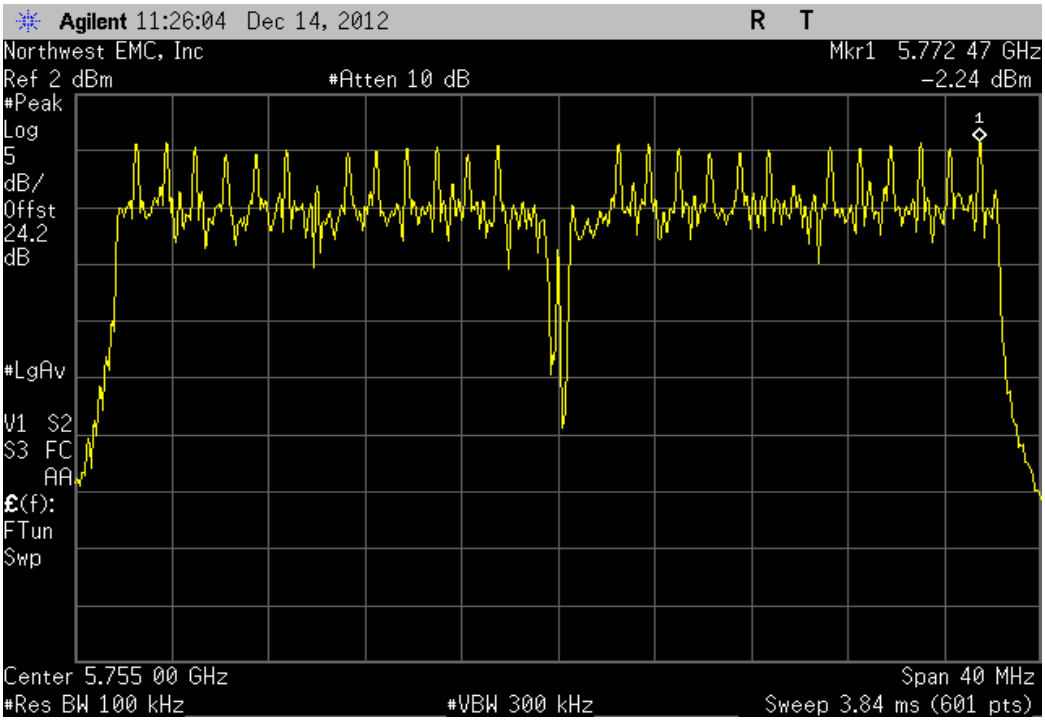
Chain B, 40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, Mid Channel 4/8, 2437 MHz						
		Value dBm/100kHz	dBm/100kHz To dBm/3kHz	Value dBm/3kHz	Limit dBm/3kHz	Result
		-1.851	-15.2	-17.051	8	Pass



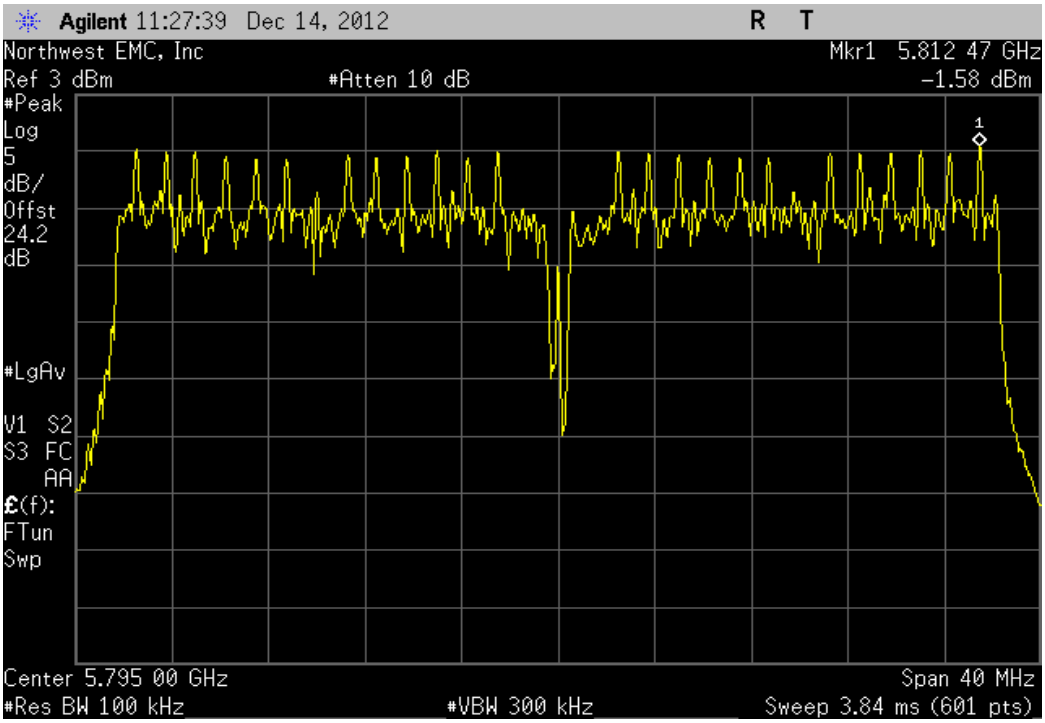
Chain B, 40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, High Channel 7/11 2452 MHz						
		Value dBm/100kHz	dBm/100kHz To dBm/3kHz	Value dBm/3kHz	Limit dBm/3kHz	Result
		-1.77	-15.2	-16.97	8	Pass



Chain B, 40 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS8, Low Channel 149/153, 5755 MHz						
		Value dBm/100kHz	dBm/100kHz To dBm/3kHz	Value dBm/3kHz	Limit dBm/3kHz	Result
		-2.237	-15.2	-17.437	8	Pass



Chain B, 40 MHz, 5725 MHz - 5850 MHz Band, 802.11(n) MCS8, High Channe 157/161, 5795 MHz						
		Value dBm/100kHz	dBm/100kHz To dBm/3kHz	Value dBm/3kHz	Limit dBm/3kHz	Result
		-1.584	-15.2	-16.784	8	Pass



SPURIOUS RADIATED EMISSIONS

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

MODES OF OPERATION

Transmitting at 100% duty cycle, 802.11b/g/n

POWER SETTINGS INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

MCSO1631 - 1

MCSO1631 - 2

FREQUENCY RANGE INVESTIGATED

Start Frequency	30 MHz	Stop Frequency	26 GHz

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
Cable	ESM Cable Corp.	KMKM-72	EVY	9/11/2012	12 mo
Pre-Amplifier	Miteq	AMF-6F-18002650-25-10P	AVU	9/11/2012	12 mo
Antenna, Horn	ETS Lindgren	3160-09	AIV	NCR	0 mo
Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	AVD	2/28/2012	12 mo
Antenna, Horn	ETS	3160-08	AHV	NCR	0 mo
EV01 Cables	N/A	Standard Gain Horns Cables	EVF	2/28/2012	12 mo
Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AVC	2/28/2012	12 mo
Antenna, Horn	ETS	3160-07	AHU	NCR	0 mo
EV01 Cables	N/A	Double Ridge Horn Cables	EVB	6/27/2012	12 mo
Pre-Amplifier	Miteq	AMF-4D-010100-24-10P	APW	6/27/2012	12 mo
Antenna, Horn	ETS	3115	AIZ	1/24/2011	24 mo
EV01 Cables	N/A	Bilog Cables	EVA	6/26/2012	12 mo
Pre-Amplifier	Miteq	AM-1616-1000	AOL	6/26/2012	12 mo
Antenna, Biconilog	EMCO	3141	AXG	4/10/2012	12 mo
Spectrum Analyzer	Agilent	E4446A	AAQ	2/7/2012	12 mo

MEASUREMENT BANDWIDTHS

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

TEST DESCRIPTION

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

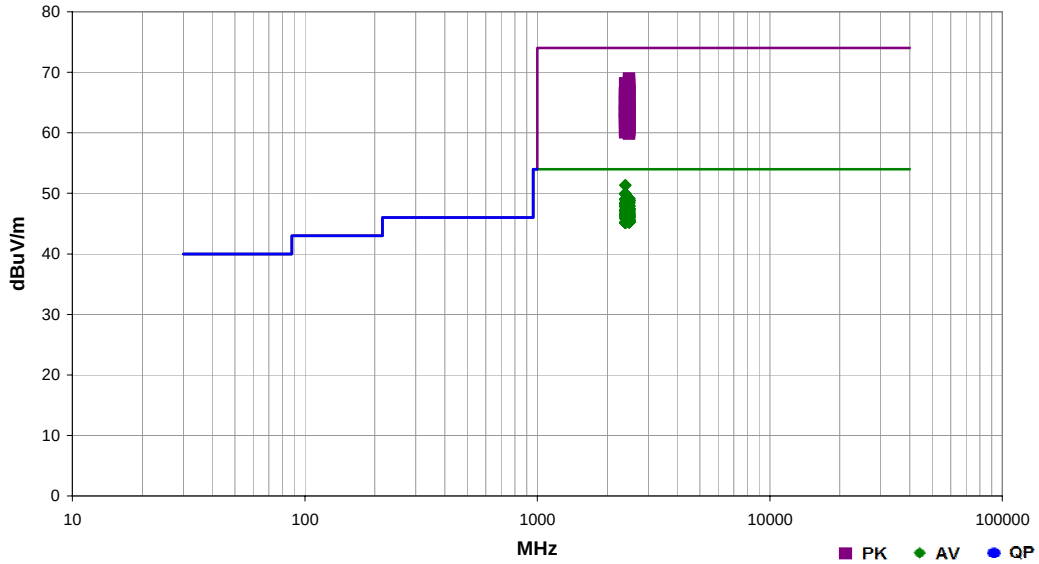
Please refer to the Power Table located elsewhere in this report for radio power operating level during testing

SPURIOUS RADIATED EMISSIONS

Work Order:	MCSO1631	**Date:**	11/01/12		
Project:	None	**Temperature:**	22.4 °C		
Job Site:	EV01	**Humidity:**	53% RH		
Serial Number:	000012424053	**Barometric Pres.:**	1012.8 mbar	**Tested by:**	Dan Haas, Carl Engholm
EUT:	1514				
Configuration:	1				
Customer:	Microsoft Corporation				
Attendees:	Mike Boucher				
EUT Power:	110VAC/60Hz				
Operating Mode:	Continuous TX 802.11b/g/n, 100% duty cycle, 16dBm power level.				
Deviations:	None				
Comments:	See comments for channel, data rate, and EUT orientation.				

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

Run #	18	**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
2390.000	29.8	1.5	1.1	308.0	3.0	20.0	Horz	AV	0.0	51.3	54.0	-2.7	Ch 1 (2412MHz), MCS8, EUT Vertical
2389.920	28.4	1.5	1.1	83.0	3.0	20.0	Horz	AV	0.0	49.9	54.0	-4.1	Ch 1 (2412MHz), MCS15, EUT on Side
2389.987	28.3	1.5	1.1	82.0	3.0	20.0	Horz	AV	0.0	49.8	54.0	-4.2	Ch 1 (2412MHz), MCS8, EUT on Side
2483.500	27.3	1.9	1.1	304.0	3.0	20.0	Horz	AV	0.0	49.2	54.0	-4.8	Ch 11 (2462MHz), MCS8, EUT Vertical
2483.500	27.2	1.9	1.1	304.0	3.0	20.0	Horz	AV	0.0	49.1	54.0	-4.9	Ch 11 (2462MHz), MCS15, EUT Vertical
2389.960	27.5	1.5	1.0	41.0	3.0	20.0	Horz	AV	0.0	49.0	54.0	-5.0	Ch 1 (2412MHz), MCS15, EUT Horizontal
2484.460	47.1	1.9	1.1	304.0	3.0	20.0	Horz	PK	0.0	69.0	74.0	-5.0	Ch 11 (2462MHz), MCS15, EUT Vertical
2390.000	27.4	1.5	1.1	85.0	3.0	20.0	Horz	AV	0.0	48.9	54.0	-5.1	Ch 1 (2412MHz), MCS0, EUT on Side
2483.500	27.0	1.9	1.0	80.0	3.0	20.0	Horz	AV	0.0	48.9	54.0	-5.1	Ch 11 (2462MHz), MCS8, EUT on Side
2483.500	27.0	1.9	1.0	80.0	3.0	20.0	Horz	AV	0.0	48.9	54.0	-5.1	Ch 11 (2462MHz), MCS15, EUT on Side
2483.500	26.9	1.9	1.0	77.0	3.0	20.0	Horz	AV	0.0	48.8	54.0	-5.2	Ch 11 (2462MHz), MCS7, EUT on Side
2483.500	26.9	1.9	1.0	77.0	3.0	20.0	Horz	AV	0.0	48.8	54.0	-5.2	Ch 11 (2462MHz), MCS0, EUT on Side
2485.180	26.6	1.9	1.3	268.0	3.0	20.0	Vert	AV	0.0	48.5	54.0	-5.5	Ch 11 (2462MHz), MCS15, EUT Vertical
2389.913	26.9	1.5	1.0	266.0	3.0	20.0	Vert	AV	0.0	48.4	54.0	-5.6	Ch 1 (2412MHz), MCS15, EUT Horizontal
2485.140	26.5	1.9	1.3	268.0	3.0	20.0	Vert	AV	0.0	48.4	54.0	-5.6	Ch 11 (2462MHz), MCS8, EUT Vertical
2483.553	46.5	1.9	1.1	304.0	3.0	20.0	Horz	PK	0.0	68.4	74.0	-5.6	Ch 11 (2462MHz), MCS8, EUT Vertical
2389.860	26.8	1.5	1.0	266.0	3.0	20.0	Vert	AV	0.0	48.3	54.0	-5.7	Ch 1 (2412MHz), MCS8, EUT Horizontal
2390.000	26.8	1.5	1.1	157.0	3.0	20.0	Vert	AV	0.0	48.3	54.0	-5.7	Ch 1 (2412MHz), MCS0, EUT Vertical
2390.000	26.8	1.5	1.1	82.0	3.0	20.0	Horz	AV	0.0	48.3	54.0	-5.7	Ch 1 (2412MHz), MCS8, EUT on Side
2390.000	26.8	1.5	1.1	83.0	3.0	20.0	Horz	AV	0.0	48.3	54.0	-5.7	Ch 1 (2412MHz), MCS8, EUT on Side
2389.993	26.7	1.5	1.1	333.0	3.0	20.0	Horz	AV	0.0	48.2	54.0	-5.8	Ch 1 (2412MHz), MCS0, EUT Vertical
2389.987	26.7	1.5	1.1	85.0	3.0	20.0	Horz	AV	0.0	48.2	54.0	-5.8	Ch 1 (2412MHz), MCS7, EUT on Side
2389.980	46.6	1.5	1.1	308.0	3.0	20.0	Horz	PK	0.0	68.1	74.0	-5.9	Ch 1 (2412MHz), MCS8, EUT Vertical
2485.247	46.1	1.9	1.3	268.0	3.0	20.0	Vert	PK	0.0	68.0	74.0	-6.0	Ch 11 (2462MHz), MCS15, EUT Vertical
2483.500	26.1	1.9	1.0	275.0	3.0	20.0	Horz	AV	0.0	48.0	54.0	-6.0	Ch 11 (2462MHz), MCS8, EUT Horizontal
2483.500	26.1	1.9	2.1	287.0	3.0	20.0	Vert	AV	0.0	48.0	54.0	-6.0	Ch 11 (2462MHz), MCS15, EUT Horizontal
2485.327	26.0	1.9	1.0	275.0	3.0	20.0	Horz	AV	0.0	47.9	54.0	-6.1	Ch 11 (2462MHz), MCS15, EUT Horizontal
2390.000	26.3	1.5	1.1	157.0	3.0	20.0	Vert	AV	0.0	47.8	54.0	-6.2	Ch 1 (2412MHz), MCS7, EUT Vertical
2390.000	26.3	1.5	1.0	207.0	3.0	20.0	Vert	AV	0.0	47.8	54.0	-6.2	Ch 1 (2412MHz), MCS8, EUT Vertical
2390.000	26.3	1.5	1.0	207.0	3.0	20.0	Vert	AV	0.0	47.8	54.0	-6.2	Ch 1 (2412MHz), MCS15, EUT Vertical
2485.493	45.9	1.9	1.3	268.0	3.0	20.0	Vert	PK	0.0	67.8	74.0	-6.2	Ch 11 (2462MHz), MCS8, EUT Vertical
2485.180	25.6	1.9	2.1	287.0	3.0	20.0	Vert	AV	0.0	47.5	54.0	-6.5	Ch 11 (2462MHz), MCS8, EUT Horizontal
2483.503	25.6	1.9	1.0	249.0	3.0	20.0	Vert	AV	0.0	47.5	54.0	-6.5	Ch 11 (2462MHz), MCS7, EUT Vertical
2483.503	25.6	1.9	1.0	249.0	3.0	20.0	Vert	AV	0.0	47.5	54.0	-6.5	Ch 11 (2462MHz), MCS0, EUT Vertical

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
2483.500	25.6	1.9	1.2	226.0	3.0	20.0	Horz	AV	0.0	47.5	54.0	-6.5	Ch 11 (2462MHz), MCS0, EUT Horizontal
2483.500	25.5	1.9	1.2	226.0	3.0	20.0	Horz	AV	0.0	47.4	54.0	-6.6	Ch 11 (2462MHz), MCS7, EUT Horizontal
2389.993	25.8	1.5	1.8	338.0	3.0	20.0	Vert	AV	0.0	47.3	54.0	-6.7	Ch 1 (2412MHz), MCS0, EUT Horizontal
2483.500	25.4	1.9	1.2	312.0	3.0	20.0	Horz	AV	0.0	47.3	54.0	-6.7	Ch 11 (2462MHz), MCS7, EUT Vertical
2483.503	25.4	1.9	1.2	312.0	3.0	20.0	Horz	AV	0.0	47.3	54.0	-6.7	Ch 11 (2462MHz), MCS0, EUT Vertical
2483.507	25.4	1.9	1.0	77.0	3.0	20.0	Horz	AV	0.0	47.3	54.0	-6.7	Ch 11 (2462MHz), 6Mbps, EUT on Side
2483.733	45.3	1.9	1.0	77.0	3.0	20.0	Horz	PK	0.0	67.2	74.0	-6.8	Ch 11 (2462MHz), MCS0, EUT on Side
2483.553	45.3	1.9	1.0	80.0	3.0	20.0	Horz	PK	0.0	67.2	74.0	-6.8	Ch 11 (2462MHz), MCS15, EUT on Side
2390.000	25.6	1.5	1.0	110.0	3.0	20.0	Horz	AV	0.0	47.1	54.0	-6.9	Ch 1 (2412MHz), MCS0, EUT Horizontal
2390.000	25.6	1.5	1.0	41.0	3.0	20.0	Horz	AV	0.0	47.1	54.0	-6.9	Ch 1 (2412MHz), MCS8, EUT Horizontal
2485.273	45.2	1.9	1.0	275.0	3.0	20.0	Horz	PK	0.0	67.1	74.0	-6.9	Ch 11 (2462MHz), MCS15, EUT Horizontal
2483.600	25.2	1.9	1.0	77.0	3.0	20.0	Horz	AV	0.0	47.1	54.0	-6.9	Ch 11 (2462MHz), 36Mbps, EUT on Side
2483.520	25.1	1.9	1.0	77.0	3.0	20.0	Horz	AV	0.0	47.0	54.0	-7.0	Ch 11 (2462MHz), 54Mbps, EUT on Side
2483.500	45.1	1.9	2.1	287.0	3.0	20.0	Vert	PK	0.0	67.0	74.0	-7.0	Ch 11 (2462MHz), MCS15, EUT Horizontal
2483.500	25.1	1.9	1.1	335.0	3.0	20.0	Vert	AV	0.0	47.0	54.0	-7.0	Ch 11 (2462MHz), MCS7, EUT Horizontal
2390.000	25.4	1.5	2.3	39.0	3.0	20.0	Vert	AV	0.0	46.9	54.0	-7.1	Ch 1 (2412MHz), MCS0, EUT on Side
2483.507	25.0	1.9	1.1	335.0	3.0	20.0	Vert	AV	0.0	46.9	54.0	-7.1	Ch 11 (2462MHz), MCS0, EUT Horizontal
2483.500	45.0	1.9	1.0	80.0	3.0	20.0	Horz	PK	0.0	66.9	74.0	-7.1	Ch 11 (2462MHz), MCS8, EUT on Side
2483.500	44.9	1.9	1.0	275.0	3.0	20.0	Horz	PK	0.0	66.8	74.0	-7.2	Ch 11 (2462MHz), MCS8, EUT Horizontal
2483.500	24.8	1.9	1.7	85.0	3.0	20.0	Vert	AV	0.0	46.7	54.0	-7.3	Ch 11 (2462MHz), MCS15, EUT on Side
2390.000	25.1	1.5	1.1	85.0	3.0	20.0	Horz	AV	0.0	46.6	54.0	-7.4	Ch 1 (2412MHz), 6Mbps, EUT on Side
2483.593	24.7	1.9	1.2	226.0	3.0	20.0	Horz	AV	0.0	46.6	54.0	-7.4	Ch 11 (2462MHz), 6Mbps, EUT Horizontal
2483.507	24.7	1.9	1.9	32.0	3.0	20.0	Vert	AV	0.0	46.6	54.0	-7.4	Ch 11 (2462MHz), MCS7, EUT on Side
2483.513	24.7	1.9	1.7	85.0	3.0	20.0	Vert	AV	0.0	46.6	54.0	-7.4	Ch 11 (2462MHz), MCS8, EUT on Side
2389.747	45.0	1.5	1.1	85.0	3.0	20.0	Horz	PK	0.0	66.5	74.0	-7.5	Ch 1 (2412MHz), MCS0, EUT on Side
2389.860	45.0	1.5	1.1	82.0	3.0	20.0	Horz	PK	0.0	66.5	74.0	-7.5	Ch 1 (2412MHz), MCS8, EUT on Side
2390.000	25.0	1.5	1.1	85.0	3.0	20.0	Horz	AV	0.0	46.5	54.0	-7.5	Ch 1 (2412MHz), 54Mbps, EUT on Side
2389.980	45.0	1.5	1.1	83.0	3.0	20.0	Horz	PK	0.0	66.5	74.0	-7.5	Ch 1 (2412MHz), MCS15, EUT on Side
2483.500	24.6	1.9	1.2	226.0	3.0	20.0	Horz	AV	0.0	46.5	54.0	-7.5	Ch 11 (2462MHz), 54Mbps, EUT Horizontal
2483.507	24.6	1.9	1.2	226.0	3.0	20.0	Horz	AV	0.0	46.5	54.0	-7.5	Ch 11 (2462MHz), 36Mbps, EUT Horizontal
2389.973	24.9	1.5	1.1	336.0	3.0	20.0	Vert	AV	0.0	46.4	54.0	-7.6	Ch 1 (2412MHz), MCS15, EUT on Side
2390.000	44.9	1.5	1.1	83.0	3.0	20.0	Horz	PK	0.0	66.4	74.0	-7.6	Ch 1 (2412MHz), MCS8, EUT on Side
2485.313	44.5	1.9	2.1	287.0	3.0	20.0	Vert	PK	0.0	66.4	74.0	-7.6	Ch 11 (2462MHz), MCS8, EUT Horizontal
2483.520	24.5	1.9	1.0	249.0	3.0	20.0	Vert	AV	0.0	46.4	54.0	-7.6	Ch 11 (2462MHz), 6Mbps, EUT Vertical
2483.513	44.5	1.9	1.0	77.0	3.0	20.0	Horz	PK	0.0	66.4	74.0	-7.6	Ch 11 (2462MHz), MCS7, EUT on Side
2389.967	24.8	1.5	1.1	85.0	3.0	20.0	Horz	AV	0.0	46.3	54.0	-7.7	Ch 1 (2412MHz), 36Mbps, EUT on Side
2390.000	24.8	1.5	1.1	157.0	3.0	20.0	Vert	AV	0.0	46.3	54.0	-7.7	Ch 1 (2412MHz), 6Mbps, EUT Vertical
2483.503	24.4	1.9	1.2	312.0	3.0	20.0	Horz	AV	0.0	46.3	54.0	-7.7	Ch 11 (2462MHz), 6Mbps, EUT Vertical
2483.500	24.4	1.9	1.9	32.0	3.0	20.0	Vert	AV	0.0	46.3	54.0	-7.7	Ch 11 (2462MHz), MCS0, EUT on Side
2389.953	24.7	1.5	1.1	157.0	3.0	20.0	Vert	AV	0.0	46.2	54.0	-7.8	Ch 1 (2412MHz), 54Mbps, EUT Vertical
2390.000	44.7	1.5	1.1	82.0	3.0	20.0	Horz	PK	0.0	66.2	74.0	-7.8	Ch 1 (2412MHz), MCS8, EUT on Side
2483.927	24.3	1.9	1.0	249.0	3.0	20.0	Vert	AV	0.0	46.2	54.0	-7.8	Ch 11 (2462MHz), 36Mbps, EUT Vertical
2483.740	24.3	1.9	1.2	312.0	3.0	20.0	Horz	AV	0.0	46.2	54.0	-7.8	Ch 11 (2462MHz), 36Mbps, EUT Vertical
2483.507	24.3	1.9	1.0	249.0	3.0	20.0	Vert	AV	0.0	46.2	54.0	-7.8	Ch 11 (2462MHz), 54Mbps, EUT Vertical
2390.000	24.6	1.5	1.1	157.0	3.0	20.0	Vert	AV	0.0	46.1	54.0	-7.9	Ch 1 (2412MHz), 36Mbps, EUT Vertical
2390.000	24.6	1.5	1.1	77.0	3.0	20.0	Vert	AV	0.0	46.1	54.0	-7.9	Ch 1 (2412MHz), MCS8, EUT on Side
2483.587	24.2	1.9	1.2	312.0	3.0	20.0	Horz	AV	0.0	46.1	54.0	-7.9	Ch 11 (2462MHz), 54Mbps, EUT Vertical
2483.527	24.2	1.9	1.1	335.0	3.0	20.0	Vert	AV	0.0	46.1	54.0	-7.9	Ch 11 (2462MHz), 6Mbps, EUT Horizontal
2389.953	44.5	1.5	1.1	85.0	3.0	20.0	Horz	PK	0.0	66.0	74.0	-8.0	Ch 1 (2412MHz), MCS7, EUT on Side
2483.527	24.1	1.9	1.1	335.0	3.0	20.0	Vert	AV	0.0	46.0	54.0	-8.0	Ch 11 (2462MHz), 36Mbps, EUT Horizontal
2483.500	24.1	1.9	1.1	335.0	3.0	20.0	Vert	AV	0.0	46.0	54.0	-8.0	Ch 11 (2462MHz), 54Mbps, EUT Horizontal
2389.793	24.3	1.5	1.1	77.0	3.0	20.0	Vert	AV	0.0	45.8	54.0	-8.2	Ch 1 (2412MHz), MCS15, EUT on Side
2483.500	23.9	1.9	1.9	32.0	3.0	20.0	Vert	AV	0.0	45.8	54.0	-8.2	Ch 11 (2462MHz), 6Mbps, EUT on Side
2483.700	43.8	1.9	1.0	77.0	3.0	20.0	Horz	PK	0.0	65.7	74.0	-8.3	Ch 11 (2462MHz), 54Mbps, EUT on Side
2483.667	23.8	1.9	1.9	32.0	3.0	20.0	Vert	AV	0.0	45.7	54.0	-8.3	Ch 11 (2462MHz), 36Mbps, EUT on Side
2486.853	23.7	1.9	1.0	77.0	3.0	20.0	Horz	AV	0.0	45.6	54.0	-8.4	Ch 11 (2462MHz), 11Mbps, EUT on Side
2486.073	23.7	1.9	1.0	77.0	3.0	20.0	Horz	AV	0.0	45.6	54.0	-8.4	Ch 11 (2462MHz), 1Mbps, EUT on Side
2483.535	43.7	1.9	1.2	226.0	3.0	20.0	Horz	PK	0.0	65.6	74.0	-8.4	Ch 11 (2462MHz), MCS7, EUT Horizontal
2486.307	23.6	1.9	1.2	226.0	3.0	20.0	Horz	AV	0.0	45.5	54.0	-8.5	Ch 11 (2462MHz), 1Mbps, EUT Horizontal
2485.040	23.6	1.9	1.2	226.0	3.0	20.0	Horz	AV	0.0	45.5	54.0	-8.5	Ch 11 (2462MHz), 11Mbps, EUT Horizontal
2389.753	43.9	1.5	1.1	333.0	3.0	20.0	Horz	PK	0.0	65.4	74.0	-8.6	Ch 1 (2412MHz), MCS0, EUT Vertical
2389.987	43.9	1.5	1.1	157.0	3.0	20.0	Vert	PK	0.0	65.4	74.0	-8.6	Ch 1 (2412MHz), MCS0, EUT Vertical
2487.333	23.5	1.9	1.1	335.0	3.0	20.0	Vert	AV	0.0	45.4	54.0	-8.6	Ch 11 (2462MHz), 1Mbps, EUT Horizontal
2485.800	23.5	1.9	1.1	335.0	3.0	20.0	Vert	AV	0.0	45.4	54.0	-8.6	Ch 11 (2462MHz), 11Mbps, EUT Horizontal
2483.500	43.5	1.9	1.0	249.0	3.0	20.0	Vert	PK	0.0	65.4	74.0	-8.6	Ch 11 (2462MHz), MCS0, EUT Vertical
2487.447	23.4	1.9	1.9	32.0	3.0	20.0	Vert	AV	0.0	45.3	54.0	-8.7	Ch 11 (2462MHz), 54Mbps, EUT on Side
2487.320	23.4	1.9	1.9	32.0	3.0	20.0	Vert	AV	0.0	45.3	54.0	-8.7	Ch 11 (2462MHz), 1Mbps, EUT on Side
2486.840	23.4	1.9	1.9	32.0	3.0	20.0	Vert	AV	0.0	45.3	54.0	-8.7	Ch 11 (2462MHz), 11Mbps, EUT on Side
2485.467	23.4	1.9	1.2	312.0	3.0	20.0	Horz	AV	0.0	45.3	54.0	-8.7	Ch 11 (2462MHz), 11Mbps, EUT Vertical
2485.400	23.4	1.9	1.2	312.0	3.0	20.0	Horz	AV	0.0	45.3	54.0	-8.7	Ch 11 (2462MHz), 1Mbps, EUT Vertical
2485.077	23.4	1.9	1.0	249.0	3.0	20.0	Vert	AV	0.0	45.3	54.0	-8.7	Ch 11 (2462MHz), 1Mbps, EUT Vertical
2484.393	23.4	1.9	1.0	249.0	3.0	20.0	Vert	AV	0.0	45.3	54.0	-8.7	Ch 11 (2462MHz), 11Mbps, EUT Vertical
2388.307	23.6	1.6	1.1	85.0	3.0	20.0	Horz	AV	0.0	45.2	54.0	-8.8	Ch 1 (2412MHz), 1Mbps, EUT on Side
2388.460	23.6	1.6	1.1	157.0	3.0	20.0	Vert	AV	0.0	45.2	54.0	-8.8	Ch 1 (2412MHz), 11Mbps, EUT Vertical
2389.160	23.6	1.5	1.1	157.0	3.0	20.0	Vert	AV	0.0	45.1	54.0	-8.9	Ch 1 (2412MHz), 1Mbps, EUT Vertical
2389.540	23.6	1.5	1.1	85.0	3.0	20.0	Horz	AV	0.0	45.1	54.0	-8.9	Ch 1 (2412MHz), 11Mbps, EUT on Side
2485.447	43.2	1.9	1.2	226.0	3.0	20.0	Horz	PK	0.0	65.1	74.0	-8.9	Ch 11 (2462MHz), MCS0, EUT Horizontal
2484.853	43.1	1.9	1.2	312.0	3.0	20.0	Horz	PK	0.0	65.0	74.0	-9.0	Ch 11 (2462MHz), MCS7, EUT Vertical
2483.527	43.0	1.9	1.2	312.0	3.0	20.0	Horz	PK	0.0	64.9	74.0	-9.1	Ch 11 (2462MHz), MCS0, EUT Vertical
2389.413	43.3	1.5	1.0	266.0	3.0	20.0	Vert	PK	0.0	64.8	74.0	-9.2	Ch 1 (2412MHz), MCS15, EUT Horizontal
2389.813	43.3	1.5	1.0	41.0	3.0	20.0	Horz	PK	0.0	64.8	74.0	-9.2	Ch 1 (2412MHz), MCS15, EUT Horizontal
2389.753	43.1	1.5	1.1	157.0	3.0	20.0	Vert	PK	0.0	64.6	74.0	-9.4	Ch 1 (2412MHz), MCS7, EUT Vertical
2486.327	42.7	1.9	1.0	77.0	3.0	20.0	Horz	PK	0.0	64.6	74.0	-9.4	Ch 11 (2462MHz), 36Mbps, EUT on Side
2483.553	42.7	1.9	1.0	77.0	3.0	20.0	Horz	PK	0.0	64.6	74.0	-9.4	Ch 11 (2462MHz), 6Mbps, EUT on Side
2483.520	42.6	1.9	1.7	85.0	3.0	20.0	Vert	PK	0.0	64.5	74.0	-9.5	Ch 11 (2462MHz), MCS15, EUT on Side
2389.587	42.8	1.5	1.0	266.0	3.0	20.0	Vert	PK	0.0	64.3	74.0	-9.7	Ch 1 (2412MHz), MCS8, EUT Horizontal
2389.960	42.8	1.5	1.0	207.0	3.0	20.0	Vert	PK	0.0	64.3	74.0	-9.7	Ch 1 (2412MHz), MCS15, EUT Vertical
2484.893	42.3	1.9	1.0	249.0	3.0	20.0	Vert	PK	0.0	64.2	74.0	-9.8	Ch 11 (2462MHz), MCS7, EUT Vertical
2483.560	42.3	1.9	1.2	226.0	3.0	20.0	Horz	PK	0.0	64.2	74.0	-9.8	Ch 11 (2462MHz), 54Mbps, EUT Horizontal
2483.660	42.1	1.9	1.1	335.0	3.0	20.0	Vert	PK	0.0	64.0	74.0	-10.0	Ch 11 (2462MHz), MCS7, EUT Horizontal
2389.913	42.4	1.5	1.0	41.0	3.0	20.0	Horz	PK	0.0	63.9	74.0	-10.1	Ch 1 (2412MHz), MCS8, EUT Horizontal
2485.287	42.0	1.9	1.2	226.0	3.0	20.0	Horz	PK	0.0	63.9	74.0	-10.1	Ch 11 (2462MHz), 6Mbps, EUT Horizontal
2485.080	42.0	1.9	1.1	335.0	3.0	20.0	Vert	PK	0.0	63.9	74.0	-10.1	Ch 11 (2462MHz), MCS0, EUT Horizontal
2483.533	42.0	1.9	1.7	85.0	3.0	20.0	Vert	PK	0.0	63.9	74.0	-10.1	Ch 11 (2462MHz), MCS8, EUT on Side
2483.887	41.9	1.9	1.0	249.0	3.0	20.0	Vert	PK	0.0	63.8	74.0	-10.2	Ch 11 (2462MHz), 54Mbps, EUT Vertical
2389.973	42.0	1.5	1.8	338.0	3.0	20.0	Vert	PK	0.0	63.5	74.0	-10.5	Ch 1 (2412MHz), MCS0, EUT Horizontal
2389.980	42.0	1.5	2.3	39.0	3.0	20.0	Vert	PK	0.0	63.5	74.0	-10.5	Ch 1 (2412MHz), MCS0, EUT on Side
2483.623	41.6	1.9	1.2	312.0	3.0	20.0	Horz	PK	0.0	63.5	74.0	-10.5	Ch 11 (2462MHz), 54Mbps, EUT Vertical
2389.860	41.9	1.5	1.0	207.0	3.0	20.0	Vert	PK	0.0	63.4	74.0	-10.6	Ch 1 (2412MHz), MCS8, EUT Vertical
2389.653	41.8	1.5	1.0	110.0	3.0	20.0	Horz	PK	0.0	63.3	74.0	-10.7	Ch 1 (2412MHz), MCS0, EUT Horizontal
2389.700	41.8	1.5	1.1	85.0	3.0	20.0	Horz	PK	0.0	63.3	74.0	-10.7	Ch 1 (2412MHz), 6Mbps, EUT on Side

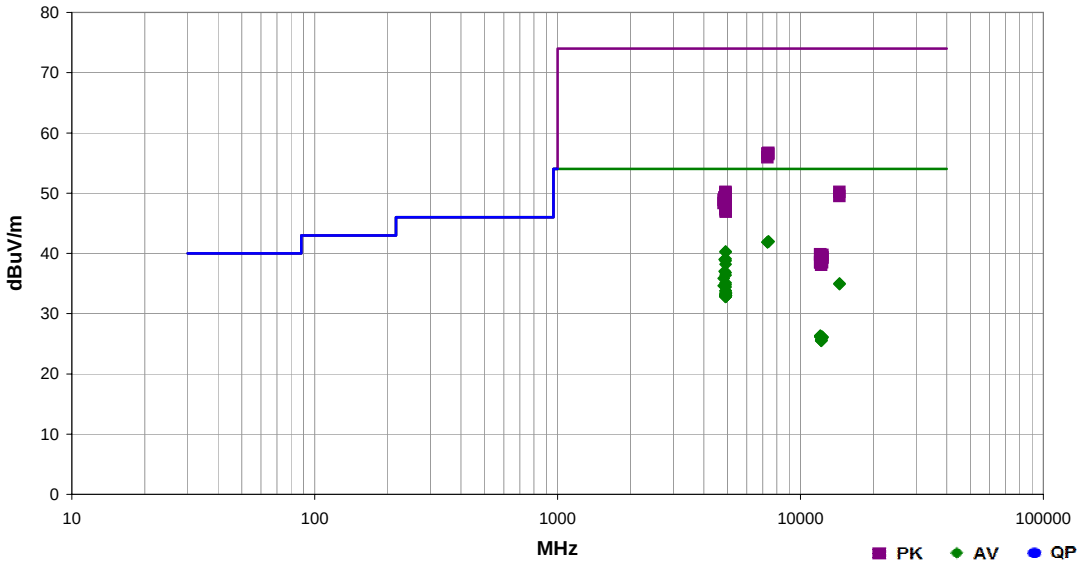
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
2486.167	41.4	1.9	1.2	226.0	3.0	20.0	Horz	PK	0.0	63.3	74.0	-10.7	Ch 11 (2462MHz), 36Mbps, EUT Horizontal
2483.563	41.4	1.9	1.2	312.0	3.0	20.0	Horz	PK	0.0	63.3	74.0	-10.7	Ch 11 (2462MHz), 6Mbps, EUT Vertical
2483.500	41.2	1.9	1.9	32.0	3.0	20.0	Vert	PK	0.0	63.1	74.0	-10.9	Ch 11 (2462MHz), MCS7, EUT on Side
2483.967	41.1	1.9	1.0	249.0	3.0	20.0	Vert	PK	0.0	63.0	74.0	-11.0	Ch 11 (2462MHz), 6Mbps, EUT Vertical
2389.687	41.1	1.5	1.1	157.0	3.0	20.0	Vert	PK	0.0	62.6	74.0	-11.4	Ch 1 (2412MHz), 6Mbps, EUT Vertical
2389.753	41.1	1.5	1.1	157.0	3.0	20.0	Vert	PK	0.0	62.6	74.0	-11.4	Ch 1 (2412MHz), 54Mbps, EUT Vertical
2483.633	40.7	1.9	1.1	335.0	3.0	20.0	Vert	PK	0.0	62.6	74.0	-11.4	Ch 11 (2462MHz), 54Mbps, EUT Horizontal
2389.880	40.9	1.5	1.1	85.0	3.0	20.0	Horz	PK	0.0	62.4	74.0	-11.6	Ch 1 (2412MHz), 54Mbps, EUT on Side
2485.853	40.5	1.9	1.9	32.0	3.0	20.0	Vert	PK	0.0	62.4	74.0	-11.6	Ch 11 (2462MHz), MCS0, EUT on Side
2483.593	40.5	1.9	1.2	312.0	3.0	20.0	Horz	PK	0.0	62.4	74.0	-11.6	Ch 11 (2462MHz), 36Mbps, EUT Vertical
2389.480	40.8	1.5	1.1	336.0	3.0	20.0	Vert	PK	0.0	62.3	74.0	-11.7	Ch 1 (2412MHz), MCS15, EUT on Side
2389.953	40.6	1.5	1.1	85.0	3.0	20.0	Horz	PK	0.0	62.1	74.0	-11.9	Ch 1 (2412MHz), 36Mbps, EUT on Side
2484.593	40.2	1.9	1.0	249.0	3.0	20.0	Vert	PK	0.0	62.1	74.0	-11.9	Ch 11 (2462MHz), 36Mbps, EUT Vertical
2483.880	40.2	1.9	1.0	77.0	3.0	20.0	Horz	PK	0.0	62.1	74.0	-11.9	Ch 11 (2462MHz), 11Mbps, EUT on Side
2485.433	40.1	1.9	1.9	32.0	3.0	20.0	Vert	PK	0.0	62.0	74.0	-12.0	Ch 11 (2462MHz), 6Mbps, EUT on Side
2485.267	40.1	1.9	1.1	335.0	3.0	20.0	Vert	PK	0.0	62.0	74.0	-12.0	Ch 11 (2462MHz), 6Mbps, EUT Horizontal
2389.533	40.4	1.5	1.1	77.0	3.0	20.0	Vert	PK	0.0	61.9	74.0	-12.1	Ch 1 (2412MHz), MCS15, EUT on Side
2389.693	40.3	1.5	1.1	157.0	3.0	20.0	Vert	PK	0.0	61.8	74.0	-12.2	Ch 1 (2412MHz), 36Mbps, EUT Vertical
2485.760	39.8	1.9	1.0	77.0	3.0	20.0	Horz	PK	0.0	61.7	74.0	-12.3	Ch 11 (2462MHz), 1Mbps, EUT on Side
2483.663	39.7	1.9	1.0	249.0	3.0	20.0	Vert	PK	0.0	61.6	74.0	-12.4	Ch 11 (2462MHz), 11Mbps, EUT Vertical
2485.873	39.5	1.9	1.9	32.0	3.0	20.0	Vert	PK	0.0	61.4	74.0	-12.6	Ch 11 (2462MHz), 36Mbps, EUT on Side
2484.880	39.3	1.9	1.2	312.0	3.0	20.0	Horz	PK	0.0	61.2	74.0	-12.8	Ch 11 (2462MHz), 11Mbps, EUT Vertical
2483.620	39.3	1.9	1.0	249.0	3.0	20.0	Vert	PK	0.0	61.2	74.0	-12.8	Ch 11 (2462MHz), 1Mbps, EUT Vertical
2389.860	39.6	1.5	1.1	77.0	3.0	20.0	Vert	PK	0.0	61.1	74.0	-12.9	Ch 1 (2412MHz), MCS8, EUT on Side
2485.053	39.2	1.9	1.1	335.0	3.0	20.0	Vert	PK	0.0	61.1	74.0	-12.9	Ch 11 (2462MHz), 36Mbps, EUT Horizontal
2483.593	39.1	1.9	1.2	226.0	3.0	20.0	Horz	PK	0.0	61.0	74.0	-13.0	Ch 11 (2462MHz), 1Mbps, EUT Horizontal
2486.367	38.8	1.9	1.2	226.0	3.0	20.0	Horz	PK	0.0	60.7	74.0	-13.3	Ch 11 (2462MHz), 11Mbps, EUT Horizontal
2486.713	38.7	1.9	1.9	32.0	3.0	20.0	Vert	PK	0.0	60.6	74.0	-13.4	Ch 11 (2462MHz), 54Mbps, EUT on Side
2389.900	39.0	1.5	1.1	157.0	3.0	20.0	Vert	PK	0.0	60.5	74.0	-13.5	Ch 1 (2412MHz), 11Mbps, EUT Vertical
2485.253	38.6	1.9	1.2	312.0	3.0	20.0	Horz	PK	0.0	60.5	74.0	-13.5	Ch 11 (2462MHz), 1Mbps, EUT Vertical
2485.260	38.6	1.9	1.1	335.0	3.0	20.0	Vert	PK	0.0	60.5	74.0	-13.5	Ch 11 (2462MHz), 1Mbps, EUT Horizontal
2388.227	38.9	1.6	1.1	85.0	3.0	20.0	Horz	PK	0.0	60.5	74.0	-13.5	Ch 1 (2412MHz), 11Mbps, EUT on Side
2484.280	38.5	1.9	1.1	335.0	3.0	20.0	Vert	PK	0.0	60.4	74.0	-13.6	Ch 11 (2462MHz), 11Mbps, EUT Horizontal
2487.167	38.3	1.9	1.9	32.0	3.0	20.0	Vert	PK	0.0	60.2	74.0	-13.8	Ch 11 (2462MHz), 11Mbps, EUT on Side
2389.187	38.5	1.5	1.1	85.0	3.0	20.0	Horz	PK	0.0	60.0	74.0	-14.0	Ch 1 (2412MHz), 1Mbps, EUT on Side
2487.267	38.0	1.9	1.9	32.0	3.0	20.0	Vert	PK	0.0	59.9	74.0	-14.1	Ch 11 (2462MHz), 1Mbps, EUT on Side

SPURIOUS RADIATED EMISSIONS

Work Order:	MCSO1631	**Date:**	11/07/12		
Project:	None	**Temperature:**	22 °C		
Job Site:	EV01	**Humidity:**	46% RH		
Serial Number:	000012424053	**Barometric Pres.:**	1020 mbar	**Tested by:**	Dan Haas, Kyle Holgate
EUT:	1514				
Configuration:	1				
Customer:	Microsoft Corporation				
Attendees:	Mike Boucher				
EUT Power:	110VAC/60Hz				
Operating Mode:	Continuous TX 802.11b/g/n, 100% duty cycle, 16dBm power level.				
Deviations:	None				
Comments:	See comments for channel, data rate, and EUT orientation.				

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

Run #	46	**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
7384.147	22.7	19.3	1.0	1.0	3.0	0.0	Vert	AV	0.0	42.0	54.0	-12.0	Ch 11 (2462MHz), 1Mbps, EUT on Side
7384.033	22.7	19.3	1.2	306.0	3.0	0.0	Horz	AV	0.0	42.0	54.0	-12.0	Ch 11 (2462MHz), 1Mbps, EUT Vertical
7310.027	22.9	19.0	1.2	302.0	3.0	0.0	Horz	AV	0.0	41.9	54.0	-12.1	Ch 6 (2437MHz), 1Mbps, EUT Vertical
7309.173	22.9	18.9	1.2	43.0	3.0	0.0	Vert	AV	0.0	41.8	54.0	-12.2	Ch 6 (2437MHz), 1Mbps, EUT on Side
4923.980	29.7	10.6	1.3	43.0	3.0	0.0	Vert	AV	0.0	40.3	54.0	-13.7	Ch 11 (2462MHz), 1Mbps, EUT on Side
4924.000	29.6	10.6	1.3	63.0	3.0	0.0	Vert	AV	0.0	40.2	54.0	-13.8	Ch 11 (2462MHz), 1Mbps, EUT on Side
4923.993	28.5	10.6	1.3	348.0	3.0	0.0	Horz	AV	0.0	39.1	54.0	-14.9	Ch 11 (2462MHz), 1Mbps, EUT Vertical
4874.000	28.6	10.4	1.4	43.0	3.0	0.0	Vert	AV	0.0	39.0	54.0	-15.0	Ch 6 (2437MHz), 1Mbps, EUT on Side
4923.987	28.2	10.6	1.3	356.0	3.0	0.0	Horz	AV	0.0	38.8	54.0	-15.2	Ch 11 (2462MHz), 1Mbps, EUT Vertical
4924.027	27.6	10.6	1.0	185.0	3.0	0.0	Horz	AV	0.0	38.2	54.0	-15.8	Ch 11 (2462MHz), 1Mbps, EUT Horizontal
4874.000	26.6	10.4	1.3	354.0	3.0	0.0	Horz	AV	0.0	37.0	54.0	-17.0	Ch 6 (2437MHz), 1Mbps, EUT Vertical
4924.007	26.2	10.6	1.0	58.0	3.0	0.0	Horz	AV	0.0	36.8	54.0	-17.2	Ch 11 (2462MHz), 1Mbps, EUT on Side
7386.067	37.4	19.3	1.2	306.0	3.0	0.0	Horz	PK	0.0	56.7	74.0	-17.3	Ch 11 (2462MHz), 1Mbps, EUT Vertical
7311.893	37.6	19.0	1.2	43.0	3.0	0.0	Vert	PK	0.0	56.6	74.0	-17.4	Ch 6 (2437MHz), 1Mbps, EUT on Side
7385.753	37.2	19.3	1.0	1.0	3.0	0.0	Vert	PK	0.0	56.5	74.0	-17.5	Ch 11 (2462MHz), 1Mbps, EUT on Side
4924.000	25.8	10.6	1.2	12.0	3.0	0.0	Vert	AV	0.0	36.4	54.0	-17.6	Ch 11 (2462MHz), 1Mbps, EUT Vertical
7312.220	37.0	19.0	1.2	302.0	3.0	0.0	Horz	PK	0.0	56.0	74.0	-18.0	Ch 6 (2437MHz), 1Mbps, EUT Vertical
4824.033	25.6	10.2	1.2	46.0	3.0	0.0	Vert	AV	0.0	35.8	54.0	-18.2	Ch 1 (2412MHz), 1Mbps, EUT on Side
4923.987	24.5	10.6	1.3	43.0	3.0	0.0	Vert	AV	0.0	35.1	54.0	-18.9	Ch 11 (2462MHz), 11Mbps, EUT on Side
14472.010	25.2	9.8	1.0	0.0	3.0	0.0	Horz	AV	0.0	35.0	54.0	-19.0	Ch 1 (2412MHz), 1 Mbps, EUT Vertical
14472.990	25.1	9.8	1.2	244.0	3.0	0.0	Vert	AV	0.0	34.9	54.0	-19.1	Ch 1 (2412MHz), 1 Mbps, EUT on Side
4923.987	24.2	10.6	2.1	51.0	3.0	0.0	Vert	AV	0.0	34.8	54.0	-19.2	Ch 11 (2462MHz), 1Mbps, EUT Horizontal
4824.020	24.4	10.2	1.0	353.0	3.0	0.0	Horz	AV	0.0	34.6	54.0	-19.4	Ch 1 (2412MHz), 1Mbps, EUT Vertical
4923.967	23.8	10.6	1.3	348.0	3.0	0.0	Horz	AV	0.0	34.4	54.0	-19.6	Ch 11 (2462MHz), 11Mbps, EUT Vertical
4924.193	23.2	10.6	1.3	43.0	3.0	0.0	Vert	AV	0.0	33.8	54.0	-20.2	Ch 11 (2462MHz), 54Mbps, EUT on Side
4922.687	23.2	10.6	1.3	43.0	3.0	0.0	Vert	AV	0.0	33.8	54.0	-20.2	Ch 11 (2462MHz), 36Mbps, EUT on Side
4925.587	22.8	10.6	1.3	43.0	3.0	0.0	Vert	AV	0.0	33.4	54.0	-20.6	Ch 11 (2462MHz), MCS7, EUT on Side
4925.580	22.8	10.6	1.3	43.0	3.0	0.0	Vert	AV	0.0	33.4	54.0	-20.6	Ch 11 (2462MHz), MCS0, EUT on Side
4924.113	22.8	10.6	1.3	43.0	3.0	0.0	Vert	AV	0.0	33.4	54.0	-20.6	Ch 11 (2462MHz), 6Mbps, EUT on Side
4924.220	22.6	10.6	1.3	348.0	3.0	0.0	Horz	AV	0.0	33.2	54.0	-20.8	Ch 11 (2462MHz), 54Mbps, EUT Vertical
4922.793	22.6	10.6	1.3	348.0	3.0	0.0	Horz	AV	0.0	33.2	54.0	-20.8	Ch 11 (2462MHz), 36Mbps, EUT Vertical
4924.247	22.5	10.6	1.3	348.0	3.0	0.0	Horz	AV	0.0	33.1	54.0	-20.9	Ch 11 (2462MHz), 6Mbps, EUT Vertical
4925.587	22.4	10.6	1.3	348.0	3.0	0.0	Horz	AV	0.0	33.0	54.0	-21.0	Ch 11 (2462MHz), MCS0, EUT Vertical
4925.520	22.4	10.6	1.3	348.0	3.0	0.0	Horz	AV	0.0	33.0	54.0	-21.0	Ch 11 (2462MHz), MCS7, EUT Vertical

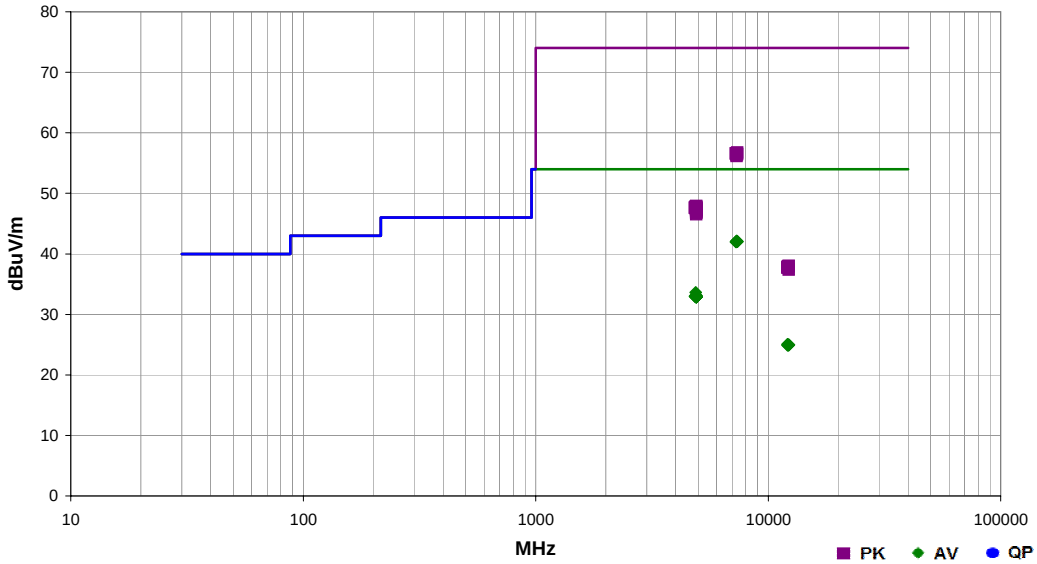
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
4922.000	22.4	10.6	1.8	132.0	3.0	0.0	Horz	AV	0.0	33.0	54.0	-21.0	Ch 11 (2462MHz), MCS15, EUT on Side
4922.280	22.3	10.6	1.4	74.0	3.0	0.0	Horz	AV	0.0	32.9	54.0	-21.1	Ch 11 (2462MHz), MCS15, EUT Horizontal
4922.153	22.3	10.6	1.2	335.0	3.0	0.0	Vert	AV	0.0	32.9	54.0	-21.1	Ch 11 (2462MHz), MCS8, EUT on Side
4922.087	22.3	10.6	1.4	74.0	3.0	0.0	Horz	AV	0.0	32.9	54.0	-21.1	Ch 11 (2462MHz), MCS8, EUT Horizontal
4922.093	22.3	10.6	1.4	142.0	3.0	0.0	Vert	AV	0.0	32.9	54.0	-21.1	Ch 11 (2462MHz), MCS15, EUT Horizontal
4922.093	22.3	10.6	1.2	335.0	3.0	0.0	Vert	AV	0.0	32.9	54.0	-21.1	Ch 11 (2462MHz), MCS15, EUT on Side
4922.047	22.3	10.6	1.1	1.0	3.0	0.0	Vert	AV	0.0	32.9	54.0	-21.1	Ch 11 (2462MHz), MCS8, EUT Vertical
4922.073	22.3	10.6	1.0	102.0	3.0	0.0	Horz	AV	0.0	32.9	54.0	-21.1	Ch 11 (2462MHz), MCS8, EUT Vertical
4922.047	22.3	10.6	1.4	142.0	3.0	0.0	Vert	AV	0.0	32.9	54.0	-21.1	Ch 11 (2462MHz), MCS8, EUT Horizontal
4922.020	22.3	10.6	1.0	102.0	3.0	0.0	Horz	AV	0.0	32.9	54.0	-21.1	Ch 11 (2462MHz), MCS15, EUT Vertical
4922.007	22.3	10.6	1.8	132.0	3.0	0.0	Horz	AV	0.0	32.9	54.0	-21.1	Ch 11 (2462MHz), MCS8, EUT on Side
4922.027	22.2	10.6	1.1	1.0	3.0	0.0	Vert	AV	0.0	32.8	54.0	-21.2	Ch 11 (2462MHz), MCS15, EUT Vertical
14473.410	40.4	9.8	1.0	0.0	3.0	0.0	Horz	PK	0.0	50.2	74.0	-23.8	Ch 1 (2412MHz), 1 Mbps, EUT Vertical
4924.420	39.6	10.6	1.3	43.0	3.0	0.0	Vert	PK	0.0	50.2	74.0	-23.8	Ch 11 (2462MHz), 11Mbps, EUT on Side
4923.553	39.5	10.6	1.3	43.0	3.0	0.0	Vert	PK	0.0	50.1	74.0	-23.9	Ch 11 (2462MHz), 1Mbps, EUT on Side
4923.747	39.3	10.6	1.3	63.0	3.0	0.0	Vert	PK	0.0	49.9	74.0	-24.1	Ch 11 (2462MHz), 1Mbps, EUT on Side
4923.460	39.3	10.6	1.3	43.0	3.0	0.0	Vert	PK	0.0	49.9	74.0	-24.1	Ch 11 (2462MHz), MCS7, EUT on Side
14473.580	39.7	9.8	1.2	244.0	3.0	0.0	Vert	PK	0.0	49.5	74.0	-24.5	Ch 1 (2412MHz), 1 Mbps, EUT on Side
4923.873	38.8	10.6	1.3	348.0	3.0	0.0	Horz	PK	0.0	49.4	74.0	-24.6	Ch 11 (2462MHz), 1Mbps, EUT Vertical
4923.873	38.8	10.6	1.3	348.0	3.0	0.0	Horz	PK	0.0	49.4	74.0	-24.6	Ch 11 (2462MHz), 11Mbps, EUT Vertical
4873.967	38.9	10.4	1.4	43.0	3.0	0.0	Vert	PK	0.0	49.3	74.0	-24.7	Ch 6 (2437MHz), 1Mbps, EUT on Side
4924.327	38.7	10.6	1.0	185.0	3.0	0.0	Horz	PK	0.0	49.3	74.0	-24.7	Ch 11 (2462MHz), 1Mbps, EUT Horizontal
4924.053	38.6	10.6	1.3	356.0	3.0	0.0	Horz	PK	0.0	49.2	74.0	-24.8	Ch 11 (2462MHz), 1Mbps, EUT Vertical
4873.780	38.7	10.4	1.3	354.0	3.0	0.0	Horz	PK	0.0	49.1	74.0	-24.9	Ch 6 (2437MHz), 1Mbps, EUT Vertical
4925.500	38.4	10.6	1.3	43.0	3.0	0.0	Vert	PK	0.0	49.0	74.0	-25.0	Ch 11 (2462MHz), 54Mbps, EUT on Side
4823.833	38.6	10.2	1.2	46.0	3.0	0.0	Vert	PK	0.0	48.8	74.0	-25.2	Ch 1 (2412MHz), 1Mbps, EUT on Side
4925.487	38.2	10.6	1.3	43.0	3.0	0.0	Vert	PK	0.0	48.8	74.0	-25.2	Ch 11 (2462MHz), 6Mbps, EUT on Side
4925.693	38.1	10.6	1.3	43.0	3.0	0.0	Vert	PK	0.0	48.7	74.0	-25.3	Ch 11 (2462MHz), 36Mbps, EUT on Side
4923.113	38.1	10.6	1.3	348.0	3.0	0.0	Horz	PK	0.0	48.7	74.0	-25.3	Ch 11 (2462MHz), MCS0, EUT Vertical
4924.727	37.9	10.6	1.1	1.0	3.0	0.0	Vert	PK	0.0	48.5	74.0	-25.5	Ch 11 (2462MHz), MCS8, EUT Vertical
4923.907	37.9	10.6	1.3	348.0	3.0	0.0	Horz	PK	0.0	48.5	74.0	-25.5	Ch 11 (2462MHz), 6Mbps, EUT Vertical
4924.693	37.8	10.6	1.2	12.0	3.0	0.0	Vert	PK	0.0	48.4	74.0	-25.6	Ch 11 (2462MHz), 1Mbps, EUT Vertical
4924.313	37.8	10.6	1.0	58.0	3.0	0.0	Horz	PK	0.0	48.4	74.0	-25.6	Ch 11 (2462MHz), 1Mbps, EUT on Side
4823.353	38.1	10.2	1.0	353.0	3.0	0.0	Horz	PK	0.0	48.3	74.0	-25.7	Ch 1 (2412MHz), 1Mbps, EUT Vertical
4925.727	37.6	10.6	1.3	43.0	3.0	0.0	Vert	PK	0.0	48.2	74.0	-25.8	Ch 11 (2462MHz), MCS0, EUT on Side
4923.420	37.6	10.6	1.0	102.0	3.0	0.0	Horz	PK	0.0	48.2	74.0	-25.8	Ch 11 (2462MHz), MCS15, EUT Vertical
4923.440	37.6	10.6	2.1	51.0	3.0	0.0	Vert	PK	0.0	48.2	74.0	-25.8	Ch 11 (2462MHz), 1Mbps, EUT Horizontal
4922.280	37.6	10.6	1.3	348.0	3.0	0.0	Horz	PK	0.0	48.2	74.0	-25.8	Ch 11 (2462MHz), 54Mbps, EUT Vertical
4923.980	37.5	10.6	1.4	74.0	3.0	0.0	Horz	PK	0.0	48.1	74.0	-25.9	Ch 11 (2462MHz), MCS8, EUT Horizontal
4923.813	37.5	10.6	1.3	348.0	3.0	0.0	Horz	PK	0.0	48.1	74.0	-25.9	Ch 11 (2462MHz), 36Mbps, EUT Vertical
4924.293	37.4	10.6	1.3	348.0	3.0	0.0	Horz	PK	0.0	48.0	74.0	-26.0	Ch 11 (2462MHz), MCS7, EUT Vertical
4923.013	37.4	10.6	1.4	142.0	3.0	0.0	Vert	PK	0.0	48.0	74.0	-26.0	Ch 11 (2462MHz), MCS8, EUT Horizontal
4923.713	37.3	10.6	1.8	132.0	3.0	0.0	Horz	PK	0.0	47.9	74.0	-26.1	Ch 11 (2462MHz), MCS15, EUT on Side
4923.833	37.0	10.6	1.2	335.0	3.0	0.0	Vert	PK	0.0	47.6	74.0	-26.4	Ch 11 (2462MHz), MCS15, EUT on Side
4925.607	36.9	10.6	1.0	102.0	3.0	0.0	Horz	PK	0.0	47.5	74.0	-26.5	Ch 11 (2462MHz), MCS8, EUT Vertical
4923.913	36.9	10.6	1.4	74.0	3.0	0.0	Horz	PK	0.0	47.5	74.0	-26.5	Ch 11 (2462MHz), MCS15, EUT Horizontal
4922.593	36.9	10.6	1.8	132.0	3.0	0.0	Horz	PK	0.0	47.5	74.0	-26.5	Ch 11 (2462MHz), MCS8, EUT on Side
4923.080	36.7	10.6	1.2	335.0	3.0	0.0	Vert	PK	0.0	47.3	74.0	-26.7	Ch 11 (2462MHz), MCS8, EUT on Side
4924.553	36.4	10.6	1.4	142.0	3.0	0.0	Vert	PK	0.0	47.0	74.0	-27.0	Ch 11 (2462MHz), MCS15, EUT Horizontal
4926.258	36.3	10.6	1.1	1.0	3.0	0.0	Vert	PK	0.0	46.9	74.0	-27.1	Ch 11 (2462MHz), MCS15, EUT Vertical
12058.050	31.5	-5.1	1.0	-1.0	3.0	0.0	Horz	AV	0.0	26.4	54.0	-27.6	Ch 1 (2412MHz), 1Mbps, EUT Vertical
12058.610	31.4	-5.1	1.0	360.0	3.0	0.0	Horz	AV	0.0	26.3	54.0	-27.7	Ch 1 (2412MHz), 1Mbps, EUT Horizontal
12058.170	31.4	-5.1	1.0	360.0	3.0	0.0	Vert	AV	0.0	26.3	54.0	-27.7	Ch 1 (2412MHz), 1Mbps, EUT on Side
12058.230	31.3	-5.1	1.0	-1.0	3.0	0.0	Vert	AV	0.0	26.2	54.0	-27.8	Ch 1 (2412MHz), 1Mbps, EUT Horizontal
12308.050	29.6	-3.5	1.0	-1.0	3.0	0.0	Horz	AV	0.0	26.1	54.0	-27.9	Ch 11 (2462MHz), 1Mbps, EUT Vertical
12308.000	29.6	-3.5	1.0	360.0	3.0	0.0	Vert	AV	0.0	26.1	54.0	-27.9	Ch 11 (2462MHz), 1Mbps, EUT on Side
12308.040	29.5	-3.5	1.0	-1.0	3.0	0.0	Vert	AV	0.0	26.0	54.0	-28.0	Ch 11 (2462MHz), 1Mbps, EUT Horizontal
12308.000	29.5	-3.5	1.0	360.0	3.0	0.0	Horz	AV	0.0	26.0	54.0	-28.0	Ch 11 (2462MHz), 1Mbps, EUT Horizontal
12183.030	30.0	-4.3	1.0	360.0	3.0	0.0	Horz	AV	0.0	25.7	54.0	-28.3	Ch 6 (2437MHz), 1Mbps, EUT Vertical
12183.000	29.9	-4.3	1.0	-1.0	3.0	0.0	Vert	AV	0.0	25.6	54.0	-28.4	Ch 6 (2437MHz), 1Mbps, EUT on Side
12183.010	29.8	-4.3	1.0	-1.0	3.0	0.0	Horz	AV	0.0	25.5	54.0	-28.5	Ch 6 (2437MHz), 1Mbps, EUT Horizontal
12183.000	29.8	-4.3	1.0	360.0	3.0	0.0	Vert	AV	0.0	25.5	54.0	-28.5	Ch 6 (2437MHz), 1Mbps, EUT Horizontal
12058.210	45.0	-5.1	1.0	360.0	3.0	0.0	Vert	PK	0.0	39.9	74.0	-34.1	Ch 1 (2412MHz), 1Mbps, EUT on Side
12061.650	44.9	-5.1	1.0	360.0	3.0	0.0	Horz	PK	0.0	39.8	74.0	-34.2	Ch 1 (2412MHz), 1Mbps, EUT Horizontal
12311.630	43.2	-3.5	1.0	360.0	3.0	0.0	Vert	PK	0.0	39.7	74.0	-34.3	Ch 11 (2462MHz), 1Mbps, EUT on Side
12311.890	42.8	-3.5	1.0	-1.0	3.0	0.0	Vert	PK	0.0	39.3	74.0	-34.7	Ch 11 (2462MHz), 1Mbps, EUT Horizontal
12311.930	42.7	-3.5	1.0	-1.0	3.0	0.0	Horz	PK	0.0	39.2	74.0	-34.8	Ch 11 (2462MHz), 1Mbps, EUT Vertical
12185.430	43.5	-4.3	1.0	-1.0	3.0	0.0	Vert	PK	0.0	39.2	74.0	-34.8	Ch 6 (2437MHz), 1Mbps, EUT on Side
12183.080	43.3	-4.3	1.0	360.0	3.0	0.0	Horz	PK	0.0	39.0	74.0	-35.0	Ch 6 (2437MHz), 1Mbps, EUT Vertical
12058.150	43.7	-5.1	1.0	-1.0	3.0	0.0	Horz	PK	0.0	38.6	74.0	-35.4	Ch 1 (2412MHz), 1Mbps, EUT Vertical
12308.100	42.0	-3.5	1.0	360.0	3.0	0.0	Horz	PK	0.0	38.5	74.0	-35.5	Ch 11 (2462MHz), 1Mbps, EUT Horizontal
12184.880	42.8	-4.3	1.0	360.0	3.0	0.0	Vert	PK	0.0	38.5	74.0	-35.5	Ch 6 (2437MHz), 1Mbps, EUT Horizontal
12061.050	43.6	-5.1	1.0	-1.0	3.0	0.0	Vert	PK	0.0	38.5	74.0	-35.5	Ch 1 (2412MHz), 1Mbps, EUT Horizontal
12184.450	42.4	-4.3	1.0	-1.0	3.0	0.0	Horz	PK	0.0	38.1	74.0	-35.9	Ch 6 (2437MHz), 1Mbps, EUT Horizontal

SPURIOUS RADIATED EMISSIONS

Work Order:	MCSO1631	**Date:**	11/08/12		
Project:	None	**Temperature:**	20.4 °C		
Job Site:	EV01	**Humidity:**	39% RH		
Serial Number:	000012424053	**Barometric Pres.:**	1009 mbar	**Tested by:**	Dan Hass, Carl Engholm
EUT:	1514				
Configuration:	1				
Customer:	Microsoft Corporation				
Attendees:	Mike Boucher				
EUT Power:	110VAC/60Hz				
Operating Mode:	Continuous TX 802.11b/g/n, 100% duty cycle, 12dBm power level.				
Deviations:	None				
Comments:	See comments for channel, data rate, and EUT orientation.				

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

Run #	52	**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
7311.350	23.2	19.0	1.0	6.0	3.0	0.0	Horz	AV	0.0	42.2	54.0	-11.8	Ch 4/8 (2437MHz), MCS15, EUT Horizontal
7311.030	23.1	19.0	1.1	128.0	3.0	0.0	Vert	AV	0.0	42.1	54.0	-11.9	Ch 4/8 (2437MHz), MCS15, EUT on Side
7358.390	22.9	19.2	1.1	184.0	3.0	0.0	Horz	AV	0.0	42.1	54.0	-11.9	Ch 7/11 (2452MHz), MCS15, EUT Horizontal
7355.400	22.9	19.1	2.2	124.0	3.0	0.0	Vert	AV	0.0	42.0	54.0	-12.0	Ch 7/11 (2452MHz), MCS15, EUT on Side
7266.980	23.3	18.7	1.1	348.0	3.0	0.0	Horz	AV	0.0	42.0	54.0	-12.0	Ch 1/5 (2422MHz), MCS15, EUT Horizontal
7266.920	23.3	18.7	1.1	346.0	3.0	0.0	Vert	AV	0.0	42.0	54.0	-12.0	Ch 1/5 (2422MHz), MCS15, EUT on Side
7356.800	37.6	19.1	1.1	184.0	3.0	0.0	Horz	PK	0.0	56.7	74.0	-17.3	Ch 7/11 (2452MHz), MCS15, EUT Horizontal
7265.470	37.9	18.7	1.1	348.0	3.0	0.0	Horz	PK	0.0	56.6	74.0	-17.4	Ch 1/5 (2422MHz), MCS15, EUT Horizontal
7263.990	37.9	18.7	1.1	346.0	3.0	0.0	Vert	PK	0.0	56.6	74.0	-17.4	Ch 1/5 (2422MHz), MCS15, EUT on Side
7357.440	37.3	19.2	2.2	124.0	3.0	0.0	Vert	PK	0.0	56.5	74.0	-17.5	Ch 7/11 (2452MHz), MCS15, EUT on Side
7312.640	37.4	19.0	1.1	128.0	3.0	0.0	Vert	PK	0.0	56.4	74.0	-17.6	Ch 4/8 (2437MHz), MCS15, EUT on Side
7311.490	37.2	19.0	1.0	6.0	3.0	0.0	Horz	PK	0.0	56.2	74.0	-17.8	Ch 4/8 (2437MHz), MCS15, EUT Horizontal
4871.830	23.2	10.4	1.2	56.0	3.0	0.0	Vert	AV	0.0	33.6	54.0	-20.4	Ch 4/8 (2437MHz), MCS15, EUT on Side
4901.700	22.6	10.5	1.1	115.0	3.0	0.0	Vert	AV	0.0	33.1	54.0	-20.9	Ch 7/11 (2452MHz), MCS15, EUT on Side
4871.630	22.7	10.4	1.1	334.0	3.0	0.0	Horz	AV	0.0	33.1	54.0	-20.9	Ch 4/8 (2437MHz), MCS15, EUT Horizontal
4841.460	22.7	10.3	3.2	358.0	3.0	0.0	Vert	AV	0.0	33.0	54.0	-21.0	Ch 1/5 (2422MHz), MCS15, EUT on Side
4901.610	22.5	10.5	1.3	150.0	3.0	0.0	Vert	AV	0.0	33.0	54.0	-21.0	Ch 7/11 (2452MHz), MCS7, EUT on Side
4841.020	22.7	10.3	1.1	333.0	3.0	0.0	Horz	AV	0.0	33.0	54.0	-21.0	Ch 1/5 (2422MHz), MCS15, EUT Horizontal
4901.260	22.5	10.5	1.6	58.0	3.0	0.0	Horz	AV	0.0	33.0	54.0	-21.0	Ch 7/11 (2452MHz), MCS7, EUT Vertical
4901.000	22.5	10.5	1.1	115.0	3.0	0.0	Vert	AV	0.0	33.0	54.0	-21.0	Ch 7/11 (2452MHz), MCS8, EUT on Side
4901.960	22.4	10.5	2.7	213.0	3.0	0.0	Horz	AV	0.0	32.9	54.0	-21.1	Ch 7/11 (2452MHz), MCS8, EUT Horizontal
4901.570	22.4	10.5	2.7	213.0	3.0	0.0	Horz	AV	0.0	32.9	54.0	-21.1	Ch 7/11 (2452MHz), MCS15, EUT Horizontal
4901.450	22.4	10.5	2.1	330.0	3.0	0.0	Vert	AV	0.0	32.9	54.0	-21.1	Ch 7/11 (2452MHz), MCS8, EUT Horizontal
4901.370	22.4	10.5	2.1	330.0	3.0	0.0	Vert	AV	0.0	32.9	54.0	-21.1	Ch 7/11 (2452MHz), MCS15, EUT Horizontal
4901.170	22.4	10.5	1.1	125.0	3.0	0.0	Horz	AV	0.0	32.9	54.0	-21.1	Ch 7/11 (2452MHz), MCS15, EUT Vertical
4901.160	22.4	10.5	1.1	266.0	3.0	0.0	Vert	AV	0.0	32.9	54.0	-21.1	Ch 7/11 (2452MHz), MCS15, EUT Vertical
4901.150	22.4	10.5	1.6	58.0	3.0	0.0	Horz	AV	0.0	32.9	54.0	-21.1	Ch 7/11 (2452MHz), MCS0, EUT Vertical
4901.110	22.4	10.5	1.1	238.0	3.0	0.0	Horz	AV	0.0	32.9	54.0	-21.1	Ch 7/11 (2452MHz), MCS15, EUT on Side
4901.120	22.4	10.5	1.1	266.0	3.0	0.0	Vert	AV	0.0	32.9	54.0	-21.1	Ch 7/11 (2452MHz), MCS8, EUT Vertical
4901.060	22.4	10.5	1.1	125.0	3.0	0.0	Horz	AV	0.0	32.9	54.0	-21.1	Ch 7/11 (2452MHz), MCS8, EUT Vertical
4901.030	22.4	10.5	1.1	238.0	3.0	0.0	Horz	AV	0.0	32.9	54.0	-21.1	Ch 7/11 (2452MHz), MCS8, EUT on Side
4901.020	22.4	10.5	1.3	150.0	3.0	0.0	Vert	AV	0.0	32.9	54.0	-21.1	Ch 7/11 (2452MHz), MCS0, EUT on Side
4902.290	37.4	10.5	2.1	330.0	3.0	0.0	Vert	PK	0.0	47.9	74.0	-26.1	Ch 7/11 (2452MHz), MCS15, EUT Horizontal
4871.920	37.4	10.4	1.2	56.0	3.0	0.0	Vert	PK	0.0	47.8	74.0	-26.2	Ch 4/8 (2437MHz), MCS15, EUT on Side

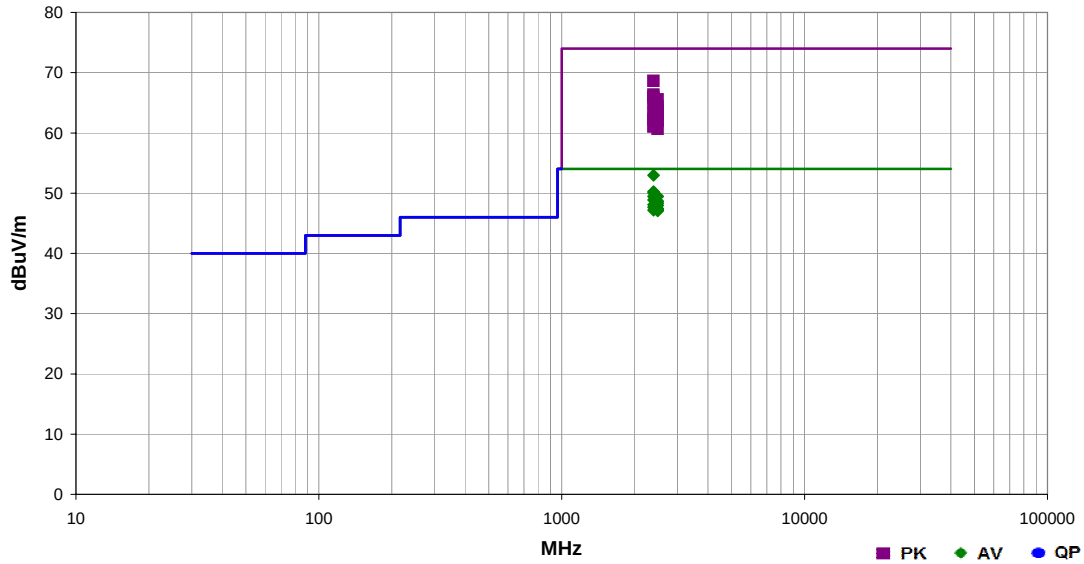
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
4906.190	37.2	10.5	1.6	58.0	3.0	0.0	Horz	PK	0.0	47.7	74.0	-26.3	Ch 7/11 (2452MHz), MCS7, EUT Vertical
4904.990	37.2	10.5	1.6	58.0	3.0	0.0	Horz	PK	0.0	47.7	74.0	-26.3	Ch 7/11 (2452MHz), MCS0, EUT Vertical
4845.010	37.3	10.3	1.1	333.0	3.0	0.0	Horz	PK	0.0	47.6	74.0	-26.4	Ch 1/5 (2422MHz), MCS15, EUT Horizontal
4902.590	37.1	10.5	1.1	125.0	3.0	0.0	Horz	PK	0.0	47.6	74.0	-26.4	Ch 7/11 (2452MHz), MCS8, EUT Vertical
4841.350	37.3	10.3	3.2	358.0	3.0	0.0	Vert	PK	0.0	47.6	74.0	-26.4	Ch 1/5 (2422MHz), MCS15, EUT on Side
4906.310	37.0	10.5	1.1	266.0	3.0	0.0	Vert	PK	0.0	47.5	74.0	-26.5	Ch 7/11 (2452MHz), MCS8, EUT Vertical
4904.020	37.0	10.5	2.7	213.0	3.0	0.0	Horz	PK	0.0	47.5	74.0	-26.5	Ch 7/11 (2452MHz), MCS15, EUT Horizontal
4873.340	37.1	10.4	1.1	334.0	3.0	0.0	Horz	PK	0.0	47.5	74.0	-26.5	Ch 4/8 (2437MHz), MCS15, EUT Horizontal
4906.040	36.9	10.5	1.3	150.0	3.0	0.0	Vert	PK	0.0	47.4	74.0	-26.6	Ch 7/11 (2452MHz), MCS7, EUT on Side
4906.410	36.7	10.5	1.1	238.0	3.0	0.0	Horz	PK	0.0	47.2	74.0	-26.8	Ch 7/11 (2452MHz), MCS15, EUT on Side
4906.040	36.7	10.5	1.1	125.0	3.0	0.0	Horz	PK	0.0	47.2	74.0	-26.8	Ch 7/11 (2452MHz), MCS15, EUT Vertical
4902.260	36.7	10.5	1.1	115.0	3.0	0.0	Vert	PK	0.0	47.2	74.0	-26.8	Ch 7/11 (2452MHz), MCS15, EUT on Side
4901.180	36.7	10.5	1.1	266.0	3.0	0.0	Vert	PK	0.0	47.2	74.0	-26.8	Ch 7/11 (2452MHz), MCS15, EUT Vertical
4904.360	36.5	10.5	1.1	115.0	3.0	0.0	Vert	PK	0.0	47.0	74.0	-27.0	Ch 7/11 (2452MHz), MCS8, EUT on Side
4901.680	36.4	10.5	1.1	238.0	3.0	0.0	Horz	PK	0.0	46.9	74.0	-27.1	Ch 7/11 (2452MHz), MCS8, EUT on Side
4902.370	36.3	10.5	2.7	213.0	3.0	0.0	Horz	PK	0.0	46.8	74.0	-27.2	Ch 7/11 (2452MHz), MCS8, EUT Horizontal
4901.420	36.3	10.5	2.1	330.0	3.0	0.0	Vert	PK	0.0	46.8	74.0	-27.2	Ch 7/11 (2452MHz), MCS8, EUT Horizontal
4906.610	36.0	10.5	1.3	150.0	3.0	0.0	Vert	PK	0.0	46.5	74.0	-27.5	Ch 7/11 (2452MHz), MCS0, EUT on Side
12108.020	29.9	-4.8	1.0	12.0	3.0	0.0	Vert	AV	0.0	25.1	54.0	-28.9	Ch 1/5 (2422MHz), MCS15, EUT on Side
12183.000	29.3	-4.3	1.1	326.0	3.0	0.0	Vert	AV	0.0	25.0	54.0	-29.0	Ch 4/8 (2437MHz), MCS15, EUT on Side
12258.110	28.8	-3.8	1.0	114.0	3.0	0.0	Vert	AV	0.0	25.0	54.0	-29.0	Ch 7/11 (2452MHz), MCS15, EUT on Side
12258.020	28.8	-3.8	1.5	137.0	3.0	0.0	Horz	AV	0.0	25.0	54.0	-29.0	Ch 7/11 (2452MHz), MCS15, EUT Horizontal
12108.110	29.7	-4.8	1.0	200.0	3.0	0.0	Horz	AV	0.0	24.9	54.0	-29.1	Ch 1/5 (2422MHz), MCS15, EUT Horizontal
12183.000	29.2	-4.3	1.0	193.0	3.0	0.0	Horz	AV	0.0	24.9	54.0	-29.1	Ch 4/8 (2437MHz), MCS15, EUT Horizontal
12261.030	41.8	-3.8	1.5	137.0	3.0	0.0	Horz	PK	0.0	38.0	74.0	-36.0	Ch 7/11 (2452MHz), MCS15, EUT Horizontal
12186.950	42.2	-4.3	1.1	326.0	3.0	0.0	Vert	PK	0.0	37.9	74.0	-36.1	Ch 4/8 (2437MHz), MCS15, EUT on Side
12183.160	42.2	-4.3	1.0	193.0	3.0	0.0	Horz	PK	0.0	37.9	74.0	-36.1	Ch 4/8 (2437MHz), MCS15, EUT Horizontal
12111.530	42.6	-4.8	1.0	200.0	3.0	0.0	Horz	PK	0.0	37.8	74.0	-36.2	Ch 1/5 (2422MHz), MCS15, EUT Horizontal
12109.940	42.5	-4.8	1.0	12.0	3.0	0.0	Vert	PK	0.0	37.7	74.0	-36.3	Ch 1/5 (2422MHz), MCS15, EUT on Side
12261.950	41.2	-3.8	1.0	114.0	3.0	0.0	Vert	PK	0.0	37.4	74.0	-36.6	Ch 7/11 (2452MHz), MCS15, EUT on Side

SPURIOUS RADIATED EMISSIONS

Work Order:	MCSO1631	**Date:**	11/08/12		
Project:	None	**Temperature:**	20.4 °C		
Job Site:	EV01	**Humidity:**	39% RH		
Serial Number:	000012424053	**Barometric Pres.:**	1009 mbar	**Tested by:**	Carl Engholm, Rod Peloquin
EUT:	1514				
Configuration:	1				
Customer:	Microsoft Corporation				
Attendees:	Mike Boucher				
EUT Power:	110VAC/60Hz				
Operating Mode:	Continuous TX 802.11b/g/n, 100% duty cycle, 12dBm power level.				
Deviations:	None				
Comments:	See comments for channel, data rate, and EUT orientation.				

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

Run #	53	**Test Distance (m)**	3	**Antenna Height(s)**	1-4m	**Results**	Pass



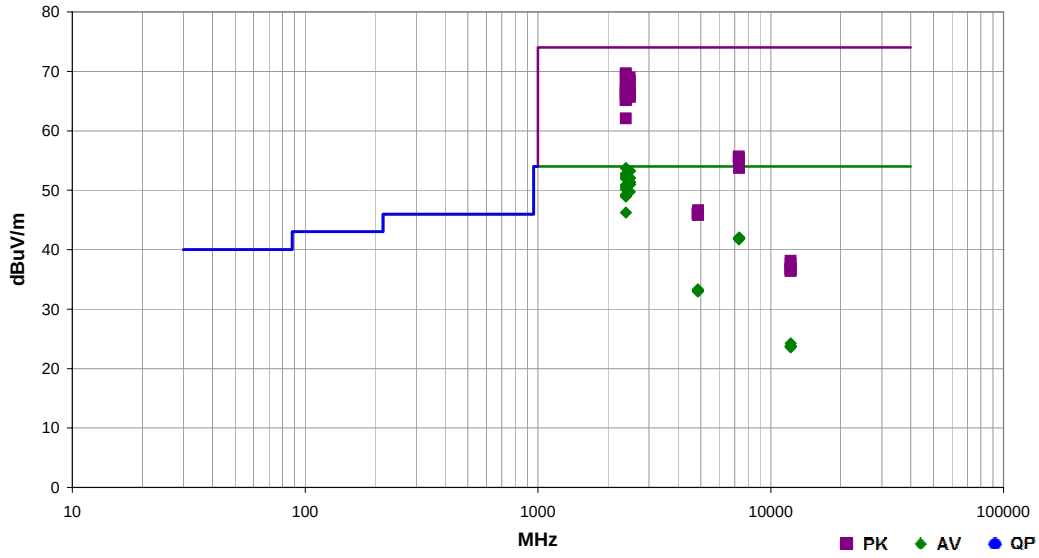
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
2388.103	31.4	1.6	1.2	306.0	3.0	20.0	Horz	AV	0.0	53.0	54.0	-1.0	CH 1/5 (2422MHz), MSC15, EUT Vertical
2388.930	28.7	1.6	1.1	203.0	3.0	20.0	Vert	AV	0.0	50.3	54.0	-3.8	CH 1/5 (2422MHz), MSC15, EUT Vertical
2389.293	28.5	1.5	1.2	308.0	3.0	20.0	Horz	AV	0.0	50.0	54.0	-4.0	CH 1/5 (2422MHz), MSC8, EUT Vertical
2483.500	27.6	1.9	1.1	317.0	3.0	20.0	Horz	AV	0.0	49.5	54.0	-4.5	CH 7/11 (2452MHz), MSC15, EUT Vertical
2389.253	27.9	1.5	1.1	317.0	3.0	20.0	Horz	AV	0.0	49.4	54.0	-4.6	CH 1/5 (2422MHz), MSC7, EUT Vertical
2389.237	27.3	1.5	1.4	252.0	3.0	20.0	Vert	AV	0.0	48.8	54.0	-5.2	CH 1/5 (2422MHz), MSC7, EUT Vertical
2484.613	26.8	1.9	1.3	250.0	3.0	20.0	Vert	AV	0.0	48.7	54.0	-5.3	CH 7/11 (2452MHz), MSC15, EUT Vertical
2388.053	47.1	1.6	1.2	306.0	3.0	20.0	Horz	PK	0.0	68.7	74.0	-5.3	CH 1/5 (2422MHz), MSC15, EUT Vertical
2483.177	26.5	1.9	1.2	259.0	3.0	20.0	Vert	AV	0.0	48.4	54.0	-5.6	CH 7/11 (2452MHz), MSC7, EUT Vertical
2389.323	26.5	1.5	0.9	257.0	3.0	20.0	Vert	AV	0.0	48.0	54.0	-6.0	CH 1/5 (2422MHz), MSC8, EUT Vertical
2483.287	26.1	1.9	1.5	339.0	3.0	20.0	Horz	AV	0.0	48.0	54.0	-6.0	CH 7/11 (2452MHz), MSC7, EUT Vertical
2389.613	26.1	1.5	1.1	317.0	3.0	20.0	Horz	AV	0.0	47.6	54.0	-6.4	CH 1/5 (2422MHz), MSC0, EUT Vertical
2483.933	25.6	1.9	1.1	317.0	3.0	20.0	Horz	AV	0.0	47.5	54.0	-6.5	CH 7/11 (2452MHz), MSC8, EUT Vertical
2482.633	25.5	1.9	1.2	259.0	3.0	20.0	Vert	AV	0.0	47.4	54.0	-6.6	CH 7/11 (2452MHz), MSC0, EUT Vertical
2483.510	25.3	1.9	1.3	250.0	3.0	20.0	Vert	AV	0.0	47.2	54.0	-6.8	CH 7/11 (2452MHz), MSC8, EUT Vertical
2389.587	25.6	1.5	1.4	252.0	3.0	20.0	Vert	AV	0.0	47.1	54.0	-6.9	CH 1/5 (2422MHz), MSC0, EUT Vertical
2482.550	25.2	1.9	1.5	339.0	3.0	20.0	Horz	AV	0.0	47.1	54.0	-6.9	CH 7/11 (2452MHz), MSC0, EUT Vertical
2388.167	44.8	1.6	1.1	317.0	3.0	20.0	Horz	PK	0.0	66.4	74.0	-7.6	CH 1/5 (2422MHz), MSC7, EUT Vertical
2389.920	44.4	1.5	1.2	308.0	3.0	20.0	Horz	PK	0.0	65.9	74.0	-8.1	CH 1/5 (2422MHz), MSC8, EUT Vertical
2483.780	43.7	1.9	1.1	317.0	3.0	20.0	Horz	PK	0.0	65.6	74.0	-8.4	CH 7/11 (2452MHz), MSC15, EUT Vertical
2388.083	43.5	1.6	1.4	252.0	3.0	20.0	Vert	PK	0.0	65.1	74.0	-8.9	CH 1/5 (2422MHz), MSC7, EUT Vertical
2483.453	42.5	1.9	1.2	259.0	3.0	20.0	Vert	PK	0.0	64.4	74.0	-9.6	CH 7/11 (2452MHz), MSC7, EUT Vertical
2484.127	41.7	1.9	1.3	250.0	3.0	20.0	Vert	PK	0.0	63.6	74.0	-10.4	CH 7/11 (2452MHz), MSC15, EUT Vertical
2483.160	41.7	1.9	1.5	339.0	3.0	20.0	Horz	PK	0.0	63.6	74.0	-10.4	CH 7/11 (2452MHz), MSC7, EUT Vertical
2484.467	41.4	1.9	1.1	317.0	3.0	20.0	Horz	PK	0.0	63.3	74.0	-10.7	CH 7/11 (2452MHz), MSC8, EUT Vertical
2389.977	41.6	1.5	0.9	257.0	3.0	20.0	Vert	PK	0.0	63.1	74.0	-10.9	CH 1/5 (2422MHz), MSC8, EUT Vertical
2389.577	40.7	1.5	1.1	317.0	3.0	20.0	Horz	PK	0.0	62.2	74.0	-11.8	CH 1/5 (2422MHz), MSC0, EUT Vertical
2482.637	40.3	1.9	1.5	339.0	3.0	20.0	Horz	PK	0.0	62.2	74.0	-11.8	CH 7/11 (2452MHz), MSC0, EUT Vertical
2484.010	40.1	1.9	1.3	250.0	3.0	20.0	Vert	PK	0.0	62.0	74.0	-12.0	CH 7/11 (2452MHz), MSC8, EUT Vertical
2388.770	39.5	1.6	1.4	252.0	3.0	20.0	Vert	PK	0.0	61.1	74.0	-12.9	CH 1/5 (2422MHz), MSC0, EUT Vertical
2482.717	38.8	1.9	1.2	259.0	3.0	20.0	Vert	PK	0.0	60.7	74.0	-13.3	CH 7/11 (2452MHz), MSC0, EUT Vertical

SPURIOUS RADIATED EMISSIONS

Work Order:	MCSO1631	**Date:**	11/26/12		
Project:	None	**Temperature:**	20.4 °C		
Job Site:	EV01	**Humidity:**	32% RH		
Serial Number:	000092324253	**Barometric Pres.:**	1019 mbar	**Tested by:**	Dan Haas, Carl Engholm
EUT:	1514				
Configuration:	2				
Customer:	Microsoft Corporation				
Attendees:	Mike Boucher				
EUT Power:	110VAC/60Hz				
Operating Mode:	Continuous TX 802.11b/g/n, 100% duty cycle.				
Deviations:	None				
Comments:	See comments for channel, data rate, power level, and EUT orientation.				

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

Run #	100	**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
2388.095	32.2	1.6	1.0	267.0	3.0	20.0	Horz	AV	0.0	53.8	54.0	-0.2	Ch 1/5 (2422MHz), MCS15, 12dBm, EUT Horizontal
2484.770	31.4	1.9	1.1	308.0	3.0	20.0	Horz	AV	0.0	53.3	54.0	-0.7	Ch 7/11 (2452MHz), MCS15, 12dBm, EUT Vertical
2390.000	31.2	1.5	1.6	317.0	3.0	20.0	Horz	AV	0.0	52.7	54.0	-1.3	Ch 1 (2412MHz), MCS15, 16dBm, EUT Vertical
2388.435	30.9	1.6	1.5	90.0	3.0	20.0	Horz	AV	0.0	52.5	54.0	-1.5	Ch 1/5 (2422MHz), MCS15, 12dBm, EUT on Side
2484.675	30.2	1.9	1.0	254.0	3.0	20.0	Horz	AV	0.0	52.1	54.0	-1.9	Ch 7/11 (2452MHz), MCS15, 12dBm, EUT Horizontal
2387.125	30.5	1.6	1.9	309.0	3.0	20.0	Vert	AV	0.0	52.1	54.0	-1.9	Ch 1/5 (2422MHz), MCS15, 12dBm, EUT Horizontal
2388.785	30.4	1.6	1.0	320.0	3.0	20.0	Horz	AV	0.0	52.0	54.0	-2.0	Ch 1/5 (2422MHz), MCS15, 11dBm, EUT Vertical
2484.735	29.5	1.9	1.8	303.0	3.0	20.0	Vert	AV	0.0	51.4	54.0	-2.6	Ch 7/11 (2452MHz), MCS15, 12dBm, EUT Horizontal
2485.175	29.1	1.9	1.2	289.0	3.0	20.0	Vert	AV	0.0	51.0	54.0	-3.0	Ch 7/11 (2452MHz), MCS15, 12dBm, EUT Vertical
2390.000	29.3	1.5	1.0	256.0	3.0	20.0	Horz	AV	0.0	50.8	54.0	-3.2	Ch 1 (2412MHz), MCS15, 16dBm, EUT Horizontal
2389.025	29.0	1.5	1.0	271.0	3.0	20.0	Vert	AV	0.0	50.5	54.0	-3.5	Ch 1/5 (2422MHz), MCS15, 11dBm, EUT Vertical
2390.000	28.6	1.5	1.0	264.0	3.0	20.0	Vert	AV	0.0	50.1	54.0	-3.9	Ch 1 (2412MHz), MCS15, 16dBm, EUT Vertical
2483.500	27.9	1.9	1.1	322.0	3.0	20.0	Horz	AV	0.0	49.8	54.0	-4.2	Ch 11 (2462MHz), MCS15, 16dBm, EUT Vertical
2387.565	48.1	1.6	1.0	267.0	3.0	20.0	Horz	PK	0.0	69.7	74.0	-4.3	Ch 1/5 (2422MHz), MCS15, 12dBm, EUT Horizontal
2389.915	47.9	1.5	1.6	317.0	3.0	20.0	Horz	PK	0.0	69.4	74.0	-4.6	Ch 1 (2412MHz), MCS15, 16dBm, EUT Vertical
2388.365	27.7	1.6	1.4	338.0	3.0	20.0	Vert	AV	0.0	49.3	54.0	-4.7	Ch 1/5 (2422MHz), MCS15, 12dBm, EUT on Side
2390.000	27.6	1.5	1.2	57.0	3.0	20.0	Horz	AV	0.0	49.1	54.0	-4.9	Ch 1 (2412MHz), MCS15, 16dBm, EUT on Side
2388.550	27.5	1.6	1.4	315.0	3.0	20.0	Horz	AV	0.0	49.1	54.0	-4.9	Ch 1 (2412MHz), MCS8, 16dBm, EUT Vertical
2483.530	47.1	1.9	1.1	322.0	3.0	20.0	Horz	PK	0.0	69.0	74.0	-5.0	Ch 11 (2462MHz), MCS15, 16dBm, EUT Vertical
2389.995	27.4	1.5	1.5	312.0	3.0	20.0	Vert	AV	0.0	48.9	54.0	-5.1	Ch 1 (2412MHz), MCS15, 16dBm, EUT Horizontal
2387.140	47.2	1.6	1.5	90.0	3.0	20.0	Horz	PK	0.0	68.8	74.0	-5.2	Ch 1/5 (2422MHz), MCS15, 12dBm, EUT on Side
2484.595	46.5	1.9	1.1	308.0	3.0	20.0	Horz	PK	0.0	68.4	74.0	-5.6	Ch 7/11 (2452MHz), MCS15, 12dBm, EUT Vertical
2389.970	46.2	1.5	1.0	256.0	3.0	20.0	Horz	PK	0.0	67.7	74.0	-6.3	Ch 1 (2412MHz), MCS15, 16dBm, EUT Horizontal
2389.955	45.6	1.5	1.0	264.0	3.0	20.0	Vert	PK	0.0	67.1	74.0	-6.9	Ch 1 (2412MHz), MCS15, 16dBm, EUT Vertical
2387.705	45.5	1.6	1.9	309.0	3.0	20.0	Vert	PK	0.0	67.1	74.0	-6.9	Ch 1/5 (2422MHz), MCS15, 12dBm, EUT Horizontal
2388.635	45.0	1.6	1.0	320.0	3.0	20.0	Horz	PK	0.0	66.6	74.0	-7.4	Ch 1/5 (2422MHz), MCS15, 11dBm, EUT Vertical
2484.505	44.6	1.9	1.0	254.0	3.0	20.0	Horz	PK	0.0	66.5	74.0	-7.5	Ch 7/11 (2452MHz), MCS15, 12dBm, EUT Horizontal
2387.570	44.8	1.6	1.4	315.0	3.0	20.0	Horz	PK	0.0	66.4	74.0	-7.6	Ch 1 (2412MHz), MCS8, 16dBm, EUT Vertical
2390.000	24.7	1.5	1.1	172.0	3.0	20.0	Vert	AV	0.0	46.2	54.0	-7.8	Ch 1 (2412MHz), MCS15, 16dBm, EUT on Side
2484.775	44.3	1.9	1.8	303.0	3.0	20.0	Vert	PK	0.0	66.2	74.0	-7.8	Ch 7/11 (2452MHz), MCS15, 12dBm, EUT Horizontal
2390.000	44.5	1.5	1.2	57.0	3.0	20.0	Horz	PK	0.0	66.0	74.0	-8.0	Ch 1 (2412MHz), MCS15, 16dBm, EUT on Side
2485.045	43.8	1.9	1.2	289.0	3.0	20.0	Vert	PK	0.0	65.7	74.0	-8.3	Ch 7/11 (2452MHz), MCS15, 12dBm, EUT Vertical
2389.090	43.7	1.5	1.0	271.0	3.0	20.0	Vert	PK	0.0	65.2	74.0	-8.8	Ch 1/5 (2422MHz), MCS15, 11dBm, EUT Vertical
2389.880	43.7	1.5	1.5	312.0	3.0	20.0	Vert	PK	0.0	65.2	74.0	-8.8	Ch 1 (2412MHz), MCS15, 16dBm, EUT Horizontal
2387.610	43.6	1.6	1.4	338.0	3.0	20.0	Vert	PK	0.0	65.2	74.0	-8.8	Ch 1/5 (2422MHz), MCS15, 12dBm, EUT on Side
7312.183	23.1	19.0	1.1	44.0	3.0	0.0	Horz	AV	0.0	42.1	54.0	-11.9	Ch 4/8 (2437MHz), MCS15, 16dBm, EUT Vertical

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
2389.950	40.5	1.5	1.1	172.0	3.0	20.0	Vert	PK	0.0	62.0	74.0	-12.0	Ch 1 (2412MHz), MCS15, 16dBm, EUT on Side
7312.683	23.0	19.0	2.0	41.0	3.0	0.0	Vert	AV	0.0	42.0	54.0	-12.0	Ch 4/8 (2437MHz), MCS15, 16dBm, EUT on Side
7311.850	23.0	19.0	1.1	114.0	3.0	0.0	Horz	AV	0.0	42.0	54.0	-12.0	Ch 4/8 (2437MHz), MCS15, 16dBm, EUT Horizontal
7311.767	23.0	19.0	1.1	195.0	3.0	0.0	Vert	AV	0.0	42.0	54.0	-12.0	Ch 4/8 (2437MHz), MCS15, 16dBm, EUT Horizontal
7310.933	23.0	19.0	3.7	348.0	3.0	0.0	Horz	AV	0.0	42.0	54.0	-12.0	Ch 4/8 (2437MHz), MCS15, 16dBm, EUT on Side
7306.000	22.8	18.9	3.5	185.0	3.0	0.0	Vert	AV	0.0	41.7	54.0	-12.3	Ch 4/8 (2437MHz), MCS15, 16dBm, EUT Vertical
7308.350	36.7	18.9	1.1	114.0	3.0	0.0	Horz	PK	0.0	55.6	74.0	-18.4	Ch 4/8 (2437MHz), MCS15, 16dBm, EUT Horizontal
7312.417	36.4	19.0	1.1	195.0	3.0	0.0	Vert	PK	0.0	55.4	74.0	-18.6	Ch 4/8 (2437MHz), MCS15, 16dBm, EUT Horizontal
7306.883	36.3	18.9	2.0	41.0	3.0	0.0	Vert	PK	0.0	55.2	74.0	-18.8	Ch 4/8 (2437MHz), MCS15, 16dBm, EUT on Side
7311.200	36.1	19.0	1.1	44.0	3.0	0.0	Horz	PK	0.0	55.1	74.0	-18.9	Ch 4/8 (2437MHz), MCS15, 16dBm, EUT Vertical
7312.783	35.9	19.0	3.7	348.0	3.0	0.0	Horz	PK	0.0	54.9	74.0	-19.1	Ch 4/8 (2437MHz), MCS15, 16dBm, EUT on Side
7310.653	34.8	19.0	3.5	185.0	3.0	0.0	Vert	PK	0.0	53.8	74.0	-20.2	Ch 4/8 (2437MHz), MCS15, 16dBm, EUT Vertical
4871.683	22.9	10.4	1.2	13.0	3.0	0.0	Horz	AV	0.0	33.3	54.0	-20.7	Ch 4/8 (2437MHz), MCS15, 16dBm, EUT Vertical
4871.683	22.7	10.4	1.1	341.0	3.0	0.0	Vert	AV	0.0	33.1	54.0	-20.9	Ch 4/8 (2437MHz), MCS15, 16dBm, EUT Vertical
4870.567	22.7	10.4	1.1	214.0	3.0	0.0	Vert	AV	0.0	33.1	54.0	-20.9	Ch 4/8 (2437MHz), MCS15, 16dBm, EUT on Side
4869.550	22.6	10.4	1.4	233.0	3.0	0.0	Horz	AV	0.0	33.0	54.0	-21.0	Ch 4/8 (2437MHz), MCS15, 16dBm, EUT Horizontal
4869.117	22.6	10.4	1.1	143.0	3.0	0.0	Vert	AV	0.0	33.0	54.0	-21.0	Ch 4/8 (2437MHz), MCS15, 16dBm, EUT Horizontal
4869.117	22.6	10.4	3.0	71.0	3.0	0.0	Horz	AV	0.0	33.0	54.0	-21.0	Ch 4/8 (2437MHz), MCS15, 16dBm, EUT on Side
4875.717	36.2	10.4	1.1	214.0	3.0	0.0	Vert	PK	0.0	46.6	74.0	-27.4	Ch 4/8 (2437MHz), MCS15, 16dBm, EUT on Side
4869.150	35.8	10.4	1.1	341.0	3.0	0.0	Vert	PK	0.0	46.2	74.0	-27.8	Ch 4/8 (2437MHz), MCS15, 16dBm, EUT Vertical
4869.083	35.7	10.4	1.4	233.0	3.0	0.0	Horz	PK	0.0	46.1	74.0	-27.9	Ch 4/8 (2437MHz), MCS15, 16dBm, EUT Horizontal
4871.017	35.6	10.4	3.0	71.0	3.0	0.0	Horz	PK	0.0	46.0	74.0	-28.0	Ch 4/8 (2437MHz), MCS15, 16dBm, EUT on Side
4872.167	35.5	10.4	1.2	13.0	3.0	0.0	Horz	PK	0.0	45.9	74.0	-28.1	Ch 4/8 (2437MHz), MCS15, 16dBm, EUT Vertical
4877.900	35.4	10.4	1.1	143.0	3.0	0.0	Vert	PK	0.0	45.8	74.0	-28.2	Ch 4/8 (2437MHz), MCS15, 16dBm, EUT Horizontal
12189.170	28.5	-4.3	3.6	324.0	3.0	0.0	Horz	AV	0.0	24.2	54.0	-29.8	Ch 4/8 (2437MHz), MCS15, 16dBm, EUT Horizontal
12185.400	28.1	-4.3	2.2	136.0	3.0	0.0	Horz	AV	0.0	23.8	54.0	-30.2	Ch 4/8 (2437MHz), MCS15, 16dBm, EUT on Side
12189.180	28.0	-4.3	1.1	346.0	3.0	0.0	Vert	AV	0.0	23.7	54.0	-30.3	Ch 4/8 (2437MHz), MCS15, 16dBm, EUT Vertical
12186.650	28.0	-4.3	1.1	10.0	3.0	0.0	Horz	AV	0.0	23.7	54.0	-30.3	Ch 4/8 (2437MHz), MCS15, 16dBm, EUT Vertical
12189.070	27.9	-4.3	1.1	76.0	3.0	0.0	Vert	AV	0.0	23.6	54.0	-30.4	Ch 4/8 (2437MHz), MCS15, 16dBm, EUT on Side
12186.380	27.9	-4.3	1.1	250.0	3.0	0.0	Vert	AV	0.0	23.6	54.0	-30.4	Ch 4/8 (2437MHz), MCS15, 16dBm, EUT Horizontal
12189.230	42.4	-4.3	1.1	346.0	3.0	0.0	Vert	PK	0.0	38.1	74.0	-35.9	Ch 4/8 (2437MHz), MCS15, 16dBm, EUT Vertical
12186.380	41.9	-4.3	1.1	10.0	3.0	0.0	Horz	PK	0.0	37.6	74.0	-36.4	Ch 4/8 (2437MHz), MCS15, 16dBm, EUT Vertical
12182.680	41.2	-4.3	2.2	136.0	3.0	0.0	Horz	PK	0.0	36.9	74.0	-37.1	Ch 4/8 (2437MHz), MCS15, 16dBm, EUT on Side
12189.480	40.9	-4.3	1.1	76.0	3.0	0.0	Vert	PK	0.0	36.6	74.0	-37.4	Ch 4/8 (2437MHz), MCS15, 16dBm, EUT on Side
12186.020	40.9	-4.3	3.6	324.0	3.0	0.0	Horz	PK	0.0	36.6	74.0	-37.4	Ch 4/8 (2437MHz), MCS15, 16dBm, EUT Horizontal
12183.900	40.7	-4.3	1.1	250.0	3.0	0.0	Vert	PK	0.0	36.4	74.0	-37.6	Ch 4/8 (2437MHz), MCS15, 16dBm, EUT Horizontal

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

Continuous Tx 802.11a, 100% duty cycle, 13dBm power level

POWER SETTINGS INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

MCSO1631 - 2

MCSO1631 - 1

FREQUENCY RANGE INVESTIGATED

Start Frequency	30 MHz	Stop Frequency	40 GHz

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
Antenna, Horn	EMCO	3115	AHE	NCR	0 mo
OC Cable	ESM Cable Corp.	KMKM-72	OCV	6/28/2012	12 mo
Pre-Amplifier	Miteq	JSW45-26004000-40-5P	AVR	6/28/2012	12 mo
Antenna, Horn	ETS Lindgren	3160-10	AIW	NCR	0 mo
Cable	ESM Cable Corp.	KMKM-72	EVY	9/11/2012	12 mo
Pre-Amplifier	Miteq	AMF-6F-18002650-25-10P	AVU	9/11/2012	12 mo
Antenna, Horn	ETS Lindgren	3160-09	AIV	NCR	0 mo
Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	AVD	2/28/2012	12 mo
Antenna, Horn	ETS	3160-08	AHV	NCR	0 mo
EV01 Cables	N/A	Standard Gain Horns Cables	EVF	2/28/2012	12 mo
Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AVC	2/28/2012	12 mo
Antenna, Horn	ETS	3160-07	AHU	NCR	0 mo
EV01 Cables	N/A	Double Ridge Horn Cables	EVB	6/27/2012	12 mo
Pre-Amplifier	Miteq	AMF-4D-010100-24-10P	APW	6/27/2012	12 mo
Antenna, Horn	ETS	3115	AIZ	1/24/2011	24 mo
EV01 Cables	N/A	Bilog Cables	EVA	6/26/2012	12 mo
Pre-Amplifier	Miteq	AM-1616-1000	AOL	6/26/2012	12 mo
Antenna, Biconilog	EMCO	3141	AXG	4/10/2012	12 mo
Spectrum Analyzer	Agilent	E4446A	AAQ	2/7/2012	12 mo

MEASUREMENT BANDWIDTHS

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

TEST DESCRIPTION

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

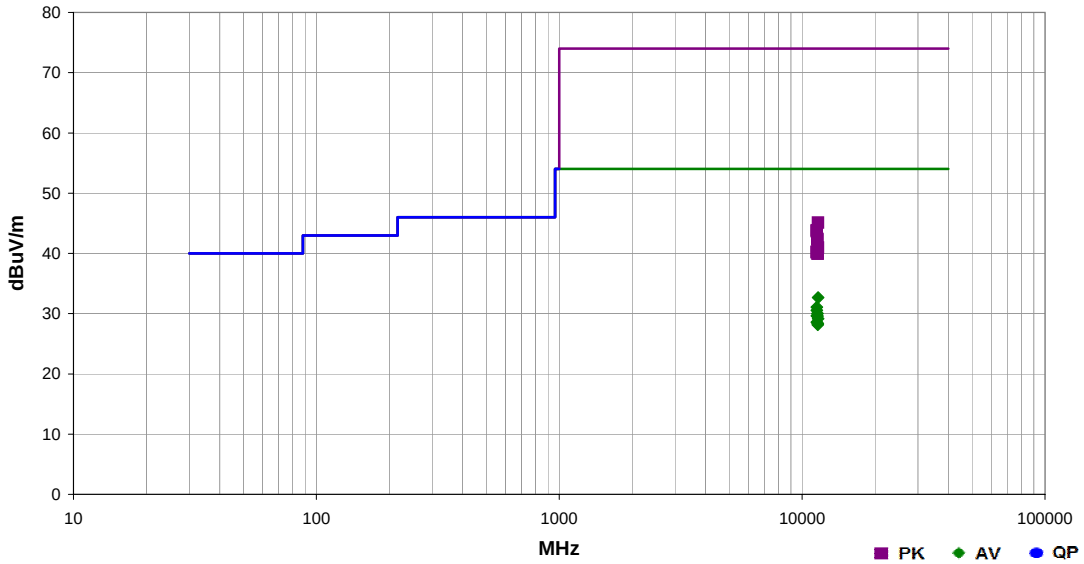
Please refer to the Power Table located elsewhere in this report for radio power operating level during testing

SPURIOUS RADIATED EMISSIONS

Work Order:	MCSO1631	**Date:**	11/12/12		
Project:	None	**Temperature:**	18.5 °C		
Job Site:	EV01	**Humidity:**	46% RH		
Serial Number:	000012424053	**Barometric Pres.:**	1022 mbar	**Tested by:**	Carl Engholm, Rod Peloquin
EUT:	1514				
Configuration:	1				
Customer:	Microsoft Corporation				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Continuous Tx 802.11a, 100% duty cycle, 13dBm power level				
Deviations:	None				
Comments:	See comments below for channel, data rate, and EUT orientation.				

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

Run #	58	**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
11650.080	39.0	-6.3	1.4	54.0	3.0	0.0	Vert	AV	0.0	32.7	54.0	-21.3	CH 165 (5825MHz), 6 Mbps, EUT On Side
11490.150	37.8	-6.7	1.4	-1.0	3.0	0.0	Horz	AV	0.0	31.1	54.0	-22.9	CH 149 (5745MHz), 6 Mbps, EUT On Side
11490.030	37.3	-6.7	1.3	62.0	3.0	0.0	Vert	AV	0.0	30.6	54.0	-23.4	CH 149 (5745MHz), 6 Mbps, EUT On Side
11570.130	36.5	-6.5	1.4	19.0	3.0	0.0	Horz	AV	0.0	30.0	54.0	-24.0	CH 157 (5785MHz), 6 Mbps, EUT On Side
11509.500	36.3	-6.6	1.4	15.0	3.0	0.0	Horz	AV	0.0	29.7	54.0	-24.3	CH 149/153 (5755MHz), MCS8, EUT On Side
11570.020	36.1	-6.5	1.3	53.0	3.0	0.0	Vert	AV	0.0	29.6	54.0	-24.4	CH 157 (5785MHz), 6 Mbps, EUT On Side
11650.070	35.5	-6.3	1.4	360.0	3.0	0.0	Horz	AV	0.0	29.2	54.0	-24.8	CH 165 (5825MHz), 6 Mbps, EUT On Side
11509.500	35.2	-6.6	1.3	62.0	3.0	0.0	Vert	AV	0.0	28.6	54.0	-25.4	CH 149/153 (5755MHz), MCS8, EUT On Side
11589.550	34.8	-6.5	1.4	17.0	3.0	0.0	Horz	AV	0.0	28.3	54.0	-25.7	CH 157/161 (5795MHz), MCS8, EUT On Side
11589.500	34.6	-6.5	1.3	52.0	3.0	0.0	Vert	AV	0.0	28.1	54.0	-25.9	CH 157/161 (5795MHz), MCS8, EUT On Side
11648.520	51.4	-6.3	1.4	54.0	3.0	0.0	Vert	PK	0.0	45.1	74.0	-28.9	CH 165 (5825MHz), 6 Mbps, EUT On Side
11486.650	50.6	-6.8	1.3	62.0	3.0	0.0	Vert	PK	0.0	43.8	74.0	-30.2	CH 149 (5745MHz), 6 Mbps, EUT On Side
11490.900	50.4	-6.7	1.4	-1.0	3.0	0.0	Horz	PK	0.0	43.7	74.0	-30.3	CH 149 (5745MHz), 6 Mbps, EUT On Side
11571.170	48.9	-6.5	1.4	19.0	3.0	0.0	Horz	PK	0.0	42.4	74.0	-31.6	CH 157 (5785MHz), 6 Mbps, EUT On Side
11571.300	48.8	-6.5	1.3	53.0	3.0	0.0	Vert	PK	0.0	42.3	74.0	-31.7	CH 157 (5785MHz), 6 Mbps, EUT On Side
11650.450	47.3	-6.3	1.4	360.0	3.0	0.0	Horz	PK	0.0	41.0	74.0	-33.0	CH 165 (5825MHz), 6 Mbps, EUT On Side
11505.400	46.9	-6.6	1.4	15.0	3.0	0.0	Horz	PK	0.0	40.3	74.0	-33.7	CH 149/153 (5755MHz), MCS8, EUT On Side
11503.700	46.8	-6.6	1.3	62.0	3.0	0.0	Vert	PK	0.0	40.2	74.0	-33.8	CH 149/153 (5755MHz), MCS8, EUT On Side
11591.150	46.4	-6.5	1.4	17.0	3.0	0.0	Horz	PK	0.0	39.9	74.0	-34.1	CH 157/161 (5795MHz), MCS8, EUT On Side
11588.700	46.4	-6.5	1.3	52.0	3.0	0.0	Vert	PK	0.0	39.9	74.0	-34.1	CH 157/161 (5795MHz), MCS8, EUT On Side

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

Transmitting

POWER SETTINGS INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

MCSO1638 - 2

SAMPLE CALCULATIONS

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
LISN	Solar	9252-50-R-24-BNC	LIN	4/16/2012	12 mo
Receiver	Rohde & Schwarz	ESCI	ARH	3/29/2012	12 mo
High Pass Filter	TTE	H97-100K-50-720B	HHD	2/1/2012	24 mo
Attenuator	Coaxicom	66702 2910-20	RBR	8/7/2012	12 mo
EV07 Cables	N/A	Conducted Cables	EVG	4/27/2012	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.

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.

Please refer to the Power Table located elsewhere in this report for radio power operating level during testing.

EUT used Antenna port A only

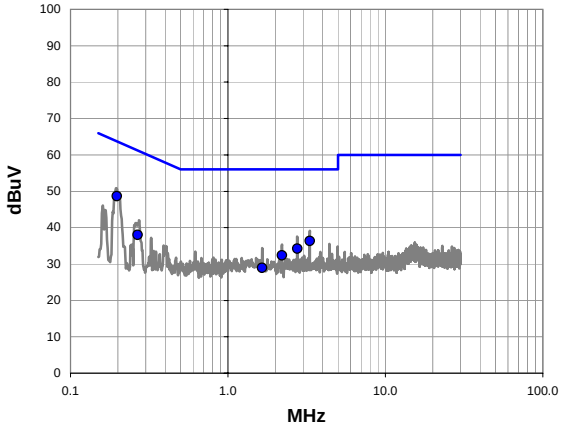
AC POWERLINE CONDUCTED EMISSIONS

Work Order:	MCSO1638	**Date:**	11/13/12		
Project:	None	**Temperature:**	23.1 °C		
Job Site:	EV07	**Humidity:**	48.1% RH		
Serial Number:	6124053	**Barometric Pres.:**	1022 mbar	**Tested by:**	Brandon Hobbs / Sabrina Sanders
EUT:	1514				
Configuration:	2				
Customer:	Microsoft Corporation				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting				
Deviations:	None				
Comments:	1Mbps - 2412Hz (L)				

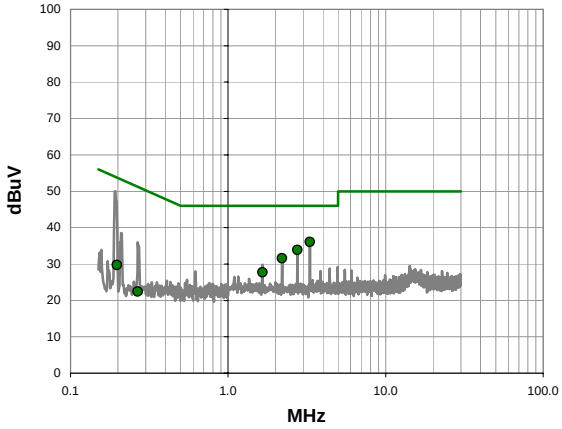
Test Specifications	**Test Method**
FCC 15.207:2012	ANSI C63.10:2009

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)
0.197	28.3	20.4	48.7	63.7	-15.1
3.308	15.8	20.5	36.3	56.0	-19.7
2.756	13.7	20.5	34.2	56.0	-21.8
0.267	17.7	20.3	38.0	61.2	-23.2
2.204	11.9	20.5	32.4	56.0	-23.6
1.652	8.5	20.4	28.9	56.0	-27.1

Average Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
3.308	15.5	20.5	36.0	46.0	-10.0
2.756	13.3	20.5	33.8	46.0	-12.2
2.204	11.1	20.5	31.6	46.0	-14.4
1.652	7.3	20.4	27.7	46.0	-18.3
0.197	9.4	20.4	29.8	53.7	-24.0
0.267	2.1	20.3	22.4	51.2	-28.8

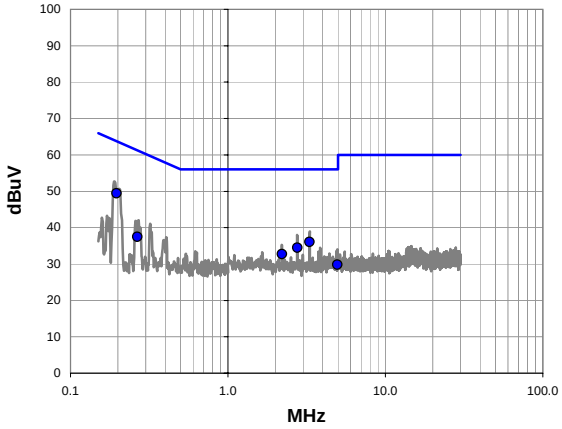
AC POWERLINE CONDUCTED EMISSIONS

Work Order:	MCSO1638	**Date:**	11/13/12		
Project:	None	**Temperature:**	23.1 °C		
Job Site:	EV07	**Humidity:**	48.1% RH		
Serial Number:	6124053	**Barometric Pres.:**	1022 mbar	**Tested by:**	Brandon Hobbs / Sabrina Sanders
EUT:	1514				
Configuration:	2				
Customer:	Microsoft Corporation				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting				
Deviations:	None				
Comments:	1Mbps - 2412Hz (H)				

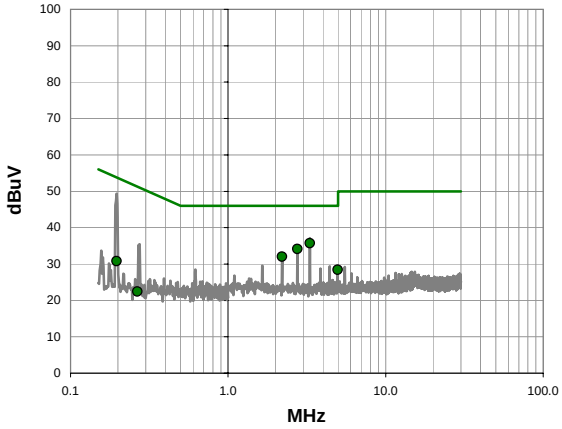
Test Specifications	**Test Method**
FCC 15.207:2012	ANSI C63.10:2009

Run #	18	**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)
0.196	29.1	20.4	49.5	63.8	-14.3
3.304	15.5	20.5	36.0	56.0	-20.0
2.756	14.0	20.5	34.5	56.0	-21.5
2.204	12.2	20.5	32.7	56.0	-23.3
0.266	17.1	20.3	37.4	61.2	-23.8
4.960	9.1	20.7	29.8	56.0	-26.2

Average Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
3.304	15.2	20.5	35.7	46.0	-10.3
2.756	13.6	20.5	34.1	46.0	-11.9
2.204	11.5	20.5	32.0	46.0	-14.0
4.960	7.7	20.7	28.4	46.0	-17.6
0.196	10.4	20.4	30.8	53.8	-23.0
0.266	2.1	20.3	22.4	51.2	-28.8

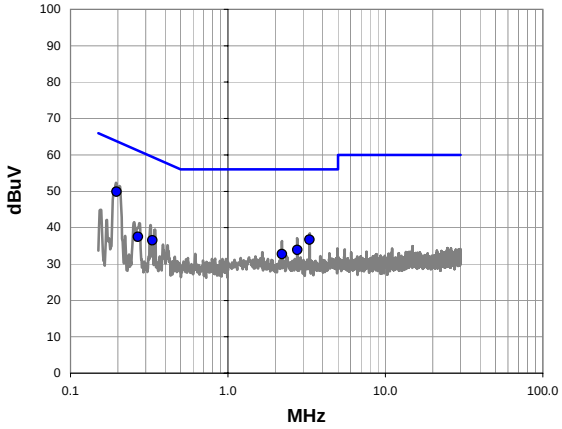
AC POWERLINE CONDUCTED EMISSIONS

Work Order:	MCSO1638	**Date:**	11/13/12		
Project:	None	**Temperature:**	23.1 °C		
Job Site:	EV07	**Humidity:**	48.1% RH		
Serial Number:	6124053	**Barometric Pres.:**	1022 mbar	**Tested by:**	Brandon Hobbs / Sabrina Sanders
EUT:	1514				
Configuration:	2				
Customer:	Microsoft Corporation				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting				
Deviations:	None				
Comments:	1Mbps - 2437Hz (H)				

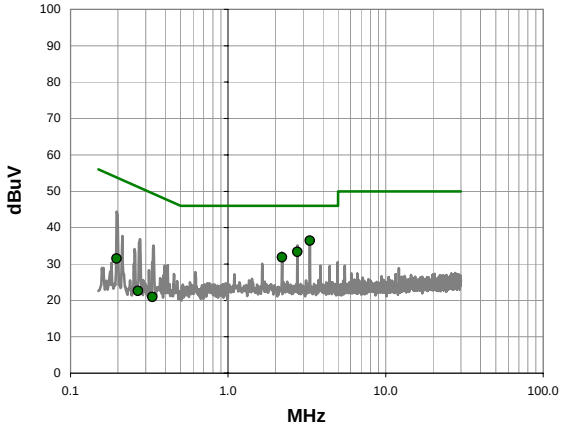
Test Specifications	**Test Method**
FCC 15.207:2012	ANSI C63.10:2009

Run #	19	**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)
0.196	29.5	20.4	49.9	63.8	-13.9
3.304	16.1	20.5	36.6	56.0	-19.4
2.756	13.3	20.5	33.8	56.0	-22.2
0.331	16.2	20.3	36.5	59.4	-22.9
2.204	12.2	20.5	32.7	56.0	-23.3
0.268	17.1	20.3	37.4	61.2	-23.8

Average Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
3.304	15.9	20.5	36.4	46.0	-9.6
2.756	12.8	20.5	33.3	46.0	-12.7
2.204	11.4	20.5	31.9	46.0	-14.1
0.196	11.1	20.4	31.5	53.8	-22.3
0.331	0.6	20.3	20.9	49.4	-28.5
0.268	2.3	20.3	22.6	51.2	-28.6

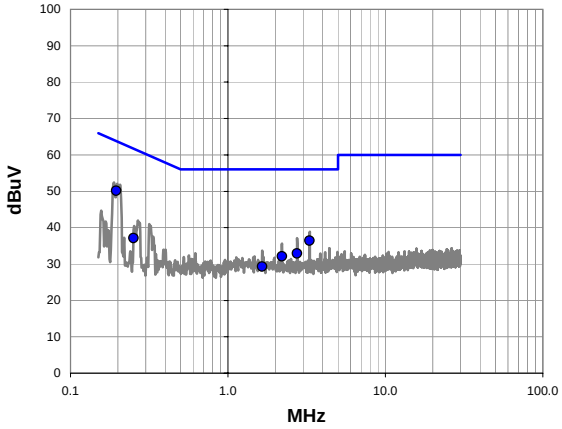
AC POWERLINE CONDUCTED EMISSIONS

Work Order:	MCSO1638	**Date:**	11/13/12		
Project:	None	**Temperature:**	23.1 °C		
Job Site:	EV07	**Humidity:**	48.1% RH		
Serial Number:	6124053	**Barometric Pres.:**	1022 mbar	**Tested by:**	Brandon Hobbs / Sabrina Sanders
EUT:	1514				
Configuration:	2				
Customer:	Microsoft Corporation				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting				
Deviations:	None				
Comments:	1Mbps - 2437Hz (L)				

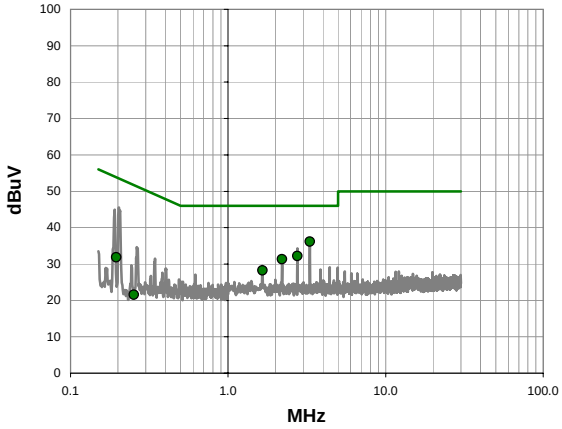
Test Specifications	**Test Method**
FCC 15.207:2012	ANSI C63.10:2009

Run #	20	**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)
0.195	29.8	20.4	50.2	63.8	-13.7
3.304	15.9	20.5	36.4	56.0	-19.6
2.752	12.4	20.5	32.9	56.0	-23.1
2.204	11.6	20.5	32.1	56.0	-23.9
0.252	16.8	20.3	37.1	61.7	-24.6
1.652	8.8	20.4	29.2	56.0	-26.8

Average Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
3.304	15.6	20.5	36.1	46.0	-9.9
2.752	11.7	20.5	32.2	46.0	-13.8
2.204	10.8	20.5	31.3	46.0	-14.7
1.652	7.8	20.4	28.2	46.0	-17.8
0.195	11.5	20.4	31.9	53.8	-22.0
0.252	1.2	20.3	21.5	51.7	-30.2

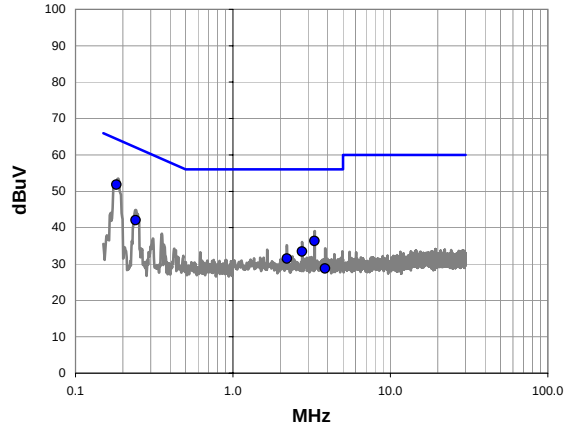
AC POWERLINE CONDUCTED EMISSIONS

Work Order:	MCSO1638	**Date:**	11/13/12		
Project:	None	**Temperature:**	23.1 °C		
Job Site:	EV07	**Humidity:**	48.1% RH		
Serial Number:	6124053	**Barometric Pres.:**	1022 mbar	**Tested by:**	Brandon Hobbs / Sabrina Sanders
EUT:	1514				
Configuration:	2				
Customer:	Microsoft Corporation				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting				
Deviations:	None				
Comments:	1Mbps - 2462Hz (L)				

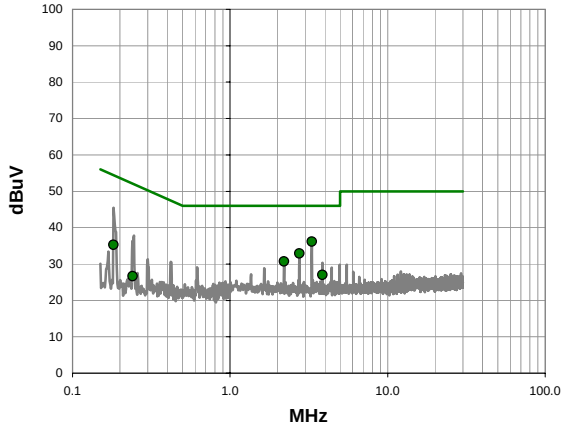
Test Specifications	**Test Method**
FCC 15.207:2012	ANSI C63.10:2009

Run #	21	**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)
0.182	31.5	20.3	51.8	64.4	-12.6
3.304	15.8	20.5	36.3	56.0	-19.7
0.241	21.7	20.3	42.0	62.1	-20.0
2.752	12.9	20.5	33.4	56.0	-22.6
2.204	11.0	20.5	31.5	56.0	-24.5
3.852	8.1	20.6	28.7	56.0	-27.3

Average Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
3.304	15.6	20.5	36.1	46.0	-9.9
2.752	12.4	20.5	32.9	46.0	-13.1
2.204	10.2	20.5	30.7	46.0	-15.3
3.852	6.4	20.6	27.0	46.0	-19.0
0.182	14.9	20.3	35.2	54.4	-19.2
0.241	6.3	20.3	26.6	52.1	-25.4

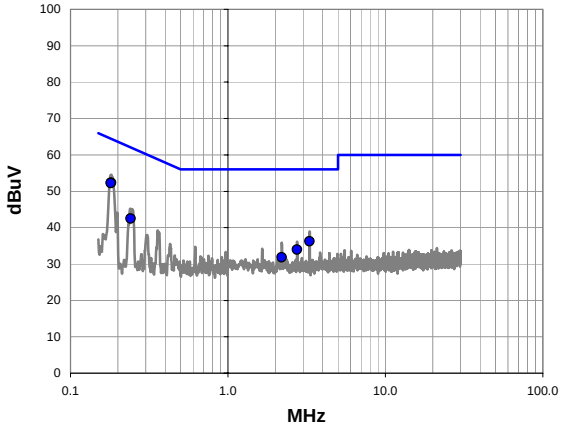
AC POWERLINE CONDUCTED EMISSIONS

Work Order:	MCSO1638	**Date:**	11/13/12		
Project:	None	**Temperature:**	23.1 °C		
Job Site:	EV07	**Humidity:**	48.1% RH		
Serial Number:	6124053	**Barometric Pres.:**	1022 mbar	**Tested by:**	Brandon Hobbs / Sabrina Sanders
EUT:	1514				
Configuration:	2				
Customer:	Microsoft Corporation				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting				
Deviations:	None				
Comments:	1Mbps - 2462Hz (H)				

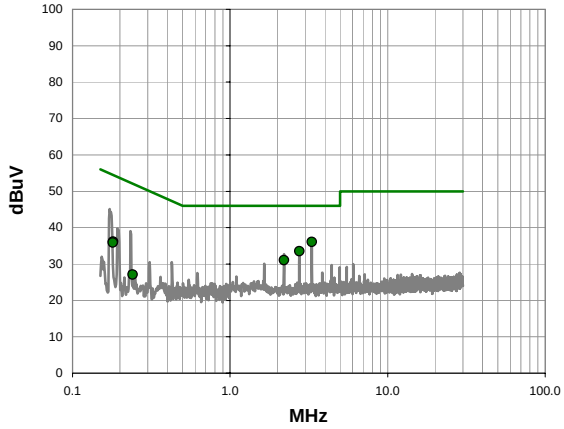
Test Specifications	**Test Method**
FCC 15.207:2012	ANSI C63.10:2009

Run #	22	**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)
0.181	32.0	20.3	52.3	64.4	-12.1
0.180	31.9	20.3	52.2	64.5	-12.2
0.241	22.1	20.3	42.4	62.1	-19.6
3.304	15.7	20.5	36.2	56.0	-19.8
2.752	13.4	20.5	33.9	56.0	-22.1
2.200	11.4	20.5	31.9	56.0	-24.1

Average Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
3.304	15.5	20.5	36.0	46.0	-10.0
2.752	13.0	20.5	33.5	46.0	-12.5
2.200	10.6	20.5	31.1	46.0	-14.9
0.181	15.8	20.3	36.1	54.4	-18.3
0.180	15.5	20.3	35.8	54.5	-18.6
0.241	6.7	20.3	27.0	52.1	-25.0

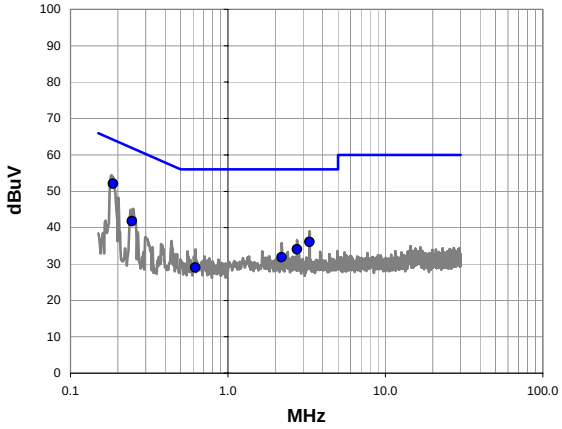
AC POWERLINE CONDUCTED EMISSIONS

Work Order:	MCSO1638	**Date:**	11/13/12		
Project:	None	**Temperature:**	23.1 °C		
Job Site:	EV07	**Humidity:**	48.1% RH		
Serial Number:	6124053	**Barometric Pres.:**	1022 mbar	**Tested by:**	Brandon Hobbs / Sabrina Sanders
EUT:	1514				
Configuration:	2				
Customer:	Microsoft Corporation				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting				
Deviations:	None				
Comments:	6Mbps - 5745Hz (H)				

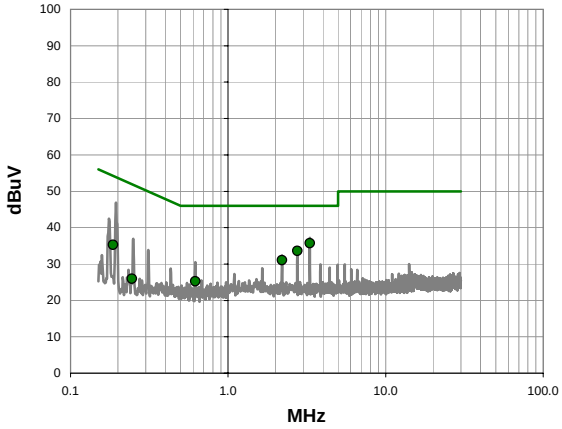
Test Specifications	**Test Method**
FCC 15.207:2012	ANSI C63.10:2009

Run #	23	**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)
0.186	31.7	20.3	52.0	64.2	-12.2
3.304	15.5	20.5	36.0	56.0	-20.0
0.246	21.4	20.3	41.7	61.9	-20.1
2.752	13.5	20.5	34.0	56.0	-22.0
2.200	11.4	20.5	31.9	56.0	-24.1
0.621	8.7	20.3	29.0	56.0	-27.0

Average Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
3.304	15.2	20.5	35.7	46.0	-10.3
2.752	13.1	20.5	33.6	46.0	-12.4
2.200	10.6	20.5	31.1	46.0	-14.9
0.186	14.9	20.3	35.2	54.2	-19.0
0.621	4.9	20.3	25.2	46.0	-20.8
0.246	5.6	20.3	25.9	51.9	-25.9

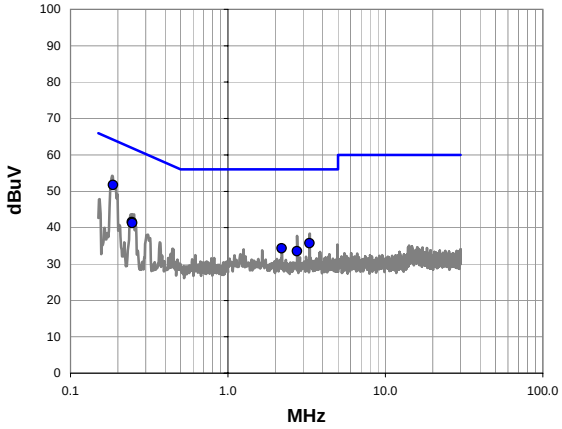
AC POWERLINE CONDUCTED EMISSIONS

Work Order:	MCSO1638	**Date:**	11/13/12		
Project:	None	**Temperature:**	23.1 °C		
Job Site:	EV07	**Humidity:**	48.1% RH		
Serial Number:	6124053	**Barometric Pres.:**	1022 mbar	**Tested by:**	Brandon Hobbs / Sabrina Sanders
EUT:	1514				
Configuration:	2				
Customer:	Microsoft Corporation				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting				
Deviations:	None				
Comments:	6Mbps - 5745Hz (L)				

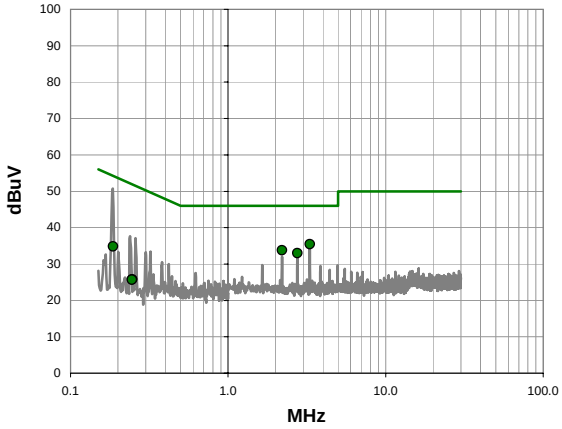
Test Specifications	**Test Method**
FCC 15.207:2012	ANSI C63. 10:2009

Run #	24	**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)
0.186	31.4	20.3	51.7	64.2	-12.5
3.304	15.2	20.5	35.7	56.0	-20.3
0.246	21.2	20.3	41.5	61.9	-20.3
0.247	20.9	20.3	41.2	61.9	-20.6
2.200	13.8	20.5	34.3	56.0	-21.7
2.752	13.0	20.5	33.5	56.0	-22.5

Average Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
3.304	14.9	20.5	35.4	46.0	-10.6
2.200	13.3	20.5	33.8	46.0	-12.2
2.752	12.5	20.5	33.0	46.0	-13.0
0.186	14.5	20.3	34.8	54.2	-19.4
0.247	5.4	20.3	25.7	51.9	-26.1
0.246	5.3	20.3	25.6	51.9	-26.2

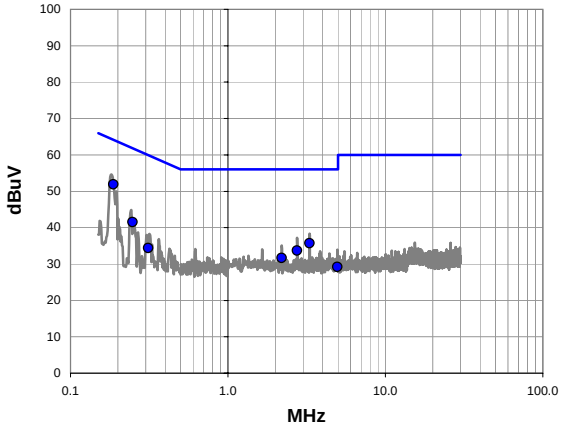
AC POWERLINE CONDUCTED EMISSIONS

Work Order:	MCSO1638	**Date:**	11/13/12		
Project:	None	**Temperature:**	23.1 °C		
Job Site:	EV07	**Humidity:**	48.1% RH		
Serial Number:	6124053	**Barometric Pres.:**	1022 mbar	**Tested by:**	Brandon Hobbs / Sabrina Sanders
EUT:	1514				
Configuration:	2				
Customer:	Microsoft Corporation				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting				
Deviations:	None				
Comments:	6Mbps - 5785Hz (L)				

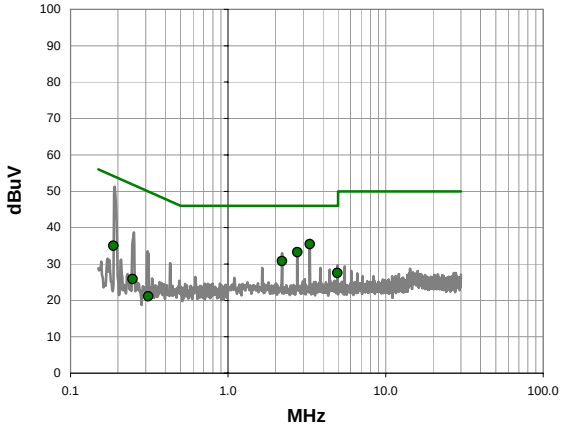
Test Specifications	**Test Method**
FCC 15.207:2012	ANSI C63. 10:2009

Run #	25	**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)
0.187	31.5	20.3	51.8	64.2	-12.3
3.304	15.2	20.5	35.7	56.0	-20.3
0.248	21.2	20.3	41.5	61.8	-20.3
2.752	13.2	20.5	33.7	56.0	-22.3
2.200	11.2	20.5	31.7	56.0	-24.3
0.312	14.1	20.3	34.4	59.9	-25.5
4.952	8.5	20.7	29.2	56.0	-26.8

Average Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
3.304	14.9	20.5	35.4	46.0	-10.6
2.752	12.7	20.5	33.2	46.0	-12.8
2.200	10.3	20.5	30.8	46.0	-15.2
4.952	6.8	20.7	27.5	46.0	-18.5
0.187	14.7	20.3	35.0	54.2	-19.1
0.248	5.5	20.3	25.8	51.8	-26.0
0.312	0.8	20.3	21.1	49.9	-28.8

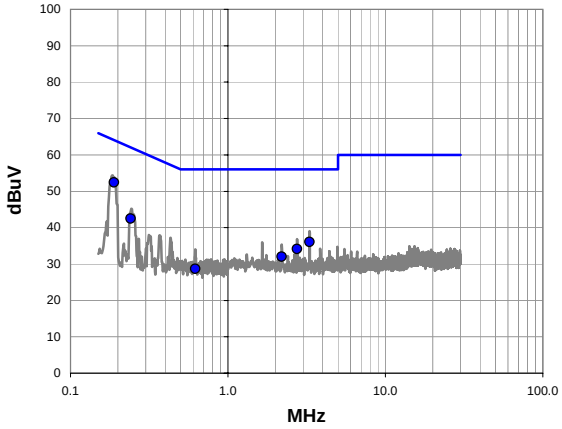
AC POWERLINE CONDUCTED EMISSIONS

Work Order:	MCSO1638	**Date:**	11/13/12		
Project:	None	**Temperature:**	23.1 °C		
Job Site:	EV07	**Humidity:**	48.1% RH		
Serial Number:	6124053	**Barometric Pres.:**	1022 mbar	**Tested by:**	Brandon Hobbs / Sabrina Sanders
EUT:	1514				
Configuration:	2				
Customer:	Microsoft Corporation				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting				
Deviations:	None				
Comments:	6Mbps - 5785Hz (H)				

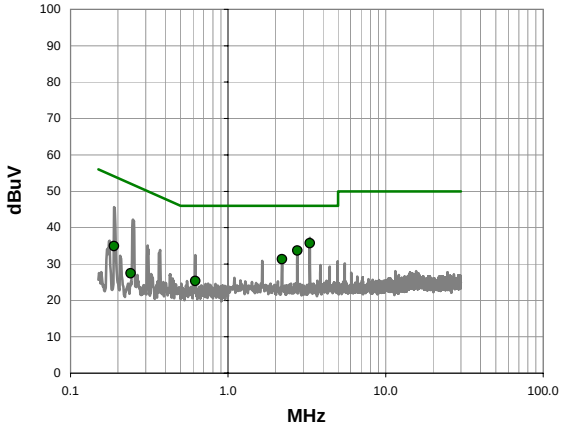
Test Specifications	**Test Method**
FCC 15.207:2012	ANSI C63. 10:2009

Run #	26	**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)
0.189	32.1	20.3	52.4	64.1	-11.6
0.241	22.1	20.3	42.4	62.1	-19.6
3.304	15.5	20.5	36.0	56.0	-20.0
2.752	13.6	20.5	34.1	56.0	-21.9
2.200	11.5	20.5	32.0	56.0	-24.0
0.619	8.4	20.3	28.7	56.0	-27.3

Average Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
3.304	15.2	20.5	35.7	46.0	-10.3
2.752	13.2	20.5	33.7	46.0	-12.3
2.200	10.8	20.5	31.3	46.0	-14.7
0.189	14.6	20.3	34.9	54.1	-19.1
0.619	5.0	20.3	25.3	46.0	-20.7
0.241	7.1	20.3	27.4	52.1	-24.6

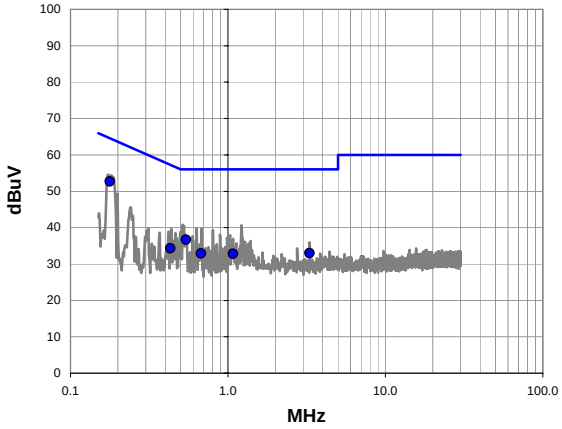
AC POWERLINE CONDUCTED EMISSIONS

Work Order:	MCSO1638	**Date:**	11/13/12		
Project:	None	**Temperature:**	23.1 °C		
Job Site:	EV07	**Humidity:**	48.1% RH		
Serial Number:	6124053	**Barometric Pres.:**	1022 mbar	**Tested by:**	Brandon Hobbs / Sabrina Sanders
EUT:	1514				
Configuration:	2				
Customer:	Microsoft Corporation				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting				
Deviations:	None				
Comments:	6Mbps - 5825Hz (L)				

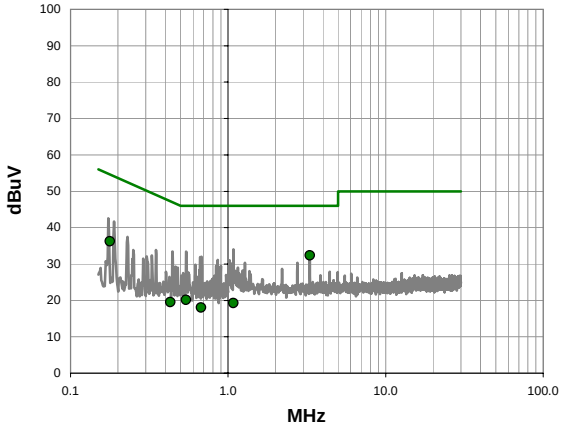
Test Specifications	**Test Method**
FCC 15.207:2012	ANSI C63. 10:2009

Run #	29	**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)
0.178	32.3	20.3	52.6	64.6	-11.9
0.541	16.4	20.3	36.7	56.0	-19.3
0.430	14.0	20.3	34.3	57.3	-23.0
3.304	12.4	20.5	32.9	56.0	-23.1
0.675	12.6	20.3	32.9	56.0	-23.1
1.080	12.4	20.4	32.8	56.0	-23.2

Average Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
3.304	11.8	20.5	32.3	46.0	-13.7
0.178	15.9	20.3	36.2	54.6	-18.3
0.541	-0.2	20.3	20.1	46.0	-25.9
1.080	-1.1	20.4	19.3	46.0	-26.7
0.430	-0.8	20.3	19.5	47.3	-27.8
0.675	-2.3	20.3	18.0	46.0	-28.0

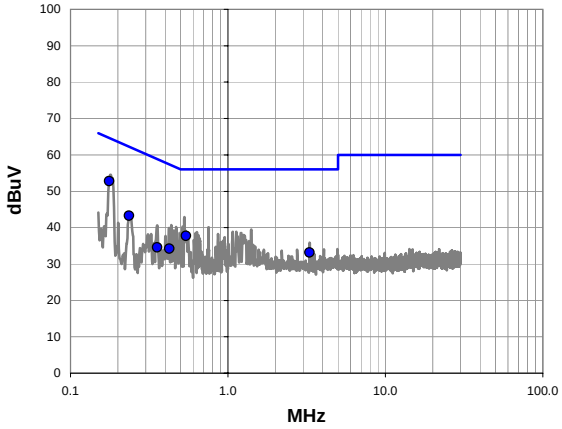
AC POWERLINE CONDUCTED EMISSIONS

Work Order:	MCSO1638	**Date:**	11/13/12		
Project:	None	**Temperature:**	23.1 °C		
Job Site:	EV07	**Humidity:**	48.1% RH		
Serial Number:	6124053	**Barometric Pres.:**	1022 mbar	**Tested by:**	Brandon Hobbs / Sabrina Sanders
EUT:	1514				
Configuration:	2				
Customer:	Microsoft Corporation				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting				
Deviations:	None				
Comments:	6Mbps - 5825Hz (H)				

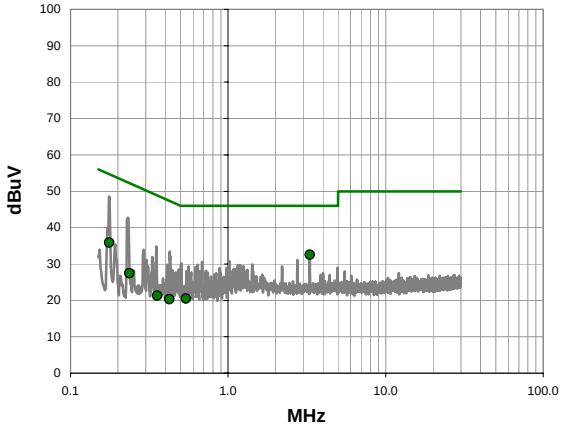
Test Specifications	**Test Method**
FCC 15.207:2012	ANSI C63. 10:2009

Run #	30	**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)
0.176	32.4	20.3	52.7	64.7	-11.9
0.541	17.4	20.3	37.7	56.0	-18.3
0.236	22.9	20.3	43.2	62.2	-19.0
3.304	12.6	20.5	33.1	56.0	-22.9
0.425	13.9	20.3	34.2	57.3	-23.2
0.355	14.3	20.3	34.6	58.8	-24.3

Average Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
3.304	12.0	20.5	32.5	46.0	-13.5
0.176	15.5	20.3	35.8	54.7	-18.8
0.236	7.1	20.3	27.4	52.2	-24.8
0.541	0.2	20.3	20.5	46.0	-25.5
0.425	0.0	20.3	20.3	47.3	-27.1
0.355	1.0	20.3	21.3	48.8	-27.6