Microsoft Corporation

1516

Report #: MCSO1601.1

FCC 15.407: 2012

WLAN Radio

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: August 14, 2012
Microsoft Corporation
Model: 1516

Emissions

Test Description	Specification	Test Method	Pass/Fail
Emission Bandwidth	FCC 15.407:2012	ANSI C63.10:2009	Pass
Peak Transmit Power	FCC 15.407:2012	ANSI C63.10:2009	Pass
Peak Power Spectral Density	FCC 15.407:2012	ANSI C63.10:2009	Pass
Peak Excursion	FCC 15.407:2012	ANSI C63.10:2009	Pass
Band Edge Compliance	FCC 15.407:2012	ANSI C63.10:2009	Pass
Unwanted Emissions	FCC 15.407:2012	ANSI C63.10:2009	Pass
Frequency Stability	FCC 15.407:2012	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).

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.

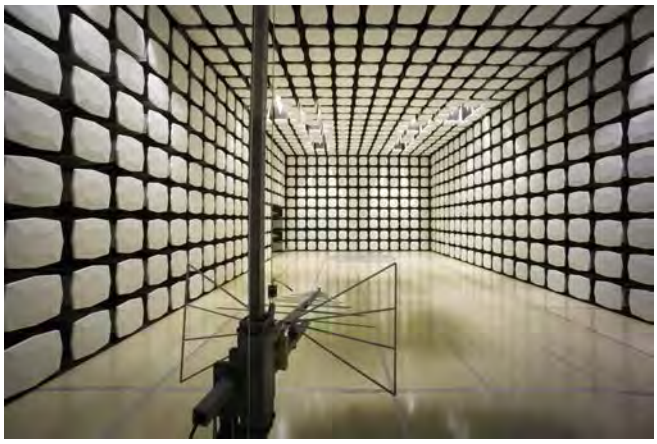
SCOPE

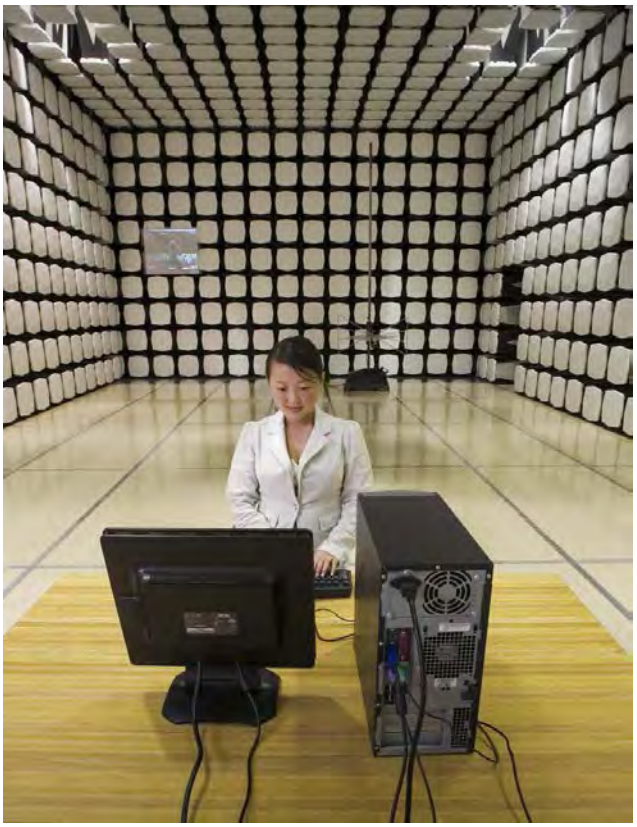
For details on the Scopes of our Accreditations, please visit:
http://www.nwemc.com/accreditations/

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

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:	1516
First Date of Test:	July 23, 2012
Last Date of Test:	August 14, 2012
Receipt Date of Samples:	July 19, 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):
Tablet computer containing WLAN (802.11a/b/g/n, 2x2 MIMO) and Bluetooth radios

Clocks and Oscillators of the EUT:
None Provided

Testing Objective:
To demonstrate compliance of the WLAN radio under FCC 15.407 for operation in the 5.2, 5.3, and 5.6 GHz bands

CONFIGURATIONS

Configuration MCSO1601- 1

Software/Firmware Running during test	
Description	**Version**
BT_scripts	1.0

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Tablet	Microsoft	EV3BB-V24	000309122652

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	Tablet
USB adapter	Yes	.2m	No	Tablet	Ethernet CAT 5 Cable
Ethernet CAT 5 Cable	Yes	1.0m	No	USB adapter	Remote PC
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

Configuration MCSO1601- 2

Software/Firmware Running during test	
Description	**Version**
Wifi Tool	1.0

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Tablet	Microsoft	EV3BB-V24	000309122652

Remote Equipment Outside of Test Setup Boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
DC Power Supply	Topward Electric	TPS-2000	946425
Remote PC	Lenovo	L420	7854CT0
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	Tablet
USB adapter	Yes	.2m	No	Tablet	Ethernet CAT 5 Cable
Ethernet CAT 5 Cable	Yes	1.0m	No	USB adapter	Remote PC
USB	Yes	2.5m	No	Tablet	USB adapter
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

CONFIGURATIONS

Configuration MCSO1608- 1

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
1516 Sample 2	Microsoft	1516	000364122652

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Membrane Keyboard	Microsoft	Unknown	000759722151
AC Adapter	Microsoft	PA-1240-06MX	0D21005652219
USB Ethernet Adapter	Cisco	USB300M	CU906M310544
Earbuds	Microsoft	Unknown	None

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
DC Power	No	1.5m	No	DC Power Supply	1516
Headphone	No	1.3m	No	1516	Earbuds
CAT-5e	No	3.0m	Yes	USB Ethernet Adapter	Ethernet Hub
USB	Yes	0.1m	No	USB Ethernet Adapter	1516
HDMI	Yes	1.0m	No	1516	Unterminated
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

Configuration MCSO1608- 2

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
1516 Sample 4	Microsoft	1516	000215622952

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Membrane Keyboard	Microsoft	Unknown	000759722151
AC Adapter	Microsoft	PA-1240-06MX	0D21005652219
USB Ethernet Adapter	Cisco	USB300M	CU906M310544
Earbuds	Microsoft	Unknown	None

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
DC Power	No	1.5m	No	DC Power Supply	1516
Headphone	No	1.3m	No	1516	Earbuds
CAT-5e	No	3.0m	Yes	USB Ethernet Adapter	Ethernet Hub
USB	Yes	0.1m	No	USB Ethernet Adapter	1516
HDMI	Yes	1.0m	No	1516	Unterminated
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	7/23/2012	Unwanted 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	7/24/2012	Frequency Stability	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	7/27/2012	Emission 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.
4	7/27/2012	Peak Transmit Power	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
5	8/2/2012	Peak Power Spectral Density	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
6	8/8/2012	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.
7	8/10/2012	Peak Excursion	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
8	8/14/2012	Band Edge Compliance	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

Emission 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
Attenuator 20 dB, SMA M/F 26GHz	S.M. Electronics	SA26B-20	AUY	8/2/2011	12
40GHz DC Block	Miteq	DCB4000	AMD	6/25/2012	12
Attenuator, 'N'	Coaxicom	66702 5910-6	ATZ	3/21/2012	12
MXG Vector Signal Generator	Agilent	N5182A	TIF	NCR	0
Power Meter	Gigatronics	8651A	SPM	1/9/2012	24
Power Sensor	Gigatronics	80701A	SPL	7/8/2011	24
Spectrum Analyzer	Agilent	E4440	AFE	1/23/2012	12

MEASUREMENT UNCERTAINTY

A measurement uncertainty estimation has been performed for each test per our internal quality document WP 342. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty for radiated emissions measurements is less than +/- 4 dB, and for conducted emissions measurements is less than +/- 2.7 dB. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for measurement uncertainty are available upon request.

TEST DESCRIPTION

FCC KDB 789033 D01 General UNII Test Procedures Section D was followed. The transmit frequency was set to the lowest, a medium, and the highest channels in each band. The transmit power was set to its default maximum. The data rate(s) listed in the datasheet were measured. A direct connection was made between the RF output of the EUT and a spectrum analyzer. Attenuation and a DC block were used. The reference level offset on the spectrum analyzer was adjusted to compensate for cable loss and the external attenuation used between the RF output and the spectrum analyzer input.

The spectrum analyzer settings were as follows:
- Span = approximately 1.5 to 2 times the emission bandwidth, centered on the transmit channel.
- RBW = Approx. 1% of the emission bandwidth (B). This was an iterative process to determine the RBW based on the emissions bandwidth (B).
- A peak detector was used.

The spectrum analyzer Occupied Bandwidth measurement function was then used to measure 26 dB emission bandwidth.

The power levels used while under test were 11dBm for 5GHz frequencies with a 40MHz bandwidth and 12dBm for 5GHz frequencies with a 20MHz bandwidth.

Emission Bandwidth

EUT:	1516			**Work Order:**	MCSO1601
Serial Number:	000309122652			**Date:**	07/27/12
Customer:	Microsoft Corporation			**Temperature:**	24°C
Attendees:	None			**Humidity:**	47%
Project:	None			**Barometric Pres.:**	1016
Tested by:	Brandon Hobbs	**Power:**	12VDC	**Job Site:**	EV06

TEST SPECIFICATIONS	Test Method
FCC 15.407:2012	ANSI C63.10:2009

COMMENTS

The power levels used while under test were 11dBm for 5GHz frequencies with a 40MHz bandwidth, 12dBm for 5GHz frequencies with a 20MHz bandwidth. The EUT was tested while operating at 100% duty cycle.

DEVIATIONS FROM TEST STANDARD

None

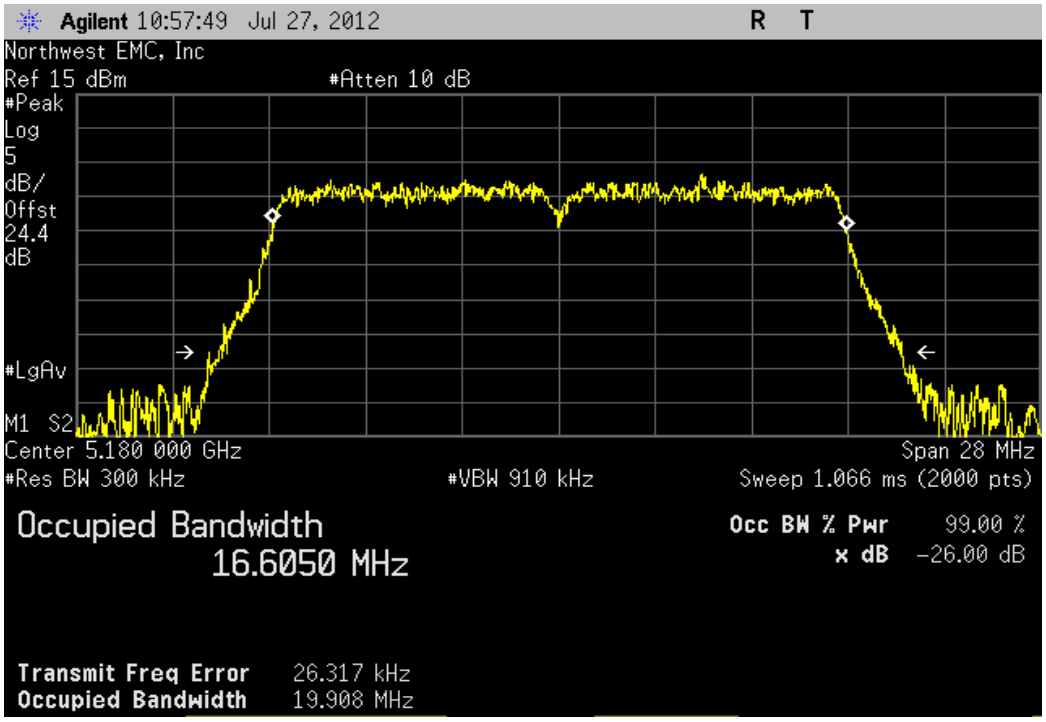
Configuration #	2	Signature

	Value	Limit	Result
Antenna A			
20MHz Bandwidth			
802.11(a) 6Mbps			
Low Channel 36 Fq 5180MHz	16.605 MHz	> 500 kHz	Pass
Low Channel 52 Fq 5260MHz	16.643 MHz	> 500 kHz	Pass
Low Channel 100 Fq 5500MHz	16.662 MHz	> 500 kHz	Pass
High Channel 48 Fq 5240MHz	16.625 MHz	> 500 kHz	Pass
High Channel 64 Fq 5320MHz	16.619 MHz	> 500 kHz	Pass
High Channel 140 Fq 5700MHz	16.635 MHz	> 500 kHz	Pass
Mid Channel 116 Fq 5580 MHz	16.623 MHz	> 500 kHz	Pass
802.11(a) 36Mbps			
Low Channel 36 Fq 5180MHz	16.662 MHz	> 500 kHz	Pass
Low Channel 52 Fq 5260MHz	16.621 MHz	> 500 kHz	Pass
Low Channel 100 Fq 5500MHz	16.642 MHz	> 500 kHz	Pass
High Channel 48 Fq 5240MHz	16.629 MHz	> 500 kHz	Pass
High Channel 64 Fq 5320MHz	16.634 MHz	> 500 kHz	Pass
High Channel 140 Fq 5700MHz	16.647 MHz	> 500 kHz	Pass
Mid Channel 116 Fq 5580 MHz	16.669 MHz	> 500 kHz	Pass
802.11(a) 54Mbps			
Low Channel 36 Fq 5180MHz	16.658 MHz	> 500 kHz	Pass
Low Channel 52 Fq 5260MHz	16.654 MHz	> 500 kHz	Pass
Low Channel 100 Fq 5500MHz	16.661 MHz	> 500 kHz	Pass
High Channel 48 Fq 5240MHz	16.658 MHz	> 500 kHz	Pass
High Channel 64 Fq 5320MHz	16.648 MHz	> 500 kHz	Pass
High Channel 140 Fq 5700MHz	16.683 MHz	> 500 kHz	Pass
Mid Channel 116 Fq 5580 MHz	16.666 MHz	> 500 kHz	Pass
802.11(n) MCS0			
Low Channel 36 Fq 5180MHz	17.828 MHz	> 500 kHz	Pass
Low Channel 52 Fq 5260MHz	17.791 MHz	> 500 kHz	Pass
Low Channel 100 Fq 5500MHz	17.829 MHz	> 500 kHz	Pass
High Channel 48 Fq 5240MHz	17.862 MHz	> 500 kHz	Pass
High Channel 64 Fq 5320MHz	17.853 MHz	> 500 kHz	Pass
High Channel 140 Fq 5700MHz	17.861 MHz	> 500 kHz	Pass
Mid Channel 116 Fq 5580 MHz	17.82 MHz	> 500 kHz	Pass
802.11(n) MCS7			
Low Channel 36 Fq 5180MHz	17.815 MHz	> 500 kHz	Pass
Low Channel 52 Fq 5260MHz	17.87 MHz	> 500 kHz	Pass
Low Channel 100 Fq 5500MHz	17.848 MHz	> 500 kHz	Pass
High Channel 48 Fq 5240MHz	17.845 MHz	> 500 kHz	Pass
High Channel 64 Fq 5320MHz	17.881 MHz	> 500 kHz	Pass
High Channel 140 Fq 5700MHz	17.813 MHz	> 500 kHz	Pass
Mid Channel 116 Fq 5580 MHz	17.837 MHz	> 500 kHz	Pass
802.11(n) MCS8			
Low Channel 36 Fq 5180MHz	17.856 MHz	> 500 kHz	Pass
Low Channel 52 Fq 5260MHz	17.808 MHz	> 500 kHz	Pass
Low Channel 100 Fq 5500MHz	17.697 MHz	> 500 kHz	Pass
High Channel 48 Fq 5240MHz	17.845 MHz	> 500 kHz	Pass
High Channel 64 Fq 5320MHz	17.803 MHz	> 500 kHz	Pass
High Channel 140 Fq 5700MHz	17.893 MHz	> 500 kHz	Pass
Mid Channel 116 Fq 5580 MHz	17.884 MHz	> 500 kHz	Pass
802.11(n) MCS15			
Low Channel 36 Fq 5180MHz	17.805 MHz	> 500 kHz	Pass
Low Channel 52 Fq 5260MHz	17.994 MHz	> 500 kHz	Pass
Low Channel 100 Fq 5500MHz	17.9 MHz	> 500 kHz	Pass
High Channel 48 Fq 5240MHz	17.931 MHz	> 500 kHz	Pass
High Channel 64 Fq 5320MHz	17.853 MHz	> 500 kHz	Pass
High Channel 140 Fq 5700MHz	17.792 MHz	> 500 kHz	Pass
Mid Channel 116 Fq 5580 MHz	17.842 MHz	> 500 kHz	Pass
40MHz Bandwidth			
802.11(n) MCS0			
Low Channel 38 Fq 5190MHz	36.36 MHz	> 500 kHz	Pass
Low Channel 54 Fq 5270MHz	36.345 MHz	> 500 kHz	Pass
Low Channel 102 Fq 5510MHz	36.334 MHz	> 500 kHz	Pass
High Channel 46 Fq 5230MHz	36.34 MHz	> 500 kHz	Pass
High Channel 62 Fq 5310MHz	36.324 MHz	> 500 kHz	Pass
High Channel 134 Fq 5670MHz	36.327 MHz	> 500 kHz	Pass
802.11(n) MCS7			
Low Channel 38 Fq 5190MHz	36.844 MHz	> 500 kHz	Pass
Low Channel 54 Fq 5270MHz	36.804 MHz	> 500 kHz	Pass
Low Channel 102 Fq 5510MHz	36.796 MHz	> 500 kHz	Pass
High Channel 46 Fq 5230MHz	36.831 MHz	> 500 kHz	Pass
High Channel 62 Fq 5310MHz	36.764 MHz	> 500 kHz	Pass
High Channel 134 Fq 5670MHz	36.955 MHz	> 500 kHz	Pass
802.11(n) MCS8			
Low Channel 38 Fq 5190MHz	36.589 MHz	> 500 kHz	Pass
Low Channel 54 Fq 5270MHz	36.571 MHz	> 500 kHz	Pass
Low Channel 102 Fq 5510MHz	36.592 MHz	> 500 kHz	Pass
High Channel 46 Fq 5230MHz	36.596 MHz	> 500 kHz	Pass
High Channel 62 Fq 5310MHz	36.58 MHz	> 500 kHz	Pass

		High Channel 134 Fq 5670MHz	36.61 MHz	> 500 kHz	Pass
		802.11(n) MCS15			
		Low Channel 38 Fq 5190MHz	36.907 MHz	> 500 kHz	Pass
		Low Channel 54 Fq 5270MHz	36.827 MHz	> 500 kHz	Pass
		Low Channel 102 Fq 5510MHz	36.883 MHz	> 500 kHz	Pass
		High Channel 46 Fq 5230MHz	36.977 MHz	> 500 kHz	Pass
		High Channel 62 Fq 5310MHz	36.819 MHz	> 500 kHz	Pass
		High Channel 134 Fq 5670MHz	37.041 MHz	> 500 kHz	Pass
Antenna B					
	20MHz Bandwidth				
		802.11(a) 6Mbps			
		Low Channel 36 Fq 5180MHz	16.593 MHz	> 500 kHz	Pass
		Low Channel 52 Fq 5260MHz	16.577 MHz	> 500 kHz	Pass
		Low Channel 100 Fq 5500MHz	16.58 MHz	> 500 kHz	Pass
		High Channel 48 Fq 5240MHz	16.612 MHz	> 500 kHz	Pass
		High Channel 64 Fq 5320MHz	16.571 MHz	> 500 kHz	Pass
		High Channel 140 Fq 5700MHz	16.608 MHz	> 500 kHz	Pass
		Mid Channel 116 Fq 5580 MHz	16.57 MHz	> 500 kHz	Pass
		802.11(a) 36Mbps			
		Low Channel 36 Fq 5180MHz	16.542 MHz	> 500 kHz	Pass
		Low Channel 52 Fq 5260MHz	16.548 MHz	> 500 kHz	Pass
		Low Channel 100 Fq 5500MHz	16.548 MHz	> 500 kHz	Pass
		High Channel 48 Fq 5240MHz	16.534 MHz	> 500 kHz	Pass
		High Channel 64 Fq 5320MHz	16.531 MHz	> 500 kHz	Pass
		High Channel 140 Fq 5700MHz	16.532 MHz	> 500 kHz	Pass
		Mid Channel 116 Fq 5580 MHz	16.528 MHz	> 500 kHz	Pass
		802.11(a) 54Mbps			
		Low Channel 36 Fq 5180MHz	16.644 MHz	> 500 kHz	Pass
		Low Channel 52 Fq 5260MHz	16.656 MHz	> 500 kHz	Pass
		Low Channel 100 Fq 5500MHz	16.648 MHz	> 500 kHz	Pass
		High Channel 48 Fq 5240MHz	16.648 MHz	> 500 kHz	Pass
		High Channel 64 Fq 5320MHz	16.604 MHz	> 500 kHz	Pass
		High Channel 140 Fq 5700MHz	16.637 MHz	> 500 kHz	Pass
		Mid Channel 116 Fq 5580 MHz	16.655 MHz	> 500 kHz	Pass
		802.11(n) MCS0			
		Low Channel 36 Fq 5180MHz	17.813 MHz	> 500 kHz	Pass
		Low Channel 52 Fq 5260MHz	17.78 MHz	> 500 kHz	Pass
		Low Channel 100 Fq 5500MHz	17.824 MHz	> 500 kHz	Pass
		High Channel 48 Fq 5240MHz	17.797 MHz	> 500 kHz	Pass
		High Channel 64 Fq 5320MHz	17.818 MHz	> 500 kHz	Pass
		High Channel 140 Fq 5700MHz	17.832 MHz	> 500 kHz	Pass
		Mid Channel 116 Fq 5580 MHz	17.877 MHz	> 500 kHz	Pass
		802.11(n) MCS7			
		Low Channel 36 Fq 5180MHz	17.803 MHz	> 500 kHz	Pass
		Low Channel 52 Fq 5260MHz	17.866 MHz	> 500 kHz	Pass
		Low Channel 100 Fq 5500MHz	17.869 MHz	> 500 kHz	Pass
		High Channel 48 Fq 5240MHz	17.787 MHz	> 500 kHz	Pass
		High Channel 64 Fq 5320MHz	17.836 MHz	> 500 kHz	Pass
		High Channel 140 Fq 5700MHz	17.777 MHz	> 500 kHz	Pass
		Mid Channel 116 Fq 5580 MHz	17.823 MHz	> 500 kHz	Pass
		802.11(n) MCS8			
		Low Channel 36 Fq 5180MHz	17.844 MHz	> 500 kHz	Pass
		Low Channel 52 Fq 5260MHz	17.919 MHz	> 500 kHz	Pass
		Low Channel 100 Fq 5500MHz	17.889 MHz	> 500 kHz	Pass
		High Channel 48 Fq 5240MHz	17.844 MHz	> 500 kHz	Pass
		High Channel 64 Fq 5320MHz	17.906 MHz	> 500 kHz	Pass
		High Channel 140 Fq 5700MHz	17.826 MHz	> 500 kHz	Pass
		Mid Channel 116 Fq 5580 MHz	17.78 MHz	> 500 kHz	Pass
		802.11(n) MCS15			
		Low Channel 36 Fq 5180MHz	17.856 MHz	> 500 kHz	Pass
		Low Channel 52 Fq 5260MHz	17.949 MHz	> 500 kHz	Pass
		Low Channel 100 Fq 5500MHz	17.724 MHz	> 500 kHz	Pass
		High Channel 48 Fq 5240MHz	17.845 MHz	> 500 kHz	Pass
		High Channel 64 Fq 5320MHz	17.817 MHz	> 500 kHz	Pass
		High Channel 140 Fq 5700MHz	17.816 MHz	> 500 kHz	Pass
		Mid Channel 116 Fq 5580 MHz	17.891 MHz	> 500 kHz	Pass
	40MHz Bandwidth				
		802.11(n) MCS0			
		Low Channel 38 Fq 5190MHz	36.518 MHz	> 500 kHz	Pass
		Low Channel 54 Fq 5270MHz	36.509 MHz	> 500 kHz	Pass
		Low Channel 102 Fq 5510MHz	36.523 MHz	> 500 kHz	Pass
		High Channel 46 Fq 5230MHz	36.52 MHz	> 500 kHz	Pass
		High Channel 62 Fq 5310MHz	36.492 MHz	> 500 kHz	Pass
		High Channel 134 Fq 5670MHz	36.518 MHz	> 500 kHz	Pass
		802.11(n) MCS7			
		Low Channel 38 Fq 5190MHz	36.441 MHz	> 500 kHz	Pass
		Low Channel 54 Fq 5270MHz	36.432 MHz	> 500 kHz	Pass
		Low Channel 102 Fq 5510MHz	36.491 MHz	> 500 kHz	Pass
		High Channel 46 Fq 5230MHz	36.46 MHz	> 500 kHz	Pass
		High Channel 62 Fq 5310MHz	36.424 MHz	> 500 kHz	Pass
		High Channel 134 Fq 5670MHz	36.476 MHz	> 500 kHz	Pass
		802.11(n) MCS8			
		Low Channel 38 Fq 5190MHz	36.551 MHz	> 500 kHz	Pass
		Low Channel 54 Fq 5270MHz	36.516 MHz	> 500 kHz	Pass
		Low Channel 102 Fq 5510MHz	36.521 MHz	> 500 kHz	Pass
		High Channel 46 Fq 5230MHz	36.467 MHz	> 500 kHz	Pass
		High Channel 62 Fq 5310MHz	36.372 MHz	> 500 kHz	Pass
		High Channel 134 Fq 5670MHz	36.518 MHz	> 500 kHz	Pass
		802.11(n) MCS15			
		Low Channel 38 Fq 5190MHz	36.623 MHz	> 500 kHz	Pass
		Low Channel 54 Fq 5270MHz	36.623 MHz	> 500 kHz	Pass
		Low Channel 102 Fq 5510MHz	36.673 MHz	> 500 kHz	Pass
		High Channel 46 Fq 5230MHz	36.647 MHz	> 500 kHz	Pass
		High Channel 62 Fq 5310MHz	36.565 MHz	> 500 kHz	Pass
		High Channel 134 Fq 5670MHz	36.651 MHz	> 500 kHz	Pass

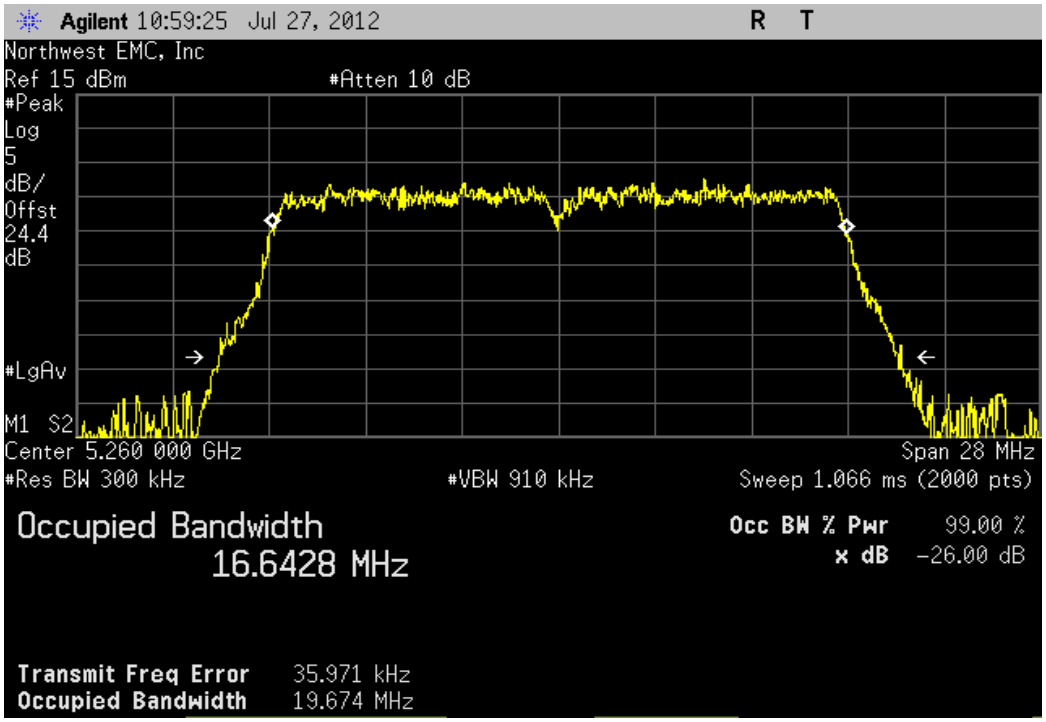
Antenna A, 20MHz Bandwidth , 802.11(a) 6Mbps, Low Channel 36 Fq 5180MHz

				Value	Limit	Result
				16.605 MHz	> 500 kHz	Pass



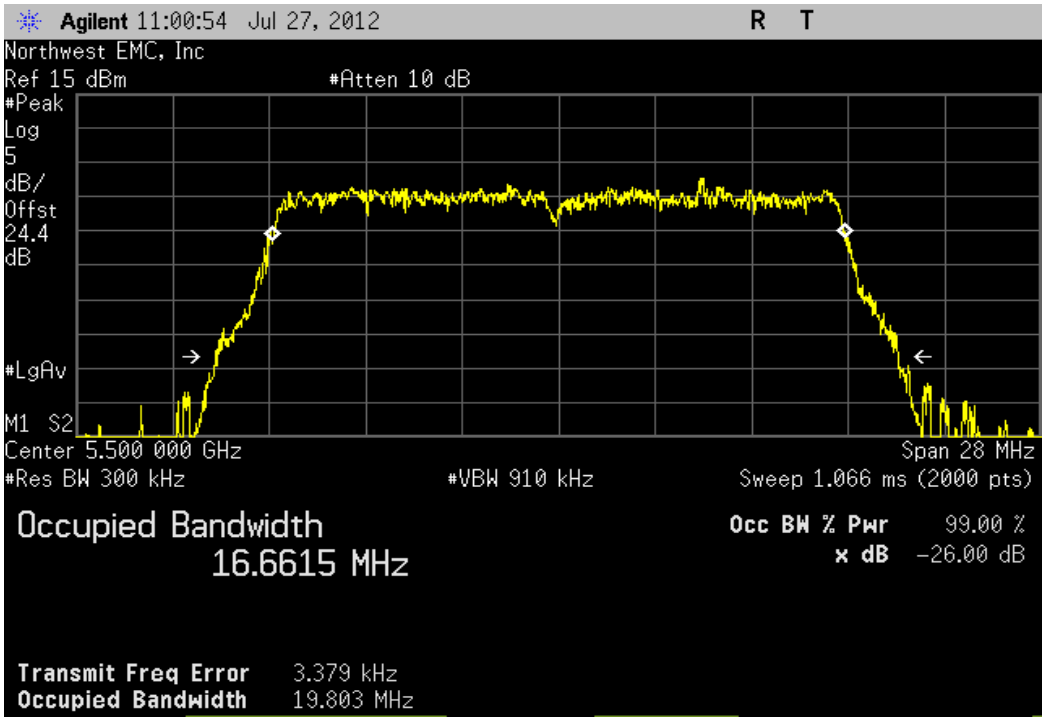
Antenna A, 20MHz Bandwidth , 802.11(a) 6Mbps, Low Channel 52 Fq 5260MHz

				Value	Limit	Result
				16.643 MHz	> 500 kHz	Pass



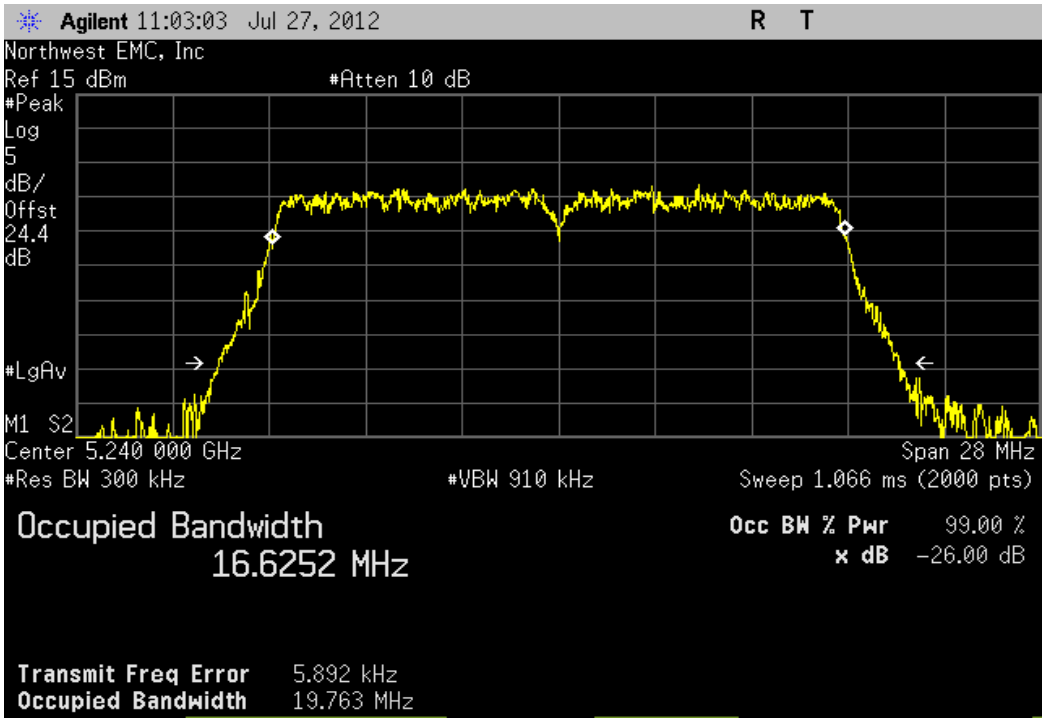
Antenna A, 20MHz Bandwidth , 802.11(a) 6Mbps, Low Channel 100 Fq 5500MHz

				Value	Limit	Result
				16.662 MHz	> 500 kHz	Pass



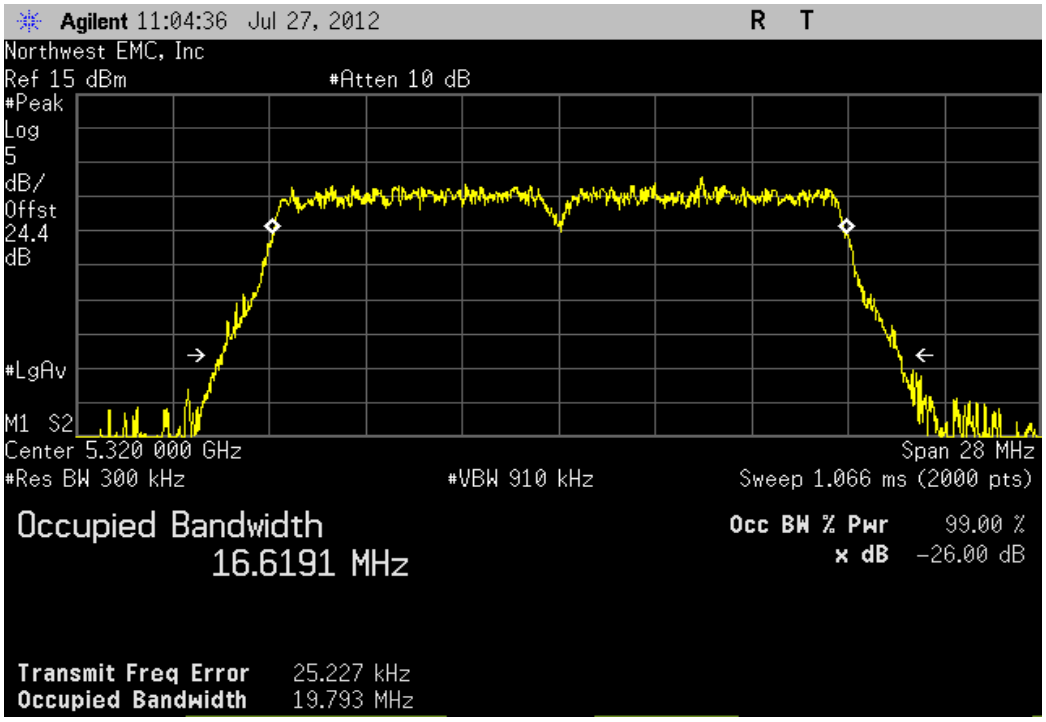
Antenna A, 20MHz Bandwidth , 802.11(a) 6Mbps, High Channel 48 Fq 5240MHz

				Value	Limit	Result
				16.625 MHz	> 500 kHz	Pass



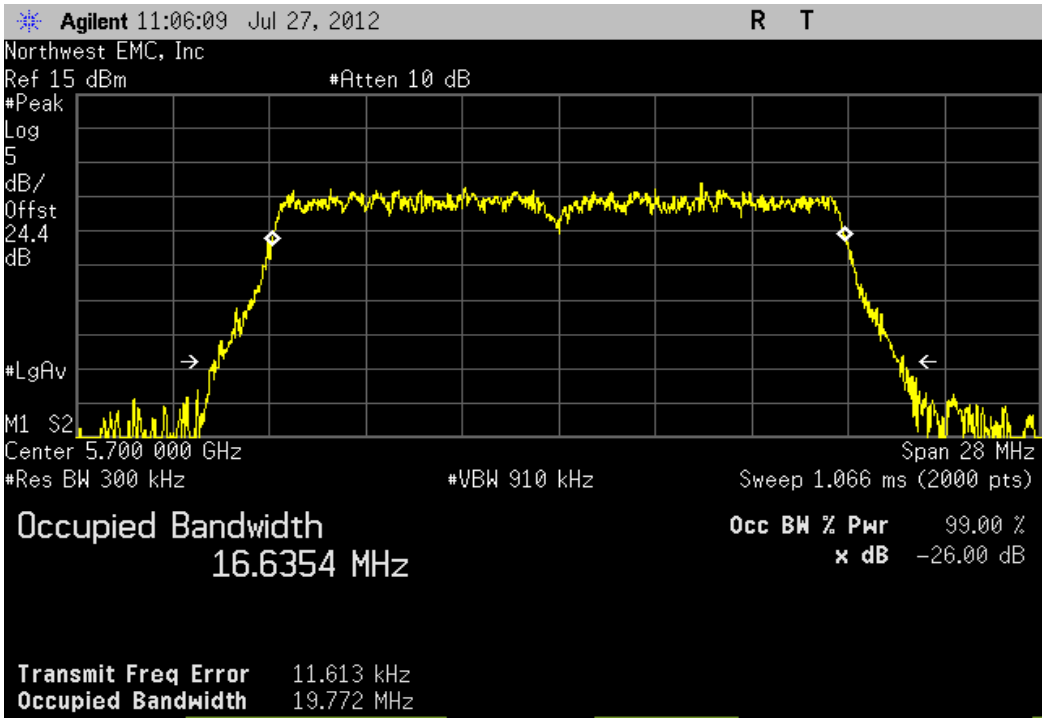
Antenna A, 20MHz Bandwidth , 802.11(a) 6Mbps, High Channel 64 Fq 5320MHz

				Value	Limit	Result
				16.619 MHz	> 500 kHz	Pass



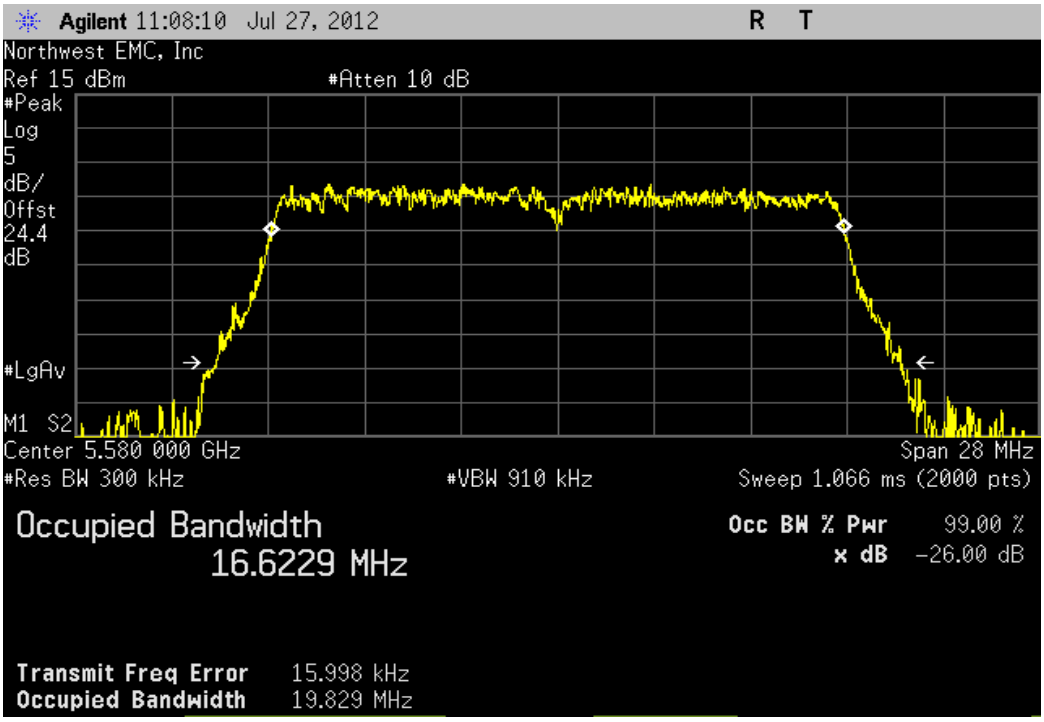
Antenna A, 20MHz Bandwidth , 802.11(a) 6Mbps, High Channel 140 Fq 5700MHz

				Value	Limit	Result
				16.635 MHz	> 500 kHz	Pass



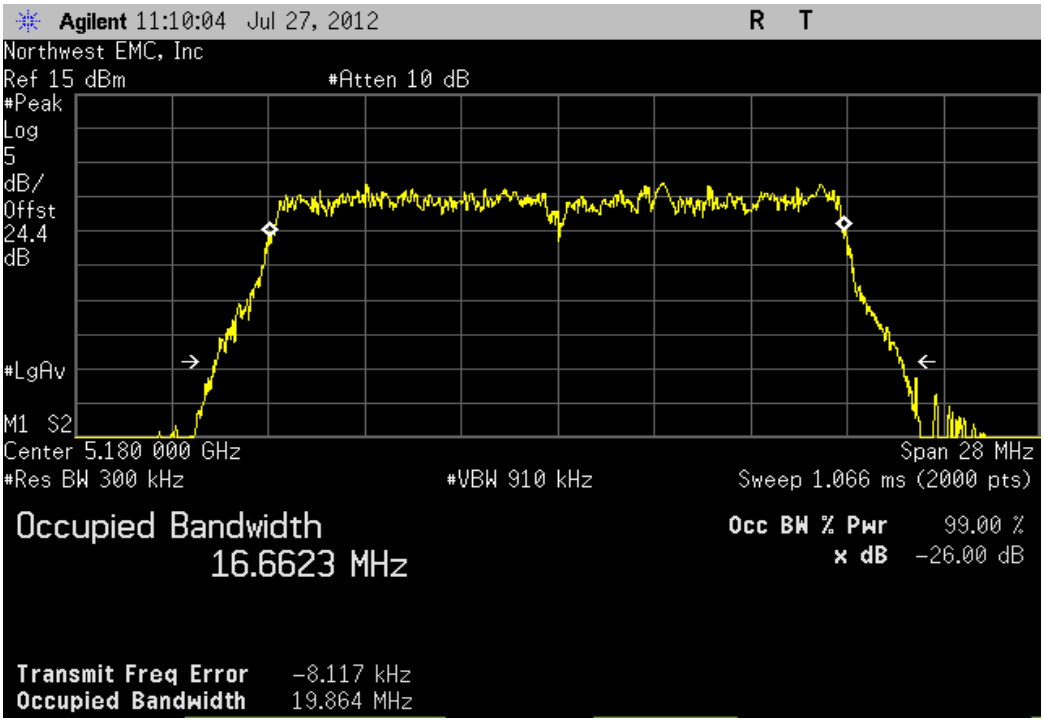
Antenna A, 20MHz Bandwidth , 802.11(a) 6Mbps, Mid Channel 116 Fq 5580 MHz

				Value	Limit	Result
				16.623 MHz	> 500 kHz	Pass



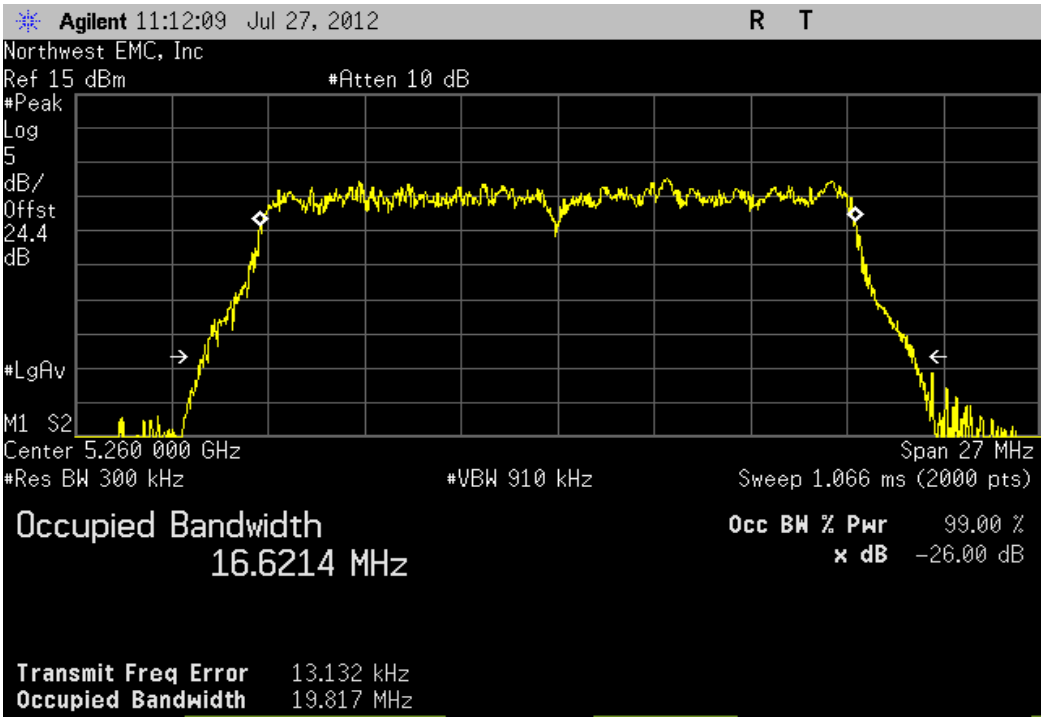
Antenna A, 20MHz Bandwidth , 802.11(a) 36Mbps, Low Channel 36 Fq 5180MHz

				Value	Limit	Result
				16.662 MHz	> 500 kHz	Pass



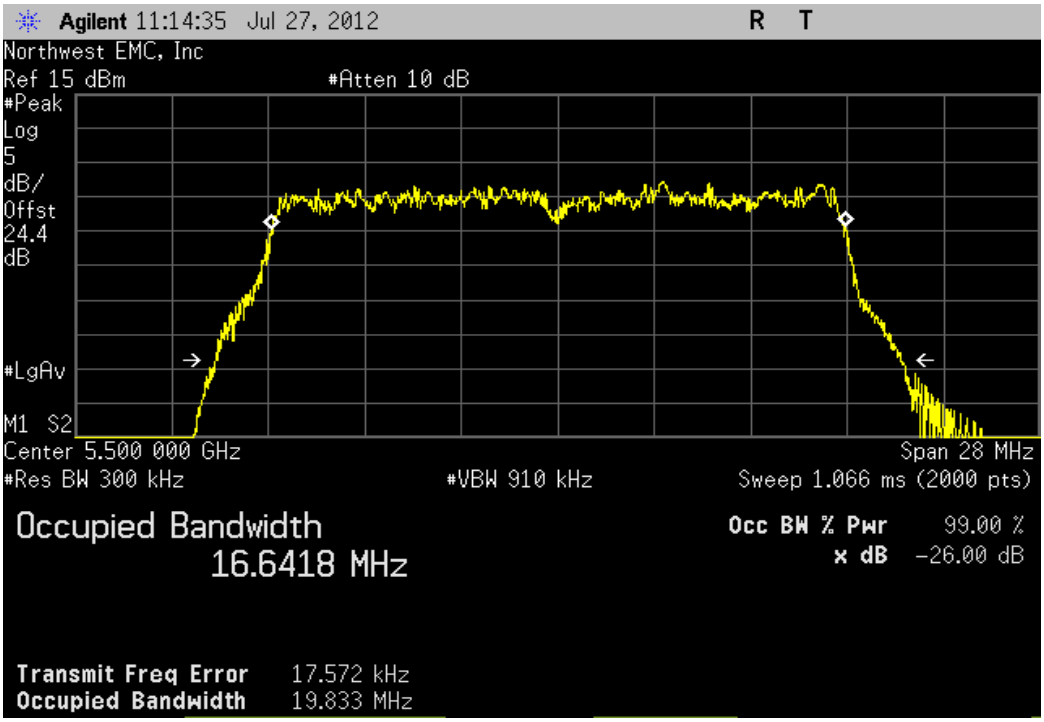
Antenna A, 20MHz Bandwidth , 802.11(a) 36Mbps, Low Channel 52 Fq 5260MHz

				Value	Limit	Result
				16.621 MHz	> 500 kHz	Pass

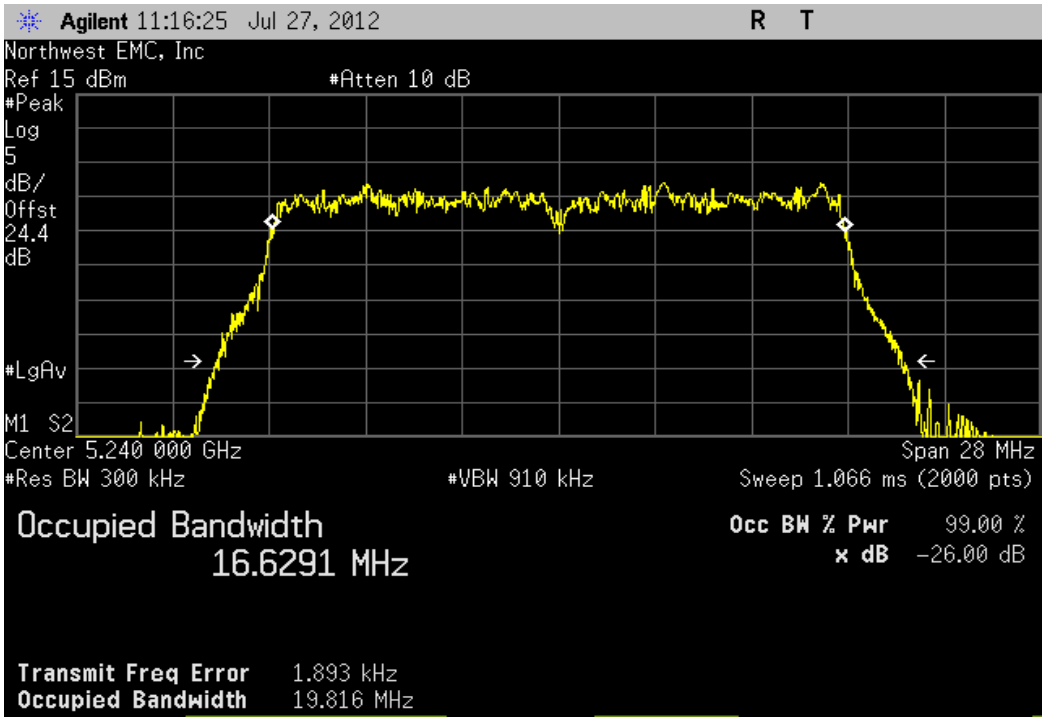


Antenna A, 20MHz Bandwidth , 802.11(a) 36Mbps, Low Channel 100 Fq 5500MHz

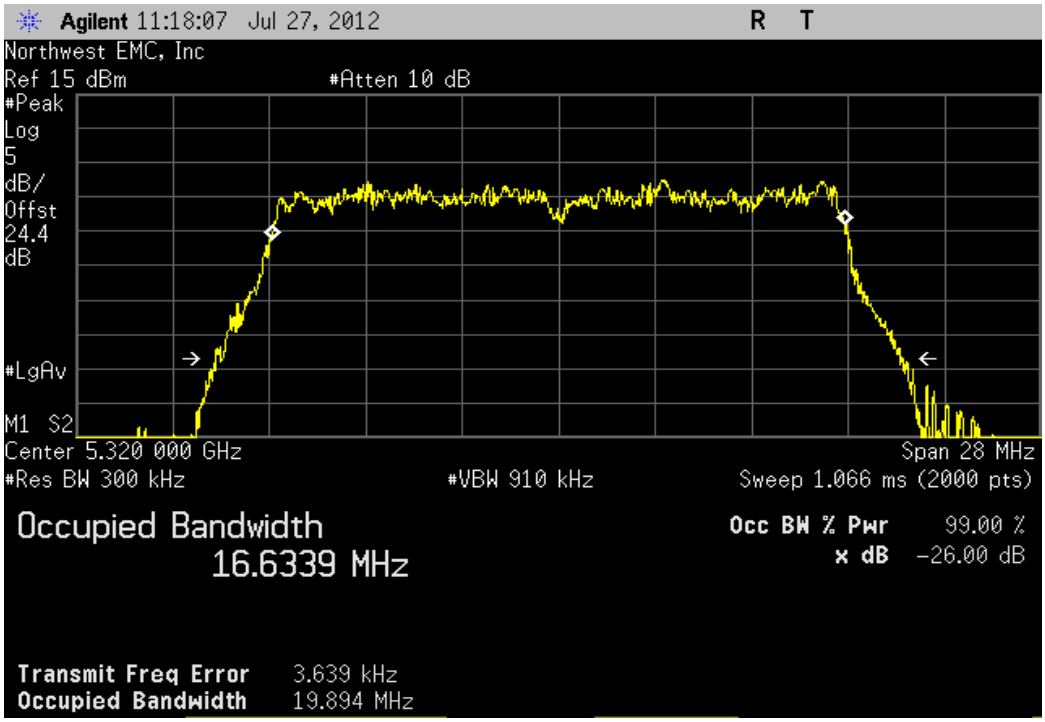
				Value	Limit	Result
				16.642 MHz	> 500 kHz	Pass



Antenna A, 20MHz Bandwidth , 802.11(a) 36Mbps, High Channel 48 Fq 5240MHz						
				Value	Limit	Result
				16.629 MHz	> 500 kHz	Pass

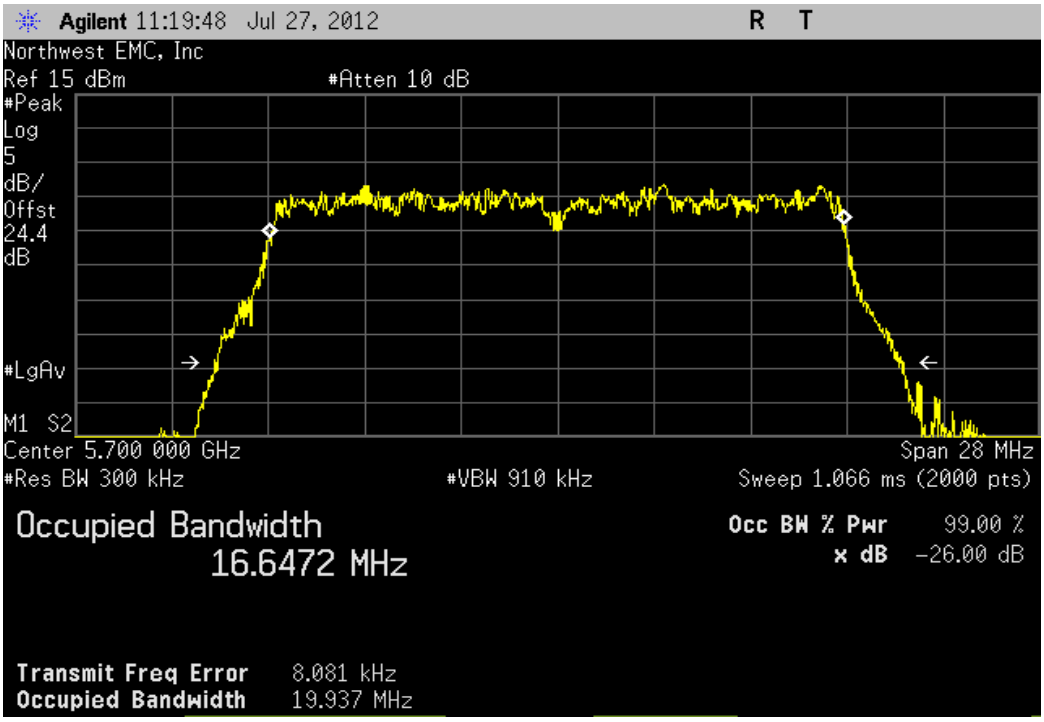


Antenna A, 20MHz Bandwidth , 802.11(a) 36Mbps, High Channel 64 Fq 5320MHz						
				Value	Limit	Result
				16.634 MHz	> 500 kHz	Pass



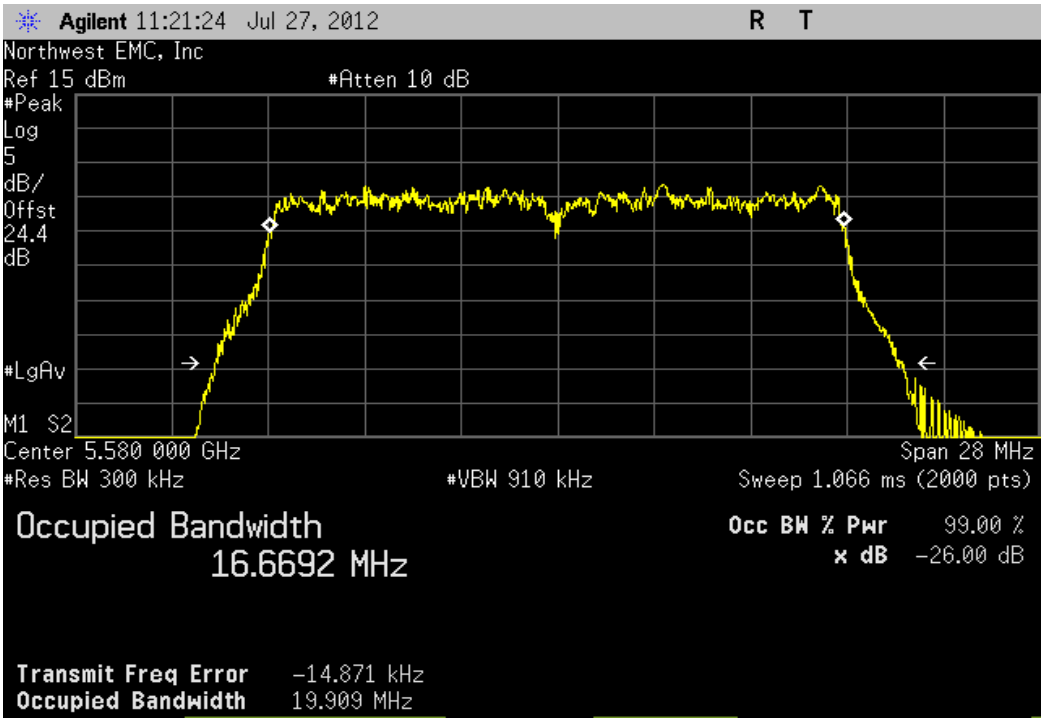
Antenna A, 20MHz Bandwidth , 802.11(a) 36Mbps, High Channel 140 Fq 5700MHz

				Value	Limit	Result
				16.647 MHz	> 500 kHz	Pass

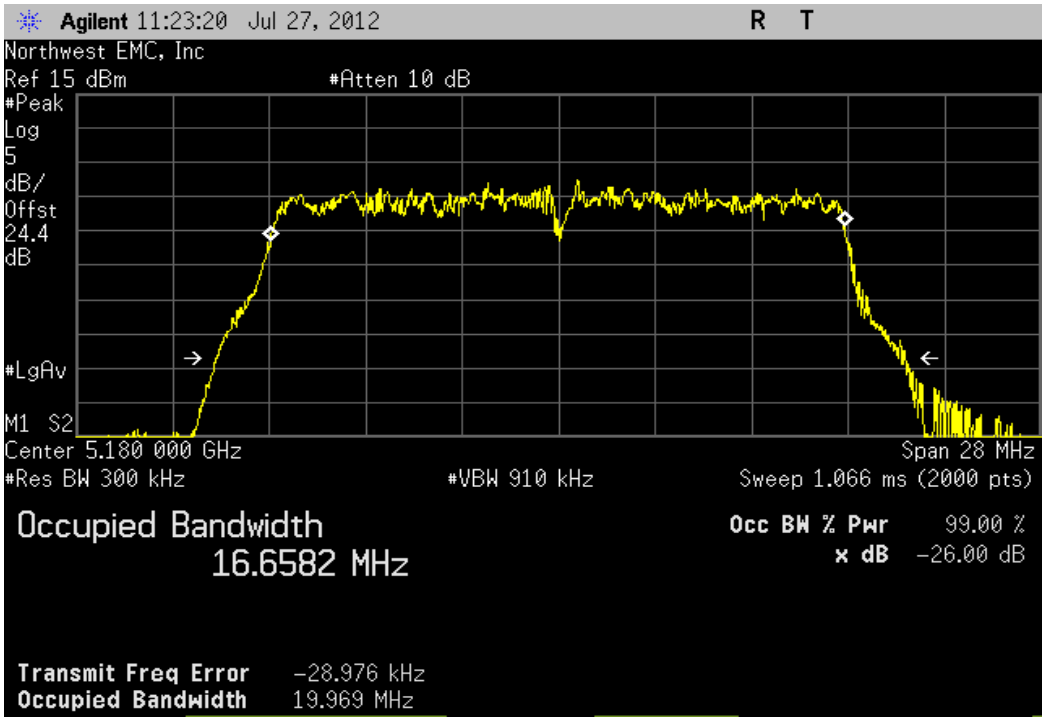


Antenna A, 20MHz Bandwidth , 802.11(a) 36Mbps, Mid Channel 116 Fq 5580 MHz

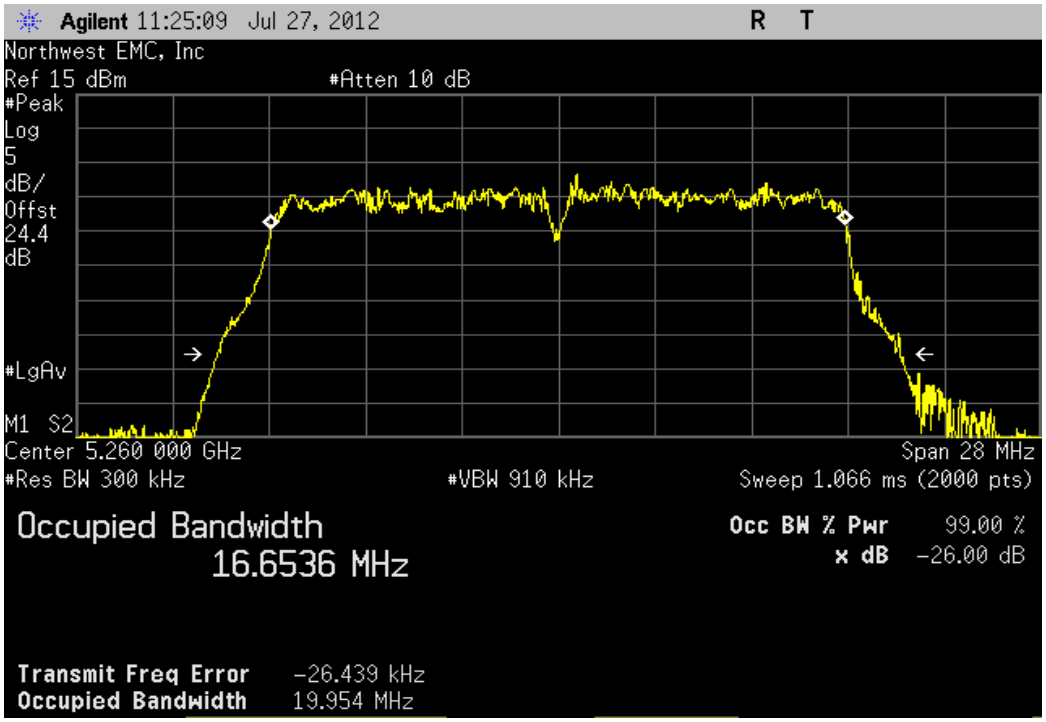
				Value	Limit	Result
				16.669 MHz	> 500 kHz	Pass



Antenna A, 20MHz Bandwidth , 802.11(a) 54Mbps, Low Channel 36 Fq 5180MHz							
					Value	Limit	Result
					16.658 MHz	> 500 kHz	Pass

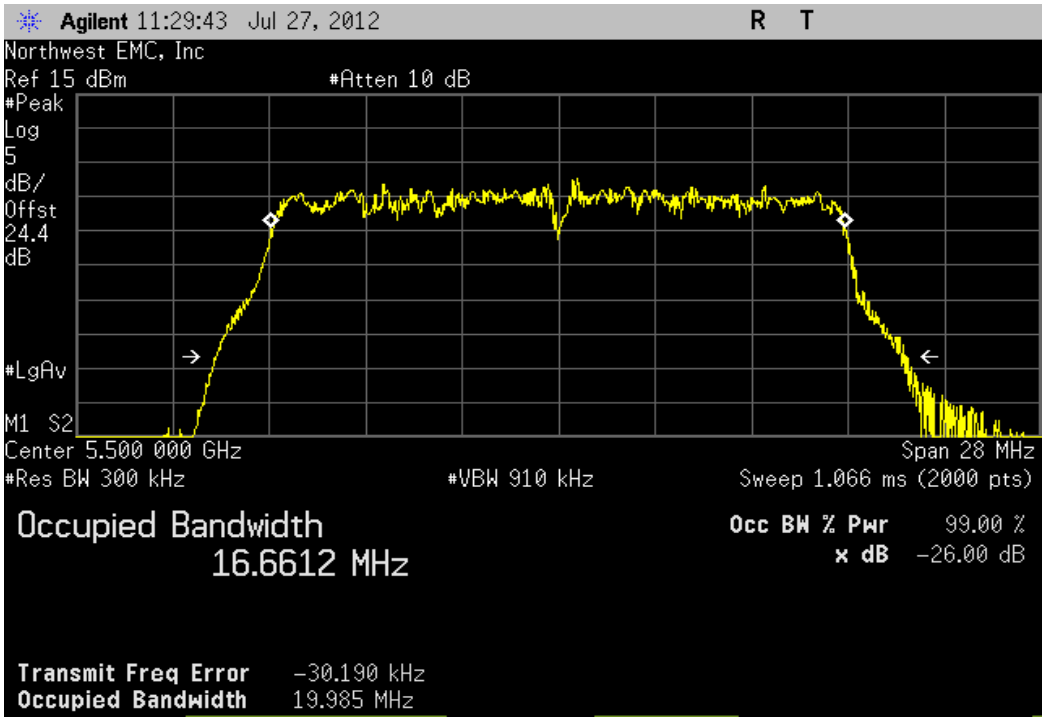


Antenna A, 20MHz Bandwidth , 802.11(a) 54Mbps, Low Channel 52 Fq 5260MHz							
					Value	Limit	Result
					16.654 MHz	> 500 kHz	Pass



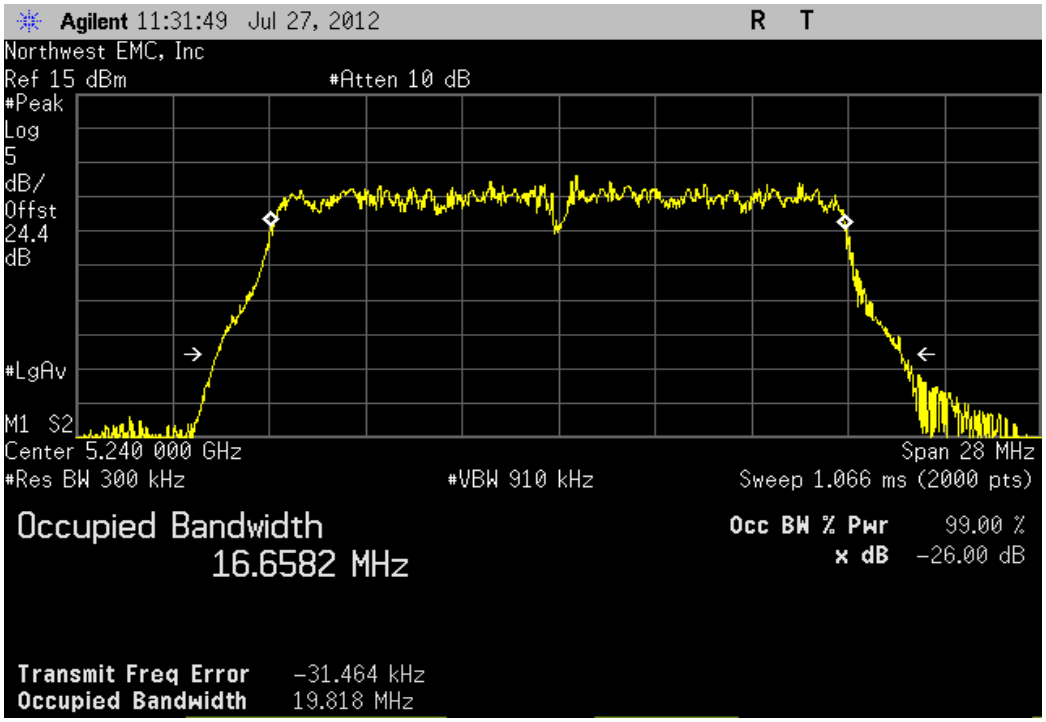
Antenna A, 20MHz Bandwidth , 802.11(a) 54Mbps, Low Channel 100 Fq 5500MHz

				Value	Limit	Result
				16.661 MHz	> 500 kHz	Pass

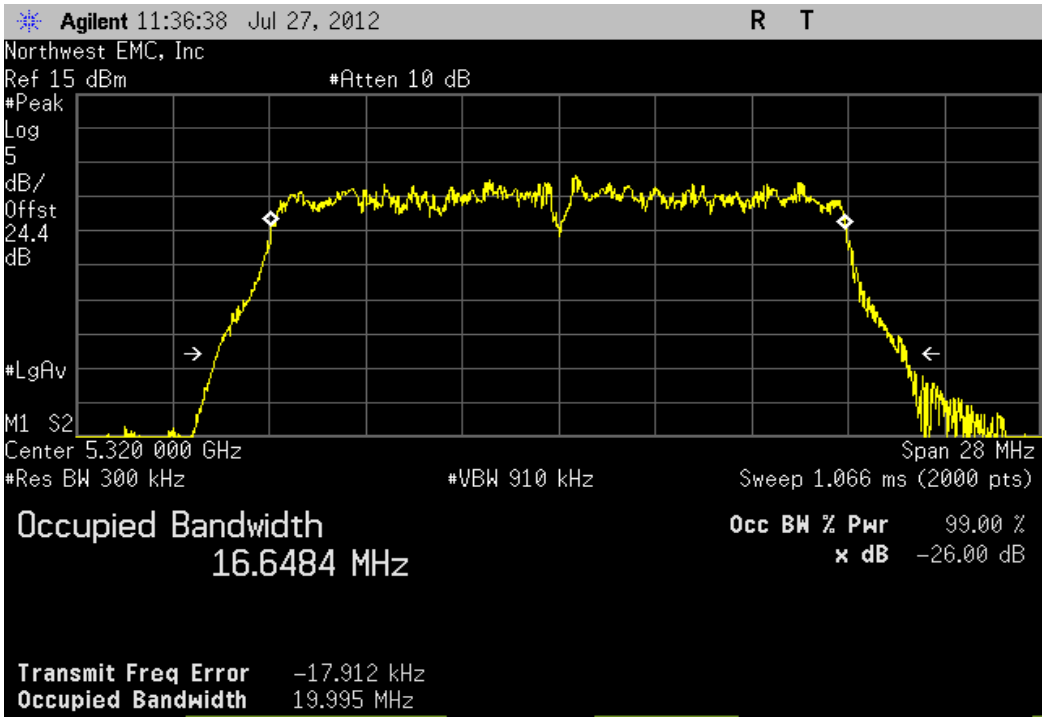


Antenna A, 20MHz Bandwidth , 802.11(a) 54Mbps, High Channel 48 Fq 5240MHz

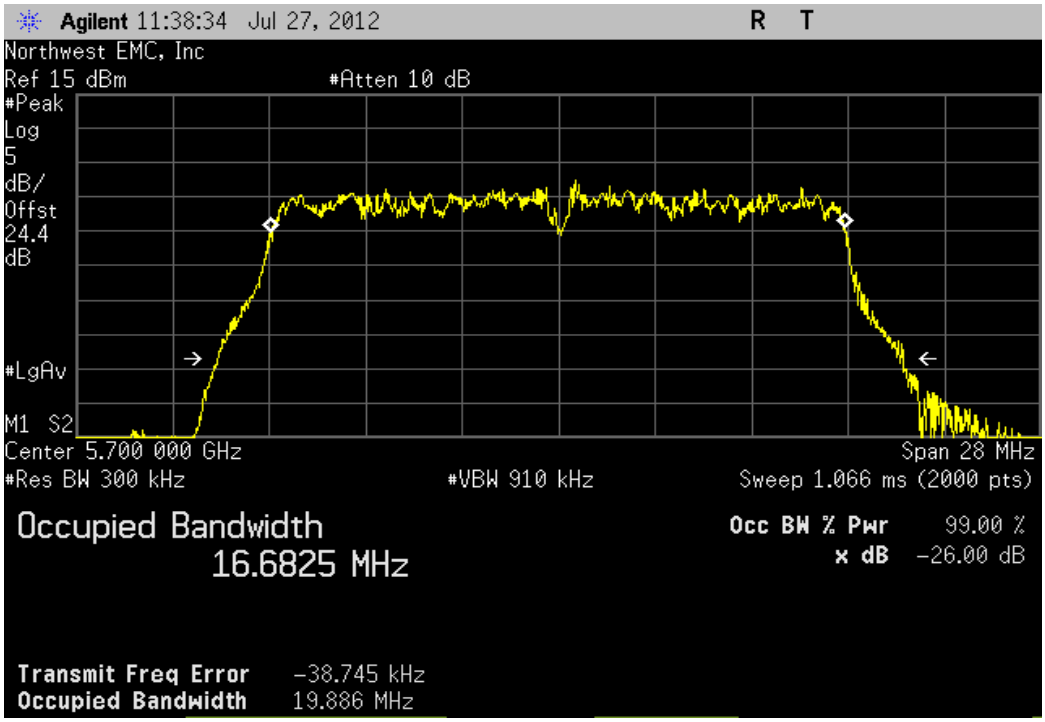
				Value	Limit	Result
				16.658 MHz	> 500 kHz	Pass



Antenna A, 20MHz Bandwidth , 802.11(a) 54Mbps, High Channel 64 Fq 5320MHz						
				Value	Limit	Result
				16.648 MHz	> 500 kHz	Pass

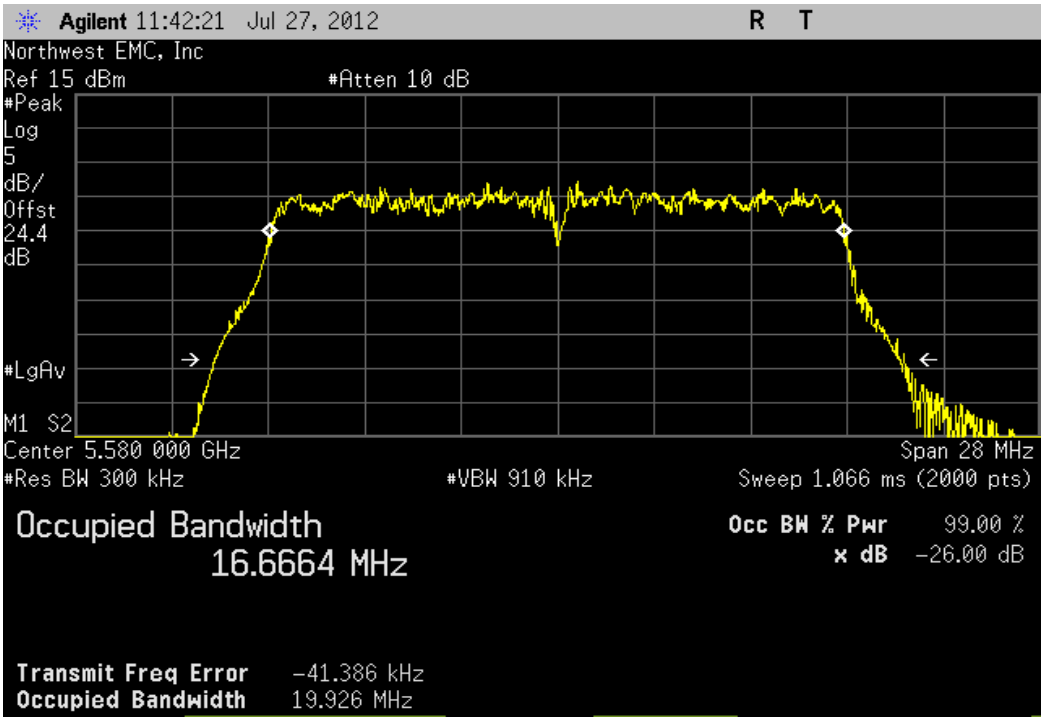


Antenna A, 20MHz Bandwidth , 802.11(a) 54Mbps, High Channel 140 Fq 5700MHz						
				Value	Limit	Result
				16.683 MHz	> 500 kHz	Pass



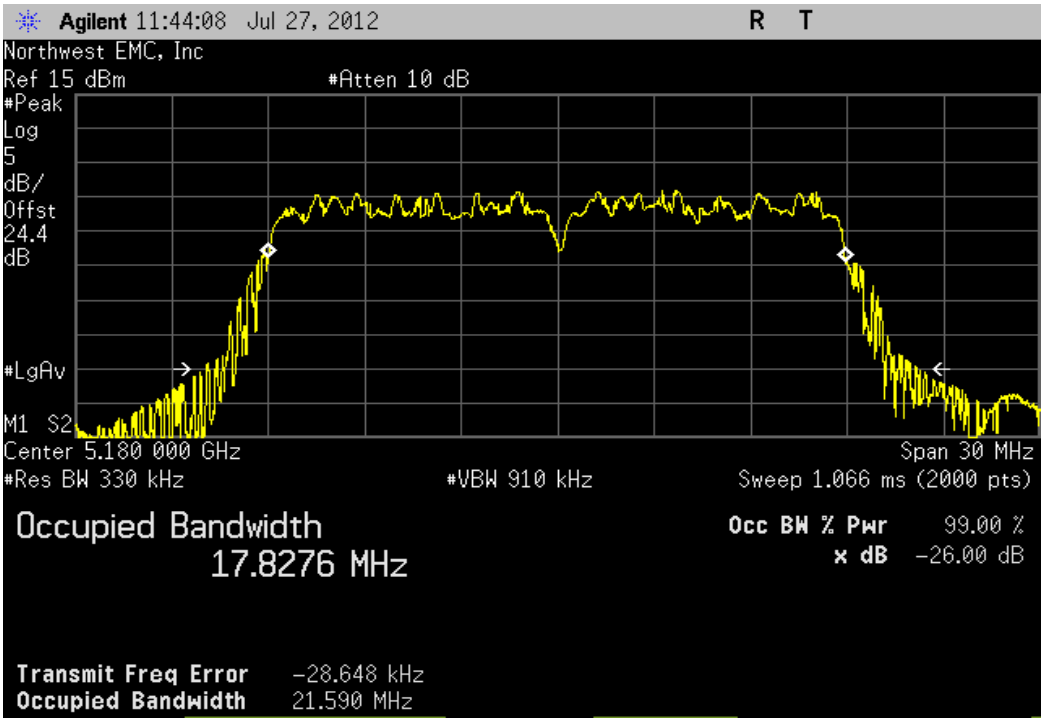
Antenna A, 20MHz Bandwidth , 802.11(a) 54Mbps, Mid Channel 116 Fq 5580 MHz

				Value	Limit	Result
				16.666 MHz	> 500 kHz	Pass



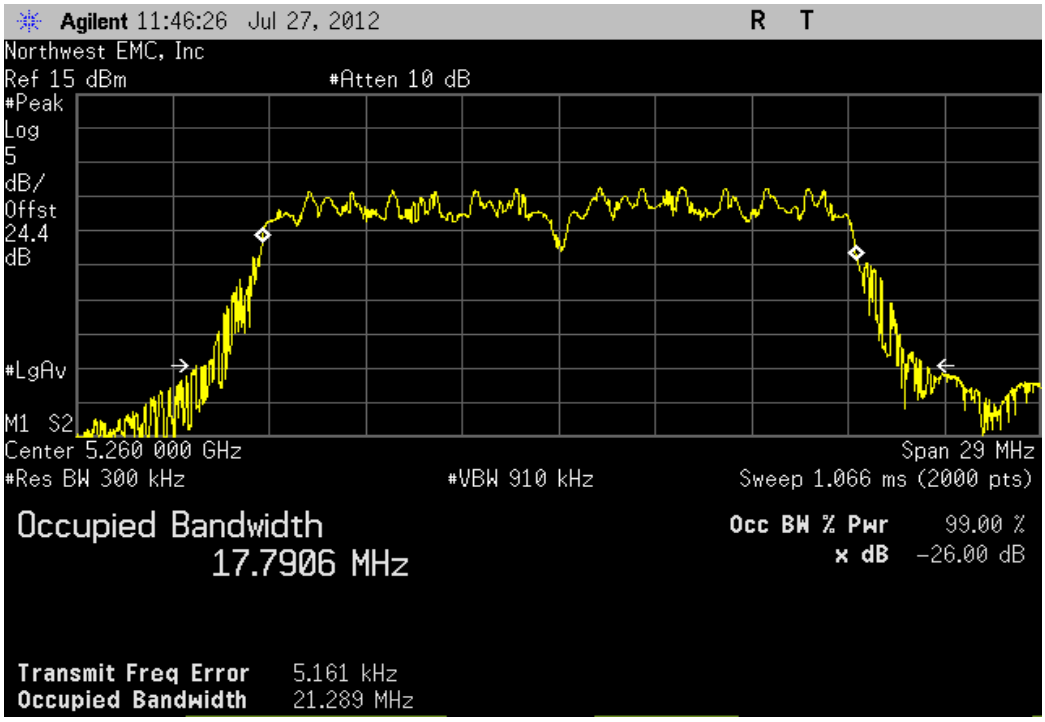
Antenna A, 20MHz Bandwidth , 802.11(n) MCS0, Low Channel 36 Fq 5180MHz

				Value	Limit	Result
				17.828 MHz	> 500 kHz	Pass



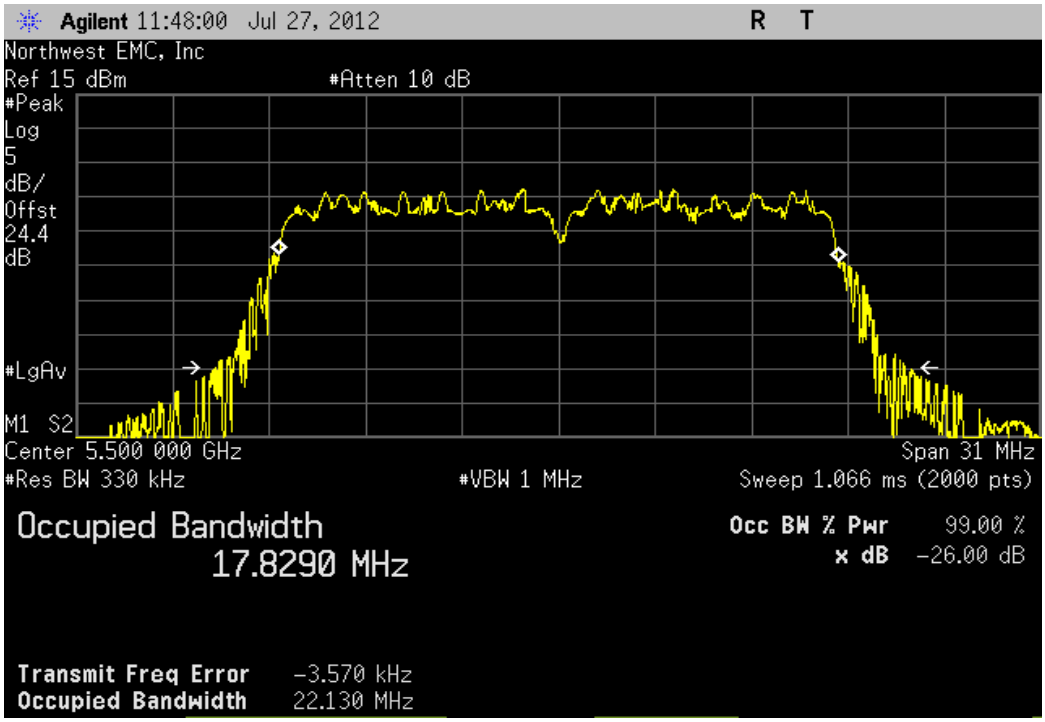
Antenna A, 20MHz Bandwidth , 802.11(n) MCS0, Low Channel 52 Fq 5260MHz

				Value	Limit	Result
				17.791 MHz	> 500 kHz	Pass



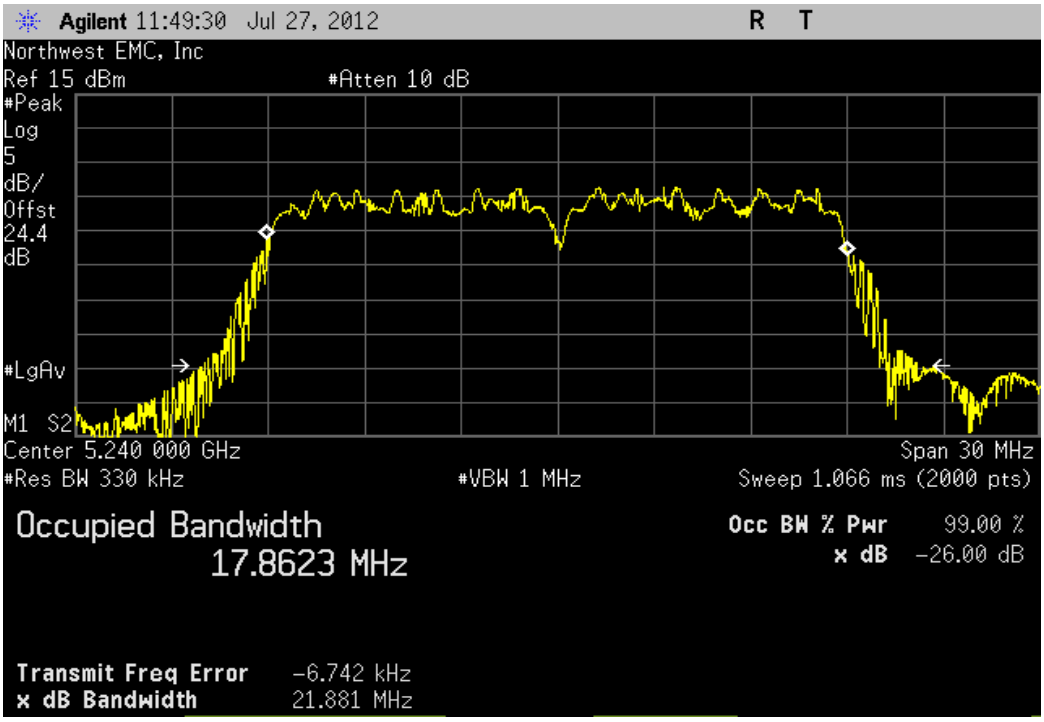
Antenna A, 20MHz Bandwidth , 802.11(n) MCS0, Low Channel 100 Fq 5500MHz

				Value	Limit	Result
				17.829 MHz	> 500 kHz	Pass



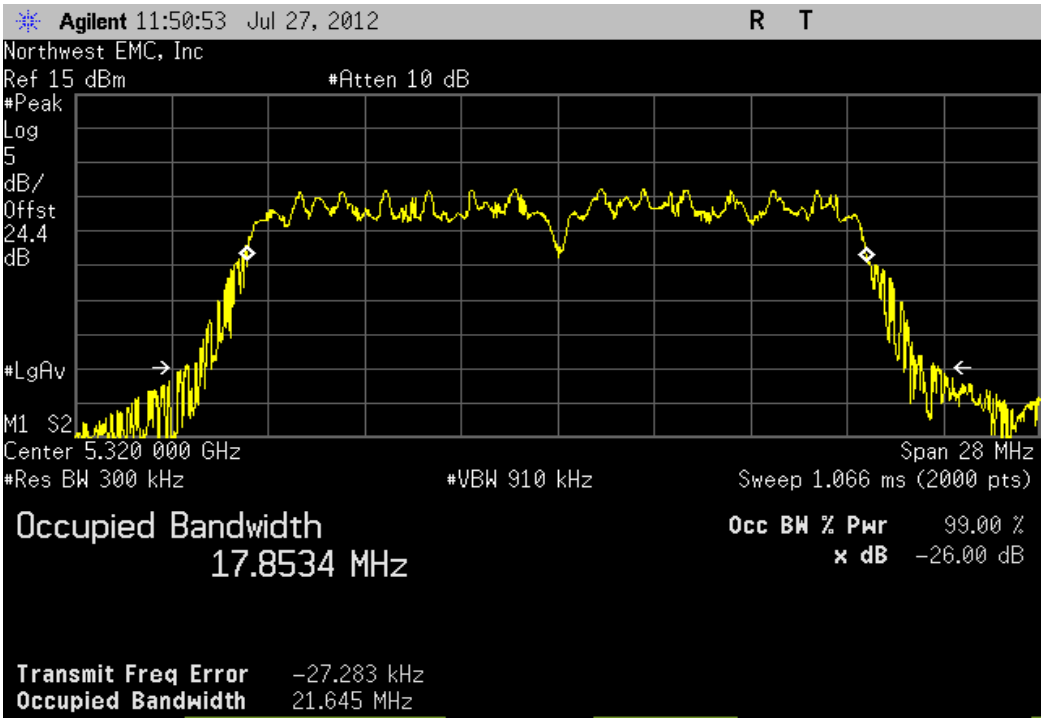
Antenna A, 20MHz Bandwidth , 802.11(n) MCS0, High Channel 48 Fq 5240MHz

				Value	Limit	Result
				17.862 MHz	> 500 kHz	Pass



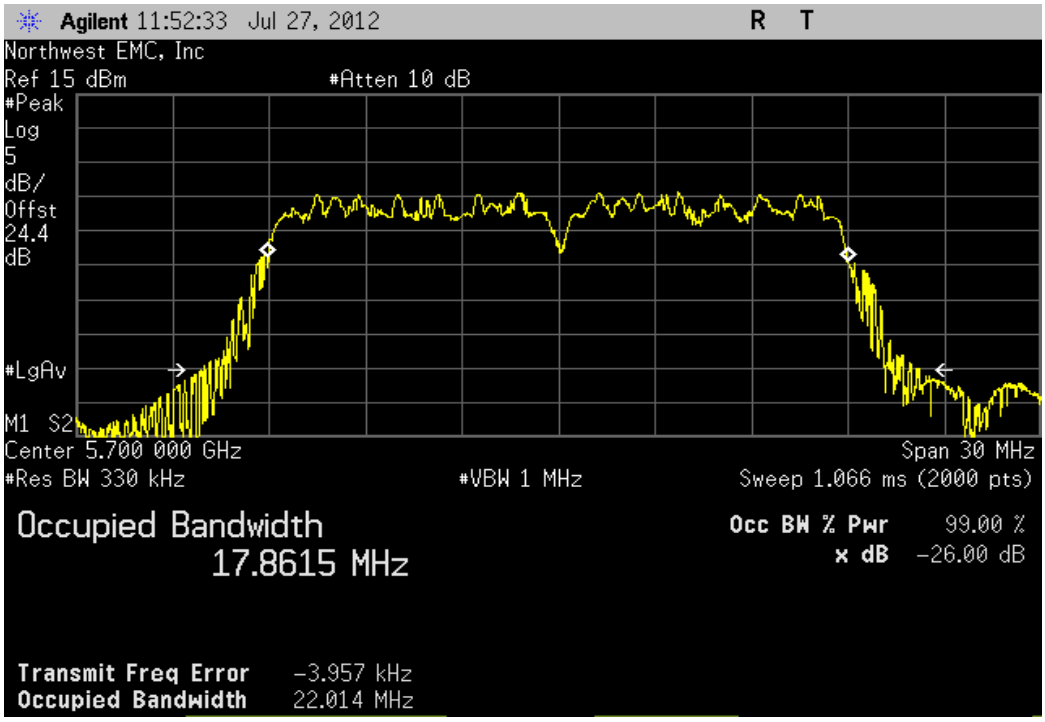
Antenna A, 20MHz Bandwidth , 802.11(n) MCS0, High Channel 64 Fq 5320MHz

				Value	Limit	Result
				17.853 MHz	> 500 kHz	Pass



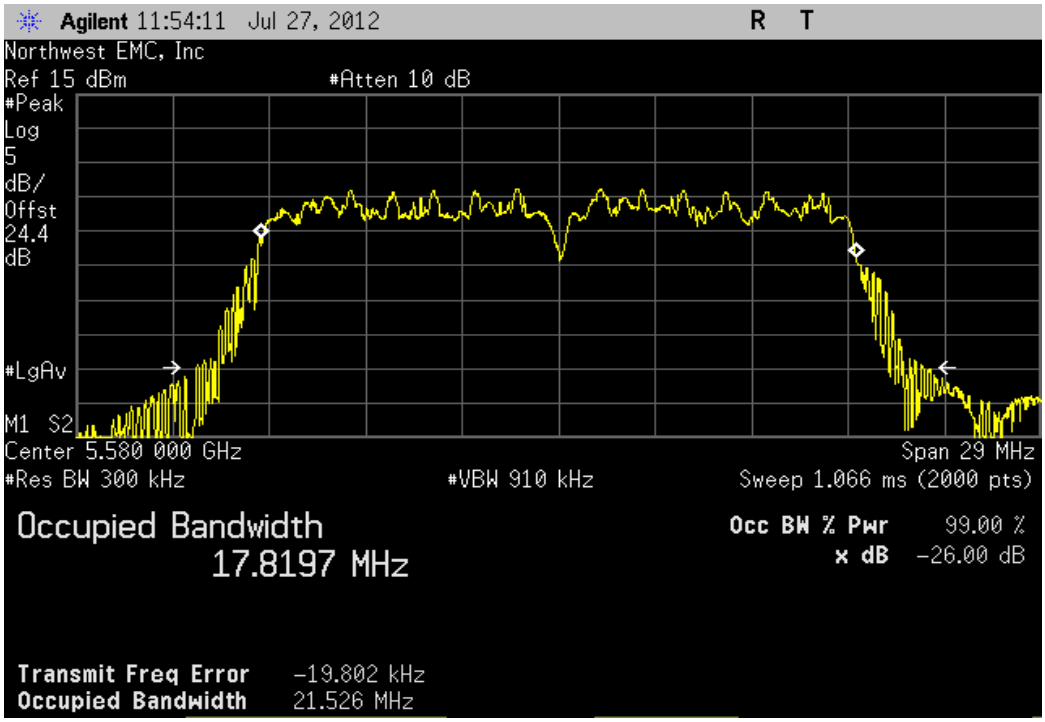
Antenna A, 20MHz Bandwidth , 802.11(n) MCS0, High Channel 140 Fq 5700MHz

				Value	Limit	Result
				17.861 MHz	> 500 kHz	Pass



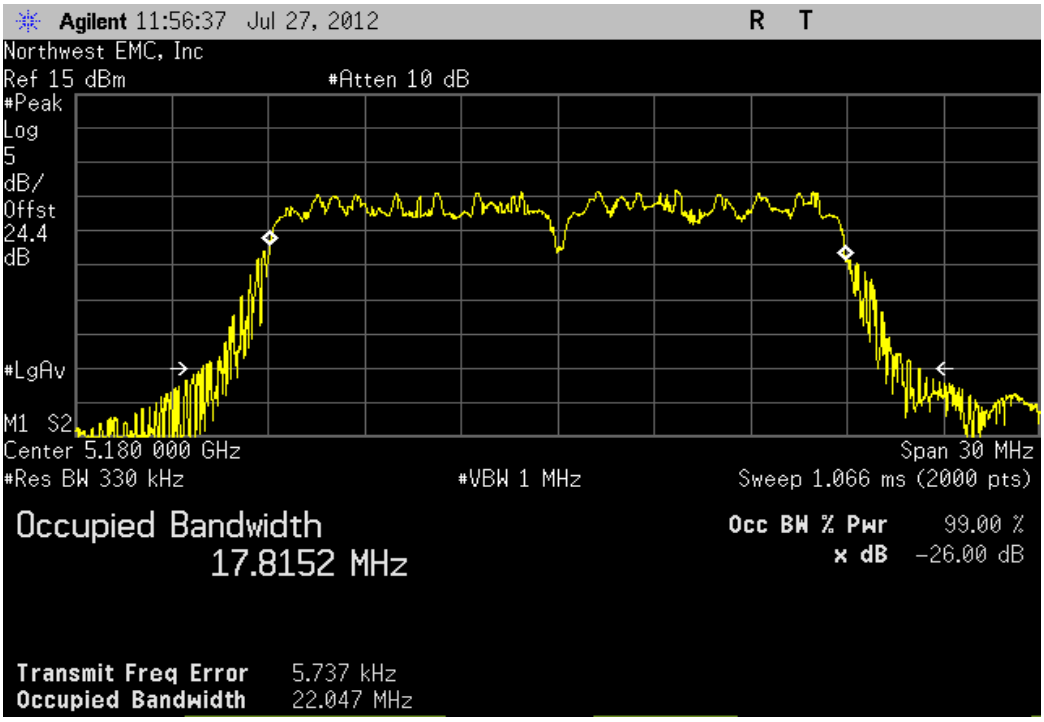
Antenna A, 20MHz Bandwidth , 802.11(n) MCS0, Mid Channel 116 Fq 5580 MHz

				Value	Limit	Result
				17.82 MHz	> 500 kHz	Pass



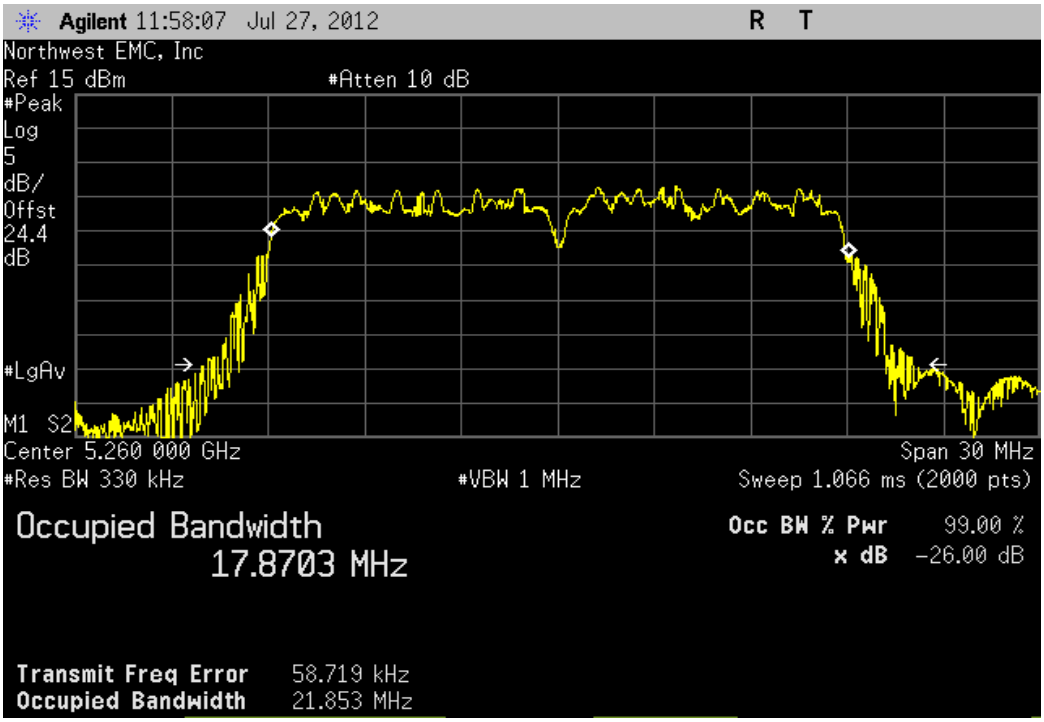
Antenna A, 20MHz Bandwidth , 802.11(n) MCS7, Low Channel 36 Fq 5180MHz

				Value	Limit	Result
				17.815 MHz	> 500 kHz	Pass



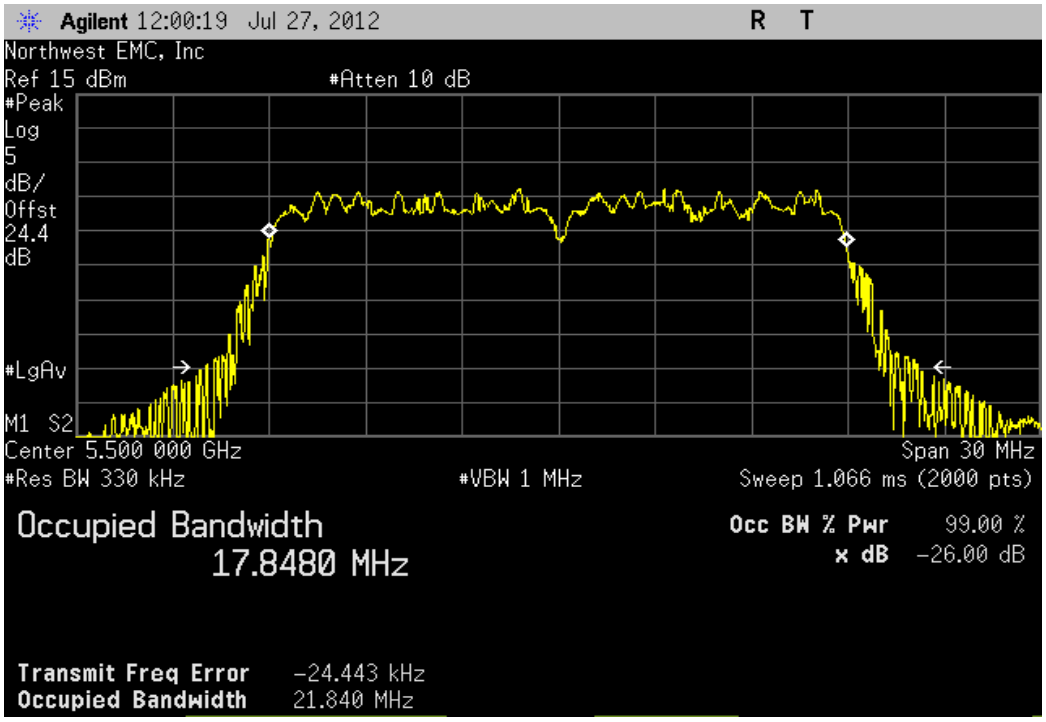
Antenna A, 20MHz Bandwidth , 802.11(n) MCS7, Low Channel 52 Fq 5260MHz

				Value	Limit	Result
				17.87 MHz	> 500 kHz	Pass



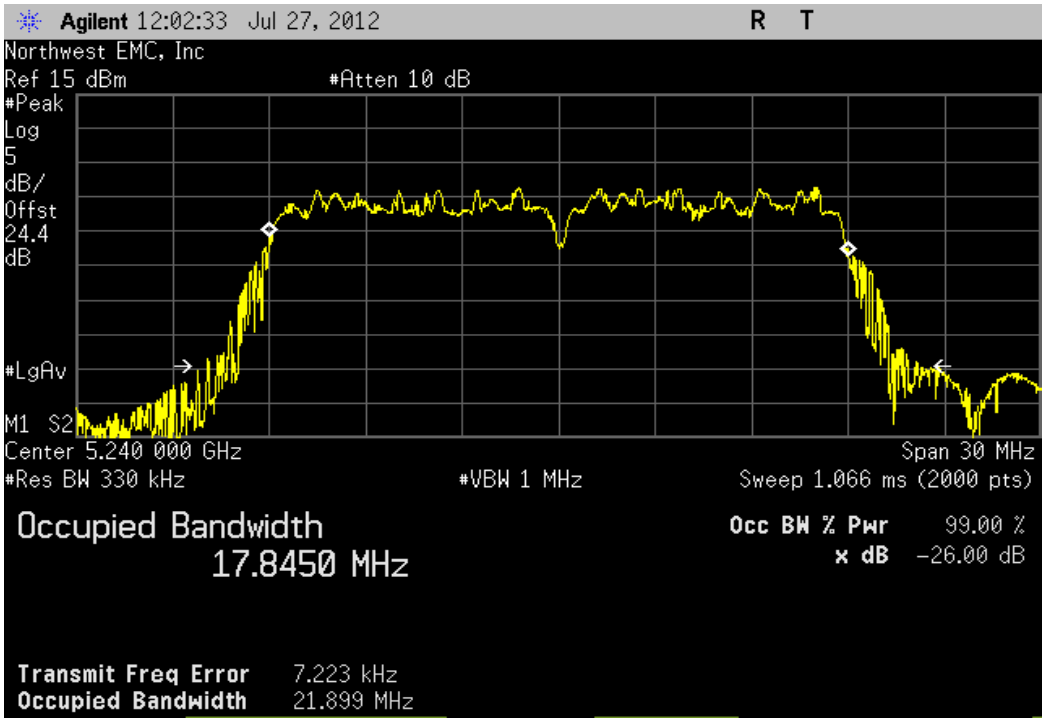
Antenna A, 20MHz Bandwidth , 802.11(n) MCS7, Low Channel 100 Fq 5500MHz

				Value	Limit	Result
				17.848 MHz	> 500 kHz	Pass



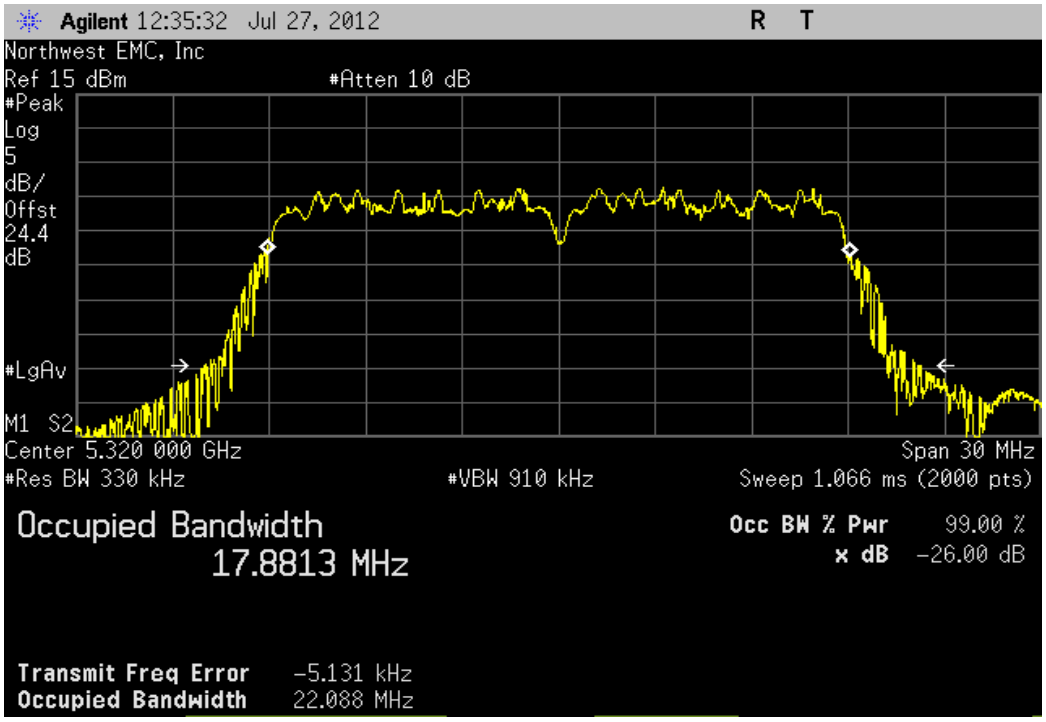
Antenna A, 20MHz Bandwidth , 802.11(n) MCS7, High Channel 48 Fq 5240MHz

				Value	Limit	Result
				17.845 MHz	> 500 kHz	Pass



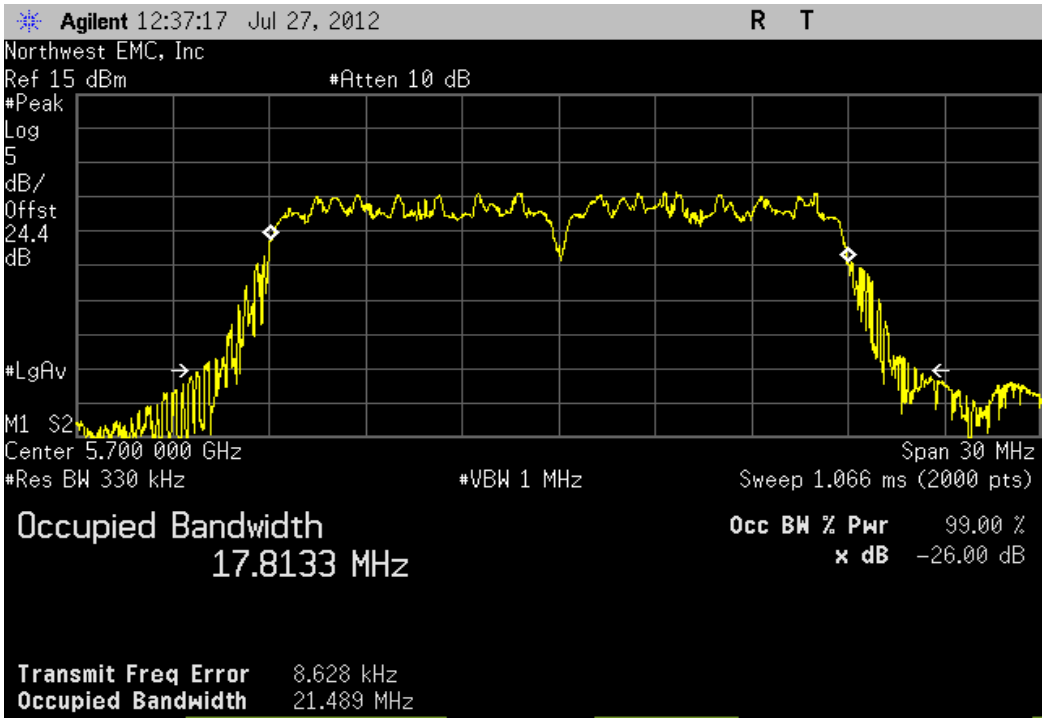
Antenna A, 20MHz Bandwidth , 802.11(n) MCS7, High Channel 64 Fq 5320MHz

				Value	Limit	Result
				17.881 MHz	> 500 kHz	Pass



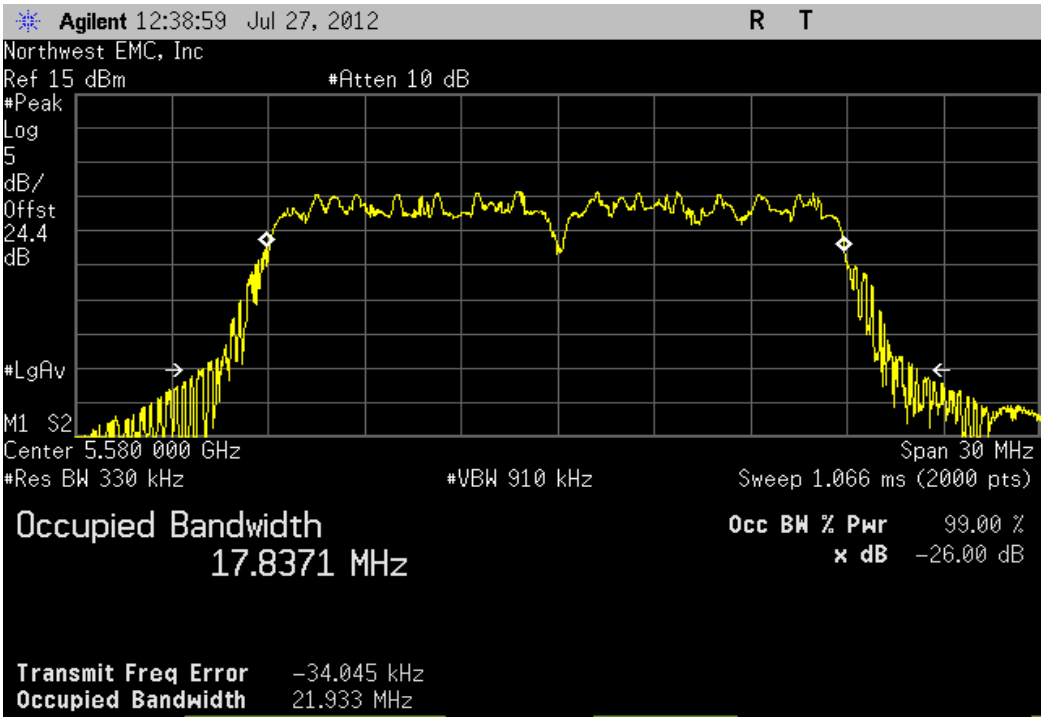
Antenna A, 20MHz Bandwidth , 802.11(n) MCS7, High Channel 140 Fq 5700MHz

				Value	Limit	Result
				17.813 MHz	> 500 kHz	Pass



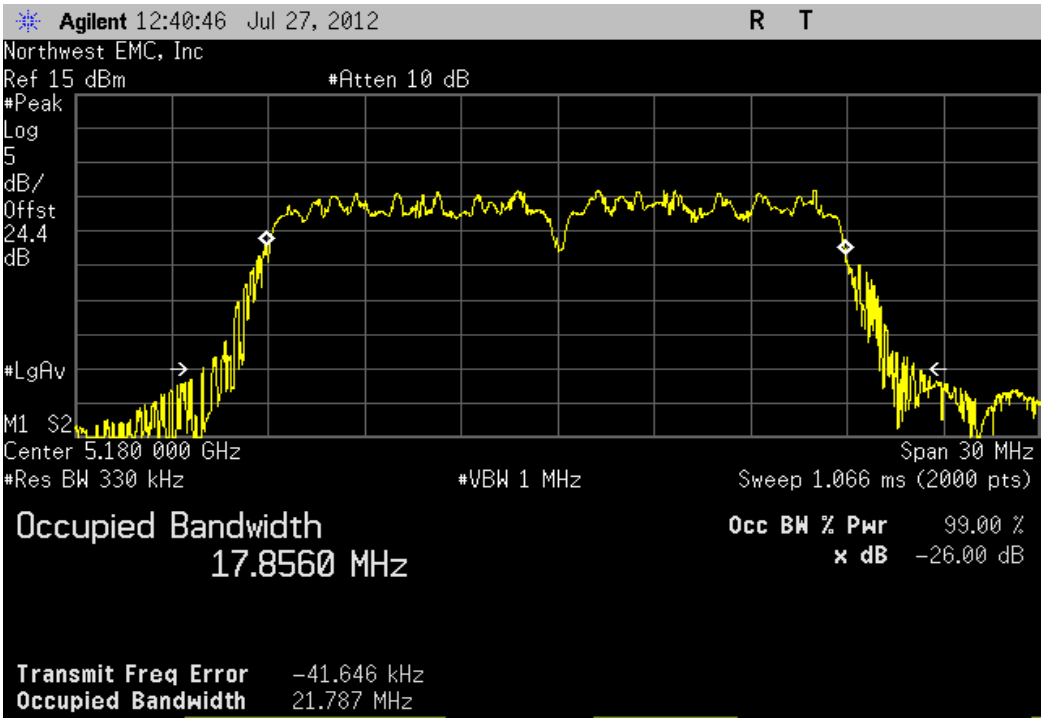
Antenna A, 20MHz Bandwidth , 802.11(n) MCS7, Mid Channel 116 Fq 5580 MHz

				Value	Limit	Result
				17.837 MHz	> 500 kHz	Pass



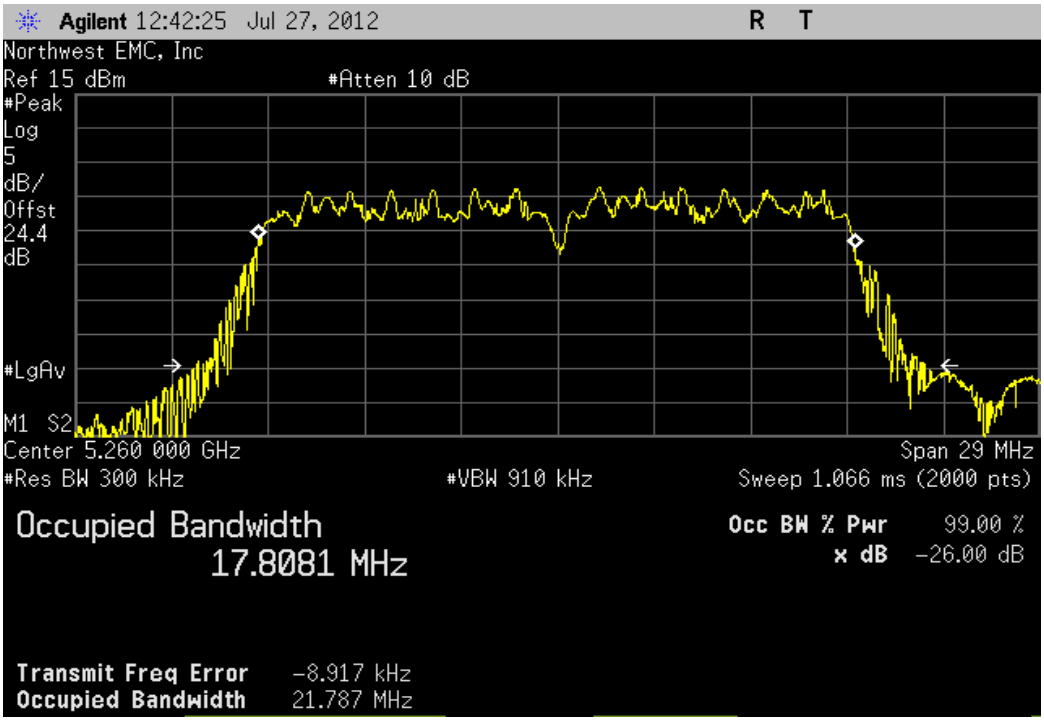
Antenna A, 20MHz Bandwidth , 802.11(n) MCS8, Low Channel 36 Fq 5180MHz

				Value	Limit	Result
				17.856 MHz	> 500 kHz	Pass



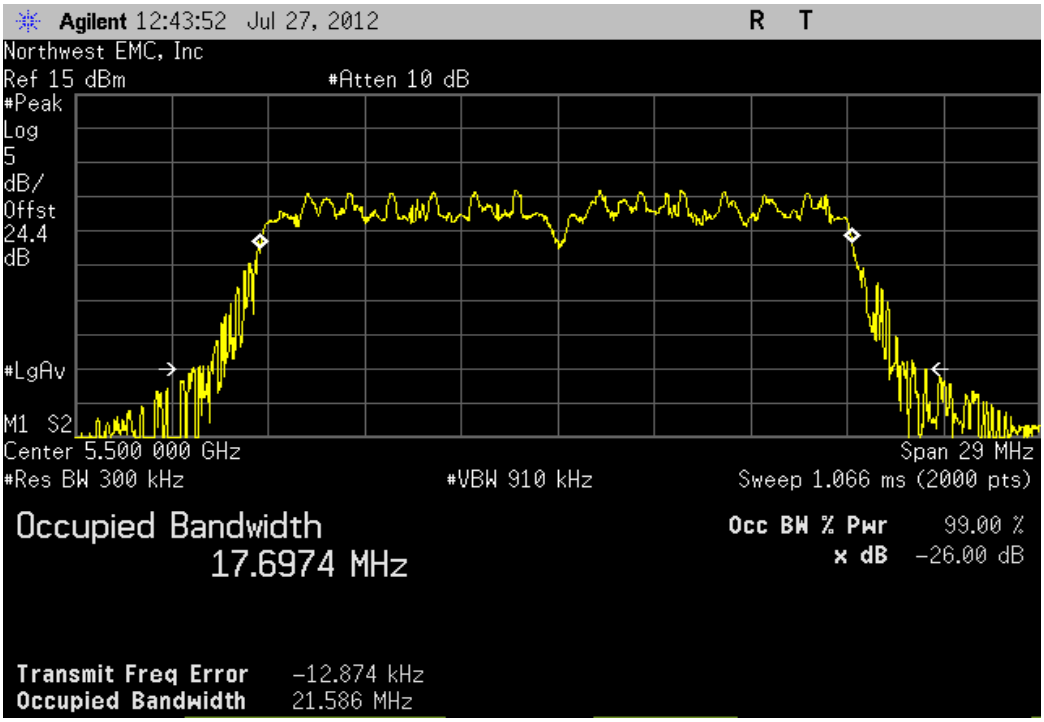
Antenna A, 20MHz Bandwidth , 802.11(n) MCS8, Low Channel 52 Fq 5260MHz

				Value	Limit	Result
				17.808 MHz	> 500 kHz	Pass



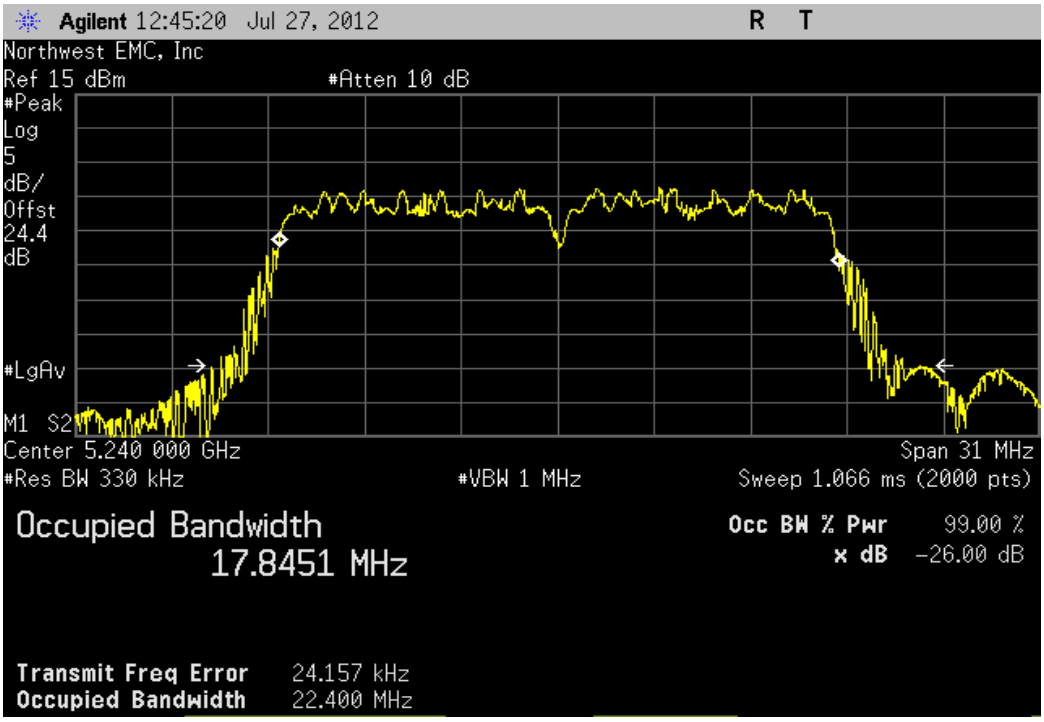
Antenna A, 20MHz Bandwidth , 802.11(n) MCS8, Low Channel 100 Fq 5500MHz

				Value	Limit	Result
				17.697 MHz	> 500 kHz	Pass



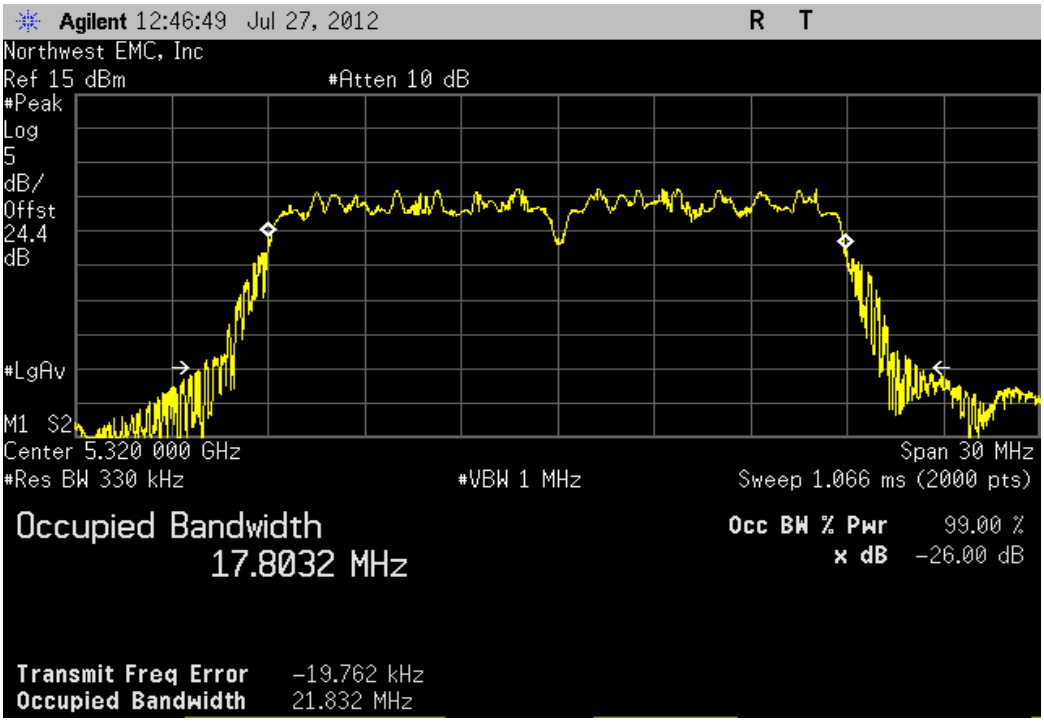
Antenna A, 20MHz Bandwidth , 802.11(n) MCS8, High Channel 48 Fq 5240MHz

				Value	Limit	Result
				17.845 MHz	> 500 kHz	Pass



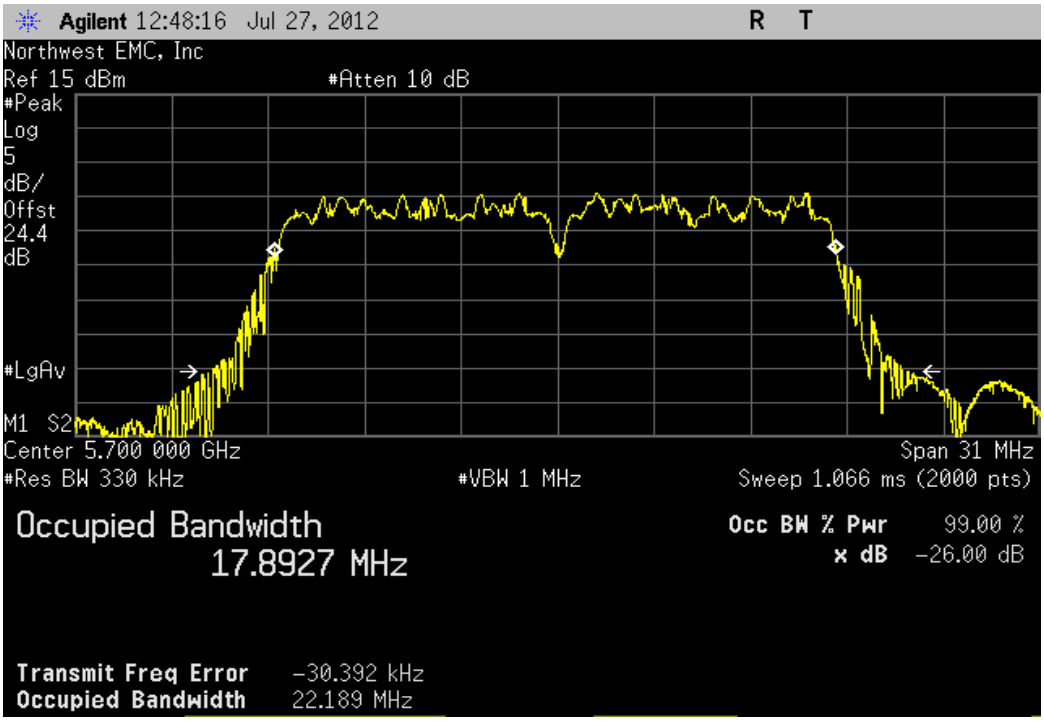
Antenna A, 20MHz Bandwidth , 802.11(n) MCS8, High Channel 64 Fq 5320MHz

				Value	Limit	Result
				17.803 MHz	> 500 kHz	Pass



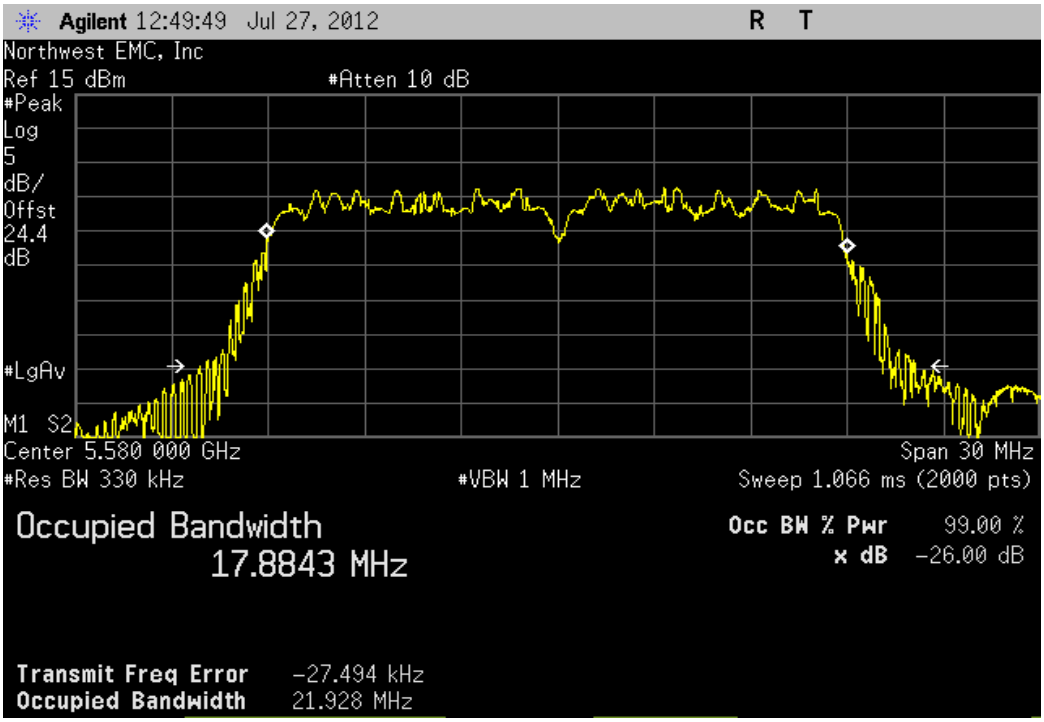
Antenna A, 20MHz Bandwidth , 802.11(n) MCS8, High Channel 140 Fq 5700MHz

				Value	Limit	Result
				17.893 MHz	> 500 kHz	Pass

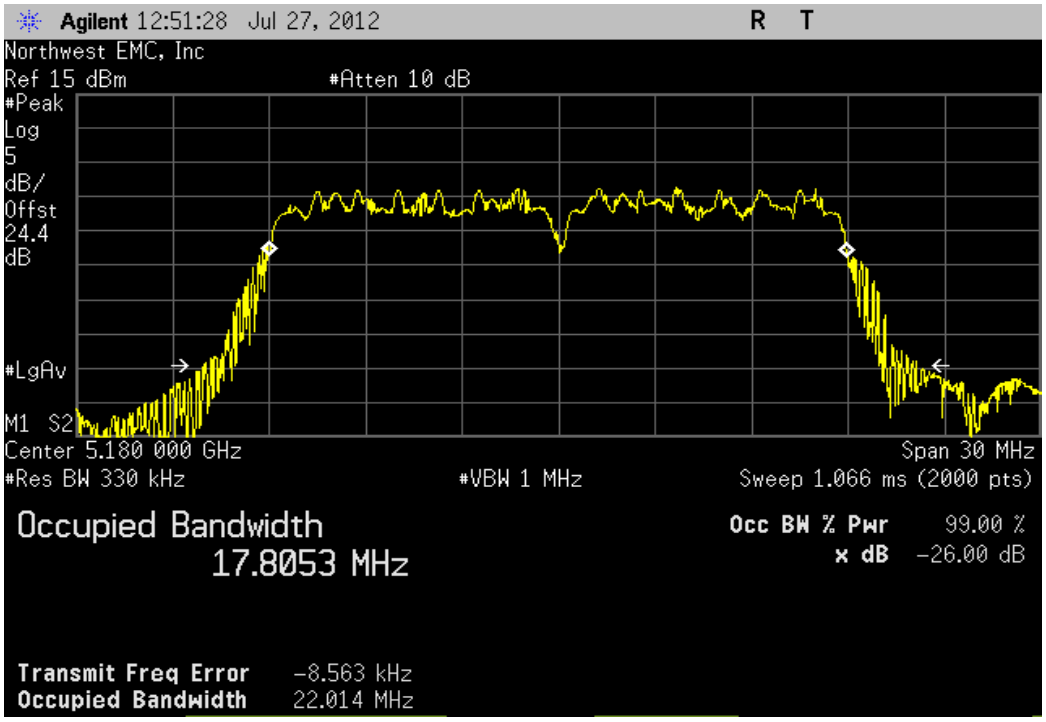


Antenna A, 20MHz Bandwidth , 802.11(n) MCS8, Mid Channel 116 Fq 5580 MHz

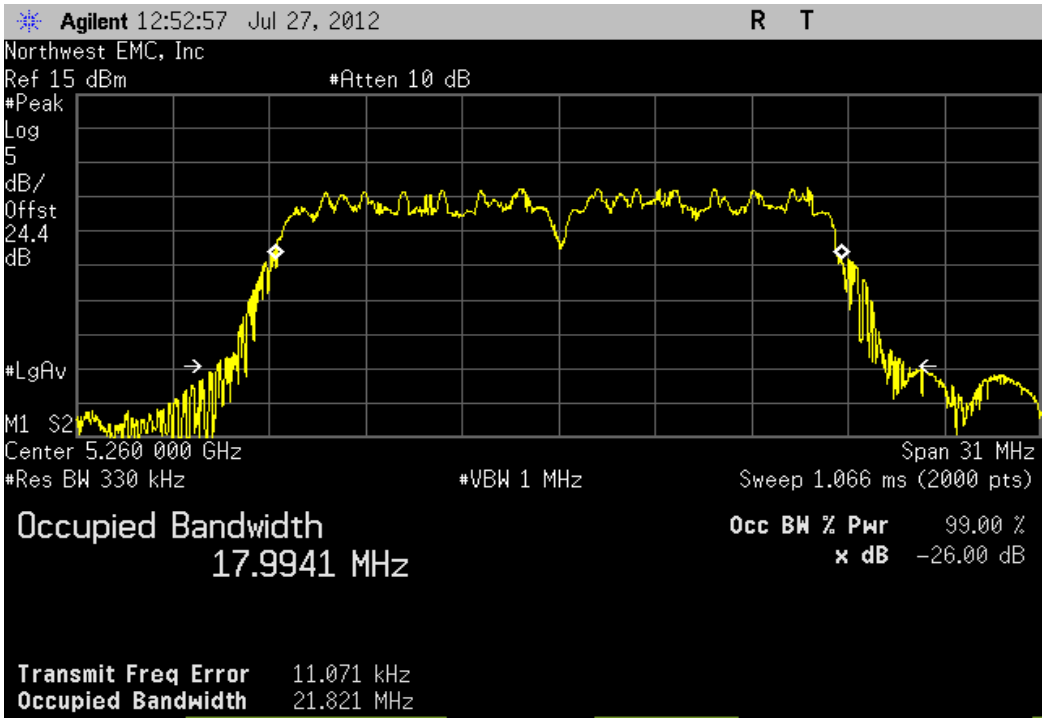
				Value	Limit	Result
				17.884 MHz	> 500 kHz	Pass



Antenna A, 20MHz Bandwidth , 802.11(n) MCS15, Low Channel 36 Fq 5180MHz						
				Value	Limit	Result
				17.805 MHz	> 500 kHz	Pass

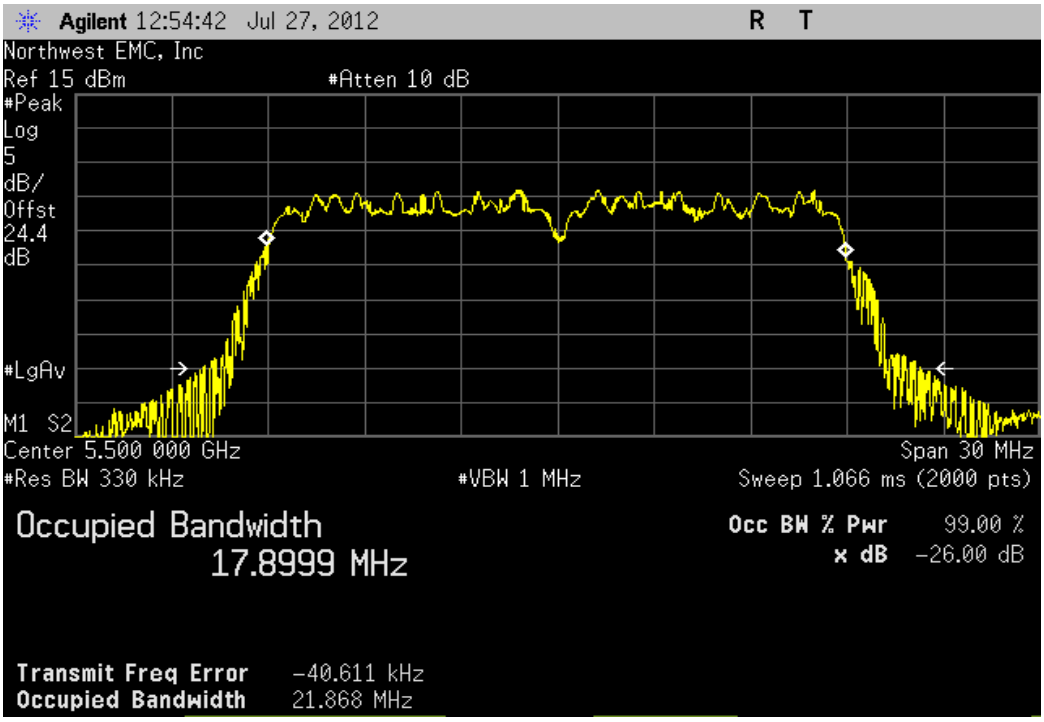


Antenna A, 20MHz Bandwidth , 802.11(n) MCS15, Low Channel 52 Fq 5260MHz						
				Value	Limit	Result
				17.994 MHz	> 500 kHz	Pass



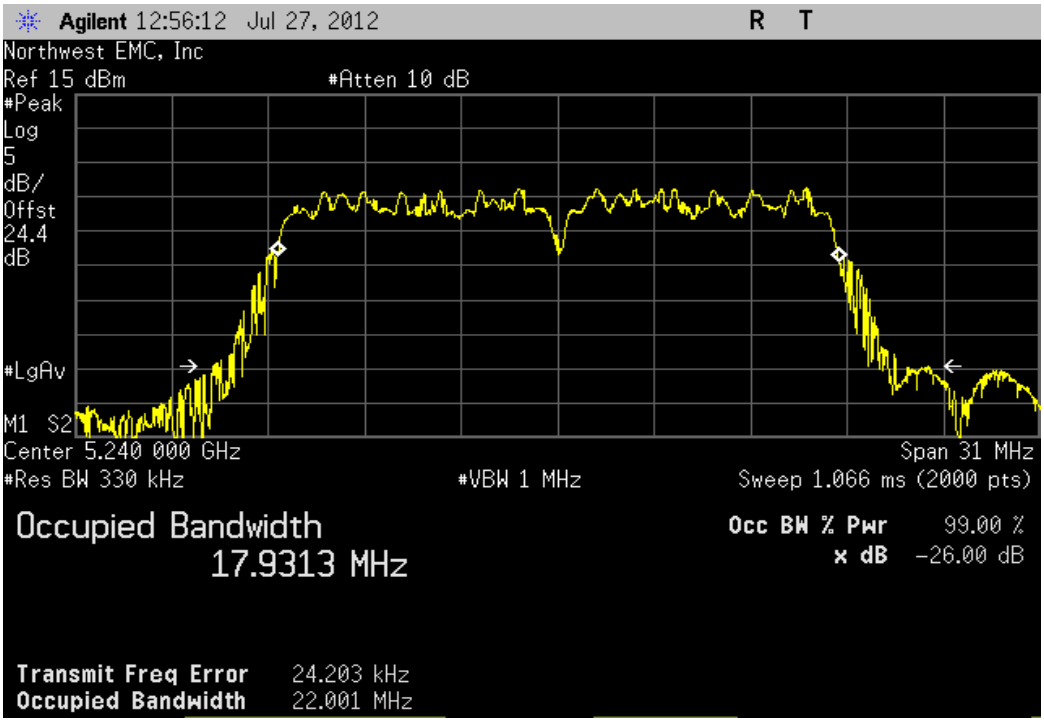
Antenna A, 20MHz Bandwidth , 802.11(n) MCS15, Low Channel 100 Fq 5500MHz

				Value	Limit	Result
				17.9 MHz	> 500 kHz	Pass

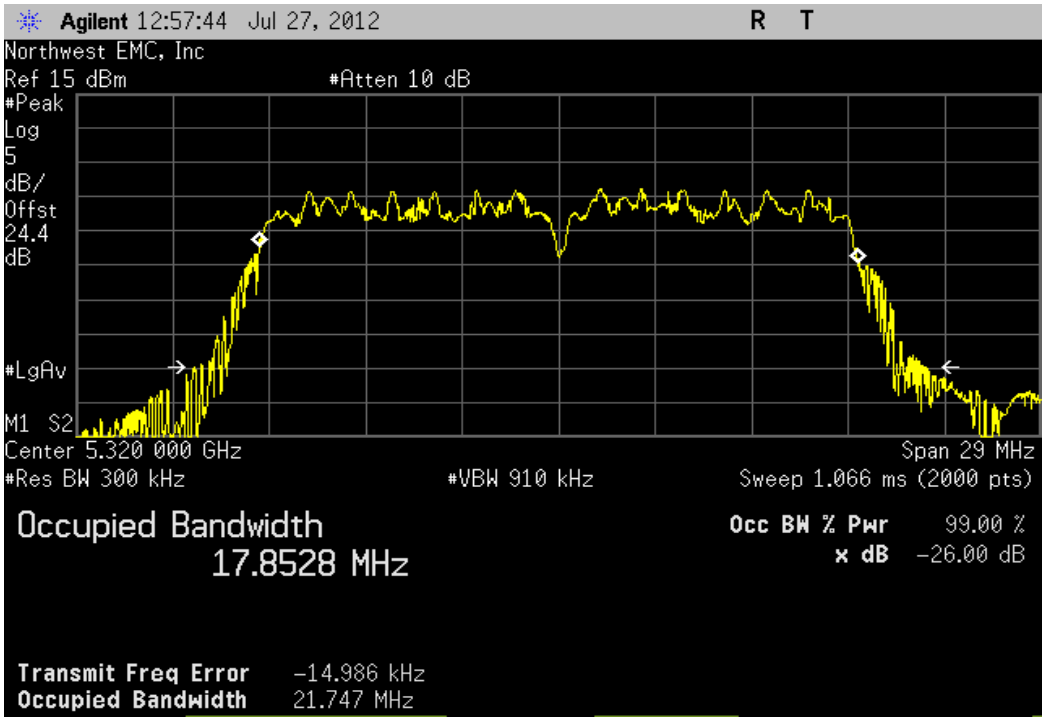


Antenna A, 20MHz Bandwidth , 802.11(n) MCS15, High Channel 48 Fq 5240MHz

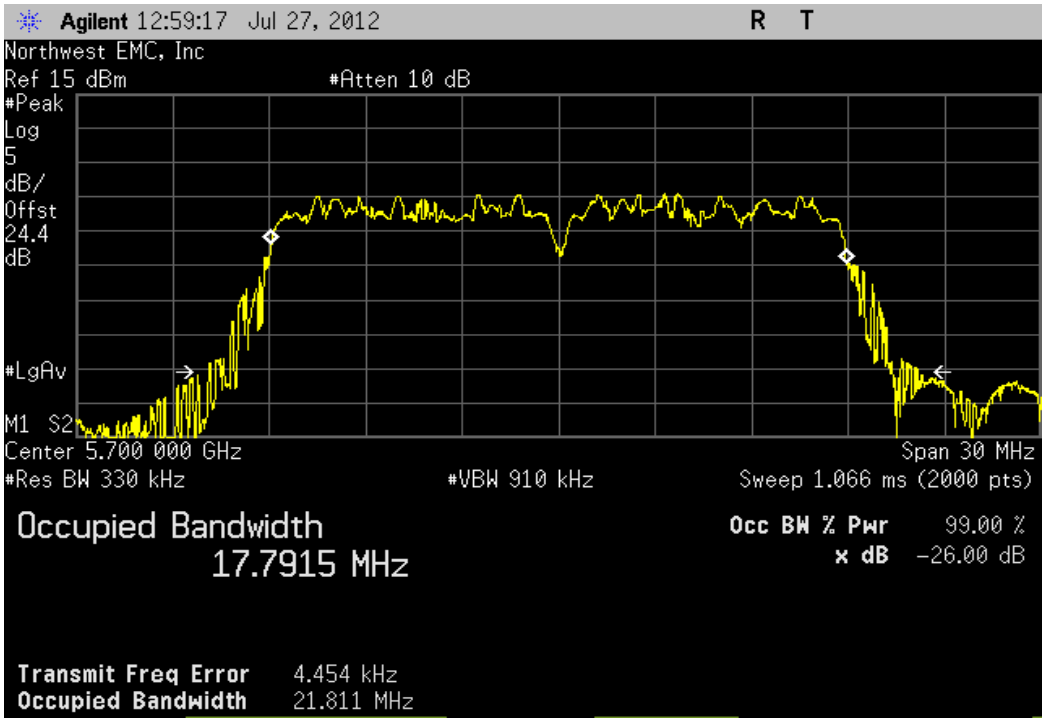
				Value	Limit	Result
				17.931 MHz	> 500 kHz	Pass



Antenna A, 20MHz Bandwidth , 802.11(n) MCS15, High Channel 64 Fq 5320MHz						
				Value	Limit	Result
				17.853 MHz	> 500 kHz	Pass

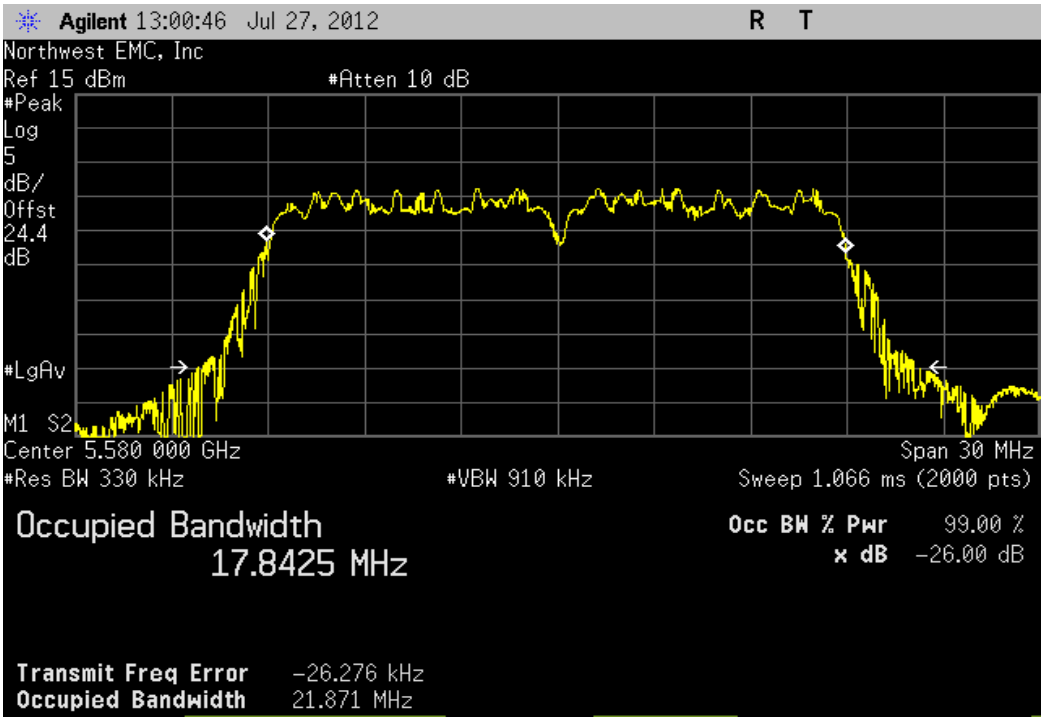


Antenna A, 20MHz Bandwidth , 802.11(n) MCS15, High Channel 140 Fq 5700MHz						
				Value	Limit	Result
				17.792 MHz	> 500 kHz	Pass



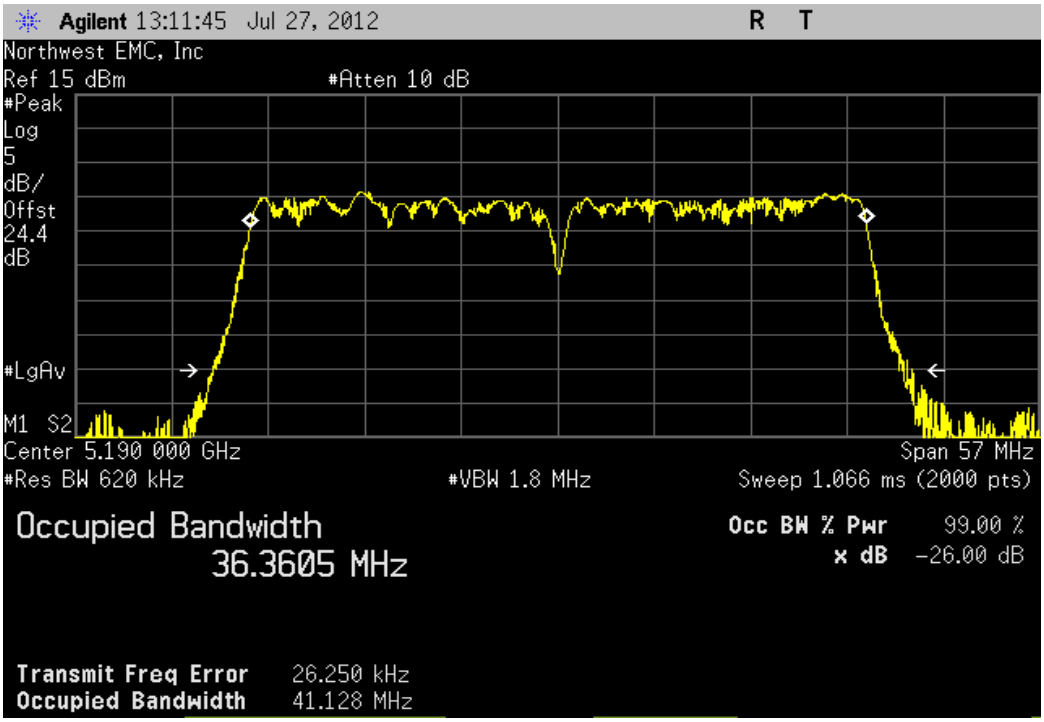
Antenna A, 20MHz Bandwidth , 802.11(n) MCS15, Mid Channel 116 Fq 5580 MHz

				Value	Limit	Result
				17.842 MHz	> 500 kHz	Pass



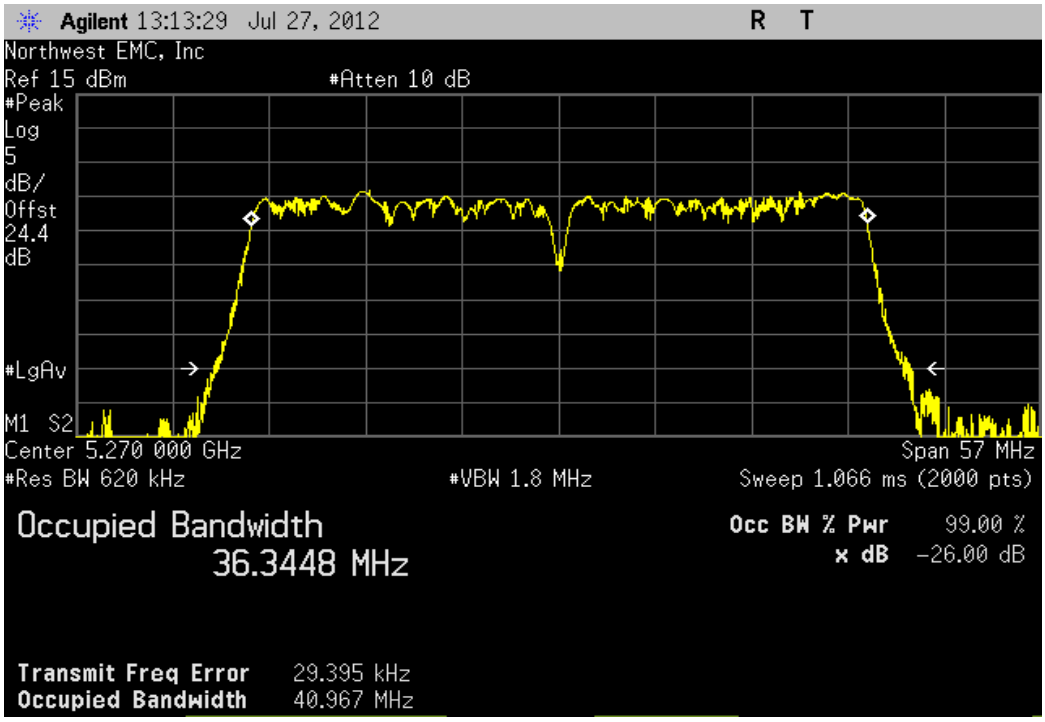
Antenna A, 40MHz Bandwidth , 802.11(n) MCS0, Low Channel 38 Fq 5190MHz

				Value	Limit	Result
				36.36 MHz	> 500 kHz	Pass



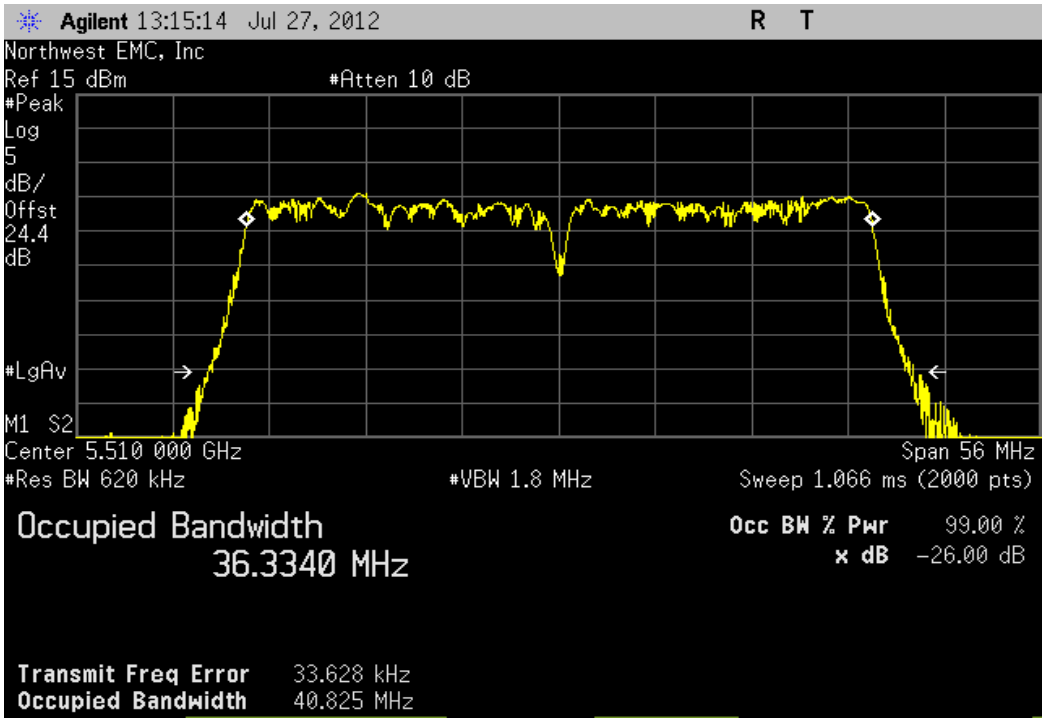
Antenna A, 40MHz Bandwidth , 802.11(n) MCS0, Low Channel 54 Fq 5270MHz

				Value	Limit	Result
				36.345 MHz	> 500 kHz	Pass

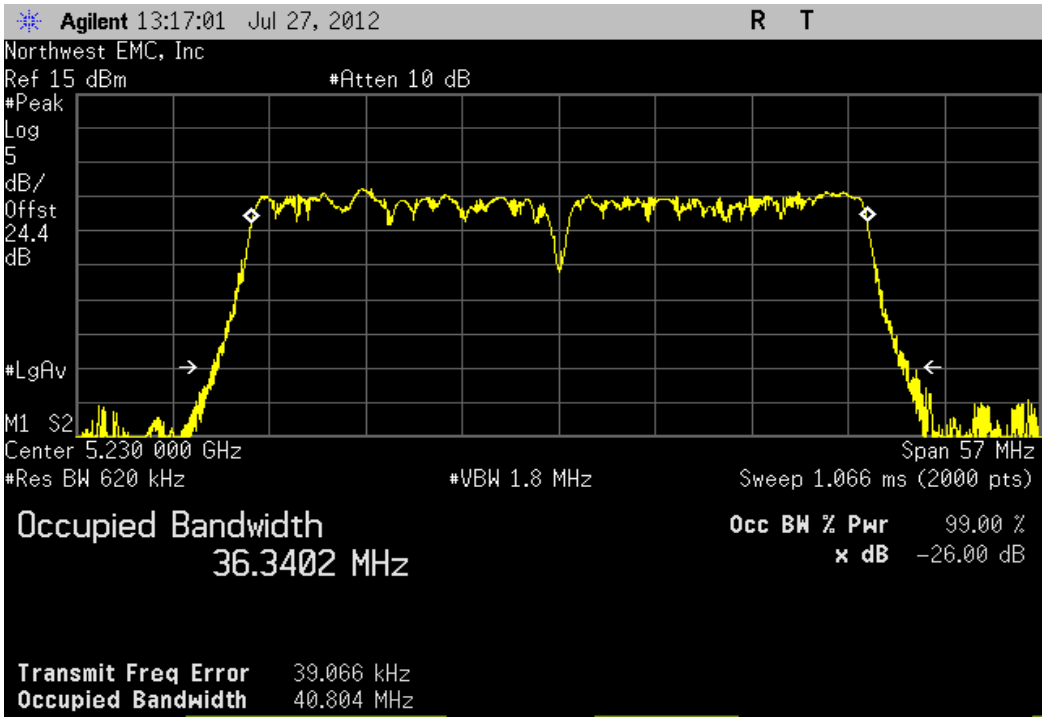


Antenna A, 40MHz Bandwidth , 802.11(n) MCS0, Low Channel 102 Fq 5510MHz

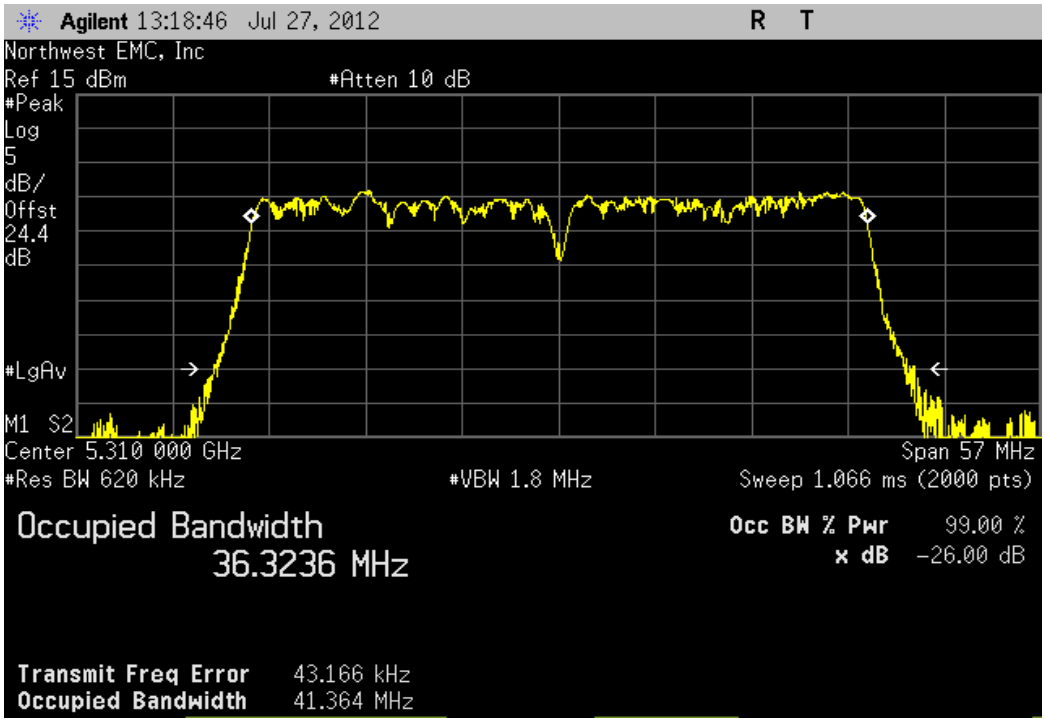
				Value	Limit	Result
				36.334 MHz	> 500 kHz	Pass



Antenna A, 40MHz Bandwidth , 802.11(n) MCS0, High Channel 46 Fq 5230MHz						
				Value	Limit	Result
				36.34 MHz	> 500 kHz	Pass

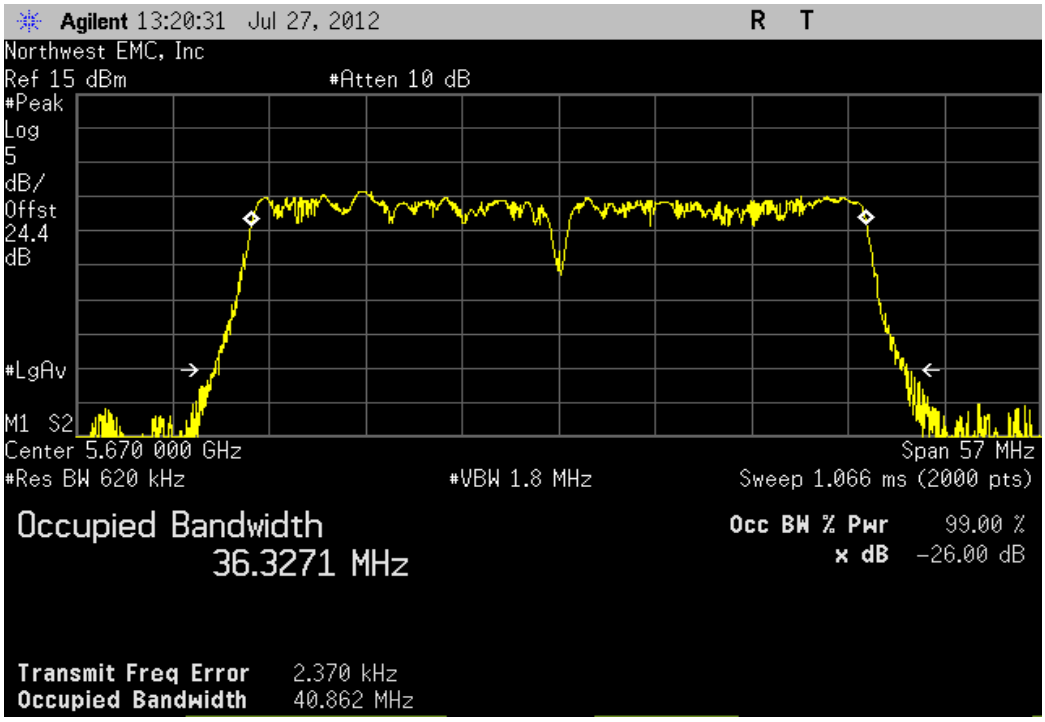


Antenna A, 40MHz Bandwidth , 802.11(n) MCS0, High Channel 62 Fq 5310MHz						
				Value	Limit	Result
				36.324 MHz	> 500 kHz	Pass



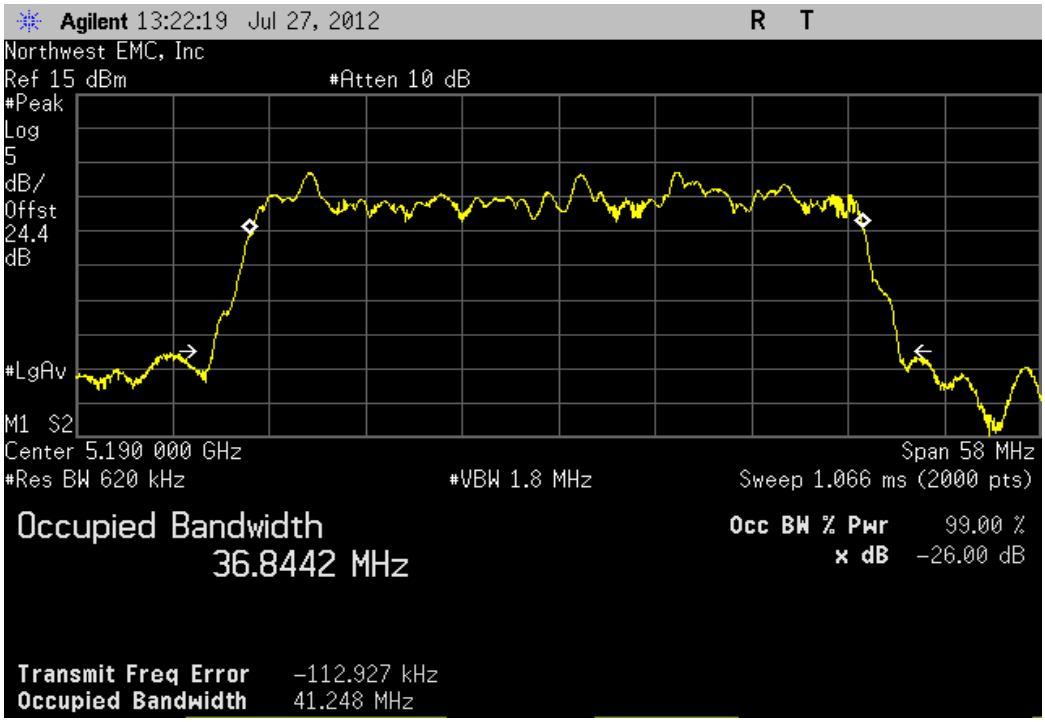
Antenna A, 40MHz Bandwidth , 802.11(n) MCS0, High Channel 134 Fq 5670MHz

				Value	Limit	Result
				36.327 MHz	> 500 kHz	Pass



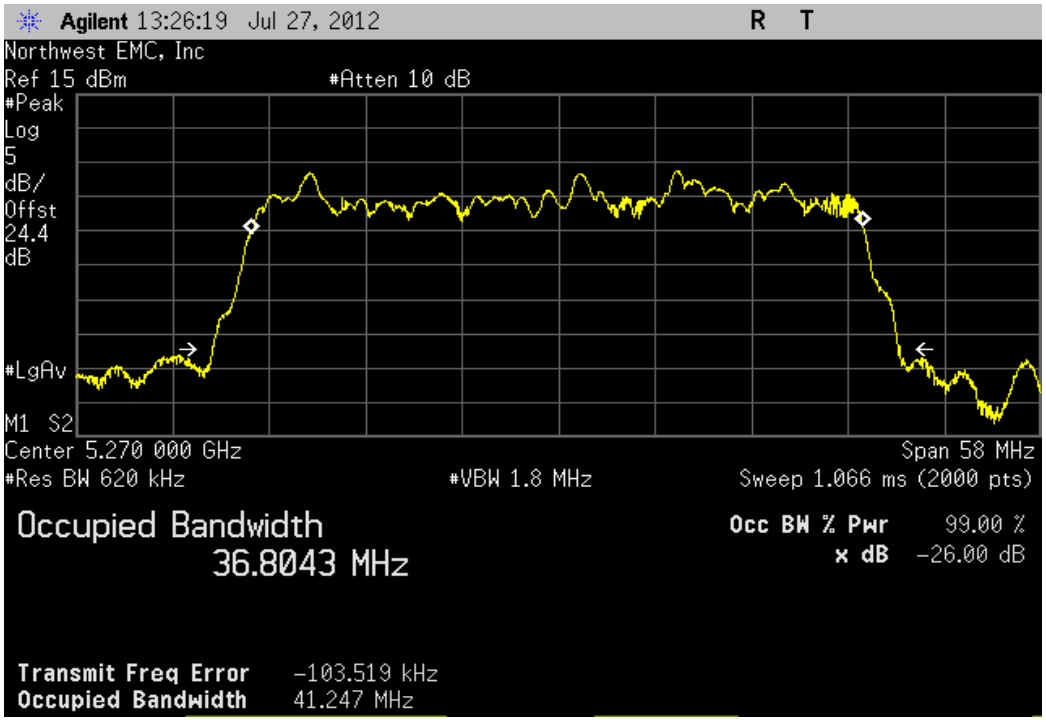
Antenna A, 40MHz Bandwidth , 802.11(n) MCS7, Low Channel 38 Fq 5190MHz

				Value	Limit	Result
				36.844 MHz	> 500 kHz	Pass



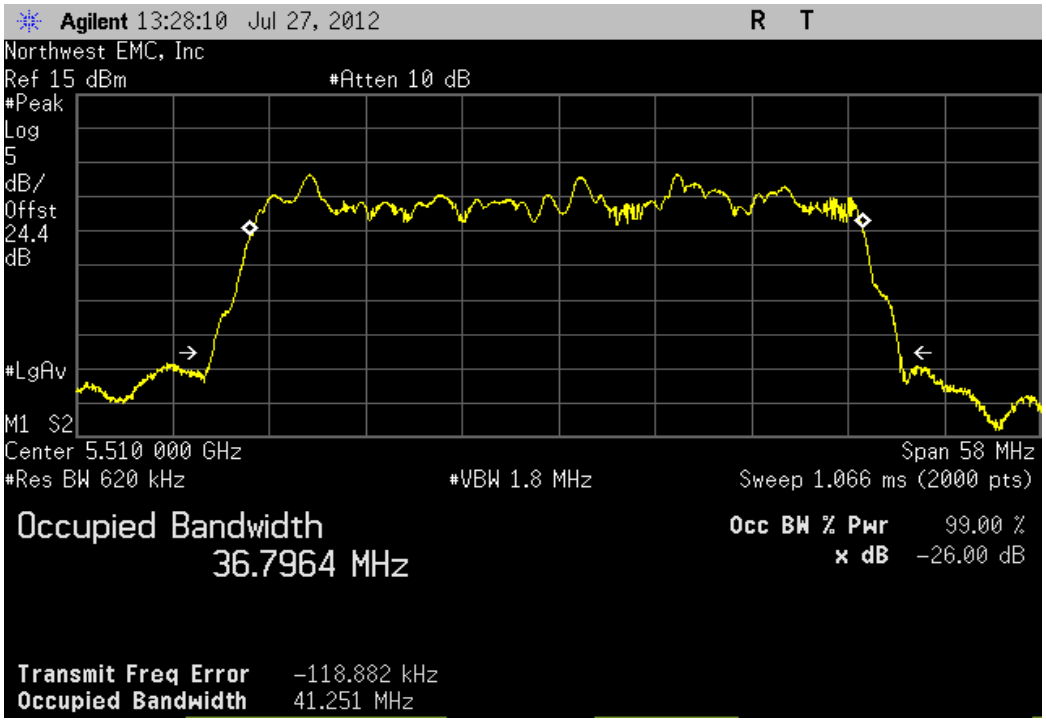
Antenna A, 40MHz Bandwidth , 802.11(n) MCS7, Low Channel 54 Fq 5270MHz

				Value	Limit	Result
				36.804 MHz	> 500 kHz	Pass



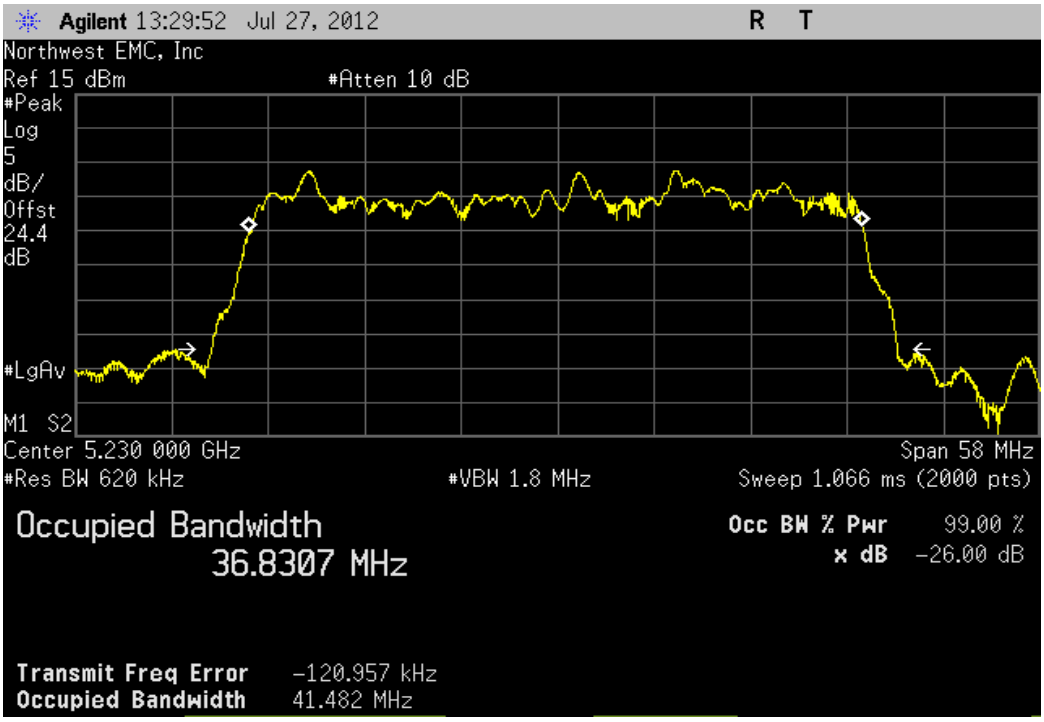
Antenna A, 40MHz Bandwidth , 802.11(n) MCS7, Low Channel 102 Fq 5510MHz

				Value	Limit	Result
				36.796 MHz	> 500 kHz	Pass



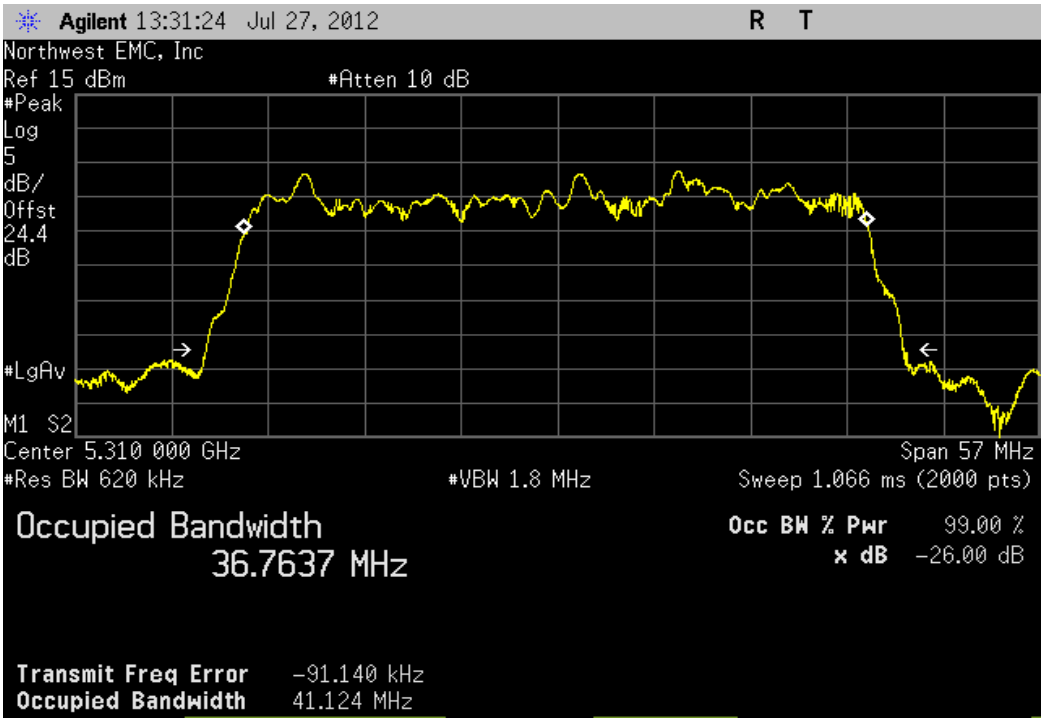
Antenna A, 40MHz Bandwidth , 802.11(n) MCS7, High Channel 46 Fq 5230MHz

				Value	Limit	Result
				36.831 MHz	> 500 kHz	Pass



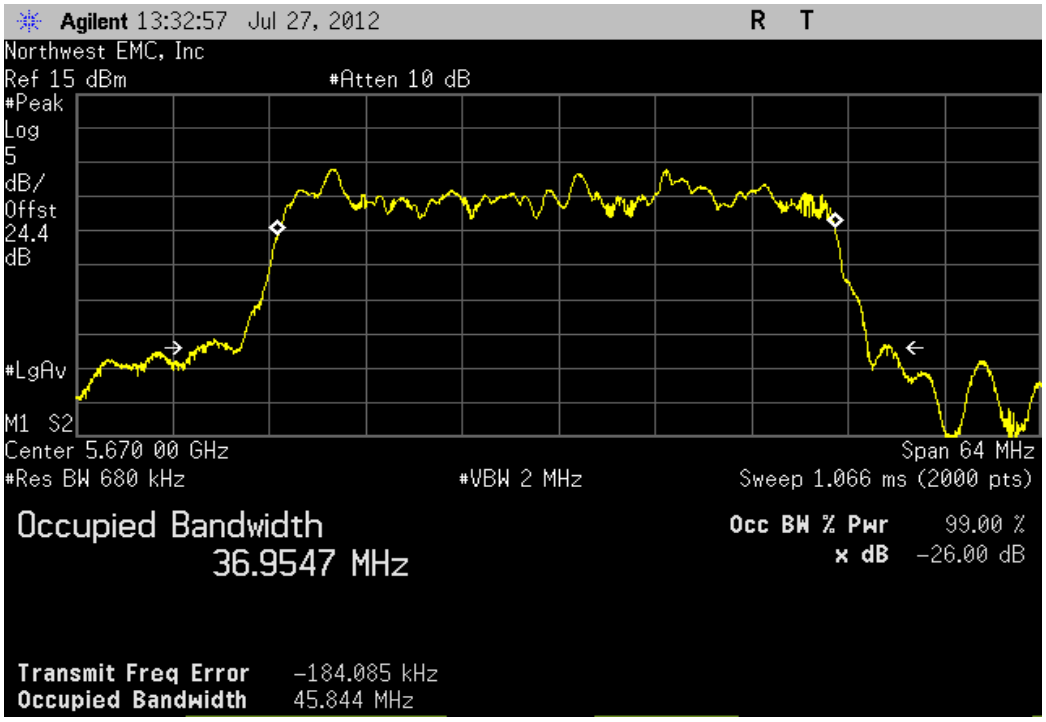
Antenna A, 40MHz Bandwidth , 802.11(n) MCS7, High Channel 62 Fq 5310MHz

				Value	Limit	Result
				36.764 MHz	> 500 kHz	Pass



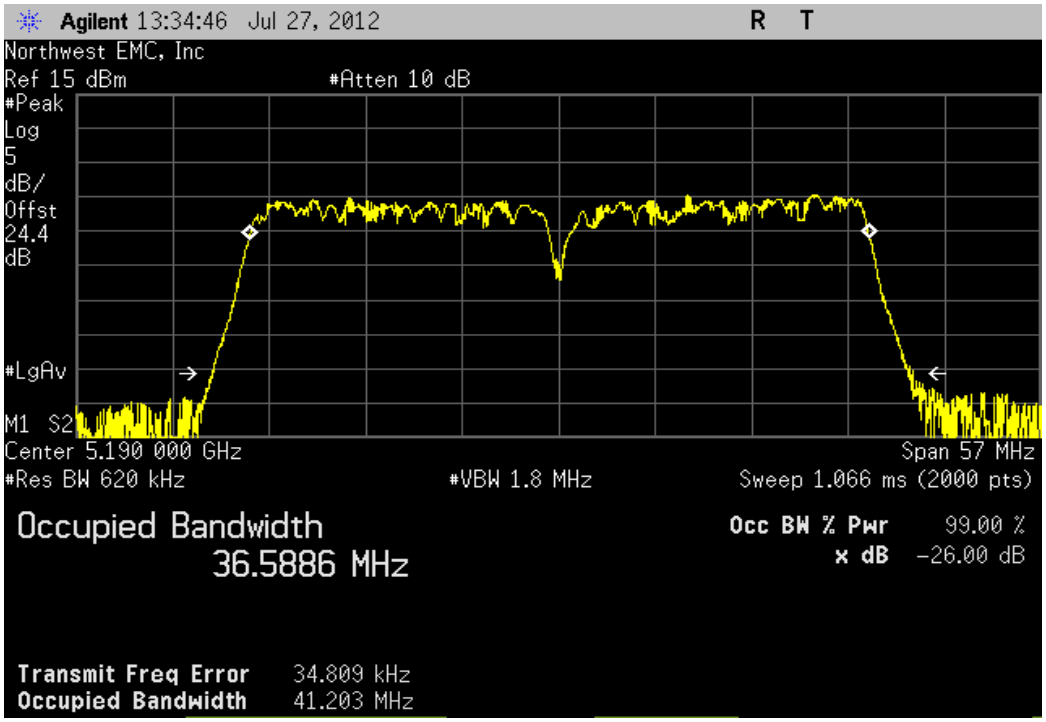
Antenna A, 40MHz Bandwidth , 802.11(n) MCS7, High Channel 134 Fq 5670MHz

				Value	Limit	Result
				36.955 MHz	> 500 kHz	Pass



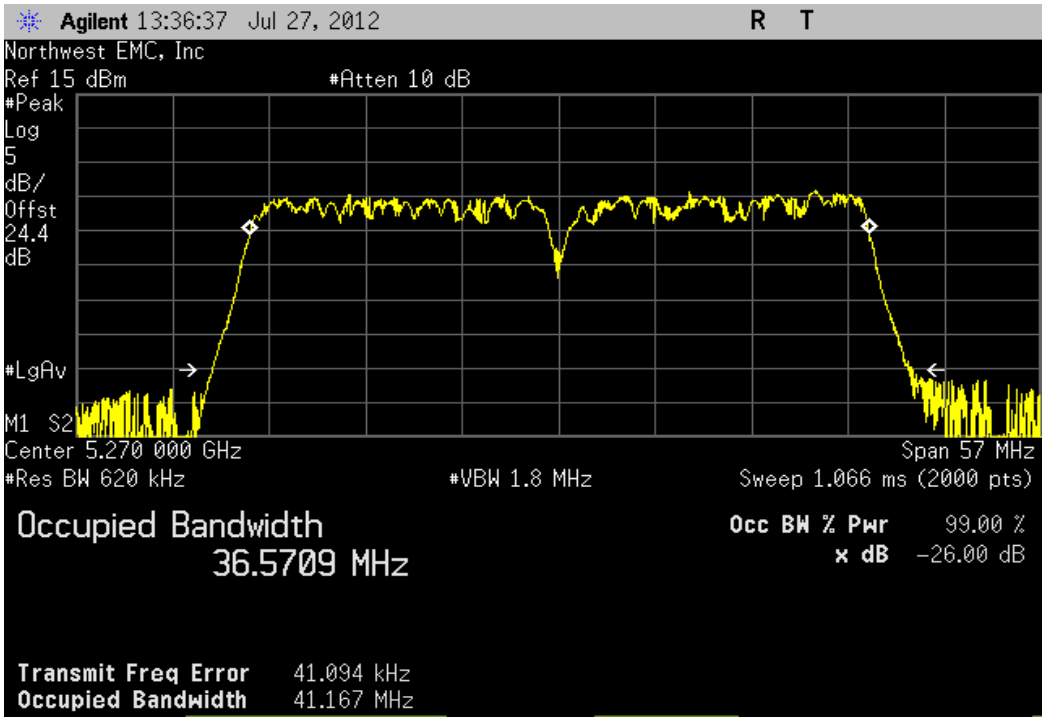
Antenna A, 40MHz Bandwidth , 802.11(n) MCS8, Low Channel 38 Fq 5190MHz

				Value	Limit	Result
				36.589 MHz	> 500 kHz	Pass



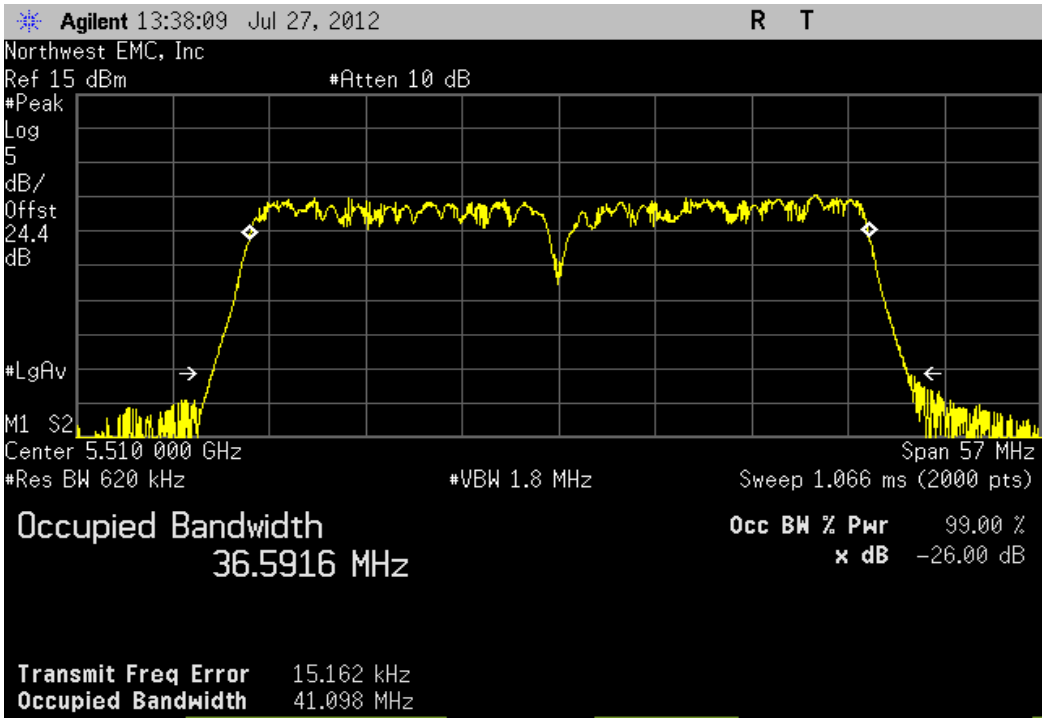
Antenna A, 40MHz Bandwidth , 802.11(n) MCS8, Low Channel 54 Fq 5270MHz

				Value	Limit	Result
				36.571 MHz	> 500 kHz	Pass



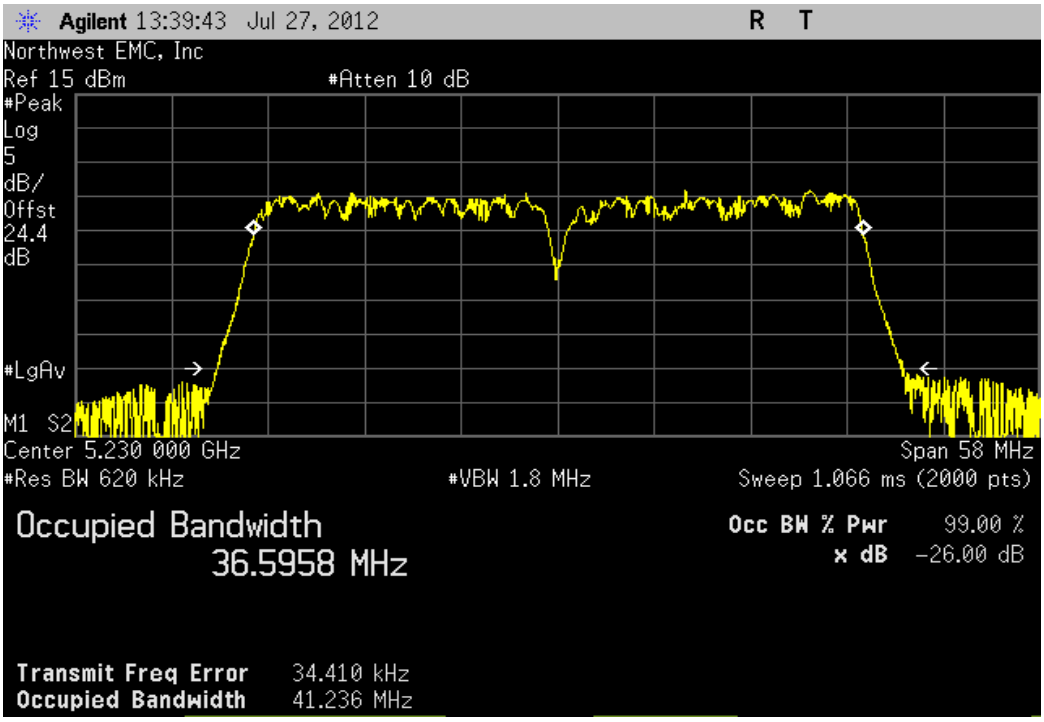
Antenna A, 40MHz Bandwidth , 802.11(n) MCS8, Low Channel 102 Fq 5510MHz

				Value	Limit	Result
				36.592 MHz	> 500 kHz	Pass



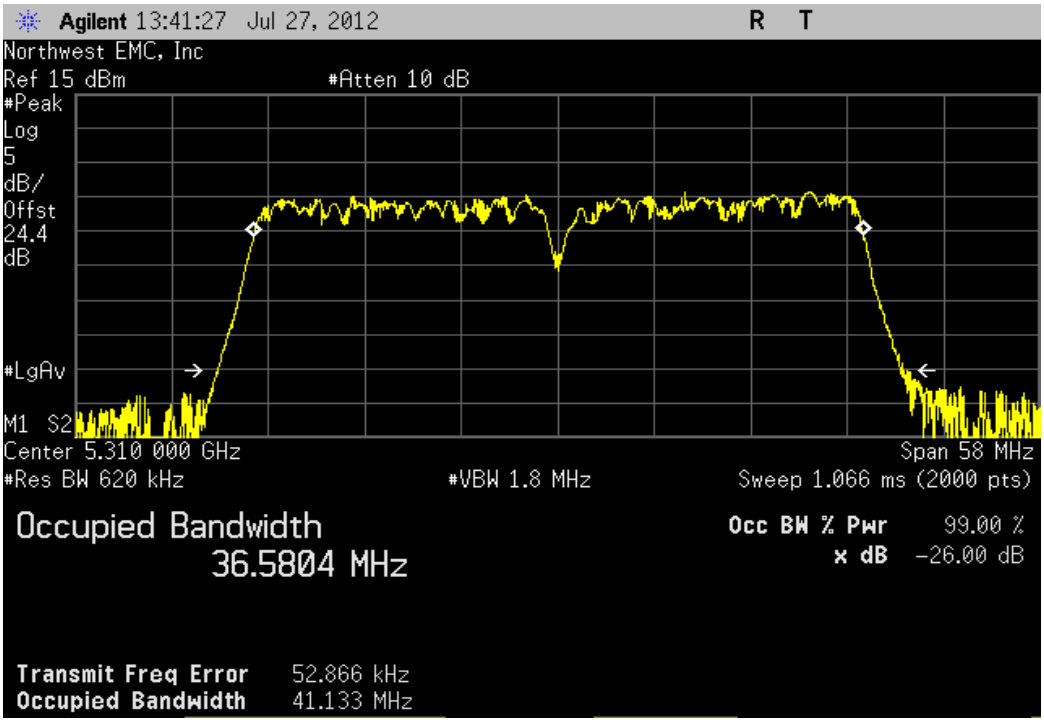
Antenna A, 40MHz Bandwidth , 802.11(n) MCS8, High Channel 46 Fq 5230MHz

				Value	Limit	Result
				36.596 MHz	> 500 kHz	Pass



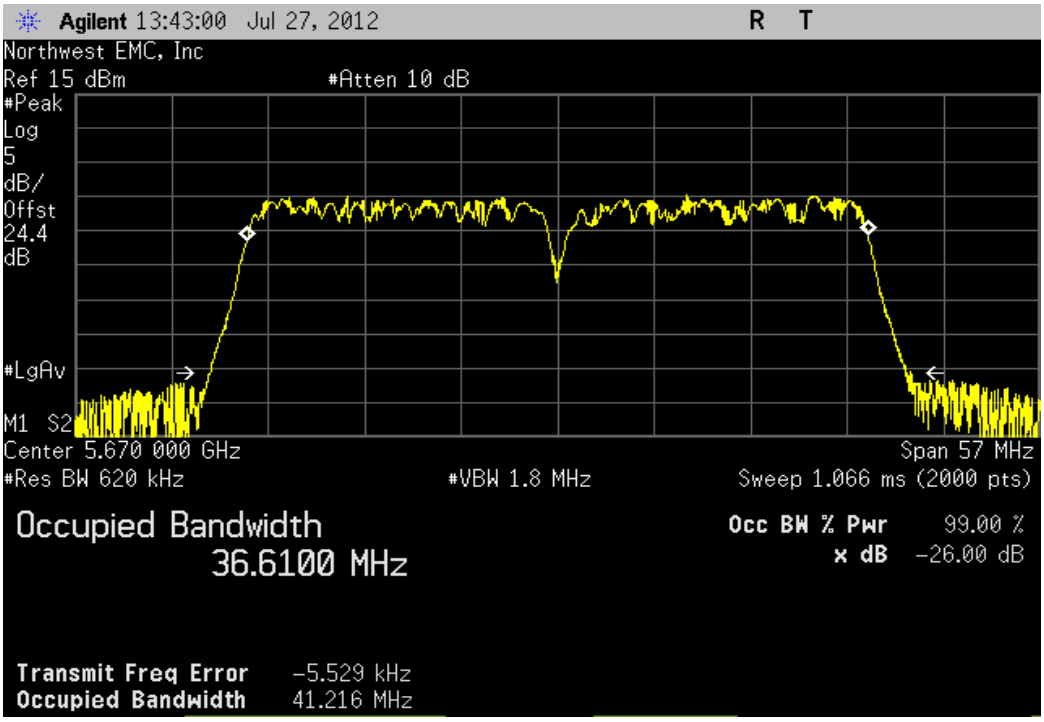
Antenna A, 40MHz Bandwidth , 802.11(n) MCS8, High Channel 62 Fq 5310MHz

				Value	Limit	Result
				36.58 MHz	> 500 kHz	Pass



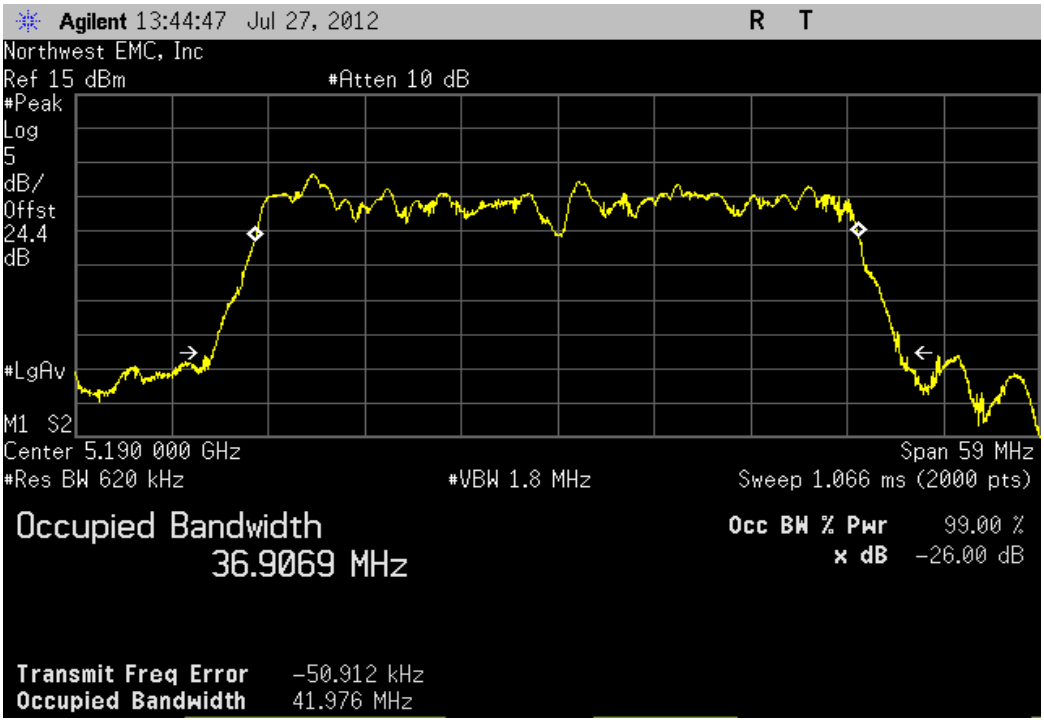
Antenna A, 40MHz Bandwidth , 802.11(n) MCS8, High Channel 134 Fq 5670MHz

				Value	Limit	Result
				36.61 MHz	> 500 kHz	Pass



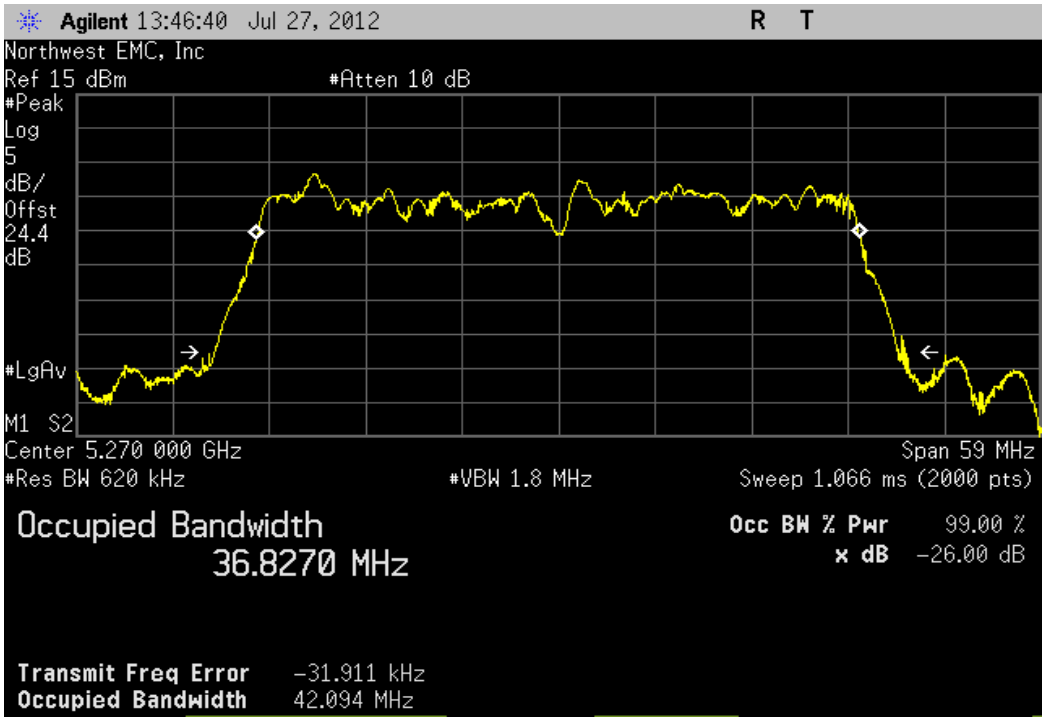
Antenna A, 40MHz Bandwidth , 802.11(n) MCS15, Low Channel 38 Fq 5190MHz

				Value	Limit	Result
				36.907 MHz	> 500 kHz	Pass



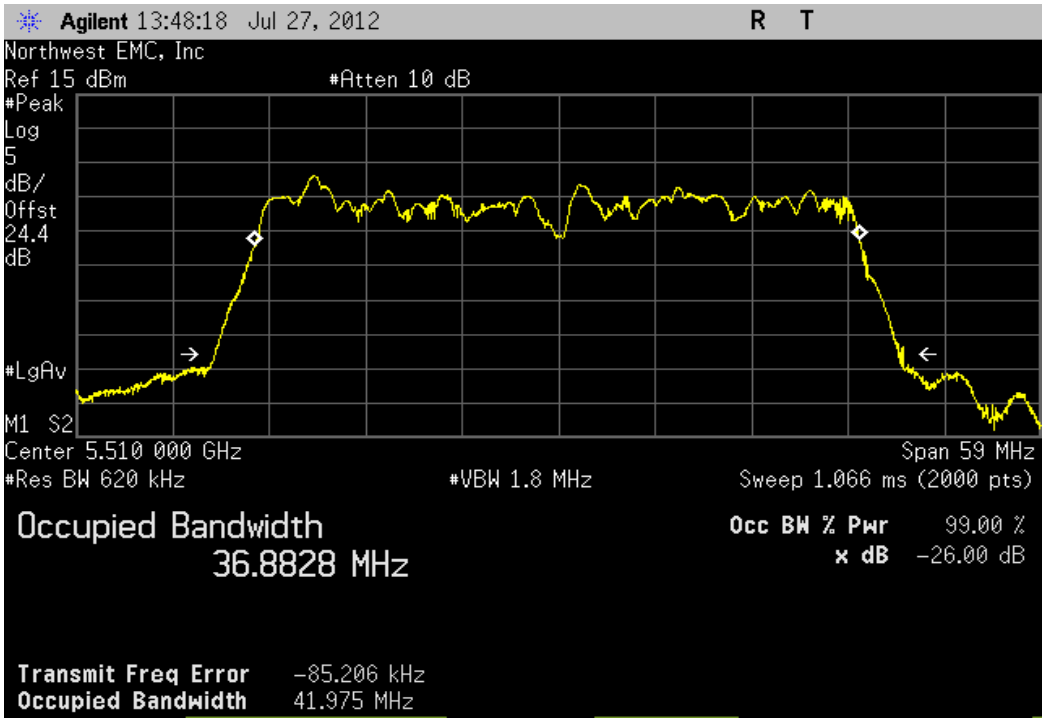
Antenna A, 40MHz Bandwidth , 802.11(n) MCS15, Low Channel 54 Fq 5270MHz

				Value	Limit	Result
				36.827 MHz	> 500 kHz	Pass



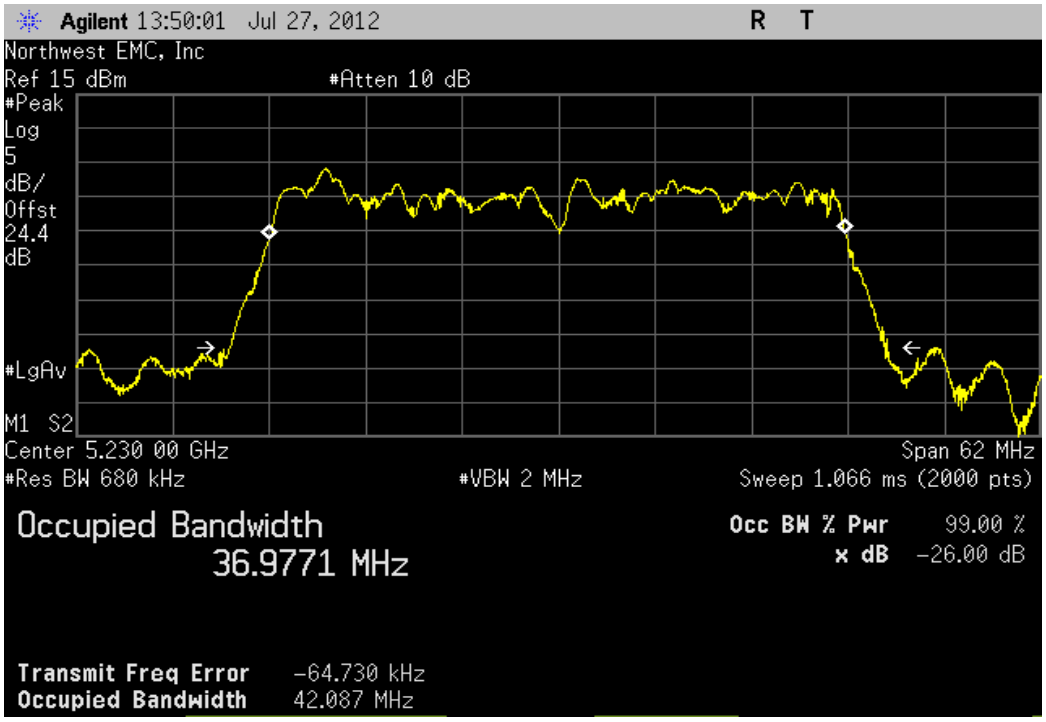
Antenna A, 40MHz Bandwidth , 802.11(n) MCS15, Low Channel 102 Fq 5510MHz

				Value	Limit	Result
				36.883 MHz	> 500 kHz	Pass



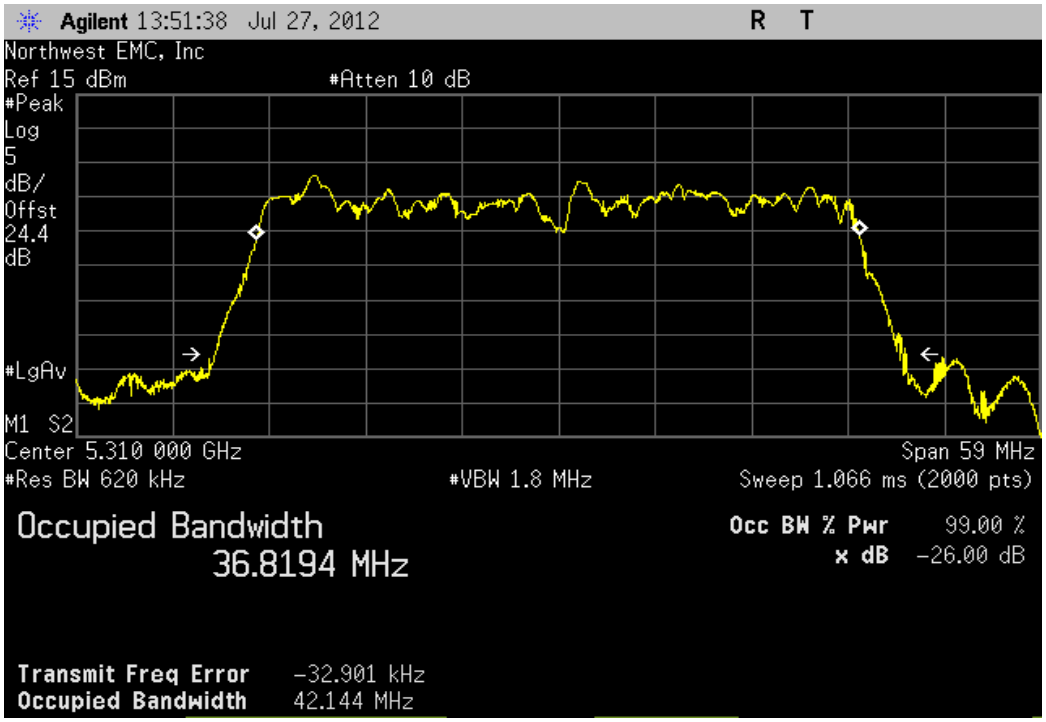
Antenna A, 40MHz Bandwidth , 802.11(n) MCS15, High Channel 46 Fq 5230MHz

				Value	Limit	Result
				36.977 MHz	> 500 kHz	Pass



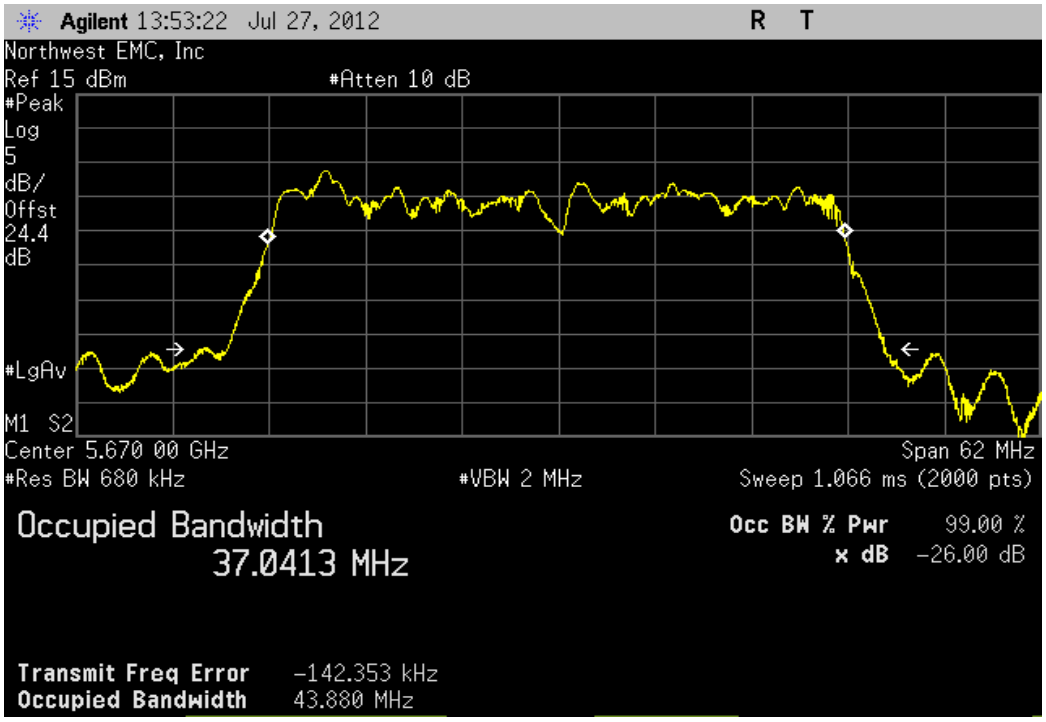
Antenna A, 40MHz Bandwidth , 802.11(n) MCS15, High Channel 62 Fq 5310MHz

				Value	Limit	Result
				36.819 MHz	> 500 kHz	Pass



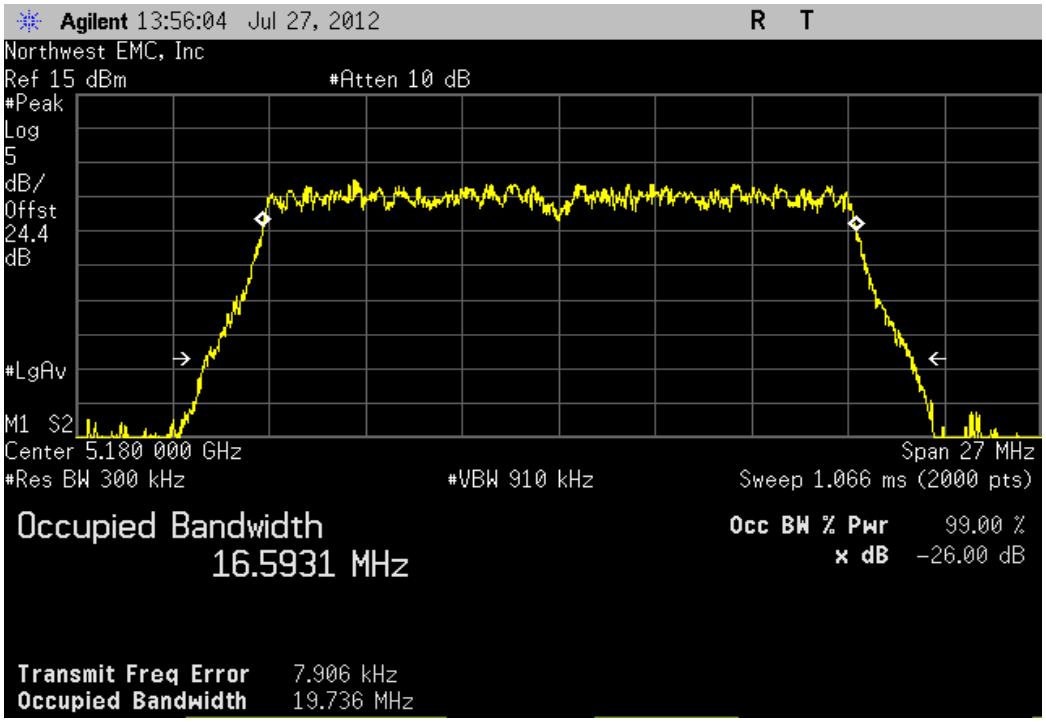
Antenna A, 40MHz Bandwidth , 802.11(n) MCS15, High Channel 134 Fq 5670MHz

				Value	Limit	Result
				37.041 MHz	> 500 kHz	Pass

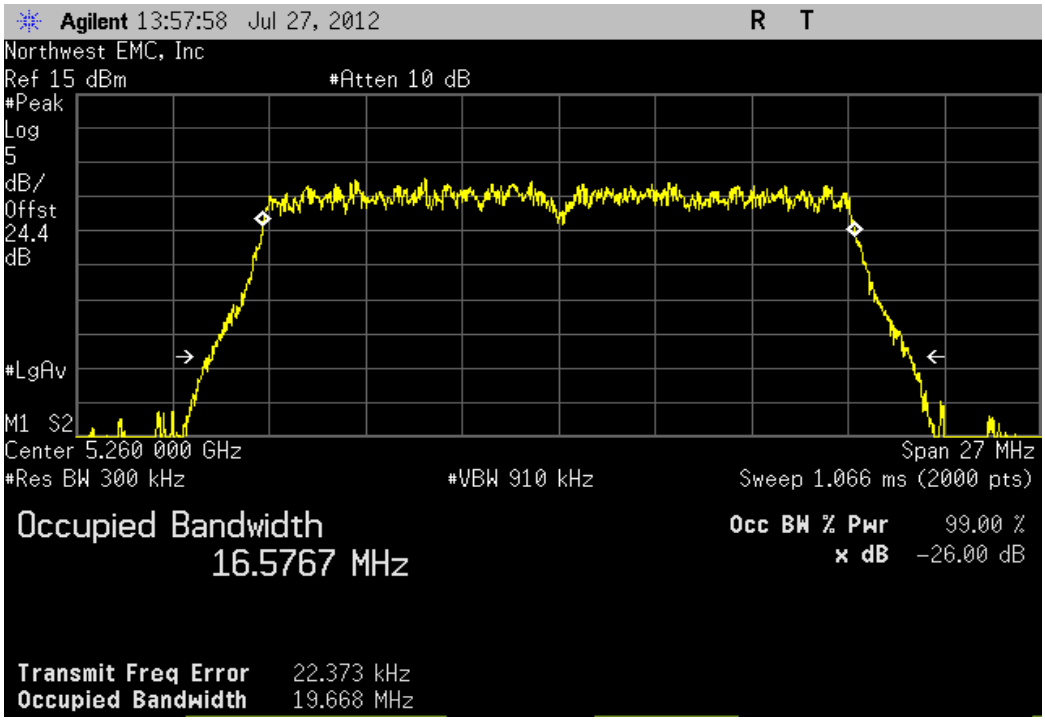


Antenna B, 20MHz Bandwidth , 802.11(a) 6Mbps, Low Channel 36 Fq 5180MHz

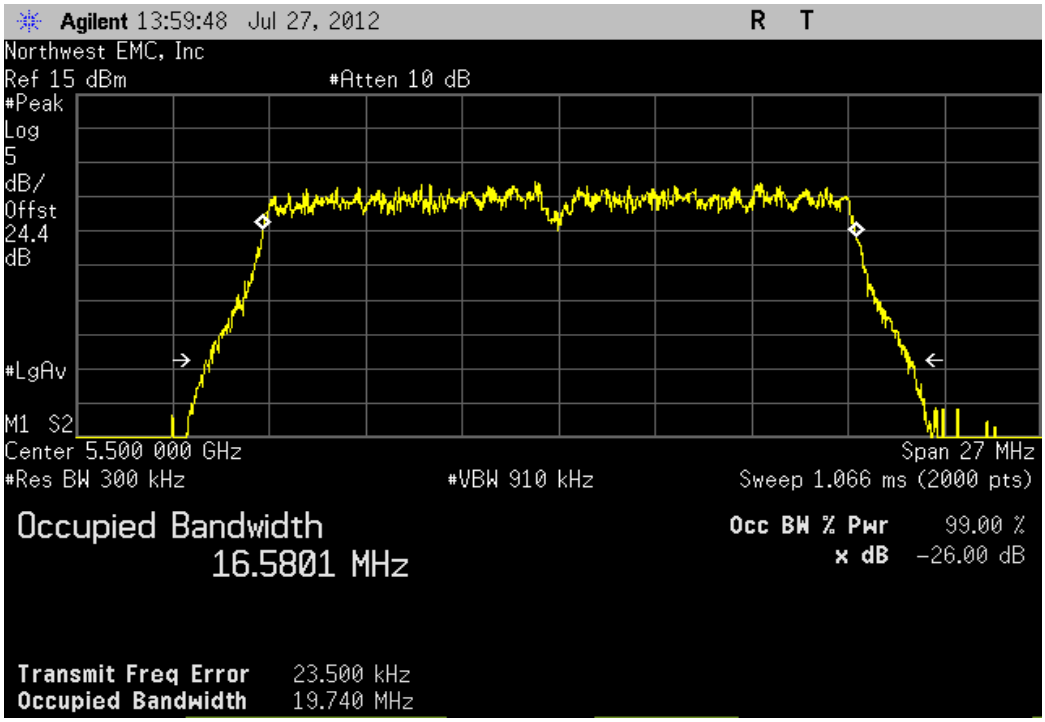
				Value	Limit	Result
				16.593 MHz	> 500 kHz	Pass



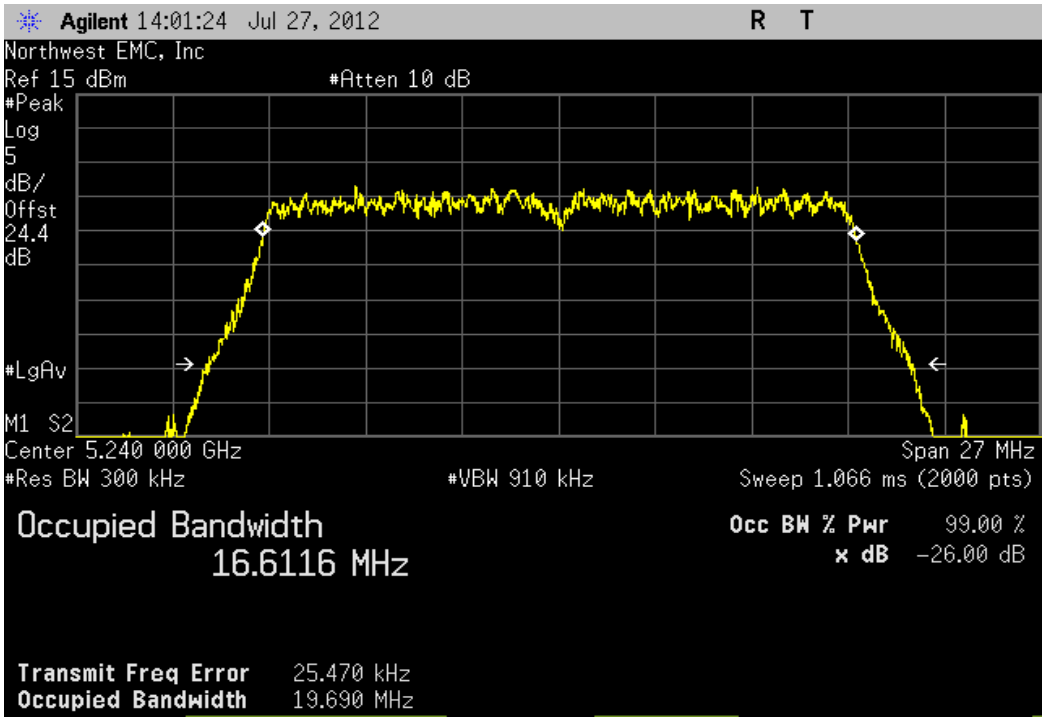
Antenna B, 20MHz Bandwidth , 802.11(a) 6Mbps, Low Channel 52 Fq 5260MHz						
				Value	Limit	Result
				16.577 MHz	> 500 kHz	Pass



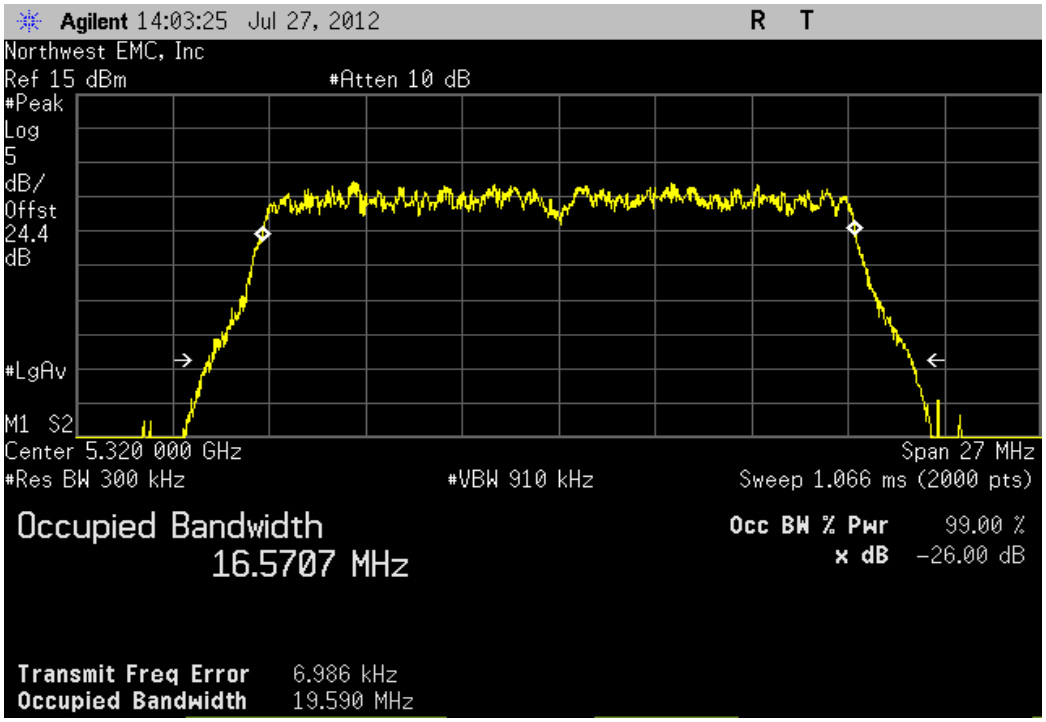
Antenna B, 20MHz Bandwidth , 802.11(a) 6Mbps, Low Channel 100 Fq 5500MHz						
				Value	Limit	Result
				16.58 MHz	> 500 kHz	Pass



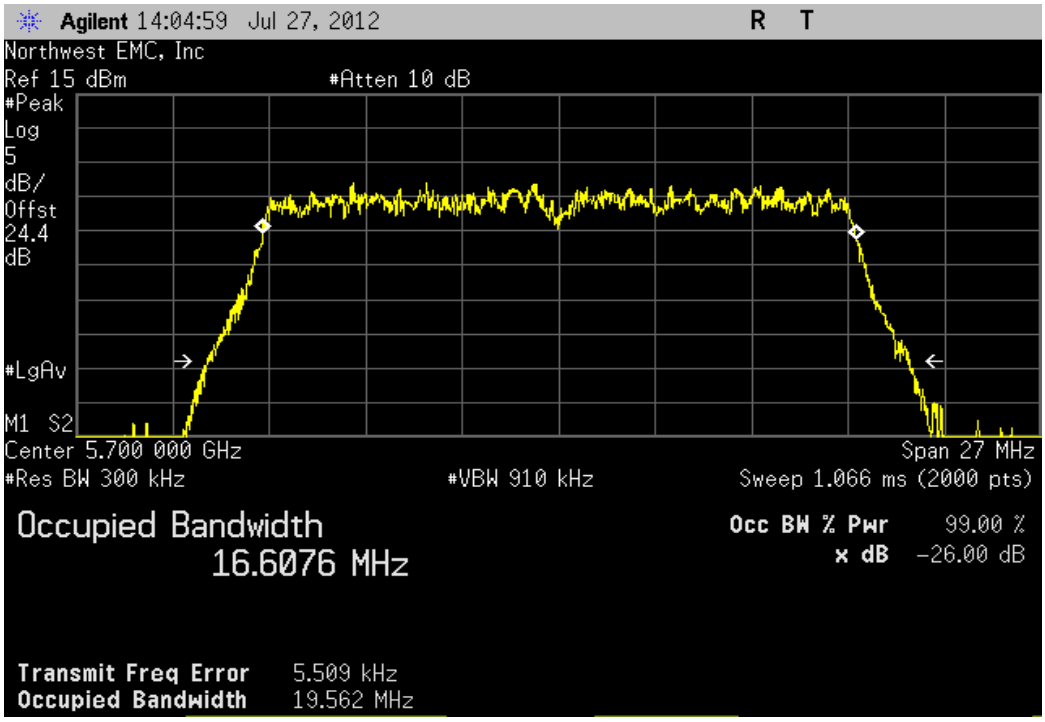
Antenna B, 20MHz Bandwidth , 802.11(a) 6Mbps, High Channel 48 Fq 5240MHz							
					Value	Limit	Result
					16.612 MHz	> 500 kHz	Pass



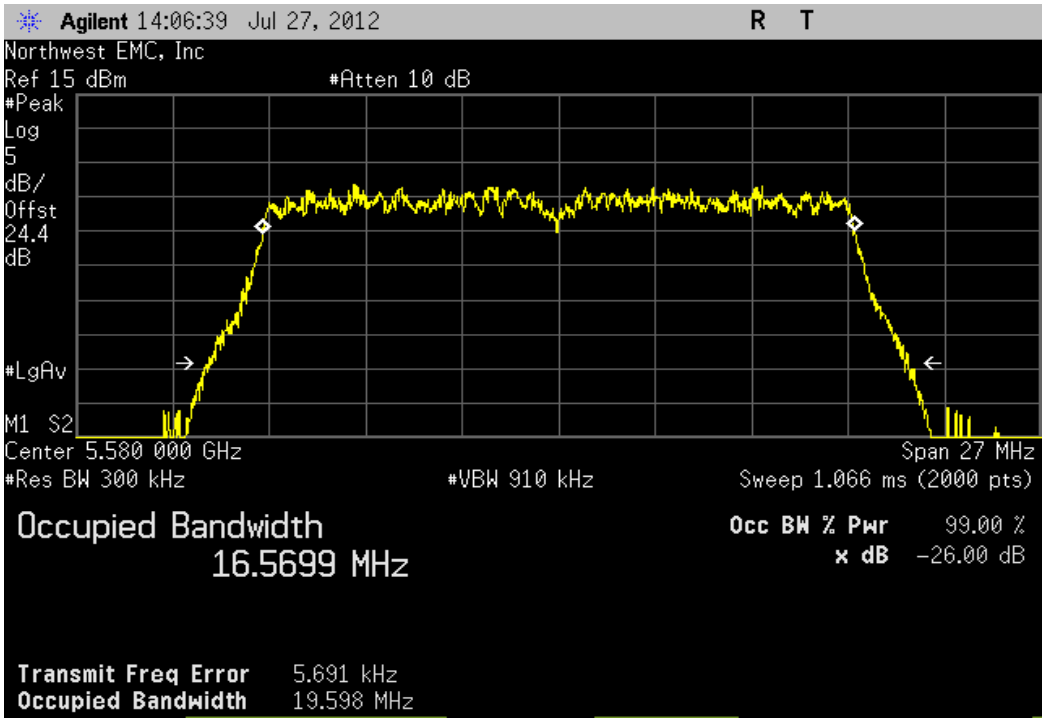
Antenna B, 20MHz Bandwidth , 802.11(a) 6Mbps, High Channel 64 Fq 5320MHz							
					Value	Limit	Result
					16.571 MHz	> 500 kHz	Pass



Antenna B, 20MHz Bandwidth , 802.11(a) 6Mbps, High Channel 140 Fq 5700MHz						
				Value	Limit	Result
				16.608 MHz	> 500 kHz	Pass

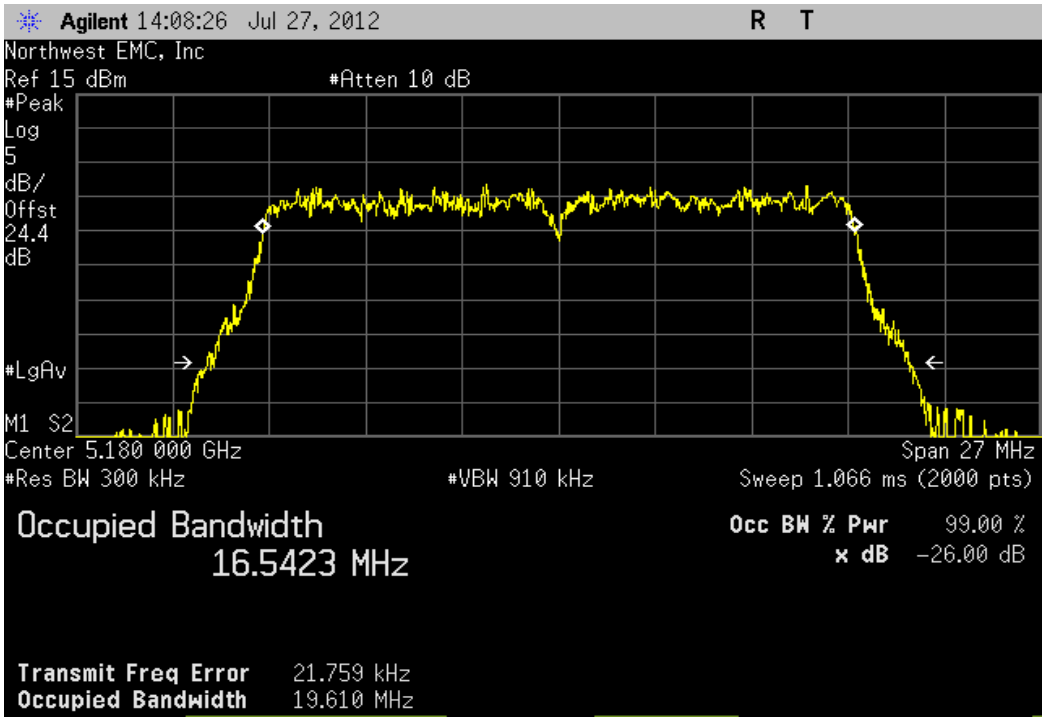


Antenna B, 20MHz Bandwidth , 802.11(a) 6Mbps, Mid Channel 116 Fq 5580 MHz						
				Value	Limit	Result
				16.57 MHz	> 500 kHz	Pass



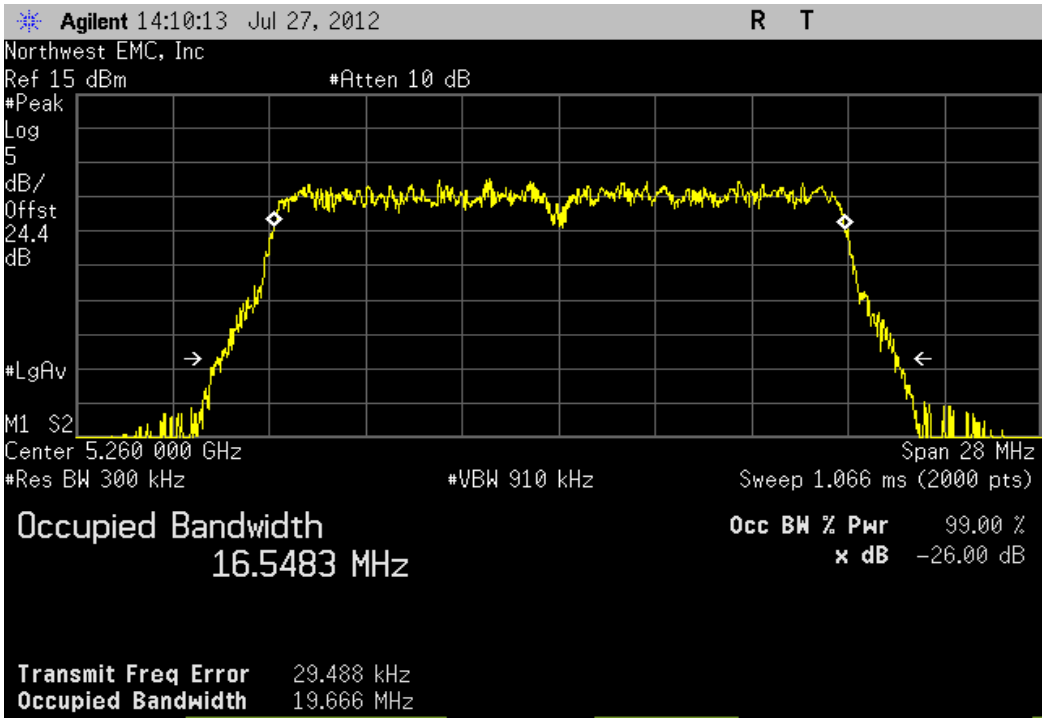
Antenna B, 20MHz Bandwidth , 802.11(a) 36Mbps, Low Channel 36 Fq 5180MHz

				Value	Limit	Result
				16.542 MHz	> 500 kHz	Pass



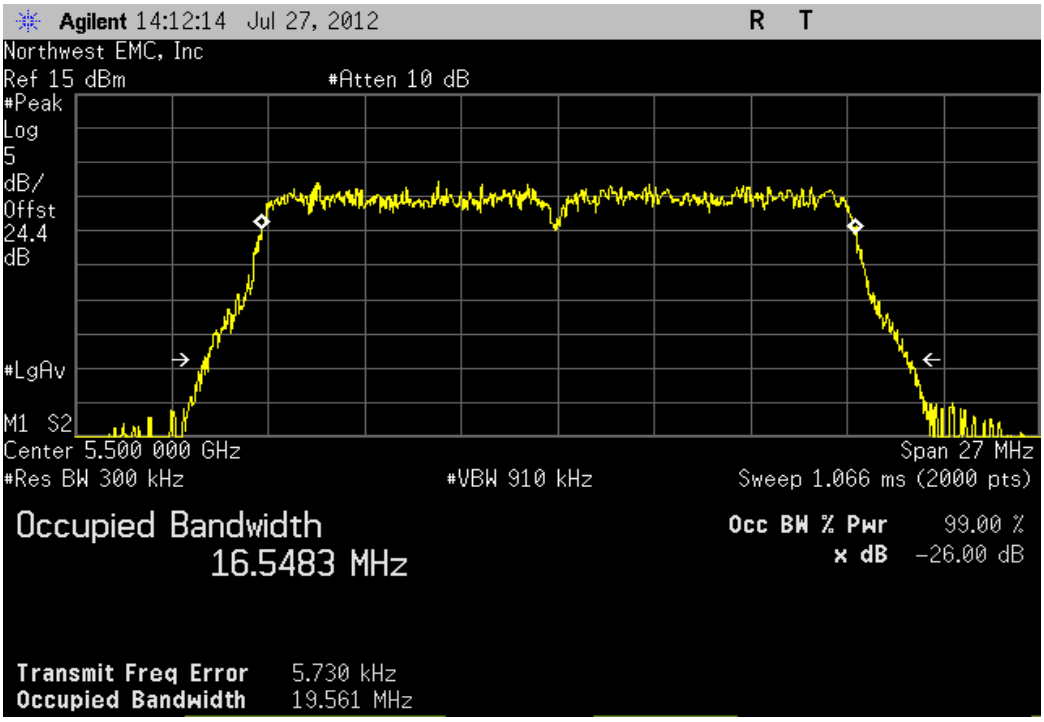
Antenna B, 20MHz Bandwidth , 802.11(a) 36Mbps, Low Channel 52 Fq 5260MHz

				Value	Limit	Result
				16.548 MHz	> 500 kHz	Pass



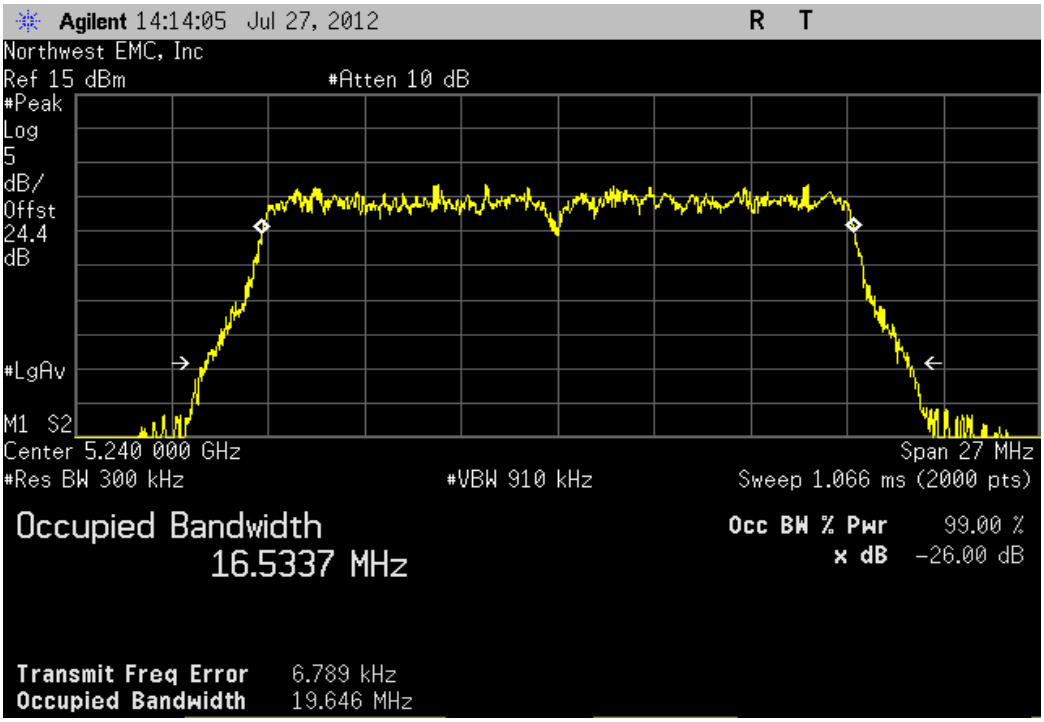
Antenna B, 20MHz Bandwidth , 802.11(a) 36Mbps, Low Channel 100 Fq 5500MHz

				Value	Limit	Result
				16.548 MHz	> 500 kHz	Pass



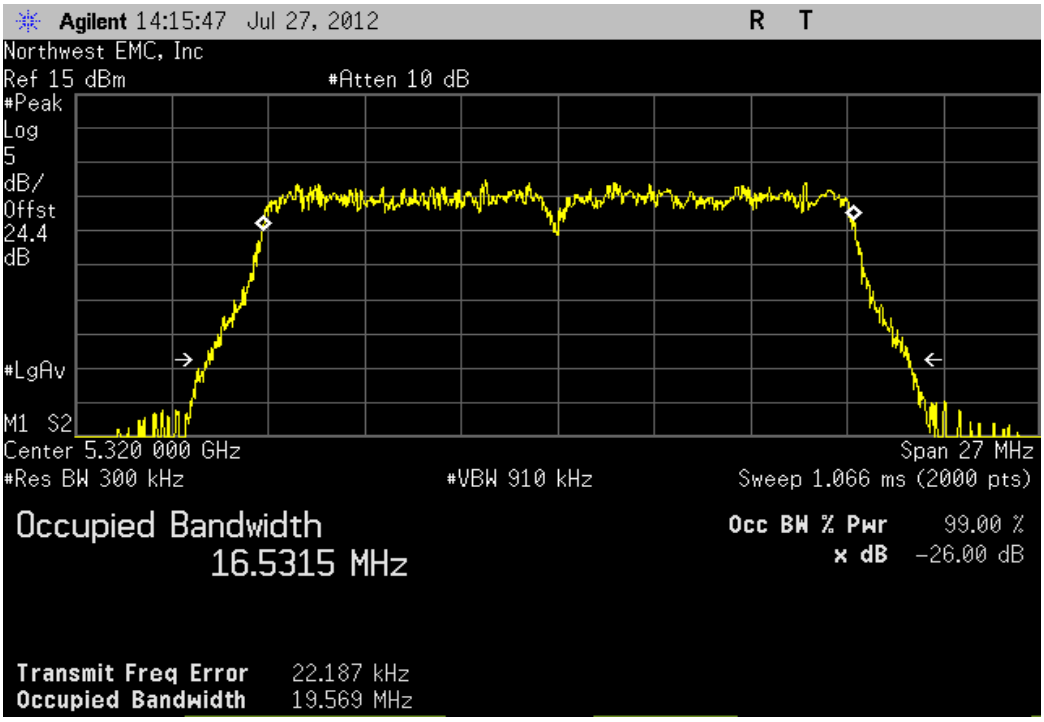
Antenna B, 20MHz Bandwidth , 802.11(a) 36Mbps, High Channel 48 Fq 5240MHz

				Value	Limit	Result
				16.534 MHz	> 500 kHz	Pass



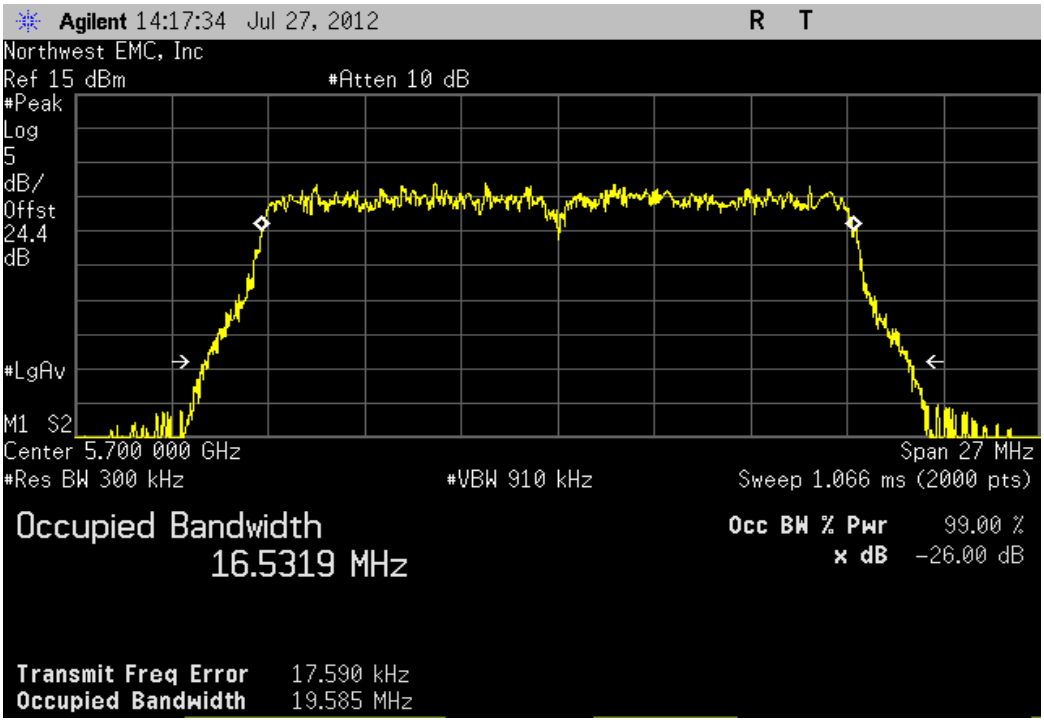
Antenna B, 20MHz Bandwidth , 802.11(a) 36Mbps, High Channel 64 Fq 5320MHz

				Value	Limit	Result
				16.531 MHz	> 500 kHz	Pass



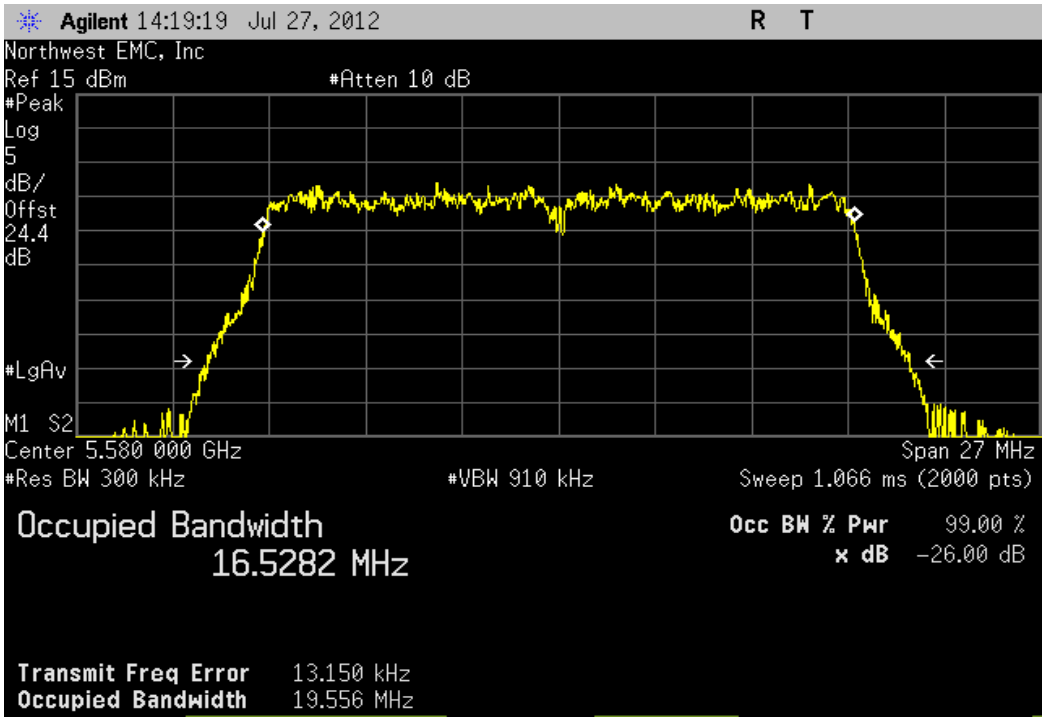
Antenna B, 20MHz Bandwidth , 802.11(a) 36Mbps, High Channel 140 Fq 5700MHz

				Value	Limit	Result
				16.532 MHz	> 500 kHz	Pass



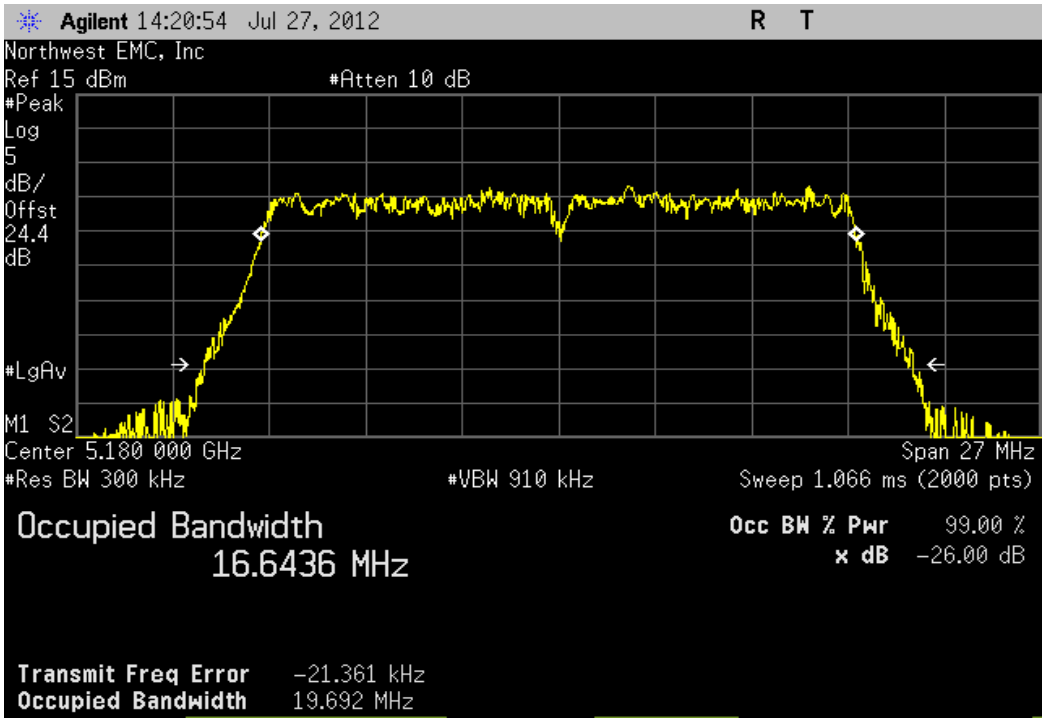
Antenna B, 20MHz Bandwidth , 802.11(a) 36Mbps, Mid Channel 116 Fq 5580 MHz

				Value	Limit	Result
				16.528 MHz	> 500 kHz	Pass



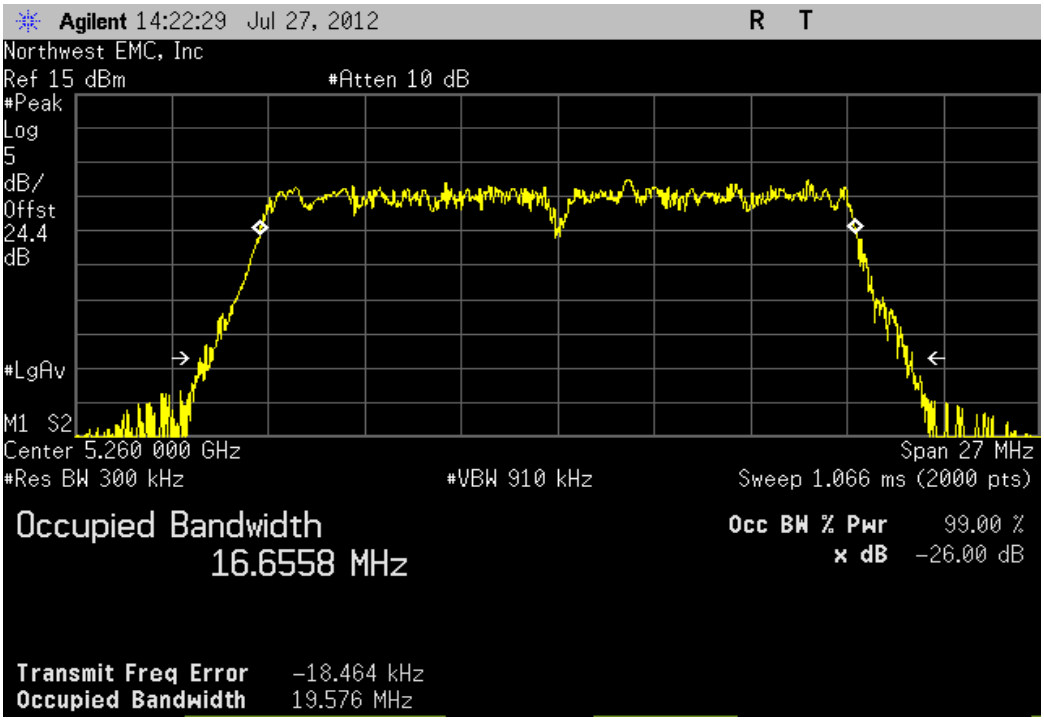
Antenna B, 20MHz Bandwidth , 802.11(a) 54Mbps, Low Channel 36 Fq 5180MHz

				Value	Limit	Result
				16.644 MHz	> 500 kHz	Pass



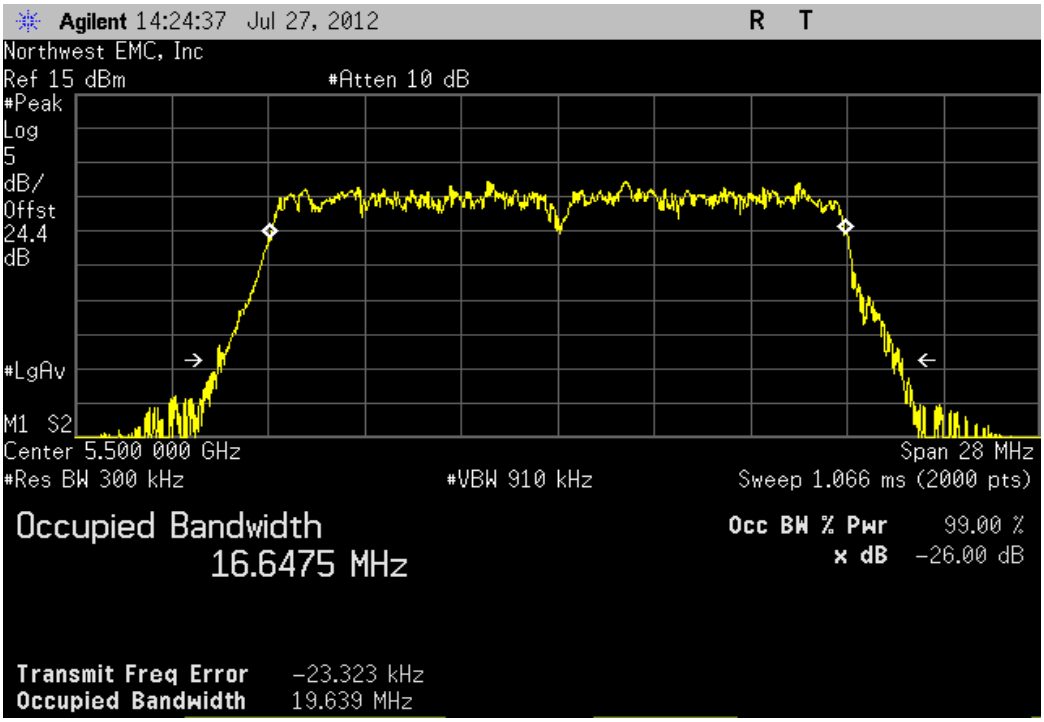
Antenna B, 20MHz Bandwidth , 802.11(a) 54Mbps, Low Channel 52 Fq 5260MHz

				Value	Limit	Result
				16.656 MHz	> 500 kHz	Pass

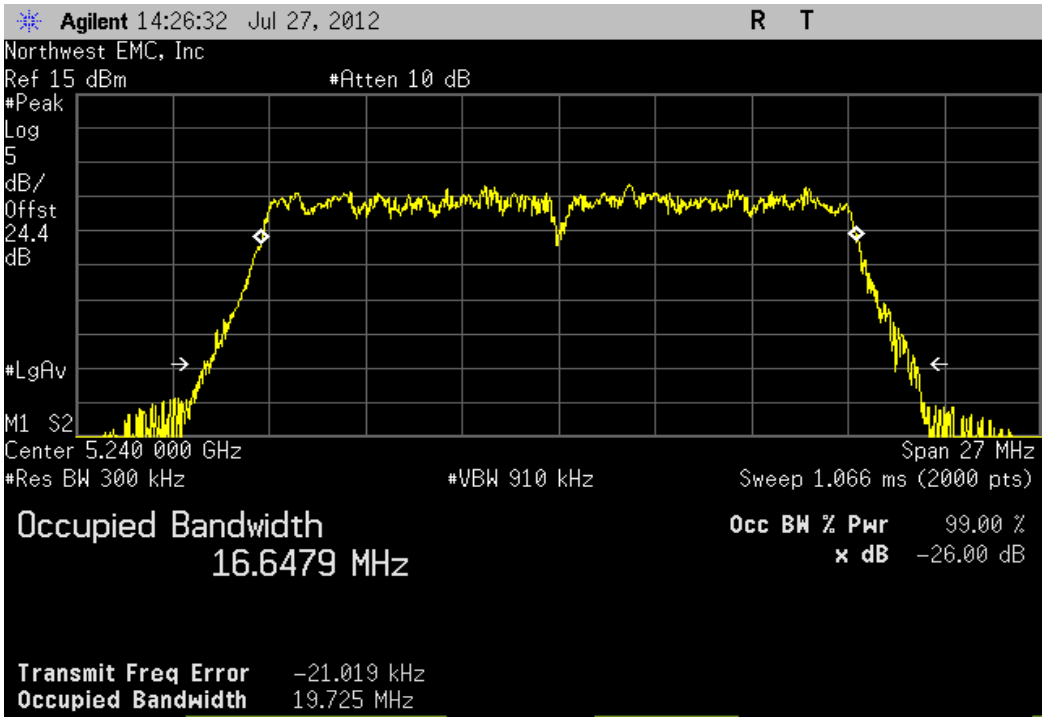


Antenna B, 20MHz Bandwidth , 802.11(a) 54Mbps, Low Channel 100 Fq 5500MHz

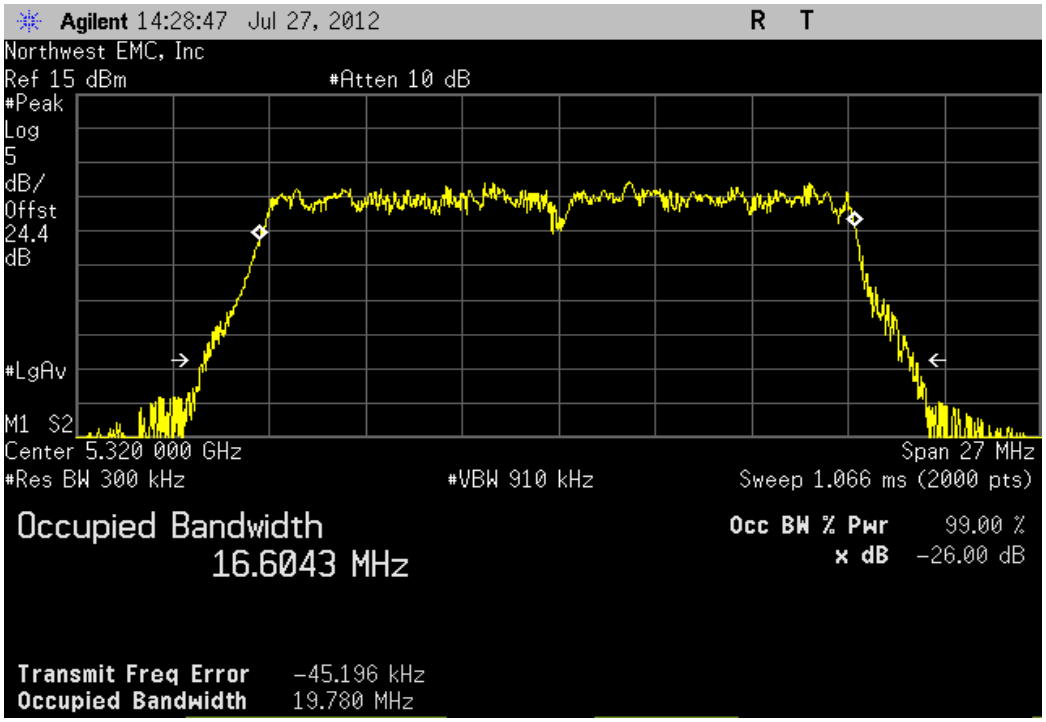
				Value	Limit	Result
				16.648 MHz	> 500 kHz	Pass



Antenna B, 20MHz Bandwidth , 802.11(a) 54Mbps, High Channel 48 Fq 5240MHz						
				Value	Limit	Result
				16.648 MHz	> 500 kHz	Pass

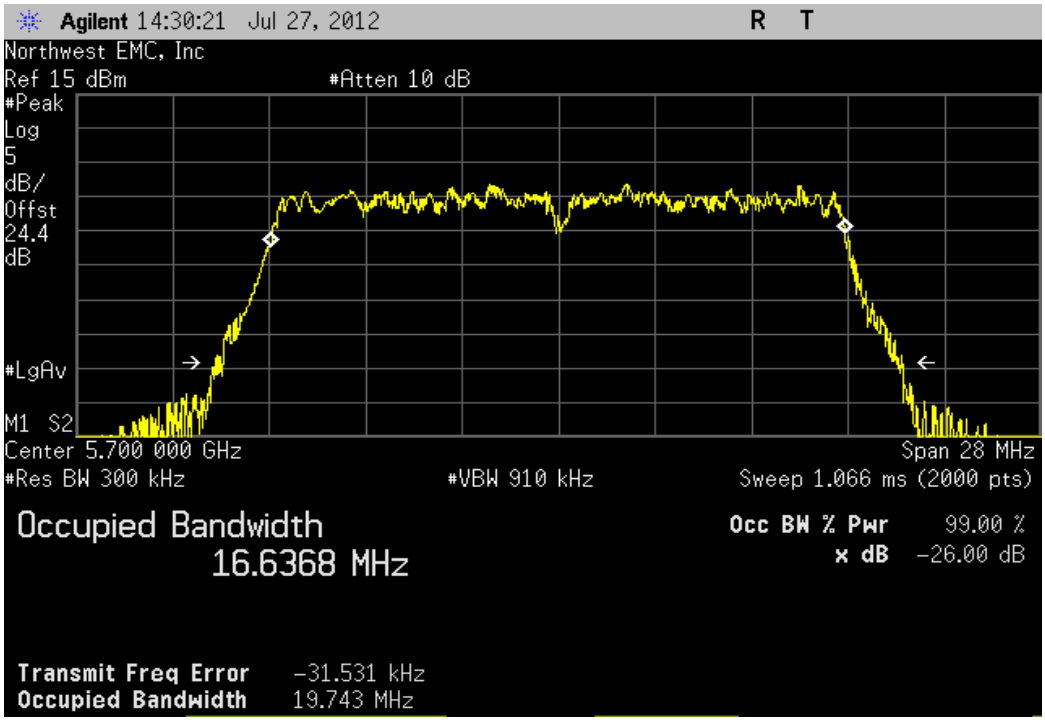


Antenna B, 20MHz Bandwidth , 802.11(a) 54Mbps, High Channel 64 Fq 5320MHz						
				Value	Limit	Result
				16.604 MHz	> 500 kHz	Pass



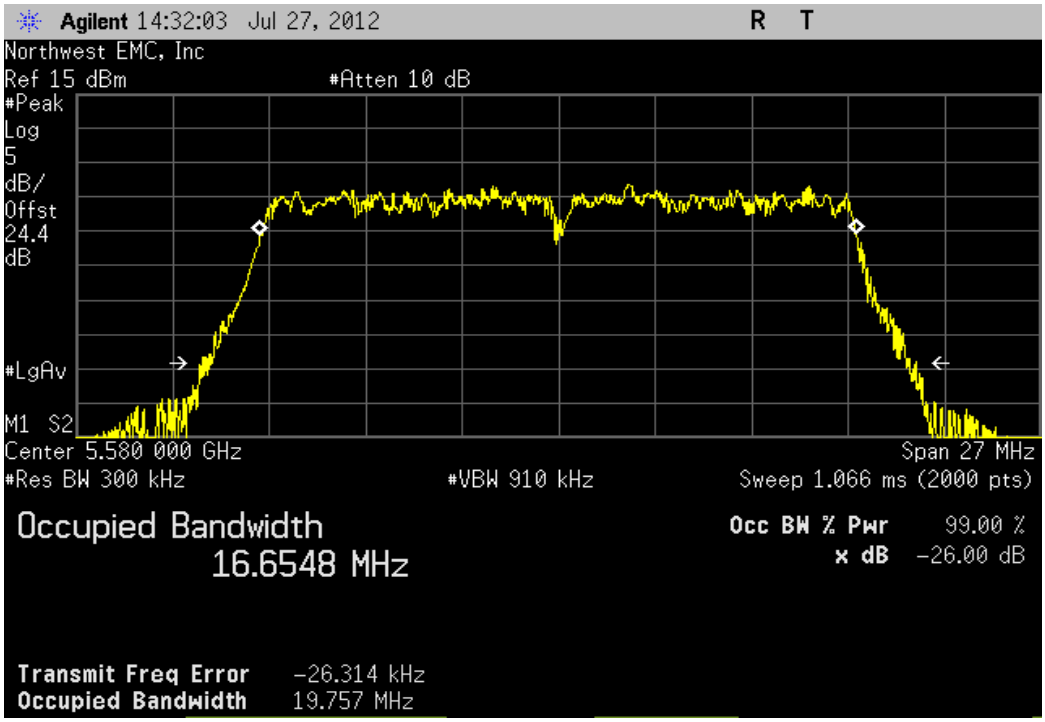
Antenna B, 20MHz Bandwidth , 802.11(a) 54Mbps, High Channel 140 Fq 5700MHz

				Value	Limit	Result
				16.637 MHz	> 500 kHz	Pass



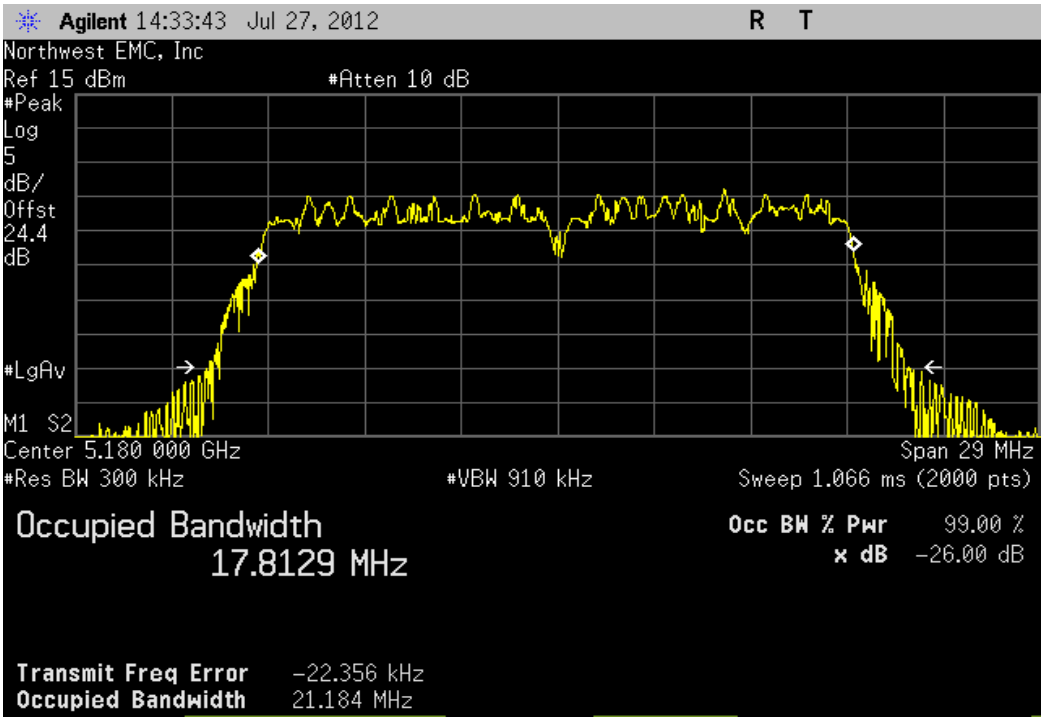
Antenna B, 20MHz Bandwidth , 802.11(a) 54Mbps, Mid Channel 116 Fq 5580 MHz

				Value	Limit	Result
				16.655 MHz	> 500 kHz	Pass



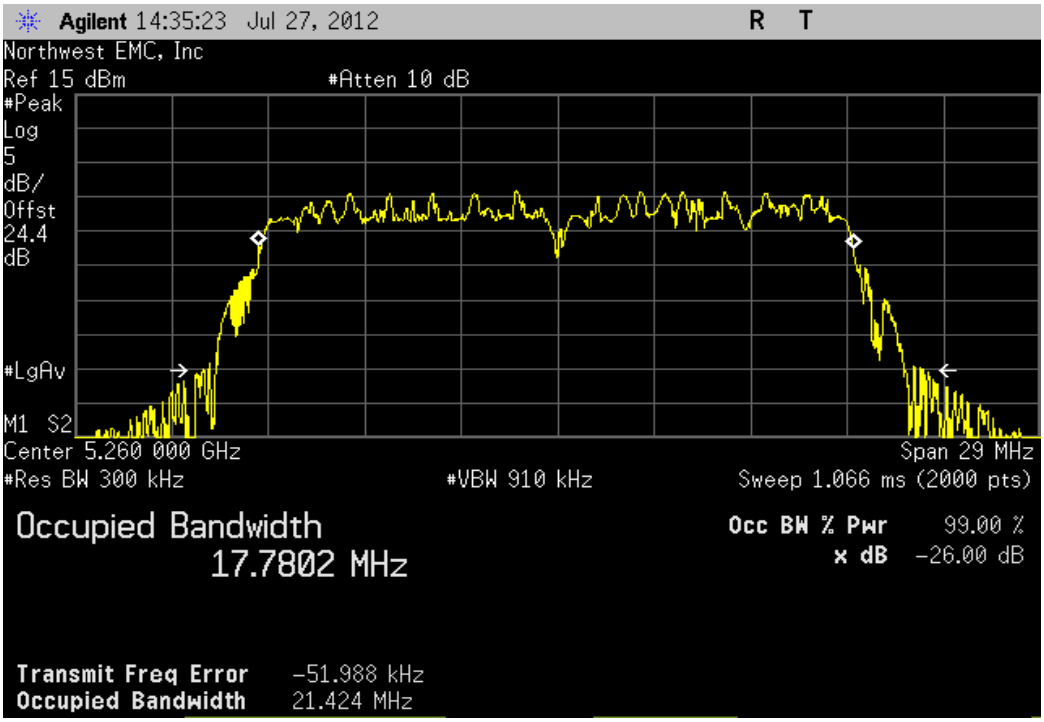
Antenna B, 20MHz Bandwidth , 802.11(n) MCS0, Low Channel 36 Fq 5180MHz

				Value	Limit	Result
				17.813 MHz	> 500 kHz	Pass



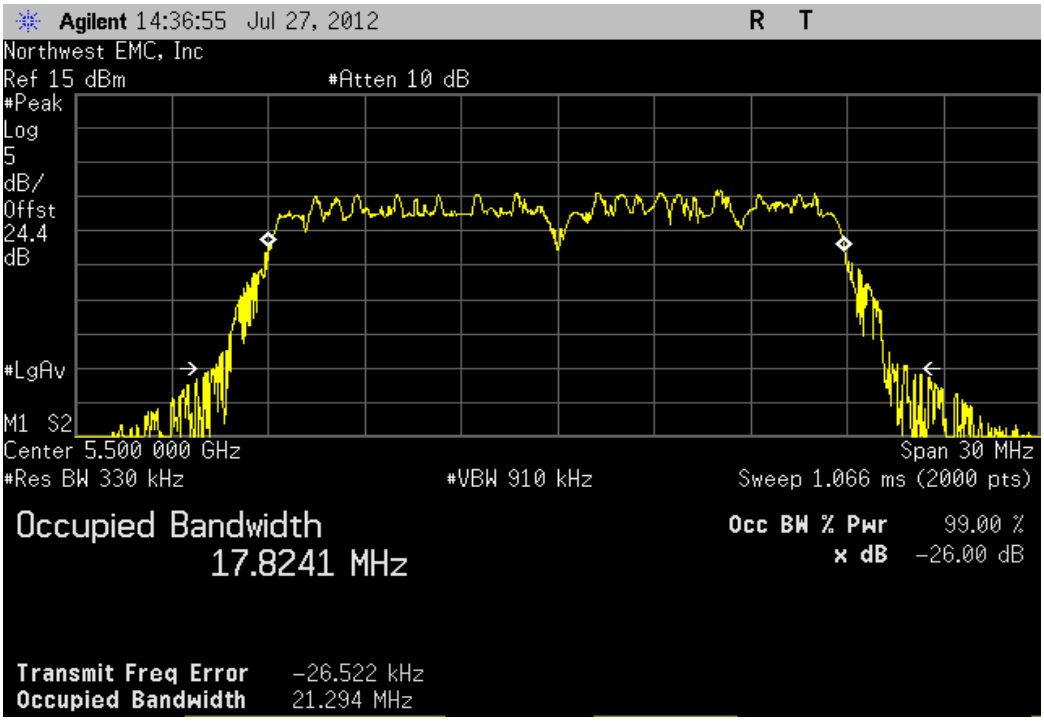
Antenna B, 20MHz Bandwidth , 802.11(n) MCS0, Low Channel 52 Fq 5260MHz

				Value	Limit	Result
				17.78 MHz	> 500 kHz	Pass



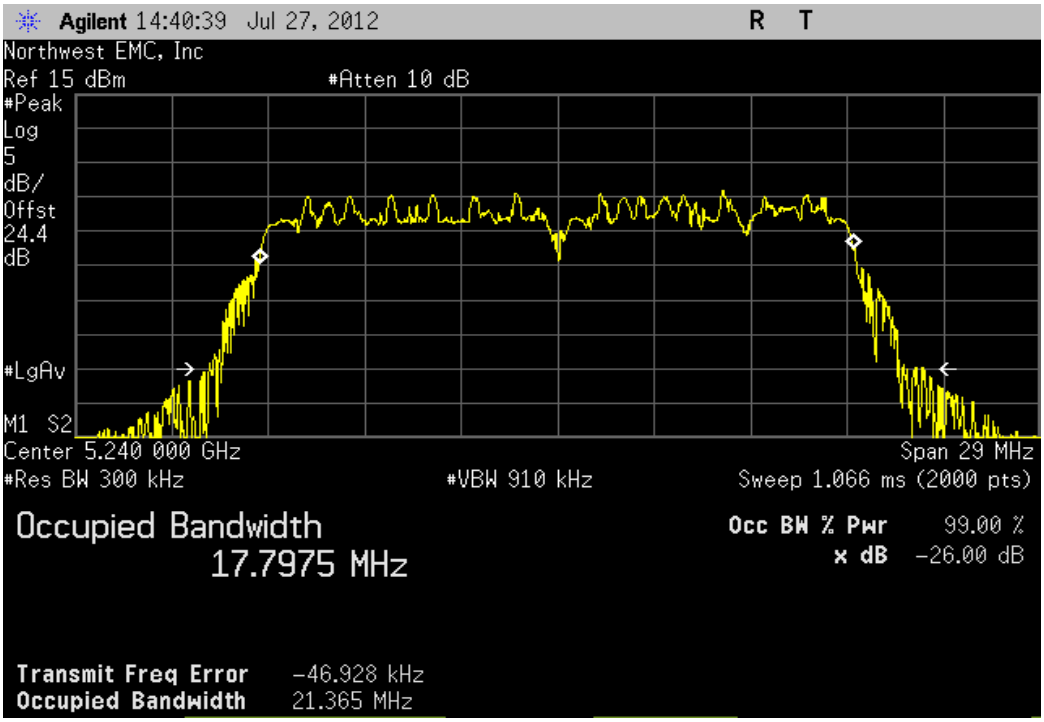
Antenna B, 20MHz Bandwidth , 802.11(n) MCS0, Low Channel 100 Fq 5500MHz

				Value	Limit	Result
				17.824 MHz	> 500 kHz	Pass



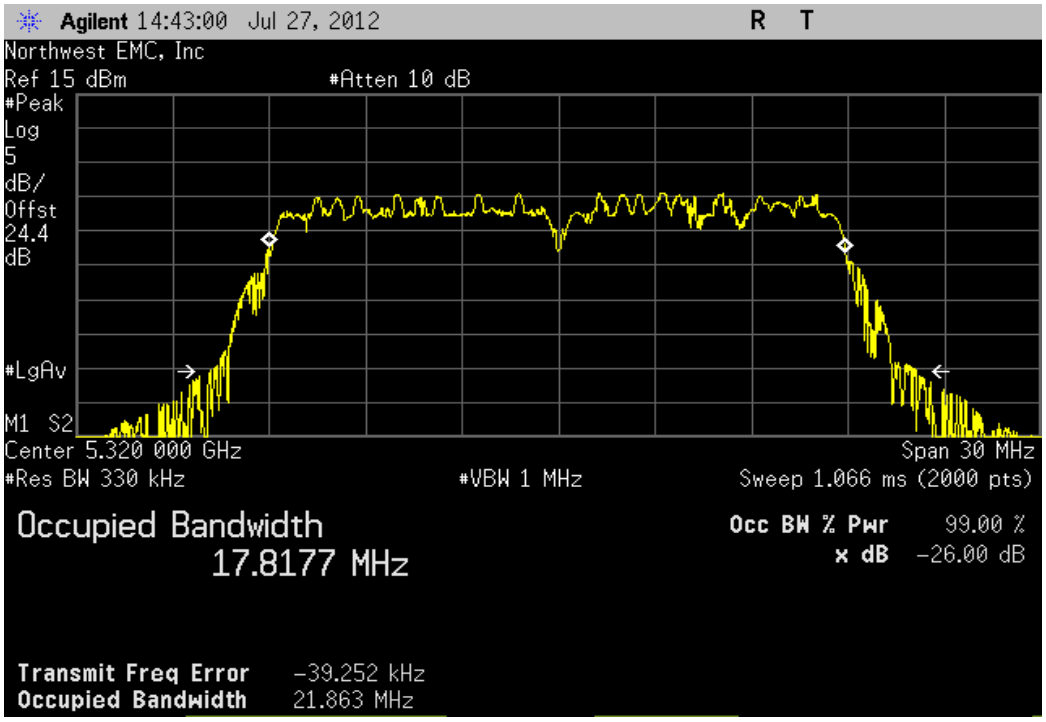
Antenna B, 20MHz Bandwidth , 802.11(n) MCS0, High Channel 48 Fq 5240MHz

				Value	Limit	Result
				17.797 MHz	> 500 kHz	Pass



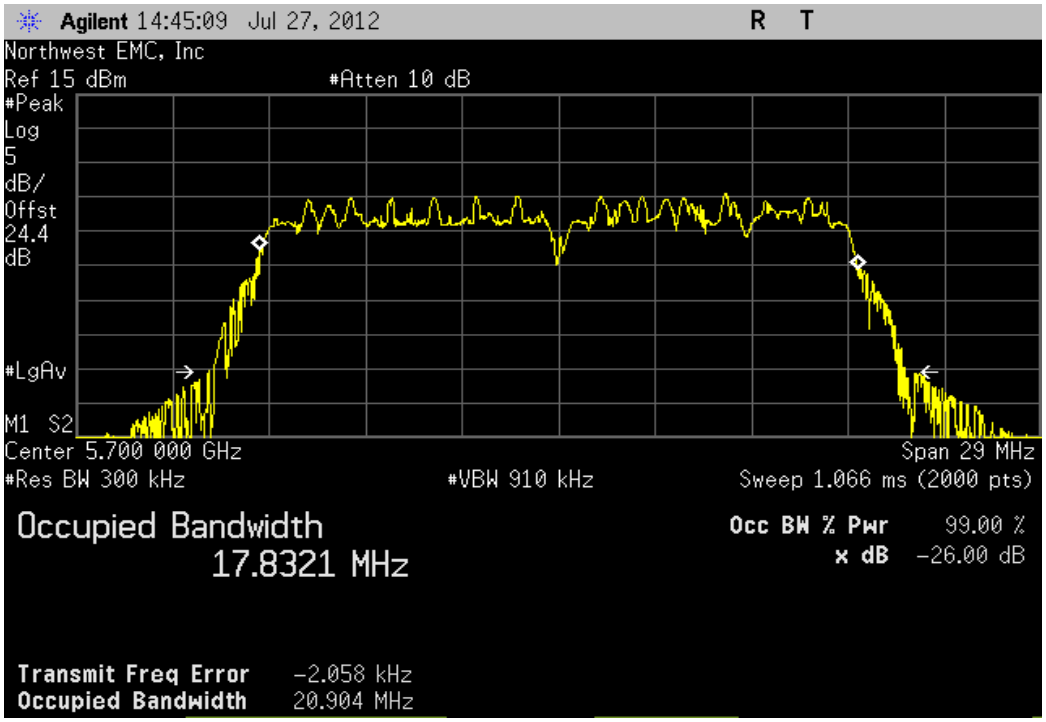
Antenna B, 20MHz Bandwidth , 802.11(n) MCS0, High Channel 64 Fq 5320MHz

				Value	Limit	Result
				17.818 MHz	> 500 kHz	Pass



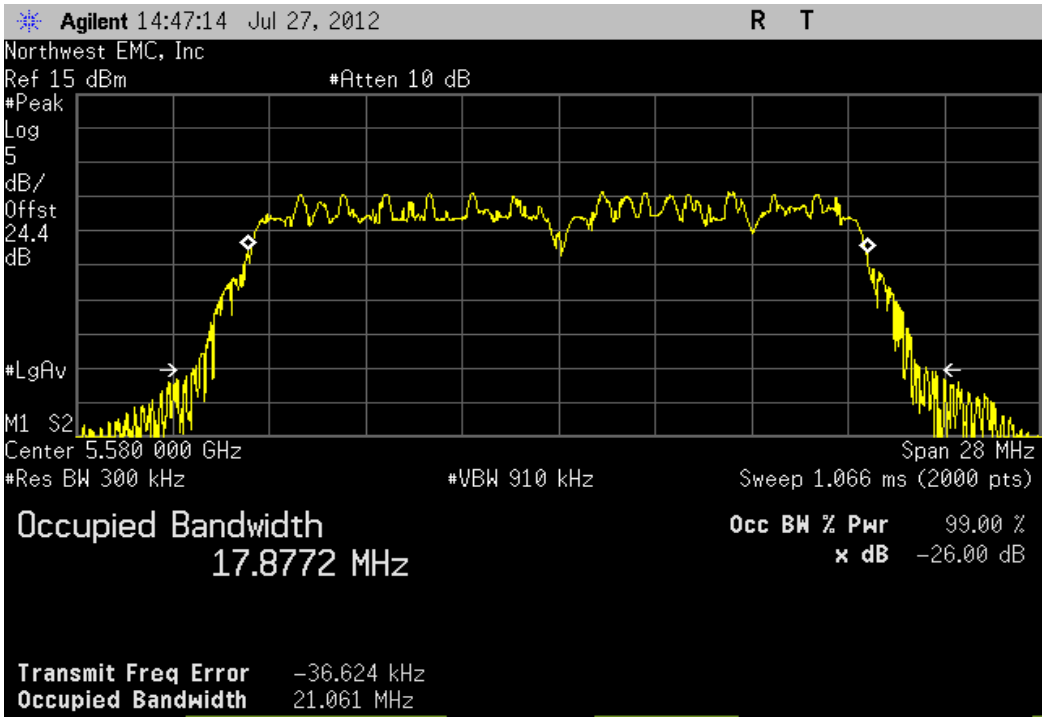
Antenna B, 20MHz Bandwidth , 802.11(n) MCS0, High Channel 140 Fq 5700MHz

				Value	Limit	Result
				17.832 MHz	> 500 kHz	Pass



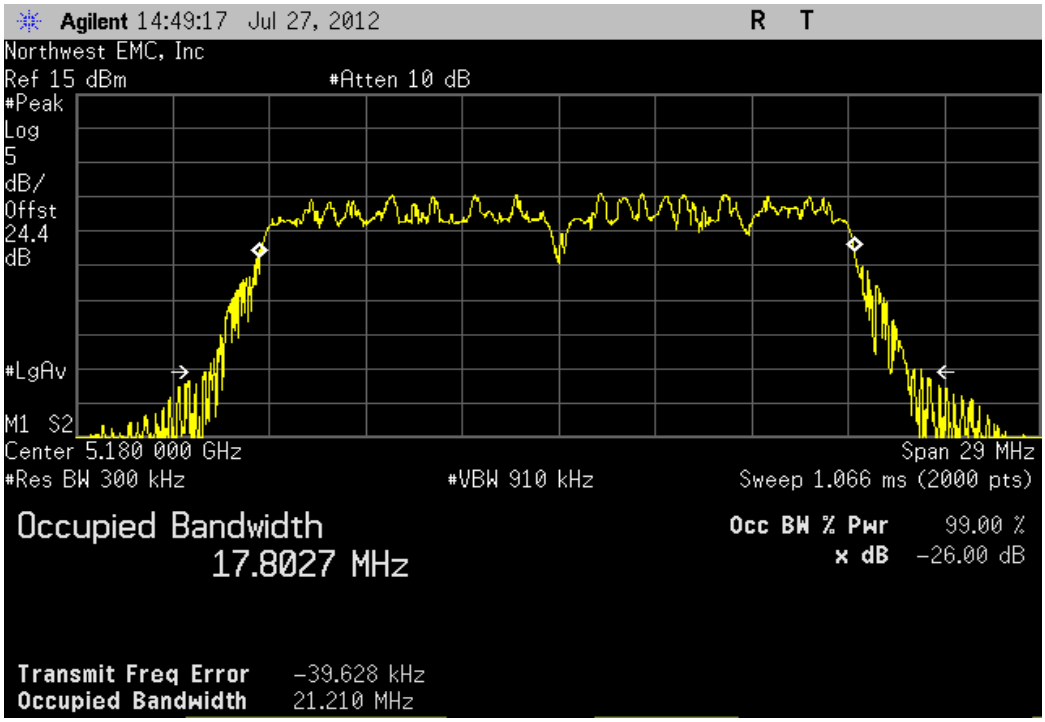
Antenna B, 20MHz Bandwidth , 802.11(n) MCS0, Mid Channel 116 Fq 5580 MHz

				Value	Limit	Result
				17.877 MHz	> 500 kHz	Pass

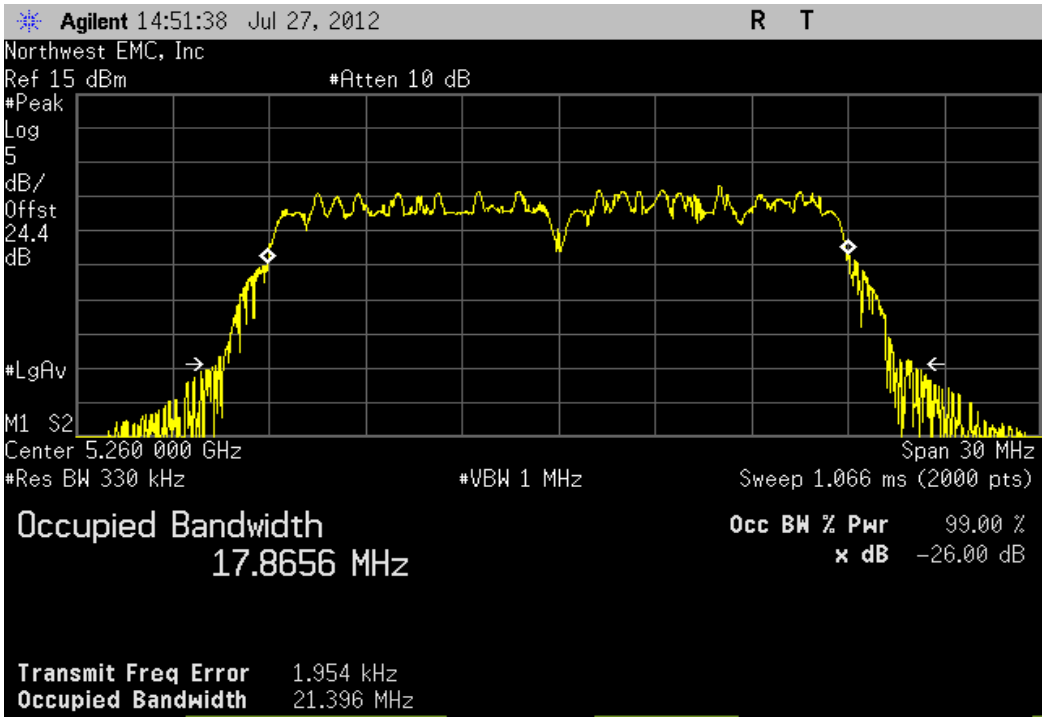


Antenna B, 20MHz Bandwidth , 802.11(n) MCS7, Low Channel 36 Fq 5180MHz

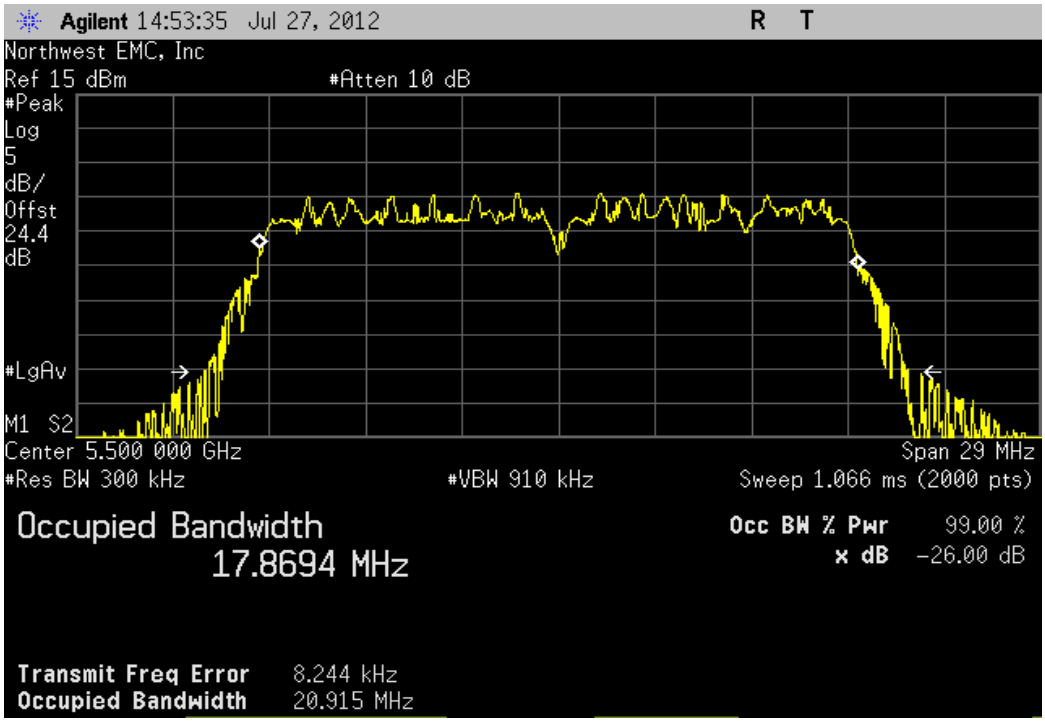
				Value	Limit	Result
				17.803 MHz	> 500 kHz	Pass



Antenna B, 20MHz Bandwidth , 802.11(n) MCS7, Low Channel 52 Fq 5260MHz						
				Value	Limit	Result
				17.866 MHz	> 500 kHz	Pass

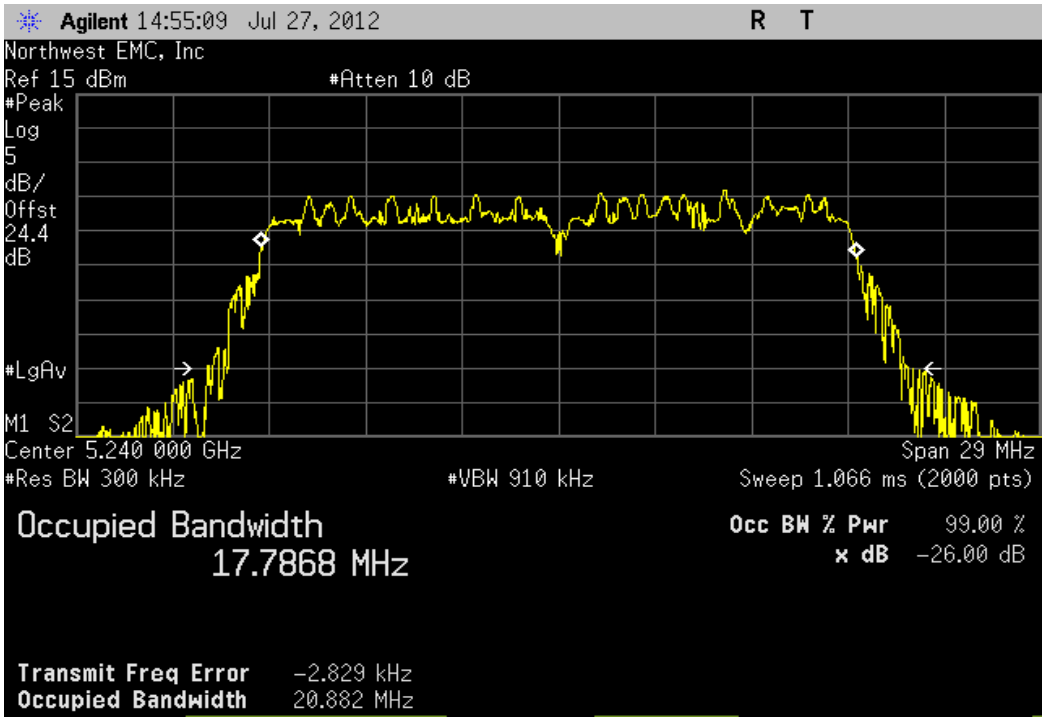


Antenna B, 20MHz Bandwidth , 802.11(n) MCS7, Low Channel 100 Fq 5500MHz						
				Value	Limit	Result
				17.869 MHz	> 500 kHz	Pass



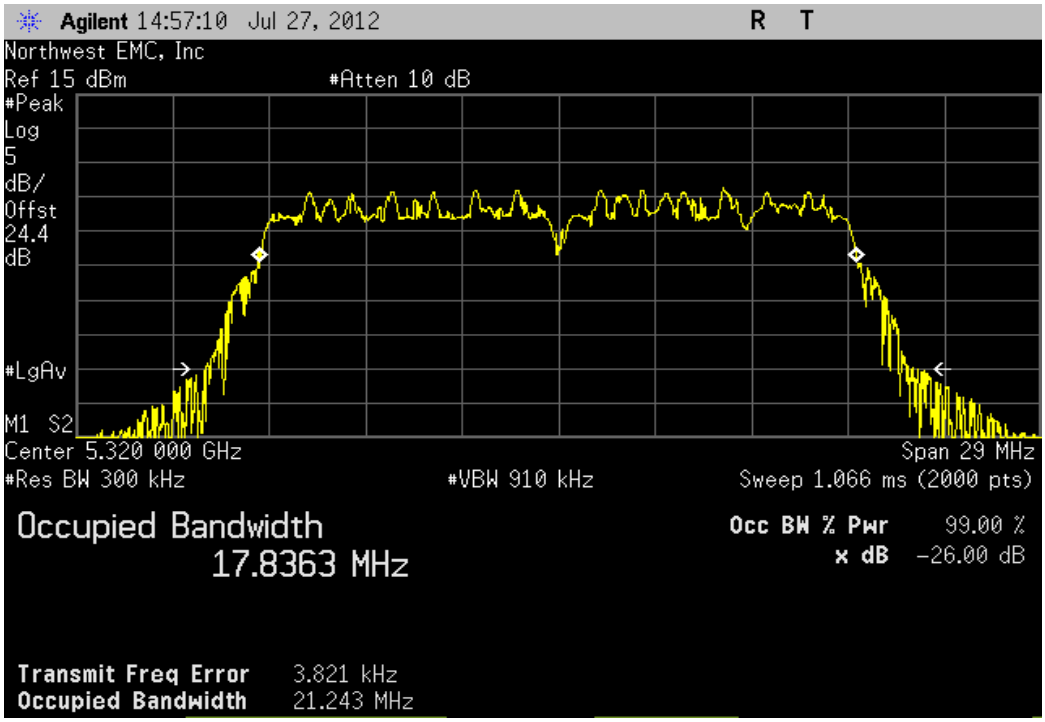
Antenna B, 20MHz Bandwidth , 802.11(n) MCS7, High Channel 48 Fq 5240MHz

				Value	Limit	Result
				17.787 MHz	> 500 kHz	Pass

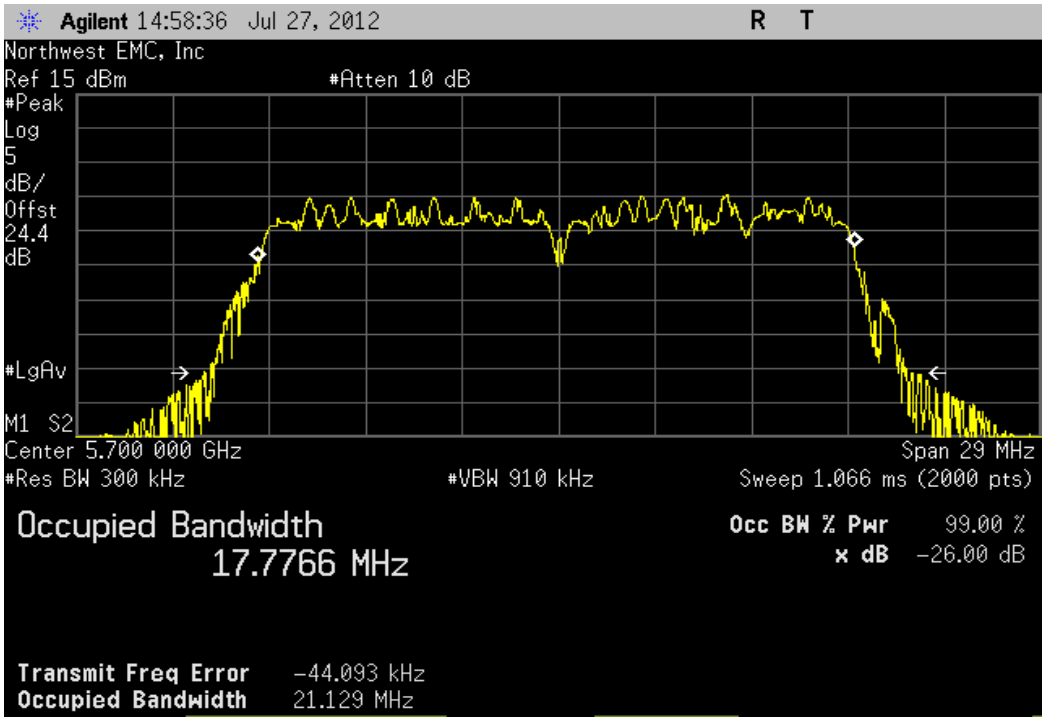


Antenna B, 20MHz Bandwidth , 802.11(n) MCS7, High Channel 64 Fq 5320MHz

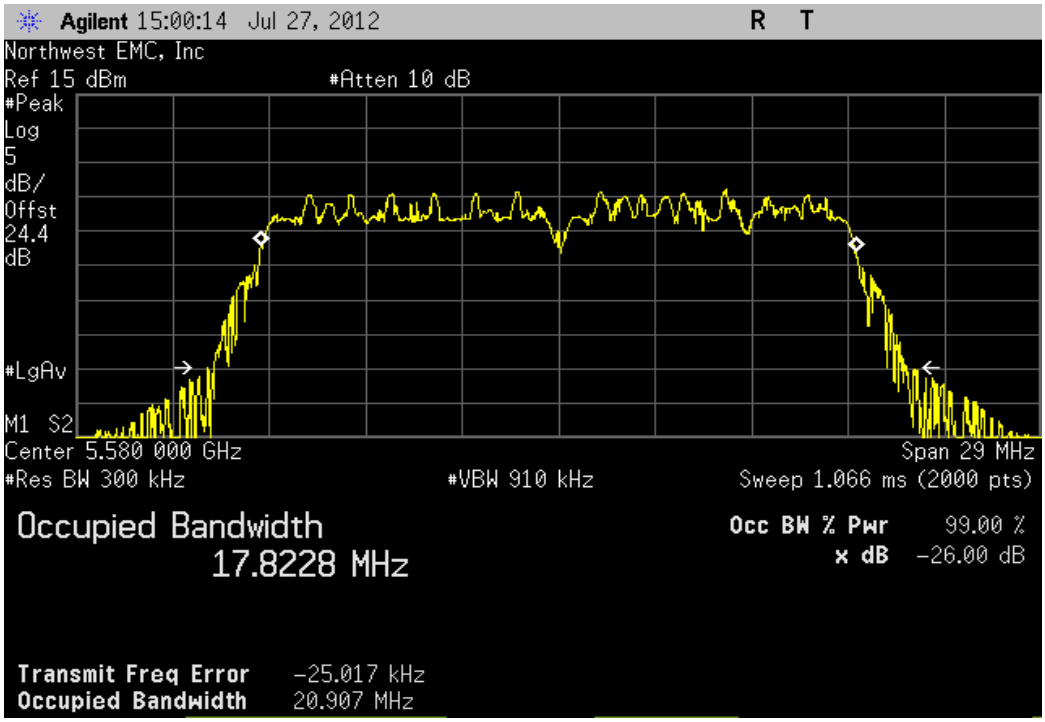
				Value	Limit	Result
				17.836 MHz	> 500 kHz	Pass



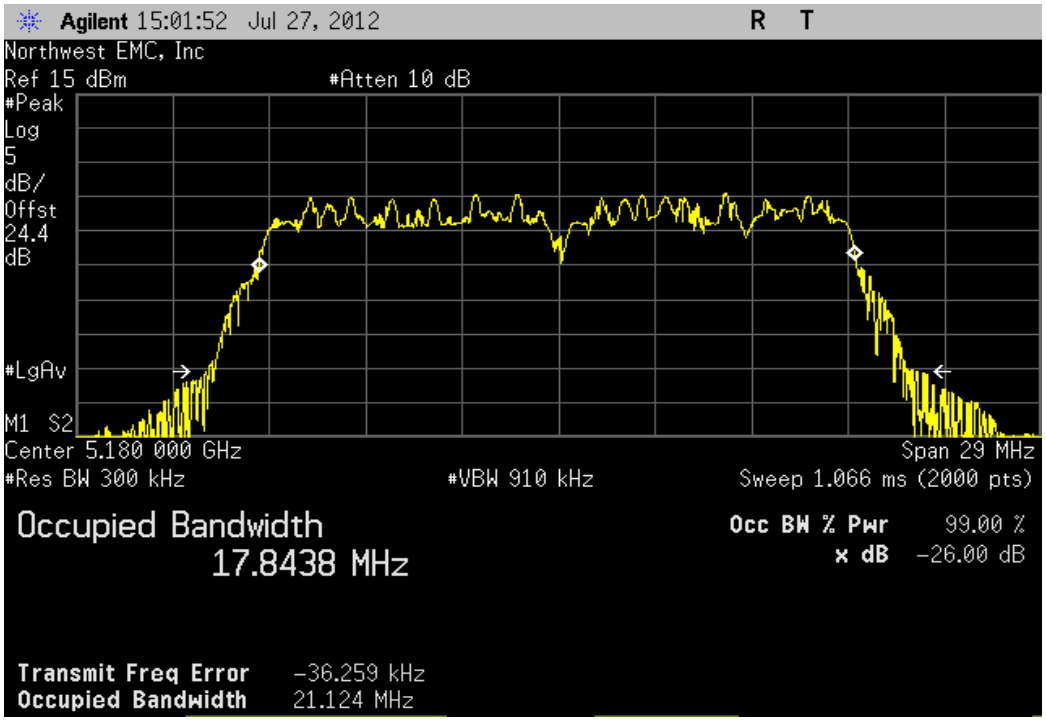
Antenna B, 20MHz Bandwidth , 802.11(n) MCS7, High Channel 140 Fq 5700MHz						
				Value	Limit	Result
				17.777 MHz	> 500 kHz	Pass



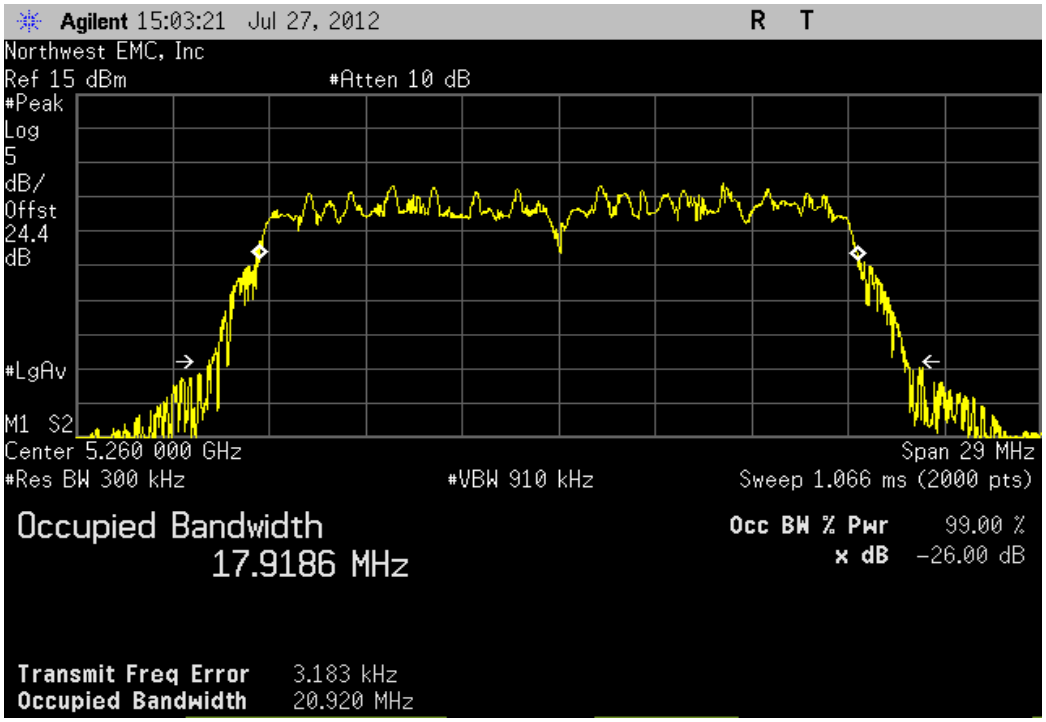
Antenna B, 20MHz Bandwidth , 802.11(n) MCS7, Mid Channel 116 Fq 5580 MHz						
				Value	Limit	Result
				17.823 MHz	> 500 kHz	Pass



Antenna B, 20MHz Bandwidth , 802.11(n) MCS8, Low Channel 36 Fq 5180MHz						
				Value	Limit	Result
				17.844 MHz	> 500 kHz	Pass

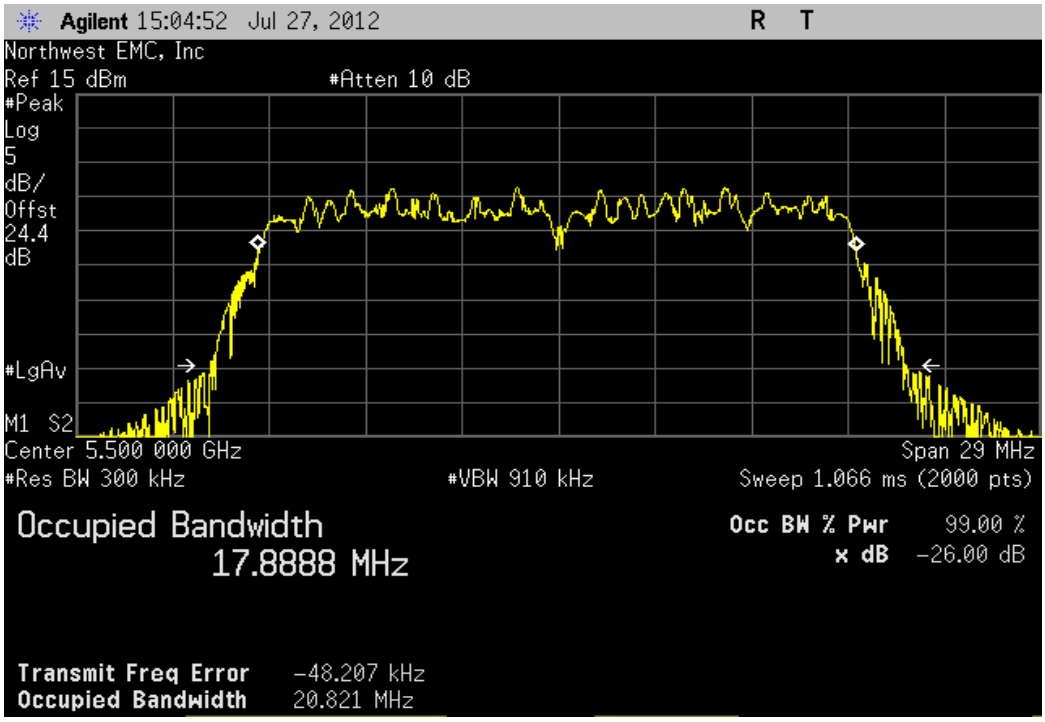


Antenna B, 20MHz Bandwidth , 802.11(n) MCS8, Low Channel 52 Fq 5260MHz						
				Value	Limit	Result
				17.919 MHz	> 500 kHz	Pass



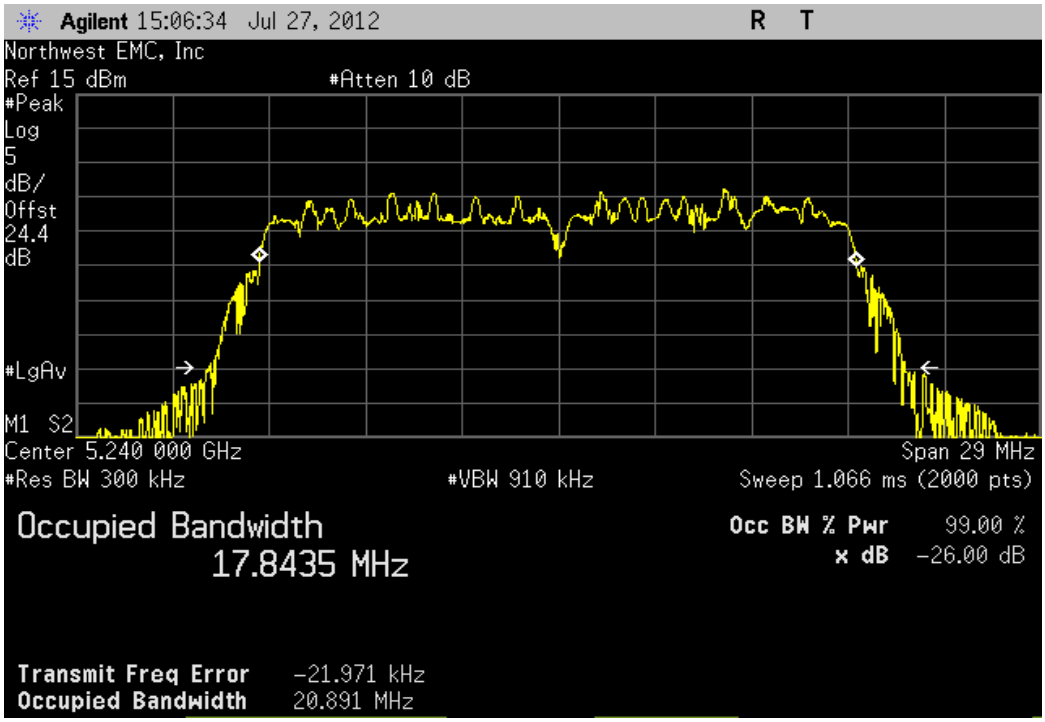
Antenna B, 20MHz Bandwidth , 802.11(n) MCS8, Low Channel 100 Fq 5500MHz

				Value	Limit	Result
				17.889 MHz	> 500 kHz	Pass



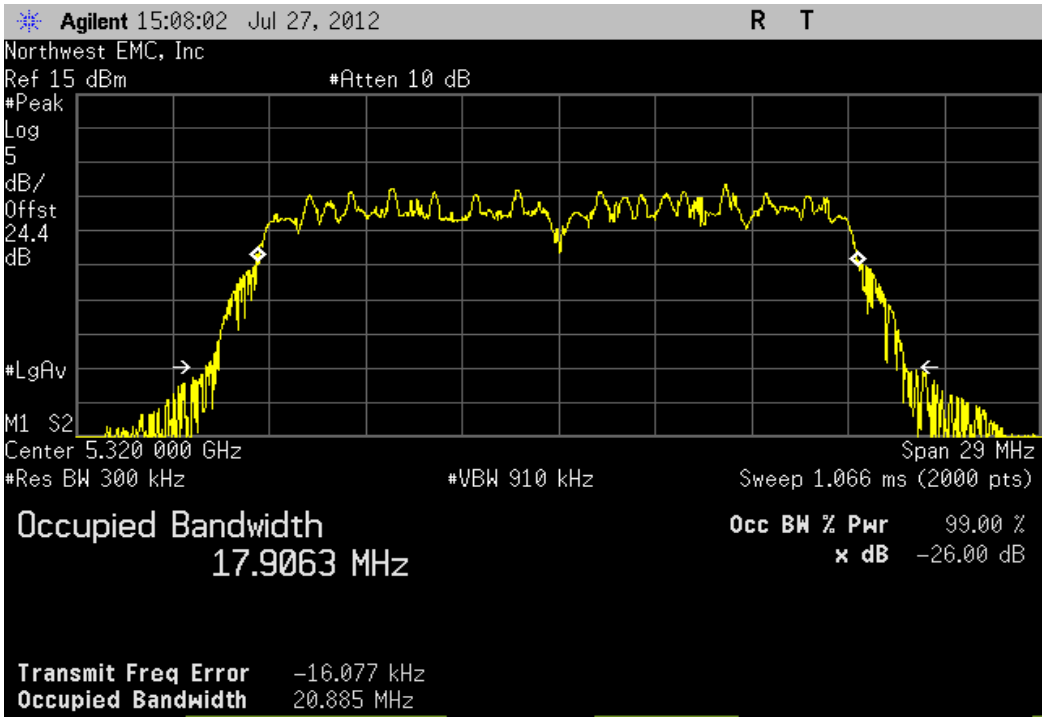
Antenna B, 20MHz Bandwidth , 802.11(n) MCS8, High Channel 48 Fq 5240MHz

				Value	Limit	Result
				17.844 MHz	> 500 kHz	Pass



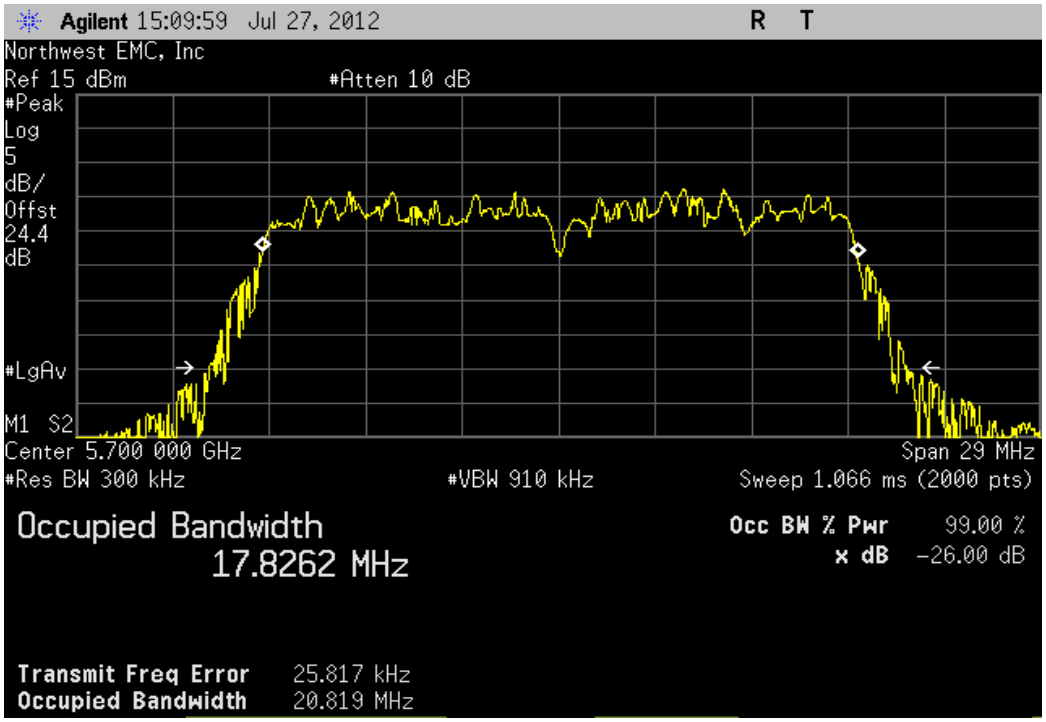
Antenna B, 20MHz Bandwidth , 802.11(n) MCS8, High Channel 64 Fq 5320MHz

				Value	Limit	Result
				17.906 MHz	> 500 kHz	Pass



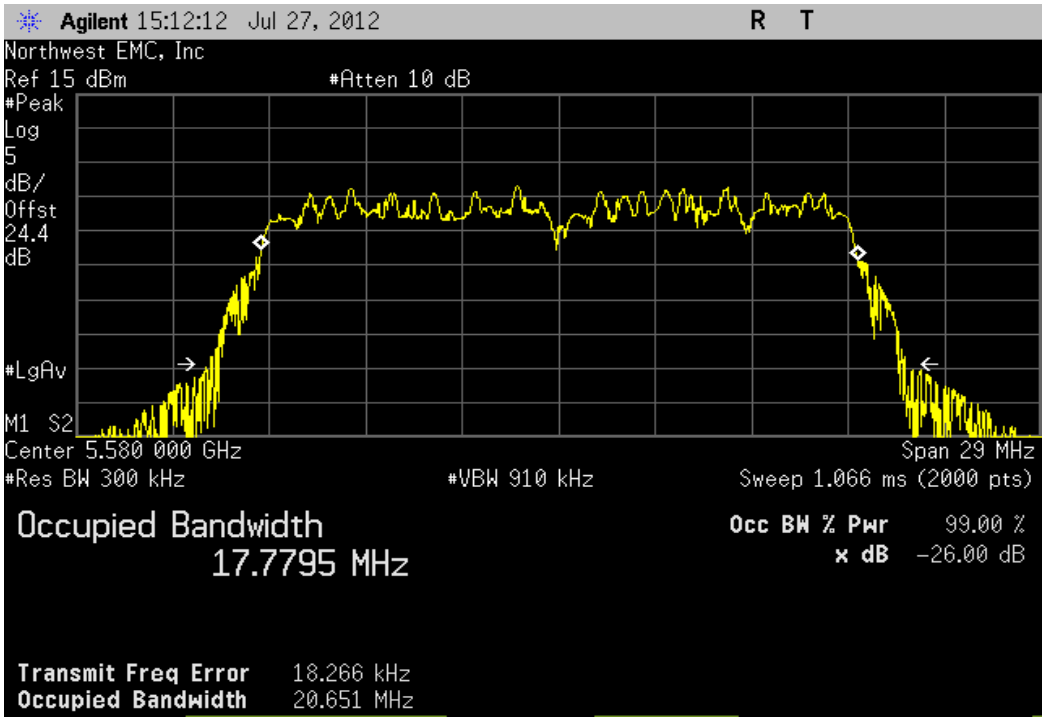
Antenna B, 20MHz Bandwidth , 802.11(n) MCS8, High Channel 140 Fq 5700MHz

				Value	Limit	Result
				17.826 MHz	> 500 kHz	Pass



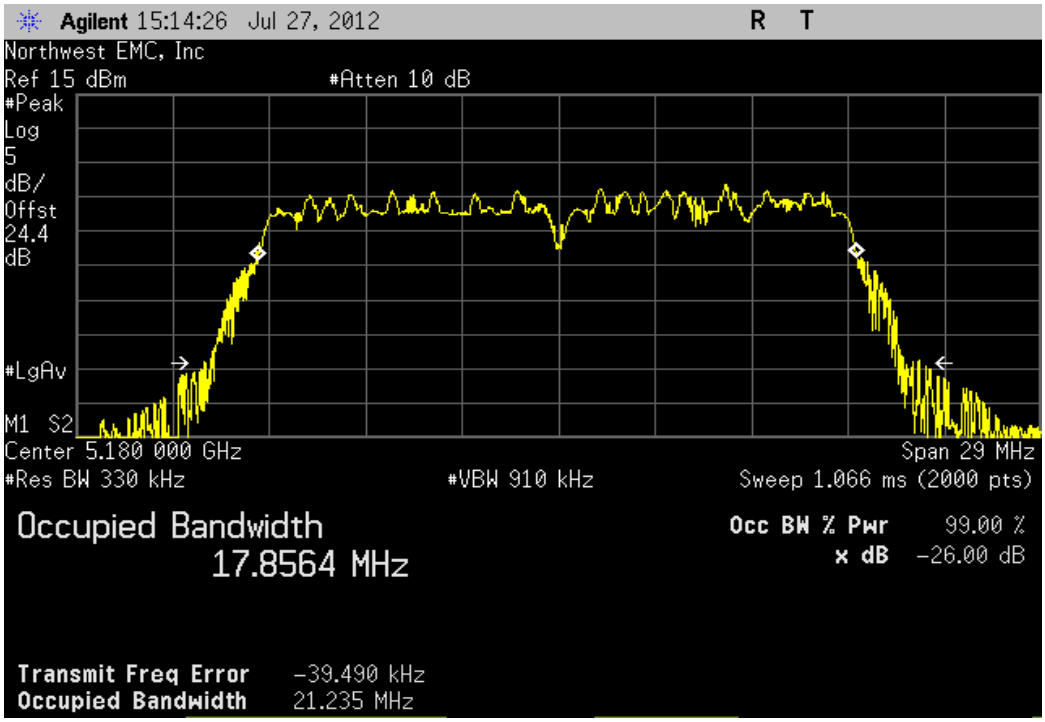
Antenna B, 20MHz Bandwidth , 802.11(n) MCS8, Mid Channel 116 Fq 5580 MHz

				Value	Limit	Result
				17.78 MHz	> 500 kHz	Pass

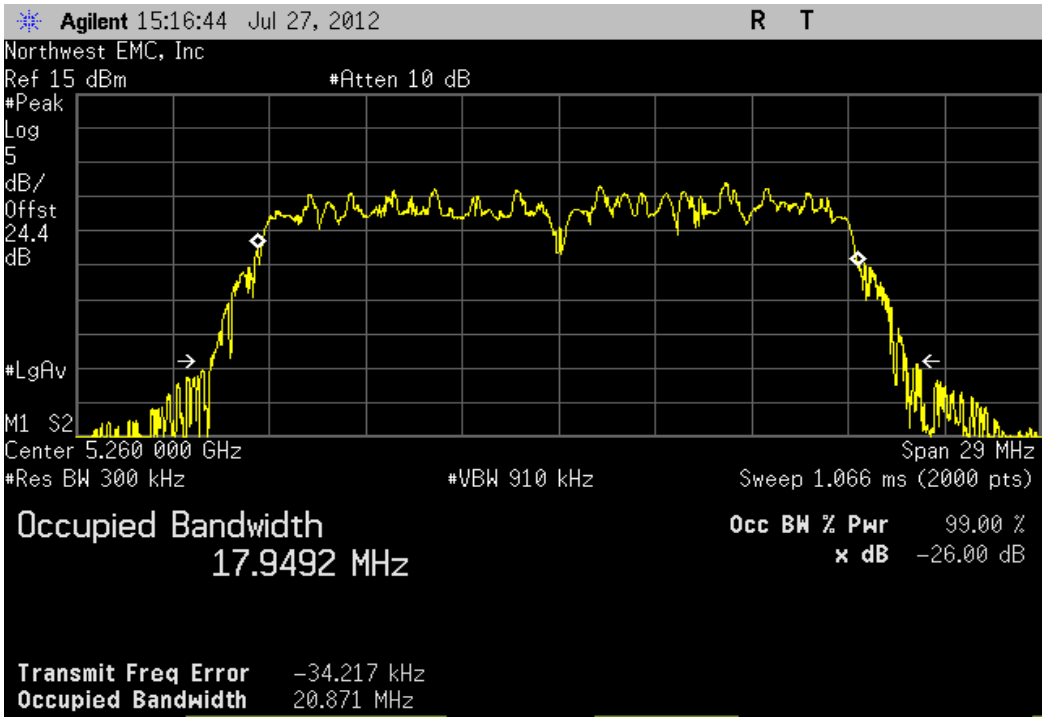


Antenna B, 20MHz Bandwidth , 802.11(n) MCS15, Low Channel 36 Fq 5180MHz

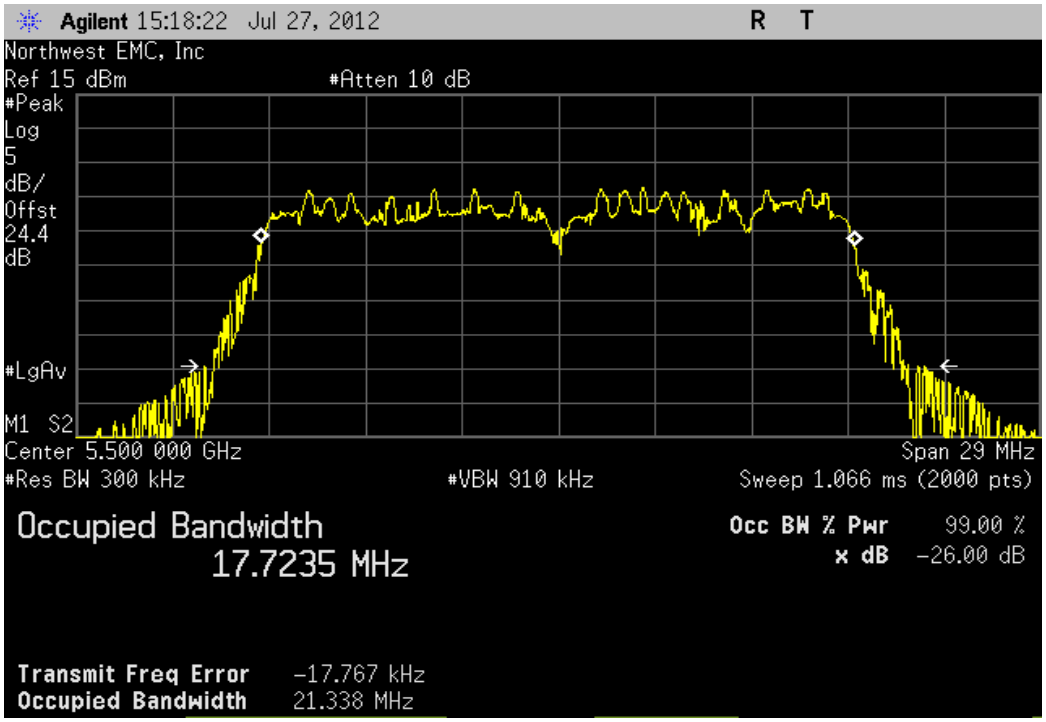
				Value	Limit	Result
				17.856 MHz	> 500 kHz	Pass



Antenna B, 20MHz Bandwidth , 802.11(n) MCS15, Low Channel 52 Fq 5260MHz						
				Value	Limit	Result
				17.949 MHz	> 500 kHz	Pass

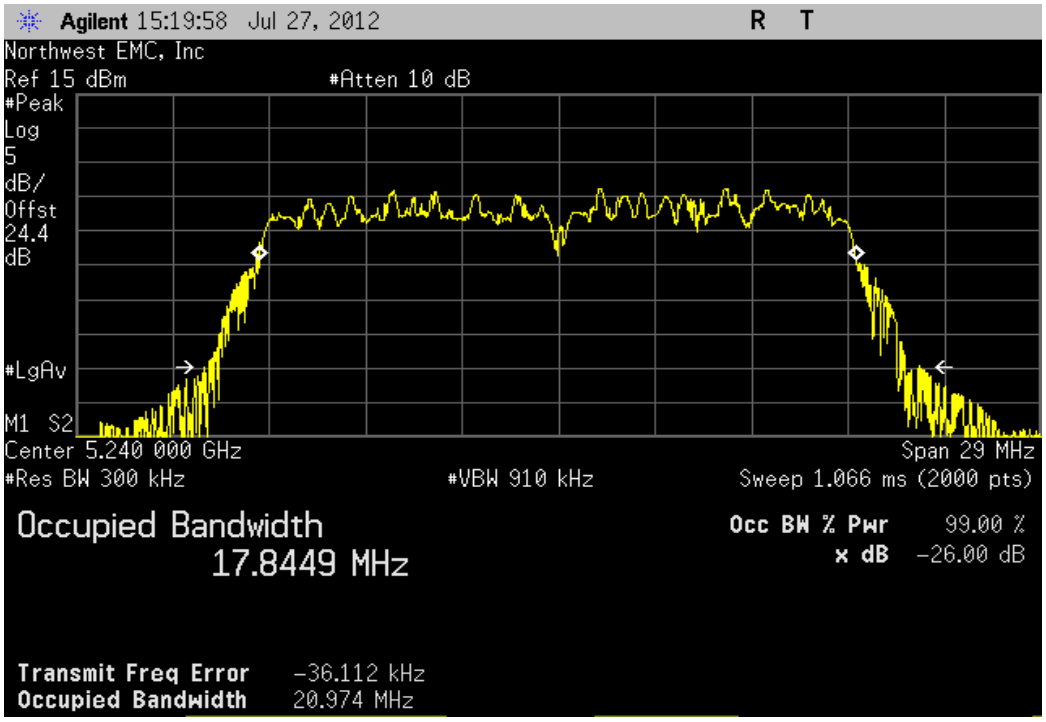


Antenna B, 20MHz Bandwidth , 802.11(n) MCS15, Low Channel 100 Fq 5500MHz						
				Value	Limit	Result
				17.724 MHz	> 500 kHz	Pass



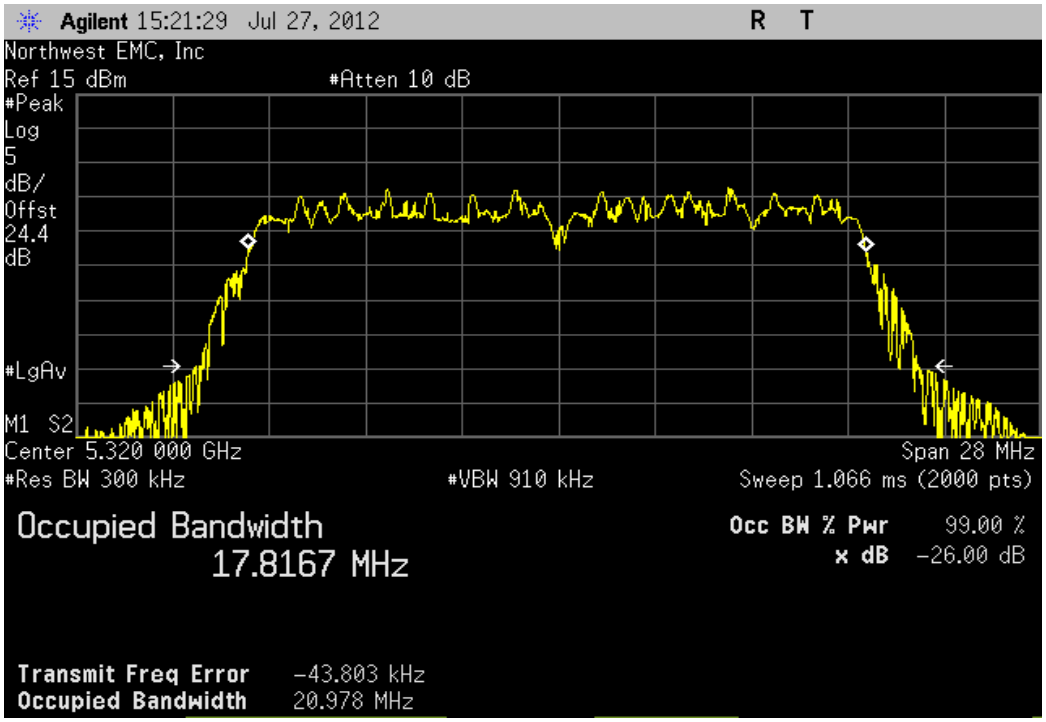
Antenna B, 20MHz Bandwidth , 802.11(n) MCS15, High Channel 48 Fq 5240MHz

				Value	Limit	Result
				17.845 MHz	> 500 kHz	Pass



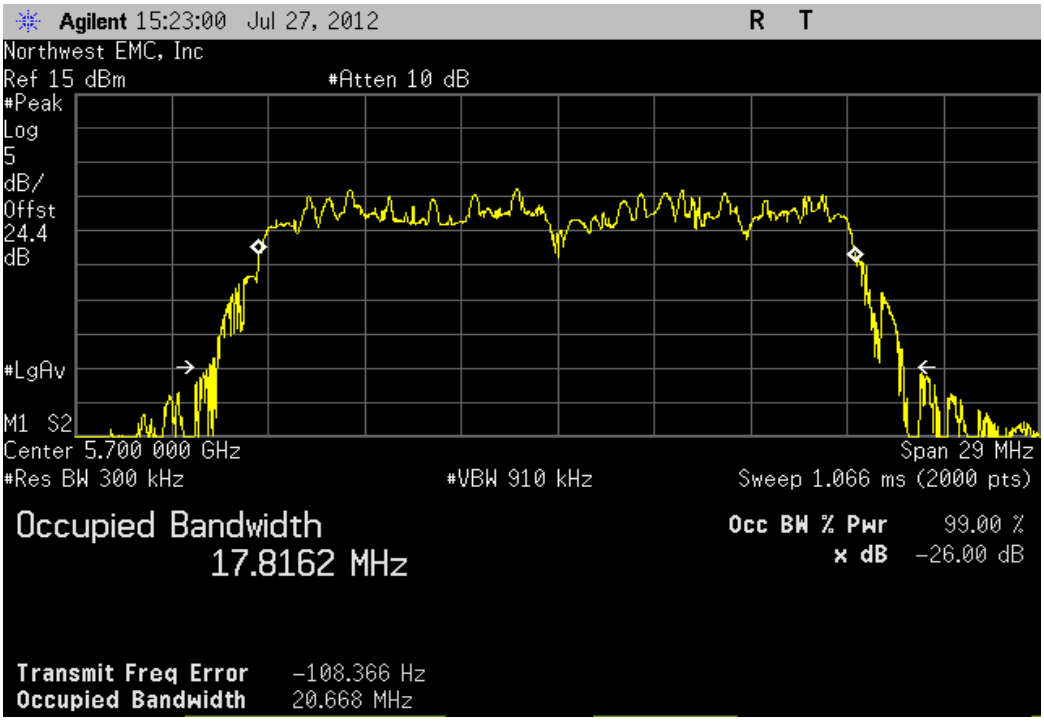
Antenna B, 20MHz Bandwidth , 802.11(n) MCS15, High Channel 64 Fq 5320MHz

				Value	Limit	Result
				17.817 MHz	> 500 kHz	Pass



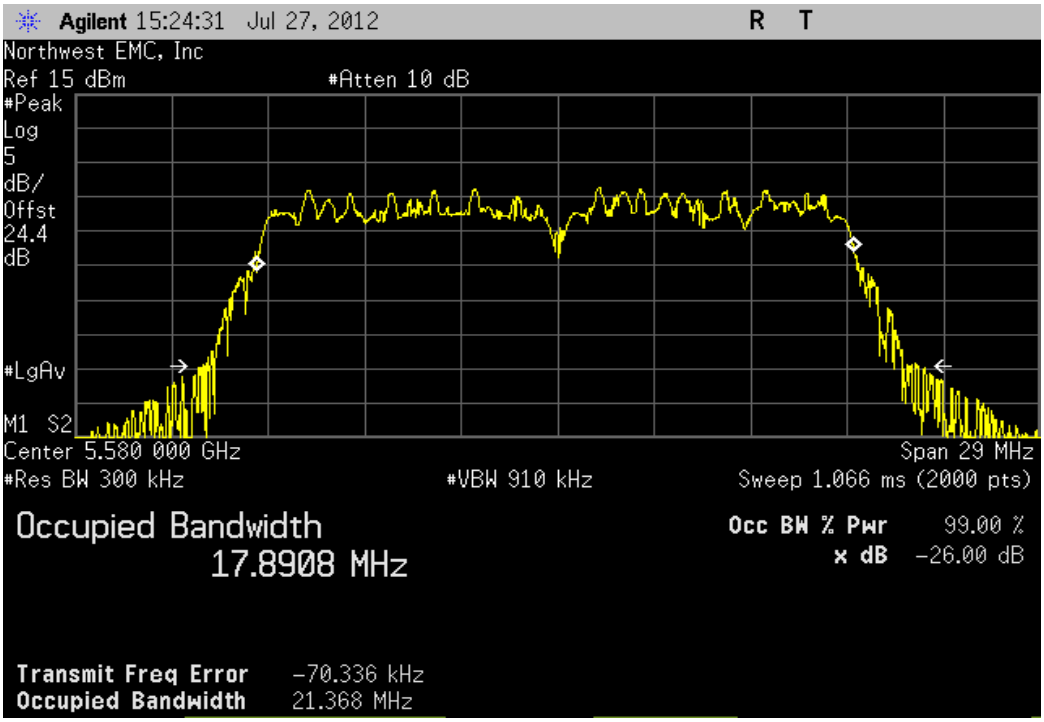
Antenna B, 20MHz Bandwidth , 802.11(n) MCS15, High Channel 140 Fq 5700MHz

				Value	Limit	Result
				17.816 MHz	> 500 kHz	Pass



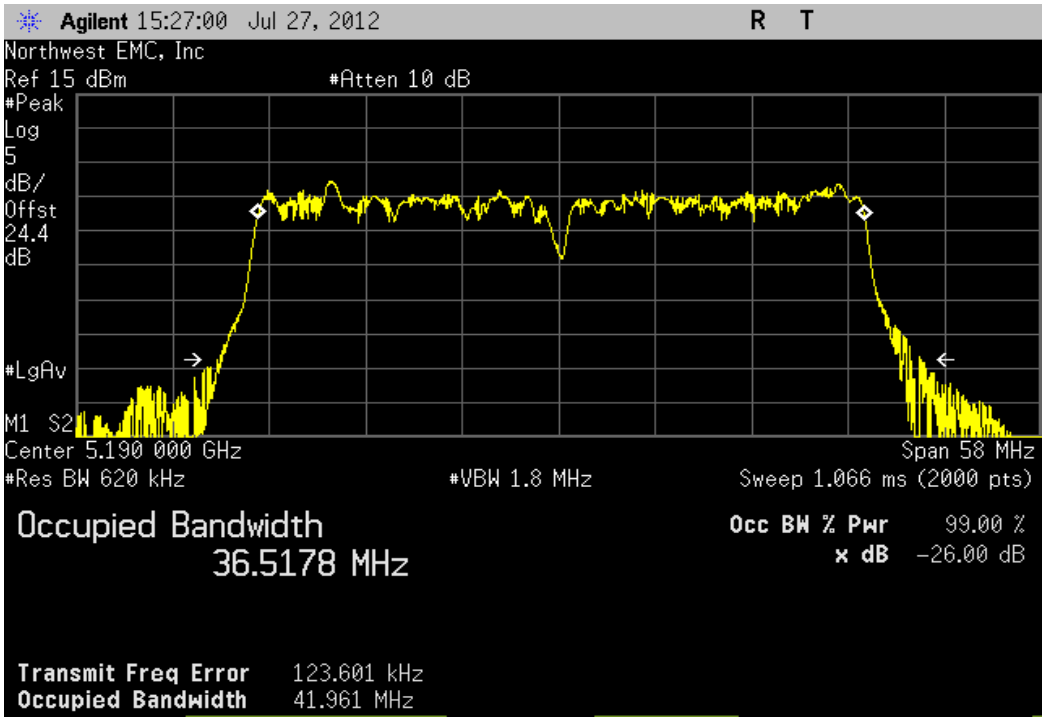
Antenna B, 20MHz Bandwidth , 802.11(n) MCS15, Mid Channel 116 Fq 5580 MHz

				Value	Limit	Result
				17.891 MHz	> 500 kHz	Pass



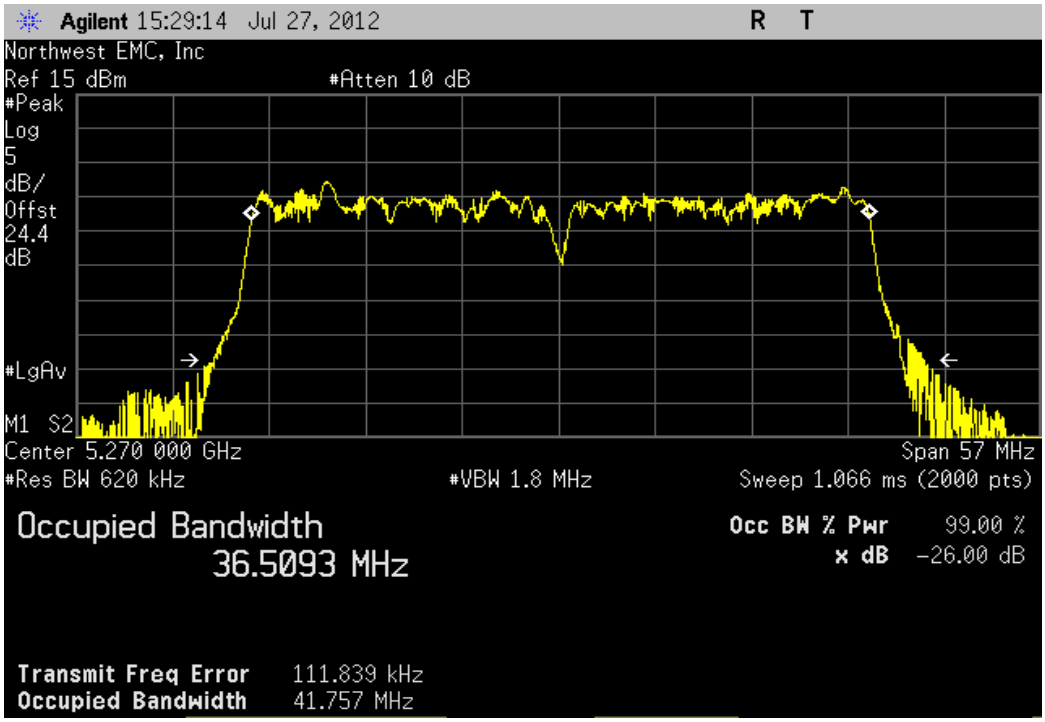
Antenna B, 40MHz Bandwidth , 802.11(n) MCS0, Low Channel 38 Fq 5190MHz

				Value	Limit	Result
				36.518 MHz	> 500 kHz	Pass



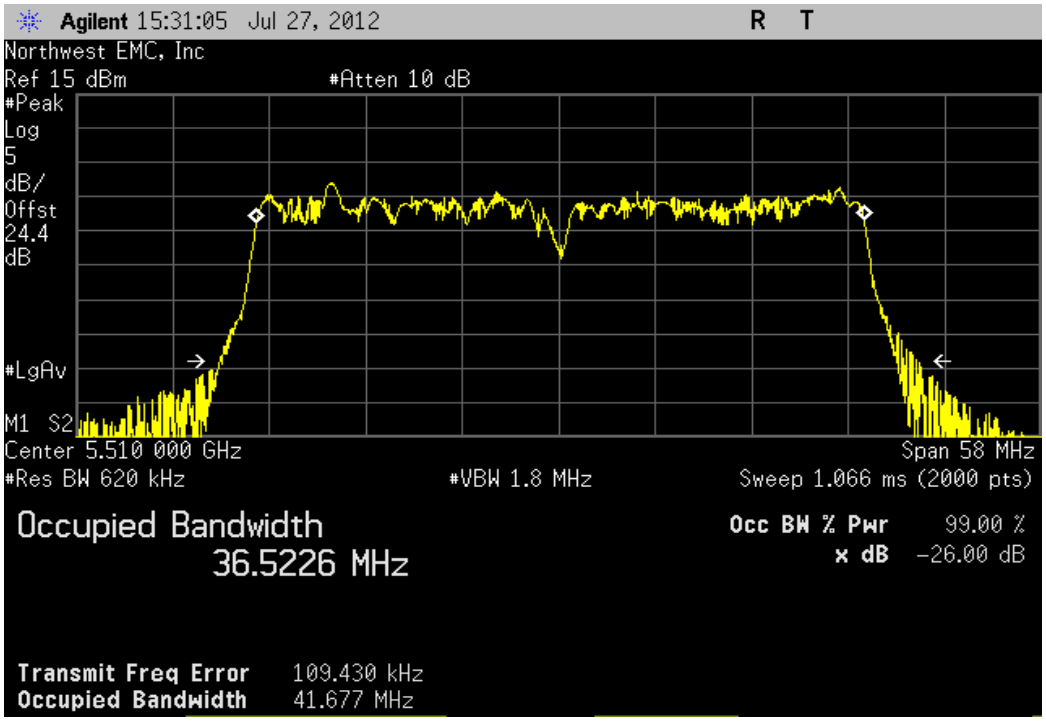
Antenna B, 40MHz Bandwidth , 802.11(n) MCS0, Low Channel 54 Fq 5270MHz

				Value	Limit	Result
				36.509 MHz	> 500 kHz	Pass



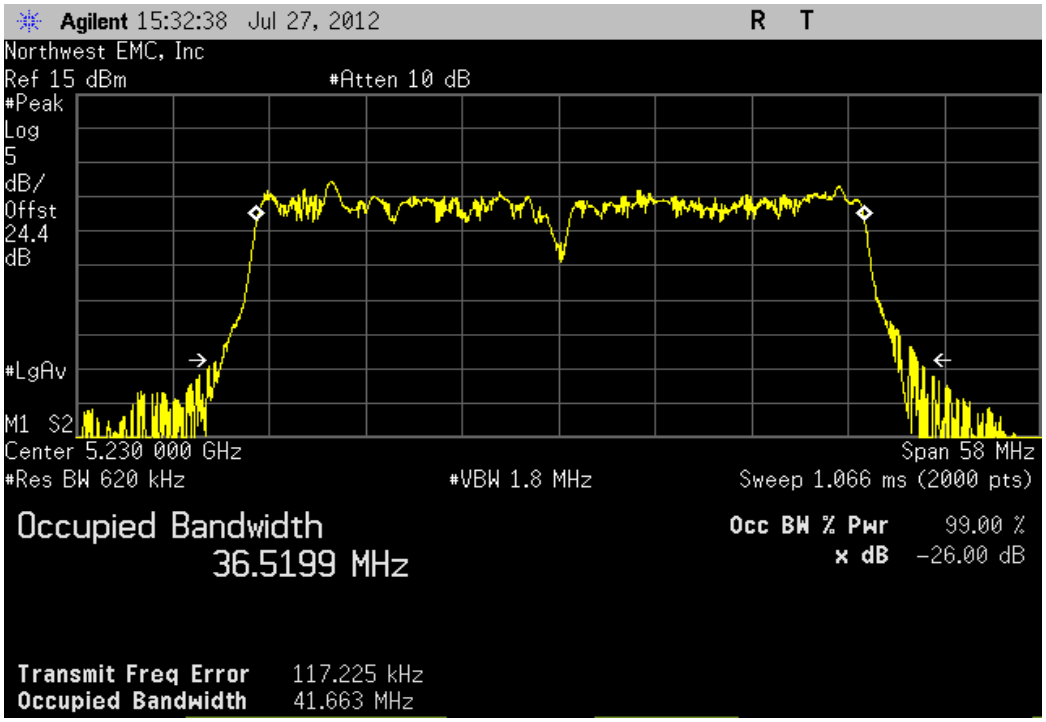
Antenna B, 40MHz Bandwidth , 802.11(n) MCS0, Low Channel 102 Fq 5510MHz

				Value	Limit	Result
				36.523 MHz	> 500 kHz	Pass

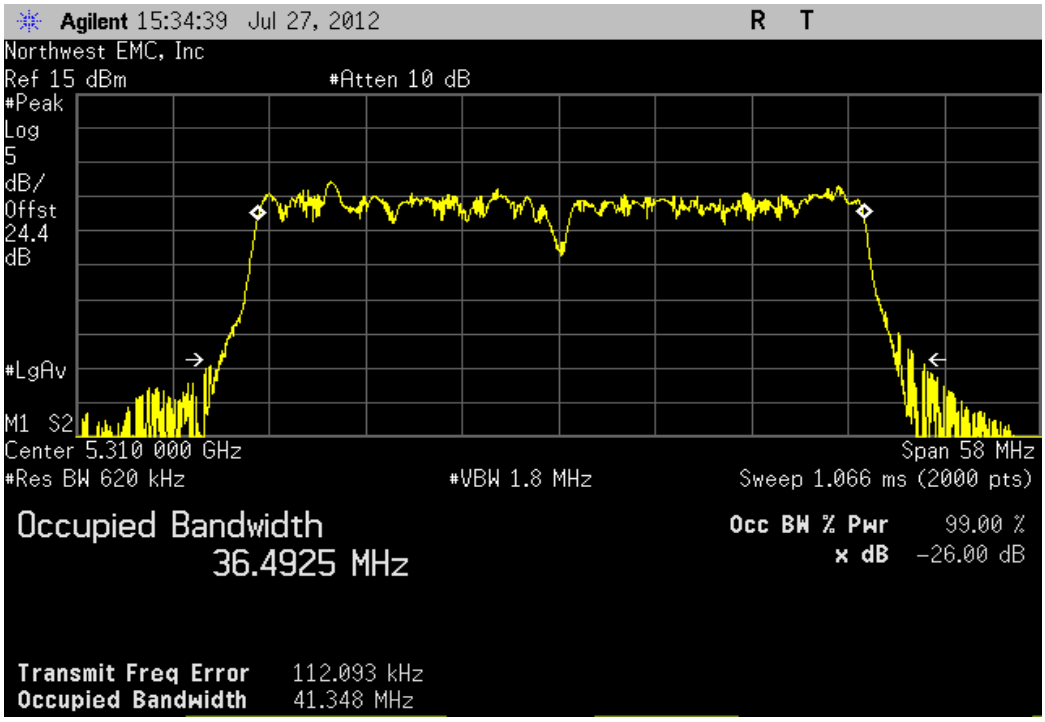


Antenna B, 40MHz Bandwidth , 802.11(n) MCS0, High Channel 46 Fq 5230MHz

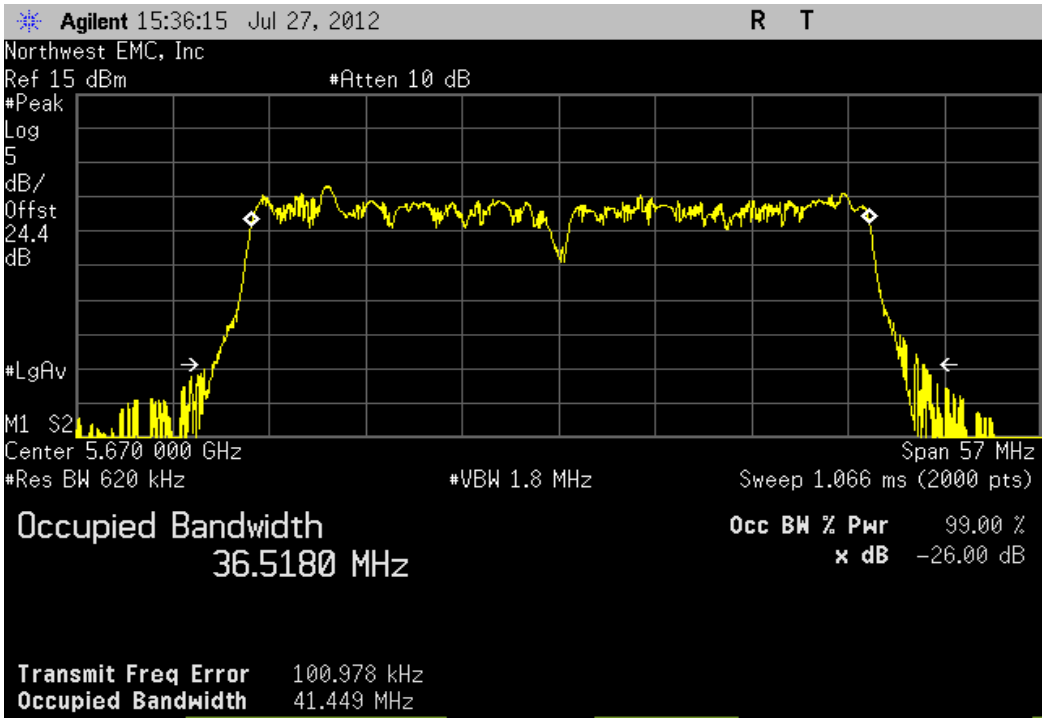
				Value	Limit	Result
				36.52 MHz	> 500 kHz	Pass



Antenna B, 40MHz Bandwidth , 802.11(n) MCS0, High Channel 62 Fq 5310MHz						
				Value	Limit	Result
				36.492 MHz	> 500 kHz	Pass

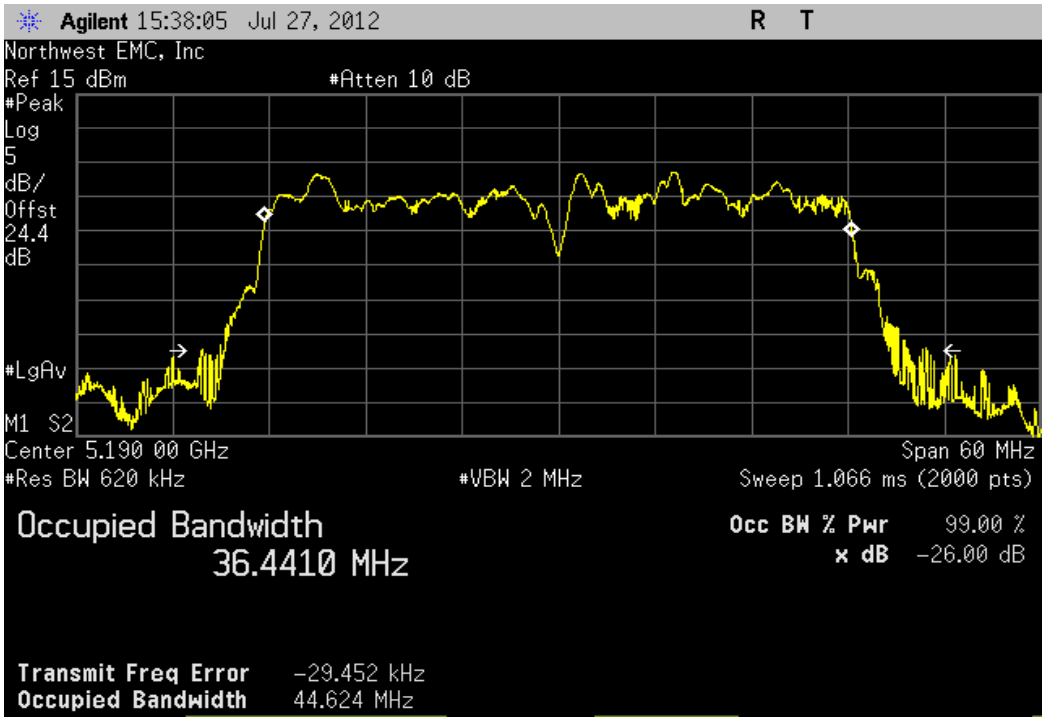


Antenna B, 40MHz Bandwidth , 802.11(n) MCS0, High Channel 134 Fq 5670MHz						
				Value	Limit	Result
				36.518 MHz	> 500 kHz	Pass



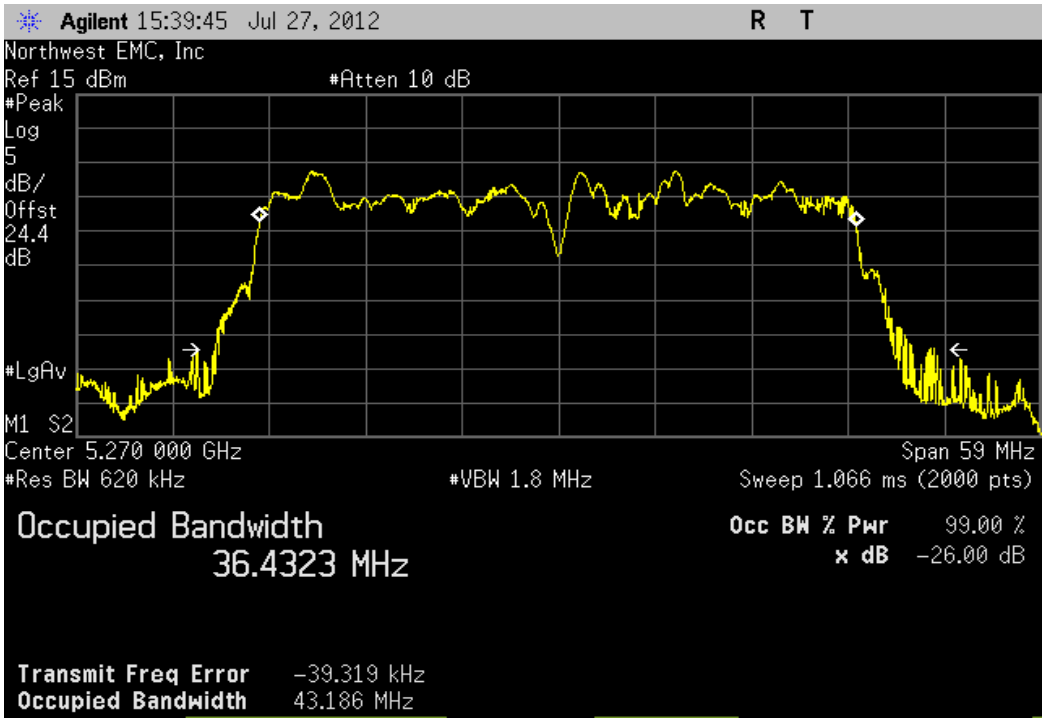
Antenna B, 40MHz Bandwidth , 802.11(n) MCS7, Low Channel 38 Fq 5190MHz

				Value	Limit	Result
				36.441 MHz	> 500 kHz	Pass

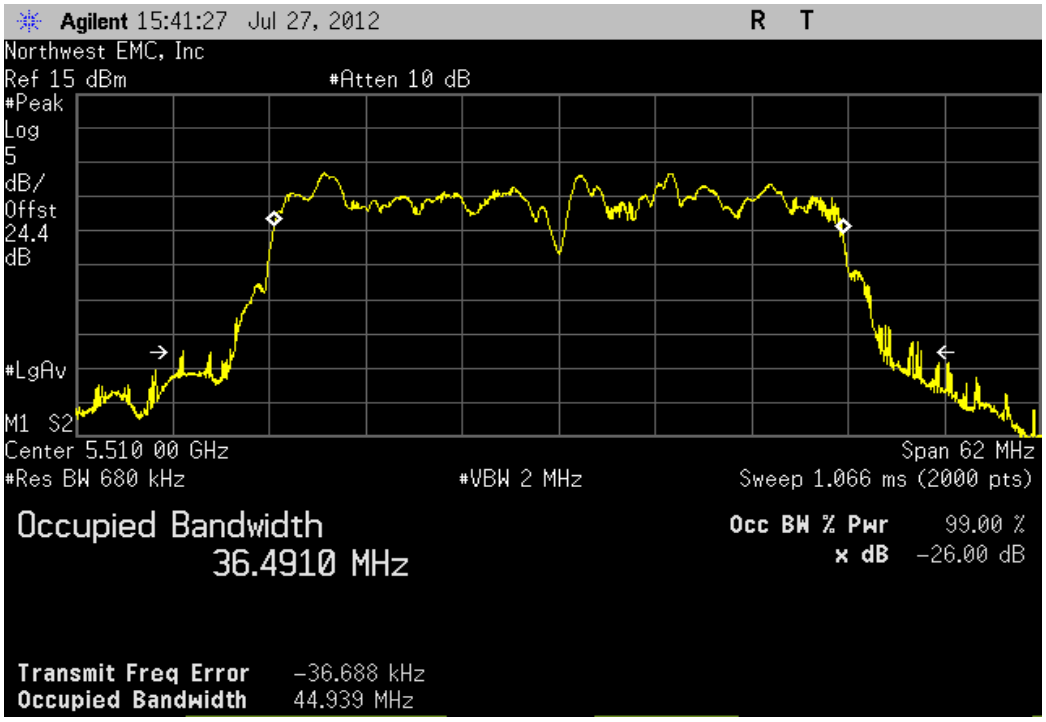


Antenna B, 40MHz Bandwidth , 802.11(n) MCS7, Low Channel 54 Fq 5270MHz

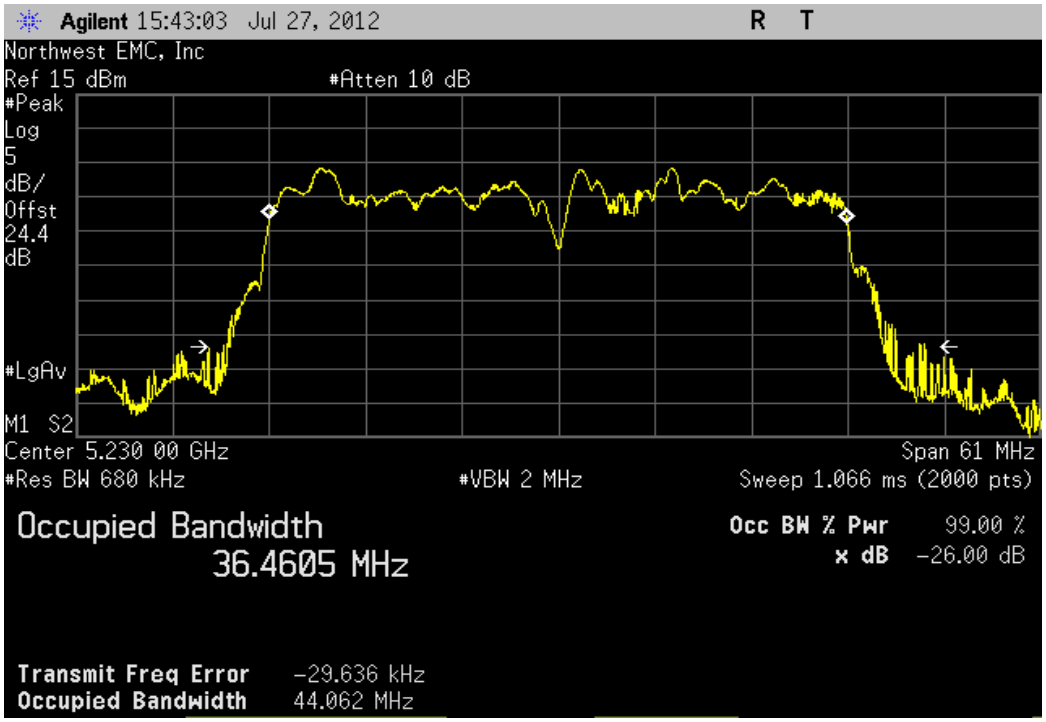
				Value	Limit	Result
				36.432 MHz	> 500 kHz	Pass



Antenna B, 40MHz Bandwidth , 802.11(n) MCS7, Low Channel 102 Fq 5510MHz						
				Value	Limit	Result
				36.491 MHz	> 500 kHz	Pass

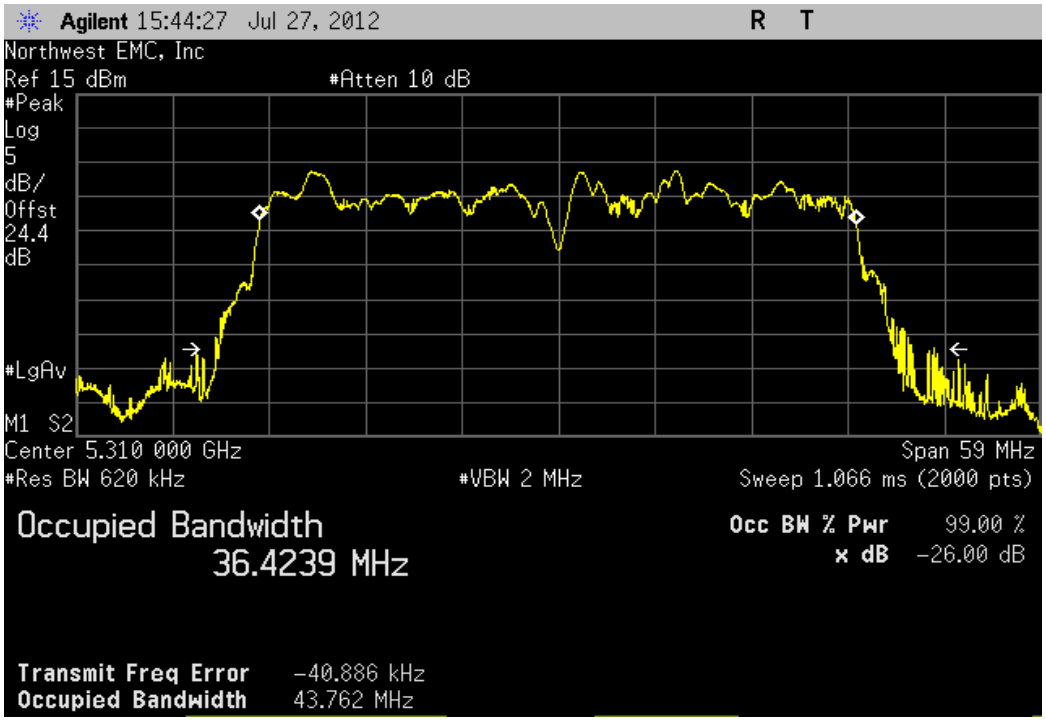


Antenna B, 40MHz Bandwidth , 802.11(n) MCS7, High Channel 46 Fq 5230MHz						
				Value	Limit	Result
				36.46 MHz	> 500 kHz	Pass



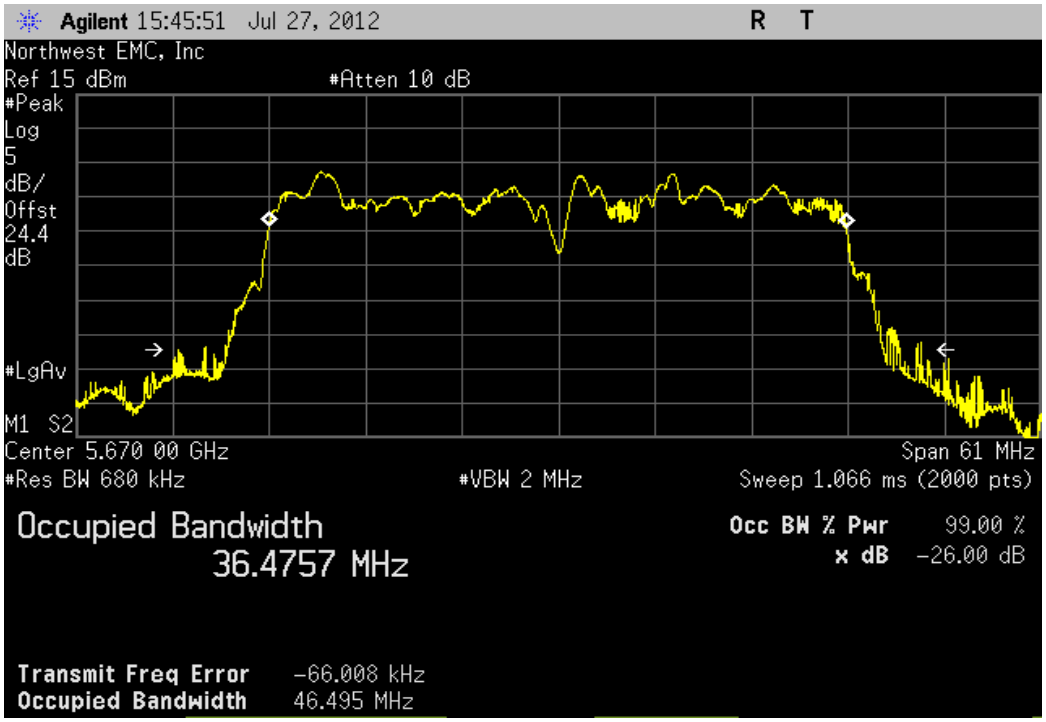
Antenna B, 40MHz Bandwidth , 802.11(n) MCS7, High Channel 62 Fq 5310MHz

				Value	Limit	Result
				36.424 MHz	> 500 kHz	Pass

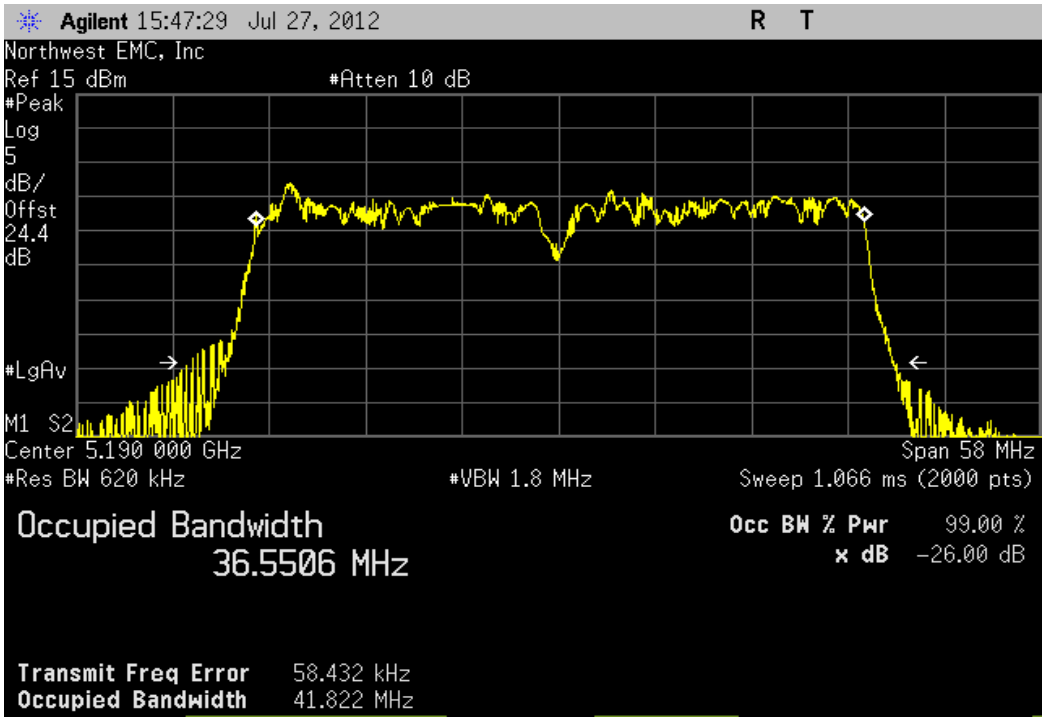


Antenna B, 40MHz Bandwidth , 802.11(n) MCS7, High Channel 134 Fq 5670MHz

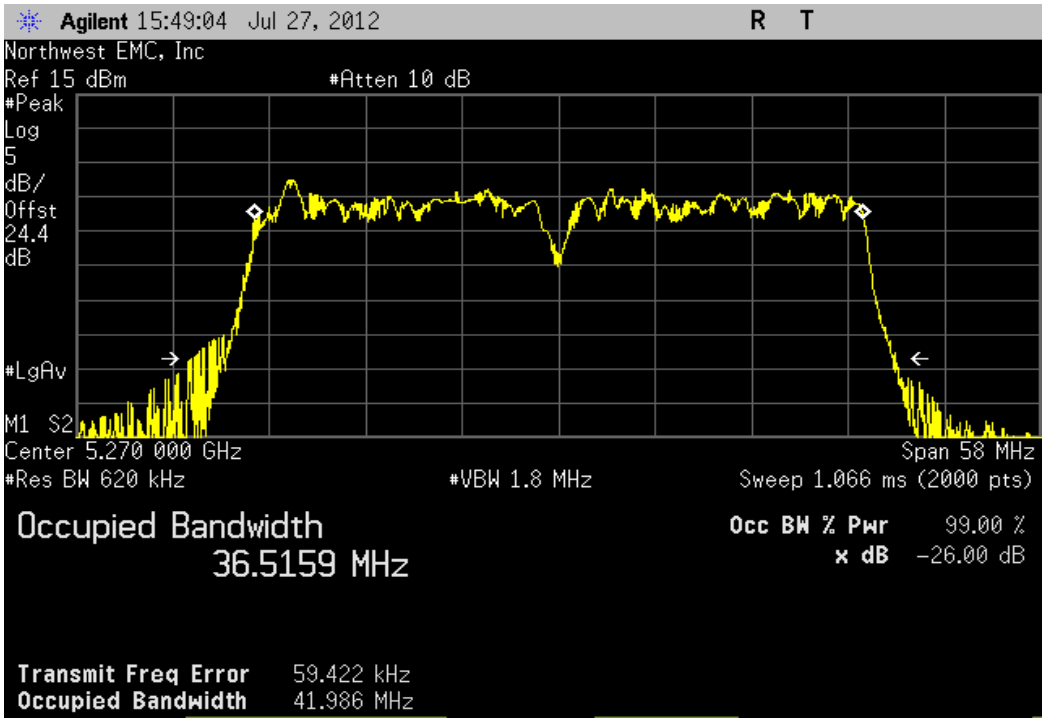
				Value	Limit	Result
				36.476 MHz	> 500 kHz	Pass



Antenna B, 40MHz Bandwidth , 802.11(n) MCS8, Low Channel 38 Fq 5190MHz						
				Value	Limit	Result
				36.551 MHz	> 500 kHz	Pass

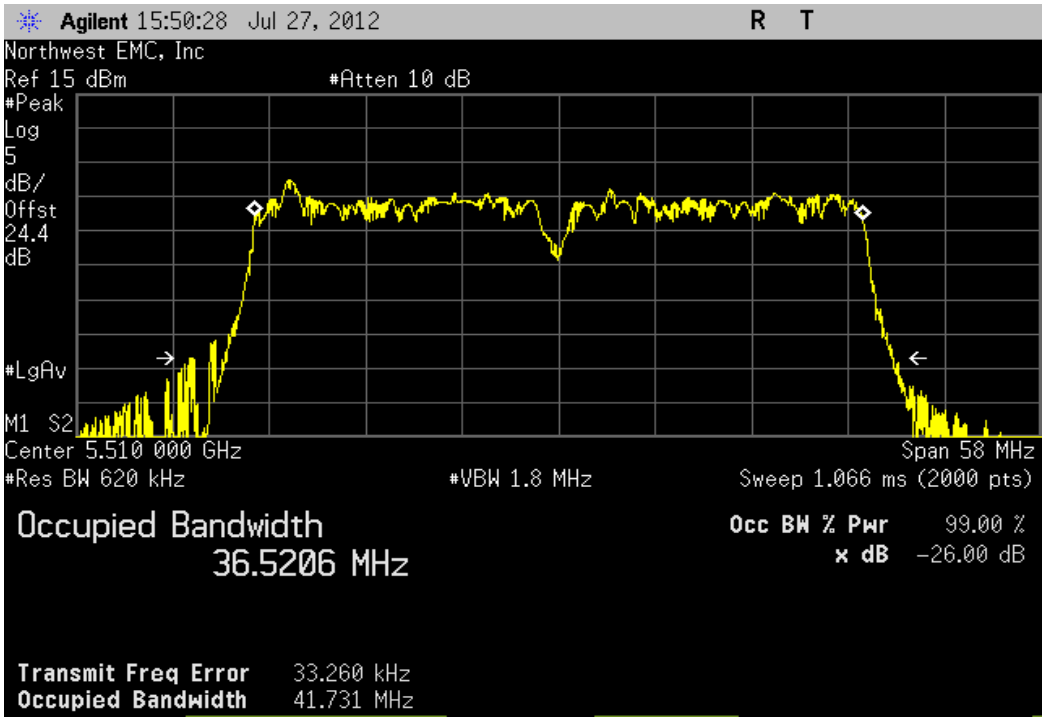


Antenna B, 40MHz Bandwidth , 802.11(n) MCS8, Low Channel 54 Fq 5270MHz						
				Value	Limit	Result
				36.516 MHz	> 500 kHz	Pass



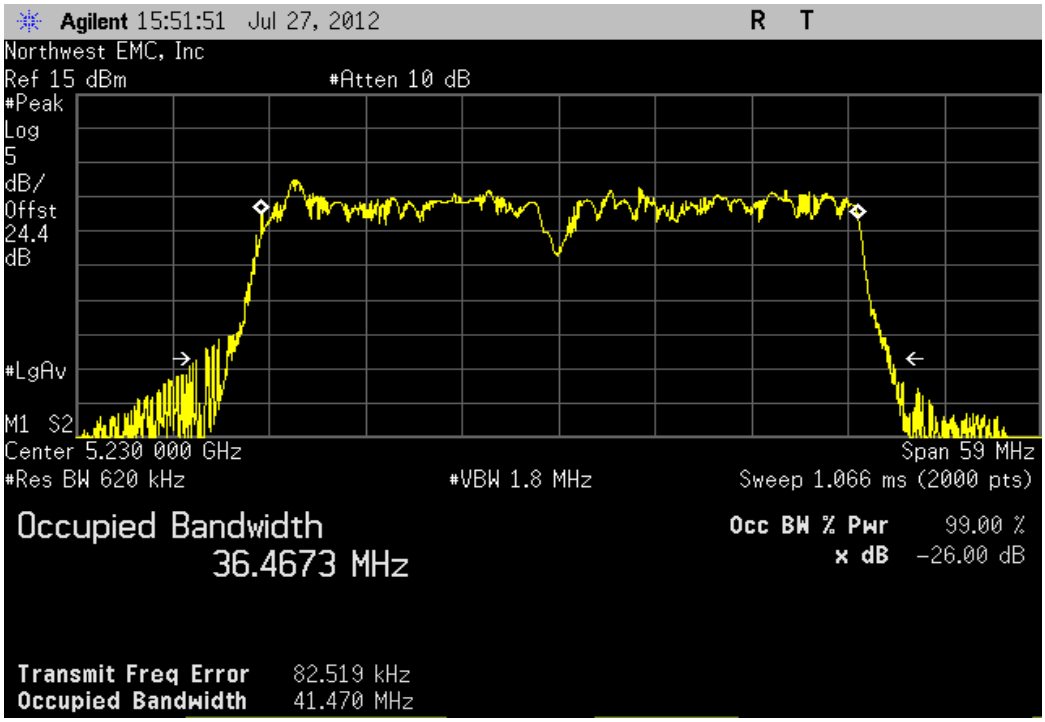
Antenna B, 40MHz Bandwidth , 802.11(n) MCS8, Low Channel 102 Fq 5510MHz

				Value	Limit	Result
				36.521 MHz	> 500 kHz	Pass



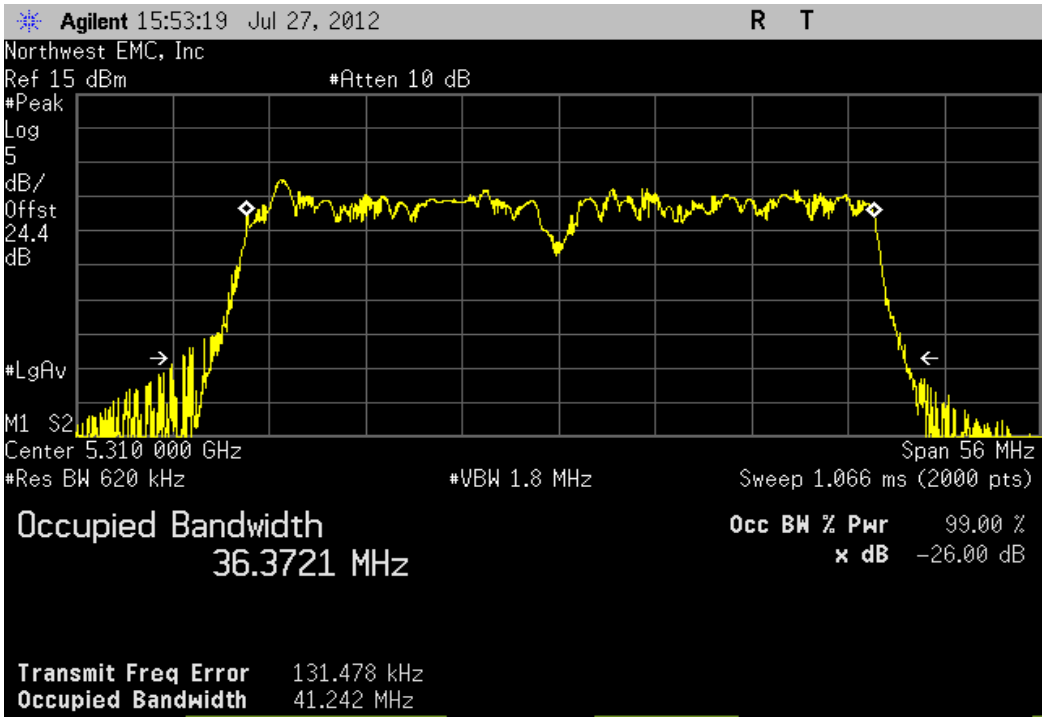
Antenna B, 40MHz Bandwidth , 802.11(n) MCS8, High Channel 46 Fq 5230MHz

				Value	Limit	Result
				36.467 MHz	> 500 kHz	Pass



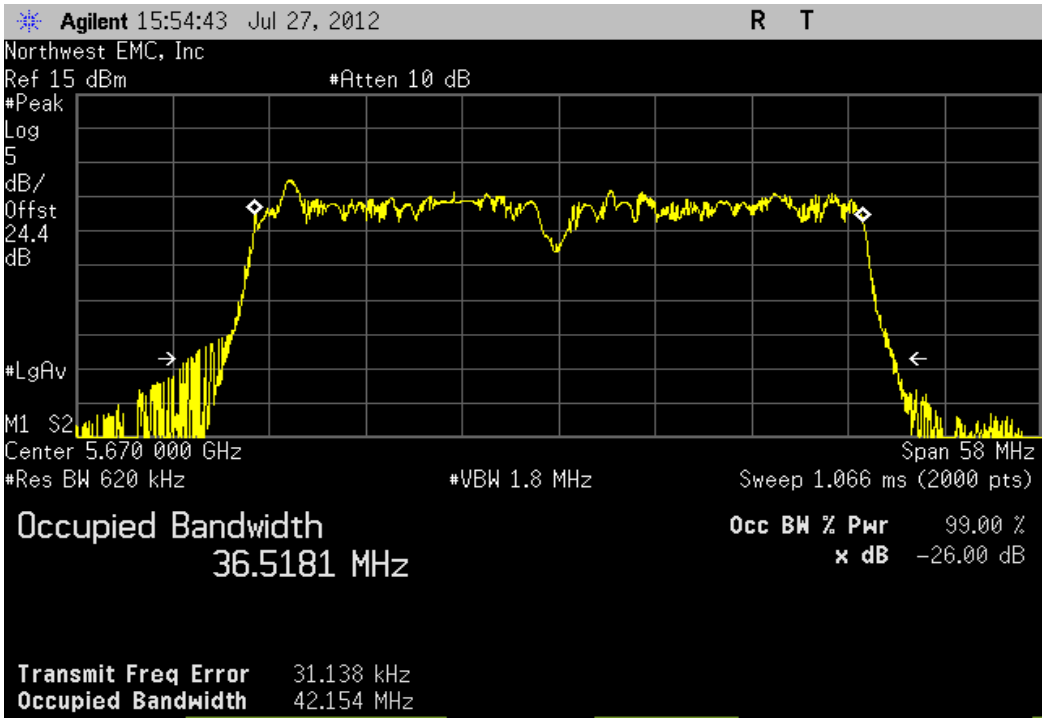
Antenna B, 40MHz Bandwidth , 802.11(n) MCS8, High Channel 62 Fq 5310MHz

				Value	Limit	Result
				36.372 MHz	> 500 kHz	Pass



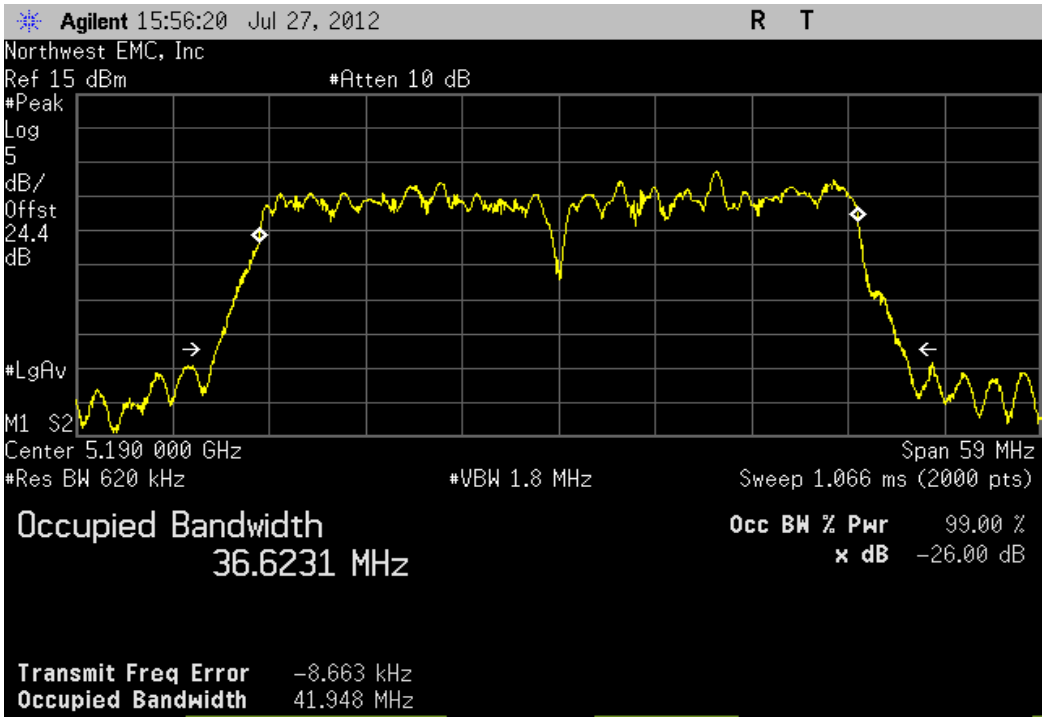
Antenna B, 40MHz Bandwidth , 802.11(n) MCS8, High Channel 134 Fq 5670MHz

				Value	Limit	Result
				36.518 MHz	> 500 kHz	Pass



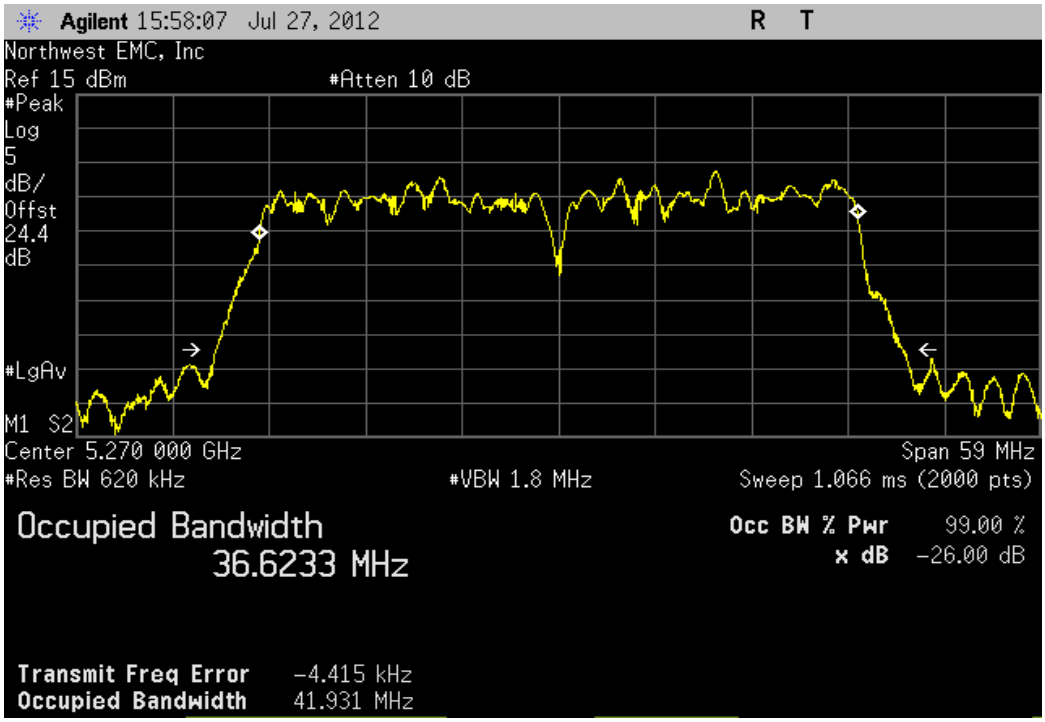
Antenna B, 40MHz Bandwidth , 802.11(n) MCS15, Low Channel 38 Fq 5190MHz

				Value	Limit	Result
				36.623 MHz	> 500 kHz	Pass

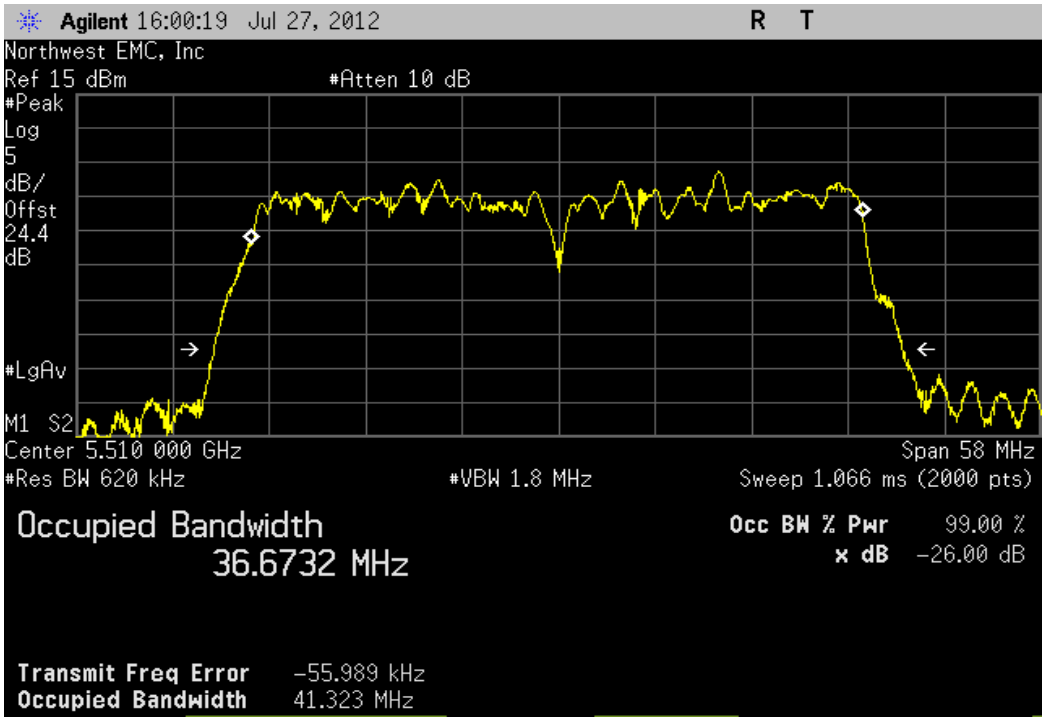


Antenna B, 40MHz Bandwidth , 802.11(n) MCS15, Low Channel 54 Fq 5270MHz

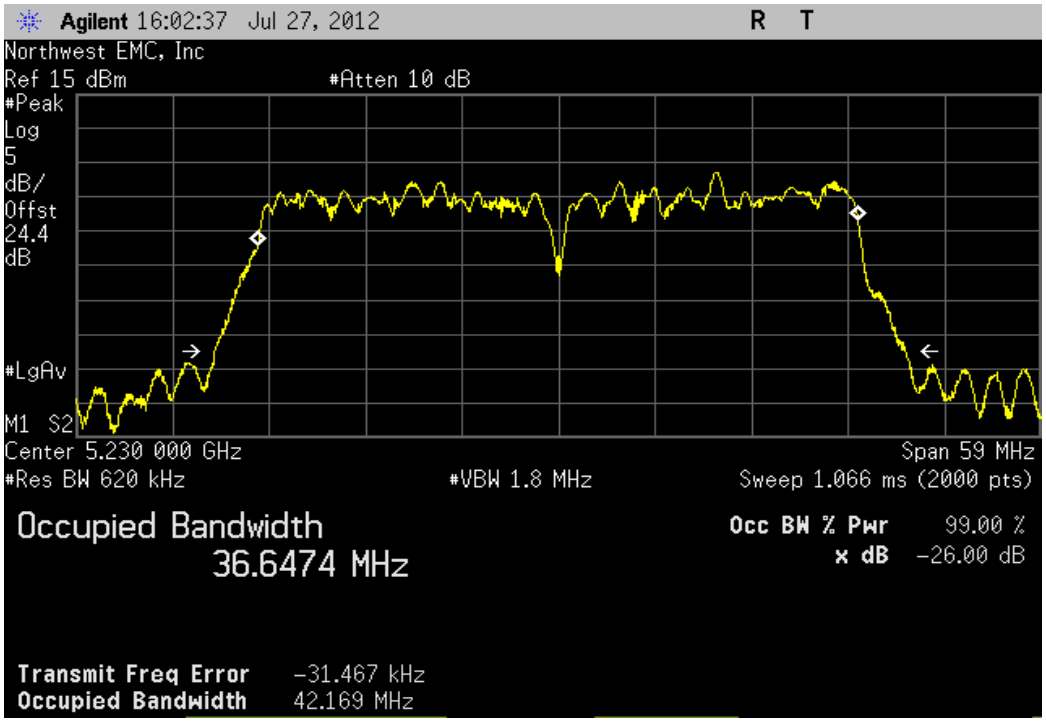
				Value	Limit	Result
				36.623 MHz	> 500 kHz	Pass



Antenna B, 40MHz Bandwidth , 802.11(n) MCS15, Low Channel 102 Fq 5510MHz						
				Value	Limit	Result
				36.673 MHz	> 500 kHz	Pass

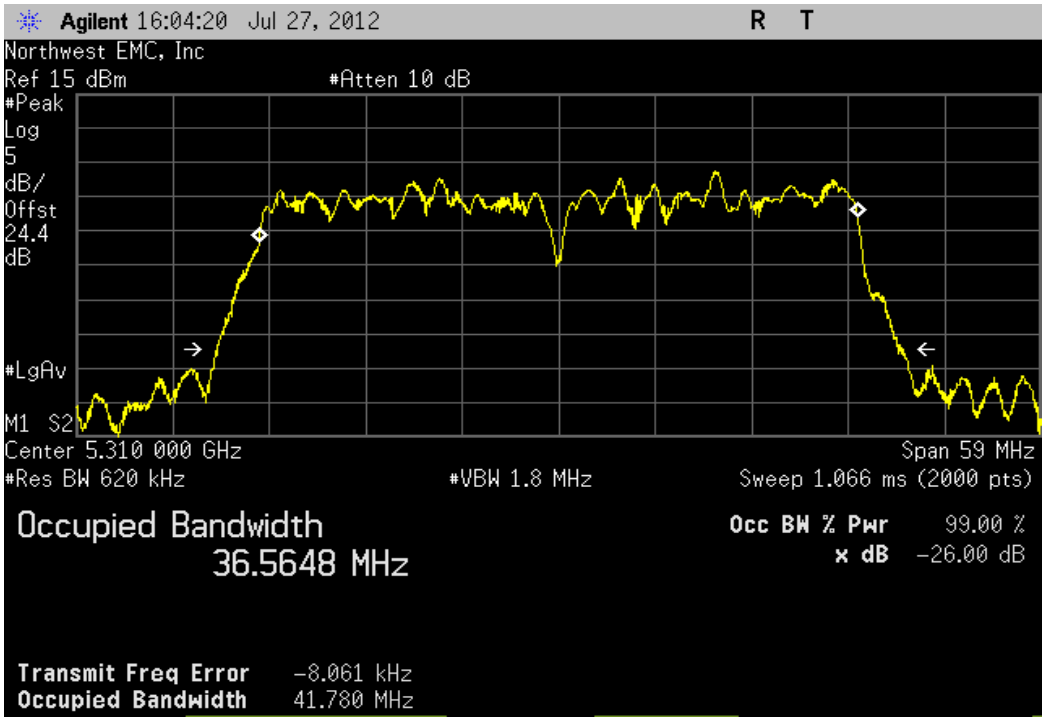


Antenna B, 40MHz Bandwidth , 802.11(n) MCS15, High Channel 46 Fq 5230MHz						
				Value	Limit	Result
				36.647 MHz	> 500 kHz	Pass



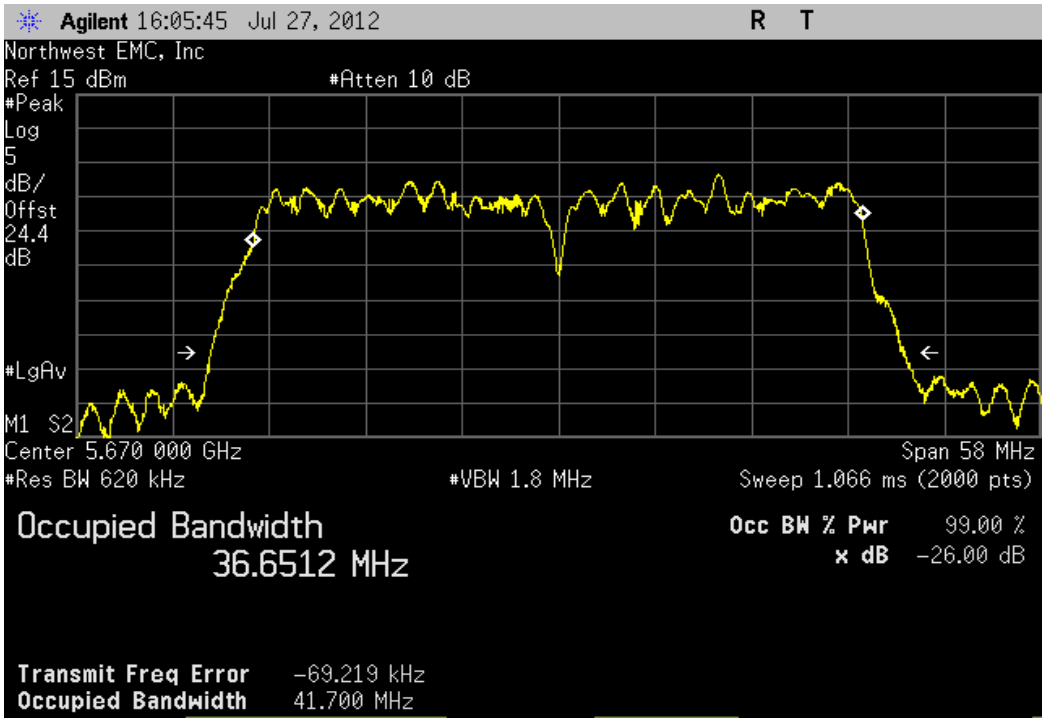
Antenna B, 40MHz Bandwidth , 802.11(n) MCS15, High Channel 62 Fq 5310MHz

				Value	Limit	Result
				36.565 MHz	> 500 kHz	Pass



Antenna B, 40MHz Bandwidth , 802.11(n) MCS15, High Channel 134 Fq 5670MHz

				Value	Limit	Result
				36.651 MHz	> 500 kHz	Pass



Peak Transmit 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
EV06 Direct Connect Cable	ESM Cable Corp.	TT	ECA	NCR	0
Attenuator 20 dB, SMA M/F 26GHz	S.M. Electronics	SA26B-20	AUY	8/2/2011	12
40GHz DC Block	Miteq	DCB4000	AMD	6/25/2012	12
Attenuator, 'N'	Coaxicom	66702 5910-6	ATZ	3/21/2012	12
MXG Vector Signal Generator	Agilent	N5182A	TIF	NCR	0
Power Meter	Gigatronics	8651A	SPM	1/9/2012	24
Power Sensor	Gigatronics	80701A	SPL	7/8/2011	24
Spectrum Analyzer	Agilent	E4440	AFE	1/23/2012	12

MEASUREMENT UNCERTAINTY

A measurement uncertainty estimation has been performed for each test per our internal quality document WP 342. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty for radiated emissions measurements is less than +/- 4 dB, and for conducted emissions measurements is less than +/- 2.7 dB. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for measurement uncertainty are available upon request.

TEST DESCRIPTION

FCC KDB 789033 D01 General UNII Test Procedures Section C was followed. The transmit frequency was set to the required channels in each band. The transmit power was set to its default maximum. A direct connection was made between the RF output of the EUT and a spectrum analyzer. Attenuation and a DC block were used. The reference level offset on the spectrum analyzer was adjusted to compensate for cable loss and the external attenuation used between the RF output and the spectrum analyzer input. The amplitude accuracy of the spectrum analyzer was further enhanced by calibrating the setup using the power meter and synthesized signal generator.

Prior to measuring peak transmit power; the emission bandwidth (B) was measured. The method of measuring the emission bandwidth and the associated data are found elsewhere in this test report

Method SA-2 Alternate (RMS detection with slow sweep across on and off times of the EUT transmission and use of a duty cycle correction factor) was used for this test.

The spectrum analyzer settings were set per the guidance as well as the following specifics:

The number of points was set to 601. This satisfied the requirement of being > 2 * span (25) / RBW (1)

Sweep time was to 2.2 seconds to satisfy the function of > 10 * (number of points being 601) * (total transmitter period of 360 µs)

Power was integrated across “B”, by using the channel power function of the analyzer.

The duty cycle correction of 2.6 dB was added to the measured value as measured and calculated in the Duty Cycle, Transmission Pulse Duration test module located elsewhere in this report.

Peak Transmit Power

EUT:	1516	**Work Order:**	MCSO1601
Serial Number:	000309122652	**Date:**	07/27/12
Customer:	Microsoft Corporation	**Temperature:**	24°C
Attendees:	None	**Humidity:**	47%
Project:	None	**Barometric Pres.:**	1016
Tested by:	Brandon Hobbs	**Power:** 12VDC	**Job Site:** EV06

TEST SPECIFICATIONS	Test Method
FCC 15.407:2012	ANSI C63.10:2009

COMMENTS

The power levels used while under test were 11dBm for 5GHz frequencies with a 40MHz bandwidth and 12dBm for 5GHz frequencies with a 20MHz bandwidth. EUT is operating at a 100% duty cycle.

None

Configuration #	2	Signature

	Value	Limit	Result
Antenna A			
20MHz Bandwidth			
802.11(a) 6Mbps			
Low Channel 36 Fq 5180MHz	11.946 dBm	< 17 dBm	Pass
Low Channel 52 Fq 5260MHz	11.446 dBm	< 24 dBm	Pass
Low Channel 100 Fq 5500MHz	11.221 dBm	< 24 dBm	Pass
High Channel 48 Fq 5240MHz	10.973 dBm	< 17 dBm	Pass
High Channel 64 Fq 5320MHz	11.386 dBm	< 24 dBm	Pass
High Channel 140 Fq 5700MHz	10.788 dBm	< 24 dBm	Pass
Mid Channel 116 Fq 5580 MHz	11.415 dBm	< 24 dBm	Pass
802.11(a) 36Mbps			
Low Channel 36 Fq 5180MHz	10.868 dBm	< 17 dBm	Pass
Low Channel 52 Fq 5260MHz	11.374 dBm	< 24 dBm	Pass
Low Channel 100 Fq 5500MHz	11.128 dBm	< 24 dBm	Pass
High Channel 48 Fq 5240MHz	10.838 dBm	< 17 dBm	Pass
High Channel 64 Fq 5320MHz	11.335 dBm	< 24 dBm	Pass
High Channel 140 Fq 5700MHz	10.662 dBm	< 24 dBm	Pass
Mid Channel 116 Fq 5580 MHz	10.754 dBm	< 24 dBm	Pass
802.11(a) 54Mbps			
Low Channel 36 Fq 5180MHz	10.728 dBm	< 17 dBm	Pass
Low Channel 52 Fq 5260MHz	11.273 dBm	< 24 dBm	Pass
Low Channel 100 Fq 5500MHz	10.975 dBm	< 24 dBm	Pass
High Channel 48 Fq 5240MHz	11.178 dBm	< 17 dBm	Pass
High Channel 64 Fq 5320MHz	11.174 dBm	< 24 dBm	Pass
High Channel 140 Fq 5700MHz	10.539 dBm	< 24 dBm	Pass
Mid Channel 116 Fq 5580 MHz	10.679 dBm	< 24 dBm	Pass
802.11(n) MCS0			
Low Channel 36 Fq 5180MHz	10.648 dBm	< 17 dBm	Pass
Low Channel 52 Fq 5260MHz	11.174 dBm	< 24 dBm	Pass
Low Channel 100 Fq 5500MHz	10.948 dBm	< 24 dBm	Pass
High Channel 48 Fq 5240MHz	11.154 dBm	< 17 dBm	Pass
High Channel 64 Fq 5320MHz	11.146 dBm	< 24 dBm	Pass
High Channel 140 Fq 5700MHz	10.52 dBm	< 24 dBm	Pass
Mid Channel 116 Fq 5580 MHz	11.137 dBm	< 24 dBm	Pass
802.11(n) MCS7			
Low Channel 36 Fq 5180MHz	10.664 dBm	< 17 dBm	Pass
Low Channel 52 Fq 5260MHz	11.242 dBm	< 24 dBm	Pass
Low Channel 100 Fq 5500MHz	10.951 dBm	< 24 dBm	Pass
High Channel 48 Fq 5240MHz	11.144 dBm	< 17 dBm	Pass
High Channel 64 Fq 5320MHz	11.135 dBm	< 24 dBm	Pass
High Channel 140 Fq 5700MHz	10.5 dBm	< 24 dBm	Pass
Mid Channel 116 Fq 5580 MHz	10.677 dBm	< 24 dBm	Pass
802.11(n) MCS8			
Low Channel 36 Fq 5180MHz	10.71 dBm	< 17 dBm	Pass
Low Channel 52 Fq 5260MHz	11.19 dBm	< 24 dBm	Pass
Low Channel 100 Fq 5500MHz	10.875 dBm	< 24 dBm	Pass
High Channel 48 Fq 5240MHz	11.11 dBm	< 17 dBm	Pass
High Channel 64 Fq 5320MHz	11.092 dBm	< 24 dBm	Pass
High Channel 140 Fq 5700MHz	10.393 dBm	< 24 dBm	Pass
Mid Channel 116 Fq 5580 MHz	11.157 dBm	< 24 dBm	Pass
802.11(n) MCS15			
Low Channel 36 Fq 5180MHz	11.072 dBm	< 17 dBm	Pass
Low Channel 52 Fq 5260MHz	11.134 dBm	< 24 dBm	Pass
Low Channel 100 Fq 5500MHz	10.882 dBm	< 24 dBm	Pass
High Channel 48 Fq 5240MHz	11.07 dBm	< 17 dBm	Pass
High Channel 64 Fq 5320MHz	11.078 dBm	< 24 dBm	Pass
High Channel 140 Fq 5700MHz	10.371 dBm	< 24 dBm	Pass
Mid Channel 116 Fq 5580 MHz	11.147 dBm	< 24 dBm	Pass
40MHz Bandwidth			
802.11(n) MCS0			
Low Channel 36/40 Fq 5190MHz	10.603 dBm	< 17 dBm	Pass
Low Channel 52/56 Fq 5270MHz	10.728 dBm	< 17 dBm	Pass
Low Channel 100/104 Fq 5510MHz	10.171 dBm	< 17 dBm	Pass
Low Channel 44/48 Fq 5230MHz	10.859 dBm	< 17 dBm	Pass
Low Channel 60/64 Fq 5310MHz	10.75 dBm	< 17 dBm	Pass
Low Channel 132/136 Fq 5670MHz	10.462 dBm	< 17 dBm	Pass
802.11(n) MCS7			
Low Channel 36/40 Fq 5190MHz	11.332 dBm	< 17 dBm	Pass
Low Channel 52/56 Fq 5270MHz	11.403 dBm	< 17 dBm	Pass
Low Channel 100/104 Fq 5510MHz	10.946 dBm	< 17 dBm	Pass
Low Channel 44/48 Fq 5230MHz	11.493 dBm	< 17 dBm	Pass
Low Channel 60/64 Fq 5310MHz	11.379 dBm	< 17 dBm	Pass
Low Channel 132/136 Fq 5670MHz	11.099 dBm	< 17 dBm	Pass
802.11(n) MCS8			
Low Channel 36/40 Fq 5190MHz	10.189 dBm	< 17 dBm	Pass
Low Channel 52/56 Fq 5270MHz	10.728 dBm	< 17 dBm	Pass
Low Channel 100/104 Fq 5510MHz	10.208 dBm	< 17 dBm	Pass
Low Channel 44/48 Fq 5230MHz	10.849 dBm	< 17 dBm	Pass
Low Channel 60/64 Fq 5310MHz	10.705 dBm	< 17 dBm	Pass

Low Channel 132/136 Fq 5670MHz	10.309 dBm	< 17 dBm	Pass
802.11(n) MCS15			
Low Channel 36/40 Fq 5190MHz	11.166 dBm	< 17 dBm	Pass
Low Channel 52/56 Fq 5270MHz	11.235 dBm	< 17 dBm	Pass
Low Channel 100/104 Fq 5510MHz	10.775 dBm	< 17 dBm	Pass
Low Channel 44/48 Fq 5230MHz	11.318 dBm	< 17 dBm	Pass
Low Channel 60/64 Fq 5310MHz	11.30 dBm	< 17 dBm	Pass
Low Channel 132/136 Fq 5670MHz	10.897 dBm	< 17 dBm	Pass
Antenna B			
20MHz Bandwidth			
802.11(a) 6Mbps			
Low Channel 36 Fq 5180MHz	11.529 dBm	< 17 dBm	Pass
Low Channel 52 Fq 5260MHz	11.383 dBm	< 24 dBm	Pass
Low Channel 100 Fq 5500MHz	11.098 dBm	< 24 dBm	Pass
High Channel 48 Fq 5240MHz	10.521 dBm	< 17 dBm	Pass
High Channel 64 Fq 5320MHz	11.093 dBm	< 24 dBm	Pass
High Channel 140 Fq 5700MHz	10.788 dBm	< 24 dBm	Pass
Mid Channel 116 Fq 5580 MHz	10.765 dBm	< 24 dBm	Pass
802.11(a) 36Mbps			
Low Channel 36 Fq 5180MHz	10.492 dBm	< 17 dBm	Pass
Low Channel 52 Fq 5260MHz	11.32 dBm	< 24 dBm	Pass
Low Channel 100 Fq 5500MHz	11.072 dBm	< 24 dBm	Pass
High Channel 48 Fq 5240MHz	10.539 dBm	< 17 dBm	Pass
High Channel 64 Fq 5320MHz	11.014 dBm	< 24 dBm	Pass
High Channel 140 Fq 5700MHz	10.788 dBm	< 24 dBm	Pass
Mid Channel 116 Fq 5580 MHz	10.763 dBm	< 24 dBm	Pass
802.11(a) 54Mbps			
Low Channel 36 Fq 5180MHz	10.647 dBm	< 17 dBm	Pass
Low Channel 52 Fq 5260MHz	11.488 dBm	< 24 dBm	Pass
Low Channel 100 Fq 5500MHz	11.189 dBm	< 24 dBm	Pass
High Channel 48 Fq 5240MHz	10.608 dBm	< 17 dBm	Pass
High Channel 64 Fq 5320MHz	11.163 dBm	< 24 dBm	Pass
High Channel 140 Fq 5700MHz	10.871 dBm	< 24 dBm	Pass
Mid Channel 116 Fq 5580 MHz	10.813 dBm	< 24 dBm	Pass
802.11(n) MCS0			
Low Channel 36 Fq 5180MHz	10.466 dBm	< 17 dBm	Pass
Low Channel 52 Fq 5260MHz	10.837 dBm	< 24 dBm	Pass
Low Channel 100 Fq 5500MHz	10.556 dBm	< 24 dBm	Pass
High Channel 48 Fq 5240MHz	10.549 dBm	< 17 dBm	Pass
High Channel 64 Fq 5320MHz	10.521 dBm	< 24 dBm	Pass
High Channel 140 Fq 5700MHz	10.115 dBm	< 24 dBm	Pass
Mid Channel 116 Fq 5580 MHz	10.696 dBm	< 24 dBm	Pass
802.11(n) MCS7			
Low Channel 36 Fq 5180MHz	10.468 dBm	< 17 dBm	Pass
Low Channel 52 Fq 5260MHz	10.843 dBm	< 24 dBm	Pass
Low Channel 100 Fq 5500MHz	10.473 dBm	< 24 dBm	Pass
High Channel 48 Fq 5240MHz	10.487 dBm	< 17 dBm	Pass
High Channel 64 Fq 5320MHz	11.002 dBm	< 24 dBm	Pass
High Channel 140 Fq 5700MHz	10.101 dBm	< 24 dBm	Pass
Mid Channel 116 Fq 5580 MHz	10.665 dBm	< 24 dBm	Pass
802.11(n) MCS8			
Low Channel 36 Fq 5180MHz	10.104 dBm	< 17 dBm	Pass
Low Channel 52 Fq 5260MHz	11.31 dBm	< 24 dBm	Pass
Low Channel 100 Fq 5500MHz	11.043 dBm	< 24 dBm	Pass
High Channel 48 Fq 5240MHz	10.45 dBm	< 17 dBm	Pass
High Channel 64 Fq 5320MHz	10.929 dBm	< 24 dBm	Pass
High Channel 140 Fq 5700MHz	10.677 dBm	< 24 dBm	Pass
Mid Channel 116 Fq 5580 MHz	11.138 dBm	< 24 dBm	Pass
802.11(n) MCS15			
Low Channel 36 Fq 5180MHz	10.936 dBm	< 17 dBm	Pass
Low Channel 52 Fq 5260MHz	11.228 dBm	< 24 dBm	Pass
Low Channel 100 Fq 5500MHz	11.054 dBm	< 24 dBm	Pass
High Channel 48 Fq 5240MHz	10.858 dBm	< 17 dBm	Pass
High Channel 64 Fq 5320MHz	10.863 dBm	< 24 dBm	Pass
High Channel 140 Fq 5700MHz	10.679 dBm	< 24 dBm	Pass
Mid Channel 116 Fq 5580 MHz	11.129 dBm	< 24 dBm	Pass
40MHz Bandwidth			
802.11(n) MCS0			
Low Channel 36/40 Fq 5190MHz	10.994 dBm	< 17 dBm	Pass
Low Channel 52/56 Fq 5270MHz	10.802 dBm	< 17 dBm	Pass
Low Channel 100/104 Fq 5510MHz	10.508 dBm	< 17 dBm	Pass
Low Channel 44/48 Fq 5230MHz	10.739 dBm	< 17 dBm	Pass
Low Channel 60/64 Fq 5310MHz	10.766 dBm	< 17 dBm	Pass
Low Channel 132/136 Fq 5670MHz	10.008 dBm	< 17 dBm	Pass
802.11(n) MCS7			
Low Channel 36/40 Fq 5190MHz	11.544 dBm	< 17 dBm	Pass
Low Channel 52/56 Fq 5270MHz	11.79 dBm	< 17 dBm	Pass
Low Channel 100/104 Fq 5510MHz	10.839 dBm	< 17 dBm	Pass
Low Channel 44/48 Fq 5230MHz	11.716 dBm	< 17 dBm	Pass
Low Channel 60/64 Fq 5310MHz	11.693 dBm	< 17 dBm	Pass
Low Channel 132/136 Fq 5670MHz	10.908 dBm	< 17 dBm	Pass
802.11(n) MCS8			
Low Channel 36/40 Fq 5190MHz	10.072 dBm	< 17 dBm	Pass
Low Channel 52/56 Fq 5270MHz	10.753 dBm	< 17 dBm	Pass
Low Channel 100/104 Fq 5510MHz	10.391 dBm	< 17 dBm	Pass
Low Channel 44/48 Fq 5230MHz	10.621 dBm	< 17 dBm	Pass
Low Channel 60/64 Fq 5310MHz	10.698 dBm	< 17 dBm	Pass
Low Channel 132/136 Fq 5670MHz	10.439 dBm	< 17 dBm	Pass
802.11(n) MCS15			
Low Channel 36/40 Fq 5190MHz	11.347 dBm	< 17 dBm	Pass
Low Channel 52/56 Fq 5270MHz	11.542 dBm	< 17 dBm	Pass
Low Channel 100/104 Fq 5510MHz	11.324 dBm	< 17 dBm	Pass
Low Channel 44/48 Fq 5230MHz	11.488 dBm	< 17 dBm	Pass
Low Channel 60/64 Fq 5310MHz	10.75 dBm	< 17 dBm	Pass
Low Channel 132/136 Fq 5670MHz	11.292 dBm	< 17 dBm	Pass

Antenna Chain AB, Power Summing

20MHz Bandwidth	Chain A		Chain B		Summed Power
802.11(n) MCS8	(dBm)	(mw)	(dBm)	(mw)	(dBm)
Low Channel 36 Fq 5180MHz	10.7	11.7	10.1	10.2	13.4
Low Channel 52 Fq 5260MHz	11.1	12.9	11.3	13.5	14.2
Low Channel 100 Fq 5500MHz	10.9	12.2	11.0	12.7	14.0
High Channel 48 Fq 5240MHz	11.1	12.9	10.4	11.0	13.8
High Channel 64 Fq 5320MHz	11.1	12.9	10.9	12.4	14.0
High Channel 140 Fq 5700MHz	10.4	10.9	10.7	11.7	13.5
Mid Channel 116 Fq 5580 MHz	11.2	13.0	11.1	13.0	14.2
802.11(n) MCS15					

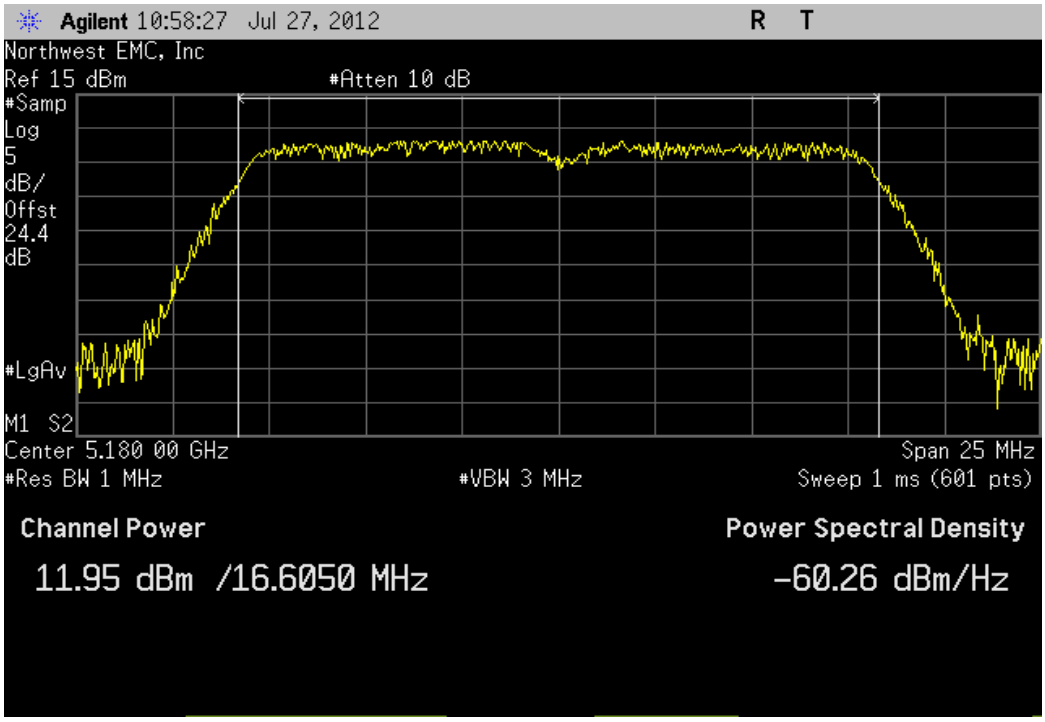
Low Channel 36 Fq 5180MHz	11.1	12.8	10.9	12.4	14.0
Low Channel 52 Fq 5260MHz	11.1	13.0	11.2	13.2	14.2
Low Channel 100 Fq 5500MHz	10.9	12.2	11.1	12.7	14.0
High Channel 48 Fq 5240MHz	11.0	12.6	10.9	12.2	13.9
High Channel 64 Fq 5320MHz	11.1	12.8	10.9	12.2	14.0
High Channel 140 Fq 5700MHz	10.4	10.9	10.7	11.7	13.5
Mid Channel 116 Fq 5580 MHz	11.1	13.0	11.1	12.9	14.1

Antenna Chain AB, Power Summing

40MHz Bandwidth	Chain A		Chain B		Summed Power
802.11(n) MCS8	(dBm)	(mw)	(dBm)	(mw)	(dBm)
Low Channel 36/40 Fq 5190MHz	10.2	10.4	10.1	10.2	13.1
Low Channel 52/56 Fq 5270MHz	10.7	11.8	10.8	11.9	13.7
Low Channel 100/104 Fq 5510MHz	10.2	10.5	10.4	10.9	13.3
Low Channel 44/48 Fq 5230MHz	10.8	12.1	10.6	11.5	13.7
Low Channel 60/64 Fq 5310MHz	10.7	11.7	10.7	11.7	13.7
Low Channel 132/136 Fq 5670MHz	10.3	10.7	10.4	11.0	13.4
802.11(n) MCS15					
Low Channel 36/40 Fq 5190MHz	11.16	13.1	11.3	13.6	14.3
Low Channel 52/56 Fq 5270MHz	11.23	13.3	11.5	14.3	14.4
Low Channel 100/104 Fq 5510MHz	10.77	11.9	11.3	13.6	14.1
Low Channel 44/48 Fq 5230MHz	11.31	13.5	11.5	14.1	14.4
Low Channel 60/64 Fq 5310MHz	11.3	13.5	10.7	11.7	14.0
Low Channel 132/136 Fq 5670MHz	10.89	12.3	11.3	13.5	14.1

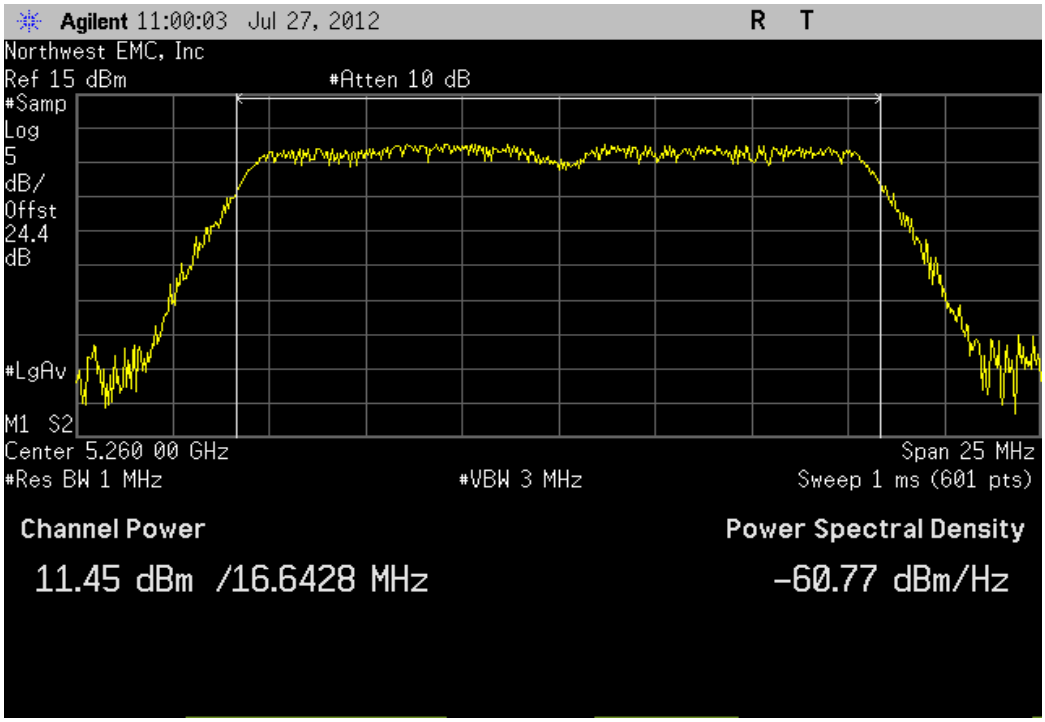
Antenna A, 20MHz Bandwidth , 802.11(a) 6Mbps, Low Channel 36 Fq 5180MHz

				Value	Limit	Result
				11.946 dBm	< 17 dBm	Pass



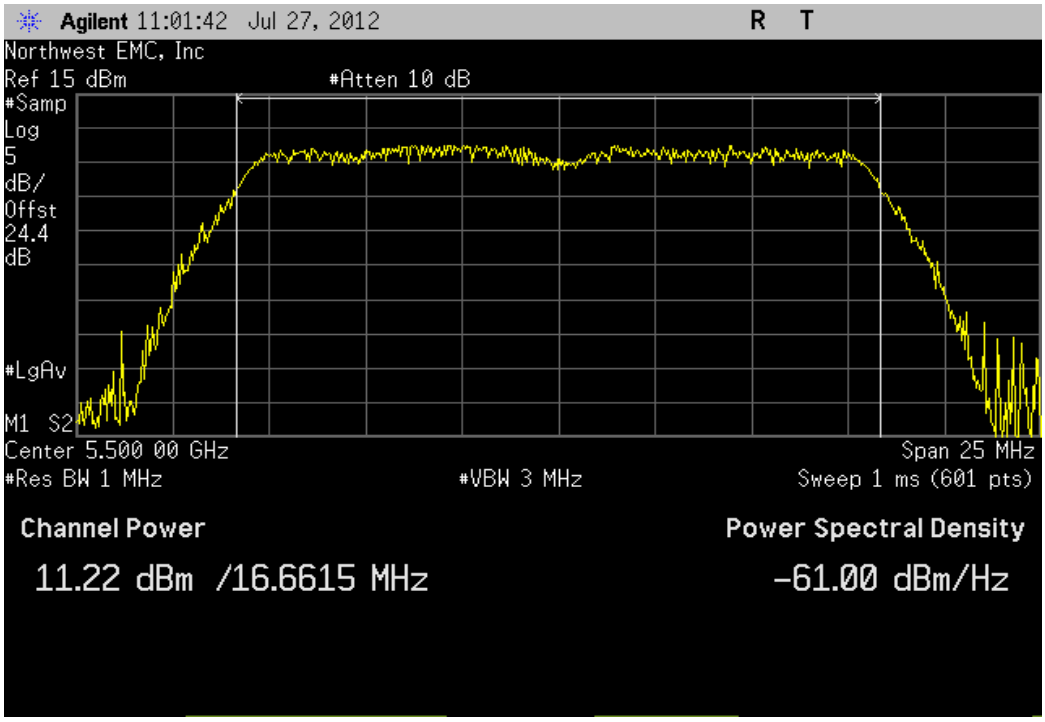
Antenna A, 20MHz Bandwidth , 802.11(a) 6Mbps, Low Channel 52 Fq 5260MHz

				Value	Limit	Result
				11.446 dBm	< 24 dBm	Pass



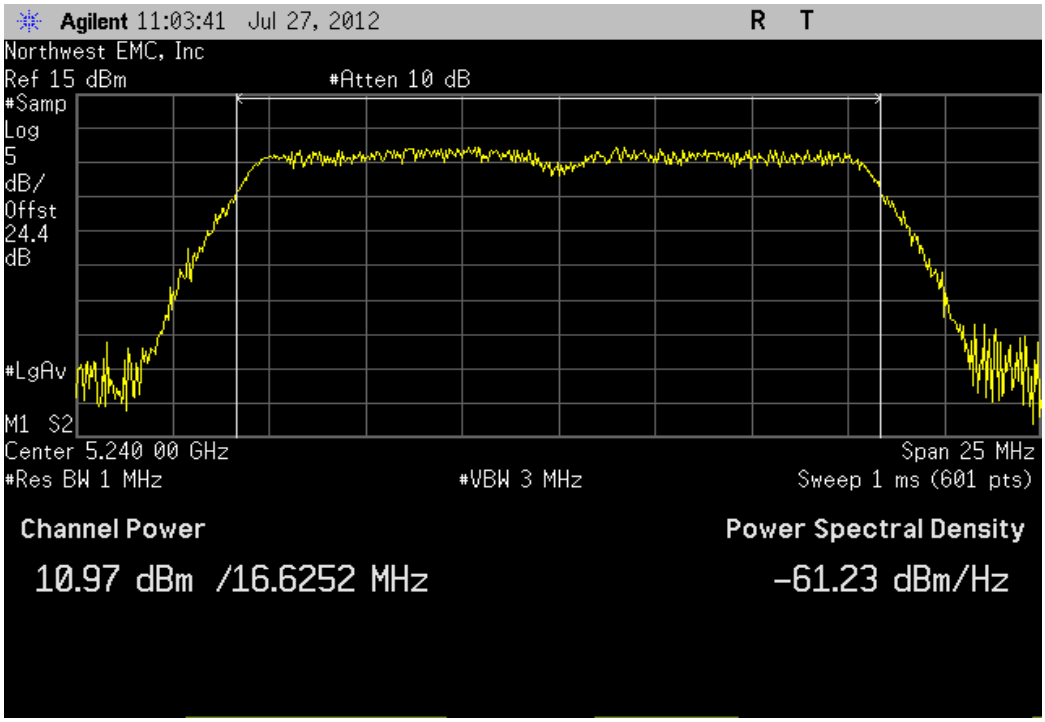
Antenna A, 20MHz Bandwidth , 802.11(a) 6Mbps, Low Channel 100 Fq 5500MHz

				Value	Limit	Result
				11.221 dBm	< 24 dBm	Pass



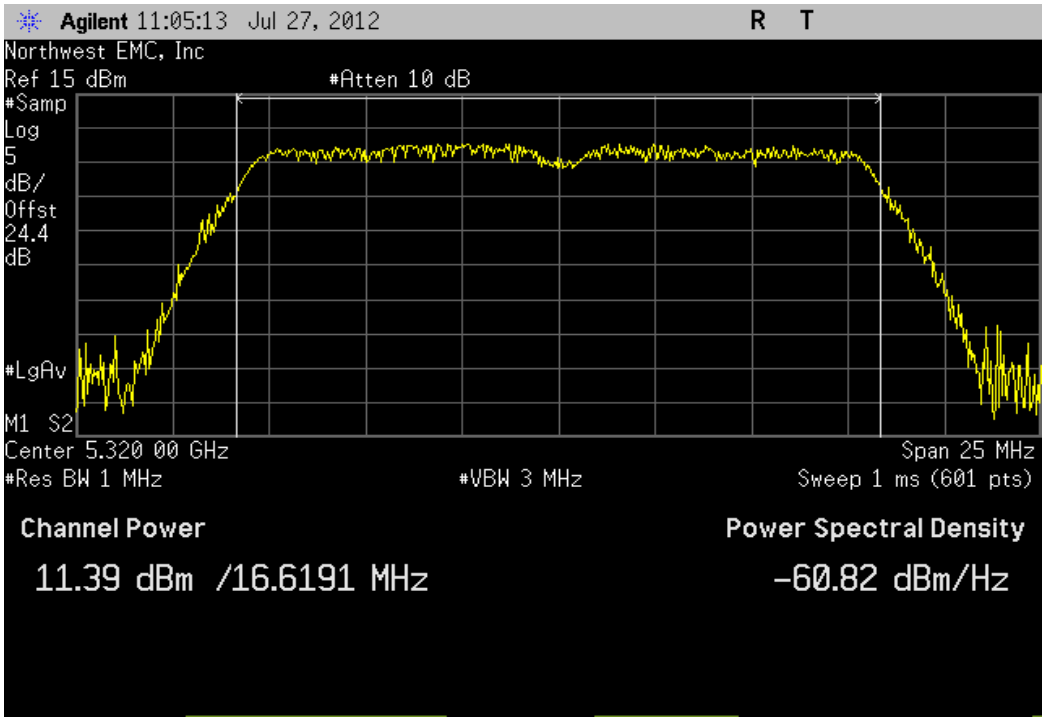
Antenna A, 20MHz Bandwidth , 802.11(a) 6Mbps, High Channel 48 Fq 5240MHz

				Value	Limit	Result
				10.973 dBm	< 17 dBm	Pass



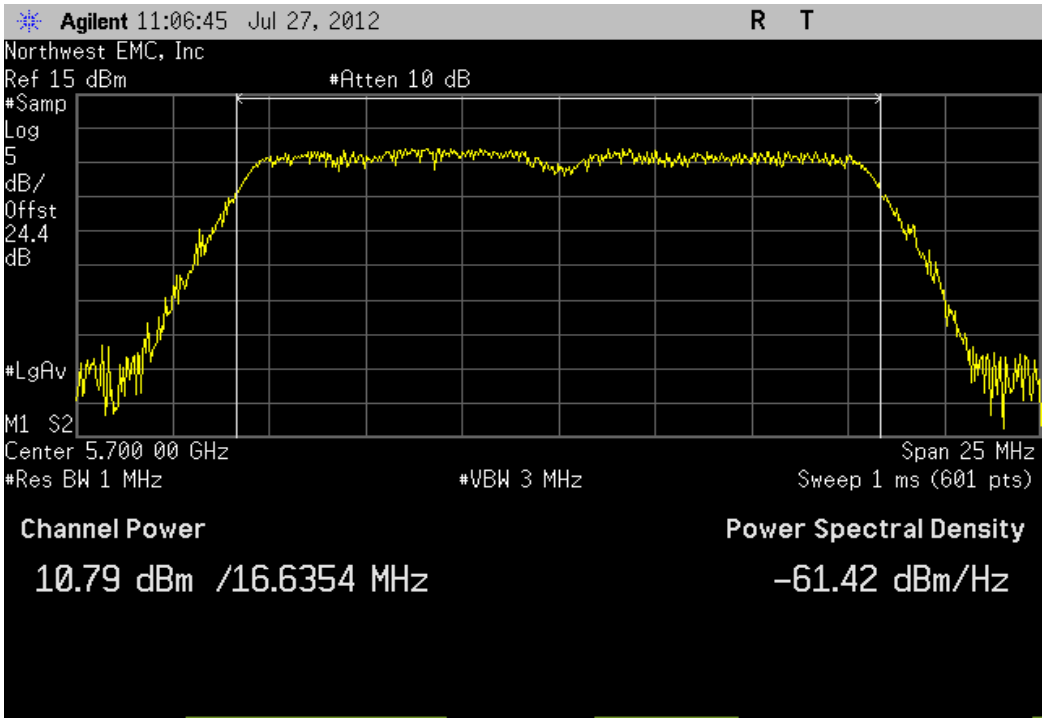
Antenna A, 20MHz Bandwidth , 802.11(a) 6Mbps, High Channel 64 Fq 5320MHz

				Value	Limit	Result
				11.386 dBm	< 24 dBm	Pass



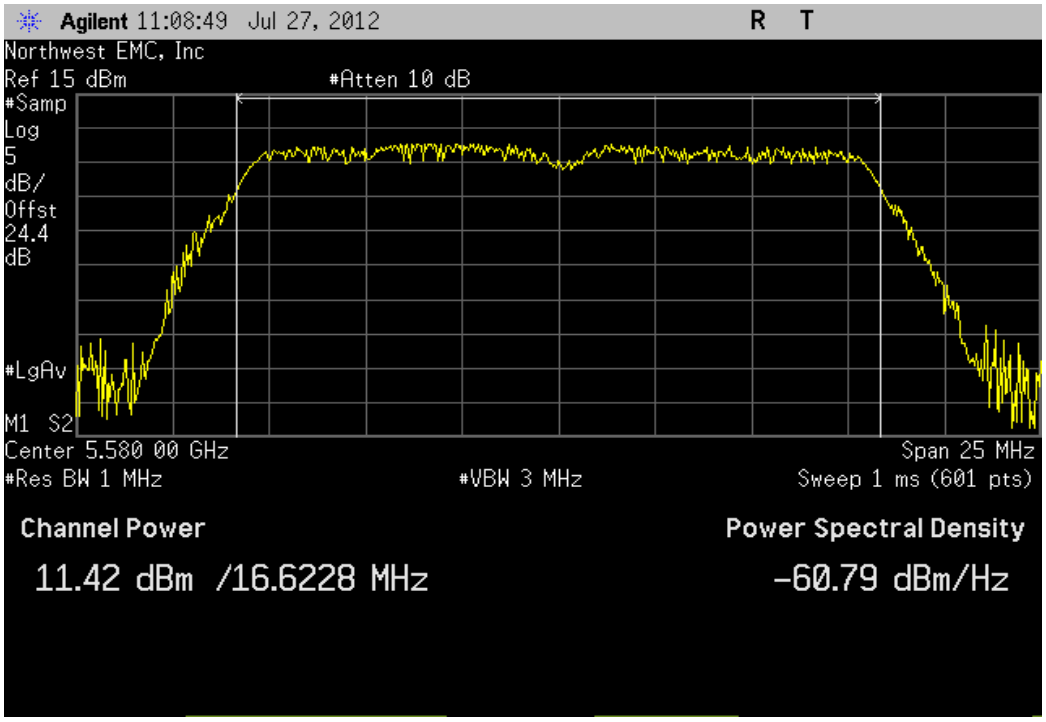
Antenna A, 20MHz Bandwidth , 802.11(a) 6Mbps, High Channel 140 Fq 5700MHz

				Value	Limit	Result
				10.788 dBm	< 24 dBm	Pass



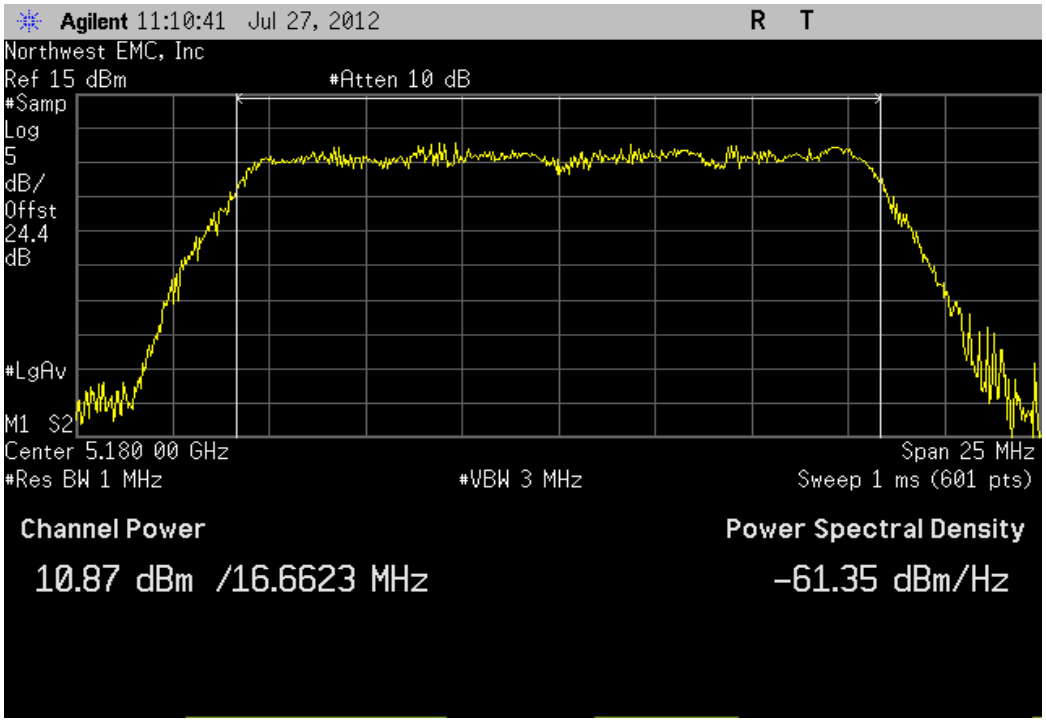
Antenna A, 20MHz Bandwidth , 802.11(a) 6Mbps, Mid Channel 116 Fq 5580 MHz

				Value	Limit	Result
				11.415 dBm	< 24 dBm	Pass

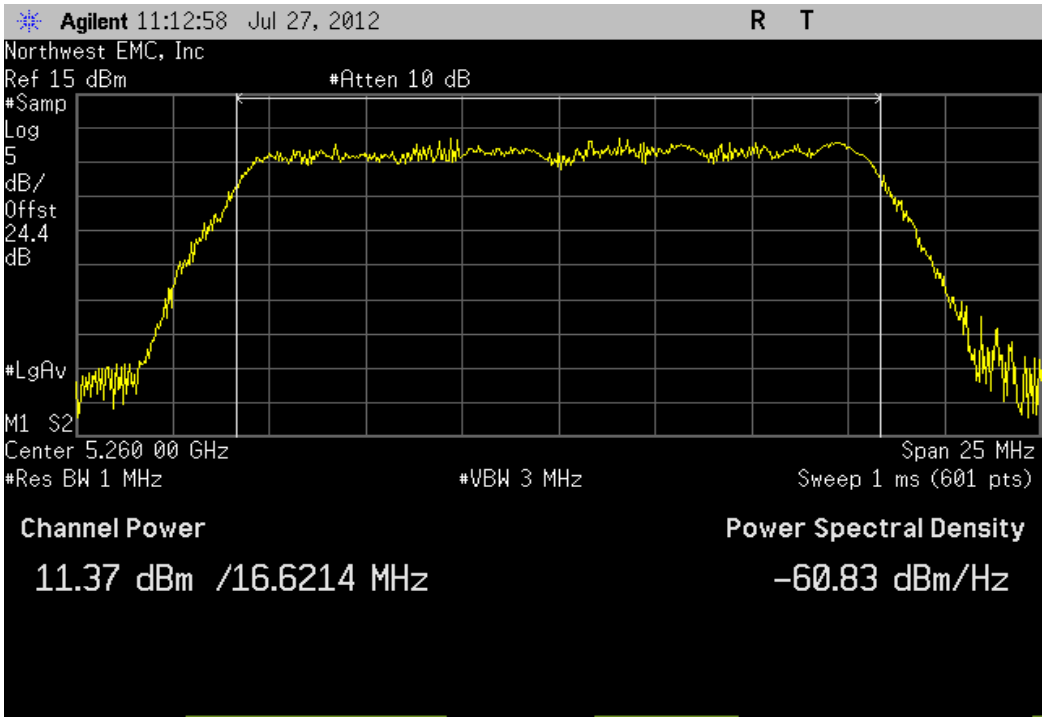


Antenna A, 20MHz Bandwidth , 802.11(a) 36Mbps, Low Channel 36 Fq 5180MHz

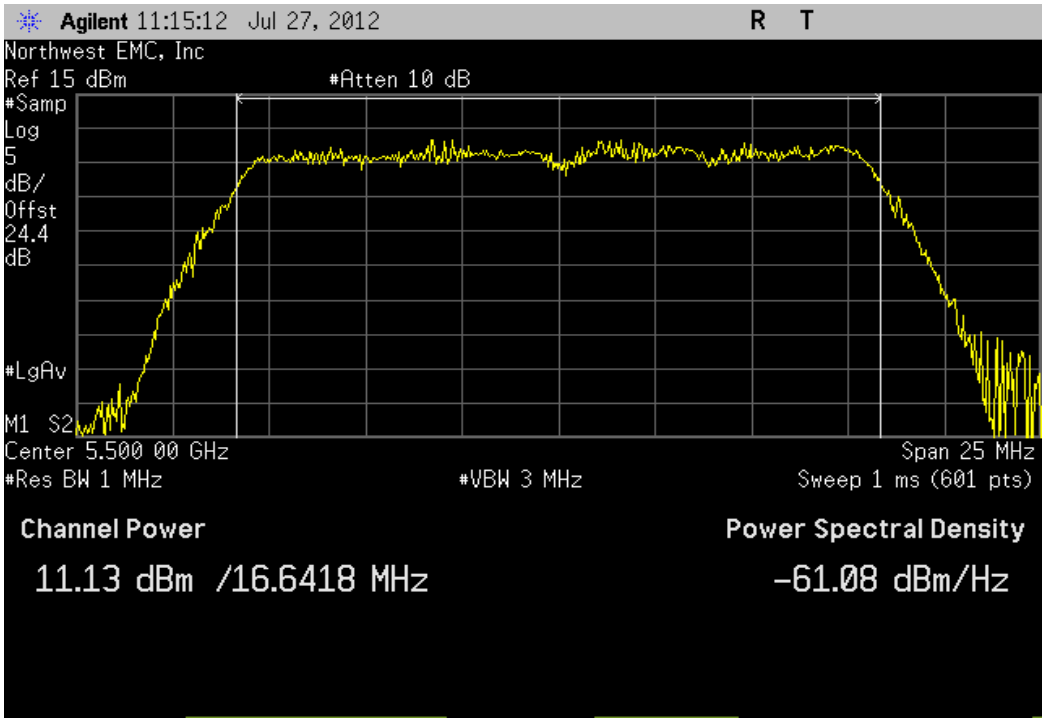
				Value	Limit	Result
				10.868 dBm	< 17 dBm	Pass



Antenna A, 20MHz Bandwidth , 802.11(a) 36Mbps, Low Channel 52 Fq 5260MHz						
				Value	Limit	Result
				11.374 dBm	< 24 dBm	Pass

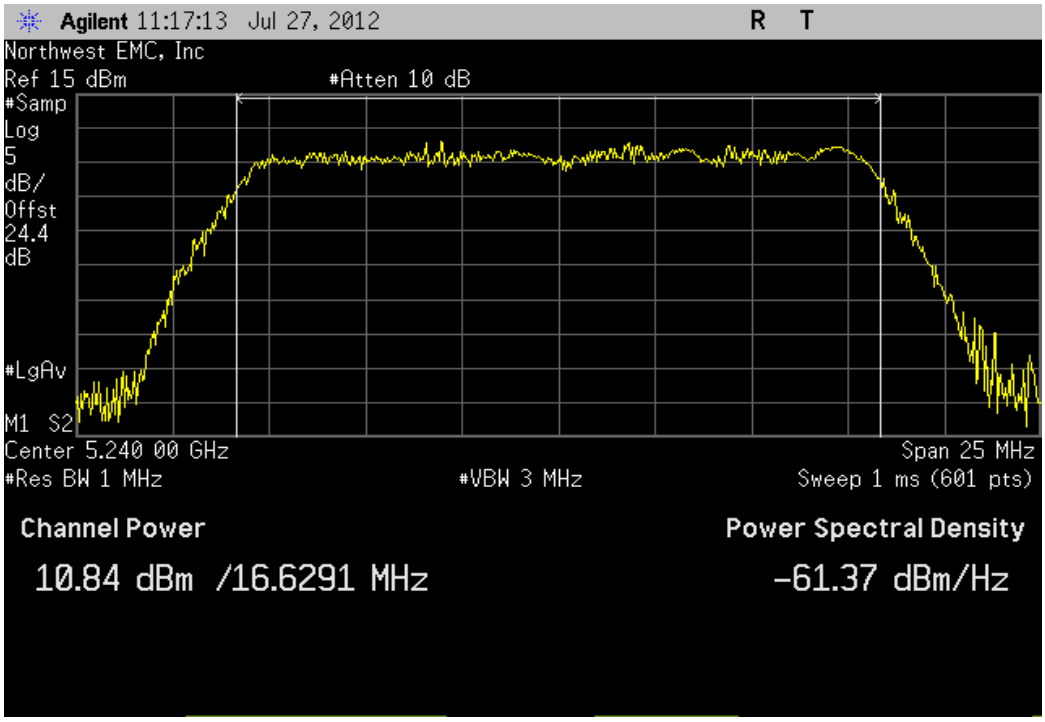


Antenna A, 20MHz Bandwidth , 802.11(a) 36Mbps, Low Channel 100 Fq 5500MHz						
				Value	Limit	Result
				11.128 dBm	< 24 dBm	Pass



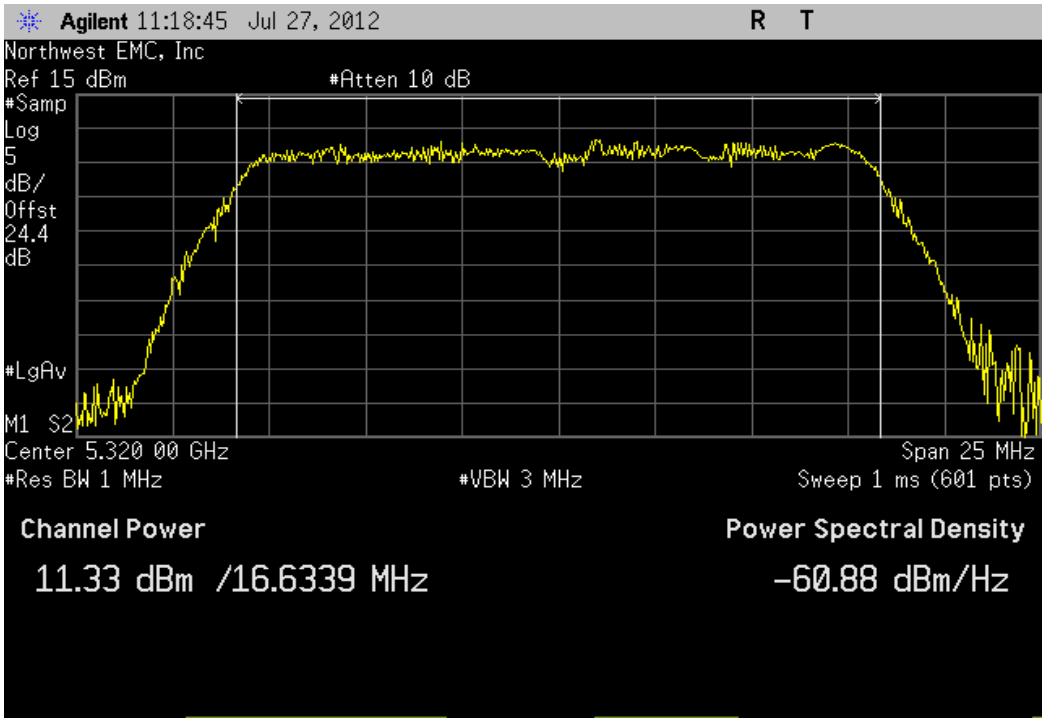
Antenna A, 20MHz Bandwidth , 802.11(a) 36Mbps, High Channel 48 Fq 5240MHz

				Value	Limit	Result
				10.838 dBm	< 17 dBm	Pass



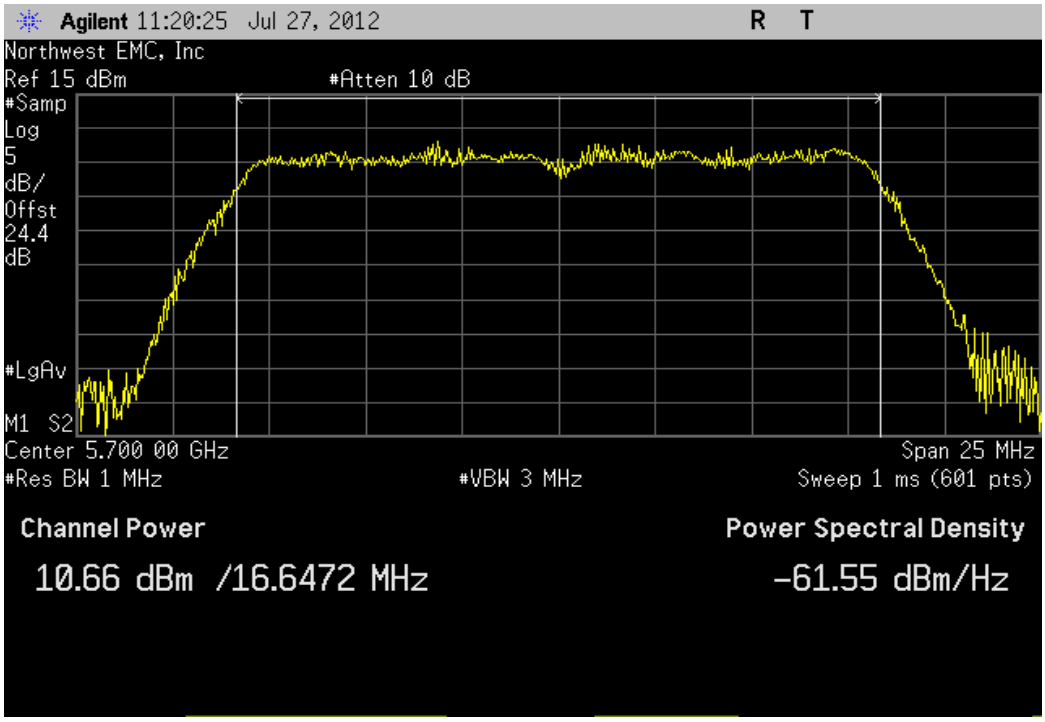
Antenna A, 20MHz Bandwidth , 802.11(a) 36Mbps, High Channel 64 Fq 5320MHz

				Value	Limit	Result
				11.335 dBm	< 24 dBm	Pass



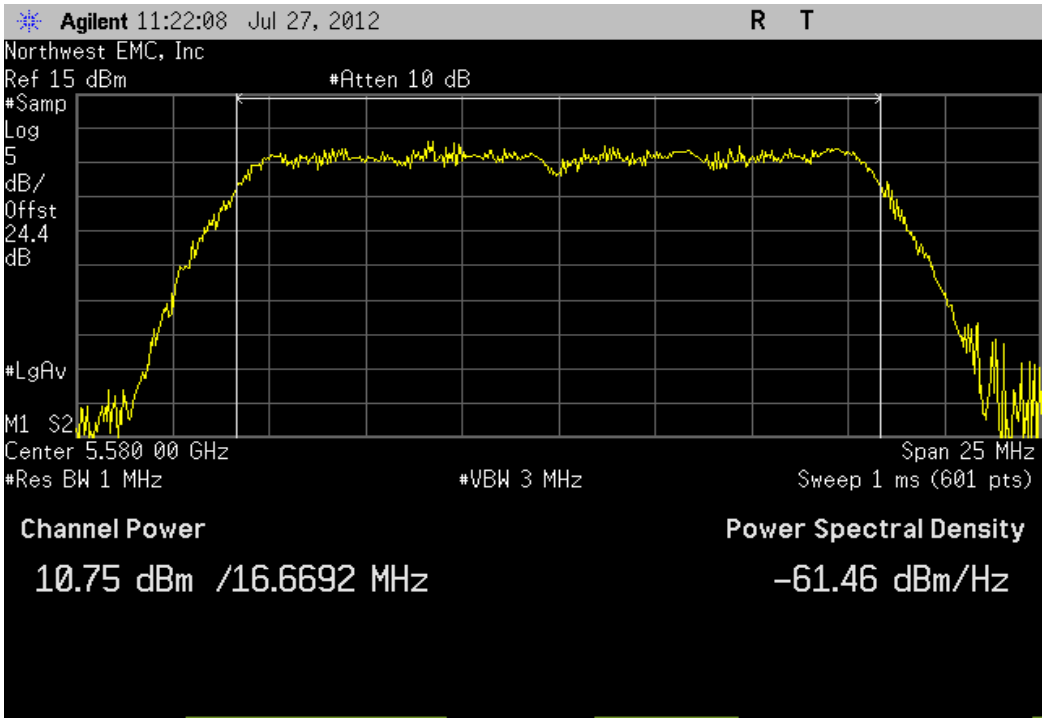
Antenna A, 20MHz Bandwidth , 802.11(a) 36Mbps, High Channel 140 Fq 5700MHz

				Value	Limit	Result
				10.662 dBm	< 24 dBm	Pass

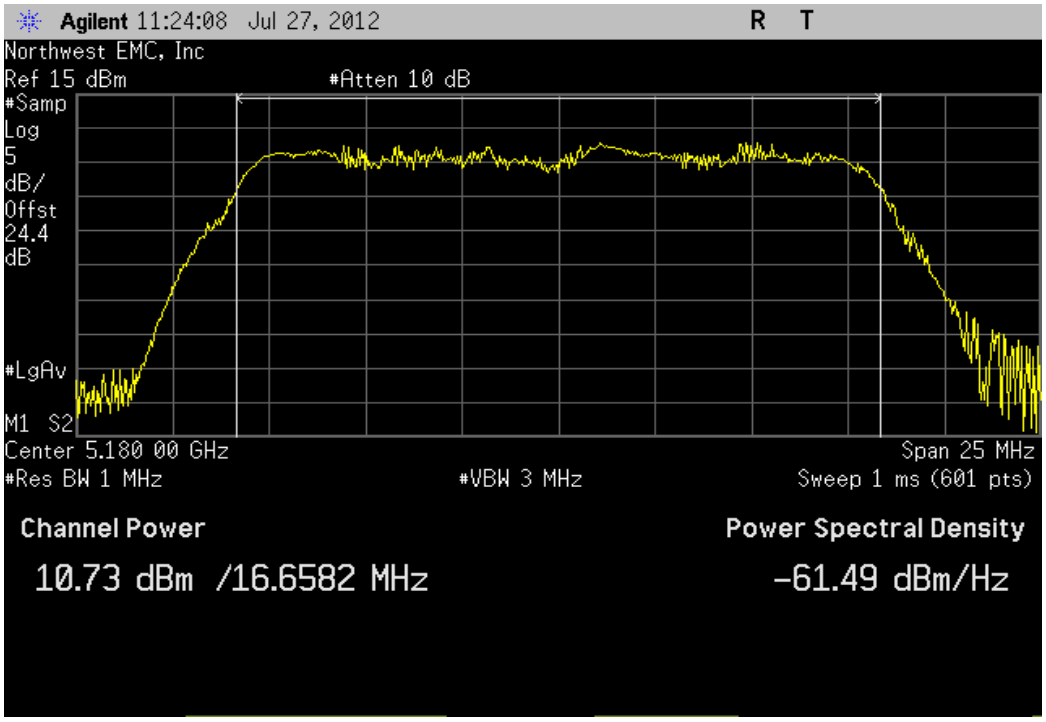


Antenna A, 20MHz Bandwidth , 802.11(a) 36Mbps, Mid Channel 116 Fq 5580 MHz

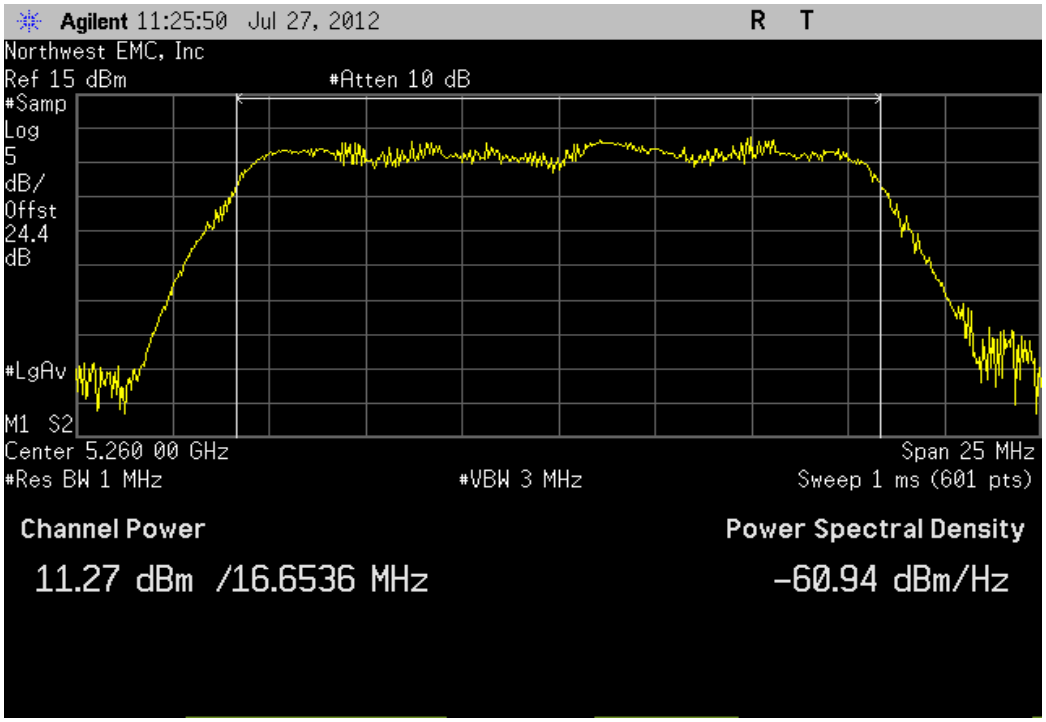
				Value	Limit	Result
				10.754 dBm	< 24 dBm	Pass



Antenna A, 20MHz Bandwidth , 802.11(a) 54Mbps, Low Channel 36 Fq 5180MHz						
				Value	Limit	Result
				10.728 dBm	< 17 dBm	Pass

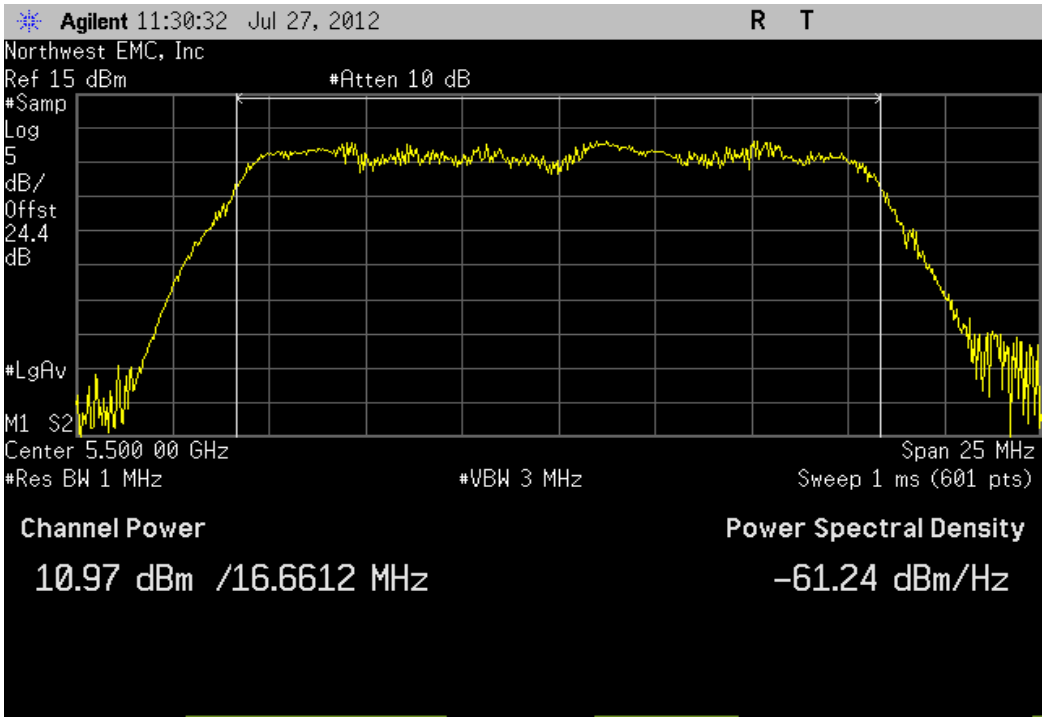


Antenna A, 20MHz Bandwidth , 802.11(a) 54Mbps, Low Channel 52 Fq 5260MHz						
				Value	Limit	Result
				11.273 dBm	< 24 dBm	Pass



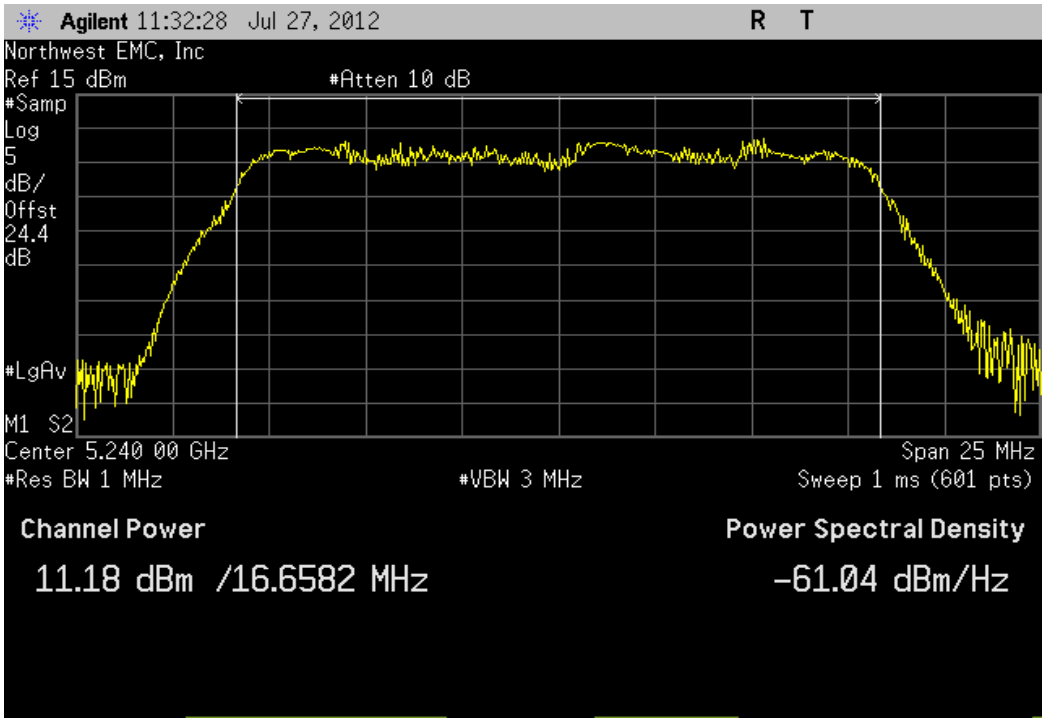
Antenna A, 20MHz Bandwidth , 802.11(a) 54Mbps, Low Channel 100 Fq 5500MHz

				Value	Limit	Result
				10.975 dBm	< 24 dBm	Pass



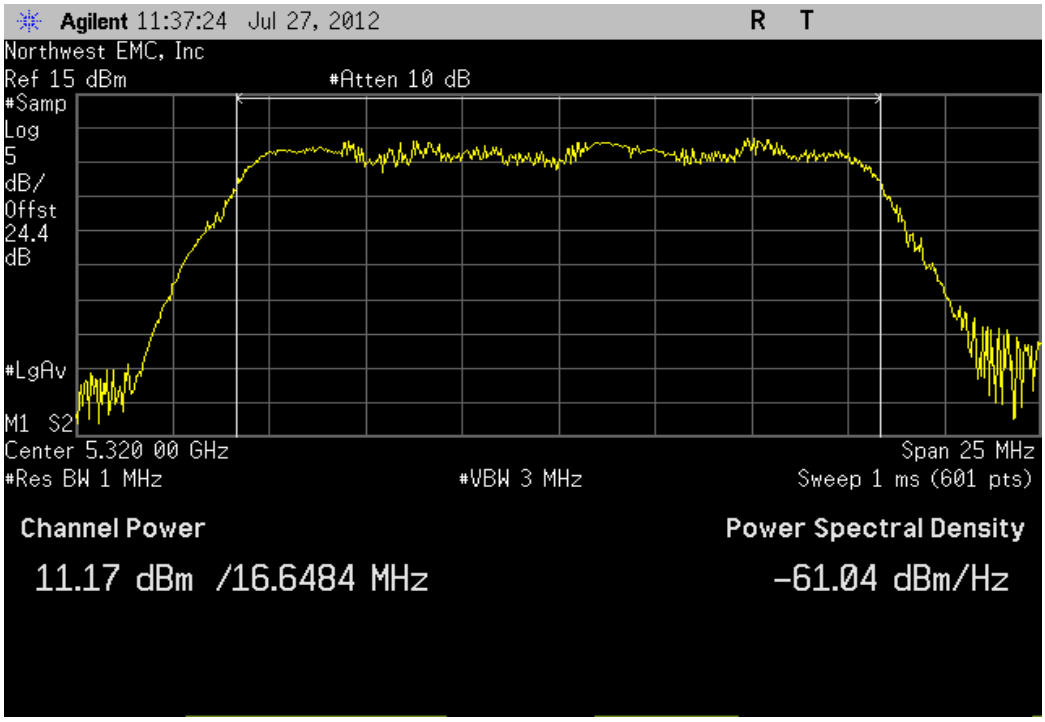
Antenna A, 20MHz Bandwidth , 802.11(a) 54Mbps, High Channel 48 Fq 5240MHz

				Value	Limit	Result
				11.178 dBm	< 17 dBm	Pass



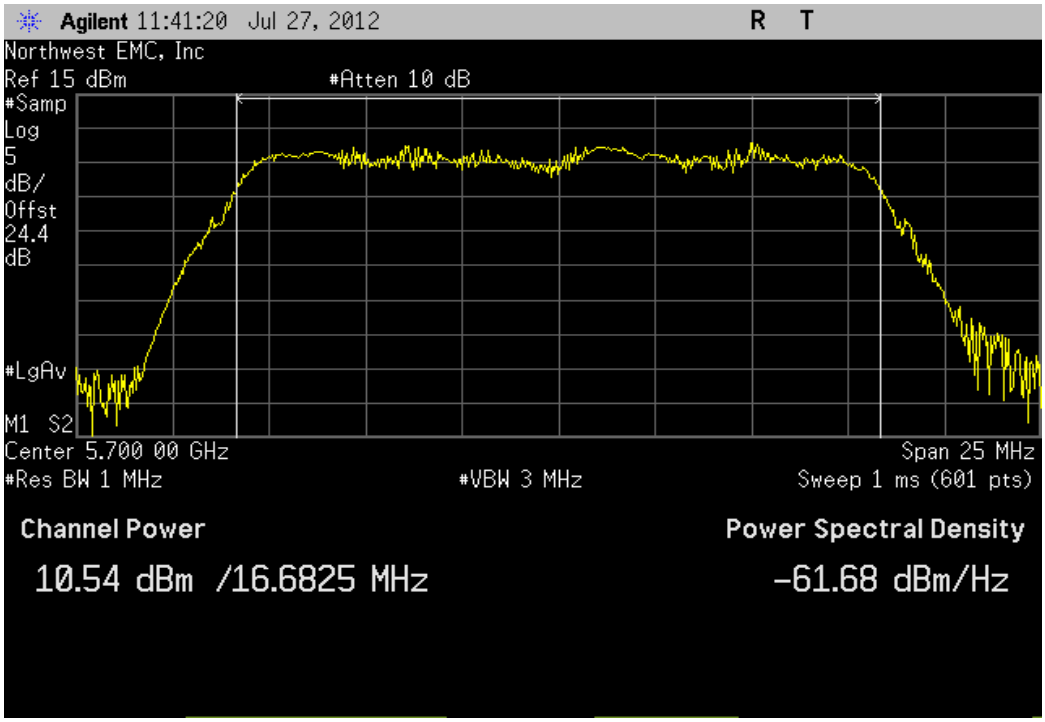
Antenna A, 20MHz Bandwidth , 802.11(a) 54Mbps, High Channel 64 Fq 5320MHz

				Value	Limit	Result
				11.174 dBm	< 24 dBm	Pass



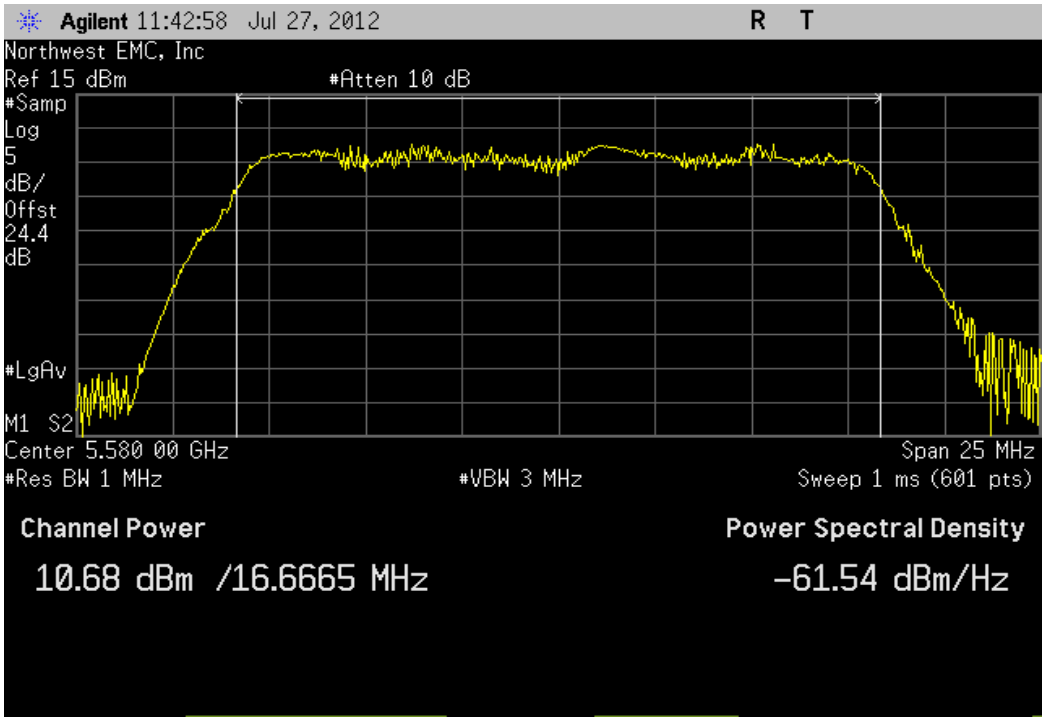
Antenna A, 20MHz Bandwidth , 802.11(a) 54Mbps, High Channel 140 Fq 5700MHz

				Value	Limit	Result
				10.539 dBm	< 24 dBm	Pass



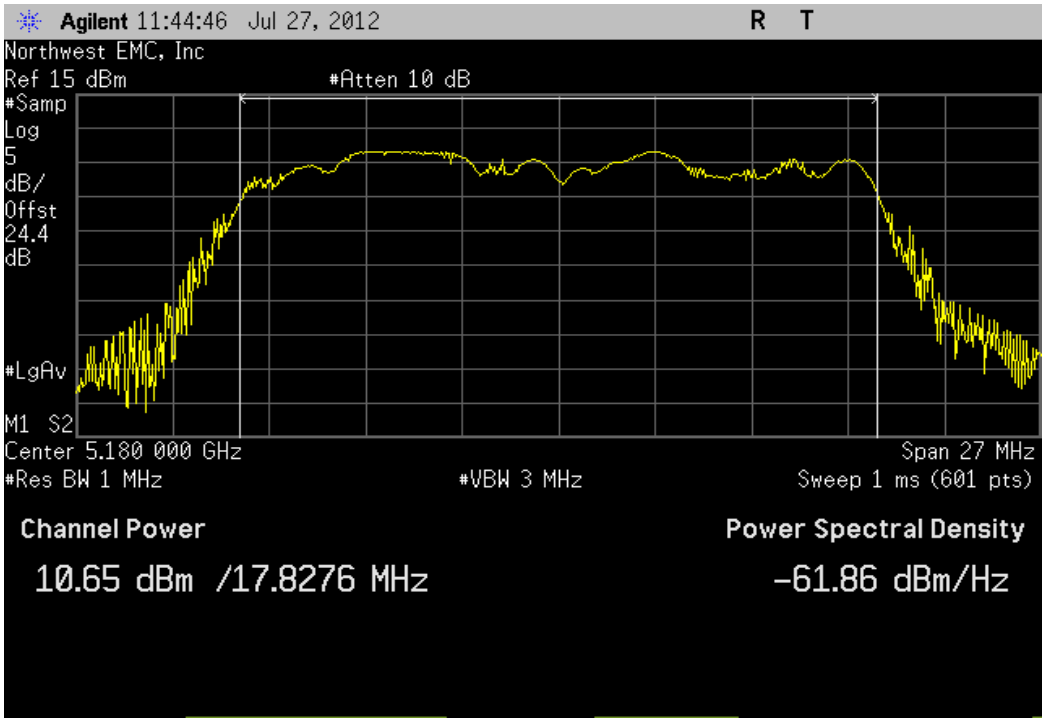
Antenna A, 20MHz Bandwidth , 802.11(a) 54Mbps, Mid Channel 116 Fq 5580 MHz

				Value	Limit	Result
				10.679 dBm	< 24 dBm	Pass

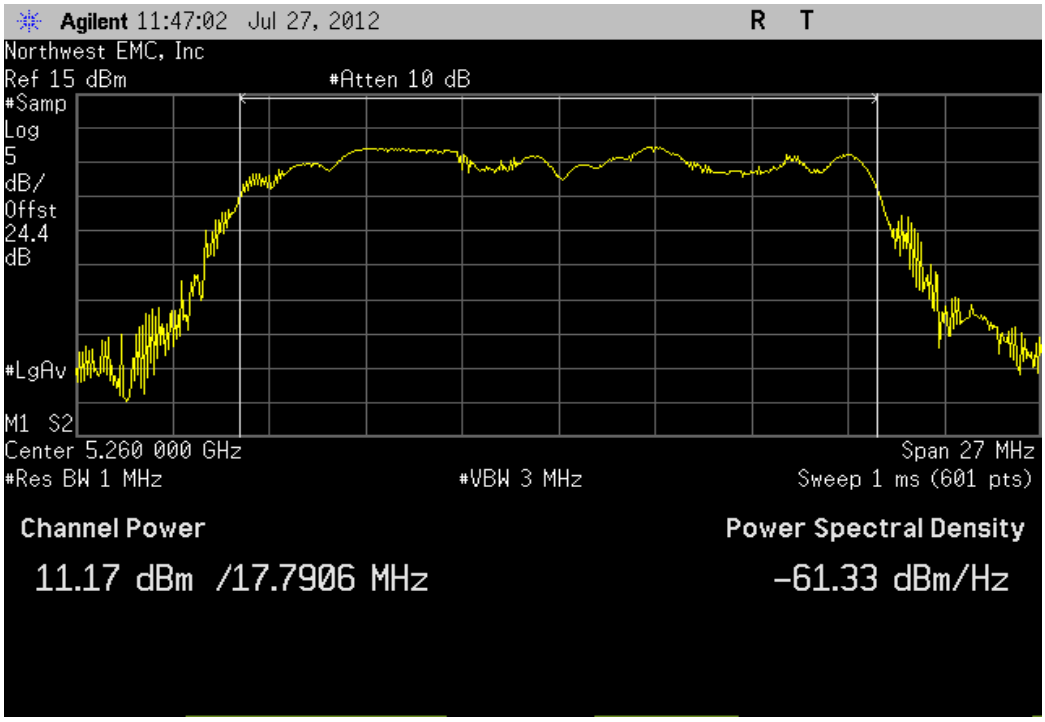


Antenna A, 20MHz Bandwidth , 802.11(n) MCS0, Low Channel 36 Fq 5180MHz

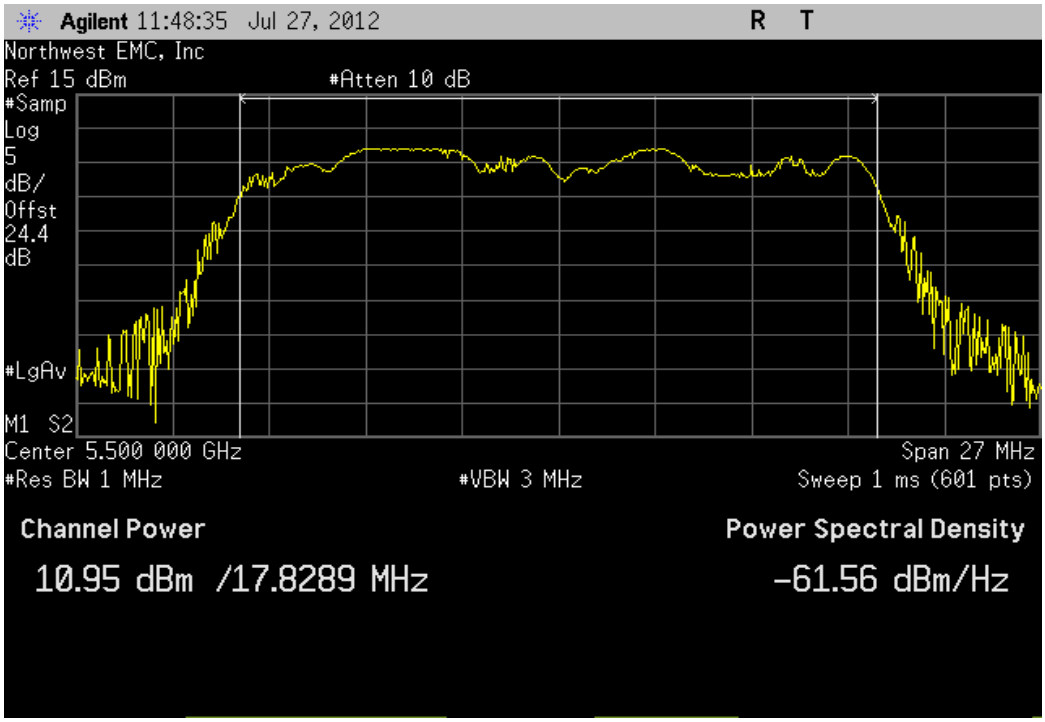
				Value	Limit	Result
				10.648 dBm	< 17 dBm	Pass



Antenna A, 20MHz Bandwidth , 802.11(n) MCS0, Low Channel 52 Fq 5260MHz						
				Value	Limit	Result
				11.174 dBm	< 24 dBm	Pass

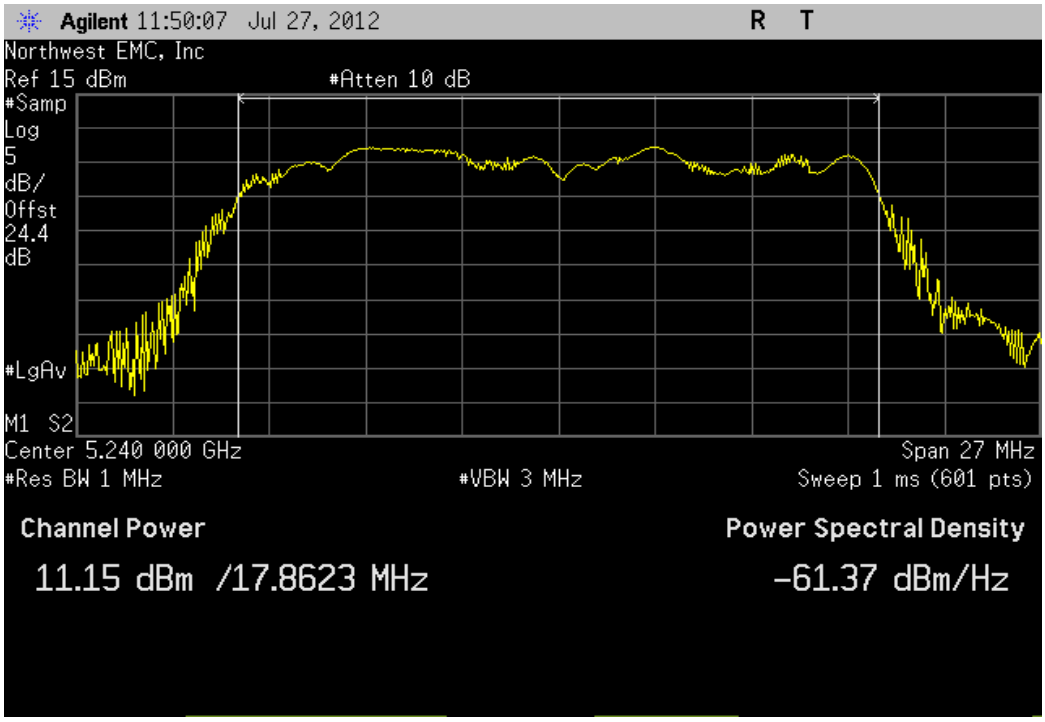


Antenna A, 20MHz Bandwidth , 802.11(n) MCS0, Low Channel 100 Fq 5500MHz						
				Value	Limit	Result
				10.948 dBm	< 24 dBm	Pass



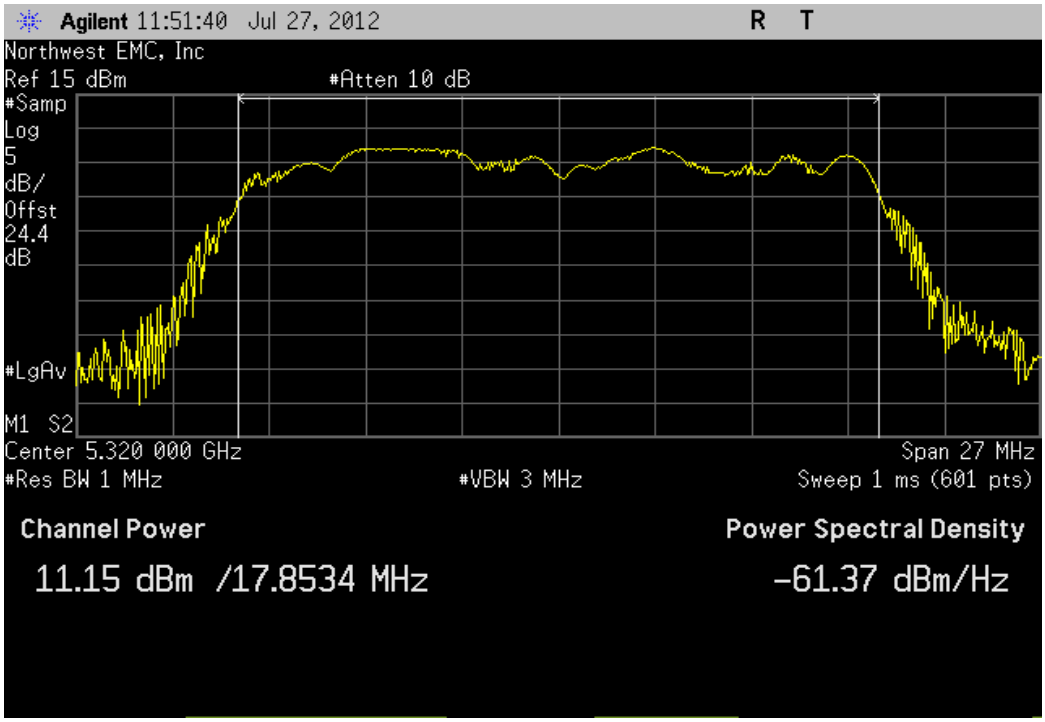
Antenna A, 20MHz Bandwidth , 802.11(n) MCS0, High Channel 48 Fq 5240MHz

				Value	Limit	Result
				11.154 dBm	< 17 dBm	Pass



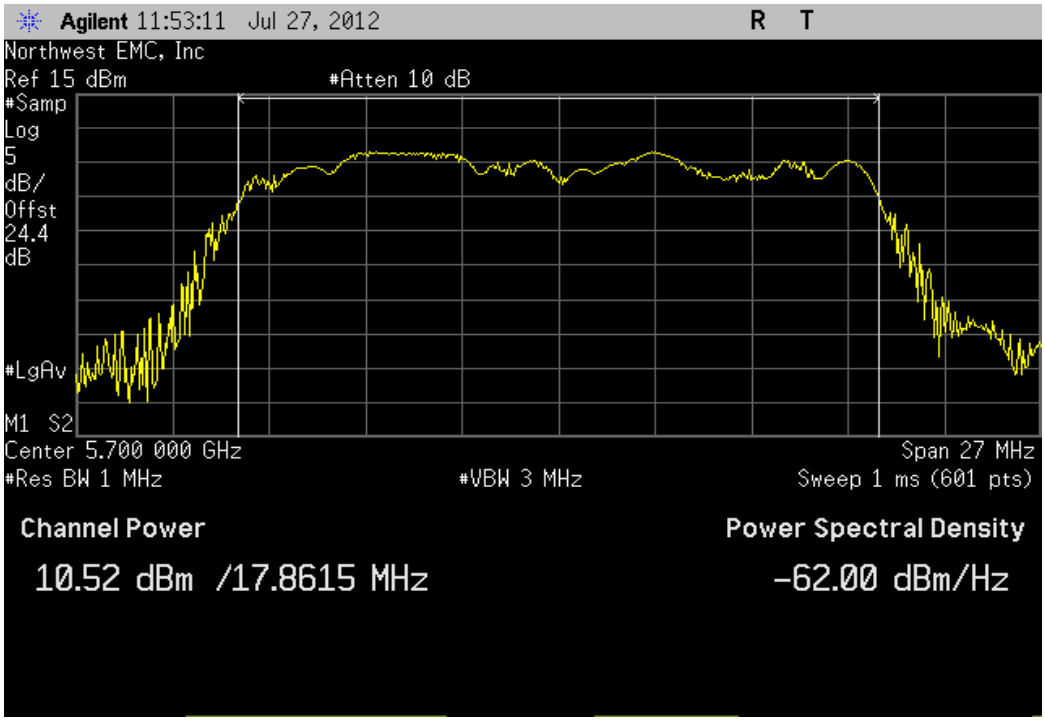
Antenna A, 20MHz Bandwidth , 802.11(n) MCS0, High Channel 64 Fq 5320MHz

				Value	Limit	Result
				11.146 dBm	< 24 dBm	Pass



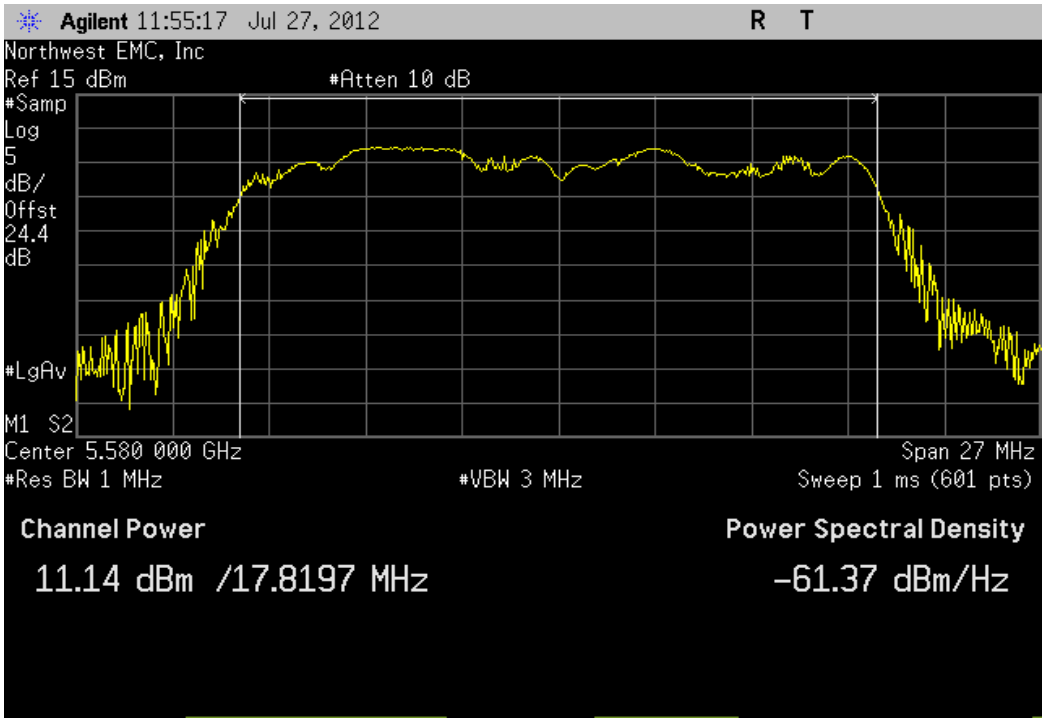
Antenna A, 20MHz Bandwidth , 802.11(n) MCS0, High Channel 140 Fq 5700MHz

				Value	Limit	Result
				10.52 dBm	< 24 dBm	Pass

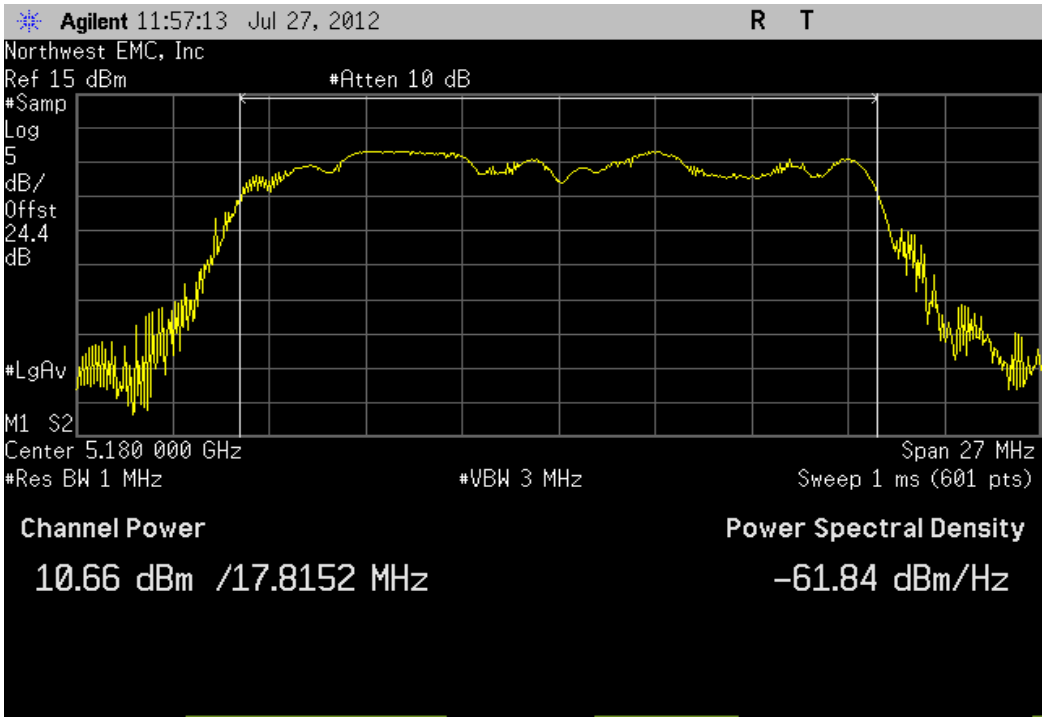


Antenna A, 20MHz Bandwidth , 802.11(n) MCS0, Mid Channel 116 Fq 5580 MHz

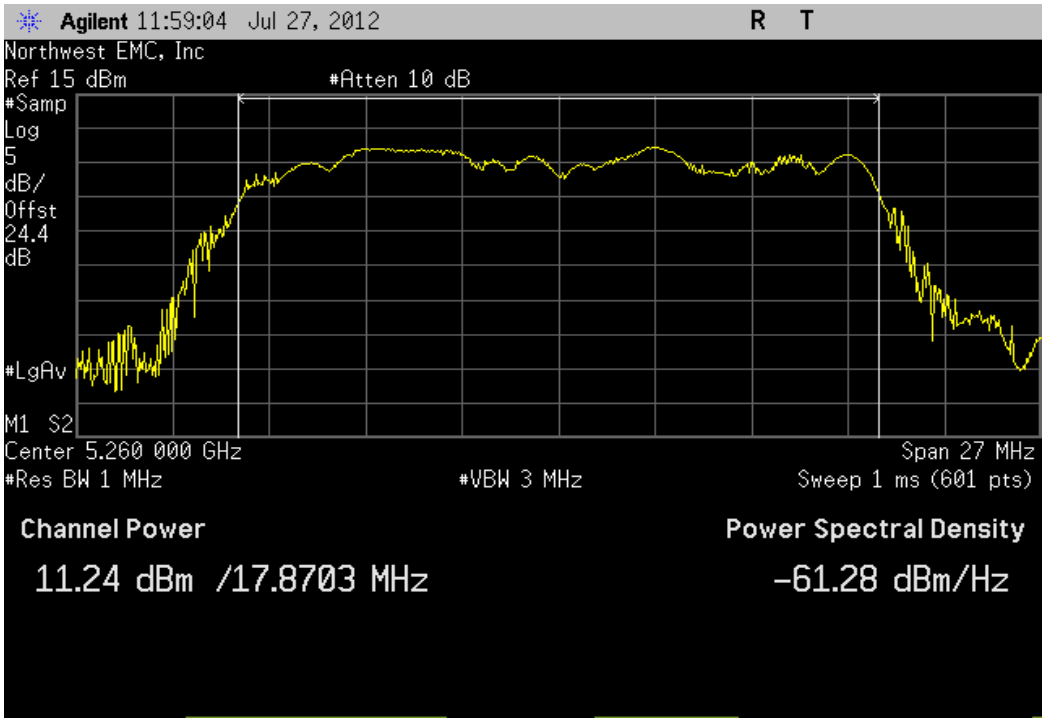
				Value	Limit	Result
				11.137 dBm	< 24 dBm	Pass



Antenna A, 20MHz Bandwidth , 802.11(n) MCS7, Low Channel 36 Fq 5180MHz						
				Value	Limit	Result
				10.664 dBm	< 17 dBm	Pass

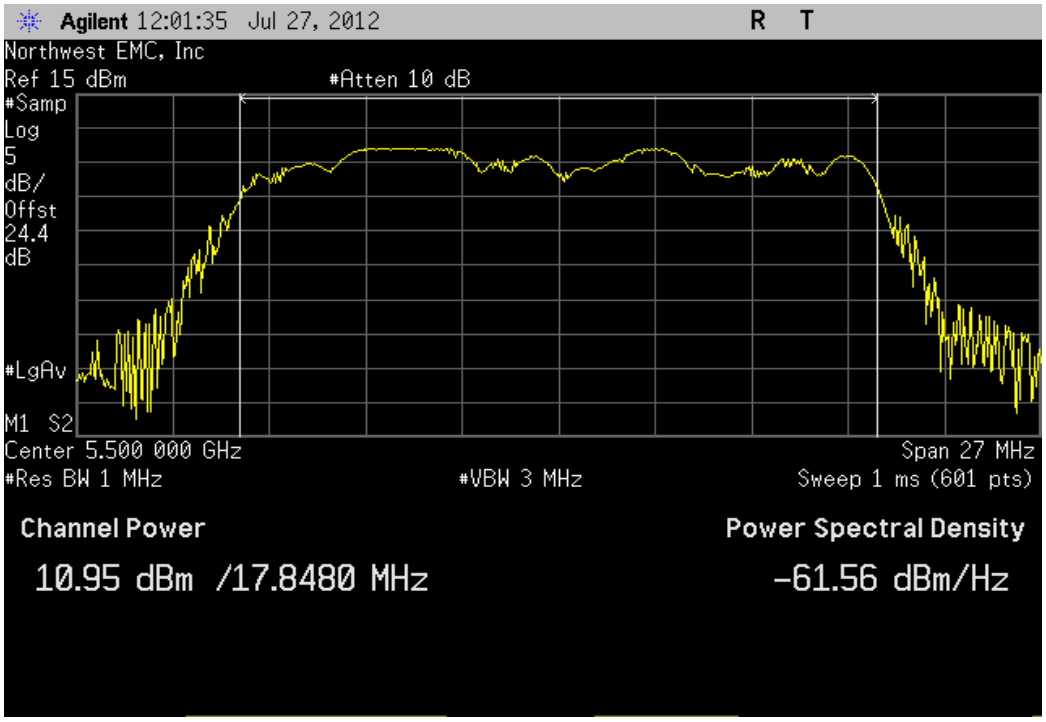


Antenna A, 20MHz Bandwidth , 802.11(n) MCS7, Low Channel 52 Fq 5260MHz						
				Value	Limit	Result
				11.242 dBm	< 24 dBm	Pass



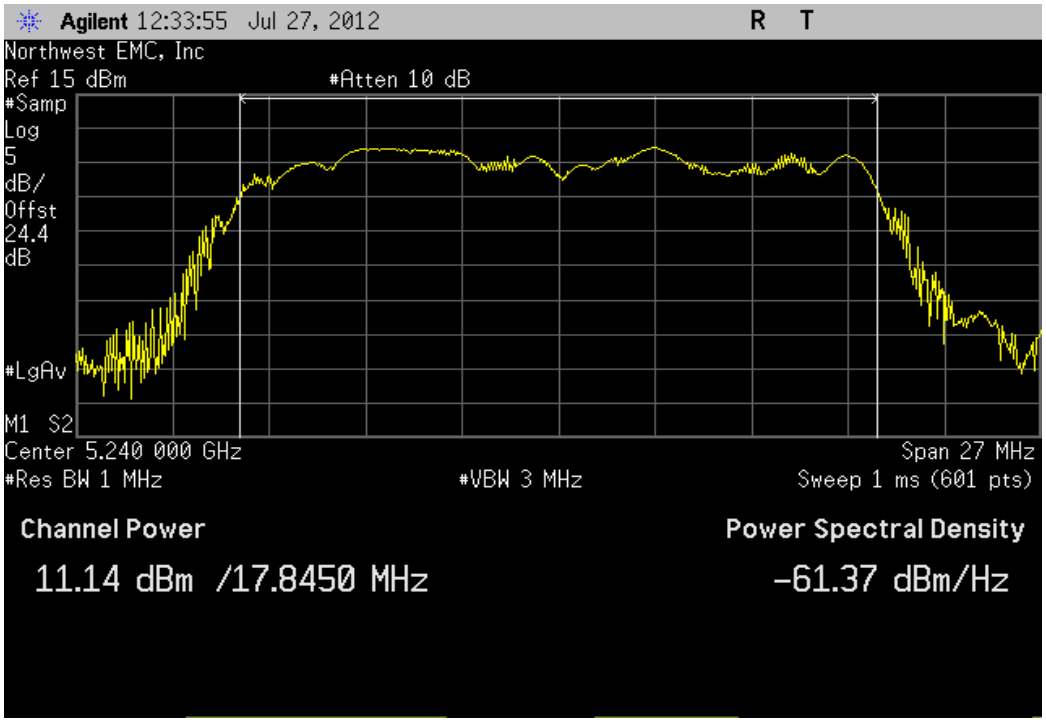
Antenna A, 20MHz Bandwidth , 802.11(n) MCS7, Low Channel 100 Fq 5500MHz

				Value	Limit	Result
				10.951 dBm	< 24 dBm	Pass



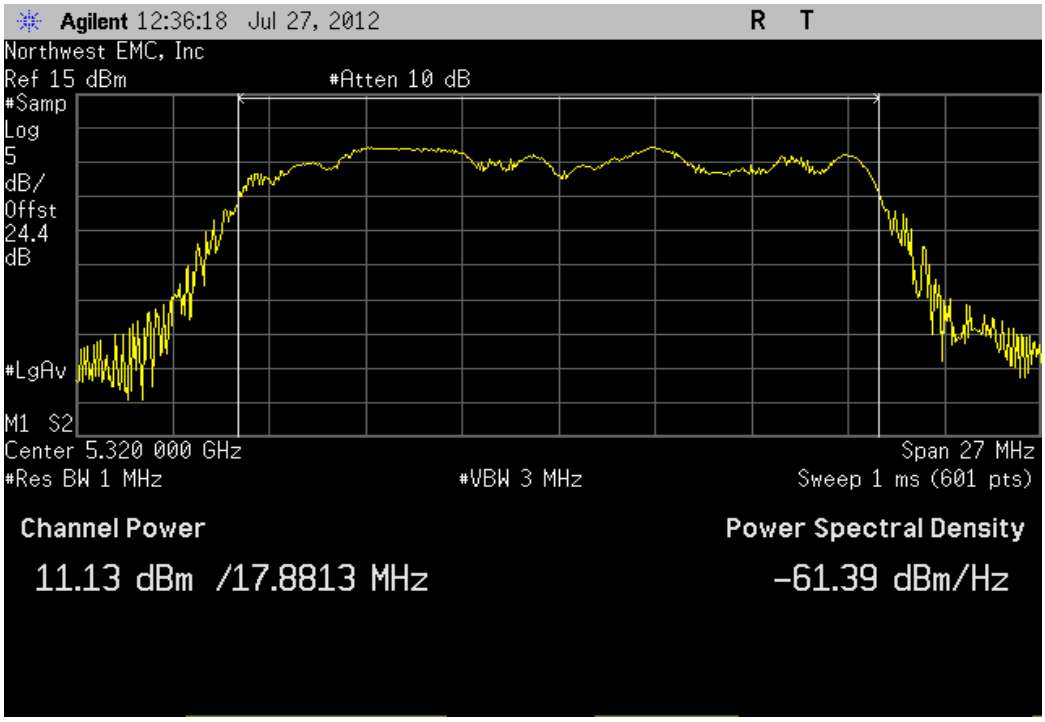
Antenna A, 20MHz Bandwidth , 802.11(n) MCS7, High Channel 48 Fq 5240MHz

				Value	Limit	Result
				11.144 dBm	< 17 dBm	Pass



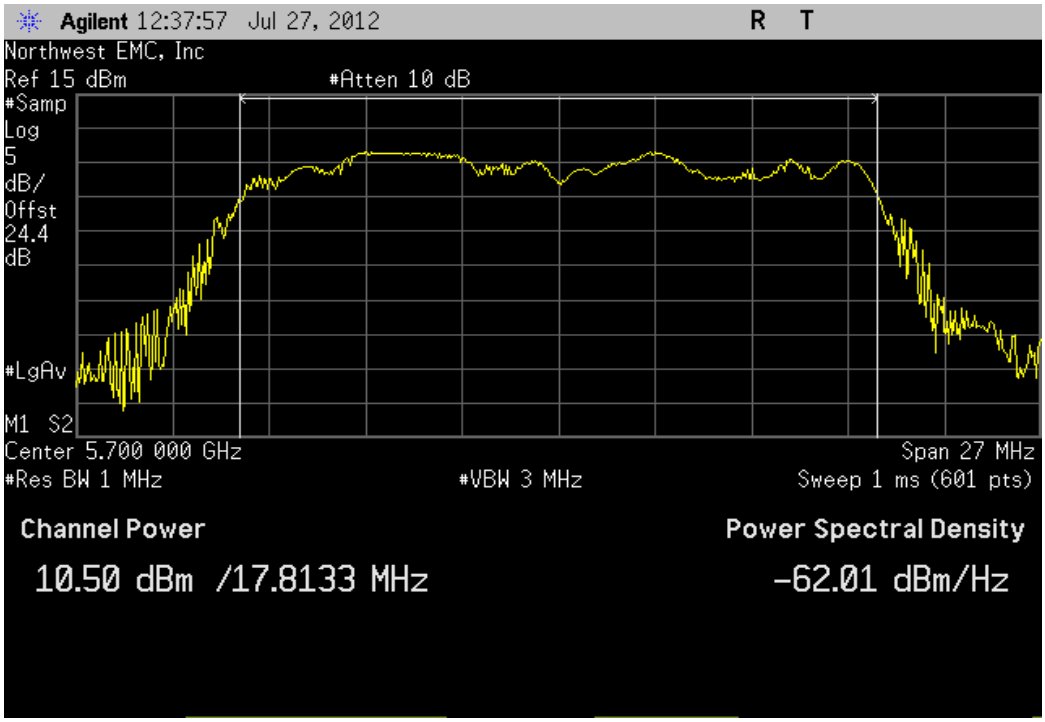
Antenna A, 20MHz Bandwidth , 802.11(n) MCS7, High Channel 64 Fq 5320MHz

				Value	Limit	Result
				11.135 dBm	< 24 dBm	Pass



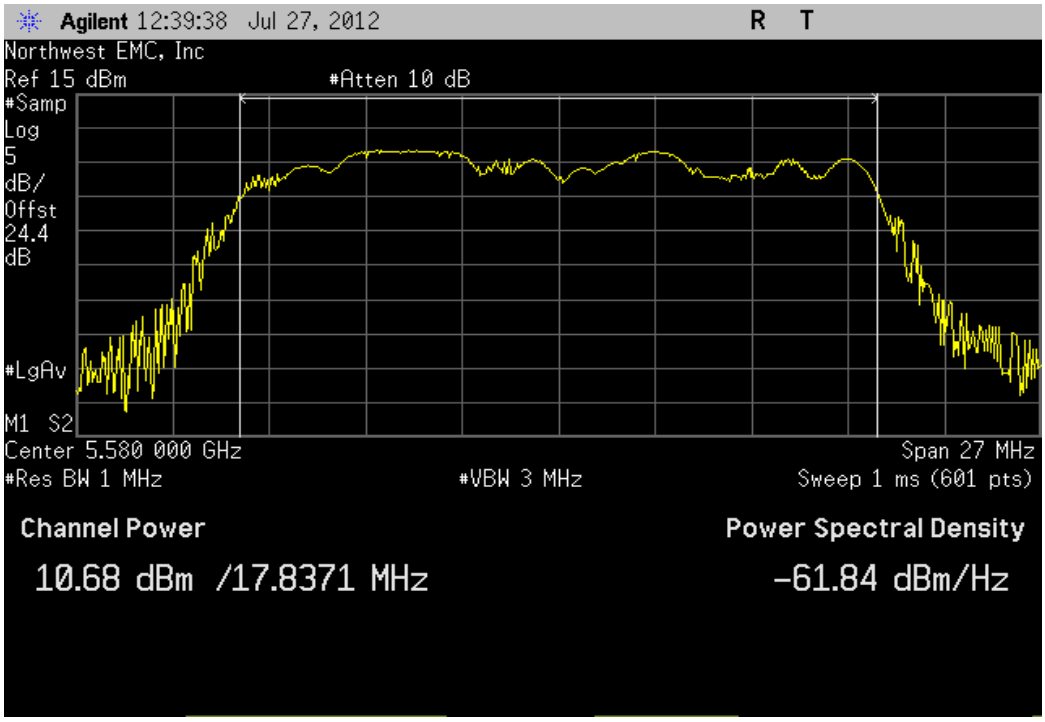
Antenna A, 20MHz Bandwidth , 802.11(n) MCS7, High Channel 140 Fq 5700MHz

				Value	Limit	Result
				10.5 dBm	< 24 dBm	Pass



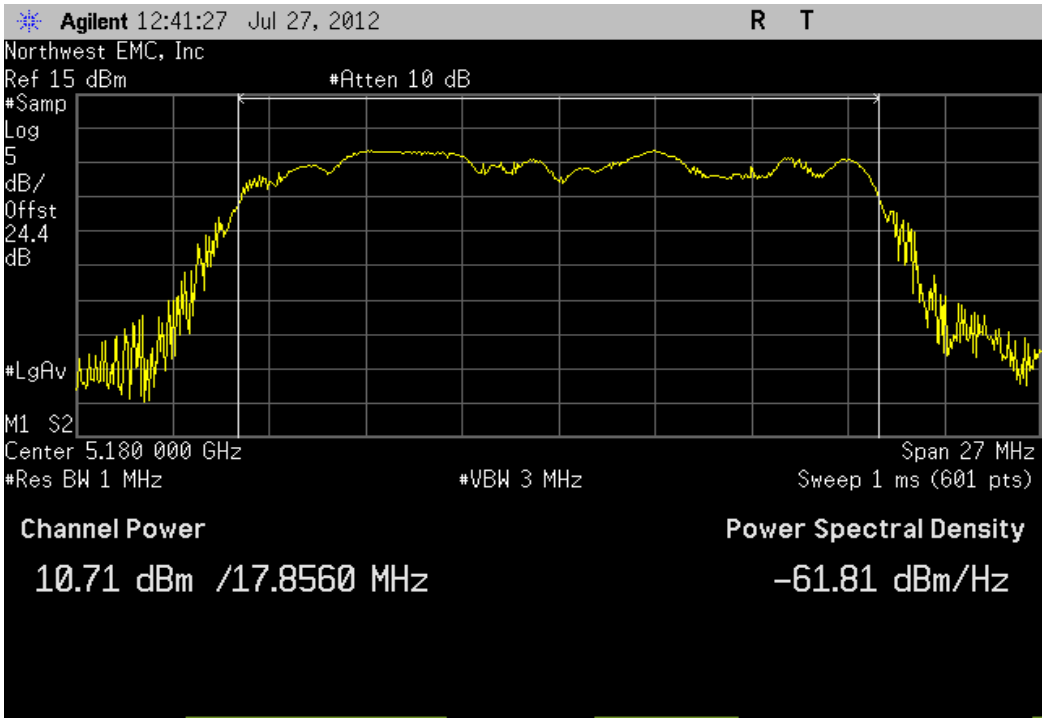
Antenna A, 20MHz Bandwidth , 802.11(n) MCS7, Mid Channel 116 Fq 5580 MHz

				Value	Limit	Result
				10.677 dBm	< 24 dBm	Pass



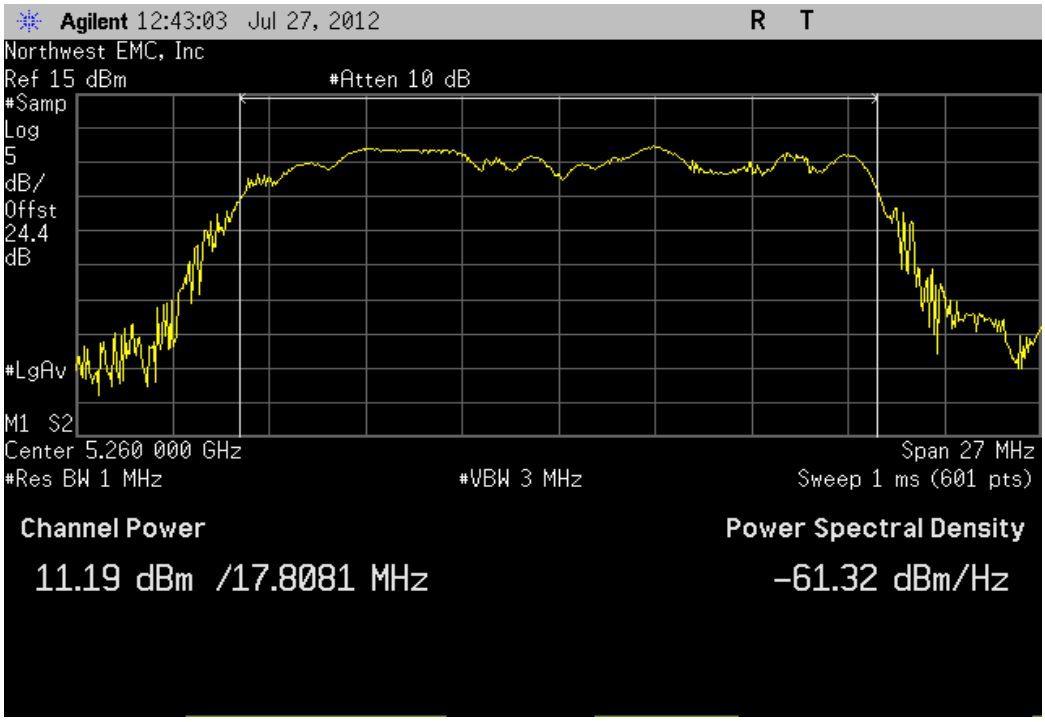
Antenna A, 20MHz Bandwidth , 802.11(n) MCS8, Low Channel 36 Fq 5180MHz

				Value	Limit	Result
				10.71 dBm	< 17 dBm	Pass



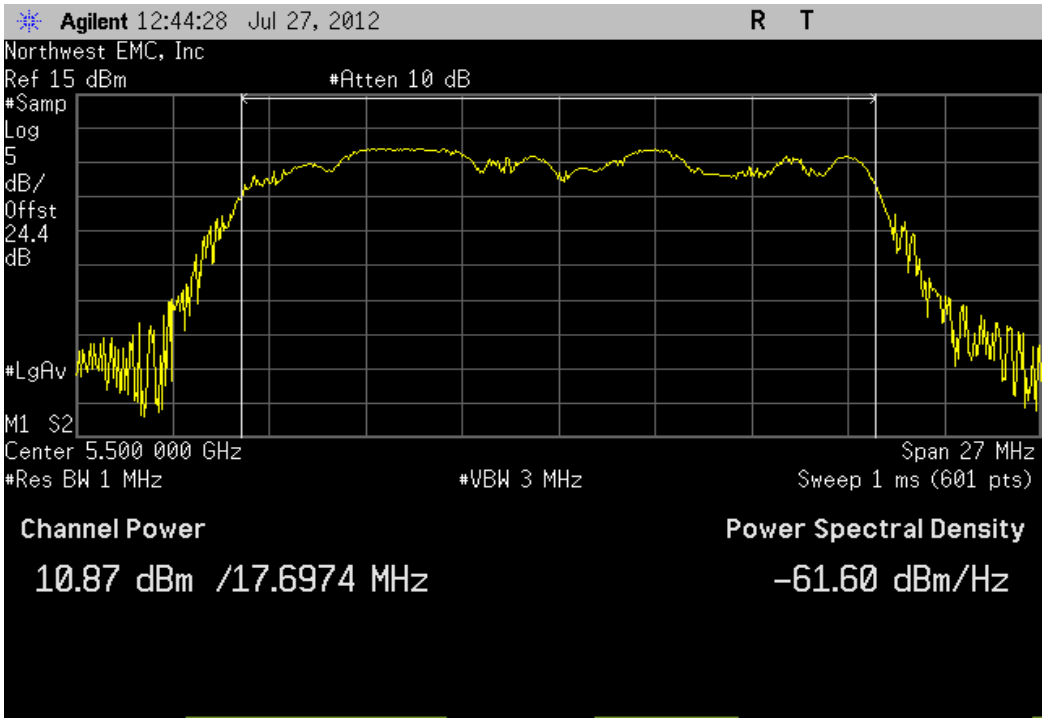
Antenna A, 20MHz Bandwidth , 802.11(n) MCS8, Low Channel 52 Fq 5260MHz

				Value	Limit	Result
				11.19 dBm	< 24 dBm	Pass



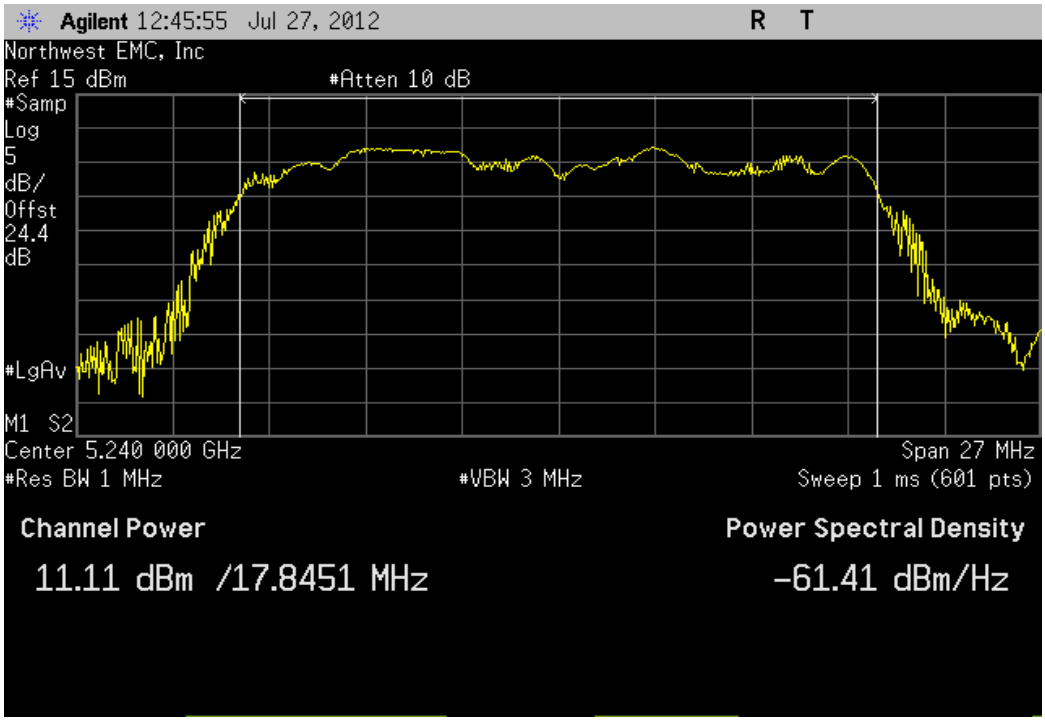
Antenna A, 20MHz Bandwidth , 802.11(n) MCS8, Low Channel 100 Fq 5500MHz

				Value	Limit	Result
				10.875 dBm	< 24 dBm	Pass



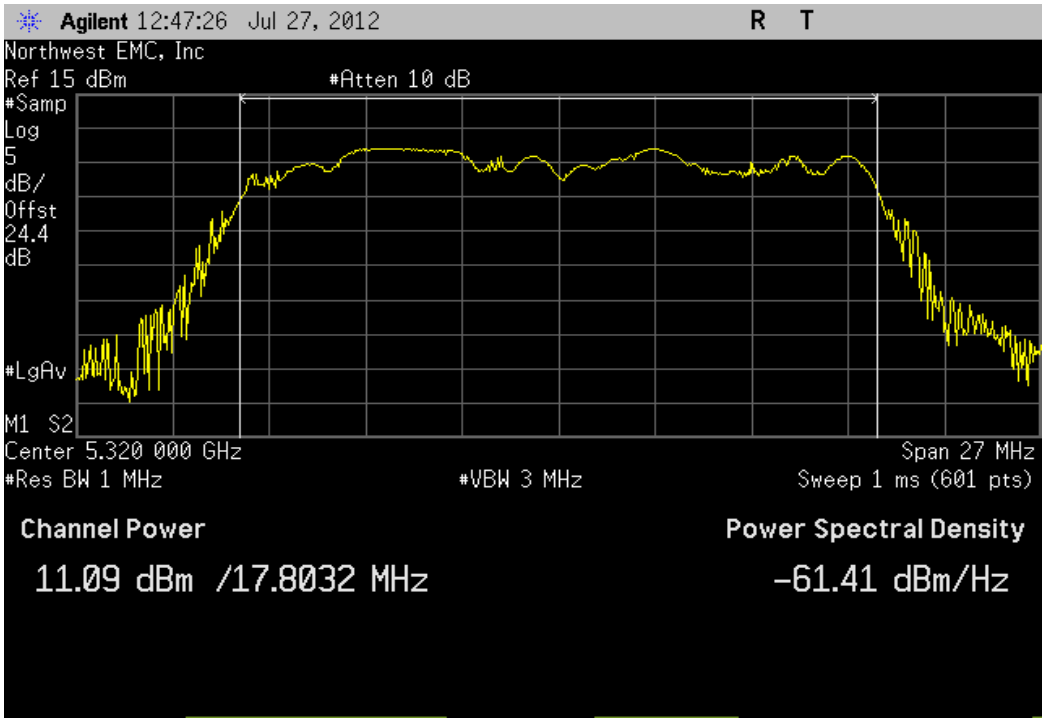
Antenna A, 20MHz Bandwidth , 802.11(n) MCS8, High Channel 48 Fq 5240MHz

				Value	Limit	Result
				11.11 dBm	< 17 dBm	Pass



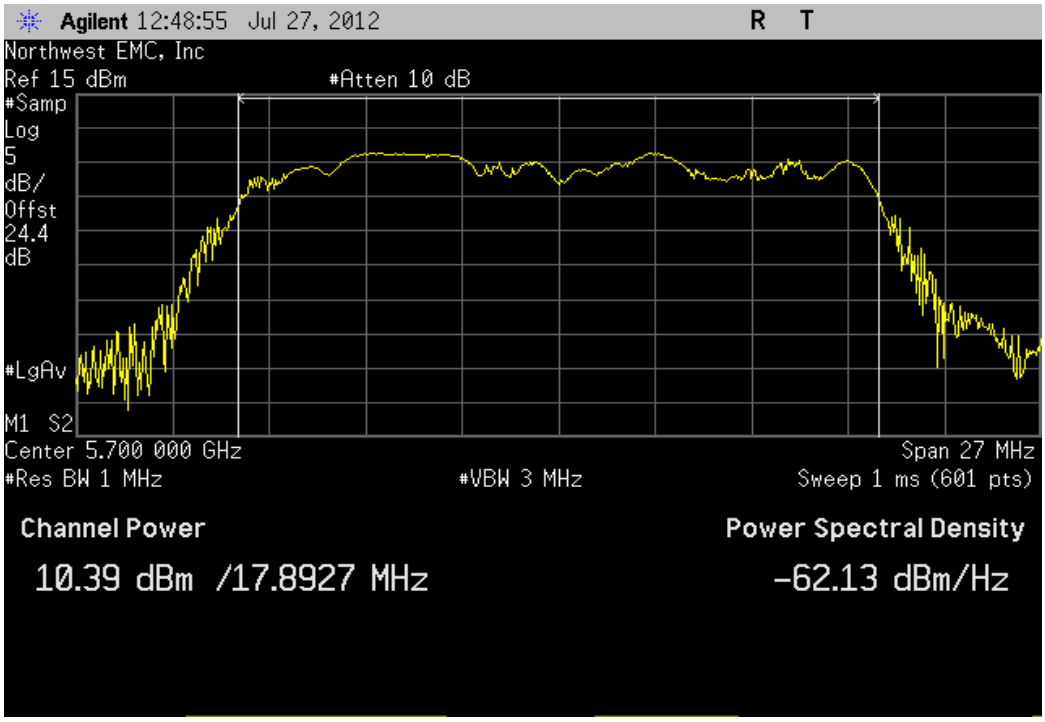
Antenna A, 20MHz Bandwidth , 802.11(n) MCS8, High Channel 64 Fq 5320MHz

				Value	Limit	Result
				11.092 dBm	< 24 dBm	Pass



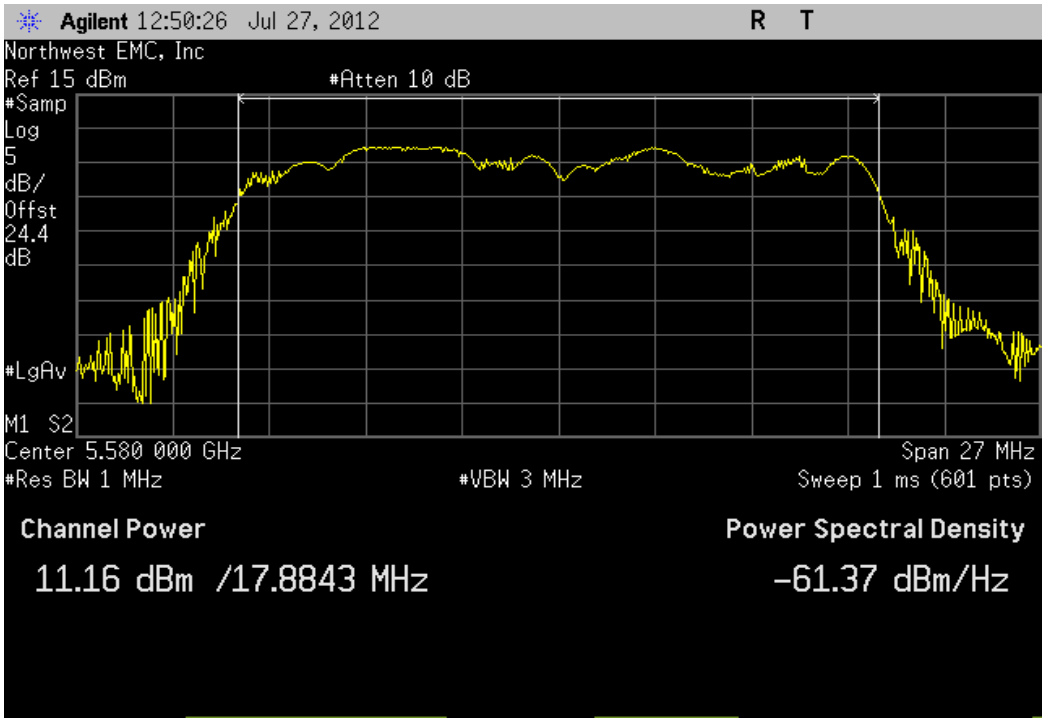
Antenna A, 20MHz Bandwidth , 802.11(n) MCS8, High Channel 140 Fq 5700MHz

				Value	Limit	Result
				10.393 dBm	< 24 dBm	Pass



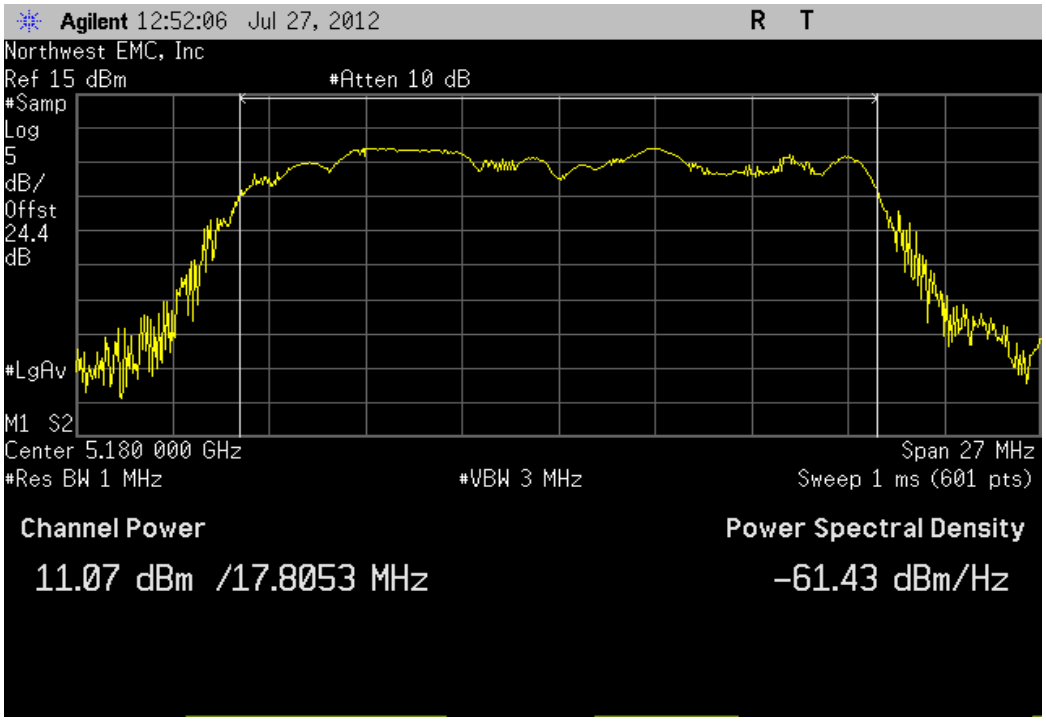
Antenna A, 20MHz Bandwidth , 802.11(n) MCS8, Mid Channel 116 Fq 5580 MHz

				Value	Limit	Result
				11.157 dBm	< 24 dBm	Pass



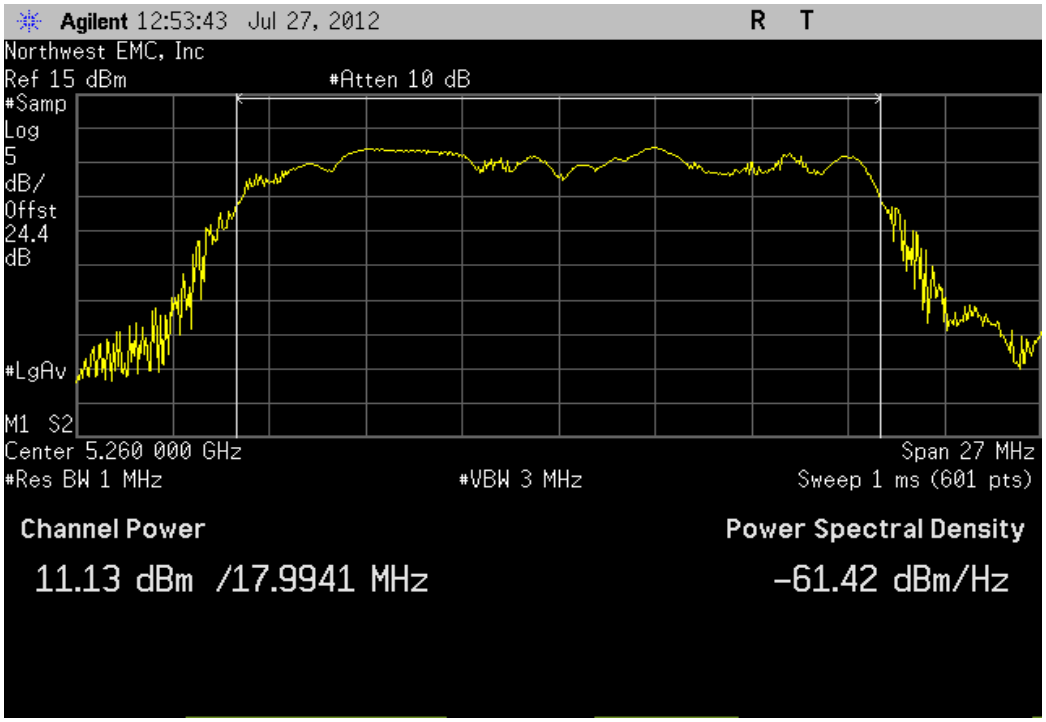
Antenna A, 20MHz Bandwidth , 802.11(n) MCS15, Low Channel 36 Fq 5180MHz

				Value	Limit	Result
				11.072 dBm	< 17 dBm	Pass



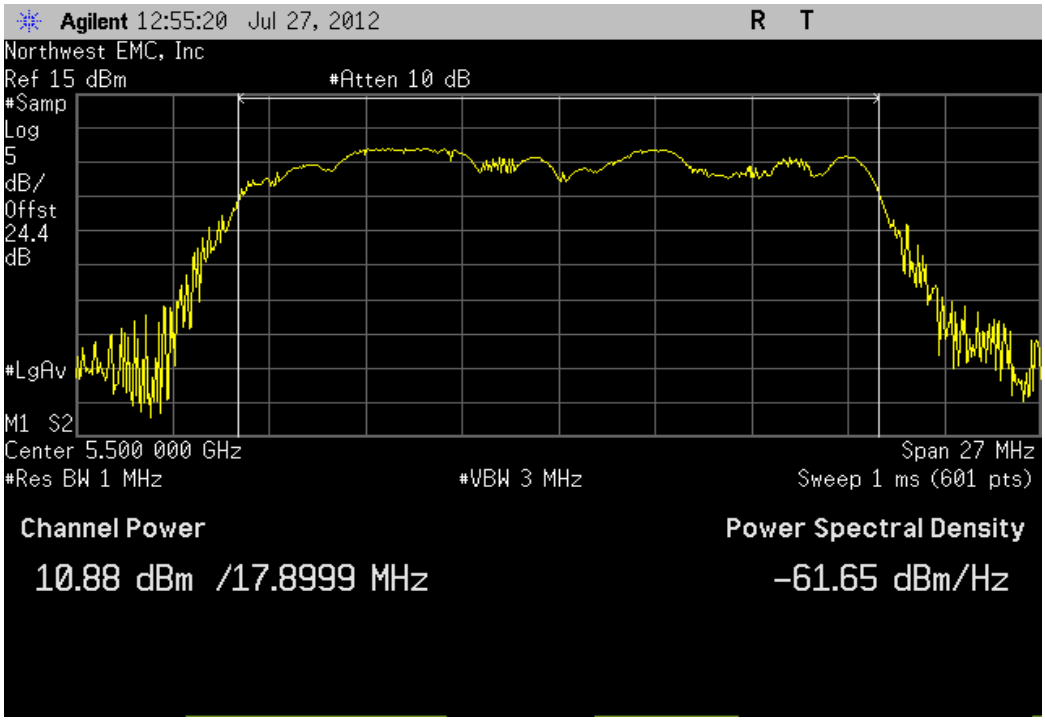
Antenna A, 20MHz Bandwidth , 802.11(n) MCS15, Low Channel 52 Fq 5260MHz

				Value	Limit	Result
				11.134 dBm	< 24 dBm	Pass



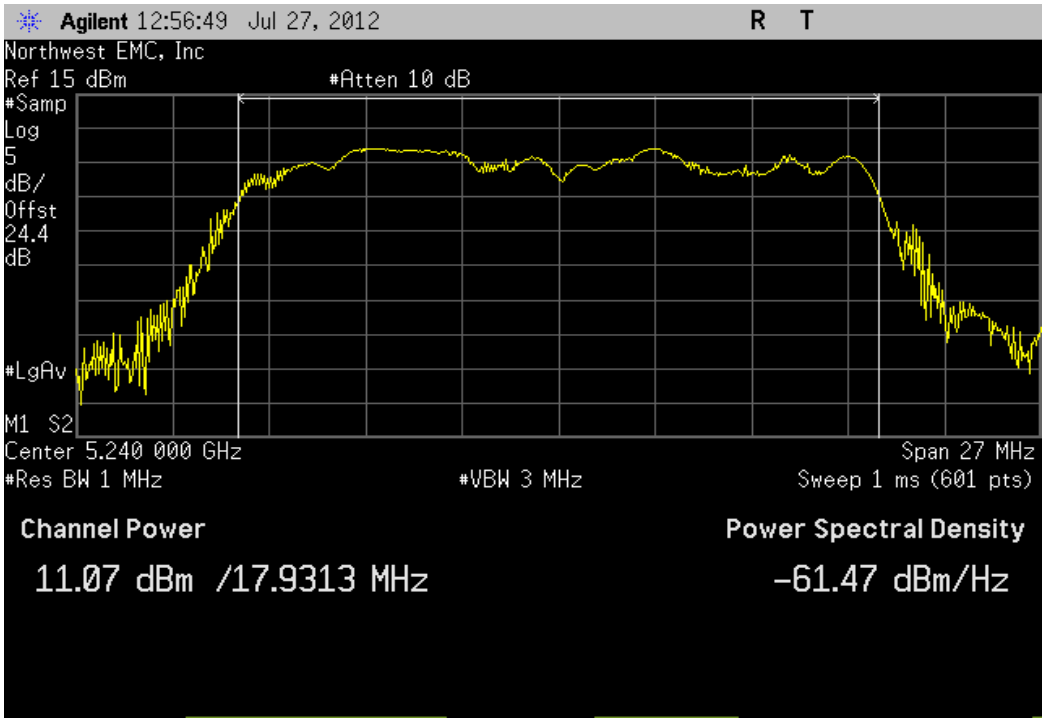
Antenna A, 20MHz Bandwidth , 802.11(n) MCS15, Low Channel 100 Fq 5500MHz

				Value	Limit	Result
				10.882 dBm	< 24 dBm	Pass



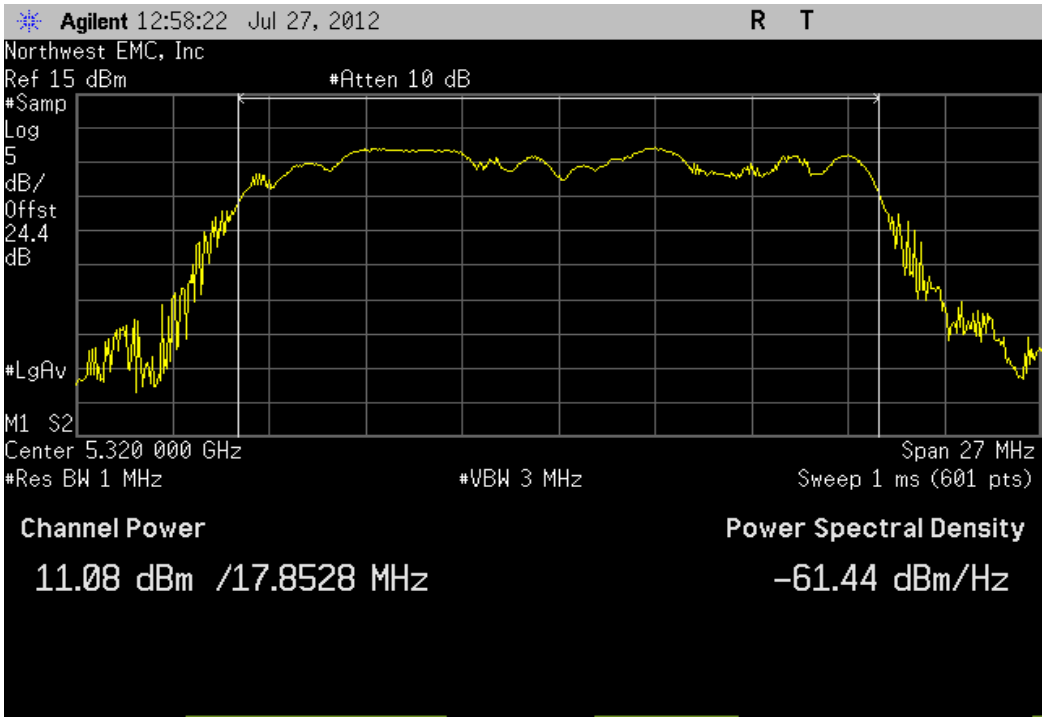
Antenna A, 20MHz Bandwidth , 802.11(n) MCS15, High Channel 48 Fq 5240MHz

				Value	Limit	Result
				11.07 dBm	< 17 dBm	Pass



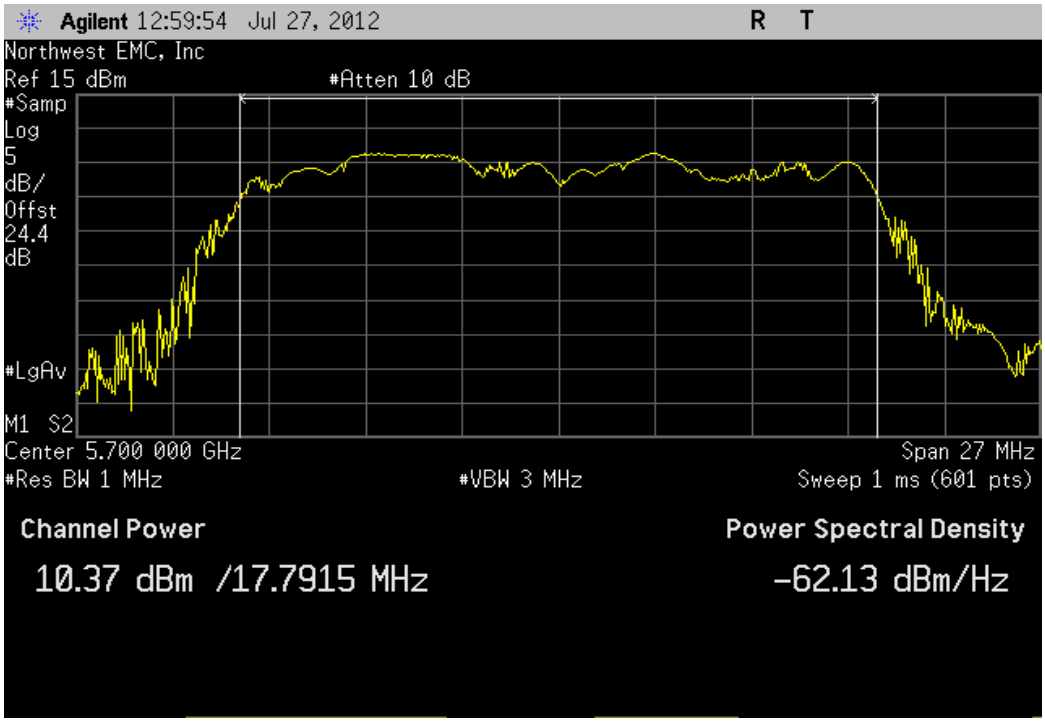
Antenna A, 20MHz Bandwidth , 802.11(n) MCS15, High Channel 64 Fq 5320MHz

				Value	Limit	Result
				11.078 dBm	< 24 dBm	Pass



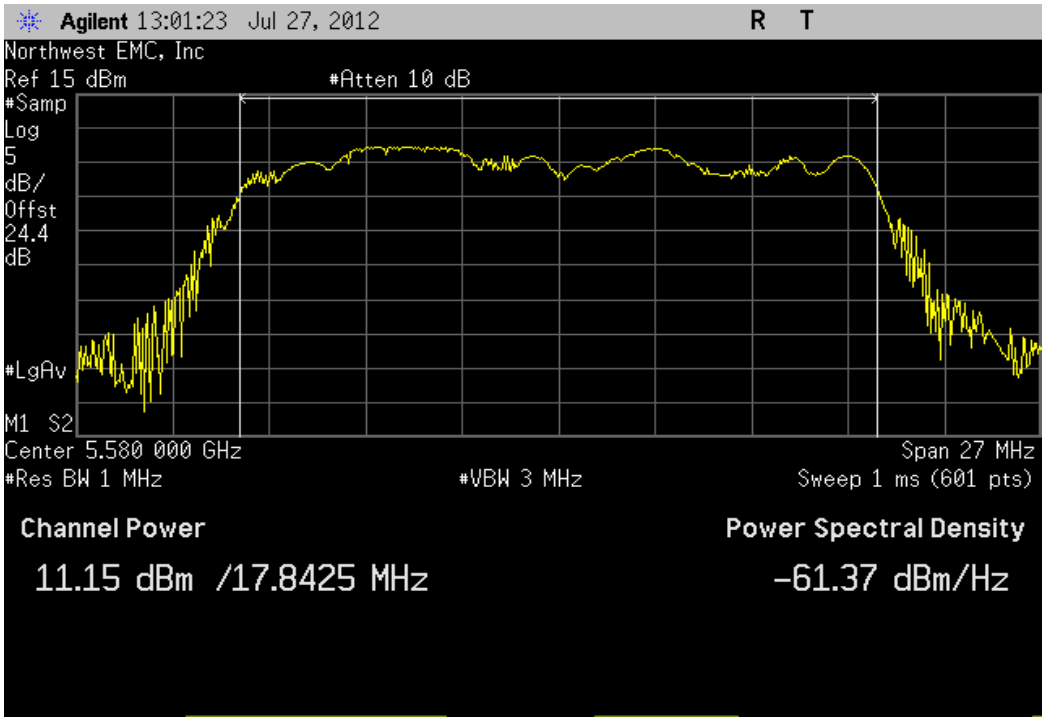
Antenna A, 20MHz Bandwidth , 802.11(n) MCS15, High Channel 140 Fq 5700MHz

				Value	Limit	Result
				10.371 dBm	< 24 dBm	Pass



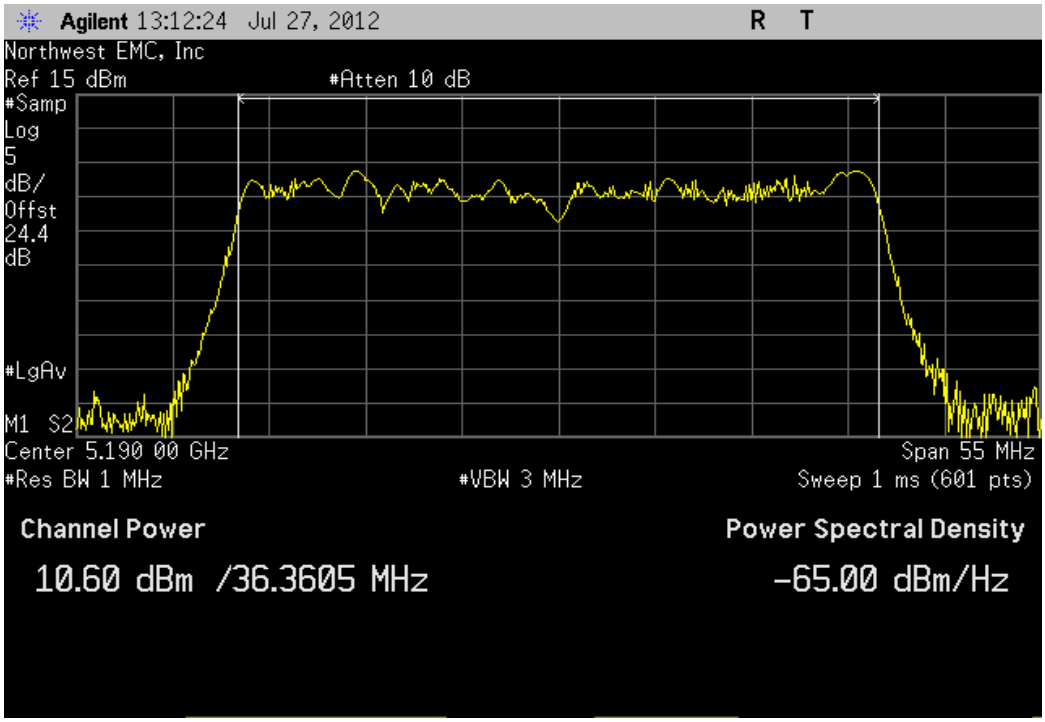
Antenna A, 20MHz Bandwidth , 802.11(n) MCS15, Mid Channel 116 Fq 5580 MHz

				Value	Limit	Result
				11.147 dBm	< 24 dBm	Pass



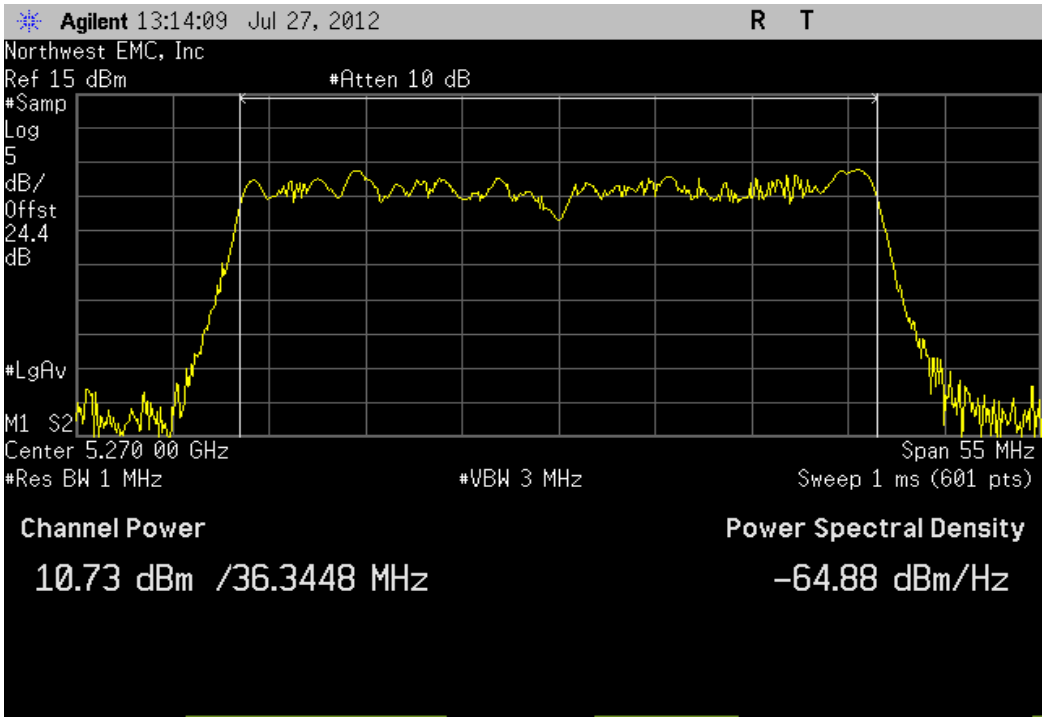
Antenna A, 40MHz Bandwidth , 802.11(n) MCS0, Low Channel 36/40 Fq 5190MHz

				Value	Limit	Result
				10.603 dBm	< 17 dBm	Pass



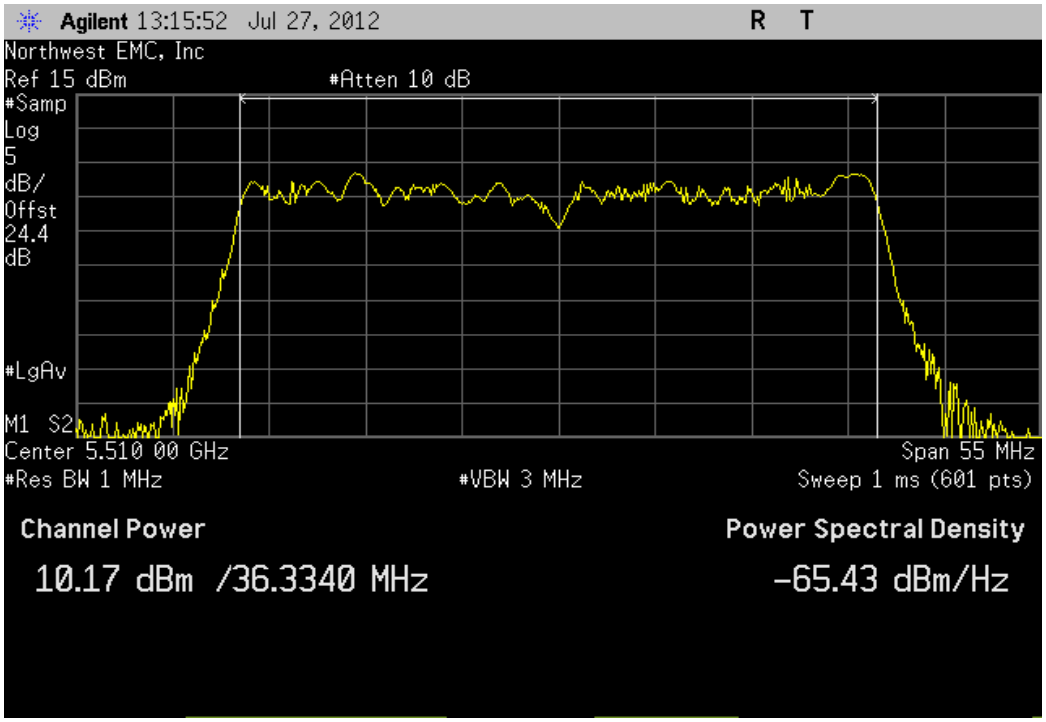
Antenna A, 40MHz Bandwidth , 802.11(n) MCS0, Low Channel 52/56 Fq 5270MHz

				Value	Limit	Result
				10.728 dBm	< 17 dBm	Pass



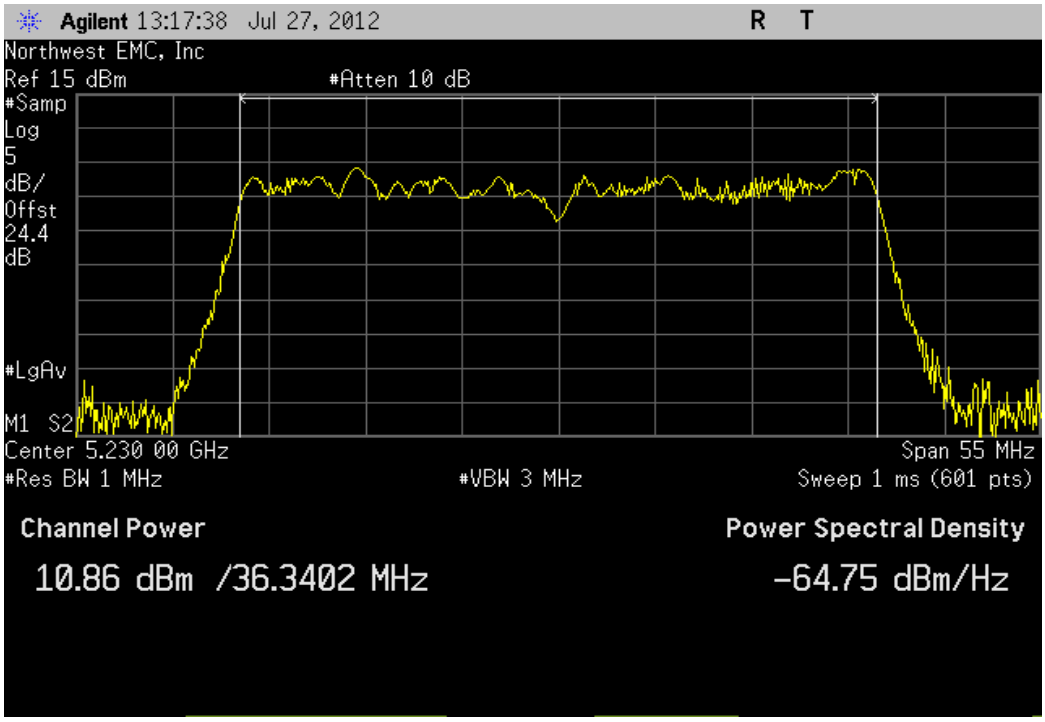
Antenna A, 40MHz Bandwidth , 802.11(n) MCS0, Low Channel 100/104 Fq 5510MHz

				Value	Limit	Result
				10.171 dBm	< 17 dBm	Pass



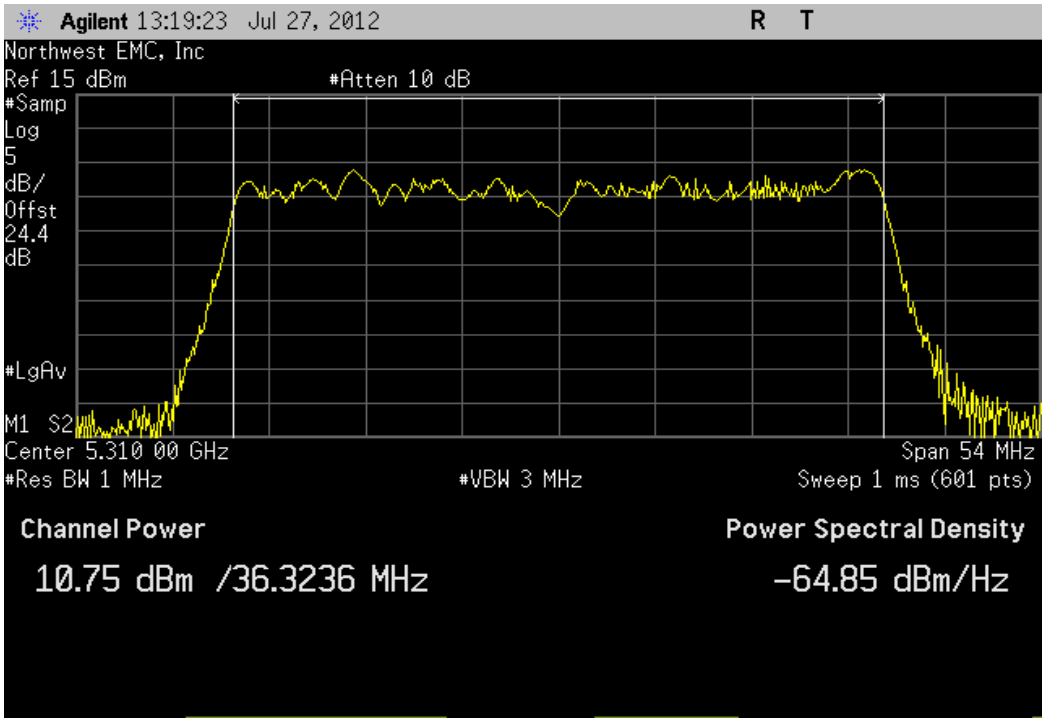
Antenna A, 40MHz Bandwidth , 802.11(n) MCS0, Low Channel 44/48 Fq 5230MHz

				Value	Limit	Result
				10.859 dBm	< 17 dBm	Pass

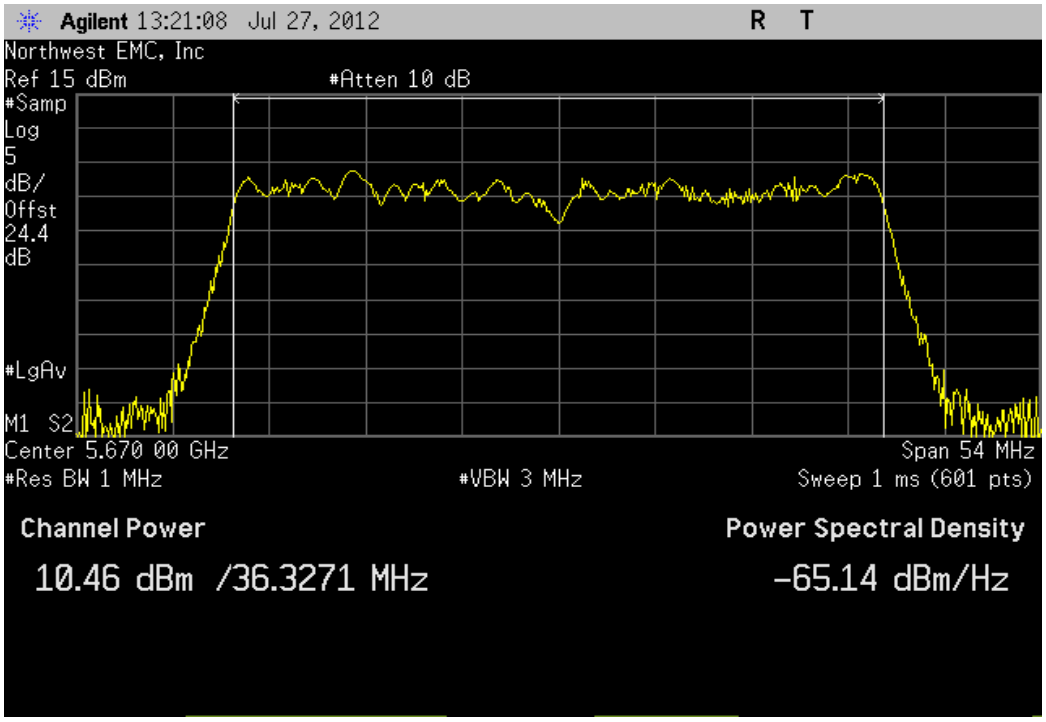


Antenna A, 40MHz Bandwidth , 802.11(n) MCS0, Low Channel 60/64 Fq 5310MHz

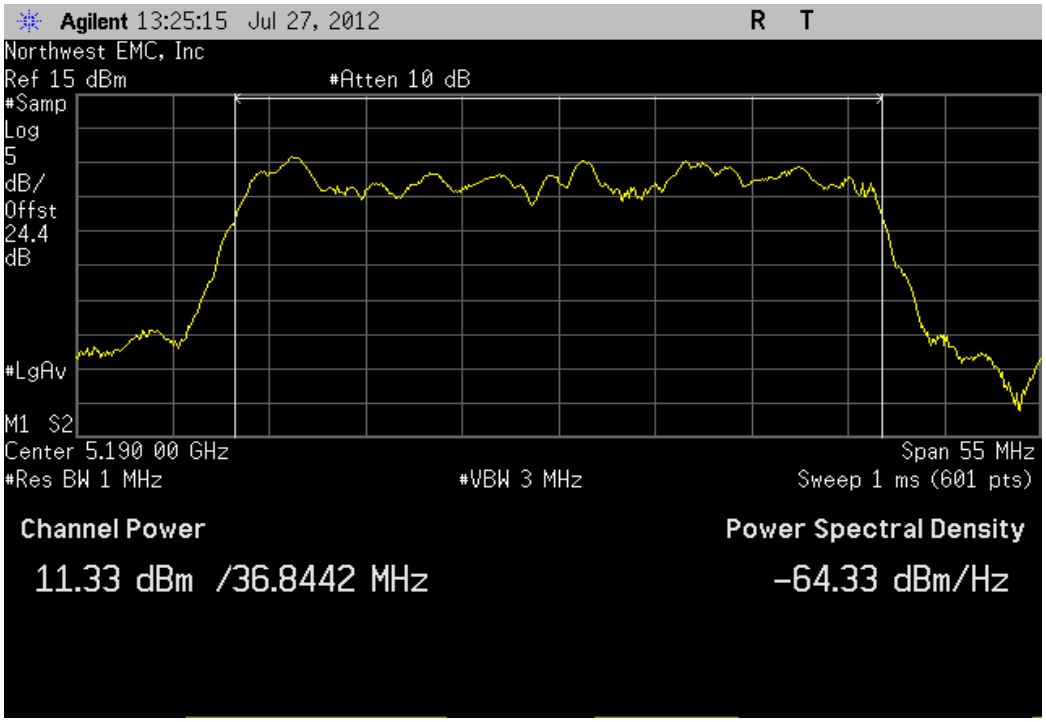
				Value	Limit	Result
				10.75 dBm	< 17 dBm	Pass



Antenna A, 40MHz Bandwidth , 802.11(n) MCS0, Low Channel 132/136 Fq 5670MHz						
				Value	Limit	Result
				10.462 dBm	< 17 dBm	Pass

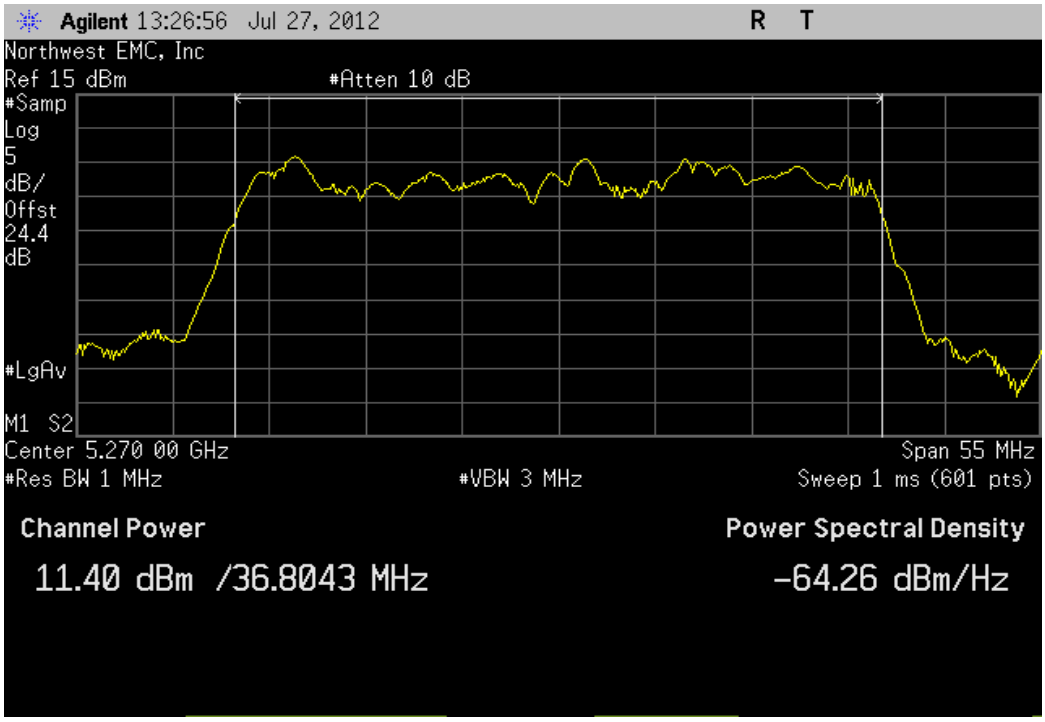


Antenna A, 40MHz Bandwidth , 802.11(n) MCS7, Low Channel 36/40 Fq 5190MHz						
				Value	Limit	Result
				11.332 dBm	< 17 dBm	Pass



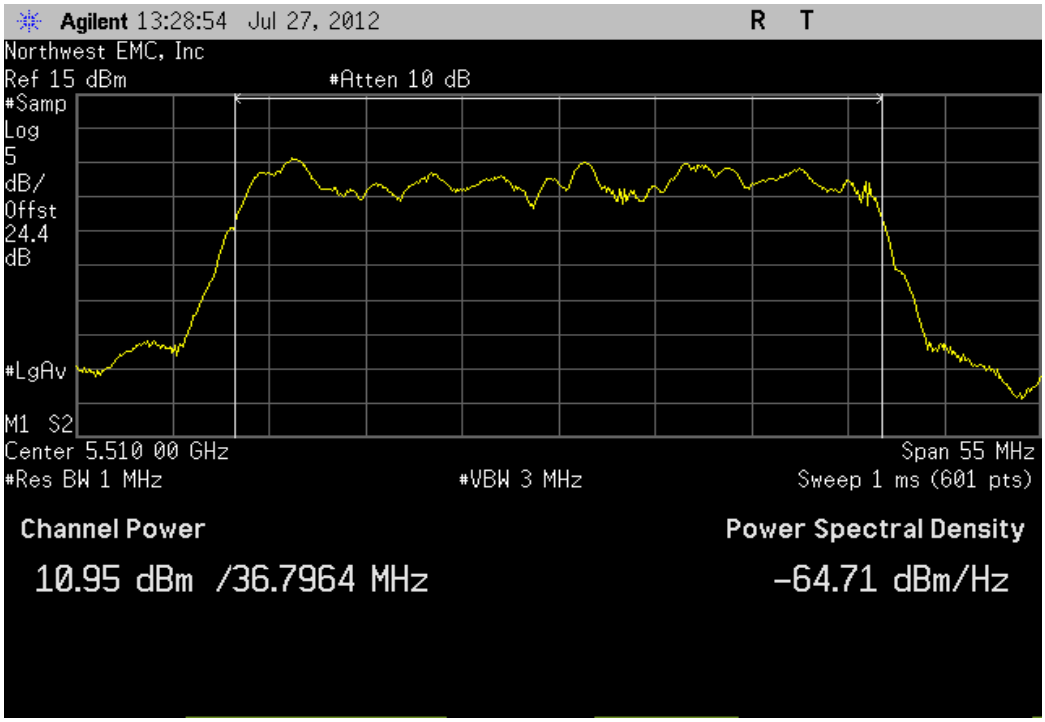
Antenna A, 40MHz Bandwidth , 802.11(n) MCS7, Low Channel 52/56 Fq 5270MHz

				Value	Limit	Result
				11.403 dBm	< 17 dBm	Pass



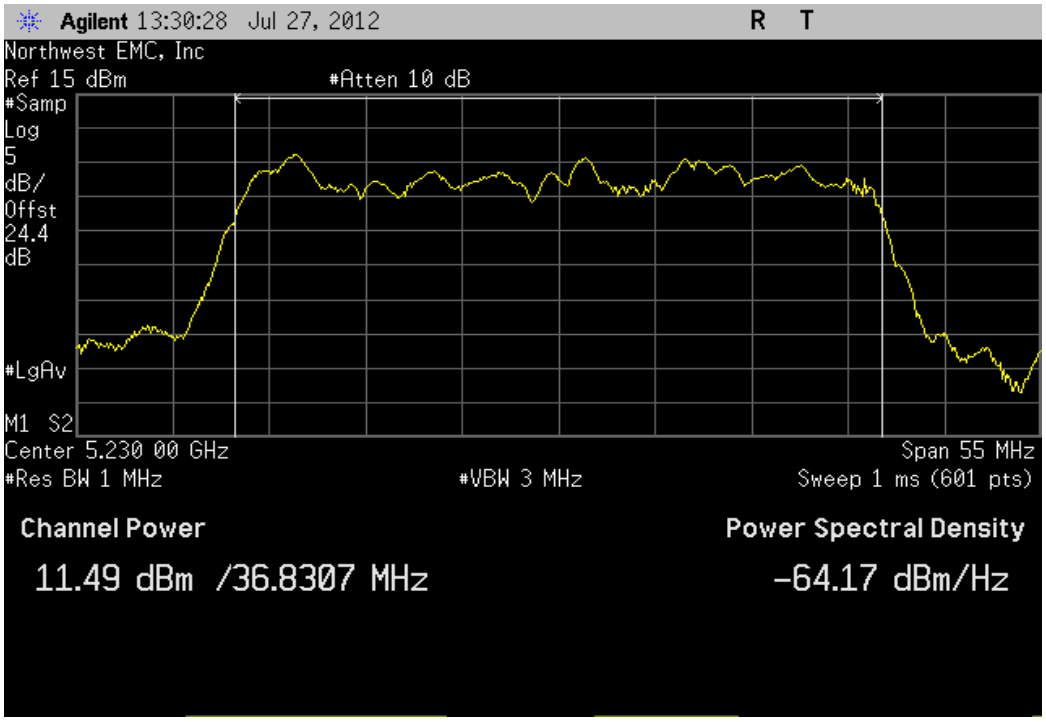
Antenna A, 40MHz Bandwidth , 802.11(n) MCS7, Low Channel 100/104 Fq 5510MHz

				Value	Limit	Result
				10.946 dBm	< 17 dBm	Pass



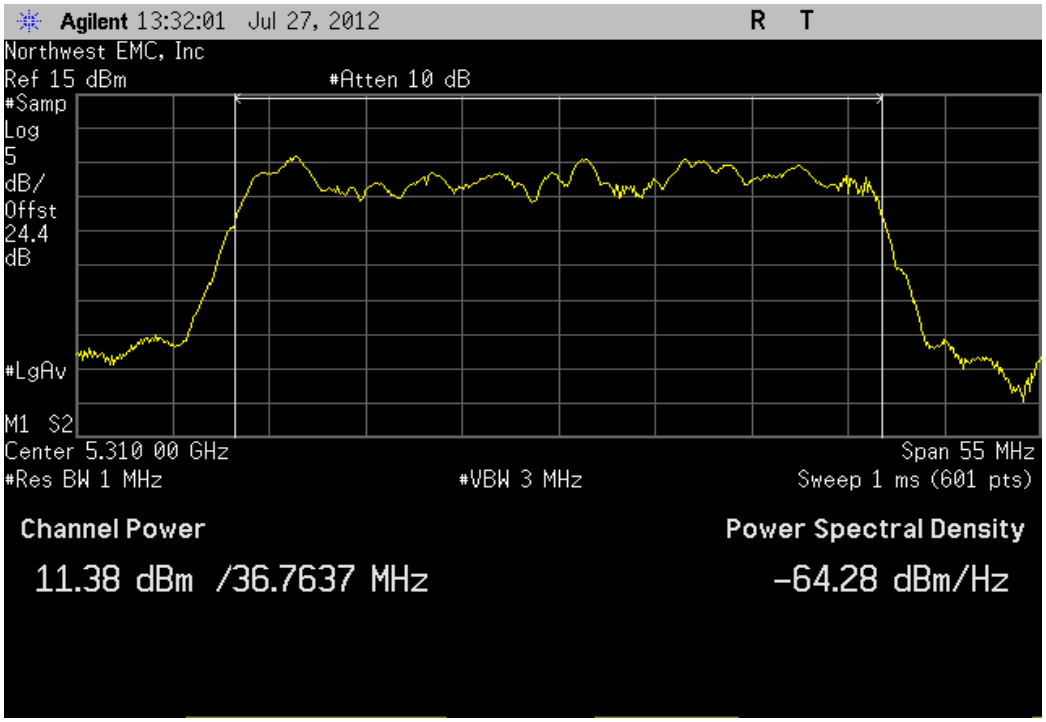
Antenna A, 40MHz Bandwidth , 802.11(n) MCS7, Low Channel 44/48 Fq 5230MHz

				Value	Limit	Result
				11.493 dBm	< 17 dBm	Pass



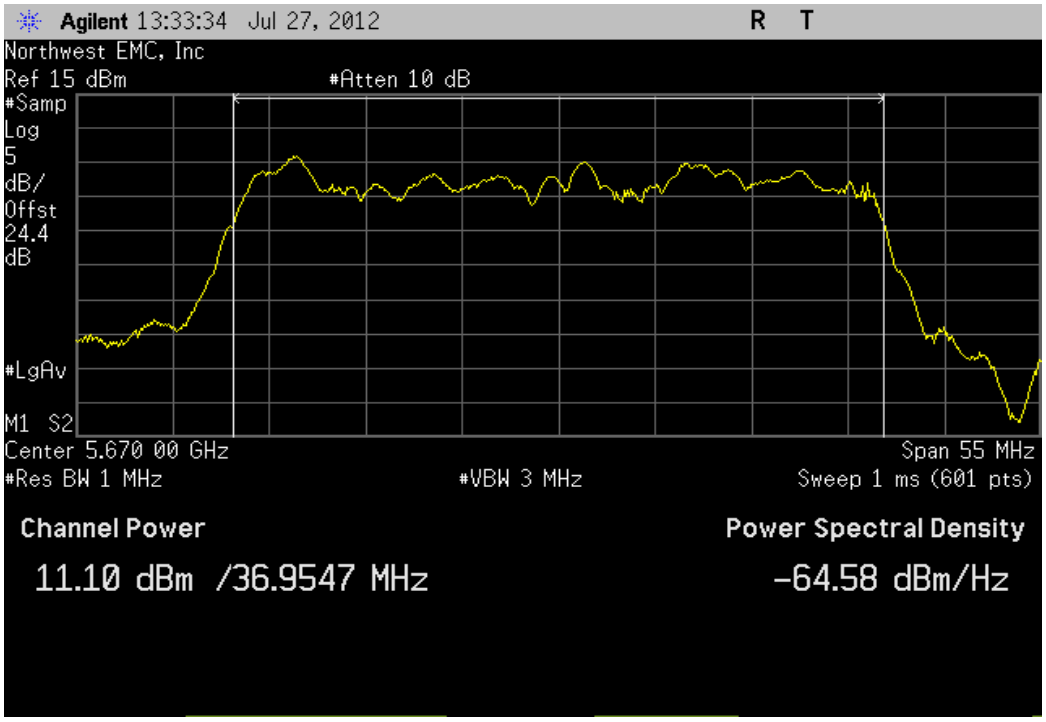
Antenna A, 40MHz Bandwidth , 802.11(n) MCS7, Low Channel 60/64 Fq 5310MHz

				Value	Limit	Result
				11.379 dBm	< 17 dBm	Pass



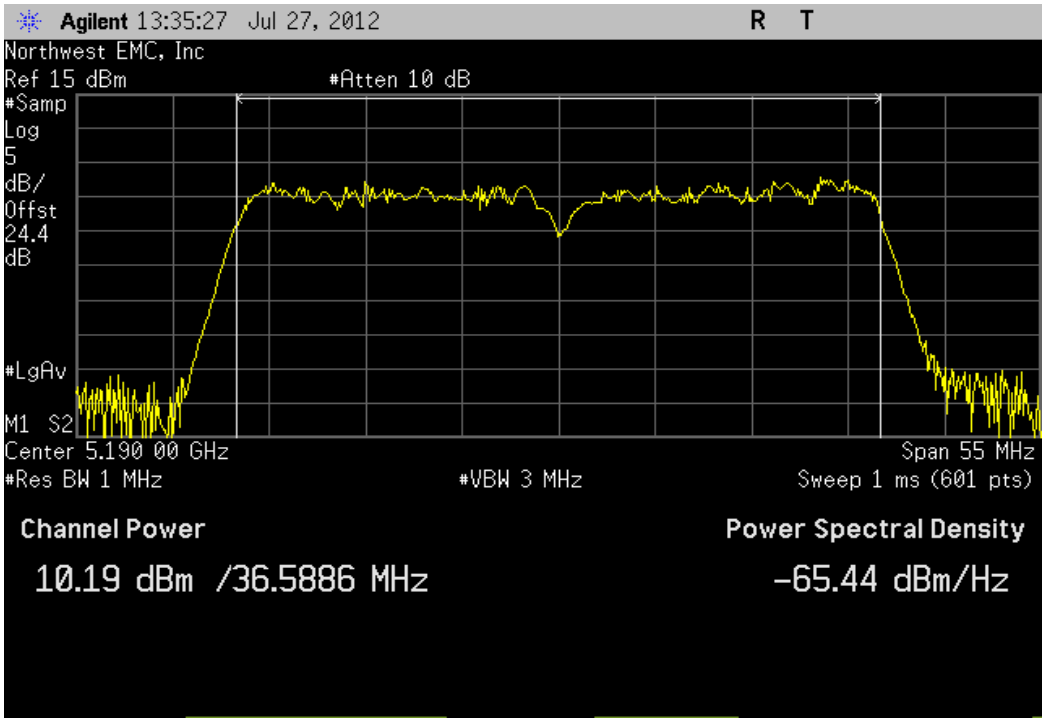
Antenna A, 40MHz Bandwidth , 802.11(n) MCS7, Low Channel 132/136 Fq 5670MHz

				Value	Limit	Result
				11.099 dBm	< 17 dBm	Pass



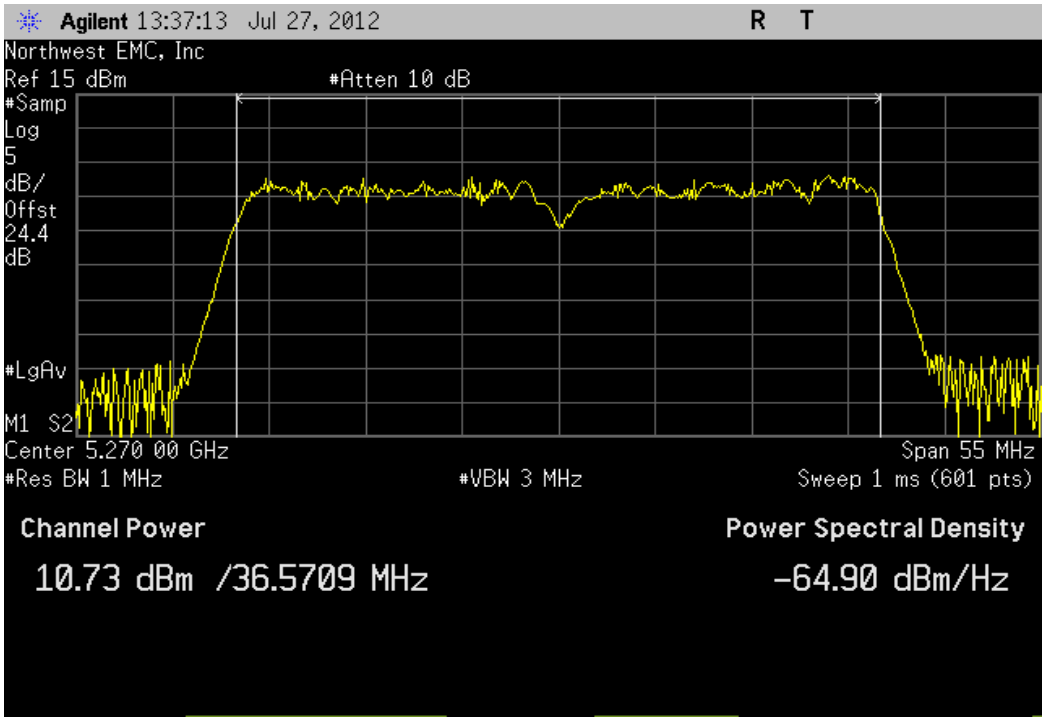
Antenna A, 40MHz Bandwidth , 802.11(n) MCS8, Low Channel 36/40 Fq 5190MHz

				Value	Limit	Result
				10.189 dBm	< 17 dBm	Pass



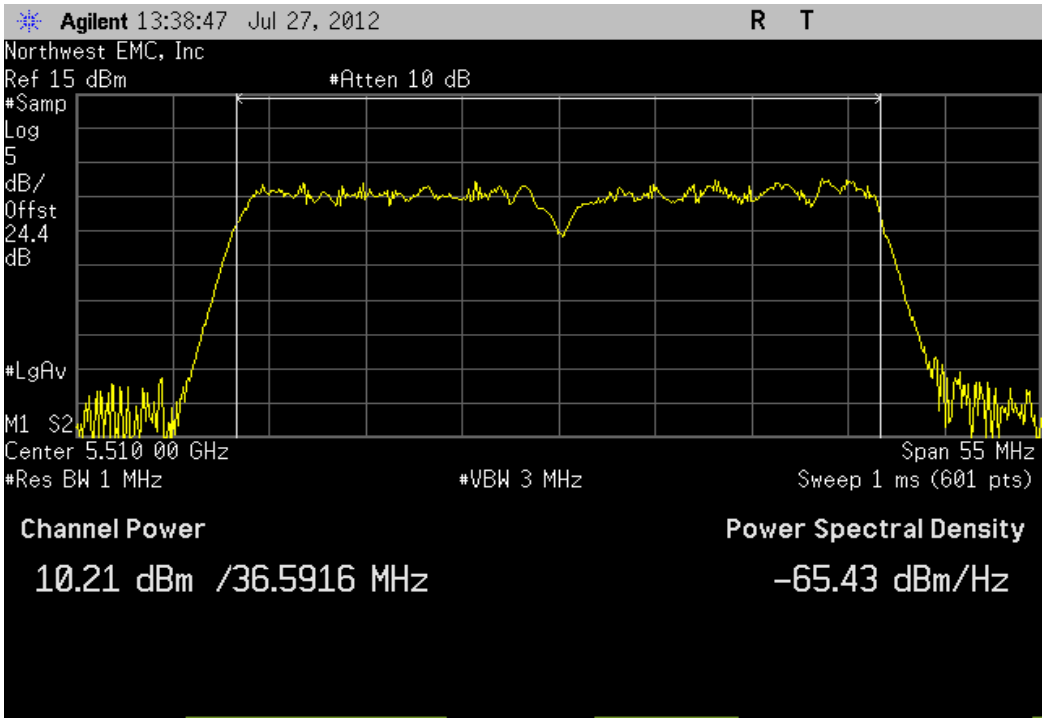
Antenna A, 40MHz Bandwidth , 802.11(n) MCS8, Low Channel 52/56 Fq 5270MHz

				Value	Limit	Result
				10.728 dBm	< 17 dBm	Pass



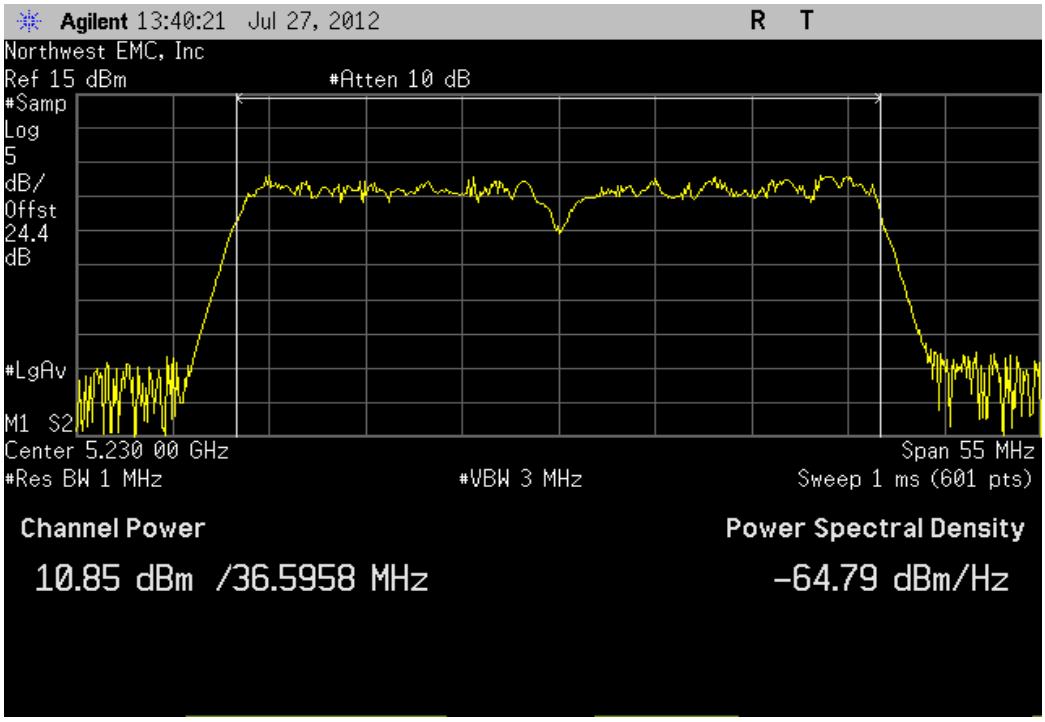
Antenna A, 40MHz Bandwidth , 802.11(n) MCS8, Low Channel 100/104 Fq 5510MHz

				Value	Limit	Result
				10.208 dBm	< 17 dBm	Pass



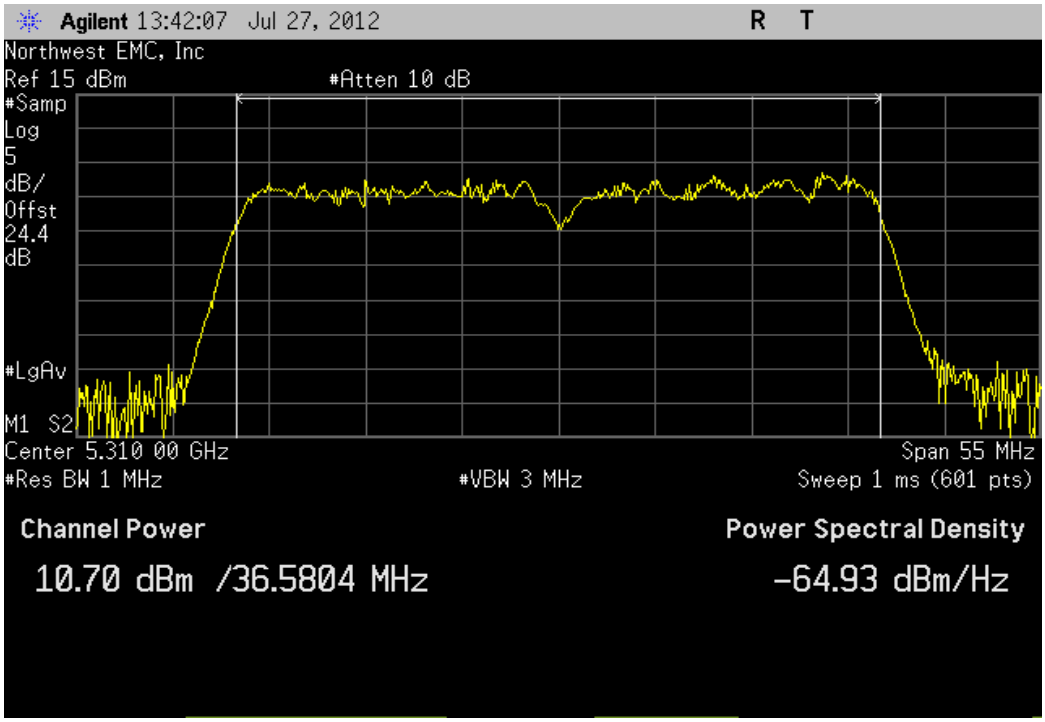
Antenna A, 40MHz Bandwidth , 802.11(n) MCS8, Low Channel 44/48 Fq 5230MHz

				Value	Limit	Result
				10.849 dBm	< 17 dBm	Pass



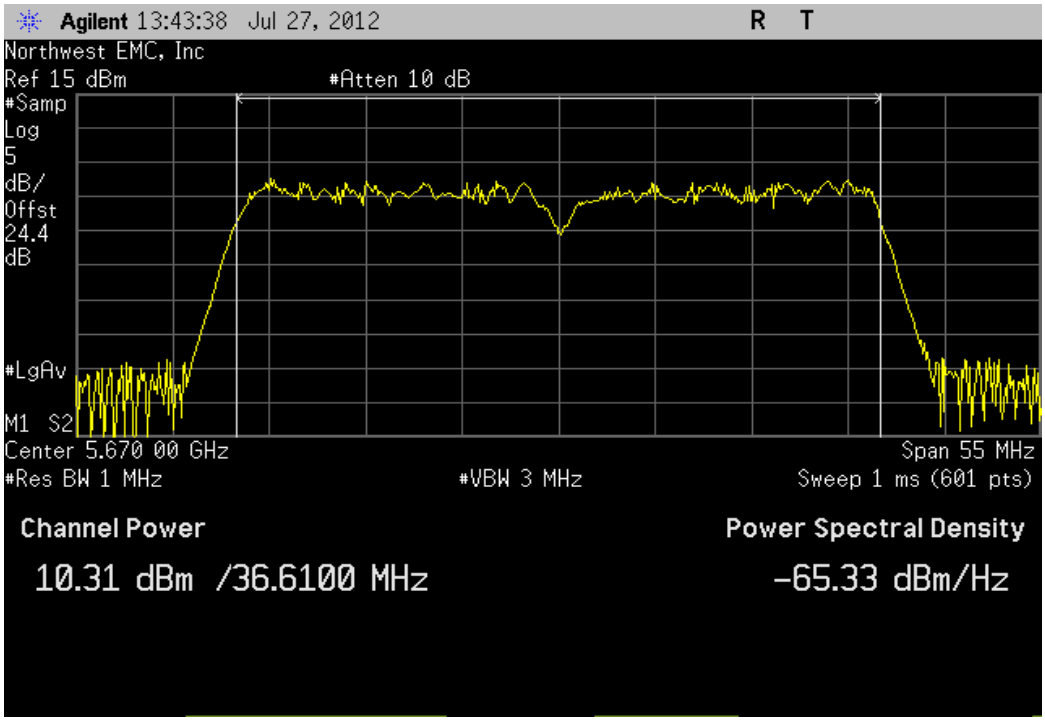
Antenna A, 40MHz Bandwidth , 802.11(n) MCS8, Low Channel 60/64 Fq 5310MHz

				Value	Limit	Result
				10.705 dBm	< 17 dBm	Pass



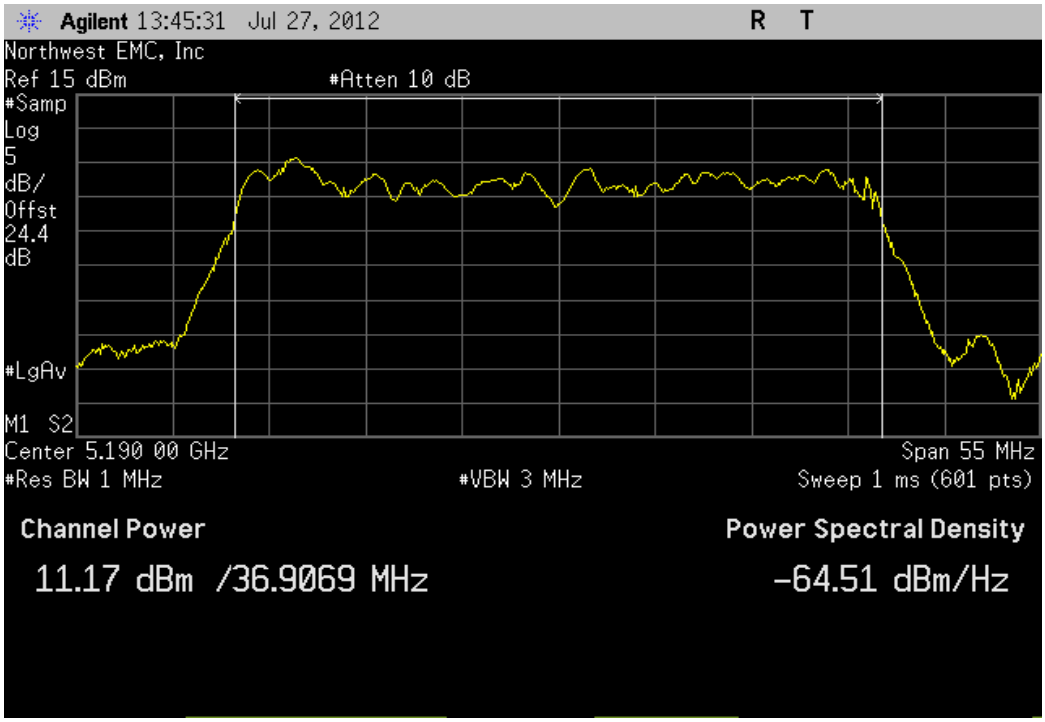
Antenna A, 40MHz Bandwidth , 802.11(n) MCS8, Low Channel 132/136 Fq 5670MHz

				Value	Limit	Result
				10.309 dBm	< 17 dBm	Pass



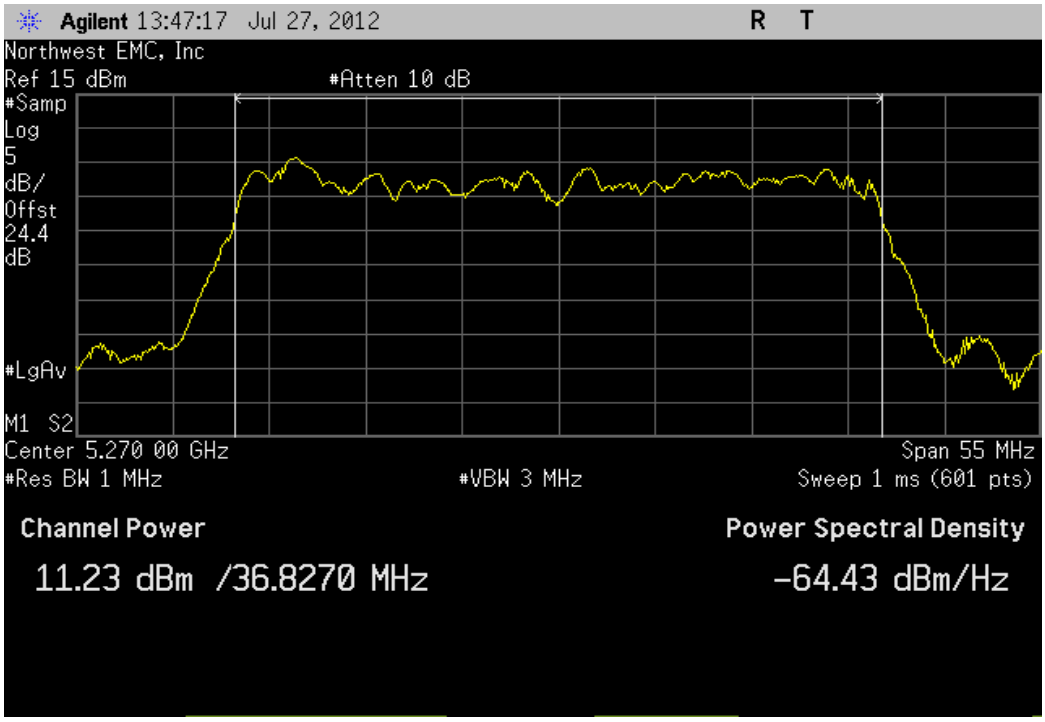
Antenna A, 40MHz Bandwidth , 802.11(n) MCS15, Low Channel 36/40 Fq 5190MHz

				Value	Limit	Result
				11.166 dBm	< 17 dBm	Pass



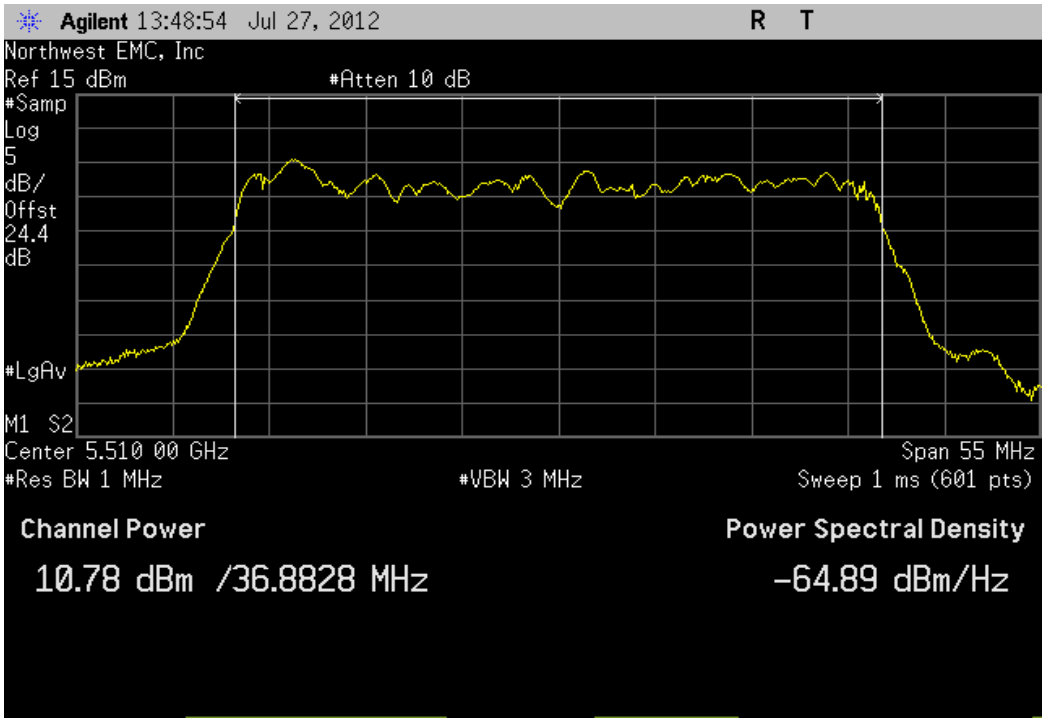
Antenna A, 40MHz Bandwidth , 802.11(n) MCS15, Low Channel 52/56 Fq 5270MHz

				Value	Limit	Result
				11.235 dBm	< 17 dBm	Pass



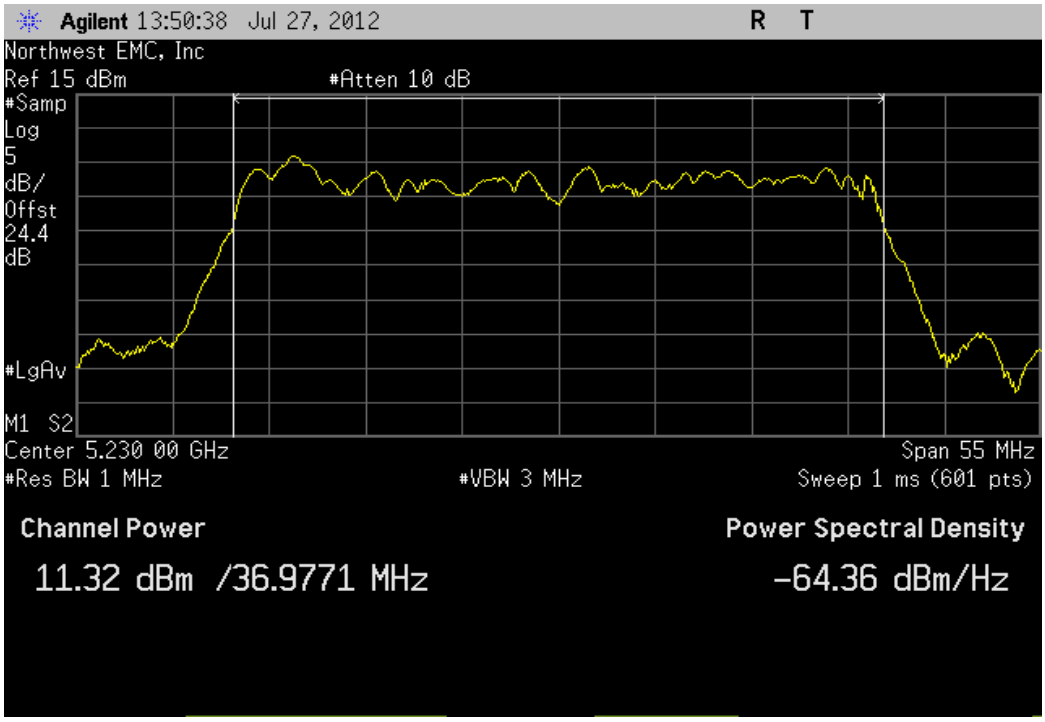
Antenna A, 40MHz Bandwidth , 802.11(n) MCS15, Low Channel 100/104 Fq 5510MHz

				Value	Limit	Result
				10.775 dBm	< 17 dBm	Pass



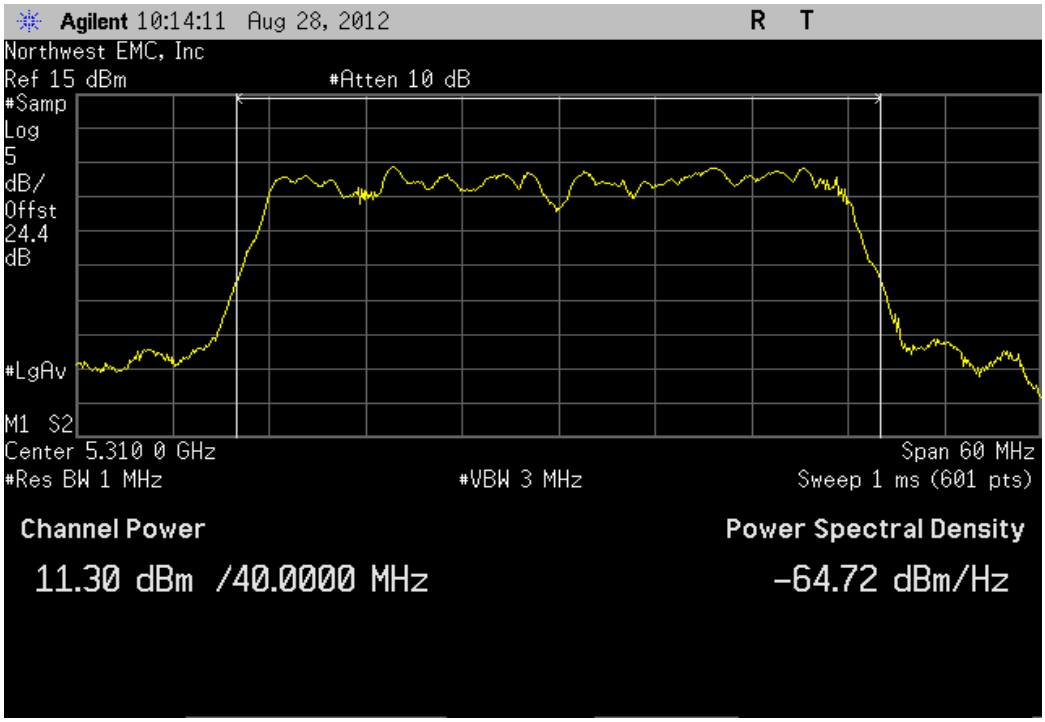
Antenna A, 40MHz Bandwidth , 802.11(n) MCS15, Low Channel 44/48 Fq 5230MHz

				Value	Limit	Result
				11.318 dBm	< 17 dBm	Pass



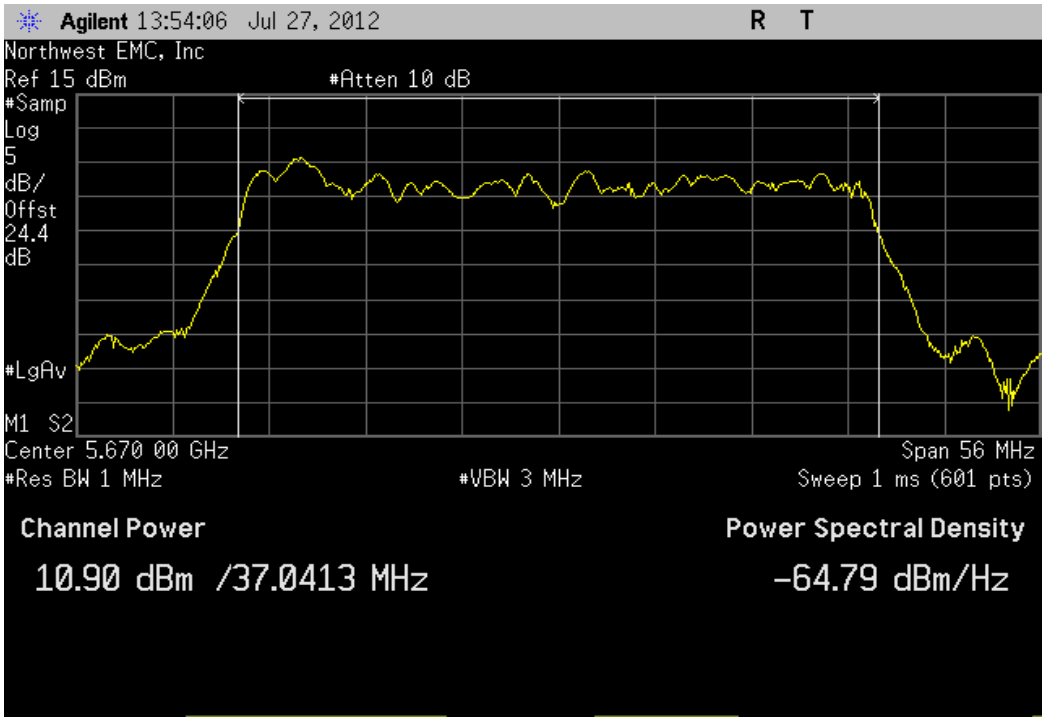
Antenna A, 40MHz Bandwidth , 802.11(n) MCS15, Low Channel 60/64 Fq 5310MHz

				Value	Limit	Result
				11.30 dBm	< 17 dBm	Pass



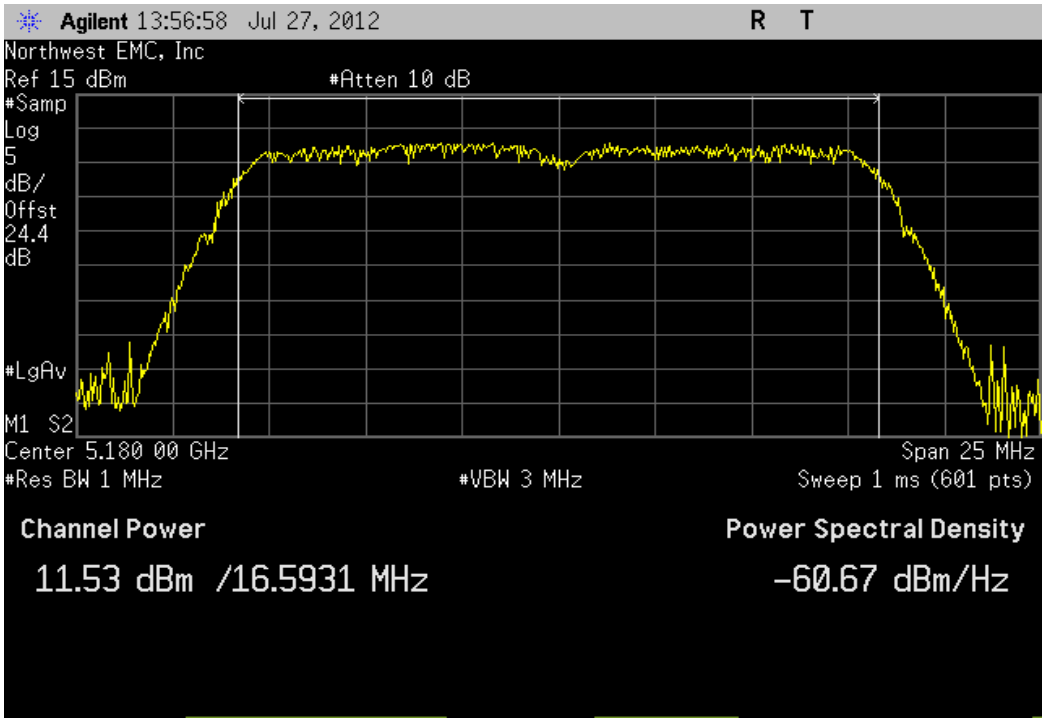
Antenna A, 40MHz Bandwidth , 802.11(n) MCS15, Low Channel 132/136 Fq 5670MHz

				Value	Limit	Result
				10.897 dBm	< 17 dBm	Pass



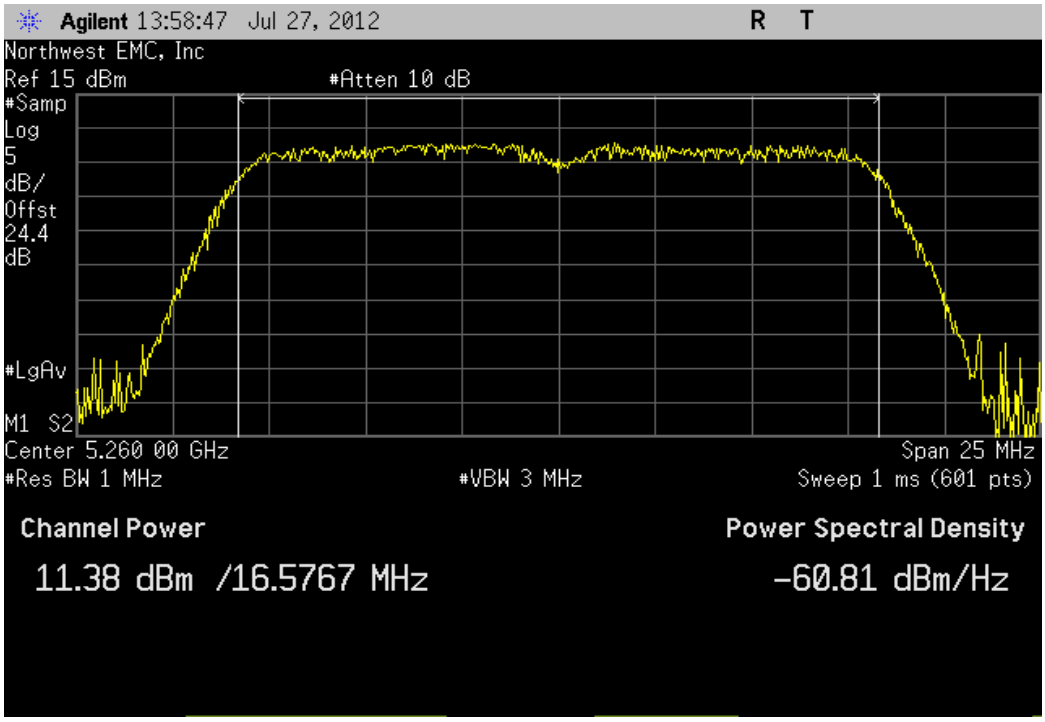
Antenna B, 20MHz Bandwidth , 802.11(a) 6Mbps, Low Channel 36 Fq 5180MHz

				Value	Limit	Result
				11.529 dBm	< 17 dBm	Pass



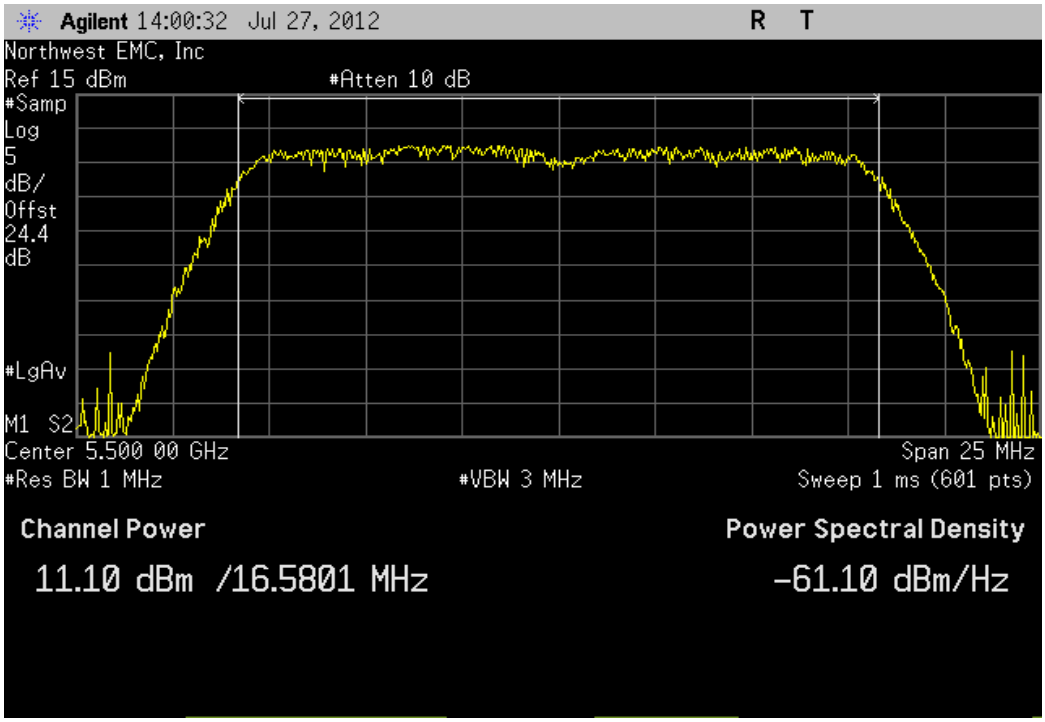
Antenna B, 20MHz Bandwidth , 802.11(a) 6Mbps, Low Channel 52 Fq 5260MHz

				Value	Limit	Result
				11.383 dBm	< 24 dBm	Pass



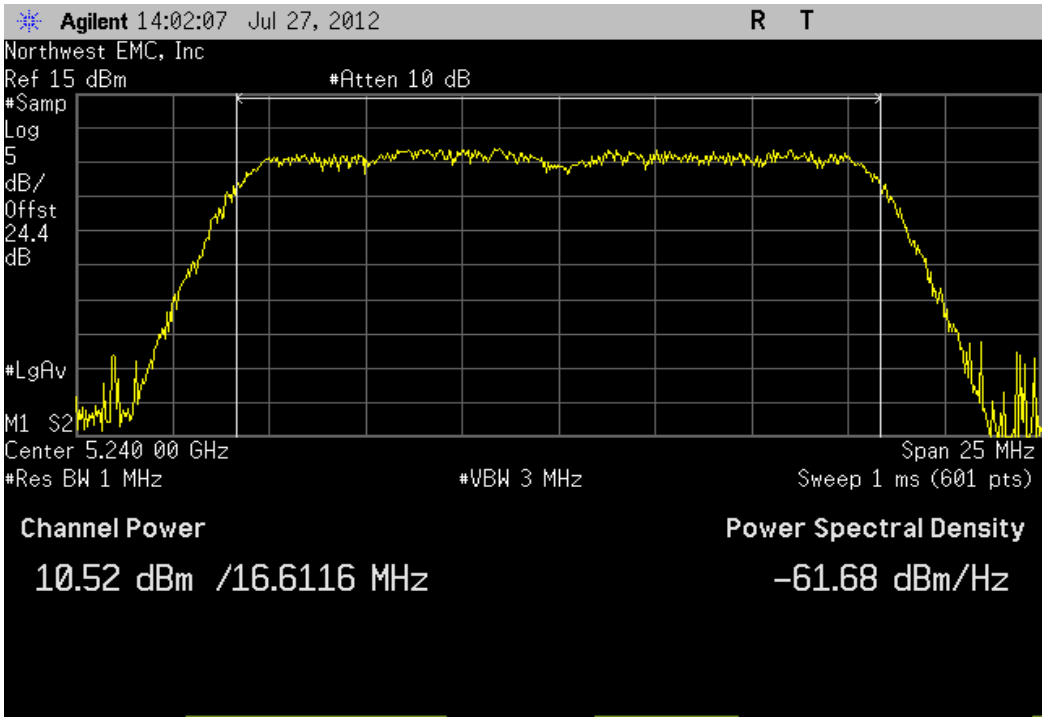
Antenna B, 20MHz Bandwidth , 802.11(a) 6Mbps, Low Channel 100 Fq 5500MHz

				Value	Limit	Result
				11.098 dBm	< 24 dBm	Pass



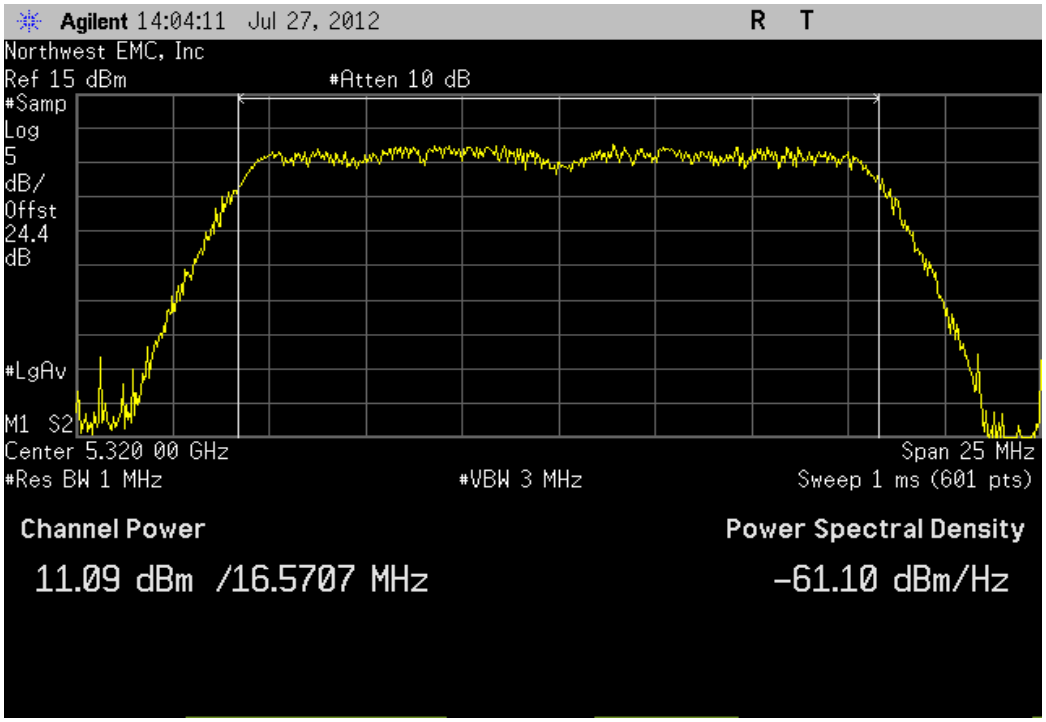
Antenna B, 20MHz Bandwidth , 802.11(a) 6Mbps, High Channel 48 Fq 5240MHz

				Value	Limit	Result
				10.521 dBm	< 17 dBm	Pass



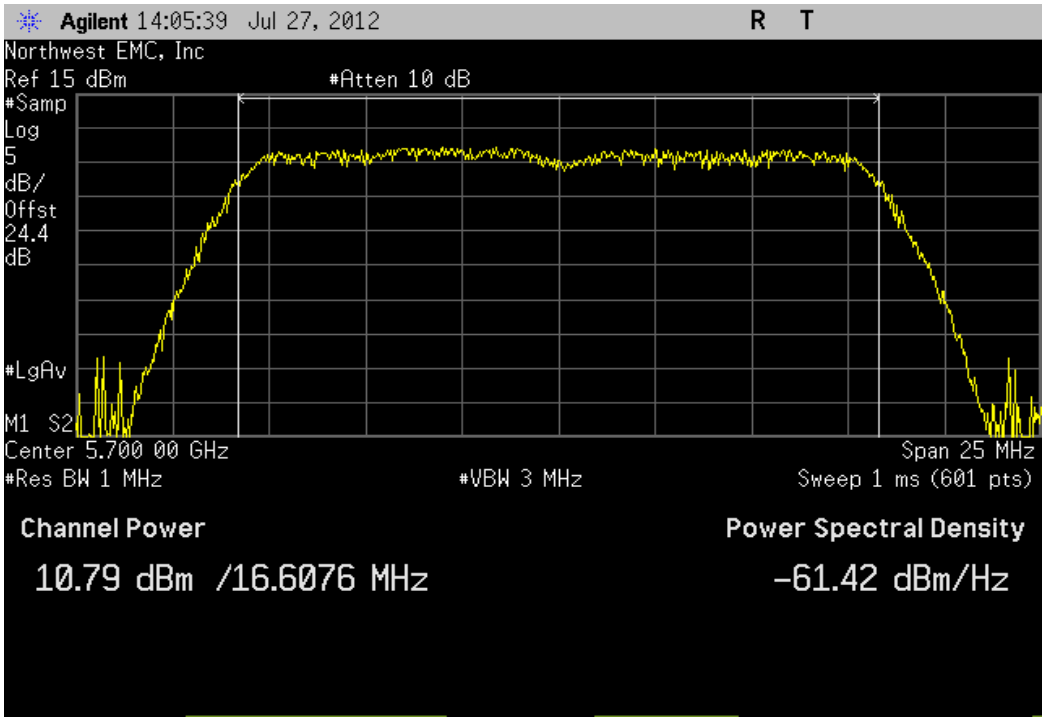
Antenna B, 20MHz Bandwidth , 802.11(a) 6Mbps, High Channel 64 Fq 5320MHz

				Value	Limit	Result
				11.093 dBm	< 24 dBm	Pass



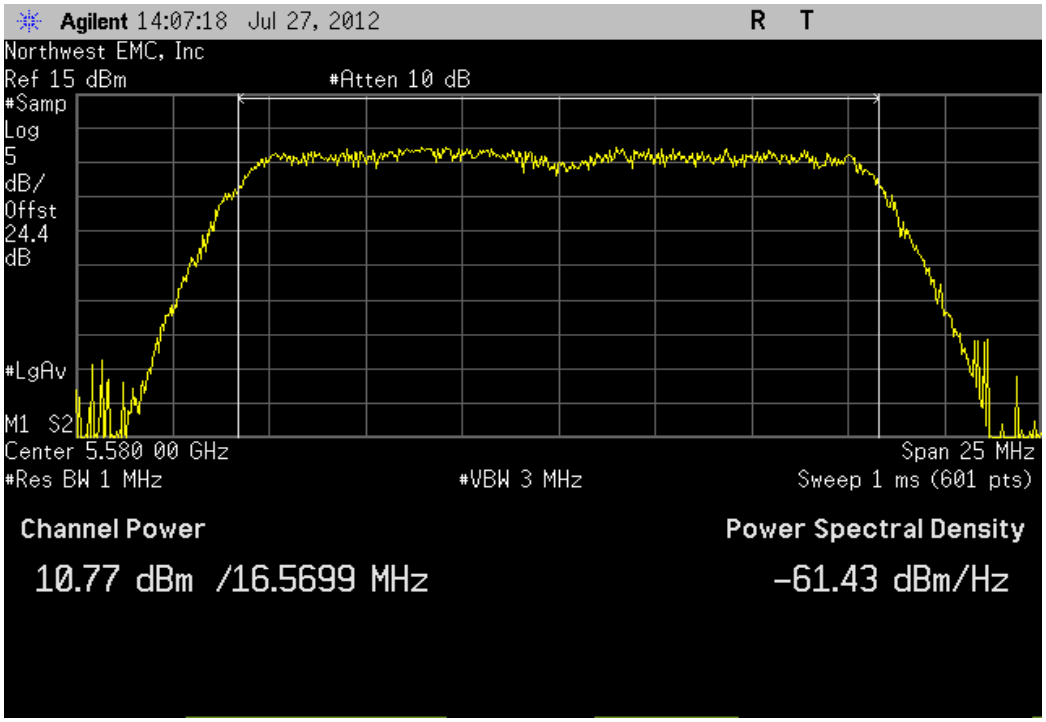
Antenna B, 20MHz Bandwidth , 802.11(a) 6Mbps, High Channel 140 Fq 5700MHz

				Value	Limit	Result
				10.788 dBm	< 24 dBm	Pass



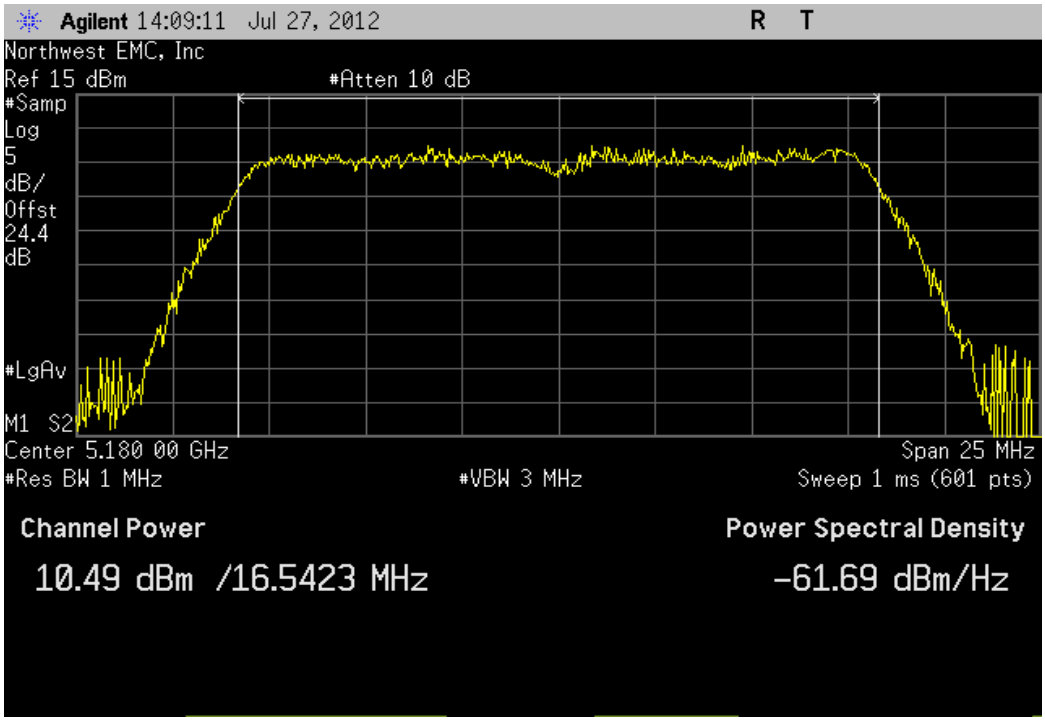
Antenna B, 20MHz Bandwidth , 802.11(a) 6Mbps, Mid Channel 116 Fq 5580 MHz

				Value	Limit	Result
				10.765 dBm	< 24 dBm	Pass



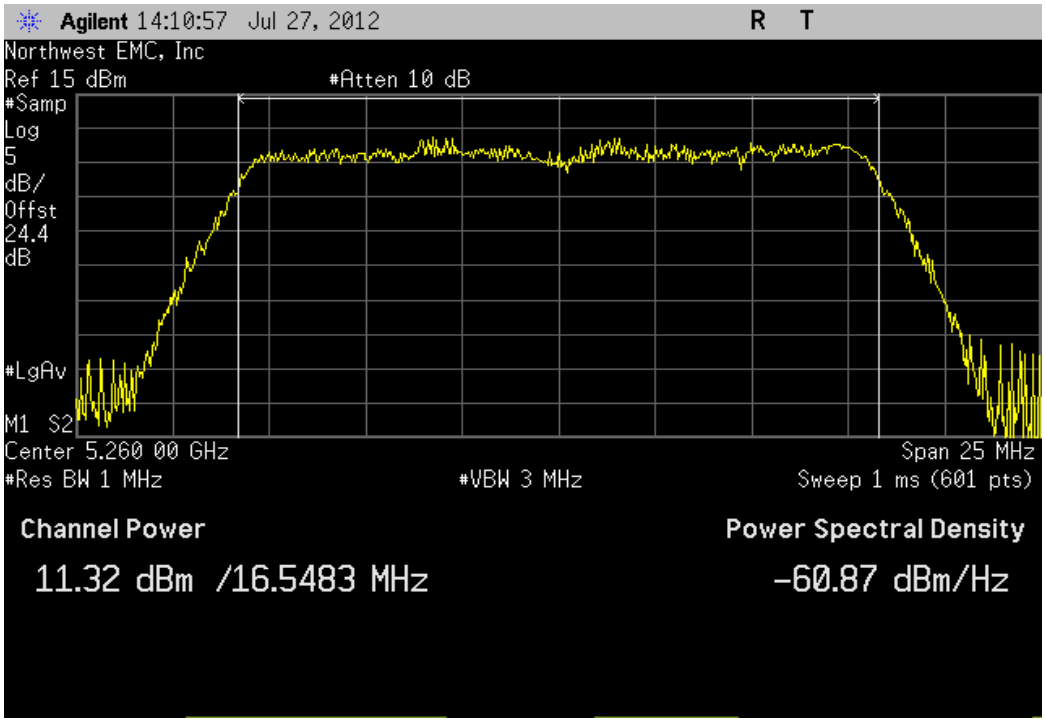
Antenna B, 20MHz Bandwidth , 802.11(a) 36Mbps, Low Channel 36 Fq 5180MHz

				Value	Limit	Result
				10.492 dBm	< 17 dBm	Pass



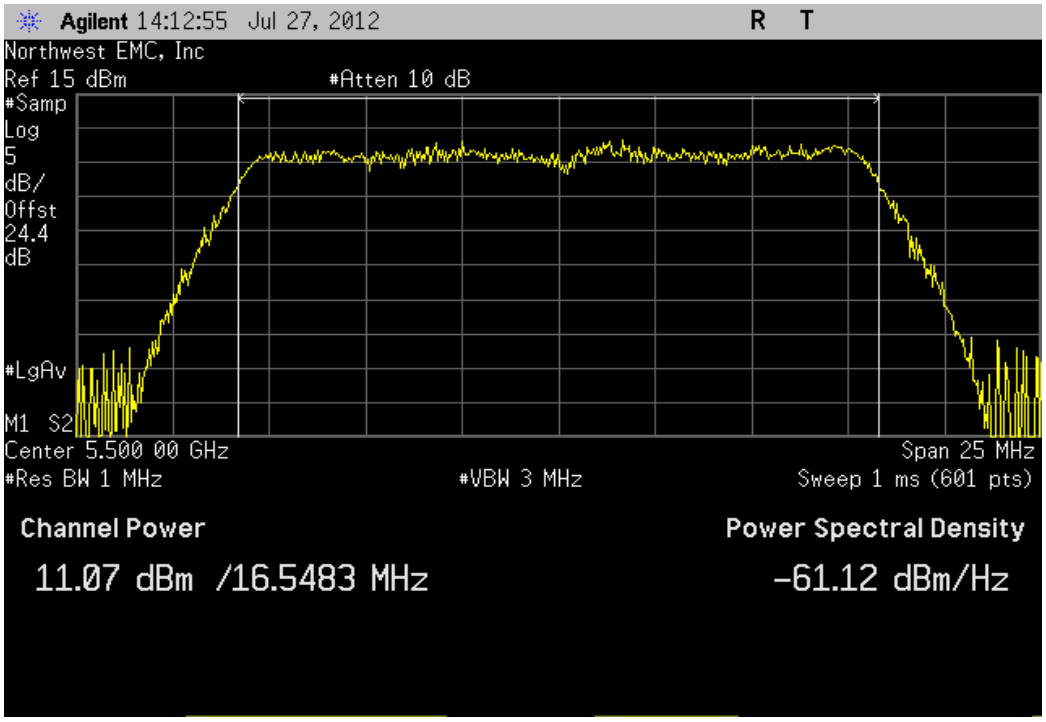
Antenna B, 20MHz Bandwidth , 802.11(a) 36Mbps, Low Channel 52 Fq 5260MHz

				Value	Limit	Result
				11.32 dBm	< 24 dBm	Pass



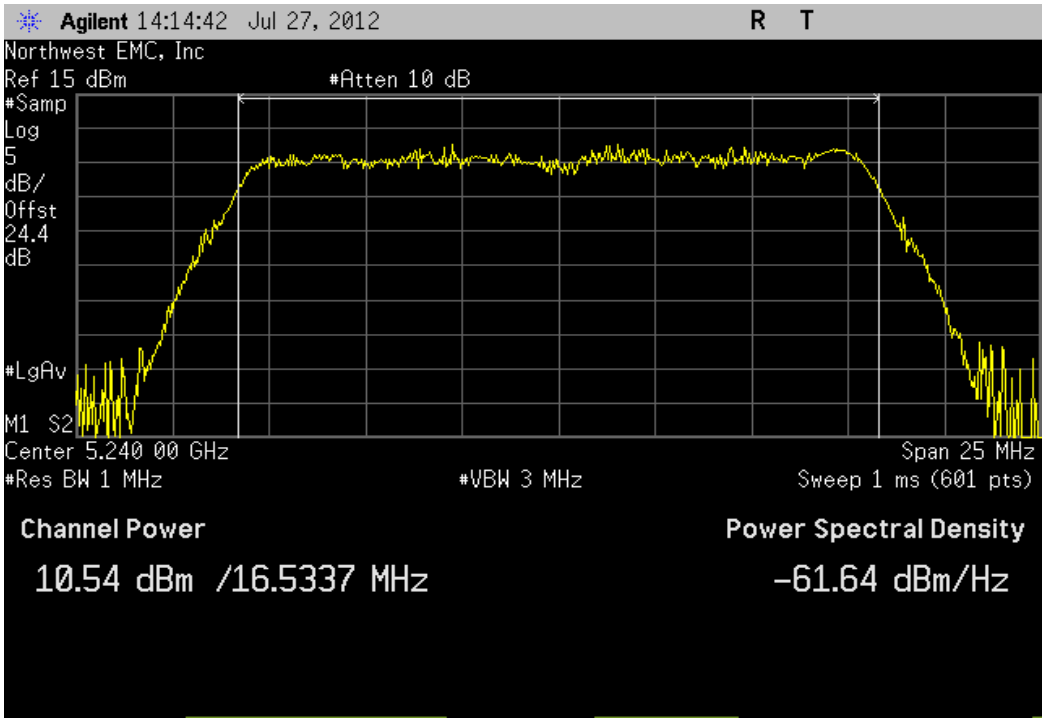
Antenna B, 20MHz Bandwidth , 802.11(a) 36Mbps, Low Channel 100 Fq 5500MHz

				Value	Limit	Result
				11.072 dBm	< 24 dBm	Pass



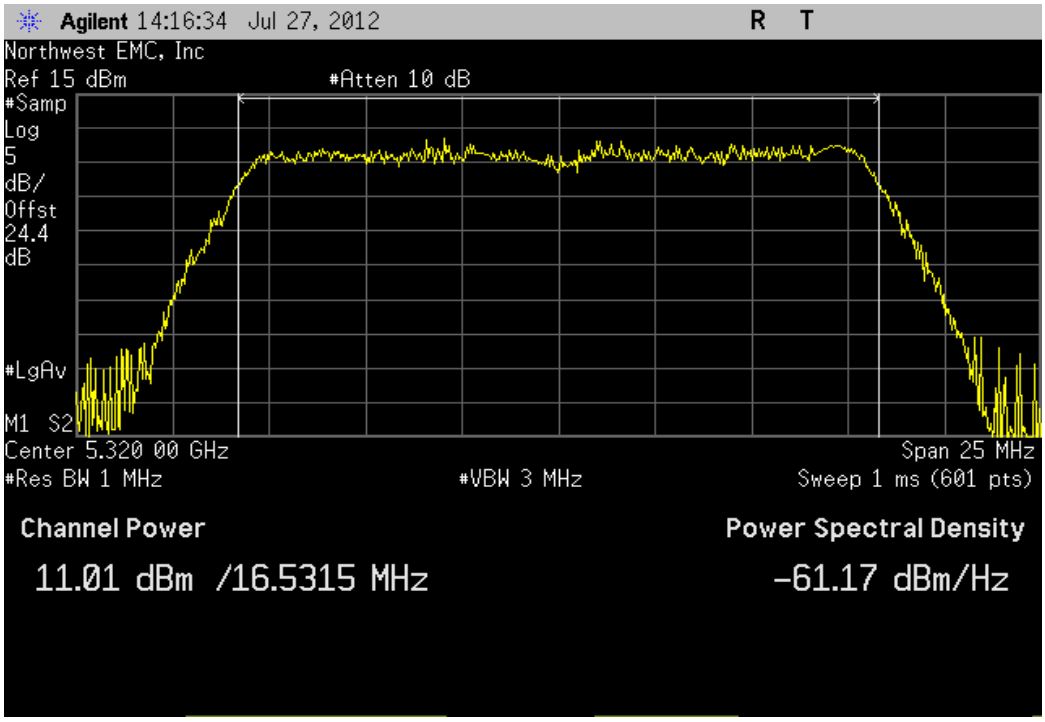
Antenna B, 20MHz Bandwidth , 802.11(a) 36Mbps, High Channel 48 Fq 5240MHz

				Value	Limit	Result
				10.539 dBm	< 17 dBm	Pass



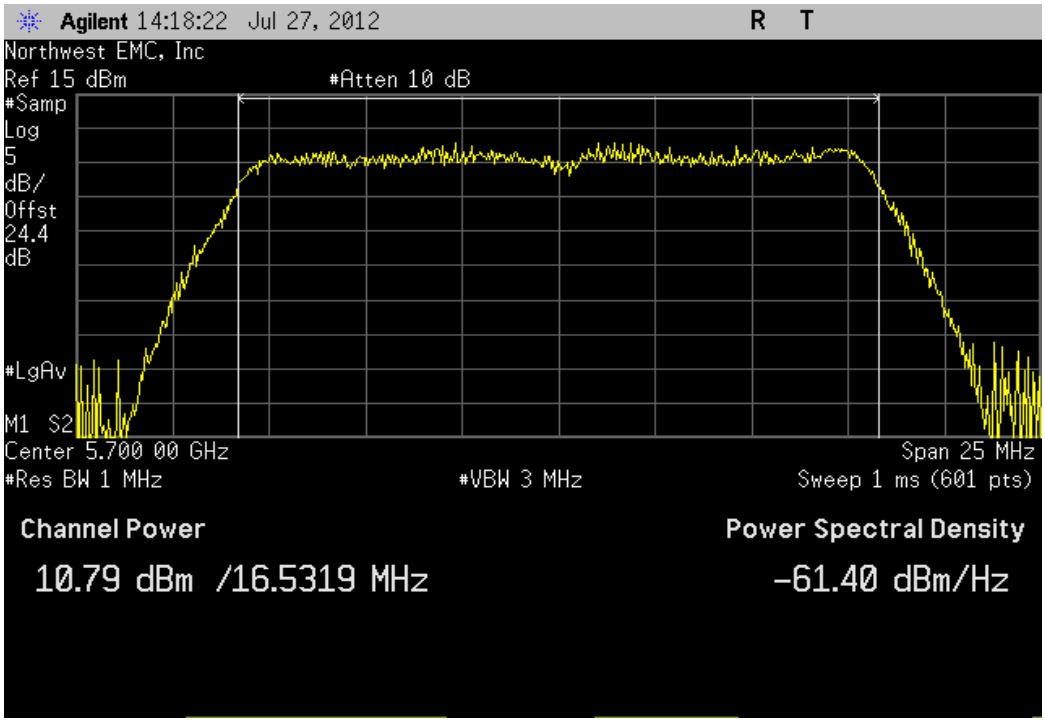
Antenna B, 20MHz Bandwidth , 802.11(a) 36Mbps, High Channel 64 Fq 5320MHz

				Value	Limit	Result
				11.014 dBm	< 24 dBm	Pass



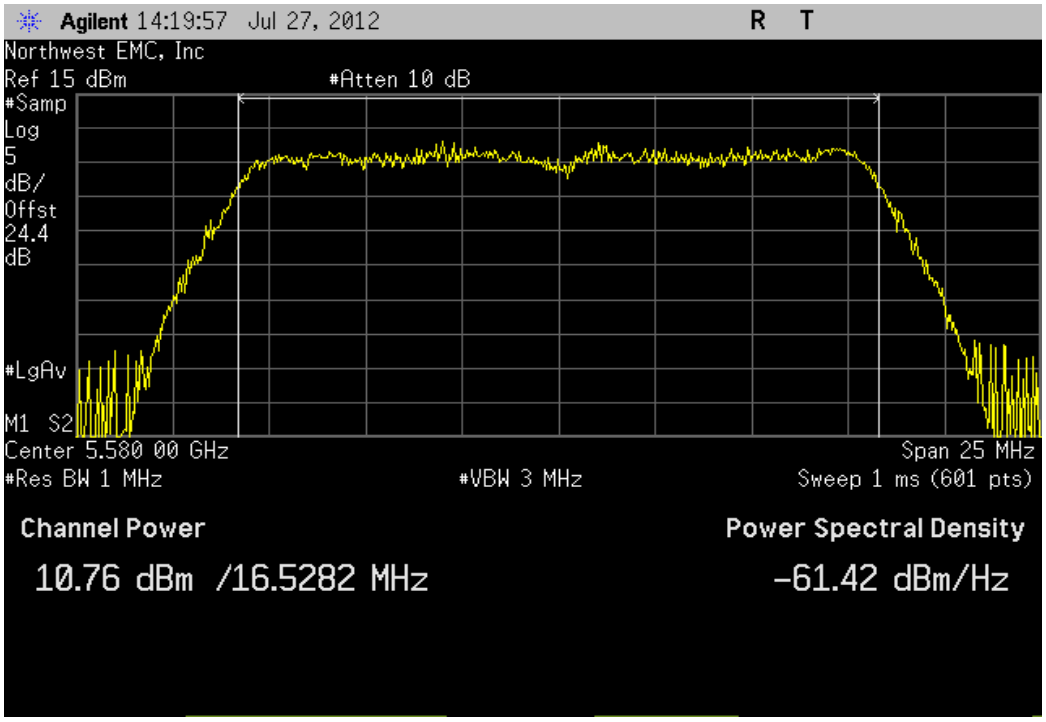
Antenna B, 20MHz Bandwidth , 802.11(a) 36Mbps, High Channel 140 Fq 5700MHz

				Value	Limit	Result
				10.788 dBm	< 24 dBm	Pass



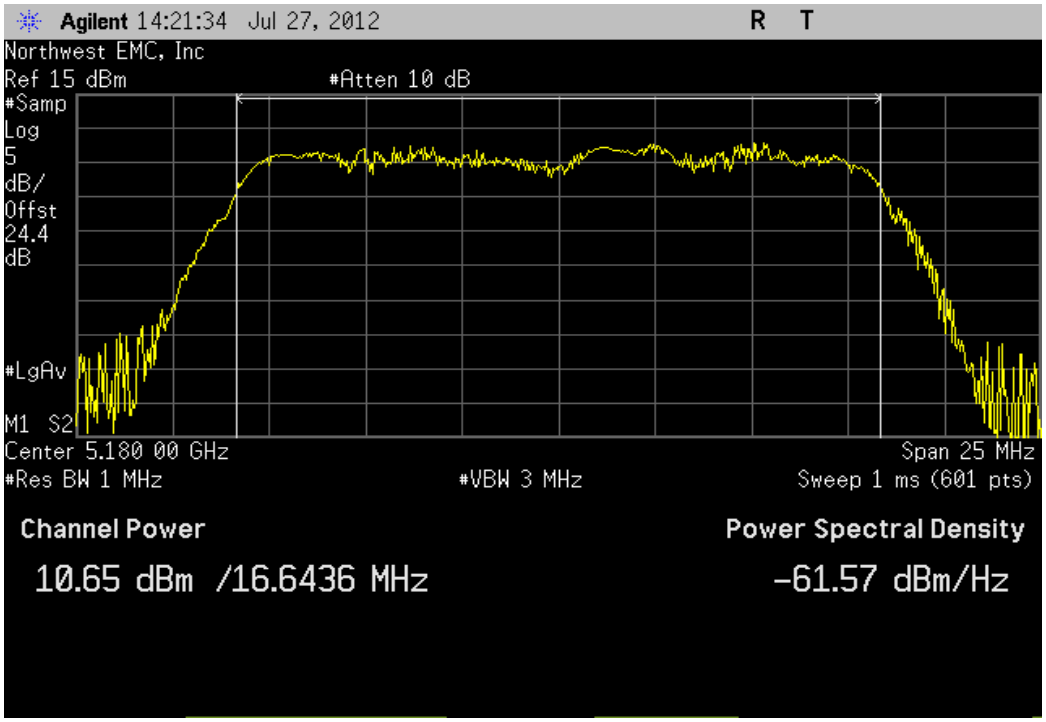
Antenna B, 20MHz Bandwidth , 802.11(a) 36Mbps, Mid Channel 116 Fq 5580 MHz

				Value	Limit	Result
				10.763 dBm	< 24 dBm	Pass



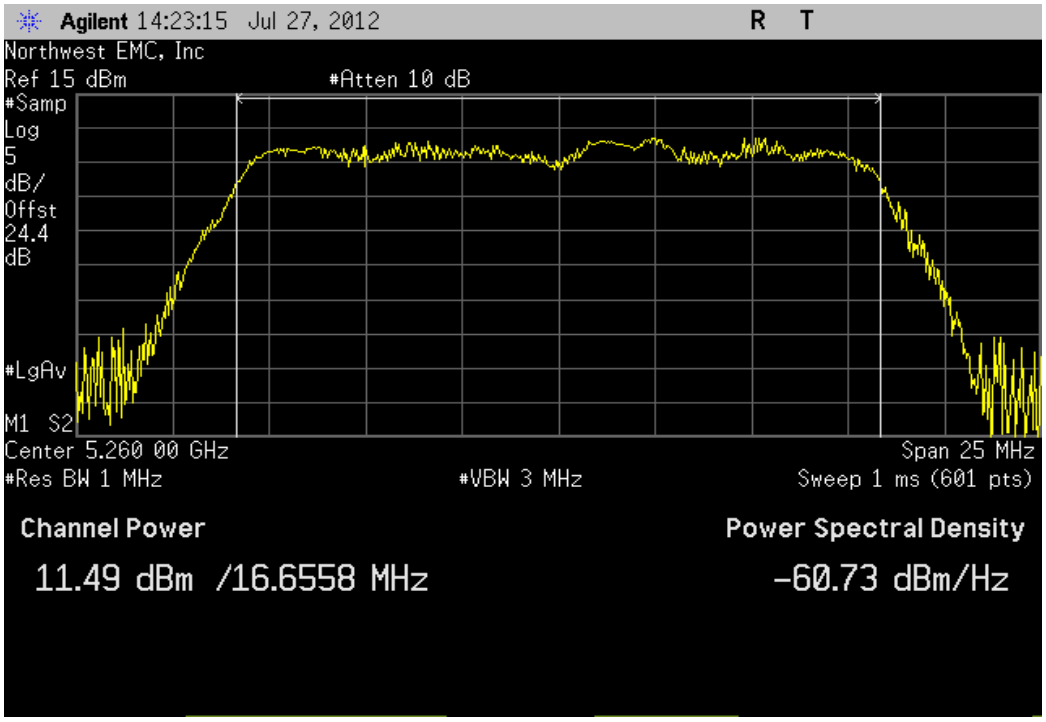
Antenna B, 20MHz Bandwidth , 802.11(a) 54Mbps, Low Channel 36 Fq 5180MHz

				Value	Limit	Result
				10.647 dBm	< 17 dBm	Pass



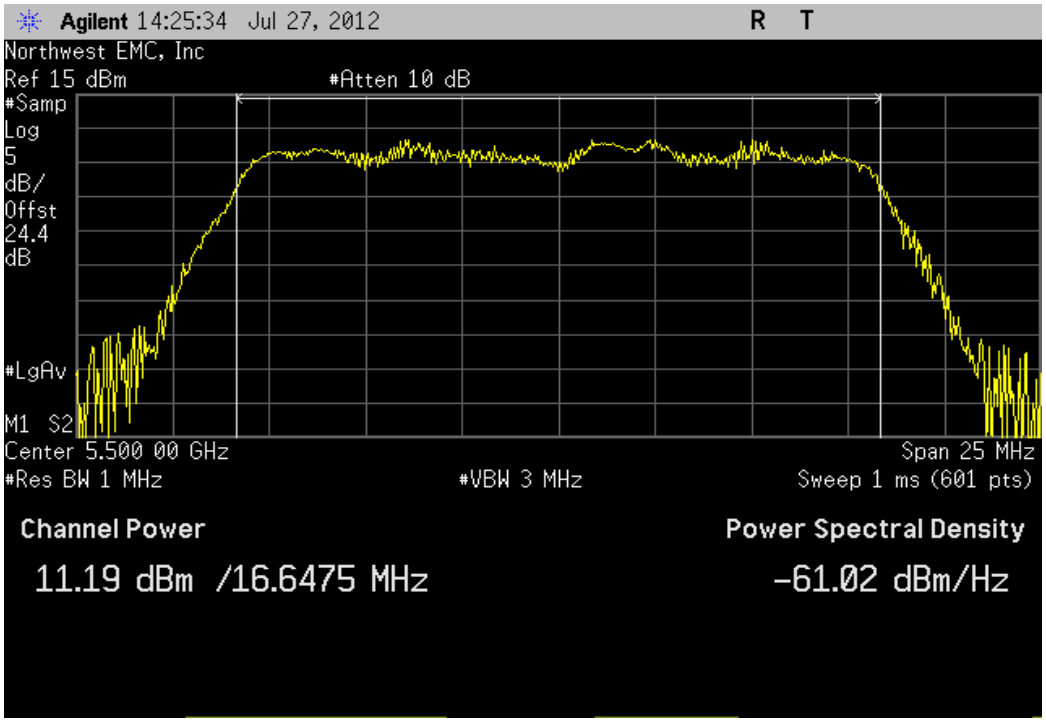
Antenna B, 20MHz Bandwidth , 802.11(a) 54Mbps, Low Channel 52 Fq 5260MHz

				Value	Limit	Result
				11.488 dBm	< 24 dBm	Pass



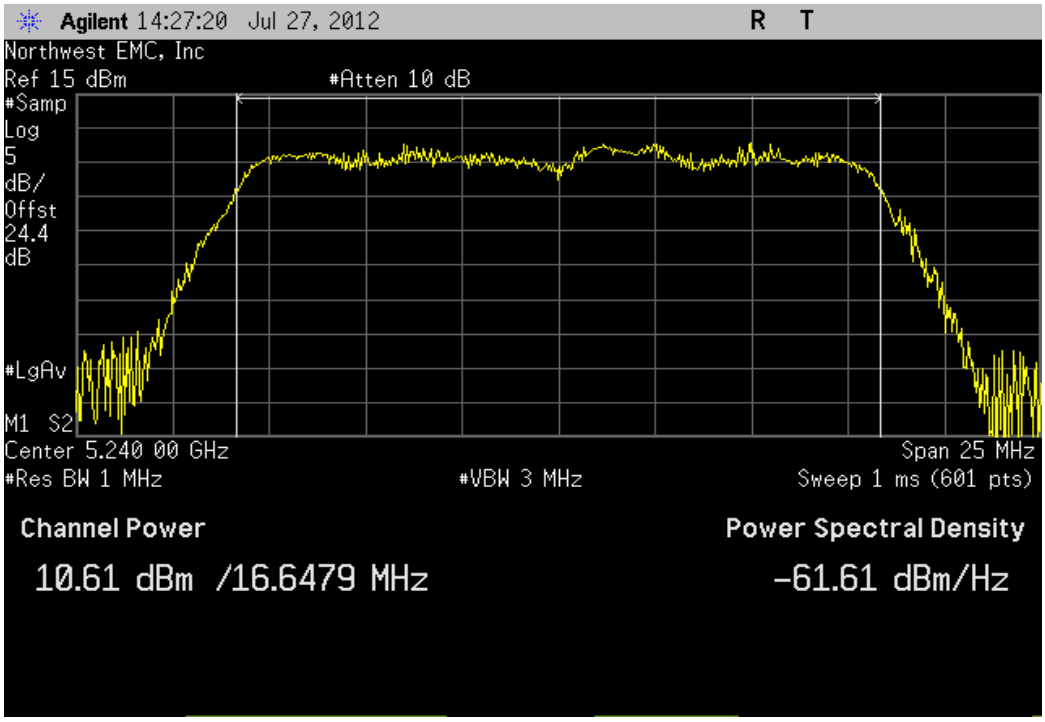
Antenna B, 20MHz Bandwidth , 802.11(a) 54Mbps, Low Channel 100 Fq 5500MHz

				Value	Limit	Result
				11.189 dBm	< 24 dBm	Pass



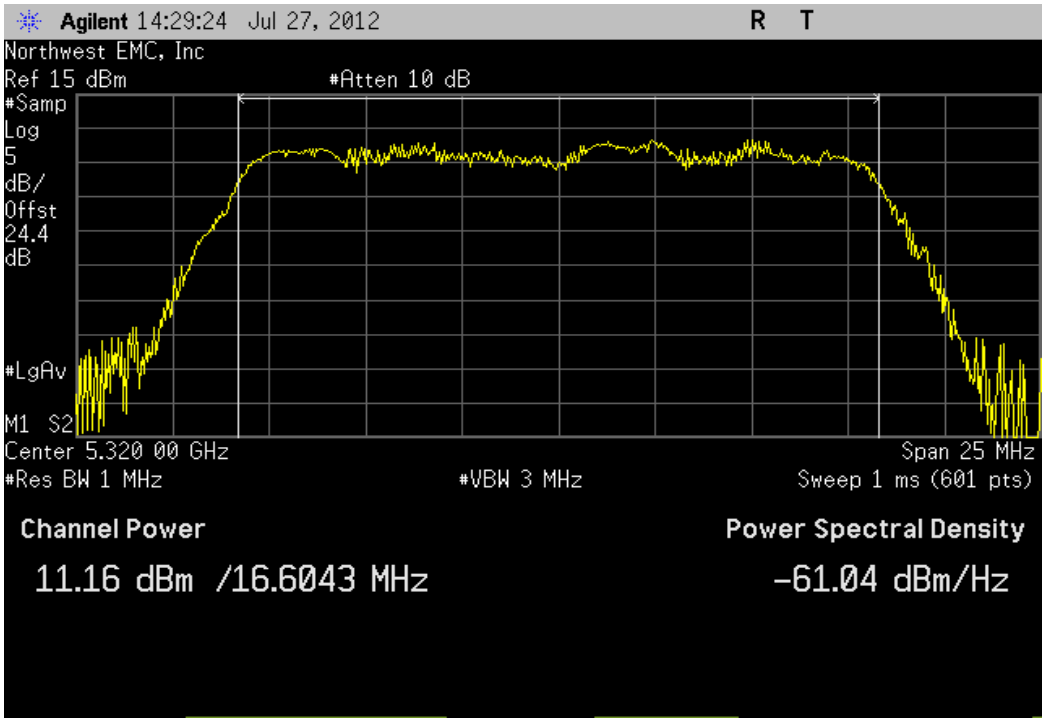
Antenna B, 20MHz Bandwidth , 802.11(a) 54Mbps, High Channel 48 Fq 5240MHz

				Value	Limit	Result
				10.608 dBm	< 17 dBm	Pass



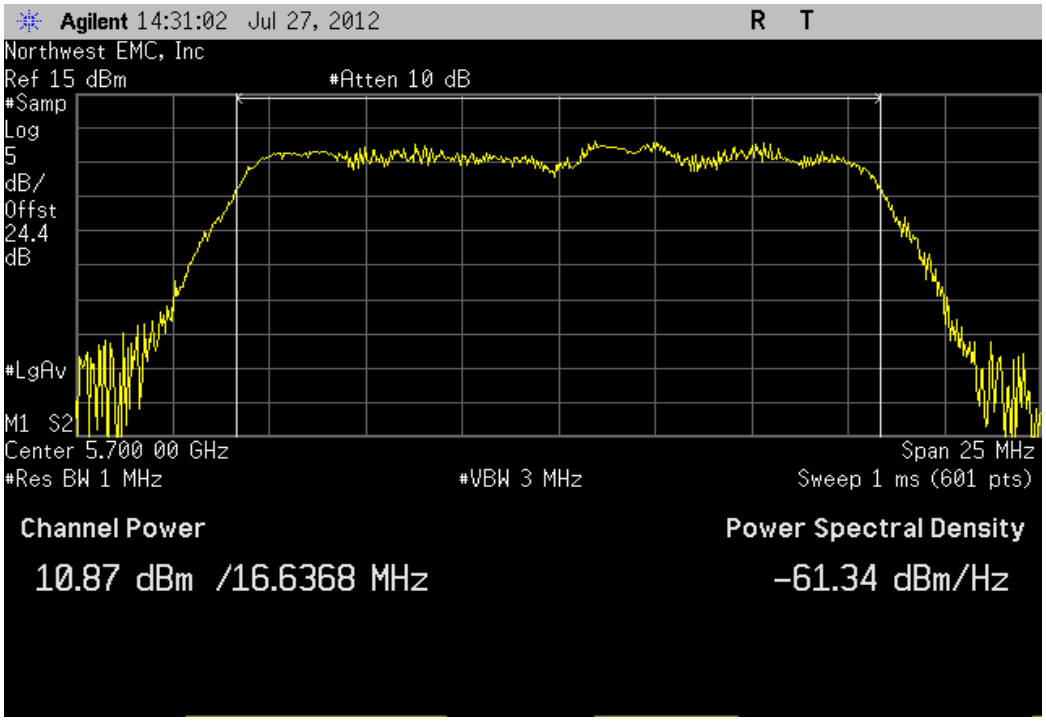
Antenna B, 20MHz Bandwidth , 802.11(a) 54Mbps, High Channel 64 Fq 5320MHz

				Value	Limit	Result
				11.163 dBm	< 24 dBm	Pass



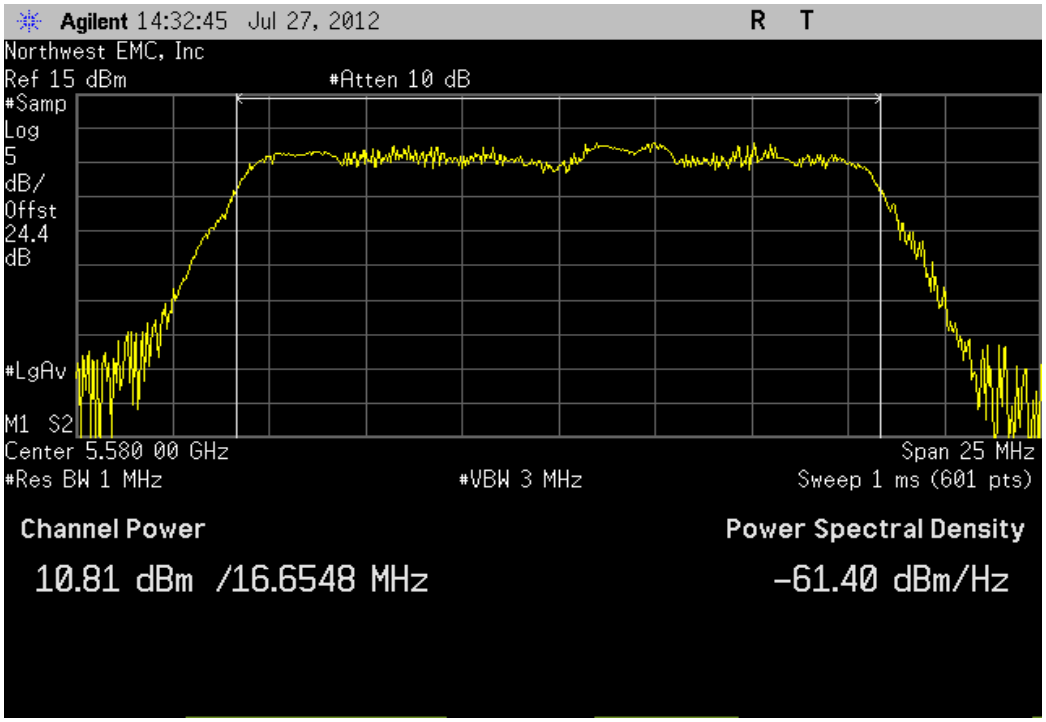
Antenna B, 20MHz Bandwidth , 802.11(a) 54Mbps, High Channel 140 Fq 5700MHz

				Value	Limit	Result
				10.871 dBm	< 24 dBm	Pass



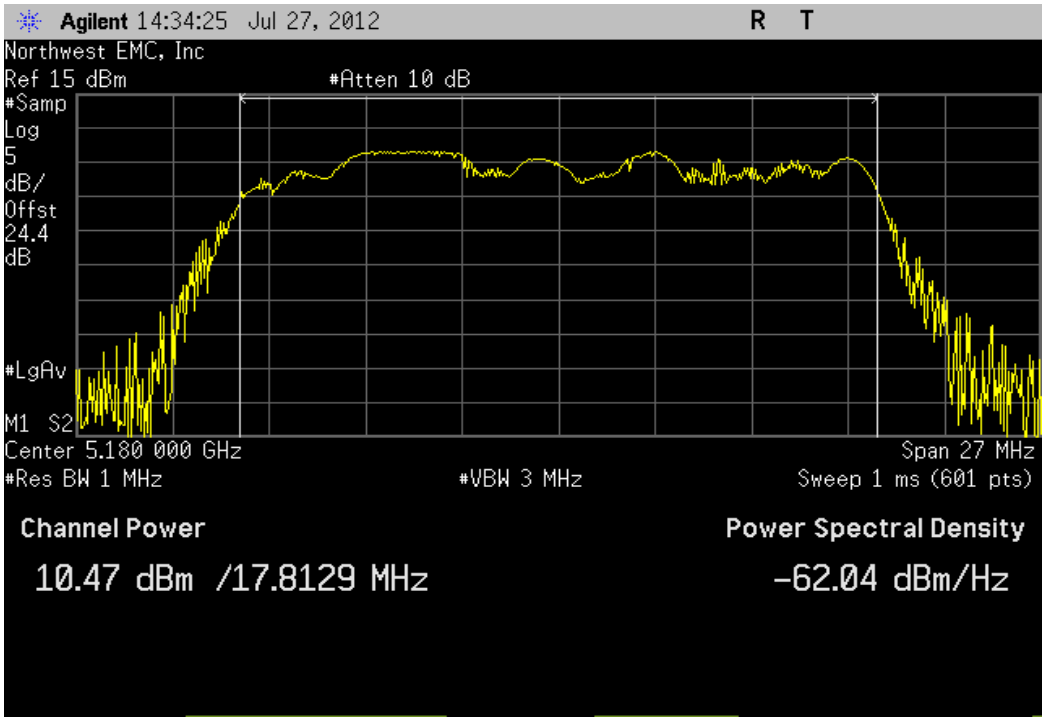
Antenna B, 20MHz Bandwidth , 802.11(a) 54Mbps, Mid Channel 116 Fq 5580 MHz

				Value	Limit	Result
				10.813 dBm	< 24 dBm	Pass



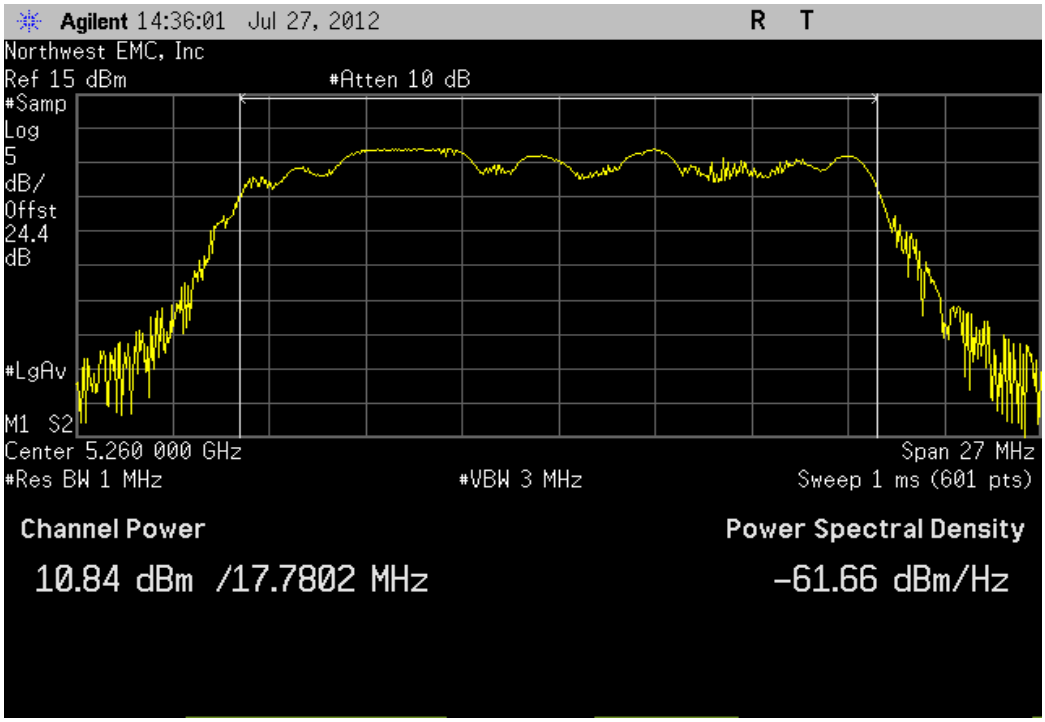
Antenna B, 20MHz Bandwidth , 802.11(n) MCS0, Low Channel 36 Fq 5180MHz

				Value	Limit	Result
				10.466 dBm	< 17 dBm	Pass



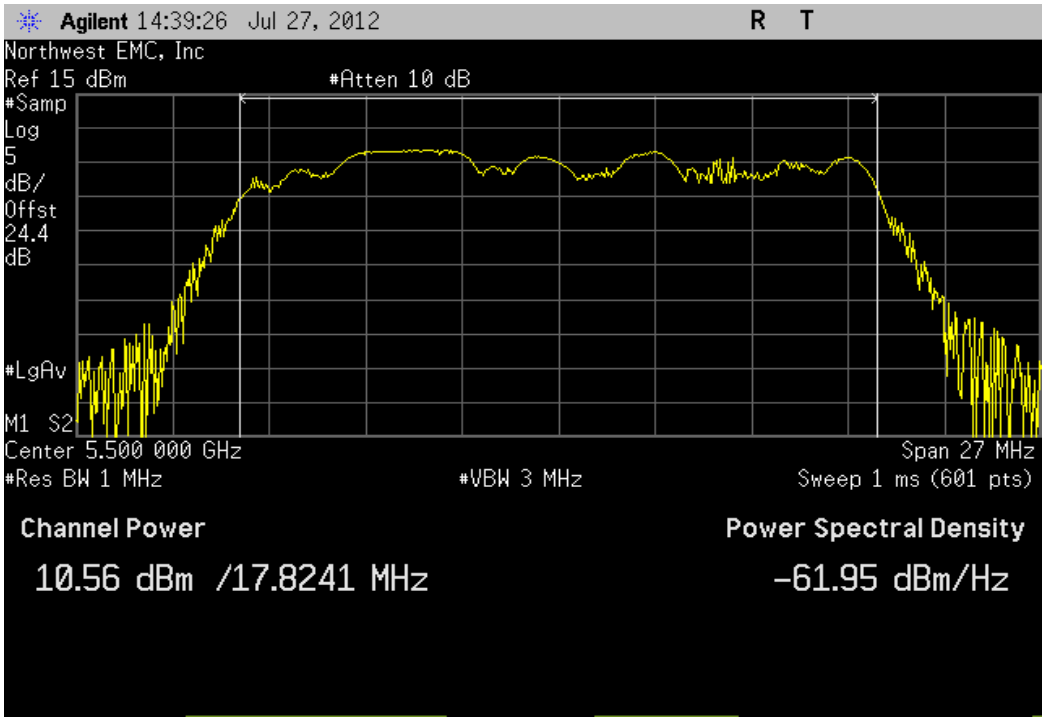
Antenna B, 20MHz Bandwidth , 802.11(n) MCS0, Low Channel 52 Fq 5260MHz

				Value	Limit	Result
				10.837 dBm	< 24 dBm	Pass



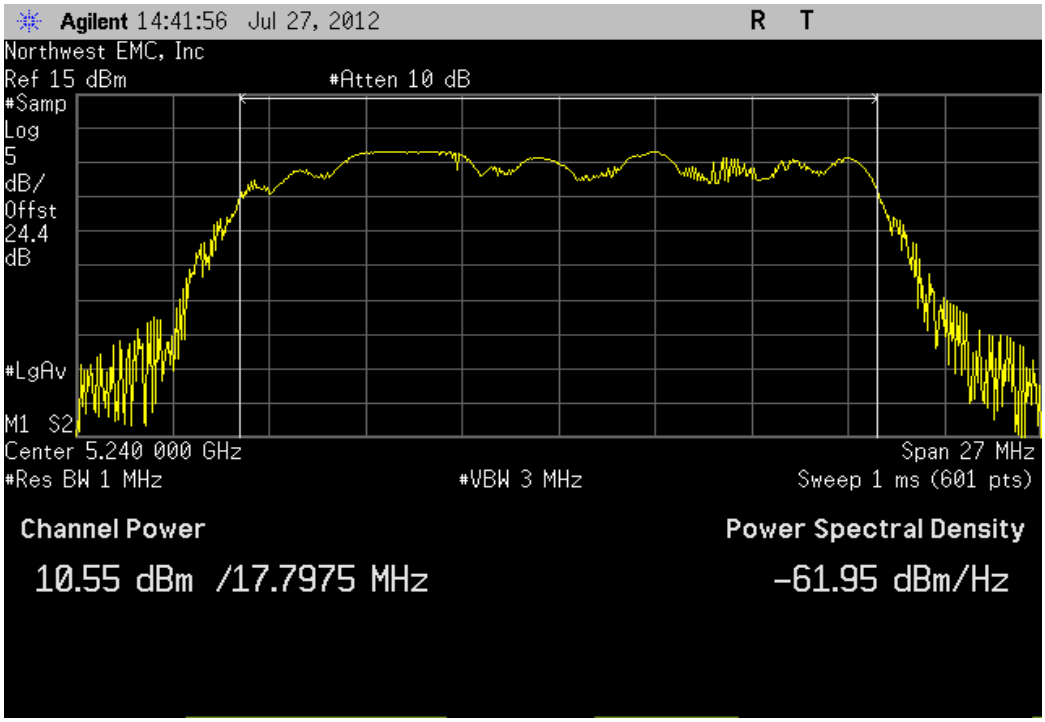
Antenna B, 20MHz Bandwidth , 802.11(n) MCS0, Low Channel 100 Fq 5500MHz

				Value	Limit	Result
				10.556 dBm	< 24 dBm	Pass



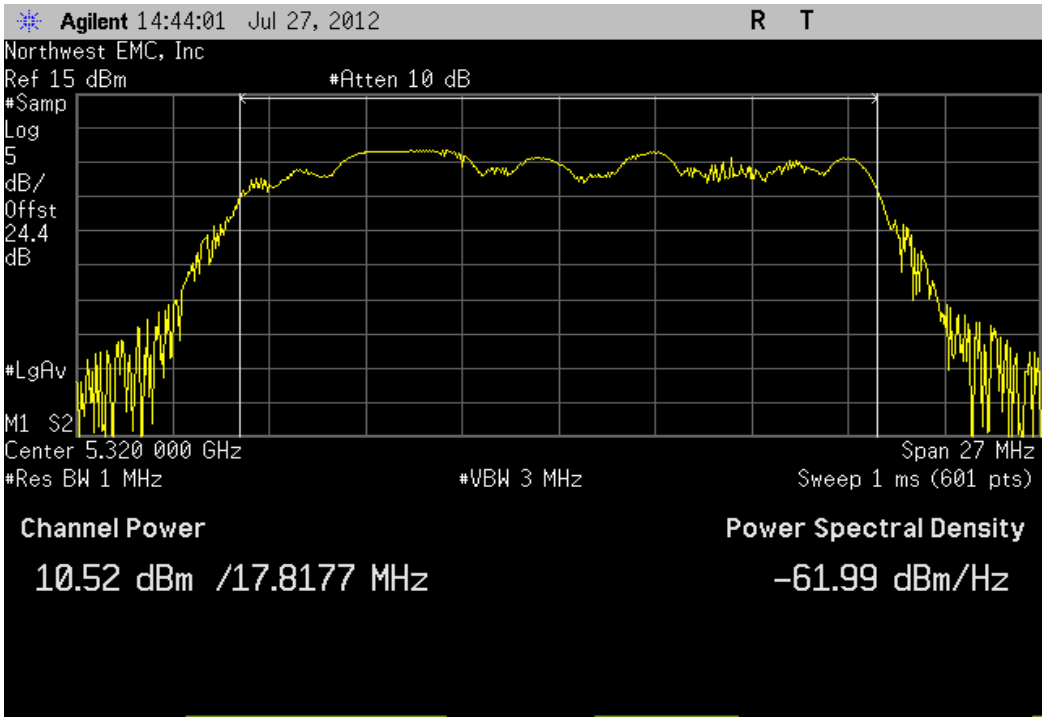
Antenna B, 20MHz Bandwidth , 802.11(n) MCS0, High Channel 48 Fq 5240MHz

				Value	Limit	Result
				10.549 dBm	< 17 dBm	Pass



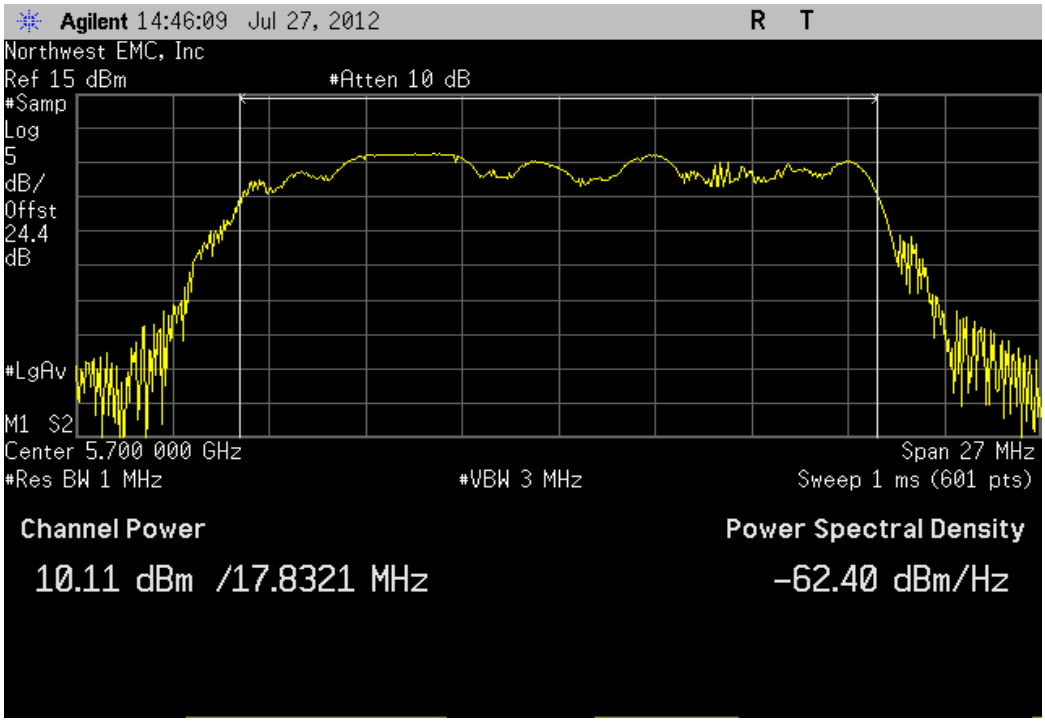
Antenna B, 20MHz Bandwidth , 802.11(n) MCS0, High Channel 64 Fq 5320MHz

				Value	Limit	Result
				10.521 dBm	< 24 dBm	Pass



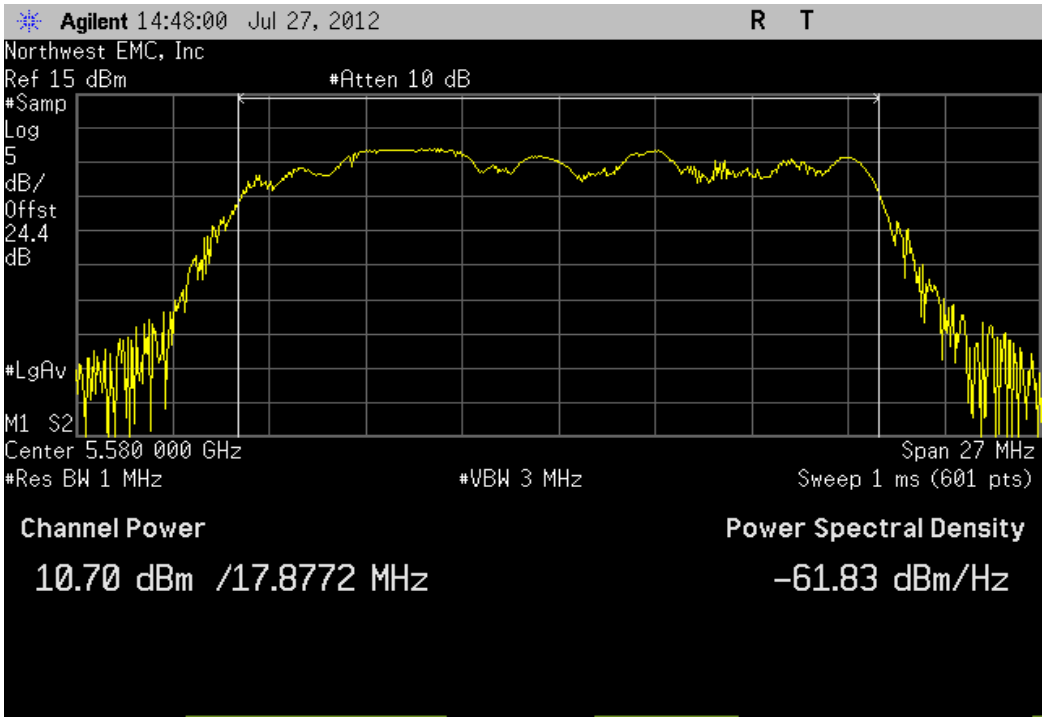
Antenna B, 20MHz Bandwidth , 802.11(n) MCS0, High Channel 140 Fq 5700MHz

				Value	Limit	Result
				10.115 dBm	< 24 dBm	Pass



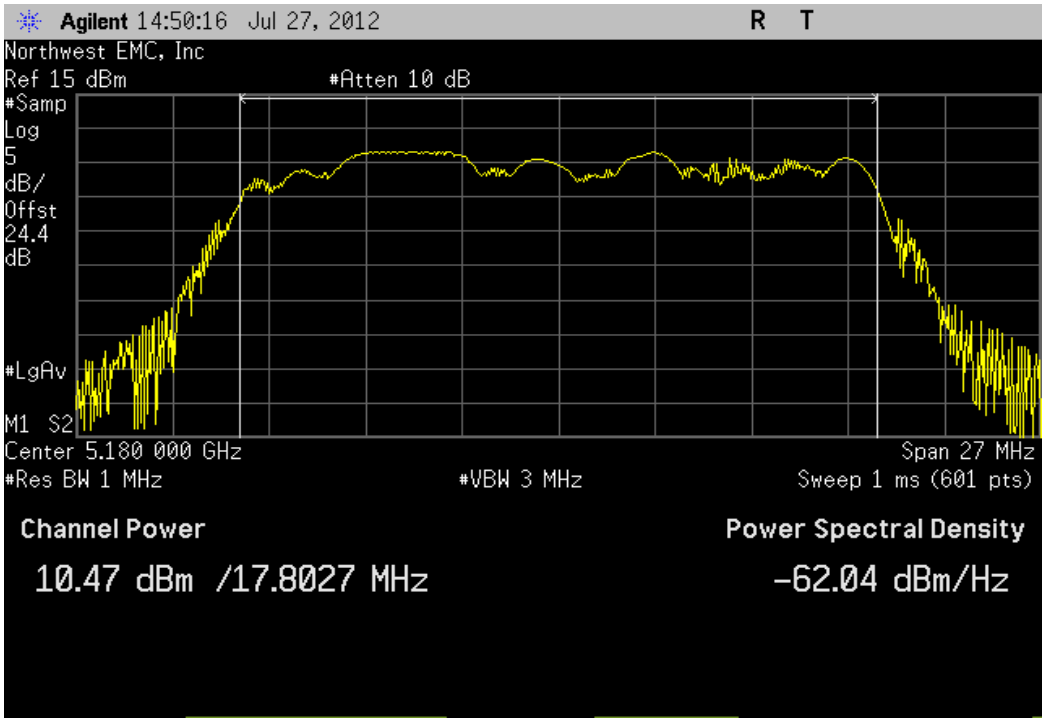
Antenna B, 20MHz Bandwidth , 802.11(n) MCS0, Mid Channel 116 Fq 5580 MHz

				Value	Limit	Result
				10.696 dBm	< 24 dBm	Pass



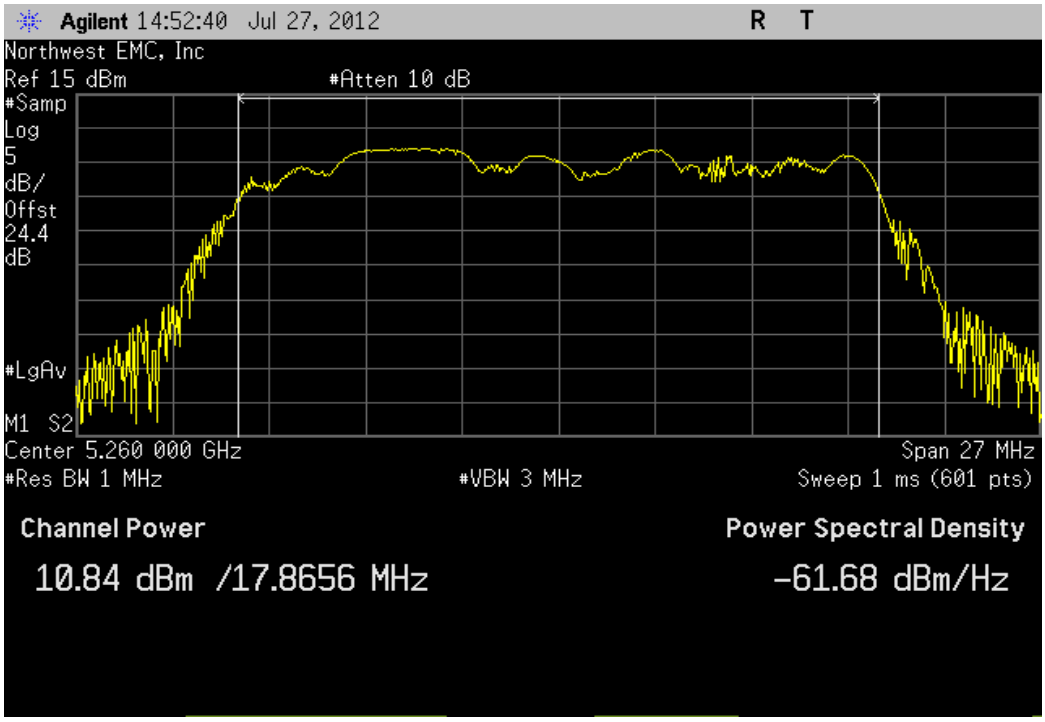
Antenna B, 20MHz Bandwidth , 802.11(n) MCS7, Low Channel 36 Fq 5180MHz

				Value	Limit	Result
				10.468 dBm	< 17 dBm	Pass



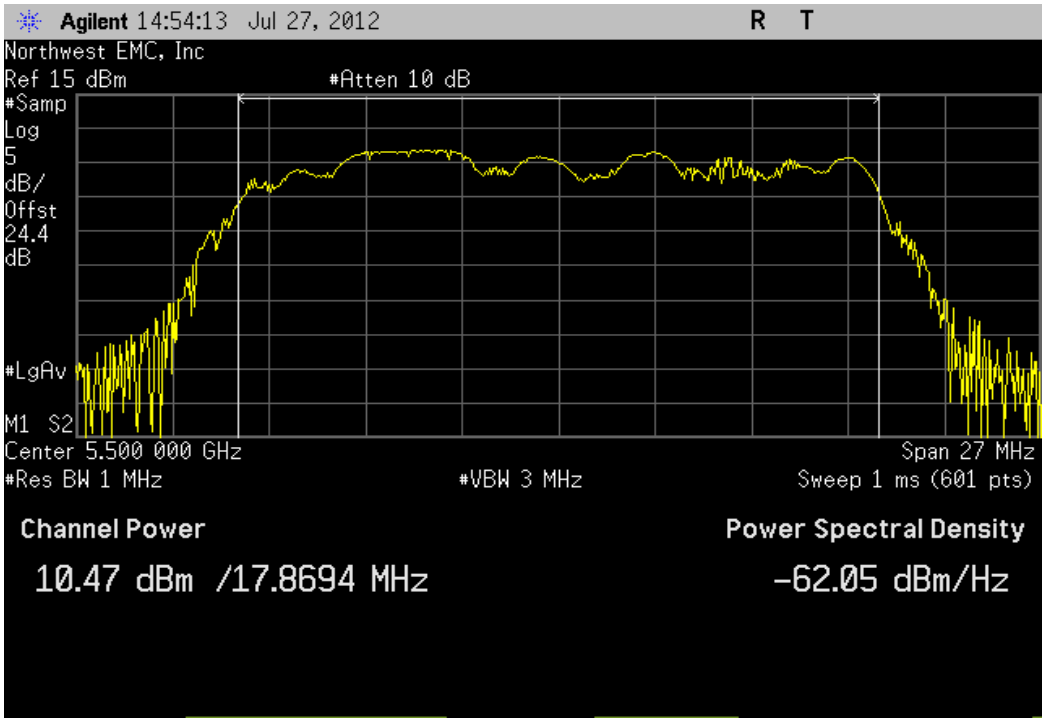
Antenna B, 20MHz Bandwidth , 802.11(n) MCS7, Low Channel 52 Fq 5260MHz

				Value	Limit	Result
				10.843 dBm	< 24 dBm	Pass



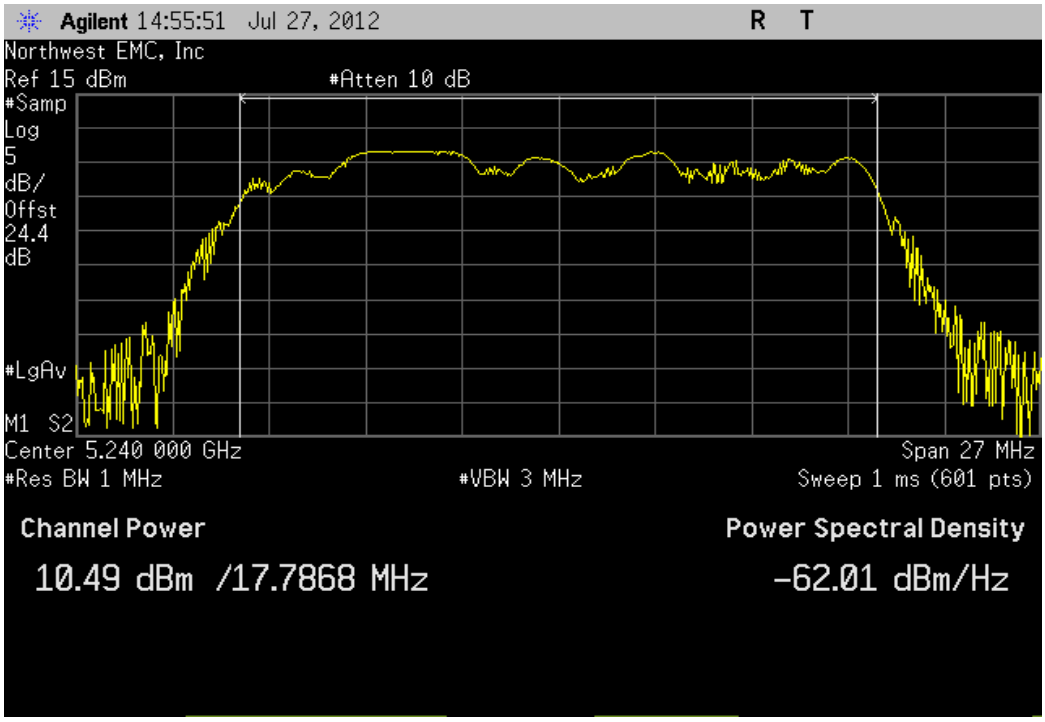
Antenna B, 20MHz Bandwidth , 802.11(n) MCS7, Low Channel 100 Fq 5500MHz

				Value	Limit	Result
				10.473 dBm	< 24 dBm	Pass



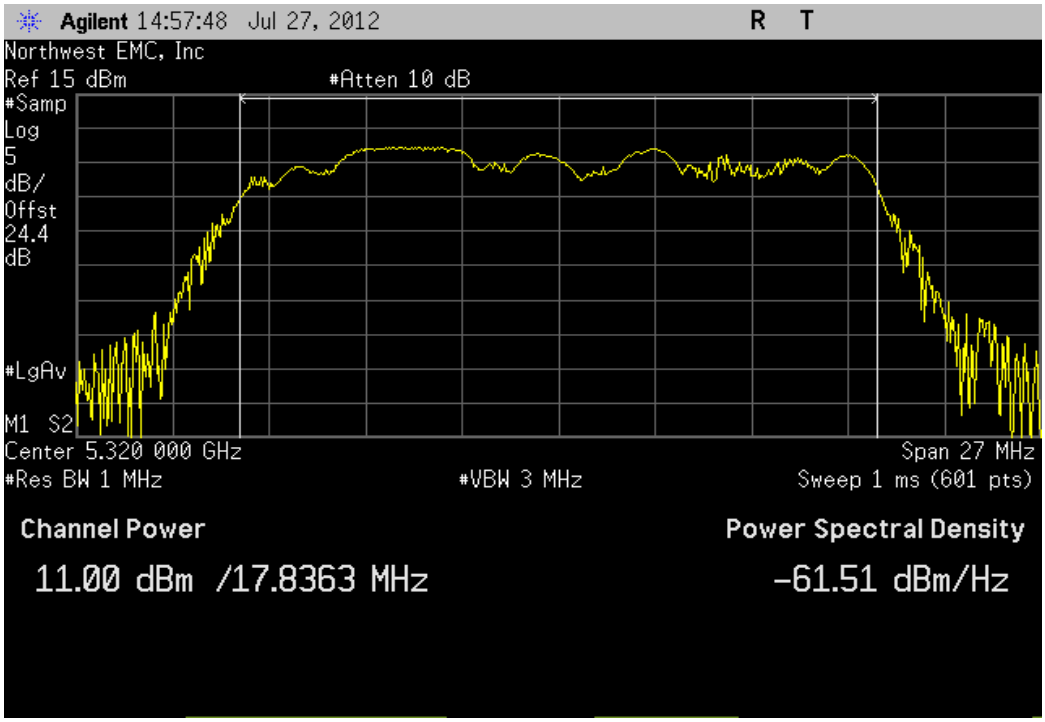
Antenna B, 20MHz Bandwidth , 802.11(n) MCS7, High Channel 48 Fq 5240MHz

				Value	Limit	Result
				10.487 dBm	< 17 dBm	Pass



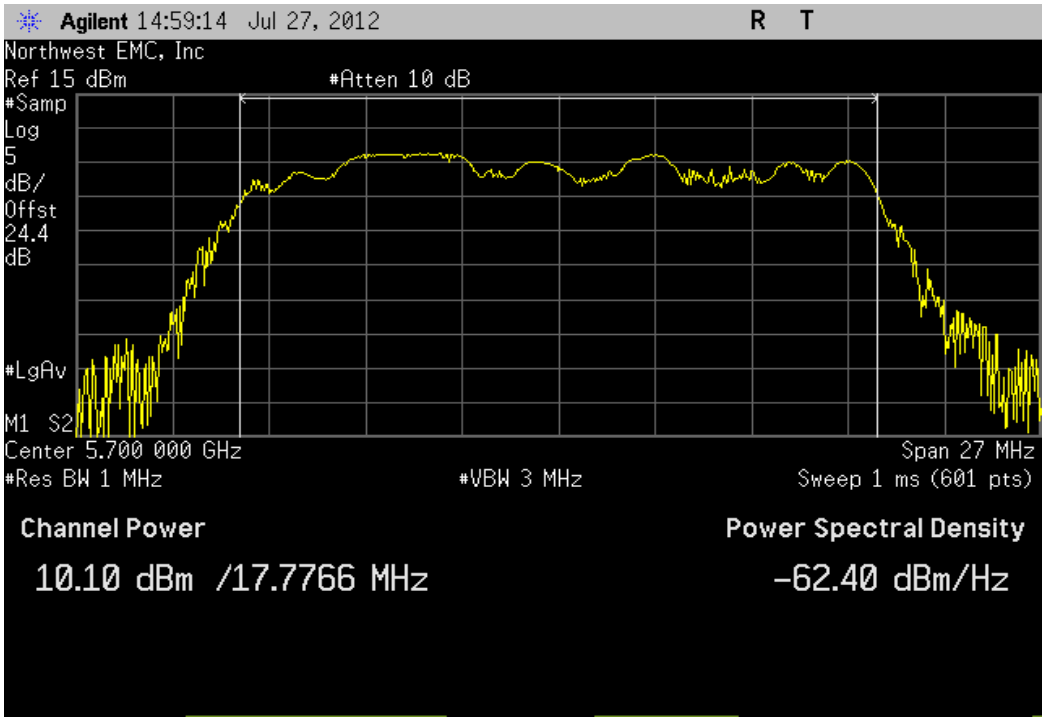
Antenna B, 20MHz Bandwidth , 802.11(n) MCS7, High Channel 64 Fq 5320MHz

				Value	Limit	Result
				11.002 dBm	< 24 dBm	Pass



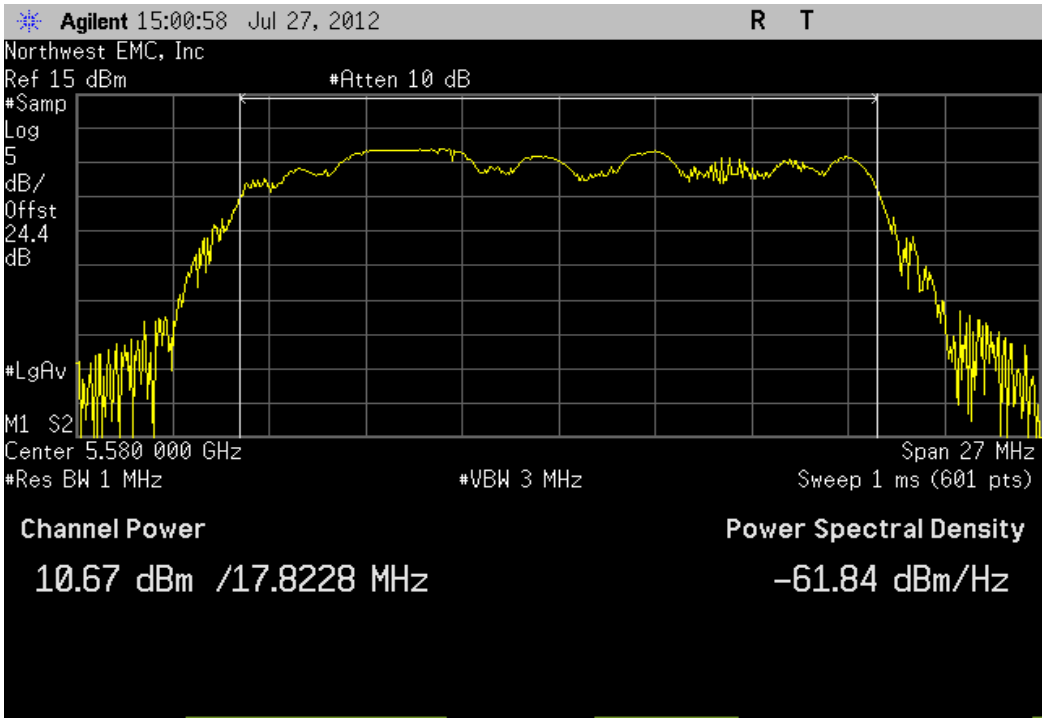
Antenna B, 20MHz Bandwidth , 802.11(n) MCS7, High Channel 140 Fq 5700MHz

				Value	Limit	Result
				10.101 dBm	< 24 dBm	Pass



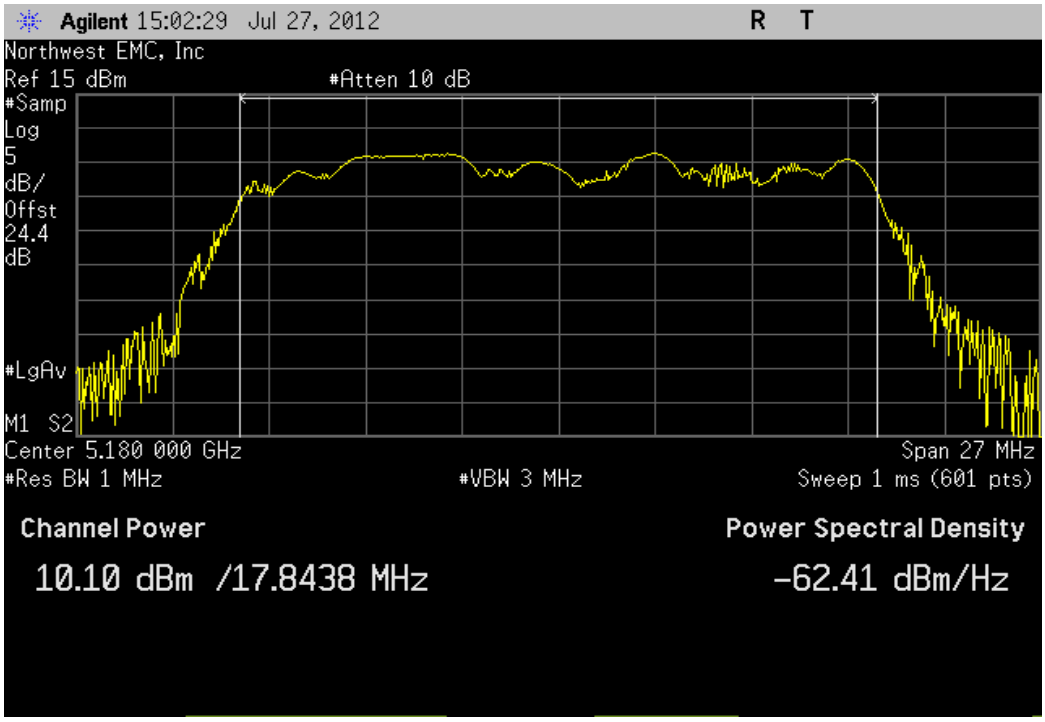
Antenna B, 20MHz Bandwidth , 802.11(n) MCS7, Mid Channel 116 Fq 5580 MHz

				Value	Limit	Result
				10.665 dBm	< 24 dBm	Pass



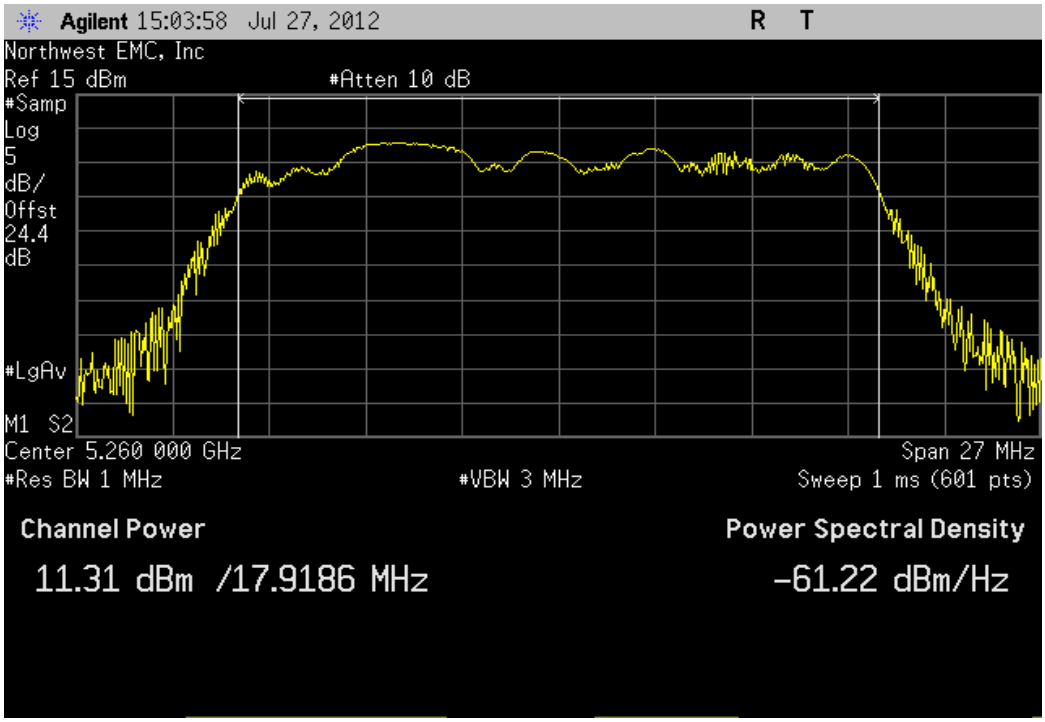
Antenna B, 20MHz Bandwidth , 802.11(n) MCS8, Low Channel 36 Fq 5180MHz

				Value	Limit	Result
				10.104 dBm	< 17 dBm	Pass



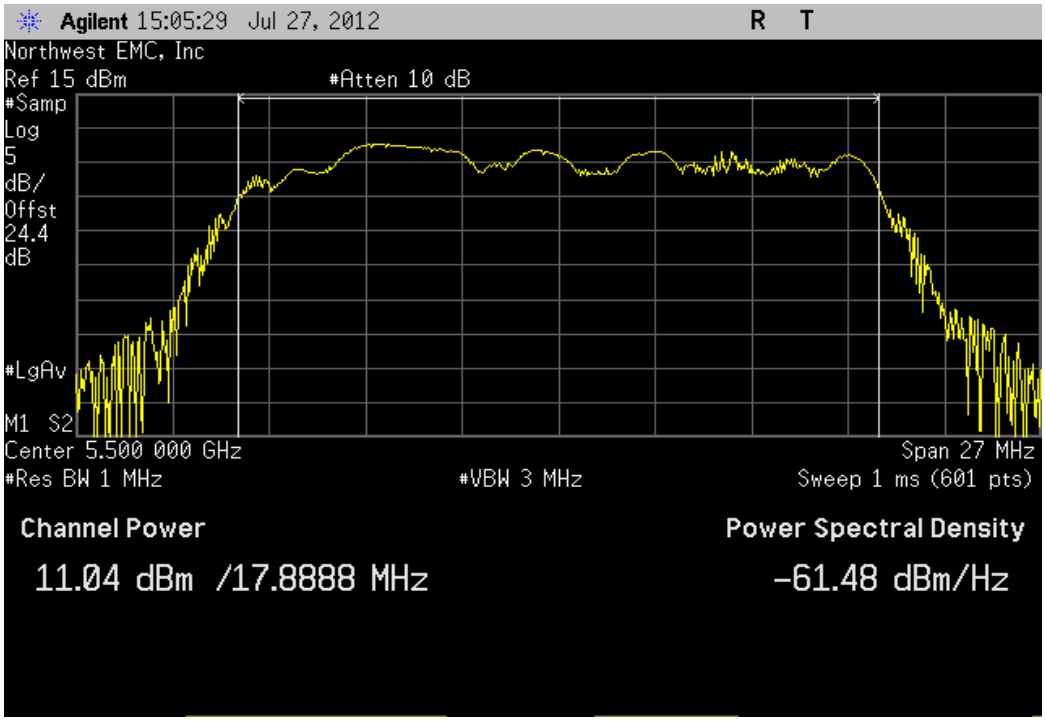
Antenna B, 20MHz Bandwidth , 802.11(n) MCS8, Low Channel 52 Fq 5260MHz

				Value	Limit	Result
				11.31 dBm	< 24 dBm	Pass



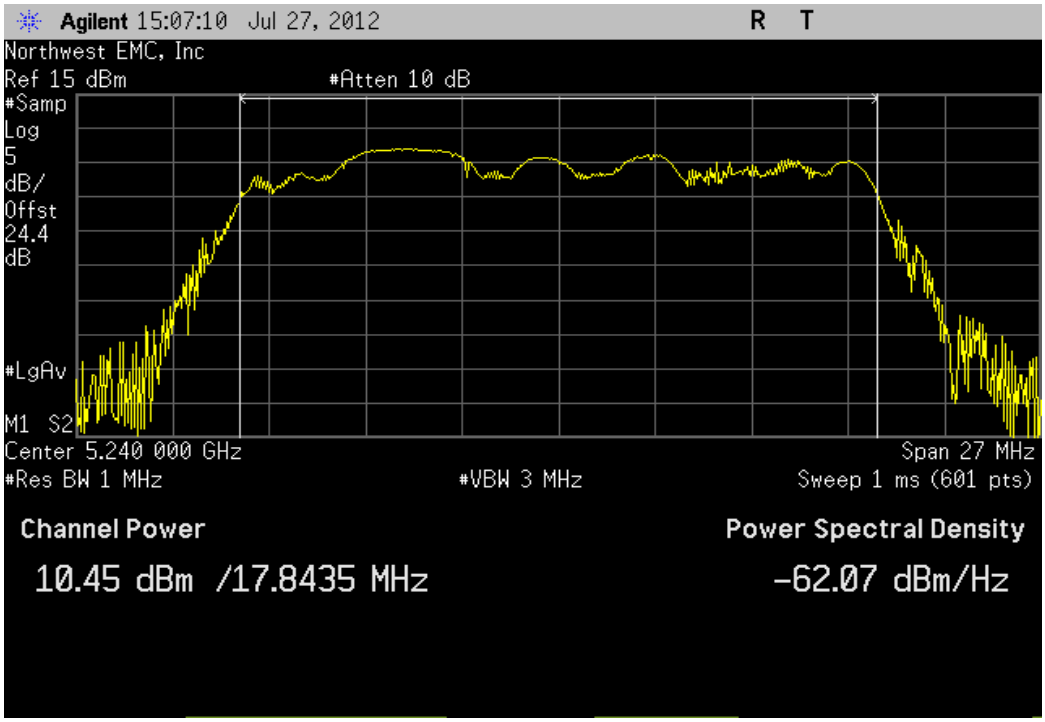
Antenna B, 20MHz Bandwidth , 802.11(n) MCS8, Low Channel 100 Fq 5500MHz

				Value	Limit	Result
				11.043 dBm	< 24 dBm	Pass



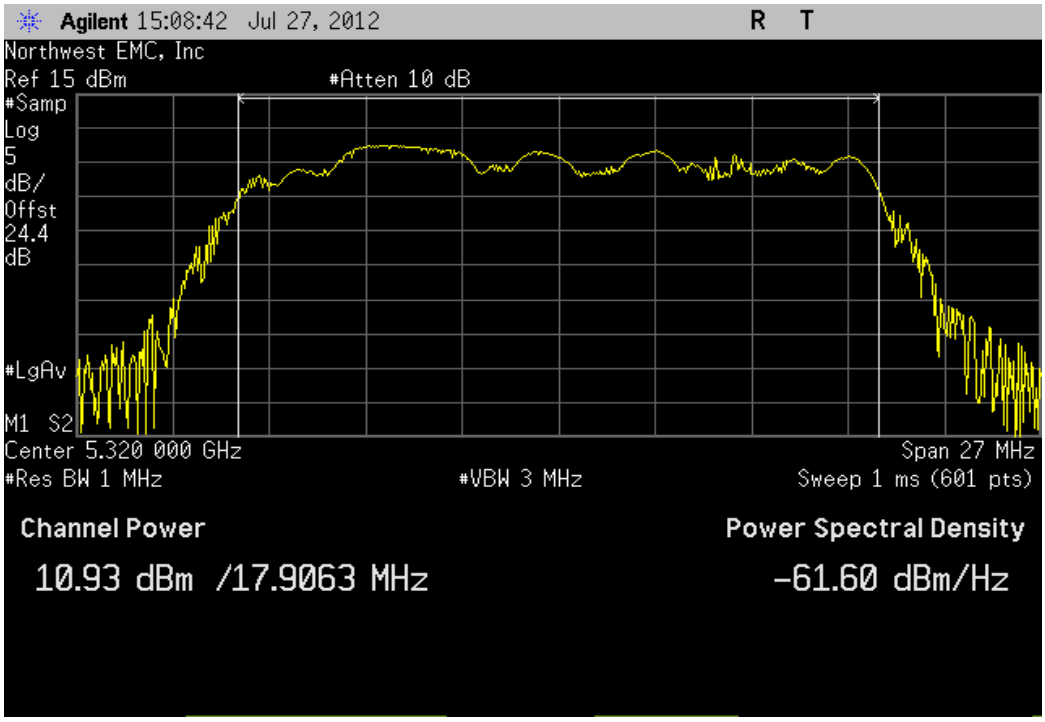
Antenna B, 20MHz Bandwidth , 802.11(n) MCS8, High Channel 48 Fq 5240MHz

				Value	Limit	Result
				10.45 dBm	< 17 dBm	Pass



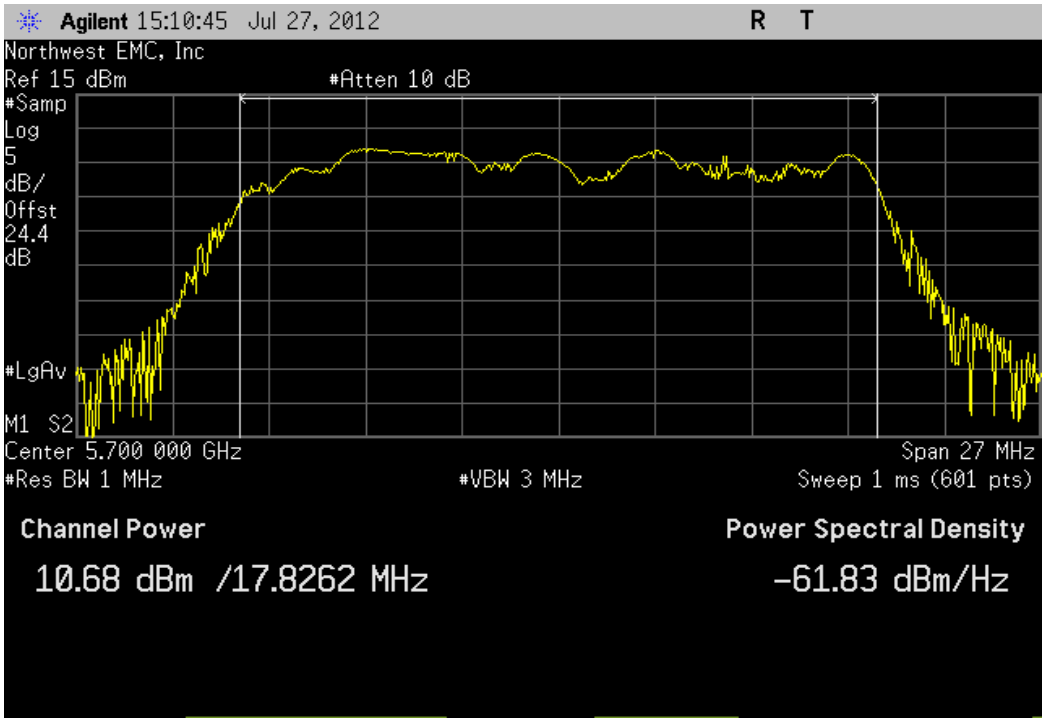
Antenna B, 20MHz Bandwidth , 802.11(n) MCS8, High Channel 64 Fq 5320MHz

				Value	Limit	Result
				10.929 dBm	< 24 dBm	Pass



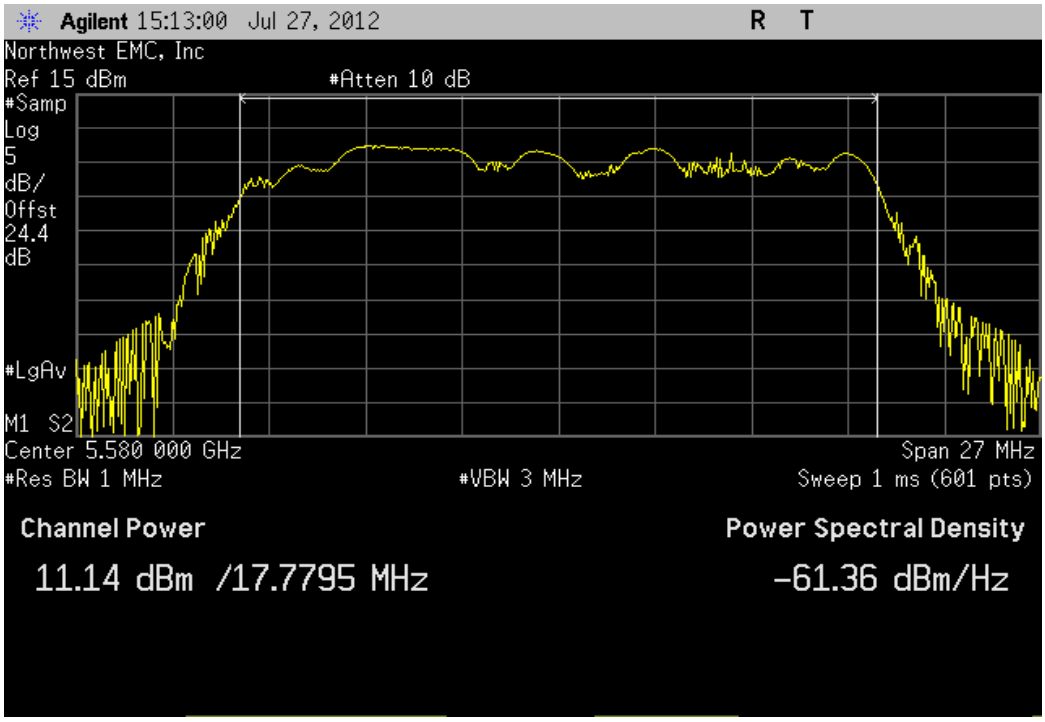
Antenna B, 20MHz Bandwidth , 802.11(n) MCS8, High Channel 140 Fq 5700MHz

				Value	Limit	Result
				10.677 dBm	< 24 dBm	Pass



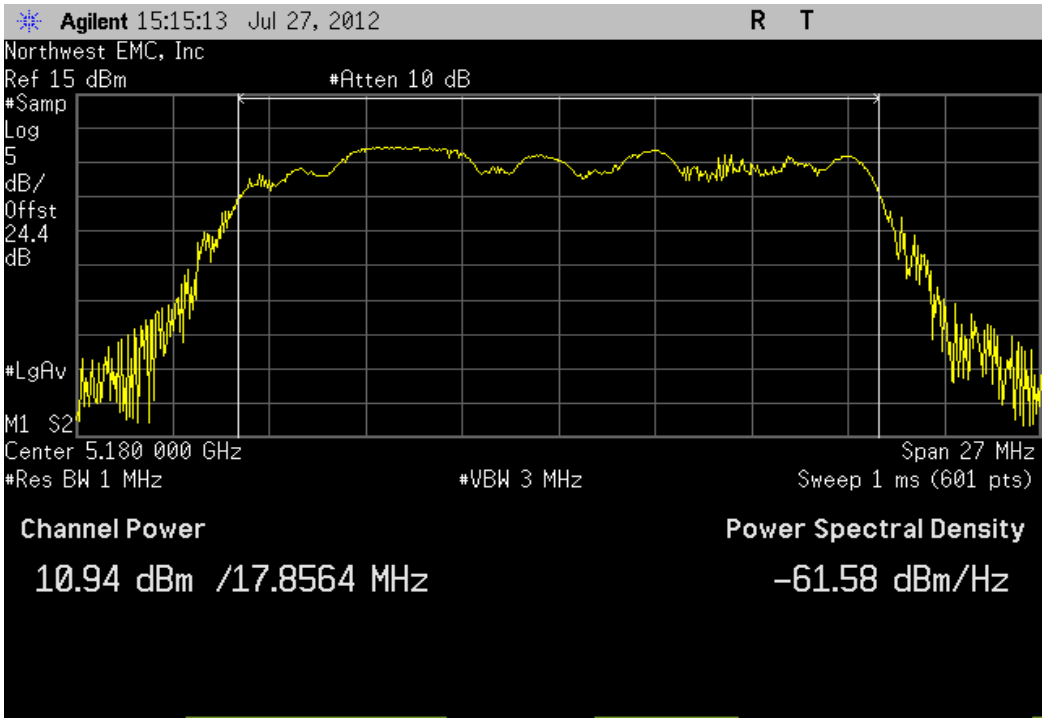
Antenna B, 20MHz Bandwidth , 802.11(n) MCS8, Mid Channel 116 Fq 5580 MHz

				Value	Limit	Result
				11.138 dBm	< 24 dBm	Pass



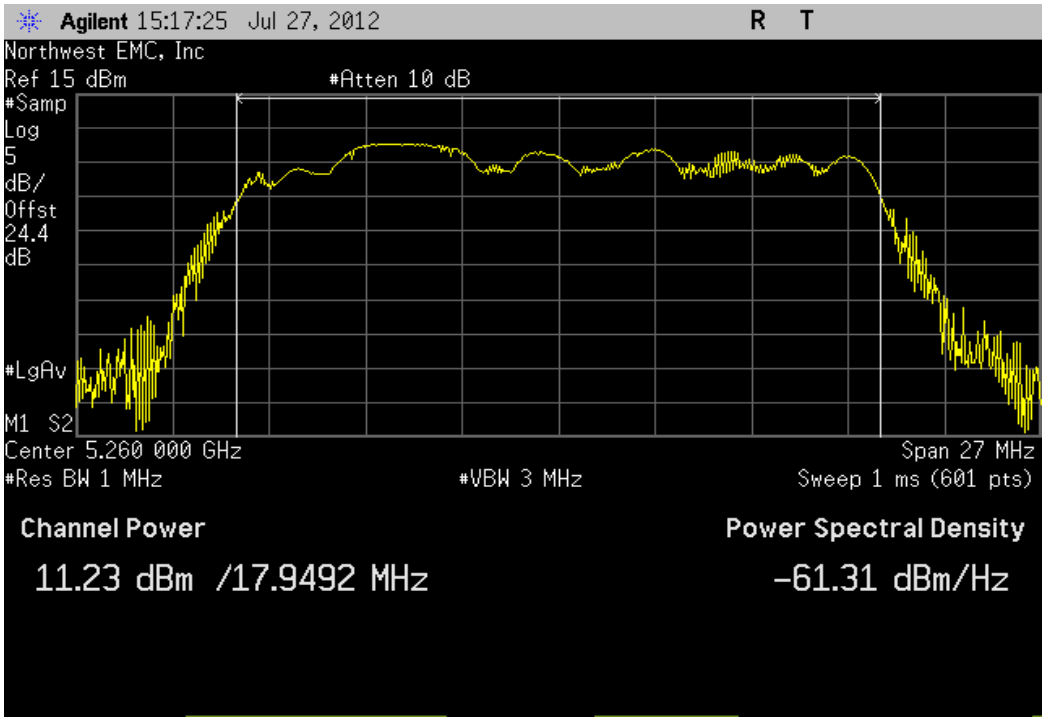
Antenna B, 20MHz Bandwidth , 802.11(n) MCS15, Low Channel 36 Fq 5180MHz

				Value	Limit	Result
				10.936 dBm	< 17 dBm	Pass



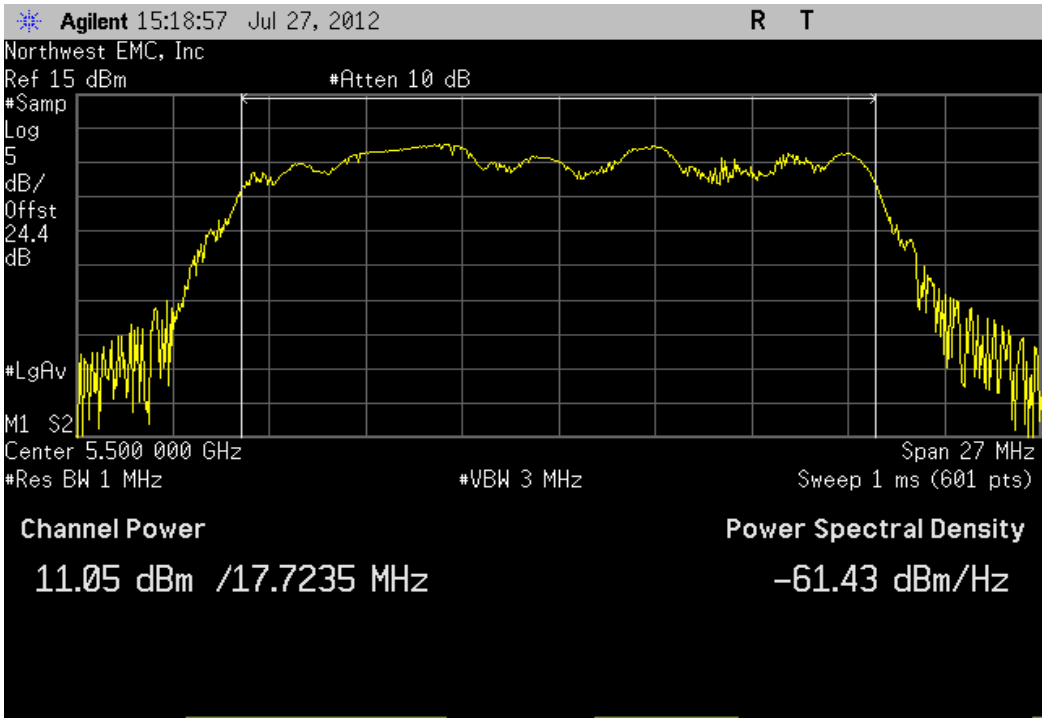
Antenna B, 20MHz Bandwidth , 802.11(n) MCS15, Low Channel 52 Fq 5260MHz

				Value	Limit	Result
				11.228 dBm	< 24 dBm	Pass



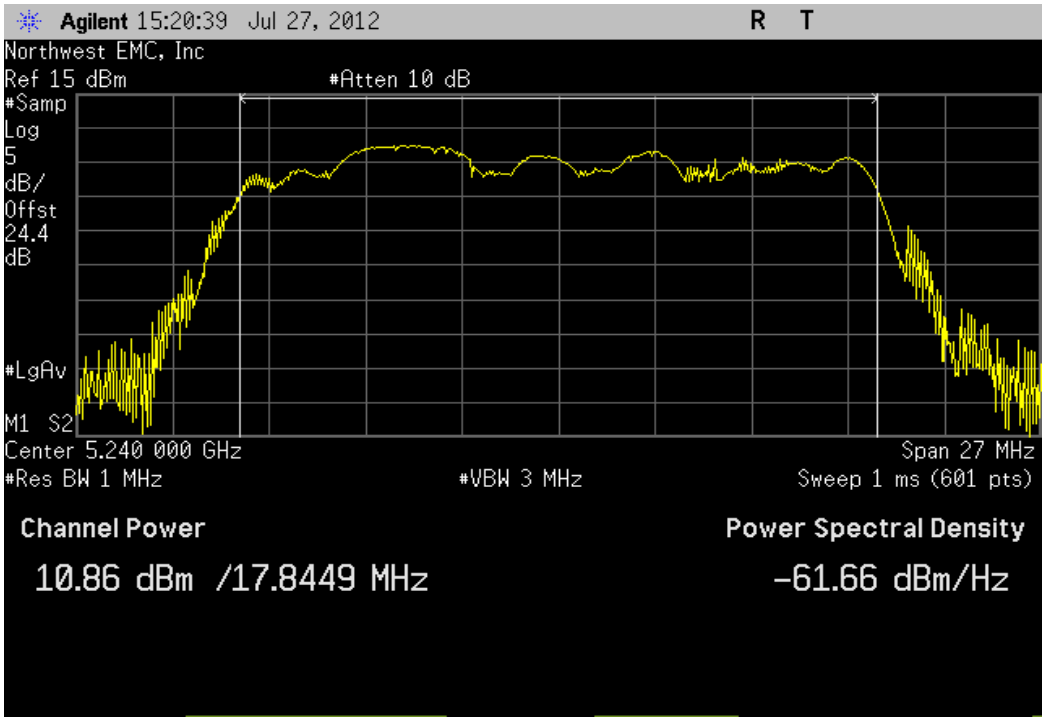
Antenna B, 20MHz Bandwidth , 802.11(n) MCS15, Low Channel 100 Fq 5500MHz

				Value	Limit	Result
				11.054 dBm	< 24 dBm	Pass



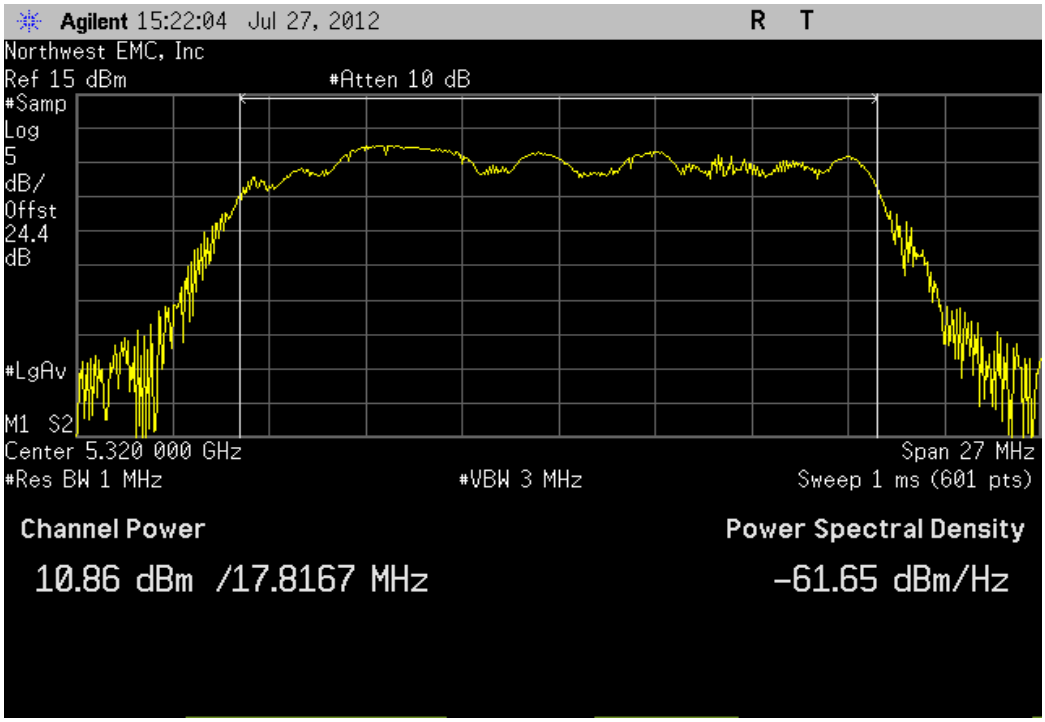
Antenna B, 20MHz Bandwidth , 802.11(n) MCS15, High Channel 48 Fq 5240MHz

				Value	Limit	Result
				10.858 dBm	< 17 dBm	Pass



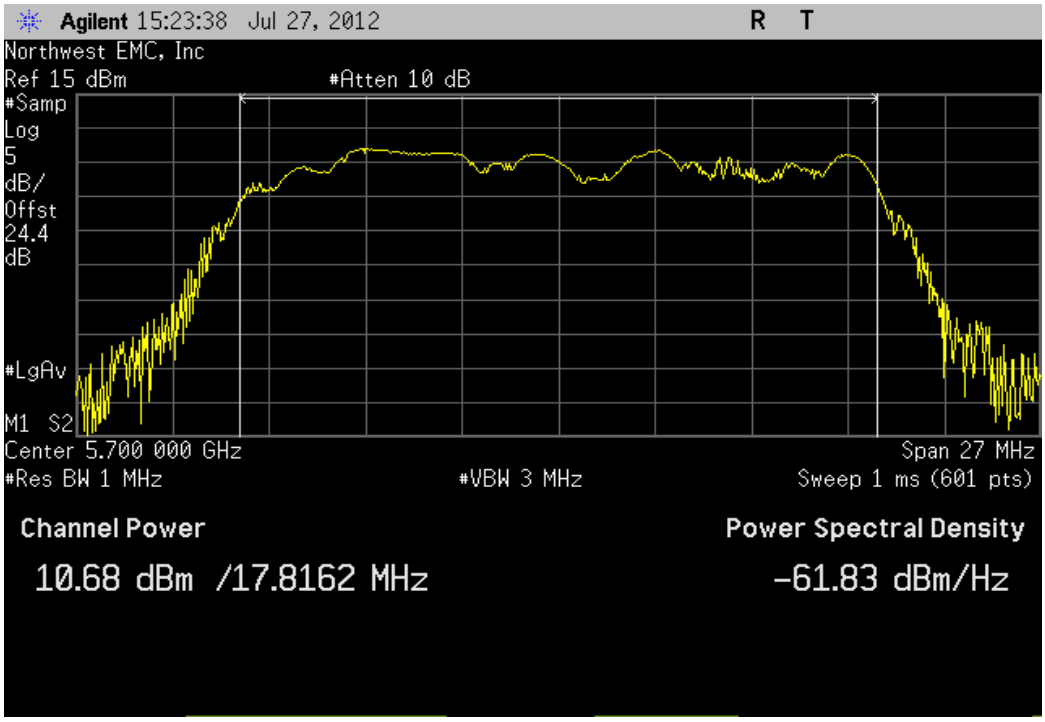
Antenna B, 20MHz Bandwidth , 802.11(n) MCS15, High Channel 64 Fq 5320MHz

				Value	Limit	Result
				10.863 dBm	< 24 dBm	Pass



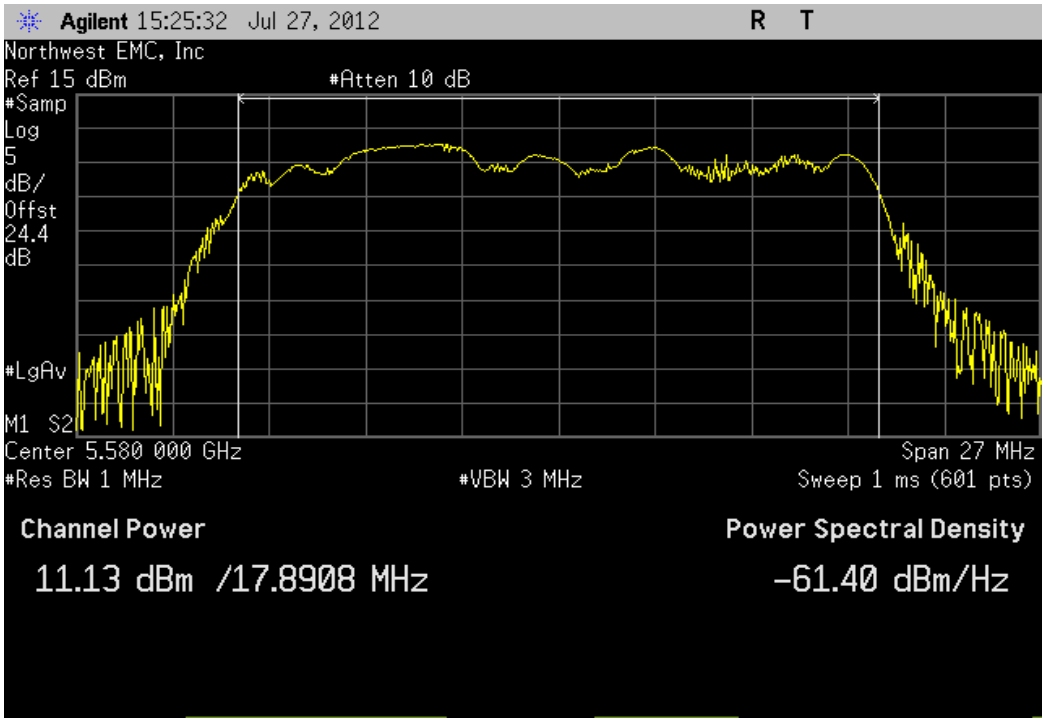
Antenna B, 20MHz Bandwidth , 802.11(n) MCS15, High Channel 140 Fq 5700MHz

				Value	Limit	Result
				10.679 dBm	< 24 dBm	Pass



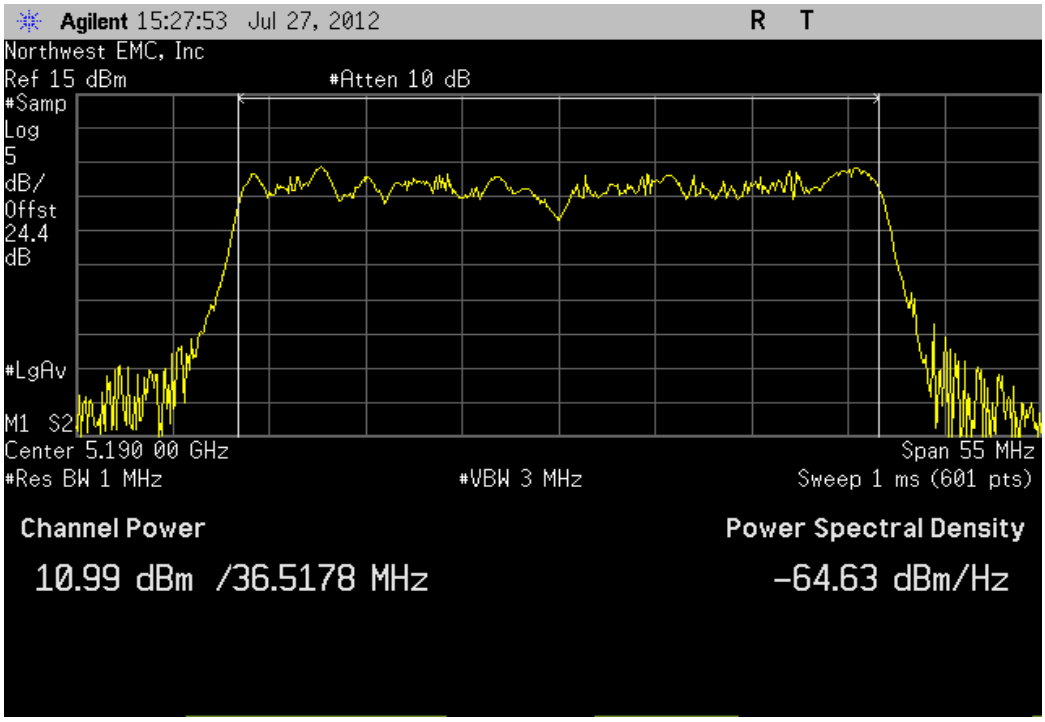
Antenna B, 20MHz Bandwidth , 802.11(n) MCS15, Mid Channel 116 Fq 5580 MHz

				Value	Limit	Result
				11.129 dBm	< 24 dBm	Pass



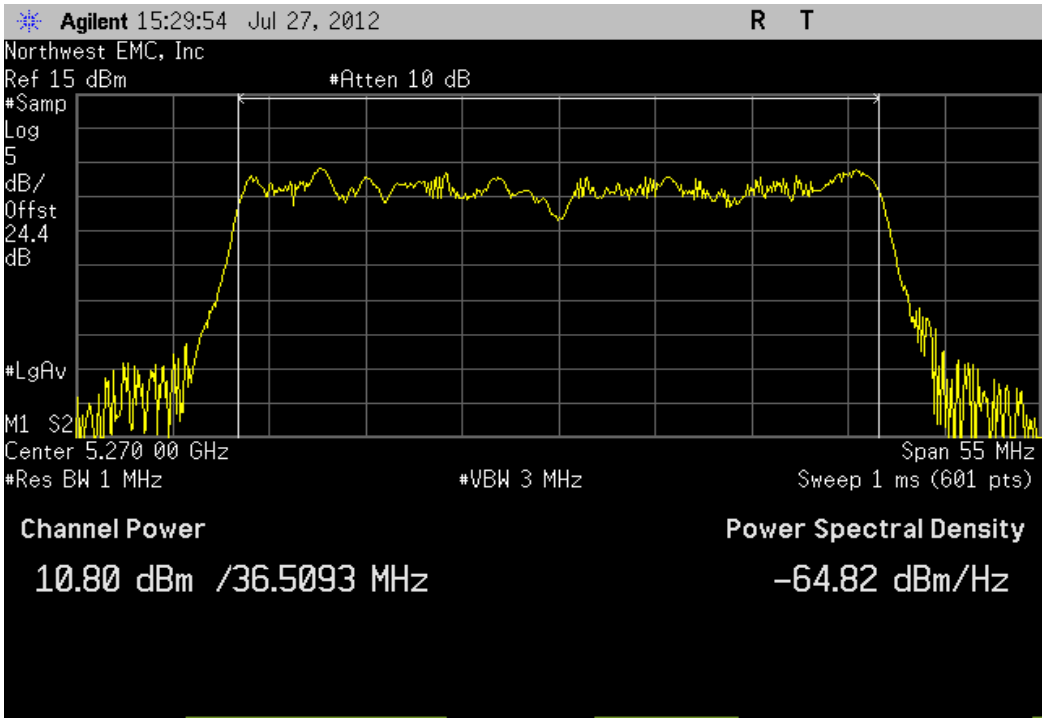
Antenna B, 40MHz Bandwidth , 802.11(n) MCS0, Low Channel 36/40 Fq 5190MHz

				Value	Limit	Result
				10.994 dBm	< 17 dBm	Pass



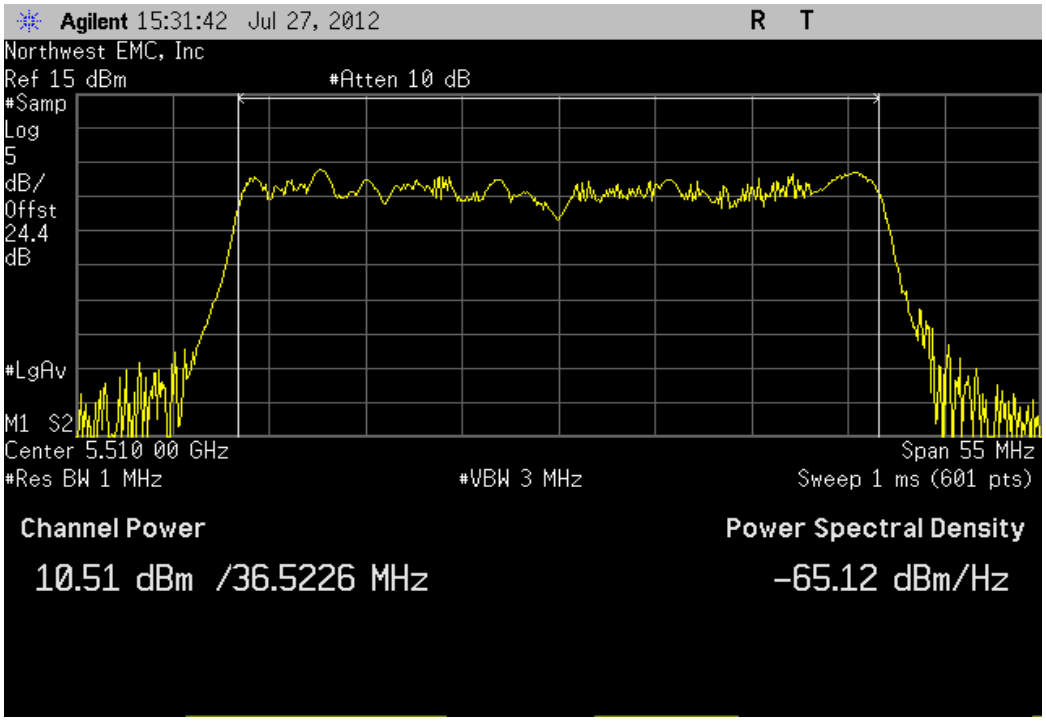
Antenna B, 40MHz Bandwidth , 802.11(n) MCS0, Low Channel 52/56 Fq 5270MHz

				Value	Limit	Result
				10.802 dBm	< 17 dBm	Pass



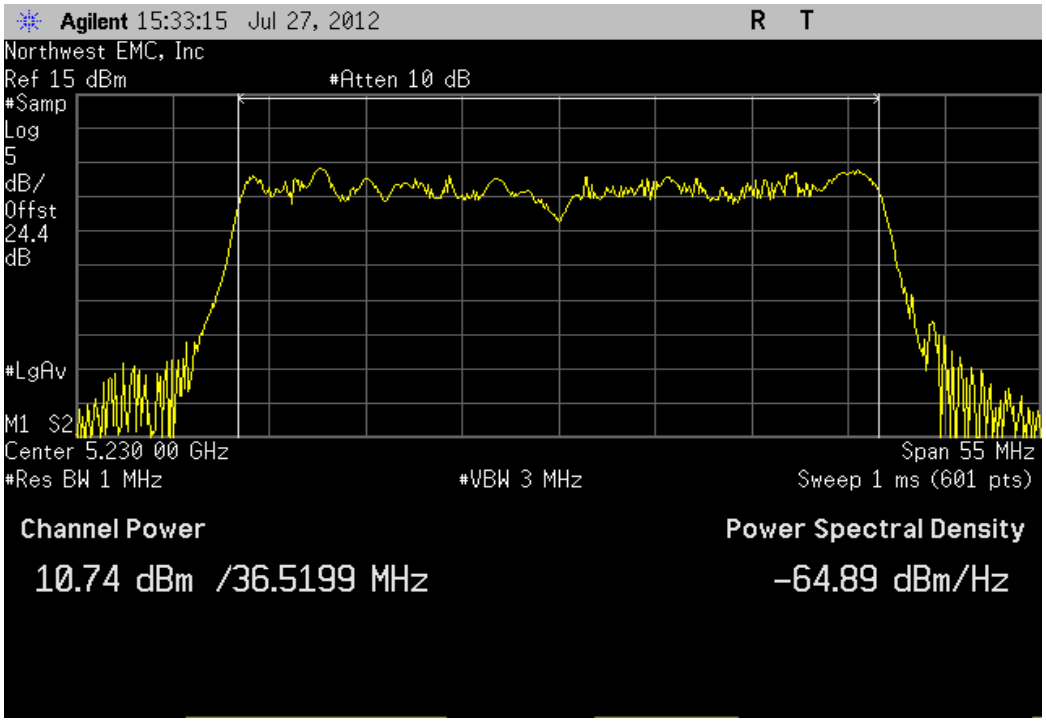
Antenna B, 40MHz Bandwidth , 802.11(n) MCS0, Low Channel 100/104 Fq 5510MHz

				Value	Limit	Result
				10.508 dBm	< 17 dBm	Pass



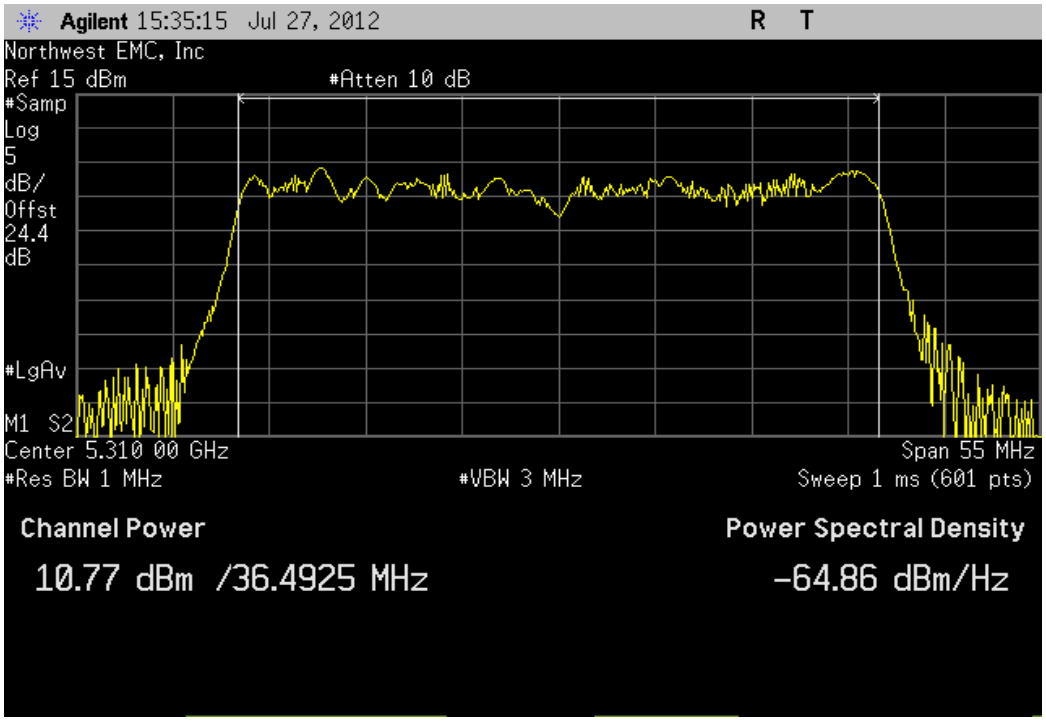
Antenna B, 40MHz Bandwidth , 802.11(n) MCS0, Low Channel 44/48 Fq 5230MHz

				Value	Limit	Result
				10.739 dBm	< 17 dBm	Pass



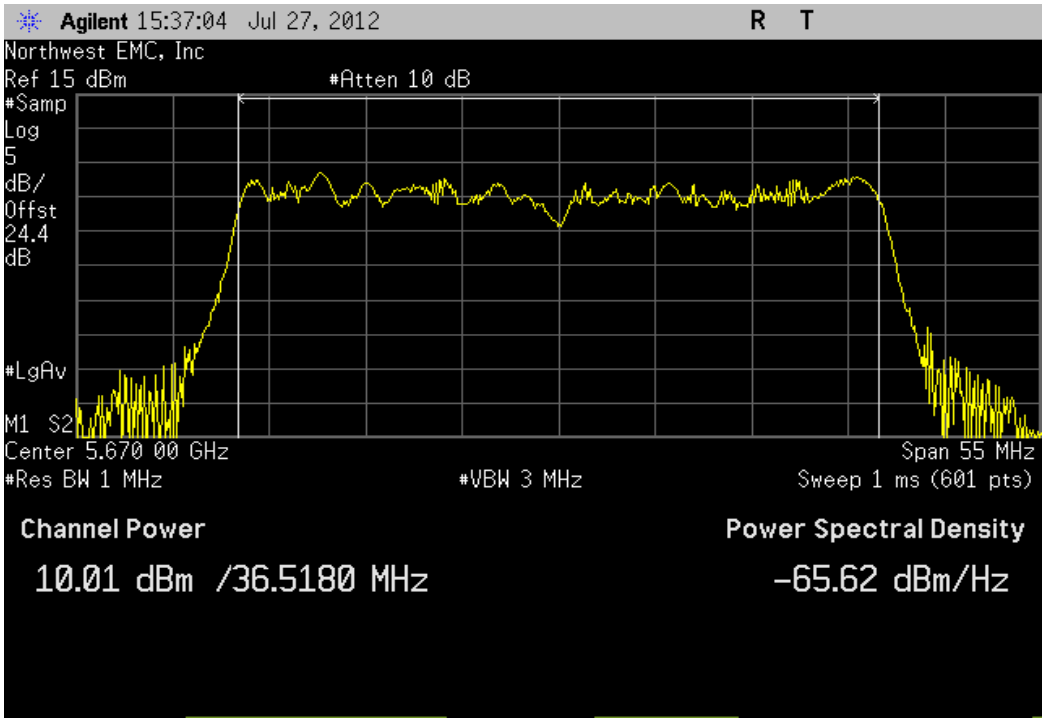
Antenna B, 40MHz Bandwidth , 802.11(n) MCS0, Low Channel 60/64 Fq 5310MHz

				Value	Limit	Result
				10.766 dBm	< 17 dBm	Pass



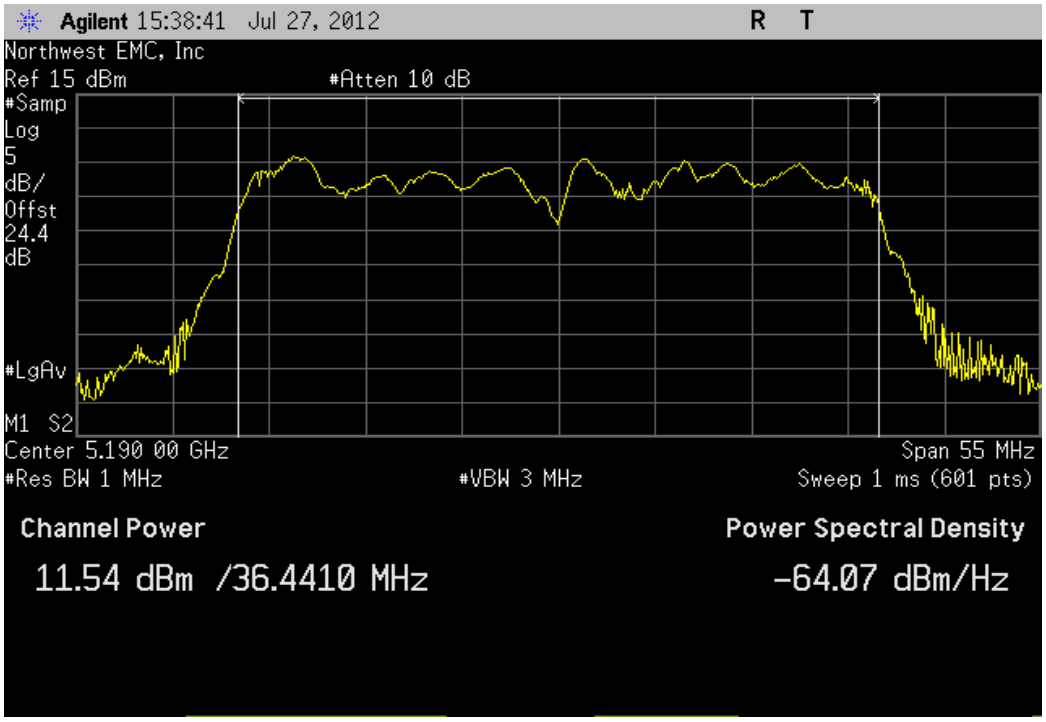
Antenna B, 40MHz Bandwidth , 802.11(n) MCS0, Low Channel 132/136 Fq 5670MHz

				Value	Limit	Result
				10.008 dBm	< 17 dBm	Pass



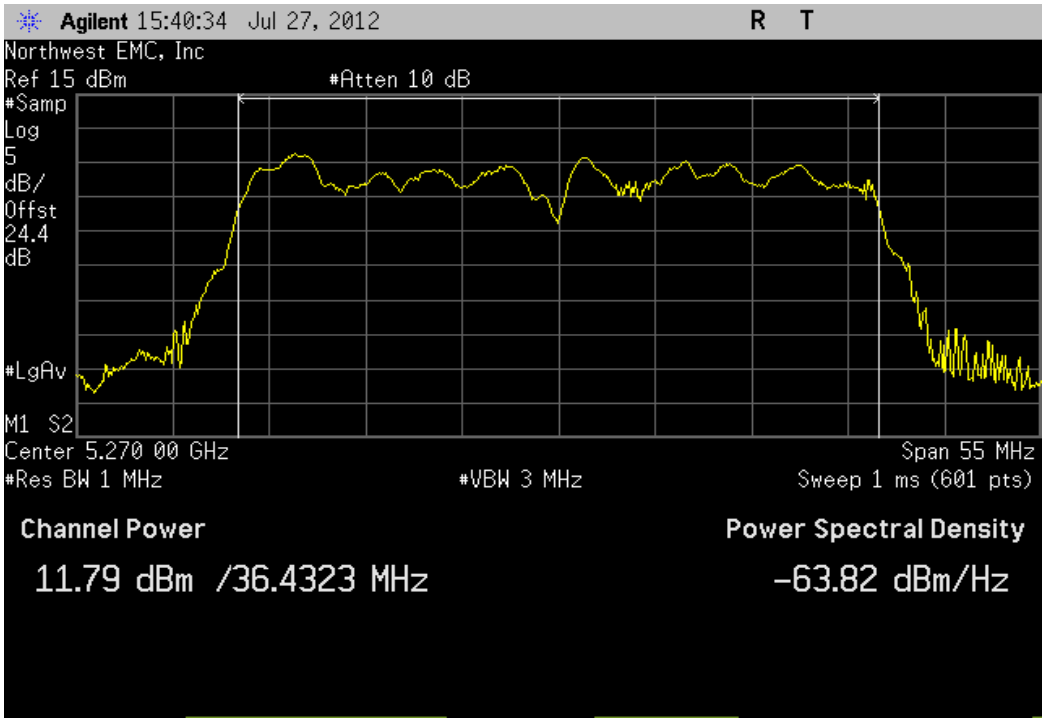
Antenna B, 40MHz Bandwidth , 802.11(n) MCS7, Low Channel 36/40 Fq 5190MHz

				Value	Limit	Result
				11.544 dBm	< 17 dBm	Pass



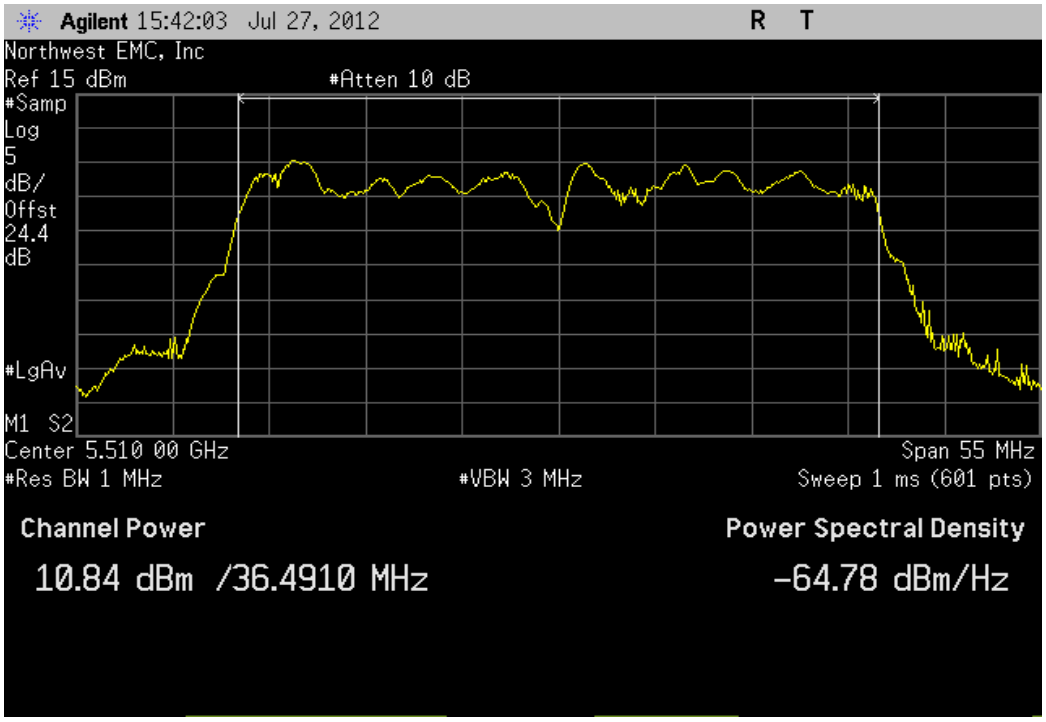
Antenna B, 40MHz Bandwidth , 802.11(n) MCS7, Low Channel 52/56 Fq 5270MHz

				Value	Limit	Result
				11.79 dBm	< 17 dBm	Pass



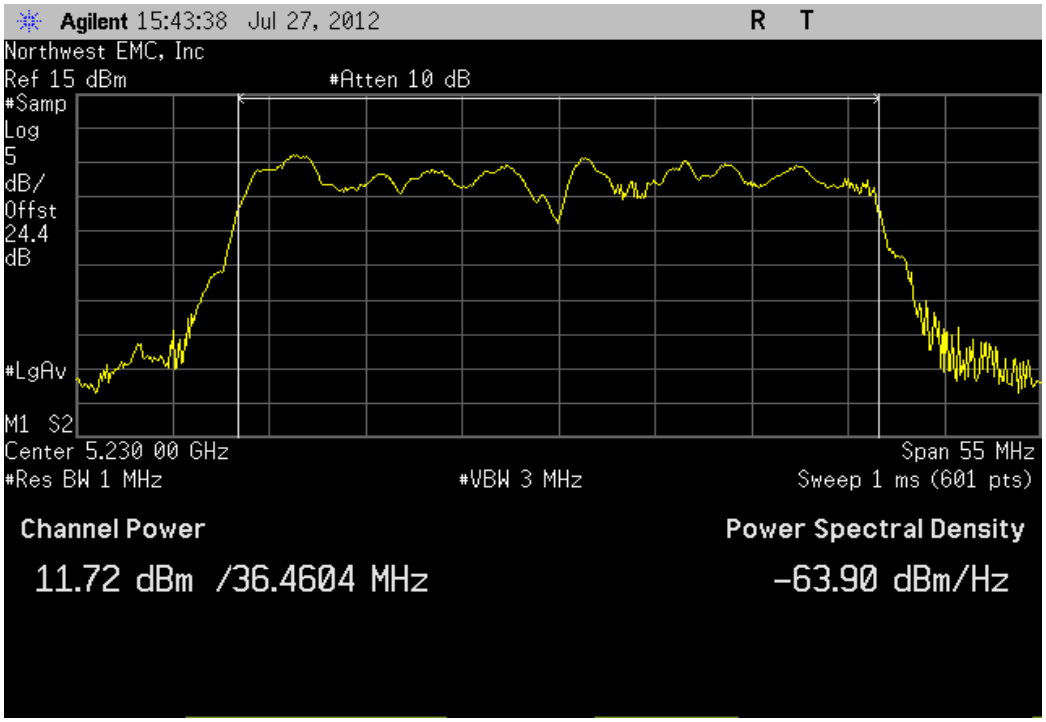
Antenna B, 40MHz Bandwidth , 802.11(n) MCS7, Low Channel 100/104 Fq 5510MHz

				Value	Limit	Result
				10.839 dBm	< 17 dBm	Pass



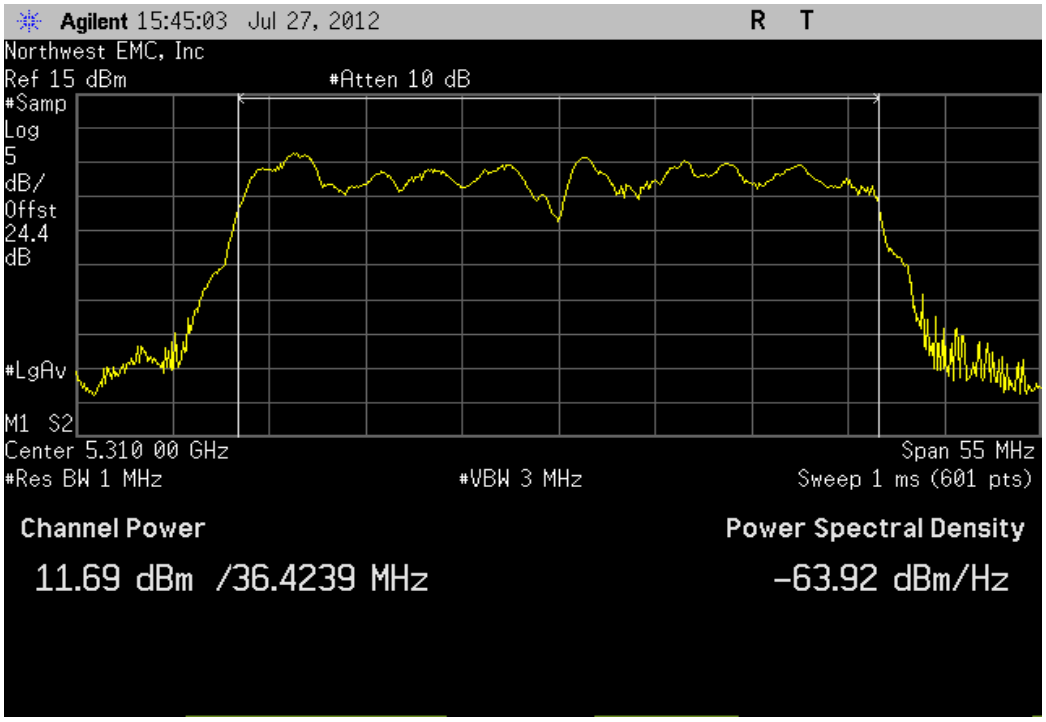
Antenna B, 40MHz Bandwidth , 802.11(n) MCS7, Low Channel 44/48 Fq 5230MHz

				Value	Limit	Result
				11.716 dBm	< 17 dBm	Pass



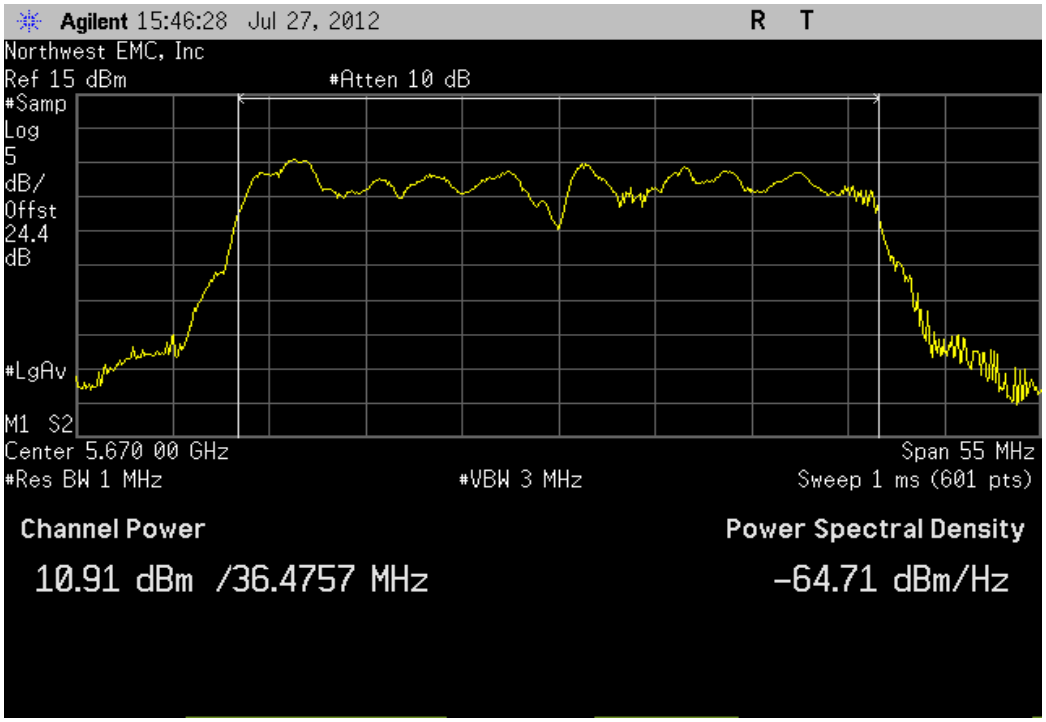
Antenna B, 40MHz Bandwidth , 802.11(n) MCS7, Low Channel 60/64 Fq 5310MHz

				Value	Limit	Result
				11.693 dBm	< 17 dBm	Pass



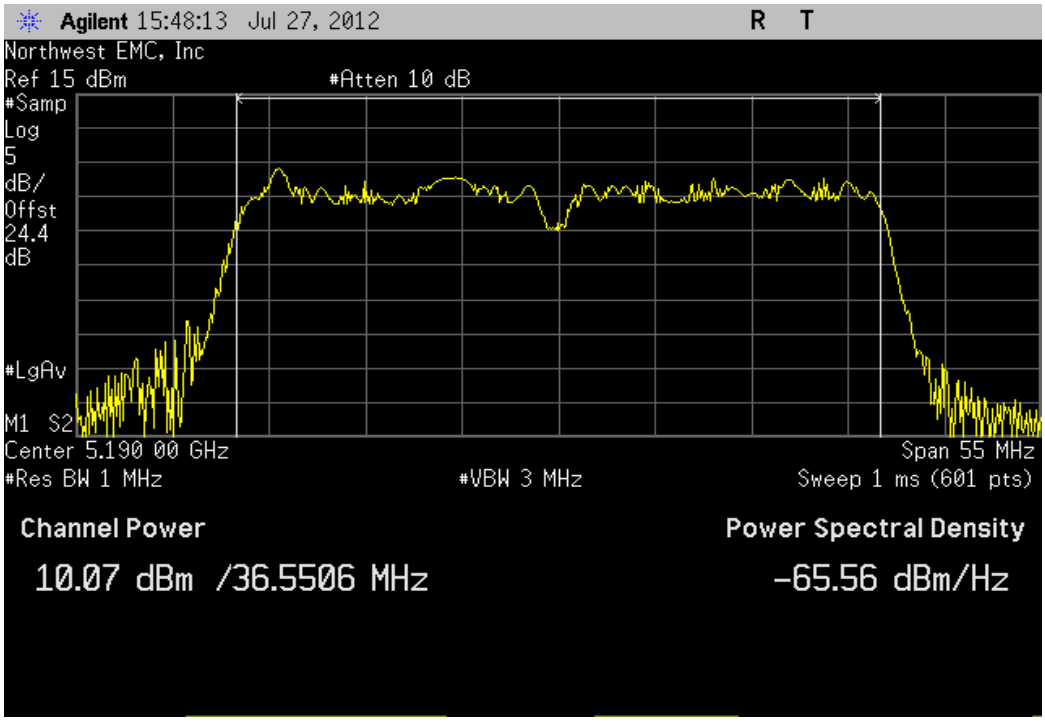
Antenna B, 40MHz Bandwidth , 802.11(n) MCS7, Low Channel 132/136 Fq 5670MHz

				Value	Limit	Result
				10.908 dBm	< 17 dBm	Pass



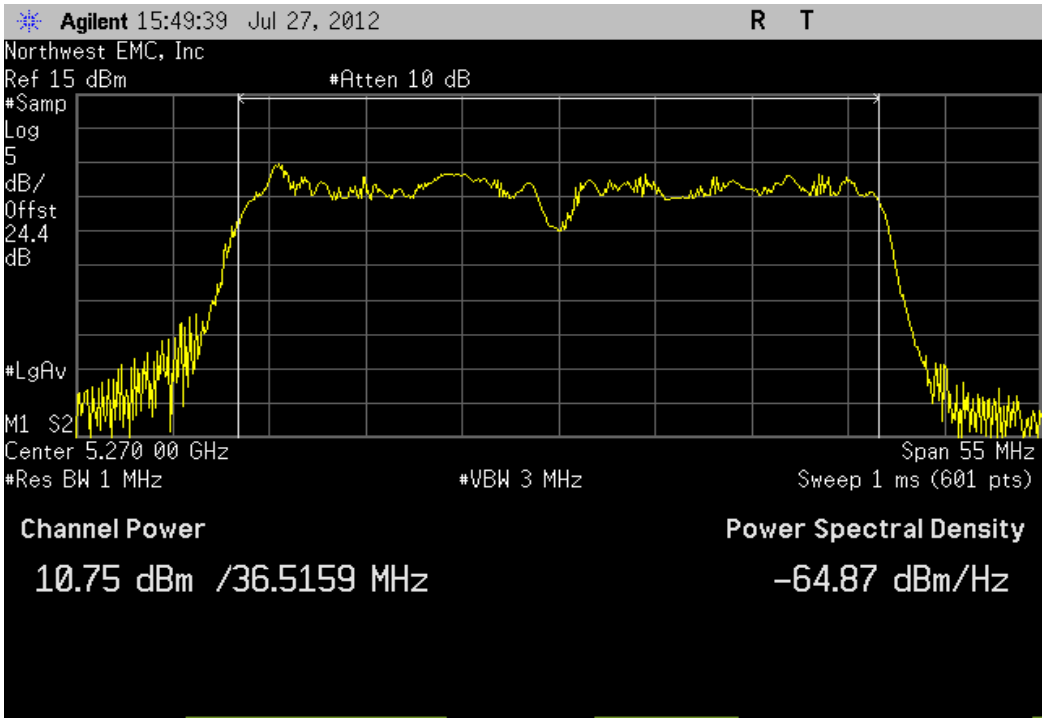
Antenna B, 40MHz Bandwidth , 802.11(n) MCS8, Low Channel 36/40 Fq 5190MHz

				Value	Limit	Result
				10.072 dBm	< 17 dBm	Pass



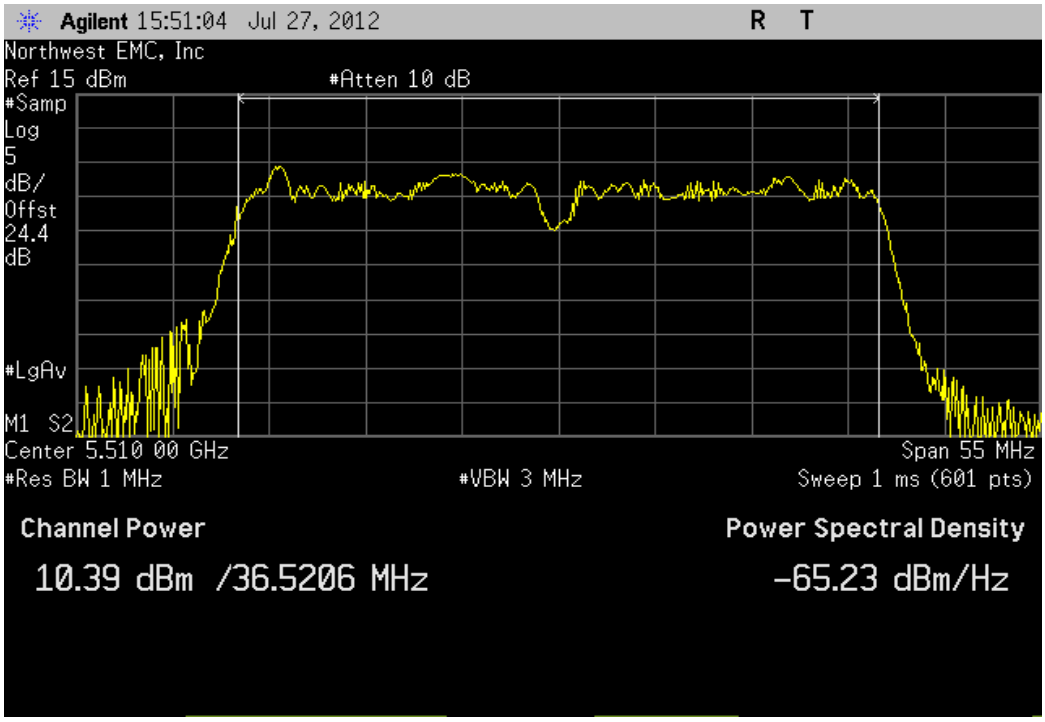
Antenna B, 40MHz Bandwidth , 802.11(n) MCS8, Low Channel 52/56 Fq 5270MHz

				Value	Limit	Result
				10.753 dBm	< 17 dBm	Pass



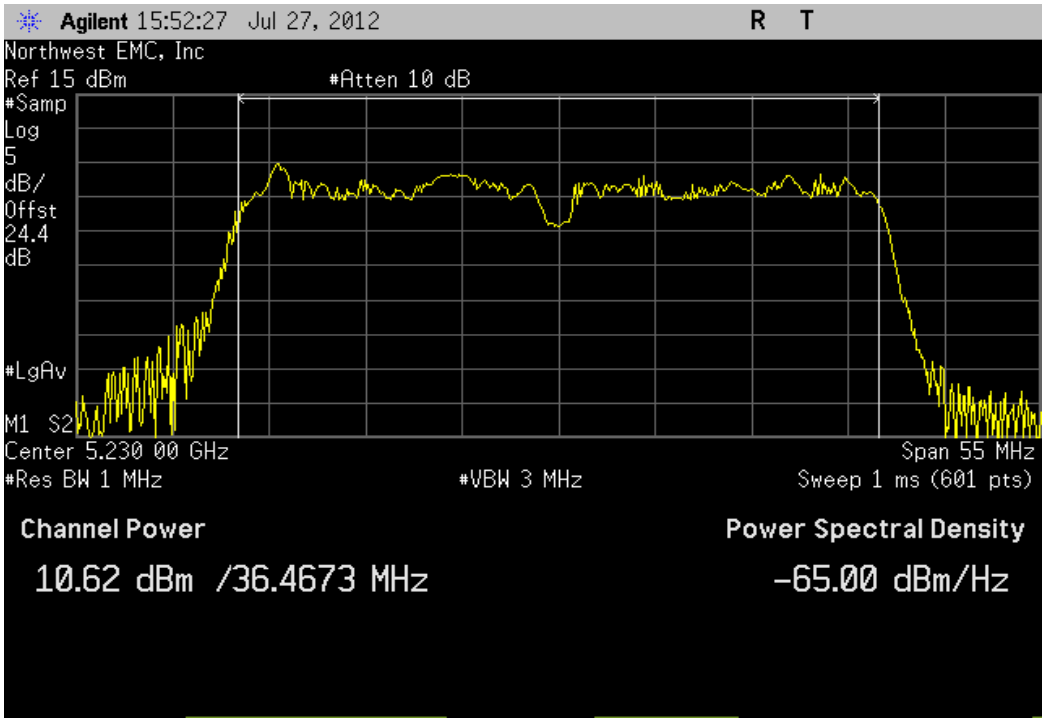
Antenna B, 40MHz Bandwidth , 802.11(n) MCS8, Low Channel 100/104 Fq 5510MHz

				Value	Limit	Result
				10.391 dBm	< 17 dBm	Pass



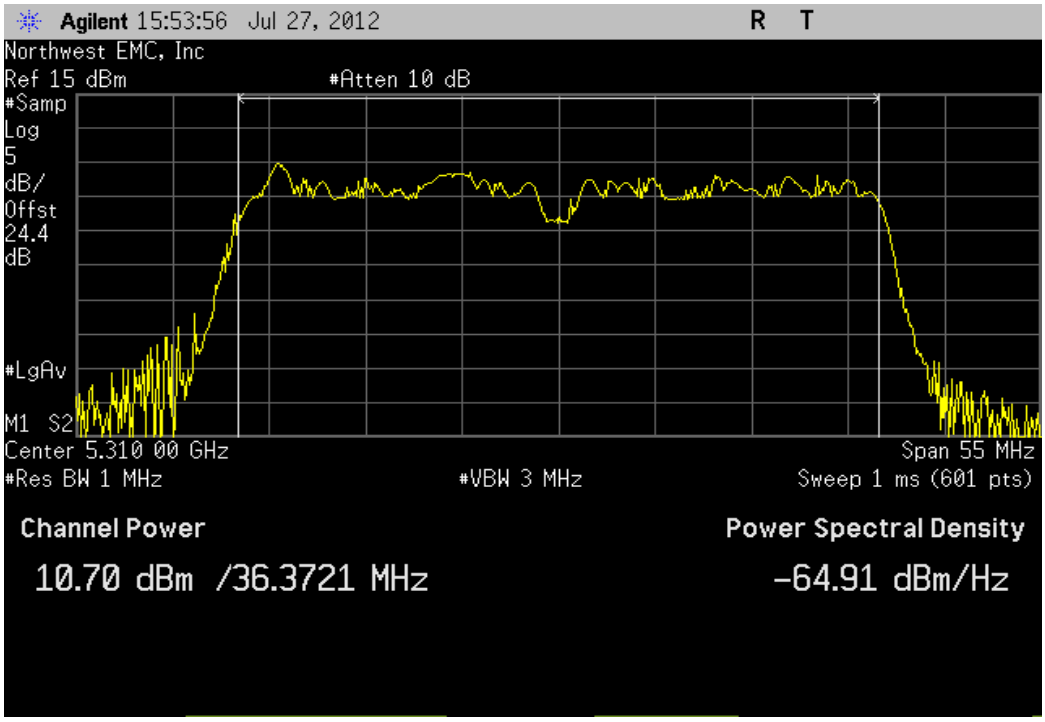
Antenna B, 40MHz Bandwidth , 802.11(n) MCS8, Low Channel 44/48 Fq 5230MHz

				Value	Limit	Result
				10.621 dBm	< 17 dBm	Pass



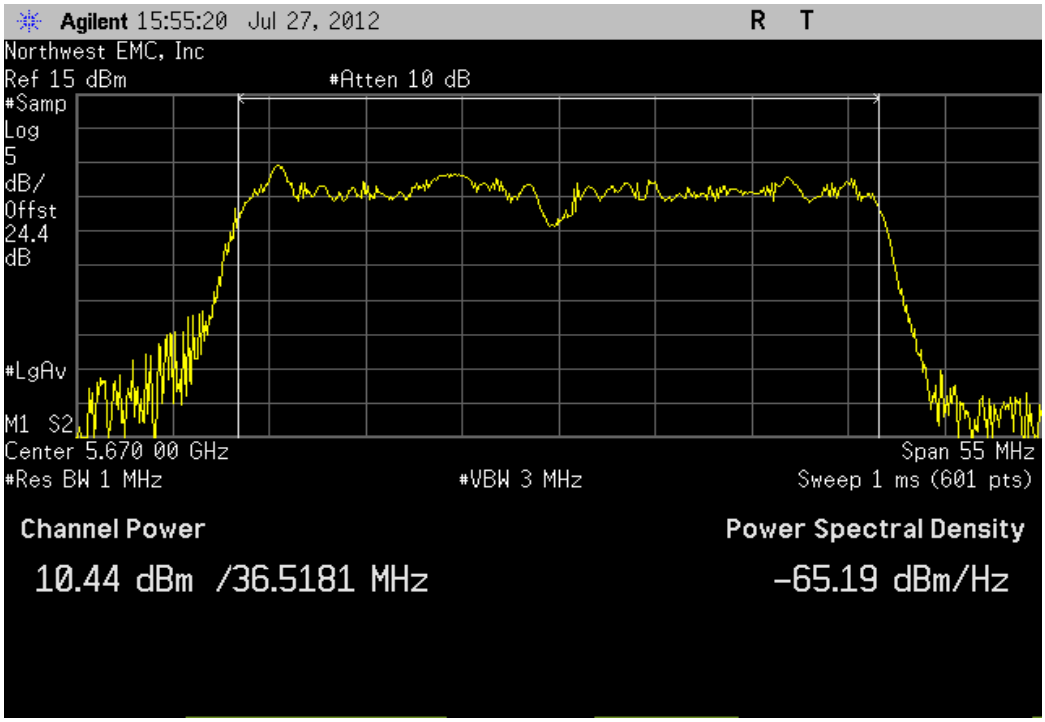
Antenna B, 40MHz Bandwidth , 802.11(n) MCS8, Low Channel 60/64 Fq 5310MHz

				Value	Limit	Result
				10.698 dBm	< 17 dBm	Pass



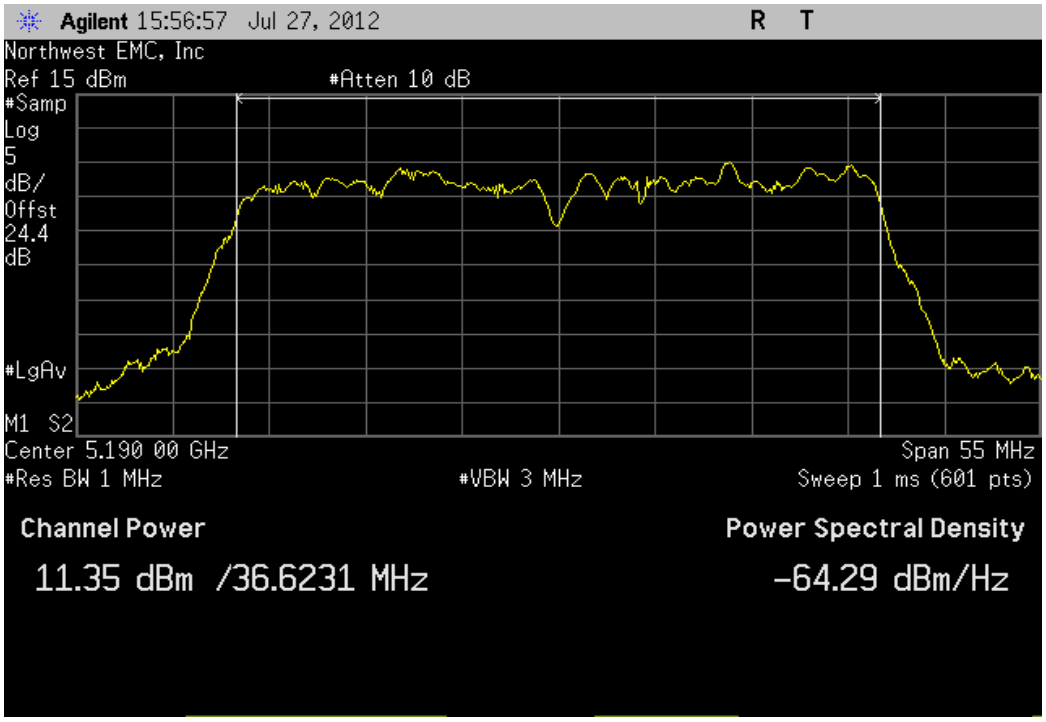
Antenna B, 40MHz Bandwidth , 802.11(n) MCS8, Low Channel 132/136 Fq 5670MHz

				Value	Limit	Result
				10.439 dBm	< 17 dBm	Pass



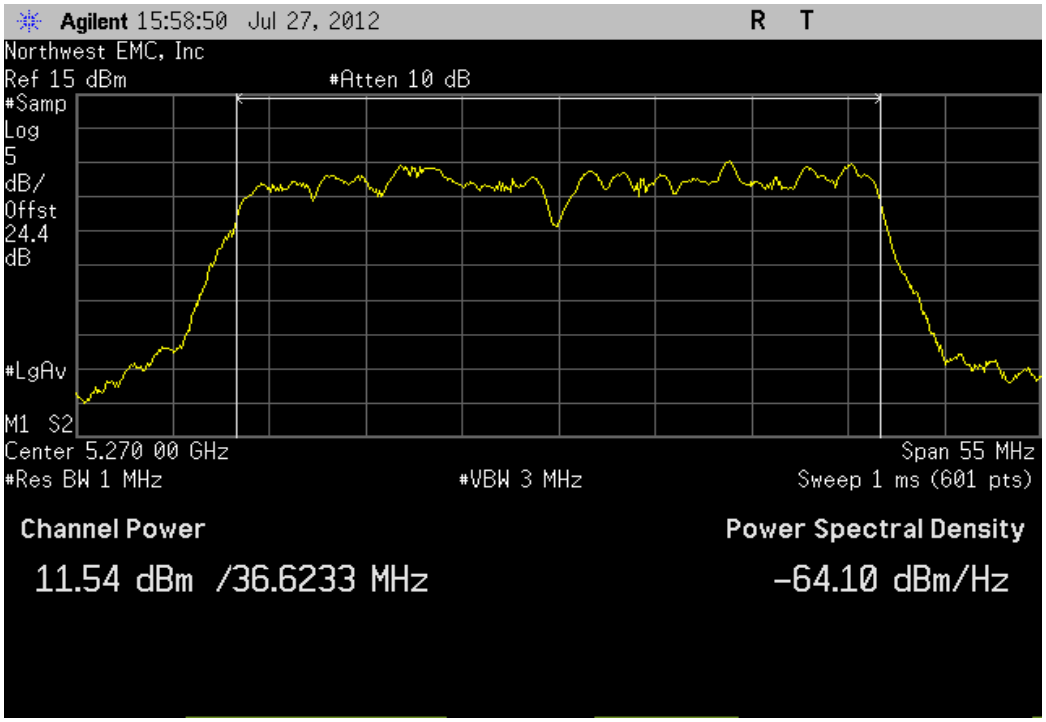
Antenna B, 40MHz Bandwidth , 802.11(n) MCS15, Low Channel 36/40 Fq 5190MHz

				Value	Limit	Result
				11.347 dBm	< 17 dBm	Pass



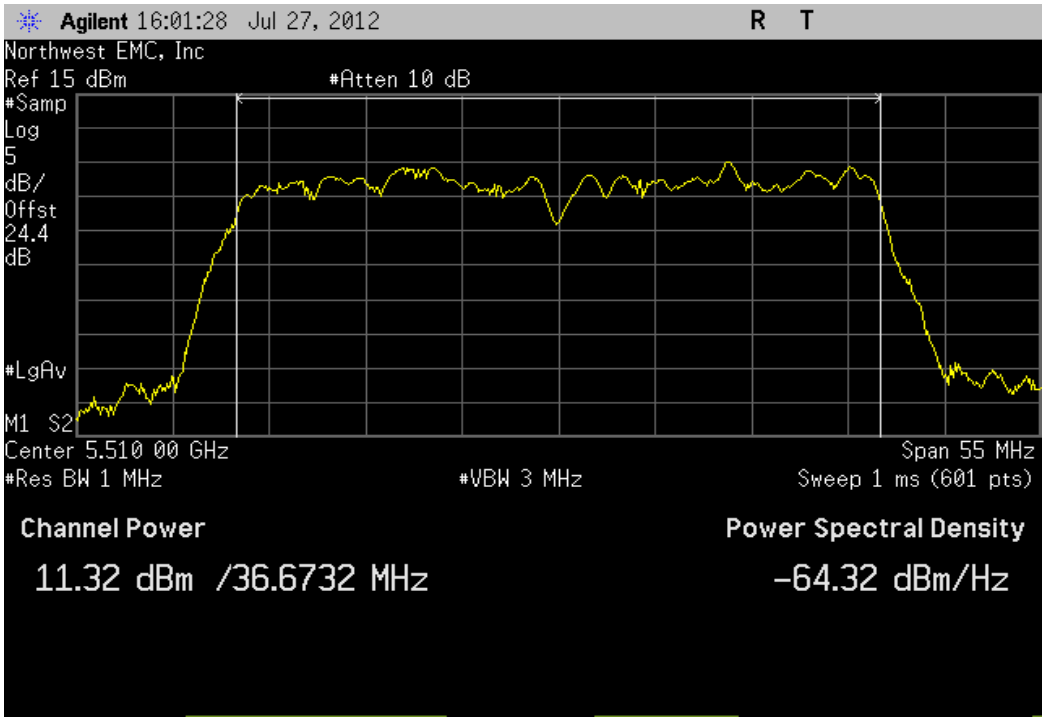
Antenna B, 40MHz Bandwidth , 802.11(n) MCS15, Low Channel 52/56 Fq 5270MHz

				Value	Limit	Result
				11.542 dBm	< 17 dBm	Pass



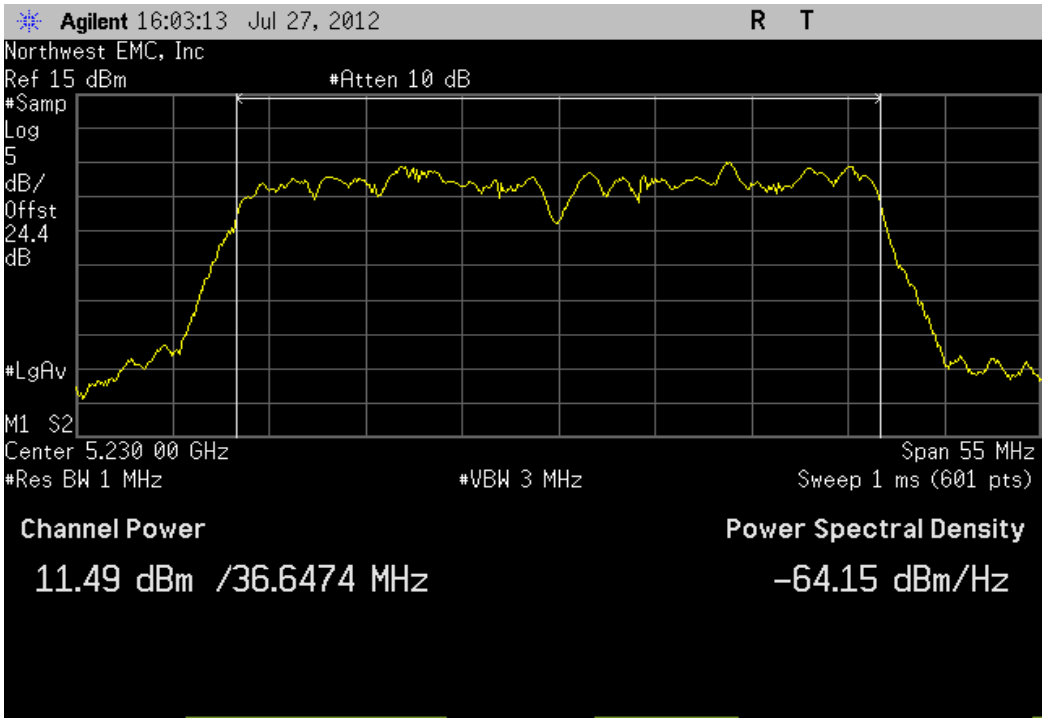
Antenna B, 40MHz Bandwidth , 802.11(n) MCS15, Low Channel 100/104 Fq 5510MHz

				Value	Limit	Result
				11.324 dBm	< 17 dBm	Pass



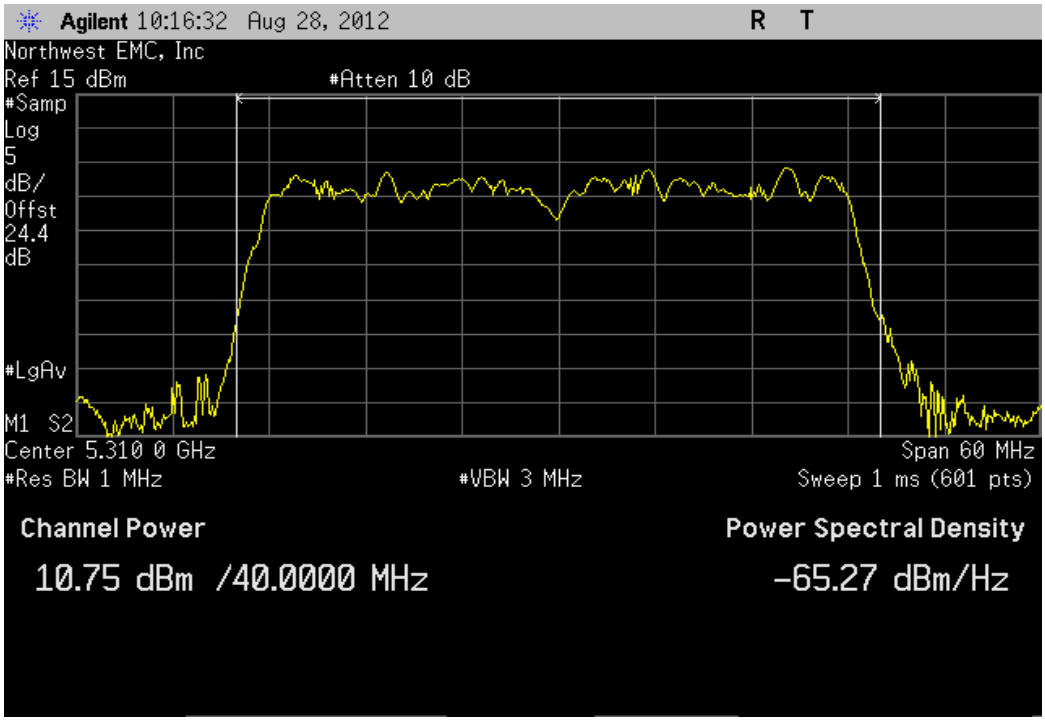
Antenna B, 40MHz Bandwidth , 802.11(n) MCS15, Low Channel 44/48 Fq 5230MHz

				Value	Limit	Result
				11.488 dBm	< 17 dBm	Pass



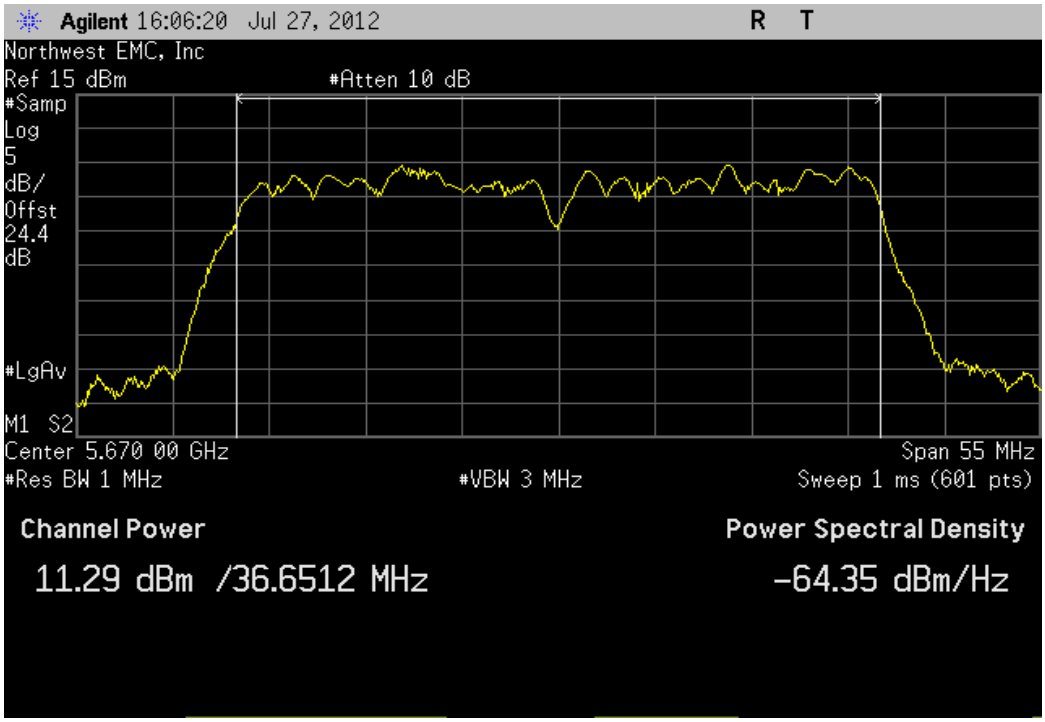
Antenna B, 40MHz Bandwidth , 802.11(n) MCS15, Low Channel 60/64 Fq 5310MHz

				Value	Limit	Result
				10.75 dBm	< 17 dBm	Pass



Antenna B, 40MHz Bandwidth , 802.11(n) MCS15, Low Channel 132/136 Fq 5670MHz

				Value	Limit	Result
				11.292 dBm	< 17 dBm	Pass



Peak 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
EV06 Direct Connect Cable	ESM Cable Corp.	TT	ECA	NCR	0
Attenuator 20 dB, SMA M/F 26GHz	S.M. Electronics	SA26B-20	AUY	8/3/2011	12
40GHz DC Block	Miteq	DCB4000	AMD	6/25/2012	12
Attenuator, 'N'	Coaxicom	66702 5910-6	ATZ	3/21/2012	12
MXG Vector Signal Generator	Agilent	N5182A	TIF	NCR	0
Power Meter	Gigatronics	8651A	SPM	1/9/2012	24
Power Sensor	Gigatronics	80701A	SPL	7/8/2011	24
Spectrum Analyzer	Agilent	E4440	AFE	1/23/2012	12
Calibration Block	EMC Test Systems	3301CD	AMC	5/10/2012	12

MEASUREMENT UNCERTAINTY

A measurement uncertainty estimation has been performed for each test per our internal quality document WP 342. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty for radiated emissions measurements is less than +/- 4 dB, and for conducted emissions measurements is less than +/- 2.7 dB. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for measurement uncertainty are available upon request.

TEST DESCRIPTION

FCC KDB 789033 D01 General UNII Test Procedures Section E was followed. The transmit frequency was set to the required channels in each band. The transmit power was set to its default maximum. The data rate(s) listed in the datasheet were tested. 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 power spectral density, the transmission pulse duration (T) was measured. The transmission pulse duration and the associated data are found elsewhere in this test report.

The spectrum analyzer settings were as follows:

- The span was set to encompass entire emission bandwidth (B), centered on the transmit channel.
- RBW = 1 MHz, VBW ≥ 3 MHz
- Sample detector was used because Method SA-1 Alternate was used to measure the Maximum Conducted Output Power.
- Trace average 100 traces in power averaging mode (not video averaging).

The peak power spectral density (PPSD) was determined to be the highest level found across the emission in any 1 MHz band after 100 sweeps of power averaging (not video averaging).

The power levels used while under test were 11dBm for 5GHz frequencies with a 40MHz bandwidth, 12dBm for 5GHz frequencies with a 20MHz bandwidth.

This testing was only done on the worst case output power modes / antenna ports as noted elsewhere in this report.

The guidance for testing multiple outputs as defined in KDB662911 D01 v01r01 item (2) was followed: Measure and add 10 log (N) dB, where N is the numer of outputs.

Peak Power Spectral Density

EUT:	1516			**Work Order:**	MCSO1601
Serial Number:	000309122652			**Date:**	08/02/12
Customer:	Microsoft Corporation			**Temperature:**	24°C
Attendees:	None			**Humidity:**	45%
Project:	None			**Barometric Pres.:**	1016
Tested by:	Brandon Hobbs	**Power:**	110ACV/60Hz	**Job Site:**	EV06

TEST SPECIFICATIONS	Test Method
FCC 15.407:2012	ANSI C63.10:2009

COMMENTS

EUT was set to 100% duty cycle for all the points listed.

DEVIATIONS FROM TEST STANDARD

None

Configuration #	1	Signature

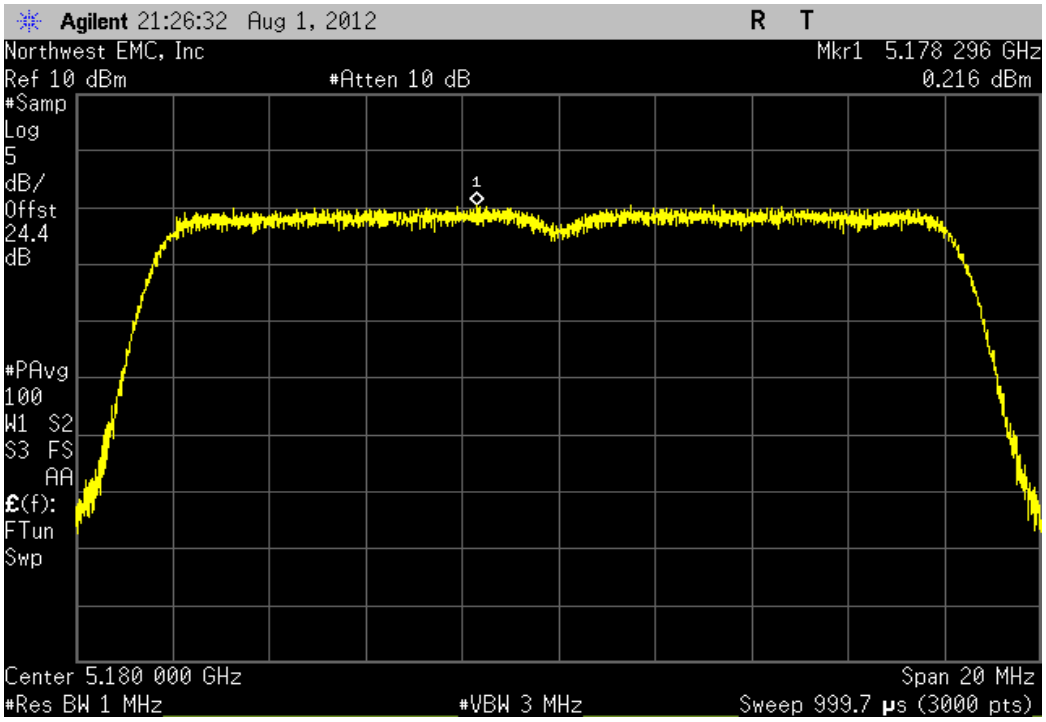
	Value (dBm / MHz)	Limit (dBm / MHz)	Result
Antenna A			
20MHz Bandwidth			
802.11(a) 6Mbps			
Low Channel 36 Fq 5180MHz	0.216	4	Pass
Low Channel 52 Fq 5260MHz	0.854	4	Pass
Low Channel 100 Fq 5500MHz	0.523	4	Pass
High Channel 48 Fq 5240MHz	0.224	4	Pass
High Channel 64 Fq 5320MHz	0.635	4	Pass
High Channel 140 Fq 5700MHz	0.038	4	Pass
Mid Channel 116 Fq 5580 MHz	0.822	4	Pass
40MHz Bandwidth			
802.11(n) MCS7			
Low Channel 38 Fq 5190MHz	-0.511	4	Pass
Low Channel 54 Fq 5270MHz	-0.753	4	Pass
Low Channel 102 Fq 5510MHz	-1.45	4	Pass
High Channel 46 Fq 5230MHz	-0.126	4	Pass
High Channel 62 Fq 5310MHz	0.143	4	Pass
High Channel 134 Fq 5670MHz	-0.697	4	Pass
802.11(n) MCS15			
Low Channel 38 Fq 5190MHz	-2.421	4	Pass
Low Channel 54 Fq 5270MHz	-1.682	4	Pass
Low Channel 102 Fq 5510MHz	-2.418	4	Pass
High Channel 46 Fq 5230MHz	-1.677	4	Pass
High Channel 62 Fq 5310MHz	-1.903	4	Pass
High Channel 134 Fq 5670MHz	-2.441	4	Pass

Power Summing 802.11(n) MCS15	Value (dBm / MHz)	Summing Factor (dbm)	Summed Power (dBm / MHz)	Limit (dBm / MHz)	Results
Low Channel 38 Fq 5190MHz	-2.421	3.000	0.58	4	Pass
Low Channel 54 Fq 5270MHz	-1.682	3.000	1.32	4	Pass
Low Channel 102 Fq 5510MHz	-2.418	3.000	0.58	4	Pass
High Channel 46 Fq 5230MHz	-1.677	3.000	1.32	4	Pass
High Channel 62 Fq 5310MHz	-1.903	3.000	1.10	4	Pass
High Channel 134 Fq 5670MHz	-2.441	3.000	0.56	4	Pass

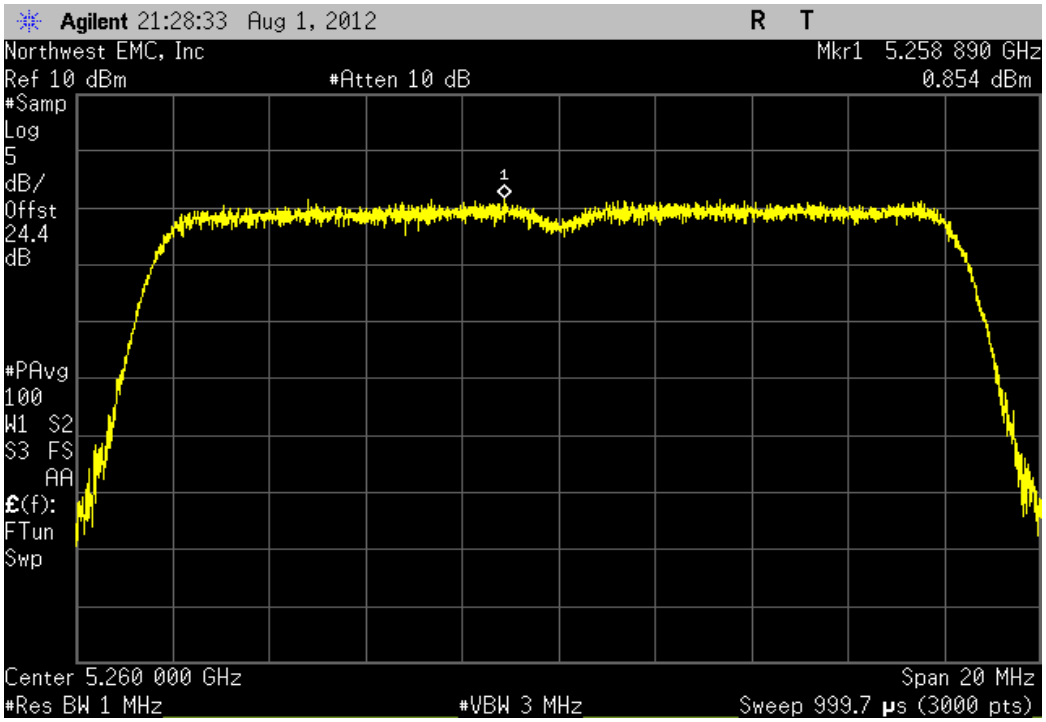
	Value (dBm / MHz)	Limit (dBm / MHz)	Result
Antenna B			
20MHz Bandwidth			
802.11(a) 36Mbps			
Low Channel 36 Fq 5180MHz	0.164	4	Pass
Low Channel 52 Fq 5260MHz	0.45	4	Pass
Low Channel 100 Fq 5500MHz	0.067	4	Pass
High Channel 48 Fq 5240MHz	0.088	4	Pass
High Channel 64 Fq 5320MHz	0.358	4	Pass
High Channel 140 Fq 5700MHz	-0.115	4	Pass
Mid Channel 116 Fq 5580 MHz	0.14	4	Pass
40MHz Bandwidth			
802.11(n) MCS7			
Low Channel 38 Fq 5190MHz	-0.335	4	Pass
Low Channel 54 Fq 5270MHz	-0.825	4	Pass
Low Channel 102 Fq 5510MHz	-1.334	4	Pass
High Channel 46 Fq 5230MHz	-0.961	4	Pass
High Channel 62 Fq 5310MHz	-0.333	4	Pass
High Channel 134 Fq 5670MHz	-1.21	4	Pass
802.11(n) MCS15			
Low Channel 38 Fq 5190MHz	-2.47	4	Pass
Low Channel 54 Fq 5270MHz	-2.123	4	Pass
Low Channel 102 Fq 5510MHz	-2.961	4	Pass
High Channel 46 Fq 5230MHz	-1.95	4	Pass
High Channel 62 Fq 5310MHz	-2.246	4	Pass
High Channel 134 Fq 5670MHz	-2.246	4	Pass

Power Summing 802.11(n) MCS15	Value (dBm / MHz)	Summing Factor (dbm)	Summed Power (dBm / MHz)	Limit (dBm / MHz)	Results
Low Channel 38 Fq 5190MHz	-2.47	3.000	0.53	4	Pass
Low Channel 54 Fq 5270MHz	-2.123	3.000	0.88	4	Pass
Low Channel 102 Fq 5510MHz	-2.961	3.000	0.04	4	Pass
High Channel 46 Fq 5230MHz	-1.95	3.000	1.05	4	Pass
High Channel 62 Fq 5310MHz	-2.246	3.000	0.75	4	Pass
High Channel 134 Fq 5670MHz	-2.246	3.000	0.75	4	Pass

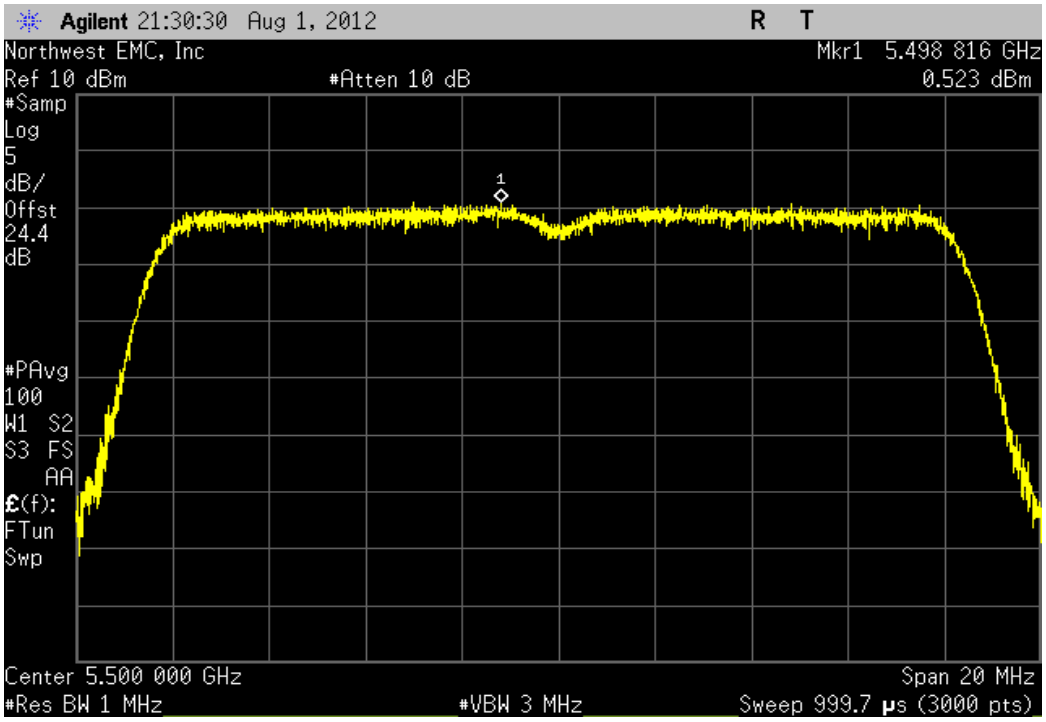
Antenna A, 20MHz Bandwidth , 802.11(a) 6Mbps, Low Channel 36 Fq 5180MHz						
				Value (dBm / MHz)	Limit (dBm / MHz)	Result
				0.216	4	Pass



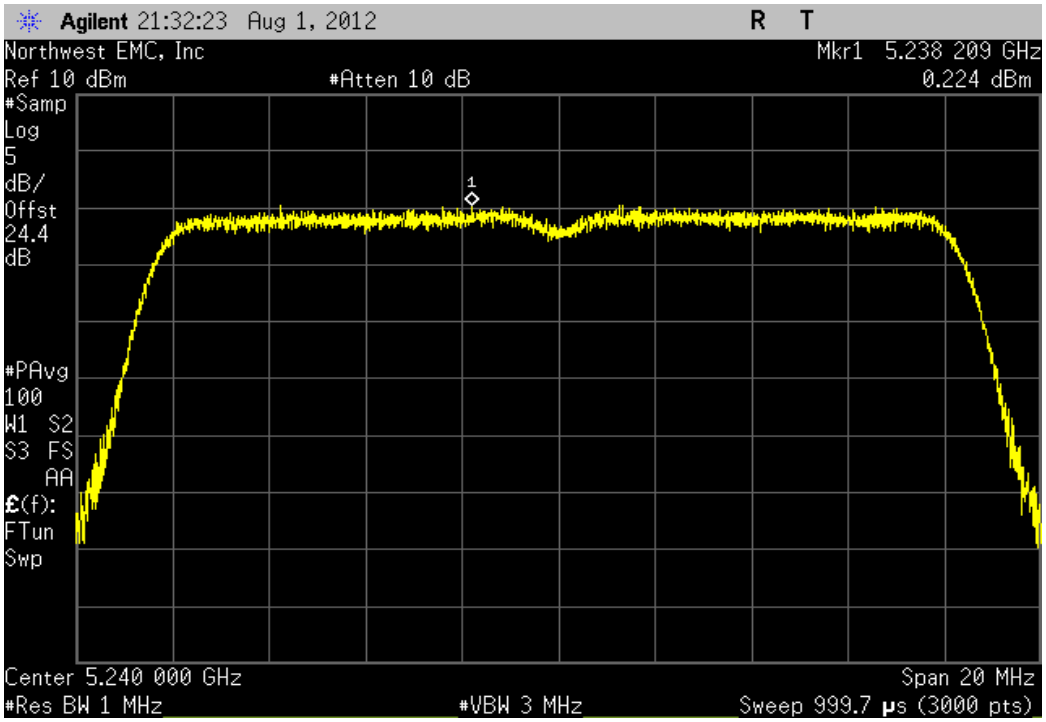
Antenna A, 20MHz Bandwidth , 802.11(a) 6Mbps, Low Channel 52 Fq 5260MHz						
				Value (dBm / MHz)	Limit (dBm / MHz)	Result
				0.854	4	Pass



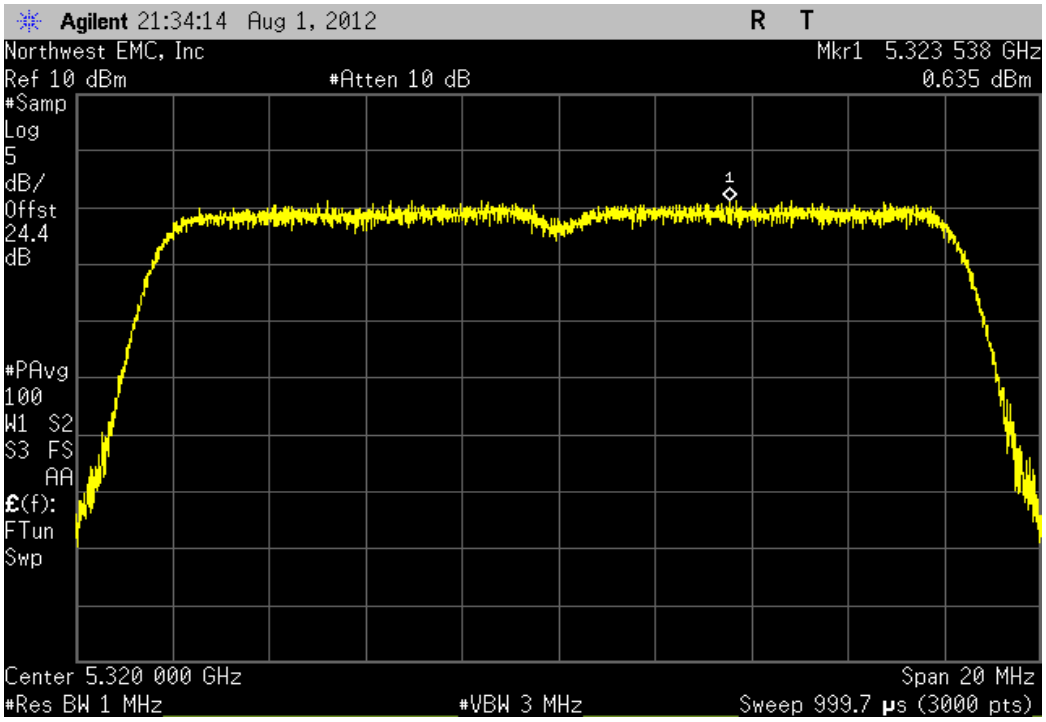
Antenna A, 20MHz Bandwidth , 802.11(a) 6Mbps, Low Channel 100 Fq 5500MHz						
					Value (dBm / MHz)	Limit (dBm / MHz)	Result
					0.523	4	Pass



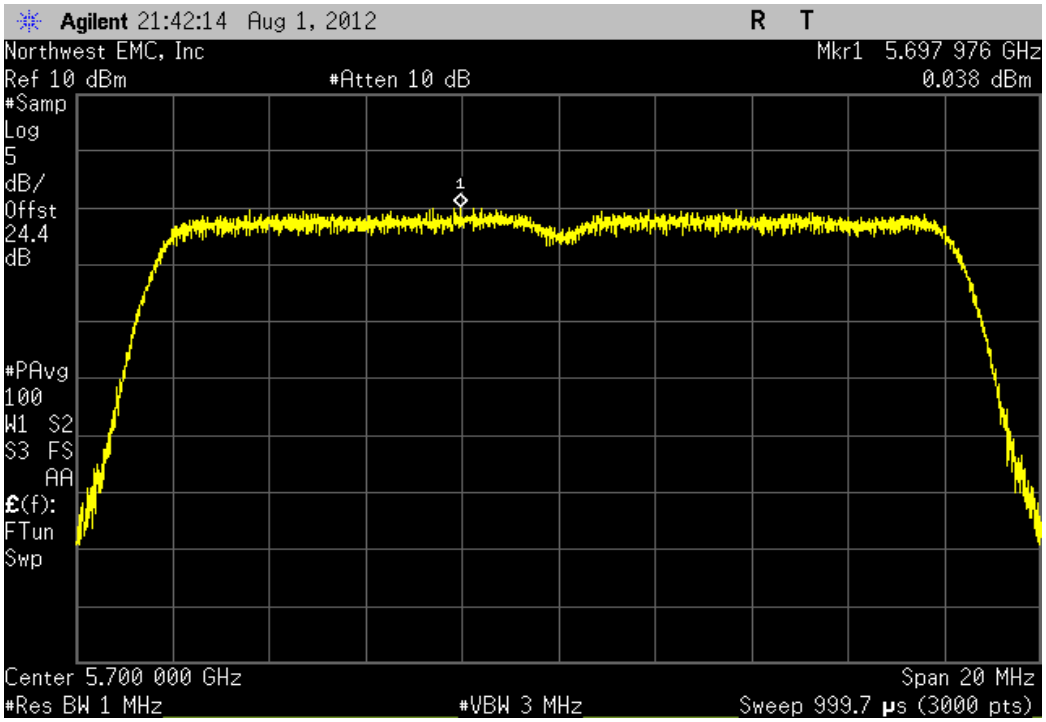
Antenna A, 20MHz Bandwidth , 802.11(a) 6Mbps, High Channel 48 Fq 5240MHz						
					Value (dBm / MHz)	Limit (dBm / MHz)	Result
					0.224	4	Pass



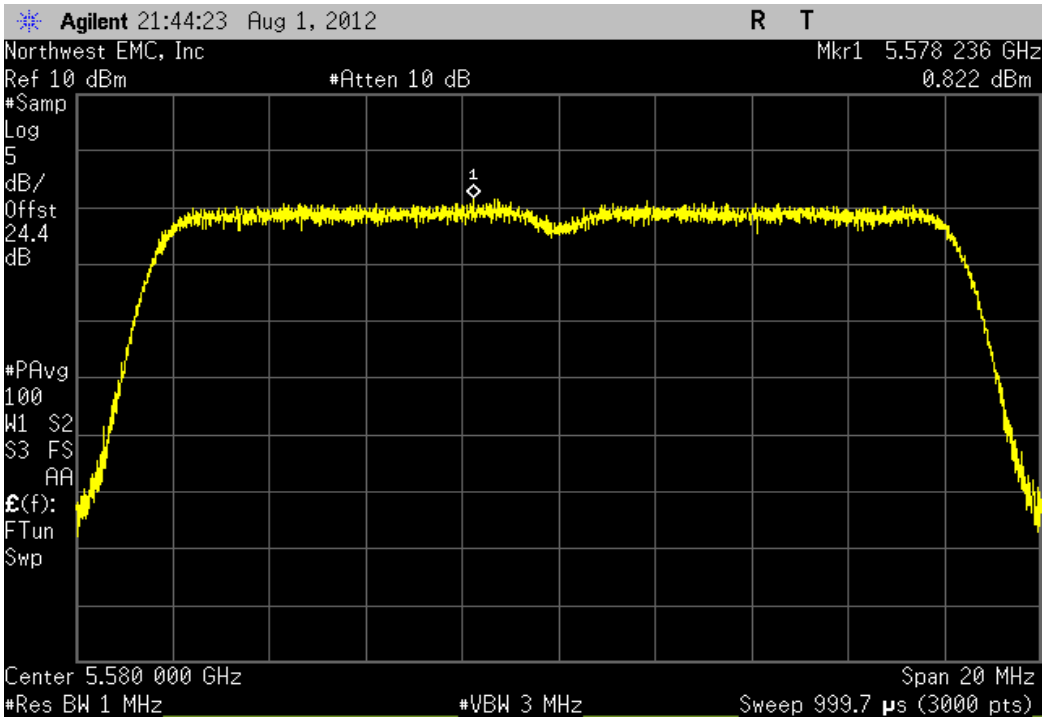
Antenna A, 20MHz Bandwidth , 802.11(a) 6Mbps, High Channel 64 Fq 5320MHz						
				Value (dBm / MHz)	Limit (dBm / MHz)	Result
				0.635	4	Pass



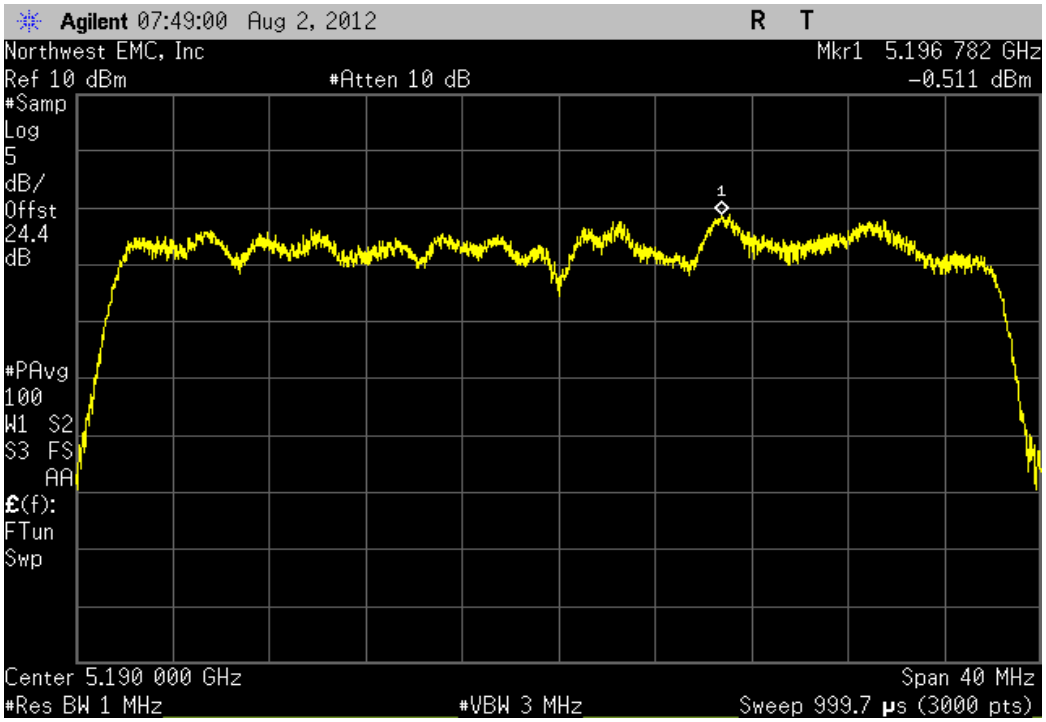
Antenna A, 20MHz Bandwidth , 802.11(a) 6Mbps, High Channel 140 Fq 5700MHz						
				Value (dBm / MHz)	Limit (dBm / MHz)	Result
				0.038	4	Pass



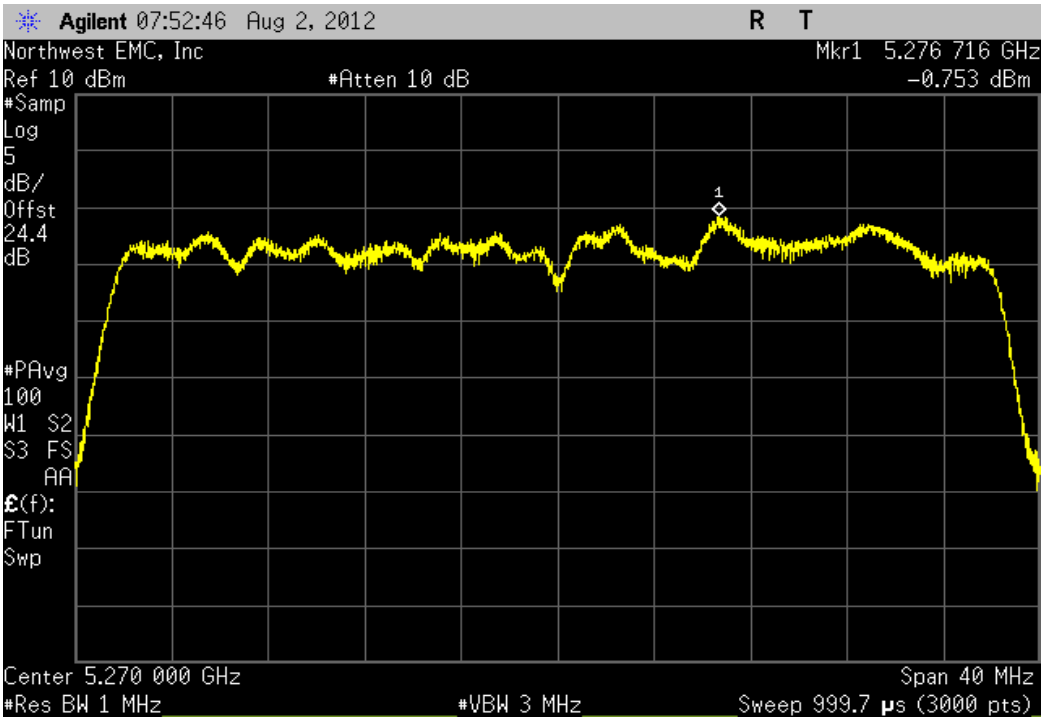
Antenna A, 20MHz Bandwidth , 802.11(a) 6Mbps, Mid Channel 116 Fq 5580 MHz						
					Value (dBm / MHz)	Limit (dBm / MHz)	Result
					0.822	4	Pass



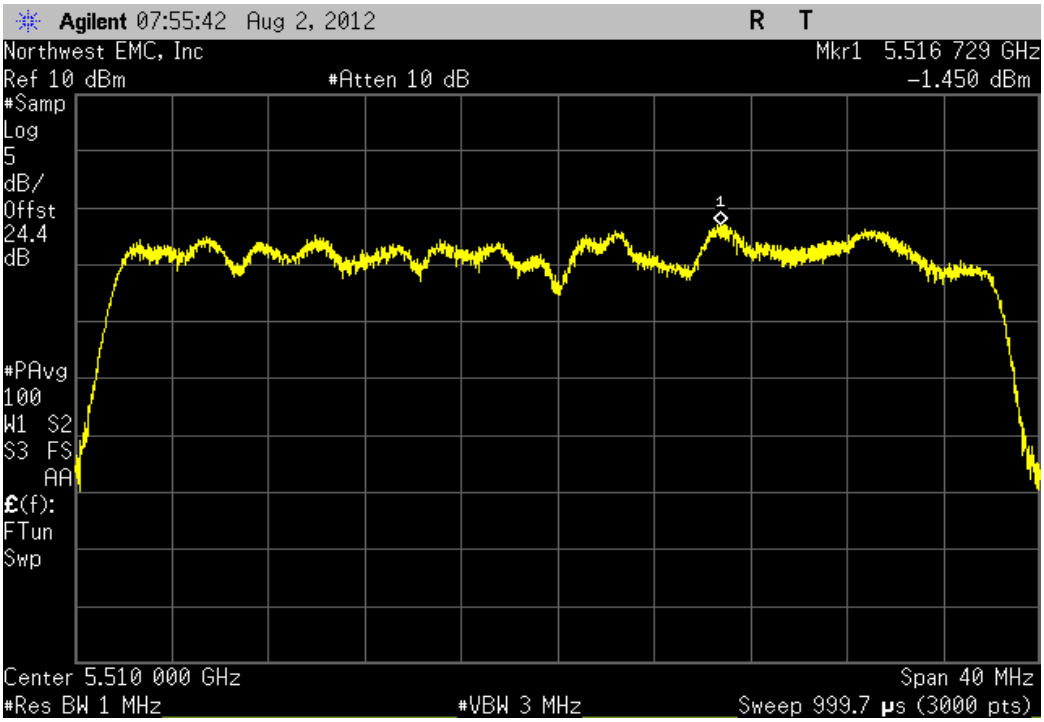
Antenna A, 40MHz Bandwidth , 802.11(n) MCS7, Low Channel 38 Fq 5190MHz						
					Value (dBm / MHz)	Limit (dBm / MHz)	Result
					-0.511	4	Pass



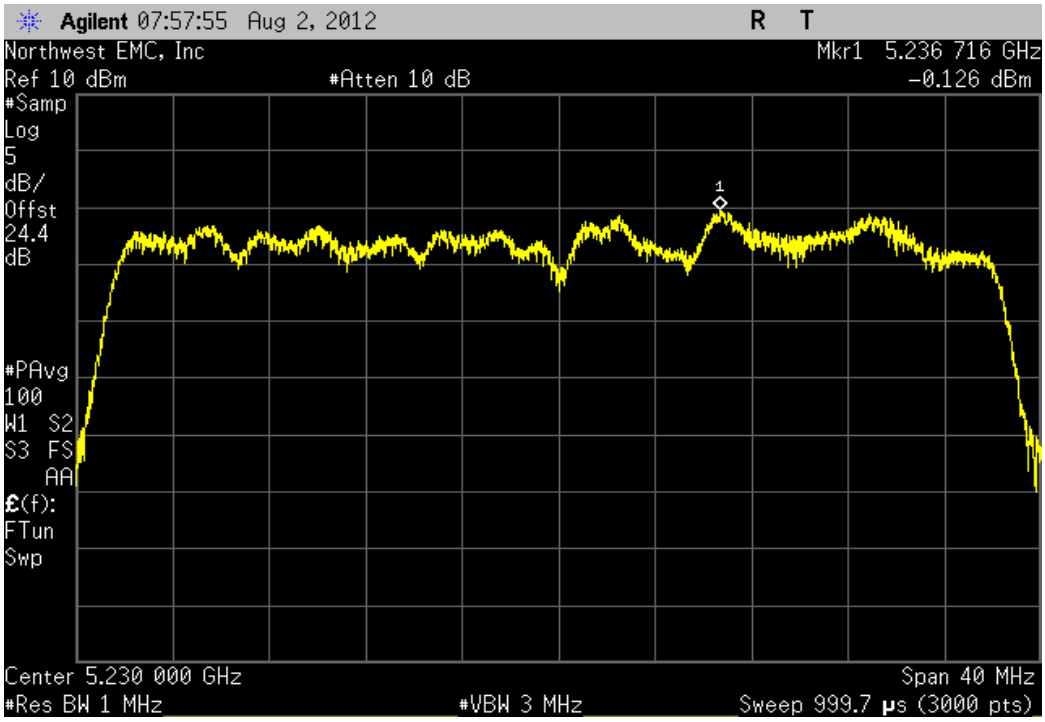
Antenna A, 40MHz Bandwidth , 802.11(n) MCS7, Low Channel 54 Fq 5270MHz						
				Value (dBm / MHz)	Limit (dBm / MHz)	Result
				-0.753	4	Pass



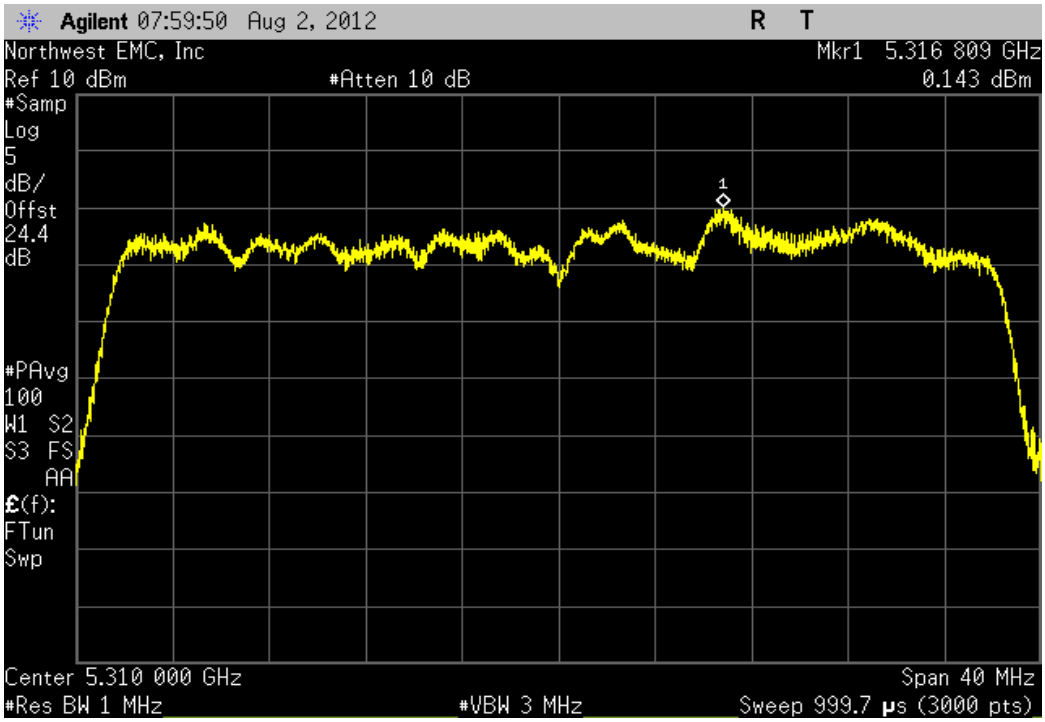
Antenna A, 40MHz Bandwidth , 802.11(n) MCS7, Low Channel 102 Fq 5510MHz						
				Value (dBm / MHz)	Limit (dBm / MHz)	Result
				-1.45	4	Pass



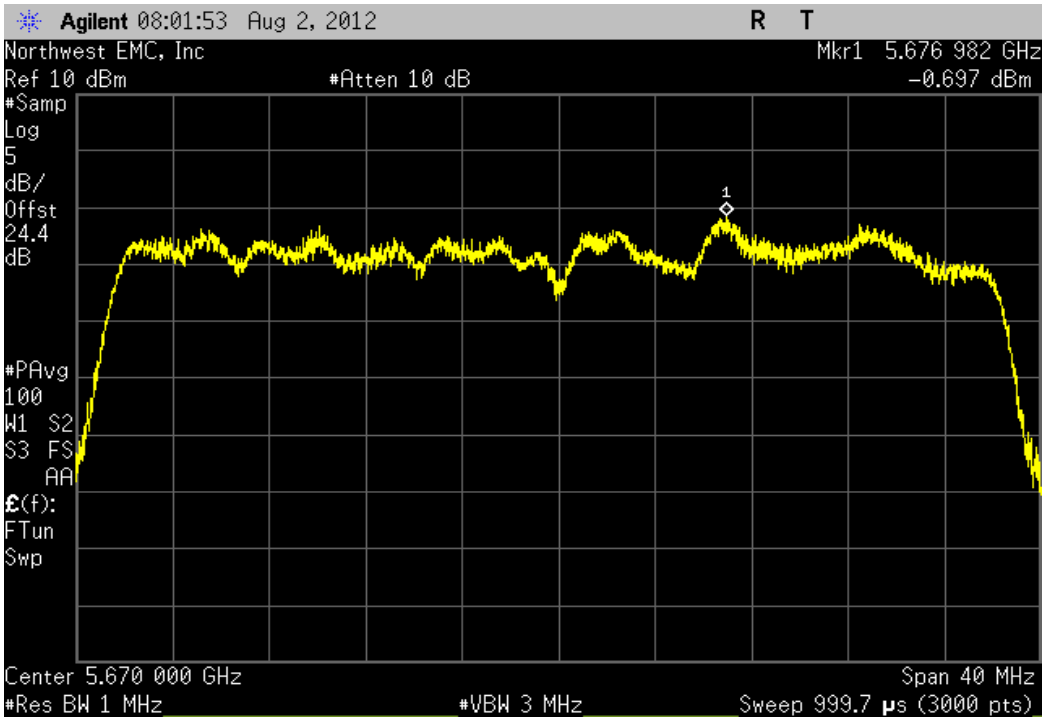
Antenna A, 40MHz Bandwidth , 802.11(n) MCS7, High Channel 46 Fq 5230MHz						
				Value (dBm / MHz)	Limit (dBm / MHz)	Result
				-0.126	4	Pass



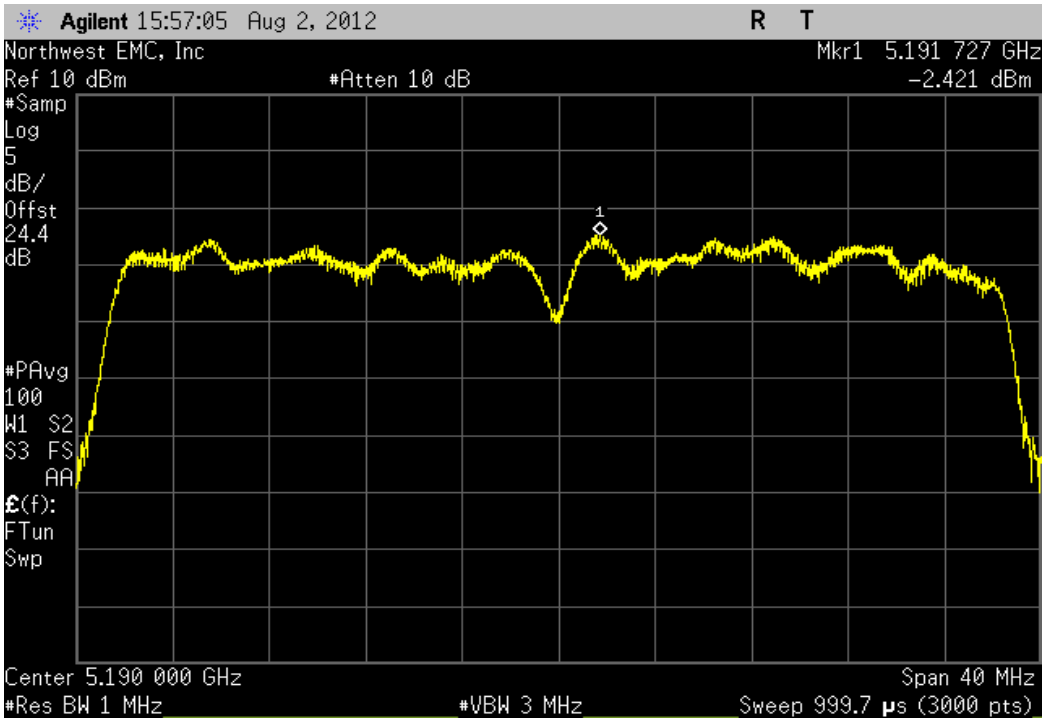
Antenna A, 40MHz Bandwidth , 802.11(n) MCS7, High Channel 62 Fq 5310MHz						
				Value (dBm / MHz)	Limit (dBm / MHz)	Result
				0.143	4	Pass



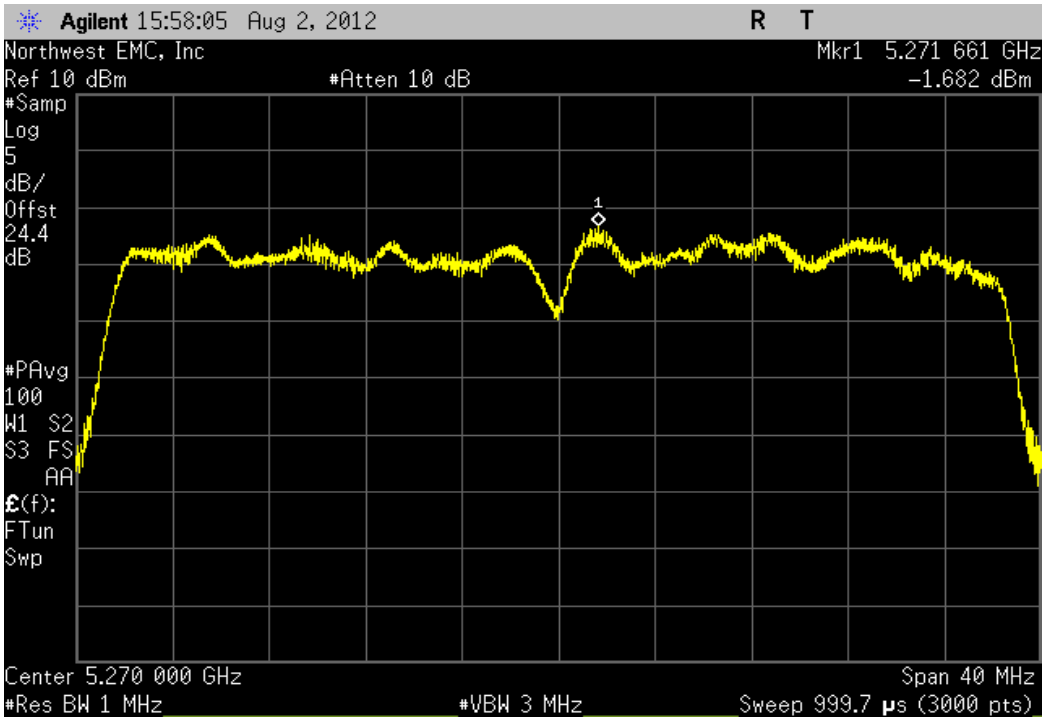
Antenna A, 40MHz Bandwidth , 802.11(n) MCS7, High Channel 134 Fq 5670MHz						
				Value (dBm / MHz)	Limit (dBm / MHz)	Result
				-0.697	4	Pass



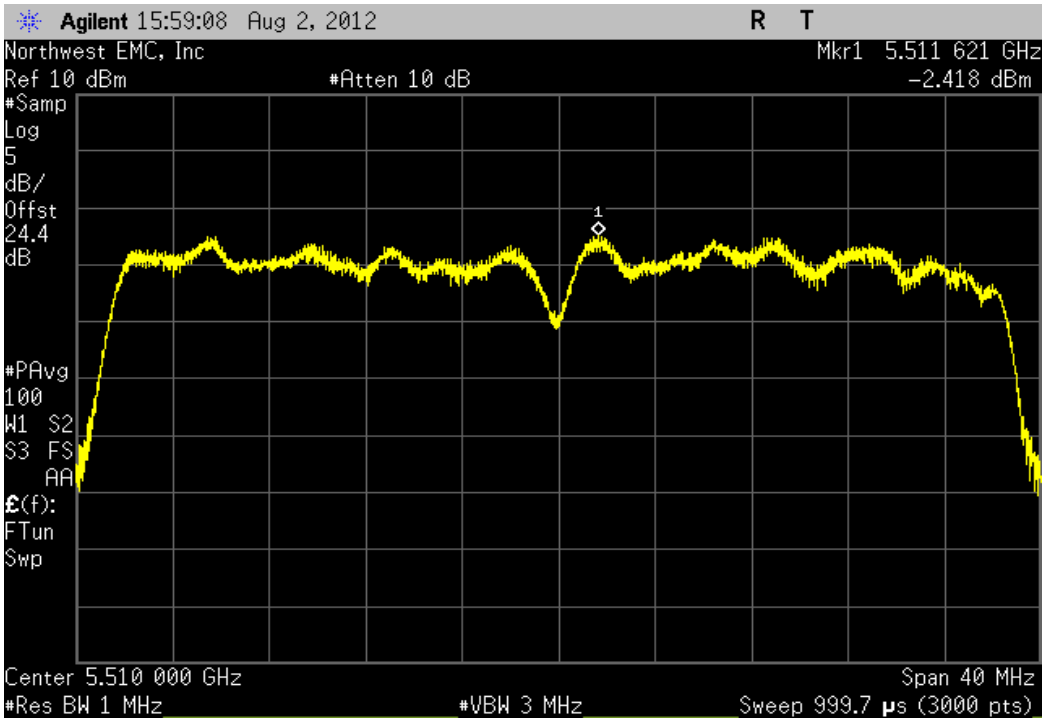
Antenna A, 40MHz Bandwidth , 802.11(n) MCS15, Low Channel 38 Fq 5190MHz						
				Value (dBm / MHz)	Limit (dBm / MHz)	Result
				-2.421	4	Pass



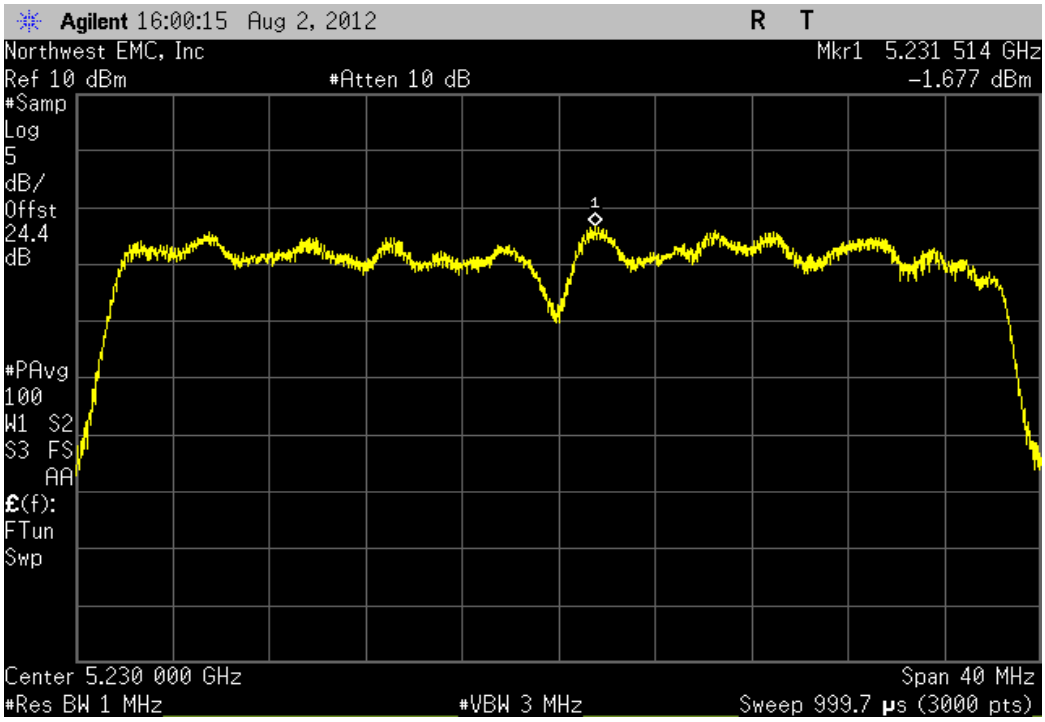
Antenna A, 40MHz Bandwidth , 802.11(n) MCS15, Low Channel 54 Fq 5270MHz						
				Value (dBm / MHz)	Limit (dBm / MHz)	Result
				-1.682	4	Pass



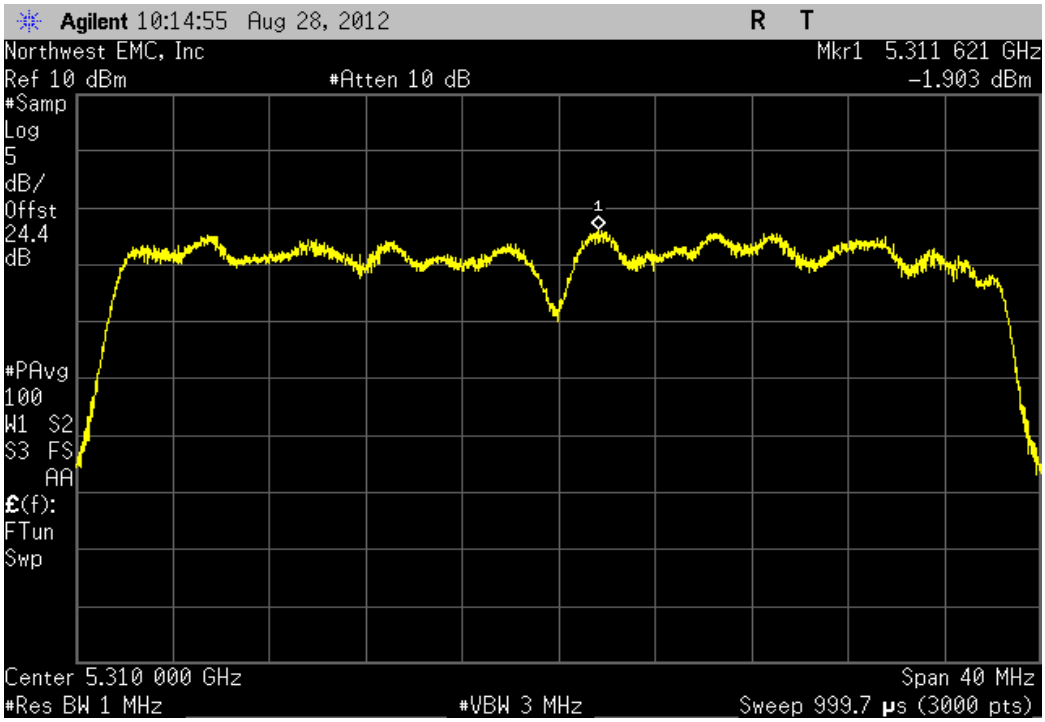
Antenna A, 40MHz Bandwidth , 802.11(n) MCS15, Low Channel 102 Fq 5510MHz						
				Value (dBm / MHz)	Limit (dBm / MHz)	Result
				-2.418	4	Pass



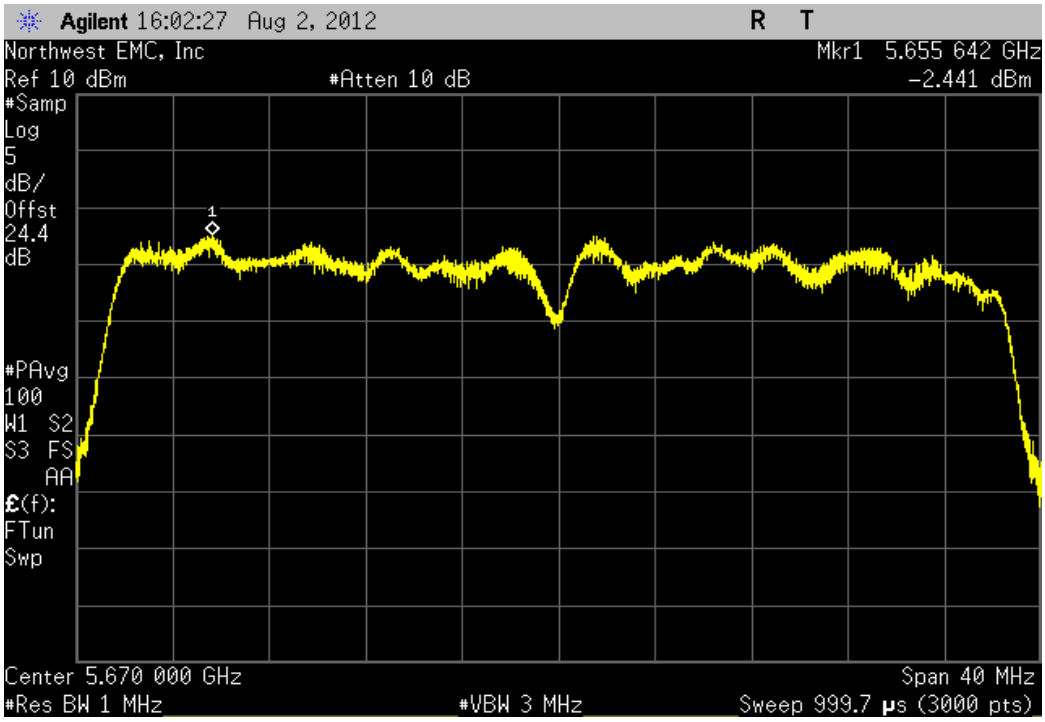
Antenna A, 40MHz Bandwidth , 802.11(n) MCS15, High Channel 46 Fq 5230MHz						
				Value (dBm / MHz)	Limit (dBm / MHz)	Result
				-1.677	4	Pass



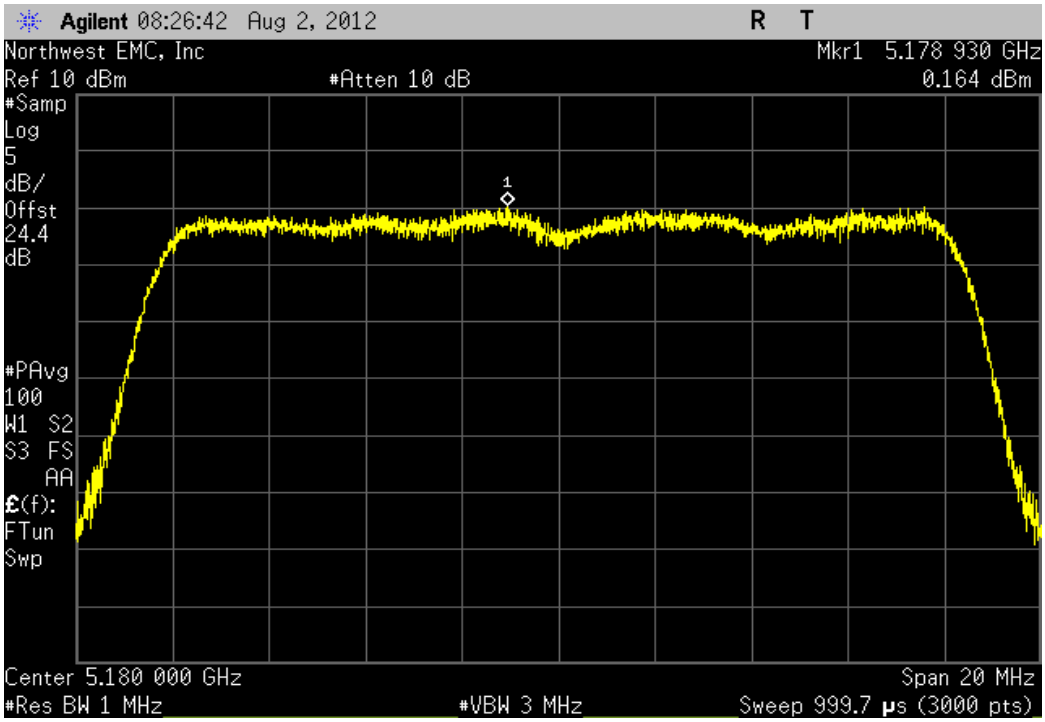
Antenna A, 40MHz Bandwidth , 802.11(n) MCS15, High Channel 62 Fq 5310MHz						
				Value (dBm / MHz)	Limit (dBm / MHz)	Result
				-1.903	4	Pass



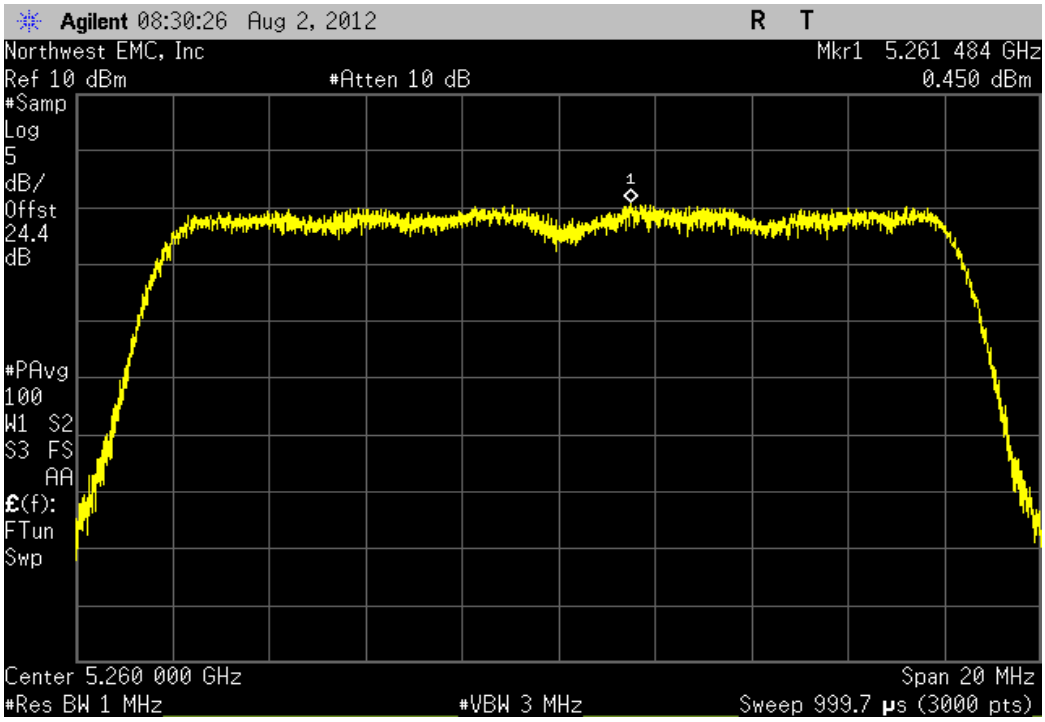
Antenna A, 40MHz Bandwidth , 802.11(n) MCS15, High Channel 134 Fq 5670MHz						
				Value (dBm / MHz)	Limit (dBm / MHz)	Result
				-2.441	4	Pass



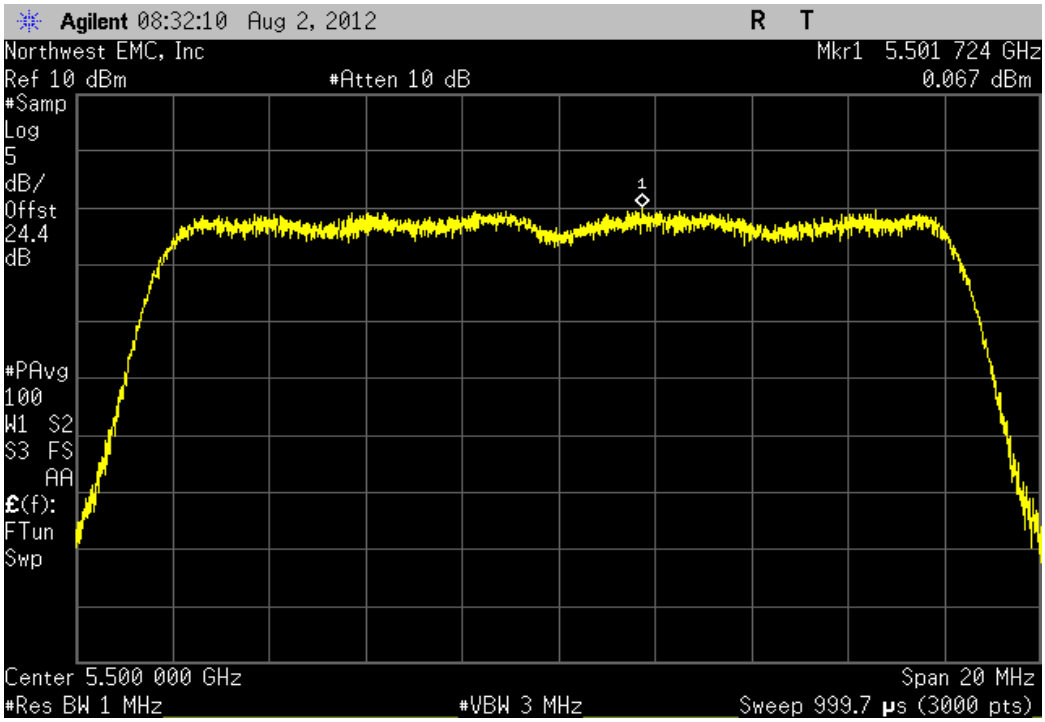
Antenna B, 20MHz Bandwidth , 802.11(a) 36Mbps, Low Channel 36 Fq 5180MHz						
				Value (dBm / MHz)	Limit (dBm / MHz)	Result
				0.164	4	Pass



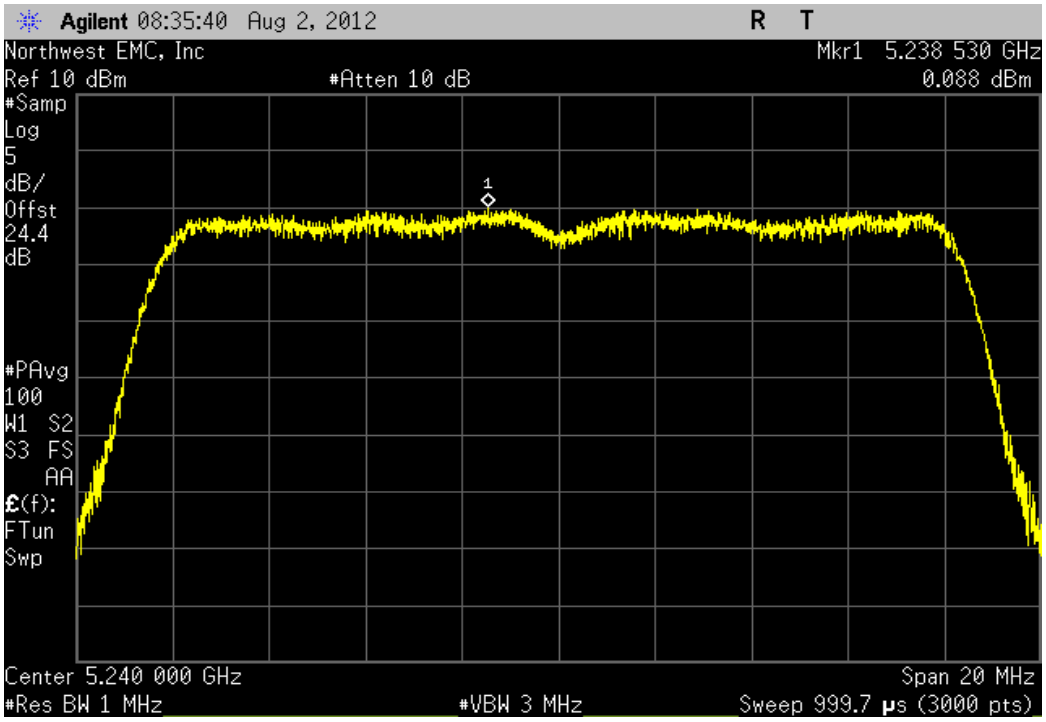
Antenna B, 20MHz Bandwidth , 802.11(a) 36Mbps, Low Channel 52 Fq 5260MHz						
				Value (dBm / MHz)	Limit (dBm / MHz)	Result
				0.45	4	Pass



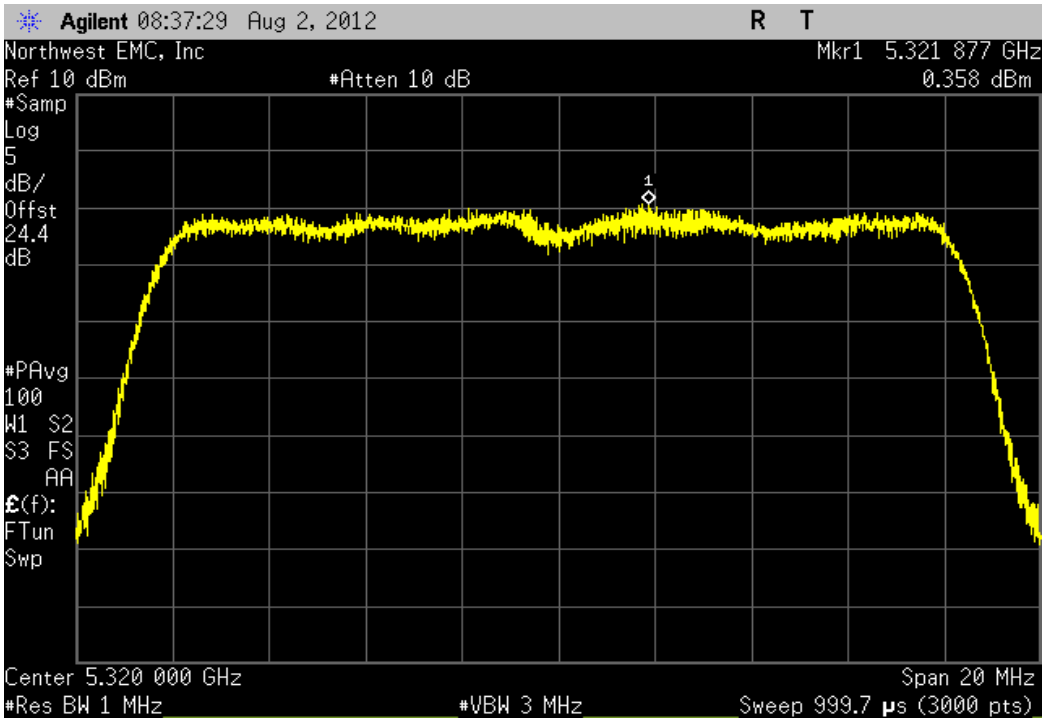
Antenna B, 20MHz Bandwidth , 802.11(a) 36Mbps, Low Channel 100 Fq 5500MHz						
				Value (dBm / MHz)	Limit (dBm / MHz)	Result
				0.067	4	Pass



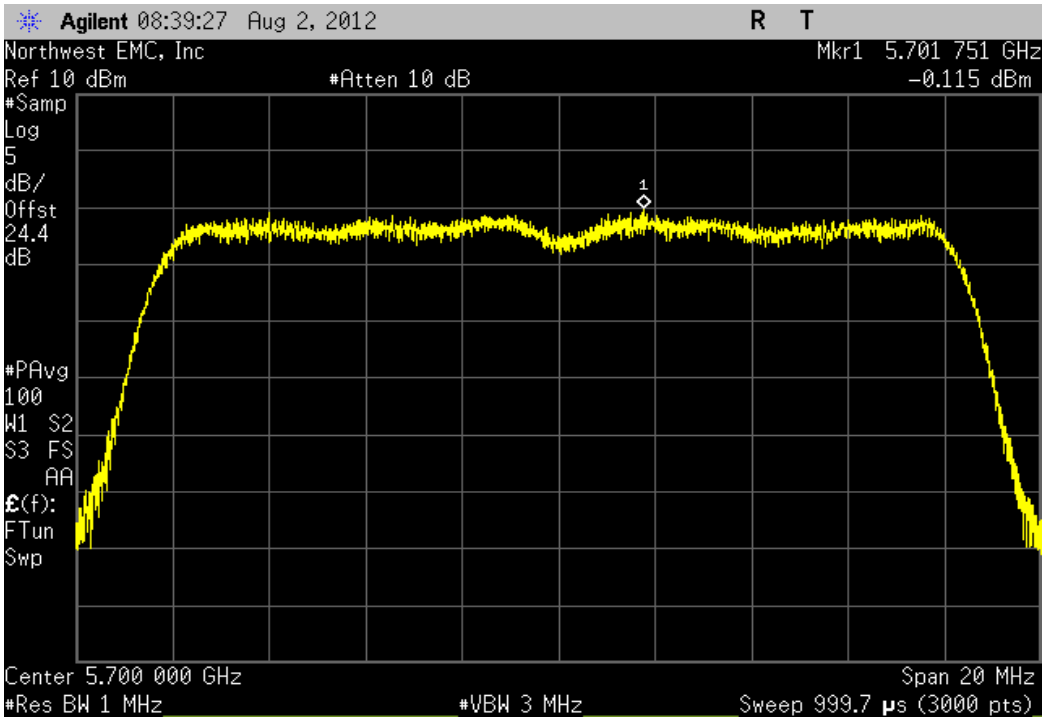
Antenna B, 20MHz Bandwidth , 802.11(a) 36Mbps, High Channel 48 Fq 5240MHz							
					Value (dBm / MHz)	Limit (dBm / MHz)	Result
					0.088	4	Pass



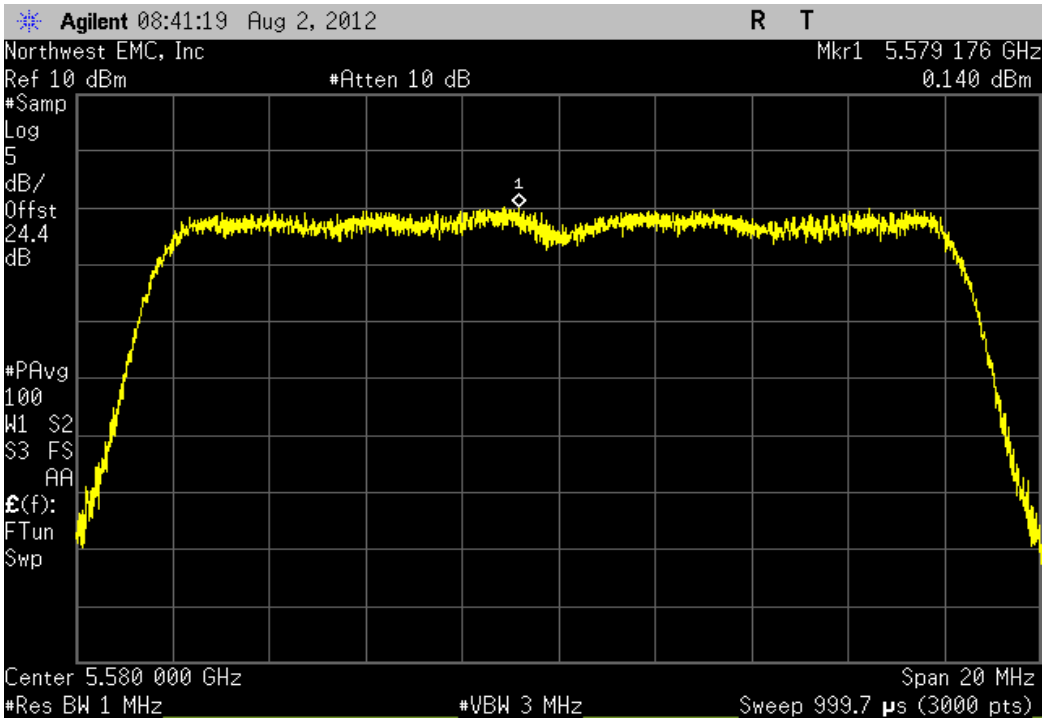
Antenna B, 20MHz Bandwidth , 802.11(a) 36Mbps, High Channel 64 Fq 5320MHz							
					Value (dBm / MHz)	Limit (dBm / MHz)	Result
					0.358	4	Pass



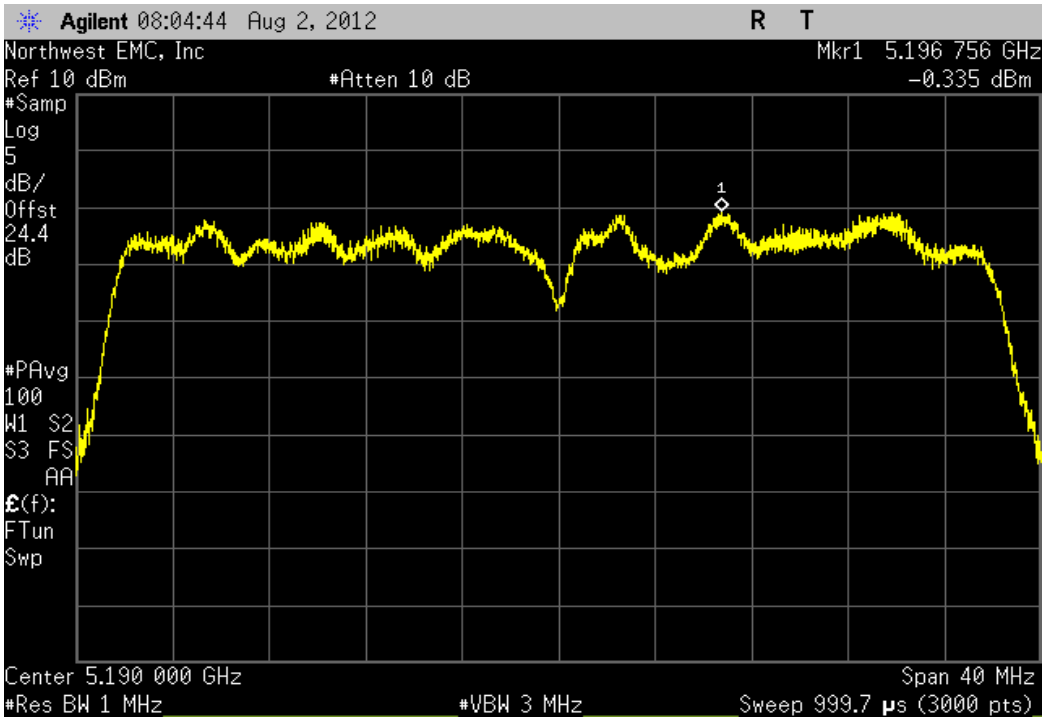
Antenna B, 20MHz Bandwidth , 802.11(a) 36Mbps, High Channel 140 Fq 5700MHz						
				Value (dBm / MHz)	Limit (dBm / MHz)	Result
				-0.115	4	Pass



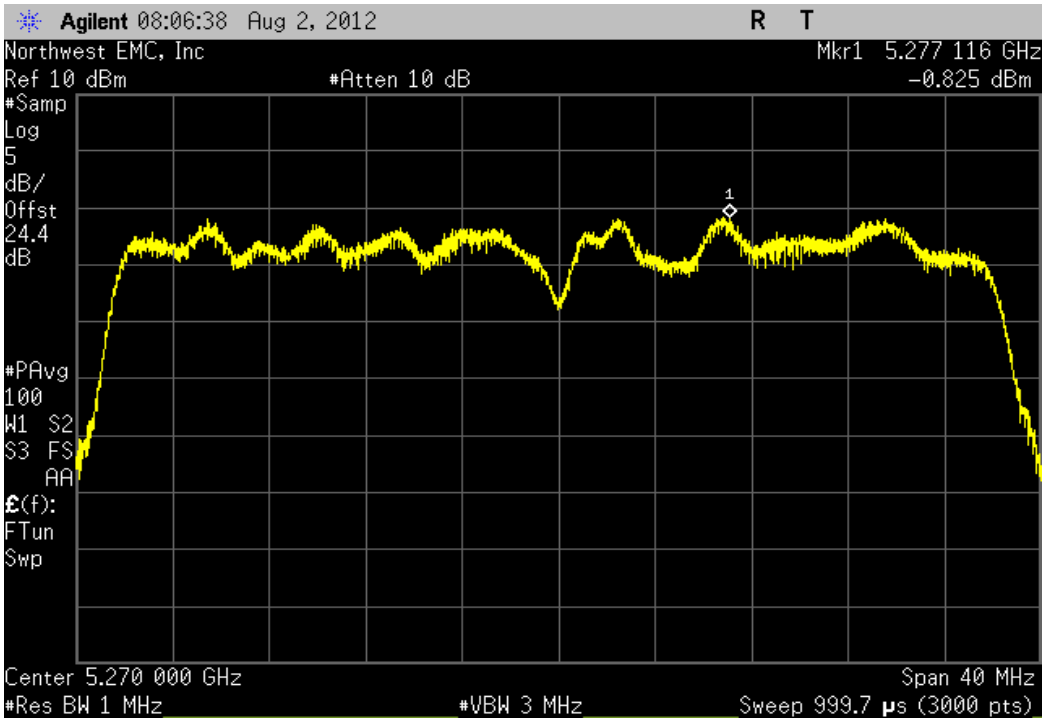
Antenna B, 20MHz Bandwidth , 802.11(a) 36Mbps, Mid Channel 116 Fq 5580 MHz						
				Value (dBm / MHz)	Limit (dBm / MHz)	Result
				0.14	4	Pass



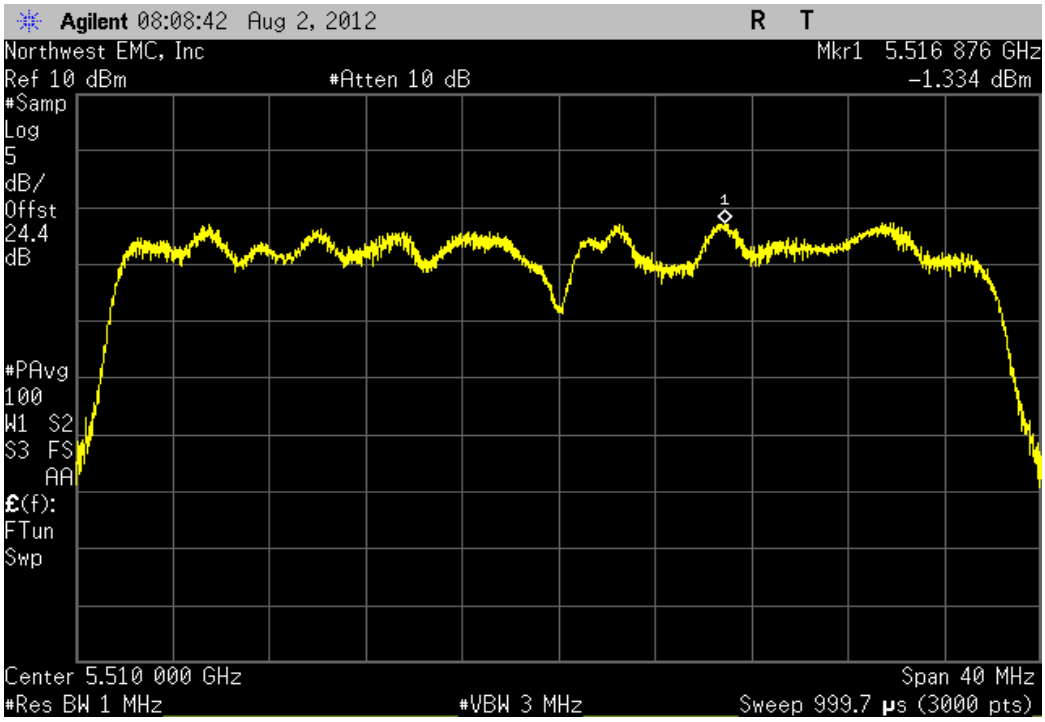
Antenna B, 40MHz Bandwidth , 802.11(n) MCS7, Low Channel 38 Fq 5190MHz						
				Value (dBm / MHz)	Limit (dBm / MHz)	Result
				-0.335	4	Pass



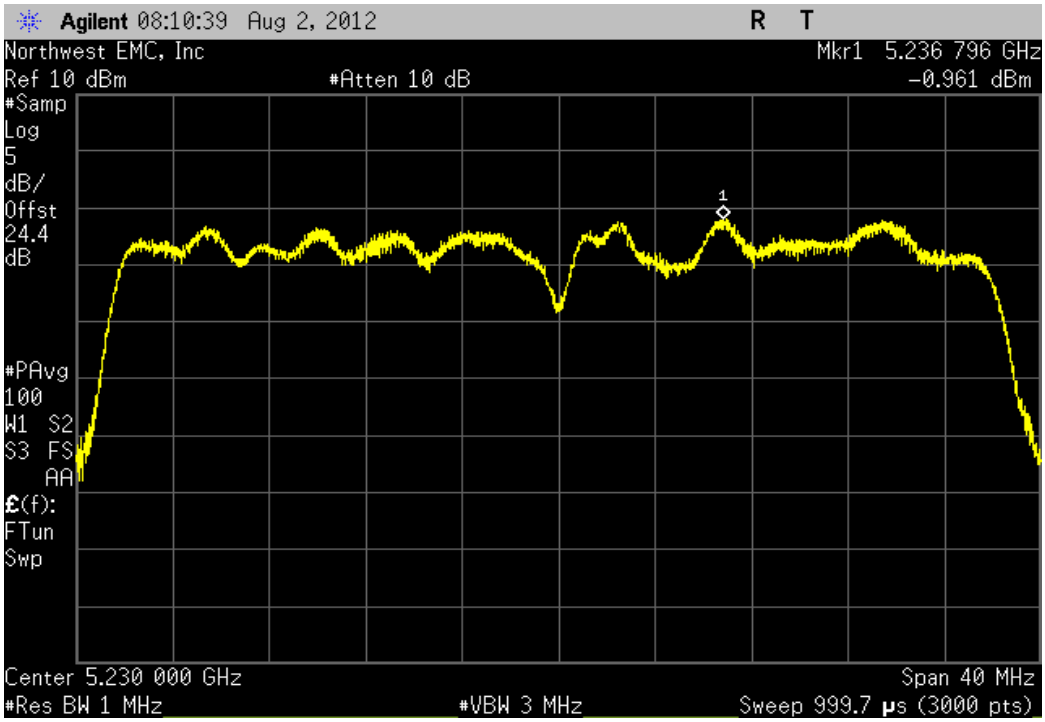
Antenna B, 40MHz Bandwidth , 802.11(n) MCS7, Low Channel 54 Fq 5270MHz						
				Value (dBm / MHz)	Limit (dBm / MHz)	Result
				-0.825	4	Pass



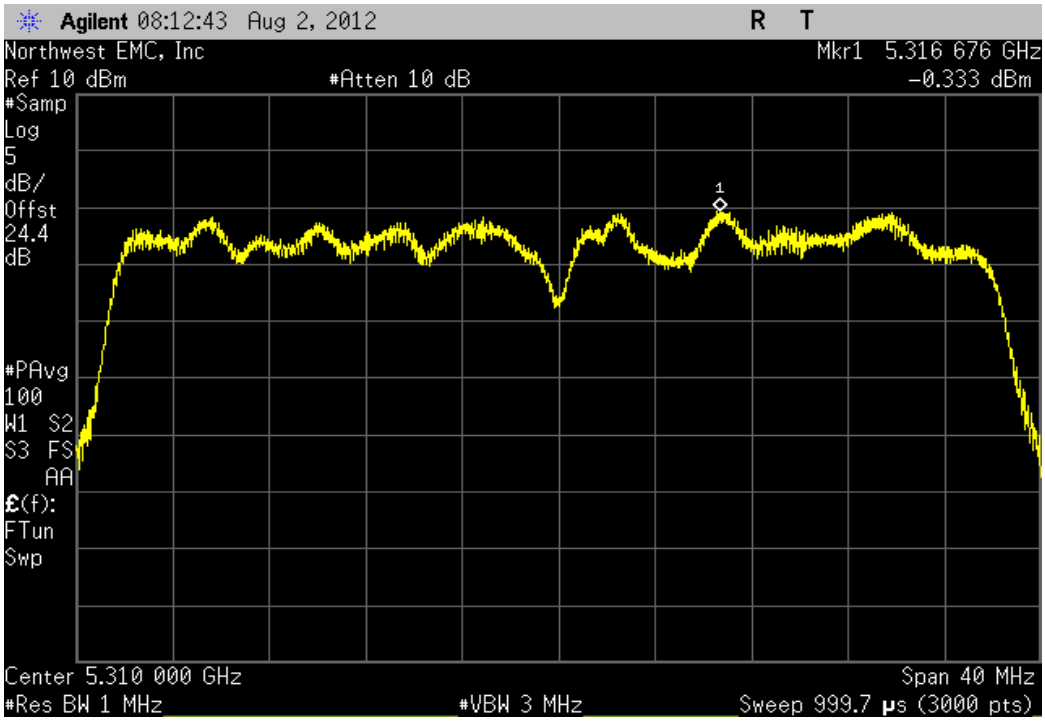
Antenna B, 40MHz Bandwidth , 802.11(n) MCS7, Low Channel 102 Fq 5510MHz						
				Value (dBm / MHz)	Limit (dBm / MHz)	Result
				-1.334	4	Pass



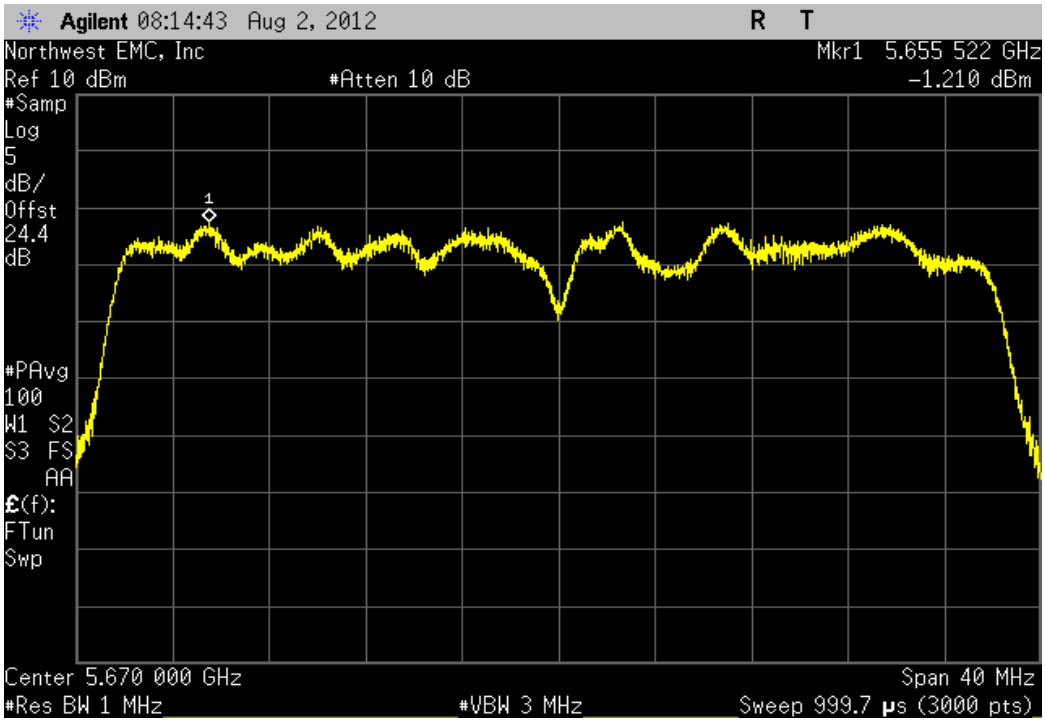
Antenna B, 40MHz Bandwidth , 802.11(n) MCS7, High Channel 46 Fq 5230MHz						
				Value (dBm / MHz)	Limit (dBm / MHz)	Result
				-0.961	4	Pass



Antenna B, 40MHz Bandwidth , 802.11(n) MCS7, High Channel 62 Fq 5310MHz						
				Value (dBm / MHz)	Limit (dBm / MHz)	Result
				-0.333	4	Pass

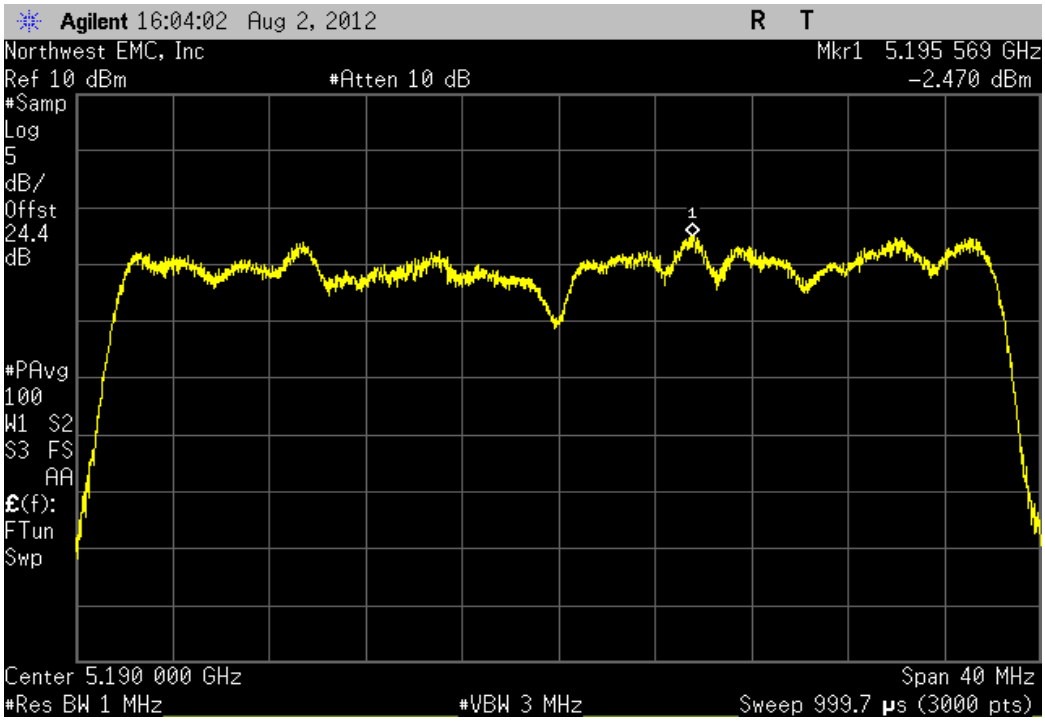


Antenna B, 40MHz Bandwidth , 802.11(n) MCS7, High Channel 134 Fq 5670MHz						
				Value (dBm / MHz)	Limit (dBm / MHz)	Result
				-1.21	4	Pass

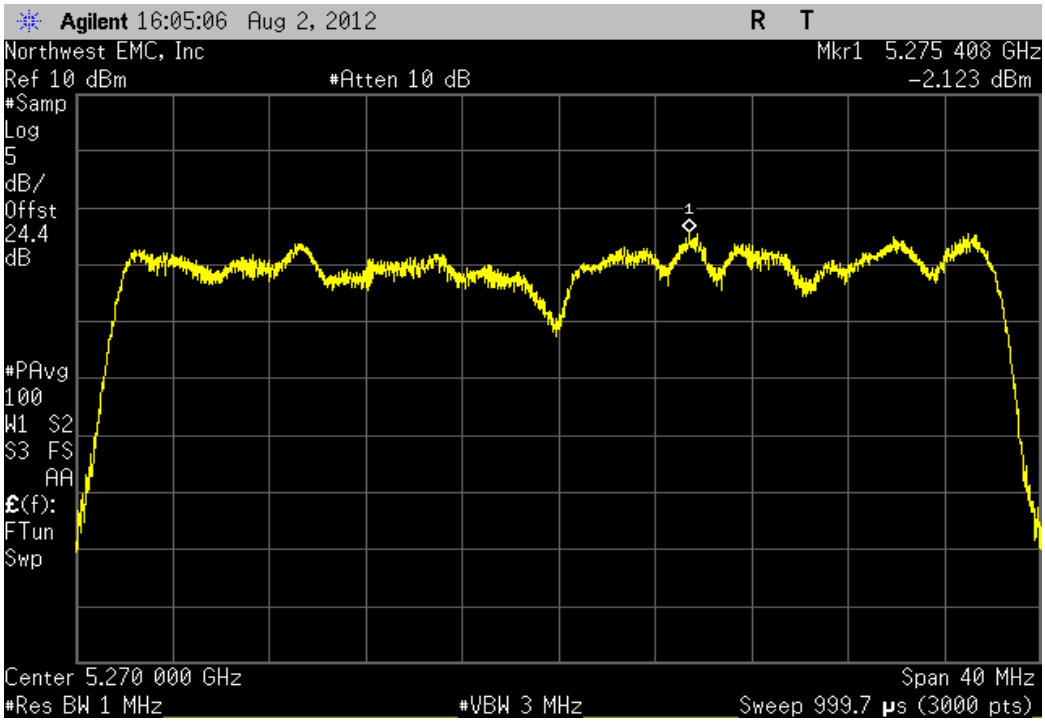


Peak Power Spectral Density

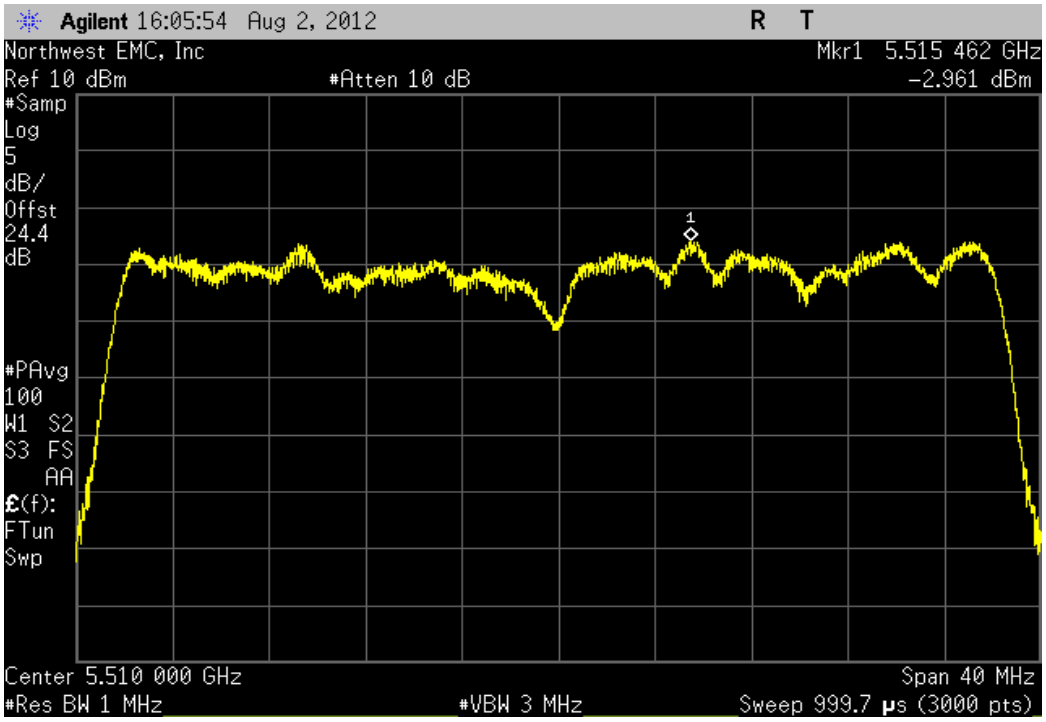
Antenna B, 40MHz Bandwidth , 802.11(n) MCS15, Low Channel 38 Fq 5190MHz						
				Value (dBm / MHz)	Limit (dBm / MHz)	Result
				-2.47	4	Pass



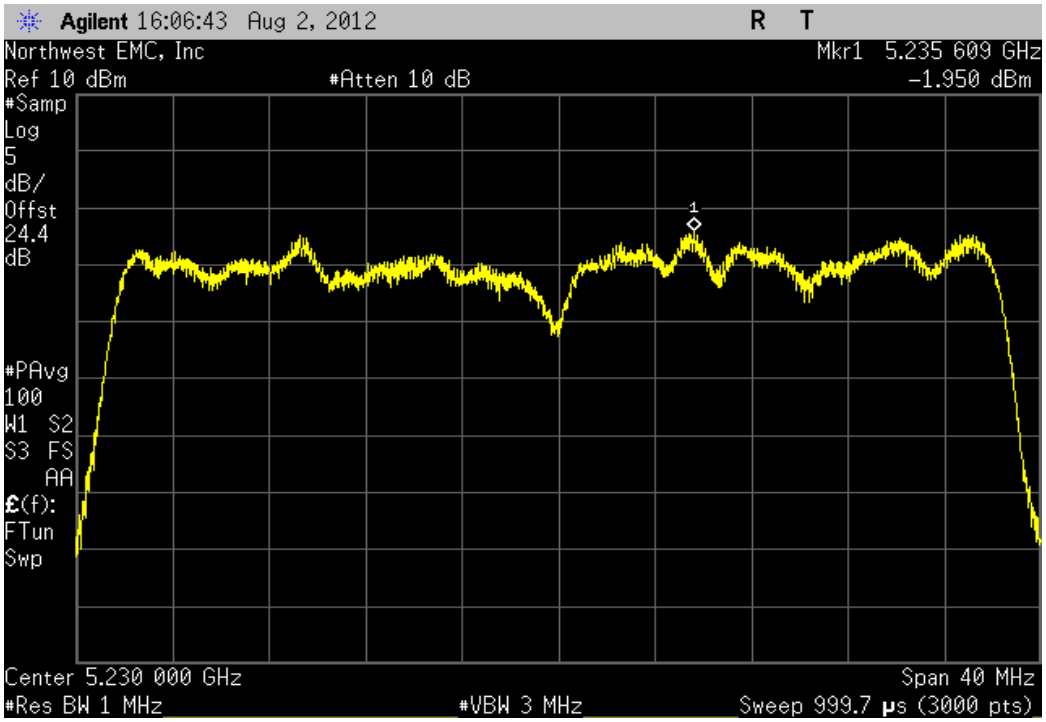
Antenna B, 40MHz Bandwidth , 802.11(n) MCS15, Low Channel 54 Fq 5270MHz						
				Value (dBm / MHz)	Limit (dBm / MHz)	Result
				-2.123	4	Pass



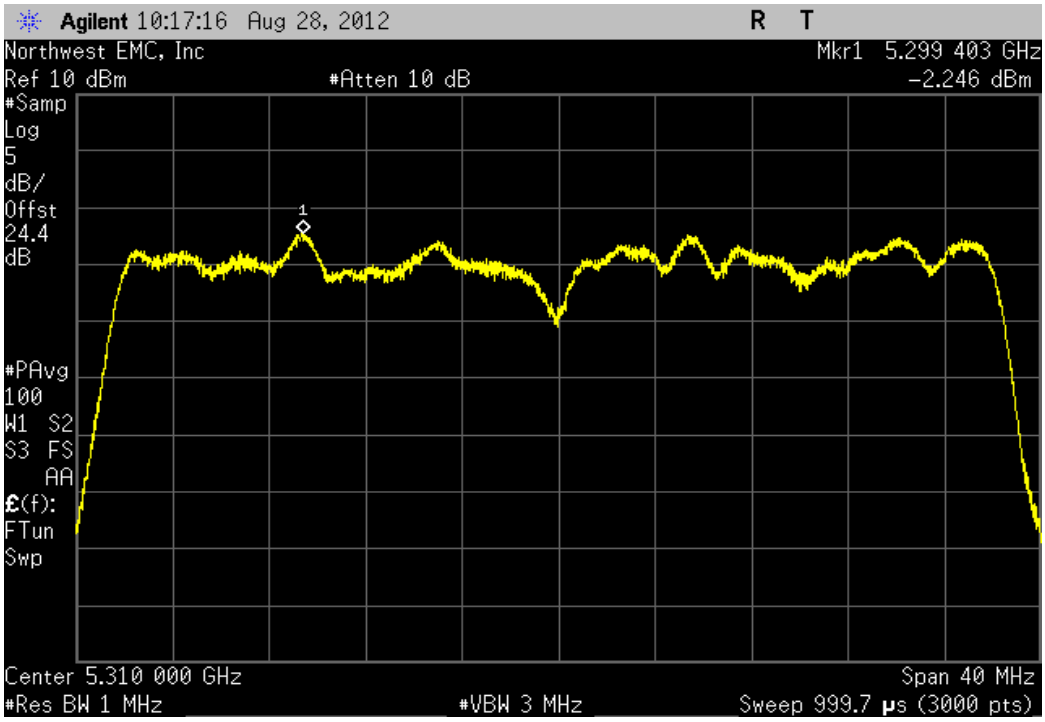
Antenna B, 40MHz Bandwidth , 802.11(n) MCS15, Low Channel 102 Fq 5510MHz						
				Value (dBm / MHz)	Limit (dBm / MHz)	Result
				-2.961	4	Pass



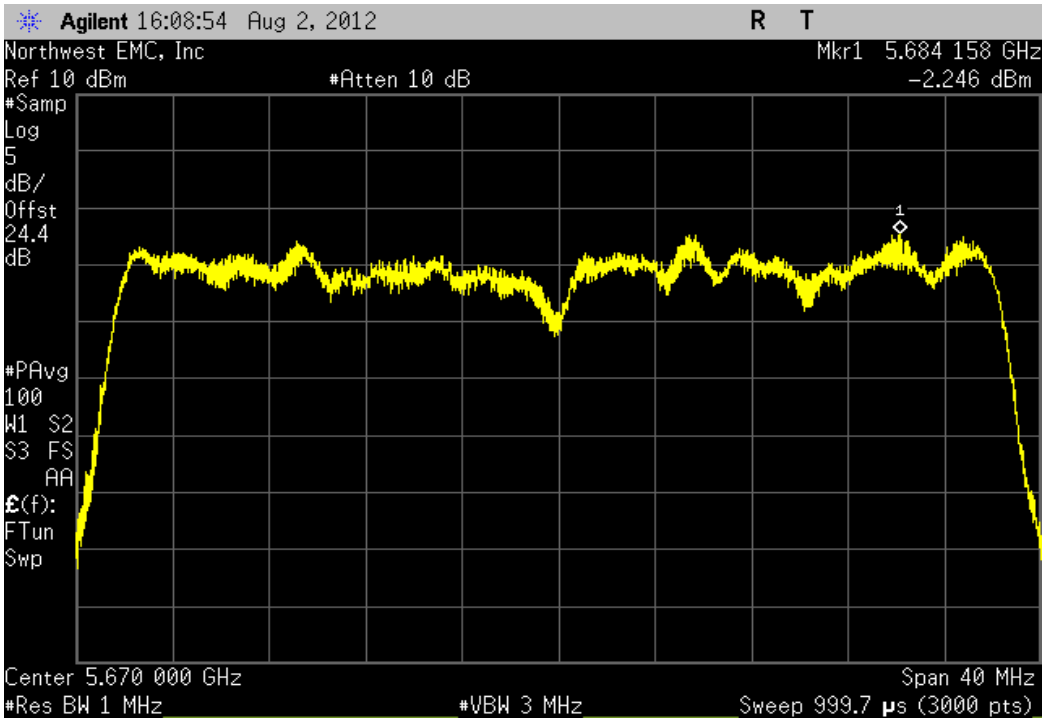
Antenna B, 40MHz Bandwidth , 802.11(n) MCS15, High Channel 46 Fq 5230MHz						
				Value (dBm / MHz)	Limit (dBm / MHz)	Result
				-1.95	4	Pass



Antenna B, 40MHz Bandwidth , 802.11(n) MCS15, High Channel 62 Fq 5310MHz						
				Value (dBm / MHz)	Limit (dBm / MHz)	Result
				-2.246	4	Pass



Antenna B, 40MHz Bandwidth , 802.11(n) MCS15, High Channel 134 Fq 5670MHz						
				Value (dBm / MHz)	Limit (dBm / MHz)	Result
				-2.246	4	Pass



Peak Excursion

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
Multimeter	Tektronix	DMM912	MMH	1/28/2011	24
DC Power Supply	Topward	TPS-2000	TPD	NCR	0
Power Meter	Gigatronics	8651A	SPM	1/9/2012	24
MXG Vector Signal Generator	Agilent	N5182A	TIF	NCR	0
Attenuator, 'N'	Coaxicom	66702 5910-6	ATZ	3/21/2012	12
Power Sensor	Gigatronics	80701A	SPL	7/8/2011	24
Spectrum Analyzer	Agilent	E4440	AFE	1/23/2012	12

MEASUREMENT UNCERTAINTY

A measurement uncertainty estimation has been performed for each test per our internal quality document WP 342. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty for radiated emissions measurements is less than +/- 4 dB, and for conducted emissions measurements is less than +/- 2.7 dB. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for measurement uncertainty are available upon request.

TEST DESCRIPTION

FCC KDB 789033 D01 General UNII Test Procedures Section F was followed to show that the radio of the maximum peak-max-hold spectrum to the maximum of the average spectrum does not exceed 13 dBm.

The transmit frequency was set to the required channels in each band. The transmit power was set to its default maximum. A direct connection was made between the RF output of the EUT and a spectrum analyzer. Attenuation and a DC block were used. The reference level offset on the spectrum analyzer was adjusted to compensate for cable loss and the external attenuation used between the RF output and the spectrum analyzer input.

The spectrum analyzer settings were as follows:

Span set to encompass the entire emission bandwidth (B), centered on the transmit channel.

Using the marker delta function, the largest difference between the following two traces was measured:

- 1st Trace: RBW = 1 MHz, VBW >= 3 MHz with peak detector and trace max-hold..
- 2nd Trace: The same procedure and settings as was used for peak power spectral density

Peak Excursion

EUT:	1516			**Work Order:**	MCSO1602
Serial Number:	000309122652			**Date:**	08/10/12
Customer:	Microsoft Corporation			**Temperature:**	24°C
Attendees:	None			**Humidity:**	45%
Project:	None			**Barometric Pres.:**	1016
Tested by:	Brandon Hobbs	**Power:**	12VDC	**Job Site:**	EV06

TEST SPECIFICATIONS	Test Method
FCC 15.407:2012	ANSI C63.10:2009

COMMENTS

EUT was set to 100% duty cycle for all the points listed. The power level used while under test was 11dBm for all the 5.0GHz frequencies with a 40MHz bandwidth and 12dBm for 5GHz frequencies with a 20MHz bandwidth.

DEVIATIONS FROM TEST STANDARD

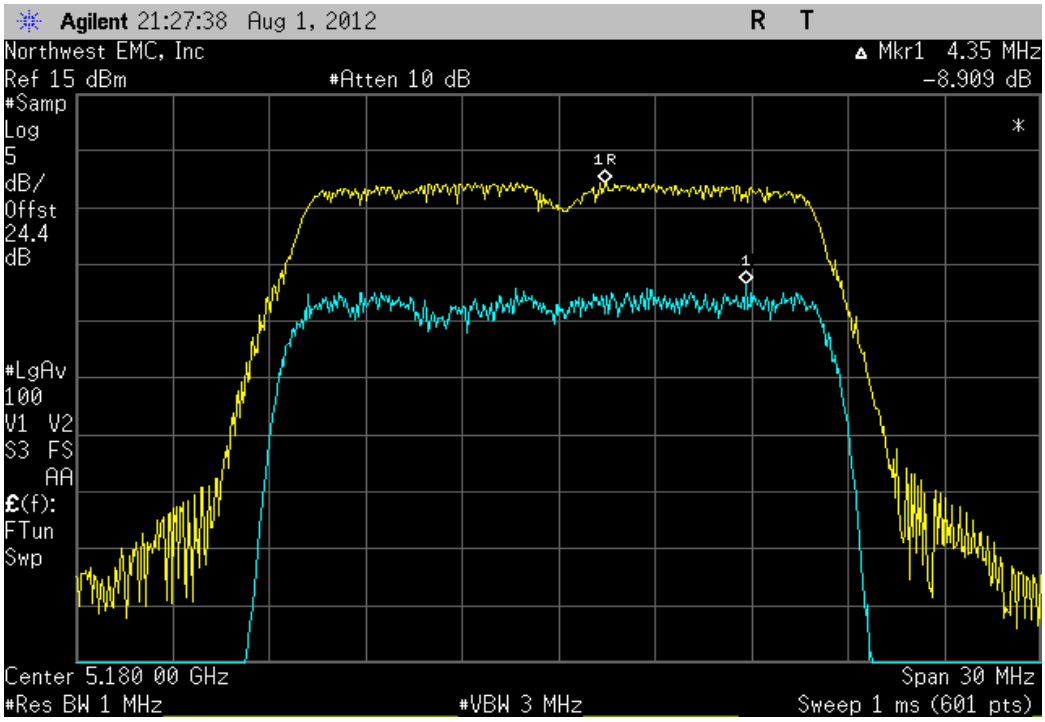
None

Configuration #	2	Signature

		Value	Limit	Result
Antenna A				
	20MHz Bandwidth			
	802.11(a) 6Mbps			
	Low Channel 36 Fq 5180MHz	8.909 dB	≤ 13 dB	Pass
	Low Channel 52 Fq 5260MHz	9.015 dB	≤ 13 dB	Pass
	Low Channel 100 Fq 5500MHz	8.821 dB	≤ 13 dB	Pass
	High Channel 48 Fq 5240MHz	9.25 dB	≤ 13 dB	Pass
	High Channel 64 Fq 5320MHz	8.873 dB	≤ 13 dB	Pass
	High Channel 140 Fq 5700MHz	9.446 dB	≤ 13 dB	Pass
	Mid Channel 116 Fq 5580 MHz	9.027 dB	≤ 13 dB	Pass
	40MHz Bandwidth			
	802.11(n) MCS7			
	Low Channel 38 Fq 5190MHz	8.68 dB	≤ 13 dB	Pass
	Low Channel 54 Fq 5270MHz	8.205 dB	≤ 13 dB	Pass
	Low Channel 102 Fq 5510MHz	8.901 dB	≤ 13 dB	Pass
	High Channel 46 Fq 5230MHz	8.5 dB	≤ 13 dB	Pass
	High Channel 62 Fq 5310MHz	8.762 dB	≤ 13 dB	Pass
	High Channel 134 Fq 5670MHz	7.829 dB	≤ 13 dB	Pass
	802.11(n) MCS15			
	Low Channel 38 Fq 5190MHz	8.512 dB	≤ 13 dB	Pass
	Low Channel 54 Fq 5270MHz	8.104 dB	≤ 13 dB	Pass
	Low Channel 102 Fq 5510MHz	7.581 dB	≤ 13 dB	Pass
	High Channel 46 Fq 5230MHz	8.526 dB	≤ 13 dB	Pass
	High Channel 62 Fq 5310MHz	8.523 dB	≤ 13 dB	Pass
	High Channel 134 Fq 5670MHz	8.454 dB	≤ 13 dB	Pass
Antenna B				
	20MHz Bandwidth			
	802.11(a) 36Mbps			
	Low Channel 36 Fq 5180MHz	9.951 dB	≤ 13 dB	Pass
	Low Channel 52 Fq 5260MHz	9.617 dB	≤ 13 dB	Pass
	Low Channel 100 Fq 5500MHz	9.679 dB	≤ 13 dB	Pass
	High Channel 48 Fq 5240MHz	10.175 dB	≤ 13 dB	Pass
	High Channel 64 Fq 5320MHz	10.191 dB	≤ 13 dB	Pass
	High Channel 140 Fq 5700MHz	10.012 dB	≤ 13 dB	Pass
	Mid Channel 116 Fq 5580 MHz	9.897 dB	≤ 13 dB	Pass
	40MHz Bandwidth			
	802.11(n) MCS7			
	Low Channel 38 Fq 5190MHz	8.322 dB	≤ 13 dB	Pass
	Low Channel 54 Fq 5270MHz	8.287 dB	≤ 13 dB	Pass
	Low Channel 102 Fq 5510MHz	8.968 dB	≤ 13 dB	Pass
	High Channel 46 Fq 5230MHz	8.215 dB	≤ 13 dB	Pass
	High Channel 62 Fq 5310MHz	8.197 dB	≤ 13 dB	Pass
	High Channel 134 Fq 5670MHz	7.61 dB	≤ 13 dB	Pass
	802.11(n) MCS15			
	Low Channel 38 Fq 5190MHz	8.86 dB	≤ 13 dB	Pass
	Low Channel 54 Fq 5270MHz	8.799 dB	≤ 13 dB	Pass
	Low Channel 102 Fq 5510MHz	8.19 dB	≤ 13 dB	Pass
	High Channel 46 Fq 5230MHz	8.373 dB	≤ 13 dB	Pass
	High Channel 62 Fq 5310MHz	7.943 dB	≤ 13 dB	Pass
	High Channel 134 Fq 5670MHz	8.704 dB	≤ 13 dB	Pass

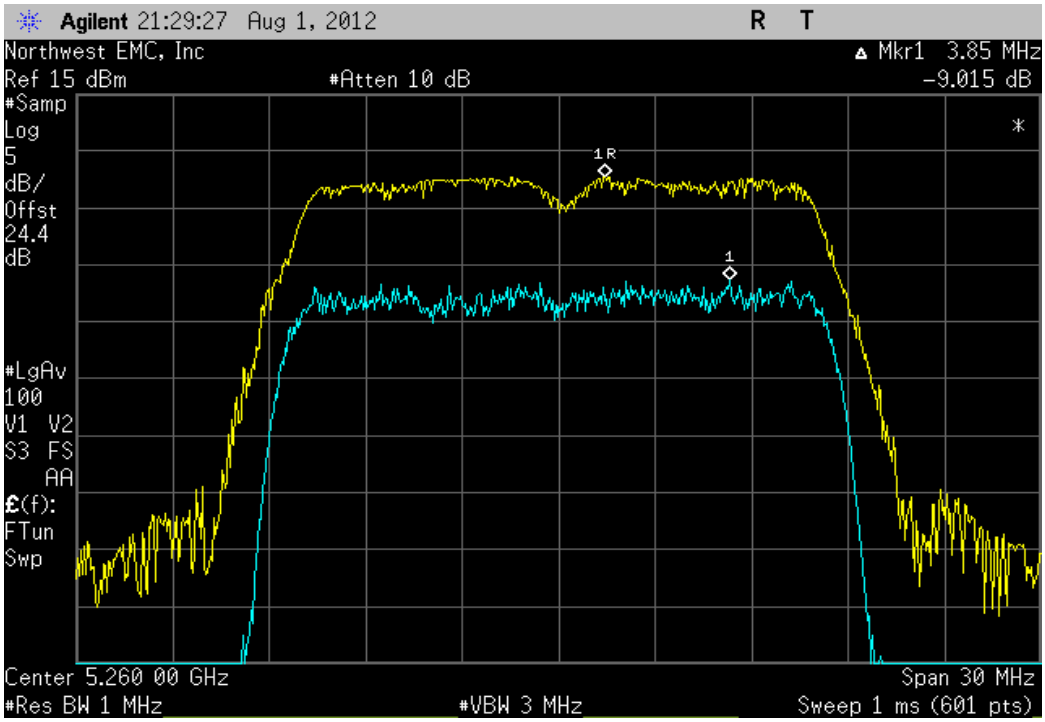
Antenna A, 20MHz Bandwidth , 802.11(a) 6Mbps, Low Channel 36 Fq 5180MHz

				Value	Limit	Result
				8.909 dB	≤ 13 dB	Pass



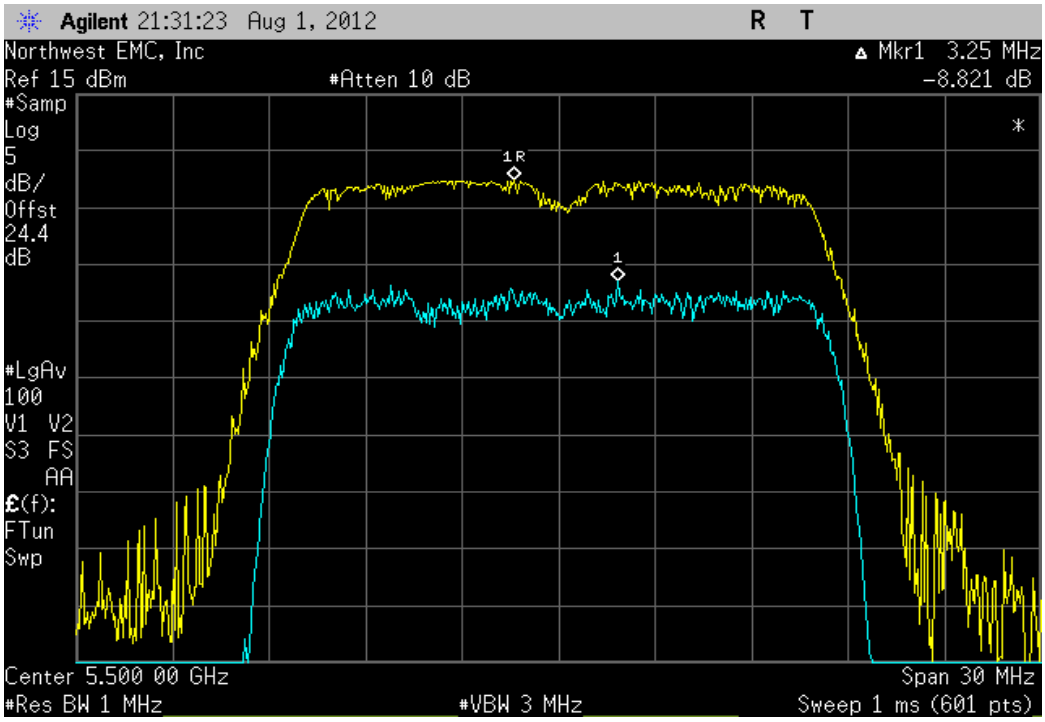
Antenna A, 20MHz Bandwidth , 802.11(a) 6Mbps, Low Channel 52 Fq 5260MHz

				Value	Limit	Result
				9.015 dB	≤ 13 dB	Pass



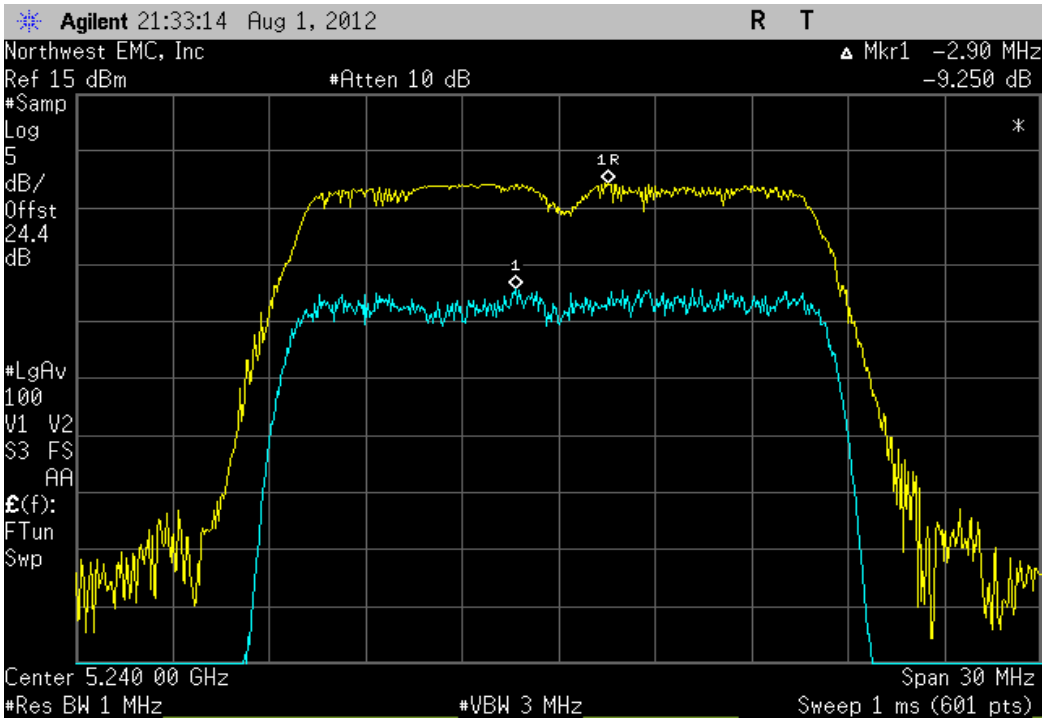
Antenna A, 20MHz Bandwidth , 802.11(a) 6Mbps, Low Channel 100 Fq 5500MHz

				Value	Limit	Result
				8.821 dB	≤ 13 dB	Pass



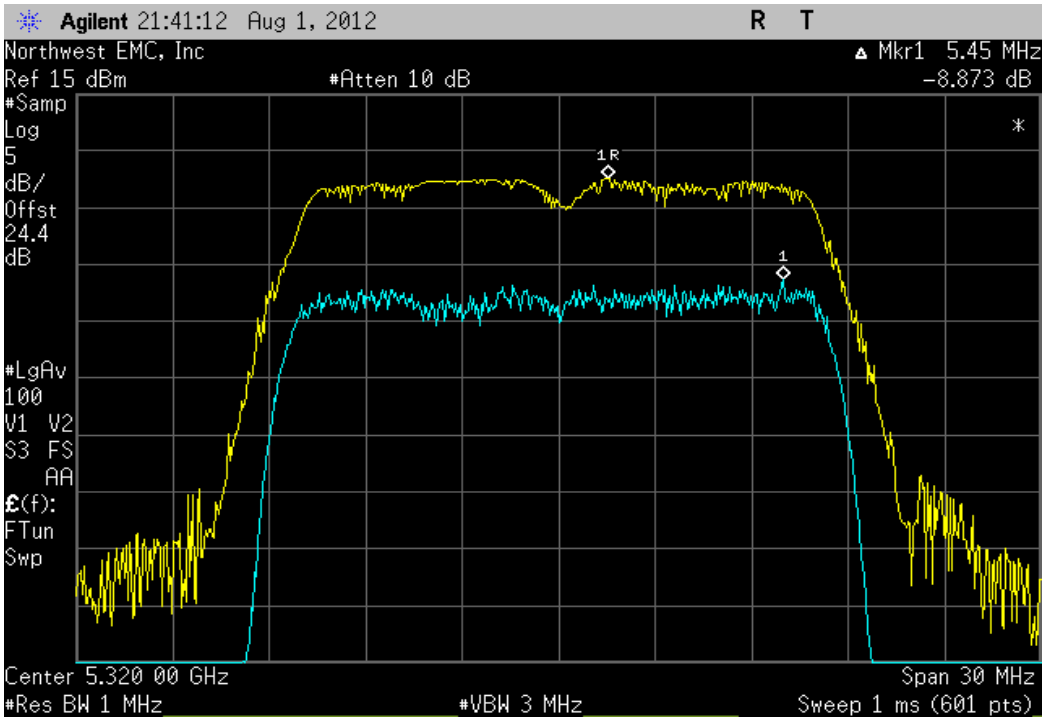
Antenna A, 20MHz Bandwidth , 802.11(a) 6Mbps, High Channel 48 Fq 5240MHz

				Value	Limit	Result
				9.25 dB	≤ 13 dB	Pass



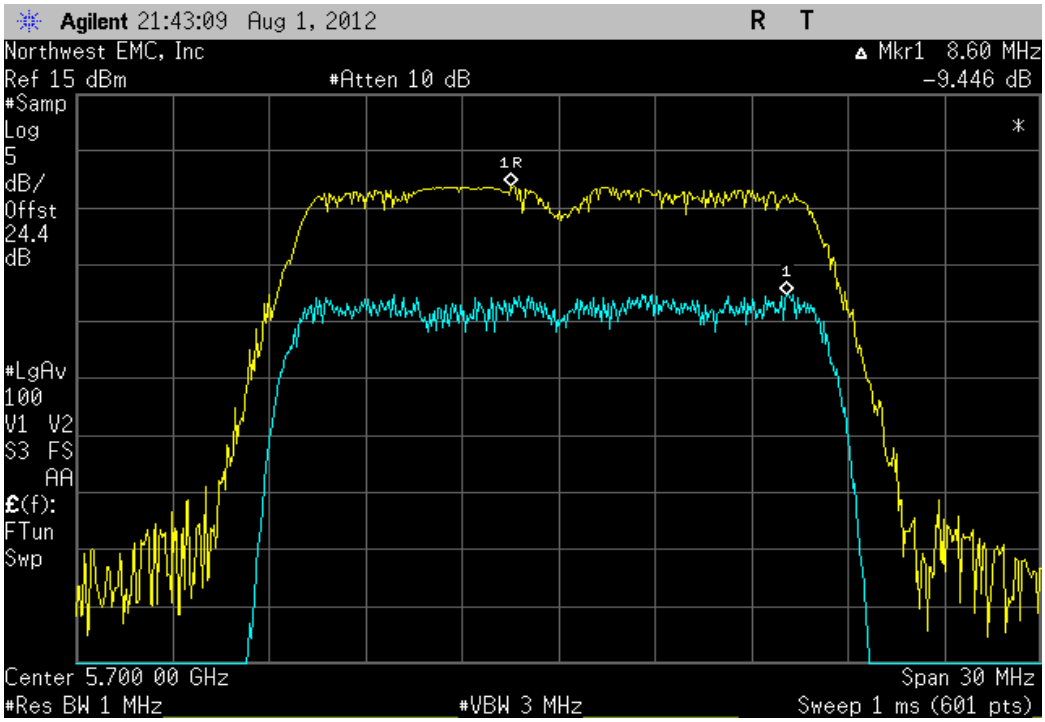
Antenna A, 20MHz Bandwidth , 802.11(a) 6Mbps, High Channel 64 Fq 5320MHz

				Value	Limit	Result
				8.873 dB	≤ 13 dB	Pass



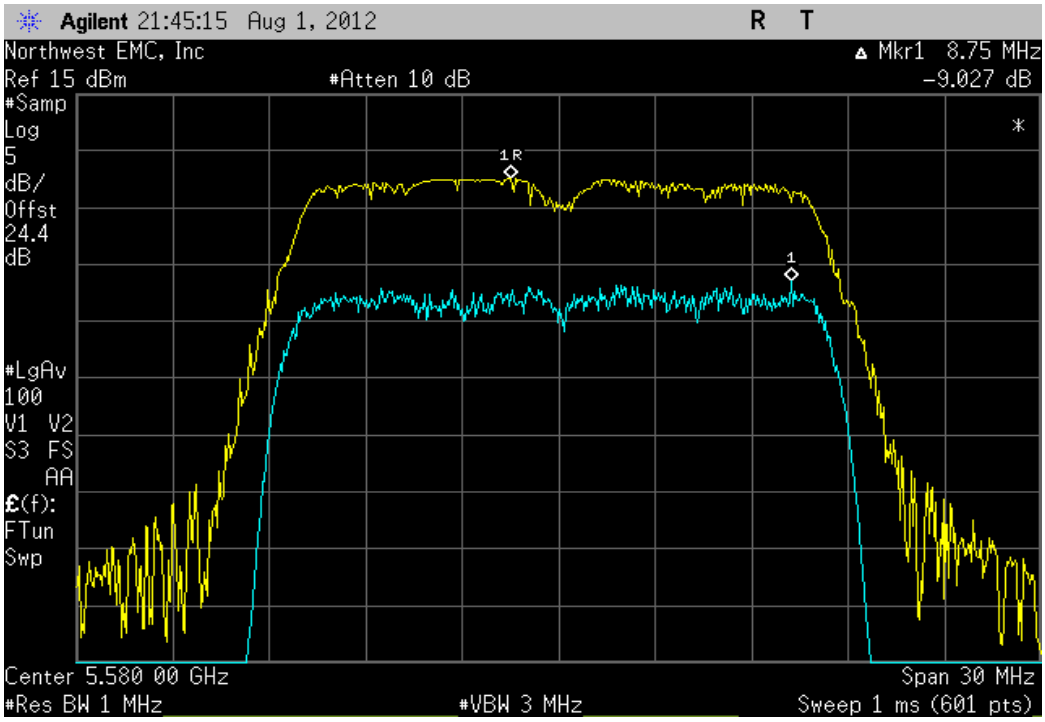
Antenna A, 20MHz Bandwidth , 802.11(a) 6Mbps, High Channel 140 Fq 5700MHz

				Value	Limit	Result
				9.446 dB	≤ 13 dB	Pass



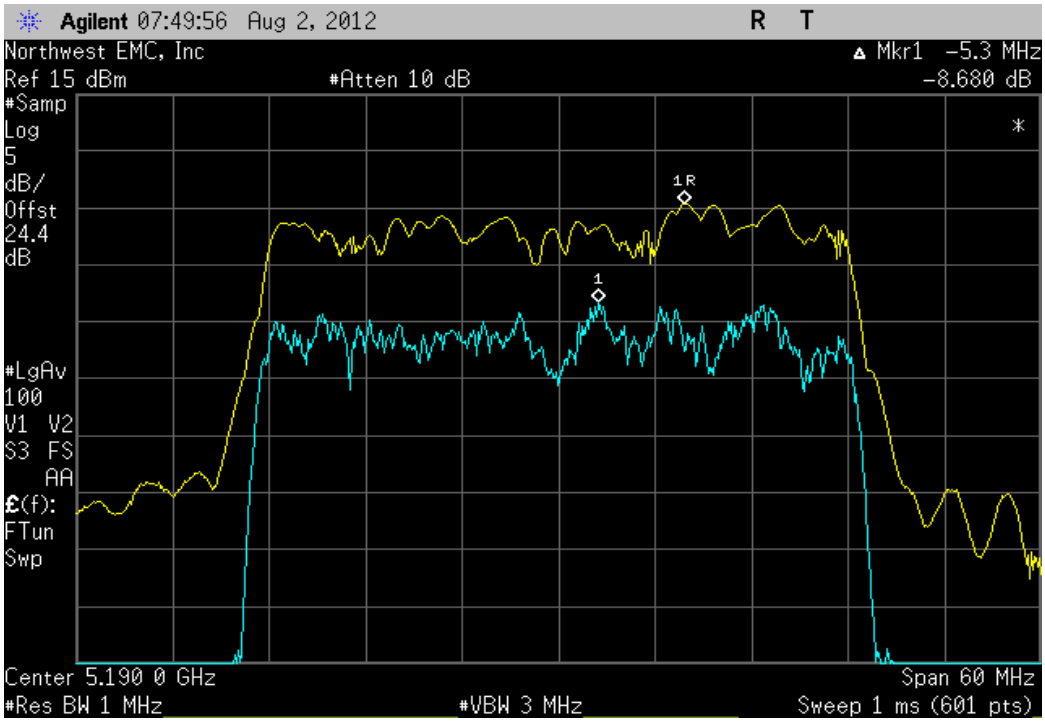
Antenna A, 20MHz Bandwidth , 802.11(a) 6Mbps, Mid Channel 116 Fq 5580 MHz

				Value	Limit	Result
				9.027 dB	≤ 13 dB	Pass



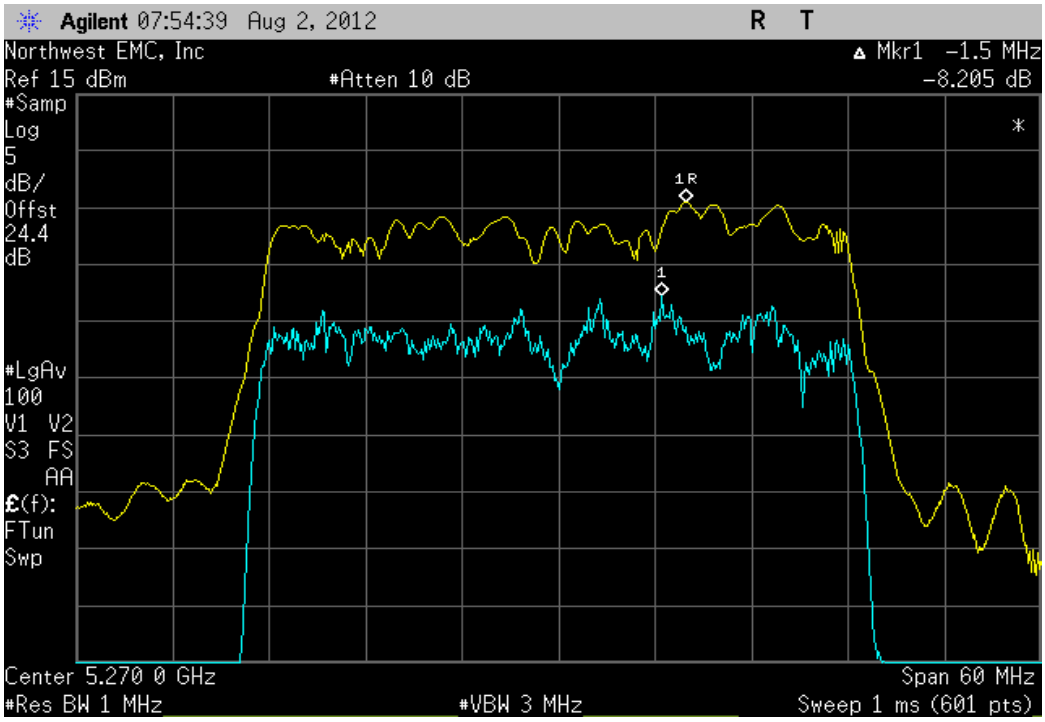
Antenna A, 40MHz Bandwidth , 802.11(n) MCS7, Low Channel 38 Fq 5190MHz

				Value	Limit	Result
				8.68 dB	≤ 13 dB	Pass



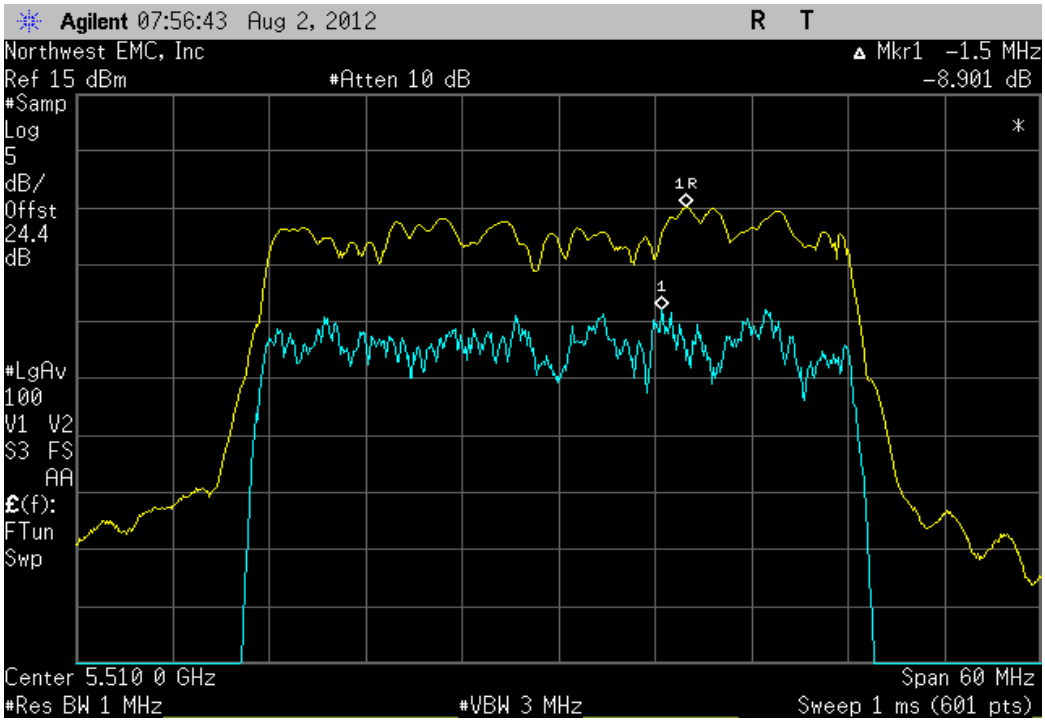
Antenna A, 40MHz Bandwidth , 802.11(n) MCS7, Low Channel 54 Fq 5270MHz

				Value	Limit	Result
				8.205 dB	≤ 13 dB	Pass



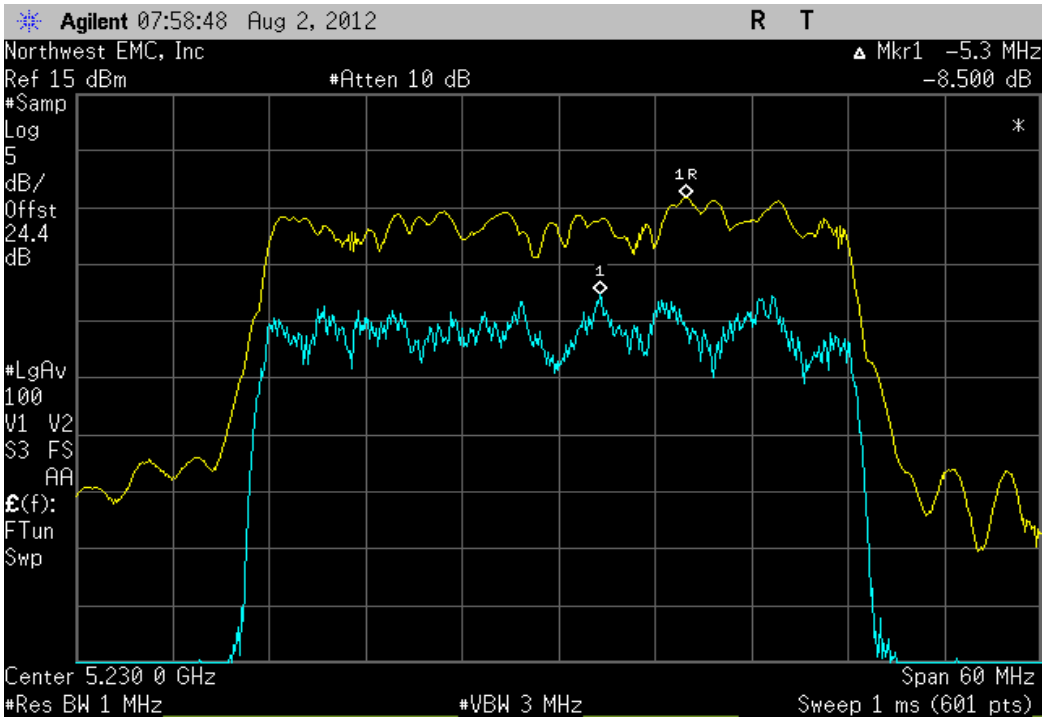
Antenna A, 40MHz Bandwidth , 802.11(n) MCS7, Low Channel 102 Fq 5510MHz

				Value	Limit	Result
				8.901 dB	≤ 13 dB	Pass



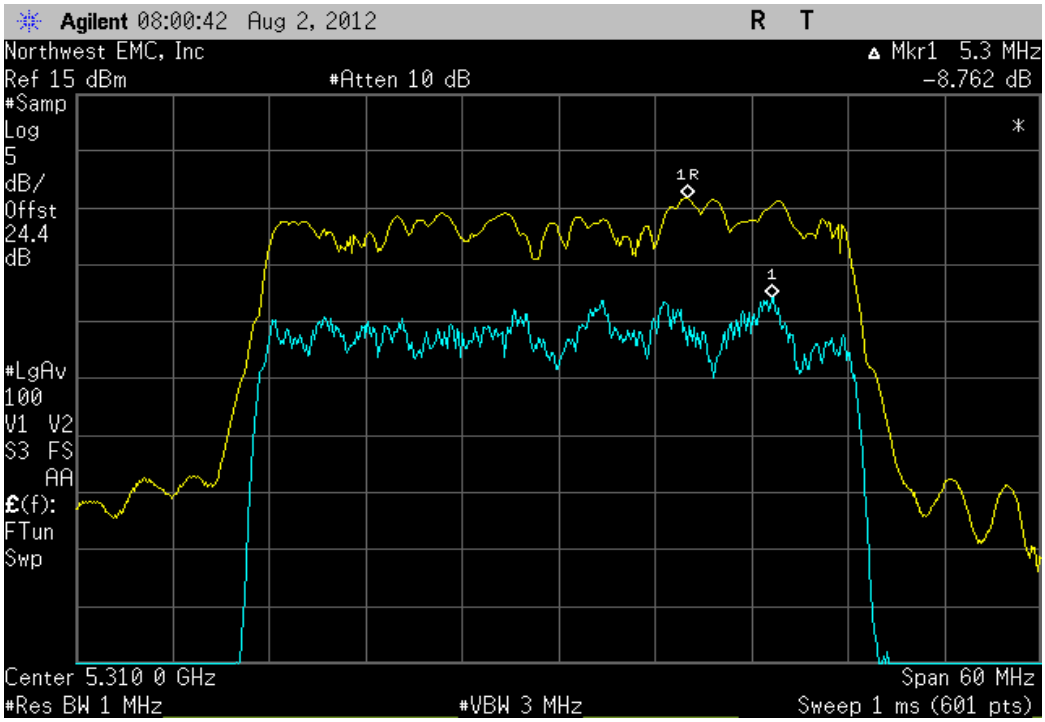
Antenna A, 40MHz Bandwidth , 802.11(n) MCS7, High Channel 46 Fq 5230MHz

				Value	Limit	Result
				8.5 dB	≤ 13 dB	Pass



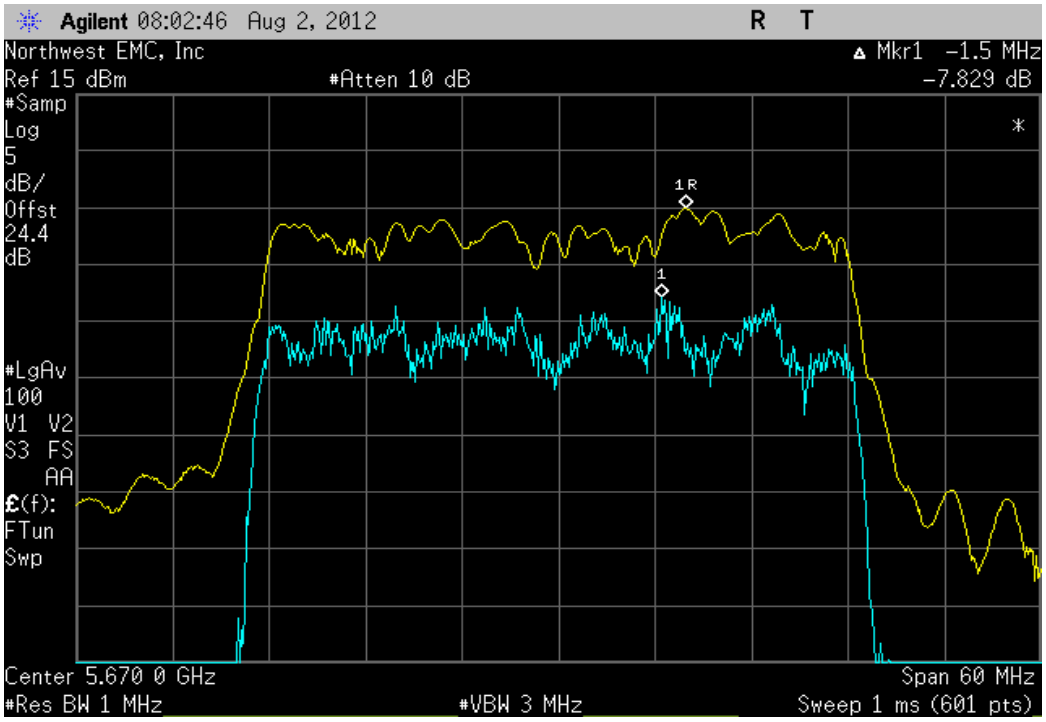
Antenna A, 40MHz Bandwidth , 802.11(n) MCS7, High Channel 62 Fq 5310MHz

				Value	Limit	Result
				8.762 dB	≤ 13 dB	Pass



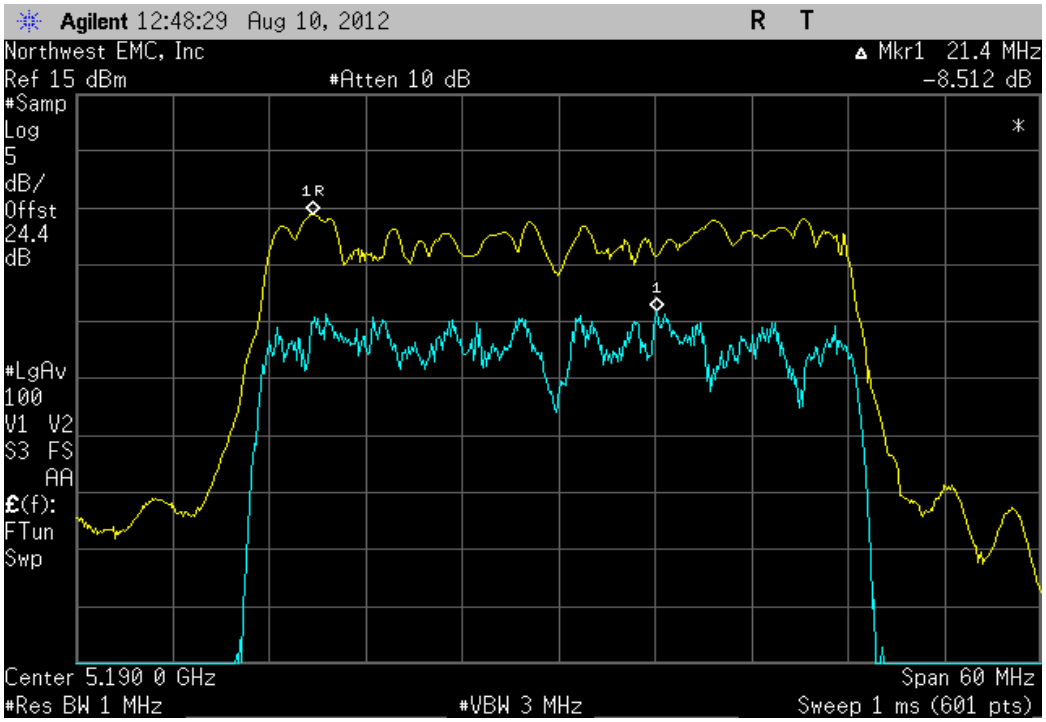
Antenna A, 40MHz Bandwidth , 802.11(n) MCS7, High Channel 134 Fq 5670MHz

				Value	Limit	Result
				7.829 dB	≤ 13 dB	Pass



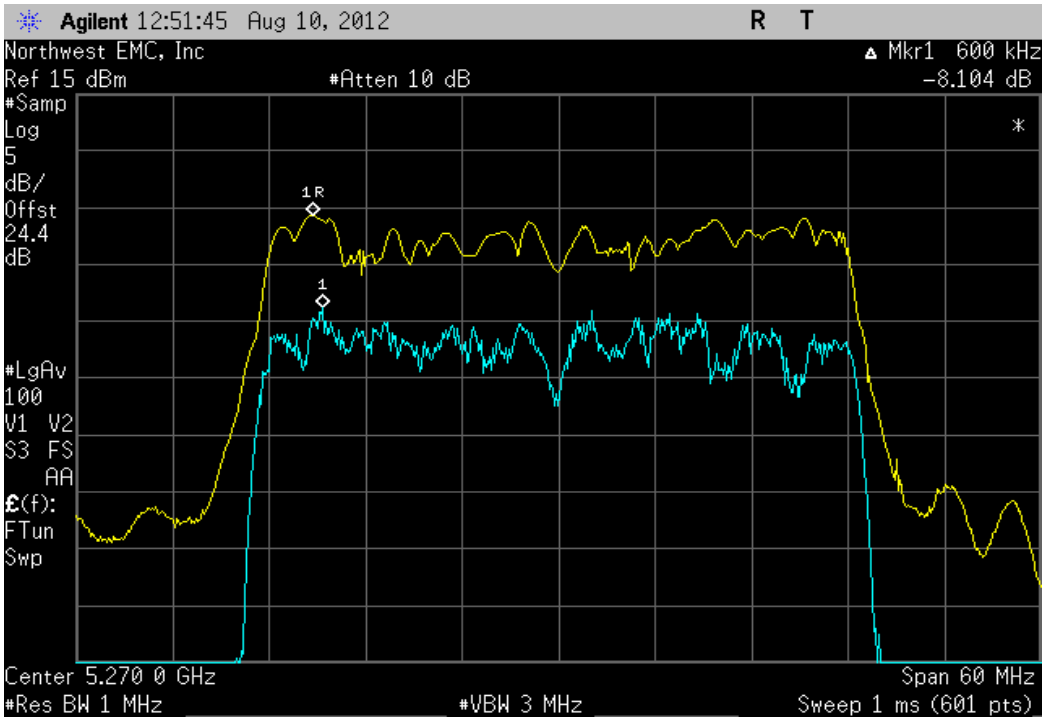
Antenna A, 40MHz Bandwidth , 802.11(n) MCS15, Low Channel 38 Fq 5190MHz

				Value	Limit	Result
				8.512 dB	≤ 13 dB	Pass



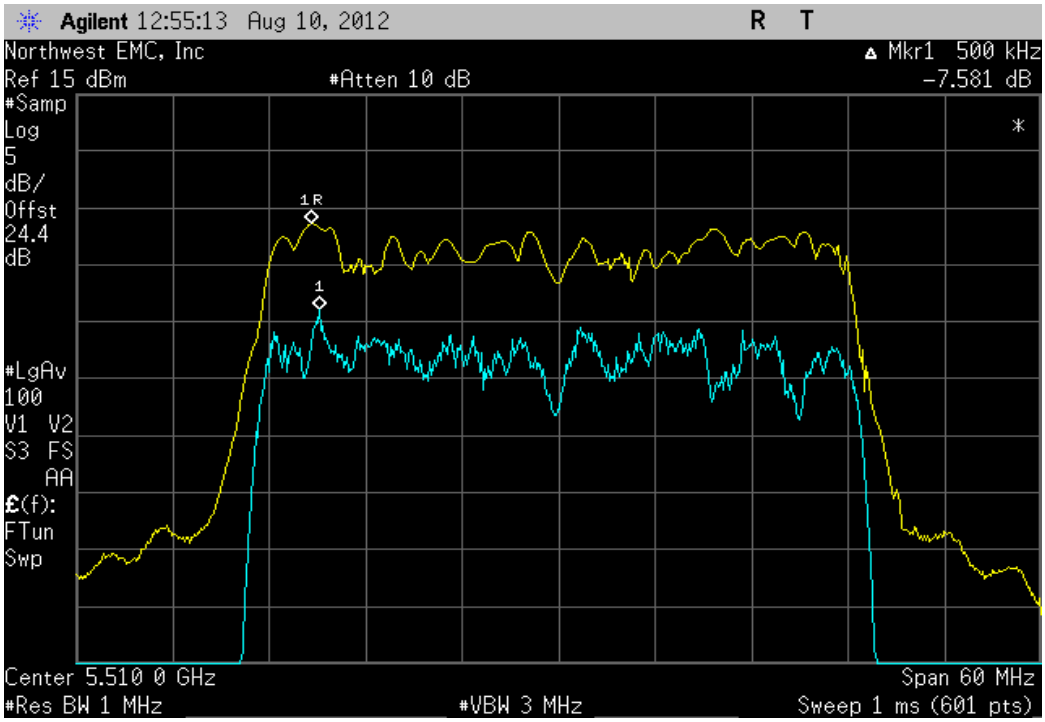
Antenna A, 40MHz Bandwidth , 802.11(n) MCS15, Low Channel 54 Fq 5270MHz

				Value	Limit	Result
				8.104 dB	≤ 13 dB	Pass



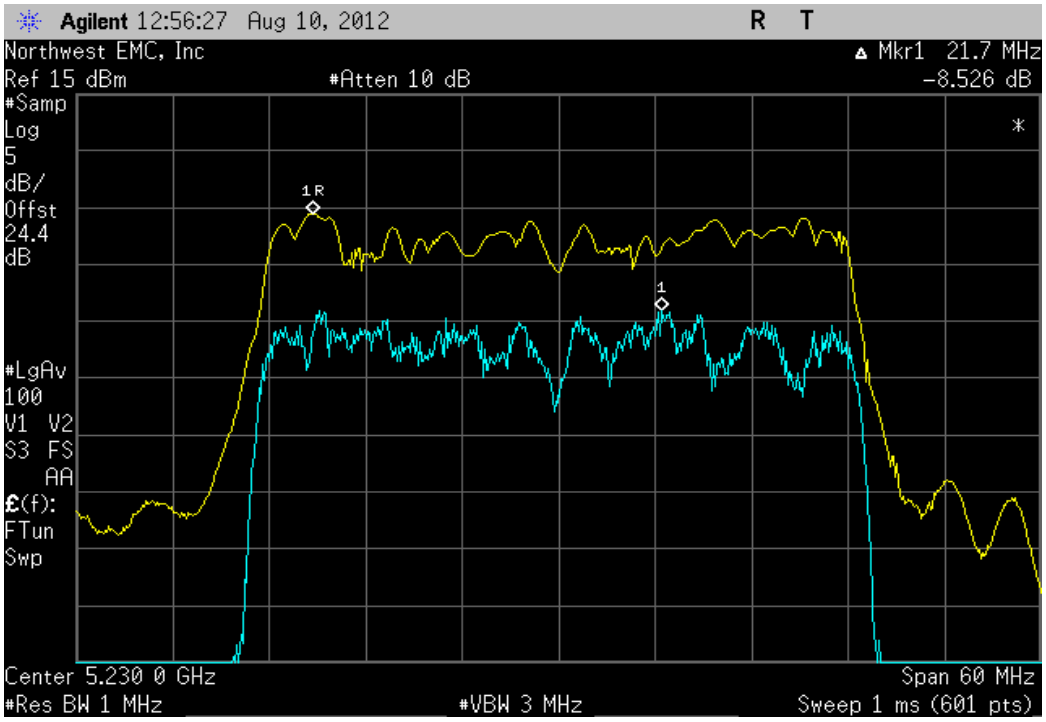
Antenna A, 40MHz Bandwidth , 802.11(n) MCS15, Low Channel 102 Fq 5510MHz

				Value	Limit	Result
				7.581 dB	≤ 13 dB	Pass



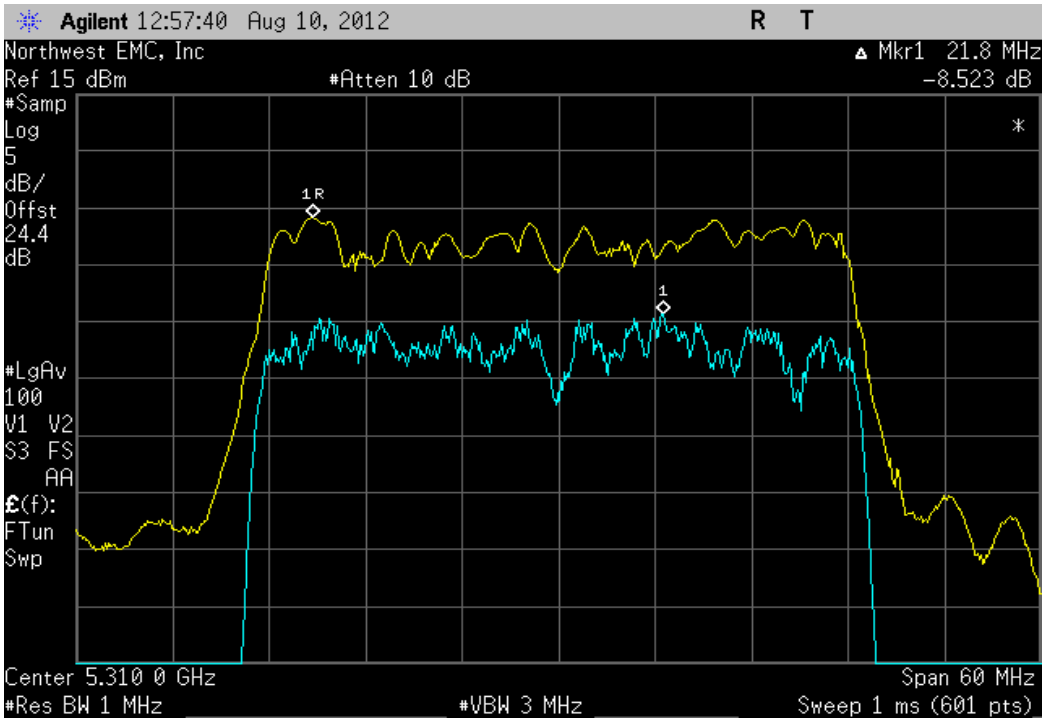
Antenna A, 40MHz Bandwidth , 802.11(n) MCS15, High Channel 46 Fq 5230MHz

				Value	Limit	Result
				8.526 dB	≤ 13 dB	Pass



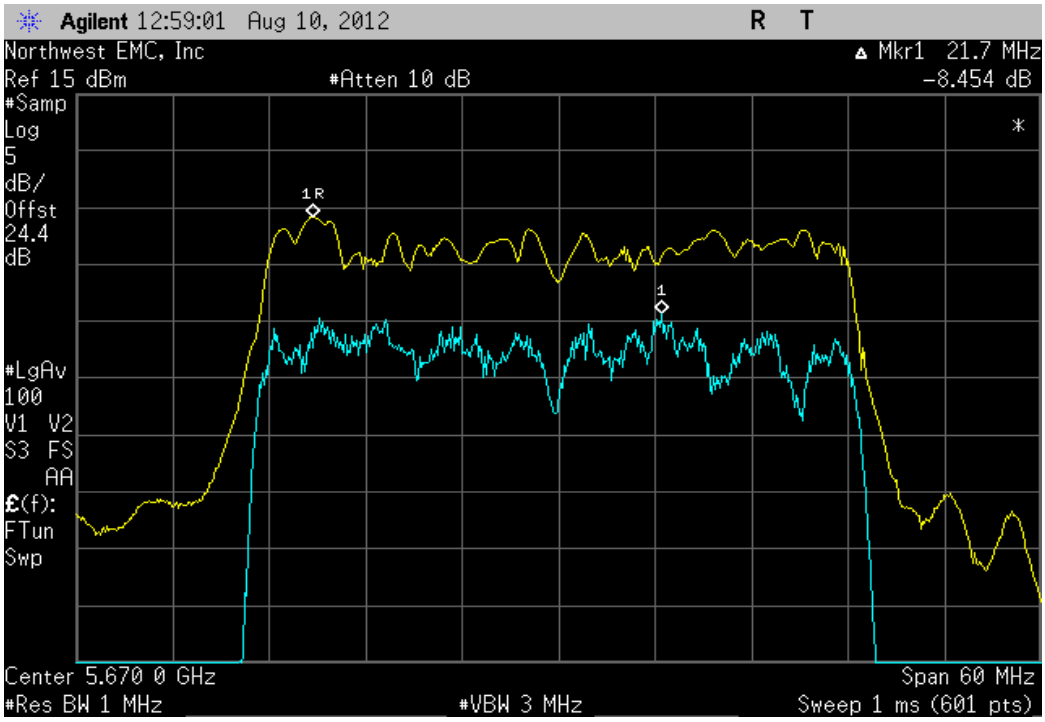
Antenna A, 40MHz Bandwidth , 802.11(n) MCS15, High Channel 62 Fq 5310MHz

				Value	Limit	Result
				8.523 dB	≤ 13 dB	Pass



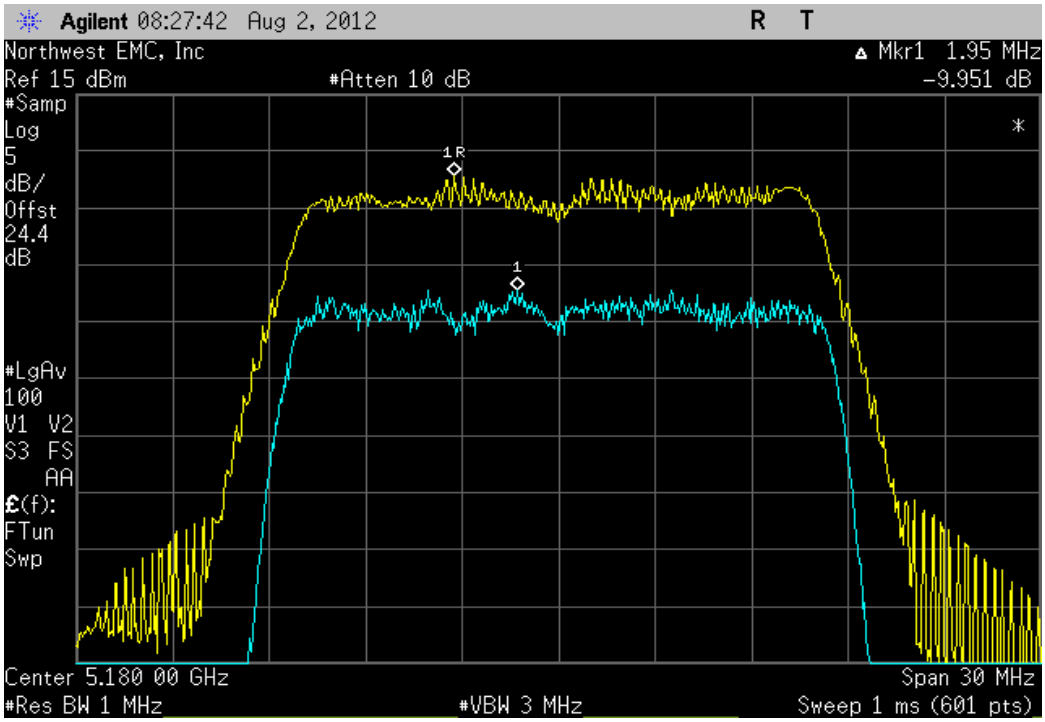
Antenna A, 40MHz Bandwidth , 802.11(n) MCS15, High Channel 134 Fq 5670MHz

				Value	Limit	Result
				8.454 dB	≤ 13 dB	Pass



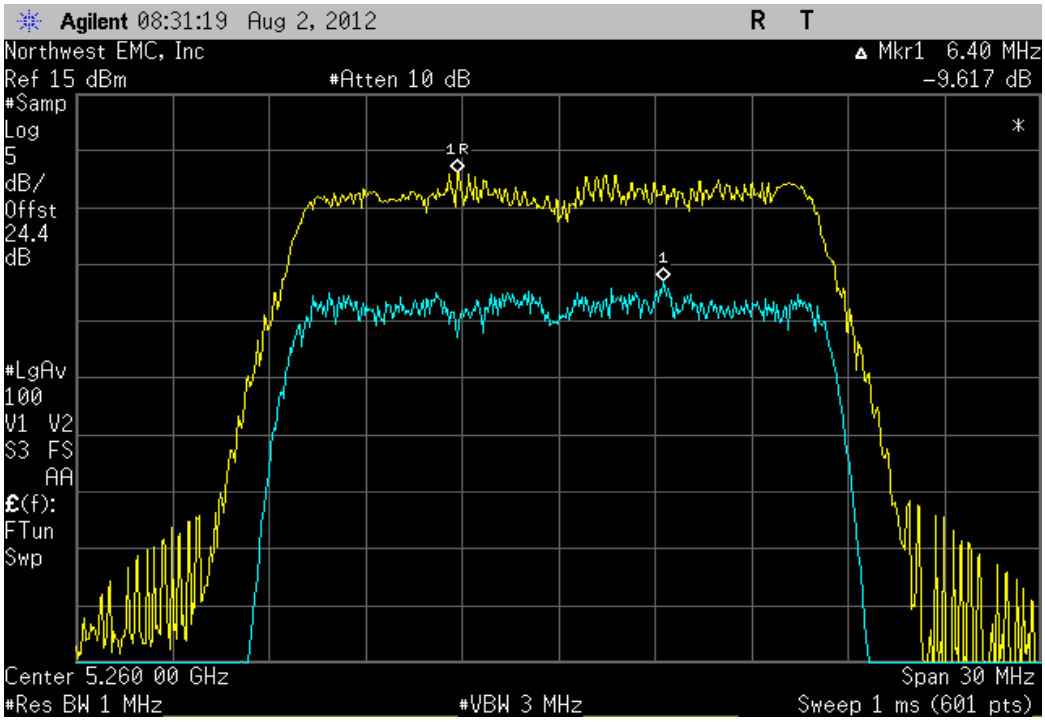
Antenna B, 20MHz Bandwidth , 802.11(a) 36Mbps, Low Channel 36 Fq 5180MHz

				Value	Limit	Result
				9.951 dB	≤ 13 dB	Pass



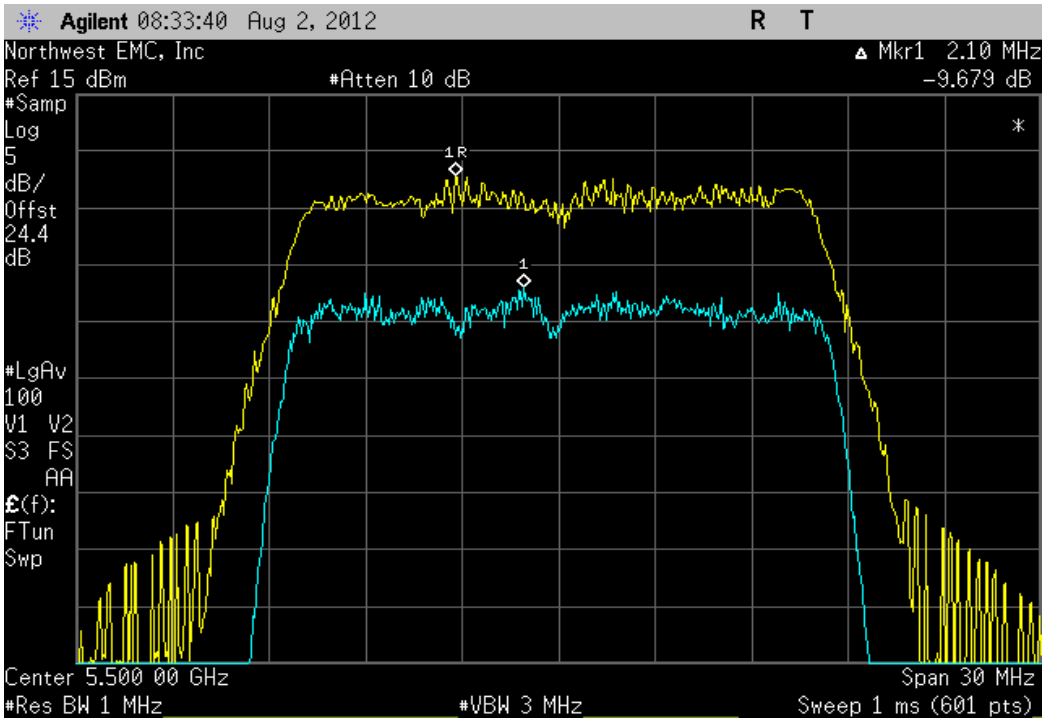
Antenna B, 20MHz Bandwidth , 802.11(a) 36Mbps, Low Channel 52 Fq 5260MHz

				Value	Limit	Result
				9.617 dB	≤ 13 dB	Pass



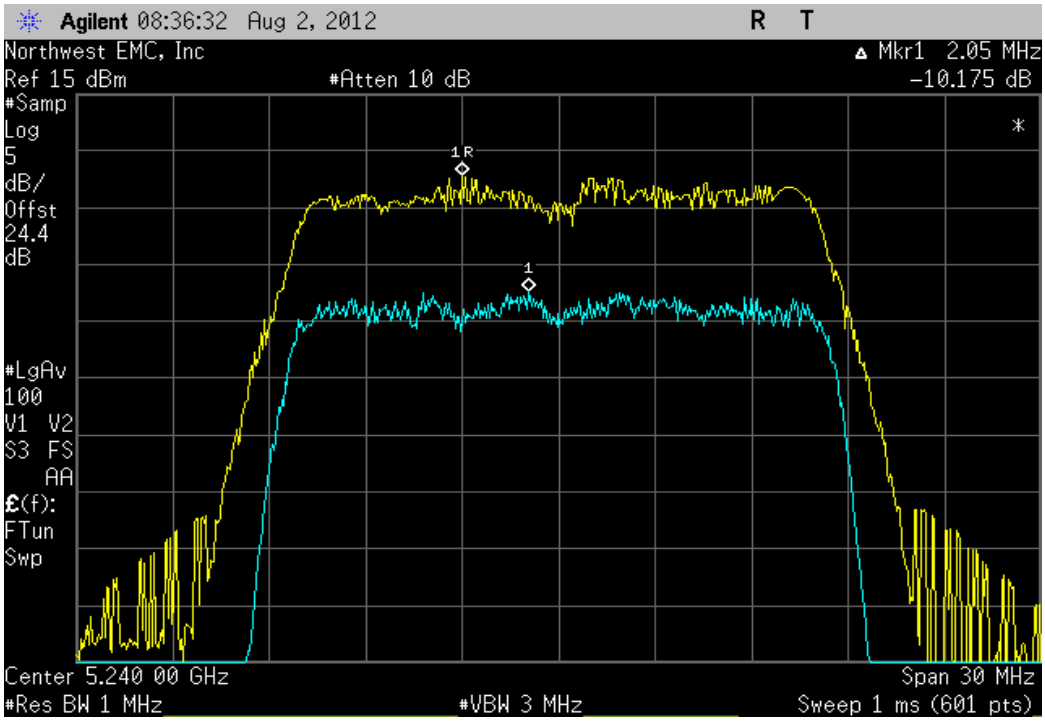
Antenna B, 20MHz Bandwidth , 802.11(a) 36Mbps, Low Channel 100 Fq 5500MHz

				Value	Limit	Result
				9.679 dB	≤ 13 dB	Pass



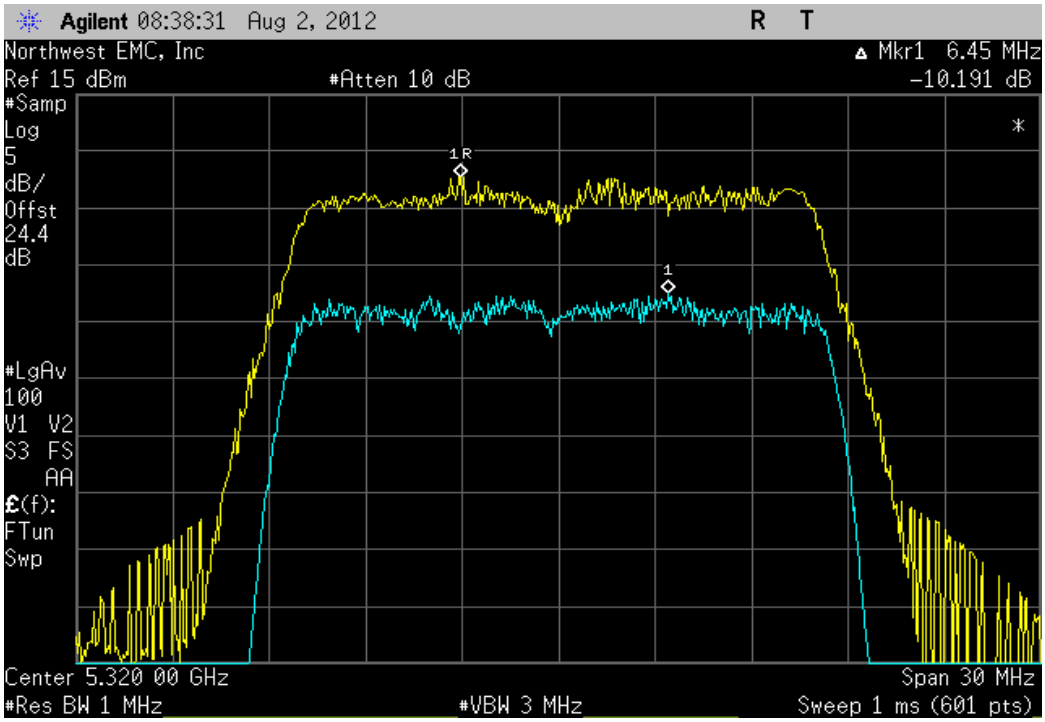
Antenna B, 20MHz Bandwidth , 802.11(a) 36Mbps, High Channel 48 Fq 5240MHz

				Value	Limit	Result
				10.175 dB	≤ 13 dB	Pass



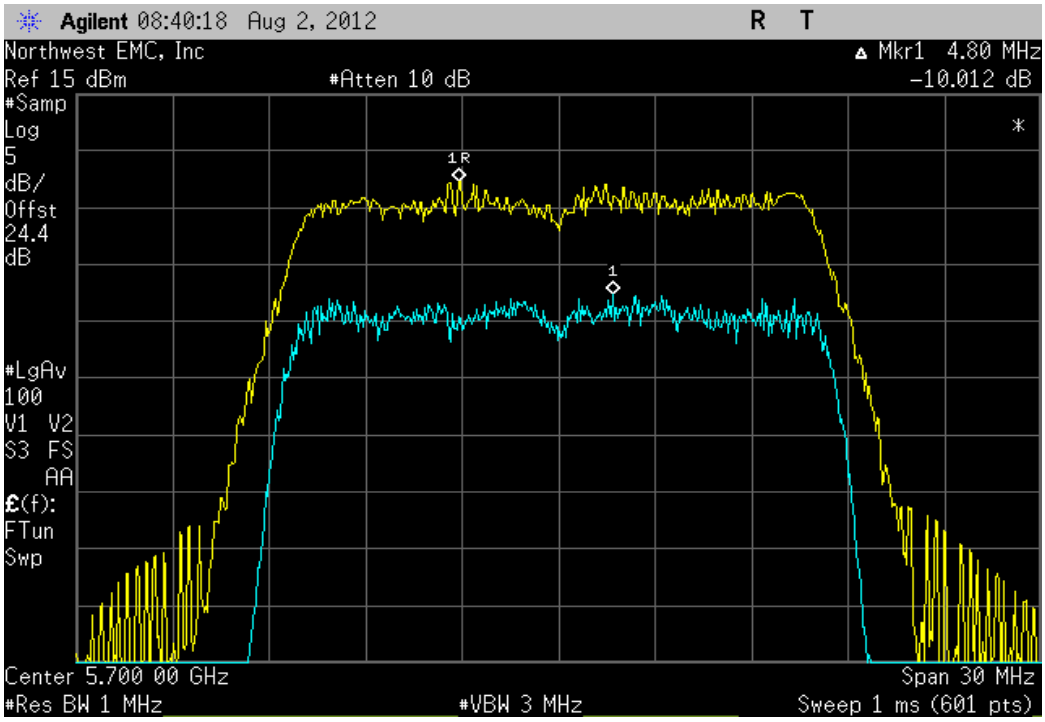
Antenna B, 20MHz Bandwidth , 802.11(a) 36Mbps, High Channel 64 Fq 5320MHz

				Value	Limit	Result
				10.191 dB	≤ 13 dB	Pass



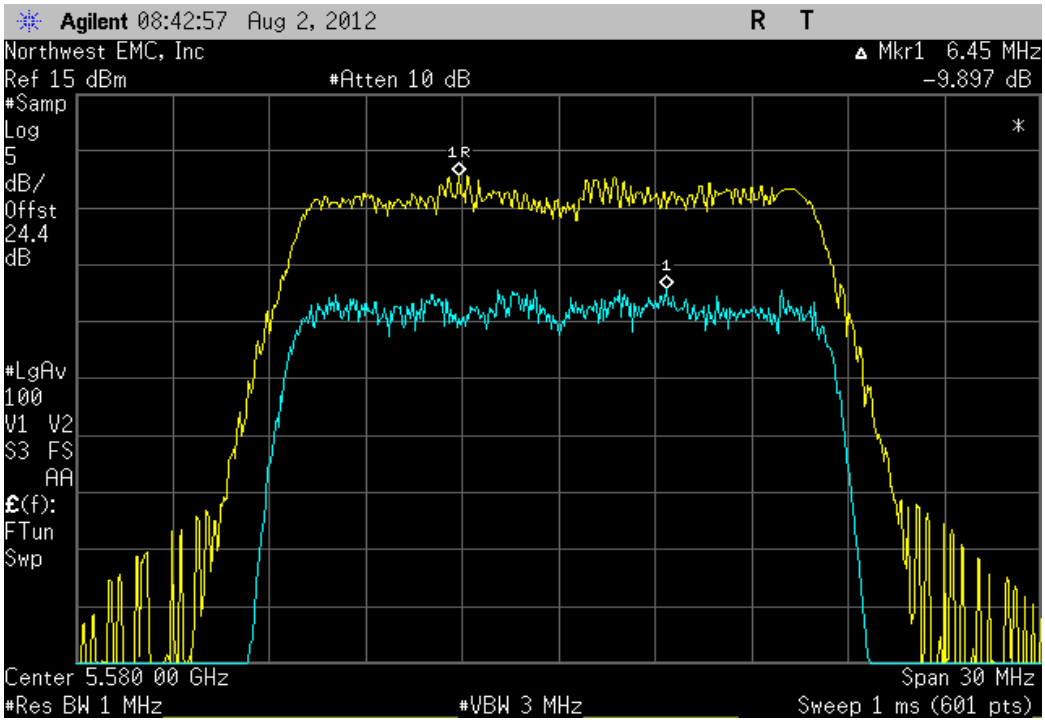
Antenna B, 20MHz Bandwidth , 802.11(a) 36Mbps, High Channel 140 Fq 5700MHz

				Value	Limit	Result
				10.012 dB	≤ 13 dB	Pass



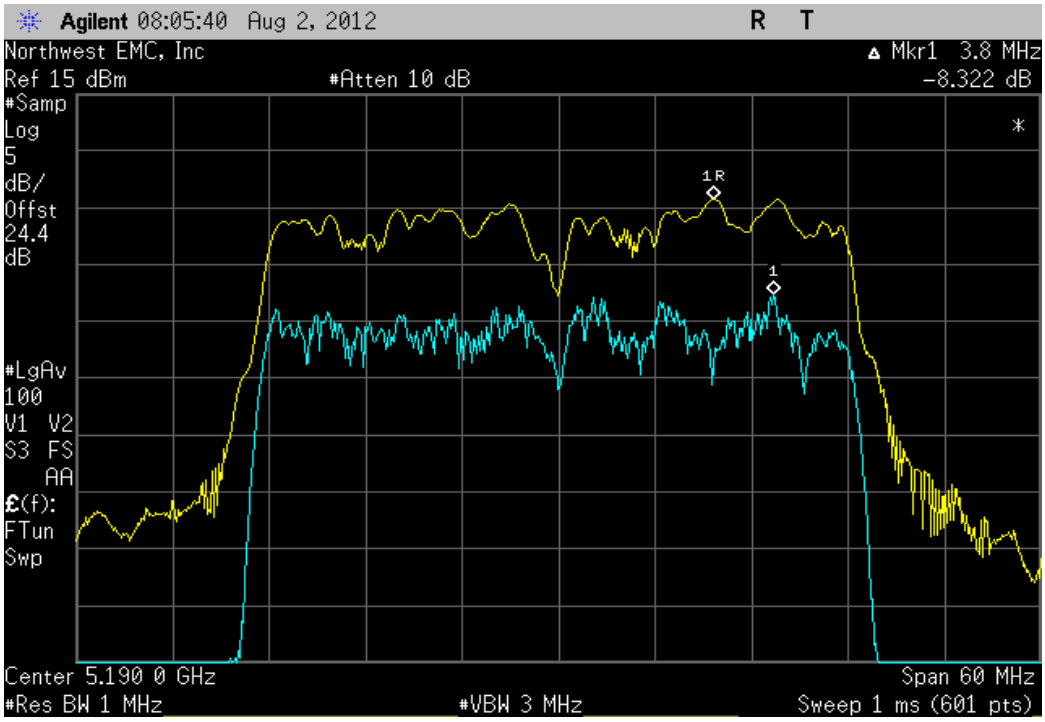
Antenna B, 20MHz Bandwidth , 802.11(a) 36Mbps, Mid Channel 116 Fq 5580 MHz

				Value	Limit	Result
				9.897 dB	≤ 13 dB	Pass



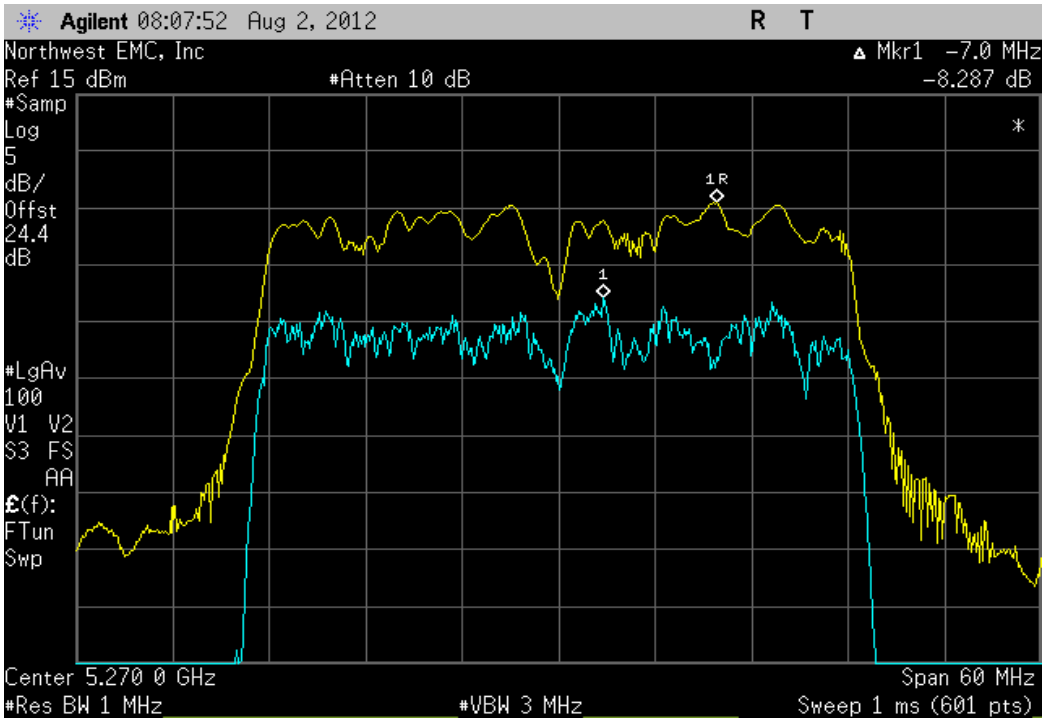
Antenna B, 40MHz Bandwidth , 802.11(n) MCS7, Low Channel 38 Fq 5190MHz

Value	Limit	Result
8.322 dB	≤ 13 dB	Pass



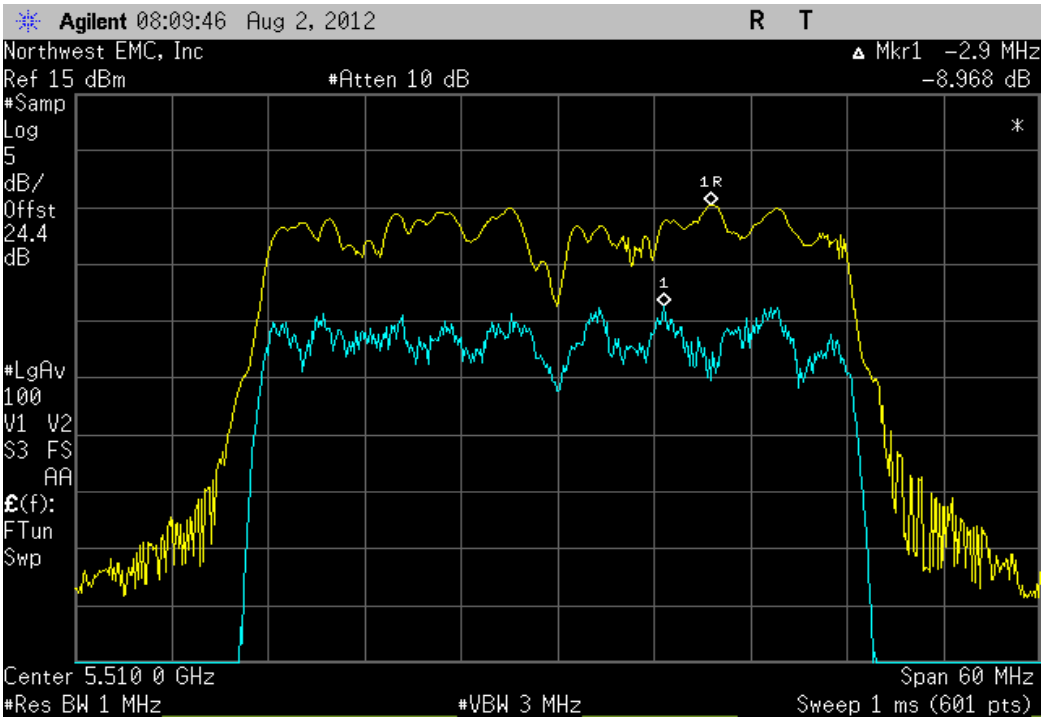
Antenna B, 40MHz Bandwidth , 802.11(n) MCS7, Low Channel 54 Fq 5270MHz

Value	Limit	Result
8.287 dB	≤ 13 dB	Pass



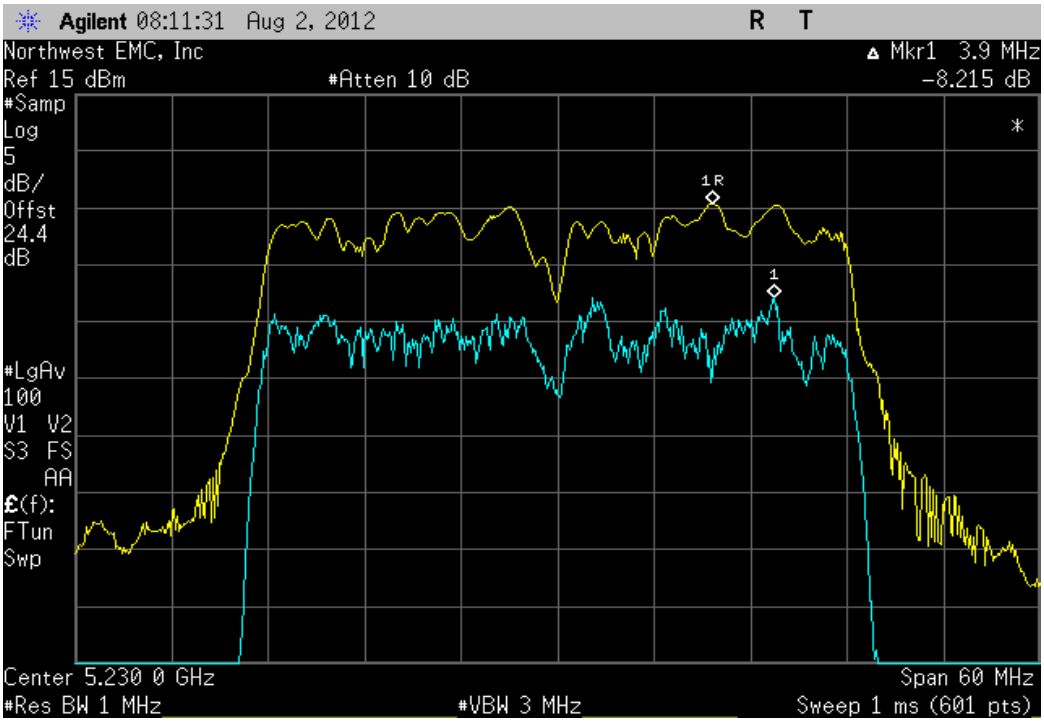
Antenna B, 40MHz Bandwidth , 802.11(n) MCS7, Low Channel 102 Fq 5510MHz

				Value	Limit	Result
				8.968 dB	≤ 13 dB	Pass



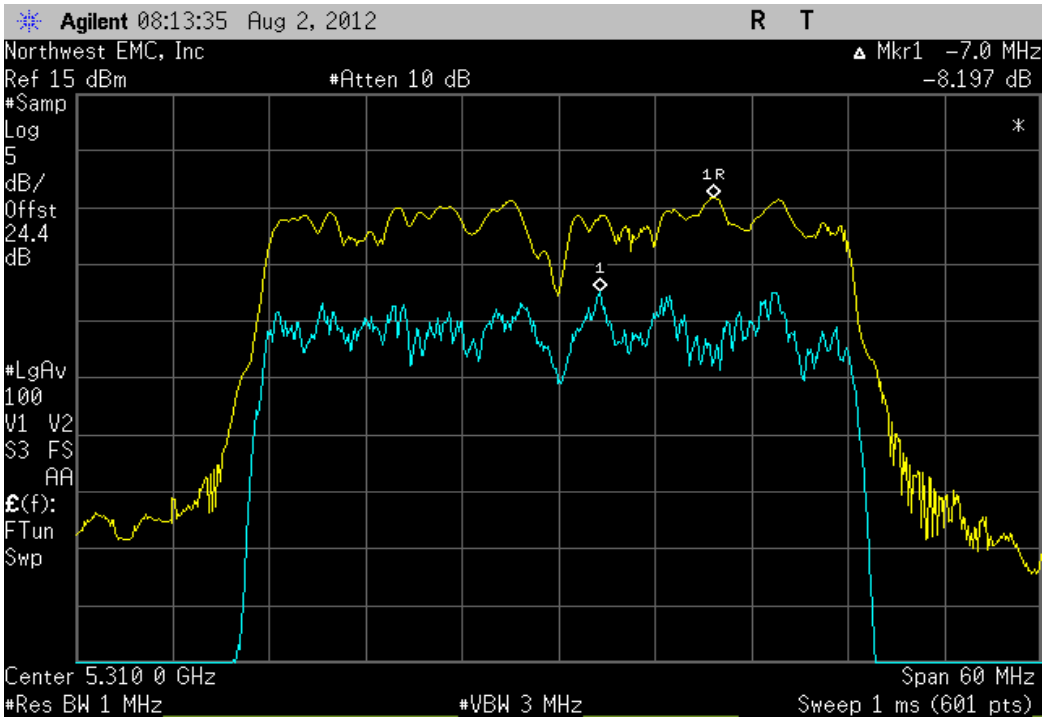
Antenna B, 40MHz Bandwidth , 802.11(n) MCS7, High Channel 46 Fq 5230MHz

				Value	Limit	Result
				8.215 dB	≤ 13 dB	Pass



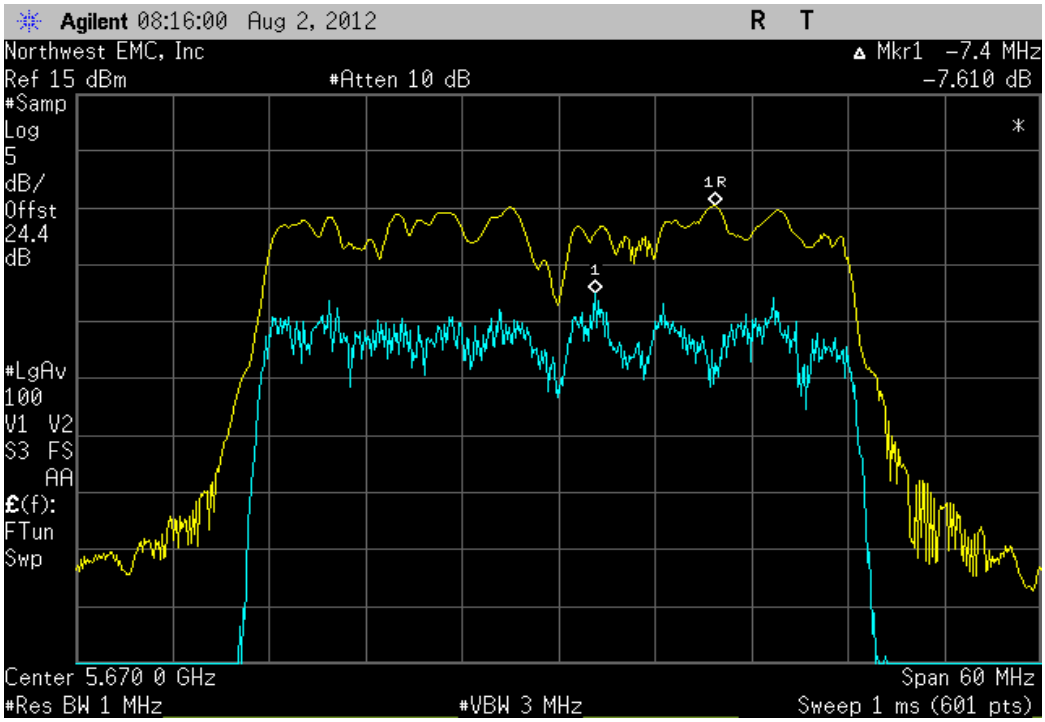
Antenna B, 40MHz Bandwidth , 802.11(n) MCS7, High Channel 62 Fq 5310MHz

				Value	Limit	Result
				8.197 dB	≤ 13 dB	Pass



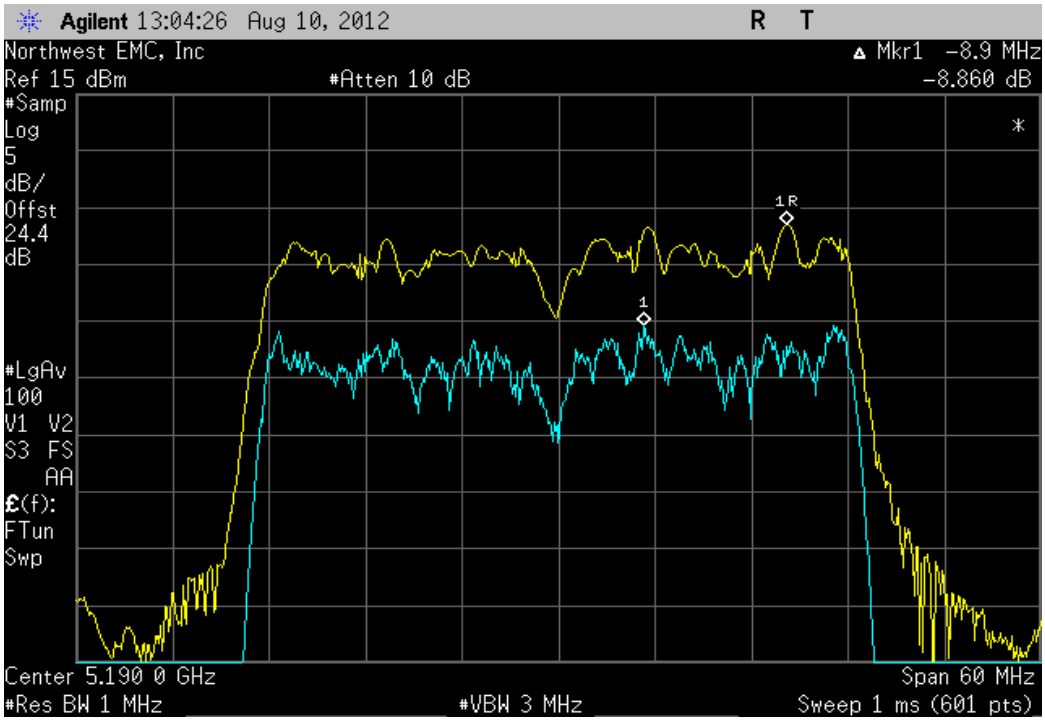
Antenna B, 40MHz Bandwidth , 802.11(n) MCS7, High Channel 134 Fq 5670MHz

				Value	Limit	Result
				7.61 dB	≤ 13 dB	Pass



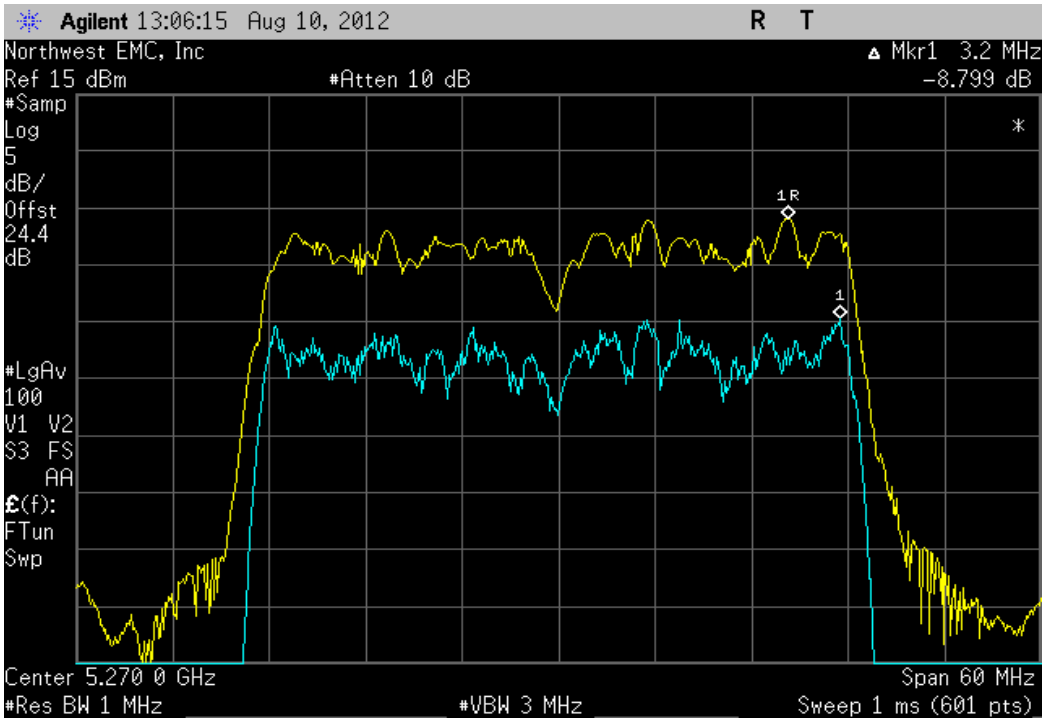
Antenna B, 40MHz Bandwidth , 802.11(n) MCS15, Low Channel 38 Fq 5190MHz

				Value	Limit	Result
				8.86 dB	≤ 13 dB	Pass



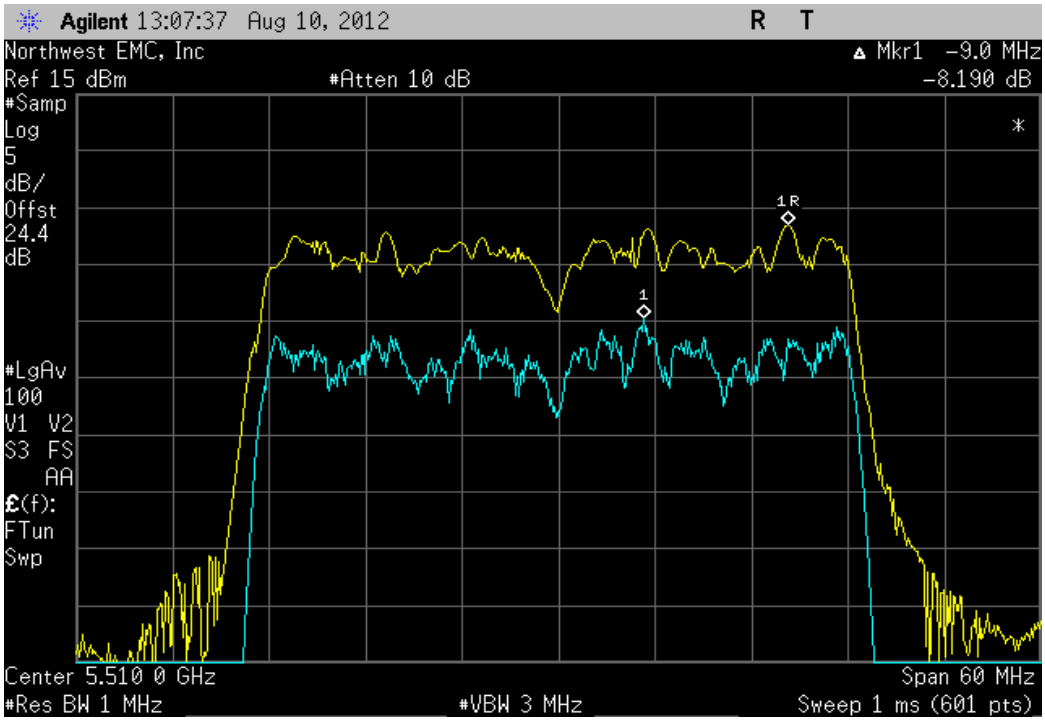
Antenna B, 40MHz Bandwidth , 802.11(n) MCS15, Low Channel 54 Fq 5270MHz

				Value	Limit	Result
				8.799 dB	≤ 13 dB	Pass



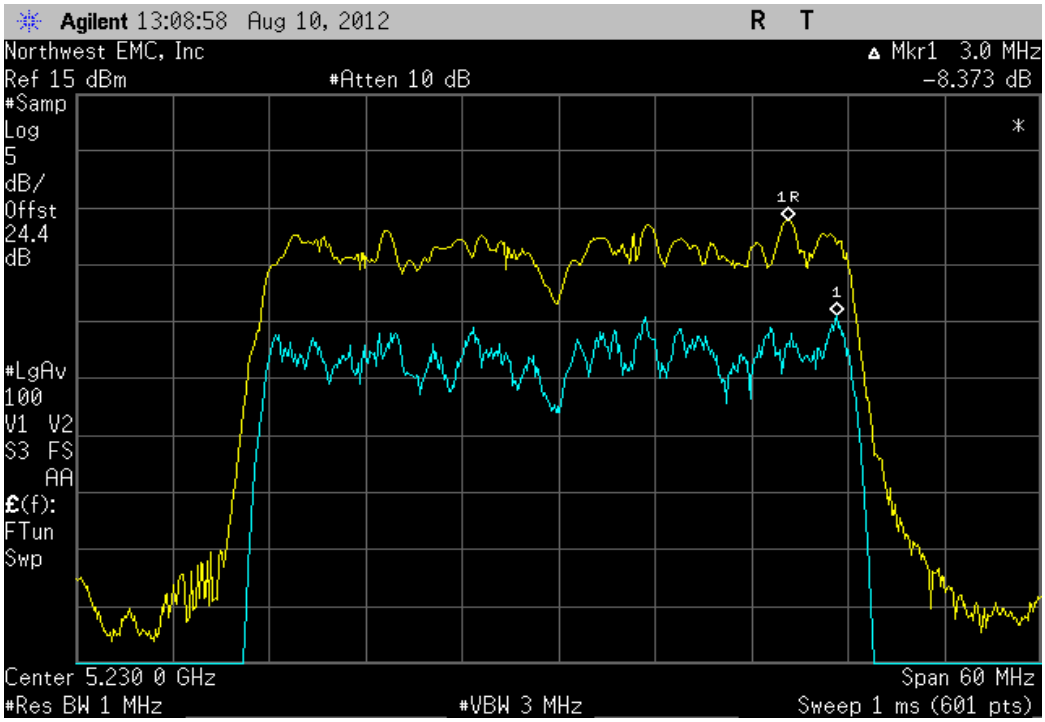
Antenna B, 40MHz Bandwidth , 802.11(n) MCS15, Low Channel 102 Fq 5510MHz

				Value	Limit	Result
				8.19 dB	≤ 13 dB	Pass



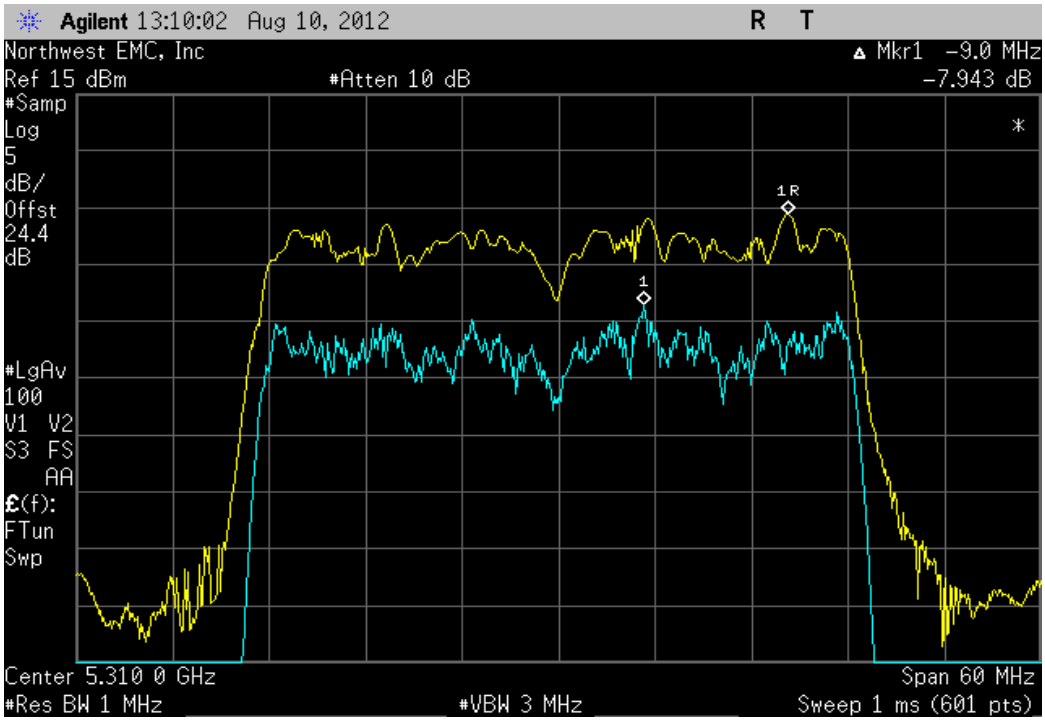
Antenna B, 40MHz Bandwidth , 802.11(n) MCS15, High Channel 46 Fq 5230MHz

				Value	Limit	Result
				8.373 dB	≤ 13 dB	Pass



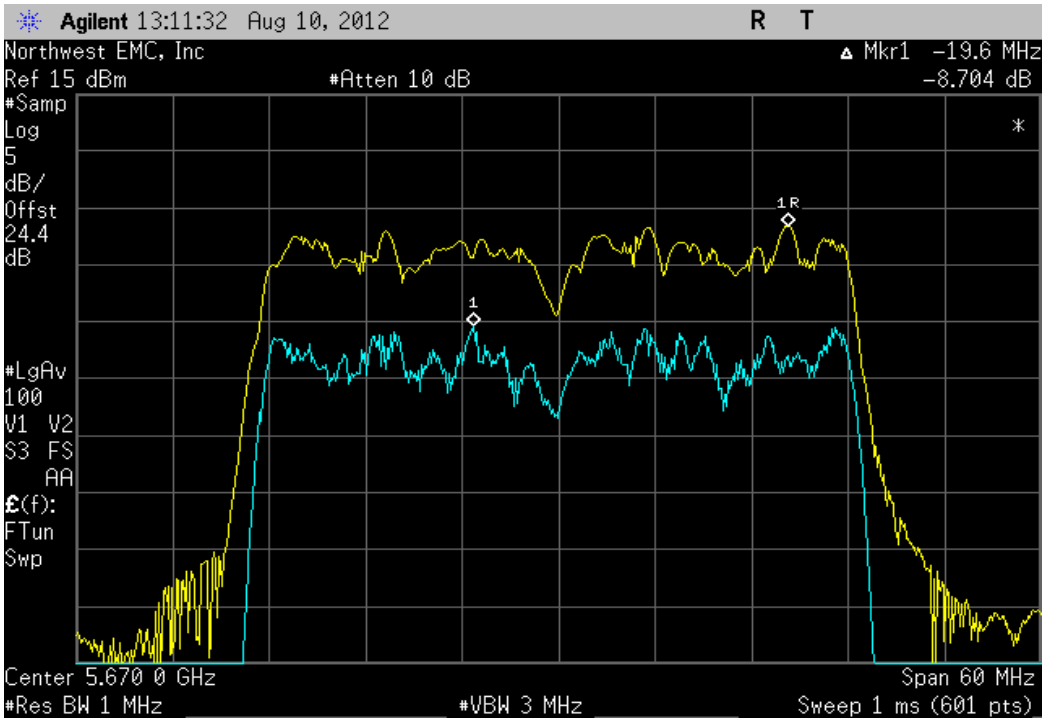
Antenna B, 40MHz Bandwidth , 802.11(n) MCS15, High Channel 62 Fq 5310MHz

				Value	Limit	Result
				7.943 dB	≤ 13 dB	Pass



Antenna B, 40MHz Bandwidth , 802.11(n) MCS15, High Channel 134 Fq 5670MHz

				Value	Limit	Result
				8.704 dB	≤ 13 dB	Pass



Band Edge Compliance
5600MHz-5650MHz

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Attenuator, 'Precision N'	S.M. Electronics	SA18N-06/SM4032	REE	12/15/2011	12
DC Power Supply	Topward	TPS-2000	TPD	NCR	0
Power Sensor	Gigatronics	80701A	SPL	7/8/2011	24
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
Multimeter	Tektronix	DMM912	MMH	1/28/2011	24
Power Meter	Gigatronics	8651A	SPM	1/9/2012	24
MXG Vector Signal Generator	Agilent	N5182A	TIF	NCR	0
Spectrum Analyzer	Agilent	E4440A	AFD	7/5/2012	12

MEASUREMENT UNCERTAINTY

A measurement uncertainty estimation has been performed for each test per our internal quality document WP 342. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty for radiated emissions measurements is less than +/- 4 dB, and for conducted emissions measurements is less than +/- 2.7 dB. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for measurement uncertainty are available upon request.

TEST DESCRIPTION

The spurious RF conducted emissions at the edges of the authorized bands were measured with the EUT set to low and high transmit frequencies in 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.

The power levels used while under test were 11dBm for 5GHz frequencies with a 40MHz bandwidth, 12dBm for 5GHz frequencies with a 20MHz bandwidth, 16dBm for 2.4GHz frequencies with a 20MHz bandwidth and 11dBm for 2.4GHz frequencies with a 40MHz bandwidth.

This testing was only done on the worst case output power modes / antenna ports as noted elsewhere in this report.

The guidance for testing multiple outputs as defined in KDB662911 D01 v01r01 item (2) was followed: Measure and add 10 log (N) dB, where N is the numer of outputs.

Band Edge Compliance 5600MHz-5650MHz

EUT:	1516			**Work Order:**	MCSO1601
Serial Number:	000309122652			**Date:**	08/14/12
Customer:	Microsoft Corporation			**Temperature:**	24°C
Attendees:	None			**Humidity:**	41%
Project:	None			**Barometric Pres.:**	1016
Tested by:	Brandon Hobbs	**Power:**	110ACV/60Hz	**Job Site:**	EV06

TEST SPECIFICATIONS	Test Method
FCC 15.407:2012	ANSI C63.10:2009

COMMENTS

EUT was set to 100% duty cycle for all the points listed.

DEVIATIONS FROM TEST STANDARD

None

Configuration #	2	Signature

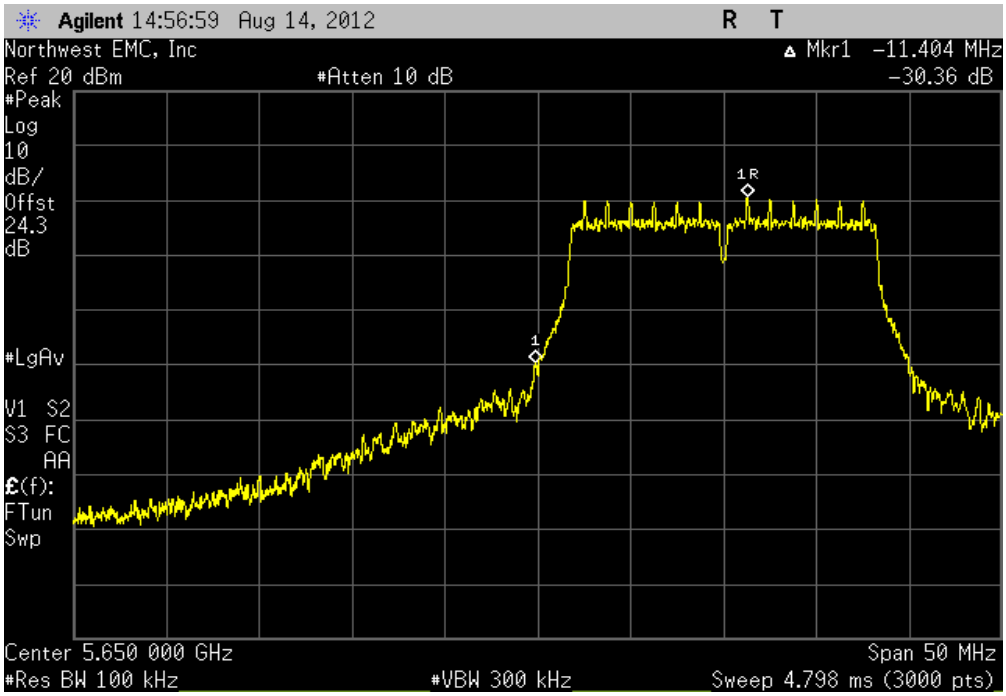
				Value (dBc)	Limit (dBc)	Result
Antenna A						
20MHz bandwidth						
802.11(a), 6 Mbps						
Low Channel. Ch 132, 5660MHz						
			15	-30.36	≤ -20	Pass
High Channel. Ch 116, 5580MHz						
				-51.38	≤ -20	Pass
802.11(a), 36 Mbps						
Low Channel. Ch 132, 5660MHz						
				-30.36	≤ -20	Pass
High Channel. Ch 116, 5580MHz						
				-51.06	≤ -20	Pass
802.11(a), 54 Mbps						
Low Channel. Ch 132, 5660MHz						
				-31.54	≤ -20	Pass
High Channel. Ch 116, 5580MHz						
				-50.52	≤ -20	Pass
802.11(n), MCS0						
Low Channel. Ch 132, 5660MHz						
				-26.94	≤ -20	Pass
High Channel. Ch 116, 5580MHz						
				-45.97	≤ -20	Pass
802.11(n), MCS7						
Low Channel. Ch 132, 5660MHz						
				-25.16	≤ -20	Pass
High Channel. Ch 116, 5580MHz						
				-46.1	≤ -20	Pass
802.11(n), MCS8						
Low Channel. Ch 132, 5660MHz						
				-26.26	≤ -20	Pass
High Channel. Ch 116, 5580MHz						
				-46.51	≤ -20	Pass
802.11(n), MCS15						
Low Channel. Ch 132, 5660MHz						
				-26.59	≤ -20	Pass
High Channel. Ch 116, 5580MHz						
				-45.15	≤ -20	Pass
Power summing		Measured Value (dBc)	Sum Factor (dB)	Summed Value (dBc)		
802.11(n), MCS8						
Low Channel. Ch 132, 5660MHz		-26.3	3	-23.3	≤ -20 dBc	Pass
High Channel. Ch 116, 5580MHz		-46.51	3	-43.5	≤ -20 dBc	Pass
802.11(n), MCS15						
Low Channel. Ch 132, 5660MHz		-26.59	3	-23.6	≤ -20 dBc	Pass
High Channel. Ch 116, 5580MHz		-45.15	3	-42.2	≤ -20 dBc	Pass
40MHz bandwidth						
802.11(n), MCS0						
Low Channel. Ch 132/136, 5670MHz						
				-33.38	≤ -20	Pass
High Channel, Ch 108/112, 5550MHz						
				-51.22	≤ -20	Pass
802.11(n), MCS7						
Low Channel. Ch 132/136, 5670MHz						
				-26.03	≤ -20	Pass
High Channel, Ch 108/112, 5550MHz						
				-46.69	≤ -20	Pass
802.11(n), MCS8						
Low Channel. Ch 132/136, 5670MHz						
				-33.02	≤ -20	Pass
High Channel, Ch 108/112, 5550MHz						
				-47.21	≤ -20	Pass
802.11(n), MCS15						
Low Channel. Ch 132/136, 5670MHz						
				-26.33	≤ -20	Pass
High Channel, Ch 108/112, 5550MHz						
				-48.76	≤ -20	Pass
Power summing		Measured Value (dBc)	Sum Factor (dB)	Summed Value (dBc)		
802.11(n), MCS8						
Low Channel. Ch 132/136, 5670MHz		-33.0	3	-30.0	≤ -20 dBc	Pass
High Channel, Ch 108/112, 5550MHz		-47.21	3	-44.2	≤ -20 dBc	Pass
802.11(n), MCS15						
Low Channel. Ch 132/136, 5670MHz		-26.33	3	-23.3	≤ -20 dBc	Pass
High Channel, Ch 108/112, 5550MHz						

		-48.76	3	-45.8	≤ -20 dBc	Pass
Antenna B						
20MHz bandwidth						
802.11(a), 6 Mbps						
Low Channel. Ch 132, 5660MHz						
				-31.2	≤ -20	Pass
High Channel. Ch 116, 5580MHz						
				-53.43	≤ -20	Pass
802.11(a), 36 Mbps						
Low Channel. Ch 132, 5660MHz						
				-31.64	≤ -20	Pass
High Channel. Ch 116, 5580MHz						
				-52.85	≤ -20	Pass
802.11(a), 54 Mbps						
Low Channel. Ch 132, 5660MHz						
				-32.8	≤ -20	Pass
High Channel. Ch 116, 5580MHz						
				-51.93	≤ -20	Pass
802.11(n), MCS0						
Low Channel. Ch 132, 5660MHz						
				-21.74	≤ -20	Pass
High Channel. Ch 116, 5580MHz						
				-49.67	≤ -20	Pass
802.11(n), MCS7						
Low Channel. Ch 132, 5660MHz						
				-21.79	≤ -20	Pass
High Channel. Ch 116, 5580MHz						
				-50.85	≤ -20	Pass
802.11(n), MCS8						
Low Channel. Ch 132, 5660MHz						
				-22.43	≤ -20	Pass
High Channel. Ch 116, 5580MHz						
				-51.47	≤ -20	Pass
802.11(n), MCS15						
Low Channel. Ch 132, 5660MHz						
				-21.93	≤ -20	Pass
High Channel. Ch 116, 5580MHz						
				-49.64	≤ -20	Pass
Power summing		Measured Value (dBc)	Sum Factor (dB)	Summed Value (dBc)		
802.11(n), MCS8						
Low Channel. Ch 132, 5660MHz		-22.4	3	-19.4	≤ -20 dBc	Pass
High Channel. Ch 116, 5580MHz		-51.47	3	-48.5	≤ -20 dBc	Pass
802.11(n), MCS15						
Low Channel. Ch 132, 5660MHz		-21.93	3	-18.9	≤ -20 dBc	Pass
High Channel. Ch 116, 5580MHz		-49.64	3	-46.6	≤ -20 dBc	Pass
40MHz bandwidth						
802.11(n), MCS0						
Low Channel. Ch 132/136, 5670MHz						
				-33.92	≤ -20	Pass
High Channel, Ch 108/112, 5550MHz						
				-50.94	≤ -20	Pass
802.11(n), MCS7						
Low Channel. Ch 132/136, 5670MHz						
				-26.2	≤ -20	Pass
High Channel, Ch 108/112, 5550MHz						
				-50.85	≤ -20	Pass
802.11(n), MCS8						
Low Channel. Ch 132/136, 5670MHz						
				-31.85	≤ -20	Pass
High Channel, Ch 108/112, 5550MHz						
				-49.83	≤ -20	Pass
802.11(n), MCS15						
Low Channel. Ch 132/136, 5670MHz						
				-28.27	≤ -20	Pass
High Channel, Ch 108/112, 5550MHz						
				-44.42	≤ -20	Pass
Power summing		Measured Value (dBc)	Sum Factor (dB)	Summed Value (dBc)		
802.11(n), MCS8						
Low Channel. Ch 132, 5660MHz		-31.9	3	-28.9	≤ -20 dBc	Pass
High Channel. Ch 116, 5580MHz		-49.83	3	-46.8	≤ -20 dBc	Pass
802.11(n), MCS15						
Low Channel. Ch 132, 5660MHz		-28.27	3	-25.3	≤ -20 dBc	Pass
High Channel. Ch 116, 5580MHz		-44.42	3	-41.4	≤ -20 dBc	Pass

Antenna A, 20MHz bandwidth , 802.11(a), 6 Mbps, Low Channel. Ch 132, 5660MHz,

				Value (dBc)	Limit (dBc)	Result
			15	-30.36	≤ -20	Pass

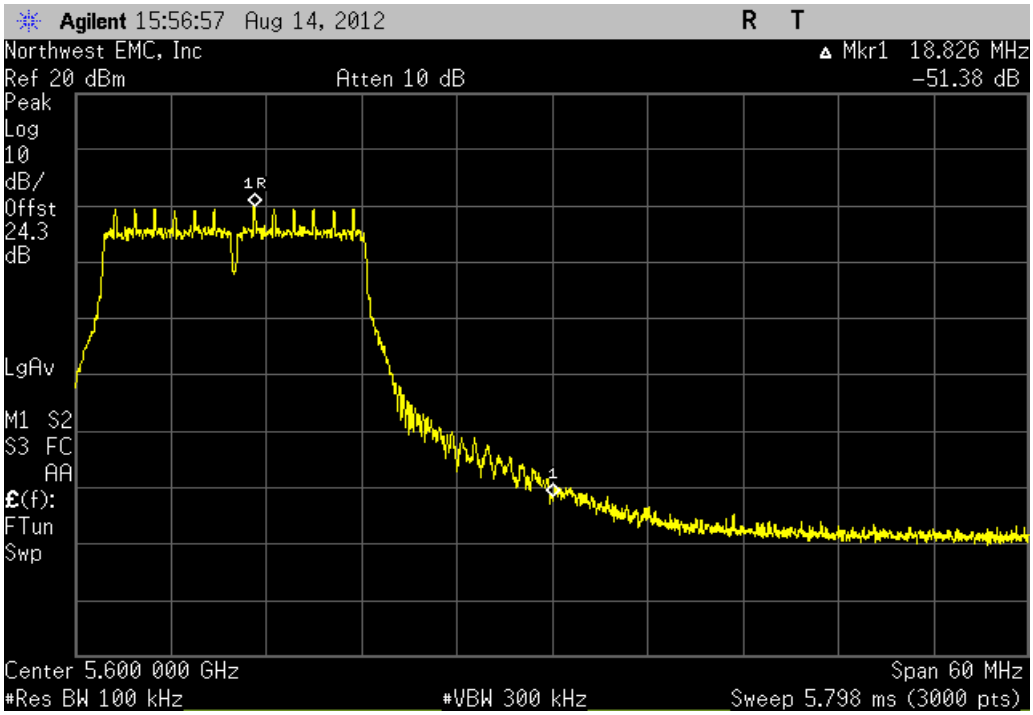
No Image Taken



Antenna A, 20MHz bandwidth , 802.11(a), 6 Mbps, High Channel. Ch 116, 5580MHz,

				Value (dBc)	Limit (dBc)	Result
				-51.38	≤ -20	Pass

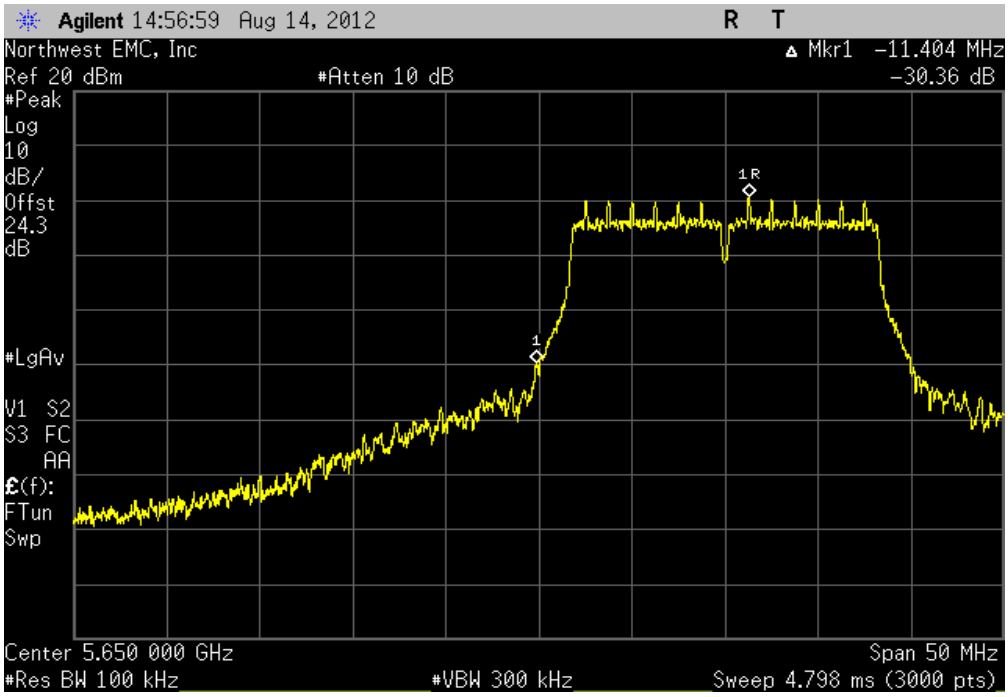
No Image Taken



Antenna A, 20MHz bandwidth , 802.11(a), 36 Mbps, Low Channel. Ch 132, 5660MHz,

				Value (dBc)	Limit (dBc)	Result
				-30.36	≤ -20	Pass

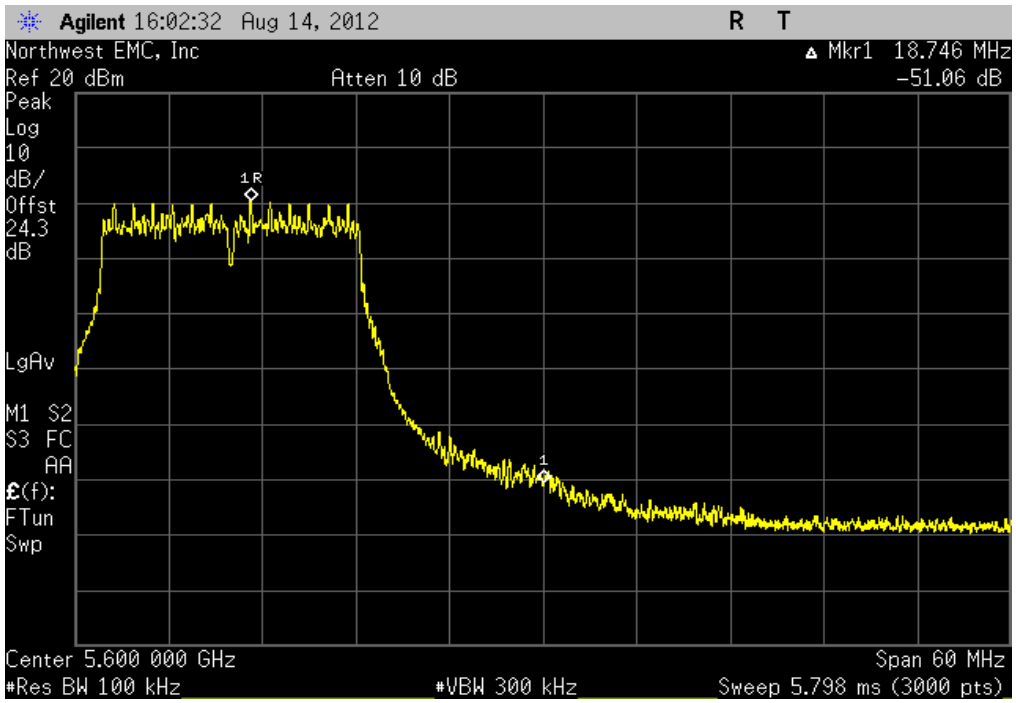
No Image Taken



Antenna A, 20MHz bandwidth , 802.11(a), 36 Mbps, High Channel. Ch 116, 5580MHz,

				Value (dBc)	Limit (dBc)	Result
				-51.06	≤ -20	Pass

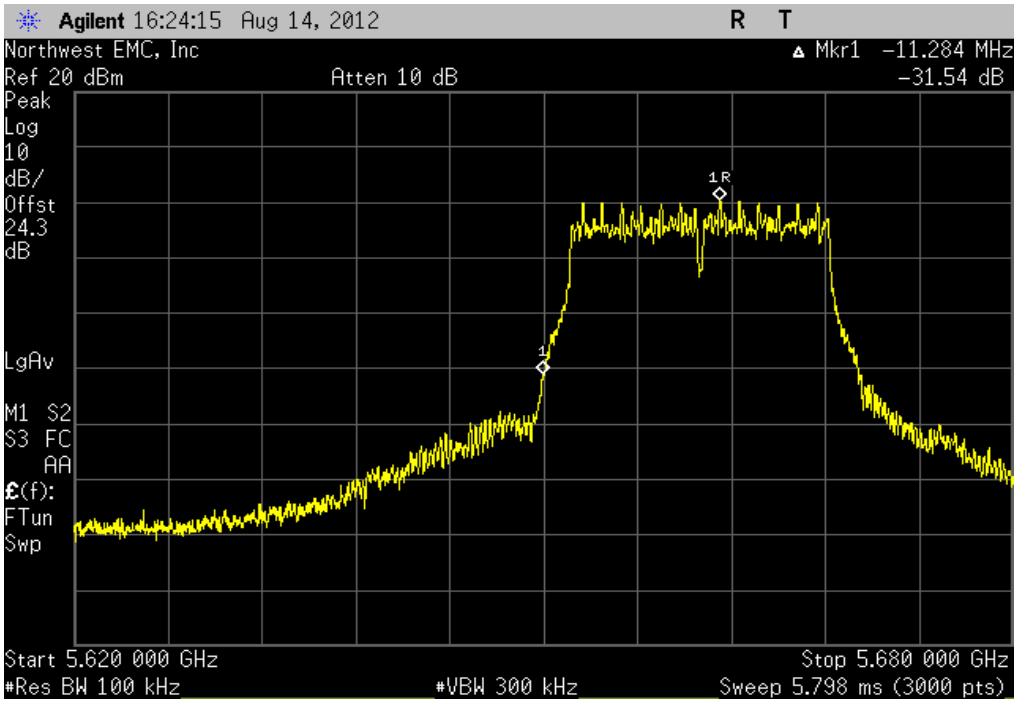
No Image Taken



Antenna A, 20MHz bandwidth , 802.11(a), 54 Mbps, Low Channel. Ch 132, 5660MHz,

				Value (dBc)	Limit (dBc)	Result
				-31.54	≤ -20	Pass

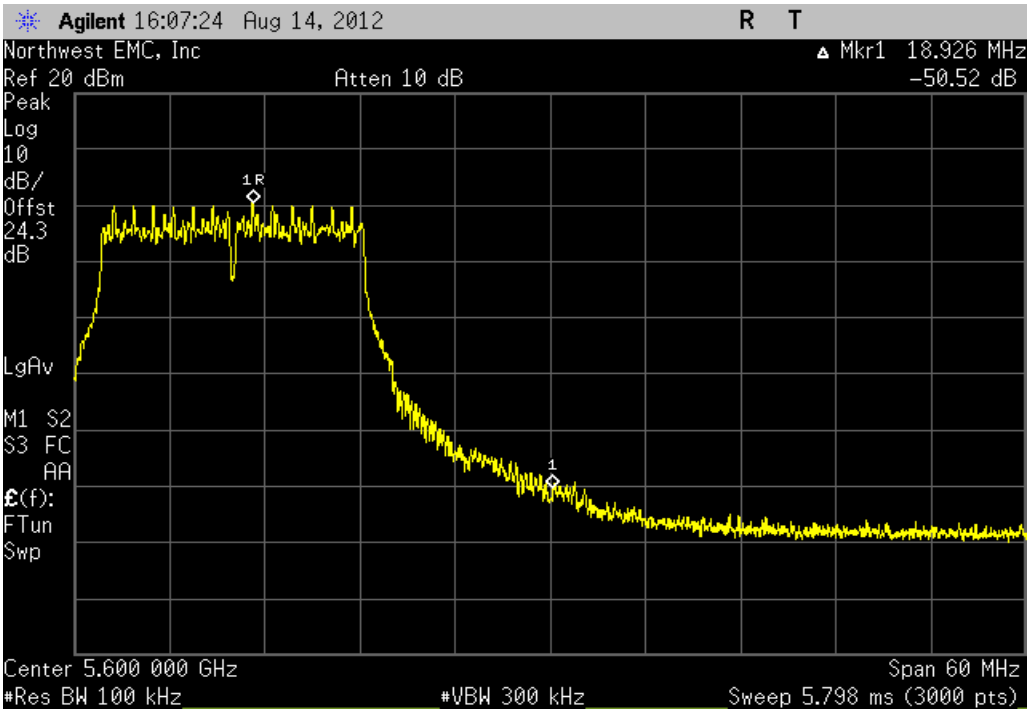
No Image Taken



Antenna A, 20MHz bandwidth , 802.11(a), 54 Mbps, High Channel. Ch 116, 5580MHz,

				Value (dBc)	Limit (dBc)	Result
				-50.52	≤ -20	Pass

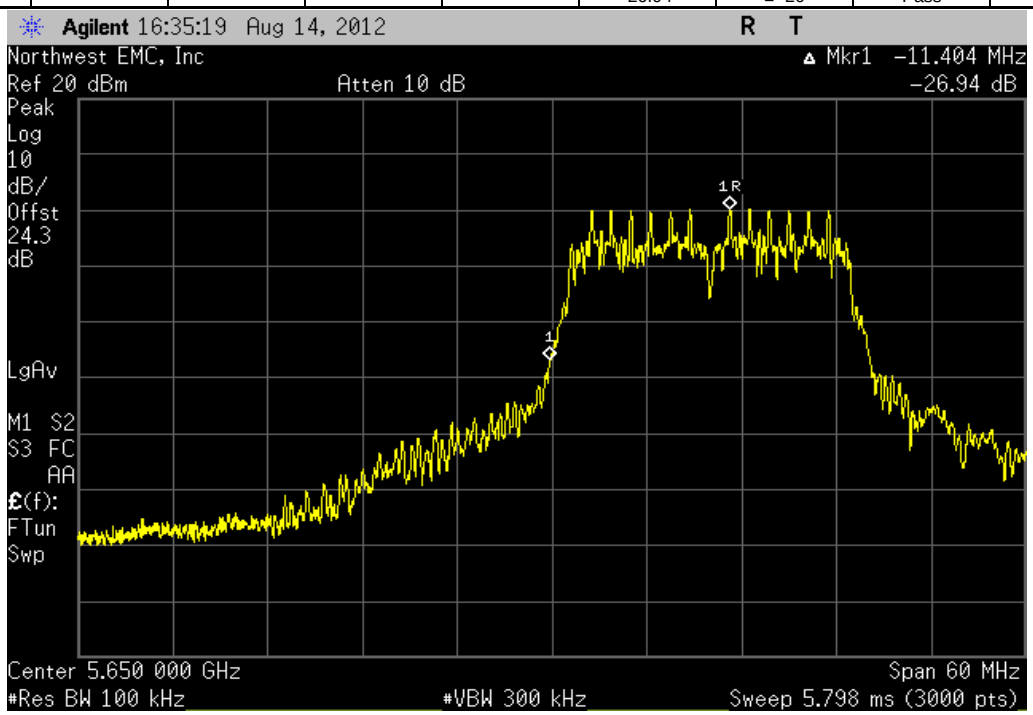
No Image Taken



Antenna A, 20MHz bandwidth , 802.11(n), MCS0, Low Channel. Ch 132, 5660MHz,

Value (dBc)	Limit (dBc)	Result
-26.94	≤ -20	Pass

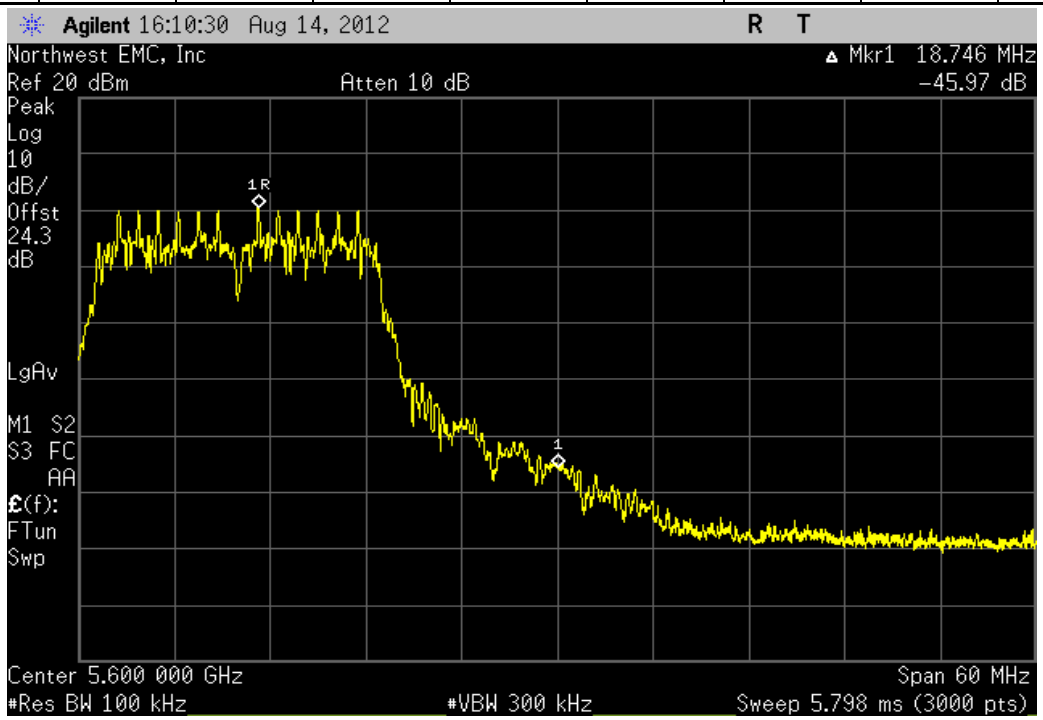
No Image Taken



Antenna A, 20MHz bandwidth , 802.11(n), MCS0, High Channel. Ch 116, 5580MHz,

Value (dBc)	Limit (dBc)	Result
-45.97	≤ -20	Pass

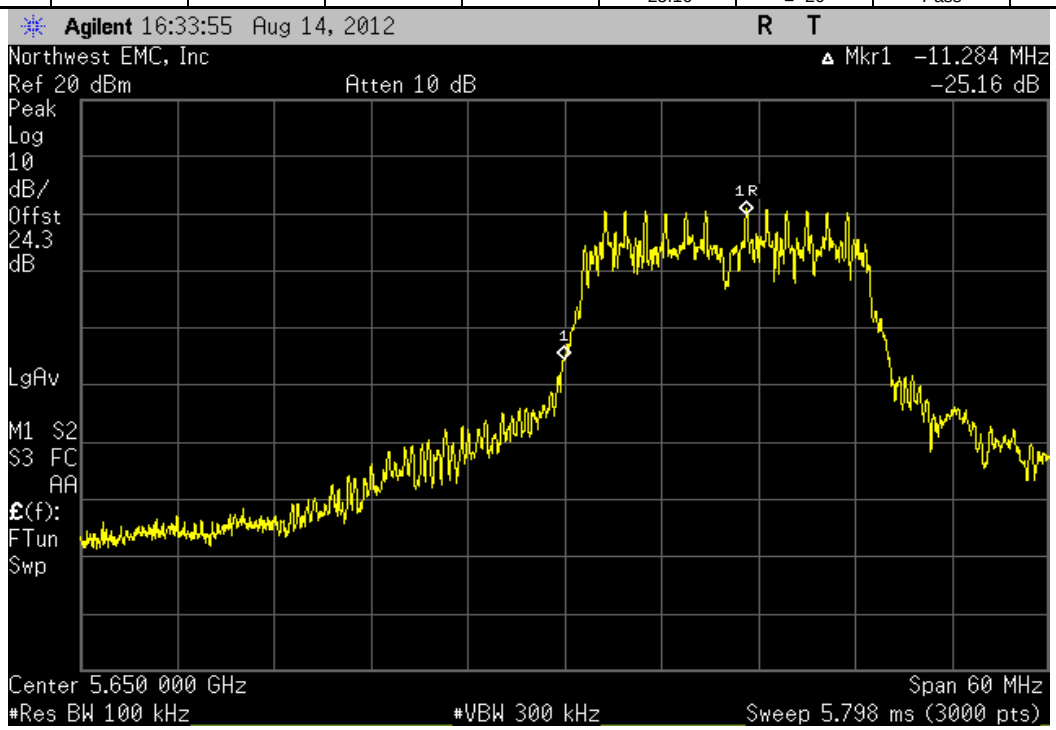
No Image Taken



Antenna A, 20MHz bandwidth , 802.11(n), MCS7, Low Channel. Ch 132, 5660MHz,

Value (dBc)	Limit (dBc)	Result
-25.16	≤ -20	Pass

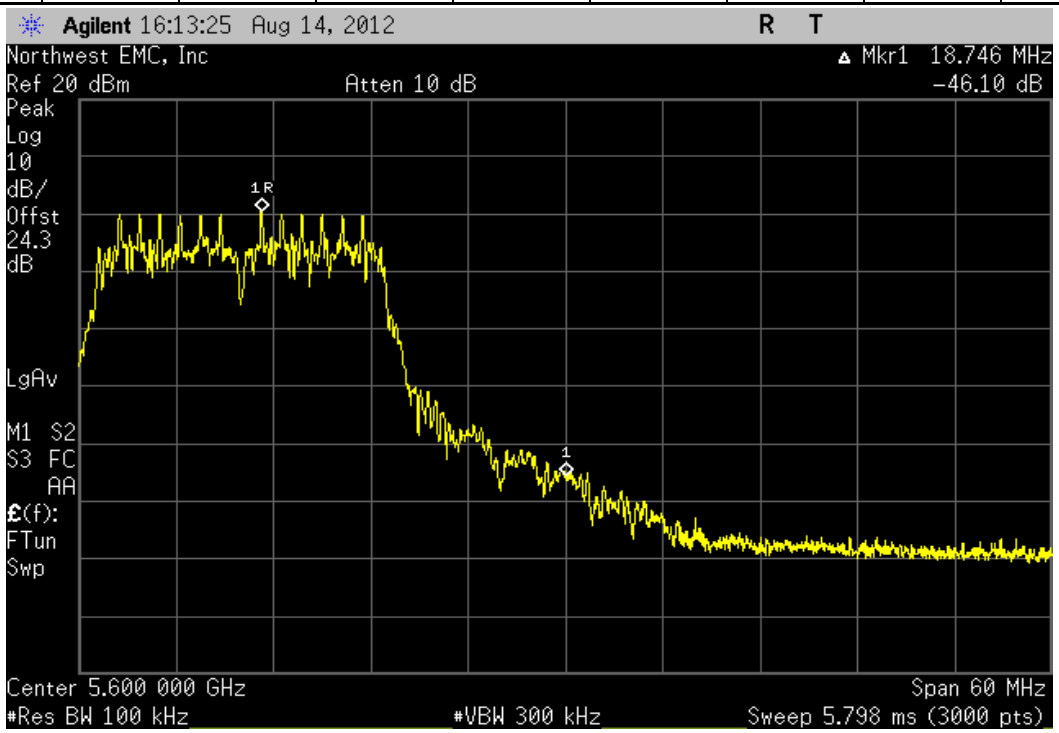
No Image Taken



Antenna A, 20MHz bandwidth , 802.11(n), MCS7, High Channel. Ch 116, 5580MHz,

Value (dBc)	Limit (dBc)	Result
-46.1	≤ -20	Pass

No Image Taken

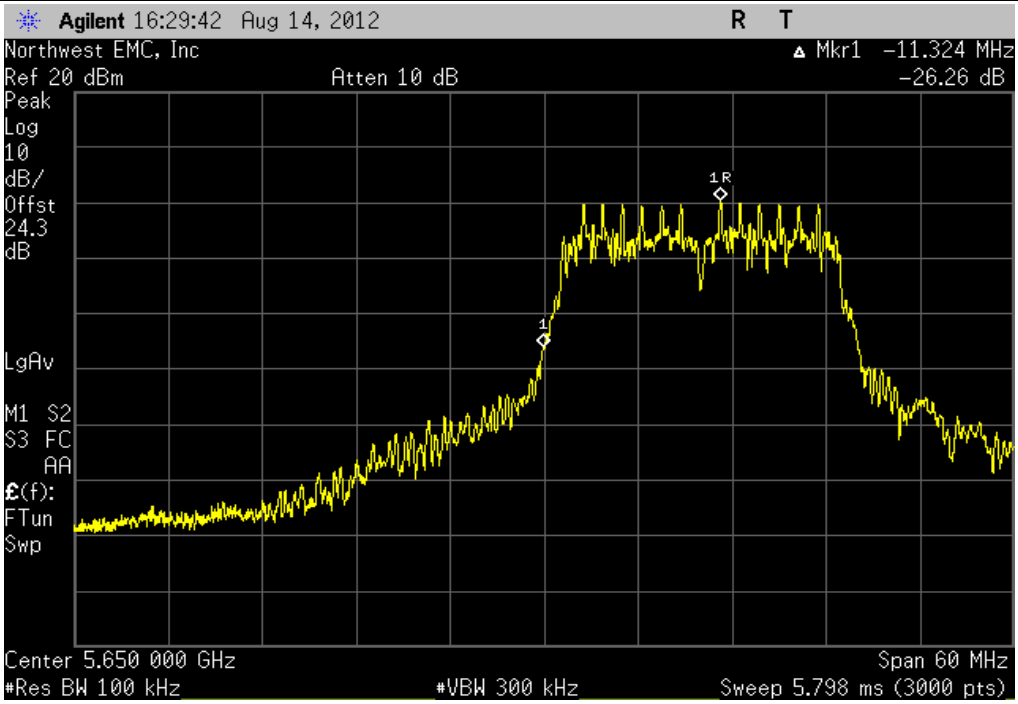


Band Edge Compliance 5600MHz-5650MHz

Antenna A, 20MHz bandwidth , 802.11(n), MCS8, Low Channel. Ch 132, 5660MHz,

Value (dBc)	Limit (dBc)	Result
-26.26	≤ -20	Pass

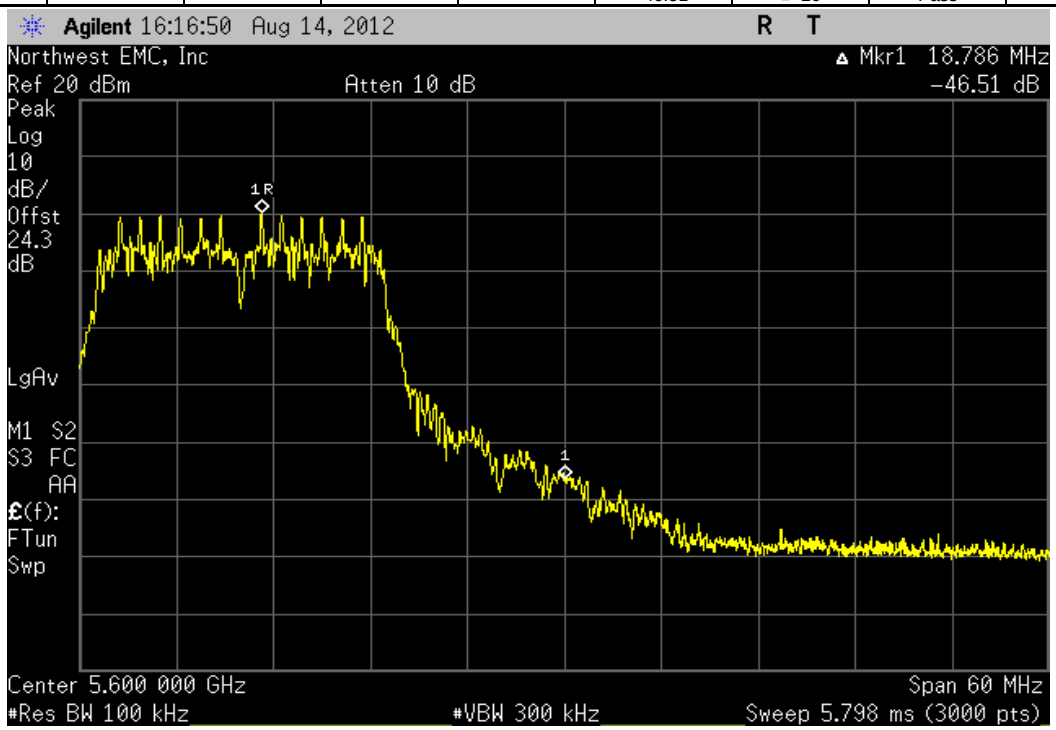
No Image Taken



Antenna A, 20MHz bandwidth , 802.11(n), MCS8, High Channel. Ch 116, 5580MHz,

Value (dBc)	Limit (dBc)	Result
-46.51	≤ -20	Pass

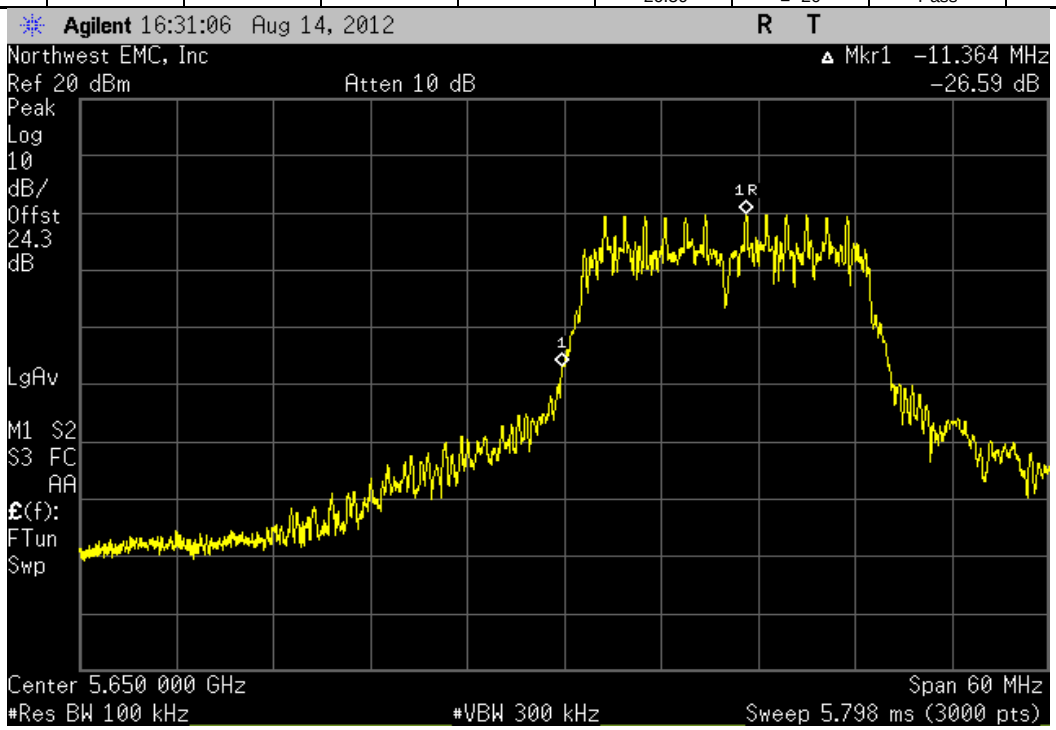
No Image Taken



Antenna A, 20MHz bandwidth , 802.11(n), MCS15, Low Channel. Ch 132, 5660MHz,

				Value (dBc)	Limit (dBc)	Result
				-26.59	≤ -20	Pass

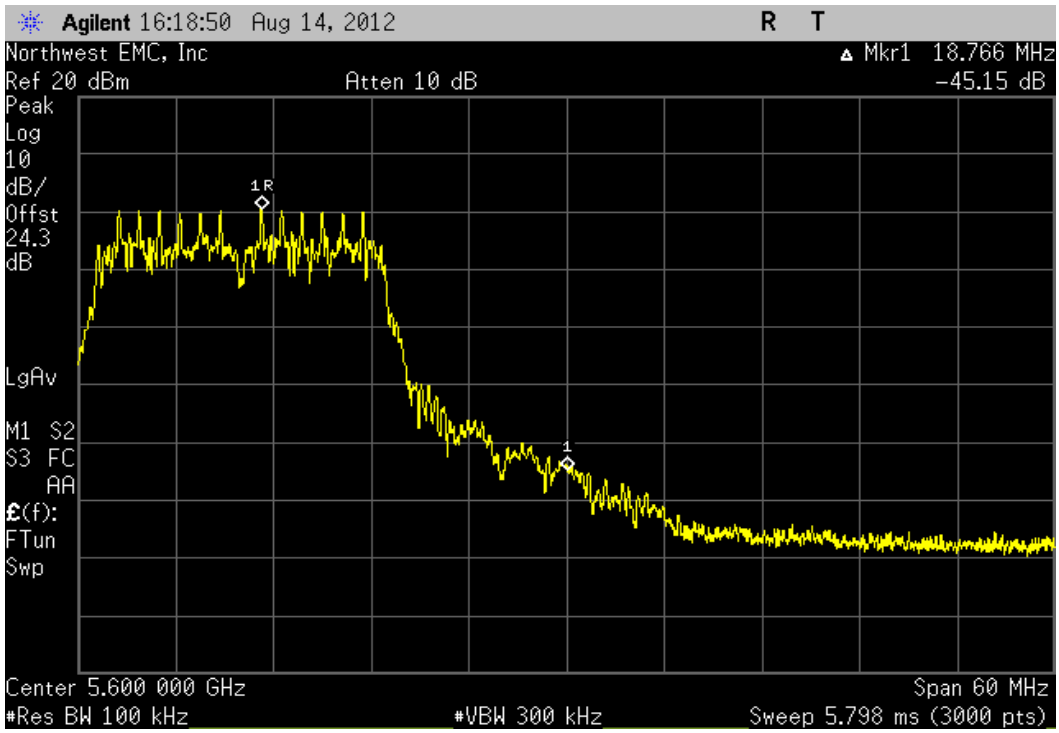
No Image Taken



Antenna A, 20MHz bandwidth , 802.11(n), MCS15, High Channel. Ch 116, 5580MHz,

				Value (dBc)	Limit (dBc)	Result
				-45.15	≤ -20	Pass

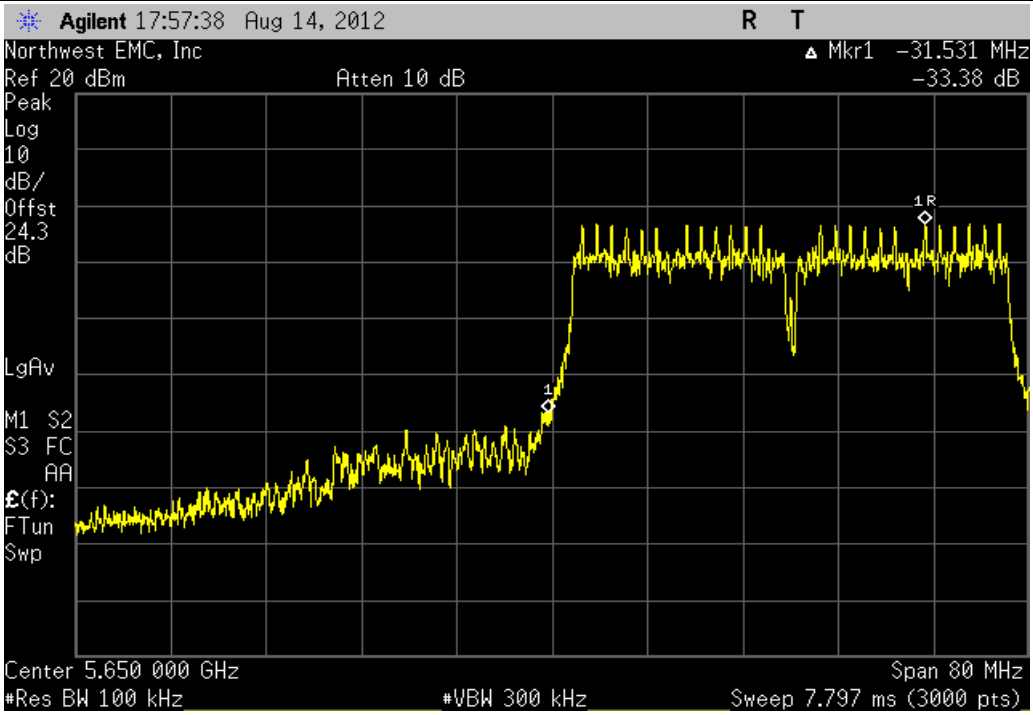
No Image Taken



Antenna A, 40MHz bandwidth , 802.11(n), MCS0, Low Channel. Ch 132/136, 5670MHz,

					Value (dBc)	Limit (dBc)	Result
					-33.38	≤ -20	Pass

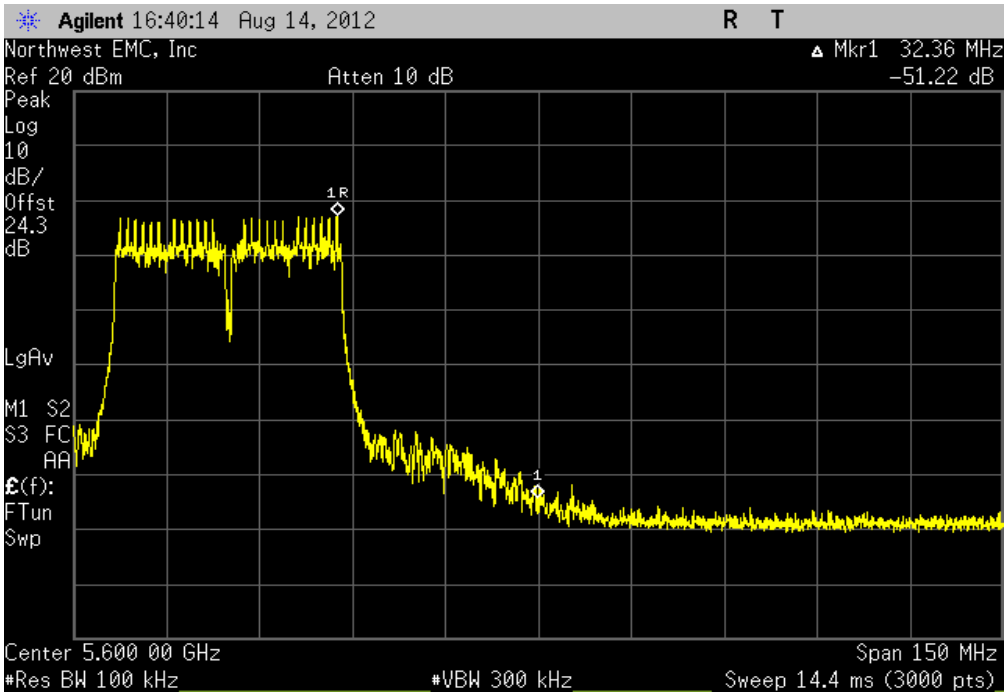
No Image Taken



Antenna A, 40MHz bandwidth , 802.11(n), MCS0, High Channel, Ch 108/112, 5550MHz,

					Value (dBc)	Limit (dBc)	Result
					-51.22	≤ -20	Pass

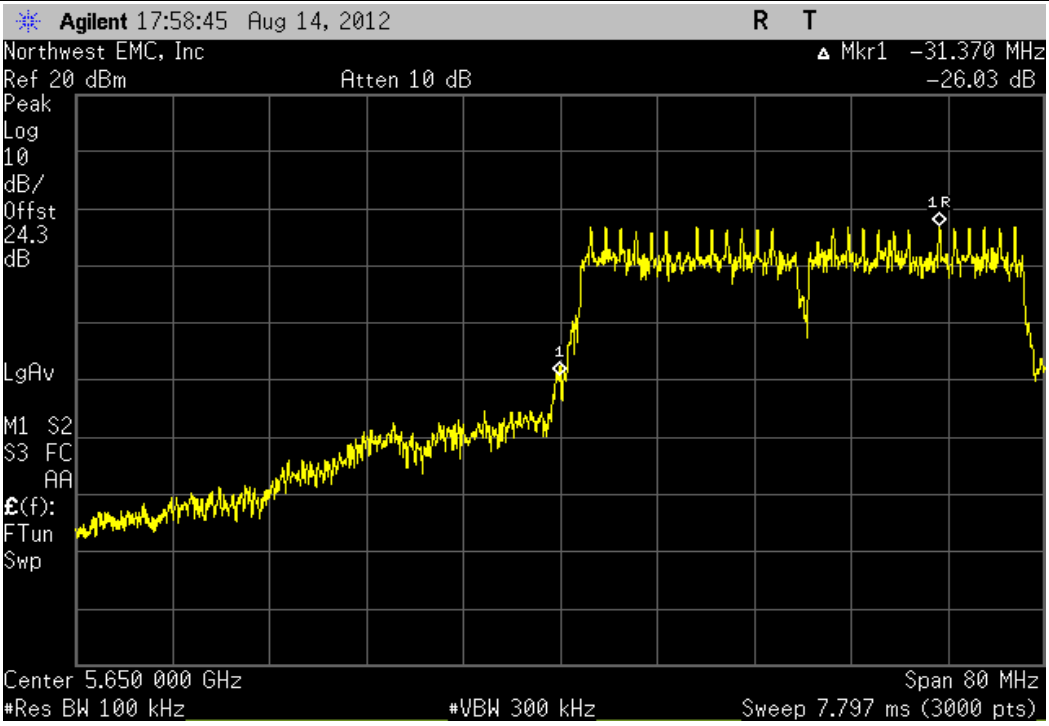
No Image Taken



Antenna A, 40MHz bandwidth , 802.11(n), MCS7, Low Channel. Ch 132/136, 5670MHz,

				Value (dBc)	Limit (dBc)	Result
				-26.03	≤ -20	Pass

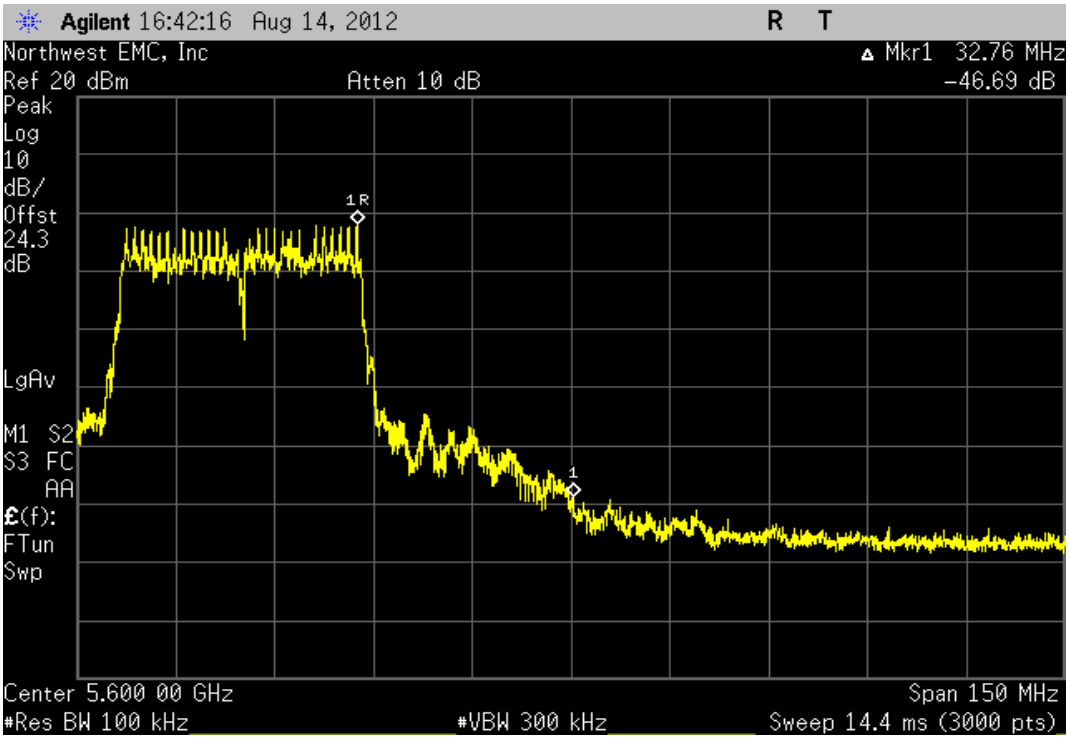
No Image Taken



Antenna A, 40MHz bandwidth , 802.11(n), MCS7, High Channel, Ch 108/112, 5550MHz,

				Value (dBc)	Limit (dBc)	Result
				-46.69	≤ -20	Pass

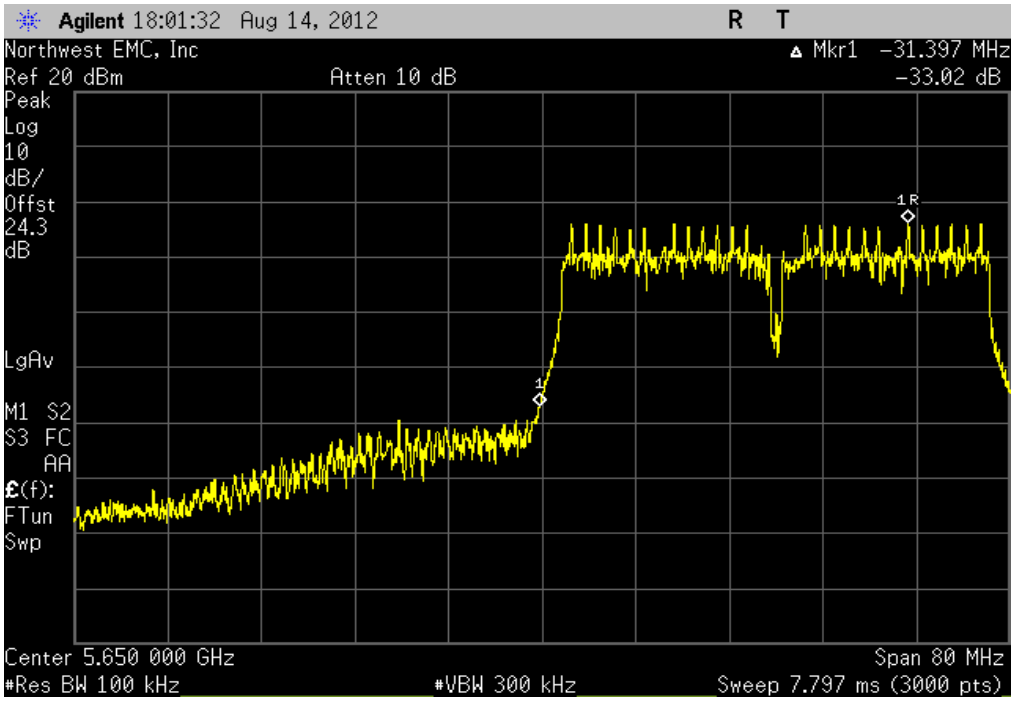
No Image Taken



Antenna A, 40MHz bandwidth , 802.11(n), MCS8, Low Channel. Ch 132/136, 5670MHz,

				Value (dBc)	Limit (dBc)	Result
				-33.02	≤ -20	Pass

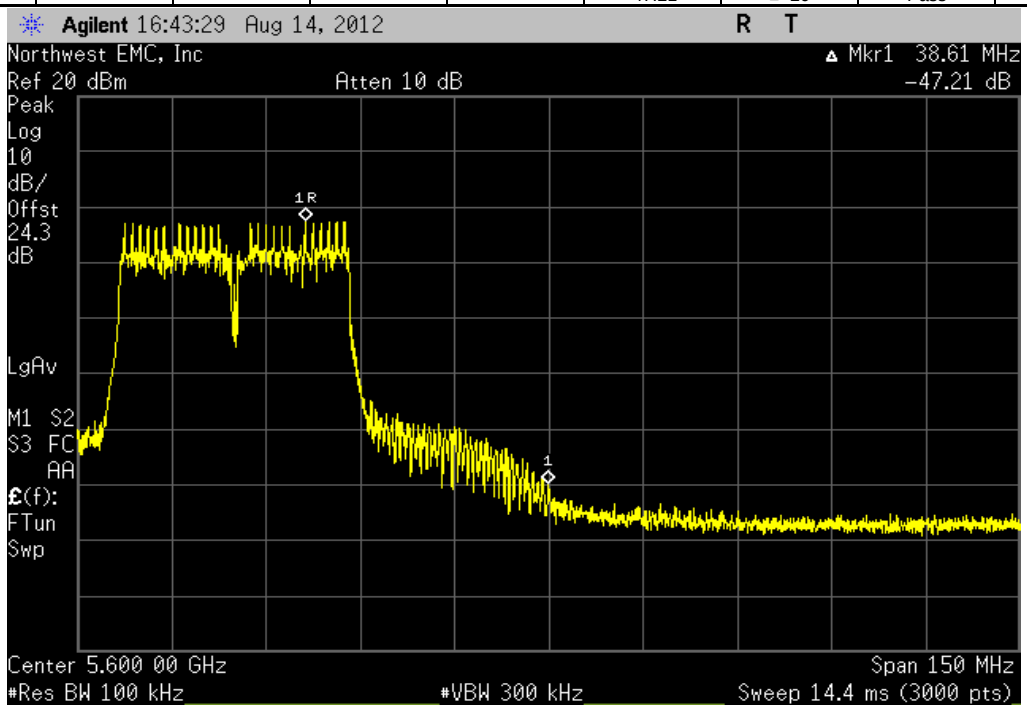
No Image Taken



Antenna A, 40MHz bandwidth , 802.11(n), MCS8, High Channel, Ch 108/112, 5550MHz,

				Value (dBc)	Limit (dBc)	Result
				-47.21	≤ -20	Pass

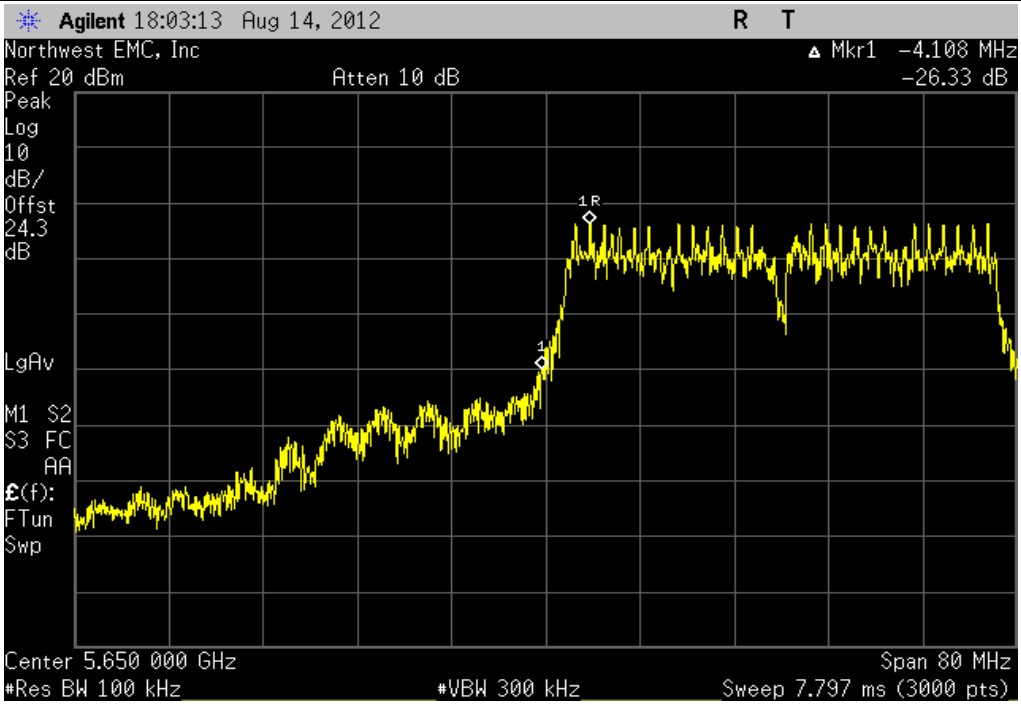
No Image Taken



Antenna A, 40MHz bandwidth , 802.11(n), MCS15, Low Channel. Ch 132/136, 5670MHz,

					Value (dBc)	Limit (dBc)	Result
					-26.33	≤ -20	Pass

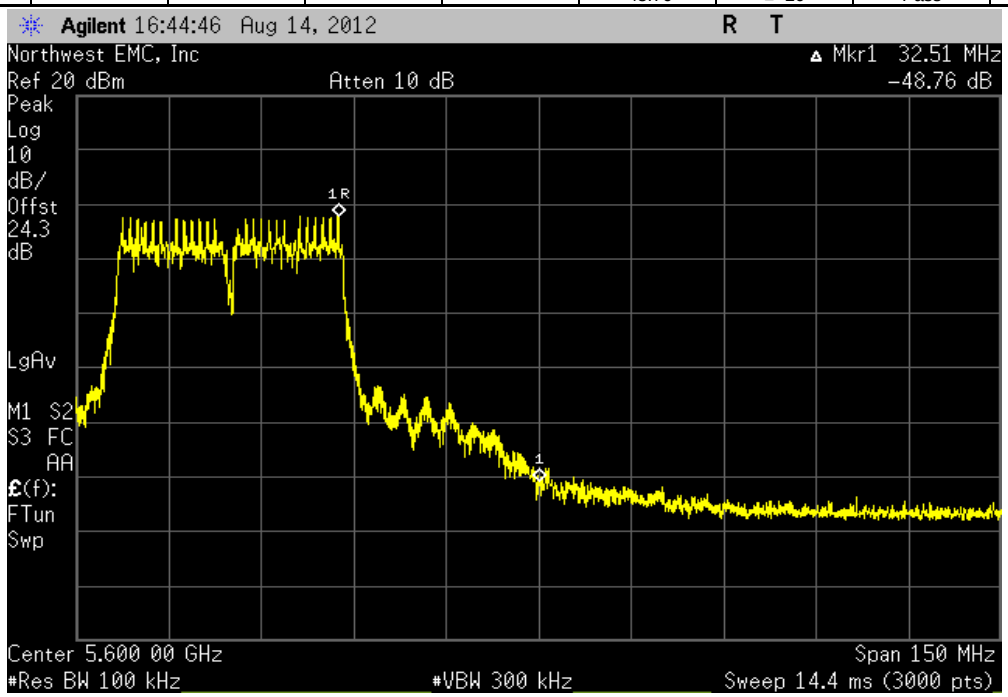
No Image Taken



Antenna A, 40MHz bandwidth , 802.11(n), MCS15, High Channel, Ch 108/112, 5550MHz,

					Value (dBc)	Limit (dBc)	Result
					-48.76	≤ -20	Pass

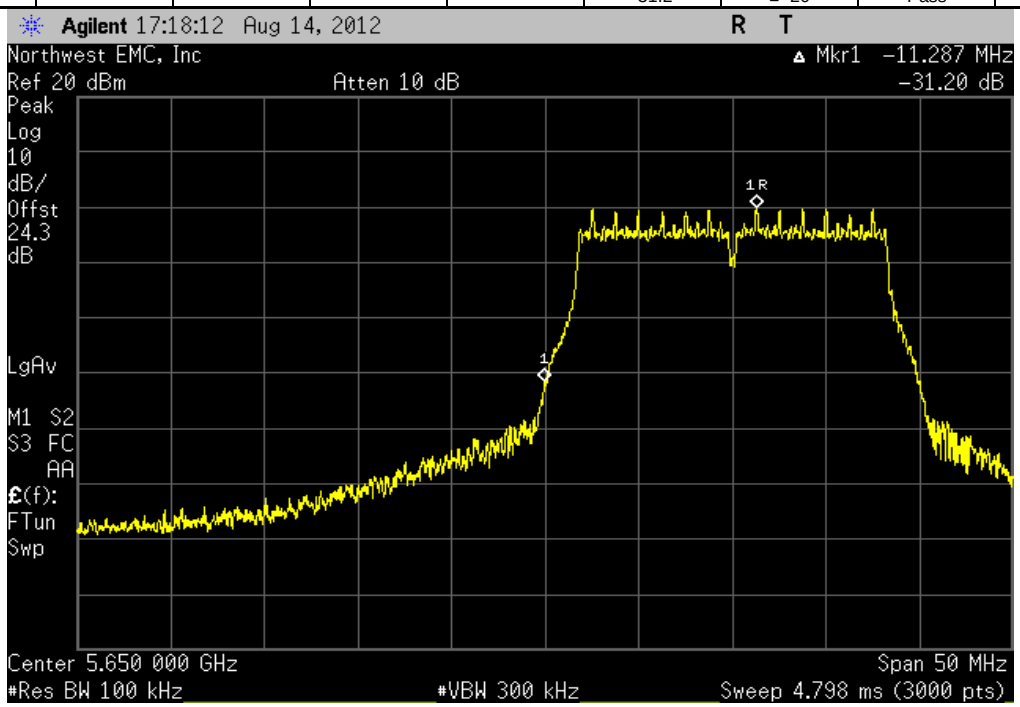
No Image Taken



Antenna B, 20MHz bandwidth , 802.11(a), 6 Mbps, Low Channel. Ch 132, 5660MHz,

Value (dBc)	Limit (dBc)	Result
-31.2	≤ -20	Pass

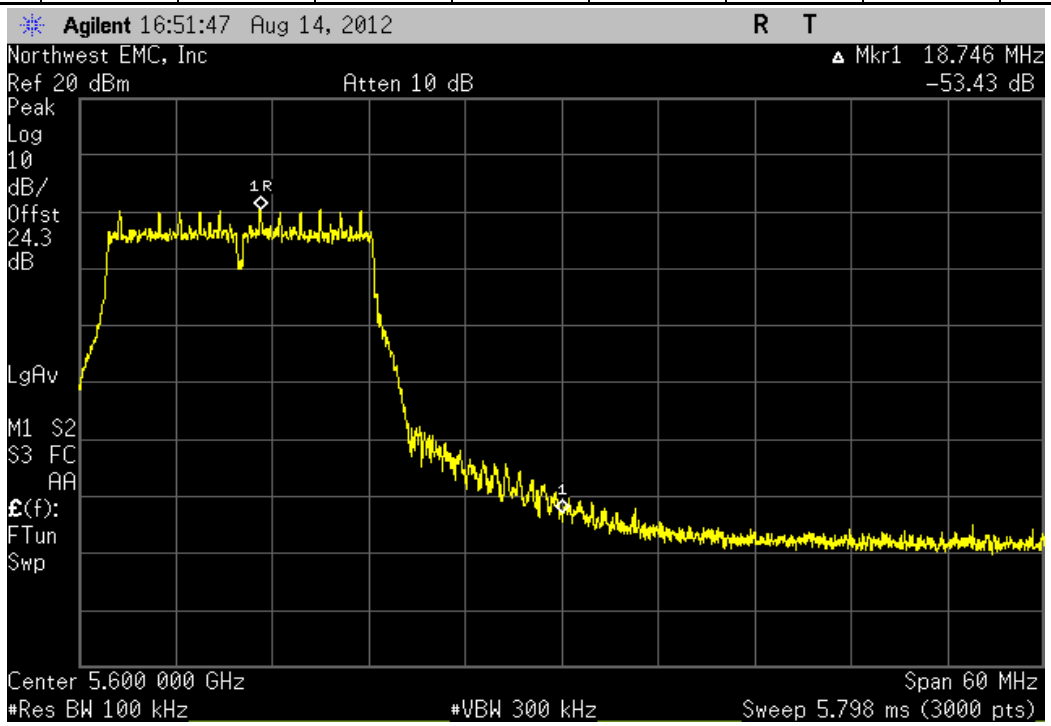
No Image Taken



Antenna B, 20MHz bandwidth , 802.11(a), 6 Mbps, High Channel. Ch 116, 5580MHz,

Value (dBc)	Limit (dBc)	Result
-53.43	≤ -20	Pass

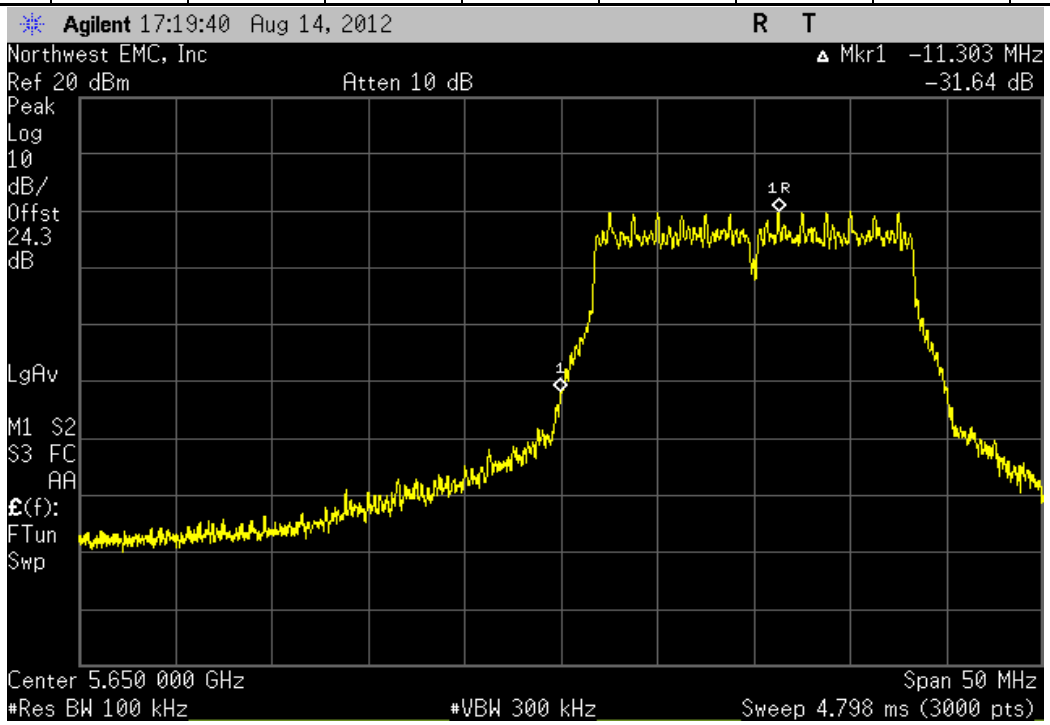
No Image Taken



Antenna B, 20MHz bandwidth , 802.11(a), 36 Mbps, Low Channel. Ch 132, 5660MHz,

Value (dBc)	Limit (dBc)	Result
-31.64	≤ -20	Pass

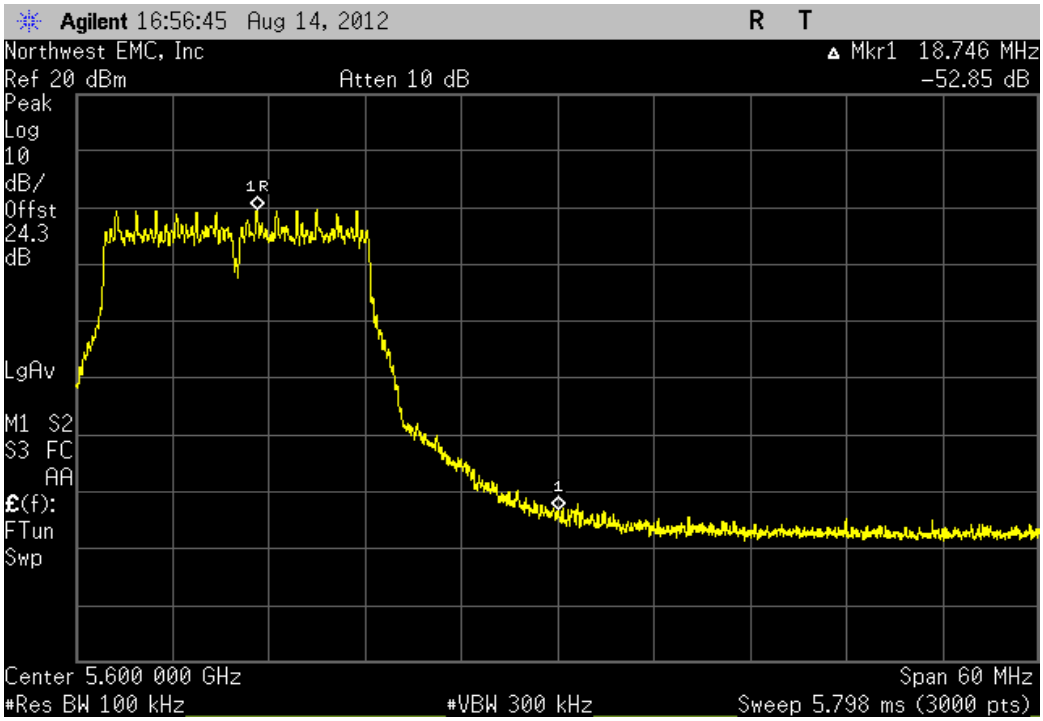
No Image Taken



Antenna B, 20MHz bandwidth , 802.11(a), 36 Mbps, High Channel. Ch 116, 5580MHz,

Value (dBc)	Limit (dBc)	Result
-52.85	≤ -20	Pass

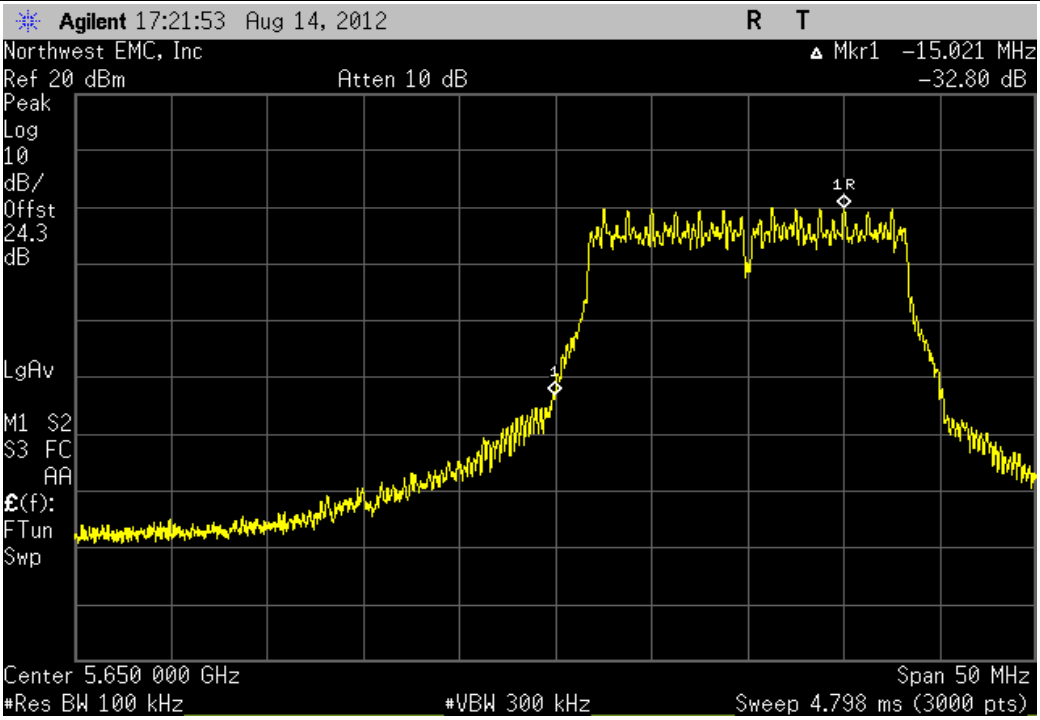
No Image Taken



Antenna B, 20MHz bandwidth , 802.11(a), 54 Mbps, Low Channel. Ch 132, 5660MHz,

Value (dBc)	Limit (dBc)	Result
-32.8	≤ -20	Pass

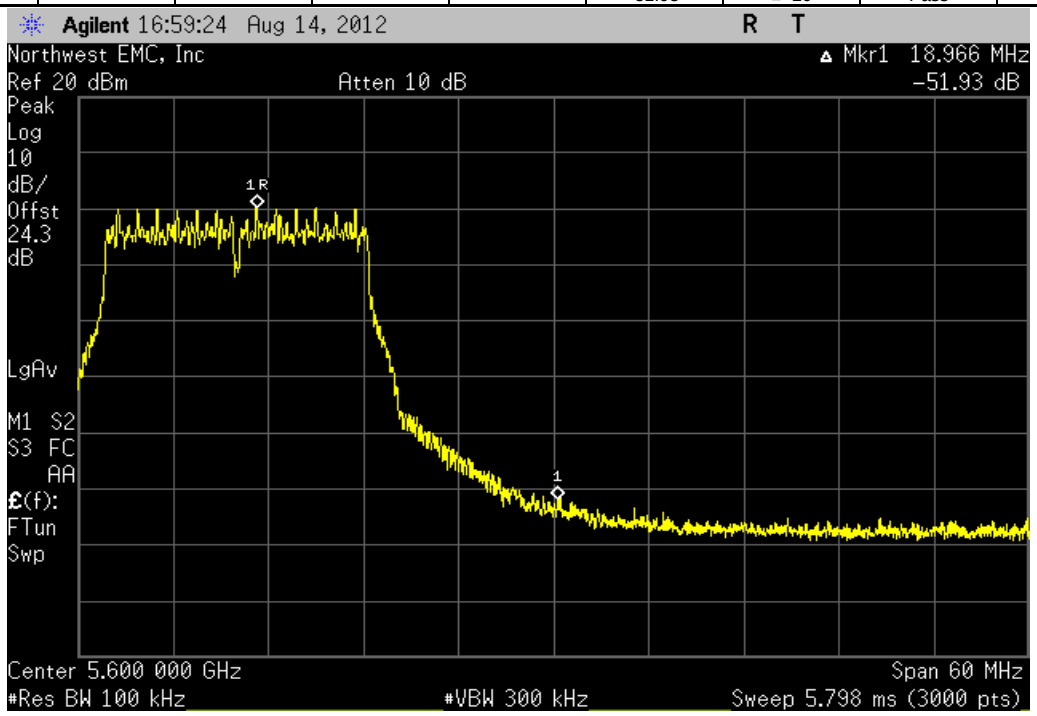
No Image Taken



Antenna B, 20MHz bandwidth , 802.11(a), 54 Mbps, High Channel. Ch 116, 5580MHz,

Value (dBc)	Limit (dBc)	Result
-51.93	≤ -20	Pass

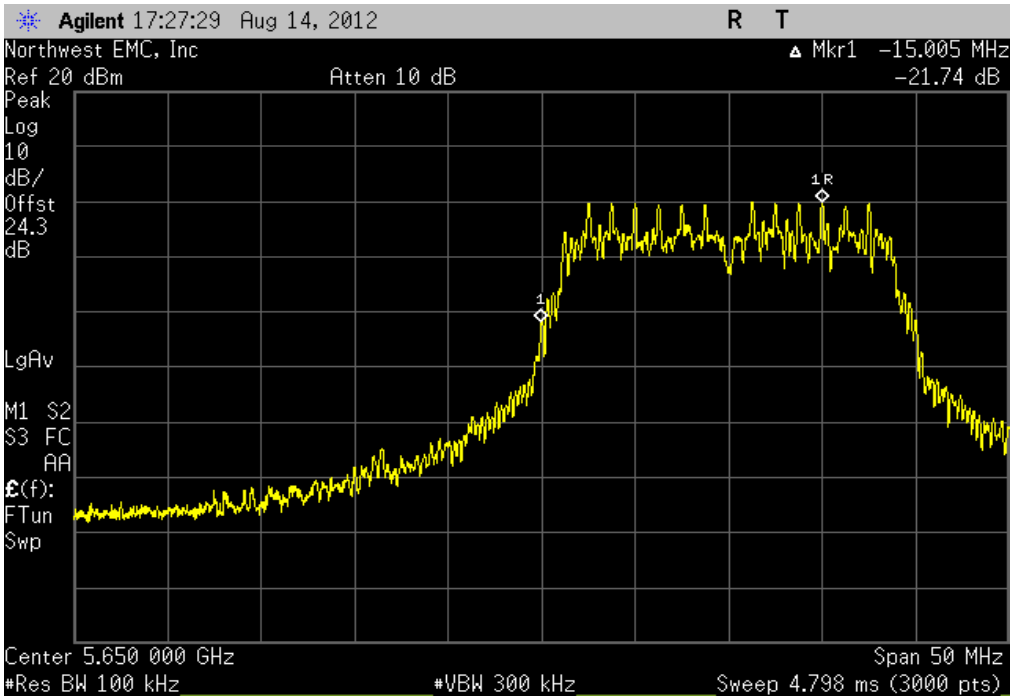
No Image Taken



Antenna B, 20MHz bandwidth , 802.11(n), MCS0, Low Channel. Ch 132, 5660MHz,

				Value (dBc)	Limit (dBc)	Result
				-21.74	≤ -20	Pass

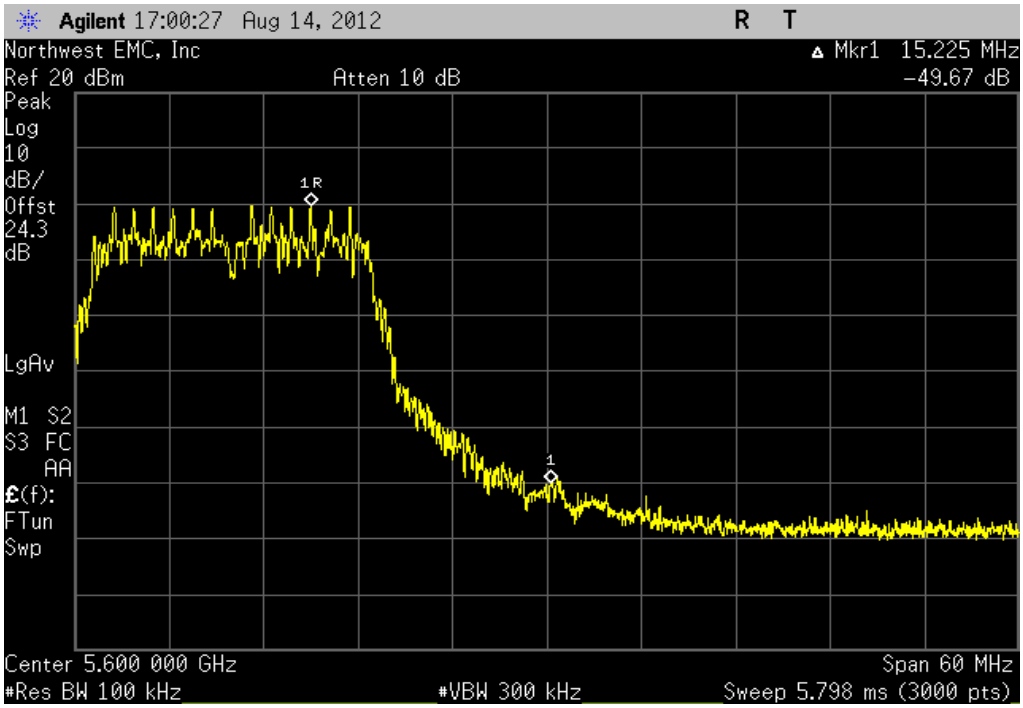
No Image Taken



Antenna B, 20MHz bandwidth , 802.11(n), MCS0, High Channel. Ch 116, 5580MHz,

				Value (dBc)	Limit (dBc)	Result
				-49.67	≤ -20	Pass

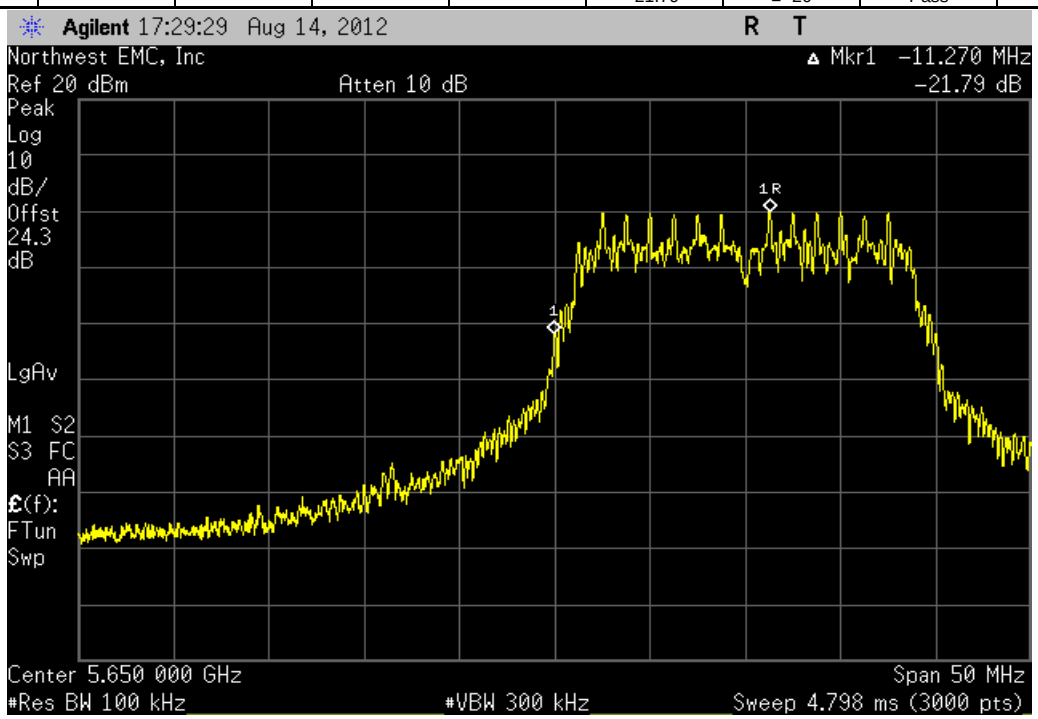
No Image Taken



Antenna B, 20MHz bandwidth , 802.11(n), MCS7, Low Channel. Ch 132, 5660MHz,

				Value (dBc)	Limit (dBc)	Result
				-21.79	≤ -20	Pass

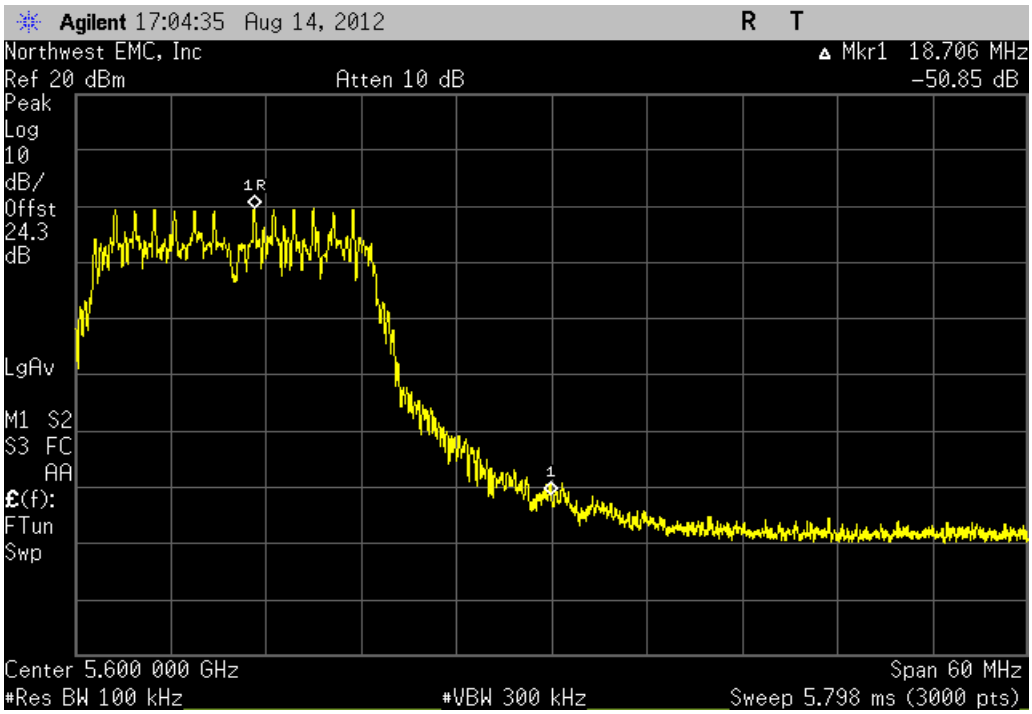
No Image Taken



Antenna B, 20MHz bandwidth , 802.11(n), MCS7, High Channel. Ch 116, 5580MHz,

				Value (dBc)	Limit (dBc)	Result
				-50.85	≤ -20	Pass

No Image Taken

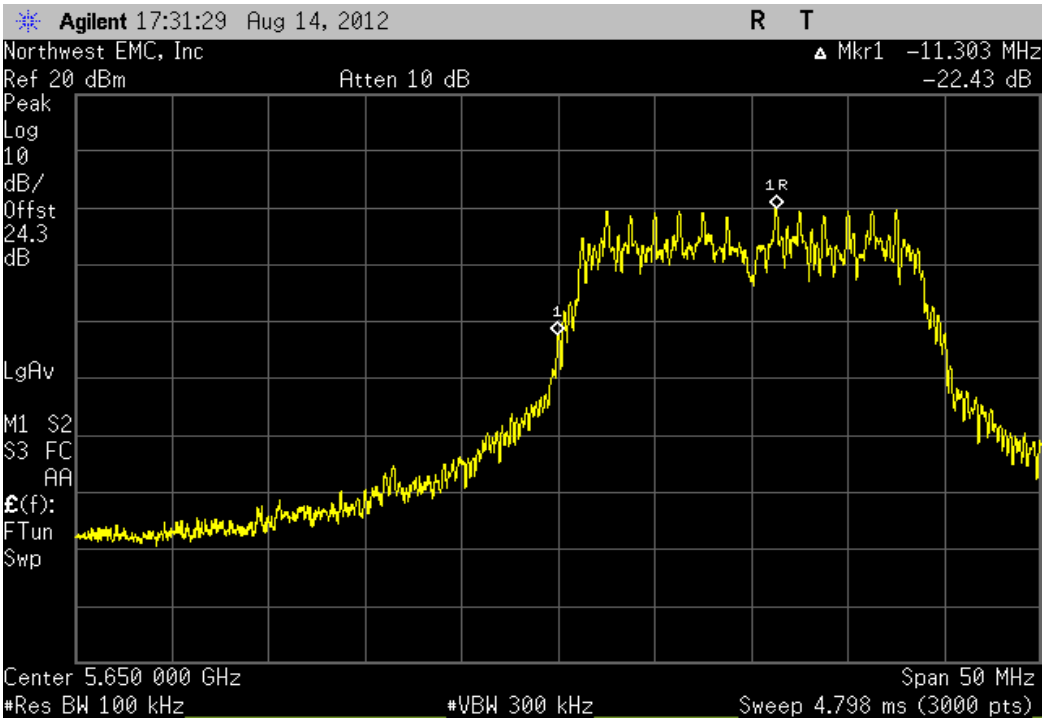


Band Edge Compliance 5600MHz-5650MHz

Antenna B, 20MHz bandwidth , 802.11(n), MCS8, Low Channel. Ch 132, 5660MHz,

					Value (dBc)	Limit (dBc)	Result
					-22.43	≤ -20	Pass

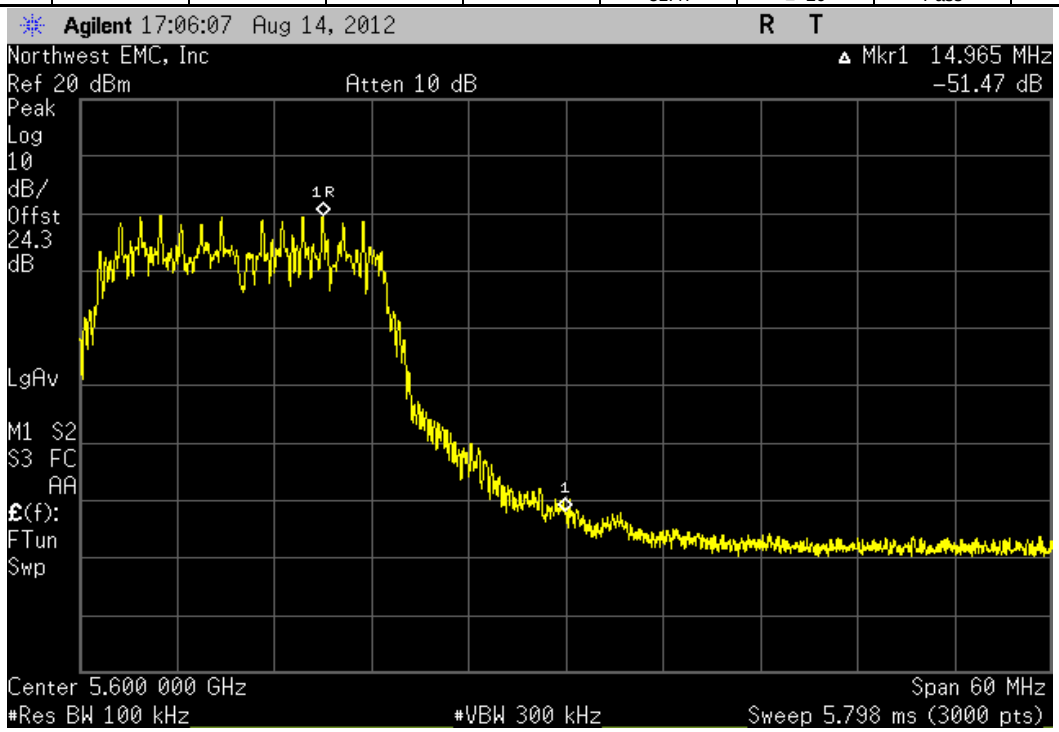
No Image Taken



Antenna B, 20MHz bandwidth , 802.11(n), MCS8, High Channel. Ch 116, 5580MHz,

					Value (dBc)	Limit (dBc)	Result
					-51.47	≤ -20	Pass

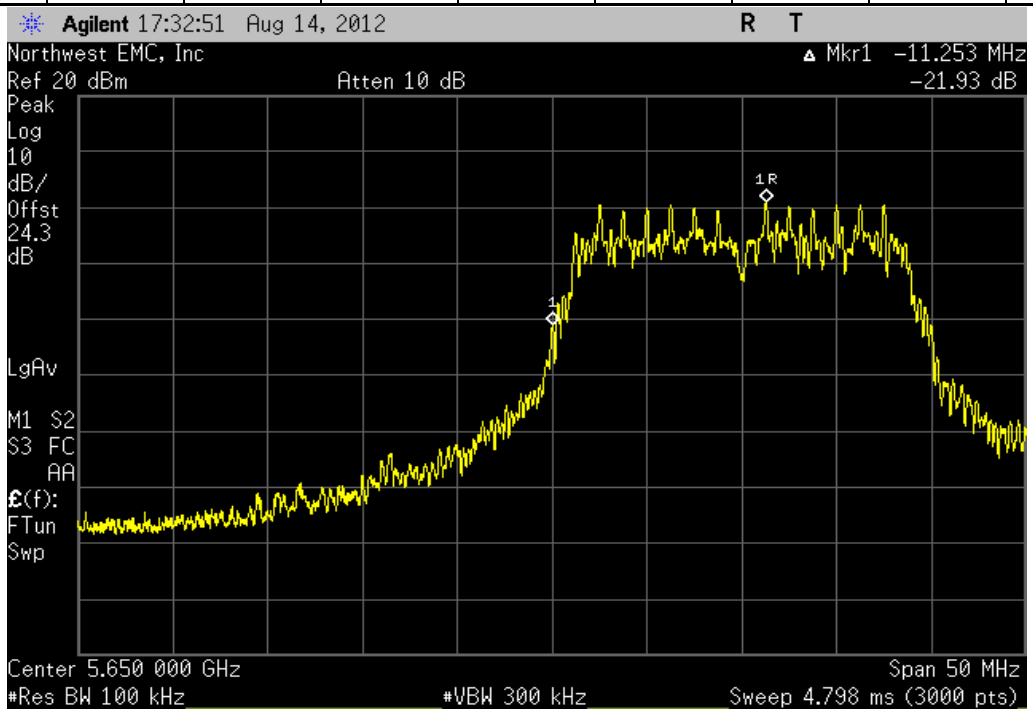
No Image Taken



Antenna B, 20MHz bandwidth , 802.11(n), MCS15, Low Channel. Ch 132, 5660MHz,

					Value (dBc)	Limit (dBc)	Result
					-21.93	≤ -20	Pass

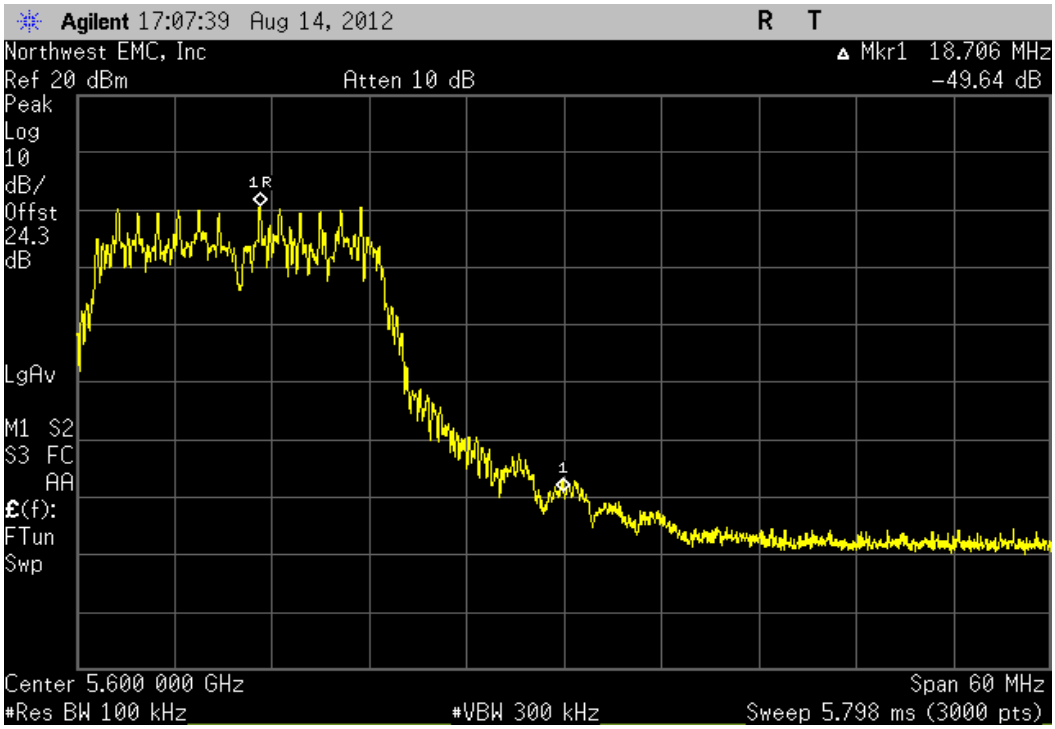
No Image Taken



Antenna B, 20MHz bandwidth , 802.11(n), MCS15, High Channel. Ch 116, 5580MHz,

					Value (dBc)	Limit (dBc)	Result
					-49.64	≤ -20	Pass

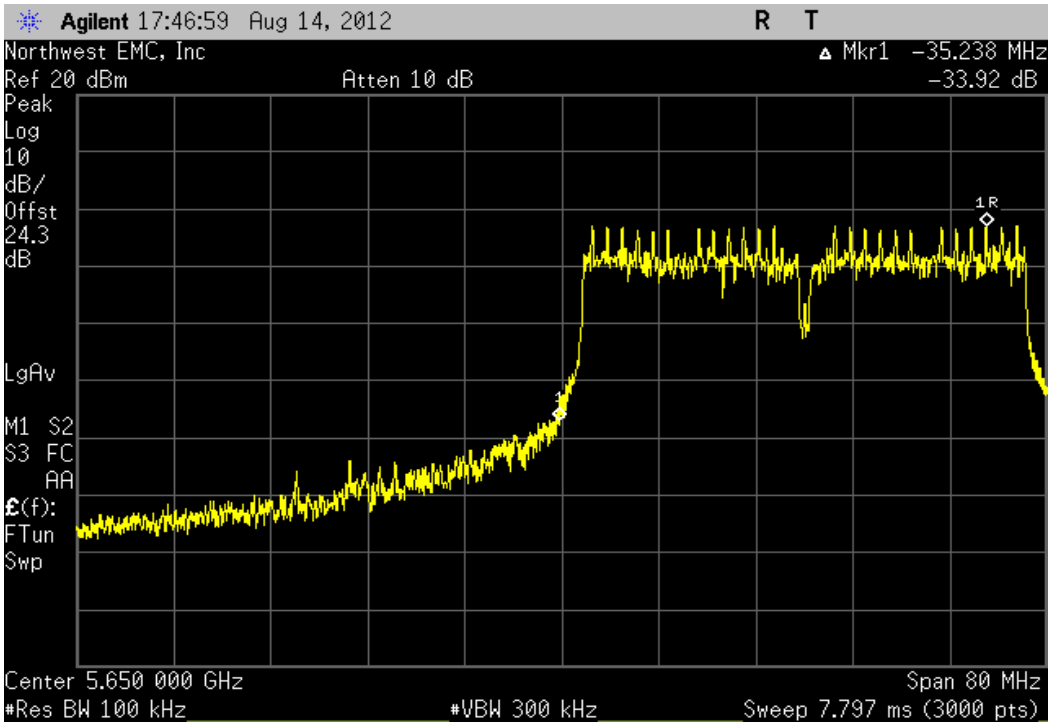
No Image Taken



Antenna B, 40MHz bandwidth , 802.11(n), MCS0, Low Channel. Ch 132/136, 5670MHz,

					Value (dBc)	Limit (dBc)	Result
					-33.92	≤ -20	Pass

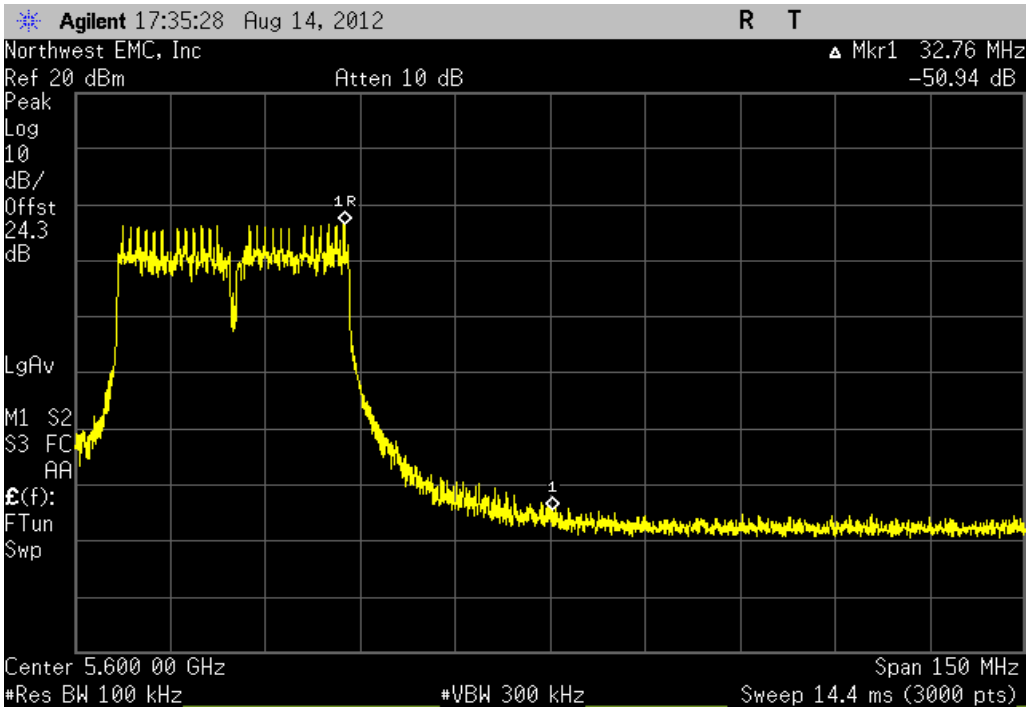
No Image Taken



Antenna B, 40MHz bandwidth , 802.11(n), MCS0, High Channel, Ch 108/112, 5550MHz,

					Value (dBc)	Limit (dBc)	Result
					-50.94	≤ -20	Pass

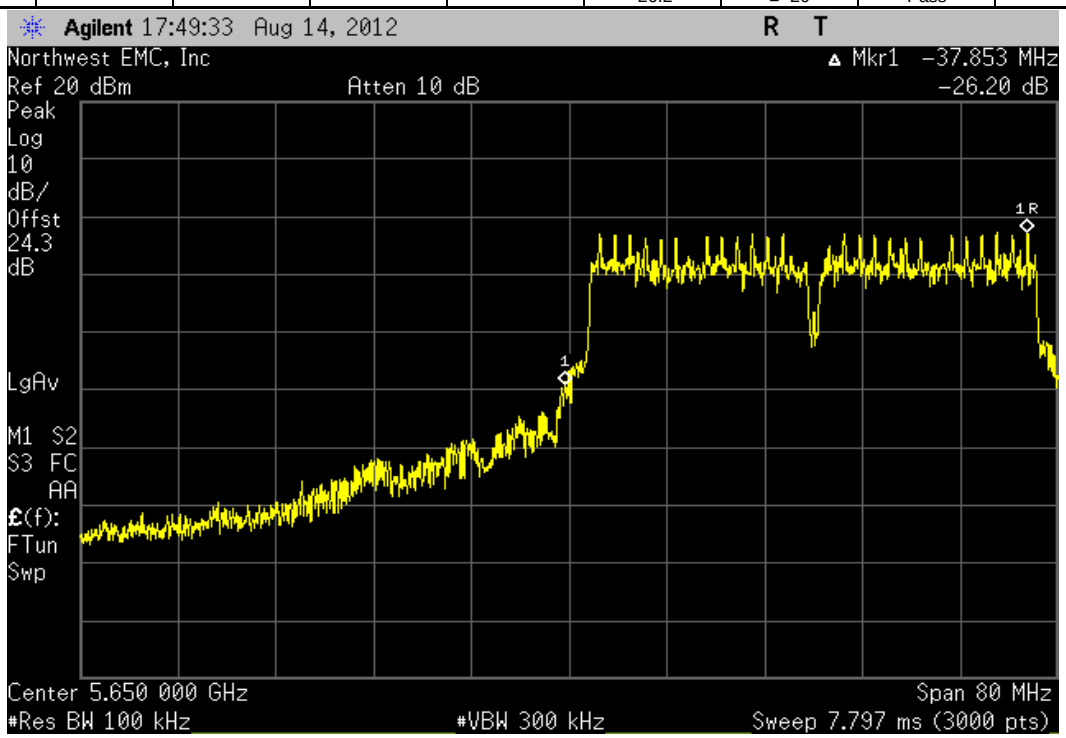
No Image Taken



Antenna B, 40MHz bandwidth , 802.11(n), MCS7, Low Channel. Ch 132/136, 5670MHz,

				Value (dBc)	Limit (dBc)	Result
				-26.2	≤ -20	Pass

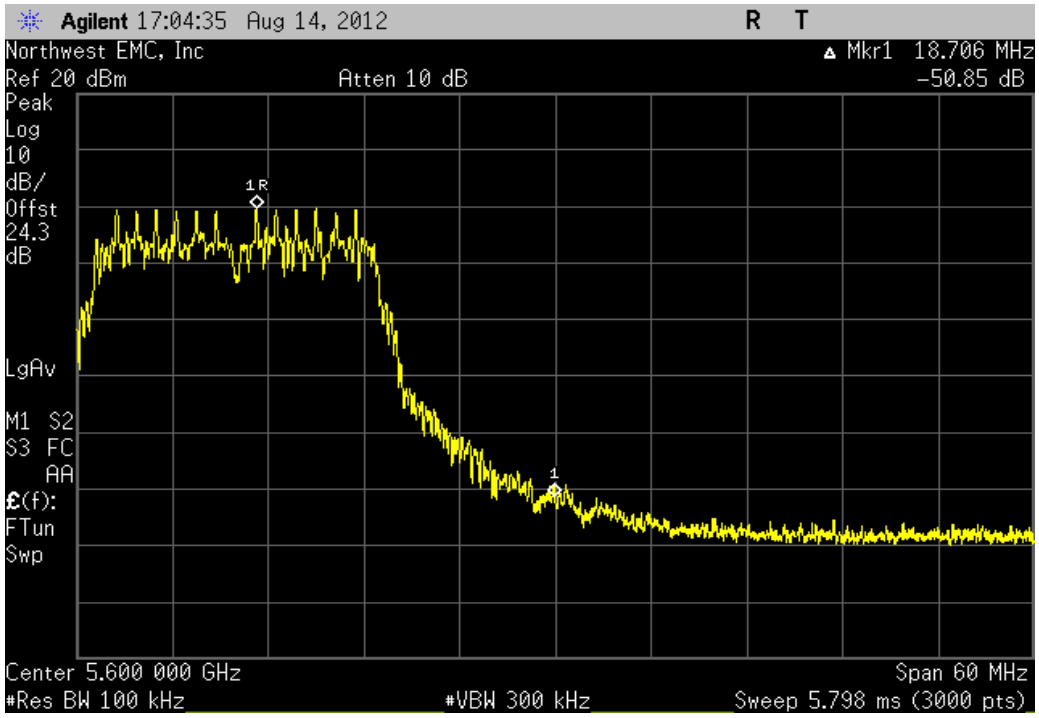
No Image Taken



Antenna B, 40MHz bandwidth , 802.11(n), MCS7, High Channel, Ch 108/112, 5550MHz,

				Value (dBc)	Limit (dBc)	Result
				-50.85	≤ -20	Pass

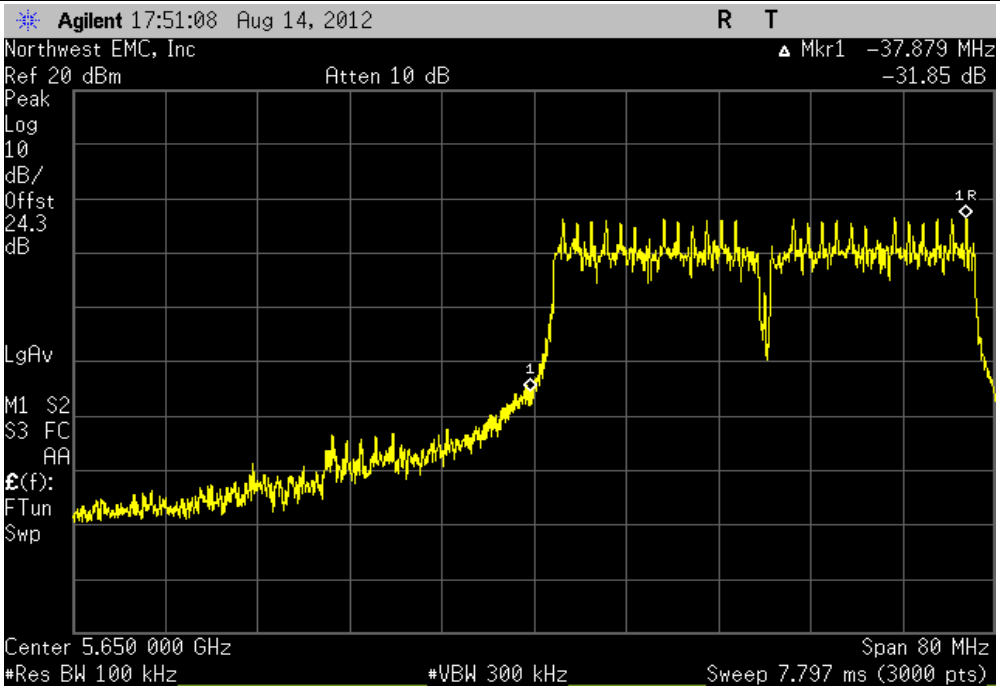
No Image Taken



Antenna B, 40MHz bandwidth , 802.11(n), MCS8, Low Channel. Ch 132/136, 5670MHz,

Value (dBc)	Limit (dBc)	Result
-31.85	≤ -20	Pass

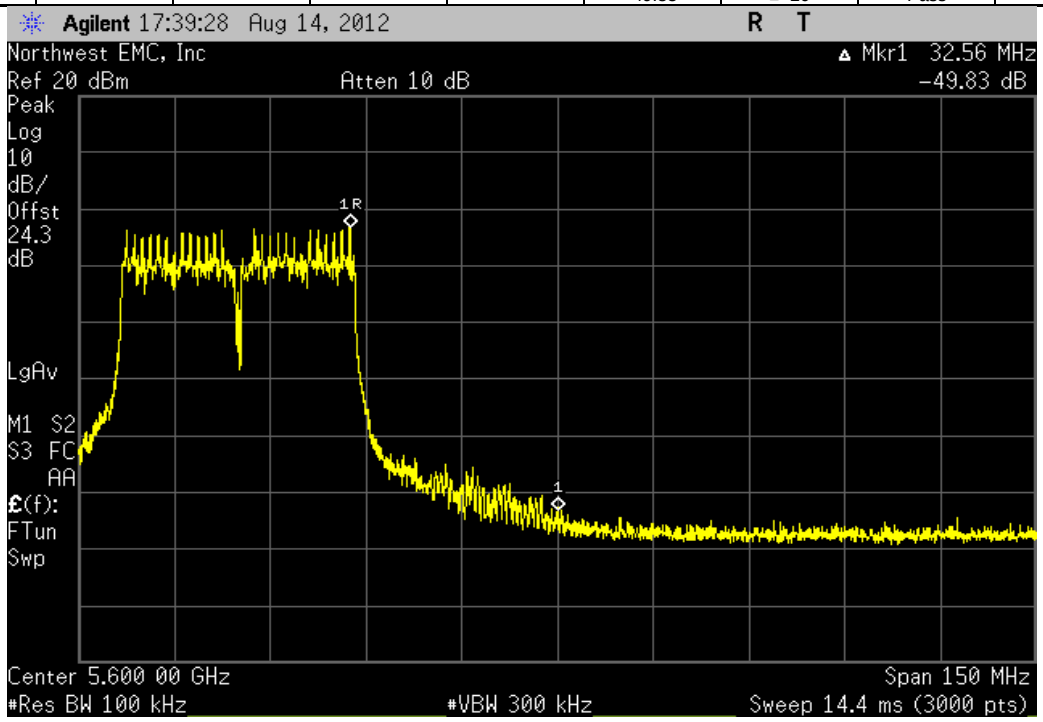
No Image Taken



Antenna B, 40MHz bandwidth , 802.11(n), MCS8, High Channel, Ch 108/112, 5550MHz,

Value (dBc)	Limit (dBc)	Result
-49.83	≤ -20	Pass

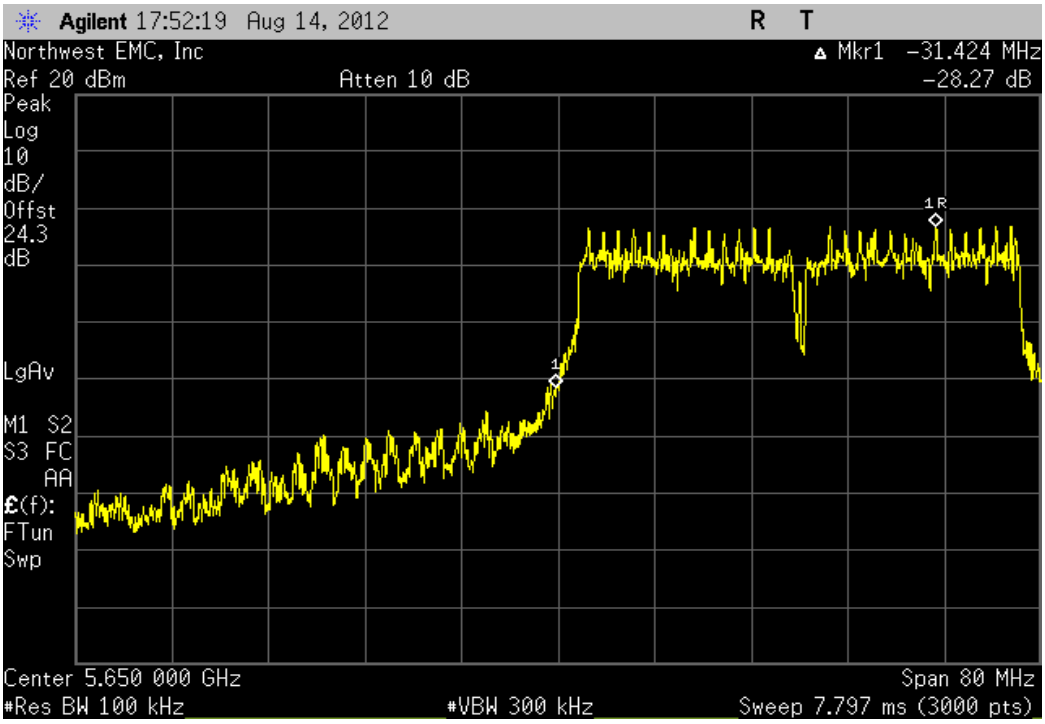
No Image Taken



Antenna B, 40MHz bandwidth , 802.11(n), MCS15, Low Channel. Ch 132/136, 5670MHz,

				Value (dBc)	Limit (dBc)	Result
				-28.27	≤ -20	Pass

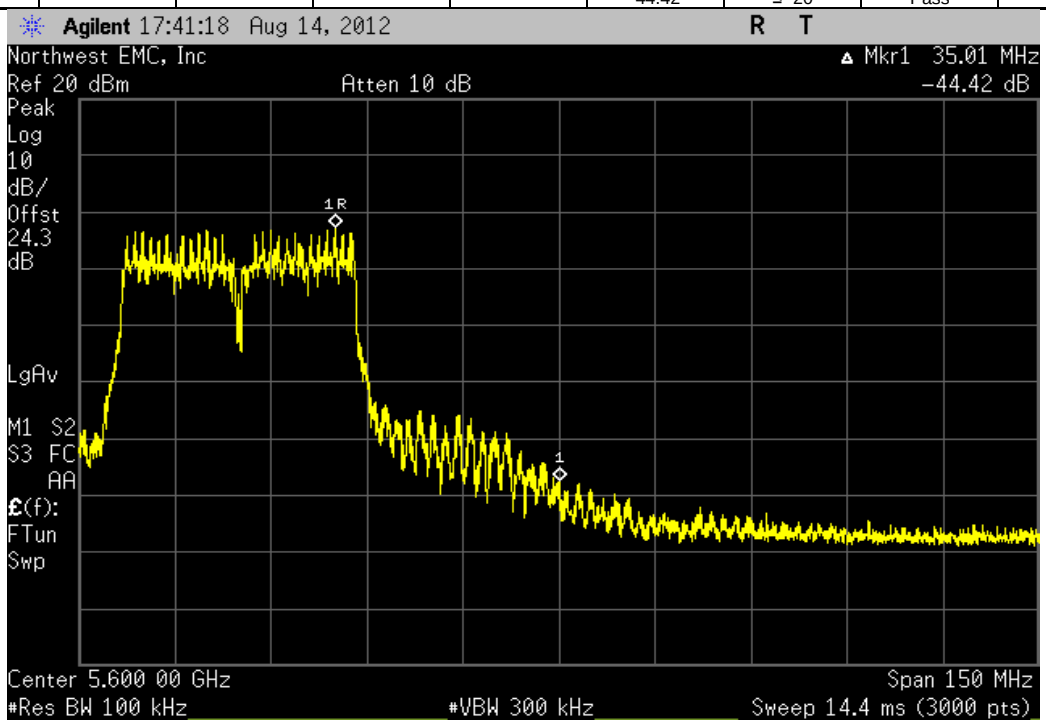
No Image Taken



Antenna B, 40MHz bandwidth , 802.11(n), MCS15, High Channel, Ch 108/112, 5550MHz,

				Value (dBc)	Limit (dBc)	Result
				-44.42	≤ -20	Pass

No Image Taken



UNWANTED 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
802.11(a), 6 Mbps
802.11(a), 36 Mbps
802.11(a), 54 Mbps
802.11(N), MCS0
802.11(N), MCS7
802.11(N), MCS8
802.11(N), MCS15

CHANNELS TESTED, 20MHz CHANNEL BANDWIDTH
Channel 36, 5180 MHz
Channel 48, 5240 MHz
Channel 52, 5260 MHz
Channel 64, 5320 MHz
Channel 100, 5500 MHz
Channel 116, 5580 MHz
Channel 140, 5700 MHz

CHANNELS TESTED, 40MHz CHANNEL BANDWIDTH
Channel 36/40, 5180/5200 MHz
Channel 40/48, 5200/5240 MHz
Channel 52/56, 5260/5280 MHz
Channel 60/64, 5300/5320 MHz
Channel 100/104, 5500/5520 MHz
Channel 108/112, 5540/5560 MHz
Channel 132/136, 5660/5680 MHz

ANTENNA CHAINS TESTED
Antenna Chain A
Antenna Chain B
Antenna Chain AB

POWER SETTINGS INVESTIGATED
120VAC/60Hz

CONFIGURATIONS INVESTIGATED
MCSO1608 - 2

FREQUENCY RANGE INVESTIGATED

Start Frequency	30 MHz	Stop Frequency	40 GHz

TEST DESCRIPTION

The highest gain antenna of each type to be used with the EUT were tested. The EUT was configured for the lowest, a middle, and the highest transmit frequency in each operational band. For each configuration, the spectrum was scanned throughout the specified range. Measurements were made to satisfy the three requirements of 47 CFR 15.407: Field strength under 1GHz, Restricted Bands of 47 CFR 15.205, and EIRP of 47 CFR 15.407.

While scanning, emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and EUT antenna in three orthogonal axis, and adjusting the measurement antenna height and polarization (per ANSI C63.10:2009). A preamp and high pass filter (and notch filter) were used for this test in order to provide sufficient measurement sensitivity. The power levels used while under test were 11dBm for 5GHz frequencies with a 40MHz bandwidth and 12dBm for 5GHz frequencies with a 20MHz bandwidth. EUT was operated at a 100% duty cycle.

15.407 Unwanted Emissions

SAMPLE CALCULATIONS

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Spectrum Analyzer	Agilent	E4446A	AAQ	2/7/2012	12 mo
Cable	ESM Cable Corp.	KMKM-72	EVY	9/12/2011	12 mo
Pre-Amplifier	Miteq	AMF-6F-18002650-25-10P	AVU	9/12/2011	12 mo
Antenna, Horn	ETS Lindgren	3160-09	AIV	NCR	0 mo
EV01 Cables	N/A	Standard Gain Horns Cables	EVF	2/28/2012	12 mo
Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	AVD	2/28/2012	12 mo
Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AVC	2/28/2012	12 mo
Antenna, Horn	ETS	3160-08	AHV	NCR	0 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
Pre-Amplifier	Miteq	JSW45-26004000-40-5P	AVR	6/28/2012	12 mo
Antenna, Horn	ETS Lindgren	3160-10	AIW	NCR	0 mo
5.25 GHz Notch Filter	K&L Microwave	8N50-5250/X200-0/0	HFK	3/21/2012	24 mo
5.47-5.725 Notch Filter	Micro-Tronics	BRC50704	HGI	10/8/2010	24 mo
High Pass Filter	Micro-Tronics	HPM50112	HGA	10/8/2010	24 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

MEASUREMENT UNCERTAINTY

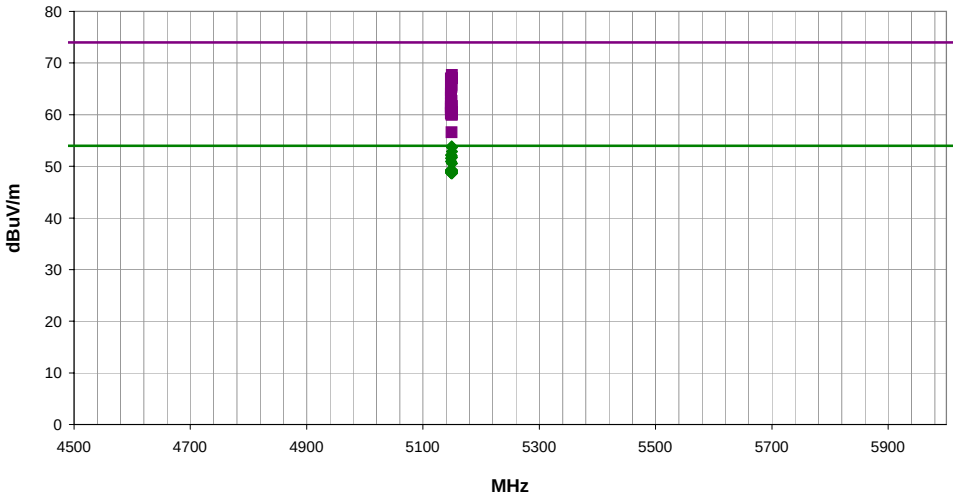
A measurement uncertainty estimation has been performed for each test per our internal quality document WP 342. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty for radiated emissions measurements is less than +/- 4 dB, and for conducted emissions measurements is less than +/- 2.7 dB. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for measurement uncertainty are available upon request.

UNWANTED EMISSIONS

Work Order:	MCSO1608	**Date:**	07/25/12		
Project:	None	**Temperature:**	24.2 °C		
Job Site:	EV01	**Humidity:**	43.1% RH		
Serial Number:	389122652	**Barometric Pres.:**	1021.7 mbar	**Tested by:**	Dan Haas
EUT:	1516				
Configuration:	2				
Customer:	Microsoft Corporation				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting at 100% duty cycle, 802.11a				
Deviations:	No deviations.				
Comments:	See Comments below for Power Level, Channel, Data Rate, Antenna, and EUT Orientation.				

Test Specifications	**Test Method**
FCC 15.209:2012	ANSI C63.10:2009

Run #	4	**Test Distance (m)**	1	**Antenna Height(s)**	1-2m	**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
5149.080	27.1	36.3	1.0	182.0	1.0	0.0	Vert	AV	-9.5	53.9	54.0	-0.1	11dBm, Ch. 36/40, MCS7, Ant. A, EUT Vertical.
5149.590	26.9	36.3	1.4	299.0	1.0	0.0	Vert	AV	-9.5	53.7	54.0	-0.3	11dBm, Ch. 36/40, MCS15, Ant. AB, EUT Horizontal.
5149.830	26.1	36.3	1.0	21.0	1.0	0.0	Vert	AV	-9.5	52.9	54.0	-1.1	11dBm, Ch. 36/40, MCS7, Ant. B, EUT Vertical.
5148.347	25.4	36.3	1.0	285.0	1.0	0.0	Horz	AV	-9.5	52.2	54.0	-1.8	11dBm, Ch. 36/40, MCS15, Ant. AB, EUT On Side.
5149.413	25.3	36.3	1.2	193.0	1.0	0.0	Vert	AV	-9.5	52.1	54.0	-1.9	11dBm, Ch. 36/40, MCS15, EUT Vertical, Sample 4.
5149.967	25.0	36.3	1.0	188.0	1.0	0.0	Vert	AV	-9.5	51.8	54.0	-2.2	11dBm, Ch. 36/40, MCS8, Ant. AB, EUT Vertical.
5148.100	24.8	36.3	1.0	182.0	1.0	0.0	Vert	AV	-9.5	51.6	54.0	-2.4	11dBm, Ch. 36/40, MCS0, Ant. A, EUT Vertical.
5148.070	24.2	36.3	1.0	21.0	1.0	0.0	Vert	AV	-9.5	51.0	54.0	-3.0	11dBm, Ch. 36/40, MCS0, Ant. B, EUT Vertical.
5149.903	23.8	36.3	1.0	130.0	1.0	0.0	Horz	AV	-9.5	50.6	54.0	-3.4	11dBm, Ch. 36/40, MCS15, Ant. AB, EUT Vertical.
5148.013	22.5	36.3	1.2	186.0	1.0	0.0	Vert	AV	-9.5	49.3	54.0	-4.7	12dBm, Ch. 36, MCS15, Ant. AB, EUT Vertical.
5148.473	22.5	36.3	1.0	250.0	1.0	0.0	Horz	AV	-9.5	49.3	54.0	-4.7	11dBm, Ch. 36/40, MCS15, Ant. AB, EUT Horizontal.
5149.737	22.5	36.3	1.0	264.0	1.0	0.0	Vert	AV	-9.5	49.3	54.0	-4.7	11dBm, Ch. 36/40, MCS15, Ant. AB, EUT On Side.
5149.983	22.4	36.3	1.2	186.0	1.0	0.0	Vert	AV	-9.5	49.2	54.0	-4.8	12dBm, Ch. 36, MCS8, Ant. AB, EUT Vertical.
5149.537	22.3	36.3	1.0	181.0	1.0	0.0	Vert	AV	-9.5	49.1	54.0	-4.9	12dBm, Ch. 36, 6Mbps, Ant A, EUT Vertical. Re-maxed
5149.887	22.3	36.3	1.4	312.0	1.0	0.0	Vert	AV	-9.5	49.1	54.0	-4.9	13dBm, Ch. 36, 6Mbps, Ant A, EUT Horizontal.
5148.043	22.2	36.3	1.0	181.0	1.0	0.0	Vert	AV	-9.5	49.0	54.0	-5.0	12dBm, Ch. 36, MCS7, Ant A, EUT Vertical.
5148.150	22.2	36.3	1.0	181.0	1.0	0.0	Vert	AV	-9.5	49.0	54.0	-5.0	12dBm, Ch. 36, 54Mbps, Ant A, EUT Vertical.
5149.283	22.2	36.3	1.0	181.0	1.0	0.0	Vert	AV	-9.5	49.0	54.0	-5.0	12dBm, Ch. 36, MCS0, Ant A, EUT Vertical.
5149.463	22.2	36.3	1.0	181.0	1.0	0.0	Vert	AV	-9.5	49.0	54.0	-5.0	12dBm, Ch. 36, 36Mbps, Ant A, EUT Vertical.
5149.487	22.2	36.3	1.4	312.0	1.0	0.0	Vert	AV	-9.5	49.0	54.0	-5.0	12dBm, Ch. 36, 6Mbps, Ant A, EUT Horizontal.
5149.810	22.2	36.3	1.0	312.0	1.0	0.0	Vert	AV	-9.5	49.0	54.0	-5.0	12dBm, Ch. 36, 6Mbps, Ant A, EUT Vertical.
5149.443	22.1	36.3	1.0	21.0	1.0	0.0	Vert	AV	-9.5	48.9	54.0	-5.1	12dBm, Ch. 36, 6Mbps, Ant. B, EUT Vertical.
5148.230	22.0	36.3	1.1	245.0	1.0	0.0	Horz	AV	-9.5	48.8	54.0	-5.2	12dBm, Ch. 36, 6Mbps, Ant A, EUT Horizontal.
5148.980	22.0	36.3	1.0	195.0	1.0	0.0	Horz	AV	-9.5	48.8	54.0	-5.2	12dBm, Ch. 36, 6Mbps, Ant A, EUT Vertical.
5149.013	22.0	36.3	1.0	21.0	1.0	0.0	Vert	AV	-9.5	48.8	54.0	-5.2	12dBm, Ch. 36, 36Mbps, Ant. B, EUT Vertical.
5149.437	22.0	36.3	1.0	21.0	1.0	0.0	Vert	AV	-9.5	48.8	54.0	-5.2	12dBm, Ch. 36, 54Mbps, Ant. B, EUT Vertical.
5149.660	22.0	36.3	1.2	210.0	1.0	0.0	Horz	AV	-9.5	48.8	54.0	-5.2	13dBm, Ch. 36, 6Mbps, Ant A, EUT Horizontal.
5148.970	21.9	36.3	1.0	262.0	1.0	0.0	Vert	AV	-9.5	48.7	54.0	-5.3	12dBm, Ch. 36, 6Mbps, Ant A, EUT On Side.
5149.723	21.9	36.3	1.0	286.0	1.0	0.0	Horz	AV	-9.5	48.7	54.0	-5.3	12dBm, Ch. 36, 6Mbps, Ant A, EUT On Side.
5149.735	40.9	36.3	1.0	182.0	1.0	0.0	Vert	PK	-9.5	67.7	74.0	-6.3	11dBm, Ch. 36/40, MCS7, Ant. A, EUT Vertical.
5149.580	40.3	36.3	1.0	193.0	1.0	0.0	Vert	PK	-9.5	67.1	74.0	-6.9	11dBm, Ch. 36/40, MCS15, Ant. AB, EUT Vertical.
5149.803	40.3	36.3	1.4	299.0	1.0	0.0	Vert	PK	-9.5	67.1	74.0	-6.9	11dBm, Ch. 36/40, MCS15, Ant. AB, EUT Horizontal.
5148.137	40.2	36.3	1.0	188.0	1.0	0.0	Vert	PK	-9.5	67.0	74.0	-7.0	11dBm, Ch. 36/40, MCS15, Ant. AB, EUT Vertical. Re-maxed
5149.373	39.0	36.3	1.0	21.0	1.0	0.0	Vert	PK	-9.5	65.8	74.0	-8.2	11dBm, Ch. 36/40, MCS7, Ant. B, EUT Vertical.
5149.133	38.6	36.3	1.2	193.0	1.0	0.0	Vert	PK	-9.5	65.4	74.0	-8.6	11dBm, Ch. 36/40, MCS15, EUT Vertical, Sample 4.
5148.040	38.0	36.3	1.0	188.0	1.0	0.0	Vert	PK	-9.5	64.8	74.0	-9.2	11dBm, Ch. 36/40, MCS8, Ant. AB, EUT Vertical.
5148.397	37.3	36.3	1.0	285.0	1.0	0.0	Horz	PK	-9.5	64.1	74.0	-9.9	11dBm, Ch. 36/40, MCS15, Ant. AB, EUT On Side.
5148.257	36.5	36.3	1.0	182.0	1.0	0.0	Vert	PK	-9.5	63.3	74.0	-10.7	11dBm, Ch. 36/40, MCS0, Ant. A, EUT Vertical.
5149.400	35.9	36.3	1.0	130.0	1.0	0.0	Horz	PK	-9.5	62.7	74.0	-11.3	11dBm, Ch. 36/40, MCS15, Ant. AB, EUT Vertical.
5148.230	35.4	36.3	1.0	21.0	1.0	0.0	Vert	PK	-9.5	62.2	74.0	-11.8	11dBm, Ch. 36/40, MCS0, Ant. B, EUT Vertical.
5148.360	34.9	36.3	1.2	186.0	1.0	0.0	Vert	PK	-9.5	61.7	74.0	-12.3	12dBm, Ch. 36, MCS15, Ant. AB, 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
5149.590	34.9	36.3	1.0	181.0	1.0	0.0	Vert	PK	-9.5	61.7	74.0	-12.3	12dBm, Ch. 36, 36Mbps, Ant A, EUT Vertical.
5148.360	34.7	36.3	1.0	181.0	1.0	0.0	Vert	PK	-9.5	61.5	74.0	-12.5	12dBm, Ch. 36, MCS0, Ant A, EUT Vertical.
5148.950	34.7	36.3	1.0	181.0	1.0	0.0	Vert	PK	-9.5	61.5	74.0	-12.5	12dBm, Ch. 36, MCS7, Ant A, EUT Vertical.
5148.453	34.4	36.3	1.2	186.0	1.0	0.0	Vert	PK	-9.5	61.2	74.0	-12.8	12dBm, Ch. 36, MCS8, Ant. AB, EUT Vertical.
5148.850	34.4	36.3	1.0	181.0	1.0	0.0	Vert	PK	-9.5	61.2	74.0	-12.8	12dBm, Ch. 36, 6Mbps, Ant A, EUT Vertical. Re-maxed
5148.410	34.3	36.3	1.0	250.0	1.0	0.0	Horz	PK	-9.5	61.1	74.0	-12.9	11dBm, Ch. 36/40, MCS15, Ant. AB, EUT Horizontal.
5148.990	34.2	36.3	1.4	312.0	1.0	0.0	Vert	PK	-9.5	61.0	74.0	-13.0	13dBm, Ch. 36, 6Mbps, Ant A, EUT Horizontal.
5148.803	34.1	36.3	1.0	312.0	1.0	0.0	Vert	PK	-9.5	60.9	74.0	-13.1	12dBm, Ch. 36, 6Mbps, Ant A, EUT Vertical.
5149.220	33.7	36.3	1.0	264.0	1.0	0.0	Vert	PK	-9.5	60.5	74.0	-13.5	11dBm, Ch. 36/40, MCS15, Ant. AB, EUT On Side.
5149.347	33.7	36.3	1.0	21.0	1.0	0.0	Vert	PK	-9.5	60.5	74.0	-13.5	12dBm, Ch. 36, 36Mbps, Ant. B, EUT Vertical.
5149.707	33.7	36.3	1.0	286.0	1.0	0.0	Horz	PK	-9.5	60.5	74.0	-13.5	12dBm, Ch. 36, 6Mbps, Ant A, EUT On Side.
5148.043	33.6	36.3	1.0	262.0	1.0	0.0	Vert	PK	-9.5	60.4	74.0	-13.6	12dBm, Ch. 36, 6Mbps, Ant A, EUT On Side.
5149.963	33.6	36.3	1.0	21.0	1.0	0.0	Vert	PK	-9.5	60.4	74.0	-13.6	12dBm, Ch. 36, 6Mbps, Ant. B, EUT Vertical.
5148.370	33.5	36.3	1.2	210.0	1.0	0.0	Horz	PK	-9.5	60.3	74.0	-13.7	13dBm, Ch. 36, 6Mbps, Ant A, EUT Horizontal.
5148.710	33.5	36.3	1.0	181.0	1.0	0.0	Vert	PK	-9.5	60.3	74.0	-13.7	12dBm, Ch. 36, 54Mbps, Ant A, EUT Vertical.
5149.940	33.4	36.3	1.4	312.0	1.0	0.0	Vert	PK	-9.5	60.2	74.0	-13.8	12dBm, Ch. 36, 6Mbps, Ant A, EUT Horizontal.
5149.120	33.2	36.3	1.1	245.0	1.0	0.0	Horz	PK	-9.5	60.0	74.0	-14.0	12dBm, Ch. 36, 6Mbps, Ant A, EUT Horizontal.
5149.870	33.2	36.3	1.0	21.0	1.0	0.0	Vert	PK	-9.5	60.0	74.0	-14.0	12dBm, Ch. 36, 54Mbps, Ant. B, EUT Vertical.
5149.520	29.8	36.3	1.0	195.0	1.0	0.0	Horz	PK	-9.5	56.6	74.0	-17.4	12dBm, Ch. 36, 6Mbps, Ant A, EUT Vertical.

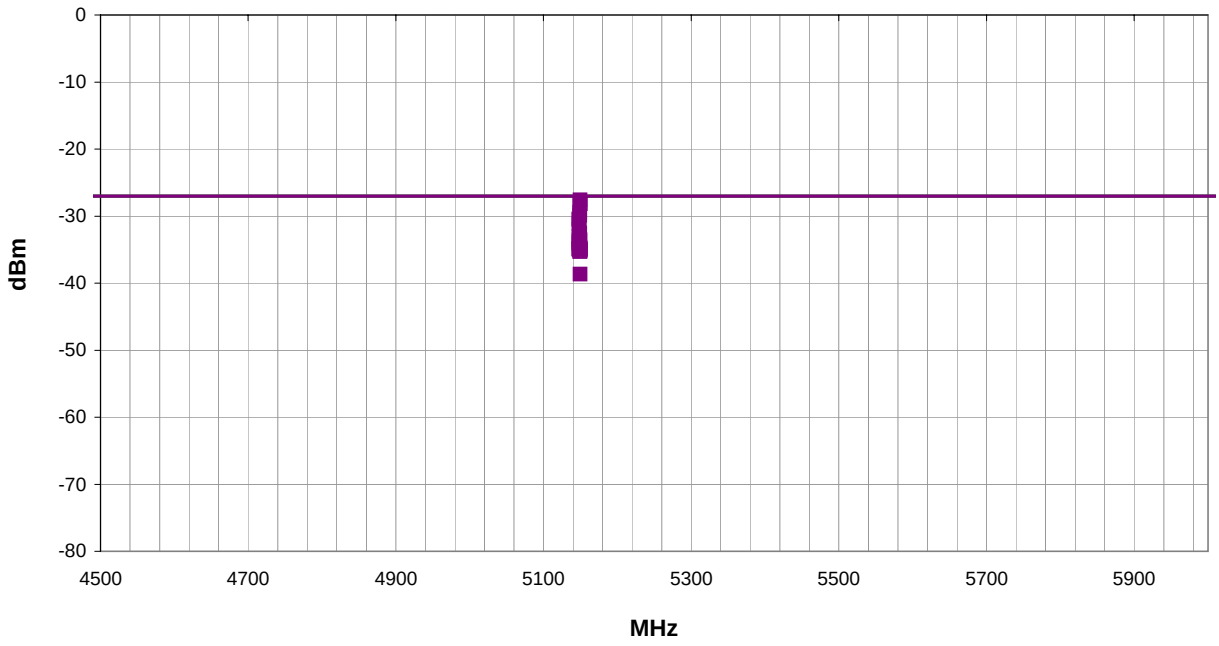
UNWANTED EMISSIONS

Work Order:	MCSO1608	**Date:**	07/25/12		
Project:	None	**Temperature:**	24.2 °C		
Job Site:	EV01	**Humidity:**	43.1% RH		
Serial Number:	389122652	**Barometric Pres.:**	1021.7 mbar	**Tested by:**	Dan Haas
EUT:	1516				
Configuration:	2				
Customer:	Microsoft Corporation				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting at 100% duty cycle, 802.11a				
Deviations:	No deviations.				
Comments:	See Comments below for Power Level, Channel, Data Rate, Antenna, and EUT Orientation.				

Test Specifications	**Test Method**
FCC 15.407:2012	ANSI C63.10:2009

Run #	4	**Test Distance (m)**	1	**Antenna Height(s)**	1-2m	**Results**	Pass

EN 55022 (Amds. A1:2000 A2:2003) Class B



	Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments	
	5149.735	1.0	182.0	Vert	PK	1.75E-06	-27.6	-27.0	-0.6	11dBm, Ch. 36/40, MCS7, Ant. A, EUT Vertical.	
	5149.580	1.0	193.0	Vert	PK	1.52E-06	-28.2	-27.0	-1.2	11dBm, Ch. 36/40, MCS15, Ant. AB, EUT Vertical.	
	5149.803	1.4	299.0	Vert	PK	1.52E-06	-28.2	-27.0	-1.2	11dBm, Ch. 36/40, MCS15, Ant. AB, EUT Horizontal.	
	5149.373	1.0	21.0	Vert	PK	1.13E-06	-29.5	-27.0	-2.5	11dBm, Ch. 36/40, MCS7, Ant. B, EUT Vertical.	
	5149.133	1.2	193.0	Vert	PK	1.03E-06	-29.9	-27.0	-2.9	11dBm, Ch. 36/40, MCS15, EUT Vertical, Sample 4.	
	5148.040	1.0	188.0	Vert	PK	8.97E-07	-30.5	-27.0	-3.5	11dBm, Ch. 36/40, MCS8, Ant. AB, EUT Vertical.	
	5148.397	1.0	285.0	Horz	PK	7.64E-07	-31.2	-27.0	-4.2	11dBm, Ch. 36/40, MCS15, Ant. AB, EUT On Side.	
	5148.257	1.0	182.0	Vert	PK	6.35E-07	-32.0	-27.0	-5.0	11dBm, Ch. 36/40, MCS0, Ant. A, EUT Vertical.	
	5149.400	1.0	130.0	Horz	PK	5.53E-07	-32.6	-27.0	-5.6	11dBm, Ch. 36/40, MCS15, Ant. AB, EUT Vertical.	
	5148.230	1.0	21.0	Vert	PK	4.93E-07	-33.1	-27.0	-6.1	11dBm, Ch. 36/40, MCS0, Ant. B, EUT Vertical.	
	5148.360	1.2	186.0	Vert	PK	4.39E-07	-33.6	-27.0	-6.6	12dBm, Ch. 36, MCS15, Ant. AB, EUT Vertical.	
	5149.590	1.0	181.0	Vert	PK	4.39E-07	-33.6	-27.0	-6.6	12dBm, Ch. 36, 36Mbps, Ant A, EUT Vertical.	
	5148.360	1.0	181.0	Vert	PK	4.20E-07	-33.8	-27.0	-6.8	12dBm, Ch. 36, MCS0, Ant A, EUT Vertical.	
	5148.950	1.0	181.0	Vert	PK	4.20E-07	-33.8	-27.0	-6.8	12dBm, Ch. 36, MCS7, Ant A, EUT Vertical.	
	5148.453	1.2	186.0	Vert	PK	3.92E-07	-34.1	-27.0	-7.1	12dBm, Ch. 36, MCS8, Ant. AB, EUT Vertical.	
	5148.410	1.0	250.0	Horz	PK	3.83E-07	-34.2	-27.0	-7.2	11dBm, Ch. 36/40, MCS15, Ant. AB, EUT Horizontal.	

■ PK ◆ AV ● QP

Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
5148.990	1.4	312.0	Vert	PK	3.74E-07	-34.3	-27.0	-7.3	13dBm, Ch. 36, 6Mbps, Ant A, EUT Horizontal.
5148.803	1.0	312.0	Vert	PK	3.65E-07	-34.4	-27.0	-7.4	12dBm, Ch. 36, 6Mbps, Ant A, EUT Vertical.
5149.220	1.0	264.0	Vert	PK	3.33E-07	-34.8	-27.0	-7.8	11dBm, Ch. 36/40, MCS15, Ant. AB, EUT On Side.
5149.347	1.0	21.0	Vert	PK	3.33E-07	-34.8	-27.0	-7.8	12dBm, Ch. 36, 36Mbps, Ant. B, EUT Vertical.
5149.707	1.0	286.0	Horz	PK	3.33E-07	-34.8	-27.0	-7.8	12dBm, Ch. 36, 6Mbps, Ant A, EUT On Side.
5148.043	1.0	262.0	Vert	PK	3.26E-07	-34.9	-27.0	-7.9	12dBm, Ch. 36, 6Mbps, Ant A, EUT On Side.
5149.963	1.0	21.0	Vert	PK	3.26E-07	-34.9	-27.0	-7.9	12dBm, Ch. 36, 6Mbps, Ant. B, EUT Vertical.
5148.370	1.2	210.0	Horz	PK	3.18E-07	-35.0	-27.0	-8.0	13dBm, Ch. 36, 6Mbps, Ant A, EUT Horizontal.
5148.710	1.0	181.0	Vert	PK	3.18E-07	-35.0	-27.0	-8.0	12dBm, Ch. 36, 54Mbps, Ant A, EUT Vertical.
5149.940	1.4	312.0	Vert	PK	3.11E-07	-35.1	-27.0	-8.1	12dBm, Ch. 36, 6Mbps, Ant A, EUT Horizontal.
5149.120	1.1	245.0	Horz	PK	2.97E-07	-35.3	-27.0	-8.3	12dBm, Ch. 36, 6Mbps, Ant A, EUT Horizontal.
5149.870	1.0	21.0	Vert	PK	2.97E-07	-35.3	-27.0	-8.3	12dBm, Ch. 36, 54Mbps, Ant. B, EUT Vertical.
5149.520	1.0	195.0	Horz	PK	1.36E-07	-38.7	-27.0	-11.7	12dBm, Ch. 36, 6Mbps, Ant A, EUT Vertical.

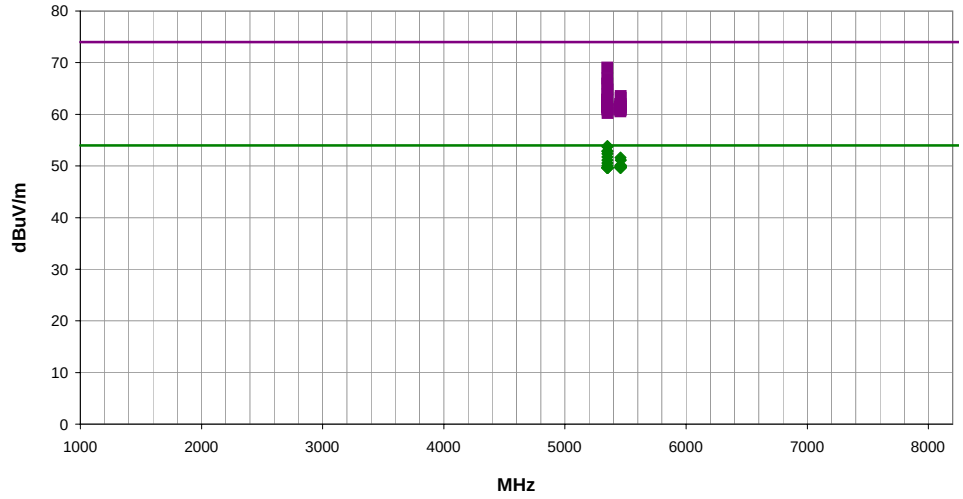
UNWANTED EMISSIONS

Work Order:	MCSO1608	**Date:**	07/26/12		
Project:	None	**Temperature:**	24.2 °C		
Job Site:	EV01	**Humidity:**	43.1% RH		
Serial Number:	215622952	**Barometric Pres.:**	1021.7 mbar	**Tested by:**	Dan Haas
EUT:	1516				
Configuration:	2				
Customer:	Microsoft Corporation				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting at 100% duty cycle, 802.11a				
Deviations:	No deviations.				
Comments:	See comments below for power level, channel, data rate, antenna chain, and EUT orientation.				

Test Specifications	**Test Method**
FCC 15.209:2012	ANSI C63.10:2009

Run #	102	**Test Distance (m)**	1	**Antenna Height(s)**	1-2m	**Results**	Pass

EN 55022 (Amds. A1:2000 A2:2003) Class B



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
5350.000	26.5	36.9	1.0	144.0	1.0	0.0	Vert	AV	-9.5	53.8	54.0	-0.2	11dBm, Ch 61/64, MCS7, Ant B, EUT Vert
5350.920	26.4	36.9	1.0	314.0	1.0	0.0	Vert	AV	-9.5	53.7	54.0	-0.3	11dBm, Ch 61/64, MCS7, Ant A, EUT Vert
5351.000	25.5	36.9	1.0	204.0	1.0	0.0	Vert	AV	-9.5	52.8	54.0	-1.2	RBAVG2, 11dBm, Ch 61/64, MCS15, Ant AB, EUT Vert
5350.007	25.5	36.9	1.0	248.0	1.0	0.0	Horz	AV	-9.5	52.8	54.0	-1.2	11dBm, Ch 61/64, MCS15, Ant AB, EUT Vert
5350.850	25.0	36.9	1.0	204.0	1.0	0.0	Vert	AV	-9.5	52.3	54.0	-1.7	11dBm, Ch 61/64, MCS8, Ant AB, EUT Vert
5350.133	24.4	36.9	1.0	314.0	1.0	0.0	Vert	AV	-9.5	51.7	54.0	-2.3	11dBm, Ch 61/64, MCS0, Ant A, EUT Vert
5459.643	24.1	37.1	1.0	130.0	1.0	0.0	Vert	AV	-9.5	51.6	54.0	-2.4	11dBm, Ch 100/104, MCS15, Ant AB, EUT Vert
5351.077	23.8	36.9	1.0	210.0	1.0	0.0	Horz	AV	-9.5	51.1	54.0	-2.9	11dBm, Ch 61/64, MCS7, Ant A, EUT Vert
5459.987	23.6	37.1	1.0	318.0	1.0	0.0	Vert	AV	-9.5	51.1	54.0	-2.9	11dBm, Ch 100/104, MCS7, Ant A, EUT Vert
5350.153	23.2	36.9	1.1	243.0	1.0	0.0	Horz	AV	-9.5	50.5	54.0	-3.5	11dBm, Ch 61/64, MCS7, Ant B, EUT Vert
5459.687	22.6	37.1	1.0	318.0	1.0	0.0	Vert	AV	-9.5	50.1	54.0	-3.9	11dBm, Ch 100/104, MCS0, Ant A, EUT Vert
5350.237	22.7	36.9	1.0	144.0	1.0	0.0	Vert	AV	-9.5	50.0	54.0	-4.0	11dBm, Ch 61/64, MCS0, Ant B, EUT Vert
5459.937	22.5	37.1	1.0	130.0	1.0	0.0	Vert	AV	-9.5	50.0	54.0	-4.0	11dBm, Ch 100/104, MCS8, Ant AB, EUT Vert
5459.117	22.4	37.1	1.0	243.0	1.0	0.0	Horz	AV	-9.5	49.9	54.0	-4.1	11dBm, Ch 100/104, MCS15, Ant AB, EUT Vert
5459.777	22.3	37.1	1.0	318.0	1.0	0.0	Vert	AV	-9.5	49.8	54.0	-4.2	12dBm, Ch 100, MCS0, Ant A, EUT Vert
5350.563	22.4	36.9	1.0	204.0	1.0	0.0	Vert	AV	-9.5	49.7	54.0	-4.3	12dBm, Ch 64, MCS15, Ant AB, EUT Vert
5459.773	22.2	37.1	1.0	144.0	1.0	0.0	Vert	AV	-9.5	49.7	54.0	-4.3	12dBm, Ch 100, MCS7, Ant B, EUT Vert
5459.383	22.2	37.1	1.0	130.0	1.0	0.0	Vert	AV	-9.5	49.7	54.0	-4.3	12dBm, Ch 100, MCS15, Ant AB, EUT Vert
5459.107	22.2	37.1	1.0	318.0	1.0	0.0	Vert	AV	-9.5	49.7	54.0	-4.3	12dBm, Ch 100, MCS7, Ant A, EUT Vert
5458.487	22.2	37.1	1.0	130.0	1.0	0.0	Vert	AV	-9.5	49.7	54.0	-4.3	12dBm, Ch 100, MCS8, Ant AB, EUT Vert
5458.373	22.2	37.1	1.0	144.0	1.0	0.0	Vert	AV	-9.5	49.7	54.0	-4.3	12dBm, Ch 100, MCS0, Ant B, EUT Vert
5351.780	22.3	36.9	1.0	204.0	1.0	0.0	Vert	AV	-9.5	49.7	54.0	-4.3	12dBm, Ch 64, MCS8, Ant AB, EUT Vert
5351.720	22.3	36.9	1.0	314.0	1.0	0.0	Vert	AV	-9.5	49.7	54.0	-4.3	12dBm, Ch 64, 6Mbps, Ant A, EUT Vert
5350.307	22.3	36.9	1.0	314.0	1.0	0.0	Vert	AV	-9.5	49.6	54.0	-4.4	12dBm, Ch 64, 36Mbps, Ant A, EUT Vert
5350.080	22.3	36.9	1.0	314.0	1.0	0.0	Vert	AV	-9.5	49.6	54.0	-4.4	12dBm, Ch 64, MCS7, Ant A, EUT Vert
5350.060	22.3	36.9	1.0	314.0	1.0	0.0	Vert	AV	-9.5	49.6	54.0	-4.4	12dBm, Ch 64, 54Mbps, Ant A, EUT Vert
5350.007	22.3	36.9	1.0	314.0	1.0	0.0	Vert	AV	-9.5	49.6	54.0	-4.4	12dBm, Ch 64, MCS0, Ant A, EUT Vert
5459.690	22.1	37.1	1.0	318.0	1.0	0.0	Vert	AV	-9.5	49.6	54.0	-4.4	12dBm, Ch 64, 6Mbps, Ant A, EUT Vert
5458.747	22.1	37.1	1.0	318.0	1.0	0.0	Vert	AV	-9.5	49.6	54.0	-4.4	12dBm, Ch 100, 54Mbps, Ant A, EUT Vert
5458.460	22.1	37.1	1.0	318.0	1.0	0.0	Vert	AV	-9.5	49.6	54.0	-4.4	12dBm, Ch 100, 36Mbps, Ant A, EUT Vert
5350.067	41.7	36.9	1.0	204.0	1.0	0.0	Vert	PK	-9.5	69.0	74.0	-5.0	11dBm, Ch 61/64, MCS15, Ant AB, EUT Vert
5350.547	39.6	36.9	1.0	314.0	1.0	0.0	Vert	PK	-9.5	66.9	74.0	-7.1	11dBm, Ch 61/64, MCS7, Ant A, EUT Vert
5350.380	38.6	36.9	1.0	144.0	1.0	0.0	Vert	PK	-9.5	65.9	74.0	-8.1	11dBm, Ch 61/64, MCS7, Ant B, EUT Vert
5351.507	37.4	36.9	1.0	248.0	1.0	0.0	Horz	PK	-9.5	64.8	74.0	-9.2	11dBm, Ch 61/64, MCS15, Ant AB, EUT Vert
5350.690	36.5	36.9	1.0	210.0	1.0	0.0	Horz	PK	-9.5	63.8	74.0	-10.2	11dBm, Ch 61/64, MCS7, Ant A, EUT Vert
5459.937	36.0	37.1	1.0	130.0	1.0	0.0	Vert	PK	-9.5	63.5	74.0	-10.5	11dBm, Ch 100/104, MCS15, Ant AB, EUT Vert
5459.923	35.6	37.1	1.0	318.0	1.0	0.0	Vert	PK	-9.5	63.1	74.0	-10.9	11dBm, Ch 100/104, MCS7, Ant A, EUT Vert
5350.077	35.5	36.9	1.1	243.0	1.0	0.0	Horz	PK	-9.5	62.8	74.0	-11.2	11dBm, Ch 61/64, MCS7, Ant B, EUT Vert
5351.083	35.4	36.9	1.0	204.0	1.0	0.0	Vert	PK	-9.5	62.7	74.0	-11.3	11dBm, Ch 61/64, MCS8, Ant AB, EUT Vert
5350.073	34.9	36.9	1.0	314.0	1.0	0.0	Vert	PK	-9.5	62.2	74.0	-11.8	11dBm, Ch 61/64, MCS0, Ant A, EUT Vert
5458.953	34.4	37.1	1.0	130.0	1.0	0.0	Vert	PK	-9.5	61.9	74.0	-12.1	12dBm, Ch 100, MCS8, Ant AB, EUT Vert

■ PK ◆ AV ● QP

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
5458.327	34.4	37.1	1.0	318.0	1.0	0.0	Vert	PK	-9.5	61.9	74.0	-12.1	11dBm, Ch 100/104, MCS0, Ant A, EUT Vert
5350.750	34.4	36.9	1.0	144.0	1.0	0.0	Vert	PK	-9.5	61.7	74.0	-12.3	11dBm, Ch 61/64, MCS0, Ant B, EUT Vert
5459.963	34.1	37.1	1.0	318.0	1.0	0.0	Vert	PK	-9.5	61.6	74.0	-12.4	12dBm, Ch 64, 6Mbps, Ant A, EUT Vert
5350.197	34.2	36.9	1.0	314.0	1.0	0.0	Vert	PK	-9.5	61.5	74.0	-12.5	12dBm, Ch 64, 36Mbps, Ant A, EUT Vert
5350.497	34.1	36.9	1.0	314.0	1.0	0.0	Vert	PK	-9.5	61.4	74.0	-12.6	12dBm, Ch 64, MCS0, Ant A, EUT Vert
5459.683	33.9	37.1	1.0	318.0	1.0	0.0	Vert	PK	-9.5	61.4	74.0	-12.6	12dBm, Ch 100, MCS7, Ant A, EUT Vert
5350.840	34.0	36.9	1.0	204.0	1.0	0.0	Vert	PK	-9.5	61.3	74.0	-12.7	12dBm, Ch 64, MCS8, Ant AB, EUT Vert
5459.210	33.8	37.1	1.0	144.0	1.0	0.0	Vert	PK	-9.5	61.3	74.0	-12.7	12dBm, Ch 100, MCS7, Ant B, EUT Vert
5458.277	33.8	37.1	1.0	243.0	1.0	0.0	Horz	PK	-9.5	61.3	74.0	-12.7	11dBm, Ch 100/104, MCS15, Ant AB, EUT Vert
5458.257	33.8	37.1	1.0	144.0	1.0	0.0	Vert	PK	-9.5	61.3	74.0	-12.7	12dBm, Ch 100, MCS0, Ant B, EUT Vert
5351.460	33.7	36.9	1.0	204.0	1.0	0.0	Vert	PK	-9.5	61.1	74.0	-12.9	12dBm, Ch 64, MCS15, Ant AB, EUT Vert
5458.833	33.5	37.1	1.0	318.0	1.0	0.0	Vert	PK	-9.5	61.0	74.0	-13.0	12dBm, Ch 100, 36Mbps, Ant A, EUT Vert
5351.477	33.6	36.9	1.0	314.0	1.0	0.0	Vert	PK	-9.5	61.0	74.0	-13.0	12dBm, Ch 64, 6Mbps, Ant A, EUT Vert
5459.230	33.4	37.1	1.0	130.0	1.0	0.0	Vert	PK	-9.5	60.9	74.0	-13.1	11dBm, Ch 100/104, MCS8, Ant AB, EUT Vert
5351.847	33.5	36.9	1.0	314.0	1.0	0.0	Vert	PK	-9.5	60.9	74.0	-13.1	12dBm, Ch 64, MCS7, Ant A, EUT Vert
5459.850	33.3	37.1	1.0	130.0	1.0	0.0	Vert	PK	-9.5	60.8	74.0	-13.2	12dBm, Ch 100, MCS15, Ant AB, EUT Vert
5459.383	33.3	37.1	1.0	318.0	1.0	0.0	Vert	PK	-9.5	60.8	74.0	-13.2	12dBm, Ch 100, MCS0, Ant A, EUT Vert
5458.920	33.0	37.1	1.0	318.0	1.0	0.0	Vert	PK	-9.5	60.5	74.0	-13.5	12dBm, Ch 100, 54Mbps, Ant A, EUT Vert
5351.707	32.9	36.9	1.0	314.0	1.0	0.0	Vert	PK	-9.5	60.3	74.0	-13.7	12dBm, Ch 64, 54Mbps, Ant A, EUT Vert

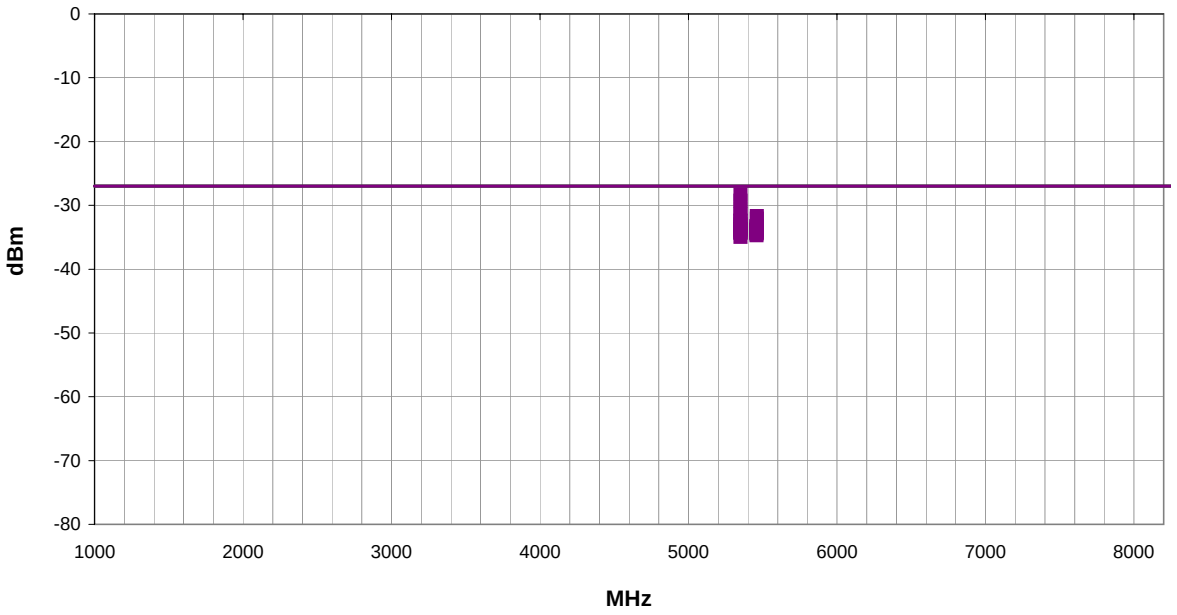
UNWANTED EMISSIONS

Work Order:	MCSO1608	**Date:**	07/26/12		
Project:	None	**Temperature:**	24.2 °C		
Job Site:	EV01	**Humidity:**	43.1% RH		
Serial Number:	215622952	**Barometric Pres.:**	1021.7 mbar	**Tested by:**	Dan Haas
EUT:	1516				
Configuration:	2				
Customer:	Microsoft Corporation				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting at 100% duty cycle, 802.11a				
Deviations:	No deviations.				
Comments:	See comments below for power level, channel, data rate, antenna chain, and EUT orientation.				

Test Specifications	**Test Method**
FCC 15.407:2012	ANSI C63.10:2009

Run #	102	**Test Distance (m)**	1	**Antenna Height(s)**	1-2m	**Results**	Pass

EN 55022 (Amds. A1:2000 A2:2003) Class B



	Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
	5350.547	1.0	314.0	Vert	PK	1.49E-06	-28.3	-27.0	-1.3	11dBm, Ch 60/64, MCS7, Ant A, EUT Vert
	5350.380	1.0	144.0	Vert	PK	1.18E-06	-29.3	-27.0	-2.3	11dBm, Ch 60/64, MCS7, Ant B, EUT Vert
	5351.507	1.0	248.0	Horz	PK	8.96E-07	-30.5	-27.0	-3.5	11dBm, Ch 60/64, MCS15, Ant AB, EUT Vert
	5350.690	1.0	210.0	Horz	PK	7.28E-07	-31.4	-27.0	-4.4	11dBm, Ch 60/64, MCS7, Ant A, EUT Vert
	5459.937	1.0	130.0	Vert	PK	6.78E-07	-31.7	-27.0	-4.7	11dBm, Ch 100/104, MCS15, Ant AB, EUT Vert
	5459.923	1.0	318.0	Vert	PK	6.18E-07	-32.1	-27.0	-5.1	11dBm, Ch 100/104, MCS7, Ant A, EUT Vert
	5350.077	1.1	243.0	Horz	PK	5.78E-07	-32.4	-27.0	-5.4	11dBm, Ch 60/64, MCS7, Ant B, EUT Vert
	5351.083	1.0	204.0	Vert	PK	5.65E-07	-32.5	-27.0	-5.5	11dBm, Ch 60/64, MCS8, Ant AB, EUT Vert
	5350.073	1.0	314.0	Vert	PK	5.03E-07	-33.0	-27.0	-6.0	11dBm, Ch 60/64, MCS0, Ant A, EUT Vert
	5458.953	1.0	130.0	Vert	PK	4.69E-07	-33.3	-27.0	-6.3	12dBm, Ch 100, MCS8, Ant AB, EUT Vert
	5458.327	1.0	318.0	Vert	PK	4.69E-07	-33.3	-27.0	-6.3	11dBm, Ch 100/104, MCS0, Ant A, EUT Vert
	5350.750	1.0	144.0	Vert	PK	4.49E-07	-33.5	-27.0	-6.5	11dBm, Ch 60/64, MCS0, Ant B, EUT Vert
	5459.963	1.0	318.0	Vert	PK	4.38E-07	-33.6	-27.0	-6.6	12dBm, Ch 64, 6Mbps, Ant A, EUT Vert
	5350.197	1.0	314.0	Vert	PK	4.28E-07	-33.7	-27.0	-6.7	12dBm, Ch 64, 36Mbps, Ant A, EUT Vert
	5350.497	1.0	314.0	Vert	PK	4.19E-07	-33.8	-27.0	-6.8	12dBm, Ch 64, MCS0, Ant A, EUT Vert
	5459.683	1.0	318.0	Vert	PK	4.18E-07	-33.8	-27.0	-6.8	12dBm, Ch 100, MCS7, Ant A, EUT Vert
	5350.840	1.0	204.0	Vert	PK	4.09E-07	-33.9	-27.0	-6.9	12dBm, Ch 64, MCS8, Ant AB, EUT Vert
	5459.210	1.0	144.0	Vert	PK	4.08E-07	-33.9	-27.0	-6.9	12dBm, Ch 100, MCS7, Ant B, EUT Vert
	5458.277	1.0	243.0	Horz	PK	4.08E-07	-33.9	-27.0	-6.9	11dBm, Ch 100/104, MCS15, Ant AB, EUT Vert
	5458.257	1.0	144.0	Vert	PK	4.08E-07	-33.9	-27.0	-6.9	12dBm, Ch 100, MCS0, Ant B, EUT Vert

PK AV QP

Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
5351.460	1.0	204.0	Vert	PK	3.82E-07	-34.2	-27.0	-7.2	12dBm, Ch 64, MCS15, Ant AB, EUT Vert
5458.833	1.0	318.0	Vert	PK	3.81E-07	-34.2	-27.0	-7.2	12dBm, Ch 100, 36Mbps, Ant A, EUT Vert
5351.477	1.0	314.0	Vert	PK	3.73E-07	-34.3	-27.0	-7.3	12dBm, Ch 64, 6Mbps, Ant A, EUT Vert
5459.230	1.0	130.0	Vert	PK	3.73E-07	-34.3	-27.0	-7.3	11dBm, Ch 100/104, MCS8, Ant AB, EUT Vert
5351.847	1.0	314.0	Vert	PK	3.65E-07	-34.4	-27.0	-7.4	12dBm, Ch 64, MCS7, Ant A, EUT Vert
5459.850	1.0	130.0	Vert	PK	3.64E-07	-34.4	-27.0	-7.4	12dBm, Ch 100, MCS15, Ant AB, EUT Vert
5459.383	1.0	318.0	Vert	PK	3.64E-07	-34.4	-27.0	-7.4	12dBm, Ch 100, MCS0, Ant A, EUT Vert
5458.920	1.0	318.0	Vert	PK	3.40E-07	-34.7	-27.0	-7.7	12dBm, Ch 100, 54Mbps, Ant A, EUT Vert
5351.707	1.0	314.0	Vert	PK	3.18E-07	-35.0	-27.0	-8.0	12dBm, Ch 64, 54Mbps, Ant A, EUT Vert

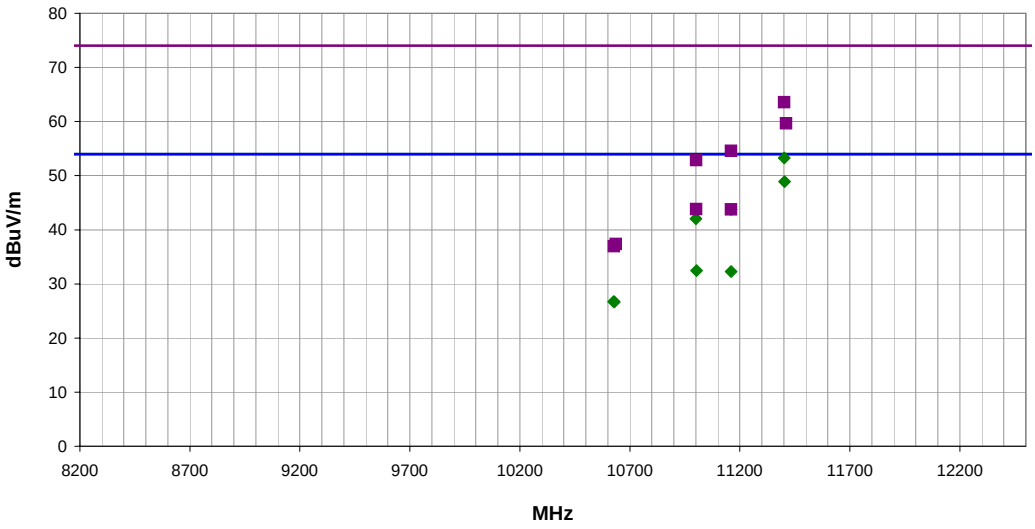
UNWANTED EMISSIONS

Work Order:	MCSO1608	**Date:**	07/23/12		
Project:	None	**Temperature:**	24.1 °C		
Job Site:	EV01	**Humidity:**	41.2% RH		
Serial Number:	364122652	**Barometric Pres.:**	1024.1 mbar	**Tested by:**	Dan Haas
EUT:	1516				
Configuration:	1				
Customer:	Microsoft Corporation				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting at 100% duty cycle, 802.11a				
Deviations:	None				
Comments:	See Comments below for Channel, EUT Orientation, Data rate, Power level, and Antenna chain.				

Test Specifications	**Test Method**
FCC 15.209:2012	ANSI C63.10:2009

Run #	84	**Test Distance (m)**	3	**Antenna Height(s)**	1-4m	**Results**	Pass

EN 55022 (Amds. A1:2000 A2:2003) Class B



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
11402.270	60.7	-7.4	3.1	318.0	3.0	0.0	Vert	AV	0.0	53.3	54.0	-0.7	13dBm Pwr, CH 140, 6Mbps, Ant A, EUT Horiz
11402.530	56.3	-7.4	3.8	46.0	3.0	0.0	Horz	AV	0.0	48.9	54.0	-5.1	13dBm Pwr, CH 140, 6Mbps, Ant A, EUT Horiz
11160.070	53.1	-9.3	3.4	305.0	3.0	0.0	Vert	AV	0.0	43.8	54.0	-10.2	13dBm Pwr, CH 116, 6Mbps, Ant A, EUT Horiz
11401.530	71.0	-7.4	3.1	318.0	3.0	0.0	Vert	PK	0.0	63.6	74.0	-10.4	13dBm Pwr, CH 140, 6Mbps, Ant A, EUT Horiz
11000.000	52.6	-10.6	3.5	316.0	3.0	0.0	Vert	AV	0.0	42.0	54.0	-12.0	13dBm Pwr, CH 100, 6Mbps, Ant A, EUT Horiz
11410.330	67.0	-7.4	3.8	46.0	3.0	0.0	Horz	PK	0.0	59.6	74.0	-14.4	13dBm Pwr, CH 140, 6Mbps, Ant A, EUT Horiz
11160.930	63.9	-9.3	3.4	305.0	3.0	0.0	Vert	PK	0.0	54.6	74.0	-19.4	13dBm Pwr, CH 116, 6Mbps, Ant A, EUT Horiz
11001.000	63.4	-10.6	3.5	316.0	3.0	0.0	Vert	PK	0.0	52.8	74.0	-21.2	13dBm Pwr, CH 100, 6Mbps, Ant A, EUT Horiz
11002.470	43.0	-10.6	3.6	267.0	3.0	0.0	Horz	AV	0.0	32.4	54.0	-21.6	13dBm Pwr, CH 100, 6Mbps, Ant A, EUT Horiz
11160.130	41.6	-9.3	3.9	270.0	3.0	0.0	Horz	AV	0.0	32.3	54.0	-21.7	13dBm Pwr, CH 116, 6Mbps, Ant A, EUT Horiz
10626.130	38.6	-11.9	1.2	92.0	3.0	0.0	Vert	AV	0.0	26.7	54.0	-27.3	13dBm Pwr, CH 64, 6Mbps, Ant A, EUT Horiz
10629.800	38.5	-11.9	1.5	3.0	3.0	0.0	Horz	AV	0.0	26.6	54.0	-27.4	13dBm Pwr, CH 64, 6Mbps, Ant A, EUT Horiz
11001.070	54.4	-10.6	3.6	267.0	3.0	0.0	Horz	PK	0.0	43.8	74.0	-30.2	13dBm Pwr, CH 100, 6Mbps, Ant A, EUT Horiz
11160.270	53.1	-9.3	3.9	270.0	3.0	0.0	Horz	PK	0.0	43.8	74.0	-30.2	13dBm Pwr, CH 116, 6Mbps, Ant A, EUT Horiz
10636.730	49.2	-11.8	1.2	92.0	3.0	0.0	Vert	PK	0.0	37.4	74.0	-36.6	13dBm Pwr, CH 64, 6Mbps, Ant A, EUT Horiz
10628.330	48.8	-11.9	1.5	3.0	3.0	0.0	Horz	PK	0.0	36.9	74.0	-37.1	13dBm Pwr, CH 64, 6Mbps, Ant A, EUT Horiz

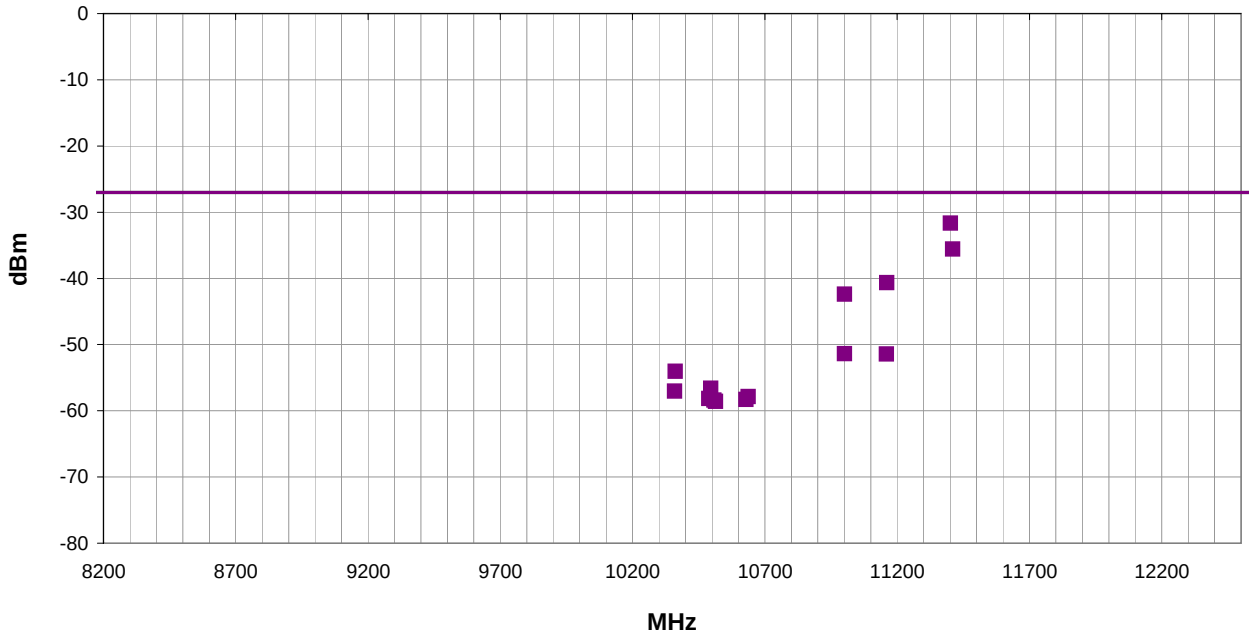
UNWANTED EMISSIONS

Work Order:	MCSO1608	**Date:**	07/23/12		
Project:	None	**Temperature:**	24.1 °C		
Job Site:	EV01	**Humidity:**	41.2% RH		
Serial Number:	364122652	**Barometric Pres.:**	1024.1 mbar	**Tested by:**	Dan Haas
EUT:	1516				
Configuration:	1				
Customer:	Microsoft Corporation				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting at 100% duty cycle, 802.11a				
Deviations:	None				
Comments:	See Comments below for Channel, EUT Orientation, Data rate, Power level, and Antenna chain.				

Test Specifications	**Test Method**
FCC 15.407:2012	ANSI C63.10:2009

Run #	84	**Test Distance (m)**	3	**Antenna Height(s)**	1-4m	**Results**	Pass

EN 55022 (Amds. A1:2000 A2:2003) Class B



	Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments	
	11401.530	3.1	318.0	Vert	PK	6.83E-07	-31.7	-27.0	-4.7	13dBm Pwr, CH 140, 6Mbps, Ant A, EUT Horiz	
	11410.330	3.8	46.0	Horz	PK	2.76E-07	-35.6	-27.0	-8.6	13dBm Pwr, CH 140, 6Mbps, Ant A, EUT Horiz	
	11160.930	3.4	305.0	Vert	PK	8.62E-08	-40.6	-27.0	-13.6	13dBm Pwr, CH 116, 6Mbps, Ant A, EUT Horiz	
	11001.000	3.5	316.0	Vert	PK	5.76E-08	-42.4	-27.0	-15.4	13dBm Pwr, CH 100, 6Mbps, Ant A, EUT Horiz	
	11001.070	3.6	267.0	Horz	PK	7.25E-09	-51.4	-27.0	-24.4	13dBm Pwr, CH 100, 6Mbps, Ant A, EUT Horiz	
	11160.270	3.9	270.0	Horz	PK	7.16E-09	-51.4	-27.0	-24.4	13dBm Pwr, CH 116, 6Mbps, Ant A, EUT Horiz	
	10361.930	1.0	183.0	Vert	PK	3.95E-09	-54.0	-27.0	-27.0	13dBm Pwr, CH 36, 6Mbps, Ant A, EUT Horiz	
	10495.870	1.0	170.0	Vert	PK	2.17E-09	-56.6	-27.0	-29.6	13dBm Pwr, CH 48, 6Mbps, Ant A, EUT Horiz	
	10358.870	1.0	92.0	Horz	PK	1.98E-09	-57.0	-27.0	-30.0	13dBm Pwr, CH 36, 6Mbps, Ant A, EUT Horiz	
	10636.730	1.2	92.0	Vert	PK	1.64E-09	-57.9	-27.0	-30.9	13dBm Pwr, CH 64, 6Mbps, Ant A, EUT Horiz	
	10488.930	1.4	204.0	Horz	PK	1.54E-09	-58.1	-27.0	-31.1	13dBm Pwr, CH 48, 6Mbps, Ant A, EUT Horiz	
	10628.330	1.5	3.0	Horz	PK	1.48E-09	-58.3	-27.0	-31.3	13dBm Pwr, CH 64, 6Mbps, Ant A, EUT Horiz	
	10507.330	1.2	16.0	Horz	PK	1.44E-09	-58.4	-27.0	-31.4	13dBm Pwr, CH 52, 6Mbps, Ant A, EUT Horiz	
	10513.530	1.2	178.0	Vert	PK	1.39E-09	-58.6	-27.0	-31.6	13dBm Pwr, CH 52, 6Mbps, Ant A, EUT Horiz	

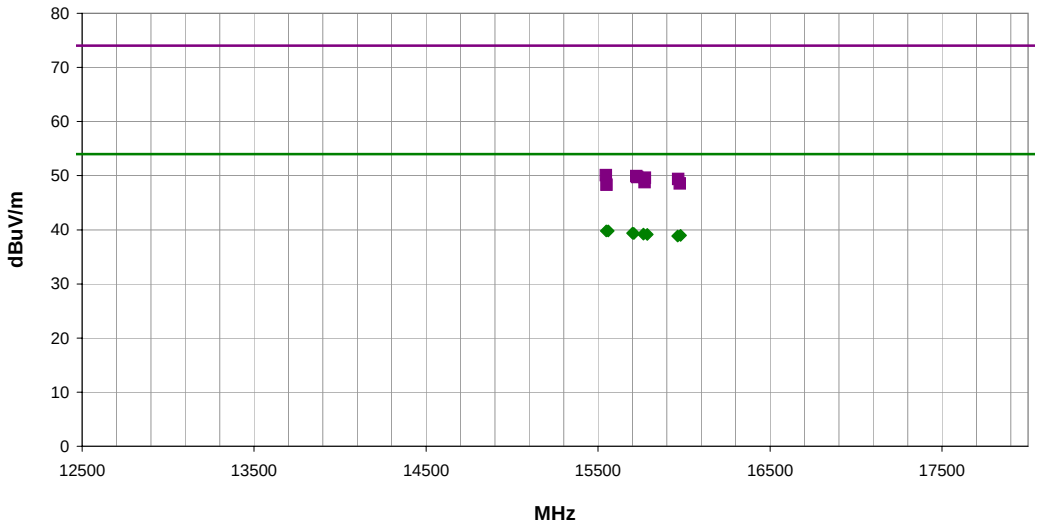
UNWANTED EMISSIONS

Work Order:	MCSO1608	**Date:**	07/23/12		
Project:	None	**Temperature:**	24.6 °C		
Job Site:	EV01	**Humidity:**	42.8% RH		
Serial Number:	364122652	**Barometric Pres.:**	1018.8 mbar	**Tested by:**	Dan Haas
EUT:	1516				
Configuration:	1				
Customer:	Microsoft Corporation				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting at 100% duty cycle, 802.11a				
Deviations:	None				
Comments:	See Comments below for Channel, EUT Orientation, Data rate, Power level, and Antenna chain.				

Test Specifications	**Test Method**
FCC 15.209:2012	ANSI C63.10:2009

Run #	85	**Test Distance (m)**	3	**Antenna Height(s)**	1-4m	**Results**	Pass

EN 55022 (Amds. A1:2000 A2:2003) Class B



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
15546.930	28.7	11.1	3.0	201.0	3.0	0.0	Horz	AV	0.0	39.8	54.0	-14.2	13dBm Pwr, CH 36, 6Mbps, Ant A, EUT Horiz
15559.070	28.7	11.1	2.4	356.0	3.0	0.0	Vert	AV	0.0	39.8	54.0	-14.2	13dBm Pwr, CH 36, 6Mbps, Ant A, EUT Horiz
15700.800	28.5	10.9	2.7	269.0	3.0	0.0	Vert	AV	0.0	39.4	54.0	-14.6	13dBm Pwr, CH 48, 6Mbps, Ant A, EUT Horiz
15707.470	28.5	10.8	1.9	280.0	3.0	0.0	Horz	AV	0.0	39.3	54.0	-14.7	13dBm Pwr, CH 48, 6Mbps, Ant A, EUT Horiz
15763.400	28.4	10.8	3.5	315.0	3.0	0.0	Horz	AV	0.0	39.2	54.0	-14.8	13dBm Pwr, CH 52, 6Mbps, Ant A, EUT Horiz
15786.130	28.3	10.8	1.8	164.0	3.0	0.0	Vert	AV	0.0	39.1	54.0	-14.9	13dBm Pwr, CH 52, 6Mbps, Ant A, EUT Horiz
15979.870	27.9	11.1	1.8	34.0	3.0	0.0	Horz	AV	0.0	39.0	54.0	-15.0	13dBm Pwr, CH 64, 6Mbps, Ant A, EUT Horiz
15962.930	27.8	11.0	3.2	61.0	3.0	0.0	Vert	AV	0.0	38.8	54.0	-15.2	13dBm Pwr, CH 64, 6Mbps, Ant A, EUT Horiz
15545.470	39.0	11.1	2.4	356.0	3.0	0.0	Vert	PK	0.0	50.1	74.0	-23.9	13dBm Pwr, CH 36, 6Mbps, Ant A, EUT Horiz
15723.470	39.1	10.8	2.7	269.0	3.0	0.0	Vert	PK	0.0	49.9	74.0	-24.1	13dBm Pwr, CH 48, 6Mbps, Ant A, EUT Horiz
15728.870	38.9	10.8	1.9	280.0	3.0	0.0	Horz	PK	0.0	49.7	74.0	-24.3	13dBm Pwr, CH 48, 6Mbps, Ant A, EUT Horiz
15772.800	38.8	10.8	3.5	315.0	3.0	0.0	Horz	PK	0.0	49.6	74.0	-24.4	13dBm Pwr, CH 52, 6Mbps, Ant A, EUT Horiz
15966.400	38.3	11.1	1.8	34.0	3.0	0.0	Horz	PK	0.0	49.4	74.0	-24.6	13dBm Pwr, CH 64, 6Mbps, Ant A, EUT Horiz
15771.270	38.0	10.8	1.8	164.0	3.0	0.0	Vert	PK	0.0	48.8	74.0	-25.2	13dBm Pwr, CH 52, 6Mbps, Ant A, EUT Horiz
15976.130	37.5	11.1	3.2	61.0	3.0	0.0	Vert	PK	0.0	48.6	74.0	-25.4	13dBm Pwr, CH 64, 6Mbps, Ant A, EUT Horiz
15550.000	37.2	11.1	3.0	201.0	3.0	0.0	Horz	PK	0.0	48.3	74.0	-25.7	13dBm Pwr, CH 36, 6Mbps, Ant A, EUT Horiz

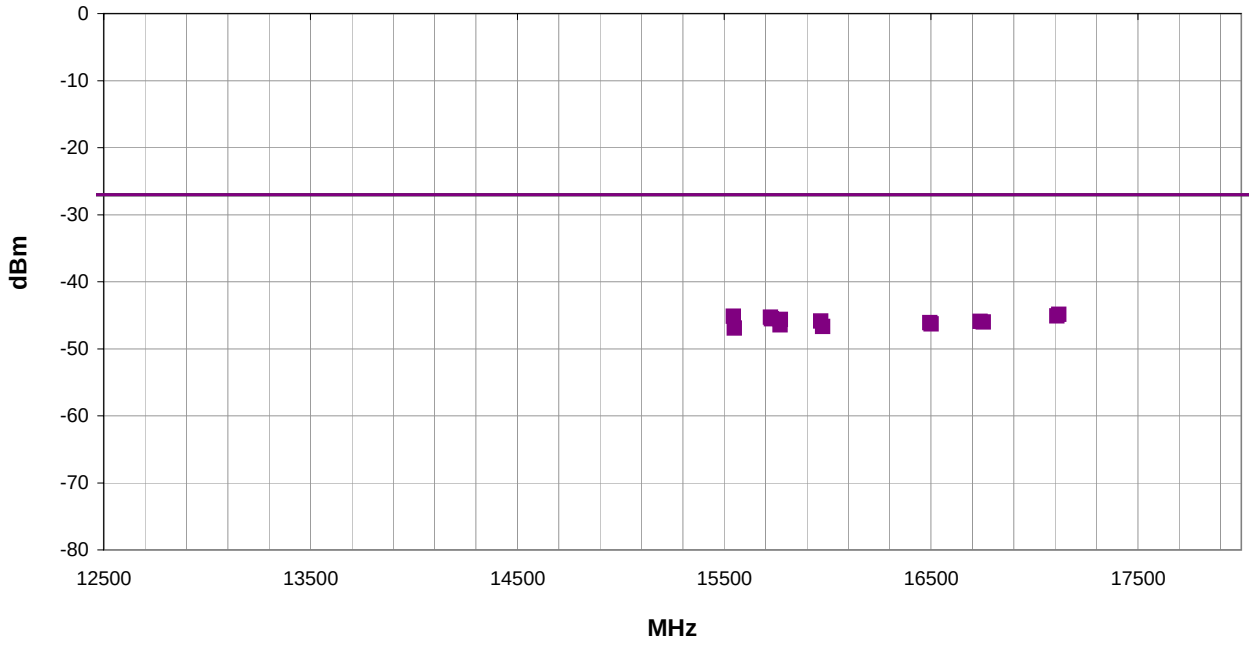
UNWANTED EMISSIONS

Work Order:	MCSO1608	**Date:**	07/23/12		
Project:	None	**Temperature:**	24.6 °C		
Job Site:	EV01	**Humidity:**	42.8% RH		
Serial Number:	364122652	**Barometric Pres.:**	1018.8 mbar	**Tested by:**	Dan Haas
EUT:	1516				
Configuration:	1				
Customer:	Microsoft Corporation				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting at 100% duty cycle, 802.11a				
Deviations:	None				
Comments:	See Comments below for Channel, EUT Orientation, Data rate, Power level, and Antenna chain.				

Test Specifications	**Test Method**
FCC 15.407:2012	ANSI C63.10:2009

Run #	85	**Test Distance (m)**	3	**Antenna Height(s)**	1-4m	**Results**	Pass

EN 55022 (Amds. A1:2000 A2:2003) Class B



	Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
	17118.530	1.2	25.0	Horz	PK	3.25E-08	-44.9	-27.0	-17.9	13dBm Pwr, CH 140, 6Mbps, Ant A, EUT Horiz
	17109.530	1.2	5.0	Vert	PK	3.10E-08	-45.1	-27.0	-18.1	13dBm Pwr, CH 140, 6Mbps, Ant A, EUT Horiz
	15545.470	2.4	356.0	Vert	PK	3.07E-08	-45.1	-27.0	-18.1	13dBm Pwr, CH 36, 6Mbps, Ant A, EUT Horiz
	15723.470	2.7	269.0	Vert	PK	2.95E-08	-45.3	-27.0	-18.3	13dBm Pwr, CH 48, 6Mbps, Ant A, EUT Horiz
	15728.870	1.9	280.0	Horz	PK	2.81E-08	-45.5	-27.0	-18.5	13dBm Pwr, CH 48, 6Mbps, Ant A, EUT Horiz
	15772.800	3.5	315.0	Horz	PK	2.74E-08	-45.6	-27.0	-18.6	13dBm Pwr, CH 52, 6Mbps, Ant A, EUT Horiz
	15966.400	1.8	34.0	Horz	PK	2.58E-08	-45.9	-27.0	-18.9	13dBm Pwr, CH 64, 6Mbps, Ant A, EUT Horiz
	16737.870	1.2	77.0	Horz	PK	2.57E-08	-45.9	-27.0	-18.9	13dBm Pwr, CH 116, 6Mbps, Ant A, EUT Horiz
	16753.470	1.8	73.0	Vert	PK	2.52E-08	-46.0	-27.0	-19.0	13dBm Pwr, CH 116, 6Mbps, Ant A, EUT Horiz
	16494.330	3.6	294.0	Horz	PK	2.45E-08	-46.1	-27.0	-19.1	13dBm Pwr, CH 100, 6Mbps, Ant A, EUT Horiz
	16500.930	1.2	1.0	Vert	PK	2.34E-08	-46.3	-27.0	-19.3	13dBm Pwr, CH 100, 6Mbps, Ant A, EUT Horiz
	15771.270	1.8	164.0	Vert	PK	2.28E-08	-46.4	-27.0	-19.4	13dBm Pwr, CH 52, 6Mbps, Ant A, EUT Horiz
	15976.130	3.2	61.0	Vert	PK	2.15E-08	-46.7	-27.0	-19.7	13dBm Pwr, CH 64, 6Mbps, Ant A, EUT Horiz
	15550.000	3.0	201.0	Horz	PK	2.02E-08	-46.9	-27.0	-19.9	13dBm Pwr, CH 36, 6Mbps, Ant A, EUT Horiz

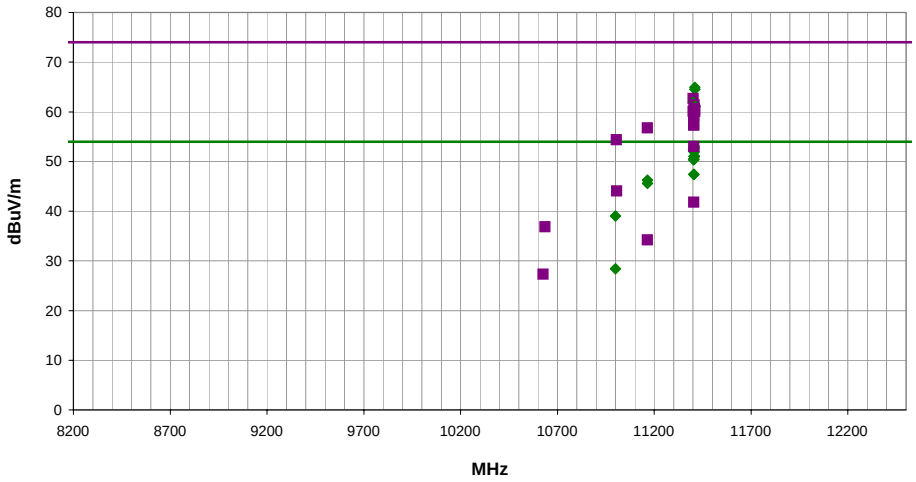
UNWANTED EMISSIONS

Work Order:	MCSO1608	**Date:**	07/23/12		
Project:	None	**Temperature:**	24.6 °C		
Job Site:	EV01	**Humidity:**	42.8% RH		
Serial Number:	215622952	**Barometric Pres.:**	1018.8 mbar	**Tested by:**	Dan Haas
EUT:	1516				
Configuration:	2				
Customer:	Microsoft Corporation				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting at 100% duty cycle, 802.11a				
Deviations:	No deviations.				
Comments:	See Comments below for Channel, EUT Orientation, Data rate, Power level, and Antenna chain.				

Test Specifications	**Test Method**
FCC 15.209:2012	ANSI C63.10:2009

Run #	103	**Test Distance (m)**	3	**Antenna Height(s)**	1-4m	**Results**	Pass

EN 55022 (Amds. A1:2000 A2:2003) Class B



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
11405.270	60.5	-7.4	3.1	338.0	3.0	0.0	Vert	AV	0.0	53.1	54.0	-0.9	RBAV2, 12dBm Pwr, Ch. 140, MCS8, Ant AB, EUT Horizontal
11405.470	60.1	-7.4	3.9	316.0	3.0	0.0	Vert	AV	0.0	52.7	54.0	-1.3	12dBm Pwr, Ch. 140, MCS7, Ant A, EUT Horizontal
11405.470	60.0	-7.4	3.9	316.0	3.0	0.0	Vert	AV	0.0	52.6	54.0	-1.4	12dBm Pwr, Ch. 140, MCS0, Ant A, EUT Horizontal
11402.600	59.9	-7.4	3.9	316.0	3.0	0.0	Vert	AV	0.0	52.5	54.0	-1.5	12dBm Pwr, Ch. 140, 6Mbps, Ant A, EUT Horizontal
11402.530	59.8	-7.4	3.9	316.0	3.0	0.0	Vert	AV	0.0	52.4	54.0	-1.6	12dBm Pwr, Ch. 140, 54Mbps, Ant A, EUT Horizontal
11404.930	59.6	-7.4	3.9	316.0	3.0	0.0	Vert	AV	0.0	52.2	54.0	-1.8	12dBm Pwr, Ch. 140, 36Mbps, Ant A, EUT Horizontal
11405.870	59.3	-7.4	3.3	336.0	3.0	0.0	Vert	AV	0.0	51.9	54.0	-2.1	12dBm Pwr, Ch. 140, MCS7, Ant B, EUT Horizontal
11405.400	58.5	-7.4	3.1	338.0	3.0	0.0	Vert	AV	0.0	51.1	54.0	-2.9	RBAV2, 12dBm Pwr, Ch. 140, MCS15, Ant AB, EUT Horizontal
11405.400	58.4	-7.4	1.8	317.0	3.0	0.0	Vert	AV	0.0	51.0	54.0	-3.0	12dBm Pwr, Ch. 140, MCS0, Ant A, EUT Vertical
11405.400	58.4	-7.4	1.8	317.0	3.0	0.0	Vert	AV	0.0	51.0	54.0	-3.0	12dBm Pwr, Ch. 140, MCS7, Ant A, EUT Vertical
11404.930	57.9	-7.4	1.8	317.0	3.0	0.0	Vert	AV	0.0	50.5	54.0	-3.5	12dBm Pwr, Ch. 140, 36Mbps, Ant A, EUT Vertical
11404.670	57.8	-7.4	1.8	317.0	3.0	0.0	Vert	AV	0.0	50.4	54.0	-3.6	12dBm Pwr, Ch. 140, 54Mbps, Ant A, EUT Vertical
11402.600	57.8	-7.4	1.8	317.0	3.0	0.0	Vert	AV	0.0	50.4	54.0	-3.6	12dBm Pwr, Ch. 140, 6Mbps, Ant A, EUT Vertical
11405.130	54.8	-7.4	3.7	59.0	3.0	0.0	Horz	AV	0.0	47.4	54.0	-6.6	12dBm Pwr, Ch. 140, MCS7, Ant A, EUT Horizontal
11405.130	54.8	-7.4	3.7	59.0	3.0	0.0	Horz	AV	0.0	47.4	54.0	-6.6	12dBm Pwr, Ch. 140, MCS0, Ant A, EUT Horizontal
11165.130	55.5	-9.3	3.2	333.0	3.0	0.0	Vert	AV	0.0	46.2	54.0	-7.8	12dBm Pwr, Ch. 116, MCS15, Ant AB, EUT Horizontal
11408.870	72.3	-7.4	3.1	338.0	3.0	0.0	Vert	PK	0.0	64.9	74.0	-9.1	12dBm Pwr, Ch. 140, MCS15, Ant AB, EUT Horizontal
11408.870	71.9	-7.4	3.1	338.0	3.0	0.0	Vert	PK	0.0	64.5	74.0	-9.5	12dBm Pwr, Ch. 140, MCS8, Ant AB, EUT Horizontal
11005.270	54.6	-10.5	2.5	331.0	3.0	0.0	Vert	AV	0.0	44.1	54.0	-9.9	12dBm Pwr, Ch. 100, MCS15, Ant AB, EUT Horizontal
11401.600	70.1	-7.4	3.9	316.0	3.0	0.0	Vert	PK	0.0	62.7	74.0	-11.3	12dBm Pwr, Ch. 140, 6Mbps, Ant A, EUT Horizontal
11401.270	69.3	-7.4	3.9	316.0	3.0	0.0	Vert	PK	0.0	61.9	74.0	-12.1	12dBm Pwr, Ch. 140, 36Mbps, Ant A, EUT Horizontal
11405.070	49.2	-7.4	3.6	73.0	3.0	0.0	Horz	AV	0.0	41.8	54.0	-12.2	12dBm Pwr, Ch. 140, MCS7, Ant A, EUT Vertical
11405.870	68.8	-7.4	3.9	316.0	3.0	0.0	Vert	PK	0.0	61.4	74.0	-12.6	12dBm Pwr, Ch. 140, 54Mbps, Ant A, EUT Horizontal
11410.400	68.5	-7.4	1.8	317.0	3.0	0.0	Vert	PK	0.0	61.1	74.0	-12.9	12dBm Pwr, Ch. 140, 6Mbps, Ant A, EUT Vertical
11407.270	68.0	-7.4	3.9	316.0	3.0	0.0	Vert	PK	0.0	60.6	74.0	-13.4	12dBm Pwr, Ch. 140, MCS7, Ant A, EUT Horizontal
11409.800	67.8	-7.4	1.8	317.0	3.0	0.0	Vert	PK	0.0	60.4	74.0	-13.6	12dBm Pwr, Ch. 140, 54Mbps, Ant A, EUT Vertical
11407.400	67.7	-7.4	3.9	316.0	3.0	0.0	Vert	PK	0.0	60.3	74.0	-13.7	12dBm Pwr, Ch. 140, MCS0, Ant A, EUT Horizontal
11401.330	67.5	-7.4	1.8	317.0	3.0	0.0	Vert	PK	0.0	60.1	74.0	-13.9	12dBm Pwr, Ch. 140, 36Mbps, Ant A, EUT Vertical
11409.000	67.4	-7.4	3.3	336.0	3.0	0.0	Vert	PK	0.0	60.0	74.0	-14.0	12dBm Pwr, Ch. 140, MCS7, Ant B, EUT Horizontal
11404.730	66.8	-7.4	1.8	317.0	3.0	0.0	Vert	PK	0.0	59.4	74.0	-14.6	12dBm Pwr, Ch. 140, MCS7, Ant A, EUT Vertical
11404.870	66.7	-7.4	1.8	317.0	3.0	0.0	Vert	PK	0.0	59.3	74.0	-14.7	12dBm Pwr, Ch. 140, MCS0, Ant A, EUT Vertical
11404.930	64.7	-7.4	3.7	59.0	3.0	0.0	Horz	PK	0.0	57.3	74.0	-16.7	12dBm Pwr, Ch. 140, MCS7, Ant A, EUT Horizontal
11404.800	64.7	-7.4	3.7	59.0	3.0	0.0	Horz	PK	0.0	57.3	74.0	-16.7	12dBm Pwr, Ch. 140, MCS0, Ant A, EUT Horizontal
11165.130	66.0	-9.3	3.2	333.0	3.0	0.0	Vert	PK	0.0	56.7	74.0	-17.3	12dBm Pwr, Ch. 116, MCS15, Ant AB, EUT Horizontal
11005.130	64.9	-10.5	2.5	331.0	3.0	0.0	Vert	PK	0.0	54.4	74.0	-19.6	12dBm Pwr, Ch. 100, MCS15, Ant AB, EUT Horizontal
11165.000	43.5	-9.3	3.3	76.0	3.0	0.0	Horz	AV	0.0	34.2	54.0	-19.8	12dBm Pwr, Ch. 116, MCS15, Ant AB, EUT Horizontal
11404.730	60.4	-7.4	3.6	73.0	3.0	0.0	Horz	PK	0.0	53.0	74.0	-21.0	12dBm Pwr, Ch. 140, MCS7, Ant A, EUT Vertical
10999.530	39.0	-10.6	1.2	218.0	3.0	0.0	Horz	AV	0.0	28.4	54.0	-25.6	12dBm Pwr, Ch. 100, MCS15, Ant AB, EUT Horizontal
10625.600	39.2	-11.9	1.0	65.0	3.0	0.0	Vert	AV	0.0	27.3	54.0	-26.7	12dBm Pwr, Ch. 64, MCS15, Ant AB, EUT Horizontal
11164.670	54.9	-9.3	3.3	76.0	3.0	0.0	Horz	PK	0.0	45.6	74.0	-28.4	12dBm Pwr, Ch. 116, MCS15, Ant AB, EUT Horizontal
10999.800	49.6	-10.6	1.2	218.0	3.0	0.0	Horz	PK	0.0	39.0	74.0	-35.0	12dBm Pwr, Ch. 100, MCS15, Ant AB, EUT Horizontal
10636.420	48.7	-11.8	1.0	65.0	3.0	0.0	Vert	PK	0.0	36.9	74.0	-37.1	12dBm Pwr, Ch. 64, MCS15, Ant AB, EUT Horizontal

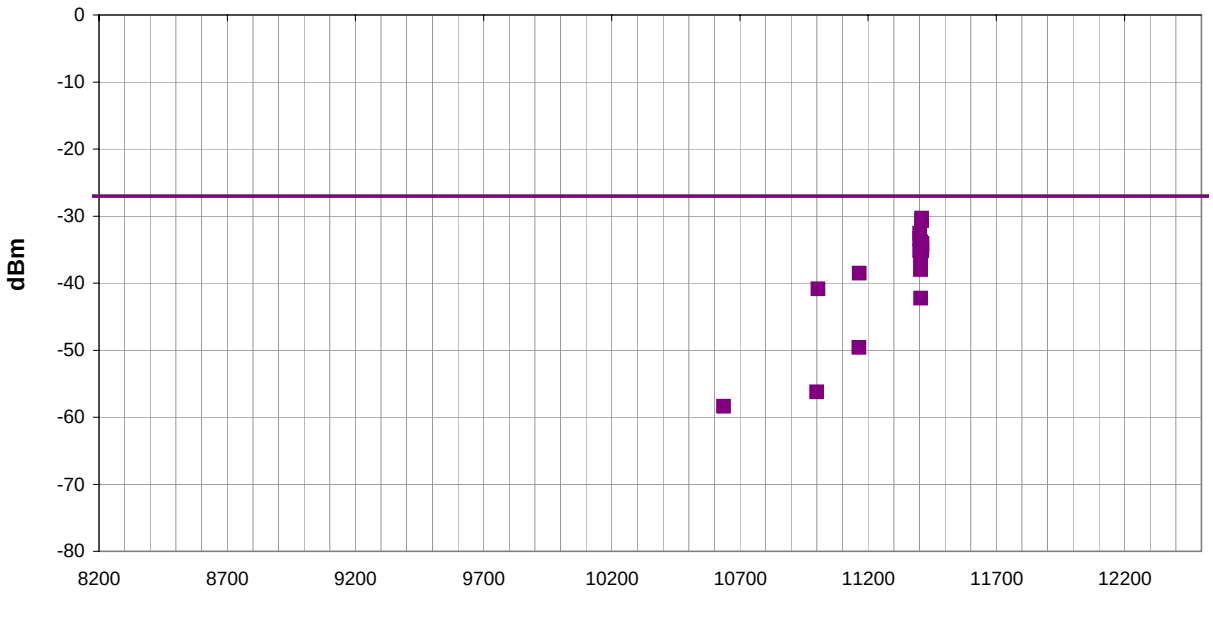
UNWANTED EMISSIONS

Work Order:	MCSO1608	**Date:**	07/23/12		
Project:	None	**Temperature:**	24.6 °C		
Job Site:	EV01	**Humidity:**	42.8% RH		
Serial Number:	215622952	**Barometric Pres.:**	1018.8 mbar	**Tested by:**	Dan Haas
EUT:	1516				
Configuration:	2				
Customer:	Microsoft Corporation				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting at 100% duty cycle, 802.11a				
Deviations:	No deviations.				
Comments:	See Comments below for Channel, EUT Orientation, Data rate, Power level, and Antenna chain.				

Test Specifications	**Test Method**
FCC 15.407:2012	ANSI C63.10:2009

Run #	103	**Test Distance (m)**	3	**Antenna Height(s)**	1-4m	**Results**	Pass

EN 55022 (Amds. A1:2000 A2:2003) Class B



	Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
	11408.870	3.1	338.0	Vert	PK	9.34E-07	-30.3	-27.0	-3.3	12dBm Pwr, Ch. 140, MCS15, Ant AB, EUT Horizontal
	11408.870	3.1	338.0	Vert	PK	8.51E-07	-30.7	-27.0	-3.7	12dBm Pwr, Ch. 140, MCS8, Ant AB, EUT Horizontal
	11401.600	3.9	316.0	Vert	PK	5.55E-07	-32.6	-27.0	-5.6	12dBm Pwr, Ch. 140, 6Mbps, Ant A, EUT Horizontal
	11401.270	3.9	316.0	Vert	PK	4.61E-07	-33.4	-27.0	-6.4	12dBm Pwr, Ch. 140, 36Mbps, Ant A, EUT Horizontal
	11405.870	3.9	316.0	Vert	PK	4.15E-07	-33.8	-27.0	-6.8	12dBm Pwr, Ch. 140, 54Mbps, Ant A, EUT Horizontal
	11410.400	1.8	317.0	Vert	PK	3.90E-07	-34.1	-27.0	-7.1	12dBm Pwr, Ch. 140, 6Mbps, Ant A, EUT Vertical
	11407.270	3.9	316.0	Vert	PK	3.46E-07	-34.6	-27.0	-7.6	12dBm Pwr, Ch. 140, MCS7, Ant A, EUT Horizontal
	11409.800	1.8	317.0	Vert	PK	3.32E-07	-34.8	-27.0	-7.8	12dBm Pwr, Ch. 140, 54Mbps, Ant A, EUT Vertical
	11407.400	3.9	316.0	Vert	PK	3.23E-07	-34.9	-27.0	-7.9	12dBm Pwr, Ch. 140, MCS0, Ant A, EUT Horizontal
	11401.330	1.8	317.0	Vert	PK	3.05E-07	-35.2	-27.0	-8.2	12dBm Pwr, Ch. 140, 36Mbps, Ant A, EUT Vertical
	11409.000	3.3	336.0	Vert	PK	3.02E-07	-35.2	-27.0	-8.2	12dBm Pwr, Ch. 140, MCS7, Ant B, EUT Horizontal
	11404.730	1.8	317.0	Vert	PK	2.61E-07	-35.8	-27.0	-8.8	12dBm Pwr, Ch. 140, MCS7, Ant A, EUT Vertical
	11404.870	1.8	317.0	Vert	PK	2.55E-07	-35.9	-27.0	-8.9	12dBm Pwr, Ch. 140, MCS0, Ant A, EUT Vertical
	11404.930	3.7	59.0	Horz	PK	1.61E-07	-37.9	-27.0	-10.9	12dBm Pwr, Ch. 140, MCS7, Ant A, EUT Horizontal
	11404.800	3.7	59.0	Horz	PK	1.61E-07	-37.9	-27.0	-10.9	12dBm Pwr, Ch. 140, MCS0, Ant A, EUT Horizontal
	11165.130	3.2	333.0	Vert	PK	1.41E-07	-38.5	-27.0	-11.5	12dBm Pwr, Ch. 116, MCS15, Ant AB, EUT Horizontal

11005.130	2.5	331.0	Vert	PK	8.19E-08	-40.9	-27.0	-13.9	12dBm Pwr, Ch. 100, MCS15, Ant AB, EUT Horizontal
11404.730	3.6	73.0	Horz	PK	5.98E-08	-42.2	-27.0	-15.2	12dBm Pwr, Ch. 140, MCS7, Ant A, EUT Vertical
11164.670	3.3	76.0	Horz	PK	1.09E-08	-49.6	-27.0	-22.6	12dBm Pwr, Ch. 116, MCS15, Ant AB, EUT Horizontal
10999.800	1.2	218.0	Horz	PK	2.40E-09	-56.2	-27.0	-29.2	12dBm Pwr, Ch. 100, MCS15, Ant AB, EUT Horizontal
10636.420	1.0	65.0	Vert	PK	1.46E-09	-58.4	-27.0	-31.4	12dBm Pwr, Ch. 64, MCS15, Ant AB, EUT Horizontal

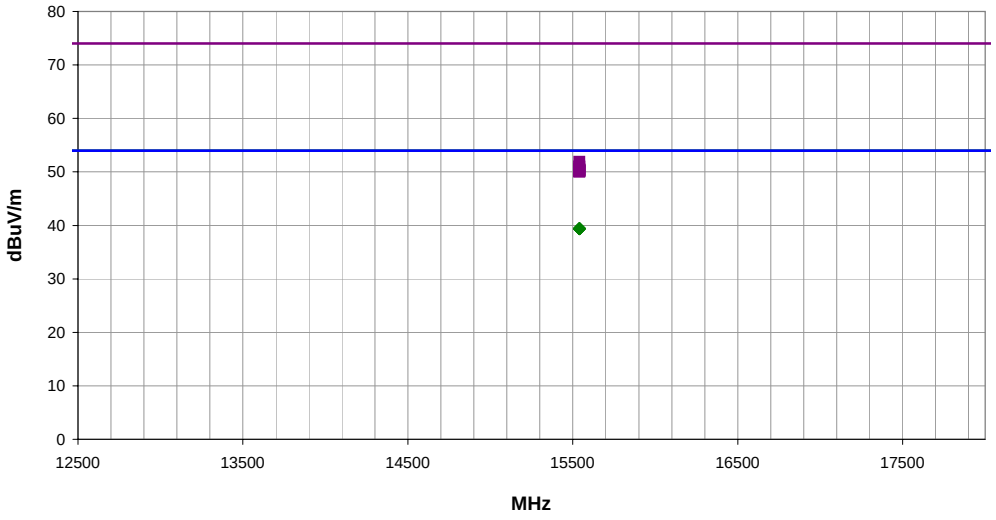
UNWANTED EMISSIONS

Work Order:	MCSO1608	**Date:**	07/30/12		
Project:	None	**Temperature:**	25.1 °C		
Job Site:	EV01	**Humidity:**	48.9% RH		
Serial Number:	215622952	**Barometric Pres.:**	1021 mbar	**Tested by:**	Mark Baytan
EUT:	1516				
Configuration:	1				
Customer:	Microsoft Corporation				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting at 100% duty cycle, 802.11a				
Deviations:	No deviations.				
Comments:	See Comments below for Channel, EUT Orientation, Data rate, Power level, and Antenna chain.				

Test Specifications	**Test Method**
FCC 15.209:2012	ANSI C63.10:2009

Run #	107	**Test Distance (m)**	3	**Antenna Height(s)**	1-4m	**Results**	Pass

EN 55022 (Amds. A1:2000 A2:2003) Class B



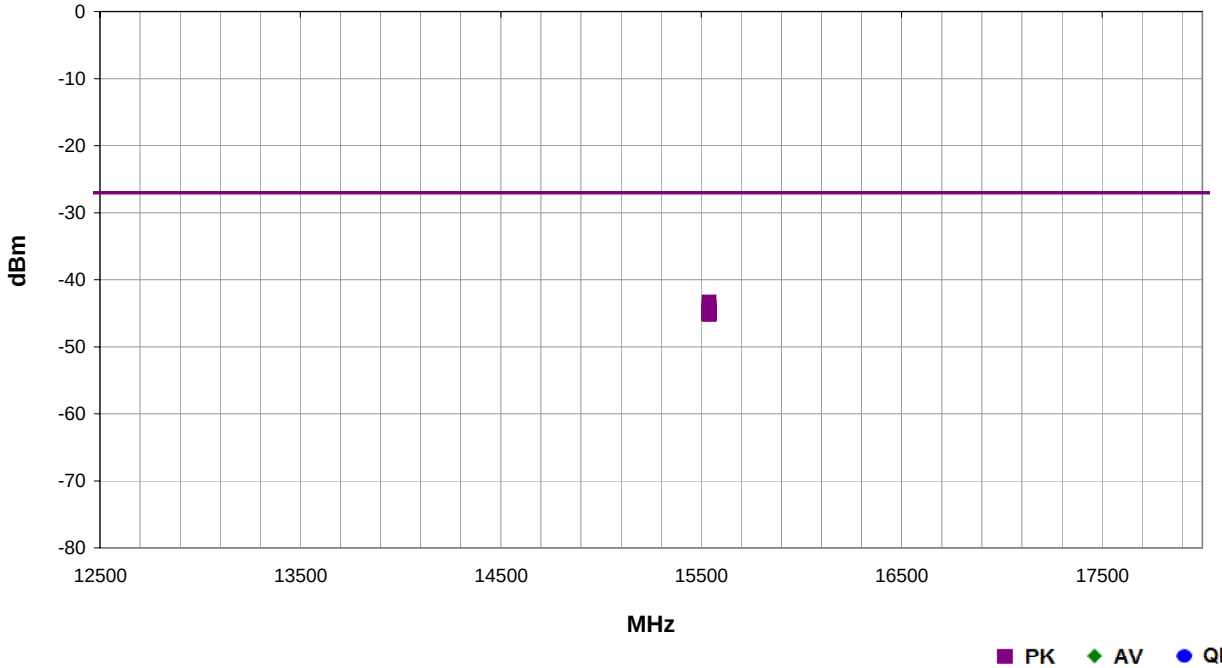
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
15539.650	28.4	11.1	1.0	82.0	3.0	0.0	Vert	AV	0.0	39.5	54.0	-14.5	13dBm PWR, Ch 36, 6Mbps, Ant B, EUT Horizontal
15539.510	28.3	11.1	1.1	159.0	3.0	0.0	Horz	AV	0.0	39.4	54.0	-14.6	13dBm PWR, Ch 36, MCS8, Ant AB, EUT Horizontal
15539.500	28.3	11.1	1.0	341.0	3.0	0.0	Vert	AV	0.0	39.4	54.0	-14.6	13dBm PWR, Ch 36, 54Mbps, Ant B, EUT Horizontal
15539.790	28.3	11.1	1.0	122.0	3.0	0.0	Vert	AV	0.0	39.4	54.0	-14.6	13dBm PWR, Ch 36, 36Mbps, Ant B, EUT Horizontal
15539.880	28.3	11.1	1.0	336.0	3.0	0.0	Horz	AV	0.0	39.4	54.0	-14.6	13dBm PWR, Ch 36, 6Mbps, Ant B, EUT Horizontal
15540.000	28.3	11.1	1.0	131.0	3.0	0.0	Vert	AV	0.0	39.4	54.0	-14.6	13dBm PWR, Ch 36, MCS15, Ant AB, EUT Horizontal
15540.030	28.3	11.1	1.0	358.0	3.0	0.0	Horz	AV	0.0	39.4	54.0	-14.6	13dBm PWR, Ch 36, MCS7, Ant B, EUT Horizontal
15540.180	28.3	11.1	1.0	70.0	3.0	0.0	Horz	AV	0.0	39.4	54.0	-14.6	13dBm PWR, Ch 36, MCS0, Ant B, EUT Horizontal
15539.520	28.2	11.1	1.0	250.0	3.0	0.0	Vert	AV	0.0	39.3	54.0	-14.7	13dBm PWR, Ch 36, MCS7, Ant B, EUT Horizontal
15539.620	28.2	11.1	3.2	110.0	3.0	0.0	Horz	AV	0.0	39.3	54.0	-14.7	13dBm PWR, Ch 36, 36Mbps, Ant B, EUT Horizontal
15539.710	28.2	11.1	2.9	317.0	3.0	0.0	Vert	AV	0.0	39.3	54.0	-14.7	13dBm PWR, Ch 36, MCS8, Ant AB, EUT Horizontal
15540.000	28.2	11.1	1.5	350.0	3.0	0.0	Horz	AV	0.0	39.3	54.0	-14.7	13dBm PWR, Ch 36, 54Mbps, Ant B, EUT Horizontal
15540.210	28.2	11.1	1.0	75.0	3.0	0.0	Vert	AV	0.0	39.3	54.0	-14.7	13dBm PWR, Ch 36, MCS0, Ant B, EUT Horizontal
15540.270	28.2	11.1	1.0	209.0	3.0	0.0	Horz	AV	0.0	39.3	54.0	-14.7	13dBm PWR, Ch 36, MCS15, Ant AB, EUT Horizontal
15539.610	40.8	11.1	1.0	122.0	3.0	0.0	Vert	PK	0.0	51.9	74.0	-22.1	13dBm PWR, Ch 36, 36Mbps, Ant B, EUT Horizontal
15539.760	39.9	11.1	1.0	341.0	3.0	0.0	Vert	PK	0.0	51.0	74.0	-23.0	13dBm PWR, Ch 36, 54Mbps, Ant B, EUT Horizontal
15539.880	39.9	11.1	1.0	131.0	3.0	0.0	Vert	PK	0.0	51.0	74.0	-23.0	13dBm PWR, Ch 36, MCS15, Ant AB, EUT Horizontal
15539.960	39.4	11.1	1.0	358.0	3.0	0.0	Horz	PK	0.0	50.5	74.0	-23.5	13dBm PWR, Ch 36, MCS7, Ant B, EUT Horizontal
15539.570	39.3	11.1	1.1	159.0	3.0	0.0	Horz	PK	0.0	50.4	74.0	-23.6	13dBm PWR, Ch 36, MCS8, Ant AB, EUT Horizontal
15539.570	39.2	11.1	1.0	250.0	3.0	0.0	Vert	PK	0.0	50.3	74.0	-23.7	13dBm PWR, Ch 36, MCS7, Ant B, EUT Horizontal
15540.390	39.2	11.1	1.5	350.0	3.0	0.0	Horz	PK	0.0	50.3	74.0	-23.7	13dBm PWR, Ch 36, 54Mbps, Ant B, EUT Horizontal
15539.760	39.1	11.1	1.0	35.0	3.0	0.0	Vert	PK	0.0	50.2	74.0	-23.8	13dBm PWR, Ch 36, 6Mbps, Ant B, EUT Horizontal
15539.850	39.1	11.1	1.0	209.0	3.0	0.0	Horz	PK	0.0	50.2	74.0	-23.8	13dBm PWR, Ch 36, MCS15, Ant AB, EUT Horizontal
15539.910	39.1	11.1	3.2	110.0	3.0	0.0	Horz	PK	0.0	50.2	74.0	-23.8	13dBm PWR, Ch 36, 36Mbps, Ant B, EUT Horizontal
15540.390	39.1	11.1	1.0	336.0	3.0	0.0	Horz	PK	0.0	50.2	74.0	-23.8	13dBm PWR, Ch 36, 6Mbps, Ant B, EUT Horizontal
15540.390	39.1	11.1	2.9	317.0	3.0	0.0	Vert	PK	0.0	50.2	74.0	-23.8	13dBm PWR, Ch 36, MCS8, Ant AB, EUT Horizontal
15539.570	39.0	11.1	1.0	75.0	3.0	0.0	Vert	PK	0.0	50.1	74.0	-23.9	13dBm PWR, Ch 36, MCS0, Ant B, EUT Horizontal
15539.890	38.9	11.1	1.0	70.0	3.0	0.0	Horz	PK	0.0	50.0	74.0	-24.0	13dBm PWR, Ch 36, MCS0, Ant B, EUT Horizontal

UNWANTED EMISSIONS

Work Order:	MCSO1608	**Date:**	07/30/12		
Project:	None	**Temperature:**	25.1 °C		
Job Site:	EV01	**Humidity:**	48.9% RH		
Serial Number:	215622952	**Barometric Pres.:**	1021 mbar	**Tested by:**	Mark Baytan
EUT:	1516				
Configuration:	1				
Customer:	Microsoft Corporation				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting at 100% duty cycle, 802.11a				
Deviations:	No deviations.				
Comments:	See Comments below for Channel, EUT Orientation, Data rate, Power level, and Antenna chain.				

Test Specifications	**Test Method**
FCC 15.407:2012	ANSI C63.10:2009

Run #	107	**Test Distance (m)**	3	**Antenna Height(s)**	1-4m	**Results**	Pass



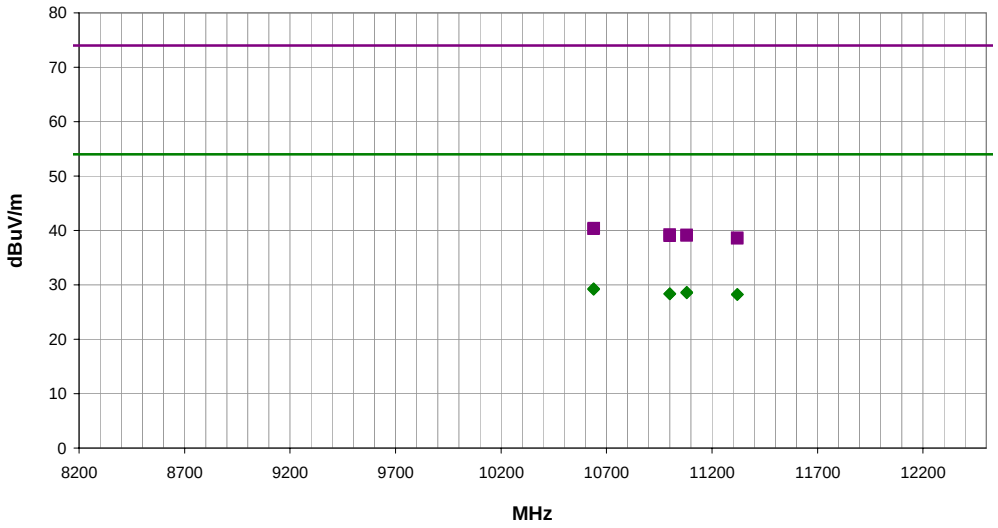
	Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments	
	15539.610	1.0	122.0	Vert	PK	4.65E-08	-43.3	-27.0	-16.3	13dBm PWR, Ch 36, 36Mbps, Ant B, EUT Horizontal	
	15539.760	1.0	341.0	Vert	PK	3.78E-08	-44.2	-27.0	-17.2	13dBm PWR, Ch 36, 54Mbps, Ant B, EUT Horizontal	
	15539.880	1.0	131.0	Vert	PK	3.78E-08	-44.2	-27.0	-17.2	13dBm PWR, Ch 36, MCS15, Ant AB, EUT Horizontal	
	15539.960	1.0	358.0	Horz	PK	3.37E-08	-44.7	-27.0	-17.7	13dBm PWR, Ch 36, MCS7, Ant B, EUT Horizontal	
	15539.570	1.1	159.0	Horz	PK	3.29E-08	-44.8	-27.0	-17.8	13dBm PWR, Ch 36, MCS8, Ant AB, EUT Horizontal	
	15539.570	1.0	250.0	Vert	PK	3.22E-08	-44.9	-27.0	-17.9	13dBm PWR, Ch 36, MCS7, Ant B, EUT Horizontal	
	15540.390	1.5	350.0	Horz	PK	3.22E-08	-44.9	-27.0	-17.9	13dBm PWR, Ch 36, 54Mbps, Ant B, EUT Horizontal	
	15539.760	1.0	35.0	Vert	PK	3.14E-08	-45.0	-27.0	-18.0	13dBm PWR, Ch 36, 6Mbps, Ant B, EUT Horizontal	
	15539.850	1.0	209.0	Horz	PK	3.14E-08	-45.0	-27.0	-18.0	13dBm PWR, Ch 36, MCS15, Ant AB, EUT Horizontal	
	15539.910	3.2	110.0	Horz	PK	3.14E-08	-45.0	-27.0	-18.0	13dBm PWR, Ch 36, 36Mbps, Ant B, EUT Horizontal	
	15540.390	1.0	336.0	Horz	PK	3.14E-08	-45.0	-27.0	-18.0	13dBm PWR, Ch 36, 6Mbps, Ant B, EUT Horizontal	
	15540.390	2.9	317.0	Vert	PK	3.14E-08	-45.0	-27.0	-18.0	13dBm PWR, Ch 36, MCS8, Ant AB, EUT Horizontal	
	15539.570	1.0	75.0	Vert	PK	3.07E-08	-45.1	-27.0	-18.1	13dBm PWR, Ch 36, MCS0, Ant B, EUT Horizontal	
	15539.890	1.0	70.0	Horz	PK	3.00E-08	-45.2	-27.0	-18.2	13dBm PWR, Ch 36, MCS0, Ant B, EUT Horizontal	

UNWANTED EMISSIONS

Work Order:	MCSO1608	**Date:**	07/31/12		
Project:	None	**Temperature:**	25.1 °C		
Job Site:	EV01	**Humidity:**	48.9% RH		
Serial Number:	215622952	**Barometric Pres.:**	1021 mbar	**Tested by:**	Mark Baytan
EUT:	1516				
Configuration:	1				
Customer:	Microsoft Corporation				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting at 100% duty cycle, 802.11a				
Deviations:	No deviations.				
Comments:	See Comments below for Channel, EUT Orientation, Data rate, Power level, and Antenna chain.				

Test Specifications	**Test Method**
FCC 15.209:2012	ANSI C63.10:2009

Run #	108	**Test Distance (m)**	3	**Antenna Height(s)**	1-4m	**Results**	Pass



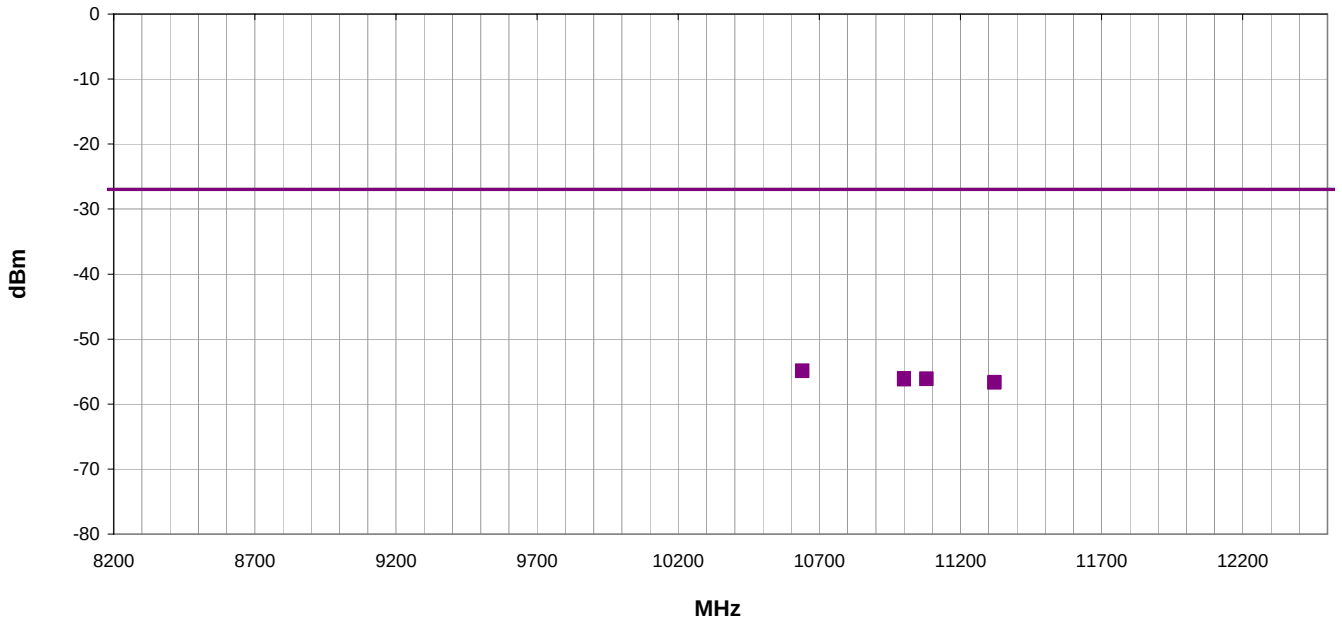
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
10639.520	41.1	-11.8	1.0	288.0	3.0	0.0	Vert	AV	0.0	29.3	54.0	-24.7	13dBm Pwr, CH60/64, MCS0, Ant A, EUT Horz
10639.510	41.0	-11.8	1.0	206.0	3.0	0.0	Horz	AV	0.0	29.2	54.0	-24.8	13dBm Pwr, CH60/64, MCS0, Ant A, EUT Horz
11080.430	38.6	-9.9	1.0	208.0	3.0	0.0	Horz	AV	0.0	28.7	54.0	-25.3	13dBm Pwr, CH108/112, MCS0, Ant A, EUT Horz
11080.320	38.5	-9.9	1.0	20.0	3.0	0.0	Vert	AV	0.0	28.6	54.0	-25.4	13dBm Pwr, CH108/112, MCS0, Ant A, EUT Horz
11000.500	38.9	-10.6	1.0	336.0	3.0	0.0	Vert	AV	0.0	28.3	54.0	-25.7	13dBm Pwr, CH100/104, MCS0, Ant A, EUT Horz
11000.420	38.9	-10.6	1.2	131.0	3.0	0.0	Horz	AV	0.0	28.3	54.0	-25.7	13dBm Pwr, CH100/104, MCS0, Ant A, EUT Horz
11319.980	36.3	-8.1	1.0	239.0	3.0	0.0	Horz	AV	0.0	28.2	54.0	-25.8	13dBm Pwr, CH132/136, MCS0, Ant A, EUT Horz
11319.560	36.3	-8.1	1.0	68.0	3.0	0.0	Vert	AV	0.0	28.2	54.0	-25.8	13dBm Pwr, CH132/136, MCS0, Ant A, EUT Horz
10640.190	52.2	-11.8	1.0	288.0	3.0	0.0	Vert	PK	0.0	40.4	74.0	-33.6	13dBm Pwr, CH60/64, MCS0, Ant A, EUT Horz
10639.500	52.1	-11.8	1.0	206.0	3.0	0.0	Horz	PK	0.0	40.3	74.0	-33.7	13dBm Pwr, CH60/64, MCS0, Ant A, EUT Horz
11000.380	49.8	-10.6	1.0	336.0	3.0	0.0	Vert	PK	0.0	39.2	74.0	-34.8	13dBm Pwr, CH100/104, MCS0, Ant A, EUT Horz
11079.880	49.1	-10.0	1.0	208.0	3.0	0.0	Horz	PK	0.0	39.1	74.0	-34.9	13dBm Pwr, CH108/112, MCS0, Ant A, EUT Horz
11079.670	49.0	-10.0	1.0	20.0	3.0	0.0	Vert	PK	0.0	39.0	74.0	-35.0	13dBm Pwr, CH108/112, MCS0, Ant A, EUT Horz
11000.470	49.6	-10.6	1.2	131.0	3.0	0.0	Horz	PK	0.0	39.0	74.0	-35.0	13dBm Pwr, CH100/104, MCS0, Ant A, EUT Horz
11320.450	46.7	-8.1	1.0	239.0	3.0	0.0	Horz	PK	0.0	38.6	74.0	-35.4	13dBm Pwr, CH132/136, MCS0, Ant A, EUT Horz
11319.550	46.6	-8.1	1.0	68.0	3.0	0.0	Vert	PK	0.0	38.5	74.0	-35.5	13dBm Pwr, CH132/136, MCS0, Ant A, EUT Horz

UNWANTED EMISSIONS

Work Order:	MCSO1608	**Date:**	07/31/12		
Project:	None	**Temperature:**	25.1 °C		
Job Site:	EV01	**Humidity:**	48.9% RH		
Serial Number:	215622952	**Barometric Pres.:**	1021 mbar	**Tested by:**	Mark Baytan
EUT:	1516				
Configuration:	1				
Customer:	Microsoft Corporation				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting at 100% duty cycle, 802.11a				
Deviations:	No deviations.				
Comments:	See Comments below for Channel, EUT Orientation, Data rate, Power level, and Antenna chain.				

Test Specifications	**Class B**	**Test Method**
FCC 15.407:2012		ANSI C63.10:2009

Run #	108	**Test Distance (m)**	3	**Antenna Height(s)**	1-4m	**Results**	Pass



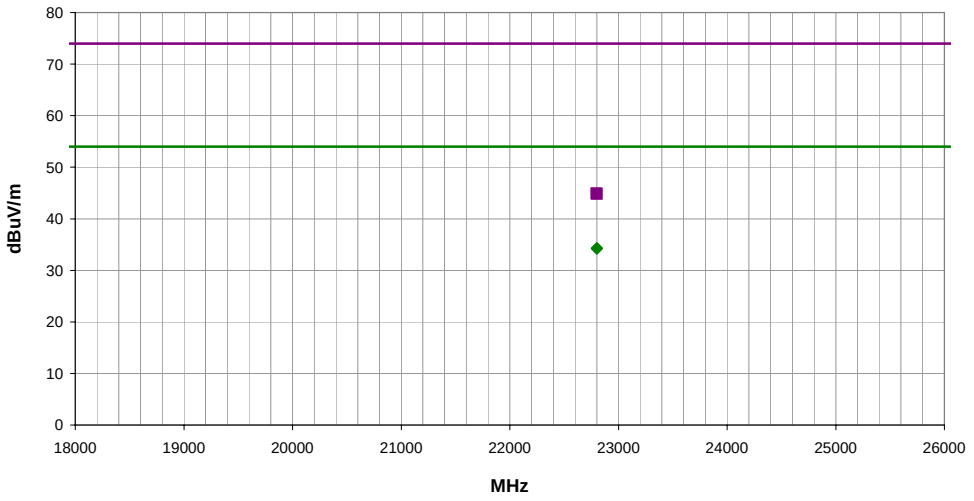
	Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments	
	10640.190	1.0	288.0	Vert	PK	3.28E-09	-54.8	-27.0	-27.8	13dBm Pwr, CH60/64, MCS0, Ant A, EUT Horz	
	10639.500	1.0	206.0	Horz	PK	3.20E-09	-54.9	-27.0	-27.9	13dBm Pwr, CH60/64, MCS0, Ant A, EUT Horz	
	11000.380	1.0	336.0	Vert	PK	2.51E-09	-56.0	-27.0	-29.0	13dBm Pwr, CH100/104, MCS0, Ant A, EUT Horz	
	11079.880	1.0	208.0	Horz	PK	2.47E-09	-56.1	-27.0	-29.1	13dBm Pwr, CH108/112, MCS0, Ant A, EUT Horz	
	11079.670	1.0	20.0	Vert	PK	2.41E-09	-56.2	-27.0	-29.2	13dBm Pwr, CH108/112, MCS0, Ant A, EUT Horz	
	11000.470	1.2	131.0	Horz	PK	2.40E-09	-56.2	-27.0	-29.2	13dBm Pwr, CH100/104, MCS0, Ant A, EUT Horz	
	11320.450	1.0	239.0	Horz	PK	2.19E-09	-56.6	-27.0	-29.6	13dBm Pwr, CH132/136, MCS0, Ant A, EUT Horz	
	11319.550	1.0	68.0	Vert	PK	2.14E-09	-56.7	-27.0	-29.7	13dBm Pwr, CH132/136, MCS0, Ant A, EUT Horz	

UNWANTED EMISSIONS

Work Order:	MCSO1608	**Date:**	07/31/12		
Project:	None	**Temperature:**	25.1 °C		
Job Site:	EV01	**Humidity:**	48.9% RH		
Serial Number:	215622952	**Barometric Pres.:**	1021 mbar	**Tested by:**	Mark Baytan
EUT:	1516				
Configuration:	1				
Customer:	Microsoft Corporation				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting at 100% duty cycle, 802.11a				
Deviations:	No deviations.				
Comments:	See Comments below for Channel, EUT Orientation, Data rate, Power level, and Antenna chain.				

Test Specifications	**Test Method**
FCC 15.209:2012	ANSI C63.10:2009

Run #	111	**Test Distance (m)**	3	**Antenna Height(s)**	1-4m	**Results**	Pass



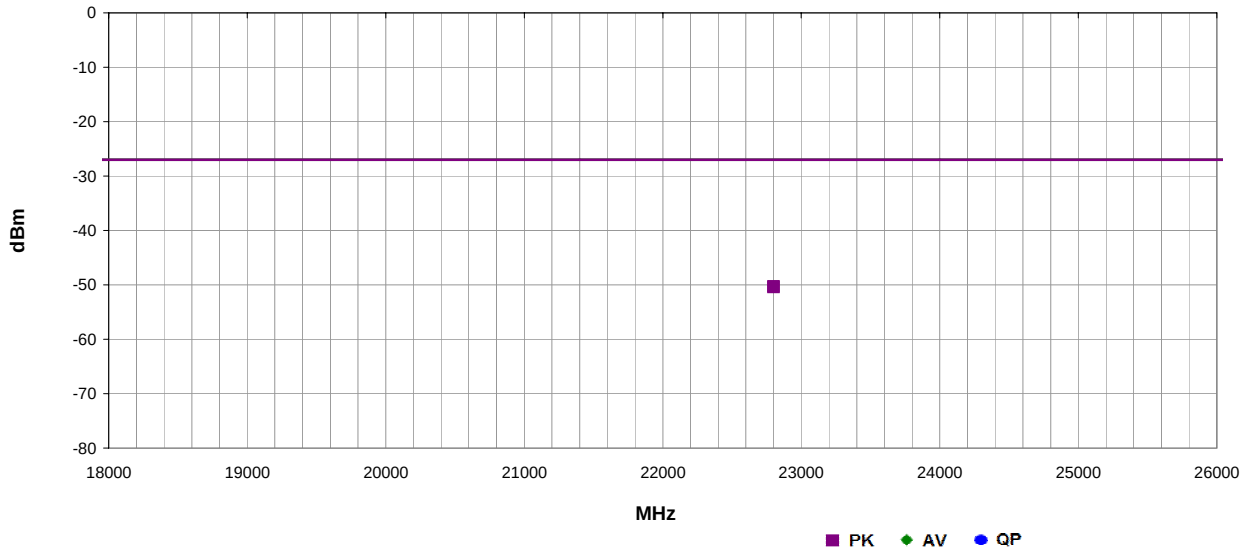
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
22800.260	41.1	-6.8	2.7	223.0	3.0	0.0	Vert	AV	0.0	34.3	54.0	-19.7	13dBm Pwr, CH140, 6Mbps, Ant A, EUT Horz
22800.480	41.0	-6.8	2.7	145.0	3.0	0.0	Horz	AV	0.0	34.2	54.0	-19.8	13dBm Pwr, CH140, 6Mbps, Ant A, EUT Horz
22799.540	51.7	-6.8	2.7	223.0	3.0	0.0	Vert	PK	0.0	44.9	74.0	-29.1	13dBm Pwr, CH140, 6Mbps, Ant A, EUT Horz
22799.920	51.6	-6.8	2.7	145.0	3.0	0.0	Horz	PK	0.0	44.8	74.0	-29.2	13dBm Pwr, CH140, 6Mbps, Ant A, EUT Horz

UNWANTED EMISSIONS

Work Order:	MCSO1608	**Date:**	07/31/12		
Project:	None	**Temperature:**	25.1 °C		
Job Site:	EV01	**Humidity:**	48.9% RH		
Serial Number:	215622952	**Barometric Pres.:**	1021 mbar	**Tested by:**	Mark Baytan
EUT:	1516				
Configuration:	1				
Customer:	Microsoft Corporation				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting at 100% duty cycle, 802.11a				
Deviations:	No deviations.				
Comments:	See Comments below for Channel, EUT Orientation, Data rate, Power level, and Antenna chain.				

Test Specifications	**Class B**	**Test Method**
FCC 15.407:2012		ANSI C63.10:2009

Run #	111	**Test Distance (m)**	3	**Antenna Height(s)**	1-4m	**Results**	Pass



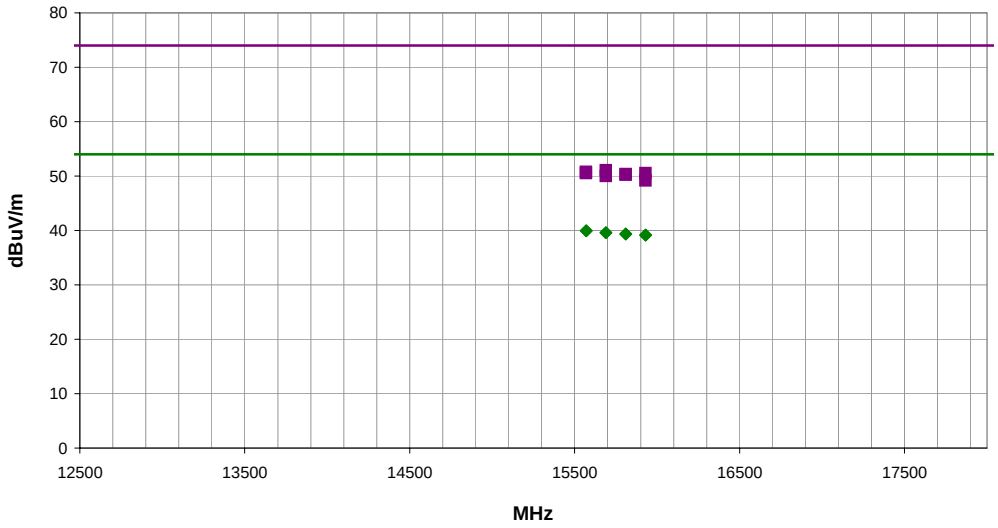
	Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments	
	22799.540	2.7	223.0	Vert	PK	9.31E-09	-50.3	-27.0	-23.3	13dBm Pwr, CH140, 6Mbps, Ant A, EUT Horz	
	22799.920	2.7	145.0	Horz	PK	9.10E-09	-50.4	-27.0	-23.4	13dBm Pwr, CH140, 6Mbps, Ant A, EUT Horz	

UNWANTED EMISSIONS

Work Order:	MCSO1608	**Date:**	08/01/12		
Project:	None	**Temperature:**	25.1 °C		
Job Site:	EV01	**Humidity:**	48.9% RH		
Serial Number:	215622952	**Barometric Pres.:**	1021 mbar	**Tested by:**	Mark Baytan
EUT:	1516				
Configuration:	1				
Customer:	Microsoft Corporation				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting at 100% duty cycle, 802.11a				
Deviations:	No deviations.				
Comments:	See Comments below for Channel, EUT Orientation, Data rate, Power level, and Antenna chain.				

Test Specifications	**Test Method**
FCC 15.209:2012	ANSI C63.10:2009

Run #	113	**Test Distance (m)**	3	**Antenna Height(s)**	1-4m	**Results**	Pass



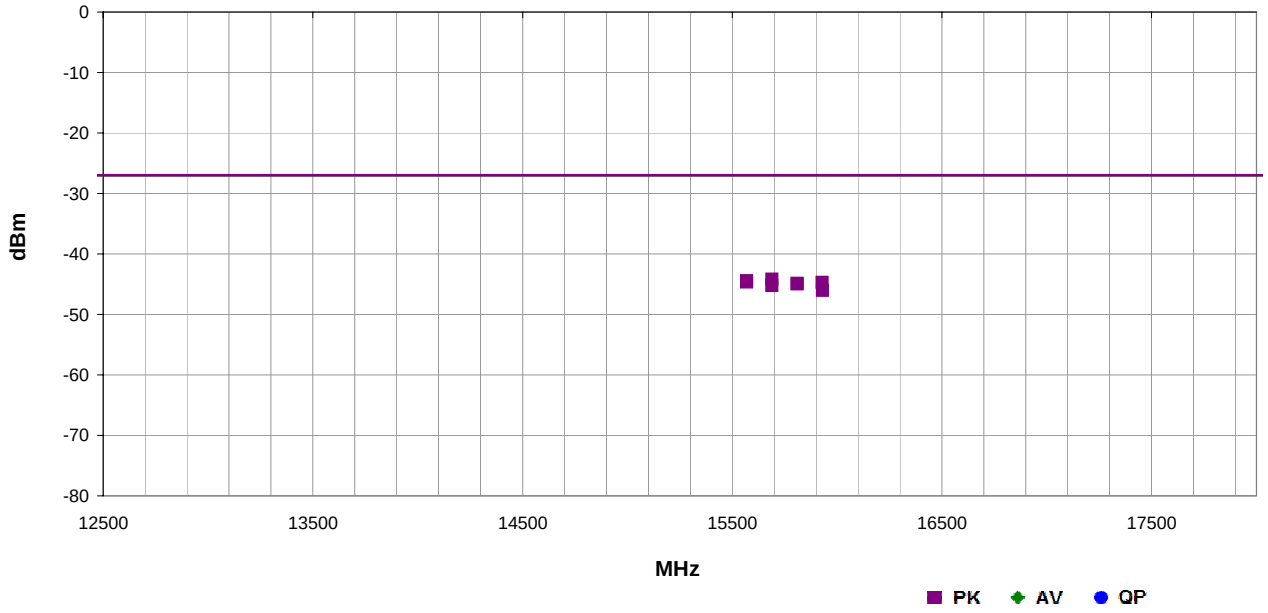
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
15569.660	28.9	11.1	3.6	184.0	3.0	0.0	Horz	AV	0.0	40.0	54.0	-14.0	11dBm Pwr, CH36/40, MCS0, Ant A, EUT Horz
15570.460	28.9	11.1	1.0	348.0	3.0	0.0	Vert	AV	0.0	40.0	54.0	-14.0	11dBm Pwr, CH36/40, MCS0, Ant A, EUT Horz
15689.910	28.7	10.9	2.1	131.0	3.0	0.0	Horz	AV	0.0	39.6	54.0	-14.4	11dBm Pwr, CH44/48, MCS0, Ant A, EUT Horz
15689.890	28.7	10.9	2.5	142.0	3.0	0.0	Vert	AV	0.0	39.6	54.0	-14.4	11dBm Pwr, CH44/48, MCS0, Ant A, EUT Horz
15810.240	28.5	10.9	1.0	119.0	3.0	0.0	Horz	AV	0.0	39.4	54.0	-14.6	11dBm Pwr, CH52/56, MCS0, Ant A, EUT Horz
15809.600	28.5	10.9	1.0	63.0	3.0	0.0	Vert	AV	0.0	39.4	54.0	-14.6	11dBm Pwr, CH52/56, MCS0, Ant A, EUT Horz
15929.750	28.2	11.0	3.0	1.0	3.0	0.0	Vert	AV	0.0	39.2	54.0	-14.8	11dBm Pwr, CH60/64, MCS0, Ant A, EUT Horz
15930.030	28.1	11.0	3.5	176.0	3.0	0.0	Horz	AV	0.0	39.1	54.0	-14.9	11dBm Pwr, CH60/64, MCS0, Ant A, EUT Horz
15689.960	40.2	10.9	2.5	142.0	3.0	0.0	Vert	PK	0.0	51.1	74.0	-22.9	11dBm Pwr, CH44/48, MCS0, Ant A, EUT Horz
15569.680	39.7	11.1	3.6	184.0	3.0	0.0	Horz	PK	0.0	50.8	74.0	-23.2	11dBm Pwr, CH36/40, MCS0, Ant A, EUT Horz
15569.670	39.5	11.1	1.0	348.0	3.0	0.0	Vert	PK	0.0	50.6	74.0	-23.4	11dBm Pwr, CH36/40, MCS0, Ant A, EUT Horz
15929.790	39.5	11.0	3.5	176.0	3.0	0.0	Horz	PK	0.0	50.5	74.0	-23.5	11dBm Pwr, CH60/64, MCS0, Ant A, EUT Horz
15809.760	39.5	10.9	1.0	63.0	3.0	0.0	Vert	PK	0.0	50.4	74.0	-23.6	11dBm Pwr, CH52/56, MCS0, Ant A, EUT Horz
15809.630	39.4	10.9	1.0	119.0	3.0	0.0	Horz	PK	0.0	50.3	74.0	-23.7	11dBm Pwr, CH52/56, MCS0, Ant A, EUT Horz
15689.850	39.1	10.9	2.1	131.0	3.0	0.0	Horz	PK	0.0	50.0	74.0	-24.0	11dBm Pwr, CH44/48, MCS0, Ant A, EUT Horz
15929.990	38.2	11.0	3.0	1.0	3.0	0.0	Vert	PK	0.0	49.2	74.0	-24.8	11dBm Pwr, CH60/64, MCS0, Ant A, EUT Horz

UNWANTED EMISSIONS

Work Order:	MCSO1608	**Date:**	08/01/12		
Project:	None	**Temperature:**	25.1 °C		
Job Site:	EV01	**Humidity:**	48.9% RH		
Serial Number:	215622952	**Barometric Pres.:**	1021 mbar	**Tested by:**	Mark Baytan
EUT:	1516				
Configuration:	1				
Customer:	Microsoft Corporation				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting at 100% duty cycle, 802.11a				
Deviations:	No deviations.				
Comments:	See Comments below for Channel, EUT Orientation, Data rate, Power level, and Antenna chain.				

Test Specifications	**Test Method**
FCC 15.407:2012	ANSI C63.10:2009

Run #	113	**Test Distance (m)**	3	**Antenna Height(s)**	1-4m	**Results**	Pass



	Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments	
	15689.960	2.5	142.0	Vert	PK	3.84E-08	-44.2	-27.0	-17.2	11dBm Pwr, CH44/48, MCS0, Ant A, EUT Horz	
	15569.680	3.6	184.0	Horz	PK	3.57E-08	-44.5	-27.0	-17.5	11dBm Pwr, CH36/40, MCS0, Ant A, EUT Horz	
	15569.670	1.0	348.0	Vert	PK	3.41E-08	-44.7	-27.0	-17.7	11dBm Pwr, CH36/40, MCS0, Ant A, EUT Horz	
	15929.790	3.5	176.0	Horz	PK	3.37E-08	-44.7	-27.0	-17.7	11dBm Pwr, CH60/64, MCS0, Ant A, EUT Horz	
	15809.760	1.0	63.0	Vert	PK	3.26E-08	-44.9	-27.0	-17.9	11dBm Pwr, CH52/56, MCS0, Ant A, EUT Horz	
	15809.630	1.0	119.0	Horz	PK	3.18E-08	-45.0	-27.0	-18.0	11dBm Pwr, CH52/56, MCS0, Ant A, EUT Horz	
	15689.850	2.1	131.0	Horz	PK	2.98E-08	-45.3	-27.0	-18.3	11dBm Pwr, CH44/48, MCS0, Ant A, EUT Horz	
	15929.990	3.0	1.0	Vert	PK	2.50E-08	-46.0	-27.0	-19.0	11dBm Pwr, CH60/64, MCS0, Ant A, EUT Horz	

Frequency Stability

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
Humidity Temperature Meter	Omegaette	HH311	DTY	3/29/2011	24
40GHz DC Block	Miteq	DCB4000	AMD	6/25/2012	12
Chamber, Temp./Humidity Chamber	Cincinnati Sub Zero (CSZ)	ZH-32-2-2-H/AC	TBA	NCR	0
EV06 Direct Connect Cable	ESM Cable Corp.	TT	ECA	NCR	0
Attenuator 20 dB, SMA M/F 26GHz	S.M. Electronics	SA26B-20	AUY	8/2/2011	12
Multimeter	Tektronix	DMM912	MMH	1/28/2011	24
DC Power Supply	Topward	TPS-2000	TPD	NCR	0
MXG Vector Signal Generator	Agilent	N5182A	TIF	NCR	0
Attenuator, 6dB	S.M. Electronics	18N-06	AWN	3/26/2012	12
Power Meter	Gigatronics	8651A	SPM	1/9/2012	24
Power Sensor	Gigatronics	80701A	SPL	7/8/2011	24
Spectrum Analyzer	Agilent	E4440	AFE	1/23/2012	12

MEASUREMENT UNCERTAINTY

A measurement uncertainty estimation has been performed for each test per our internal quality document WP 342. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty for radiated emissions measurements is less than +/- 4 dB, and for conducted emissions measurements is less than +/- 2.7 dB. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for measurement uncertainty are available upon request.

TEST DESCRIPTION

Variation of Supply Voltage

The primary supply voltage was varied from 85 % to 115% of the nominal voltage

Variation of Ambient Temperature
Using a temperature chamber, the transmit frequency was recorded at the extremes of the specified temperature range (-30 ° to +50° C) and at 10°C intervals.

A direct connect measurement was made between the EUT's antenna cable and a spectrum analyzer. The spectrum analyzer is equipped with a precision frequency reference that exceeds the stability requirement of the EUT. Measurements were made at the mid channel of each band to determine frequency stability. If the frequency variation is less than 100 ppm, the EUT will meet the requirement of 15.407(g), that the emissions are maintained within the band of operation.

Based on 85% voltage (10.3volts) low side and 115% voltage (13.9volts) high side that was requested, the variation in supply voltage was limited to 10.6 volts low side and 13.5 volts high side due to a system off condition that was achie

Extreme tempuratures under 0°C and over 40°C caused an extreme tempurature system off condition with the EUT

The power levels used while under test were 11dBm for 5GHz frequencies with a 40MHz bandwidth, 12dBm for 5GHz frequencies with a 20MHz bandwidth.

Frequency Stability

EUT:	1516			**Work Order:**	MCSO1601
Serial Number:	000309122652			**Date:**	07/24/12
Customer:	Microsoft Corporation			**Temperature:**	21°C
Attendees:	None			**Humidity:**	53%
Project:	None			**Barometric Pres.:**	1017
Tested by:	Brandon Hobbs	**Power:**	12VDC	**Job Site:**	EV06

TEST SPECIFICATIONS	Test Method
FCC 15.407:2012	ANSI C63.10:2009

COMMENTS

The EUT was tested while operating at 100% duty cycle

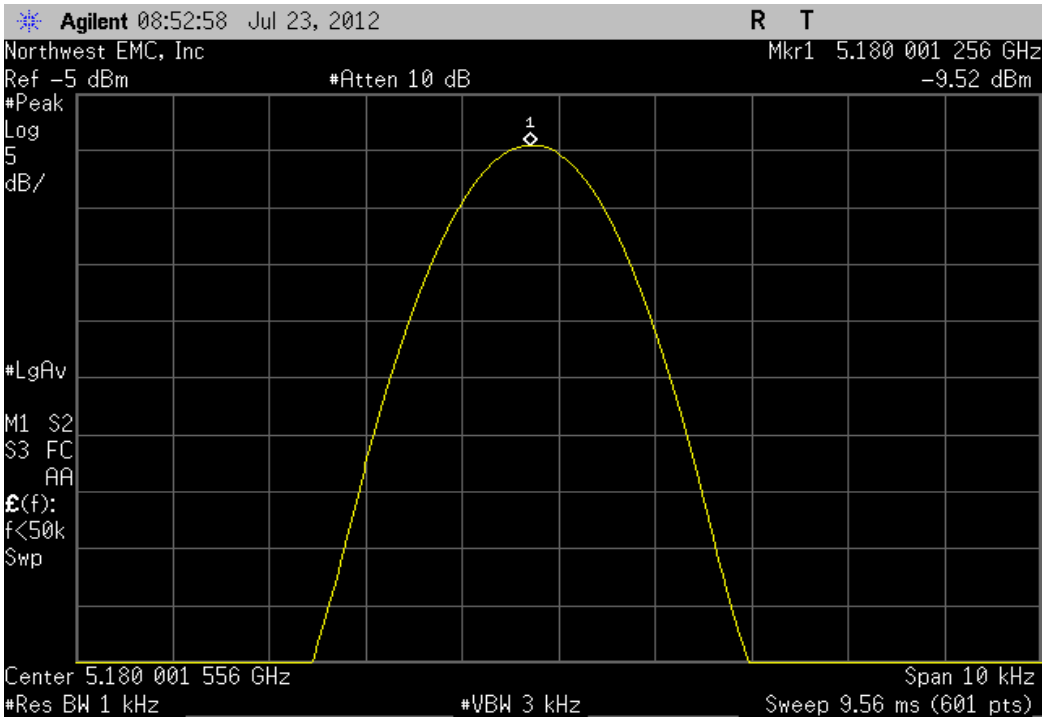
DEVIATIONS FROM TEST STANDARD

None

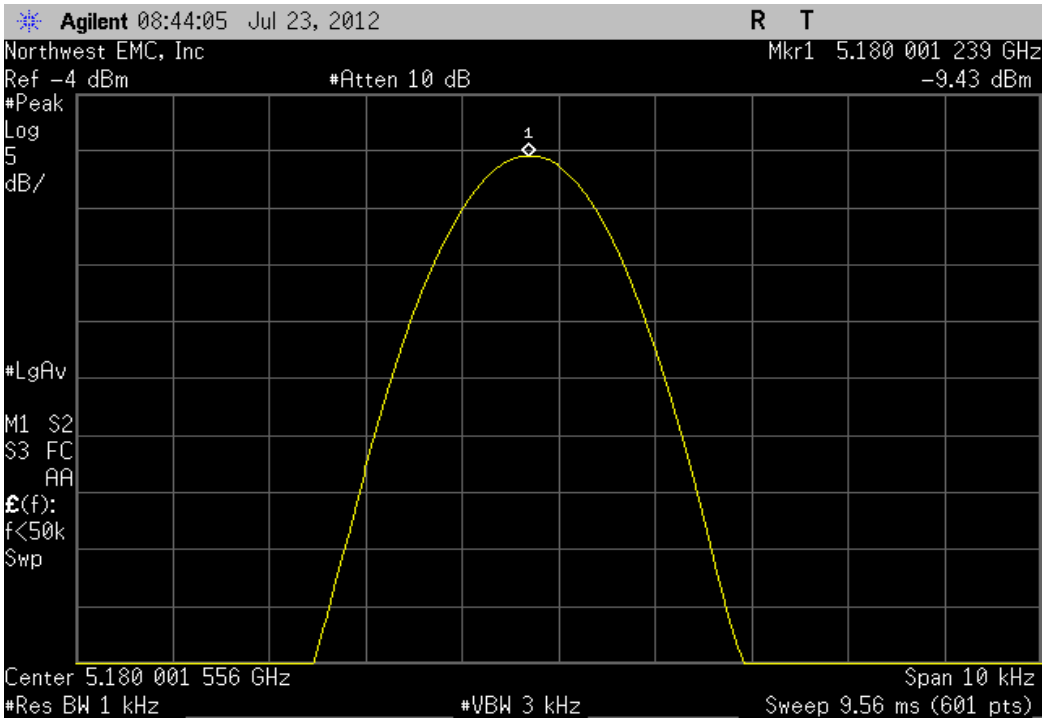
Configuration #	2	Signature

	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
5150 MHz - 5250 MHz - Low Channel, 5180 MHz					
Voltage: 115%	5180.001256	5180	0.24	100	Pass
Voltage: 100%	5180.001239	5180	0.24	100	Pass
Voltage: 85%	5180.001206	5180	0.23	100	Pass
Temperature: +50°	5180	5180	0	100	Pass
Temperature: +40°	5180.000954	5180	0.18	100	Pass
Temperature: +30°	5180.001387	5180	0.27	100	Pass
Temperature: +20°	5180.000366	5180	0.07	100	Pass
Temperature: +10°	5179.999484	5180	0.1	100	Pass
Temperature: 0°	5179.999667	5180	0.06	100	Pass
Temperature: -10°	5180	5180	0	100	Pass
Temperature: -20°	5180	5180	0	100	Pass
Temperature: -30°	5180	5180	0	100	Pass
5250 MHz - 5350 MHz - High Channel, 5320 MHz					
Voltage: 115%	5320.001326	5320	0.25	100	Pass
Voltage: 100%	5320.00129	5320	0.24	100	Pass
Voltage: 85%	5320.001274	5320	0.24	100	Pass
Temperature: +50°	5320	5320	0	100	Pass
Temperature: +40°	5320.000906	5320	0.17	100	Pass
Temperature: +30°	5320.001343	5320	0.25	100	Pass
Temperature: +20°	5320.000323	5320	0.06	100	Pass
Temperature: +10°	5319.999452	5320	0.1	100	Pass
Temperature: 0°	5319.999671	5320	0.06	100	Pass
Temperature: -10°	5320	5320	0	100	Pass
Temperature: -20°	5320	5320	0	100	Pass
Temperature: -30°	5320	5320	0	100	Pass
5470 MHz - 5725 MHz - Low Channel, 5500 MHz					
Voltage: 115%	5500.001336	5500	0.24	100	Pass
Voltage: 100%	5500.001302	5500	0.24	100	Pass
Voltage: 85%	5500.001302	5500	0.24	100	Pass
Temperature: +50°	5500	5500	0	100	Pass
Temperature: +40°	5500.000968	5500	0.18	100	Pass
Temperature: +30°	5500.001419	5500	0.26	100	Pass
Temperature: +20°	5500.000351	5500	0.06	100	Pass
Temperature: +10°	5499.999467	5500	0.1	100	Pass
Temperature: 0°	5499.999684	5500	0.06	100	Pass
Temperature: -10°	5500	5500	0	100	Pass
Temperature: -20°	5500	5500	0	100	Pass
Temperature: -30°	5500	5500	0	100	Pass
5470 MHz - 5725 MHz - High Channel, 5700 MHz					
Voltage: 115%	5700.001378	5700	0.24	100	Pass
Voltage: 100%	5700.001378	5700	0.24	100	Pass
Voltage: 85%	5700.00134	5700	0.24	100	Pass
Temperature: +50°	5700	5700	0	100	Pass
Temperature: +40°	5700.001007	5700	0.18	100	Pass
Temperature: +30°	5700.00149	5700	0.26	100	Pass
Temperature: +20°	5700.000256	5700	0.04	100	Pass
Temperature: +10°	5699.999369	5700	0.11	100	Pass
Temperature: 0°	5699.999686	5700	0.06	100	Pass
Temperature: -10°	5700	5700	0	100	Pass
Temperature: -20°	5700	5700	0	100	Pass
Temperature: -30°	5700	5700	0	100	Pass

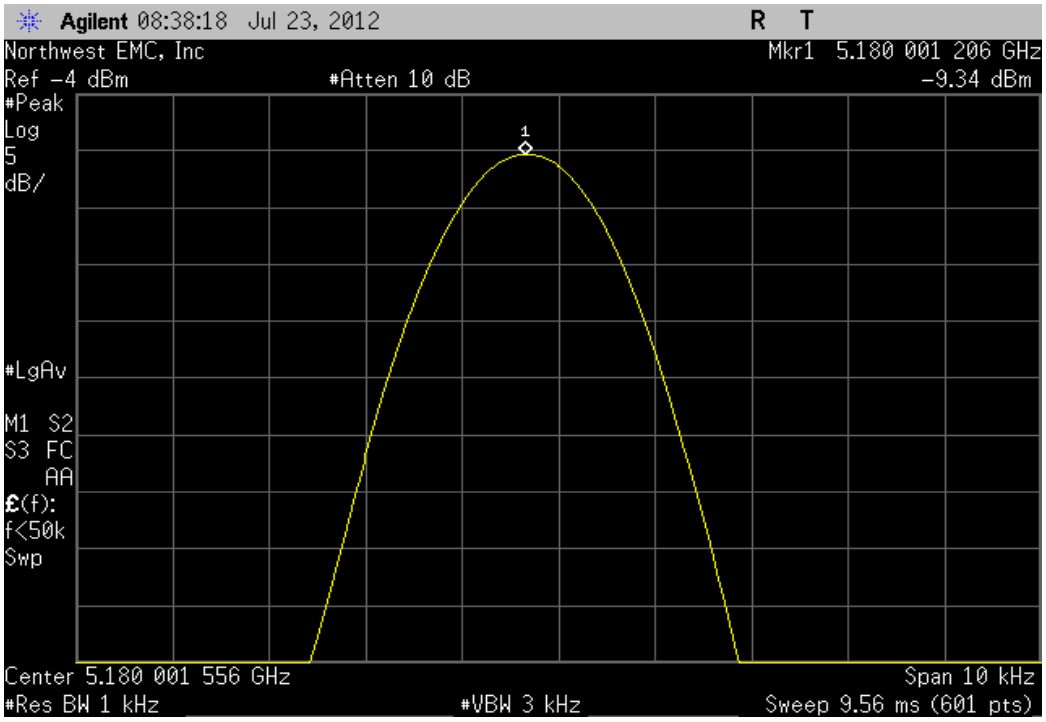
5150 MHz - 5250 MHz - Low Channel, 5180 MHz, Voltage: 115%						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		5180.001256	5180	0.24	100	Pass



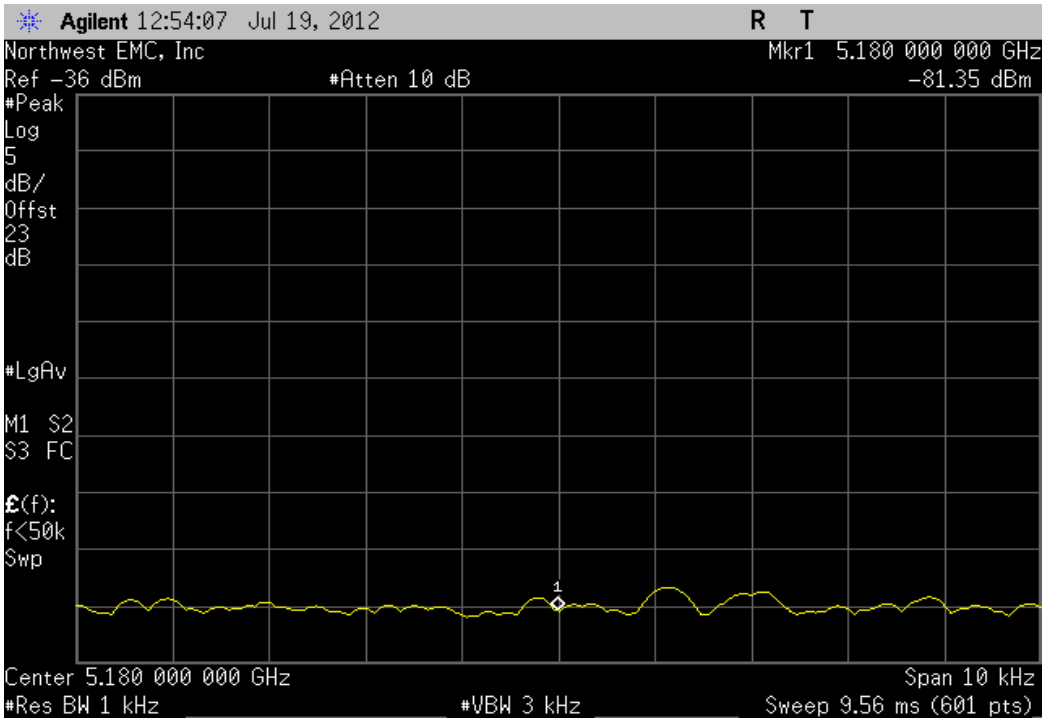
5150 MHz - 5250 MHz - Low Channel, 5180 MHz, Voltage: 100%						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		5180.001239	5180	0.24	100	Pass



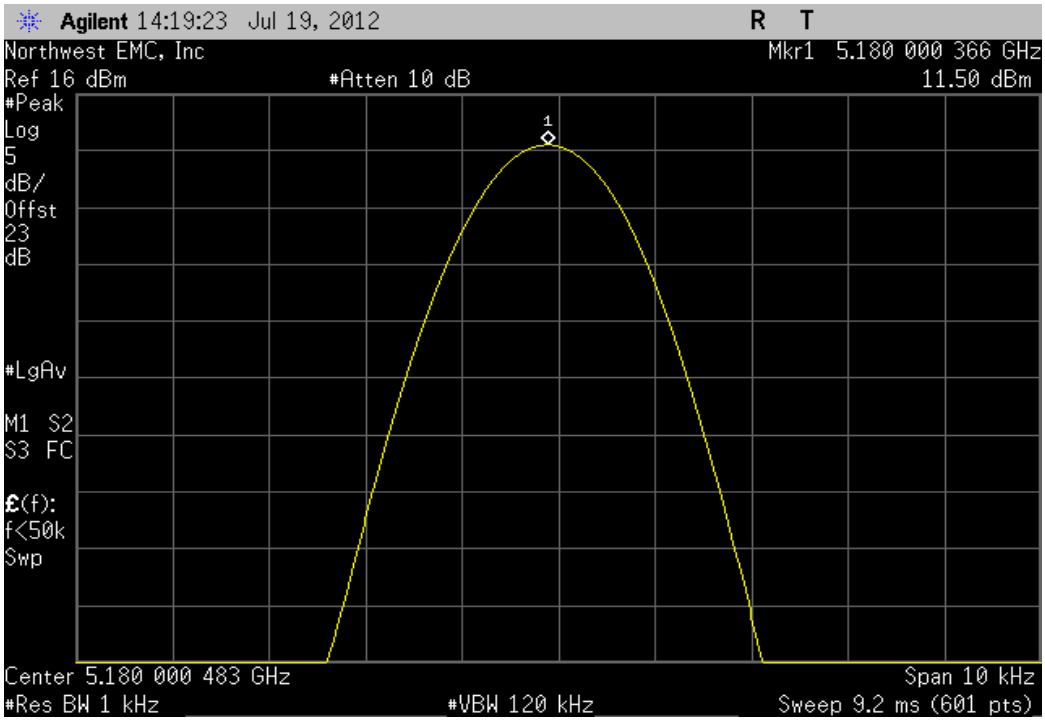
5150 MHz - 5250 MHz - Low Channel, 5180 MHz, Voltage: 85%						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		5180.001206	5180	0.23	100	Pass



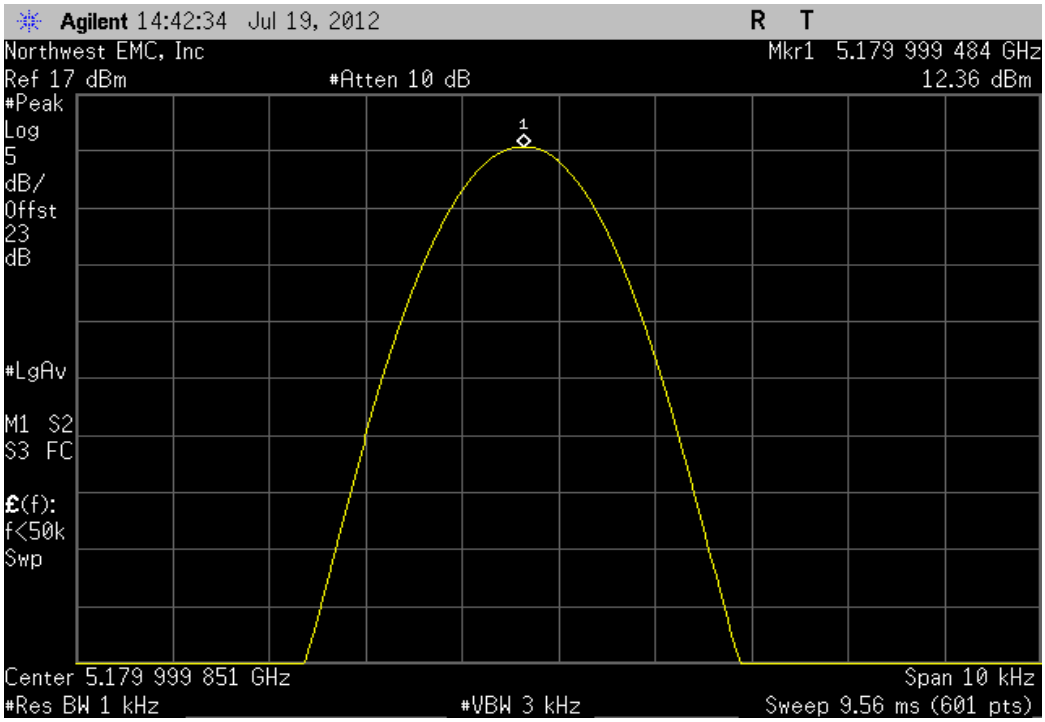
5150 MHz - 5250 MHz - Low Channel, 5180 MHz, Temperature: +50°						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		5180	5180	0	100	Pass



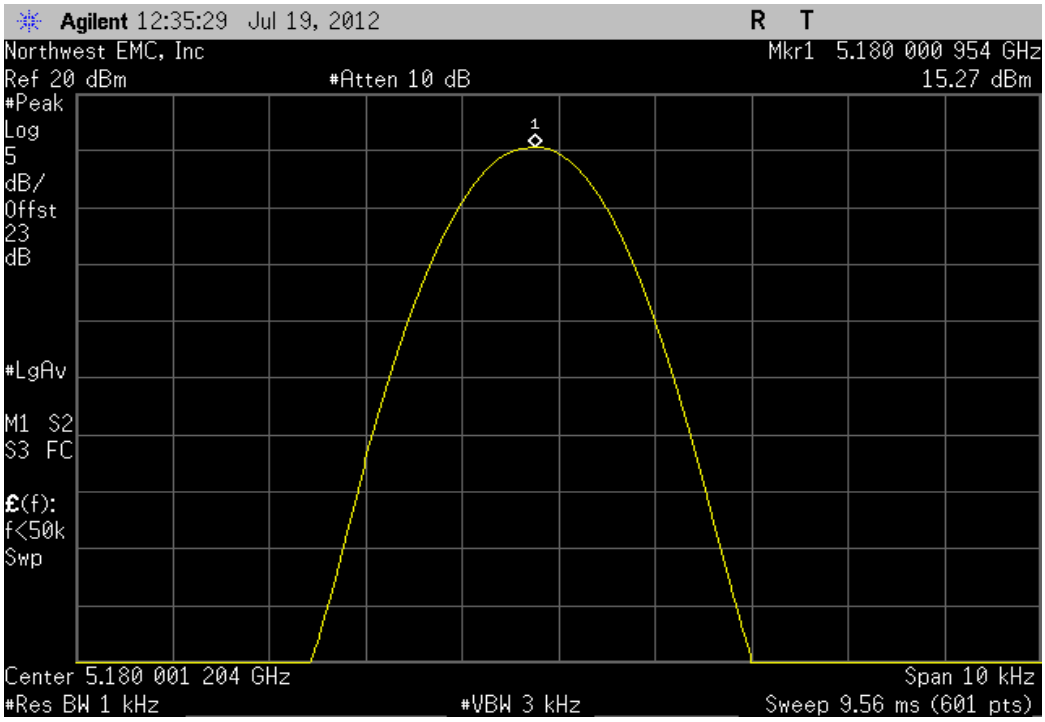
5150 MHz - 5250 MHz - Low Channel, 5180 MHz, Temperature: +20°						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		5180.000366	5180	0.07	100	Pass



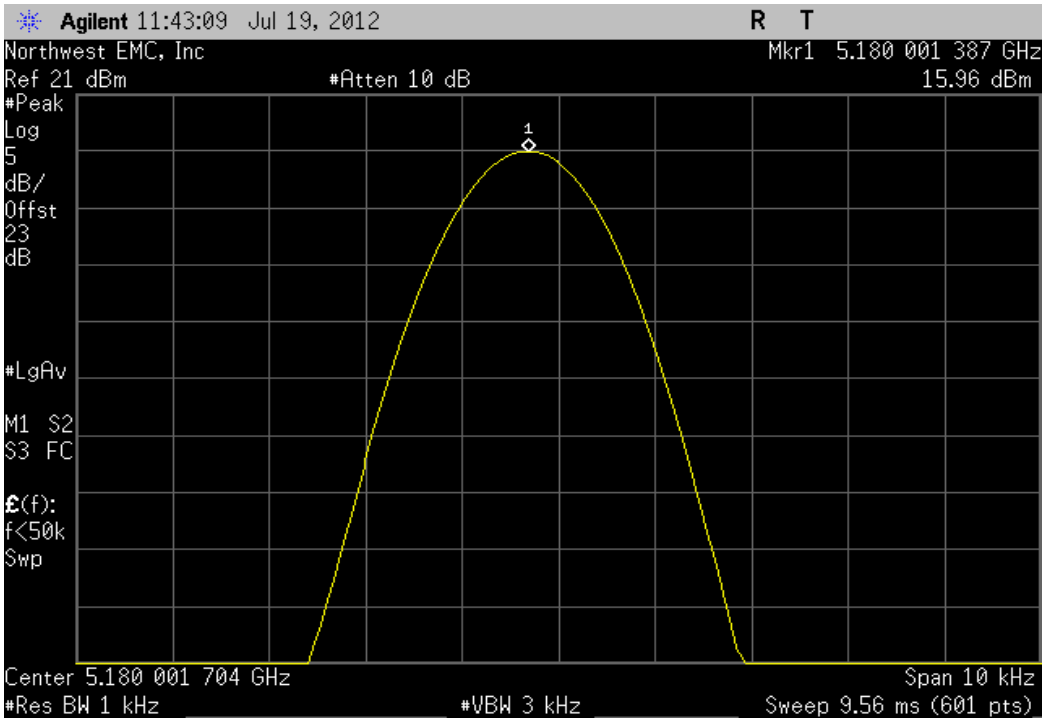
5150 MHz - 5250 MHz - Low Channel, 5180 MHz, Temperature: +10°						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		5179.999484	5180	0.1	100	Pass



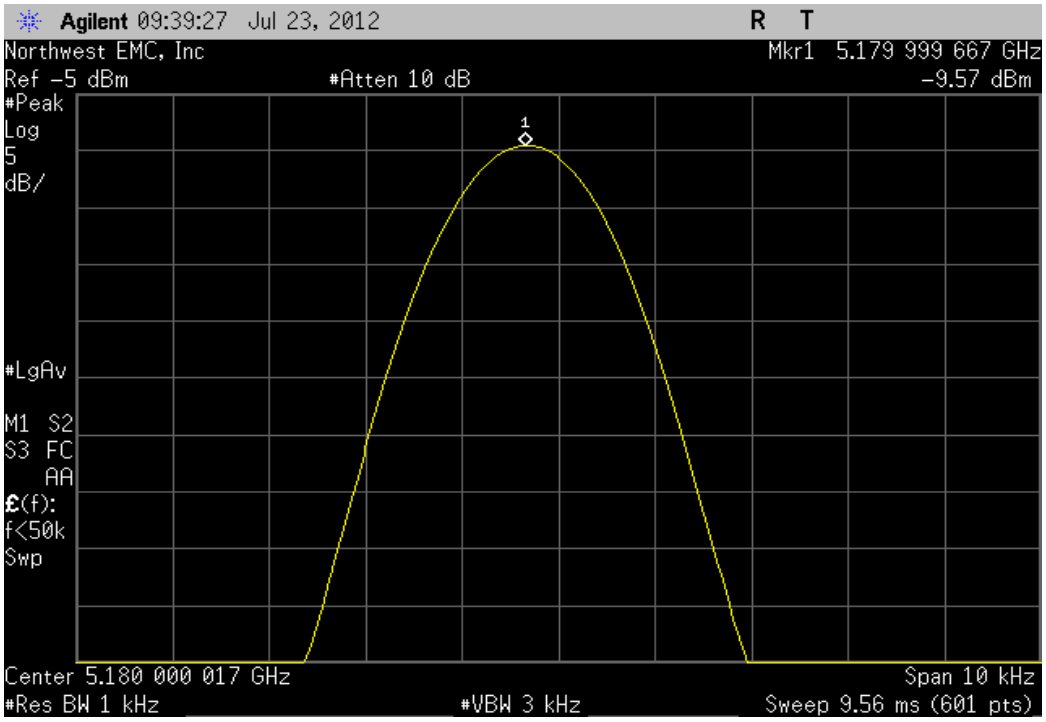
5150 MHz - 5250 MHz - Low Channel, 5180 MHz, Temperature: +40°						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		5180.000954	5180	0.18	100	Pass



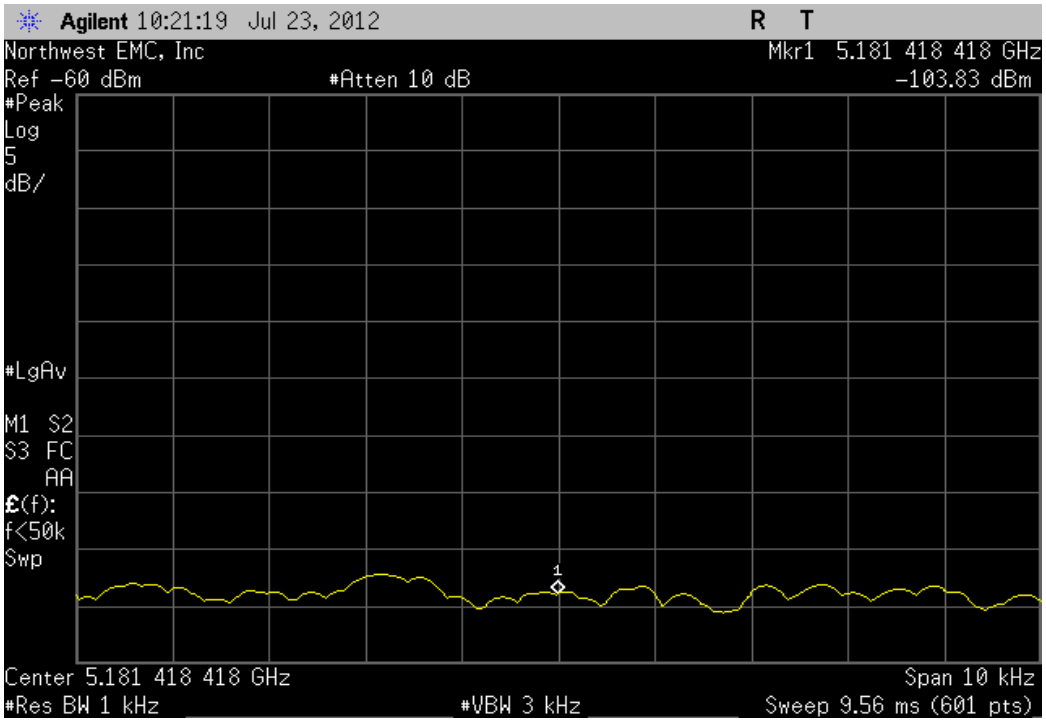
5150 MHz - 5250 MHz - Low Channel, 5180 MHz, Temperature: +30°						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		5180.001387	5180	0.27	100	Pass



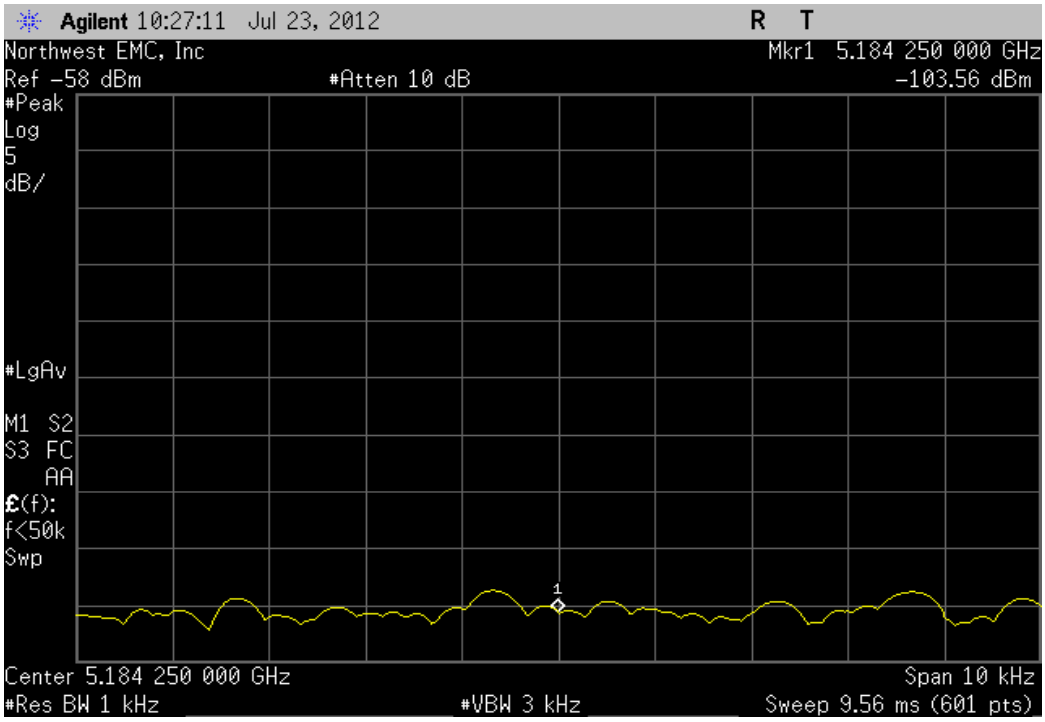
5150 MHz - 5250 MHz - Low Channel, 5180 MHz, Temperature: 0°						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		5179.999667	5180	0.06	100	Pass



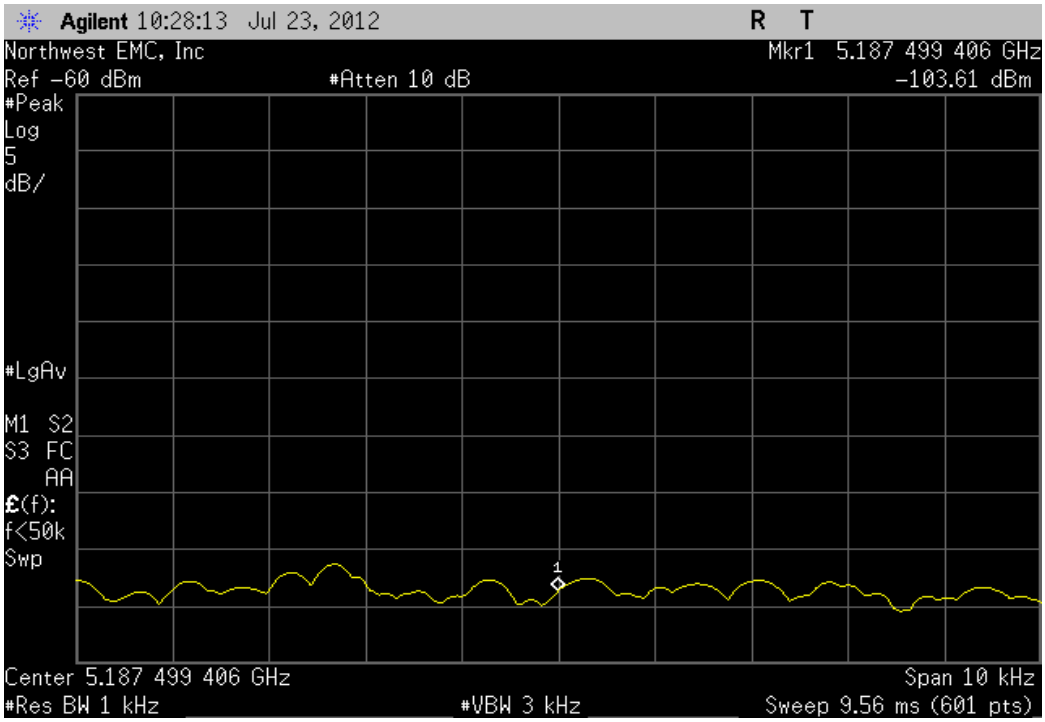
5150 MHz - 5250 MHz - Low Channel, 5180 MHz, Temperature: -10°						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		5180	5180	0	100	Pass



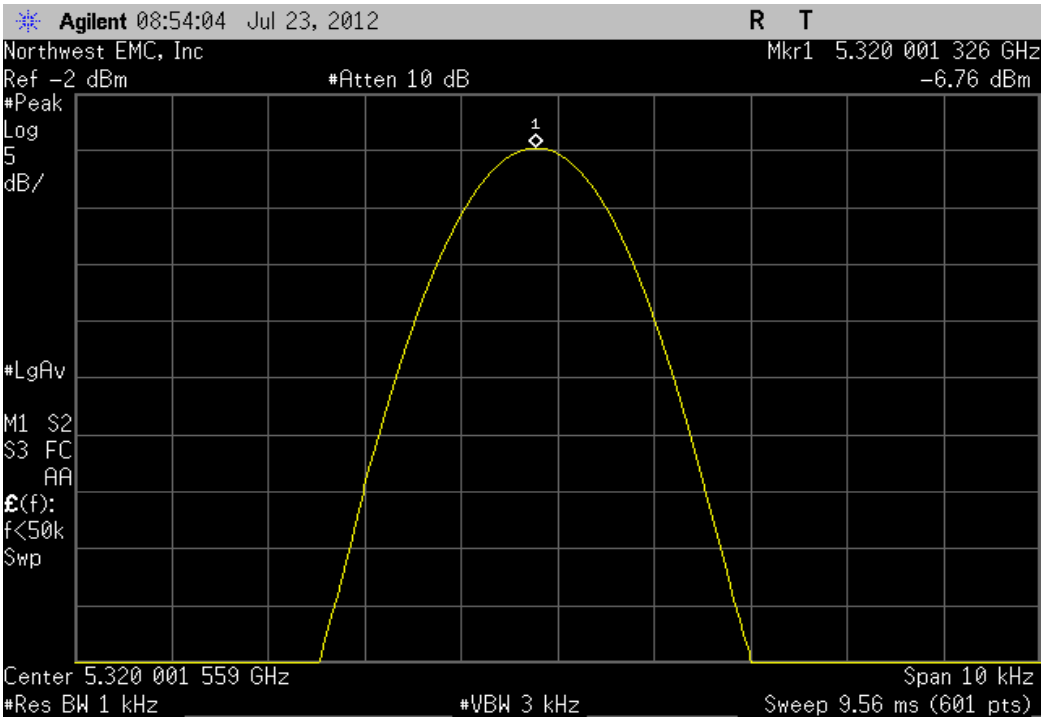
5150 MHz - 5250 MHz - Low Channel, 5180 MHz, Temperature: -20°						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		5180	5180	0	100	Pass



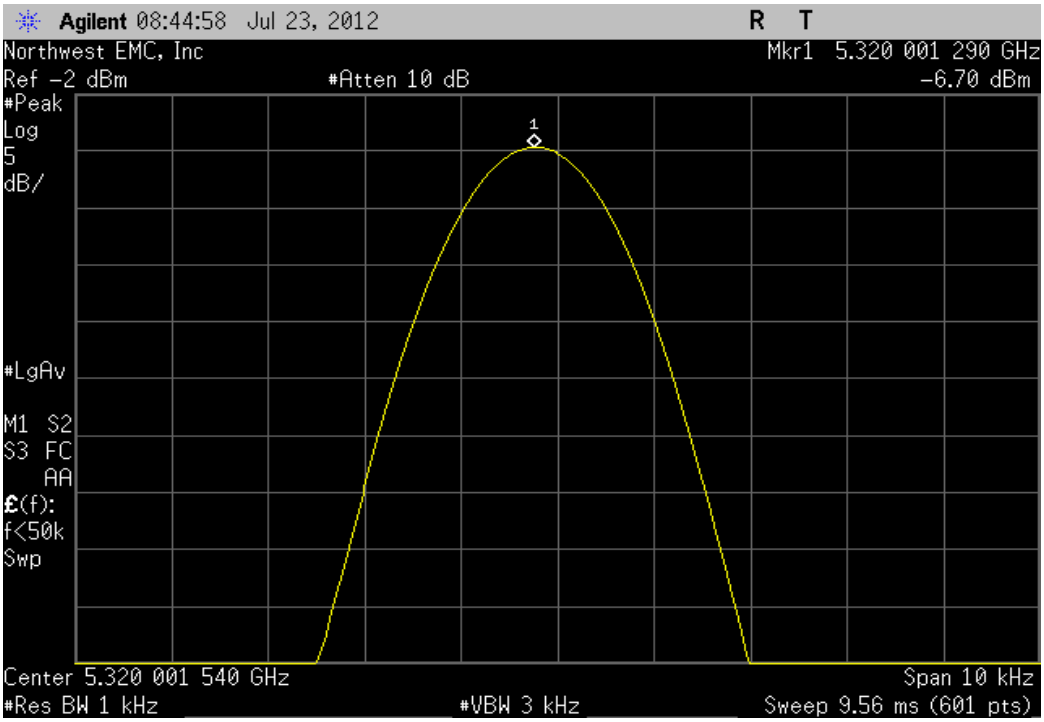
5150 MHz - 5250 MHz - Low Channel, 5180 MHz, Temperature: -30°						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		5180	5180	0	100	Pass



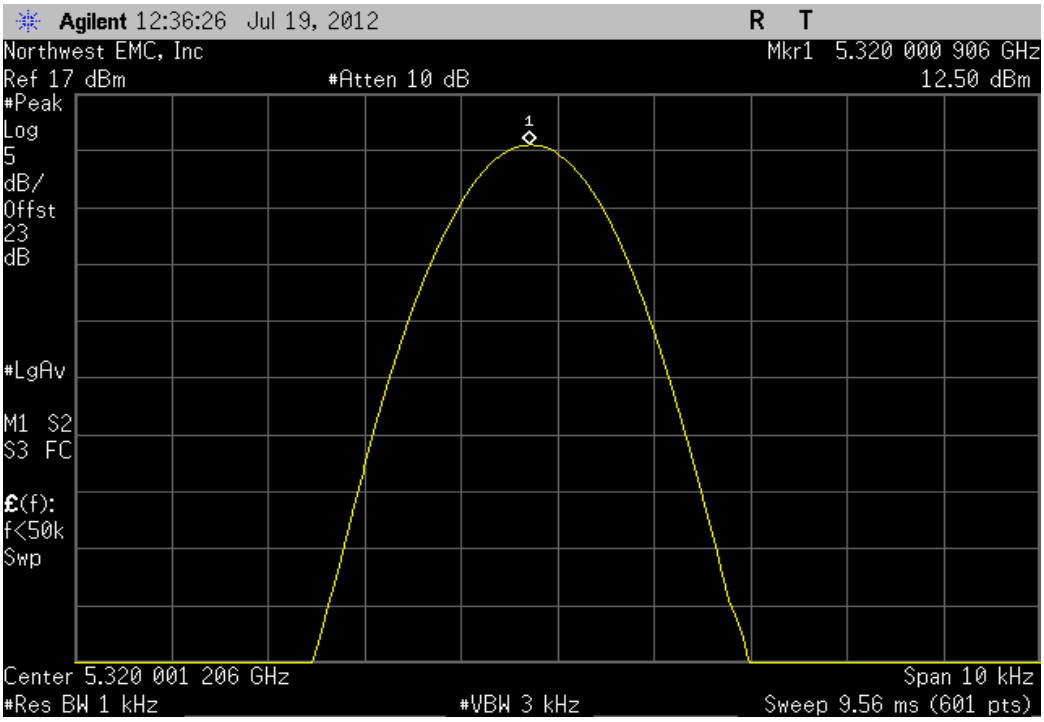
5250 MHz - 5350 MHz - High Channel, 5320 MHz, Voltage: 115%						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		5320.001326	5320	0.25	100	Pass



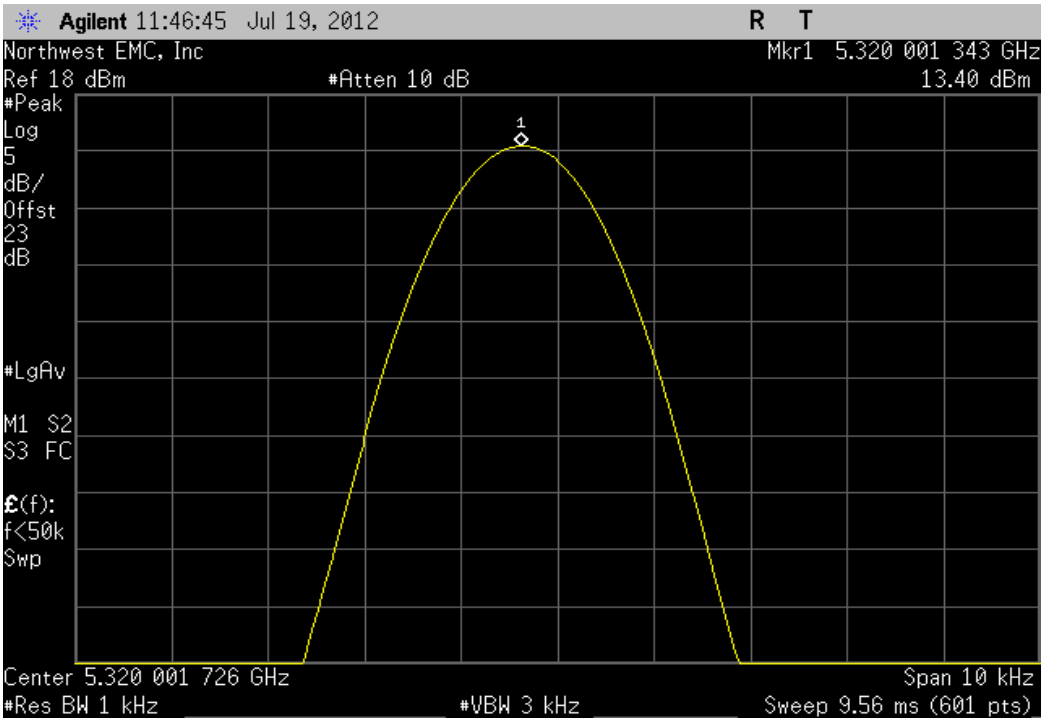
5250 MHz - 5350 MHz - High Channel, 5320 MHz, Voltage: 100%						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		5320.00129	5320	0.24	100	Pass



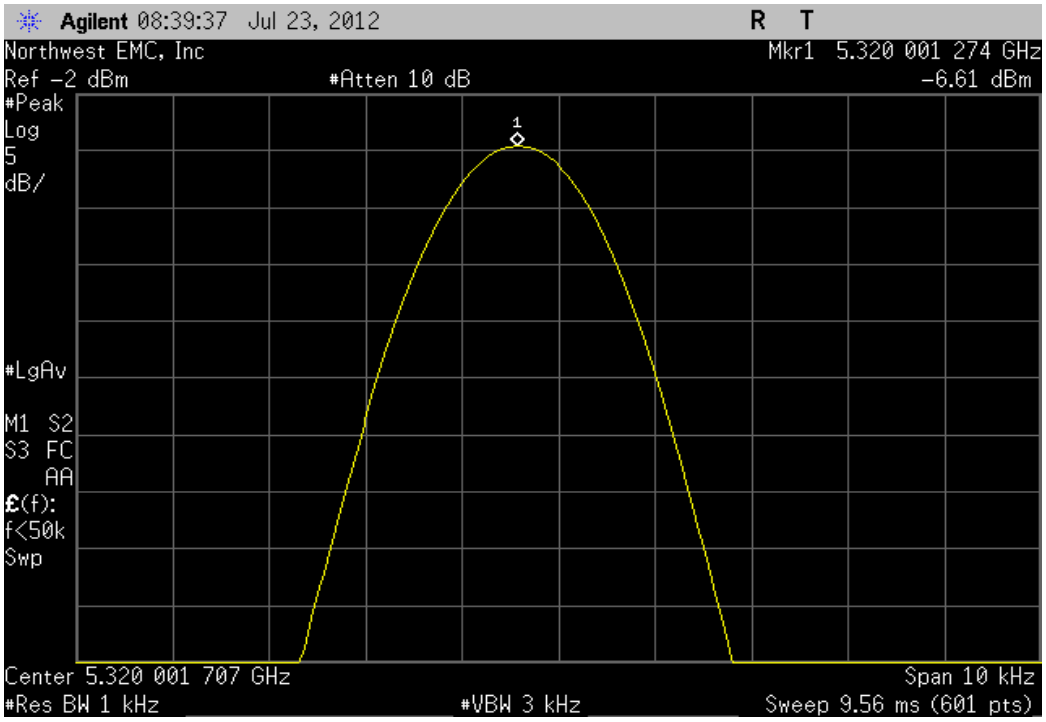
5250 MHz - 5350 MHz - High Channel, 5320 MHz, Temperature: +40°						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		5320.000906	5320	0.17	100	Pass



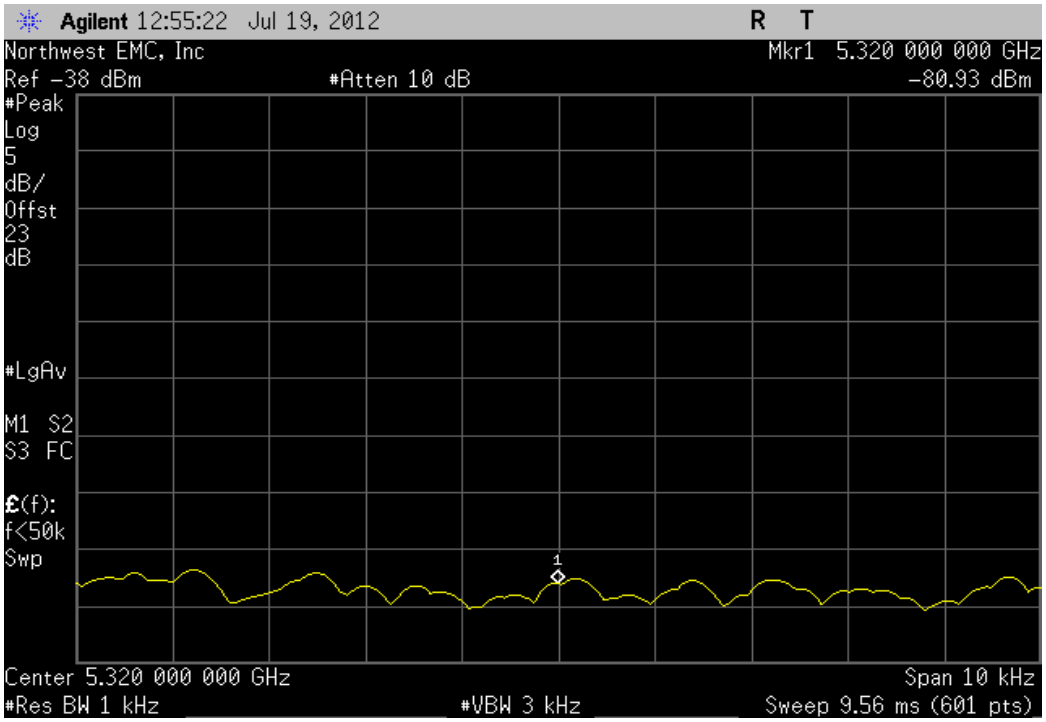
5250 MHz - 5350 MHz - High Channel, 5320 MHz, Temperature: +30°						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		5320.001343	5320	0.25	100	Pass



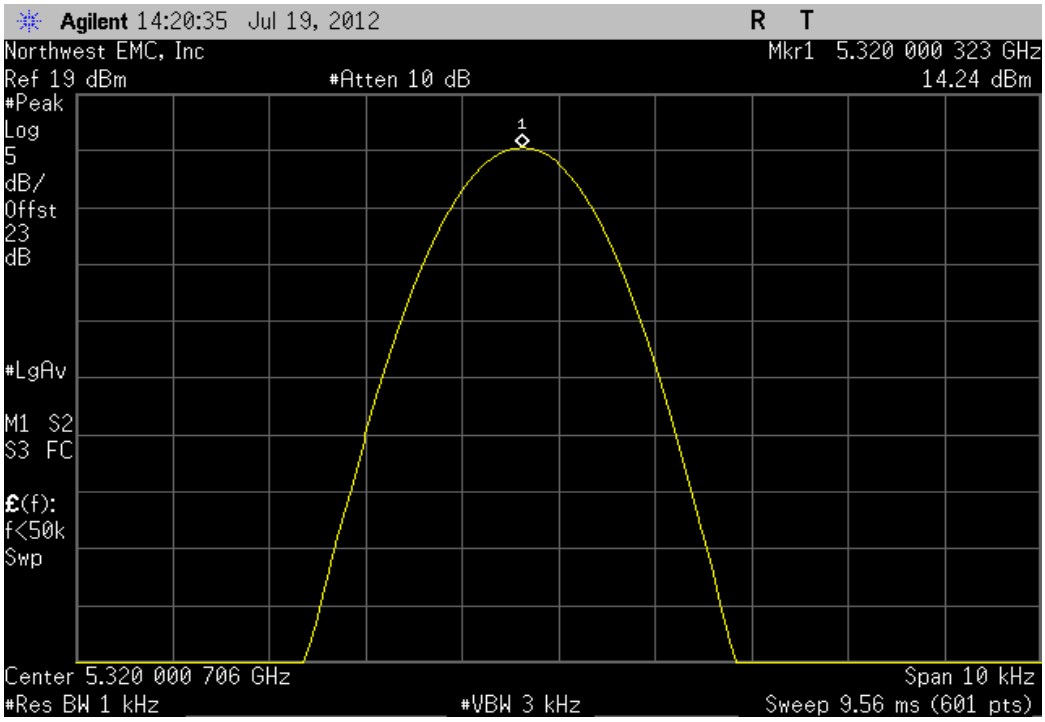
5250 MHz - 5350 MHz - High Channel, 5320 MHz, Voltage: 85%						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		5320.001274	5320	0.24	100	Pass



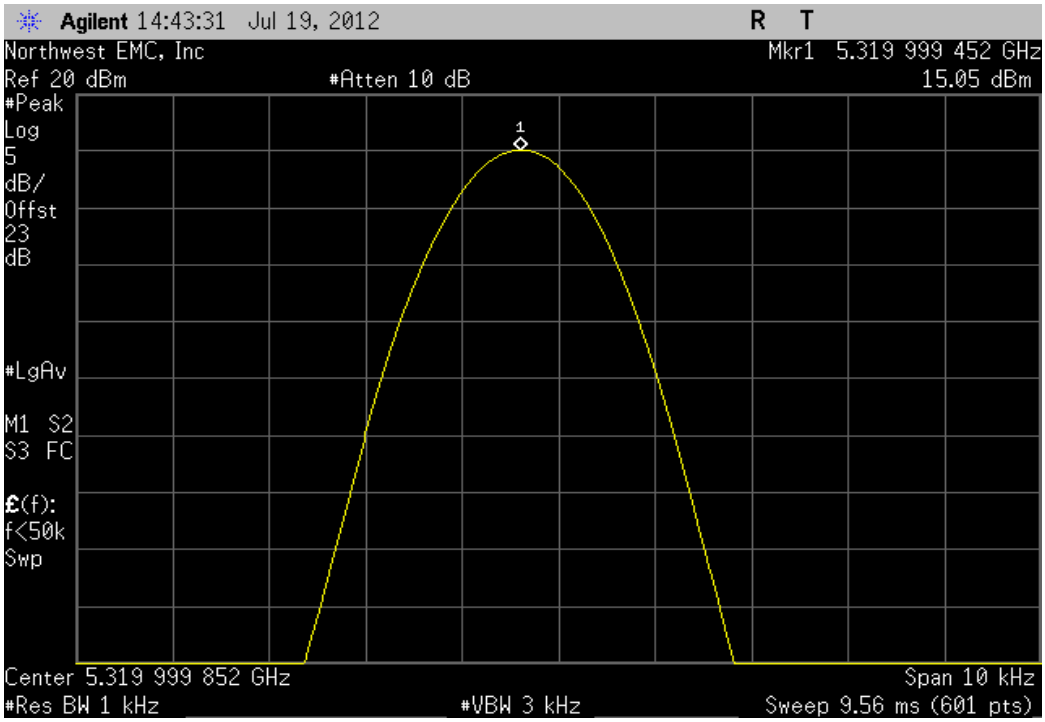
5250 MHz - 5350 MHz - High Channel, 5320 MHz, Temperature: +50°						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		5320	5320	0	100	Pass



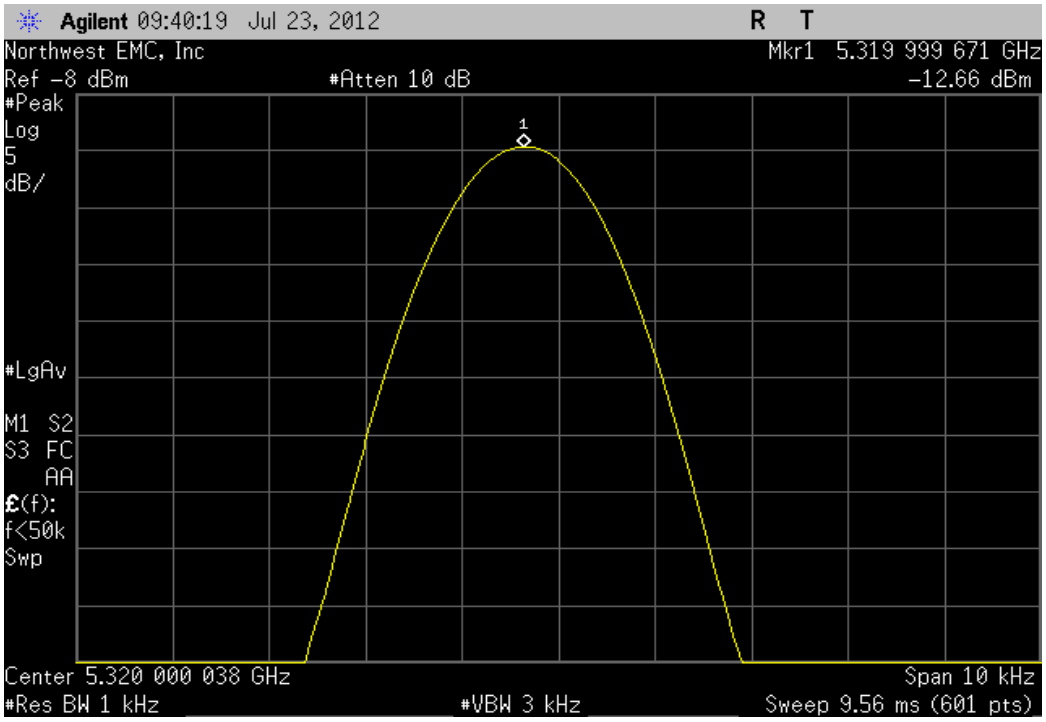
5250 MHz - 5350 MHz - High Channel, 5320 MHz, Temperature: +20°						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		5320.000323	5320	0.06	100	Pass



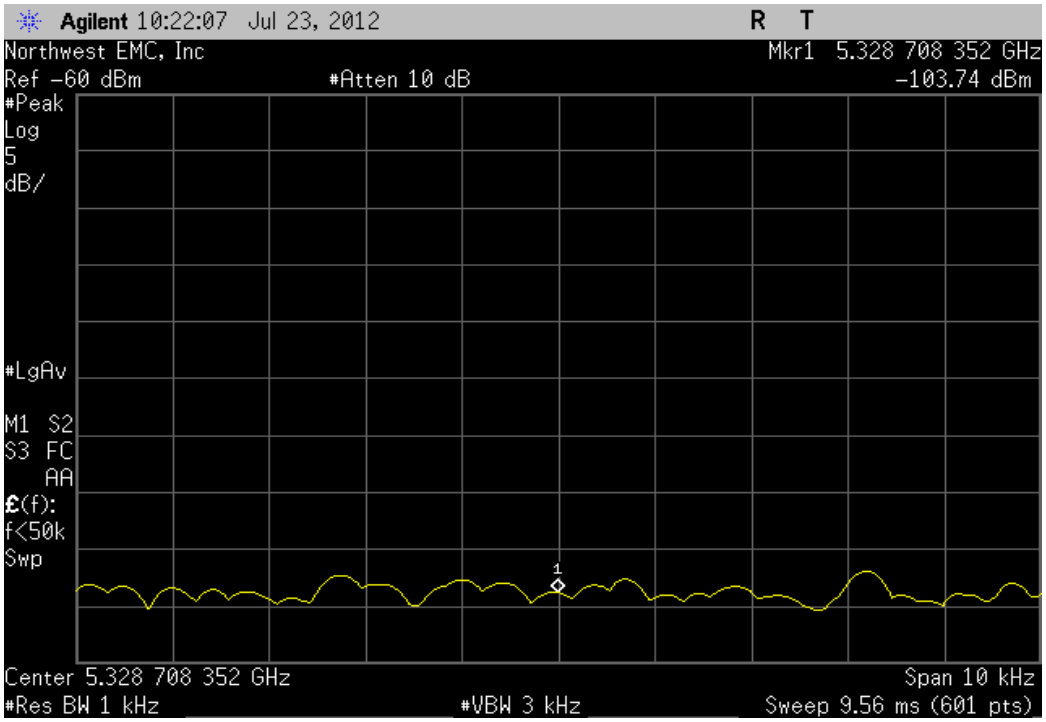
5250 MHz - 5350 MHz - High Channel, 5320 MHz, Temperature: +10°						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		5319.999452	5320	0.1	100	Pass



5250 MHz - 5350 MHz - High Channel, 5320 MHz, Temperature: 0°						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		5319.999671	5320	0.06	100	Pass

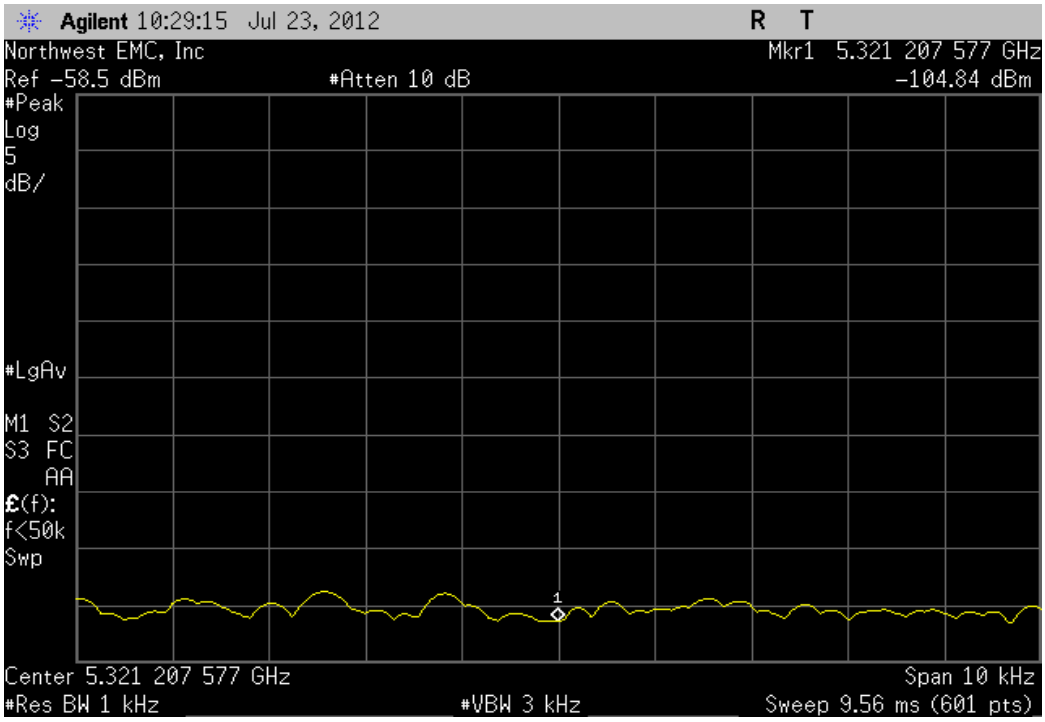


5250 MHz - 5350 MHz - High Channel, 5320 MHz, Temperature: -10°						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		5320	5320	0	100	Pass

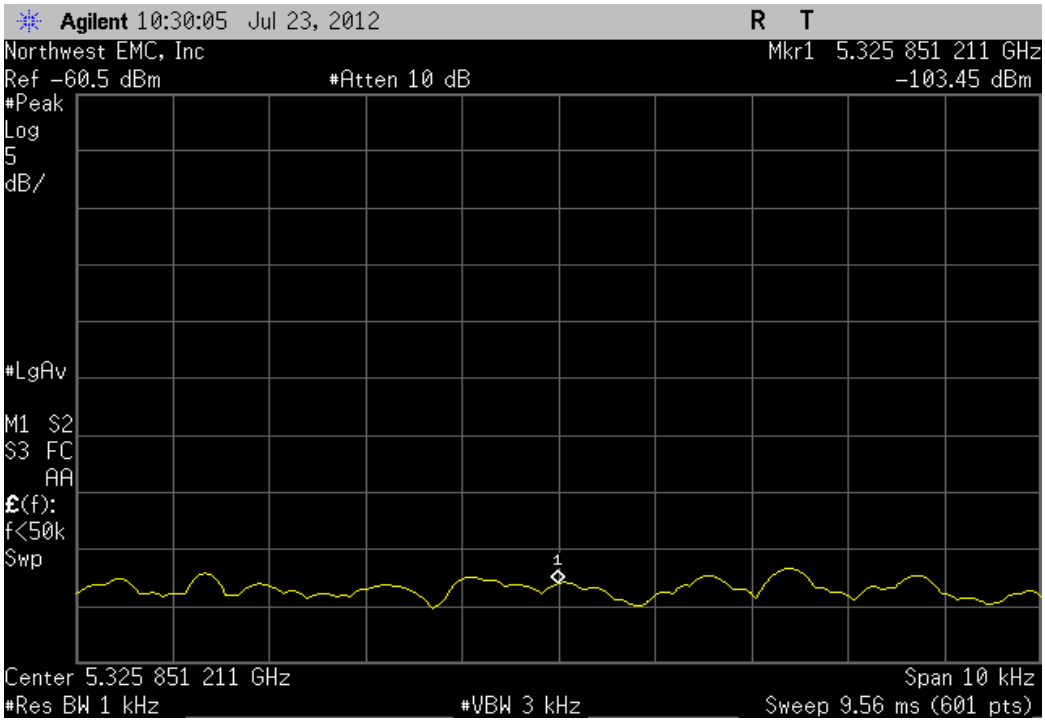


Frequency Stability

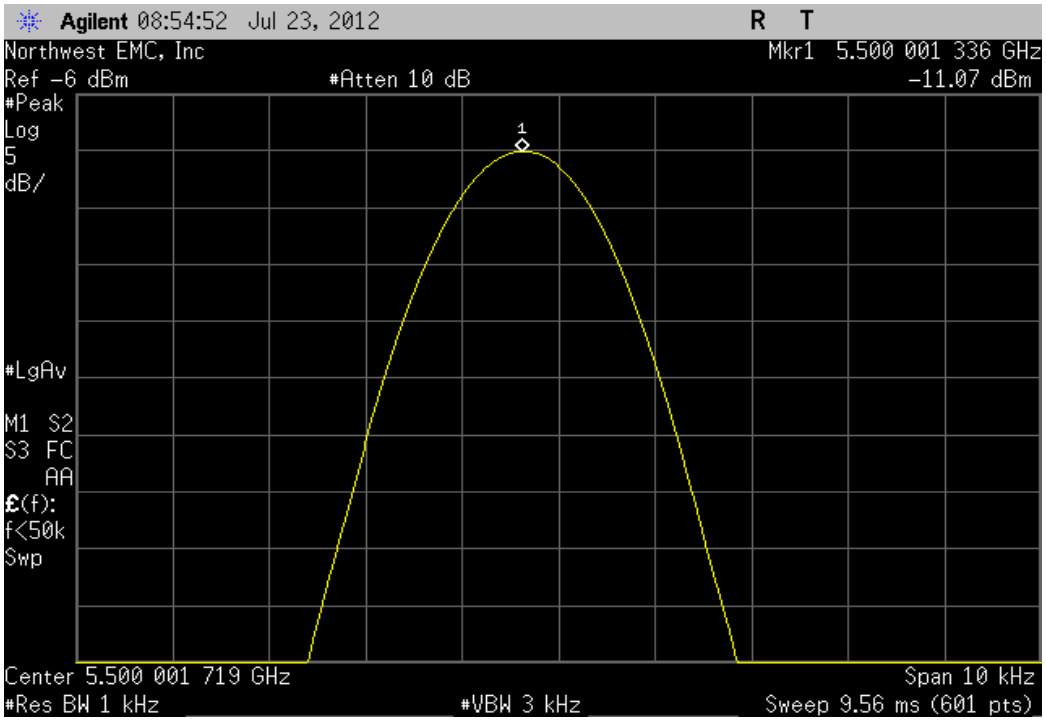
5250 MHz - 5350 MHz - High Channel, 5320 MHz, Temperature: -20°						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		5320	5320	0	100	Pass



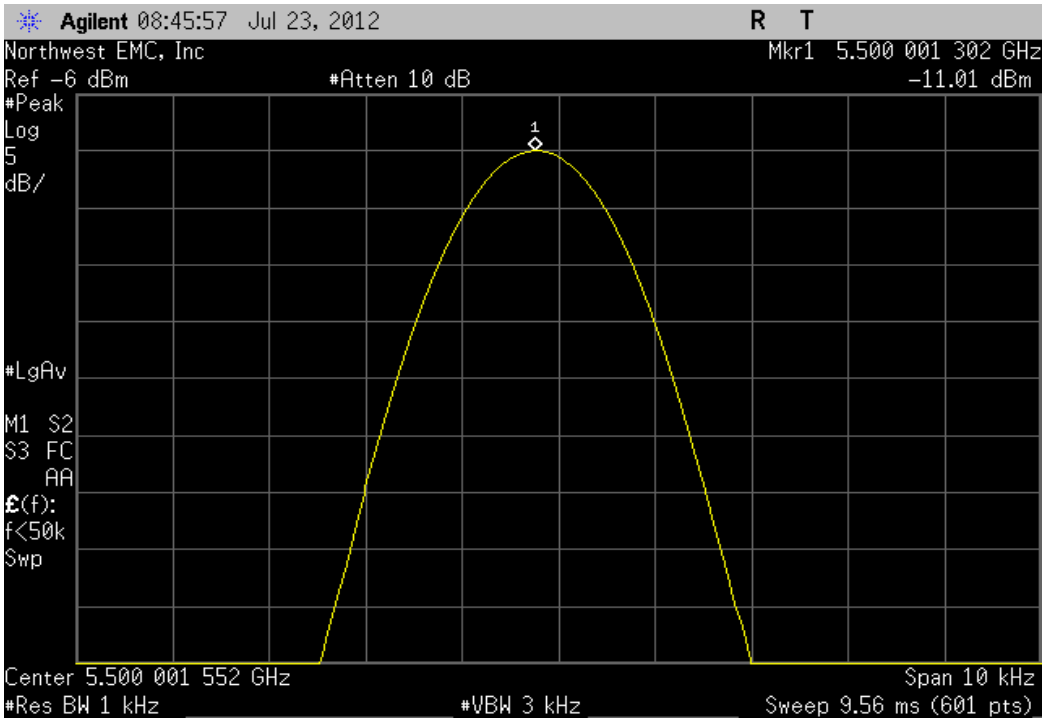
5250 MHz - 5350 MHz - High Channel, 5320 MHz, Temperature: -30°						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		5320	5320	0	100	Pass



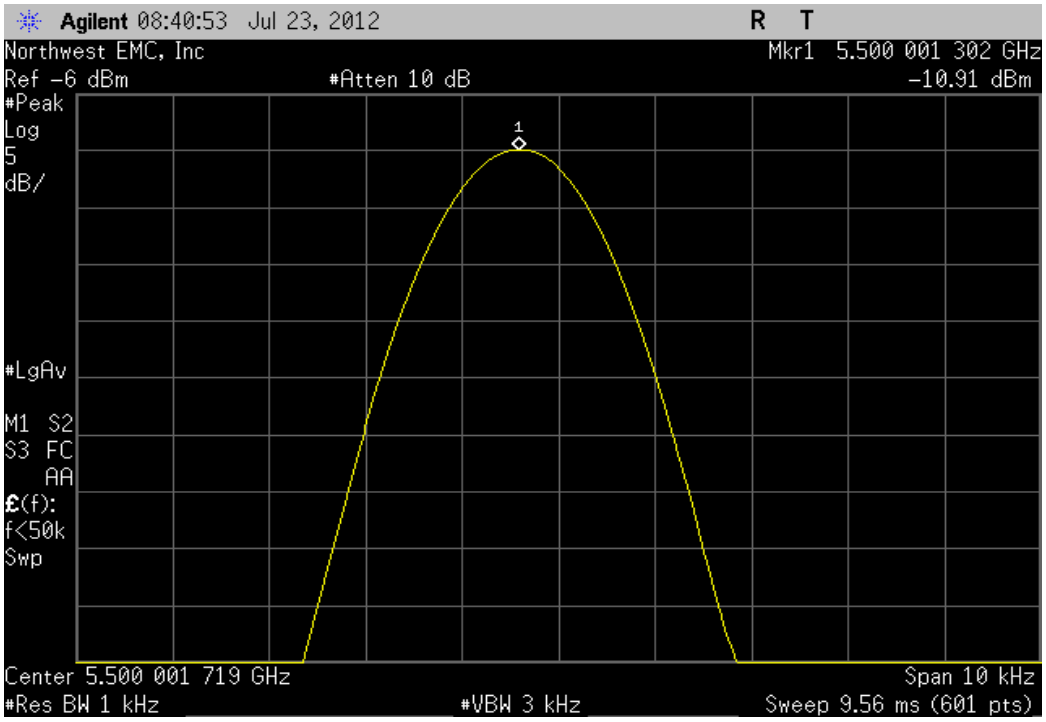
5470 MHz - 5725 MHz - Low Channel, 5500 MHz, Voltage: 115%						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		5500.001336	5500	0.24	100	Pass



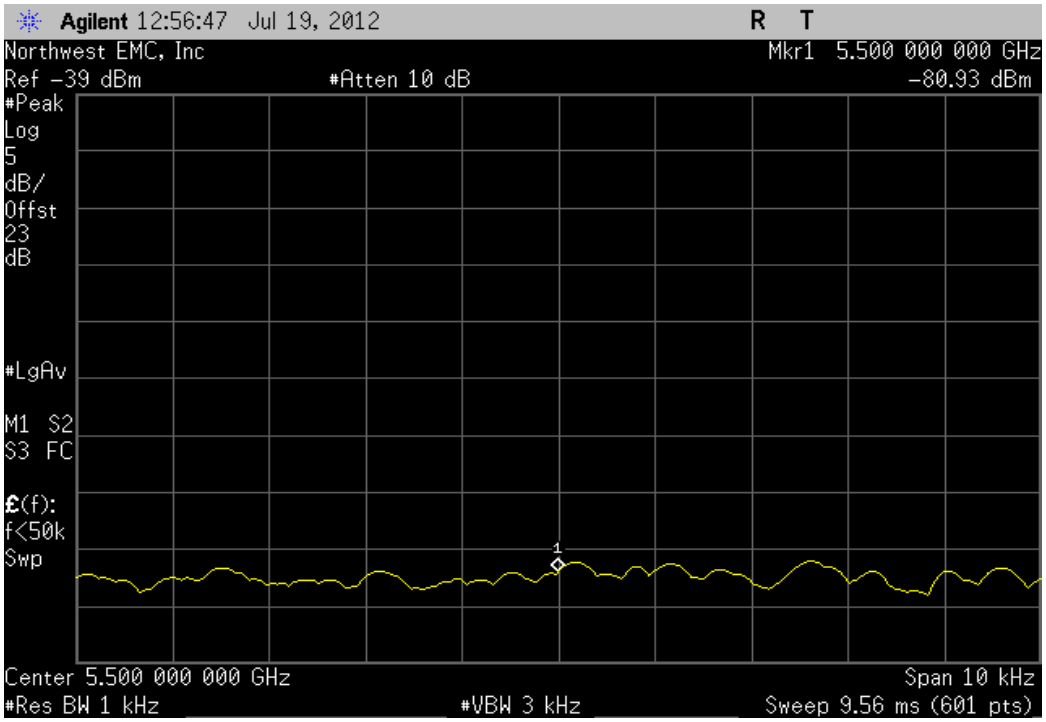
5470 MHz - 5725 MHz - Low Channel, 5500 MHz, Voltage: 100%						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		5500.001302	5500	0.24	100	Pass



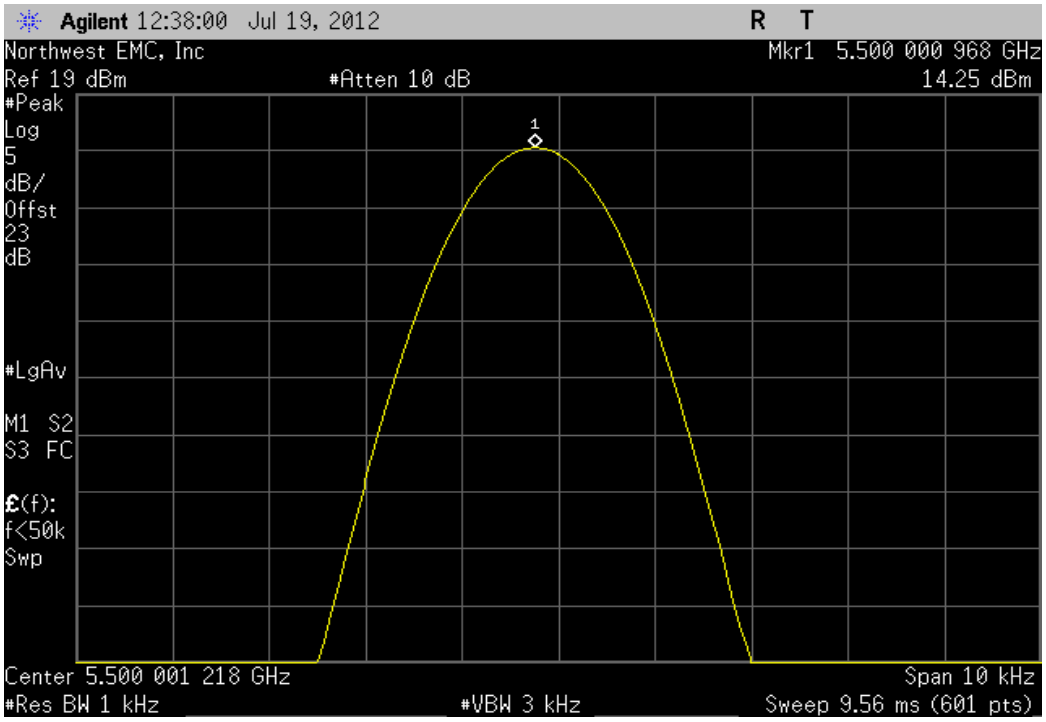
5470 MHz - 5725 MHz - Low Channel, 5500 MHz, Voltage: 85%						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		5500.001302	5500	0.24	100	Pass



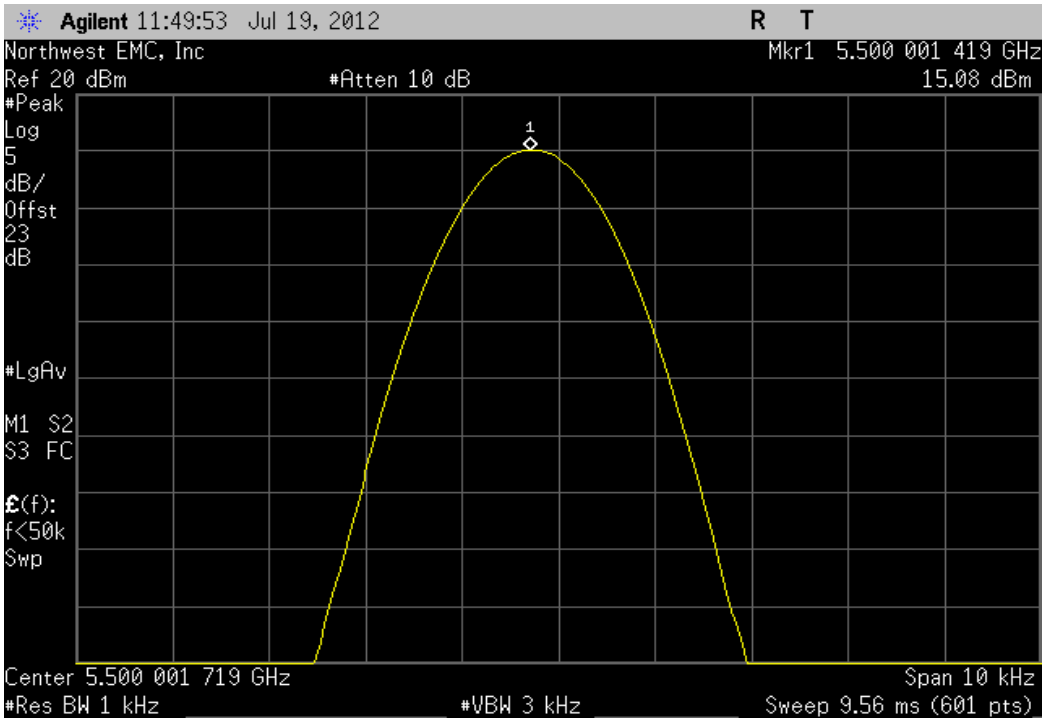
5470 MHz - 5725 MHz - Low Channel, 5500 MHz, Temperature: +50°						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		5500	5500	0	100	Pass



5470 MHz - 5725 MHz - Low Channel, 5500 MHz, Temperature: +40°						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		5500.000968	5500	0.18	100	Pass

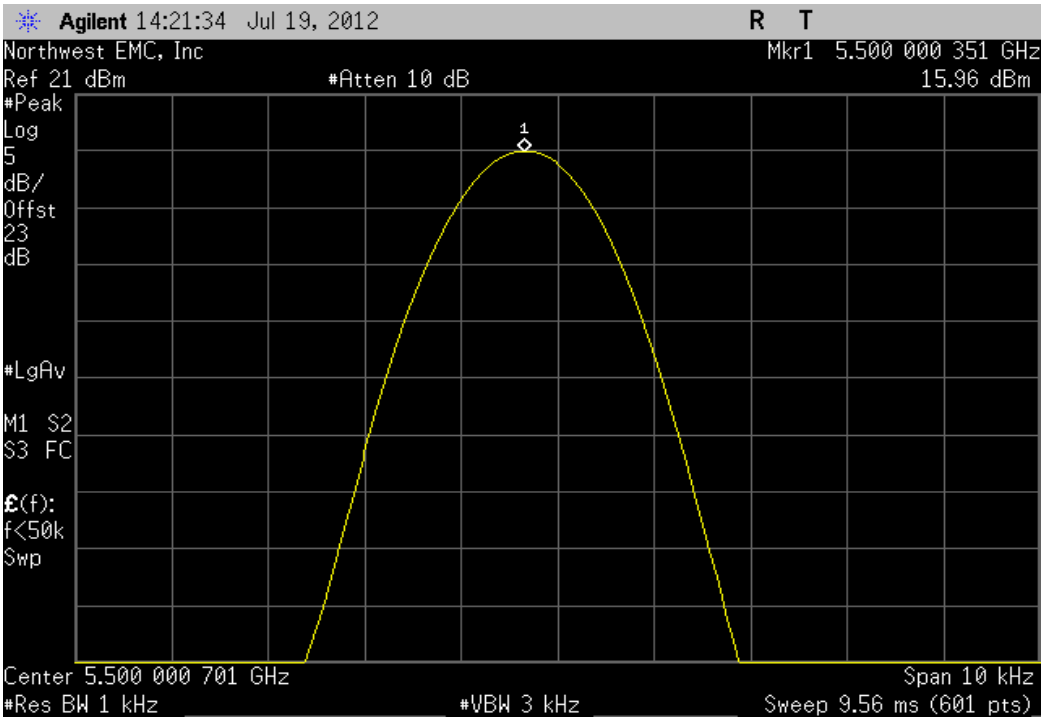


5470 MHz - 5725 MHz - Low Channel, 5500 MHz, Temperature: +30°						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		5500.001419	5500	0.26	100	Pass

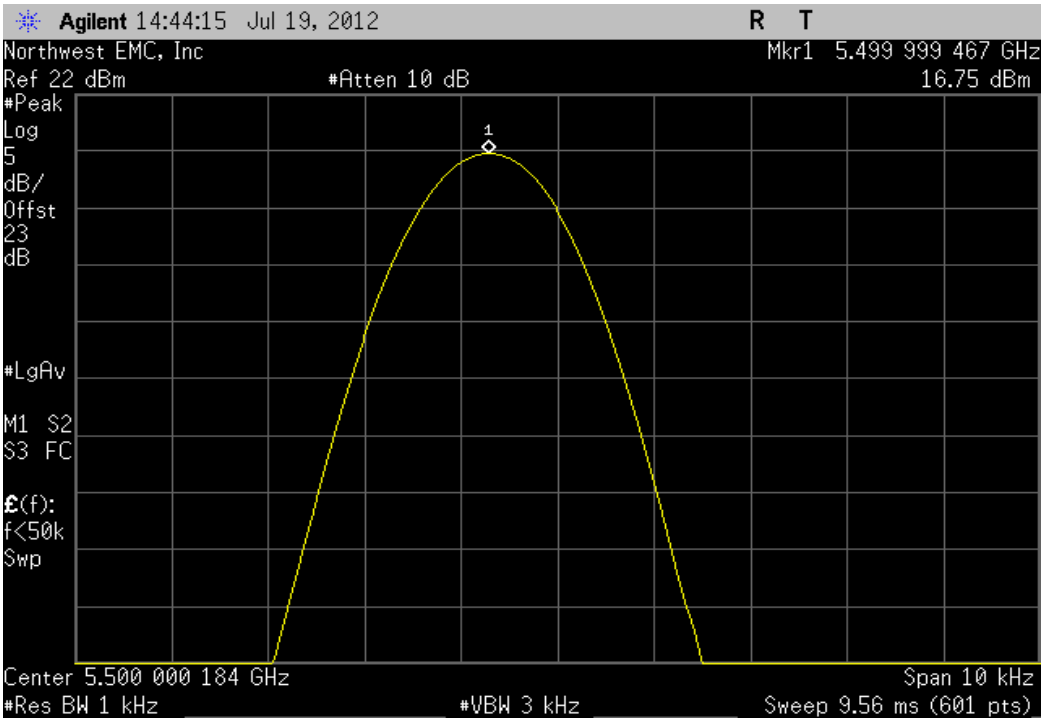


Frequency Stability

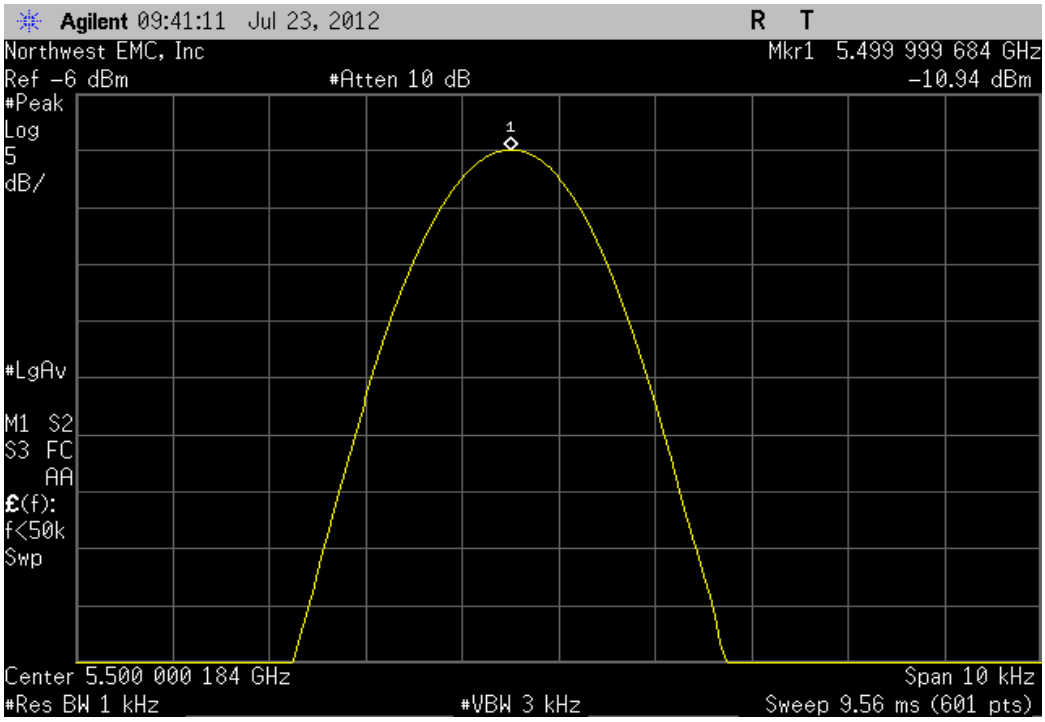
5470 MHz - 5725 MHz - Low Channel, 5500 MHz, Temperature: +20°						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		5500.000351	5500	0.06	100	Pass



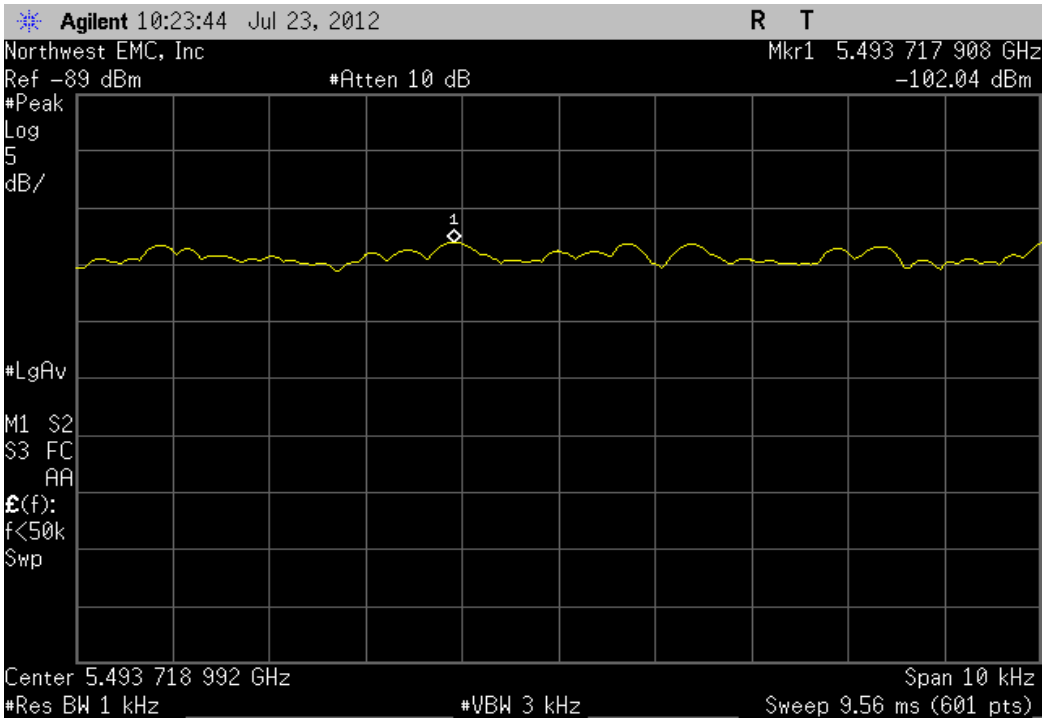
5470 MHz - 5725 MHz - Low Channel, 5500 MHz, Temperature: +10°						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		5499.999467	5500	0.1	100	Pass



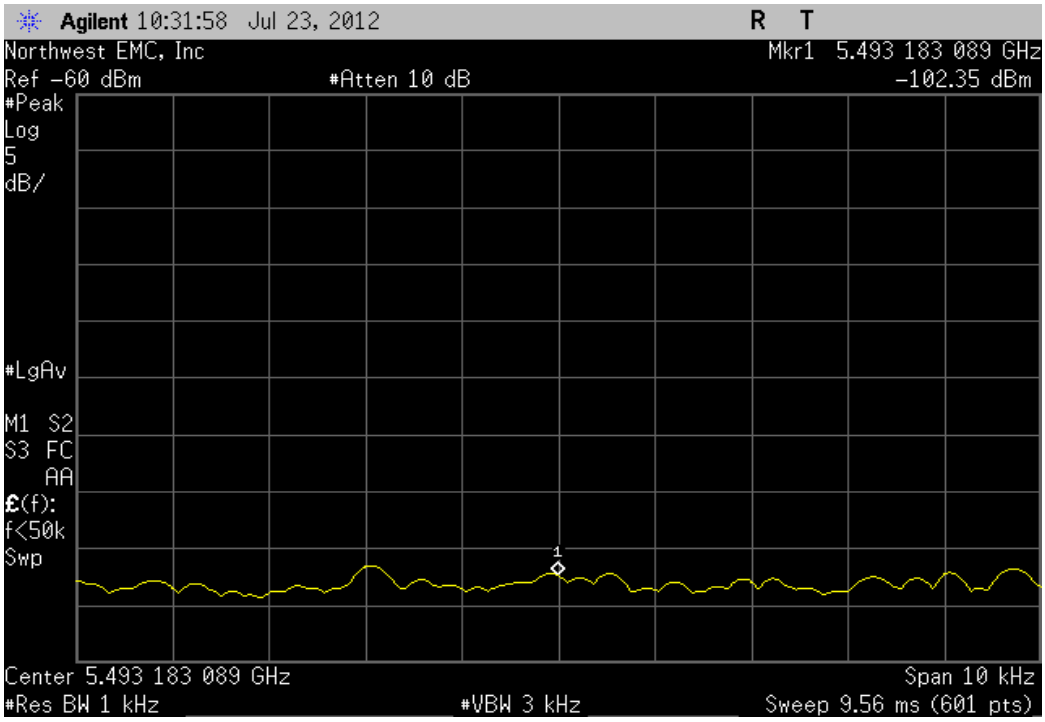
5470 MHz - 5725 MHz - Low Channel, 5500 MHz, Temperature: 0°						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		5499.999684	5500	0.06	100	Pass



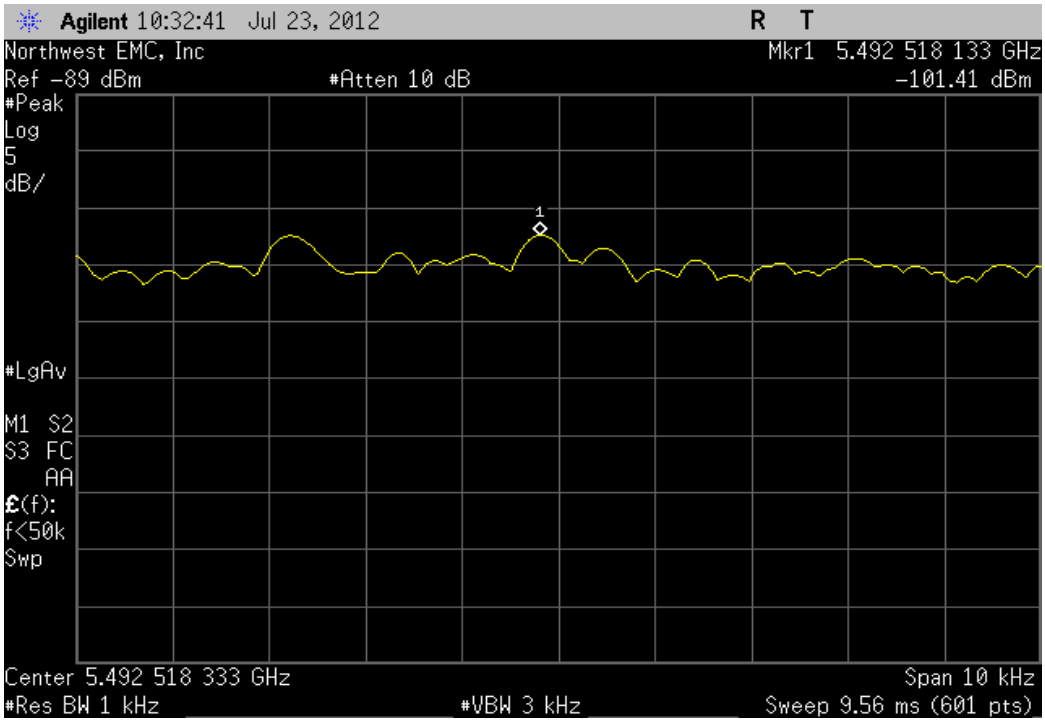
5470 MHz - 5725 MHz - Low Channel, 5500 MHz, Temperature: -10°						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		5500	5500	0	100	Pass



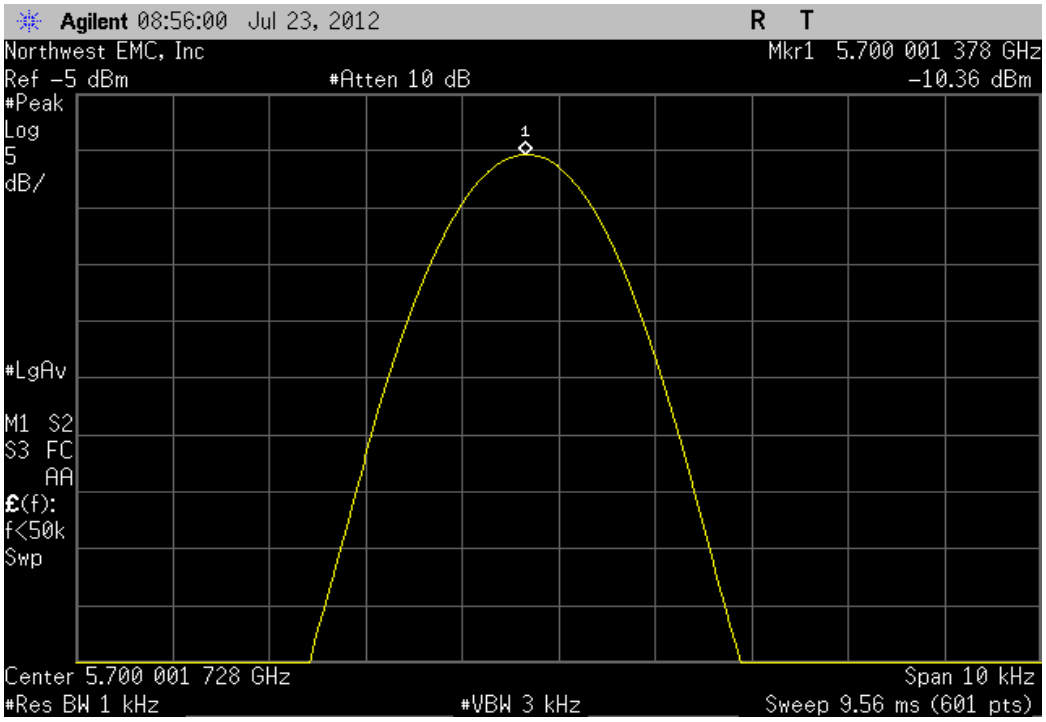
5470 MHz - 5725 MHz - Low Channel, 5500 MHz, Temperature: -20°						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		5500	5500	0	100	Pass



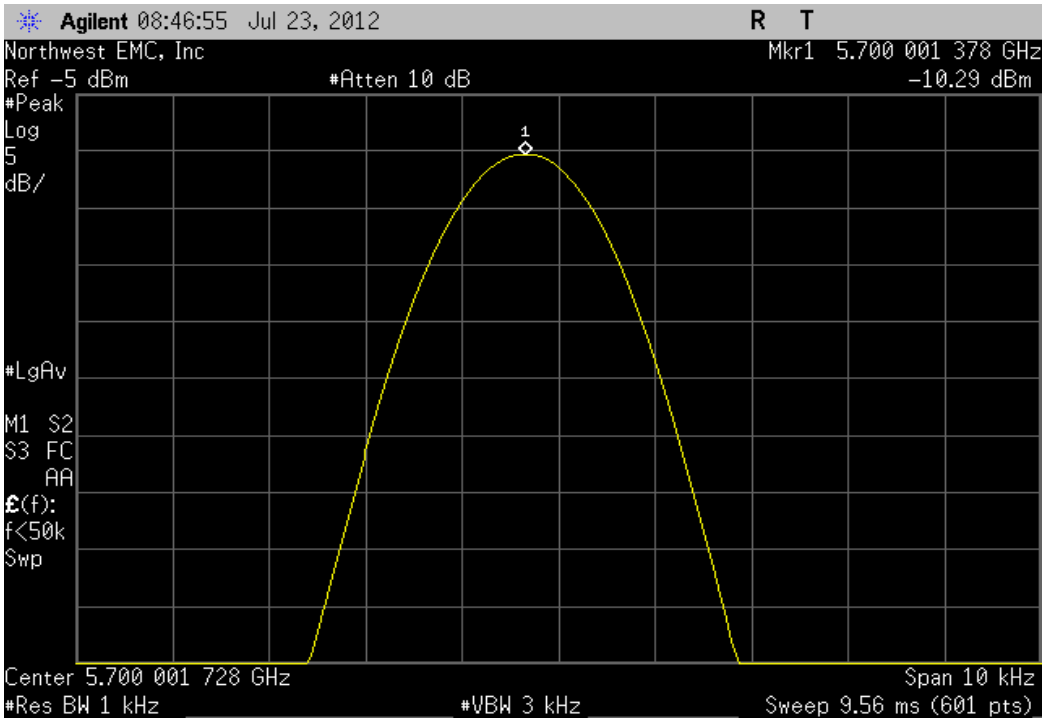
5470 MHz - 5725 MHz - Low Channel, 5500 MHz, Temperature: -30°						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		5500	5500	0	100	Pass



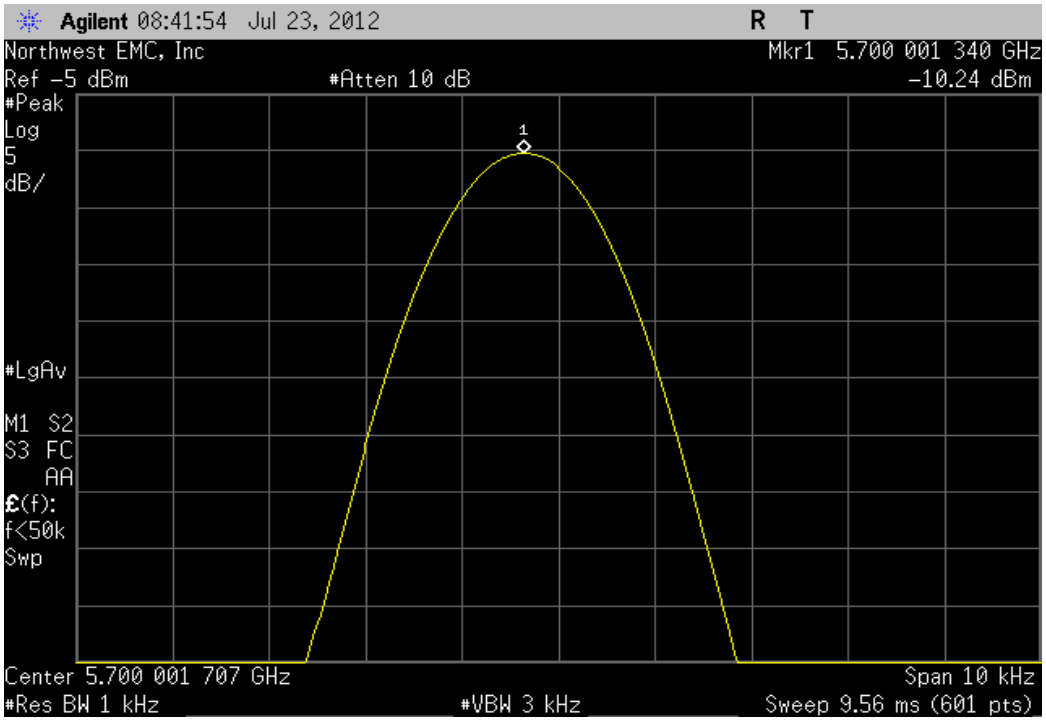
5470 MHz - 5725 MHz - High Channel, 5700 MHz, Voltage: 115%						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		5700.001378	5700	0.24	100	Pass



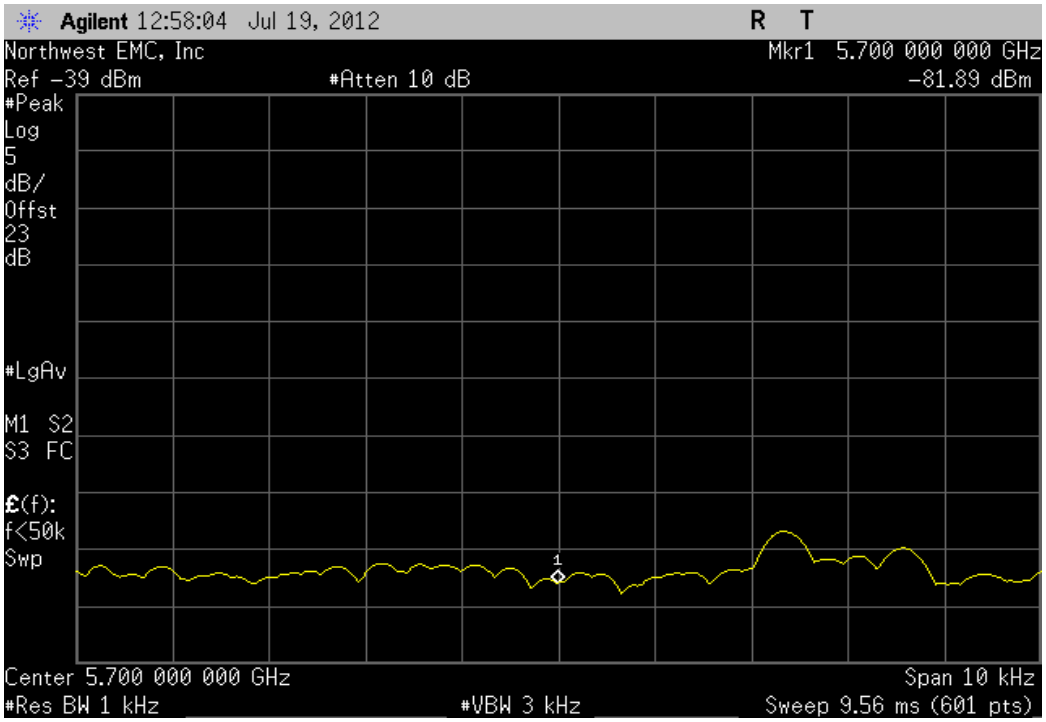
5470 MHz - 5725 MHz - High Channel, 5700 MHz, Voltage: 100%						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		5700.001378	5700	0.24	100	Pass



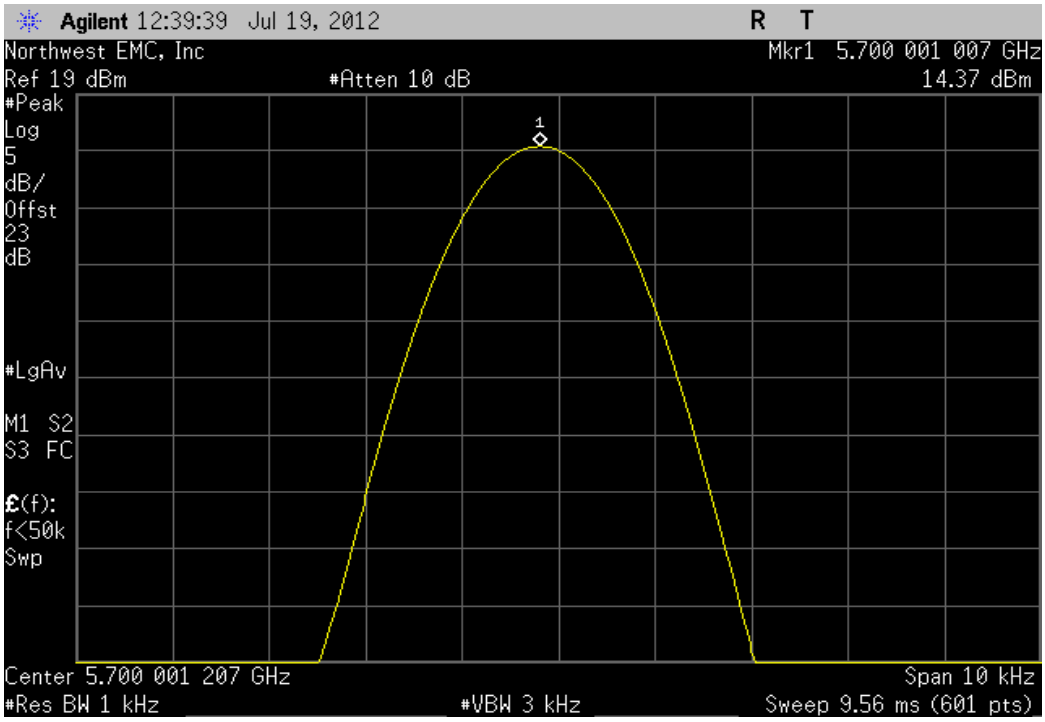
5470 MHz - 5725 MHz - High Channel, 5700 MHz, Voltage: 85%						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		5700.00134	5700	0.24	100	Pass



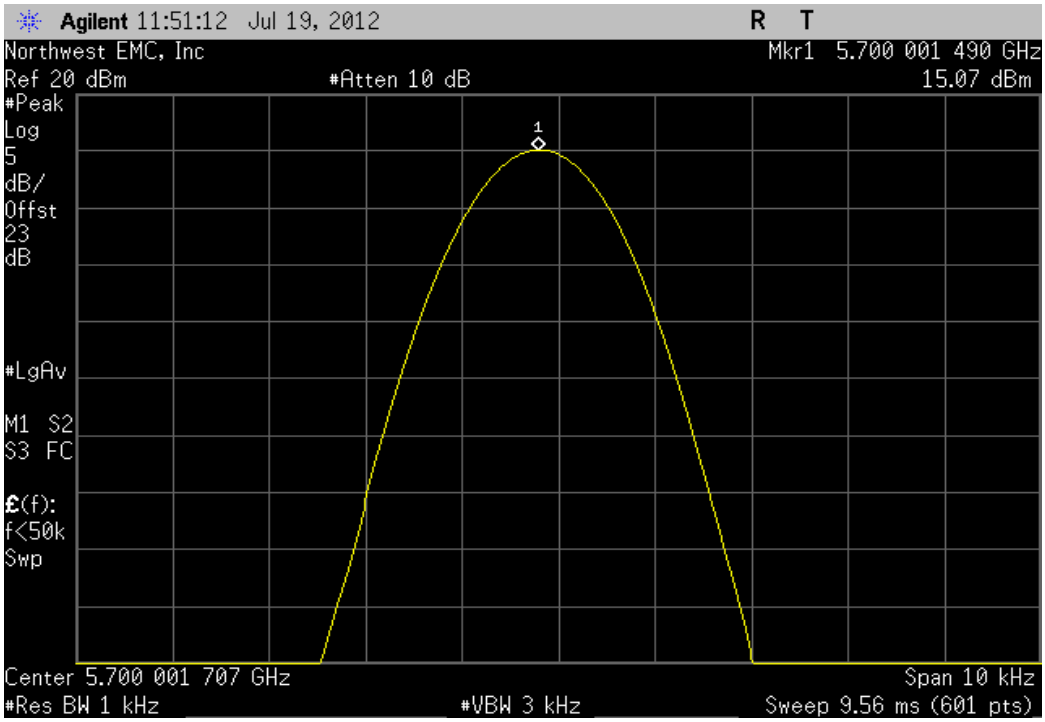
5470 MHz - 5725 MHz - High Channel, 5700 MHz, Temperature: +50°						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		5700	5700	0	100	Pass



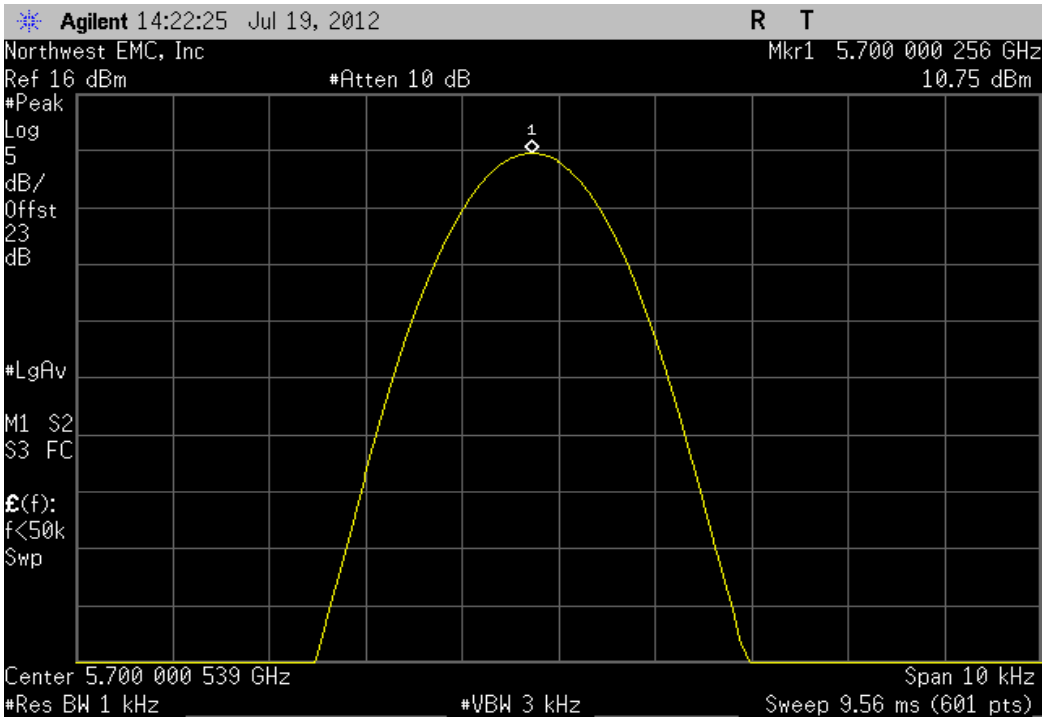
5470 MHz - 5725 MHz - High Channel, 5700 MHz, Temperature: +40°						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		5700.001007	5700	0.18	100	Pass



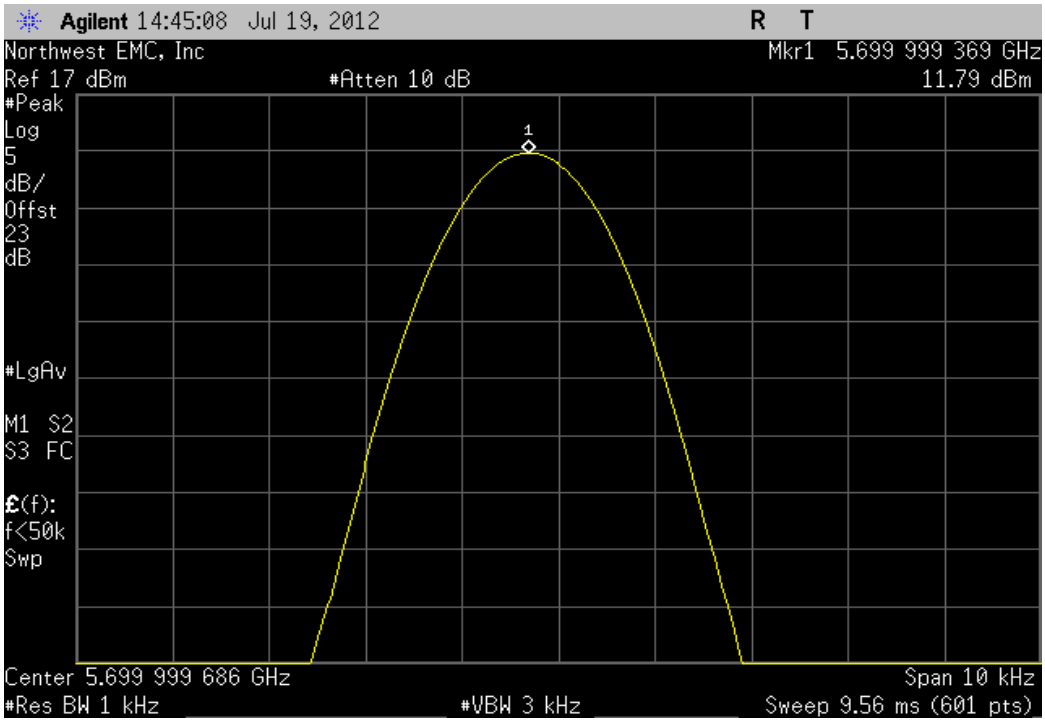
5470 MHz - 5725 MHz - High Channel, 5700 MHz, Temperature: +30°						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		5700.00149	5700	0.26	100	Pass



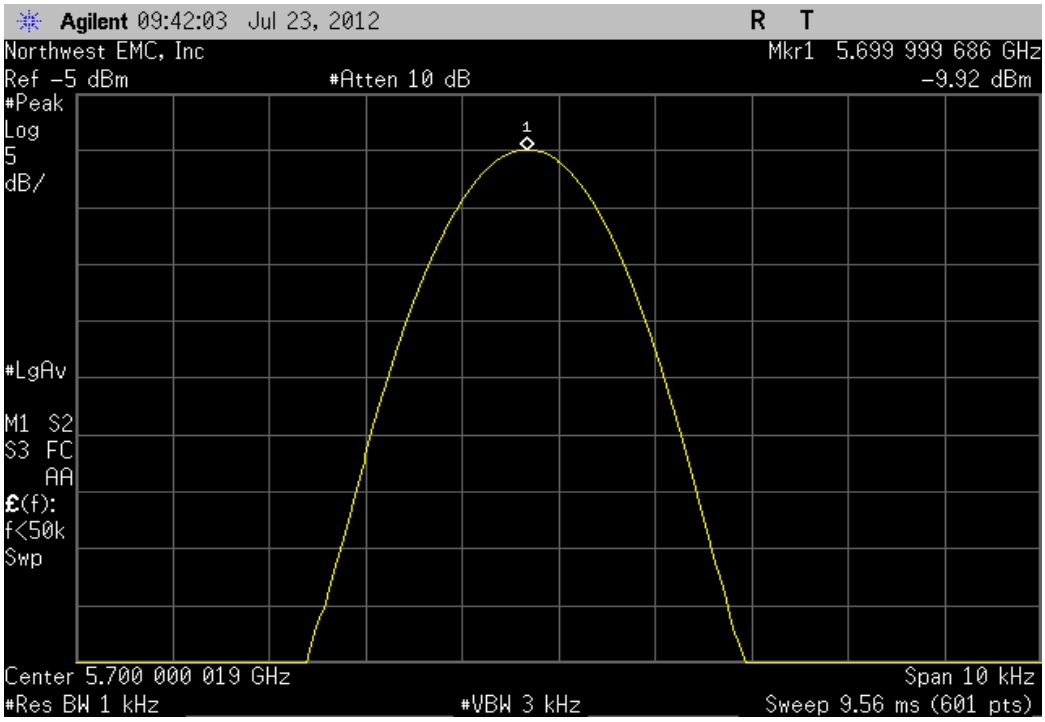
5470 MHz - 5725 MHz - High Channel, 5700 MHz, Temperature: +20°						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		5700.000256	5700	0.04	100	Pass



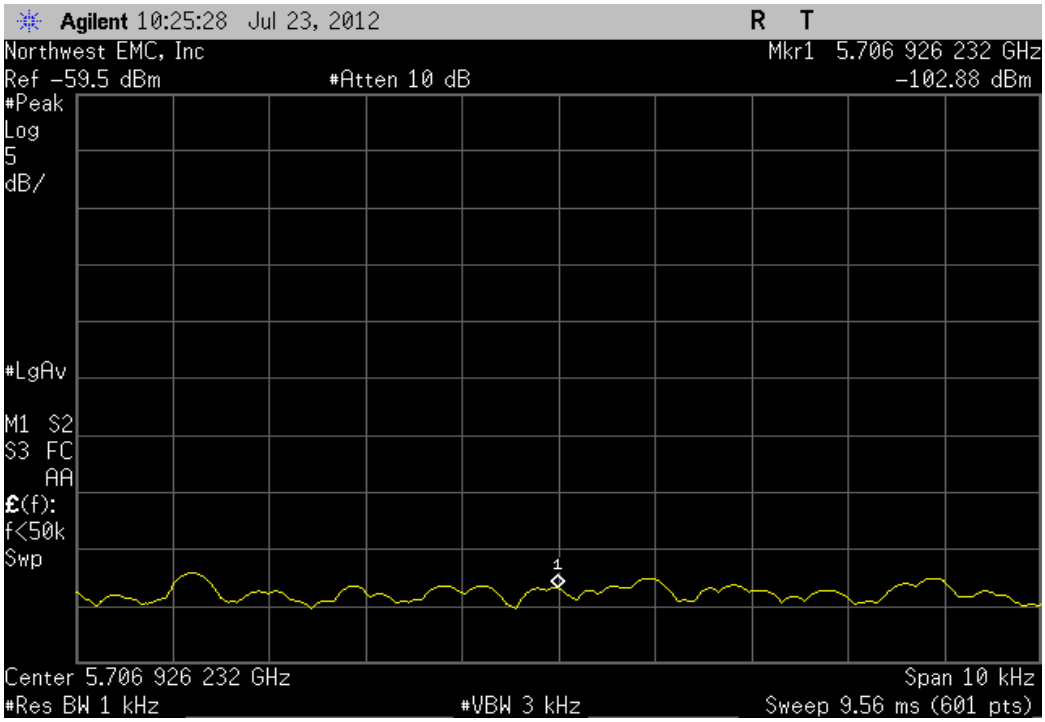
5470 MHz - 5725 MHz - High Channel, 5700 MHz, Temperature: +10°						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		5699.999369	5700	0.11	100	Pass



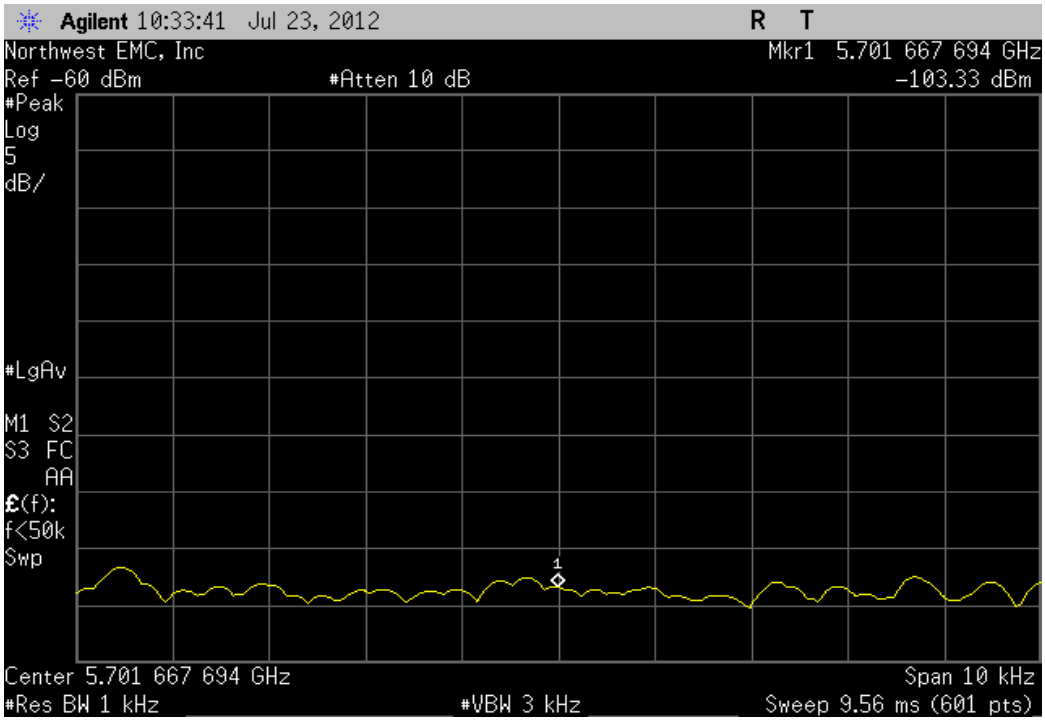
5470 MHz - 5725 MHz - High Channel, 5700 MHz, Temperature: 0°						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		5699.999686	5700	0.06	100	Pass



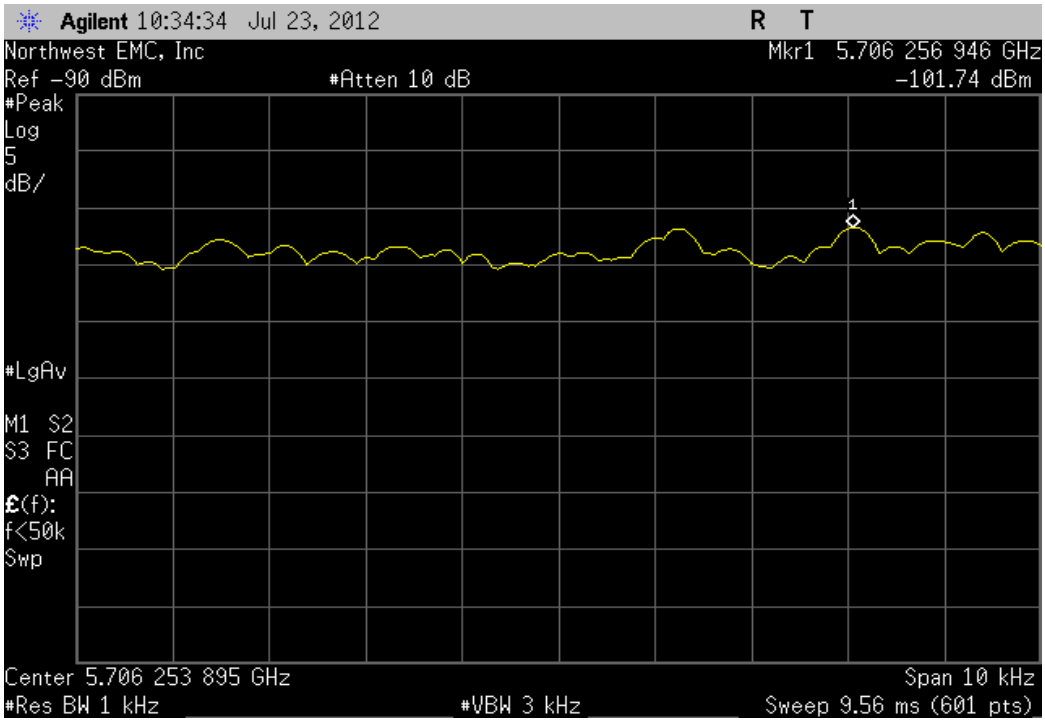
5470 MHz - 5725 MHz - High Channel, 5700 MHz, Temperature: -10°						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		5700	5700	0	100	Pass



5470 MHz - 5725 MHz - High Channel, 5700 MHz, Temperature: -20°						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		5700	5700	0	100	Pass



5470 MHz - 5725 MHz - High Channel, 5700 MHz, Temperature: -30°						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		5700	5700	0	100	Pass



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 802.11(a), 6 Mbps, 5470 MHz - 5725 Band, High Channel 140
Transmitting 802.11(a), 6 Mbps, 5470 MHz - 5725 Band, Mid Channel 116
Transmitting 802.11(a), 6 Mbps, 5470 MHz - 5725 Band, Low Channel 100
Transmitting 802.11(a), 6 Mbps, 5250 MHz - 5350 Band, High Channel 64
Transmitting 802.11(a), 6 Mbps, 5250 MHz - 5350 Band, Low Channel 52
Transmitting 802.11(a), 6 Mbps, 5150 MHz - 5250 MHz Band, High Channel 48
Transmitting 802.11(a), 6 Mbps, 5150 MHz - 5250 MHz Band, Low Channel 36

POWER SETTINGS INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

MCSO1608 - 3

SAMPLE CALCULATIONS

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
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
LISN	Solar	9252-50-R-24-BNC	LIR	11/4/2011	12 mo
LISN	Solar	9252-50-R-24-BNC	LIP	4/16/2012	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.

MEASUREMENT UNCERTAINTY

A measurement uncertainty estimation has been performed for each test per our internal quality document WP 342. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty for radiated emissions measurements is less than +/- 4 dB, and for conducted emissions measurements is less than +/- 2.7 dB. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for measurement uncertainty are available upon request.

TEST DESCRIPTION

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

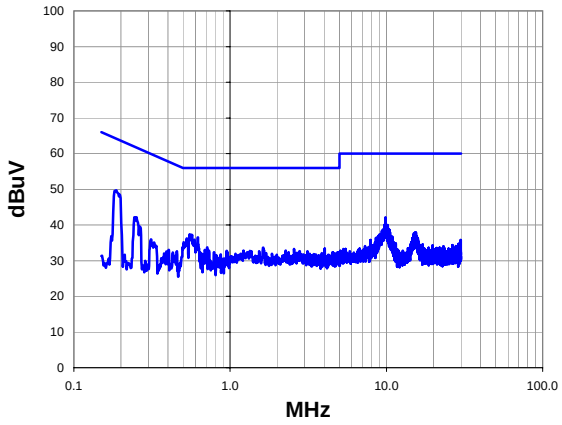
AC POWERLINE CONDUCTED EMISSIONS

Work Order:	MCSO1608	**Date:**	08/08/12		
Project:	None	**Temperature:**	24 °C		
Job Site:	EV01	**Humidity:**	45% RH		
Serial Number:	215622952	**Barometric Pres.:**	1015.5 mbar	**Tested by:**	Rod Peloquin
EUT:	1516				
Configuration:	3				
Customer:	Microsoft Corporation				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting 802.11(a), 6 Mbps, 5150 MHz - 5250 MHz Band, Low Channel 36				
Deviations:	No deviations.				
Comments:	None				

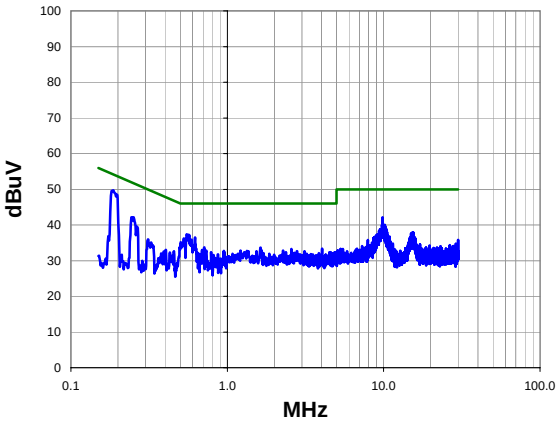
Test Specifications	**Test Method**
FCC 15.207:2012	ANSI C63.10:2009

Run #	35	**Line:**	High Line	**Ext. Attenuation:**	20	**Results**	Pass

Peak Data - vs - Quasi Peak Limit



Peak Data - vs - Average Limit



Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.187	29.3	20.3	49.6	64.2	-14.5
9.860	21.2	21.0	42.2	60.0	-17.8
0.551	17.1	20.3	37.4	56.0	-18.6
0.623	16.2	20.3	36.5	56.0	-19.5
0.527	15.9	20.3	36.2	56.0	-19.8
9.800	19.2	21.0	40.2	60.0	-19.8
0.243	21.8	20.3	42.1	62.0	-19.8
10.180	19.0	21.0	40.0	60.0	-20.0
9.770	19.0	21.0	40.0	60.0	-20.0
10.150	18.8	21.0	39.8	60.0	-20.2
9.490	17.8	21.0	38.8	60.0	-21.2
10.410	17.7	21.0	38.7	60.0	-21.3
10.450	17.6	21.0	38.6	60.0	-21.4
10.530	16.9	21.0	37.9	60.0	-22.1
10.370	16.9	21.0	37.9	60.0	-22.1
15.470	16.6	21.3	37.9	60.0	-22.1
15.250	16.6	21.3	37.9	60.0	-22.1
15.350	16.5	21.3	37.8	60.0	-22.2
0.713	13.4	20.3	33.7	56.0	-22.3
1.632	13.2	20.4	33.6	56.0	-22.4

Peak Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.187	29.3	20.3	49.6	54.2	-4.5
9.860	21.2	21.0	42.2	50.0	-7.8
0.551	17.1	20.3	37.4	46.0	-8.6
0.623	16.2	20.3	36.5	46.0	-9.5
0.527	15.9	20.3	36.2	46.0	-9.8
9.800	19.2	21.0	40.2	50.0	-9.8
0.243	21.8	20.3	42.1	52.0	-9.8
10.180	19.0	21.0	40.0	50.0	-10.0
9.770	19.0	21.0	40.0	50.0	-10.0
10.150	18.8	21.0	39.8	50.0	-10.2
9.490	17.8	21.0	38.8	50.0	-11.2
10.410	17.7	21.0	38.7	50.0	-11.3
10.450	17.6	21.0	38.6	50.0	-11.4
10.530	16.9	21.0	37.9	50.0	-12.1
10.370	16.9	21.0	37.9	50.0	-12.1
15.470	16.6	21.3	37.9	50.0	-12.1
15.250	16.6	21.3	37.9	50.0	-12.1
15.350	16.5	21.3	37.8	50.0	-12.2
0.713	13.4	20.3	33.7	46.0	-12.3
1.632	13.2	20.4	33.6	46.0	-12.4

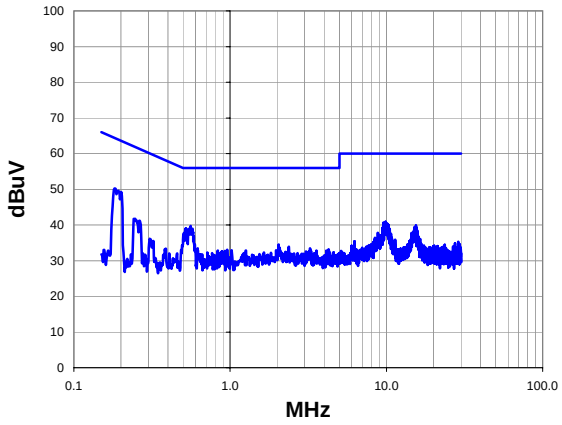
AC POWERLINE CONDUCTED EMISSIONS

Work Order:	MCSO1608	**Date:**	08/08/12		
Project:	None	**Temperature:**	24 °C		
Job Site:	EV01	**Humidity:**	45% RH		
Serial Number:	215622952	**Barometric Pres.:**	1015.5 mbar	**Tested by:**	Rod Peloquin
EUT:	1516				
Configuration:	3				
Customer:	Microsoft Corporation				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting 802.11(a), 6 Mbps, 5150 MHz - 5250 MHz Band, Low Channel 36				
Deviations:	No deviations.				
Comments:	None				

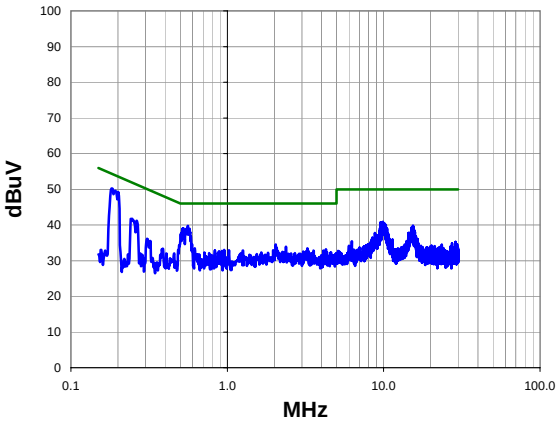
Test Specifications	**Test Method**
FCC 15.207:2012	ANSI C63.10:2009

Run #	36	**Line:**	Neutral	**Ext. Attenuation:**	20	**Results**	Pass

Peak Data - vs - Quasi Peak Limit



Peak Data - vs - Average Limit



Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.184	29.9	20.3	50.2	64.3	-14.1
0.560	19.4	20.3	39.7	56.0	-16.3
0.524	18.7	20.3	39.0	56.0	-17.0
9.870	19.9	21.0	40.9	60.0	-19.1
9.580	19.7	21.0	40.7	60.0	-19.3
9.710	19.5	21.0	40.5	60.0	-19.5
10.120	19.4	21.0	40.4	60.0	-19.6
10.180	19.2	21.0	40.2	60.0	-19.8
10.310	19.0	21.0	40.0	60.0	-20.0
15.430	18.5	21.3	39.8	60.0	-20.2
0.262	20.8	20.3	41.1	61.4	-20.2
0.242	21.4	20.3	41.7	62.0	-20.3
9.530	18.5	21.0	39.5	60.0	-20.5
15.530	18.0	21.3	39.3	60.0	-20.7
15.090	18.0	21.3	39.3	60.0	-20.7
10.370	18.1	21.0	39.1	60.0	-20.9
9.460	18.1	21.0	39.1	60.0	-20.9
10.520	17.9	21.0	38.9	60.0	-21.1
2.040	14.1	20.5	34.6	56.0	-21.4
15.720	17.2	21.3	38.5	60.0	-21.5

Peak Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.184	29.9	20.3	50.2	54.3	-4.1
0.560	19.4	20.3	39.7	46.0	-6.3
0.524	18.7	20.3	39.0	46.0	-7.0
9.870	19.9	21.0	40.9	50.0	-9.1
9.580	19.7	21.0	40.7	50.0	-9.3
9.710	19.5	21.0	40.5	50.0	-9.5
10.120	19.4	21.0	40.4	50.0	-9.6
10.180	19.2	21.0	40.2	50.0	-9.8
10.310	19.0	21.0	40.0	50.0	-10.0
15.430	18.5	21.3	39.8	50.0	-10.2
0.262	20.8	20.3	41.1	51.4	-10.2
0.242	21.4	20.3	41.7	52.0	-10.3
9.530	18.5	21.0	39.5	50.0	-10.5
15.530	18.0	21.3	39.3	50.0	-10.7
15.090	18.0	21.3	39.3	50.0	-10.7
10.370	18.1	21.0	39.1	50.0	-10.9
9.460	18.1	21.0	39.1	50.0	-10.9
10.520	17.9	21.0	38.9	50.0	-11.1
2.040	14.1	20.5	34.6	46.0	-11.4
15.720	17.2	21.3	38.5	50.0	-11.5

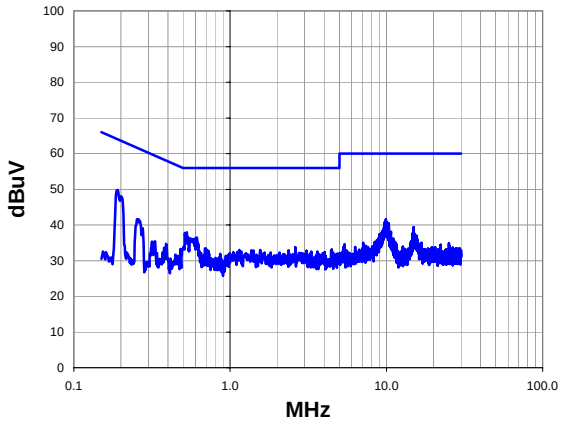
AC POWERLINE CONDUCTED EMISSIONS

Work Order:	MCSO1608	**Date:**	08/08/12		
Project:	None	**Temperature:**	24 °C		
Job Site:	EV01	**Humidity:**	45% RH		
Serial Number:	215622952	**Barometric Pres.:**	1015.5 mbar	**Tested by:**	Rod Peloquin
EUT:	1516				
Configuration:	3				
Customer:	Microsoft Corporation				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting 802.11(a), 6 Mbps, 5150 MHz - 5250 MHz Band, High Channel 48				
Deviations:	No deviations.				
Comments:	None				

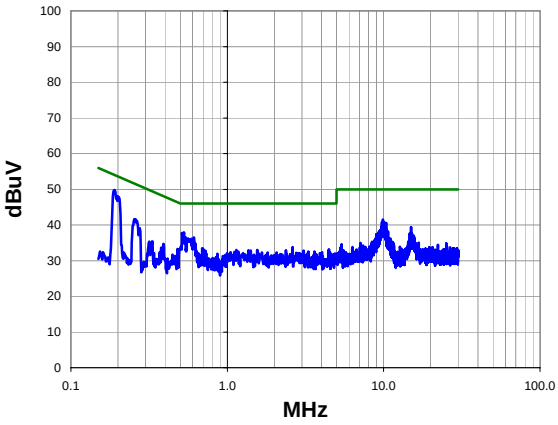
Test Specifications	**Test Method**
FCC 15.207:2012	ANSI C63.10:2009

Run #	37	**Line:**	High Line	**Ext. Attenuation:**	20	**Results**	Pass

Peak Data - vs - Quasi Peak Limit



Peak Data - vs - Average Limit



Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.191	29.4	20.4	49.8	64.0	-14.3
0.527	17.6	20.3	37.9	56.0	-18.1
9.910	20.5	21.0	41.5	60.0	-18.5
10.030	19.8	21.0	40.8	60.0	-19.2
9.790	19.8	21.0	40.8	60.0	-19.2
10.140	19.6	21.0	40.6	60.0	-19.4
0.611	16.2	20.3	36.5	56.0	-19.5
10.370	19.5	21.0	40.5	60.0	-19.5
0.254	21.3	20.3	41.6	61.6	-20.0
10.260	19.0	21.0	40.0	60.0	-20.0
9.690	18.7	21.0	39.7	60.0	-20.3
14.960	18.1	21.3	39.4	60.0	-20.6
10.680	17.1	21.0	38.1	60.0	-21.9
9.310	17.0	21.0	38.0	60.0	-22.0
2.616	13.3	20.5	33.8	56.0	-22.2
14.690	16.3	21.2	37.5	60.0	-22.5
15.180	16.2	21.3	37.5	60.0	-22.5
0.691	13.1	20.3	33.4	56.0	-22.6
9.010	16.5	20.9	37.4	60.0	-22.6
10.520	16.4	21.0	37.4	60.0	-22.6

Peak Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.191	29.4	20.4	49.8	54.0	-4.3
0.527	17.6	20.3	37.9	46.0	-8.1
9.910	20.5	21.0	41.5	50.0	-8.5
10.030	19.8	21.0	40.8	50.0	-9.2
9.790	19.8	21.0	40.8	50.0	-9.2
10.140	19.6	21.0	40.6	50.0	-9.4
0.611	16.2	20.3	36.5	46.0	-9.5
10.370	19.5	21.0	40.5	50.0	-9.5
0.254	21.3	20.3	41.6	51.6	-10.0
10.260	19.0	21.0	40.0	50.0	-10.0
9.690	18.7	21.0	39.7	50.0	-10.3
14.960	18.1	21.3	39.4	50.0	-10.6
10.680	17.1	21.0	38.1	50.0	-11.9
9.310	17.0	21.0	38.0	50.0	-12.0
2.616	13.3	20.5	33.8	46.0	-12.2
14.690	16.3	21.2	37.5	50.0	-12.5
15.180	16.2	21.3	37.5	50.0	-12.5
0.691	13.1	20.3	33.4	46.0	-12.6
9.010	16.5	20.9	37.4	50.0	-12.6
10.520	16.4	21.0	37.4	50.0	-12.6

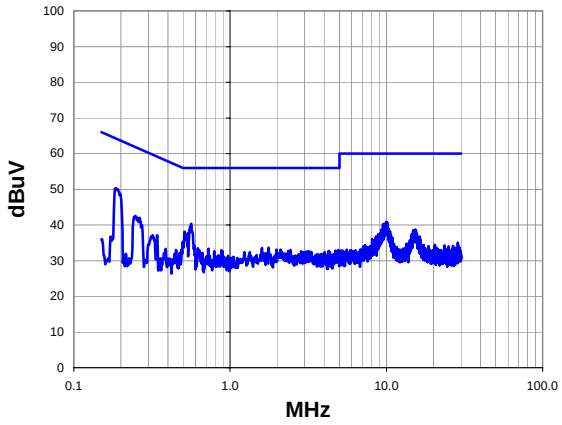
AC POWERLINE CONDUCTED EMISSIONS

Work Order:	MCSO1608	**Date:**	08/08/12		
Project:	None	**Temperature:**	24 °C		
Job Site:	EV01	**Humidity:**	45% RH		
Serial Number:	215622952	**Barometric Pres.:**	1015.5 mbar	**Tested by:**	Rod Peloquin
EUT:	1516				
Configuration:	3				
Customer:	Microsoft Corporation				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting 802.11(a), 6 Mbps, 5150 MHz - 5250 MHz Band, High Channel 48				
Deviations:	No deviations.				
Comments:	None				

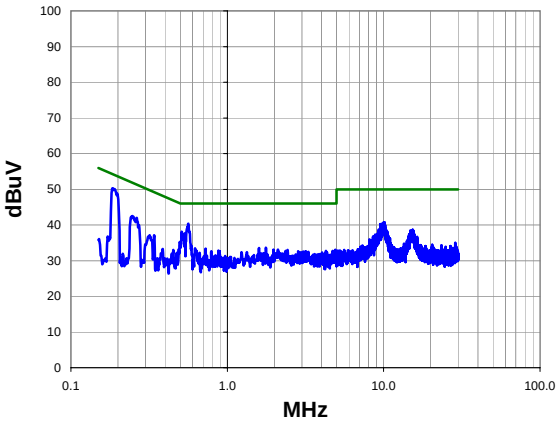
Test Specifications	**Test Method**
FCC 15.207:2012	ANSI C63.10:2009

Run #	38	**Line:**	Neutral	**Ext. Attenuation:**	20	**Results**	Pass

Peak Data - vs - Quasi Peak Limit



Peak Data - vs - Average Limit



Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.186	30.0	20.3	50.3	64.2	-13.9
0.563	20.1	20.3	40.4	56.0	-15.6
0.510	17.8	20.3	38.1	56.0	-17.9
0.536	17.4	20.3	37.7	56.0	-18.3
10.120	19.7	21.0	40.7	60.0	-19.3
9.970	19.7	21.0	40.7	60.0	-19.3
0.247	22.2	20.3	42.5	61.9	-19.3
9.700	19.3	21.0	40.3	60.0	-19.7
9.530	19.2	21.0	40.2	60.0	-19.8
9.320	17.8	21.0	38.8	60.0	-21.2
15.330	17.4	21.3	38.7	60.0	-21.3
14.860	17.2	21.3	38.5	60.0	-21.5
15.450	17.1	21.3	38.4	60.0	-21.6
10.530	17.2	21.0	38.2	60.0	-21.8
0.340	16.8	20.3	37.1	59.2	-22.1
1.760	13.2	20.5	33.7	56.0	-22.3
1.600	13.1	20.4	33.5	56.0	-22.5
14.600	16.2	21.2	37.4	60.0	-22.6
0.623	13.1	20.3	33.4	56.0	-22.6
0.318	16.8	20.3	37.1	59.8	-22.7

Peak Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.186	30.0	20.3	50.3	54.2	-3.9
0.563	20.1	20.3	40.4	46.0	-5.6
0.510	17.8	20.3	38.1	46.0	-7.9
0.536	17.4	20.3	37.7	46.0	-8.3
10.120	19.7	21.0	40.7	50.0	-9.3
9.970	19.7	21.0	40.7	50.0	-9.3
0.247	22.2	20.3	42.5	51.9	-9.3
9.700	19.3	21.0	40.3	50.0	-9.7
9.530	19.2	21.0	40.2	50.0	-9.8
9.320	17.8	21.0	38.8	50.0	-11.2
15.330	17.4	21.3	38.7	50.0	-11.3
14.860	17.2	21.3	38.5	50.0	-11.5
15.450	17.1	21.3	38.4	50.0	-11.6
10.530	17.2	21.0	38.2	50.0	-11.8
0.340	16.8	20.3	37.1	49.2	-12.1
1.760	13.2	20.5	33.7	46.0	-12.3
1.600	13.1	20.4	33.5	46.0	-12.5
14.600	16.2	21.2	37.4	50.0	-12.6
0.623	13.1	20.3	33.4	46.0	-12.6
0.318	16.8	20.3	37.1	49.8	-12.7

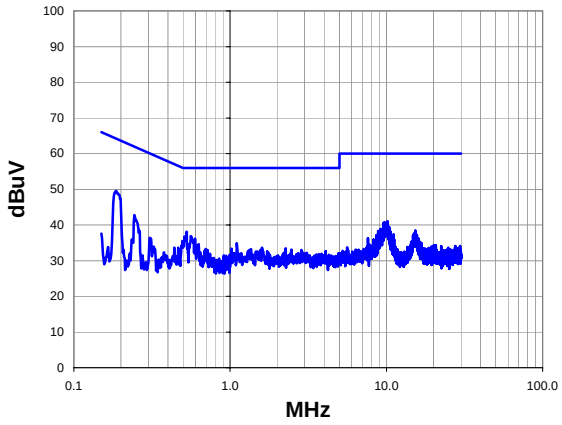
AC POWERLINE CONDUCTED EMISSIONS

Work Order:	MCSO1608	**Date:**	08/08/12		
Project:	None	**Temperature:**	24 °C		
Job Site:	EV01	**Humidity:**	45% RH		
Serial Number:	215622952	**Barometric Pres.:**	1015.5 mbar	**Tested by:**	Rod Peloquin
EUT:	1516				
Configuration:	3				
Customer:	Microsoft Corporation				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting 802.11(a), 6 Mbps, 5250 MHz - 5350 Band, Low Channel 52				
Deviations:	No deviations.				
Comments:	None				

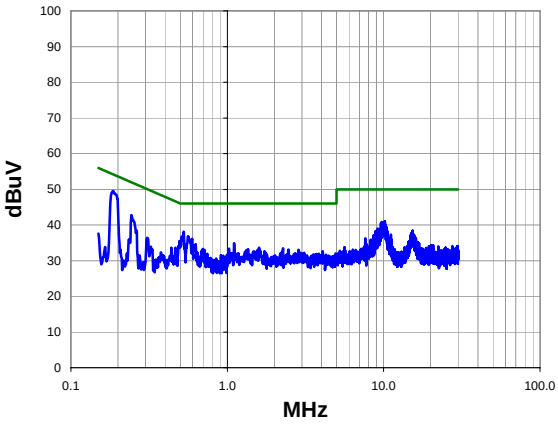
Test Specifications	**Test Method**
FCC 15.207:2012	ANSI C63.10:2009

Run #	39	**Line:**	High Line	**Ext. Attenuation:**	20	**Results**	Pass

Peak Data - vs - Quasi Peak Limit



Peak Data - vs - Average Limit



Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.187	29.2	20.3	49.5	64.2	-14.6
0.526	17.8	20.3	38.1	56.0	-17.9
10.170	20.0	21.0	41.0	60.0	-19.0
0.561	16.6	20.3	36.9	56.0	-19.1
9.750	19.8	21.0	40.8	60.0	-19.2
0.243	22.4	20.3	42.7	62.0	-19.2
9.600	19.6	21.0	40.6	60.0	-19.4
0.597	15.8	20.3	36.1	56.0	-19.9
10.430	18.4	21.0	39.4	60.0	-20.6
9.170	18.0	20.9	38.9	60.0	-21.1
1.104	14.5	20.4	34.9	56.0	-21.1
9.240	17.8	20.9	38.7	60.0	-21.3
0.629	14.3	20.3	34.6	56.0	-21.4
15.320	17.1	21.3	38.4	60.0	-21.6
9.080	17.4	20.9	38.3	60.0	-21.7
8.860	17.4	20.9	38.3	60.0	-21.7
10.630	17.1	21.0	38.1	60.0	-21.9
9.340	17.0	21.0	38.0	60.0	-22.0
15.050	16.4	21.3	37.7	60.0	-22.3
1.600	13.2	20.4	33.6	56.0	-22.4

Peak Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.187	29.2	20.3	49.5	54.2	-4.6
0.526	17.8	20.3	38.1	46.0	-7.9
10.170	20.0	21.0	41.0	50.0	-9.0
0.561	16.6	20.3	36.9	46.0	-9.1
9.750	19.8	21.0	40.8	50.0	-9.2
0.243	22.4	20.3	42.7	52.0	-9.2
9.600	19.6	21.0	40.6	50.0	-9.4
0.597	15.8	20.3	36.1	46.0	-9.9
10.430	18.4	21.0	39.4	50.0	-10.6
9.170	18.0	20.9	38.9	50.0	-11.1
1.104	14.5	20.4	34.9	46.0	-11.1
9.240	17.8	20.9	38.7	50.0	-11.3
0.629	14.3	20.3	34.6	46.0	-11.4
15.320	17.1	21.3	38.4	50.0	-11.6
9.080	17.4	20.9	38.3	50.0	-11.7
8.860	17.4	20.9	38.3	50.0	-11.7
10.630	17.1	21.0	38.1	50.0	-11.9
9.340	17.0	21.0	38.0	50.0	-12.0
15.050	16.4	21.3	37.7	50.0	-12.3
1.600	13.2	20.4	33.6	46.0	-12.4

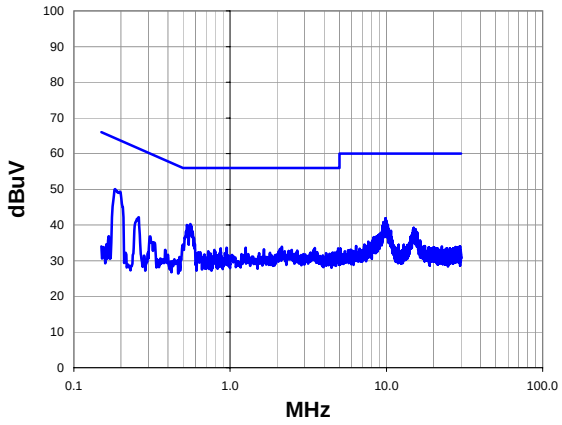
AC POWERLINE CONDUCTED EMISSIONS

Work Order:	MCSO1608	**Date:**	08/08/12		
Project:	None	**Temperature:**	24 °C		
Job Site:	EV01	**Humidity:**	45% RH		
Serial Number:	215622952	**Barometric Pres.:**	1015.5 mbar	**Tested by:**	Rod Peloquin
EUT:	1516				
Configuration:	3				
Customer:	Microsoft Corporation				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting 802.11(a), 6 Mbps, 5250 MHz - 5350 Band, Low Channel 52				
Deviations:	No deviations.				
Comments:	None				

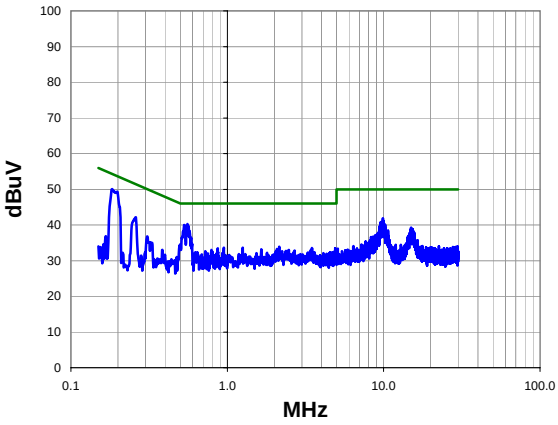
Test Specifications	**Test Method**
FCC 15.207:2012	ANSI C63.10:2009

Run #	40	**Line:**	Neutral	**Ext. Attenuation:**	20	**Results**	Pass

Peak Data - vs - Quasi Peak Limit



Peak Data - vs - Average Limit



Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.184	29.7	20.3	50.0	64.3	-14.3
0.556	20.0	20.3	40.3	56.0	-15.7
0.529	19.7	20.3	40.0	56.0	-16.0
9.870	20.9	21.0	41.9	60.0	-18.1
9.960	20.3	21.0	41.3	60.0	-18.7
9.590	19.8	21.0	40.8	60.0	-19.2
0.259	21.8	20.3	42.1	61.5	-19.3
10.050	19.5	21.0	40.5	60.0	-19.5
9.420	18.8	21.0	39.8	60.0	-20.2
14.950	17.9	21.3	39.2	60.0	-20.8
15.350	17.6	21.3	38.9	60.0	-21.1
14.810	17.4	21.2	38.6	60.0	-21.4
15.090	17.2	21.3	38.5	60.0	-21.5
10.680	17.4	21.0	38.4	60.0	-21.6
9.360	17.3	21.0	38.3	60.0	-21.7
10.300	17.1	21.0	38.1	60.0	-21.9
15.540	16.8	21.3	38.1	60.0	-21.9
2.144	13.4	20.5	33.9	56.0	-22.1
15.730	16.5	21.3	37.8	60.0	-22.2
9.340	16.8	21.0	37.8	60.0	-22.2

Peak Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.184	29.7	20.3	50.0	54.3	-4.3
0.556	20.0	20.3	40.3	46.0	-5.7
0.529	19.7	20.3	40.0	46.0	-6.0
9.870	20.9	21.0	41.9	50.0	-8.1
9.960	20.3	21.0	41.3	50.0	-8.7
9.590	19.8	21.0	40.8	50.0	-9.2
0.259	21.8	20.3	42.1	51.5	-9.3
10.050	19.5	21.0	40.5	50.0	-9.5
9.420	18.8	21.0	39.8	50.0	-10.2
14.950	17.9	21.3	39.2	50.0	-10.8
15.350	17.6	21.3	38.9	50.0	-11.1
14.810	17.4	21.2	38.6	50.0	-11.4
15.090	17.2	21.3	38.5	50.0	-11.5
10.680	17.4	21.0	38.4	50.0	-11.6
9.360	17.3	21.0	38.3	50.0	-11.7
10.300	17.1	21.0	38.1	50.0	-11.9
15.540	16.8	21.3	38.1	50.0	-11.9
2.144	13.4	20.5	33.9	46.0	-12.1
15.730	16.5	21.3	37.8	50.0	-12.2
9.340	16.8	21.0	37.8	50.0	-12.2

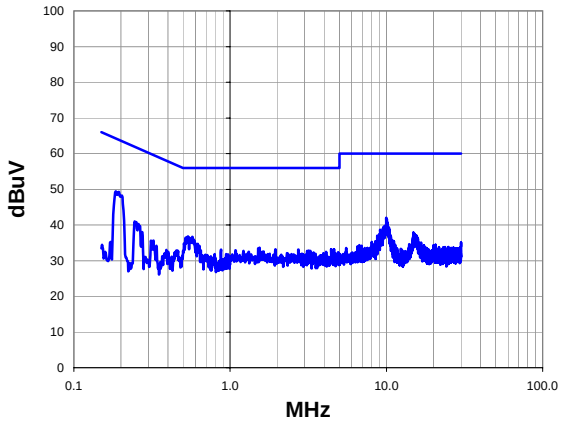
AC POWERLINE CONDUCTED EMISSIONS

Work Order:	MCSO1608	**Date:**	08/08/12		
Project:	None	**Temperature:**	24 °C		
Job Site:	EV01	**Humidity:**	45% RH		
Serial Number:	215622952	**Barometric Pres.:**	1015.5 mbar	**Tested by:**	Rod Peloquin
EUT:	1516				
Configuration:	3				
Customer:	Microsoft Corporation				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting 802.11(a), 6 Mbps, 5250 MHz - 5350 Band, High Channel 64				
Deviations:	No deviations.				
Comments:	None				

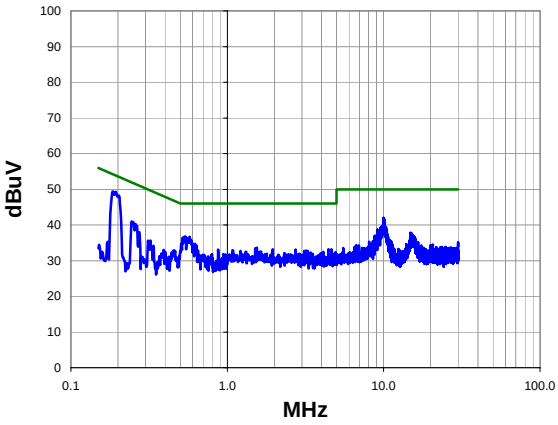
Test Specifications	**Test Method**
FCC 15.207:2012	ANSI C63.10:2009

Run #	41	**Line:**	High Line	**Ext. Attenuation:**	20	**Results**	Pass

Peak Data - vs - Quasi Peak Limit



Peak Data - vs - Average Limit



Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.186	29.1	20.3	49.4	64.2	-14.8
9.980	21.0	21.0	42.0	60.0	-18.0
10.070	20.6	21.0	41.6	60.0	-18.4
0.538	16.5	20.3	36.8	56.0	-19.2
0.573	16.4	20.3	36.7	56.0	-19.3
9.600	18.4	21.0	39.4	60.0	-20.6
0.245	20.6	20.3	40.9	61.9	-21.0
0.621	14.4	20.3	34.7	56.0	-21.3
9.130	17.7	20.9	38.6	60.0	-21.4
10.480	17.5	21.0	38.5	60.0	-21.5
9.450	17.3	21.0	38.3	60.0	-21.7
14.860	16.6	21.3	37.9	60.0	-22.1
1.544	13.2	20.4	33.6	56.0	-22.4
15.130	16.3	21.3	37.6	60.0	-22.4
9.290	16.6	21.0	37.6	60.0	-22.4
9.070	16.6	20.9	37.5	60.0	-22.5
1.512	13.0	20.4	33.4	56.0	-22.6
4.624	12.5	20.7	33.2	56.0	-22.8
1.952	12.7	20.5	33.2	56.0	-22.8
4.432	12.5	20.7	33.2	56.0	-22.8

Peak Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.186	29.1	20.3	49.4	54.2	-4.8
9.980	21.0	21.0	42.0	50.0	-8.0
10.070	20.6	21.0	41.6	50.0	-8.4
0.538	16.5	20.3	36.8	46.0	-9.2
0.573	16.4	20.3	36.7	46.0	-9.3
9.600	18.4	21.0	39.4	50.0	-10.6
0.245	20.6	20.3	40.9	51.9	-11.0
0.621	14.4	20.3	34.7	46.0	-11.3
9.130	17.7	20.9	38.6	50.0	-11.4
10.480	17.5	21.0	38.5	50.0	-11.5
9.450	17.3	21.0	38.3	50.0	-11.7
14.860	16.6	21.3	37.9	50.0	-12.1
1.544	13.2	20.4	33.6	46.0	-12.4
15.130	16.3	21.3	37.6	50.0	-12.4
9.290	16.6	21.0	37.6	50.0	-12.4
9.070	16.6	20.9	37.5	50.0	-12.5
1.512	13.0	20.4	33.4	46.0	-12.6
4.624	12.5	20.7	33.2	46.0	-12.8
1.952	12.7	20.5	33.2	46.0	-12.8
4.432	12.5	20.7	33.2	46.0	-12.8

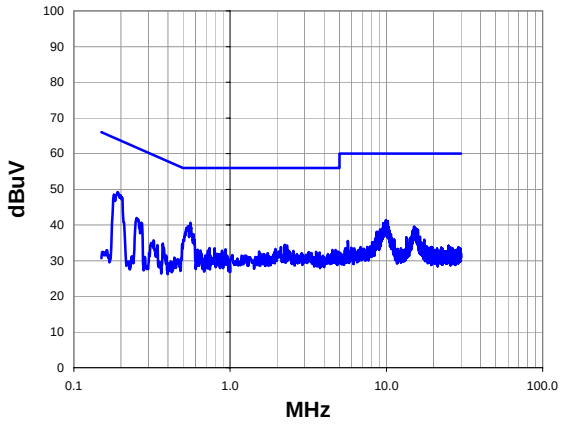
AC POWERLINE CONDUCTED EMISSIONS

Work Order:	MCSO1608	**Date:**	08/08/12		
Project:	None	**Temperature:**	24 °C		
Job Site:	EV01	**Humidity:**	45% RH		
Serial Number:	215622952	**Barometric Pres.:**	1015.5 mbar	**Tested by:**	Rod Peloquin
EUT:	1516				
Configuration:	3				
Customer:	Microsoft Corporation				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting 802.11(a), 6 Mbps, 5250 MHz - 5350 Band, High Channel 64				
Deviations:	No deviations.				
Comments:	None				

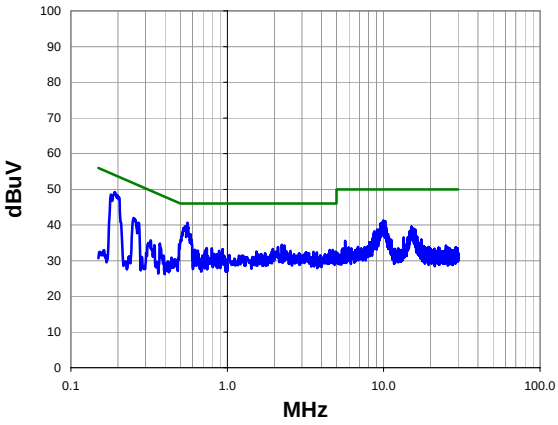
Test Specifications	**Test Method**
FCC 15.207:2012	ANSI C63.10:2009

Run #	42	**Line:**	Neutral	**Ext. Attenuation:**	20	**Results**	Pass

Peak Data - vs - Quasi Peak Limit



Peak Data - vs - Average Limit



Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.191	28.9	20.4	49.3	64.0	-14.8
0.556	20.3	20.3	40.6	56.0	-15.4
9.920	20.3	21.0	41.3	60.0	-18.7
10.220	20.1	21.0	41.1	60.0	-18.9
10.080	19.7	21.0	40.7	60.0	-19.3
9.550	19.5	21.0	40.5	60.0	-19.5
9.620	19.3	21.0	40.3	60.0	-19.7
0.252	21.6	20.3	41.9	61.7	-19.8
15.130	18.2	21.3	39.5	60.0	-20.5
15.030	18.2	21.3	39.5	60.0	-20.5
10.350	18.4	21.0	39.4	60.0	-20.6
15.530	17.6	21.3	38.9	60.0	-21.1
9.100	17.8	20.9	38.7	60.0	-21.3
15.930	17.3	21.3	38.6	60.0	-21.4
2.232	14.0	20.5	34.5	56.0	-21.5
2.312	13.8	20.5	34.3	56.0	-21.7
8.710	17.2	20.9	38.1	60.0	-21.9
8.970	17.1	20.9	38.0	60.0	-22.0
8.650	17.0	20.9	37.9	60.0	-22.1
15.830	16.5	21.3	37.8	60.0	-22.2

Peak Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.191	28.9	20.4	49.3	54.0	-4.8
0.556	20.3	20.3	40.6	46.0	-5.4
9.920	20.3	21.0	41.3	50.0	-8.7
10.220	20.1	21.0	41.1	50.0	-8.9
10.080	19.7	21.0	40.7	50.0	-9.3
9.550	19.5	21.0	40.5	50.0	-9.5
9.620	19.3	21.0	40.3	50.0	-9.7
0.252	21.6	20.3	41.9	51.7	-9.8
15.130	18.2	21.3	39.5	50.0	-10.5
15.030	18.2	21.3	39.5	50.0	-10.5
10.350	18.4	21.0	39.4	50.0	-10.6
15.530	17.6	21.3	38.9	50.0	-11.1
9.100	17.8	20.9	38.7	50.0	-11.3
15.930	17.3	21.3	38.6	50.0	-11.4
2.232	14.0	20.5	34.5	46.0	-11.5
2.312	13.8	20.5	34.3	46.0	-11.7
8.710	17.2	20.9	38.1	50.0	-11.9
8.970	17.1	20.9	38.0	50.0	-12.0
8.650	17.0	20.9	37.9	50.0	-12.1
15.830	16.5	21.3	37.8	50.0	-12.2

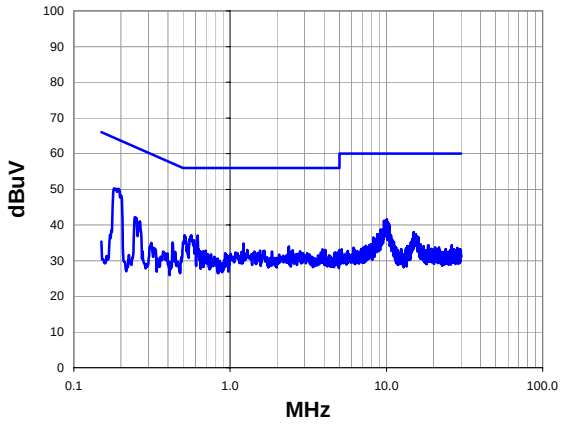
AC POWERLINE CONDUCTED EMISSIONS

Work Order:	MCSO1608	**Date:**	08/08/12		
Project:	None	**Temperature:**	24 °C		
Job Site:	EV01	**Humidity:**	45% RH		
Serial Number:	215622952	**Barometric Pres.:**	1015.5 mbar	**Tested by:**	Rod Peloquin
EUT:	1516				
Configuration:	3				
Customer:	Microsoft Corporation				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting 802.11(a), 6 Mbps, 5470 MHz - 5725 Band, Low Channel 100				
Deviations:	No deviations.				
Comments:	None				

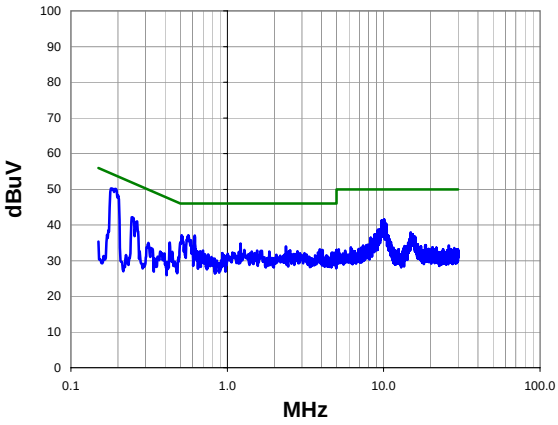
Test Specifications	**Test Method**
FCC 15.207:2012	ANSI C63.10:2009

Run #	43	**Line:**	High Line	**Ext. Attenuation:**	20	**Results**	Pass

Peak Data - vs - Quasi Peak Limit



Peak Data - vs - Average Limit



Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.182	29.9	20.3	50.2	64.4	-14.1
10.070	20.5	21.0	41.5	60.0	-18.5
9.950	20.2	21.0	41.2	60.0	-18.8
9.760	20.2	21.0	41.2	60.0	-18.8
9.660	20.2	21.0	41.2	60.0	-18.8
0.565	16.8	20.3	37.1	56.0	-18.9
0.510	16.8	20.3	37.1	56.0	-18.9
0.619	16.7	20.3	37.0	56.0	-19.0
10.240	19.7	21.0	40.7	60.0	-19.3
0.245	21.8	20.3	42.1	61.9	-19.8
10.420	19.2	21.0	40.2	60.0	-19.8
0.264	20.7	20.3	41.0	61.3	-20.3
1.216	14.4	20.4	34.8	56.0	-21.2
9.450	17.8	21.0	38.8	60.0	-21.2
9.210	17.7	20.9	38.6	60.0	-21.4
9.180	17.5	20.9	38.4	60.0	-21.6
2.376	13.5	20.5	34.0	56.0	-22.0
14.930	16.7	21.3	38.0	60.0	-22.0
0.429	14.8	20.3	35.1	57.3	-22.2
9.250	16.5	20.9	37.4	60.0	-22.6

Peak Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.182	29.9	20.3	50.2	54.4	-4.1
10.070	20.5	21.0	41.5	50.0	-8.5
9.950	20.2	21.0	41.2	50.0	-8.8
9.760	20.2	21.0	41.2	50.0	-8.8
9.660	20.2	21.0	41.2	50.0	-8.8
0.565	16.8	20.3	37.1	46.0	-8.9
0.510	16.8	20.3	37.1	46.0	-8.9
0.619	16.7	20.3	37.0	46.0	-9.0
10.240	19.7	21.0	40.7	50.0	-9.3
0.245	21.8	20.3	42.1	51.9	-9.8
10.420	19.2	21.0	40.2	50.0	-9.8
0.264	20.7	20.3	41.0	51.3	-10.3
1.216	14.4	20.4	34.8	46.0	-11.2
9.450	17.8	21.0	38.8	50.0	-11.2
9.210	17.7	20.9	38.6	50.0	-11.4
9.180	17.5	20.9	38.4	50.0	-11.6
2.376	13.5	20.5	34.0	46.0	-12.0
14.930	16.7	21.3	38.0	50.0	-12.0
0.429	14.8	20.3	35.1	47.3	-12.2
9.250	16.5	20.9	37.4	50.0	-12.6

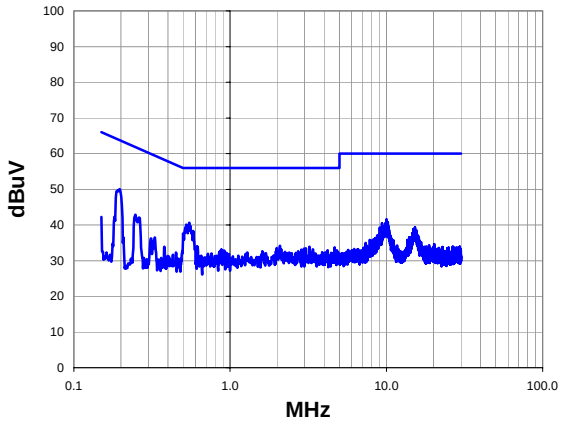
AC POWERLINE CONDUCTED EMISSIONS

Work Order:	MCSO1608	**Date:**	08/08/12		
Project:	None	**Temperature:**	24 °C		
Job Site:	EV01	**Humidity:**	45% RH		
Serial Number:	215622952	**Barometric Pres.:**	1015.5 mbar	**Tested by:**	Rod Peloquin
EUT:	1516				
Configuration:	3				
Customer:	Microsoft Corporation				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting 802.11(a), 6 Mbps, 5470 MHz - 5725 Band, Low Channel 100				
Deviations:	No deviations.				
Comments:	None				

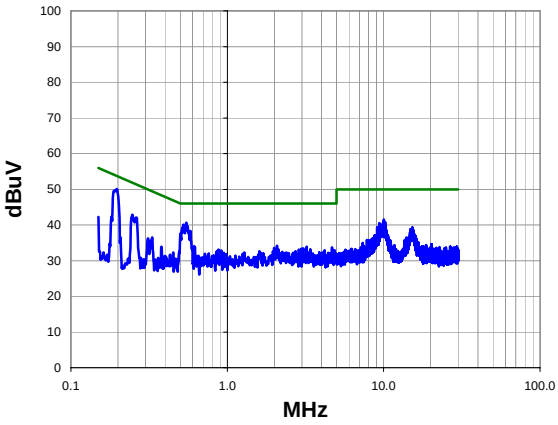
Test Specifications	**Test Method**
FCC 15.207:2012	ANSI C63.10:2009

Run #	44	**Line:**	Neutral	**Ext. Attenuation:**	20	**Results**	Pass

Peak Data - vs - Quasi Peak Limit



Peak Data - vs - Average Limit



Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.196	29.7	20.4	50.1	63.8	-13.7
0.548	20.3	20.3	40.6	56.0	-15.4
10.010	20.5	21.0	41.5	60.0	-18.5
0.247	22.5	20.3	42.8	61.9	-19.0
10.210	19.7	21.0	40.7	60.0	-19.3
9.380	19.5	21.0	40.5	60.0	-19.5
9.090	18.4	20.9	39.3	60.0	-20.7
15.250	18.0	21.3	39.3	60.0	-20.7
9.320	18.2	21.0	39.2	60.0	-20.8
14.860	17.6	21.3	38.9	60.0	-21.1
9.290	17.7	21.0	38.7	60.0	-21.3
2.080	13.7	20.5	34.2	56.0	-21.8
0.614	13.8	20.3	34.1	56.0	-21.9
3.216	13.4	20.5	33.9	56.0	-22.1
4.672	13.0	20.7	33.7	56.0	-22.3
1.992	13.1	20.5	33.6	56.0	-22.4
3.056	12.9	20.5	33.4	56.0	-22.6
2.976	12.8	20.5	33.3	56.0	-22.7
3.392	12.6	20.5	33.1	56.0	-22.9
2.864	12.6	20.5	33.1	56.0	-22.9

Peak Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.196	29.7	20.4	50.1	53.8	-3.7
0.548	20.3	20.3	40.6	46.0	-5.4
10.010	20.5	21.0	41.5	50.0	-8.5
0.247	22.5	20.3	42.8	51.9	-9.0
10.210	19.7	21.0	40.7	50.0	-9.3
9.380	19.5	21.0	40.5	50.0	-9.5
9.090	18.4	20.9	39.3	50.0	-10.7
15.250	18.0	21.3	39.3	50.0	-10.7
9.320	18.2	21.0	39.2	50.0	-10.8
14.860	17.6	21.3	38.9	50.0	-11.1
9.290	17.7	21.0	38.7	50.0	-11.3
2.080	13.7	20.5	34.2	46.0	-11.8
0.614	13.8	20.3	34.1	46.0	-11.9
3.216	13.4	20.5	33.9	46.0	-12.1
4.672	13.0	20.7	33.7	46.0	-12.3
1.992	13.1	20.5	33.6	46.0	-12.4
3.056	12.9	20.5	33.4	46.0	-12.6
2.976	12.8	20.5	33.3	46.0	-12.7
3.392	12.6	20.5	33.1	46.0	-12.9
2.864	12.6	20.5	33.1	46.0	-12.9

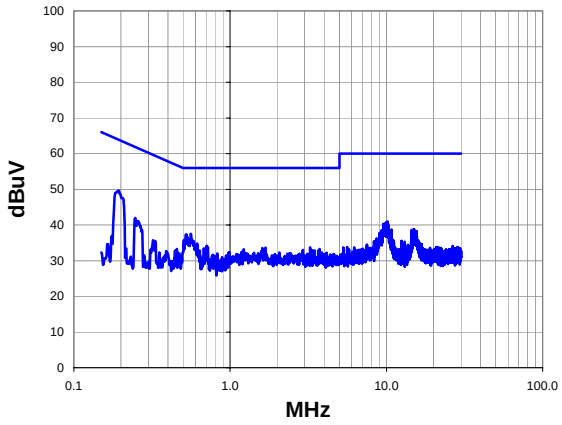
AC POWERLINE CONDUCTED EMISSIONS

Work Order:	MCSO1608	**Date:**	08/08/12		
Project:	None	**Temperature:**	24 °C		
Job Site:	EV01	**Humidity:**	45% RH		
Serial Number:	215622952	**Barometric Pres.:**	1015.5 mbar	**Tested by:**	Rod Peloquin
EUT:	1516				
Configuration:	3				
Customer:	Microsoft Corporation				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting 802.11(a), 6 Mbps, 5470 MHz - 5725 Band, Mid Channel 116				
Deviations:	No deviations.				
Comments:	None				

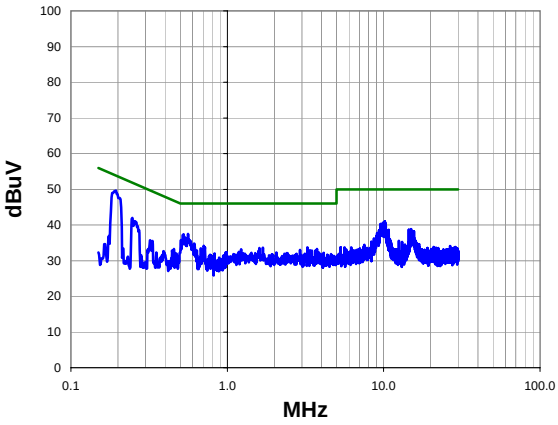
Test Specifications	**Test Method**
FCC 15.207:2012	ANSI C63.10:2009

Run #	45	**Line:**	High Line	**Ext. Attenuation:**	20	**Results**	Pass

Peak Data - vs - Quasi Peak Limit



Peak Data - vs - Average Limit



Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.194	29.2	20.4	49.6	63.9	-14.3
0.561	17.2	20.3	37.5	56.0	-18.5
0.524	17.1	20.3	37.4	56.0	-18.6
10.180	20.0	21.0	41.0	60.0	-19.0
9.910	19.6	21.0	40.6	60.0	-19.4
10.030	19.5	21.0	40.5	60.0	-19.5
9.560	19.3	21.0	40.3	60.0	-19.7
0.247	21.6	20.3	41.9	61.9	-19.9
10.300	18.7	21.0	39.7	60.0	-20.3
15.000	17.6	21.3	38.9	60.0	-21.1
0.614	14.5	20.3	34.8	56.0	-21.2
14.510	17.4	21.2	38.6	60.0	-21.4
10.790	17.6	21.0	38.6	60.0	-21.4
9.340	17.5	21.0	38.5	60.0	-21.5
15.620	16.9	21.3	38.2	60.0	-21.8
15.120	16.9	21.3	38.2	60.0	-21.8
0.708	13.8	20.3	34.1	56.0	-21.9
3.248	13.2	20.5	33.7	56.0	-22.3
9.070	16.8	20.9	37.7	60.0	-22.3
1.688	13.2	20.4	33.6	56.0	-22.4

Peak Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.194	29.2	20.4	49.6	53.9	-4.3
0.561	17.2	20.3	37.5	46.0	-8.5
0.524	17.1	20.3	37.4	46.0	-8.6
10.180	20.0	21.0	41.0	50.0	-9.0
9.910	19.6	21.0	40.6	50.0	-9.4
10.030	19.5	21.0	40.5	50.0	-9.5
9.560	19.3	21.0	40.3	50.0	-9.7
0.247	21.6	20.3	41.9	51.9	-9.9
10.300	18.7	21.0	39.7	50.0	-10.3
15.000	17.6	21.3	38.9	50.0	-11.1
0.614	14.5	20.3	34.8	46.0	-11.2
14.510	17.4	21.2	38.6	50.0	-11.4
10.790	17.6	21.0	38.6	50.0	-11.4
9.340	17.5	21.0	38.5	50.0	-11.5
15.620	16.9	21.3	38.2	50.0	-11.8
15.120	16.9	21.3	38.2	50.0	-11.8
0.708	13.8	20.3	34.1	46.0	-11.9
3.248	13.2	20.5	33.7	46.0	-12.3
9.070	16.8	20.9	37.7	50.0	-12.3
1.688	13.2	20.4	33.6	46.0	-12.4

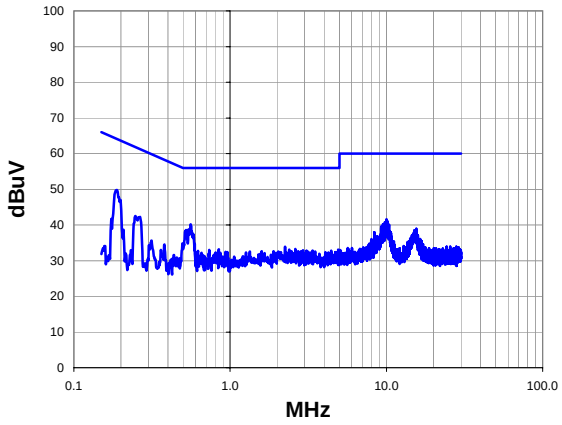
AC POWERLINE CONDUCTED EMISSIONS

Work Order:	MCSO1608	**Date:**	08/08/12		
Project:	None	**Temperature:**	24 °C		
Job Site:	EV01	**Humidity:**	45% RH		
Serial Number:	215622952	**Barometric Pres.:**	1015.5 mbar	**Tested by:**	Rod Peloquin
EUT:	1516				
Configuration:	3				
Customer:	Microsoft Corporation				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting 802.11(a), 6 Mbps, 5470 MHz - 5725 Band, Mid Channel 116				
Deviations:	No deviations.				
Comments:	None				

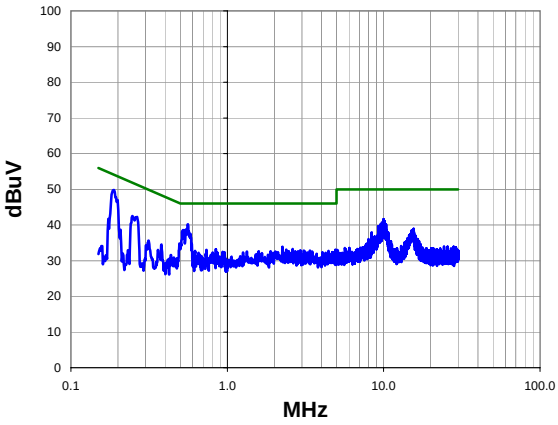
Test Specifications	**Test Method**
FCC 15.207:2012	ANSI C63.10:2009

Run #	46	**Line:**	Neutral	**Ext. Attenuation:**	20	**Results**	Pass

Peak Data - vs - Quasi Peak Limit



Peak Data - vs - Average Limit



Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.189	29.4	20.3	49.7	64.1	-14.3
0.560	19.9	20.3	40.2	56.0	-15.8
0.522	18.3	20.3	38.6	56.0	-17.4
10.000	20.6	21.0	41.6	60.0	-18.4
10.140	20.1	21.0	41.1	60.0	-18.9
9.770	19.7	21.0	40.7	60.0	-19.3
0.247	22.2	20.3	42.5	61.9	-19.3
9.520	19.2	21.0	40.2	60.0	-19.8
10.380	19.1	21.0	40.1	60.0	-19.9
10.260	19.1	21.0	40.1	60.0	-19.9
10.200	19.1	21.0	40.1	60.0	-19.9
9.270	18.7	20.9	39.6	60.0	-20.4
9.690	18.5	21.0	39.5	60.0	-20.5
15.530	17.6	21.3	38.9	60.0	-21.1
9.470	17.8	21.0	38.8	60.0	-21.2
8.370	17.1	20.8	37.9	60.0	-22.1
10.660	16.9	21.0	37.9	60.0	-22.1
2.248	13.4	20.5	33.9	56.0	-22.1
10.680	16.7	21.0	37.7	60.0	-22.3
2.616	12.8	20.5	33.3	56.0	-22.7

Peak Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.189	29.4	20.3	49.7	54.1	-4.3
0.560	19.9	20.3	40.2	46.0	-5.8
0.522	18.3	20.3	38.6	46.0	-7.4
10.000	20.6	21.0	41.6	50.0	-8.4
10.140	20.1	21.0	41.1	50.0	-8.9
9.770	19.7	21.0	40.7	50.0	-9.3
0.247	22.2	20.3	42.5	51.9	-9.3
9.520	19.2	21.0	40.2	50.0	-9.8
10.380	19.1	21.0	40.1	50.0	-9.9
10.260	19.1	21.0	40.1	50.0	-9.9
10.200	19.1	21.0	40.1	50.0	-9.9
9.270	18.7	20.9	39.6	50.0	-10.4
9.690	18.5	21.0	39.5	50.0	-10.5
15.530	17.6	21.3	38.9	50.0	-11.1
9.470	17.8	21.0	38.8	50.0	-11.2
8.370	17.1	20.8	37.9	50.0	-12.1
10.660	16.9	21.0	37.9	50.0	-12.1
2.248	13.4	20.5	33.9	46.0	-12.1
10.680	16.7	21.0	37.7	50.0	-12.3
2.616	12.8	20.5	33.3	46.0	-12.7

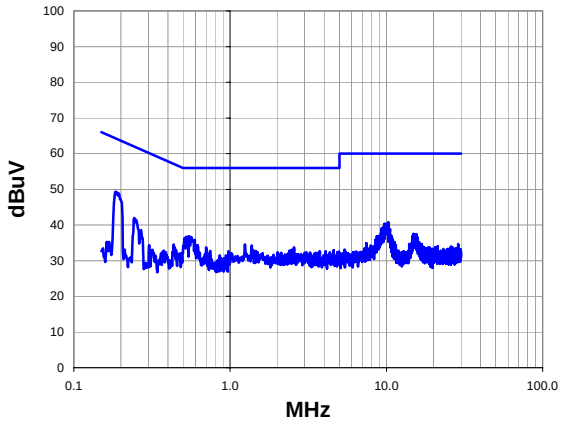
AC POWERLINE CONDUCTED EMISSIONS

Work Order:	MCSO1608	**Date:**	08/08/12		
Project:	None	**Temperature:**	24 °C		
Job Site:	EV01	**Humidity:**	45% RH		
Serial Number:	215622952	**Barometric Pres.:**	1015.5 mbar	**Tested by:**	Rod Peloquin
EUT:	1516				
Configuration:	3				
Customer:	Microsoft Corporation				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting 802.11(a), 6 Mbps, 5470 MHz - 5725 Band, Mid Channel 116				
Deviations:	No deviations.				
Comments:	None				

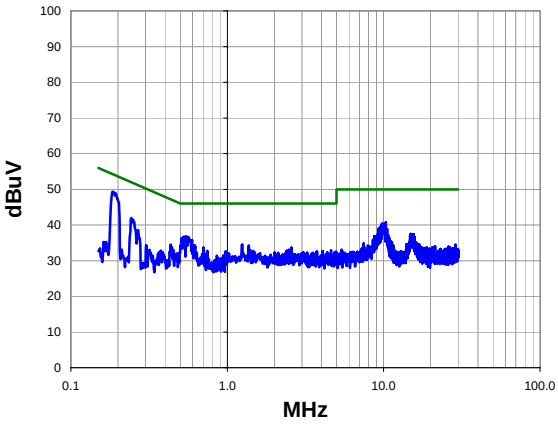
Test Specifications	**Test Method**
FCC 15.207:2012	ANSI C63.10:2009

Run #	47	**Line:**	High Line	**Ext. Attenuation:**	20	**Results**	Pass

Peak Data - vs - Quasi Peak Limit



Peak Data - vs - Average Limit



Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.186	29.0	20.3	49.3	64.2	-14.9
0.546	16.5	20.3	36.8	56.0	-19.2
0.538	16.5	20.3	36.8	56.0	-19.2
10.310	19.7	21.0	40.7	60.0	-19.3
9.850	19.4	21.0	40.4	60.0	-19.6
9.690	19.3	21.0	40.3	60.0	-19.7
0.243	21.6	20.3	41.9	62.0	-20.0
0.595	15.5	20.3	35.8	56.0	-20.2
9.440	18.2	21.0	39.2	60.0	-20.8
9.300	18.0	21.0	39.0	60.0	-21.0
10.530	17.8	21.0	38.8	60.0	-21.2
10.430	17.7	21.0	38.7	60.0	-21.3
1.248	14.1	20.4	34.5	56.0	-21.5
0.619	14.0	20.3	34.3	56.0	-21.7
1.376	13.8	20.4	34.2	56.0	-21.8
0.703	13.4	20.3	33.7	56.0	-22.3
2.568	13.2	20.5	33.7	56.0	-22.3
14.900	16.2	21.3	37.5	60.0	-22.5
15.550	16.1	21.3	37.4	60.0	-22.6
0.269	18.2	20.3	38.5	61.1	-22.6

Peak Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.186	29.0	20.3	49.3	54.2	-4.9
0.546	16.5	20.3	36.8	46.0	-9.2
0.538	16.5	20.3	36.8	46.0	-9.2
10.310	19.7	21.0	40.7	50.0	-9.3
9.850	19.4	21.0	40.4	50.0	-9.6
9.690	19.3	21.0	40.3	50.0	-9.7
0.243	21.6	20.3	41.9	52.0	-10.0
0.595	15.5	20.3	35.8	46.0	-10.2
9.440	18.2	21.0	39.2	50.0	-10.8
9.300	18.0	21.0	39.0	50.0	-11.0
10.530	17.8	21.0	38.8	50.0	-11.2
10.430	17.7	21.0	38.7	50.0	-11.3
1.248	14.1	20.4	34.5	46.0	-11.5
0.619	14.0	20.3	34.3	46.0	-11.7
1.376	13.8	20.4	34.2	46.0	-11.8
0.703	13.4	20.3	33.7	46.0	-12.3
2.568	13.2	20.5	33.7	46.0	-12.3
14.900	16.2	21.3	37.5	50.0	-12.5
15.550	16.1	21.3	37.4	50.0	-12.6
0.269	18.2	20.3	38.5	51.1	-12.6

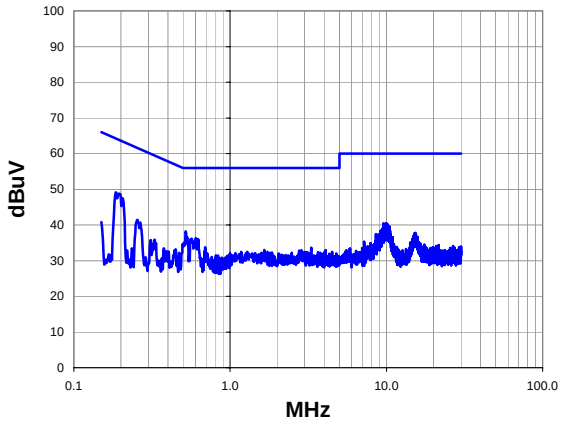
AC POWERLINE CONDUCTED EMISSIONS

Work Order:	MCSO1608	**Date:**	08/08/12		
Project:	None	**Temperature:**	24 °C		
Job Site:	EV01	**Humidity:**	45% RH		
Serial Number:	215622952	**Barometric Pres.:**	1015.5 mbar	**Tested by:**	Rod Peloquin
EUT:	1516				
Configuration:	3				
Customer:	Microsoft Corporation				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting 802.11(a), 6 Mbps, 5470 MHz - 5725 Band, High Channel 140				
Deviations:	No deviations.				
Comments:	None				

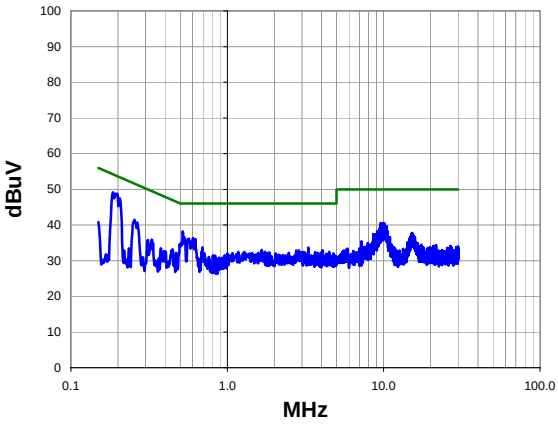
Test Specifications	**Test Method**
FCC 15.207:2012	ANSI C63.10:2009

Run #	48	**Line:**	High Line	**Ext. Attenuation:**	20	**Results**	Pass

Peak Data - vs - Quasi Peak Limit



Peak Data - vs - Average Limit



Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.186	28.8	20.3	49.1	64.2	-15.1
0.519	17.9	20.3	38.2	56.0	-17.8
9.890	19.5	21.0	40.5	60.0	-19.5
9.570	19.5	21.0	40.5	60.0	-19.5
10.130	19.4	21.0	40.4	60.0	-19.6
0.604	16.0	20.3	36.3	56.0	-19.7
9.820	19.1	21.0	40.1	60.0	-19.9
9.680	19.1	21.0	40.1	60.0	-19.9
0.255	21.1	20.3	41.4	61.6	-20.1
10.430	18.6	21.0	39.6	60.0	-20.4
0.548	14.8	20.3	35.1	56.0	-20.9
9.440	18.0	21.0	39.0	60.0	-21.0
9.380	17.8	21.0	38.8	60.0	-21.2
10.550	17.4	21.0	38.4	60.0	-21.6
9.150	17.4	20.9	38.3	60.0	-21.7
9.200	17.2	20.9	38.1	60.0	-21.9
15.290	16.5	21.3	37.8	60.0	-22.2
0.694	13.4	20.3	33.7	56.0	-22.3
3.304	13.1	20.5	33.6	56.0	-22.4
15.120	16.3	21.3	37.6	60.0	-22.4

Peak Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.186	28.8	20.3	49.1	54.2	-5.1
0.519	17.9	20.3	38.2	46.0	-7.8
9.890	19.5	21.0	40.5	50.0	-9.5
9.570	19.5	21.0	40.5	50.0	-9.5
10.130	19.4	21.0	40.4	50.0	-9.6
0.604	16.0	20.3	36.3	46.0	-9.7
9.820	19.1	21.0	40.1	50.0	-9.9
9.680	19.1	21.0	40.1	50.0	-9.9
0.255	21.1	20.3	41.4	51.6	-10.1
10.430	18.6	21.0	39.6	50.0	-10.4
0.548	14.8	20.3	35.1	46.0	-10.9
9.440	18.0	21.0	39.0	50.0	-11.0
9.380	17.8	21.0	38.8	50.0	-11.2
10.550	17.4	21.0	38.4	50.0	-11.6
9.150	17.4	20.9	38.3	50.0	-11.7
9.200	17.2	20.9	38.1	50.0	-11.9
15.290	16.5	21.3	37.8	50.0	-12.2
0.694	13.4	20.3	33.7	46.0	-12.3
3.304	13.1	20.5	33.6	46.0	-12.4
15.120	16.3	21.3	37.6	50.0	-12.4

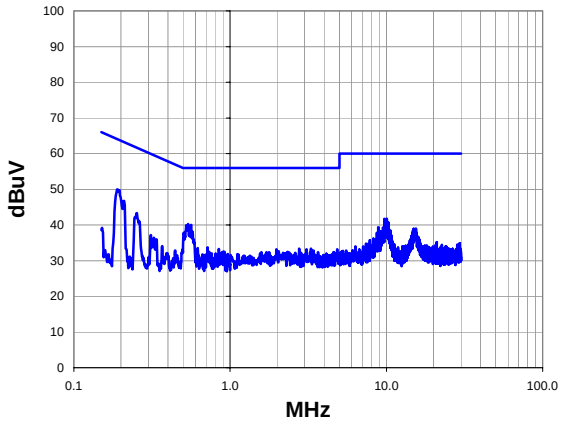
AC POWERLINE CONDUCTED EMISSIONS

Work Order:	MCSO1608	**Date:**	08/08/12		
Project:	None	**Temperature:**	24 °C		
Job Site:	EV01	**Humidity:**	45% RH		
Serial Number:	215622952	**Barometric Pres.:**	1015.5 mbar	**Tested by:**	Rod Peloquin
EUT:	1516				
Configuration:	3				
Customer:	Microsoft Corporation				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting 802.11(a), 6 Mbps, 5470 MHz - 5725 Band, High Channel 140				
Deviations:	No deviations.				
Comments:	None				

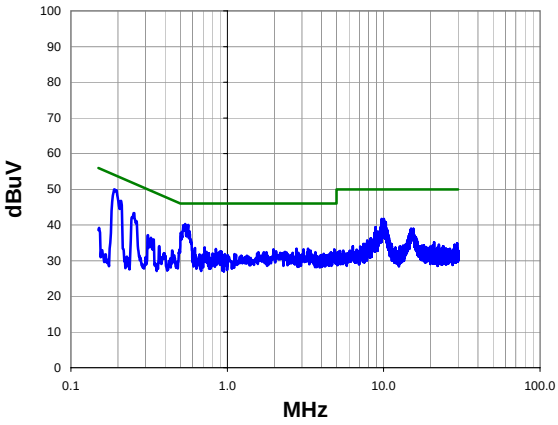
Test Specifications	**Test Method**
FCC 15.207:2012	ANSI C63.10:2009

Run #	49	**Line:**	Neutral	**Ext. Attenuation:**	20	**Results**	Pass

Peak Data - vs - Quasi Peak Limit



Peak Data - vs - Average Limit



Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.191	29.6	20.4	50.0	64.0	-14.1
0.538	20.0	20.3	40.3	56.0	-15.7
0.563	19.7	20.3	40.0	56.0	-16.0
10.050	20.7	21.0	41.7	60.0	-18.3
9.720	20.7	21.0	41.7	60.0	-18.3
0.252	23.0	20.3	43.3	61.7	-18.4
9.780	20.1	21.0	41.1	60.0	-18.9
9.930	19.8	21.0	40.8	60.0	-19.2
10.320	19.7	21.0	40.7	60.0	-19.3
8.880	18.5	20.9	39.4	60.0	-20.6
9.530	18.3	21.0	39.3	60.0	-20.7
14.950	17.7	21.3	39.0	60.0	-21.0
15.470	17.6	21.3	38.9	60.0	-21.1
10.580	17.5	21.0	38.5	60.0	-21.5
14.820	17.2	21.2	38.4	60.0	-21.6
9.190	17.3	20.9	38.2	60.0	-21.8
10.630	16.9	21.0	37.9	60.0	-22.1
8.700	16.9	20.9	37.8	60.0	-22.2
0.716	13.4	20.3	33.7	56.0	-22.3
0.621	13.2	20.3	33.5	56.0	-22.5

Peak Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.191	29.6	20.4	50.0	54.0	-4.1
0.538	20.0	20.3	40.3	46.0	-5.7
0.563	19.7	20.3	40.0	46.0	-6.0
10.050	20.7	21.0	41.7	50.0	-8.3
9.720	20.7	21.0	41.7	50.0	-8.3
0.252	23.0	20.3	43.3	51.7	-8.4
9.780	20.1	21.0	41.1	50.0	-8.9
9.930	19.8	21.0	40.8	50.0	-9.2
10.320	19.7	21.0	40.7	50.0	-9.3
8.880	18.5	20.9	39.4	50.0	-10.6
9.530	18.3	21.0	39.3	50.0	-10.7
14.950	17.7	21.3	39.0	50.0	-11.0
15.470	17.6	21.3	38.9	50.0	-11.1
10.580	17.5	21.0	38.5	50.0	-11.5
14.820	17.2	21.2	38.4	50.0	-11.6
9.190	17.3	20.9	38.2	50.0	-11.8
10.630	16.9	21.0	37.9	50.0	-12.1
8.700	16.9	20.9	37.8	50.0	-12.2
0.716	13.4	20.3	33.7	46.0	-12.3
0.621	13.2	20.3	33.5	46.0	-12.5