ZOLL Medical Corp.

X Series

Report No. LGPD0044.2 Rev 01

Report Prepared By

www.nwemc.com
1-888-EMI-CERT

EMC Test Report

22975 NW Evergreen Parkway
Suite 400
Hillsboro, Oregon 97124

Certificate of Test

Last Date of Test: October 27, 2011
ZOLL Medical Corp.
Model: X Series

Emissions			
Test Description	**Specification**	**Test Method**	**Pass/Fail**
Emission Bandwidth	FCC 15.407:2011	ANSI C63.10:2009	**Pass**
Peak Transmit Power	FCC 15.407:2011	ANSI C63.10:2009	**Pass**
Peak Power Spectral Density	FCC 15.407:2011	ANSI C63.10:2009	**Pass**
Peak Excursion of the Modulation Envelope	FCC 15.407:2011	ANSI C63.10:2009	**Pass**
Frequency Stability	FCC 15.407:2011	ANSI C63.10:2009	**Pass**
Spurious Radiated Emissions	FCC 15.407:2011	ANSI C63.10:2009	**Pass**
AC Power line Conducted Emissions	FCC 15.407:2011	ANSI C63.10:2009	**Pass**

Modifications made to the product
See the Modifications section of this report

Test Facility

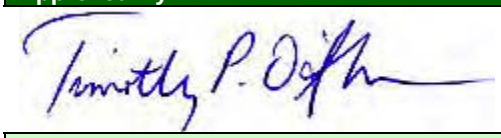
The measurement facility used to collect the data is located at:

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

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

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

Approved By:



Tim O'Shea, Operations Manager

NVLAP Lab Code: 200881-0

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

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

Revision Number	Description	Date	Page Number
01	Corrected mfg information	1/20/12	8

Barometric Pressure

The recorded barometric pressure has been normalized to sea level.

Accreditations and Authorizations

FCC

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

NVLAP

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

Industry Canada

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

CAB

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

Australia/New Zealand

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

Accreditations and Authorizations

VCCI

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

BSMI

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

GOST

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

KCC

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

VIETNAM

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

SCOPE

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

Northwest EMC Locations

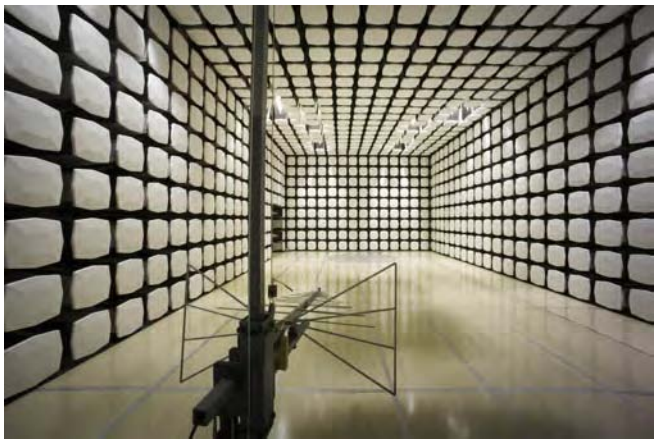
Oregon
Labs EV01-EV12
22975 NW Evergreen Pkwy
Suite 400
Hillsboro, OR 97124
(503) 844-4066

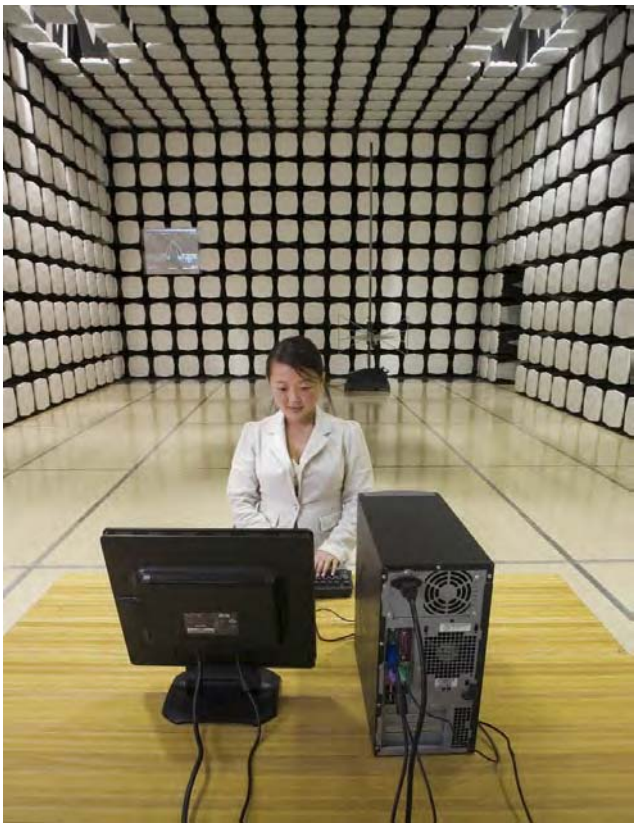
California
Labs OC01-OC13
41 Tesla
Irvine, CA 92618
(949) 861-8918

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

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

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





Party Requesting the Test

Company Name:	ZOLL Medical Corp.
Address:	269 Mill Road
City, State, Zip:	Chelmsford, MA 01824
Test Requested By:	Curt McNamara - Logic Product Development
Model:	X Series
First Date of Test:	October 20, 2011
Last Date of Test:	October 27, 2011
Receipt Date of Samples:	October 19, 2011
Equipment Design Stage:	Prototype
Equipment Condition:	No Damage

Information Provided by the Party Requesting the Test

Functional Description of the EUT (Equipment Under Test):
802.11a/b/g/n - Bluetooth radio

Testing Objective:
Seeking to demonstrate compliance under FCC 15.407 for operation in the 5.2, 5.3, and 5.6 bands.

CONFIGURATION 1 LGPD0044

Software/Firmware Running during test	
Description	**Version**
Iris Software	00.03.02.1002

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
CPA Board	Logic Product Development	1020247 rev B	L341100050
CP Board	Logic Product Development	1020246 rev B	L341100012

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Debug Board	ZOLL Medical Corp.	None	None
DC Power Supply	Agilent	E3620A	MY40003282
Laptop	DELL	PP18L/KX335 A01	CN-0WM416-12961-81N-4502
Laptop Power Brick	DELL	DA130PE1-00/JU012	CN-0JU012-48661-09K-HHFR-A04

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
AC Power Cable	No	1.80 m	No	AC Mains	DC Power Supply
AC Power Cable	No	1.00 m	No	AC Mains	Laptop Power Brick
DC Power Cable	No	1.80 m	Yes	Laptop Power Brick	Laptop
DC Power Cable	No	0.50 m	No	DC Power Supply	CP Board
Serial Cable	Yes	2.0 m	No	Laptop	Debug Board
Ribbon Cable	No	0.13 m	No	CP Board	CPA Board
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

CONFIGURATION 2 LGPD0044

Software/Firmware Running during test	
Description	**Version**
Iris Software	00.03.02.1002

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
X-series	ZOLL Medical Corp.	X-Series	AR11J000137
X-series Power Brick	Propaq MD	8300-0004	4142F 0000587
Propaq.MD Battery Pack	ZOLL Medical Corp.	8000-0580-01	AJ10BMV0059
X-series USB Board	ZOLL Medical Corp.	None	None

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
DC Power Supply	V Infinity	3A-1WP05	None
Ethernet to USB Adapter	D-Link	DUB-E100	Q8031A9000586

Remote Equipment Outside of Test Setup Boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Laptop	DELL	PP18L/KX335 A01	CN-0WM416-12961-81N-4502
Laptop Power Brick	DELL	DA130PE1-00/JU012	CN-0JU012-48661-09K-HHFR-A04

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
AC Power Cable	No	1.00 m	No	AC Mains	Laptop Power Brick
DC Power Cable	No	1.80 m	Yes	Laptop Power Brick	Laptop
DC Power Cable	No	1.90m	No	X-series Power Brick	X-series
DC Power Cable	No	1.00m	Yes	DC Power Supply	X-series USB Board
AC Power Cable	No	1.80m	No	AC Mains	X-series Power Brick
3 ea. Invasive Pressure (8300-0787-01)	No	4.30m	No	X-series	Self Terminated
Manual Defib.	No	2.40m	No	X-series	Termination
2 ea. Temp. Leads, (11J40753 409B)	No	3.10m	No	X-series	Self Terminated
USB	Yes	0.30m	No	X-series	Unterminated
SpO2, (PS-10153D 0299)	No	0.95m	No	X-series	Self Terminated
ECG, (8300-0789-01, Lot:58646)	No	3.10m	No	X-series	Termination
Patient Leads, (8300-0790-01, Lot:57862)	No	0.80m	No	ECG, (8300-0789-01, Lot:58646)	Termination
USB	PA	0.15m	No	Ethernet to USB Adapter	X-series USB Board
USB	Yes	1.80m	No	X-series USB Board	Laptop
Cat5 Ethernet	No	7.50m	No	Ethernet to USB Adapter	Laptop
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

CONFIGURATION 3 LGPD0044

Software/Firmware Running during test	
Description	**Version**
Iris Software	00.03.02.1002

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
X-series	ZOLL Medical Corp.	X-Series	AR11J000137
X-series Power Brick	Propaq MD	8300-0004	4142F 0000587
Propaq.MD Battery Pack	ZOLL Medical Corp.	8000-0580-01	AJ10BMV0059
X-series USB Board	ZOLL Medical Corp.	None	None

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
DC Power Supply	V Infinity	3A-1WP05	None
Ethernet to USB Adapter	D-Link	DUB-E100	Q8031A9000586

Remote Equipment Outside of Test Setup Boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Laptop	DELL	PP18L/KX335 A01	CN-0WM416-12961-81N-4502
Laptop Power Brick	DELL	DA130PE1-00/JU012	CN-0JU012-48661-09K-HHFR-A04

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
AC Power Cable	No	1.00 m	No	AC Mains	Laptop Power Brick
DC Power Cable	No	1.80 m	Yes	Laptop Power Brick	Laptop
DC Power Cable	No	0.50 m	No	DC Power Supply	CP Board
DC Power Cable	No	1.90m	No	X-series Power Brick	X-series
DC Power Cable	No	1.00m	Yes	DC Power Supply	X-series USB Board
AC Power Cable	No	1.80m	No	AC Mains	X-series Power Brick
3 ea. Invasive Pressure (8300-0787-01)	No	4.30m	No	X-series	Self Terminated
Manual Defib.	No	2.40m	No	X-series	Termination
2 ea. Temp. Leads, (11J40753 409B)	No	3.10m	No	X-series	Self Terminated
USB	Yes	0.30m	No	X-series	Unterminated
SpO2, (PS-10153D 0299)	No	0.95m	No	X-series	Self Terminated
ECG, (8300-0789-01, Lot:58646)	No	3.10m	No	X-series	Termination
Patient Leads, (8300-0790-01, Lot:57862)	No	0.80m	No	ECG, (8300-0789-01, Lot:58646)	Termination
USB	PA	0.15m	No	Ethernet to USB Adapter	X-series USB Board
Cat5 Ethernet	No	0.90m	No	Ethernet to USB Adapter	Laptop
USB	Yes	1.80m	No	X-series USB Board	Laptop
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

Equipment modifications					
Item	Date	Test	Modification	Note	Disposition of EUT
1	10/20/2011	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.
2	10/20/2011	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.
3	10/20/2011	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	10/20/2011	Peak Excursion of the Modulation Envelope	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	10/21/2011	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.
6	10/26/2011	Spurious Radiated Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
7	10/27/2011	AC Powerline Conducted Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

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

TEST EQUIPMENT

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

MEASUREMENT UNCERTAINTY

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

TEST DESCRIPTION

FCC Public Notice DA 02-2138 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 lowest, a medium, and the highest data rates were measured if available. 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 where an exact match of 1% may not be achieved. The largest value of RBW that came close to 1% of the emission bandwidth was used.
- A peak detector was used.

The marker-delta function was then used to measure 26 dB emission bandwidth

NORTHWEST EMC

Emission Bandwidth

XMit 2011.08.04
PsaTx 2011.09.28

EUT:	X Series			Work Order:	LGPD0044
Serial Number:	3411000112, 341100050			Date:	10/20/11
Customer:	ZOLL Medical Corp.			Temperature:	23.54C°C
Attendees:	Curt McNamara, Karl Karcht			Humidity:	25%
Project:	None			Barometric Pres.:	1014
Tested by:	Elaine Reeves	Power:	15VDC	Job Site:	MN08

TEST SPECIFICATIONS	TEST METHOD
FCC 15.407:2011	ANSI C63.10:2009

COMMENTS

Customer cable loss factor subtracted from reference level offset (Cable missing from test setup). Results fluctuated due to low duty cycle.

DEVIATIONS FROM TEST STANDARD

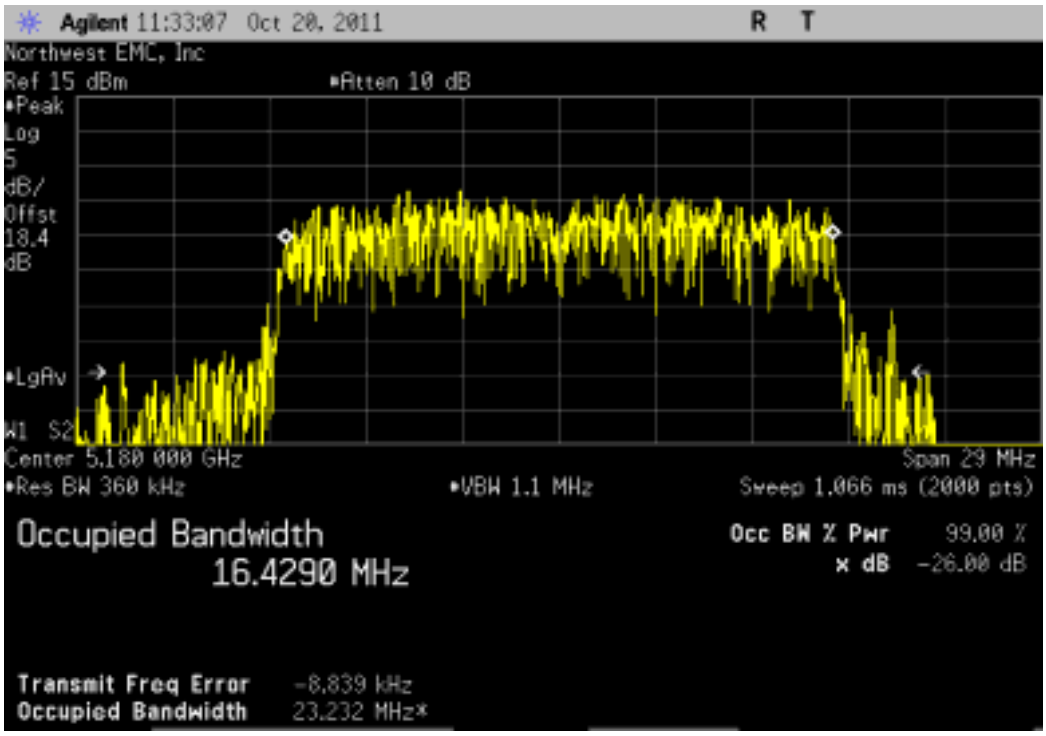
None

Configuration #	1	Signature	Trevor Bulo

		Value	Limit	Result
802.11(a) 6 Mbps				
	5150 - 5250 MHz Band			
	Channel 36, Low Channel	23.232 MHz	> 500 kHz	Pass
	Channel 48, High Channel	13.635 MHz	> 500 kHz	Pass
	5250 - 5350 MHz Band			
	Channel 52, Low Channel	21.237 MHz	> 500 kHz	Pass
	Channel 64, High Channel	22.312 MHz	> 500 kHz	Pass
	5470 - 5725 MHz Band			
	Channel 100, Low Channel	13.28 MHz	> 500 kHz	Pass
	Channel 120, Mid Channel	22.334 MHz	> 500 kHz	Pass
	Channel 140, High Channel	17.308 MHz	> 500 kHz	Pass
802.11(a) 36 Mbps				
	5150 - 5250 MHz Band			
	Channel 36, Low Channel	20.49 MHz	> 500 kHz	Pass
	Channel 48, High Channel	20.848 MHz	> 500 kHz	Pass
	5250 - 5350 MHz Band			
	Channel 52, Low Channel	20.562 MHz	> 500 kHz	Pass
	Channel 64, High Channel	20.895 MHz	> 500 kHz	Pass
	5470 - 5725 MHz Band			
	Channel 100, Low Channel	20.601 MHz	> 500 kHz	Pass
	Channel 120, Mid Channel	20.952 MHz	> 500 kHz	Pass
	Channel 140, High Channel	20.672 MHz	> 500 kHz	Pass
802.11(a) 54 Mbps				
	5150 - 5250 MHz Band			
	Channel 36, Low Channel	20.27 MHz	> 500 kHz	Pass
	Channel 48, High Channel	20.124 MHz	> 500 kHz	Pass
	5250 - 5350 MHz Band			
	Channel 52, Low Channel	20.19 MHz	> 500 kHz	Pass
	Channel 64, High Channel	20.725 MHz	> 500 kHz	Pass
	5470 - 5725 MHz Band			
	Channel 100, Low Channel	20.552 MHz	> 500 kHz	Pass
	Channel 120, Mid Channel	20.313 MHz	> 500 kHz	Pass
	Channel 140, High Channel	20.236 MHz	> 500 kHz	Pass
802.11(n) MCS0				
	5150 - 5250 MHz Band			
	Channel 36, Low Channel	14.933 MHz	> 500 kHz	Pass
	Channel 48, High Channel	23.009 MHz	> 500 kHz	Pass
	5250 - 5350 MHz Band			
	Channel 52, Low Channel	28.407 MHz	> 500 kHz	Pass
	Channel 64, High Channel	22.657 MHz	> 500 kHz	Pass
	5470 - 5725 MHz Band			
	Channel 100, Low Channel	23.175 MHz	> 500 kHz	Pass
	Channel 120, Mid Channel	19.354 MHz	> 500 kHz	Pass
	Channel 140, High Channel	23.164 MHz	> 500 kHz	Pass
802.11(n) MCS7				
	5150 - 5250 MHz Band			
	Channel 36, Low Channel	21.448 MHz	> 500 kHz	Pass
	Channel 48, High Channel	21.293 MHz	> 500 kHz	Pass
	5250 - 5350 MHz Band			
	Channel 52, Low Channel	21.01 MHz	> 500 kHz	Pass
	Channel 64, High Channel	21.12 MHz	> 500 kHz	Pass
	5470 - 5725 MHz Band			
	Channel 100, Low Channel	21.198 MHz	> 500 kHz	Pass
	Channel 120, Mid Channel	21.482 MHz	> 500 kHz	Pass
	Channel 140, High Channel	21.438 MHz	> 500 kHz	Pass

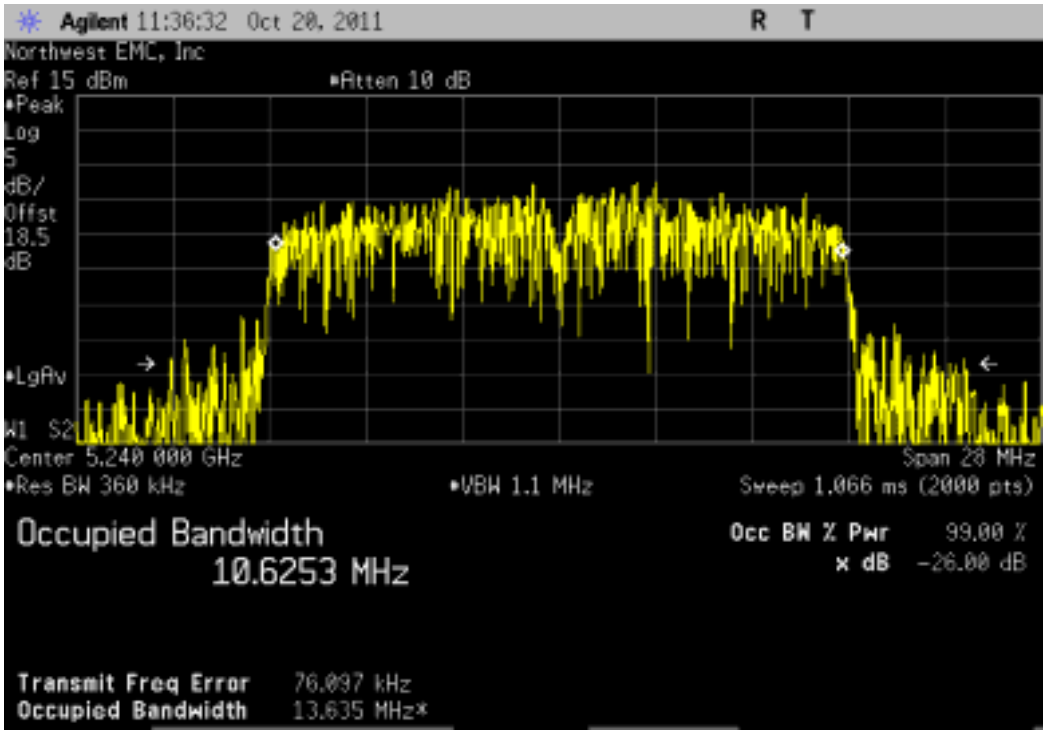
802.11(a) 6 Mbps, 5150 - 5250 MHz Band, Channel 36, Low Channel

				Value	Limit	Result
				23.232 MHz	> 500 kHz	Pass



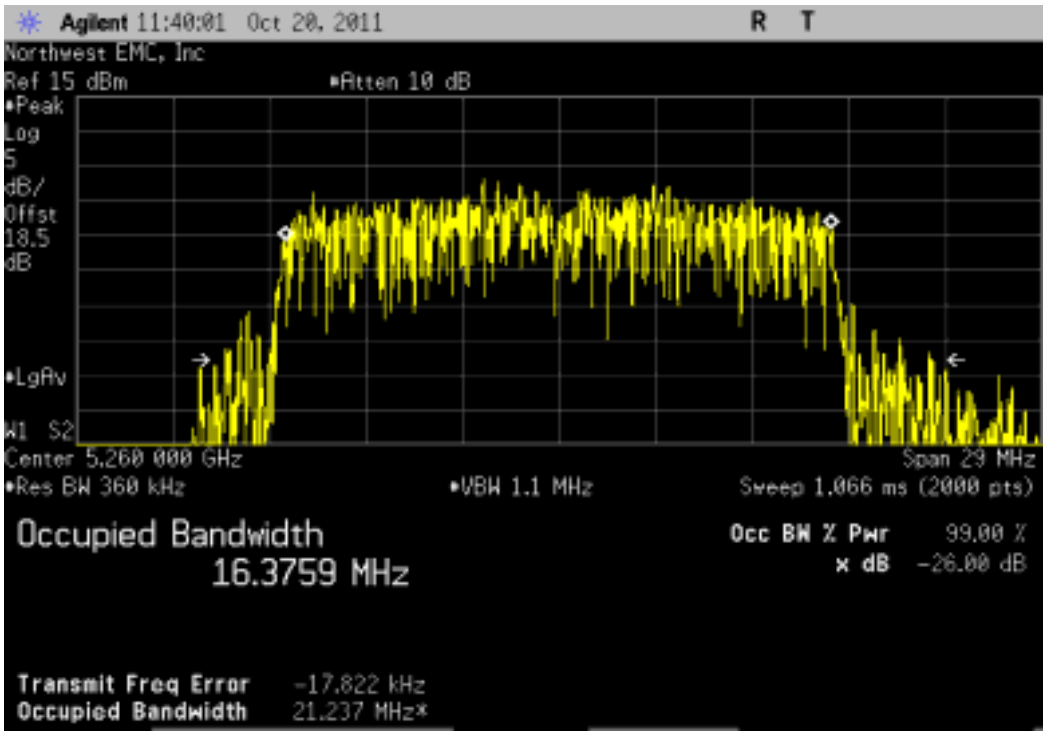
802.11(a) 6 Mbps, 5150 - 5250 MHz Band, Channel 48, High Channel

				Value	Limit	Result
				13.635 MHz	> 500 kHz	Pass



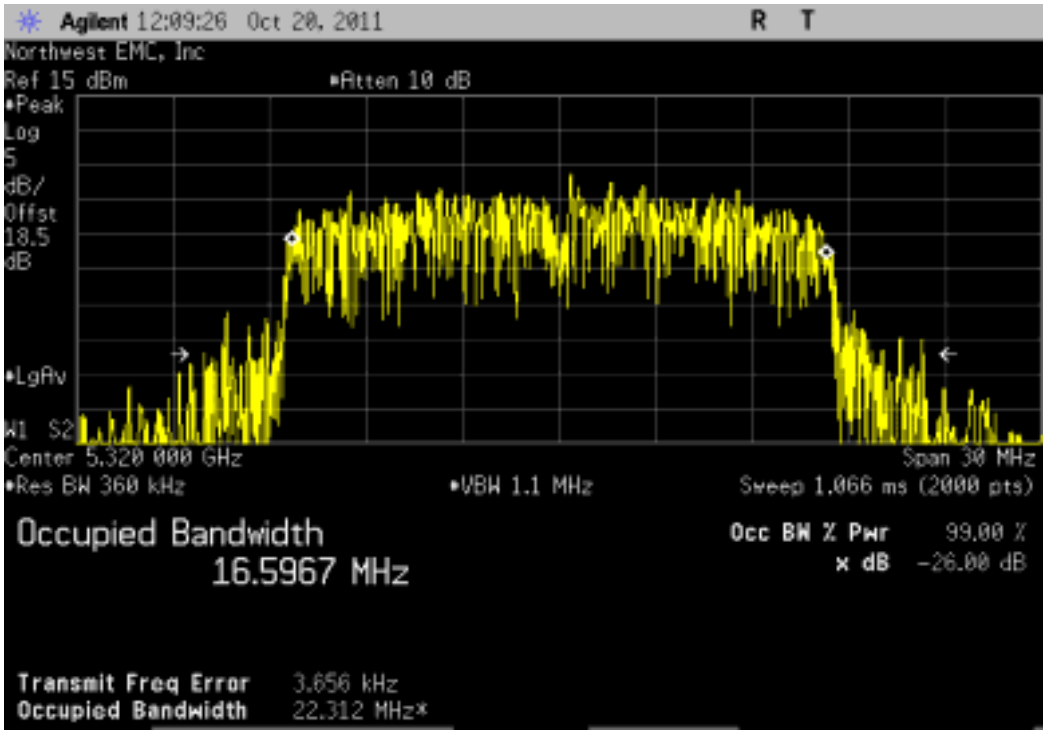
802.11(a) 6 Mbps, 5250 - 5350 MHz Band, Channel 52, Low Channel

				Value	Limit	Result
				21.237 MHz	> 500 kHz	Pass



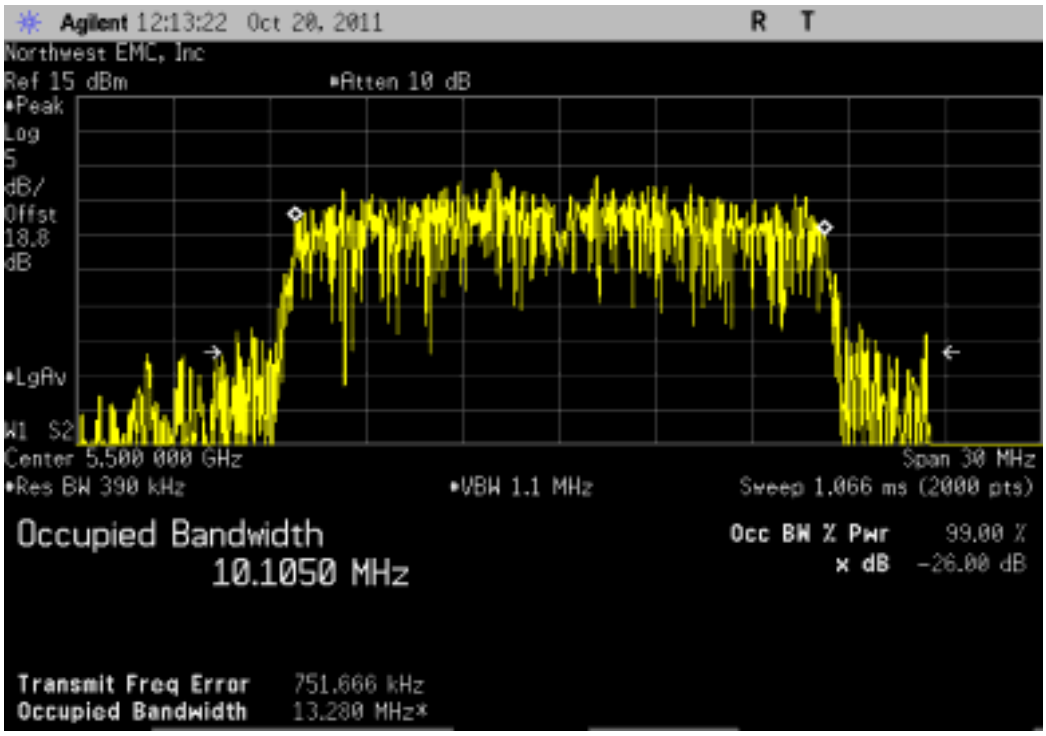
802.11(a) 6 Mbps, 5250 - 5350 MHz Band, Channel 64, High Channel

				Value	Limit	Result
				22.312 MHz	> 500 kHz	Pass



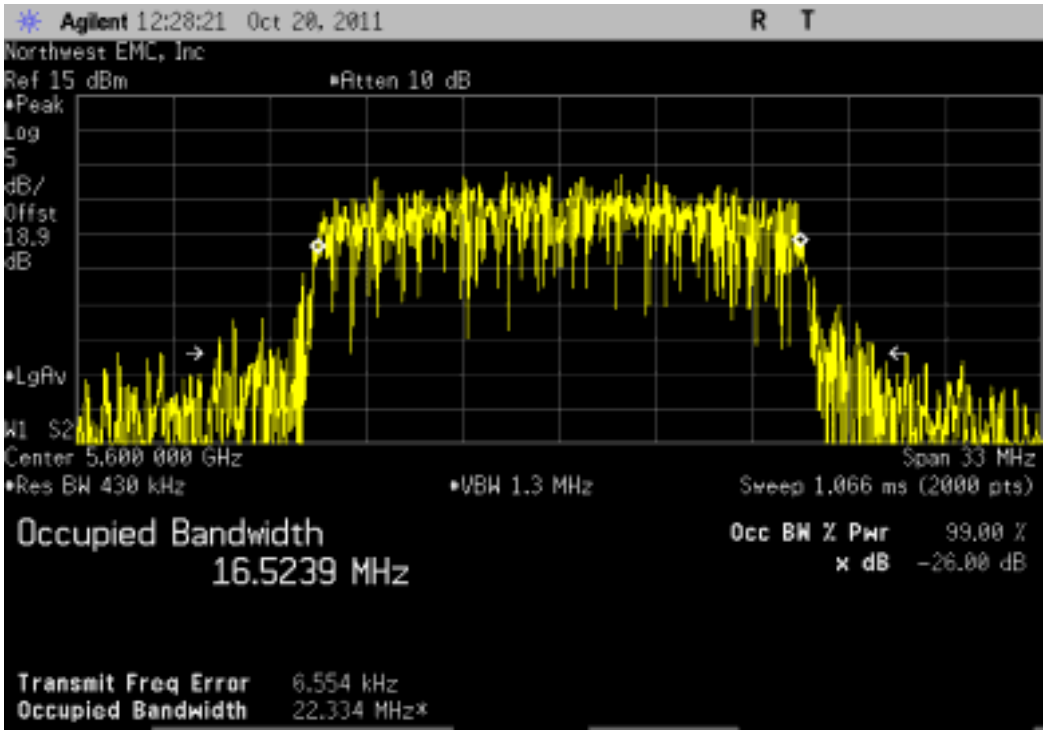
802.11(a) 6 Mbps, 5470 - 5725 MHz Band, Channel 100, Low Channel

				Value	Limit	Result
				13.28 MHz	> 500 kHz	Pass



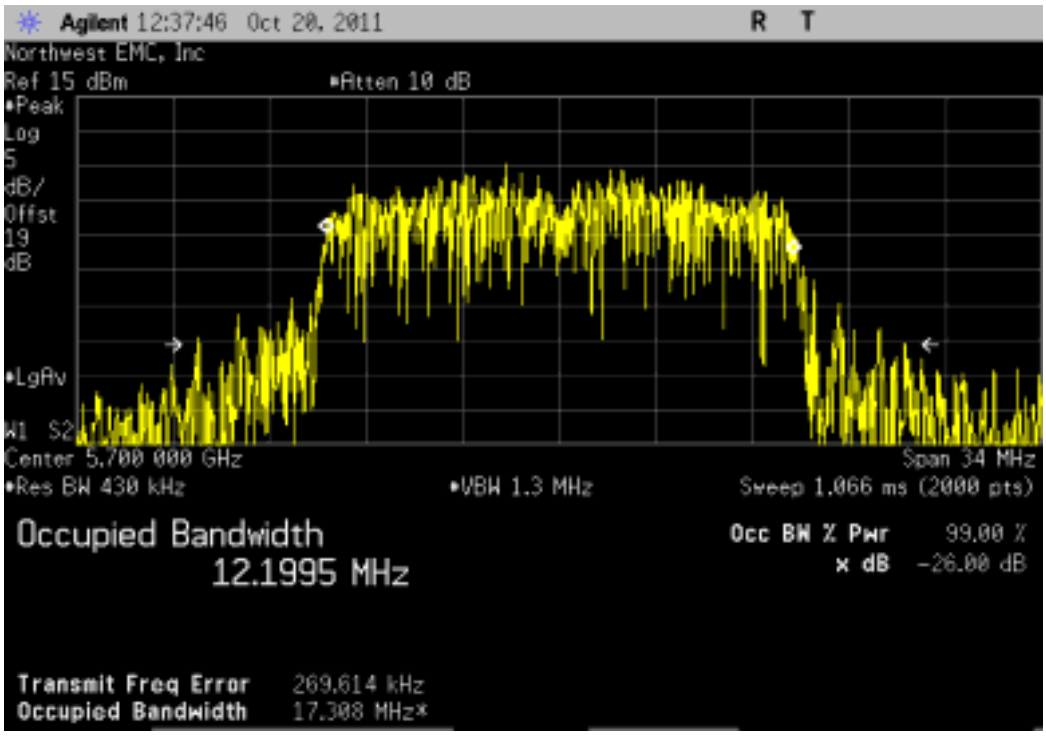
802.11(a) 6 Mbps, 5470 - 5725 MHz Band, Channel 120, Mid Channel

				Value	Limit	Result
				22.334 MHz	> 500 kHz	Pass



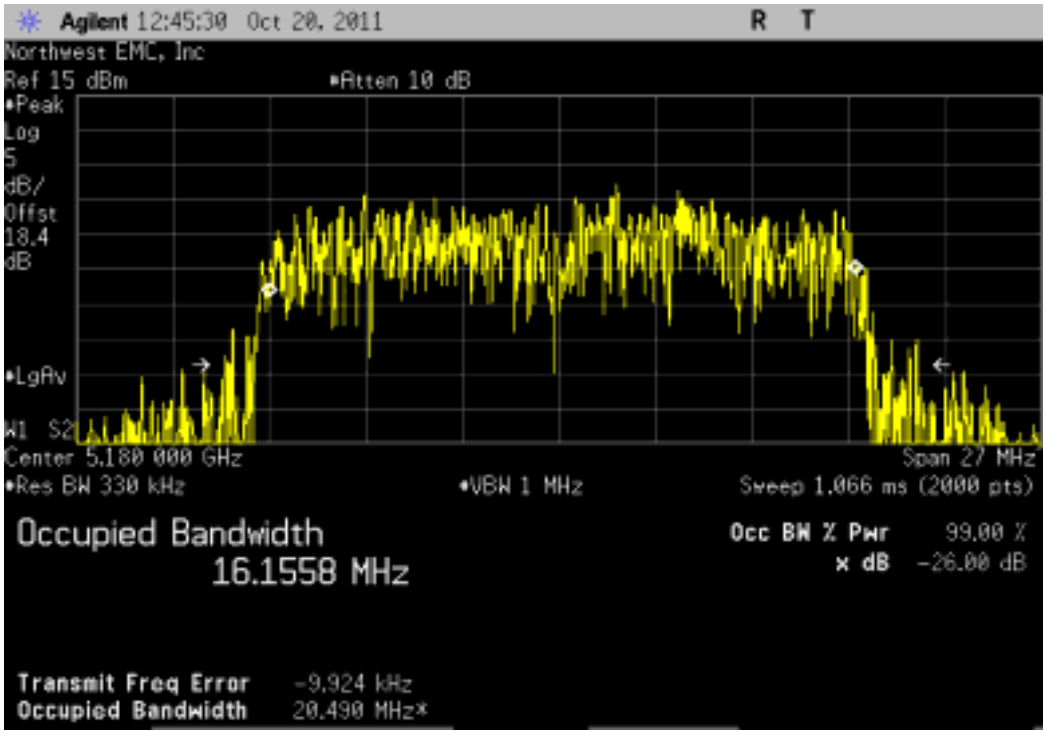
802.11(a) 6 Mbps, 5470 - 5725 MHz Band, Channel 140, High Channel

				Value	Limit	Result
				17.308 MHz	> 500 kHz	Pass



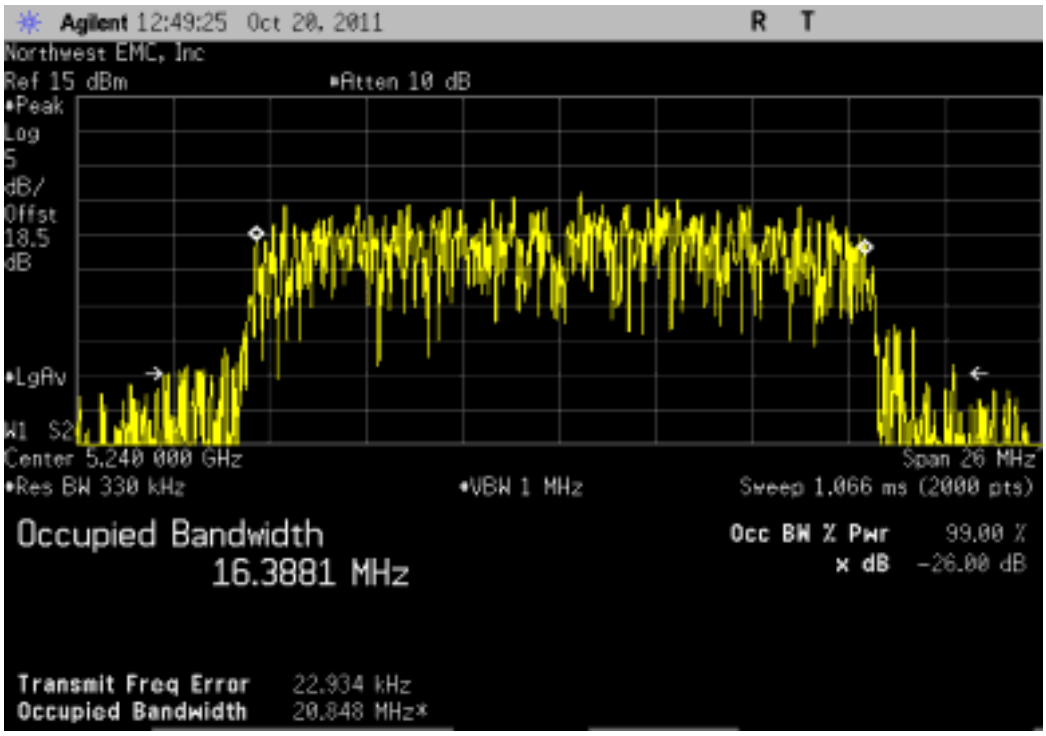
802.11(a) 36 Mbps, 5150 - 5250 MHz Band, Channel 36, Low Channel

				Value	Limit	Result
				20.49 MHz	> 500 kHz	Pass



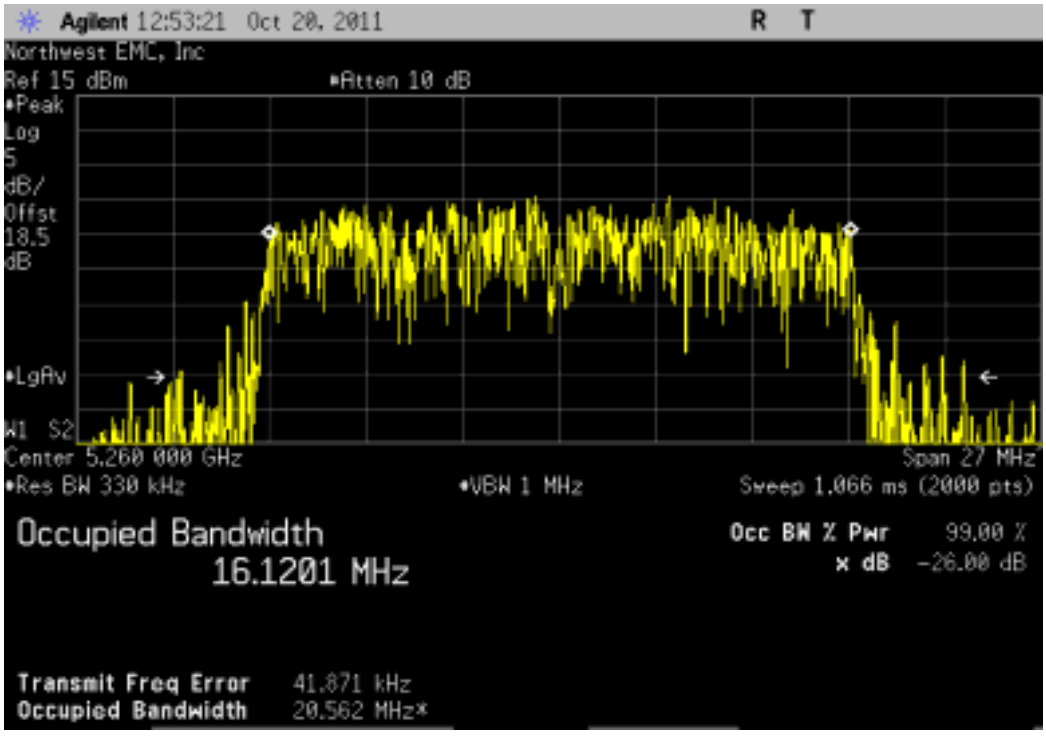
802.11(a) 36 Mbps, 5150 - 5250 MHz Band, Channel 48, High Channel

				Value	Limit	Result
				20.848 MHz	> 500 kHz	Pass



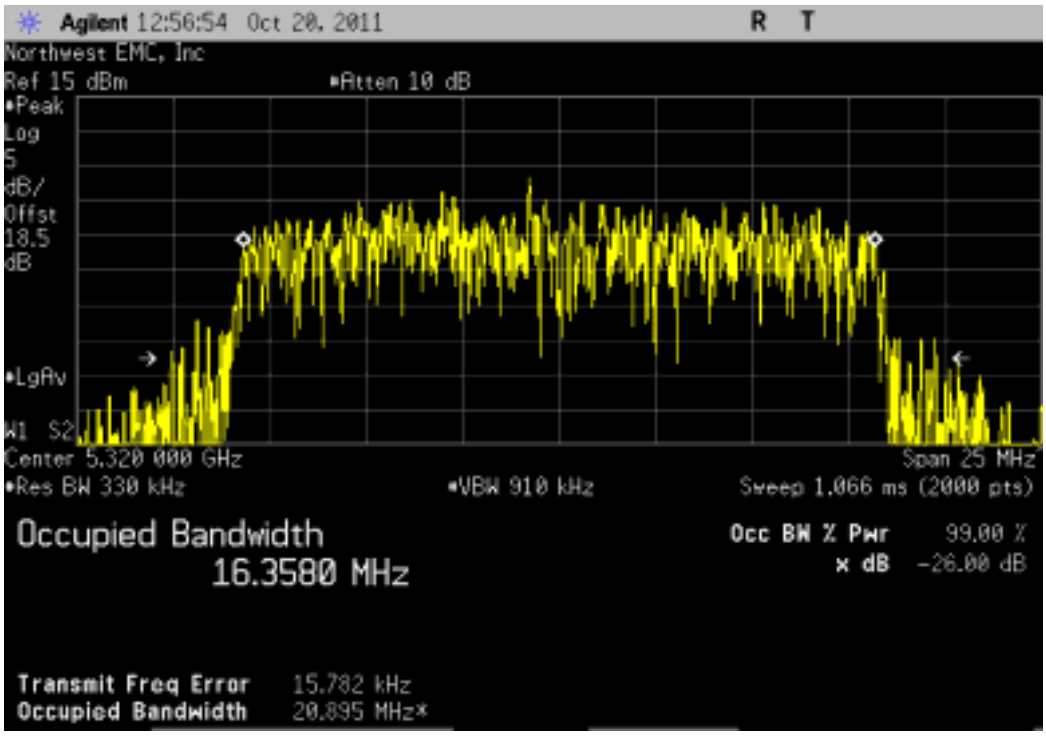
802.11(a) 36 Mbps, 5250 - 5350 MHz Band, Channel 52, Low Channel

				Value	Limit	Result
				20.562 MHz	> 500 kHz	Pass



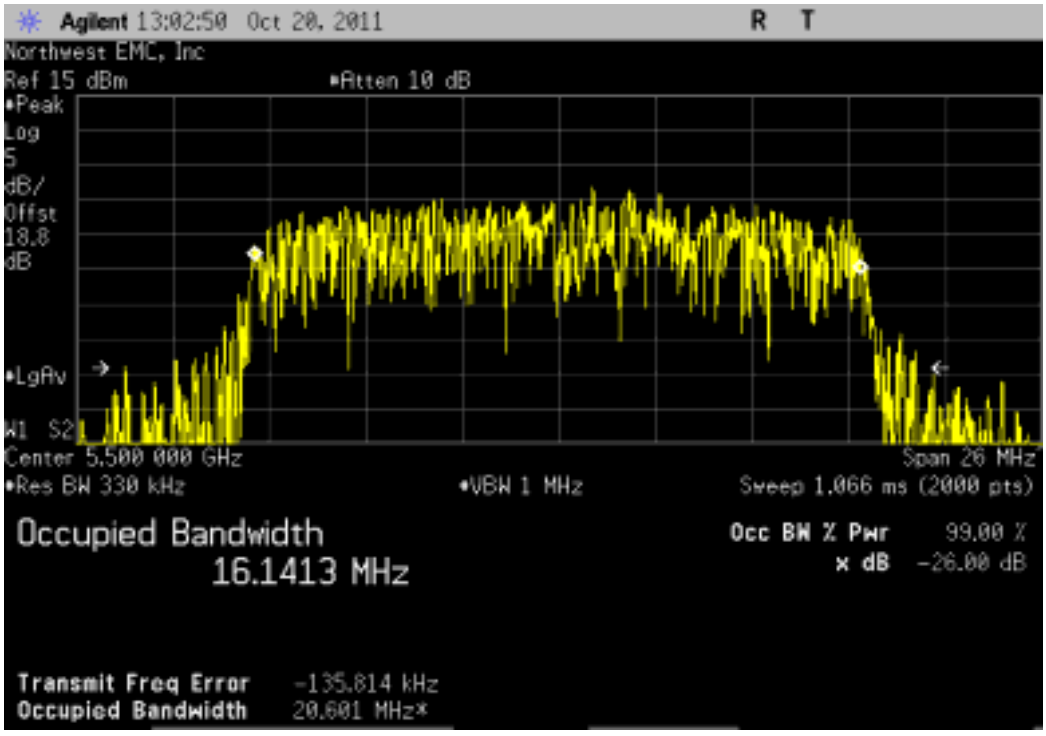
802.11(a) 36 Mbps, 5250 - 5350 MHz Band, Channel 64, High Channel

				Value	Limit	Result
				20.895 MHz	> 500 kHz	Pass



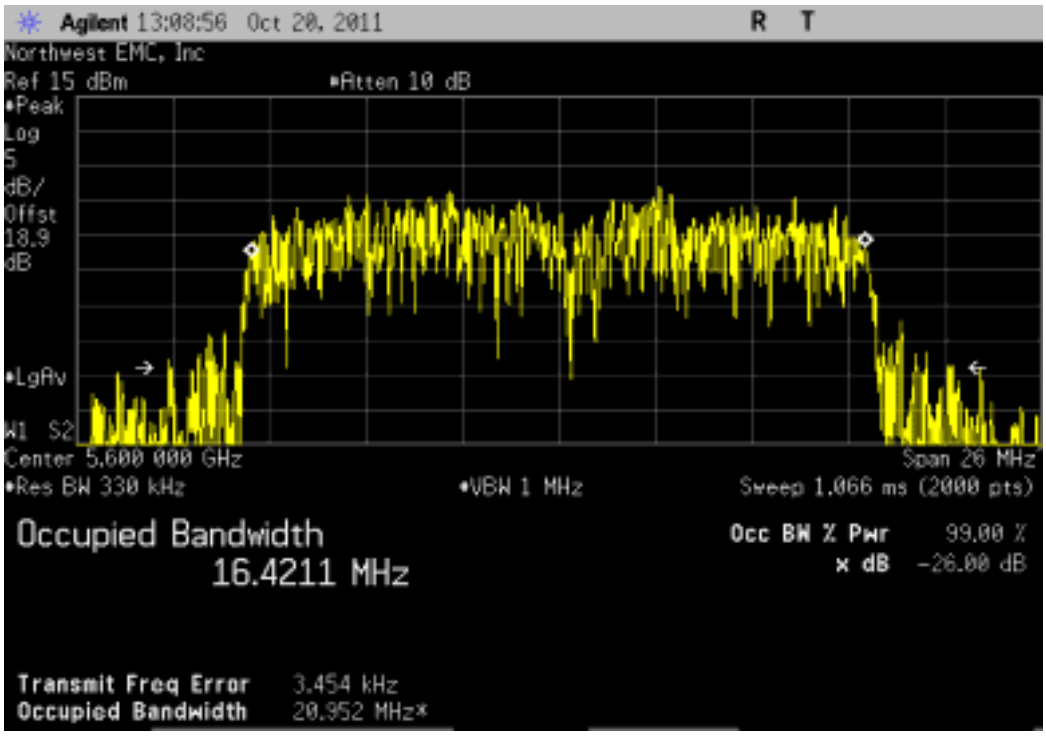
802.11(a) 36 Mbps, 5470 - 5725 MHz Band, Channel 100, Low Channel

				Value	Limit	Result
				20.601 MHz	> 500 kHz	Pass



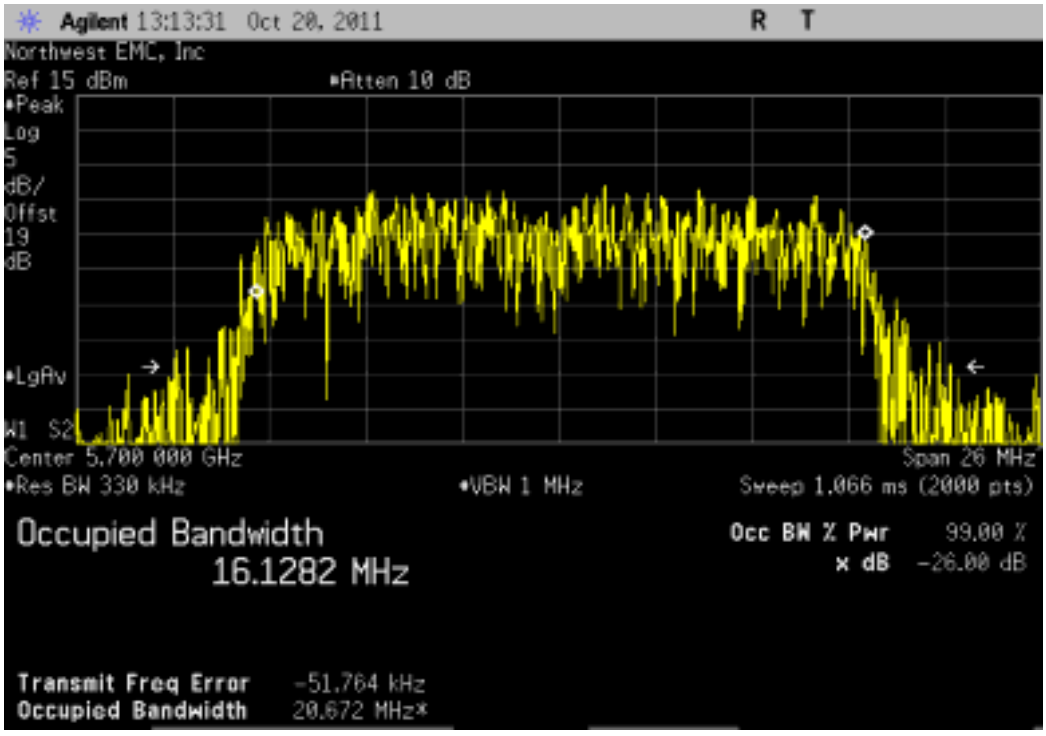
802.11(a) 36 Mbps, 5470 - 5725 MHz Band, Channel 120, Mid Channel

				Value	Limit	Result
				20.952 MHz	> 500 kHz	Pass



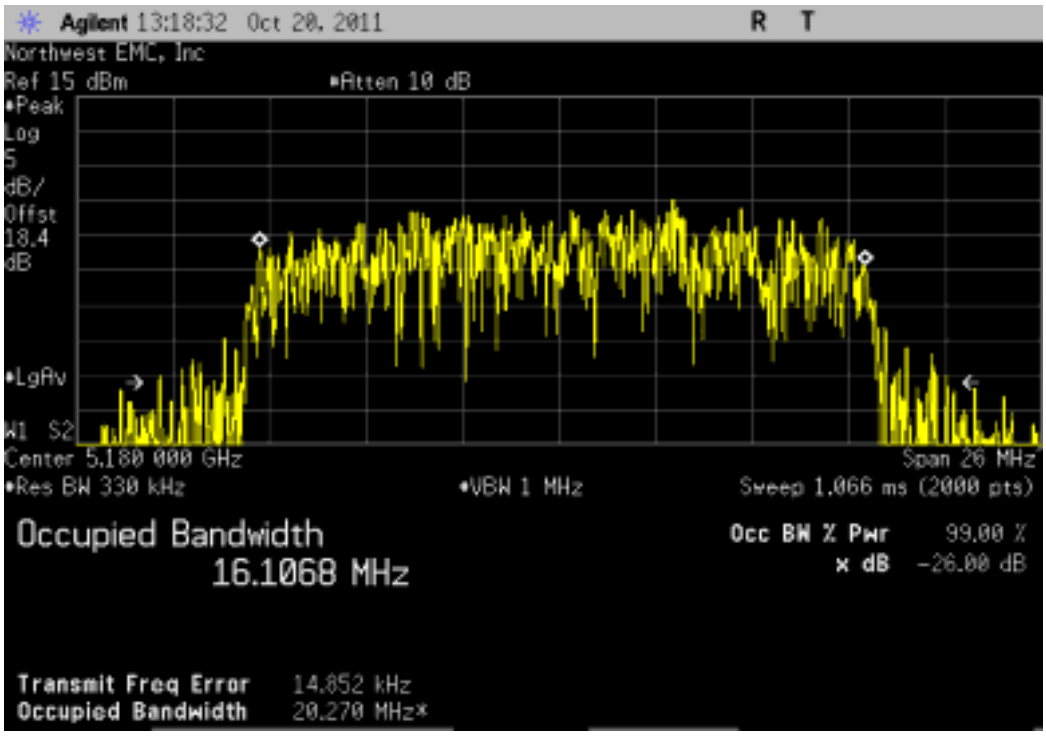
802.11(a) 36 Mbps, 5470 - 5725 MHz Band, Channel 140, High Channel

				Value	Limit	Result
				20.672 MHz	> 500 kHz	Pass



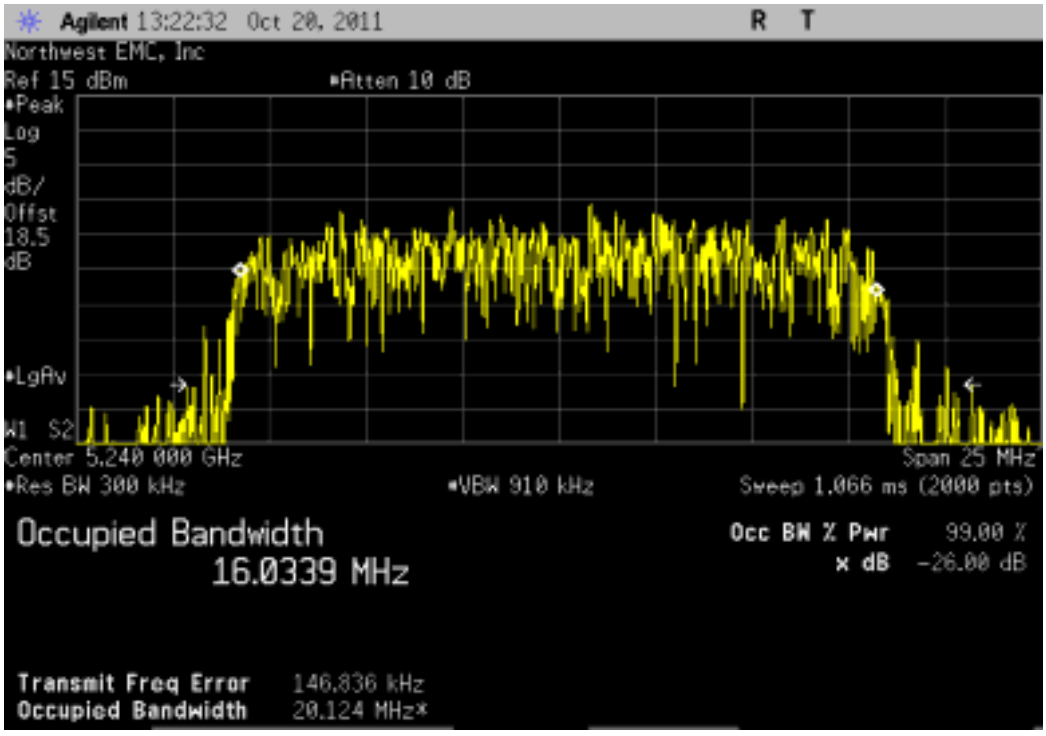
802.11(a) 54 Mbps, 5150 - 5250 MHz Band, Channel 36, Low Channel

				Value	Limit	Result
				20.27 MHz	> 500 kHz	Pass



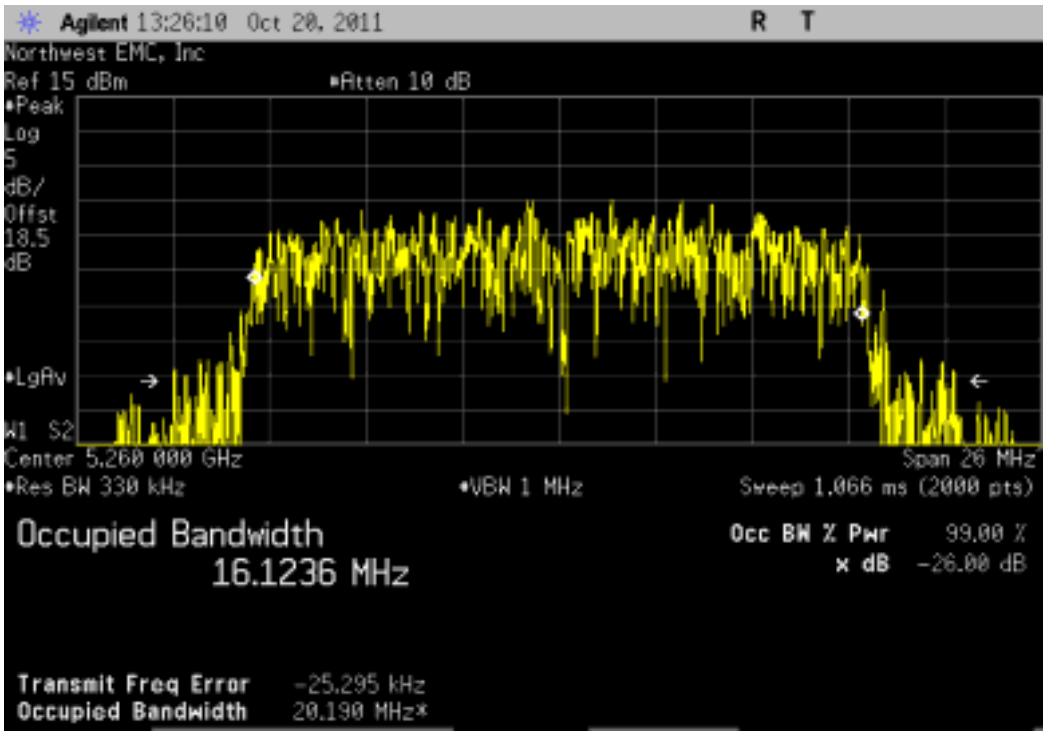
802.11(a) 54 Mbps, 5150 - 5250 MHz Band, Channel 48, High Channel

				Value	Limit	Result
				20.124 MHz	> 500 kHz	Pass



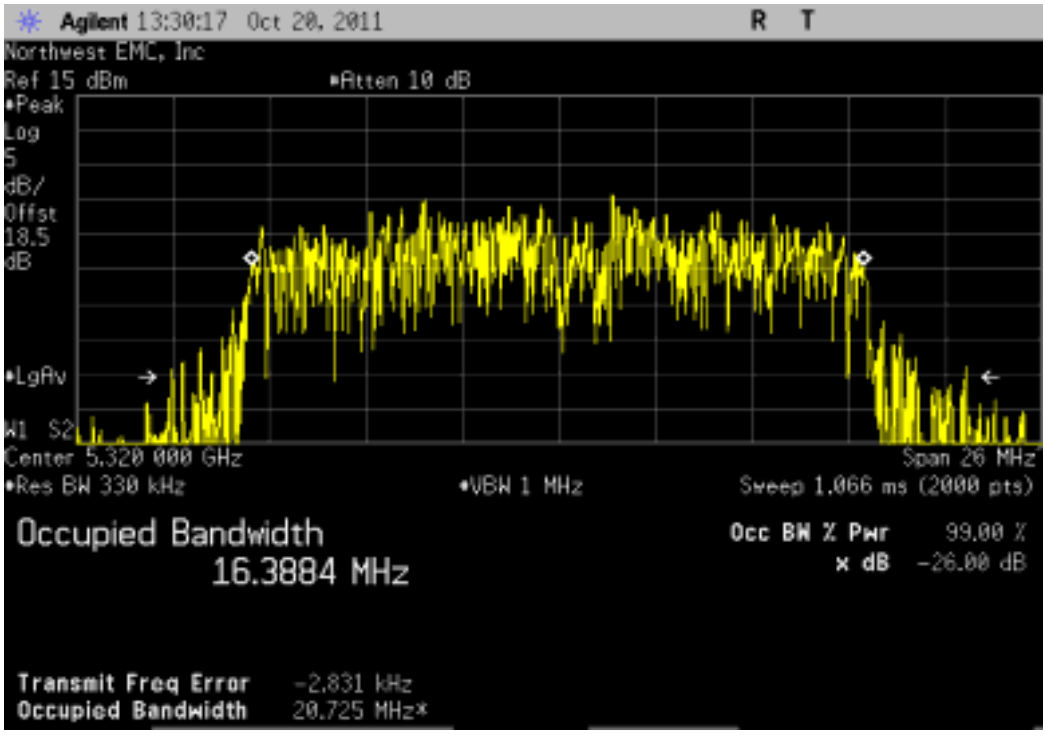
802.11(a) 54 Mbps, 5250 - 5350 MHz Band, Channel 52, Low Channel

				Value	Limit	Result
				20.19 MHz	> 500 kHz	Pass



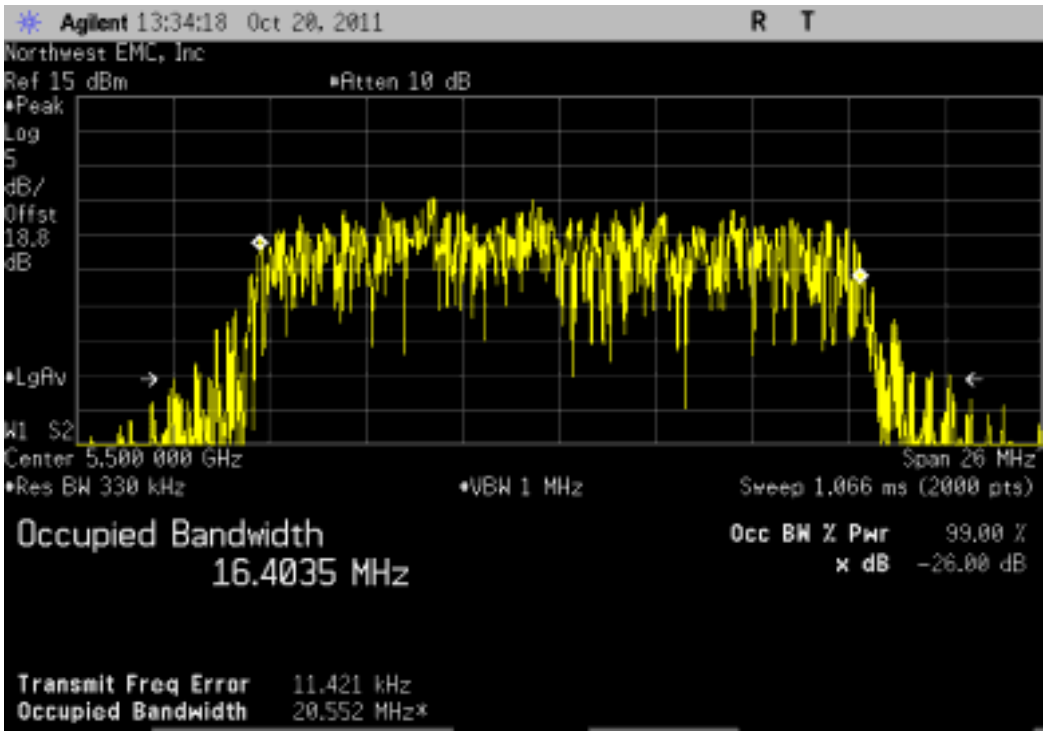
802.11(a) 54 Mbps, 5250 - 5350 MHz Band, Channel 64, High Channel

				Value	Limit	Result
				20.725 MHz	> 500 kHz	Pass



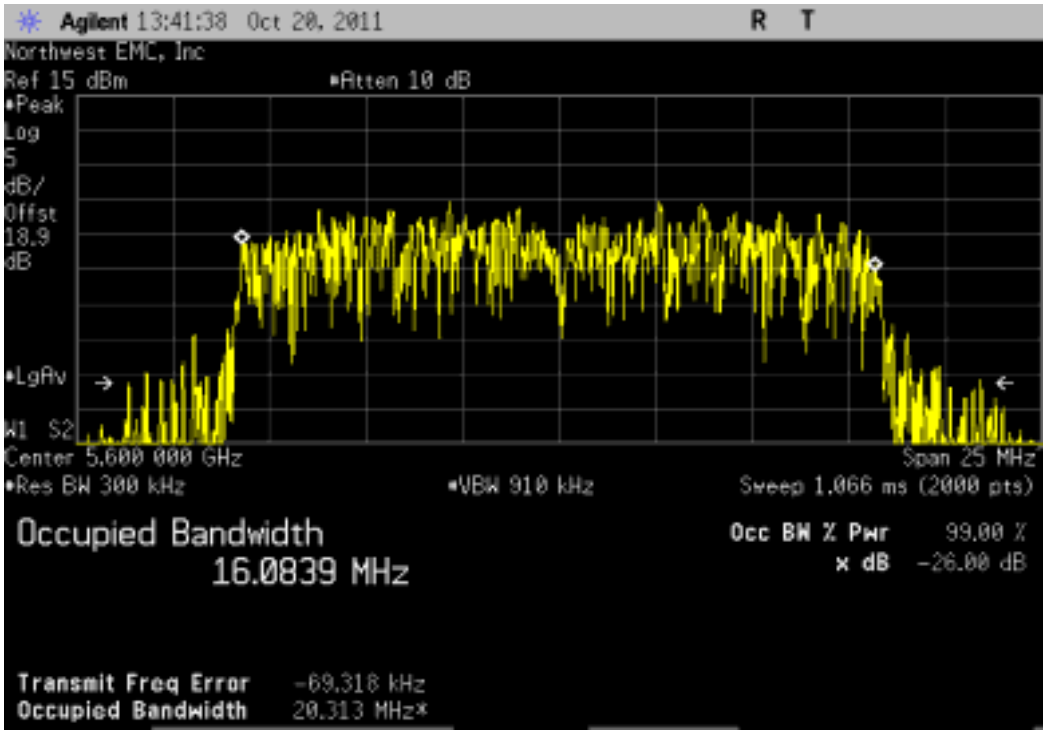
802.11(a) 54 Mbps, 5470 - 5725 MHz Band, Channel 100, Low Channel

				Value	Limit	Result
				20.552 MHz	> 500 kHz	Pass



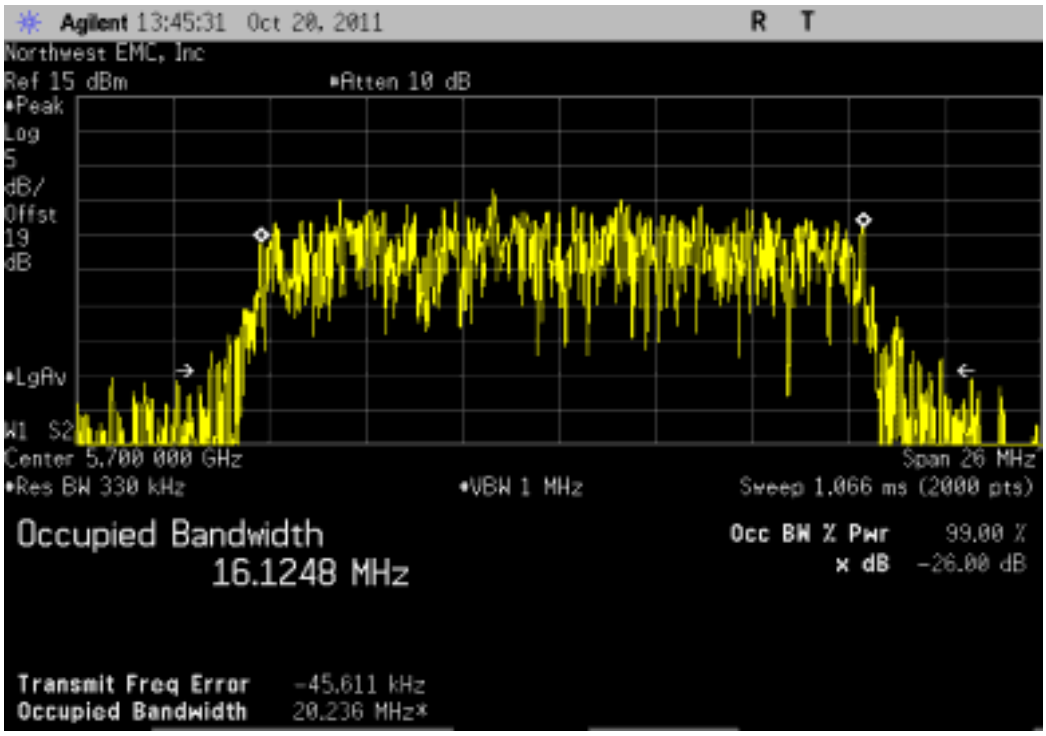
802.11(a) 54 Mbps, 5470 - 5725 MHz Band, Channel 120, Mid Channel

				Value	Limit	Result
				20.313 MHz	> 500 kHz	Pass



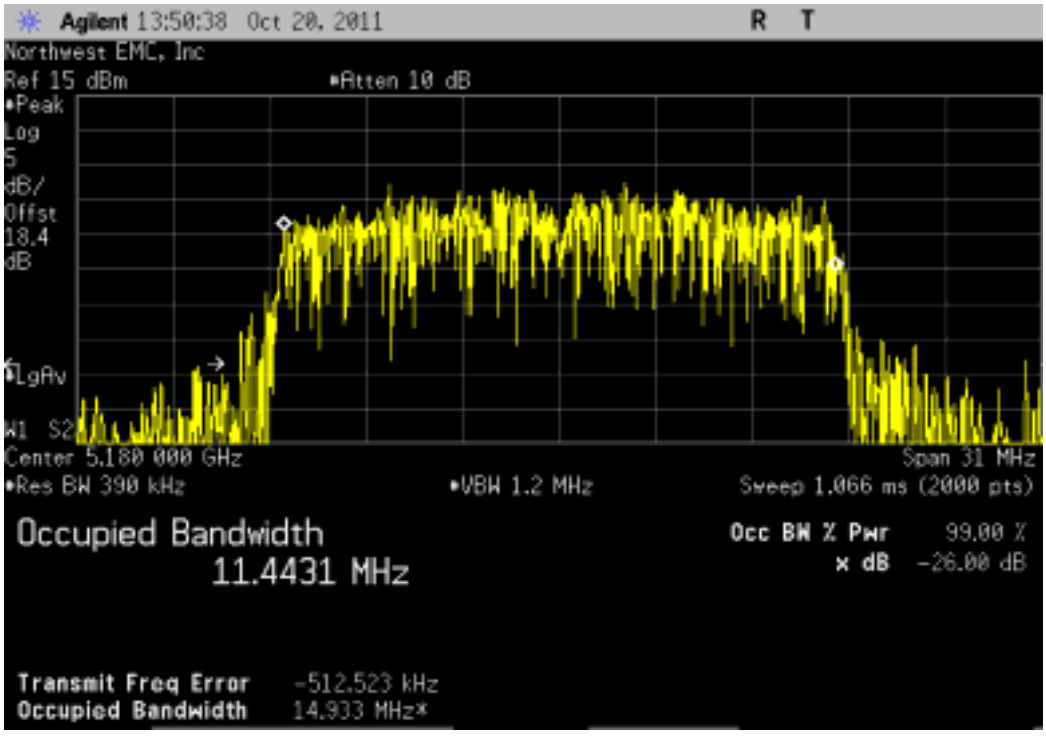
802.11(a) 54 Mbps, 5470 - 5725 MHz Band, Channel 140, High Channel

				Value	Limit	Result
				20.236 MHz	> 500 kHz	Pass



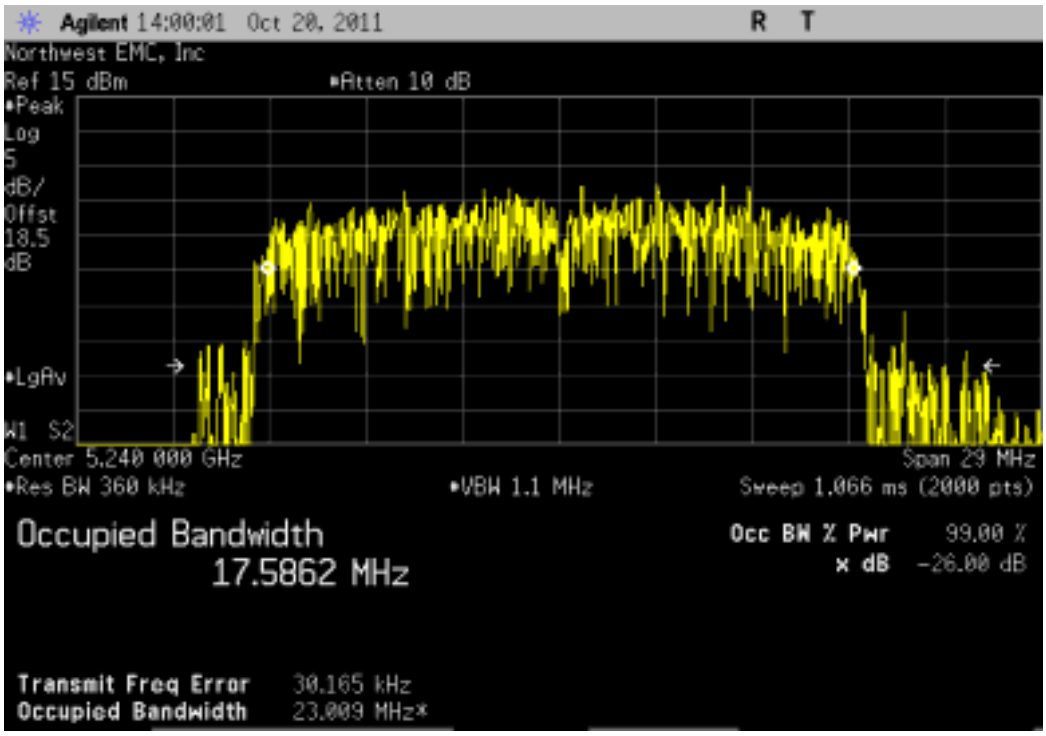
802.11(n) MCS0, 5150 - 5250 MHz Band, Channel 36, Low Channel

				Value	Limit	Result
				14.933 MHz	> 500 kHz	Pass



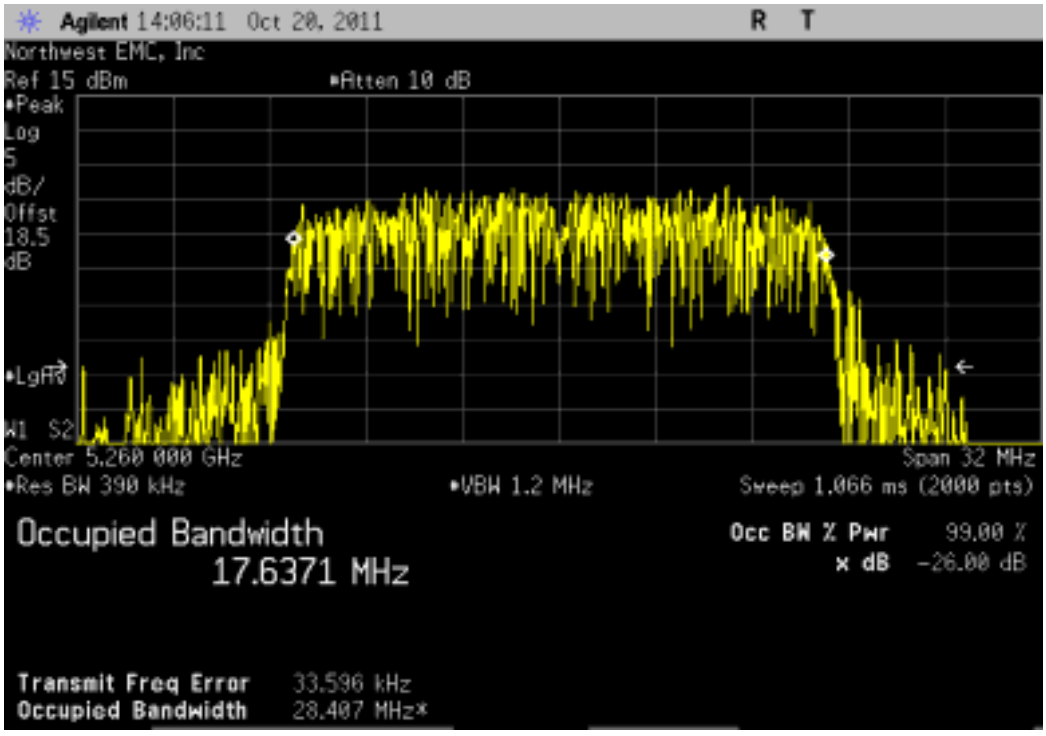
802.11(n) MCS0, 5150 - 5250 MHz Band, Channel 48, High Channel

				Value	Limit	Result
				23.009 MHz	> 500 kHz	Pass



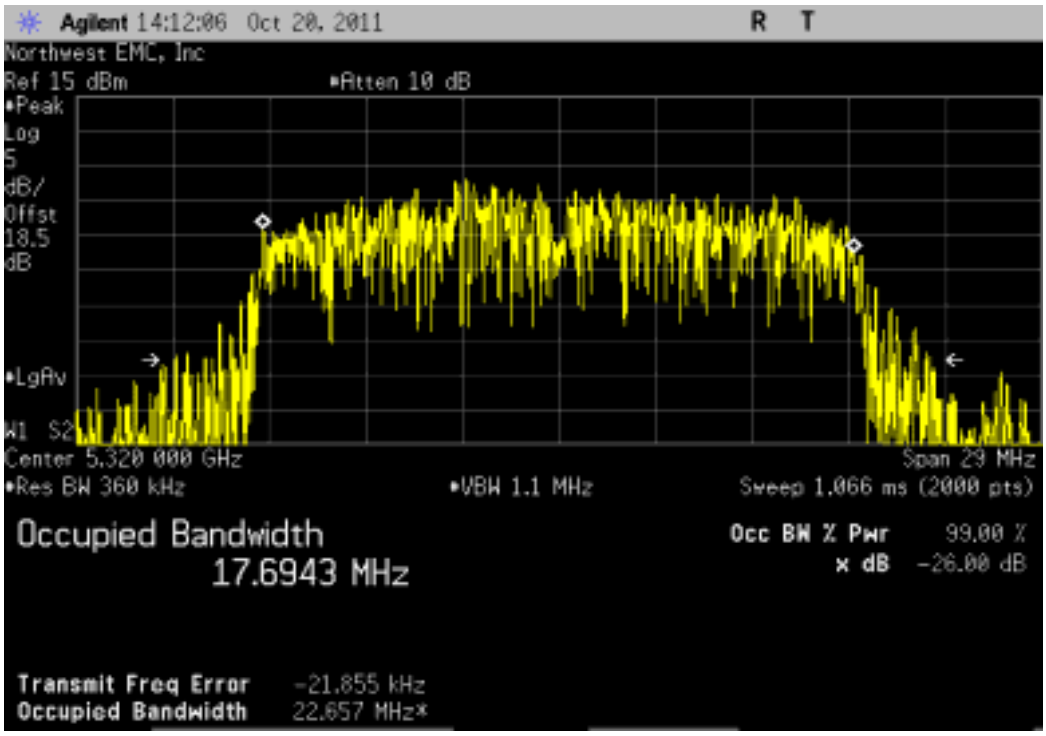
802.11(n) MCS0, 5250 - 5350 MHz Band, Channel 52, Low Channel

				Value	Limit	Result
				28.407 MHz	> 500 kHz	Pass



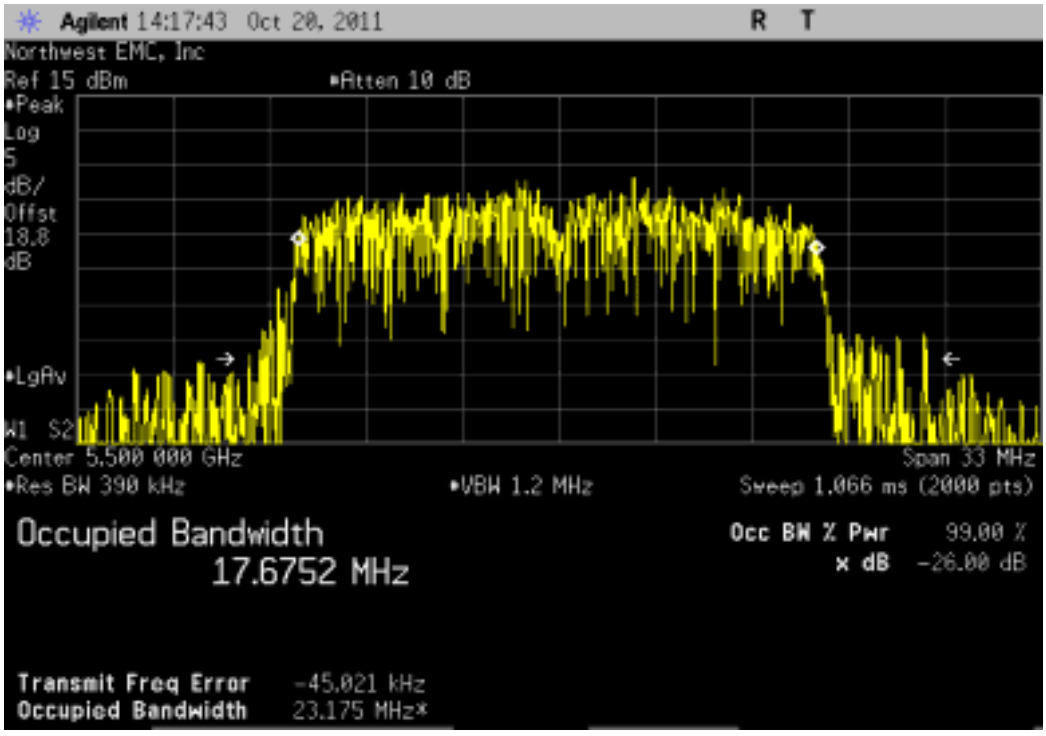
802.11(n) MCS0, 5250 - 5350 MHz Band, Channel 64, High Channel

				Value	Limit	Result
				22.657 MHz	> 500 kHz	Pass



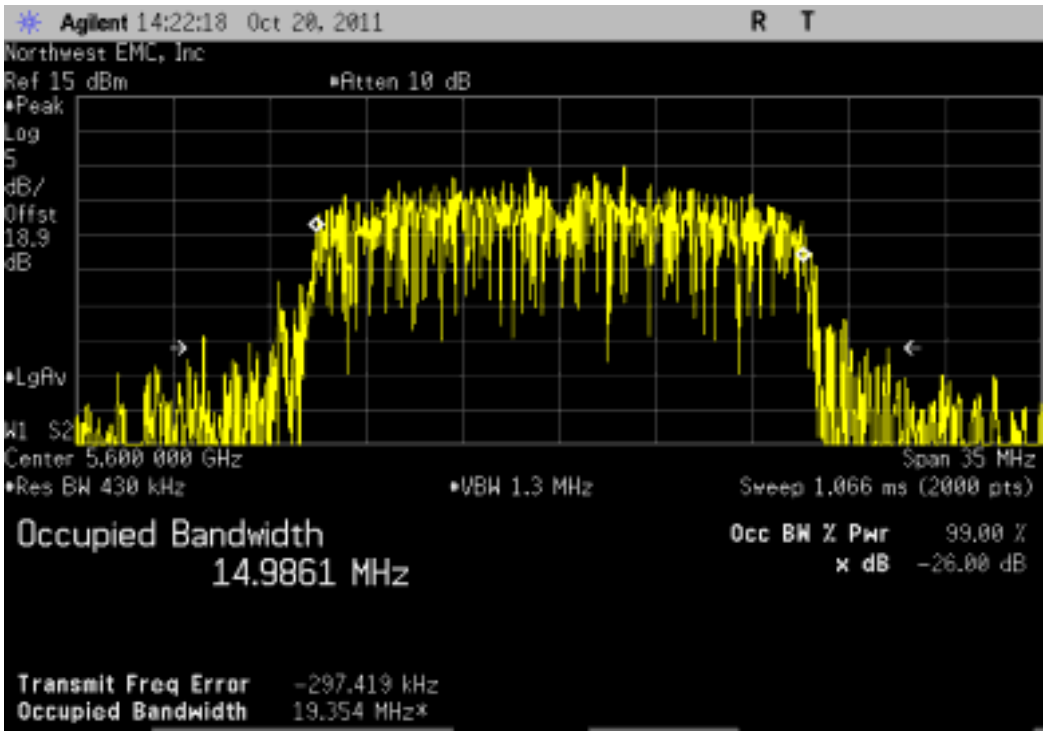
802.11(n) MCS0, 5470 - 5725 MHz Band, Channel 100, Low Channel

				Value	Limit	Result
				23.175 MHz	> 500 kHz	Pass



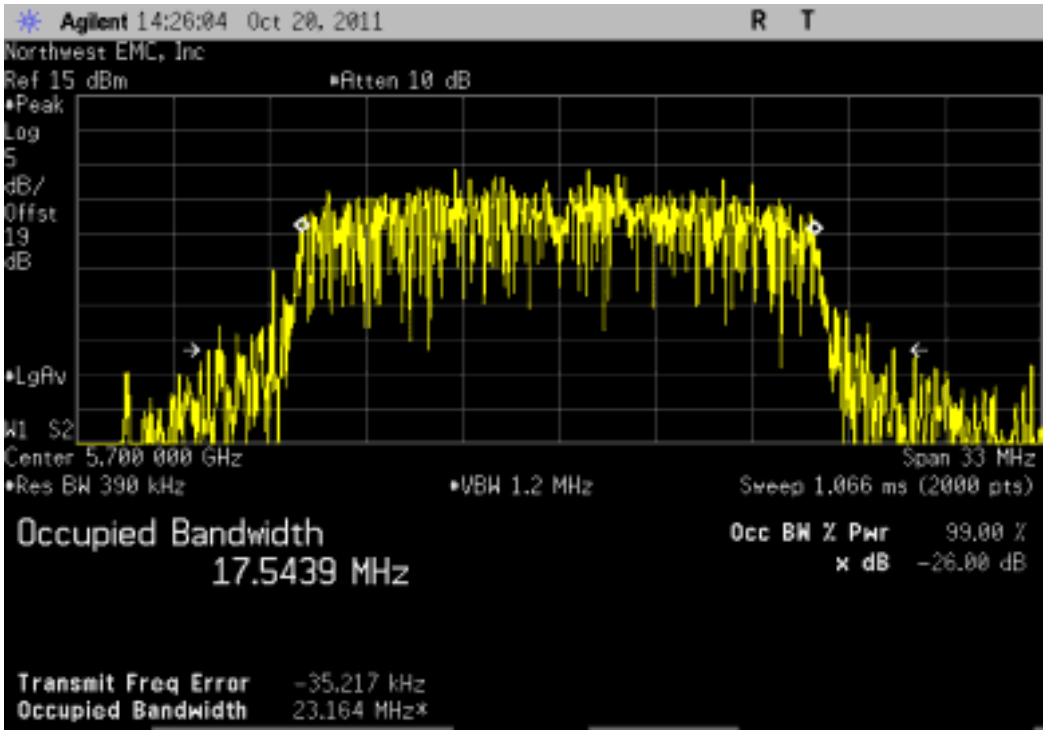
802.11(n) MCS0, 5470 - 5725 MHz Band, Channel 120, Mid Channel

				Value	Limit	Result
				19.354 MHz	> 500 kHz	Pass



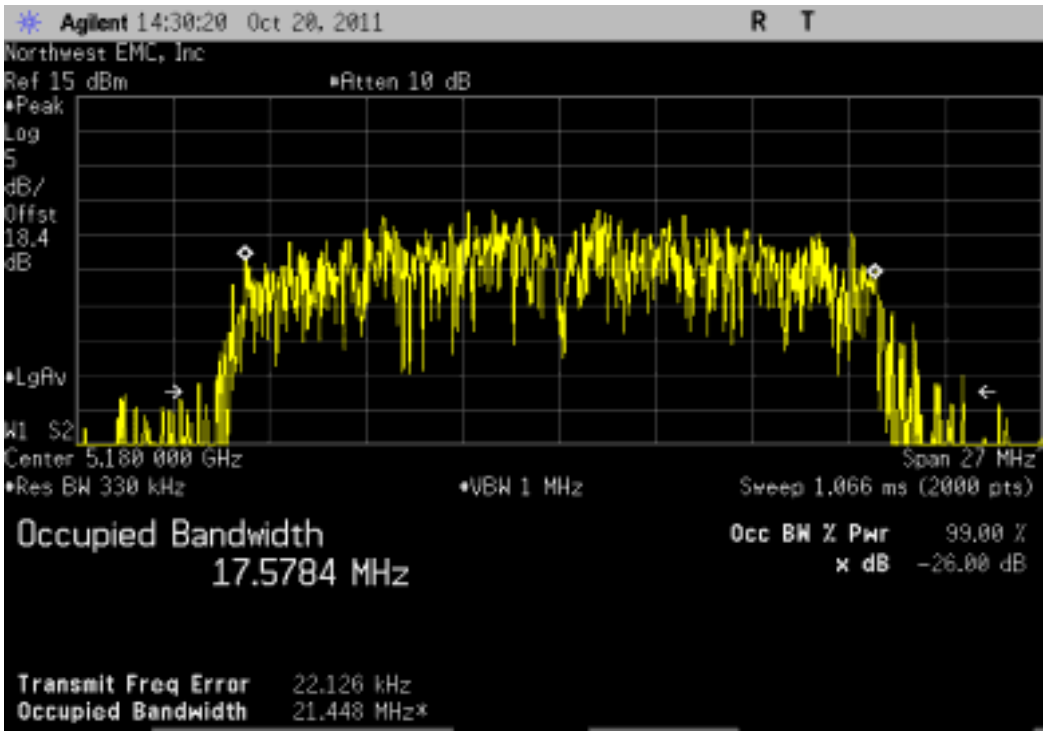
802.11(n) MCS0, 5470 - 5725 MHz Band, Channel 140, High Channel

				Value	Limit	Result
				23.164 MHz	> 500 kHz	Pass



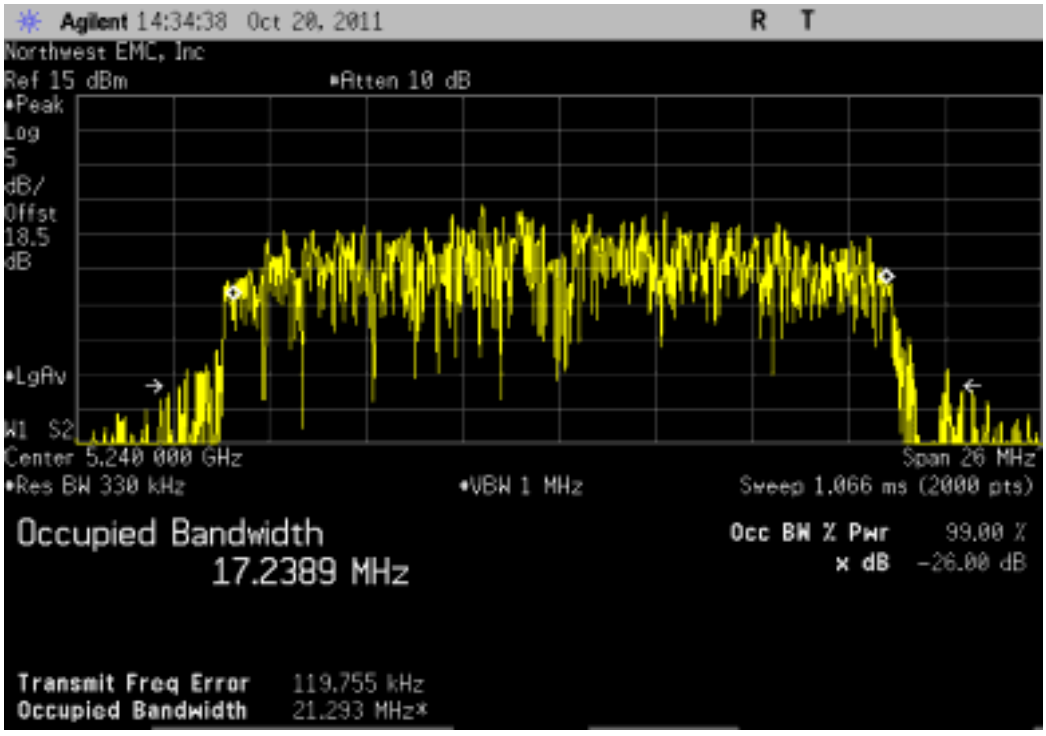
802.11(n) MCS7, 5150 - 5250 MHz Band, Channel 36, Low Channel

				Value	Limit	Result
				21.448 MHz	> 500 kHz	Pass



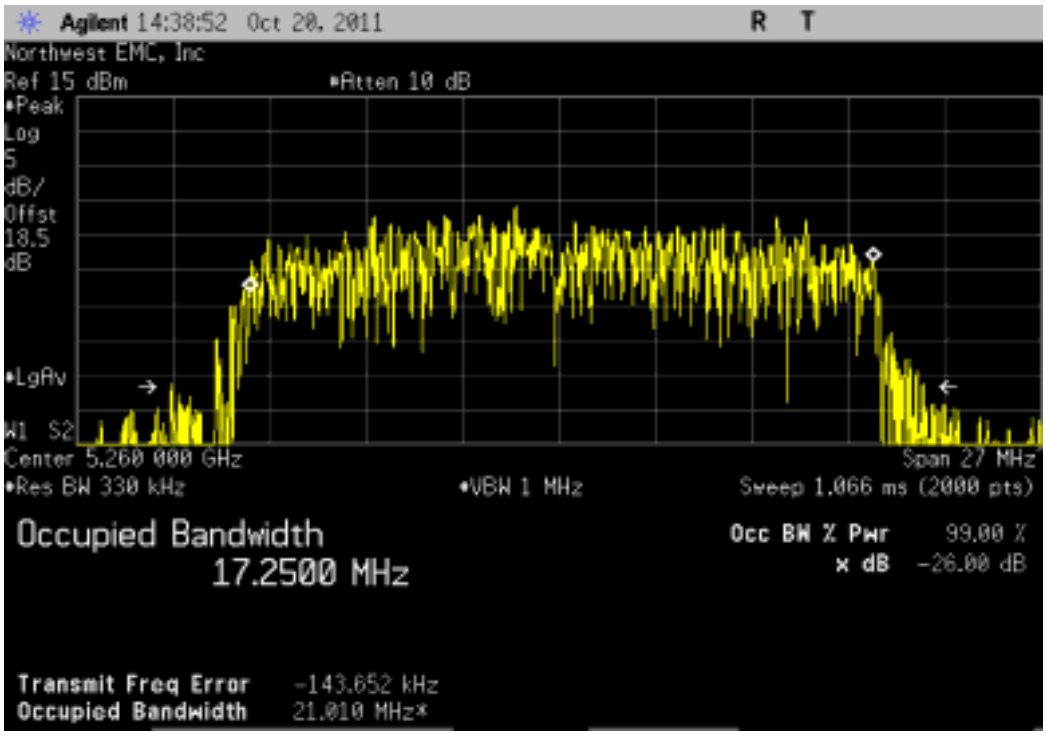
802.11(n) MCS7, 5150 - 5250 MHz Band, Channel 48, High Channel

				Value	Limit	Result
				21.293 MHz	> 500 kHz	Pass



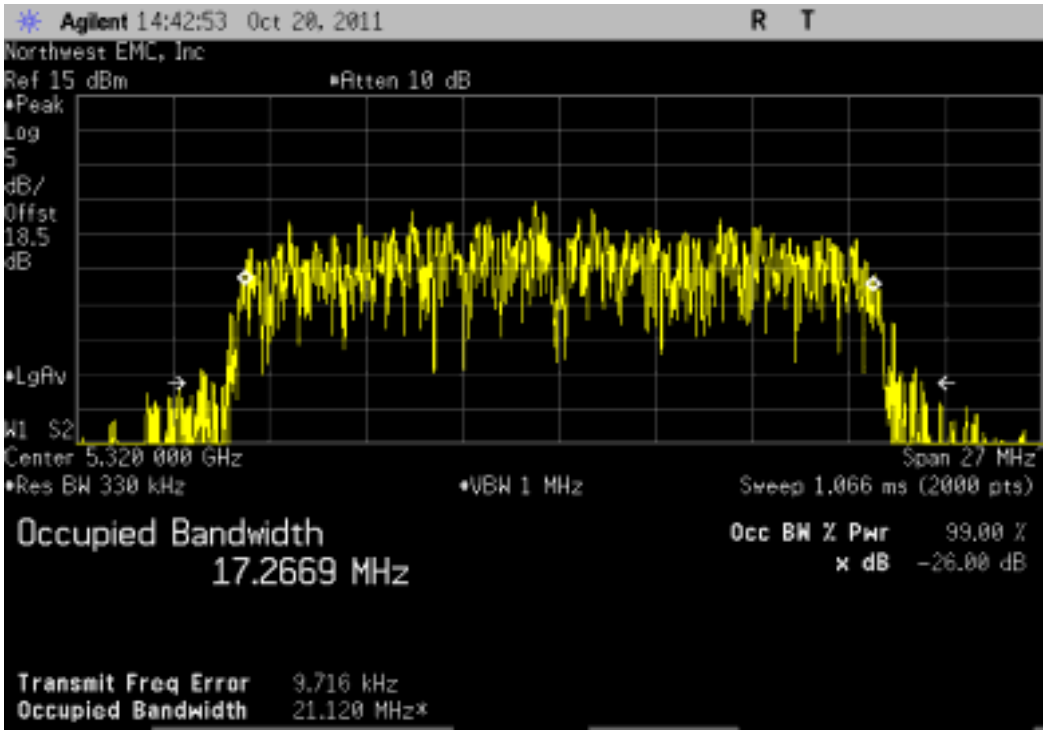
802.11(n) MCS7, 5250 - 5350 MHz Band, Channel 52, Low Channel

				Value	Limit	Result
				21.01 MHz	> 500 kHz	Pass



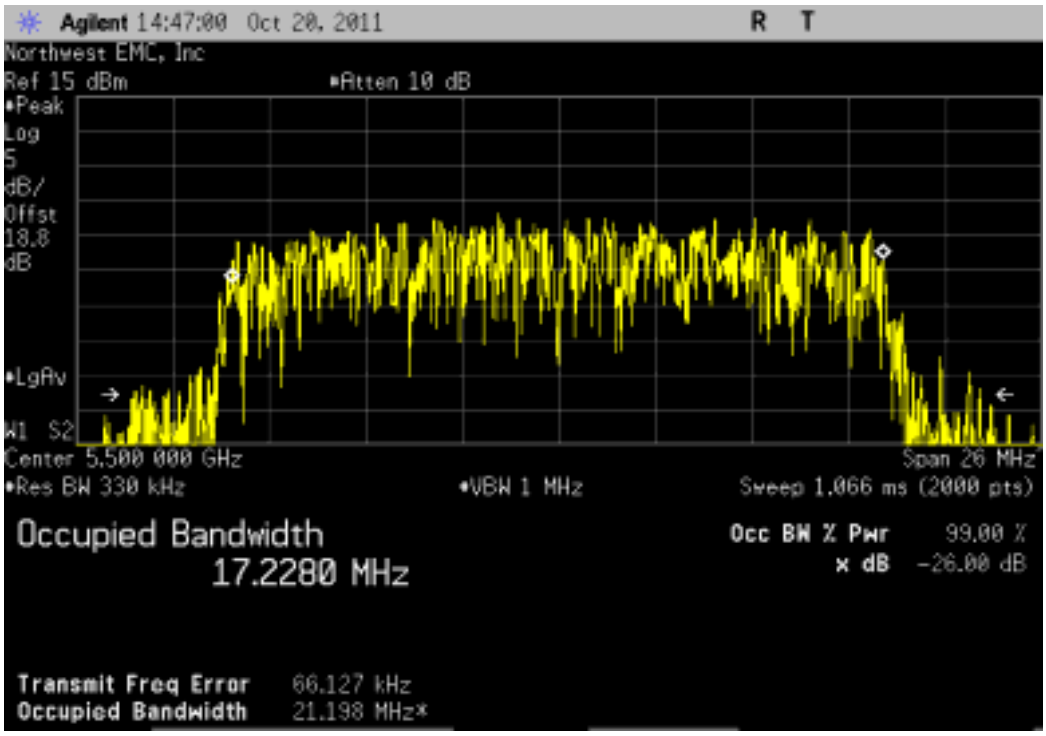
802.11(n) MCS7, 5250 - 5350 MHz Band, Channel 64, High Channel

				Value	Limit	Result
				21.12 MHz	> 500 kHz	Pass



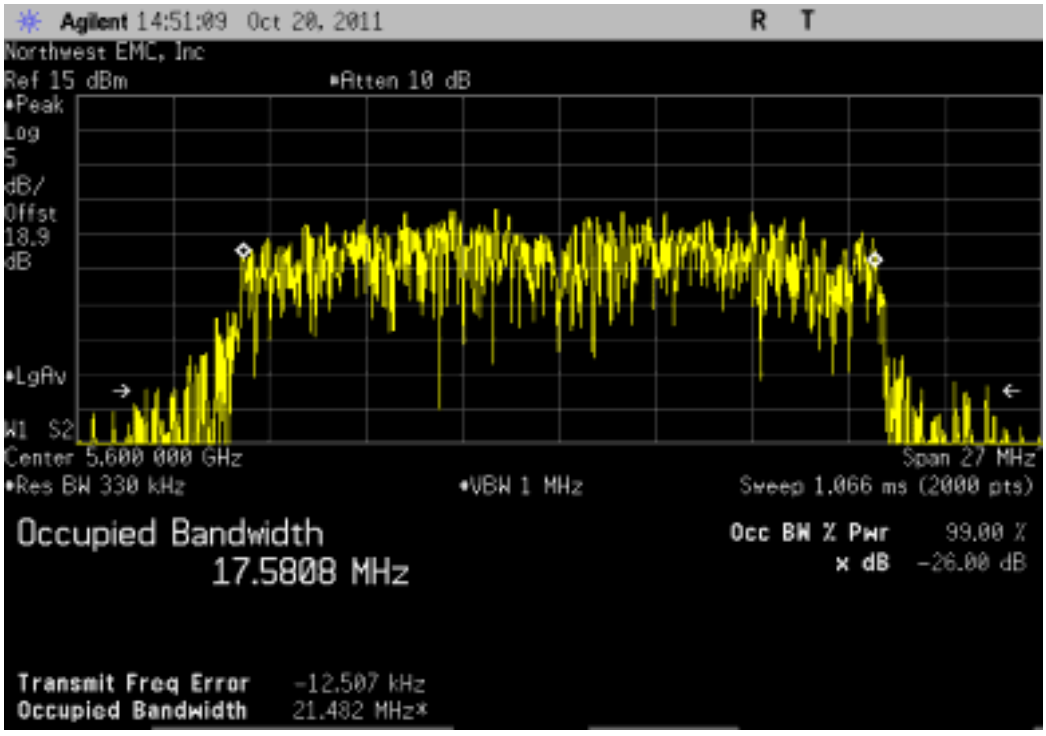
802.11(n) MCS7, 5470 - 5725 MHz Band, Channel 100, Low Channel

				Value	Limit	Result
				21.198 MHz	> 500 kHz	Pass



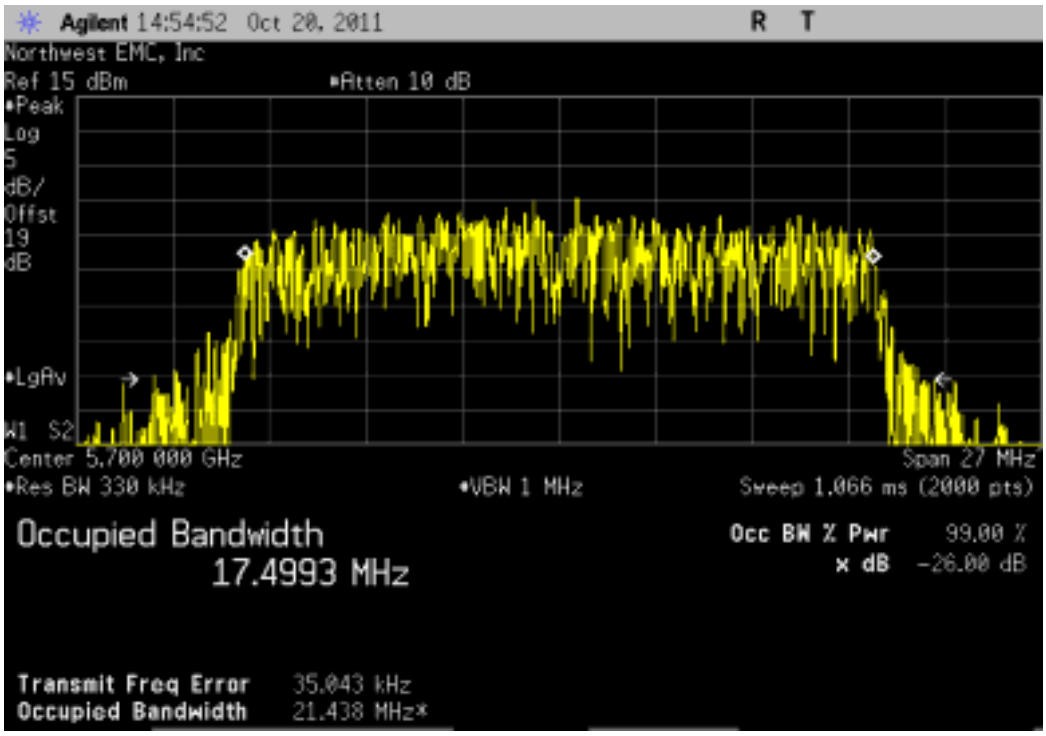
802.11(n) MCS7, 5470 - 5725 MHz Band, Channel 120, Mid Channel

				Value	Limit	Result
				21.482 MHz	> 500 kHz	Pass



802.11(n) MCS7, 5470 - 5725 MHz Band, Channel 140, High Channel

				Value	Limit	Result
				21.438 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
Spectrum Analyzer	Agilent	E4440A	AAX	5/23/2011	12
Signal Generator	Agilent	N5183A	TIA	1/18/2011	12
40 GHz DC block	Fairview Microwave	SD3379	AMI	10/12/2011	12
Attenuator - 20db, 'SMA'	SM Electronics	SA26B-20	RFW	6/2/2011	12

MEASUREMENT UNCERTAINTY

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

TEST DESCRIPTION

ANSI C63.10 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) and the transmission pulse duration (T) were measured. Both are required to determine the method of measuring Peak Transmit Power. The method of measuring the emission bandwidth and the associated data are found elsewhere in this test report. The transmission pulse duration (T) was measured using a zero span on the spectrum analyzer to see the pulses in the time domain.

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

The spectrum analyzer settings were as follows:

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

Sample detector mode because the bin width (span / number of spectral points) < 0.5 RBW.

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

NORTHWEST EMC

Peak Transmit Power

XMit 2011.08.04
PsaTx 2011.09.28

EUT:	X Series			Work Order:	LGPD0044
Serial Number:	3411000112, 341100050			Date:	10/20/11
Customer:	ZOLL Medical Corp.			Temperature:	23.57C°C
Attendees:	Curt McNamara, Karl Karcht			Humidity:	25%
Project:	None			Barometric Pres.:	1014
Tested by:	Elaine Reeves	Power:	15VDC	Job Site:	MN08

TEST SPECIFICATIONS	TEST METHOD
FCC 15.407:2011	ANSI C63.10:2009

COMMENTS

Customer cable loss factor subtracted from reference level offset (Cable missing from test setup).

DEVIATIONS FROM TEST STANDARD

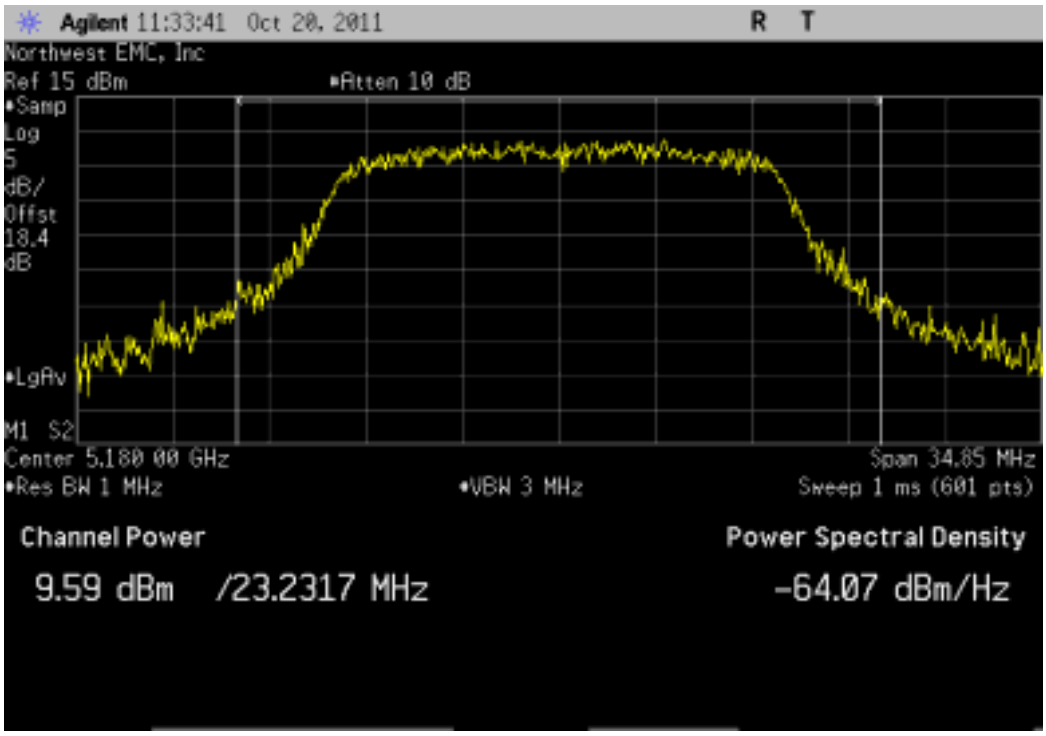
None

Configuration #	1	Signature	Trevor Bula

		Value	Limit	Result
802.11(a) 6 Mbps				
	5150 - 5250 MHz Band			
	Channel 36, Low Channel	9.593 dBm	< 17 dBm	Pass
	Channel 48, High Channel	9.309 dBm	< 17 dBm	Pass
	5250 - 5350 MHz Band			
	Channel 52, Low Channel	10.103 dBm	< 24 dBm	Pass
	Channel 64, High Channel	9.913 dBm	< 24 dBm	Pass
	5470 - 5725 MHz Band			
	Channel 100, Low Channel	9.504 dBm	< 17 dBm	Pass
	Channel 120, Mid Channel	10.577 dBm	< 17 dBm	Pass
	Channel 140, High Channel	11.027 dBm	< 17 dBm	Pass
802.11(a) 36 Mbps				
	5150 - 5250 MHz Band			
	Channel 36, Low Channel	10.231 dBm	< 17 dBm	Pass
	Channel 48, High Channel	10.096 dBm	< 17 dBm	Pass
	5250 - 5350 MHz Band			
	Channel 52, Low Channel	10.562 dBm	< 24 dBm	Pass
	Channel 64, High Channel	10.534 dBm	< 24 dBm	Pass
	5470 - 5725 MHz Band			
	Channel 100, Low Channel	10.663 dBm	< 17 dBm	Pass
	Channel 120, Mid Channel	10.672 dBm	< 17 dBm	Pass
	Channel 140, High Channel	11.279 dBm	< 17 dBm	Pass
802.11(a) 54 Mbps				
	5150 - 5250 MHz Band			
	Channel 36, Low Channel	8.721 dBm	< 17 dBm	Pass
	Channel 48, High Channel	8.711 dBm	< 17 dBm	Pass
	5250 - 5350 MHz Band			
	Channel 52, Low Channel	9.105 dBm	< 24 dBm	Pass
	Channel 64, High Channel	8.98 dBm	< 24 dBm	Pass
	5470 - 5725 MHz Band			
	Channel 100, Low Channel	9.318 dBm	< 17 dBm	Pass
	Channel 120, Mid Channel	9.373 dBm	< 17 dBm	Pass
	Channel 140, High Channel	9.287 dBm	< 17 dBm	Pass
802.11(n) MCS0				
	5150 - 5250 MHz Band			
	Channel 36, Low Channel	8.478 dBm	< 17 dBm	Pass
	Channel 48, High Channel	9.411 dBm	< 17 dBm	Pass
	5250 - 5350 MHz Band			
	Channel 52, Low Channel	10.083 dBm	< 24 dBm	Pass
	Channel 64, High Channel	10.499 dBm	< 24 dBm	Pass
	5470 - 5725 MHz Band			
	Channel 100, Low Channel	9.586 dBm	< 17 dBm	Pass
	Channel 120, Mid Channel	9.729 dBm	< 17 dBm	Pass
	Channel 140, High Channel	10.609 dBm	< 17 dBm	Pass
802.11(n) MCS7				
	5150 - 5250 MHz Band			
	Channel 36, Low Channel	7.425 dBm	< 17 dBm	Pass
	Channel 48, High Channel	7.403 dBm	< 17 dBm	Pass
	5250 - 5350 MHz Band			
	Channel 52, Low Channel	7.883 dBm	< 24 dBm	Pass
	Channel 64, High Channel	7.777 dBm	< 24 dBm	Pass
	5470 - 5725 MHz Band			
	Channel 100, Low Channel	8.194 dBm	< 17 dBm	Pass
	Channel 120, Mid Channel	8.008 dBm	< 17 dBm	Pass
	Channel 140, High Channel	7.955 dBm	< 17 dBm	Pass

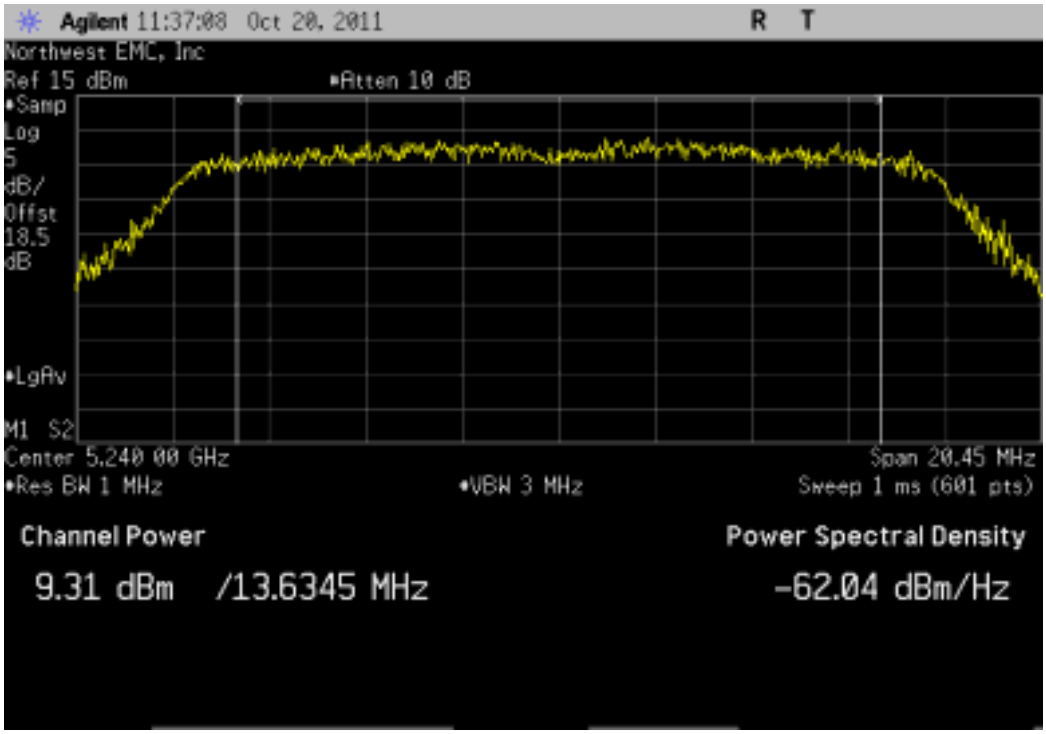
802.11(a) 6 Mbps, 5150 - 5250 MHz Band, Channel 36, Low Channel

				Value	Limit	Result
				9.593 dBm	< 17 dBm	Pass



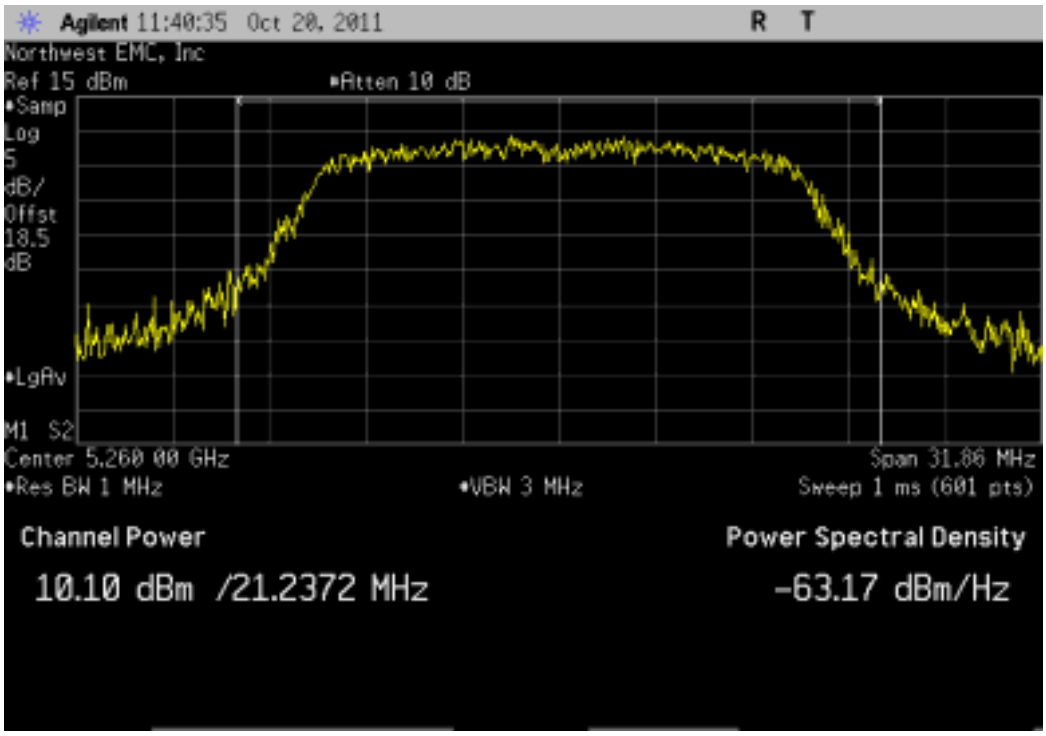
802.11(a) 6 Mbps, 5150 - 5250 MHz Band, Channel 48, High Channel

				Value	Limit	Result
				9.309 dBm	< 17 dBm	Pass



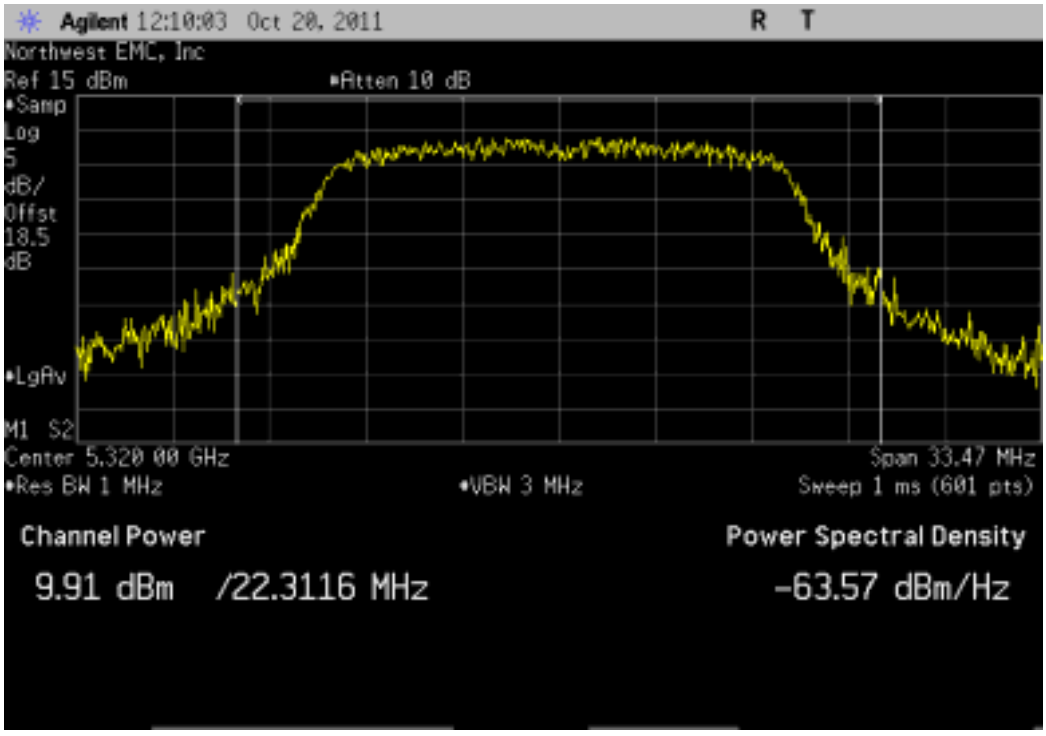
802.11(a) 6 Mbps, 5250 - 5350 MHz Band, Channel 52, Low Channel

				Value	Limit	Result
				10.103 dBm	< 24 dBm	Pass



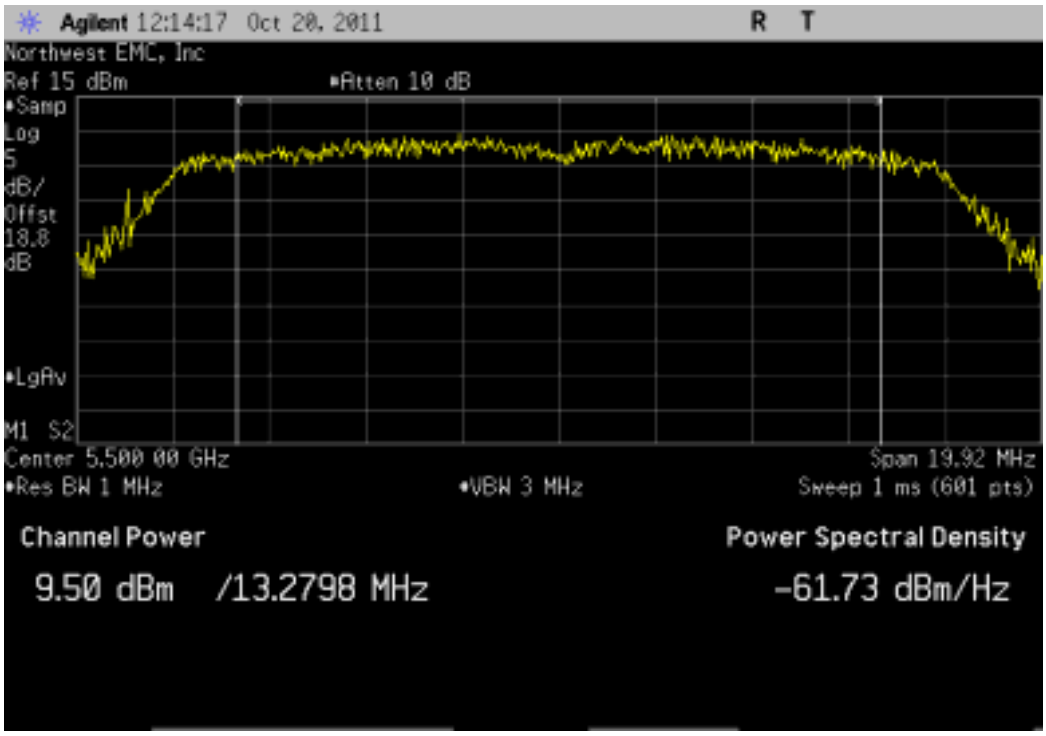
802.11(a) 6 Mbps, 5250 - 5350 MHz Band, Channel 64, High Channel

				Value	Limit	Result
				9.913 dBm	< 24 dBm	Pass



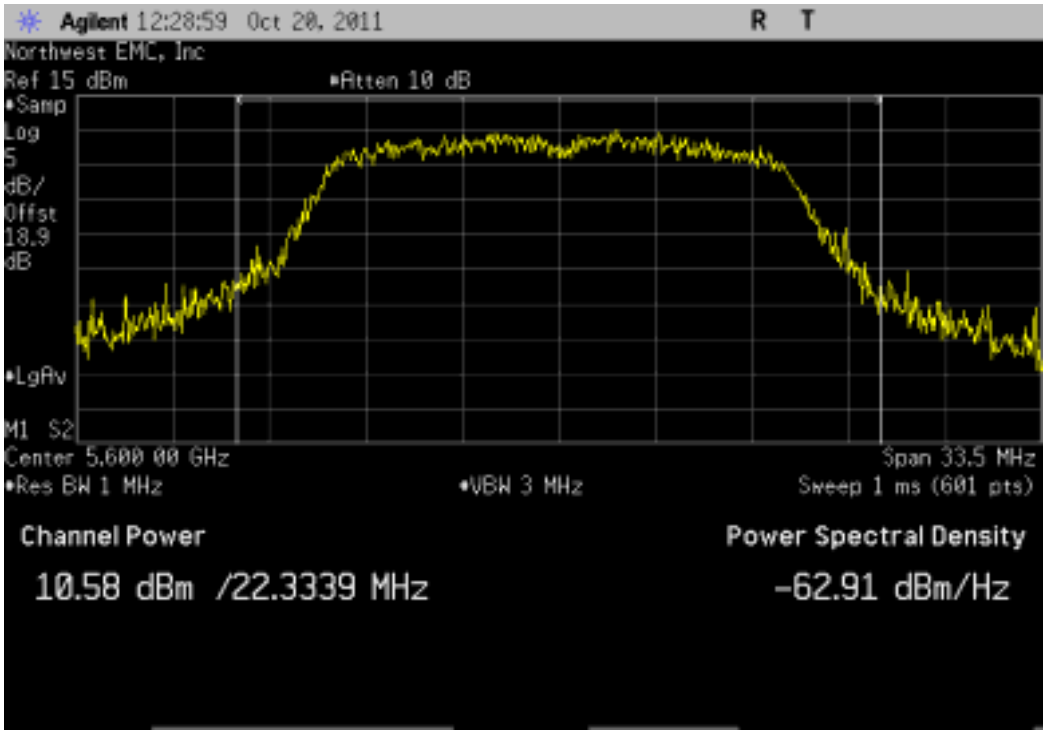
802.11(a) 6 Mbps, 5470 - 5725 MHz Band, Channel 100, Low Channel

				Value	Limit	Result
				9.504 dBm	< 17 dBm	Pass



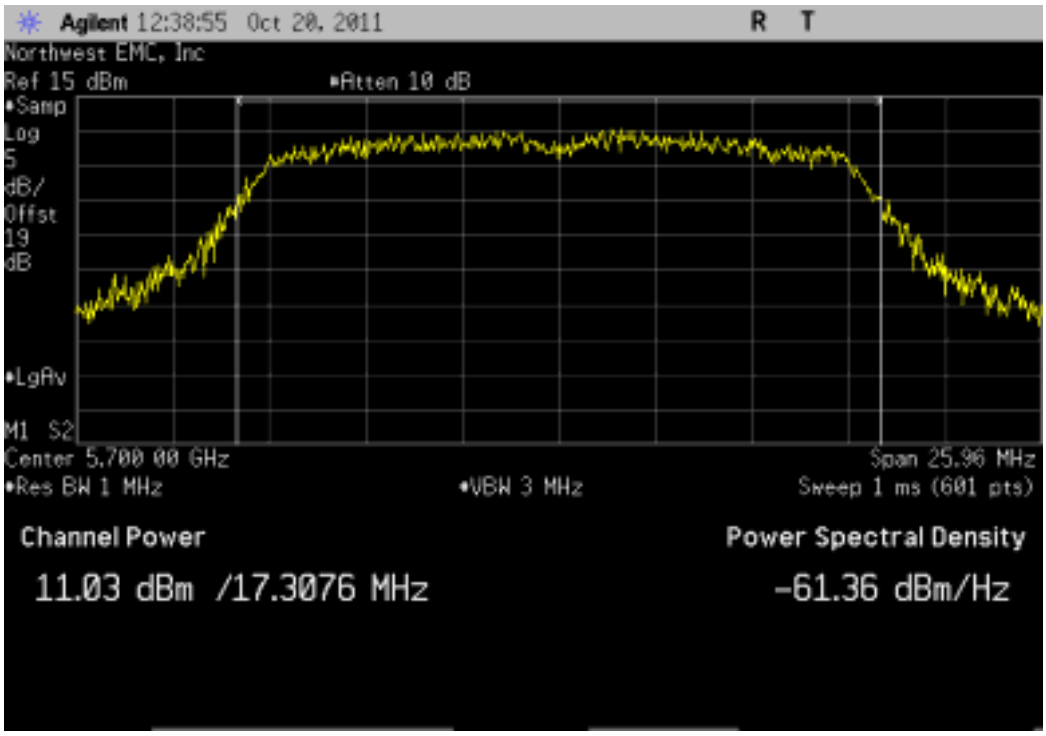
802.11(a) 6 Mbps, 5470 - 5725 MHz Band, Channel 120, Mid Channel

				Value	Limit	Result
				10.577 dBm	< 17 dBm	Pass



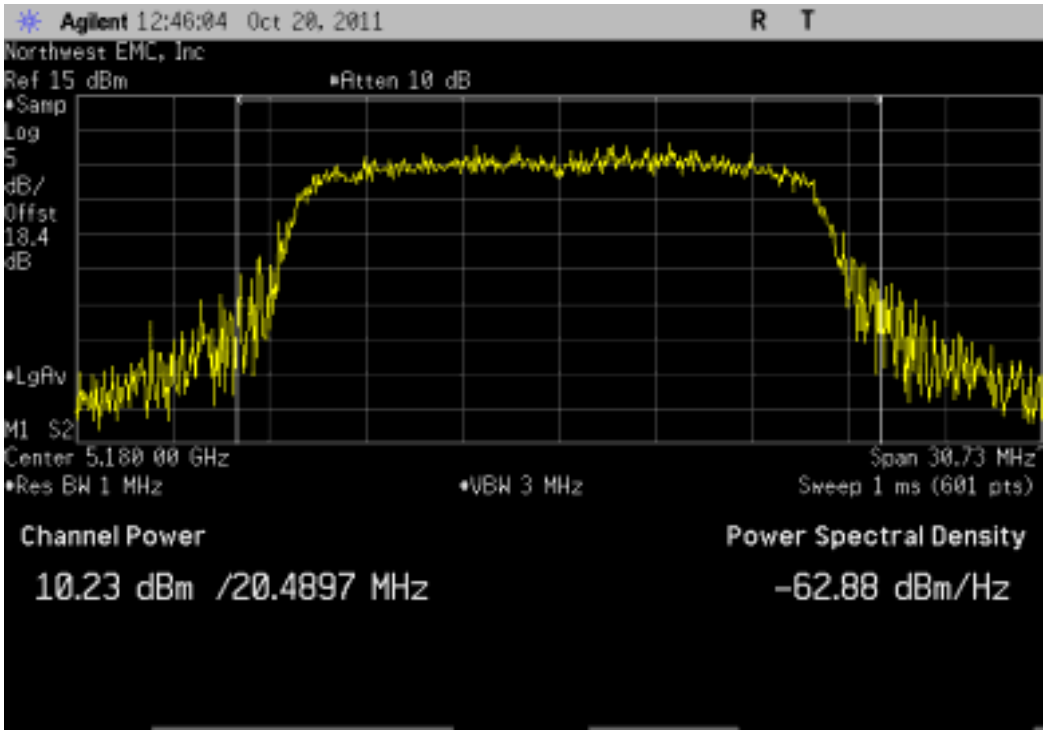
802.11(a) 6 Mbps, 5470 - 5725 MHz Band, Channel 140, High Channel

				Value	Limit	Result
				11.027 dBm	< 17 dBm	Pass



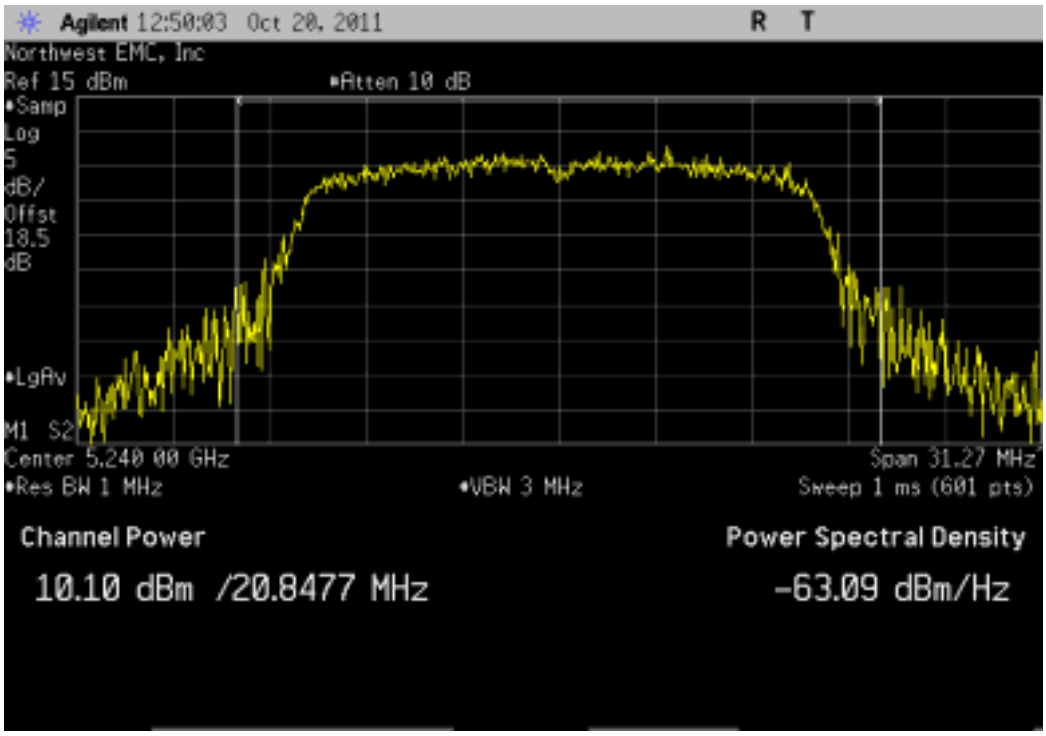
802.11(a) 36 Mbps, 5150 - 5250 MHz Band, Channel 36, Low Channel

				Value	Limit	Result
				10.231 dBm	< 17 dBm	Pass



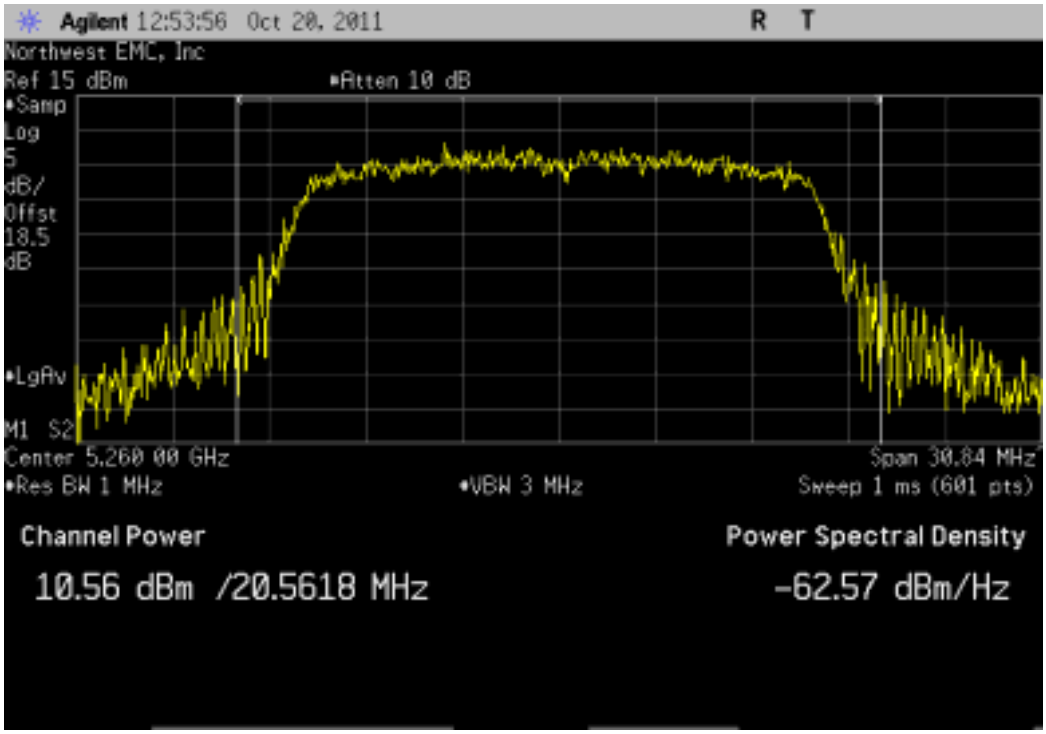
802.11(a) 36 Mbps, 5150 - 5250 MHz Band, Channel 48, High Channel

				Value	Limit	Result
				10.096 dBm	< 17 dBm	Pass



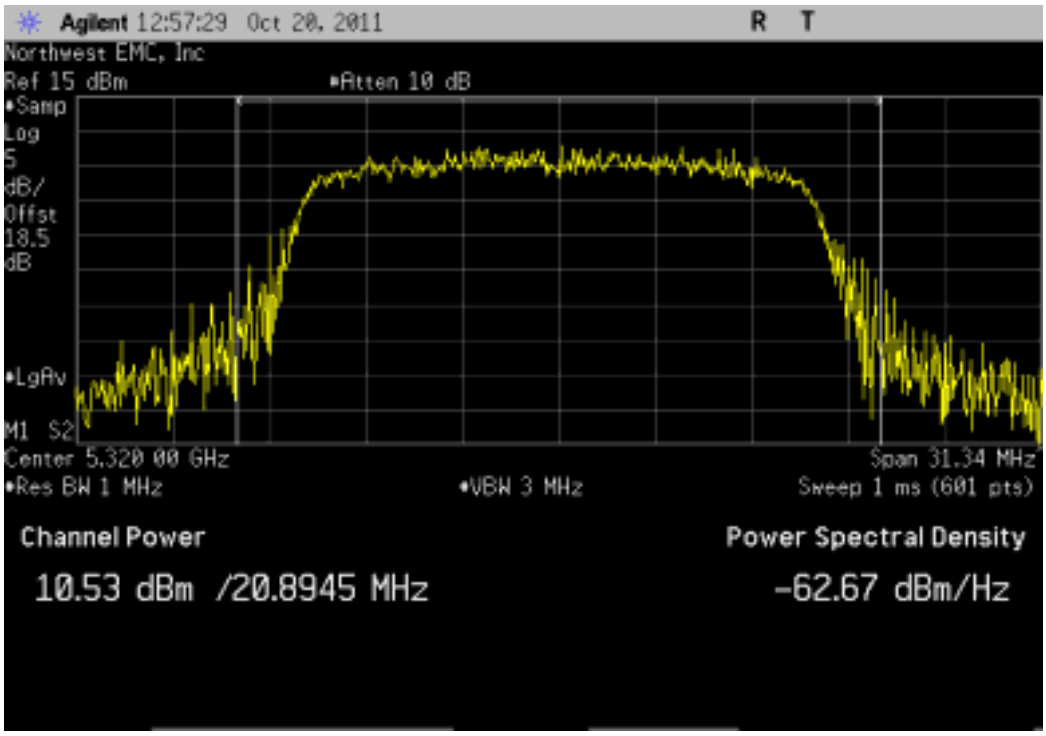
802.11(a) 36 Mbps, 5250 - 5350 MHz Band, Channel 52, Low Channel

				Value	Limit	Result
				10.562 dBm	< 24 dBm	Pass



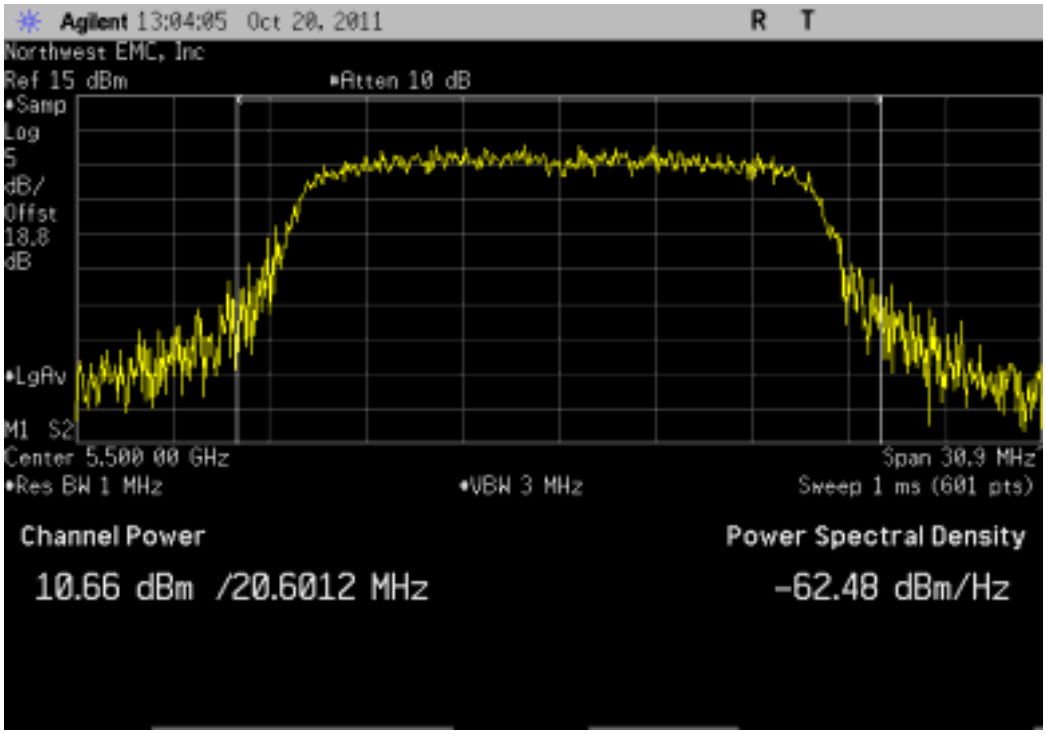
802.11(a) 36 Mbps, 5250 - 5350 MHz Band, Channel 64, High Channel

				Value	Limit	Result
				10.534 dBm	< 24 dBm	Pass



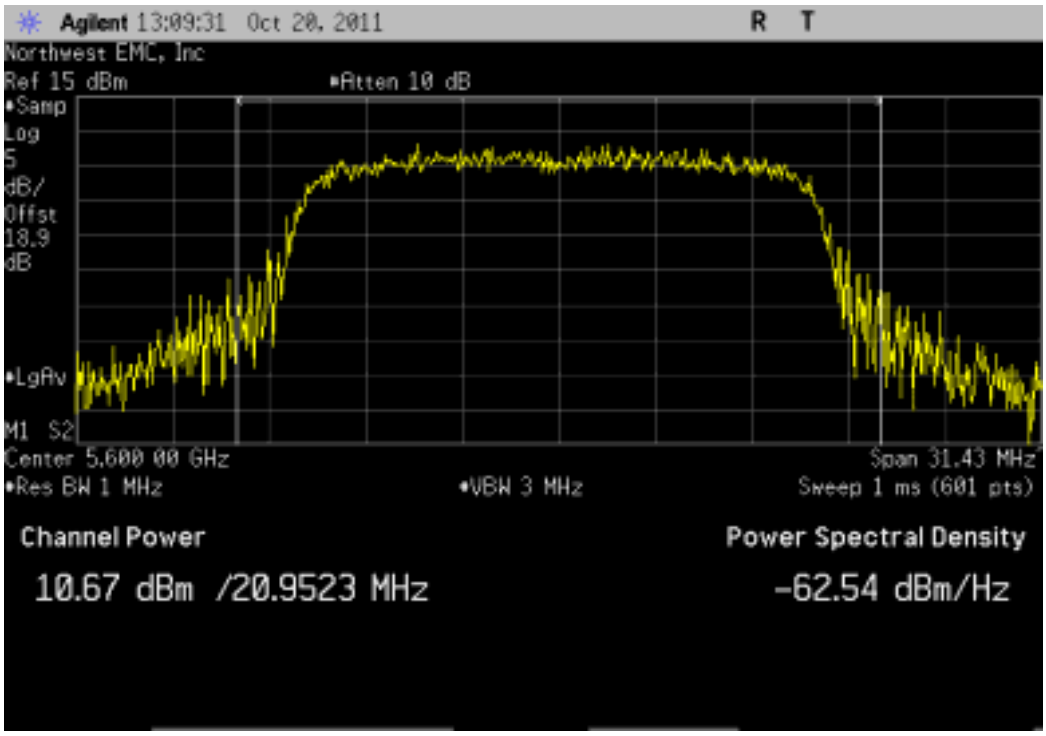
802.11(a) 36 Mbps, 5470 - 5725 MHz Band, Channel 100, Low Channel

				Value	Limit	Result
				10.663 dBm	< 17 dBm	Pass



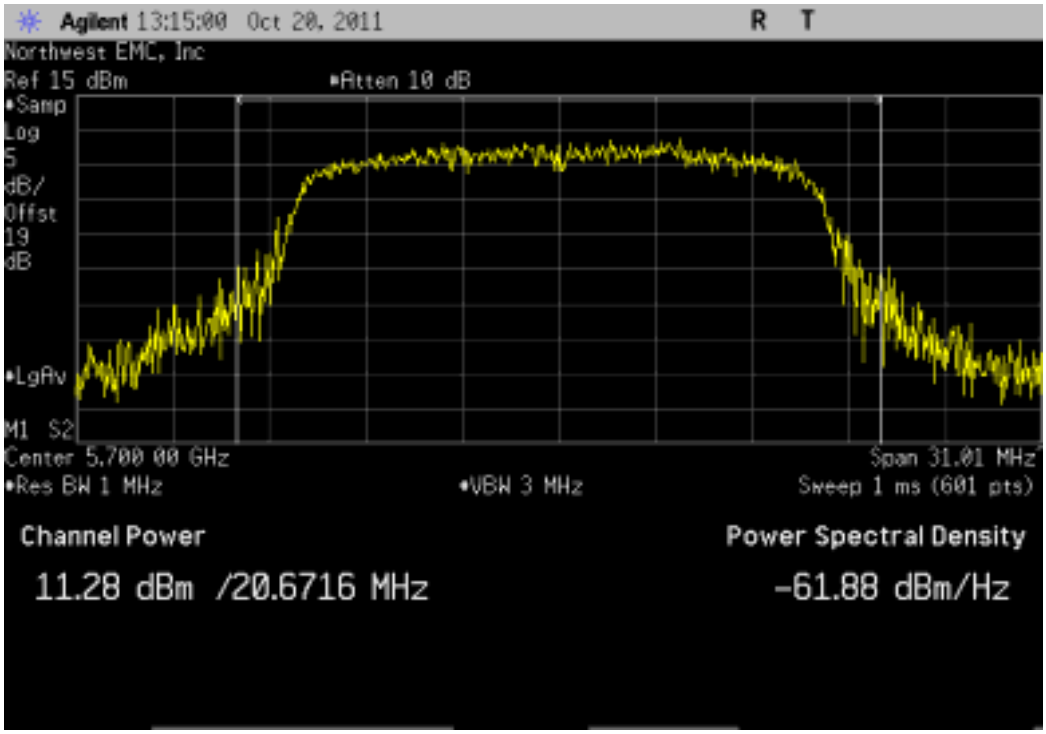
802.11(a) 36 Mbps, 5470 - 5725 MHz Band, Channel 120, Mid Channel

				Value	Limit	Result
				10.672 dBm	< 17 dBm	Pass



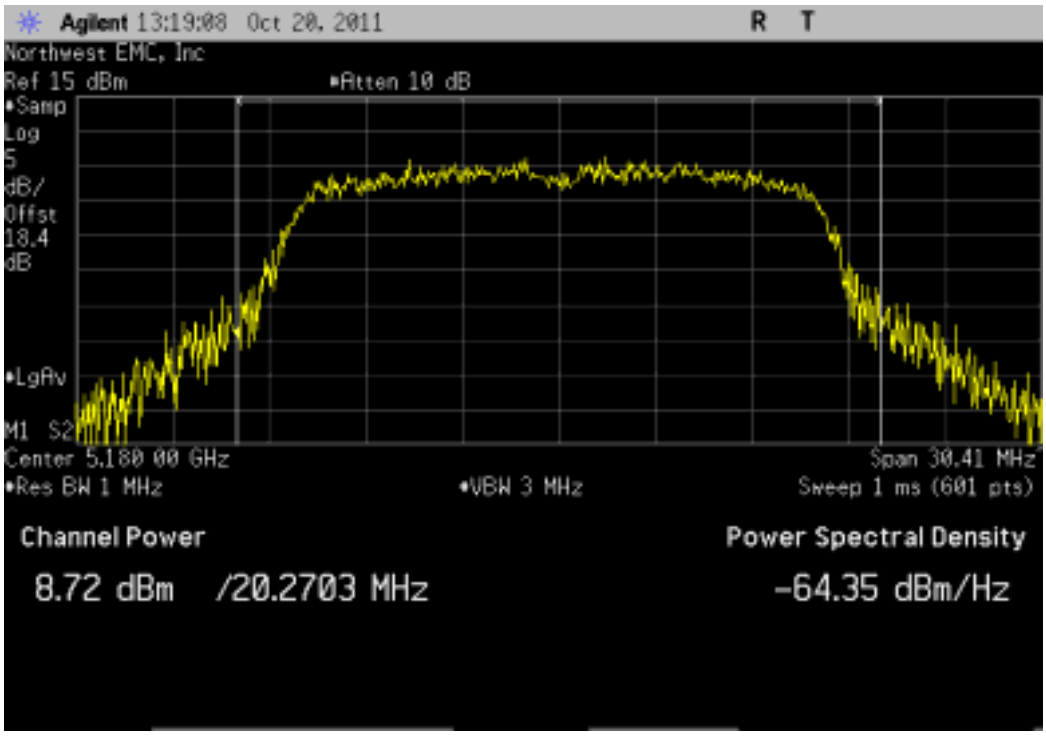
802.11(a) 36 Mbps, 5470 - 5725 MHz Band, Channel 140, High Channel

				Value	Limit	Result
				11.279 dBm	< 17 dBm	Pass



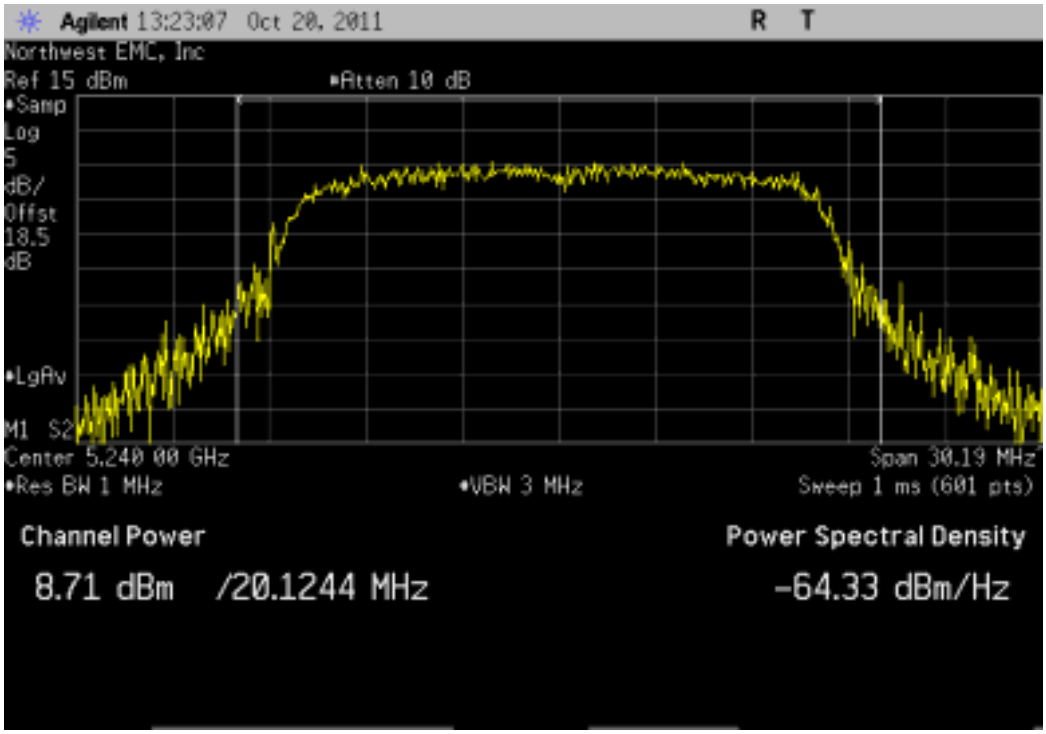
802.11(a) 54 Mbps, 5150 - 5250 MHz Band, Channel 36, Low Channel

				Value	Limit	Result
				8.721 dBm	< 17 dBm	Pass



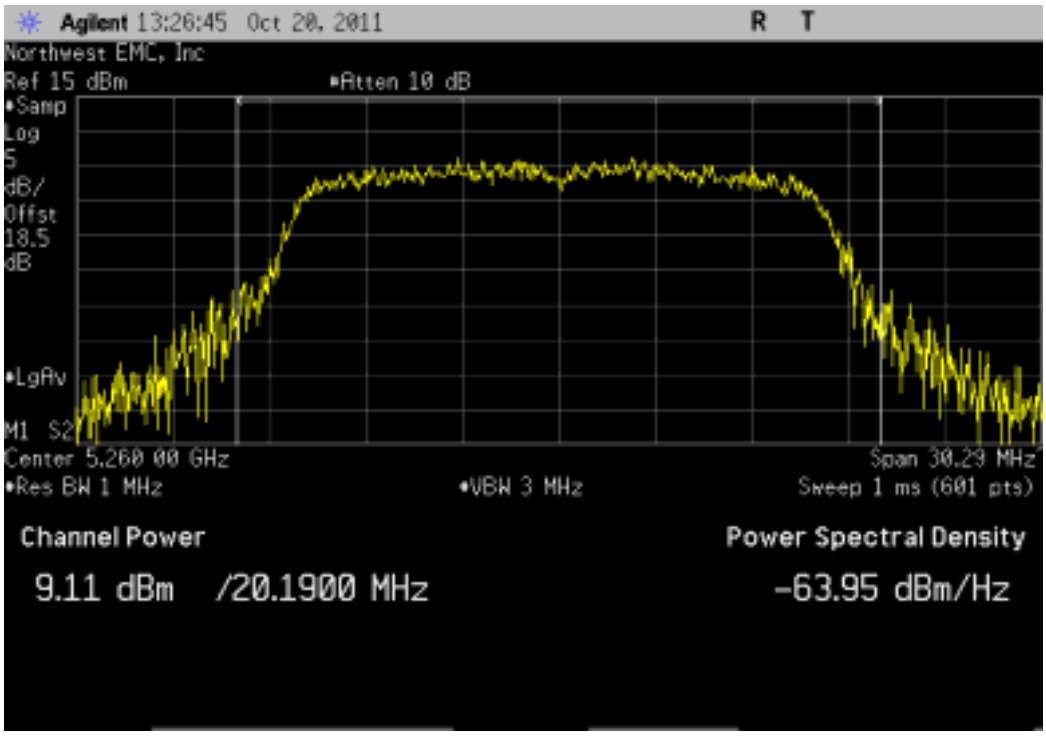
802.11(a) 54 Mbps, 5150 - 5250 MHz Band, Channel 48, High Channel

				Value	Limit	Result
				8.711 dBm	< 17 dBm	Pass



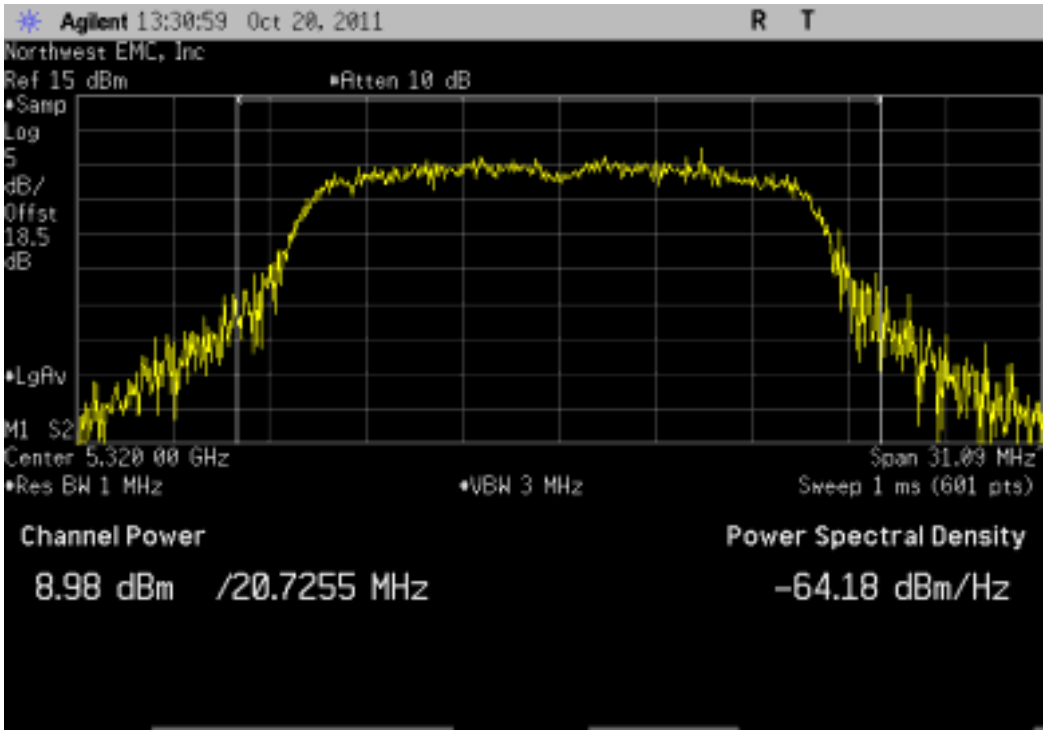
802.11(a) 54 Mbps, 5250 - 5350 MHz Band, Channel 52, Low Channel

				Value	Limit	Result
				9.105 dBm	< 24 dBm	Pass



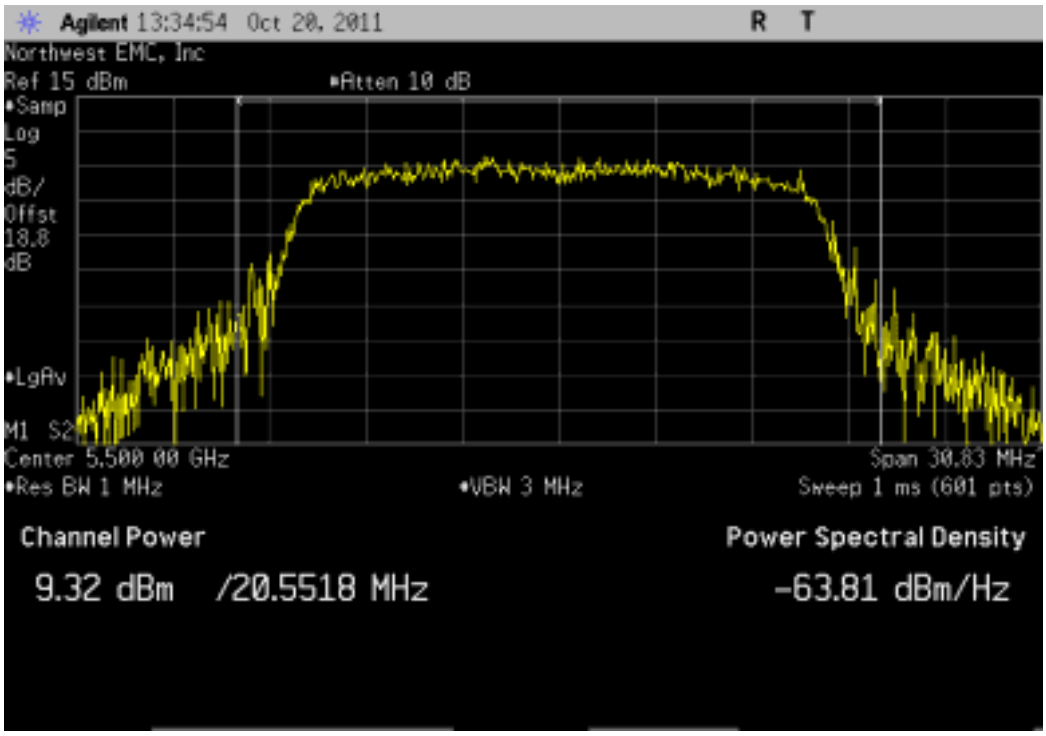
802.11(a) 54 Mbps, 5250 - 5350 MHz Band, Channel 64, High Channel

				Value	Limit	Result
				8.98 dBm	< 24 dBm	Pass



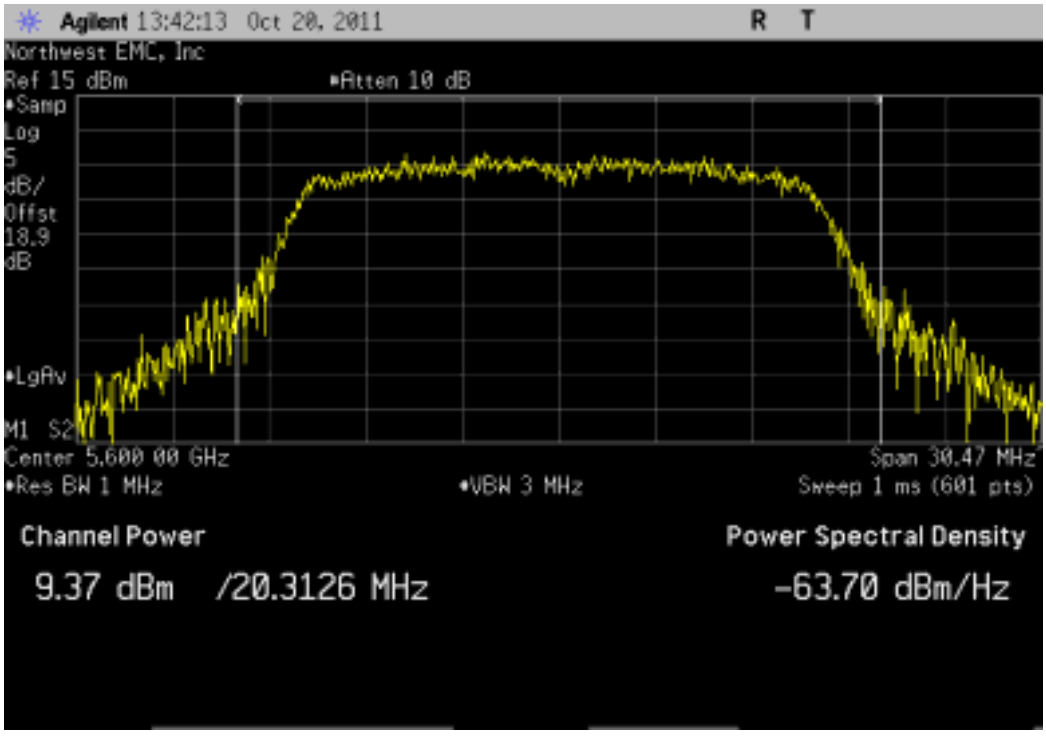
802.11(a) 54 Mbps, 5470 - 5725 MHz Band, Channel 100, Low Channel

				Value	Limit	Result
				9.318 dBm	< 17 dBm	Pass



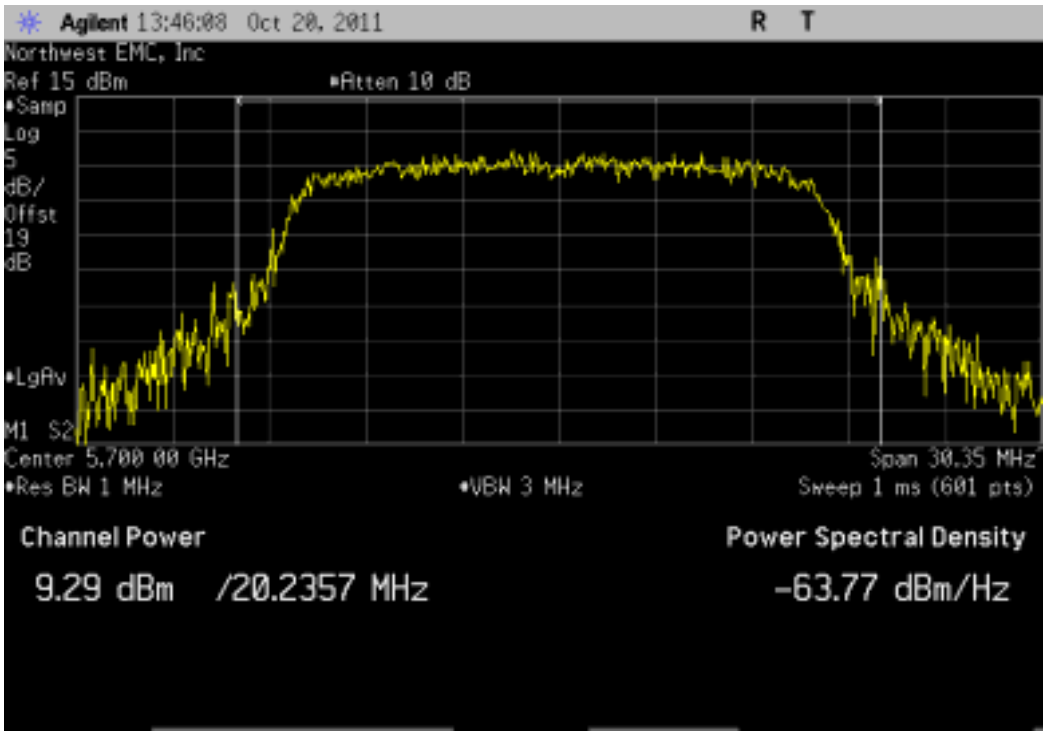
802.11(a) 54 Mbps, 5470 - 5725 MHz Band, Channel 120, Mid Channel

				Value	Limit	Result
				9.373 dBm	< 17 dBm	Pass



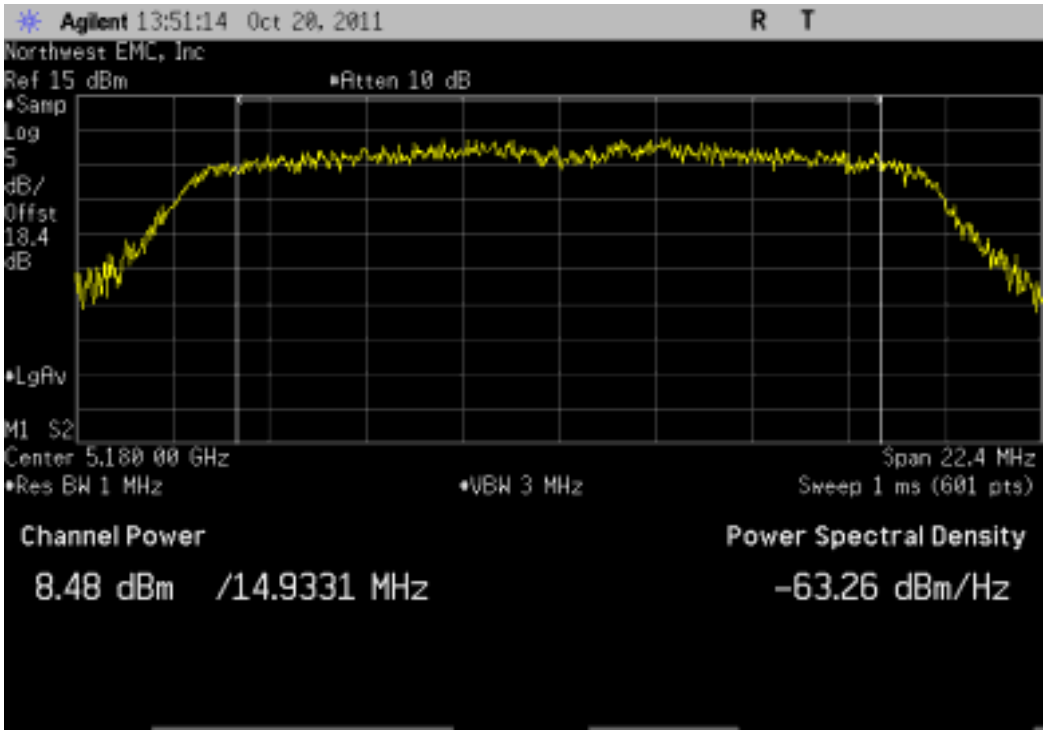
802.11(a) 54 Mbps, 5470 - 5725 MHz Band, Channel 140, High Channel

				Value	Limit	Result
				9.287 dBm	< 17 dBm	Pass



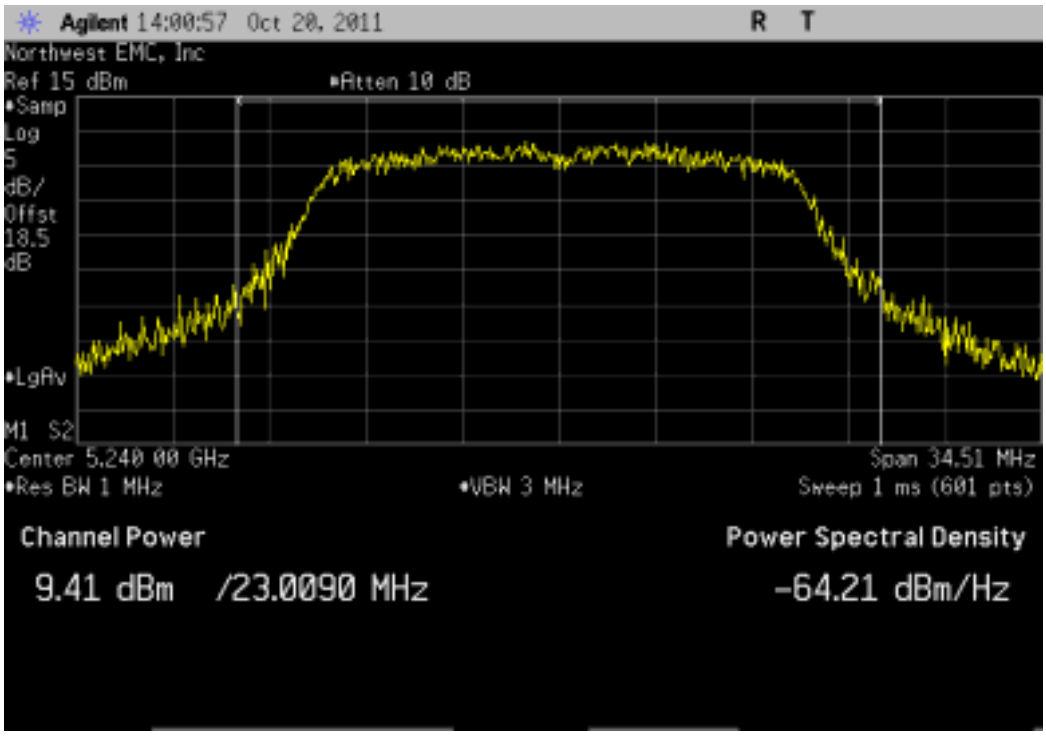
802.11(n) MCS0, 5150 - 5250 MHz Band, Channel 36, Low Channel

				Value	Limit	Result
				8.478 dBm	< 17 dBm	Pass



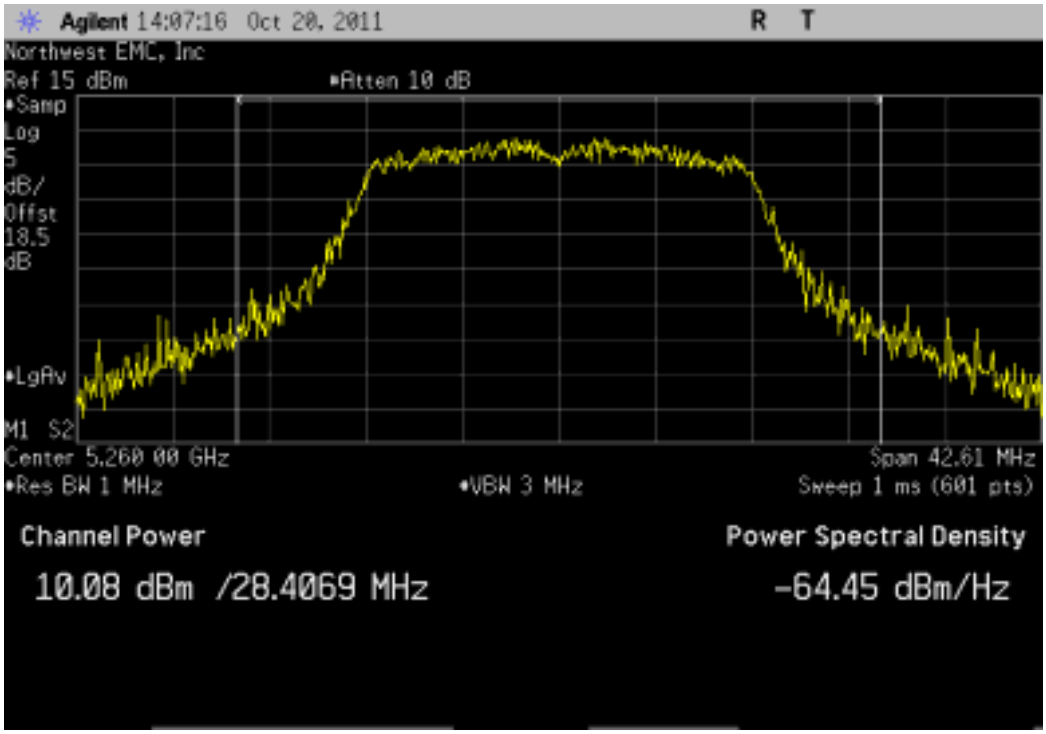
802.11(n) MCS0, 5150 - 5250 MHz Band, Channel 48, High Channel

				Value	Limit	Result
				9.411 dBm	< 17 dBm	Pass



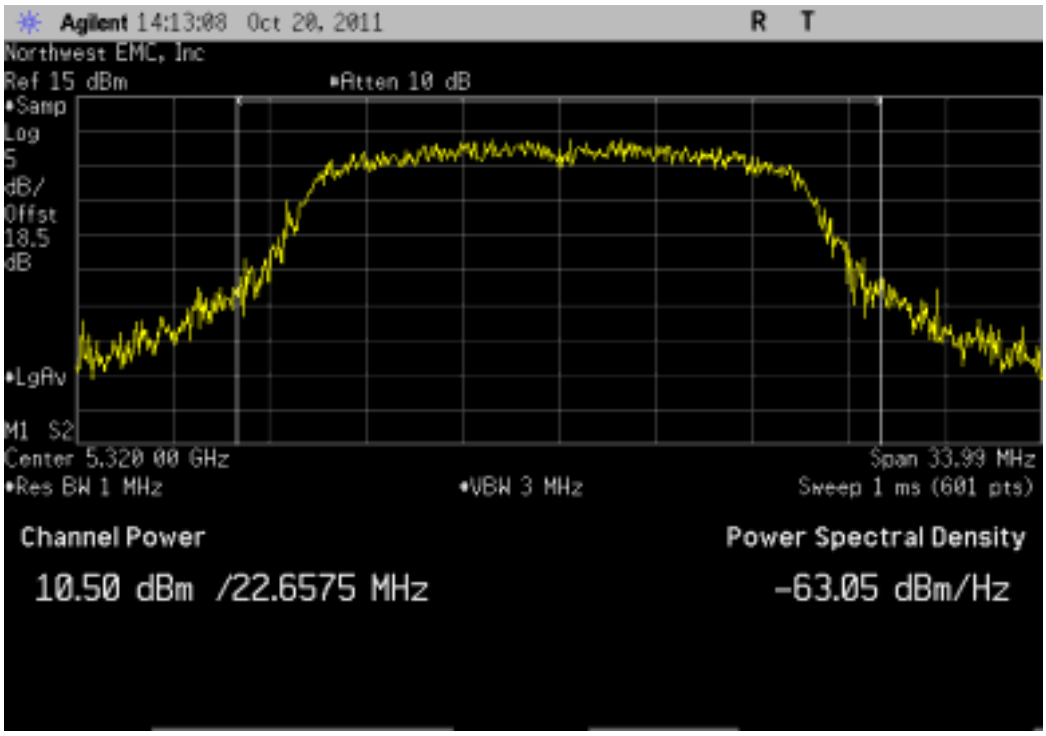
802.11(n) MCS0, 5250 - 5350 MHz Band, Channel 52, Low Channel

				Value	Limit	Result
				10.083 dBm	< 24 dBm	Pass



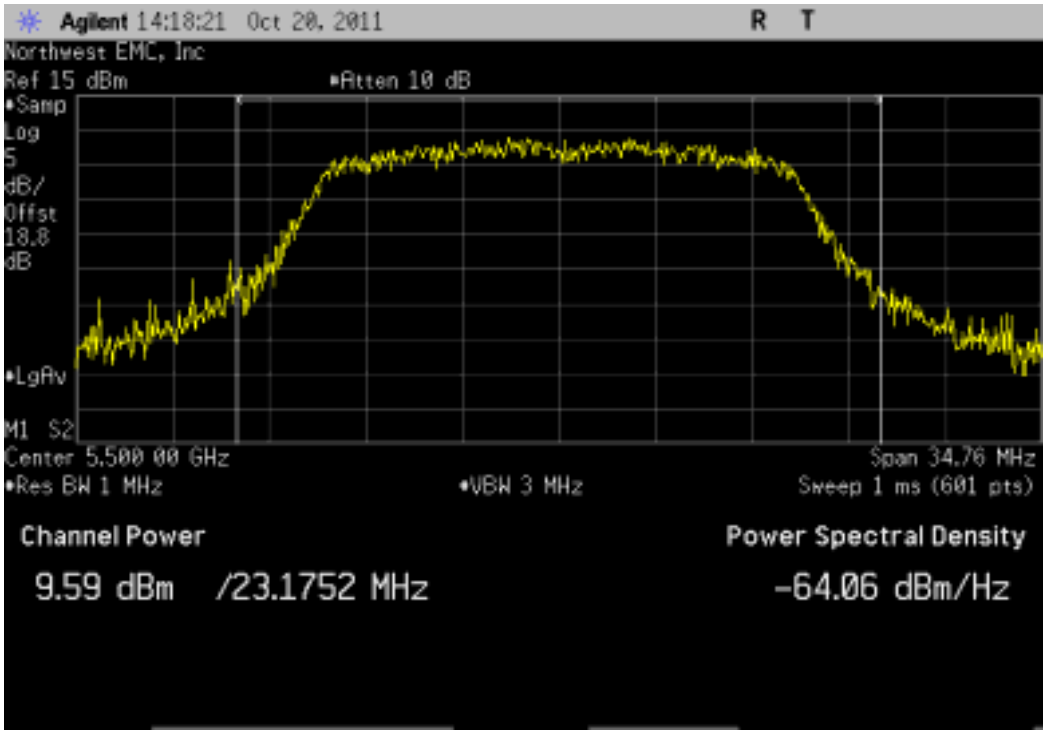
802.11(n) MCS0, 5250 - 5350 MHz Band, Channel 64, High Channel

				Value	Limit	Result
				10.499 dBm	< 24 dBm	Pass



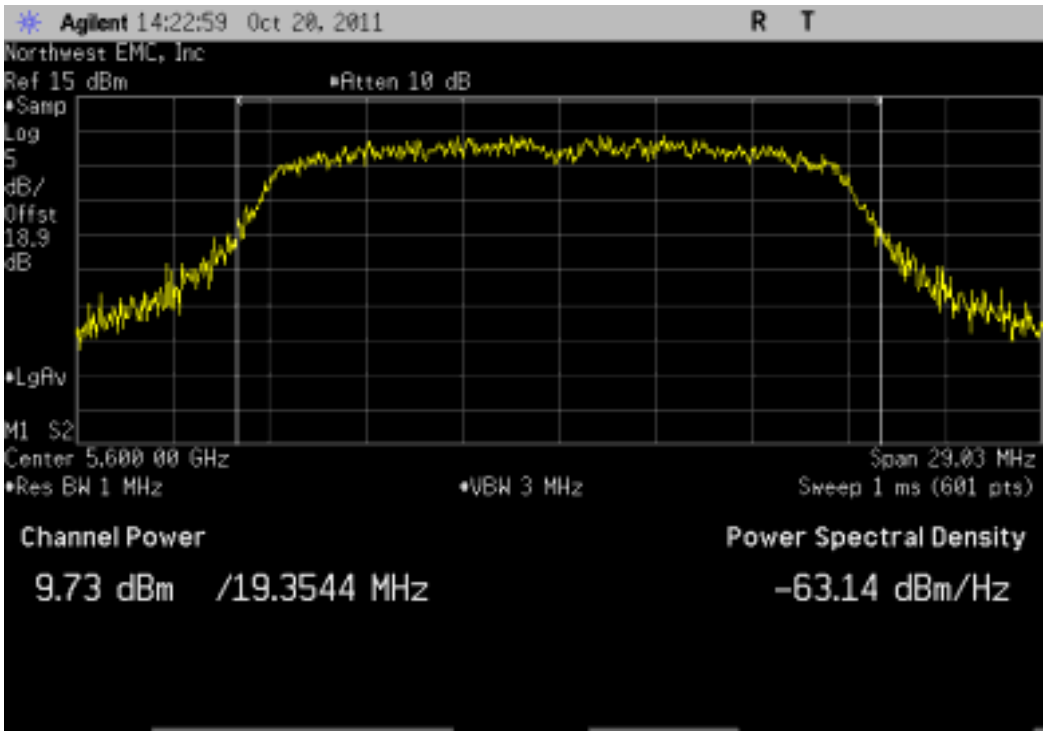
802.11(n) MCS0, 5470 - 5725 MHz Band, Channel 100, Low Channel

				Value	Limit	Result
				9.586 dBm	< 17 dBm	Pass



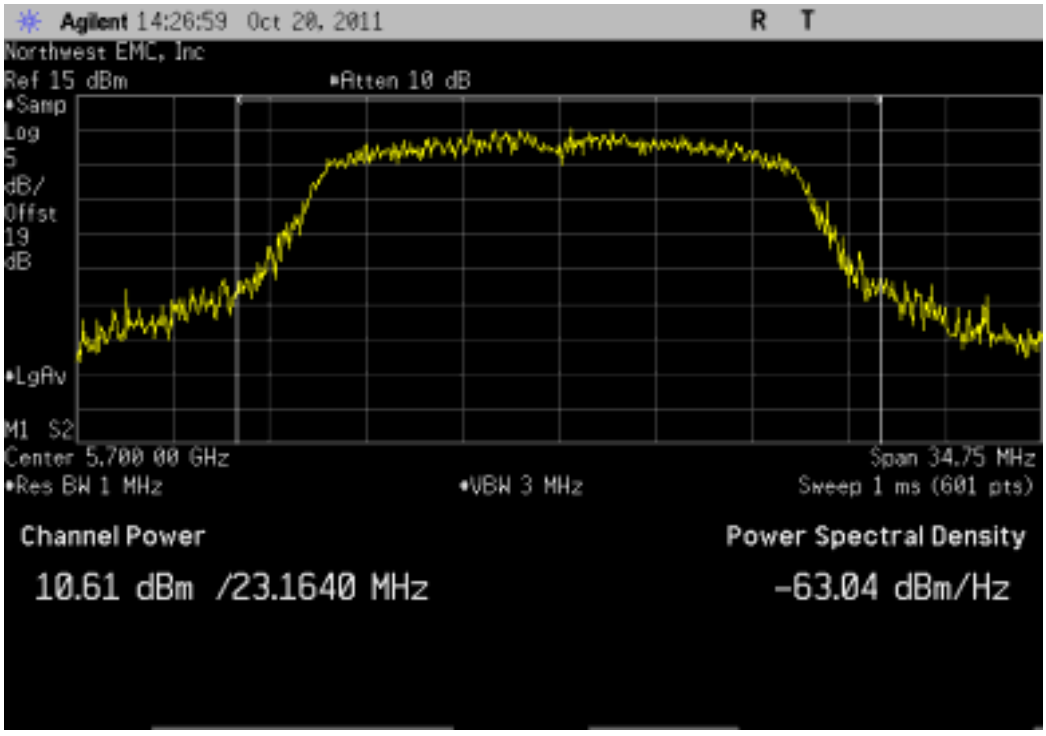
802.11(n) MCS0, 5470 - 5725 MHz Band, Channel 120, Mid Channel

				Value	Limit	Result
				9.729 dBm	< 17 dBm	Pass



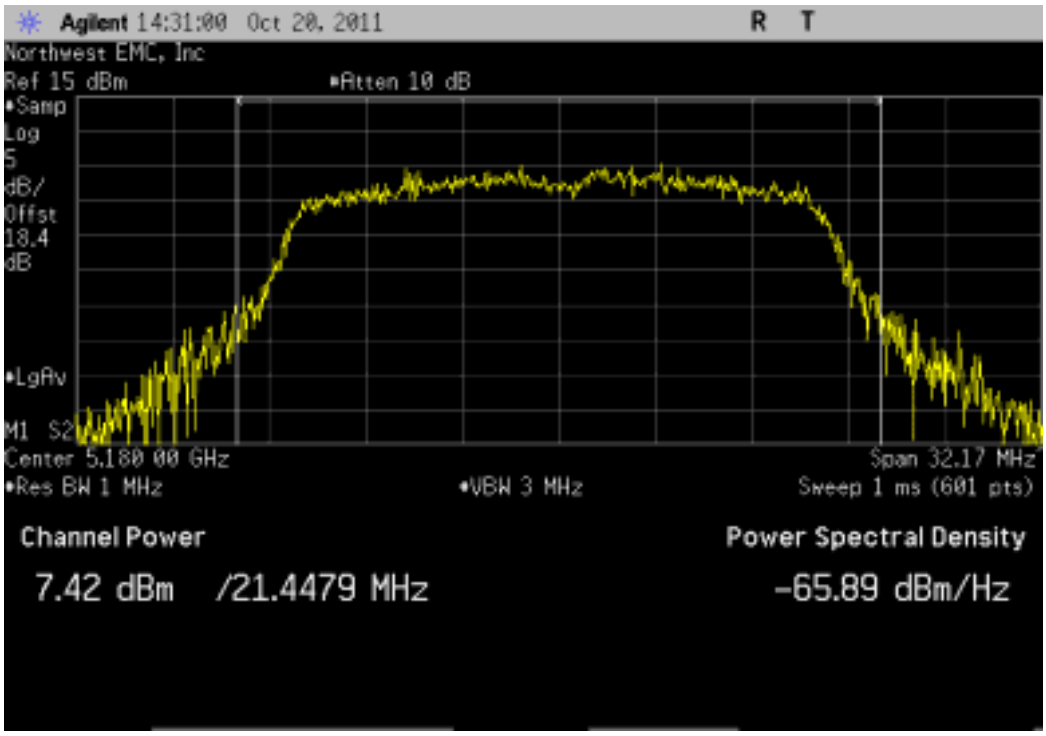
802.11(n) MCS0, 5470 - 5725 MHz Band, Channel 140, High Channel

				Value	Limit	Result
				10.609 dBm	< 17 dBm	Pass



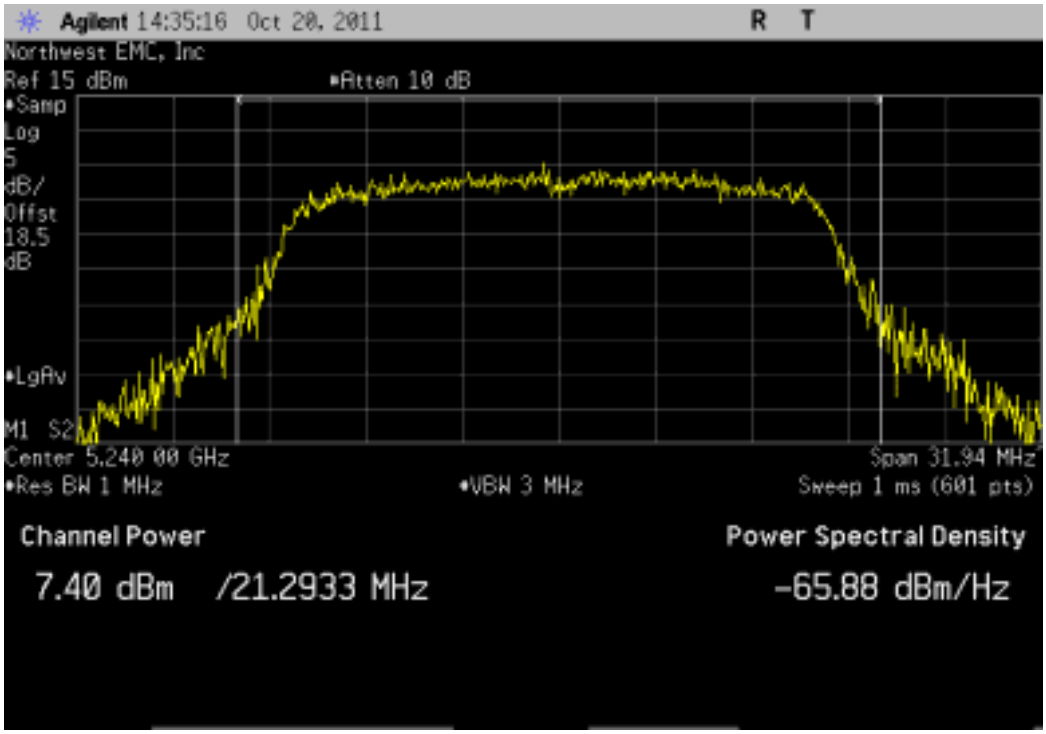
802.11(n) MCS7, 5150 - 5250 MHz Band, Channel 36, Low Channel

				Value	Limit	Result
				7.425 dBm	< 17 dBm	Pass



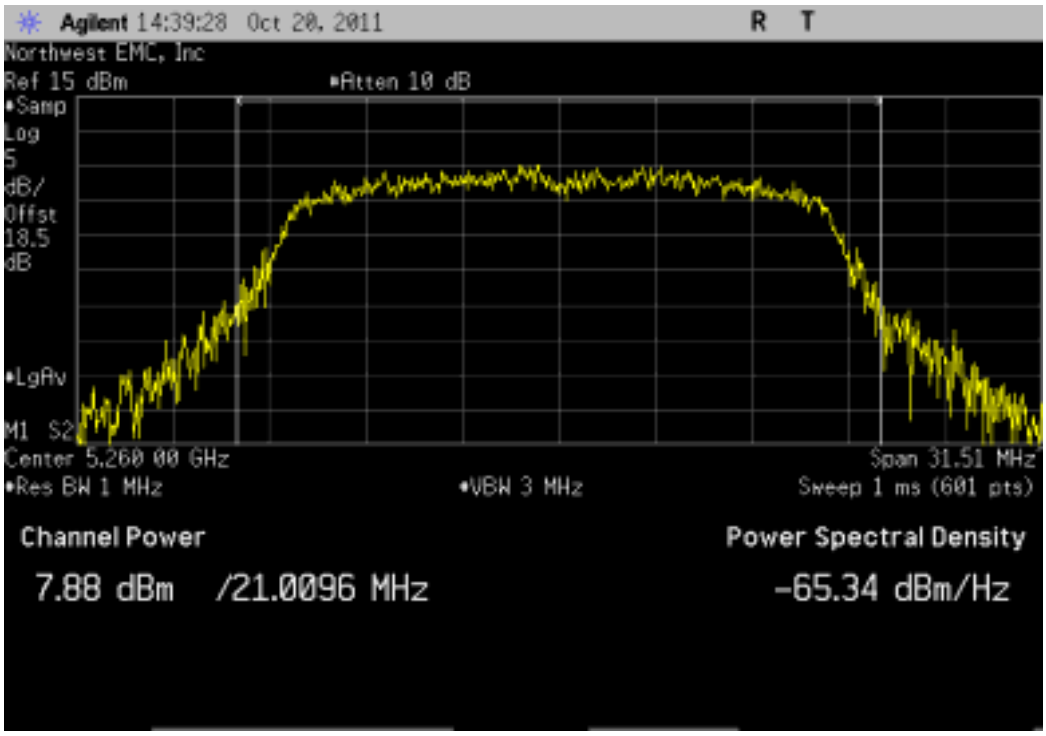
802.11(n) MCS7, 5150 - 5250 MHz Band, Channel 48, High Channel

				Value	Limit	Result
				7.403 dBm	< 17 dBm	Pass



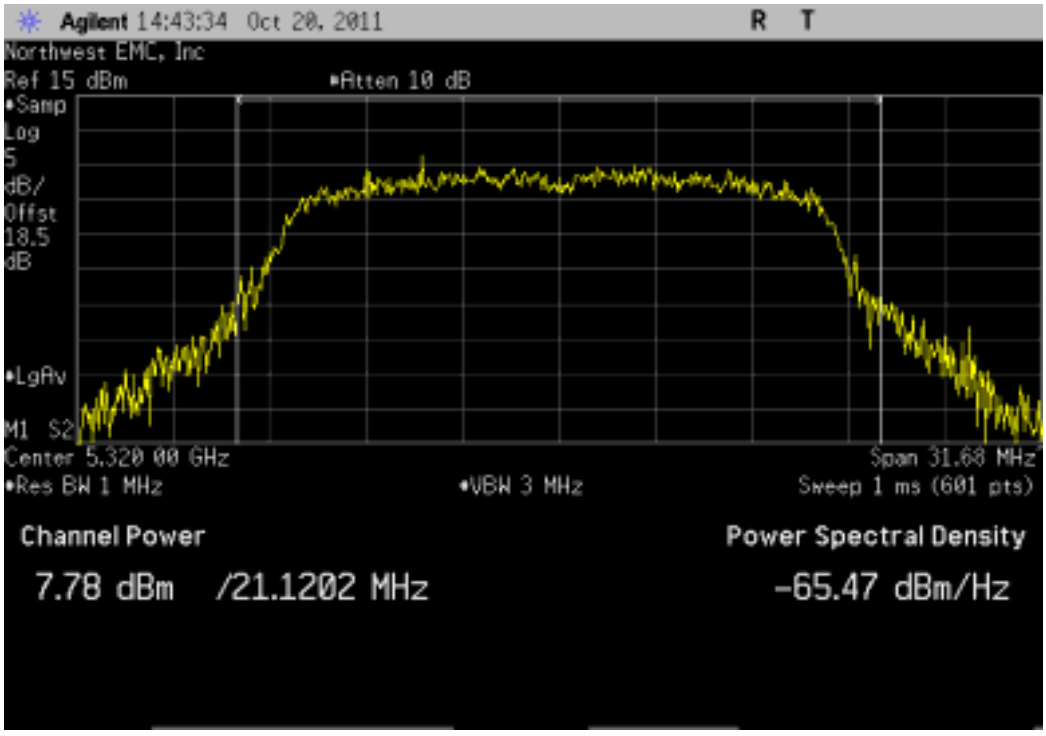
802.11(n) MCS7, 5250 - 5350 MHz Band, Channel 52, Low Channel

				Value	Limit	Result
				7.883 dBm	< 24 dBm	Pass



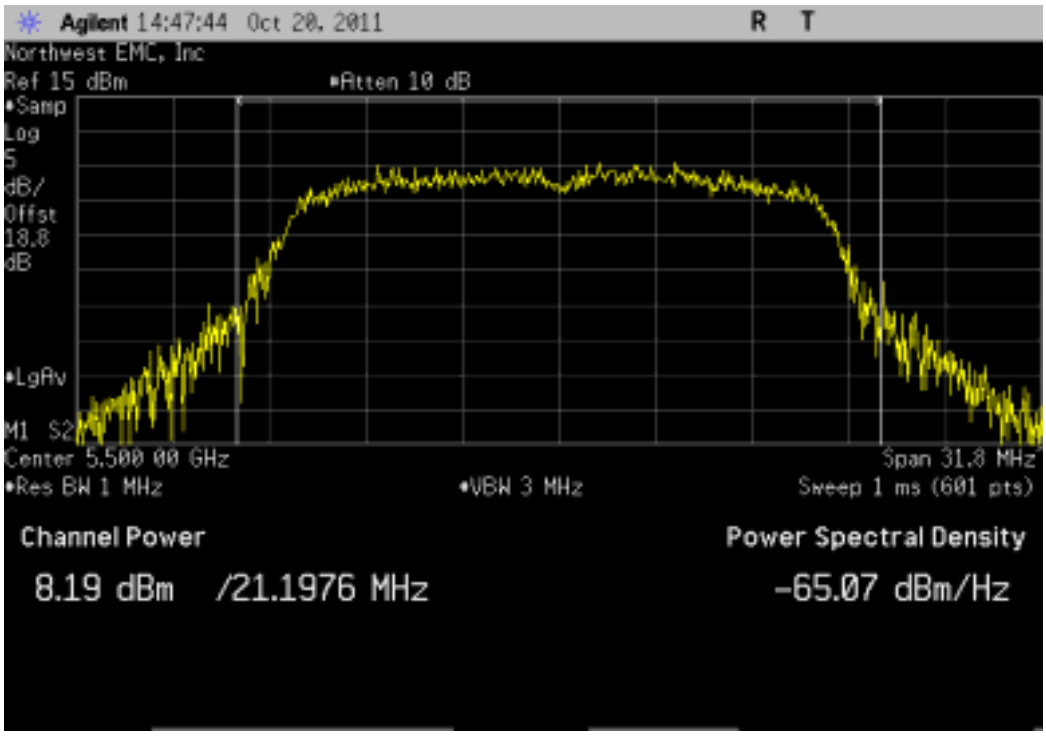
802.11(n) MCS7, 5250 - 5350 MHz Band, Channel 64, High Channel

				Value	Limit	Result
				7.777 dBm	< 24 dBm	Pass



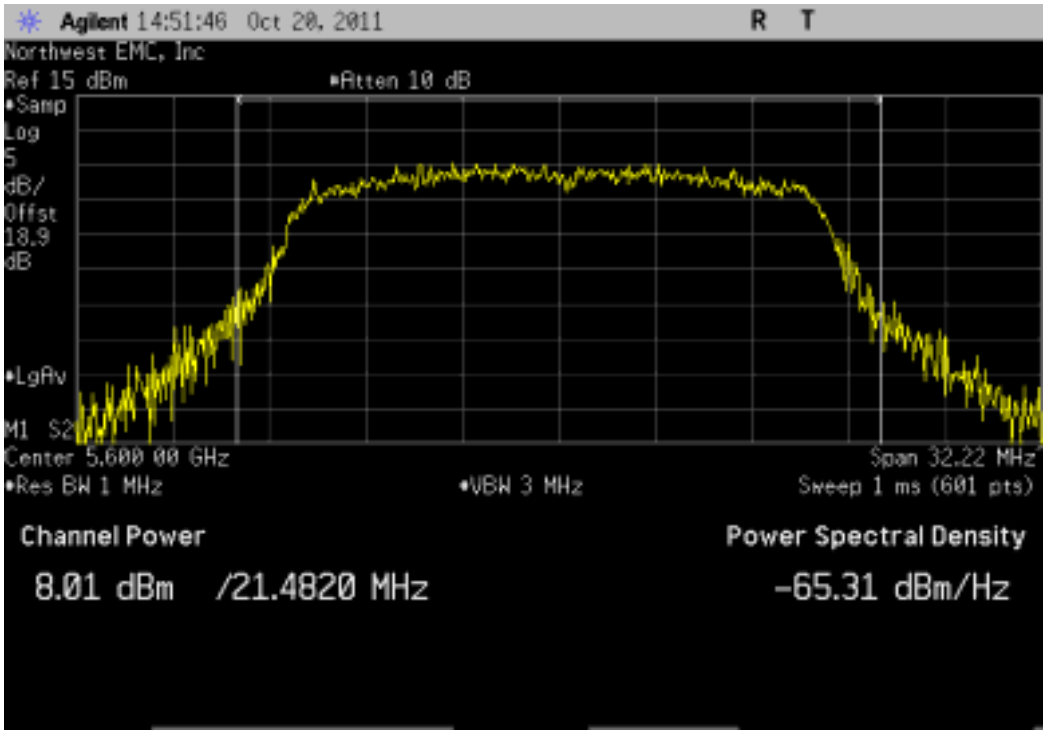
802.11(n) MCS7, 5470 - 5725 MHz Band, Channel 100, Low Channel

				Value	Limit	Result
				8.194 dBm	< 17 dBm	Pass



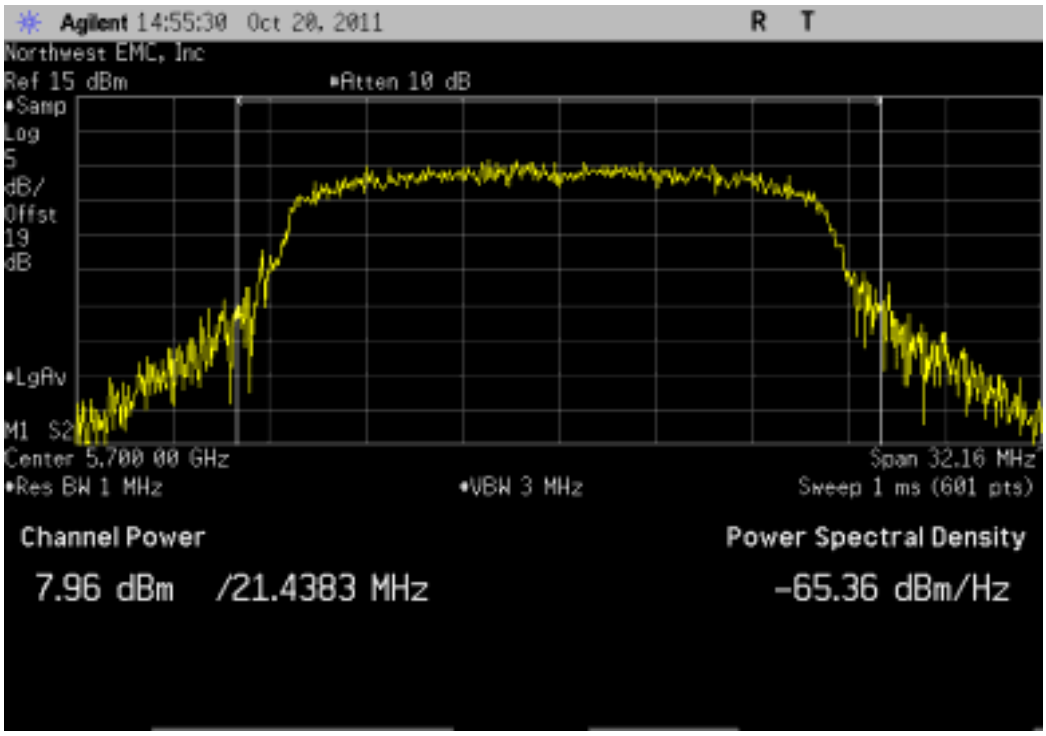
802.11(n) MCS7, 5470 - 5725 MHz Band, Channel 120, Mid Channel

				Value	Limit	Result
				8.008 dBm	< 17 dBm	Pass



802.11(n) MCS7, 5470 - 5725 MHz Band, Channel 140, High Channel

				Value	Limit	Result
				7.955 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
Spectrum Analyzer	Agilent	E4440A	AAX	5/23/2011	12
Signal Generator	Agilent	N5183A	TIA	1/18/2011	12
40 GHz DC block	Fairview Microwave	SD3379	AMI	10/12/2011	12
Attenuator - 20db, 'SMA'	SM Electronics	SA26B-20	RFW	6/2/2011	12

MEASUREMENT UNCERTAINTY

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

TEST DESCRIPTION

ANSI C63.10 was followed. The transmit frequency was set to the required channels in each band. The transmit power was set to its default maximum. The lowest data rate was measured as it provided the highest output power. 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 power spectral density, the transmission pulse duration (T) were measured. The transmission pulse duration and the associated data are found elsewhere in this test report.

Method #2 was used.

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 because the emission bandwidth (B) is greater than 1 MHz
- Sample detector mode because the bin width (span / number of spectral points) < 0.5 RBW.
- 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).

NORTHWEST EMC

Peak Power Spectral Density

XMit 2011.08.04
PsaTx 2011.09.28

EUT:	X Series			Work Order:	LGPD0044
Serial Number:	3411000112, 341100050			Date:	10/20/11
Customer:	ZOLL Medical Corp.			Temperature:	23.57C°C
Attendees:	Curt McNamara, Karl Karcht			Humidity:	25%
Project:	None			Barometric Pres.:	1014
Tested by:	Elaine Reeves	Power:	15VDC	Job Site:	MN08

TEST SPECIFICATIONS	TEST METHOD
FCC 15.407:2011	ANSI C63.10:2009

COMMENTS

Customer cable loss factor subtracted from reference level offset (Cable missing from test setup).

DEVIATIONS FROM TEST STANDARD

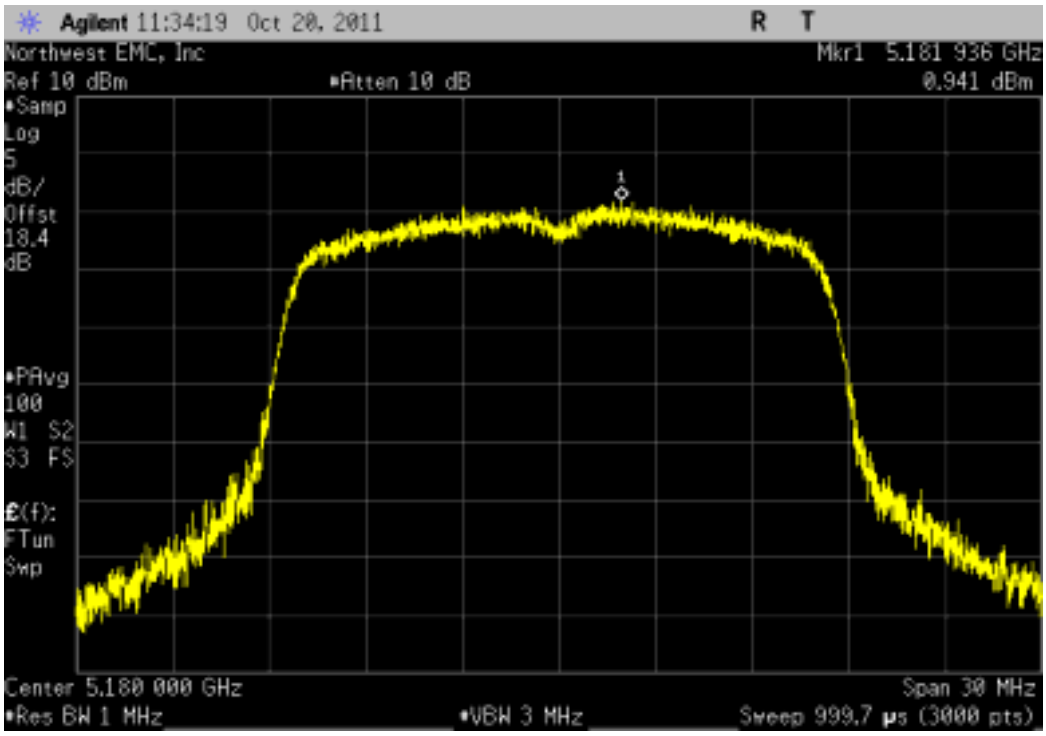
None

Configuration #	1	Signature	Trevor Bulo

		Value (dBm / MHz)	Limit (dBm / MHz)	Result
802.11(a) 6 Mbps				
	5150 - 5250 MHz Band			
	Channel 36, Low Channel	0.941	4	Pass
	Channel 48, High Channel	-0.386	4	Pass
	5250 - 5350 MHz Band			
	Channel 52, Low Channel	0.282	4	Pass
	Channel 64, High Channel	0.775	4	Pass
	5470 - 5725 MHz Band			
	Channel 100, Low Channel	0.059	4	Pass
	Channel 120, Mid Channel	0.065	4	Pass
	Channel 140, High Channel	1.77	4	Pass
802.11(a) 36 Mbps				
	5150 - 5250 MHz Band			
	Channel 36, Low Channel	0.686	4	Pass
	Channel 48, High Channel	0.462	4	Pass
	5250 - 5350 MHz Band			
	Channel 52, Low Channel	1.276	4	Pass
	Channel 64, High Channel	1.573	4	Pass
	5470 - 5725 MHz Band			
	Channel 100, Low Channel	1.225	4	Pass
	Channel 120, Mid Channel	1.386	4	Pass
	Channel 140, High Channel	1.605	4	Pass
802.11(a) 54 Mbps				
	5150 - 5250 MHz Band			
	Channel 36, Low Channel	-1.205	4	Pass
	Channel 48, High Channel	-0.972	4	Pass
	5250 - 5350 MHz Band			
	Channel 52, Low Channel	-0.851	4	Pass
	Channel 64, High Channel	-0.921	4	Pass
	5470 - 5725 MHz Band			
	Channel 100, Low Channel	-0.488	4	Pass
	Channel 120, Mid Channel	-0.488	4	Pass
	Channel 140, High Channel	-0.501	4	Pass
802.11(n) MCS0				
	5150 - 5250 MHz Band			
	Channel 36, Low Channel	-0.286	4	Pass
	Channel 48, High Channel	-0.876	4	Pass
	5250 - 5350 MHz Band			
	Channel 52, Low Channel	0.117	4	Pass
	Channel 64, High Channel	-0.225	4	Pass
	5470 - 5725 MHz Band			
	Channel 100, Low Channel	0.239	4	Pass
	Channel 120, Mid Channel	0.108	4	Pass
	Channel 140, High Channel	1.197	4	Pass
802.11(n) MCS7				
	5150 - 5250 MHz Band			
	Channel 36, Low Channel	-2.439	4	Pass
	Channel 48, High Channel	-2.598	4	Pass
	5250 - 5350 MHz Band			
	Channel 52, Low Channel	-2.369	4	Pass
	Channel 64, High Channel	-2.212	4	Pass
	5470 - 5725 MHz Band			
	Channel 100, Low Channel	-1.674	4	Pass
	Channel 120, Mid Channel	-1.625	4	Pass
	Channel 140, High Channel	-1.608	4	Pass

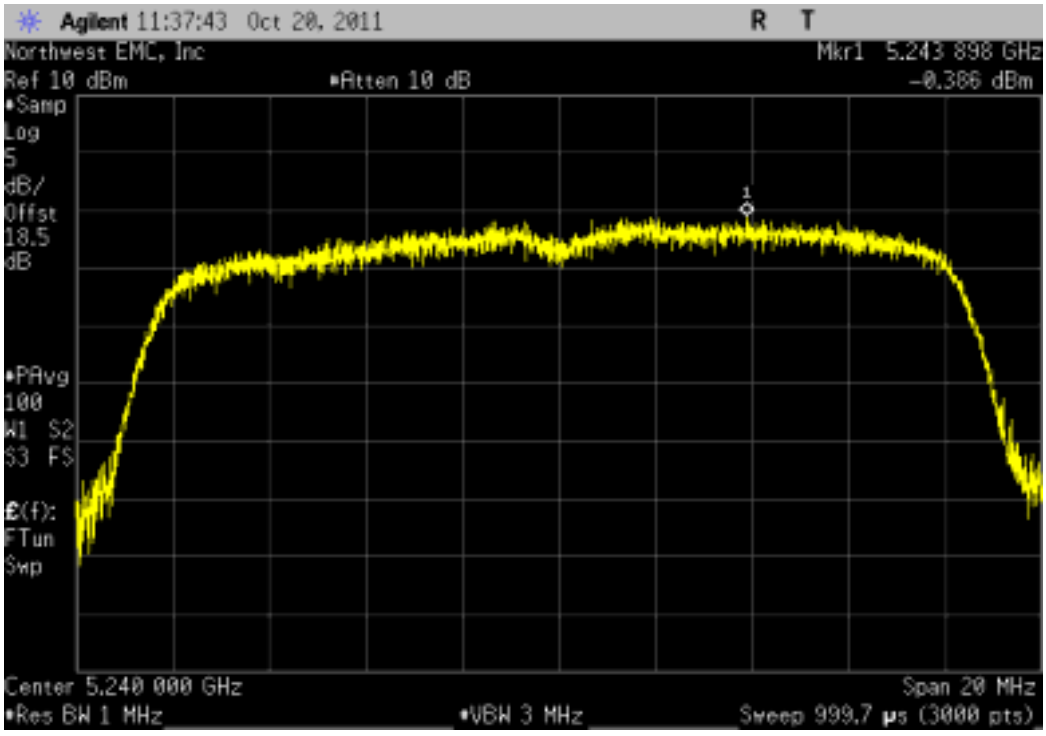
802.11(a) 6 Mbps, 5150 - 5250 MHz Band, Channel 36, Low Channel

				Value (dBm / MHz)	Limit (dBm / MHz)	Result
				0.941	4	Pass

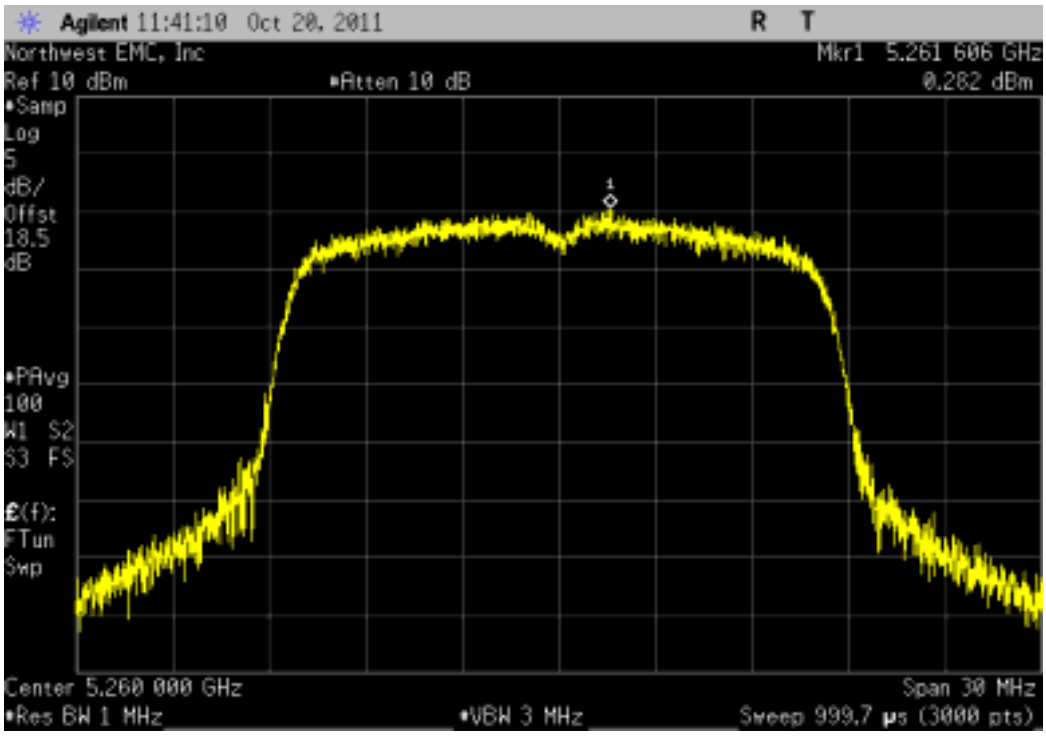


802.11(a) 6 Mbps, 5150 - 5250 MHz Band, Channel 48, High Channel

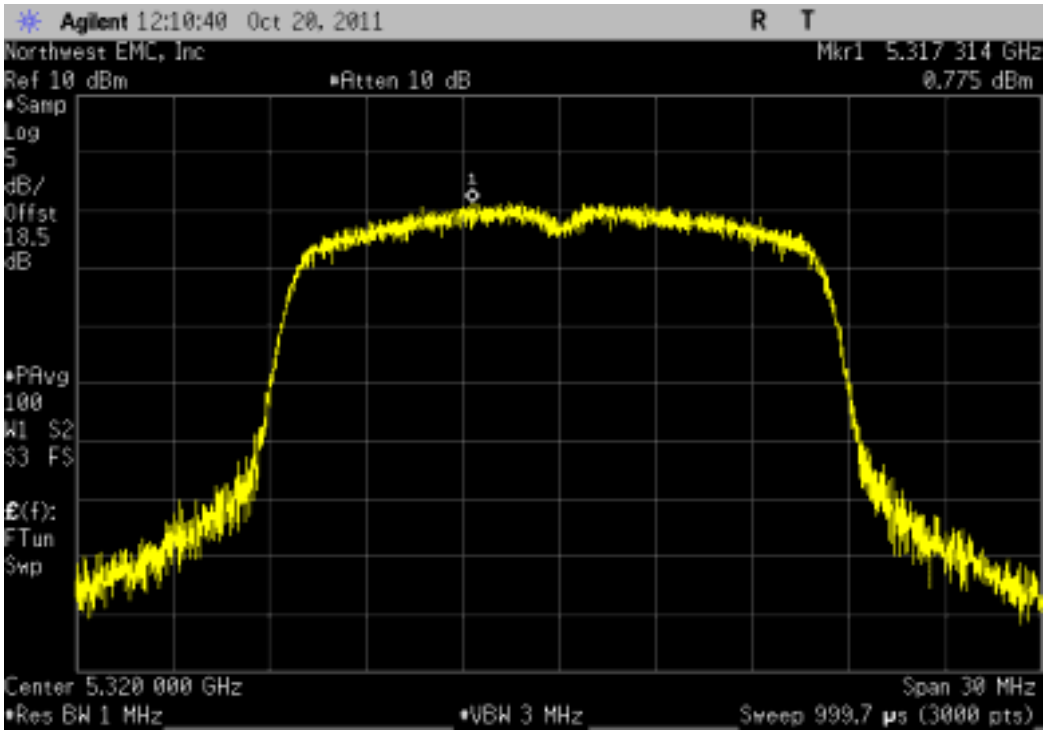
				Value (dBm / MHz)	Limit (dBm / MHz)	Result
				-0.386	4	Pass



802.11(a) 6 Mbps, 5250 - 5350 MHz Band, Channel 52, Low Channel						
				Value (dBm / MHz)	Limit (dBm / MHz)	Result
				0.282	4	Pass

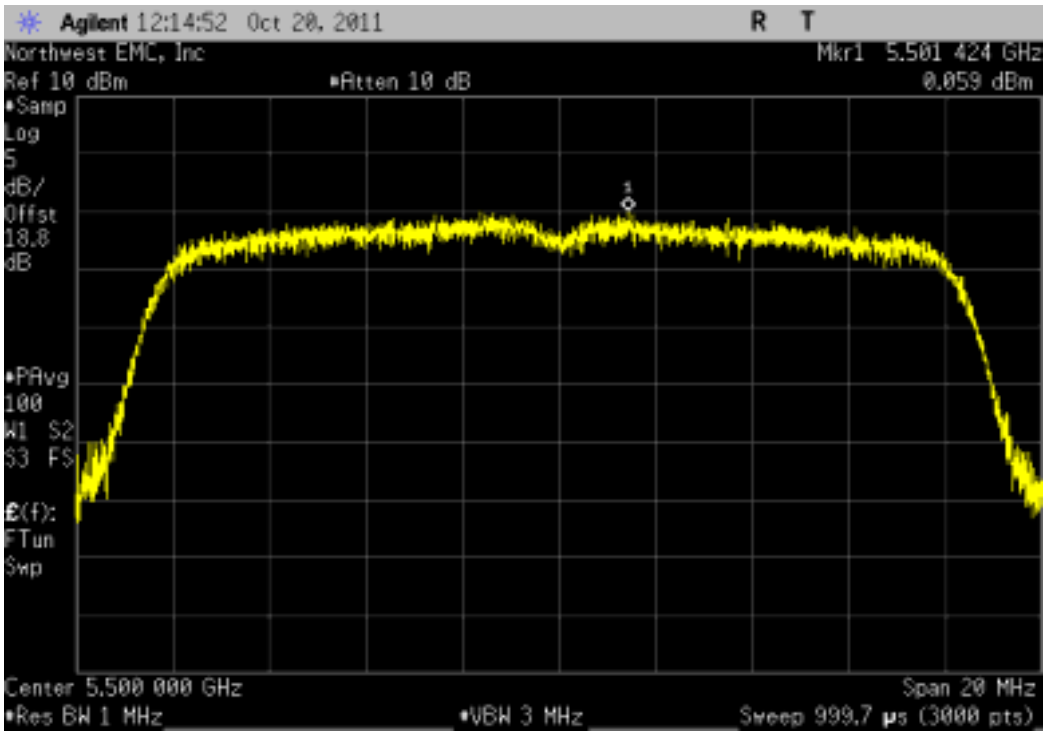


802.11(a) 6 Mbps, 5250 - 5350 MHz Band, Channel 64, High Channel						
				Value (dBm / MHz)	Limit (dBm / MHz)	Result
				0.775	4	Pass



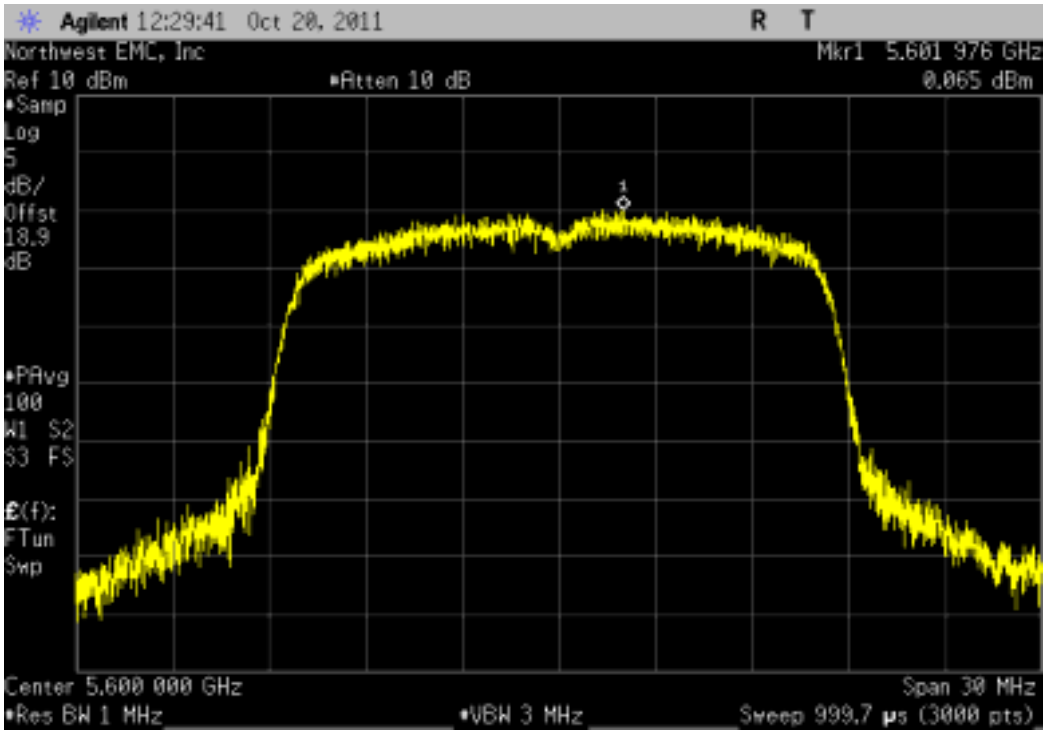
802.11(a) 6 Mbps, 5470 - 5725 MHz Band, Channel 100, Low Channel

				Value (dBm / MHz)	Limit (dBm / MHz)	Result
				0.059	4	Pass



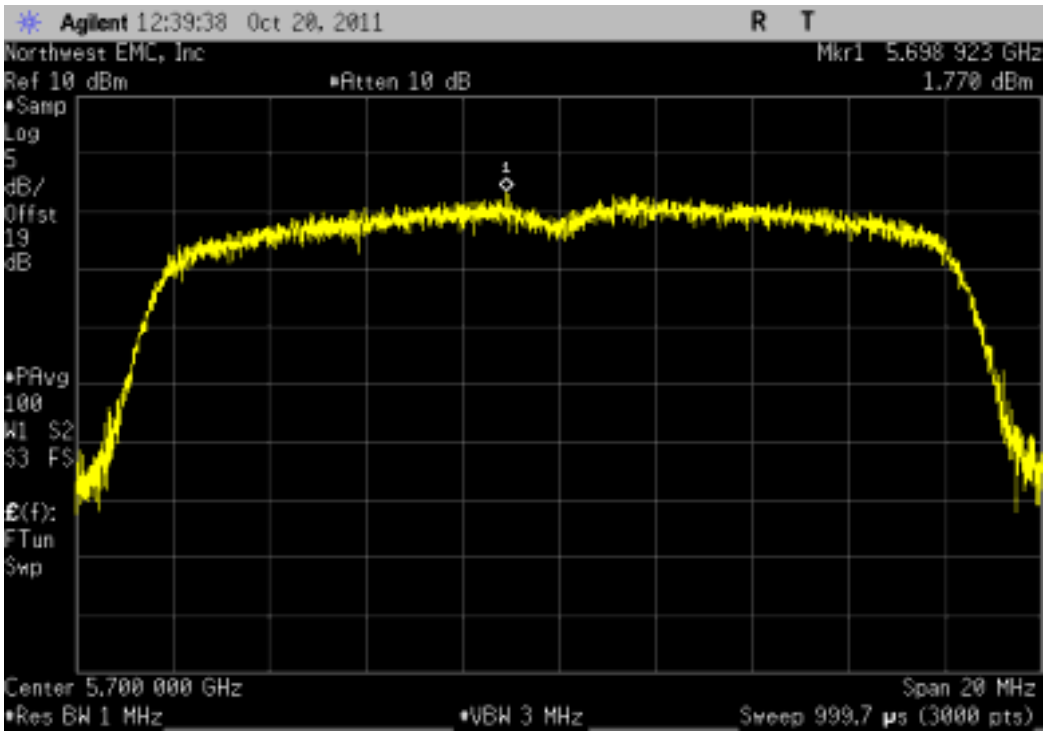
802.11(a) 6 Mbps, 5470 - 5725 MHz Band, Channel 120, Mid Channel

				Value (dBm / MHz)	Limit (dBm / MHz)	Result
				0.065	4	Pass



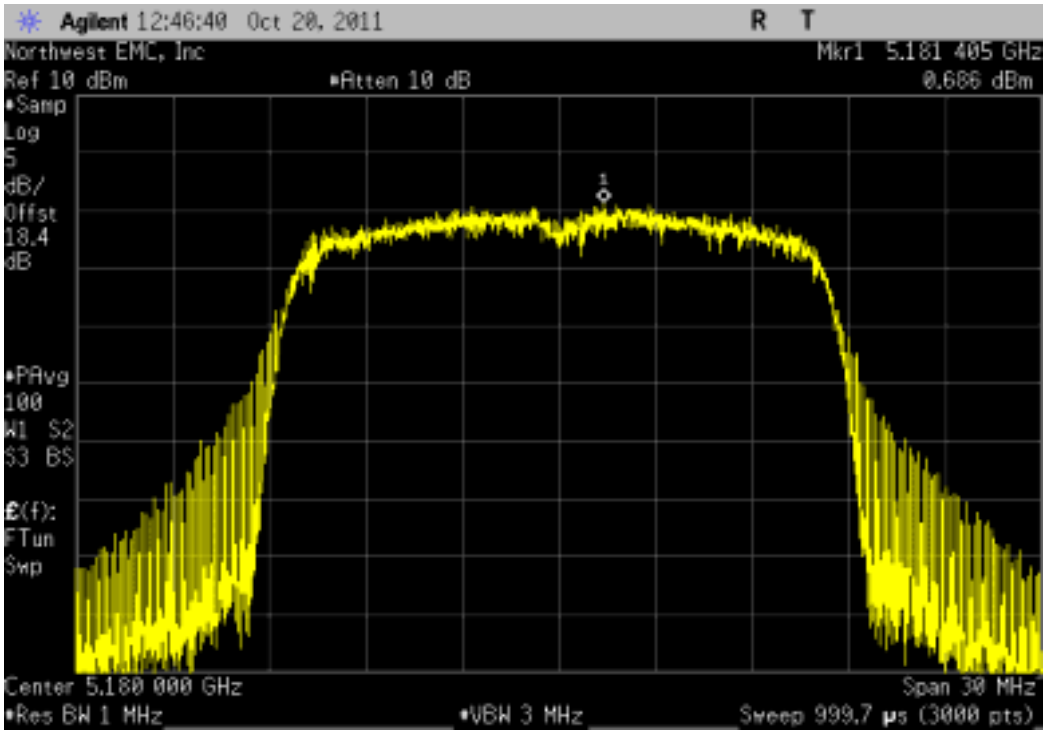
802.11(a) 6 Mbps, 5470 - 5725 MHz Band, Channel 140, High Channel

				Value (dBm / MHz)	Limit (dBm / MHz)	Result
				1.77	4	Pass

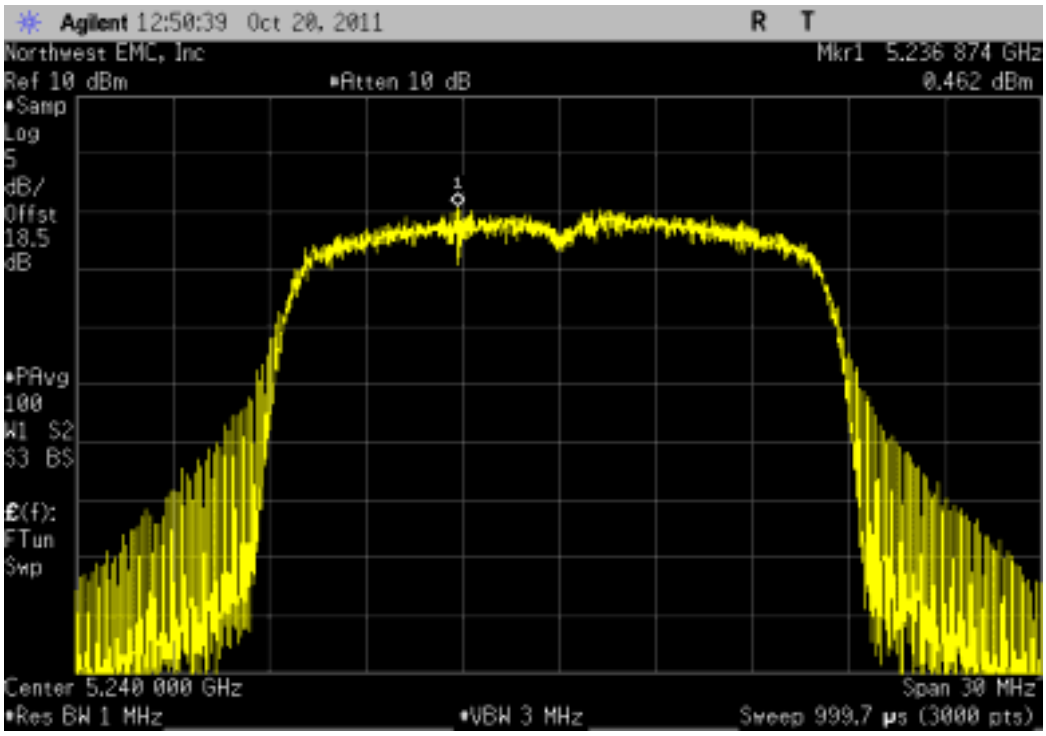


802.11(a) 36 Mbps, 5150 - 5250 MHz Band, Channel 36, Low Channel

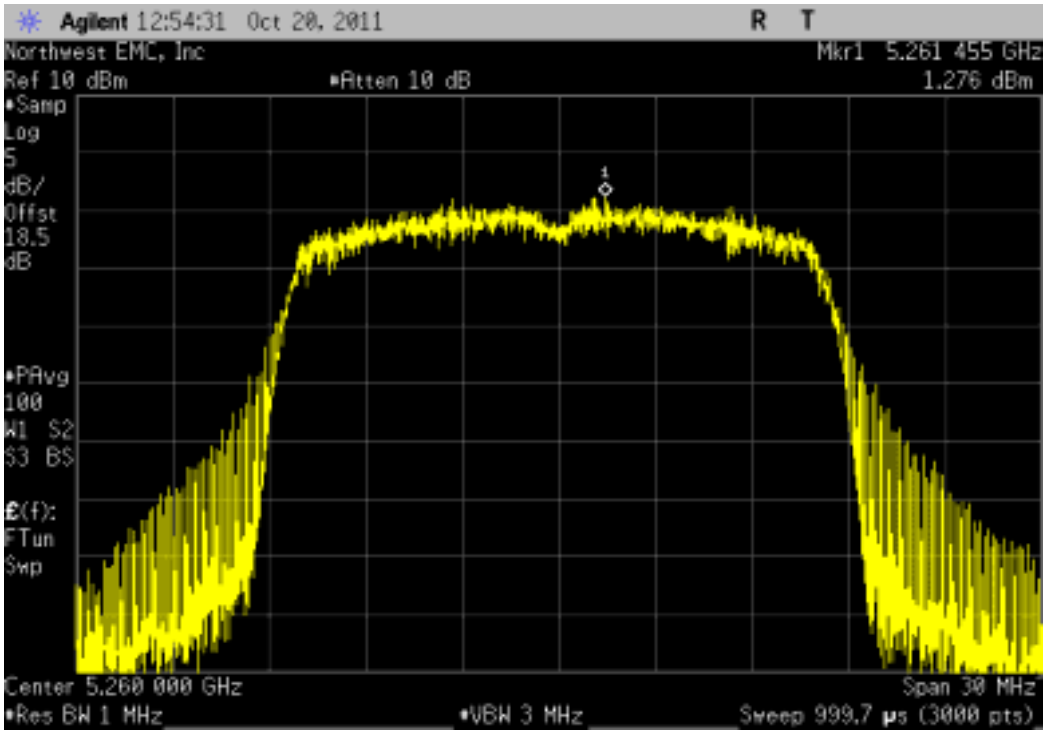
				Value (dBm / MHz)	Limit (dBm / MHz)	Result
				0.686	4	Pass



802.11(a) 36 Mbps, 5150 - 5250 MHz Band, Channel 48, High Channel						
				Value (dBm / MHz)	Limit (dBm / MHz)	Result
				0.462	4	Pass

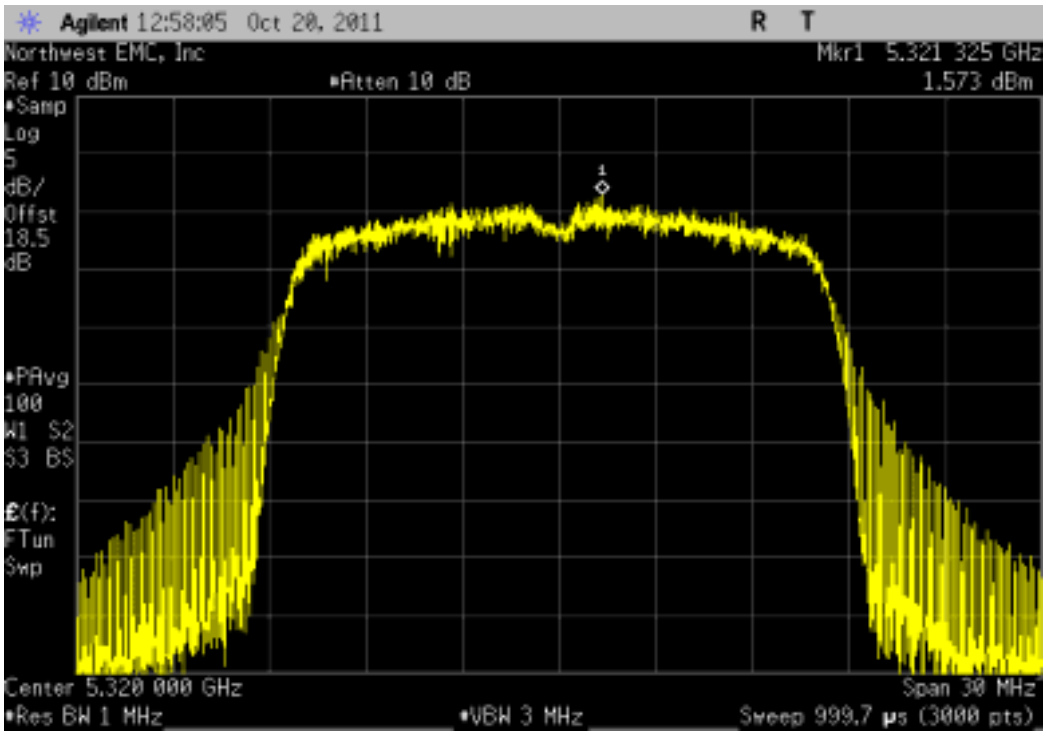


802.11(a) 36 Mbps, 5250 - 5350 MHz Band, Channel 52, Low Channel						
				Value (dBm / MHz)	Limit (dBm / MHz)	Result
				1.276	4	Pass



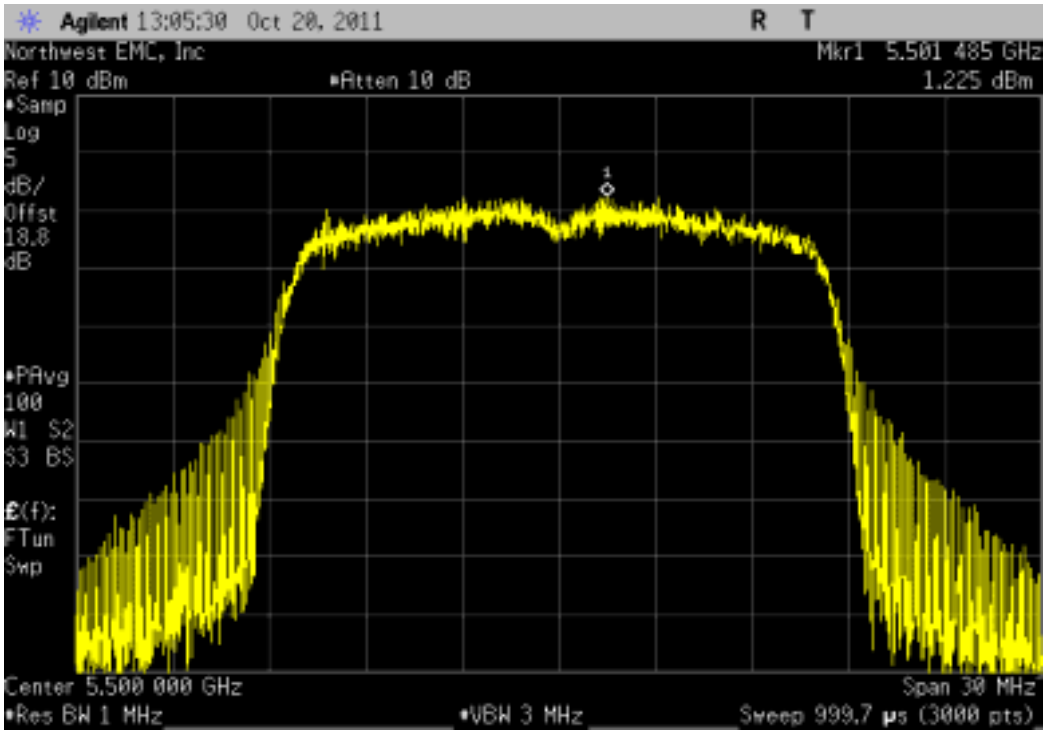
802.11(a) 36 Mbps, 5250 - 5350 MHz Band, Channel 64, High Channel

				Value (dBm / MHz)	Limit (dBm / MHz)	Result
				1.573	4	Pass



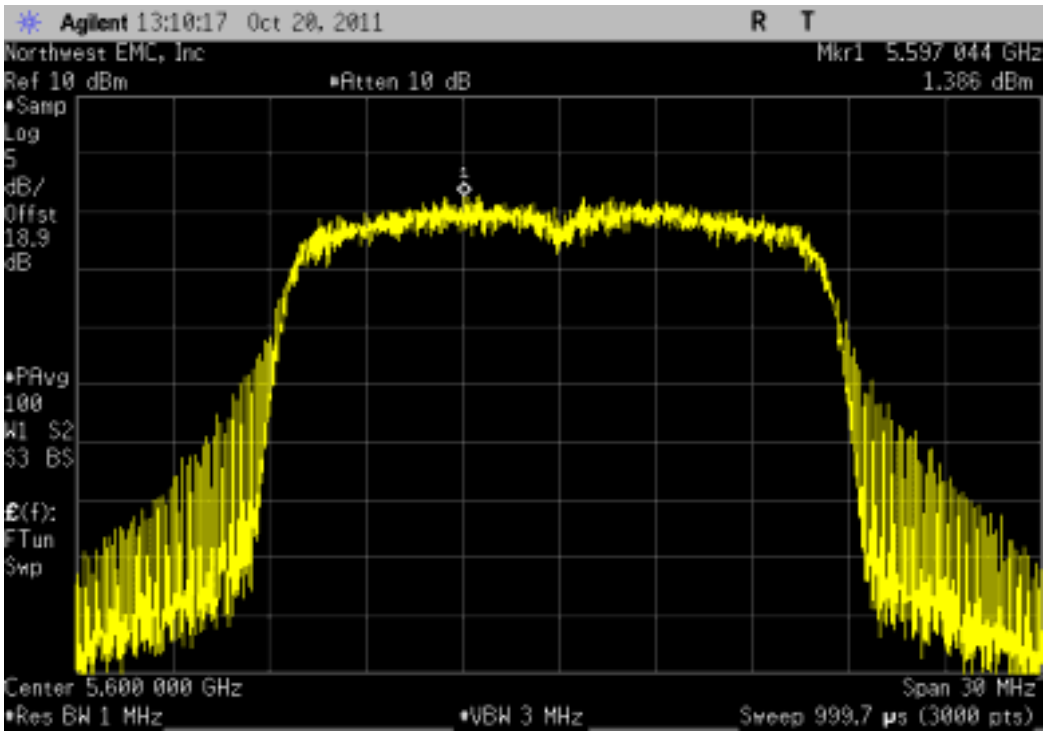
802.11(a) 36 Mbps, 5470 - 5725 MHz Band, Channel 100, Low Channel

				Value (dBm / MHz)	Limit (dBm / MHz)	Result
				1.225	4	Pass



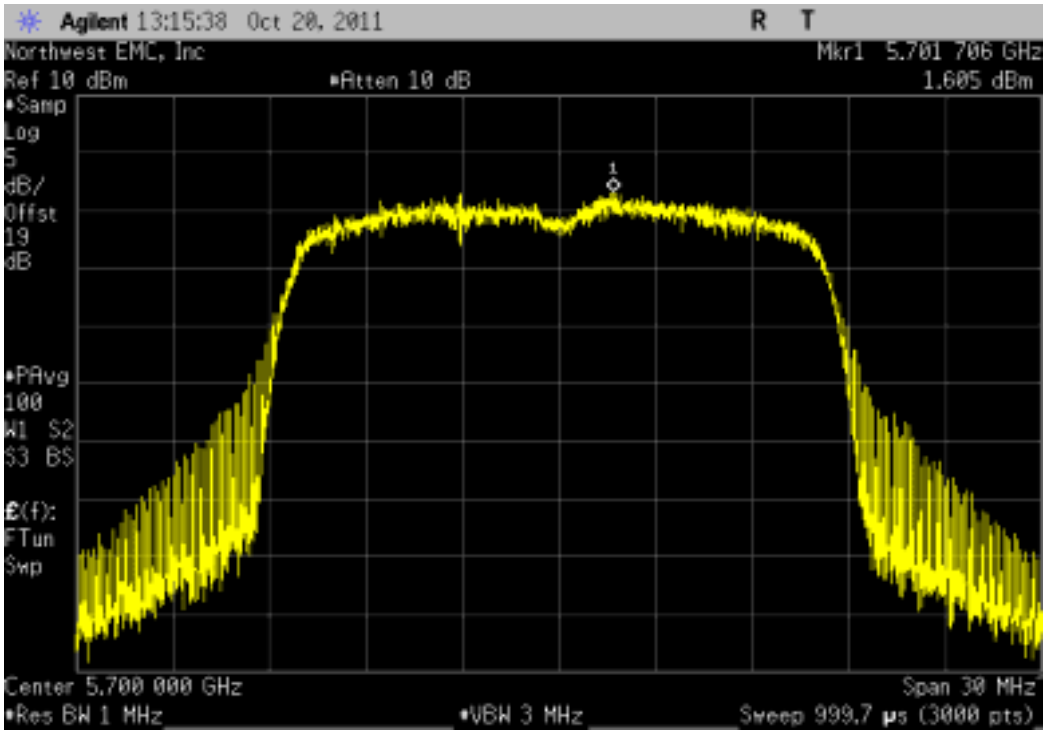
802.11(a) 36 Mbps, 5470 - 5725 MHz Band, Channel 120, Mid Channel

				Value (dBm / MHz)	Limit (dBm / MHz)	Result
				1.386	4	Pass



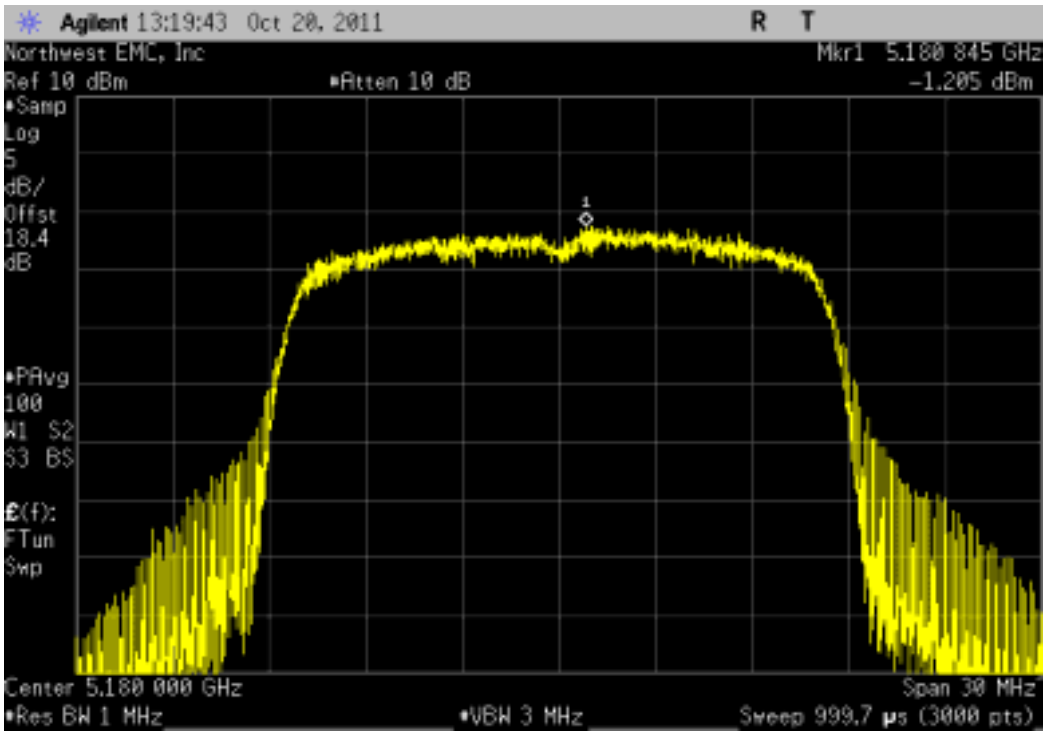
802.11(a) 36 Mbps, 5470 - 5725 MHz Band, Channel 140, High Channel

				Value (dBm / MHz)	Limit (dBm / MHz)	Result
				1.605	4	Pass



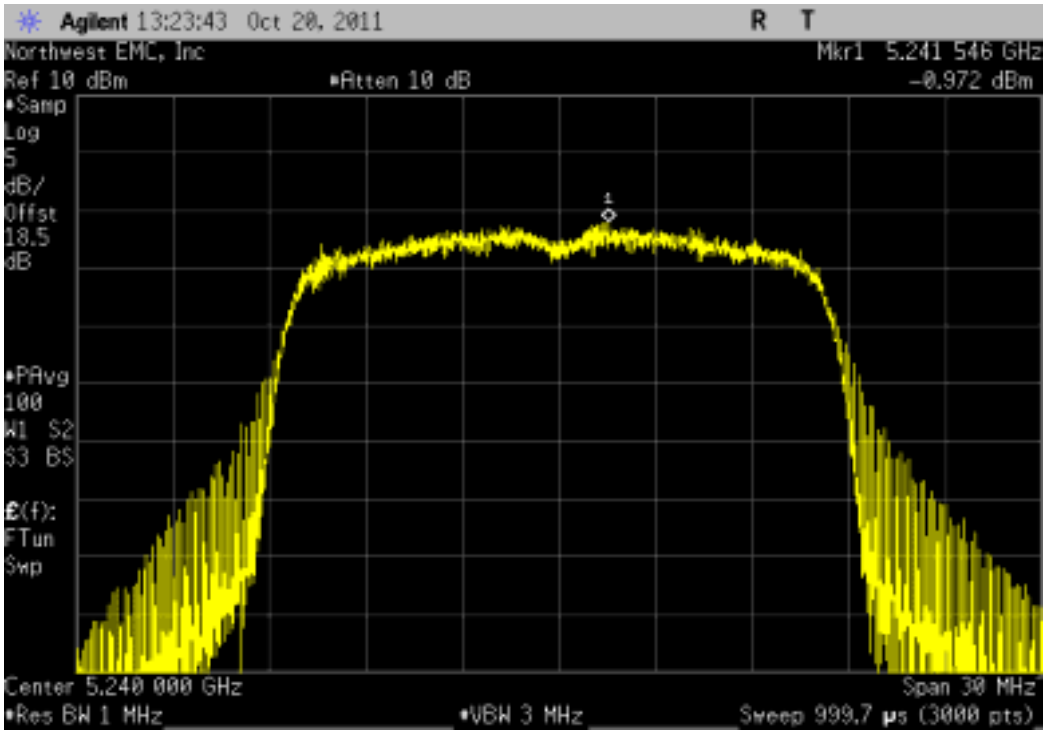
802.11(a) 54 Mbps, 5150 - 5250 MHz Band, Channel 36, Low Channel

				Value (dBm / MHz)	Limit (dBm / MHz)	Result
				-1.205	4	Pass



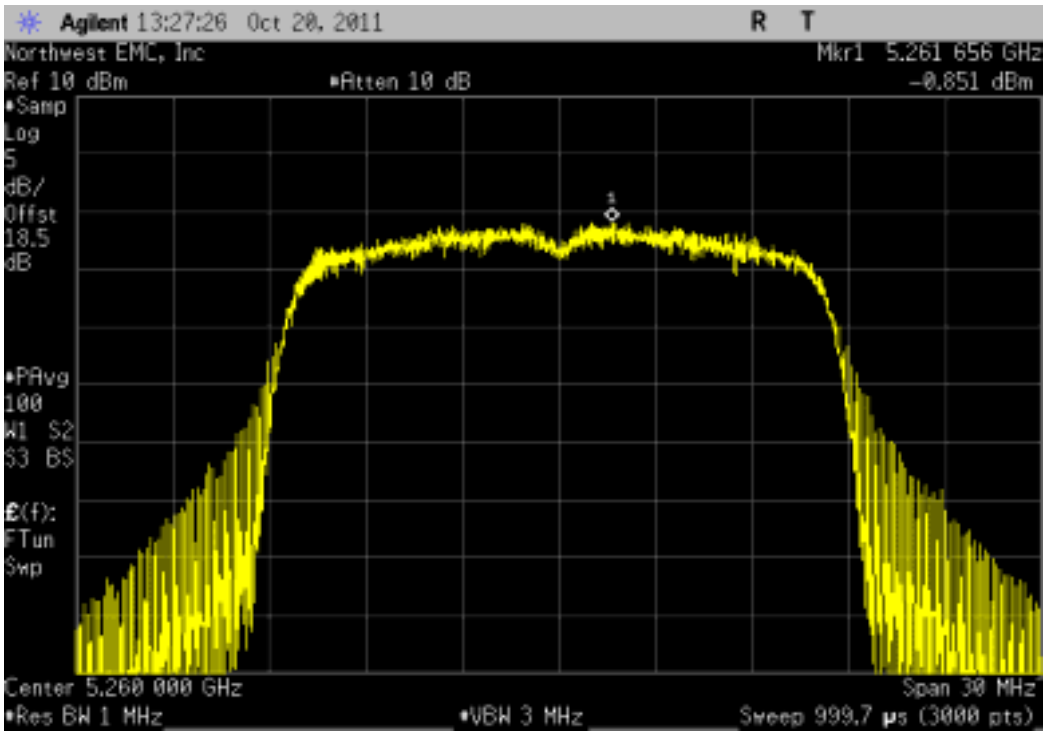
802.11(a) 54 Mbps, 5150 - 5250 MHz Band, Channel 48, High Channel

				Value (dBm / MHz)	Limit (dBm / MHz)	Result
				-0.972	4	Pass



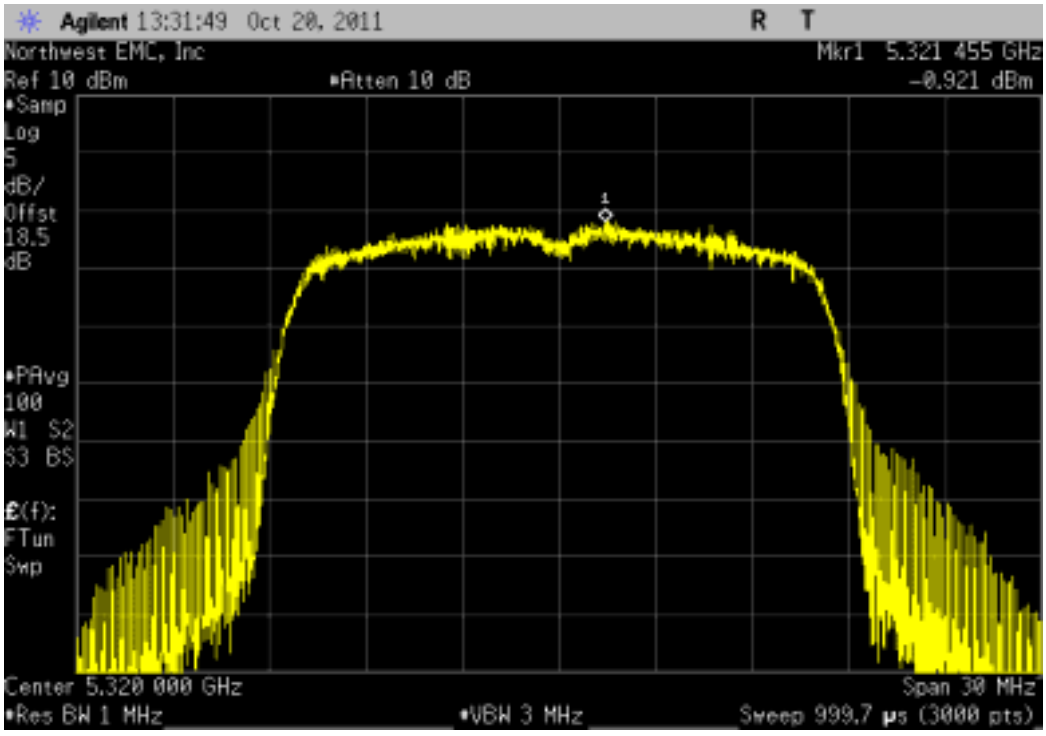
802.11(a) 54 Mbps, 5250 - 5350 MHz Band, Channel 52, Low Channel

				Value (dBm / MHz)	Limit (dBm / MHz)	Result
				-0.851	4	Pass



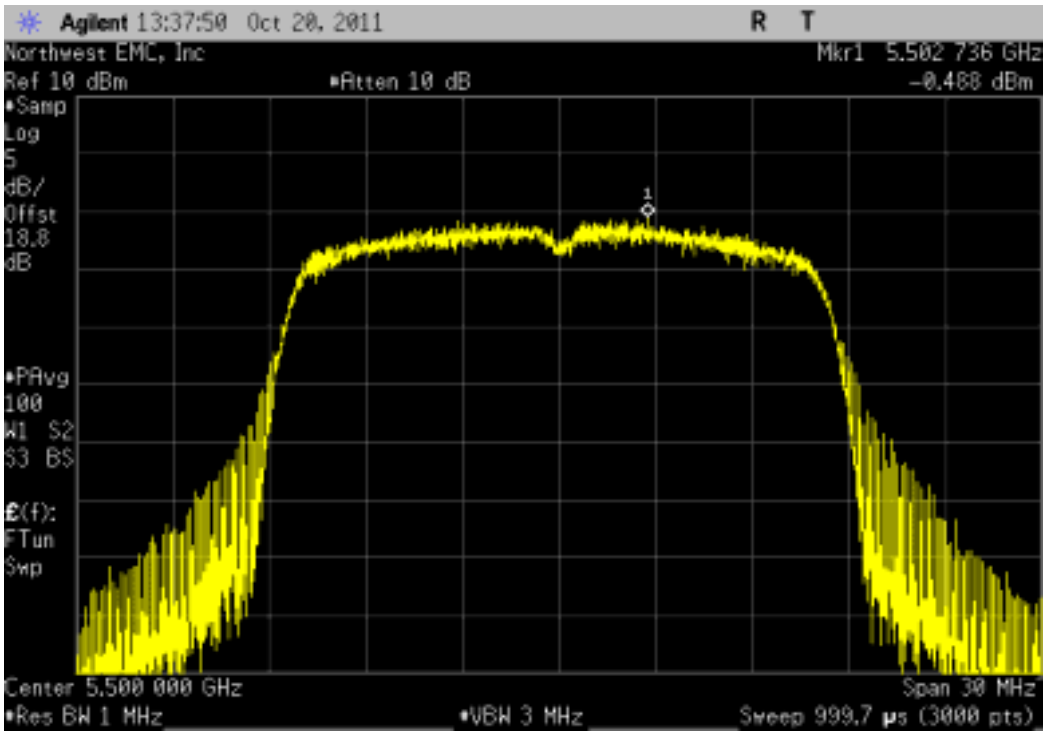
802.11(a) 54 Mbps, 5250 - 5350 MHz Band, Channel 64, High Channel

				Value (dBm / MHz)	Limit (dBm / MHz)	Result
				-0.921	4	Pass



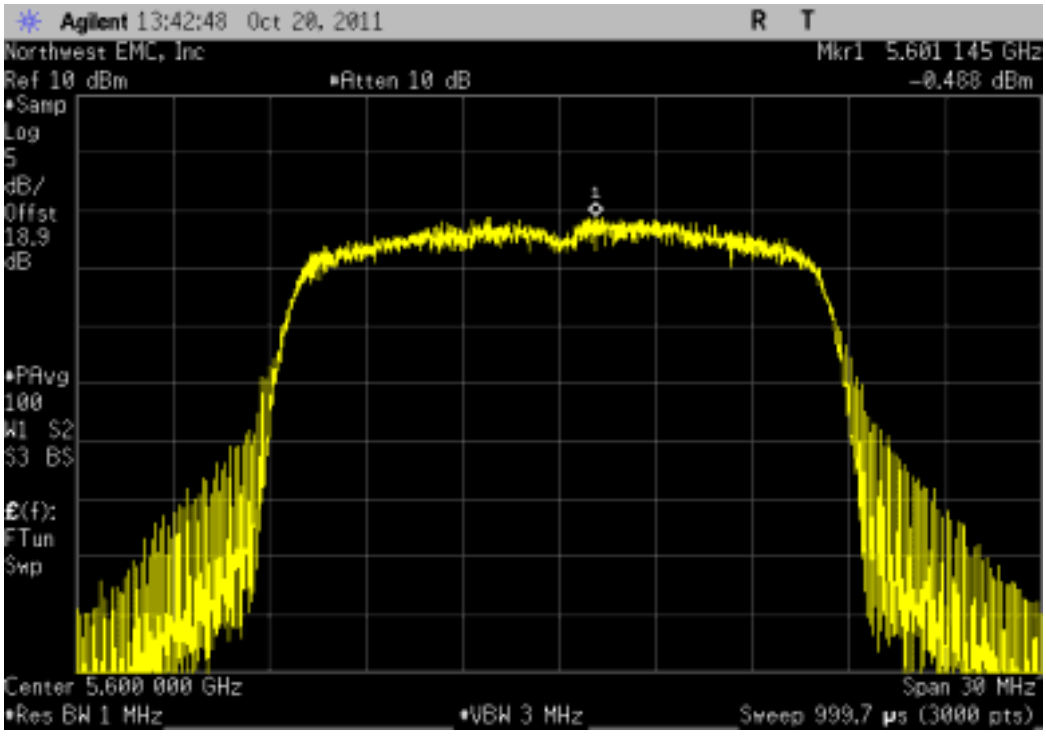
802.11(a) 54 Mbps, 5470 - 5725 MHz Band, Channel 100, Low Channel

				Value (dBm / MHz)	Limit (dBm / MHz)	Result
				-0.488	4	Pass



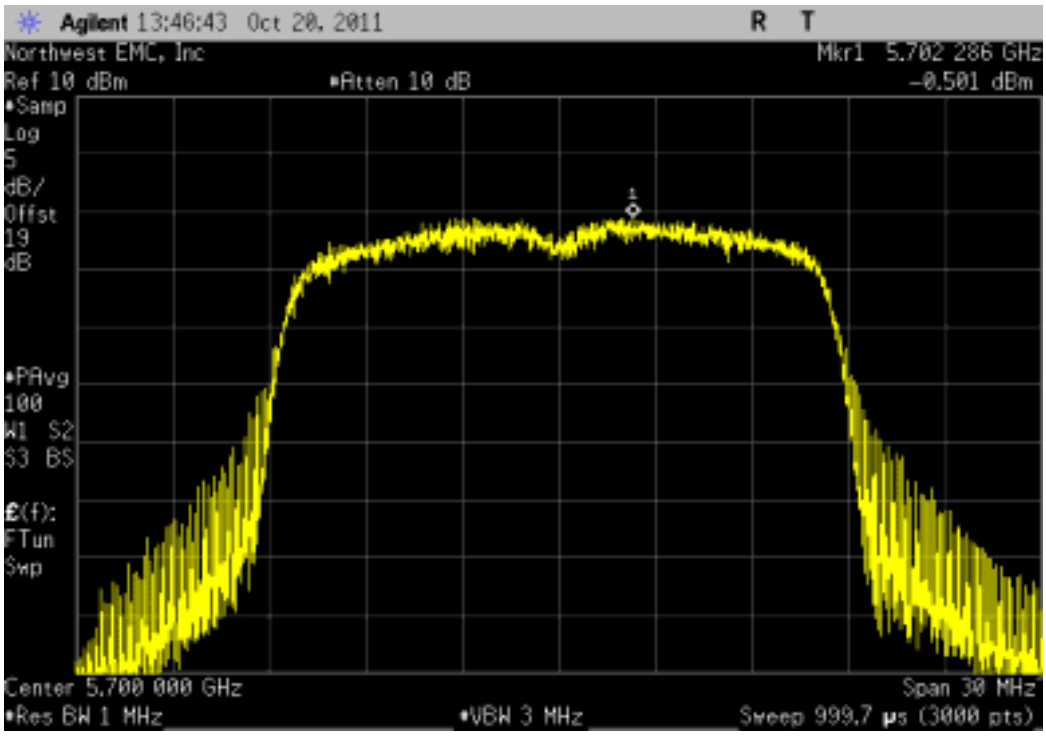
802.11(a) 54 Mbps, 5470 - 5725 MHz Band, Channel 120, Mid Channel

				Value (dBm / MHz)	Limit (dBm / MHz)	Result
				-0.488	4	Pass



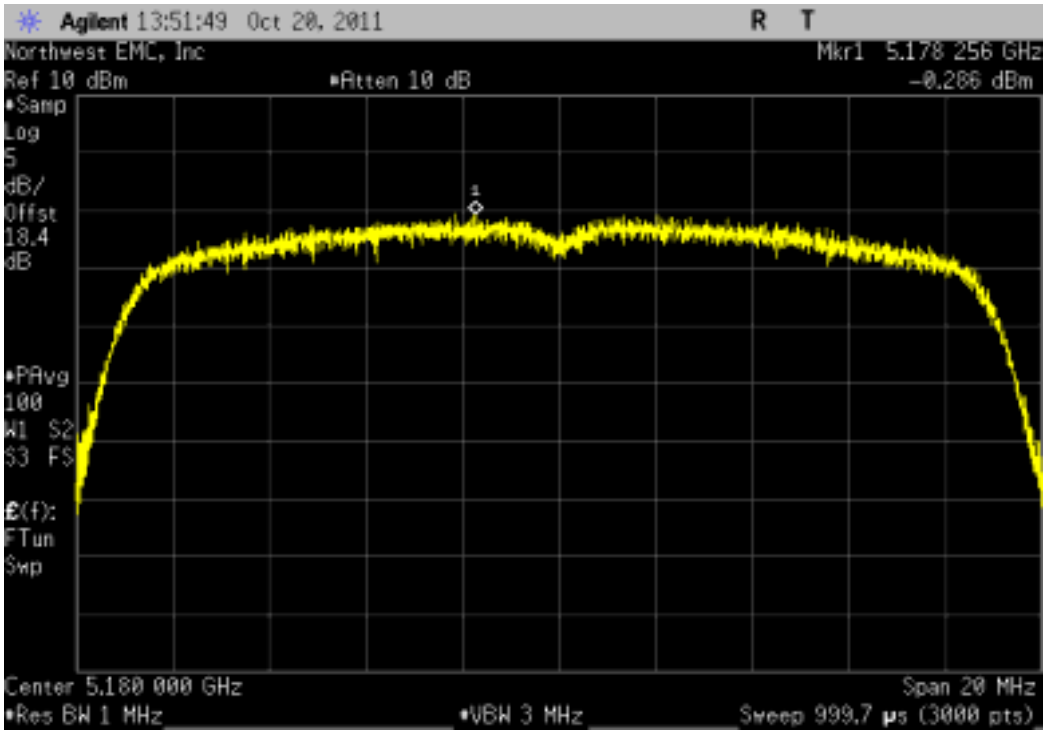
802.11(a) 54 Mbps, 5470 - 5725 MHz Band, Channel 140, High Channel

				Value (dBm / MHz)	Limit (dBm / MHz)	Result
				-0.501	4	Pass

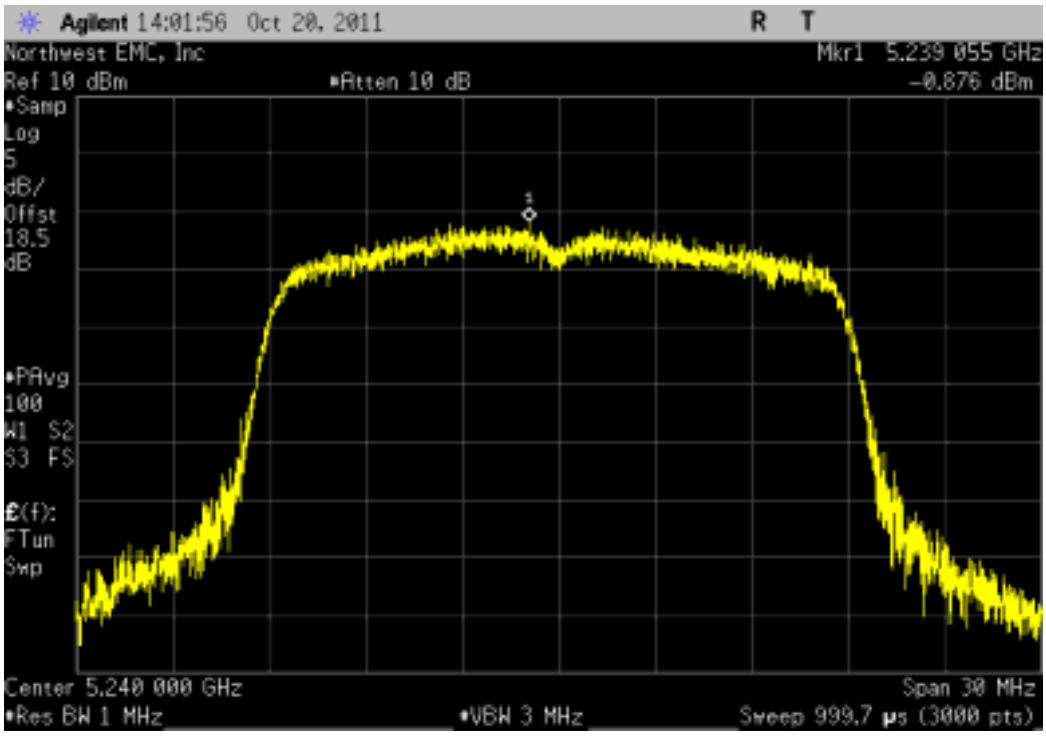


802.11(n) MCS0, 5150 - 5250 MHz Band, Channel 36, Low Channel

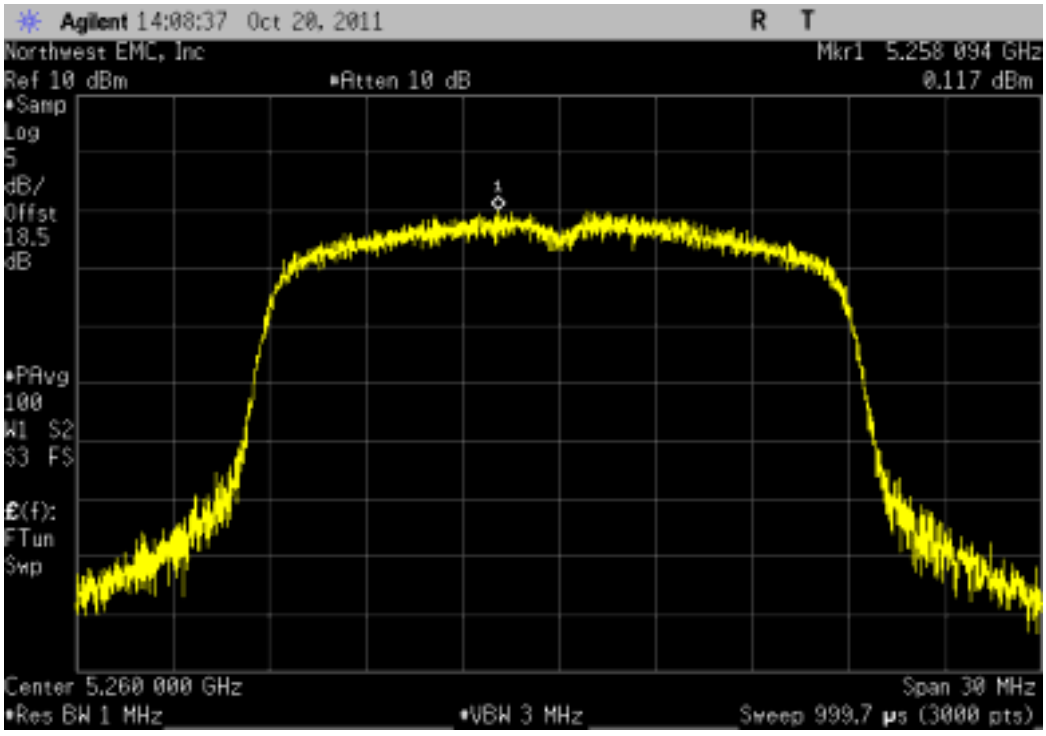
				Value (dBm / MHz)	Limit (dBm / MHz)	Result
				-0.286	4	Pass



802.11(n) MCS0, 5150 - 5250 MHz Band, Channel 48, High Channel						
				Value (dBm / MHz)	Limit (dBm / MHz)	Result
				-0.876	4	Pass

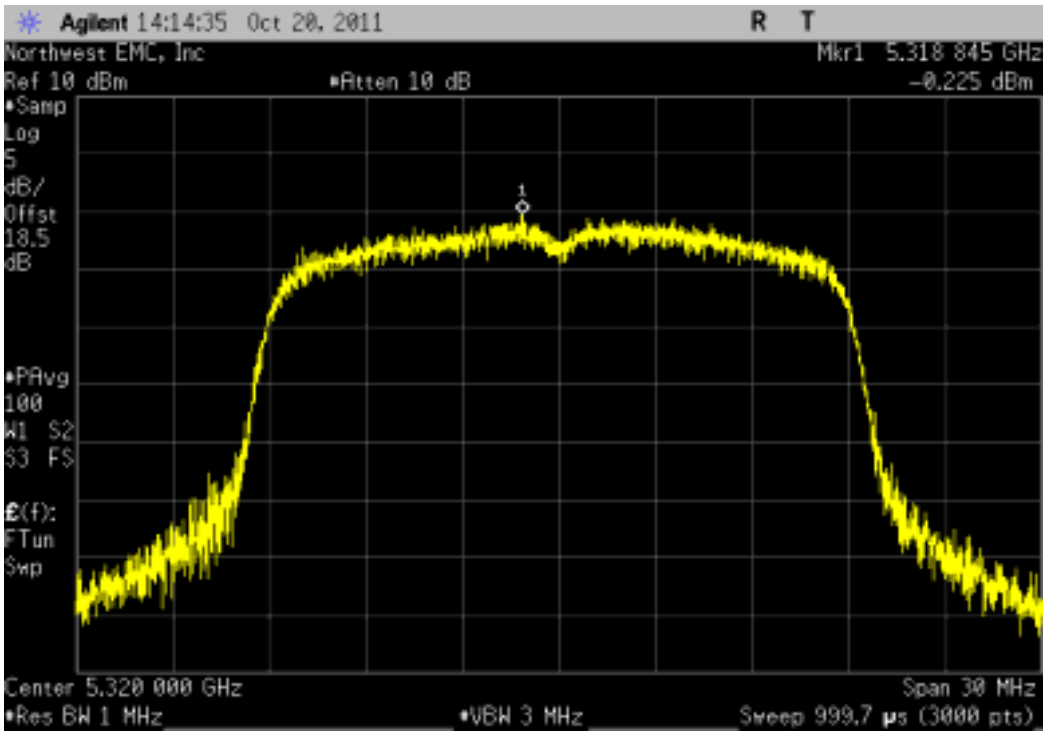


802.11(n) MCS0, 5250 - 5350 MHz Band, Channel 52, Low Channel						
				Value (dBm / MHz)	Limit (dBm / MHz)	Result
				0.117	4	Pass



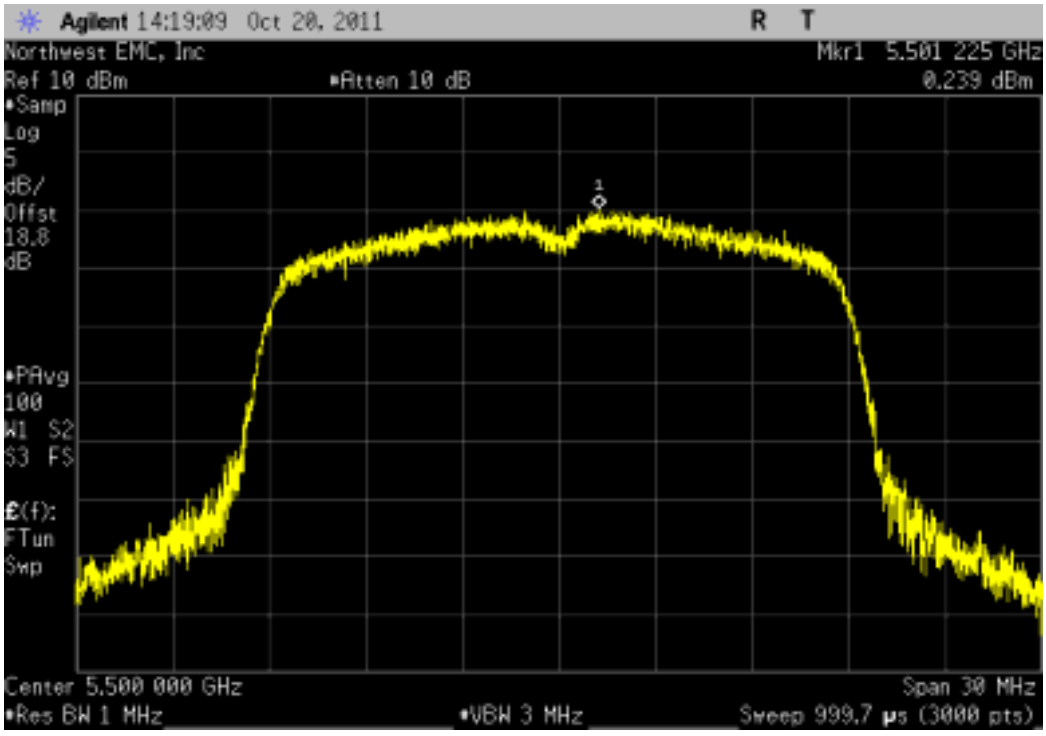
802.11(n) MCS0, 5250 - 5350 MHz Band, Channel 64, High Channel

				Value (dBm / MHz)	Limit (dBm / MHz)	Result
				-0.225	4	Pass

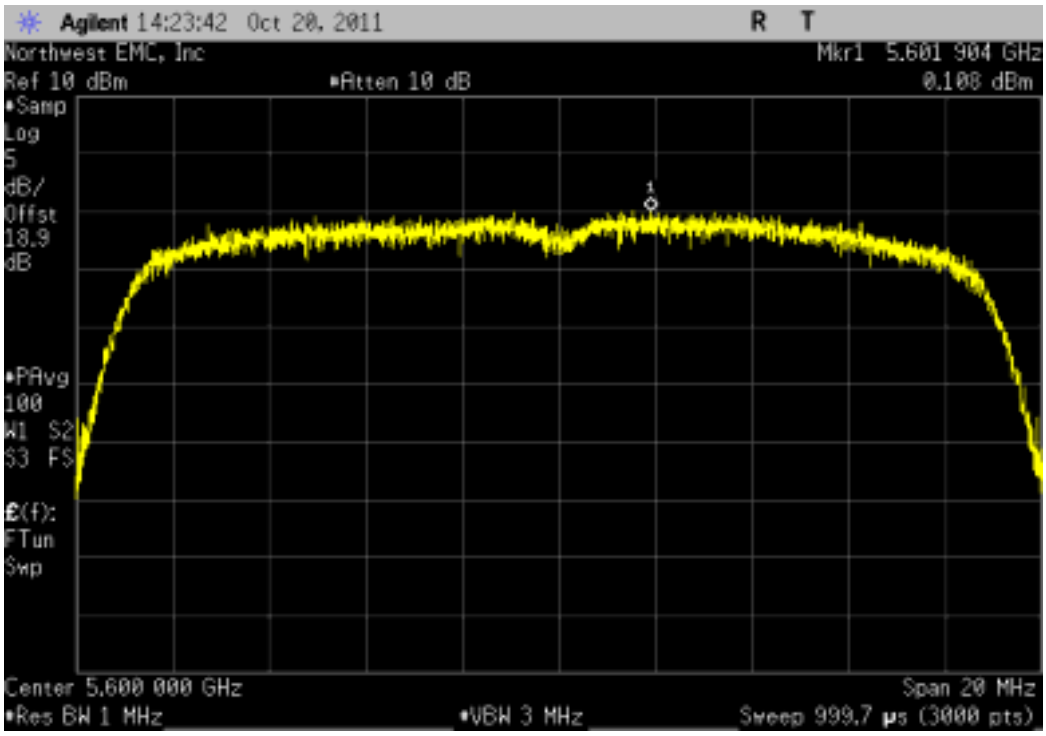


802.11(n) MCS0, 5470 - 5725 MHz Band, Channel 100, Low Channel

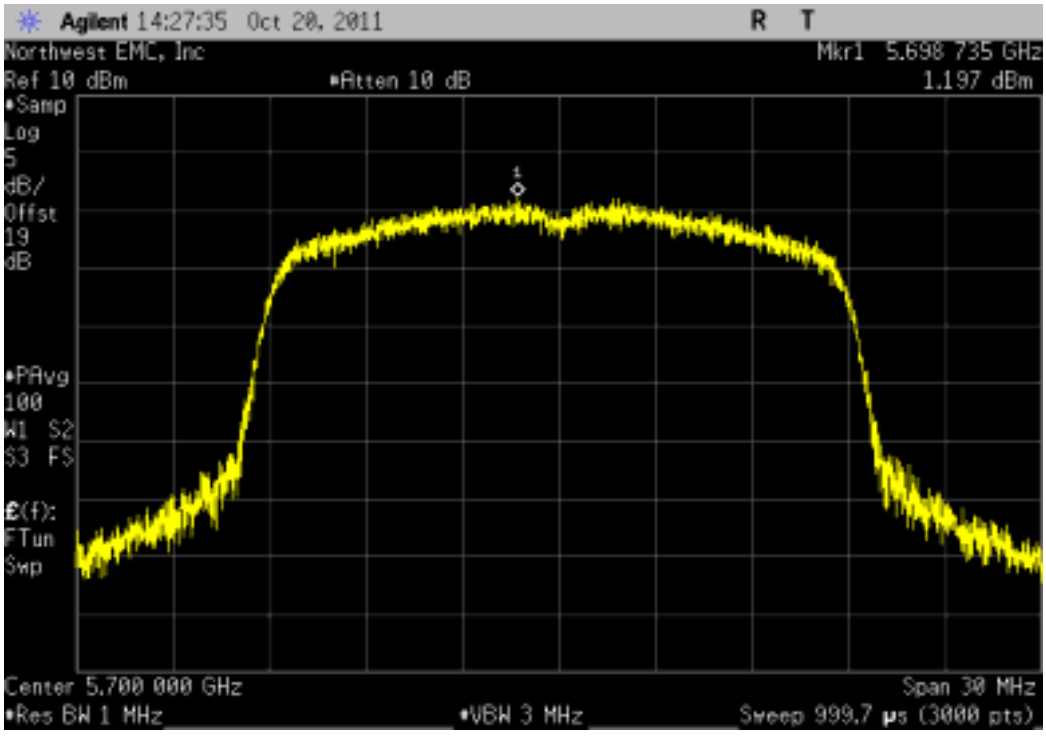
				Value (dBm / MHz)	Limit (dBm / MHz)	Result
				0.239	4	Pass



802.11(n) MCS0, 5470 - 5725 MHz Band, Channel 120, Mid Channel						
				Value (dBm / MHz)	Limit (dBm / MHz)	Result
				0.108	4	Pass

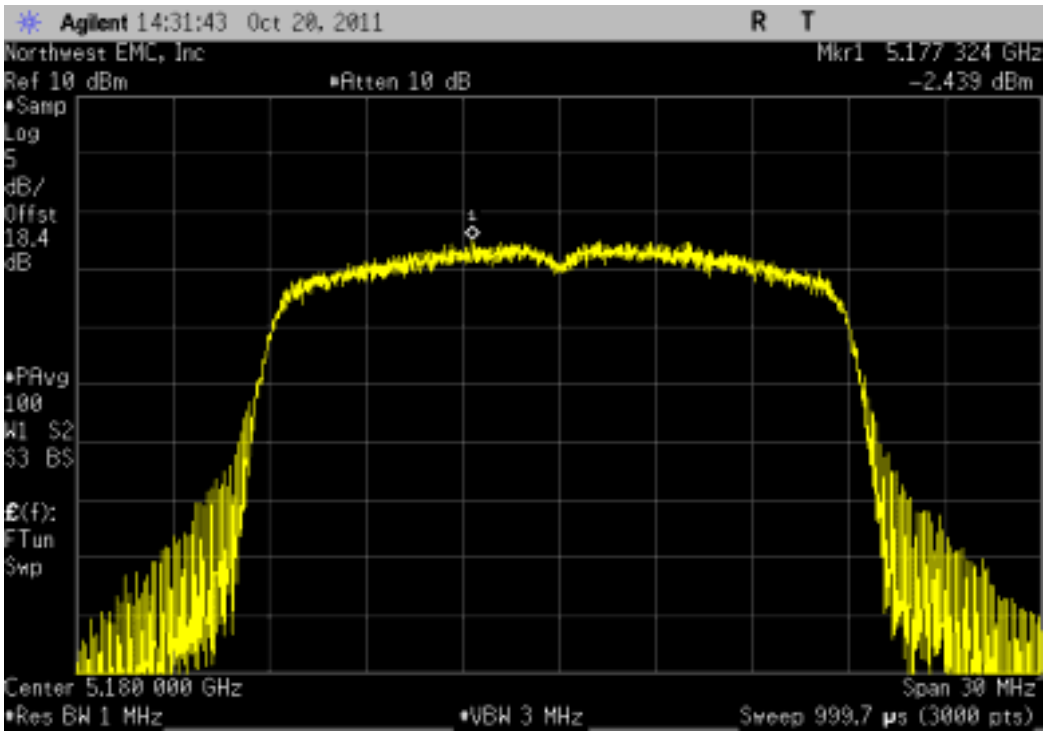


802.11(n) MCS0, 5470 - 5725 MHz Band, Channel 140, High Channel						
				Value (dBm / MHz)	Limit (dBm / MHz)	Result
				1.197	4	Pass



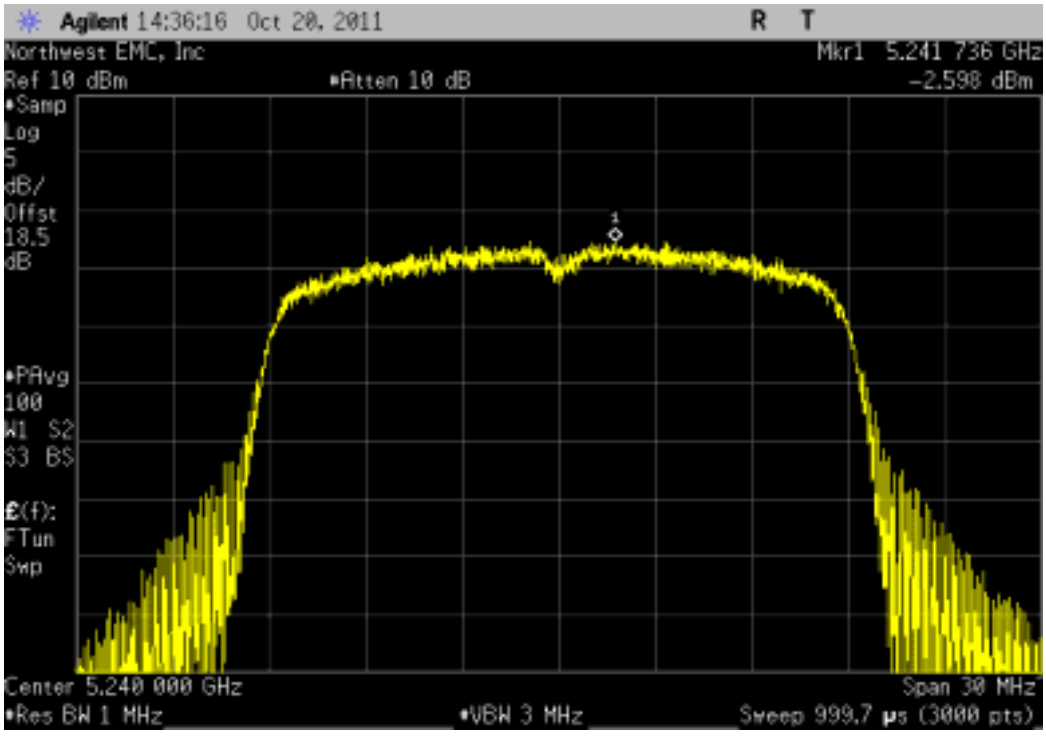
802.11(n) MCS7, 5150 - 5250 MHz Band, Channel 36, Low Channel

				Value (dBm / MHz)	Limit (dBm / MHz)	Result
				-2.439	4	Pass



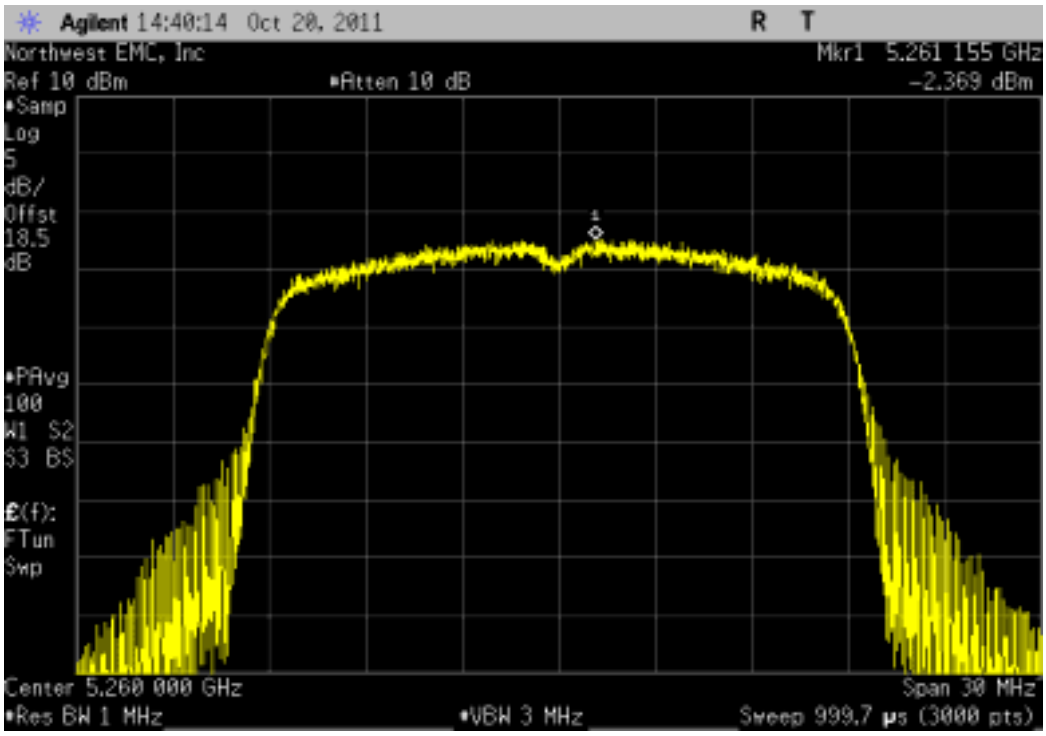
802.11(n) MCS7, 5150 - 5250 MHz Band, Channel 48, High Channel

				Value (dBm / MHz)	Limit (dBm / MHz)	Result
				-2.598	4	Pass



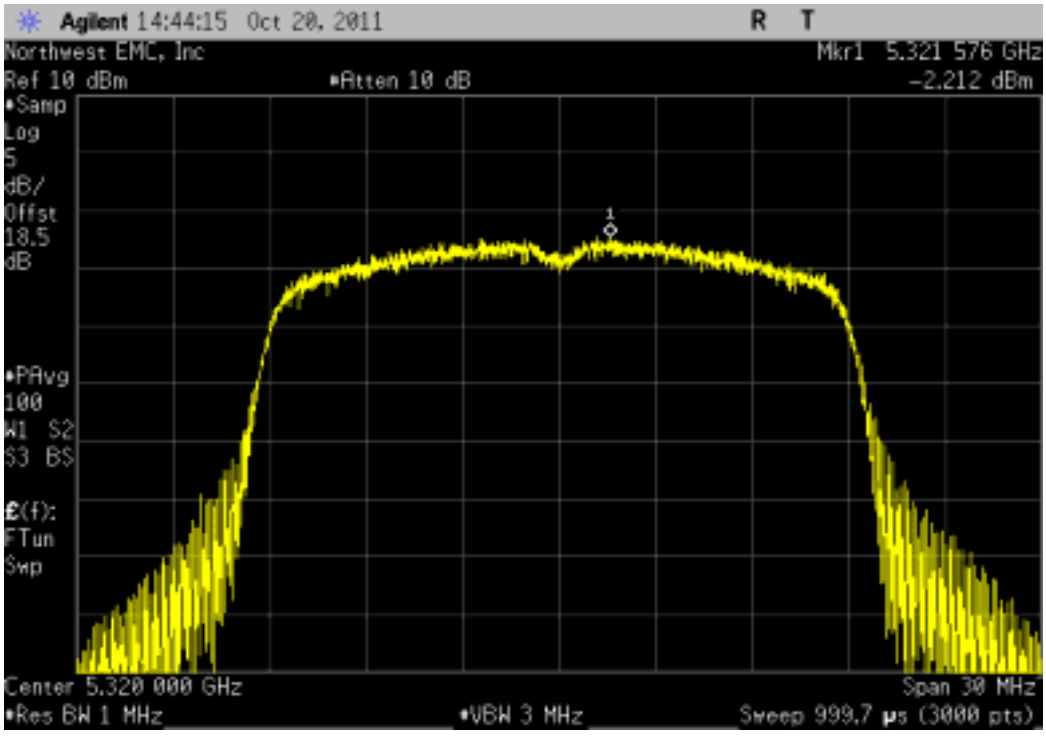
802.11(n) MCS7, 5250 - 5350 MHz Band, Channel 52, Low Channel

				Value (dBm / MHz)	Limit (dBm / MHz)	Result
				-2.369	4	Pass

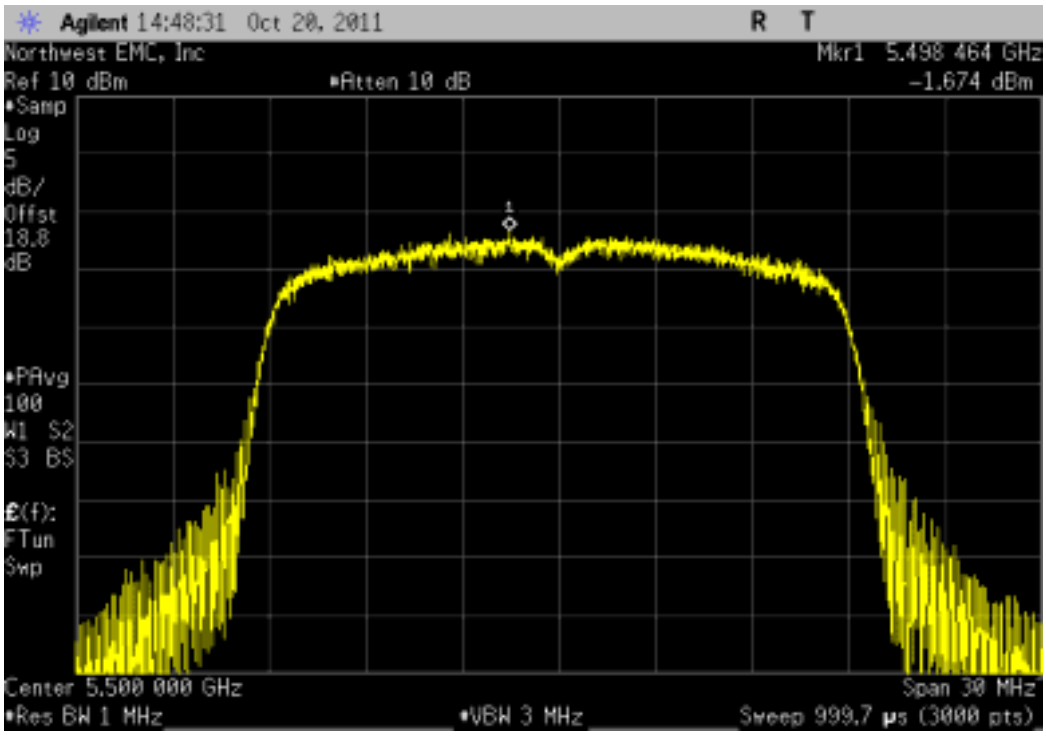


802.11(n) MCS7, 5250 - 5350 MHz Band, Channel 64, High Channel

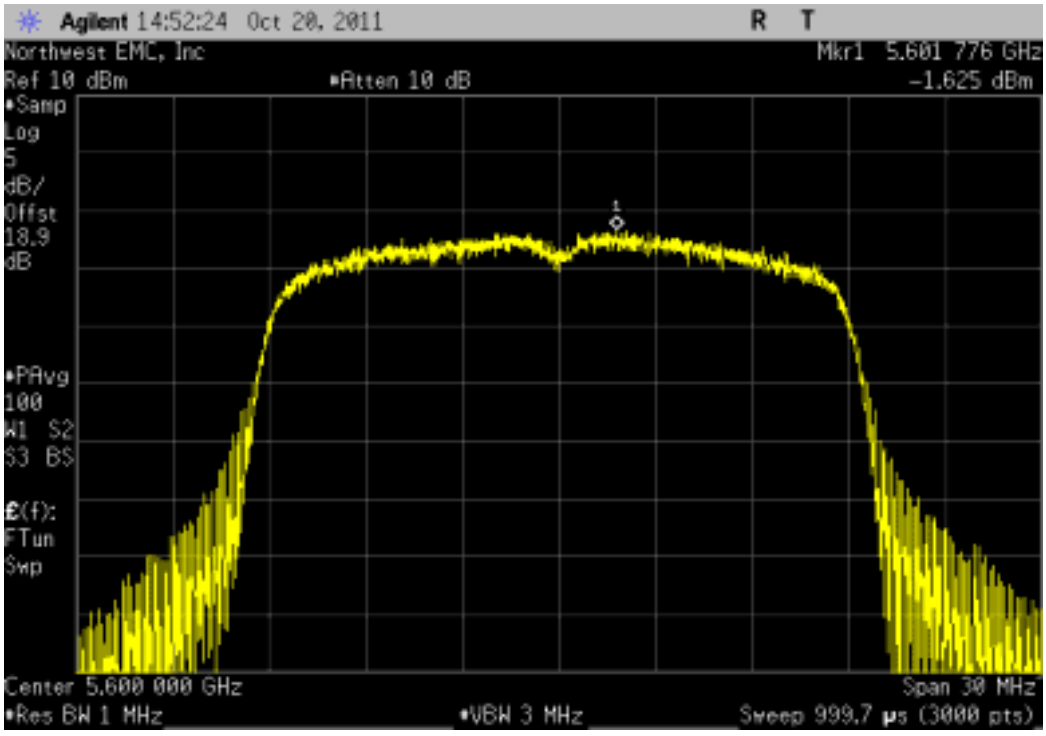
				Value (dBm / MHz)	Limit (dBm / MHz)	Result
				-2.212	4	Pass



802.11(n) MCS7, 5470 - 5725 MHz Band, Channel 100, Low Channel						
				Value (dBm / MHz)	Limit (dBm / MHz)	Result
				-1.674	4	Pass

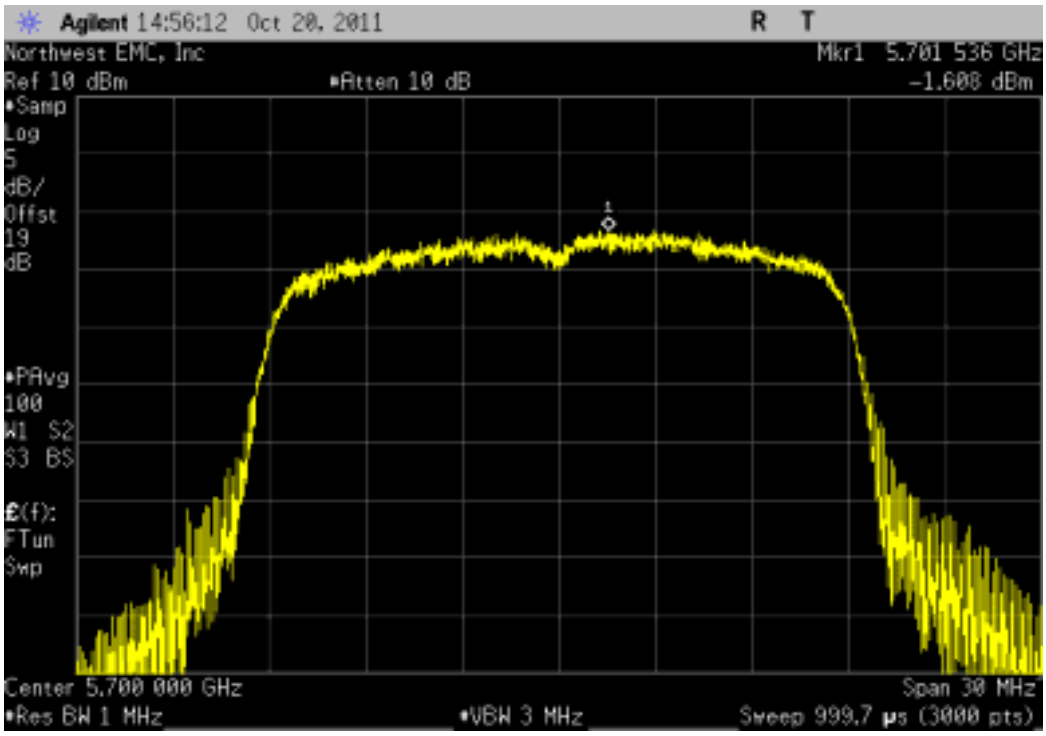


802.11(n) MCS7, 5470 - 5725 MHz Band, Channel 120, Mid Channel						
				Value (dBm / MHz)	Limit (dBm / MHz)	Result
				-1.625	4	Pass



802.11(n) MCS7, 5470 - 5725 MHz Band, Channel 140, High Channel

				Value (dBm / MHz)	Limit (dBm / MHz)	Result
				-1.608	4	Pass



Peak Excursion of the Modulation Envelope

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

TEST EQUIPMENT

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

MEASUREMENT UNCERTAINTY

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

TEST DESCRIPTION

FCC Public Notice DA 02-2138 was followed. The transmit frequency was set to the required channels in each band. The transmit power was set to its default maximum. The lowest, a medium, and the highest data rates 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 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 max-hold settings.
  - 2nd Trace: Use same settings as were used for peak conducted transmit power. The sample detector was used as well as the VBW being matched to that used on the peak conducted transmit power.

NORTHWEST EMC

Peak Excursion of the Modulation Envelope

XMit 2011.08.04
PsaTx 2011.09.28

EUT:	X Series			Work Order:	LGPD0044
Serial Number:	3411000112, 341100050			Date:	10/20/11
Customer:	ZOLL Medical Corp.			Temperature:	23.58C°C
Attendees:	Curt McNamara, Karl Karcht			Humidity:	25%
Project:	None			Barometric Pres.:	1014
Tested by:	Elaine Reeves	Power:	15VDC	Job Site:	MN08

TEST SPECIFICATIONS	TEST METHOD
FCC 15.407:2011	ANSI C63.10:2009

COMMENTS

Customer cable loss factor subtracted from reference level offset (Cable missing from test setup).

DEVIATIONS FROM TEST STANDARD

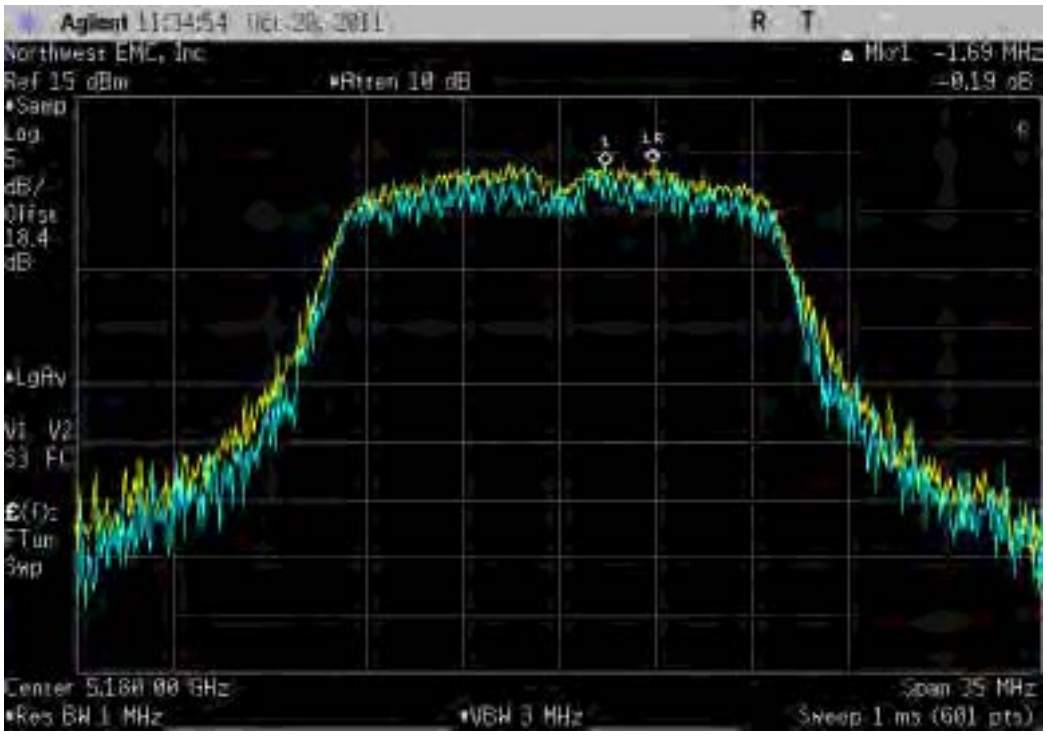
None

Configuration #	1	Signature	Trevor Bulo

		Value	Limit	Result
802.11(a) 6 Mbps				
	5150 - 5250 MHz Band			
	Channel 36, Low Channel	0.191 dB	≤ 13 dB	Pass
	Channel 48, High Channel	0.062 dB	≤ 13 dB	Pass
	5250 - 5350 MHz Band			
	Channel 52, Low Channel	0.206 dB	≤ 13 dB	Pass
	Channel 64, High Channel	0.091 dB	≤ 13 dB	Pass
	5470 - 5725 MHz Band			
	Channel 100, Low Channel	0.368 dB	≤ 13 dB	Pass
	Channel 120, Mid Channel	0.317 dB	≤ 13 dB	Pass
	Channel 140, High Channel	0.425 dB	≤ 13 dB	Pass
802.11(a) 36 Mbps				
	5150 - 5250 MHz Band			
	Channel 36, Low Channel	0.63 dB	≤ 13 dB	Pass
	Channel 48, High Channel	0.41 dB	≤ 13 dB	Pass
	5250 - 5350 MHz Band			
	Channel 52, Low Channel	0.266 dB	≤ 13 dB	Pass
	Channel 64, High Channel	1.104 dB	≤ 13 dB	Pass
	5470 - 5725 MHz Band			
	Channel 100, Low Channel	0.742 dB	≤ 13 dB	Pass
	Channel 120, Mid Channel	0.94 dB	≤ 13 dB	Pass
	Channel 140, High Channel	0.207 dB	≤ 13 dB	Pass
802.11(a) 54 Mbps				
	5150 - 5250 MHz Band			
	Channel 36, Low Channel	1.027 dB	≤ 13 dB	Pass
	Channel 48, High Channel	0.029 dB	≤ 13 dB	Pass
	5250 - 5350 MHz Band			
	Channel 52, Low Channel	0.667 dB	≤ 13 dB	Pass
	Channel 64, High Channel	1.061 dB	≤ 13 dB	Pass
	5470 - 5725 MHz Band			
	Channel 100, Low Channel	0.167 dB	≤ 13 dB	Pass
	Channel 120, Mid Channel	0.827 dB	≤ 13 dB	Pass
	Channel 140, High Channel	0.144 dB	≤ 13 dB	Pass
802.11(n) MCS0				
	5150 - 5250 MHz Band			
	Channel 36, Low Channel	0.404 dB	≤ 13 dB	Pass
	Channel 48, High Channel	0.439 dB	≤ 13 dB	Pass
	5250 - 5350 MHz Band			
	Channel 52, Low Channel	1.086 dB	≤ 13 dB	Pass
	Channel 64, High Channel	0.112 dB	≤ 13 dB	Pass
	5470 - 5725 MHz Band			
	Channel 100, Low Channel	0.982 dB	≤ 13 dB	Pass
	Channel 120, Mid Channel	0.512 dB	≤ 13 dB	Pass
	Channel 140, High Channel	0.319 dB	≤ 13 dB	Pass
802.11(n) MCS7				
	5150 - 5250 MHz Band			
	Channel 36, Low Channel	0.214 dB	≤ 13 dB	Pass
	Channel 48, High Channel	0.02 dB	≤ 13 dB	Pass
	5250 - 5350 MHz Band			
	Channel 52, Low Channel	0.116 dB	≤ 13 dB	Pass
	Channel 64, High Channel	0.13 dB	≤ 13 dB	Pass
	5470 - 5725 MHz Band			
	Channel 100, Low Channel	0.412 dB	≤ 13 dB	Pass
	Channel 120, Mid Channel	1.026 dB	≤ 13 dB	Pass
	Channel 140, High Channel	0.572 dB	≤ 13 dB	Pass

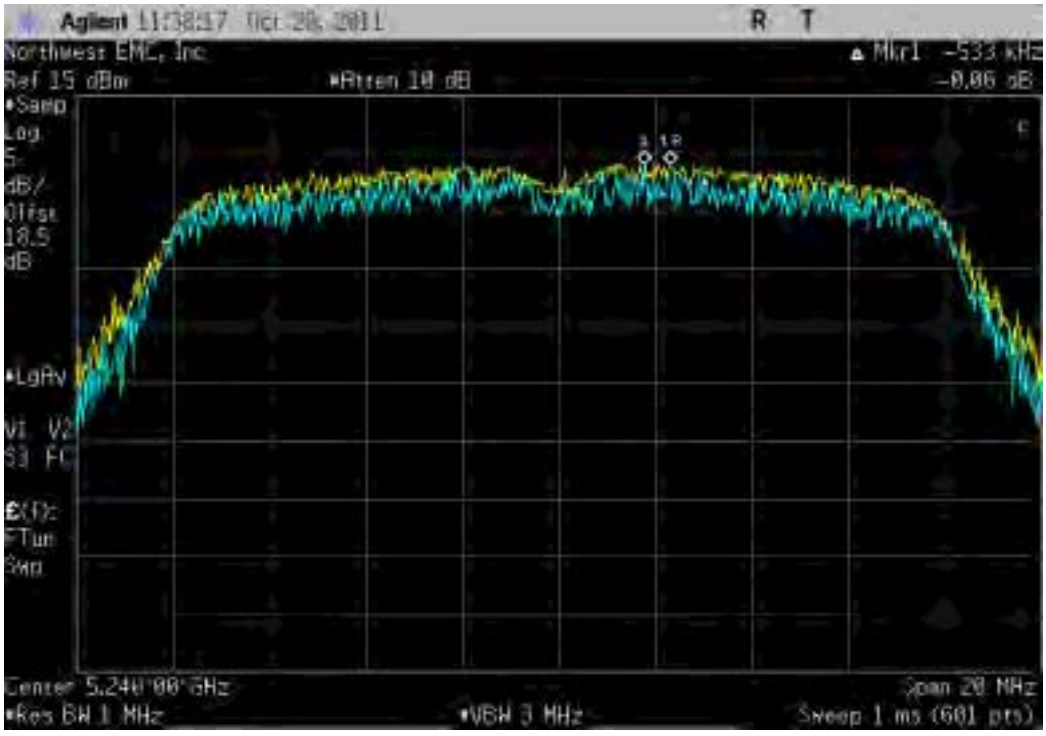
802.11(a) 6 Mbps, 5150 - 5250 MHz Band, Channel 36, Low Channel

				Value	Limit	Result
				0.191 dB	≤ 13 dB	Pass



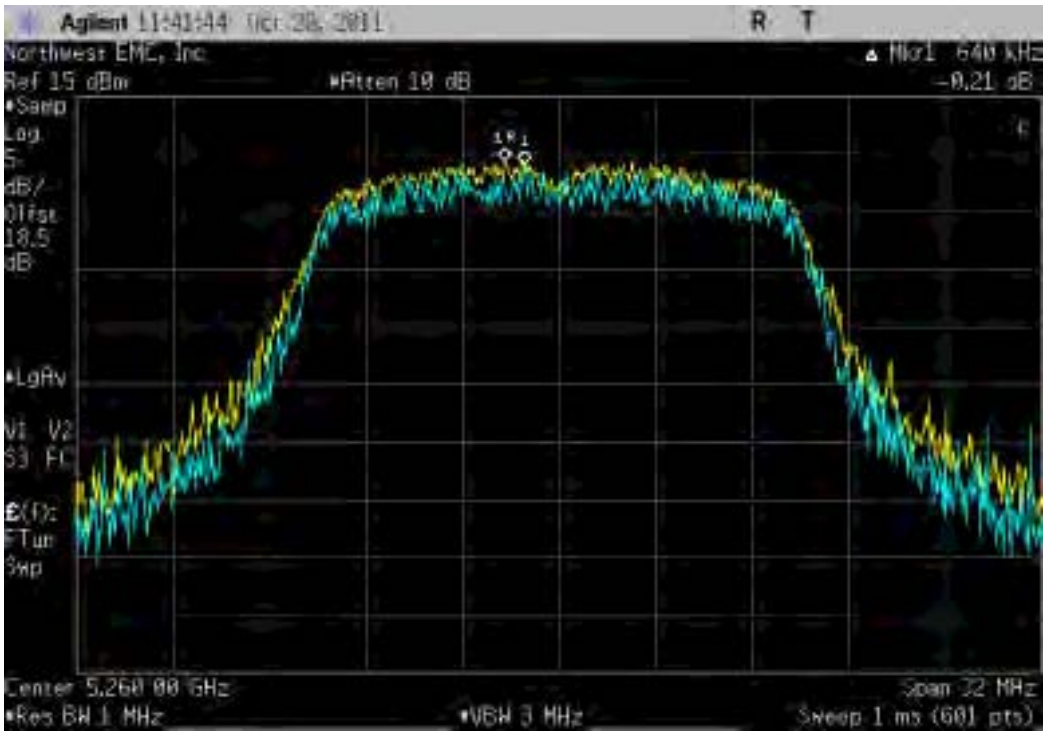
802.11(a) 6 Mbps, 5150 - 5250 MHz Band, Channel 48, High Channel

				Value	Limit	Result
				0.062 dB	≤ 13 dB	Pass



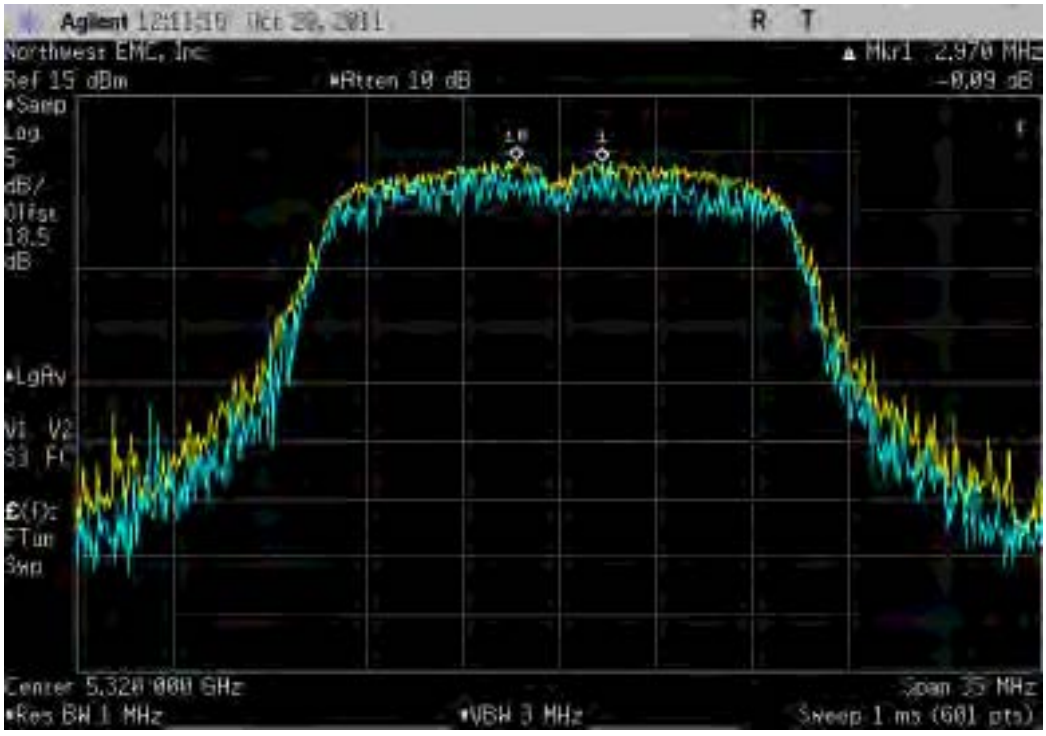
802.11(a) 6 Mbps, 5250 - 5350 MHz Band, Channel 52, Low Channel

				Value	Limit	Result
				0.206 dB	≤ 13 dB	Pass



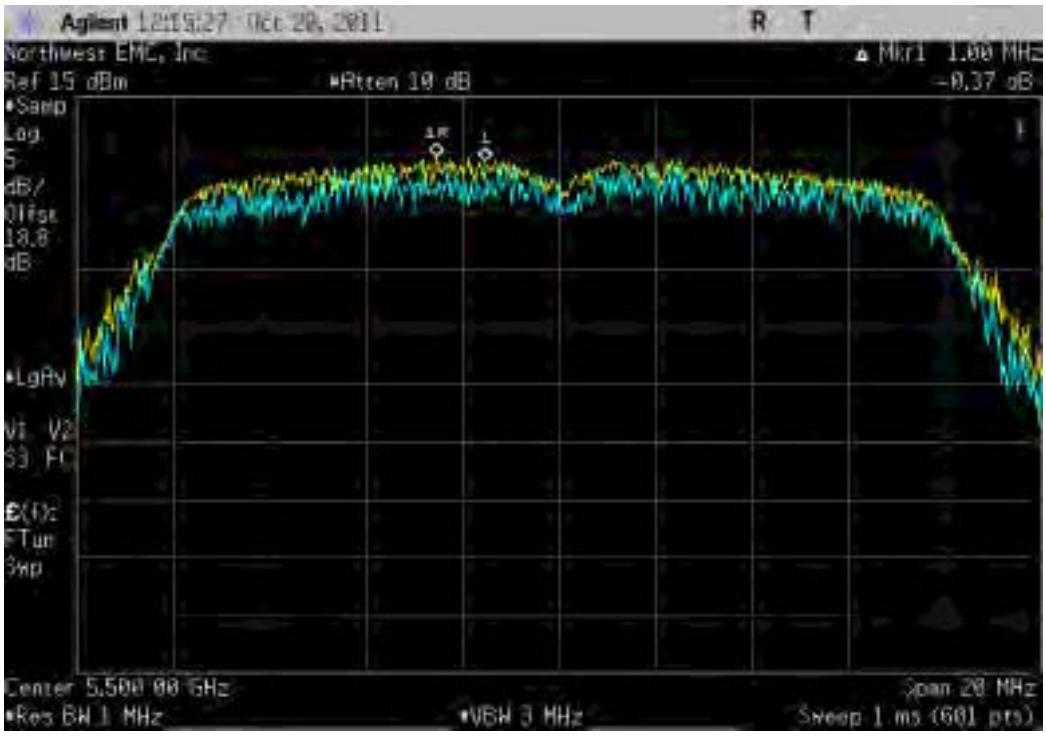
802.11(a) 6 Mbps, 5250 - 5350 MHz Band, Channel 64, High Channel

				Value	Limit	Result
				0.091 dB	≤ 13 dB	Pass



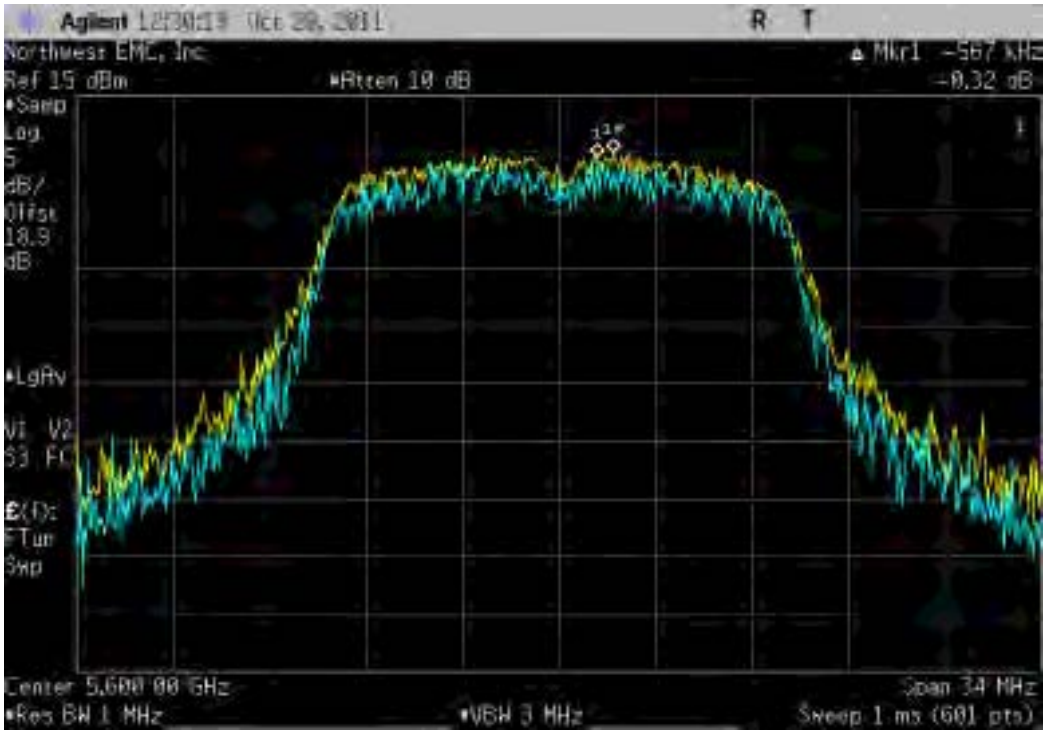
802.11(a) 6 Mbps, 5470 - 5725 MHz Band, Channel 100, Low Channel

				Value	Limit	Result
				0.368 dB	≤ 13 dB	Pass



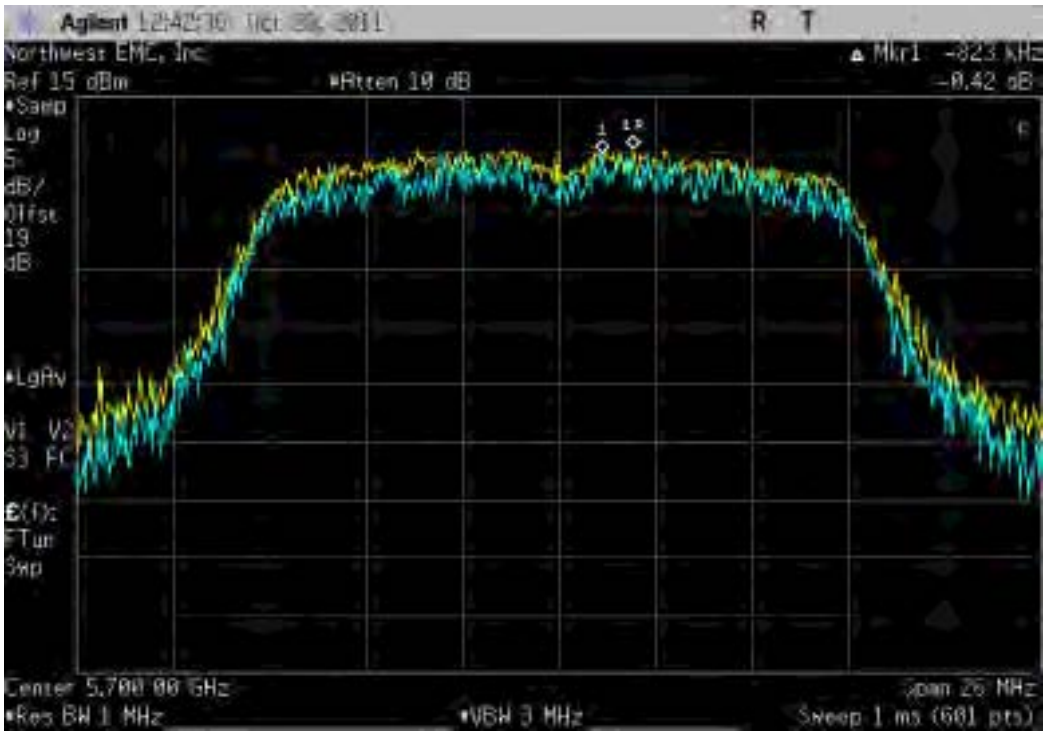
802.11(a) 6 Mbps, 5470 - 5725 MHz Band, Channel 120, Mid Channel

				Value	Limit	Result
				0.317 dB	≤ 13 dB	Pass



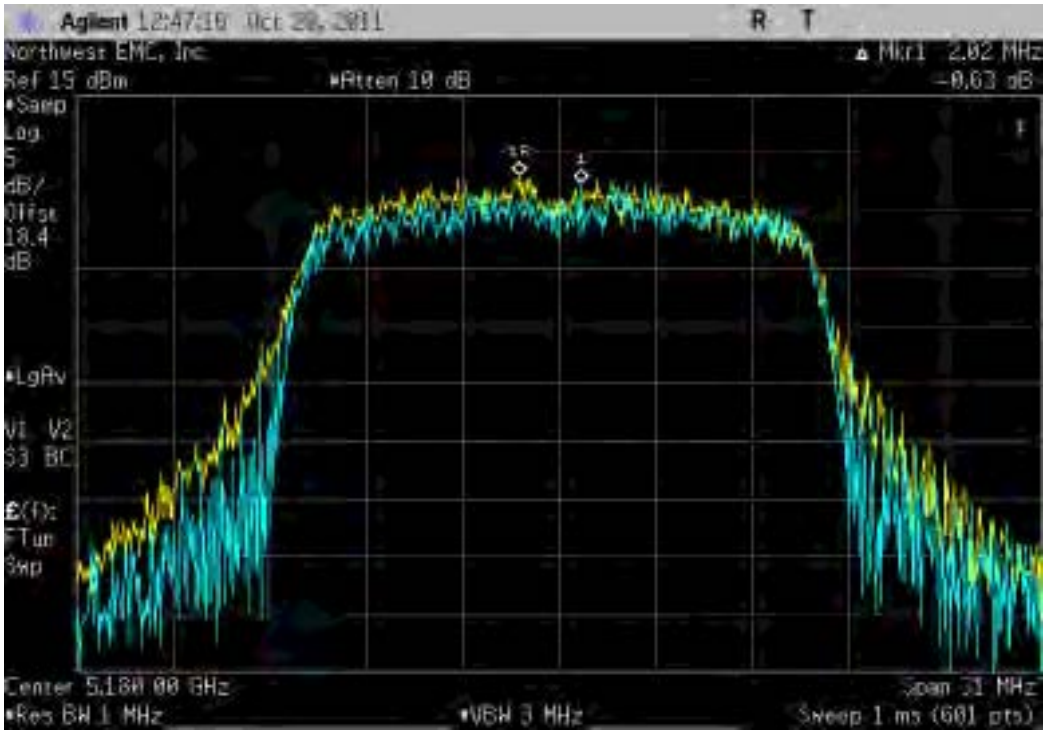
802.11(a) 6 Mbps, 5470 - 5725 MHz Band, Channel 140, High Channel

				Value	Limit	Result
				0.425 dB	≤ 13 dB	Pass



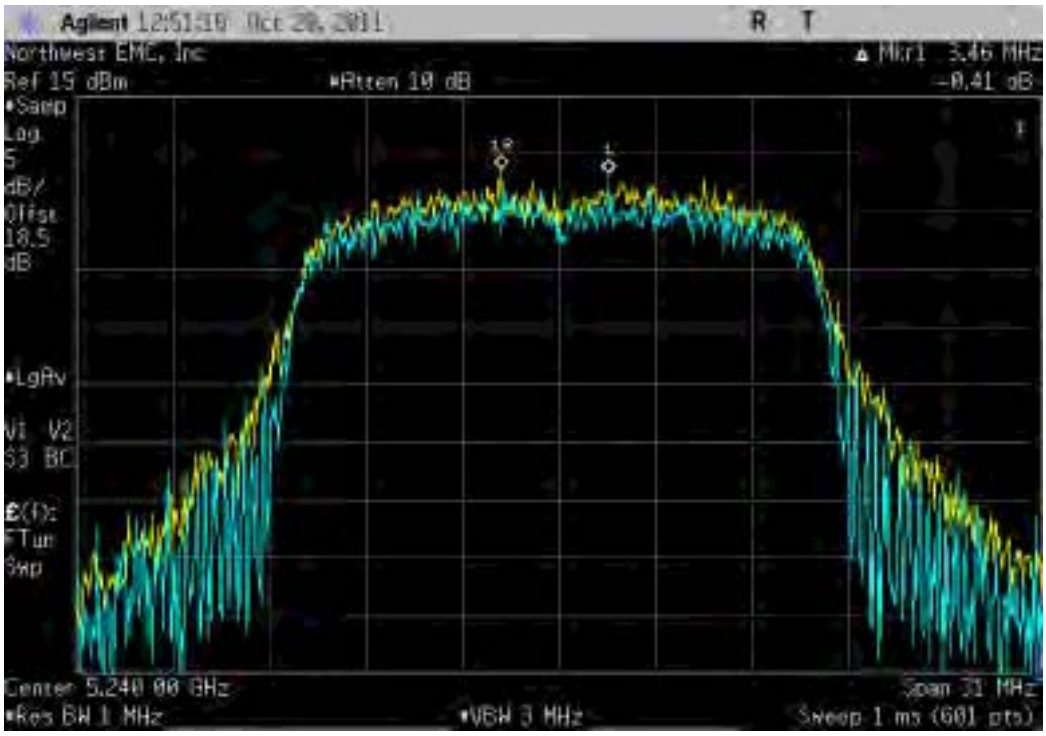
802.11(a) 36 Mbps, 5150 - 5250 MHz Band, Channel 36, Low Channel

				Value	Limit	Result
				0.63 dB	≤ 13 dB	Pass



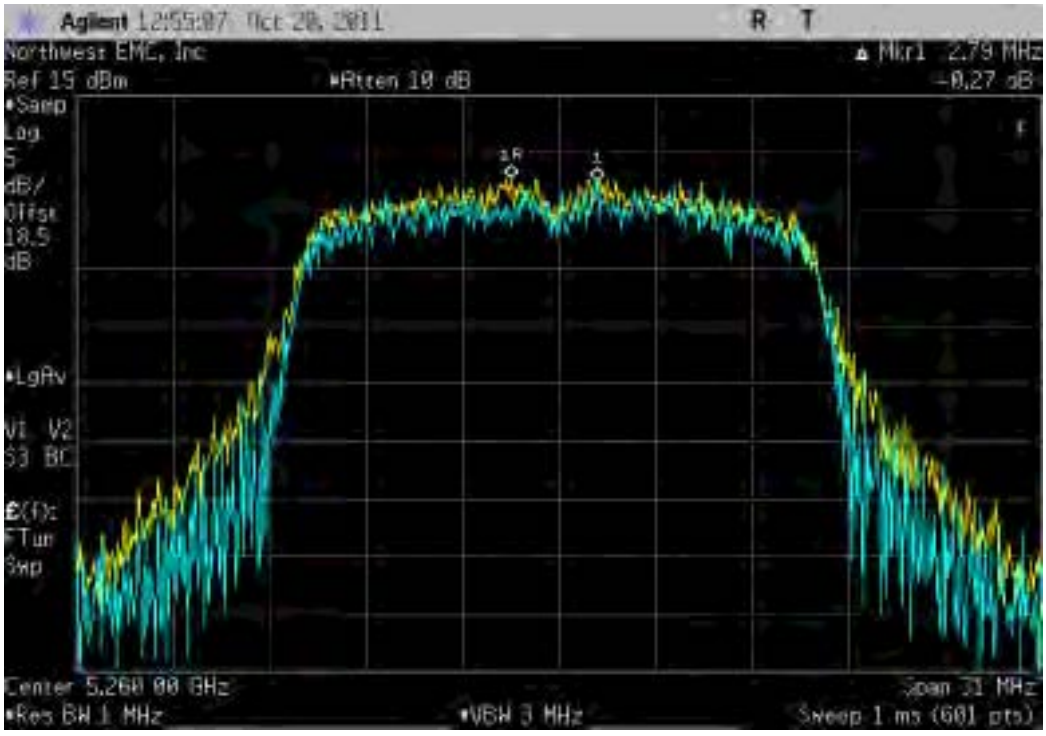
802.11(a) 36 Mbps, 5150 - 5250 MHz Band, Channel 48, High Channel

				Value	Limit	Result
				0.41 dB	≤ 13 dB	Pass



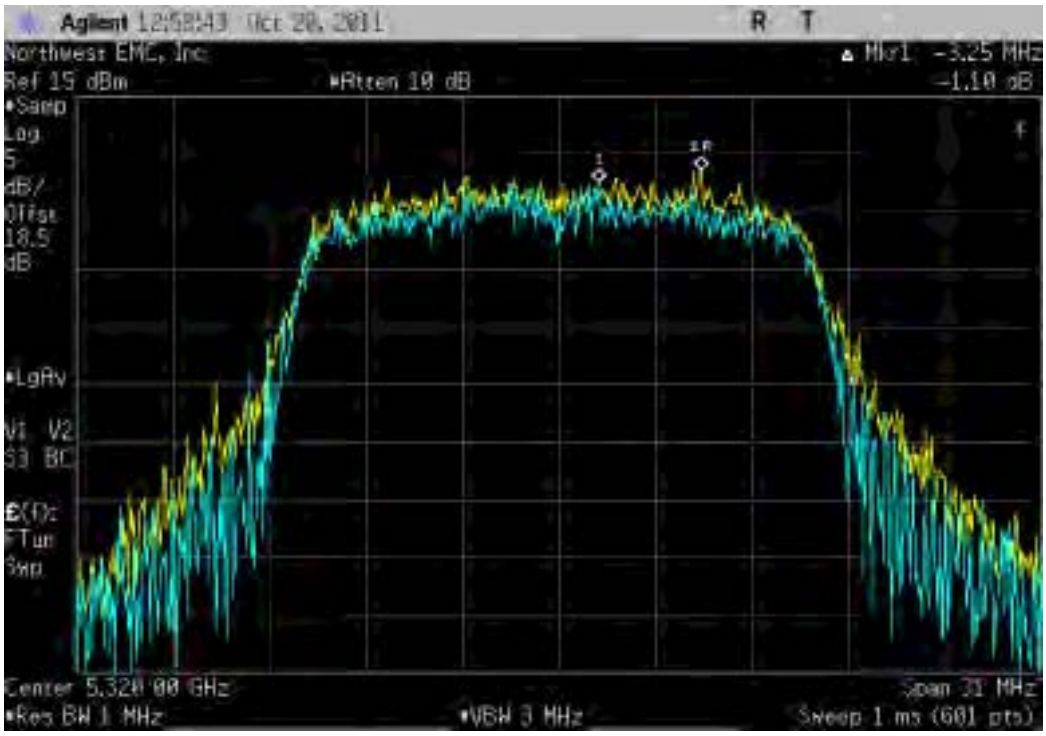
802.11(a) 36 Mbps, 5250 - 5350 MHz Band, Channel 52, Low Channel

				Value	Limit	Result
				0.266 dB	≤ 13 dB	Pass



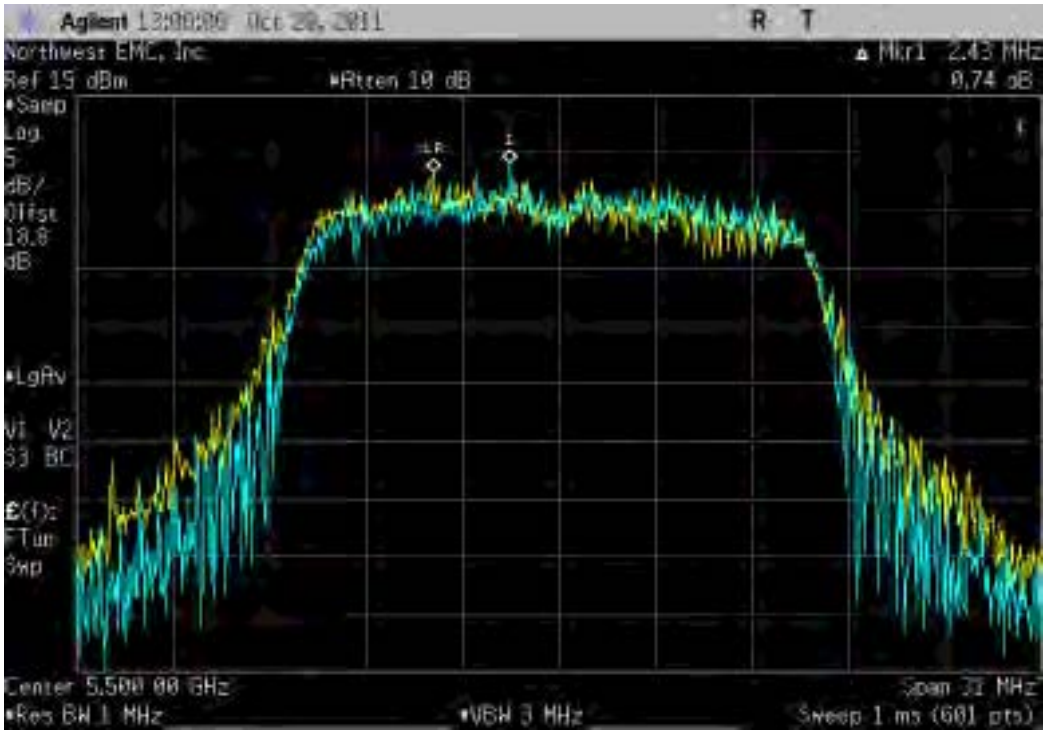
802.11(a) 36 Mbps, 5250 - 5350 MHz Band, Channel 64, High Channel

				Value	Limit	Result
				1.104 dB	≤ 13 dB	Pass



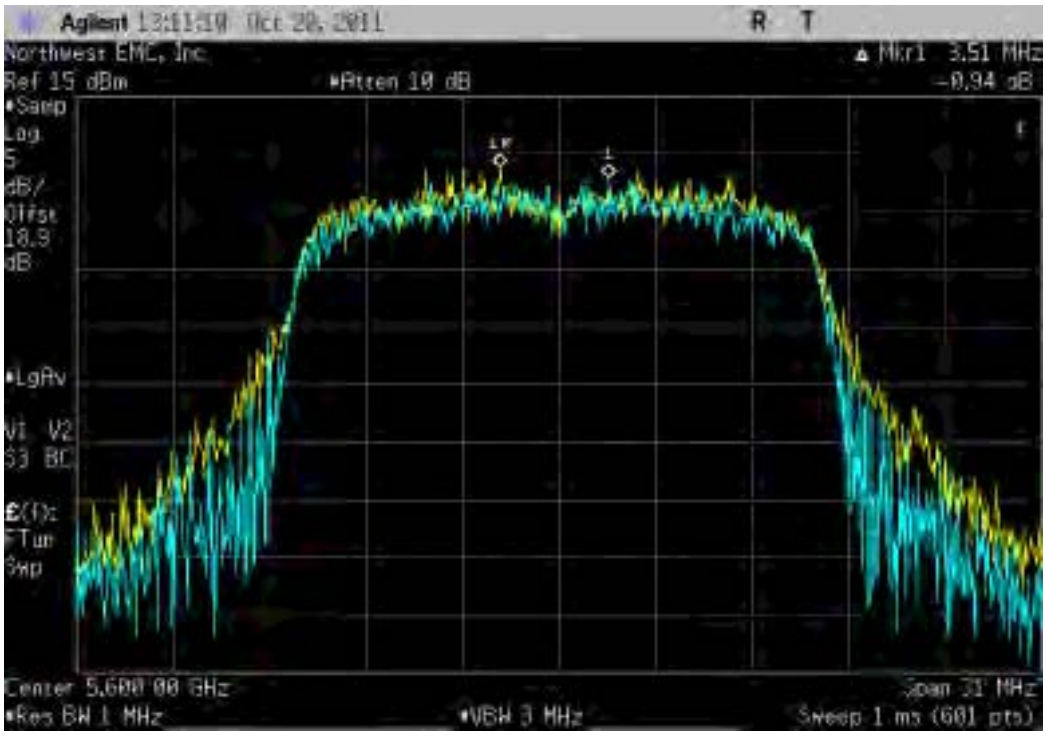
802.11(a) 36 Mbps, 5470 - 5725 MHz Band, Channel 100, Low Channel

				Value	Limit	Result
				0.742 dB	≤ 13 dB	Pass



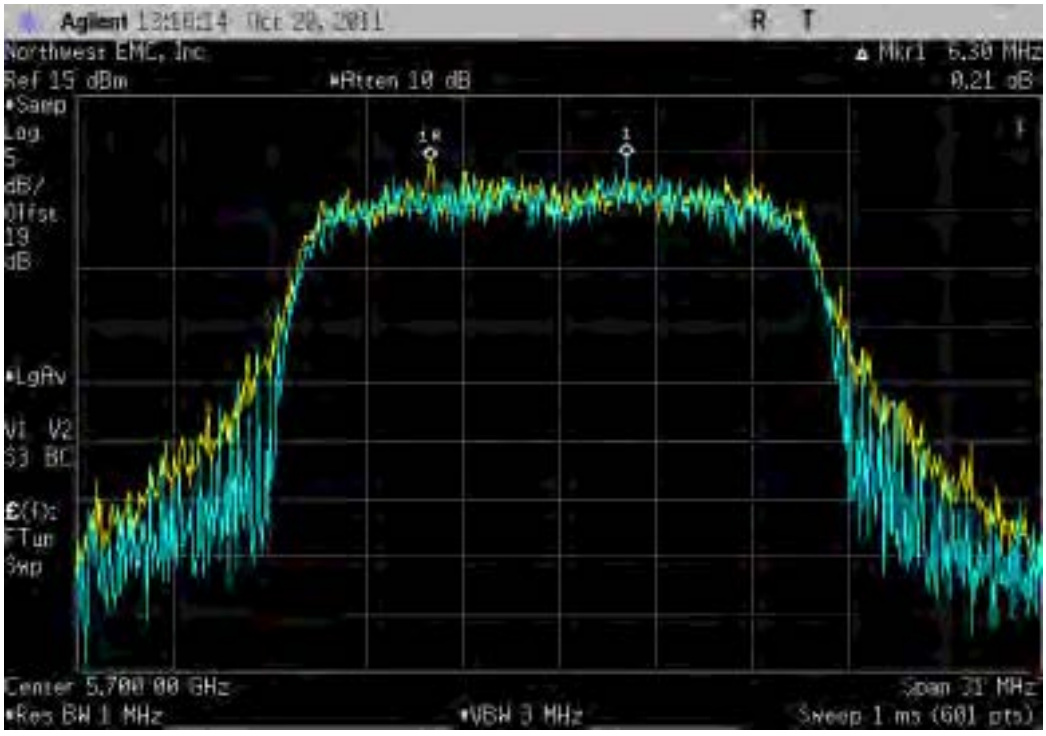
802.11(a) 36 Mbps, 5470 - 5725 MHz Band, Channel 120, Mid Channel

				Value	Limit	Result
				0.94 dB	≤ 13 dB	Pass



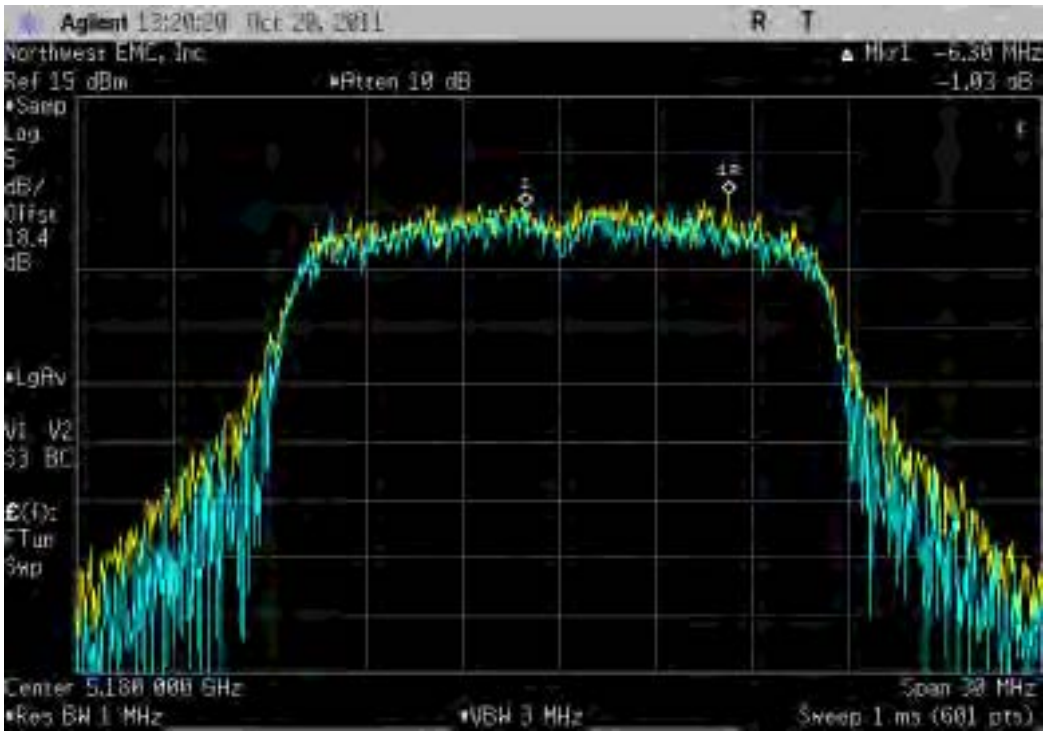
802.11(a) 36 Mbps, 5470 - 5725 MHz Band, Channel 140, High Channel

				Value	Limit	Result
				0.207 dB	≤ 13 dB	Pass



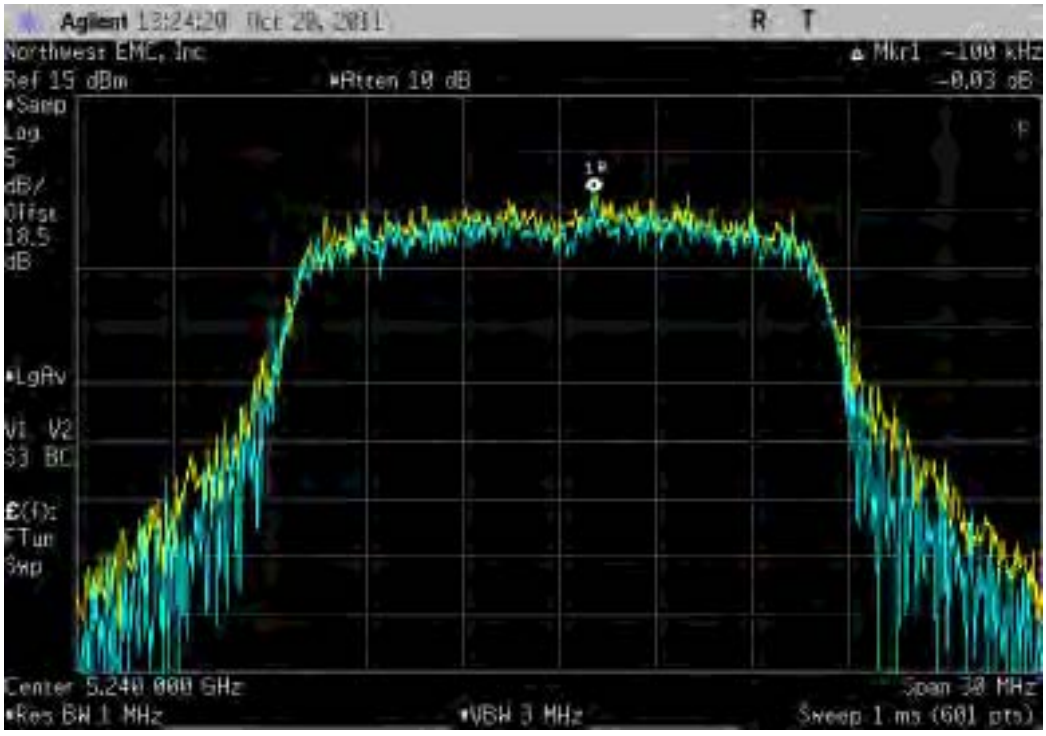
802.11(a) 54 Mbps, 5150 - 5250 MHz Band, Channel 36, Low Channel

				Value	Limit	Result
				1.027 dB	≤ 13 dB	Pass



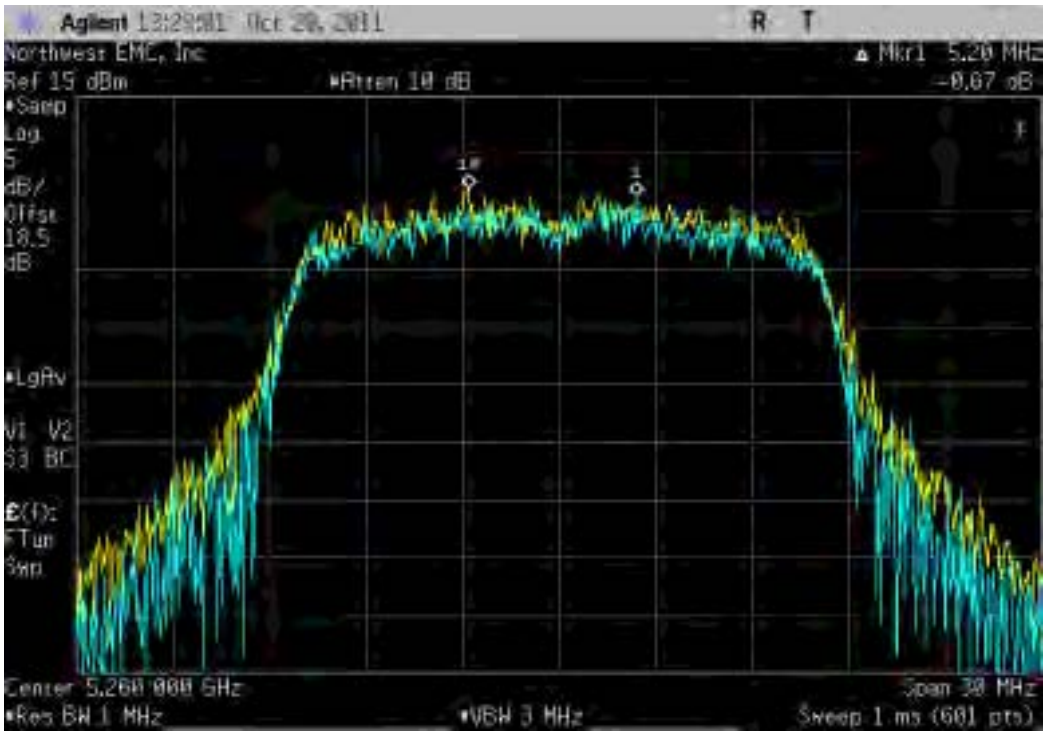
802.11(a) 54 Mbps, 5150 - 5250 MHz Band, Channel 48, High Channel

				Value	Limit	Result
				0.029 dB	≤ 13 dB	Pass



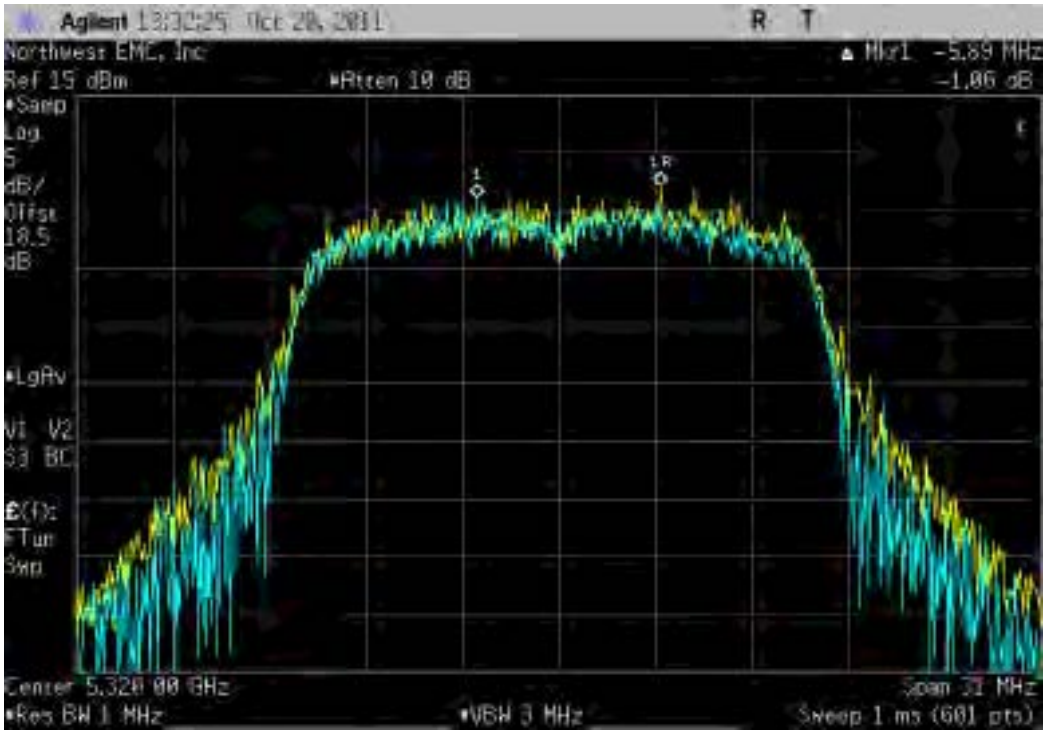
802.11(a) 54 Mbps, 5250 - 5350 MHz Band, Channel 52, Low Channel

				Value	Limit	Result
				0.667 dB	≤ 13 dB	Pass



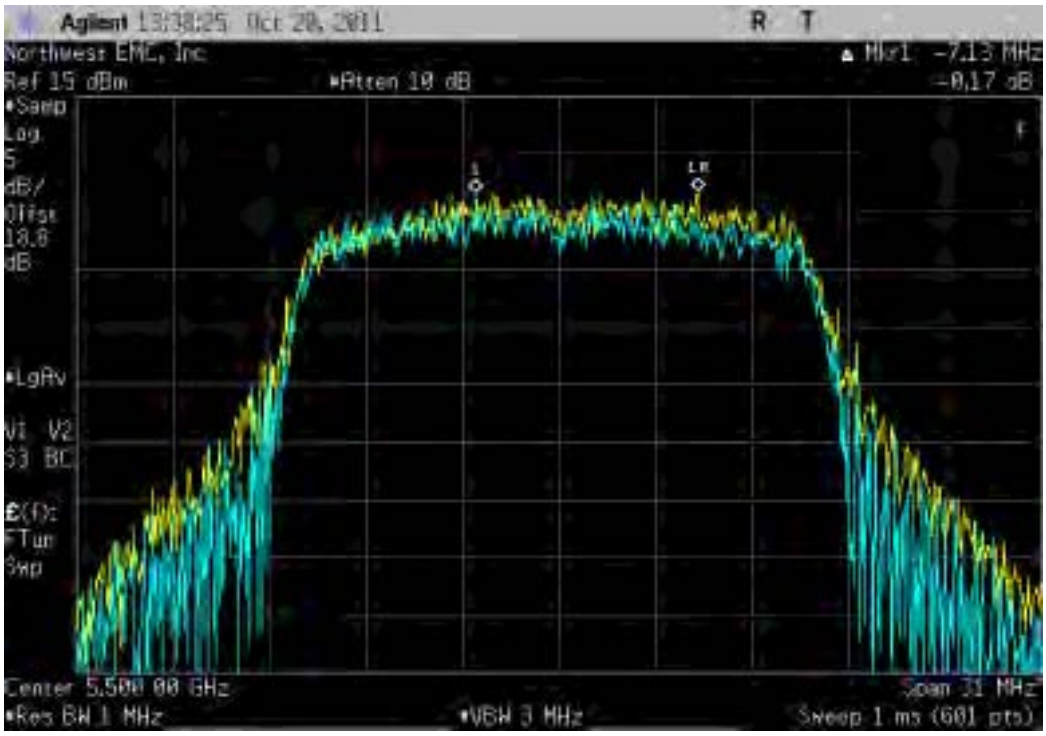
802.11(a) 54 Mbps, 5250 - 5350 MHz Band, Channel 64, High Channel

				Value	Limit	Result
				1.061 dB	≤ 13 dB	Pass



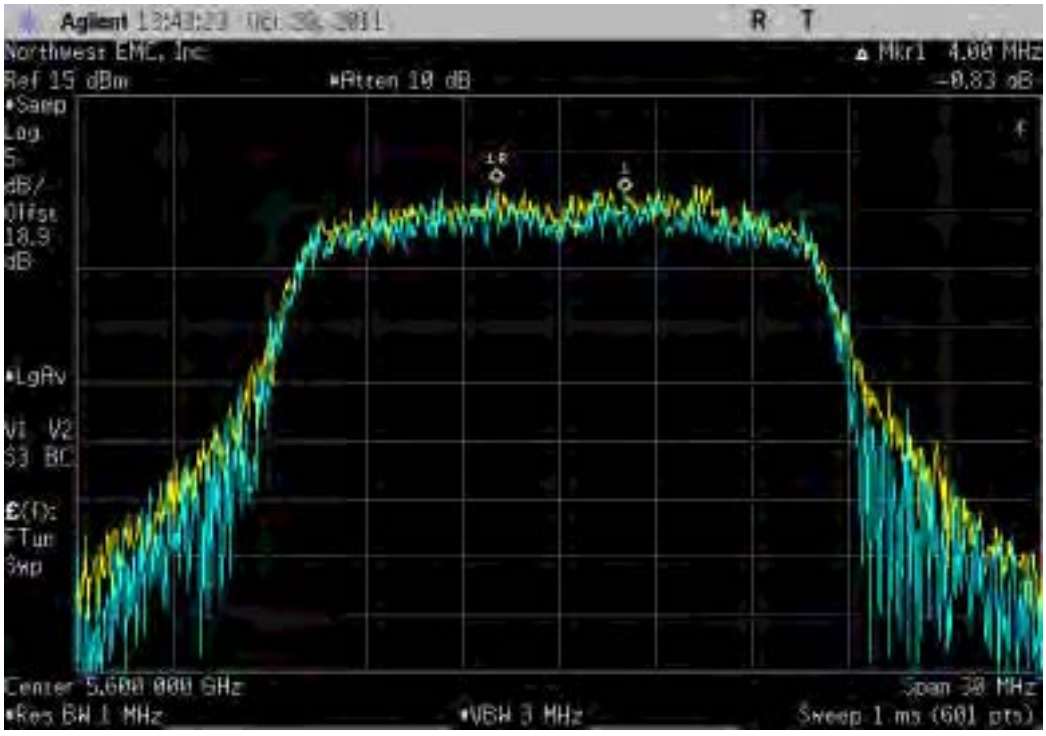
802.11(a) 54 Mbps, 5470 - 5725 MHz Band, Channel 100, Low Channel

				Value	Limit	Result
				0.167 dB	≤ 13 dB	Pass



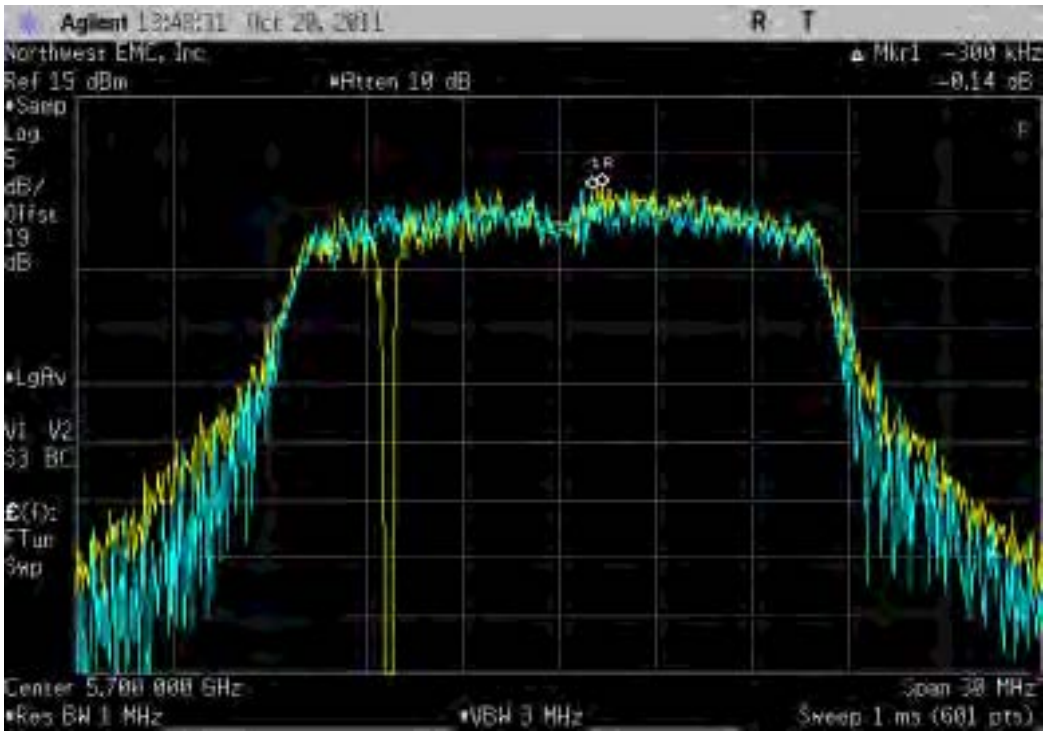
802.11(a) 54 Mbps, 5470 - 5725 MHz Band, Channel 120, Mid Channel

				Value	Limit	Result
				0.827 dB	≤ 13 dB	Pass



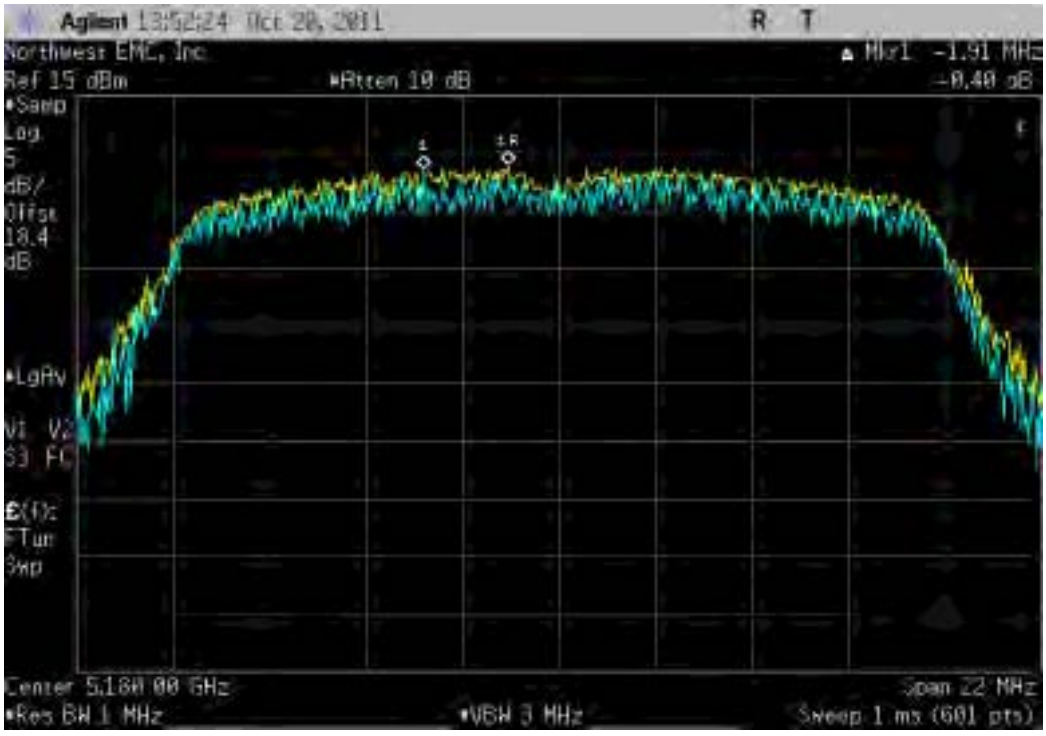
802.11(a) 54 Mbps, 5470 - 5725 MHz Band, Channel 140, High Channel

				Value	Limit	Result
				0.144 dB	≤ 13 dB	Pass



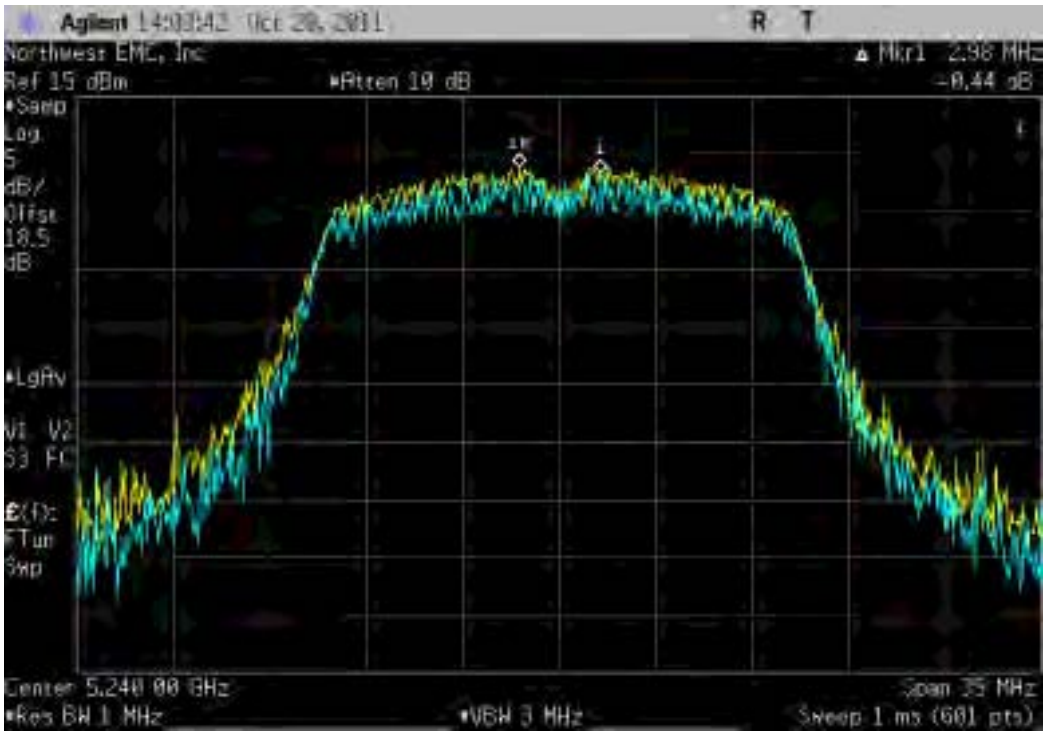
802.11(n) MCS0, 5150 - 5250 MHz Band, Channel 36, Low Channel

				Value	Limit	Result
				0.404 dB	≤ 13 dB	Pass



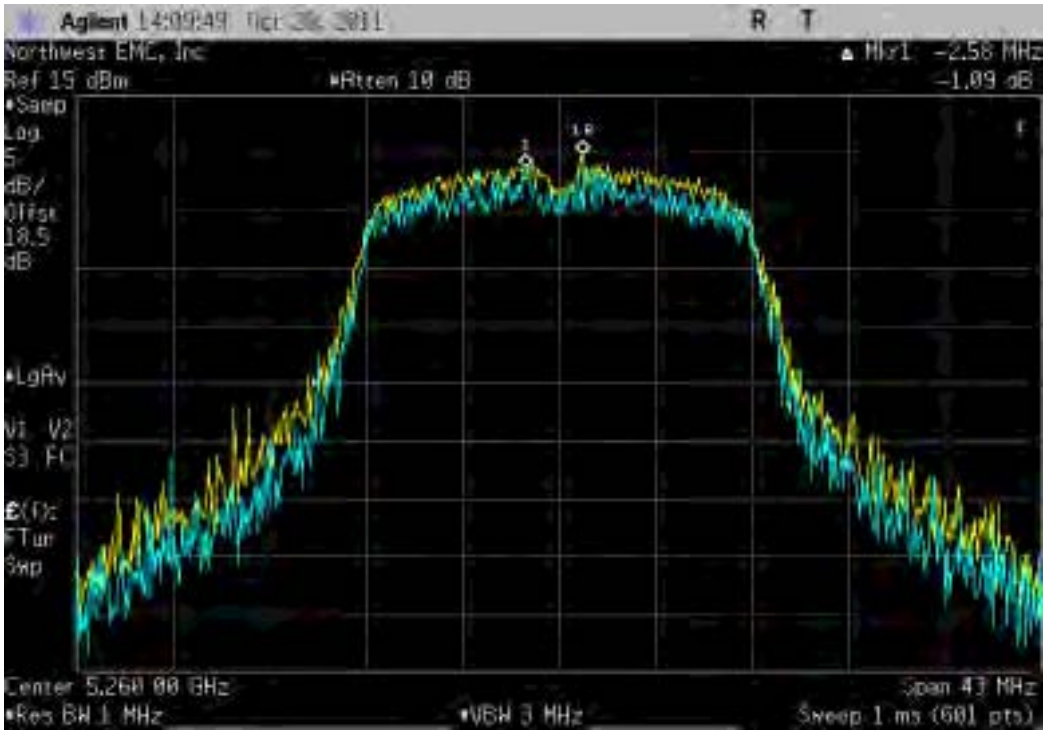
802.11(n) MCS0, 5150 - 5250 MHz Band, Channel 48, High Channel

				Value	Limit	Result
				0.439 dB	≤ 13 dB	Pass



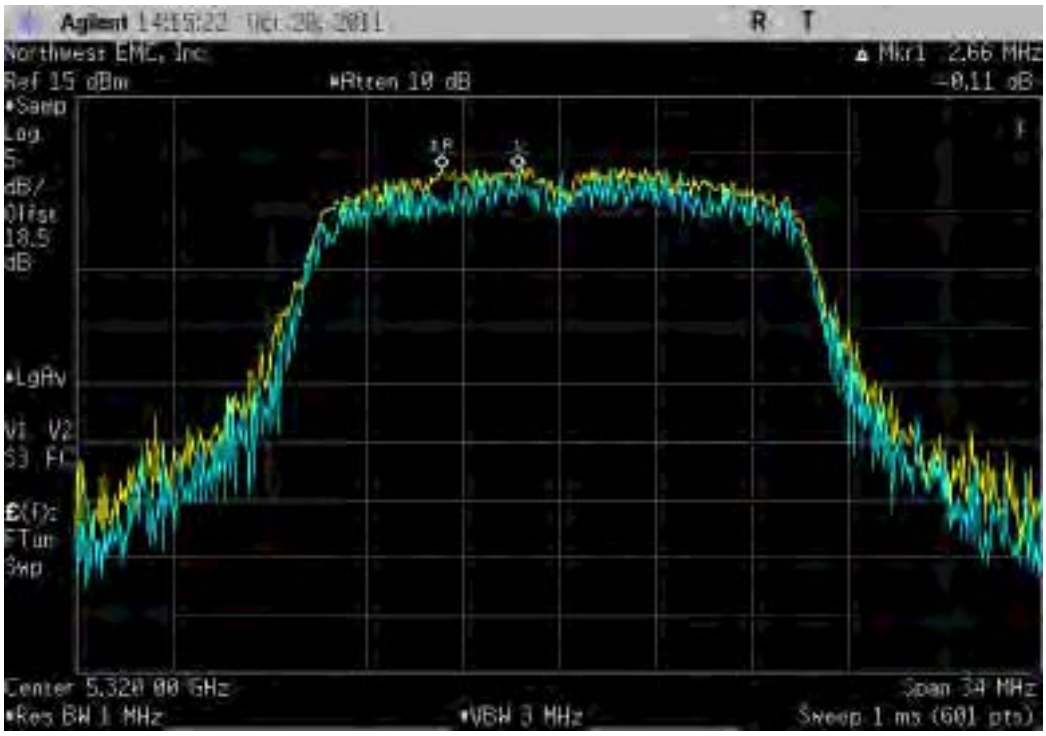
802.11(n) MCS0, 5250 - 5350 MHz Band, Channel 52, Low Channel

				Value	Limit	Result
				1.086 dB	≤ 13 dB	Pass



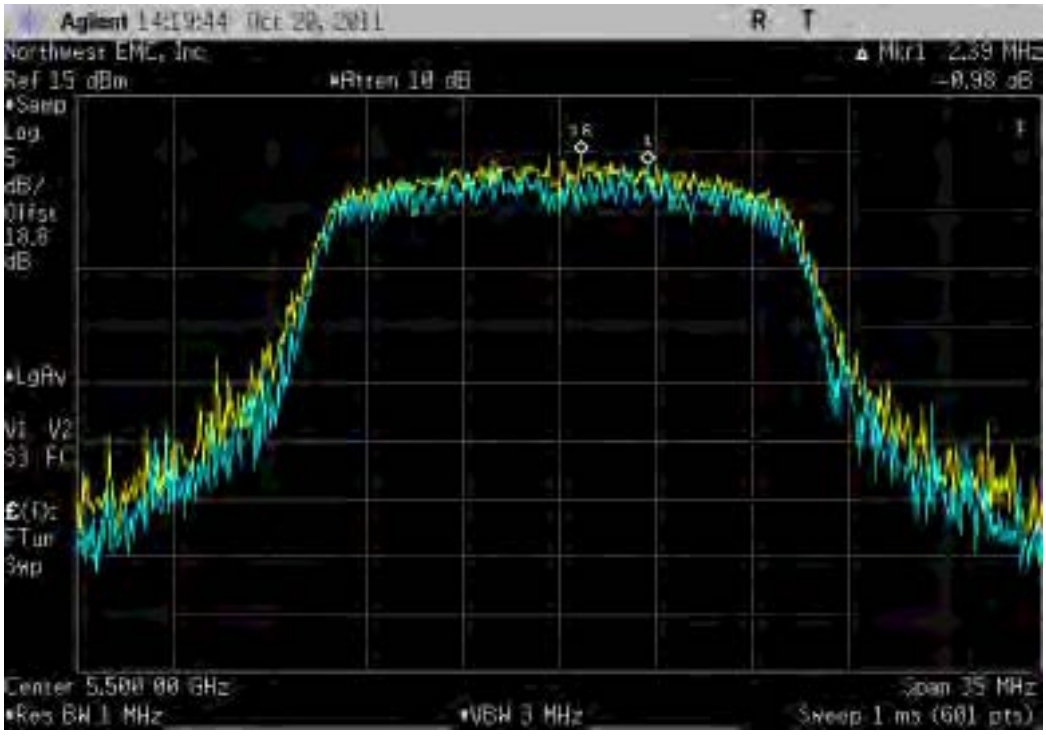
802.11(n) MCS0, 5250 - 5350 MHz Band, Channel 64, High Channel

				Value	Limit	Result
				0.112 dB	≤ 13 dB	Pass



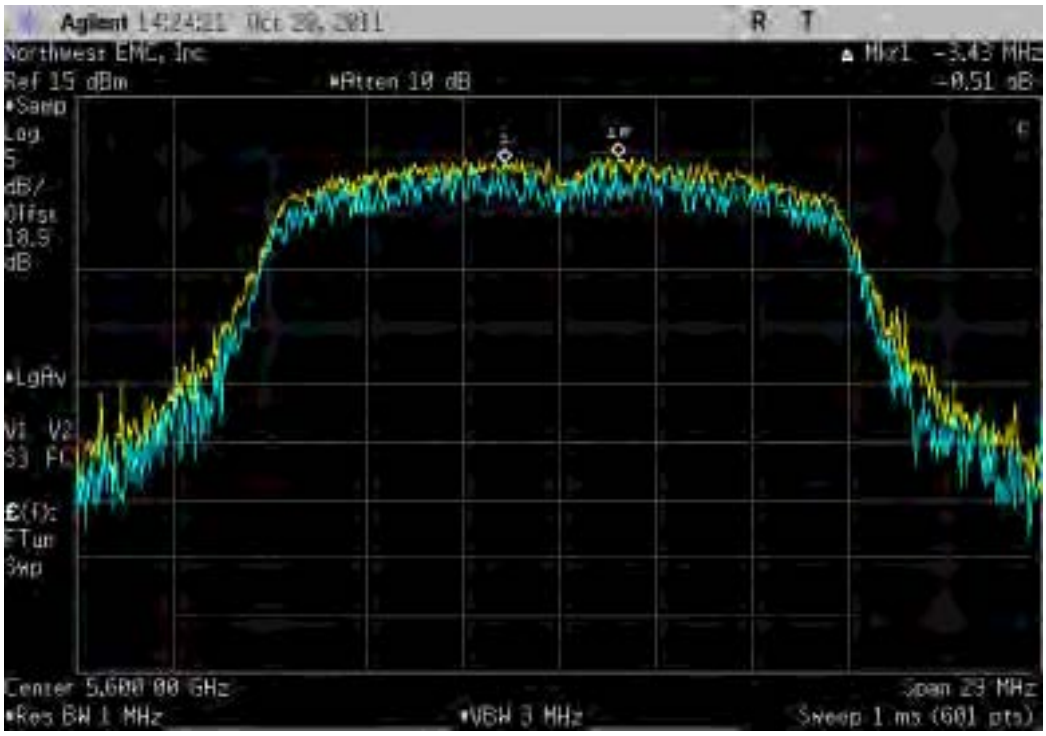
802.11(n) MCS0, 5470 - 5725 MHz Band, Channel 100, Low Channel

				Value	Limit	Result
				0.982 dB	≤ 13 dB	Pass



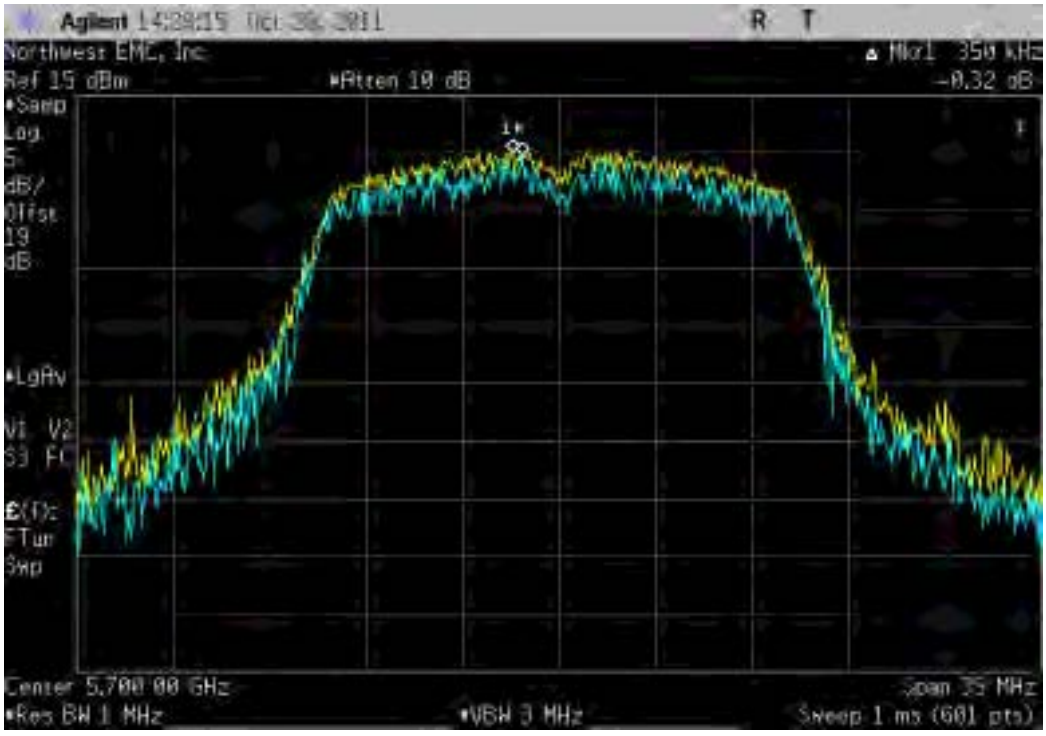
802.11(n) MCS0, 5470 - 5725 MHz Band, Channel 120, Mid Channel

				Value	Limit	Result
				0.512 dB	≤ 13 dB	Pass



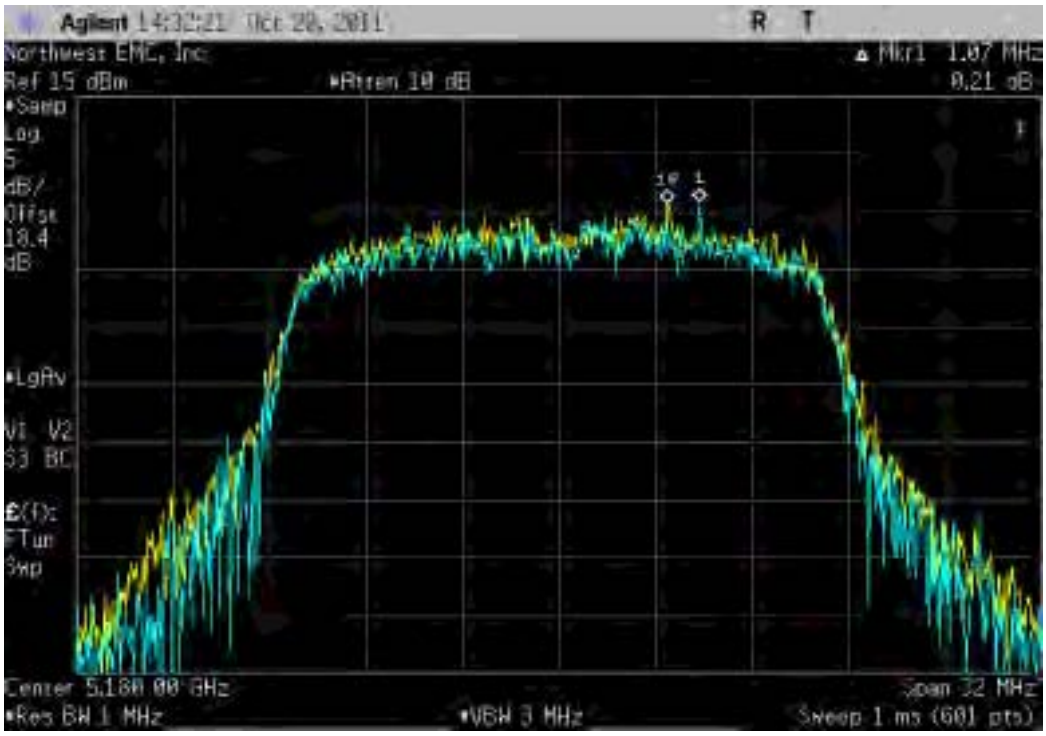
802.11(n) MCS0, 5470 - 5725 MHz Band, Channel 140, High Channel

				Value	Limit	Result
				0.319 dB	≤ 13 dB	Pass



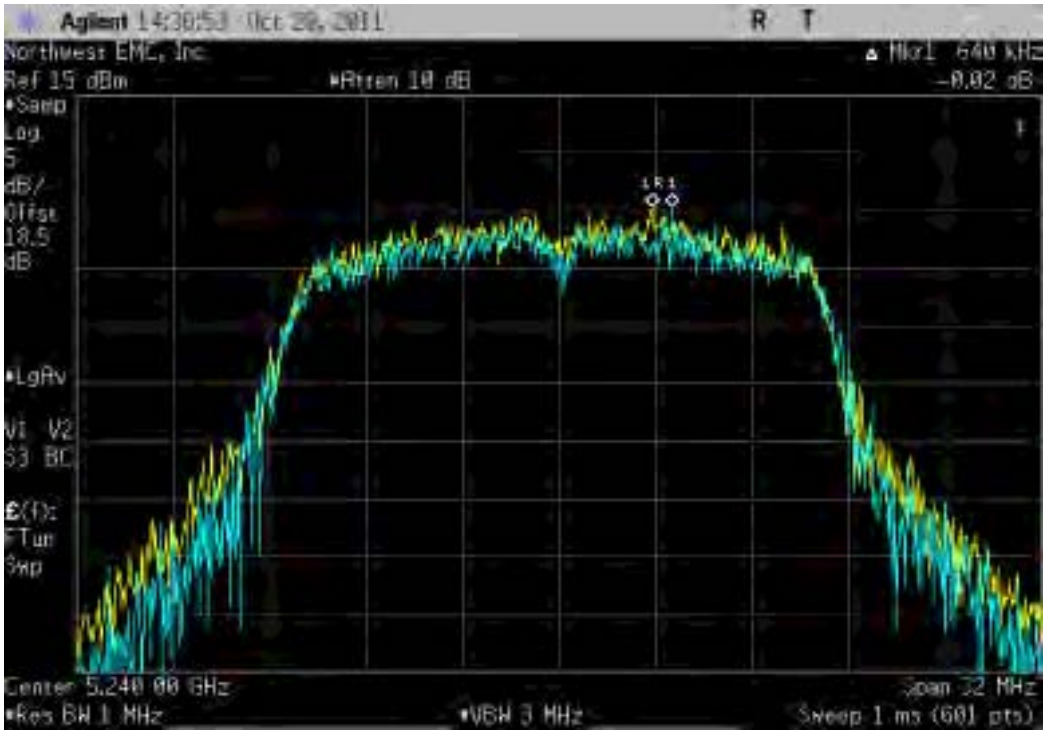
802.11(n) MCS7, 5150 - 5250 MHz Band, Channel 36, Low Channel

				Value	Limit	Result
				0.214 dB	≤ 13 dB	Pass



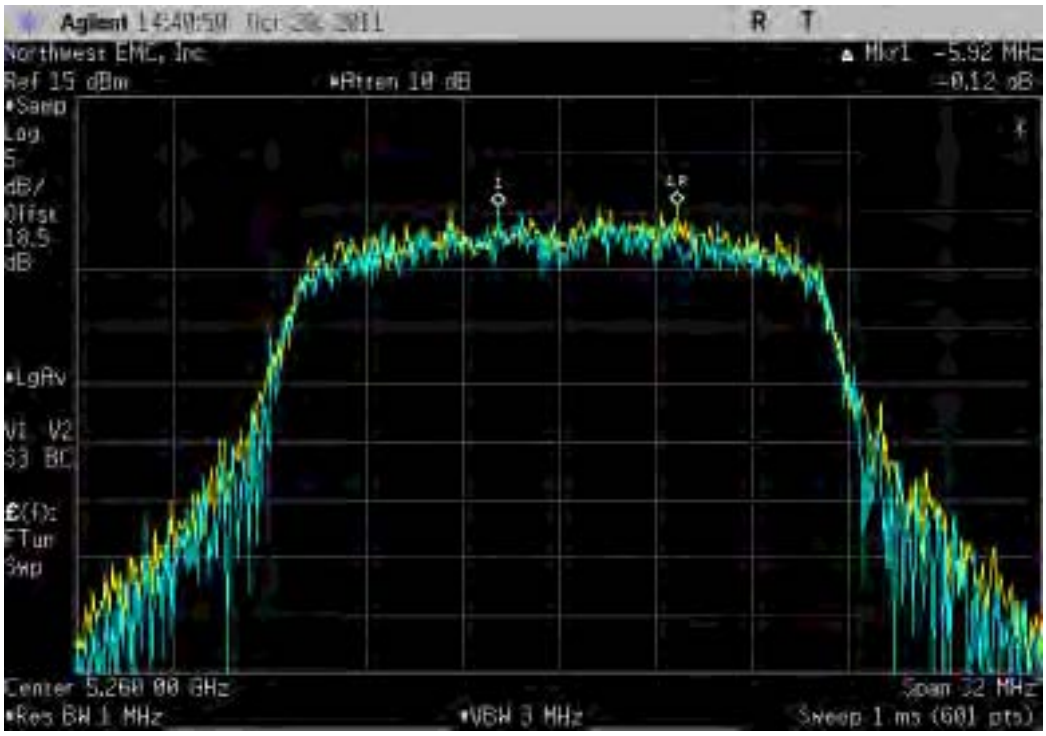
802.11(n) MCS7, 5150 - 5250 MHz Band, Channel 48, High Channel

				Value	Limit	Result
				0.02 dB	≤ 13 dB	Pass



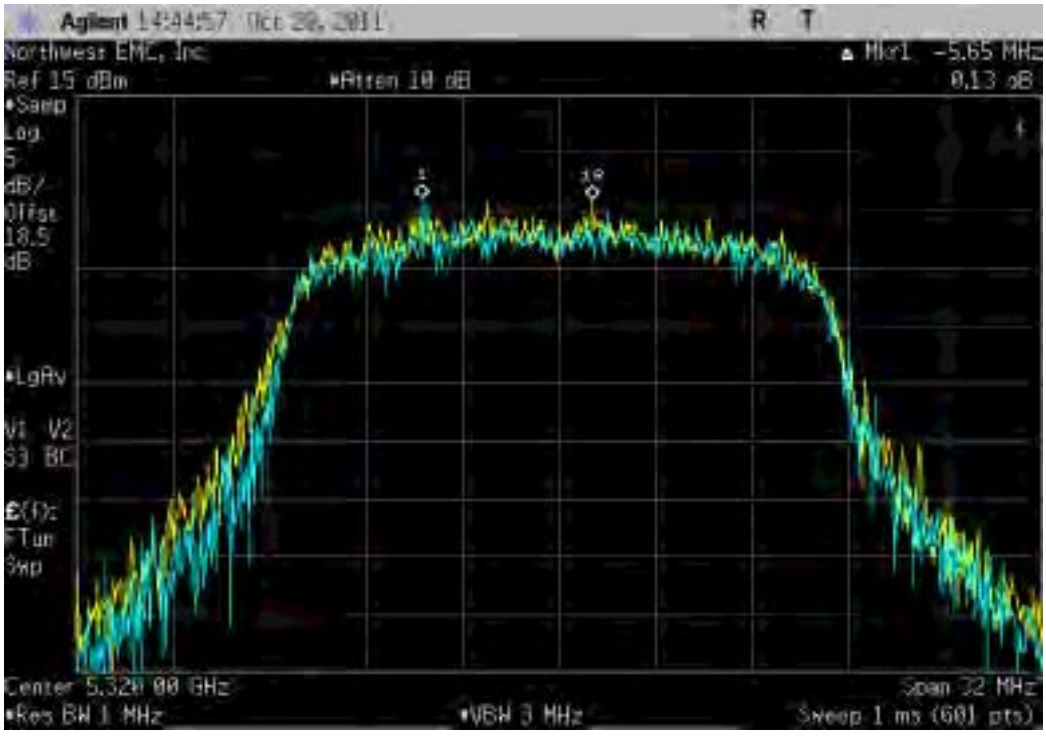
802.11(n) MCS7, 5250 - 5350 MHz Band, Channel 52, Low Channel

				Value	Limit	Result
				0.116 dB	≤ 13 dB	Pass



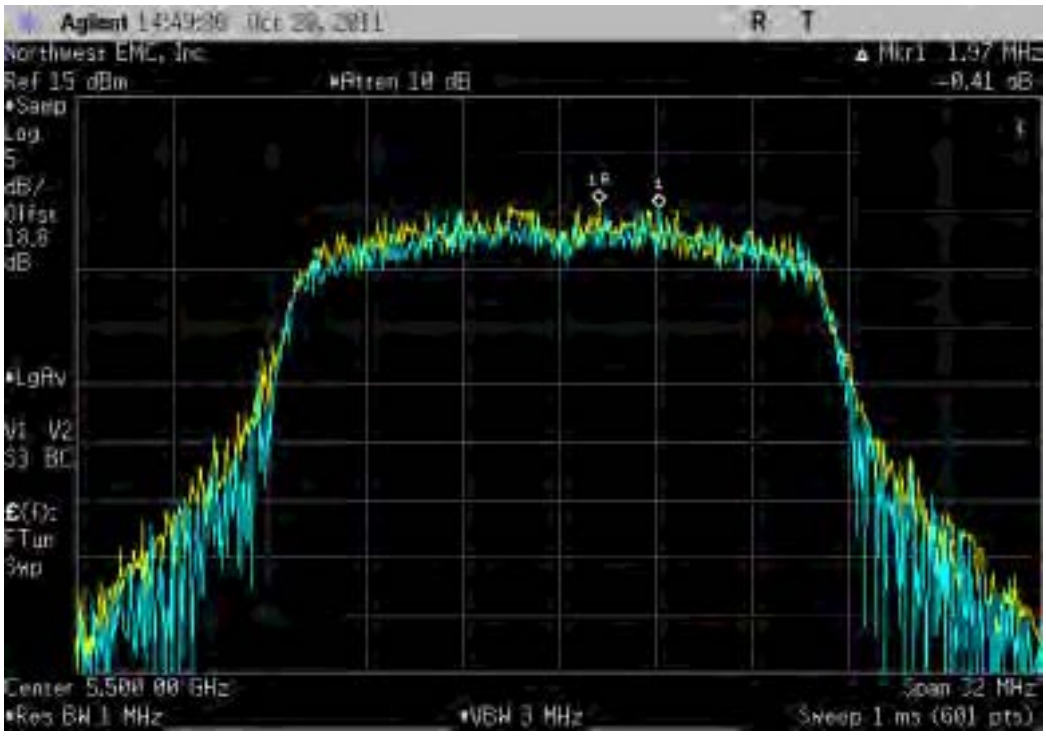
802.11(n) MCS7, 5250 - 5350 MHz Band, Channel 64, High Channel

				Value	Limit	Result
				0.13 dB	≤ 13 dB	Pass



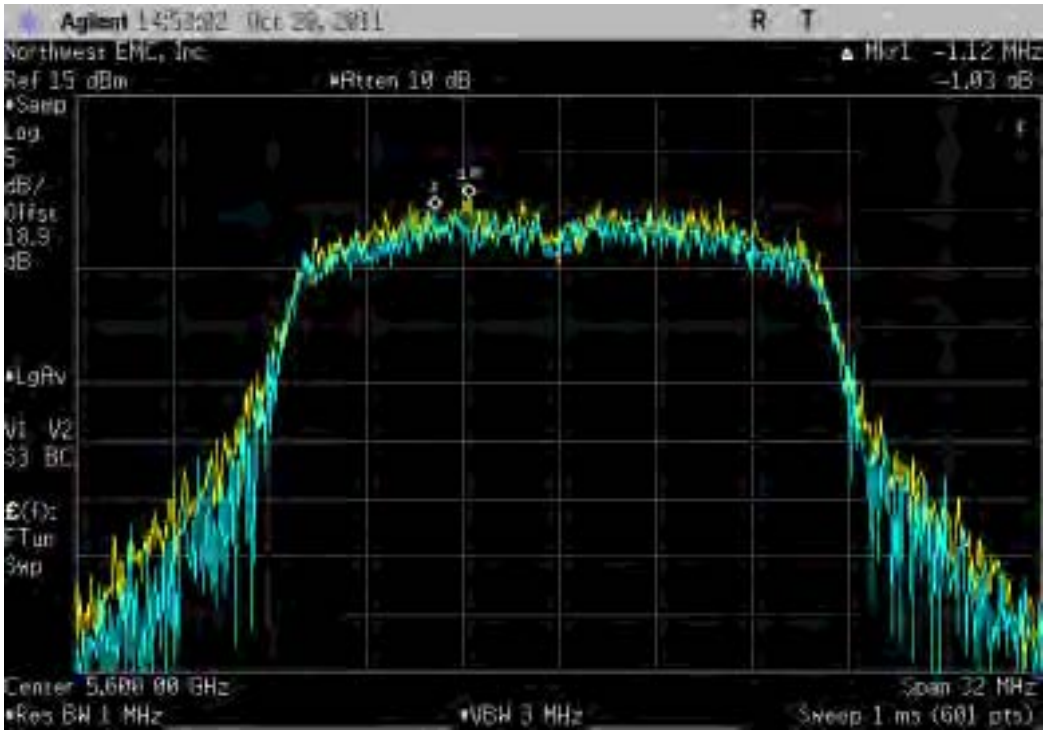
802.11(n) MCS7, 5470 - 5725 MHz Band, Channel 100, Low Channel

				Value	Limit	Result
				0.412 dB	≤ 13 dB	Pass



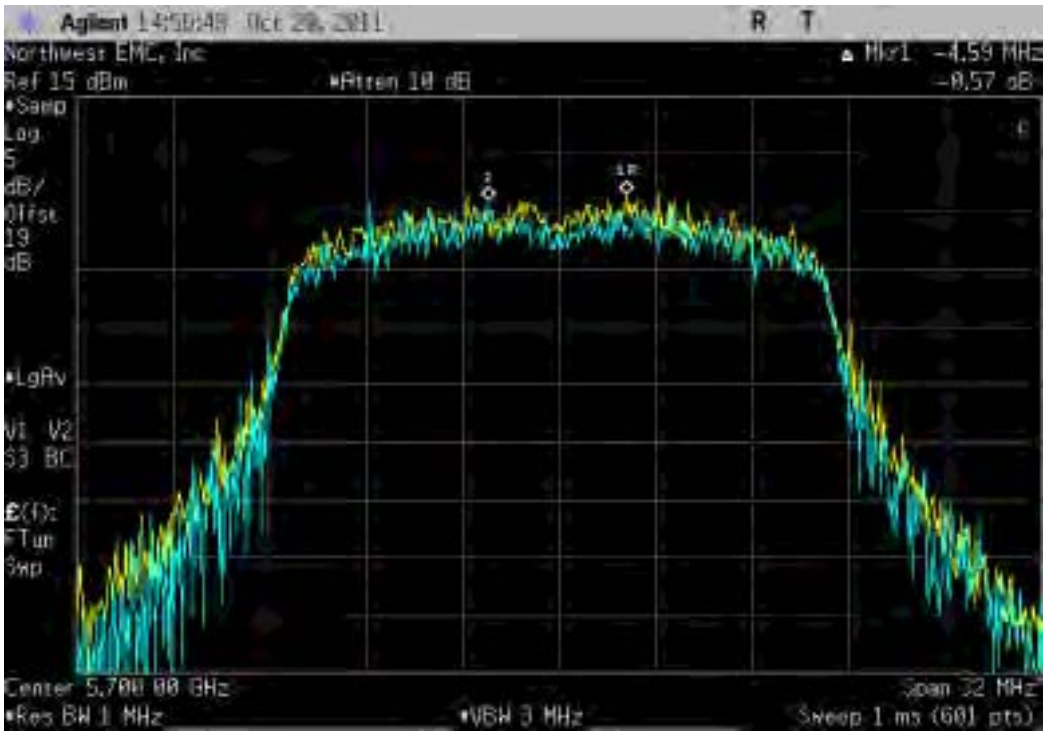
802.11(n) MCS7, 5470 - 5725 MHz Band, Channel 120, Mid Channel

				Value	Limit	Result
				1.026 dB	≤ 13 dB	Pass



802.11(n) MCS7, 5470 - 5725 MHz Band, Channel 140, High Channel

				Value	Limit	Result
				0.572 dB	≤ 13 dB	Pass



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
Signal Generator	Agilent	N5183A	TIA	1/18/2011	12
Chamber, Temp./Humidity Chamber	Cincinnati Sub Zero (CSZ)	ZPH-32-3.5-SCT/AC	TBF	12/29/2009	24
40 GHz DC block	Fairview Microwave	SD3379	AMI	10/12/2011	12
Attenuator - 20db, 'SMA'	SM Electronics	SA26B-20	RFW	6/2/2011	12
Spectrum Analyzer	Agilent	E4440A	AAX	5/23/2011	12

MEASUREMENT UNCERTAINTY

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

TEST DESCRIPTION

Variation of Supply Voltage

The primary supply voltage was varied from +8 VDC to +15 VDC, as specified by the manufacturer. A DC lab supply was used to vary the supply voltage.

Variation of Ambient Temperature

Using a temperature chamber, the transmit frequency was recorded at the extremes of the specified temperature range (-0 to +50 C) and at 10C intervals. This range was specified by the manufacturer.

The measurement was made with a direct connection between the EUT antenna port and the test equipment. The spectrum analyzer is equipped with a precision frequency reference that exceeds the stability requirement of the EUT.

NORTHWEST EMC

Frequency Stability

XMit 2011.08.04
PsaTx 2011.09.28

EUT:	X Series	Work Order:	LGPD0044
Serial Number:	3411000112, 341100050	Date:	10/21/11
Customer:	ZOLL Medical Corp.	Temperature:	22.87 C°C
Attendees:	Curt McNamara, Karl Karcht	Humidity:	26%
Project:	None	Barometric Pres.:	1016.9
Tested by:	Elaine Reeves	Power: 15VDC	Job Site: MN08

TEST SPECIFICATIONS	TEST METHOD
FCC 15.407:2011	ANSI C63.10:2009

COMMENTS

None

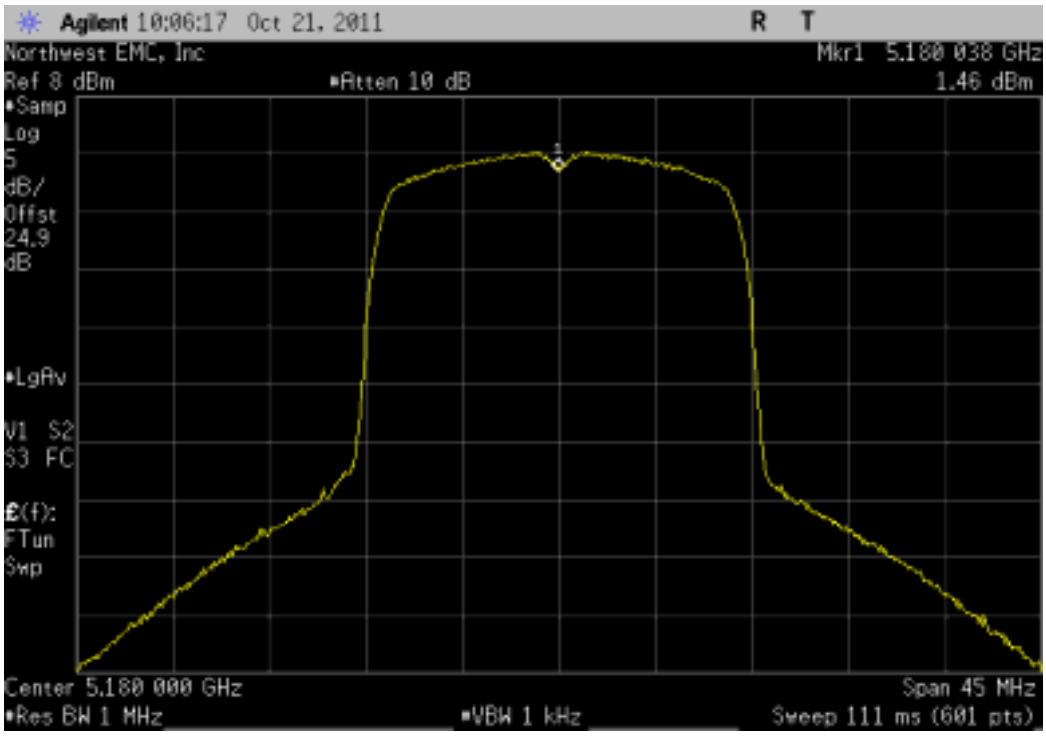
DEVIATIONS FROM TEST STANDARD

None

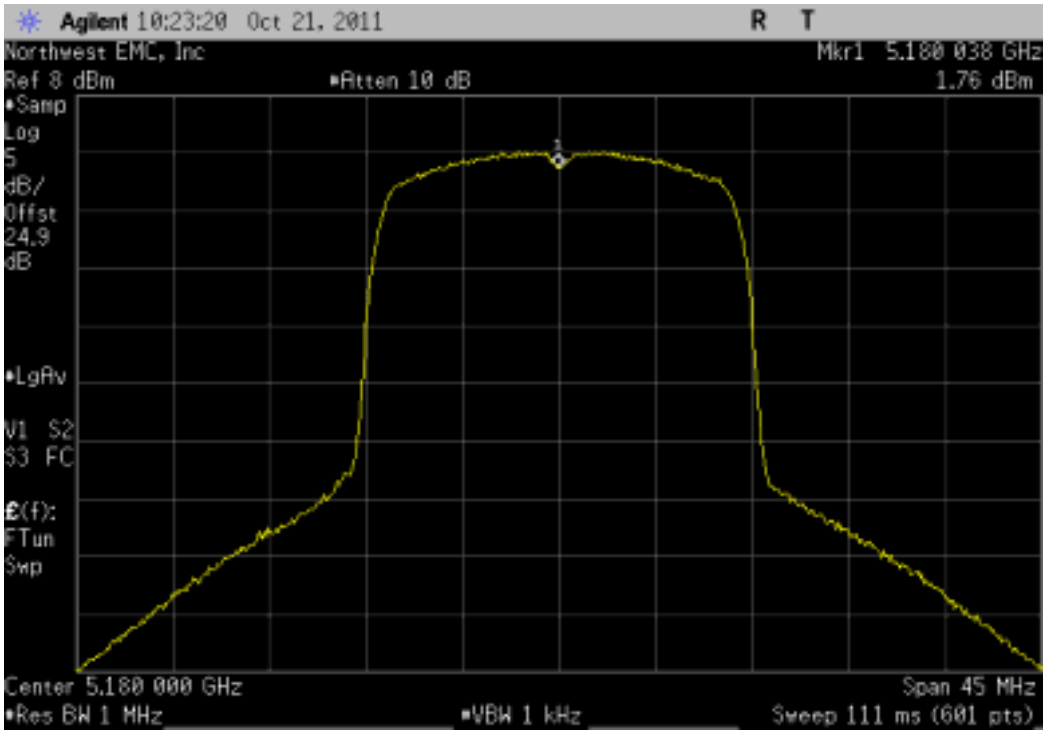
Configuration #	1	Signature	Trevor Bulo

	Measured Value	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
5150 MHz - 5250 MHz - Low Channel, 5180 MHz					
Temperature: +50°	5.180038 GHz	5180	7.34	100	Pass
Temperature: +40°	5.180038 GHz	5180	7.34	100	Pass
Temperature: +30°	5.180038 GHz	5180	7.34	100	Pass
Temperature: +20°	5.180038 GHz	5180	7.34	100	Pass
Temperature: +10°	5.180038 GHz	5180	7.34	100	Pass
Temperature: 0°	5.180038 GHz	5180	7.34	100	Pass
Voltage: 15VDC	5.18002 GHz	5180	3.86	100	Pass
Voltage: 14.5VDC	5.180038 GHz	5180	7.34	100	Pass
Voltage: 8VDC	5.180038 GHz	5180	7.34	100	Pass
5250 MHz - 5350 MHz - High Channel, 5320 MHz					
Temperature: +50°	5.320038 GHz	5320	7.14	100	Pass
Temperature: +40°	5.320038 GHz	5320	7.14	100	Pass
Temperature: +30°	5.320038 GHz	5320	7.14	100	Pass
Temperature: +20°	5.320038 GHz	5320	7.14	100	Pass
Temperature: +10°	5.320038 GHz	5320	7.14	100	Pass
Temperature: 0°	5.320038 GHz	5320	7.14	100	Pass
Voltage: 15VDC	5.320038 GHz	5320	7.14	100	Pass
Voltage: 14.5VDC	5.320038 GHz	5320	7.14	100	Pass
Voltage: 8VDC	5.320038 GHz	5320	7.14	100	Pass
5470 MHz - 5725 MHz - Low Channel, 5500 MHz					
Temperature: +50°	5.500038 GHz	5500	6.91	100	Pass
Temperature: +40°	5.500038 GHz	5500	6.91	100	Pass
Temperature: +30°	5.500038 GHz	5500	6.91	100	Pass
Temperature: +20°	5.500038 GHz	5500	6.91	100	Pass
Temperature: +10°	5.500038 GHz	5500	6.91	100	Pass
Temperature: 0°	5.500038 GHz	5500	6.91	100	Pass
Voltage: 15VDC	5.500038 GHz	5500	6.91	100	Pass
Voltage: 14.5VDC	5.500038 GHz	5500	6.91	100	Pass
Voltage: 8VDC	5.500038 GHz	5500	6.91	100	Pass
5470 MHz - 5725 MHz - High Channel, 5700 MHz					
Temperature: +50°	5.700038 GHz	5700	6.67	100	Pass
Temperature: +40°	5.700038 GHz	5700	6.67	100	Pass
Temperature: +30°	5.700038 GHz	5700	6.67	100	Pass
Temperature: +20°	5.700038 GHz	5700	6.67	100	Pass
Temperature: +10°	5.700038 GHz	5700	6.67	100	Pass
Temperature: 0°	5.700038 GHz	5700	6.67	100	Pass
Voltage: 15VDC	5.700038 GHz	5700	6.67	100	Pass
Voltage: 14.5VDC	5.700038 GHz	5700	6.67	100	Pass
Voltage: 8VDC	5.700038 GHz	5700	6.67	100	Pass

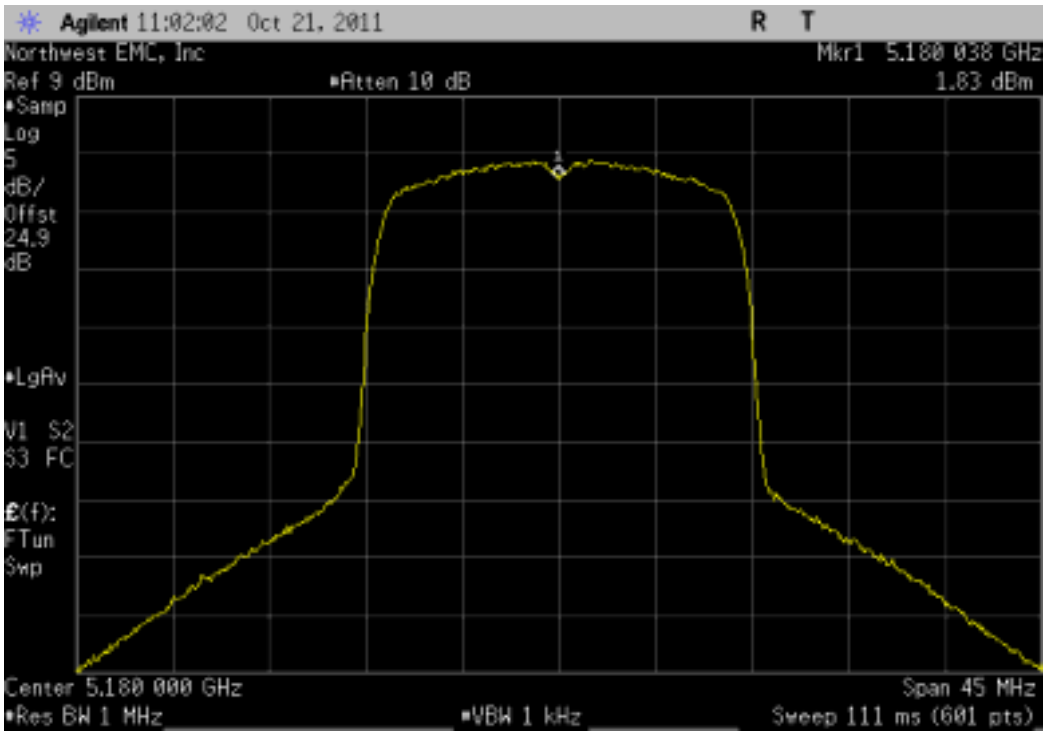
5150 MHz - 5250 MHz - Low Channel, 5180 MHz, Temperature: +50°						
		Measured Value	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		5.180038 GHz	5180	7.34	100	Pass



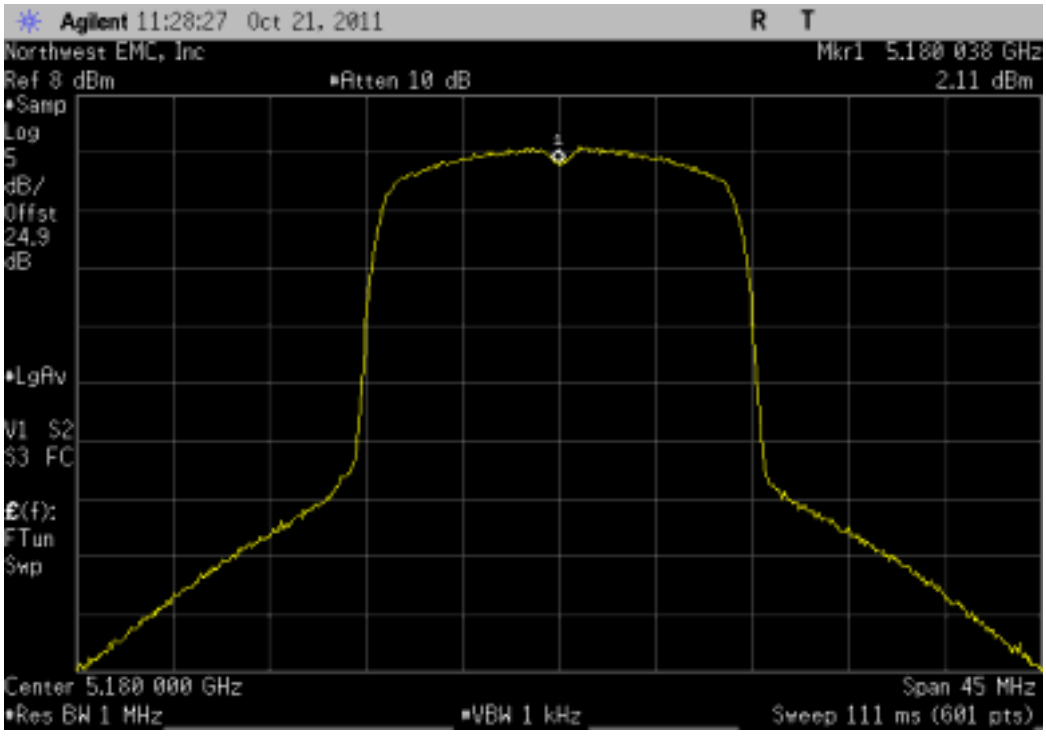
5150 MHz - 5250 MHz - Low Channel, 5180 MHz, Temperature: +40°						
		Measured Value	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		5.180038 GHz	5180	7.34	100	Pass



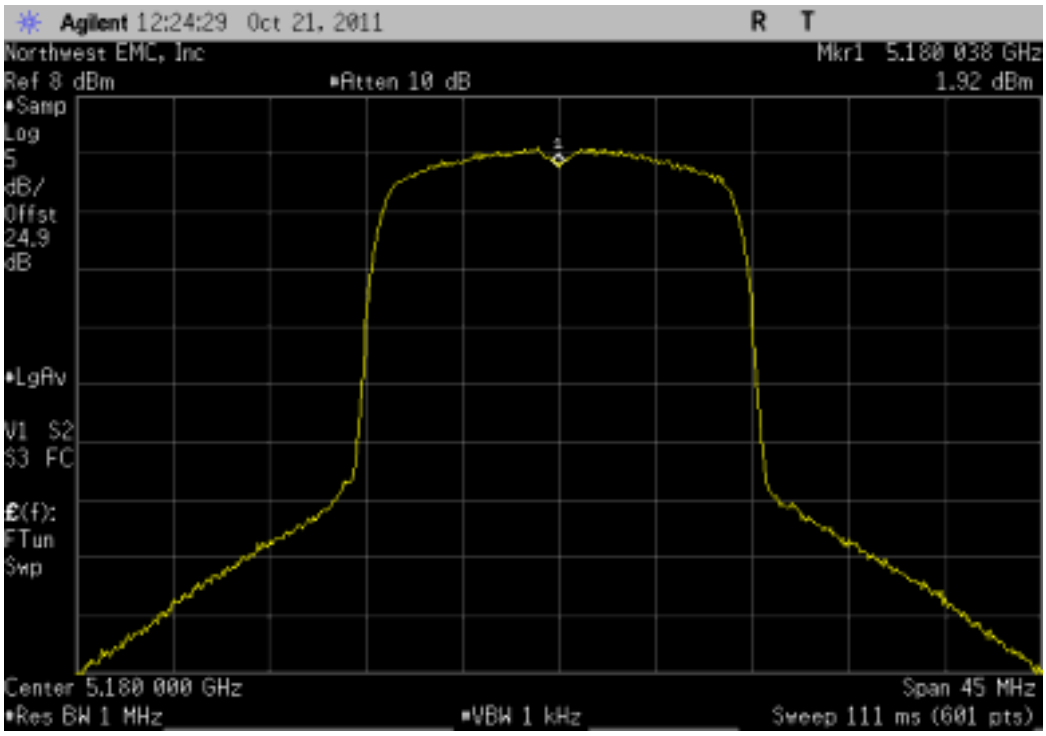
5150 MHz - 5250 MHz - Low Channel, 5180 MHz, Temperature: +30°						
		Measured Value	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		5.180038 GHz	5180	7.34	100	Pass



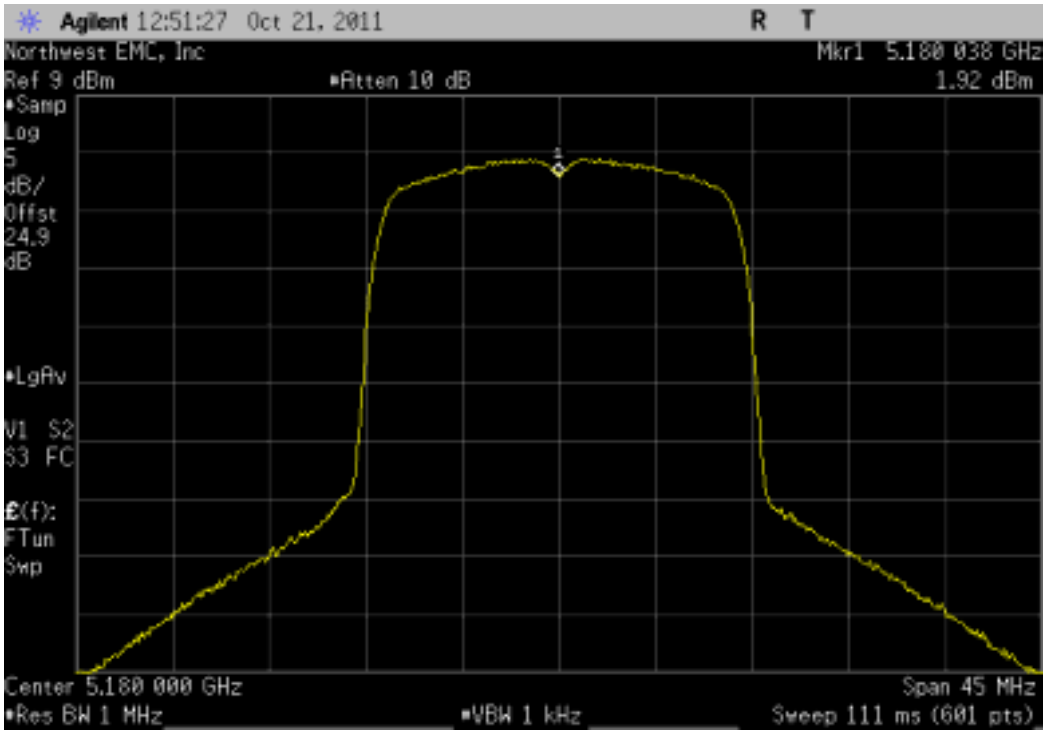
5150 MHz - 5250 MHz - Low Channel, 5180 MHz, Temperature: +20°						
		Measured Value	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		5.180038 GHz	5180	7.34	100	Pass



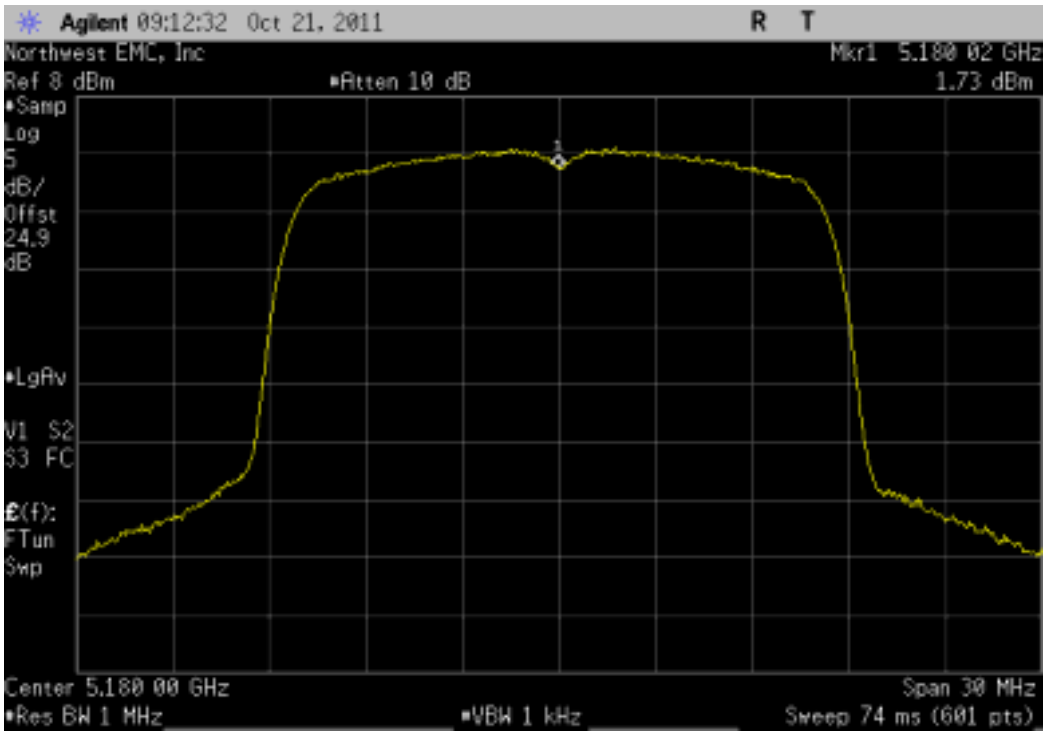
5150 MHz - 5250 MHz - Low Channel, 5180 MHz, Temperature: +10°						
		Measured Value	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		5.180038 GHz	5180	7.34	100	Pass



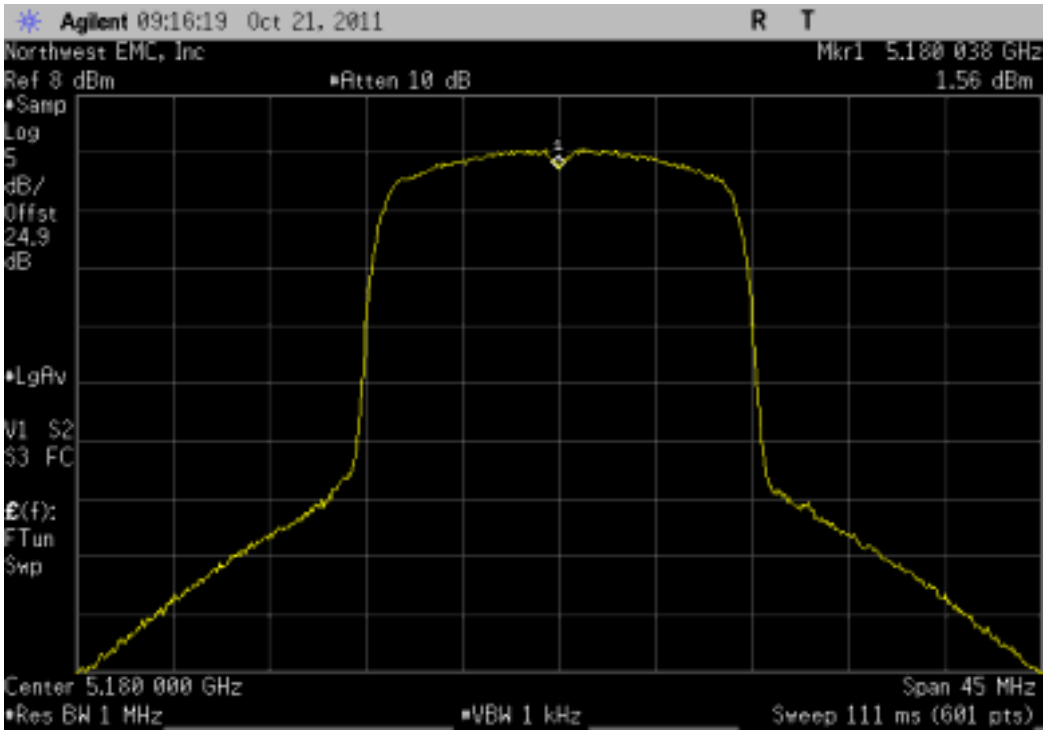
5150 MHz - 5250 MHz - Low Channel, 5180 MHz, Temperature: 0°						
		Measured Value	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		5.180038 GHz	5180	7.34	100	Pass



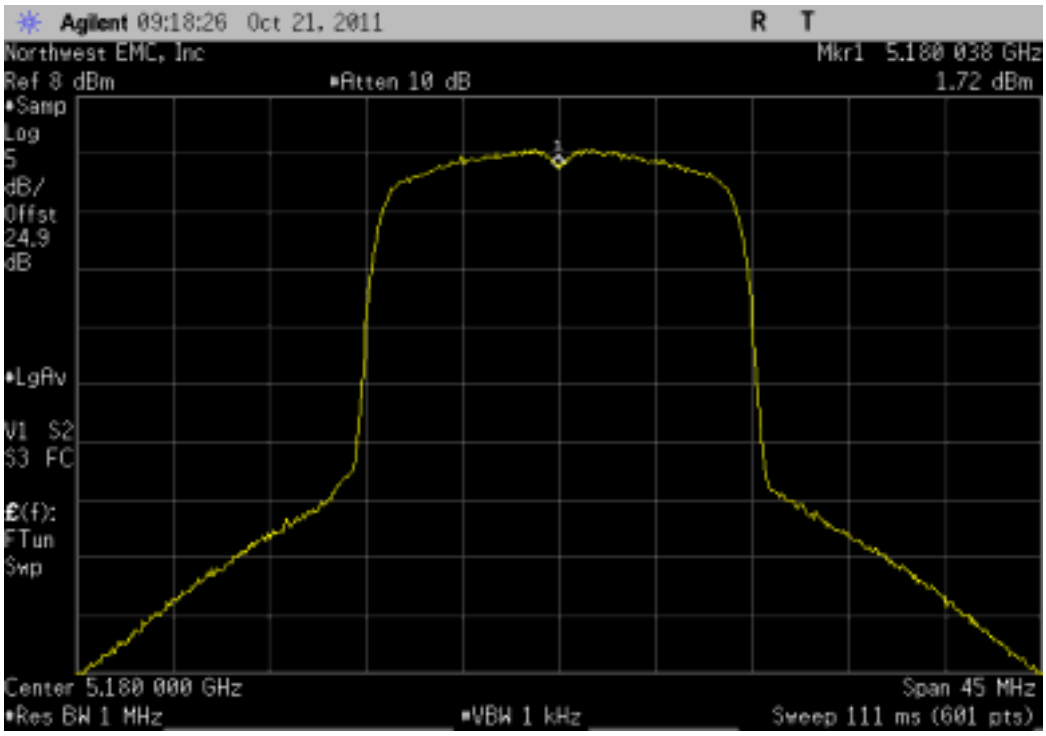
5150 MHz - 5250 MHz - Low Channel, 5180 MHz, Voltage: 15VDC						
		Measured Value	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		5.18002 GHz	5180	3.86	100	Pass



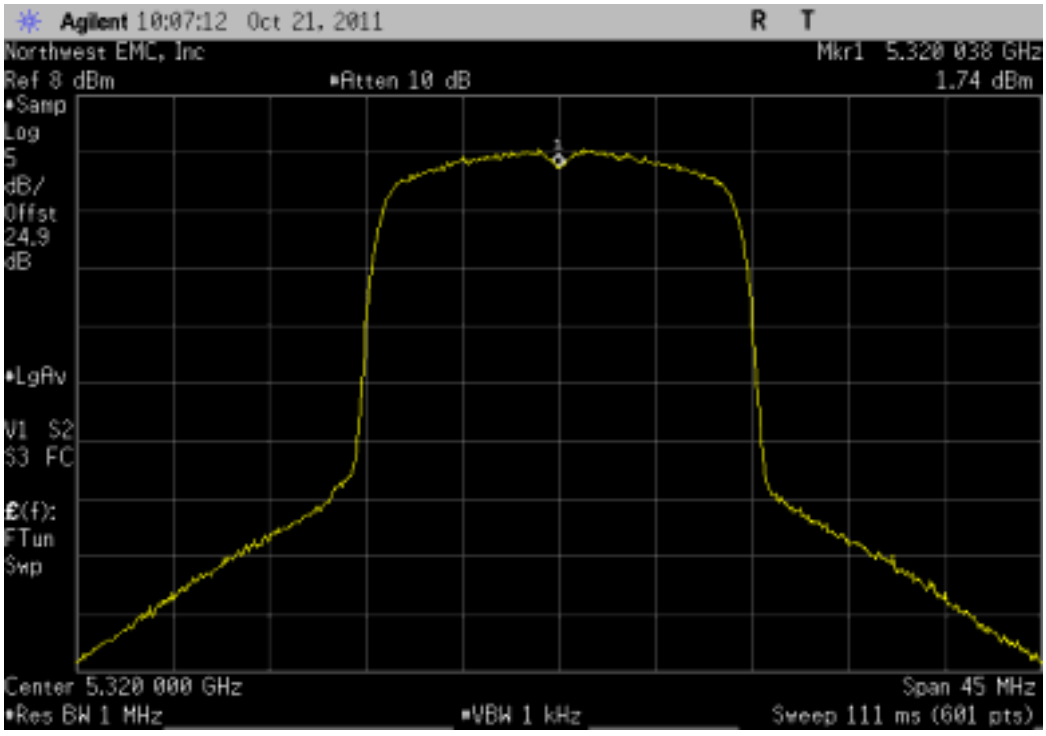
5150 MHz - 5250 MHz - Low Channel, 5180 MHz, Voltage: 14.5VDC						
		Measured Value	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		5.180038 GHz	5180	7.34	100	Pass



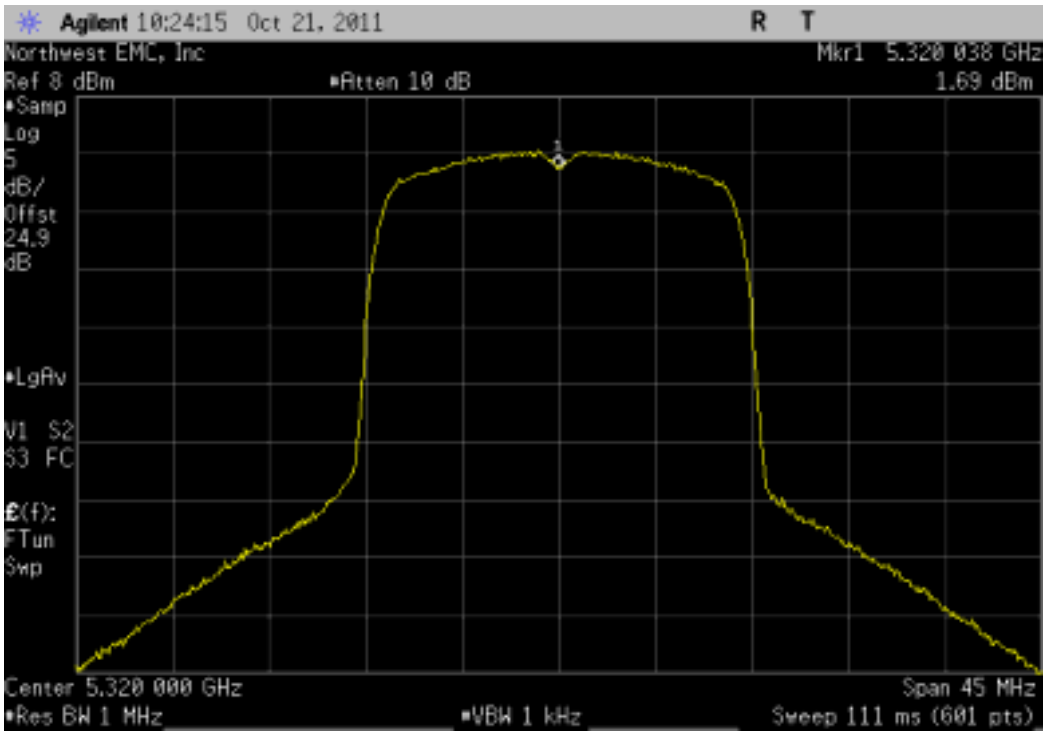
5150 MHz - 5250 MHz - Low Channel, 5180 MHz, Voltage: 8VDC						
		Measured Value	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		5.180038 GHz	5180	7.34	100	Pass



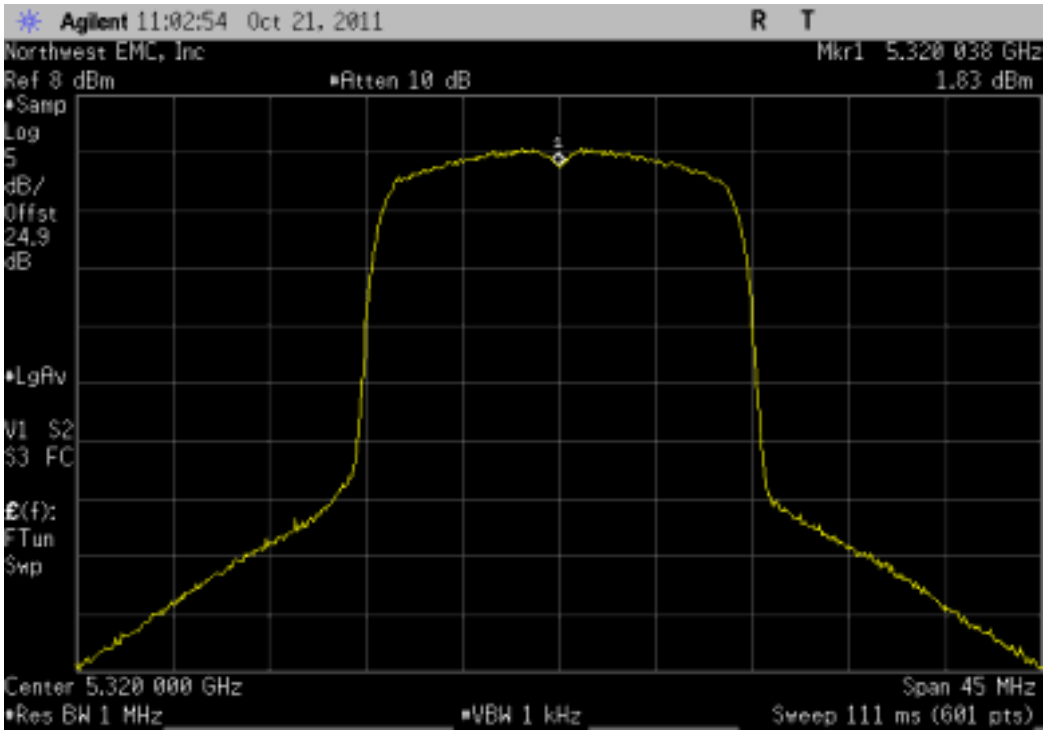
5250 MHz - 5350 MHz - High Channel, 5320 MHz, Temperature: +50°						
		Measured Value	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		5.320038 GHz	5320	7.14	100	Pass



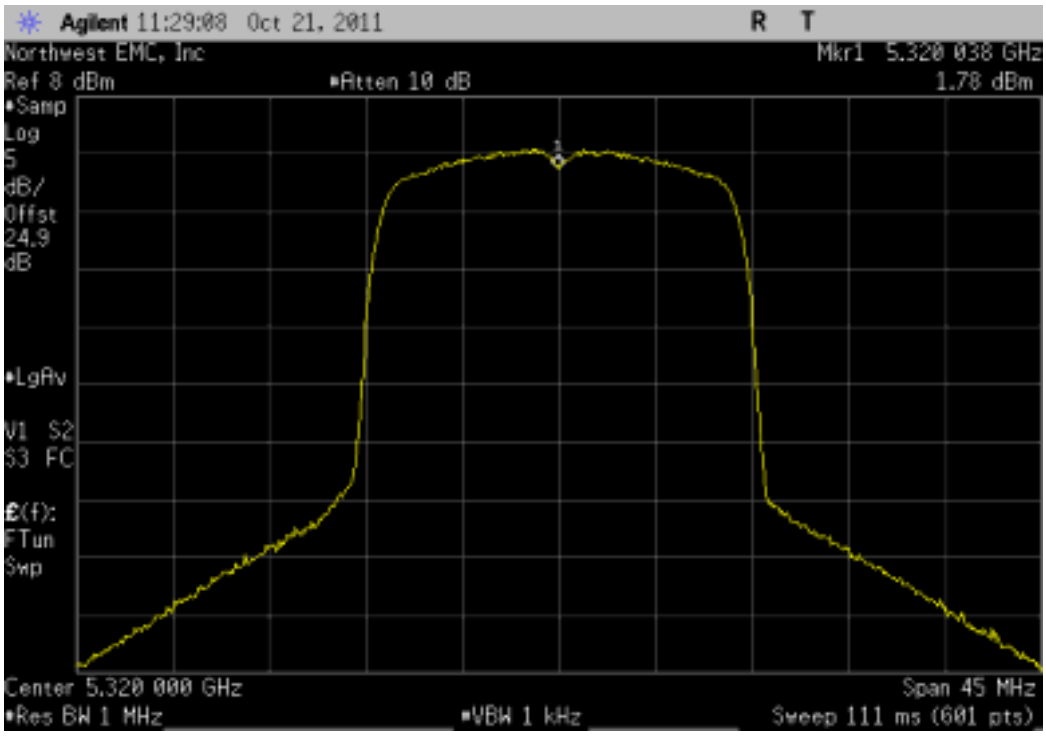
5250 MHz - 5350 MHz - High Channel, 5320 MHz, Temperature: +40°						
		Measured Value	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		5.320038 GHz	5320	7.14	100	Pass



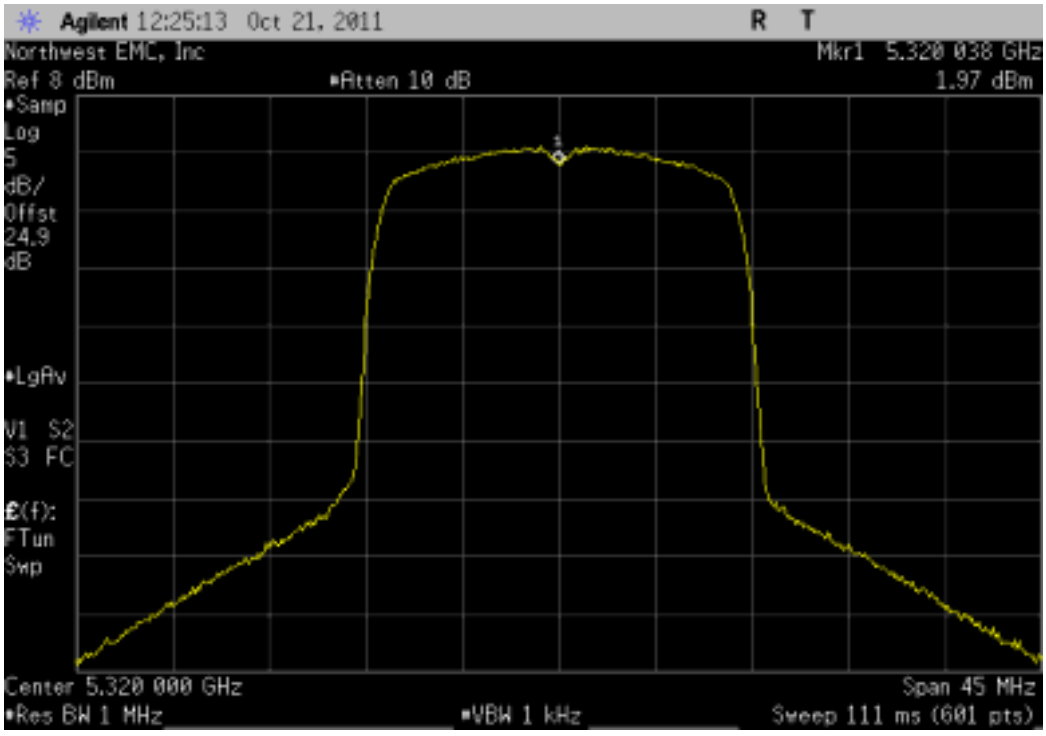
5250 MHz - 5350 MHz - High Channel, 5320 MHz, Temperature: +30°						
		Measured Value	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		5.320038 GHz	5320	7.14	100	Pass



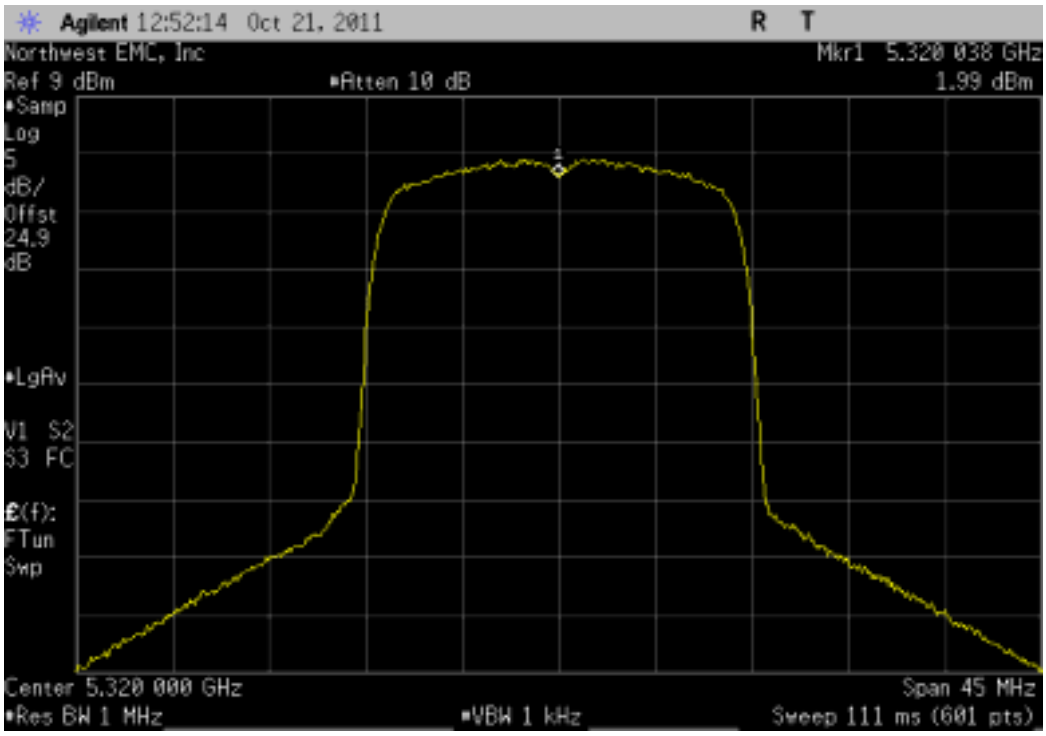
5250 MHz - 5350 MHz - High Channel, 5320 MHz, Temperature: +20°						
		Measured Value	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		5.320038 GHz	5320	7.14	100	Pass



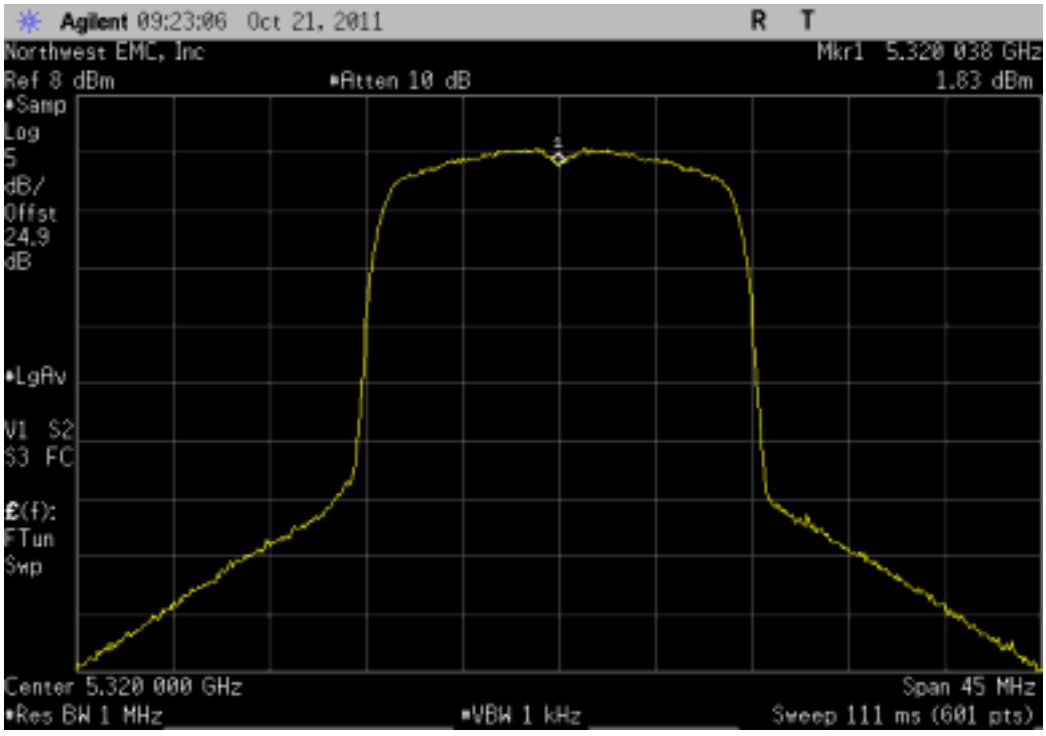
5250 MHz - 5350 MHz - High Channel, 5320 MHz, Temperature: +10°						
		Measured Value	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		5.320038 GHz	5320	7.14	100	Pass



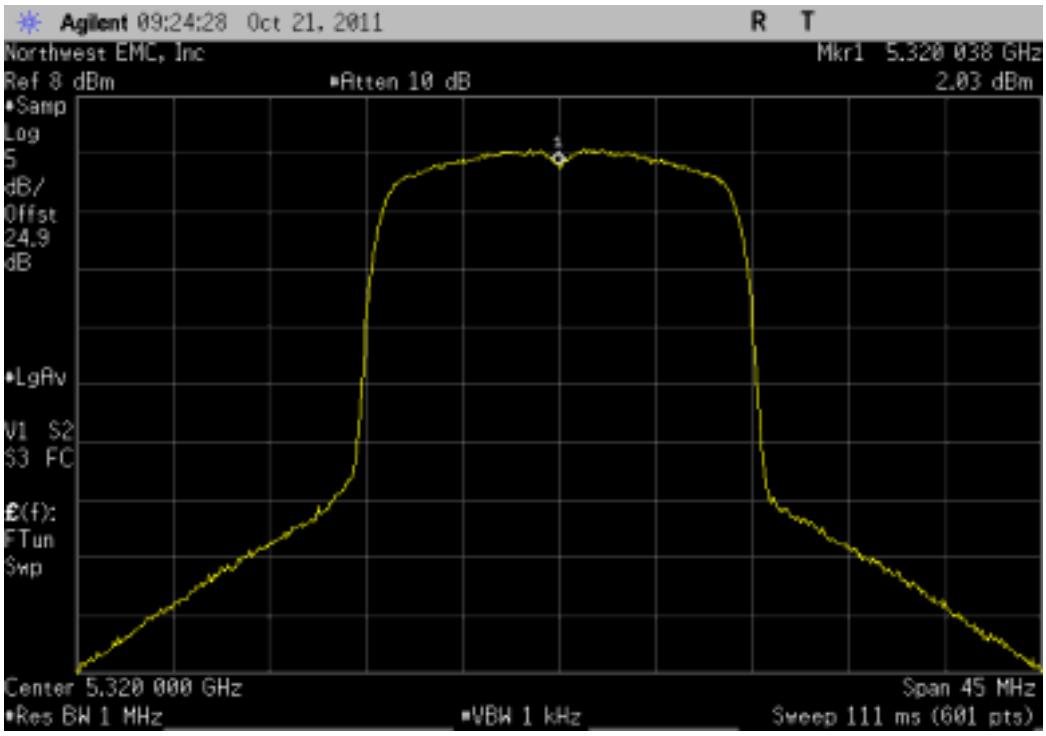
5250 MHz - 5350 MHz - High Channel, 5320 MHz, Temperature: 0°						
		Measured Value	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		5.320038 GHz	5320	7.14	100	Pass



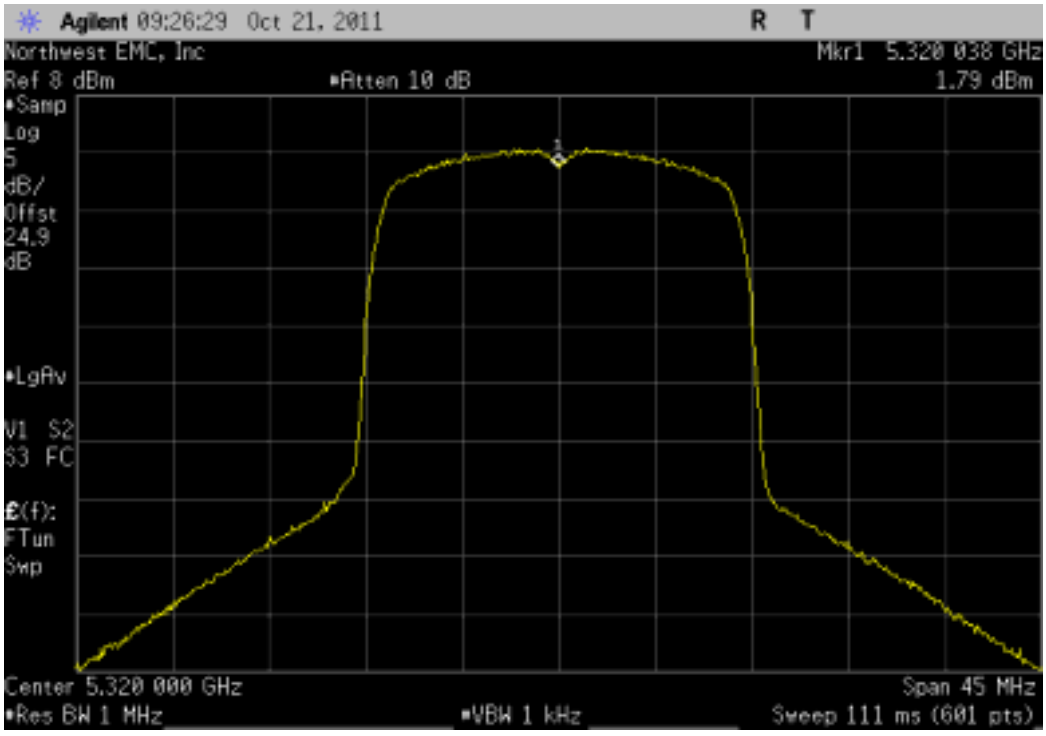
5250 MHz - 5350 MHz - High Channel, 5320 MHz, Voltage: 15VDC						
		Measured Value	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		5.320038 GHz	5320	7.14	100	Pass



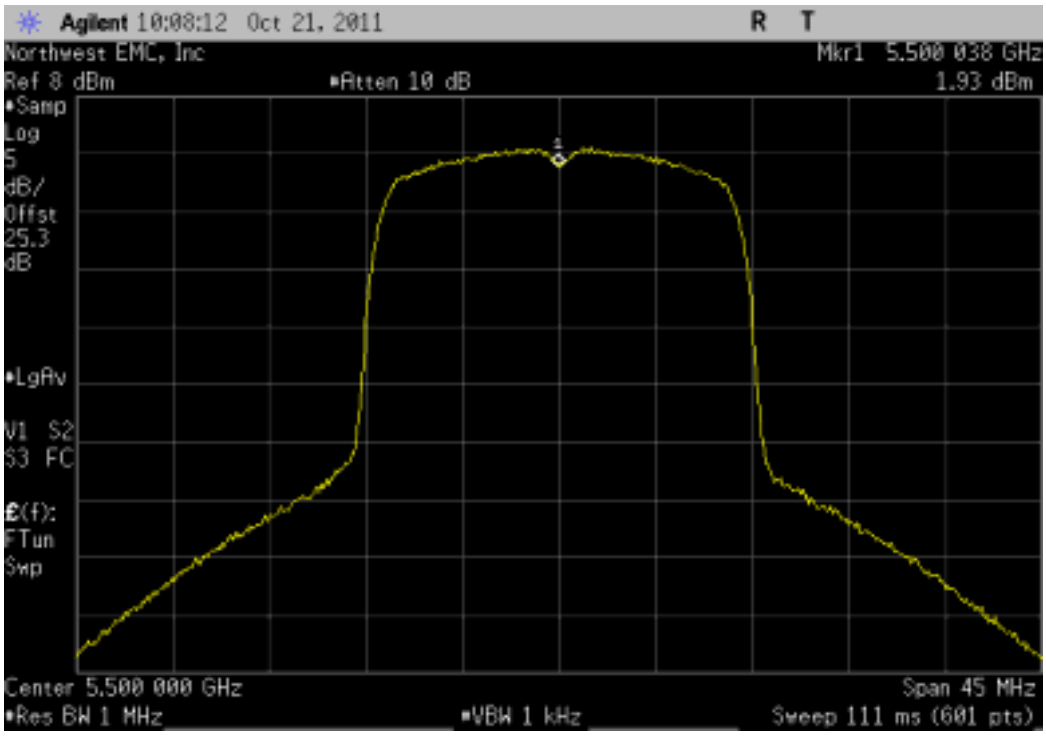
5250 MHz - 5350 MHz - High Channel, 5320 MHz, Voltage: 14.5VDC						
		Measured Value	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		5.320038 GHz	5320	7.14	100	Pass



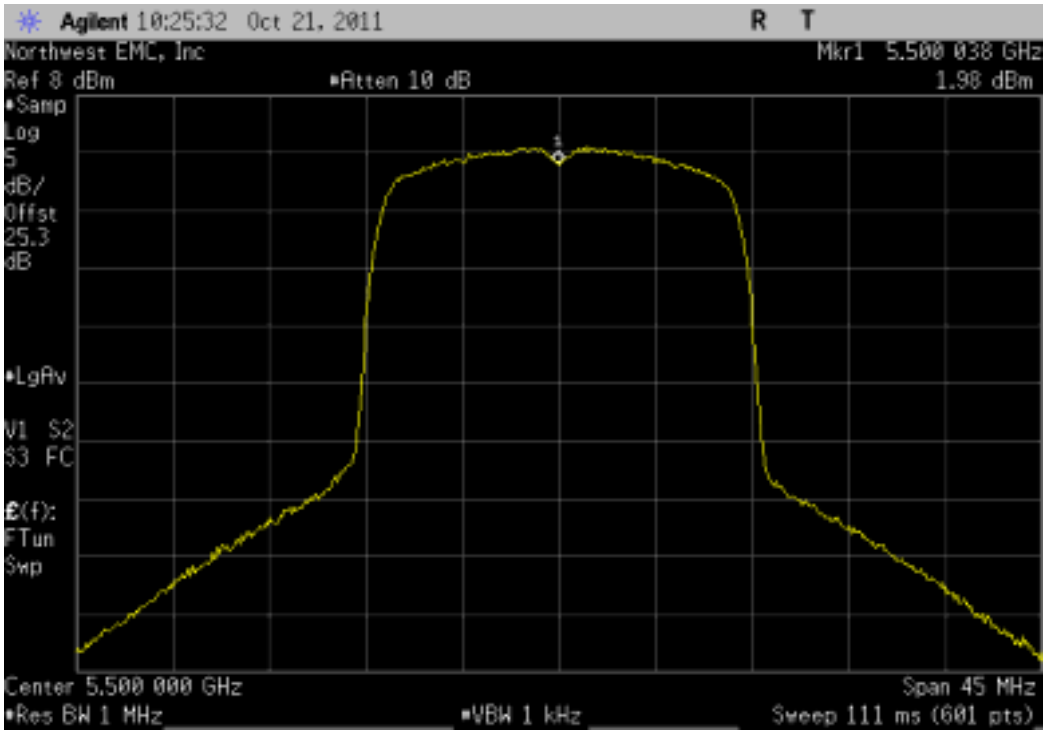
5250 MHz - 5350 MHz - High Channel, 5320 MHz, Voltage: 8VDC						
		Measured Value	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		5.320038 GHz	5320	7.14	100	Pass



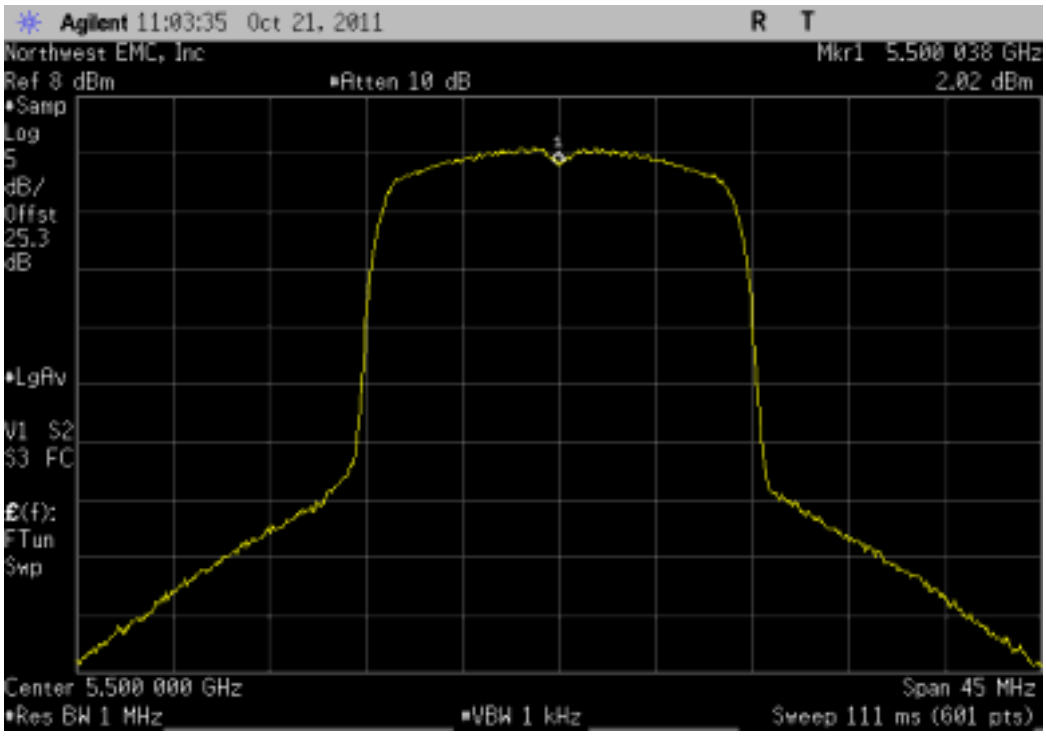
5470 MHz - 5725 MHz - Low Channel, 5500 MHz, Temperature: +50°						
		Measured Value	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		5.500038 GHz	5500	6.91	100	Pass



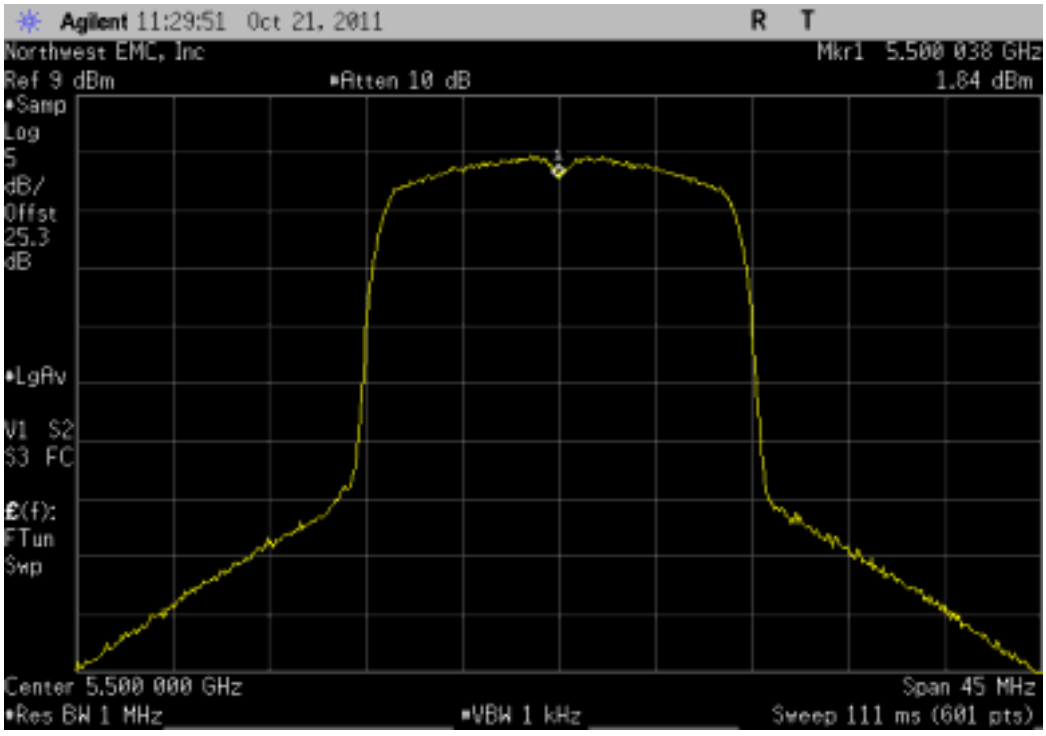
5470 MHz - 5725 MHz - Low Channel, 5500 MHz, Temperature: +40°						
		Measured Value	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		5.500038 GHz	5500	6.91	100	Pass



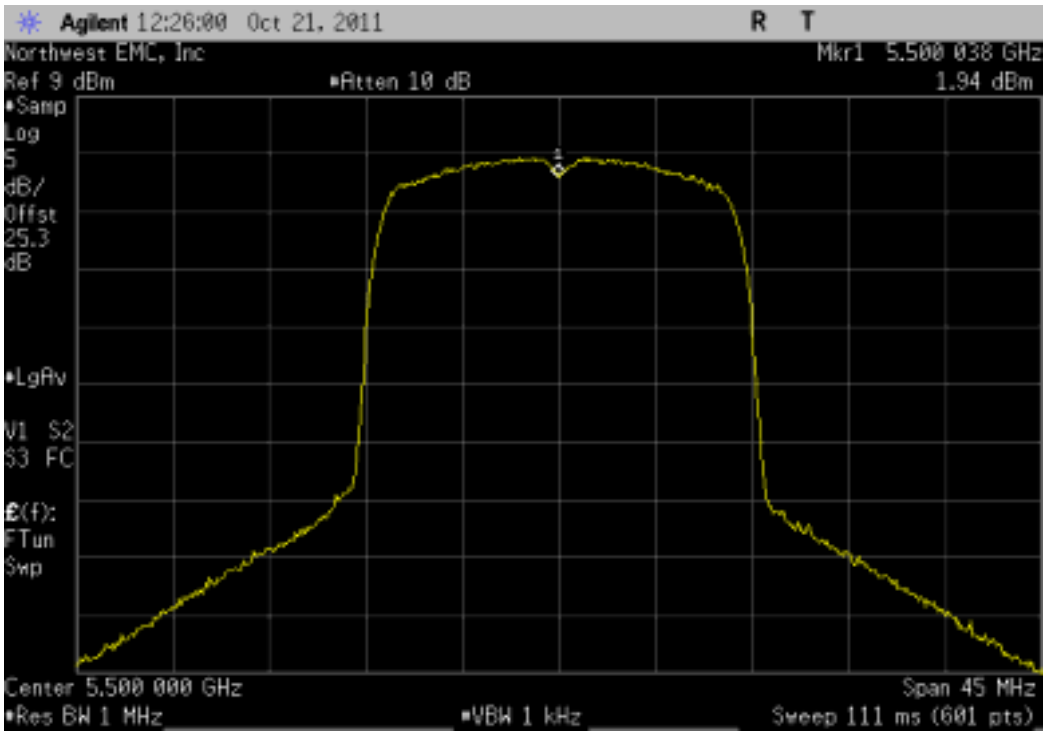
5470 MHz - 5725 MHz - Low Channel, 5500 MHz, Temperature: +30°						
		Measured Value	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		5.500038 GHz	5500	6.91	100	Pass



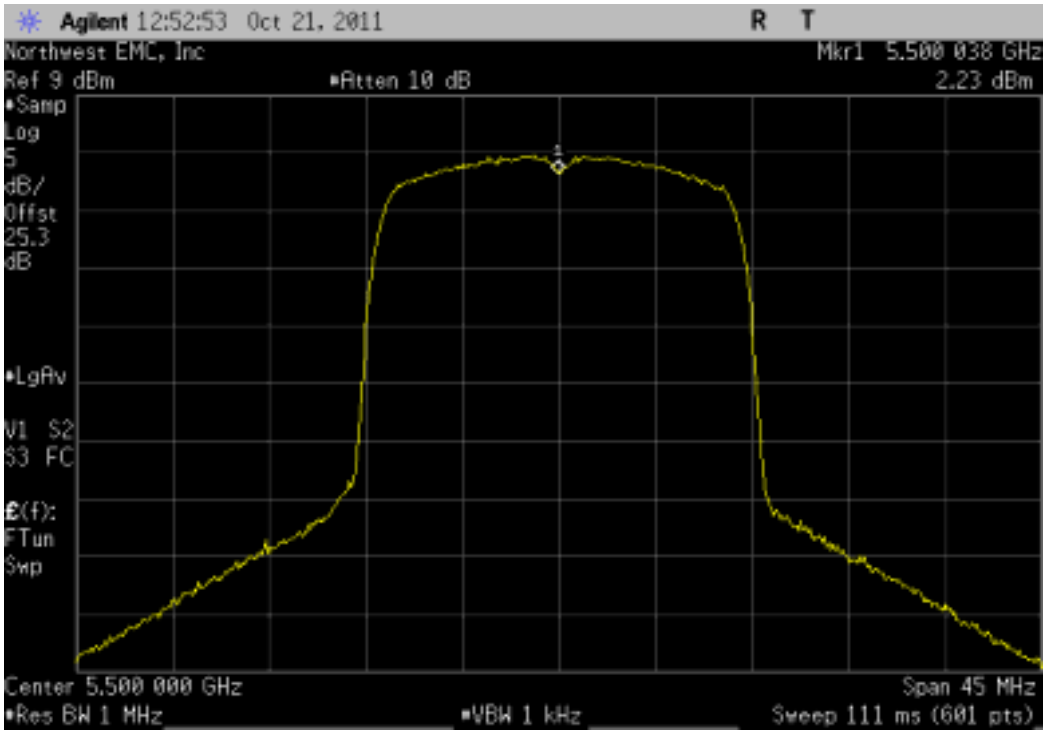
5470 MHz - 5725 MHz - Low Channel, 5500 MHz, Temperature: +20°						
		Measured Value	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		5.500038 GHz	5500	6.91	100	Pass



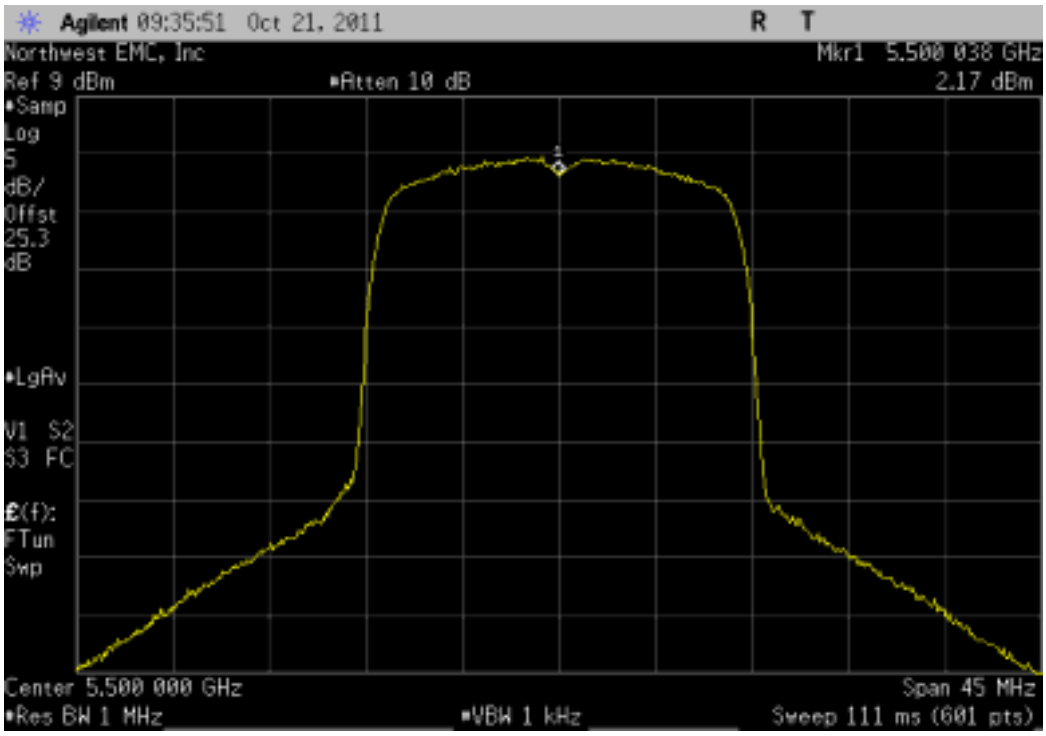
5470 MHz - 5725 MHz - Low Channel, 5500 MHz, Temperature: +10°						
		Measured Value	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		5.500038 GHz	5500	6.91	100	Pass



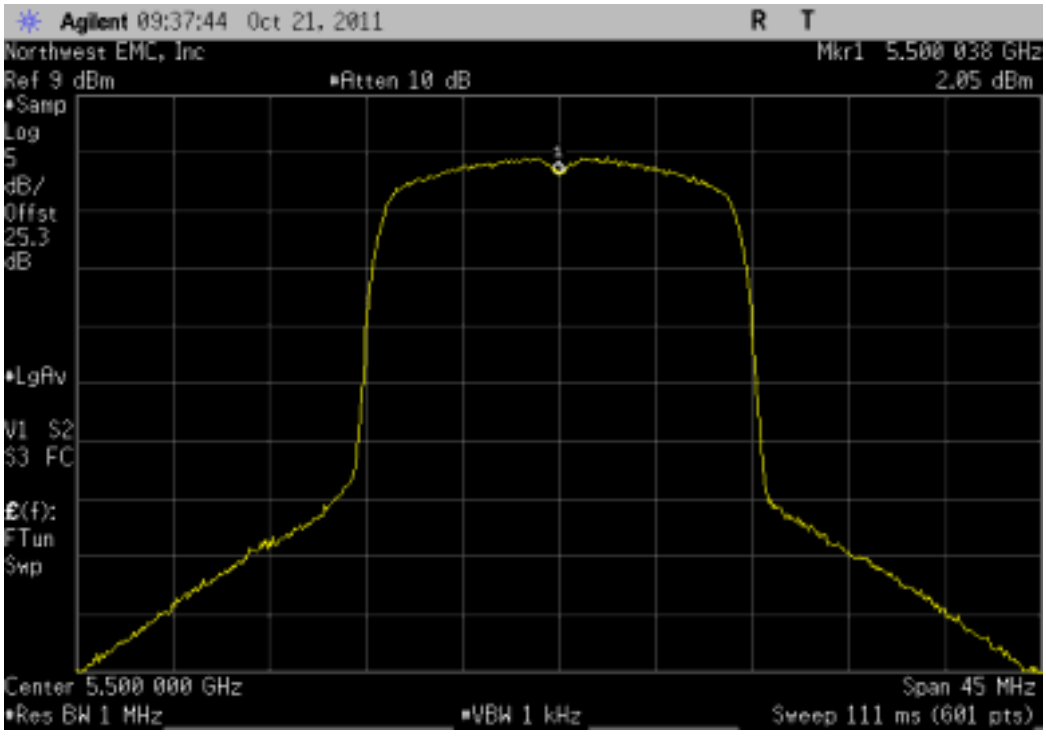
5470 MHz - 5725 MHz - Low Channel, 5500 MHz, Temperature: 0°						
		Measured Value	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		5.500038 GHz	5500	6.91	100	Pass



5470 MHz - 5725 MHz - Low Channel, 5500 MHz, Voltage: 15VDC						
		Measured Value	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		5.500038 GHz	5500	6.91	100	Pass

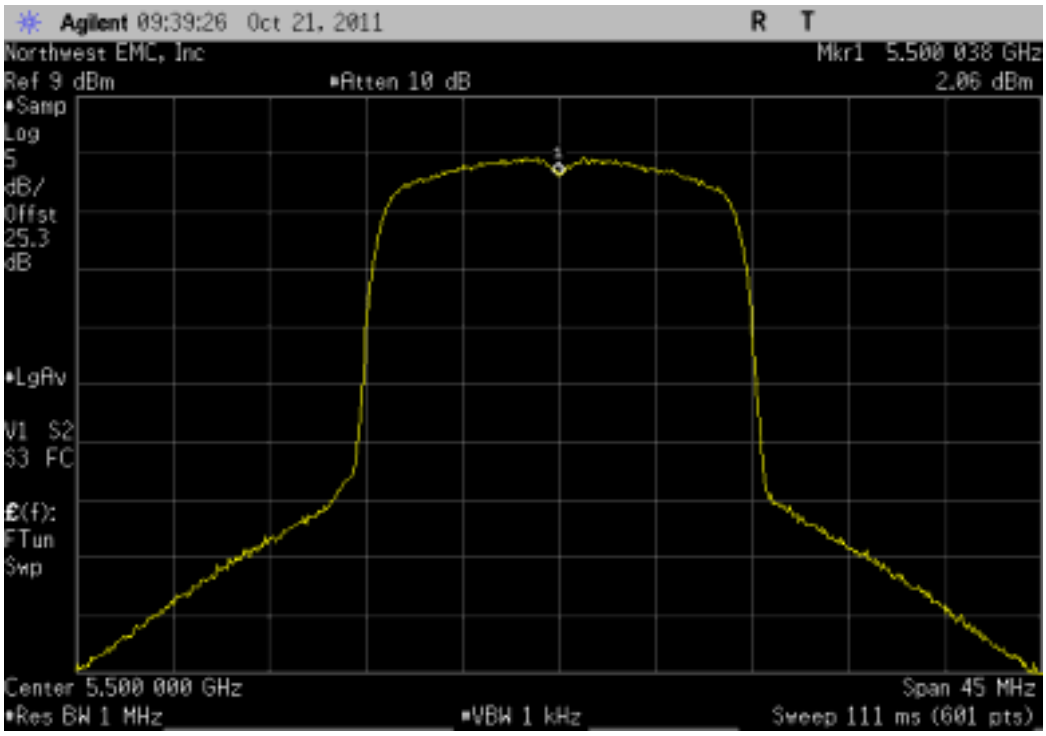


5470 MHz - 5725 MHz - Low Channel, 5500 MHz, Voltage: 14.5VDC						
		Measured Value	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		5.500038 GHz	5500	6.91	100	Pass



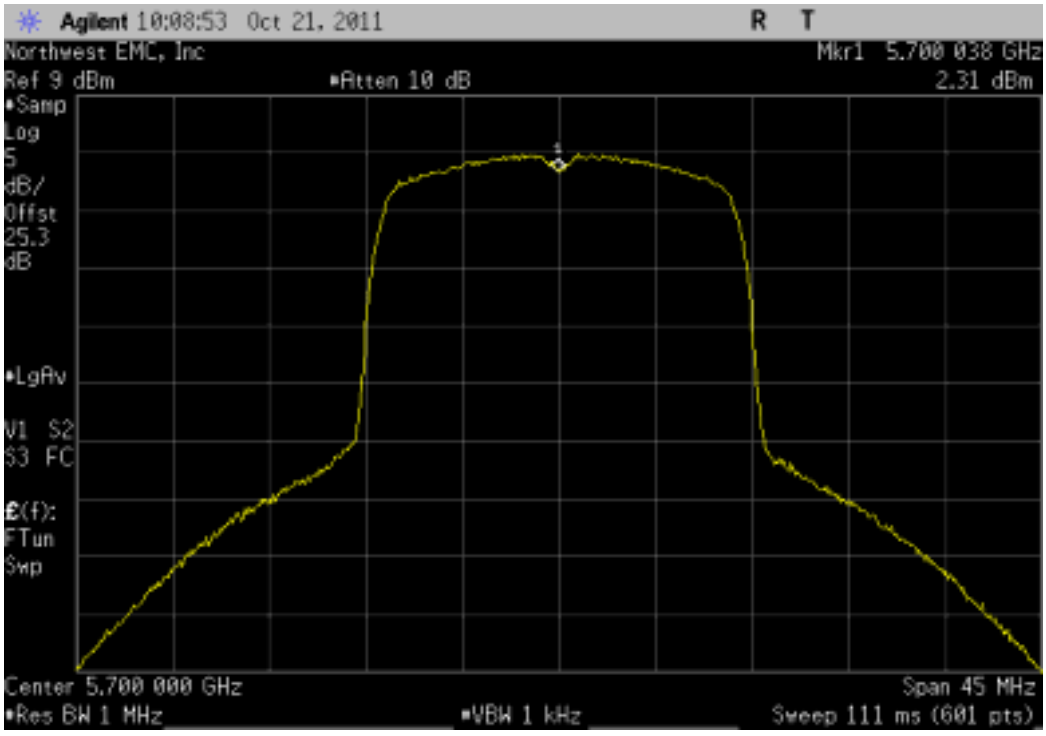
5470 MHz - 5725 MHz - Low Channel, 5500 MHz, Voltage: 8VDC

		Measured Value	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		5.500038 GHz	5500	6.91	100	Pass



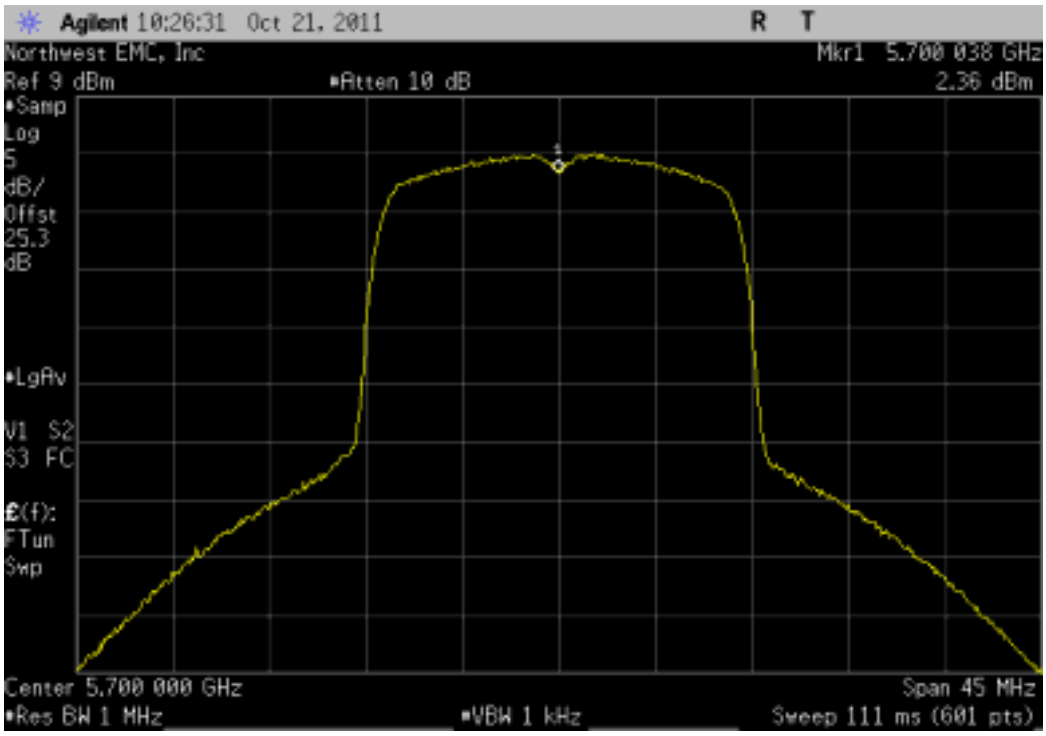
5470 MHz - 5725 MHz - High Channel, 5700 MHz, Temperature: +50°

		Measured Value	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		5.700038 GHz	5700	6.67	100	Pass



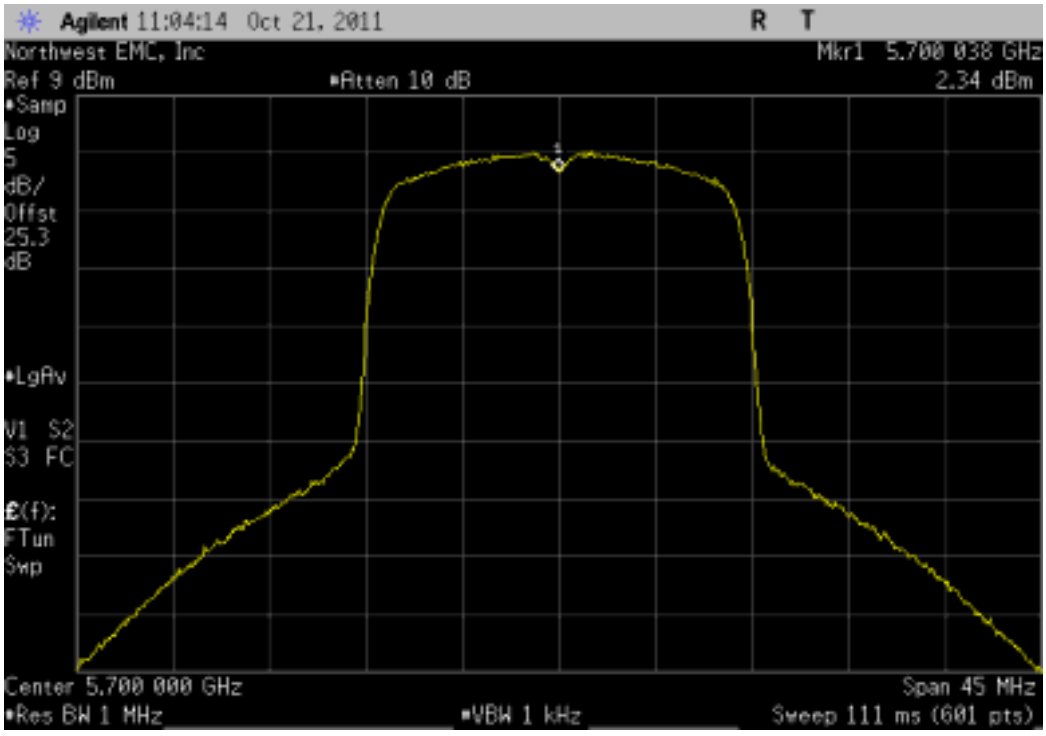
5470 MHz - 5725 MHz - High Channel, 5700 MHz, Temperature: +40°

		Measured Value	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		5.700038 GHz	5700	6.67	100	Pass

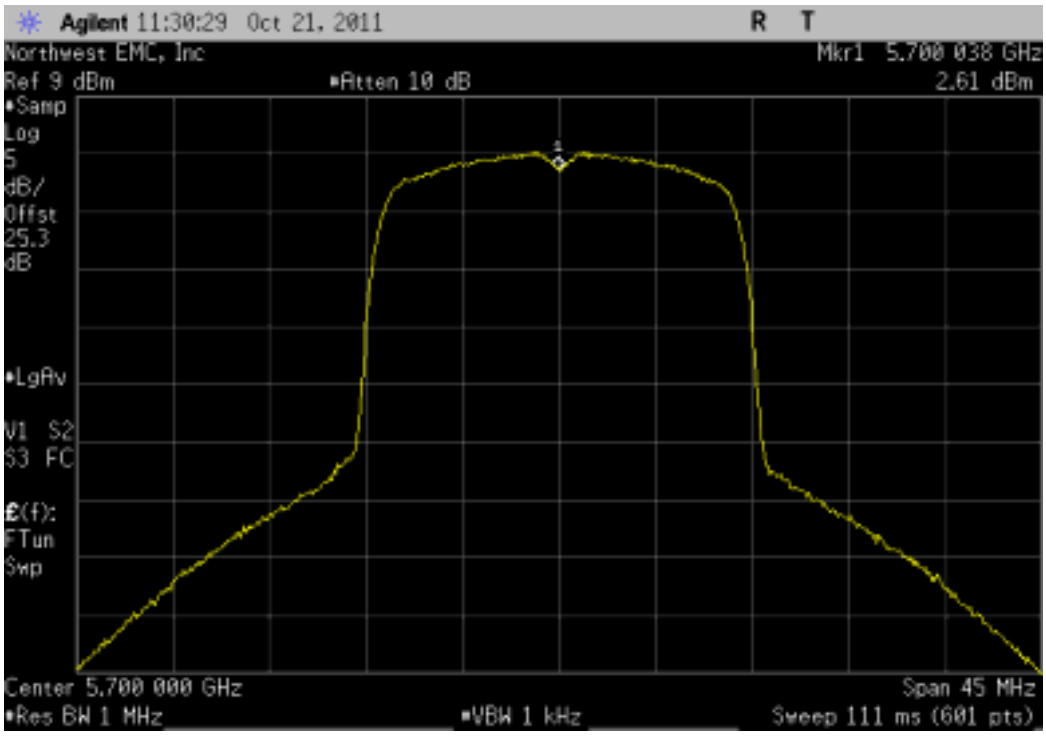


5470 MHz - 5725 MHz - High Channel, 5700 MHz, Temperature: +30°

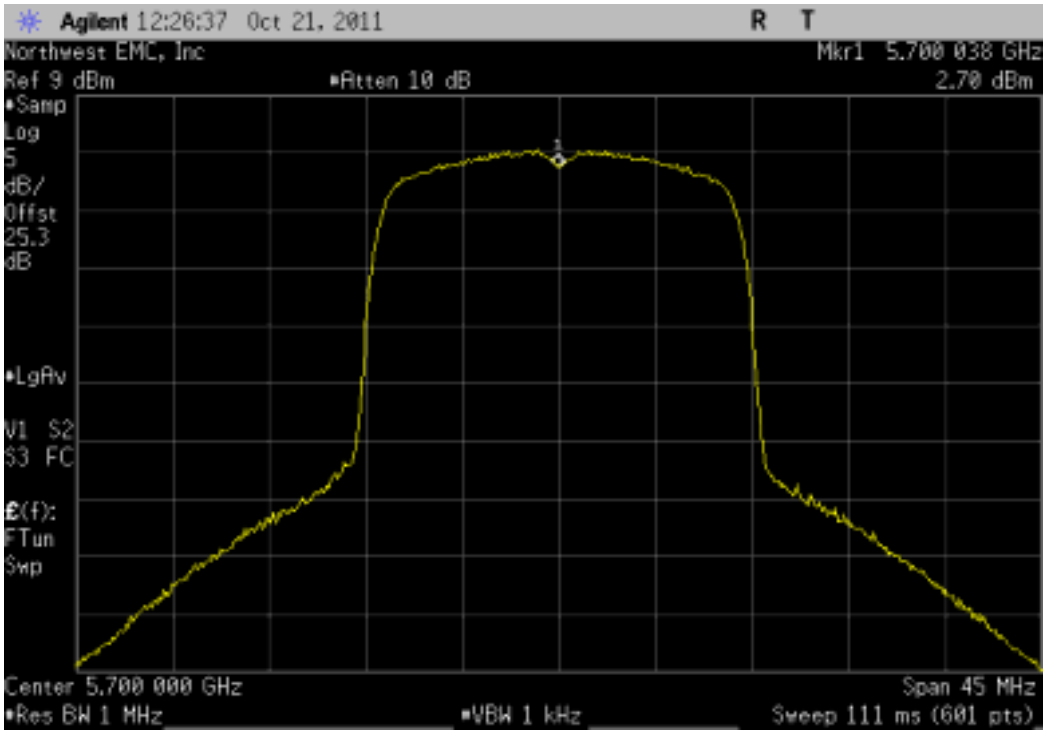
		Measured Value	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		5.700038 GHz	5700	6.67	100	Pass



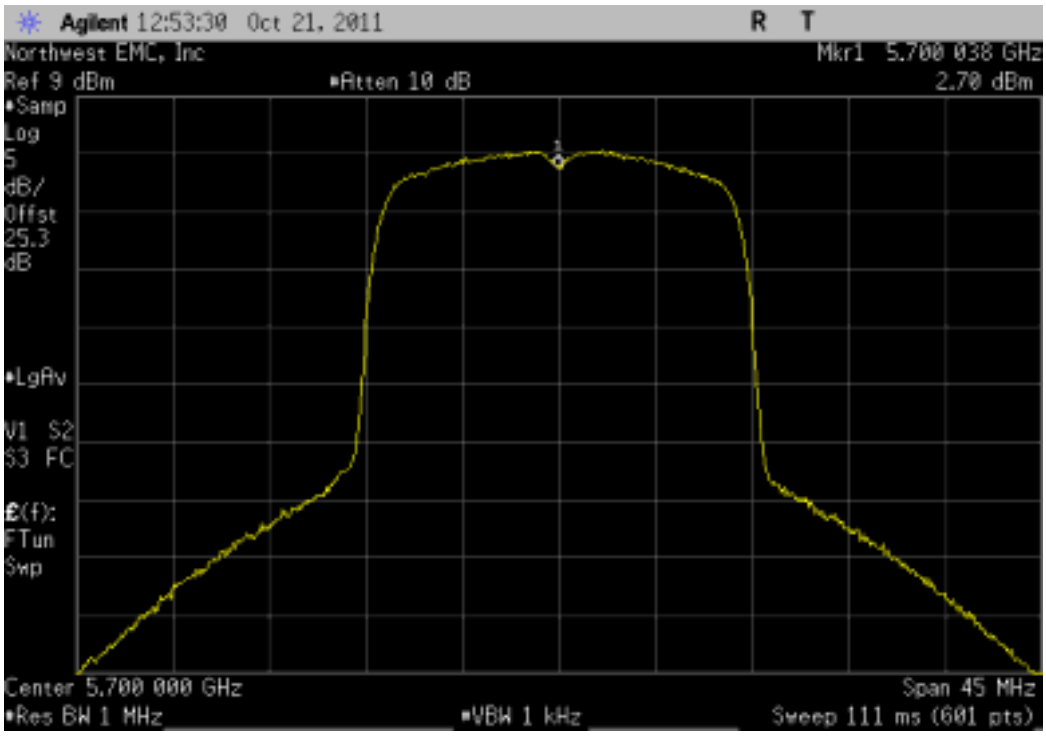
5470 MHz - 5725 MHz - High Channel, 5700 MHz, Temperature: +20°						
		Measured Value	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		5.700038 GHz	5700	6.67	100	Pass



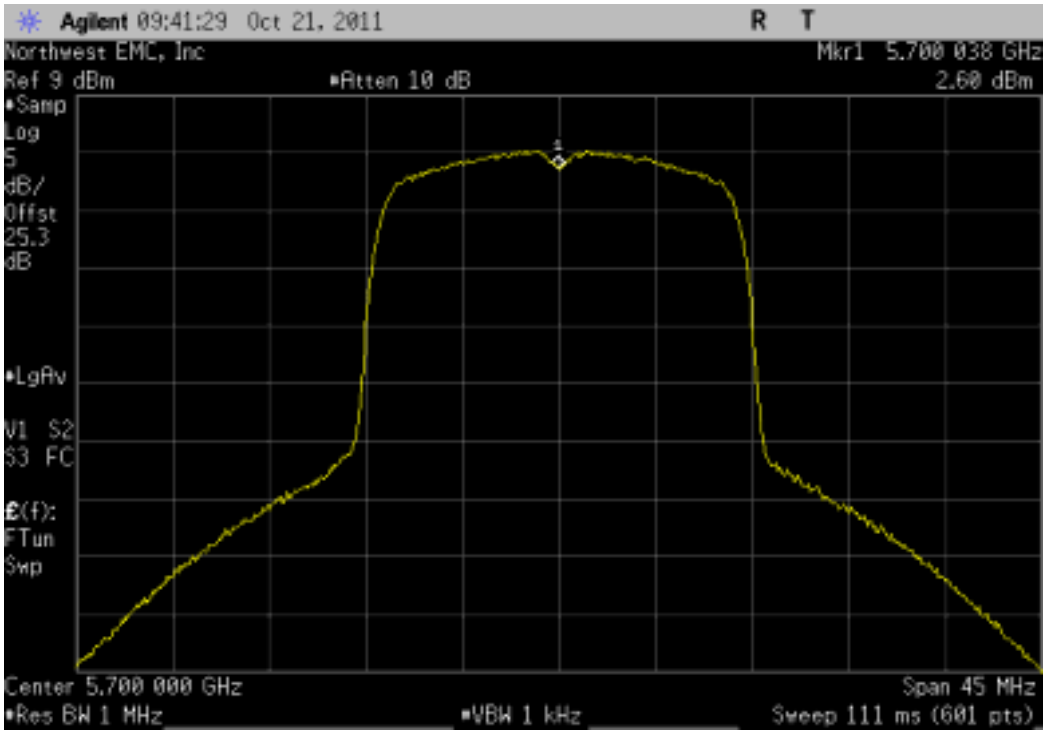
5470 MHz - 5725 MHz - High Channel, 5700 MHz, Temperature: +10°						
		Measured Value	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		5.700038 GHz	5700	6.67	100	Pass



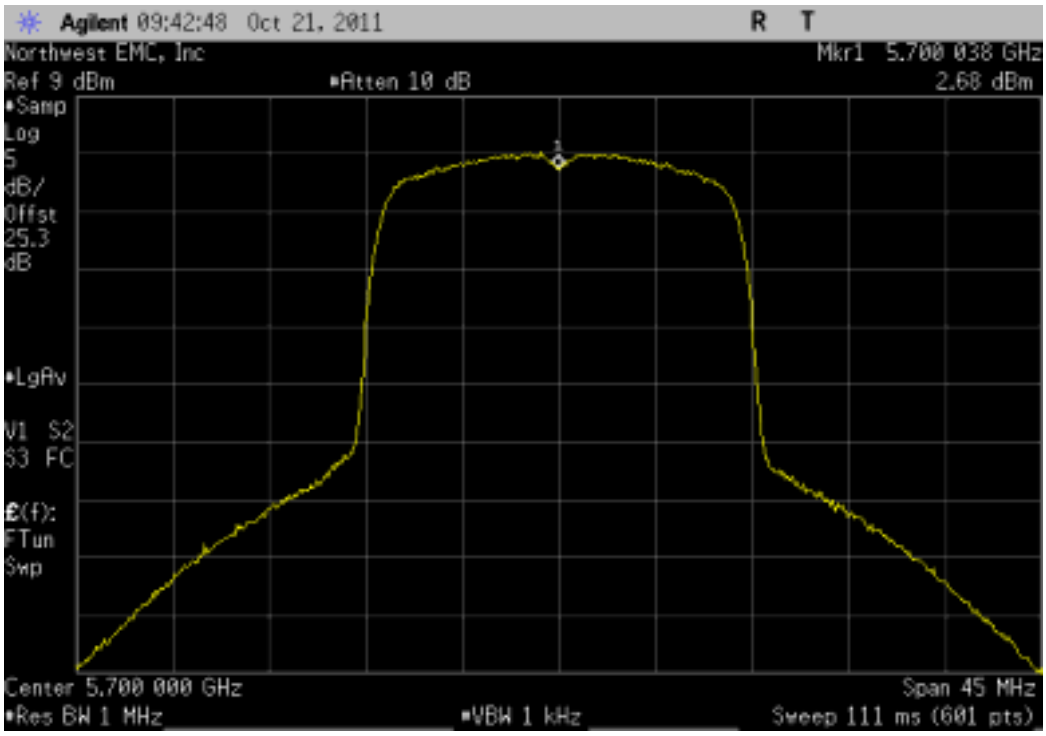
5470 MHz - 5725 MHz - High Channel, 5700 MHz, Temperature: 0°						
		Measured Value	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		5.700038 GHz	5700	6.67	100	Pass



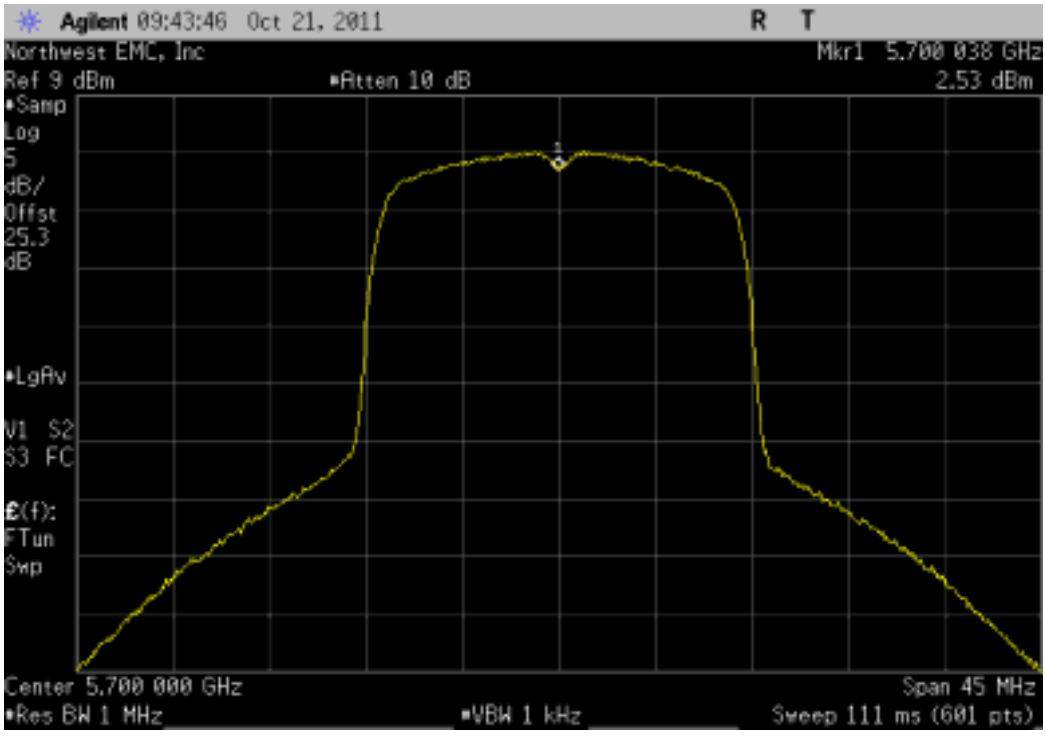
5470 MHz - 5725 MHz - High Channel, 5700 MHz, Voltage: 15VDC						
		Measured Value	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		5.700038 GHz	5700	6.67	100	Pass



5470 MHz - 5725 MHz - High Channel, 5700 MHz, Voltage: 14.5VDC						
		Measured Value	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		5.700038 GHz	5700	6.67	100	Pass



5470 MHz - 5725 MHz - High Channel, 5700 MHz, Voltage: 8VDC						
		Measured Value	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		5.700038 GHz	5700	6.67	100	Pass



Spurious Radiated Emissions

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

MODES OF OPERATION

Transmitting Wifi, Ch 36, 48, 52, 64, 100, 116, 140. Modulated, see comments.

POWER SETTINGS INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

LGPD0044 - 2

FREQUENCY RANGE INVESTIGATED

Start Frequency	30 MHz	Stop Frequency	40 GHz

SAMPLE CALCULATIONS

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
5G Notch Filter	Micro-Tronics	BRC50705	HGZ	6/2/2011	24 mo
5G Notch Filter	Micro-Tronics	BRC50703	HHB	6/2/2011	24 mo
5G Notch Filter	Micro-Tronics	BRC50704	HHA	6/2/2011	24 mo
Signal Generator	Agilent	N5183A	TIA	1/18/2011	12 mo
Antenna, Horn	ETS	3115	AJA	5/13/2011	24 mo
Low Pass Filter	Micro-Tronics	LPM50004	HGK	7/9/2010	24 mo
Pre-Amplifier	Miteq	JSW45-26004000-40-5P	AVN	10/12/2011	12 mo
26-40GHz Cable	N/A	TTBJ141-KMKM-72	EVX	10/12/2011	12 mo
Antenna, Horn	ETS	3160-10	AIC	NCR	0 mo
Pre-Amplifier	Miteq	JSD4-18002600-26-8P	APU	4/15/2011	12 mo
MN05 Cables	N/A	18-26GHz Standard Gain Horn Cable	EVD	4/15/2011	12 mo
Antenna, Horn	ETS	3160-09	AHG	NCR	0 mo
Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	AVW	7/1/2011	12 mo
Antenna, Horn	ETS Lindgren	3160-08	AIQ	NCR	0 mo
MN05 Cables	ESM Cable Corp.	Standard Gain Horn Cables	MNJ	7/1/2011	12 mo
Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AVV	7/1/2011	12 mo
Antenna, Horn	ETS	3160-07	AXP	NCR	0 mo
Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	AVX	7/1/2011	12 mo
MN05 Cables	ESM Cable Corp.	Double Ridge Guide Horn Cables	MNI	10/18/2011	12 mo
Antenna, Horn (DRG)	ETS Lindgren	3115	AIP	6/29/2011	24 mo
Pre-Amplifier	Miteq	AM-1616-1000	AVY	7/1/2011	12 mo
MN05 Cables	ESM Cable Corp.	Bilog Cables	MNH	2/2/2011	12 mo
Antenna, Biconilog	ETS Lindgren	3142D	AXN	12/30/2009	24 mo
Spectrum Analyzer	Agilent	E4446A	AAT	2/15/2011	12 mo

MEASUREMENT BANDWIDTHS

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

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

MEASUREMENT UNCERTAINTY

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

TEST DESCRIPTION

The highest gain 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 amplitude and frequency of the highest emissions were noted. The EUT was then replaced with a ½ wave dipole that was successively tuned to each of the highest spurious emissions. A signal generator was connected to the dipole (horn antenna for frequencies above 1GHz), and its output was adjusted to match the level previously noted for each frequency. The output of the signal generator was recorded, and by factoring in the cable loss to the dipole antenna (or horn) and its gain (dBi); the effective radiated power for each radiated spurious emission was determined.

NORTHWEST
EMC

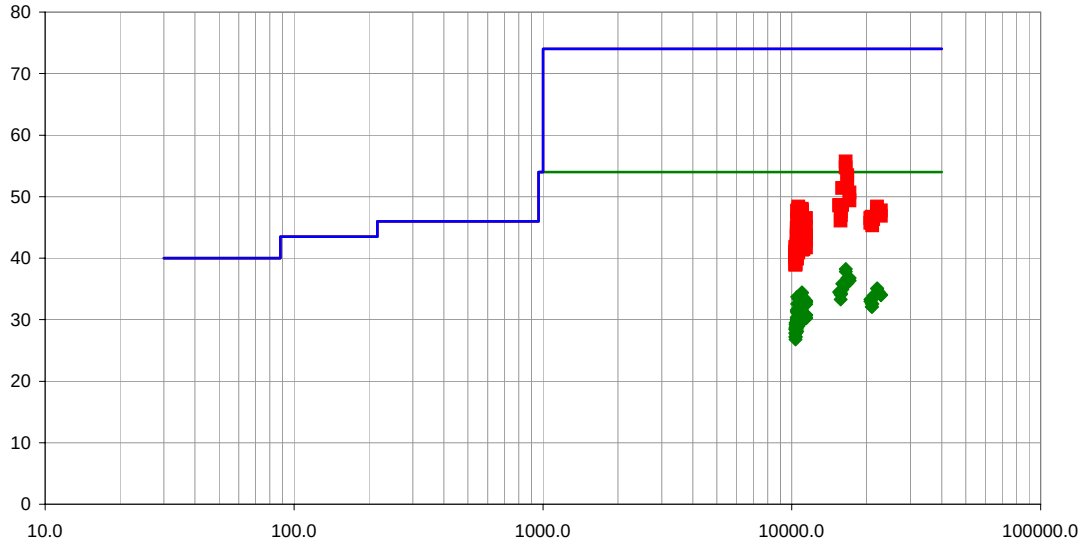
Spurious Radiated Emissions

PSA-ESCI 2011.07.26
PSA-ESCI Version 2011.06.23

Work Order:	LGPD0044	**Date:**	10/26/11	Trevor Buls	
Project:	None	**Temperature:**	23.84 °C		
Job Site:	MN05	**Humidity:**	24.37% RH		
Serial Number:	AR11J000137	**Barometric Pres.:**	1018.6 mbar	**Tested by:**	Trevor Buls
EUT:	X Series				
Configuration:	2				
Customer:	ZOLL Medical Corp.				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting Wifi, Ch 36, 48, 52, 64, 100, 116, 140. Modulated, see comments.				
Deviations:	None				
Comments:	None				

Test Specifications	**Test Method**
FCC 15.407:2011	ANSI C63.10:2009

Run #	49	**Test Distance (m)**	3	**Antenna Height(s)**	1-4m	**Results**	Pass



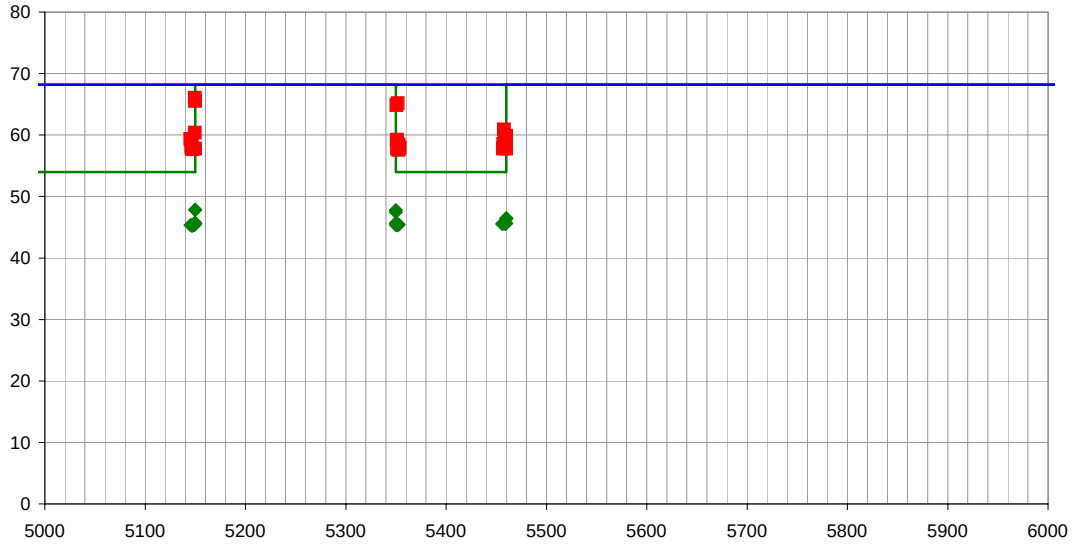
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
16497.750	52.8	2.9	1.1	169.0	3.0	0.0	Horz	PK	0.0	55.7	68.2	-12.5	EUT on Side, Ch 100, 6Mbps
16500.140	51.8	2.9	1.0	163.0	3.0	0.0	Vert	PK	0.0	54.7	68.2	-13.5	EUT on Side, Ch 100, 6Mbps
16737.610	50.1	3.4	1.0	172.0	3.0	0.0	Vert	PK	0.0	53.5	68.2	-14.7	EUT on Side, Ch 116, 6Mbps
16738.850	49.4	3.4	1.3	157.0	3.0	0.0	Horz	PK	0.0	52.8	68.2	-15.4	EUT on Side, Ch 116, 6Mbps
15958.130	47.8	3.6	1.1	173.0	3.0	0.0	Horz	PK	0.0	51.4	68.2	-16.8	EUT on Side, Ch 64, 6Mbps
16738.440	33.4	3.4	1.0	172.0	3.0	0.0	Vert	AV	0.0	36.8	54.0	-17.2	EUT on Side, Ch 116, 6Mbps
17099.300	33.0	3.8	1.0	151.0	3.0	0.0	Vert	AV	0.0	36.8	54.0	-17.2	EUT on Side, Ch 140, 6Mbps
17100.470	46.9	3.8	1.0	151.0	3.0	0.0	Vert	PK	0.0	50.7	68.2	-17.5	EUT on Side, Ch 140, 6Mbps
17098.470	32.6	3.8	1.0	167.0	3.0	0.0	Horz	AV	0.0	36.4	54.0	-17.6	EUT on Side, Ch 140, 6Mbps
16739.800	32.6	3.4	1.3	157.0	3.0	0.0	Horz	AV	0.0	36.0	54.0	-18.0	EUT on Side, Ch 116, 6Mbps
15962.280	32.2	3.6	1.1	173.0	3.0	0.0	Horz	AV	0.0	35.8	54.0	-18.2	EUT on Side, Ch 64, 6Mbps
17098.570	45.6	3.8	1.0	167.0	3.0	0.0	Horz	PK	0.0	49.4	68.2	-18.8	EUT on Side, Ch 140, 6Mbps
15962.090	31.3	3.6	1.4	145.0	3.0	0.0	Vert	AV	0.0	34.9	54.0	-19.1	EUT on Side, Ch 64, 6Mbps
15539.960	31.7	2.8	1.0	130.0	3.0	0.0	Horz	AV	0.0	34.5	54.0	-19.5	EUT on Side, Ch 36, 6Mbps
22319.980	24.6	9.9	1.2	159.0	3.0	0.0	Vert	AV	0.0	34.5	54.0	-19.5	EUT on Side, Ch 116, 6Mbps
15541.880	45.8	2.8	1.0	152.0	3.0	0.0	Vert	PK	0.0	48.6	68.2	-19.6	EUT on Side, Ch 36, 6Mbps
15539.980	31.6	2.8	1.0	152.0	3.0	0.0	Vert	AV	0.0	34.4	54.0	-19.6	EUT on Side, Ch 36, 6Mbps
22320.130	24.5	9.9	1.2	117.0	3.0	0.0	Horz	AV	0.0	34.4	54.0	-19.6	EUT on Side, Ch 116, 6Mbps
11000.010	43.0	-8.6	1.0	103.0	3.0	0.0	Horz	AV	0.0	34.4	54.0	-19.6	EUT on Side, Ch 100, 6Mbps
15960.880	45.0	3.6	1.4	145.0	3.0	0.0	Vert	PK	0.0	48.6	68.2	-19.6	EUT on Side, Ch 64, 6Mbps

Spurious Radiated Emissions

Work Order:	LGPD0044	**Date:**	10/26/11		
Project:	None	**Temperature:**	23.84 °C		
Job Site:	MN05	**Humidity:**	24.37% RH		
Serial Number:	AR11J000137	**Barometric Pres.:**	1018.6 mbar	**Tested by:**	Trevor Buls
EUT:	X Series				
Configuration:	2				
Customer:	ZOLL Medical Corp.				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting Wifi, Ch 36, 48, 52, 64, 100, 116, 140. Modulated, see comments.				
Deviations:	None				
Comments:	None				

Test Specifications	**Test Method**
FCC 15.407:2011	ANSI C63.10:2009

Run #	49	**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
5149.742	40.4	35.2	1.0	0.0	1.0	0.0	Horz	PK	-9.5	66.1	68.2	-2.1	EUT on Side, Ch 36, 6Mbps
5149.992	39.9	35.2	1.0	0.0	1.0	0.0	Horz	PK	-9.5	65.6	68.2	-2.6	EUT on Side, Ch 36, MCS0
5351.733	39.1	35.6	1.0	0.0	1.0	0.0	Horz	PK	-9.5	65.2	68.2	-3.0	EUT on Side, Ch 64, MCS0
5350.492	38.8	35.6	1.0	0.0	1.0	0.0	Horz	PK	-9.5	64.9	68.2	-3.3	EUT on Side, Ch 64, 6Mbps
5149.992	22.2	35.2	1.0	0.0	1.0	0.0	Horz	AV	-9.5	47.9	54.0	-6.1	EUT on Side, Ch 36, 6Mbps
5149.892	22.2	35.2	1.0	0.0	1.0	0.0	Horz	AV	-9.5	47.9	54.0	-6.1	EUT on Side, Ch 36, MCS0
5350.017	21.7	35.6	1.0	0.0	1.0	0.0	Horz	AV	-9.5	47.8	54.0	-6.2	EUT on Side, Ch 64, MCS0
5350.025	21.4	35.6	1.0	0.0	1.0	0.0	Horz	AV	-9.5	47.5	54.0	-6.5	EUT on Side, Ch 64, 6Mbps
5457.725	34.6	35.8	1.0	0.0	1.0	0.0	Horz	PK	-9.5	60.9	68.2	-7.3	EUT on Side, Ch 100, MCS0
5459.900	20.2	35.8	1.0	0.0	1.0	0.0	Horz	AV	-9.5	46.5	54.0	-7.5	EUT on Side, Ch 100, MCS0
5459.967	20.1	35.8	1.0	0.0	1.0	0.0	Horz	AV	-9.5	46.4	54.0	-7.6	EUT on Side, Ch 100, 6Mbps
5149.675	34.7	35.2	1.0	0.0	1.0	0.0	Horz	PK	-9.5	60.4	68.2	-7.8	EUT on Side, Ch 36, 36Mbps
5149.492	20.1	35.2	1.0	0.0	1.0	0.0	Vert	AV	-9.5	45.8	54.0	-8.2	EUT on Side, Ch 36, 6Mbps
5459.933	33.6	35.8	1.0	0.0	1.0	0.0	Horz	PK	-9.5	59.9	68.2	-8.3	EUT on Side, Ch 100, 6Mbps
5459.608	19.4	35.8	1.0	0.0	1.0	0.0	Horz	AV	-9.5	45.7	54.0	-8.3	EUT on Side, Ch 100, 36Mbps
5350.083	19.6	35.6	1.0	0.0	1.0	0.0	Vert	AV	-9.5	45.7	54.0	-8.3	EUT on Side, Ch 64, MCS0
5350.000	19.6	35.6	1.0	0.0	1.0	0.0	Vert	AV	-9.5	45.7	54.0	-8.3	EUT on Side, Ch 64, 6Mbps
5149.933	20.0	35.2	1.0	0.0	1.0	0.0	Vert	AV	-9.5	45.7	54.0	-8.3	EUT on Side, Ch 36, MCS0
5459.525	19.3	35.8	1.0	0.0	1.0	0.0	Horz	AV	-9.5	45.6	54.0	-8.4	EUT on Side, Ch 100, 54Mbps
5459.208	19.3	35.8	1.0	0.0	1.0	0.0	Vert	AV	-9.5	45.6	54.0	-8.4	EUT on Side, Ch 100, 54Mbps

NORTHWEST

EMC

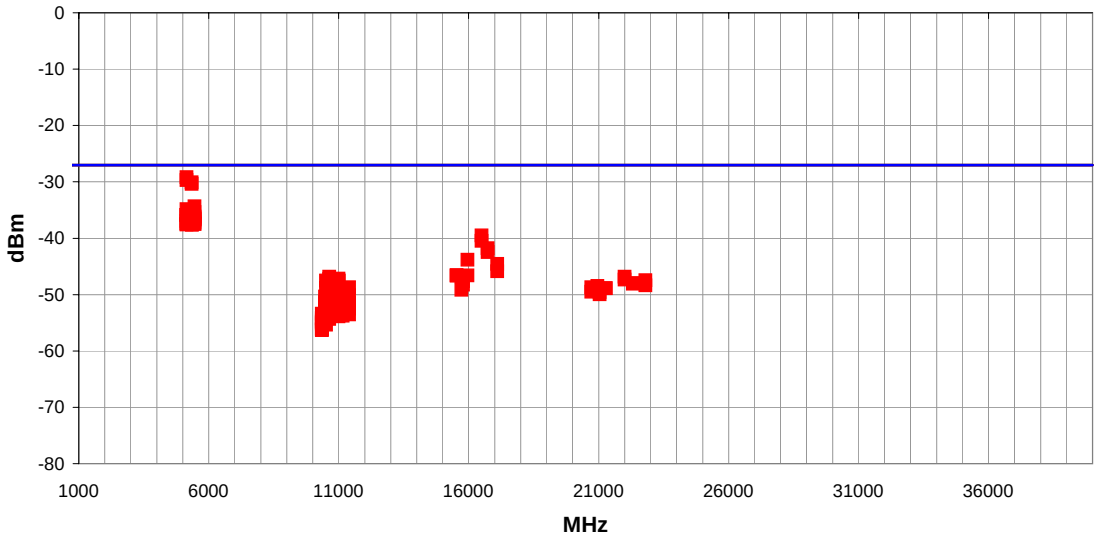
Spurious Radiated Emissions

PSA-ESCI 2011.07.26
PSA-ESCI Version 2011.06.23

Work Order:	LGPD0044	**Date:**	10/26/11		
Project:	None	**Temperature:**	23.84 °C		
Job Site:	MN05	**Humidity:**	24.37% RH		
Serial Number:	AR11J000137	**Barometric Pres.:**	1018.6 mbar	**Tested by:**	Trevor Buls
EUT:	X Series				
Configuration:	2				
Customer:	ZOLL Medical Corp.				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting Wifi, Ch 36, 48, 52, 64, 100, 116, 140. Modulated, see comments.				
Deviations:	None				
Comments:	None				

Test Specifications	**Test Method**
FCC 15.407:2011	ANSI C63.10:2009

Run #	49	**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
	5149.742	1.0	0.0	Horz	PK	1.21E-06	-29.2	-27.0	-2.2	EUT on Side, Ch 36, 6Mbps
	5149.992	1.0	0.0	Horz	PK	1.08E-06	-29.7	-27.0	-2.7	EUT on Side, Ch 36, MCS0
	5351.733	1.0	0.0	Horz	PK	9.84E-07	-30.1	-27.0	-3.1	EUT on Side, Ch 64, MCS0
	5350.492	1.0	0.0	Horz	PK	9.18E-07	-30.4	-27.0	-3.4	EUT on Side, Ch 64, 6Mbps
	5457.725	1.0	0.0	Horz	PK	3.67E-07	-34.4	-27.0	-7.4	EUT on Side, Ch 100, MCS0
	5149.675	1.0	0.0	Horz	PK	3.25E-07	-34.9	-27.0	-7.9	EUT on Side, Ch 36, 36Mbps
	5459.933	1.0	0.0	Horz	PK	2.92E-07	-35.4	-27.0	-8.4	EUT on Side, Ch 100, 6Mbps
	5146.440	1.0	0.0	Vert	PK	2.58E-07	-35.9	-27.0	-8.9	EUT on Side, Ch 36, 6Mbps
	5146.025	1.0	0.0	Vert	PK	2.58E-07	-35.9	-27.0	-8.9	EUT on Side, Ch 36, 36Mbps
	5145.208	1.0	0.0	Vert	PK	2.58E-07	-35.9	-27.0	-8.9	EUT on Side, Ch 36, MCS0
	5350.983	1.0	0.0	Horz	PK	2.53E-07	-36.0	-27.0	-9.0	EUT on Side, Ch 64, MCS7
	5351.225	1.0	0.0	Horz	PK	2.47E-07	-36.1	-27.0	-9.1	EUT on Side, Ch 64, 36Mbps
	5459.842	1.0	0.0	Horz	PK	2.43E-07	-36.2	-27.0	-9.2	EUT on Side, Ch 100, MCS7
	5458.625	1.0	0.0	Vert	PK	2.32E-07	-36.4	-27.0	-9.4	EUT on Side, Ch 100, 54Mbps
	5458.967	1.0	0.0	Vert	PK	2.21E-07	-36.6	-27.0	-9.6	EUT on Side, Ch 100, MCS7
	5457.017	1.0	0.0	Horz	PK	2.16E-07	-36.7	-27.0	-9.7	EUT on Side, Ch 100, 36Mbps
	5457.617	1.0	0.0	Horz	PK	2.11E-07	-36.8	-27.0	-9.8	EUT on Side, Ch 100, 54Mbps
	5352.792	1.0	0.0	Vert	PK	2.11E-07	-36.8	-27.0	-9.8	EUT on Side, Ch 64, MCS0
	5146.042	1.0	0.0	Horz	PK	2.00E-07	-37.0	-27.0	-10.0	EUT on Side, Ch 36, 54Mbps
	5457.667	1.0	0.0	Vert	PK	1.92E-07	-37.2	-27.0	-10.2	EUT on Side, Ch 100, 6Mbps

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
Wifi enabled. Channel 36, 6Mbps.
Wifi enabled. Channel 48, 6Mbps.
Wifi enabled. Channel 52, 6Mbps.
Wifi enabled. Channel 64, 6Mbps.
Wifi enabled. Channel 100, 6Mbps.
Wifi enabled. Channel 120, 6Mbps.
Wifi enabled. Channel 140, 6Mbps.

POWER SETTINGS INVESTIGATED
110VAC/60Hz

CONFIGURATIONS INVESTIGATED
LGPD0044 - 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
MN03 Cables	ESM Cable Corp.	Conducted Cables	MNC	5/18/2011	12 mo
LISN	Solar Electronics	9252-50-R-24-BNC	LIY	7/5/2011	12 mo
LISN	Solar	9252-50-R-24-BNC	LIQ	3/9/2011	12 mo
High Pass Filter	TTE	H97-100K-50-720B	HGN	6/28/2010	24 mo
Attenuator, 20 dB	SM Electronics	SA01B-20	REF	1/3/2011	12 mo
Receiver	Rohde & Schwarz	ESCI	ARG	3/22/2011	12 mo

MEASUREMENT BANDWIDTHS

Frequency Range (MHz)	Peak Data (kHz)	Quasi-Peak Data (kHz)	Average Data (kHz)
0.01 - 0.15	1.0	0.2	0.2
0.15 - 30.0	10.0	9.0	9.0
30.0 - 1000	100.0	120.0	120.0
Above 1000	1000.0	N/A	1000.0
Measurements were made using the bandwidths and detectors specified. No video filter was used.			

MEASUREMENT UNCERTAINTY

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

TEST DESCRIPTION

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

NORTHWEST

EMC

AC Powerline Conducted Emissions

PSA-ESCI 2011.10.17
PSA-ESCI Version 2011.06.23

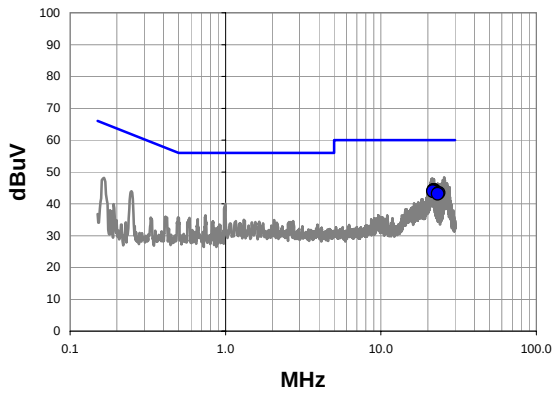
Work Order:	LGPD0044	**Date:**	10/27/11	Elaine J Reeves	
Project:	None	**Temperature:**	23.57 °C		
Job Site:	MN05	**Humidity:**	26.92% RH		
Serial Number:	AR11J000137	**Barometric Pres.:**	1018.2 mbar	**Tested by:**	Johnathon Lee

EUT:	X Series
Configuration:	3
Customer:	ZOLL Medical Corp.
Attendees:	None
EUT Power:	110VAC/60Hz
Operating Mode:	Wifi enabled. Channel 36, 6Mbps.
Deviations:	None
Comments:	None

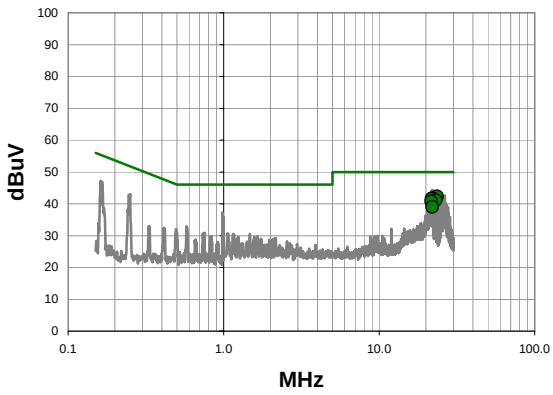
Test Specifications	**Test Method**
FCC 15.407:2011	ANSI C63.10:2009

Run #	18	**Line:**	High Line	**Ext. Attenuation:**	20	**Results**	Pass

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
22.020	22.7	21.7	44.4	60.0	-15.6
21.790	22.7	21.6	44.3	60.0	-15.7
21.964	22.4	21.7	44.1	60.0	-15.9
21.674	22.3	21.6	43.9	60.0	-16.1
23.520	21.6	21.8	43.4	60.0	-16.6
23.174	21.4	21.7	43.1	60.0	-16.9

Average Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
23.520	20.5	21.8	42.3	50.0	-7.7
22.020	20.0	21.7	41.7	50.0	-8.3
21.790	20.0	21.6	41.6	50.0	-8.4
23.174	19.4	21.7	41.1	50.0	-8.9
21.674	19.1	21.6	40.7	50.0	-9.3
21.964	17.3	21.7	39.0	50.0	-11.0

NORTHWEST

EMC

AC Powerline Conducted Emissions

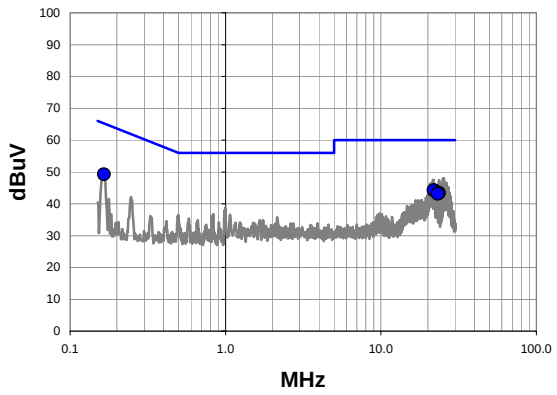
PSA-ESCI 2011.10.17
PSA-ESCI Version 2011.06.23

Work Order:	LGPD0044	**Date:**	10/27/11	Elaine J Reeves	
Project:	None	**Temperature:**	23.57 °C		
Job Site:	MN05	**Humidity:**	26.92% RH		
Serial Number:	AR11J000137	**Barometric Pres.:**	1018.2 mbar	**Tested by:**	Johnathon Lee
EUT:	X Series				
Configuration:	3				
Customer:	ZOLL Medical Corp.				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Wifi enabled. Channel 36, 6Mbps.				
Deviations:	None				
Comments:	None				

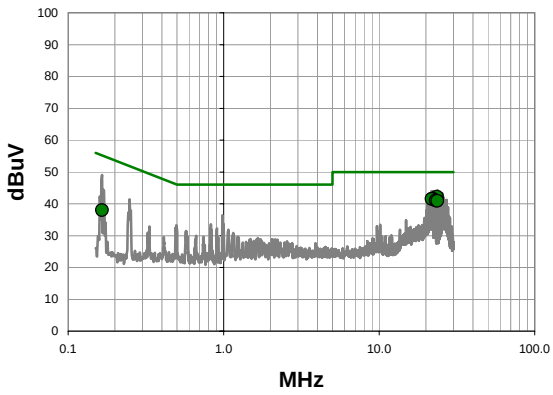
Test Specifications	**Test Method**
FCC 15.407:2011	ANSI C63.10:2009

Run #	19	**Line:**	Neutral	**Ext. Attenuation:**	20	**Results**	Pass

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
22.020	22.6	21.7	44.3	60.0	-15.7
21.790	22.6	21.6	44.2	60.0	-15.8
0.165	29.0	20.2	49.2	65.2	-16.0
23.520	21.6	21.8	43.4	60.0	-16.6
23.632	21.5	21.8	43.3	60.0	-16.7
23.174	21.4	21.7	43.1	60.0	-16.9

Average Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
23.520	20.4	21.8	42.2	50.0	-7.8
22.020	19.9	21.7	41.6	50.0	-8.4
21.790	19.9	21.6	41.5	50.0	-8.5
23.174	19.3	21.7	41.0	50.0	-9.0
23.632	19.1	21.8	40.9	50.0	-9.1
0.165	17.8	20.2	38.0	55.2	-17.2

NORTHWEST
EMC

AC Powerline Conducted Emissions

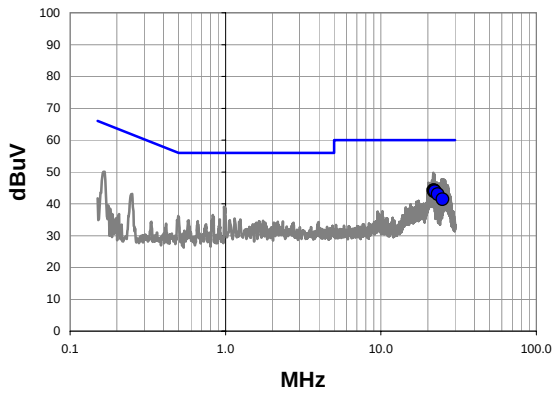
PSA-ESCI 2011.10.17
PSA-ESCI Version 2011.06.23

Work Order:	LGPD0044	**Date:**	10/27/11		
Project:	None	**Temperature:**	23.57 °C		
Job Site:	MN05	**Humidity:**	26.92% RH		
Serial Number:	AR11J000137	**Barometric Pres.:**	1018.2 mbar	**Tested by:**	Johnathon Lee
EUT:	X Series				
Configuration:	3				
Customer:	ZOLL Medical Corp.				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Wifi enabled. Channel 48, 6Mbps.				
Deviations:	None				
Comments:	None				

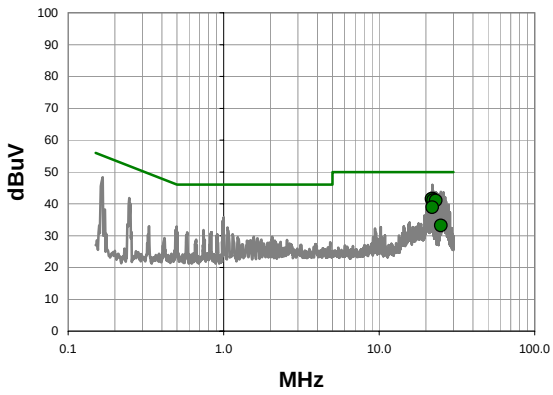
Test Specifications	**Test Method**
FCC 15.407:2011	ANSI C63.10:2009

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

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
22.020	22.6	21.7	44.3	60.0	-15.7
21.790	22.6	21.6	44.2	60.0	-15.8
21.964	22.3	21.7	44.0	60.0	-16.0
22.250	22.2	21.7	43.9	60.0	-16.1
23.174	21.3	21.7	43.0	60.0	-17.0
24.922	19.5	21.9	41.4	60.0	-18.6

Average Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
22.020	19.9	21.7	41.6	50.0	-8.4
21.790	19.9	21.6	41.5	50.0	-8.5
22.250	19.4	21.7	41.1	50.0	-8.9
23.174	19.3	21.7	41.0	50.0	-9.0
21.964	17.2	21.7	38.9	50.0	-11.1
24.922	11.2	21.9	33.1	50.0	-16.9

NORTHWEST

EMC

AC Powerline Conducted Emissions

PSA-ESCI 2011.10.17
PSA-ESCI Version 2011.06.23

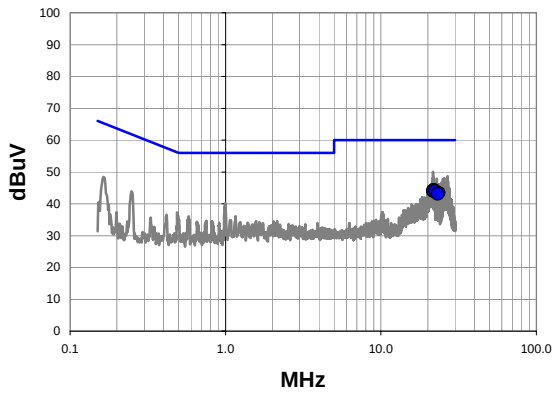
Work Order:	LGPD0044	**Date:**	10/27/11	Elaine L Reeves	
Project:	None	**Temperature:**	23.57 °C		
Job Site:	MN05	**Humidity:**	26.92% RH		
Serial Number:	AR11J000137	**Barometric Pres.:**	1018.2 mbar	**Tested by:**	Johnathon Lee

EUT:	X Series
Configuration:	3
Customer:	ZOLL Medical Corp.
Attendees:	None
EUT Power:	110VAC/60Hz
Operating Mode:	Wifi enabled. Channel 48, 6Mbps.
Deviations:	None
Comments:	None

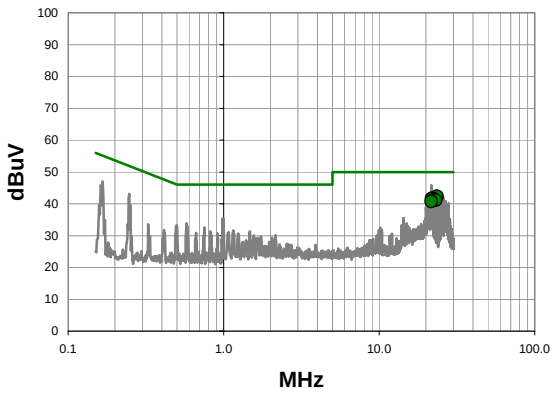
Test Specifications	**Test Method**
FCC 15.407:2011	ANSI C63.10:2009

Run #	21	**Line:**	High Line	**Ext. Attenuation:**	20	**Results**	Pass

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
21.790	22.7	21.6	44.3	60.0	-15.7
22.020	22.6	21.7	44.3	60.0	-15.7
21.674	22.4	21.6	44.0	60.0	-16.0
22.250	22.3	21.7	44.0	60.0	-16.0
23.520	21.6	21.8	43.4	60.0	-16.6
23.174	21.4	21.7	43.1	60.0	-16.9

Average Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
23.520	20.5	21.8	42.3	50.0	-7.7
22.020	20.0	21.7	41.7	50.0	-8.3
21.790	20.0	21.6	41.6	50.0	-8.4
22.250	19.5	21.7	41.2	50.0	-8.8
23.174	19.4	21.7	41.1	50.0	-8.9
21.674	19.1	21.6	40.7	50.0	-9.3

NORTHWEST

EMC

AC Powerline Conducted Emissions

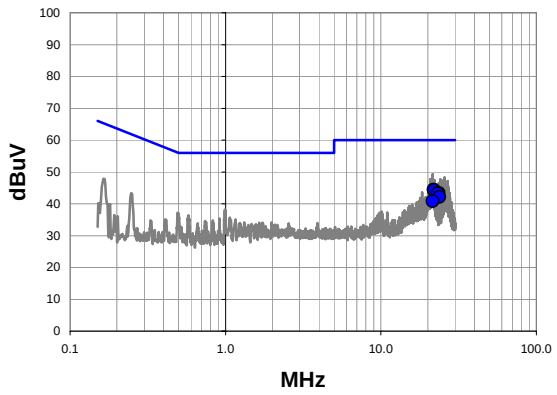
PSA-ESCI 2011.10.17
PSA-ESCI Version 2011.06.23

Work Order:	LGPD0044	**Date:**	10/27/11		
Project:	None	**Temperature:**	23.57 °C		
Job Site:	MN05	**Humidity:**	26.92% RH		
Serial Number:	AR11J000137	**Barometric Pres.:**	1018.2 mbar	**Tested by:**	Johnathon Lee
EUT:	X Series				
Configuration:	3				
Customer:	ZOLL Medical Corp.				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Wifi enabled. Channel 52, 6Mbps.				
Deviations:	None				
Comments:	None				

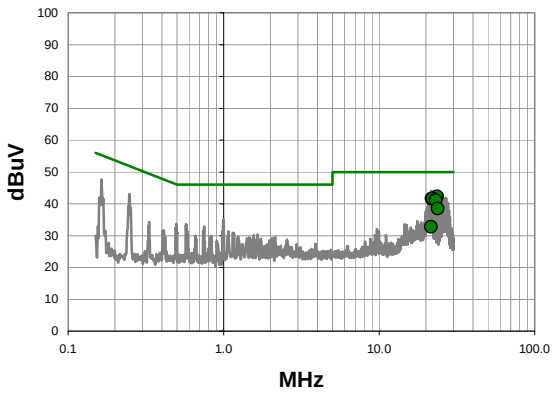
Test Specifications	**Test Method**
FCC 15.407:2011	ANSI C63.10:2009

Run #	22	**Line:**	High Line	**Ext. Attenuation:**	20	**Results**	Pass

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
21.790	22.8	21.6	44.4	60.0	-15.6
22.020	22.6	21.7	44.3	60.0	-15.7
23.520	21.6	21.8	43.4	60.0	-16.6
23.174	21.5	21.7	43.2	60.0	-16.8
23.808	20.3	21.8	42.1	60.0	-17.9
21.572	19.2	21.6	40.8	60.0	-19.2

Average Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
23.520	20.5	21.8	42.3	50.0	-7.7
21.790	20.0	21.6	41.6	50.0	-8.4
22.020	19.9	21.7	41.6	50.0	-8.4
23.174	19.4	21.7	41.1	50.0	-8.9
23.808	16.7	21.8	38.5	50.0	-11.5
21.572	11.1	21.6	32.7	50.0	-17.3

NORTHWEST

EMC

AC Powerline Conducted Emissions

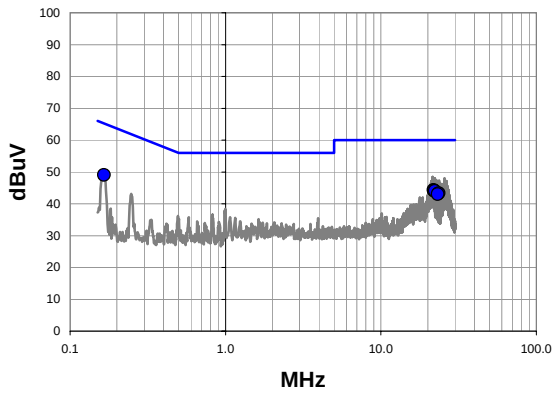
PSA-ESCI 2011.10.17
PSA-ESCI Version 2011.06.23

Work Order:	LGPD0044	**Date:**	10/27/11	Elaine L Reeves	
Project:	None	**Temperature:**	23.57 °C		
Job Site:	MN05	**Humidity:**	26.92% RH		
Serial Number:	AR11J000137	**Barometric Pres.:**	1018.2 mbar	**Tested by:**	Johnathon Lee
EUT:	X Series				
Configuration:	3				
Customer:	ZOLL Medical Corp.				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Wifi enabled. Channel 52, 6Mbps.				
Deviations:	None				
Comments:	None				

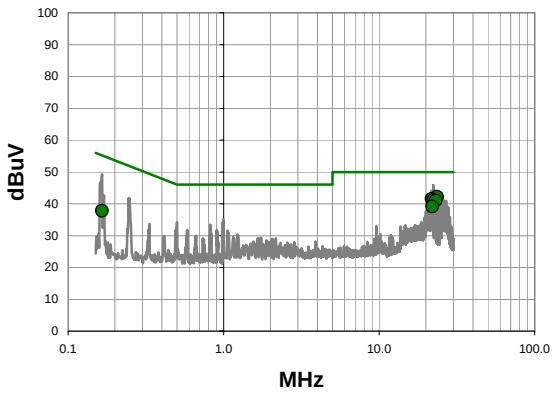
Test Specifications	**Test Method**
FCC 15.407:2011	ANSI C63.10:2009

Run #	23	**Line:**	Neutral	**Ext. Attenuation:**	20	**Results**	Pass

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
21.790	22.7	21.6	44.3	60.0	-15.7
21.964	22.5	21.7	44.2	60.0	-15.8
22.250	22.3	21.7	44.0	60.0	-16.0
0.165	28.8	20.2	49.0	65.2	-16.2
23.520	21.5	21.8	43.3	60.0	-16.7
23.174	21.3	21.7	43.0	60.0	-17.0

Average Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
23.520	20.4	21.8	42.2	50.0	-7.8
21.790	19.9	21.6	41.5	50.0	-8.5
22.250	19.4	21.7	41.1	50.0	-8.9
23.174	19.3	21.7	41.0	50.0	-9.0
21.964	17.4	21.7	39.1	50.0	-10.9
0.165	17.6	20.2	37.8	55.2	-17.4

NORTHWEST
EMC

AC Powerline Conducted Emissions

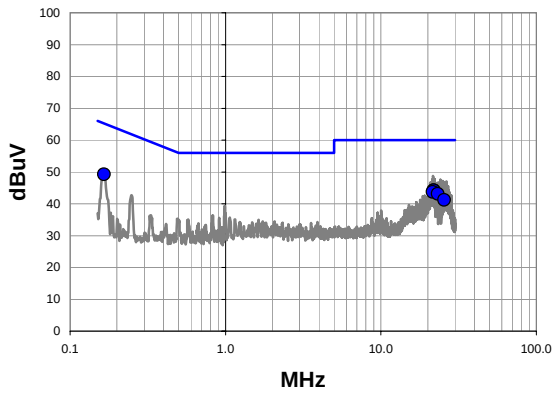
PSA-ESCI 2011.10.17
PSA-ESCI Version 2011.06.23

Work Order:	LGPD0044	**Date:**	10/27/11		
Project:	None	**Temperature:**	23.57 °C		
Job Site:	MN05	**Humidity:**	26.92% RH		
Serial Number:	AR11J000137	**Barometric Pres.:**	1018.2 mbar	**Tested by:**	Johnathon Lee
EUT:	X Series				
Configuration:	3				
Customer:	ZOLL Medical Corp.				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Wifi enabled. Channel 64, 6Mbps.				
Deviations:	None				
Comments:	None				

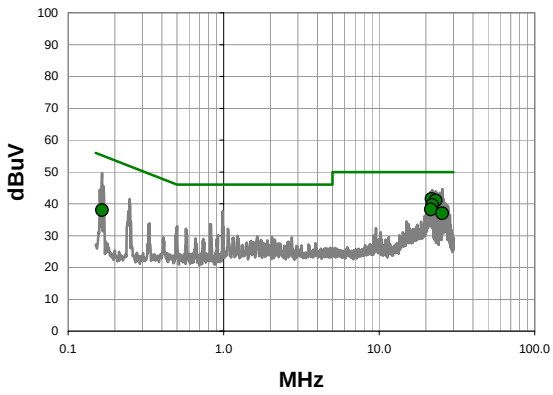
Test Specifications	**Test Method**
FCC 15.407:2011	ANSI C63.10:2009

Run #	24	**Line:**	Neutral	**Ext. Attenuation:**	20	**Results**	Pass

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
21.962	22.6	21.7	44.3	60.0	-15.7
21.790	22.6	21.6	44.2	60.0	-15.8
0.165	29.0	20.2	49.2	65.2	-16.0
21.502	22.1	21.6	43.7	60.0	-16.3
23.174	21.4	21.7	43.1	60.0	-16.9
25.480	19.2	22.0	41.2	60.0	-18.8

Average Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
21.790	19.9	21.6	41.5	50.0	-8.5
23.174	19.3	21.7	41.0	50.0	-9.0
21.962	17.9	21.7	39.6	50.0	-10.4
21.502	16.6	21.6	38.2	50.0	-11.8
25.480	15.0	22.0	37.0	50.0	-13.0
0.165	17.8	20.2	38.0	55.2	-17.2

NORTHWEST

EMC

AC Powerline Conducted Emissions

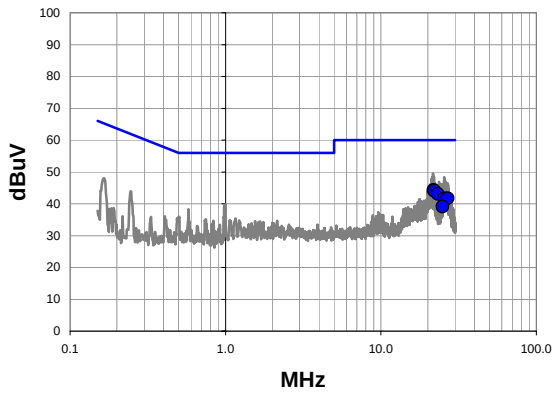
PSA-ESCI 2011.10.17
PSA-ESCI Version 2011.06.23

Work Order:	LGPD0044	**Date:**	10/27/11	Elaine L Reeves	
Project:	None	**Temperature:**	23.57 °C		
Job Site:	MN05	**Humidity:**	26.92% RH		
Serial Number:	AR11J000137	**Barometric Pres.:**	1018.2 mbar	**Tested by:**	Johnathon Lee
EUT:	X Series				
Configuration:	3				
Customer:	ZOLL Medical Corp.				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Wifi enabled. Channel 64, 6Mbps.				
Deviations:	None				
Comments:	None				

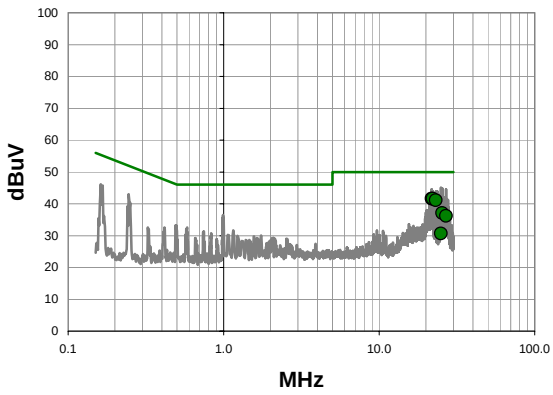
Test Specifications	**Test Method**
FCC 15.407:2011	ANSI C63.10:2009

Run #	25	**Line:**	High Line	**Ext. Attenuation:**	20	**Results**	Pass

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
21.790	22.7	21.6	44.3	60.0	-15.7
22.020	22.5	21.7	44.2	60.0	-15.8
23.174	21.4	21.7	43.1	60.0	-16.9
25.480	19.7	22.0	41.7	60.0	-18.3
26.884	19.6	22.1	41.7	60.0	-18.3
24.922	17.2	21.9	39.1	60.0	-20.9

Average Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
21.790	20.0	21.6	41.6	50.0	-8.4
22.020	19.9	21.7	41.6	50.0	-8.4
23.174	19.4	21.7	41.1	50.0	-8.9
25.480	15.1	22.0	37.1	50.0	-12.9
26.884	14.1	22.1	36.2	50.0	-13.8
24.922	8.7	21.9	30.6	50.0	-19.4

NORTHWEST

EMC

AC Powerline Conducted Emissions

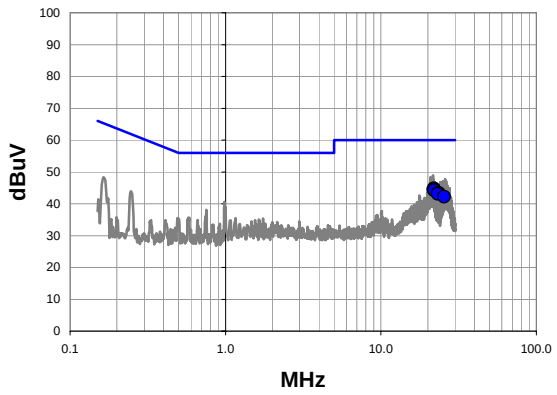
PSA-ESCI 2011.10.17
PSA-ESCI Version 2011.06.23

Work Order:	LGPD0044	**Date:**	10/27/11		
Project:	None	**Temperature:**	23.57 °C		
Job Site:	MN05	**Humidity:**	26.92% RH		
Serial Number:	AR11J000137	**Barometric Pres.:**	1018.2 mbar	**Tested by:**	Johnathon Lee
EUT:	X Series				
Configuration:	3				
Customer:	ZOLL Medical Corp.				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Wifi enabled. Channel 100, 6Mbps.				
Deviations:	None				
Comments:	None				

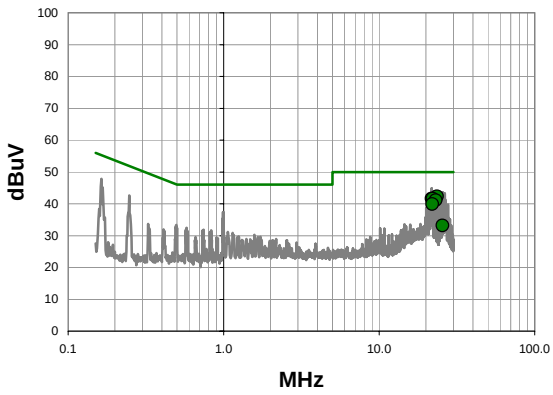
Test Specifications	**Test Method**
FCC 15.407:2011	ANSI C63.10:2009

Run #	26	**Line:**	High Line	**Ext. Attenuation:**	20	**Results**	Pass

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
21.962	23.2	21.7	44.9	60.0	-15.1
21.790	22.8	21.6	44.4	60.0	-15.6
22.020	22.6	21.7	44.3	60.0	-15.7
23.520	21.6	21.8	43.4	60.0	-16.6
23.174	21.4	21.7	43.1	60.0	-16.9
25.578	20.2	22.0	42.2	60.0	-17.8

Average Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
23.520	20.5	21.8	42.3	50.0	-7.7
21.790	20.0	21.6	41.6	50.0	-8.4
22.020	19.9	21.7	41.6	50.0	-8.4
23.174	19.4	21.7	41.1	50.0	-8.9
21.962	18.2	21.7	39.9	50.0	-10.1
25.578	11.1	22.0	33.1	50.0	-16.9

NORTHWEST

EMC

AC Powerline Conducted Emissions

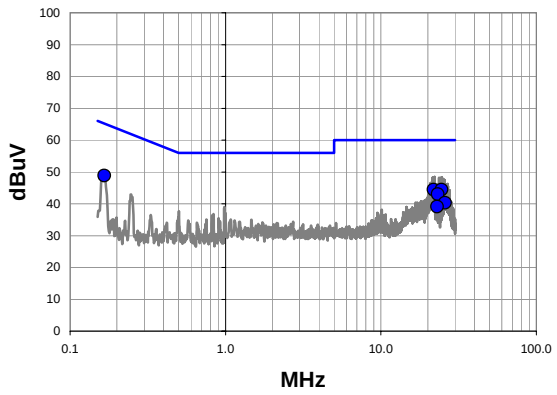
PSA-ESCI 2011.10.17
PSA-ESCI Version 2011.06.23

Work Order:	LGPD0044	**Date:**	10/27/11		
Project:	None	**Temperature:**	23.57 °C		
Job Site:	MN05	**Humidity:**	26.92% RH		
Serial Number:	AR11J000137	**Barometric Pres.:**	1018.2 mbar	**Tested by:**	Johnathon Lee
EUT:	X Series				
Configuration:	3				
Customer:	ZOLL Medical Corp.				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Wifi enabled. Channel 100, 6Mbps.				
Deviations:	None				
Comments:	None				

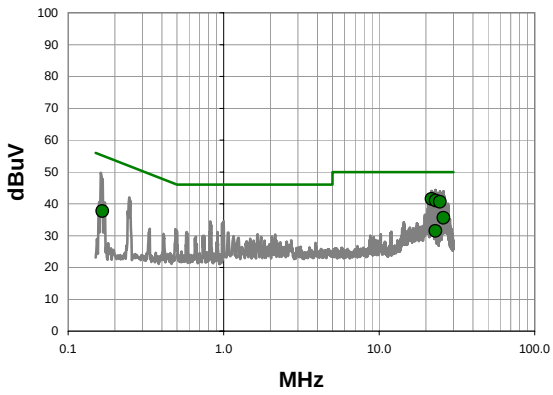
Test Specifications	**Test Method**
FCC 15.407:2011	ANSI C63.10:2009

Run #	27	**Line:**	Neutral	**Ext. Attenuation:**	20	**Results**	Pass

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
21.790	22.8	21.6	44.4	60.0	-15.6
24.556	22.5	21.9	44.4	60.0	-15.6
0.166	28.6	20.2	48.8	65.2	-16.4
23.174	21.3	21.7	43.0	60.0	-17.0
25.938	18.3	22.0	40.3	60.0	-19.7
22.976	17.4	21.7	39.1	60.0	-20.9

Average Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
21.790	19.9	21.6	41.5	50.0	-8.5
23.174	19.3	21.7	41.0	50.0	-9.0
24.556	18.7	21.9	40.6	50.0	-9.4
25.938	13.5	22.0	35.5	50.0	-14.5
0.166	17.5	20.2	37.7	55.2	-17.5
22.976	9.7	21.7	31.4	50.0	-18.6

NORTHWEST

EMC

AC Powerline Conducted Emissions

PSA-ESCI 2011.10.17
PSA-ESCI Version 2011.06.23

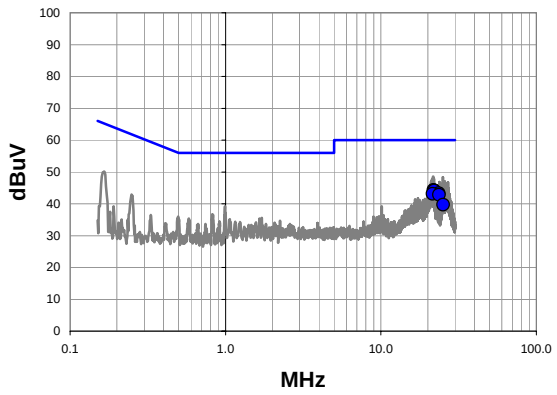
Work Order:	LGPD0044	**Date:**	10/27/11	Elaine J Reeves	
Project:	None	**Temperature:**	23.57 °C		
Job Site:	MN05	**Humidity:**	26.92% RH		
Serial Number:	AR11J000137	**Barometric Pres.:**	1018.2 mbar	**Tested by:**	Johnathon Lee

EUT:	X Series
Configuration:	3
Customer:	ZOLL Medical Corp.
Attendees:	None
EUT Power:	110VAC/60Hz
Operating Mode:	Wifi enabled. Channel 120, 6Mbps.
Deviations:	None
Comments:	None

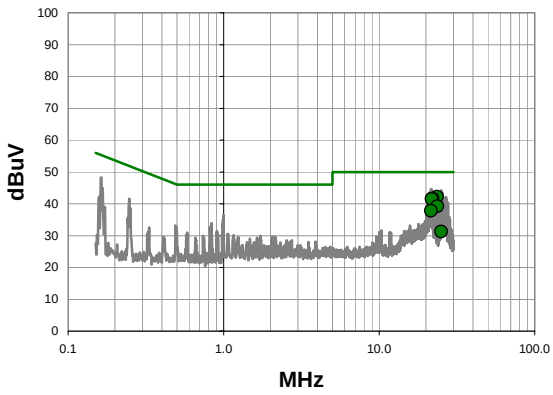
Test Specifications	**Test Method**
FCC 15.407:2011	ANSI C63.10:2009

Run #	28	**Line:**	Neutral	**Ext. Attenuation:**	20	**Results**	Pass

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
21.790	22.7	21.6	44.3	60.0	-15.7
22.020	22.5	21.7	44.2	60.0	-15.8
23.520	21.5	21.8	43.3	60.0	-16.7
21.500	21.5	21.6	43.1	60.0	-16.9
23.690	21.0	21.8	42.8	60.0	-17.2
25.110	17.7	22.0	39.7	60.0	-20.3

Average Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
23.520	20.4	21.8	42.2	50.0	-7.8
22.020	19.9	21.7	41.6	50.0	-8.4
21.790	19.9	21.6	41.5	50.0	-8.5
23.690	17.4	21.8	39.2	50.0	-10.8
21.500	16.2	21.6	37.8	50.0	-12.2
25.110	9.3	22.0	31.3	50.0	-18.7

NORTHWEST

EMC

AC Powerline Conducted Emissions

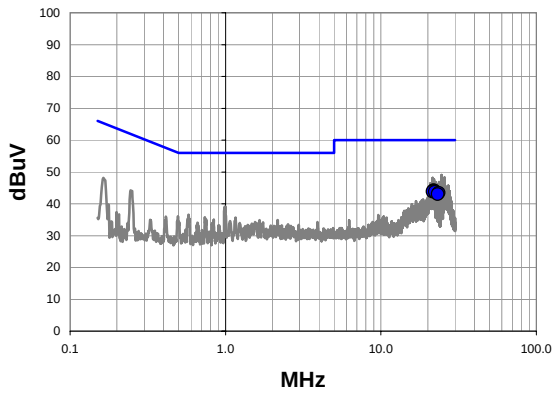
PSA-ESCI 2011.10.17
PSA-ESCI Version 2011.06.23

Work Order:	LGPD0044	**Date:**	10/27/11		
Project:	None	**Temperature:**	23.57 °C		
Job Site:	MN05	**Humidity:**	26.92% RH		
Serial Number:	AR11J000137	**Barometric Pres.:**	1018.2 mbar	**Tested by:**	Johnathon Lee
EUT:	X Series				
Configuration:	3				
Customer:	ZOLL Medical Corp.				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Wifi enabled. Channel 120, 6Mbps.				
Deviations:	None				
Comments:	None				

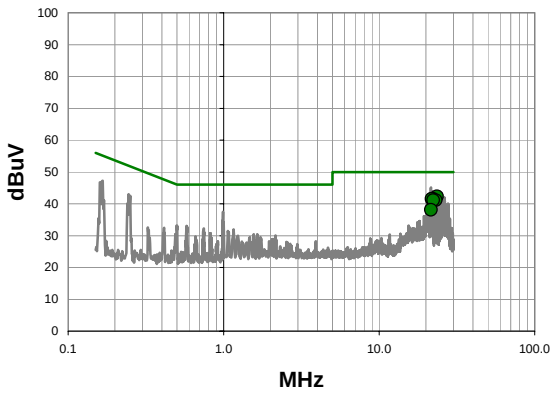
Test Specifications	**Test Method**
FCC 15.407:2011	ANSI C63.10:2009

Run #	29	**Line:**	High Line	**Ext. Attenuation:**	20	**Results**	Pass

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
21.790	22.6	21.6	44.2	60.0	-15.8
22.020	22.5	21.7	44.2	60.0	-15.8
21.500	22.2	21.6	43.8	60.0	-16.2
22.250	22.0	21.7	43.7	60.0	-16.3
23.520	21.6	21.8	43.4	60.0	-16.6
23.174	21.3	21.7	43.0	60.0	-17.0

Average Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
23.520	20.5	21.8	42.3	50.0	-7.7
22.020	19.9	21.7	41.6	50.0	-8.4
21.790	19.9	21.6	41.5	50.0	-8.5
23.174	19.4	21.7	41.1	50.0	-8.9
22.250	19.4	21.7	41.1	50.0	-8.9
21.500	16.5	21.6	38.1	50.0	-11.9

NORTHWEST

EMC

AC Powerline Conducted Emissions

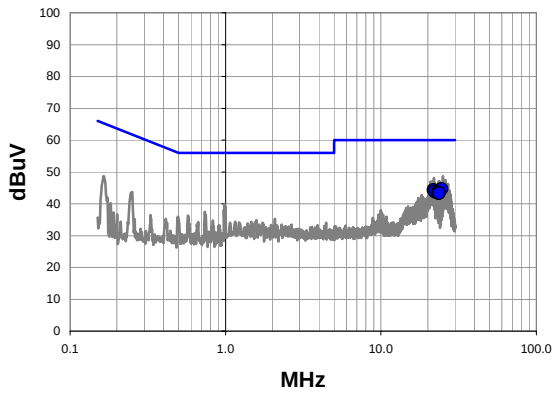
PSA-ESCI 2011.10.17
PSA-ESCI Version 2011.06.23

Work Order:	LGPD0044	**Date:**	10/27/11	Elaine L Reeves	
Project:	None	**Temperature:**	23.57 °C		
Job Site:	MN05	**Humidity:**	26.92% RH		
Serial Number:	AR11J000137	**Barometric Pres.:**	1018.2 mbar	**Tested by:**	Johnathon Lee
EUT:	X Series				
Configuration:	3				
Customer:	ZOLL Medical Corp.				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Wifi enabled. Channel 140, 6Mbps.				
Deviations:	None				
Comments:	None				

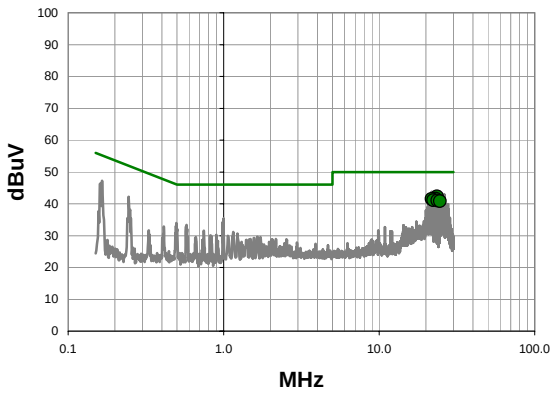
Test Specifications	**Test Method**
FCC 15.407:2011	ANSI C63.10:2009

Run #	30	**Line:**	High Line	**Ext. Attenuation:**	20	**Results**	Pass

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
24.556	22.7	21.9	44.6	60.0	-15.4
21.790	22.7	21.6	44.3	60.0	-15.7
22.250	22.1	21.7	43.8	60.0	-16.2
23.172	21.8	21.7	43.5	60.0	-16.5
23.520	21.6	21.8	43.4	60.0	-16.6
23.632	21.5	21.8	43.3	60.0	-16.7

Average Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
23.520	20.5	21.8	42.3	50.0	-7.7
23.172	19.9	21.7	41.6	50.0	-8.4
21.790	19.9	21.6	41.5	50.0	-8.5
22.250	19.4	21.7	41.1	50.0	-8.9
23.632	19.2	21.8	41.0	50.0	-9.0
24.556	18.9	21.9	40.8	50.0	-9.2

NORTHWEST

EMC

AC Powerline Conducted Emissions

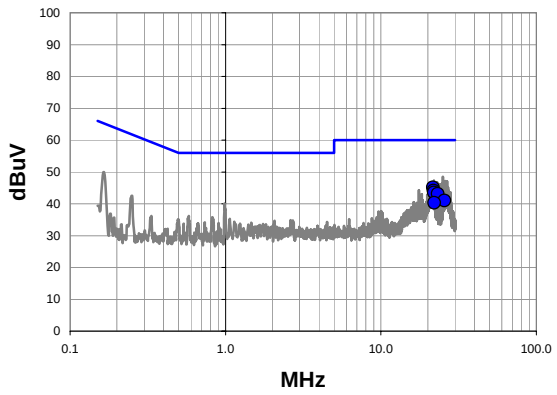
PSA-ESCI 2011.10.17
PSA-ESCI Version 2011.06.23

Work Order:	LGPD0044	**Date:**	10/27/11		
Project:	None	**Temperature:**	23.57 °C		
Job Site:	MN05	**Humidity:**	26.92% RH		
Serial Number:	AR11J000137	**Barometric Pres.:**	1018.2 mbar	**Tested by:**	Johnathon Lee
EUT:	X Series				
Configuration:	3				
Customer:	ZOLL Medical Corp.				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Wifi enabled. Channel 140, 6Mbps.				
Deviations:	None				
Comments:	None				

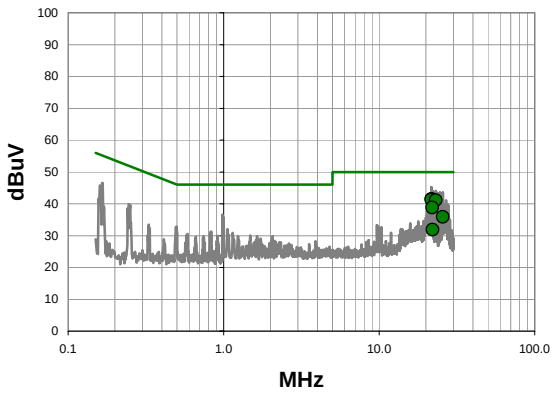
Test Specifications	**Test Method**
FCC 15.407:2011	ANSI C63.10:2009

Run #	31	**Line:**	Neutral	**Ext. Attenuation:**	20	**Results**	Pass

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
21.674	23.5	21.6	45.1	60.0	-14.9
21.790	22.5	21.6	44.1	60.0	-15.9
21.964	21.9	21.7	43.6	60.0	-16.4
23.174	21.4	21.7	43.1	60.0	-16.9
25.652	19.0	22.0	41.0	60.0	-19.0
22.058	18.6	21.7	40.3	60.0	-19.7

Average Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
21.790	19.9	21.6	41.5	50.0	-8.5
21.674	19.7	21.6	41.3	50.0	-8.7
23.174	19.4	21.7	41.1	50.0	-8.9
21.964	17.1	21.7	38.8	50.0	-11.2
25.652	13.9	22.0	35.9	50.0	-14.1
22.058	10.2	21.7	31.9	50.0	-18.1