NORTHWEST EMC

Microsoft Corporation

1713 USB Radio Device

FCC 15.207:2015
FCC 15.407:2015

Report # MCSO1731.2 Rev. 1

NVLAP Lab Code: 200629-0

CERTIFICATE OF TEST

NORTHWEST EMC
2014-12-10

Last Date of Test: July 15, 2015
Microsoft Corporation
Model: 1713 USB Radio Device

Radio Equipment Testing

Standards

Specification	Method
FCC 15.207:2015	ANSI C63.10:2009
FCC 15.407:2015	ANSI C63.10:2009

Results

Method Clause	Test Description	Applied	Results	Comments
6.2	Powerline Conducted Emissions	Yes	Pass	
6.5, 6.6	Spurious Radiated Emissions	Yes	Pass	
6.8	Frequency Stability	Yes	Pass	
6.9.1	Emission Bandwidth	Yes	Pass	
6.9.1	Occupied Bandwidth	Yes	Pass	
6.10.3	Peak Transmit Power	Yes	Pass	
6.11.1	Peak Power Spectral Density	Yes	Pass	
7.5	Duty Cycle	Yes	Pass	

Deviations From Test Standards

None

Approved By:

Rod Munro, Operations Manager

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

REVISION HISTORY

NORTHWEST EMC
REV 2014.10.14

Revision Number	Description	Date	Page Number
01	Correct references to channel number and transmit frequency for high channel	7/17/15	Various

ACCREDITATIONS AND AUTHORIZATIONS

NORTHWEST EMC
REV 2015.2.19

United States

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

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

NVLAP - Each laboratory is accredited by NVLAP to ISO 17025

Canada

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

European Union

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

Australia/New Zealand

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

Korea

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

Japan

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

Taiwan

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

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

Singapore

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

Israel

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

Hong Kong

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

Vietnam

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

SCOPE

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

MEASUREMENT UNCERTAINTY

TMU.2014.12.03

Measurement Uncertainty

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

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

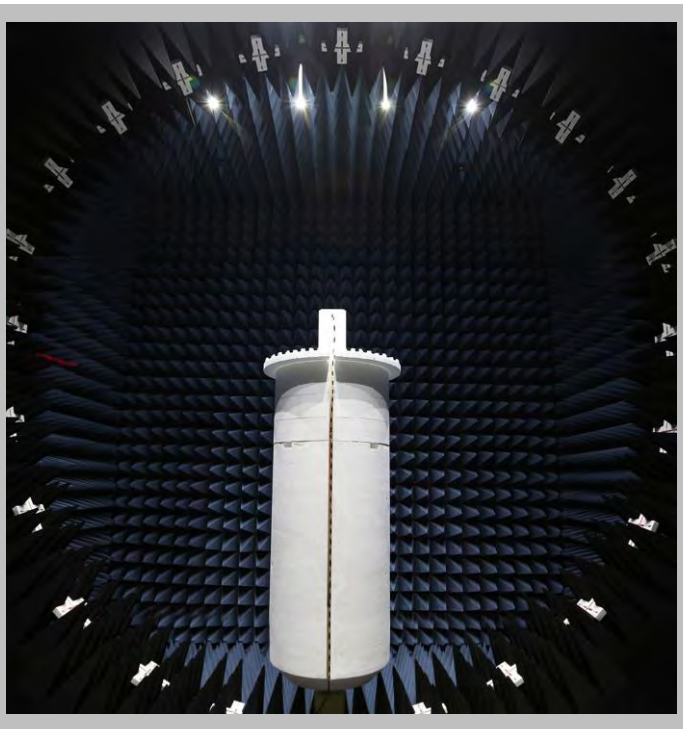
The following table represents the Measurement Uncertainty (MU) budgets for each of the tests that may be contained in this report.

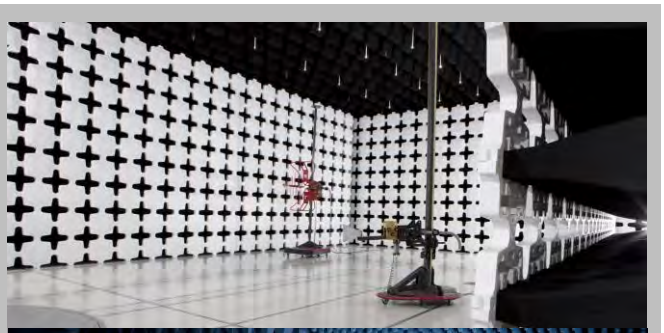
Test	+ MU	- MU
Frequency Accuracy (Hz)	0.0007%	-0.0007%
Amplitude Accuracy (dB)	1.2 dB	-1.2 dB
Conducted Power (dB)	0.3 dB	-0.3 dB
Radiated Power via Substitution (dB)	0.7 dB	-0.7 dB
Temperature (degrees C)	0.7°C	-0.7°C
Humidity (% RH)	2.5% RH	-2.5% RH
Voltage (AC)	1.0%	-1.0%
Voltage (DC)	0.7%	-0.7%
Field Strength (dB)	4.5 dB	-4.5 dB
AC Powerline Conducted Emissions (dB)	2.9 dB	-2.9 dB

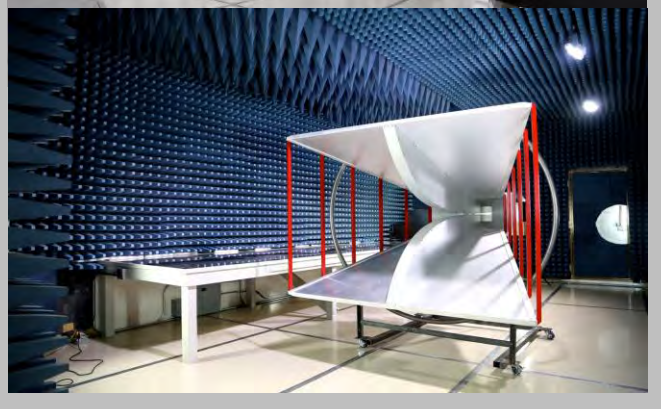
FACILITIES

NORTHWEST EMC
REV 2015.2.19

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







PRODUCT DESCRIPTION

NORTHWEST EMC
2014-12-10

Client and Equipment Under Test (EUT) Information

Company Name:	Microsoft Corporation
Address:	One Microsoft Way
City, State, Zip:	Redmond, WA 98052
Test Requested By:	Kitty Tam
Model:	1713 USB Radio Device
First Date of Test:	May 11, 2015
Last Date of Test:	July 15, 2015
Receipt Date of Samples:	May 07, 2015
Equipment Design Stage:	Pre-production
Equipment Condition:	No Damage

Information Provided by the Party Requesting the Test

Functional Description of the EUT:
USB radio device

Testing Objective:
To demonstrate compliance of the 802.11 radio under FCC 15.407 for operation in the 5.2 GHz and 5.8 GHz bands.

CONFIGURATIONS

NORTHWEST EMC 2014-12-10

Configuration MCSO1731- 1

Software/Firmware Running during test	
Description	**Version**
MT7662 QA	V1.03.13 (v1.8)

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
USB Radio Device	Microsoft Corporation	1713	EV1-3-000299

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Laptop Computer	Lenovo	ThinkPad T440S	R-86-2
AC Adapter	Lenovo	ADLX45NDC2A	None

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
USB Cable	No	1m	Yes	USB Radio Device	Laptop Computer
AC Power	No	0.9m	No	AC Mains	AC Adapter
DC Power	No	1.65m	Yes	AC Adapter	Laptop Computer

Configuration MCSO1731- 2

Software/Firmware Running during test	
Description	**Version**
MT7662 QA	V1.03.13 (v1.8)

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
USB Radio Device	Microsoft Corporation	1713	EV1-3-000297

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Laptop Computer	Lenovo	ThinkPad T440S	R-86-2
AC Adapter	Lenovo	ADLX45NDC2A	None

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
USB Cable	No	1m	Yes	USB Radio Device	Laptop Computer
AC Power	No	0.9m	No	AC Mains	AC Adapter
DC Power	No	1.65m	Yes	AC Adapter	Laptop Computer

CONFIGURATIONS

NORTHWEST EMC 2014-12-10

Configuration MCSO1731- 3

Software/Firmware Running during test	
Description	**Version**
MT7662 QA	V1.03.13 (v1.8)

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
USB Radio Device	Microsoft Corporation	1713	EV1-3-000299

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Laptop Computer	Lenovo	ThinkPad T440S	R-86-2
AC Adapter	Lenovo	ADLX45NDC2A	None
DC Power Supply	Kikusui	None	1930492

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
AC Power	No	0.9m	No	AC Mains	AC Adapter
DC Power	No	1.65m	Yes	AC Adapter	Laptop Computer
Spliced USB Cable	No	1m	Yes	USB Radio Device	Laptop Computer
DC Power Leads	No	0.6m	No	Spliced USB Cable	DC Power Supply

Configuration MCSO1731- 4

Software/Firmware Running during test	
Description	**Version**
MT7662 QA	V1.03.13 (v1.8)

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
USB Radio Device	Microsoft Corporation	1713	EV1-3-000297

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
AC Adapter	Lenovo	ADLX45NDC2A	None
Laptop Computer	Lenovo	ThinkPad E450	E-349-043015-2

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
USB Cable	No	1m	Yes	USB Radio Device	Laptop Computer
AC Power	No	0.9m	No	AC Mains	AC Adapter
DC Power	No	1.65m	Yes	AC Adapter	Laptop Computer

MODIFICATIONS

NORTHWEST EMC
2014-12-10

Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	5/11/2015	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.
2	5/13/2015	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.
3	5/22/2015	Powerline Conducted Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
4	7/15/2015	Duty Cycle	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
5	7/15/2015	Peak Power Spectral Density	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
6	7/15/2015	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.
7	7/15/2015	Occupied Bandwidth	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
8	7/15/2015	Emissions Bandwidth	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

AC POWERLINE CONDUCTED EMISSIONS

NORTHWEST EMC

WTD.2015.03.10
PSA-ESCI 2015.03.03, EmiR5 2015.03.24

TEST DESCRIPTION

Using the mode of operation and configuration noted within this report, conducted emissions tests were performed. The frequency range investigated (scanned), is also noted in this report. Conducted power line measurements are made, unless otherwise specified, over the frequency range from 150 kHz to 30 MHz to determine the line-to-ground radio-noise voltage that is conducted from the EUT power-input terminals that are directly (or indirectly via separate transformer or power supplies) connected to a public power network. Equipment is tested with power cords that are normally used or that have electrical or shielding characteristics that are the same as those cords normally used. Typically those measurements are made using a LISN (Line Impedance Stabilization Network), the 50 Ω measuring port is terminated by a 50 Ω EMI meter or a 50 Ω resistive load. All 50 Ω measuring ports of the LISN are terminated by 50Ω.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Cable	N/A	Conducted / NF Probe Cable	NC4	2/11/2015	02/11/2016
Attenuator	Fairview Microwave	SA03B-20	RKD	10/14/2014	10/14/2015
High Pass Filter	TTE	H97-100K-50-720B	HHF	12/8/2014	12/08/2015
LISN	Solar Electronics	9252-50-R-24-BNC	LIM	12/9/2014	12/09/2015
Receiver	Rohde & Schwarz	ESCI	ARE	6/6/2014	06/06/2015

MEASUREMENT UNCERTAINTY

Description		
Expanded k=2	2.4 dB	-2.4 dB

CONFIGURATIONS INVESTIGATED

MCSO1731-2

MODES INVESTIGATED

Transmitting Low Channel 36, 5180 MHz, 6Mbps
Transmitting High Channel 64, 5320 MHz, 6Mbps
Transmitting Low Channel 149, 5745 MHz, 6Mbps
Transmitting Mid Channel 157, 5785 MHz, 6Mbps
Transmitting High Channel 165, 5825 MHz, 6Mbps

AC POWERLINE CONDUCTED EMISSIONS

NORTHWEST EMC
WTD.2015.03.10
PSA-ESCI 2015.03.03, EmiR5 2015.03.24

EUT:	1713 USB Radio Device	Work Order:	MCSO1731
Serial Number:	EV1-3-000297	Date:	05/22/2015
Customer:	Microsoft Corporation	Temperature:	23°C
Attendees:	None	Relative Humidity:	49%
Customer Project:	None	Bar. Pressure:	1014 mb
Tested By:	Richard Mellroth	Job Site:	NC05
Power:	USB via 110VAC/60Hz	Configuration:	MCSO1731-2

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2015	ANSI C63.10:2009

TEST PARAMETERS

Run #:	7	Line:	High Line	Ext. Attenuation (dB):	20

COMMENTS

None

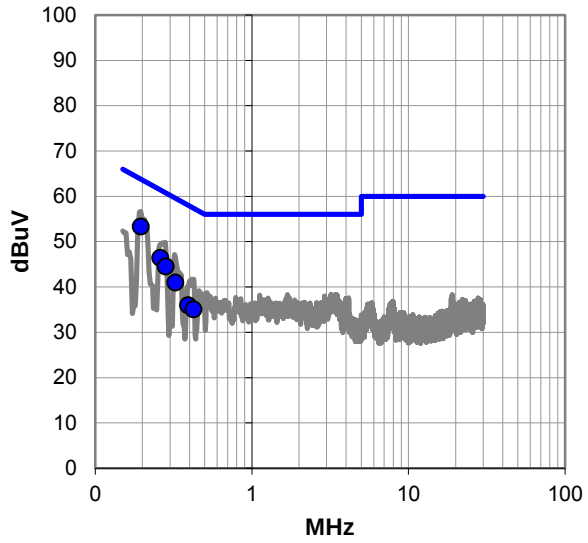
EUT OPERATING MODES

Transmitting Low Channel 36, 5180 MHz, 6Mbps, Maximum Duty Cycle, Power Settings at Default

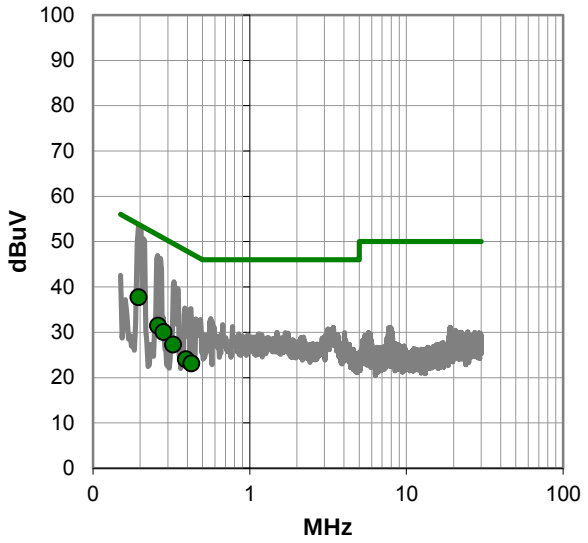
DEVIATIONS FROM TEST STANDARD

None

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



AC POWERLINE CONDUCTED EMISSIONS

NORTHWEST EMC

WTD.2015.03.10
PSA-ESCI 2015.03.03, EmiR5 2015.03.24

RESULTS - Run #7

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.195	32.9	20.4	53.3	63.8	-10.5
0.260	26.1	20.3	46.4	61.4	-15.0
0.282	24.1	20.4	44.5	60.8	-16.3
0.325	20.7	20.3	41.0	59.6	-18.6
0.391	15.7	20.2	35.9	58.0	-22.1
0.424	14.8	20.2	35.0	57.4	-22.3

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.195	17.3	20.4	37.7	53.8	-16.1
0.260	11.1	20.3	31.4	51.4	-20.0
0.282	9.6	20.4	30.0	50.8	-20.8
0.325	7.0	20.3	27.3	49.6	-22.3
0.391	3.8	20.2	24.0	48.0	-24.0
0.424	2.9	20.2	23.1	47.4	-24.2

CONCLUSION

Pass

Tested By

AC POWERLINE CONDUCTED EMISSIONS

NORTHWEST EMC
WTD.2015.03.10
PSA-ESCI 2015.03.03, EmiR5 2015.03.24

EUT:	1713 USB Radio Device	Work Order:	MCSO1731
Serial Number:	EV1-3-000297	Date:	05/22/2015
Customer:	Microsoft Corporation	Temperature:	23°C
Attendees:	None	Relative Humidity:	49%
Customer Project:	None	Bar. Pressure:	1014 mb
Tested By:	Richard Mellroth	Job Site:	NC05
Power:	USB via 110VAC/60Hz	Configuration:	MCSO1731-2

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2015	ANSI C63.10:2009

TEST PARAMETERS

Run #:	8	Line:	Neutral	Ext. Attenuation (dB):	20

COMMENTS

None

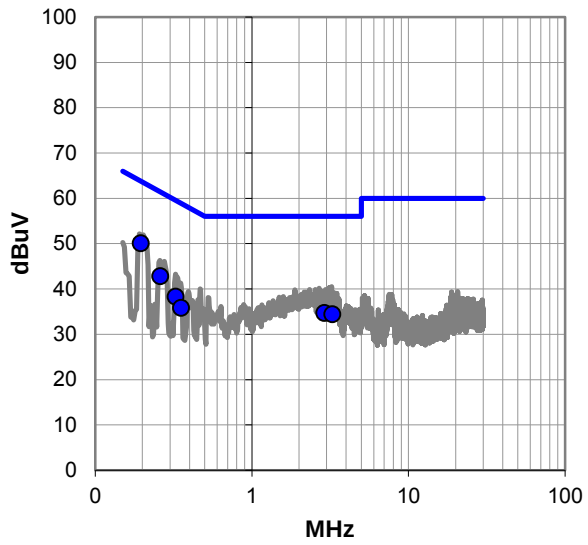
EUT OPERATING MODES

Transmitting Low Channel 36, 5180 MHz, 6Mbps, Maximum Duty Cycle, Power Settings at Default

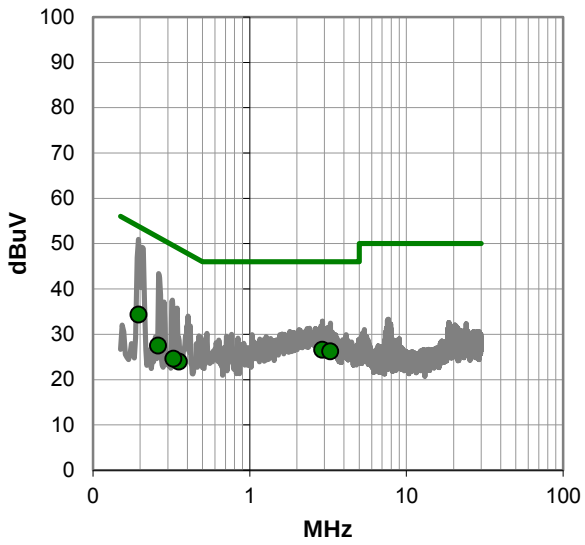
DEVIATIONS FROM TEST STANDARD

None

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



AC POWERLINE CONDUCTED EMISSIONS

NORTHWEST EMC

WTD.2015.03.10
PSA-ESCI 2015.03.03, EmiR5 2015.03.24

RESULTS - Run #8

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.195	29.6	20.4	50.0	63.8	-13.8
0.260	22.5	20.3	42.8	61.4	-18.6
0.326	18.0	20.3	38.3	59.6	-21.3
2.911	14.1	20.6	34.7	56.0	-21.3
3.268	13.8	20.6	34.4	56.0	-21.6
0.353	15.6	20.2	35.8	58.9	-23.0

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
2.911	6.0	20.6	26.6	46.0	-19.4
0.195	13.9	20.4	34.3	53.8	-19.5
3.268	5.6	20.6	26.2	46.0	-19.8
0.260	7.2	20.3	27.5	51.4	-23.9
0.353	3.7	20.2	23.9	48.9	-24.9
0.326	4.3	20.3	24.6	49.6	-25.0

CONCLUSION

Pass

Tested By

AC POWERLINE CONDUCTED EMISSIONS

NORTHWEST EMC
WTD.2015.03.10
PSA-ESCI 2015.03.03, EmiR5 2015.03.24

EUT:	1713 USB Radio Device	Work Order:	MCSO1731
Serial Number:	EV1-3-000297	Date:	05/22/2015
Customer:	Microsoft Corporation	Temperature:	23°C
Attendees:	None	Relative Humidity:	49%
Customer Project:	None	Bar. Pressure:	1014 mb
Tested By:	Richard Mellroth	Job Site:	NC05
Power:	USB via 110VAC/60Hz	Configuration:	MCSO1731-2

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2015	ANSI C63.10:2009

TEST PARAMETERS

Run #:	9	Line:	High Line	Ext. Attenuation (dB):	20

COMMENTS

None

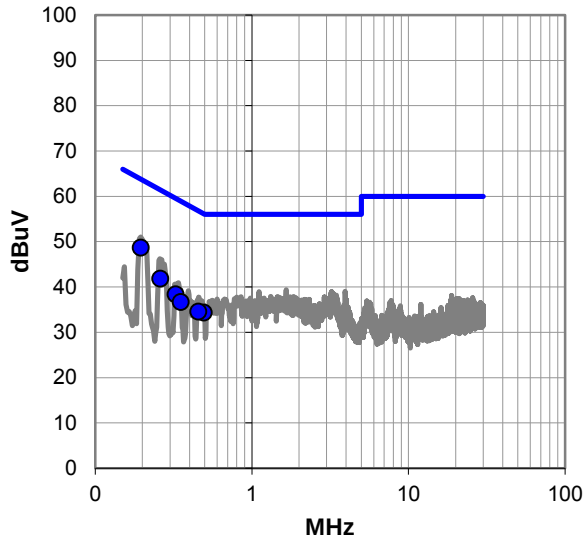
EUT OPERATING MODES

Transmitting High Channel 64, 5320 MHz, 6Mbps, Maximum Duty Cycle, Power Settings at Default

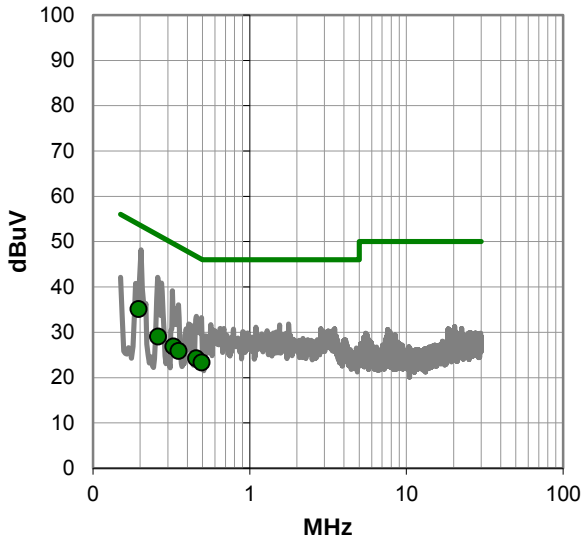
DEVIATIONS FROM TEST STANDARD

None

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



AC POWERLINE CONDUCTED EMISSIONS

NORTHWEST EMC

WTD.2015.03.10
PSA-ESCI 2015.03.03, EmiR5 2015.03.24

RESULTS - Run #9

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.196	28.2	20.4	48.6	63.8	-15.2
0.260	21.5	20.3	41.8	61.4	-19.6
0.327	18.1	20.3	38.4	59.5	-21.2
0.495	14.1	20.2	34.3	56.1	-21.8
0.457	14.3	20.2	34.5	56.8	-22.2
0.352	16.4	20.2	36.6	58.9	-22.3

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.196	14.7	20.4	35.1	53.8	-18.7
0.260	8.7	20.3	29.0	51.4	-22.4
0.457	4.0	20.2	24.2	46.8	-22.5
0.327	6.6	20.3	26.9	49.5	-22.7
0.495	3.1	20.2	23.3	46.1	-22.8
0.352	5.6	20.2	25.8	48.9	-23.1

CONCLUSION

Pass

Tested By

AC POWERLINE CONDUCTED EMISSIONS

NORTHWEST EMC
WTD.2015.03.10
PSA-ESCI 2015.03.03, EmiR5 2015.03.24

EUT:	1713 USB Radio Device	Work Order:	MCSO1731
Serial Number:	EV1-3-000297	Date:	05/22/2015
Customer:	Microsoft Corporation	Temperature:	23°C
Attendees:	None	Relative Humidity:	49%
Customer Project:	None	Bar. Pressure:	1014 mb
Tested By:	Richard Mellroth	Job Site:	NC05
Power:	USB via 110VAC/60Hz	Configuration:	MCSO1731-2

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2015	ANSI C63.10:2009

TEST PARAMETERS

Run #:	10	Line:	Neutral	Ext. Attenuation (dB):	20

COMMENTS

None

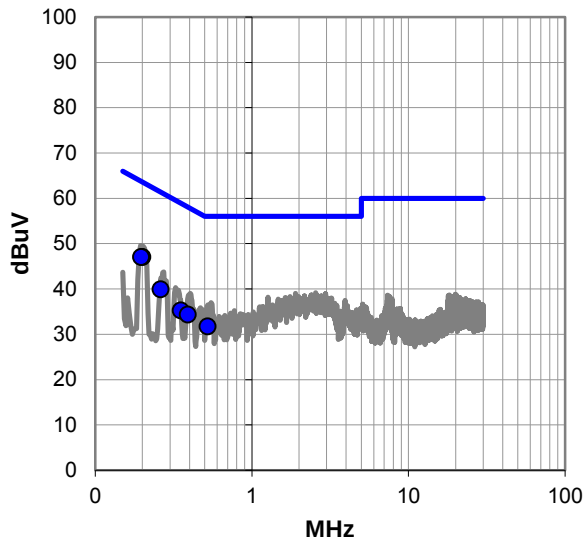
EUT OPERATING MODES

Transmitting High Channel 64, 5320 MHz, 6Mbps, Maximum Duty Cycle, Power Settings at Default

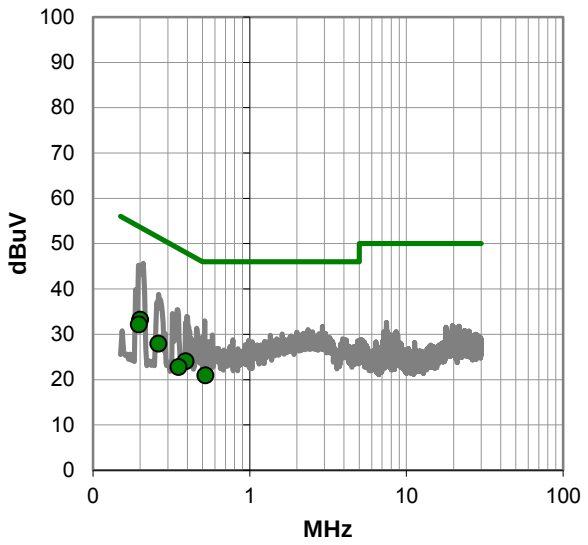
DEVIATIONS FROM TEST STANDARD

None

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



AC POWERLINE CONDUCTED EMISSIONS

NORTHWEST EMC

WTD.2015.03.10
PSA-ESCI 2015.03.03, EmiR5 2015.03.24

RESULTS - Run #10

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.200	26.6	20.4	47.0	63.6	-16.6
0.196	26.6	20.4	47.0	63.8	-16.7
0.261	19.6	20.3	39.9	61.4	-21.5
0.352	15.0	20.2	35.2	58.9	-23.7
0.390	14.1	20.2	34.3	58.1	-23.7
0.521	11.5	20.2	31.7	56.0	-24.3

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.200	12.8	20.4	33.2	53.6	-20.4
0.196	11.7	20.4	32.1	53.8	-21.6
0.261	7.6	20.3	27.9	51.4	-23.5
0.390	3.8	20.2	24.0	48.1	-24.0
0.521	0.7	20.2	20.9	46.0	-25.1
0.352	2.5	20.2	22.7	48.9	-26.2

CONCLUSION

Pass

Tested By

AC POWERLINE CONDUCTED EMISSIONS

NORTHWEST EMC
WTD.2015.03.10
PSA-ESCI 2015.03.03, EmiR5 2015.03.24

EUT:	1713 USB Radio Device	Work Order:	MCSO1731
Serial Number:	EV1-3-000297	Date:	05/22/2015
Customer:	Microsoft Corporation	Temperature:	23°C
Attendees:	None	Relative Humidity:	49%
Customer Project:	None	Bar. Pressure:	1014 mb
Tested By:	Richard Mellroth	Job Site:	NC05
Power:	USB via 110VAC/60Hz	Configuration:	MCSO1731-2

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2015	ANSI C63.10:2009

TEST PARAMETERS

Run #:	11	Line:	High Line	Ext. Attenuation (dB):	20

COMMENTS

None

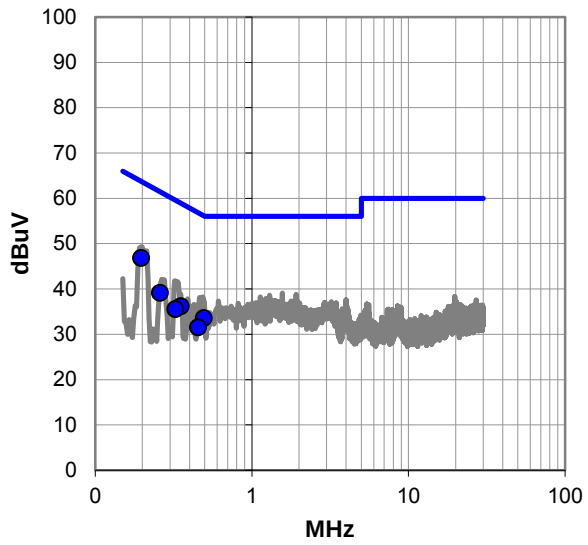
EUT OPERATING MODES

Transmitting Low Channel 149, 5745 MHz, 6Mbps, Maximum Duty Cycle, Power Settings at Default

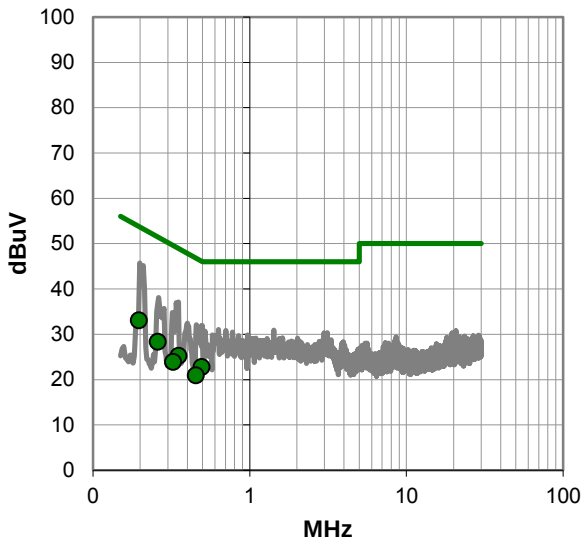
DEVIATIONS FROM TEST STANDARD

None

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



AC POWERLINE CONDUCTED EMISSIONS

NORTHWEST EMC

WTD.2015.03.10
PSA-ESCI 2015.03.03, EmiR5 2015.03.24

RESULTS - Run #11

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.197	26.4	20.4	46.8	63.7	-16.9
0.260	18.8	20.3	39.1	61.4	-22.3
0.495	13.3	20.2	33.5	56.1	-22.6
0.353	15.9	20.2	36.1	58.9	-22.8
0.325	15.3	20.3	35.6	59.6	-24.0
0.455	11.3	20.2	31.5	56.8	-25.3

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.197	12.6	20.4	33.0	53.7	-20.7
0.260	8.0	20.3	28.3	51.4	-23.1
0.495	2.5	20.2	22.7	46.1	-23.4
0.353	5.0	20.2	25.2	48.9	-23.7
0.325	3.6	20.3	23.9	49.6	-25.7
0.455	0.7	20.2	20.9	46.8	-25.9

CONCLUSION

Pass

Tested By

AC POWERLINE CONDUCTED EMISSIONS

NORTHWEST EMC
WTD.2015.03.10
PSA-ESCI 2015.03.03, EmiR5 2015.03.24

EUT:	1713 USB Radio Device	Work Order:	MCSO1731
Serial Number:	EV1-3-000297	Date:	05/22/2015
Customer:	Microsoft Corporation	Temperature:	23°C
Attendees:	None	Relative Humidity:	49%
Customer Project:	None	Bar. Pressure:	1014 mb
Tested By:	Richard Mellroth	Job Site:	NC05
Power:	USB via 110VAC/60Hz	Configuration:	MCSO1731-2

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2015	ANSI C63.10:2009

TEST PARAMETERS

Run #:	12	Line:	Neutral	Ext. Attenuation (dB):	20

COMMENTS

None

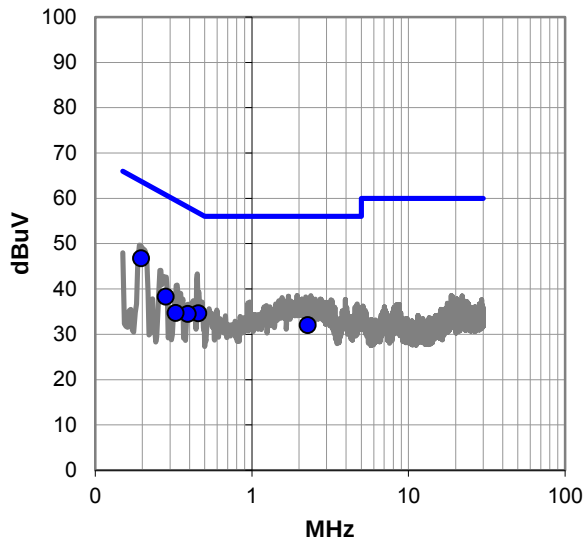
EUT OPERATING MODES

Transmitting Low Channel 149, 5745 MHz, 6Mbps, Maximum Duty Cycle, Power Settings at Default

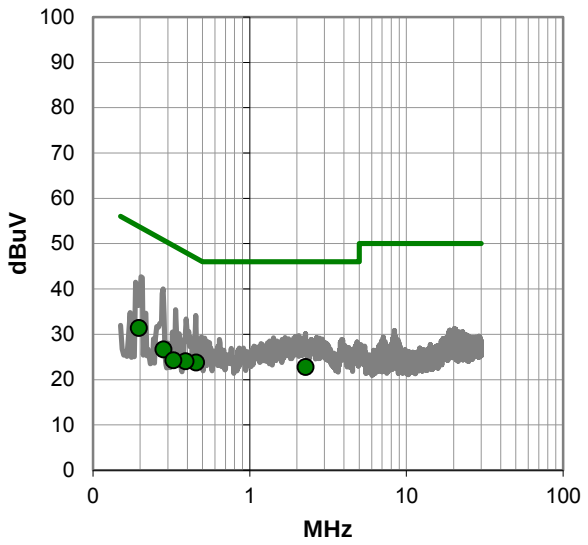
DEVIATIONS FROM TEST STANDARD

None

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



AC POWERLINE CONDUCTED EMISSIONS

NORTHWEST EMC

WTD.2015.03.10
PSA-ESCI 2015.03.03, EmiR5 2015.03.24

RESULTS - Run #12

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.196	26.3	20.4	46.7	63.8	-17.0
0.456	14.4	20.2	34.6	56.8	-22.1
0.282	17.9	20.4	38.3	60.8	-22.5
0.390	14.2	20.2	34.4	58.1	-23.6
2.276	11.5	20.5	32.0	56.0	-24.0
0.327	14.4	20.3	34.7	59.5	-24.9

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.196	10.9	20.4	31.3	53.8	-22.4
0.456	3.5	20.2	23.7	46.8	-23.0
2.276	2.2	20.5	22.7	46.0	-23.3
0.390	3.8	20.2	24.0	48.1	-24.0
0.282	6.2	20.4	26.6	50.8	-24.2
0.327	4.0	20.3	24.3	49.5	-25.3

CONCLUSION

Pass

Tested By

AC POWERLINE CONDUCTED EMISSIONS

NORTHWEST EMC
WTD.2015.03.10
PSA-ESCI 2015.03.03, EmiR5 2015.03.24

EUT:	1713 USB Radio Device	Work Order:	MCSO1731
Serial Number:	EV1-3-000297	Date:	05/22/2015
Customer:	Microsoft Corporation	Temperature:	23°C
Attendees:	None	Relative Humidity:	49%
Customer Project:	None	Bar. Pressure:	1014 mb
Tested By:	Richard Mellroth	Job Site:	NC05
Power:	USB via 110VAC/60Hz	Configuration:	MCSO1731-2

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2015	ANSI C63.10:2009

TEST PARAMETERS

Run #:	13	Line:	High Line	Ext. Attenuation (dB):	20

COMMENTS

None

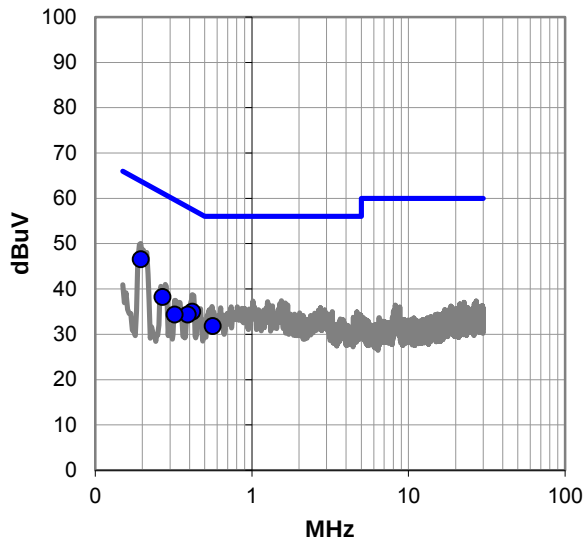
EUT OPERATING MODES

Transmitting Mid Channel 157, 5785 MHz, 6Mbps, Maximum Duty Cycle, Power Settings at Default

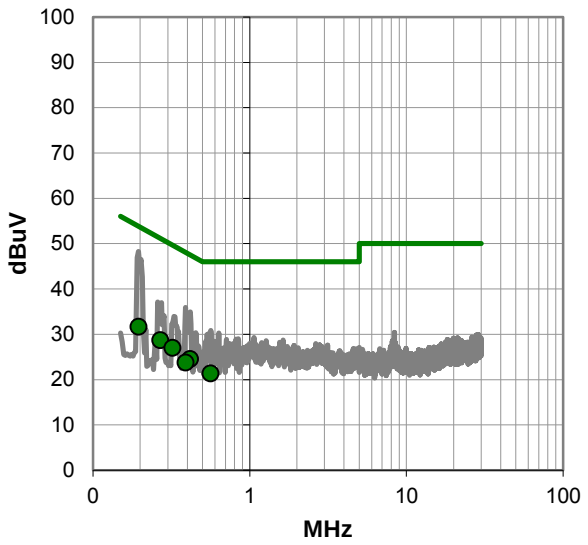
DEVIATIONS FROM TEST STANDARD

None

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



AC POWERLINE CONDUCTED EMISSIONS

NORTHWEST EMC

WTD.2015.03.10
PSA-ESCI 2015.03.03, EmiR5 2015.03.24

RESULTS - Run #13

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.196	26.1	20.4	46.5	63.8	-17.3
0.417	14.7	20.2	34.9	57.5	-22.6
0.269	17.9	20.3	38.2	61.2	-23.0
0.391	14.1	20.2	34.3	58.0	-23.7
0.564	11.3	20.5	31.8	56.0	-24.2
0.321	14.1	20.3	34.4	59.7	-25.3

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.196	11.2	20.4	31.6	53.8	-22.2
0.269	8.4	20.3	28.7	51.2	-22.5
0.321	6.7	20.3	27.0	49.7	-22.7
0.417	4.3	20.2	24.5	47.5	-23.0
0.391	3.5	20.2	23.7	48.0	-24.3
0.564	0.9	20.5	21.4	46.0	-24.6

CONCLUSION

Pass

Tested By

AC POWERLINE CONDUCTED EMISSIONS

NORTHWEST EMC
WTD.2015.03.10
PSA-ESCI 2015.03.03, EmiR5 2015.03.24

EUT:	1713 USB Radio Device	Work Order:	MCSO1731
Serial Number:	EV1-3-000297	Date:	05/22/2015
Customer:	Microsoft Corporation	Temperature:	23°C
Attendees:	None	Relative Humidity:	49%
Customer Project:	None	Bar. Pressure:	1014 mb
Tested By:	Richard Mellroth	Job Site:	NC05
Power:	USB via 110VAC/60Hz	Configuration:	MCSO1731-2

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2015	ANSI C63.10:2009

TEST PARAMETERS

Run #:	14	Line:	Neutral	Ext. Attenuation (dB):	20

COMMENTS

None

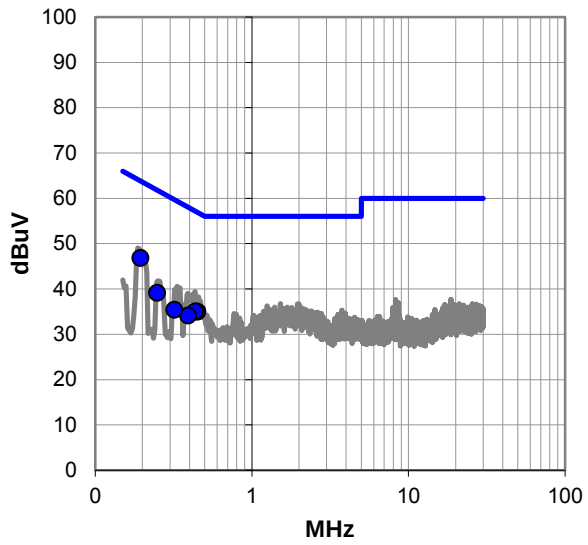
EUT OPERATING MODES

Transmitting Mid Channel 157, 5785 MHz, 6Mbps, Maximum Duty Cycle, Power Settings at Default

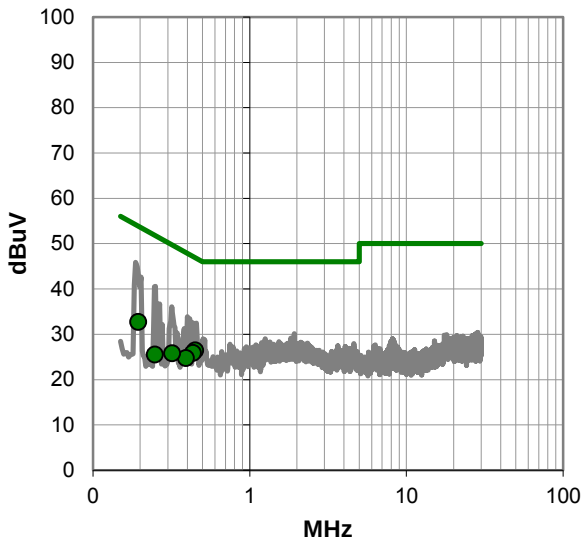
DEVIATIONS FROM TEST STANDARD

None

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



AC POWERLINE CONDUCTED EMISSIONS

NORTHWEST EMC

WTD.2015.03.10
PSA-ESCI 2015.03.03, EmiR5 2015.03.24

RESULTS - Run #14

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.195	26.4	20.4	46.8	63.8	-17.0
0.449	14.7	20.2	34.9	56.9	-22.0
0.434	14.8	20.2	35.0	57.2	-22.1
0.248	18.8	20.3	39.1	61.8	-22.7
0.392	13.9	20.2	34.1	58.0	-23.9
0.320	15.1	20.3	35.4	59.7	-24.3

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.449	6.2	20.2	26.4	46.9	-20.5
0.195	12.3	20.4	32.7	53.8	-21.1
0.434	5.6	20.2	25.8	47.2	-21.3
0.392	4.5	20.2	24.7	48.0	-23.3
0.320	5.5	20.3	25.8	49.7	-23.9
0.248	5.2	20.3	25.5	51.8	-26.3

CONCLUSION

Pass

Tested By

AC POWERLINE CONDUCTED EMISSIONS

NORTHWEST EMC
WTD.2015.03.10
PSA-ESCI 2015.03.03, EmiR5 2015.03.24

EUT:	1713 USB Radio Device	Work Order:	MCSO1731
Serial Number:	EV1-3-000297	Date:	05/22/2015
Customer:	Microsoft Corporation	Temperature:	23°C
Attendees:	None	Relative Humidity:	49%
Customer Project:	None	Bar. Pressure:	1014 mb
Tested By:	Richard Mellroth	Job Site:	NC05
Power:	USB via 110VAC/60Hz	Configuration:	MCSO1731-2

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2015	ANSI C63.10:2009

TEST PARAMETERS

Run #:	15	Line:	High Line	Ext. Attenuation (dB):	20

COMMENTS

None

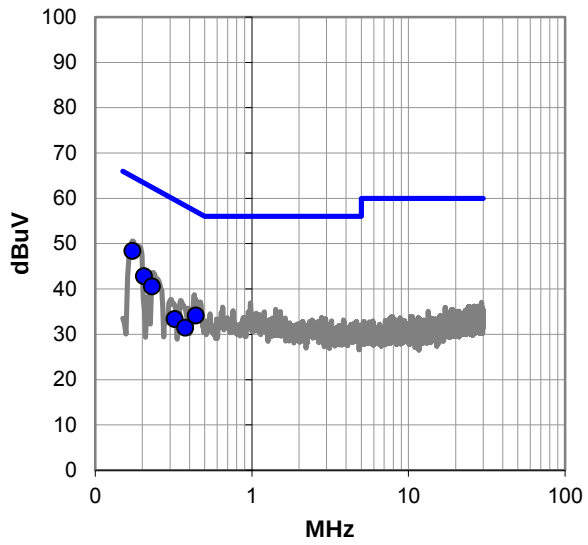
EUT OPERATING MODES

Transmitting High Channel 165, 5825 MHz, 6Mbps, Maximum Duty Cycle, Power Settings at Default

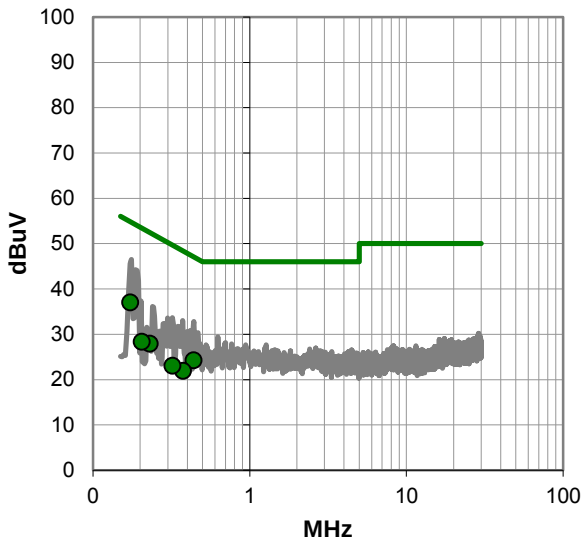
DEVIATIONS FROM TEST STANDARD

None

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



AC POWERLINE CONDUCTED EMISSIONS

NORTHWEST EMC

WTD.2015.03.10
PSA-ESCI 2015.03.03, EmiR5 2015.03.24

RESULTS - Run #15

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.173	27.9	20.5	48.4	64.8	-16.4
0.205	22.4	20.4	42.8	63.4	-20.6
0.230	20.2	20.3	40.5	62.4	-21.9
0.439	13.9	20.2	34.1	57.1	-22.9
0.322	13.1	20.3	33.4	59.7	-26.3
0.375	11.2	20.2	31.4	58.4	-26.9

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.173	16.5	20.5	37.0	54.8	-17.8
0.439	4.0	20.2	24.2	47.1	-22.8
0.230	7.6	20.3	27.9	52.4	-24.5
0.205	7.9	20.4	28.3	53.4	-25.1
0.375	1.7	20.2	21.9	48.4	-26.4
0.322	2.8	20.3	23.1	49.7	-26.6

CONCLUSION

Pass

Tested By

AC POWERLINE CONDUCTED EMISSIONS

NORTHWEST EMC
WTD.2015.03.10
PSA-ESCI 2015.03.03, EmiR5 2015.03.24

EUT:	1713 USB Radio Device	Work Order:	MCSO1731
Serial Number:	EV1-3-000297	Date:	05/22/2015
Customer:	Microsoft Corporation	Temperature:	23°C
Attendees:	None	Relative Humidity:	49%
Customer Project:	None	Bar. Pressure:	1014 mb
Tested By:	Richard Mellroth	Job Site:	NC05
Power:	USB via 110VAC/60Hz	Configuration:	MCSO1731-2

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2015	ANSI C63.10:2009

TEST PARAMETERS

Run #:	16	Line:	Neutral	Ext. Attenuation (dB):	20

COMMENTS

None

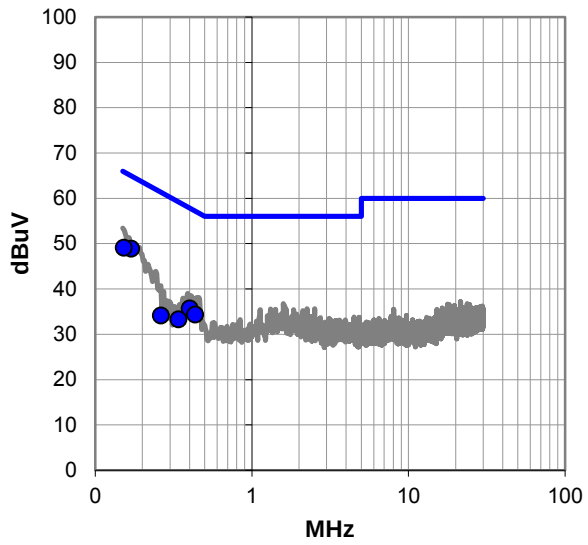
EUT OPERATING MODES

Transmitting High Channel 165, 5825 MHz, 6Mbps, Maximum Duty Cycle, Power Settings at Default

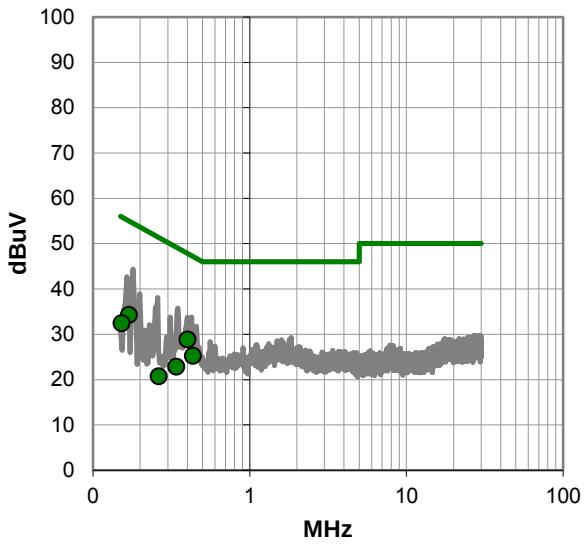
DEVIATIONS FROM TEST STANDARD

None

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



AC POWERLINE CONDUCTED EMISSIONS

NORTHWEST EMC

WTD.2015.03.10
PSA-ESCI 2015.03.03, EmiR5 2015.03.24

RESULTS - Run #16

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.170	28.4	20.5	48.9	65.0	-16.1
0.153	28.5	20.5	49.0	65.9	-16.8
0.402	15.4	20.2	35.6	57.8	-22.2
0.434	14.1	20.2	34.3	57.2	-22.8
0.341	13.0	20.2	33.2	59.2	-25.9
0.263	13.8	20.3	34.1	61.4	-27.2

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.402	8.6	20.2	28.8	47.8	-19.0
0.170	13.8	20.5	34.3	55.0	-20.7
0.434	5.0	20.2	25.2	47.2	-21.9
0.153	11.9	20.5	32.4	55.9	-23.4
0.341	2.6	20.2	22.8	49.2	-26.3
0.263	0.4	20.3	20.7	51.4	-30.6

CONCLUSION

Pass

Tested By

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

Low Channel 36, 5180 MHz
High Channel 48, 5240 MHz
Low Channel 149, 5745 MHz
Mid Channel 157, 5785 MHz
High Channel 165, 5825 MHz

MODES OF OPERATION

802.11(a), 6Mbps
802.11(a), 36Mbps
802.11(a), 54Mbps
802.11(n), MCS0
802.11(n), MCS7

POWER SETTINGS INVESTIGATED

USB

CONFIGURATIONS INVESTIGATED

MCSO1731 - 4

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
NC02 Cable	ESM Cable Corp.	TTBJ-141 KMKM-72	NC7	11/10/2014	12 mo
Amplifier	Miteq	JSW45-2600400-40-5P	TTK	11/10/2014	12 mo
Antenna, Horn	ETS Lindgren	3160-10	AJE	NCR	0 mo
18-26GHz Horn Antenna Cable	N/A	N/A	NC8	6/10/2014	12 mo
Pre-Amplifier	Miteq	AMF-6F-18002650-25-10P	AOD	6/10/2014	12 mo
Antenna, Horn	ETS	3160-09	AIY	NCR	0 mo
NC01 Cables	N/A	Standard Gain Horn Cable	NC3	10/13/2014	12 mo
Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	AOJ	10/13/2014	12 mo
Antenna, Horn	EMCO	3160-08	AHO	NCR	0 mo
Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AOK	10/13/2014	12 mo
Antenna, Horn	EMCO	3160-07	AHP	NCR	0 mo
Notch Filter, 5.725-5.875 GHz	Micro-Tronics	BRC50705	HHM	3/6/2015	12 mo
Notch Filter, 5.15 - 5.35 GHz	Micro-Tronics	BRC50703	HHK	3/6/2015	12 mo
NC01 Cables	N/A	3115 Horn Cable	NC2	10/13/2014	12 mo
Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	AVZ	9/8/2014	12 mo
Antenna, Horn	EMCO	3115	AHM	6/3/2014	24 mo
Low Pass Filter, 0 - 1000 MHz	Micro-Tronics	LPM50004	LFF	3/6/2015	12 mo
Pre-Amplifier	Miteq	AM-1616-1000	PAB	9/8/2014	12 mo
Antenna, Bilog	Teseq	CBL 6144	AYG	3/5/2015	24 mo
NC01 Cables	N/A	Bilog Cables	NC1	9/8/2014	12 mo
Spectrum Analyzer	Agilent	E4446A	AAT	6/27/2014	12 mo
Spectrum Analyzer	Agilent	E4440A	AFE	10/28/2014	12 mo

MEASUREMENT BANDWIDTHS

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

TEST DESCRIPTION

The highest gain 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.

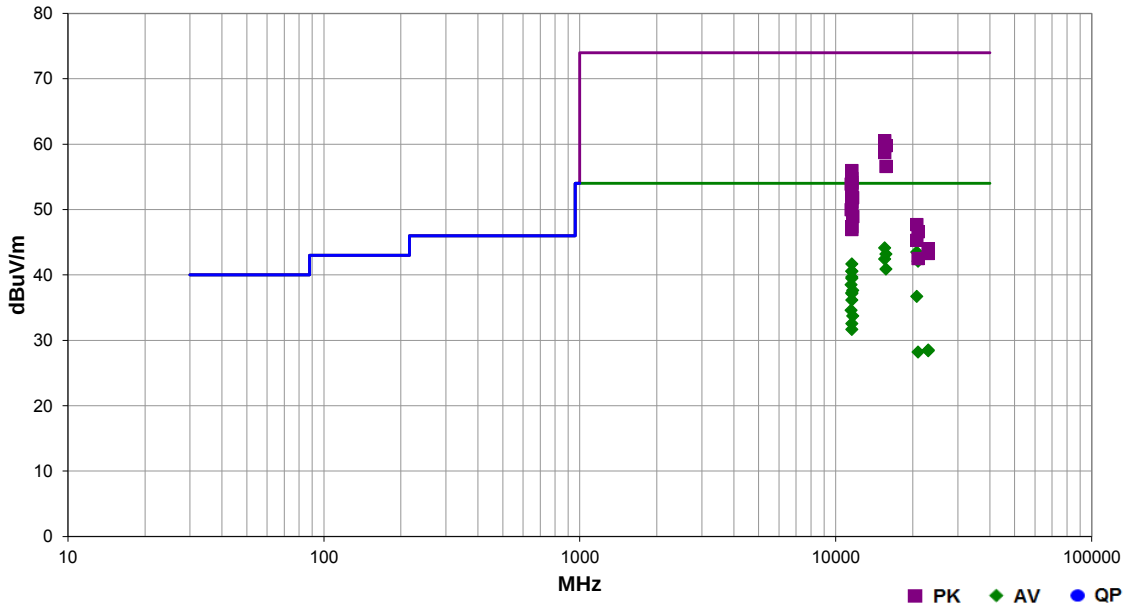
While scanning, emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and EUT antenna in three orthogonal axis, and adjusting the measurement antenna height and polarization (per ANSI C63.10:2009). A preamp and high pass filter (and notch filter) were used for this test in order to provide sufficient measurement sensitivity.

SPURIOUS RADIATED EMISSIONS

Work Order:	MCSO1731	**Date:**	05/12/15		
Project:	None	**Temperature:**	22 °C		
Job Site:	NC01	**Humidity:**	46% RH		
Serial Number:	EV1-3-000299	**Barometric Pres.:**	1011 mbar	**Tested by:**	Richard Mellroth
EUT:	1713 USB Radio Device				
Configuration:	4				
Customer:	Microsoft Corporation				
Attendees:	None				
EUT Power:	USB				
Operating Mode:	Continuous Tx Enabled, EUT power settings at Default. See comments next to data points for EUT channel, data rate, and orientation.				
Deviations:	None				
Comments:	None				

Test Specifications	**Test Method**
FCC 15.407:2015	ANSI C63.10:2009

Run #	48,50,52,61	**Test Distance (m)**	3	**Antenna Height(s)**	1 to 4(m)	**Results**	Pass



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
15539.510	26.7	17.4	1.2	89.0	3.0	0.0	Vert	AV	0.0	44.1	54.0	-9.9	Low Ch 36, 6Mbps, EUT Flat
20720.680	43.5	0.0	1.3	232.0	3.0	0.0	Horz	AV	0.0	43.5	54.0	-10.5	Low Ch 36, 6Mbps, EUT on Side
15719.540	26.1	17.1	1.2	83.0	3.0	0.0	Vert	AV	0.0	43.2	54.0	-10.8	High Ch 48, 6Mbps, EUT Flat
15539.410	25.0	17.4	1.2	2.0	3.0	0.0	Horz	AV	0.0	42.4	54.0	-11.6	Low Ch 36, 6Mbps, EUT on Side
20960.780	42.1	0.0	1.3	233.0	3.0	0.0	Horz	AV	0.0	42.1	54.0	-11.9	High Ch 48, 6Mbps, EUT on Side
11570.040	43.0	-1.3	1.2	334.0	3.0	0.0	Horz	AV	0.0	41.7	54.0	-12.3	Mid Ch 157, 36Mbps, EUT on Side
15719.490	23.8	17.1	1.2	254.0	3.0	0.0	Horz	AV	0.0	40.9	54.0	-13.1	High Ch 48, 6Mbps, EUT on Side
11570.030	41.9	-1.3	1.2	301.0	3.0	0.0	Horz	AV	0.0	40.6	54.0	-13.4	Mid Ch 157, 54Mbps, EUT on Side
11570.030	41.9	-1.3	1.2	333.0	3.0	0.0	Horz	AV	0.0	40.6	54.0	-13.4	Mid Ch 157, MCS7, EUT on Side
15542.090	43.1	17.4	1.2	89.0	3.0	0.0	Vert	PK	0.0	60.5	74.0	-13.5	Low Ch 36, 6Mbps, EUT Flat
15719.710	42.7	17.1	1.2	83.0	3.0	0.0	Vert	PK	0.0	59.8	74.0	-14.2	High Ch 48, 6Mbps, EUT Flat
11570.070	41.0	-1.3	1.2	300.0	3.0	0.0	Horz	AV	0.0	39.7	54.0	-14.3	Mid Ch 157, MCS0, EUT on Side
11570.060	40.8	-1.3	1.3	329.0	3.0	0.0	Horz	AV	0.0	39.5	54.0	-14.5	Mid Ch 157, 6Mbps, EUT on Side
15541.660	41.3	17.4	1.2	2.0	3.0	0.0	Horz	PK	0.0	58.7	74.0	-15.3	Low Ch 36, 6Mbps, EUT on Side
11490.190	39.9	-1.4	1.6	358.0	3.0	0.0	Vert	AV	0.0	38.5	54.0	-15.5	Low Ch 149, 6Mbps, EUT Flat
11650.200	38.7	-1.1	1.5	0.0	3.0	0.0	Vert	AV	0.0	37.6	54.0	-16.4	High Ch 165, 6Mbps, EUT Flat
11570.090	38.6	-1.3	1.3	276.0	3.0	0.0	Horz	AV	0.0	37.3	54.0	-16.7	Mid Ch 157, 6Mbps, EUT Vert
11570.080	38.5	-1.3	1.0	272.0	3.0	0.0	Vert	AV	0.0	37.2	54.0	-16.8	Mid Ch 157, 6Mbps, EUT Flat
20720.560	36.7	0.0	1.3	190.0	3.0	0.0	Vert	AV	0.0	36.7	54.0	-17.3	Low Ch 36, 6Mbps, EUT Flat
15722.030	39.5	17.1	1.2	254.0	3.0	0.0	Horz	PK	0.0	56.6	74.0	-17.4	High Ch 48, 6Mbps, EUT on Side
11570.080	37.5	-1.3	1.4	268.0	3.0	0.0	Horz	AV	0.0	36.2	54.0	-17.8	Mid Ch 157, 6Mbps, EUT Flat
11570.430	57.3	-1.3	1.2	334.0	3.0	0.0	Horz	PK	0.0	56.0	74.0	-18.0	Mid Ch 157, 36Mbps, EUT on Side
11570.440	56.1	-1.3	1.2	333.0	3.0	0.0	Horz	PK	0.0	54.8	74.0	-19.2	Mid Ch 157, MCS7, EUT on Side
11490.140	36.0	-1.4	1.0	123.0	3.0	0.0	Horz	AV	0.0	34.6	54.0	-19.4	Low Ch 149, 6Mbps, EUT on Side
11568.810	55.5	-1.3	1.2	301.0	3.0	0.0	Horz	PK	0.0	54.2	74.0	-19.8	Mid Ch 157, 54Mbps, EUT on Side
11570.030	55.3	-1.3	1.3	329.0	3.0	0.0	Horz	PK	0.0	54.0	74.0	-20.0	Mid Ch 157, 6Mbps, EUT on Side
11488.650	55.3	-1.4	1.6	358.0	3.0	0.0	Vert	PK	0.0	53.9	74.0	-20.1	Low Ch 149, 6Mbps, EUT Flat

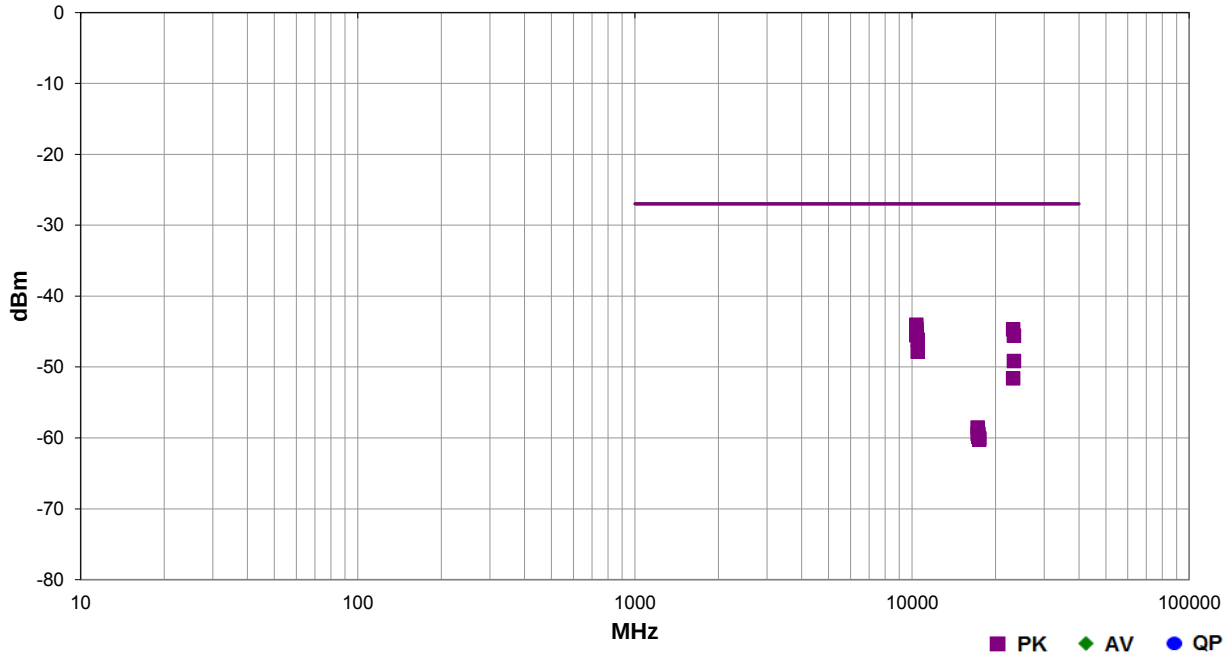
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
11650.200	34.8	-1.1	1.0	124.0	3.0	0.0	Horz	AV	0.0	33.7	54.0	-20.3	High Ch 165, 6Mbps, EUT on Side
11570.670	54.8	-1.3	1.2	300.0	3.0	0.0	Horz	PK	0.0	53.5	74.0	-20.5	Mid Ch 157, MCS0, EUT on Side
11570.080	33.9	-1.3	1.2	15.0	3.0	0.0	Vert	AV	0.0	32.6	54.0	-21.4	Mid Ch 157, 6Mbps, EUT Vert
11647.850	52.9	-1.1	1.5	0.0	3.0	0.0	Vert	PK	0.0	51.8	74.0	-22.2	High Ch 165, 6Mbps, EUT Flat
11570.970	53.1	-1.3	1.3	276.0	3.0	0.0	Horz	PK	0.0	51.8	74.0	-22.2	Mid Ch 157, 6Mbps, EUT Vert
11570.080	33.0	-1.3	1.3	10.0	3.0	0.0	Vert	AV	0.0	31.7	54.0	-22.3	Mid Ch 157, 6Mbps, EUT on Side
11570.350	52.5	-1.3	1.0	272.0	3.0	0.0	Vert	PK	0.0	51.2	74.0	-22.8	Mid Ch 157, 6Mbps, EUT Flat
11571.160	52.3	-1.3	1.4	268.0	3.0	0.0	Horz	PK	0.0	51.0	74.0	-23.0	Mid Ch 157, 6Mbps, EUT Flat
11488.830	51.4	-1.4	1.0	123.0	3.0	0.0	Horz	PK	0.0	50.0	74.0	-24.0	Low Ch 149, 6Mbps, EUT on Side
11652.950	50.0	-1.1	1.0	124.0	3.0	0.0	Horz	PK	0.0	48.9	74.0	-25.1	High Ch 165, 6Mbps, EUT on Side
22980.480	28.5	0.0	1.3	241.0	3.0	0.0	Horz	AV	0.0	28.5	54.0	-25.5	Low Ch 149, 6Mbps, EUT on Side
22980.350	28.4	0.0	1.3	353.0	3.0	0.0	Vert	AV	0.0	28.4	54.0	-25.6	Low Ch 149, 6Mbps, EUT Flat
20960.850	28.2	0.0	1.3	335.0	3.0	0.0	Vert	AV	0.0	28.2	54.0	-25.8	High Ch 48, 6Mbps, EUT Flat
20720.580	47.7	0.0	1.3	232.0	3.0	0.0	Horz	PK	0.0	47.7	74.0	-26.3	Low Ch 36, 6Mbps, EUT on Side
11568.570	48.7	-1.3	1.2	15.0	3.0	0.0	Vert	PK	0.0	47.4	74.0	-26.6	Mid Ch 157, 6Mbps, EUT Vert
11568.520	48.3	-1.3	1.3	10.0	3.0	0.0	Vert	PK	0.0	47.0	74.0	-27.0	Mid Ch 157, 6Mbps, EUT on Side
20961.040	46.6	0.0	1.3	233.0	3.0	0.0	Horz	PK	0.0	46.6	74.0	-27.4	High Ch 48, 6Mbps, EUT on Side
20720.620	45.3	0.0	1.3	190.0	3.0	0.0	Vert	PK	0.0	45.3	74.0	-28.7	Low Ch 36, 6Mbps, EUT Flat
22978.870	44.0	0.0	1.3	353.0	3.0	0.0	Vert	PK	0.0	44.0	74.0	-30.0	Low Ch 149, 6Mbps, EUT Flat
22981.930	43.3	0.0	1.3	241.0	3.0	0.0	Horz	PK	0.0	43.3	74.0	-30.7	Low Ch 149, 6Mbps, EUT on Side
20960.810	42.5	0.0	1.3	335.0	3.0	0.0	Vert	PK	0.0	42.5	74.0	-31.5	High Ch 48, 6Mbps, EUT Flat

SPURIOUS RADIATED EMISSIONS

Work Order:	MCSO1731	**Date:**	05/12/15		
Project:	None	**Temperature:**	22 °C		
Job Site:	NC01	**Humidity:**	46% RH		
Serial Number:	EV1-3-000299	**Barometric Pres.:**	1011 mbar	**Tested by:**	Richard Mellroth
EUT:	1713 USB Radio Device				
Configuration:	4				
Customer:	Microsoft Corporation				
Attendees:	None				
EUT Power:	USB				
Operating Mode:	Continuous Tx Enabled, EUT power settings at Default. See comments next to data points for EUT channel, data rate, and orientation.				
Deviations:	None				
Comments:	None				

Test Specifications	**Test Method**
FCC 15.407:2015	ANSI C63.10:2009

Run #	49,51,60	**Test Distance (m)**	3	**Antenna Height(s)**	1 to 4(m)	**Results**	Pass



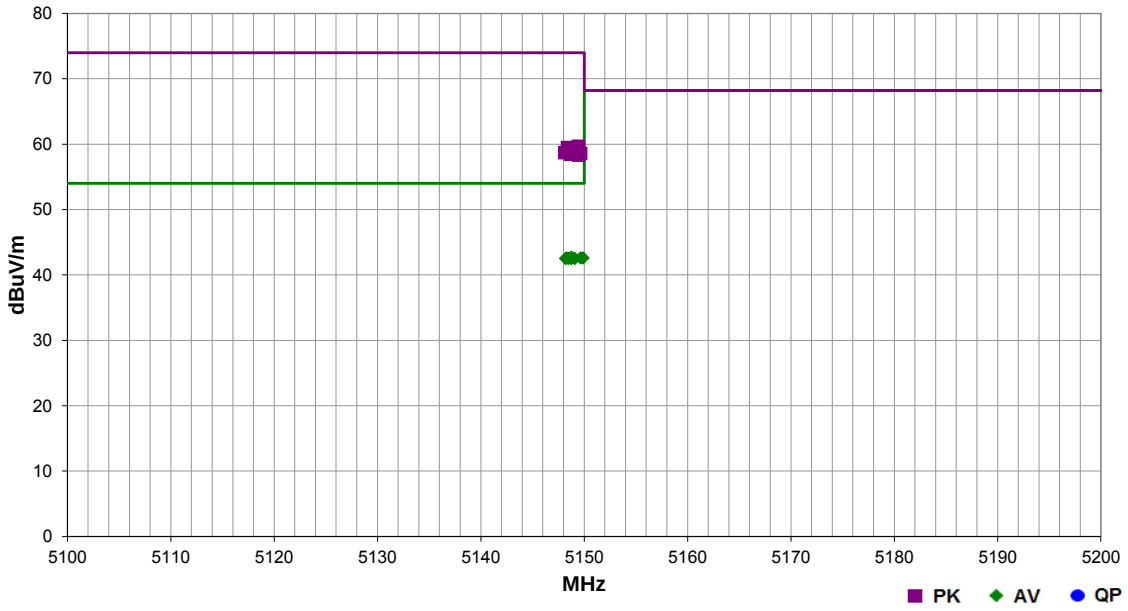
	Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
	10362.310	1.4	339.0	Horz	PK	3.95E-08	-44.0	-27.0	-17.0	Low Ch 36, 6Mbps, EUT on Side
	10360.130	1.4	322.0	Horz	PK	3.44E-08	-44.6	-27.0	-17.6	Low Ch 36, MCS7, EUT on Side
	23140.660	1.3	280.0	Horz	PK	3.40E-08	-44.7	-27.0	-17.7	Mid Ch 157, 6Mbps, EUT on Side
	10360.540	1.6	316.0	Horz	PK	3.29E-08	-44.8	-27.0	-17.8	Low Ch 36, 54Mbps, EUT on Side
	10359.550	1.5	319.0	Horz	PK	3.00E-08	-45.2	-27.0	-18.2	Low Ch 36, 36Mbps, EUT on Side
	10362.390	1.2	0.0	Vert	PK	2.86E-08	-45.4	-27.0	-18.4	Low Ch 36, 6Mbps, EUT Flat
	10359.340	1.5	321.0	Horz	PK	2.80E-08	-45.5	-27.0	-18.5	Low Ch 36, MCS0, EUT on Side
	23300.630	1.3	305.0	Horz	PK	2.77E-08	-45.6	-27.0	-18.6	High Ch 165, 6Mbps, EUT on Side
	10480.980	1.2	152.0	Vert	PK	2.44E-08	-46.1	-27.0	-19.1	High Ch 48, 6Mbps, EUT Flat
	10480.720	1.2	297.0	Horz	PK	1.65E-08	-47.8	-27.0	-20.8	High Ch 48, 6Mbps, EUT on Side
	23300.770	1.3	10.0	Vert	PK	1.21E-08	-49.2	-27.0	-22.2	High Ch 165, 6Mbps, EUT Flat
	23140.650	1.3	12.0	Vert	PK	6.94E-09	-51.6	-27.0	-24.6	Mid Ch 157, 6Mbps, EUT Flat
	17235.440	1.4	124.0	Horz	PK	1.40E-09	-58.5	-27.0	-31.5	Low Ch 149, 6Mbps, EUT Flat
	17354.190	1.0	239.0	Vert	PK	1.14E-09	-59.4	-27.0	-32.4	Mid Ch 157, 6Mbps, EUT on Side
	17235.940	1.0	171.0	Vert	PK	1.14E-09	-59.4	-27.0	-32.4	Low Ch 149, 6Mbps, EUT on Side
	17356.830	1.0	95.0	Horz	PK	1.04E-09	-59.8	-27.0	-32.8	Mid Ch 157, 6Mbps, EUT Flat
	17477.370	2.8	205.0	Vert	PK	9.93E-10	-60.0	-27.0	-33.0	High Ch 165, 6Mbps, EUT Flat
	17475.160	1.0	284.0	Horz	PK	9.49E-10	-60.2	-27.0	-33.2	High Ch 165, 6Mbps, EUT on Side

SPURIOUS RADIATED EMISSIONS

Work Order:	MCSO1731	**Date:**	05/13/15		
Project:	None	**Temperature:**	22 °C		
Job Site:	NC01	**Humidity:**	48% RH		
Serial Number:	EV1-3-000299	**Barometric Pres.:**	1011 mbar	**Tested by:**	Richard Mellroth
EUT:	1713 USB Radio Device				
Configuration:	4				
Customer:	Microsoft Corporation				
Attendees:	None				
EUT Power:	USB				
Operating Mode:	Continuous Tx Enabled, EUT power settings at Default. Low Channel 36, 5180 MHz. See comments next to data points for EUT data rate and orientation.				
Deviations:	None				
Comments:	None				

Test Specifications	**Test Method**
FCC 15.407:2015	ANSI C63.10:2009

Run #	66	**Test Distance (m)**	1	**Antenna Height(s)**	1(m)	**Results**	Pass



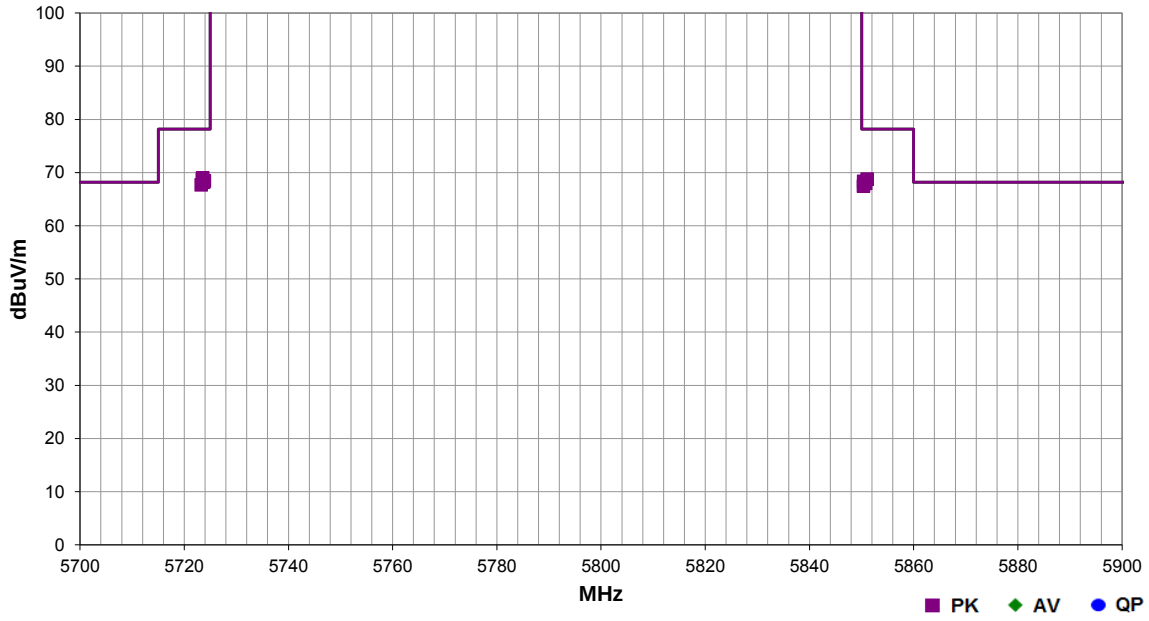
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
5148.767	17.0	35.2	1.0	63.0	1.0	0.0	Horz	AV	-9.5	42.7	54.0	-11.3	Low Ch 36, 6Mbps, EUT Flat
5149.890	16.9	35.2	1.0	138.0	1.0	0.0	Horz	AV	-9.5	42.6	54.0	-11.4	Low Ch 36, 6Mbps, EUT on Side
5149.660	16.9	35.2	1.0	272.0	1.0	0.0	Horz	AV	-9.5	42.6	54.0	-11.4	Low Ch 36, 54Mbps, EUT Flat
5148.837	16.9	35.2	1.0	234.0	1.0	0.0	Vert	AV	-9.5	42.6	54.0	-11.4	Low Ch 36, 6Mbps, EUT Vert
5148.710	16.9	35.2	1.0	2.0	1.0	0.0	Horz	AV	-9.5	42.6	54.0	-11.4	Low Ch 36, MCS7, EUT Flat
5148.300	16.9	35.2	1.0	270.0	1.0	0.0	Horz	AV	-9.5	42.6	54.0	-11.4	Low Ch 36, MCS0, EUT Flat
5149.093	16.8	35.2	1.0	146.0	1.0	0.0	Horz	AV	-9.5	42.5	54.0	-11.5	Low Ch 36, 6Mbps, EUT Vert
5148.473	16.8	35.2	1.0	79.0	1.0	0.0	Vert	AV	-9.5	42.5	54.0	-11.5	Low Ch 36, 6Mbps, EUT on Side
5148.750	16.8	35.2	1.0	323.0	1.0	0.0	Horz	AV	-9.5	42.5	54.0	-11.5	Low Ch 36, 36Mbps, EUT Flat
5148.197	16.8	35.2	1.0	59.0	1.0	0.0	Vert	AV	-9.5	42.5	54.0	-11.5	Low Ch 36, 6Mbps, EUT Flat
5149.420	34.0	35.2	1.0	234.0	1.0	0.0	Vert	PK	-9.5	59.7	74.0	-14.3	Low Ch 36, 6Mbps, EUT Vert
5148.377	33.8	35.2	1.0	138.0	1.0	0.0	Horz	PK	-9.5	59.5	74.0	-14.5	Low Ch 36, 6Mbps, EUT on Side
5148.897	33.4	35.2	1.0	146.0	1.0	0.0	Horz	PK	-9.5	59.1	74.0	-14.9	Low Ch 36, 6Mbps, EUT Vert
5149.290	33.3	35.2	1.0	59.0	1.0	0.0	Vert	PK	-9.5	59.0	74.0	-15.0	Low Ch 36, 6Mbps, EUT Flat
5148.110	33.0	35.2	1.0	63.0	1.0	0.0	Horz	PK	-9.5	58.7	74.0	-15.3	Low Ch 36, 6Mbps, EUT Flat
5149.657	32.9	35.2	1.0	79.0	1.0	0.0	Vert	PK	-9.5	58.6	74.0	-15.4	Low Ch 36, 6Mbps, EUT on Side
5149.040	32.9	35.2	1.0	270.0	1.0	0.0	Horz	PK	-9.5	58.6	74.0	-15.4	Low Ch 36, MCS0, EUT Flat
5149.340	32.8	35.2	1.0	272.0	1.0	0.0	Horz	PK	-9.5	58.5	74.0	-15.5	Low Ch 36, 54Mbps, EUT Flat
5148.710	32.8	35.2	1.0	323.0	1.0	0.0	Horz	PK	-9.5	58.5	74.0	-15.5	Low Ch 36, 36Mbps, EUT Flat
5149.493	32.6	35.2	1.0	2.0	1.0	0.0	Horz	PK	-9.5	58.3	74.0	-15.7	Low Ch 36, MCS7, EUT Flat

SPURIOUS RADIATED EMISSIONS

Work Order:	MCSO1731	**Date:**	05/13/15		
Project:	None	**Temperature:**	22 °C		
Job Site:	NC01	**Humidity:**	48% RH		
Serial Number:	EV1-3-000299	**Barometric Pres.:**	1011 mbar	**Tested by:**	Richard Mellroth
EUT:	1713 USB Radio Device				
Configuration:	4				
Customer:	Microsoft Corporation				
Attendees:	None				
EUT Power:	USB				
Operating Mode:	Continuous Tx Enabled, EUT power settings at Default. See comments next to data points for EUT orientation, data rate, and channel information.				
Deviations:	None				
Comments:	None				

Test Specifications	**Test Method**
FCC 15.407:2015	ANSI C63.10:2009

Run #	67	**Test Distance (m)**	1	**Antenna Height(s)**	1(m)	**Results**	Pass



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
5723.550	33.8	35.2	1.0	2.0	1.0	0.0	Horz	PK	0.0	69.0	78.2	-9.2	Low Ch 149, 6Mbps, EUT Flat
5723.457	33.6	35.2	1.0	92.0	1.0	0.0	Horz	PK	0.0	68.8	78.2	-9.4	Low Ch 149, MCS7, EUT Flat
5851.063	33.6	35.2	1.0	91.0	1.0	0.0	Horz	PK	0.0	68.8	78.2	-9.4	High Ch 165, 36Mbps, EUT Flat
5723.863	33.2	35.2	1.0	92.0	1.0	0.0	Horz	PK	0.0	68.4	78.2	-9.8	Low Ch 149, 54Mbps, EUT Flat
5850.390	33.2	35.2	1.0	108.0	1.0	0.0	Horz	PK	0.0	68.4	78.2	-9.8	High Ch 165, MCS0, EUT Flat
5723.703	33.0	35.2	1.0	291.0	1.0	0.0	Horz	PK	0.0	68.2	78.2	-10.0	Low Ch 149, MCS0, EUT Flat
5850.563	32.9	35.2	1.0	65.0	1.0	0.0	Horz	PK	0.0	68.1	78.2	-10.1	High Ch 165, MCS7, EUT Flat
5850.777	32.8	35.2	1.0	359.0	1.0	0.0	Horz	PK	0.0	68.0	78.2	-10.2	High Ch 165, 6Mbps, EUT Flat
5723.267	32.5	35.2	1.0	65.0	1.0	0.0	Horz	PK	0.0	67.7	78.2	-10.5	Low Ch 149, 36Mbps, EUT Flat
5850.350	32.3	35.2	1.0	174.0	1.0	0.0	Horz	PK	0.0	67.5	78.2	-10.7	High Ch 165, 54Mbps, EUT Flat

FREQUENCY STABILITY

XMit 2015.01.14

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval (mo)
Humidity Temperature Chamber	Tenney	T6S	TBG	NCR	12
Signal Generator	Agilent	N5183A	TIA	4/7/2014	36
Thermometer	Omega Engineering, Inc.	HH311	DUH	4/3/2015	36
Multimeter	Fluke	111	MMM	3/20/2013	36
Spectrum Analyzer	Agilent	E4446A	AAT	6/27/2014	12
NC02 Cable	ESM Cable Corp.	TTBJ-141 KMKM-72	NC5	6/9/2014	12
Attenuator	Fairview Microwave	SA4014-20	TKE	1/16/2015	12
DC Block, 40 GHz	Fairview Microwave	SD3379	AMJ	6/9/2014	12

TEST DESCRIPTION

A direct connect measurement was made between the EUT's antenna cable and a spectrum analyzer. The spectrum analyzer is equipped with a precision frequency reference that exceeds the stability requirement of the EUT.

Measurements were made at the edges of the main transmit bands as called out on the data sheets. Testing was done with an absence of modulation in a CW mode of operation.

The primary supply voltage was varied from 85 % to 115% of the nominal voltage Using a temperature chamber, the transmit frequency was recorded at the extremes of the specified temperature range (-30 ° to +50° C) and at 10°C intervals.

Per the requirements of FCC 15.407:

"Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual."

No specific limits are provided in either FCC 15.407, the product specific rule part, or FCC 2.1055, the equipment authorization procedure for testing frequency stability. While there are no limits called out, any results less than 100ppm will still allow the radio to be operating within the band.

FREQUENCY STABILITY

NORTHWEST EMC

XMit 2015.01.14

EUT:	1713 USB Radio Device			**Work Order:**	MCSO1731
Serial Number:	EV1-3-000299			**Date:**	05/11/15
Customer:	Microsoft Corporation			**Temperature:**	24°C
Attendees:	Kitty Tam			**Humidity:**	39%
Project:	None			**Barometric Pres.:**	1021 mb
Tested by:	Richard Mellroth	**Power:**	USB (5 VDC Nominal)	**Job Site:**	NC02

TEST SPECIFICATIONS	Test Method
FCC 15.407:2015	ANSI C63.10:2009

COMMENTS

Power Settings set to Default. Client adapter cable loss of 1.3dB added to reference level offset.

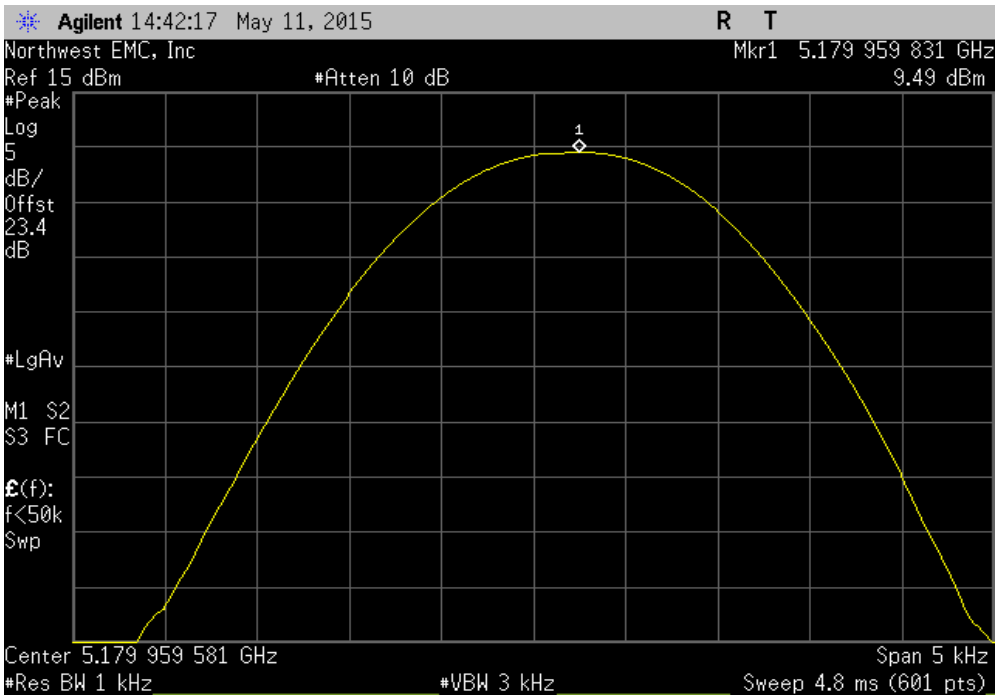
DEVIATIONS FROM TEST STANDARD

None

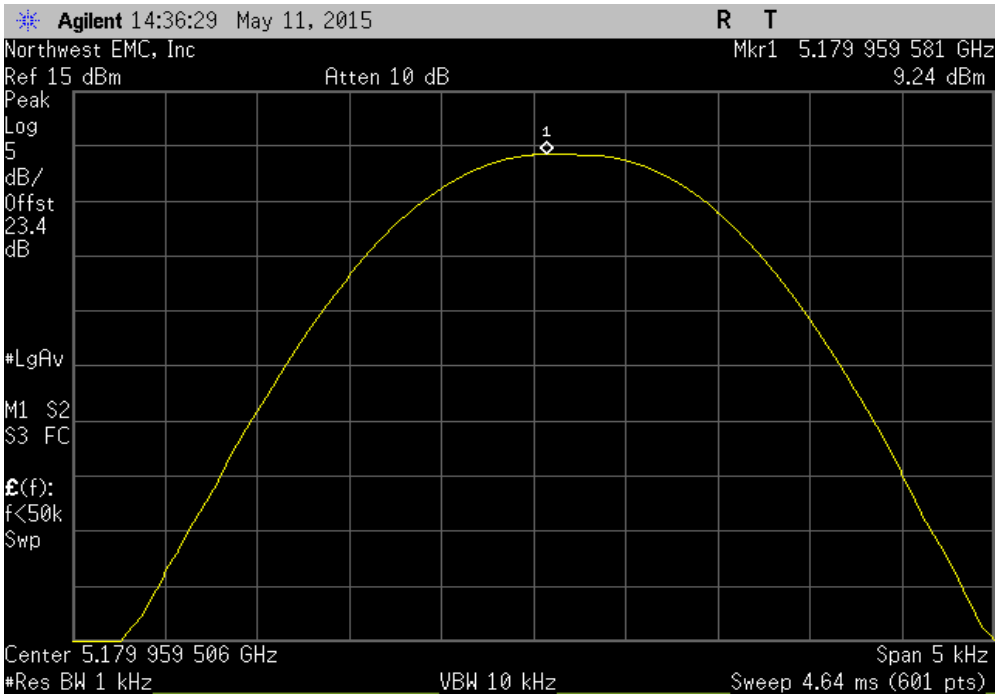
Configuration #	1,3	Signature

	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Results
5150 MHz - 5250 MHz - Low Channel 36, 5180 MHz					
Voltage: 115%	5179.959831	5180	7.8	100	Pass
Voltage: 100%	5179.959581	5180	7.8	100	Pass
Voltage: 85%	5179.96215	5180	7.3	100	Pass
Temperature: +50°	5179.971113	5180	5.6	100	Pass
Temperature: +40°	5179.960351	5180	7.7	100	Pass
Temperature: +30°	5179.96187	5180	7.4	100	Pass
Temperature: +20°	5179.965397	5180	6.7	100	Pass
Temperature: +10°	5179.979648	5180	3.9	100	Pass
Temperature: 0°	5179.989529	5180	2	100	Pass
Temperature: -10°	5179.996931	5180	0.6	100	Pass
Temperature: -20°	5180.001571	5180	0.3	100	Pass
Temperature: -30°	5179.997213	5180	0.5	100	Pass
5725 MHz - 5850 MHz - High Channel 165, 5825 MHz					
Voltage: 115%	5824.961596	5825	6.6	100	Pass
Voltage: 100%	5824.960435	5825	6.8	100	Pass
Voltage: 85%	5824.958509	5825	7.1	100	Pass
Temperature: +50°	5824.968084	5825	5.5	100	Pass
Temperature: +40°	5824.956039	5825	7.6	100	Pass
Temperature: +30°	5824.957749	5825	7.3	100	Pass
Temperature: +20°	5824.961755	5825	6.6	100	Pass
Temperature: +10°	5824.976917	5825	4	100	Pass
Temperature: 0°	5824.988551	5825	2	100	Pass
Temperature: -10°	5824.996938	5825	0.5	100	Pass
Temperature: -20°	5825.001749	5825	0.3	100	Pass
Temperature: -30°	5824.997558	5825	0.4	100	Pass

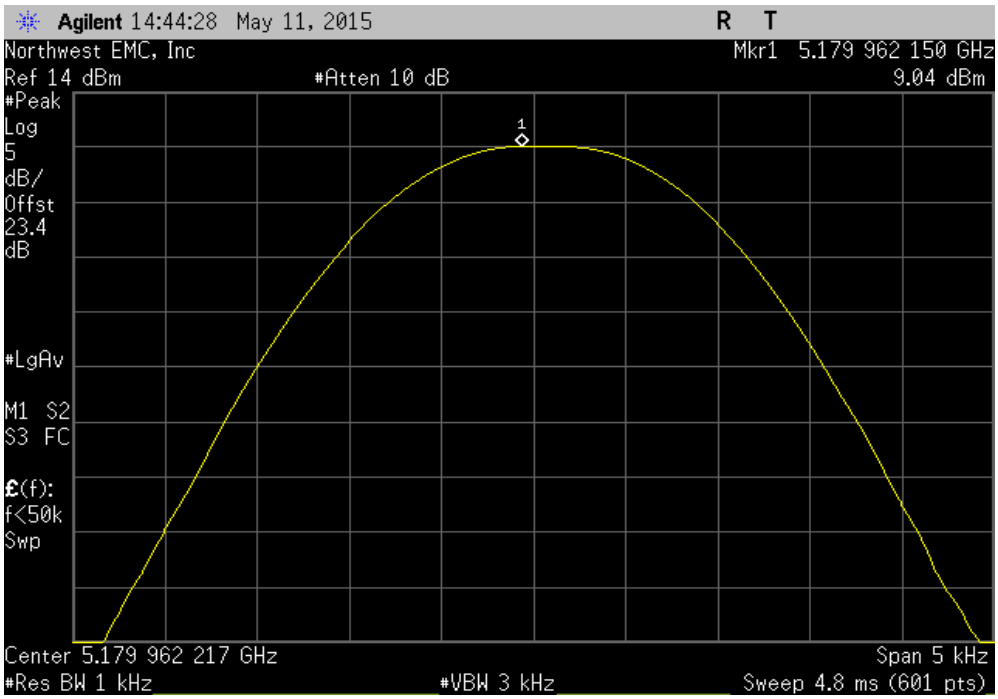
5150 MHz - 5250 MHz - Low Channel 36, 5180 MHz, Voltage: 115%						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Results
		5179.959831	5180	7.8	100	Pass



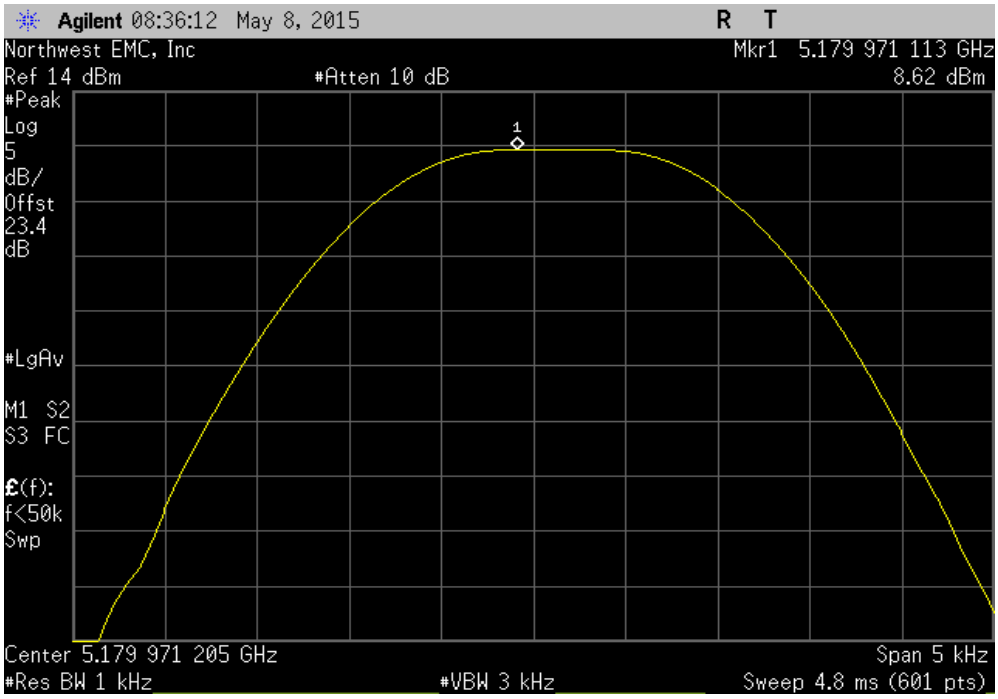
5150 MHz - 5250 MHz - Low Channel 36, 5180 MHz, Voltage: 100%						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Results
		5179.959581	5180	7.8	100	Pass



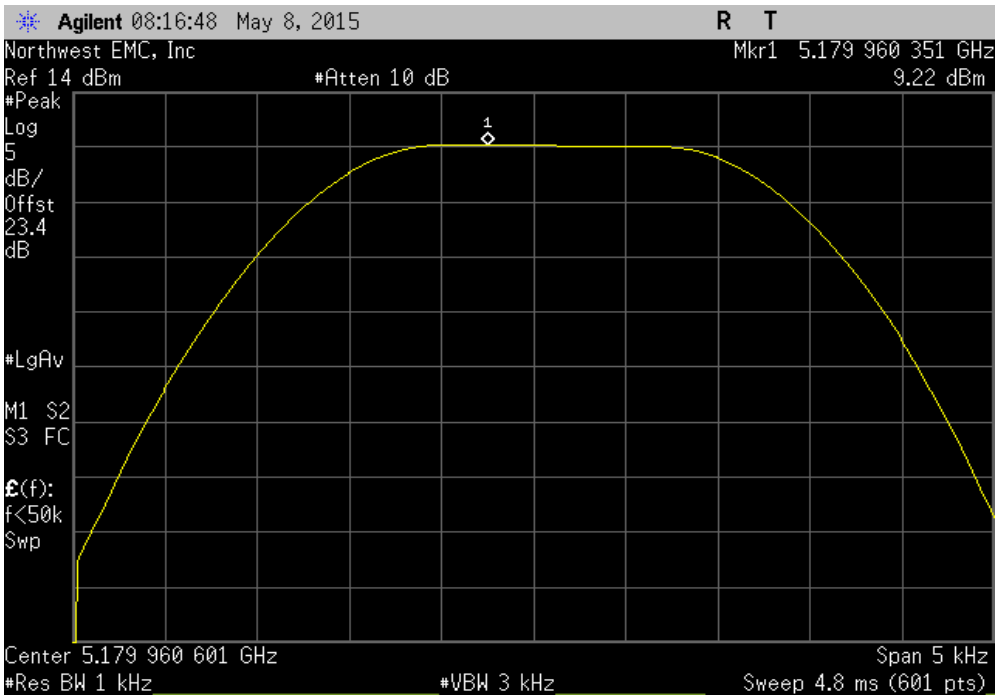
5150 MHz - 5250 MHz - Low Channel 36, 5180 MHz, Voltage: 85%						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Results
		5179.96215	5180	7.3	100	Pass



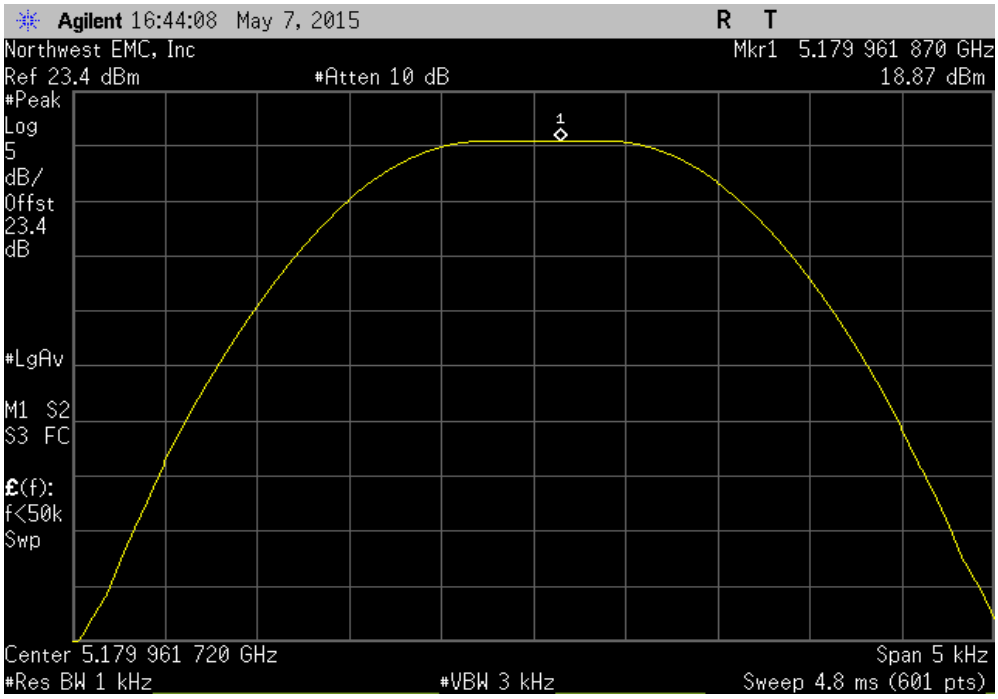
5150 MHz - 5250 MHz - Low Channel 36, 5180 MHz, Temperature: +50°						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Results
		5179.971113	5180	5.6	100	Pass



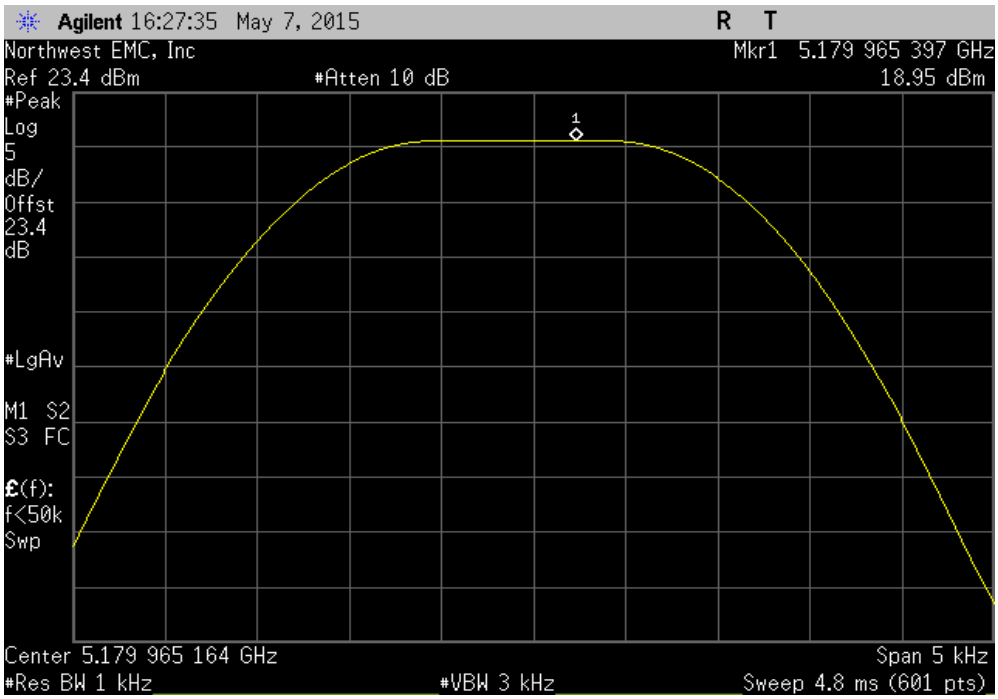
5150 MHz - 5250 MHz - Low Channel 36, 5180 MHz, Temperature: +40°						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Results
		5179.960351	5180	7.7	100	Pass



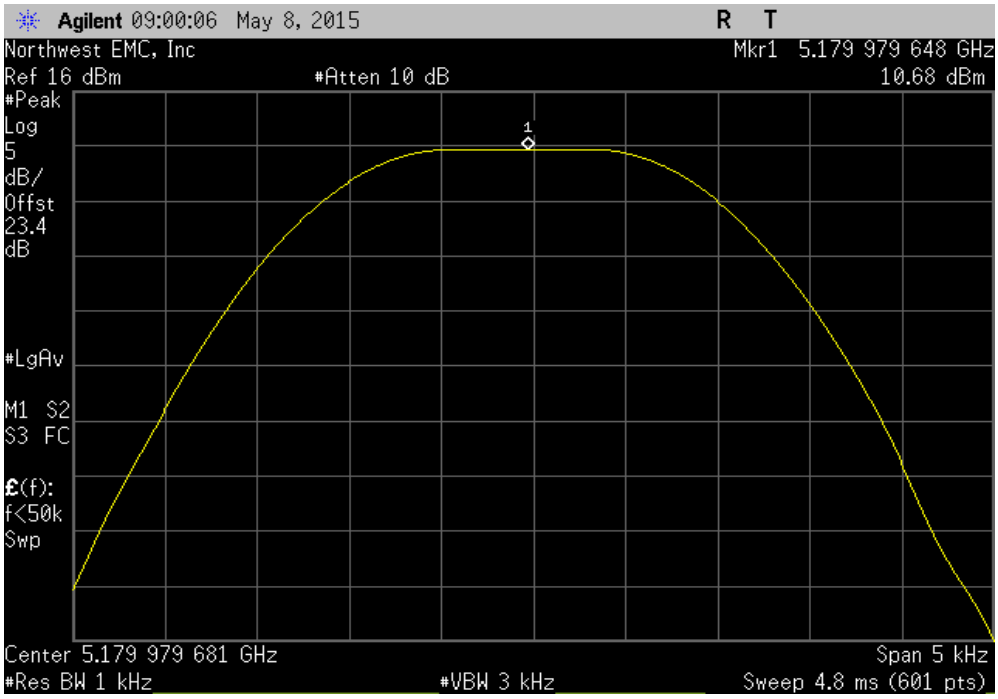
5150 MHz - 5250 MHz - Low Channel 36, 5180 MHz, Temperature: +30°						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Results
		5179.96187	5180	7.4	100	Pass



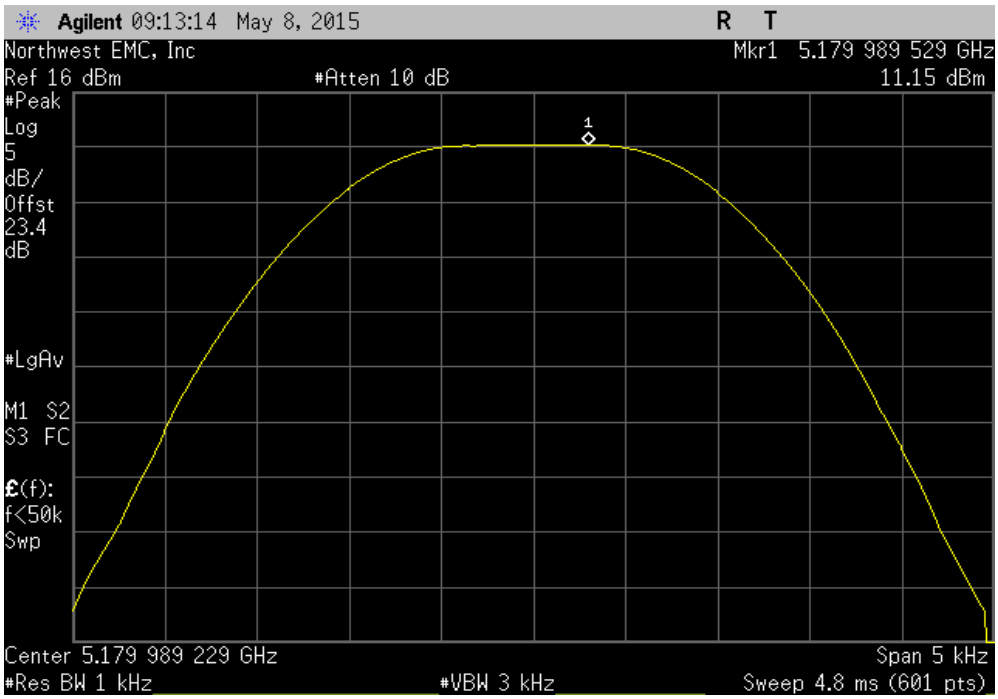
5150 MHz - 5250 MHz - Low Channel 36, 5180 MHz, Temperature: +20°						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Results
		5179.965397	5180	6.7	100	Pass



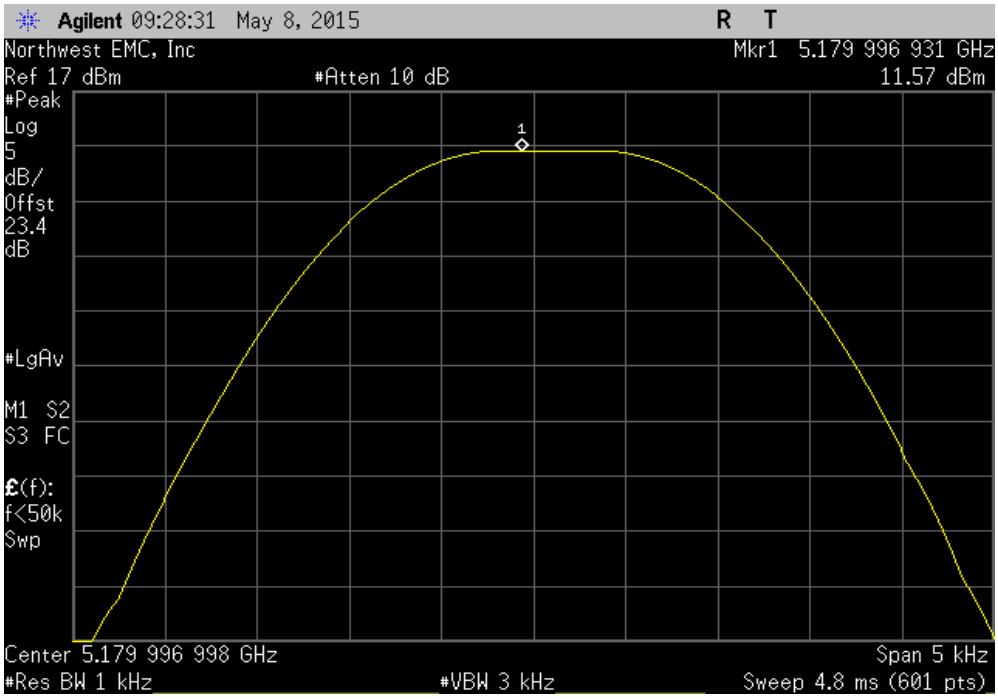
5150 MHz - 5250 MHz - Low Channel 36, 5180 MHz, Temperature: +10°						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Results
		5179.979648	5180	3.9	100	Pass



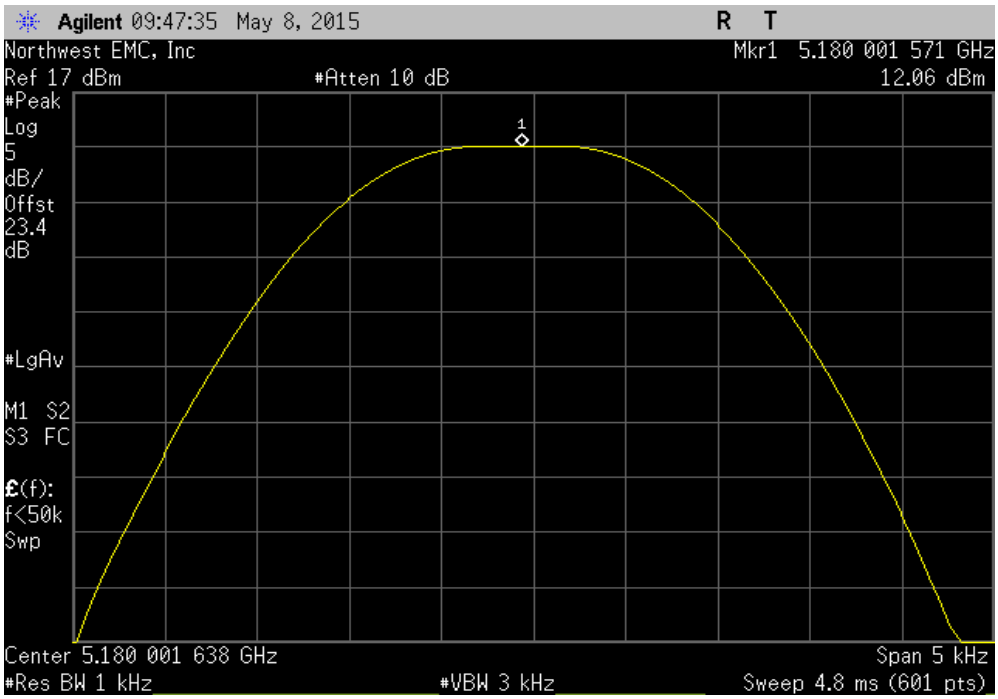
5150 MHz - 5250 MHz - Low Channel 36, 5180 MHz, Temperature: 0°						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Results
		5179.989529	5180	2	100	Pass



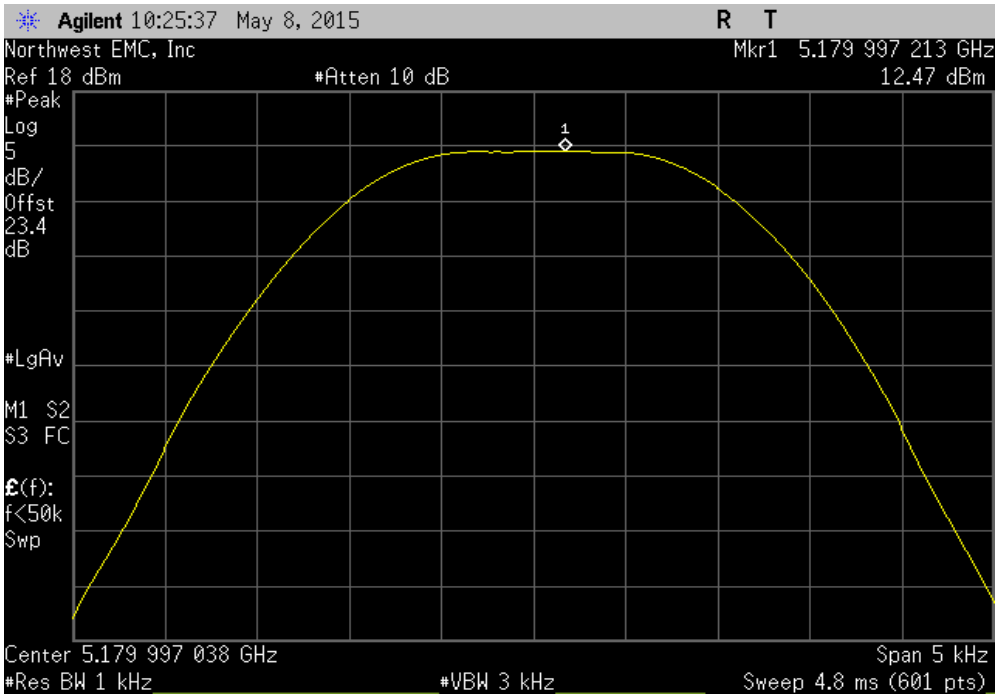
5150 MHz - 5250 MHz - Low Channel 36, 5180 MHz, Temperature: -10°						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Results
		5179.996931	5180	0.6	100	Pass



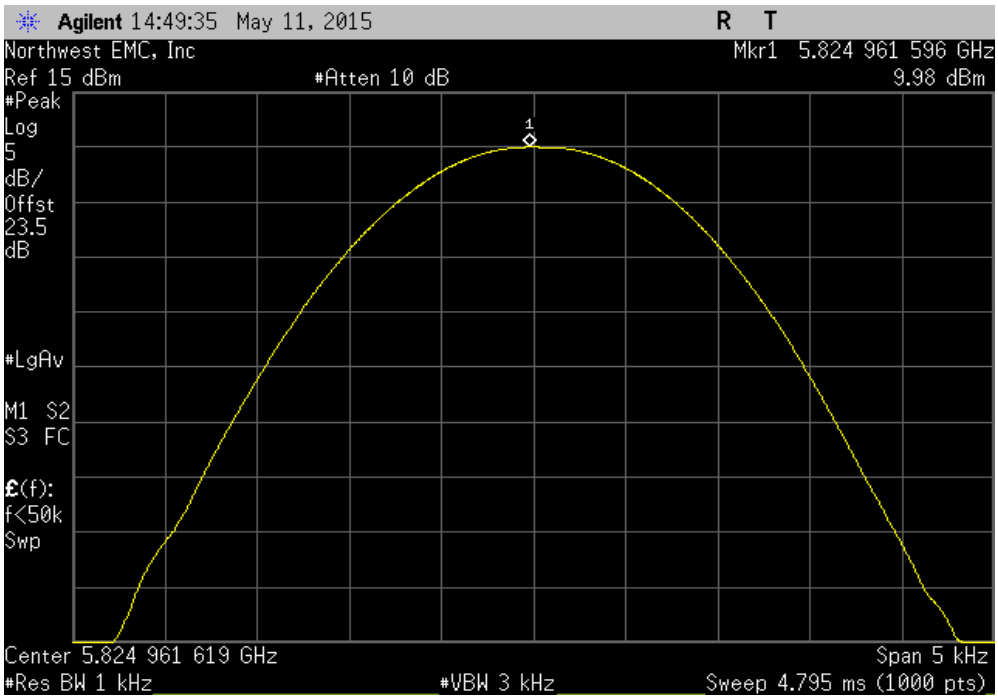
5150 MHz - 5250 MHz - Low Channel 36, 5180 MHz, Temperature: -20°						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Results
		5180.001571	5180	0.3	100	Pass



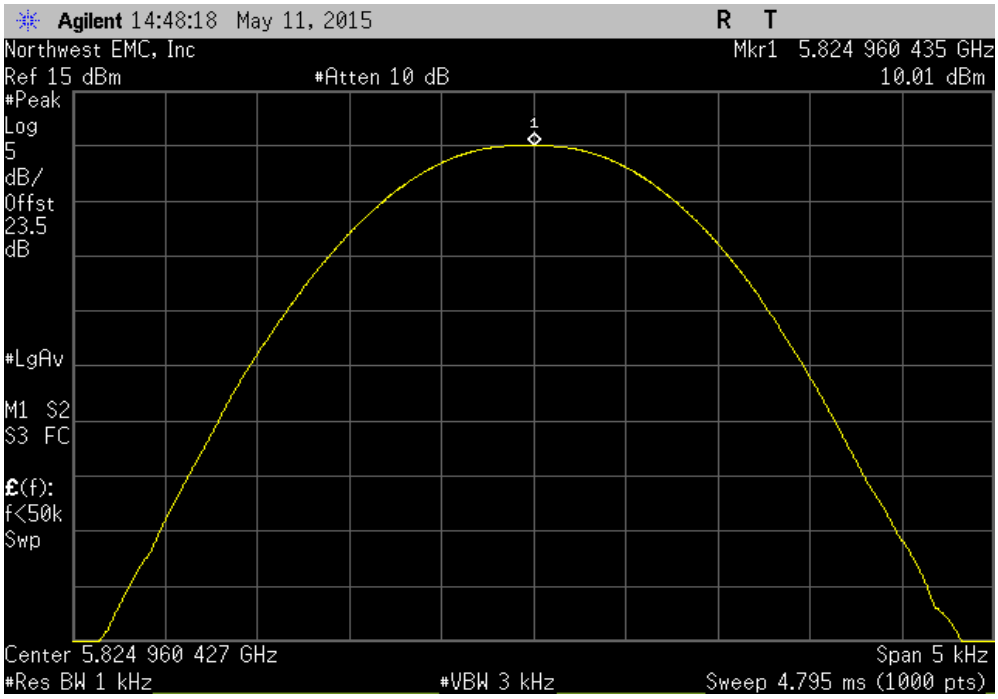
5150 MHz - 5250 MHz - Low Channel 36, 5180 MHz, Temperature: -30°						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Results
		5179.997213	5180	0.5	100	Pass



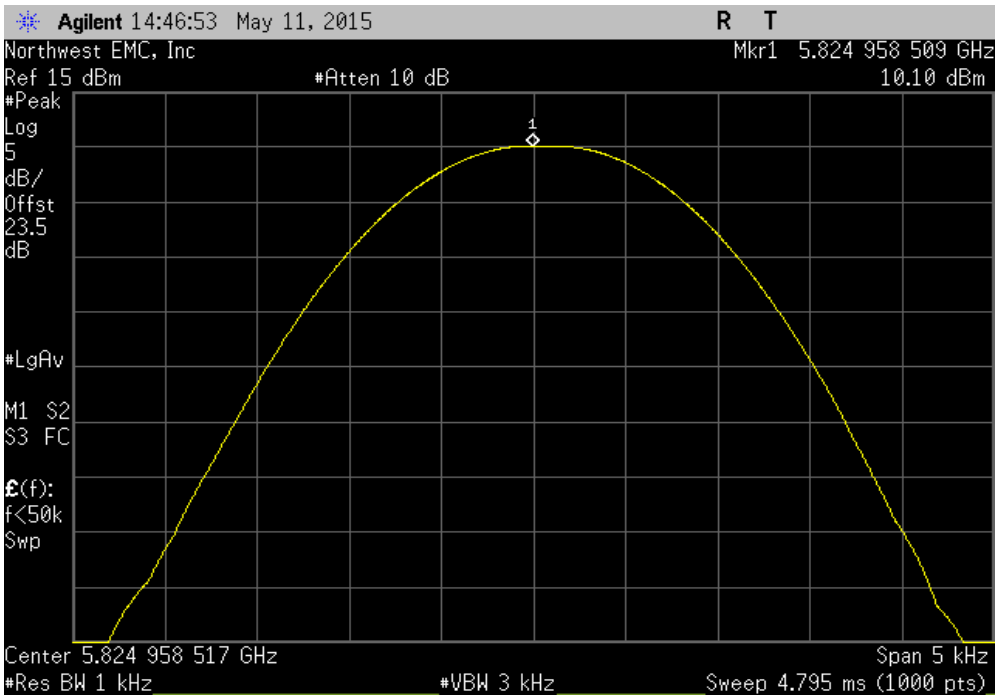
5725 MHz - 5850 MHz - High Channel 165, 5825 MHz, Voltage: 115%						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Results
		5824.961596	5825	6.6	100	Pass



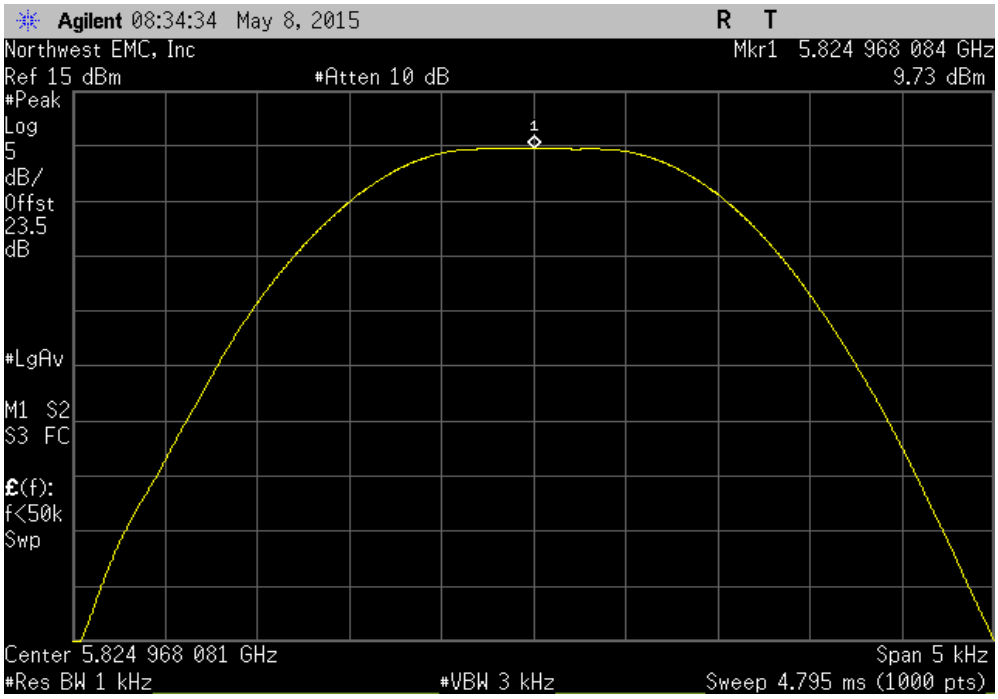
5725 MHz - 5850 MHz - High Channel 165, 5825 MHz, Voltage: 100%						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Results
		5824.960435	5825	6.8	100	Pass



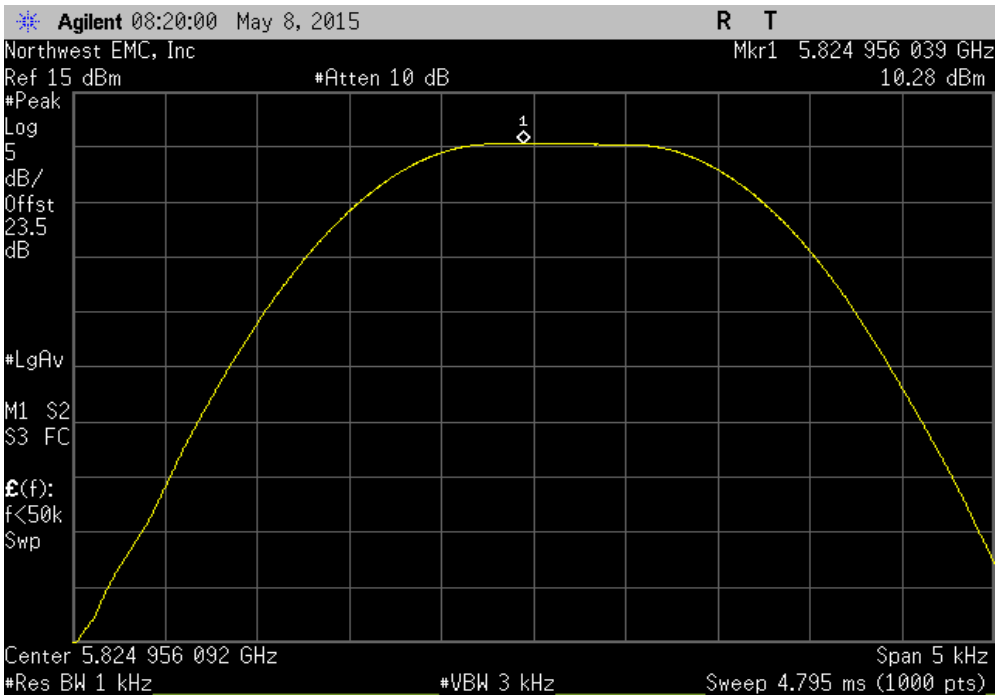
5725 MHz - 5850 MHz - High Channel 165, 5825 MHz, Voltage: 85%						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Results
		5824.958509	5825	7.1	100	Pass



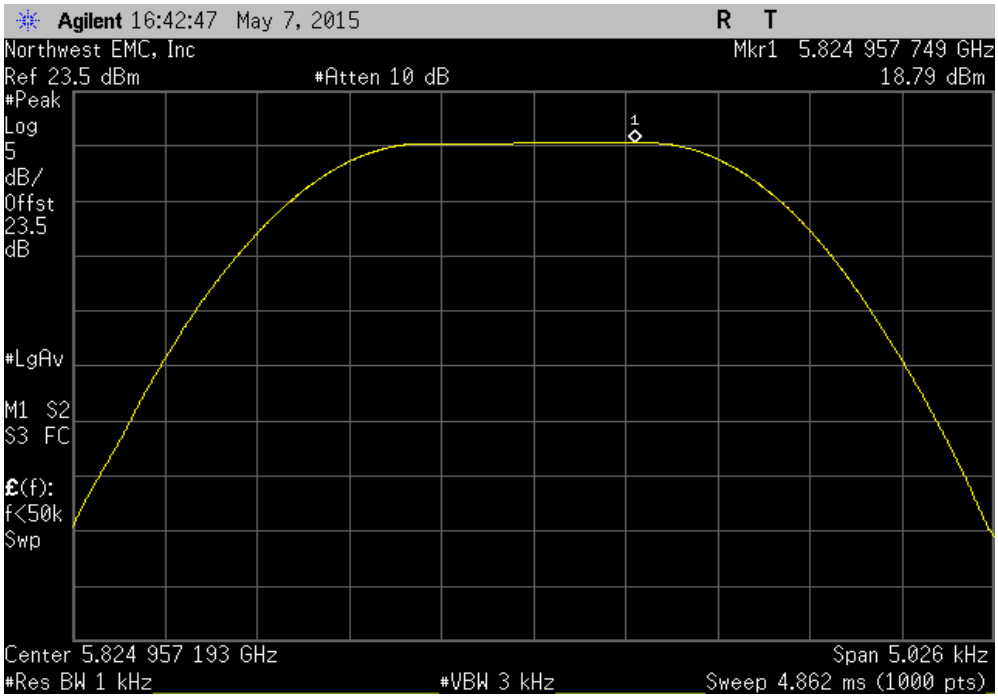
5725 MHz - 5850 MHz - High Channel 165, 5825 MHz, Temperature: +50°						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Results
		5824.968084	5825	5.5	100	Pass



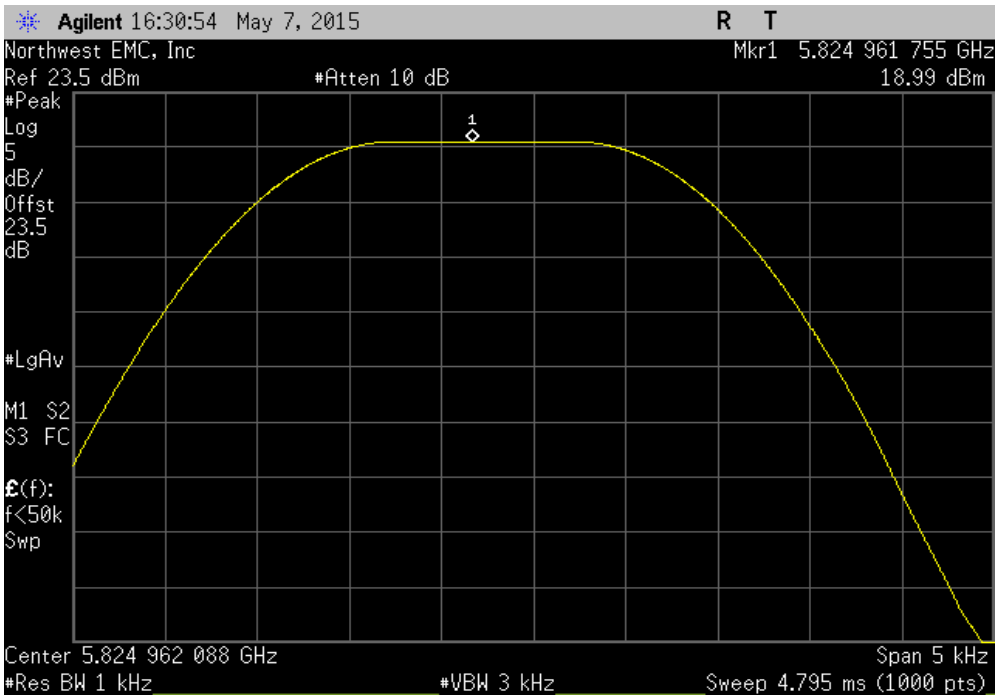
5725 MHz - 5850 MHz - High Channel 165, 5825 MHz, Temperature: +40°						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Results
		5824.956039	5825	7.6	100	Pass



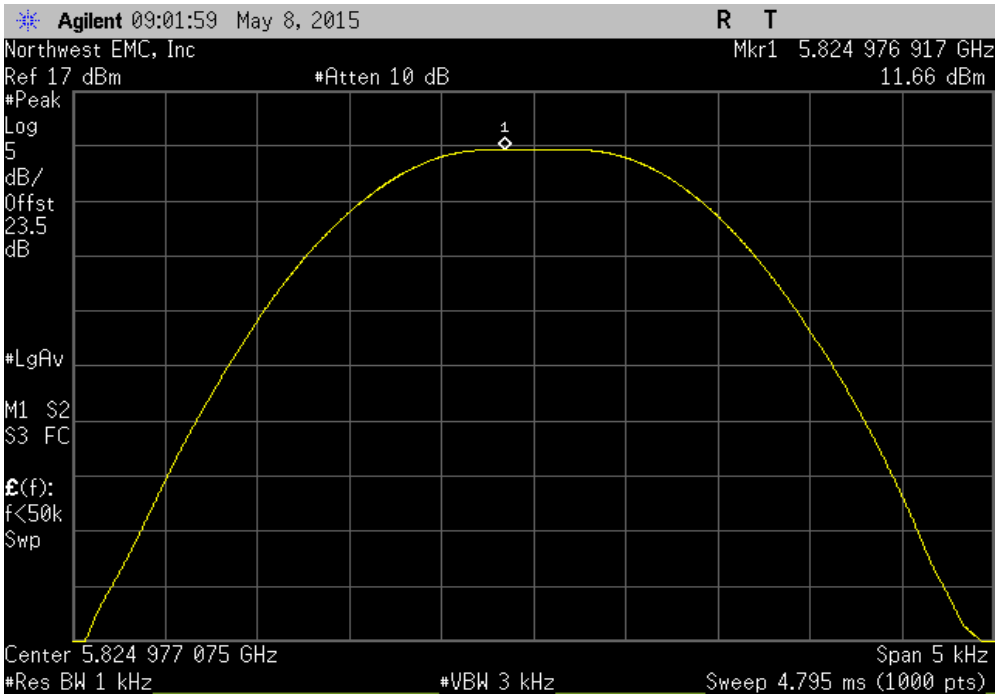
5725 MHz - 5850 MHz - High Channel 165, 5825 MHz, Temperature: +30°						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Results
		5824.957749	5825	7.3	100	Pass



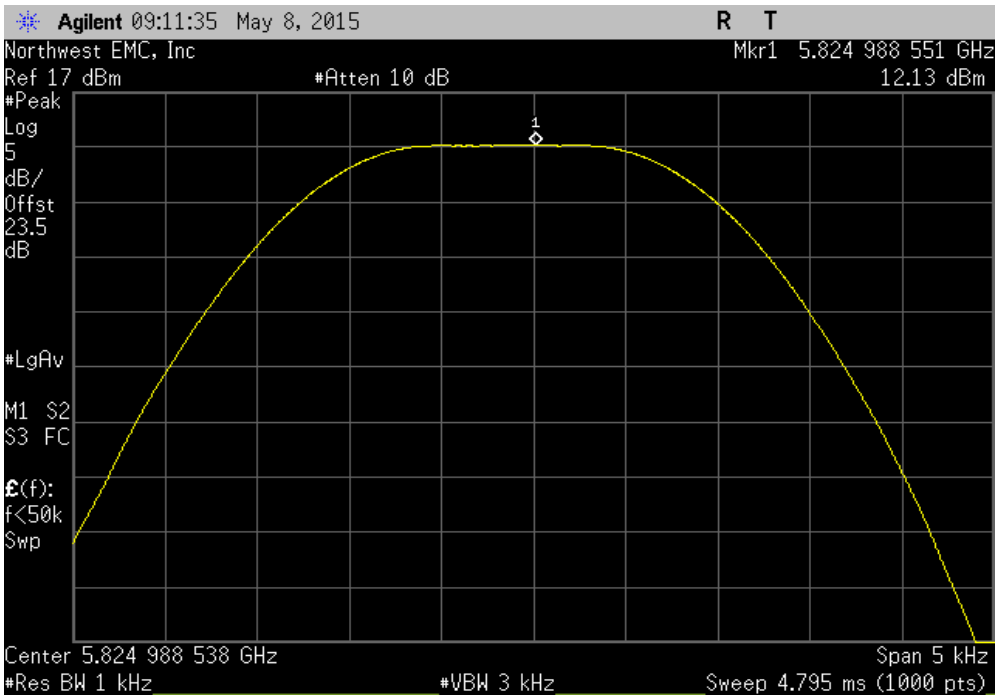
5725 MHz - 5850 MHz - High Channel 165, 5825 MHz, Temperature: +20°						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Results
		5824.961755	5825	6.6	100	Pass



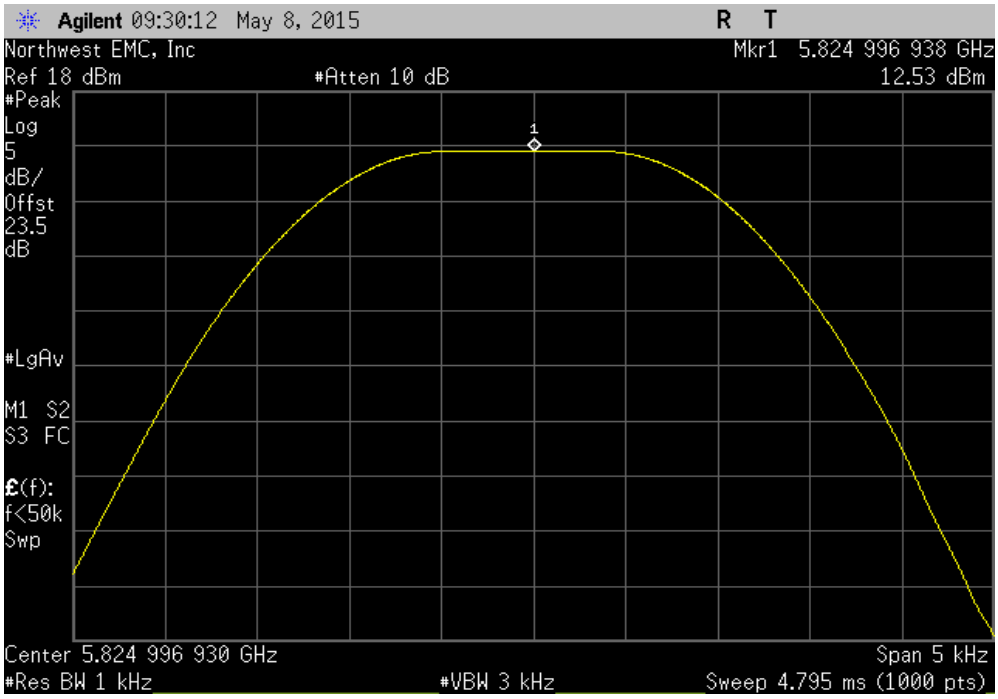
5725 MHz - 5850 MHz - High Channel 165, 5825 MHz, Temperature: +10°						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Results
		5824.976917	5825	4	100	Pass



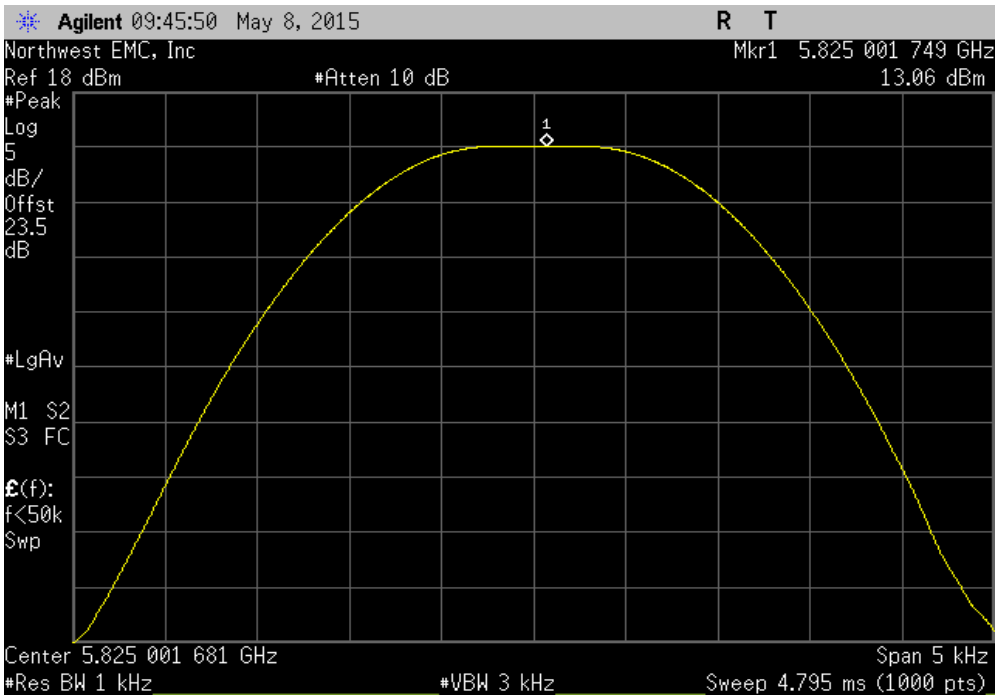
5725 MHz - 5850 MHz - High Channel 165, 5825 MHz, Temperature: 0°						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Results
		5824.988551	5825	2	100	Pass



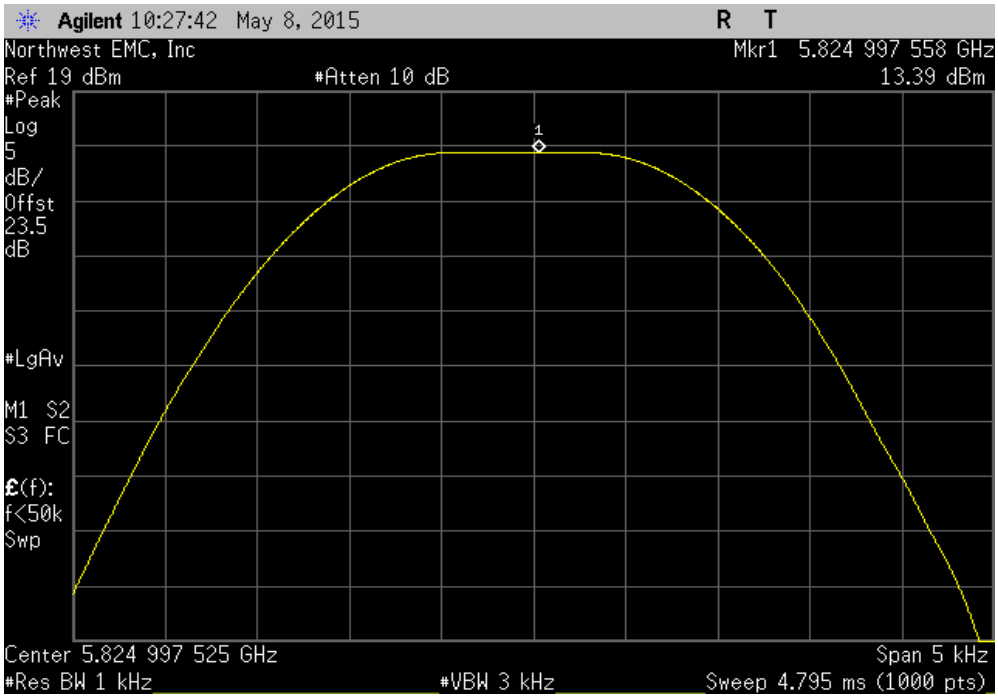
5725 MHz - 5850 MHz - High Channel 165, 5825 MHz, Temperature: -10°						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Results
		5824.996938	5825	0.5	100	Pass



5725 MHz - 5850 MHz - High Channel 165, 5825 MHz, Temperature: -20°						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Results
		5825.001749	5825	0.3	100	Pass



5725 MHz - 5850 MHz - High Channel 165, 5825 MHz, Temperature: -30°						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Results
		5824.997558	5825	0.4	100	Pass



EMISSION BANDWIDTH

XMit 2015.01.14

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval (mo)
Spectrum Analyzer	Agilent	E4446A	AAT	9/27/2014	12
NC02 Cable	ESM Cable Corp.	TTBJ-141 KMKM-72	NC5	6/6/2015	12
DC Block, 40 GHz	Fairview Microwave	SD3379	AMJ	6/6/2015	12
Attenuator	Fairview Microwave	SA4014-20	TKE	1/16/2015	12
Signal Generator	Agilent	N5183A	TIA	4/7/2014	36

TEST DESCRIPTION

FCC KDB 789033 General UNII Test Procedures were followed.

The transmit frequencies and data rates listed in the datasheet were measured in each band utilized by the radio. The transmit power was set to its default maximum.

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

The spectrum analyzer settings were as follows:

- RBW = Approx. 1% of the emission bandwidth (B).
- VBW = > RBW
- Detector = Peak
- Trace mode = max hold

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

There is no required limit to be met in the rule part for this test. The purpose of the test is to both report the results as required by the KDB, and to utilize the emission bandwidth for setting the channel power integration bandwidth during conducted output power testing.

EMISSION BANDWIDTH

NORTHWEST EMC

XMit 2015.01.14

EUT:	1713 USB Radio Device			**Work Order:**	MCSO1731
Serial Number:	EV1-3-000299			**Date:**	07/15/15
Customer:	Microsoft Corporation			**Temperature:**	24°C
Attendees:	None			**Humidity:**	43%
Project:	None			**Barometric Pres.:**	1018 mb
Tested by:	Richard Mellroth	**Power:**	USB	**Job Site:**	NC02

TEST SPECIFICATIONS	Test Method
FCC 15.407:2015	ANSI C63.10:2009

COMMENTS

Power Settings at Default. Client adapter cable loss of 1.3dB included in reference level offset.

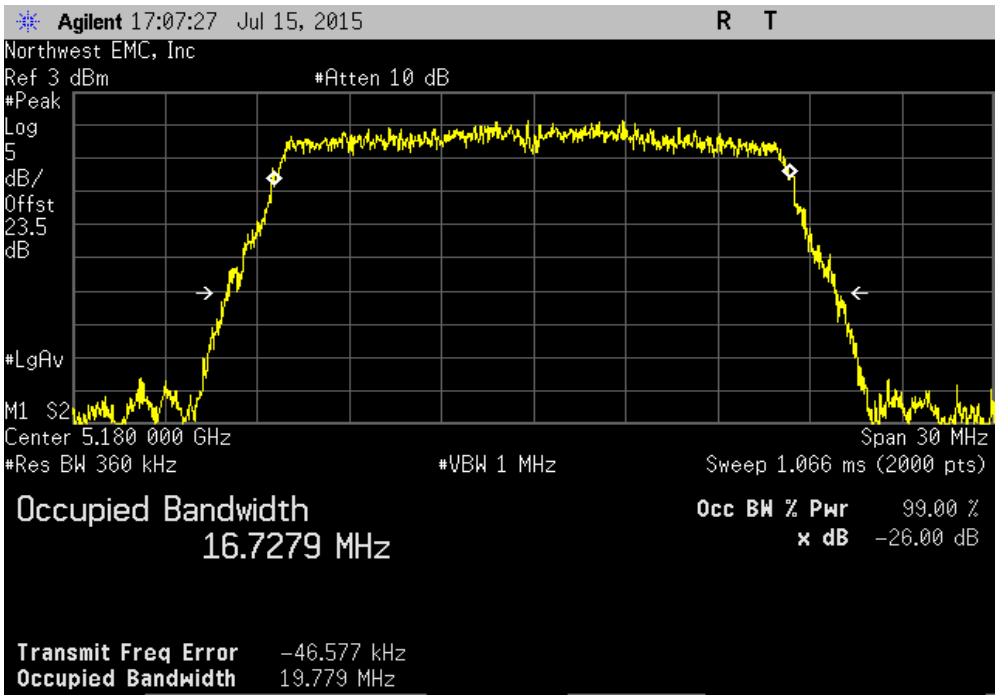
DEVIATIONS FROM TEST STANDARD

None

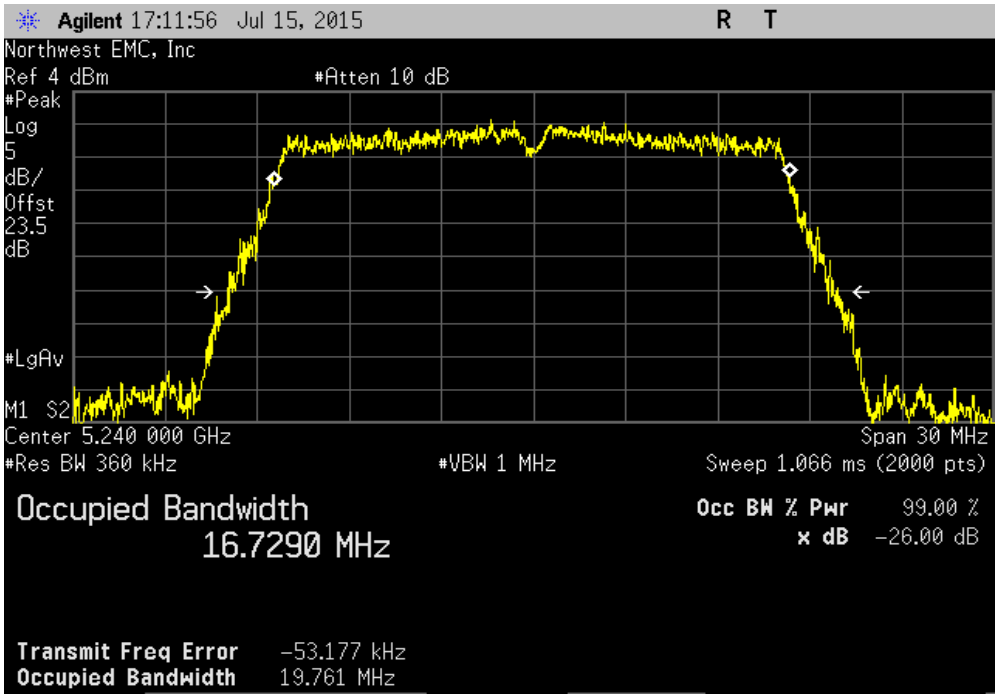
Configuration #	1	Signature

	Value	Limit	Result
5150 - 5250 MHz Band			
802.11(a) 6 Mbps			
Channel 36, Low Channel 5180 MHz	19.779 MHz	N/A	N/A
Channel 48, High Channel, 5240 MHz	19.761 MHz	N/A	N/A
802.11(a) 36 Mbps			
Channel 36, Low Channel 5180 MHz	19.329 MHz	N/A	N/A
Channel 48, High Channel, 5240 MHz	19.442 MHz	N/A	N/A
802.11(a) 54 Mbps			
Channel 36, Low Channel 5180 MHz	19.104 MHz	N/A	N/A
Channel 48, High Channel, 5240 MHz	19.122 MHz	N/A	N/A
802.11(n) MCS0			
Channel 36, Low Channel 5180 MHz	20.23 MHz	N/A	N/A
Channel 48, High Channel, 5240 MHz	20.415 MHz	N/A	N/A
802.11(n) MCS7			
Channel 36, Low Channel 5180 MHz	20.008 MHz	N/A	N/A
Channel 48, High Channel, 5240 MHz	19.896 MHz	N/A	N/A

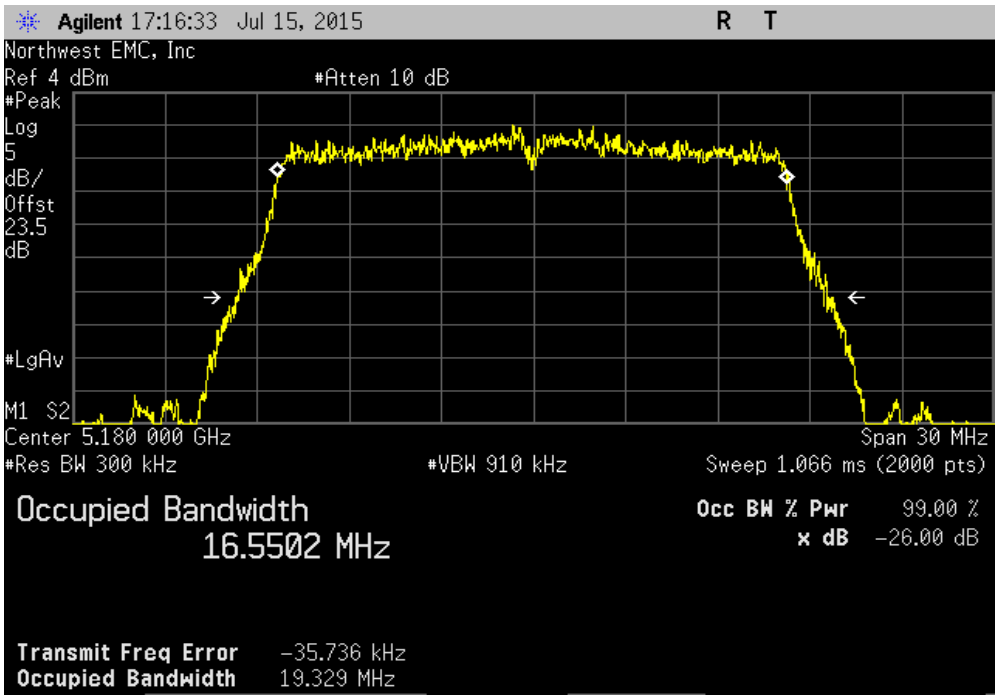
5150 - 5250 MHz Band, 802.11(a) 6 Mbps, Channel 36, Low Channel 5180 MHz						
				Value	Limit	Result
				19.779 MHz	N/A	N/A



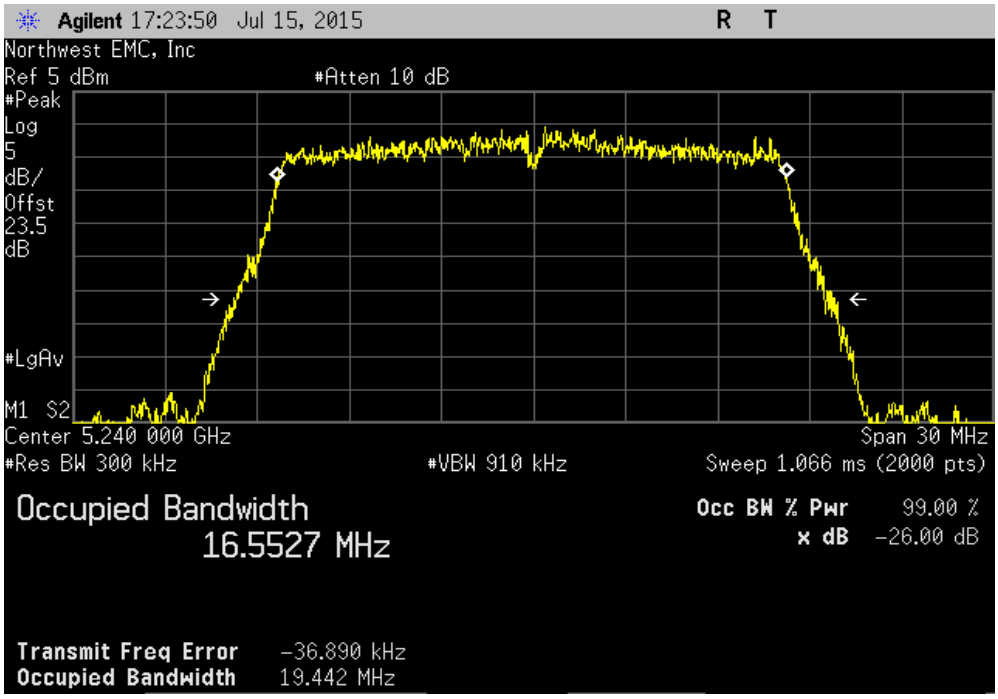
5150 - 5250 MHz Band, 802.11(a) 6 Mbps, Channel 48, High Channel, 5240 MHz						
				Value	Limit	Result
				19.761 MHz	N/A	N/A



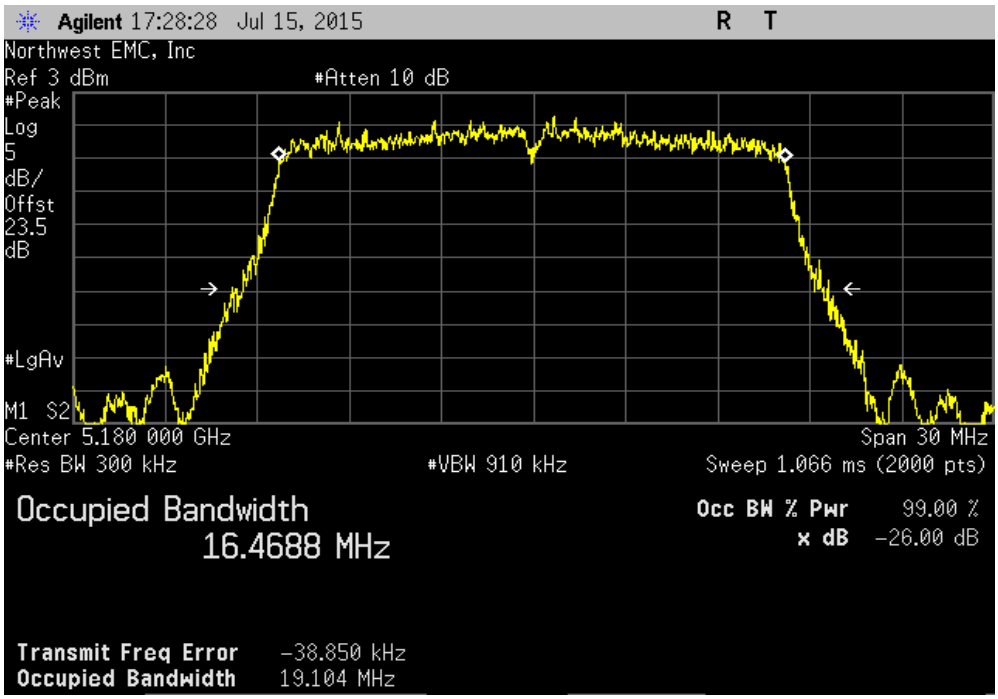
5150 - 5250 MHz Band, 802.11(a) 36 Mbps, Channel 36, Low Channel 5180 MHz						
				Value	Limit	Result
				19.329 MHz	N/A	N/A



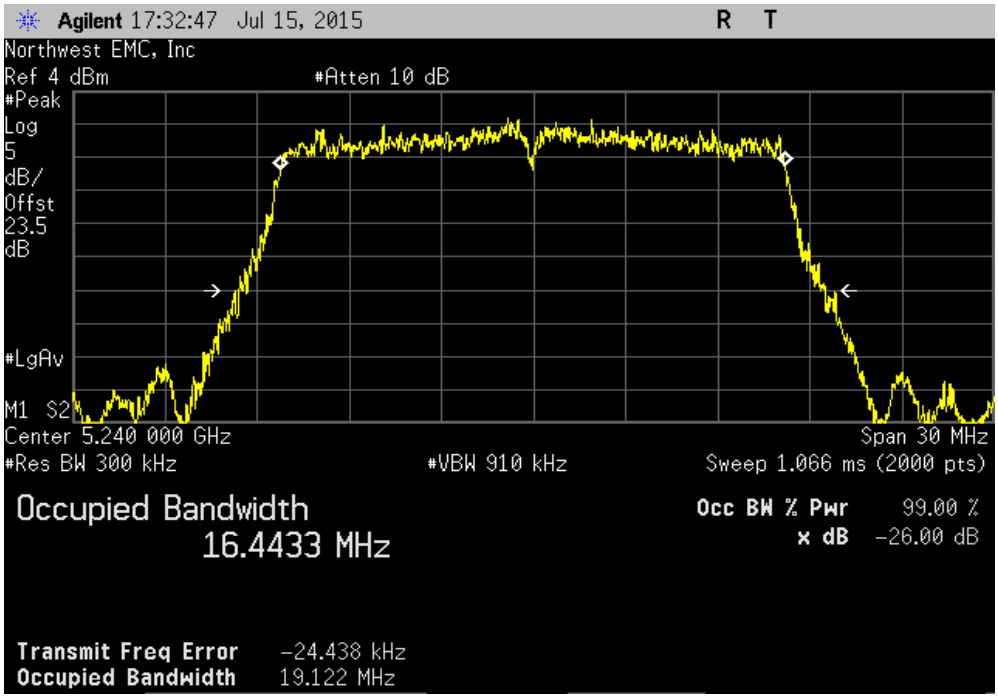
5150 - 5250 MHz Band, 802.11(a) 36 Mbps, Channel 48, High Channel, 5240 MHz						
				Value	Limit	Result
				19.442 MHz	N/A	N/A



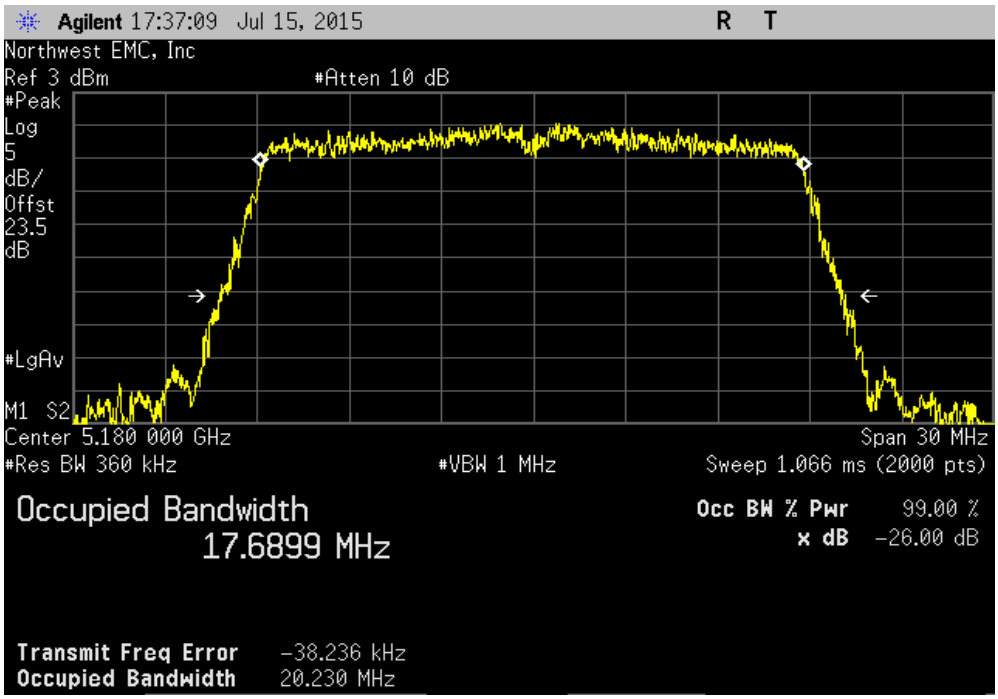
5150 - 5250 MHz Band, 802.11(a) 54 Mbps, Channel 36, Low Channel 5180 MHz						
				Value	Limit	Result
				19.104 MHz	N/A	N/A



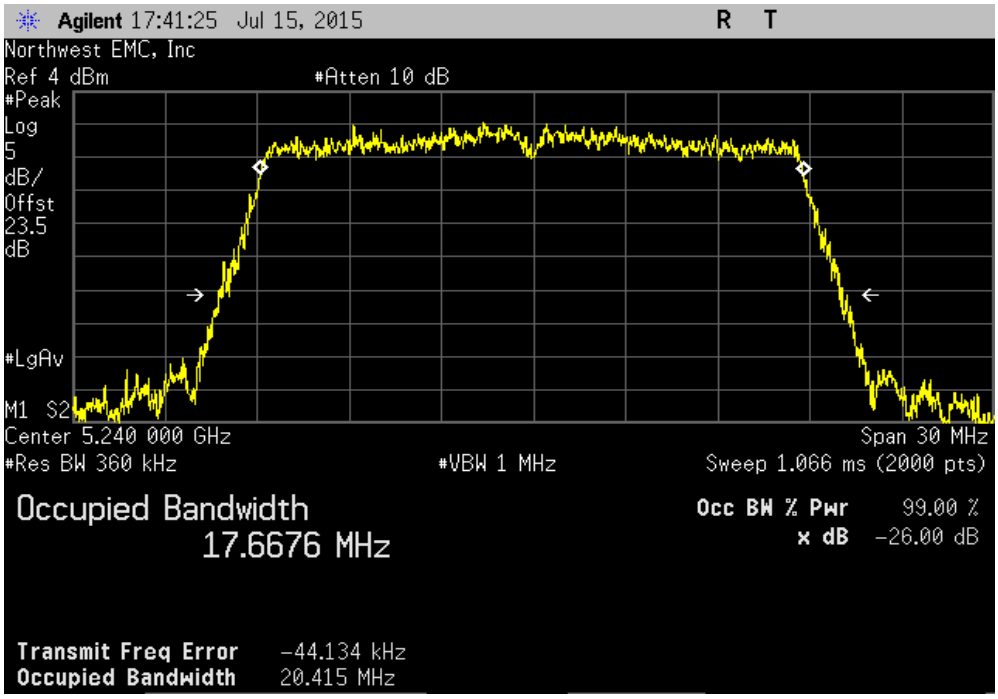
5150 - 5250 MHz Band, 802.11(a) 54 Mbps, Channel 48, High Channel, 5240 MHz						
				Value	Limit	Result
				19.122 MHz	N/A	N/A



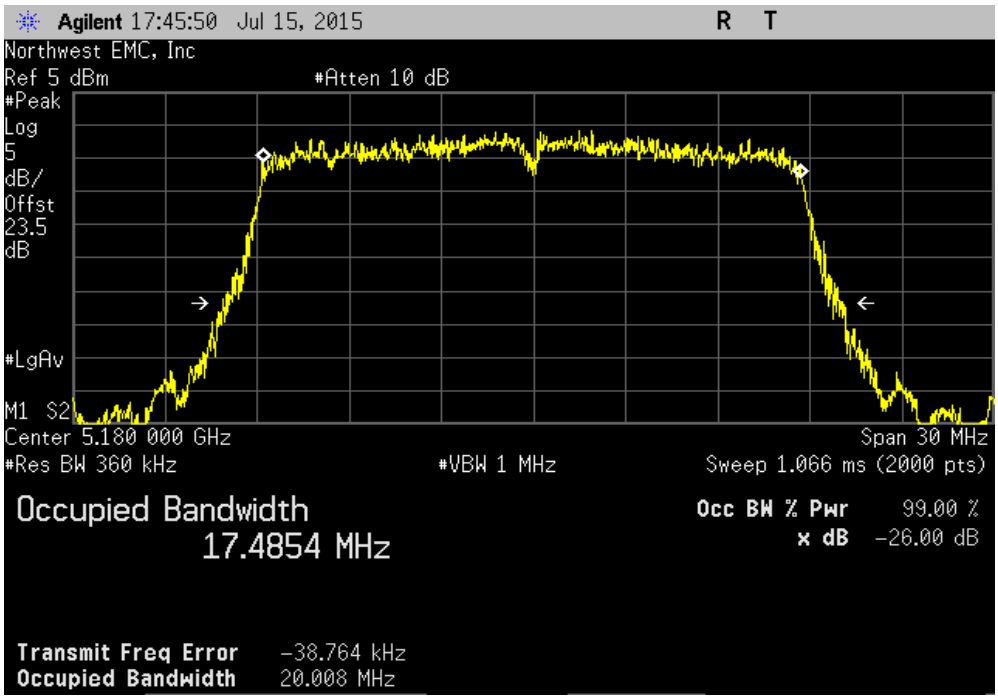
5150 - 5250 MHz Band, 802.11(n) MCS0, Channel 36, Low Channel 5180 MHz						
				Value	Limit	Result
				20.23 MHz	N/A	N/A



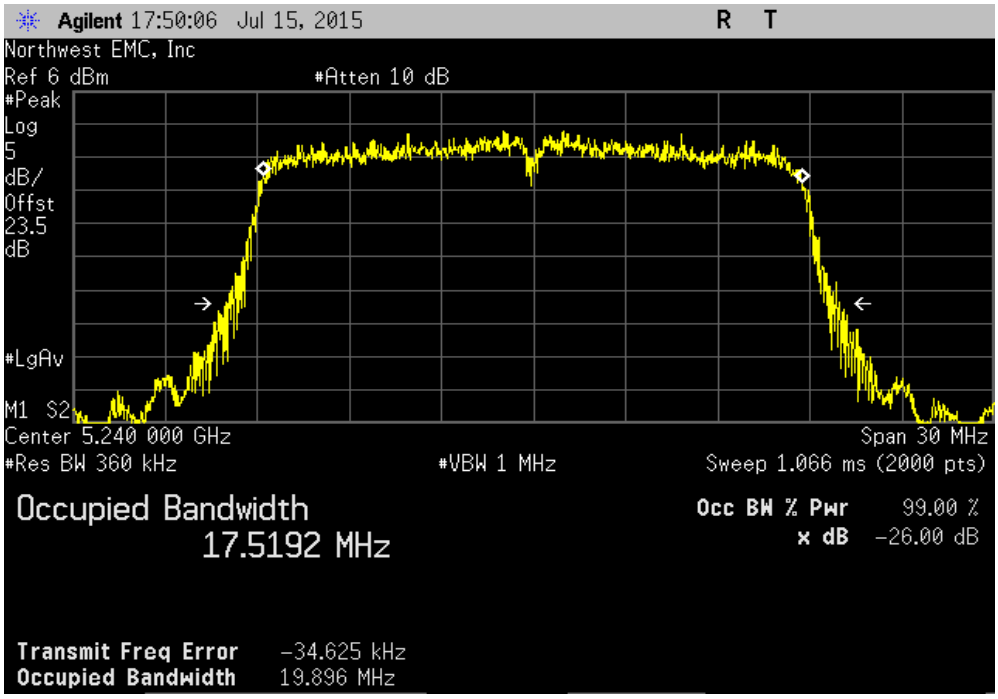
5150 - 5250 MHz Band, 802.11(n) MCS0, Channel 48, High Channel, 5240 MHz						
				Value	Limit	Result
				20.415 MHz	N/A	N/A



5150 - 5250 MHz Band, 802.11(n) MCS7, Channel 36, Low Channel 5180 MHz						
				Value	Limit	Result
				20.008 MHz	N/A	N/A



5150 - 5250 MHz Band, 802.11(n) MCS7, Channel 48, High Channel, 5240 MHz						
				Value	Limit	Result
				19.896 MHz	N/A	N/A



OCCUPIED BANDWIDTH

XMit 2015.01.14

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval (mo)
Spectrum Analyzer	Agilent	E4446A	AAT	9/27/2014	12
NC02 Cable	ESM Cable Corp.	TTBJ-141 KMKM-72	NC5	6/6/2015	12
Attenuator	Fairview Microwave	SA4014-20	TKE	1/16/2015	12
DC Block, 40 GHz	Fairview Microwave	SD3379	AMJ	6/6/2015	12
Signal Generator	Agilent	N5183A	TIA	4/7/2014	36

TEST DESCRIPTION

FCC KDB 789033 General UNII Test Procedures were followed to measure the minimum emission bandwidth for the 5.725-5.85 GHz band.

The transmit frequencies and data rates listed in the datasheet were measured in each band utilized by the radio. The transmit power was set to its default maximum.

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

The spectrum analyzer settings were as follows:

- RBW = 100 kHz
- VBW = ≥ 3x RBW
- Detector = Peak
- Trace mode = max hold

The spectrum analyzer occupied bandwidth measurement function was then used to measure 6 dB emission bandwidth.

The 99.00% emission bandwidth (EBW) was also measured at the same time to be used for setting the channel power

OCCUPIED BANDWIDTH

NORTHWEST EMC

XMit 2015.01.14

EUT:	1713 USB Radio Device			**Work Order:**	MCSO1731
Serial Number:	EV1-3-000299			**Date:**	07/15/15
Customer:	Microsoft Corporation			**Temperature:**	24°C
Attendees:	None			**Humidity:**	43%
Project:	None			**Barometric Pres.:**	1018 mb
Tested by:	Richard Mellroth	**Power:**	USB	**Job Site:**	NC02

TEST SPECIFICATIONS	Test Method
FCC 15.407:2015	ANSI C63.10:2009

COMMENTS

Power Settings at Default. Client adapter cable loss of 1.3dB included in reference level offset.

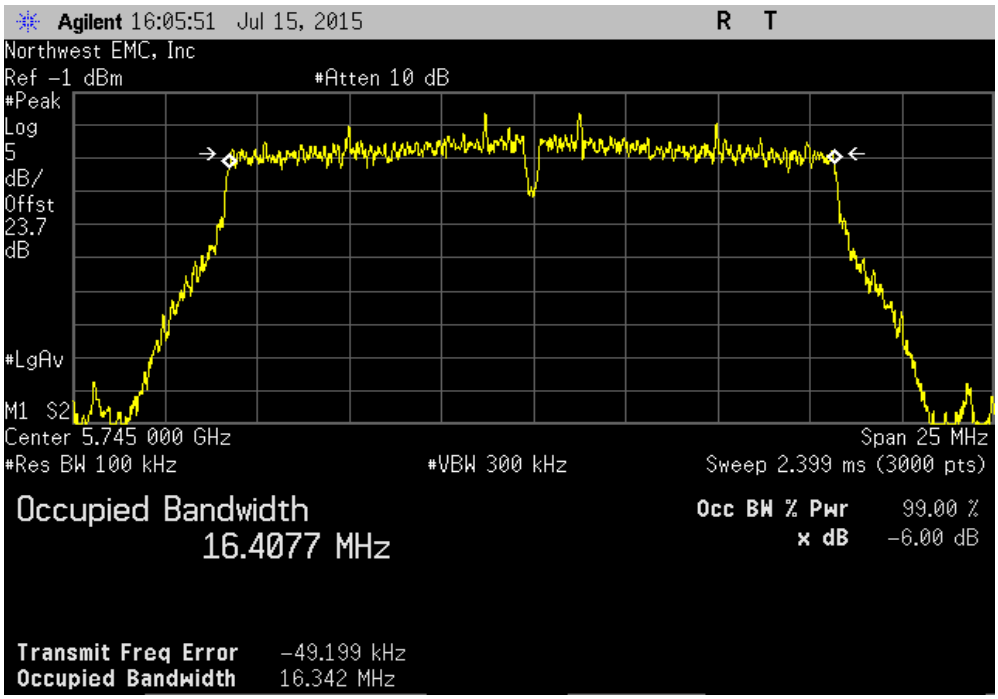
DEVIATIONS FROM TEST STANDARD

None

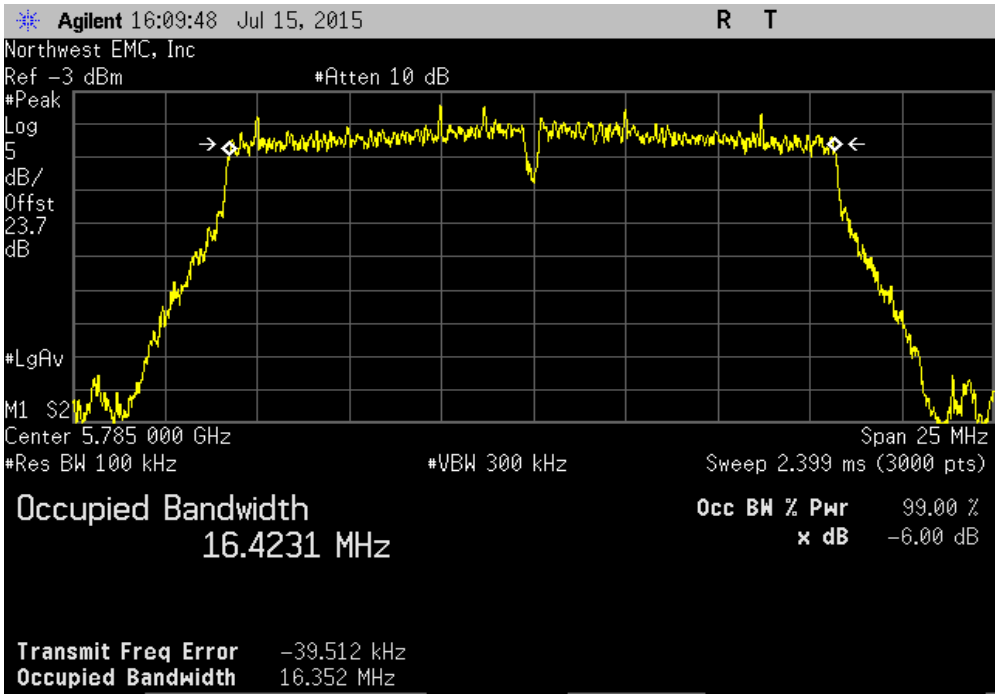
Configuration #	1	Signature

	Value	Limit (>)	Result
5725-5850 MHz Band			
802.11(a) 6 Mbps			
Channel 149, Low Channel, 5745 MHz	16.342 MHz	500 kHz	Pass
Channel 157, Mid Channel, 5785 MHz	16.352 MHz	500 kHz	Pass
Channel 165, High Channel, 5825 MHz	15.902 MHz	500 kHz	Pass
802.11(a) 36 Mbps			
Channel 149, Low Channel, 5745 MHz	16.419 MHz	500 kHz	Pass
Channel 157, Mid Channel, 5785 MHz	16.399 MHz	500 kHz	Pass
Channel 165, High Channel, 5825 MHz	16.363 MHz	500 kHz	Pass
802.11(a) 54 Mbps			
Channel 149, Low Channel, 5745 MHz	16.143 MHz	500 kHz	Pass
Channel 157, Mid Channel, 5785 MHz	16.245 MHz	500 kHz	Pass
Channel 165, High Channel, 5825 MHz	16.193 MHz	500 kHz	Pass
802.11(n) MCS0			
Channel 149, Low Channel, 5745 MHz	17.348 MHz	500 kHz	Pass
Channel 157, Mid Channel, 5785 MHz	16.575 MHz	500 kHz	Pass
Channel 165, High Channel, 5825 MHz	17.615 MHz	500 kHz	Pass
802.11(n) MCS7			
Channel 149, Low Channel, 5745 MHz	16.88 MHz	500 kHz	Pass
Channel 157, Mid Channel, 5785 MHz	16.344 MHz	500 kHz	Pass
Channel 165, High Channel, 5825 MHz	15.922 MHz	500 kHz	Pass

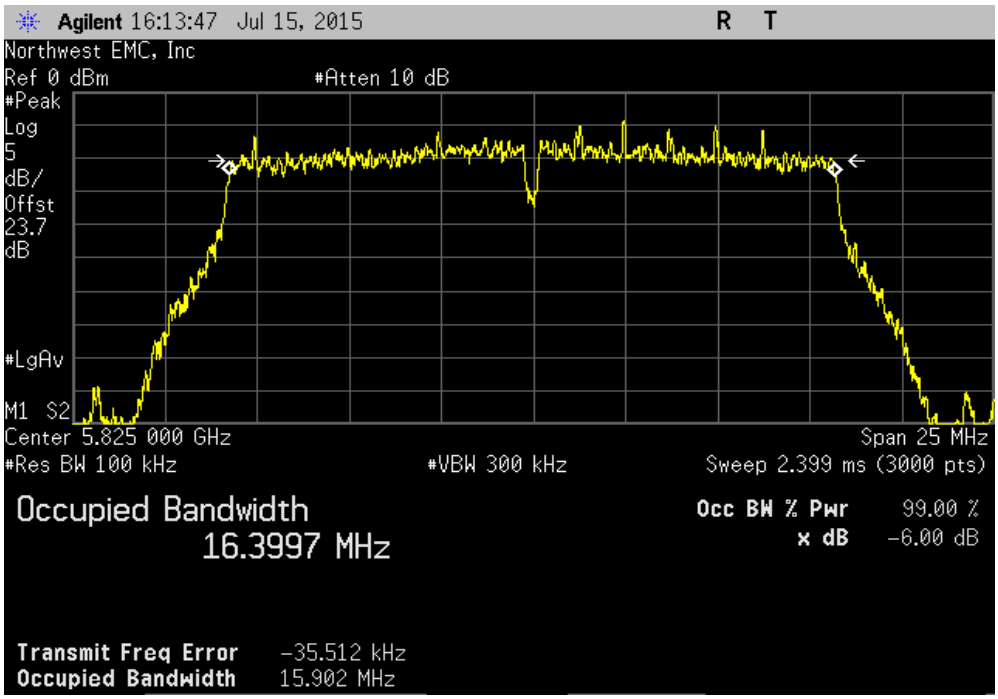
5725-5850 MHz Band, 802.11(a) 6 Mbps, Channel 149, Low Channel, 5745 MHz						
				Value	Limit (>)	Result
				16.342 MHz	500 kHz	Pass



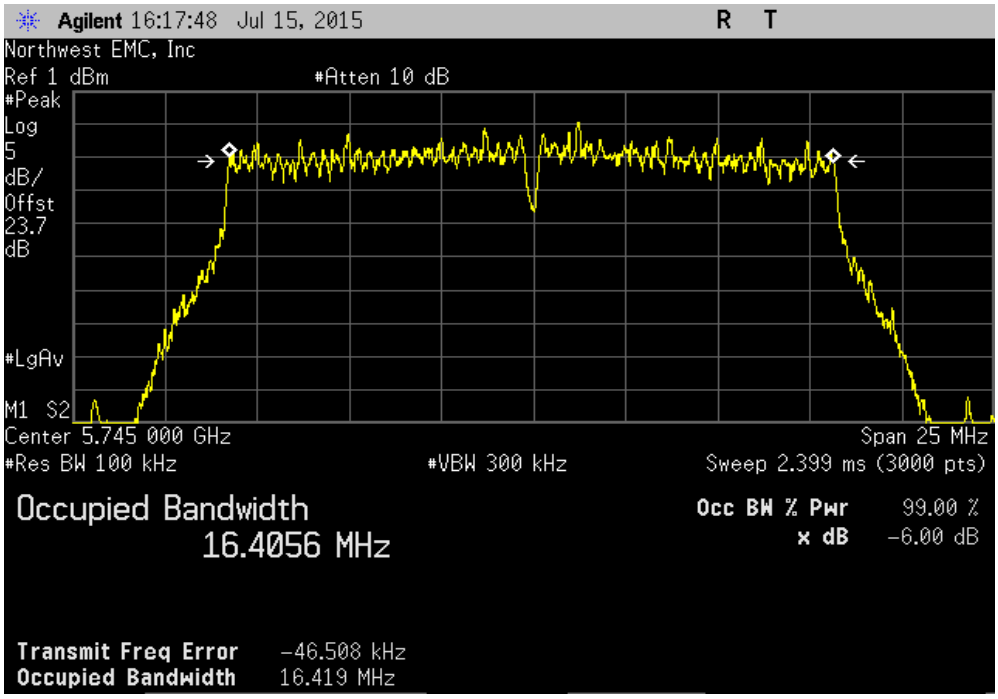
5725-5850 MHz Band, 802.11(a) 6 Mbps, Channel 157, Mid Channel, 5785 MHz						
				Value	Limit (>)	Result
				16.352 MHz	500 kHz	Pass



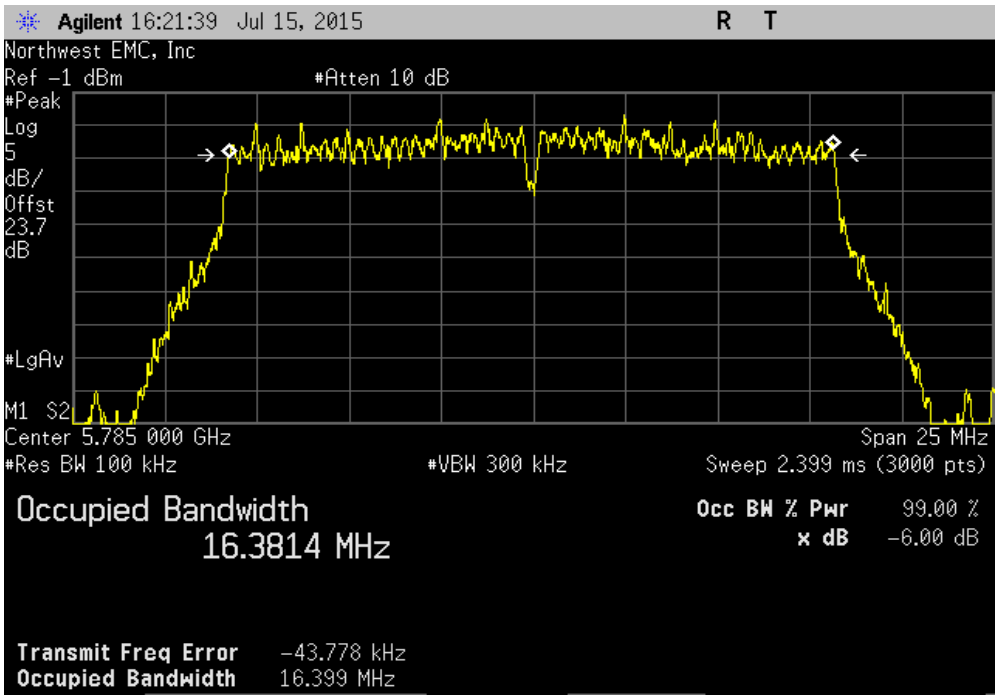
5725-5850 MHz Band, 802.11(a) 6 Mbps, Channel 165, High Channel, 5825 MHz						
				Value	Limit (>)	Result
				15.902 MHz	500 kHz	Pass



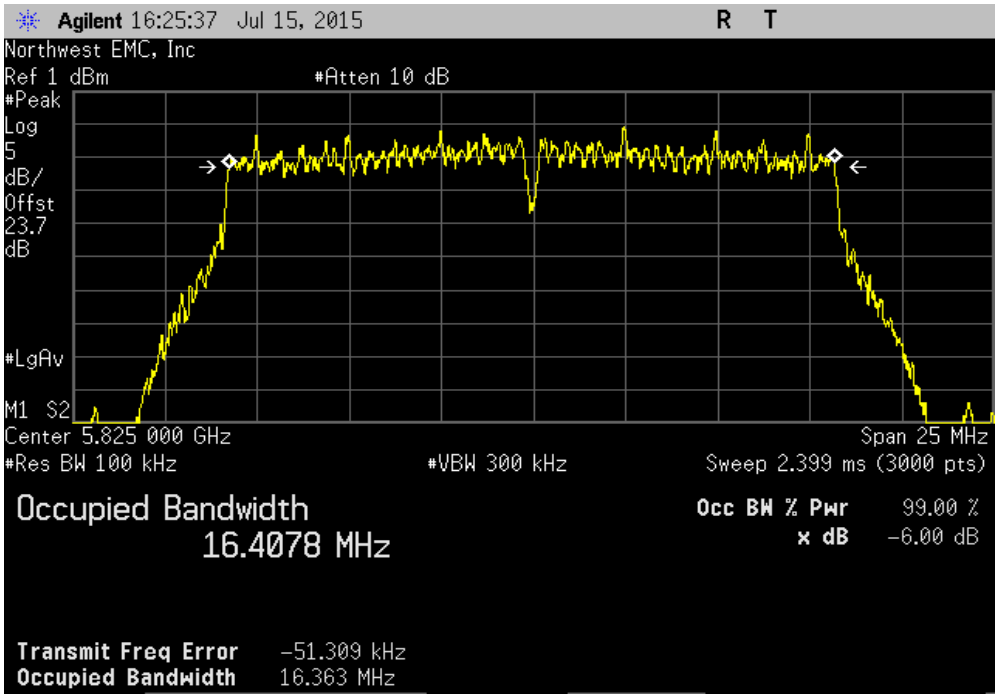
5725-5850 MHz Band, 802.11(a) 36 Mbps, Channel 149, Low Channel, 5745 MHz						
				Value	Limit (>)	Result
				16.419 MHz	500 kHz	Pass



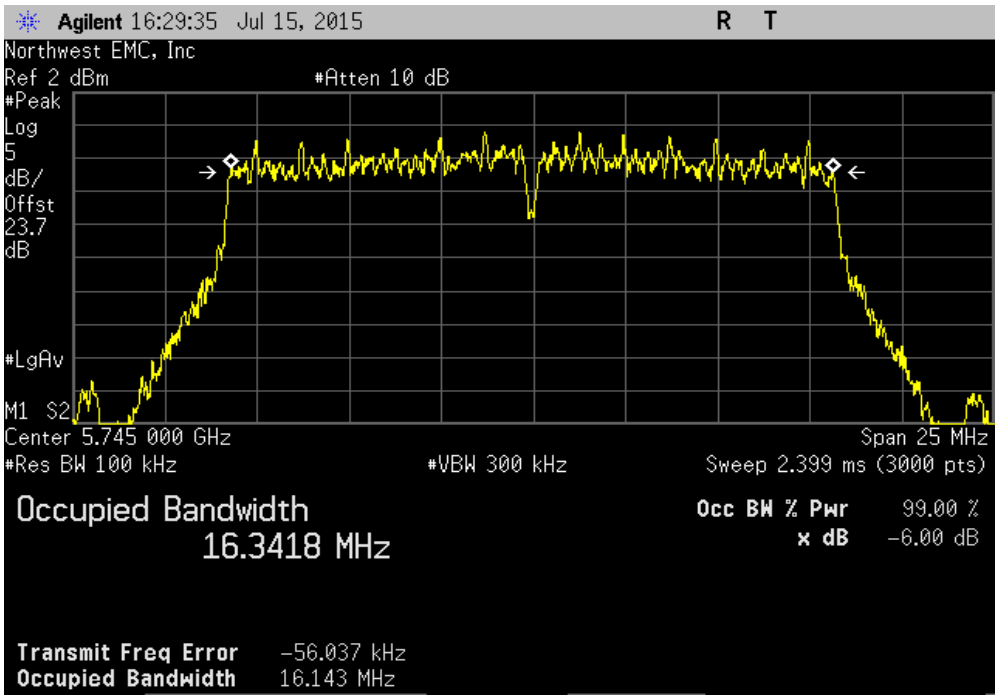
5725-5850 MHz Band, 802.11(a) 36 Mbps, Channel 157, Mid Channel, 5785 MHz						
				Value	Limit (>)	Result
				16.399 MHz	500 kHz	Pass



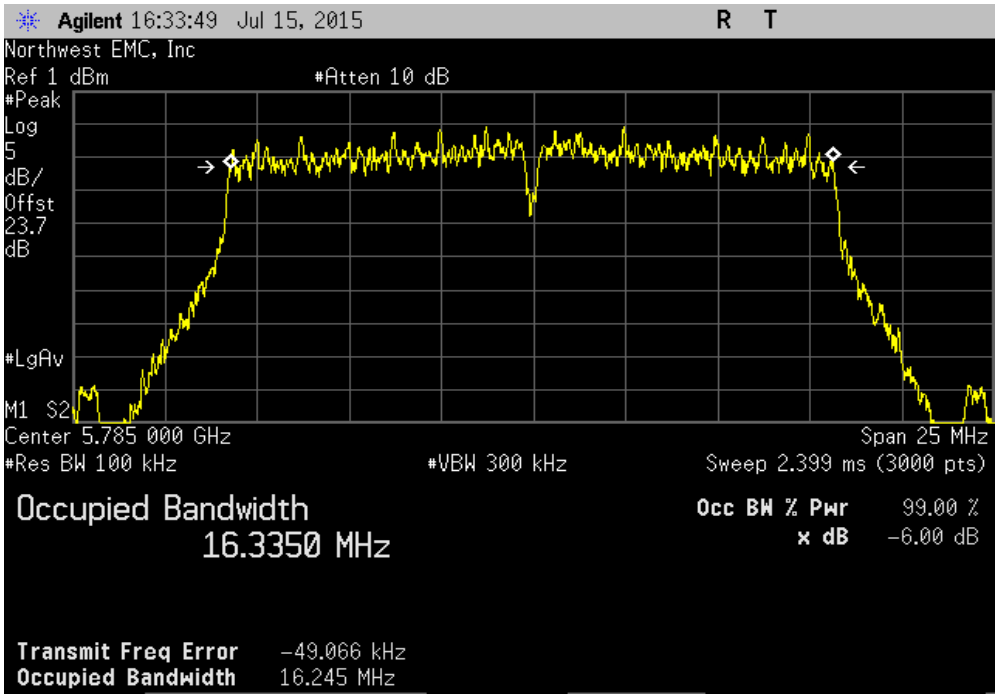
5725-5850 MHz Band, 802.11(a) 36 Mbps, Channel 165, High Channel, 5825 MHz						
				Value	Limit (>)	Result
				16.363 MHz	500 kHz	Pass



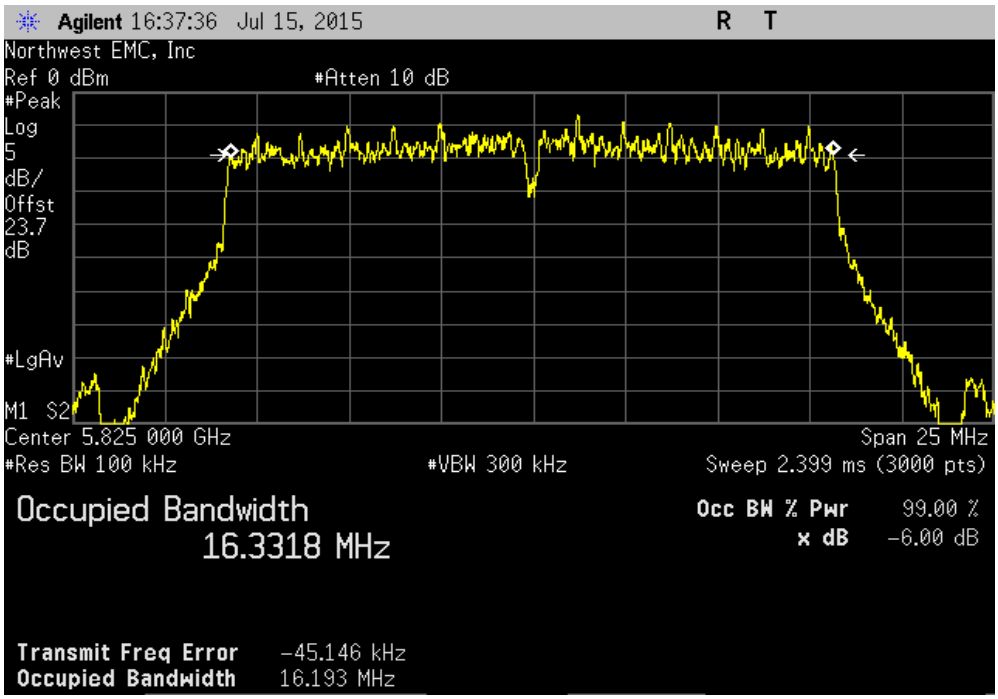
5725-5850 MHz Band, 802.11(a) 54 Mbps, Channel 149, Low Channel, 5745 MHz						
				Value	Limit (>)	Result
				16.143 MHz	500 kHz	Pass



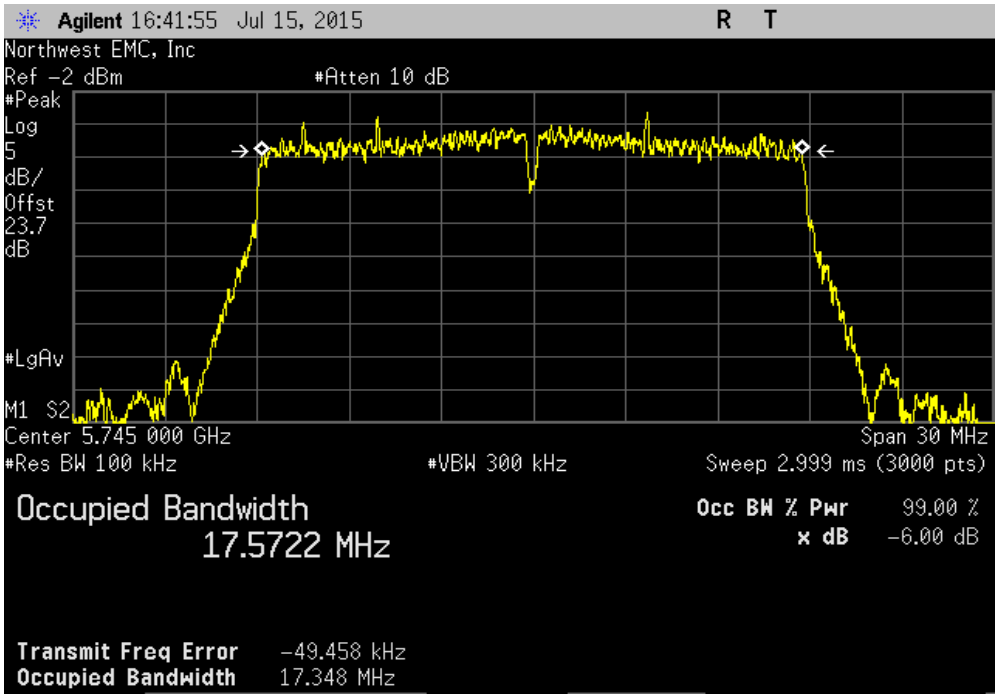
5725-5850 MHz Band, 802.11(a) 54 Mbps, Channel 157, Mid Channel, 5785 MHz						
				Value	Limit (>)	Result
				16.245 MHz	500 kHz	Pass



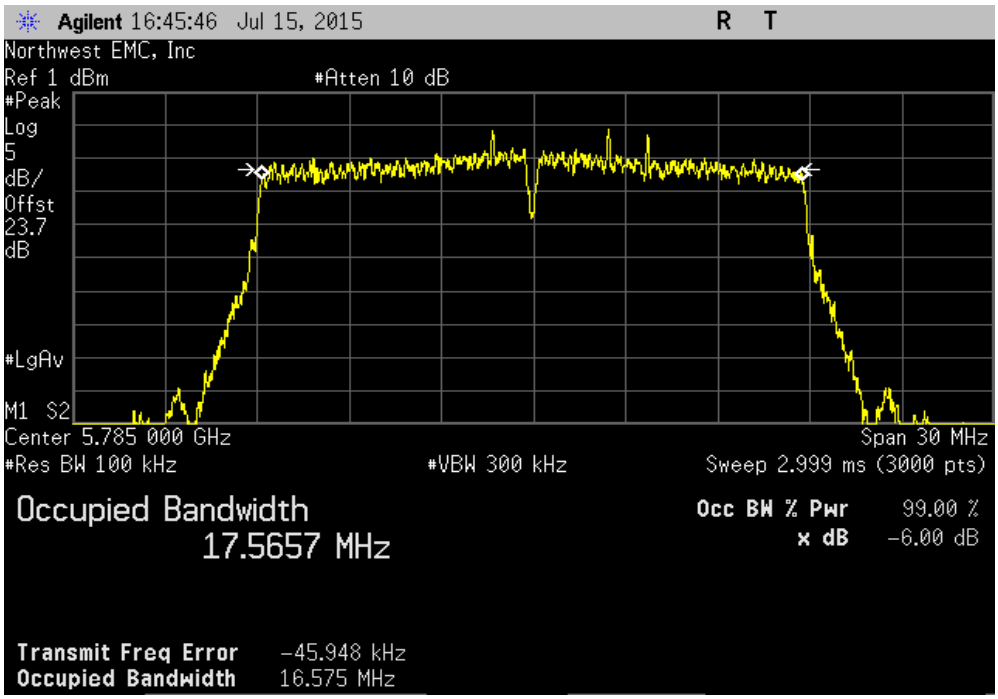
5725-5850 MHz Band, 802.11(a) 54 Mbps, Channel 165, High Channel, 5825 MHz						
				Value	Limit (>)	Result
				16.193 MHz	500 kHz	Pass



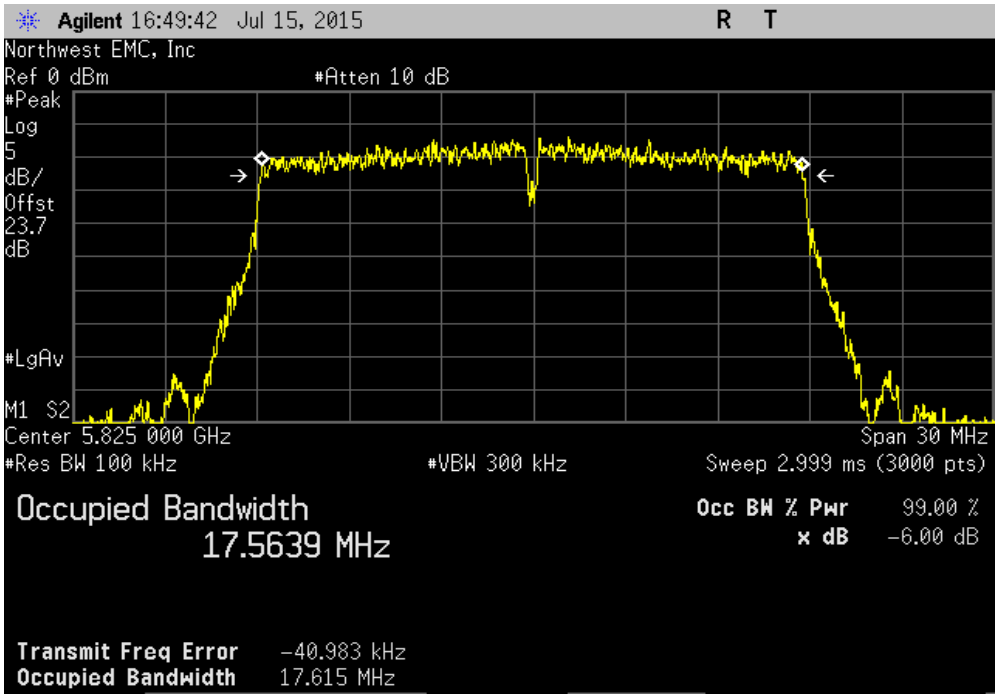
5725-5850 MHz Band, 802.11(n) MCS0, Channel 149, Low Channel, 5745 MHz						
				Value	Limit (>)	Result
				17.348 MHz	500 kHz	Pass



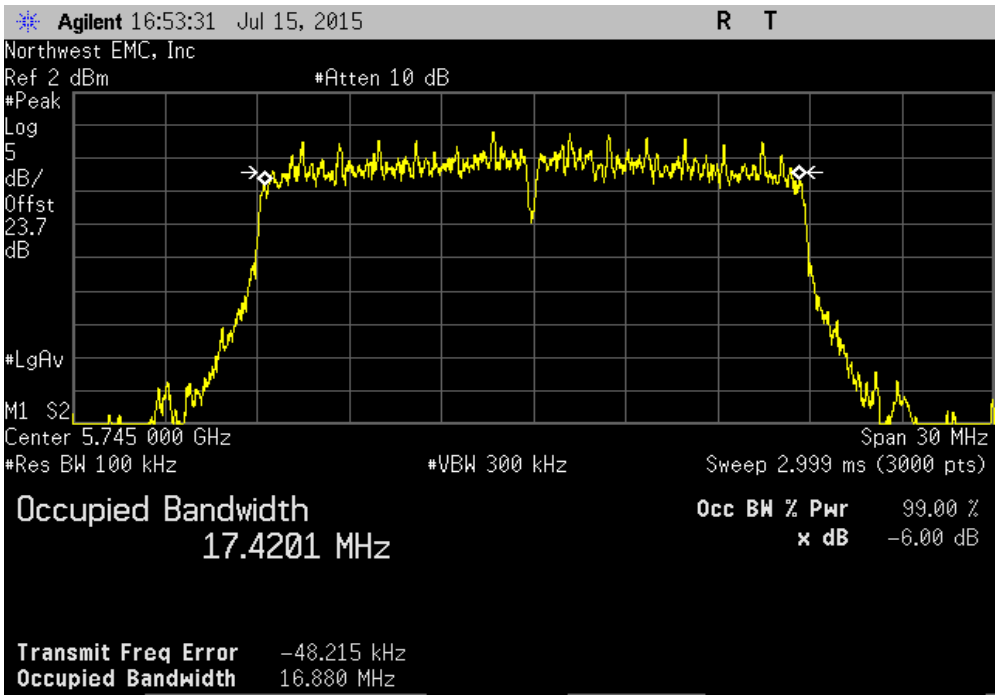
5725-5850 MHz Band, 802.11(n) MCS0, Channel 157, Mid Channel, 5785 MHz						
				Value	Limit (>)	Result
				16.575 MHz	500 kHz	Pass



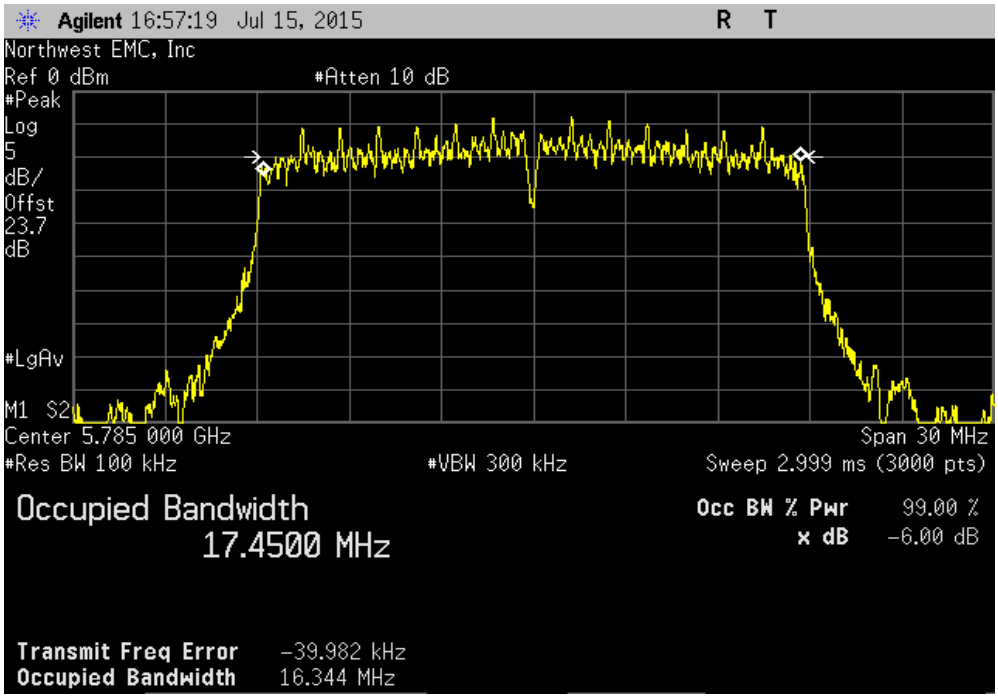
5725-5850 MHz Band, 802.11(n) MCS0, Channel 165, High Channel, 5825 MHz						
				Value	Limit (>)	Result
				17.615 MHz	500 kHz	Pass



5725-5850 MHz Band, 802.11(n) MCS7, Channel 149, Low Channel, 5745 MHz						
				Value	Limit (>)	Result
				16.88 MHz	500 kHz	Pass



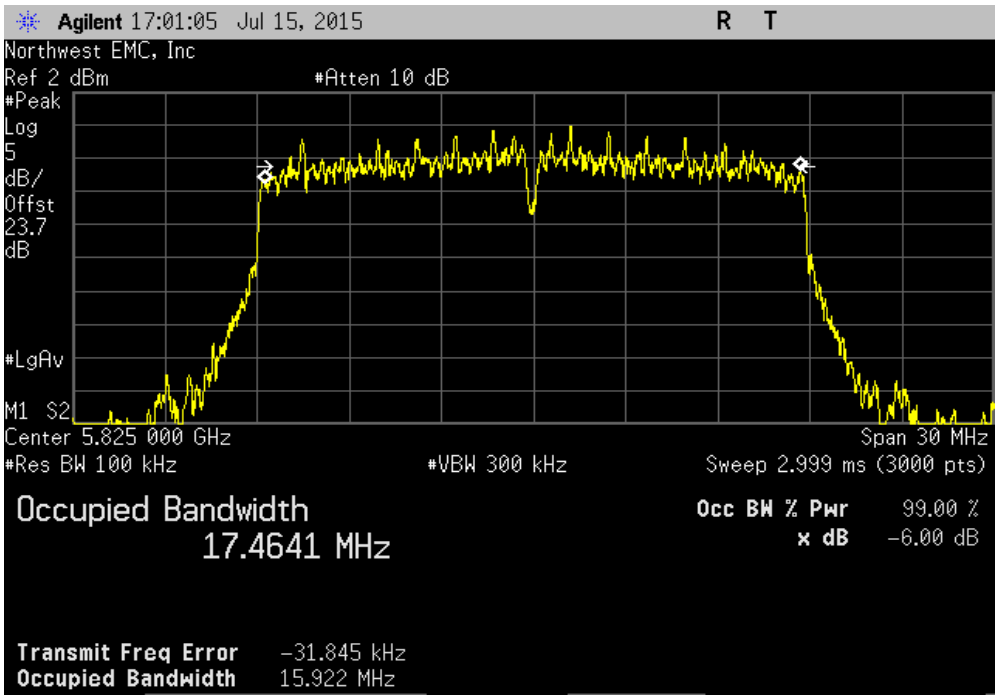
5725-5850 MHz Band, 802.11(n) MCS7, Channel 157, Mid Channel, 5785 MHz						
				Value	Limit (>)	Result
				16.344 MHz	500 kHz	Pass



OCCUPIED BANDWIDTH

XMit 2015.01.14

5725-5850 MHz Band, 802.11(n) MCS7, Channel 165, High Channel, 5825 MHz						
				Value	Limit (>)	Result
				15.922 MHz	500 kHz	Pass



PEAK TRANSMIT POWER

XMit 2015.01.14

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval (mo)
Spectrum Analyzer	Agilent	E4446A	AAT	9/27/2014	12
NC02 Cable	ESM Cable Corp.	TTBJ-141 KMKM-72	NC5	6/6/2015	12
Attenuator	Fairview Microwave	SA4014-20	TKE	1/16/2015	12
DC Block, 40 GHz	Fairview Microwave	SD3379	AMJ	6/6/2015	12
Signal Generator	Agilent	N5183A	TIA	4/7/2014	36

TEST DESCRIPTION

FCC KDB 789033 D02 General UNII Test Procedures Section E method SA-2 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 and duty cycle were measured.

PEAK TRANSMIT POWER

NORTHWEST EMC

XMit 2015.01.14

EUT:	1713 USB Radio Device			**Work Order:**	MCSO1731
Serial Number:	EV1-3-000299			**Date:**	07/15/15
Customer:	Microsoft Corporation			**Temperature:**	24°C
Attendees:	None			**Humidity:**	43%
Project:	None			**Barometric Pres.:**	1018 mb
Tested by:	Richard Mellroth	**Power:**	USB	**Job Site:**	NC02

TEST SPECIFICATIONS	Test Method
FCC 15.407:2015	ANSI C63.10:2009

COMMENTS

Power Settings at Default. Client adapter cable loss of 1.3dB included in reference level offset.

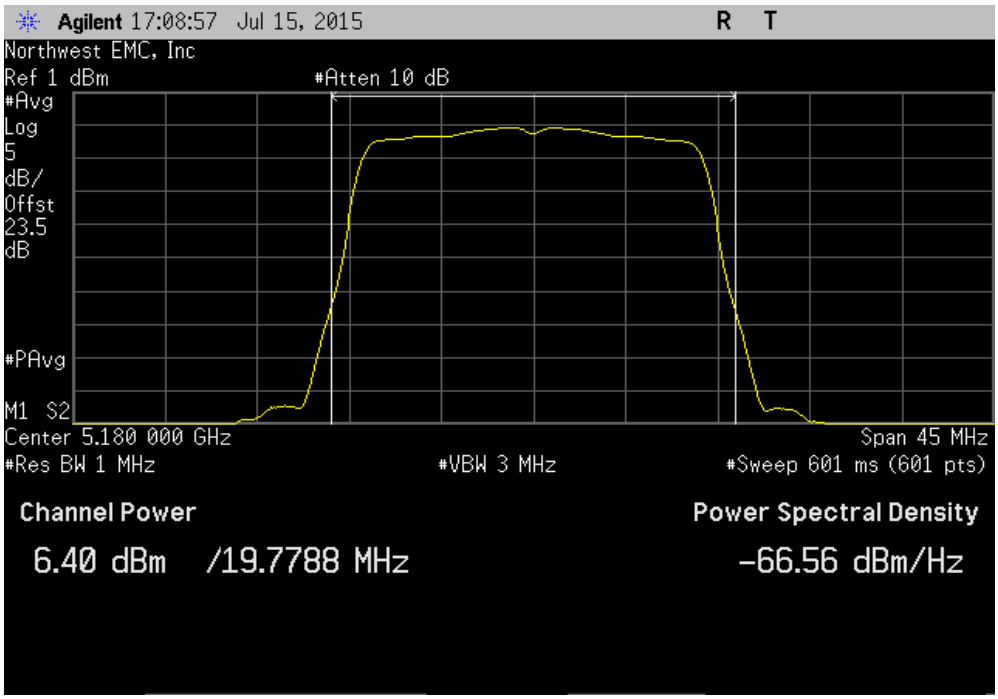
DEVIATIONS FROM TEST STANDARD

None

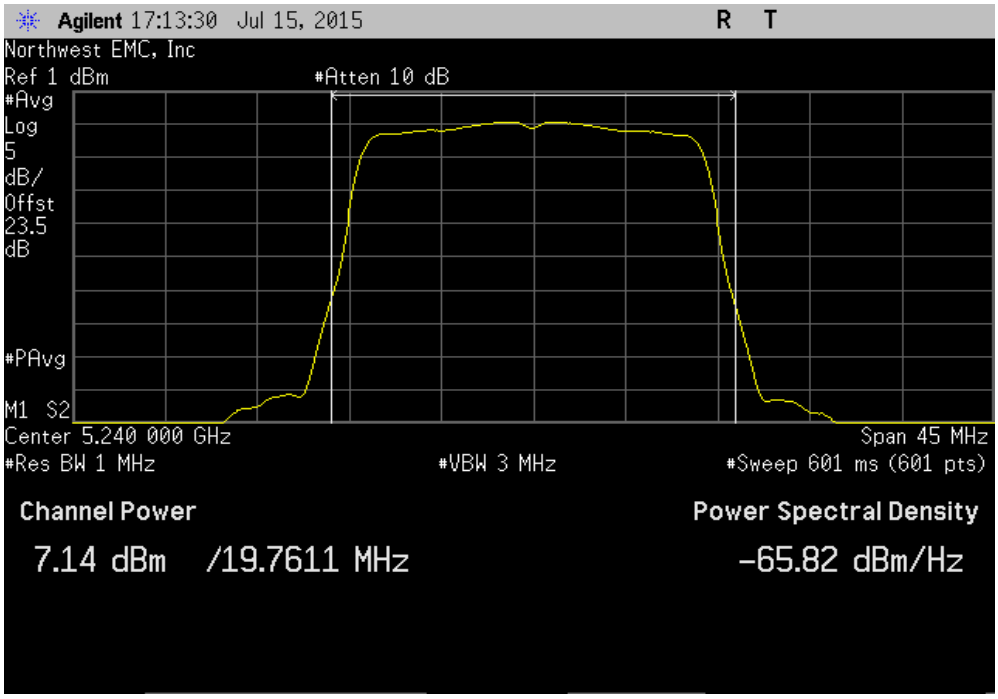
Configuration #	1	Signature

	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Output Power (dBm)	Limit (dBm)	Results
5150 - 5250 MHz Band					
802.11(a) 6 Mbps					
Channel 36, Low Channel 5180 MHz	6.399	0.1	6.5	24	Pass
Channel 48, High Channel, 5240 MHz	7.143	0.1	7.2	24	Pass
802.11(a) 36 Mbps					
Channel 36, Low Channel 5180 MHz	6.23	0.5	6.8	24	Pass
Channel 48, High Channel, 5240 MHz	6.856	0.5	7.4	24	Pass
802.11(a) 54 Mbps					
Channel 36, Low Channel 5180 MHz	6.268	0.8	7	24	Pass
Channel 48, High Channel, 5240 MHz	6.812	0.8	7.6	24	Pass
802.11(n) MCS0					
Channel 36, Low Channel 5180 MHz	6.293	0.1	6.4	24	Pass
Channel 48, High Channel, 5240 MHz	7.054	0.1	7.2	24	Pass
802.11(n) MCS7					
Channel 36, Low Channel 5180 MHz	5.995	0.9	6.9	24	Pass
Channel 48, High Channel, 5240 MHz	6.576	0.9	7.5	24	Pass

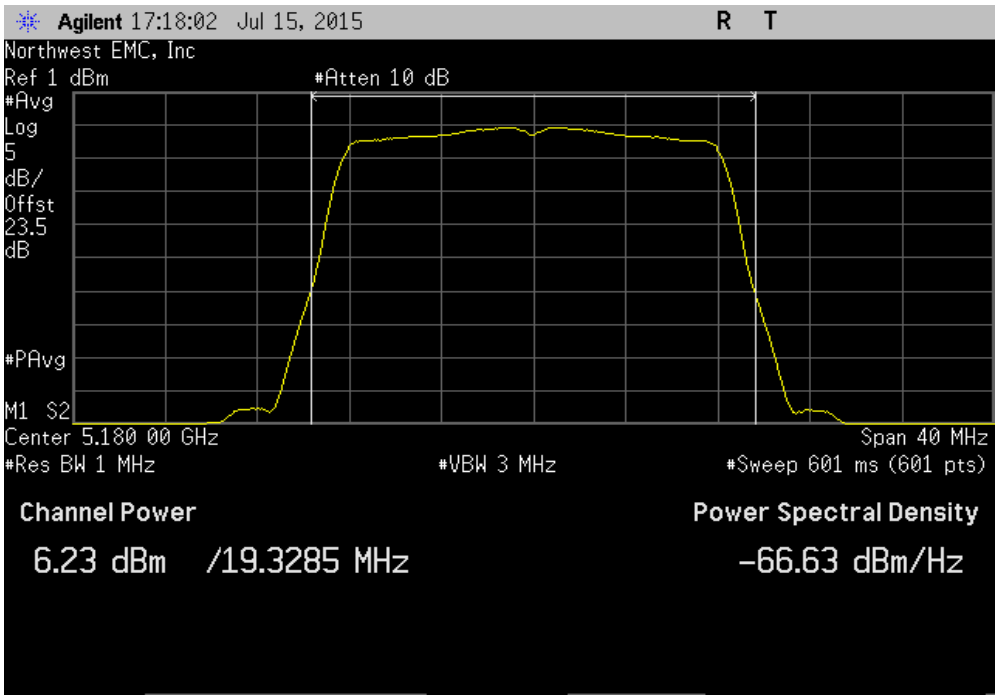
5150 - 5250 MHz Band, 802.11(a) 6 Mbps, Channel 36, Low Channel 5180 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)		Output Power (dBm)	Limit (dBm)	Results
	6.399	0.1		6.5	24	Pass



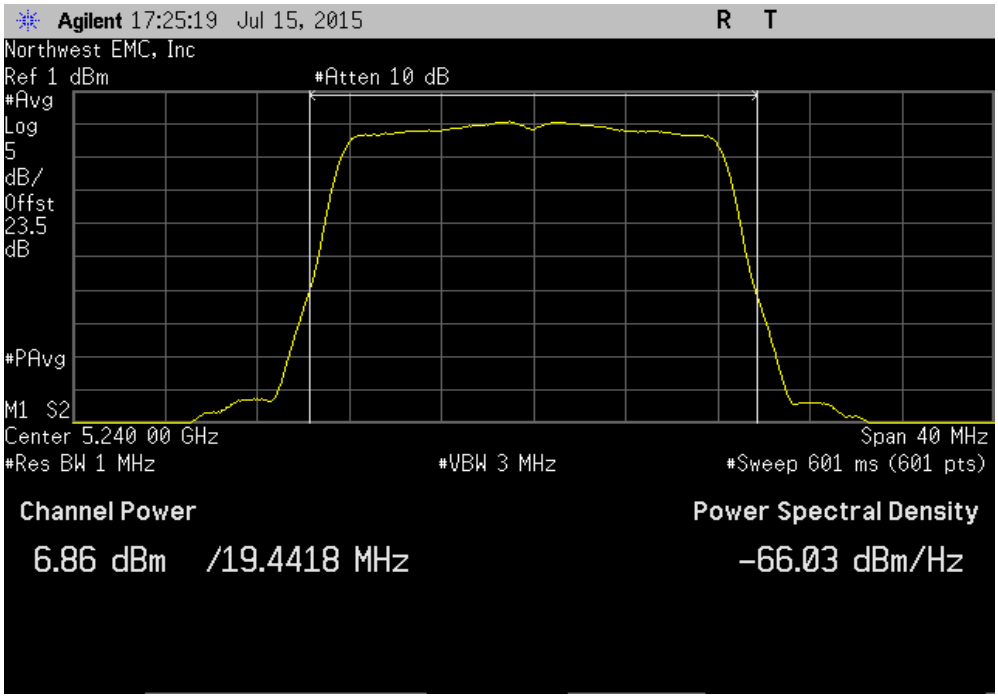
5150 - 5250 MHz Band, 802.11(a) 6 Mbps, Channel 48, High Channel, 5240 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)		Output Power (dBm)	Limit (dBm)	Results
	7.143	0.1		7.2	24	Pass



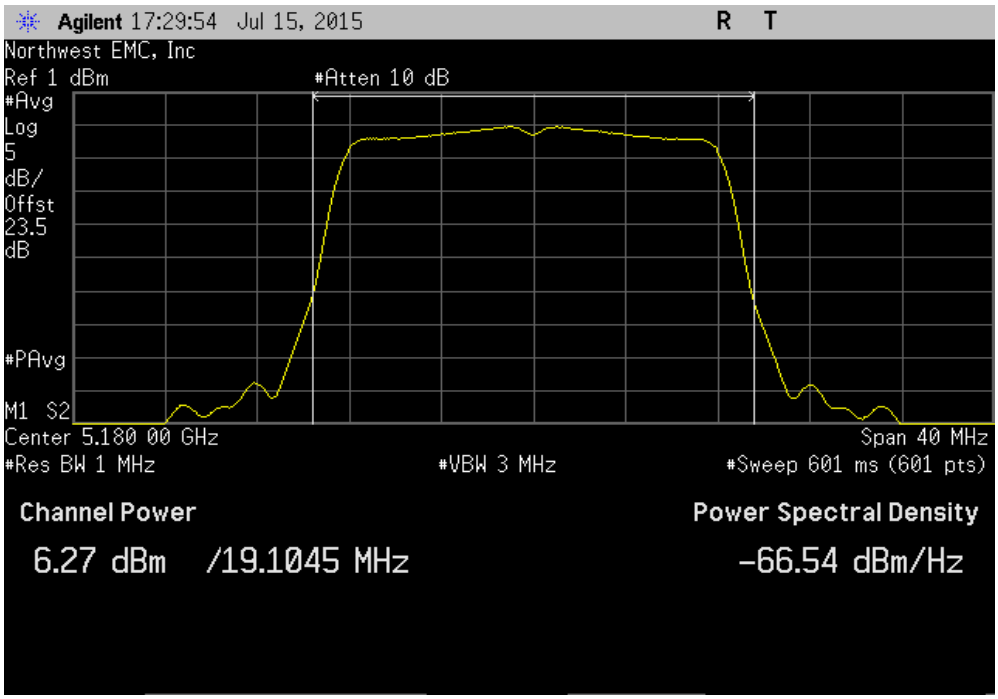
5150 - 5250 MHz Band, 802.11(a) 36 Mbps, Channel 36, Low Channel 5180 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)		Output Power (dBm)	Limit (dBm)	Results
	6.23	0.5		6.8	24	Pass



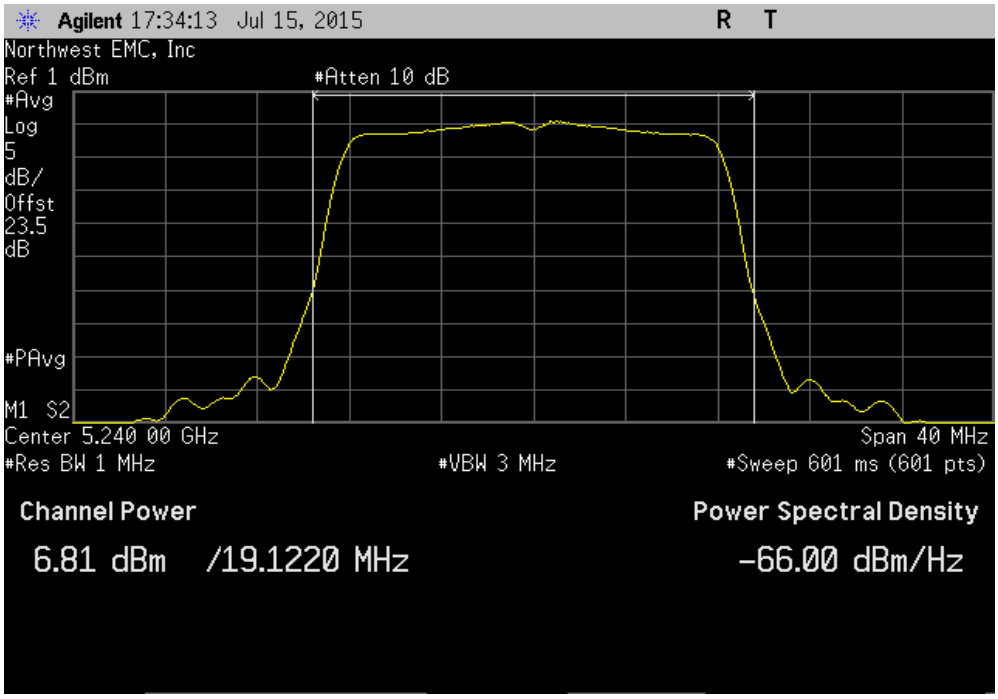
5150 - 5250 MHz Band, 802.11(a) 36 Mbps, Channel 48, High Channel, 5240 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)		Output Power (dBm)	Limit (dBm)	Results
	6.856	0.5		7.4	24	Pass



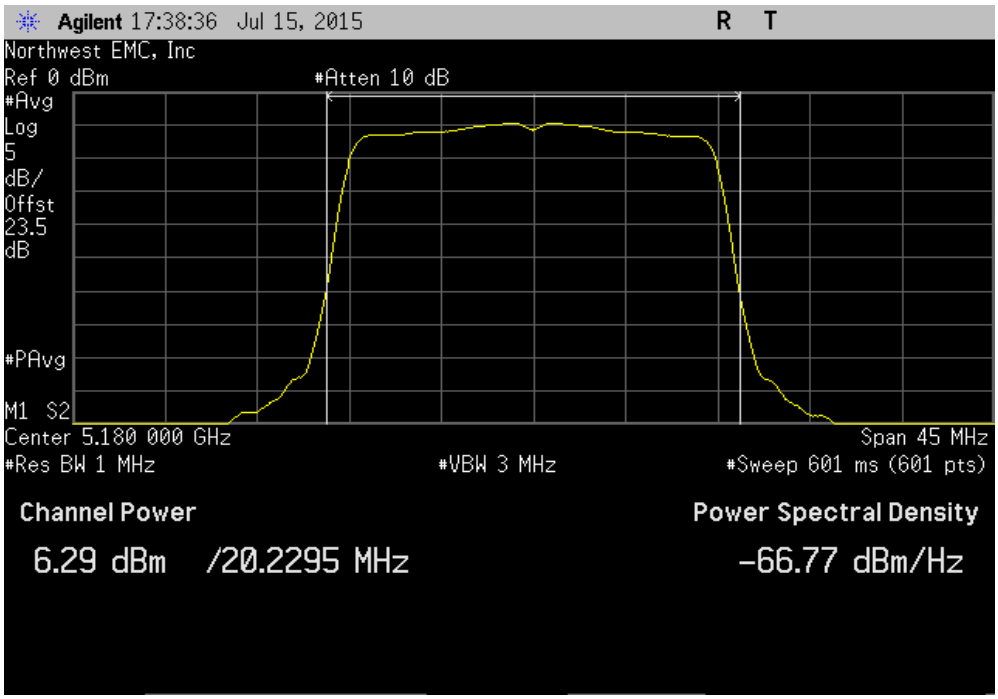
5150 - 5250 MHz Band, 802.11(a) 54 Mbps, Channel 36, Low Channel 5180 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)		Output Power (dBm)	Limit (dBm)	Results
	6.268	0.8		7	24	Pass



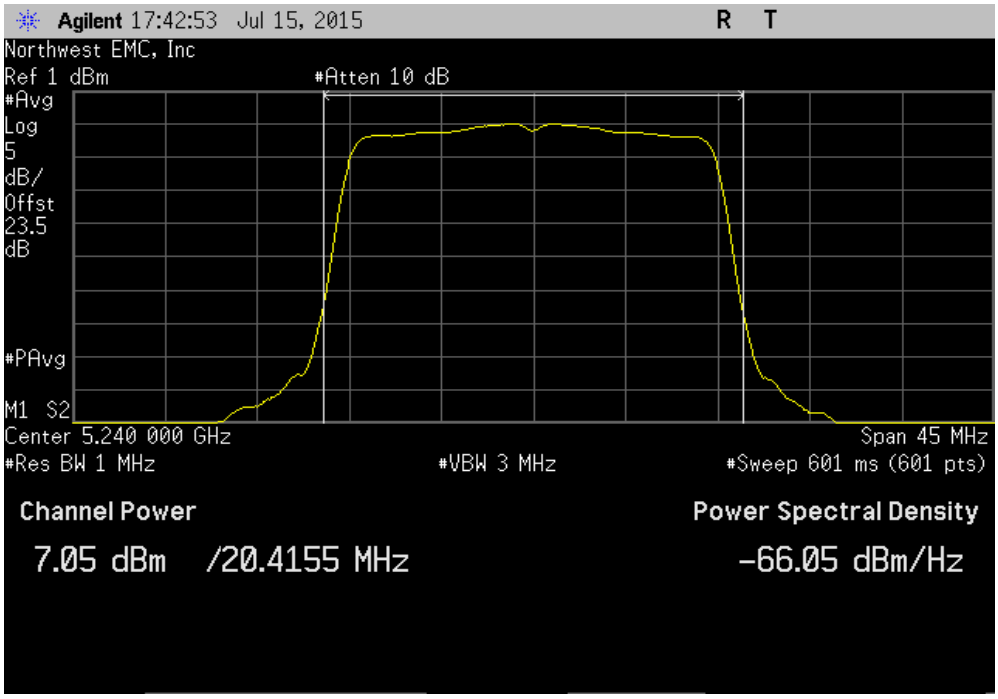
5150 - 5250 MHz Band, 802.11(a) 54 Mbps, Channel 48, High Channel, 5240 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)		Output Power (dBm)	Limit (dBm)	Results
	6.812	0.8		7.6	24	Pass



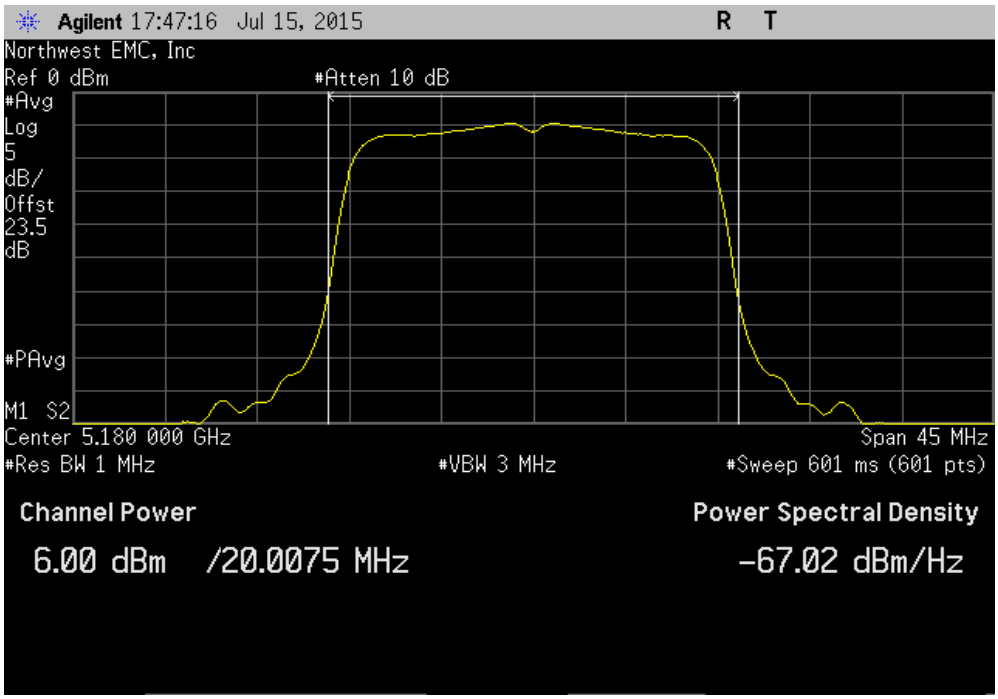
5150 - 5250 MHz Band, 802.11(n) MCS0, Channel 36, Low Channel 5180 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)		Output Power (dBm)	Limit (dBm)	Results
	6.293	0.1		6.4	24	Pass



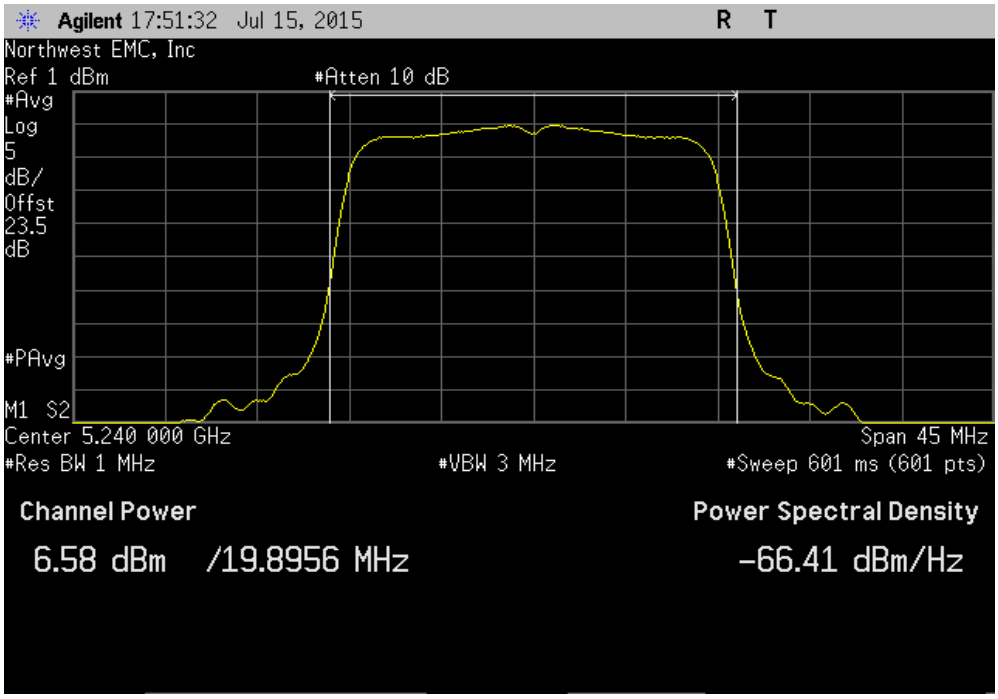
5150 - 5250 MHz Band, 802.11(n) MCS0, Channel 48, High Channel, 5240 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)		Output Power (dBm)	Limit (dBm)	Results
	7.054	0.1		7.2	24	Pass



5150 - 5250 MHz Band, 802.11(n) MCS7, Channel 36, Low Channel 5180 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)		Output Power (dBm)	Limit (dBm)	Results
	5.995	0.9		6.9	24	Pass



5150 - 5250 MHz Band, 802.11(n) MCS7, Channel 48, High Channel, 5240 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)		Output Power (dBm)	Limit (dBm)	Results
	6.576	0.9		7.5	24	Pass



PEAK TRANSMIT POWER

XMit 2015.01.14

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval (mo)
Spectrum Analyzer	Agilent	E4446A	AAT	9/27/2014	12
NC02 Cable	ESM Cable Corp.	TTBJ-141 KMKM-72	NC5	6/6/2015	12
Attenuator	Fairview Microwave	SA4014-20	TKE	1/16/2015	12
DC Block, 40 GHz	Fairview Microwave	SD3379	AMJ	6/6/2015	12
Signal Generator	Agilent	N5183A	TIA	4/7/2014	36

TEST DESCRIPTION

FCC KDB 789033 D02 General UNII Test Procedures Section E method SA-2 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 and duty cycle were measured.

PEAK TRANSMIT POWER

NORTHWEST EMC

XMit 2015.01.14

EUT:	1713 USB Radio Device			**Work Order:**	MCSO1731
Serial Number:	EV1-3-000299			**Date:**	07/15/15
Customer:	Microsoft Corporation			**Temperature:**	24°C
Attendees:	None			**Humidity:**	43%
Project:	None			**Barometric Pres.:**	1018 mb
Tested by:	Richard Mellroth	**Power:**	USB	**Job Site:**	NC02

TEST SPECIFICATIONS	Test Method
FCC 15.407:2015	ANSI C63.10:2009

COMMENTS

Power Settings at Default. Client adapter cable loss of 1.3dB included in reference level offset.

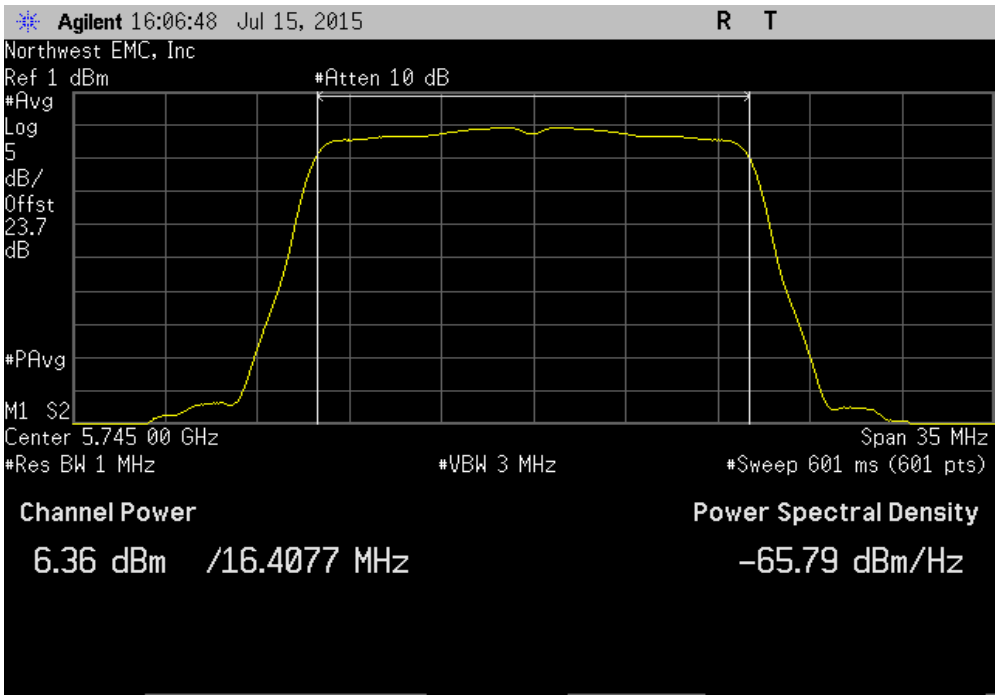
DEVIATIONS FROM TEST STANDARD

None

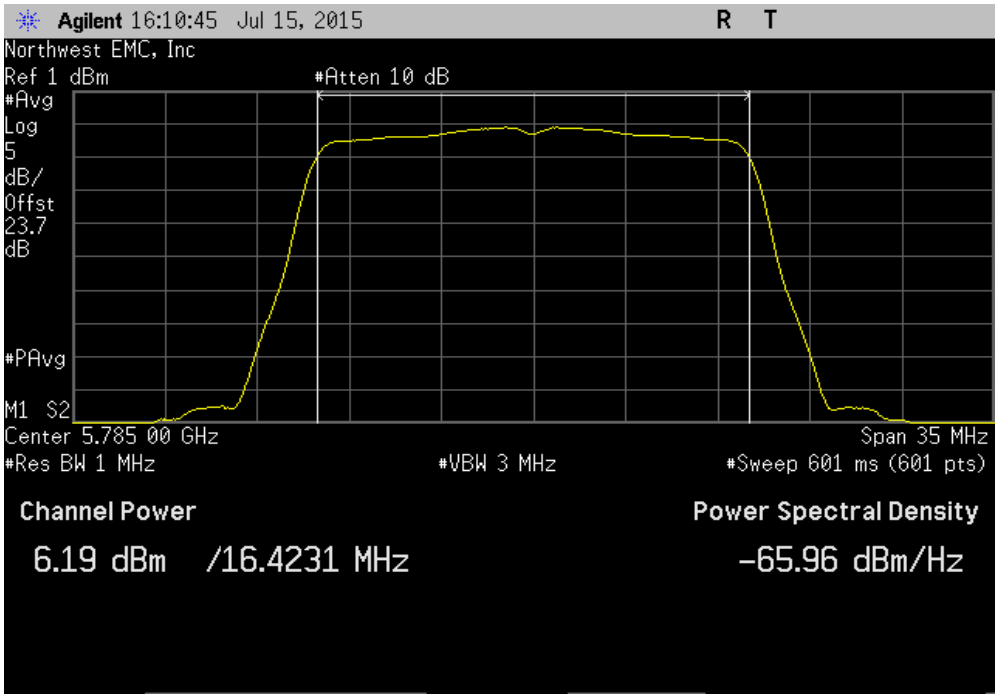
Configuration #	1	*Signature*

	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Output Power (dBm)	Limit (dBm)	Results
5725-5850 MHz Band					
802.11(a) 6 Mbps					
Channel 149, Low Channel, 5745 MHz	6.358	0.1	6.5	30	Pass
Channel 157, Mid Channel, 5785 MHz	6.191	0.1	6.3	30	Pass
Channel 165, High Channel, 5825 MHz	6.426	0.1	6.5	30	Pass
802.11(a) 36 Mbps					
Channel 149, Low Channel, 5745 MHz	6.067	0.5	6.6	30	Pass
Channel 157, Mid Channel, 5785 MHz	5.974	0.5	6.5	30	Pass
Channel 165, High Channel, 5825 MHz	6.196	0.5	6.7	30	Pass
802.11(a) 54 Mbps					
Channel 149, Low Channel, 5745 MHz	6.101	0.8	6.9	30	Pass
Channel 157, Mid Channel, 5785 MHz	5.964	0.8	6.7	30	Pass
Channel 165, High Channel, 5825 MHz	6.203	0.8	7	30	Pass
802.11(n) MCS0					
Channel 149, Low Channel, 5745 MHz	6.419	0.1	6.5	30	Pass
Channel 157, Mid Channel, 5785 MHz	6.188	0.1	6.3	30	Pass
Channel 165, High Channel, 5825 MHz	6.552	0.1	6.7	30	Pass
802.11(n) MCS7					
Channel 149, Low Channel, 5745 MHz	5.871	0.9	6.8	30	Pass
Channel 157, Mid Channel, 5785 MHz	5.776	0.9	6.7	30	Pass
Channel 165, High Channel, 5825 MHz	6.105	0.9	7	30	Pass

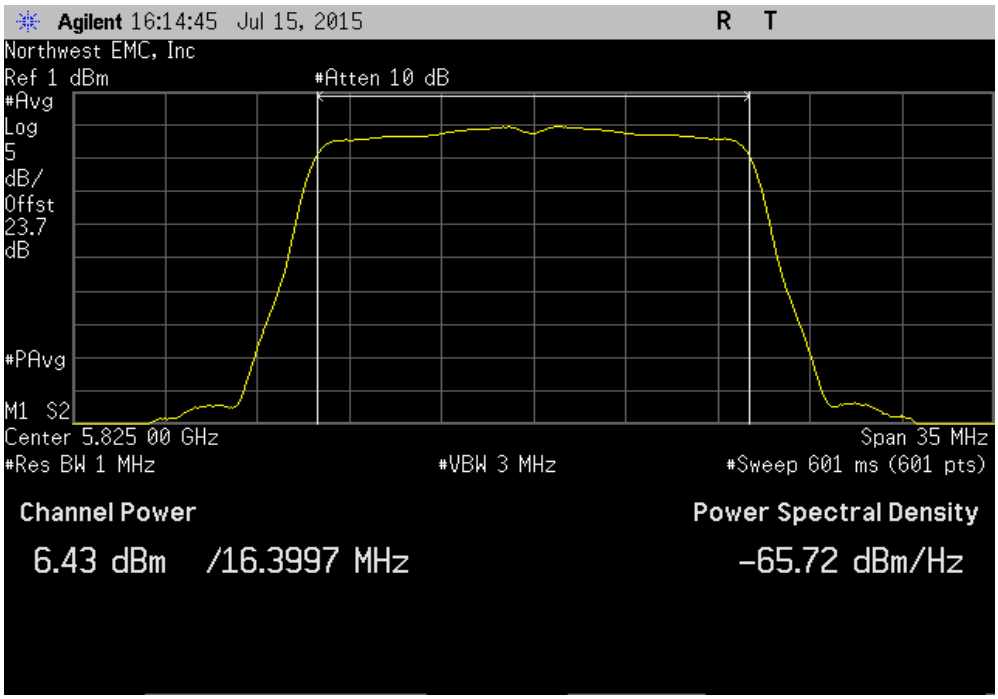
5725-5850 MHz Band, 802.11(a) 6 Mbps, Channel 149, Low Channel, 5745 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)		Output Power (dBm)	Limit (dBm)	Results
	6.358	0.1		6.5	30	Pass



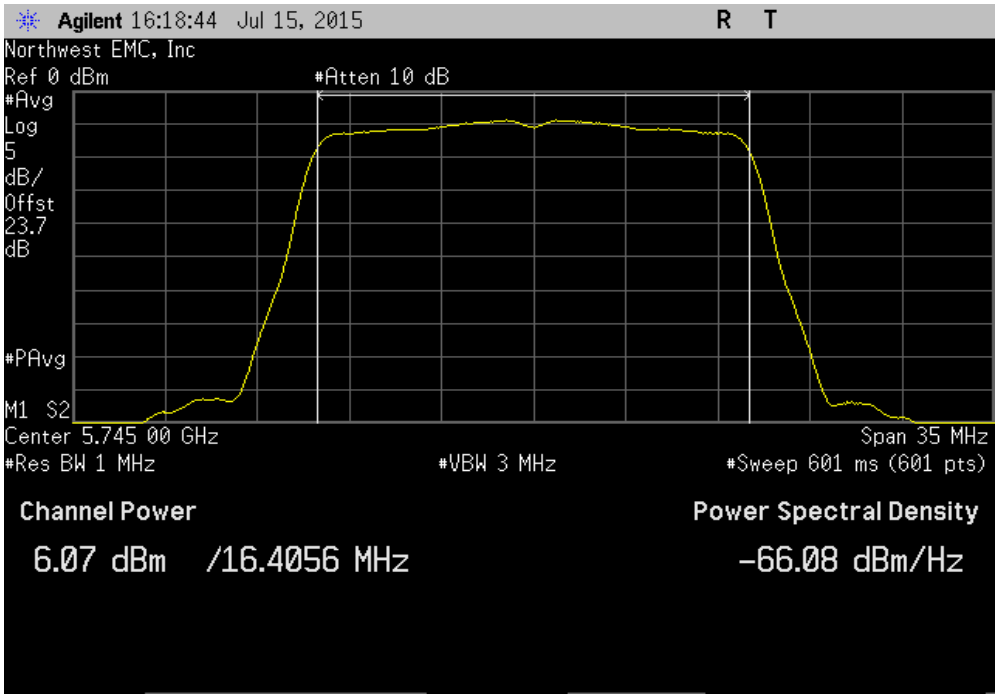
5725-5850 MHz Band, 802.11(a) 6 Mbps, Channel 157, Mid Channel, 5785 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)		Output Power (dBm)	Limit (dBm)	Results
	6.191	0.1		6.3	30	Pass



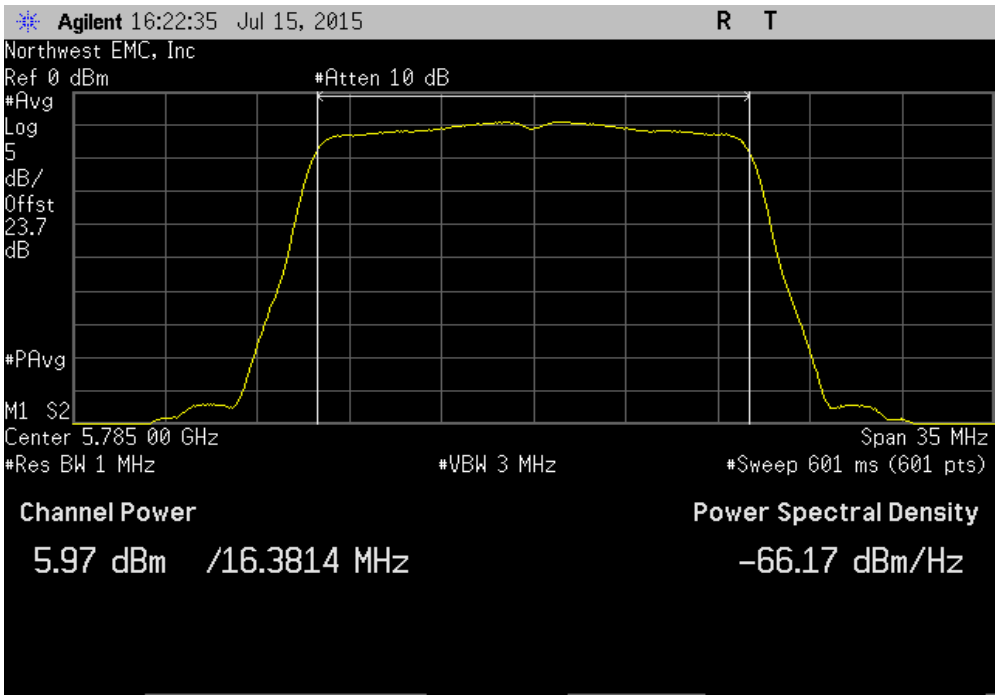
5725-5850 MHz Band, 802.11(a) 6 Mbps, Channel 165, High Channel, 5825 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)		Output Power (dBm)	Limit (dBm)	Results
	6.426	0.1		6.5	30	Pass



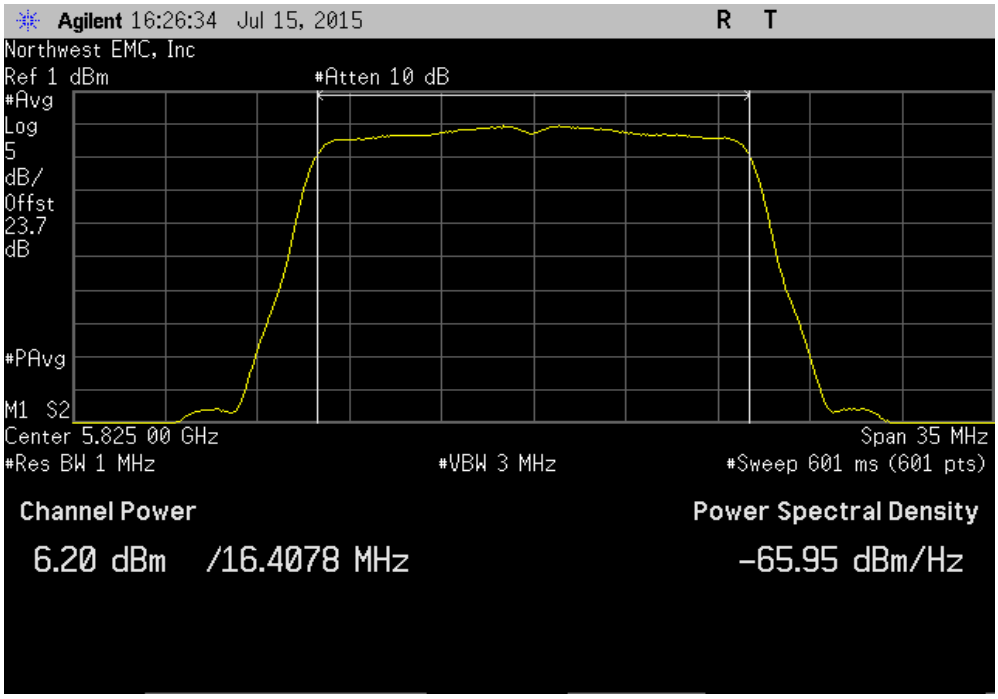
5725-5850 MHz Band, 802.11(a) 36 Mbps, Channel 149, Low Channel, 5745 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)		Output Power (dBm)	Limit (dBm)	Results
	6.067	0.5		6.6	30	Pass



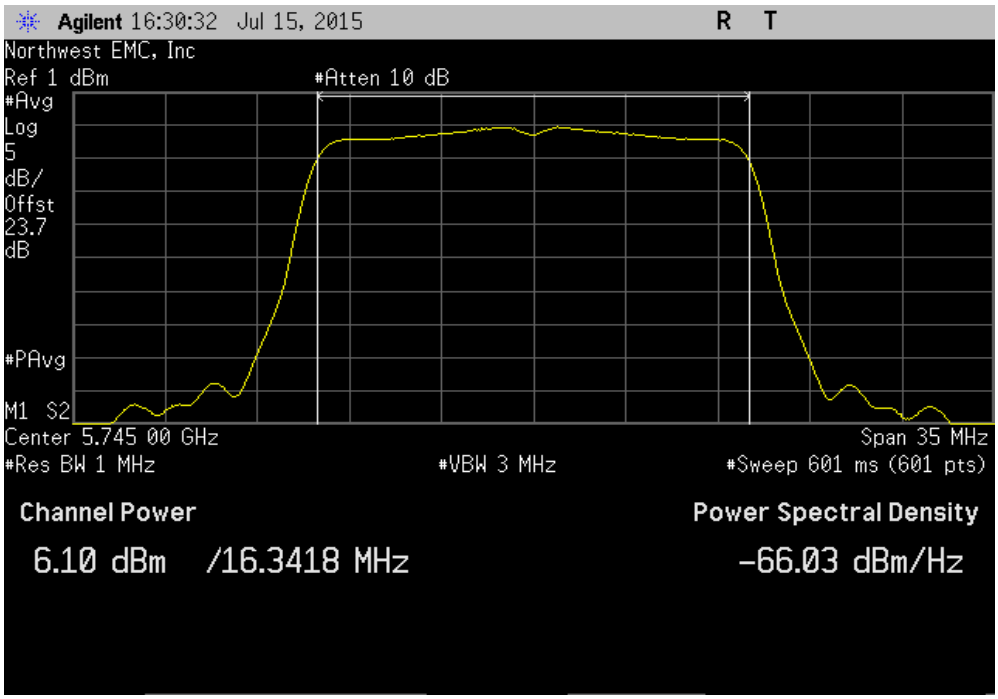
5725-5850 MHz Band, 802.11(a) 36 Mbps, Channel 157, Mid Channel, 5785 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)		Output Power (dBm)	Limit (dBm)	Results
	5.974	0.5		6.5	30	Pass



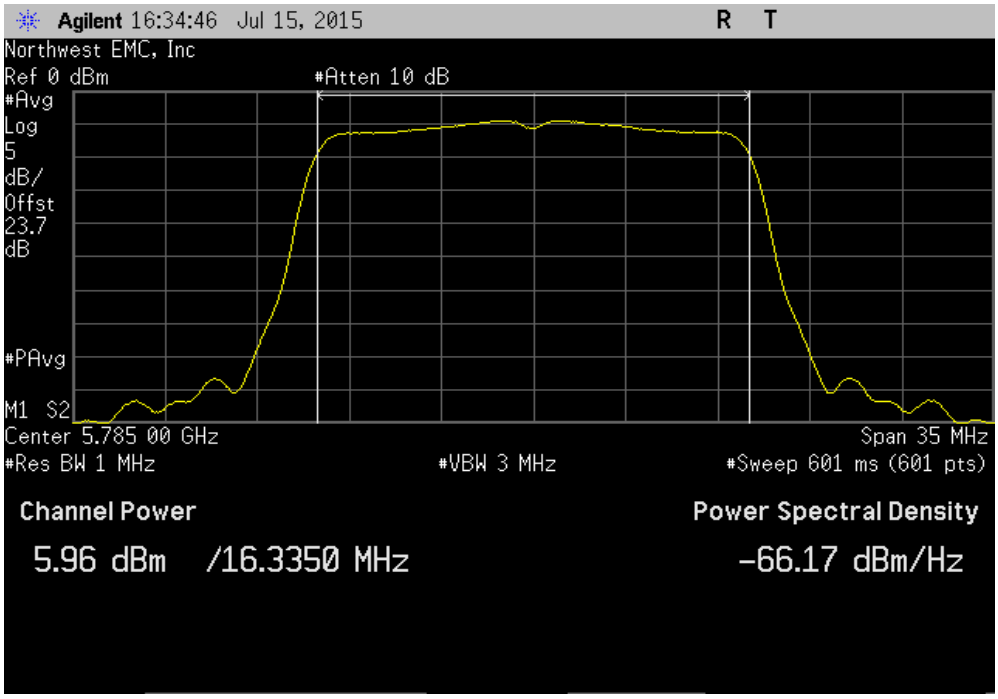
5725-5850 MHz Band, 802.11(a) 36 Mbps, Channel 165, High Channel, 5825 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)		Output Power (dBm)	Limit (dBm)	Results
	6.196	0.5		6.7	30	Pass



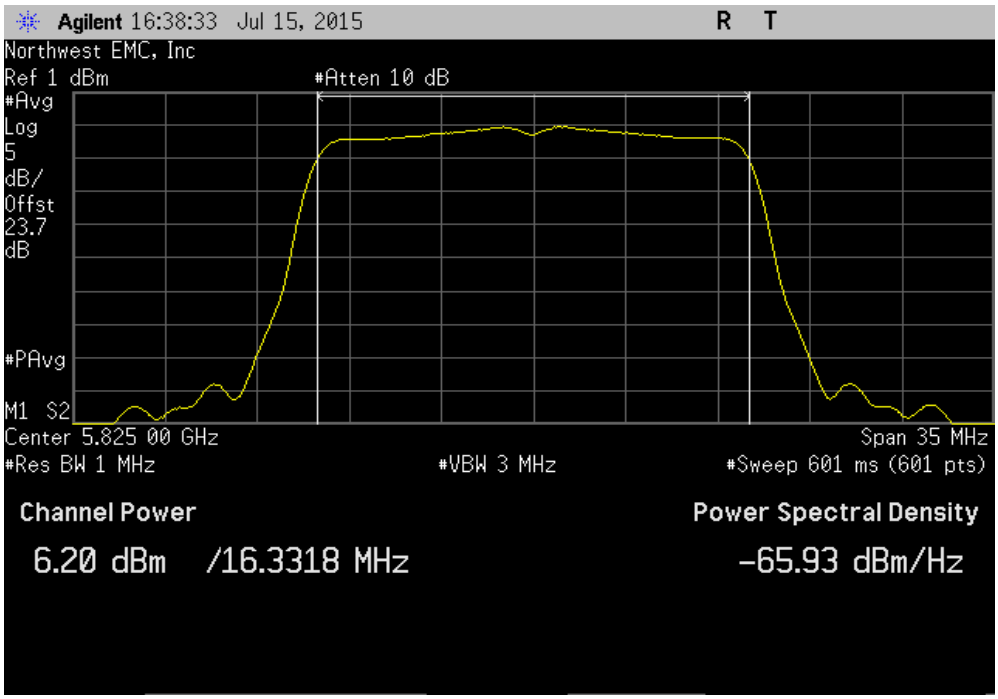
5725-5850 MHz Band, 802.11(a) 54 Mbps, Channel 149, Low Channel, 5745 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)		Output Power (dBm)	Limit (dBm)	Results
	6.101	0.8		6.9	30	Pass



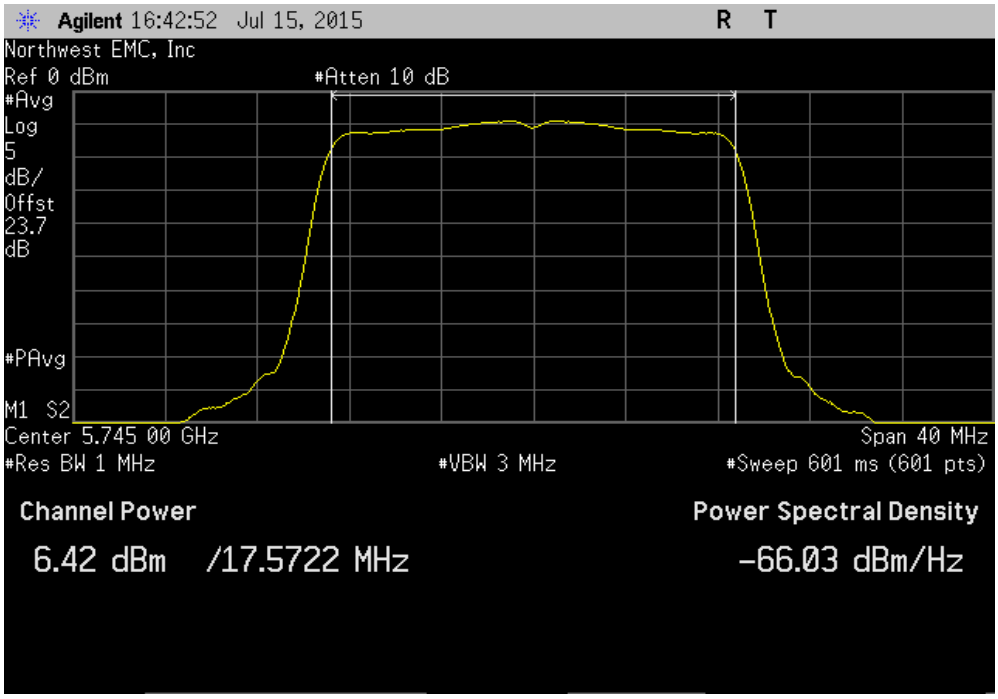
5725-5850 MHz Band, 802.11(a) 54 Mbps, Channel 157, Mid Channel, 5785 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)		Output Power (dBm)	Limit (dBm)	Results
	5.964	0.8		6.7	30	Pass



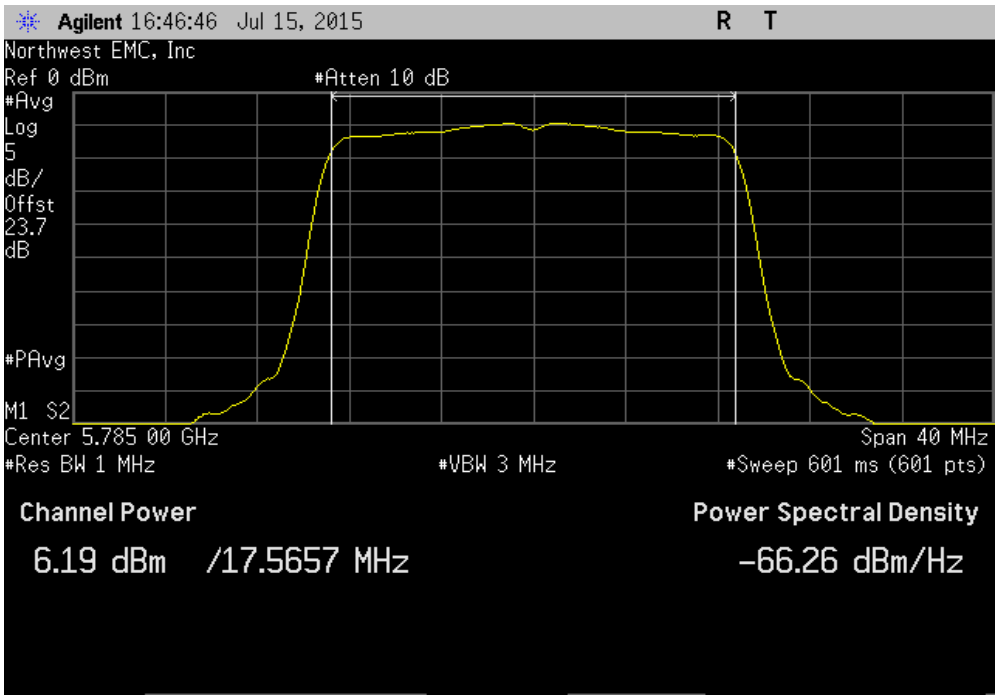
5725-5850 MHz Band, 802.11(a) 54 Mbps, Channel 165, High Channel, 5825 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)		Output Power (dBm)	Limit (dBm)	Results
	6.203	0.8		7	30	Pass



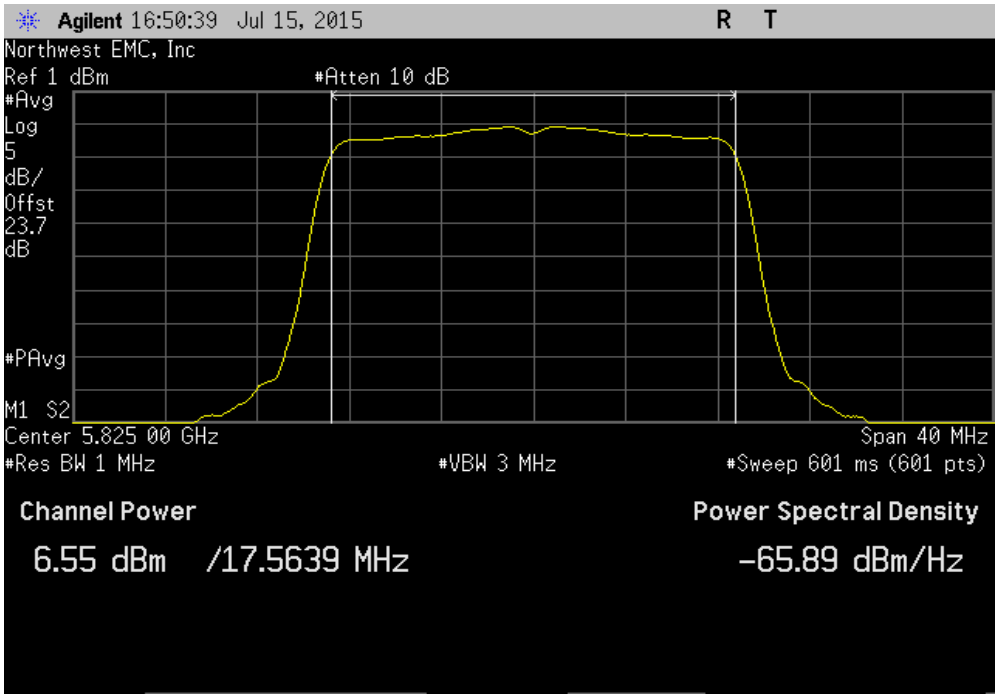
5725-5850 MHz Band, 802.11(n) MCS0, Channel 149, Low Channel, 5745 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)		Output Power (dBm)	Limit (dBm)	Results
	6.419	0.1		6.5	30	Pass



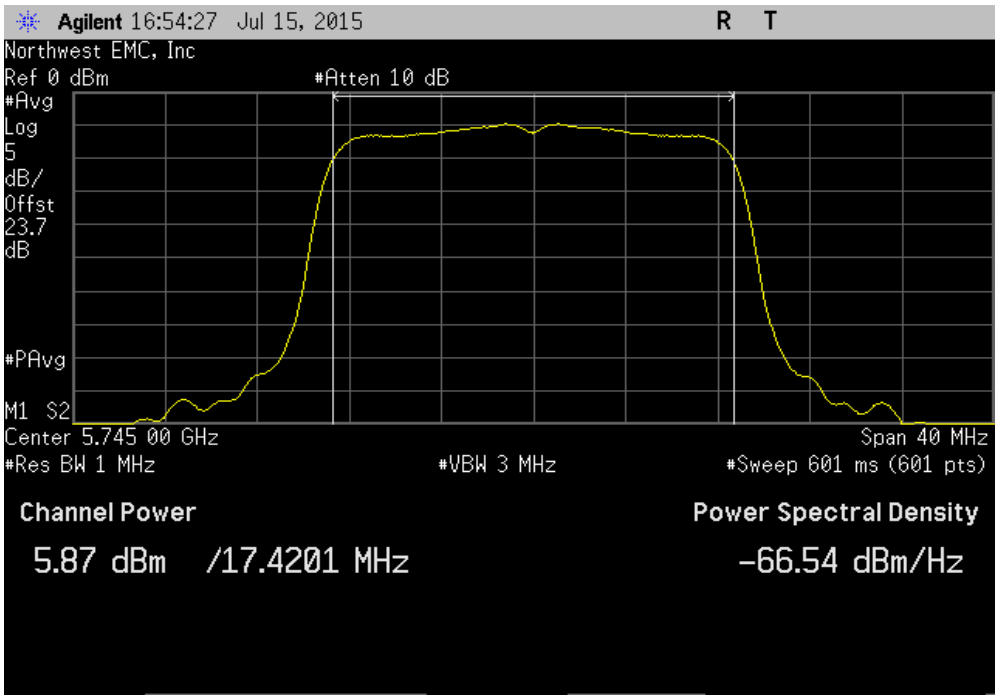
5725-5850 MHz Band, 802.11(n) MCS0, Channel 157, Mid Channel, 5785 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)		Output Power (dBm)	Limit (dBm)	Results
	6.188	0.1		6.3	30	Pass



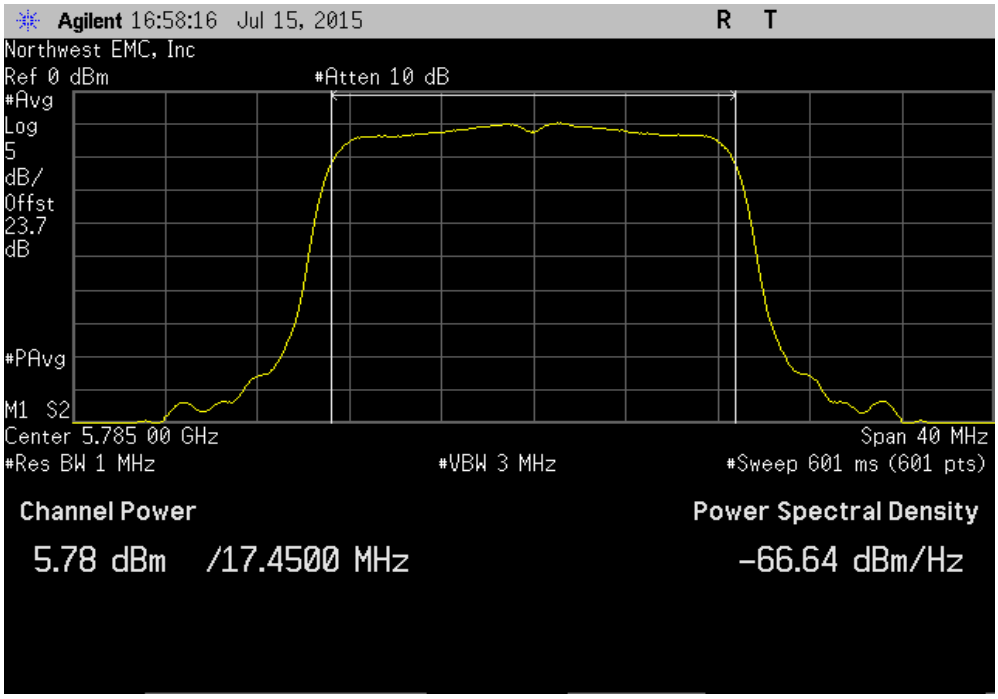
5725-5850 MHz Band, 802.11(n) MCS0, Channel 165, High Channel, 5825 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)		Output Power (dBm)	Limit (dBm)	Results
	6.552	0.1		6.7	30	Pass



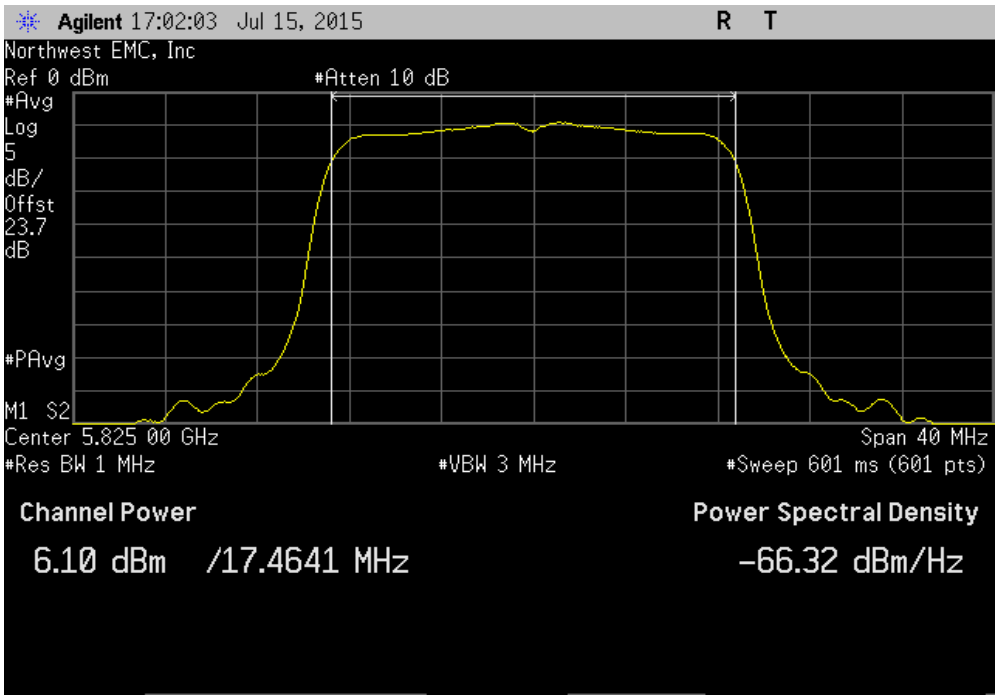
5725-5850 MHz Band, 802.11(n) MCS7, Channel 149, Low Channel, 5745 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)		Output Power (dBm)	Limit (dBm)	Results
	5.871	0.9		6.8	30	Pass



5725-5850 MHz Band, 802.11(n) MCS7, Channel 157, Mid Channel, 5785 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)		Output Power (dBm)	Limit (dBm)	Results
	5.776	0.9		6.7	30	Pass



5725-5850 MHz Band, 802.11(n) MCS7, Channel 165, High Channel, 5825 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)		Output Power (dBm)	Limit (dBm)	Results
	6.105	0.9		7	30	Pass



PEAK POWER SPECTRAL DENSITY

NORTHWEST EMC

XMit 2015.01.14

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval (mo)
Spectrum Analyzer	Agilent	E4446A	AAT	9/27/2014	12
NC02 Cable	ESM Cable Corp.	TTBJ-141 KMKM-72	NC5	6/6/2015	12
Attenuator	Fairview Microwave	SA4014-20	TKE	1/16/2015	12
DC Block, 40 GHz	Fairview Microwave	SD3379	AMJ	6/6/2015	12
Signal Generator	Agilent	N5183A	TIA	4/7/2014	36

TEST DESCRIPTION

FCC KDB 789033 D02 General UNII Test Procedures Section F was followed. The transmit frequency was set to the required channels in each band. The transmit power was set to its default maximum. The data rate(s) listed in the datasheet were tested. A direct connection was made between the RF output of the EUT and a spectrum analyzer. Attenuation and a DC block were used. The reference level offset on the spectrum analyzer was adjusted to compensate for cable loss and the external attenuation used between the RF output and the spectrum analyzer input.

Prior to measuring peak power spectral density, the transmission pulse duration (T) was measured. The transmission pulse duration and the associated data are found elsewhere in this test report.

PEAK POWER SPECTRAL DENSITY

NORTHWEST EMC

XMit 2015.01.14

EUT:	1713 USB Radio Device			**Work Order:**	MCSO1731
Serial Number:	EV1-3-000299			**Date:**	07/15/15
Customer:	Microsoft Corporation			**Temperature:**	24°C
Attendees:	None			**Humidity:**	43%
Project:	None			**Barometric Pres.:**	1018 mb
Tested by:	Richard Mellroth	**Power:**	USB	**Job Site:**	NC02

TEST SPECIFICATIONS	Test Method
FCC 15.407:2015	ANSI C63.10:2009

COMMENTS

Power Settings at Default. Client adapter cable loss of 1.3dB included in reference level offset.

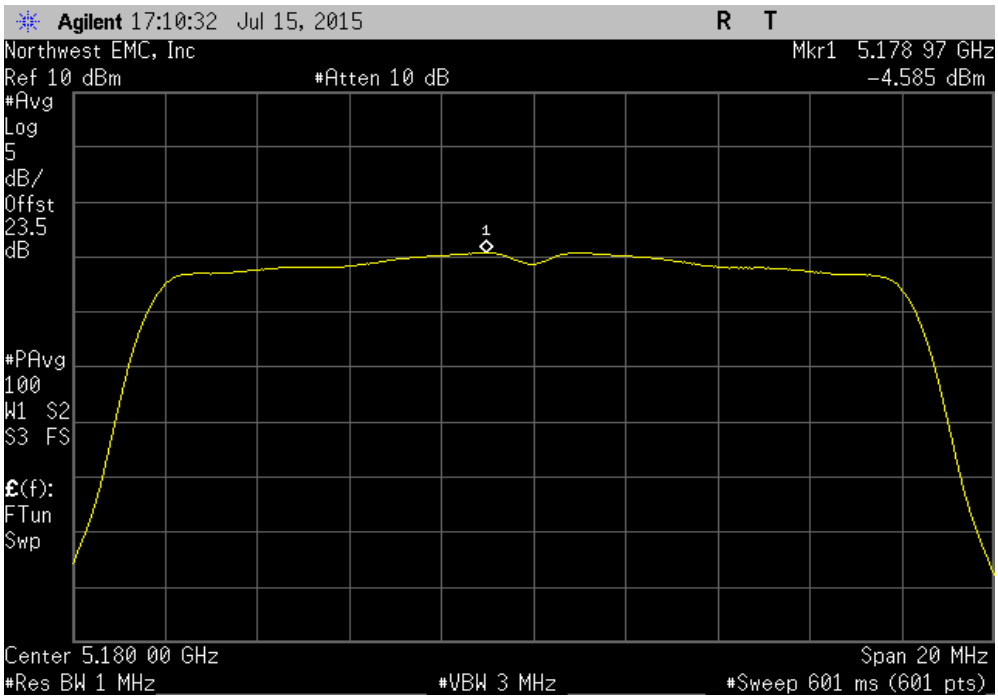
DEVIATIONS FROM TEST STANDARD

None

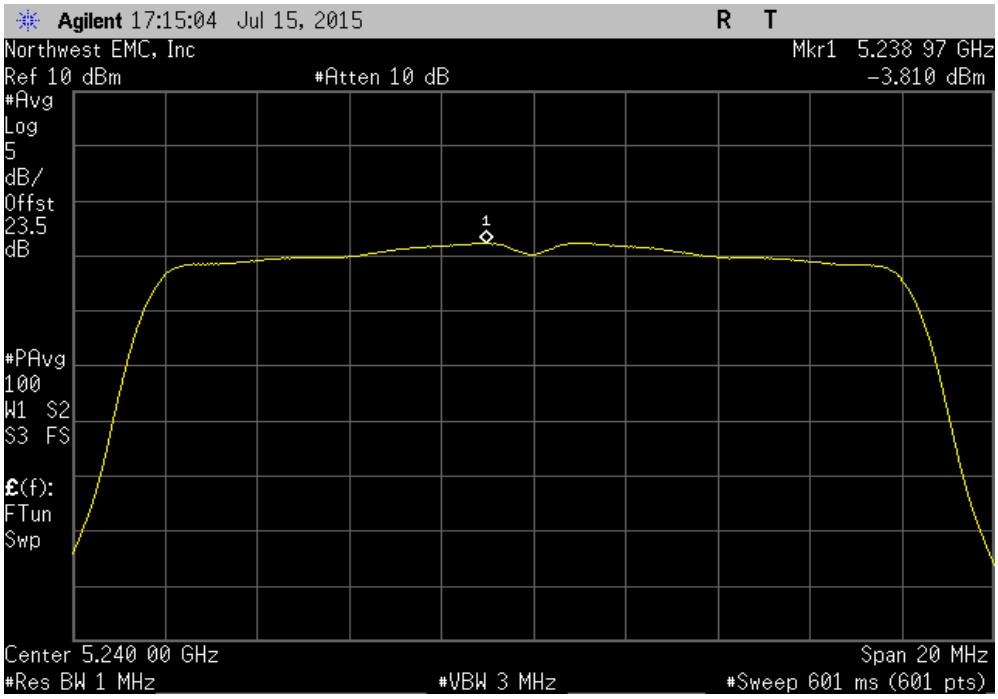
Configuration #	1	Signature

	Power (dBm/MHz)	Duty Cycle Factor (dB)	Density (dBm/Ref BW)	Limit (dBm / Ref BW)	Results
5150 - 5250 MHz Band					
802.11(a) 6 Mbps					
Channel 36, Low Channel 5180 MHz	-4.585	0.1	-4.5	11	Pass
Channel 48, High Channel, 5240 MHz	-3.81	0.1	-3.7	11	Pass
802.11(a) 36 Mbps					
Channel 36, Low Channel 5180 MHz	-4.611	0.5	-4.1	11	Pass
Channel 48, High Channel, 5240 MHz	-4.096	0.5	-3.6	11	Pass
802.11(a) 54 Mbps					
Channel 36, Low Channel 5180 MHz	-4.547	0.8	-3.8	11	Pass
Channel 48, High Channel, 5240 MHz	-4.02	0.8	-3.3	11	Pass
802.11(n) MCS0					
Channel 36, Low Channel 5180 MHz	-4.962	0.1	-4.9	11	Pass
Channel 48, High Channel, 5240 MHz	-4.176	0.1	-4.1	11	Pass
802.11(n) MCS7					
Channel 36, Low Channel 5180 MHz	-5.008	0.9	-4.1	11	Pass
Channel 48, High Channel, 5240 MHz	-4.434	0.9	-3.5	11	Pass

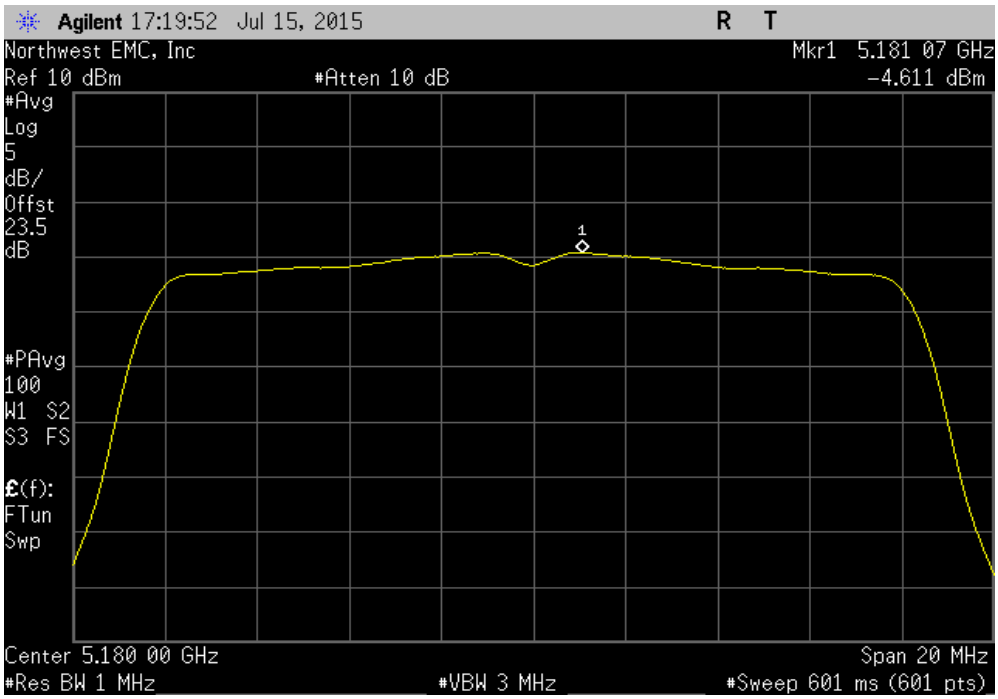
5150 - 5250 MHz Band, 802.11(a) 6 Mbps, Channel 36, Low Channel 5180 MHz						
	Power (dBm/MHz)	Duty Cycle Factor (dB)		Density (dBm/Ref BW)	Limit (dBm / Ref BW)	Results
	-4.585	0.1		-4.5	11	Pass



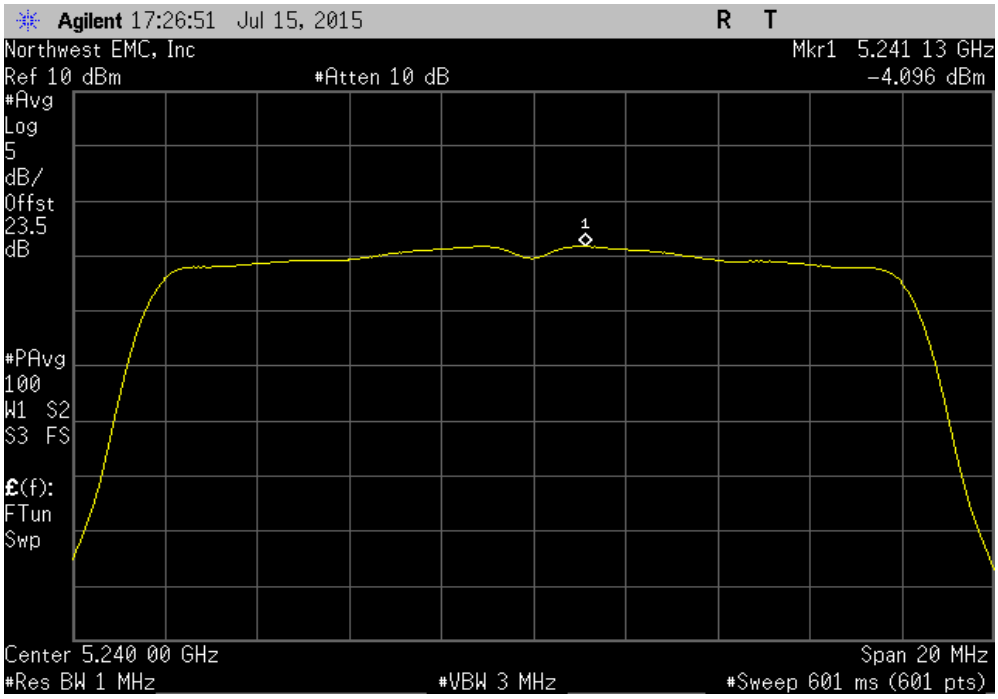
5150 - 5250 MHz Band, 802.11(a) 6 Mbps, Channel 48, High Channel, 5240 MHz						
	Power (dBm/MHz)	Duty Cycle Factor (dB)		Density (dBm/Ref BW)	Limit (dBm / Ref BW)	Results
	-3.81	0.1		-3.7	11	Pass



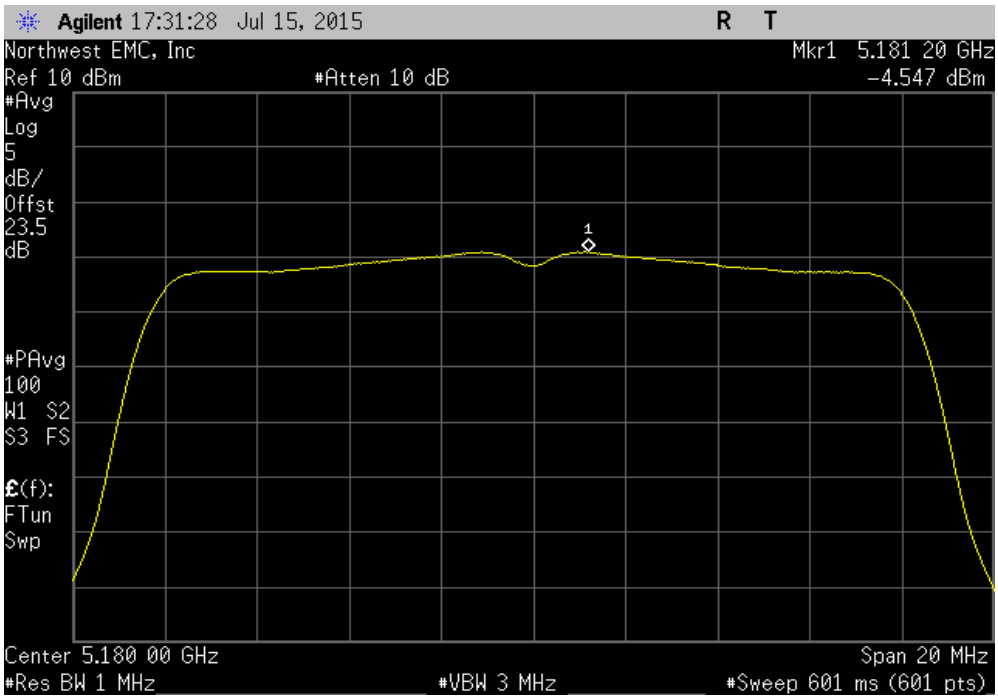
5150 - 5250 MHz Band, 802.11(a) 36 Mbps, Channel 36, Low Channel 5180 MHz						
	Power (dBm/MHz)	Duty Cycle Factor (dB)		Density (dBm/Ref BW)	Limit (dBm / Ref BW)	Results
	-4.611	0.5		-4.1	11	Pass



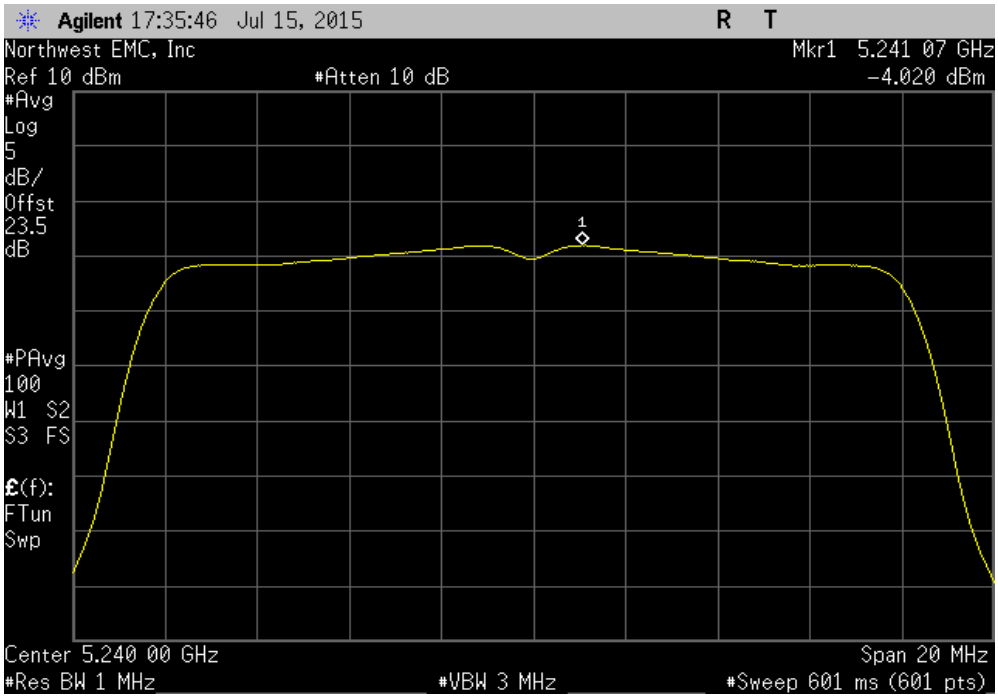
5150 - 5250 MHz Band, 802.11(a) 36 Mbps, Channel 48, High Channel, 5240 MHz						
	Power (dBm/MHz)	Duty Cycle Factor (dB)		Density (dBm/Ref BW)	Limit (dBm / Ref BW)	Results
	-4.096	0.5		-3.6	11	Pass



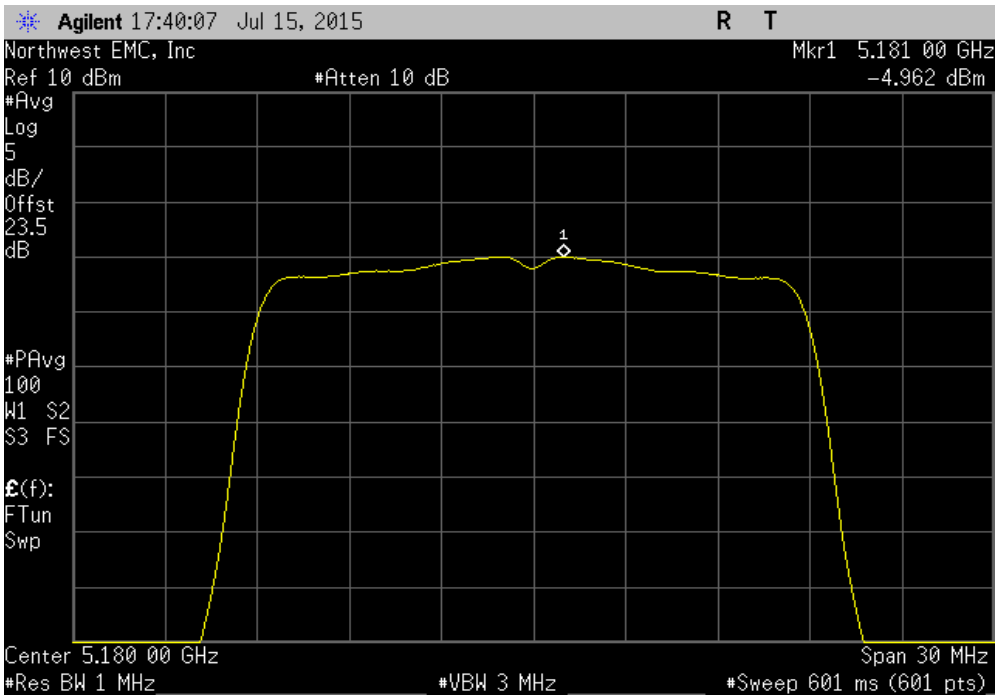
5150 - 5250 MHz Band, 802.11(a) 54 Mbps, Channel 36, Low Channel 5180 MHz						
	Power (dBm/MHz)	Duty Cycle Factor (dB)		Density (dBm/Ref BW)	Limit (dBm / Ref BW)	Results
	-4.547	0.8		-3.8	11	Pass



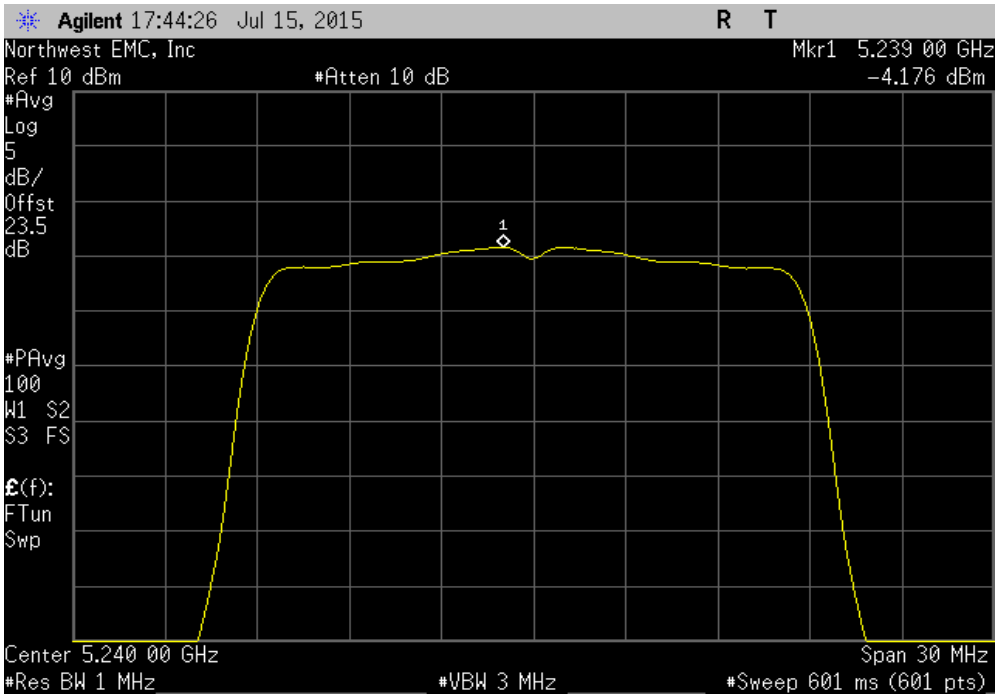
5150 - 5250 MHz Band, 802.11(a) 54 Mbps, Channel 48, High Channel, 5240 MHz						
	Power (dBm/MHz)	Duty Cycle Factor (dB)		Density (dBm/Ref BW)	Limit (dBm / Ref BW)	Results
	-4.02	0.8		-3.3	11	Pass



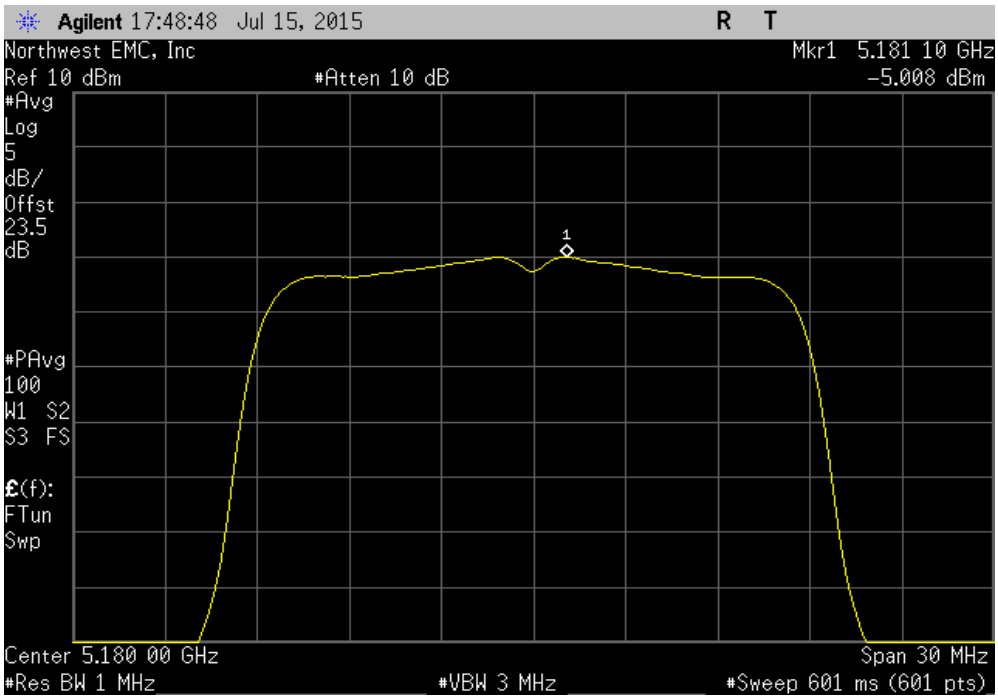
5150 - 5250 MHz Band, 802.11(n) MCS0, Channel 36, Low Channel 5180 MHz						
	Power (dBm/MHz)	Duty Cycle Factor (dB)		Density (dBm/Ref BW)	Limit (dBm / Ref BW)	Results
	-4.962	0.1		-4.9	11	Pass



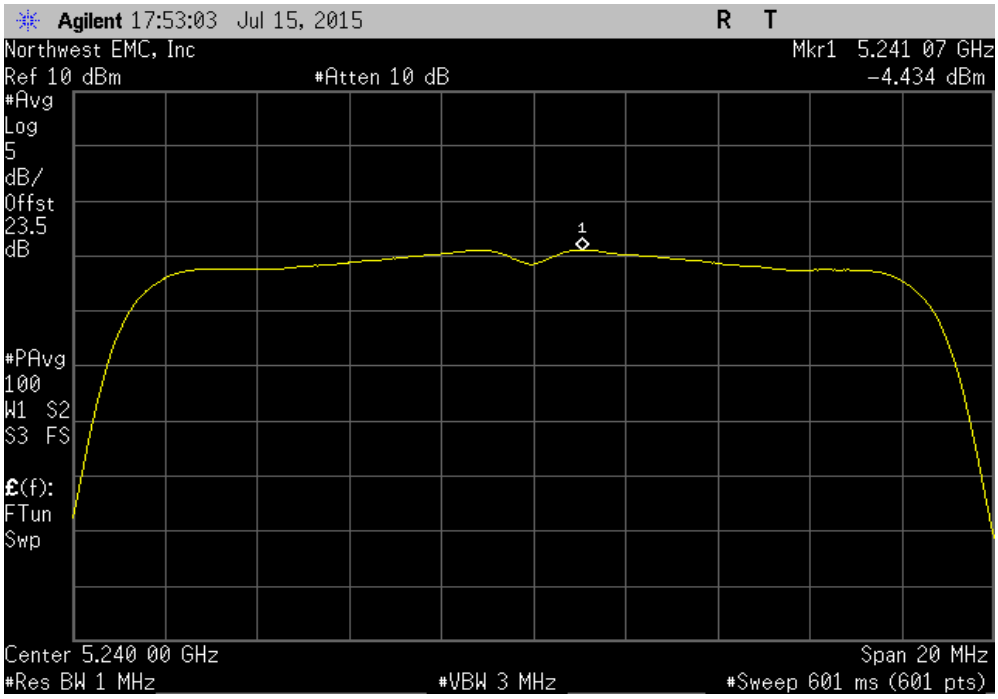
5150 - 5250 MHz Band, 802.11(n) MCS0, Channel 48, High Channel, 5240 MHz						
	Power (dBm/MHz)	Duty Cycle Factor (dB)		Density (dBm/Ref BW)	Limit (dBm / Ref BW)	Results
	-4.176	0.1		-4.1	11	Pass



5150 - 5250 MHz Band, 802.11(n) MCS7, Channel 36, Low Channel 5180 MHz						
	Power (dBm/MHz)	Duty Cycle Factor (dB)		Density (dBm/Ref BW)	Limit (dBm / Ref BW)	Results
	-5.008	0.9		-4.1	11	Pass



5150 - 5250 MHz Band, 802.11(n) MCS7, Channel 48, High Channel, 5240 MHz						
	Power (dBm/MHz)	Duty Cycle Factor (dB)		Density (dBm/Ref BW)	Limit (dBm / Ref BW)	Results
	-4.434	0.9		-3.5	11	Pass



PEAK POWER SPECTRAL DENSITY

XMit 2015.01.14

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval (mo)
Spectrum Analyzer	Agilent	E4446A	AAT	9/27/2014	12
NC02 Cable	ESM Cable Corp.	TTBJ-141 KMKM-72	NC5	6/6/2015	12
Attenuator	Fairview Microwave	SA4014-20	TKE	1/16/2015	12
DC Block, 40 GHz	Fairview Microwave	SD3379	AMJ	6/6/2015	12
Signal Generator	Agilent	N5183A	TIA	4/7/2014	36

TEST DESCRIPTION

FCC KDB 789033 D02 General UNII Test Procedures Section F was followed. The transmit frequency was set to the required channels in each band. The transmit power was set to its default maximum. The data rate(s) listed in the datasheet were tested. A direct connection was made between the RF output of the EUT and a spectrum analyzer. Attenuation and a DC block were used. The reference level offset on the spectrum analyzer was adjusted to compensate for cable loss and the external attenuation used between the RF output and the spectrum analyzer input.

Prior to measuring peak power spectral density, the transmission pulse duration (T) was measured. The transmission pulse duration and the associated data are found elsewhere in this test report.

PEAK POWER SPECTRAL DENSITY

NORTHWEST EMC

XMit 2015.01.14

EUT:	1713 USB Radio Device			**Work Order:**	MCSO1731
Serial Number:	EV1-3-000299			**Date:**	07/15/15
Customer:	Microsoft Corporation			**Temperature:**	24°C
Attendees:	None			**Humidity:**	43%
Project:	None			**Barometric Pres.:**	1018 mb
Tested by:	Richard Mellroth	**Power:**	USB	**Job Site:**	NC02

TEST SPECIFICATIONS	Test Method
FCC 15.407:2015	ANSI C63.10:2009

COMMENTS

Power Settings at Default. Client adapter cable loss of 1.3dB included in reference level offset.

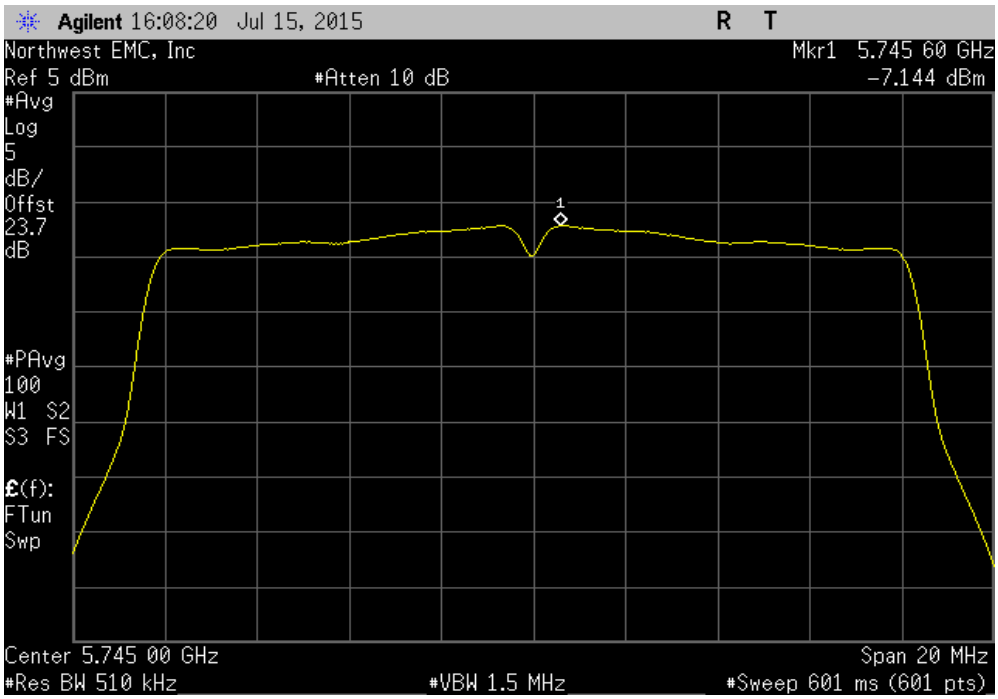
DEVIATIONS FROM TEST STANDARD

None

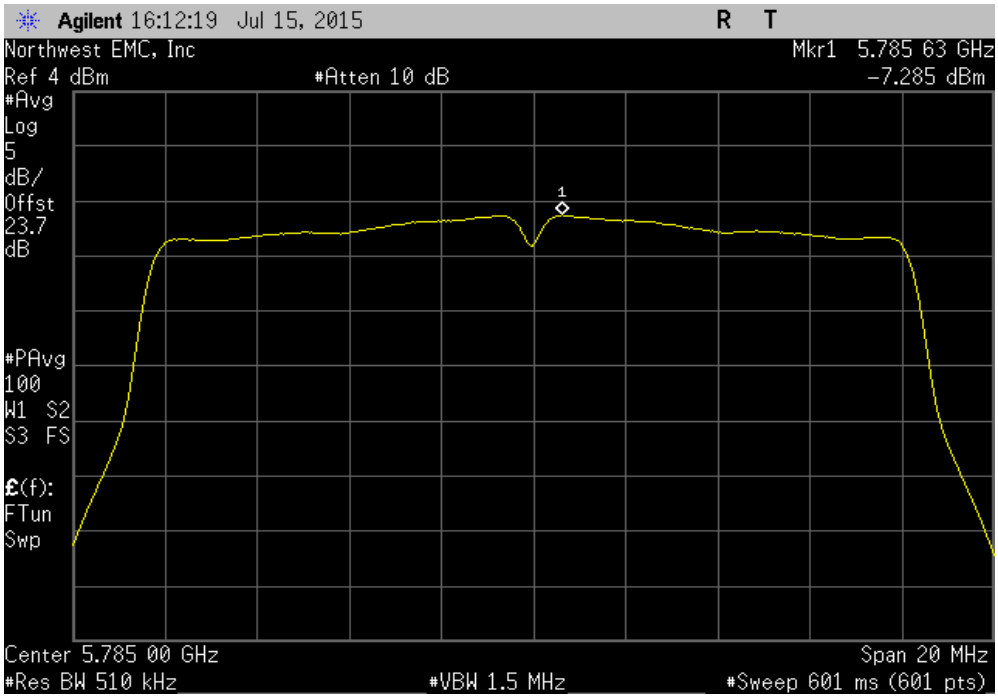
Configuration #	1	Signature

	Power (dBm/MHz)	Duty Cycle Factor (dB)	Density (dBm/Ref BW)	Limit (dBm / Ref BW)	Results
5725-5850 MHz Band					
802.11(a) 6 Mbps					
Channel 149, Low Channel, 5745 MHz	-7.144	0.1	-7.0	30	Pass
Channel 157, Mid Channel, 5785 MHz	-7.285	0.1	-7.2	30	Pass
Channel 165, High Channel, 5825 MHz	-7.073	0.1	-7.0	30	Pass
802.11(a) 36 Mbps					
Channel 149, Low Channel, 5745 MHz	-7.428	0.5	-6.9	30	Pass
Channel 157, Mid Channel, 5785 MHz	-7.553	0.5	-7.0	30	Pass
Channel 165, High Channel, 5825 MHz	-7.371	0.5	-6.8	30	Pass
802.11(a) 54 Mbps					
Channel 149, Low Channel, 5745 MHz	-7.403	0.8	-6.6	30	Pass
Channel 157, Mid Channel, 5785 MHz	-7.5	0.8	-6.7	30	Pass
Channel 165, High Channel, 5825 MHz	-7.299	0.8	-6.5	30	Pass
802.11(n) MCS0					
Channel 149, Low Channel, 5745 MHz	-7.403	0.1	-7.3	30	Pass
Channel 157, Mid Channel, 5785 MHz	-7.598	0.1	-7.5	30	Pass
Channel 165, High Channel, 5825 MHz	-7.19	0.1	-7.1	30	Pass
802.11(n) MCS7					
Channel 149, Low Channel, 5745 MHz	-7.739	0.9	-6.9	30	Pass
Channel 157, Mid Channel, 5785 MHz	-7.823	0.9	-6.9	30	Pass
Channel 165, High Channel, 5825 MHz	-7.473	0.9	-6.6	30	Pass

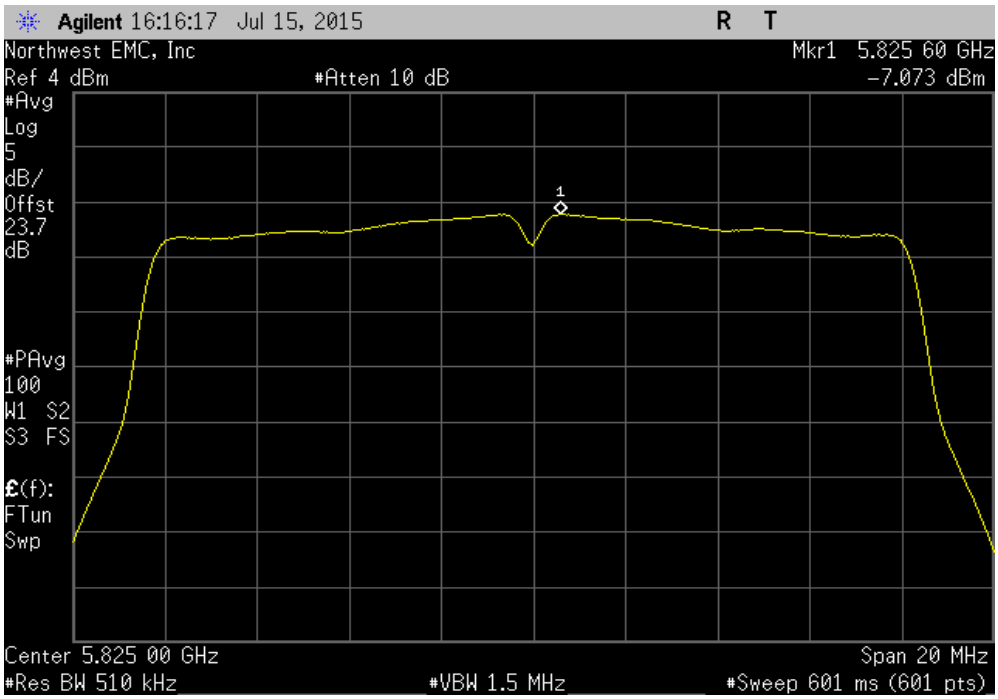
5725-5850 MHz Band, 802.11(a) 6 Mbps, Channel 149, Low Channel, 5745 MHz						
	Power (dBm/MHz)	Duty Cycle Factor (dB)		Density (dBm/Ref BW)	Limit (dBm / Ref BW)	Results
	-7.144	0.1		-7.0	30	Pass



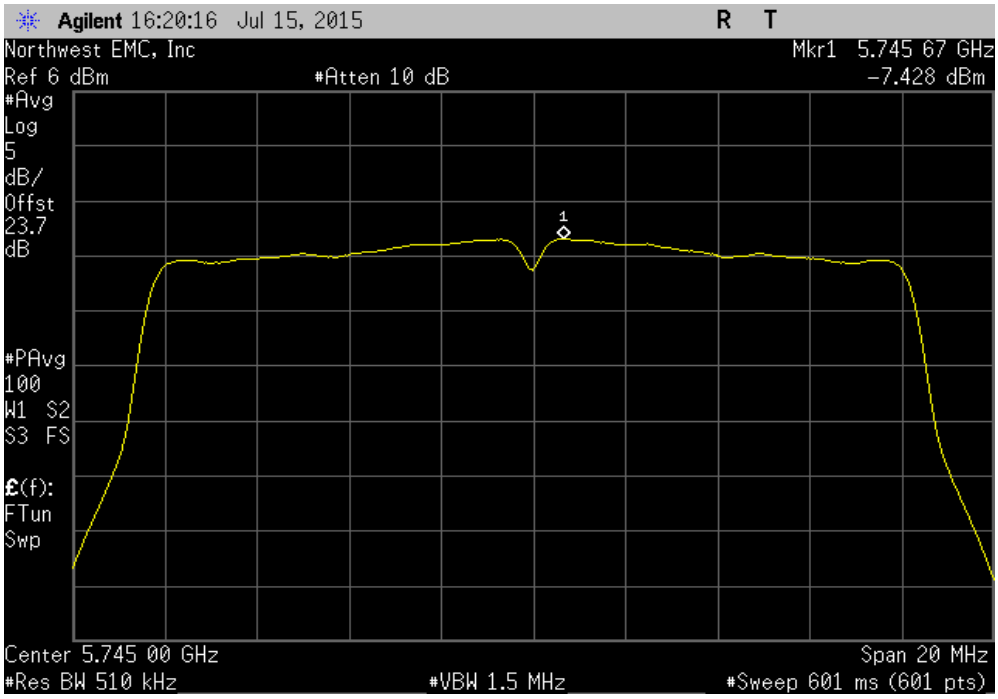
5725-5850 MHz Band, 802.11(a) 6 Mbps, Channel 157, Mid Channel, 5785 MHz						
	Power (dBm/MHz)	Duty Cycle Factor (dB)		Density (dBm/Ref BW)	Limit (dBm / Ref BW)	Results
	-7.285	0.1		-7.2	30	Pass



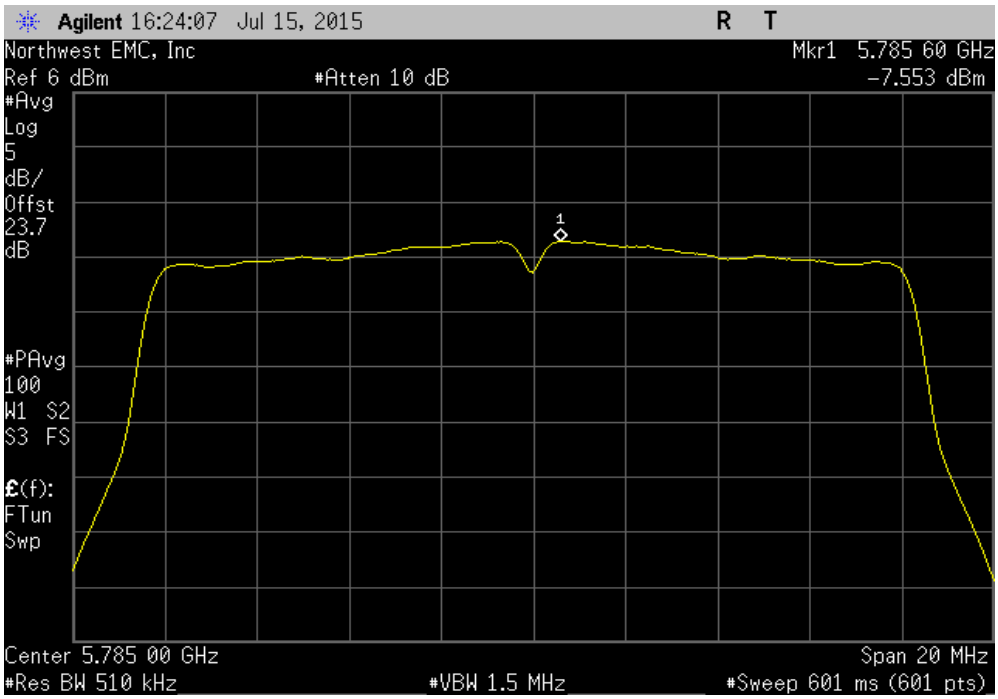
5725-5850 MHz Band, 802.11(a) 6 Mbps, Channel 165, High Channel, 5825 MHz						
	Power (dBm/MHz)	Duty Cycle Factor (dB)		Density (dBm/Ref BW)	Limit (dBm / Ref BW)	Results
	-7.073	0.1		-7.0	30	Pass



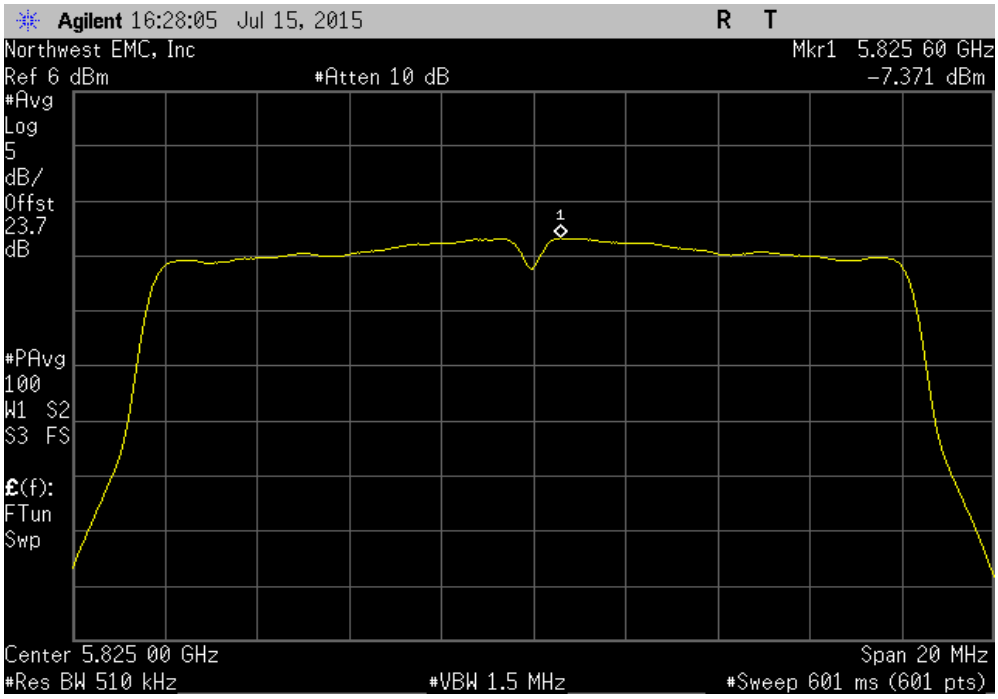
5725-5850 MHz Band, 802.11(a) 36 Mbps, Channel 149, Low Channel, 5745 MHz						
	Power (dBm/MHz)	Duty Cycle Factor (dB)		Density (dBm/Ref BW)	Limit (dBm / Ref BW)	Results
	-7.428	0.5		-6.9	30	Pass



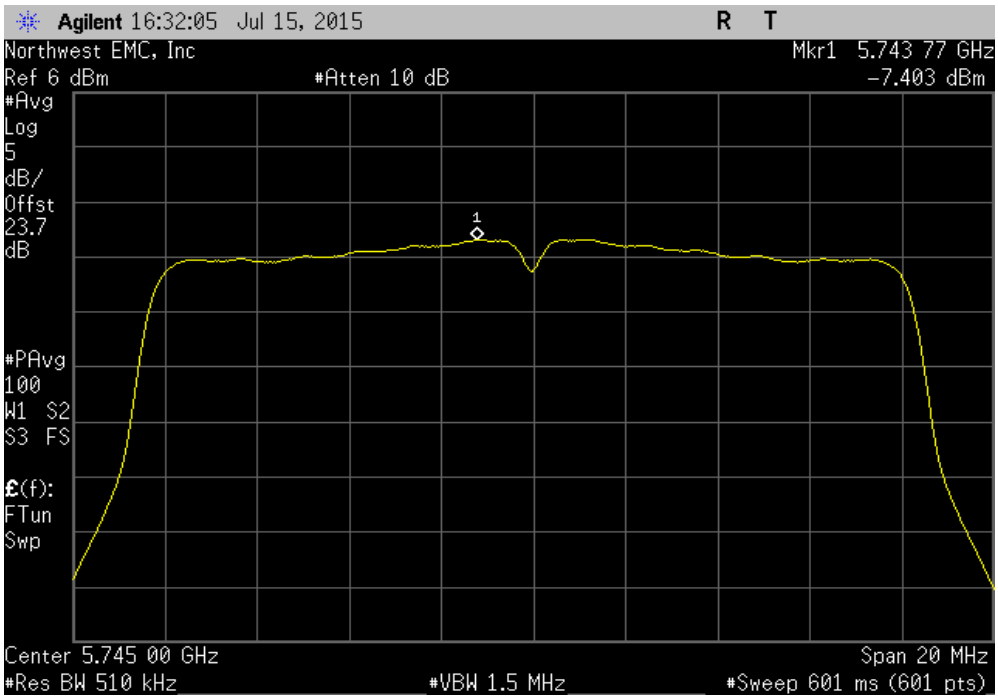
5725-5850 MHz Band, 802.11(a) 36 Mbps, Channel 157, Mid Channel, 5785 MHz						
	Power (dBm/MHz)	Duty Cycle Factor (dB)		Density (dBm/Ref BW)	Limit (dBm / Ref BW)	Results
	-7.553	0.5		-7.0	30	Pass



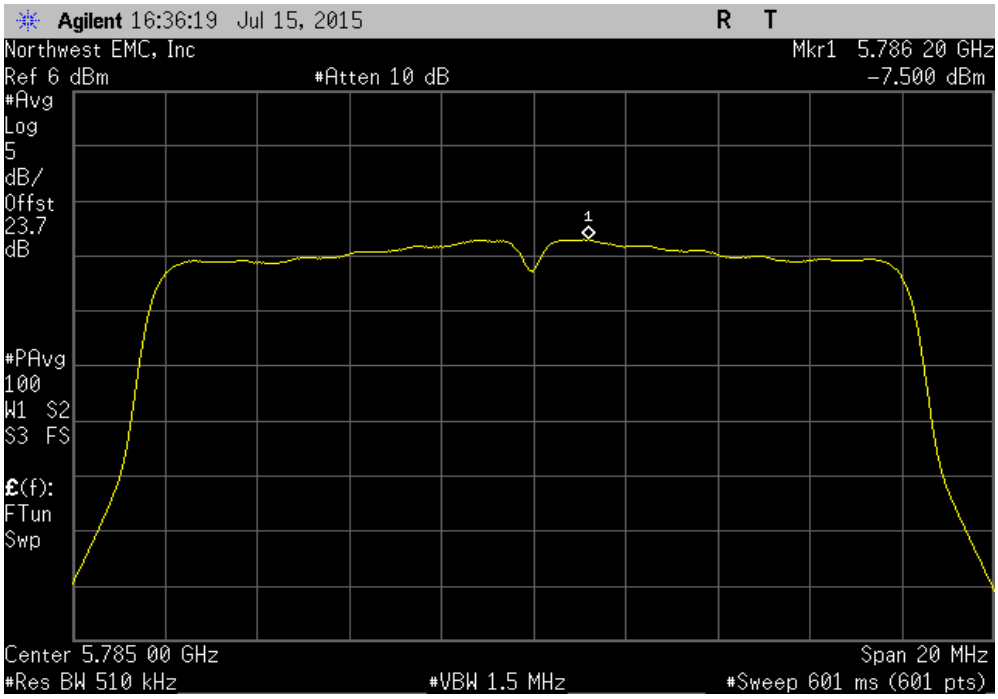
5725-5850 MHz Band, 802.11(a) 36 Mbps, Channel 165, High Channel, 5825 MHz						
	Power (dBm/MHz)	Duty Cycle Factor (dB)		Density (dBm/Ref BW)	Limit (dBm / Ref BW)	Results
	-7.371	0.5		-6.8	30	Pass



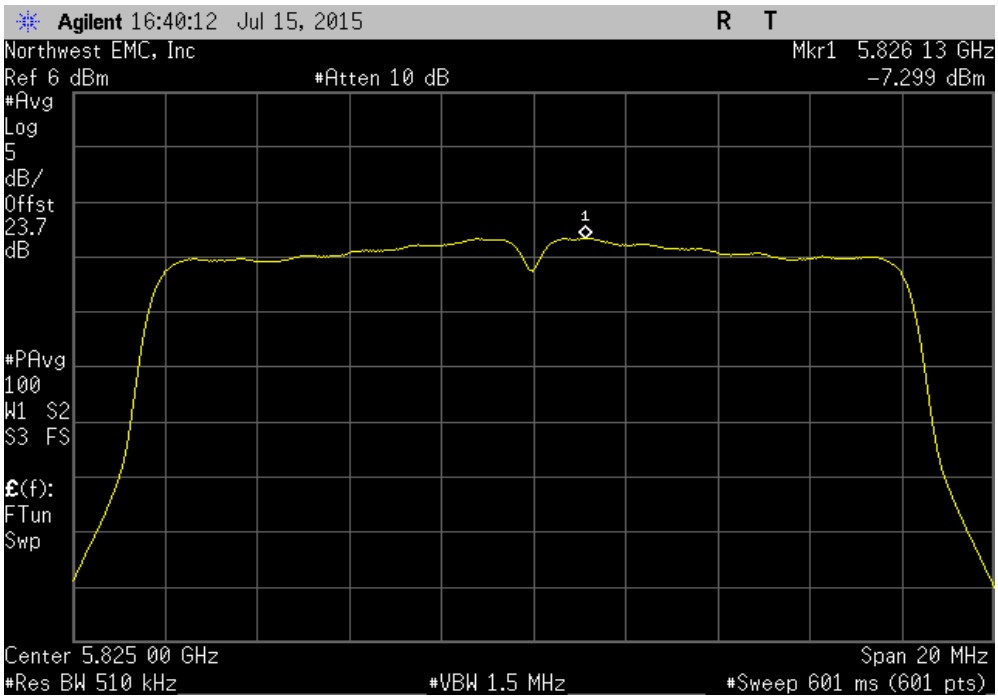
5725-5850 MHz Band, 802.11(a) 54 Mbps, Channel 149, Low Channel, 5745 MHz						
	Power (dBm/MHz)	Duty Cycle Factor (dB)		Density (dBm/Ref BW)	Limit (dBm / Ref BW)	Results
	-7.403	0.8		-6.6	30	Pass



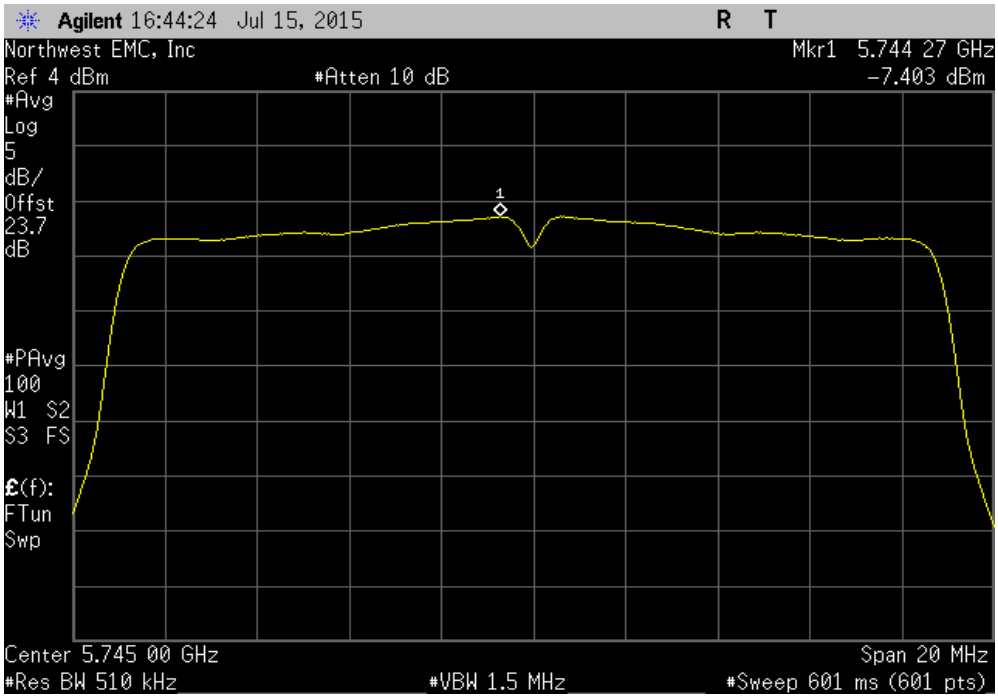
5725-5850 MHz Band, 802.11(a) 54 Mbps, Channel 157, Mid Channel, 5785 MHz						
	Power (dBm/MHz)	Duty Cycle Factor (dB)		Density (dBm/Ref BW)	Limit (dBm / Ref BW)	Results
	-7.5	0.8		-6.7	30	Pass



5725-5850 MHz Band, 802.11(a) 54 Mbps, Channel 165, High Channel, 5825 MHz						
	Power (dBm/MHz)	Duty Cycle Factor (dB)		Density (dBm/Ref BW)	Limit (dBm / Ref BW)	Results
	-7.299	0.8		-6.5	30	Pass



5725-5850 MHz Band, 802.11(n) MCS0, Channel 149, Low Channel, 5745 MHz						
	Power (dBm/MHz)	Duty Cycle Factor (dB)		Density (dBm/Ref BW)	Limit (dBm / Ref BW)	Results
	-7.403	0.1		-7.3	30	Pass



PEAK POWER SPECTRAL DENSITY

NORTHWEST EMC

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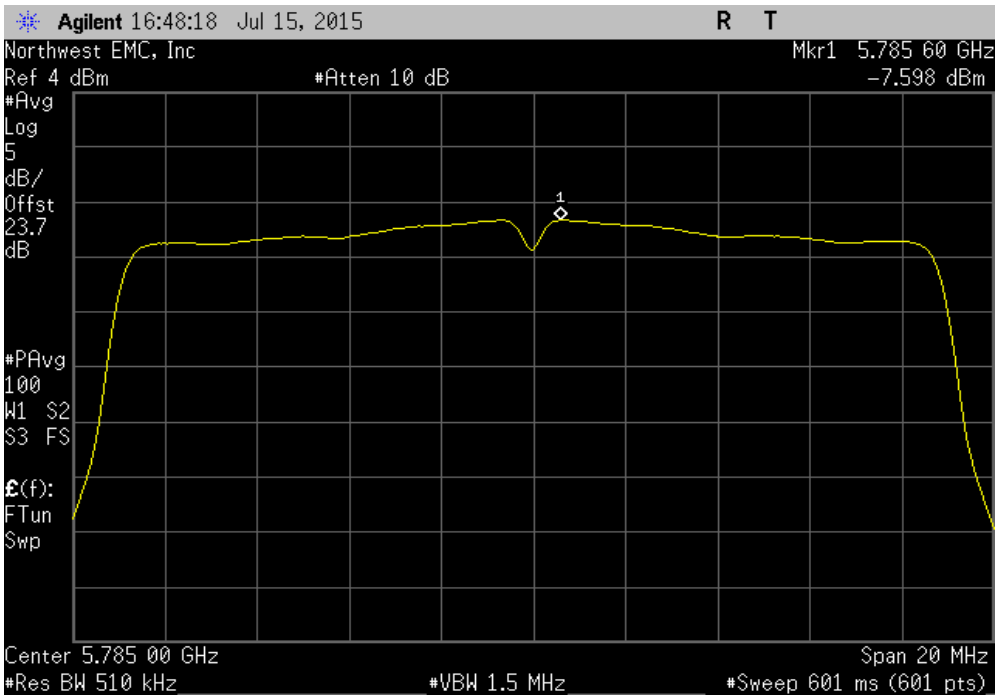
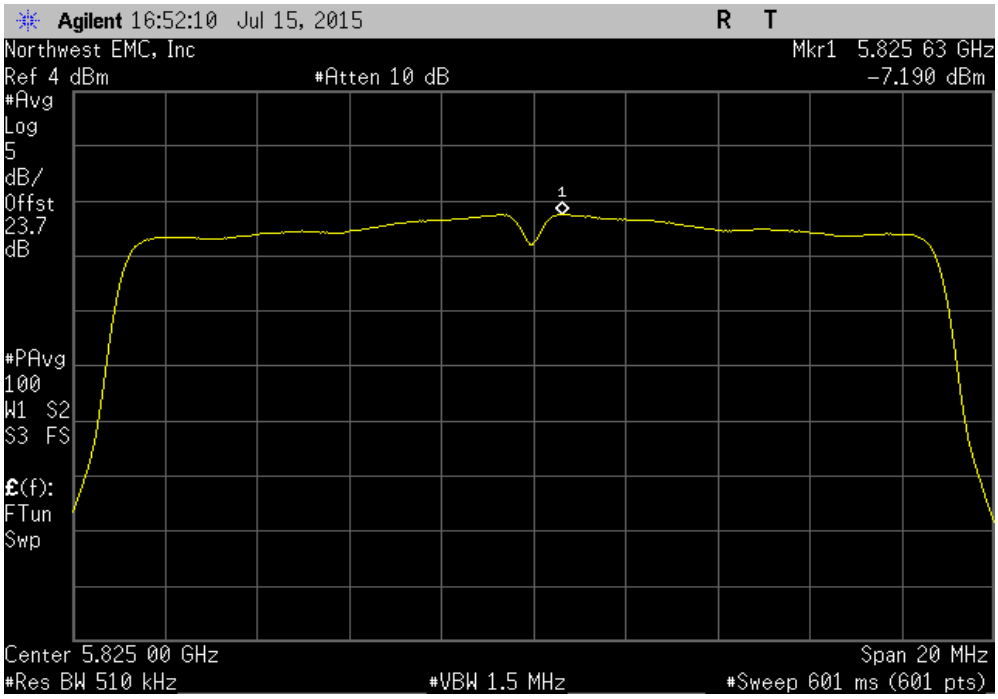
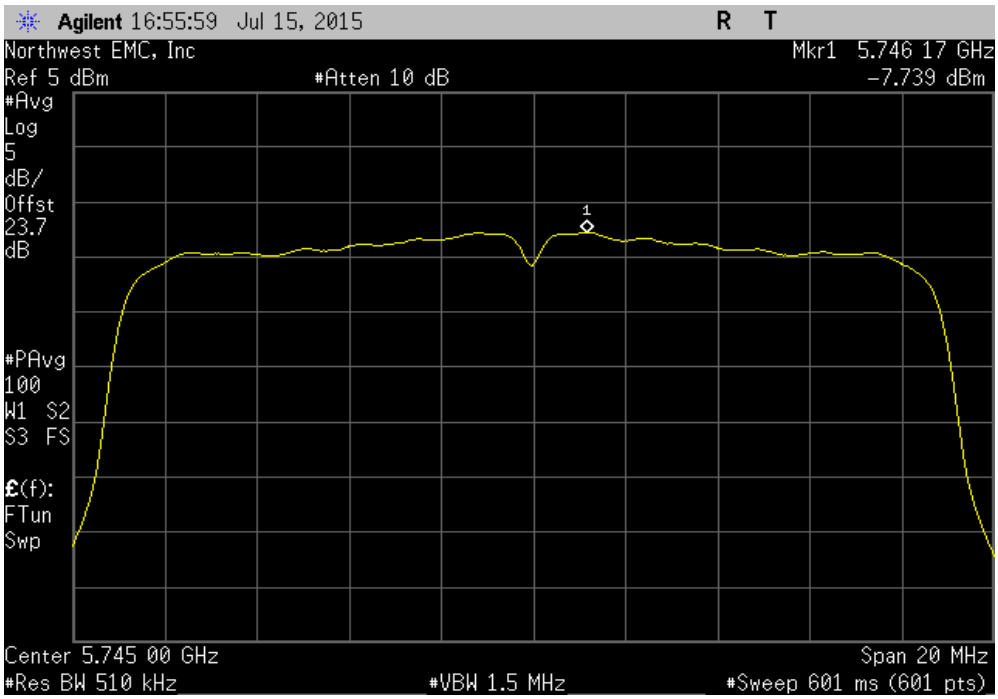
5725-5850 MHz Band, 802.11(n) MCS0, Channel 157, Mid Channel, 5785 MHz						
	Power (dBm/MHz)	Duty Cycle Factor (dB)		Density (dBm/Ref BW)	Limit (dBm / Ref BW)	Results
	-7.598	0.1		-7.5	30	Pass



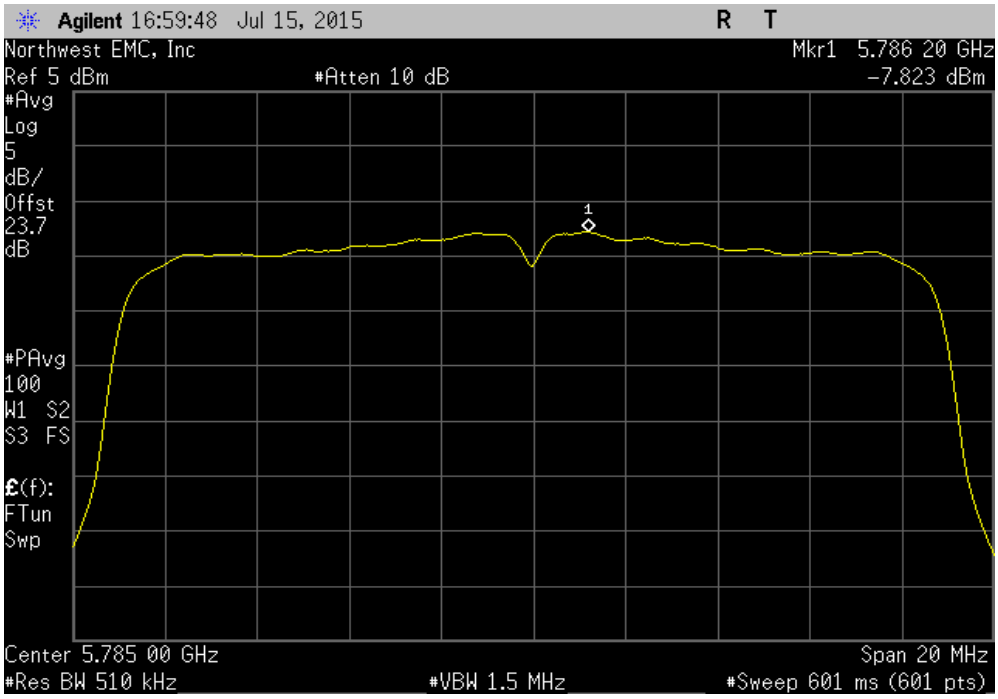
5725-5850 MHz Band, 802.11(n) MCS0, Channel 165, High Channel, 5825 MHz						
	Power (dBm/MHz)	Duty Cycle Factor (dB)		Density (dBm/Ref BW)	Limit (dBm / Ref BW)	Results
	-7.19	0.1		-7.1	30	Pass



5725-5850 MHz Band, 802.11(n) MCS7, Channel 149, Low Channel, 5745 MHz						
	Power (dBm/MHz)	Duty Cycle Factor (dB)		Density (dBm/Ref BW)	Limit (dBm / Ref BW)	Results
	-7.739	0.9		-6.9	30	Pass



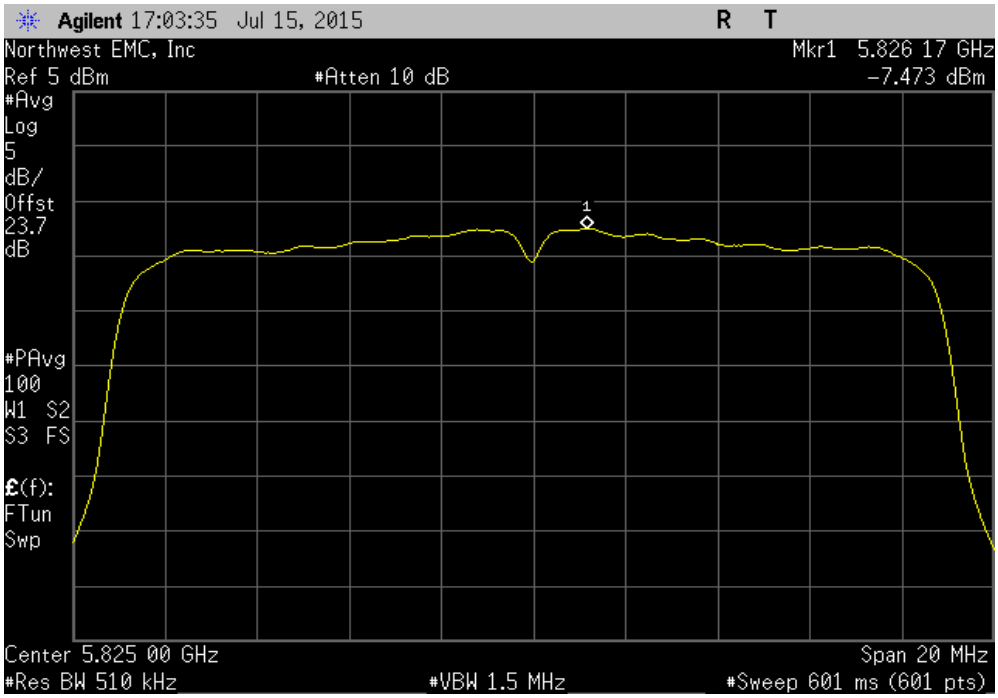
5725-5850 MHz Band, 802.11(n) MCS7, Channel 157, Mid Channel, 5785 MHz						
	Power (dBm/MHz)	Duty Cycle Factor (dB)		Density (dBm/Ref BW)	Limit (dBm / Ref BW)	Results
	-7.823	0.9		-6.9	30	Pass



PEAK POWER SPECTRAL DENSITY

XMit 2015.01.14

5725-5850 MHz Band, 802.11(n) MCS7, Channel 165, High Channel, 5825 MHz						
	Power (dBm/MHz)	Duty Cycle Factor (dB)		Density (dBm/Ref BW)	Limit (dBm / Ref BW)	Results
	-7.473	0.9		-6.6	30	Pass



DUTY CYCLE

XMit 2015.01.14

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval (mo)
Spectrum Analyzer	Agilent	E4446A	AAT	9/27/2014	12
NC02 Cable	ESM Cable Corp.	TTBJ-141 KMKM-72	NC5	6/6/2015	12
Attenuator	Fairview Microwave	SA4014-20	TKE	1/16/2015	12
DC Block, 40 GHz	Fairview Microwave	SD3379	AMJ	6/6/2015	12
Signal Generator	Agilent	N5183A	TIA	4/7/2014	36

TEST DESCRIPTION

The transmission pulse duration (T) and Duty Cycle (x) were measured for each of the EUT operating modes per the FCC KDB 789033 D01 General UNII Test Procedures.

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

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

If the transmit duty cycle < 98 percent, burst gating was used during some of the other tests in this report only measure during the burst duration.

DUTY CYCLE

NORTHWEST EMC

XMit 2015.01.14

EUT:	1713 USB Radio Device			**Work Order:**	MCSO1731
Serial Number:	EV1-3-000299			**Date:**	07/15/15
Customer:	Microsoft Corporation			**Temperature:**	24°C
Attendees:	None			**Humidity:**	43%
Project:	None			**Barometric Pres.:**	1018 mb
Tested by:	Richard Mellroth	**Power:**	USB	**Job Site:**	NC02

TEST SPECIFICATIONS	Test Method
FCC 15.407:2015	ANSI C63.10:2009

COMMENTS

Power Settings at Default. Client adapter cable loss of 1.3dB included in reference level offset.

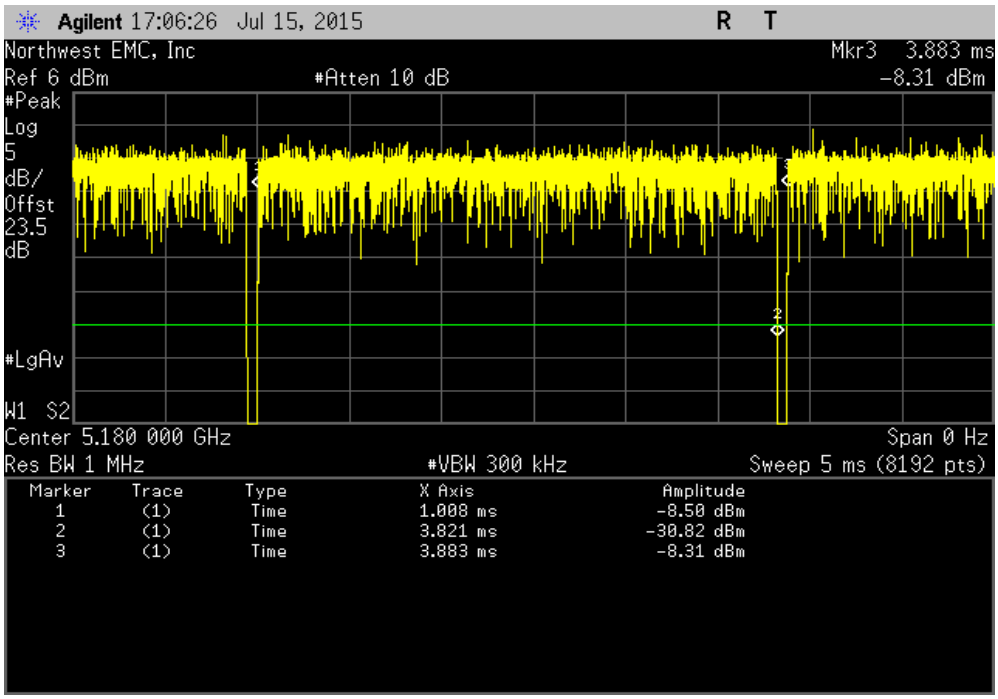
DEVIATIONS FROM TEST STANDARD

None

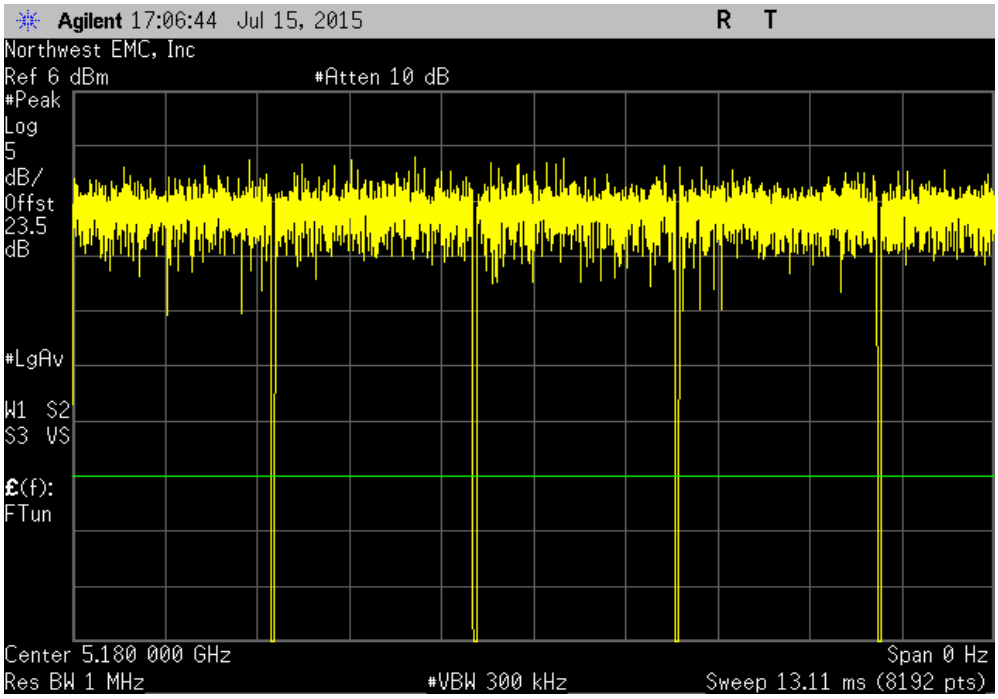
Configuration #	1	Signature

	Pulse Width	Period	Number of Pulses	Value (%)	Limit N/A (N/A)	Results
5150 - 5250 MHz Band						
802.11(a) 6 Mbps						
Channel 36, Low Channel 5180 MHz	2.813 ms	2.876 ms	1	97.8	N/A	N/A
Channel 36, Low Channel 5180 MHz	N/A	N/A	5	N/A	N/A	N/A
Channel 48, High Channel, 5240 MHz	2.813 ms	2.876 ms	1	97.8	N/A	N/A
Channel 48, High Channel, 5240 MHz	N/A	N/A	5	N/A	N/A	N/A
802.11(a) 36 Mbps						
Channel 36, Low Channel 5180 MHz	480.5 us	543.5 us	1	88.4	N/A	N/A
Channel 36, Low Channel 5180 MHz	N/A	N/A	5	N/A	N/A	N/A
Channel 48, High Channel, 5240 MHz	480.7 us	543.5 us	1	88.4	N/A	N/A
Channel 48, High Channel, 5240 MHz	N/A	N/A	5	N/A	N/A	N/A
802.11(a) 54 Mbps						
Channel 36, Low Channel 5180 MHz	324.7 us	387.5 us	1	83.8	N/A	N/A
Channel 36, Low Channel 5180 MHz	N/A	N/A	5	N/A	N/A	N/A
Channel 48, High Channel, 5240 MHz	324.8 us	387.5 us	1	83.8	N/A	N/A
Channel 48, High Channel, 5240 MHz	N/A	N/A	5	N/A	N/A	N/A
802.11(n) MCS0						
Channel 36, Low Channel 5180 MHz	2.601 ms	2.663 ms	1	97.7	N/A	N/A
Channel 36, Low Channel 5180 MHz	N/A	N/A	5	N/A	N/A	N/A
Channel 48, High Channel, 5240 MHz	2.601 ms	2.664 ms	1	97.6	N/A	N/A
Channel 48, High Channel, 5240 MHz	N/A	N/A	5	N/A	N/A	N/A
802.11(n) MCS7						
Channel 36, Low Channel 5180 MHz	276.7 us	339.4 us	1	81.5	N/A	N/A
Channel 36, Low Channel 5180 MHz	N/A	N/A	5	N/A	N/A	N/A
Channel 48, High Channel, 5240 MHz	276.9 us	339.6 us	1	81.5	N/A	N/A
Channel 48, High Channel, 5240 MHz	N/A	N/A	5	N/A	N/A	N/A

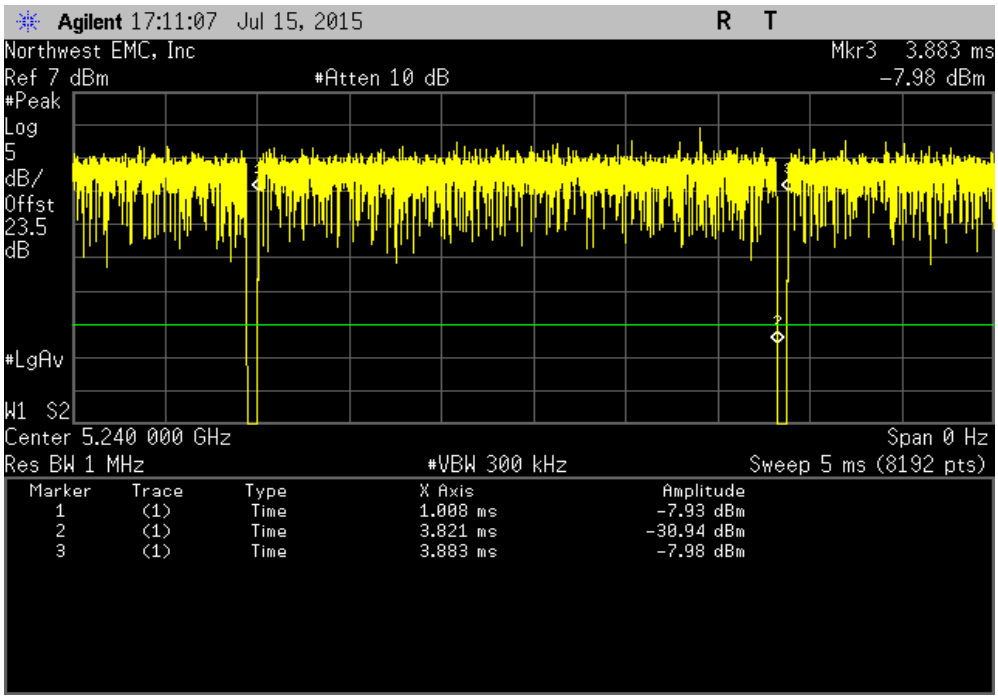
5150 - 5250 MHz Band, 802.11(a) 6 Mbps, Channel 36, Low Channel 5180 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit N/A (N/A)	Results
	2.813 ms	2.876 ms	1	97.8	N/A	N/A



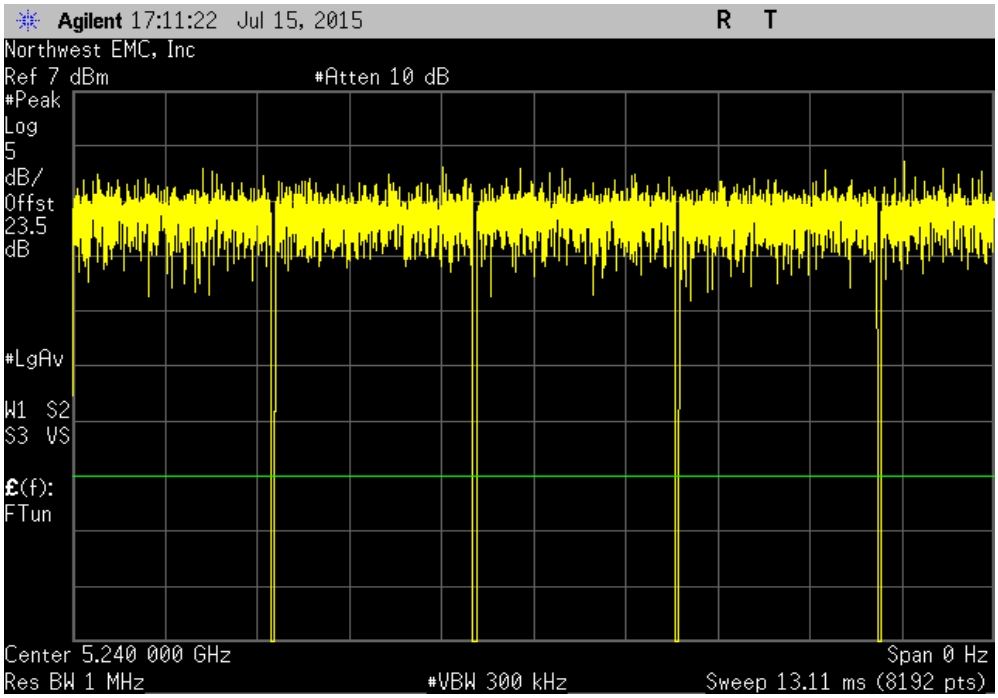
5150 - 5250 MHz Band, 802.11(a) 6 Mbps, Channel 36, Low Channel 5180 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit N/A (N/A)	Results
	N/A	N/A	5	N/A	N/A	N/A



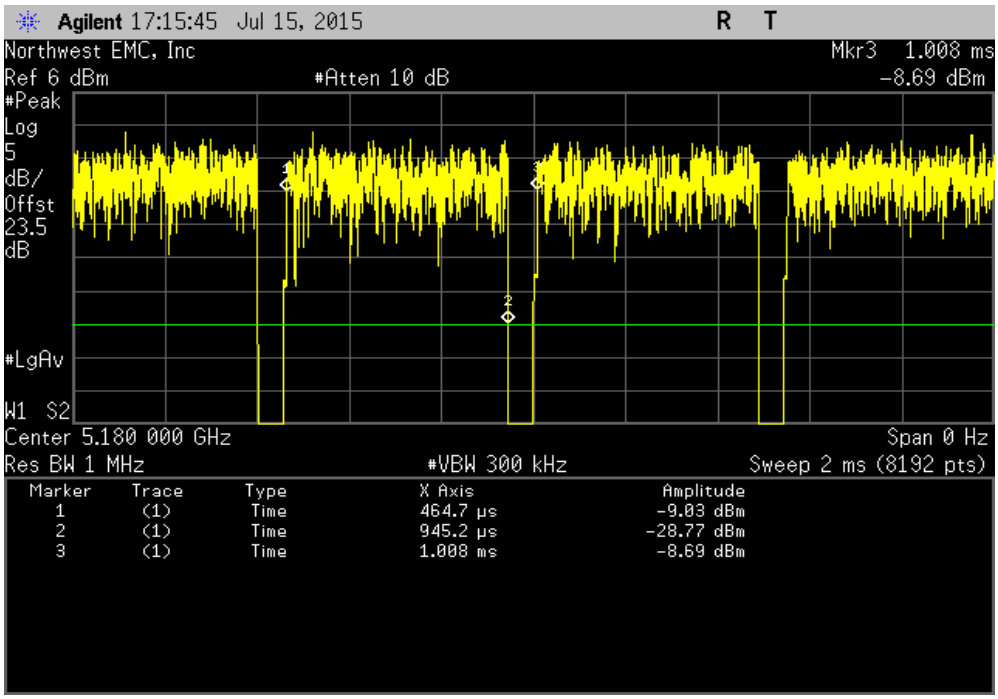
5150 - 5250 MHz Band, 802.11(a) 6 Mbps, Channel 48, High Channel, 5240 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit N/A (N/A)	Results
	2.813 ms	2.876 ms	1	97.8	N/A	N/A



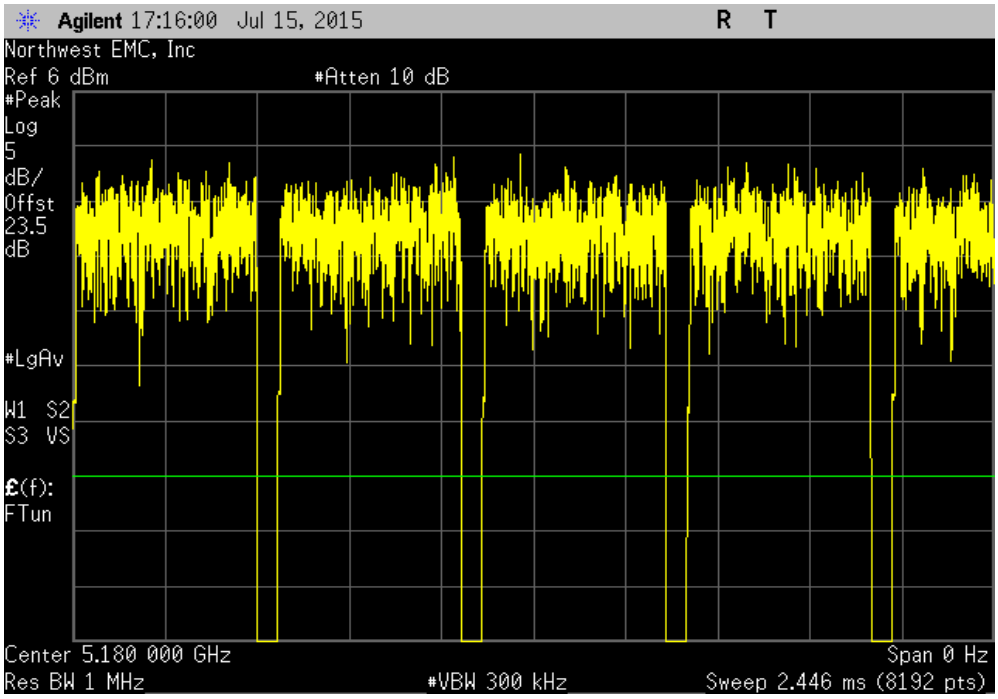
5150 - 5250 MHz Band, 802.11(a) 6 Mbps, Channel 48, High Channel, 5240 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit N/A (N/A)	Results
	N/A	N/A	5	N/A	N/A	N/A



5150 - 5250 MHz Band, 802.11(a) 36 Mbps, Channel 36, Low Channel 5180 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit N/A (N/A)	Results
	480.5 us	543.5 us	1	88.4	N/A	N/A



5150 - 5250 MHz Band, 802.11(a) 36 Mbps, Channel 36, Low Channel 5180 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit N/A (N/A)	Results
	N/A	N/A	5	N/A	N/A	N/A



DUTY CYCLE

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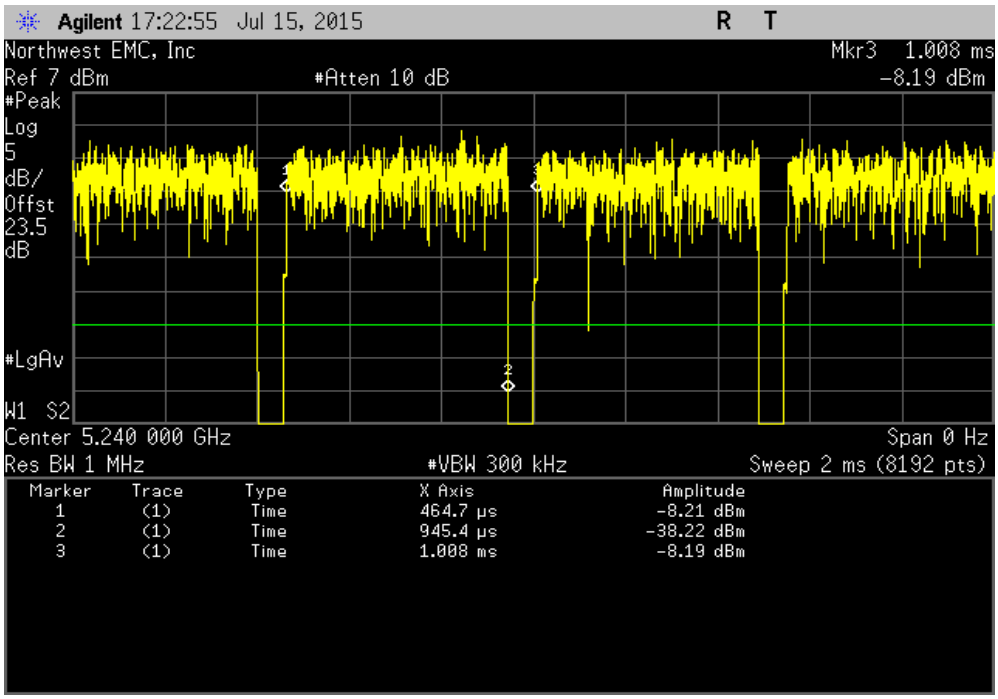
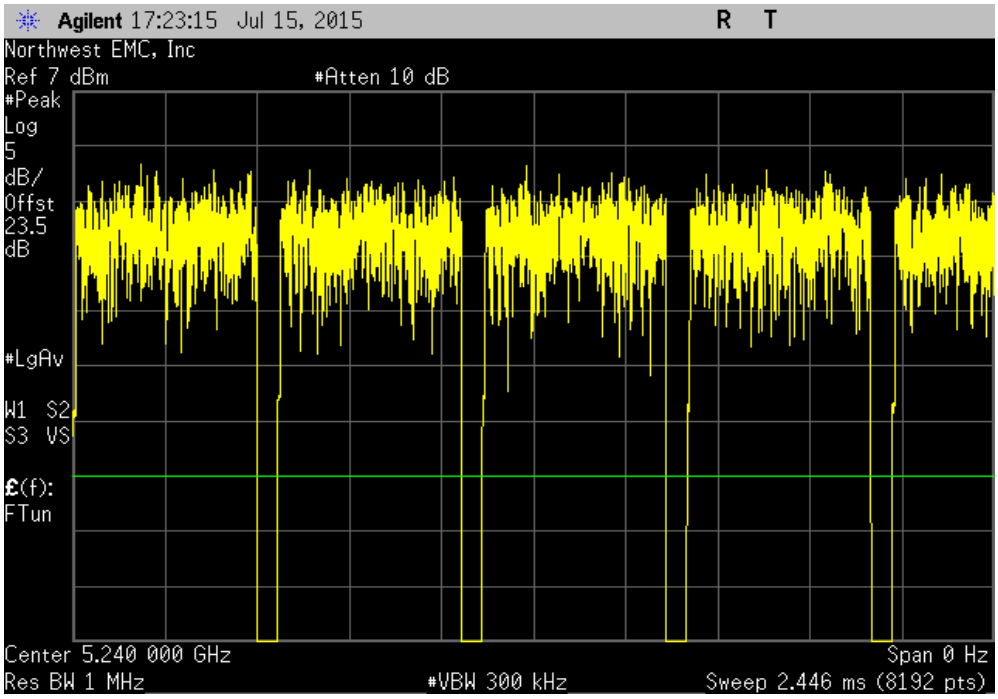
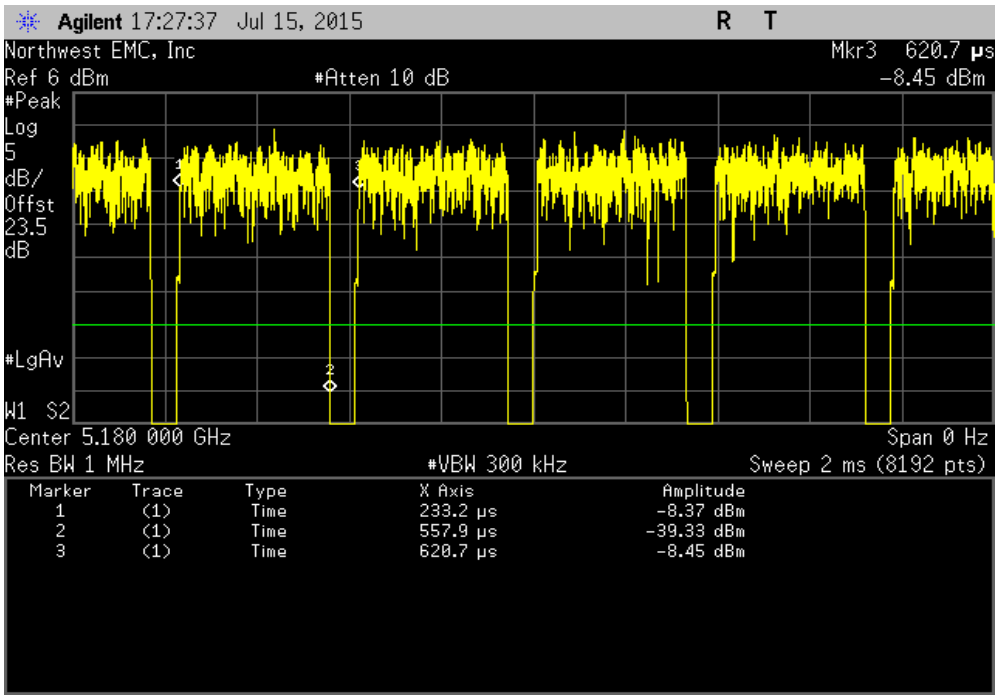
5150 - 5250 MHz Band, 802.11(a) 36 Mbps, Channel 48, High Channel, 5240 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit N/A (N/A)	Results
	480.7 us	543.5 us	1	88.4	N/A	N/A



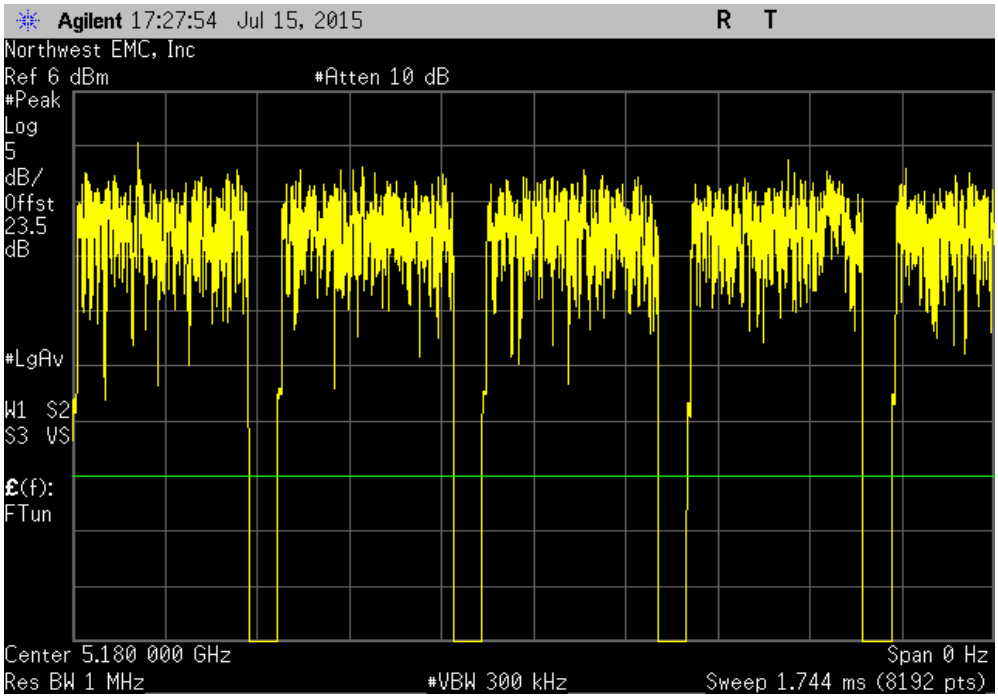
5150 - 5250 MHz Band, 802.11(a) 36 Mbps, Channel 48, High Channel, 5240 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit N/A (N/A)	Results
	N/A	N/A	5	N/A	N/A	N/A



5150 - 5250 MHz Band, 802.11(a) 54 Mbps, Channel 36, Low Channel 5180 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit N/A (N/A)	Results
	324.7 us	387.5 us	1	83.8	N/A	N/A



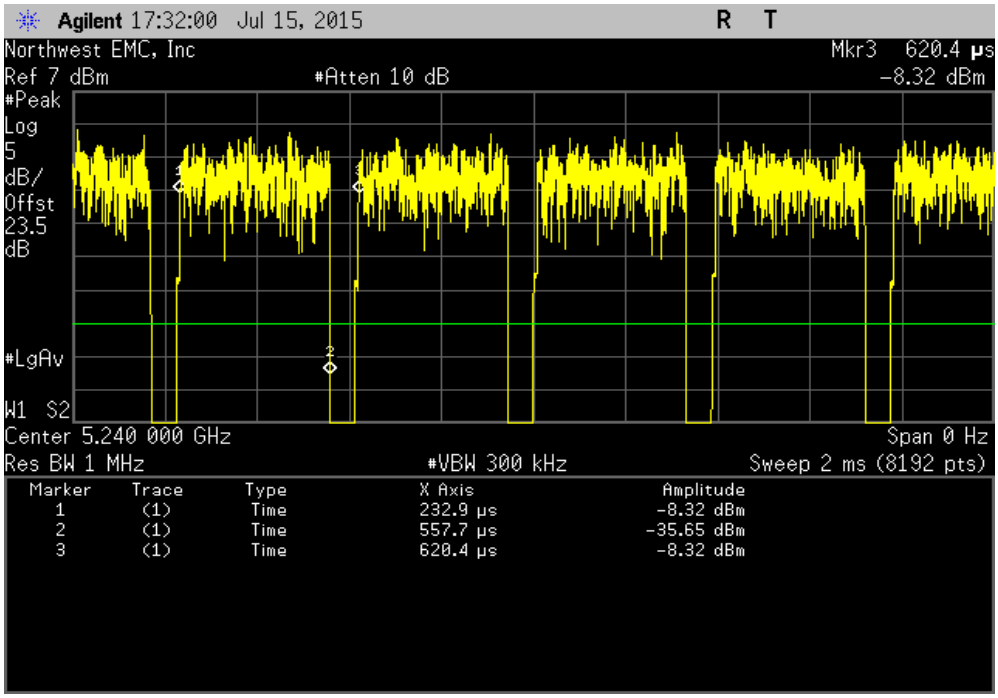
5150 - 5250 MHz Band, 802.11(a) 54 Mbps, Channel 36, Low Channel 5180 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit N/A (N/A)	Results
	N/A	N/A	5	N/A	N/A	N/A



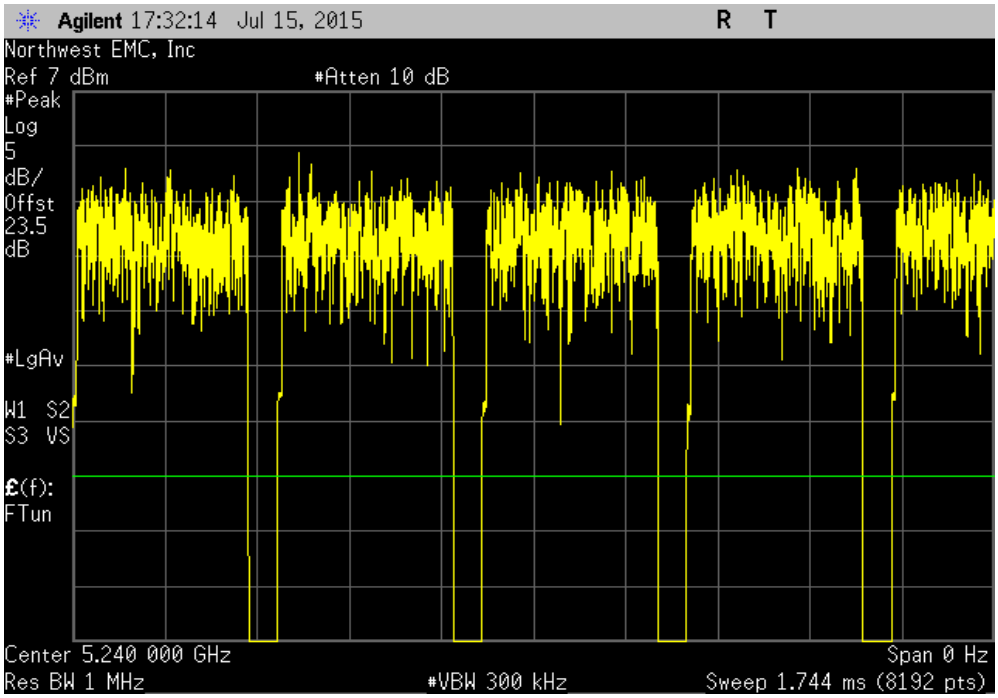
DUTY CYCLE

XMit 2015.01.14

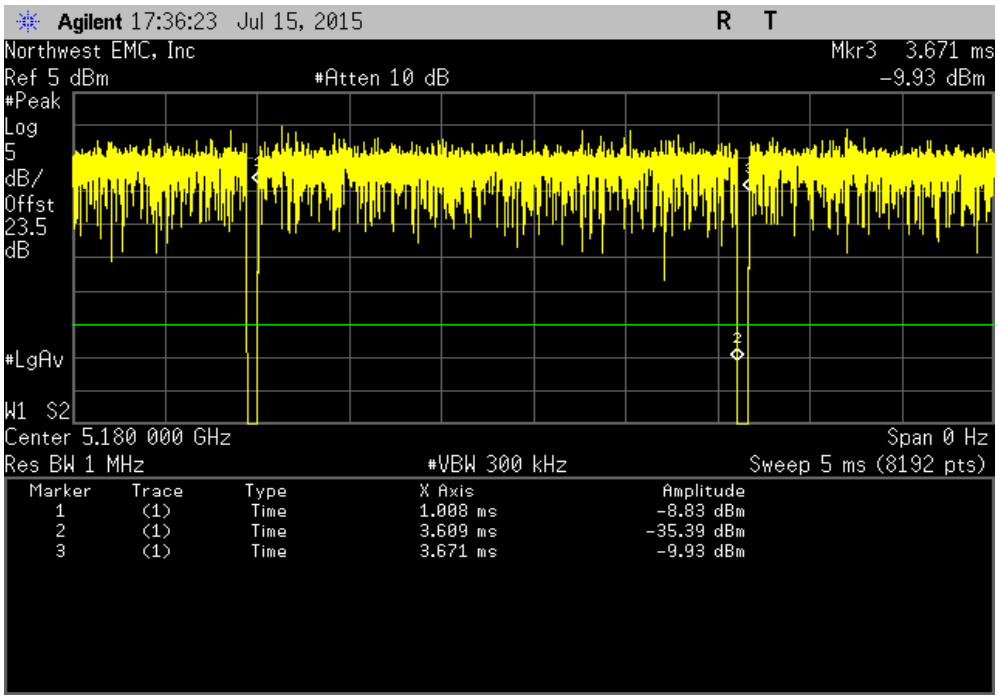
5150 - 5250 MHz Band, 802.11(a) 54 Mbps, Channel 48, High Channel, 5240 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit N/A (N/A)	Results
	324.8 us	387.5 us	1	83.8	N/A	N/A



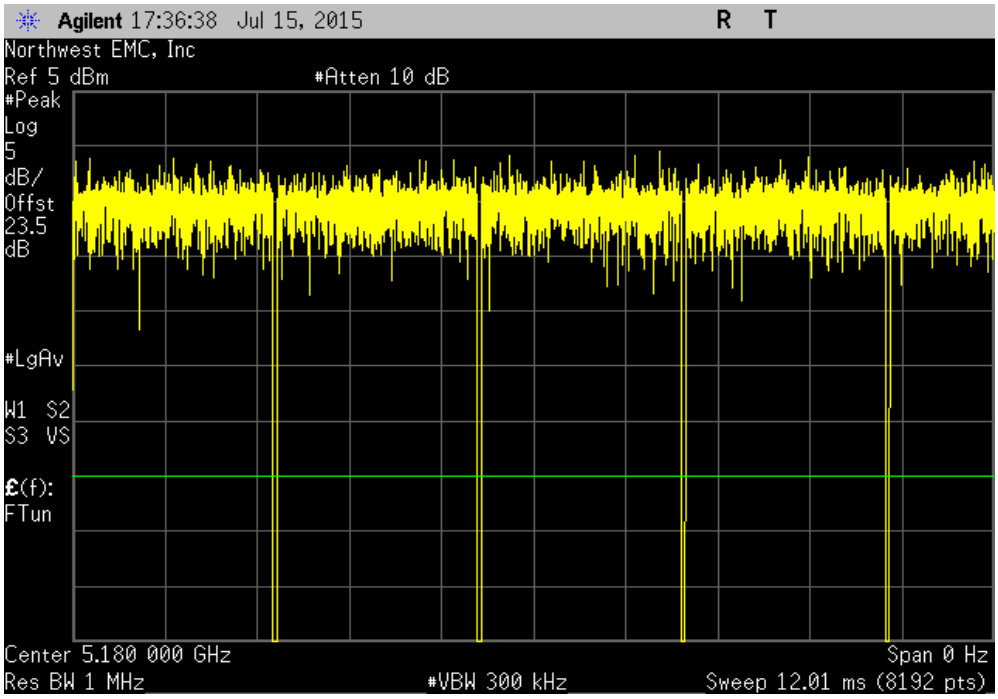
5150 - 5250 MHz Band, 802.11(a) 54 Mbps, Channel 48, High Channel, 5240 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit N/A (N/A)	Results
	N/A	N/A	5	N/A	N/A	N/A



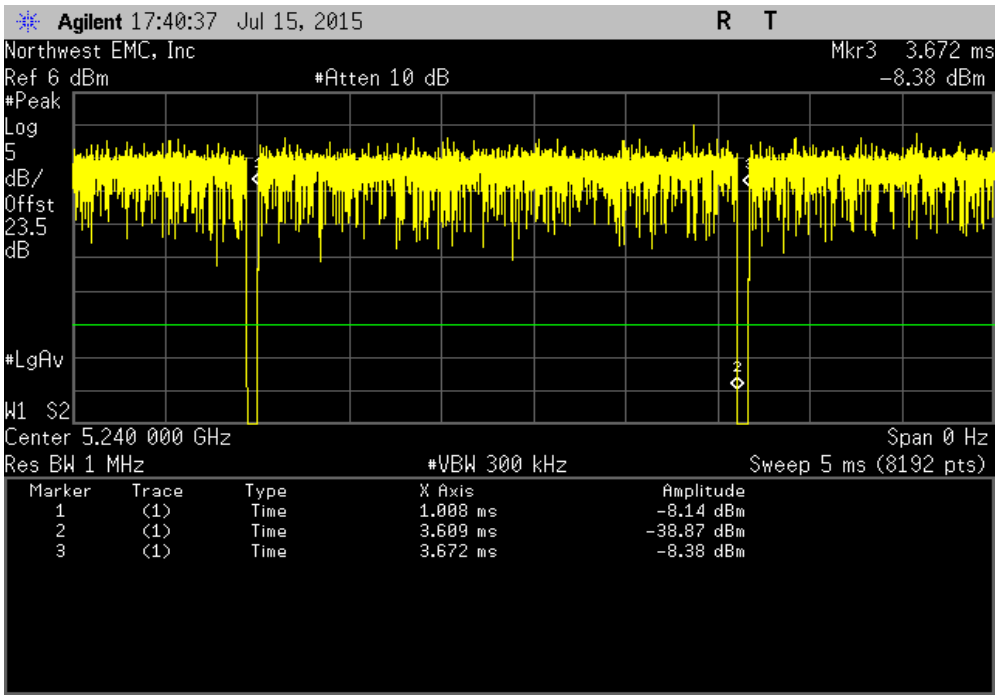
5150 - 5250 MHz Band, 802.11(n) MCS0, Channel 36, Low Channel 5180 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit N/A (N/A)	Results
	2.601 ms	2.663 ms	1	97.7	N/A	N/A



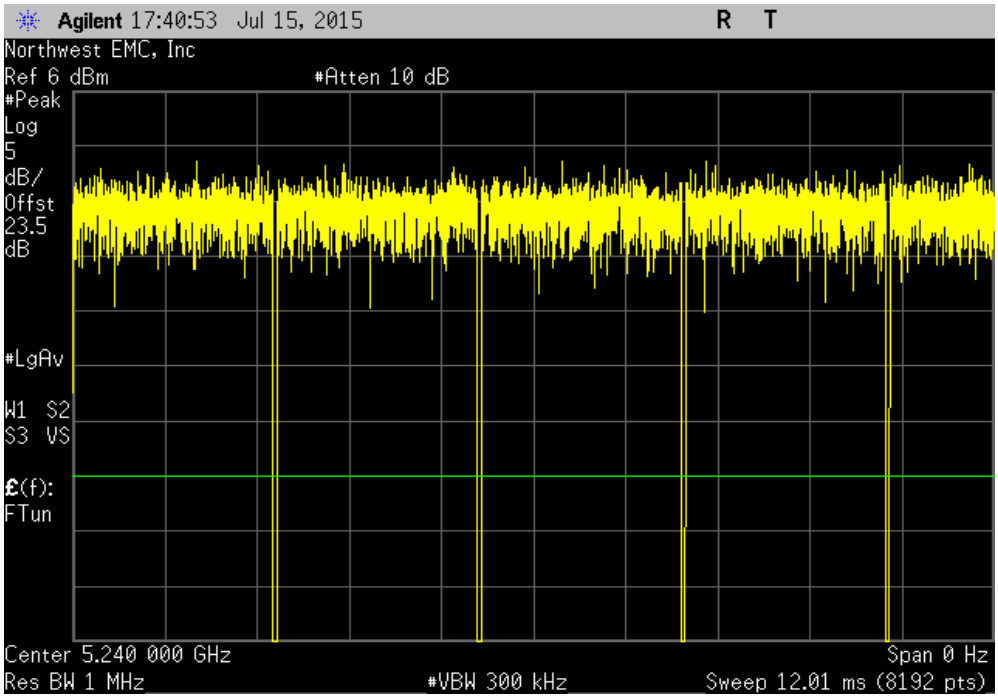
5150 - 5250 MHz Band, 802.11(n) MCS0, Channel 36, Low Channel 5180 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit N/A (N/A)	Results
	N/A	N/A	5	N/A	N/A	N/A



5150 - 5250 MHz Band, 802.11(n) MCS0, Channel 48, High Channel, 5240 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit N/A (N/A)	Results
	2.601 ms	2.664 ms	1	97.6	N/A	N/A



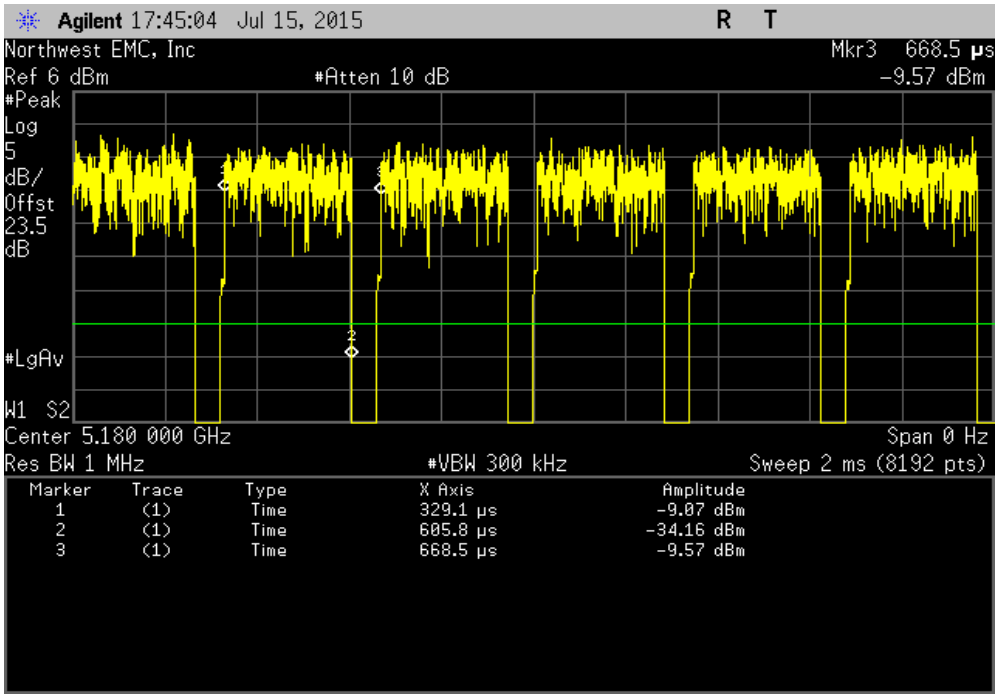
5150 - 5250 MHz Band, 802.11(n) MCS0, Channel 48, High Channel, 5240 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit N/A (N/A)	Results
	N/A	N/A	5	N/A	N/A	N/A



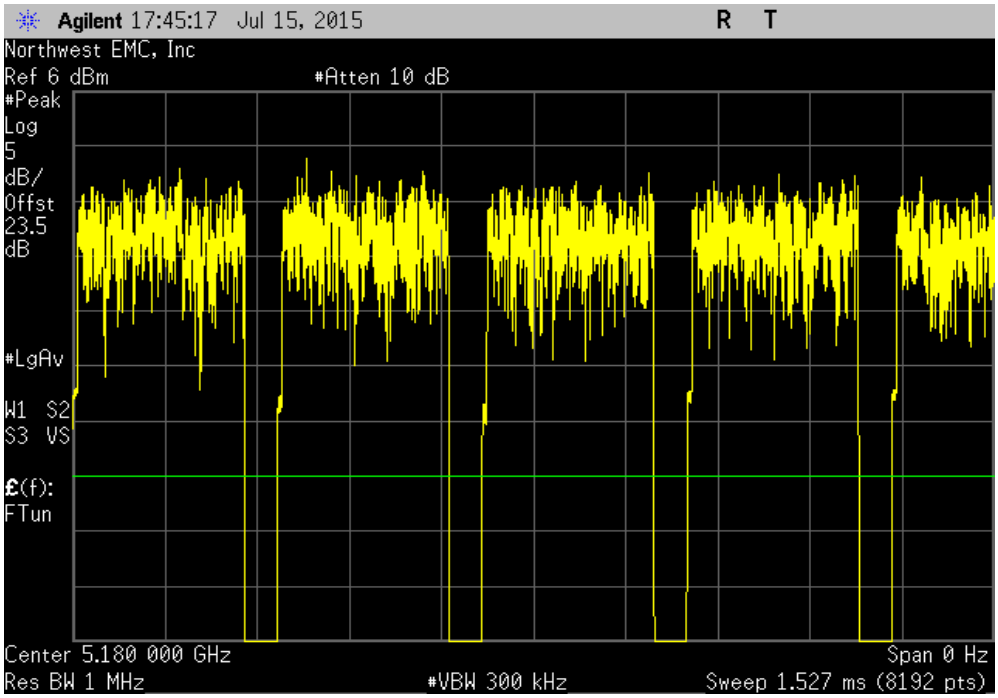
DUTY CYCLE

XMit 2015.01.14

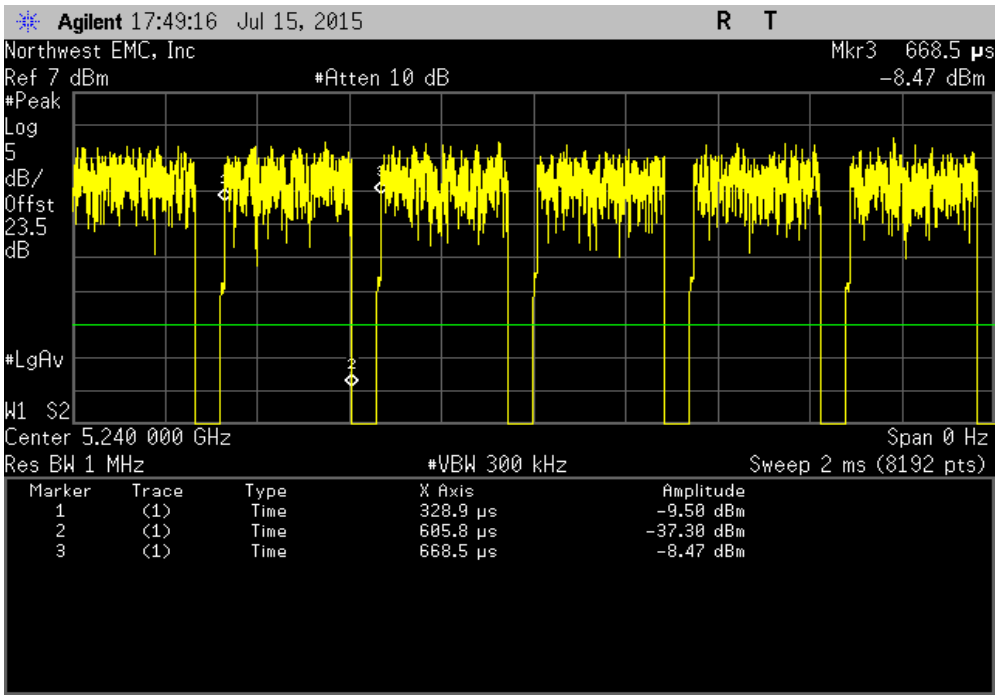
5150 - 5250 MHz Band, 802.11(n) MCS7, Channel 36, Low Channel 5180 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit N/A (N/A)	Results
	276.7 us	339.4 us	1	81.5	N/A	N/A



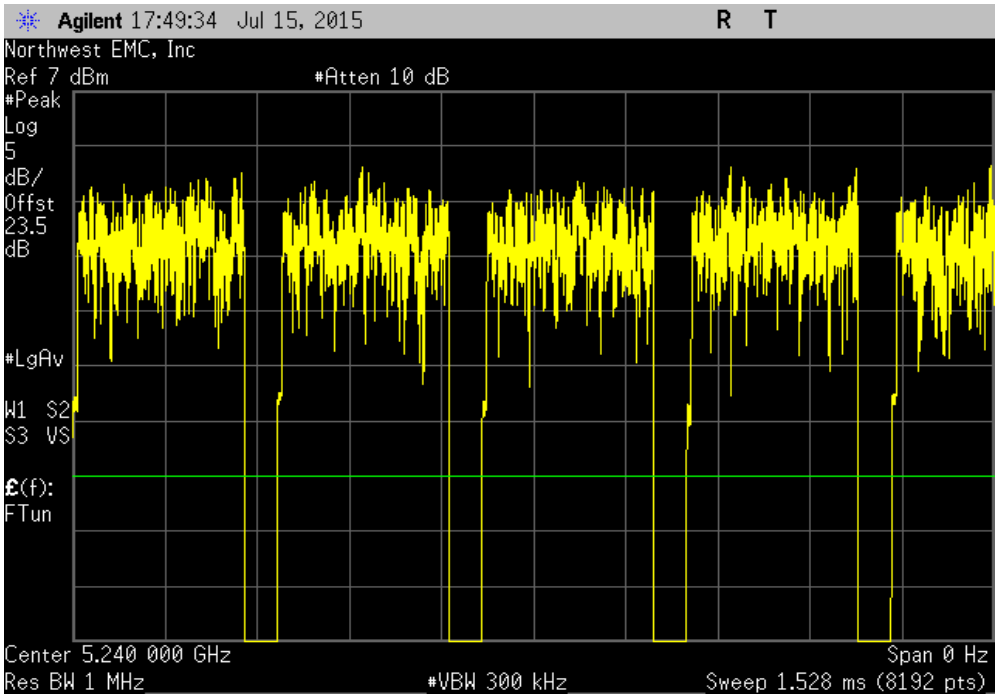
5150 - 5250 MHz Band, 802.11(n) MCS7, Channel 36, Low Channel 5180 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit N/A (N/A)	Results
	N/A	N/A	5	N/A	N/A	N/A



5150 - 5250 MHz Band, 802.11(n) MCS7, Channel 48, High Channel, 5240 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit N/A (N/A)	Results
	276.9 us	339.6 us	1	81.5	N/A	N/A



5150 - 5250 MHz Band, 802.11(n) MCS7, Channel 48, High Channel, 5240 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit N/A (N/A)	Results
	N/A	N/A	5	N/A	N/A	N/A



DUTY CYCLE

XMit 2015.01.14

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval (mo)
Spectrum Analyzer	Agilent	E4446A	AAT	9/27/2014	12
NC02 Cable	ESM Cable Corp.	TTBJ-141 KMKM-72	NC5	6/6/2015	12
Attenuator	Fairview Microwave	SA4014-20	TKE	1/16/2015	12
DC Block, 40 GHz	Fairview Microwave	SD3379	AMJ	6/6/2015	12
Signal Generator	Agilent	N5183A	TIA	4/7/2014	36

TEST DESCRIPTION

The transmission pulse duration (T) and Duty Cycle (x) were measured for each of the EUT operating modes per the FCC KDB 789033 D01 General UNII Test Procedures.

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

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

If the transmit duty cycle < 98 percent, burst gating was used during some of the other tests in this report only measure during the burst duration.

DUTY CYCLE

NORTHWEST EMC

XMit 2015.01.14

EUT:	1713 USB Radio Device			**Work Order:**	MCSO1731
Serial Number:	EV1-3-000299			**Date:**	07/15/15
Customer:	Microsoft Corporation			**Temperature:**	24°C
Attendees:	None			**Humidity:**	43%
Project:	None			**Barometric Pres.:**	1018 mb
Tested by:	Richard Mellroth	**Power:**	USB	**Job Site:**	NC02

TEST SPECIFICATIONS	Test Method
FCC 15.407:2015	ANSI C63.10:2009

COMMENTS

Power Settings at Default. Client adapter cable loss of 1.3dB included in reference level offset.

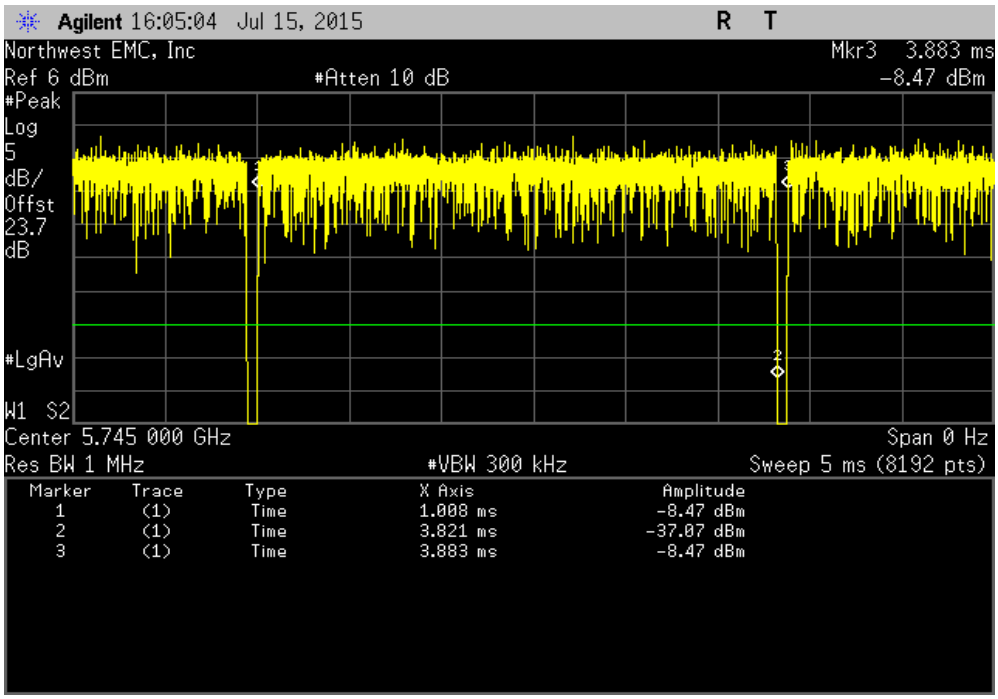
DEVIATIONS FROM TEST STANDARD

None

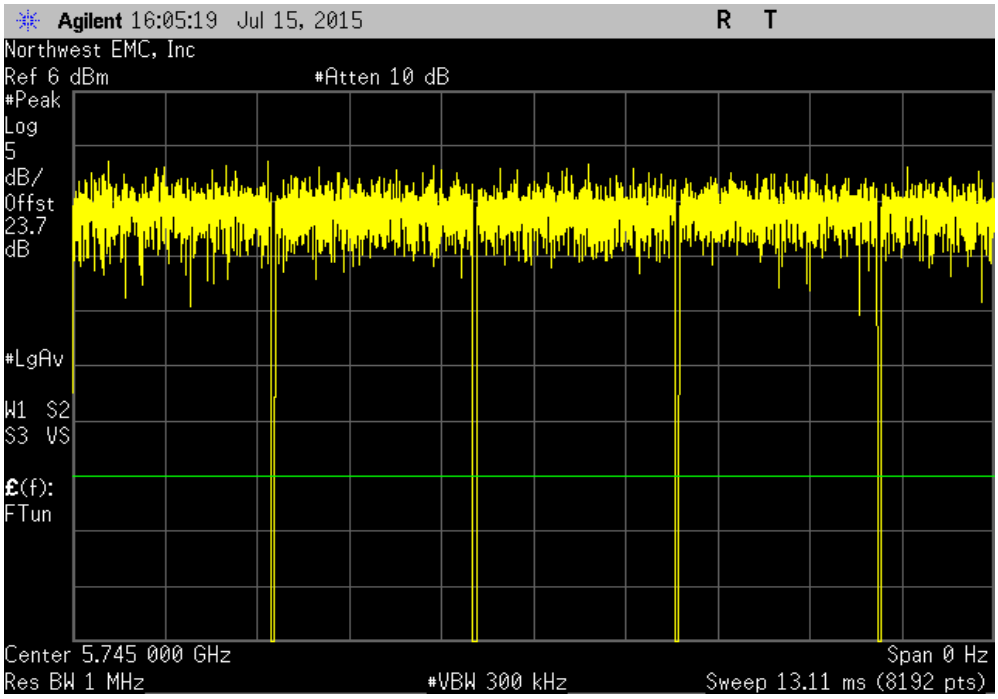
Configuration #	1	Signature

	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
5725-5850 MHz Band						
802.11(a) 6 Mbps						
Channel 149, Low Channel, 5745 MHz	2.813 ms	2.876 ms	1	97.8	N/A	N/A
Channel 149, Low Channel, 5745 MHz	N/A	N/A	5	N/A	N/A	N/A
Channel 157, Mid Channel, 5785 MHz	2.813 ms	2.876 ms	1	97.8	N/A	N/A
Channel 157, Mid Channel, 5785 MHz	N/A	N/A	5	N/A	N/A	N/A
Channel 165, High Channel, 5825 MHz	2.813 ms	2.875 ms	1	97.8	N/A	N/A
Channel 165, High Channel, 5825 MHz	N/A	N/A	6	N/A	N/A	N/A
802.11(a) 36 Mbps						
Channel 149, Low Channel, 5745 MHz	481 us	543.3 us	1	88.5	N/A	N/A
Channel 149, Low Channel, 5745 MHz	N/A	N/A	5	N/A	N/A	N/A
Channel 157, Mid Channel, 5785 MHz	480.8 us	543.5 us	1	88.5	N/A	N/A
Channel 157, Mid Channel, 5785 MHz	N/A	N/A	5	N/A	N/A	N/A
Channel 165, High Channel, 5825 MHz	480.3 us	543.3 us	1	88.4	N/A	N/A
Channel 165, High Channel, 5825 MHz	N/A	N/A	5	N/A	N/A	N/A
802.11(a) 54 Mbps						
Channel 149, Low Channel, 5745 MHz	324.7 us	387.5 us	1	83.8	N/A	N/A
Channel 149, Low Channel, 5745 MHz	N/A	N/A	5	N/A	N/A	N/A
Channel 157, Mid Channel, 5785 MHz	324.7 us	387.5 us	1	83.8	N/A	N/A
Channel 157, Mid Channel, 5785 MHz	N/A	N/A	5	N/A	N/A	N/A
Channel 165, High Channel, 5825 MHz	325 us	387.5 us	1	83.9	N/A	N/A
Channel 165, High Channel, 5825 MHz	N/A	N/A	5	N/A	N/A	N/A
802.11(n) MCS0						
Channel 149, Low Channel, 5745 MHz	2.601 ms	2.663 ms	1	97.7	N/A	N/A
Channel 149, Low Channel, 5745 MHz	N/A	N/A	5	N/A	N/A	N/A
Channel 157, Mid Channel, 5785 MHz	2.601 ms	2.663 ms	1	97.7	N/A	N/A
Channel 157, Mid Channel, 5785 MHz	N/A	N/A	6	N/A	N/A	N/A
Channel 165, High Channel, 5825 MHz	2.601 ms	2.663 ms	1	97.7	N/A	N/A
Channel 165, High Channel, 5825 MHz	N/A	N/A	5	N/A	N/A	N/A
802.11(n) MCS7						
Channel 149, Low Channel, 5745 MHz	276.9 us	339.6 us	1	81.5	N/A	N/A
Channel 149, Low Channel, 5745 MHz	N/A	N/A	5	N/A	N/A	N/A
Channel 157, Mid Channel, 5785 MHz	276.9 us	339.6 us	1	81.5	N/A	N/A
Channel 157, Mid Channel, 5785 MHz	N/A	N/A	5	N/A	N/A	N/A
Channel 165, High Channel, 5825 MHz	276.7 us	339.4 us	1	81.5	N/A	N/A
Channel 165, High Channel, 5825 MHz	N/A	N/A	5	N/A	N/A	N/A

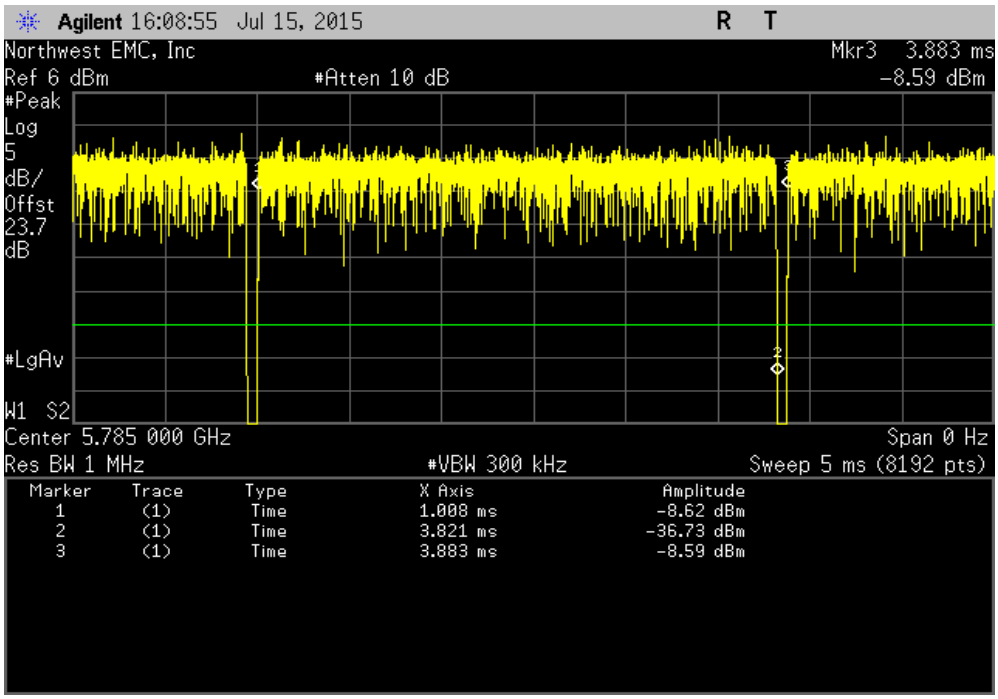
5725-5850 MHz Band, 802.11(a) 6 Mbps, Channel 149, Low Channel, 5745 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	2.813 ms	2.876 ms	1	97.8	N/A	N/A



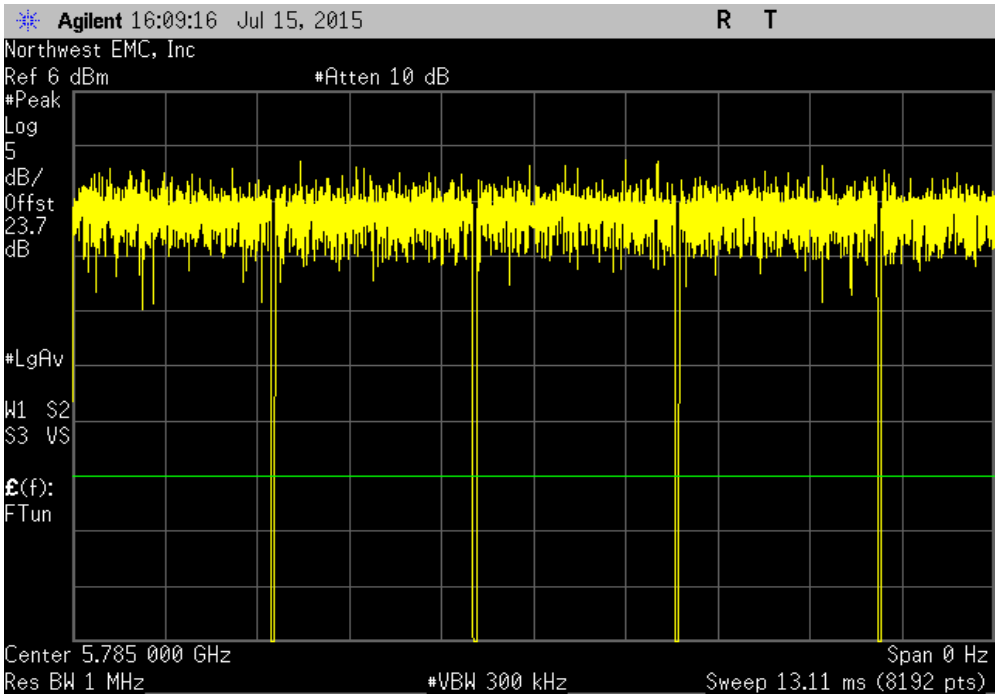
5725-5850 MHz Band, 802.11(a) 6 Mbps, Channel 149, Low Channel, 5745 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



5725-5850 MHz Band, 802.11(a) 6 Mbps, Channel 157, Mid Channel, 5785 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	2.813 ms	2.876 ms	1	97.8	N/A	N/A



5725-5850 MHz Band, 802.11(a) 6 Mbps, Channel 157, Mid Channel, 5785 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



DUTY CYCLE

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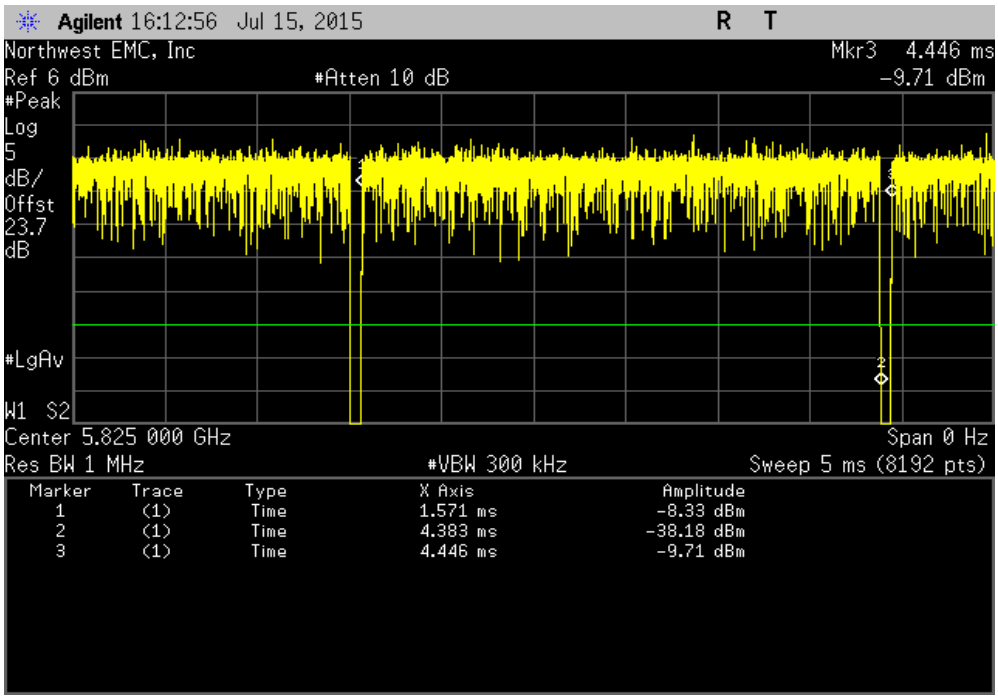
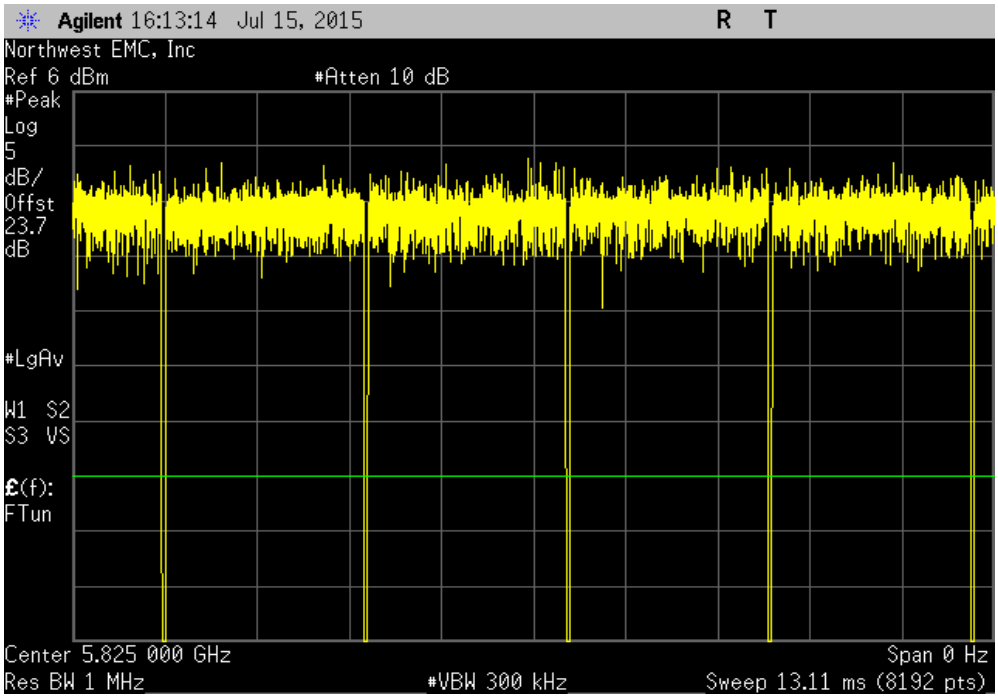
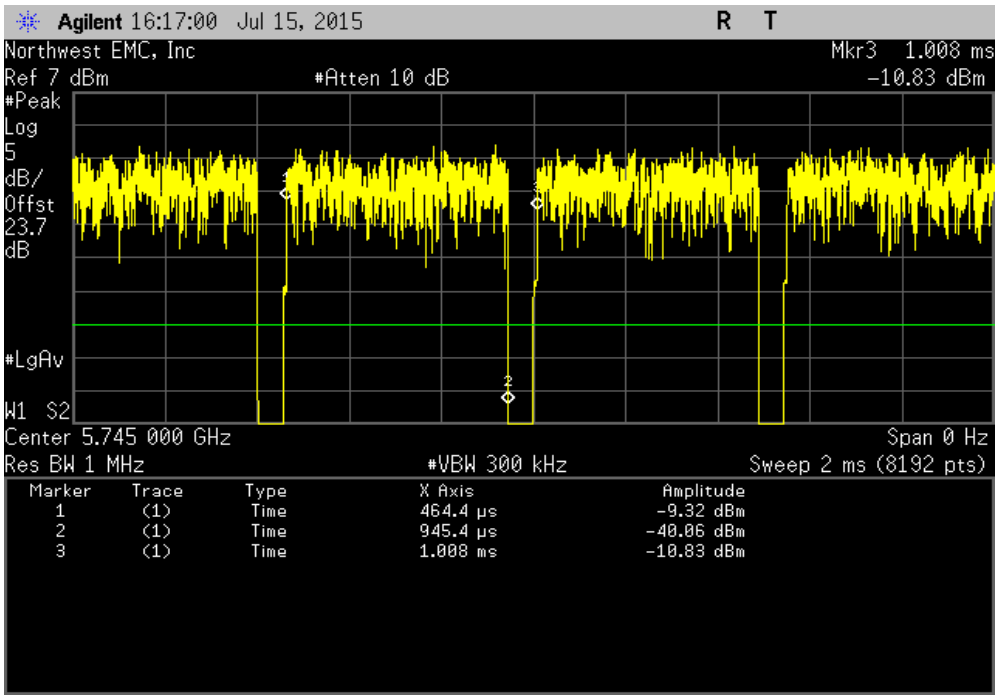
5725-5850 MHz Band, 802.11(a) 6 Mbps, Channel 165, High Channel, 5825 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	2.813 ms	2.875 ms	1	97.8	N/A	N/A



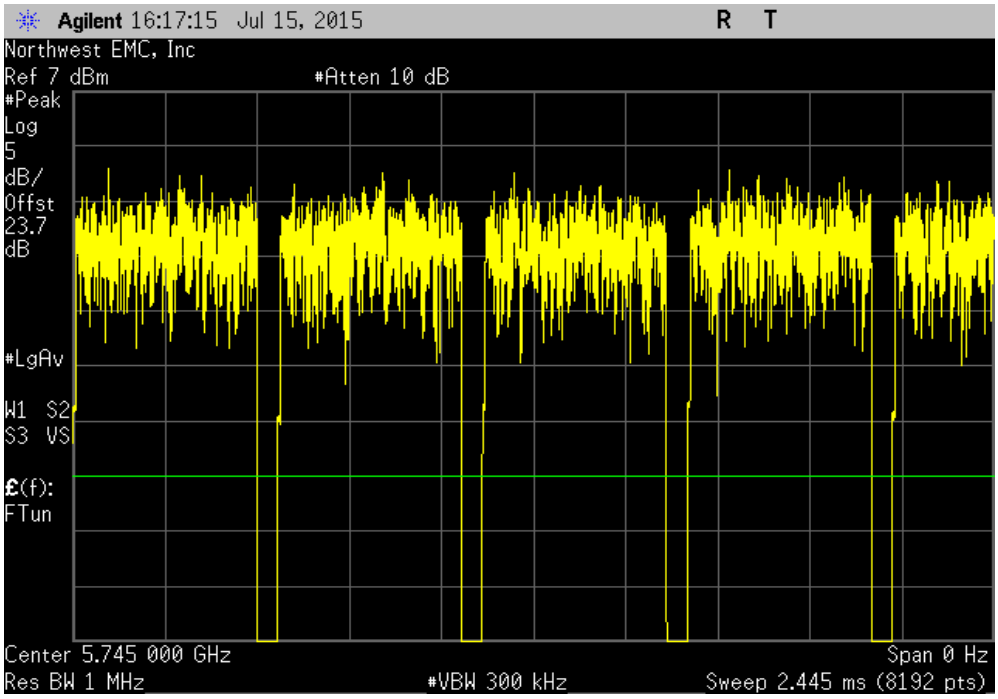
5725-5850 MHz Band, 802.11(a) 6 Mbps, Channel 165, High Channel, 5825 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	6	N/A	N/A	N/A



5725-5850 MHz Band, 802.11(a) 36 Mbps, Channel 149, Low Channel, 5745 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	481 us	543.3 us	1	88.5	N/A	N/A



5725-5850 MHz Band, 802.11(a) 36 Mbps, Channel 149, Low Channel, 5745 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A

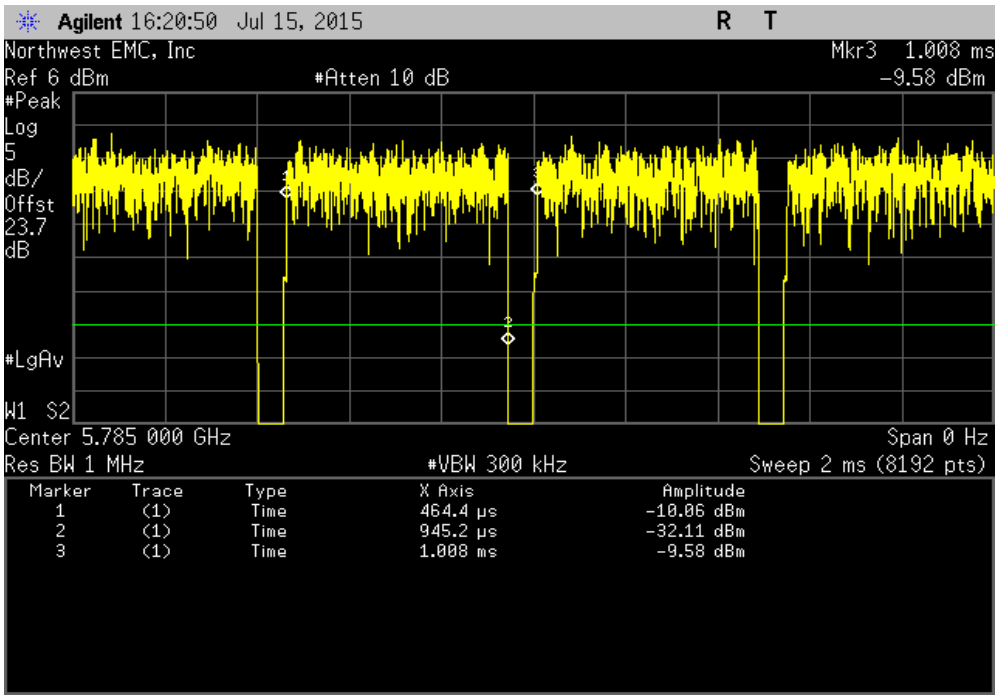


DUTY CYCLE

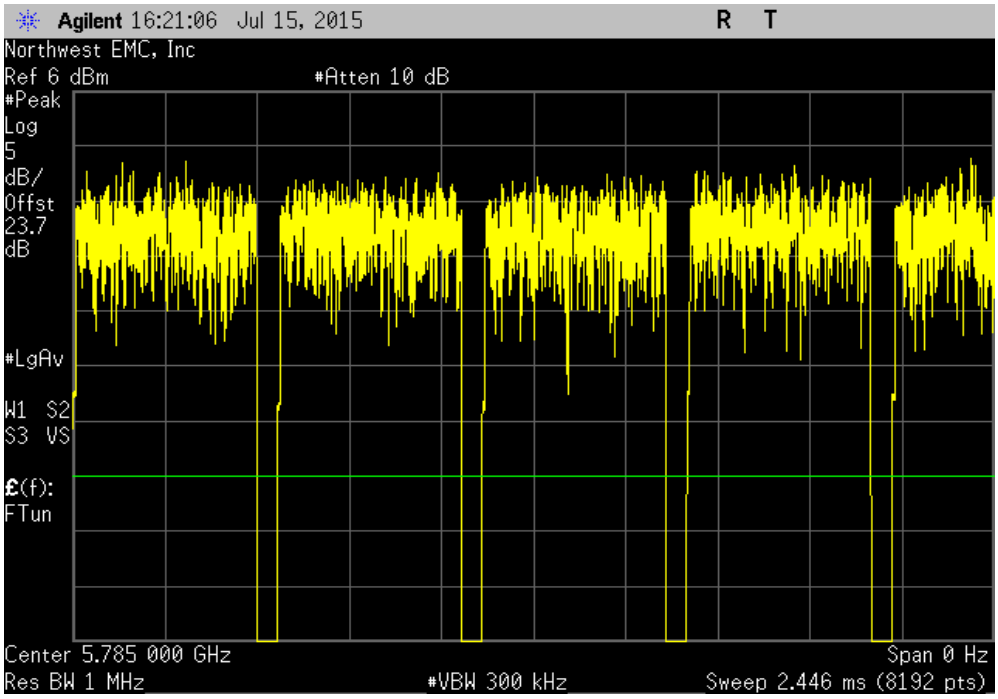
NORTHWEST EMC

XMit 2015.01.14

5725-5850 MHz Band, 802.11(a) 36 Mbps, Channel 157, Mid Channel, 5785 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	480.8 us	543.5 us	1	88.5	N/A	N/A

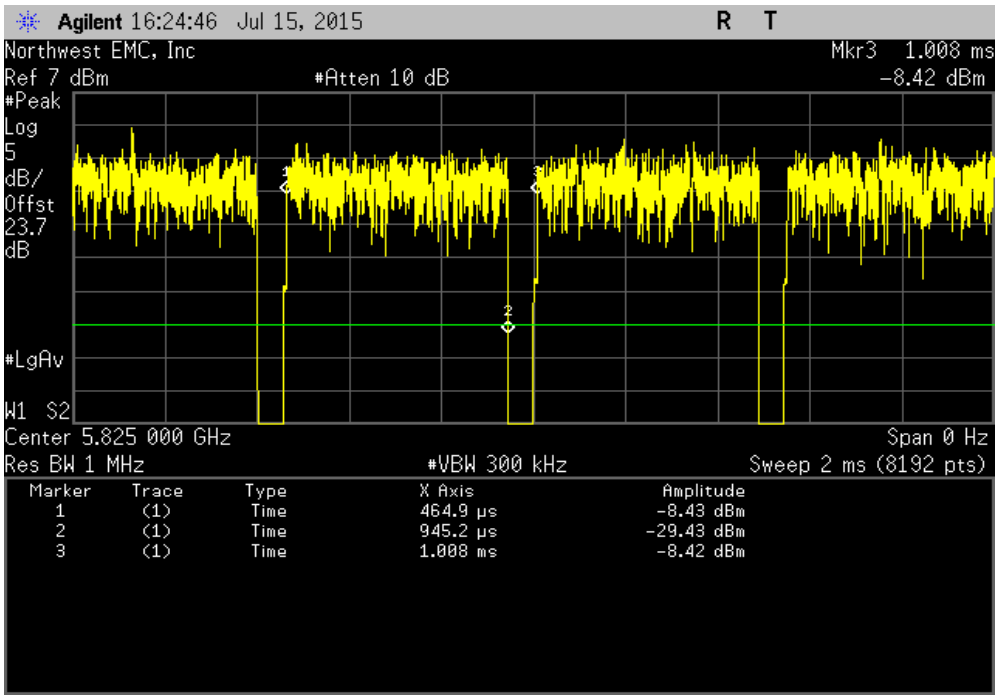


5725-5850 MHz Band, 802.11(a) 36 Mbps, Channel 157, Mid Channel, 5785 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A

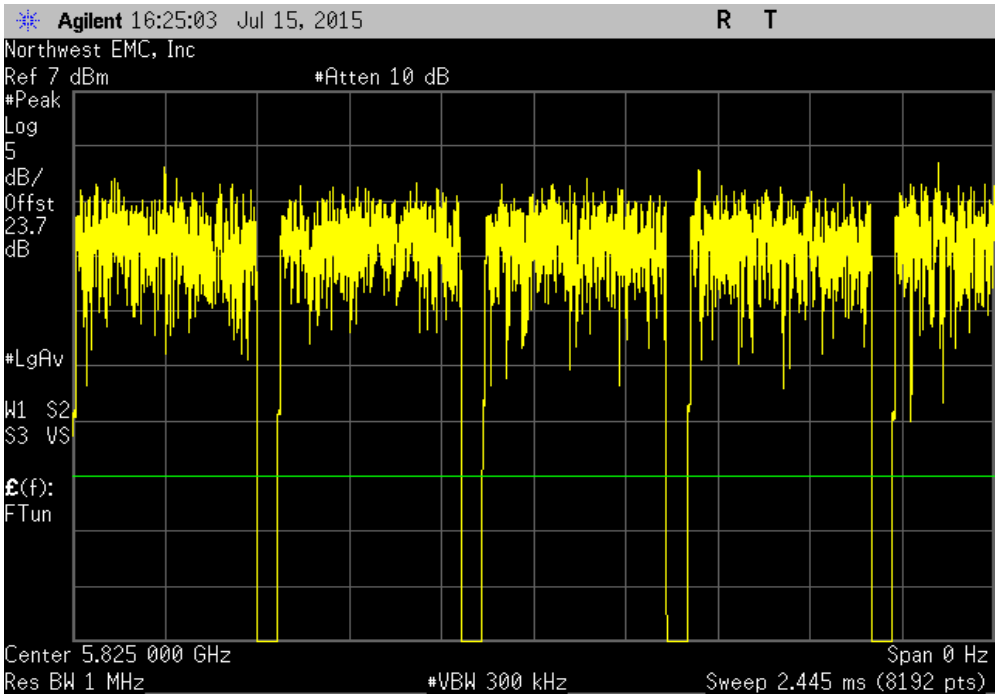


DUTY CYCLE

5725-5850 MHz Band, 802.11(a) 36 Mbps, Channel 165, High Channel, 5825 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	480.3 us	543.3 us	1	88.4	N/A	N/A



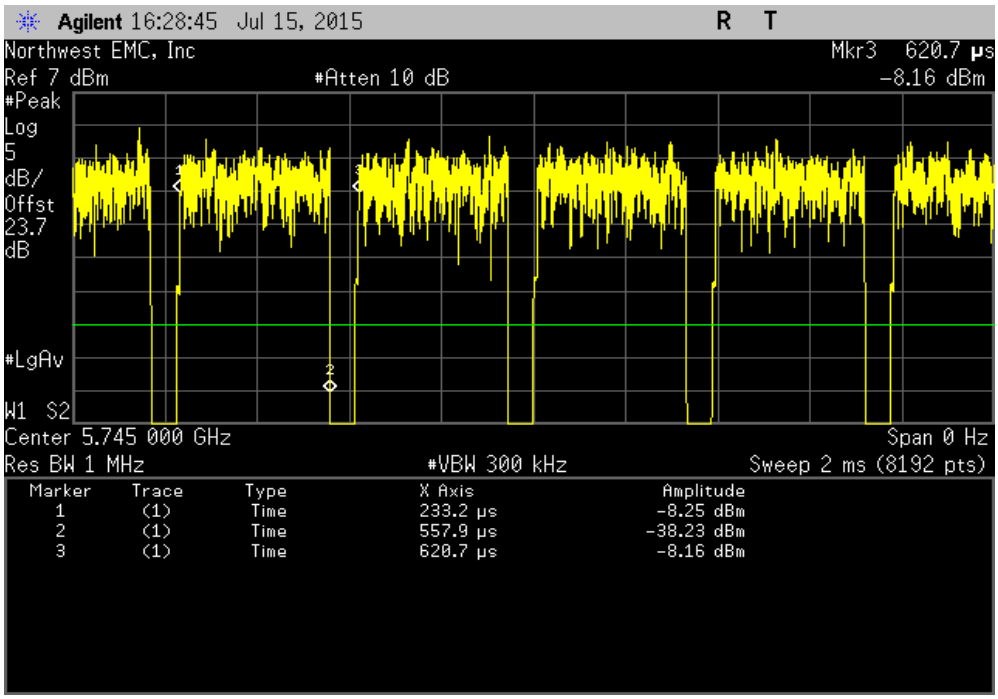
5725-5850 MHz Band, 802.11(a) 36 Mbps, Channel 165, High Channel, 5825 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



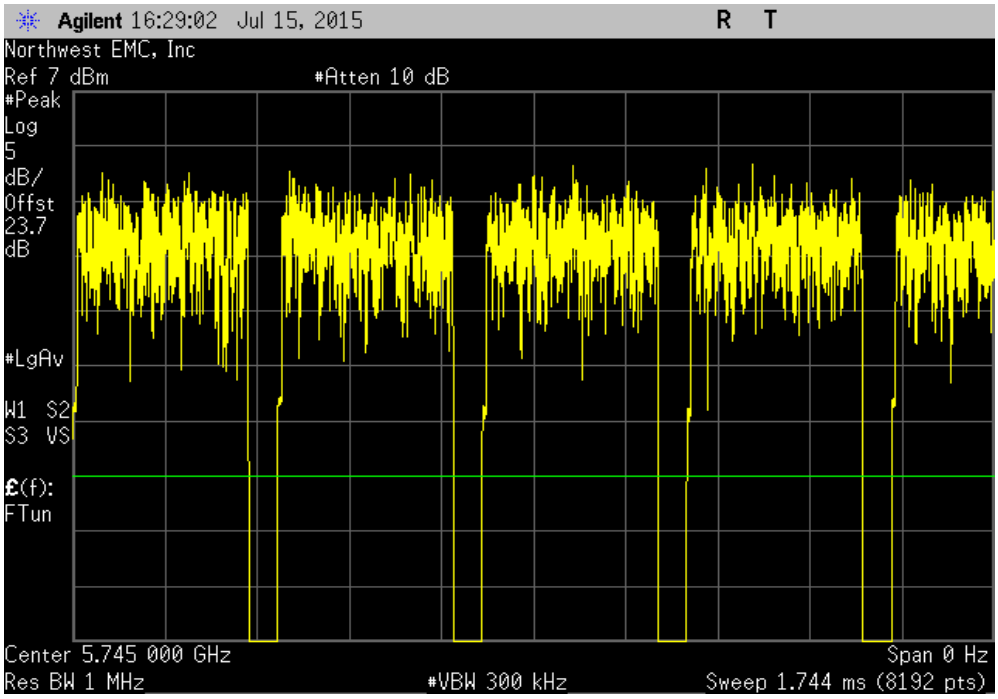
DUTY CYCLE

XMit 2015.01.14

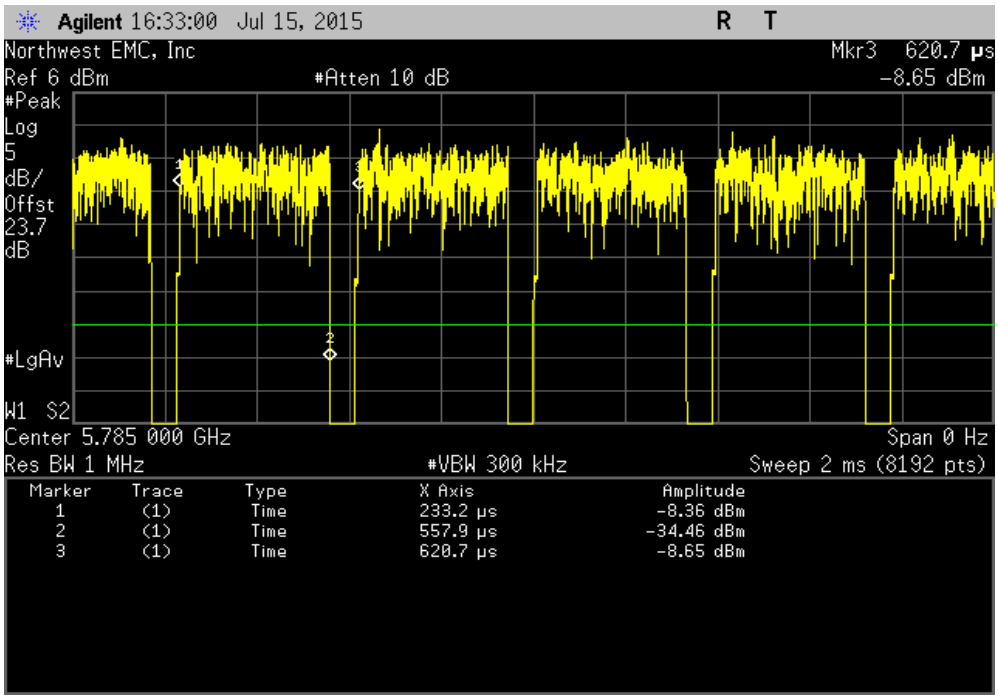
5725-5850 MHz Band, 802.11(a) 54 Mbps, Channel 149, Low Channel, 5745 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	324.7 us	387.5 us	1	83.8	N/A	N/A



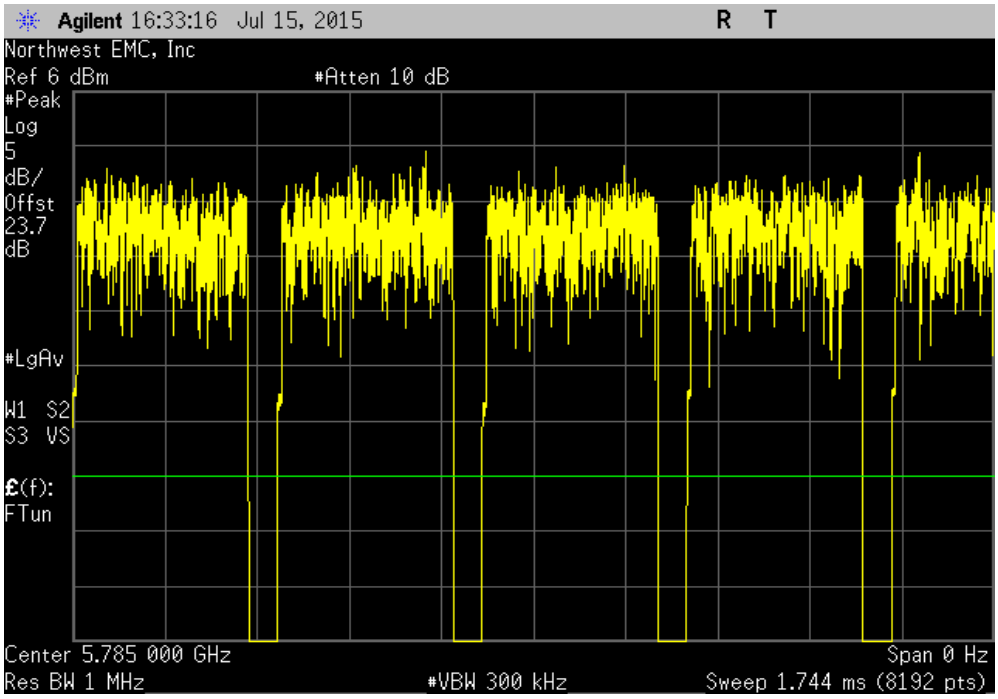
5725-5850 MHz Band, 802.11(a) 54 Mbps, Channel 149, Low Channel, 5745 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



5725-5850 MHz Band, 802.11(a) 54 Mbps, Channel 157, Mid Channel, 5785 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	324.7 us	387.5 us	1	83.8	N/A	N/A



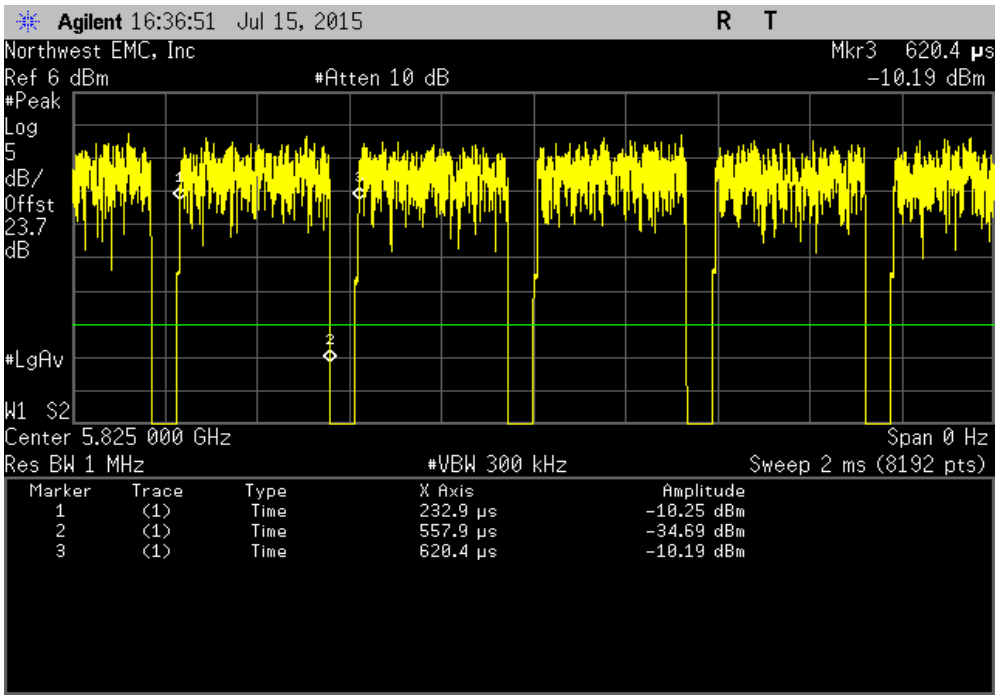
5725-5850 MHz Band, 802.11(a) 54 Mbps, Channel 157, Mid Channel, 5785 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



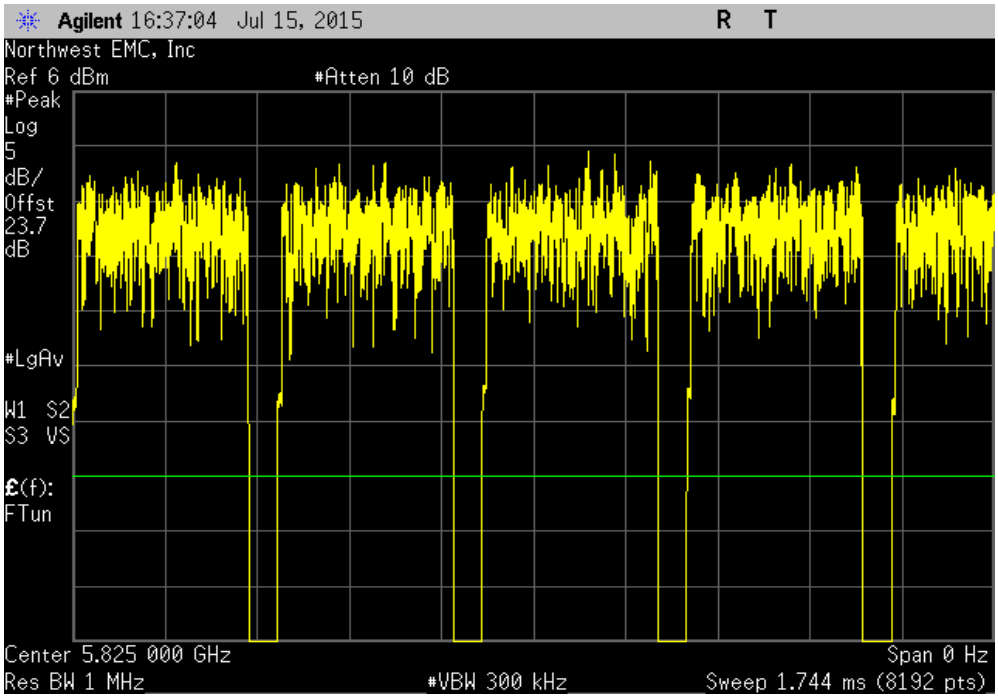
DUTY CYCLE

XMit 2015.01.14

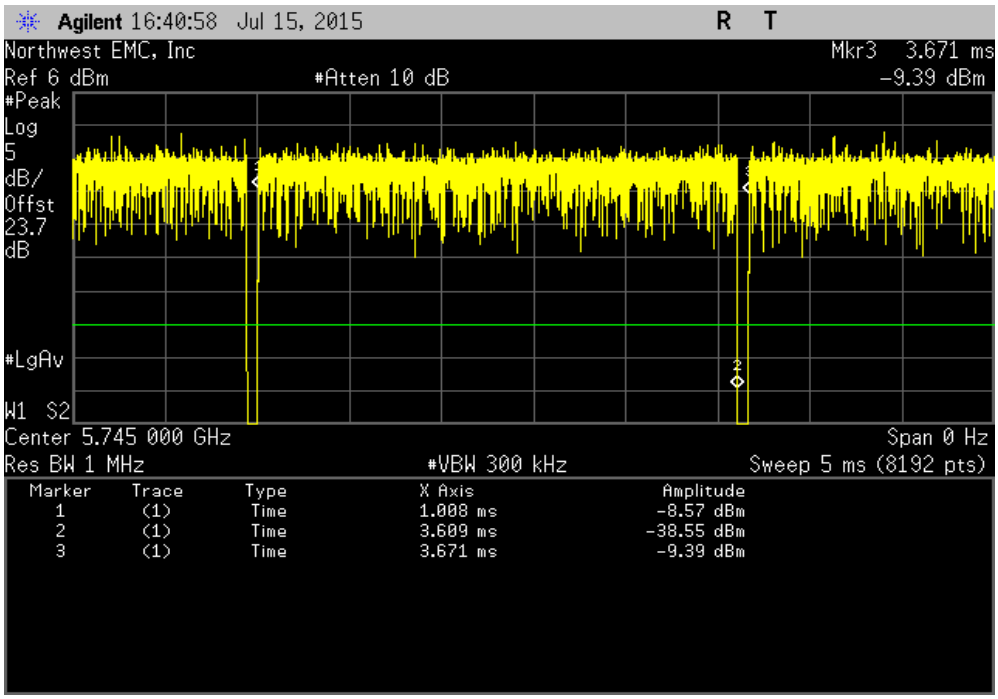
5725-5850 MHz Band, 802.11(a) 54 Mbps, Channel 165, High Channel, 5825 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	325 us	387.5 us	1	83.9	N/A	N/A



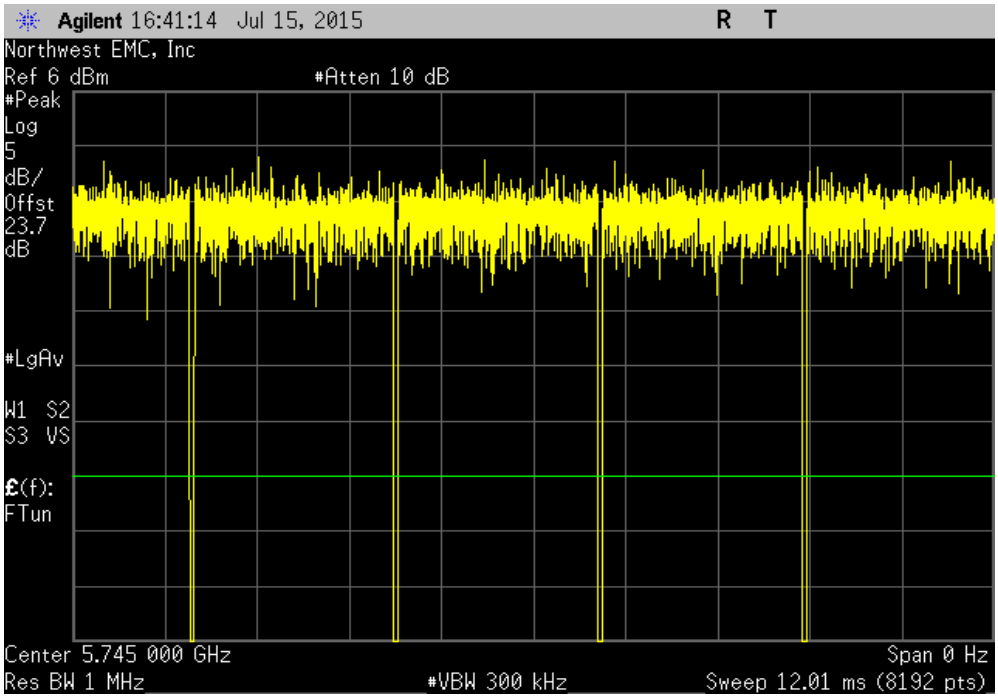
5725-5850 MHz Band, 802.11(a) 54 Mbps, Channel 165, High Channel, 5825 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



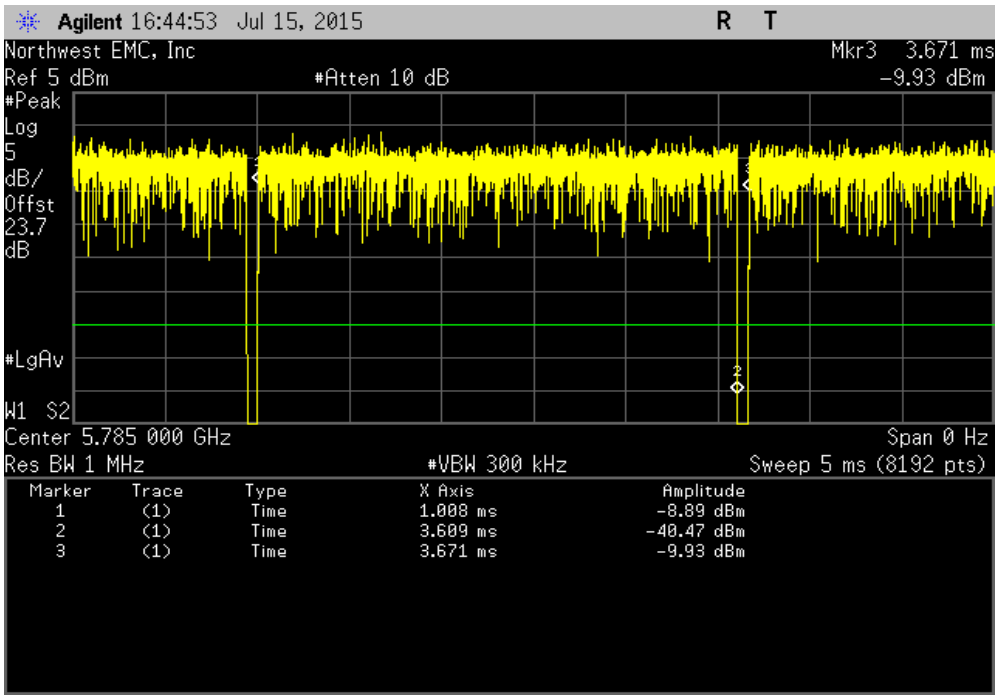
5725-5850 MHz Band, 802.11(n) MCS0, Channel 149, Low Channel, 5745 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	2.601 ms	2.663 ms	1	97.7	N/A	N/A



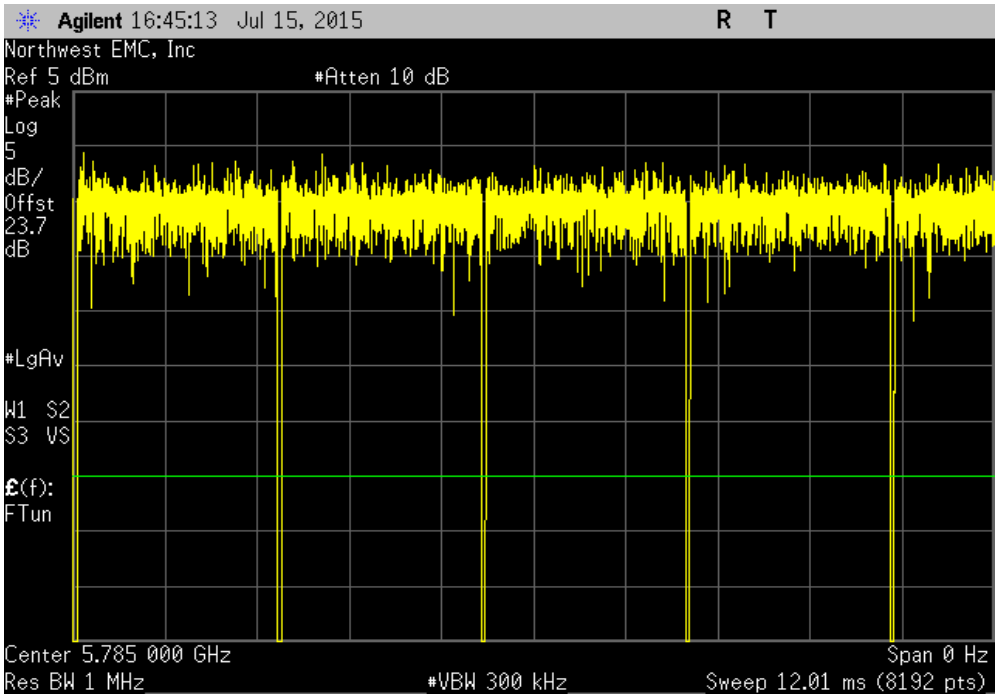
5725-5850 MHz Band, 802.11(n) MCS0, Channel 149, Low Channel, 5745 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



5725-5850 MHz Band, 802.11(n) MCS0, Channel 157, Mid Channel, 5785 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	2.601 ms	2.663 ms	1	97.7	N/A	N/A



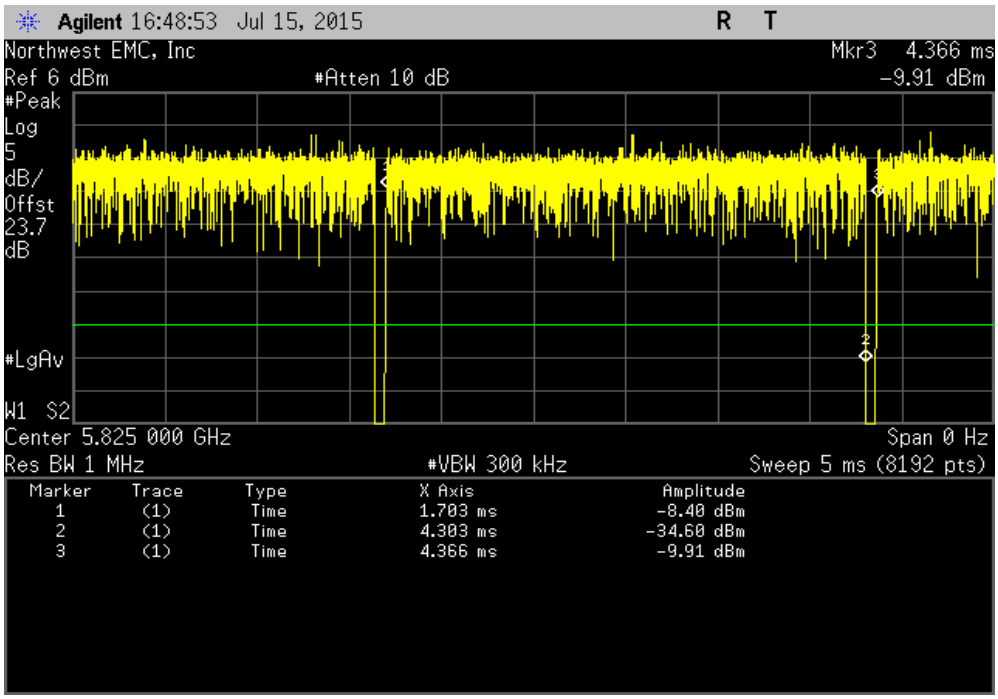
5725-5850 MHz Band, 802.11(n) MCS0, Channel 157, Mid Channel, 5785 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	6	N/A	N/A	N/A



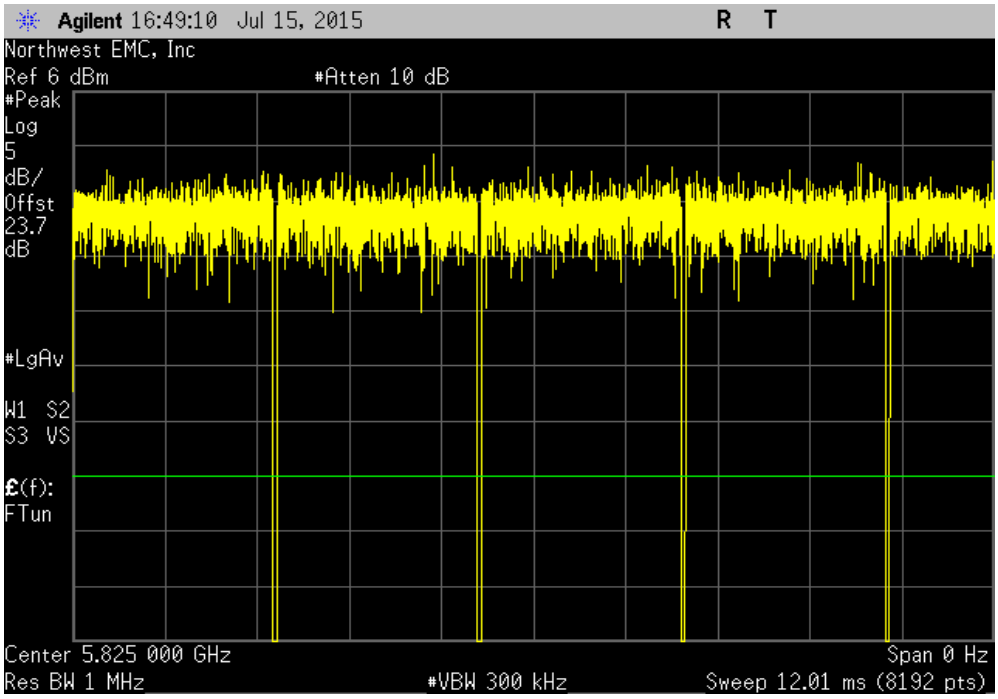
DUTY CYCLE

XMit 2015.01.14

5725-5850 MHz Band, 802.11(n) MCS0, Channel 165, High Channel, 5825 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	2.601 ms	2.663 ms	1	97.7	N/A	N/A



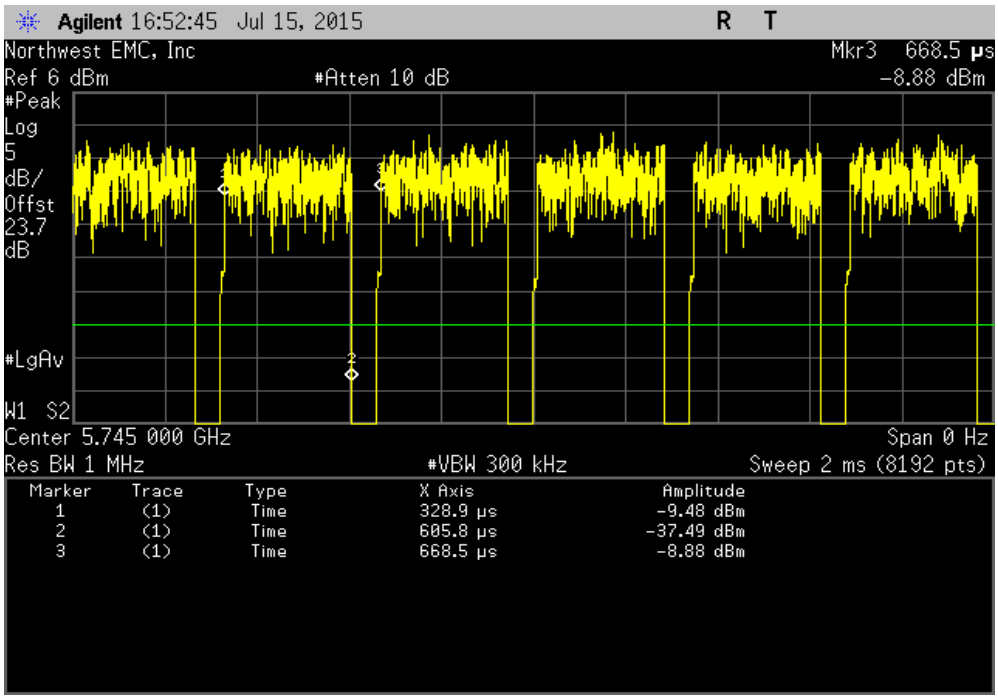
5725-5850 MHz Band, 802.11(n) MCS0, Channel 165, High Channel, 5825 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



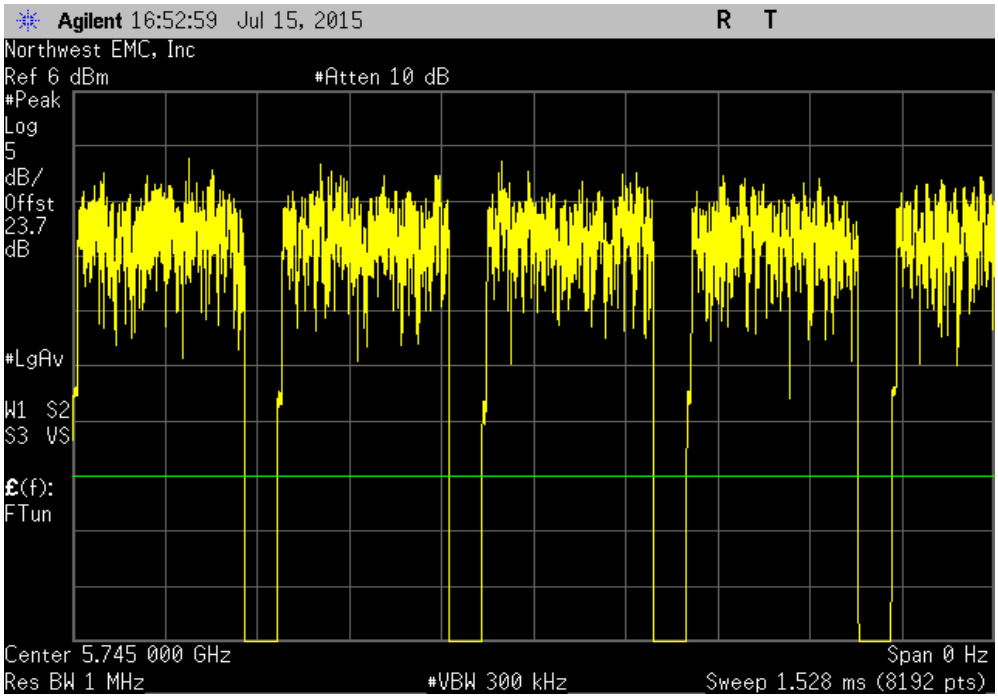
DUTY CYCLE

XMit 2015.01.14

5725-5850 MHz Band, 802.11(n) MCS7, Channel 149, Low Channel, 5745 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	276.9 us	339.6 us	1	81.5	N/A	N/A



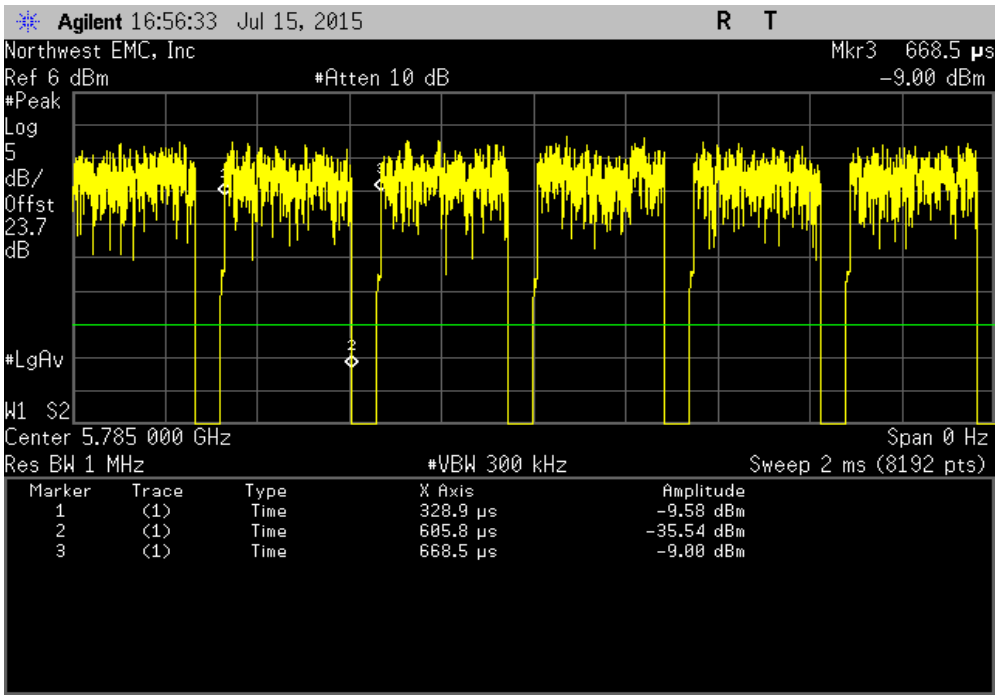
5725-5850 MHz Band, 802.11(n) MCS7, Channel 149, Low Channel, 5745 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



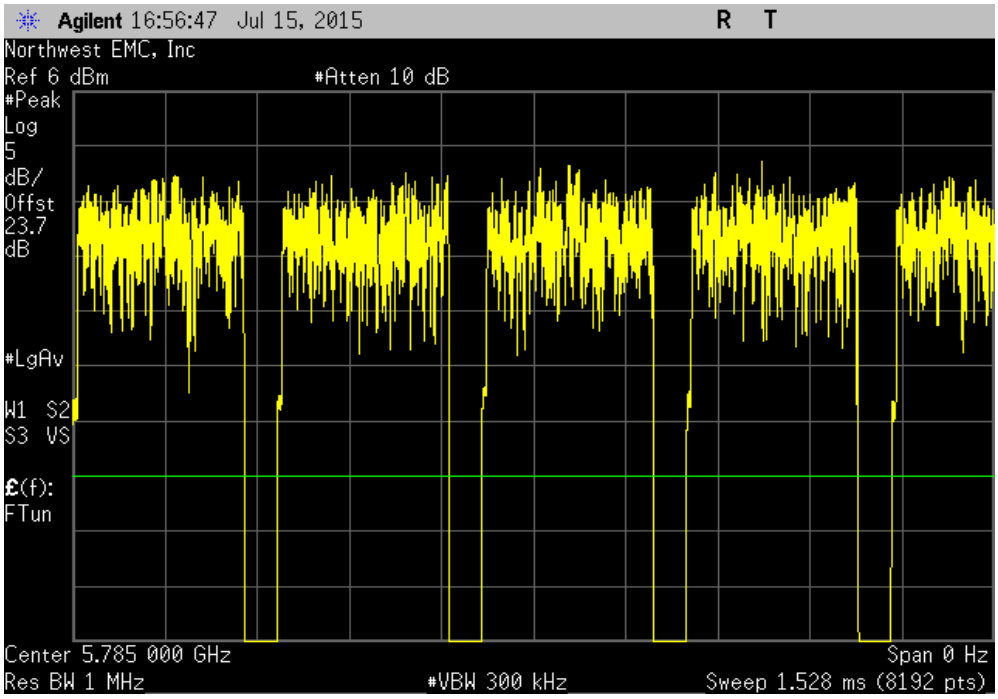
DUTY CYCLE

XMit 2015.01.14

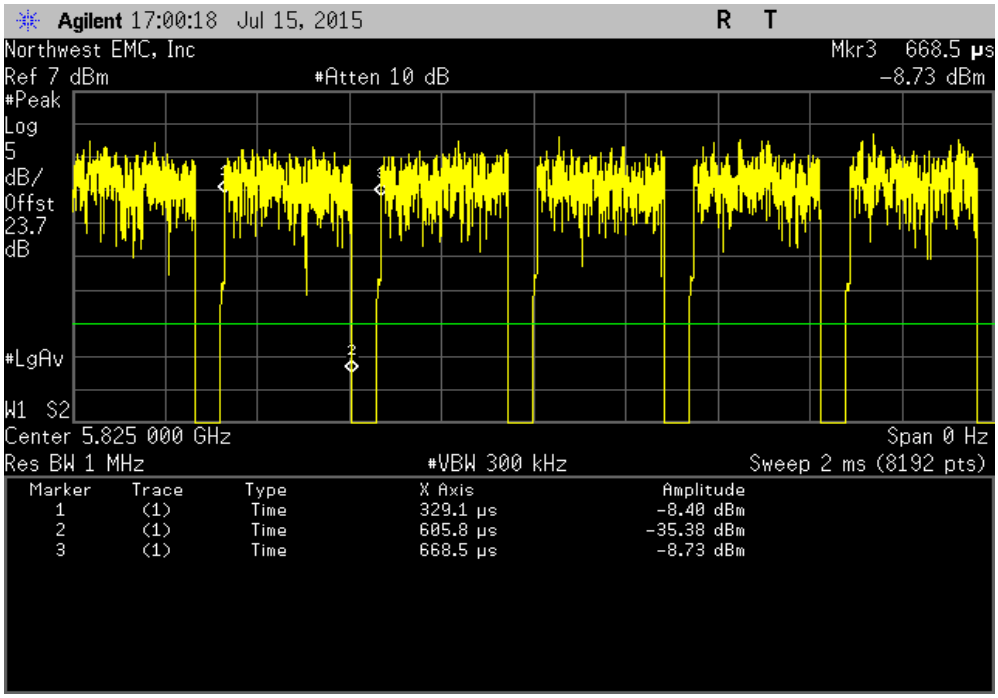
5725-5850 MHz Band, 802.11(n) MCS7, Channel 157, Mid Channel, 5785 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	276.9 us	339.6 us	1	81.5	N/A	N/A



5725-5850 MHz Band, 802.11(n) MCS7, Channel 157, Mid Channel, 5785 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



5725-5850 MHz Band, 802.11(n) MCS7, Channel 165, High Channel, 5825 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	276.7 us	339.4 us	1	81.5	N/A	N/A



5725-5850 MHz Band, 802.11(n) MCS7, Channel 165, High Channel, 5825 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A