NORTHWEST EMC

# Digi International Inc

## Sigma Pumps Gen IV 802.11abgn Module

**FCC 15.207:2016**
**FCC 15.209:2016**
**FCC 15.407:2016**

**802.11 an Radio**

**Report # DGII0152.4**

NVLAP Lab Code: 200881-0

# CERTIFICATE OF TEST

NORTHWEST EMC
2014-12-10

**Last Date of Test: January 12, 2016**
**Digi International Inc**
**Model: Sigma Pumps Gen IV 802.11abgn Module**

## Radio Equipment Testing

### Standards

| Specification | Method |
|---|---|
| FCC 15.207:2016 | ANSI C63.10:2013 |
| FCC 15.209:2016 | ANSI C63.10:2013 |
| FCC 15.407:2016 | ANSI C63.10:2013 |

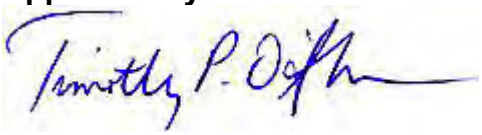
### Results

| Method Clause | Test Description | Applied | Results | Comments |
|---|---|---|---|---|
| 6.2 | AC Powerline Conducted Emissions | Yes | Pass | |
| 6.5, 6.6, 12.7 | Spurious Radiated Emissions | Yes | Pass | |
| 6.7 | Band Edge Compliance | Yes | Pass | |
| 6.8 | Frequency Stability | Yes | Pass | |
| 12.2 | Duty Cycle | Yes | N/A | |
| 12.3.2.4 | Maximum Conducted Output Power | Yes | Pass | |
| 12.4.1 | Emission Bandwidth | Yes | Pass | |
| 12.4.2 | Occupied Bandwidth | Yes | Pass | |
| 12.5 | Maximum Power Spectral Density | Yes | Pass | |

### Deviations From Test Standards

None

### Approved By:



*Tim O'Shea, 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. This report reflects only those tests from the referenced standards shown in the certificate of test. It does not include inspection or verification of labels, identification, marking or user information.***

# REVISION HISTORY

NORTHWEST EMC
REV 2014.10.14

| Revision Number | Description | Date | Page Number |
|---|---|---|---|
| 00 | None | | |

# 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.2015.07.10

## 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.

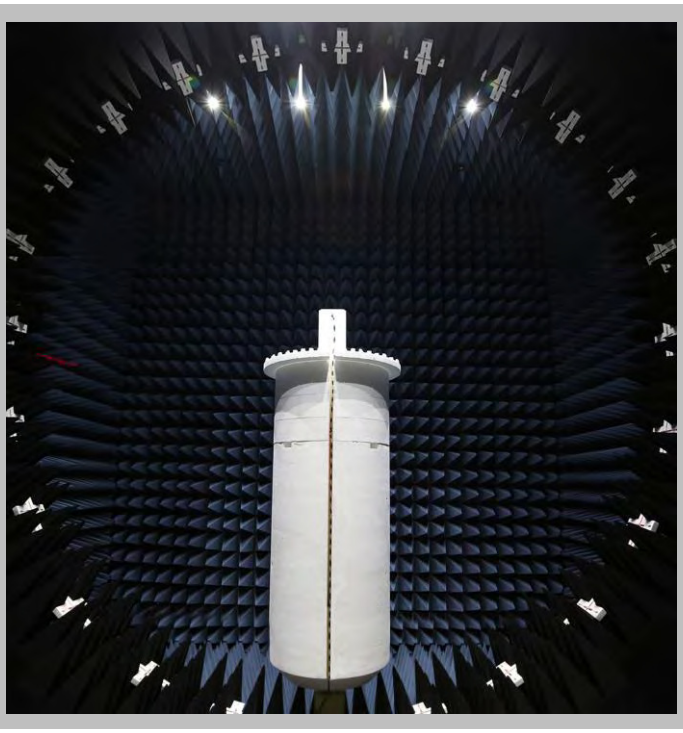
The following table represents the Measurement Uncertainty (MU) budgets for each of the tests that may be contained in this report.

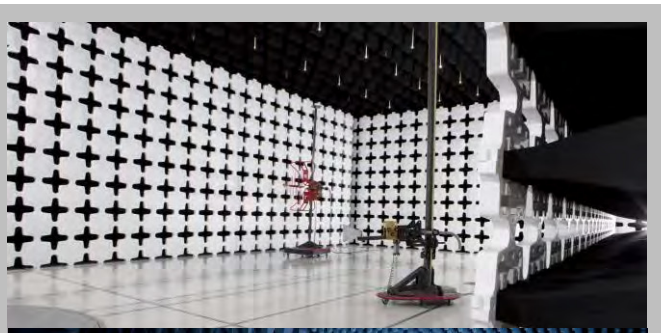
| Test | + MU | - MU |
|---|---|---|
| Frequency Accuracy (Hz) | 0.0007% | -0.0007% |
| Amplitude Accuracy (dB) | 1.2 dB | -1.2 dB |
| Conducted Power (dB) | 0.3 dB | -0.3 dB |
| Radiated Power via Substitution (dB) | 0.7 dB | -0.7 dB |
| Temperature (degrees C) | 0.7°C | -0.7°C |
| Humidity (% RH) | 2.5% RH | -2.5% RH |
| Voltage (AC) | 1.0% | -1.0% |
| Voltage (DC) | 0.7% | -0.7% |
| Field Strength (dB) | 5.2 dB | -5.2 dB |
| AC Powerline Conducted Emissions (dB) | 2.4 dB | -2.4 dB |

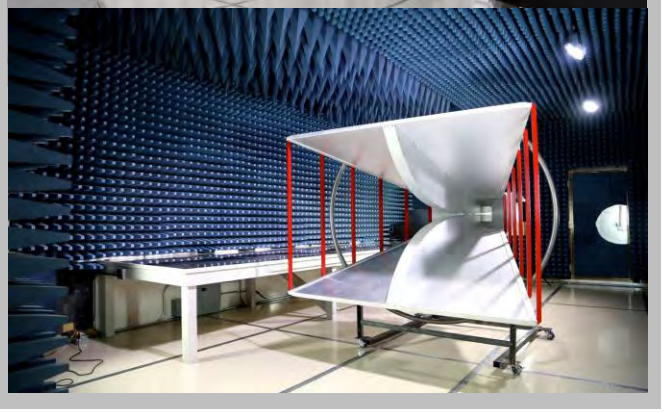
# FACILITIES

NORTHWEST EMC
REV 2015.2.19

| California | Minnesota | New York | Oregon | Texas | Washington |
|---|---|---|---|---|---|
| Labs OC01-13<br>41 Tesla<br>Irvine, CA 92618<br>(949) 861-8918 | Labs MN01-08, MN10<br>9349 W Broadway Ave.<br>Brooklyn Park, MN 55445<br>(612)-638-5136 | Labs NY01-04<br>4939 Jordan Rd.<br>Elbridge, NY 13060<br>(315) 554-8214 | Labs EV01-12<br>22975 NW Evergreen Pkwy<br>Hillsboro, OR 97124<br>(503) 844-4066 | Labs TX01-09<br>3801 E Plano Pkwy<br>Plano, TX 75074<br>(469) 304-5255 | Labs NC01-05<br>19201 120th Ave NE<br>Bothell, WA 98011<br>(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:** | Digi International Inc |
| **Address:** | 11001 Bren Road E. |
| **City, State, Zip:** | Minnetonka, MN 55343 |
| **Test Requested By:** | Slava Gekht |
| **Model:** | Sigma Pumps Gen IV 802.11abgn Module |
| **First Date of Test:** | January 04, 2016 |
| **Last Date of Test:** | January 12, 2016 |
| **Receipt Date of Samples:** | November 19, 2015 |
| **Equipment Design Stage:** | Production |
| **Equipment Condition:** | No Damage |

## Information Provided by the Party Requesting the Test

| **Functional Description of the EUT:** |
|---|
| Sigma Pump Radio Module |

| **Testing Objective:** |
|---|
| To demonstrate compliance of the 802.11 radio under FCC 15.407 for operation in the 5.2 GHz, 5.3 GHz, 5.6 GHz and 5.8 GHz band(s). |

# CONFIGURATIONS

NORTHWEST EMC 2014-12-10

## Configuration DGII0152- 1

| EUT | | | |
|---|---|---|---|
| **Description** | **Manufacturer** | **Model/Part Number** | **Serial Number** |
| Sigma Pump Radio Module | Digi International Inc | 50001857-1 | UUT #7 (55001769-1 rev. 1P) |
| Development Board | Digi International Inc | 55001610-2 rev. 01 | None |

| Peripherals in test setup boundary | | | |
|---|---|---|---|
| **Description** | **Manufacturer** | **Model/Part Number** | **Serial Number** |
| AC Adapter (Development Board) | Bobbintron Electrical Corporation | VEG20C-120F | None |

| Remote Equipment Outside of Test Setup Boundary | | | |
|---|---|---|---|
| **Description** | **Manufacturer** | **Model/Part Number** | **Serial Number** |
| Laptop | Hewlett-Packard | Compaq nc6320 | CNU7D62VS5 |
| AC Adapter (Laptop) | Hewlett-Packard | PPP014L-S | W97950EBMVYB2Z |

| Cables | | | | | |
|---|---|---|---|---|---|
| **Cable Type** | **Shield** | **Length (m)** | **Ferrite** | **Connection 1** | **Connection 2** |
| Serial Cable | Yes | >3m | Yes | Development Board | Laptop |
| DC Cable (Development Board) | No | 1.6m | Yes | Development Board | AC Adapter (Development Board) |
| AC Cable (Development Board) | No | 2.3m | No | AC Mains | AC Adapter (Development Board) |
| DC Cable (Laptop) | No | 1.8m | No | Laptop | AC Adapter (Laptop) |
| AC Cable (Laptop) | No | 1.8m | No | AC Adapter (Laptop) | AC Mains |

# CONFIGURATIONS

NORTHWEST EMC 2014-12-10

## Configuration DGII0152- 2

| EUT | | | |
|---|---|---|---|
| **Description** | **Manufacturer** | **Model/Part Number** | **Serial Number** |
| Sigma Pump Radio Module | Digi International Inc | 50001857-1 | UUT #7 (55001769-1 rev. 1P) |
| Development Board | Digi International Inc | 55001610-2 rev. 01 | None |

| Peripherals in test setup boundary | | | |
|---|---|---|---|
| **Description** | **Manufacturer** | **Model/Part Number** | **Serial Number** |
| DC Power Supply | Agilent | U8002A | TPZ |

| Remote Equipment Outside of Test Setup Boundary | | | |
|---|---|---|---|
| **Description** | **Manufacturer** | **Model/Part Number** | **Serial Number** |
| Laptop | Hewlett-Packard | Compaq nc6320 | CNU7D62VS5 |
| AC Adapter (Laptop) | Hewlett-Packard | PPP014L-S | W97950EBMVYB2Z |

| Cables | | | | | |
|---|---|---|---|---|---|
| **Cable Type** | **Shield** | **Length (m)** | **Ferrite** | **Connection 1** | **Connection 2** |
| Serial Cable | Yes | >3m | Yes | Development Board | Laptop |
| DC Cable (Laptop) | No | 1.8m | No | Laptop | AC Adapter (Laptop) |
| AC Cable (Laptop) | No | 1.8m | No | AC Adapter (Laptop) | AC Mains |
| DC Cable (DC Power Supply) | No | 1.0m | No | DC Power Supply | Development Board |

# CONFIGURATIONS

NORTHWEST EMC 2014-12-10

## Configuration DGII0152- 3

| EUT | | | |
|---|---|---|---|
| **Description** | **Manufacturer** | **Model/Part Number** | **Serial Number** |
| Sigma Pump Radio Module | Digi International Inc | 50001857-1 | UUT #7 (55001769-1 rev. 1P) |
| Development Board | Digi International Inc | 55001610-2 rev. 01 | None |

| Peripherals in test setup boundary | | | |
|---|---|---|---|
| **Description** | **Manufacturer** | **Model/Part Number** | **Serial Number** |
| DC Power Supply | Agilent | U8002A | TPZ |

| Remote Equipment Outside of Test Setup Boundary | | | |
|---|---|---|---|
| **Description** | **Manufacturer** | **Model/Part Number** | **Serial Number** |
| Laptop | Hewlett-Packard | Compaq nc6320 | CNU7D62VS5 |
| AC Adapter (Laptop) | Hewlett-Packard | PPP014L-S | W97950EBMVYB2Z |
| Wireless Router | Cisco | Linksys | Linksys 2 |
| AC/DC Adapter | Cisco | None | None |

| Cables | | | | | |
|---|---|---|---|---|---|
| **Cable Type** | **Shield** | **Length (m)** | **Ferrite** | **Connection 1** | **Connection 2** |
| Serial Cable | Yes | >3m | Yes | Development Board | Laptop |
| DC Cable (Laptop) | No | 1.8m | No | Laptop | AC Adapter (Laptop) |
| AC Cable (Laptop) | No | 1.8m | No | AC Adapter (Laptop) | AC Mains |
| DC Cable (DC Power Supply) | No | 1.0m | No | DC Power Supply | Development Board |
| DC Cable (Linksys PS) | No | 1.5m | No | AC/DC Adapter | Wireless Router |
| Ethernet Cable | No | 1.5m | No | Wireless Router | Cisco AP |

# MODIFICATIONS

NORTHWEST EMC
2014-12-10

## Equipment Modifications

| Item | Date | Test | Modification | Note | Disposition of EUT |
|---|---|---|---|---|---|
| 1 | 1/4/2016 | AC Powerline Conducted Emissions | Tested as delivered to Test Station. | No EMI suppression devices were added or modified during this test. | EUT remained at Northwest EMC following the test. |
| 2 | 1/4/2016 | 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 | 1/7/2016 | 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. |
| 4 | 1/11/2016 | Band Edge Compliance | Tested as delivered to Test Station. | No EMI suppression devices were added or modified during this test. | EUT remained at Northwest EMC following the test. |
| 5 | 1/11/2016 | Move Time | Tested as delivered to Test Station. | No EMI suppression devices were added or modified during this test. | EUT remained at Northwest EMC following the test. |
| 6 | 1/11/2016 | Closing Time | Tested as delivered to Test Station. | No EMI suppression devices were added or modified during this test. | EUT remained at Northwest EMC following the test. |
| 7 | 1/11/2016 | Emissions 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 | 1/11/2016 | Maximum 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. |
| 9 | 1/11/2016 | Maximum Conducted Output Power | Tested as delivered to Test Station. | No EMI suppression devices were added or modified during this test. | EUT remained at Northwest EMC following the test. |
| 10 | 1/11/2016 | 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. |
| 11 | 1/12/2016 | Non Occupancy Period | 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.2015.12.01
PSA-ESCI 2015.07.01, EmiR5 2015.11.06

## 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. Per the standard, an insulating material was also added to ground plane between the EUT's power and remote I/O cables. 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 50ohm measuring port is terminated by a 50ohm EMI meter or a 50ohm resistive load. All 50ohm measuring ports of the LISN are terminated by 50ohm. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

## TEST EQUIPMENT

| Description | Manufacturer | Model | ID | Last Cal. | Cal. Due |
|---|---|---|---|---|---|
| Receiver | Rohde & Schwarz | ESR7 | ARI | 5/21/2015 | 5/21/2016 |
| LISN | Solar Electronics | 9252-50-R-24-BNC | LIY | 3/23/2015 | 3/23/2016 |
| Cable - Conducted Cable Assembly | Northwest EMC | MNC, HGN, AQP | MNCA | 5/13/2015 | 5/13/2016 |

## MEASUREMENT UNCERTAINTY

| Description | | |
|---|---|---|
| Expanded k=2 | 2.4 dB | -2.4 dB |

## CONFIGURATIONS INVESTIGATED

DGII0152-1

## MODES INVESTIGATED

Transmitting 802.11 channel 120, 6 Mbps
Transmitting 802.11 channel 157, 6 Mbps
Transmitting 802.11 channel 48, 6 Mbps

# AC POWERLINE CONDUCTED EMISSIONS

NORTHWEST EMC
WTD.2015.12.01
PSA-ESCI 2015.07.01, EmiR5 2015.11.06

| | | | |
|---|---|---|---|
| EUT: | Sigma Pumps Gen IV 802.11abgn Module | Work Order: | DGII0152 |
| Serial Number: | UUT #7 (55001769-1 rev. 1P) | Date: | 01/04/2016 |
| Customer: | Digi International Inc | Temperature: | 22.5°C |
| Attendees: | Slava Gehkt | Relative Humidity: | 18.9% |
| Customer Project: | None | Bar. Pressure: | 1004.2 mb |
| Tested By: | Dustin Sparks | Job Site: | MN03 |
| Power: | 110VAC/60Hz | Configuration: | DGII0152-1 |

## TEST SPECIFICATIONS

| Specification: | Method: |
|---|---|
| FCC 15.207:2016 | ANSI C63.10:2013 |

## TEST PARAMETERS

| | | | | | |
|---|---|---|---|---|---|
| Run #: | 12 | Line: | High Line | Add. Ext. Attenuation (dB): | 0 |

## COMMENTS

None

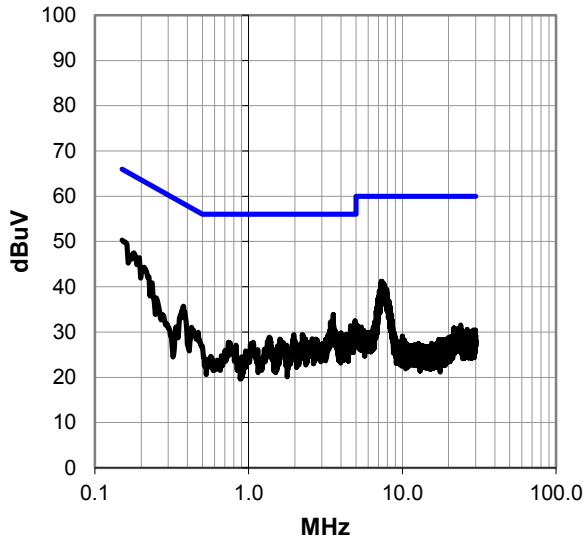
## EUT OPERATING MODES

Transmitting 802.11 channel 48, 6 Mbps

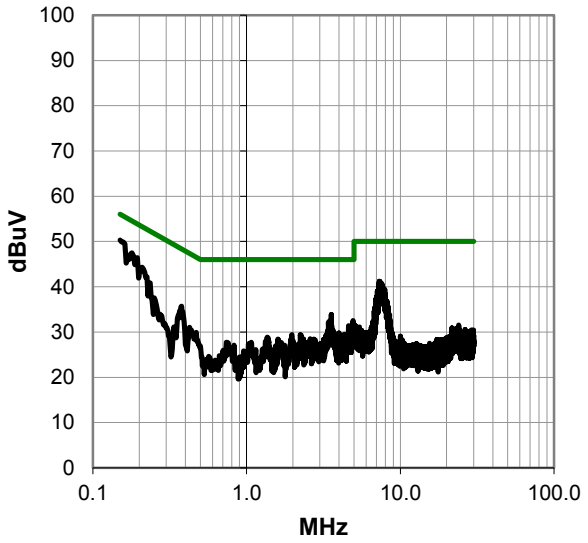
## DEVIATIONS FROM TEST STANDARD

None

**Peak Data - vs - Quasi Peak Limit**




**Peak Data - vs - Average Limit**



# AC POWERLINE CONDUCTED EMISSIONS

NORTHWEST EMC

WTD.2015.12.01
PSA-ESCI 2015.07.01, EmiR5 2015.11.06

## RESULTS - Run #12

Peak Data - vs - Quasi Peak Limit

| Freq (MHz) | Amp. (dBuV) | Factor (dB) | Adjusted (dBuV) | Spec. Limit (dBuV) | Margin (dB) |
|---|---|---|---|---|---|
| 0.150 | 29.9 | 20.4 | 50.3 | 66.0 | -15.7 |
| 7.313 | 20.6 | 20.6 | 41.2 | 60.0 | -18.8 |
| 7.377 | 20.5 | 20.6 | 41.1 | 60.0 | -18.9 |
| 7.526 | 20.1 | 20.7 | 40.8 | 60.0 | -19.2 |
| 7.253 | 20.0 | 20.6 | 40.6 | 60.0 | -19.4 |
| 7.768 | 19.0 | 20.7 | 39.7 | 60.0 | -20.3 |
| 7.906 | 18.8 | 20.7 | 39.5 | 60.0 | -20.5 |
| 7.097 | 18.5 | 20.6 | 39.1 | 60.0 | -20.9 |
| 7.130 | 18.4 | 20.6 | 39.0 | 60.0 | -21.0 |
| 7.966 | 17.8 | 20.7 | 38.5 | 60.0 | -21.5 |
| 3.560 | 13.5 | 20.4 | 33.9 | 56.0 | -22.1 |
| 7.030 | 17.2 | 20.6 | 37.8 | 60.0 | -22.2 |
| 0.378 | 15.5 | 20.2 | 35.7 | 58.3 | -22.6 |
| 6.921 | 16.7 | 20.6 | 37.3 | 60.0 | -22.7 |
| 8.179 | 16.1 | 20.7 | 36.8 | 60.0 | -23.2 |
| 4.918 | 12.0 | 20.5 | 32.5 | 56.0 | -23.5 |
| 8.156 | 15.8 | 20.7 | 36.5 | 60.0 | -23.5 |
| 3.482 | 12.1 | 20.3 | 32.4 | 56.0 | -23.6 |
| 8.238 | 15.6 | 20.7 | 36.3 | 60.0 | -23.7 |
| 3.414 | 11.8 | 20.3 | 32.1 | 56.0 | -23.9 |
| 4.985 | 11.4 | 20.5 | 31.9 | 56.0 | -24.1 |
| 0.251 | 17.3 | 20.3 | 37.6 | 61.7 | -24.2 |
| 6.899 | 15.1 | 20.6 | 35.7 | 60.0 | -24.3 |
| 8.317 | 15.0 | 20.7 | 35.7 | 60.0 | -24.3 |
| 3.582 | 11.1 | 20.4 | 31.5 | 56.0 | -24.5 |
| 4.601 | 10.9 | 20.5 | 31.4 | 56.0 | -24.6 |

Peak Data - vs - Average Limit

| Freq (MHz) | Amp. (dBuV) | Factor (dB) | Adjusted (dBuV) | Spec. Limit (dBuV) | Margin (dB) |
|---|---|---|---|---|---|
| 0.150 | 29.9 | 20.4 | 50.3 | 56.0 | -5.7 |
| 7.313 | 20.6 | 20.6 | 41.2 | 50.0 | -8.8 |
| 7.377 | 20.5 | 20.6 | 41.1 | 50.0 | -8.9 |
| 7.526 | 20.1 | 20.7 | 40.8 | 50.0 | -9.2 |
| 7.253 | 20.0 | 20.6 | 40.6 | 50.0 | -9.4 |
| 7.768 | 19.0 | 20.7 | 39.7 | 50.0 | -10.3 |
| 7.906 | 18.8 | 20.7 | 39.5 | 50.0 | -10.5 |
| 7.097 | 18.5 | 20.6 | 39.1 | 50.0 | -10.9 |
| 7.130 | 18.4 | 20.6 | 39.0 | 50.0 | -11.0 |
| 7.966 | 17.8 | 20.7 | 38.5 | 50.0 | -11.5 |
| 3.560 | 13.5 | 20.4 | 33.9 | 46.0 | -12.1 |
| 7.030 | 17.2 | 20.6 | 37.8 | 50.0 | -12.2 |
| 0.378 | 15.5 | 20.2 | 35.7 | 48.3 | -12.6 |
| 6.921 | 16.7 | 20.6 | 37.3 | 50.0 | -12.7 |
| 8.179 | 16.1 | 20.7 | 36.8 | 50.0 | -13.2 |
| 4.918 | 12.0 | 20.5 | 32.5 | 46.0 | -13.5 |
| 8.156 | 15.8 | 20.7 | 36.5 | 50.0 | -13.5 |
| 3.482 | 12.1 | 20.3 | 32.4 | 46.0 | -13.6 |
| 8.238 | 15.6 | 20.7 | 36.3 | 50.0 | -13.7 |
| 3.414 | 11.8 | 20.3 | 32.1 | 46.0 | -13.9 |
| 4.985 | 11.4 | 20.5 | 31.9 | 46.0 | -14.1 |
| 0.251 | 17.3 | 20.3 | 37.6 | 51.7 | -14.2 |
| 6.899 | 15.1 | 20.6 | 35.7 | 50.0 | -14.3 |
| 8.317 | 15.0 | 20.7 | 35.7 | 50.0 | -14.3 |
| 3.582 | 11.1 | 20.4 | 31.5 | 46.0 | -14.5 |
| 4.601 | 10.9 | 20.5 | 31.4 | 46.0 | -14.6 |

## CONCLUSION

Pass

Dustin Sparks

Tested By

# AC POWERLINE CONDUCTED EMISSIONS

NORTHWEST EMC
WTD.2015.12.01
PSA-ESCI 2015.07.01, EmiR5 2015.11.06

| | | | |
|---|---|---|---|
| EUT: | Sigma Pumps Gen IV 802.11abgn Module | Work Order: | DGII0152 |
| Serial Number: | UUT #7 (55001769-1 rev. 1P) | Date: | 01/04/2016 |
| Customer: | Digi International Inc | Temperature: | 22.5°C |
| Attendees: | Slava Gehkt | Relative Humidity: | 18.9% |
| Customer Project: | None | Bar. Pressure: | 1004.2 mb |
| Tested By: | Dustin Sparks | Job Site: | MN03 |
| Power: | 110VAC/60Hz | Configuration: | DGII0152-1 |

## TEST SPECIFICATIONS

| Specification: | Method: |
|---|---|
| FCC 15.207:2016 | ANSI C63.10:2013 |

## TEST PARAMETERS

| | | | | | |
|---|---|---|---|---|---|
| Run #: | 13 | Line: | Neutral | Add. Ext. Attenuation (dB): | 0 |

## COMMENTS

None

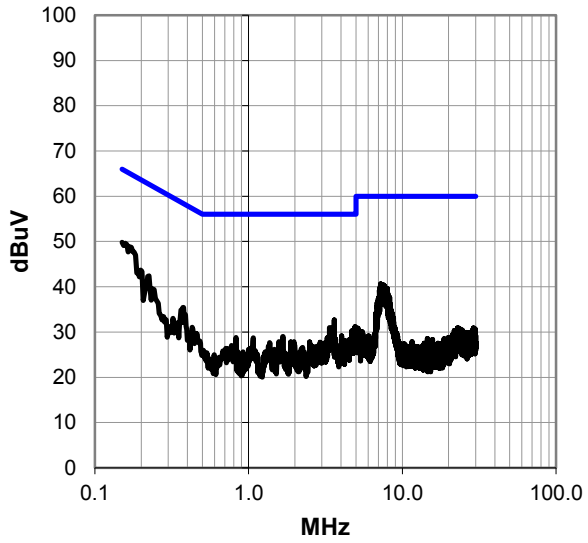
## EUT OPERATING MODES

Transmitting 802.11 channel 48, 6 Mbps

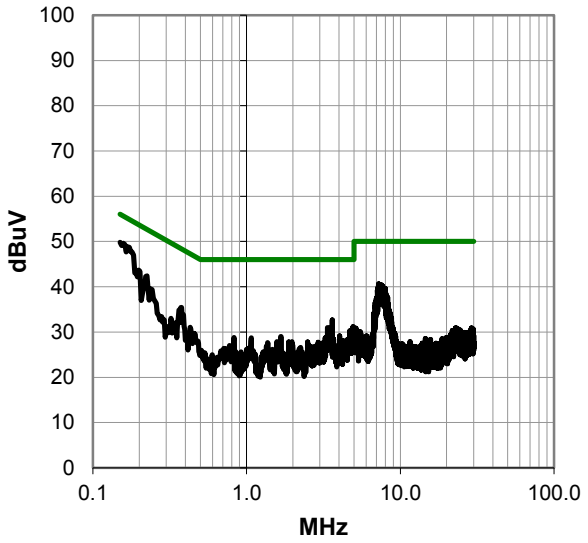
## DEVIATIONS FROM TEST STANDARD

None

**Peak Data - vs - Quasi Peak Limit**




**Peak Data - vs - Average Limit**



# AC POWERLINE CONDUCTED EMISSIONS

NORTHWEST EMC

WTD.2015.12.01
PSA-ESCI 2015.07.01, EmiR5 2015.11.06

## RESULTS - Run #13

Peak Data - vs - Quasi Peak Limit

| Freq (MHz) | Amp. (dBuV) | Factor (dB) | Adjusted (dBuV) | Spec. Limit (dBuV) | Margin (dB) |
|---|---|---|---|---|---|
| 0.150 | 29.4 | 20.4 | 49.8 | 66.0 | -16.2 |
| 7.242 | 20.0 | 20.6 | 40.6 | 60.0 | -19.4 |
| 7.507 | 19.8 | 20.7 | 40.5 | 60.0 | -19.5 |
| 7.321 | 19.7 | 20.6 | 40.3 | 60.0 | -19.7 |
| 7.619 | 19.6 | 20.7 | 40.3 | 60.0 | -19.7 |
| 7.716 | 19.4 | 20.7 | 40.1 | 60.0 | -19.9 |
| 7.541 | 19.4 | 20.7 | 40.1 | 60.0 | -19.9 |
| 7.149 | 19.3 | 20.6 | 39.9 | 60.0 | -20.1 |
| 0.225 | 22.1 | 20.3 | 42.4 | 62.6 | -20.3 |
| 7.955 | 19.0 | 20.7 | 39.7 | 60.0 | -20.3 |
| 7.209 | 18.8 | 20.6 | 39.4 | 60.0 | -20.6 |
| 8.007 | 18.7 | 20.7 | 39.4 | 60.0 | -20.6 |
| 7.112 | 18.6 | 20.6 | 39.2 | 60.0 | -20.8 |
| 8.070 | 17.7 | 20.7 | 38.4 | 60.0 | -21.6 |
| 8.093 | 17.3 | 20.7 | 38.0 | 60.0 | -22.0 |
| 8.261 | 17.0 | 20.7 | 37.7 | 60.0 | -22.3 |
| 7.033 | 17.0 | 20.6 | 37.6 | 60.0 | -22.4 |
| 8.197 | 16.6 | 20.7 | 37.3 | 60.0 | -22.7 |
| 0.374 | 15.2 | 20.2 | 35.4 | 58.4 | -23.0 |
| 6.936 | 16.1 | 20.6 | 36.7 | 60.0 | -23.3 |
| 3.608 | 12.3 | 20.4 | 32.7 | 56.0 | -23.3 |
| 6.869 | 15.9 | 20.6 | 36.5 | 60.0 | -23.5 |
| 8.354 | 15.5 | 20.7 | 36.2 | 60.0 | -23.8 |
| 4.922 | 10.7 | 20.5 | 31.2 | 56.0 | -24.8 |
| 3.366 | 10.6 | 20.3 | 30.9 | 56.0 | -25.1 |
| 3.437 | 10.5 | 20.3 | 30.8 | 56.0 | -25.2 |

Peak Data - vs - Average Limit

| Freq (MHz) | Amp. (dBuV) | Factor (dB) | Adjusted (dBuV) | Spec. Limit (dBuV) | Margin (dB) |
|---|---|---|---|---|---|
| 0.150 | 29.4 | 20.4 | 49.8 | 56.0 | -6.2 |
| 7.242 | 20.0 | 20.6 | 40.6 | 50.0 | -9.4 |
| 7.507 | 19.8 | 20.7 | 40.5 | 50.0 | -9.5 |
| 7.321 | 19.7 | 20.6 | 40.3 | 50.0 | -9.7 |
| 7.619 | 19.6 | 20.7 | 40.3 | 50.0 | -9.7 |
| 7.716 | 19.4 | 20.7 | 40.1 | 50.0 | -9.9 |
| 7.541 | 19.4 | 20.7 | 40.1 | 50.0 | -9.9 |
| 7.149 | 19.3 | 20.6 | 39.9 | 50.0 | -10.1 |
| 0.225 | 22.1 | 20.3 | 42.4 | 52.6 | -10.3 |
| 7.955 | 19.0 | 20.7 | 39.7 | 50.0 | -10.3 |
| 7.209 | 18.8 | 20.6 | 39.4 | 50.0 | -10.6 |
| 8.007 | 18.7 | 20.7 | 39.4 | 50.0 | -10.6 |
| 7.112 | 18.6 | 20.6 | 39.2 | 50.0 | -10.8 |
| 8.070 | 17.7 | 20.7 | 38.4 | 50.0 | -11.6 |
| 8.093 | 17.3 | 20.7 | 38.0 | 50.0 | -12.0 |
| 8.261 | 17.0 | 20.7 | 37.7 | 50.0 | -12.3 |
| 7.033 | 17.0 | 20.6 | 37.6 | 50.0 | -12.4 |
| 8.197 | 16.6 | 20.7 | 37.3 | 50.0 | -12.7 |
| 0.374 | 15.2 | 20.2 | 35.4 | 48.4 | -13.0 |
| 6.936 | 16.1 | 20.6 | 36.7 | 50.0 | -13.3 |
| 3.608 | 12.3 | 20.4 | 32.7 | 46.0 | -13.3 |
| 6.869 | 15.9 | 20.6 | 36.5 | 50.0 | -13.5 |
| 8.354 | 15.5 | 20.7 | 36.2 | 50.0 | -13.8 |
| 4.922 | 10.7 | 20.5 | 31.2 | 46.0 | -14.8 |
| 3.366 | 10.6 | 20.3 | 30.9 | 46.0 | -15.1 |
| 3.437 | 10.5 | 20.3 | 30.8 | 46.0 | -15.2 |

## CONCLUSION

Pass

Tested By

# AC POWERLINE CONDUCTED EMISSIONS

NORTHWEST EMC
WTD.2015.12.01
PSA-ESCI 2015.07.01, EmiR5 2015.11.06

| | | | |
|---|---|---|---|
| EUT: | Sigma Pumps Gen IV 802.11abgn Module | Work Order: | DGII0152 |
| Serial Number: | UUT #7 (55001769-1 rev. 1P) | Date: | 01/04/2016 |
| Customer: | Digi International Inc | Temperature: | 22.5°C |
| Attendees: | Slava Gehkt | Relative Humidity: | 18.9% |
| Customer Project: | None | Bar. Pressure: | 1004.2 mb |
| Tested By: | Dustin Sparks | Job Site: | MN03 |
| Power: | 110VAC/60Hz | Configuration: | DGII0152-1 |

## TEST SPECIFICATIONS

| Specification: | Method: |
|---|---|
| FCC 15.207:2016 | ANSI C63.10:2013 |

## TEST PARAMETERS

| | | | | | |
|---|---|---|---|---|---|
| Run #: | 14 | Line: | Neutral | Add. Ext. Attenuation (dB): | 0 |

## COMMENTS

None

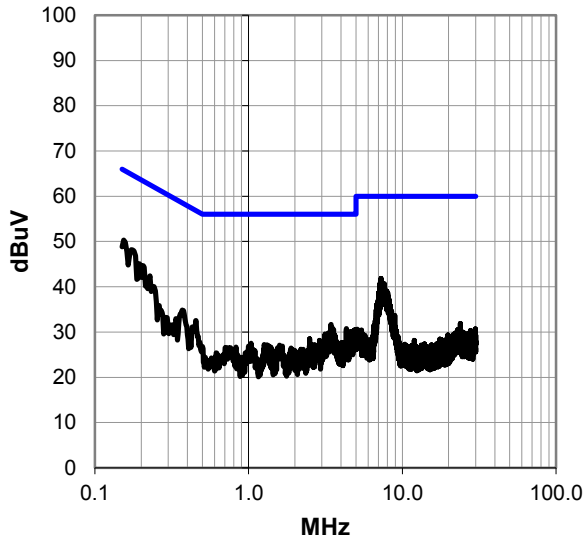
## EUT OPERATING MODES

Transmitting 802.11 channel 120, 6 Mbps

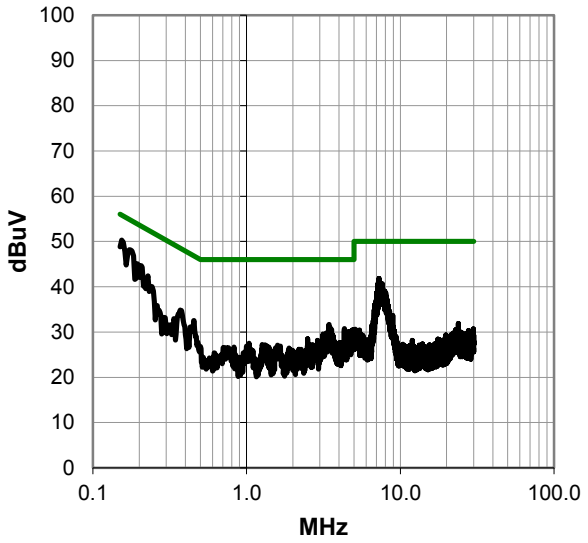
## DEVIATIONS FROM TEST STANDARD

None

**Peak Data - vs - Quasi Peak Limit**




**Peak Data - vs - Average Limit**



# AC POWERLINE CONDUCTED EMISSIONS

NORTHWEST EMC

WTD.2015.12.01
PSA-ESCI 2015.07.01, EmiR5 2015.11.06

## RESULTS - Run #14

Peak Data - vs - Quasi Peak Limit

| Freq (MHz) | Amp. (dBuV) | Factor (dB) | Adjusted (dBuV) | Spec. Limit (dBuV) | Margin (dB) |
|---|---|---|---|---|---|
| 0.154 | 29.9 | 20.4 | 50.3 | 65.8 | -15.5 |
| 0.172 | 27.8 | 20.4 | 48.2 | 64.8 | -16.7 |
| 7.276 | 21.2 | 20.6 | 41.8 | 60.0 | -18.2 |
| 7.309 | 20.7 | 20.6 | 41.3 | 60.0 | -18.7 |
| 0.195 | 24.8 | 20.3 | 45.1 | 63.8 | -18.7 |
| 7.197 | 20.4 | 20.6 | 41.0 | 60.0 | -19.0 |
| 7.350 | 20.2 | 20.6 | 40.8 | 60.0 | -19.2 |
| 7.619 | 20.0 | 20.7 | 40.7 | 60.0 | -19.3 |
| 7.418 | 20.0 | 20.6 | 40.6 | 60.0 | -19.4 |
| 7.134 | 19.8 | 20.6 | 40.4 | 60.0 | -19.6 |
| 7.529 | 19.6 | 20.7 | 40.3 | 60.0 | -19.7 |
| 7.679 | 19.3 | 20.7 | 40.0 | 60.0 | -20.0 |
| 7.862 | 18.4 | 20.7 | 39.1 | 60.0 | -20.9 |
| 7.944 | 18.2 | 20.7 | 38.9 | 60.0 | -21.1 |
| 7.074 | 18.2 | 20.6 | 38.8 | 60.0 | -21.2 |
| 8.037 | 18.0 | 20.7 | 38.7 | 60.0 | -21.3 |
| 8.179 | 16.5 | 20.7 | 37.2 | 60.0 | -22.8 |
| 6.951 | 16.4 | 20.6 | 37.0 | 60.0 | -23.0 |
| 0.370 | 14.6 | 20.2 | 34.8 | 58.5 | -23.7 |
| 6.873 | 15.6 | 20.6 | 36.2 | 60.0 | -23.8 |
| 8.350 | 15.2 | 20.7 | 35.9 | 60.0 | -24.1 |
| 0.452 | 12.3 | 20.2 | 32.5 | 56.8 | -24.3 |
| 3.433 | 11.3 | 20.3 | 31.6 | 56.0 | -24.4 |
| 6.765 | 14.3 | 20.6 | 34.9 | 60.0 | -25.1 |
| 3.511 | 10.5 | 20.4 | 30.9 | 56.0 | -25.1 |
| 4.321 | 10.3 | 20.5 | 30.8 | 56.0 | -25.2 |

Peak Data - vs - Average Limit

| Freq (MHz) | Amp. (dBuV) | Factor (dB) | Adjusted (dBuV) | Spec. Limit (dBuV) | Margin (dB) |
|---|---|---|---|---|---|
| 0.154 | 29.9 | 20.4 | 50.3 | 55.8 | -5.5 |
| 0.172 | 27.8 | 20.4 | 48.2 | 54.8 | -6.7 |
| 7.276 | 21.2 | 20.6 | 41.8 | 50.0 | -8.2 |
| 7.309 | 20.7 | 20.6 | 41.3 | 50.0 | -8.7 |
| 0.195 | 24.8 | 20.3 | 45.1 | 53.8 | -8.7 |
| 7.197 | 20.4 | 20.6 | 41.0 | 50.0 | -9.0 |
| 7.350 | 20.2 | 20.6 | 40.8 | 50.0 | -9.2 |
| 7.619 | 20.0 | 20.7 | 40.7 | 50.0 | -9.3 |
| 7.418 | 20.0 | 20.6 | 40.6 | 50.0 | -9.4 |
| 7.134 | 19.8 | 20.6 | 40.4 | 50.0 | -9.6 |
| 7.529 | 19.6 | 20.7 | 40.3 | 50.0 | -9.7 |
| 7.679 | 19.3 | 20.7 | 40.0 | 50.0 | -10.0 |
| 7.862 | 18.4 | 20.7 | 39.1 | 50.0 | -10.9 |
| 7.944 | 18.2 | 20.7 | 38.9 | 50.0 | -11.1 |
| 7.074 | 18.2 | 20.6 | 38.8 | 50.0 | -11.2 |
| 8.037 | 18.0 | 20.7 | 38.7 | 50.0 | -11.3 |
| 8.179 | 16.5 | 20.7 | 37.2 | 50.0 | -12.8 |
| 6.951 | 16.4 | 20.6 | 37.0 | 50.0 | -13.0 |
| 0.370 | 14.6 | 20.2 | 34.8 | 48.5 | -13.7 |
| 6.873 | 15.6 | 20.6 | 36.2 | 50.0 | -13.8 |
| 8.350 | 15.2 | 20.7 | 35.9 | 50.0 | -14.1 |
| 0.452 | 12.3 | 20.2 | 32.5 | 46.8 | -14.3 |
| 3.433 | 11.3 | 20.3 | 31.6 | 46.0 | -14.4 |
| 6.765 | 14.3 | 20.6 | 34.9 | 50.0 | -15.1 |
| 3.511 | 10.5 | 20.4 | 30.9 | 46.0 | -15.1 |
| 4.321 | 10.3 | 20.5 | 30.8 | 46.0 | -15.2 |

## CONCLUSION

Pass

Tested By

# AC POWERLINE CONDUCTED EMISSIONS

NORTHWEST EMC
WTD.2015.12.01
PSA-ESCI 2015.07.01, EmiR5 2015.11.06

| | | | |
|---|---|---|---|
| EUT: | Sigma Pumps Gen IV 802.11abgn Module | Work Order: | DGII0152 |
| Serial Number: | UUT #7 (55001769-1 rev. 1P) | Date: | 01/04/2016 |
| Customer: | Digi International Inc | Temperature: | 22.5°C |
| Attendees: | Slava Gehkt | Relative Humidity: | 18.9% |
| Customer Project: | None | Bar. Pressure: | 1004.2 mb |
| Tested By: | Dustin Sparks | Job Site: | MN03 |
| Power: | 110VAC/60Hz | Configuration: | DGII0152-1 |

## TEST SPECIFICATIONS

| Specification: | Method: |
|---|---|
| FCC 15.207:2016 | ANSI C63.10:2013 |

## TEST PARAMETERS

| | | | | | |
|---|---|---|---|---|---|
| Run #: | 15 | Line: | High Line | Add. Ext. Attenuation (dB): | 0 |

## COMMENTS

None

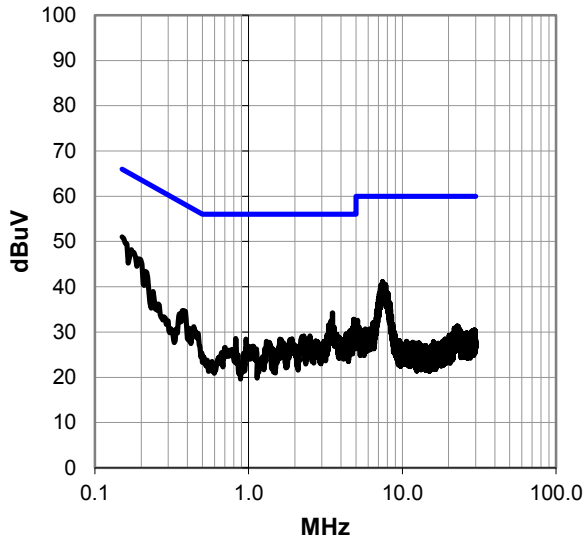
## EUT OPERATING MODES

Transmitting 802.11 channel 120, 6 Mbps

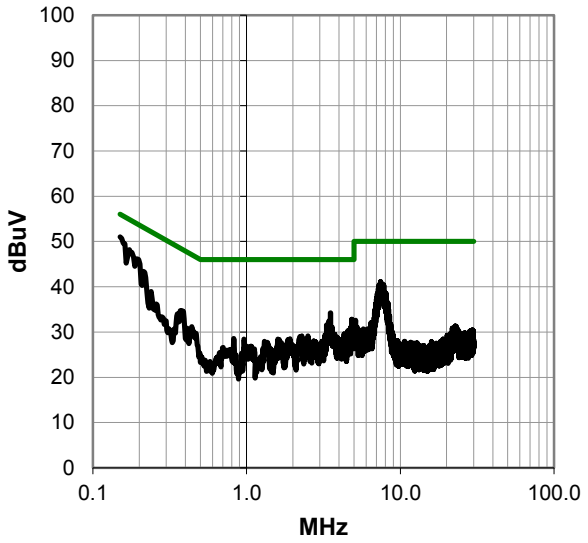
## DEVIATIONS FROM TEST STANDARD

None

**Peak Data - vs - Quasi Peak Limit**




**Peak Data - vs - Average Limit**



# AC POWERLINE CONDUCTED EMISSIONS

NORTHWEST EMC

WTD.2015.12.01
PSA-ESCI 2015.07.01, EmiR5 2015.11.06

## RESULTS - Run #15

Peak Data - vs - Quasi Peak Limit

| Freq (MHz) | Amp. (dBuV) | Factor (dB) | Adjusted (dBuV) | Spec. Limit (dBuV) | Margin (dB) |
|---|---|---|---|---|---|
| 0.150 | 30.6 | 20.4 | 51.0 | 66.0 | -15.0 |
| 7.444 | 20.5 | 20.6 | 41.1 | 60.0 | -18.9 |
| 7.470 | 20.0 | 20.6 | 40.6 | 60.0 | -19.4 |
| 7.369 | 20.0 | 20.6 | 40.6 | 60.0 | -19.4 |
| 7.750 | 19.9 | 20.7 | 40.6 | 60.0 | -19.4 |
| 7.600 | 19.7 | 20.7 | 40.4 | 60.0 | -19.6 |
| 0.213 | 23.1 | 20.3 | 43.4 | 63.1 | -19.7 |
| 7.794 | 19.6 | 20.7 | 40.3 | 60.0 | -19.7 |
| 7.197 | 19.0 | 20.6 | 39.6 | 60.0 | -20.4 |
| 8.070 | 17.9 | 20.7 | 38.6 | 60.0 | -21.4 |
| 7.104 | 17.9 | 20.6 | 38.5 | 60.0 | -21.5 |
| 3.519 | 13.9 | 20.4 | 34.3 | 56.0 | -21.7 |
| 7.026 | 17.1 | 20.6 | 37.7 | 60.0 | -22.3 |
| 0.240 | 18.7 | 20.3 | 39.0 | 62.1 | -23.1 |
| 4.836 | 12.3 | 20.5 | 32.8 | 56.0 | -23.2 |
| 8.186 | 16.0 | 20.7 | 36.7 | 60.0 | -23.3 |
| 3.500 | 12.2 | 20.4 | 32.6 | 56.0 | -23.5 |
| 3.441 | 12.1 | 20.3 | 32.4 | 56.0 | -23.6 |
| 8.302 | 15.7 | 20.7 | 36.4 | 60.0 | -23.6 |
| 6.933 | 15.7 | 20.6 | 36.3 | 60.0 | -23.7 |
| 0.370 | 14.5 | 20.2 | 34.7 | 58.5 | -23.8 |
| 4.933 | 11.7 | 20.5 | 32.2 | 56.0 | -23.8 |
| 3.321 | 11.3 | 20.3 | 31.6 | 56.0 | -24.4 |
| 3.403 | 11.0 | 20.3 | 31.3 | 56.0 | -24.7 |
| 6.880 | 14.7 | 20.6 | 35.3 | 60.0 | -24.7 |
| 8.320 | 14.6 | 20.7 | 35.3 | 60.0 | -24.7 |

Peak Data - vs - Average Limit

| Freq (MHz) | Amp. (dBuV) | Factor (dB) | Adjusted (dBuV) | Spec. Limit (dBuV) | Margin (dB) |
|---|---|---|---|---|---|
| 0.150 | 30.6 | 20.4 | 51.0 | 56.0 | -5.0 |
| 7.444 | 20.5 | 20.6 | 41.1 | 50.0 | -8.9 |
| 7.470 | 20.0 | 20.6 | 40.6 | 50.0 | -9.4 |
| 7.369 | 20.0 | 20.6 | 40.6 | 50.0 | -9.4 |
| 7.750 | 19.9 | 20.7 | 40.6 | 50.0 | -9.4 |
| 7.600 | 19.7 | 20.7 | 40.4 | 50.0 | -9.6 |
| 0.213 | 23.1 | 20.3 | 43.4 | 53.1 | -9.7 |
| 7.794 | 19.6 | 20.7 | 40.3 | 50.0 | -9.7 |
| 7.197 | 19.0 | 20.6 | 39.6 | 50.0 | -10.4 |
| 8.070 | 17.9 | 20.7 | 38.6 | 50.0 | -11.4 |
| 7.104 | 17.9 | 20.6 | 38.5 | 50.0 | -11.5 |
| 3.519 | 13.9 | 20.4 | 34.3 | 46.0 | -11.7 |
| 7.026 | 17.1 | 20.6 | 37.7 | 50.0 | -12.3 |
| 0.240 | 18.7 | 20.3 | 39.0 | 52.1 | -13.1 |
| 4.836 | 12.3 | 20.5 | 32.8 | 46.0 | -13.2 |
| 8.186 | 16.0 | 20.7 | 36.7 | 50.0 | -13.3 |
| 3.500 | 12.2 | 20.4 | 32.6 | 46.0 | -13.5 |
| 3.441 | 12.1 | 20.3 | 32.4 | 46.0 | -13.6 |
| 8.302 | 15.7 | 20.7 | 36.4 | 50.0 | -13.6 |
| 6.933 | 15.7 | 20.6 | 36.3 | 50.0 | -13.7 |
| 0.370 | 14.5 | 20.2 | 34.7 | 48.5 | -13.8 |
| 4.933 | 11.7 | 20.5 | 32.2 | 46.0 | -13.8 |
| 3.321 | 11.3 | 20.3 | 31.6 | 46.0 | -14.4 |
| 3.403 | 11.0 | 20.3 | 31.3 | 46.0 | -14.7 |
| 6.880 | 14.7 | 20.6 | 35.3 | 50.0 | -14.7 |
| 8.320 | 14.6 | 20.7 | 35.3 | 50.0 | -14.7 |

## CONCLUSION

Pass

Dustin Sparks

Tested By

# AC POWERLINE CONDUCTED EMISSIONS

NORTHWEST EMC
WTD.2015.12.01
PSA-ESCI 2015.07.01, EmiR5 2015.11.06

| | | | |
|---|---|---|---|
| EUT: | Sigma Pumps Gen IV 802.11abgn Module | Work Order: | DGII0152 |
| Serial Number: | UUT #7 (55001769-1 rev. 1P) | Date: | 01/04/2016 |
| Customer: | Digi International Inc | Temperature: | 22.5°C |
| Attendees: | Slava Gehkt | Relative Humidity: | 18.9% |
| Customer Project: | None | Bar. Pressure: | 1004.2 mb |
| Tested By: | Dustin Sparks | Job Site: | MN03 |
| Power: | 110VAC/60Hz | Configuration: | DGII0152-1 |

## TEST SPECIFICATIONS

| Specification: | Method: |
|---|---|
| FCC 15.207:2016 | ANSI C63.10:2013 |

## TEST PARAMETERS

| | | | | | |
|---|---|---|---|---|---|
| Run #: | 16 | Line: | High Line | Add. Ext. Attenuation (dB): | 0 |

## COMMENTS

None

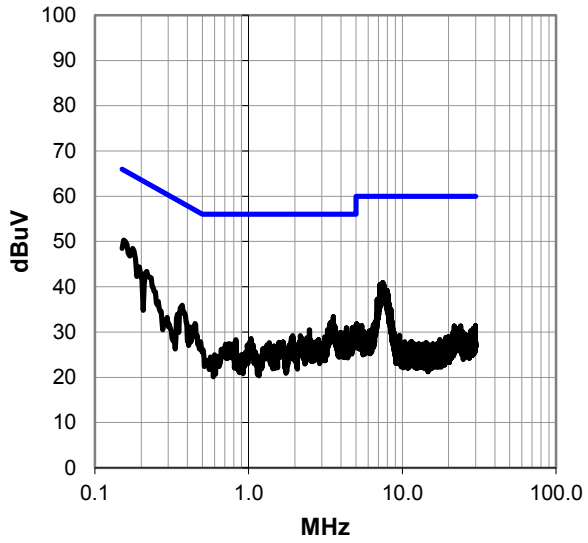
## EUT OPERATING MODES

Transmitting 802.11 channel 157, 6 Mbps

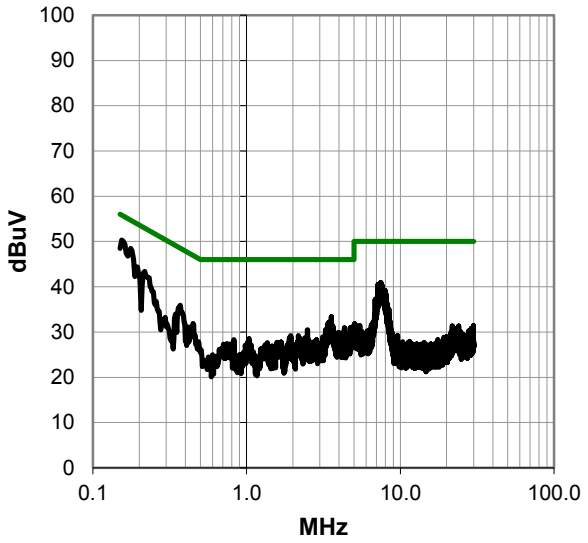
## DEVIATIONS FROM TEST STANDARD

None

**Peak Data - vs - Quasi Peak Limit**




**Peak Data - vs - Average Limit**



# AC POWERLINE CONDUCTED EMISSIONS

NORTHWEST EMC

WTD.2015.12.01
PSA-ESCI 2015.07.01, EmiR5 2015.11.06

## RESULTS - Run #16

Peak Data - vs - Quasi Peak Limit

| Freq (MHz) | Amp. (dBuV) | Factor (dB) | Adjusted (dBuV) | Spec. Limit (dBuV) | Margin (dB) |
|---|---|---|---|---|---|
| 0.154 | 29.9 | 20.4 | 50.3 | 65.8 | -15.5 |
| 7.470 | 20.3 | 20.6 | 40.9 | 60.0 | -19.1 |
| 7.459 | 20.2 | 20.6 | 40.8 | 60.0 | -19.2 |
| 7.164 | 19.9 | 20.6 | 40.5 | 60.0 | -19.5 |
| 0.217 | 23.1 | 20.3 | 43.4 | 62.9 | -19.5 |
| 7.612 | 19.6 | 20.7 | 40.3 | 60.0 | -19.7 |
| 7.388 | 19.5 | 20.6 | 40.1 | 60.0 | -19.9 |
| 7.869 | 18.6 | 20.7 | 39.3 | 60.0 | -20.7 |
| 7.959 | 18.5 | 20.7 | 39.2 | 60.0 | -20.8 |
| 8.044 | 17.8 | 20.7 | 38.5 | 60.0 | -21.5 |
| 0.370 | 15.7 | 20.2 | 35.9 | 58.5 | -22.6 |
| 3.560 | 13.0 | 20.4 | 33.4 | 56.0 | -22.6 |
| 6.951 | 16.7 | 20.6 | 37.3 | 60.0 | -22.7 |
| 6.865 | 16.6 | 20.6 | 37.2 | 60.0 | -22.8 |
| 8.130 | 16.1 | 20.7 | 36.8 | 60.0 | -23.2 |
| 8.190 | 15.7 | 20.7 | 36.4 | 60.0 | -23.6 |
| 3.497 | 12.0 | 20.3 | 32.3 | 56.0 | -23.7 |
| 3.407 | 11.7 | 20.3 | 32.0 | 56.0 | -24.0 |
| 3.523 | 11.6 | 20.4 | 32.0 | 56.0 | -24.0 |
| 3.385 | 11.6 | 20.3 | 31.9 | 56.0 | -24.1 |
| 8.238 | 15.1 | 20.7 | 35.8 | 60.0 | -24.2 |
| 3.649 | 10.9 | 20.4 | 31.3 | 56.0 | -24.7 |
| 3.631 | 10.9 | 20.4 | 31.3 | 56.0 | -24.7 |
| 4.873 | 10.7 | 20.5 | 31.2 | 56.0 | -24.8 |
| 0.448 | 11.7 | 20.2 | 31.9 | 56.9 | -25.0 |
| 8.417 | 14.3 | 20.7 | 35.0 | 60.0 | -25.0 |

Peak Data - vs - Average Limit

| Freq (MHz) | Amp. (dBuV) | Factor (dB) | Adjusted (dBuV) | Spec. Limit (dBuV) | Margin (dB) |
|---|---|---|---|---|---|
| 0.154 | 29.9 | 20.4 | 50.3 | 55.8 | -5.5 |
| 7.470 | 20.3 | 20.6 | 40.9 | 50.0 | -9.1 |
| 7.459 | 20.2 | 20.6 | 40.8 | 50.0 | -9.2 |
| 7.164 | 19.9 | 20.6 | 40.5 | 50.0 | -9.5 |
| 0.217 | 23.1 | 20.3 | 43.4 | 52.9 | -9.5 |
| 7.612 | 19.6 | 20.7 | 40.3 | 50.0 | -9.7 |
| 7.388 | 19.5 | 20.6 | 40.1 | 50.0 | -9.9 |
| 7.869 | 18.6 | 20.7 | 39.3 | 50.0 | -10.7 |
| 7.959 | 18.5 | 20.7 | 39.2 | 50.0 | -10.8 |
| 8.044 | 17.8 | 20.7 | 38.5 | 50.0 | -11.5 |
| 0.370 | 15.7 | 20.2 | 35.9 | 48.5 | -12.6 |
| 3.560 | 13.0 | 20.4 | 33.4 | 46.0 | -12.6 |
| 6.951 | 16.7 | 20.6 | 37.3 | 50.0 | -12.7 |
| 6.865 | 16.6 | 20.6 | 37.2 | 50.0 | -12.8 |
| 8.130 | 16.1 | 20.7 | 36.8 | 50.0 | -13.2 |
| 8.190 | 15.7 | 20.7 | 36.4 | 50.0 | -13.6 |
| 3.497 | 12.0 | 20.3 | 32.3 | 46.0 | -13.7 |
| 3.407 | 11.7 | 20.3 | 32.0 | 46.0 | -14.0 |
| 3.523 | 11.6 | 20.4 | 32.0 | 46.0 | -14.0 |
| 3.385 | 11.6 | 20.3 | 31.9 | 46.0 | -14.1 |
| 8.238 | 15.1 | 20.7 | 35.8 | 50.0 | -14.2 |
| 3.649 | 10.9 | 20.4 | 31.3 | 46.0 | -14.7 |
| 3.631 | 10.9 | 20.4 | 31.3 | 46.0 | -14.7 |
| 4.873 | 10.7 | 20.5 | 31.2 | 46.0 | -14.8 |
| 0.448 | 11.7 | 20.2 | 31.9 | 46.9 | -15.0 |
| 8.417 | 14.3 | 20.7 | 35.0 | 50.0 | -15.0 |

## CONCLUSION

Pass

Tested By

# AC POWERLINE CONDUCTED EMISSIONS

NORTHWEST EMC
WTD.2015.12.01
PSA-ESCI 2015.07.01, EmiR5 2015.11.06

| | | | |
|---|---|---|---|
| EUT: | Sigma Pumps Gen IV 802.11abgn Module | Work Order: | DGII0152 |
| Serial Number: | UUT #7 (55001769-1 rev. 1P) | Date: | 01/04/2016 |
| Customer: | Digi International Inc | Temperature: | 22.5°C |
| Attendees: | Slava Gehkt | Relative Humidity: | 18.9% |
| Customer Project: | None | Bar. Pressure: | 1004.2 mb |
| Tested By: | Dustin Sparks | Job Site: | MN03 |
| Power: | 110VAC/60Hz | Configuration: | DGII0152-1 |

## TEST SPECIFICATIONS

| Specification: | Method: |
|---|---|
| FCC 15.207:2016 | ANSI C63.10:2013 |

## TEST PARAMETERS

| | | | | | |
|---|---|---|---|---|---|
| Run #: | 17 | Line: | Neutral | Add. Ext. Attenuation (dB): | 0 |

## COMMENTS

None

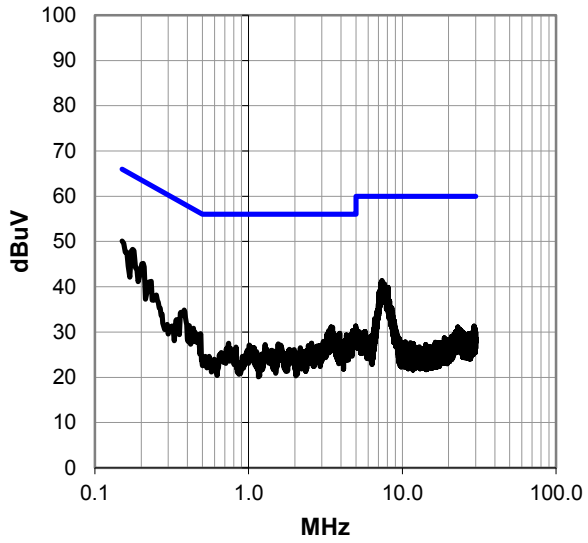
## EUT OPERATING MODES

Transmitting 802.11 channel 157, 6 Mbps

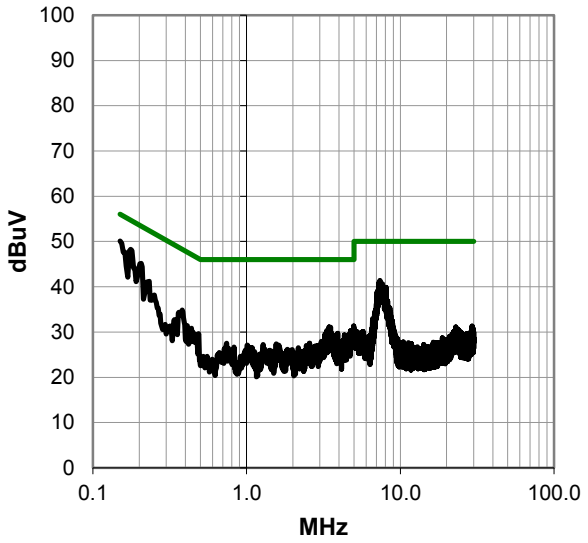
## DEVIATIONS FROM TEST STANDARD

None

**Peak Data - vs - Quasi Peak Limit**




**Peak Data - vs - Average Limit**



# AC POWERLINE CONDUCTED EMISSIONS

NORTHWEST EMC

WTD.2015.12.01
PSA-ESCI 2015.07.01, EmiR5 2015.11.06

## RESULTS - Run #17

Peak Data - vs - Quasi Peak Limit

| Freq (MHz) | Amp. (dBuV) | Factor (dB) | Adjusted (dBuV) | Spec. Limit (dBuV) | Margin (dB) |
|---|---|---|---|---|---|
| 0.150 | 29.7 | 20.4 | 50.1 | 66.0 | -15.9 |
| 0.176 | 27.9 | 20.4 | 48.3 | 64.7 | -16.4 |
| 0.206 | 24.9 | 20.3 | 45.2 | 63.4 | -18.2 |
| 7.362 | 20.7 | 20.6 | 41.3 | 60.0 | -18.7 |
| 7.280 | 20.3 | 20.6 | 40.9 | 60.0 | -19.1 |
| 7.645 | 20.0 | 20.7 | 40.7 | 60.0 | -19.3 |
| 7.444 | 19.7 | 20.6 | 40.3 | 60.0 | -19.7 |
| 8.074 | 19.2 | 20.7 | 39.9 | 60.0 | -20.1 |
| 7.160 | 18.6 | 20.6 | 39.2 | 60.0 | -20.8 |
| 8.014 | 18.3 | 20.7 | 39.0 | 60.0 | -21.0 |
| 0.232 | 20.9 | 20.3 | 41.2 | 62.4 | -21.2 |
| 7.063 | 18.2 | 20.6 | 38.8 | 60.0 | -21.2 |
| 7.970 | 18.1 | 20.7 | 38.8 | 60.0 | -21.2 |
| 7.910 | 17.9 | 20.7 | 38.6 | 60.0 | -21.4 |
| 8.130 | 17.1 | 20.7 | 37.8 | 60.0 | -22.2 |
| 8.268 | 16.2 | 20.7 | 36.9 | 60.0 | -23.1 |
| 0.381 | 14.6 | 20.2 | 34.8 | 58.3 | -23.4 |
| 6.977 | 15.7 | 20.6 | 36.3 | 60.0 | -23.7 |
| 8.395 | 14.9 | 20.7 | 35.6 | 60.0 | -24.4 |
| 8.574 | 14.7 | 20.7 | 35.4 | 60.0 | -24.6 |
| 8.458 | 14.7 | 20.7 | 35.4 | 60.0 | -24.6 |
| 4.978 | 10.8 | 20.5 | 31.3 | 56.0 | -24.7 |
| 8.477 | 14.5 | 20.7 | 35.2 | 60.0 | -24.8 |
| 3.444 | 10.8 | 20.3 | 31.1 | 56.0 | -24.9 |
| 3.519 | 10.7 | 20.4 | 31.1 | 56.0 | -24.9 |
| 4.989 | 10.3 | 20.5 | 30.8 | 56.0 | -25.2 |

Peak Data - vs - Average Limit

| Freq (MHz) | Amp. (dBuV) | Factor (dB) | Adjusted (dBuV) | Spec. Limit (dBuV) | Margin (dB) |
|---|---|---|---|---|---|
| 0.150 | 29.7 | 20.4 | 50.1 | 56.0 | -5.9 |
| 0.176 | 27.9 | 20.4 | 48.3 | 54.7 | -6.4 |
| 0.206 | 24.9 | 20.3 | 45.2 | 53.4 | -8.2 |
| 7.362 | 20.7 | 20.6 | 41.3 | 50.0 | -8.7 |
| 7.280 | 20.3 | 20.6 | 40.9 | 50.0 | -9.1 |
| 7.645 | 20.0 | 20.7 | 40.7 | 50.0 | -9.3 |
| 7.444 | 19.7 | 20.6 | 40.3 | 50.0 | -9.7 |
| 8.074 | 19.2 | 20.7 | 39.9 | 50.0 | -10.1 |
| 7.160 | 18.6 | 20.6 | 39.2 | 50.0 | -10.8 |
| 8.014 | 18.3 | 20.7 | 39.0 | 50.0 | -11.0 |
| 0.232 | 20.9 | 20.3 | 41.2 | 52.4 | -11.2 |
| 7.063 | 18.2 | 20.6 | 38.8 | 50.0 | -11.2 |
| 7.970 | 18.1 | 20.7 | 38.8 | 50.0 | -11.2 |
| 7.910 | 17.9 | 20.7 | 38.6 | 50.0 | -11.4 |
| 8.130 | 17.1 | 20.7 | 37.8 | 50.0 | -12.2 |
| 8.268 | 16.2 | 20.7 | 36.9 | 50.0 | -13.1 |
| 0.381 | 14.6 | 20.2 | 34.8 | 48.3 | -13.4 |
| 6.977 | 15.7 | 20.6 | 36.3 | 50.0 | -13.7 |
| 8.395 | 14.9 | 20.7 | 35.6 | 50.0 | -14.4 |
| 8.574 | 14.7 | 20.7 | 35.4 | 50.0 | -14.6 |
| 8.458 | 14.7 | 20.7 | 35.4 | 50.0 | -14.6 |
| 4.978 | 10.8 | 20.5 | 31.3 | 46.0 | -14.7 |
| 8.477 | 14.5 | 20.7 | 35.2 | 50.0 | -14.8 |
| 3.444 | 10.8 | 20.3 | 31.1 | 46.0 | -14.9 |
| 3.519 | 10.7 | 20.4 | 31.1 | 46.0 | -14.9 |
| 4.989 | 10.3 | 20.5 | 30.8 | 46.0 | -15.2 |

## 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

Transmitting 802.11 - channels 36 (5180 MHz), 48 (5240 MHz), 52 (5260 MHz), 64 (5320 MHz), 100 (5500 MHz), 120 (5600 MHz), 140 (5700 MHz), 149 (5745 MHz), 157 (5785 MHz), and 165 (5825 MHz); 6 Mbps, 36 Mbps, 54 Mbps, MCS0 20MHz, MCS7 20MHz, MCS0 40MHz, and MCS7 40MHz data rates.

## POWER SETTINGS INVESTIGATED

110VAC/60Hz

## CONFIGURATIONS INVESTIGATED

DGII0152 - 1

## FREQUENCY RANGE INVESTIGATED

| | | | |
|---|---|---|---|
| Start Frequency | 30 MHz | Stop Frequency | 40000 MHz |

## SAMPLE CALCULATIONS

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

## TEST EQUIPMENT

| Description | Manufacturer | Model | ID | Last Cal. | Interval |
|---|---|---|---|---|---|
| Filter - Band Pass/Notch | Micro-Tronics | BRC50705 | LFI | 10/21/2015 | 12 mo |
| Filter - Band Pass/Notch | Micro-Tronics | BRC50704 | LFH | 10/21/2015 | 12 mo |
| Filter - Band Pass/Notch | Micro-Tronics | BRC50703 | LFG | 10/21/2015 | 12 mo |
| Filter - Low Pass | Micro-Tronics | LPM50004 | LFK | 10/21/2015 | 12 mo |
| Amplifier - Pre-Amplifier | Miteq | JSW45-26004000-40-5P | AVN | 9/18/2015 | 12 mo |
| Cable | Northwest EMC | TTBJ141-KMKM-72 | MNQ | 9/18/2015 | 12 mo |
| Antenna - Standard Gain | ETS Lindgren | 3160-10 | AIC | NCR | 0 mo |
| Amplifier - Pre-Amplifier | Miteq | JSD4-18002600-26-8P | APU | 9/18/2015 | 12 mo |
| Cable | Northwest EMC | 18-26GHz Standard Gain Horn Cable | MNP | 9/18/2015 | 12 mo |
| Antenna - Standard Gain | ETS Lindgren | 3160-09 | AHG | NCR | 0 mo |
| Amplifier - Pre-Amplifier | Miteq | AM-1616-1000 | AVO | 12/10/2015 | 12 mo |
| Cable | ESM Cable Corp. | Bilog Cables | MNH | 12/7/2015 | 12 mo |
| Antenna - Biconilog | ETS Lindgren | 3142D | AXO | 12/11/2015 | 24 mo |
| Amplifier - Pre-Amplifier | Miteq | AMF-6F-12001800-30-10P | AVW | 3/2/2015 | 12 mo |
| Antenna - Standard Gain | ETS Lindgren | 3160-08 | AIQ | NCR | 0 mo |
| Cable | ESM Cable Corp. | Standard Gain Horn Cables | MNJ | 12/7/2015 | 12 mo |
| Amplifier - Pre-Amplifier | Miteq | AMF-6F-08001200-30-10P | AVV | 3/2/2015 | 12 mo |
| Antenna - Standard Gain | ETS Lindgren | 3160-07 | AXP | NCR | 0 mo |
| Amplifier - Pre-Amplifier | Miteq | AMF-3D-00100800-32-13P | AVT | 3/10/2015 | 12 mo |
| Cable | ESM Cable Corp. | Double Ridge Guide Horn Cables | MNI | 12/7/2015 | 12 mo |
| Antenna - Double Ridge | ETS Lindgren | 3115 | AJA | 6/3/2014 | 24 mo |
| Analyzer - Spectrum Analyzer | Agilent | N9010A | AFI | 1/27/2015 | 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.

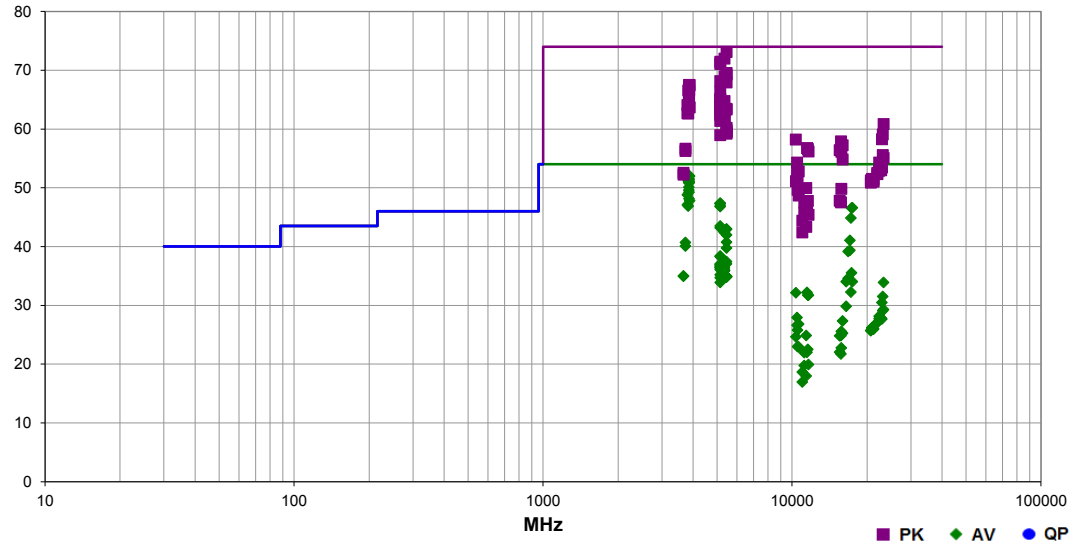
While scanning, emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and EUT antenna in three orthogonal axis, and adjusting the measurement antenna height and polarization (per ANSI C63.10:2009). A preamp and high pass filter (and notch filter)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

# SPURIOUS RADIATED EMISSIONS

| | | | | | |
|---|---|---|---|---|---|
| **Work Order:** | DGII0152 | **Date:** | 01/05/16 | | |
| **Project:** | None | **Temperature:** | 22.4 °C | | |
| **Job Site:** | MN05 | **Humidity:** | 19.7% RH | | |
| **Serial Number:** | UUT #7 (55001769-1 rev. 1P) | **Barometric Pres.:** | 996.3 mbar | **Tested by:** | Dustin Sparks |
| **EUT:** | Sigma Pumps Gen IV 802.11abgn Module | | | | |
| **Configuration:** | 1 | | | | |
| **Customer:** | Digi International Inc | | | | |
| **Attendees:** | Slava Gehkt | | | | |
| **EUT Power:** | 110VAC/60Hz | | | | |
| **Operating Mode:** | Transmitting 802.11 - channels 36 (5180 MHz), 48 (5240 MHz), 52 (5260 MHz), 64 (5320 MHz), 100 (5500 MHz), 120 (5600 MHz), 140 (5700 MHz), 149 (5745 MHz), 157 (5785 MHz), and 165 (5825 MHz); 6 Mbps, 36 Mbps, 54 Mbps, MCS0 20MHz, MCS7 20MHz, MCS0 40MHz, and MCS7 40MHz data rates. | | | | |
| **Deviations:** | None | | | | |
| **Comments:** | DCCF = -13.98dB. DCCF = 20 log10 (DC), duty cycle = 20% | | | | |

| **Test Specifications** | **Test Method** |
|---|---|
| FCC 15.209:2016 | ANSI C63.10:2013 |

| **Run #** | 109 | **Test Distance (m)** | 3 | **Antenna Height(s)** | 1 to 4(m) | **Results** | Pass |
|---|---|---|---|---|---|---|---|




| Freq (MHz) | Amplitude (dBuV) | Factor (dB) | Antenna Height (meters) | Azimuth (degrees) | Duty Cycle Correction Factor (dB) | External Attenuation (dB) | Polarity/ Transducer Type | Detector | Distance Adjustment (dB) | Adjusted (dBuV/m) | Spec. Limit (dBuV/m) | Compared to Spec. (dB) | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5459.683 | 46.7 | 36.0 | 1.7 | 306.0 | 0.0 | 0.0 | Vert | PK | -9.5 | 73.1 | 74.0 | -0.9 | Ch 100, MCS0 40MHz, EUT on side, Pwr 20 |
| 3856.625 | 62.9 | 3.1 | 1.0 | 31.0 | -14.0 | 0.0 | Horz | AV | 0.0 | 52.0 | 54.0 | -2.0 | Ch 157, 6 Mbps, EUT on side, pwr 14 |
| 3883.277 | 62.7 | 3.3 | 1.0 | 14.0 | -14.0 | 0.0 | Horz | AV | 0.0 | 52.0 | 54.0 | -2.0 | Ch 165, 6 Mbps, EUT on side, pwr 14 |
| 5354.983 | 46.0 | 35.5 | 1.6 | 293.0 | 0.0 | 0.0 | Vert | PK | -9.5 | 72.0 | 74.0 | -2.0 | Ch 64, MCS7 40MHz, EUT on side, Pwr 16 |
| 3856.608 | 62.4 | 3.1 | 1.0 | 347.9 | -14.0 | 0.0 | Horz | AV | 0.0 | 51.5 | 54.0 | -2.5 | Ch 157, 6 Mbps, EUT horz, pwr 14 |
| 5149.883 | 46.0 | 35.0 | 1.7 | 296.9 | 0.0 | 0.0 | Vert | PK | -9.5 | 71.5 | 74.0 | -2.5 | Ch 36, MCS0 40MHz, EUT on side, pwr 16 |
| 3856.608 | 62.2 | 3.1 | 1.1 | 6.0 | -14.0 | 0.0 | Vert | AV | 0.0 | 51.3 | 54.0 | -2.7 | Ch 157, 6 Mbps, EUT vert, pwr 14 |
| 3829.947 | 62.2 | 3.0 | 1.4 | 19.1 | -14.0 | 0.0 | Horz | AV | 0.0 | 51.2 | 54.0 | -2.8 | Ch 149, 6 Mbps, EUT on side, pwr 14 |
| 3856.642 | 62.0 | 3.1 | 1.0 | 155.1 | -14.0 | 0.0 | Vert | AV | 0.0 | 51.1 | 54.0 | -2.9 | Ch 157, 6 Mbps, EUT on side, pwr 14 |
| 5148.325 | 45.6 | 35.0 | 1.7 | 296.9 | 0.0 | 0.0 | Vert | PK | -9.5 | 71.1 | 74.0 | -2.9 | Ch 36, MCS7 40MHz, EUT on side, pwr 16 |
| 3856.663 | 61.8 | 3.1 | 1.4 | 210.1 | -14.0 | 0.0 | Horz | AV | 0.0 | 50.9 | 54.0 | -3.1 | Ch 157, MCS7 20MHz, EUT on side, pwr 14 |
| 3856.647 | 61.8 | 3.1 | 1.4 | 210.1 | -14.0 | 0.0 | Horz | AV | 0.0 | 50.9 | 54.0 | -3.1 | Ch 157, MCS0 20MHz, EUT on side, pwr 14 |
| 3856.613 | 61.7 | 3.1 | 1.4 | 210.1 | -14.0 | 0.0 | Horz | AV | 0.0 | 50.8 | 54.0 | -3.2 | Ch 157, 36 Mbps, EUT on side, pwr 14 |
| 3856.622 | 61.7 | 3.1 | 1.4 | 210.1 | -14.0 | 0.0 | Horz | AV | 0.0 | 50.8 | 54.0 | -3.2 | Ch 157, 54 Mbps, EUT on side, pwr 14 |
| 3849.955 | 61.0 | 3.1 | 1.3 | 207.0 | -14.0 | 0.0 | Horz | AV | 0.0 | 50.1 | 54.0 | -3.9 | Ch 157, MCS0 40MHz, EUT on side, pwr 14 |
| 3849.955 | 60.5 | 3.1 | 1.3 | 207.0 | -14.0 | 0.0 | Horz | AV | 0.0 | 49.6 | 54.0 | -4.4 | Ch 157, MCS7 40MHz, EUT on side, pwr 14 |
| 5459.525 | 43.1 | 36.0 | 1.7 | 306.0 | 0.0 | 0.0 | Vert | PK | -9.5 | 69.5 | 74.0 | -4.5 | Ch 100, MCS0 40MHz, EUT on side, Pwr 18 |
| 3856.625 | 60.1 | 3.1 | 1.0 | 185.1 | -14.0 | 0.0 | Horz | AV | 0.0 | 49.2 | 54.0 | -4.8 | Ch 157, 6 Mbps, EUT vert, pwr 14 |
| 5457.625 | 42.8 | 36.0 | 1.7 | 306.0 | 0.0 | 0.0 | Vert | PK | -9.5 | 69.2 | 74.0 | -4.8 | Ch 100, MCS7 40MHz, EUT on side, Pwr 20 |
| 5351.367 | 43.0 | 35.5 | 1.6 | 293.0 | 0.0 | 0.0 | Vert | PK | -9.5 | 69.0 | 74.0 | -5.0 | Ch 64, MCS7 40MHz, EUT on side, Pwr 14 |
| 3799.962 | 60.0 | 2.8 | 1.0 | 343.0 | -14.0 | 0.0 | Horz | AV | 0.0 | 48.8 | 54.0 | -5.2 | Ch 140, 6 Mbps, EUT on side, pwr 14 |
| 5148.475 | 42.7 | 35.0 | 1.7 | 296.9 | 0.0 | 0.0 | Vert | PK | -9.5 | 68.2 | 74.0 | -5.8 | Ch 36, MCS0 40MHz, EUT on side, pwr 14 |
| 3856.633 | 59.0 | 3.1 | 2.5 | 146.0 | -14.0 | 0.0 | Vert | AV | 0.0 | 48.1 | 54.0 | -5.9 | Ch 157, 6 Mbps, EUT horz, pwr 14 |
| 5458.392 | 41.5 | 36.0 | 1.7 | 306.0 | 0.0 | 0.0 | Vert | PK | -9.5 | 67.9 | 74.0 | -6.1 | Ch 100, MCS7 40MHz, EUT on side, Pwr 16 |
| 3883.293 | 58.5 | 3.3 | 1.0 | 208.0 | -14.0 | 0.0 | Vert | AV | 0.0 | 47.8 | 54.0 | -6.2 | Ch 165, 6 Mbps, EUT on side, pwr 14 |
| 3856.642 | 64.4 | 3.1 | 1.0 | 31.0 | 0.0 | 0.0 | Horz | PK | 0.0 | 67.5 | 74.0 | -6.5 | Ch 157, 6 Mbps, EUT on side, pwr 14 |
| 3883.343 | 64.2 | 3.3 | 1.0 | 14.0 | 0.0 | 0.0 | Horz | PK | 0.0 | 67.5 | 74.0 | -6.5 | Ch 165, 6 Mbps, EUT on side, pwr 14 |
| 5149.992 | 35.9 | 35.0 | 1.7 | 296.9 | -14.0 | 0.0 | Vert | AV | -9.5 | 47.4 | 54.0 | -6.6 | Ch 36, MCS0 40MHz, EUT on side, pwr 18 |
| 5149.983 | 35.8 | 35.0 | 1.7 | 296.9 | -14.0 | 0.0 | Vert | AV | -9.5 | 47.3 | 54.0 | -6.7 | Ch 36, MCS0 40MHz, EUT on side, pwr 30 |
| 5149.892 | 35.8 | 35.0 | 1.7 | 296.9 | -14.0 | 0.0 | Vert | AV | -9.5 | 47.3 | 54.0 | -6.7 | Ch 36, MCS0 40MHz, EUT on side, pwr 20 |
| 3856.683 | 64.1 | 3.1 | 1.0 | 347.9 | 0.0 | 0.0 | Horz | PK | 0.0 | 67.2 | 74.0 | -6.8 | Ch 157, 6 Mbps, EUT horz, pwr 14 |
| 3799.978 | 58.3 | 2.8 | 1.0 | 151.0 | -14.0 | 0.0 | Vert | AV | 0.0 | 47.1 | 54.0 | -6.9 | Ch 140, 6 Mbps, EUT on side, pwr 14 |
| 5149.900 | 35.4 | 35.0 | 1.7 | 296.9 | -14.0 | 0.0 | Vert | AV | -9.5 | 46.9 | 54.0 | -7.1 | Ch 36, MCS7 40MHz, EUT on side, pwr 20 |
| 3829.947 | 57.9 | 3.0 | 1.0 | 209.1 | -14.0 | 0.0 | Vert | AV | 0.0 | 46.9 | 54.0 | -7.1 | Ch 149, 6 Mbps, EUT on side, pwr 14 |
| 3856.650 | 63.7 | 3.1 | 1.1 | 6.0 | 0.0 | 0.0 | Vert | PK | 0.0 | 66.8 | 74.0 | -7.2 | Ch 157, 6 Mbps, EUT vert, pwr 14 |
| 5149.992 | 35.3 | 35.0 | 1.7 | 296.9 | -14.0 | 0.0 | Vert | AV | -9.5 | 46.8 | 54.0 | -7.2 | Ch 36, MCS7 40MHz, EUT on side, pwr 18 |
| 23301.690 | 46.7 | 14.2 | 1.5 | 279.9 | 0.0 | 0.0 | Horz | PK | 0.0 | 60.9 | 68.2 | -7.3 | Ch 165, 6 Mbps, EUT on side, pwr 14 |

| Freq (MHz) | Amplitude (dBuV) | Factor (dB) | Antenna Height (meters) | Azimuth (degrees) | Duty Cycle Correction Factor (dB) | External Attenuation (dB) | Polarity/ Transducer Type | Detector | Distance Adjustment (dB) | Adjusted (dBuV/m) | Spec. Limit (dBuV/m) | Compared to Spec. (dB) | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3856.597 | 63.5 | 3.1 | 1.4 | 210.1 | 0.0 | 0.0 | Horz | PK | 0.0 | 66.6 | 74.0 | -7.4 | Ch 157, 54 Mbps, EUT on side, pwr 14 |
| 3856.538 | 63.5 | 3.1 | 1.4 | 210.1 | 0.0 | 0.0 | Horz | PK | 0.0 | 66.6 | 74.0 | -7.4 | Ch 157, MCS7 20MHz, EUT on side, pwr 14 |
| 3829.988 | 63.6 | 3.0 | 1.4 | 19.1 | 0.0 | 0.0 | Horz | PK | 0.0 | 66.6 | 74.0 | -7.4 | Ch 149, 6 Mbps, EUT on side, pwr 14 |
| 3856.633 | 63.4 | 3.1 | 1.0 | 155.1 | 0.0 | 0.0 | Vert | PK | 0.0 | 66.5 | 74.0 | -7.5 | Ch 157, 6 Mbps, EUT on side, pwr 14 |
| 3856.647 | 63.4 | 3.1 | 1.4 | 210.1 | 0.0 | 0.0 | Horz | PK | 0.0 | 66.5 | 74.0 | -7.5 | Ch 157, 36 Mbps, EUT on side, pwr 14 |
| 5148.442 | 40.9 | 35.0 | 1.7 | 296.9 | 0.0 | 0.0 | Vert | PK | -9.5 | 66.4 | 74.0 | -7.6 | Ch 36, MCS7 40MHz, EUT on side, pwr 14 |
| 3856.655 | 63.2 | 3.1 | 1.4 | 210.1 | 0.0 | 0.0 | Horz | PK | 0.0 | 66.3 | 74.0 | -7.7 | Ch 157, MCS0 20MHz, EUT on side, pwr 14 |
| 3850.022 | 62.9 | 3.1 | 1.3 | 207.0 | 0.0 | 0.0 | Horz | PK | 0.0 | 66.0 | 74.0 | -8.0 | Ch 157, MCS0 40MHz, EUT on side, pwr 14 |
| 3849.963 | 62.9 | 3.1 | 1.3 | 207.0 | 0.0 | 0.0 | Horz | PK | 0.0 | 66.0 | 74.0 | -8.0 | Ch 157, MCS7 40MHz, EUT on side, pwr 14 |
| 5149.858 | 39.7 | 35.0 | 1.7 | 297.0 | 0.0 | 0.0 | Vert | PK | -9.5 | 65.2 | 74.0 | -8.8 | Ch 36, 54 Mbps, EUT on side, pwr 30 |
| 5149.683 | 39.5 | 35.0 | 1.5 | 314.0 | 0.0 | 0.0 | Horz | PK | -9.5 | 65.0 | 74.0 | -9.0 | Ch 36, 6 Mbps, EUT vert, pwr 30 |
| 3856.600 | 61.8 | 3.1 | 1.0 | 185.1 | 0.0 | 0.0 | Horz | PK | 0.0 | 64.9 | 74.0 | -9.1 | Ch 157, 6 Mbps, EUT vert, pwr 14 |
| 23140.980 | 45.0 | 14.1 | 1.5 | 275.0 | 0.0 | 0.0 | Horz | PK | 0.0 | 59.1 | 68.2 | -9.1 | Ch 157, 6 Mbps, EUT on side, pwr 14 |
| 5350.100 | 38.8 | 35.5 | 1.6 | 293.0 | 0.0 | 0.0 | Vert | PK | -9.5 | 64.8 | 74.0 | -9.2 | Ch 64, MCS0 40MHz, EUT on side, Pwr 14 |
| 5149.933 | 38.7 | 35.0 | 1.7 | 297.0 | 0.0 | 0.0 | Vert | PK | -9.5 | 64.2 | 74.0 | -9.8 | Ch 36, 6 Mbps, EUT on side, pwr 30 |
| 3799.945 | 61.3 | 2.8 | 1.0 | 343.0 | 0.0 | 0.0 | Horz | PK | 0.0 | 64.1 | 74.0 | -9.9 | Ch 140, 6 Mbps, EUT on side, pwr 14 |
| 10358.920 | 61.8 | -3.6 | 1.8 | 314.0 | 0.0 | 0.0 | Horz | PK | 0.0 | 58.2 | 68.2 | -10.0 | Ch 36, 6 Mbps, EUT on side, pwr 14 |
| 5149.375 | 38.5 | 35.0 | 1.7 | 297.0 | 0.0 | 0.0 | Vert | PK | -9.5 | 64.0 | 74.0 | -10.0 | Ch 36, 36 Mbps, EUT on side, pwr 30 |
| 3856.642 | 60.6 | 3.1 | 2.5 | 146.0 | 0.0 | 0.0 | Vert | PK | 0.0 | 63.7 | 74.0 | -10.3 | Ch 157, 6 Mbps, EUT horz, pwr 14 |
| 3883.285 | 60.4 | 3.3 | 1.0 | 208.0 | 0.0 | 0.0 | Vert | PK | 0.0 | 63.7 | 74.0 | -10.3 | Ch 165, 6 Mbps, EUT on side, pwr 14 |
| 5147.108 | 38.2 | 35.0 | 1.7 | 297.0 | 0.0 | 0.0 | Vert | PK | -9.5 | 63.7 | 74.0 | -10.3 | Ch 36, MCS0 20MHz, EUT on side, pwr 30 |
| 5149.717 | 32.0 | 35.0 | 1.7 | 296.9 | -14.0 | 0.0 | Vert | AV | -9.5 | 43.5 | 54.0 | -10.5 | Ch 36, MCS0 40MHz, EUT on side, pwr 16 |
| 5352.650 | 37.5 | 35.5 | 1.6 | 293.0 | 0.0 | 0.0 | Vert | PK | -9.5 | 63.5 | 74.0 | -10.5 | Ch 64, 36 Mbps, EUT on side, Pwr 30 |
| 5459.975 | 37.0 | 36.0 | 1.7 | 306.0 | 0.0 | 0.0 | Vert | PK | -9.5 | 63.4 | 74.0 | -10.6 | Ch 100, MCS0 40MHz, EUT on side, Pwr 14 |
| 5458.508 | 36.9 | 36.0 | 1.7 | 306.0 | 0.0 | 0.0 | Vert | PK | -9.5 | 63.3 | 74.0 | -10.7 | Ch 100, MCS0 40MHz, EUT on side, Pwr 14 |
| 5149.592 | 37.8 | 35.0 | 1.7 | 297.0 | 0.0 | 0.0 | Vert | PK | -9.5 | 63.3 | 74.0 | -10.7 | Ch 36, MCS7 20MHz, EUT on side, pwr 30 |
| 5149.975 | 31.7 | 35.0 | 1.7 | 296.9 | -14.0 | 0.0 | Vert | AV | -9.5 | 43.2 | 54.0 | -10.8 | Ch 36, MCS7 40MHz, EUT on side, pwr 16 |
| 5353.283 | 37.1 | 35.5 | 1.6 | 293.0 | 0.0 | 0.0 | Vert | PK | -9.5 | 63.1 | 74.0 | -10.9 | Ch 64, 6 Mbps, EUT on side, Pwr 30 |
| 5459.992 | 30.5 | 36.0 | 1.7 | 306.0 | -14.0 | 0.0 | Vert | AV | -9.5 | 42.9 | 54.0 | -11.1 | Ch 100, MCS0 40MHz, EUT on side, Pwr 18 |
| 5459.875 | 30.5 | 36.0 | 1.7 | 306.0 | -14.0 | 0.0 | Vert | AV | -9.5 | 42.9 | 54.0 | -11.1 | Ch 100, MCS0 40MHz, EUT on side, Pwr 20 |
| 5149.975 | 37.3 | 35.0 | 1.5 | 246.0 | 0.0 | 0.0 | Horz | PK | -9.5 | 62.8 | 74.0 | -11.2 | Ch 36, 6 Mbps, EUT on side, pwr 30 |
| 3799.970 | 59.9 | 2.8 | 1.0 | 151.0 | 0.0 | 0.0 | Vert | PK | 0.0 | 62.7 | 74.0 | -11.3 | Ch 140, 6 Mbps, EUT on side, pwr 14 |
| 3830.055 | 59.7 | 3.0 | 1.0 | 209.1 | 0.0 | 0.0 | Vert | PK | 0.0 | 62.7 | 74.0 | -11.3 | Ch 149, 6 Mbps, EUT on side, pwr 14 |
| 5350.150 | 30.5 | 35.5 | 1.6 | 293.0 | -14.0 | 0.0 | Vert | AV | -9.5 | 42.5 | 54.0 | -11.5 | Ch 64, MCS0 40MHz, EUT on side, Pwr 16 |
| 5350.083 | 30.4 | 35.5 | 1.6 | 293.0 | -14.0 | 0.0 | Vert | AV | -9.5 | 42.4 | 54.0 | -11.6 | Ch 64, MCS7 40MHz, EUT on side, Pwr 16 |
| 5149.425 | 36.9 | 35.0 | 1.5 | 340.0 | 0.0 | 0.0 | Vert | PK | -9.5 | 62.4 | 74.0 | -11.6 | Ch 36, 6 Mbps, EUT vert, pwr 30 |
| 5353.392 | 36.1 | 35.5 | 1.6 | 293.0 | 0.0 | 0.0 | Vert | PK | -9.5 | 62.1 | 74.0 | -11.9 | Ch 64, MCS7 20MHz, EUT on side, Pwr 30 |
| 5351.217 | 36.1 | 35.5 | 1.6 | 293.0 | 0.0 | 0.0 | Vert | PK | -9.5 | 62.1 | 74.0 | -11.9 | Ch 64, MCS0 20MHz, EUT on side, Pwr 30 |
| 5459.975 | 29.5 | 36.0 | 1.7 | 306.0 | -14.0 | 0.0 | Vert | AV | -9.5 | 41.9 | 54.0 | -12.1 | Ch 100, MCS7 40MHz, EUT on side, Pwr 20 |
| 5351.100 | 35.5 | 35.5 | 1.6 | 293.0 | 0.0 | 0.0 | Vert | PK | -9.5 | 61.5 | 74.0 | -12.5 | Ch 64, 54 Mbps, EUT on side, Pwr 30 |
| 5149.842 | 35.9 | 35.0 | 1.5 | 148.1 | 0.0 | 0.0 | Vert | PK | -9.5 | 61.4 | 74.0 | -12.6 | Ch 36, 6 Mbps, EUT horz, pwr 30 |
| 23139.330 | 41.5 | 14.1 | 1.5 | 48.1 | 0.0 | 0.0 | Vert | PK | 0.0 | 55.6 | 68.2 | -12.6 | Ch 157, 6 Mbps, EUT on side, pwr 14 |
| 23301.480 | 40.9 | 14.2 | 1.5 | 318.9 | 0.0 | 0.0 | Vert | PK | 0.0 | 55.1 | 68.2 | -13.1 | Ch 165, 6 Mbps, EUT on side, pwr 14 |
| 5459.958 | 28.3 | 36.0 | 1.7 | 306.0 | -14.0 | 0.0 | Vert | AV | -9.5 | 40.7 | 54.0 | -13.3 | Ch 100, MCS0 40MHz, EUT on side, Pwr 16 |
| 3733.275 | 52.4 | 2.3 | 1.8 | 213.1 | -14.0 | 0.0 | Horz | AV | 0.0 | 40.7 | 54.0 | -13.3 | Ch 120, 6 Mbps, EUT on side, pwr 14 |
| 5456.292 | 33.8 | 36.0 | 1.7 | 214.1 | 0.0 | 0.0 | Vert | PK | -9.5 | 60.2 | 74.0 | -13.8 | Ch 100, 6 Mbps, EUT on side, Pwr 30 |
| 10482.230 | 58.3 | -4.0 | 1.0 | 347.9 | 0.0 | 0.0 | Horz | PK | 0.0 | 54.3 | 68.2 | -13.9 | Ch 48, 6 Mbps, EUT on side, pwr 14 |
| 3733.325 | 51.8 | 2.3 | 1.0 | 147.0 | -14.0 | 0.0 | Vert | AV | 0.0 | 40.1 | 54.0 | -13.9 | Ch 120, 6 Mbps, EUT on side, pwr 14 |
| 5458.033 | 33.4 | 36.0 | 1.7 | 214.1 | 0.0 | 0.0 | Vert | PK | -9.5 | 59.8 | 74.0 | -14.2 | Ch 100, MCS7 20MHz, EUT on side, Pwr 30 |
| 5459.983 | 27.3 | 36.0 | 1.7 | 306.0 | -14.0 | 0.0 | Vert | AV | -9.5 | 39.7 | 54.0 | -14.3 | Ch 100, MCS7 40MHz, EUT on side, Pwr 16 |
| 5459.317 | 33.1 | 36.0 | 1.7 | 214.1 | 0.0 | 0.0 | Vert | PK | -9.5 | 59.5 | 74.0 | -14.5 | Ch 100, 54 Mbps, EUT on side, Pwr 30 |
| 5459.867 | 33.0 | 36.0 | 1.7 | 214.1 | 0.0 | 0.0 | Vert | PK | -9.5 | 59.4 | 74.0 | -14.6 | Ch 100, MCS0 20MHz, EUT on side, Pwr 30 |
| 5456.600 | 32.8 | 36.0 | 1.7 | 214.1 | 0.0 | 0.0 | Vert | PK | -9.5 | 59.2 | 74.0 | -14.8 | Ch 100, 36 Mbps, EUT on side, Pwr 30 |
| 5149.208 | 33.5 | 35.0 | 1.5 | 327.0 | 0.0 | 0.0 | Horz | PK | -9.5 | 59.0 | 74.0 | -15.0 | Ch 36, 6 Mbps, EUT horz, pwr 30 |
| 10482.490 | 56.9 | -4.0 | 1.8 | 322.9 | 0.0 | 0.0 | Vert | PK | 0.0 | 52.9 | 68.2 | -15.3 | Ch 48, 6 Mbps, EUT on side, pwr 14 |
| 5149.800 | 26.9 | 35.0 | 1.7 | 296.9 | -14.0 | 0.0 | Vert | AV | -9.5 | 38.4 | 54.0 | -15.6 | Ch 36, MCS0 40MHz, EUT on side, pwr 14 |
| 21998.210 | 39.1 | 13.4 | 1.5 | 96.0 | 0.0 | 0.0 | Horz | PK | 0.0 | 52.5 | 68.2 | -15.7 | Ch 100, 6 Mbps, EUT on side, pwr 14 |
| 5150.000 | 26.8 | 35.0 | 1.7 | 296.9 | -14.0 | 0.0 | Vert | AV | -9.5 | 38.3 | 54.0 | -15.7 | Ch 36, MCS7 40MHz, EUT on side, pwr 14 |
| 22981.230 | 44.3 | 14.0 | 1.5 | 322.0 | 0.0 | 0.0 | Horz | PK | 0.0 | 58.3 | 74.0 | -15.7 | Ch 149, 6 Mbps, EUT on side, pwr 14 |
| 22001.480 | 38.9 | 13.4 | 1.5 | 329.9 | 0.0 | 0.0 | Vert | PK | 0.0 | 52.3 | 68.2 | -15.9 | Ch 100, 6 Mbps, EUT on side, pwr 14 |
| 15719.500 | 48.6 | 9.3 | 1.7 | 6.0 | 0.0 | 0.0 | Horz | PK | 0.0 | 57.9 | 74.0 | -16.1 | Ch 48, 6 Mbps, EUT on side, pwr 14 |
| 10522.110 | 55.9 | -4.0 | 1.0 | 44.1 | 0.0 | 0.0 | Horz | PK | 0.0 | 51.9 | 68.2 | -16.3 | Ch 52, 6 Mbps, EUT on side, pwr 14 |
| 5459.825 | 25.0 | 36.0 | 1.7 | 306.0 | -14.0 | 0.0 | Vert | AV | -9.5 | 37.4 | 54.0 | -16.6 | Ch 100, MCS0 40MHz, EUT on side, Pwr 14 |
| 5350.108 | 25.3 | 35.5 | 1.6 | 293.0 | -14.0 | 0.0 | Vert | AV | -9.5 | 37.3 | 54.0 | -16.7 | Ch 64, MCS7 40MHz, EUT on side, Pwr 14 |
| 15959.510 | 46.8 | 10.4 | 1.0 | 360.0 | 0.0 | 0.0 | Horz | PK | 0.0 | 57.2 | 74.0 | -16.8 | Ch 64, 6 Mbps, EUT on side, pwr 14 |
| 5459.775 | 24.6 | 36.0 | 1.7 | 306.0 | -14.0 | 0.0 | Vert | AV | -9.5 | 37.0 | 54.0 | -17.0 | Ch 100, MCS0 40MHz, EUT on side, Pwr 14 |
| 5149.992 | 25.5 | 35.0 | 1.7 | 297.0 | -14.0 | 0.0 | Vert | AV | -9.5 | 37.0 | 54.0 | -17.0 | Ch 36, 6 Mbps, EUT on side, pwr 30 |
| 5149.817 | 25.5 | 35.0 | 1.5 | 314.0 | -14.0 | 0.0 | Horz | AV | -9.5 | 37.0 | 54.0 | -17.0 | Ch 36, 6 Mbps, EUT vert, pwr 30 |
| 10362.120 | 54.7 | -3.6 | 1.0 | 116.1 | 0.0 | 0.0 | Vert | PK | 0.0 | 51.1 | 68.2 | -17.1 | Ch 36, 6 Mbps, EUT on side, pwr 14 |
| 5350.383 | 24.9 | 35.5 | 1.6 | 293.0 | -14.0 | 0.0 | Vert | AV | -9.5 | 36.9 | 54.0 | -17.1 | Ch 64, MCS0 40MHz, EUT on side, Pwr 14 |
| 5149.983 | 25.3 | 35.0 | 1.7 | 297.0 | -14.0 | 0.0 | Vert | AV | -9.5 | 36.8 | 54.0 | -17.2 | Ch 36, MCS0 20MHz, EUT on side, pwr 30 |
| 11490.740 | 59.8 | -3.0 | 1.8 | 25.0 | 0.0 | 0.0 | Horz | PK | 0.0 | 56.8 | 74.0 | -17.2 | Ch 149, 6 Mbps, EUT on side, pwr 14 |
| 3733.192 | 54.4 | 2.3 | 1.8 | 213.1 | 0.0 | 0.0 | Horz | PK | 0.0 | 56.7 | 74.0 | -17.3 | Ch 120, 6 Mbps, EUT on side, pwr 14 |
| 11571.580 | 58.7 | -2.1 | 1.8 | 26.1 | 0.0 | 0.0 | Horz | PK | 0.0 | 56.6 | 74.0 | -17.4 | Ch 157, 6 Mbps, EUT on side, pwr 14 |
| 5149.992 | 25.1 | 35.0 | 1.7 | 297.0 | -14.0 | 0.0 | Vert | AV | -9.5 | 36.6 | 54.0 | -17.4 | Ch 36, 54 Mbps, EUT on side, pwr 30 |
| 15539.630 | 47.1 | 9.3 | 1.8 | 343.9 | 0.0 | 0.0 | Horz | PK | 0.0 | 56.4 | 74.0 | -17.6 | Ch 36, 6 Mbps, EUT on side, pwr 14 |
| 5150.000 | 24.9 | 35.0 | 1.7 | 297.0 | -14.0 | 0.0 | Vert | AV | -9.5 | 36.4 | 54.0 | -17.6 | Ch 36, MCS7 20MHz, EUT on side, pwr 30 |
| 5149.933 | 24.9 | 35.0 | 1.7 | 297.0 | -14.0 | 0.0 | Vert | AV | -9.5 | 36.4 | 54.0 | -17.6 | Ch 36, 36 Mbps, EUT on side, pwr 30 |
| 5350.158 | 24.4 | 35.5 | 1.6 | 293.0 | -14.0 | 0.0 | Vert | AV | -9.5 | 36.4 | 54.0 | -17.6 | Ch 64, MCS7 20MHz, EUT on side, Pwr 30 |
| 3733.158 | 54.0 | 2.3 | 1.0 | 147.0 | 0.0 | 0.0 | Vert | PK | 0.0 | 56.3 | 74.0 | -17.7 | Ch 120, 6 Mbps, EUT on side, pwr 14 |
| 11651.530 | 58.6 | -2.4 | 1.8 | 20.0 | 0.0 | 0.0 | Horz | PK | 0.0 | 56.2 | 74.0 | -17.8 | Ch 165, 6 Mbps, EUT on side, pwr 14 |
| 15779.630 | 46.7 | 9.4 | 1.0 | 12.1 | 0.0 | 0.0 | Horz | PK | 0.0 | 56.1 | 74.0 | -17.9 | Ch 52, 6 Mbps, EUT on side, pwr 14 |
| 5149.725 | 24.6 | 35.0 | 1.5 | 246.0 | -14.0 | 0.0 | Horz | AV | -9.5 | 36.1 | 54.0 | -17.9 | Ch 36, 6 Mbps, EUT on side, pwr 30 |
| 5350.058 | 24.1 | 35.5 | 1.6 | 293.0 | -14.0 | 0.0 | Vert | AV | -9.5 | 36.1 | 54.0 | -17.9 | Ch 64, 36 Mbps, EUT on side, Pwr 30 |
| 5350.208 | 23.9 | 35.5 | 1.6 | 293.0 | -14.0 | 0.0 | Vert | AV | -9.5 | 35.9 | 54.0 | -18.1 | Ch 64, 6 Mbps, EUT on side, Pwr 30 |
| 5350.092 | 23.9 | 35.5 | 1.6 | 293.0 | -14.0 | 0.0 | Vert | AV | -9.5 | 35.9 | 54.0 | -18.1 | Ch 64, 54 Mbps, EUT on side, Pwr 30 |
| 5350.108 | 23.9 | 35.5 | 1.6 | 293.0 | -14.0 | 0.0 | Vert | AV | -9.5 | 35.9 | 54.0 | -18.1 | Ch 64, MCS0 20MHz, EUT on side, Pwr 30 |
| 10522.230 | 53.7 | -4.0 | 1.0 | 48.1 | 0.0 | 0.0 | Vert | PK | 0.0 | 49.7 | 68.2 | -18.5 | Ch 52, 6 Mbps, EUT on side, pwr 14 |
| 5149.942 | 23.7 | 35.0 | 1.5 | 340.0 | -14.0 | 0.0 | Vert | AV | -9.5 | 35.2 | 54.0 | -18.8 | Ch 36, 6 Mbps, EUT vert, pwr 30 |
| 3666.633 | 47.2 | 1.7 | 1.0 | 358.0 | -14.0 | 0.0 | Horz | AV | 0.0 | 35.0 | 54.0 | -19.0 | Ch 100, 6 Mbps, EUT on side, pwr 14 |
| 3666.642 | 47.2 | 1.7 | 1.0 | 165.0 | -14.0 | 0.0 | Vert | AV | 0.0 | 35.0 | 54.0 | -19.0 | Ch 100, 6 Mbps, EUT on side, pwr 14 |
| 5458.575 | 22.5 | 36.0 | 1.7 | 214.1 | -14.0 | 0.0 | Vert | AV | -9.5 | 34.9 | 54.0 | -19.1 | Ch 100, MCS7 20MHz, EUT on side, Pwr 30 |
| 5458.150 | 22.5 | 36.0 | 1.7 | 214.1 | -14.0 | 0.0 | Vert | AV | -9.5 | 34.9 | 54.0 | -19.1 | Ch 100, 36 Mbps, EUT on side, Pwr 30 |
| 5459.058 | 22.4 | 36.0 | 1.7 | 214.1 | -14.0 | 0.0 | Vert | AV | -9.5 | 34.8 | 54.0 | -19.2 | Ch 100, 6 Mbps, EUT on side, Pwr 30 |
| 5456.425 | 22.4 | 36.0 | 1.7 | 214.1 | -14.0 | 0.0 | Vert | AV | -9.5 | 34.8 | 54.0 | -19.2 | Ch 100, 54 Mbps, EUT on side, Pwr 30 |
| 5456.167 | 22.4 | 36.0 | 1.7 | 214.1 | -14.0 | 0.0 | Vert | AV | -9.5 | 34.8 | 54.0 | -19.2 | Ch 100, MCS0 20MHz, EUT on side, Pwr 30 |
| 15959.720 | 44.4 | 10.4 | 2.3 | 318.9 | 0.0 | 0.0 | Vert | PK | 0.0 | 54.8 | 74.0 | -19.2 | Ch 64, 6 Mbps, EUT on side, pwr 14 |
| 5149.892 | 23.2 | 35.0 | 1.5 | 148.1 | -14.0 | 0.0 | Vert | AV | -9.5 | 34.7 | 54.0 | -19.3 | Ch 36, 6 Mbps, EUT horz, pwr 30 |
| 22398.050 | 40.7 | 13.6 | 1.5 | 304.9 | 0.0 | 0.0 | Horz | PK | 0.0 | 54.3 | 74.0 | -19.7 | Ch 120, 6 Mbps, EUT on side, pwr 14 |
| 5149.250 | 22.4 | 35.0 | 1.5 | 327.0 | -14.0 | 0.0 | Horz | AV | -9.5 | 33.9 | 54.0 | -20.1 | Ch 36, 6 Mbps, EUT horz, pwr 30 |
| 22979.130 | 39.5 | 14.0 | 1.5 | 119.1 | 0.0 | 0.0 | Vert | PK | 0.0 | 53.5 | 74.0 | -20.5 | Ch 149, 6 Mbps, EUT on side, pwr 14 |
| 22797.620 | 39.6 | 13.8 | 1.5 | 154.0 | 0.0 | 0.0 | Horz | PK | 0.0 | 53.4 | 74.0 | -20.6 | Ch 140, 6 Mbps, EUT on side, pwr 14 |
| 22800.680 | 39.2 | 13.8 | 1.5 | 358.0 | 0.0 | 0.0 | Vert | PK | 0.0 | 53.0 | 74.0 | -21.0 | Ch 140, 6 Mbps, EUT on side, pwr 14 |
| 22401.680 | 39.3 | 13.6 | 1.5 | 168.0 | 0.0 | 0.0 | Vert | PK | 0.0 | 52.9 | 74.0 | -21.1 | Ch 120, 6 Mbps, EUT on side, pwr 14 |
| 10642.330 | 56.3 | -3.5 | 1.7 | 72.0 | 0.0 | 0.0 | Horz | PK | 0.0 | 52.8 | 74.0 | -21.2 | Ch 64, 6 Mbps, EUT on side, pwr 14 |

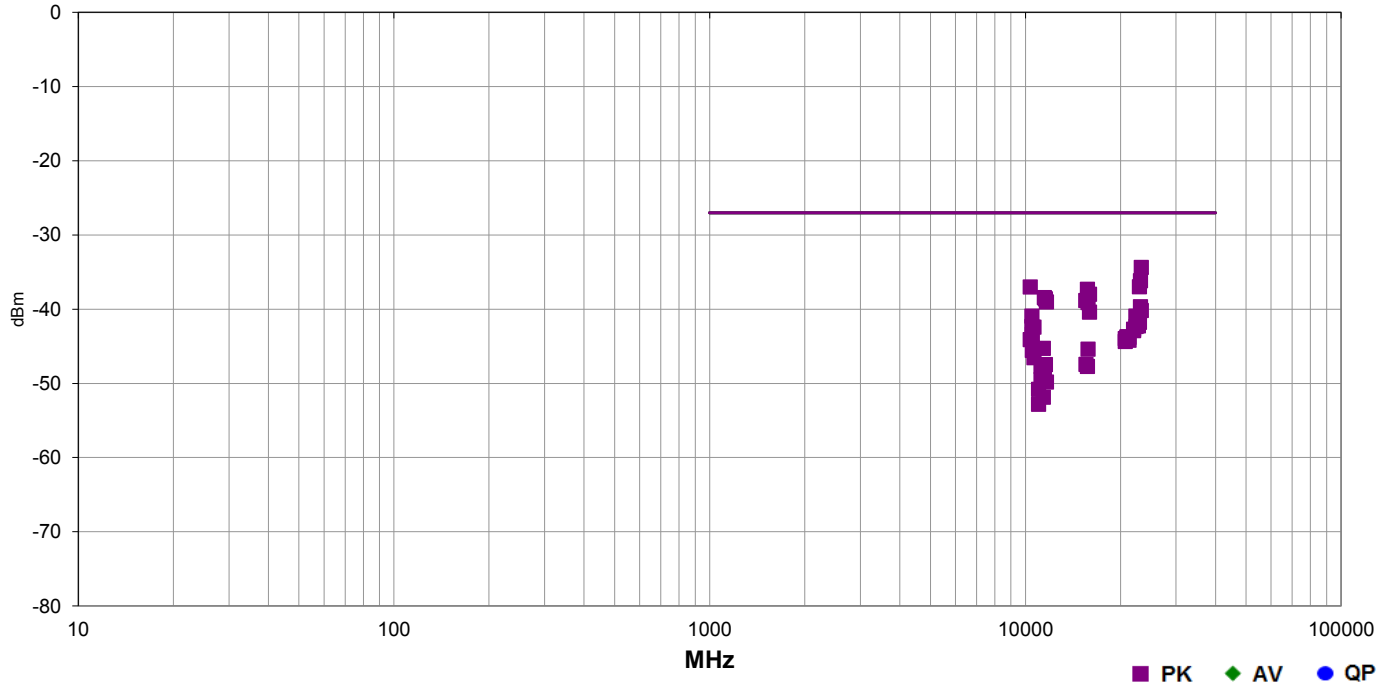
| Freq (MHz) | Amplitude (dBuV) | Factor (dB) | Antenna Height (meters) | Azimuth (degrees) | Duty Cycle Correction Factor (dB) | External Attenuation (dB) | Polarity/ Transducer Type | Detector | Distance Adjustment (dB) | Adjusted (dBuV/m) | Spec. Limit (dBuV/m) | Compared to Spec. (dB) | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3666.617 | 50.8 | 1.7 | 1.0 | 358.0 | 0.0 | 0.0 | Horz | PK | 0.0 | 52.5 | 74.0 | -21.5 | Ch 100, 6 Mbps, EUT on side, pwr 14 |
| 17474.180 | 49.5 | 11.1 | 1.8 | 332.0 | -14.0 | 0.0 | Horz | AV | 0.0 | 46.6 | 68.2 | -21.6 | Ch 165, 6 Mbps, EUT on side, pwr 14 |
| 17354.310 | 49.7 | 10.8 | 1.9 | 330.9 | -14.0 | 0.0 | Horz | AV | 0.0 | 46.5 | 68.2 | -21.7 | Ch 157, 6 Mbps, EUT on side, pwr 14 |
| 3666.458 | 50.5 | 1.7 | 1.0 | 165.0 | 0.0 | 0.0 | Vert | PK | 0.0 | 52.2 | 74.0 | -21.8 | Ch 100, 6 Mbps, EUT on side, pwr 14 |
| 11489.980 | 49.2 | -3.0 | 1.8 | 25.0 | -14.0 | 0.0 | Horz | AV | 0.0 | 32.2 | 54.0 | -21.8 | Ch 149, 6 Mbps, EUT on side, pwr 14 |
| 11650.040 | 48.1 | -2.4 | 1.8 | 20.0 | -14.0 | 0.0 | Horz | AV | 0.0 | 31.7 | 54.0 | -22.3 | Ch 165, 6 Mbps, EUT on side, pwr 14 |
| 11569.980 | 47.8 | -2.1 | 1.8 | 26.1 | -14.0 | 0.0 | Horz | AV | 0.0 | 31.7 | 54.0 | -22.3 | Ch 157, 6 Mbps, EUT on side, pwr 14 |
| 21038.940 | 38.4 | 13.1 | 1.5 | 72.0 | 0.0 | 0.0 | Horz | PK | 0.0 | 51.5 | 74.0 | -22.5 | Ch 52, 6 Mbps, EUT on side, pwr 14 |
| 20958.980 | 38.4 | 13.1 | 1.5 | 175.0 | 0.0 | 0.0 | Vert | PK | 0.0 | 51.5 | 74.0 | -22.5 | Ch 48, 6 Mbps, EUT on side, pwr 14 |
| 21279.380 | 38.3 | 13.1 | 1.5 | 179.0 | 0.0 | 0.0 | Horz | PK | 0.0 | 51.4 | 74.0 | -22.6 | Ch 64, 6 Mbps, EUT on side, pwr 14 |
| 20960.150 | 38.3 | 13.1 | 1.5 | 31.0 | 0.0 | 0.0 | Horz | PK | 0.0 | 51.4 | 74.0 | -22.6 | Ch 48, 6 Mbps, EUT on side, pwr 14 |
| 21039.790 | 38.2 | 13.1 | 1.5 | 243.9 | 0.0 | 0.0 | Vert | PK | 0.0 | 51.3 | 74.0 | -22.7 | Ch 52, 6 Mbps, EUT on side, pwr 14 |
| 20718.190 | 38.3 | 13.0 | 1.5 | 102.1 | 0.0 | 0.0 | Vert | PK | 0.0 | 51.3 | 74.0 | -22.7 | Ch 36, 6 Mbps, EUT on side, pwr 14 |
| 21278.800 | 37.9 | 13.1 | 1.5 | 34.1 | 0.0 | 0.0 | Vert | PK | 0.0 | 51.0 | 74.0 | -23.0 | Ch 64, 6 Mbps, EUT on side, pwr 14 |
| 20719.490 | 37.9 | 13.0 | 1.5 | 175.0 | 0.0 | 0.0 | Horz | PK | 0.0 | 50.9 | 74.0 | -23.1 | Ch 36, 6 Mbps, EUT on side, pwr 14 |
| 17234.110 | 49.0 | 9.8 | 1.9 | 333.9 | -14.0 | 0.0 | Horz | AV | 0.0 | 44.8 | 68.2 | -23.4 | Ch 149, 6 Mbps, EUT on side, pwr 14 |
| 22980.680 | 30.5 | 14.0 | 1.5 | 322.0 | -14.0 | 0.0 | Horz | AV | 0.0 | 30.5 | 54.0 | -23.5 | Ch 149, 6 Mbps, EUT on side, pwr 14 |
| 11400.750 | 53.6 | -3.7 | 1.0 | 221.1 | 0.0 | 0.0 | Vert | PK | 0.0 | 49.9 | 74.0 | -24.1 | Ch 140, 6 Mbps, EUT on side, pwr 14 |
| 15781.500 | 40.4 | 9.4 | 1.0 | 343.0 | 0.0 | 0.0 | Vert | PK | 0.0 | 49.8 | 74.0 | -24.2 | Ch 52, 6 Mbps, EUT on side, pwr 14 |
| 10642.330 | 52.2 | -3.5 | 1.8 | 322.9 | 0.0 | 0.0 | Vert | PK | 0.0 | 48.7 | 74.0 | -25.3 | Ch 64, 6 Mbps, EUT on side, pwr 14 |
| 22400.240 | 28.5 | 13.6 | 1.5 | 304.9 | -14.0 | 0.0 | Horz | AV | 0.0 | 28.1 | 54.0 | -25.9 | Ch 120, 6 Mbps, EUT on side, pwr 14 |
| 22800.830 | 28.0 | 13.8 | 1.5 | 358.0 | -14.0 | 0.0 | Vert | AV | 0.0 | 27.8 | 54.0 | -26.2 | Ch 140, 6 Mbps, EUT on side, pwr 14 |
| 22799.530 | 28.0 | 13.8 | 1.5 | 154.0 | -14.0 | 0.0 | Horz | AV | 0.0 | 27.8 | 54.0 | -26.2 | Ch 140, 6 Mbps, EUT on side, pwr 14 |
| 15541.980 | 38.5 | 9.3 | 1.0 | 257.0 | 0.0 | 0.0 | Vert | PK | 0.0 | 47.8 | 74.0 | -26.2 | Ch 36, 6 Mbps, EUT on side, pwr 14 |
| 11568.430 | 49.9 | -2.1 | 1.0 | 76.1 | 0.0 | 0.0 | Vert | PK | 0.0 | 47.8 | 74.0 | -26.2 | Ch 157, 6 Mbps, EUT on side, pwr 14 |
| 22399.830 | 28.1 | 13.6 | 1.5 | 168.0 | -14.0 | 0.0 | Vert | AV | 0.0 | 27.7 | 54.0 | -26.3 | Ch 120, 6 Mbps, EUT on side, pwr 14 |
| 22979.510 | 27.7 | 14.0 | 1.5 | 119.1 | -14.0 | 0.0 | Vert | AV | 0.0 | 27.7 | 54.0 | -26.3 | Ch 149, 6 Mbps, EUT on side, pwr 14 |
| 11201.480 | 51.1 | -3.6 | 1.9 | 360.0 | 0.0 | 0.0 | Horz | PK | 0.0 | 47.5 | 74.0 | -26.5 | Ch 120, 6 Mbps, EUT on side, pwr 14 |
| 15722.420 | 38.2 | 9.3 | 1.0 | 228.1 | 0.0 | 0.0 | Vert | PK | 0.0 | 47.5 | 74.0 | -26.5 | Ch 48, 6 Mbps, EUT on side, pwr 14 |
| 15957.570 | 30.9 | 10.4 | 1.0 | 360.0 | -14.0 | 0.0 | Horz | AV | 0.0 | 27.3 | 54.0 | -26.7 | Ch 64, 6 Mbps, EUT on side, pwr 14 |
| 11490.850 | 49.9 | -3.0 | 1.1 | 89.0 | 0.0 | 0.0 | Vert | PK | 0.0 | 46.9 | 74.0 | -27.1 | Ch 149, 6 Mbps, EUT on side, pwr 14 |
| 17097.580 | 44.0 | 11.0 | 1.0 | 39.0 | -14.0 | 0.0 | Horz | AV | 0.0 | 41.1 | 68.2 | -27.1 | Ch 140, 6 Mbps, EUT on side, pwr 14 |
| 10640.180 | 44.3 | -3.5 | 1.7 | 72.0 | -14.0 | 0.0 | Horz | AV | 0.0 | 26.8 | 54.0 | -27.2 | Ch 64, 6 Mbps, EUT on side, pwr 14 |
| 20958.070 | 27.1 | 13.1 | 1.5 | 31.0 | -14.0 | 0.0 | Horz | AV | 0.0 | 26.2 | 54.0 | -27.8 | Ch 48, 6 Mbps, EUT on side, pwr 14 |
| 21037.670 | 27.0 | 13.1 | 1.5 | 243.9 | -14.0 | 0.0 | Vert | AV | 0.0 | 26.1 | 54.0 | -27.9 | Ch 52, 6 Mbps, EUT on side, pwr 14 |
| 21038.530 | 27.0 | 13.1 | 1.5 | 72.0 | -14.0 | 0.0 | Horz | AV | 0.0 | 26.1 | 54.0 | -27.9 | Ch 52, 6 Mbps, EUT on side, pwr 14 |
| 20958.970 | 27.0 | 13.1 | 1.5 | 175.0 | -14.0 | 0.0 | Vert | AV | 0.0 | 26.1 | 54.0 | -27.9 | Ch 48, 6 Mbps, EUT on side, pwr 14 |
| 21280.020 | 26.8 | 13.1 | 1.5 | 34.1 | -14.0 | 0.0 | Vert | AV | 0.0 | 26.0 | 54.0 | -28.0 | Ch 64, 6 Mbps, EUT on side, pwr 14 |
| 21279.490 | 26.8 | 13.1 | 1.5 | 179.0 | -14.0 | 0.0 | Horz | AV | 0.0 | 26.0 | 54.0 | -28.0 | Ch 64, 6 Mbps, EUT on side, pwr 14 |
| 11200.920 | 49.3 | -3.6 | 2.2 | 195.1 | 0.0 | 0.0 | Vert | PK | 0.0 | 45.7 | 74.0 | -28.3 | Ch 120, 6 Mbps, EUT on side, pwr 14 |
| 20721.180 | 26.7 | 13.0 | 1.5 | 102.1 | -14.0 | 0.0 | Vert | AV | 0.0 | 25.7 | 54.0 | -28.3 | Ch 36, 6 Mbps, EUT on side, pwr 14 |
| 20717.940 | 26.7 | 13.0 | 1.5 | 175.0 | -14.0 | 0.0 | Horz | AV | 0.0 | 25.7 | 54.0 | -28.3 | Ch 36, 6 Mbps, EUT on side, pwr 14 |
| 15781.440 | 30.1 | 9.4 | 1.0 | 12.1 | -14.0 | 0.0 | Horz | AV | 0.0 | 25.6 | 54.0 | -28.4 | Ch 52, 6 Mbps, EUT on side, pwr 14 |
| 11650.530 | 47.8 | -2.4 | 1.0 | 306.0 | 0.0 | 0.0 | Vert | PK | 0.0 | 45.4 | 74.0 | -28.6 | Ch 165, 6 Mbps, EUT on side, pwr 14 |
| 15959.210 | 28.8 | 10.4 | 2.3 | 318.9 | -14.0 | 0.0 | Vert | AV | 0.0 | 25.2 | 54.0 | -28.8 | Ch 64, 6 Mbps, EUT on side, pwr 14 |
| 17097.570 | 42.3 | 11.0 | 1.9 | 336.0 | -14.0 | 0.0 | Vert | AV | 0.0 | 39.4 | 68.2 | -28.8 | Ch 140, 6 Mbps, EUT on side, pwr 14 |
| 16799.110 | 43.2 | 9.9 | 1.0 | 12.1 | -14.0 | 0.0 | Horz | AV | 0.0 | 39.2 | 68.2 | -29.0 | Ch 120, 6 Mbps, EUT on side, pwr 14 |
| 11400.200 | 42.5 | -3.7 | 1.0 | 221.1 | -14.0 | 0.0 | Vert | AV | 0.0 | 24.9 | 54.0 | -29.1 | Ch 140, 6 Mbps, EUT on side, pwr 14 |
| 15721.570 | 29.5 | 9.3 | 1.7 | 6.0 | -14.0 | 0.0 | Horz | AV | 0.0 | 24.8 | 54.0 | -29.2 | Ch 48, 6 Mbps, EUT on side, pwr 14 |
| 15541.860 | 29.5 | 9.3 | 1.8 | 343.9 | -14.0 | 0.0 | Horz | AV | 0.0 | 24.8 | 54.0 | -29.2 | Ch 36, 6 Mbps, EUT on side, pwr 14 |
| 11002.120 | 47.7 | -3.3 | 1.8 | 68.0 | 0.0 | 0.0 | Horz | PK | 0.0 | 44.4 | 74.0 | -29.6 | Ch 100, 6 Mbps, EUT on side, pwr 14 |
| 11402.430 | 47.0 | -3.6 | 1.0 | 19.1 | 0.0 | 0.0 | Horz | PK | 0.0 | 43.4 | 74.0 | -30.6 | Ch 140, 6 Mbps, EUT on side, pwr 14 |
| 10640.180 | 40.4 | -3.5 | 1.8 | 322.9 | -14.0 | 0.0 | Vert | AV | 0.0 | 22.9 | 54.0 | -31.1 | Ch 64, 6 Mbps, EUT on side, pwr 14 |
| 15782.220 | 27.3 | 9.4 | 1.0 | 343.0 | -14.0 | 0.0 | Vert | AV | 0.0 | 22.8 | 54.0 | -31.2 | Ch 52, 6 Mbps, EUT on side, pwr 14 |
| 11570.180 | 38.6 | -2.1 | 1.0 | 76.1 | -14.0 | 0.0 | Vert | AV | 0.0 | 22.5 | 54.0 | -31.5 | Ch 157, 6 Mbps, EUT on side, pwr 14 |
| 11001.860 | 45.7 | -3.3 | 1.1 | 294.9 | 0.0 | 0.0 | Vert | PK | 0.0 | 42.4 | 74.0 | -31.6 | Ch 100, 6 Mbps, EUT on side, pwr 14 |
| 15542.320 | 26.7 | 9.3 | 1.0 | 257.0 | -14.0 | 0.0 | Vert | AV | 0.0 | 22.0 | 54.0 | -32.0 | Ch 36, 6 Mbps, EUT on side, pwr 14 |
| 11490.020 | 39.0 | -3.0 | 1.1 | 89.0 | -14.0 | 0.0 | Vert | AV | 0.0 | 22.0 | 54.0 | -32.0 | Ch 149, 6 Mbps, EUT on side, pwr 14 |
| 11200.030 | 39.5 | -3.6 | 1.9 | 360.0 | -14.0 | 0.0 | Horz | AV | 0.0 | 21.9 | 54.0 | -32.1 | Ch 120, 6 Mbps, EUT on side, pwr 14 |
| 15721.280 | 26.4 | 9.3 | 1.0 | 228.1 | -14.0 | 0.0 | Vert | AV | 0.0 | 21.7 | 54.0 | -32.3 | Ch 48, 6 Mbps, EUT on side, pwr 14 |
| 17354.180 | 38.7 | 10.8 | 1.4 | 40.1 | -14.0 | 0.0 | Vert | AV | 0.0 | 35.5 | 68.2 | -32.7 | Ch 157, 6 Mbps, EUT on side, pwr 14 |
| 16797.510 | 38.6 | 10.0 | 1.0 | 336.9 | -14.0 | 0.0 | Vert | AV | 0.0 | 34.6 | 68.2 | -33.6 | Ch 120, 6 Mbps, EUT on side, pwr 14 |
| 11650.100 | 36.3 | -2.4 | 1.0 | 306.0 | -14.0 | 0.0 | Vert | AV | 0.0 | 19.9 | 54.0 | -34.1 | Ch 165, 6 Mbps, EUT on side, pwr 14 |
| 16499.630 | 37.3 | 10.7 | 2.0 | 329.9 | -14.0 | 0.0 | Horz | AV | 0.0 | 34.0 | 68.2 | -34.2 | Ch 100, 6 Mbps, EUT on side, pwr 14 |
| 17474.000 | 36.9 | 11.1 | 2.3 | 310.0 | -14.0 | 0.0 | Vert | AV | 0.0 | 34.0 | 68.2 | -34.2 | Ch 165, 6 Mbps, EUT on side, pwr 14 |
| 11199.940 | 37.3 | -3.6 | 2.2 | 195.1 | -14.0 | 0.0 | Vert | AV | 0.0 | 19.8 | 54.0 | -34.3 | Ch 120, 6 Mbps, EUT on side, pwr 14 |
| 23299.810 | 33.7 | 14.2 | 1.5 | 279.9 | -14.0 | 0.0 | Horz | AV | 0.0 | 33.9 | 68.2 | -34.3 | Ch 165, 6 Mbps, EUT on side, pwr 14 |
| 10999.810 | 35.9 | -3.3 | 1.8 | 68.0 | -14.0 | 0.0 | Horz | AV | 0.0 | 18.6 | 54.0 | -35.4 | Ch 100, 6 Mbps, EUT on side, pwr 14 |
| 17234.080 | 36.4 | 9.8 | 2.0 | 24.0 | -14.0 | 0.0 | Vert | AV | 0.0 | 32.2 | 68.2 | -36.0 | Ch 149, 6 Mbps, EUT on side, pwr 14 |
| 11399.980 | 35.6 | -3.7 | 1.0 | 19.1 | -14.0 | 0.0 | Horz | AV | 0.0 | 18.0 | 54.0 | -36.0 | Ch 140, 6 Mbps, EUT on side, pwr 14 |
| 10360.140 | 49.7 | -3.6 | 1.8 | 314.0 | -14.0 | 0.0 | Horz | AV | 0.0 | 32.1 | 68.2 | -36.1 | Ch 36, 6 Mbps, EUT on side, pwr 14 |
| 23140.530 | 31.4 | 14.1 | 1.5 | 275.0 | -14.0 | 0.0 | Horz | AV | 0.0 | 31.5 | 68.2 | -36.7 | Ch 157, 6 Mbps, EUT on side, pwr 14 |
| 10999.850 | 34.2 | -3.3 | 1.1 | 294.9 | -14.0 | 0.0 | Vert | AV | 0.0 | 16.9 | 54.0 | -37.1 | Ch 100, 6 Mbps, EUT on side, pwr 14 |
| 16499.190 | 33.1 | 10.7 | 2.0 | 49.0 | -14.0 | 0.0 | Vert | AV | 0.0 | 29.8 | 68.2 | -38.4 | Ch 100, 6 Mbps, EUT on side, pwr 14 |
| 23300.410 | 29.1 | 14.2 | 1.5 | 318.9 | -14.0 | 0.0 | Vert | AV | 0.0 | 29.3 | 68.2 | -38.9 | Ch 165, 6 Mbps, EUT on side, pwr 14 |
| 23139.580 | 29.0 | 14.1 | 1.5 | 48.1 | -14.0 | 0.0 | Vert | AV | 0.0 | 29.1 | 68.2 | -39.1 | Ch 157, 6 Mbps, EUT on side, pwr 14 |
| 10481.930 | 45.9 | -4.0 | 1.0 | 347.9 | -14.0 | 0.0 | Horz | AV | 0.0 | 27.9 | 68.2 | -40.3 | Ch 48, 6 Mbps, EUT on side, pwr 14 |
| 22002.100 | 27.6 | 13.4 | 1.5 | 329.9 | -14.0 | 0.0 | Vert | AV | 0.0 | 27.1 | 68.2 | -41.1 | Ch 100, 6 Mbps, EUT on side, pwr 14 |
| 22000.780 | 27.6 | 13.4 | 1.5 | 96.0 | -14.0 | 0.0 | Horz | AV | 0.0 | 27.1 | 68.2 | -41.1 | Ch 100, 6 Mbps, EUT on side, pwr 14 |
| 10481.980 | 44.6 | -4.0 | 1.8 | 322.9 | -14.0 | 0.0 | Vert | AV | 0.0 | 26.6 | 68.2 | -41.6 | Ch 48, 6 Mbps, EUT on side, pwr 14 |
| 10520.100 | 43.8 | -4.0 | 1.0 | 44.1 | -14.0 | 0.0 | Horz | AV | 0.0 | 25.8 | 68.2 | -42.4 | Ch 52, 6 Mbps, EUT on side, pwr 14 |
| 10359.970 | 42.2 | -3.6 | 1.0 | 116.1 | -14.0 | 0.0 | Vert | AV | 0.0 | 24.6 | 68.2 | -43.6 | Ch 36, 6 Mbps, EUT on side, pwr 14 |
| 10520.130 | 41.0 | -4.0 | 1.0 | 48.1 | -14.0 | 0.0 | Vert | AV | 0.0 | 23.0 | 68.2 | -45.2 | Ch 52, 6 Mbps, EUT on side, pwr 14 |

# SPURIOUS RADIATED EMISSIONS

| | | | | | |
|---|---|---|---|---|---|
| **Work Order:** | DGII0152 | **Date:** | 01/05/16 | | |
| **Project:** | None | **Temperature:** | 22.4 °C | | |
| **Job Site:** | MN05 | **Humidity:** | 19.7% RH | | |
| **Serial Number:** | UUT #7 (55001769-1 rev. 1P) | **Barometric Pres.:** | 996.3 mbar | **Tested by:** | Dustin Sparks |
| **EUT:** | Sigma Pumps Gen IV 802.11abgn Module | | | | |
| **Configuration:** | 1 | | | | |
| **Customer:** | Digi International Inc | | | | |
| **Attendees:** | Slava Gehkt | | | | |
| **EUT Power:** | 110VAC/60Hz | | | | |
| **Operating Mode:** | Transmitting 802.11 - channels 36 (5180 MHz), 48 (5240 MHz), 52 (5260 MHz), 64 (5320 MHz), 100 (5500 MHz), 120 (5600 MHz), 140 (5700 MHz), 149 (5745 MHz), 157 (5785 MHz), and 165 (5825 MHz); 6 Mbps, 36 Mbps, 54 Mbps, MCS0 20MHz, MCS7 20MHz, MCS0 40MHz, and MCS7 40MHz data rates. | | | | |
| **Deviations:** | None | | | | |
| **Comments:** | DCCF = -13.98dB. DCCF = 20 log10 (DC), duty cycle = 20% | | | | |

| **Test Specifications** | **Test Method** |
|---|---|
| FCC 15.209:2016 | ANSI C63.10:2013 |

| **Run #** | 109 | **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 |
|---|---|---|---|---|---|---|---|---|---|---|
| | 23301.690 | 1.5 | 279.9 | Horz | PK | 3.65E-07 | -34.4 | -27.0 | -7.4 | Ch 165, 6 Mbps, EUT on side, pwr 14 |
| | 23140.980 | 1.5 | 275.0 | Horz | PK | 2.42E-07 | -36.2 | -27.0 | -9.2 | Ch 157, 6 Mbps, EUT on side, pwr 14 |
| | 22981.230 | 1.5 | 322.0 | Horz | PK | 2.01E-07 | -37.0 | -27.0 | -10.0 | Ch 149, 6 Mbps, EUT on side, pwr 14 |
| | 10358.920 | 1.8 | 314.0 | Horz | PK | 1.99E-07 | -37.0 | -27.0 | -10.0 | Ch 36, 6 Mbps, EUT on side, pwr 14 |
| | 15719.500 | 1.7 | 6.0 | Horz | PK | 1.85E-07 | -37.3 | -27.0 | -10.3 | Ch 48, 6 Mbps, EUT on side, pwr 14 |
| | 15959.510 | 1.0 | 360.0 | Horz | PK | 1.59E-07 | -38.0 | -27.0 | -11.0 | Ch 64, 6 Mbps, EUT on side, pwr 14 |
| | 11490.740 | 1.8 | 25.0 | Horz | PK | 1.43E-07 | -38.5 | -27.0 | -11.5 | Ch 149, 6 Mbps, EUT on side, pwr 14 |
| | 11571.580 | 1.8 | 26.1 | Horz | PK | 1.37E-07 | -38.6 | -27.0 | -11.6 | Ch 157, 6 Mbps, EUT on side, pwr 14 |
| | 15539.630 | 1.8 | 343.9 | Horz | PK | 1.31E-07 | -38.8 | -27.0 | -11.8 | Ch 36, 6 Mbps, EUT on side, pwr 14 |
| | 11651.530 | 1.8 | 20.0 | Horz | PK | 1.25E-07 | -39.0 | -27.0 | -12.0 | Ch 165, 6 Mbps, EUT on side, pwr 14 |
| | 15779.630 | 1.0 | 12.1 | Horz | PK | 1.23E-07 | -39.1 | -27.0 | -12.1 | Ch 52, 6 Mbps, EUT on side, pwr 14 |
| | 23139.330 | 1.5 | 48.1 | Vert | PK | 1.08E-07 | -39.7 | -27.0 | -12.7 | Ch 157, 6 Mbps, EUT on side, pwr 14 |
| | 23301.480 | 1.5 | 318.9 | Vert | PK | 9.61E-08 | -40.2 | -27.0 | -13.2 | Ch 165, 6 Mbps, EUT on side, pwr 14 |

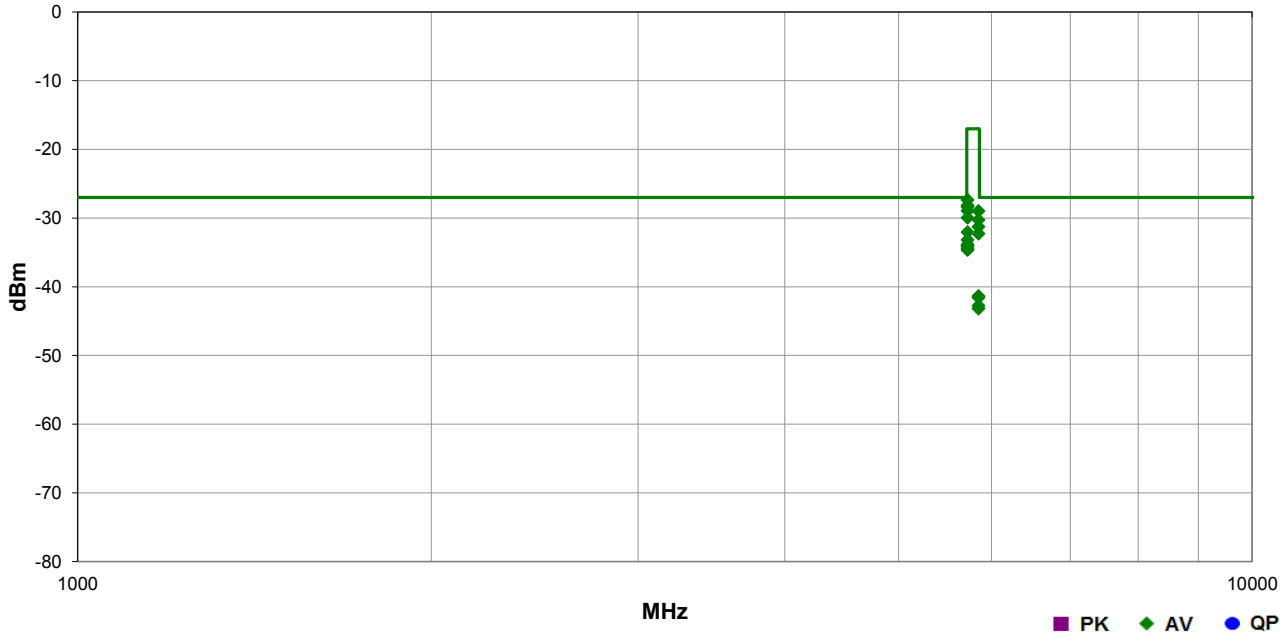
| | Freq (MHz) | Antenna Height (meters) | Azimuth (degrees) | Polarity/ Transducer Type | Detector | EIRP (Watts) | EIRP (dBm) | Spec. Limit (dBm) | Compared to Spec. (dB) | Comments |
|---|---|---|---|---|---|---|---|---|---|---|
| | 15959.720 | 2.3 | 318.9 | Vert | PK | 9.13E-08 | -40.4 | -27.0 | -13.4 | Ch 64, 6 Mbps, EUT on side, pwr 14 |
| | 22398.050 | 1.5 | 304.9 | Horz | PK | 8.08E-08 | -40.9 | -27.0 | -13.9 | Ch 120, 6 Mbps, EUT on side, pwr 14 |
| | 10482.230 | 1.0 | 347.9 | Horz | PK | 8.07E-08 | -40.9 | -27.0 | -13.9 | Ch 48, 6 Mbps, EUT on side, pwr 14 |
| | 22979.130 | 1.5 | 119.1 | Vert | PK | 6.64E-08 | -41.8 | -27.0 | -14.8 | Ch 149, 6 Mbps, EUT on side, pwr 14 |
| | 22797.620 | 1.5 | 154.0 | Horz | PK | 6.53E-08 | -41.8 | -27.0 | -14.8 | Ch 140, 6 Mbps, EUT on side, pwr 14 |
| | 22800.680 | 1.5 | 358.0 | Vert | PK | 5.96E-08 | -42.2 | -27.0 | -15.2 | Ch 140, 6 Mbps, EUT on side, pwr 14 |
| | 22401.680 | 1.5 | 168.0 | Vert | PK | 5.85E-08 | -42.3 | -27.0 | -15.3 | Ch 120, 6 Mbps, EUT on side, pwr 14 |
| | 10482.490 | 1.8 | 322.9 | Vert | PK | 5.84E-08 | -42.3 | -27.0 | -15.3 | Ch 48, 6 Mbps, EUT on side, pwr 14 |
| | 10642.330 | 1.7 | 72.0 | Horz | PK | 5.71E-08 | -42.4 | -27.0 | -15.4 | Ch 64, 6 Mbps, EUT on side, pwr 14 |
| | 21998.210 | 1.5 | 96.0 | Horz | PK | 5.37E-08 | -42.7 | -27.0 | -15.7 | Ch 100, 6 Mbps, EUT on side, pwr 14 |
| | 22001.480 | 1.5 | 329.9 | Vert | PK | 5.13E-08 | -42.9 | -27.0 | -15.9 | Ch 100, 6 Mbps, EUT on side, pwr 14 |
| | 10522.110 | 1.0 | 44.1 | Horz | PK | 4.60E-08 | -43.4 | -27.0 | -16.4 | Ch 52, 6 Mbps, EUT on side, pwr 14 |
| | 21038.940 | 1.5 | 72.0 | Horz | PK | 4.24E-08 | -43.7 | -27.0 | -16.7 | Ch 52, 6 Mbps, EUT on side, pwr 14 |
| | 20958.980 | 1.5 | 175.0 | Vert | PK | 4.22E-08 | -43.7 | -27.0 | -16.7 | Ch 48, 6 Mbps, EUT on side, pwr 14 |
| | 21279.380 | 1.5 | 179.0 | Horz | PK | 4.18E-08 | -43.8 | -27.0 | -16.8 | Ch 64, 6 Mbps, EUT on side, pwr 14 |
| | 20960.150 | 1.5 | 31.0 | Horz | PK | 4.13E-08 | -43.8 | -27.0 | -16.8 | Ch 48, 6 Mbps, EUT on side, pwr 14 |
| | 21039.790 | 1.5 | 243.9 | Vert | PK | 4.05E-08 | -43.9 | -27.0 | -16.9 | Ch 52, 6 Mbps, EUT on side, pwr 14 |
| | 20718.190 | 1.5 | 102.1 | Vert | PK | 4.03E-08 | -44.0 | -27.0 | -17.0 | Ch 36, 6 Mbps, EUT on side, pwr 14 |
| | 10362.120 | 1.0 | 116.1 | Vert | PK | 3.88E-08 | -44.1 | -27.0 | -17.1 | Ch 36, 6 Mbps, EUT on side, pwr 14 |
| | 21278.800 | 1.5 | 34.1 | Vert | PK | 3.81E-08 | -44.2 | -27.0 | -17.2 | Ch 64, 6 Mbps, EUT on side, pwr 14 |
| | 20719.490 | 1.5 | 175.0 | Horz | PK | 3.67E-08 | -44.4 | -27.0 | -17.4 | Ch 36, 6 Mbps, EUT on side, pwr 14 |
| | 11400.750 | 1.0 | 221.1 | Vert | PK | 2.96E-08 | -45.3 | -27.0 | -18.3 | Ch 140, 6 Mbps, EUT on side, pwr 14 |
| | 15781.500 | 1.0 | 343.0 | Vert | PK | 2.89E-08 | -45.4 | -27.0 | -18.4 | Ch 52, 6 Mbps, EUT on side, pwr 14 |
| | 10522.230 | 1.0 | 48.1 | Vert | PK | 2.77E-08 | -45.6 | -27.0 | -18.6 | Ch 52, 6 Mbps, EUT on side, pwr 14 |
| | 10642.330 | 1.8 | 322.9 | Vert | PK | 2.22E-08 | -46.5 | -27.0 | -19.5 | Ch 64, 6 Mbps, EUT on side, pwr 14 |
| | 15541.980 | 1.0 | 257.0 | Vert | PK | 1.81E-08 | -47.4 | -27.0 | -20.4 | Ch 36, 6 Mbps, EUT on side, pwr 14 |
| | 11568.430 | 1.0 | 76.1 | Vert | PK | 1.80E-08 | -47.5 | -27.0 | -20.5 | Ch 157, 6 Mbps, EUT on side, pwr 14 |
| | 11201.480 | 1.9 | 360.0 | Horz | PK | 1.70E-08 | -47.7 | -27.0 | -20.7 | Ch 120, 6 Mbps, EUT on side, pwr 14 |
| | 15722.420 | 1.0 | 228.1 | Vert | PK | 1.69E-08 | -47.7 | -27.0 | -20.7 | Ch 48, 6 Mbps, EUT on side, pwr 14 |
| | 11490.850 | 1.1 | 89.0 | Vert | PK | 1.46E-08 | -48.4 | -27.0 | -21.4 | Ch 149, 6 Mbps, EUT on side, pwr 14 |
| | 11200.920 | 2.2 | 195.1 | Vert | PK | 1.12E-08 | -49.5 | -27.0 | -22.5 | Ch 120, 6 Mbps, EUT on side, pwr 14 |
| | 11650.530 | 1.0 | 306.0 | Vert | PK | 1.04E-08 | -49.8 | -27.0 | -22.8 | Ch 165, 6 Mbps, EUT on side, pwr 14 |
| | 11002.120 | 1.8 | 68.0 | Horz | PK | 8.29E-09 | -50.8 | -27.0 | -23.8 | Ch 100, 6 Mbps, EUT on side, pwr 14 |
| | 11402.430 | 1.0 | 19.1 | Horz | PK | 6.50E-09 | -51.9 | -27.0 | -24.9 | Ch 140, 6 Mbps, EUT on side, pwr 14 |
| | 11001.860 | 1.1 | 294.9 | Vert | PK | 5.23E-09 | -52.8 | -27.0 | -25.8 | Ch 100, 6 Mbps, EUT on side, pwr 14 |

# SPURIOUS RADIATED EMISSIONS

| | | | | | |
|---|---|---|---|---|---|
| **Work Order:** | DGII0152 | **Date:** | 01/05/16 | | |
| **Project:** | None | **Temperature:** | 22.4 °C | | |
| **Job Site:** | MN05 | **Humidity:** | 19.7% RH | | |
| **Serial Number:** | UUT #7 (55001769-1 rev. 1P) | **Barometric Pres.:** | 996.3 mbar | **Tested by:** | Dustin Sparks |
| **EUT:** | Sigma Pumps Gen IV 802.11abgn Module | | | | |
| **Configuration:** | 1 | | | | |
| **Customer:** | Digi International Inc | | | | |
| **Attendees:** | Slava Gehkt | | | | |
| **EUT Power:** | 110VAC/60Hz | | | | |
| **Operating Mode:** | Transmitting 802.11 - channels 149 (5745 MHz) and 165 (5825 MHz); 6 Mbps, 36 Mbps, 54 Mbps, MCS0 20MHz, MCS7 20MHz, MCS0 40MHz, and MCS7 40MHz data rates. | | | | |
| **Deviations:** | None | | | | |
| **Comments:** | DCCF = -13.98dB. DCCF = 20 log10 (DC), duty cycle = 20% | | | | |

| **Test Specifications** | **Test Method** |
|---|---|
| FCC 15.407:2016 | ANSI C63.10:2013 |

| **Run #** | 6 | **Test Distance (m)** | 1 | **Antenna Height(s)** | 1(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 |
|---|---|---|---|---|---|---|---|---|---|---|
| | 5724.992 | 1.6 | 301.9 | Vert | AV | 1.83E-06 | -27.4 | -17.0 | -10.4 | Ch 149, MCS0 40MHz, EUT on side, pwr 18 |
| | 5725.000 | 1.6 | 301.9 | Vert | AV | 1.53E-06 | -28.2 | -17.0 | -11.2 | Ch 149, MCS0 40MHz, EUT on side, pwr 20 |
| | 5724.900 | 1.6 | 301.9 | Vert | AV | 1.46E-06 | -28.4 | -17.0 | -11.4 | Ch 149, MCS7 40MHz, EUT on side, pwr 20 |
| | 5724.975 | 1.6 | 301.9 | Vert | AV | 1.27E-06 | -29.0 | -17.0 | -12.0 | Ch 149, MCS0 40MHz, EUT on side, pwr 16 |
| | 5850.050 | 1.6 | 301.9 | Vert | AV | 1.27E-06 | -29.0 | -17.0 | -12.0 | Ch 165, MCS0 40MHz, EUT on side, pwr 20 |
| | 5724.933 | 1.6 | 301.9 | Vert | AV | 1.01E-06 | -30.0 | -17.0 | -13.0 | Ch 149, MCS7 40MHz, EUT on side, pwr 16 |
| | 5850.033 | 1.6 | 292.0 | Vert | AV | 9.38E-07 | -30.3 | -17.0 | -13.3 | Ch 165, MCS7 40MHz, EUT on side, pwr 20 |
| | 5850.042 | 1.6 | 292.0 | Vert | AV | 7.45E-07 | -31.3 | -17.0 | -14.3 | Ch 165, MCS0 40MHz, EUT on side, pwr 16 |
| | 5724.983 | 1.6 | 301.9 | Vert | AV | 6.22E-07 | -32.1 | -17.0 | -15.1 | Ch 149, MCS0 20MHz, EUT on side, pwr 30 |
| | 5850.050 | 1.6 | 292.0 | Vert | AV | 5.92E-07 | -32.3 | -17.0 | -15.3 | Ch 165, MCS7 40MHz, EUT on side, pwr 16 |
| | 5724.967 | 1.6 | 301.9 | Vert | AV | 4.83E-07 | -33.2 | -17.0 | -16.2 | Ch 149, MCS7 20MHz, EUT on side, pwr 30 |
| | 5724.967 | 1.6 | 301.9 | Vert | AV | 4.11E-07 | -33.9 | -17.0 | -16.9 | Ch 149, MCS0 40MHz, EUT on side, pwr 14 |
| | 5724.975 | 1.6 | 301.9 | Vert | AV | 3.92E-07 | -34.1 | -17.0 | -17.1 | Ch 149, MCS7 40MHz, EUT on side, pwr 14 |
| | 5725.000 | 0.0 | 301.9 | Vert | AV | 3.83E-07 | -34.2 | -17.0 | -17.2 | Ch 149, 36 Mbps, EUT on side, pwr 30 |
| | 5725.000 | 1.6 | 301.9 | Vert | AV | 3.58E-07 | -34.5 | -17.0 | -17.5 | Ch 149, 54 Mbps, EUT on side, pwr 30 |
| | 5724.992 | 1.7 | 301.9 | Vert | AV | 3.42E-07 | -34.7 | -17.0 | -17.7 | Ch 149, 6 Mbps, EUT on side, pwr 30 |
| | 5850.033 | 1.6 | 292.0 | Vert | AV | 7.28E-08 | -41.4 | -17.0 | -24.4 | Ch 165, MCS7 20MHz, EUT on side, pwr 30 |
| | 5850.017 | 1.6 | 292.0 | Vert | AV | 6.96E-08 | -41.6 | -17.0 | -24.6 | Ch 165, MCS0 20MHz, EUT on side, pwr 30 |
| | 5850.067 | 1.6 | 292.0 | Vert | AV | 5.28E-08 | -42.8 | -17.0 | -25.8 | Ch 165, 6 Mbps, EUT on side, pwr 30 |
| | 5850.000 | 1.6 | 292.0 | Vert | AV | 4.81E-08 | -43.2 | -17.0 | -26.2 | Ch 165, 54 Mbps, EUT on side, pwr 30 |

# BAND EDGE COMPLIANCE

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) |
|---|---|---|---|---|---|
| Generator - Signal | Agilent | N5183A | TIK | 10/17/2014 | 36 |
| Attenuator | S.M. Electronics | SA26B-20 | RFW | 3/10/2015 | 12 |
| Block - DC | Fairview Microwave | SD3379 | AMI | 9/18/2015 | 12 |
| Cable | ESM Cable Corp. | TTBJ141 KMKM-72 | MNU | 9/18/2015 | 12 |
| Analyzer - Spectrum Analyzer | Agilent | E4440A | AAX | 4/20/2015 | 12 |

**TEST DESCRIPTION**

The 99% occupied bandwidth of the carrier was measured to ensure that no part of the carrier operating in the U-NII-1 band (5.2 GHz band) was contained within the U-NII-2A band.

The transmit frequencies and data rates listed in the datasheet were measured. 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.

# BAND EDGE COMPLIANCE

NORTHWEST EMC

XMit 2015.01.14

| | | | | | |
|---|---|---|---|---|---|
| **EUT:** | Sigma Pumps Gen IV 802.11abgn Module | | | **Work Order:** | DGII0152 |
| **Serial Number:** | UUT #7 (55001769-1 rev. 1P) | | | **Date:** | 01/11/16 |
| **Customer:** | Digi International Inc | | | **Temperature:** | 21.1°C |
| **Attendees:** | Slava Gehkt | | | **Humidity:** | 16% |
| **Project:** | None | | | **Barometric Pres.:** | 984 |
| **Tested by:** | Jared Ison | **Power:** | 110VAC/60Hz | **Job Site:** | MN08 |

| TEST SPECIFICATIONS | Test Method |
|---|---|
| FCC 15.407:2016 | ANSI C63.10:2013 |
| | |

**COMMENTS**

802.11 radio set to single channel continuous transmission.

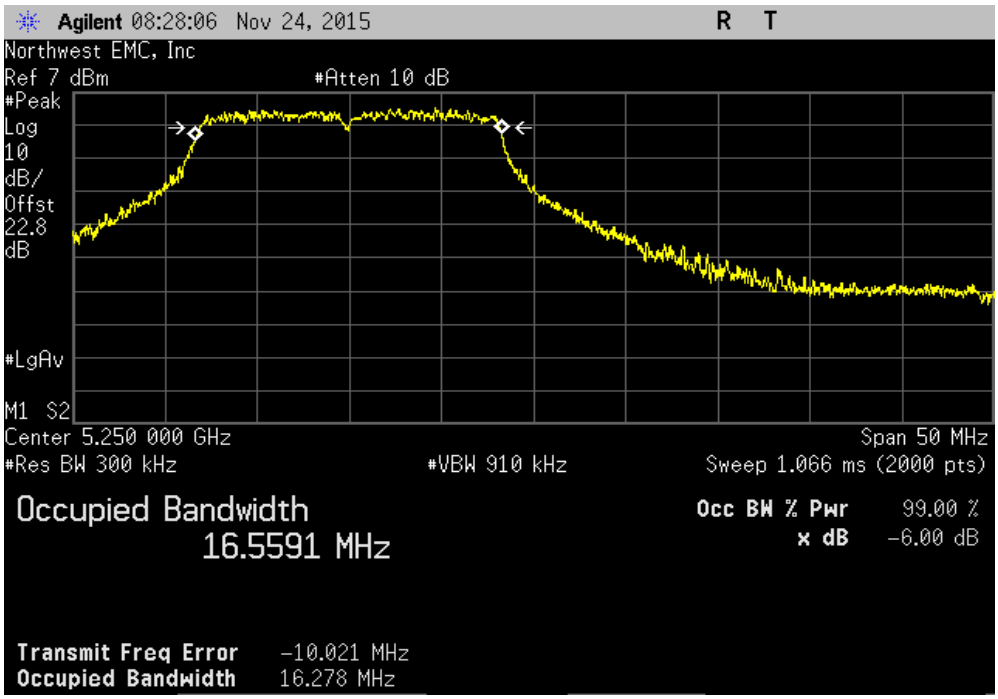
**DEVIATIONS FROM TEST STANDARD**

None

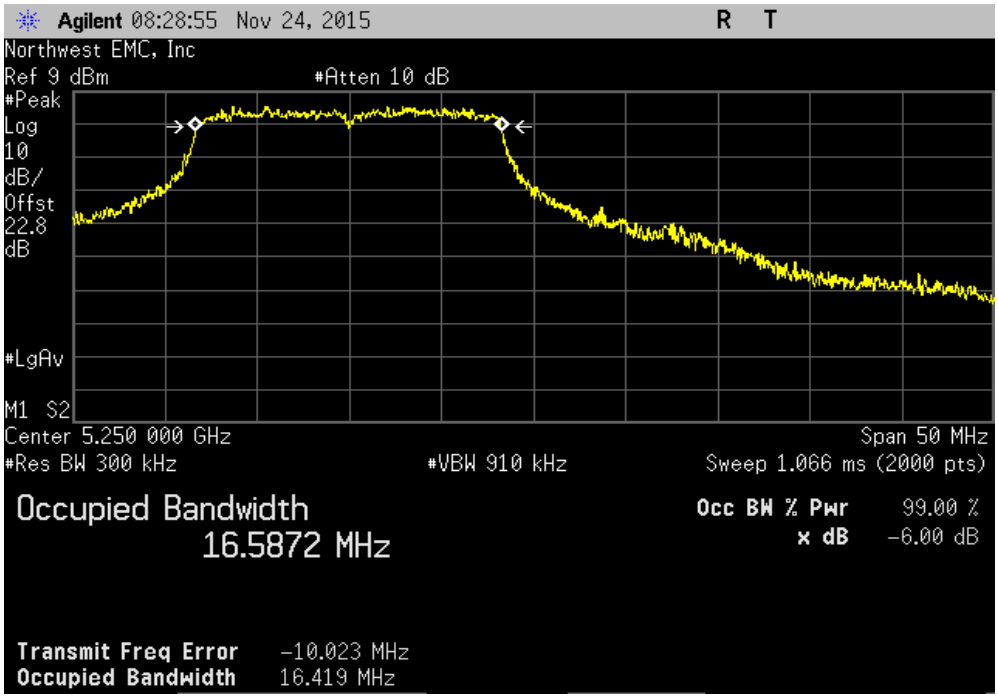
| Configuration # | 2 | Signature |
|---|---|---|

| | OBW Within Band | Band Edge (MHz) | Result |
|---|---|---|---|
| 5150 - 5250 MHz Band | | | |
| High Channel, Ch 48 - 5240 MHz | | | |
| 802.11(a) 6 Mbps | Yes | 5250 | Pass |
| 802.11(a) 36 Mbps | Yes | 5250 | Pass |
| 802.11(a) 54 Mbps | Yes | 5250 | Pass |
| 802.11(n) MCS0 | Yes | 5250 | Pass |
| 802.11(n) MCS7 | Yes | 5250 | Pass |
| 802.11(n) MCS0 - 40 MHz | Yes | 5250 | Pass |
| 802.11(n) MCS7 - 40 MHz | Yes | 5250 | Pass |

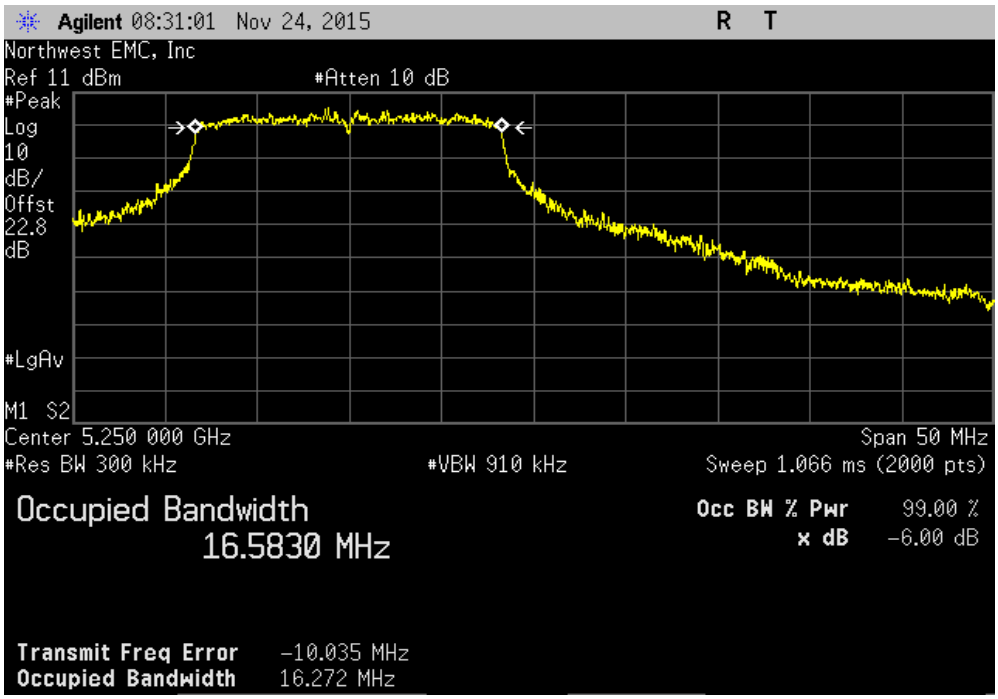
| 5150 - 5250 MHz Band, High Channel, Ch 48 - 5240 MHz, 802.11(a) 6 Mbps | | | | | | |
|---|---|---|---|---|---|---|
| | | | | OBW Within Band | Band Edge (MHz) | Result |
| | | | | Yes | 5250 | Pass |



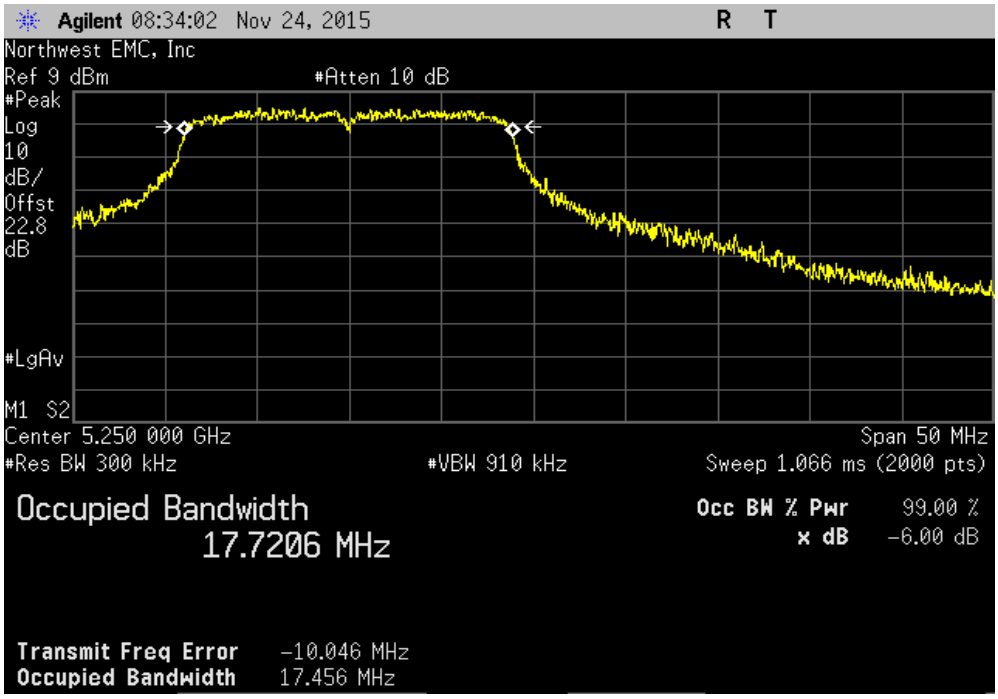

| 5150 - 5250 MHz Band, High Channel, Ch 48 - 5240 MHz, 802.11(a) 36 Mbps | | | | | | |
|---|---|---|---|---|---|---|
| | | | | OBW Within Band | Band Edge (MHz) | Result |
| | | | | Yes | 5250 | Pass |



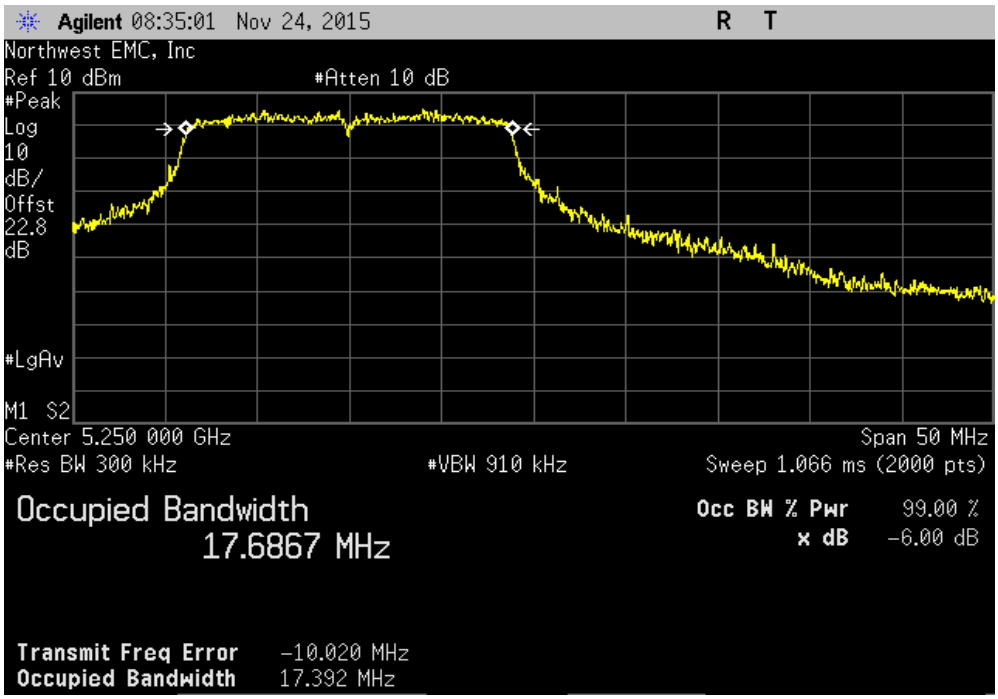
| 5150 - 5250 MHz Band, High Channel, Ch 48 - 5240 MHz, 802.11(a) 54 Mbps | | | | | | |
|---|---|---|---|---|---|---|
| | | | | OBW Within Band | Band Edge (MHz) | Result |
| | | | | Yes | 5250 | Pass |



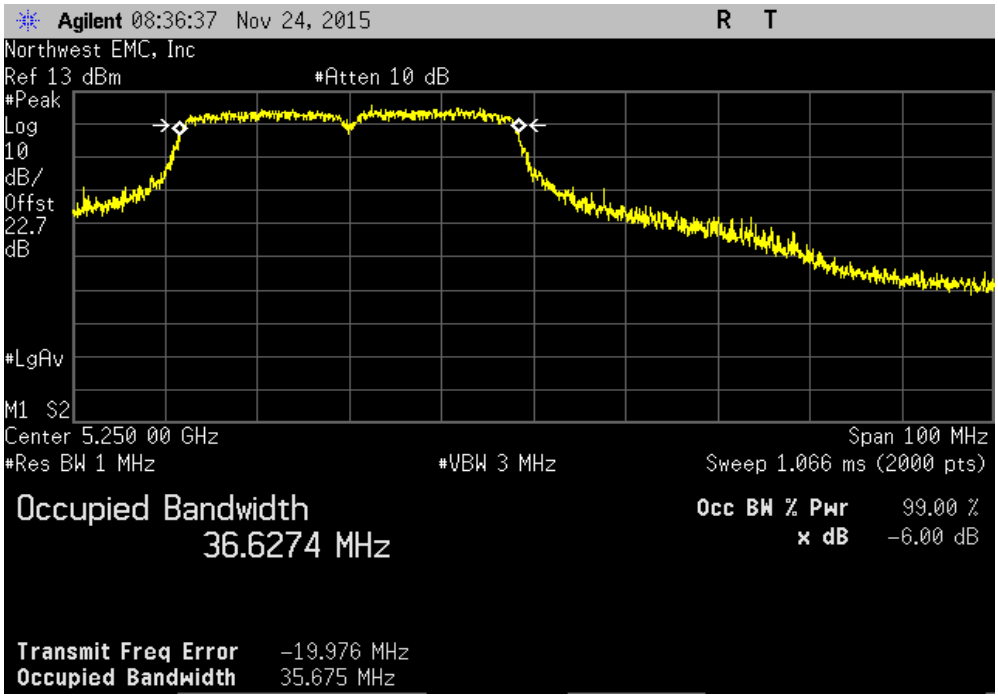

| 5150 - 5250 MHz Band, High Channel, Ch 48 - 5240 MHz, 802.11(n) MCS0 | | | | | | |
|---|---|---|---|---|---|---|
| | | | | OBW Within Band | Band Edge (MHz) | Result |
| | | | | Yes | 5250 | Pass |



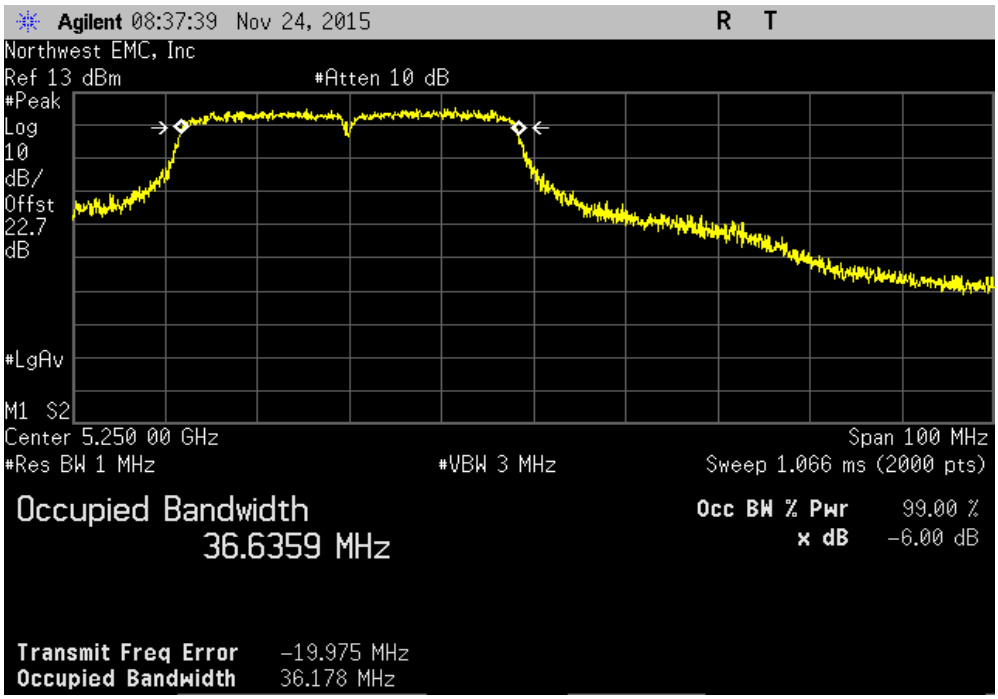
| 5150 - 5250 MHz Band, High Channel, Ch 48 - 5240 MHz, 802.11(n) MCS7 | | | | | | |
|---|---|---|---|---|---|---|
| | | | | OBW Within Band | Band Edge (MHz) | Result |
| | | | | Yes | 5250 | Pass |




| 5150 - 5250 MHz Band, High Channel, Ch 48 - 5240 MHz, 802.11(n) MCS0 - 40 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | | | | OBW Within Band | Band Edge (MHz) | Result |
| | | | | Yes | 5250 | Pass |



| 5150 - 5250 MHz Band, High Channel, Ch 48 - 5240 MHz, 802.11(n) MCS7 - 40 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | | | | OBW Within Band | Band Edge (MHz) | Result |
| | | | | Yes | 5250 | Pass |



# 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) |
|---|---|---|---|---|---|
| Chamber - Temperature/Humidity | Cincinnati Sub Zero (CSZ) | ZPH-32-3.5-SCT/AC | TBF | 10/21/2015 | 12 |
| Thermometer | Omega Engineering, Inc. | HH311 | DUB | 11/3/2014 | 36 |
| Power Supply - DC | Agilent | U8002A | TPZ | NCR | 0 |
| Analyzer - Spectrum Analyzer | Agilent | N9010A | AFI | 1/27/2015 | 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 (0° 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:** | Sigma Pumps Gen IV 802.11abgn Module | | | **Work Order:** | DGII0152 |
| **Serial Number:** | UUT #7 (55001769-1 rev. 1P) | | | **Date:** | 01/07/16 |
| **Customer:** | Digi International Inc | | | **Temperature:** | 21.9°C |
| **Attendees:** | Slava Gehkt | | | **Humidity:** | 27% |
| **Project:** | None | | | **Barometric Pres.:** | 984.2 |
| **Tested by:** | Dustin Sparks, Trevor Buls | **Power:** | 110VAC/60Hz | **Job Site:** | MN05 |

| **TEST SPECIFICATIONS** | **Test Method** |
|---|---|
| FCC 15.407:2016 | ANSI C63.10:2013 |
| | |

**COMMENTS**

None

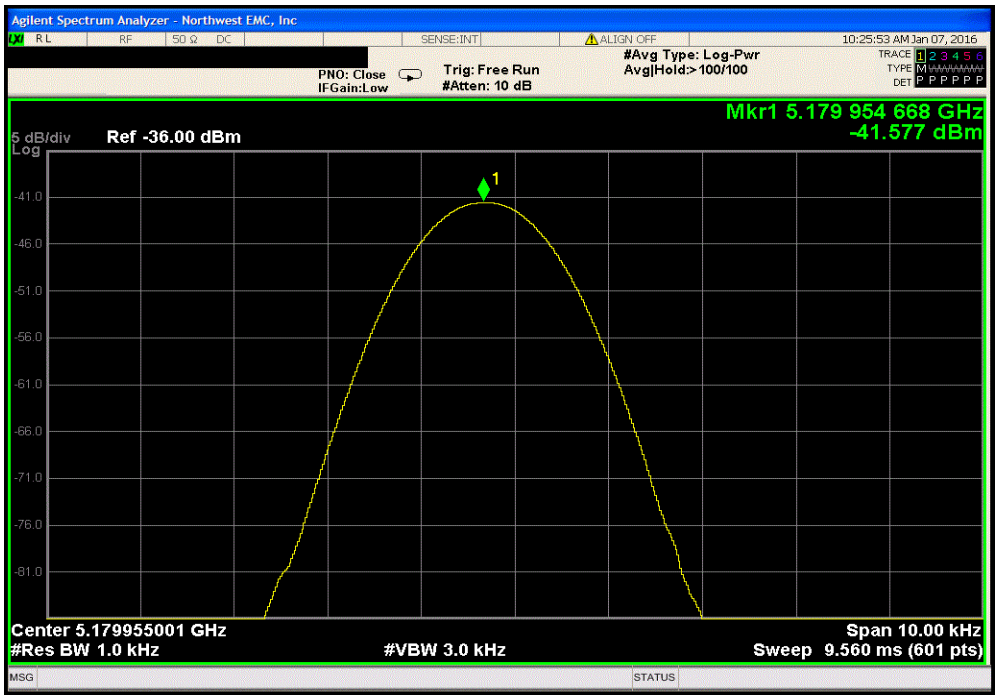
**DEVIATIONS FROM TEST STANDARD**

None

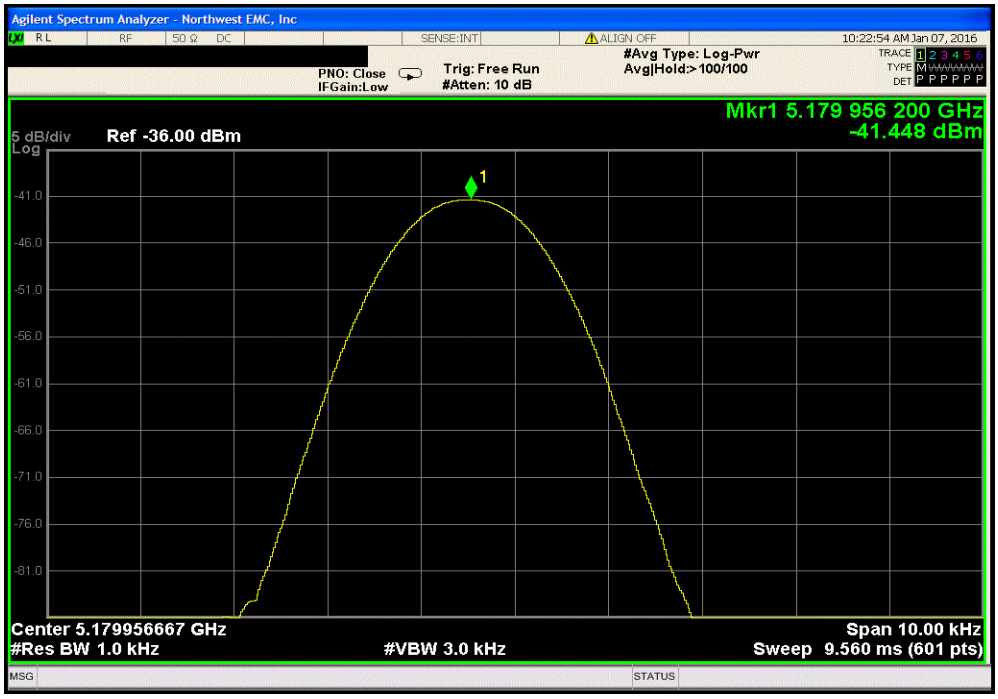
| **Configuration #** | 2 | *Signature* Trevor Buls |
|---|---|---|

| | Measured Value (MHz) | Assigned Value (MHz) | Error (ppm) | Limit (ppm) | Results |
|---|---|---|---|---|---|
| 5150 MHz - 5250 MHz - Low Channel, 5180 MHz | | | | | |
| Voltage: 115% | 5179.954668 | 5180 | 8.8 | 100 | Pass |
| Voltage: 100% | 5179.9562 | 5180 | 8.5 | 100 | Pass |
| Voltage: 85% | 5179.9542 | 5180 | 8.8 | 100 | Pass |
| Temperature: +50° | 5179.930317 | 5180 | 13.5 | 100 | Pass |
| Temperature: +40° | 5179.938167 | 5180 | 11.9 | 100 | Pass |
| Temperature: +30° | 5179.952334 | 5180 | 9.2 | 100 | Pass |
| Temperature: +20° | 5179.968151 | 5180 | 6.2 | 100 | Pass |
| Temperature: +10° | 5179.985383 | 5180 | 2.8 | 100 | Pass |
| Temperature: 0° | 5180.005534 | 5180 | 1.1 | 100 | Pass |
| 5250 MHz - 5350 MHz - High Channel, 5320 MHz | | | | | |
| Voltage: 115% | 5319.952284 | 5320 | 9 | 100 | Pass |
| Voltage: 100% | 5319.9524 | 5320 | 9 | 100 | Pass |
| Voltage: 85% | 5319.952601 | 5320 | 8.9 | 100 | Pass |
| Temperature: +50° | 5319.928466 | 5320 | 13.5 | 100 | Pass |
| Temperature: +40° | 5319.9365 | 5320 | 11.9 | 100 | Pass |
| Temperature: +30° | 5319.950617 | 5320 | 9.3 | 100 | Pass |
| Temperature: +20° | 5319.967134 | 5320 | 6.2 | 100 | Pass |
| Temperature: +10° | 5319.98515 | 5320 | 2.8 | 100 | Pass |
| Temperature: 0° | 5320.00555 | 5320 | 1 | 100 | Pass |
| 5470 MHz - 5725 MHz - Low Channel, 5500 MHz | | | | | |
| Voltage: 115% | 5499.9506 | 5500 | 9 | 100 | Pass |
| Voltage: 100% | 5499.95045 | 5500 | 9 | 100 | Pass |
| Voltage: 85% | 5499.950316 | 5500 | 9 | 100 | Pass |
| Temperature: +50° | 5499.926117 | 5500 | 13.4 | 100 | Pass |
| Temperature: +40° | 5499.9344 | 5500 | 11.9 | 100 | Pass |
| Temperature: +30° | 5499.94865 | 5500 | 9.3 | 100 | Pass |
| Temperature: +20° | 5499.966083 | 5500 | 6.2 | 100 | Pass |
| Temperature: +10° | 5499.984333 | 5500 | 2.9 | 100 | Pass |
| Temperature: 0° | 5500.005717 | 5500 | 1 | 100 | Pass |
| 5470 MHz - 5725 MHz - High Channel, 5700 MHz | | | | | |
| Voltage: 115% | 5699.948251 | 5700 | 9.1 | 100 | Pass |
| Voltage: 100% | 5699.948333 | 5700 | 9.1 | 100 | Pass |
| Voltage: 85% | 5699.94835 | 5700 | 9.1 | 100 | Pass |
| Temperature: +50° | 5699.923399 | 5700 | 13.4 | 100 | Pass |
| Temperature: +40° | 5699.9319 | 5700 | 12 | 100 | Pass |
| Temperature: +30° | 5699.946683 | 5700 | 9.4 | 100 | Pass |
| Temperature: +20° | 5699.96485 | 5700 | 6.2 | 100 | Pass |
| Temperature: +10° | 5699.98345 | 5700 | 2.9 | 100 | Pass |
| Temperature: 0° | 5700.005833 | 5700 | 1 | 100 | Pass |
| 5725 MHz - 5850 MHz - High Channel, 5825 MHz | | | | | |
| Voltage: 115% | 5824.946733 | 5825 | 9.1 | 100 | Pass |
| Voltage: 100% | 5824.946683 | 5825 | 9.2 | 100 | Pass |
| Voltage: 85% | 5824.946623 | 5825 | 9.2 | 100 | Pass |
| Temperature: +50° | 5824.921557 | 5825 | 13.5 | 100 | Pass |
| Temperature: +40° | 5824.930256 | 5825 | 12 | 100 | Pass |
| Temperature: +30° | 5824.945291 | 5825 | 9.4 | 100 | Pass |
| Temperature: +20° | 5824.96371 | 5825 | 6.2 | 100 | Pass |
| Temperature: +10° | 5824.983278 | 5825 | 2.9 | 100 | Pass |
| Temperature: 0° | 5825.005811 | 5825 | 1 | 100 | Pass |

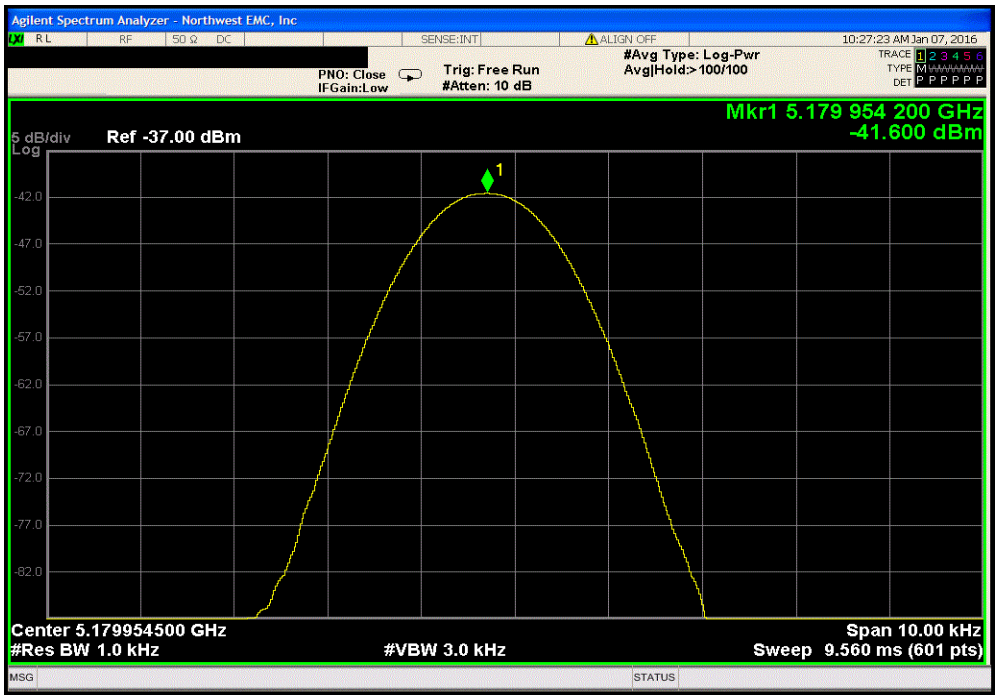
| 5150 MHz - 5250 MHz - Low Channel, 5180 MHz, Voltage: 115% | | | | | | |
|---|---|---|---|---|---|---|
| | | Measured Value (MHz) | Assigned Value (MHz) | Error (ppm) | Limit (ppm) | Results |
| | | 5179.954668 | 5180 | 8.8 | 100 | Pass |



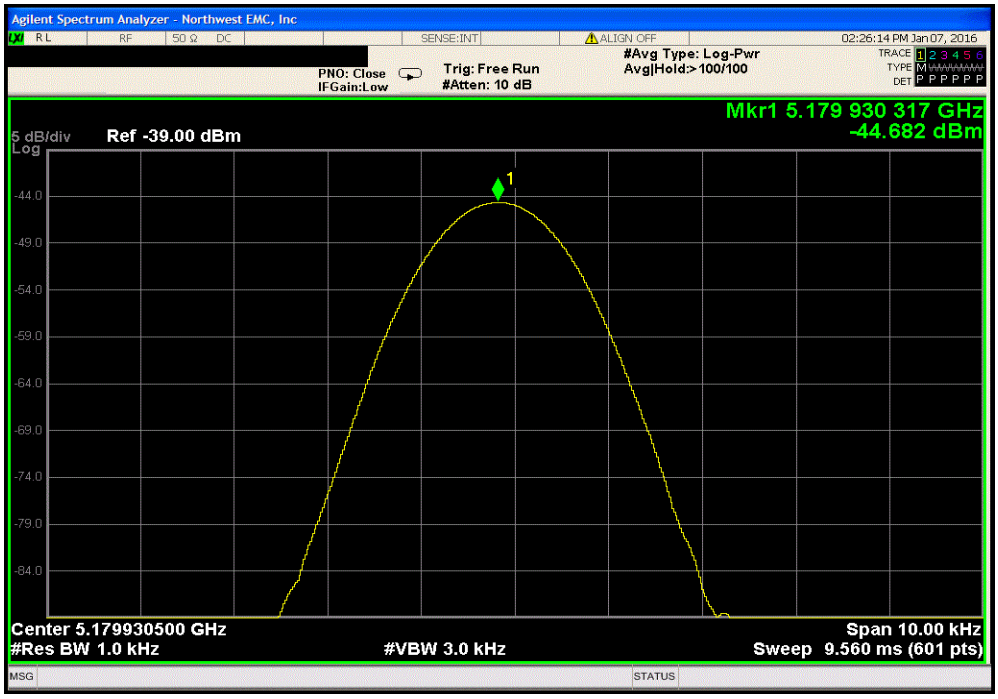

| 5150 MHz - 5250 MHz - Low Channel, 5180 MHz, Voltage: 100% | | | | | | |
|---|---|---|---|---|---|---|
| | | Measured Value (MHz) | Assigned Value (MHz) | Error (ppm) | Limit (ppm) | Results |
| | | 5179.9562 | 5180 | 8.5 | 100 | Pass |



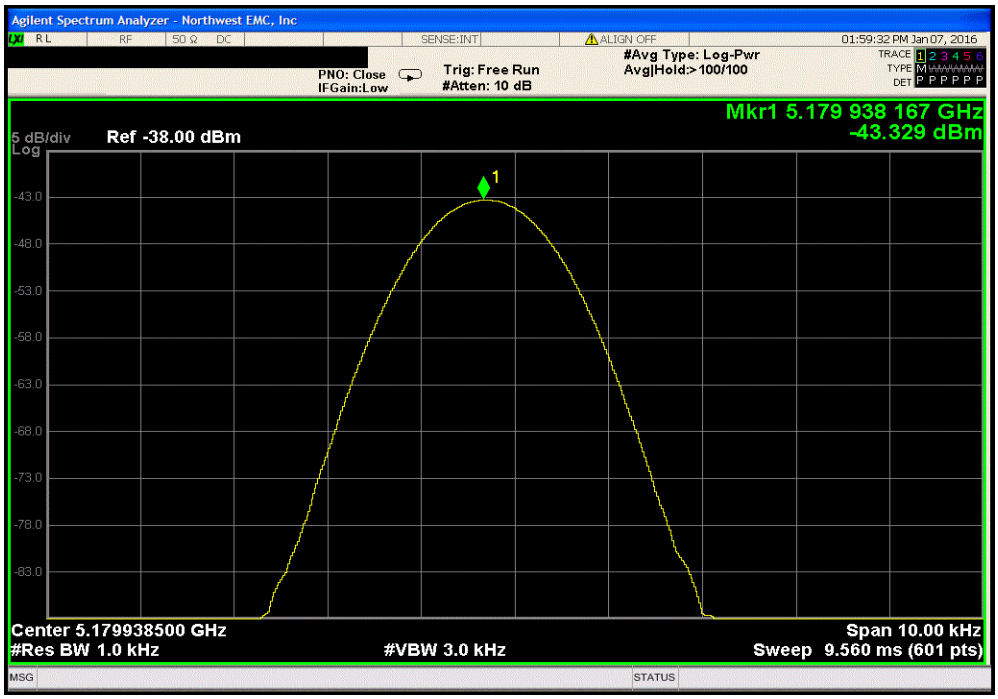
| 5150 MHz - 5250 MHz - Low Channel, 5180 MHz, Voltage: 85% | | | | | | |
|---|---|---|---|---|---|---|
| | | Measured Value (MHz) | Assigned Value (MHz) | Error (ppm) | Limit (ppm) | Results |
| | | 5179.9542 | 5180 | 8.8 | 100 | Pass |



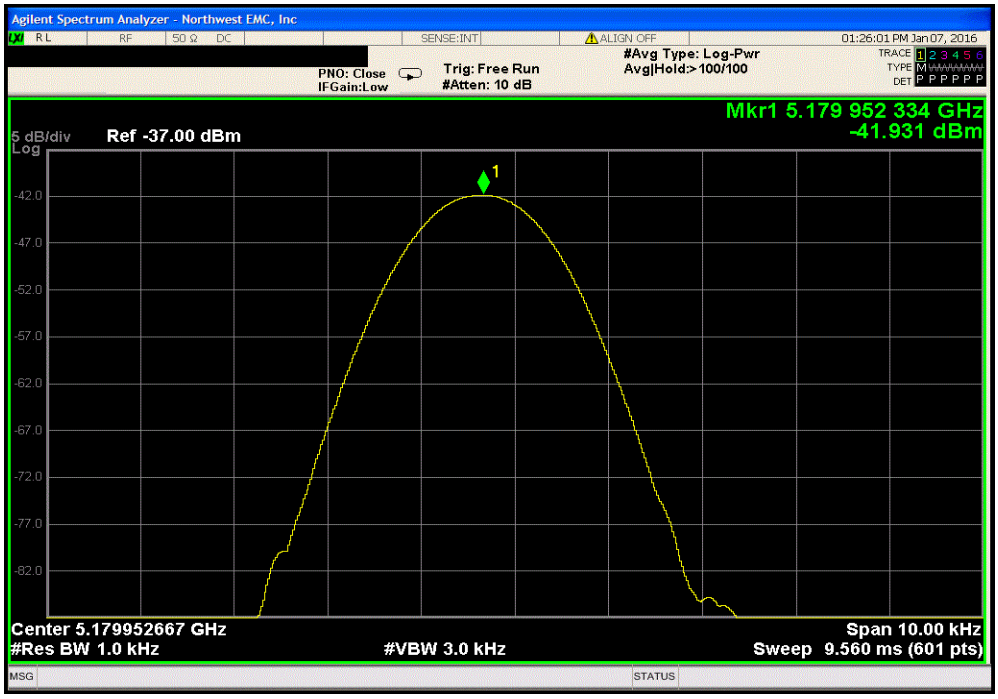

| 5150 MHz - 5250 MHz - Low Channel, 5180 MHz, Temperature: +50° | | | | | | |
|---|---|---|---|---|---|---|
| | | Measured Value (MHz) | Assigned Value (MHz) | Error (ppm) | Limit (ppm) | Results |
| | | 5179.930317 | 5180 | 13.5 | 100 | Pass |



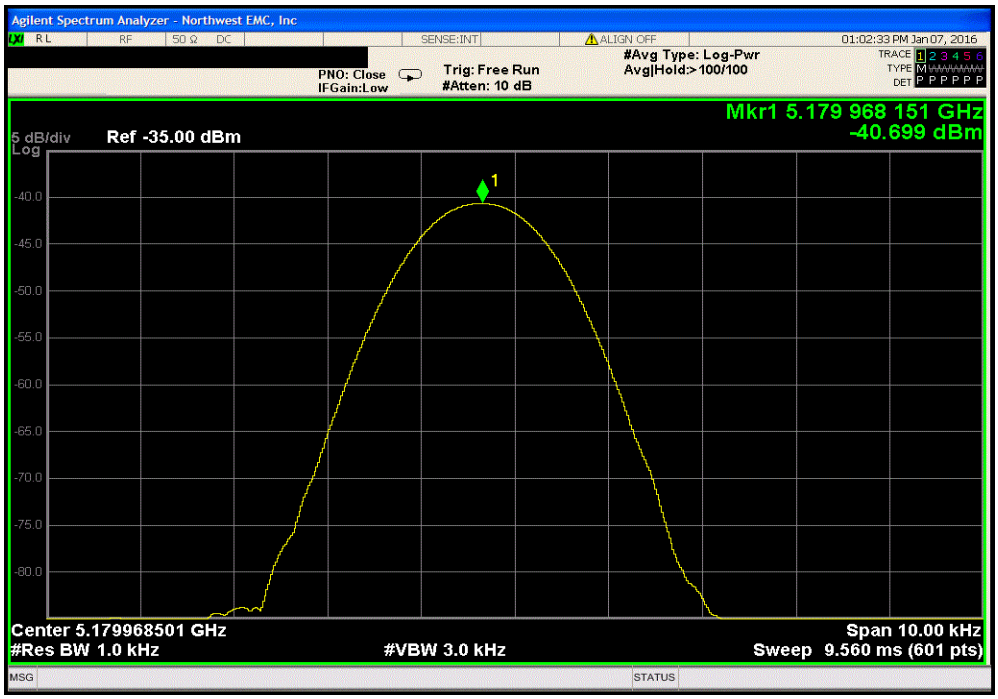
| 5150 MHz - 5250 MHz - Low Channel, 5180 MHz, Temperature: +40° | | | | | | |
|---|---|---|---|---|---|---|
| | | Measured Value (MHz) | Assigned Value (MHz) | Error (ppm) | Limit (ppm) | Results |
| | | 5179.938167 | 5180 | 11.9 | 100 | Pass |



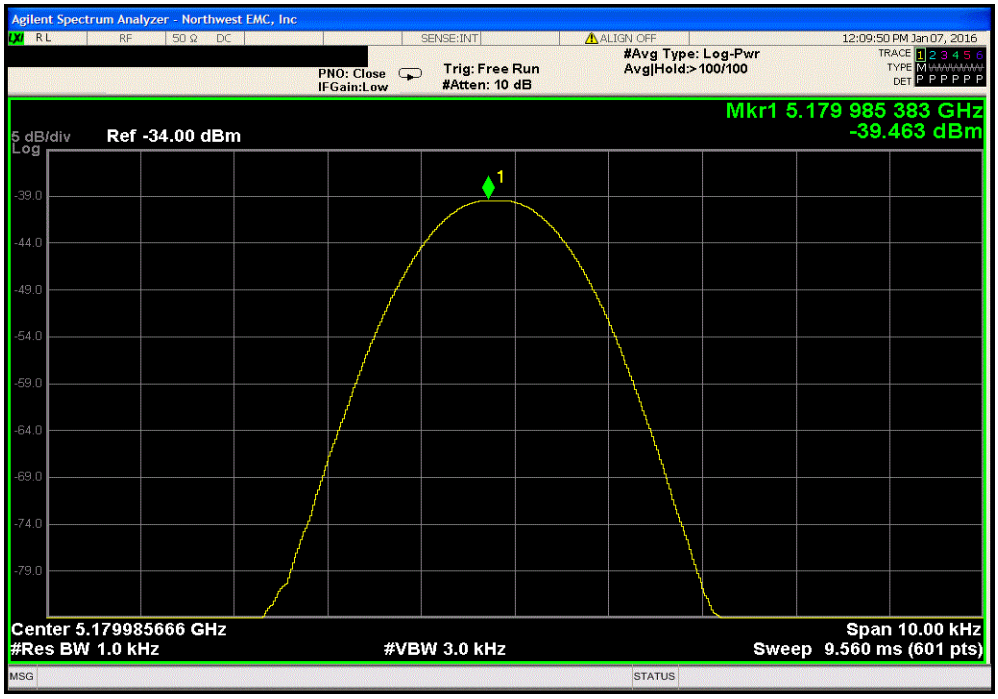

| 5150 MHz - 5250 MHz - Low Channel, 5180 MHz, Temperature: +30° | | | | | | |
|---|---|---|---|---|---|---|
| | | Measured Value (MHz) | Assigned Value (MHz) | Error (ppm) | Limit (ppm) | Results |
| | | 5179.952334 | 5180 | 9.2 | 100 | Pass |



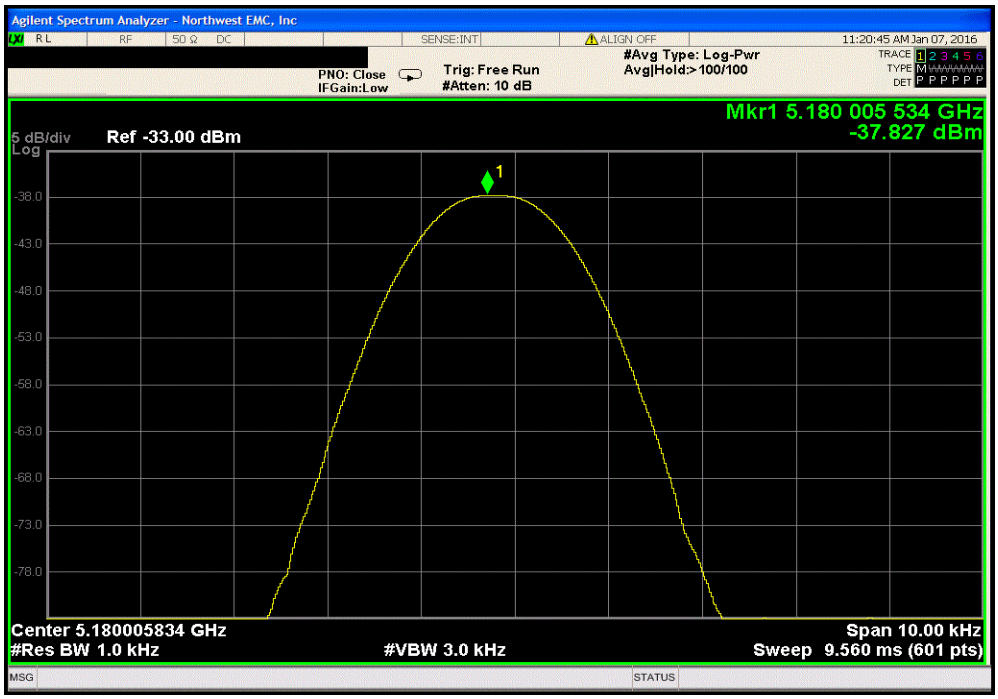
| 5150 MHz - 5250 MHz - Low Channel, 5180 MHz, Temperature: +20° | | | | | | |
|---|---|---|---|---|---|---|
| | | Measured Value (MHz) | Assigned Value (MHz) | Error (ppm) | Limit (ppm) | Results |
| | | 5179.968151 | 5180 | 6.2 | 100 | Pass |



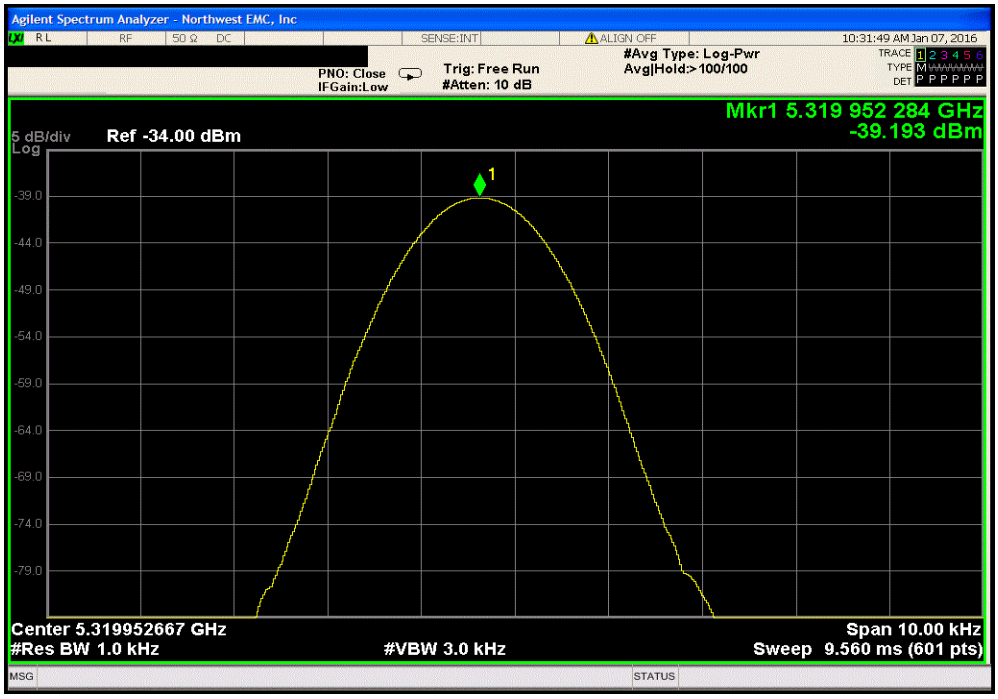

| 5150 MHz - 5250 MHz - Low Channel, 5180 MHz, Temperature: +10° | | | | | | |
|---|---|---|---|---|---|---|
| | | Measured Value (MHz) | Assigned Value (MHz) | Error (ppm) | Limit (ppm) | Results |
| | | 5179.985383 | 5180 | 2.8 | 100 | Pass |



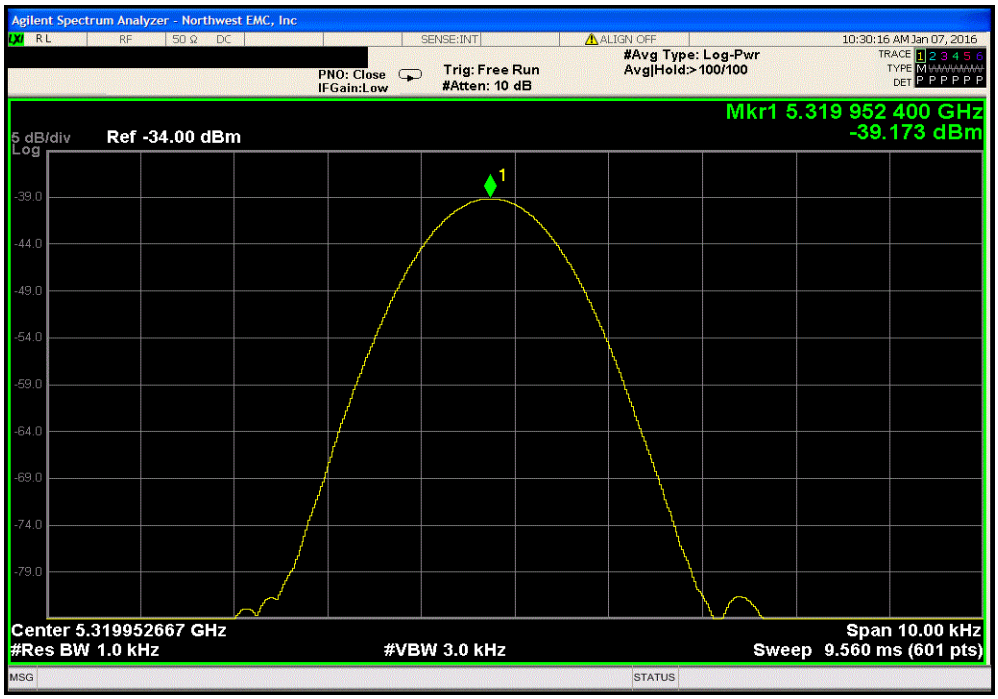
| 5150 MHz - 5250 MHz - Low Channel, 5180 MHz, Temperature: 0° | | | | | | |
|---|---|---|---|---|---|---|
| | | Measured Value (MHz) | Assigned Value (MHz) | Error (ppm) | Limit (ppm) | Results |
| | | 5180.005534 | 5180 | 1.1 | 100 | Pass |



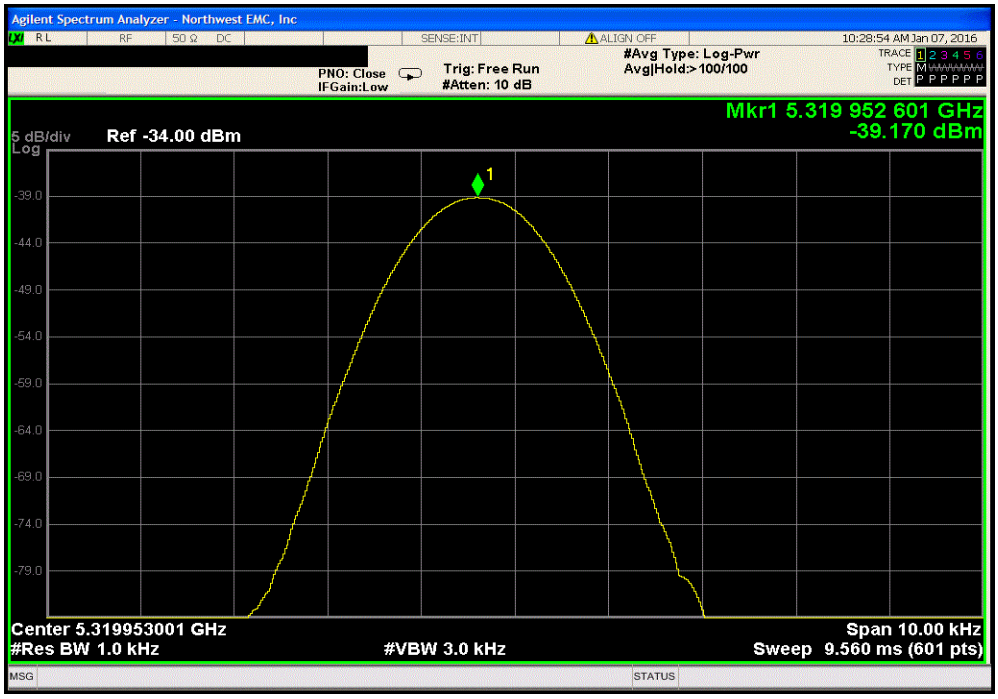

| 5250 MHz - 5350 MHz - High Channel, 5320 MHz, Voltage: 115% | | | | | | |
|---|---|---|---|---|---|---|
| | | Measured Value (MHz) | Assigned Value (MHz) | Error (ppm) | Limit (ppm) | Results |
| | | 5319.952284 | 5320 | 9 | 100 | Pass |



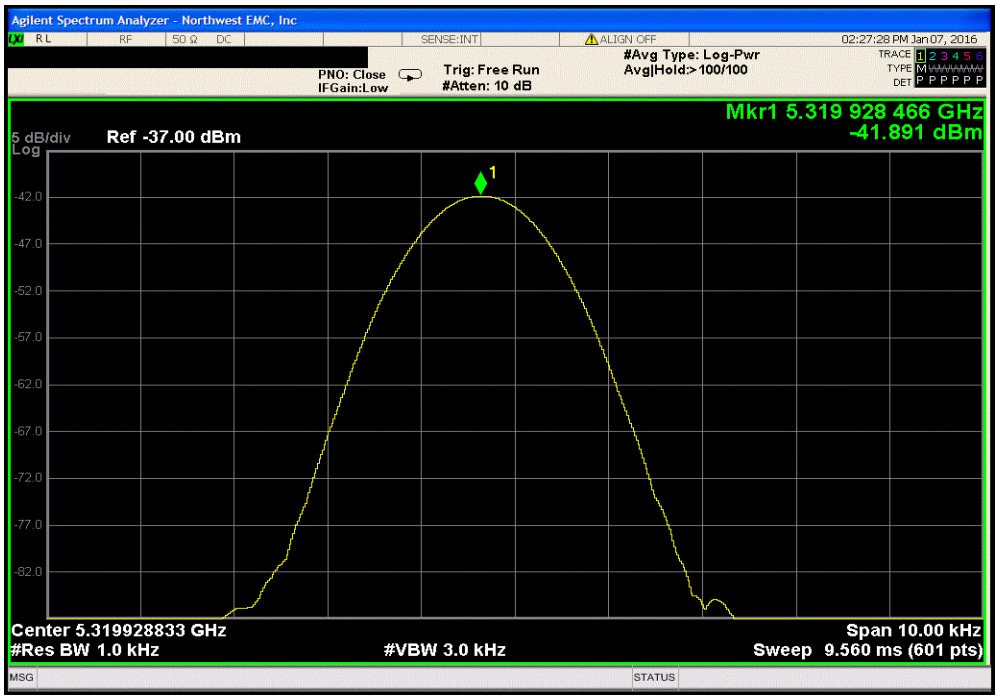
| 5250 MHz - 5350 MHz - High Channel, 5320 MHz, Voltage: 100% | | | | | | |
|---|---|---|---|---|---|---|
| | | Measured Value (MHz) | Assigned Value (MHz) | Error (ppm) | Limit (ppm) | Results |
| | | 5319.9524 | 5320 | 9 | 100 | Pass |



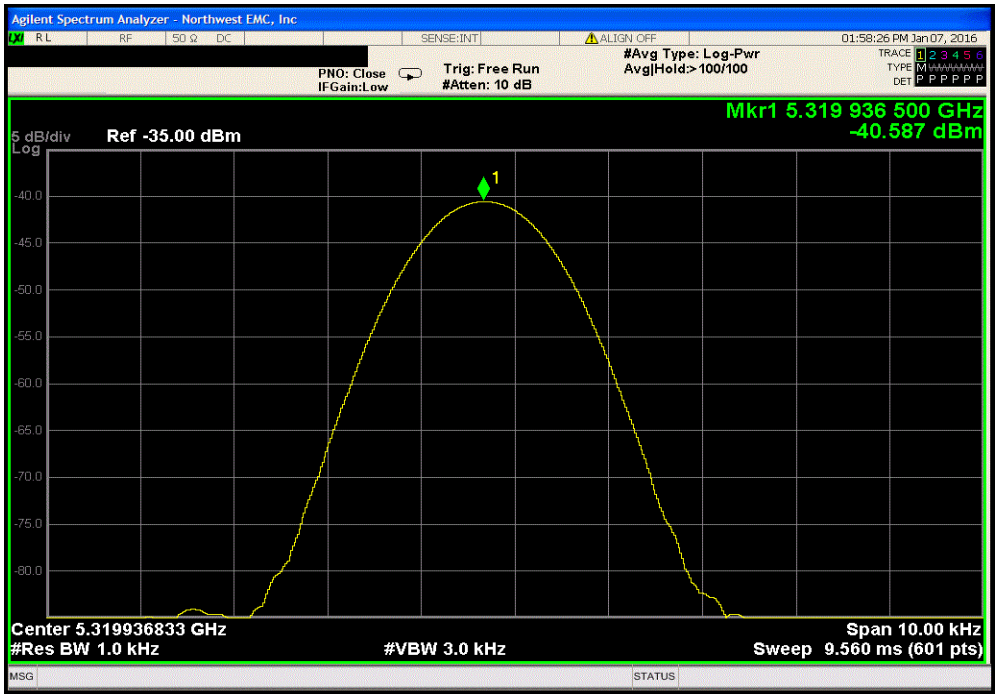

| 5250 MHz - 5350 MHz - High Channel, 5320 MHz, Voltage: 85% | | | | | | |
|---|---|---|---|---|---|---|
| | | Measured Value (MHz) | Assigned Value (MHz) | Error (ppm) | Limit (ppm) | Results |
| | | 5319.952601 | 5320 | 8.9 | 100 | Pass |



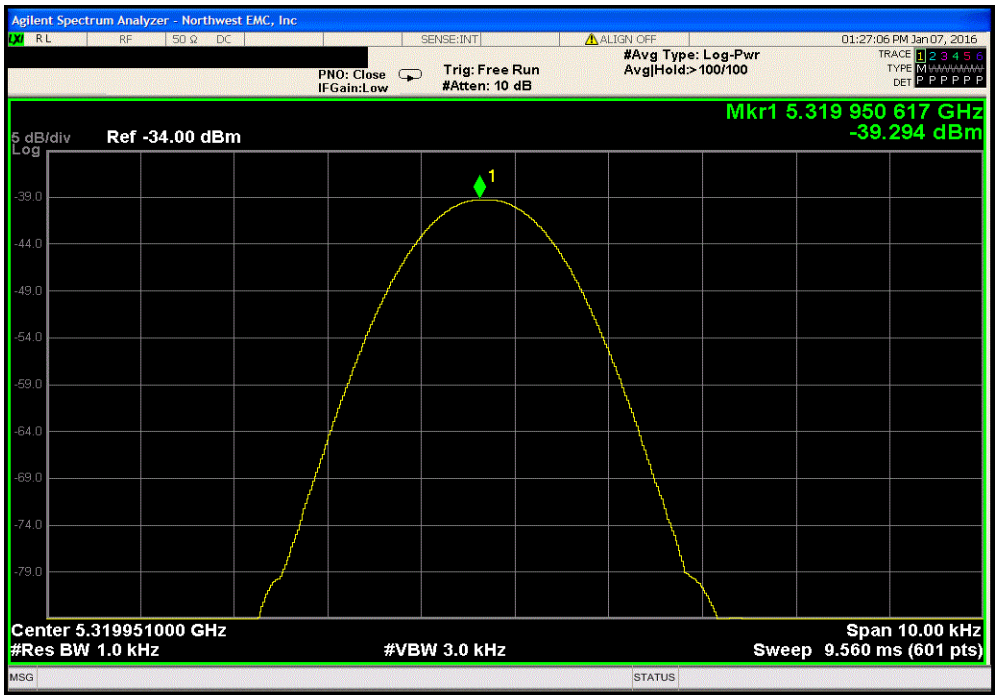
| 5250 MHz - 5350 MHz - High Channel, 5320 MHz, Temperature: +50° | | | | | | |
|---|---|---|---|---|---|---|
| | | Measured Value (MHz) | Assigned Value (MHz) | Error (ppm) | Limit (ppm) | Results |
| | | 5319.928466 | 5320 | 13.5 | 100 | Pass |



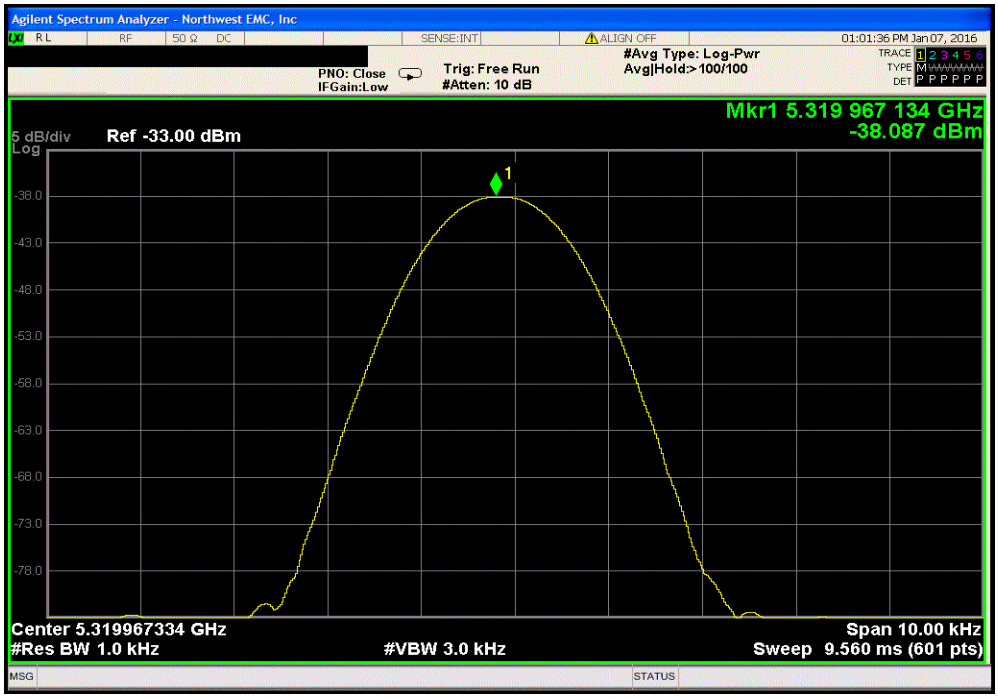

| 5250 MHz - 5350 MHz - High Channel, 5320 MHz, Temperature: +40° | | | | | | |
|---|---|---|---|---|---|---|
| | | Measured Value (MHz) | Assigned Value (MHz) | Error (ppm) | Limit (ppm) | Results |
| | | 5319.9365 | 5320 | 11.9 | 100 | Pass |



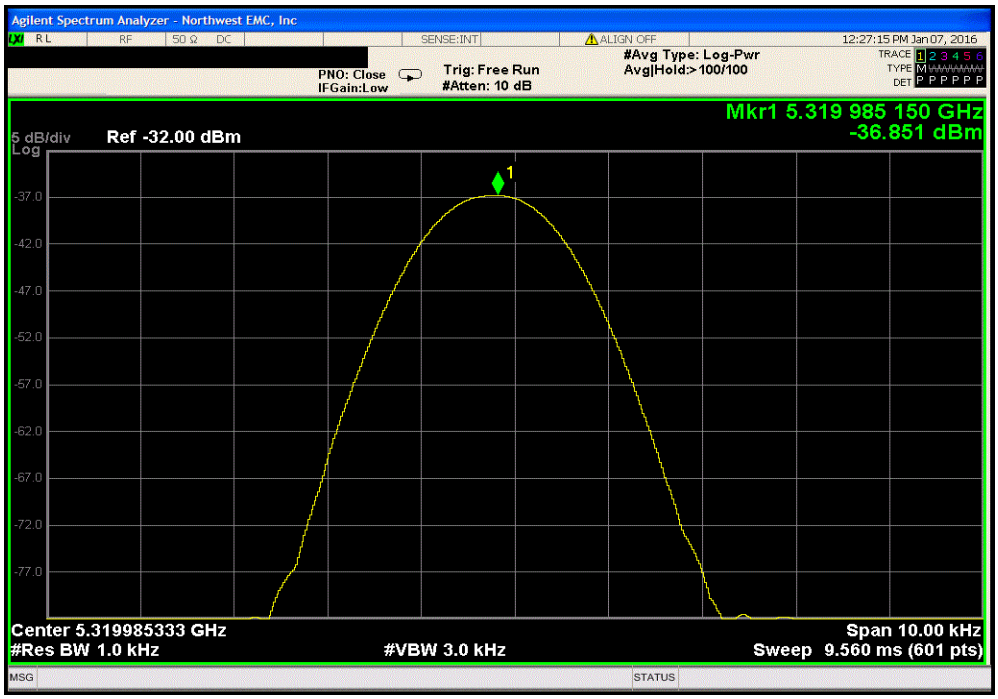
| 5250 MHz - 5350 MHz - High Channel, 5320 MHz, Temperature: +30° | | | | | | |
|---|---|---|---|---|---|---|
| | | Measured Value (MHz) | Assigned Value (MHz) | Error (ppm) | Limit (ppm) | Results |
| | | 5319.950617 | 5320 | 9.3 | 100 | Pass |



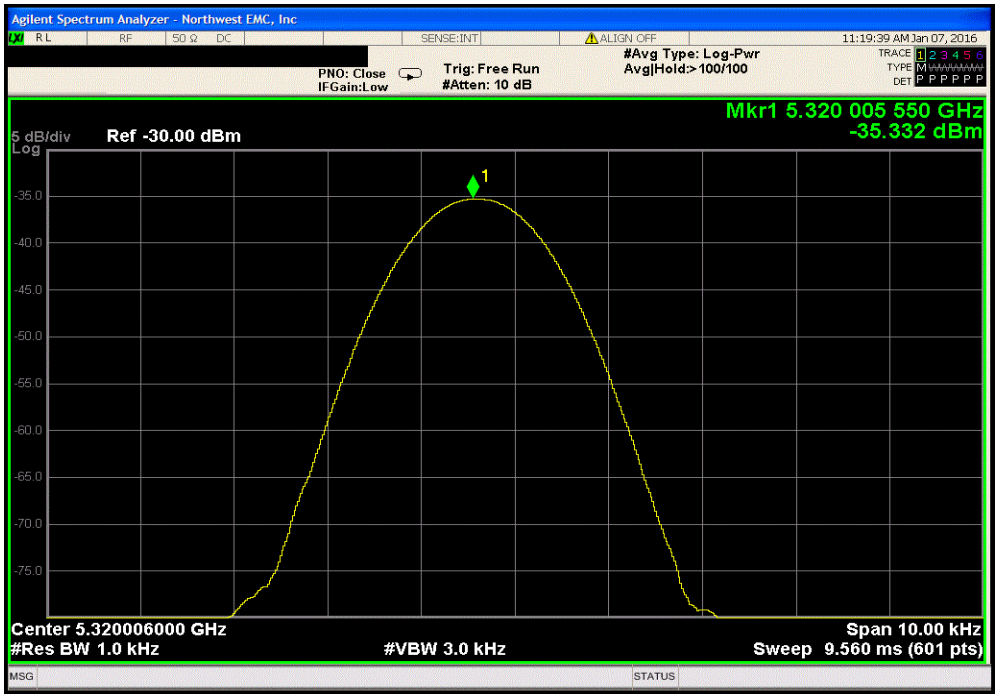

| 5250 MHz - 5350 MHz - High Channel, 5320 MHz, Temperature: +20° | | | | | | |
|---|---|---|---|---|---|---|
| | | Measured Value (MHz) | Assigned Value (MHz) | Error (ppm) | Limit (ppm) | Results |
| | | 5319.967134 | 5320 | 6.2 | 100 | Pass |



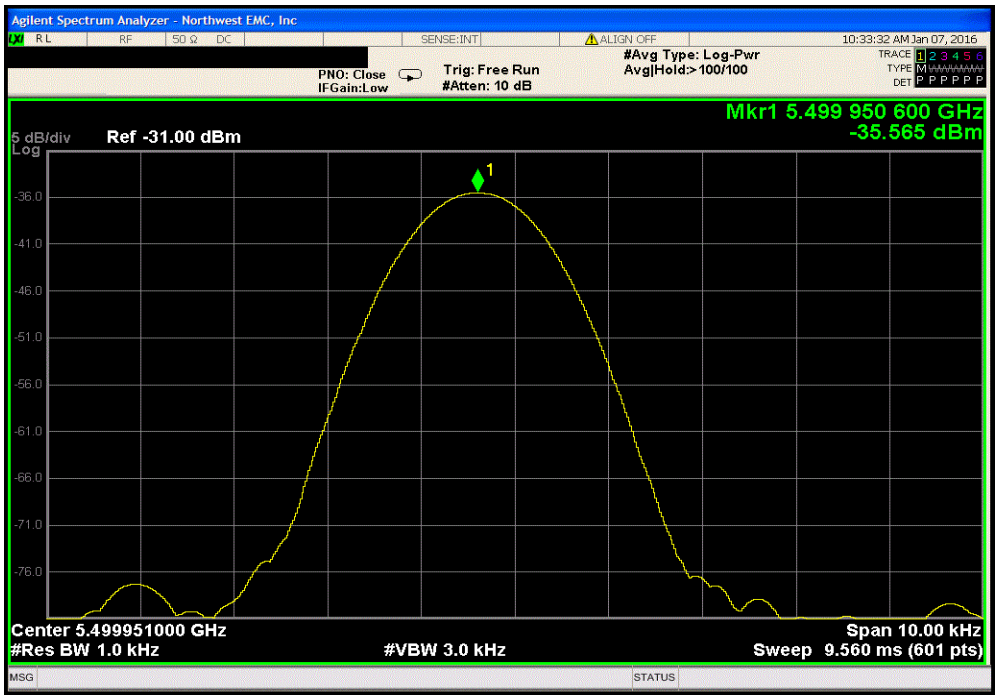
| 5250 MHz - 5350 MHz - High Channel, 5320 MHz, Temperature: +10° | | | | | | |
|---|---|---|---|---|---|---|
| | | Measured Value (MHz) | Assigned Value (MHz) | Error (ppm) | Limit (ppm) | Results |
| | | 5319.98515 | 5320 | 2.8 | 100 | Pass |



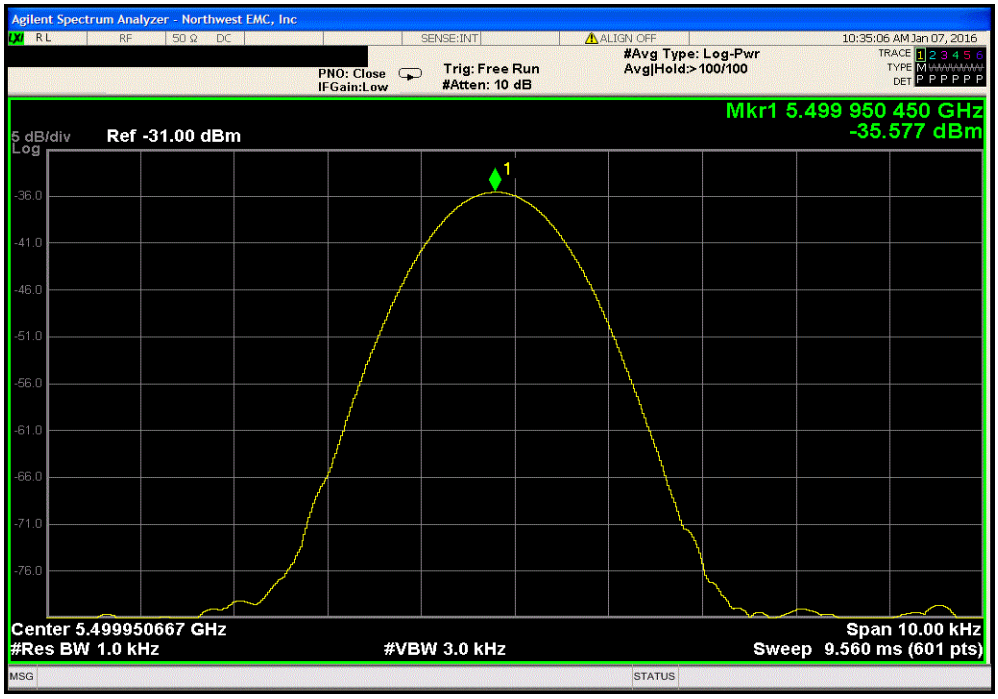

| 5250 MHz - 5350 MHz - High Channel, 5320 MHz, Temperature: 0° | | | | | | |
|---|---|---|---|---|---|---|
| | | Measured Value (MHz) | Assigned Value (MHz) | Error (ppm) | Limit (ppm) | Results |
| | | 5320.00555 | 5320 | 1 | 100 | Pass |



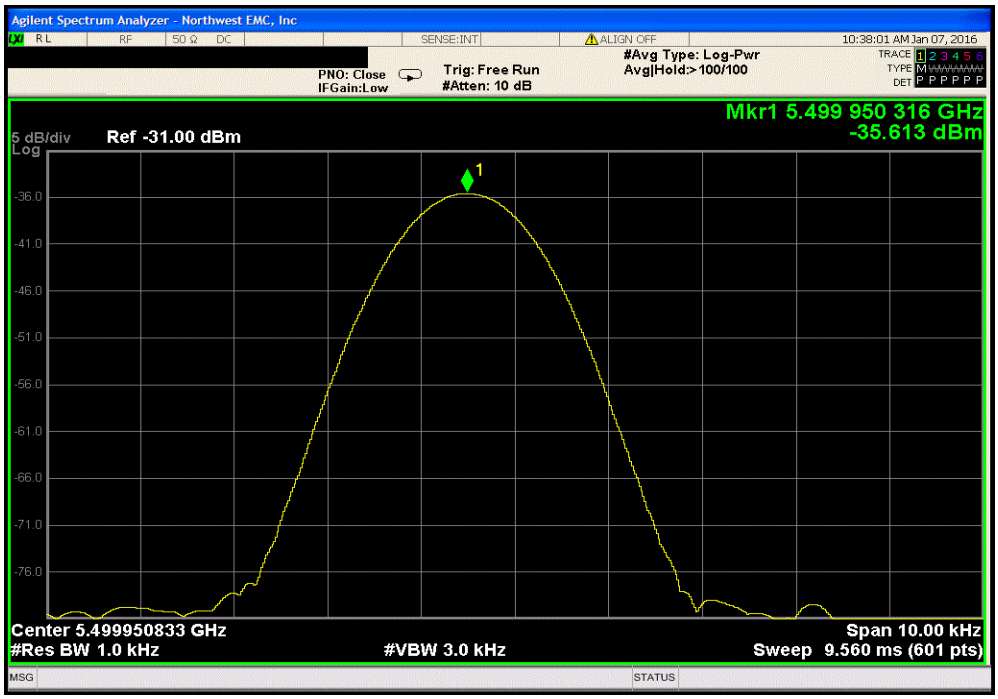
| 5470 MHz - 5725 MHz - Low Channel, 5500 MHz, Voltage: 115% | | | | | | |
|---|---|---|---|---|---|---|
| | | Measured Value (MHz) | Assigned Value (MHz) | Error (ppm) | Limit (ppm) | Results |
| | | 5499.9506 | 5500 | 9 | 100 | Pass |



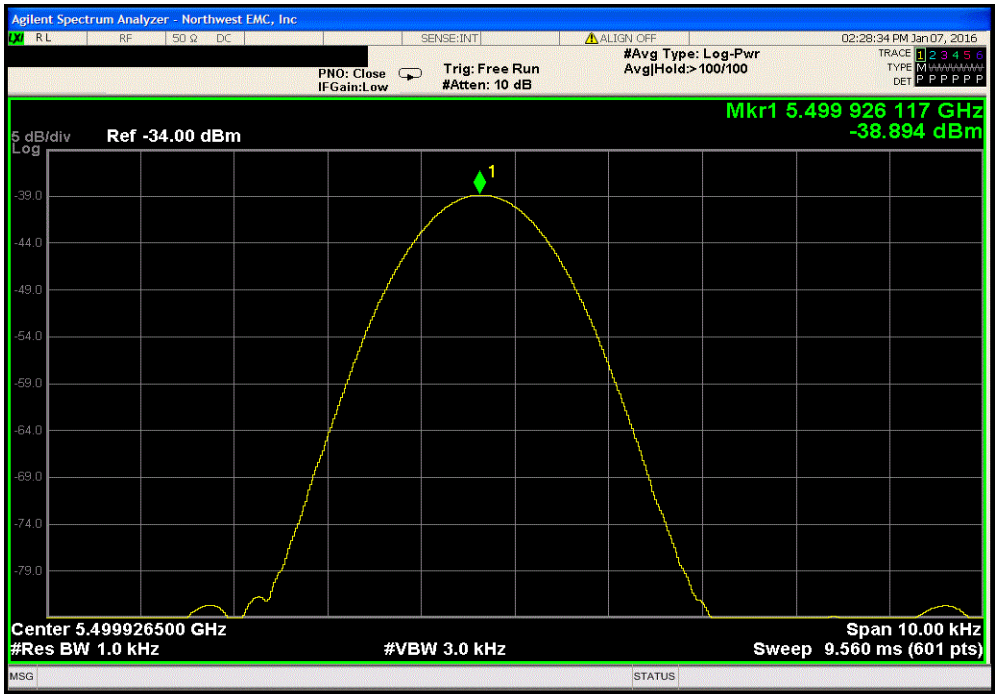

| 5470 MHz - 5725 MHz - Low Channel, 5500 MHz, Voltage: 100% | | | | | | |
|---|---|---|---|---|---|---|
| | | Measured Value (MHz) | Assigned Value (MHz) | Error (ppm) | Limit (ppm) | Results |
| | | 5499.95045 | 5500 | 9 | 100 | Pass |



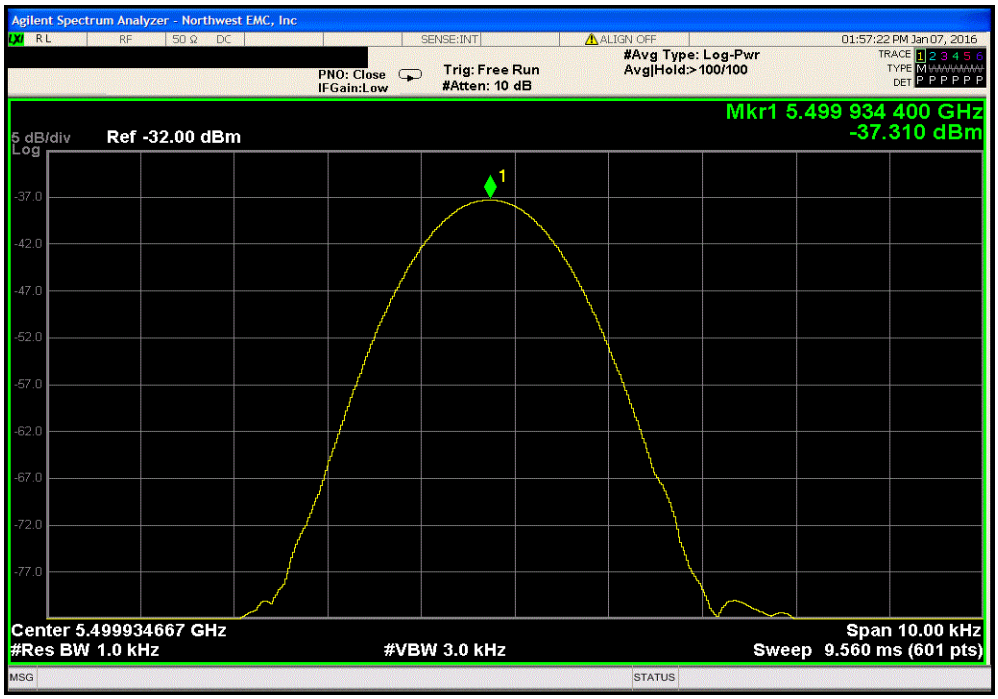
| 5470 MHz - 5725 MHz - Low Channel, 5500 MHz, Voltage: 85% | | | | | | |
|---|---|---|---|---|---|---|
| | | Measured Value (MHz) | Assigned Value (MHz) | Error (ppm) | Limit (ppm) | Results |
| | | 5499.950316 | 5500 | 9 | 100 | Pass |



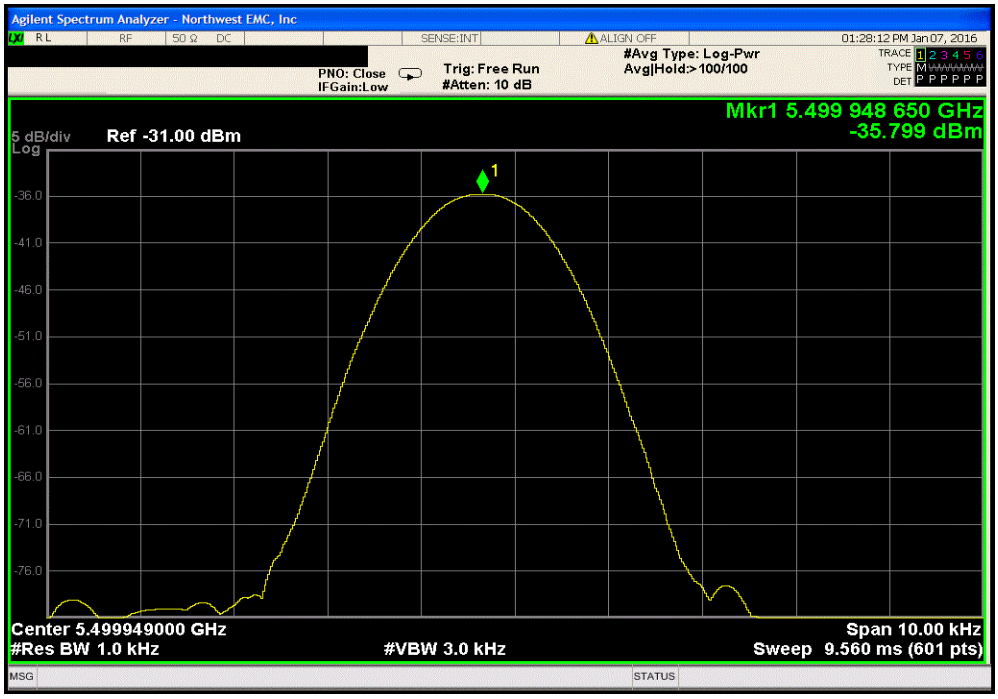

| 5470 MHz - 5725 MHz - Low Channel, 5500 MHz, Temperature: +50° | | | | | | |
|---|---|---|---|---|---|---|
| | | Measured Value (MHz) | Assigned Value (MHz) | Error (ppm) | Limit (ppm) | Results |
| | | 5499.926117 | 5500 | 13.4 | 100 | Pass |



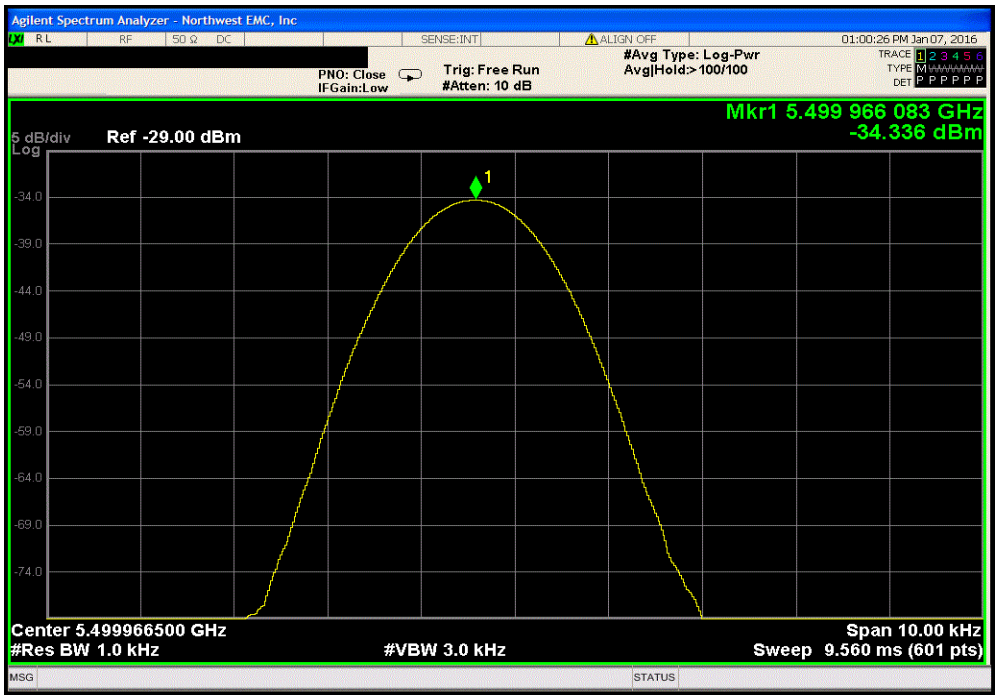
| 5470 MHz - 5725 MHz - Low Channel, 5500 MHz, Temperature: +40° | | | | | | |
|---|---|---|---|---|---|---|
| | | Measured Value (MHz) | Assigned Value (MHz) | Error (ppm) | Limit (ppm) | Results |
| | | 5499.9344 | 5500 | 11.9 | 100 | Pass |



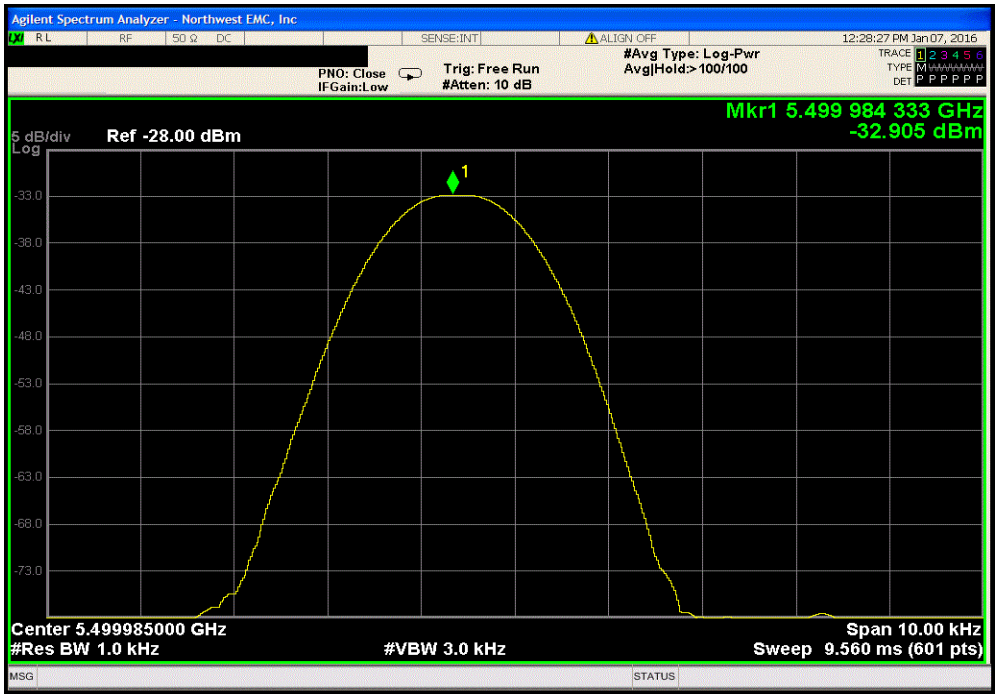

| 5470 MHz - 5725 MHz - Low Channel, 5500 MHz, Temperature: +30° | | | | | | |
|---|---|---|---|---|---|---|
| | | Measured Value (MHz) | Assigned Value (MHz) | Error (ppm) | Limit (ppm) | Results |
| | | 5499.94865 | 5500 | 9.3 | 100 | Pass |



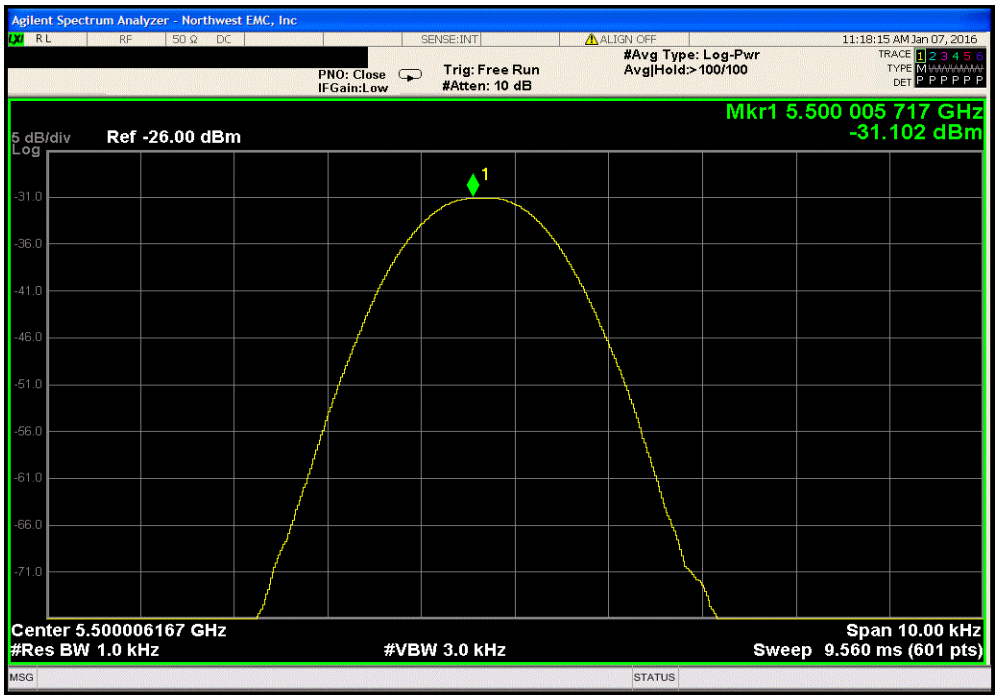
| 5470 MHz - 5725 MHz - Low Channel, 5500 MHz, Temperature: +20° | | | | | | |
|---|---|---|---|---|---|---|
| | | Measured Value (MHz) | Assigned Value (MHz) | Error (ppm) | Limit (ppm) | Results |
| | | 5499.966083 | 5500 | 6.2 | 100 | Pass |



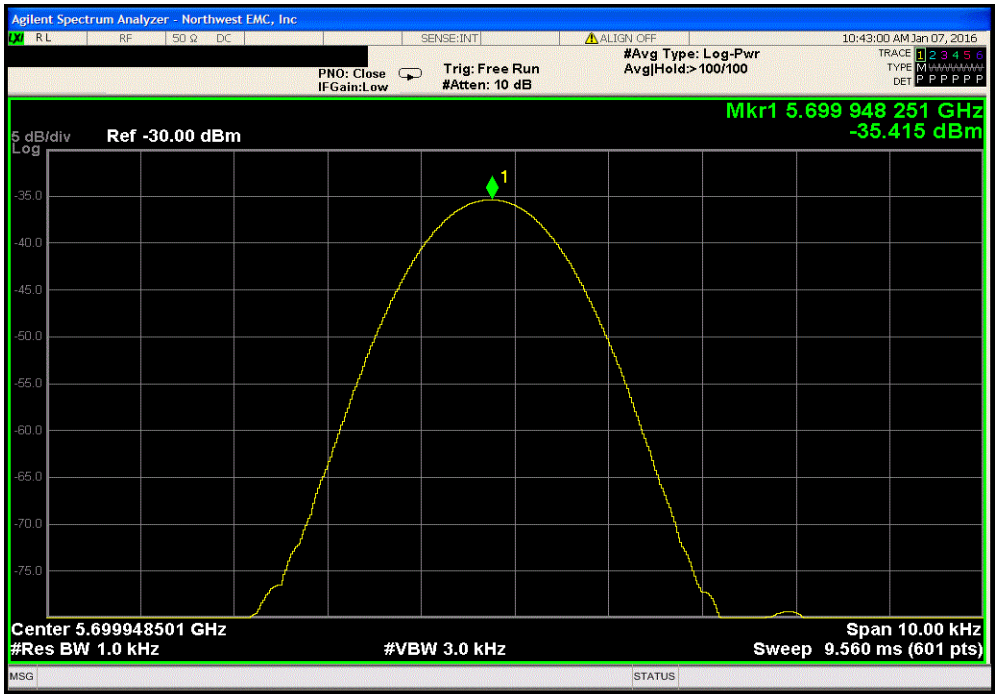

| 5470 MHz - 5725 MHz - Low Channel, 5500 MHz, Temperature: +10° | | | | | | |
|---|---|---|---|---|---|---|
| | | Measured Value (MHz) | Assigned Value (MHz) | Error (ppm) | Limit (ppm) | Results |
| | | 5499.984333 | 5500 | 2.9 | 100 | Pass |



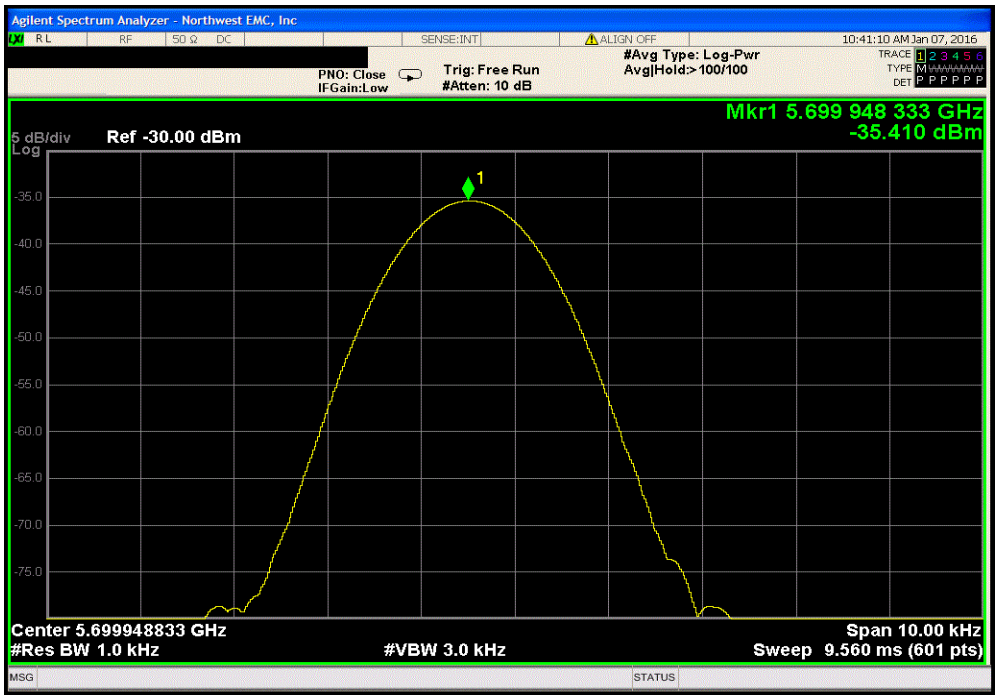
| 5470 MHz - 5725 MHz - Low Channel, 5500 MHz, Temperature: 0° | | | | | | |
|---|---|---|---|---|---|---|
| | | Measured Value (MHz) | Assigned Value (MHz) | Error (ppm) | Limit (ppm) | Results |
| | | 5500.005717 | 5500 | 1 | 100 | Pass |



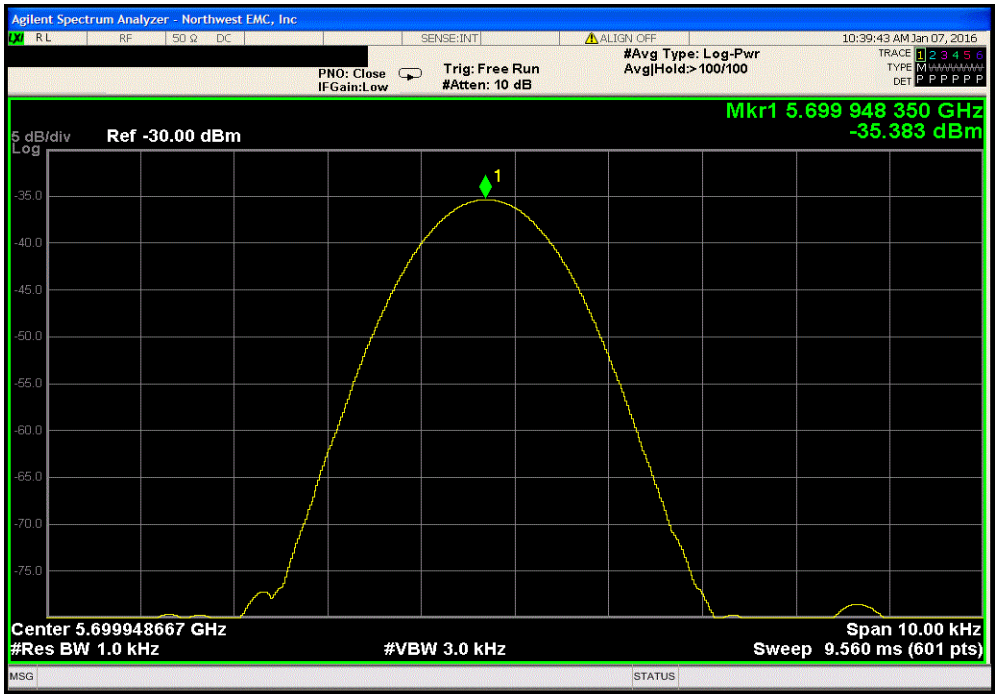

| 5470 MHz - 5725 MHz - High Channel, 5700 MHz, Voltage: 115% | | | | | | |
|---|---|---|---|---|---|---|
| | | Measured Value (MHz) | Assigned Value (MHz) | Error (ppm) | Limit (ppm) | Results |
| | | 5699.948251 | 5700 | 9.1 | 100 | Pass |



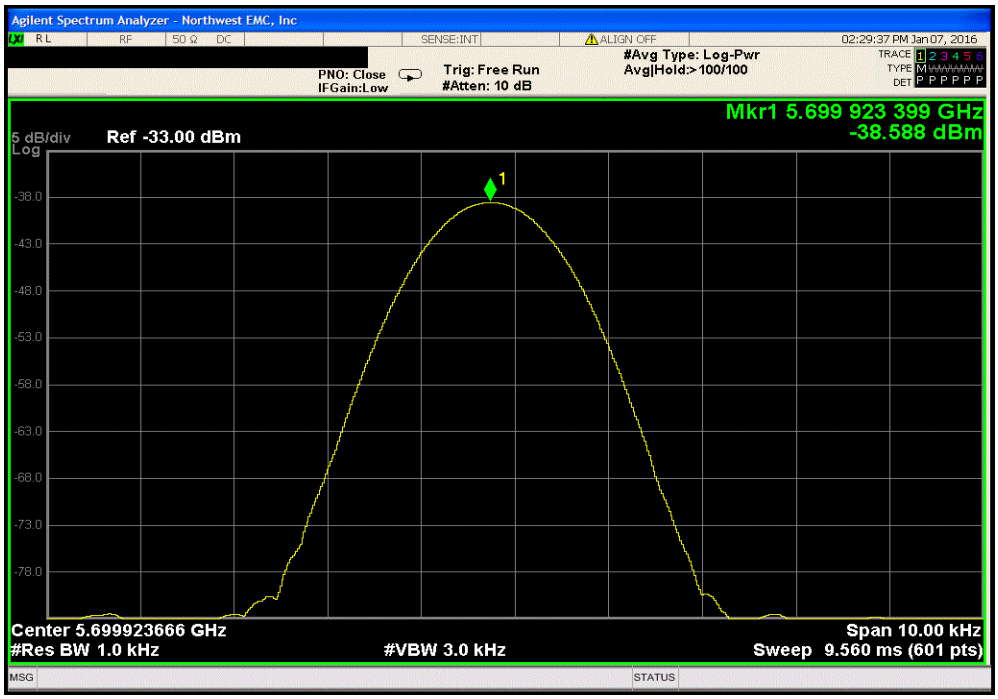
| 5470 MHz - 5725 MHz - High Channel, 5700 MHz, Voltage: 100% | | | | | | |
|---|---|---|---|---|---|---|
| | | Measured Value (MHz) | Assigned Value (MHz) | Error (ppm) | Limit (ppm) | Results |
| | | 5699.948333 | 5700 | 9.1 | 100 | Pass |



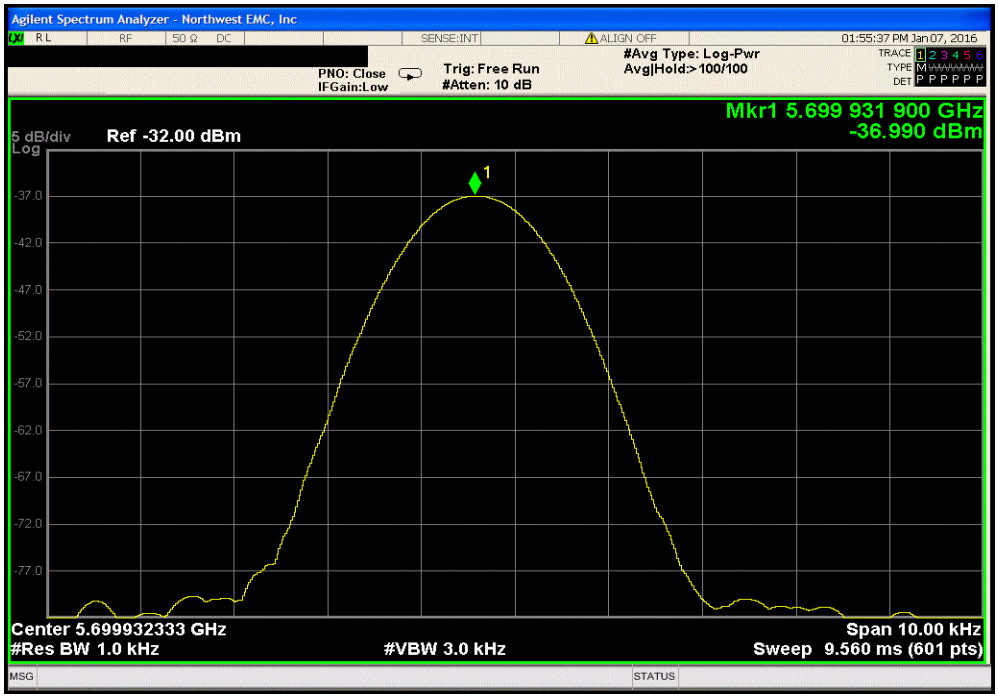

| 5470 MHz - 5725 MHz - High Channel, 5700 MHz, Voltage: 85% | | | | | | |
|---|---|---|---|---|---|---|
| | | Measured Value (MHz) | Assigned Value (MHz) | Error (ppm) | Limit (ppm) | Results |
| | | 5699.94835 | 5700 | 9.1 | 100 | Pass |



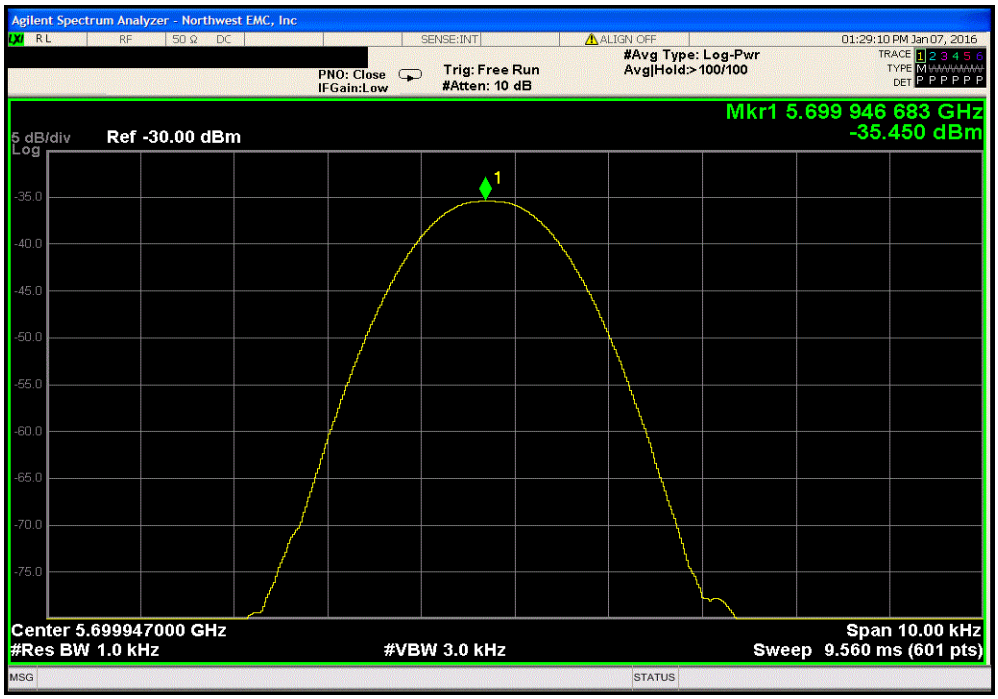
| 5470 MHz - 5725 MHz - High Channel, 5700 MHz, Temperature: +50° | | | | | | |
|---|---|---|---|---|---|---|
| | | Measured Value (MHz) | Assigned Value (MHz) | Error (ppm) | Limit (ppm) | Results |
| | | 5699.923399 | 5700 | 13.4 | 100 | Pass |



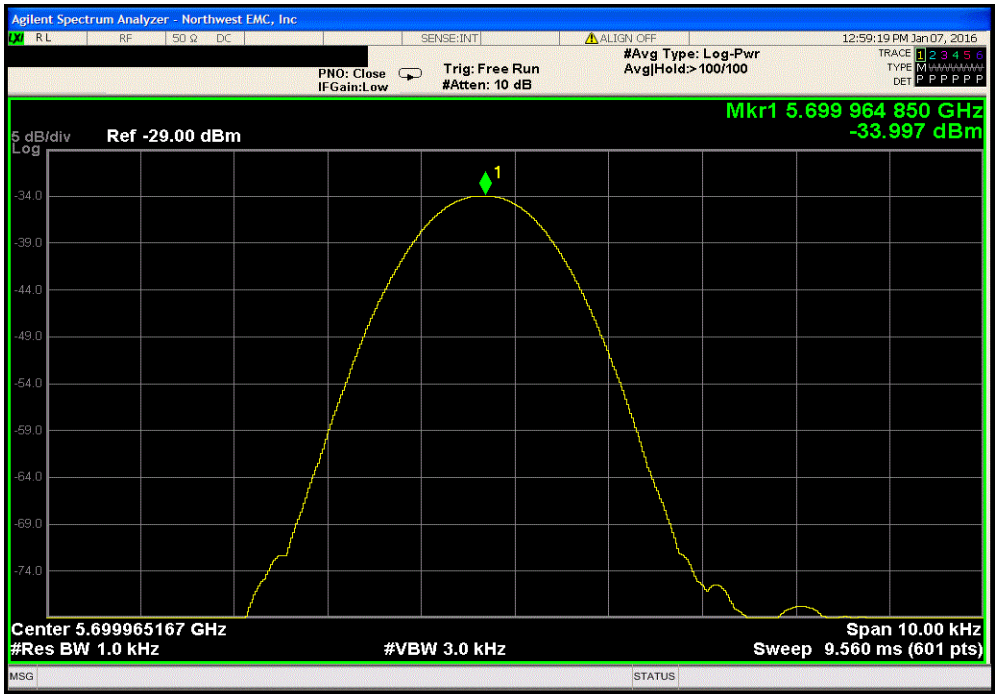

| 5470 MHz - 5725 MHz - High Channel, 5700 MHz, Temperature: +40° | | | | | | |
|---|---|---|---|---|---|---|
| | | Measured Value (MHz) | Assigned Value (MHz) | Error (ppm) | Limit (ppm) | Results |
| | | 5699.9319 | 5700 | 12 | 100 | Pass |



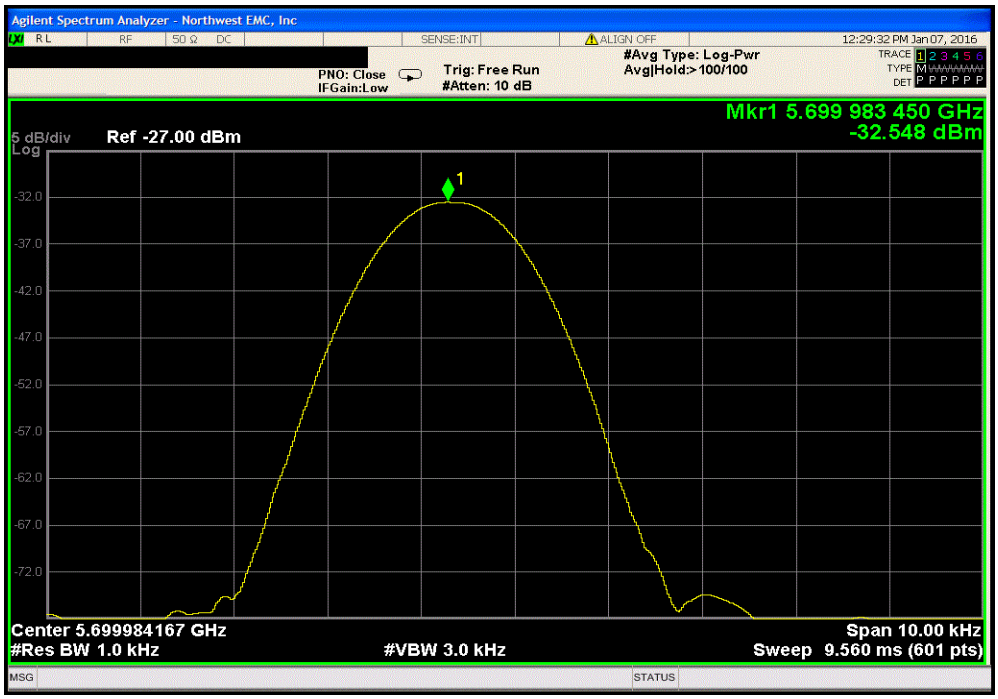
| 5470 MHz - 5725 MHz - High Channel, 5700 MHz, Temperature: +30° | | | | | | |
|---|---|---|---|---|---|---|
| | | Measured Value (MHz) | Assigned Value (MHz) | Error (ppm) | Limit (ppm) | Results |
| | | 5699.946683 | 5700 | 9.4 | 100 | Pass |



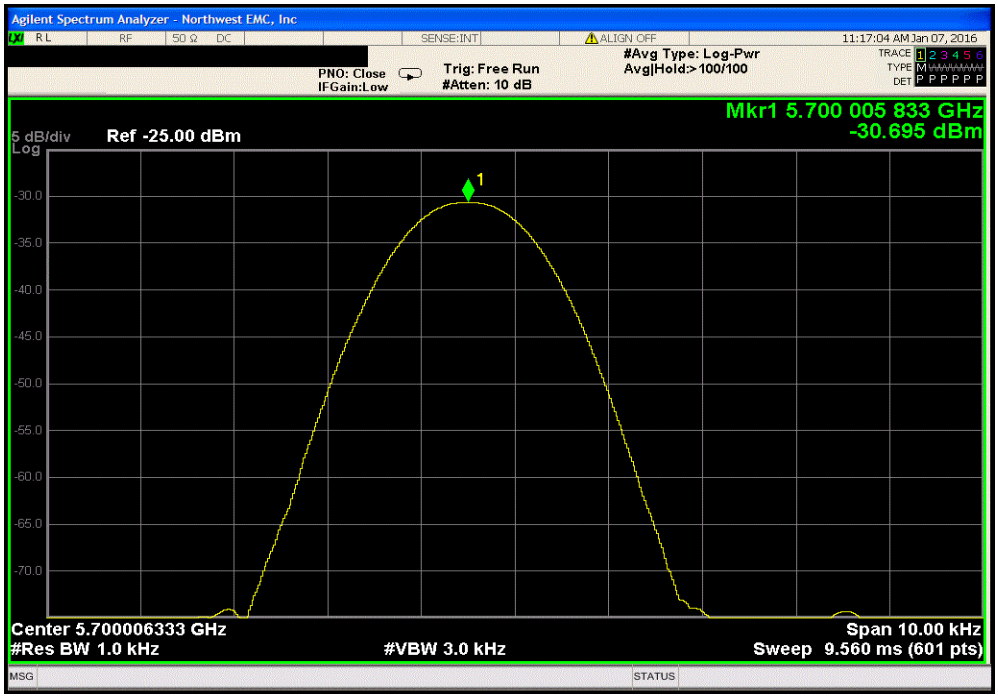

| 5470 MHz - 5725 MHz - High Channel, 5700 MHz, Temperature: +20° | | | | | | |
|---|---|---|---|---|---|---|
| | | Measured Value (MHz) | Assigned Value (MHz) | Error (ppm) | Limit (ppm) | Results |
| | | 5699.96485 | 5700 | 6.2 | 100 | Pass |



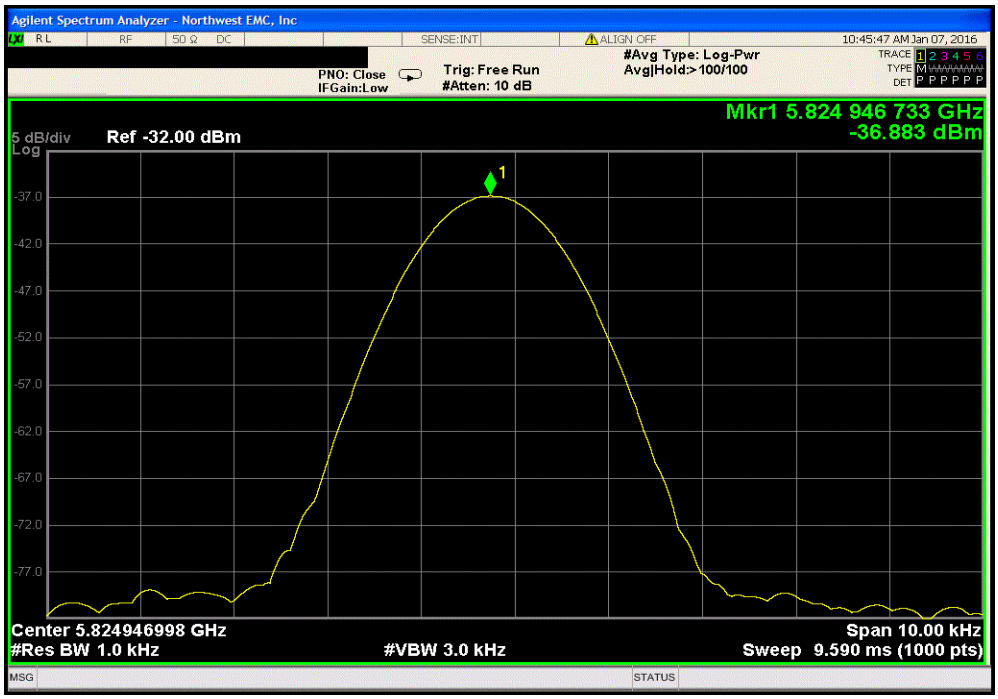
| 5470 MHz - 5725 MHz - High Channel, 5700 MHz, Temperature: +10° | | | | | | |
|---|---|---|---|---|---|---|
| | | Measured Value (MHz) | Assigned Value (MHz) | Error (ppm) | Limit (ppm) | Results |
| | | 5699.98345 | 5700 | 2.9 | 100 | Pass |



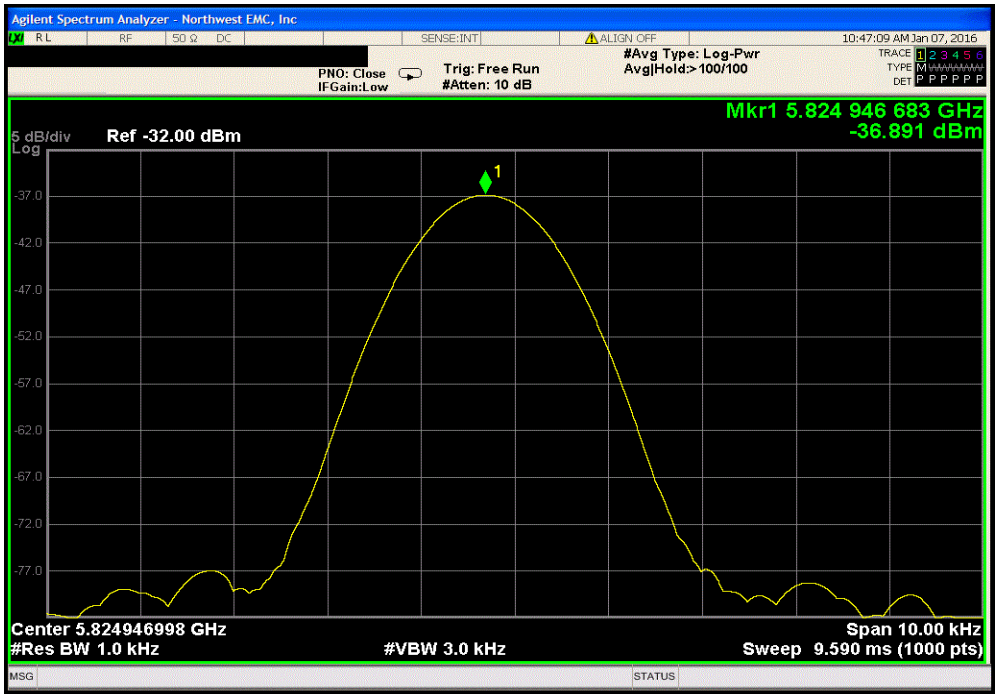

| 5470 MHz - 5725 MHz - High Channel, 5700 MHz, Temperature: 0° | | | | | | |
|---|---|---|---|---|---|---|
| | | Measured Value (MHz) | Assigned Value (MHz) | Error (ppm) | Limit (ppm) | Results |
| | | 5700.005833 | 5700 | 1 | 100 | Pass |



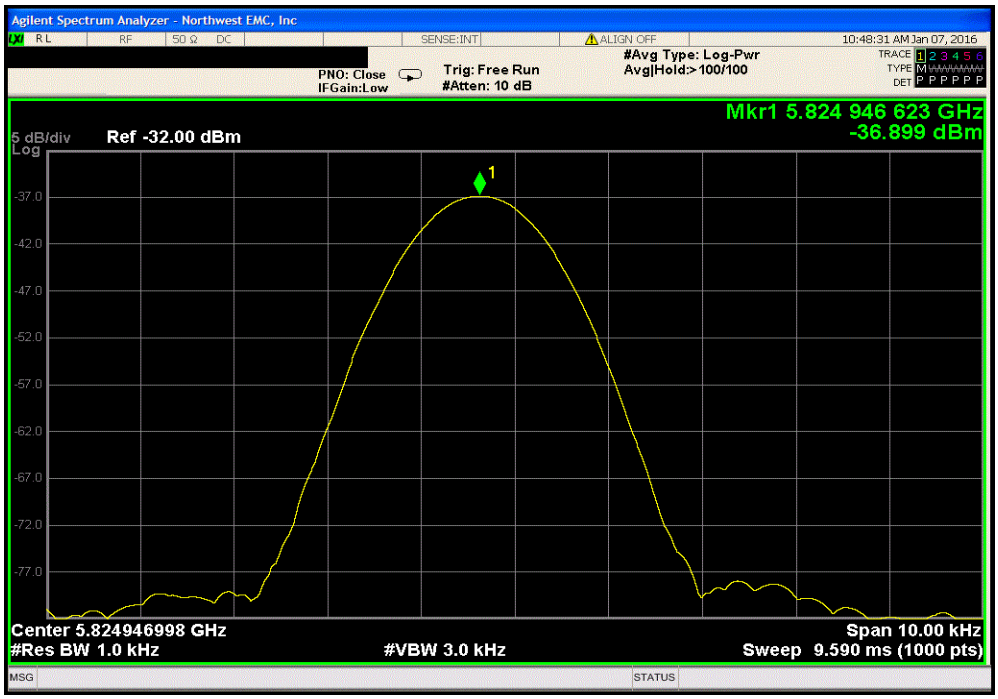
| 5725 MHz - 5850 MHz - High Channel, 5825 MHz, Voltage: 115% | | | | | | |
|---|---|---|---|---|---|---|
| | | Measured Value (MHz) | Assigned Value (MHz) | Error (ppm) | Limit (ppm) | Results |
| | | 5824.946733 | 5825 | 9.1 | 100 | Pass |



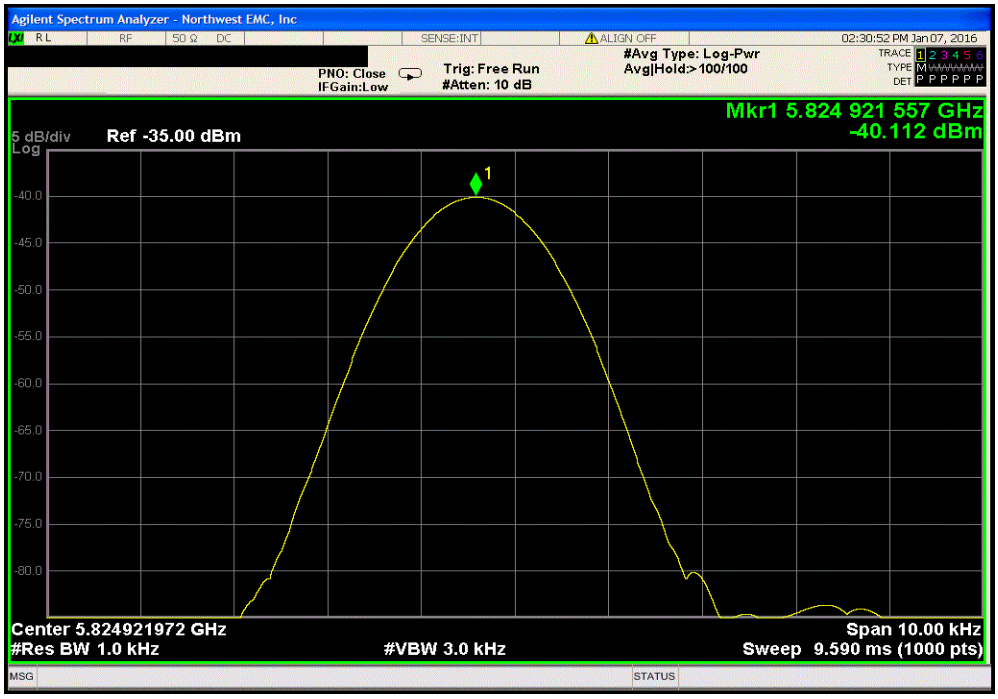

| 5725 MHz - 5850 MHz - High Channel, 5825 MHz, Voltage: 100% | | | | | | |
|---|---|---|---|---|---|---|
| | | Measured Value (MHz) | Assigned Value (MHz) | Error (ppm) | Limit (ppm) | Results |
| | | 5824.946683 | 5825 | 9.2 | 100 | Pass |



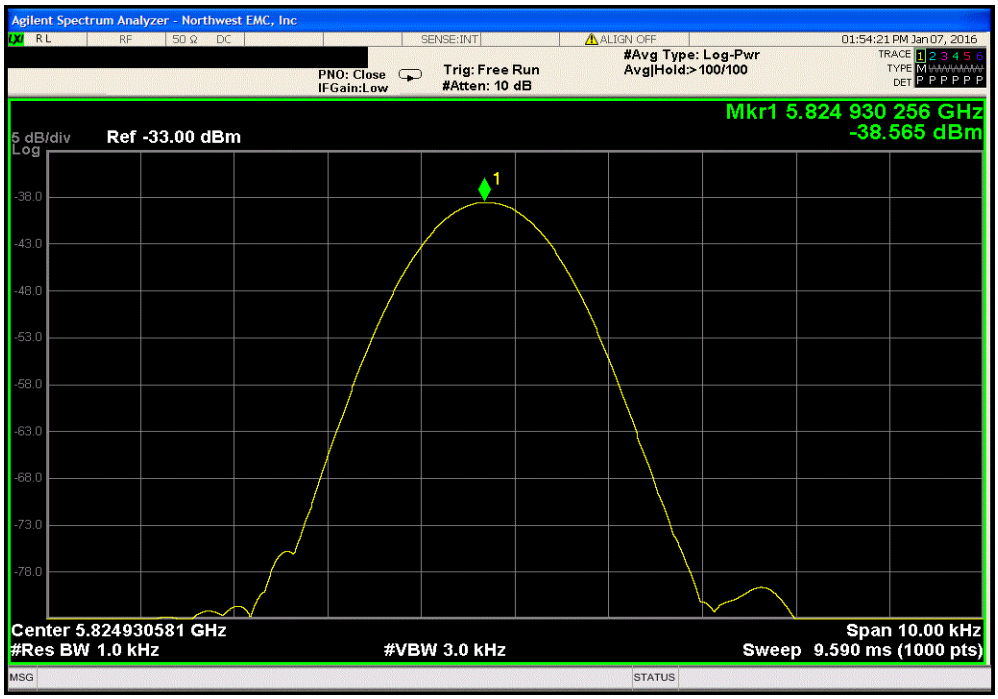
| 5725 MHz - 5850 MHz - High Channel, 5825 MHz, Voltage: 85% | | | | | | |
|---|---|---|---|---|---|---|
| | | Measured Value (MHz) | Assigned Value (MHz) | Error (ppm) | Limit (ppm) | Results |
| | | 5824.946623 | 5825 | 9.2 | 100 | Pass |



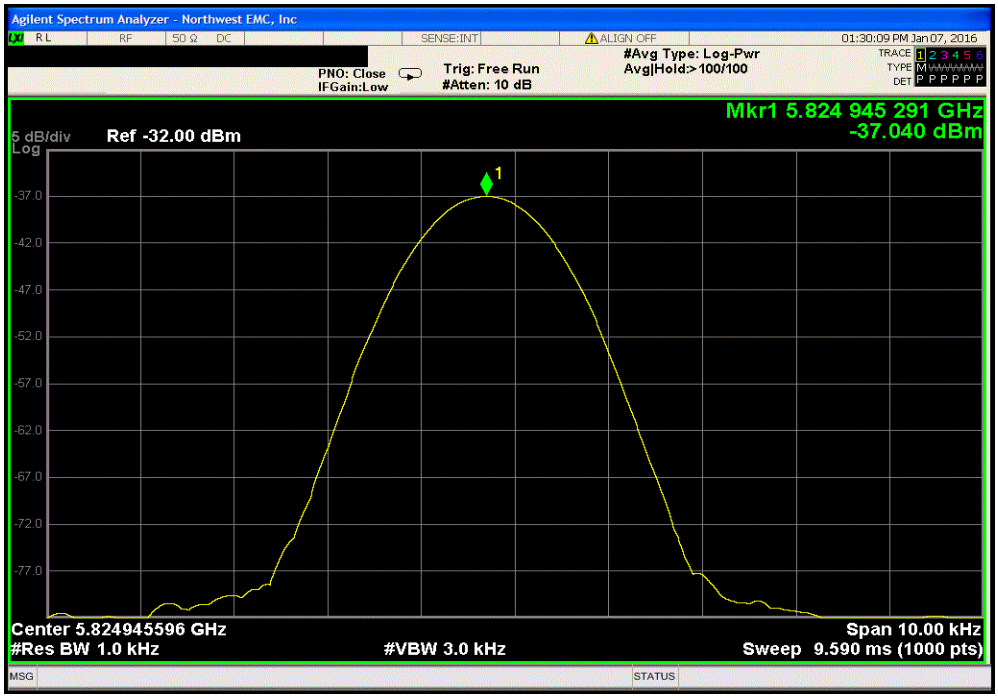

| 5725 MHz - 5850 MHz - High Channel, 5825 MHz, Temperature: +50° | | | | | | |
|---|---|---|---|---|---|---|
| | | Measured Value (MHz) | Assigned Value (MHz) | Error (ppm) | Limit (ppm) | Results |
| | | 5824.921557 | 5825 | 13.5 | 100 | Pass |



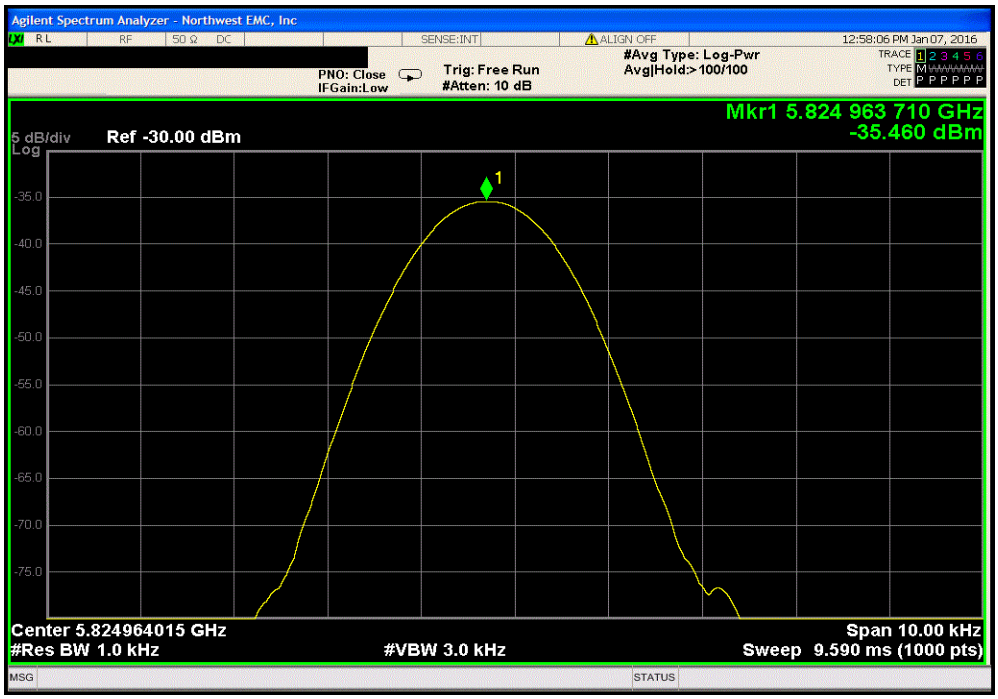
| 5725 MHz - 5850 MHz - High Channel, 5825 MHz, Temperature: +40° | | | | | | |
|---|---|---|---|---|---|---|
| | | Measured Value (MHz) | Assigned Value (MHz) | Error (ppm) | Limit (ppm) | Results |
| | | 5824.930256 | 5825 | 12 | 100 | Pass |



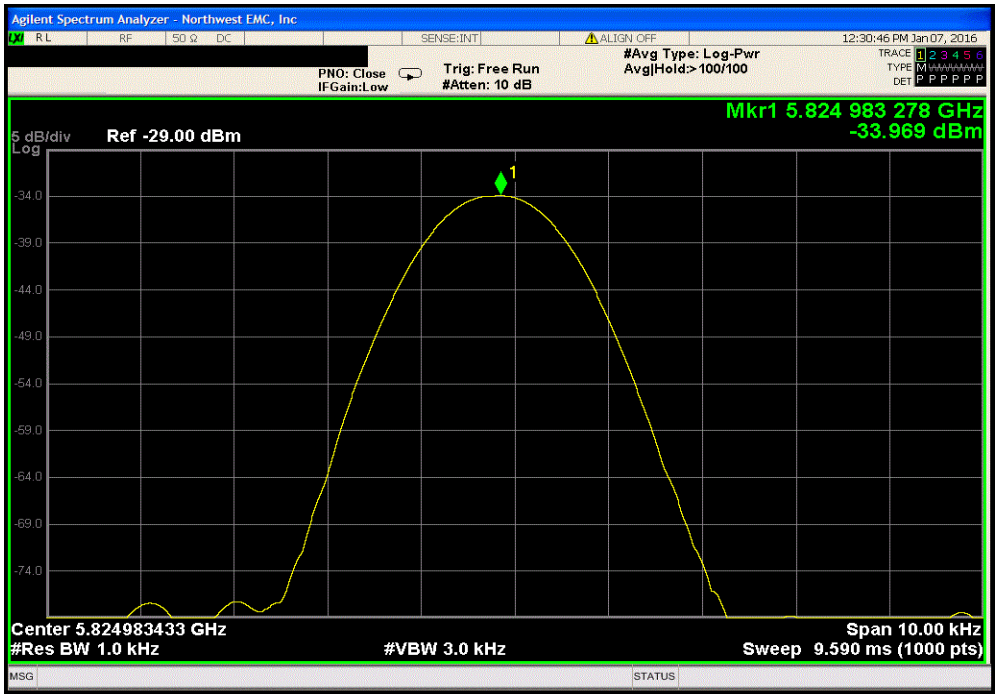

| 5725 MHz - 5850 MHz - High Channel, 5825 MHz, Temperature: +30° | | | | | | |
|---|---|---|---|---|---|---|
| | | Measured Value (MHz) | Assigned Value (MHz) | Error (ppm) | Limit (ppm) | Results |
| | | 5824.945291 | 5825 | 9.4 | 100 | Pass |



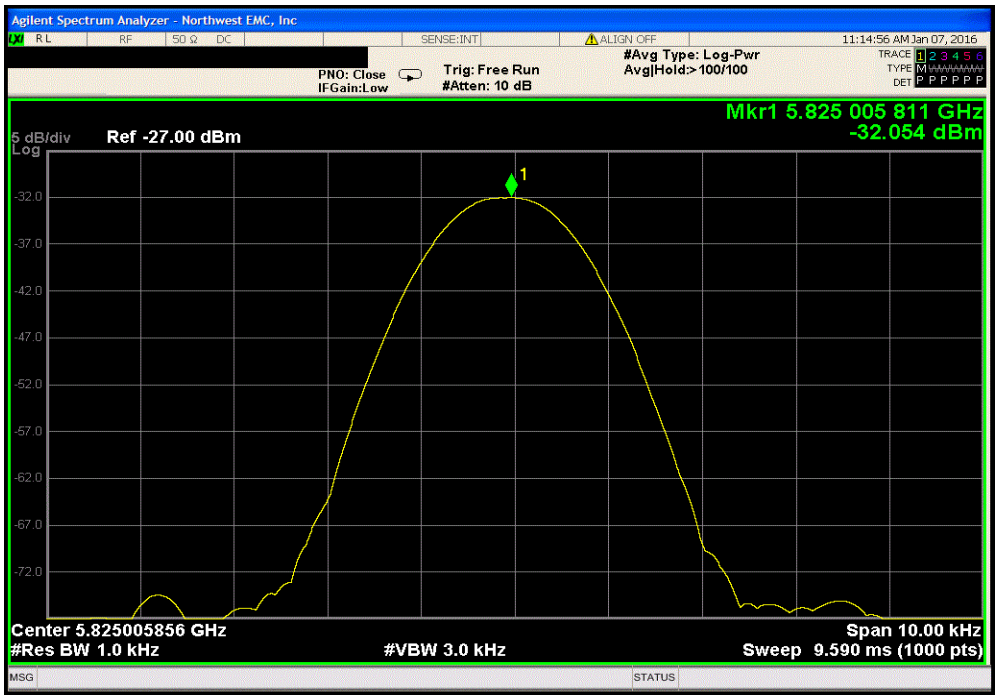
| 5725 MHz - 5850 MHz - High Channel, 5825 MHz, Temperature: +20° | | | | | | |
|---|---|---|---|---|---|---|
| | | Measured Value (MHz) | Assigned Value (MHz) | Error (ppm) | Limit (ppm) | Results |
| | | 5824.96371 | 5825 | 6.2 | 100 | Pass |




| 5725 MHz - 5850 MHz - High Channel, 5825 MHz, Temperature: +10° | | | | | | |
|---|---|---|---|---|---|---|
| | | Measured Value (MHz) | Assigned Value (MHz) | Error (ppm) | Limit (ppm) | Results |
| | | 5824.983278 | 5825 | 2.9 | 100 | Pass |



| 5725 MHz - 5850 MHz - High Channel, 5825 MHz, Temperature: 0° | | | | | | |
|---|---|---|---|---|---|---|
| | | Measured Value (MHz) | Assigned Value (MHz) | Error (ppm) | Limit (ppm) | Results |
| | | 5825.005811 | 5825 | 1 | 100 | Pass |



# DUTY CYCLE

**TEST DESCRIPTION**

The manufacturer does not have software to simulate actual usage allowing a measurement of the duty cycle. They specified a duty cycle correction factor of 13.98 dB based on the actual use of the equipment. The manufacturer has provided an attestation that is included in this report.

# MAXIMUM CONDUCTED OUTPUT POWER

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) |
|---|---|---|---|---|---|
| Generator - Signal | Agilent | N5183A | TIK | 10/17/2014 | 36 |
| Attenuator | S.M. Electronics | SA26B-20 | RFW | 3/10/2015 | 12 |
| Block - DC | Fairview Microwave | SD3379 | AMI | 9/18/2015 | 12 |
| Cable | ESM Cable Corp. | TTBJ141 KMKM-72 | MNU | 9/18/2015 | 12 |
| Analyzer - Spectrum Analyzer | Agilent | E4440A | AAX | 4/20/2015 | 12 |

**TEST DESCRIPTION**

The transmit frequency was set to the required channels in each band. The transmit power was set to its default maximum. The radio was operated in the modes as shown in the following data sheets.

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 maximum transmit power; the emission bandwidth (B) and the transmission pulse duration (T) were measured. The method of measuring the emission bandwidth and the associated data are found elsewhere in this test report. The transmission pulse duration (T) was measured using a zero span on the spectrum analyzer to see the pulses in the time domain.

The maximum conducted output power was measured using ANSI C63.10, Method SA-1 (trace averaging with the EUT transmitting at full power throughout each sweep).

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

-RMS Detector

-Trace average 100 traces in power averaging mode.

# MAXIMUM CONDUCTED OUTPUT POWER

NORTHWEST EMC

XMit 2015.01.14

| | | | | | |
|---|---|---|---|---|---|
| **EUT:** | Sigma Pumps Gen IV 802.11abgn Module | | | **Work Order:** | DGII0152 |
| **Serial Number:** | UUT #7 (55001769-1 rev. 1P) | | | **Date:** | 01/11/16 |
| **Customer:** | Digi International Inc | | | **Temperature:** | 21.1°C |
| **Attendees:** | Slava Gehkt | | | **Humidity:** | 16% |
| **Project:** | None | | | **Barometric Pres.:** | 984 |
| **Tested by:** | Jared Ison | **Power:** | 110VAC/60Hz | **Job Site:** | MN08 |

| **TEST SPECIFICATIONS** | **Test Method** |
|---|---|
| FCC 15.407:2016 | ANSI C63.10:2013 |
| | |

**COMMENTS**

802.11 radio set to single channel continuous transmission.

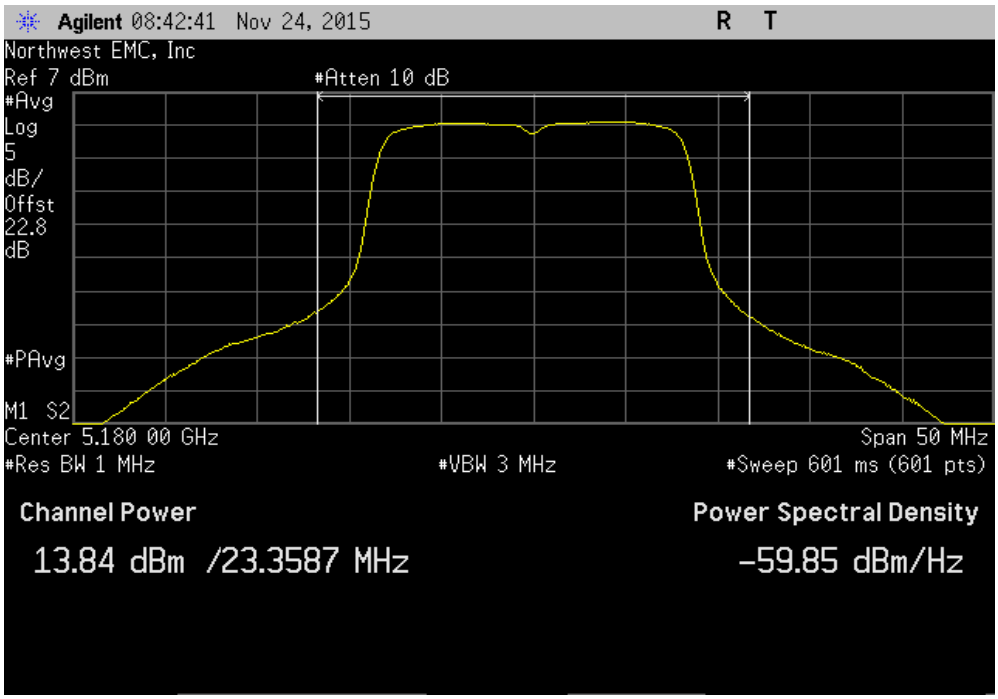
**DEVIATIONS FROM TEST STANDARD**

None

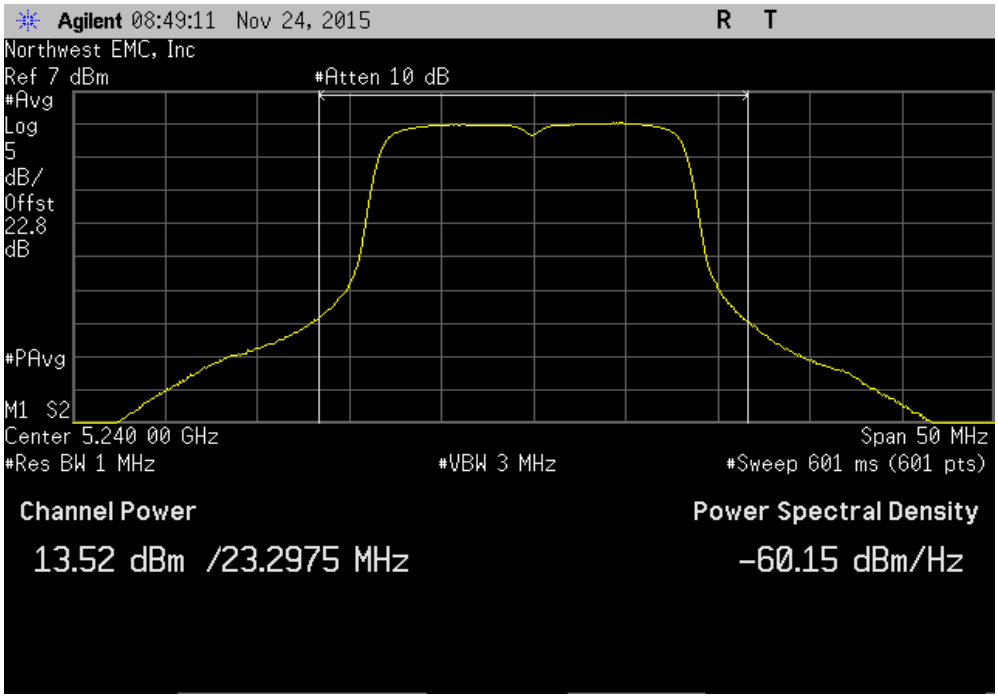
| **Configuration #** | 2 | *Signature* |
|---|---|---|

| | | Avg Cond Pwr (dBm) | Duty Cycle Factor (dB) | Value (dBm) | Limit (dBm) | Results |
|---|---|---|---|---|---|---|
| 20 MHz | | | | | | |
| | 802.11(a) 6 Mbps | | | | | |
| | Ch 36, Low Channel 5180 MHz | 13.838 | 0 | 13.8 | 24 | Pass |
| | Ch 48, High Channel 5240 MHz | 13.519 | 0 | 13.5 | 24 | Pass |
| | Ch 52, Low Channel 5260 MHz | 13.425 | 0 | 13.4 | 24 | Pass |
| | Ch 64, High Channel 5320 MHz | 13.144 | 0 | 13.1 | 24 | Pass |
| | Ch 100, Low Channel 5500 MHz | 14.04 | 0 | 14 | 24 | Pass |
| | Ch 116, Mid Channel 5580 MHz | 15.595 | 0 | 15.6 | 24 | Pass |
| | Ch 140, High Channel 5700 MHz | 16.499 | 0 | 16.5 | 24 | Pass |
| | Ch 149, Low Channel 5745 MHz | 16.464 | 0 | 16.5 | 30 | Pass |
| | Ch 157, Mid Channel 5785 MHz | 16.72 | 0 | 16.7 | 30 | Pass |
| | Ch 165, High Channel 5825 MHz | 16.863 | 0 | 16.9 | 30 | Pass |
| | 802.11(a) 36 Mbps | | | | | |
| | Ch 36, Low Channel 5180 MHz | 14.145 | 0 | 14.1 | 24 | Pass |
| | Ch 48, High Channel 5240 MHz | 13.501 | 0 | 13.5 | 24 | Pass |
| | Ch 52, Low Channel 5260 MHz | 13.431 | 0 | 13.4 | 24 | Pass |
| | Ch 64, High Channel 5320 MHz | 13.079 | 0 | 13.1 | 24 | Pass |
| | Ch 100, Low Channel 5500 MHz | 13.986 | 0 | 14 | 24 | Pass |
| | Ch 116, Mid Channel 5580 MHz | 15.49 | 0 | 15.5 | 24 | Pass |
| | Ch 140, High Channel 5700 MHz | 16.481 | 0 | 16.5 | 24 | Pass |
| | Ch 149, Low Channel 5745 MHz | 16.374 | 0 | 16.4 | 30 | Pass |
| | Ch 157, Mid Channel 5785 MHz | 16.636 | 0 | 16.6 | 30 | Pass |
| | Ch 165, High Channel 5825 MHz | 16.782 | 0 | 16.8 | 30 | Pass |
| | 802.11(a) 54 Mbps | | | | | |
| | Ch 36, Low Channel 5180 MHz | 14.137 | 0 | 14.1 | 24 | Pass |
| | Ch 48, High Channel 5240 MHz | 13.448 | 0 | 13.4 | 24 | Pass |
| | Ch 52, Low Channel 5260 MHz | 13.48 | 0 | 13.5 | 24 | Pass |
| | Ch 64, High Channel 5320 MHz | 13.1 | 0 | 13.1 | 24 | Pass |
| | Ch 100, Low Channel 5500 MHz | 13.56 | 0 | 13.6 | 24 | Pass |
| | Ch 116, Mid Channel 5580 MHz | 15.502 | 0 | 15.5 | 24 | Pass |
| | Ch 140, High Channel 5700 MHz | 16.495 | 0 | 16.5 | 24 | Pass |
| | Ch 149, Low Channel 5745 MHz | 16.345 | 0 | 16.3 | 30 | Pass |
| | Ch 157, Mid Channel 5785 MHz | 16.651 | 0 | 16.7 | 30 | Pass |
| | Ch 165, High Channel 5825 MHz | 16.788 | 0 | 16.8 | 30 | Pass |
| | 802.11(n) MCS0 | | | | | |
| | Ch 36, Low Channel 5180 MHz | 14.097 | 0 | 14.1 | 30 | Pass |
| | Ch 48, High Channel 5240 MHz | 13.4 | 0 | 13.4 | 30 | Pass |
| | Ch 52, Low Channel 5260 MHz | 13.326 | 0 | 13.3 | 24 | Pass |
| | Ch 64, High Channel 5320 MHz | 13.013 | 0 | 13 | 24 | Pass |
| | Ch 100, Low Channel 5500 MHz | 13.946 | 0 | 13.9 | 24 | Pass |
| | Ch 116, Mid Channel 5580 MHz | 15.431 | 0 | 15.4 | 24 | Pass |
| | Ch 140, High Channel 5700 MHz | 16.412 | 0 | 16.4 | 24 | Pass |
| | Ch 149, Low Channel 5745 MHz | 16.683 | 0 | 16.7 | 30 | Pass |
| | Ch 157, Mid Channel 5785 MHz | 16.927 | 0 | 16.9 | 30 | Pass |
| | Ch 165, High Channel 5825 MHz | 16.749 | 0 | 16.7 | 30 | Pass |
| | 802.11(n) MCS7 | | | | | |
| | Ch 36, Low Channel 5180 MHz | 14.003 | 0 | 14 | 24 | Pass |
| | Ch 48, High Channel 5240 MHz | 13.417 | 0 | 13.4 | 24 | Pass |
| | Ch 52, Low Channel 5260 MHz | 13.314 | 0 | 13.3 | 24 | Pass |
| | Ch 64, High Channel 5320 MHz | 12.962 | 0 | 13 | 24 | Pass |
| | Ch 100, Low Channel 5500 MHz | 13.444 | 0 | 13.4 | 24 | Pass |
| | Ch 116, Mid Channel 5580 MHz | 15.379 | 0 | 15.4 | 24 | Pass |
| | Ch 140, High Channel 5700 MHz | 16.378 | 0 | 16.4 | 24 | Pass |
| | Ch 149, Low Channel 5745 MHz | 16.272 | 0 | 16.3 | 30 | Pass |
| | Ch 157, Mid Channel 5785 MHz | 16.52 | 0 | 16.5 | 30 | Pass |
| | Ch 165, High Channel 5825 MHz | 16.666 | 0 | 16.7 | 30 | Pass |
| 40 MHz | | | | | | |
| | 802.11(n) MCS0 | | | | | |
| | Ch 36/40, Low Channel 5190 MHz | 14.267 | 0 | 14.3 | 24 | Pass |
| | Ch 44/48, High Channel 5230 MHz | 14.185 | 0 | 14.2 | 24 | Pass |
| | Ch 52/56, Low Channel 5270 MHz | 14.449 | 0 | 14.4 | 24 | Pass |
| | Ch 60/64, High Channel 5310 MHz | 14.109 | 0 | 14.1 | 24 | Pass |
| | Ch 100/104, Low Channel 5510 MHz | 14.715 | 0 | 14.7 | 24 | Pass |
| | Ch 108/112, Mid Channel 5550 MHz | 15.457 | 0 | 15.5 | 24 | Pass |
| | Ch 132/136, High Channel 5670 MHz | 16.996 | 0 | 17 | 24 | Pass |
| | Ch 149/153, Low Channel 5755 MHz | 17.044 | 0 | 17 | 30 | Pass |
| | Ch 157/161, High Channel 5795 MHz | 17.209 | 0 | 17.2 | 30 | Pass |
| | 802.11(n) MCS7 | | | | | |
| | Ch 36/40, Low Channel 5190 MHz | 13.783 | 0 | 13.8 | 24 | Pass |
| | Ch 44/48, High Channel 5230 MHz | 14.184 | 0 | 14.2 | 24 | Pass |
| | Ch 52/56, Low Channel 5270 MHz | 14.106 | 0 | 14.1 | 24 | Pass |
| | Ch 60/64, High Channel 5310 MHz | 13.95 | 0 | 14 | 24 | Pass |
| | Ch 100/104, Low Channel 5510 MHz | 14.318 | 0 | 14.3 | 24 | Pass |
| | Ch 108/112, Mid Channel 5550 MHz | 15.349 | 0 | 15.3 | 24 | Pass |
| | Ch 132/136, High Channel 5670 MHz | 16.604 | 0 | 16.6 | 24 | Pass |
| | Ch 149/153, Low Channel 5755 MHz | 17.004 | 0 | 17 | 30 | Pass |
| | Ch 157/161, High Channel 5795 MHz | 17.184 | 0 | 17.2 | 30 | Pass |

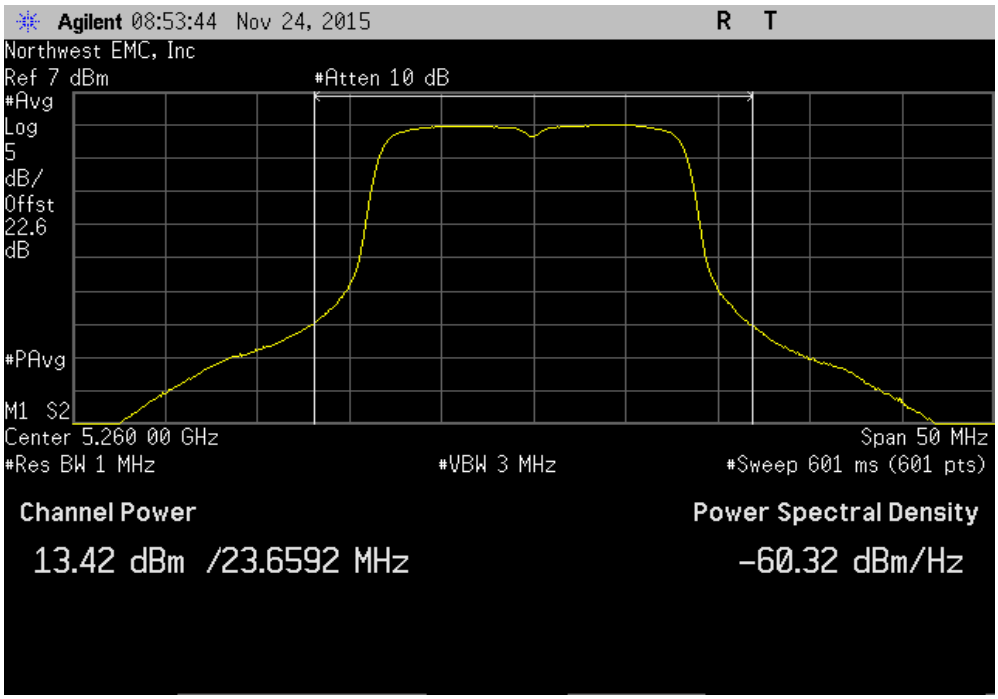
| 20 MHz, 802.11(a) 6 Mbps, Ch 36, Low Channel 5180 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Avg Cond Pwr (dBm) | Duty Cycle Factor (dB) | | Value (dBm) | Limit (dBm) | Results |
| | 13.838 | 0 | | 13.8 | 24 | Pass |



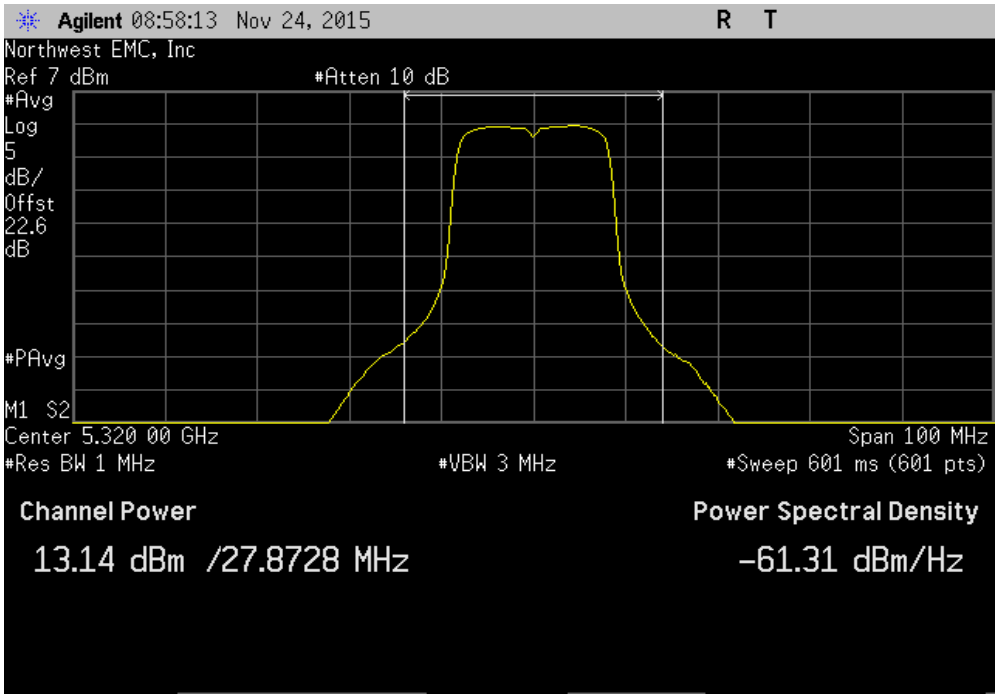

| 20 MHz, 802.11(a) 6 Mbps, Ch 48, High Channel 5240 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Avg Cond Pwr (dBm) | Duty Cycle Factor (dB) | | Value (dBm) | Limit (dBm) | Results |
| | 13.519 | 0 | | 13.5 | 24 | Pass |



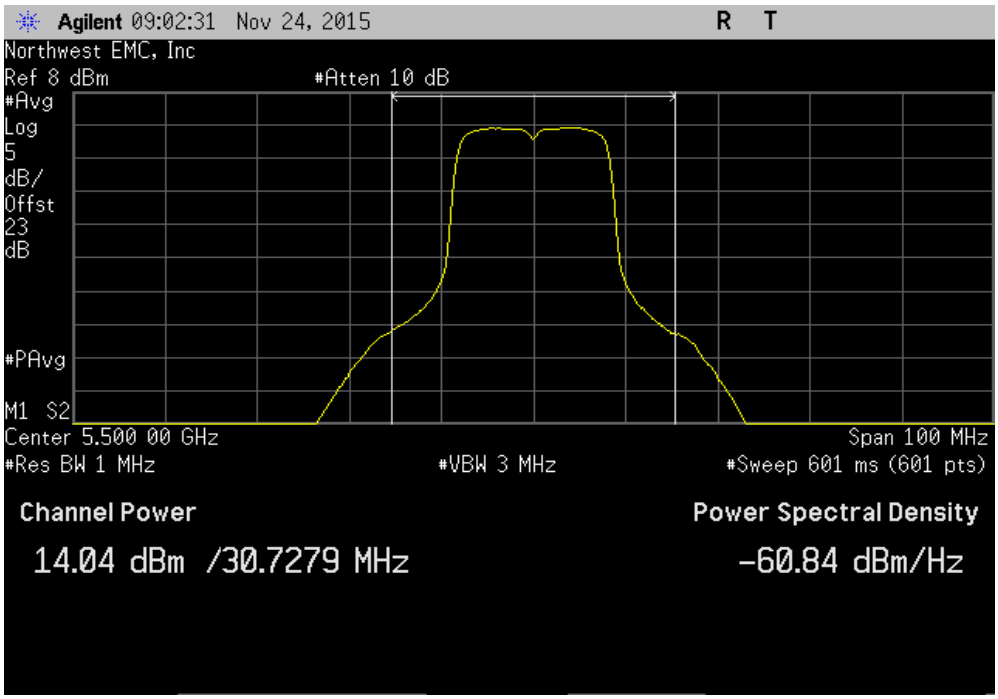
| 20 MHz, 802.11(a) 6 Mbps, Ch 52, Low Channel 5260 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Avg Cond Pwr (dBm) | Duty Cycle Factor (dB) | | Value (dBm) | Limit (dBm) | Results |
| | 13.425 | 0 | | 13.4 | 24 | Pass |



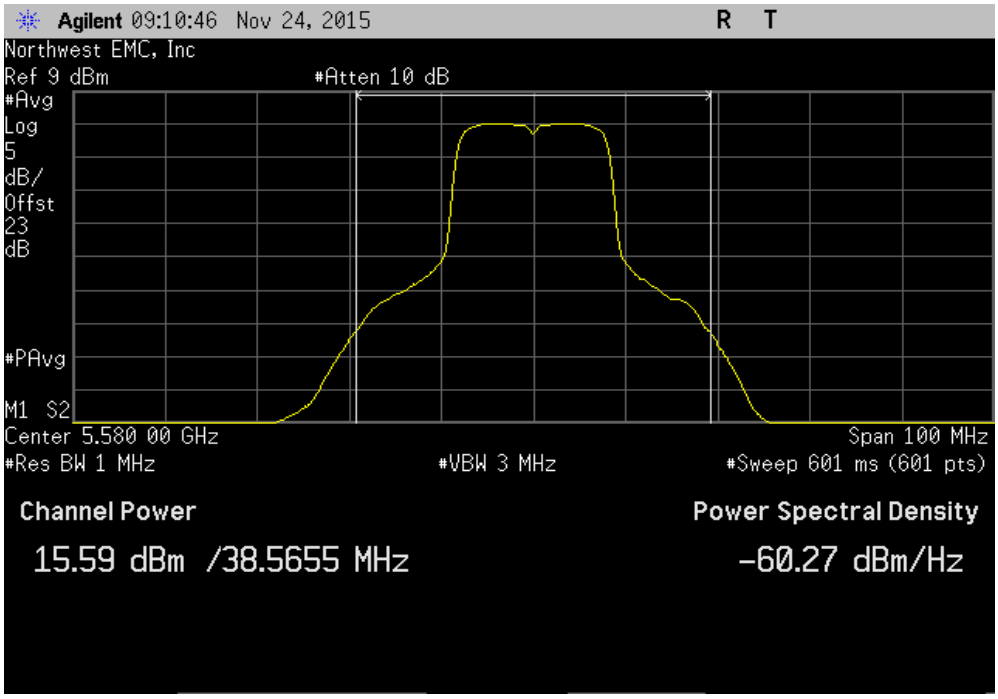

| 20 MHz, 802.11(a) 6 Mbps, Ch 64, High Channel 5320 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Avg Cond Pwr (dBm) | Duty Cycle Factor (dB) | | Value (dBm) | Limit (dBm) | Results |
| | 13.144 | 0 | | 13.1 | 24 | Pass |



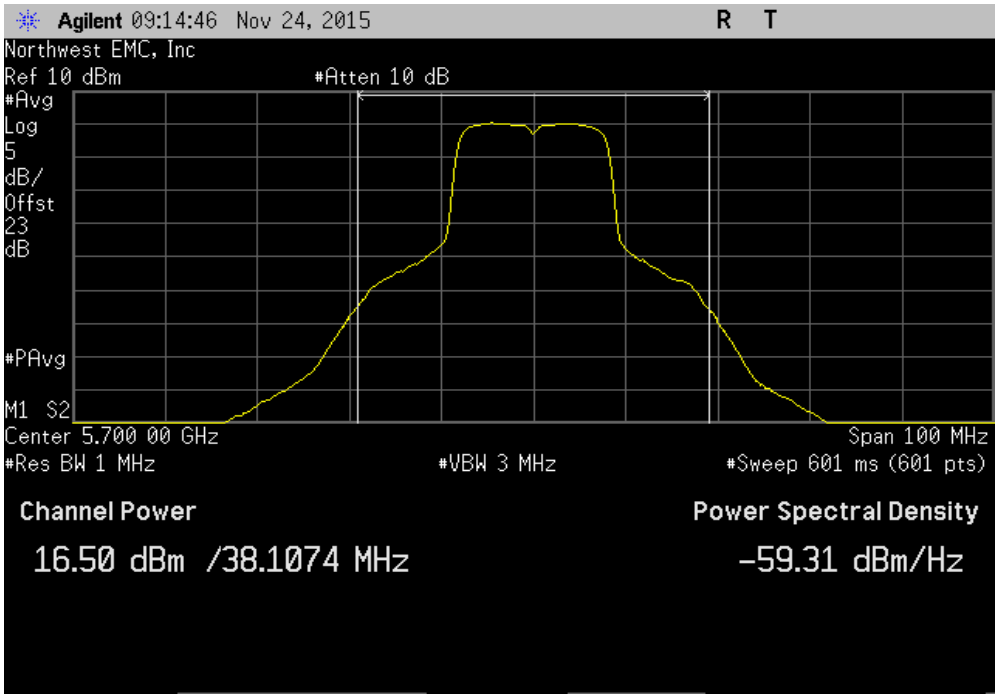
| 20 MHz, 802.11(a) 6 Mbps, Ch 100, Low Channel 5500 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Avg Cond Pwr (dBm) | Duty Cycle Factor (dB) | | Value (dBm) | Limit (dBm) | Results |
| | 14.04 | 0 | | 14 | 24 | Pass |



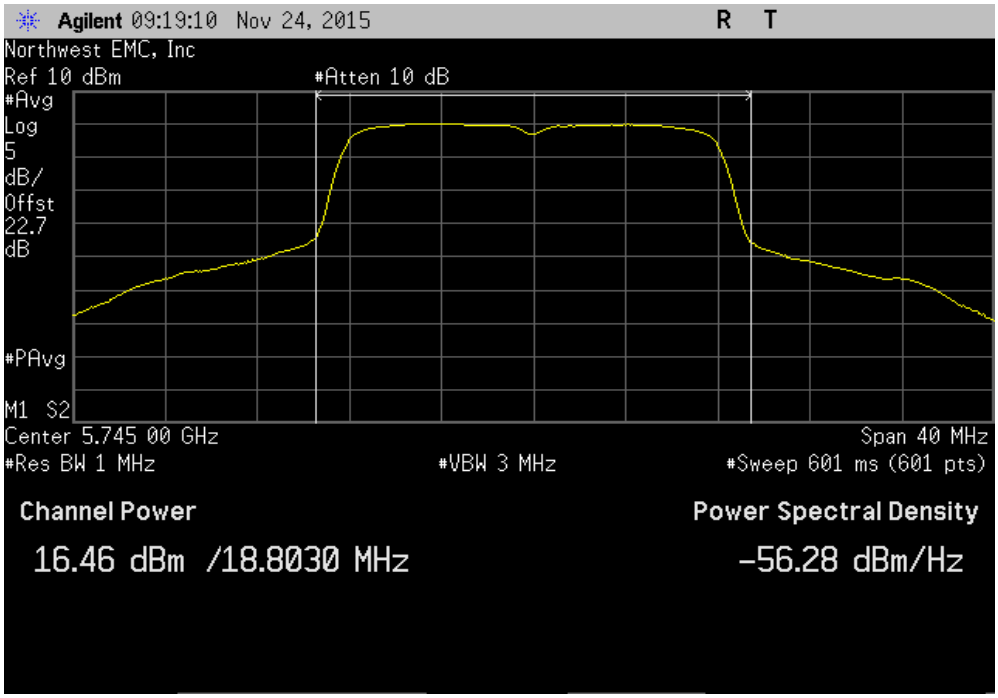

| 20 MHz, 802.11(a) 6 Mbps, Ch 116, Mid Channel 5580 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Avg Cond Pwr (dBm) | Duty Cycle Factor (dB) | | Value (dBm) | Limit (dBm) | Results |
| | 15.595 | 0 | | 15.6 | 24 | Pass |



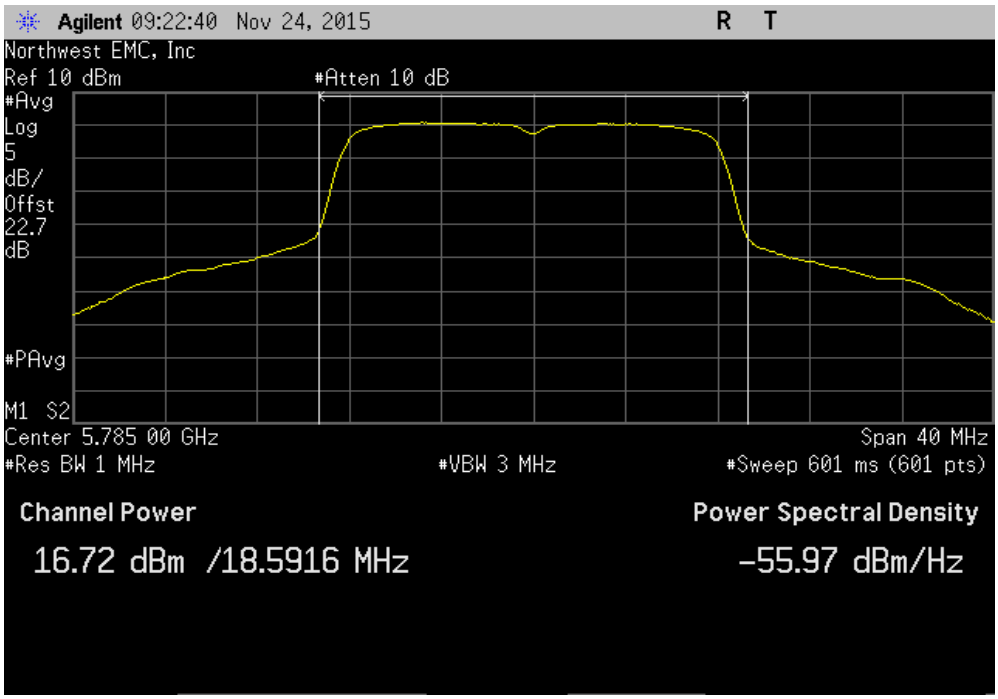
| 20 MHz, 802.11(a) 6 Mbps, Ch 140, High Channel 5700 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Avg Cond Pwr (dBm) | Duty Cycle Factor (dB) | | Value (dBm) | Limit (dBm) | Results |
| | 16.499 | 0 | | 16.5 | 24 | Pass |



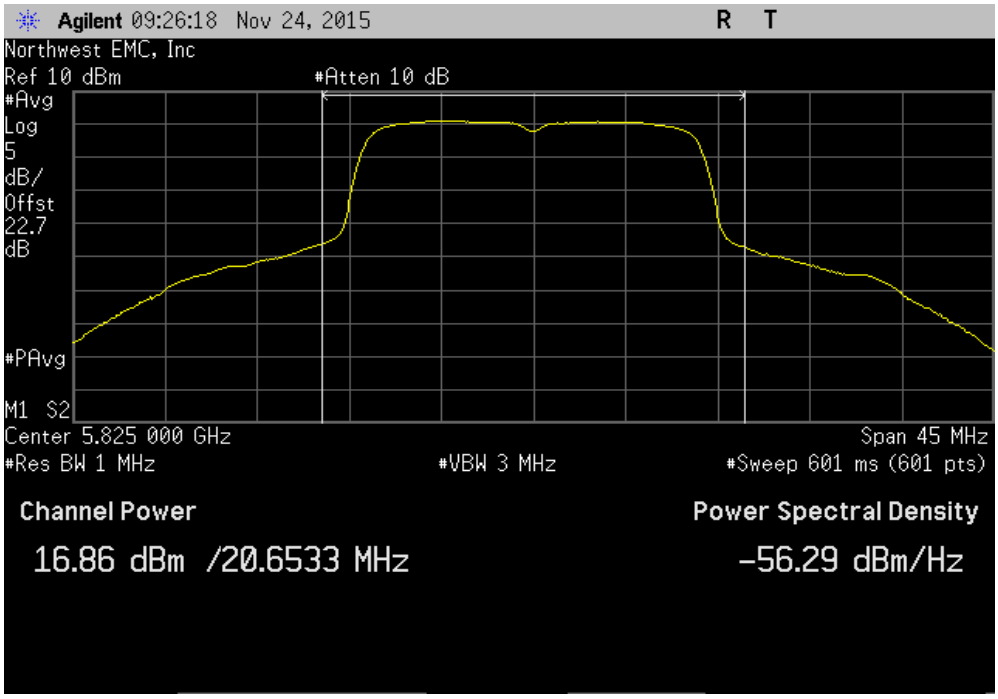

| 20 MHz, 802.11(a) 6 Mbps, Ch 149, Low Channel 5745 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Avg Cond Pwr (dBm) | Duty Cycle Factor (dB) | | Value (dBm) | Limit (dBm) | Results |
| | 16.464 | 0 | | 16.5 | 30 | Pass |



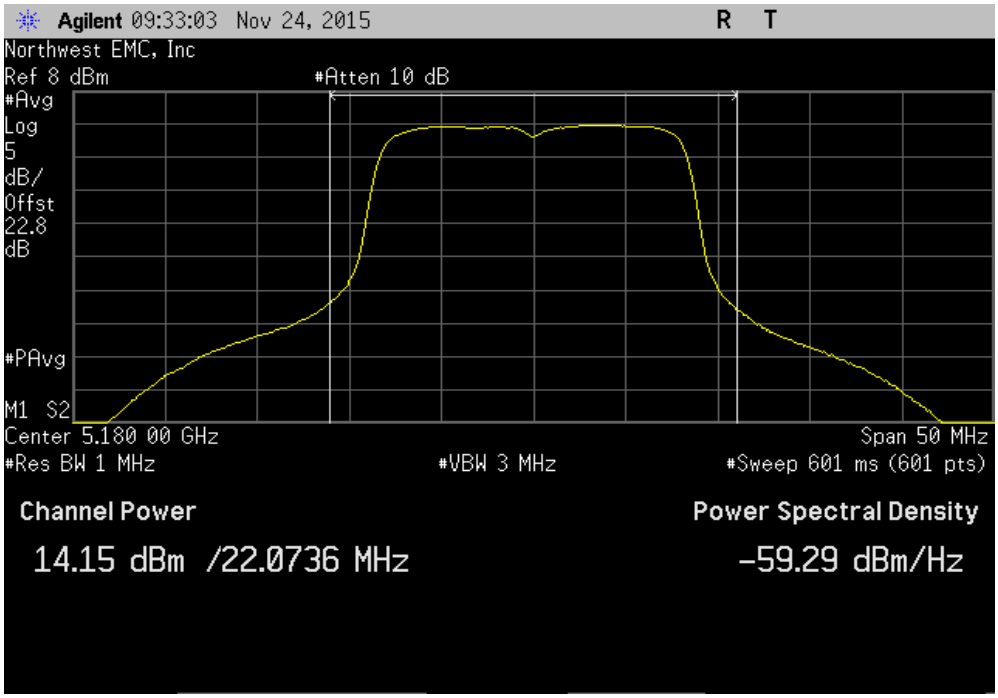
| 20 MHz, 802.11(a) 6 Mbps, Ch 157, Mid Channel 5785 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Avg Cond Pwr (dBm) | Duty Cycle Factor (dB) | | Value (dBm) | Limit (dBm) | Results |
| | 16.72 | 0 | | 16.7 | 30 | Pass |



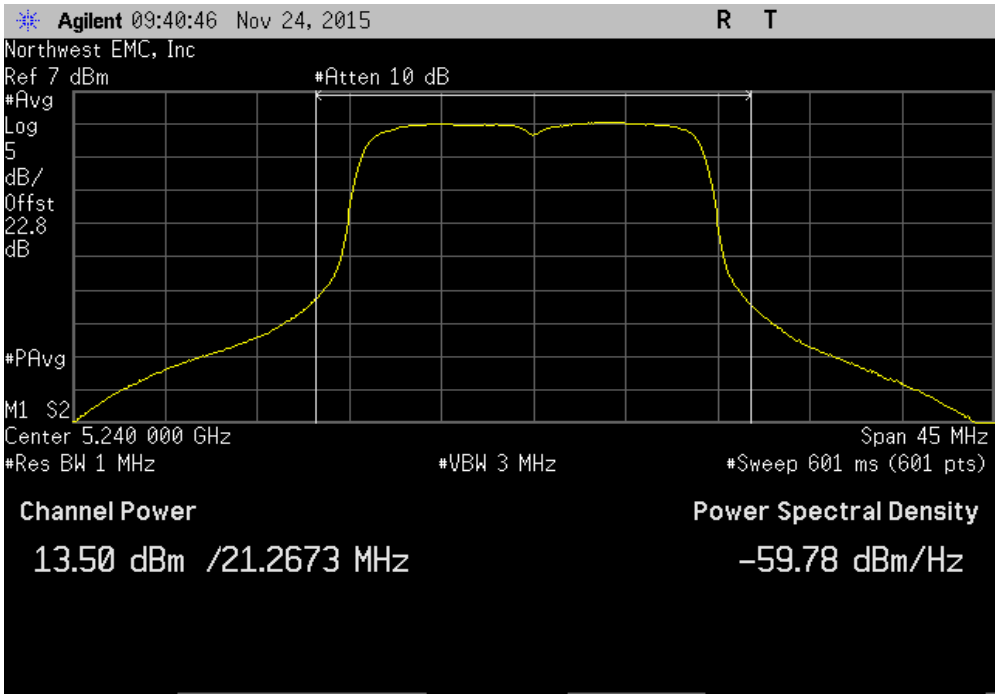

| 20 MHz, 802.11(a) 6 Mbps, Ch 165, High Channel 5825 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Avg Cond Pwr (dBm) | Duty Cycle Factor (dB) | | Value (dBm) | Limit (dBm) | Results |
| | 16.863 | 0 | | 16.9 | 30 | Pass |



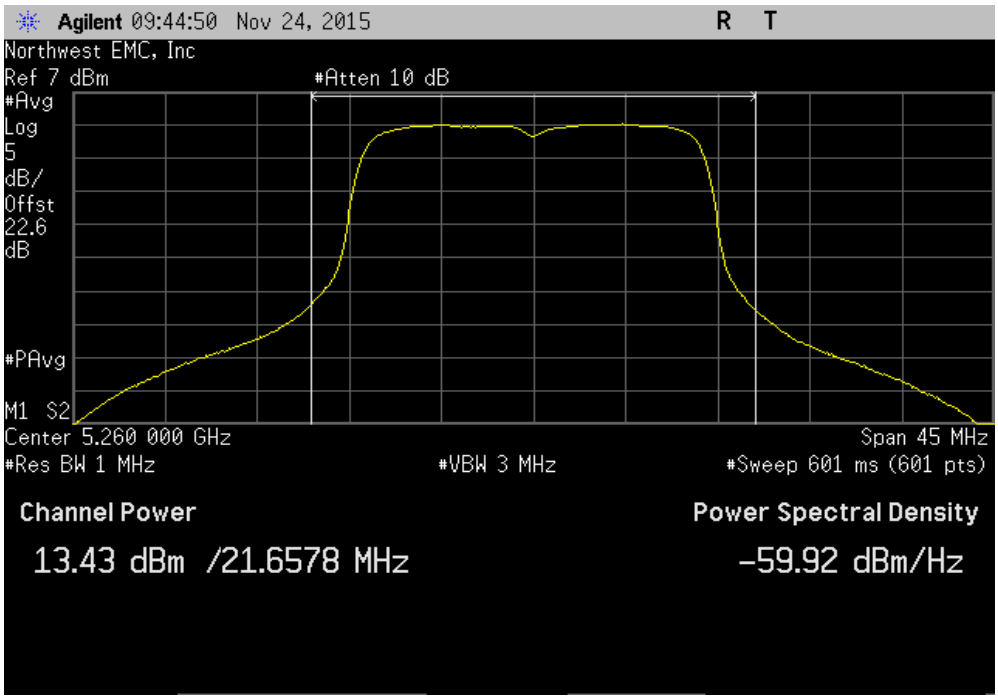
| 20 MHz, 802.11(a) 36 Mbps, Ch 36, Low Channel 5180 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Avg Cond Pwr (dBm) | Duty Cycle Factor (dB) | | Value (dBm) | Limit (dBm) | Results |
| | 14.145 | 0 | | 14.1 | 24 | Pass |



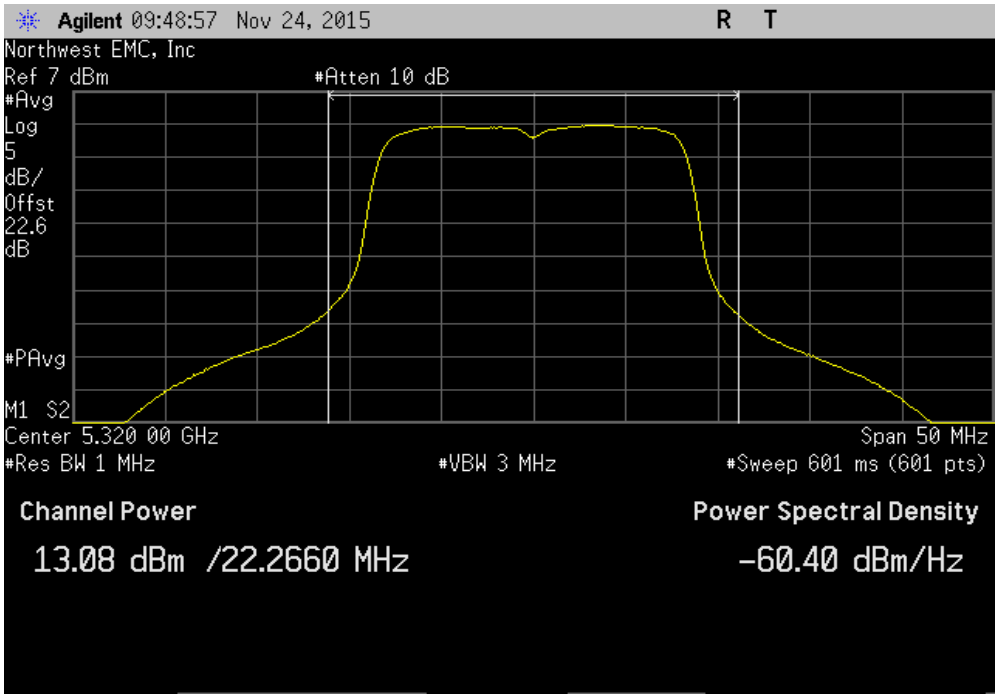

| 20 MHz, 802.11(a) 36 Mbps, Ch 48, High Channel 5240 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Avg Cond Pwr (dBm) | Duty Cycle Factor (dB) | | Value (dBm) | Limit (dBm) | Results |
| | 13.501 | 0 | | 13.5 | 24 | Pass |



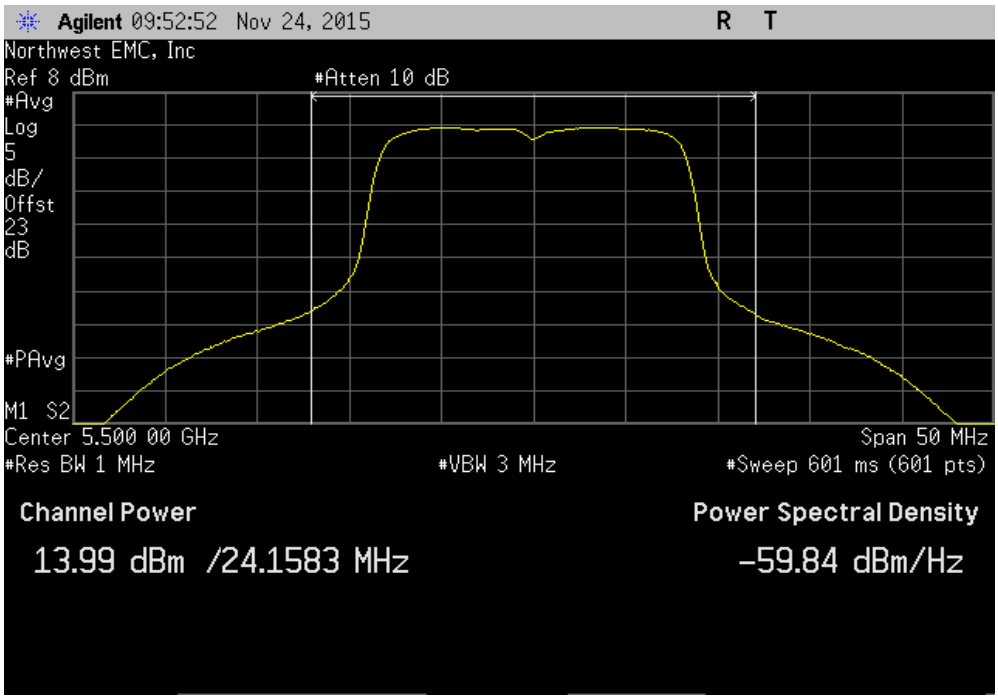
| 20 MHz, 802.11(a) 36 Mbps, Ch 52, Low Channel 5260 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Avg Cond Pwr (dBm) | Duty Cycle Factor (dB) | | Value (dBm) | Limit (dBm) | Results |
| | 13.431 | 0 | | 13.4 | 24 | Pass |



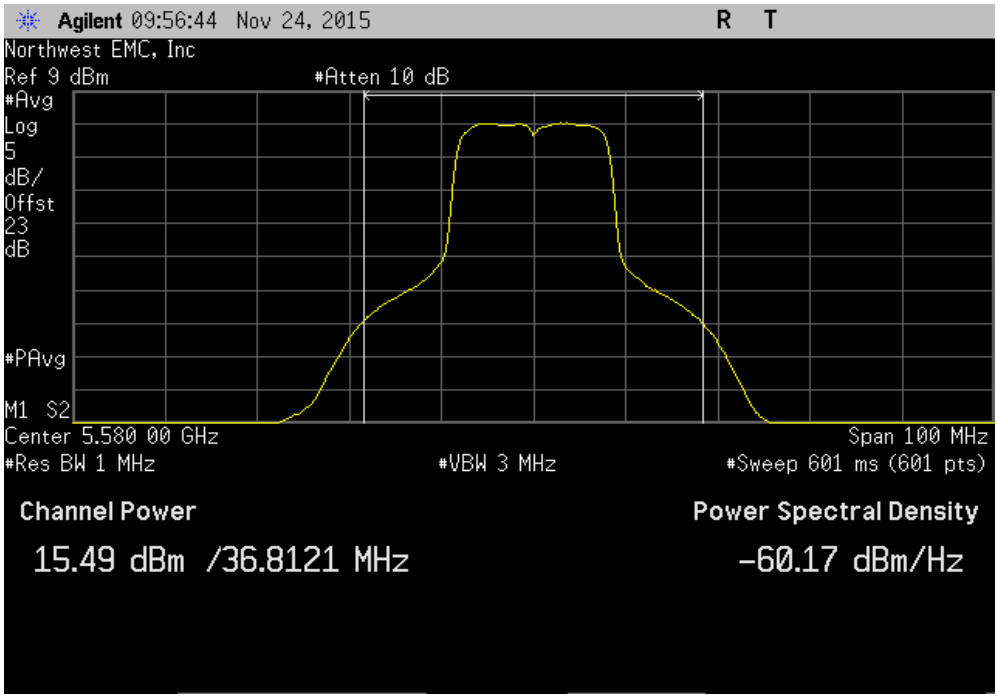

| 20 MHz, 802.11(a) 36 Mbps, Ch 64, High Channel 5320 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Avg Cond Pwr (dBm) | Duty Cycle Factor (dB) | | Value (dBm) | Limit (dBm) | Results |
| | 13.079 | 0 | | 13.1 | 24 | Pass |



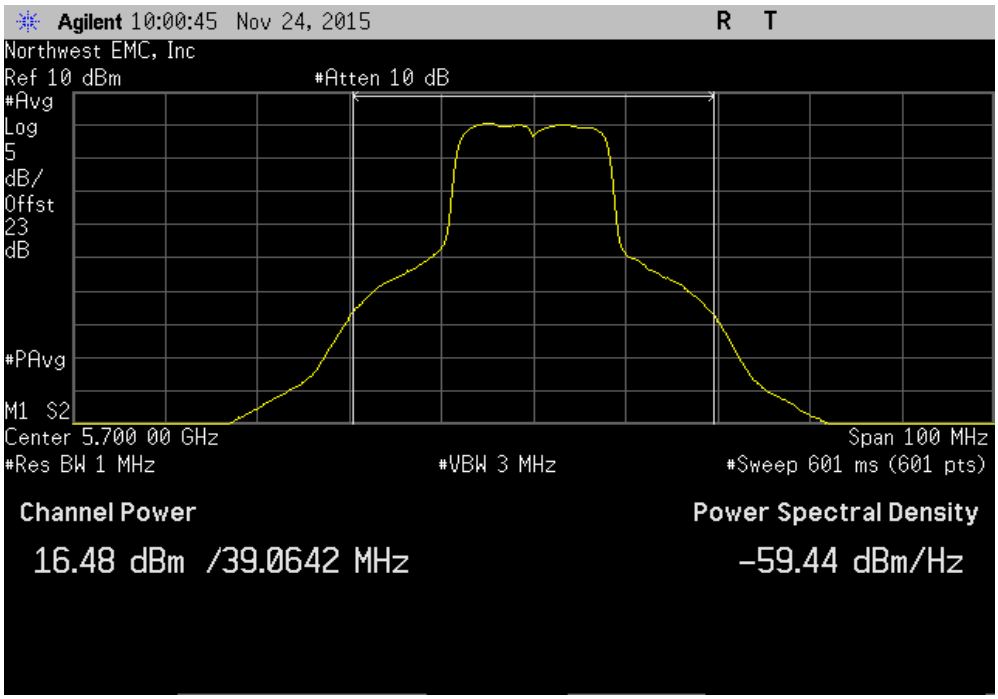
| 20 MHz, 802.11(a) 36 Mbps, Ch 100, Low Channel 5500 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Avg Cond Pwr (dBm) | Duty Cycle Factor (dB) | | Value (dBm) | Limit (dBm) | Results |
| | 13.986 | 0 | | 14 | 24 | Pass |



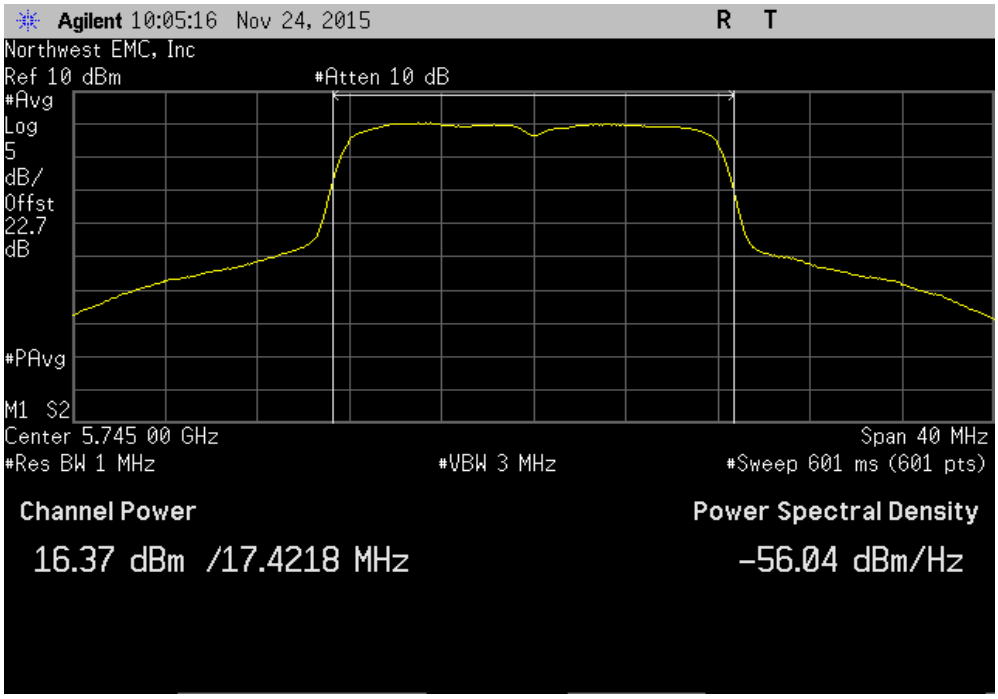

| 20 MHz, 802.11(a) 36 Mbps, Ch 116, Mid Channel 5580 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Avg Cond Pwr (dBm) | Duty Cycle Factor (dB) | | Value (dBm) | Limit (dBm) | Results |
| | 15.49 | 0 | | 15.5 | 24 | Pass |



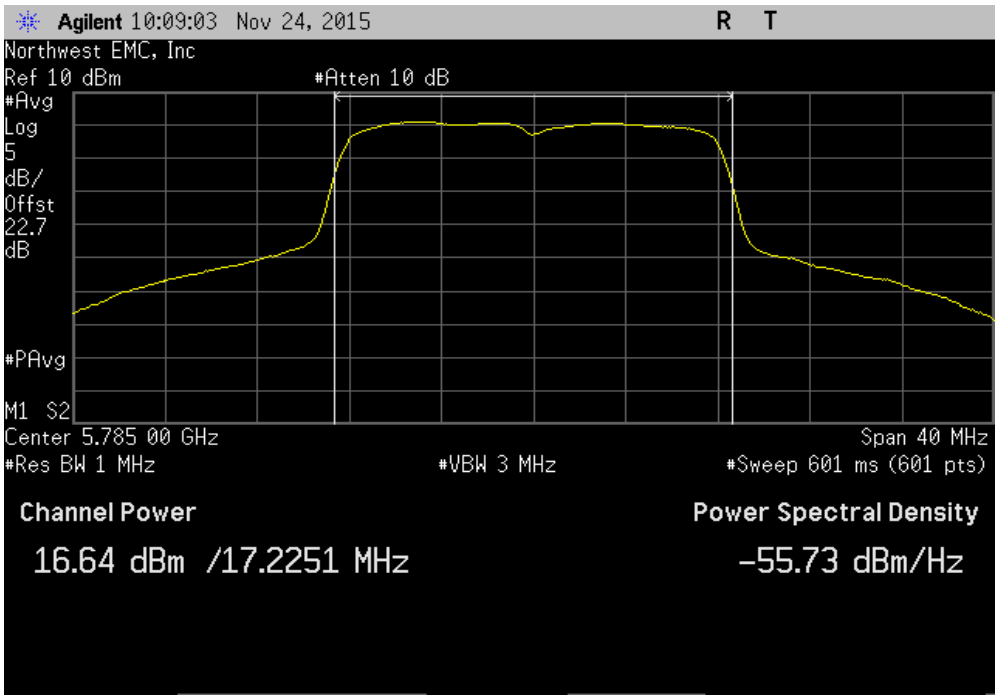
| 20 MHz, 802.11(a) 36 Mbps, Ch 140, High Channel 5700 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Avg Cond Pwr (dBm) | Duty Cycle Factor (dB) | | Value (dBm) | Limit (dBm) | Results |
| | 16.481 | 0 | | 16.5 | 24 | Pass |



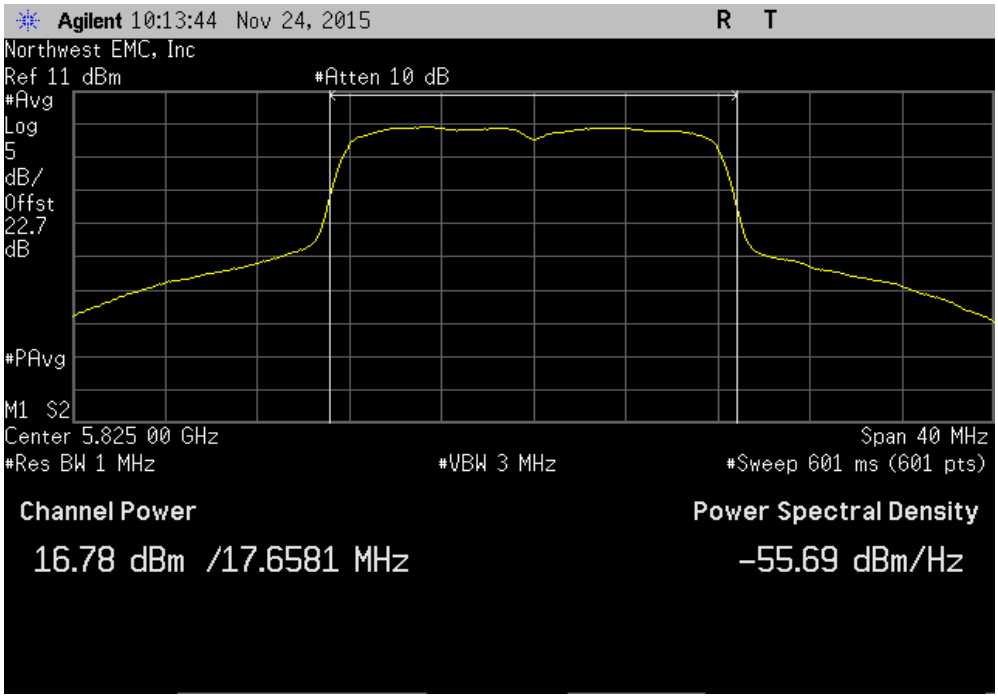

| 20 MHz, 802.11(a) 36 Mbps, Ch 149, Low Channel 5745 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Avg Cond Pwr (dBm) | Duty Cycle Factor (dB) | | Value (dBm) | Limit (dBm) | Results |
| | 16.374 | 0 | | 16.4 | 30 | Pass |



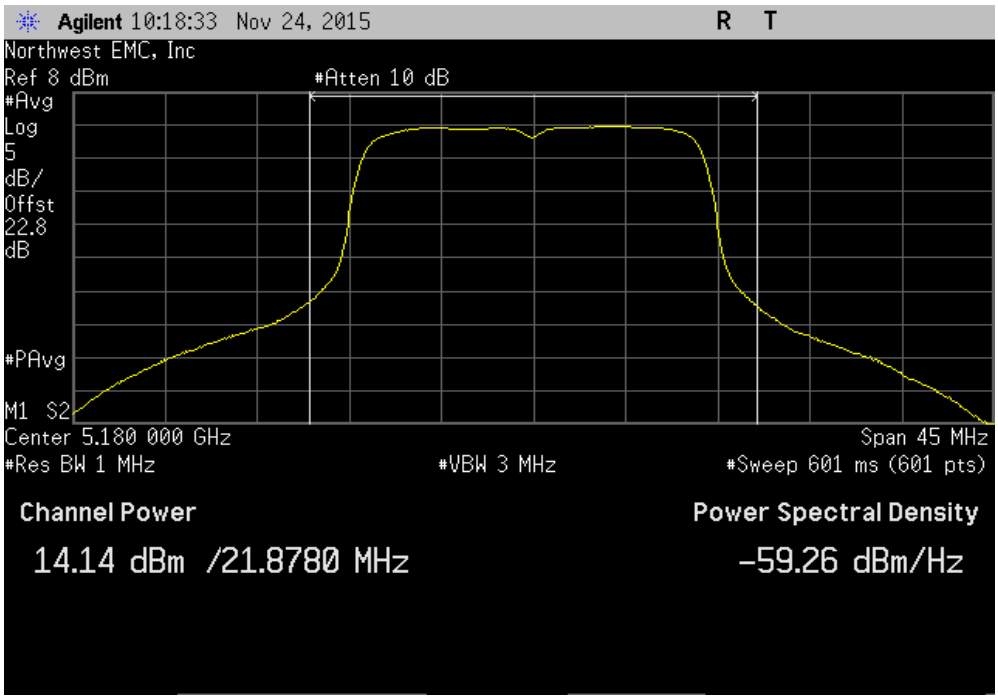
| 20 MHz, 802.11(a) 36 Mbps, Ch 157, Mid Channel 5785 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Avg Cond Pwr (dBm) | Duty Cycle Factor (dB) | | Value (dBm) | Limit (dBm) | Results |
| | 16.636 | 0 | | 16.6 | 30 | Pass |



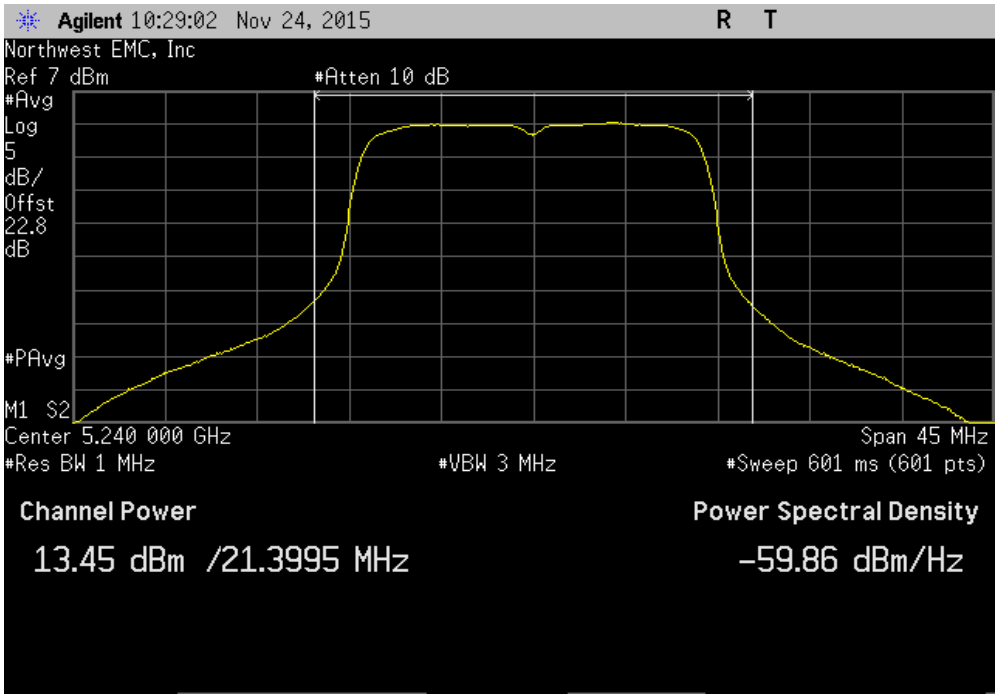

| 20 MHz, 802.11(a) 36 Mbps, Ch 165, High Channel 5825 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Avg Cond Pwr (dBm) | Duty Cycle Factor (dB) | | Value (dBm) | Limit (dBm) | Results |
| | 16.782 | 0 | | 16.8 | 30 | Pass |



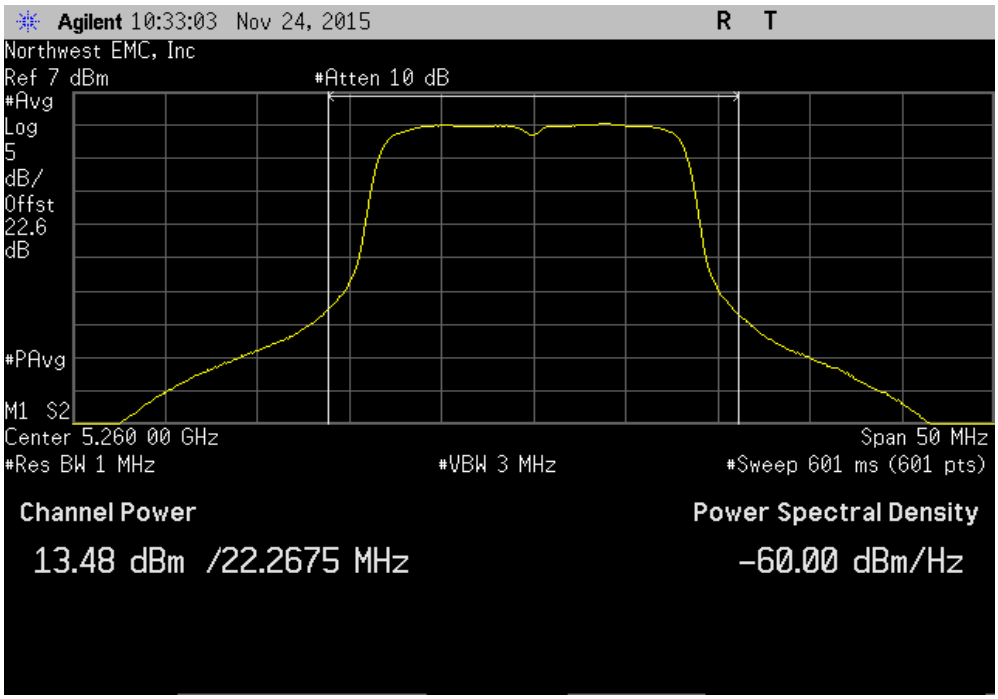
| 20 MHz, 802.11(a) 54 Mbps, Ch 36, Low Channel 5180 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Avg Cond Pwr (dBm) | Duty Cycle Factor (dB) | | Value (dBm) | Limit (dBm) | Results |
| | 14.137 | 0 | | 14.1 | 24 | Pass |



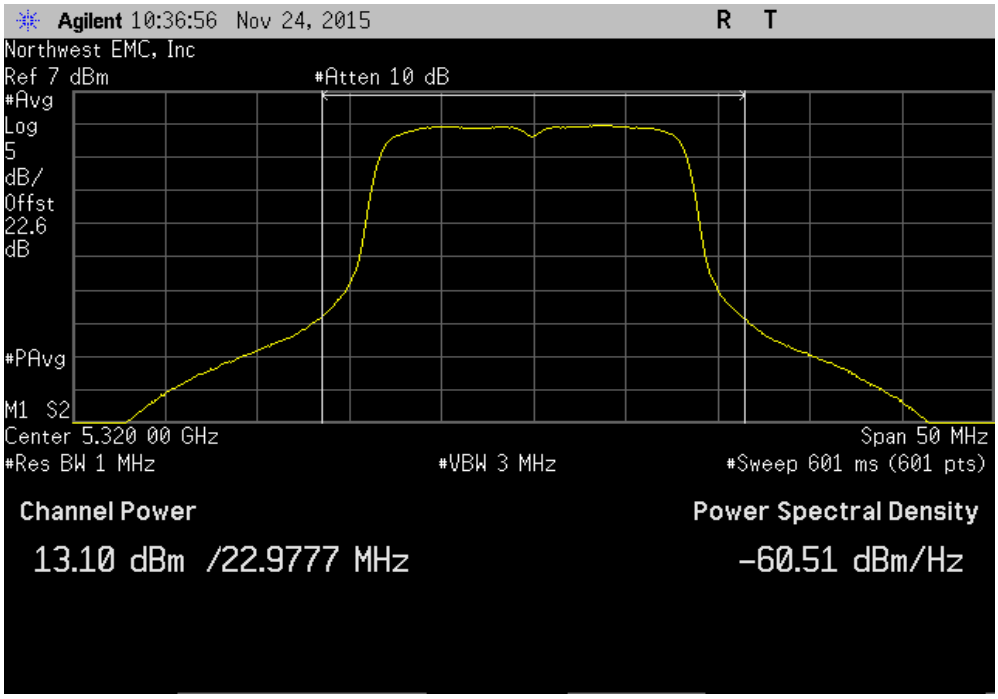

| 20 MHz, 802.11(a) 54 Mbps, Ch 48, High Channel 5240 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Avg Cond Pwr (dBm) | Duty Cycle Factor (dB) | | Value (dBm) | Limit (dBm) | Results |
| | 13.448 | 0 | | 13.4 | 24 | Pass |



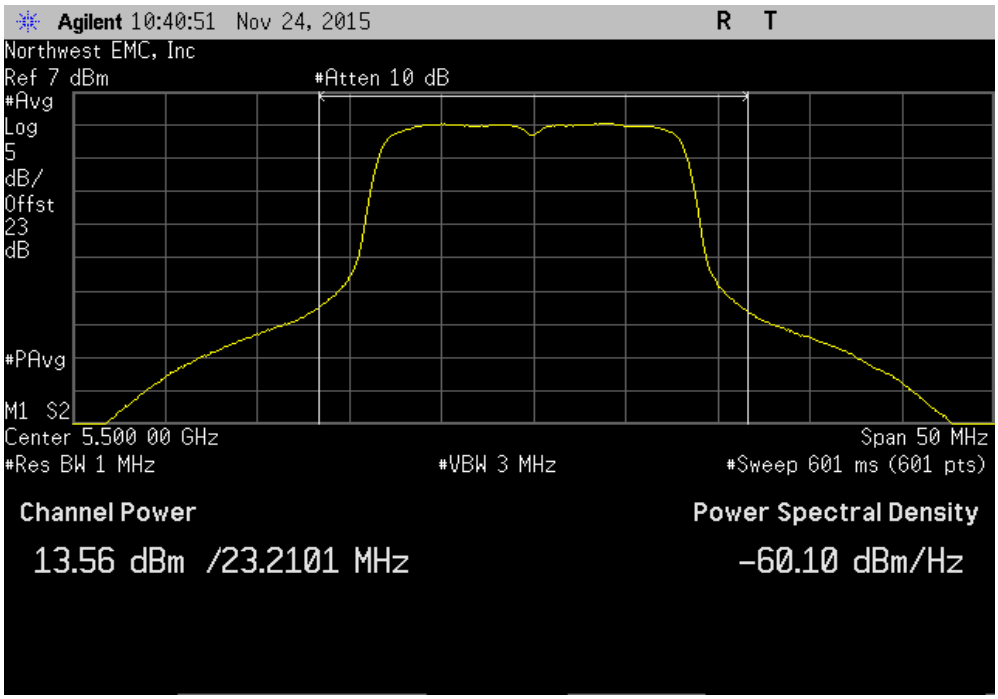
| 20 MHz, 802.11(a) 54 Mbps, Ch 52, Low Channel 5260 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Avg Cond Pwr (dBm) | Duty Cycle Factor (dB) | | Value (dBm) | Limit (dBm) | Results |
| | 13.48 | 0 | | 13.5 | 24 | Pass |



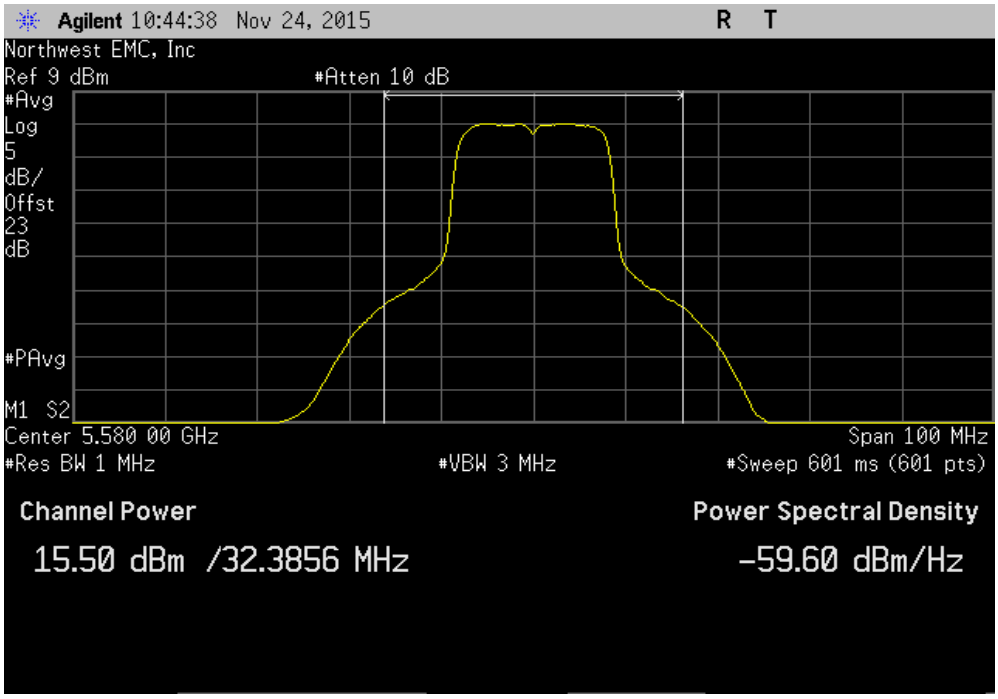

| 20 MHz, 802.11(a) 54 Mbps, Ch 64, High Channel 5320 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Avg Cond Pwr (dBm) | Duty Cycle Factor (dB) | | Value (dBm) | Limit (dBm) | Results |
| | 13.1 | 0 | | 13.1 | 24 | Pass |



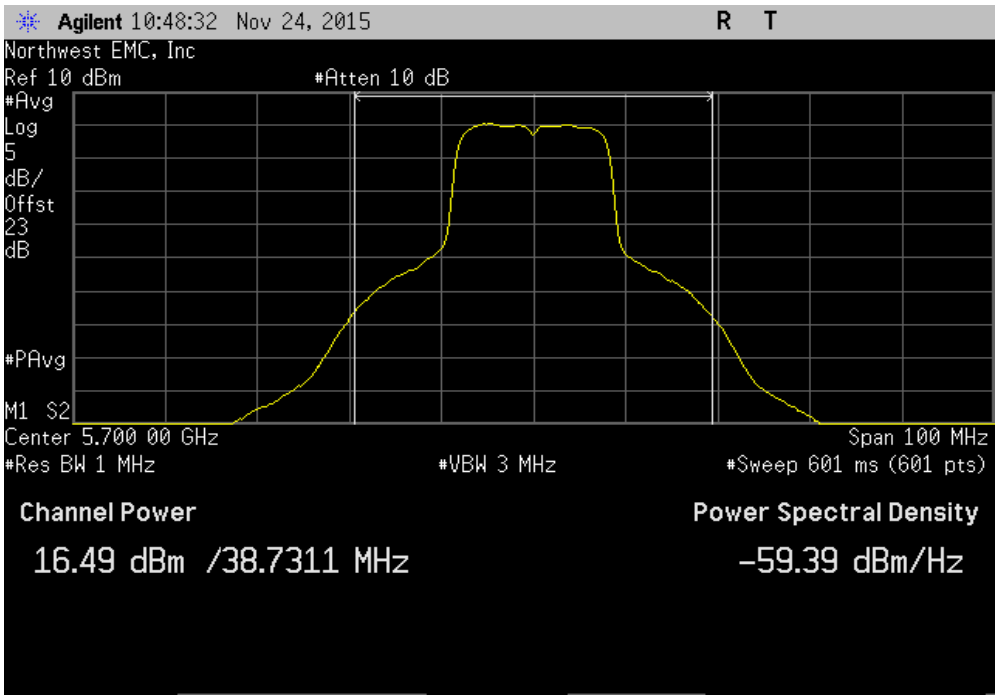
| 20 MHz, 802.11(a) 54 Mbps, Ch 100, Low Channel 5500 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Avg Cond Pwr (dBm) | Duty Cycle Factor (dB) | | Value (dBm) | Limit (dBm) | Results |
| | 13.56 | 0 | | 13.6 | 24 | Pass |



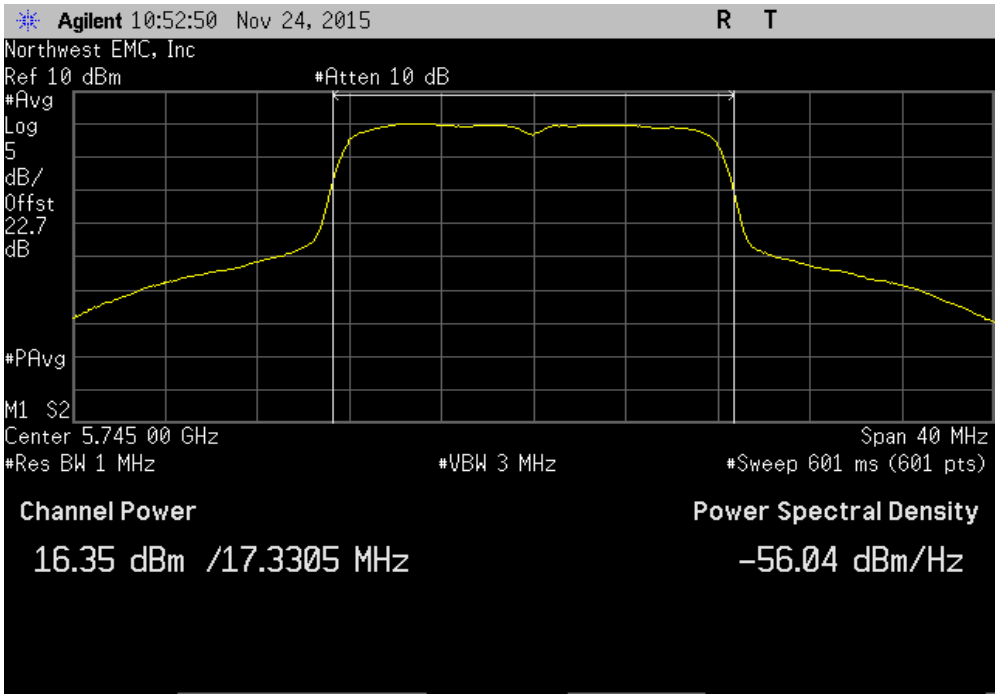

| 20 MHz, 802.11(a) 54 Mbps, Ch 116, Mid Channel 5580 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Avg Cond Pwr (dBm) | Duty Cycle Factor (dB) | | Value (dBm) | Limit (dBm) | Results |
| | 15.502 | 0 | | 15.5 | 24 | Pass |



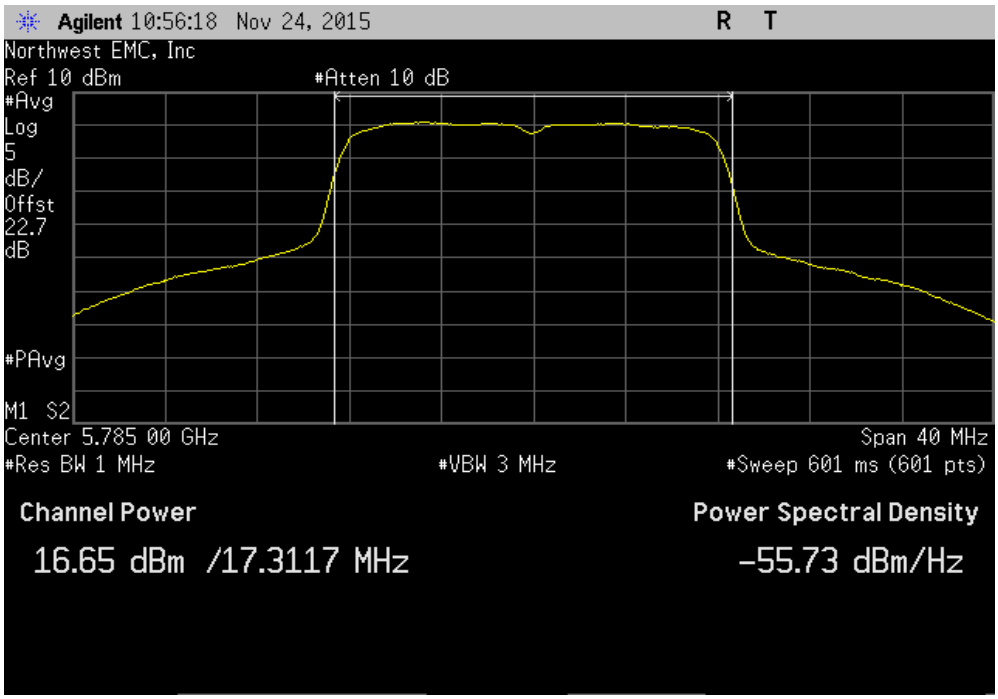
| 20 MHz, 802.11(a) 54 Mbps, Ch 140, High Channel 5700 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Avg Cond Pwr (dBm) | Duty Cycle Factor (dB) | | Value (dBm) | Limit (dBm) | Results |
| | 16.495 | 0 | | 16.5 | 24 | Pass |



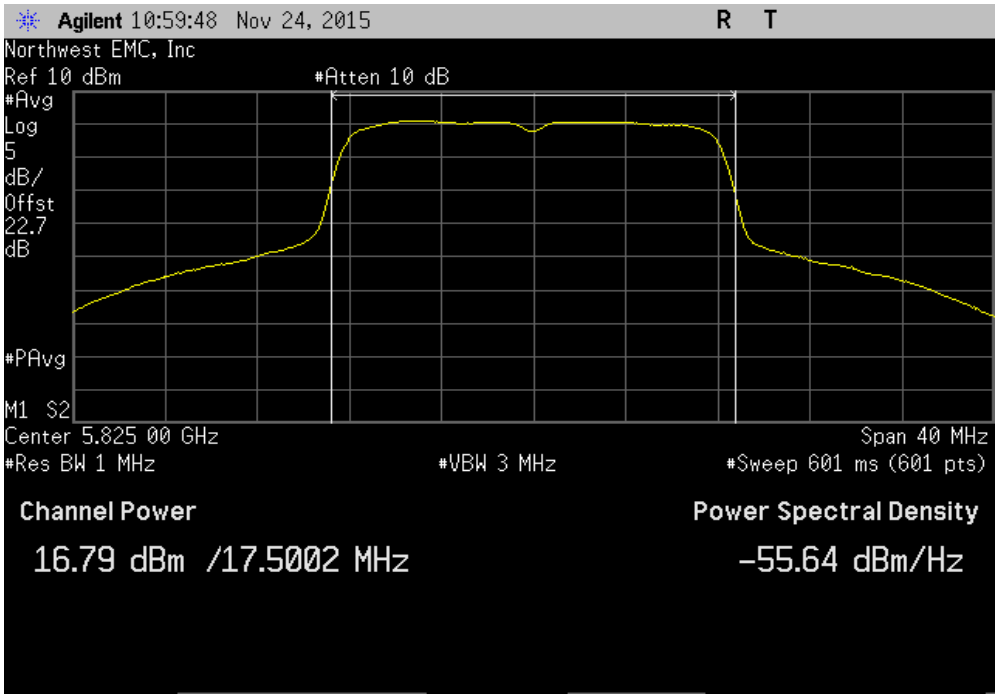

| 20 MHz, 802.11(a) 54 Mbps, Ch 149, Low Channel 5745 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Avg Cond Pwr (dBm) | Duty Cycle Factor (dB) | | Value (dBm) | Limit (dBm) | Results |
| | 16.345 | 0 | | 16.3 | 30 | Pass |



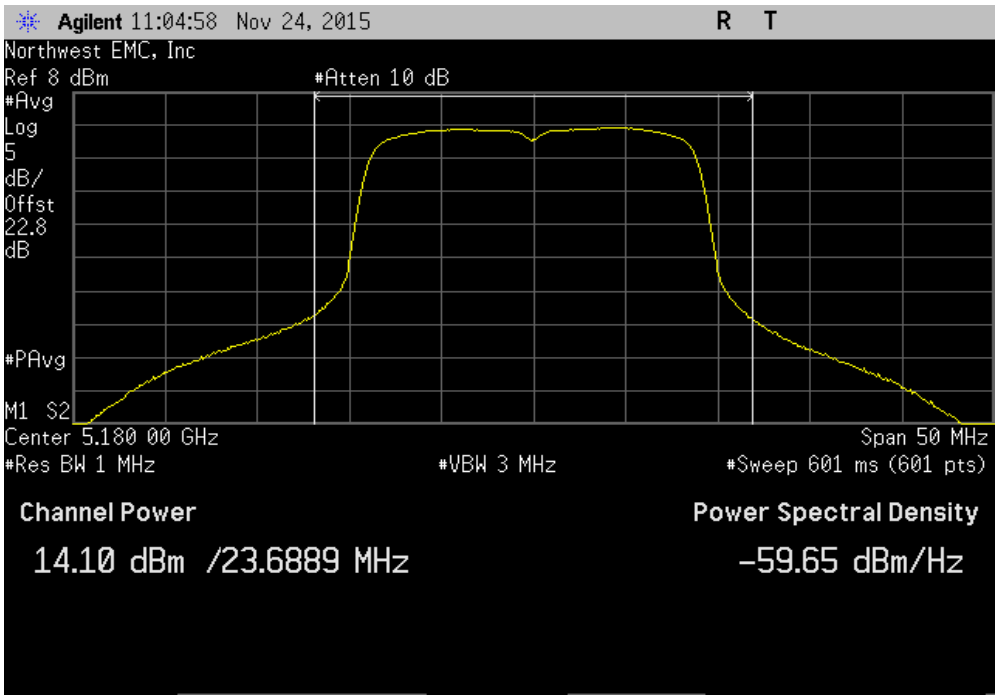
| 20 MHz, 802.11(a) 54 Mbps, Ch 157, Mid Channel 5785 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Avg Cond Pwr (dBm) | Duty Cycle Factor (dB) | | Value (dBm) | Limit (dBm) | Results |
| | 16.651 | 0 | | 16.7 | 30 | Pass |



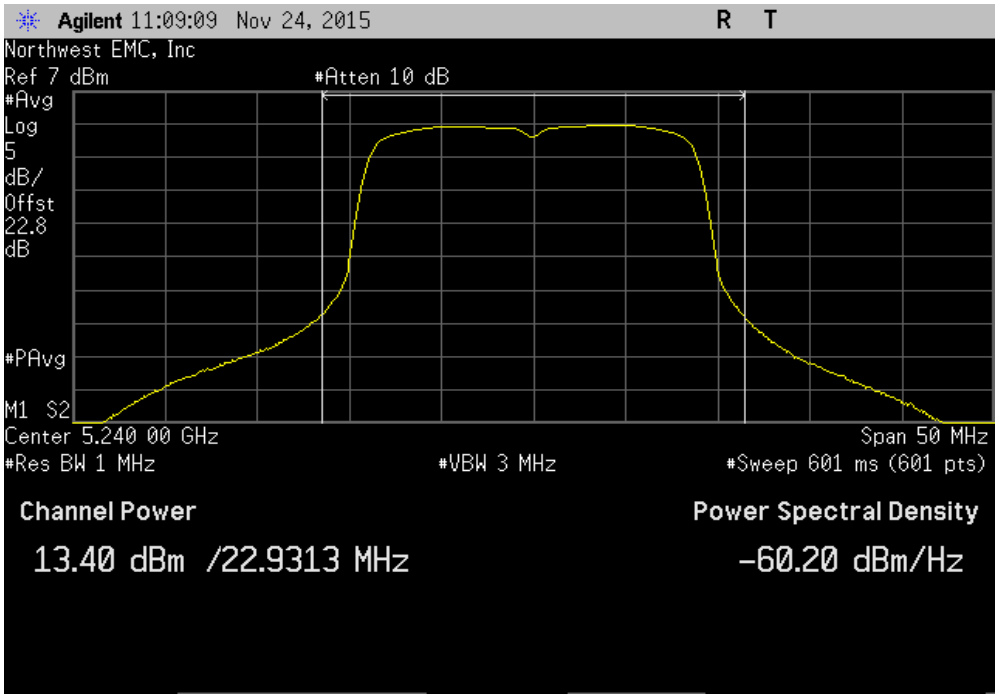

| 20 MHz, 802.11(a) 54 Mbps, Ch 165, High Channel 5825 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Avg Cond Pwr (dBm) | Duty Cycle Factor (dB) | | Value (dBm) | Limit (dBm) | Results |
| | 16.788 | 0 | | 16.8 | 30 | Pass |



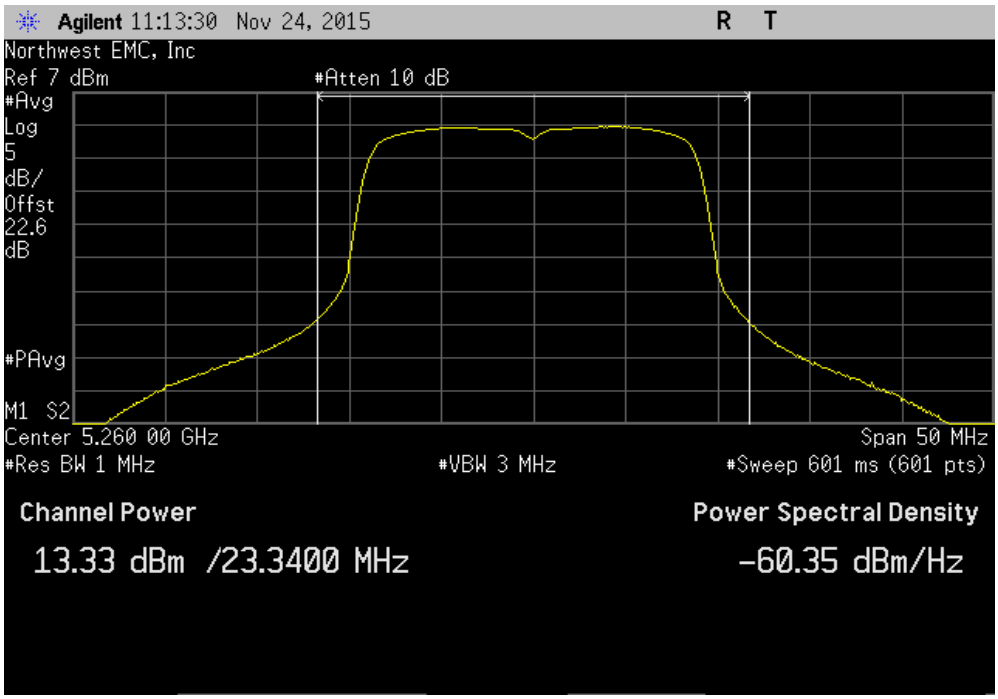
| 20 MHz, 802.11(n) MCS0, Ch 36, Low Channel 5180 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Avg Cond Pwr (dBm) | Duty Cycle Factor (dB) | | Value (dBm) | Limit (dBm) | Results |
| | 14.097 | 0 | | 14.1 | 30 | Pass |



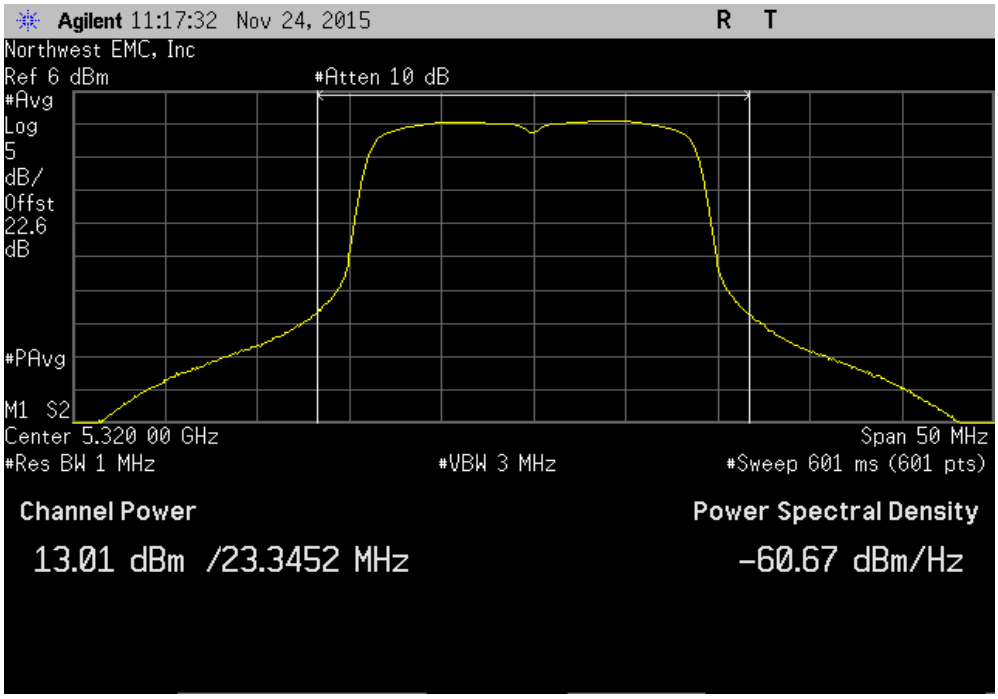

| 20 MHz, 802.11(n) MCS0, Ch 48, High Channel 5240 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Avg Cond Pwr (dBm) | Duty Cycle Factor (dB) | | Value (dBm) | Limit (dBm) | Results |
| | 13.4 | 0 | | 13.4 | 30 | Pass |



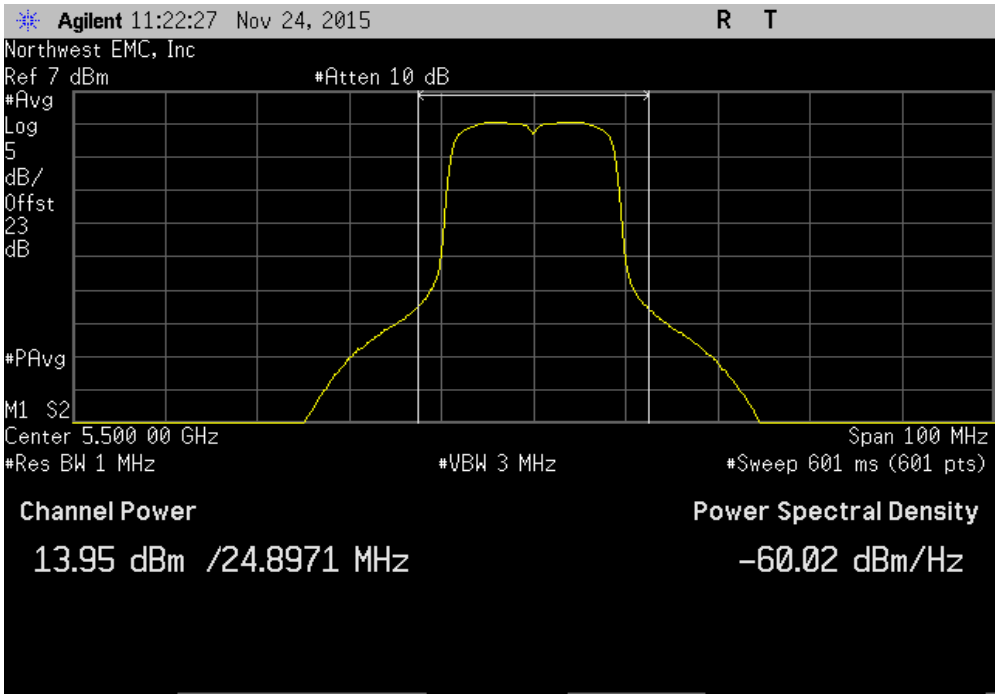
| 20 MHz, 802.11(n) MCS0, Ch 52, Low Channel 5260 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Avg Cond Pwr (dBm) | Duty Cycle Factor (dB) | | Value (dBm) | Limit (dBm) | Results |
| | 13.326 | 0 | | 13.3 | 24 | Pass |



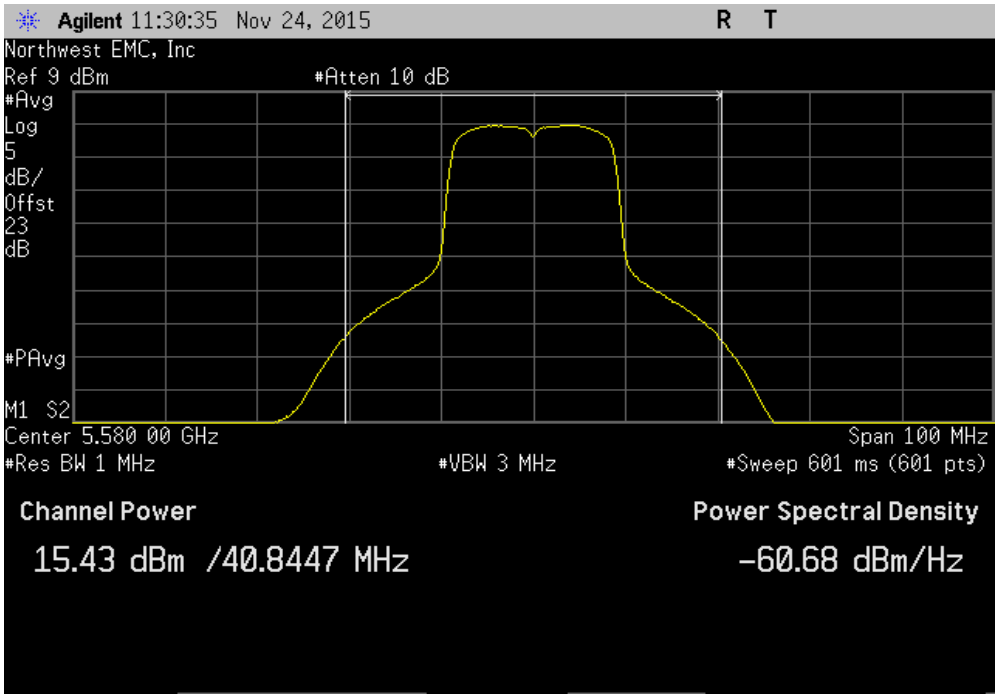

| 20 MHz, 802.11(n) MCS0, Ch 64, High Channel 5320 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Avg Cond Pwr (dBm) | Duty Cycle Factor (dB) | | Value (dBm) | Limit (dBm) | Results |
| | 13.013 | 0 | | 13 | 24 | Pass |



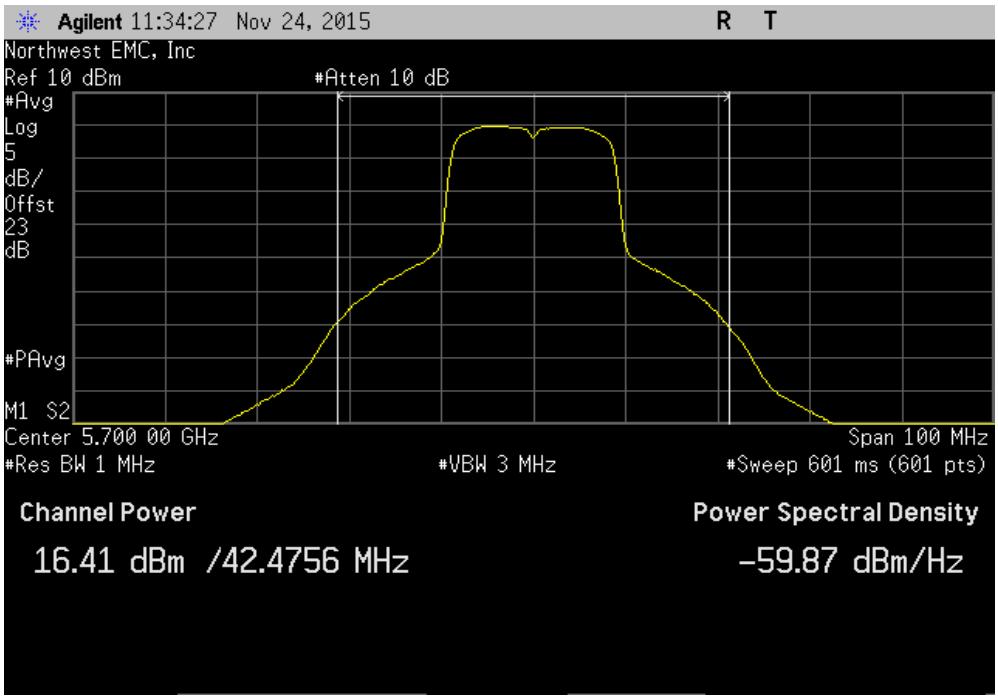
| 20 MHz, 802.11(n) MCS0, Ch 100, Low Channel 5500 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Avg Cond Pwr (dBm) | Duty Cycle Factor (dB) | | Value (dBm) | Limit (dBm) | Results |
| | 13.946 | 0 | | 13.9 | 24 | Pass |



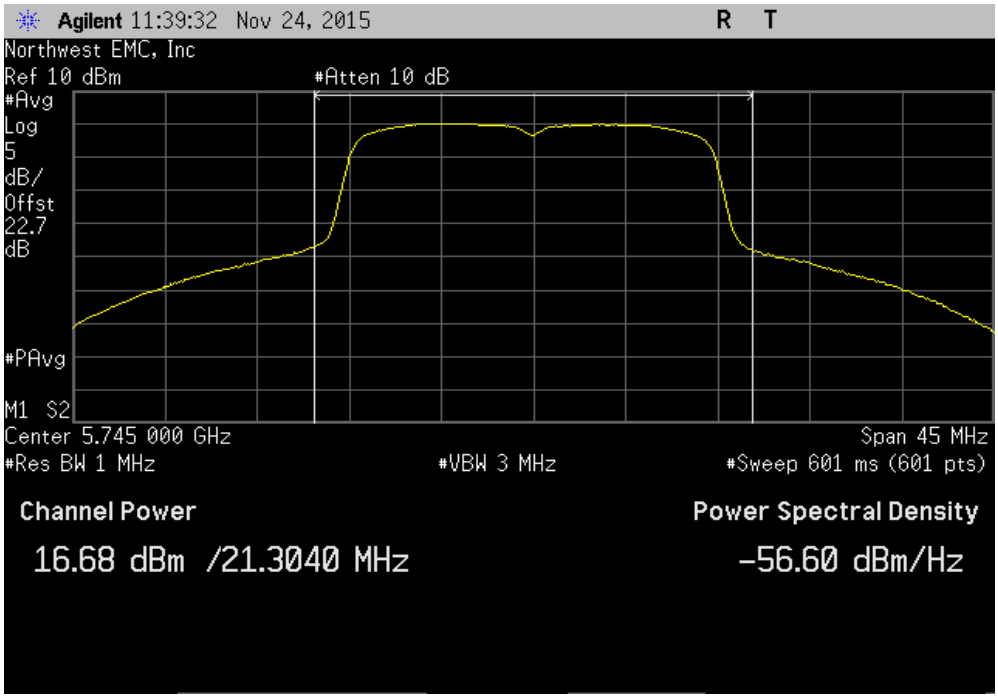

| 20 MHz, 802.11(n) MCS0, Ch 116, Mid Channel 5580 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Avg Cond Pwr (dBm) | Duty Cycle Factor (dB) | | Value (dBm) | Limit (dBm) | Results |
| | 15.431 | 0 | | 15.4 | 24 | Pass |



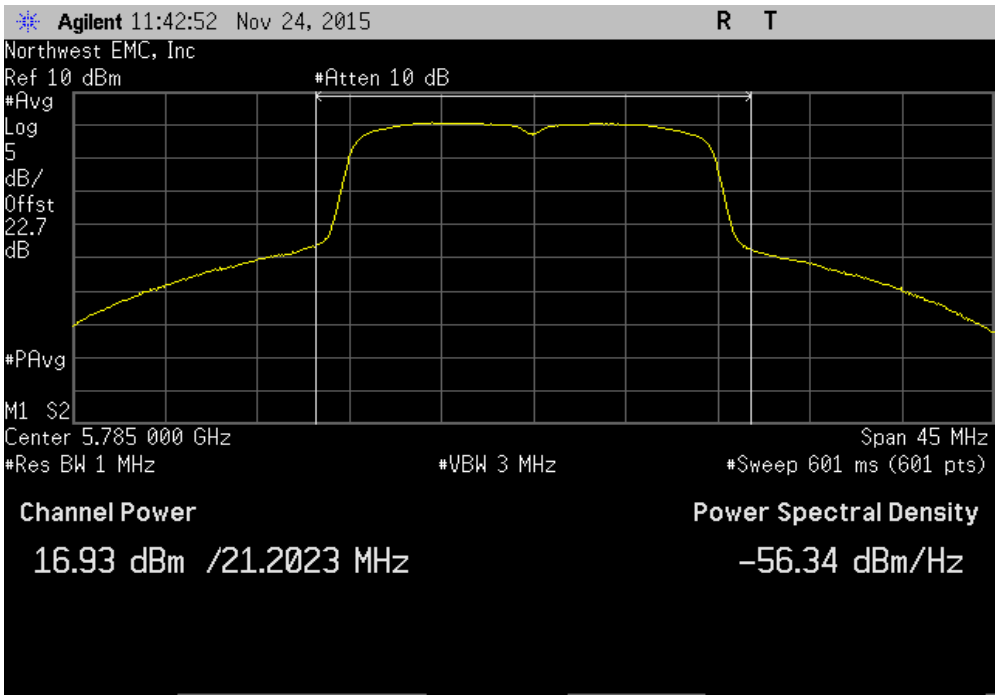
| 20 MHz, 802.11(n) MCS0, Ch 140, High Channel 5700 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Avg Cond Pwr (dBm) | Duty Cycle Factor (dB) | | Value (dBm) | Limit (dBm) | Results |
| | 16.412 | 0 | | 16.4 | 24 | Pass |



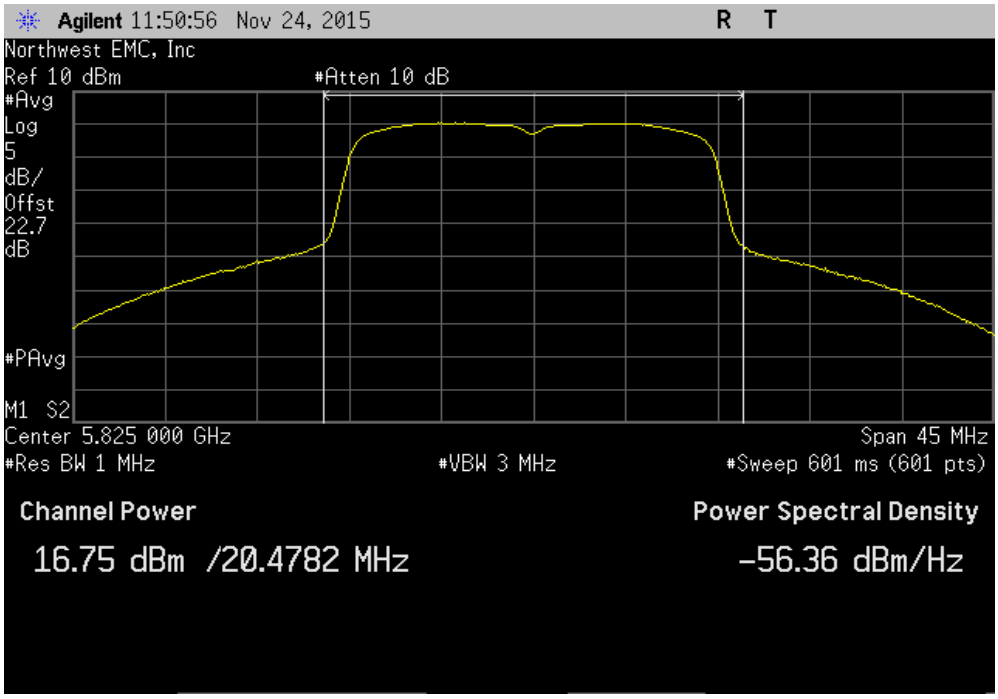

| 20 MHz, 802.11(n) MCS0, Ch 149, Low Channel 5745 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Avg Cond Pwr (dBm) | Duty Cycle Factor (dB) | | Value (dBm) | Limit (dBm) | Results |
| | 16.683 | 0 | | 16.7 | 30 | Pass |



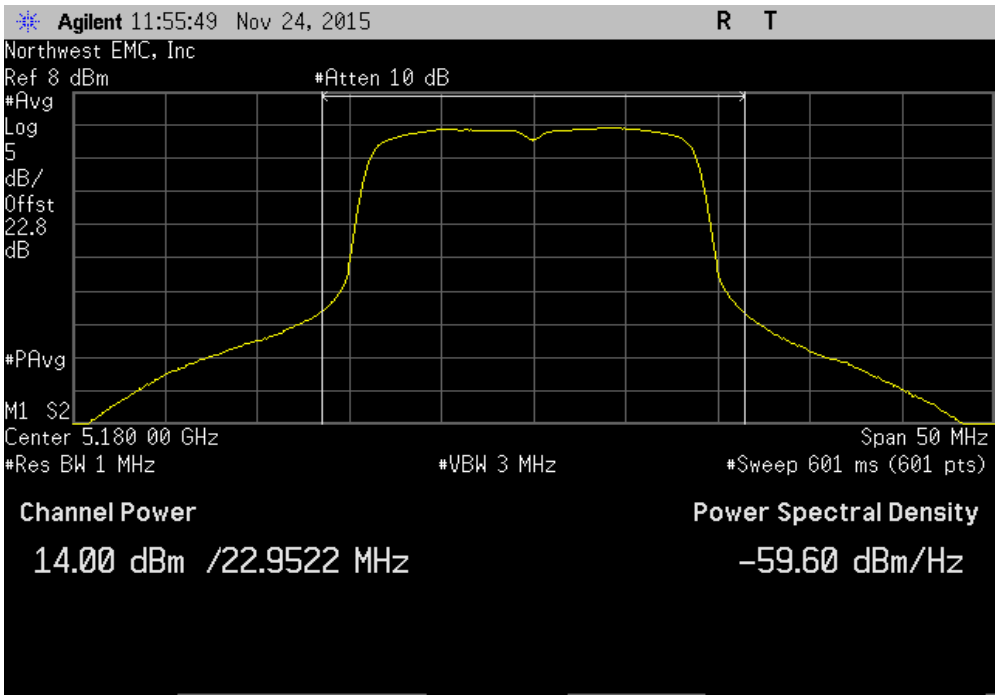
| 20 MHz, 802.11(n) MCS0, Ch 157, Mid Channel 5785 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Avg Cond Pwr (dBm) | Duty Cycle Factor (dB) | | Value (dBm) | Limit (dBm) | Results |
| | 16.927 | 0 | | 16.9 | 30 | Pass |



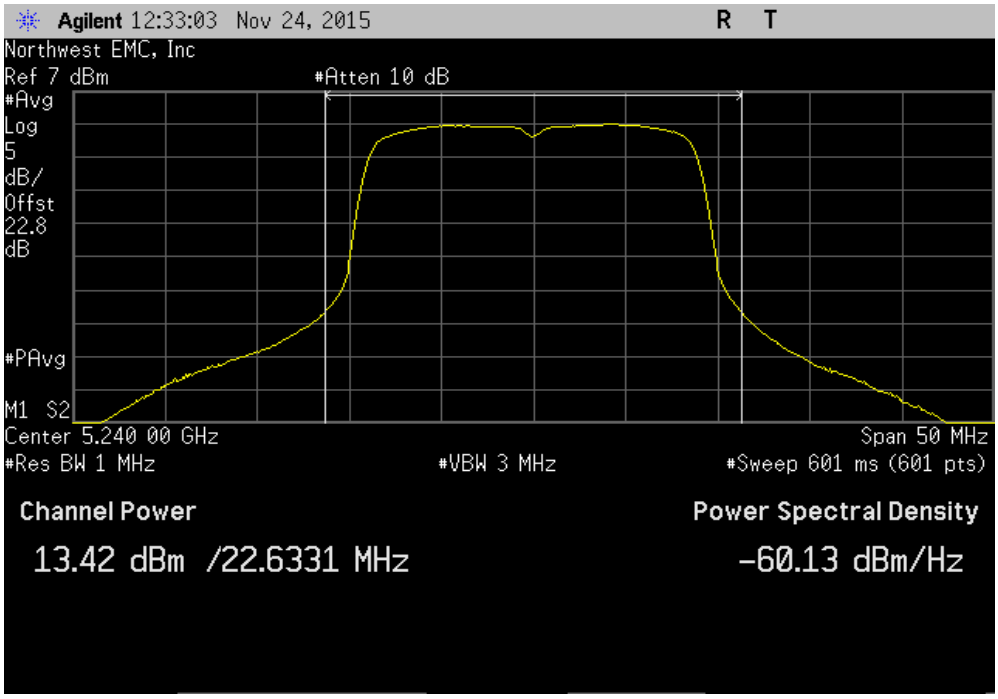

| 20 MHz, 802.11(n) MCS0, Ch 165, High Channel 5825 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Avg Cond Pwr (dBm) | Duty Cycle Factor (dB) | | Value (dBm) | Limit (dBm) | Results |
| | 16.749 | 0 | | 16.7 | 30 | Pass |



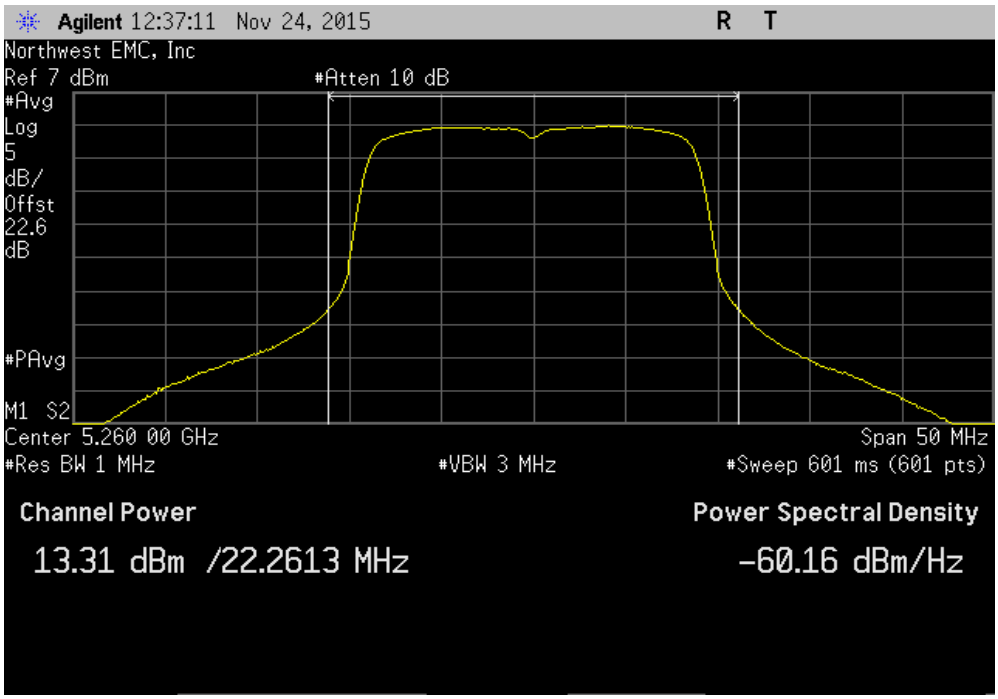
| 20 MHz, 802.11(n) MCS7, Ch 36, Low Channel 5180 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Avg Cond Pwr (dBm) | Duty Cycle Factor (dB) | | Value (dBm) | Limit (dBm) | Results |
| | 14.003 | 0 | | 14 | 24 | Pass |



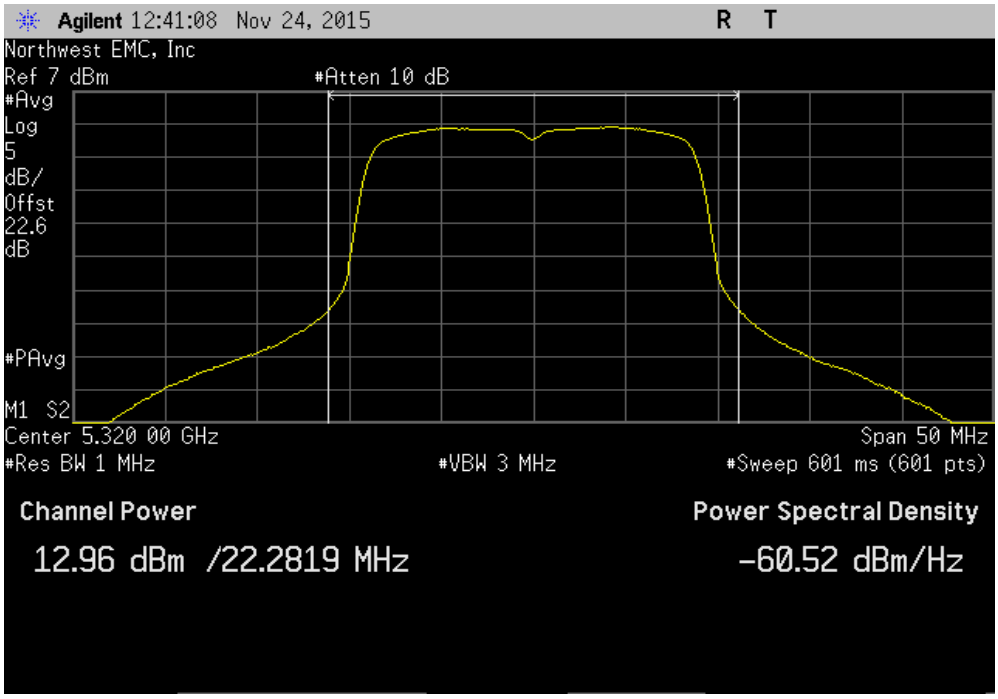

| 20 MHz, 802.11(n) MCS7, Ch 48, High Channel 5240 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Avg Cond Pwr (dBm) | Duty Cycle Factor (dB) | | Value (dBm) | Limit (dBm) | Results |
| | 13.417 | 0 | | 13.4 | 24 | Pass |



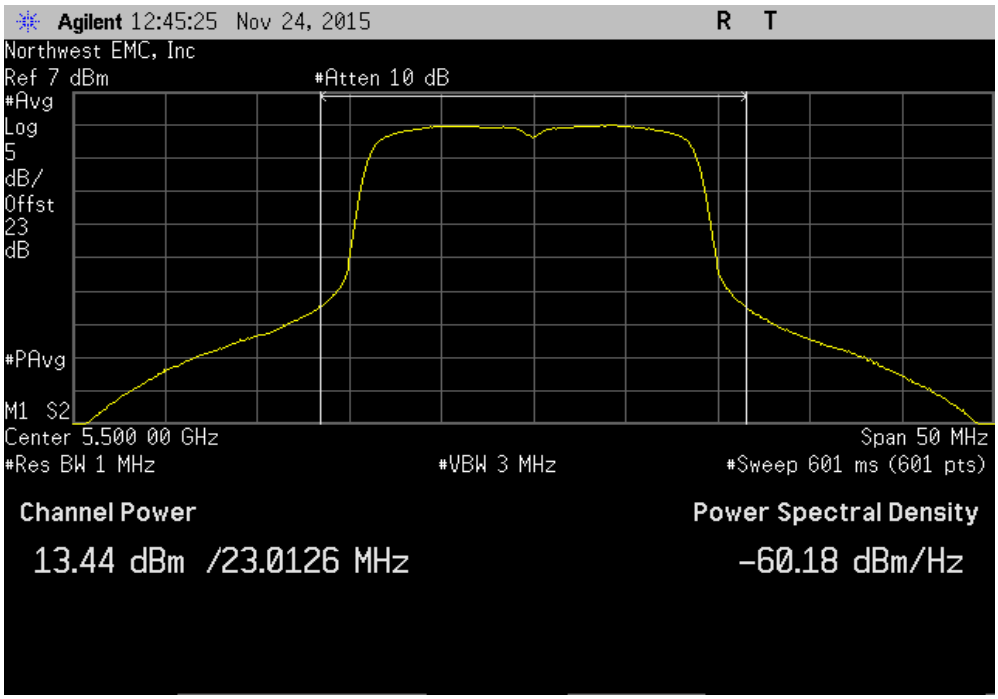
| 20 MHz, 802.11(n) MCS7, Ch 52, Low Channel 5260 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Avg Cond Pwr (dBm) | Duty Cycle Factor (dB) | | Value (dBm) | Limit (dBm) | Results |
| | 13.314 | 0 | | 13.3 | 24 | Pass |



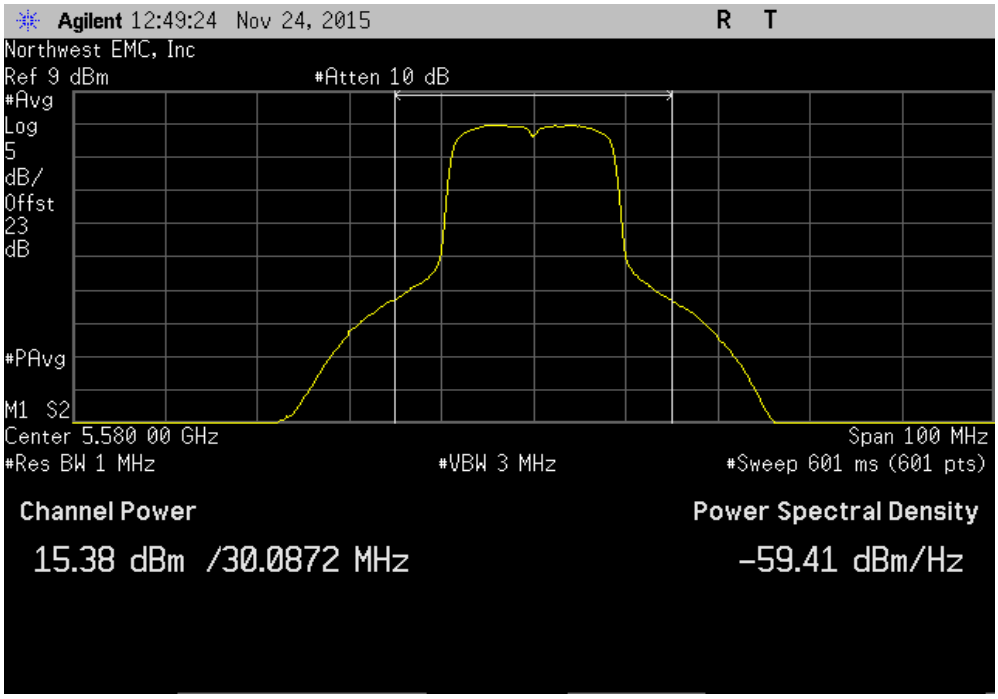

| 20 MHz, 802.11(n) MCS7, Ch 64, High Channel 5320 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Avg Cond Pwr (dBm) | Duty Cycle Factor (dB) | | Value (dBm) | Limit (dBm) | Results |
| | 12.962 | 0 | | 13 | 24 | Pass |



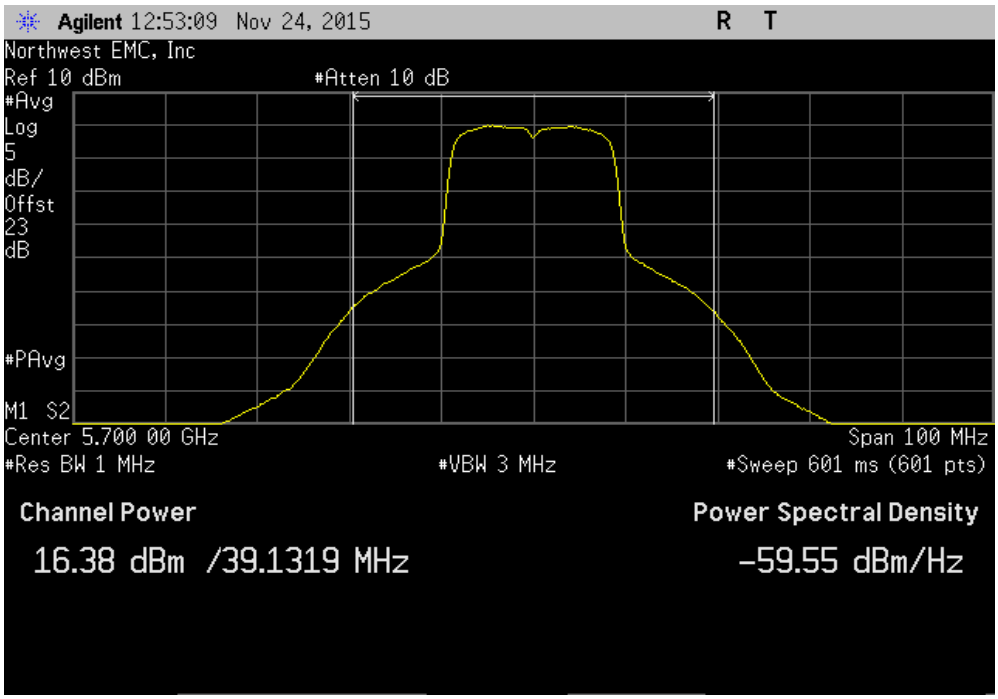
| 20 MHz, 802.11(n) MCS7, Ch 100, Low Channel 5500 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Avg Cond Pwr (dBm) | Duty Cycle Factor (dB) | | Value (dBm) | Limit (dBm) | Results |
| | 13.444 | 0 | | 13.4 | 24 | Pass |



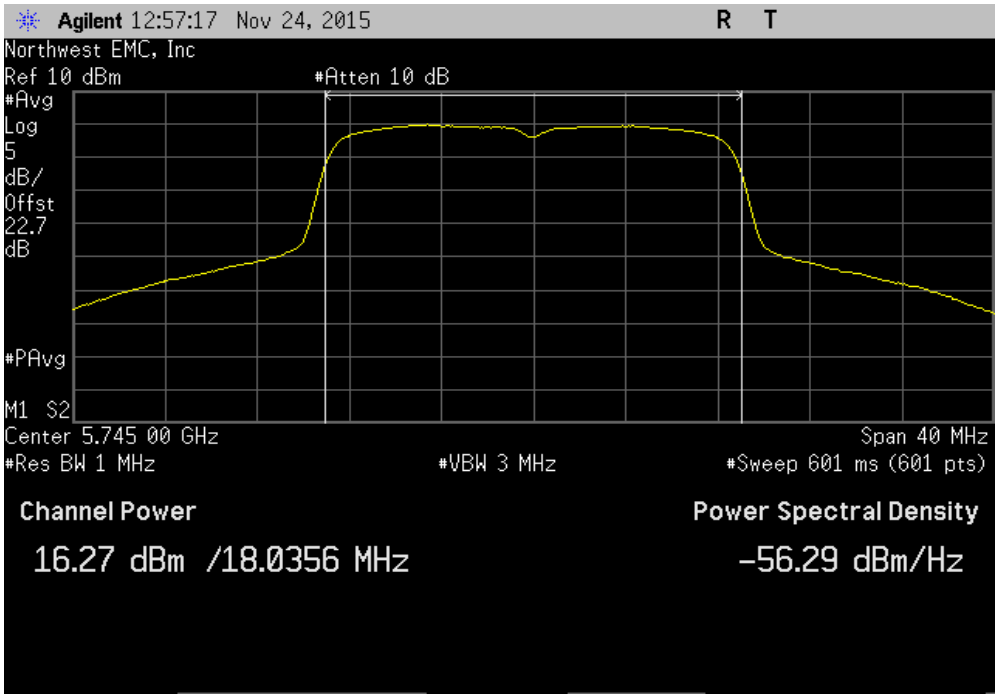

| 20 MHz, 802.11(n) MCS7, Ch 116, Mid Channel 5580 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Avg Cond Pwr (dBm) | Duty Cycle Factor (dB) | | Value (dBm) | Limit (dBm) | Results |
| | 15.379 | 0 | | 15.4 | 24 | Pass |



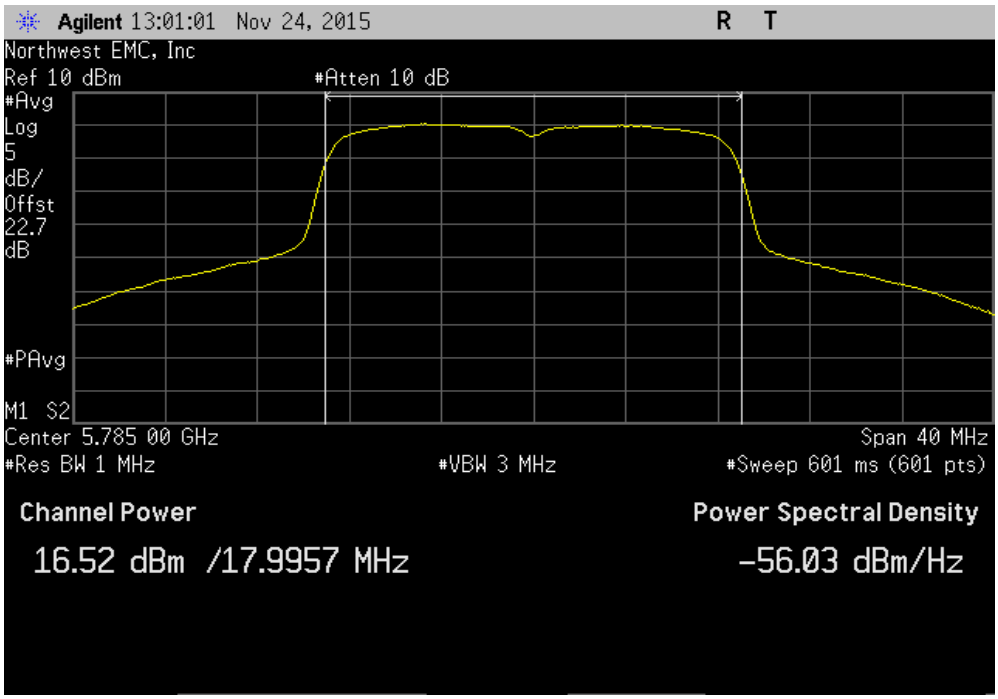
| 20 MHz, 802.11(n) MCS7, Ch 140, High Channel 5700 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Avg Cond Pwr (dBm) | Duty Cycle Factor (dB) | | Value (dBm) | Limit (dBm) | Results |
| | 16.378 | 0 | | 16.4 | 24 | Pass |



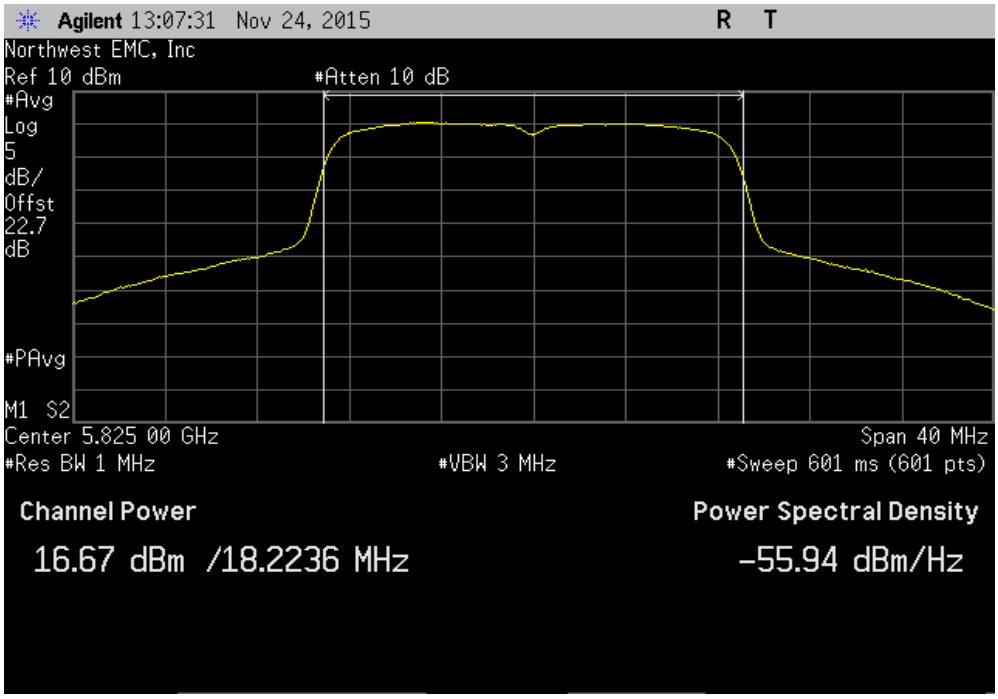

| 20 MHz, 802.11(n) MCS7, Ch 149, Low Channel 5745 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Avg Cond Pwr (dBm) | Duty Cycle Factor (dB) | | Value (dBm) | Limit (dBm) | Results |
| | 16.272 | 0 | | 16.3 | 30 | Pass |



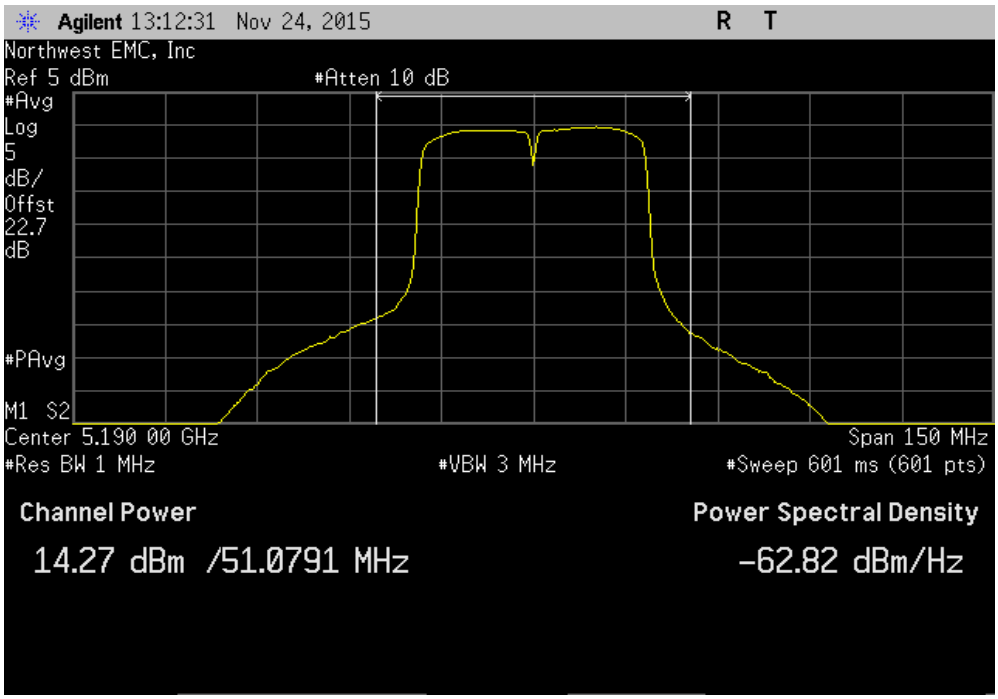
| 20 MHz, 802.11(n) MCS7, Ch 157, Mid Channel 5785 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Avg Cond Pwr (dBm) | Duty Cycle Factor (dB) | | Value (dBm) | Limit (dBm) | Results |
| | 16.52 | 0 | | 16.5 | 30 | Pass |



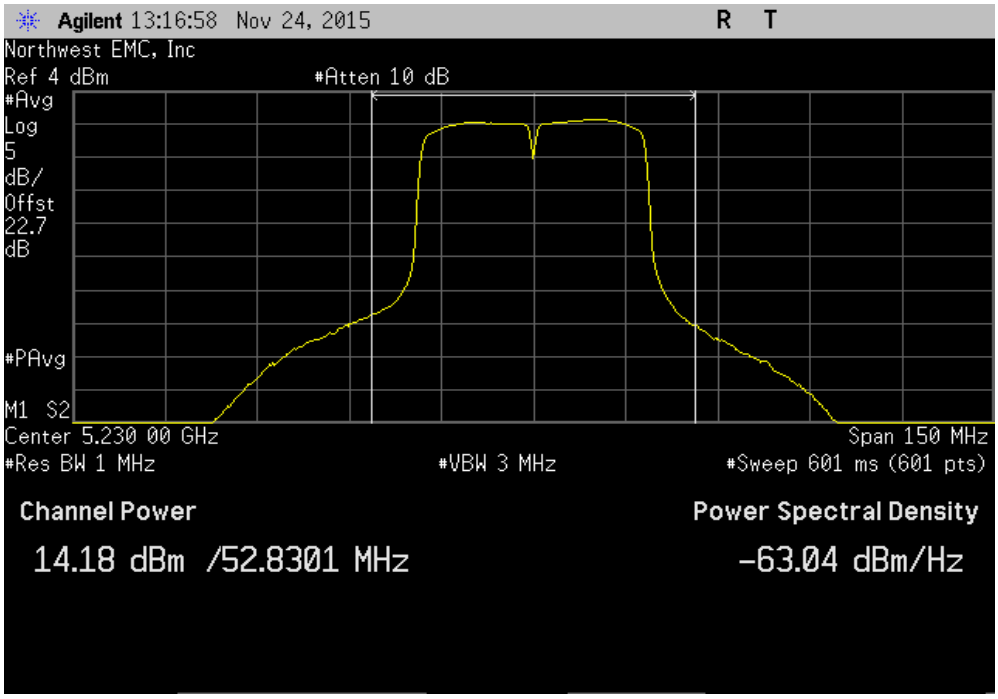

| 20 MHz, 802.11(n) MCS7, Ch 165, High Channel 5825 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Avg Cond Pwr (dBm) | Duty Cycle Factor (dB) | | Value (dBm) | Limit (dBm) | Results |
| | 16.666 | 0 | | 16.7 | 30 | Pass |



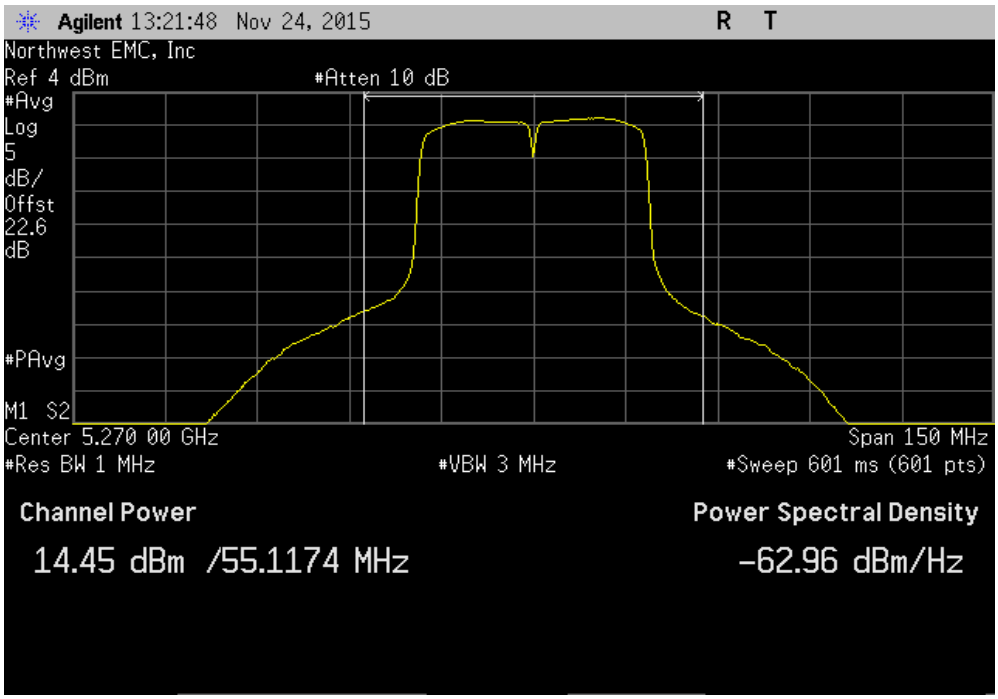
| 40 MHz, 802.11(n) MCS0, Ch 36/40, Low Channel 5190 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Avg Cond Pwr (dBm) | Duty Cycle Factor (dB) | | Value (dBm) | Limit (dBm) | Results |
| | 14.267 | 0 | | 14.3 | 24 | Pass |



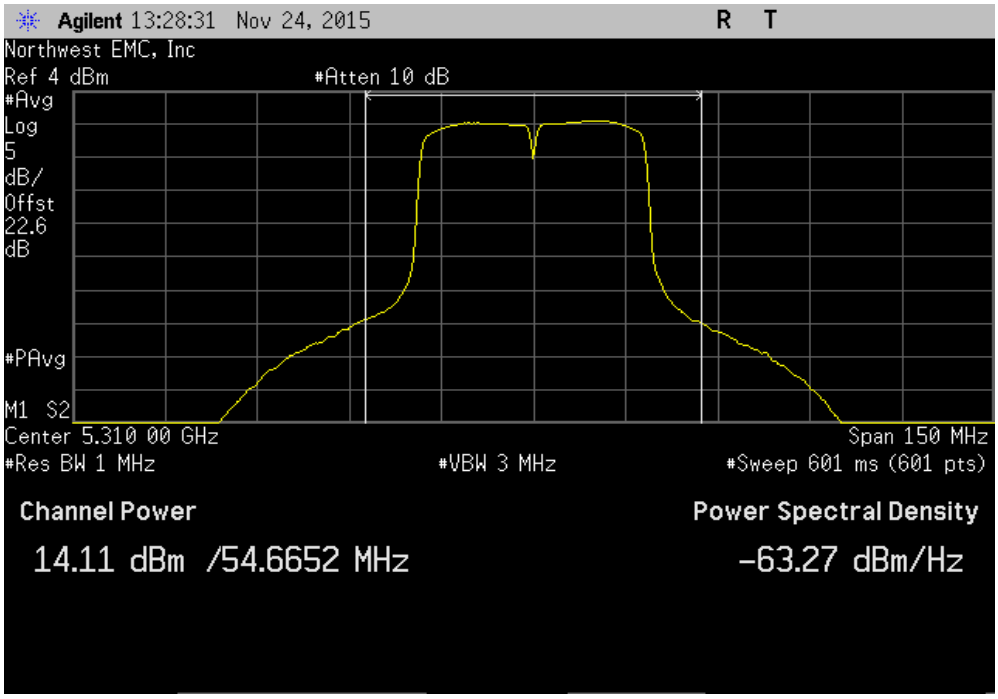

| 40 MHz, 802.11(n) MCS0, Ch 44/48, High Channel 5230 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Avg Cond Pwr (dBm) | Duty Cycle Factor (dB) | | Value (dBm) | Limit (dBm) | Results |
| | 14.185 | 0 | | 14.2 | 24 | Pass |



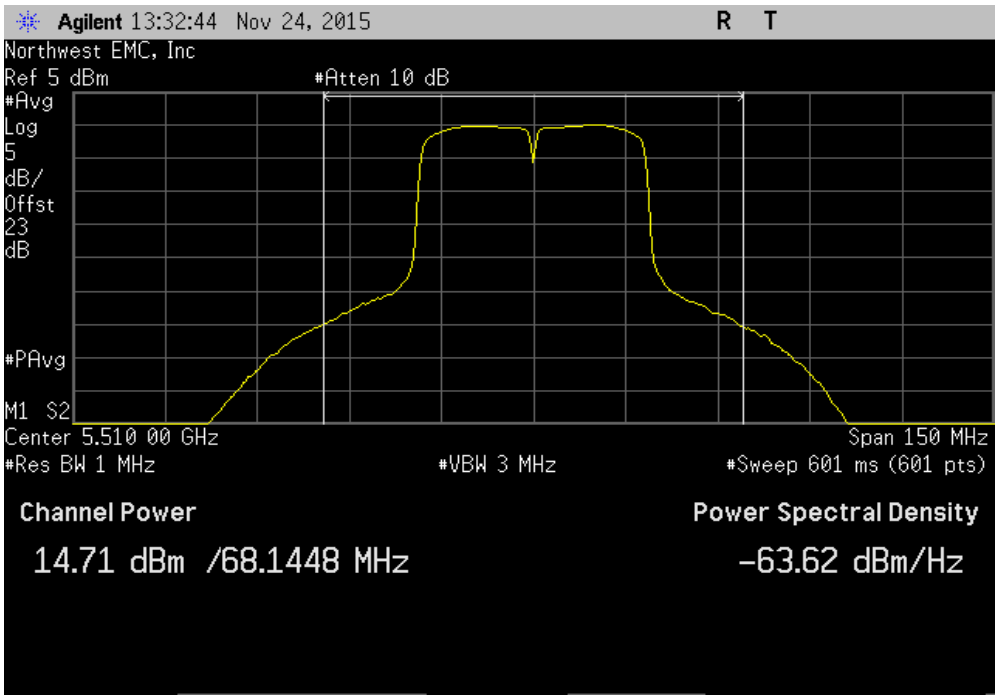
| 40 MHz, 802.11(n) MCS0, Ch 52/56, Low Channel 5270 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Avg Cond Pwr (dBm) | Duty Cycle Factor (dB) | | Value (dBm) | Limit (dBm) | Results |
| | 14.449 | 0 | | 14.4 | 24 | Pass |



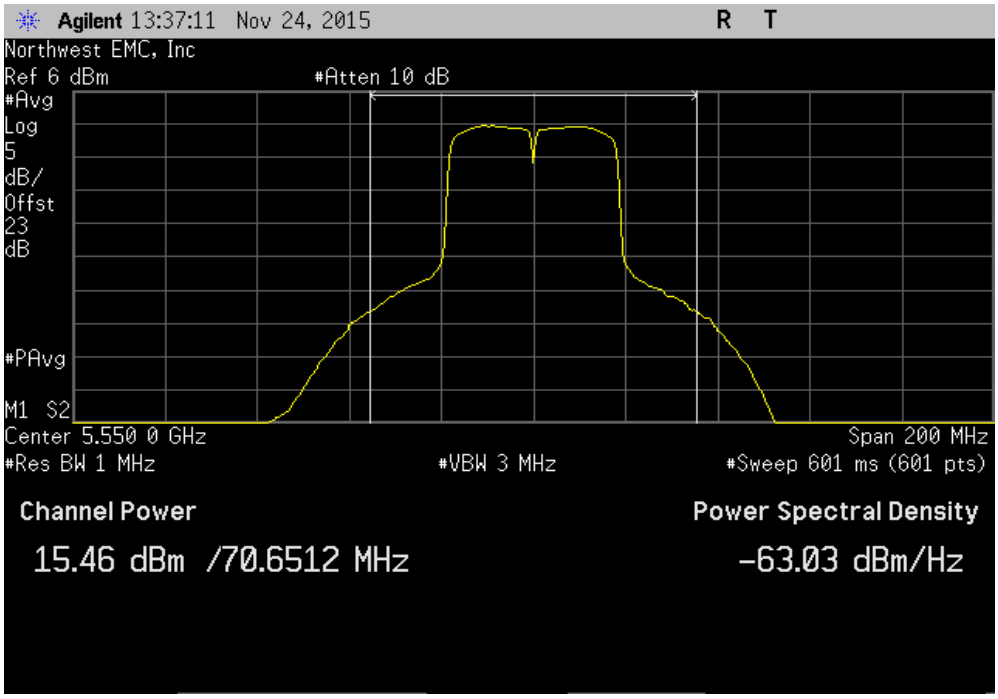

| 40 MHz, 802.11(n) MCS0, Ch 60/64, High Channel 5310 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Avg Cond Pwr (dBm) | Duty Cycle Factor (dB) | | Value (dBm) | Limit (dBm) | Results |
| | 14.109 | 0 | | 14.1 | 24 | Pass |



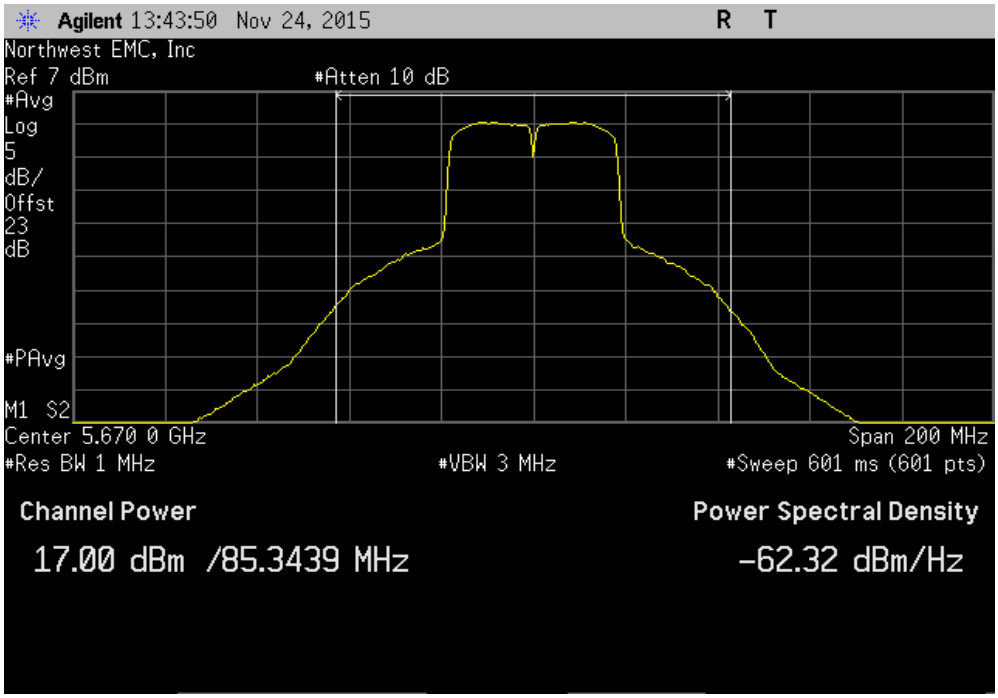
| 40 MHz, 802.11(n) MCS0, Ch 100/104, Low Channel 5510 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Avg Cond Pwr (dBm) | Duty Cycle Factor (dB) | | Value (dBm) | Limit (dBm) | Results |
| | 14.715 | 0 | | 14.7 | 24 | Pass |



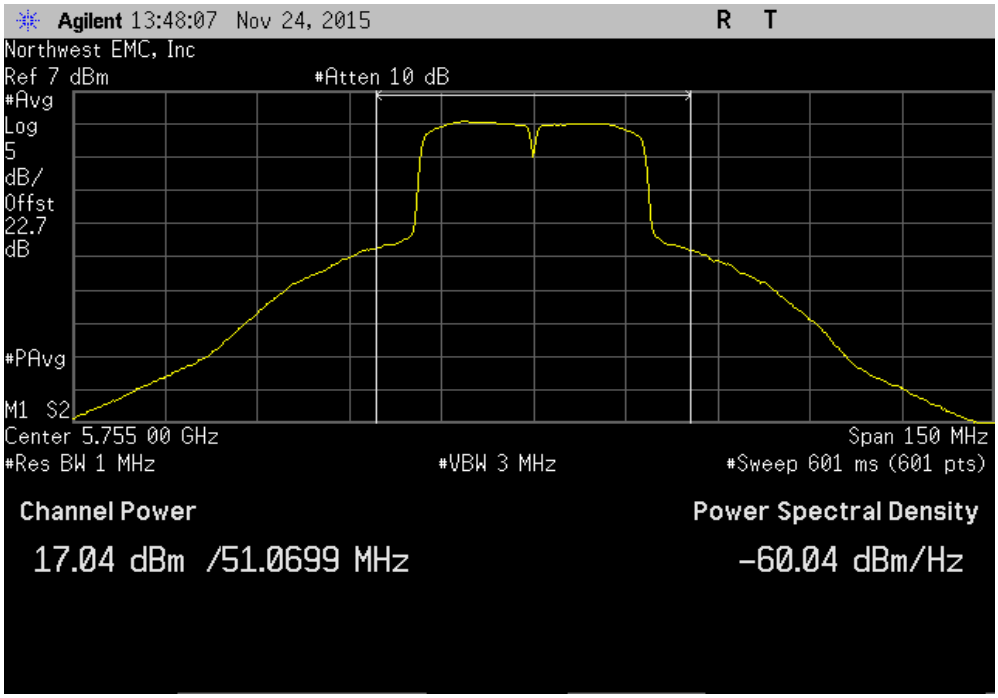

| 40 MHz, 802.11(n) MCS0, Ch 108/112, Mid Channel 5550 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Avg Cond Pwr (dBm) | Duty Cycle Factor (dB) | | Value (dBm) | Limit (dBm) | Results |
| | 15.457 | 0 | | 15.5 | 24 | Pass |



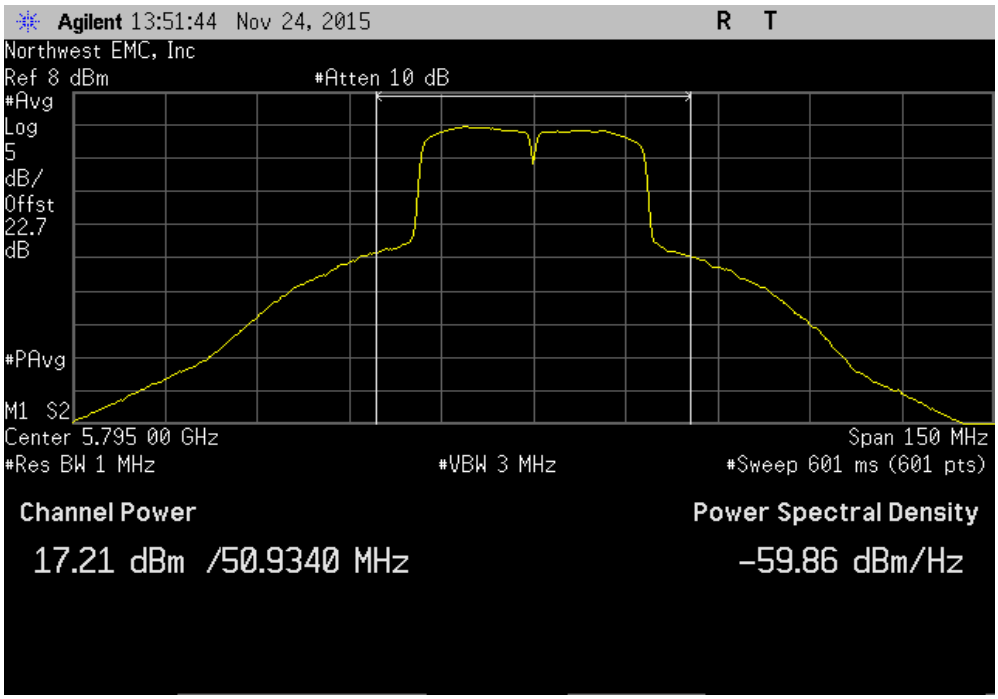
| 40 MHz, 802.11(n) MCS0, Ch 132/136, High Channel 5670 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Avg Cond Pwr (dBm) | Duty Cycle Factor (dB) | | Value (dBm) | Limit (dBm) | Results |
| | 16.996 | 0 | | 17 | 24 | Pass |



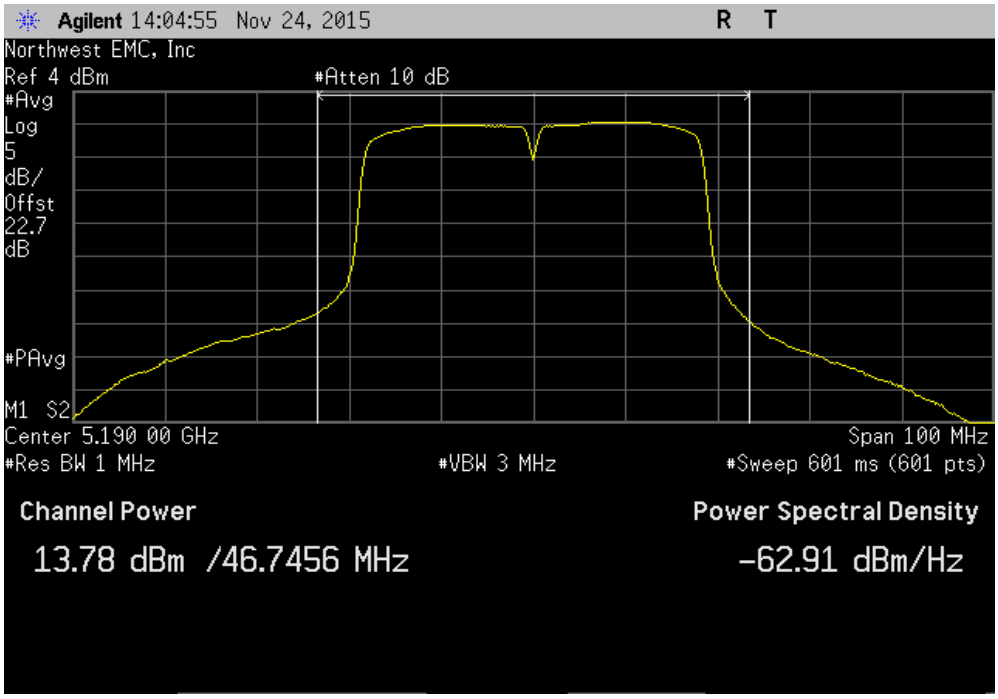

| 40 MHz, 802.11(n) MCS0, Ch 149/153, Low Channel 5755 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Avg Cond Pwr (dBm) | Duty Cycle Factor (dB) | | Value (dBm) | Limit (dBm) | Results |
| | 17.044 | 0 | | 17 | 30 | Pass |



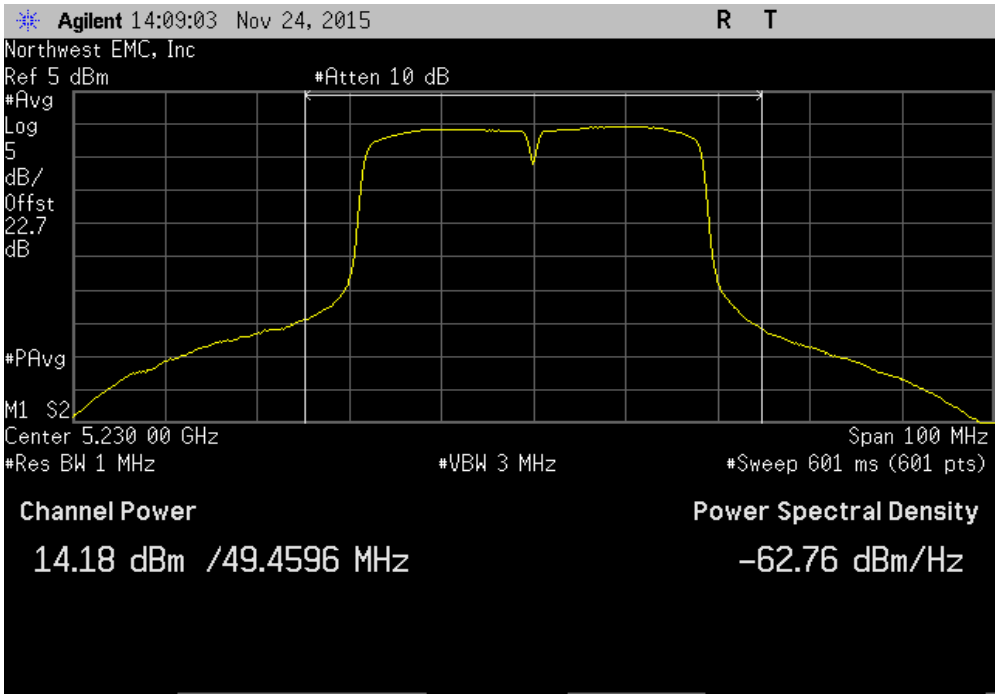
| 40 MHz, 802.11(n) MCS0, Ch 157/161, High Channel 5795 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Avg Cond Pwr (dBm) | Duty Cycle Factor (dB) | | Value (dBm) | Limit (dBm) | Results |
| | 17.209 | 0 | | 17.2 | 30 | Pass |



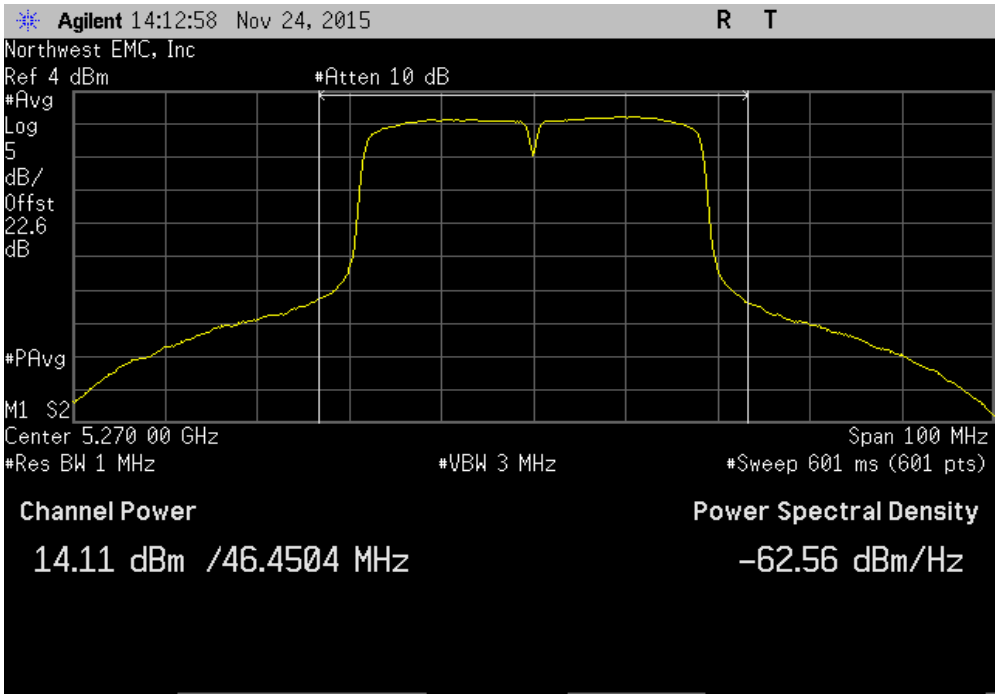

| 40 MHz, 802.11(n) MCS7, Ch 36/40, Low Channel 5190 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Avg Cond Pwr (dBm) | Duty Cycle Factor (dB) | | Value (dBm) | Limit (dBm) | Results |
| | 13.783 | 0 | | 13.8 | 24 | Pass |



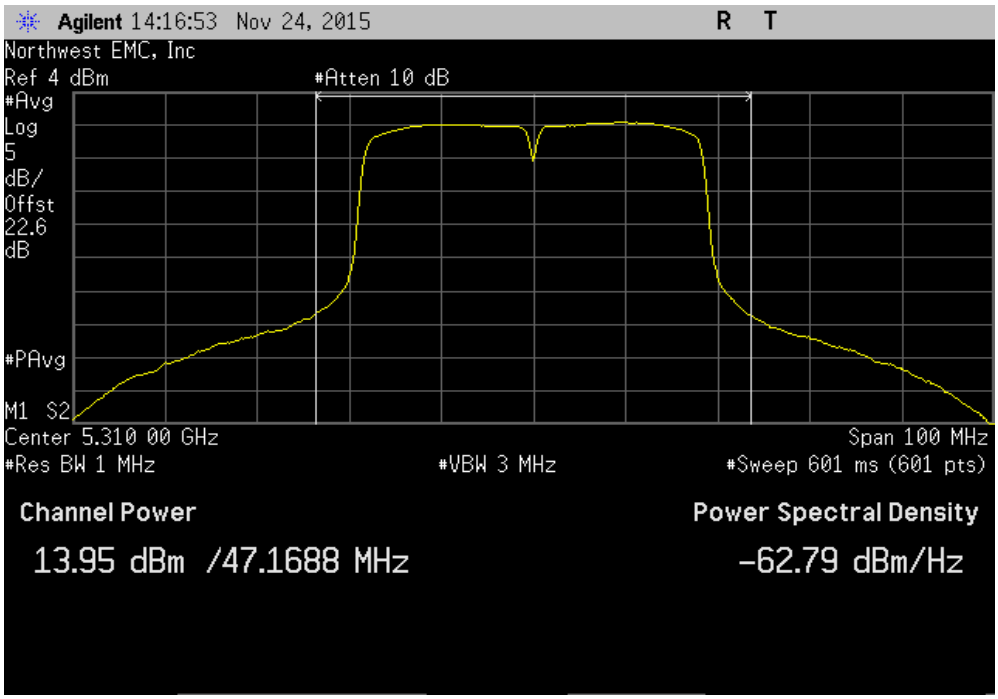
| 40 MHz, 802.11(n) MCS7, Ch 44/48, High Channel 5230 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Avg Cond Pwr (dBm) | Duty Cycle Factor (dB) | | Value (dBm) | Limit (dBm) | Results |
| | 14.184 | 0 | | 14.2 | 24 | Pass |



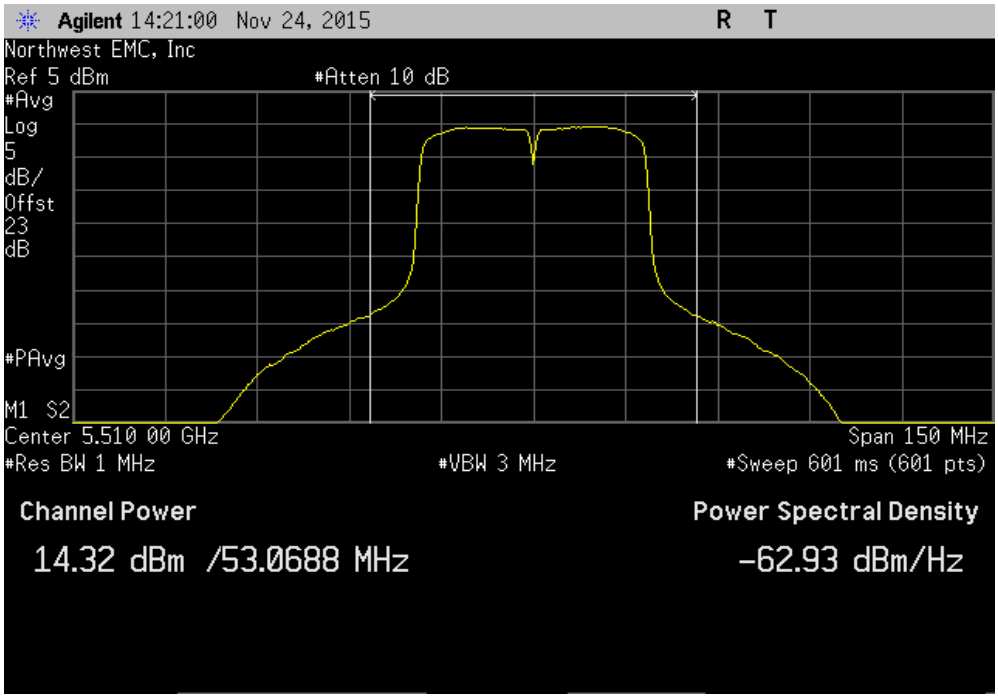

| 40 MHz, 802.11(n) MCS7, Ch 52/56, Low Channel 5270 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Avg Cond Pwr (dBm) | Duty Cycle Factor (dB) | | Value (dBm) | Limit (dBm) | Results |
| | 14.106 | 0 | | 14.1 | 24 | Pass |



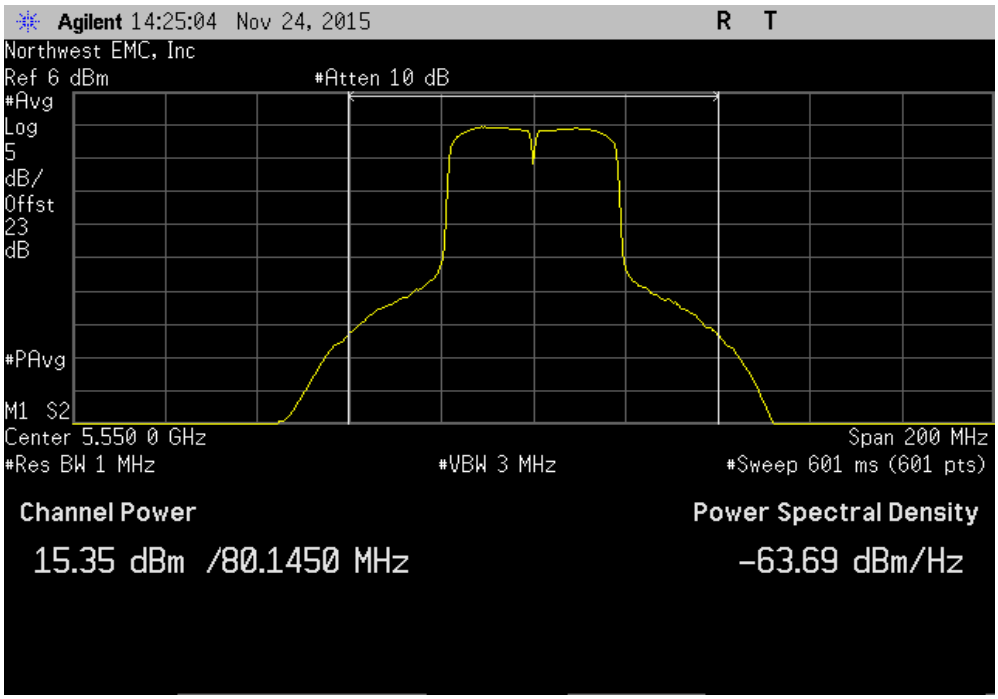
| 40 MHz, 802.11(n) MCS7, Ch 60/64, High Channel 5310 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Avg Cond Pwr (dBm) | Duty Cycle Factor (dB) | | Value (dBm) | Limit (dBm) | Results |
| | 13.95 | 0 | | 14 | 24 | Pass |



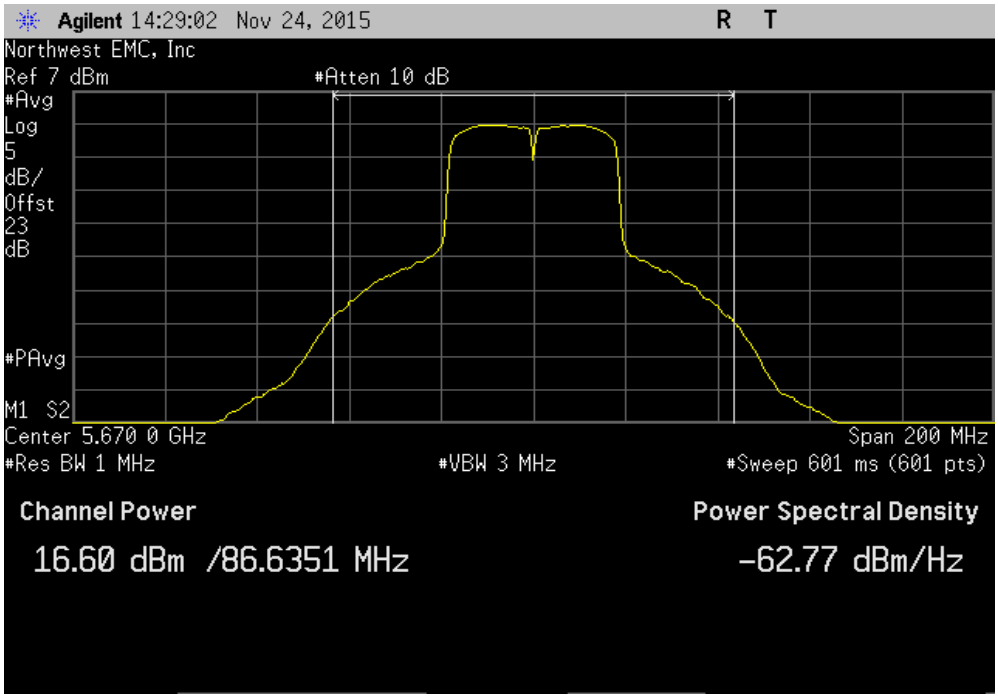

| 40 MHz, 802.11(n) MCS7, Ch 100/104, Low Channel 5510 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Avg Cond Pwr (dBm) | Duty Cycle Factor (dB) | | Value (dBm) | Limit (dBm) | Results |
| | 14.318 | 0 | | 14.3 | 24 | Pass |



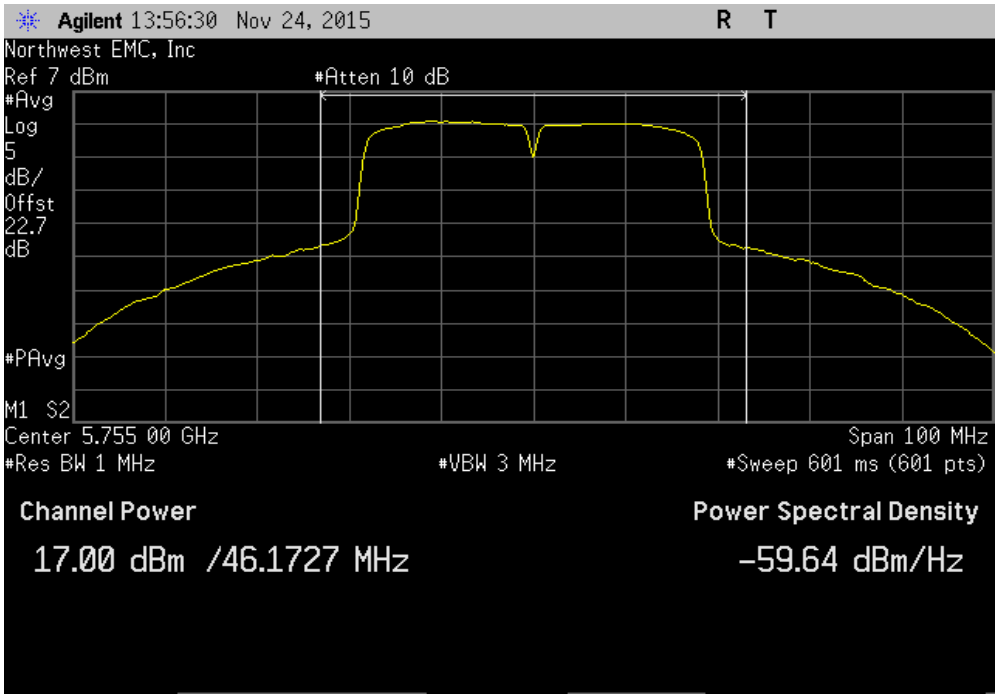
| 40 MHz, 802.11(n) MCS7, Ch 108/112, Mid Channel 5550 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Avg Cond Pwr (dBm) | Duty Cycle Factor (dB) | | Value (dBm) | Limit (dBm) | Results |
| | 15.349 | 0 | | 15.3 | 24 | Pass |



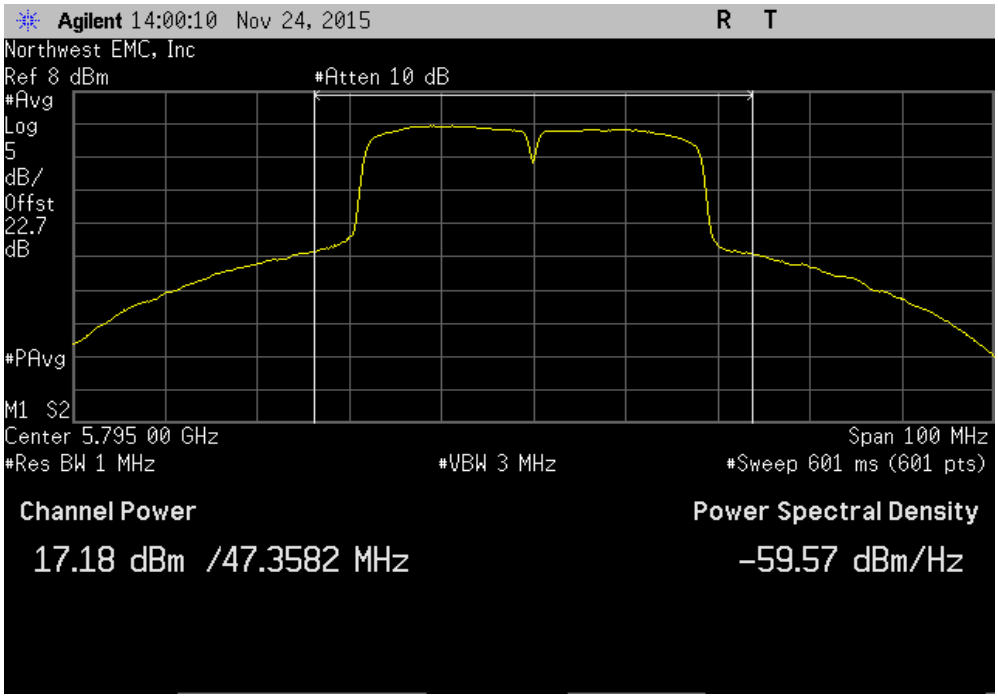

| 40 MHz, 802.11(n) MCS7, Ch 132/136, High Channel 5670 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Avg Cond Pwr (dBm) | Duty Cycle Factor (dB) | | Value (dBm) | Limit (dBm) | Results |
| | 16.604 | 0 | | 16.6 | 24 | Pass |



| 40 MHz, 802.11(n) MCS7, Ch 149/153, Low Channel 5755 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Avg Cond Pwr (dBm) | Duty Cycle Factor (dB) | | Value (dBm) | Limit (dBm) | Results |
| | 17.004 | 0 | | 17 | 30 | Pass |




| 40 MHz, 802.11(n) MCS7, Ch 157/161, High Channel 5795 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Avg Cond Pwr (dBm) | Duty Cycle Factor (dB) | | Value (dBm) | Limit (dBm) | Results |
| | 17.184 | 0 | | 17.2 | 30 | 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) |
|---|---|---|---|---|---|
| Generator - Signal | Agilent | N5183A | TIK | 10/17/2014 | 36 |
| Block - DC | Fairview Microwave | SD3379 | AMI | 9/18/2015 | 12 |
| Cable | ESM Cable Corp. | TTBJ141 KMKM-72 | MNU | 9/18/2015 | 12 |
| Attenuator | S.M. Electronics | SA26B-20 | RFW | 3/10/2015 | 12 |
| Analyzer - Spectrum Analyzer | Agilent | E4440A | AAX | 4/20/2015 | 12 |

**TEST DESCRIPTION**

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.

Per ANSI C63.10, 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 and to utilize the emission bandwidth for setting the channel power integration bandwidth during conducted output power

# EMISSION BANDWIDTH

NORTHWEST EMC

XMit 2015.01.14

| | | | | | |
|---|---|---|---|---|---|
| **EUT:** | Sigma Pumps Gen IV 802.11abgn Module | | | **Work Order:** | DGII0152 |
| **Serial Number:** | None | | | **Date:** | 01/11/16 |
| **Customer:** | Digi International Inc | | | **Temperature:** | 21.1°C |
| **Attendees:** | Slava Gehkt | | | **Humidity:** | 16% |
| **Project:** | None | | | **Barometric Pres.:** | 981.5 |
| **Tested by:** | Jared Ison | **Power:** | 110VAC/60Hz | **Job Site:** | MN08 |

| TEST SPECIFICATIONS | Test Method |
|---|---|
| FCC 15.407:2016 | ANSI C63.10:2013 |

**COMMENTS**

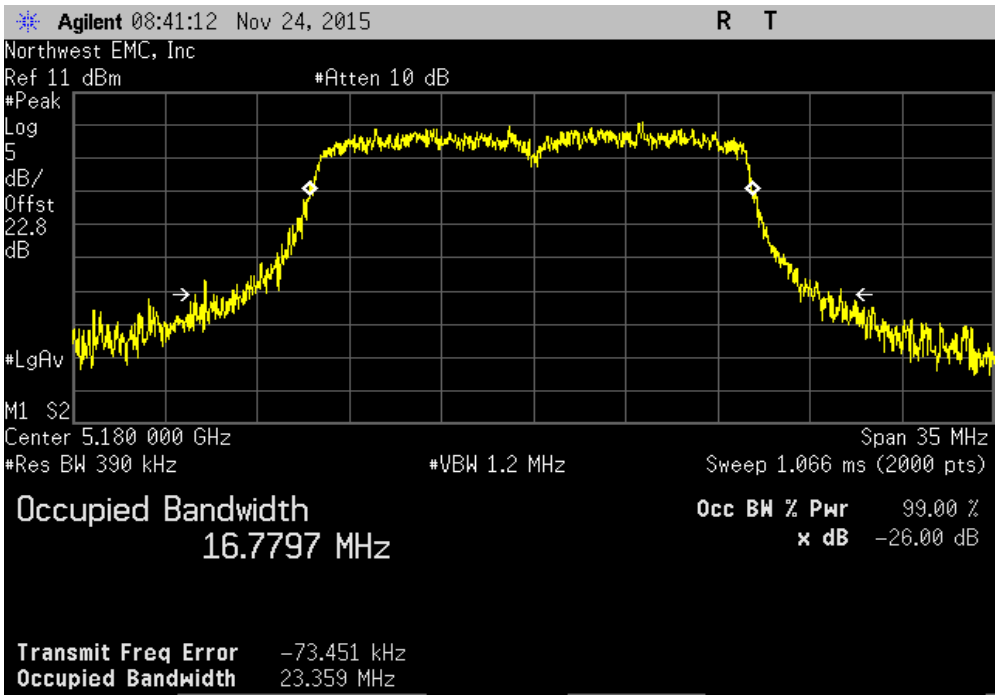
None

**DEVIATIONS FROM TEST STANDARD**

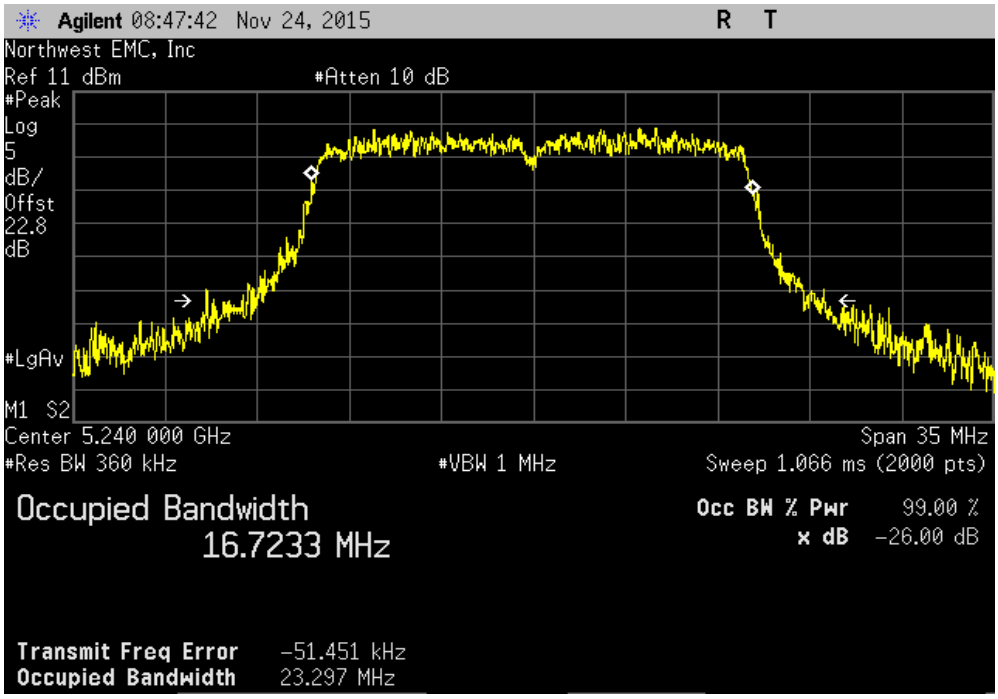
| Configuration # | 2 | Signature |
|---|---|---|

| | | Value | Limit (>) | Result |
|---|---|---|---|---|
| 20 MHz | | | | |
| | 802.11(a) 6 Mbps | | | |
| | Ch 36, Low Channel 5180 MHz | 23.359 MHz | 500 kHz | Pass |
| | Ch 48, High Channel 5240 MHz | 23.297 MHz | 500 kHz | Pass |
| | Ch 52, Low Channel 5260 MHz | 23.659 MHz | 500 kHz | Pass |
| | Ch 64, High Channel 5320 MHz | 27.873 MHz | 500 kHz | Pass |
| | Ch 100, Low Channel 5500 MHz | 30.728 MHz | 500 kHz | Pass |
| | Ch 116, Mid Channel 5580 MHz | 38.565 MHz | 500 kHz | Pass |
| | Ch 140, High Channel 5700 MHz | 38.107 MHz | 500 kHz | Pass |
| | 802.11(a) 36 Mbps | | | |
| | Ch 36, Low Channel 5180 MHz | 22.074 MHz | 500 kHz | Pass |
| | Ch 48, High Channel 5240 MHz | 21.267 MHz | 500 kHz | Pass |
| | Ch 52, Low Channel 5260 MHz | 21.658 MHz | 500 kHz | Pass |
| | Ch 64, High Channel 5320 MHz | 22.266 MHz | 500 kHz | Pass |
| | Ch 100, Low Channel 5500 MHz | 24.158 MHz | 500 kHz | Pass |
| | Ch 116, Mid Channel 5580 MHz | 36.812 MHz | 500 kHz | Pass |
| | Ch 140, High Channel 5700 MHz | 39.064 MHz | 500 kHz | Pass |
| | 802.11(a) 54 Mbps | | | |
| | Ch 36, Low Channel 5180 MHz | 21.878 MHz | 500 kHz | Pass |
| | Ch 48, High Channel 5240 MHz | 21.4 MHz | 500 kHz | Pass |
| | Ch 52, Low Channel 5260 MHz | 22.267 MHz | 500 kHz | Pass |
| | Ch 64, High Channel 5320 MHz | 22.978 MHz | 500 kHz | Pass |
| | Ch 100, Low Channel 5500 MHz | 23.21 MHz | 500 kHz | Pass |
| | Ch 116, Mid Channel 5580 MHz | 32.386 MHz | 500 kHz | Pass |
| | Ch 140, High Channel 5700 MHz | 38.731 MHz | 500 kHz | Pass |
| | 802.11(n) MCS0 | | | |
| | Ch 36, Low Channel 5180 MHz | 23.689 MHz | 500 kHz | Pass |
| | Ch 48, High Channel 5240 MHz | 22.931 MHz | 500 kHz | Pass |
| | Ch 52, Low Channel 5260 MHz | 23.34 MHz | 500 kHz | Pass |
| | Ch 64, High Channel 5320 MHz | 23.345 MHz | 500 kHz | Pass |
| | Ch 100, Low Channel 5500 MHz | 24.897 MHz | 500 kHz | Pass |
| | Ch 116, Mid Channel 5580 MHz | 40.845 MHz | 500 kHz | Pass |
| | Ch 140, High Channel 5700 MHz | 42.476 MHz | 500 kHz | Pass |
| | 802.11(n) MCS7 | | | |
| | Ch 36, Low Channel 5180 MHz | 22.952 MHz | 500 kHz | Pass |
| | Ch 48, High Channel 5240 MHz | 22.633 MHz | 500 kHz | Pass |
| | Ch 52, Low Channel 5260 MHz | 22.261 MHz | 500 kHz | Pass |
| | Ch 64, High Channel 5320 MHz | 22.282 MHz | 500 kHz | Pass |
| | Ch 100, Low Channel 5500 MHz | 23.013 MHz | 500 kHz | Pass |
| | Ch 116, Mid Channel 5580 MHz | 30.087 MHz | 500 kHz | Pass |
| | Ch 140, High Channel 5700 MHz | 39.132 MHz | 500 kHz | Pass |
| 40 MHz | | | | |
| | 802.11(n) MCS0 | | | |
| | Ch 36/40, Low Channel 5190 MHz | 51.079 MHz | 500 kHz | Pass |
| | Ch 44/48, High Channel 5230 MHz | 52.83 MHz | 500 kHz | Pass |
| | Ch 52/56, Low Channel 5270 MHz | 61.768 MHz | 500 kHz | Pass |
| | Ch 60/64, High Channel 5310 MHz | 54.665 MHz | 500 kHz | Pass |
| | Ch 100/104, Low Channel 5510 MHz | 68.145 MHz | 500 kHz | Pass |
| | Ch 108/112, Mid Channel 5550 MHz | 70.651 MHz | 500 kHz | Pass |
| | Ch 132/136, High Channel 5670 MHz | 85.344 MHz | 500 kHz | Pass |
| | 802.11(n) MCS7 | | | |
| | Ch 36/40, Low Channel 5190 MHz | 46.746 MHz | 500 kHz | Pass |
| | Ch 44/48, High Channel 5230 MHz | 49.46 MHz | 500 kHz | Pass |
| | Ch 52/56, Low Channel 5270 MHz | 46.45 MHz | 500 kHz | Pass |
| | Ch 60/64, High Channel 5310 MHz | 47.169 MHz | 500 kHz | Pass |
| | Ch 100/104, Low Channel 5510 MHz | 53.069 MHz | 500 kHz | Pass |
| | Ch 108/112, Mid Channel 5550 MHz | 80.145 MHz | 500 kHz | Pass |
| | Ch 132/136, High Channel 5670 MHz | 86.635 MHz | 500 kHz | Pass |

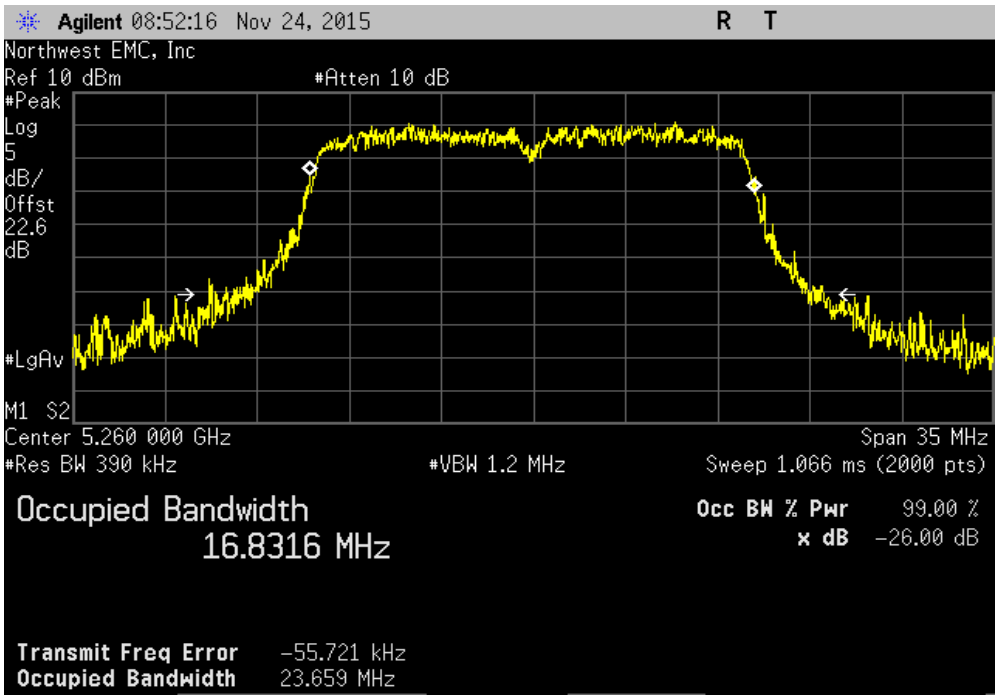
| 20 MHz, 802.11(a) 6 Mbps, Ch 36, Low Channel 5180 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Value | Limit (>) | Result |
| | | | | 23.359 MHz | 500 kHz | Pass |



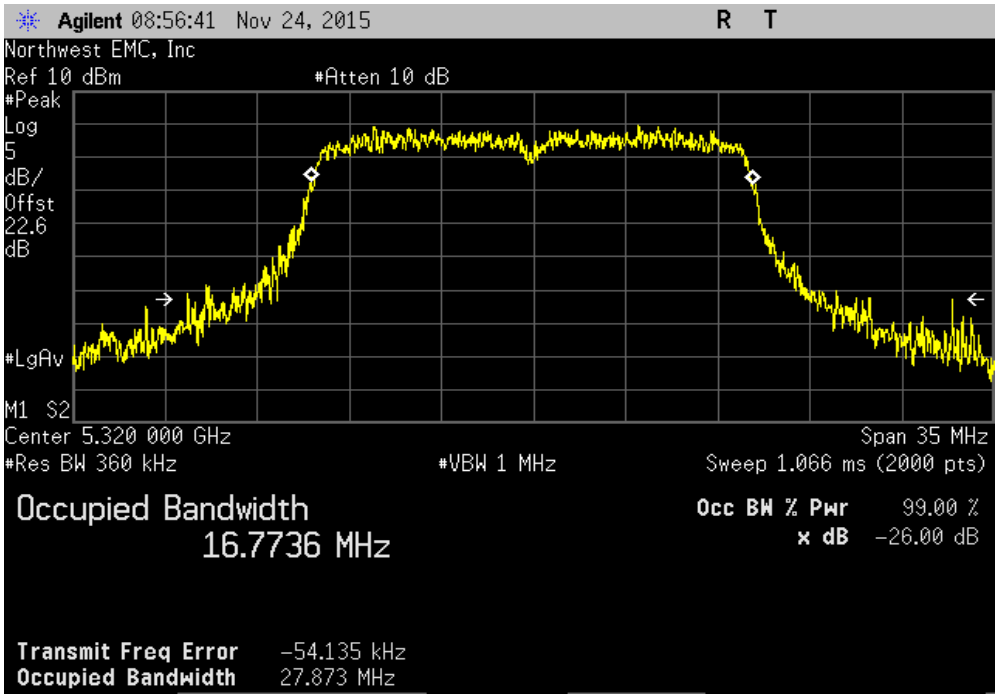

| 20 MHz, 802.11(a) 6 Mbps, Ch 48, High Channel 5240 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Value | Limit (>) | Result |
| | | | | 23.297 MHz | 500 kHz | Pass |



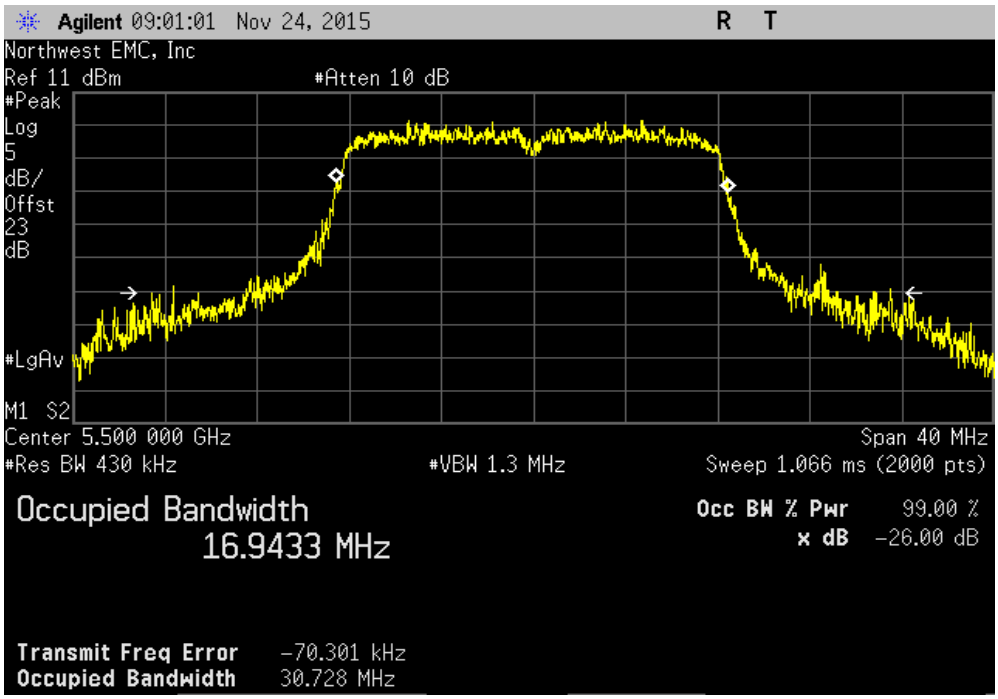
| 20 MHz, 802.11(a) 6 Mbps, Ch 52, Low Channel 5260 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Value | Limit (>) | Result |
| | | | | 23.659 MHz | 500 kHz | Pass |



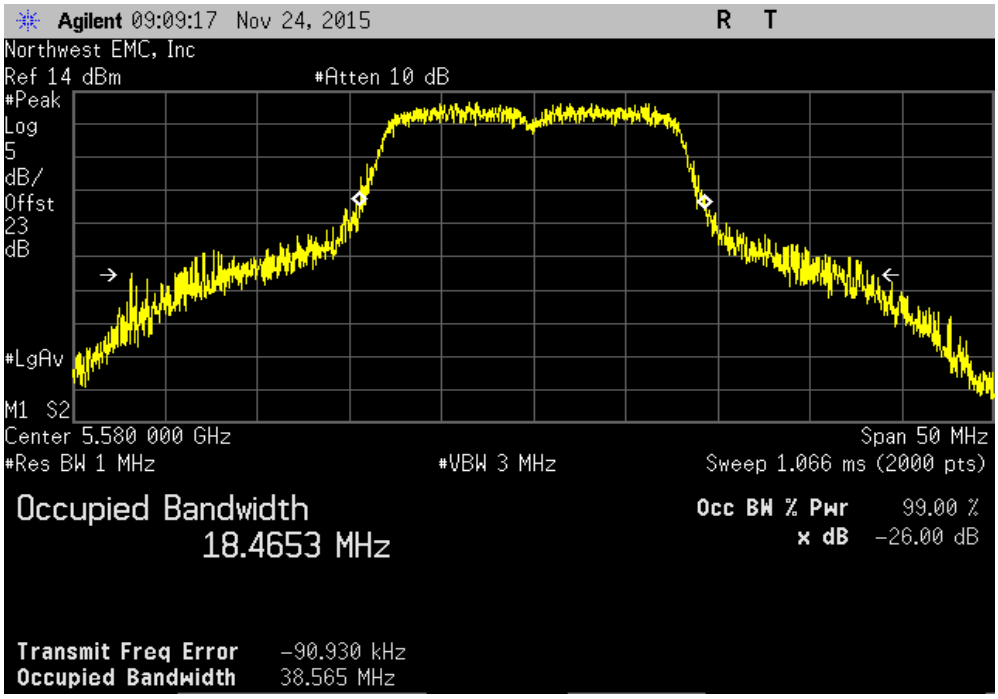

| 20 MHz, 802.11(a) 6 Mbps, Ch 64, High Channel 5320 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Value | Limit (>) | Result |
| | | | | 27.873 MHz | 500 kHz | Pass |



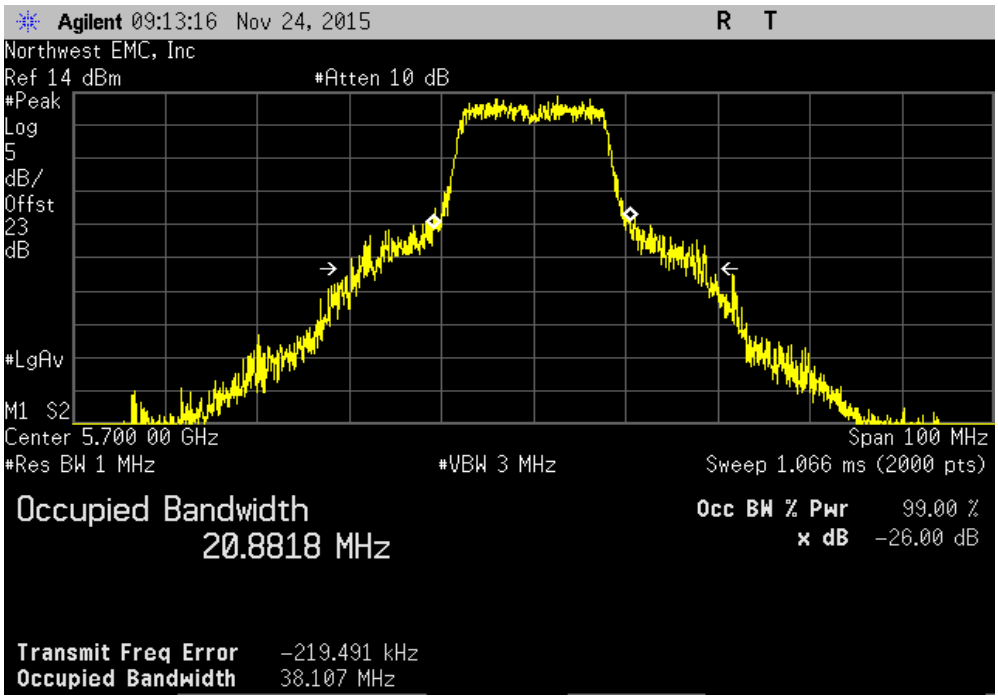
| 20 MHz, 802.11(a) 6 Mbps, Ch 100, Low Channel 5500 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Value | Limit (>) | Result |
| | | | | 30.728 MHz | 500 kHz | Pass |




| 20 MHz, 802.11(a) 6 Mbps, Ch 116, Mid Channel 5580 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Value | Limit (>) | Result |
| | | | | 38.565 MHz | 500 kHz | Pass |

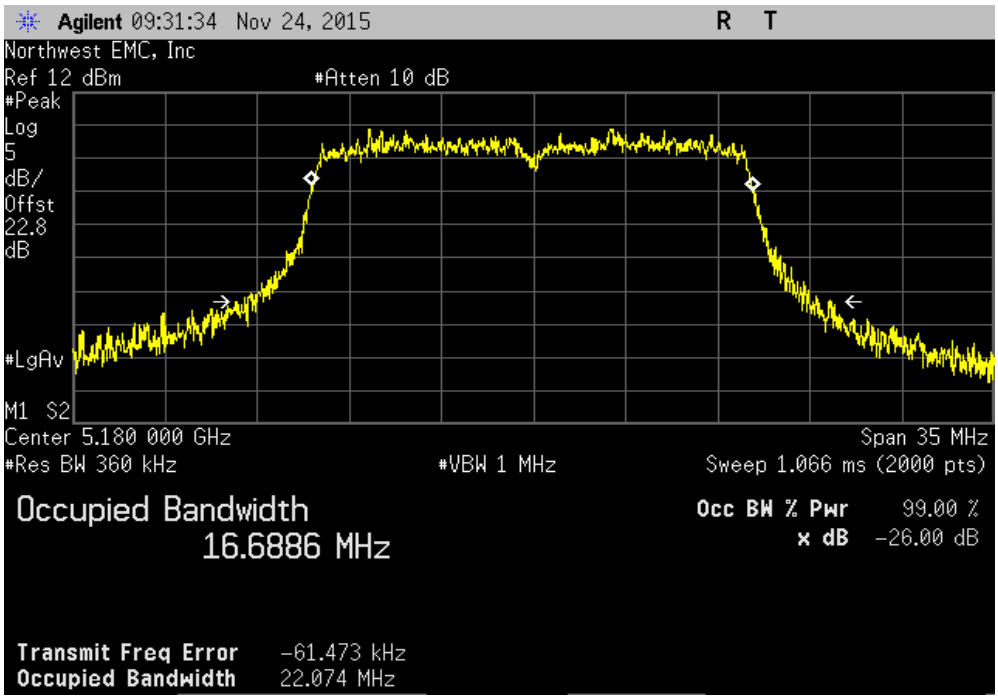


| 20 MHz, 802.11(a) 6 Mbps, Ch 140, High Channel 5700 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Value | Limit (>) | Result |
| | | | | 38.107 MHz | 500 kHz | Pass |

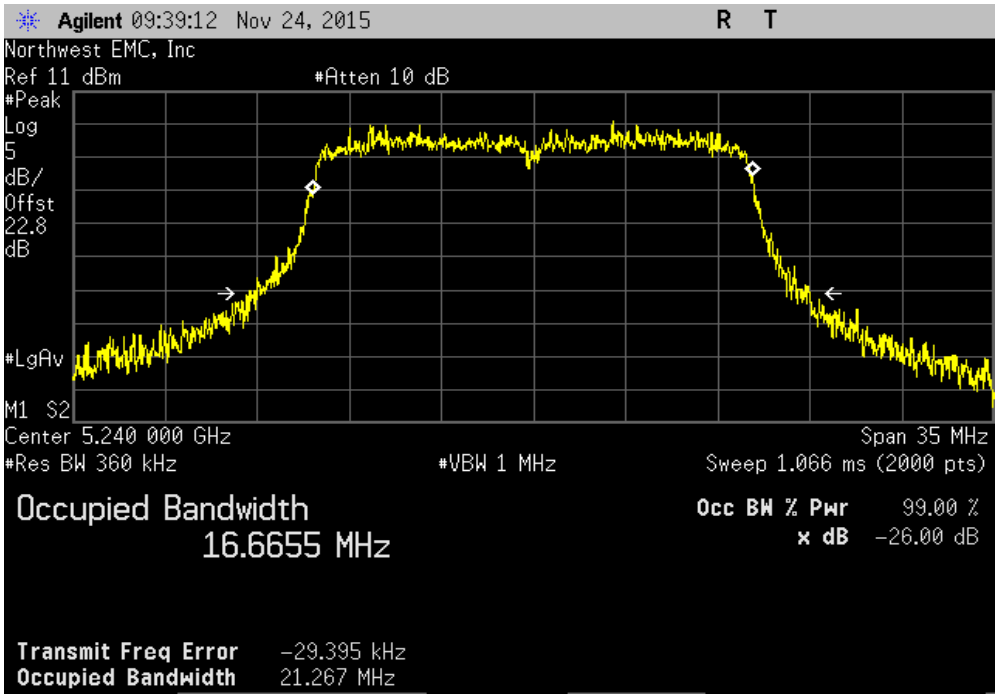



| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Value | Limit (>) | Result |
| | | | | | | |

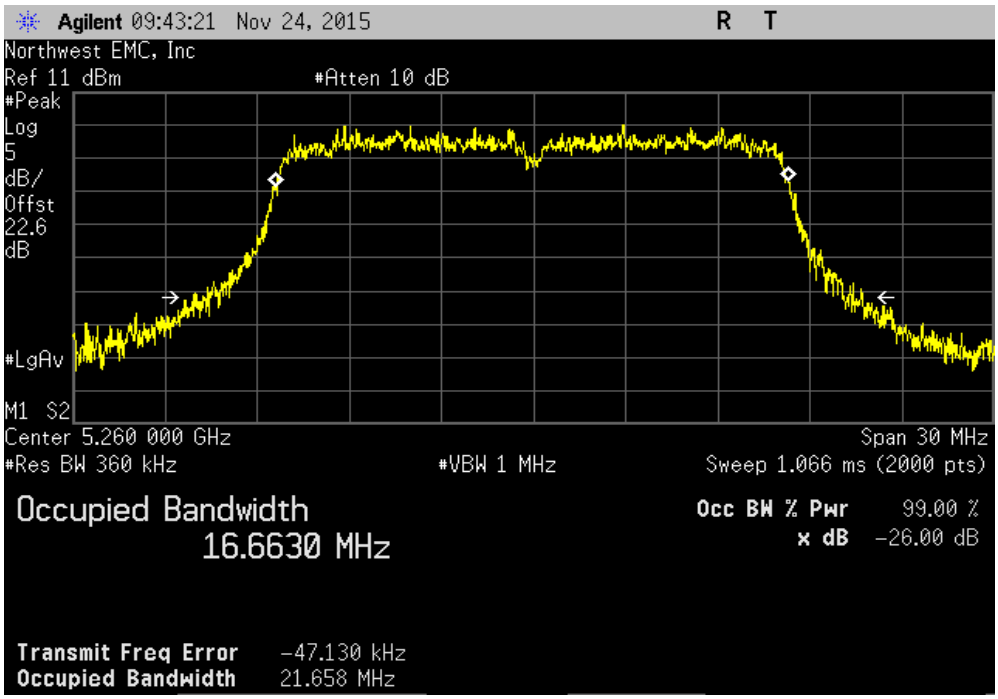
| 20 MHz, 802.11(a) 36 Mbps, Ch 36, Low Channel 5180 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Value | Limit (>) | Result |
| | | | | 22.074 MHz | 500 kHz | Pass |



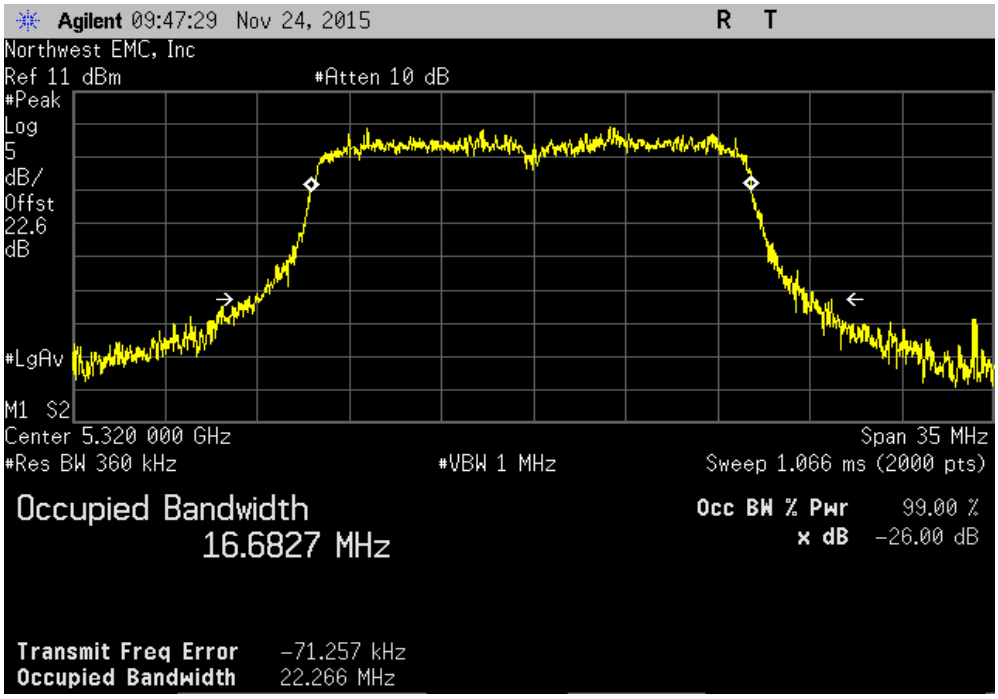

| 20 MHz, 802.11(a) 36 Mbps, Ch 48, High Channel 5240 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Value | Limit (>) | Result |
| | | | | 21.267 MHz | 500 kHz | Pass |



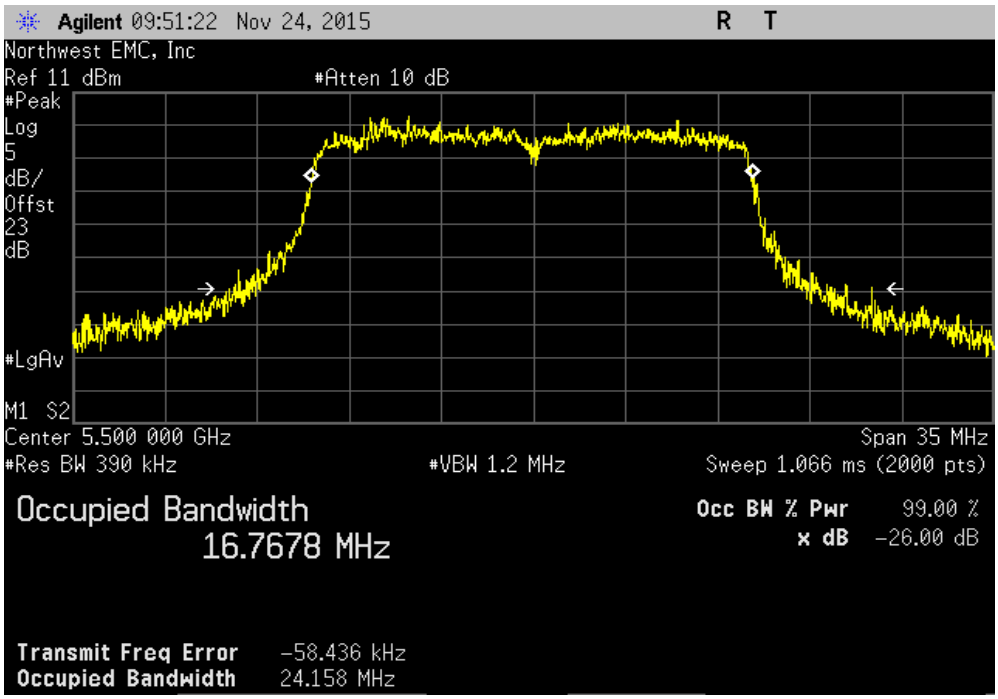
| 20 MHz, 802.11(a) 36 Mbps, Ch 52, Low Channel 5260 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Value | Limit (>) | Result |
| | | | | 21.658 MHz | 500 kHz | Pass |



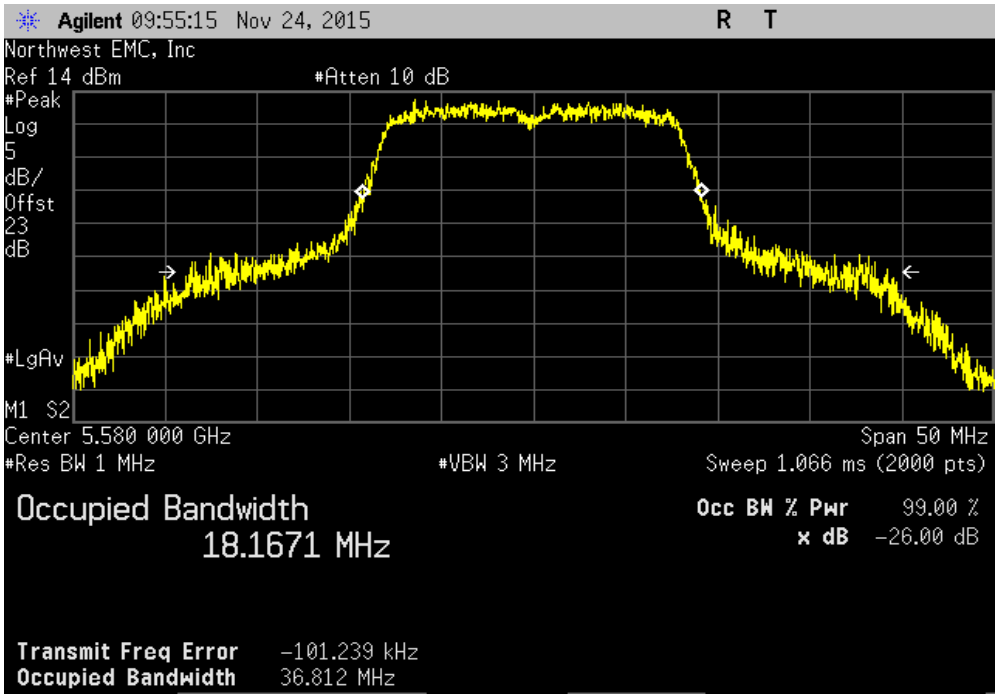

| 20 MHz, 802.11(a) 36 Mbps, Ch 64, High Channel 5320 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Value | Limit (>) | Result |
| | | | | 22.266 MHz | 500 kHz | Pass |



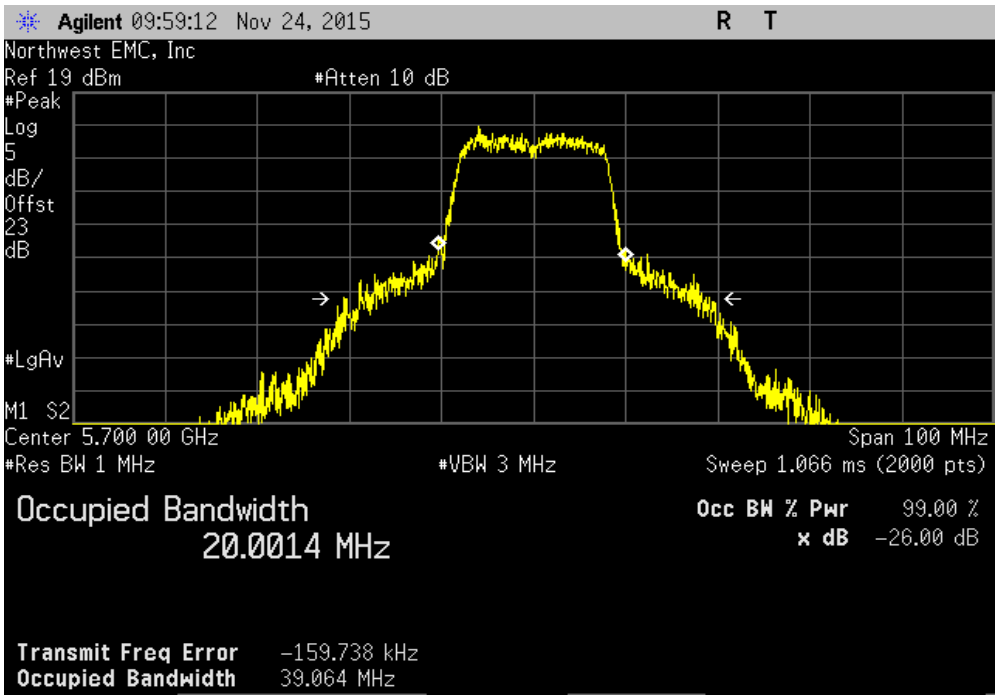
| 20 MHz, 802.11(a) 36 Mbps, Ch 100, Low Channel 5500 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Value | Limit (>) | Result |
| | | | | 24.158 MHz | 500 kHz | Pass |




| 20 MHz, 802.11(a) 36 Mbps, Ch 116, Mid Channel 5580 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Value | Limit (>) | Result |
| | | | | 36.812 MHz | 500 kHz | Pass |

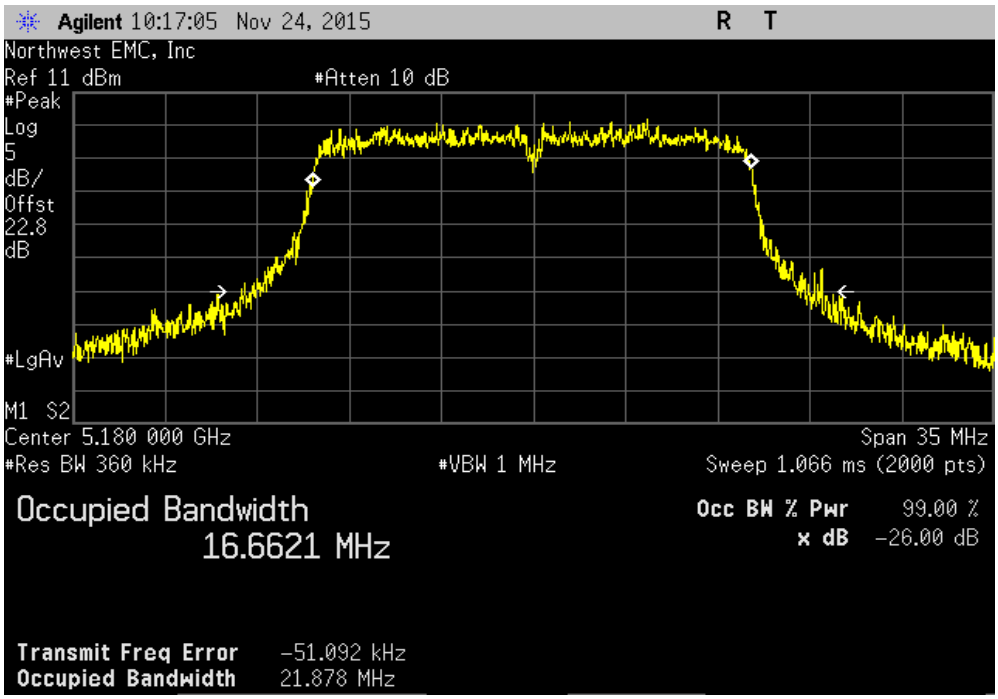


| 20 MHz, 802.11(a) 36 Mbps, Ch 140, High Channel 5700 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Value | Limit (>) | Result |
| | | | | 39.064 MHz | 500 kHz | Pass |

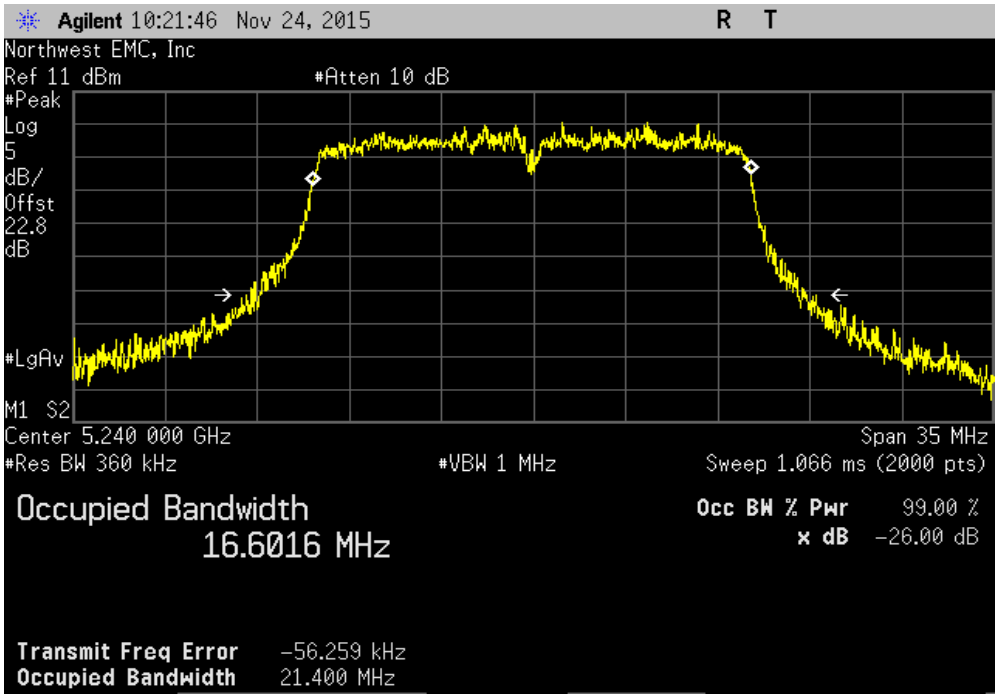



| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Value | Limit (>) | Result |
| | | | | | | |

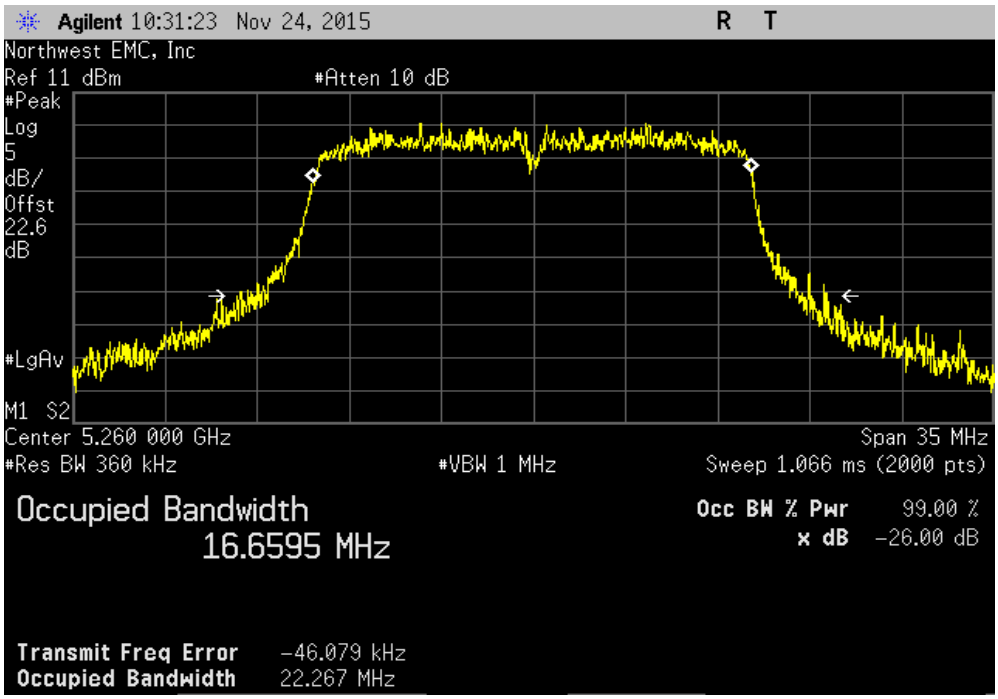
| 20 MHz, 802.11(a) 54 Mbps, Ch 36, Low Channel 5180 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Value | Limit (>) | Result |
| | | | | 21.878 MHz | 500 kHz | Pass |



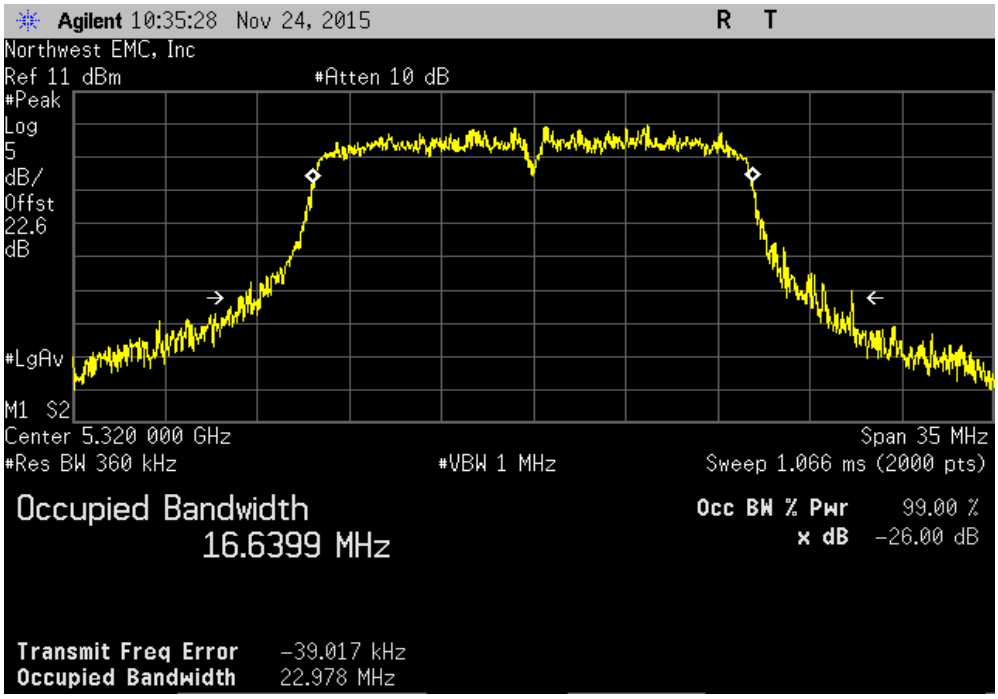

| 20 MHz, 802.11(a) 54 Mbps, Ch 48, High Channel 5240 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Value | Limit (>) | Result |
| | | | | 21.4 MHz | 500 kHz | Pass |



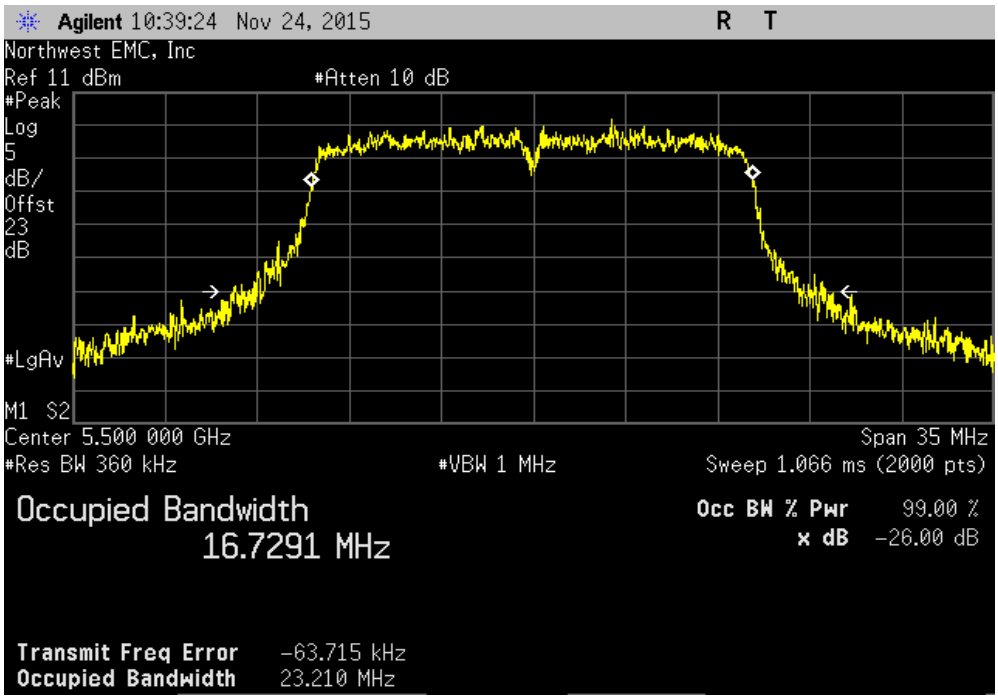
| 20 MHz, 802.11(a) 54 Mbps, Ch 52, Low Channel 5260 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Value | Limit (>) | Result |
| | | | | 22.267 MHz | 500 kHz | Pass |



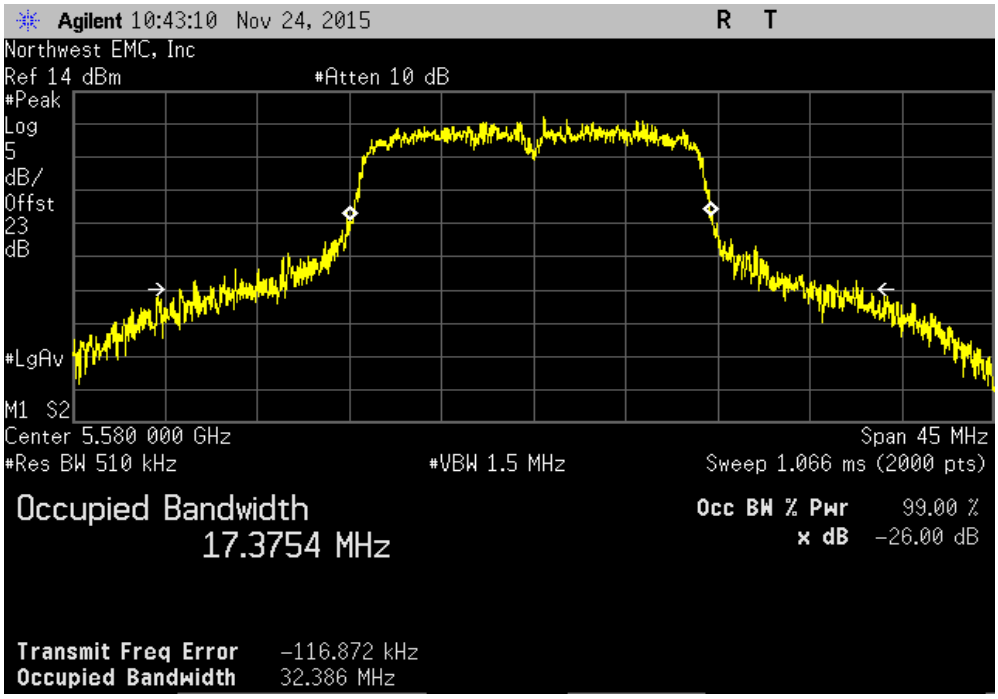

| 20 MHz, 802.11(a) 54 Mbps, Ch 64, High Channel 5320 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Value | Limit (>) | Result |
| | | | | 22.978 MHz | 500 kHz | Pass |



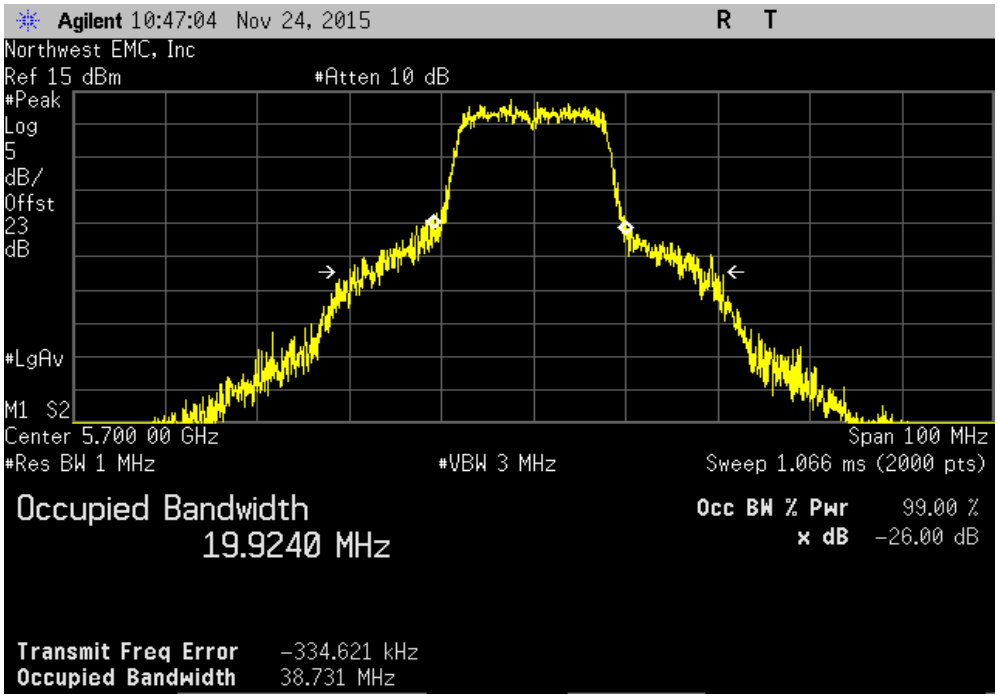
| 20 MHz, 802.11(a) 54 Mbps, Ch 100, Low Channel 5500 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Value | Limit (>) | Result |
| | | | | 23.21 MHz | 500 kHz | Pass |




| 20 MHz, 802.11(a) 54 Mbps, Ch 116, Mid Channel 5580 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Value | Limit (>) | Result |
| | | | | 32.386 MHz | 500 kHz | Pass |

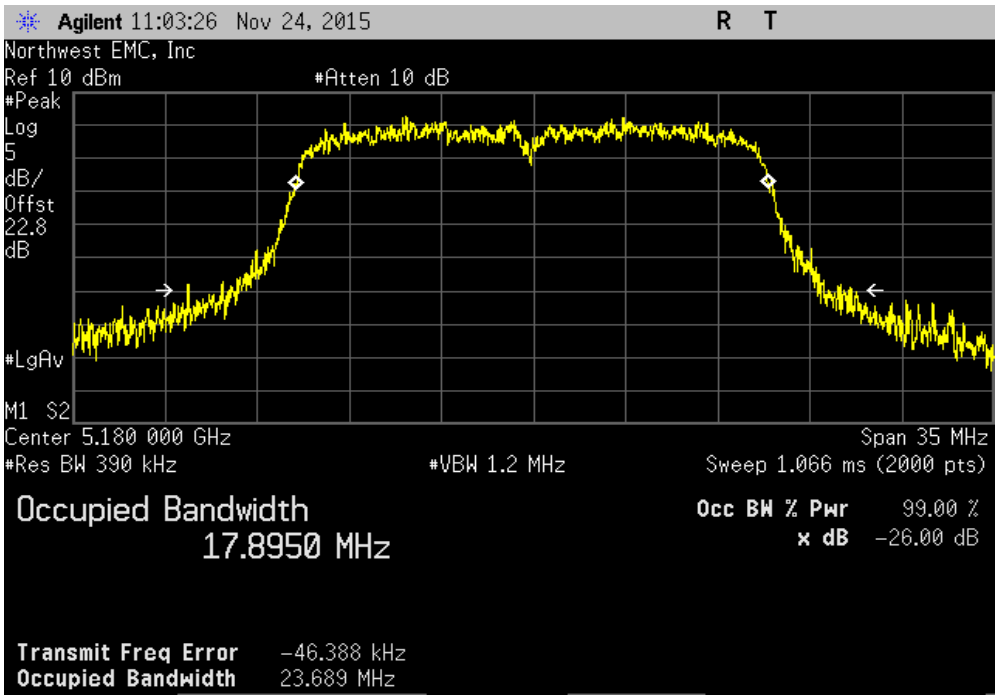


| 20 MHz, 802.11(a) 54 Mbps, Ch 140, High Channel 5700 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Value | Limit (>) | Result |
| | | | | 38.731 MHz | 500 kHz | Pass |

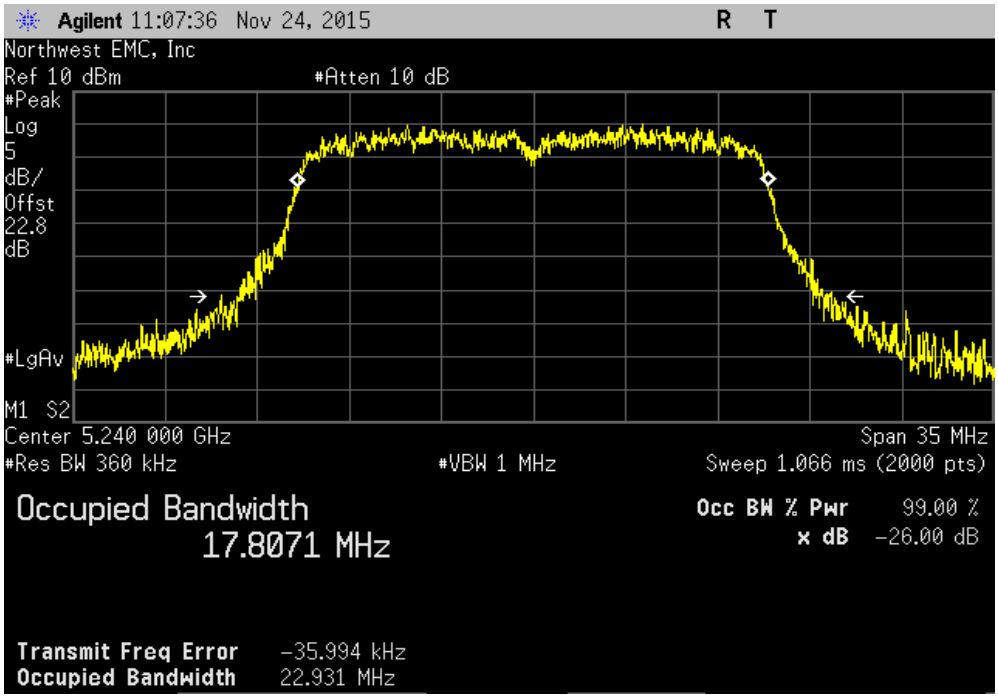



| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Value | Limit (>) | Result |
| | | | | | | |

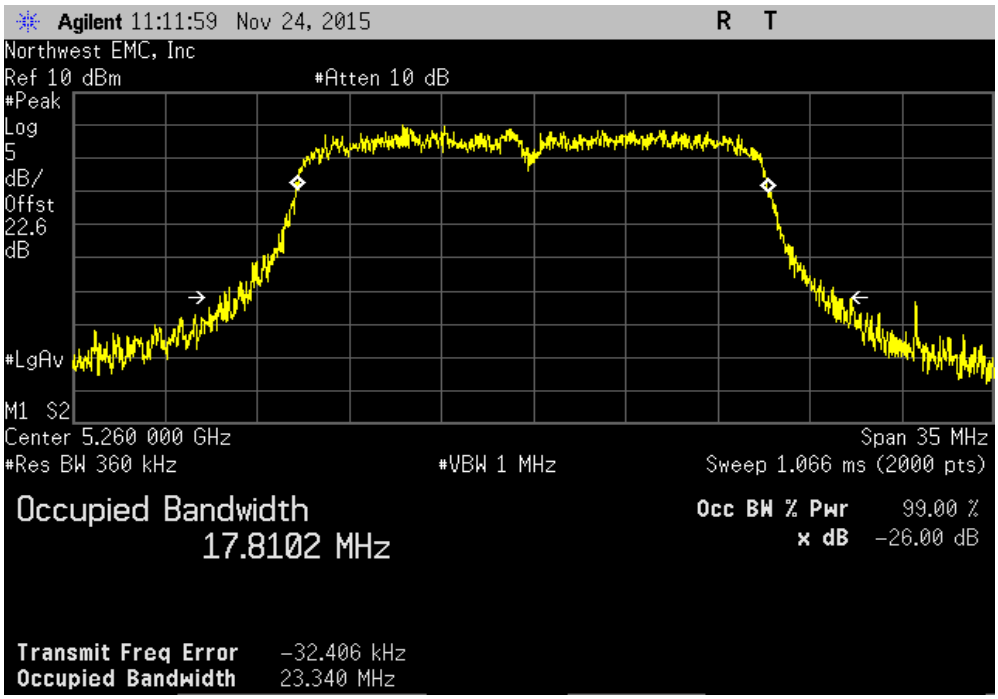
| 20 MHz, 802.11(n) MCS0, Ch 36, Low Channel 5180 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Value | Limit (>) | Result |
| | | | | 23.689 MHz | 500 kHz | Pass |



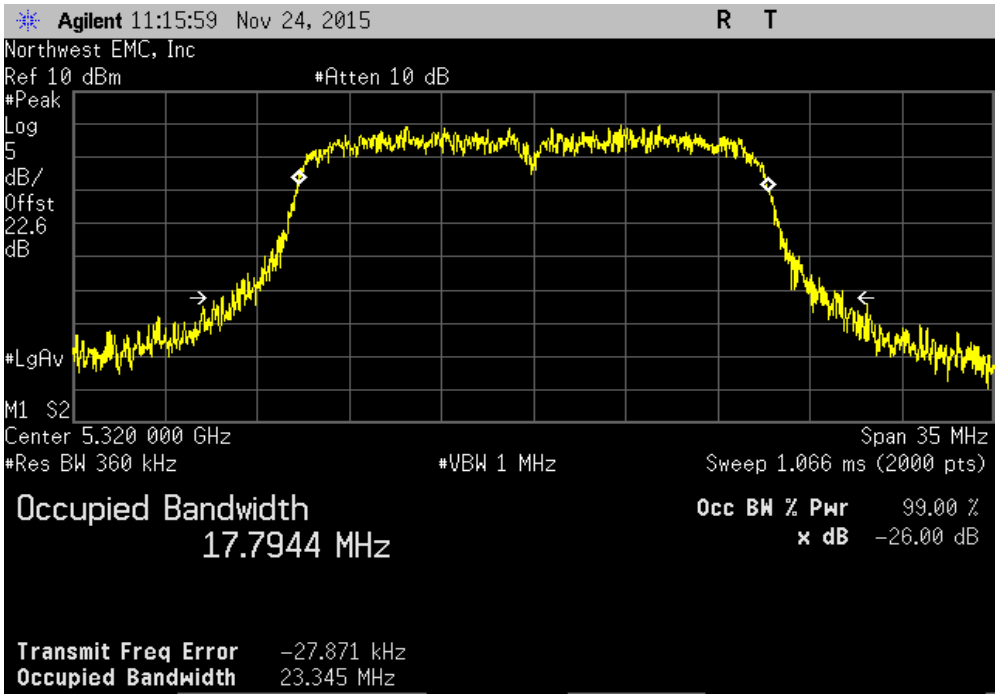

| 20 MHz, 802.11(n) MCS0, Ch 48, High Channel 5240 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Value | Limit (>) | Result |
| | | | | 22.931 MHz | 500 kHz | Pass |



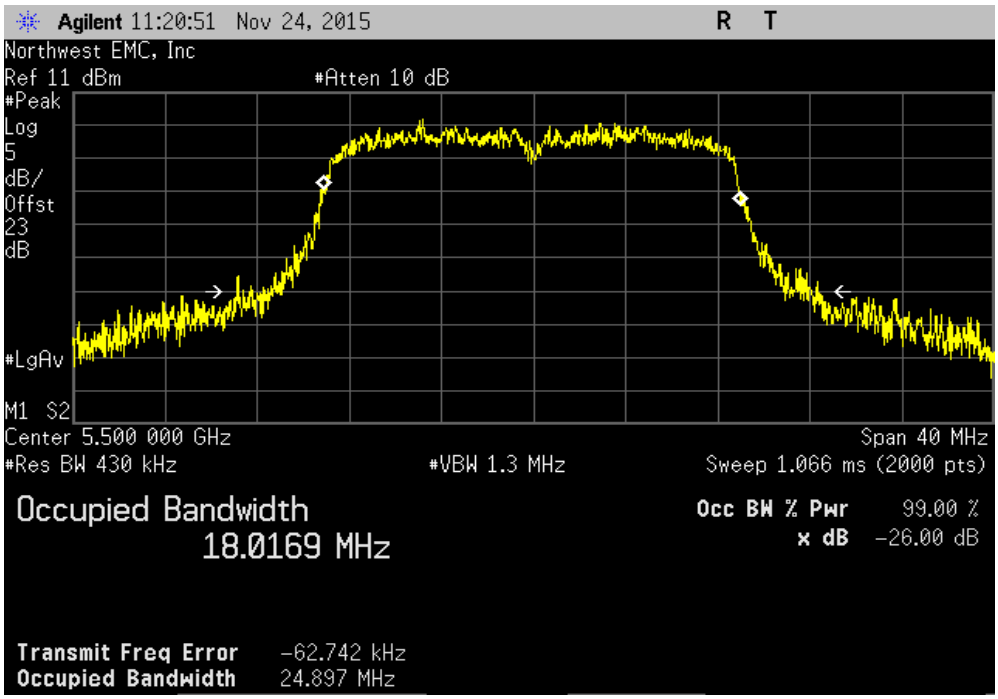
| 20 MHz, 802.11(n) MCS0, Ch 52, Low Channel 5260 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Value | Limit (>) | Result |
| | | | | 23.34 MHz | 500 kHz | Pass |



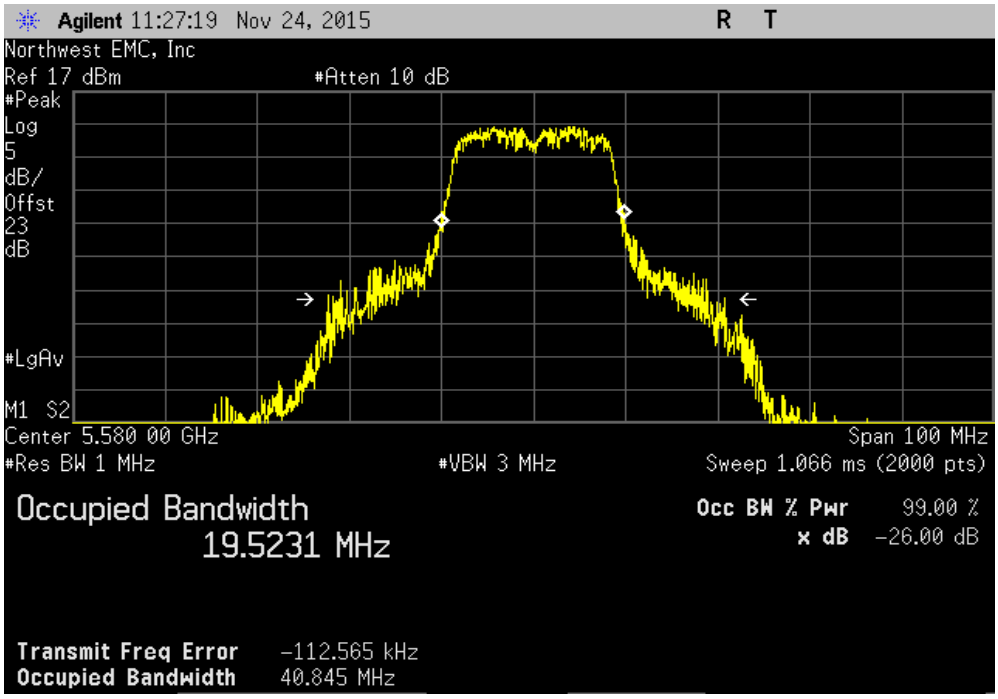

| 20 MHz, 802.11(n) MCS0, Ch 64, High Channel 5320 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Value | Limit (>) | Result |
| | | | | 23.345 MHz | 500 kHz | Pass |



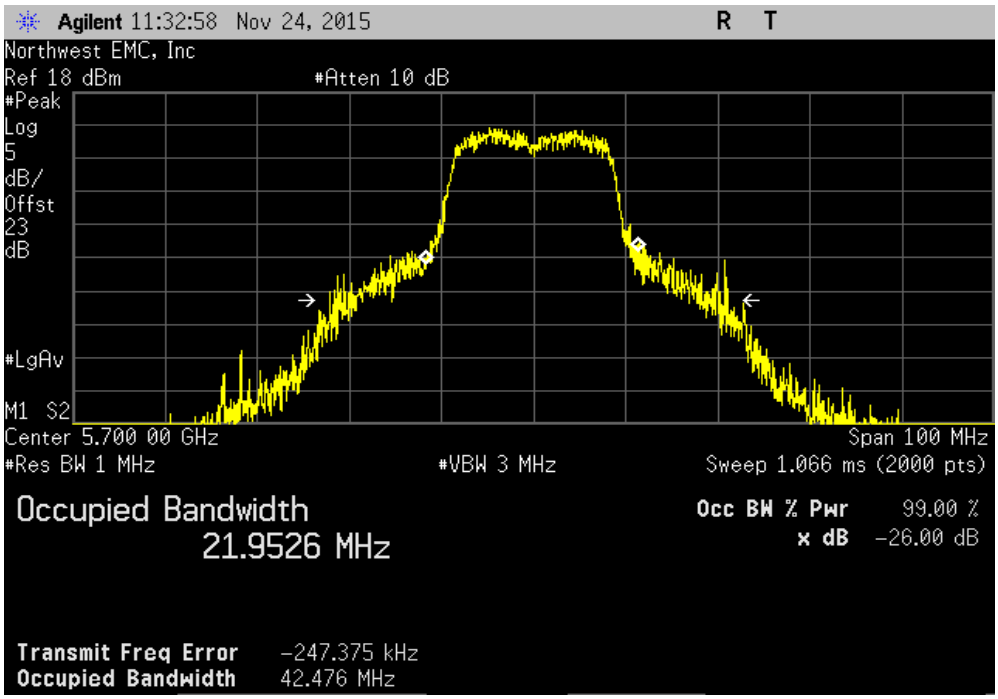
| 20 MHz, 802.11(n) MCS0, Ch 100, Low Channel 5500 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Value | Limit (>) | Result |
| | | | | 24.897 MHz | 500 kHz | Pass |




| 20 MHz, 802.11(n) MCS0, Ch 116, Mid Channel 5580 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Value | Limit (>) | Result |
| | | | | 40.845 MHz | 500 kHz | Pass |

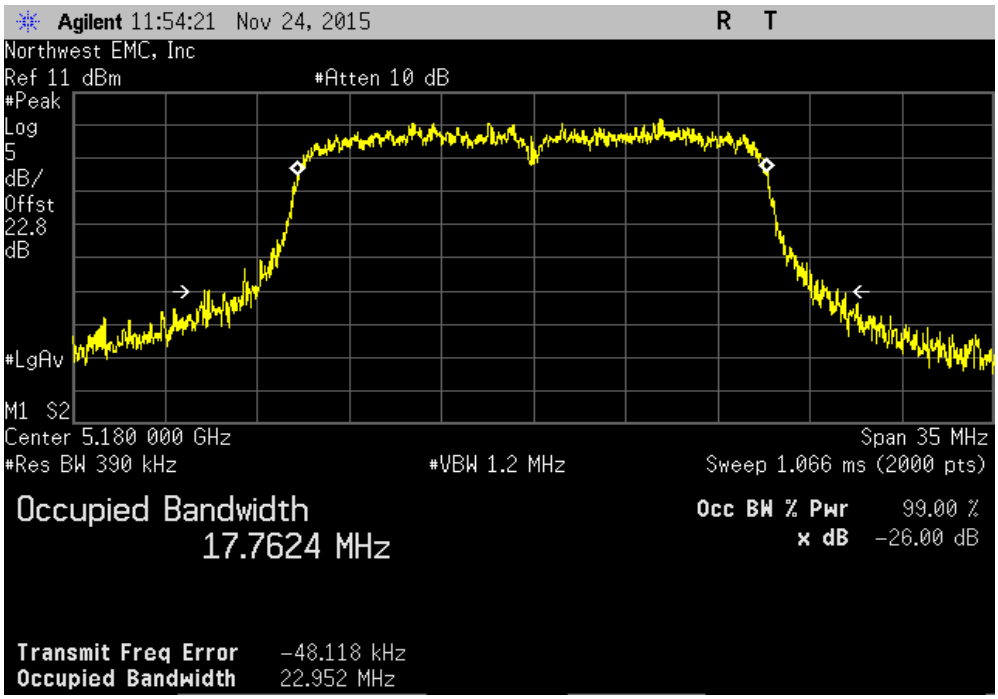


| 20 MHz, 802.11(n) MCS0, Ch 140, High Channel 5700 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Value | Limit (>) | Result |
| | | | | 42.476 MHz | 500 kHz | Pass |

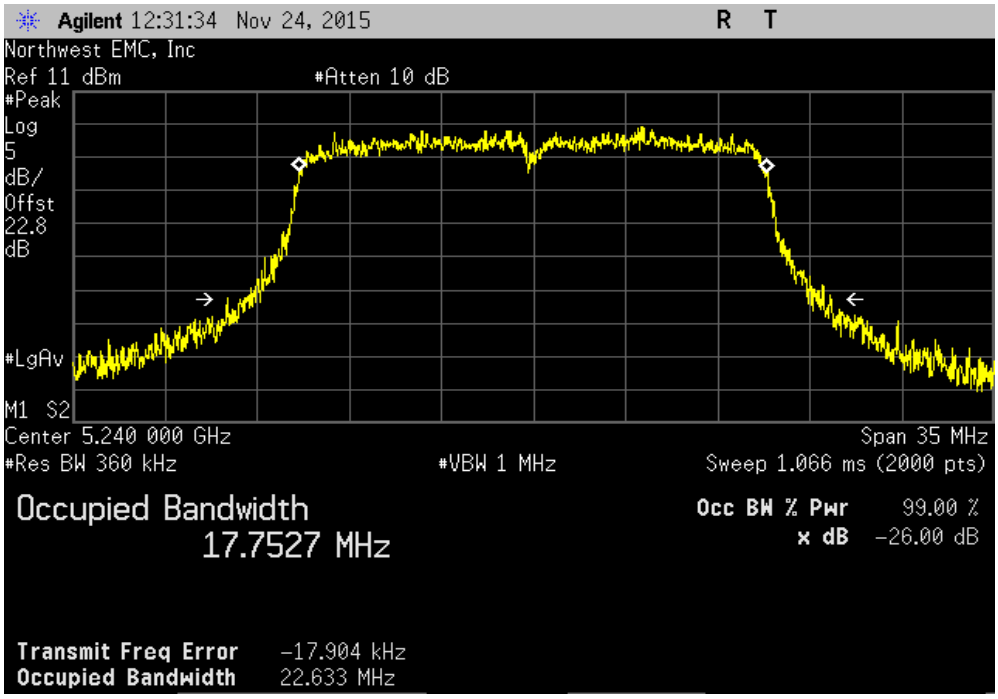



| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Value | Limit (>) | Result |
| | | | | | | |

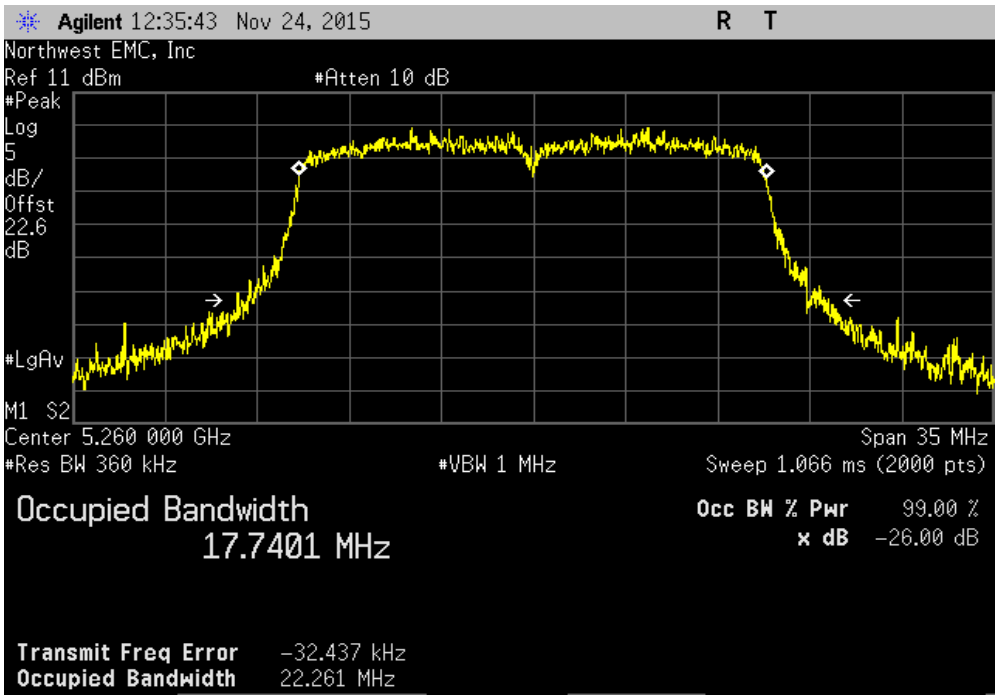
| 20 MHz, 802.11(n) MCS7, Ch 36, Low Channel 5180 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Value | Limit (>) | Result |
| | | | | 22.952 MHz | 500 kHz | Pass |



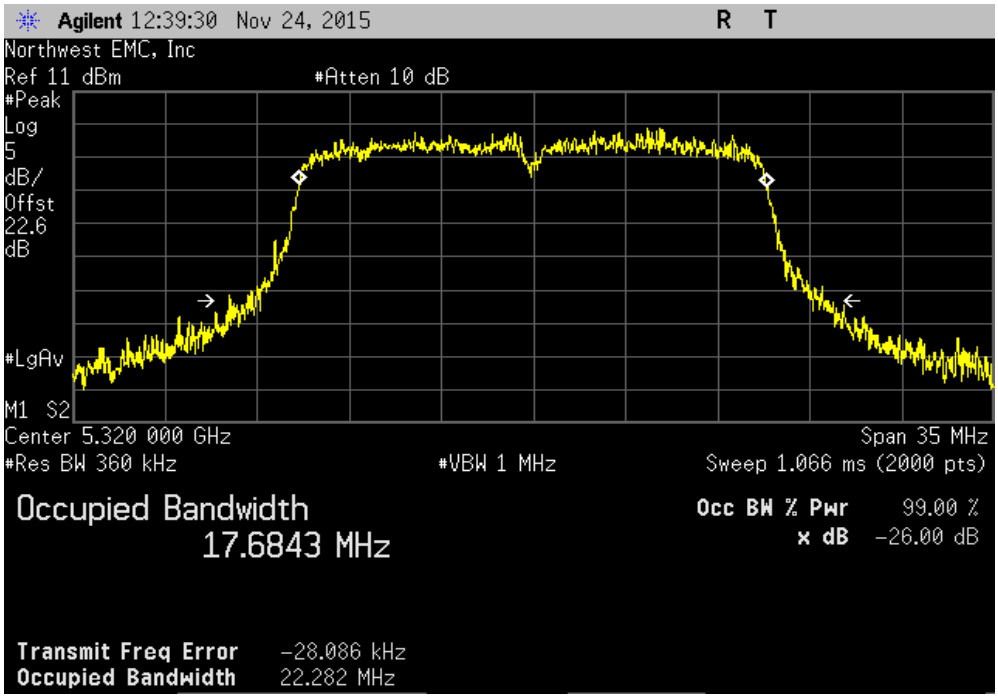

| 20 MHz, 802.11(n) MCS7, Ch 48, High Channel 5240 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Value | Limit (>) | Result |
| | | | | 22.633 MHz | 500 kHz | Pass |



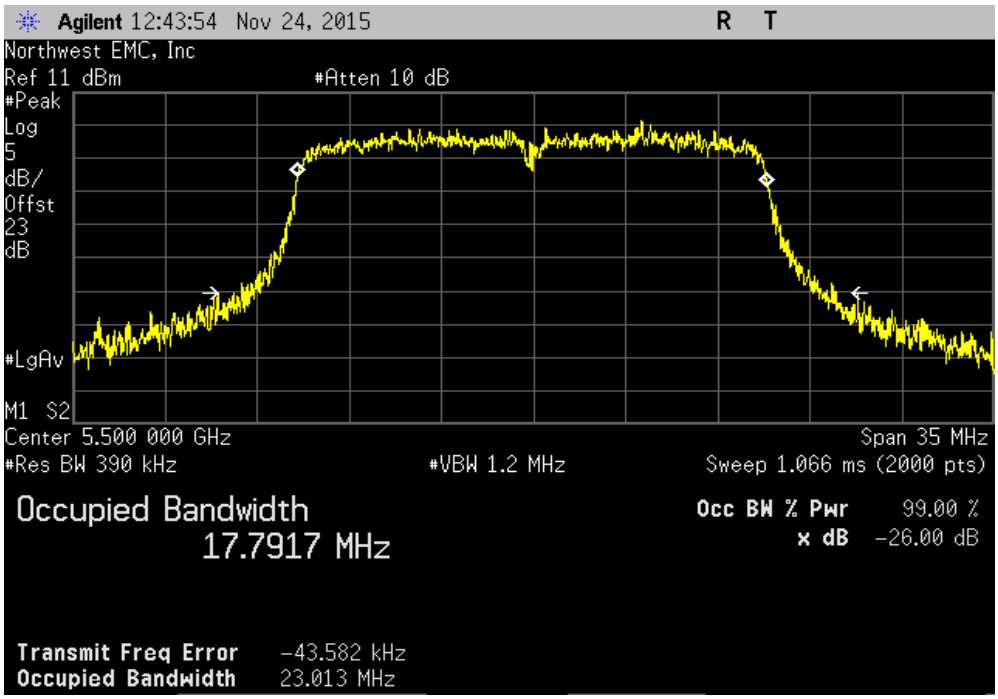
| 20 MHz, 802.11(n) MCS7, Ch 52, Low Channel 5260 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Value | Limit (>) | Result |
| | | | | 22.261 MHz | 500 kHz | Pass |



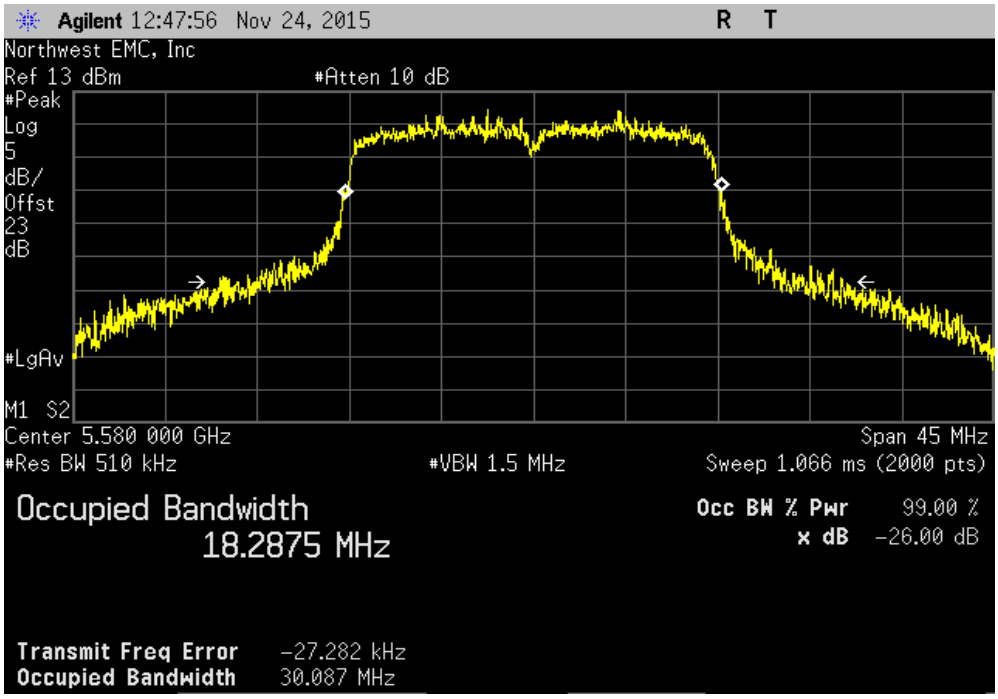

| 20 MHz, 802.11(n) MCS7, Ch 64, High Channel 5320 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Value | Limit (>) | Result |
| | | | | 22.282 MHz | 500 kHz | Pass |



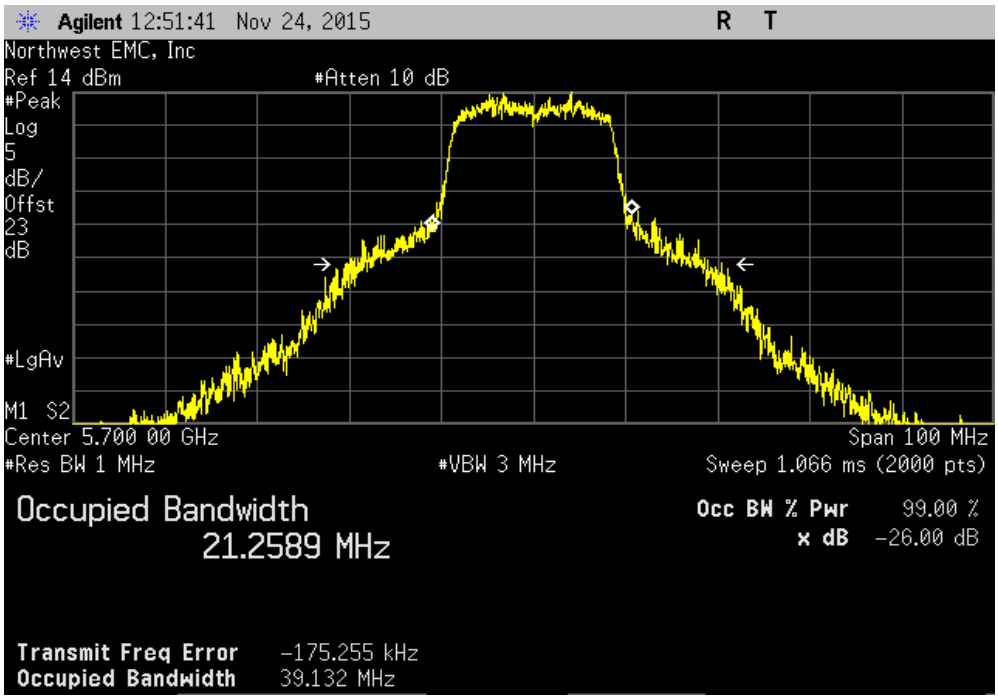
| 20 MHz, 802.11(n) MCS7, Ch 100, Low Channel 5500 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Value | Limit (>) | Result |
| | | | | 23.013 MHz | 500 kHz | Pass |




| 20 MHz, 802.11(n) MCS7, Ch 116, Mid Channel 5580 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Value | Limit (>) | Result |
| | | | | 30.087 MHz | 500 kHz | Pass |

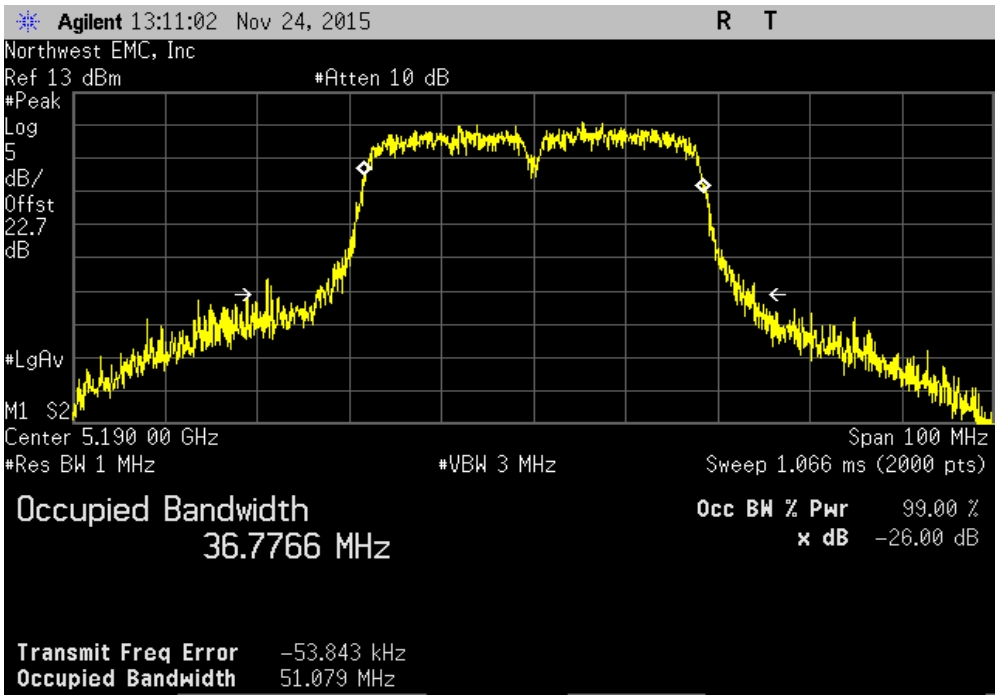


| 20 MHz, 802.11(n) MCS7, Ch 140, High Channel 5700 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Value | Limit (>) | Result |
| | | | | 39.132 MHz | 500 kHz | Pass |

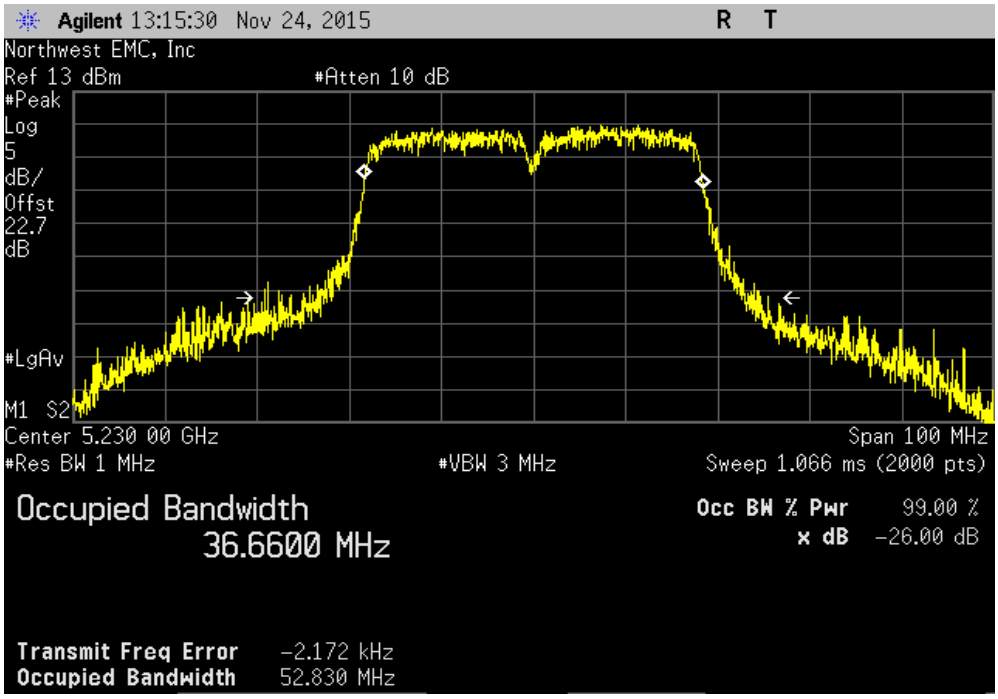



| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Value | Limit (>) | Result |
| | | | | | | |

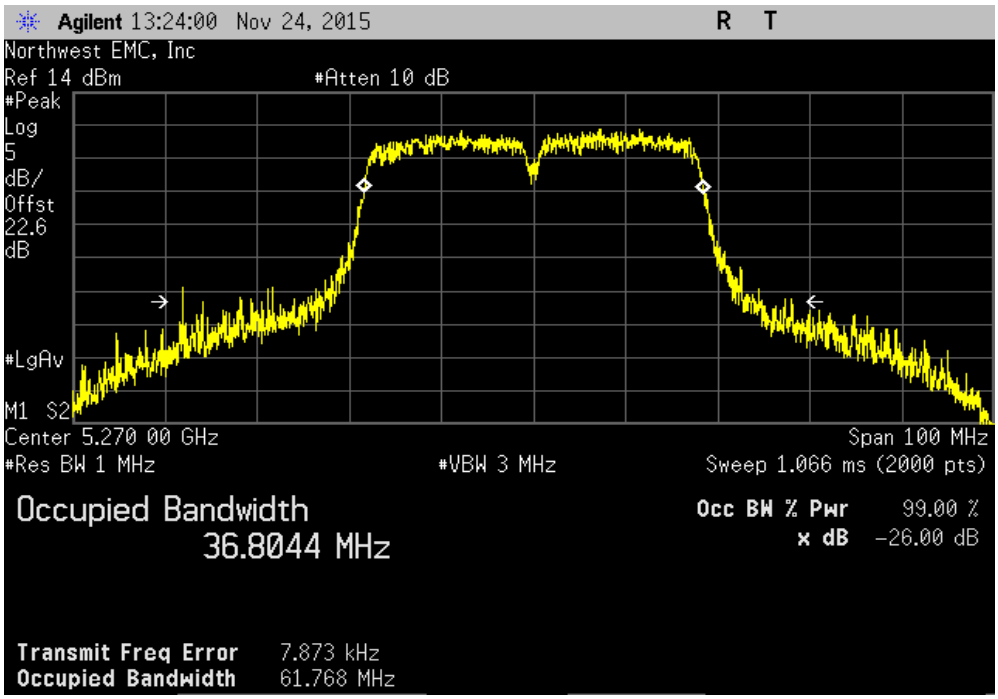
| 40 MHz, 802.11(n) MCS0, Ch 36/40, Low Channel 5190 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Value | Limit (>) | Result |
| | | | | 51.079 MHz | 500 kHz | Pass |



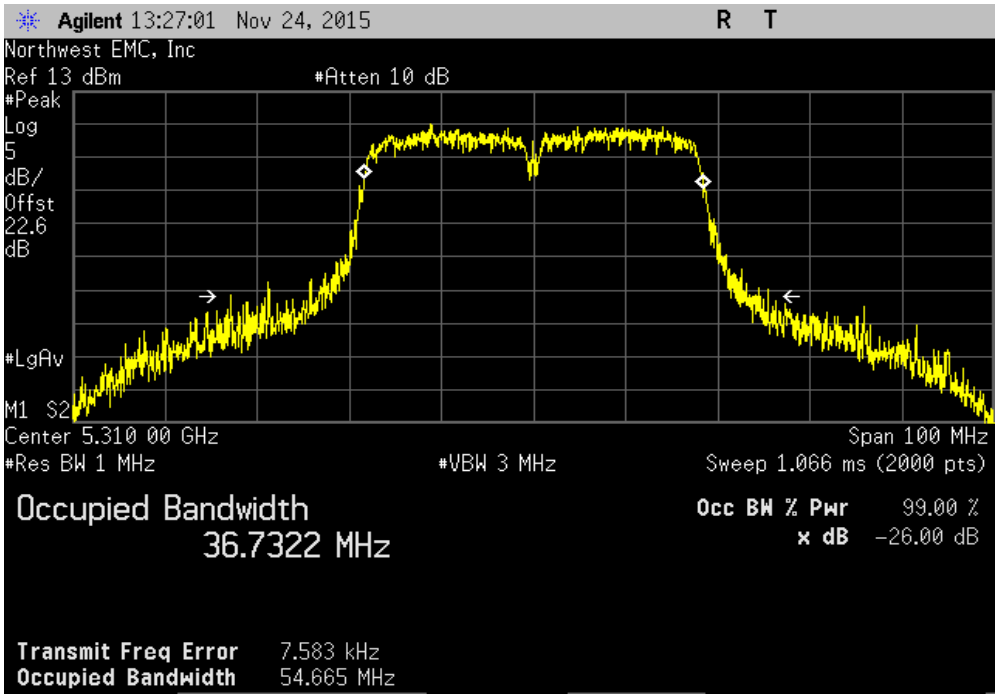

| 40 MHz, 802.11(n) MCS0, Ch 44/48, High Channel 5230 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Value | Limit (>) | Result |
| | | | | 52.83 MHz | 500 kHz | Pass |



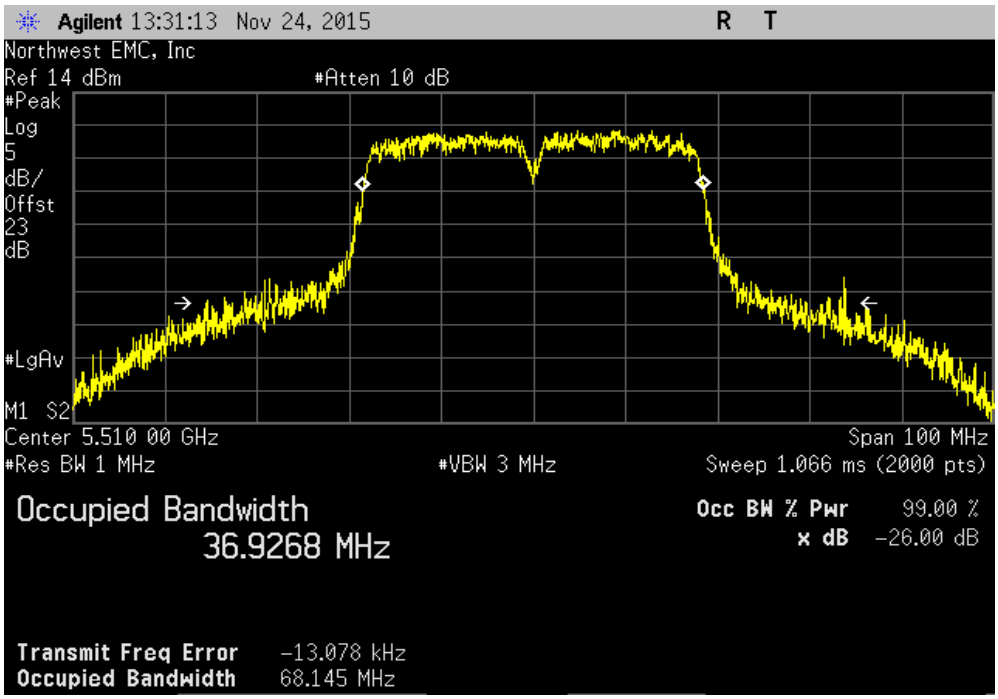
| 40 MHz, 802.11(n) MCS0, Ch 52/56, Low Channel 5270 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Value | Limit (>) | Result |
| | | | | 61.768 MHz | 500 kHz | Pass |



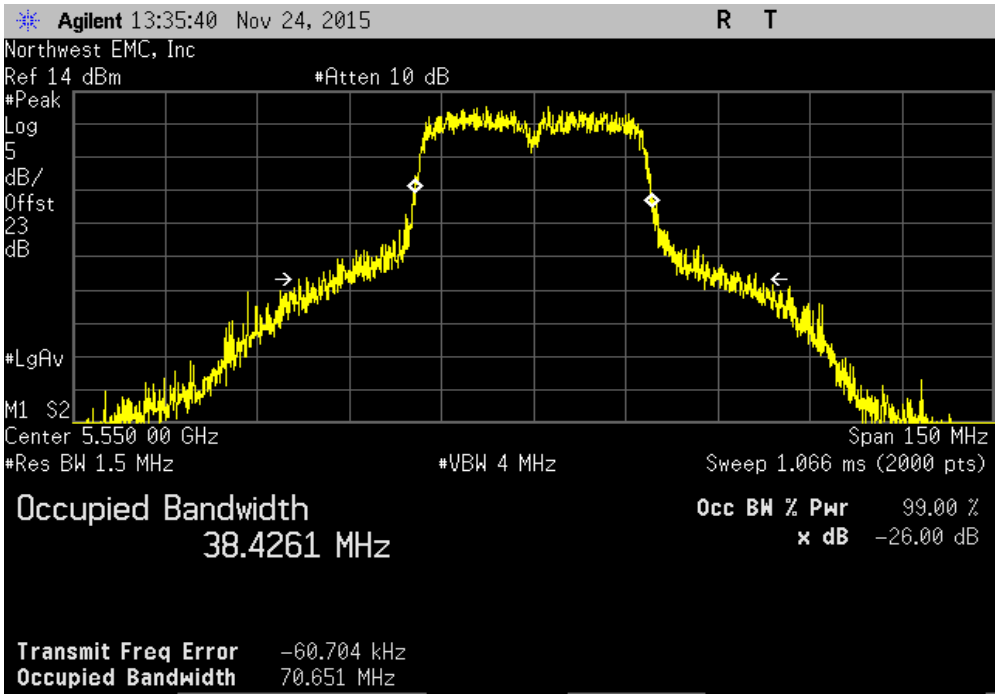

| 40 MHz, 802.11(n) MCS0, Ch 60/64, High Channel 5310 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Value | Limit (>) | Result |
| | | | | 54.665 MHz | 500 kHz | Pass |



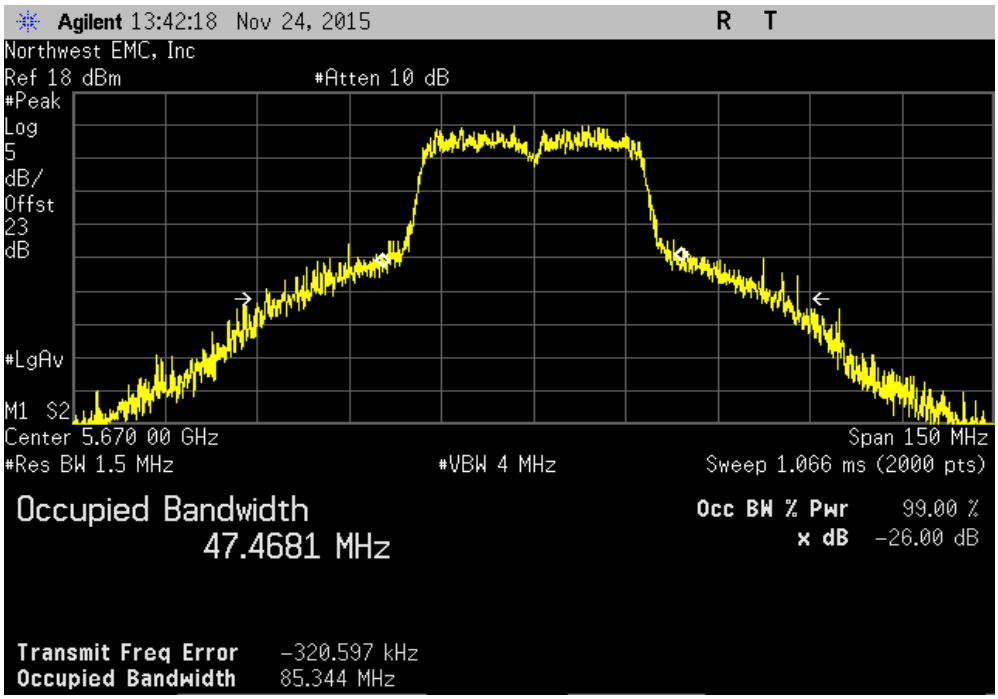
| 40 MHz, 802.11(n) MCS0, Ch 100/104, Low Channel 5510 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Value | Limit (>) | Result |
| | | | | 68.145 MHz | 500 kHz | Pass |




| 40 MHz, 802.11(n) MCS0, Ch 108/112, Mid Channel 5550 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Value | Limit (>) | Result |
| | | | | 70.651 MHz | 500 kHz | Pass |



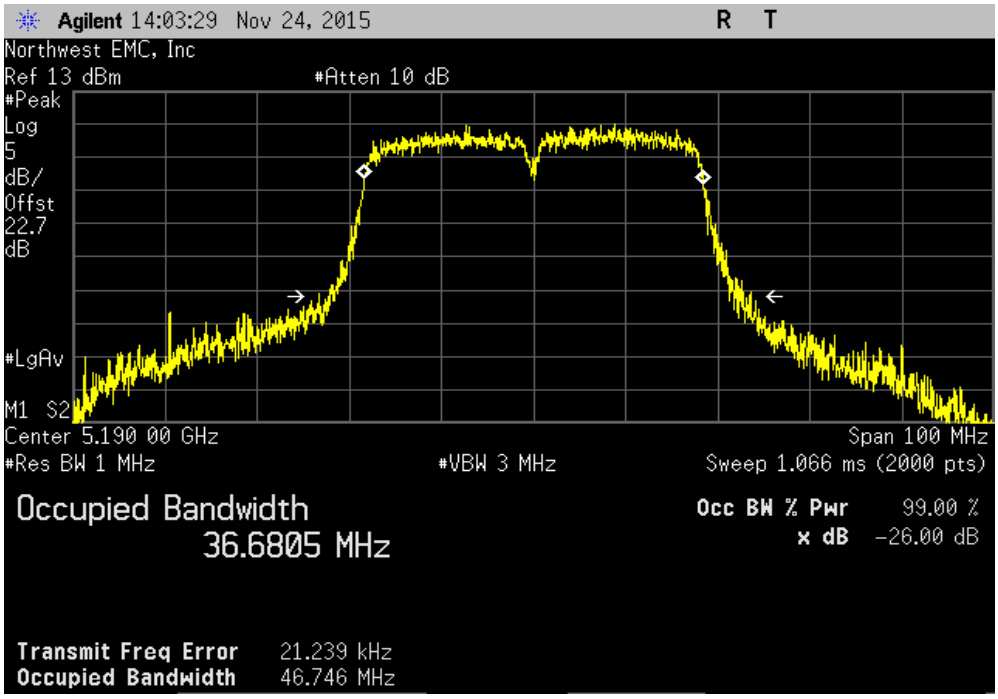
| 40 MHz, 802.11(n) MCS0, Ch 132/136, High Channel 5670 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Value | Limit (>) | Result |
| | | | | 85.344 MHz | 500 kHz | Pass |



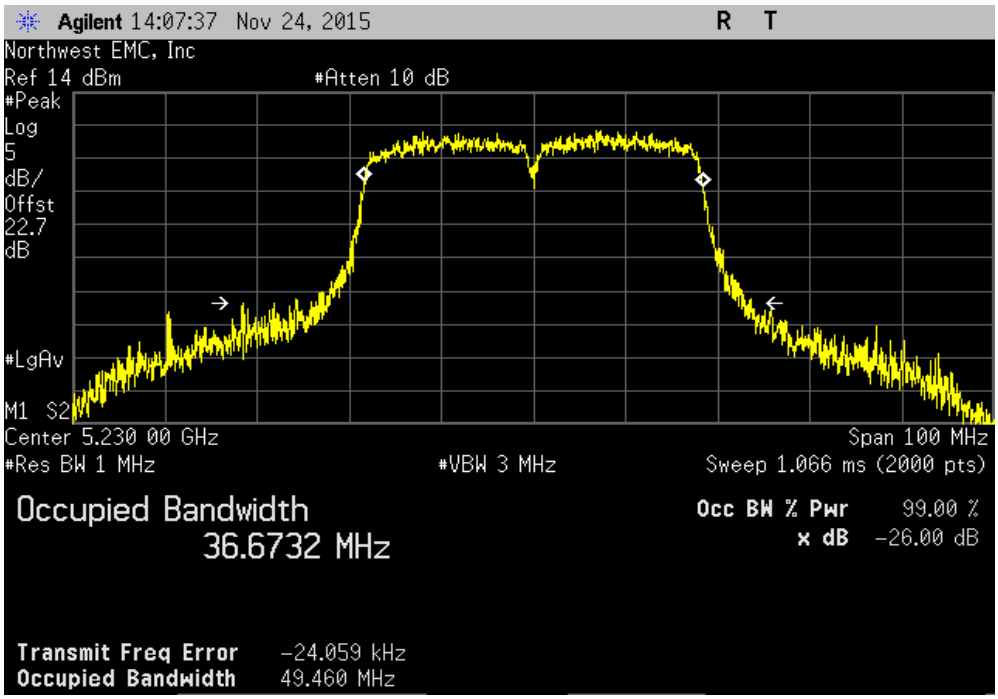

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Value | Limit (>) | Result |
| | | | | | | |

| | | | | | Value | Limit (>) | Result |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

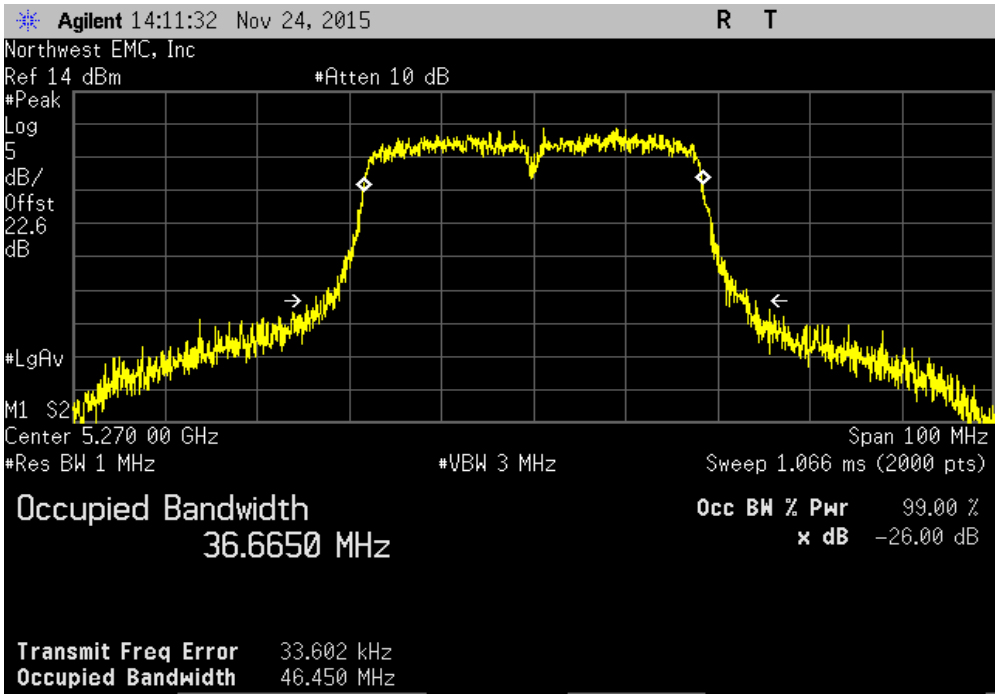
| 40 MHz, 802.11(n) MCS7, Ch 36/40, Low Channel 5190 MHz | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | | Value | Limit (>) | Result |
| | | | | | 46.746 MHz | 500 kHz | Pass |



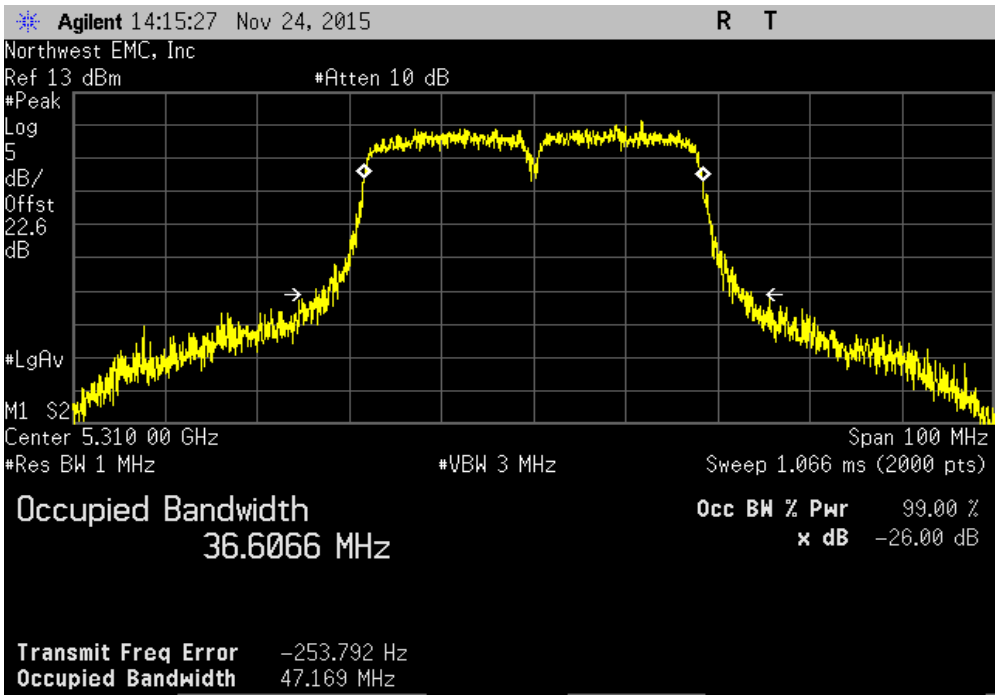
| 40 MHz, 802.11(n) MCS7, Ch 44/48, High Channel 5230 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Value | Limit (>) | Result |
| | | | | 49.46 MHz | 500 kHz | Pass |



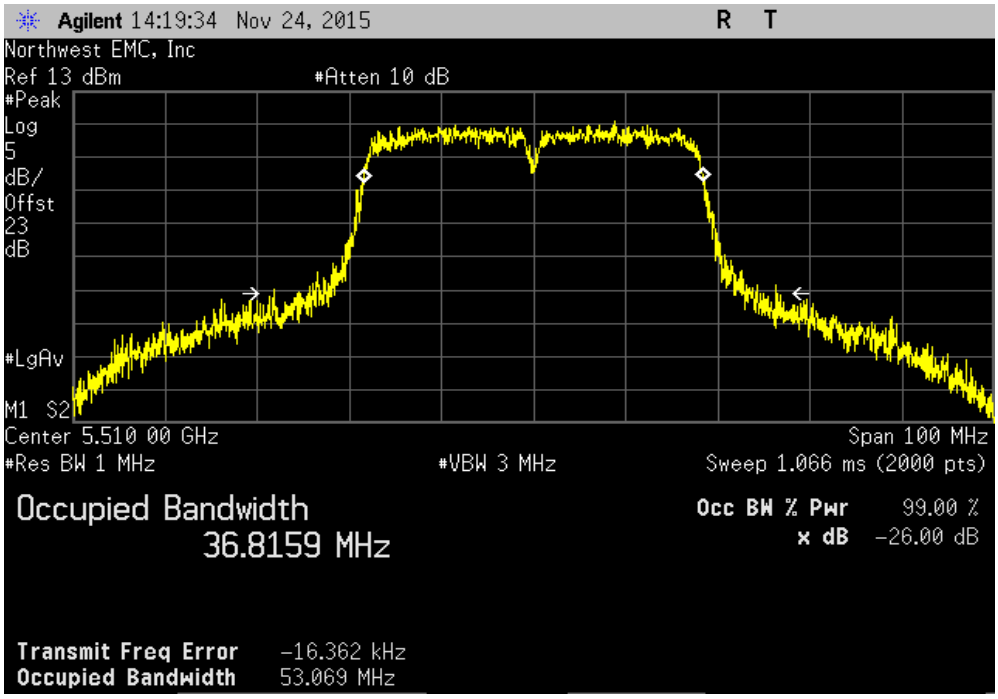

| 40 MHz, 802.11(n) MCS7, Ch 52/56, Low Channel 5270 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Value | Limit (>) | Result |
| | | | | 46.45 MHz | 500 kHz | Pass |



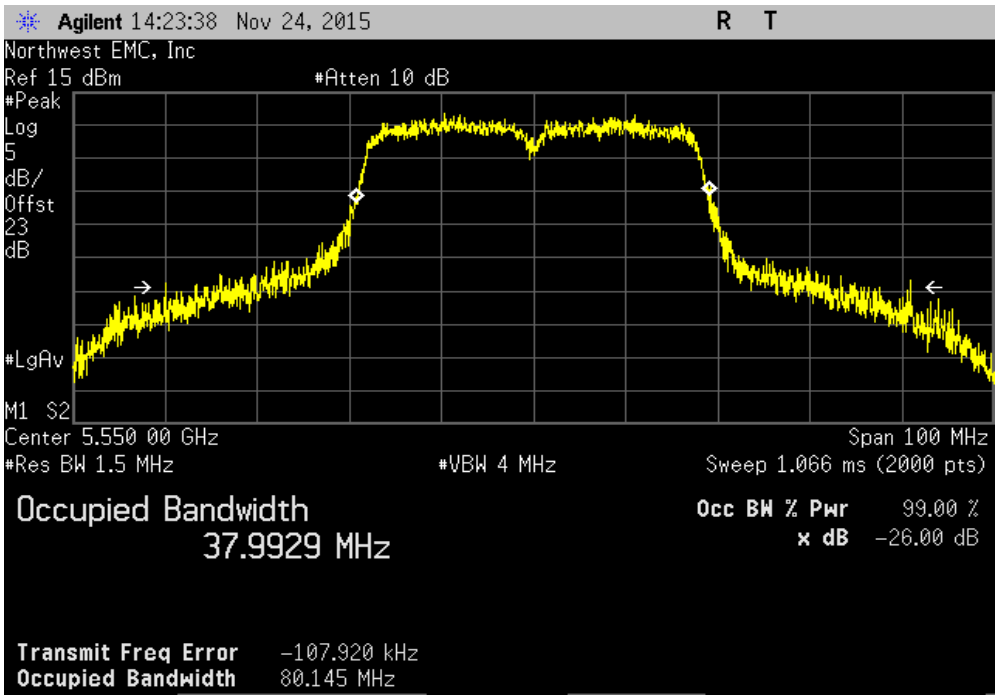
| 40 MHz, 802.11(n) MCS7, Ch 60/64, High Channel 5310 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Value | Limit (>) | Result |
| | | | | 47.169 MHz | 500 kHz | Pass |



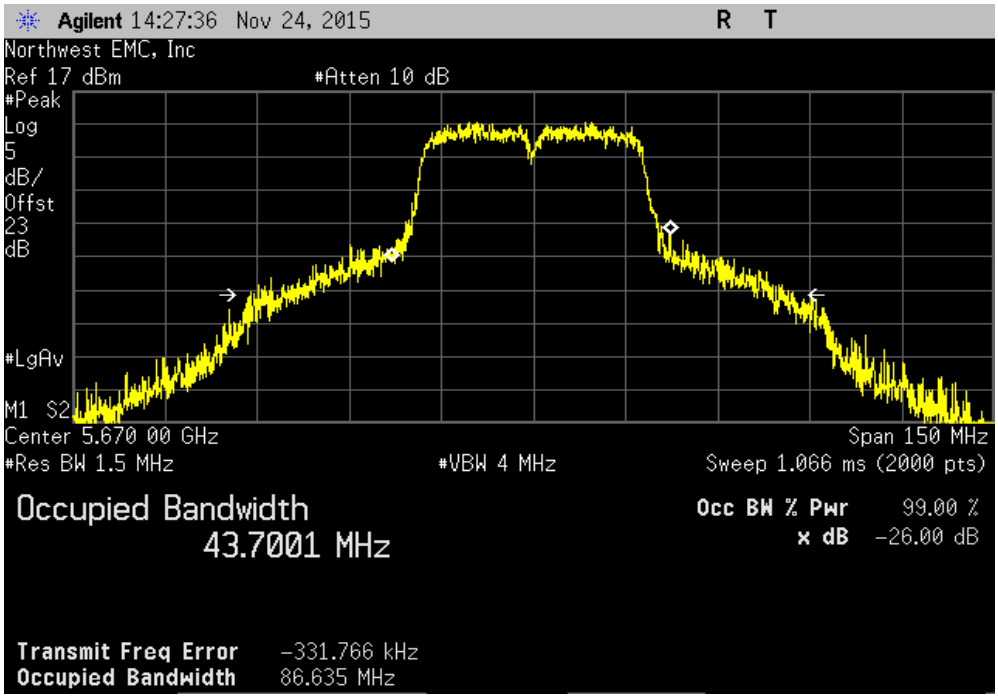

| 40 MHz, 802.11(n) MCS7, Ch 100/104, Low Channel 5510 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Value | Limit (>) | Result |
| | | | | 53.069 MHz | 500 kHz | Pass |



| 40 MHz, 802.11(n) MCS7, Ch 108/112, Mid Channel 5550 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Value | Limit (>) | Result |
| | | | | 80.145 MHz | 500 kHz | Pass |




| 40 MHz, 802.11(n) MCS7, Ch 132/136, High Channel 5670 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Value | Limit (>) | Result |
| | | | | 86.635 MHz | 500 kHz | Pass |



# 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) |
|---|---|---|---|---|---|
| Generator - Signal | Agilent | N5183A | TIK | 10/17/2014 | 36 |
| Block - DC | Fairview Microwave | SD3379 | AMI | 9/18/2015 | 12 |
| Cable | ESM Cable Corp. | TTBJ141 KMKM-72 | MNU | 9/18/2015 | 12 |
| Attenuator | S.M. Electronics | SA26B-20 | RFW | 3/10/2015 | 12 |
| Analyzer - Spectrum Analyzer | Agilent | E4440A | AAX | 4/20/2015 | 12 |

**TEST DESCRIPTION**

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.

Per ANSI C63.10, 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 the 6 dB emission bandwidth.

The 99.9% (approximate 26 dB) emission bandwidth (EBW) was also measured at the same time to be used for setting the channel power integration bandwidth during conducted output power testing.

# OCCUPIED BANDWIDTH

NORTHWEST EMC

XMit 2015.01.14

| | | | | | |
|---|---|---|---|---|---|
| **EUT:** | Sigma Pumps Gen IV 802.11abgn Module | | | **Work Order:** | DGII0152 |
| **Serial Number:** | None | | | **Date:** | 01/11/16 |
| **Customer:** | Digi International Inc | | | **Temperature:** | 21.1°C |
| **Attendees:** | Slava Gehkt | | | **Humidity:** | 16% |
| **Project:** | None | | | **Barometric Pres.:** | 981.5 |
| **Tested by:** | Jared Ison | **Power:** | 110VAC/60Hz | **Job Site:** | MN08 |

| TEST SPECIFICATIONS | Test Method |
|---|---|
| FCC 15.407:2016 | ANSI C63.10:2013 |
| | |

**COMMENTS**

None

**DEVIATIONS FROM TEST STANDARD**

None

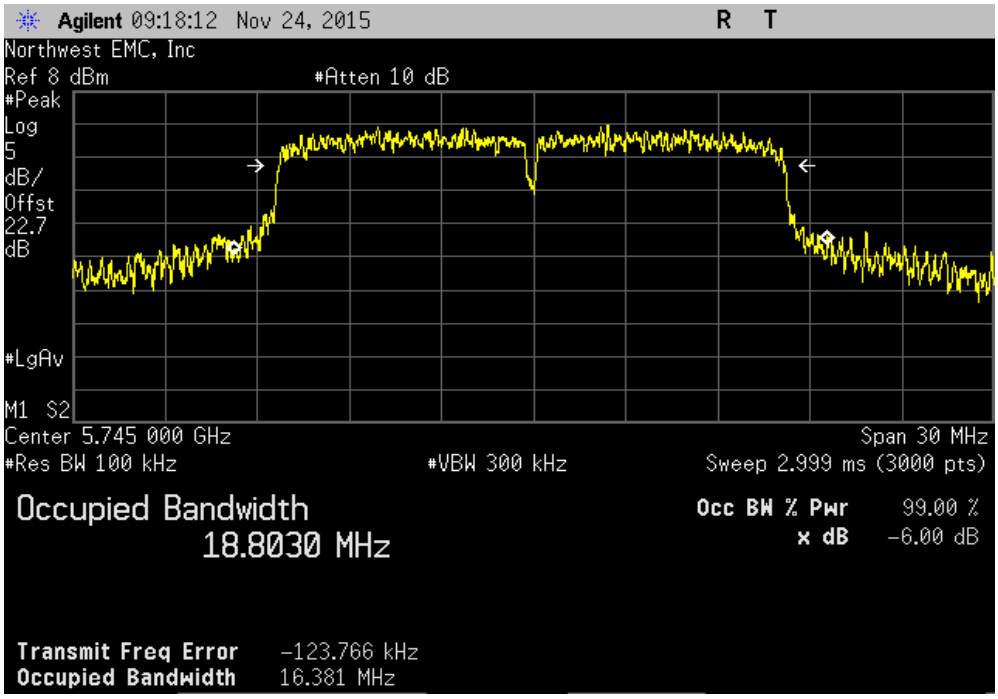
| Configuration # | 2 | Signature |
|---|---|---|

| | | Value | Limit (>) | Result |
|---|---|---|---|---|
| 20 MHz | | | | |
| | 802.11(a) 6 Mbps | | | |
| | Ch 149, Low Channel 5745 MHz | 16.381 MHz | 500 kHz | Pass |
| | Ch 157, Mid Channel 5785 MHz | 16.41 MHz | 500 kHz | Pass |
| | Ch 165, High Channel 5825 MHz | 16.409 MHz | 500 kHz | Pass |
| | 802.11(a) 36 Mbps | | | |
| | Ch 149, Low Channel 5745 MHz | 16.451 MHz | 500 kHz | Pass |
| | Ch 157, Mid Channel 5785 MHz | 16.448 MHz | 500 kHz | Pass |
| | Ch 165, High Channel 5825 MHz | 16.443 MHz | 500 kHz | Pass |
| | 802.11(a) 54 Mbps | | | |
| | Ch 149, Low Channel 5745 MHz | 16.462 MHz | 500 kHz | Pass |
| | Ch 157, Mid Channel 5785 MHz | 16.435 MHz | 500 kHz | Pass |
| | Ch 165, High Channel 5825 MHz | 16.348 MHz | 500 kHz | Pass |
| | 802.11(n) MCS0 | | | |
| | Ch 149, Low Channel 5745 MHz | 17.703 MHz | 500 kHz | Pass |
| | Ch 157, Mid Channel 5785 MHz | 17.609 MHz | 500 kHz | Pass |
| | Ch 165, High Channel 5825 MHz | 17.615 MHz | 500 kHz | Pass |
| | 802.11(n) MCS7 | | | |
| | Ch 149, Low Channel 5745 MHz | 17.685 MHz | 500 kHz | Pass |
| | Ch 157, Mid Channel 5785 MHz | 17.567 MHz | 500 kHz | Pass |
| | Ch 165, High Channel 5825 MHz | 17.628 MHz | 500 kHz | Pass |
| 40 MHz | | | | |
| | 802.11(n) MCS0 | | | |
| | Ch 149/153, Low Channel 5755 MHz | 36.473 MHz | 500 kHz | Pass |
| | Ch 157/161, High Channel 5795 MHz | 36.459 MHz | 500 kHz | Pass |
| | 802.11(n) MCS7 | | | |
| | Ch 149/153, Low Channel 5755 MHz | 36.401 MHz | 500 kHz | Pass |
| | Ch 157/161, High Channel 5795 MHz | 36.449 MHz | 500 kHz | Pass |

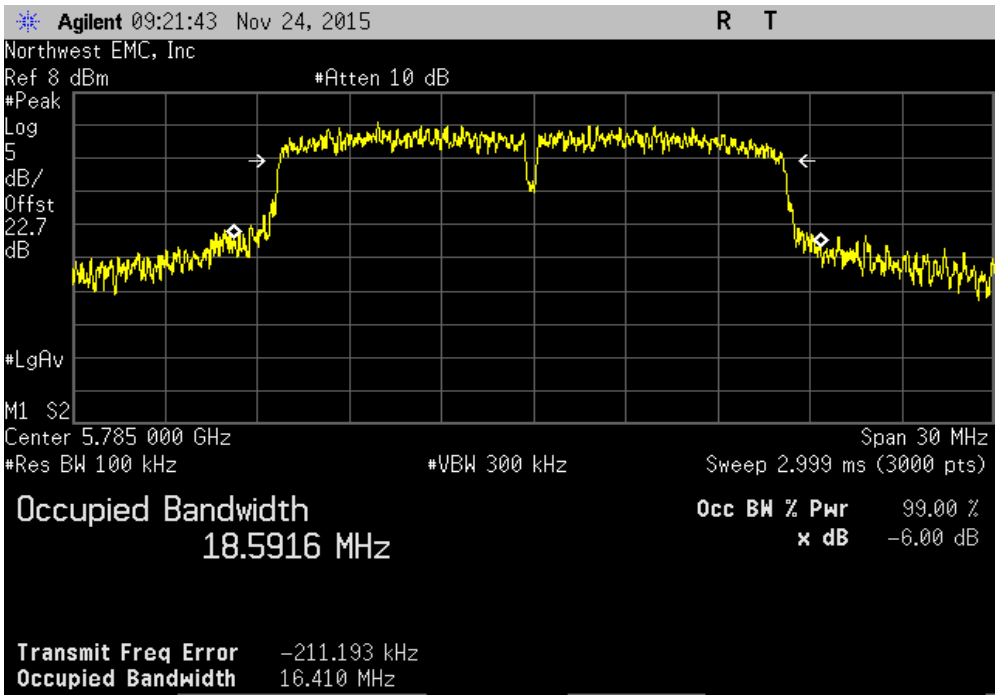
| | | | | | Value | Limit (>) | Result |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

20 MHz, 802.11(a) 6 Mbps, Ch 149, Low Channel 5745 MHz

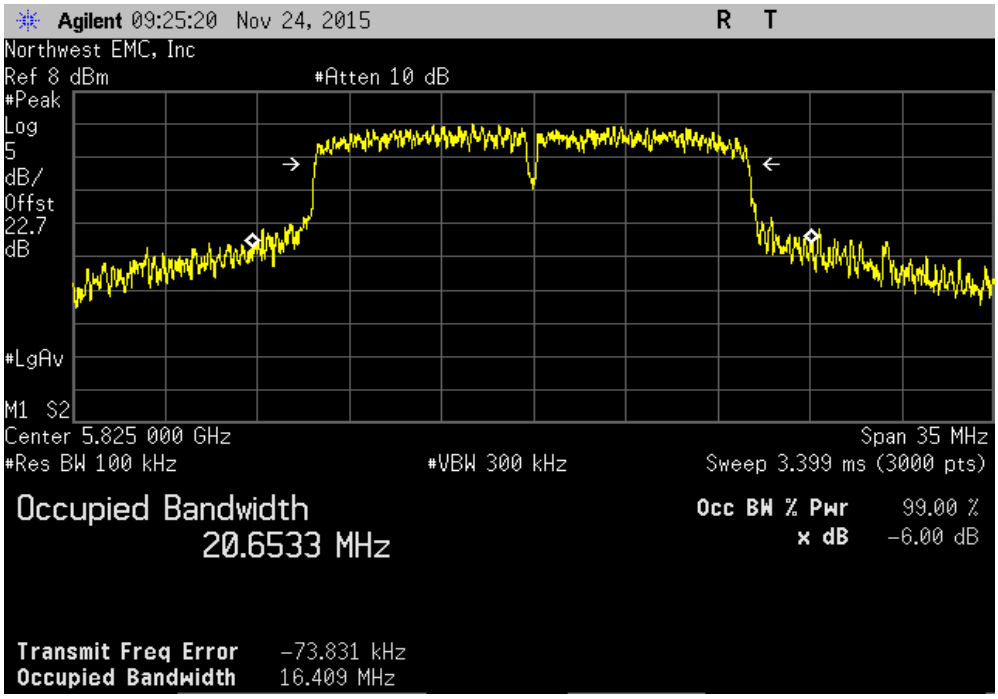
| | | | | Value | Limit (>) | Result |
|---|---|---|---|---|---|---|
| | | | | 16.381 MHz | 500 kHz | Pass |



| 20 MHz, 802.11(a) 6 Mbps, Ch 157, Mid Channel 5785 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Value | Limit (>) | Result |
| | | | | 16.41 MHz | 500 kHz | Pass |



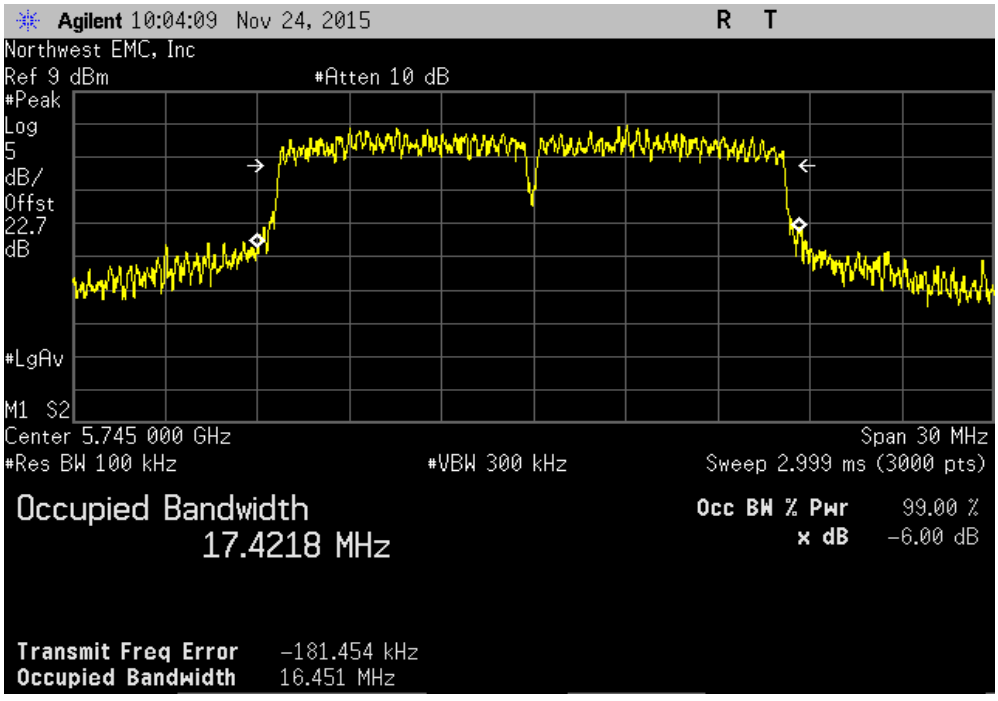

| 20 MHz, 802.11(a) 6 Mbps, Ch 165, High Channel 5825 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Value | Limit (>) | Result |
| | | | | 16.409 MHz | 500 kHz | Pass |



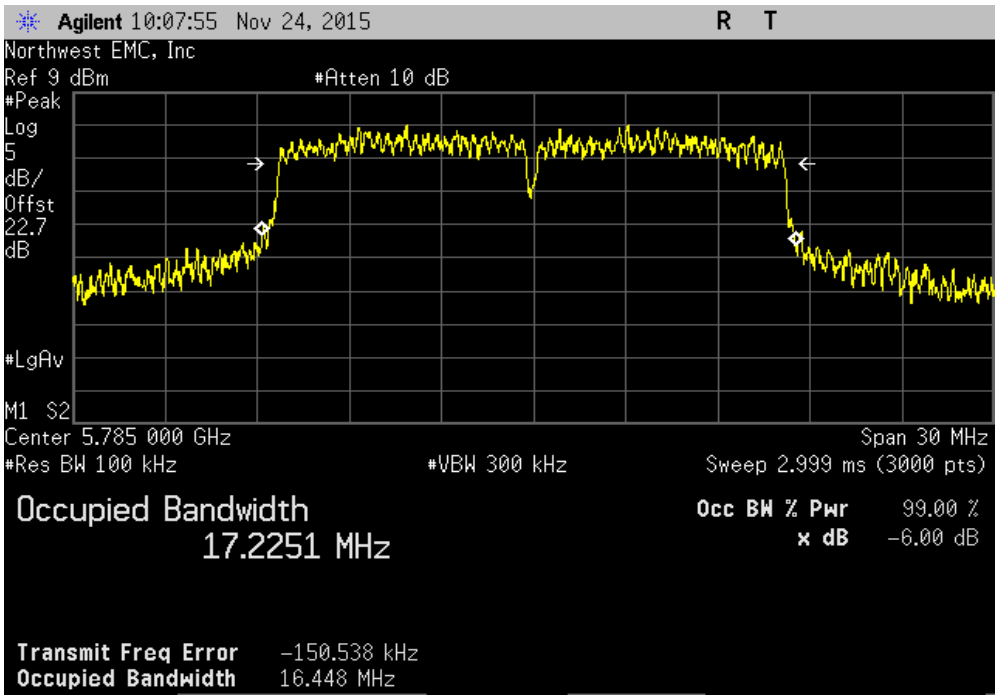
| | | | | | Value | Limit (>) | Result |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

20 MHz, 802.11(a) 36 Mbps, Ch 149, Low Channel 5745 MHz

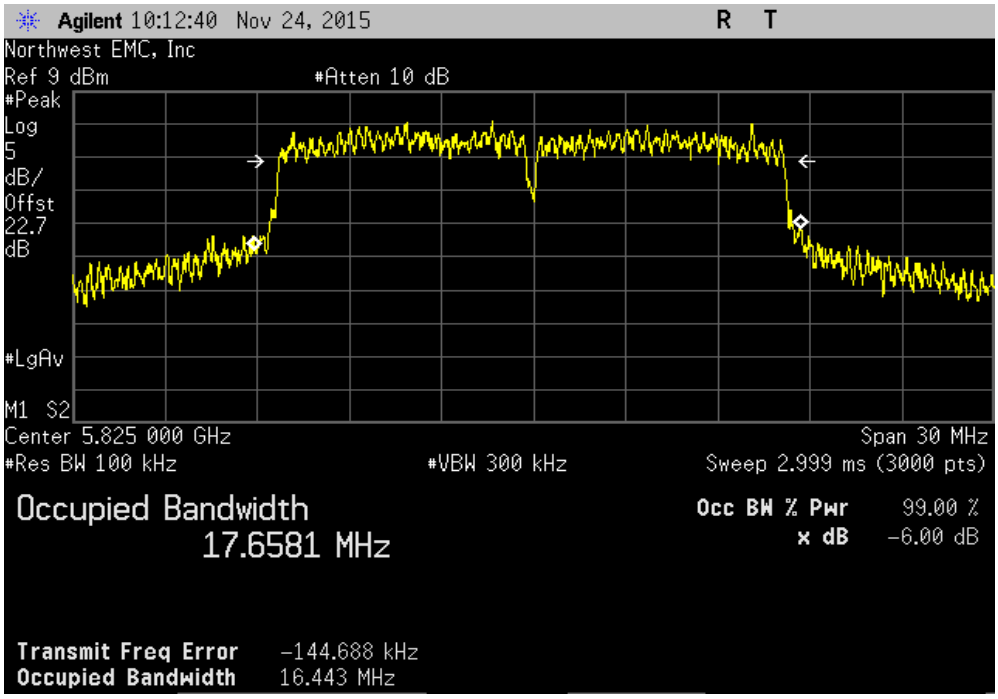
| | | | | | Value | Limit (>) | Result |
|---|---|---|---|---|---|---|---|
| | | | | | 16.451 MHz | 500 kHz | Pass |



| 20 MHz, 802.11(a) 36 Mbps, Ch 157, Mid Channel 5785 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Value | Limit (>) | Result |
| | | | | 16.448 MHz | 500 kHz | Pass |



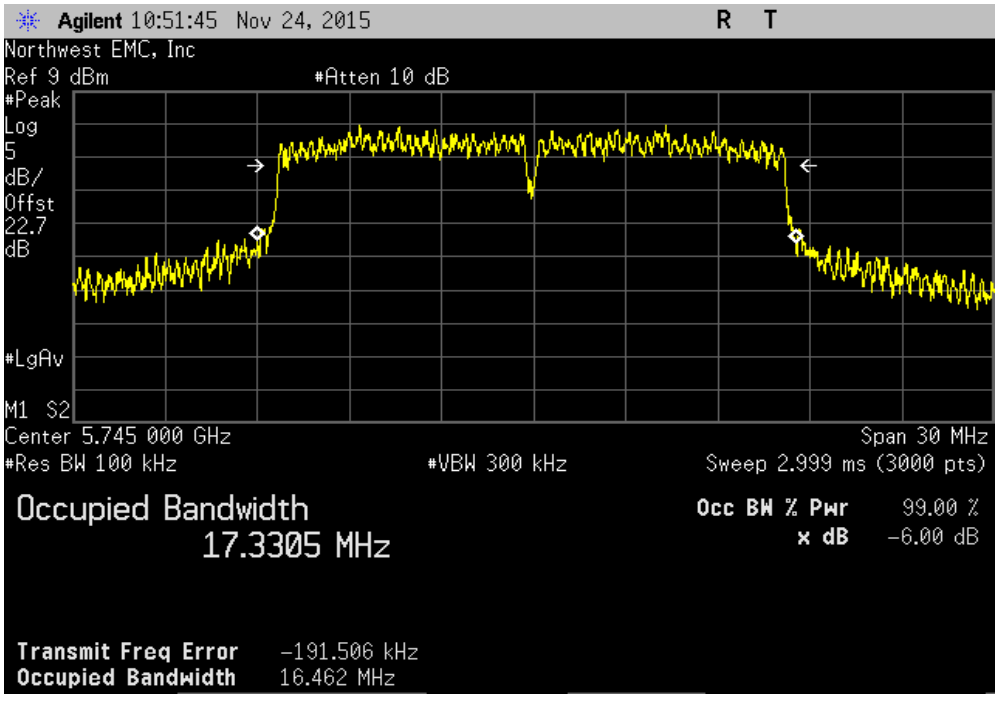

| 20 MHz, 802.11(a) 36 Mbps, Ch 165, High Channel 5825 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Value | Limit (>) | Result |
| | | | | 16.443 MHz | 500 kHz | Pass |



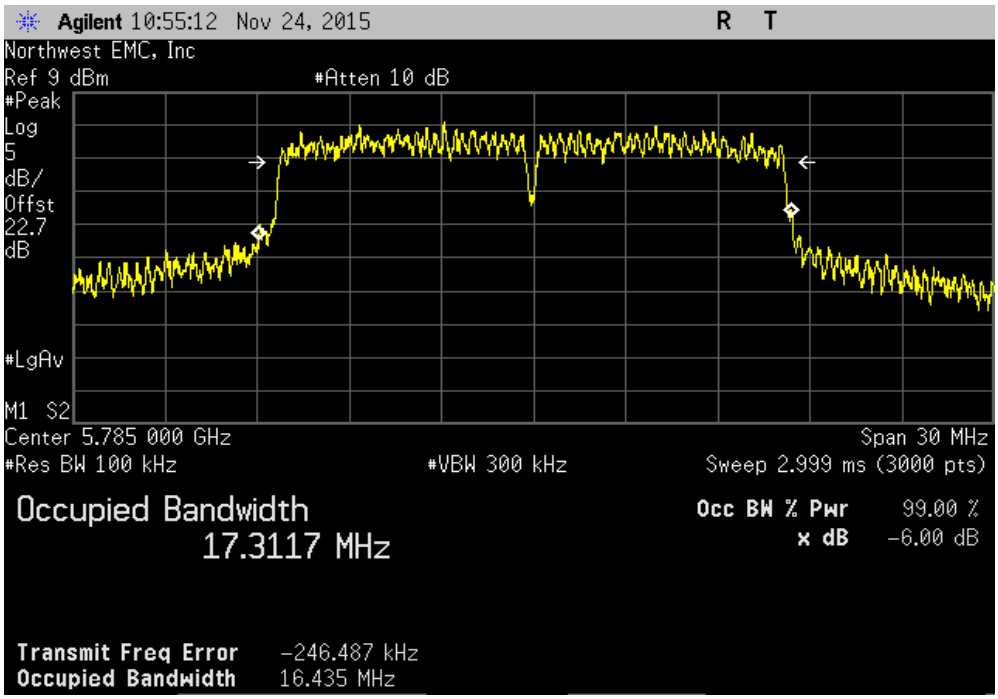
| | | | | | Value | Limit (>) | Result |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

20 MHz, 802.11(a) 54 Mbps, Ch 149, Low Channel 5745 MHz

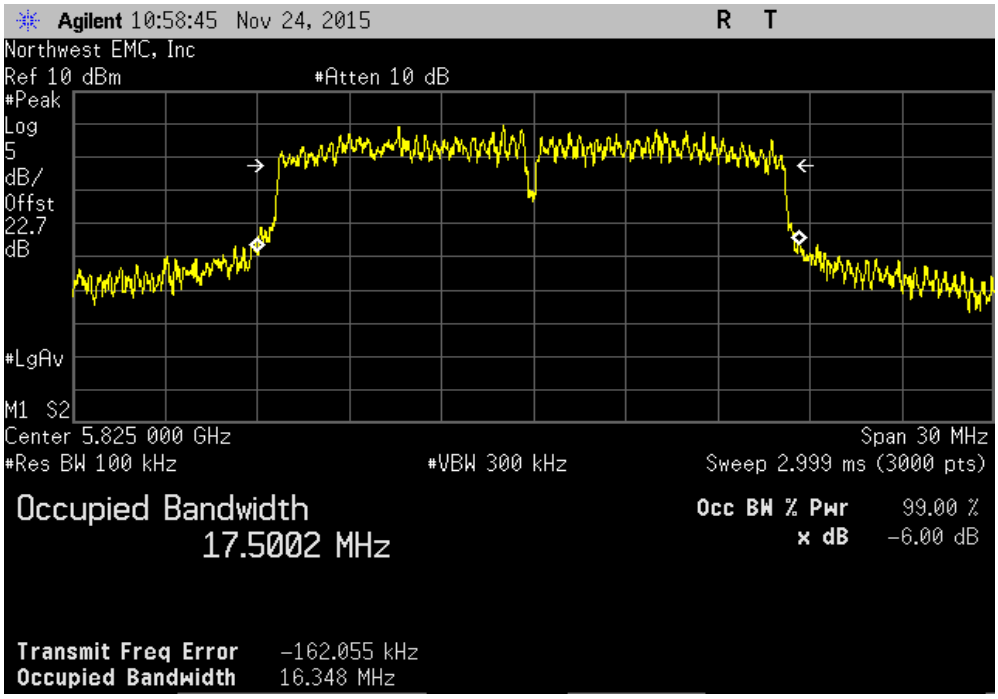
| | | | | | Value | Limit (>) | Result |
|---|---|---|---|---|---|---|---|
| | | | | | 16.462 MHz | 500 kHz | Pass |



| 20 MHz, 802.11(a) 54 Mbps, Ch 157, Mid Channel 5785 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Value | Limit (>) | Result |
| | | | | 16.435 MHz | 500 kHz | Pass |



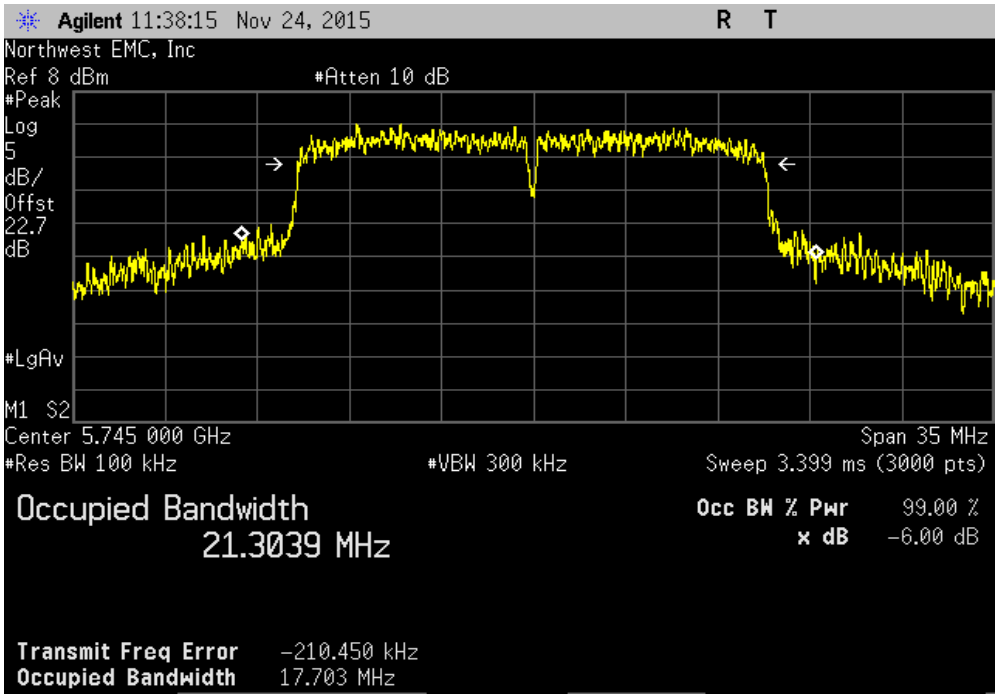

| 20 MHz, 802.11(a) 54 Mbps, Ch 165, High Channel 5825 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Value | Limit (>) | Result |
| | | | | 16.348 MHz | 500 kHz | Pass |



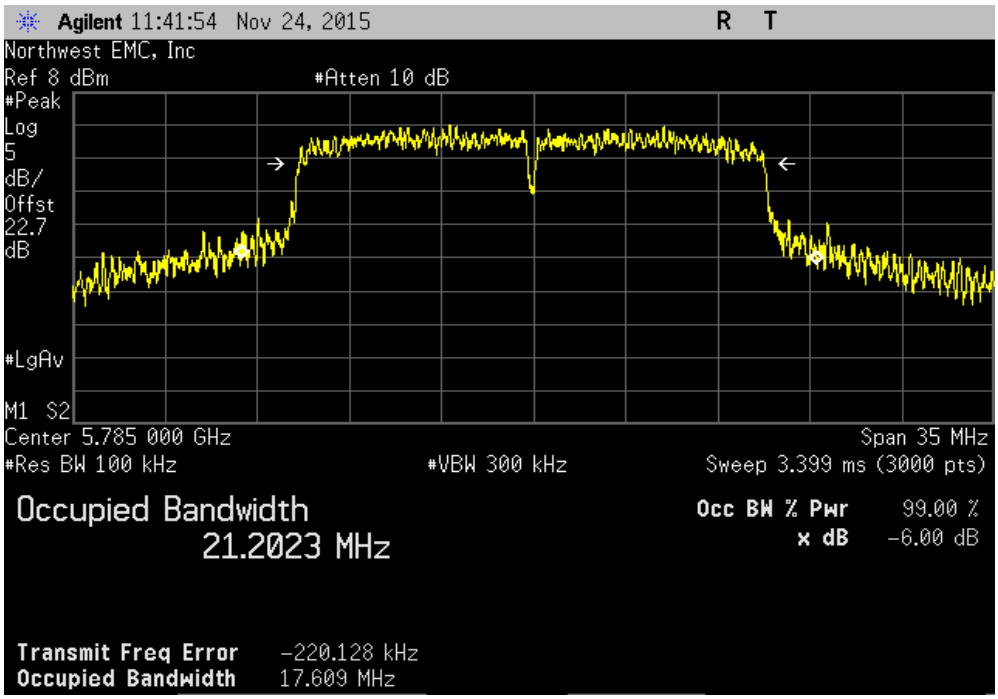
| | | | | | Value | Limit (>) | Result |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

20 MHz, 802.11(n) MCS0, Ch 149, Low Channel 5745 MHz

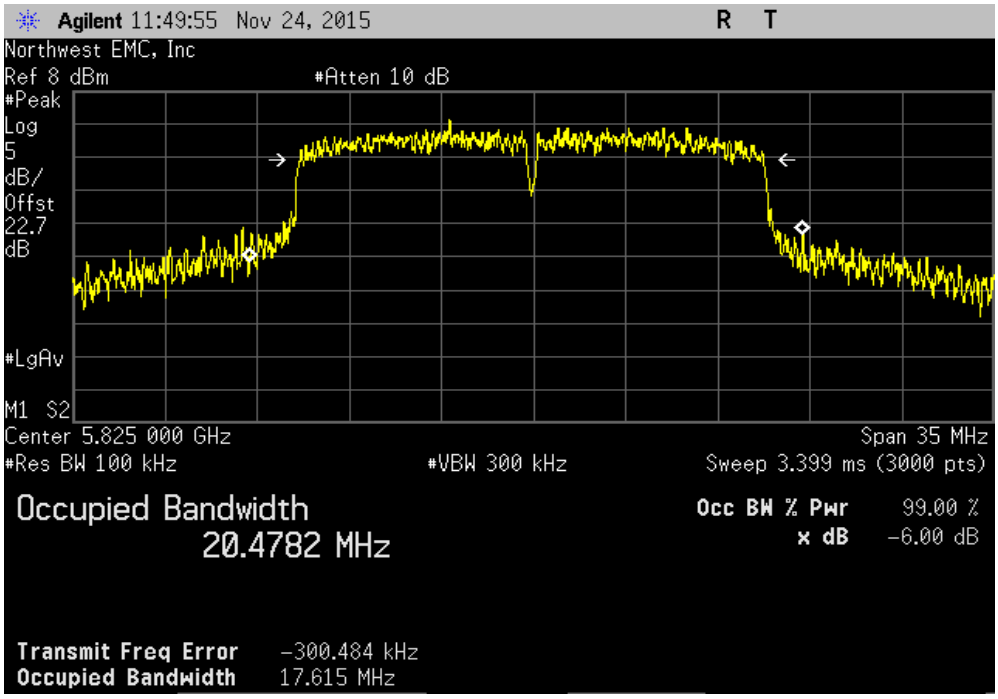
| | | | | Value | Limit (>) | Result |
|---|---|---|---|---|---|---|
| | | | | 17.703 MHz | 500 kHz | Pass |



| 20 MHz, 802.11(n) MCS0, Ch 157, Mid Channel 5785 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Value | Limit (>) | Result |
| | | | | 17.609 MHz | 500 kHz | Pass |



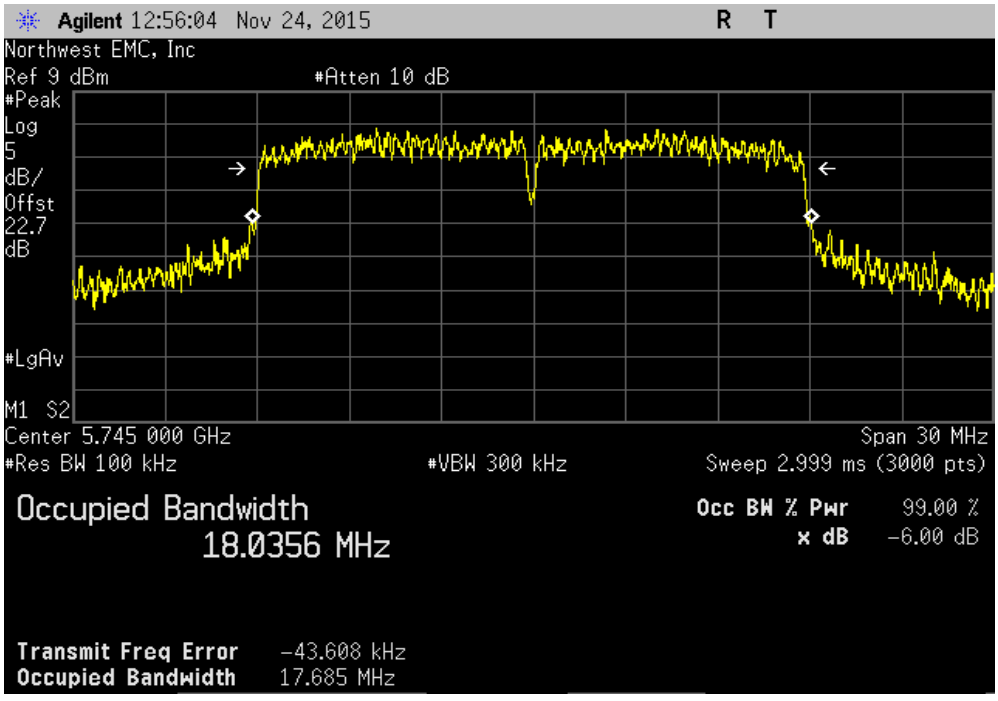

| 20 MHz, 802.11(n) MCS0, Ch 165, High Channel 5825 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Value | Limit (>) | Result |
| | | | | 17.615 MHz | 500 kHz | Pass |



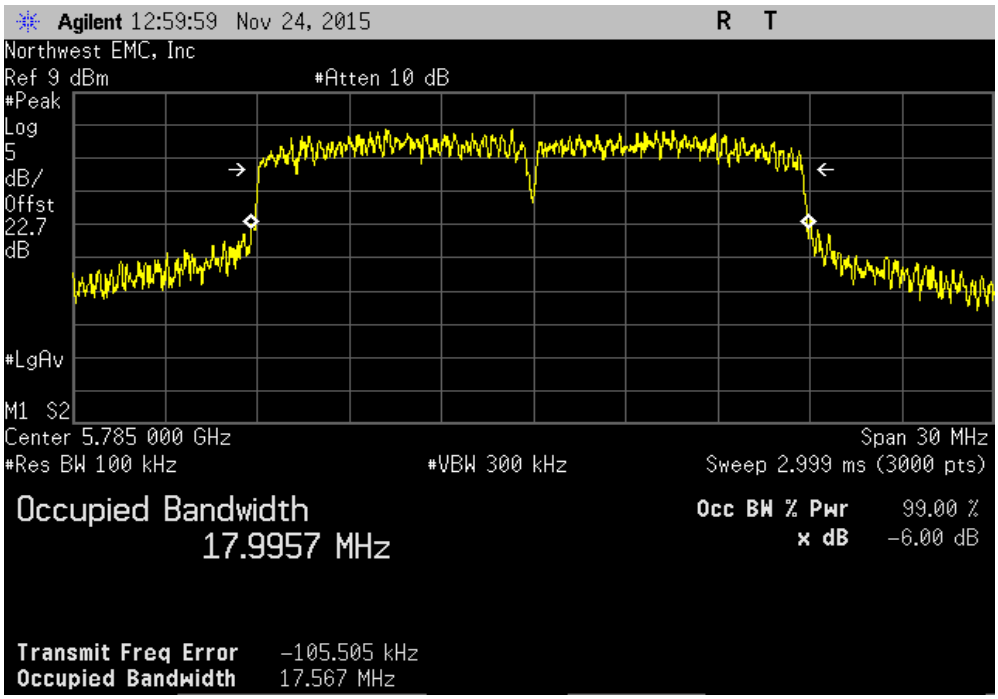
| | | | | | Value | Limit (>) | Result |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

20 MHz, 802.11(n) MCS7, Ch 149, Low Channel 5745 MHz

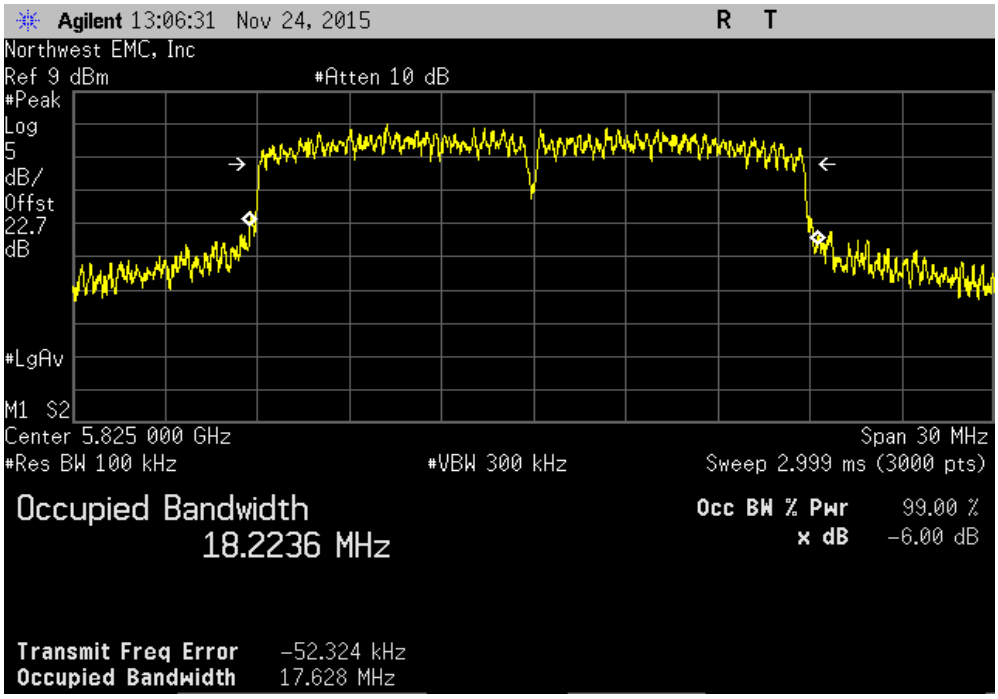
| | | | | | Value | Limit (>) | Result |
|---|---|---|---|---|---|---|---|
| | | | | | 17.685 MHz | 500 kHz | Pass |



| 20 MHz, 802.11(n) MCS7, Ch 157, Mid Channel 5785 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Value | Limit (>) | Result |
| | | | | 17.567 MHz | 500 kHz | Pass |



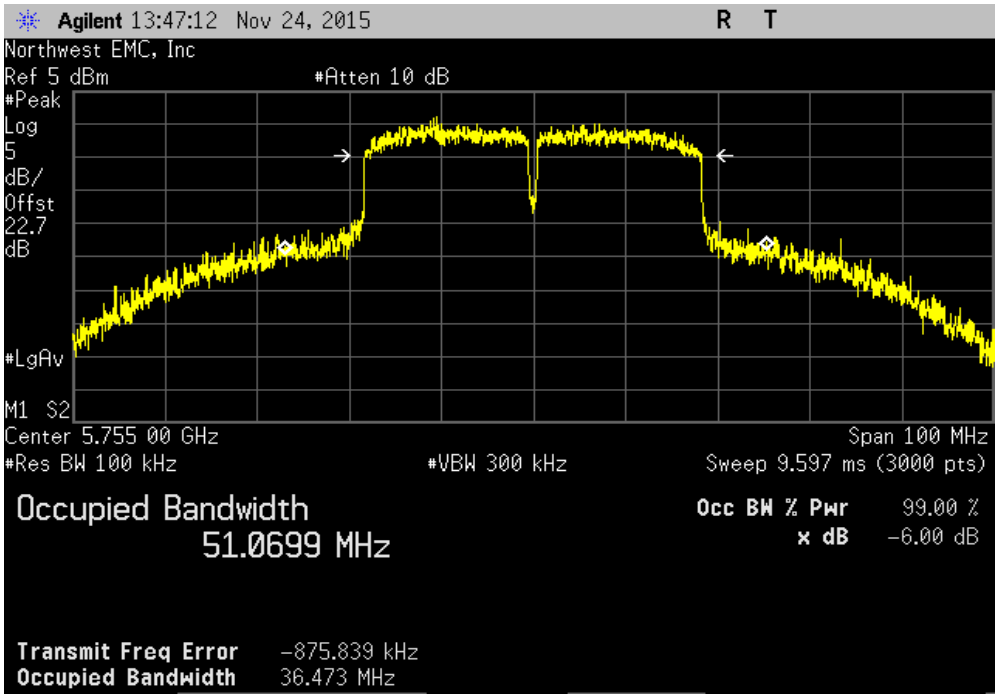

| 20 MHz, 802.11(n) MCS7, Ch 165, High Channel 5825 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Value | Limit (>) | Result |
| | | | | 17.628 MHz | 500 kHz | Pass |



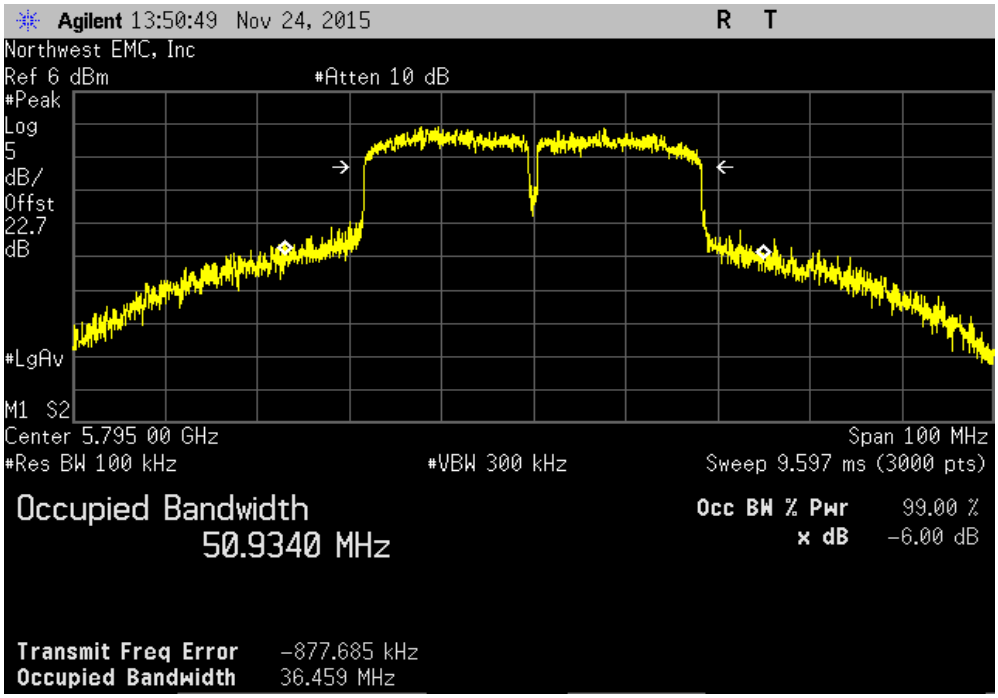
| | | | | | Value | Limit (>) | Result |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

40 MHz, 802.11(n) MCS0, Ch 149/153, Low Channel 5755 MHz

| | | | | | Value | Limit (>) | Result |
|---|---|---|---|---|---|---|---|
| | | | | | 36.473 MHz | 500 kHz | Pass |

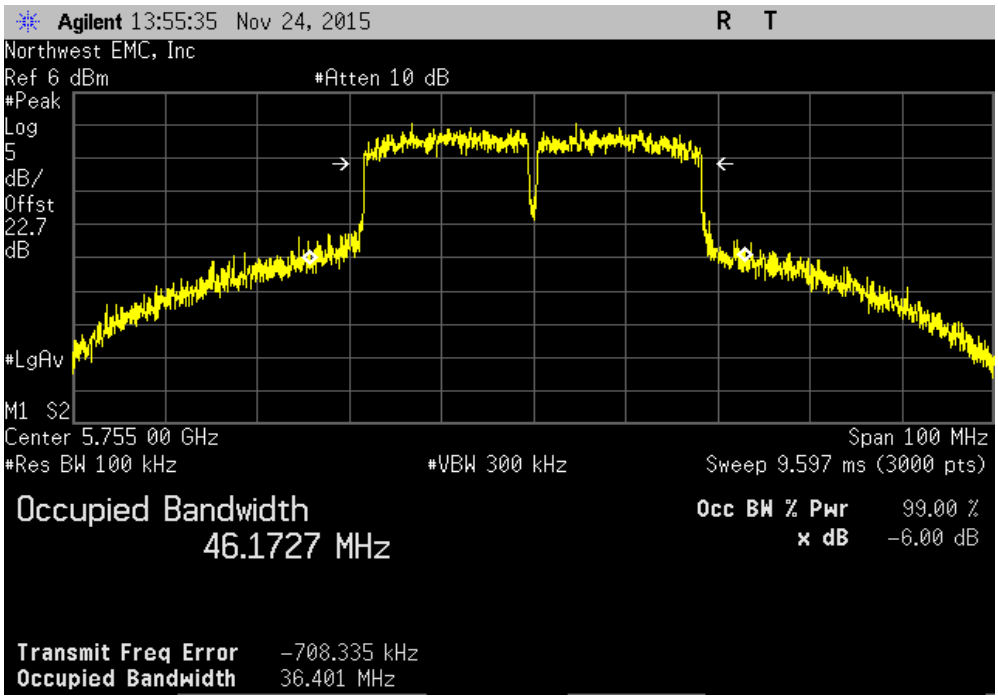


| 40 MHz, 802.11(n) MCS0, Ch 157/161, High Channel 5795 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Value | Limit (>) | Result |
| | | | | 36.459 MHz | 500 kHz | Pass |

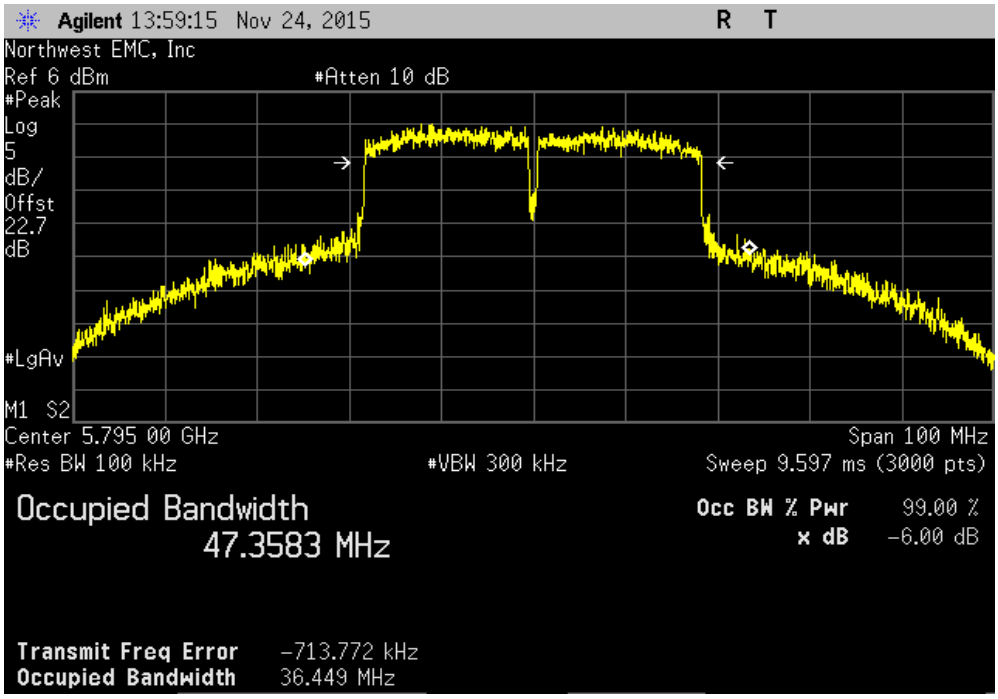



| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Value | Limit (>) | Result |
| | | | | | | |

| 40 MHz, 802.11(n) MCS7, Ch 149/153, Low Channel 5755 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Value | Limit (>) | Result |
| | | | | 36.401 MHz | 500 kHz | Pass |




| 40 MHz, 802.11(n) MCS7, Ch 157/161, High Channel 5795 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Value | Limit (>) | Result |
| | | | | 36.449 MHz | 500 kHz | Pass |



# MAXIMUM 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) |
|---|---|---|---|---|---|
| Generator - Signal | Agilent | N5183A | TIK | 10/17/2014 | 36 |
| Block - DC | Fairview Microwave | SD3379 | AMI | 9/18/2015 | 12 |
| Cable | ESM Cable Corp. | TTBJ141 KMKM-72 | MNU | 9/18/2015 | 12 |
| Attenuator | S.M. Electronics | SA26B-20 | RFW | 3/10/2015 | 12 |
| Analyzer - Spectrum Analyzer | Agilent | E4440A | AAX | 4/20/2015 | 12 |

**TEST DESCRIPTION**

The transmit frequency was set to the required channels in each band. The transmit power was set to its default maximum. The radio was operated in the modes as shown in the following data sheets.

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

The maximum power spectral density was measured using ANSI C63.10, Method SA-1 (RMS detection and trace averaging with the EUT transmitting at full power throughout each sweep), consistent with the method used for maximum conducted output power.

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

-Resolution Bandwidth of 1 MHz

-RMS Detector

-Trace average 100 traces in power averaging mode

The peak power spectral density (PPSD) was determined to be the highest level found across the emission in any 1 MHz band

# MAXIMUM POWER SPECTRAL DENSITY

NORTHWEST EMC

XMit 2015.01.14

| | | | | | |
|---|---|---|---|---|---|
| **EUT:** | Sigma Pumps Gen IV 802.11abgn Module | | | **Work Order:** | DGII0152 |
| **Serial Number:** | UUT #7 (55001769-1 rev. 1P) | | | **Date:** | 01/11/16 |
| **Customer:** | Digi International Inc | | | **Temperature:** | 21.1°C |
| **Attendees:** | Slava Gehkt | | | **Humidity:** | 16% |
| **Project:** | None | | | **Barometric Pres.:** | 984 |
| **Tested by:** | Jared Ison | **Power:** | 110VAC/60Hz | **Job Site:** | MN08 |

| **TEST SPECIFICATIONS** | **Test Method** |
|---|---|
| FCC 15.407:2016 | ANSI C63.10:2013 |
| | |

**COMMENTS**

802.11 radio set to single channel continuous transmission.

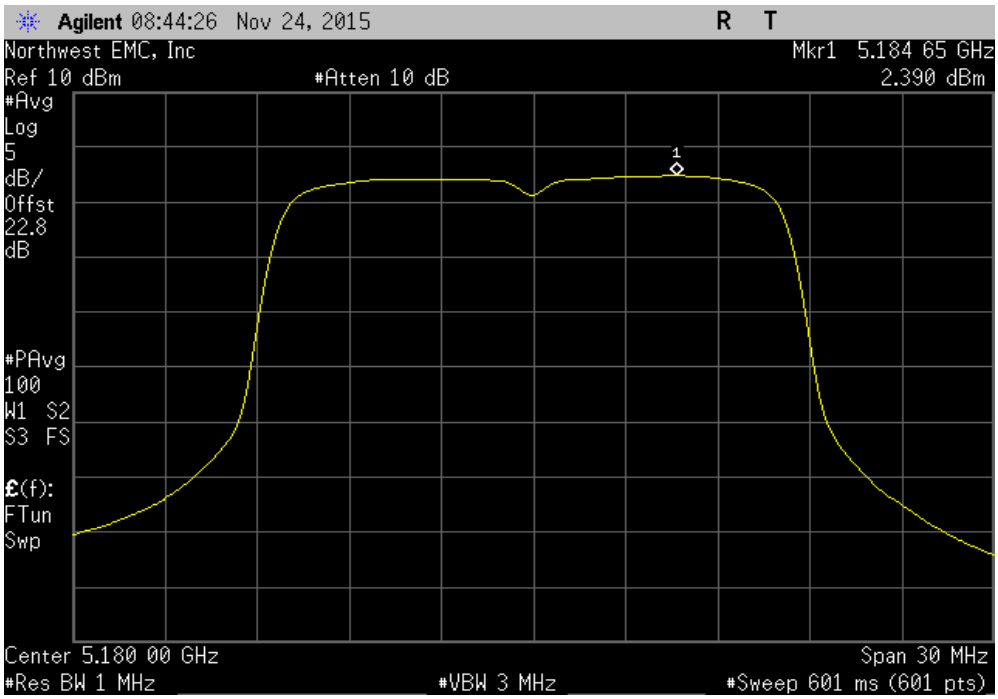
**DEVIATIONS FROM TEST STANDARD**

None

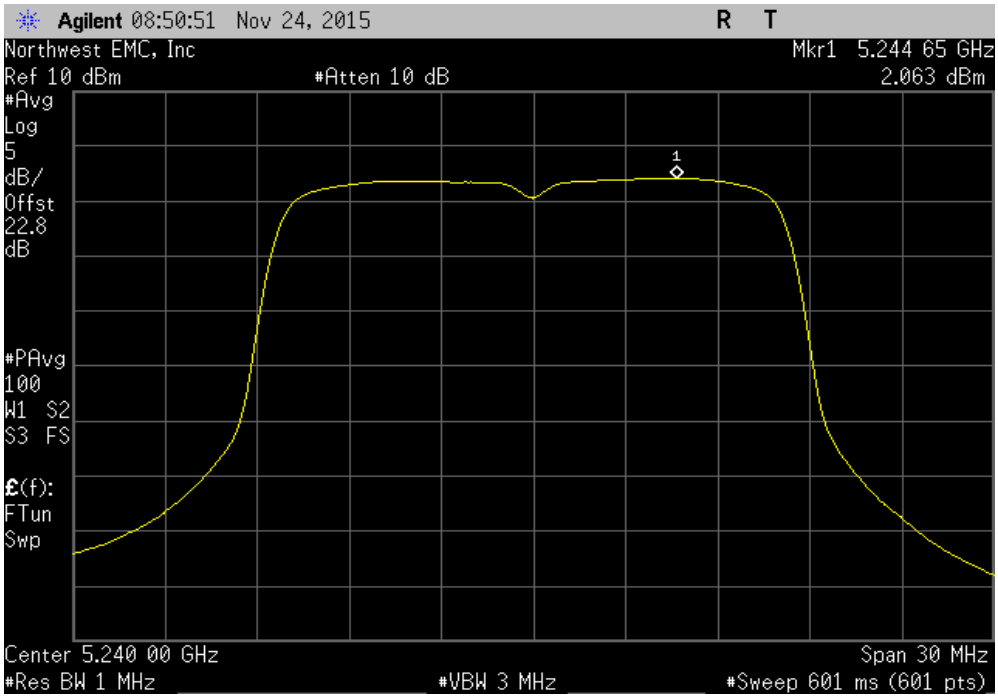
| **Configuration #** | 2 | *Signature* |
|---|---|---|

| | | Power (dBm/MHz) | Duty Cycle Factor (dB) | Density (dBm/MHz) | Limit ≤ (dBm / Ref BW) | Results |
|---|---|---|---|---|---|---|
| 20 MHz | | | | | | |
| | 802.11(a) 6 Mbps | | | | | |
| | Ch 36, Low Channel 5180 MHz | 2.39 | 0 | 2.4 | 11 | Pass |
| | Ch 48, High Channel 5240 MHz | 2.063 | 0 | 2.1 | 11 | Pass |
| | Ch 52, Low Channel 5260 MHz | 1.909 | 0 | 1.9 | 11 | Pass |
| | Ch 64, High Channel 5320 MHz | 1.67 | 0 | 1.7 | 11 | Pass |
| | Ch 100, Low Channel 5500 MHz | 2.438 | 0 | 2.4 | 11 | Pass |
| | Ch 116, Mid Channel 5580 MHz | 3.993 | 0 | 4 | 11 | Pass |
| | Ch 140, High Channel 5700 MHz | 4.957 | 0 | 5 | 11 | Pass |
| | Ch 149, Low Channel 5745 MHz | 2.106 | 0 | 2.1 | 30 | Pass |
| | Ch 157, Mid Channel 5785 MHz | 2.404 | 0 | 2.4 | 30 | Pass |
| | Ch 165, High Channel 5825 MHz | 2.432 | 0 | 2.4 | 30 | Pass |
| | 802.11(a) 36 Mbps | | | | | |
| | Ch 36, Low Channel 5180 MHz | 2.357 | 0 | 2.4 | 11 | Pass |
| | Ch 48, High Channel 5240 MHz | 2.066 | 0 | 2.1 | 11 | Pass |
| | Ch 52, Low Channel 5260 MHz | 1.95 | 0 | 2 | 11 | Pass |
| | Ch 64, High Channel 5320 MHz | 1.62 | 0 | 1.6 | 11 | Pass |
| | Ch 100, Low Channel 5500 MHz | 2.447 | 0 | 2.4 | 11 | Pass |
| | Ch 116, Mid Channel 5580 MHz | 3.967 | 0 | 4 | 11 | Pass |
| | Ch 140, High Channel 5700 MHz | 4.999 | 0 | 5 | 11 | Pass |
| | Ch 149, Low Channel 5745 MHz | 2.255 | 0 | 2.3 | 30 | Pass |
| | Ch 157, Mid Channel 5785 MHz | 2.576 | 0 | 2.6 | 30 | Pass |
| | Ch 165, High Channel 5825 MHz | 2.639 | 0 | 2.6 | 30 | Pass |
| | 802.11(a) 54 Mbps | | | | | |
| | Ch 36, Low Channel 5180 MHz | 2.556 | 0 | 2.6 | 11 | Pass |
| | Ch 48, High Channel 5240 MHz | 2.219 | 0 | 2.2 | 11 | Pass |
| | Ch 52, Low Channel 5260 MHz | 2.017 | 0 | 2 | 11 | Pass |
| | Ch 64, High Channel 5320 MHz | 1.678 | 0 | 1.7 | 11 | Pass |
| | Ch 100, Low Channel 5500 MHz | 2.073 | 0 | 2.1 | 11 | Pass |
| | Ch 116, Mid Channel 5580 MHz | 3.947 | 0 | 3.9 | 11 | Pass |
| | Ch 140, High Channel 5700 MHz | 4.934 | 0 | 4.9 | 11 | Pass |
| | Ch 149, Low Channel 5745 MHz | 2.105 | 0 | 2.1 | 30 | Pass |
| | Ch 157, Mid Channel 5785 MHz | 2.469 | 0 | 2.5 | 30 | Pass |
| | Ch 165, High Channel 5825 MHz | 2.539 | 0 | 2.5 | 30 | Pass |
| | 802.11(n) MCS0 | | | | | |
| | Ch 36, Low Channel 5180 MHz | 2.126 | 0 | 2.1 | 17 | Pass |
| | Ch 48, High Channel 5240 MHz | 1.721 | 0 | 1.7 | 17 | Pass |
| | Ch 52, Low Channel 5260 MHz | 1.654 | 0 | 1.7 | 11 | Pass |
| | Ch 64, High Channel 5320 MHz | 1.318 | 0 | 1.3 | 11 | Pass |
| | Ch 100, Low Channel 5500 MHz | 2.178 | 0 | 2.2 | 11 | Pass |
| | Ch 116, Mid Channel 5580 MHz | 3.752 | 0 | 3.8 | 11 | Pass |
| | Ch 140, High Channel 5700 MHz | 4.66 | 0 | 4.7 | 11 | Pass |
| | Ch 149, Low Channel 5745 MHz | 2.06 | 0 | 2.1 | 30 | Pass |
| | Ch 157, Mid Channel 5785 MHz | 2.321 | 0 | 2.3 | 30 | Pass |
| | Ch 165, High Channel 5825 MHz | 2.15 | 0 | 2.2 | 30 | Pass |
| | 802.11(n) MCS7 | | | | | |
| | Ch 36, Low Channel 5180 MHz | 2.426 | 0 | 2.4 | 11 | Pass |
| | Ch 48, High Channel 5240 MHz | 1.772 | 0 | 1.8 | 11 | Pass |
| | Ch 52, Low Channel 5260 MHz | 1.621 | 0 | 1.6 | 11 | Pass |
| | Ch 64, High Channel 5320 MHz | 1.288 | 0 | 1.3 | 11 | Pass |
| | Ch 100, Low Channel 5500 MHz | 1.704 | 0 | 1.7 | 11 | Pass |
| | Ch 116, Mid Channel 5580 MHz | 3.594 | 0 | 3.6 | 11 | Pass |
| | Ch 140, High Channel 5700 MHz | 4.603 | 0 | 4.6 | 11 | Pass |
| | Ch 149, Low Channel 5745 MHz | 1.798 | 0 | 1.8 | 30 | Pass |
| | Ch 157, Mid Channel 5785 MHz | 2.102 | 0 | 2.1 | 30 | Pass |
| | Ch 165, High Channel 5825 MHz | 2.163 | 0 | 2.2 | 30 | Pass |
| 40 MHz | | | | | | |
| | 802.11(n) MCS0 | | | | | |
| | Ch 36/40, Low Channel 5190 MHz | -0.292 | 0 | -0.3 | 11 | Pass |
| | Ch 44/48, High Channel 5230 MHz | -0.826 | 0 | -0.8 | 11 | Pass |
| | Ch 52/56, Low Channel 5270 MHz | -0.058 | 0 | -0.1 | 11 | Pass |
| | Ch 60/64, High Channel 5310 MHz | -0.61 | 0 | -0.6 | 11 | Pass |
| | Ch 100/104, Low Channel 5510 MHz | -0.1 | 0 | -0.1 | 11 | Pass |
| | Ch 108/112, Mid Channel 5550 MHz | 0.64 | 0 | 0.6 | 11 | Pass |
| | Ch 132/136, High Channel 5670 MHz | 2.05 | 0 | 2.1 | 11 | Pass |
| | Ch 149/153, Low Channel 5755 MHz | -0.516 | 0 | -0.5 | 30 | Pass |
| | Ch 157/161, High Channel 5795 MHz | -0.202 | 0 | -0.2 | 30 | Pass |
| | 802.11(n) MCS7 | | | | | |
| | Ch 36/40, Low Channel 5190 MHz | -0.984 | 0 | -1 | 11 | Pass |
| | Ch 44/48, High Channel 5230 MHz | -0.486 | 0 | -0.5 | 11 | Pass |
| | Ch 52/56, Low Channel 5270 MHz | -0.493 | 0 | -0.5 | 11 | Pass |
| | Ch 60/64, High Channel 5310 MHz | -0.821 | 0 | -0.8 | 11 | Pass |
| | Ch 100/104, Low Channel 5510 MHz | -0.379 | 0 | -0.4 | 11 | Pass |
| | Ch 108/112, Mid Channel 5550 MHz | 0.516 | 0 | 0.5 | 11 | Pass |
| | Ch 132/136, High Channel 5670 MHz | 1.861 | 0 | 1.9 | 11 | Pass |
| | Ch 149/153, Low Channel 5755 MHz | -0.565 | 0 | -0.6 | 30 | Pass |
| | Ch 157/161, High Channel 5795 MHz | -0.231 | 0 | -0.2 | 30 | Pass |

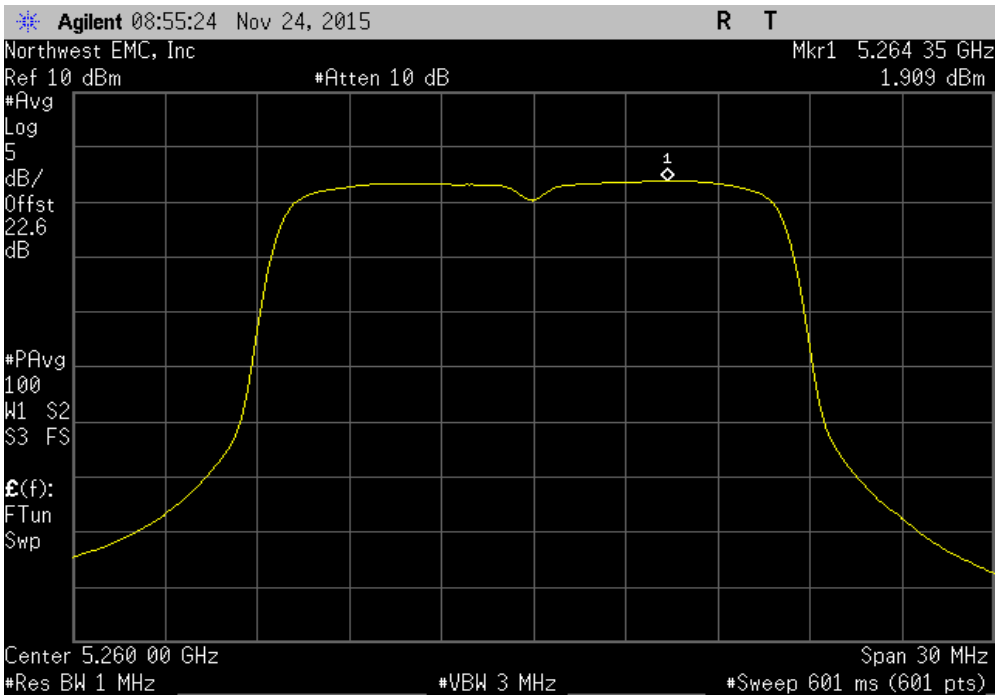
| 20 MHz, 802.11(a) 6 Mbps, Ch 36, Low Channel 5180 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Power (dBm/MHz) | Duty Cycle Factor (dB) | | Density (dBm/MHz) | Limit (dBm / Ref BW | Results |
| | 2.39 | 0 | | 2.4 | 11 | Pass |



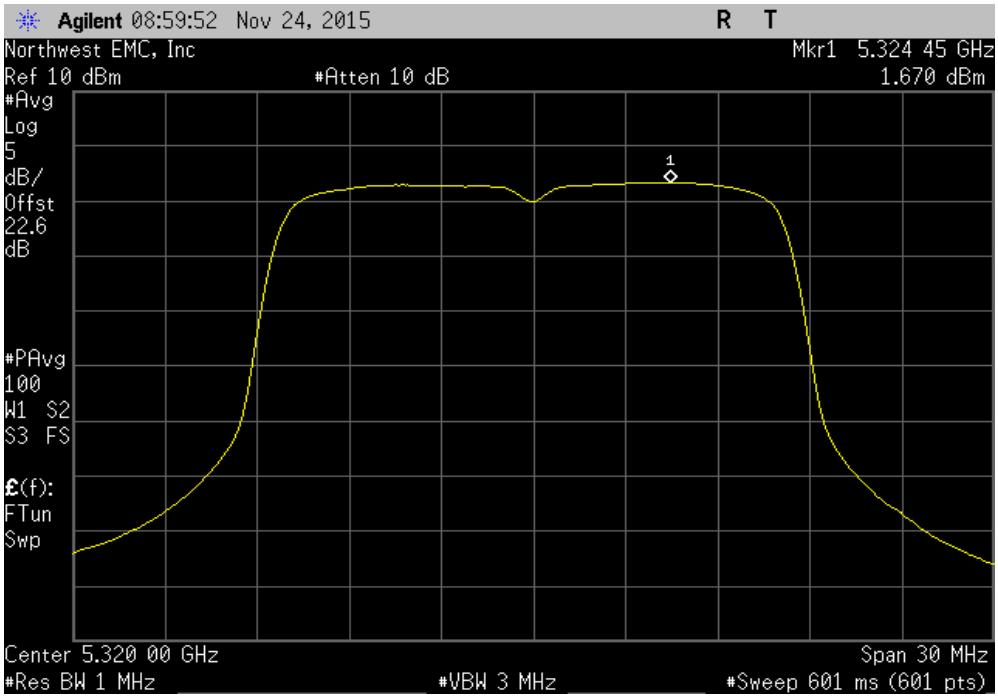

| 20 MHz, 802.11(a) 6 Mbps, Ch 48, High Channel 5240 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Power (dBm/MHz) | Duty Cycle Factor (dB) | | Density (dBm/MHz) | Limit (dBm / Ref BW | Results |
| | 2.063 | 0 | | 2.1 | 11 | Pass |



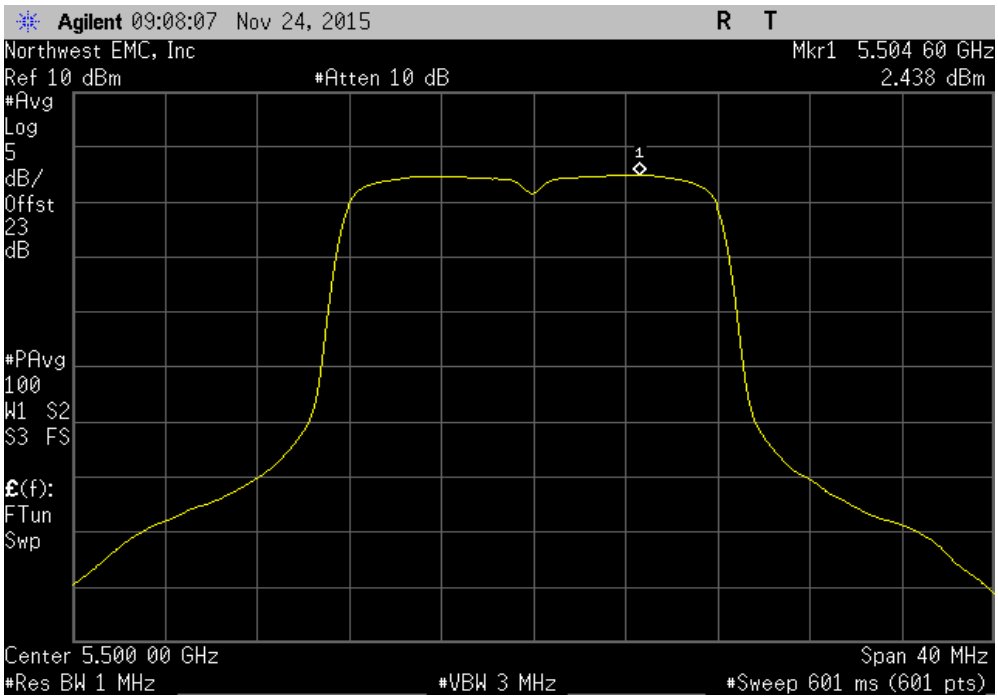
| 20 MHz, 802.11(a) 6 Mbps, Ch 52, Low Channel 5260 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Power (dBm/MHz) | Duty Cycle Factor (dB) | | Density (dBm/MHz) | Limit (dBm / Ref BW | Results |
| | 1.909 | 0 | | 1.9 | 11 | Pass |



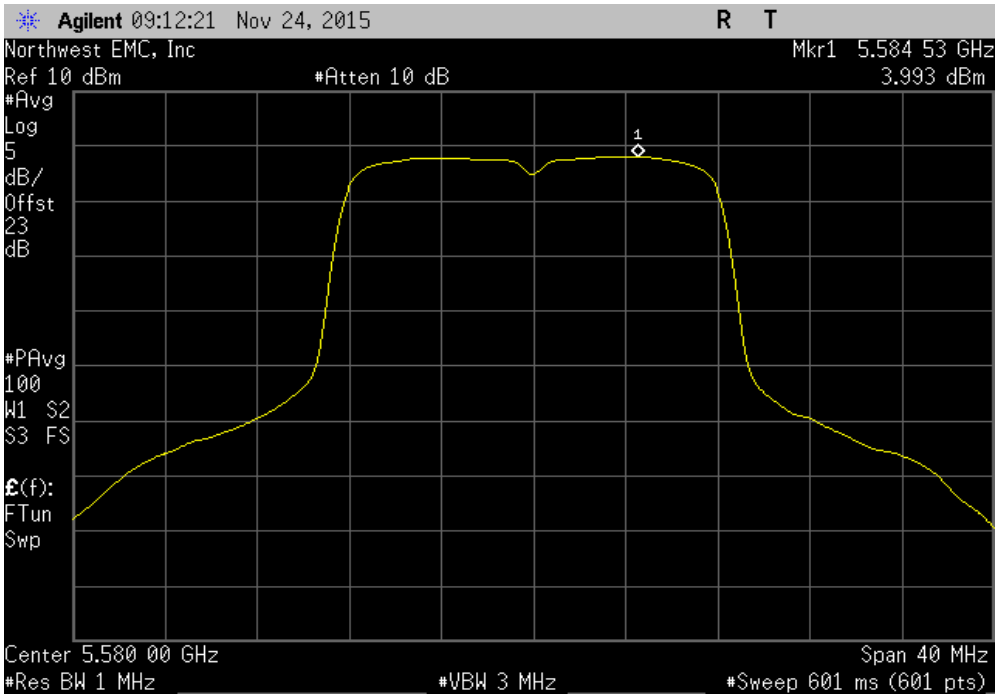

| 20 MHz, 802.11(a) 6 Mbps, Ch 64, High Channel 5320 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Power (dBm/MHz) | Duty Cycle Factor (dB) | | Density (dBm/MHz) | Limit (dBm / Ref BW | Results |
| | 1.67 | 0 | | 1.7 | 11 | Pass |



| 20 MHz, 802.11(a) 6 Mbps, Ch 100, Low Channel 5500 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Power (dBm/MHz) | Duty Cycle Factor (dB) | | Density (dBm/MHz) | Limit (dBm / Ref BW | Results |
| | 2.438 | 0 | | 2.4 | 11 | Pass |




| 20 MHz, 802.11(a) 6 Mbps, Ch 116, Mid Channel 5580 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Power (dBm/MHz) | Duty Cycle Factor (dB) | | Density (dBm/MHz) | Limit (dBm / Ref BW | Results |
| | 3.993 | 0 | | 4 | 11 | Pass |



# MAXIMUM POWER SPECTRAL DENSITY

NORTHWEST EMC

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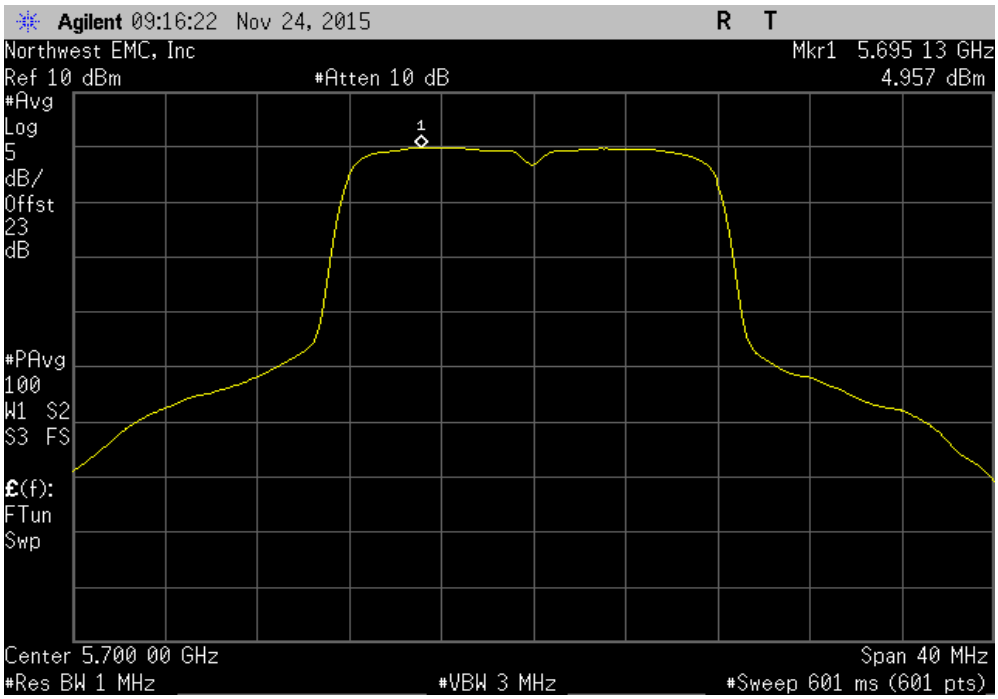
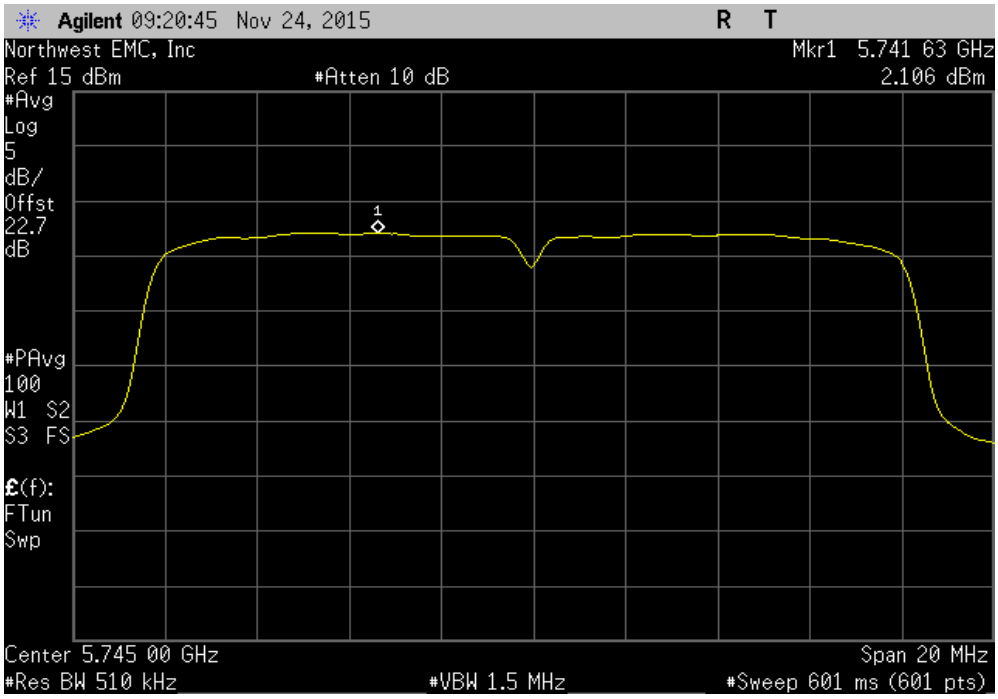
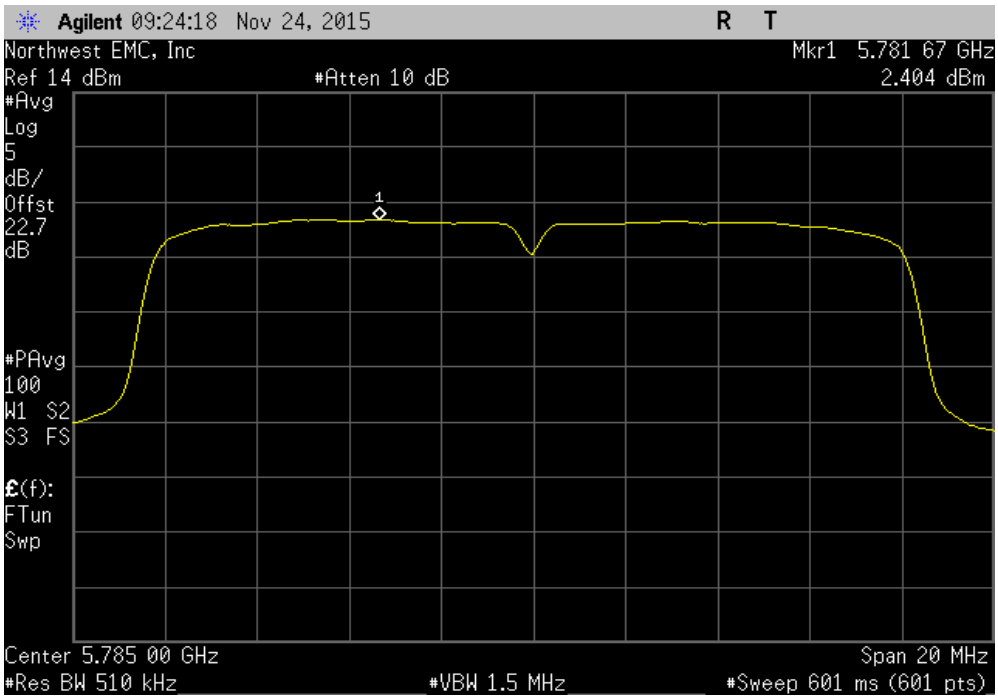
| 20 MHz, 802.11(a) 6 Mbps, Ch 140, High Channel 5700 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Power (dBm/MHz) | Duty Cycle Factor (dB) | | Density (dBm/MHz) | Limit (dBm / Ref BW | Results |
| | 4.957 | 0 | | 5 | 11 | Pass |



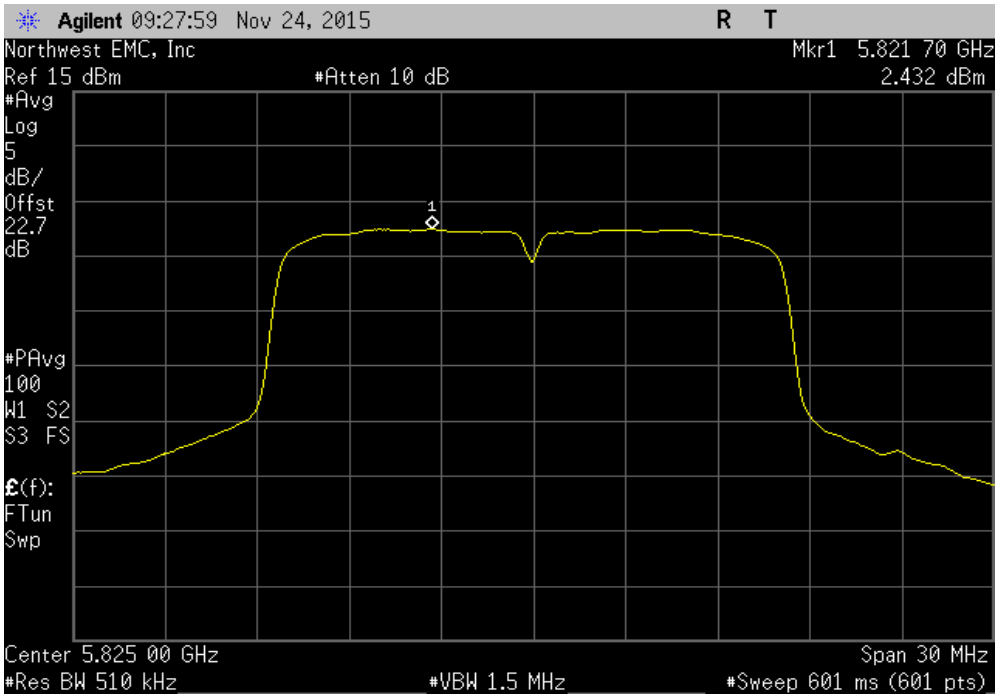

| 20 MHz, 802.11(a) 6 Mbps, Ch 149, Low Channel 5745 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Power (dBm/MHz) | Duty Cycle Factor (dB) | | Density (dBm/MHz) | Limit (dBm / Ref BW | Results |
| | 2.106 | 0 | | 2.1 | 30 | Pass |



| 20 MHz, 802.11(a) 6 Mbps, Ch 157, Mid Channel 5785 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Power (dBm/MHz) | Duty Cycle Factor (dB) | | Density (dBm/MHz) | Limit (dBm / Ref BW | Results |
| | 2.404 | 0 | | 2.4 | 30 | Pass |




| 20 MHz, 802.11(a) 6 Mbps, Ch 165, High Channel 5825 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Power (dBm/MHz) | Duty Cycle Factor (dB) | | Density (dBm/MHz) | Limit (dBm / Ref BW | Results |
| | 2.432 | 0 | | 2.4 | 30 | Pass |



# MAXIMUM POWER SPECTRAL DENSITY

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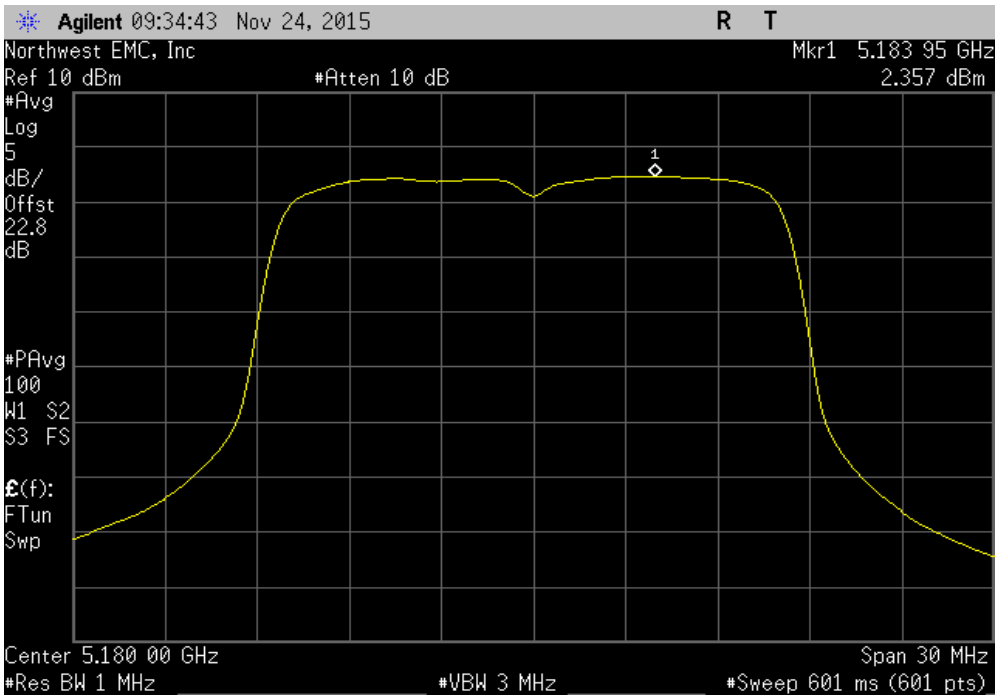
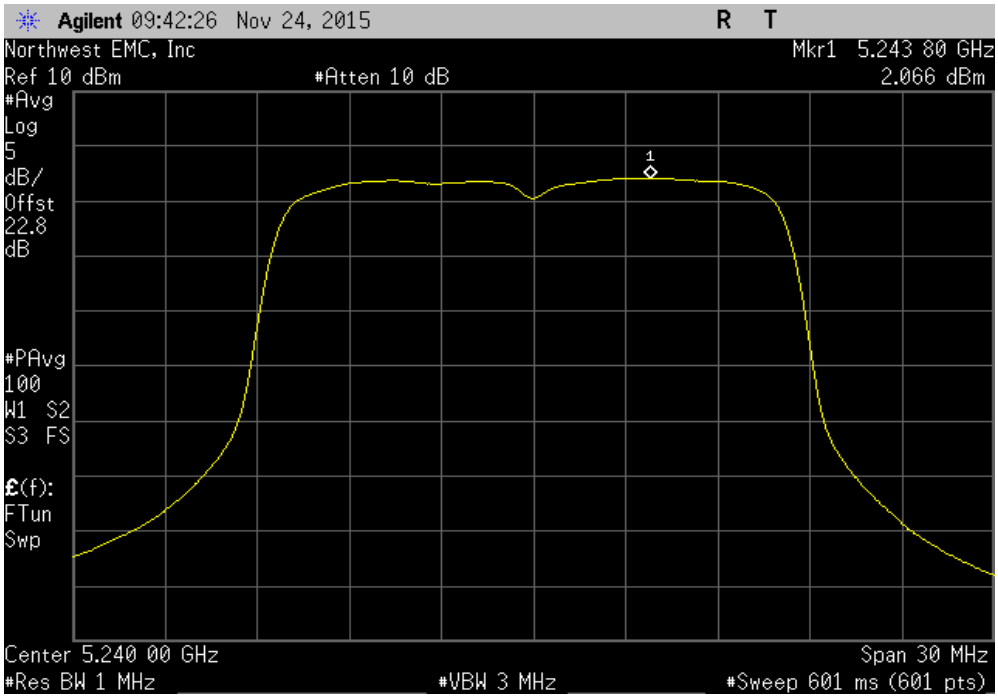
| 20 MHz, 802.11(a) 36 Mbps, Ch 36, Low Channel 5180 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Power (dBm/MHz) | Duty Cycle Factor (dB) | | Density (dBm/MHz) | Limit (dBm / Ref BW | Results |
| | 2.357 | 0 | | 2.4 | 11 | Pass |




| 20 MHz, 802.11(a) 36 Mbps, Ch 48, High Channel 5240 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Power (dBm/MHz) | Duty Cycle Factor (dB) | | Density (dBm/MHz) | Limit (dBm / Ref BW | Results |
| | 2.066 | 0 | | 2.1 | 11 | Pass |



# MAXIMUM POWER SPECTRAL DENSITY

NORTHWEST EMC

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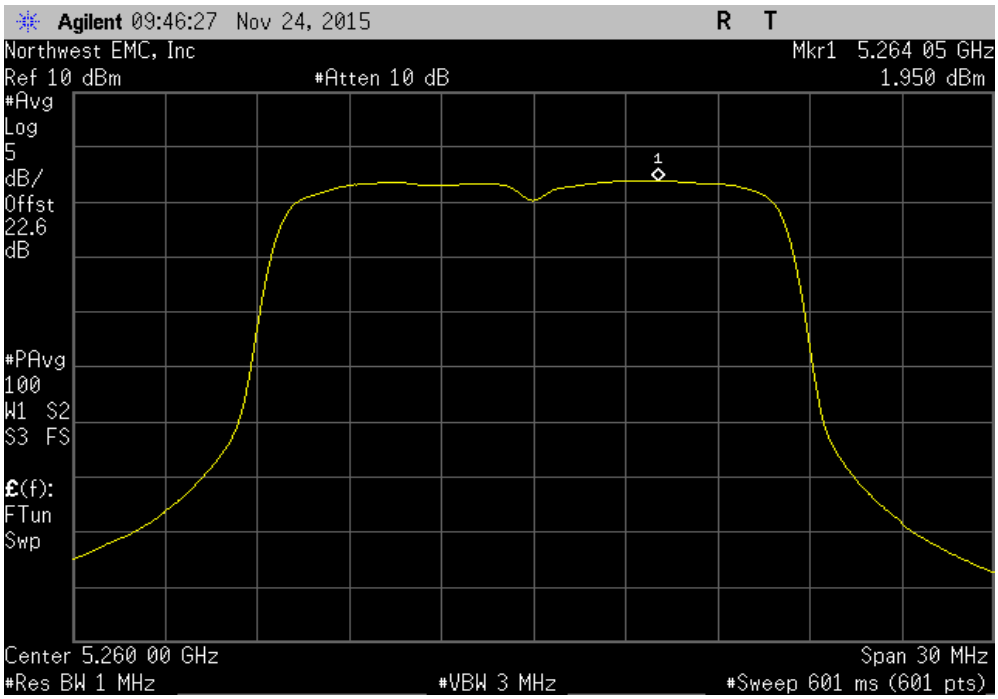
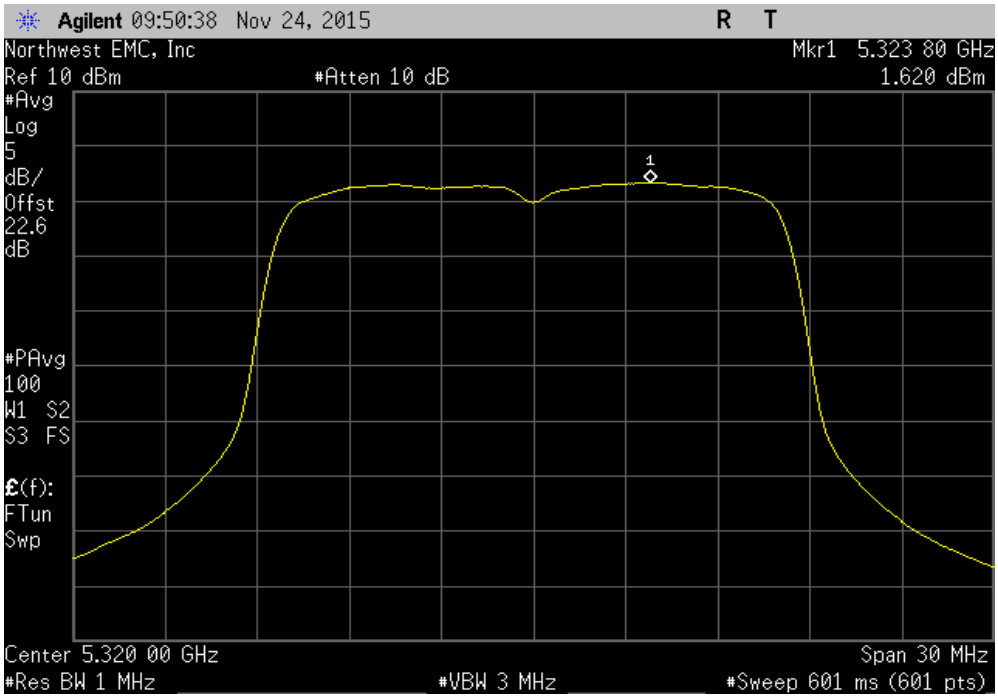
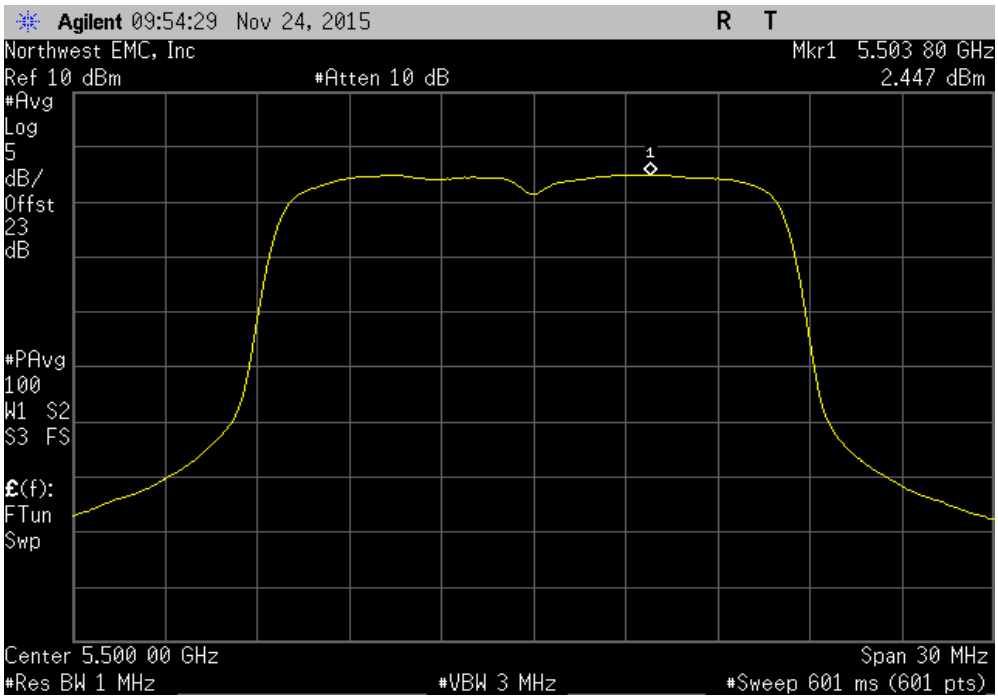
| 20 MHz, 802.11(a) 36 Mbps, Ch 52, Low Channel 5260 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Power (dBm/MHz) | Duty Cycle Factor (dB) | | Density (dBm/MHz) | Limit (dBm / Ref BW | Results |
| | 1.95 | 0 | | 2 | 11 | Pass |



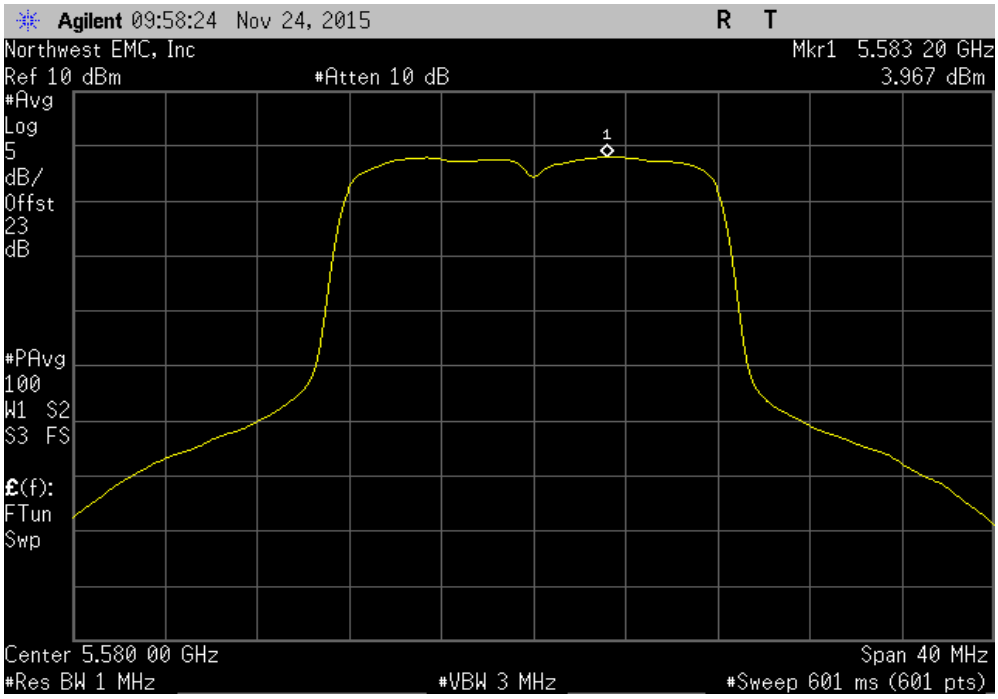

| 20 MHz, 802.11(a) 36 Mbps, Ch 64, High Channel 5320 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Power (dBm/MHz) | Duty Cycle Factor (dB) | | Density (dBm/MHz) | Limit (dBm / Ref BW | Results |
| | 1.62 | 0 | | 1.6 | 11 | Pass |



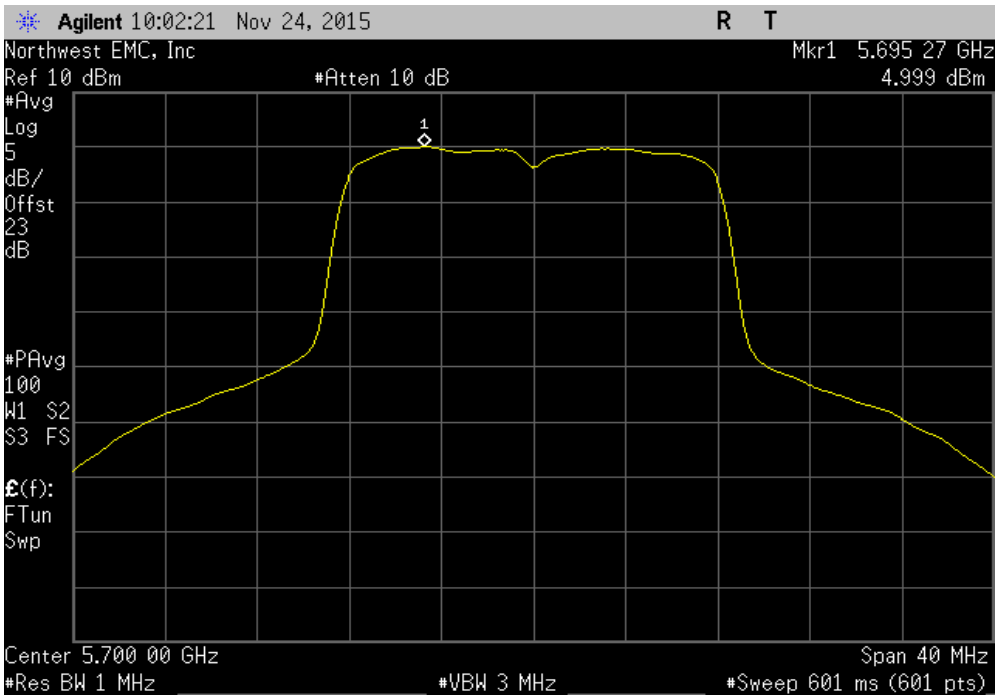
| 20 MHz, 802.11(a) 36 Mbps, Ch 100, Low Channel 5500 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Power (dBm/MHz) | Duty Cycle Factor (dB) | | Density (dBm/MHz) | Limit (dBm / Ref BW | Results |
| | 2.447 | 0 | | 2.4 | 11 | Pass |



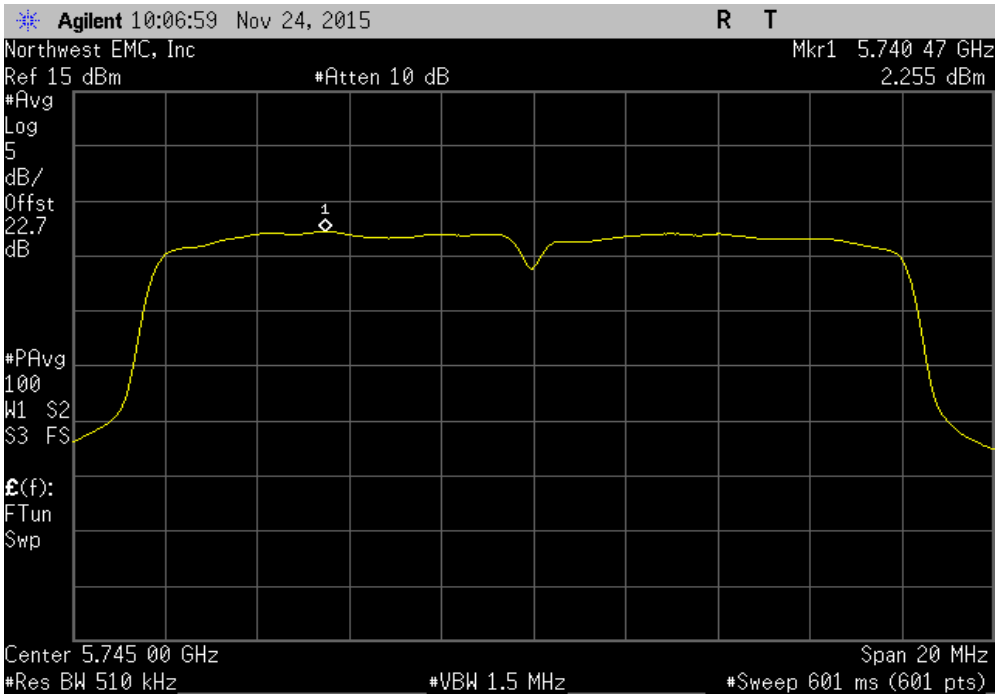

| 20 MHz, 802.11(a) 36 Mbps, Ch 116, Mid Channel 5580 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Power (dBm/MHz) | Duty Cycle Factor (dB) | | Density (dBm/MHz) | Limit (dBm / Ref BW | Results |
| | 3.967 | 0 | | 4 | 11 | Pass |



| 20 MHz, 802.11(a) 36 Mbps, Ch 140, High Channel 5700 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Power (dBm/MHz) | Duty Cycle Factor (dB) | | Density (dBm/MHz) | Limit (dBm / Ref BW | Results |
| | 4.999 | 0 | | 5 | 11 | Pass |




| 20 MHz, 802.11(a) 36 Mbps, Ch 149, Low Channel 5745 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Power (dBm/MHz) | Duty Cycle Factor (dB) | | Density (dBm/MHz) | Limit (dBm / Ref BW | Results |
| | 2.255 | 0 | | 2.3 | 30 | Pass |



# MAXIMUM POWER SPECTRAL DENSITY

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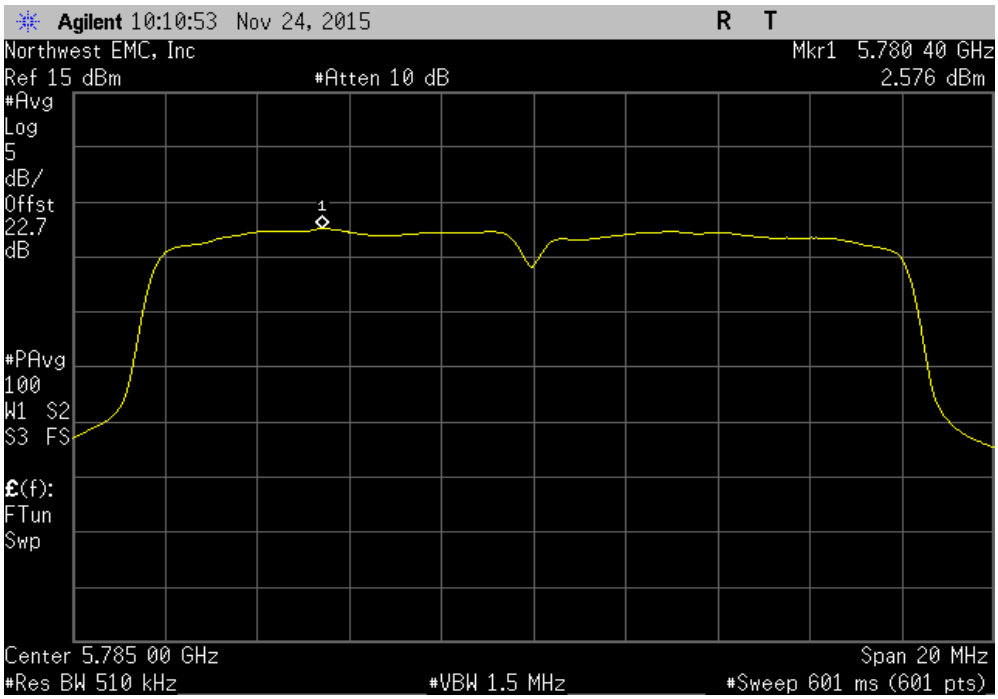
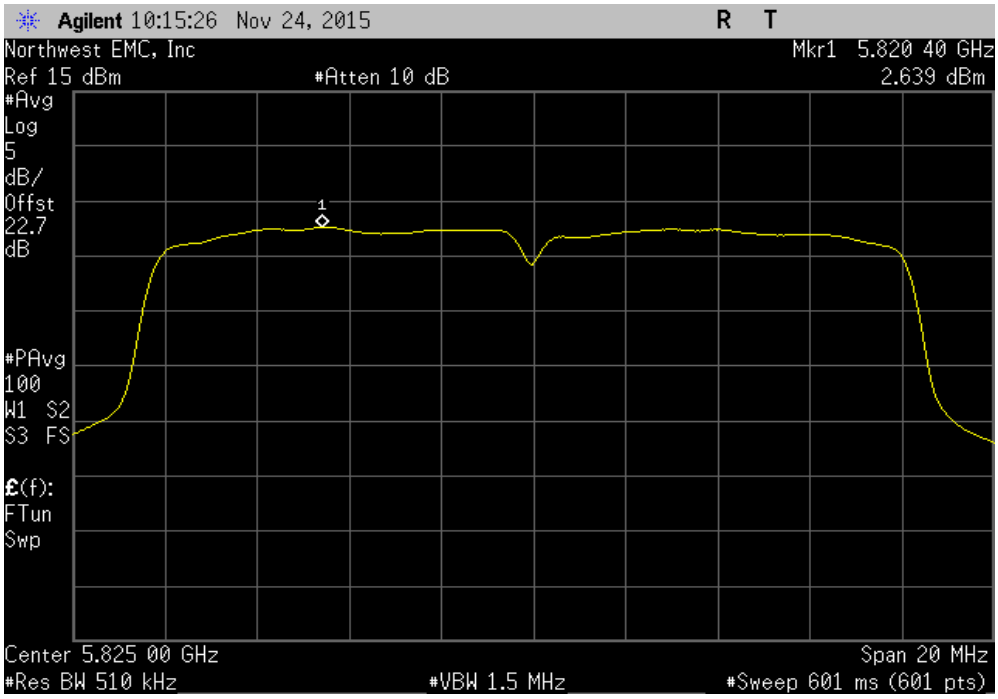
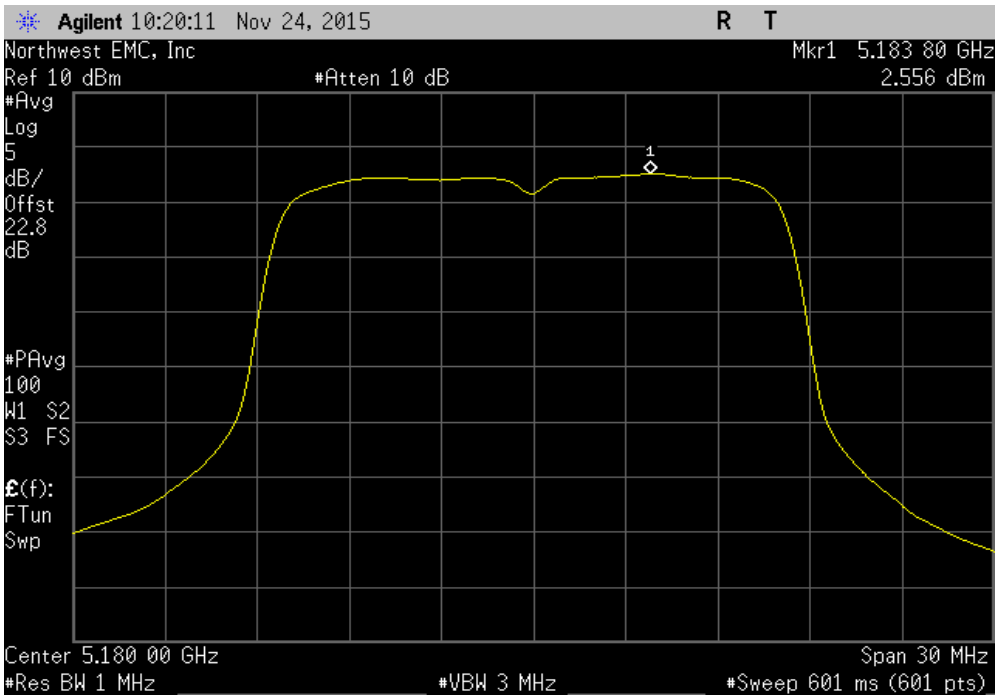
| 20 MHz, 802.11(a) 36 Mbps, Ch 157, Mid Channel 5785 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Power (dBm/MHz) | Duty Cycle Factor (dB) | | Density (dBm/MHz) | Limit (dBm / Ref BW | Results |
| | 2.576 | 0 | | 2.6 | 30 | Pass |



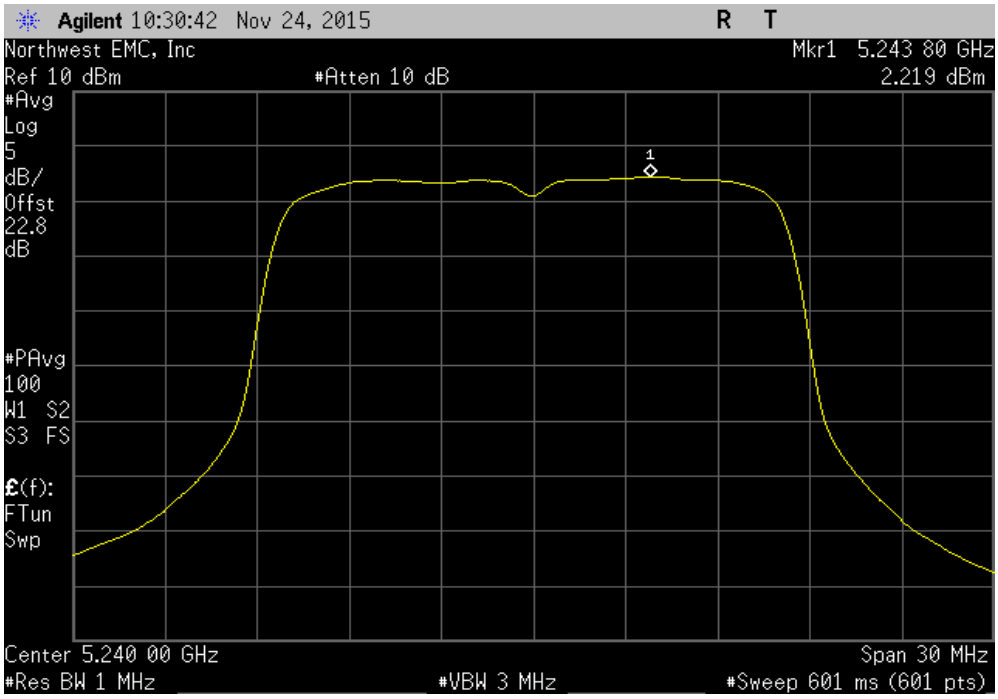

| 20 MHz, 802.11(a) 36 Mbps, Ch 165, High Channel 5825 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Power (dBm/MHz) | Duty Cycle Factor (dB) | | Density (dBm/MHz) | Limit (dBm / Ref BW | Results |
| | 2.639 | 0 | | 2.6 | 30 | Pass |



| 20 MHz, 802.11(a) 54 Mbps, Ch 36, Low Channel 5180 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Power (dBm/MHz) | Duty Cycle Factor (dB) | | Density (dBm/MHz) | Limit (dBm / Ref BW | Results |
| | 2.556 | 0 | | 2.6 | 11 | Pass |




| 20 MHz, 802.11(a) 54 Mbps, Ch 48, High Channel 5240 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Power (dBm/MHz) | Duty Cycle Factor (dB) | | Density (dBm/MHz) | Limit (dBm / Ref BW | Results |
| | 2.219 | 0 | | 2.2 | 11 | Pass |



# MAXIMUM POWER SPECTRAL DENSITY

NORTHWEST EMC

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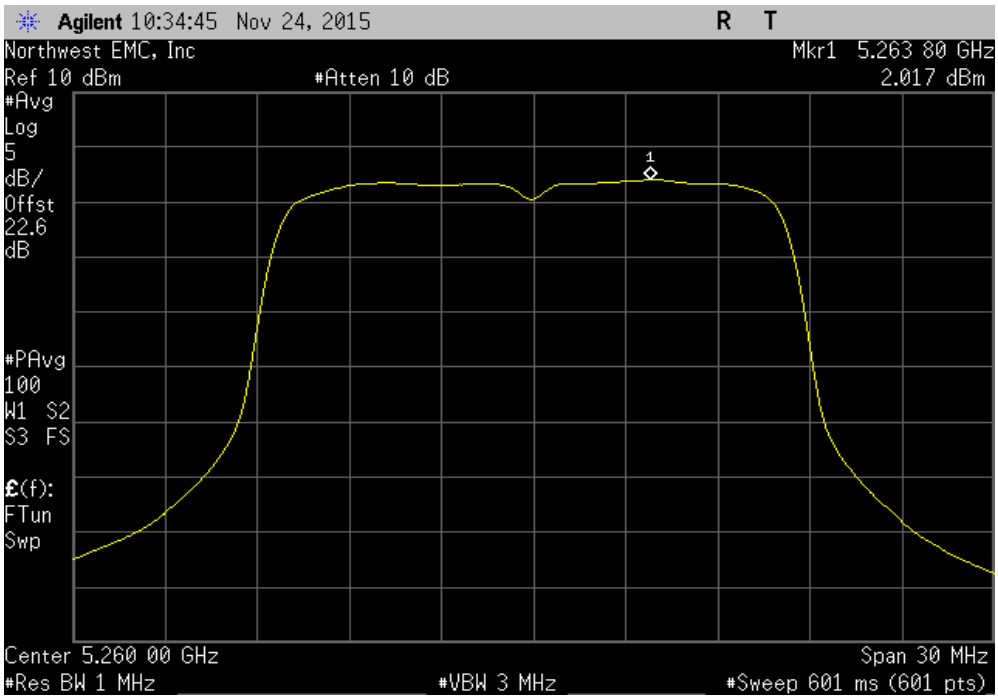
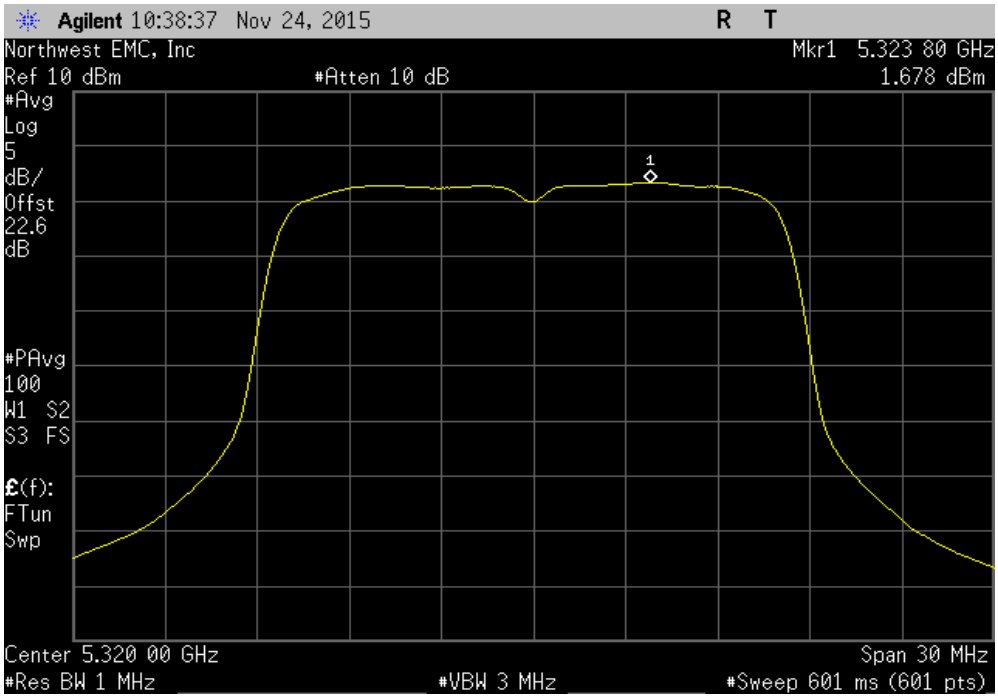
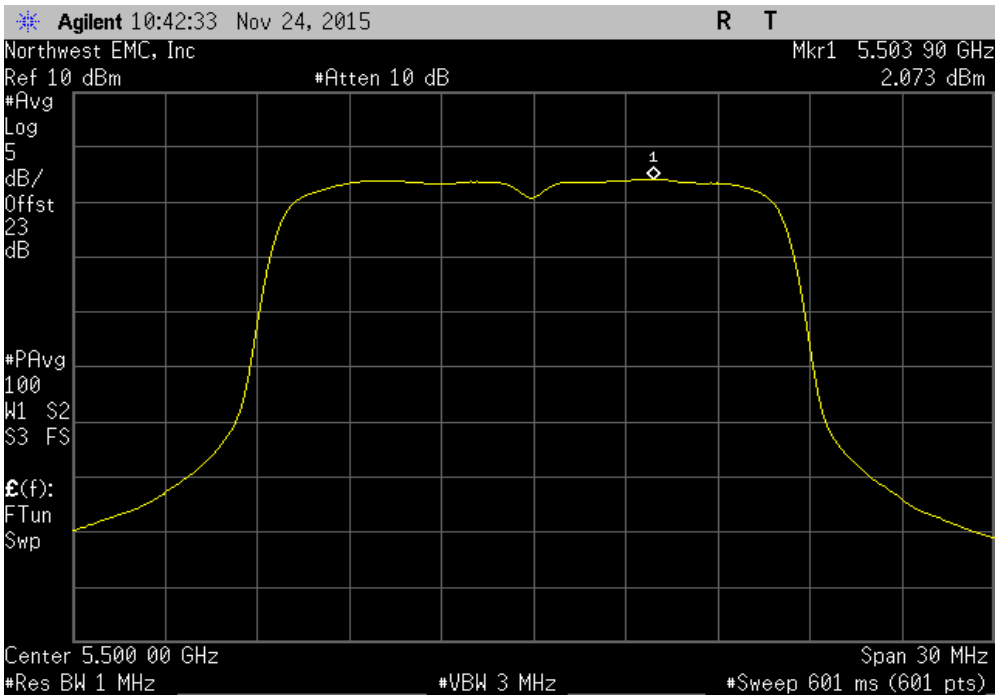
| 20 MHz, 802.11(a) 54 Mbps, Ch 52, Low Channel 5260 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Power (dBm/MHz) | Duty Cycle Factor (dB) | | Density (dBm/MHz) | Limit (dBm / Ref BW | Results |
| | 2.017 | 0 | | 2 | 11 | Pass |



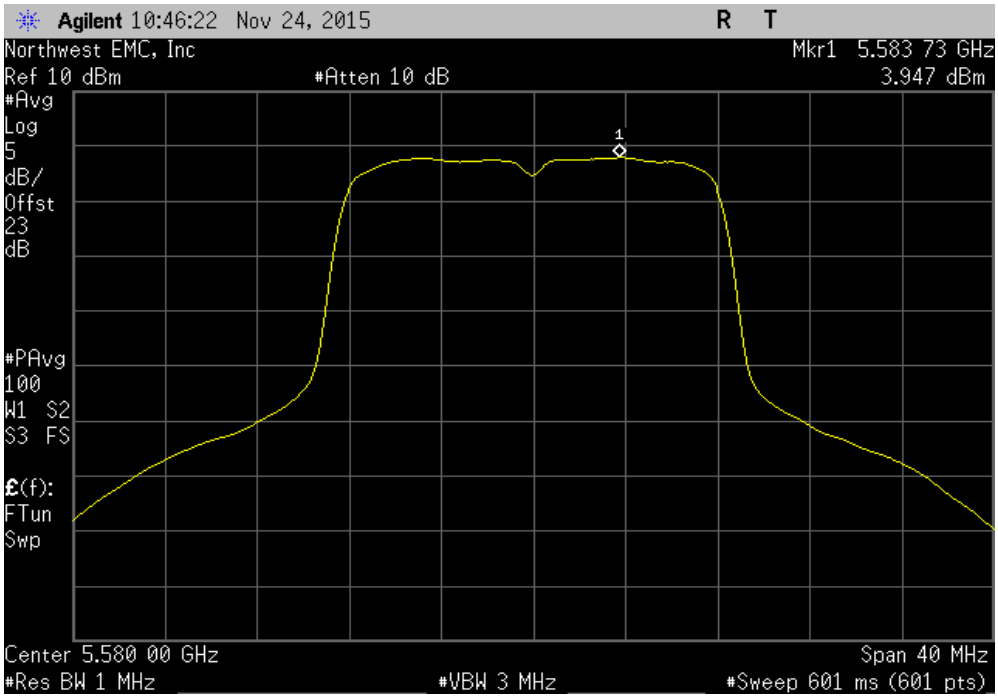

| 20 MHz, 802.11(a) 54 Mbps, Ch 64, High Channel 5320 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Power (dBm/MHz) | Duty Cycle Factor (dB) | | Density (dBm/MHz) | Limit (dBm / Ref BW | Results |
| | 1.678 | 0 | | 1.7 | 11 | Pass |



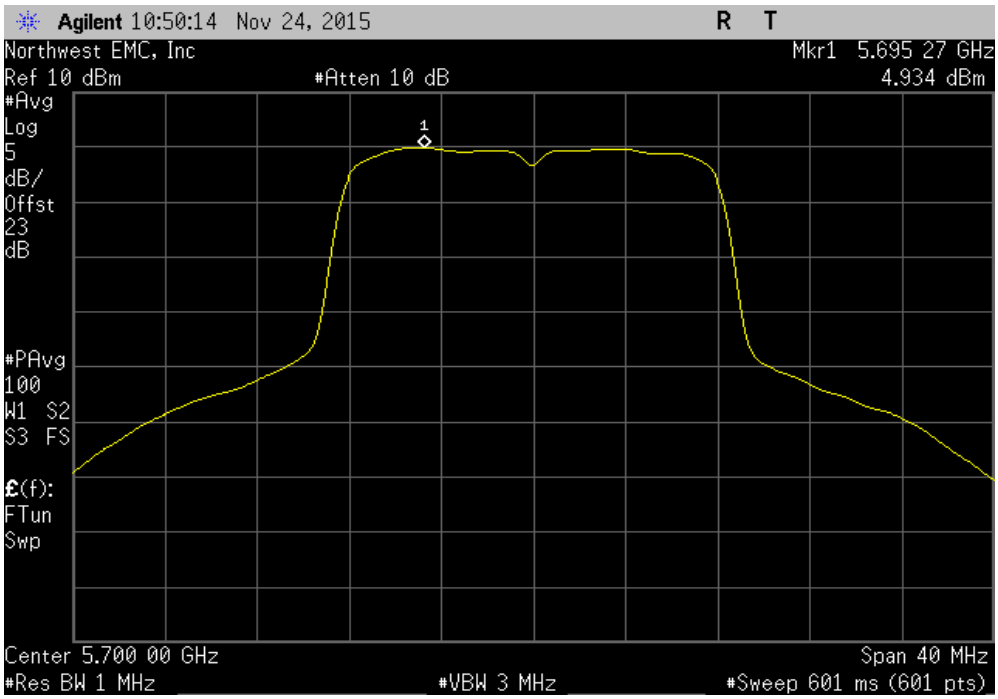
| 20 MHz, 802.11(a) 54 Mbps, Ch 100, Low Channel 5500 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Power (dBm/MHz) | Duty Cycle Factor (dB) | | Density (dBm/MHz) | Limit (dBm / Ref BW | Results |
| | 2.073 | 0 | | 2.1 | 11 | Pass |



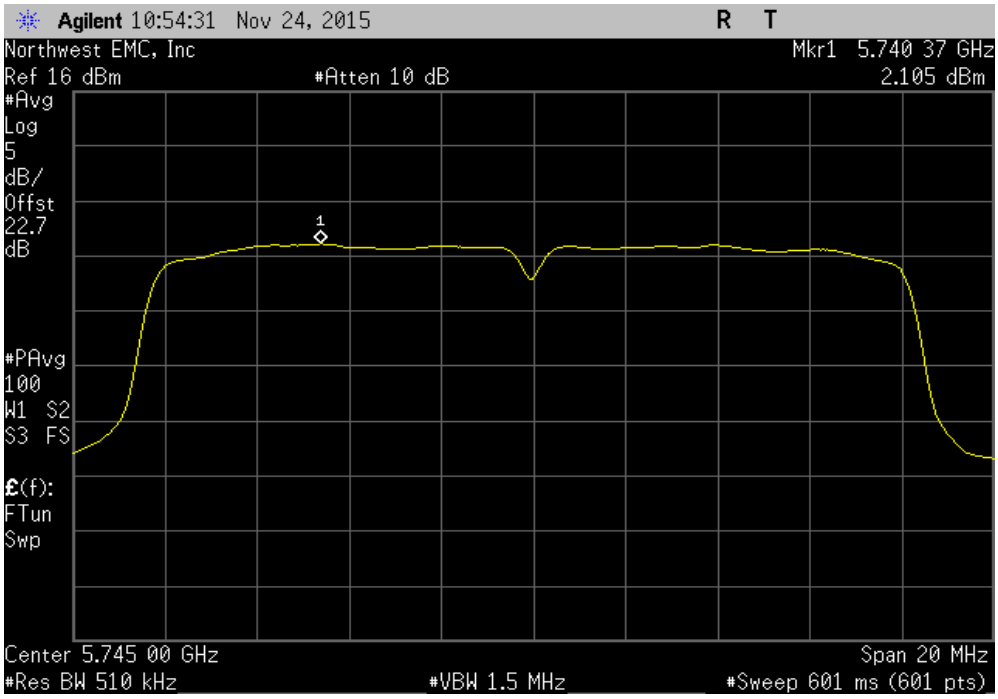

| 20 MHz, 802.11(a) 54 Mbps, Ch 116, Mid Channel 5580 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Power (dBm/MHz) | Duty Cycle Factor (dB) | | Density (dBm/MHz) | Limit (dBm / Ref BW | Results |
| | 3.947 | 0 | | 3.9 | 11 | Pass |



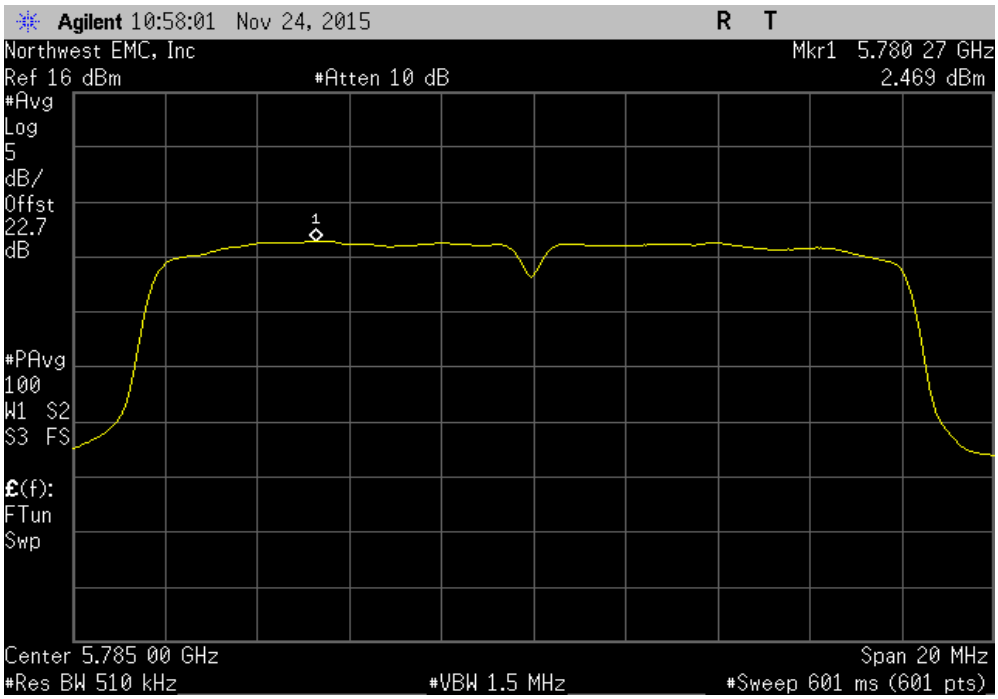
| 20 MHz, 802.11(a) 54 Mbps, Ch 140, High Channel 5700 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Power (dBm/MHz) | Duty Cycle Factor (dB) | | Density (dBm/MHz) | Limit (dBm / Ref BW | Results |
| | 4.934 | 0 | | 4.9 | 11 | Pass |



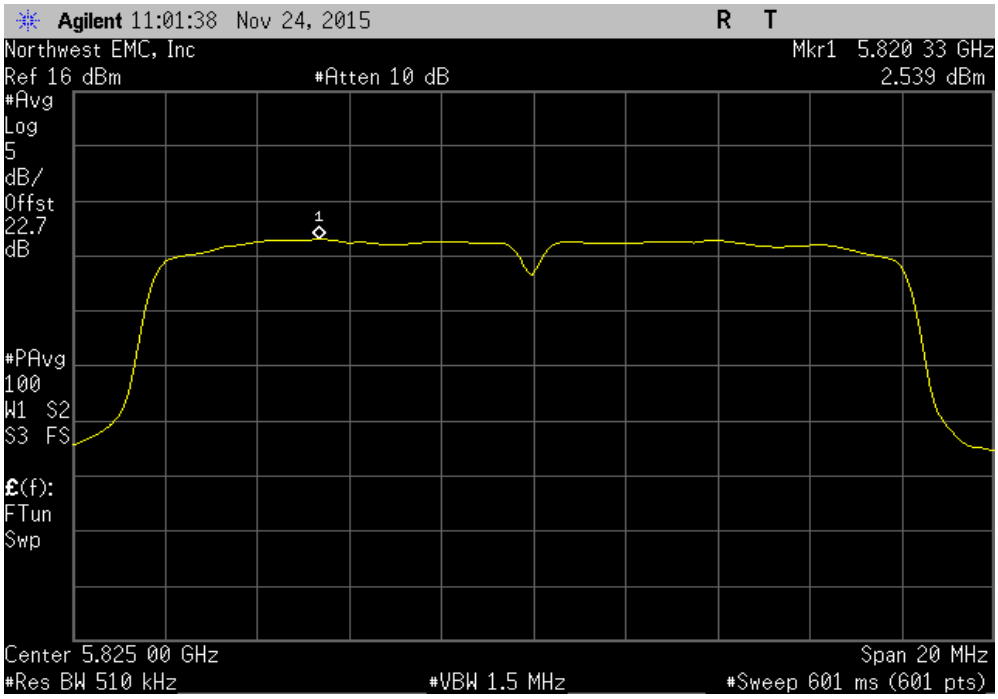

| 20 MHz, 802.11(a) 54 Mbps, Ch 149, Low Channel 5745 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Power (dBm/MHz) | Duty Cycle Factor (dB) | | Density (dBm/MHz) | Limit (dBm / Ref BW | Results |
| | 2.105 | 0 | | 2.1 | 30 | Pass |



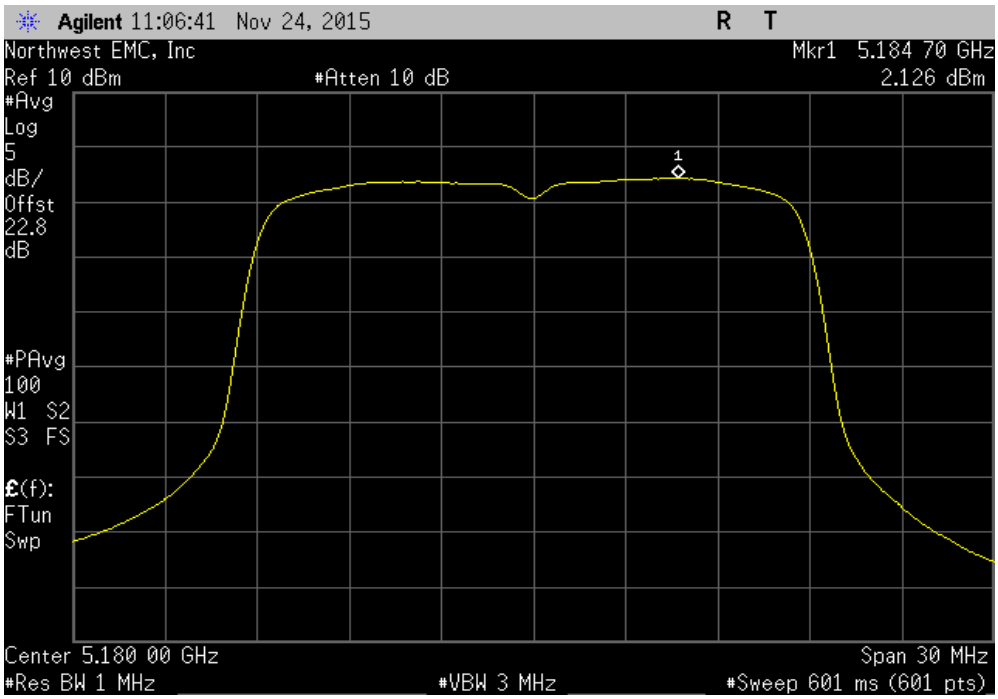
| 20 MHz, 802.11(a) 54 Mbps, Ch 157, Mid Channel 5785 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Power (dBm/MHz) | Duty Cycle Factor (dB) | | Density (dBm/MHz) | Limit (dBm / Ref BW | Results |
| | 2.469 | 0 | | 2.5 | 30 | Pass |



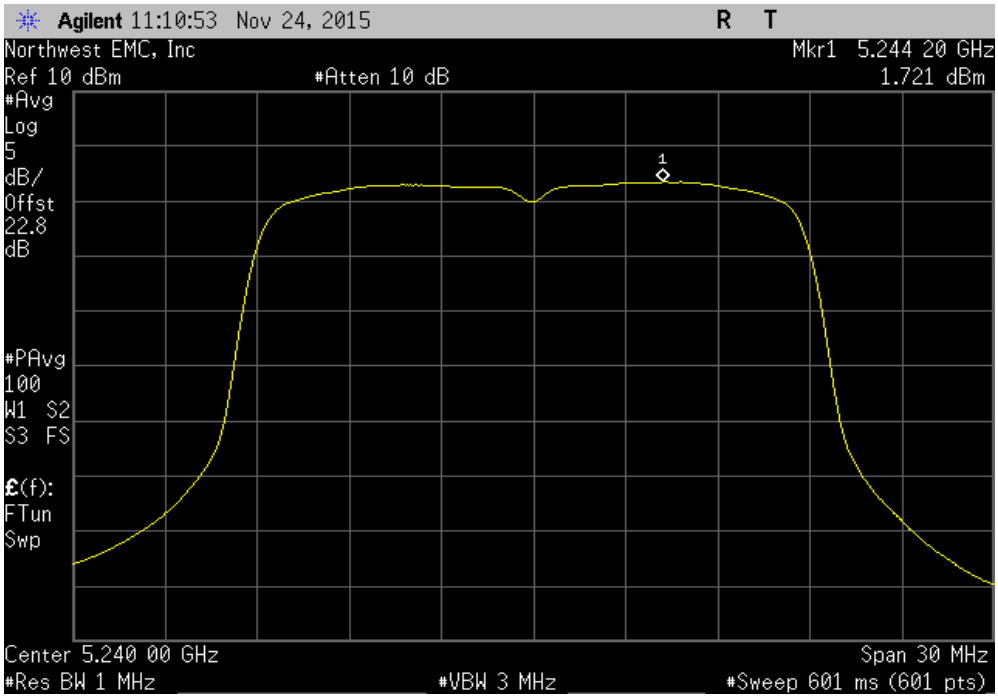

| 20 MHz, 802.11(a) 54 Mbps, Ch 165, High Channel 5825 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Power (dBm/MHz) | Duty Cycle Factor (dB) | | Density (dBm/MHz) | Limit (dBm / Ref BW | Results |
| | 2.539 | 0 | | 2.5 | 30 | Pass |



| 20 MHz, 802.11(n) MCS0, Ch 36, Low Channel 5180 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Power (dBm/MHz) | Duty Cycle Factor (dB) | | Density (dBm/MHz) | Limit (dBm / Ref BW | Results |
| | 2.126 | 0 | | 2.1 | 17 | Pass |




| 20 MHz, 802.11(n) MCS0, Ch 48, High Channel 5240 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Power (dBm/MHz) | Duty Cycle Factor (dB) | | Density (dBm/MHz) | Limit (dBm / Ref BW | Results |
| | 1.721 | 0 | | 1.7 | 17 | Pass |



# MAXIMUM POWER SPECTRAL DENSITY

NORTHWEST EMC

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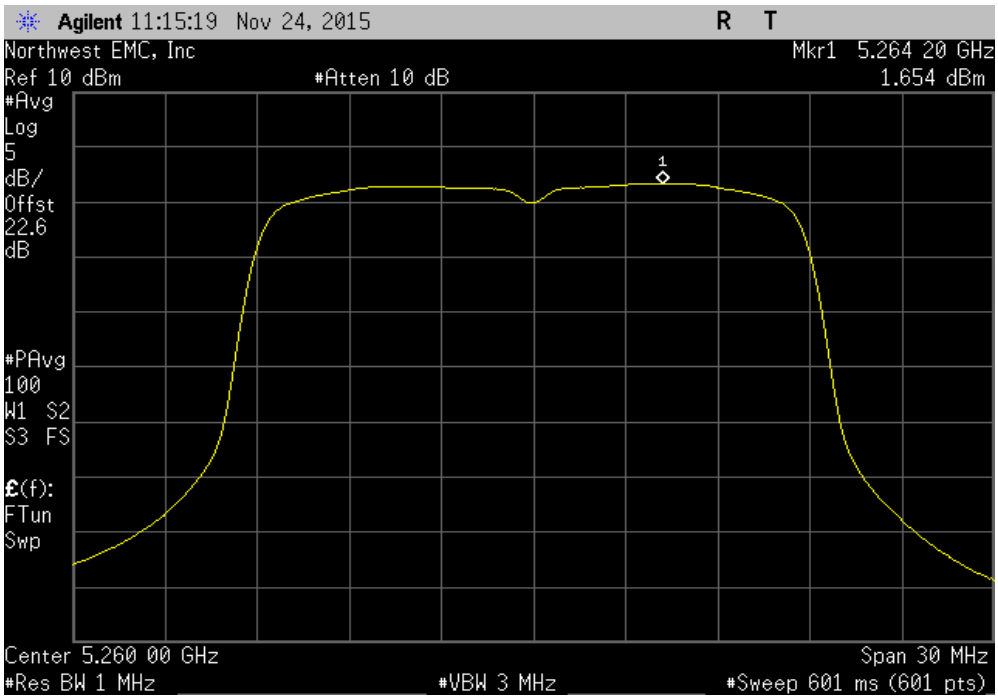
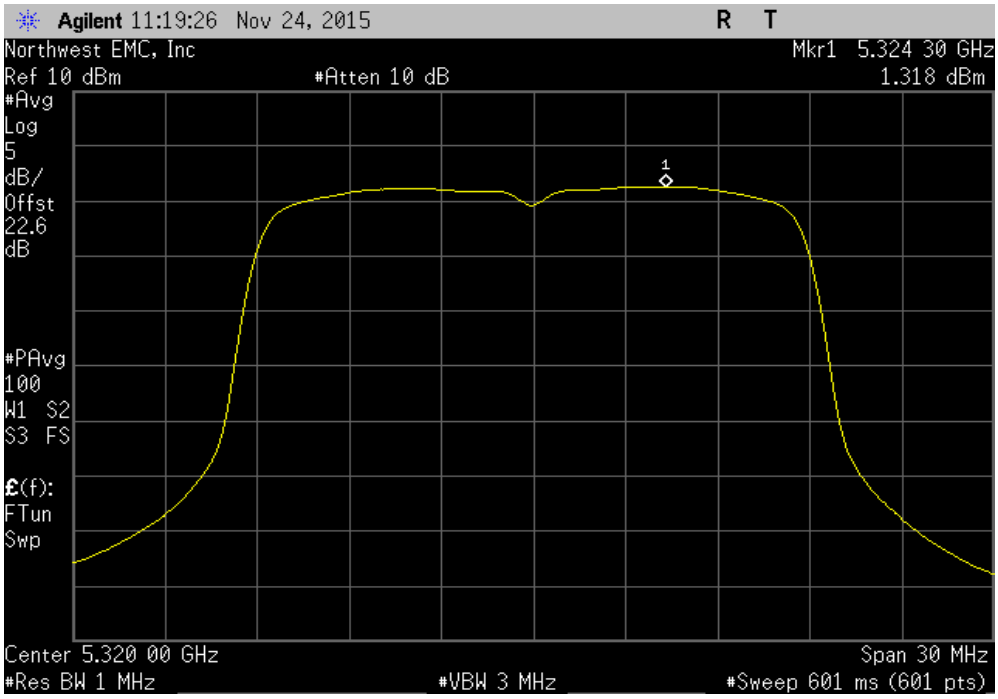
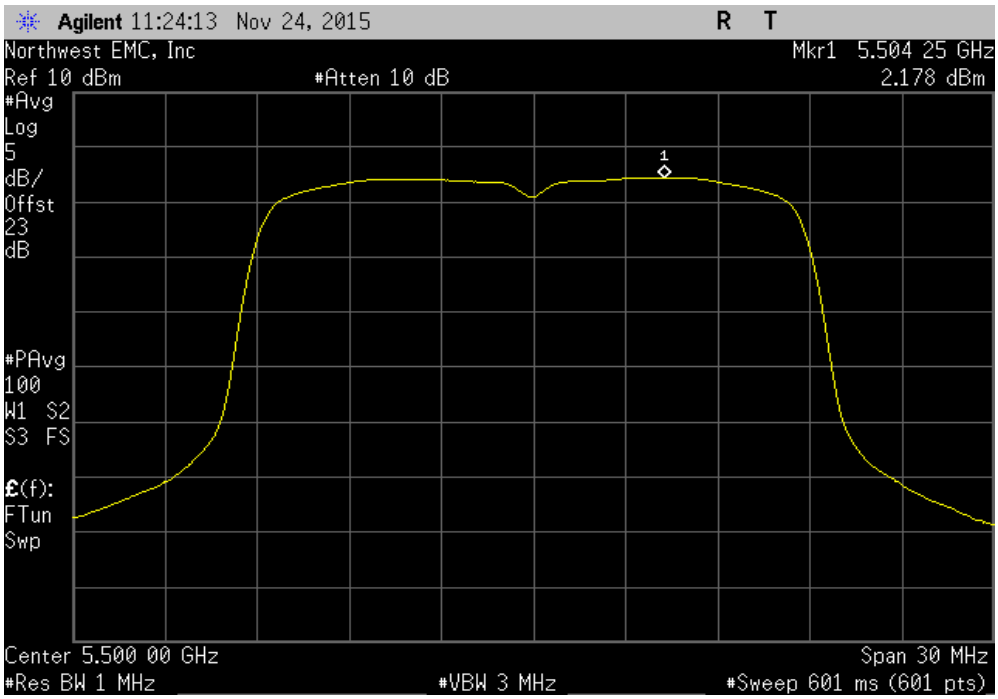
| 20 MHz, 802.11(n) MCS0, Ch 52, Low Channel 5260 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Power (dBm/MHz) | Duty Cycle Factor (dB) | | Density (dBm/MHz) | Limit (dBm / Ref BW | Results |
| | 1.654 | 0 | | 1.7 | 11 | Pass |



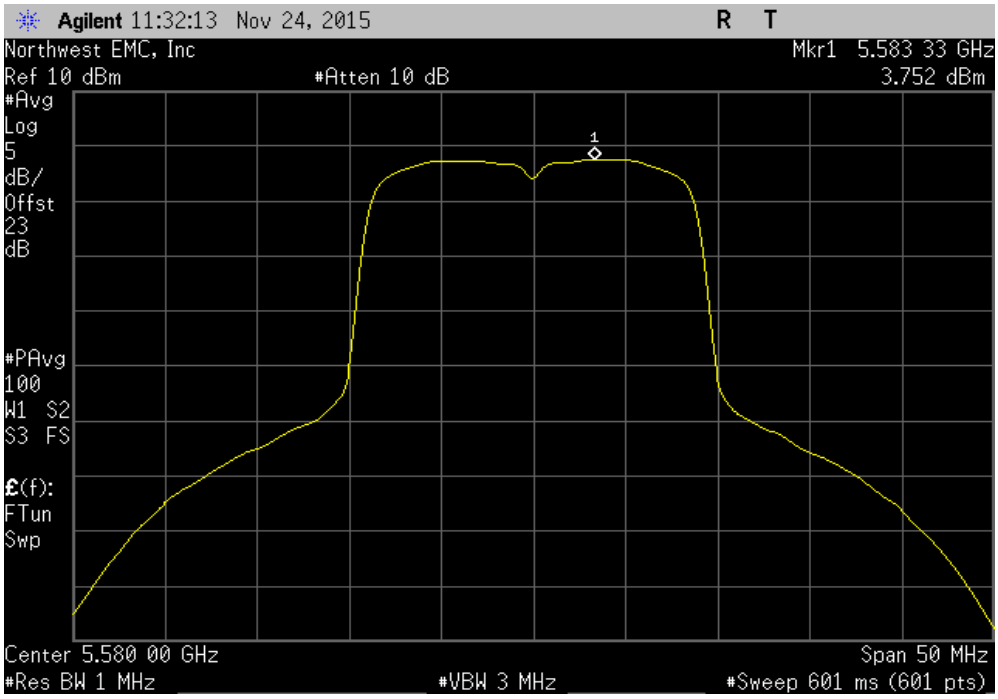

| 20 MHz, 802.11(n) MCS0, Ch 64, High Channel 5320 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Power (dBm/MHz) | Duty Cycle Factor (dB) | | Density (dBm/MHz) | Limit (dBm / Ref BW | Results |
| | 1.318 | 0 | | 1.3 | 11 | Pass |



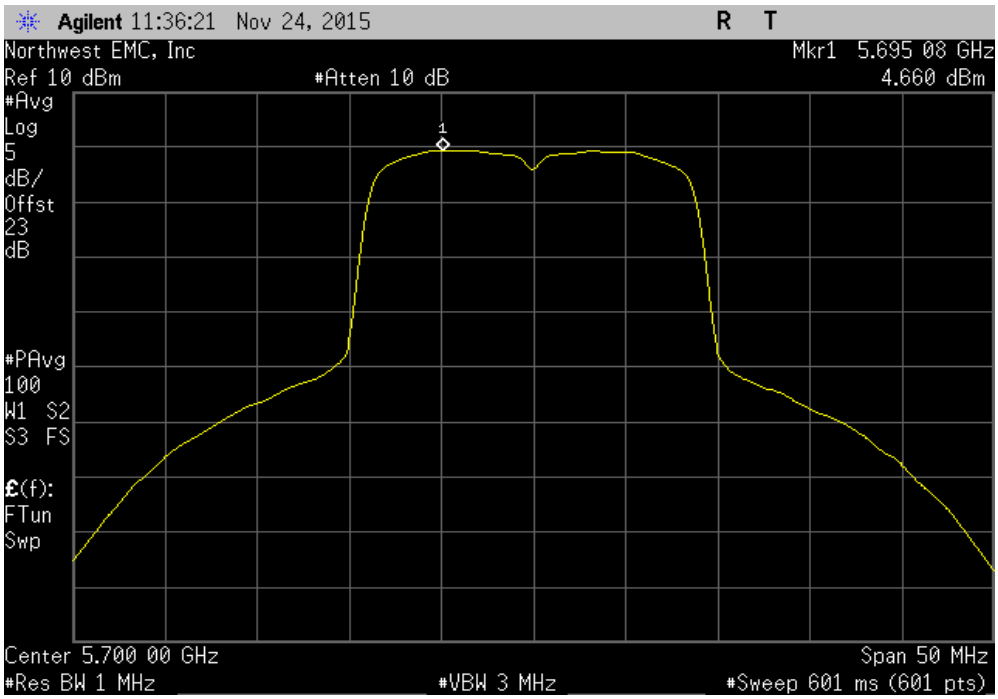
| 20 MHz, 802.11(n) MCS0, Ch 100, Low Channel 5500 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Power (dBm/MHz) | Duty Cycle Factor (dB) | | Density (dBm/MHz) | Limit (dBm / Ref BW | Results |
| | 2.178 | 0 | | 2.2 | 11 | Pass |



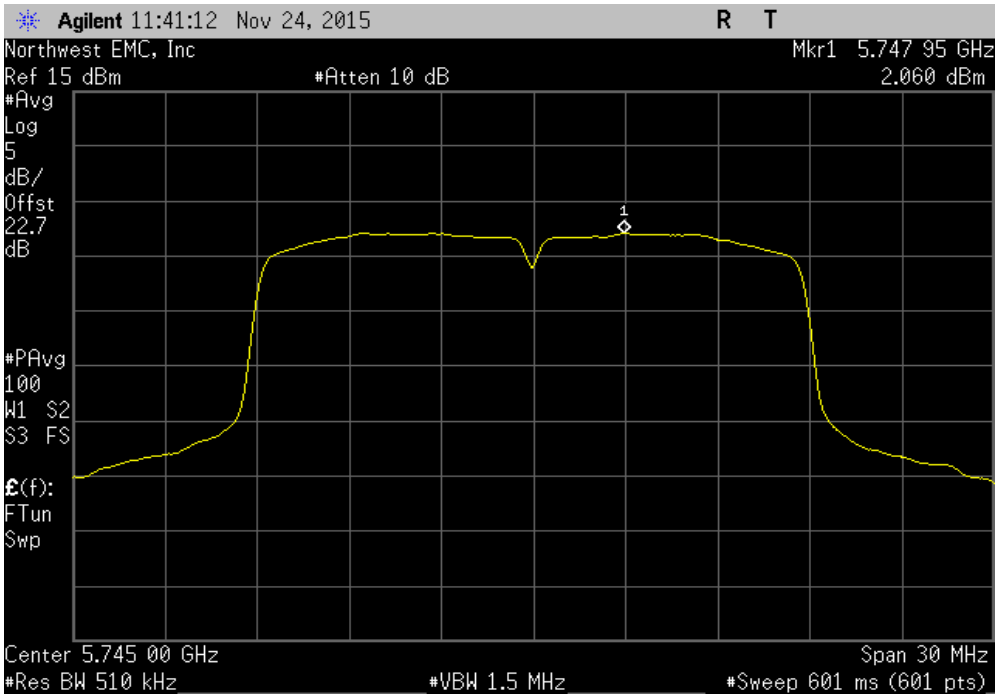

| 20 MHz, 802.11(n) MCS0, Ch 116, Mid Channel 5580 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Power (dBm/MHz) | Duty Cycle Factor (dB) | | Density (dBm/MHz) | Limit (dBm / Ref BW | Results |
| | 3.752 | 0 | | 3.8 | 11 | Pass |



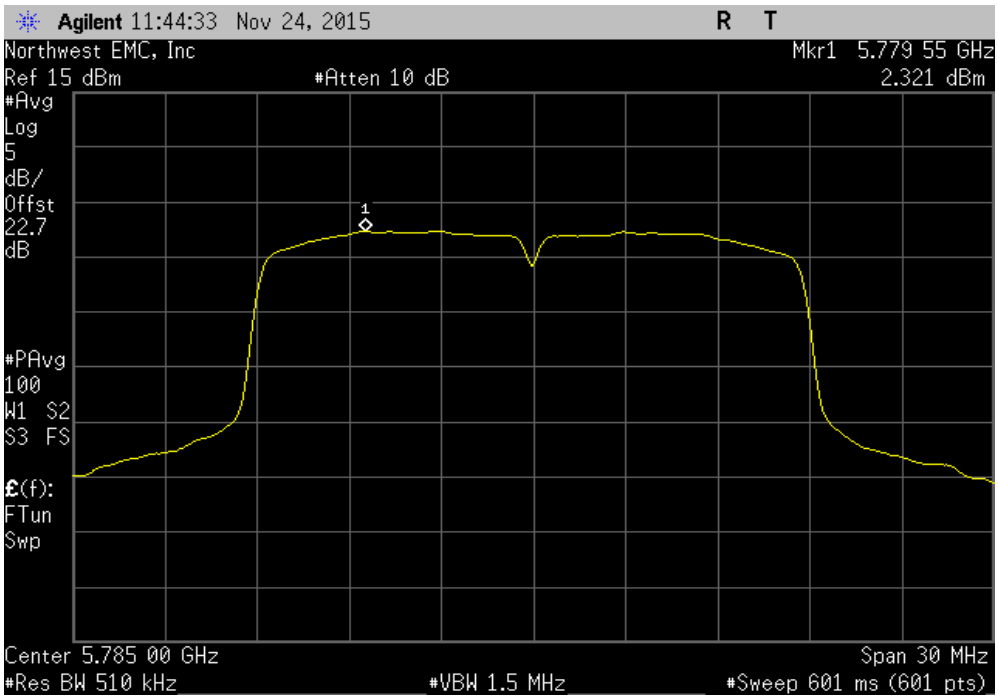
| 20 MHz, 802.11(n) MCS0, Ch 140, High Channel 5700 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Power (dBm/MHz) | Duty Cycle Factor (dB) | | Density (dBm/MHz) | Limit (dBm / Ref BW | Results |
| | 4.66 | 0 | | 4.7 | 11 | Pass |



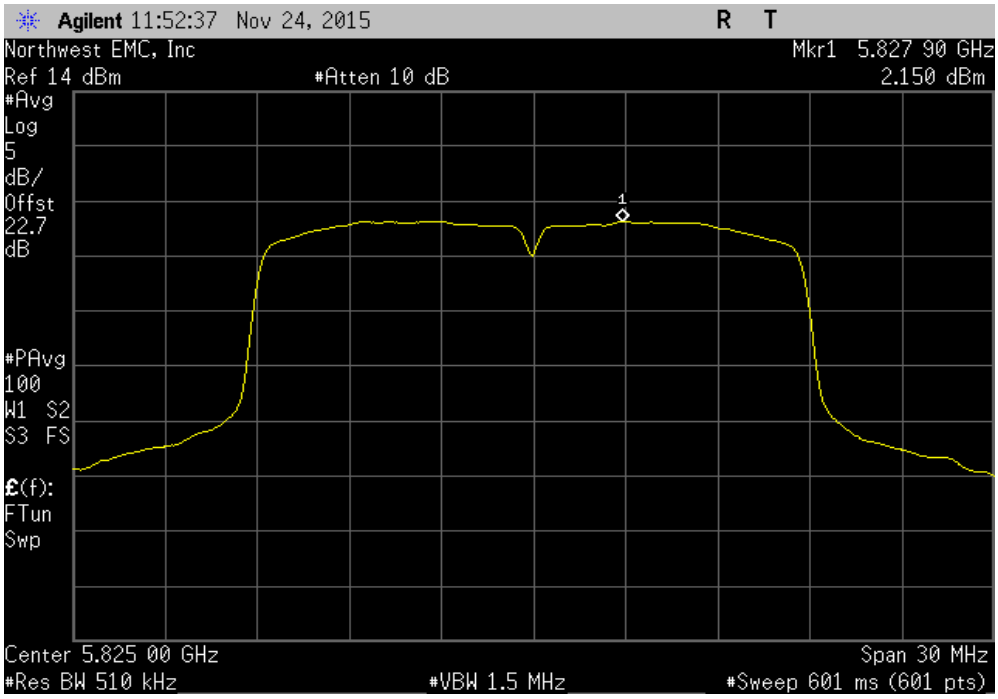

| 20 MHz, 802.11(n) MCS0, Ch 149, Low Channel 5745 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Power (dBm/MHz) | Duty Cycle Factor (dB) | | Density (dBm/MHz) | Limit (dBm / Ref BW | Results |
| | 2.06 | 0 | | 2.1 | 30 | Pass |



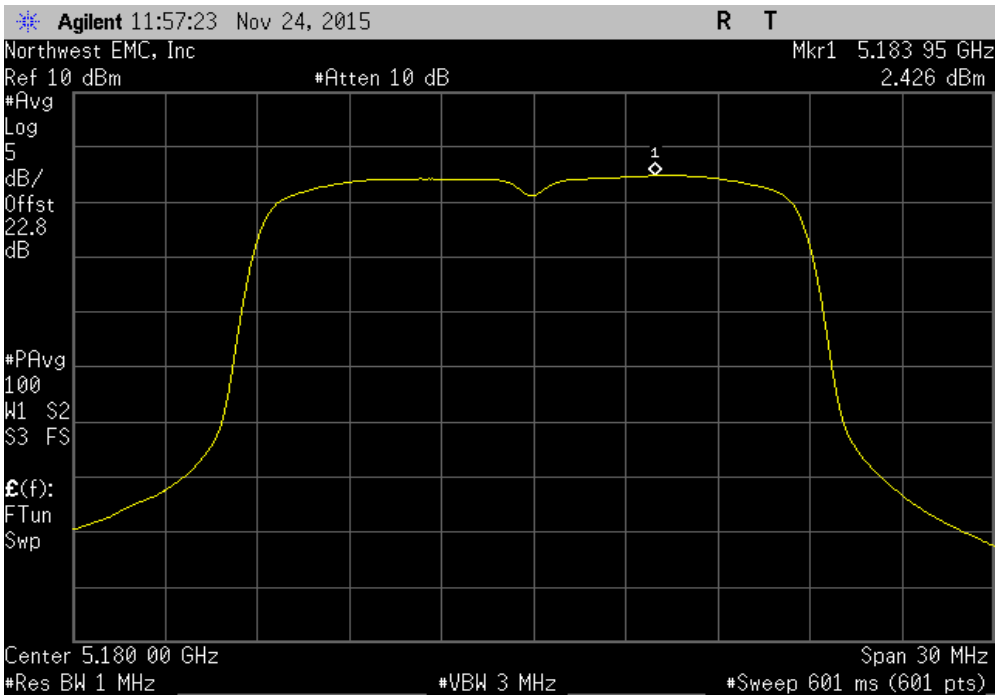
| 20 MHz, 802.11(n) MCS0, Ch 157, Mid Channel 5785 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Power (dBm/MHz) | Duty Cycle Factor (dB) | | Density (dBm/MHz) | Limit (dBm / Ref BW | Results |
| | 2.321 | 0 | | 2.3 | 30 | Pass |



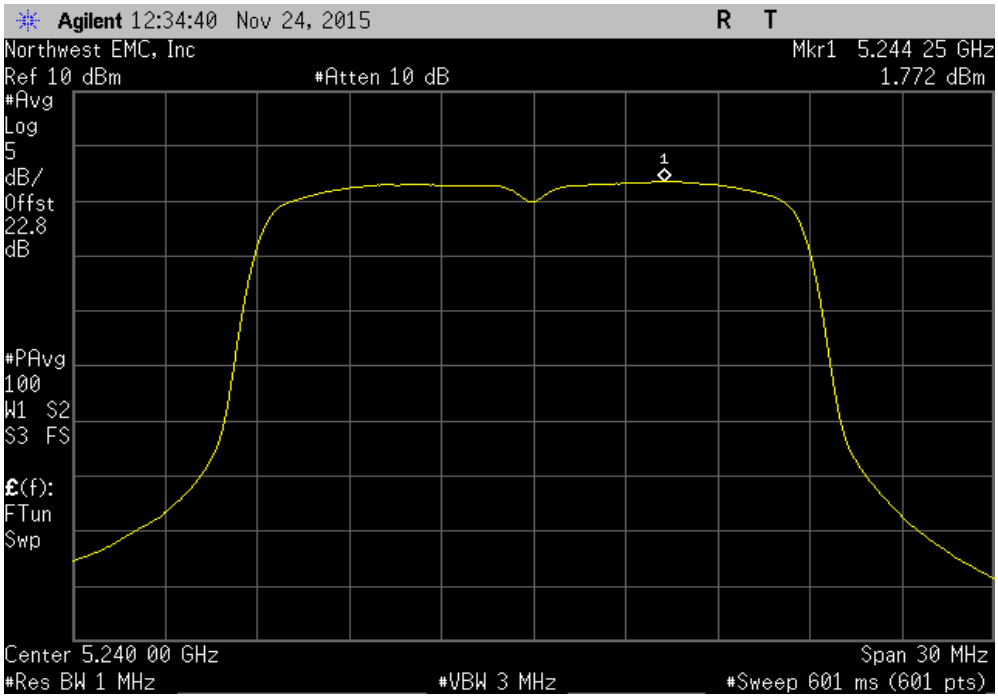

| 20 MHz, 802.11(n) MCS0, Ch 165, High Channel 5825 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Power (dBm/MHz) | Duty Cycle Factor (dB) | | Density (dBm/MHz) | Limit (dBm / Ref BW | Results |
| | 2.15 | 0 | | 2.2 | 30 | Pass |



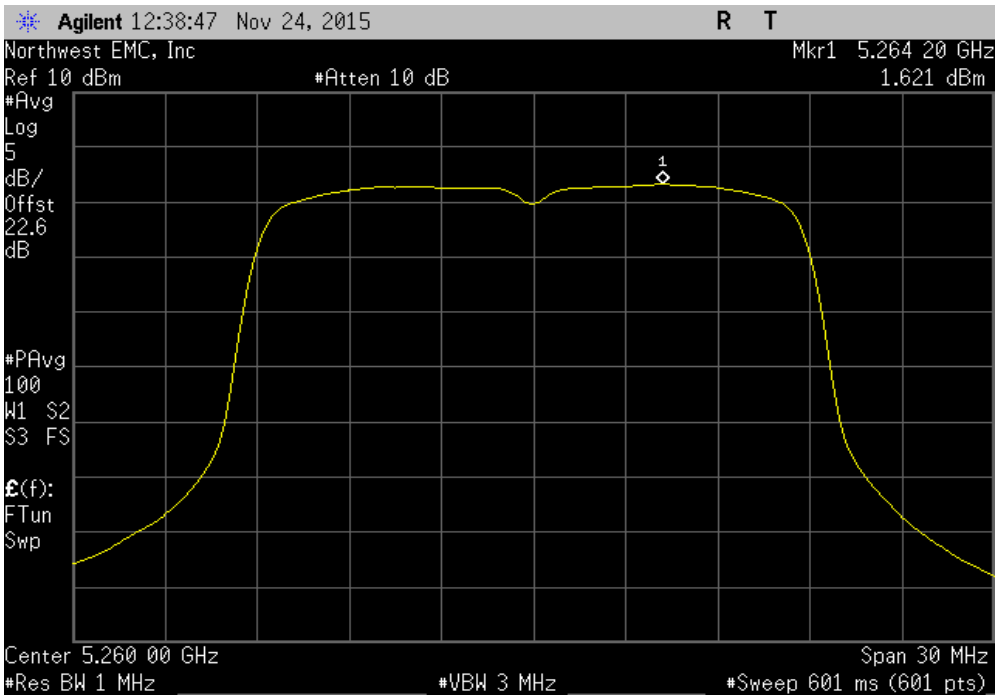
| 20 MHz, 802.11(n) MCS7, Ch 36, Low Channel 5180 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Power (dBm/MHz) | Duty Cycle Factor (dB) | | Density (dBm/MHz) | Limit (dBm / Ref BW | Results |
| | 2.426 | 0 | | 2.4 | 11 | Pass |



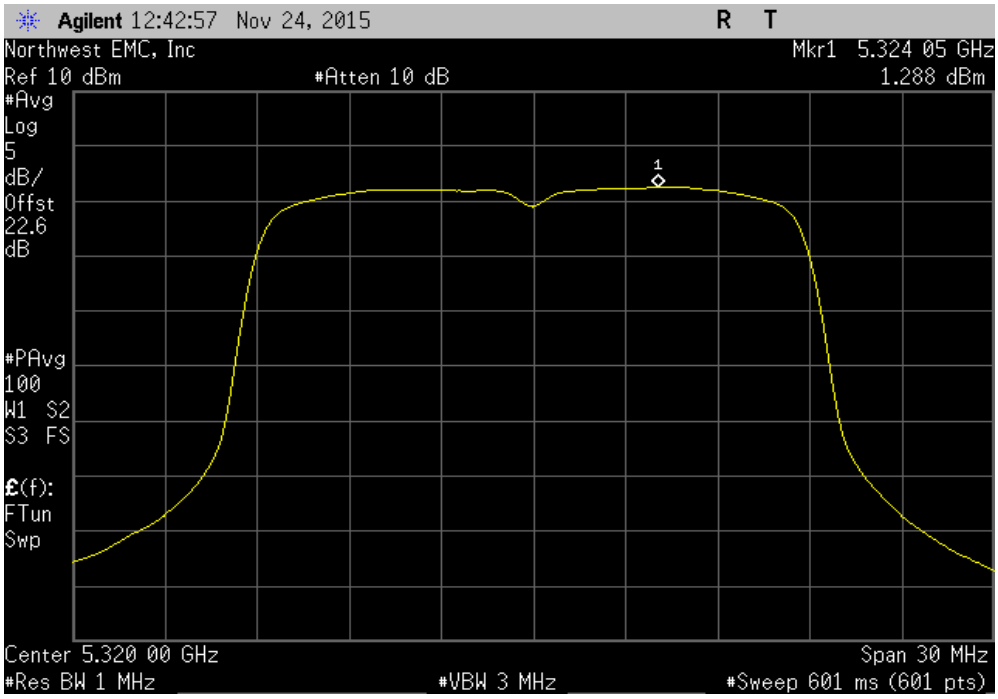

| 20 MHz, 802.11(n) MCS7, Ch 48, High Channel 5240 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Power (dBm/MHz) | Duty Cycle Factor (dB) | | Density (dBm/MHz) | Limit (dBm / Ref BW | Results |
| | 1.772 | 0 | | 1.8 | 11 | Pass |



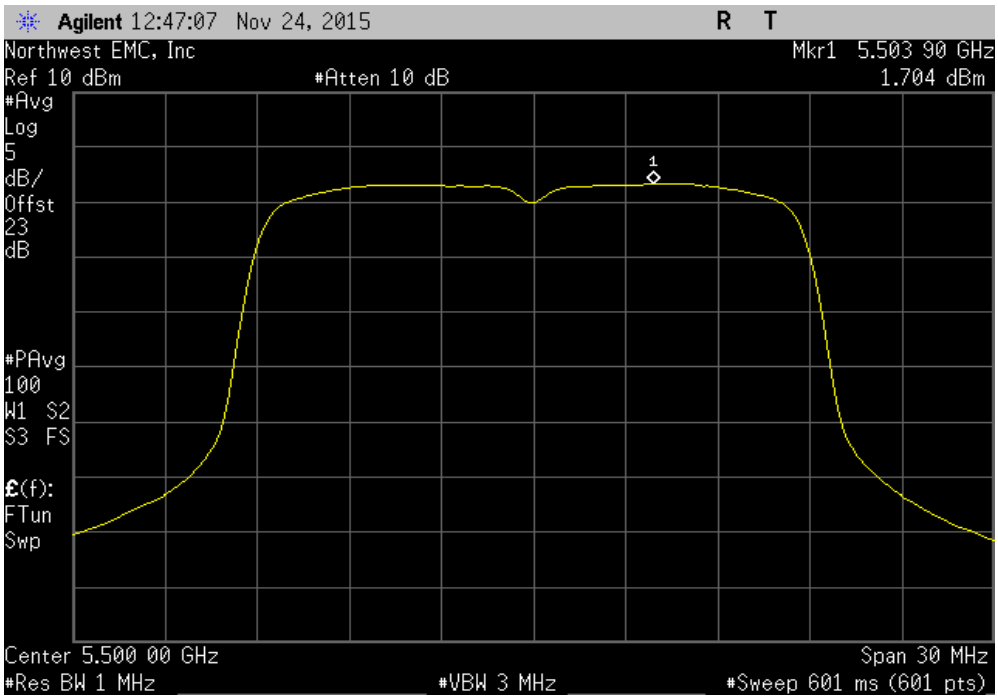
| 20 MHz, 802.11(n) MCS7, Ch 52, Low Channel 5260 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Power (dBm/MHz) | Duty Cycle Factor (dB) | | Density (dBm/MHz) | Limit (dBm / Ref BW | Results |
| | 1.621 | 0 | | 1.6 | 11 | Pass |



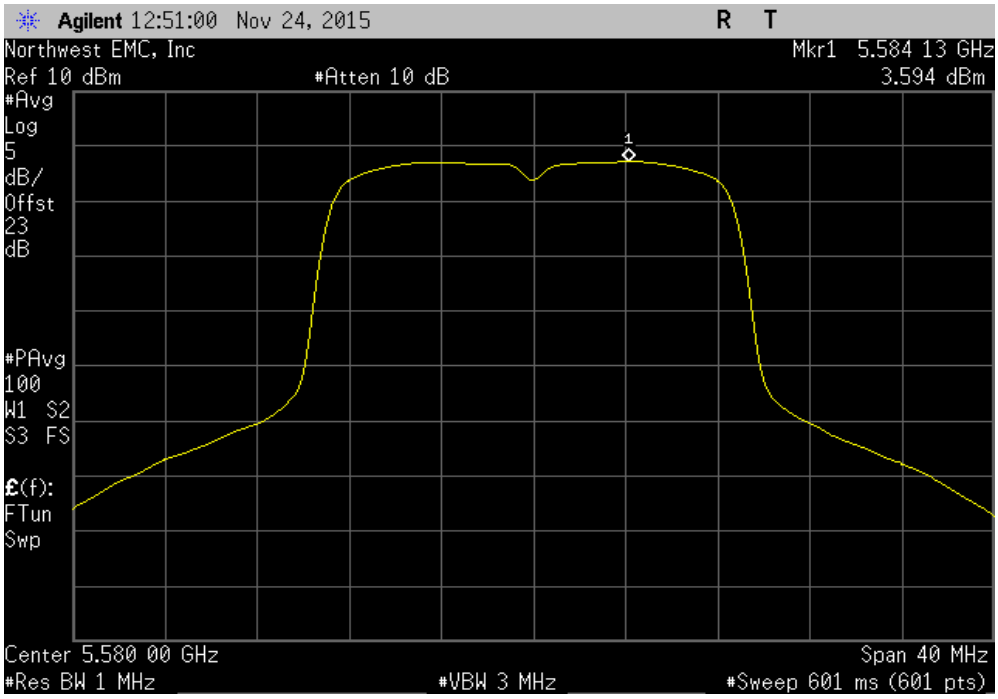

| 20 MHz, 802.11(n) MCS7, Ch 64, High Channel 5320 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Power (dBm/MHz) | Duty Cycle Factor (dB) | | Density (dBm/MHz) | Limit (dBm / Ref BW | Results |
| | 1.288 | 0 | | 1.3 | 11 | Pass |



| 20 MHz, 802.11(n) MCS7, Ch 100, Low Channel 5500 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Power (dBm/MHz) | Duty Cycle Factor (dB) | | Density (dBm/MHz) | Limit (dBm / Ref BW | Results |
| | 1.704 | 0 | | 1.7 | 11 | Pass |




| 20 MHz, 802.11(n) MCS7, Ch 116, Mid Channel 5580 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Power (dBm/MHz) | Duty Cycle Factor (dB) | | Density (dBm/MHz) | Limit (dBm / Ref BW | Results |
| | 3.594 | 0 | | 3.6 | 11 | Pass |



# MAXIMUM POWER SPECTRAL DENSITY

NORTHWEST EMC

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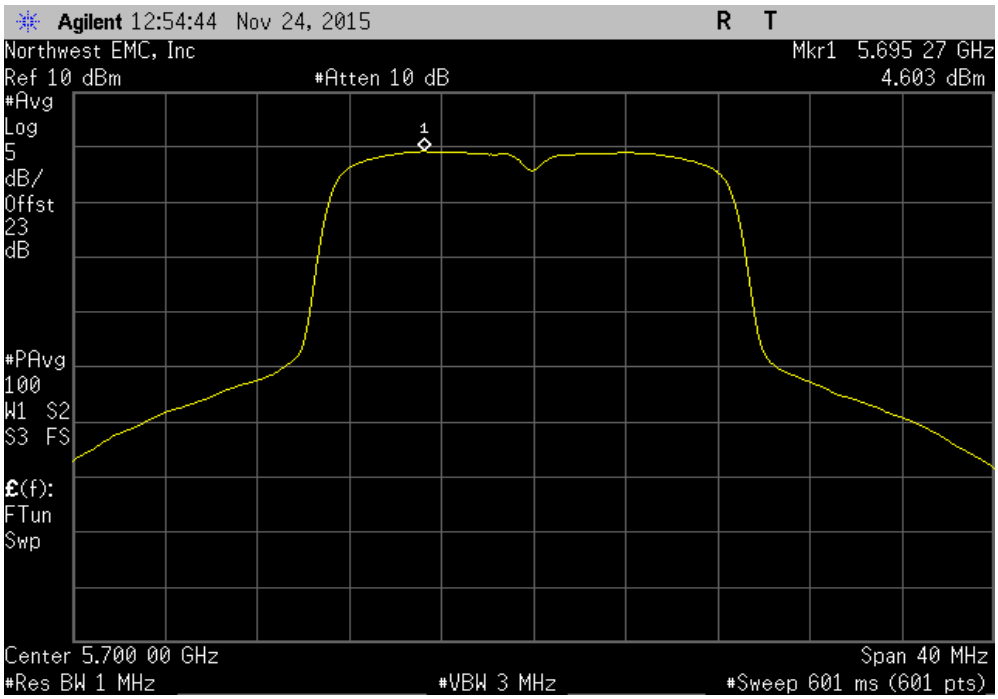
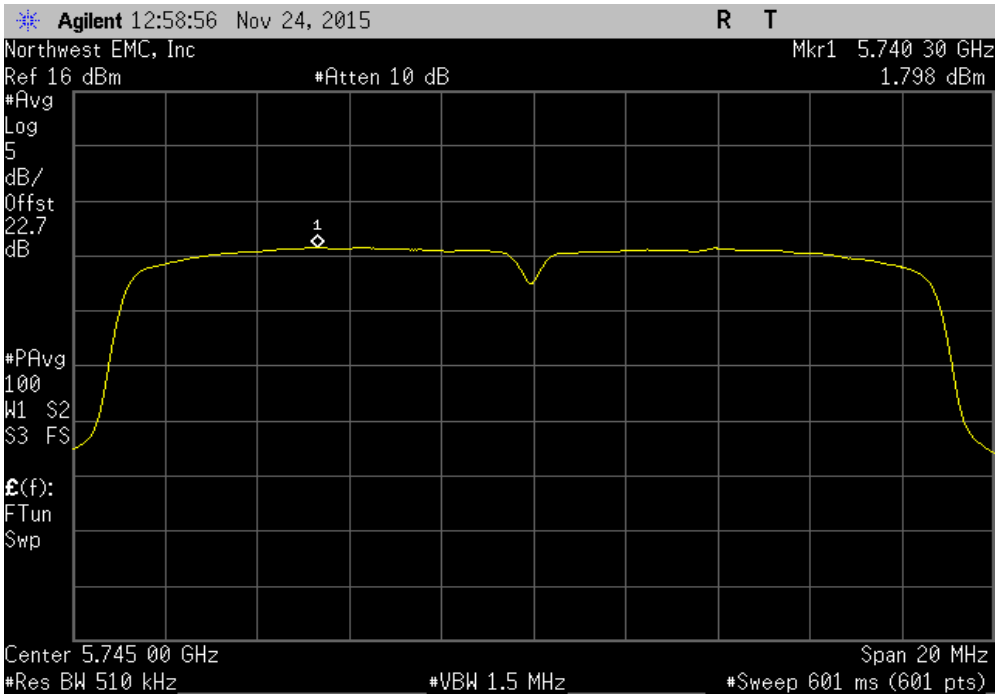
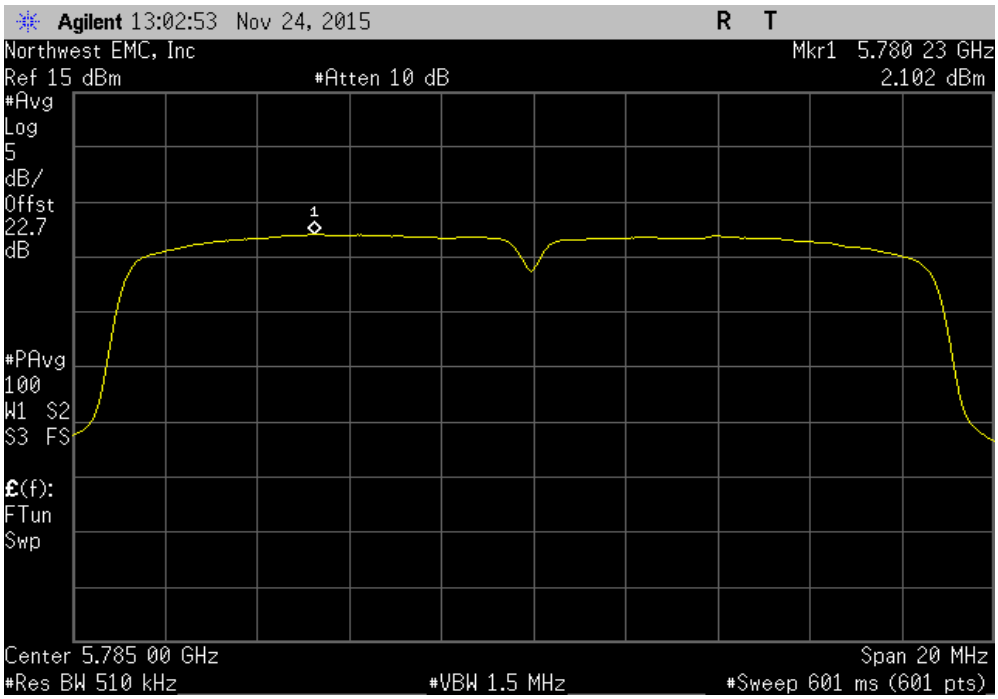
| 20 MHz, 802.11(n) MCS7, Ch 140, High Channel 5700 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Power (dBm/MHz) | Duty Cycle Factor (dB) | | Density (dBm/MHz) | Limit (dBm / Ref BW | Results |
| | 4.603 | 0 | | 4.6 | 11 | Pass |



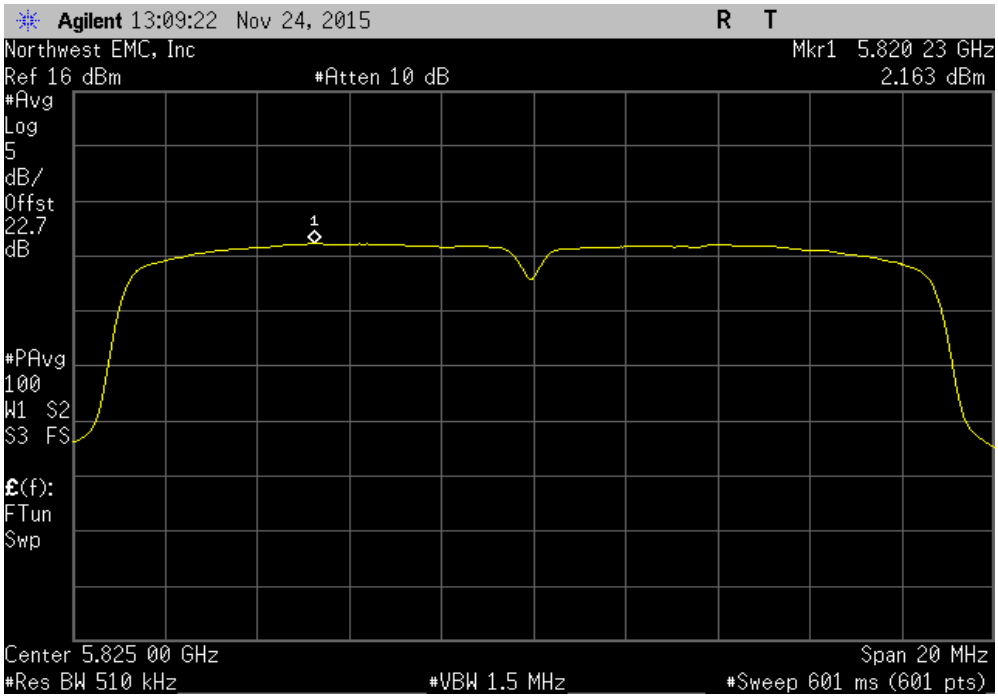

| 20 MHz, 802.11(n) MCS7, Ch 149, Low Channel 5745 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Power (dBm/MHz) | Duty Cycle Factor (dB) | | Density (dBm/MHz) | Limit (dBm / Ref BW | Results |
| | 1.798 | 0 | | 1.8 | 30 | Pass |



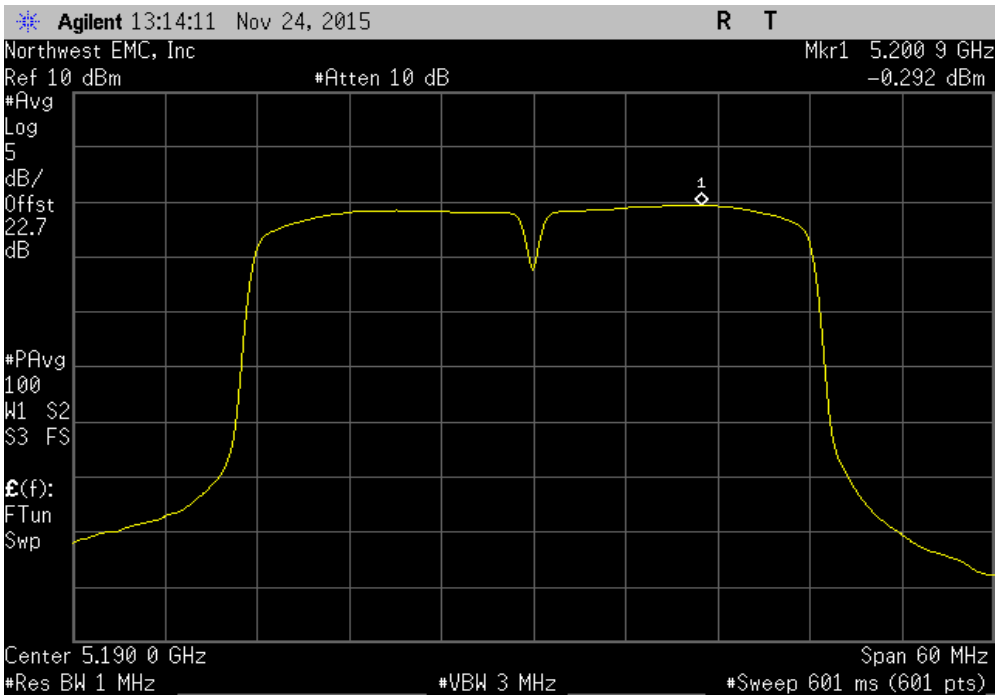
| 20 MHz, 802.11(n) MCS7, Ch 157, Mid Channel 5785 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Power (dBm/MHz) | Duty Cycle Factor (dB) | | Density (dBm/MHz) | Limit (dBm / Ref BW | Results |
| | 2.102 | 0 | | 2.1 | 30 | Pass |



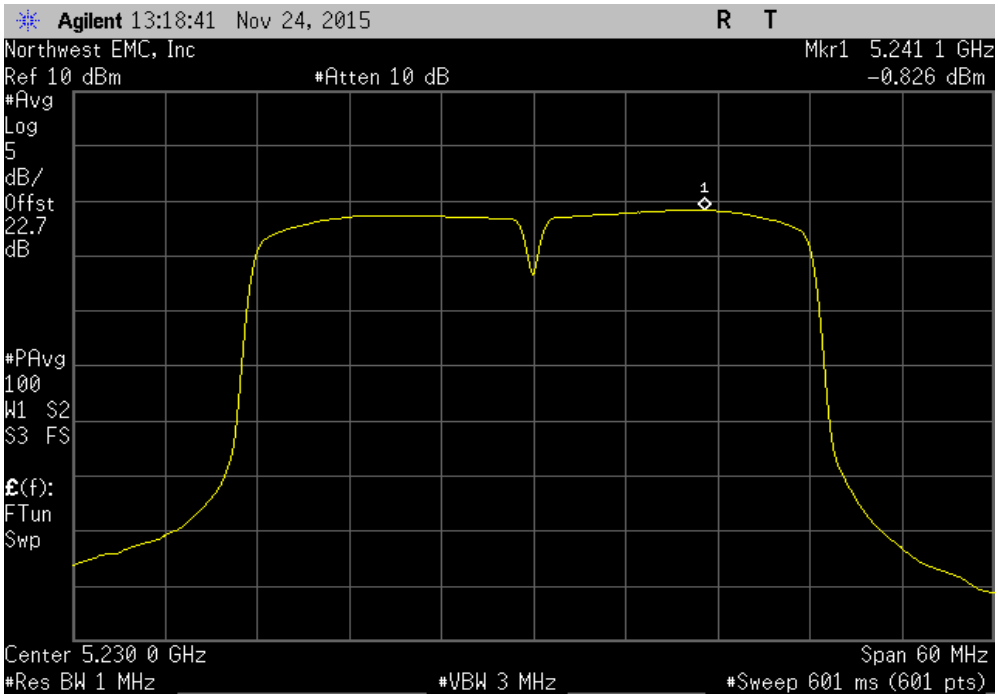

| 20 MHz, 802.11(n) MCS7, Ch 165, High Channel 5825 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Power (dBm/MHz) | Duty Cycle Factor (dB) | | Density (dBm/MHz) | Limit (dBm / Ref BW | Results |
| | 2.163 | 0 | | 2.2 | 30 | Pass |



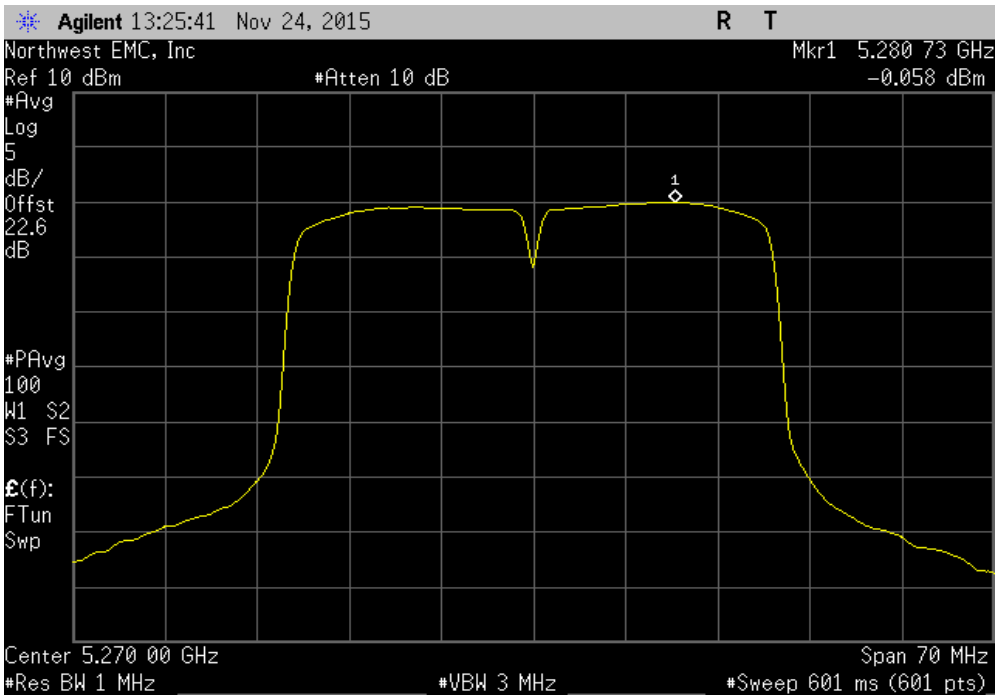
| 40 MHz, 802.11(n) MCS0, Ch 36/40, Low Channel 5190 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Power (dBm/MHz) | Duty Cycle Factor (dB) | | Density (dBm/MHz) | Limit (dBm / Ref BW | Results |
| | -0.292 | 0 | | -0.3 | 11 | Pass |



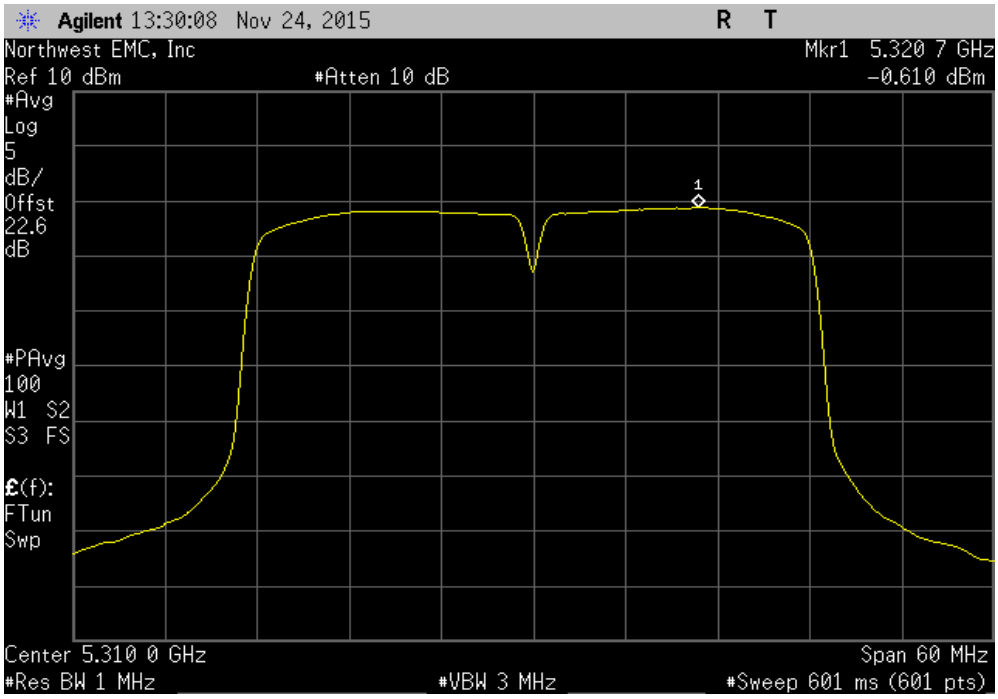

| 40 MHz, 802.11(n) MCS0, Ch 44/48, High Channel 5230 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Power (dBm/MHz) | Duty Cycle Factor (dB) | | Density (dBm/MHz) | Limit (dBm / Ref BW | Results |
| | -0.826 | 0 | | -0.8 | 11 | Pass |



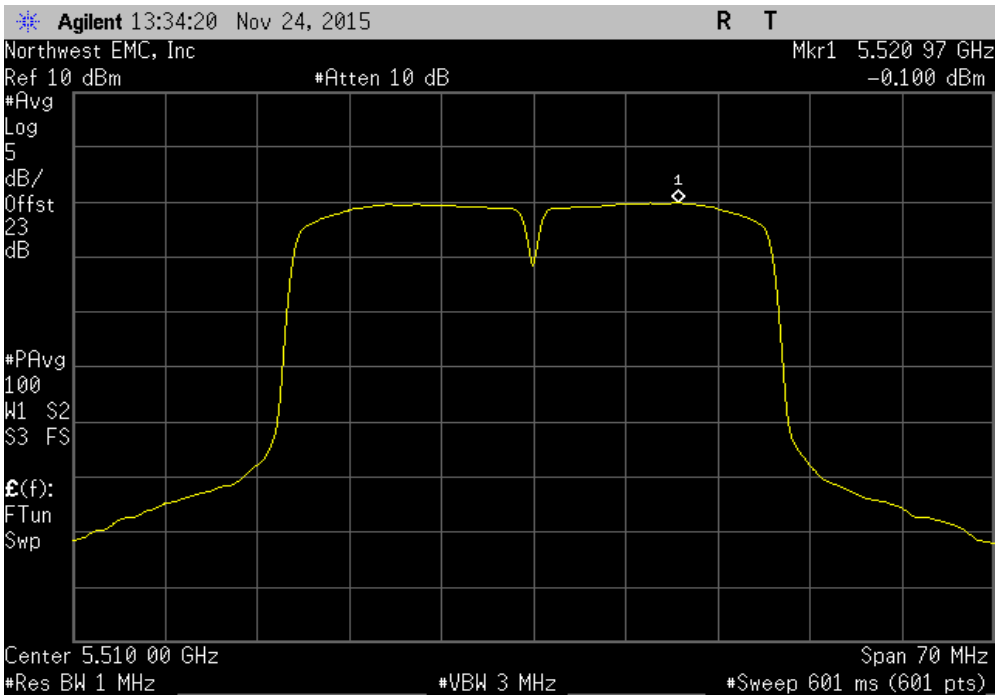
| 40 MHz, 802.11(n) MCS0, Ch 52/56, Low Channel 5270 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Power (dBm/MHz) | Duty Cycle Factor (dB) | | Density (dBm/MHz) | Limit (dBm / Ref BW | Results |
| | -0.058 | 0 | | -0.1 | 11 | Pass |



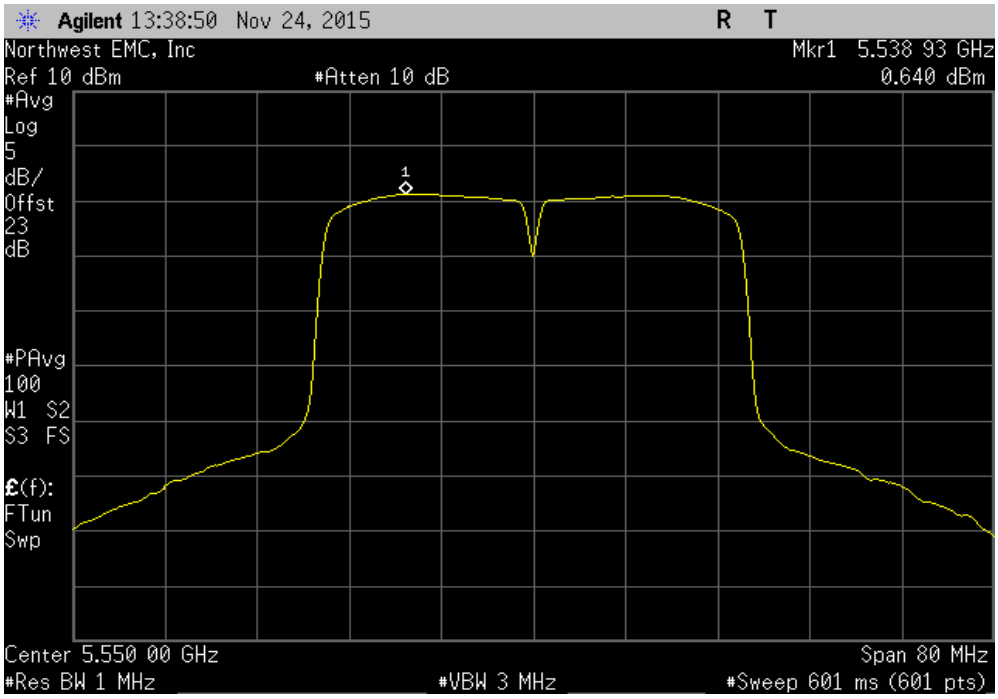

| 40 MHz, 802.11(n) MCS0, Ch 60/64, High Channel 5310 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Power (dBm/MHz) | Duty Cycle Factor (dB) | | Density (dBm/MHz) | Limit (dBm / Ref BW | Results |
| | -0.61 | 0 | | -0.6 | 11 | Pass |



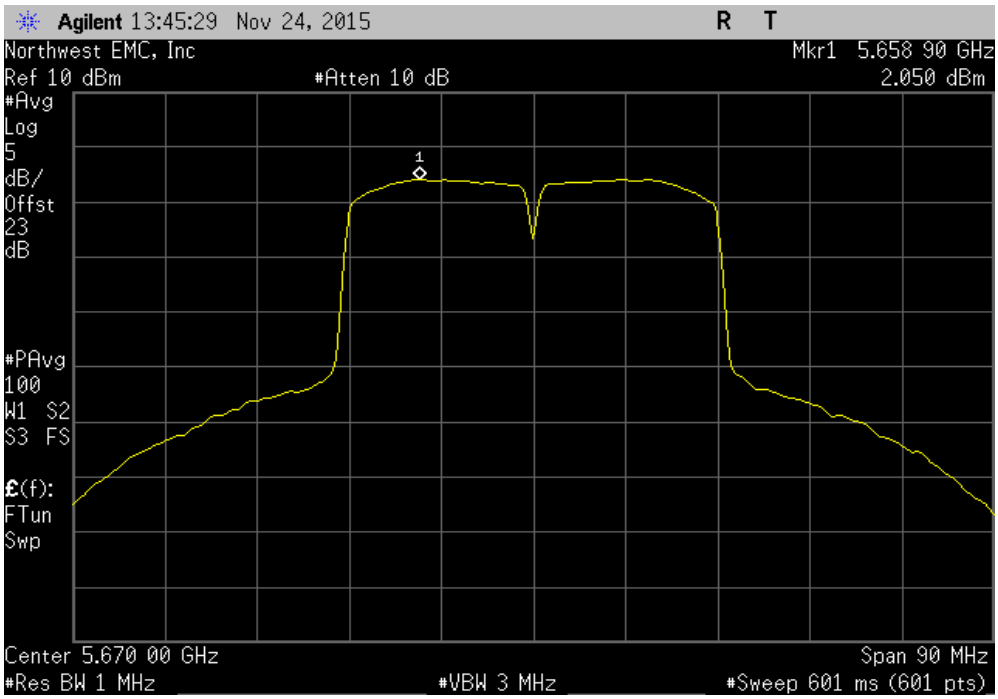
| 40 MHz, 802.11(n) MCS0, Ch 100/104, Low Channel 5510 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Power (dBm/MHz) | Duty Cycle Factor (dB) | | Density (dBm/MHz) | Limit (dBm / Ref BW | Results |
| | -0.1 | 0 | | -0.1 | 11 | Pass |



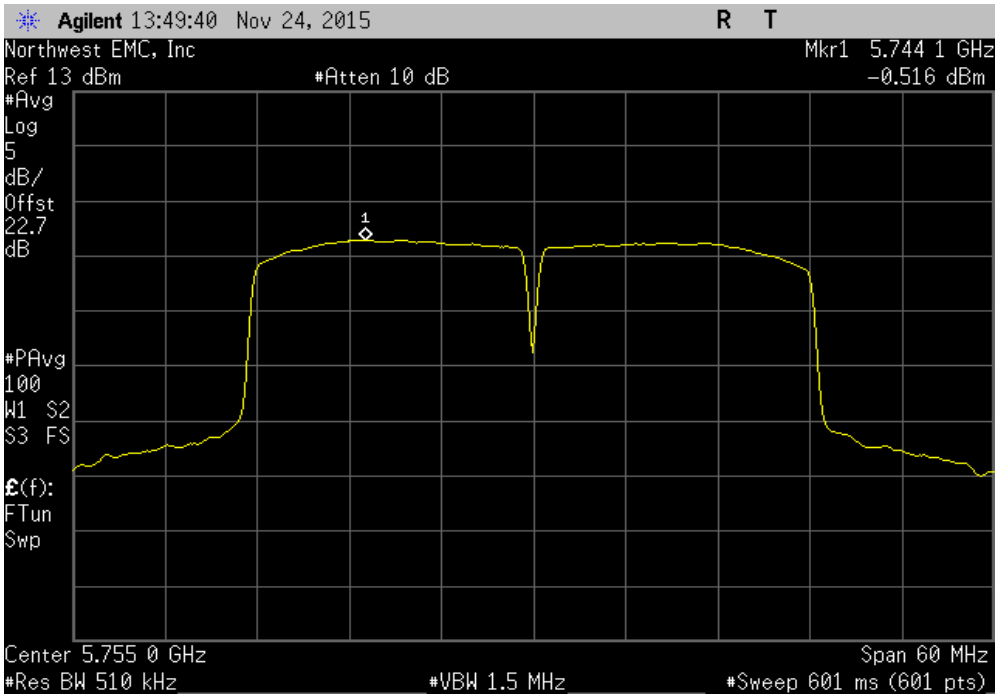

| 40 MHz, 802.11(n) MCS0, Ch 108/112, Mid Channel 5550 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Power (dBm/MHz) | Duty Cycle Factor (dB) | | Density (dBm/MHz) | Limit (dBm / Ref BW | Results |
| | 0.64 | 0 | | 0.6 | 11 | Pass |



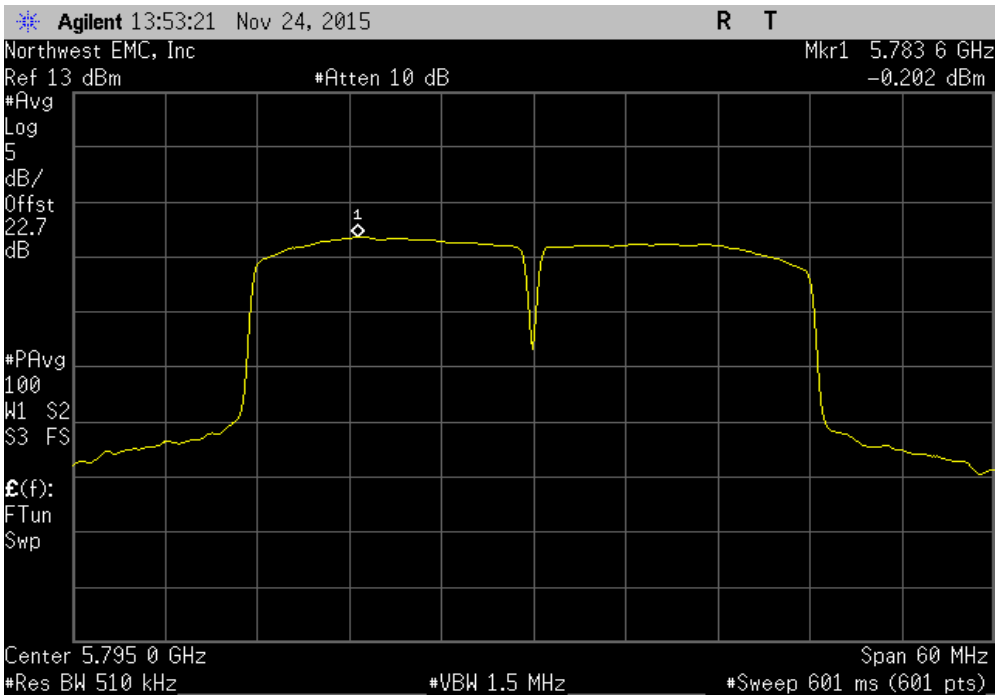
| 40 MHz, 802.11(n) MCS0, Ch 132/136, High Channel 5670 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Power (dBm/MHz) | Duty Cycle Factor (dB) | | Density (dBm/MHz) | Limit (dBm / Ref BW | Results |
| | 2.05 | 0 | | 2.1 | 11 | Pass |



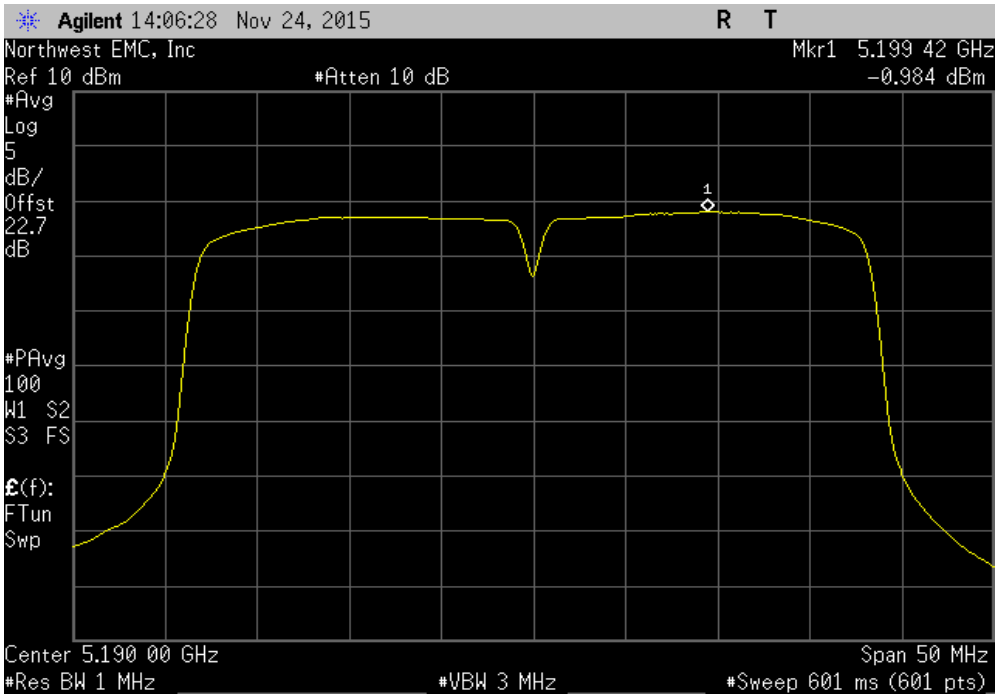

| 40 MHz, 802.11(n) MCS0, Ch 149/153, Low Channel 5755 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Power (dBm/MHz) | Duty Cycle Factor (dB) | | Density (dBm/MHz) | Limit (dBm / Ref BW | Results |
| | -0.516 | 0 | | -0.5 | 30 | Pass |



| 40 MHz, 802.11(n) MCS0, Ch 157/161, High Channel 5795 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Power (dBm/MHz) | Duty Cycle Factor (dB) | | Density (dBm/MHz) | Limit (dBm / Ref BW | Results |
| | -0.202 | 0 | | -0.2 | 30 | Pass |




| 40 MHz, 802.11(n) MCS7, Ch 36/40, Low Channel 5190 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Power (dBm/MHz) | Duty Cycle Factor (dB) | | Density (dBm/MHz) | Limit (dBm / Ref BW | Results |
| | -0.984 | 0 | | -1 | 11 | Pass |



# MAXIMUM POWER SPECTRAL DENSITY

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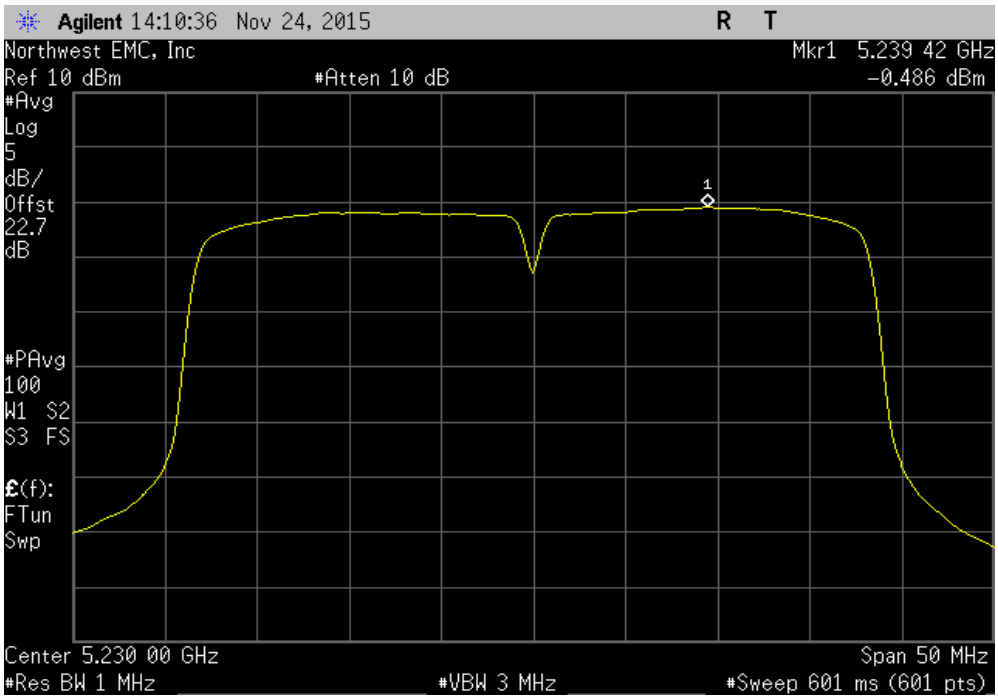
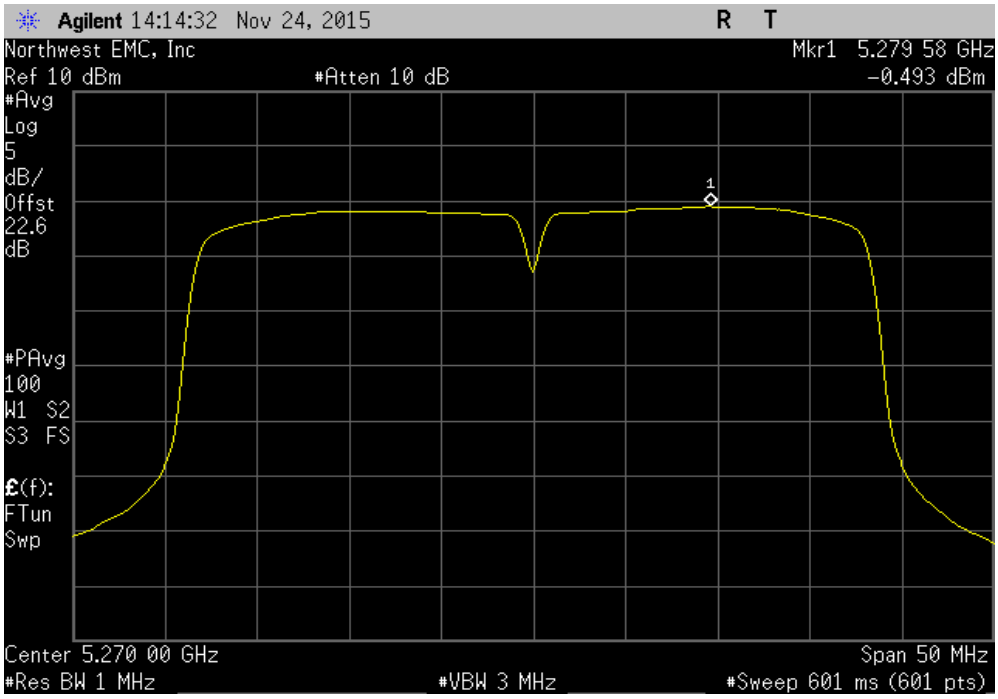
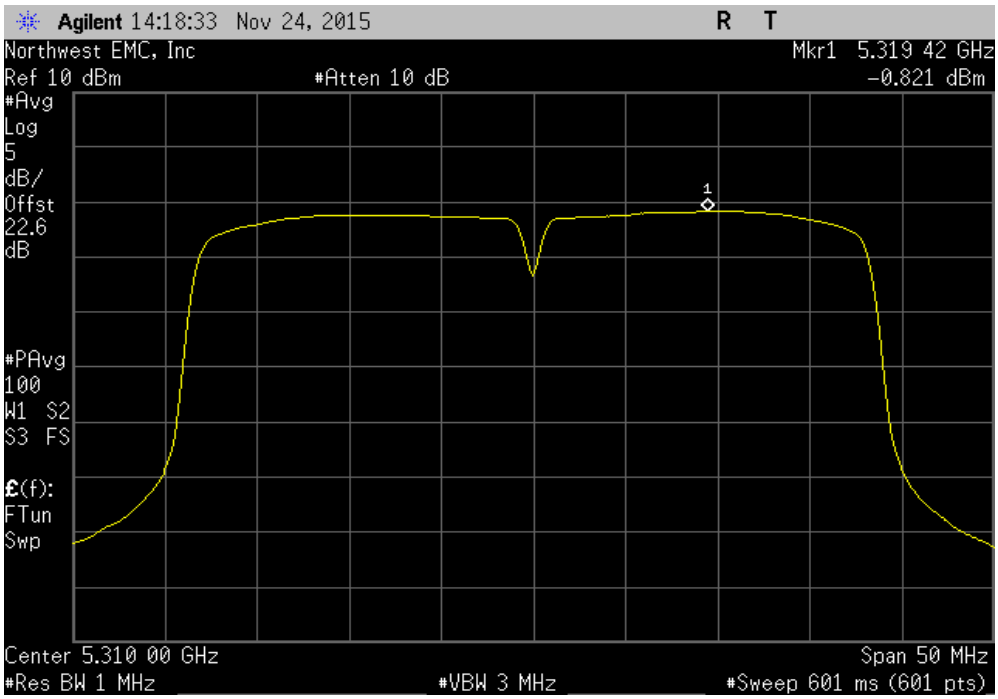
| 40 MHz, 802.11(n) MCS7, Ch 44/48, High Channel 5230 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Power (dBm/MHz) | Duty Cycle Factor (dB) | | Density (dBm/MHz) | Limit (dBm / Ref BW | Results |
| | -0.486 | 0 | | -0.5 | 11 | Pass |



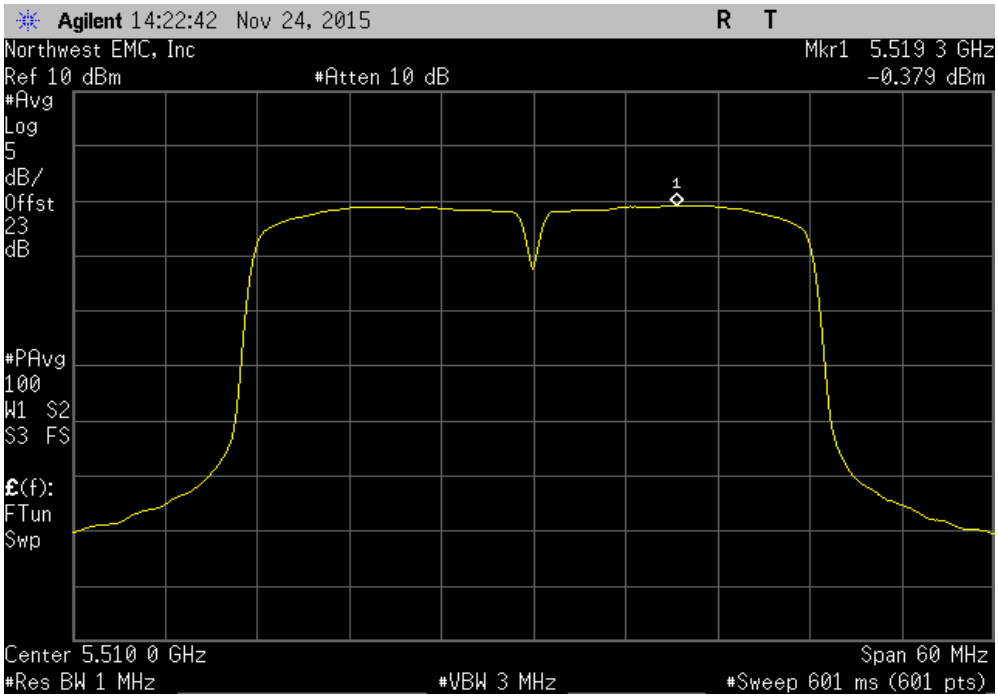

| 40 MHz, 802.11(n) MCS7, Ch 52/56, Low Channel 5270 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Power (dBm/MHz) | Duty Cycle Factor (dB) | | Density (dBm/MHz) | Limit (dBm / Ref BW | Results |
| | -0.493 | 0 | | -0.5 | 11 | Pass |



| 40 MHz, 802.11(n) MCS7, Ch 60/64, High Channel 5310 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Power (dBm/MHz) | Duty Cycle Factor (dB) | | Density (dBm/MHz) | Limit (dBm / Ref BW | Results |
| | -0.821 | 0 | | -0.8 | 11 | Pass |




| 40 MHz, 802.11(n) MCS7, Ch 100/104, Low Channel 5510 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Power (dBm/MHz) | Duty Cycle Factor (dB) | | Density (dBm/MHz) | Limit (dBm / Ref BW | Results |
| | -0.379 | 0 | | -0.4 | 11 | Pass |



# MAXIMUM POWER SPECTRAL DENSITY

NORTHWEST EMC

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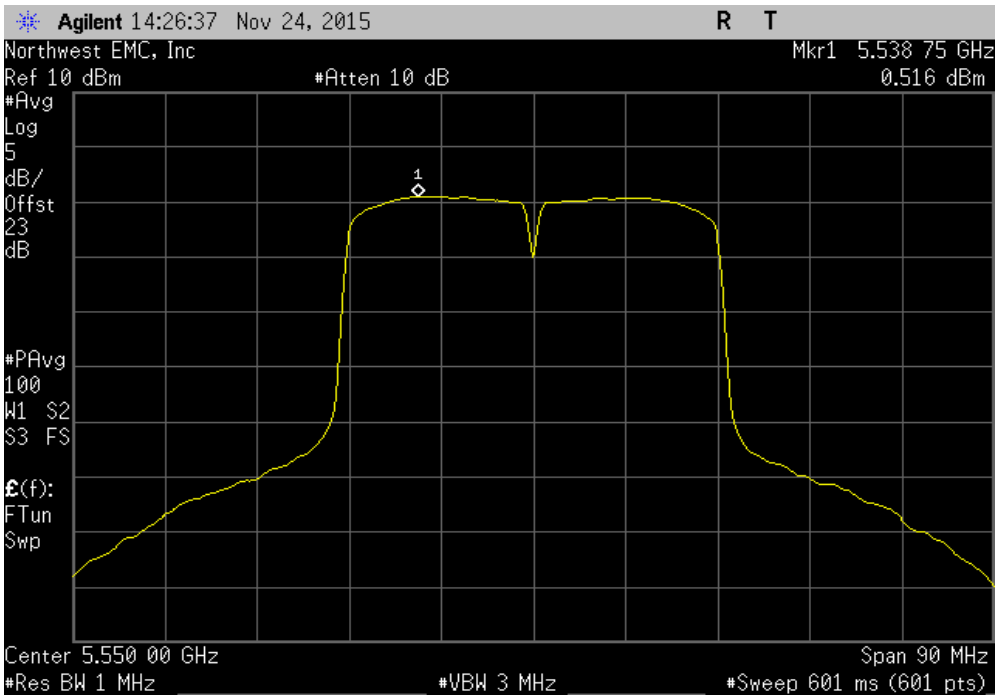
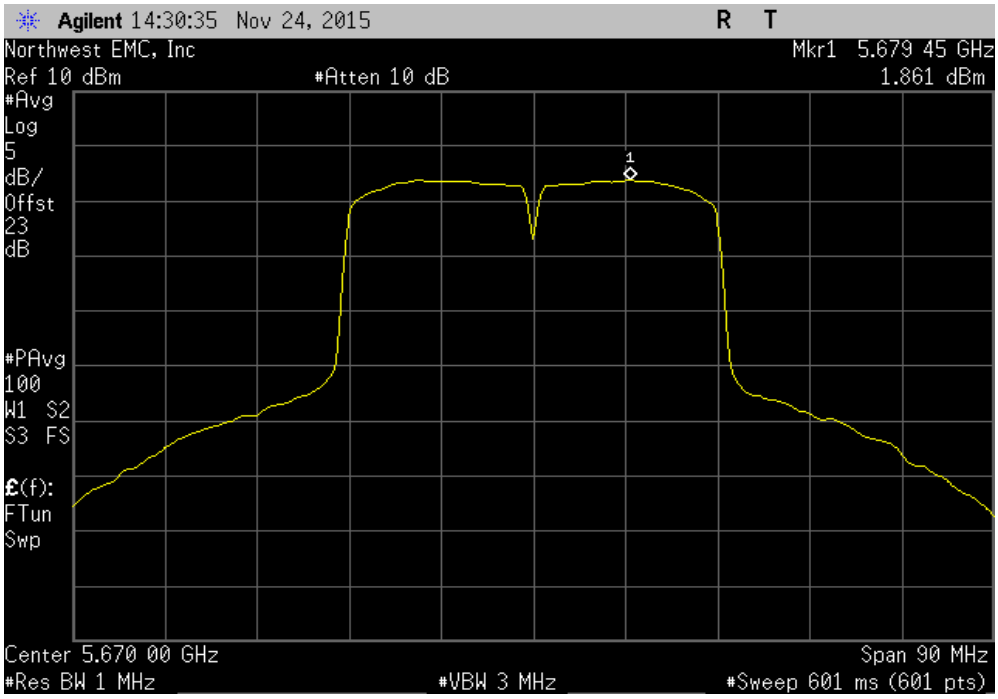
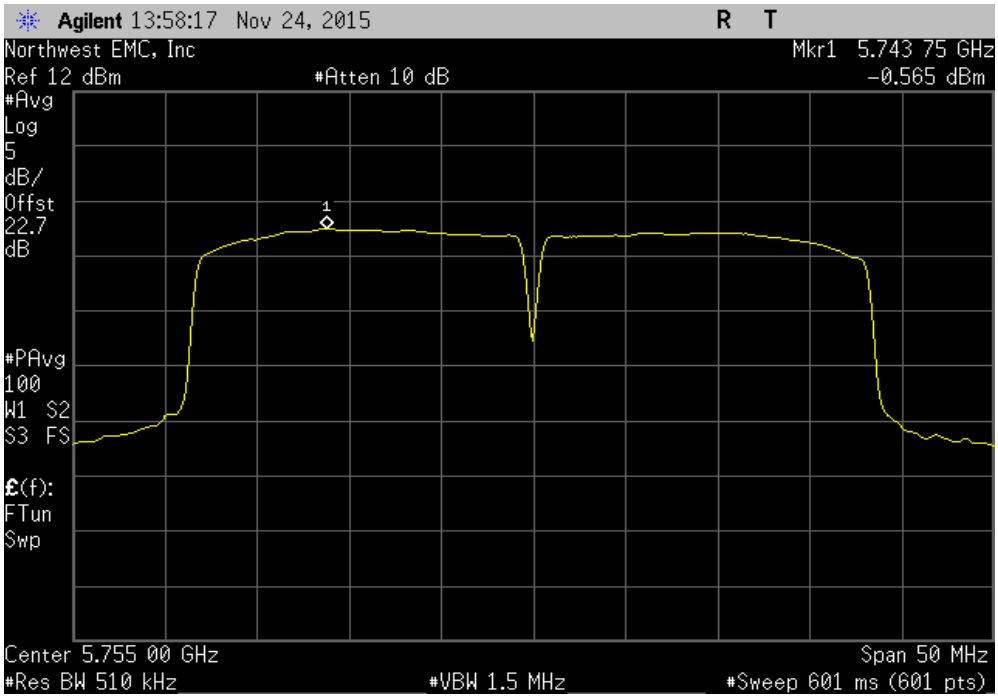
| 40 MHz, 802.11(n) MCS7, Ch 108/112, Mid Channel 5550 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Power (dBm/MHz) | Duty Cycle Factor (dB) | | Density (dBm/MHz) | Limit (dBm / Ref BW | Results |
| | 0.516 | 0 | | 0.5 | 11 | Pass |



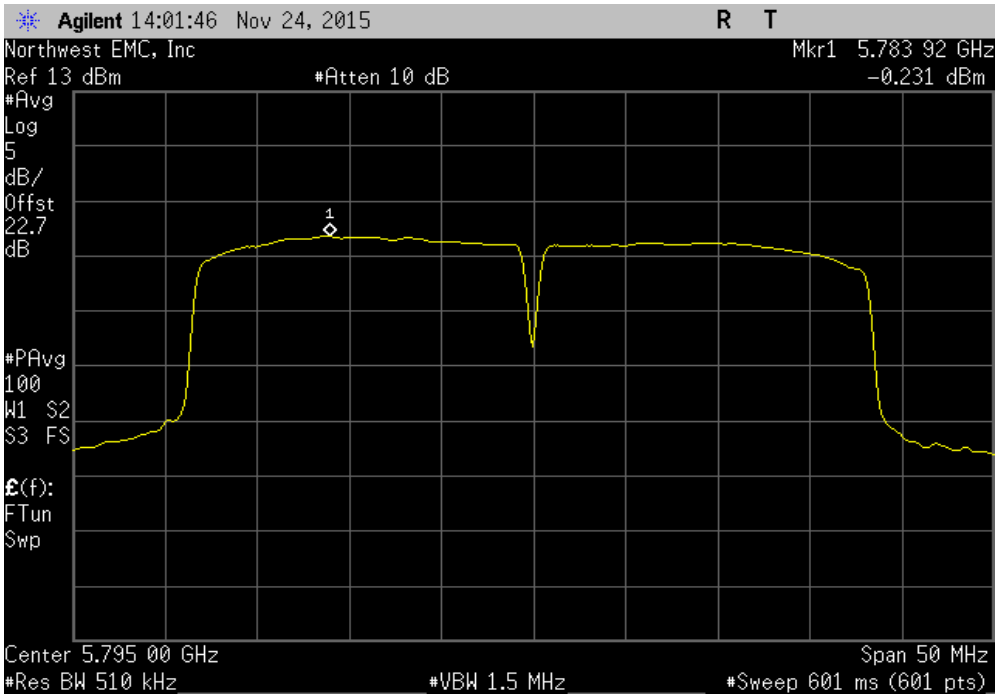

| 40 MHz, 802.11(n) MCS7, Ch 132/136, High Channel 5670 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Power (dBm/MHz) | Duty Cycle Factor (dB) | | Density (dBm/MHz) | Limit (dBm / Ref BW | Results |
| | 1.861 | 0 | | 1.9 | 11 | Pass |



| 40 MHz, 802.11(n) MCS7, Ch 149/153, Low Channel 5755 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Power (dBm/MHz) | Duty Cycle Factor (dB) | | Density (dBm/MHz) | Limit (dBm / Ref BW | Results |
| | -0.565 | 0 | | -0.6 | 30 | Pass |




| 40 MHz, 802.11(n) MCS7, Ch 157/161, High Channel 5795 MHz | | | | | | |
|---|---|---|---|---|---|---|
| | Power (dBm/MHz) | Duty Cycle Factor (dB) | | Density (dBm/MHz) | Limit (dBm / Ref BW | Results |
| | -0.231 | 0 | | -0.2 | 30 | Pass |



NORTHWEST EMC

# APPENDIX

# DUTY CYCLE DECLARATION

Digi International Inc
11001 Bren Road East
Minnetonka, MN 55343
952-912-3444 tel
952-912-4991 central fax

Date: February 4, 2016

Subject: Duty Cycle

**FCC ID:** **MCQ-50M1768**
**IC:** **1846A-50M1857**
**Applicant:** **Digi International Inc.**
**FRN:** **0010283307**

To Whom It May Concern:

We hereby attest that Digi's Sigma Pumps Gen IV 802.11abgn Module operates at or below 20% Duty Cycle during Transmit Mode.

Sincerely,

Scott McCall
Mgr, Hardware Engineering
Digi International Inc.
scott.mccall@digi.com
office: 952-912-4248