# FCC 47 CFR PART 15 SUBPART E

# TEST REPORT

## For

## AC1200 Dual-Band Wireless LAN Repeater

## Model: EW-7476RPC

## Trade Name: EDIMAX

*Issued to*

**EDIMAX TECHNOLOGY CO., LTD.**
**No.3,Wu-Chuan 3rd Road,Wu-Ku Industrial Park, New Taipei City, Taiwan**

*Issued by*

**Compliance Certification Services Inc.**
**No.11, Wugong 6th Rd., Wugu Dist.,**
**New Taipei City 24891, Taiwan. (R.O.C.)**
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**Issued Date: June 16, 2015**

Testing Laboratory
1309

## Revision History

| Rev. | | Issue Date | | Revisions | Effect Page | Revised By |
|---|---|---|---|---|---|---|
| 00 | | June 16, 2015 | | Initial Issue | ALL | Kelly Cheng |

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# 1. TEST RESULT CERTIFICATION

| | |
|---|---|
| **Applicant:** | EDIMAX TECHNOLOGY CO., LTD.<br>No.3,Wu-Chuan 3rd Road,Wu-Ku Industrial Park, New Taipei City, Taiwan |
| **Equipment Under Test:** | AC1200 Dual-Band Wireless LAN Repeater |
| **Trade Name:** | EDIMAX |
| **Model:** | EW-7476RPC |
| **Date of Test:** | June 10, 2015 |

| APPLICABLE STANDARDS | |
|---|---|
| **STANDARD** | **TEST RESULT** |
| FCC 47 CFR Part 15 Subpart E | No non-compliance noted |

## We hereby certify that:

Compliance Certification Services Inc. tested the above equipment. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10: 2009 and the energy emitted by the sample EUT tested as described in this report is in compliance with conducted and radiated emission limits of FCC Rules Part 15.407.

The test results of this report relate only to the tested sample identified in this report.

*Approved by:*

Miller Lee
Manager
Compliance Certification Services Inc.

*Reviewed by:*

Angel Cheng
Section Manager
Compliance Certification Services Inc.

# 2. EUT DESCRIPTION

<table>
<tr><td>Product</td><td>AC1200 Dual-Band Wireless LAN Repeater</td></tr>
<tr><td>Trade Name</td><td>EDIMAX</td></tr>
<tr><td>Model Number</td><td>EW-7476RPC</td></tr>
<tr><td>Model Discrepancy</td><td>N/A</td></tr>
<tr><td>Received Date</td><td>March 29, 2015</td></tr>
<tr><td>Power Supply</td><td>Power from host device</td></tr>
<tr><td>Frequency Range</td><td>IEEE 802.11a, IEEE 802.11n HT20 : 5180MHz ~ 5240MHz;<br>5745 ~ 5825MHz<br>IEEE 802.11n HT40 : 5190MHz ~ 5230MHz; 5755 ~ 5795MHz<br>IEEE 802.11ac VHT80 mode: 5210MHz; 5775MHz</td></tr>
<tr><td>Channel Number</td><td>IEEE 802.11a, IEEE 802.11n HT20 : 5180MHz ~ 5825MHz : 9 Channels<br>IEEE 802.11n HT40 : 5190MHz ~ 5795MHz : 4 Channels<br>IEEE 802.11ac VHT80 mode: 5210MHz ~ 5775MHz : 2 Channels</td></tr>
<tr><td>Transmit Power</td><td>
<table>
<tr><th></th><th>Mode</th><th>Frequency Range (MHz)</th><th>Transmit Power (dBm)</th><th>Transmit Power (W)</th></tr>
<tr><td rowspan="4">UNII Band I</td><td>IEEE 802.11a</td><td>5180 – 5240</td><td>24.38</td><td>0.2742</td></tr>
<tr><td>IEEE 802.11n HT 20 mode</td><td>5180 – 5240</td><td>24.38</td><td>0.2742</td></tr>
<tr><td>IEEE 802.11n HT 40 mode</td><td>5190 ~ 5230</td><td>19.94</td><td>0.0986</td></tr>
<tr><td>IEEE 802.11ac VHT80 mode</td><td>5210</td><td>14.48</td><td>0.0281</td></tr>
<tr><td rowspan="4">UNII Band IV</td><td>IEEE 802.11a</td><td>5745 ~ 5825</td><td>23.62</td><td>0.2301</td></tr>
<tr><td>IEEE 802.11n HT 20 mode</td><td>5745 ~ 5825</td><td>23.94</td><td>0.2477</td></tr>
<tr><td>IEEE 802.11n HT 40 mode</td><td>5755 ~ 5815</td><td>23.79</td><td>0.2393</td></tr>
<tr><td>IEEE 802.11ac VHT80 mode</td><td>5775</td><td>12.41</td><td>0.0174</td></tr>
</table>
</td></tr>
<tr><td>Modulation Technique</td><td>OFDM (QPSK, BPSK, 16-QAM, 64-QAM, 256QAM)</td></tr>
<tr><td>Transmit Data Rate</td><td>IEEE 802.11a mode: 54, 48, 36, 24, 18, 12, 9, 6 Mbps<br>IEEE 802.11n HT 20 mode: OFDM (6.5, 7.2, 13, 14.4, 14.44, 19.5, 21.7, 26, 28.89, 28.9, 39, 43.3, 43.33 52, 57.78, 57.8, 58.5, 65.0, 72.2, 78, 86.67, 104, 115.56, 117, 130, 144.44 Mbps)<br>IEEE 802.11n HT 40 mode: OFDM (13.5, 15, 27, 30, 40.5, 45, 54, 60, 81, 90, 108, 120, 121.5, 135, 150, 162, 180, 216, 240, 243, 270, 300 Mbps)<br>IEEE 802.11ac VHT80 mode: OFDM (29.3, 58.5, 87.8, 117, 175.5, 234, 263.3, 292.5, 351, 390, 468, 526.5, 585, 702, 780 Mbps)</td></tr>
<tr><td>Antenna Specification</td><td>MAG.LAYERS / EDA-1313-25GR2-A10-E<br>1. LYN wave / ALA150-222031 / Gain: 4.79 dBi<br>2. LYN wave / ALA150-222030 / Gain: 4.19 dBi</td></tr>
</table>

***Remark:***

1. *The sample selected for test was engineering sample that approximated to production product and was provided by manufacturer.*
2. *This submittal(s) (test report) is intended for FCC ID: **NDD9574761501** filing to comply with Section 15.407 of the FCC Part 15, Subpart E Rules.*

# 3. TEST METHODOLOGY

Both conducted and radiated testing was performed according to the procedures in ANSI C63.10 Radiated testing was performed at an antenna to EUT distance 3 meters, KDB 789033 D02.

## 3.1 EUT CONFIGURATION

The EUT configuration for testing is installed for RF field strength measurement to meet the Commissions requirement, and is operated in a manner intended to generate the maximum emission in a continuous normal application.

## 3.2 EUT EXERCISE

The EUT is operated in the engineering mode to fix the Tx frequency for the purposes of measurement.

According to its specifications, the EUT must comply with the requirements of Section 15.407 under the FCC Rules Part 15 Subpart E.

## 3.3 GENERAL TEST PROCEDURES

**Conducted Emissions**

The EUT is placed on the turntable, which is positioned at 0.8 m above the ground plane. According to the requirements in Section 13.1.4.1 of ANSI C63.10, the conducted emission from the EUT is measured in the frequency range between 0.15 MHz and 30MHz, using the CISPR Quasi-Peak detector mode.

**Radiated Emissions**

The EUT is placed on the turntable, which is 1.5 m above the ground plane. The turntable is then rotated for 360 degrees to determine the proper orientation for the maximum emission level. The EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emission level. And, each emission is to be maximized by changing the horizontal and vertical polarization of the receiving antenna. In order to find out the maximum emissions, exploratory radiated emission measurements were made according to the requirements in Section 13.1.4.1 of ANSI C63.10.

## 3.4 FCC PART 15.205 RESTRICTED BANDS OF OPERATIONS

(a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

| MHz | MHz | MHz | GHz |
|---|---|---|---|
| 0.090 - 0.110 | 16.42 - 16.423 | 399.9 - 410 | 4.5 - 5.15 |
| [1]0.495 - 0.505 | 16.69475 - 16.69525 | 608 - 614 | 5.35 - 5.46 |
| 2.1735 - 2.1905 | 16.80425 - 16.80475 | 960 - 1240 | 7.25 - 7.75 |
| 4.125 - 4.128 | 25.5 - 25.67 | 1300 - 1427 | 8.025 - 8.5 |
| 4.17725 - 4.17775 | 37.5 - 38.25 | 1435 - 1626.5 | 9.0 - 9.2 |
| 4.20725 - 4.20775 | 73 - 74.6 | 1645.5 - 1646.5 | 9.3 - 9.5 |
| 6.215 - 6.218 | 74.8 - 75.2 | 1660 - 1710 | 10.6 - 12.7 |
| 6.26775 - 6.26825 | 108 - 121.94 | 1718.8 - 1722.2 | 13.25 - 13.4 |
| 6.31175 - 6.31225 | 123 - 138 | 2200 - 2300 | 14.47 - 14.5 |
| 8.291 - 8.294 | 149.9 - 150.05 | 2310 - 2390 | 15.35 - 16.2 |
| 8.362 - 8.366 | 156.52475 - | 2483.5 - 2500 | 17.7 - 21.4 |
| 8.37625 - 8.38675 | 156.52525 | 2655 - 2900 | 22.01 - 23.12 |
| 8.41425 - 8.41475 | 156.7 - 156.9 | 3260 - 3267 | 23.6 - 24.0 |
| 12.29 - 12.293 | 162.0125 - 167.17 | 3332 - 3339 | 31.2 - 31.8 |
| 12.51975 - 12.52025 | 167.72 - 173.2 | 3345.8 - 3358 | 36.43 - 36.5 |
| 12.57675 - 12.57725 | 240 - 285 | 3600 - 4400 | ([2]) |
| 13.36 - 13.41 | 322 - 335.4 | | |

[1] Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

[2] Above 38.6

(b) Except as provided in paragraphs (d) and (e), the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

## 3.5 DESCRIPTION OF TEST MODES

The EUT (model: EW-7476RPC) had been tested under operating condition.

The EUT is a 2x2 configuration spatial MIMO (2Tx & 2Rx) without beam forming function that operate in double TX chains and double RX chains. The 2x2 configuration is implemented with two outside TX & RX chains (Chain 0 and 1).

Software used to control the EUT for staying in continuous transmitting mode was programmed.

The field strength of spurious emission was measured in the following position: EUT stand-up position (Z axis), lie-down position (X, Y axis). The worst emission was found in lie-down position (X axis) and the worst case was recorded.

After verification, all tests were carried out with the worst case test modes as shown below except radiated spurious emission below 1GHz, which worst case was in normal link mode only.

**Band I**

**IEEE 802.11a mode / 5180 ~ 5240MHz:**

Channel Low (5180MHz), Channel Mid (5220MHz) and Channel High (5240MHz) with 6Mbps data rate were chosen for full testing.

**IEEE 802.11n HT 20 mode / 5180 ~ 5240MHz:**

Channel Low (5180MHz), Channel Mid (5220MHz) and Channel High (5240MHz) with 6.5Mbps data rate were chosen for full testing.

**IEEE 802.11n HT 40 mode / 5190 ~ 5230MHz:**

Channel Low (5190MHz) and Channel High (5230MHz) with 13.5Mbps data rate were chosen for full testing.

**IEEE 802.11ac VHT80 Mode for 5210MHz:**
Channel (5210MHz) with 6.5Mbps data rate were chosen for full testing.

**Band IV**

**IEEE 802.11a mode / 5745 ~ 5825MHz**
Channel Low (5745MHz), Channel Mid (5785MHz) and Channel High (5825MHz) with 6Mbps data rate were chosen for full testing.

**IEEE 802.11n HT 20 mode: / 5745 ~ 5825MHz**
Channel Low(5745MHz), Channel Mid(5785MHz) and Channel High(5825MHz) with 6.5Mbps data rate were chosen for full testing.

**IEEE 802.11n HT 40 mode / 5755 ~ 5795MHz**
Channel Low(5755MHz) and Channel High(5795MHz) with 13.5Mbps data rate were chosen for full testing.

**IEEE 802.11ac VHT80 Mode for 5775MHz:**
Channel (5775MHz) with 6.5Mbps data rate were chosen for full testing.

# 4. INSTRUMENT CALIBRATION

## 4.1 MEASURING INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment, which is traceable to recognized national standards.

## 4.2 MEASUREMENT EQUIPMENT USED

**Equipment Used for Emissions Measurement**

***Remark:*** *Each piece of equipment is scheduled for calibration once a year and Loop Antenna is scheduled for calibration once three years.*

| Conducted Emissions Test Site | | | | |
|---|---|---|---|---|
| **Name of Equipment** | **Manufacturer** | **Model** | **Serial Number** | **Calibration Due** |
| Spectrum Analyzer | Agilent | E4446A | US42510252 | 11/23/2015 |
| Thermostatic/Hrgrosatic Chamber | TAICHY | MHG-150LF | 930619 | 10/07/2015 |
| AC Power Source | EXTECH | 6205 | 1140845 | N.C.R |
| DC Power Supply | ABM | 8301HD | D011531 | N.C.R |
| Power Meter | Anritsu | ML2495A | 1012009 | 06/07/2016 |
| Power Sensor | Anritsu | MA2411A | 0917072 | 06/08/2016 |
| Spectrum Analyzer | ROHDE&SCHWARZ | FSV40 | 101073 | 07/09/2015 |

| Wugu 966 Chamber A | | | | |
|---|---|---|---|---|
| **Name of Equipment** | **Manufacturer** | **Model** | **Serial Number** | **Calibration Due** |
| Spectrum Analyzer | Agilent | E4446A | US42510268 | 09/18/2015 |
| EMI Test Receiver | R&S | ESCI | 100064 | 06/04/2016 |
| Bilog Antenna | Sunol Sciences | JB3 | A030105 | 08/19/2015 |
| Horn Antenna | EMCO | 3117 | 00055165 | 01/26/2016 |
| Horn Antenna | EMCO | 3116 | 26370 | 12/25/2015 |
| Turn Table | CCS | CC-T-1F | N/A | N.C.R |
| Antenna Tower | CCS | CC-A-1F | N/A | N.C.R |
| Controller | CCS | CC-C-1F | N/A | N.C.R |
| Pre-Amplifier | MITEQ | 1652-3000 | 1490939 | 08/09/2016 |
| Pre-Amplifier | EMC | EMC 01265 | 4035 | 08/09/2016 |
| Pre-Amplifier | MITEQ | AMF-6F-260400-40-8P | 985646 | 12/25/2015 |
| Coaxial Cable | Huber+Suhner | 102 | 29212/2 | 12/25/2015 |
| Coaxial Cable | Huber+Suhner | 102 | 29406/2 | 12/25/2015 |
| Test S/W | EZ-EMC (CCS-3A1RE) | | | |

| Conducted Emission room # B | | | | |
|---|---|---|---|---|
| **Name of Equipment** | **Manufacturer** | **Model** | **Serial Number** | **Calibration Due** |
| EMI Test Receiver | R&S | ESCI | 101073 | 09/18/2015 |
| LISN | R&S | ENV216 | 101054 | 06/06/2016 |
| LISN | SCHWARZBECK | NSLK 8127 | 8127-541 | 11/25/2015 |
| Capacitive Voltage Probe | FCC | F-CVP-1 | 100185 | 03/12/2016 |
| Test S/W | CCS-3A1-CE | | | |

## 4.3 MEASUREMENT UNCERTAINTY

| PARAMETER | UNCERTAINTY |
|---|---|
| Powerline Conducted Emission | +/- 1.2575 |
| 3M Semi Anechoic Chamber / <200M | +/- 4.0138 |
| 3M Semi Anechoic Chamber / 200M~1000M | +/- 3.9483 |
| 3M Semi Anechoic Chamber / 1G~8G | +/- 2.5975 |
| 3M Semi Anechoic Chamber / 8G~18G | +/- 2.6112 |
| 3M Semi Anechoic Chamber / 18G~26G | +/- 2.7389 |
| 3M Semi Anechoic Chamber / 26G~40G | +/- 2.9683 |

***Remark**: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.*

# 5. FACILITIES AND ACCREDITATIONS

## 5.1 FACILITIES

All measurement facilities used to collect the measurement data are located at

☐ No.199, Chunghsen Road, Hsintien City, Taipei Hsien, Taiwan, R.O.C.

☒ No.139, Wugong Rd., Wugu Dist., New Taipei City 24891, Taiwan (R.O.C.)

☒ No.11, Wugong 6th Rd., Wugu Dist., New Taipei City 24891, Taiwan. (R.O.C.)

☐ No.81-1, Lane 210, Bade 2nd Rd., Lujhu Township, Taoyuan County 33841, TAIWAN, R.O.C.

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.10 and CISPR Publication 22.

## 5.2 EQUIPMENT

Radiated emissions are measured with one or more of the following types of linearly polarized antennas: tuned dipole, biconical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with pre-selectors and quasi-peak detectors are used to perform radiated measurements.

Conducted emissions are measured with Line Impedance Stabilization Networks and EMI Test Receivers.

Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

All receiving equipment conforms to CISPR Publication 16-1, “Radio Interference Measuring Apparatus and Measurement Methods.”

## 5.3 TABLE OF ACCREDITATIONS AND LISTINGS

| Country | Agency | Scope of Accreditation | Logo |
|---|---|---|---|
| USA | FCC | 3M Semi Anechoic Chamber (FCC MRA: TW1039) to perform FCC Part 15 measurements | FCC MRA: TW1039 |
| Taiwan | TAF | LP0002, RTTE01, FCC Method-47 CFR Part 15 Subpart C, D, E, RSS-210, RSS-310<br>IDA TS SRD, AS/NZS 4268, AS/NZS 4771, TS 12.1 & 12,2,<br>ETSI EN 300 440-1, ETSI EN 300 440-2, ETSI EN 300 328,<br>ETSI EN 300 220-1, ETSI EN 300 220-2, ETSI EN 301 893,<br>ETSI EN 301 489-1/3/7/17<br>FCC OET Bulletin 65 + Supplement C,<br>EN 50360, EN 50361, EN 50371, RSS 102, EN 50383, EN 50385,<br>EN 50392, IEC 62209, CNS 14958-1, CNS 14959<br>FCC Method –47 CFR Part 15 Subpart B<br>IEC / EN 61000-3-2, IEC / EN 61000-3-3,<br>IEC / EN 61000-4-2/3/4/5/6/8/11 | Testing Laboratory 1309 |
| Canada | Industry Canada | 3M Semi Anechoic Chamber (IC 2324G-1 / IC 2324G-2) to perform | IC 2324G-1<br>IC 2324G-2 |

** No part of this report may be used to claim or imply product endorsement by A2LA or any agency of the US Government.*

# 6. SETUP OF EQUIPMENT UNDER TEST

## 6.1 SETUP CONFIGURATION OF EUT

See test photographs attached in Appendix I for the actual connections between EUT and support equipment.

## 6.2 SUPPORT EQUIPMENT

| No. | Device Type | Brand | Model | Series No. | FCC ID | Data Cable | Power Cord |
|---|---|---|---|---|---|---|---|
| 1 | Notebook PC | TOSHIBA | Satellite M840 | N/A | PPD-AR5B225 | N/A | AC I/P: Unshielded, 1.8m DC O/P: Unshielded, 1.8m with a core |

***Remark:***

1. *All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.*
2. *Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.*

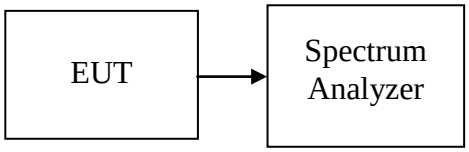
# 7. FCC PART 15 REQUIREMENTS

## 7.1 26 DB EMISSION BANDWIDTH

### LIMIT

According to §15.303(c), for purposes of this subpart the emission bandwidth shall be determined by measuring the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, that are 26 dB down relative to the maximum level of the modulated carrier. Compliance with the emissions limits is based on the use of measurement instrumentation employing a peak detector function with an instrument resolutions bandwidth approximately equal to 1.0 percent of the emission bandwidth of the device under measurement.

**Test Configuration**




### TEST PROCEDURE

1. Place the EUT on the table and set it in the transmitting mode.
2. Remove the antenna from the EUT and then connect a low-loss RF cable from the antenna port to the spectrum analyzer.
3. Set the spectrum analyzer as RBW > 1%EBW, VBW > RBW, Span >26dB bandwidth, and Sweep = auto.
4. Mark the peak frequency and –26dB (upper and lower) frequency.
5. Repeat until all the rest channels were investigated.

### TEST RESULTS

*No non-compliance noted*

## Test Data

### Test mode: IEEE 802.11a mode / 5180 ~ 5240MHz

| Channel | Frequency (MHz) | Chain 0 Bandwidth (MHz) | Chain 1 Bandwidth (MHz) |
|---|---|---|---|
| Low | 5180 | 31.540 | 32.811 |
| Mid | 5220 | 40.000 | 38.914 |
| High | 5240 | 39.895 | 39.740 |

### Test mode: IEEE 802.11n HT 20 mode / 5180 ~ 5240MHz

| Channel | Frequency (MHz) | Chain 0 Bandwidth (MHz) | Chain 1 Bandwidth (MHz) |
|---|---|---|---|
| Low | 5180 | 33.955 | 30.580 |
| Mid | 5220 | 40.000 | 39.816 |
| High | 5240 | 24.770 | 24.506 |

### Test mode: IEEE 802.11n HT 40 mode / 5190 ~ 5230MHz

| Channel | Frequency (MHz) | Chain 0 Bandwidth (MHz) | Chain 1 Bandwidth (MHz) |
|---|---|---|---|
| Low | 5190 | 41.430 | 40.625 |
| High | 5230 | 61.081 | 65.956 |

### Test mode: IEEE 802.11ac VHT80 Mode/ 5210MHz

| Channel | Frequency (MHz) | Chain 0 Bandwidth (MHz) | Chain 1 Bandwidth (MHz) |
|---|---|---|---|
| Mid | 5210 | 81.934 | 81.627 |

**Test mode: IEEE 802.11a mode / 5745 ~ 5825MHz**

| Channel | Frequency (MHz) | Chain 0 Bandwidth (MHz) | Chain 1 Bandwidth (MHz) |
|---|---|---|---|
| Low | 5745 | 16.422 | 16.248 |
| Mid | 5785 | 16.565 | 16.457 |
| High | 5825 | 16.461 | 16.409 |

**Test mode: IEEE 802.11n HT 20 mode / 5745 ~ 5825MHz**

| Channel | Frequency (MHz) | Chain 0 Bandwidth (MHz) | Chain 1 Bandwidth (MHz) |
|---|---|---|---|
| Low | 5745 | 17.692 | 17.769 |
| Mid | 5785 | 17.652 | 17.563 |
| High | 5825 | 17.463 | 17.437 |

**Test mode: IEEE 802.11n HT 40 mode / 5755 ~ 5815MHz**

| Channel | Frequency (MHz) | Chain 0 Bandwidth (MHz) | Chain 1 Bandwidth (MHz) |
|---|---|---|---|
| Low | 5755 | 36.230 | 35.950 |
| High | 5795 | 36.283 | 36.129 |

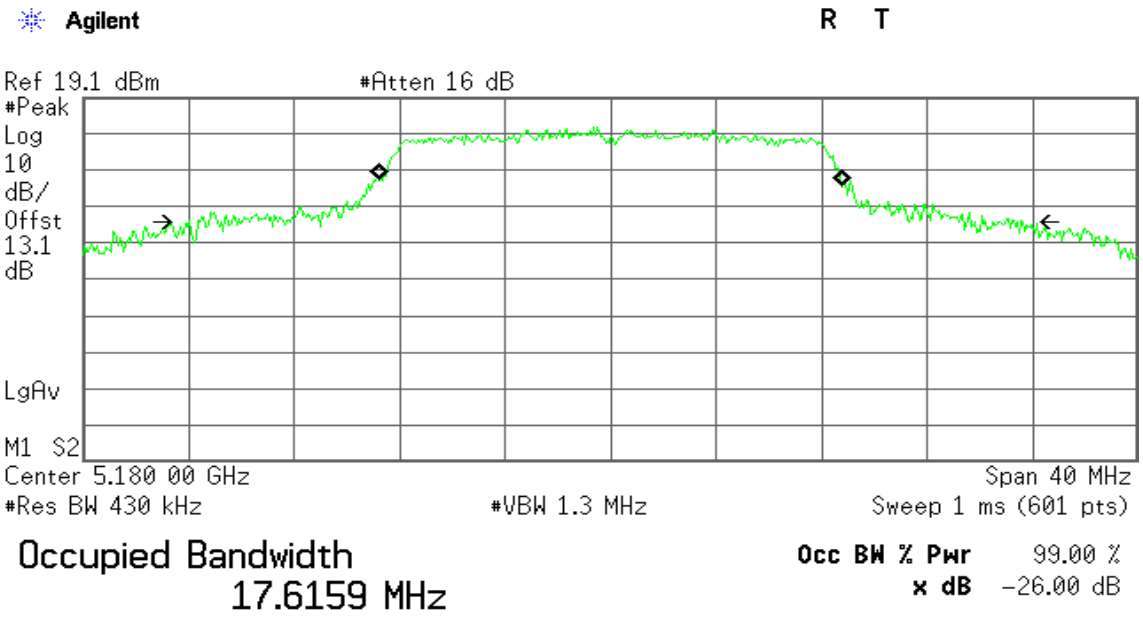
**Test mode: IEEE 802.11ac VHT80 Mode/ 5775MHz**

| Channel | Frequency (MHz) | Chain 0 Bandwidth (MHz) | Chain 1 Bandwidth (MHz) |
|---|---|---|---|
| Mid | 5775 | 74.398 | 74.140 |

## Test Plot

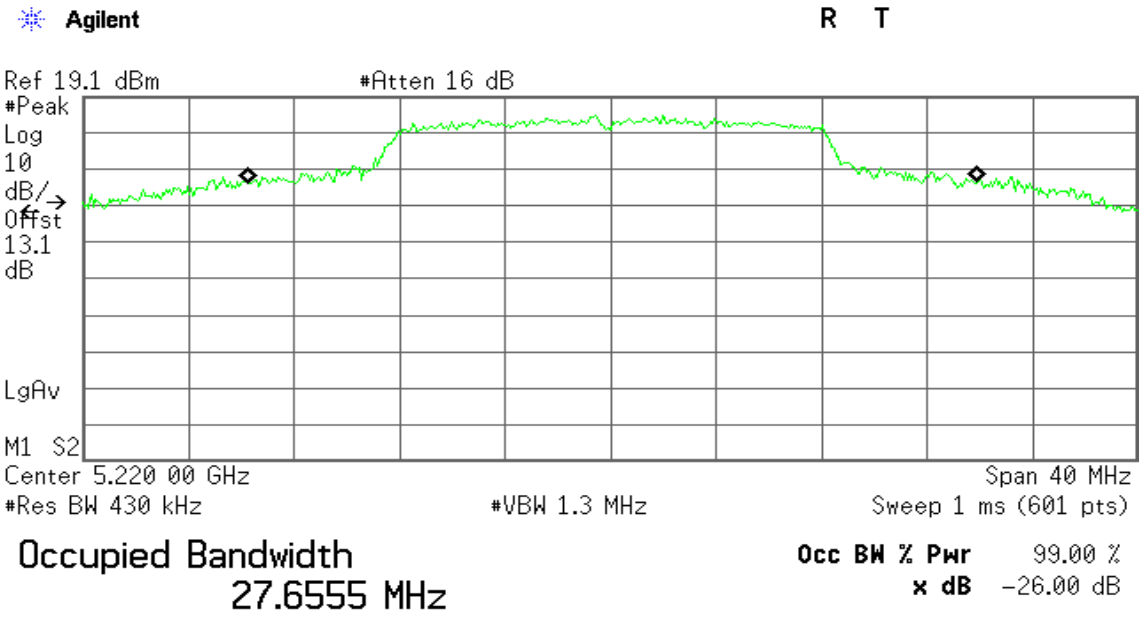
## IEEE 802.11a mode / 5180 ~ 5240MHz / Chain 0

### CH Low



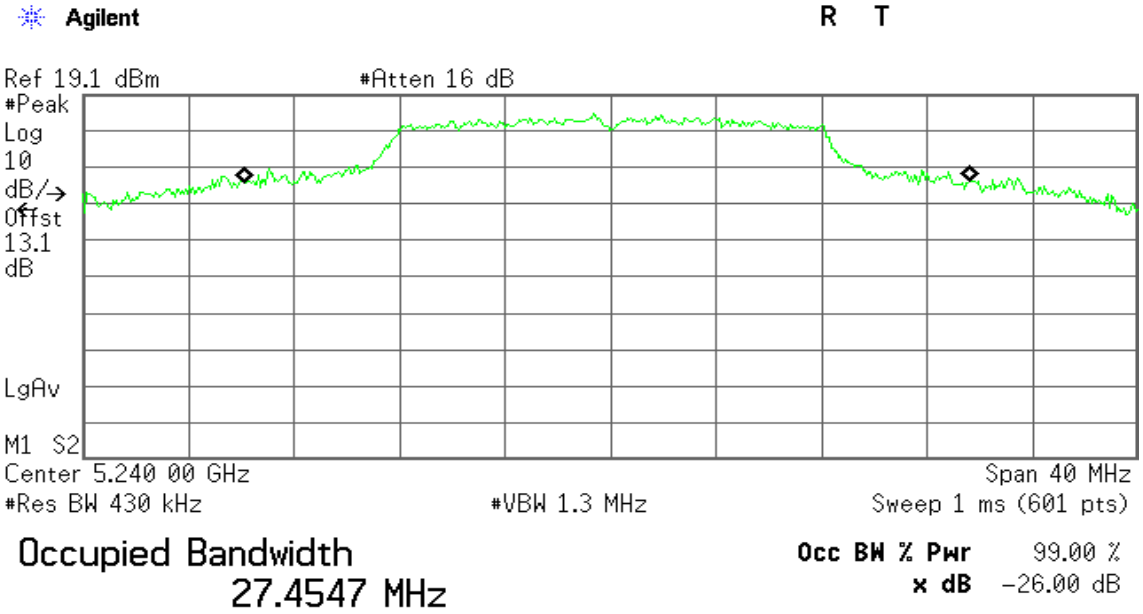

**Transmit Freq Error** -17.263 kHz
**x dB Bandwidth** 31.540 MHz

### CH Mid




**Transmit Freq Error** 66.758 kHz
**x dB Bandwidth** 40.000 MHz

**CH High**



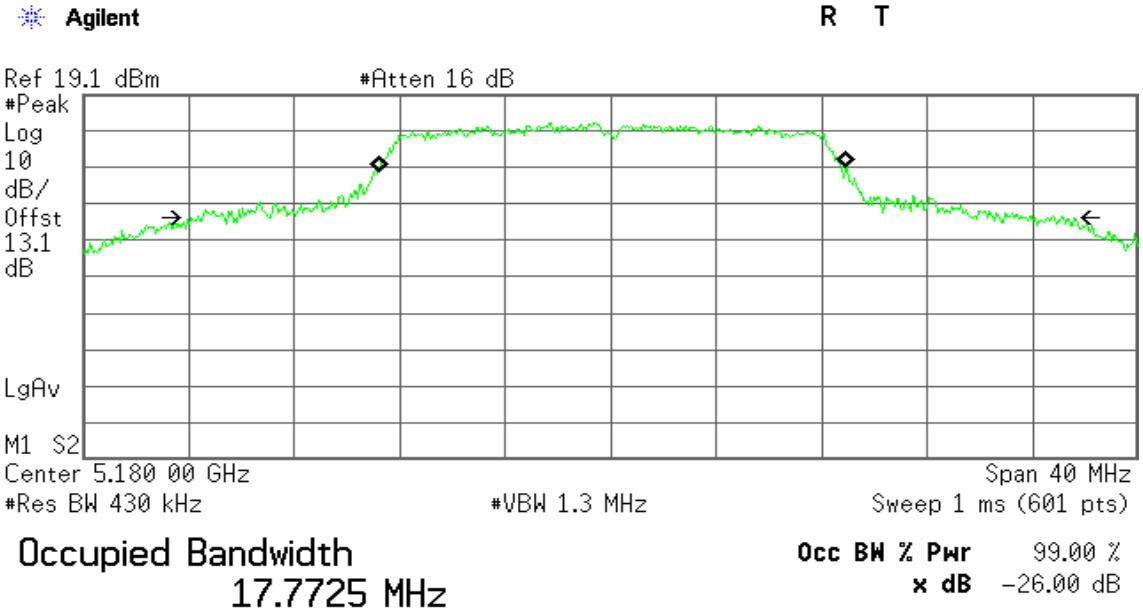

Occupied Bandwidth
27.4547 MHz

**Occ BW % Pwr** 99.00 %
**x dB** -26.00 dB

**Transmit Freq Error** -122.540 kHz
**x dB Bandwidth** 39.895 MHz

**IEEE 802.11a mode / 5180 ~ 5240MHz / Chain 1**

**CH Low**

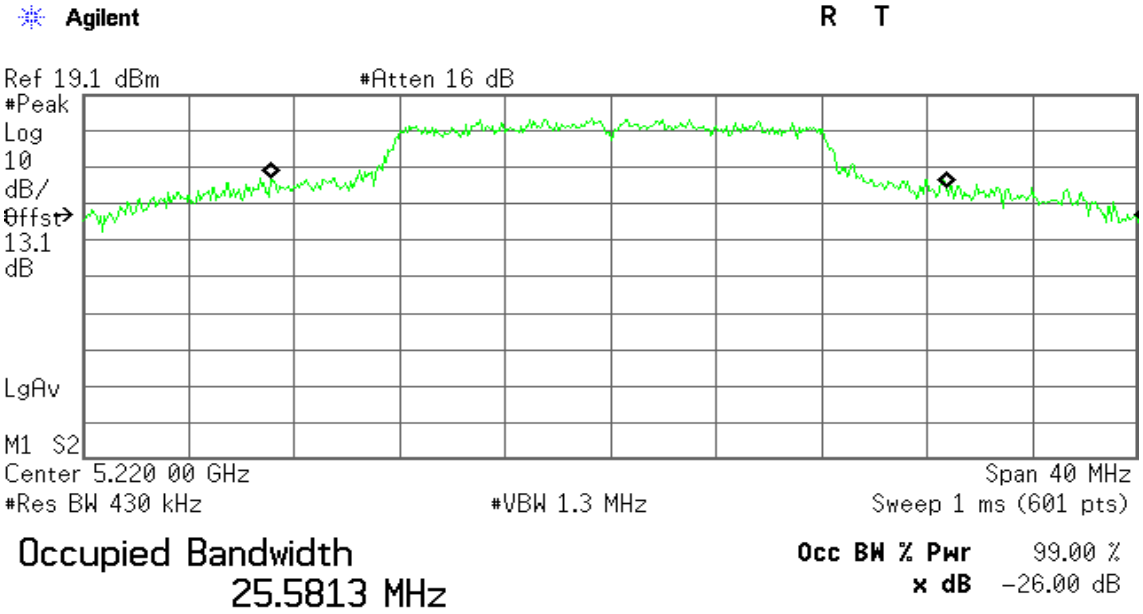



Occupied Bandwidth
17.7725 MHz

**Occ BW % Pwr** 99.00 %
**x dB** -26.00 dB

**Transmit Freq Error** 61.424 kHz
**x dB Bandwidth** 32.811 MHz

## CH Mid

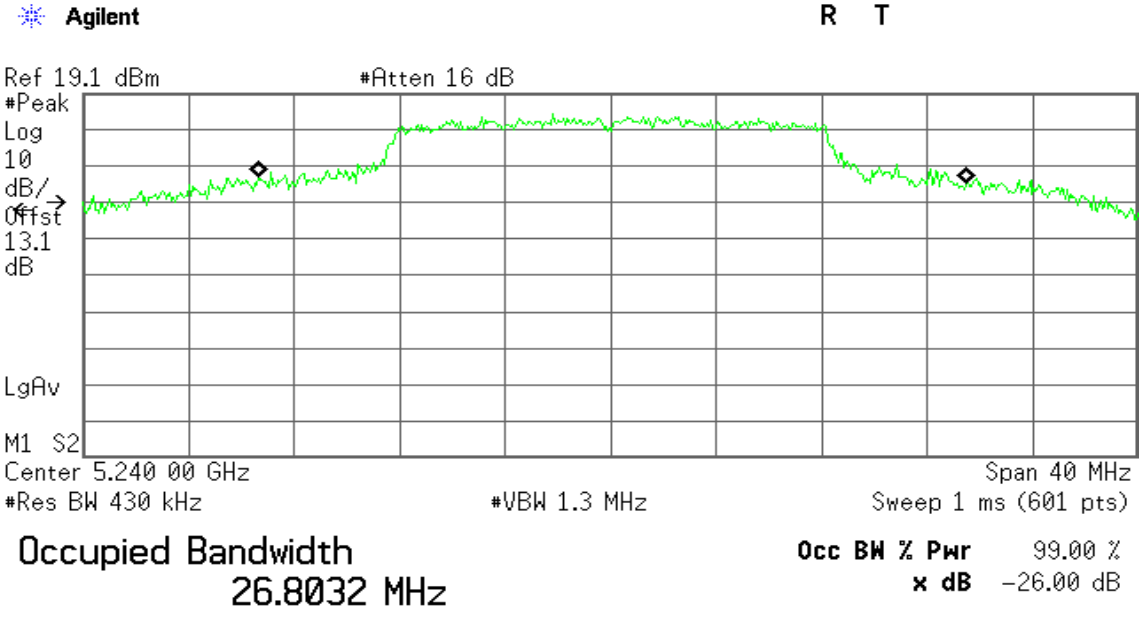



Occupied Bandwidth
25.5813 MHz

**Occ BW % Pwr** 99.00 %
**x dB** -26.00 dB

**Transmit Freq Error** -65.719 kHz
**x dB Bandwidth** 38.914 MHz

## CH High



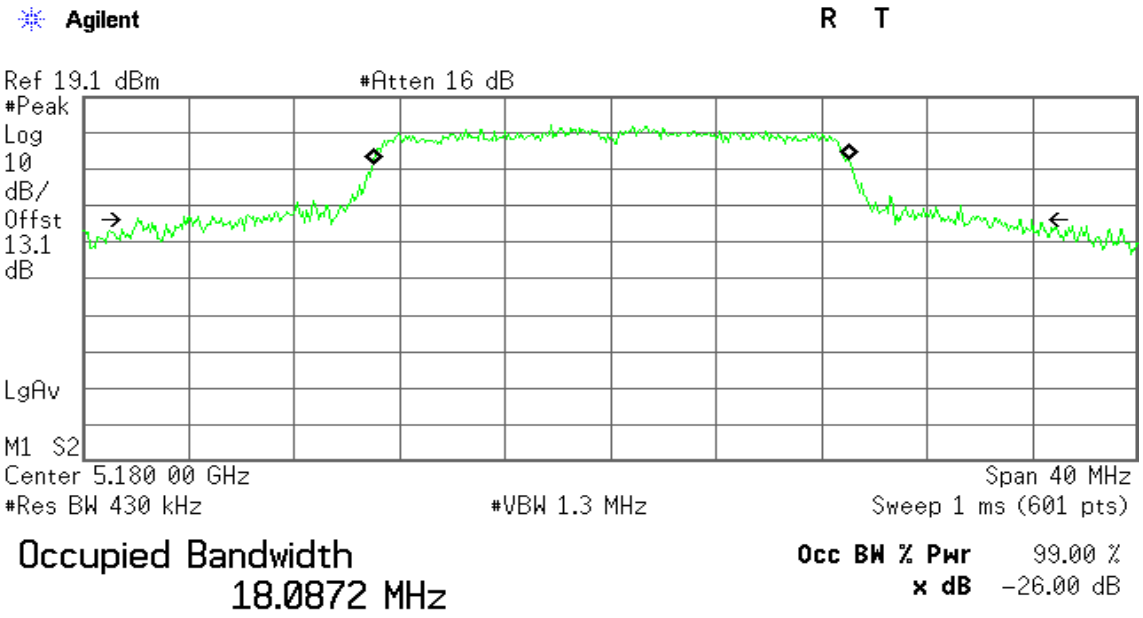

Occupied Bandwidth
26.8032 MHz

**Occ BW % Pwr** 99.00 %
**x dB** -26.00 dB

**Transmit Freq Error** 67.433 kHz
**x dB Bandwidth** 39.740 MHz

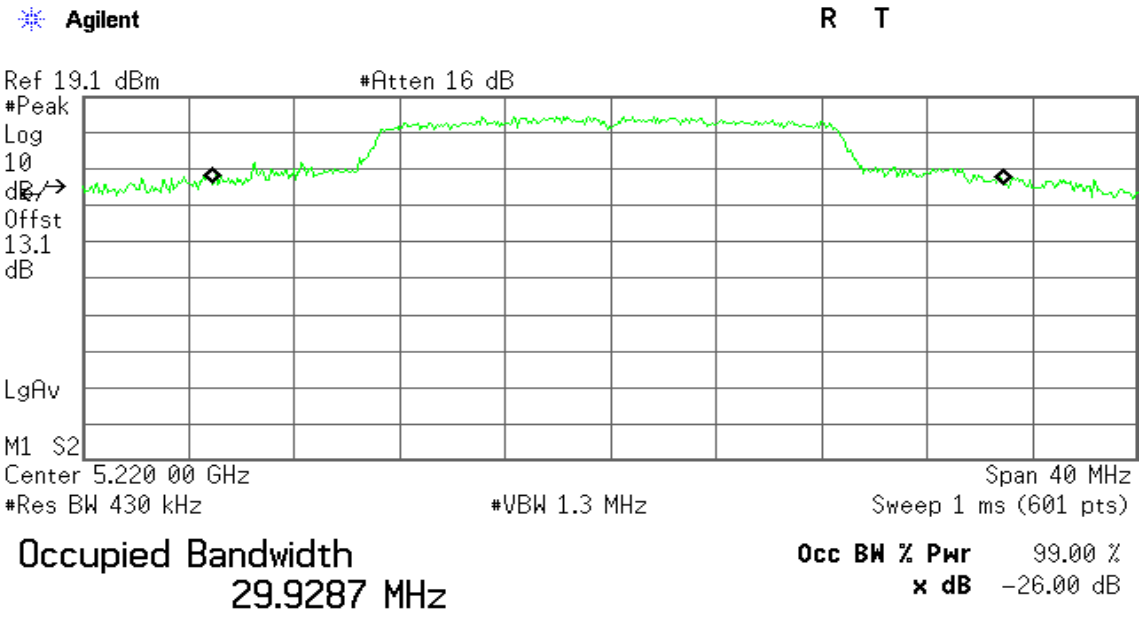
## IEEE 802.11n HT 20 mode / 5180 ~ 5240MHz / Chain 0

### CH Low



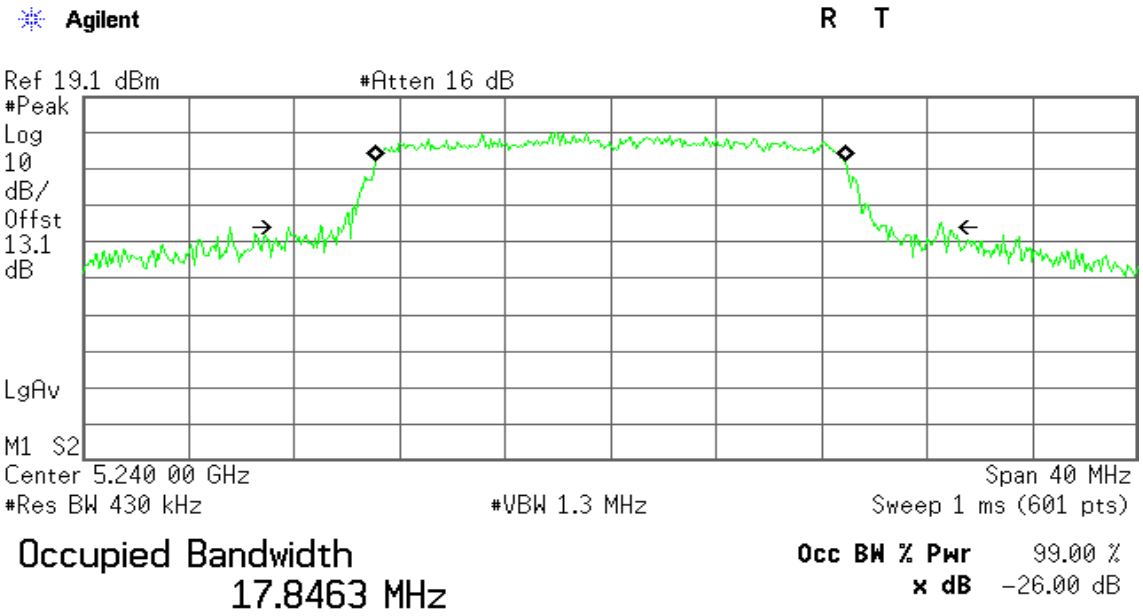

| | |
|---|---|
| **Transmit Freq Error** | 19.799 kHz |
| **x dB Bandwidth** | 33.955 MHz |

### CH Mid




| | |
|---|---|
| **Transmit Freq Error** | -70.730 kHz |
| **x dB Bandwidth** | 40.000 MHz |

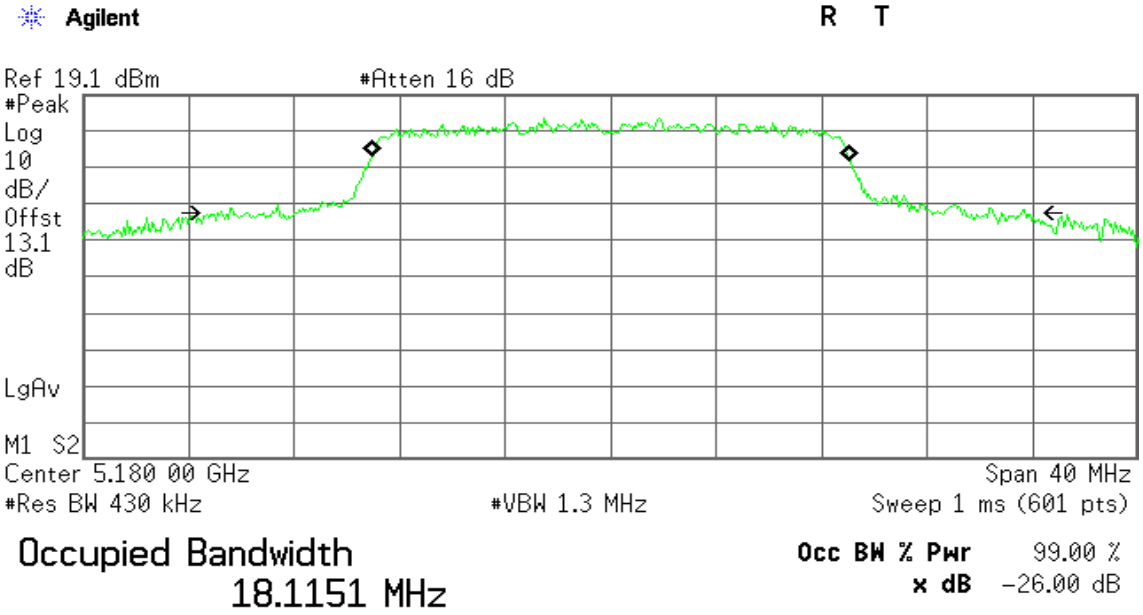
## CH High




**Transmit Freq Error** -6.713 kHz
**x dB Bandwidth** 24.770 MHz

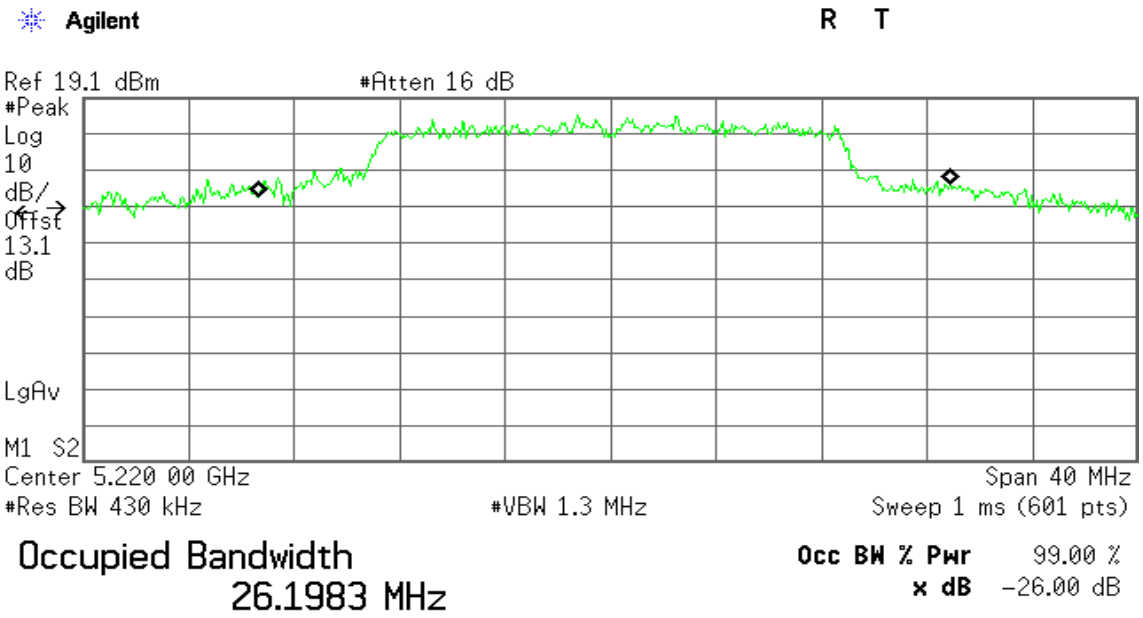
## IEEE 802.11n HT 20 mode / 5180 ~ 5240MHz / Chain 1

## CH Low




**Transmit Freq Error** -9.244 kHz
**x dB Bandwidth** 30.580 MHz

## CH Mid

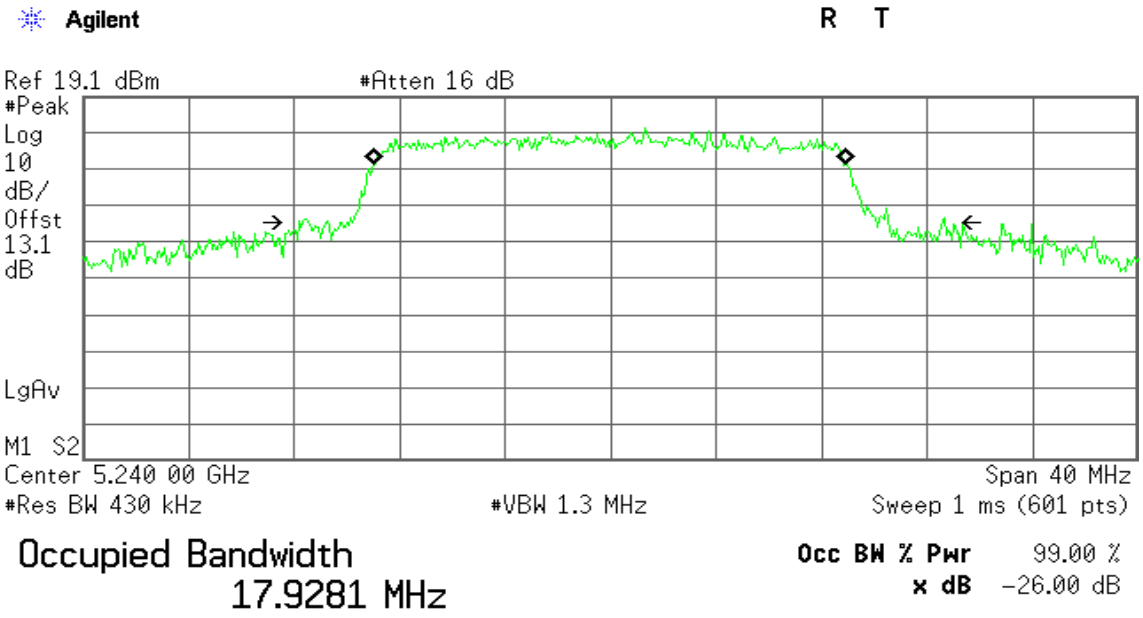



Occupied Bandwidth
26.1983 MHz

**Occ BW % Pwr** 99.00 %
**x dB** -26.00 dB

**Transmit Freq Error** -247.596 kHz
**x dB Bandwidth** 39.816 MHz

## CH High



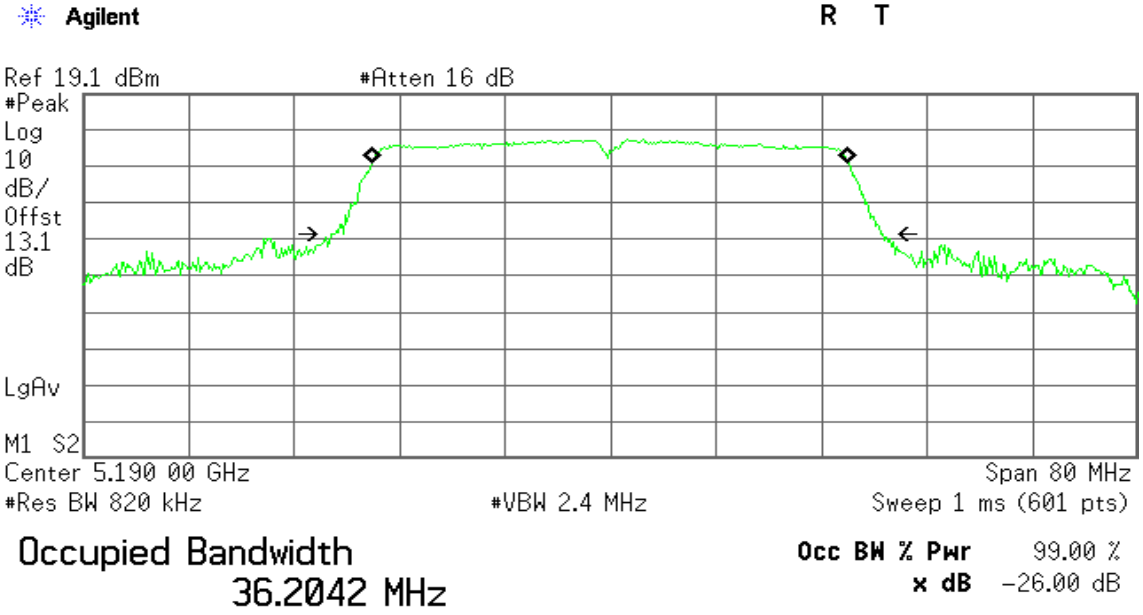

Occupied Bandwidth
17.9281 MHz

**Occ BW % Pwr** 99.00 %
**x dB** -26.00 dB

**Transmit Freq Error** -4.048 kHz
**x dB Bandwidth** 24.506 MHz

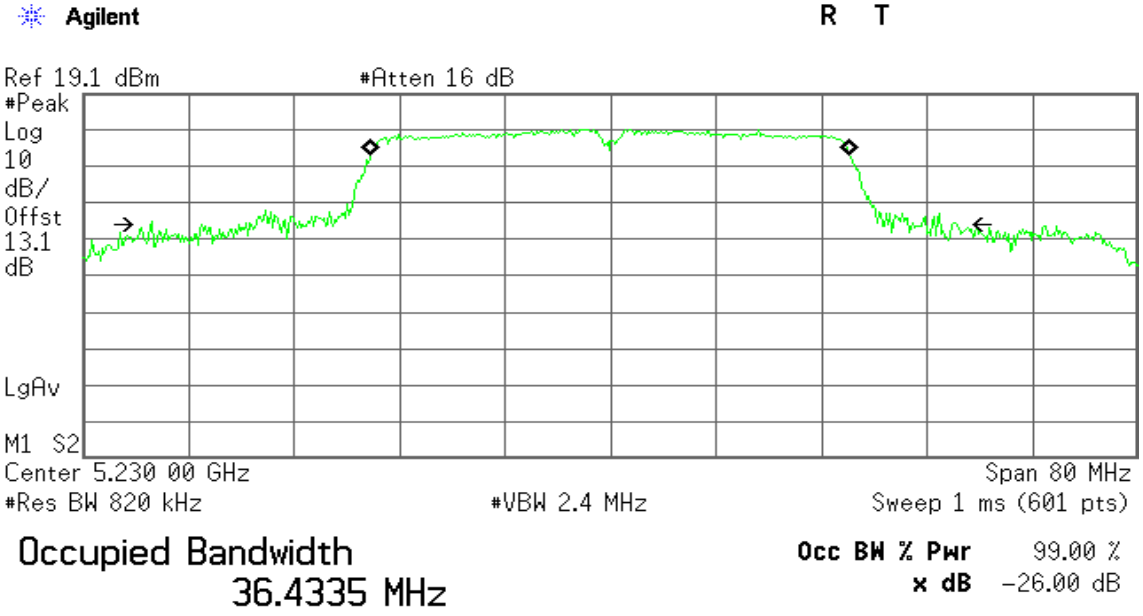
## IEEE 802.11n HT 40 mode / 5190 ~ 5230MHz / Chain 0

### CH Low




**Transmit Freq Error** -57.537 kHz
**x dB Bandwidth** 41.430 MHz

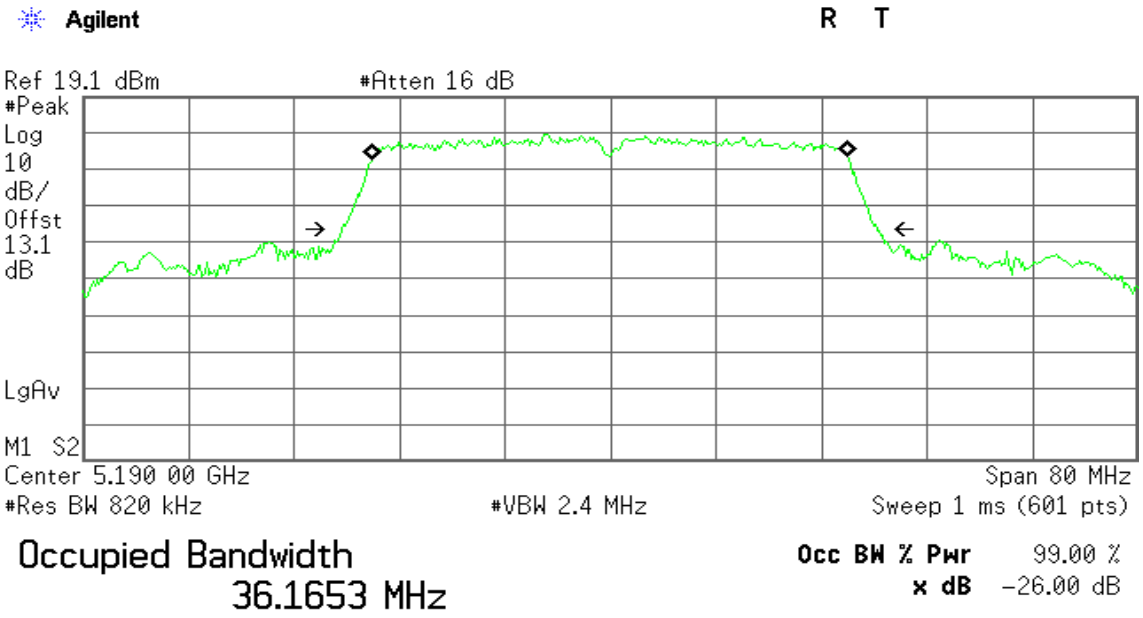
### CH High




**Transmit Freq Error** -26.773 kHz
**x dB Bandwidth** 61.081 MHz

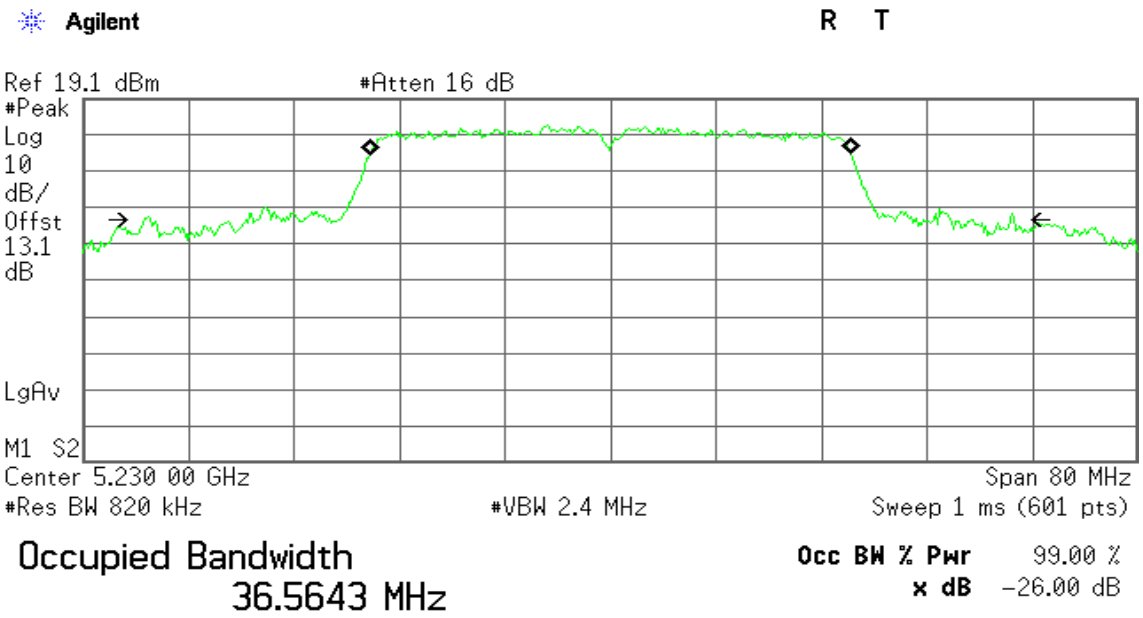
## IEEE 802.11n HT 40 mode / 5190 ~ 5230MHz / Chain 1

### CH Low




**Transmit Freq Error** -35.485 kHz
**x dB Bandwidth** 40.625 MHz

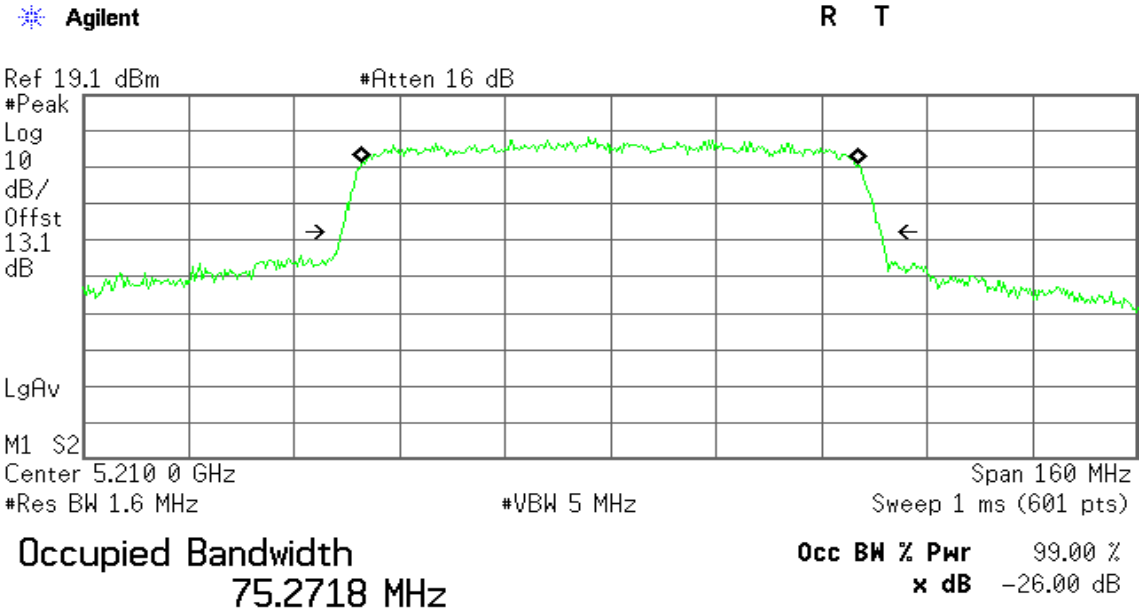
### CH High




**Transmit Freq Error** -37.731 kHz
**x dB Bandwidth** 65.956 MHz

## IEEE 802.11ac VHT80 Mode / 5210MHz / Chain 0

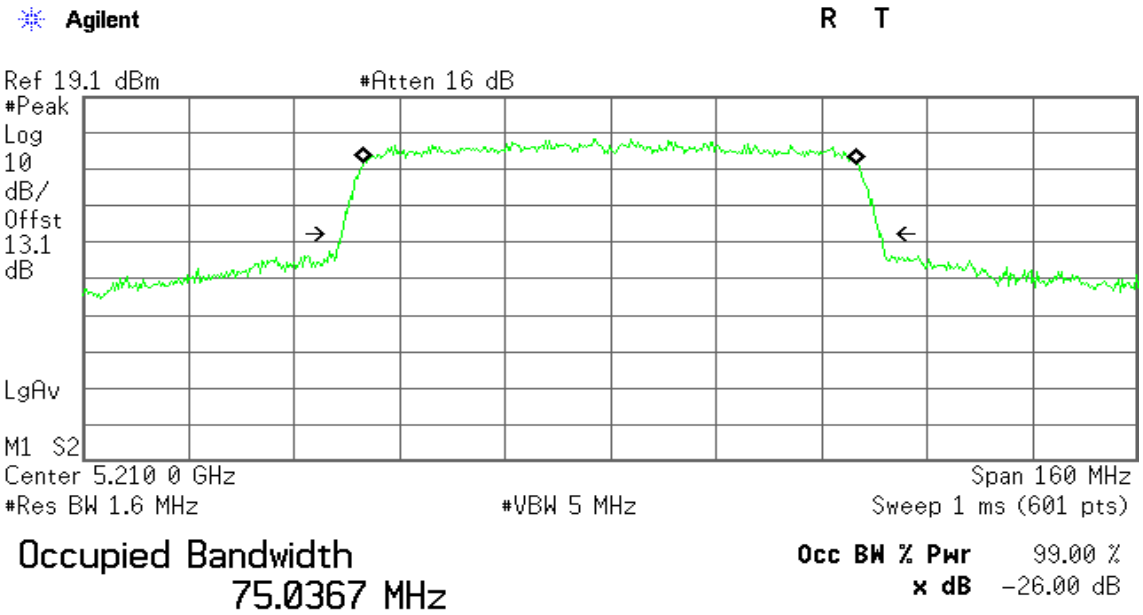
### CH Mid




**Transmit Freq Error** -116.536 kHz
**x dB Bandwidth** 81.934 MHz

## IEEE 802.11ac VHT80 Mode / 5210MHz / Chain 1

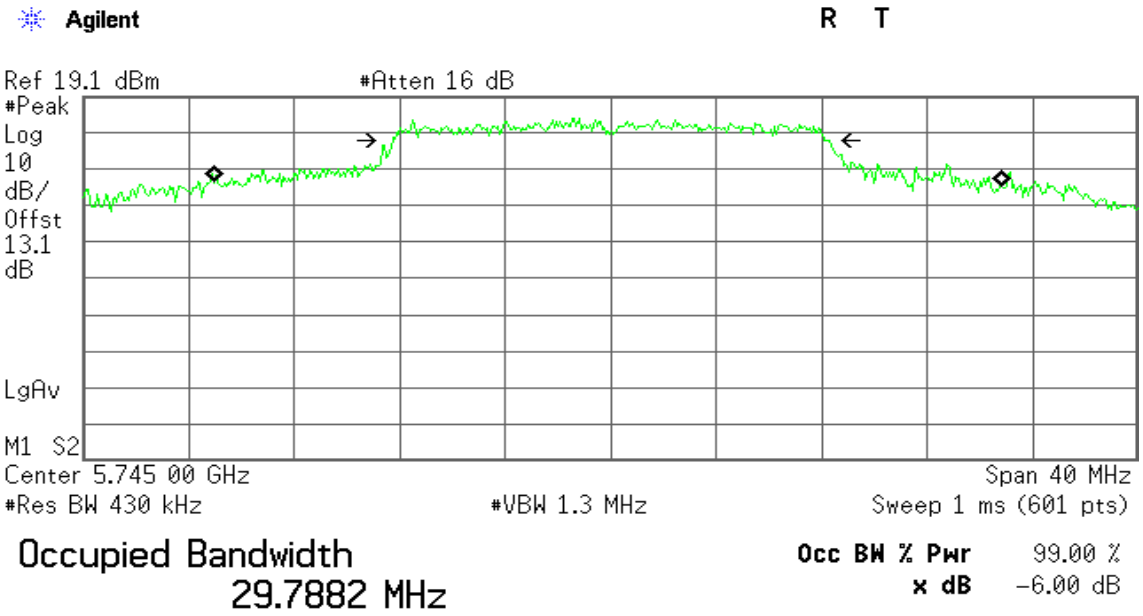
### CH Mid




**Transmit Freq Error** -60.319 kHz
**x dB Bandwidth** 81.627 MHz

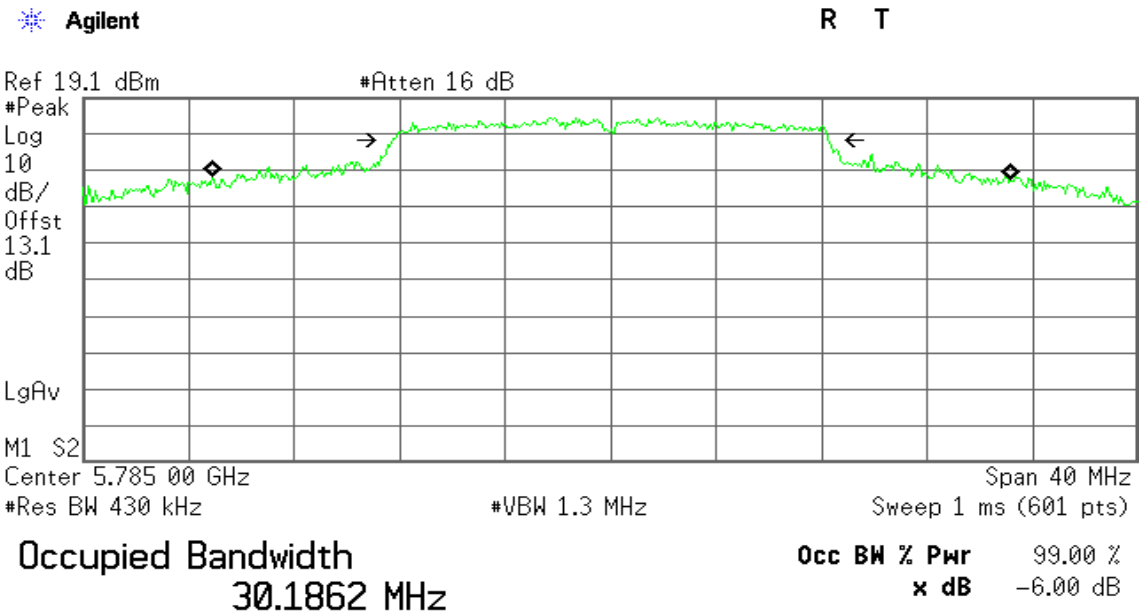
## IEEE 802.11a mode / 5745 ~ 5825MHz / Chain 0

### CH Low



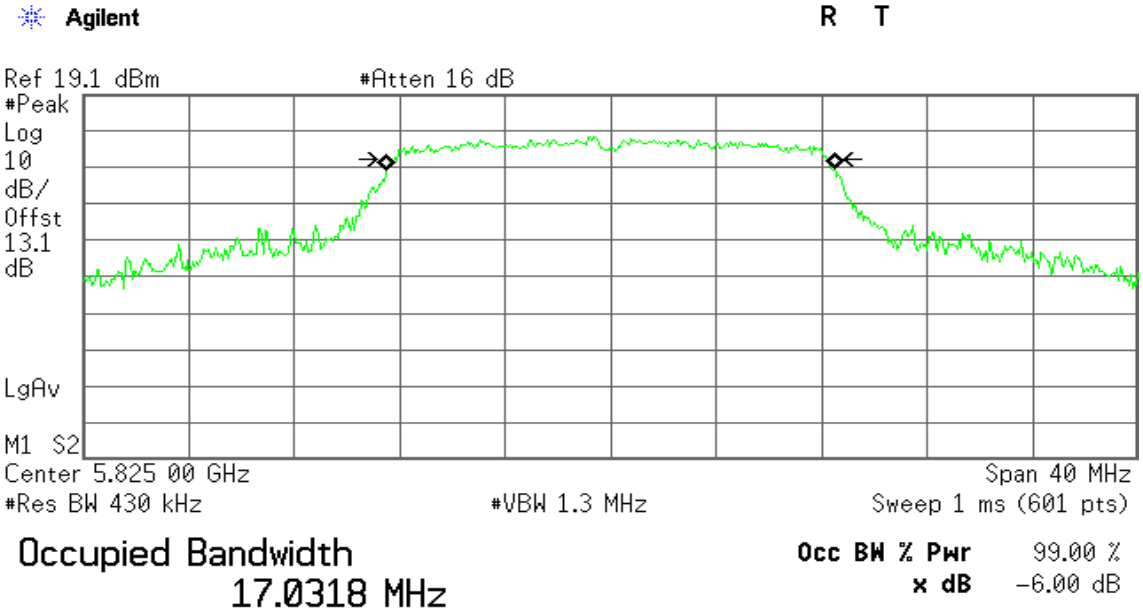

| | |
|---|---|
| **Transmit Freq Error** | -117.350 kHz |
| **x dB Bandwidth** | 16.422 MHz |

### CH Mid




| | |
|---|---|
| **Transmit Freq Error** | 25.466 kHz |
| **x dB Bandwidth** | 16.565 MHz |

### CH High



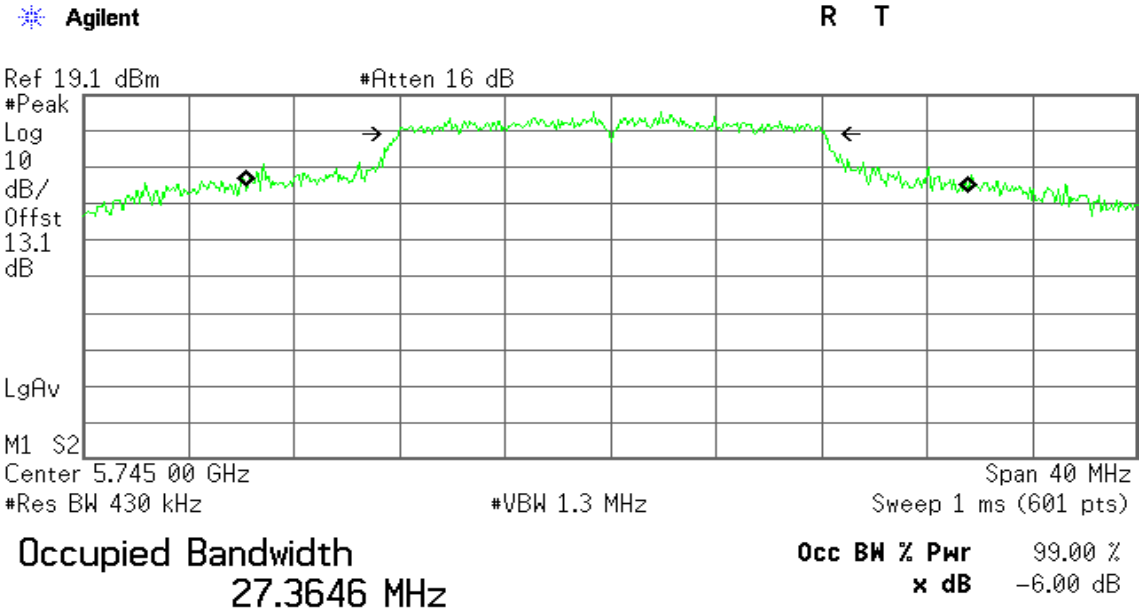

Occupied Bandwidth
17.0318 MHz

| | |
|---|---|
| **Occ BW % Pwr** | 99.00 % |
| **x dB** | -6.00 dB |

| | |
|---|---|
| **Transmit Freq Error** | 8.043 kHz |
| **x dB Bandwidth** | 16.461 MHz |

## IEEE 802.11a mode / 5745 ~ 5825MHz / Chain 1

### CH Low

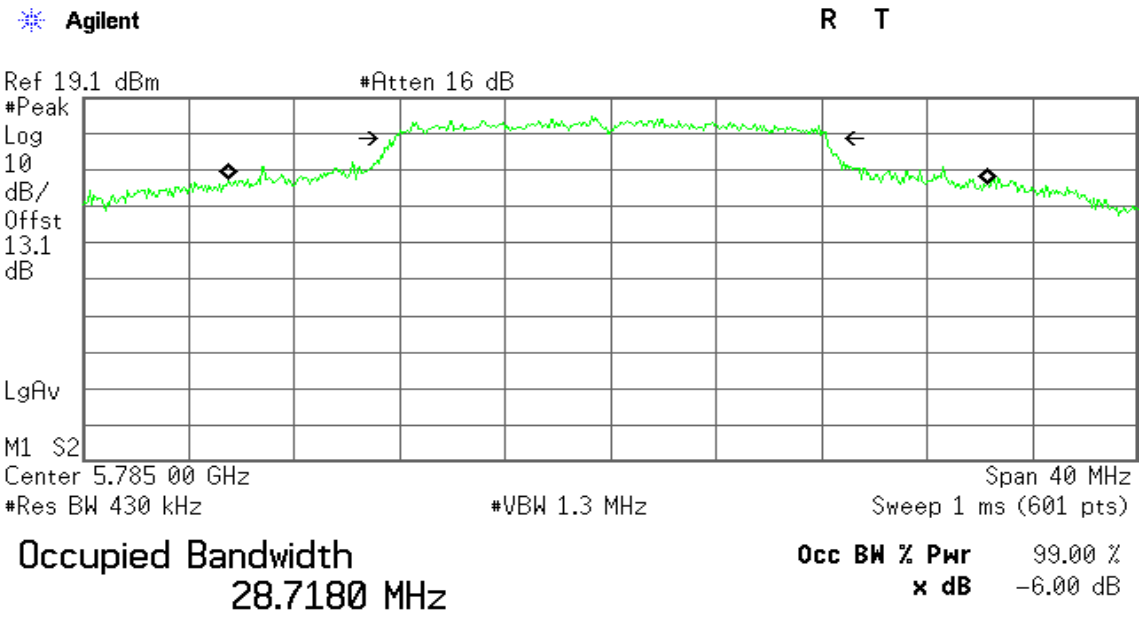



Occupied Bandwidth
27.3646 MHz

| | |
|---|---|
| **Occ BW % Pwr** | 99.00 % |
| **x dB** | -6.00 dB |

| | |
|---|---|
| **Transmit Freq Error** | -146.241 kHz |
| **x dB Bandwidth** | 16.248 MHz |

## CH Mid

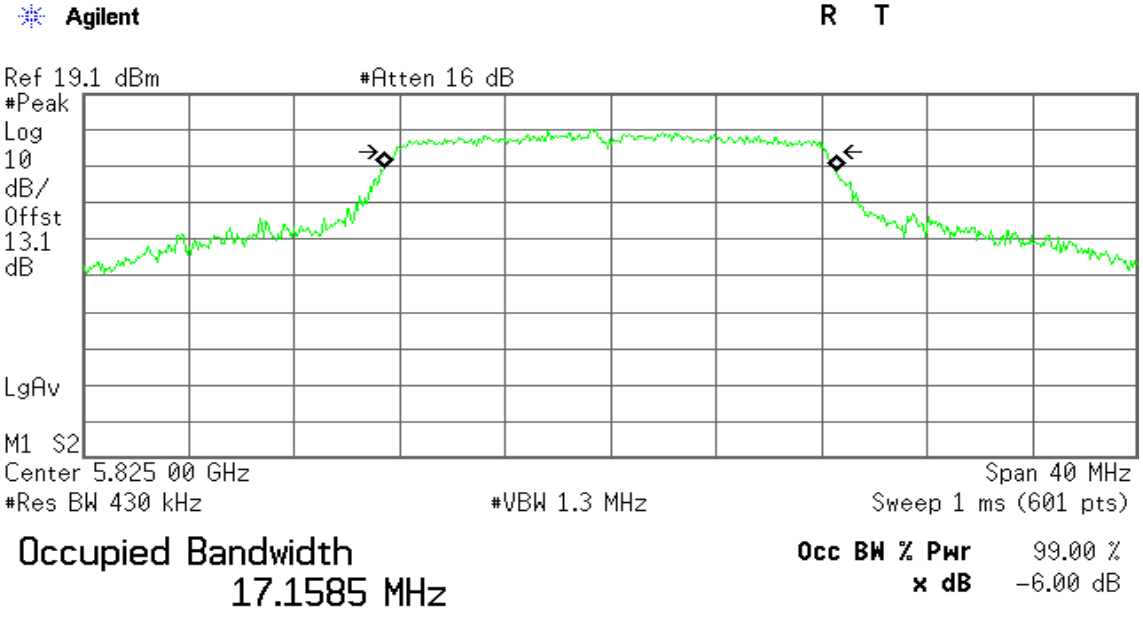



Occupied Bandwidth
28.7180 MHz

**Occ BW % Pwr** 99.00 %
**x dB** -6.00 dB

**Transmit Freq Error** -107.396 kHz
**x dB Bandwidth** 16.457 MHz

## CH High



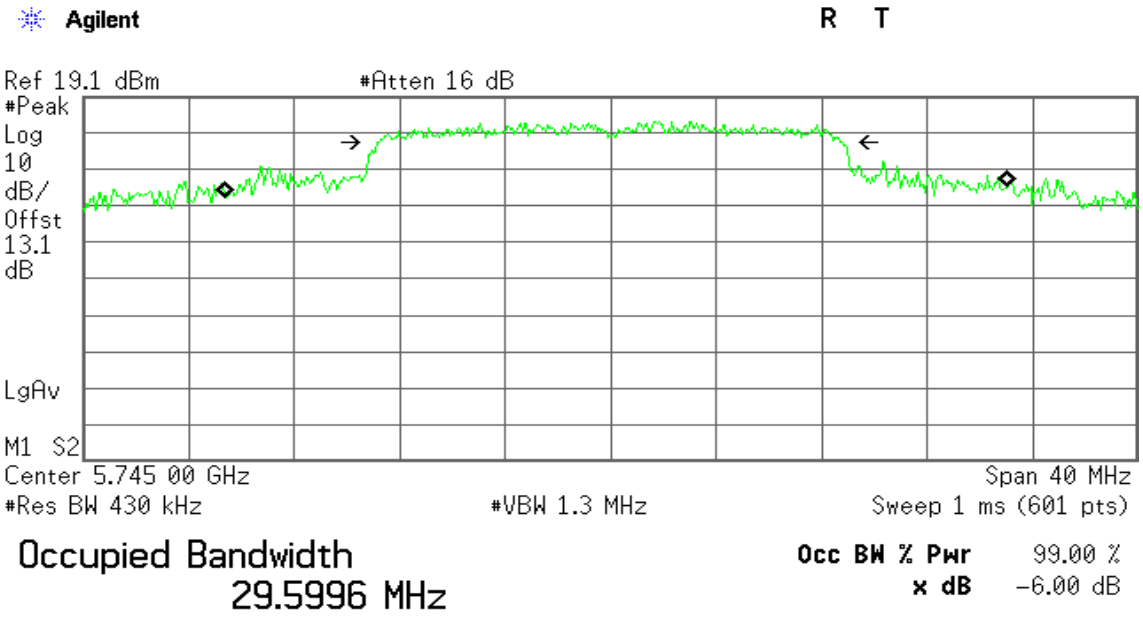

Occupied Bandwidth
17.1585 MHz

**Occ BW % Pwr** 99.00 %
**x dB** -6.00 dB

**Transmit Freq Error** -12.234 kHz
**x dB Bandwidth** 16.409 MHz

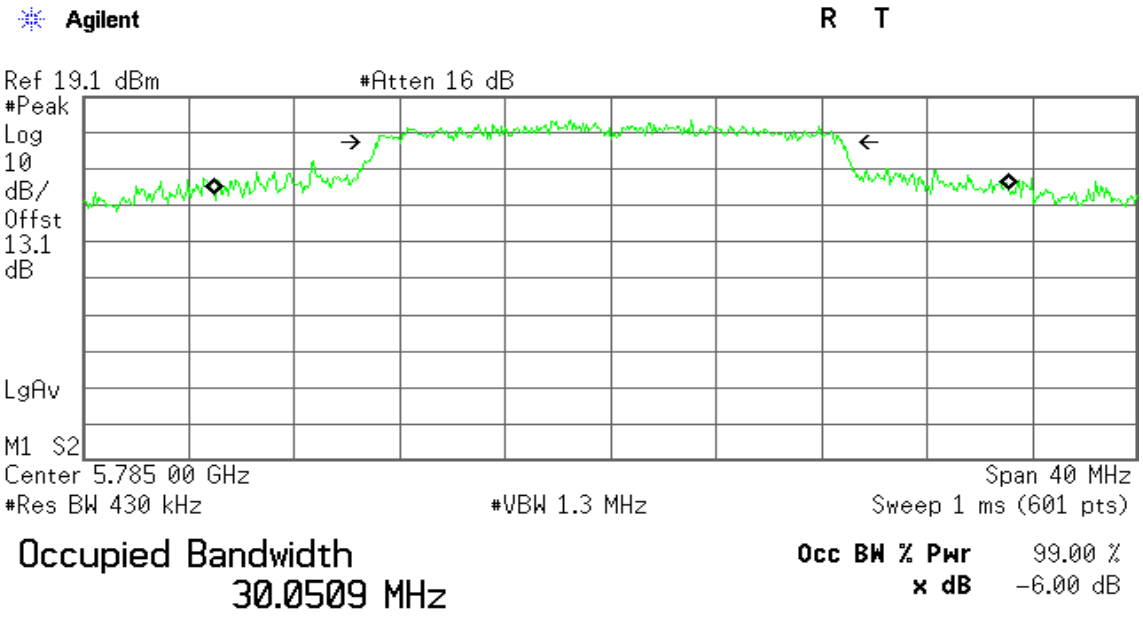
## IEEE 802.11n HT 20 mode / 5745 ~ 5825MHz / Chain 0

### CH Low



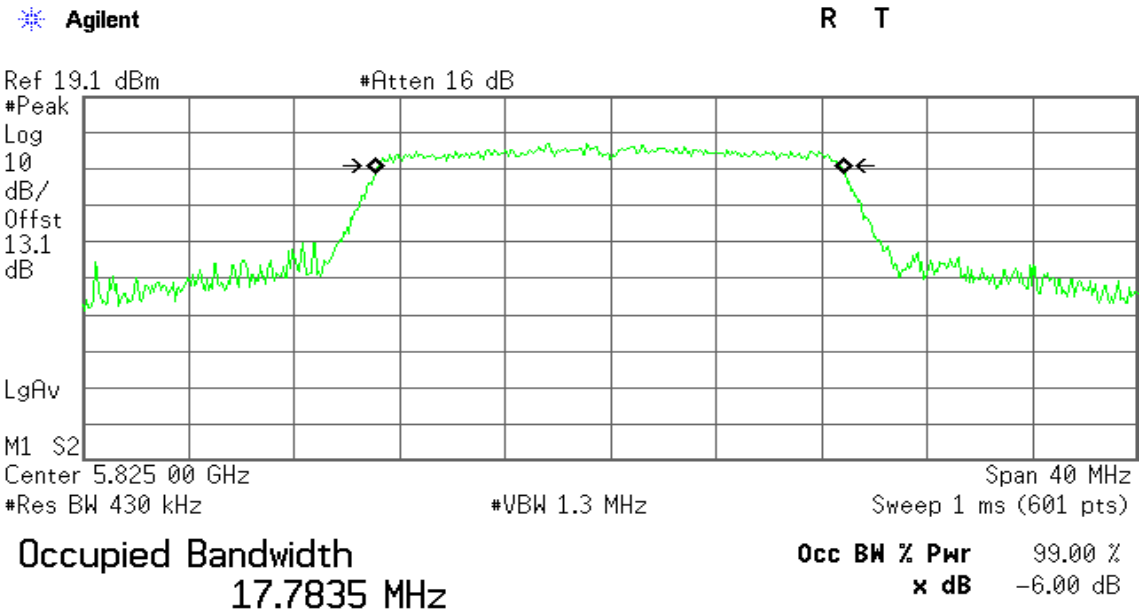

| | |
|---|---|
| **Transmit Freq Error** | 221.969 kHz |
| **x dB Bandwidth** | 17.692 MHz |

### CH Mid




| | |
|---|---|
| **Transmit Freq Error** | 40.446 kHz |
| **x dB Bandwidth** | 17.652 MHz |

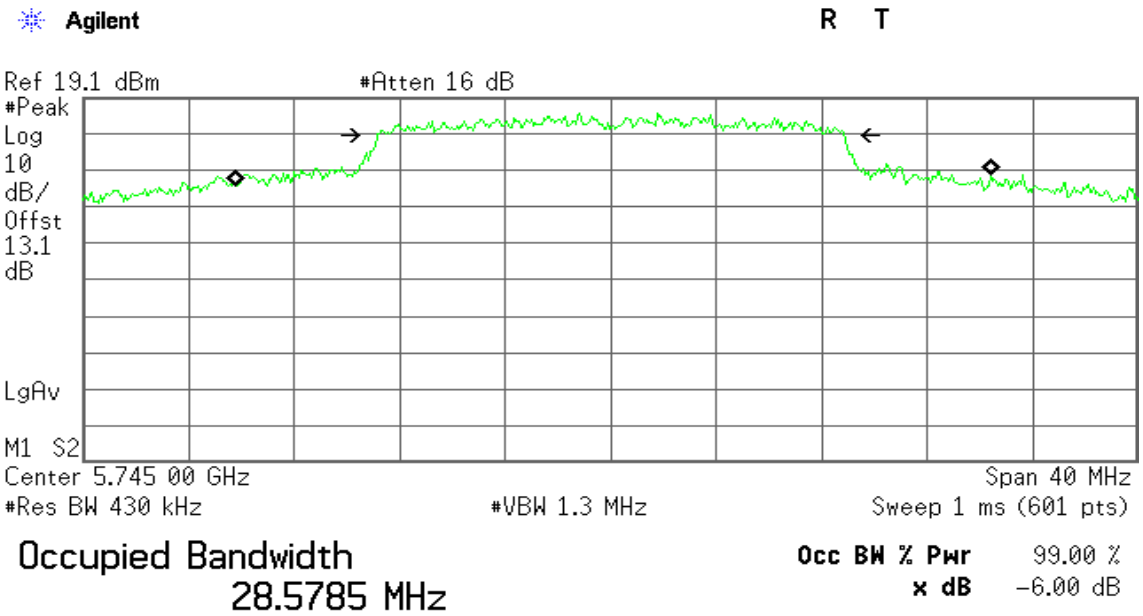
## CH High




**Transmit Freq Error** -33.032 kHz
**x dB Bandwidth** 17.463 MHz

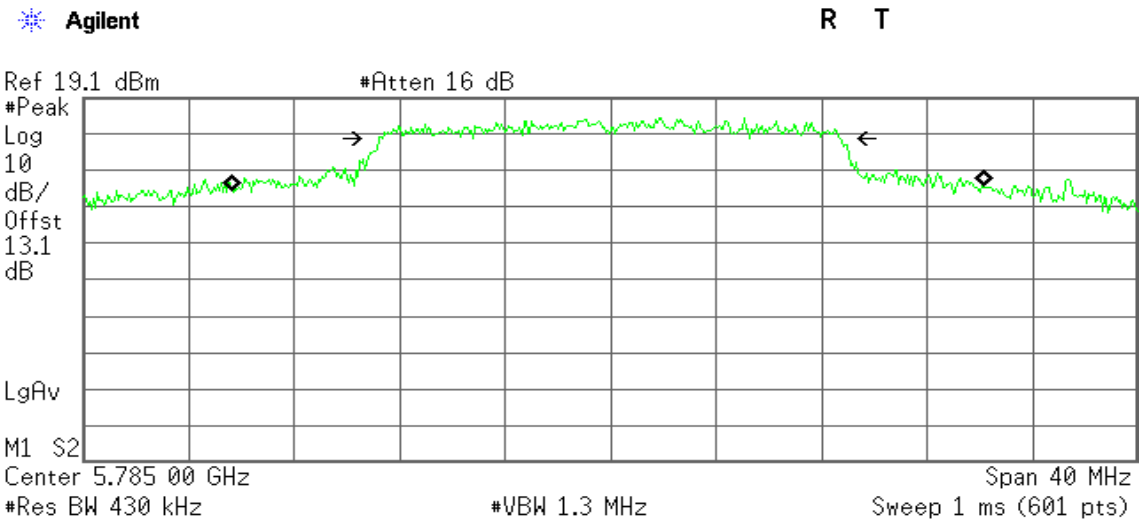
## IEEE 802.11n HT 20 mode / 5745 ~ 5825MHz / Chain 1

## CH Low




**Transmit Freq Error** 102.965 kHz
**x dB Bandwidth** 17.769 MHz

## CH Mid

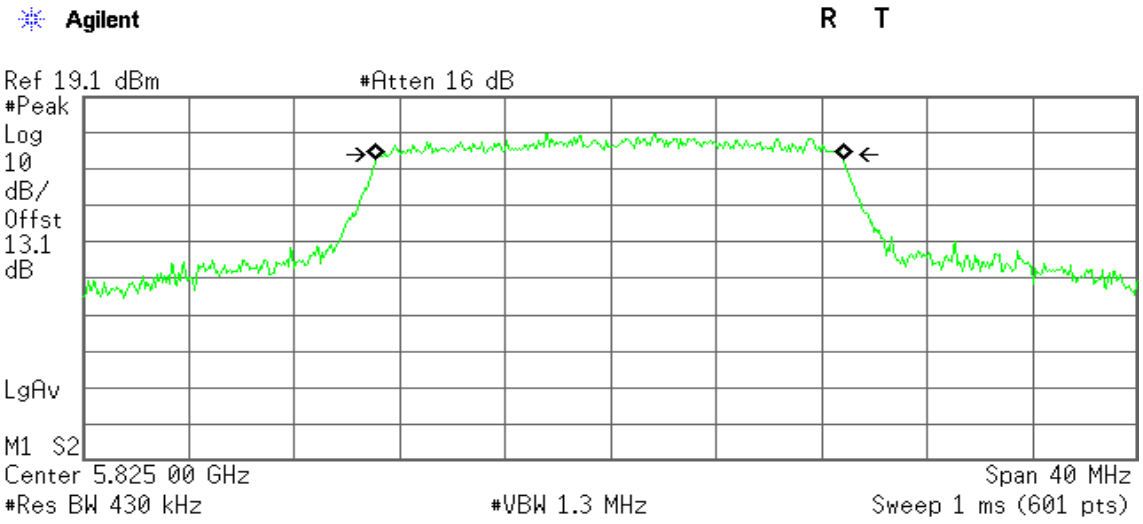



Occupied Bandwidth
28.4184 MHz

**Occ BW % Pwr** 99.00 %
**x dB** -6.00 dB

**Transmit Freq Error** -92.868 kHz
**x dB Bandwidth** 17.563 MHz

## CH High



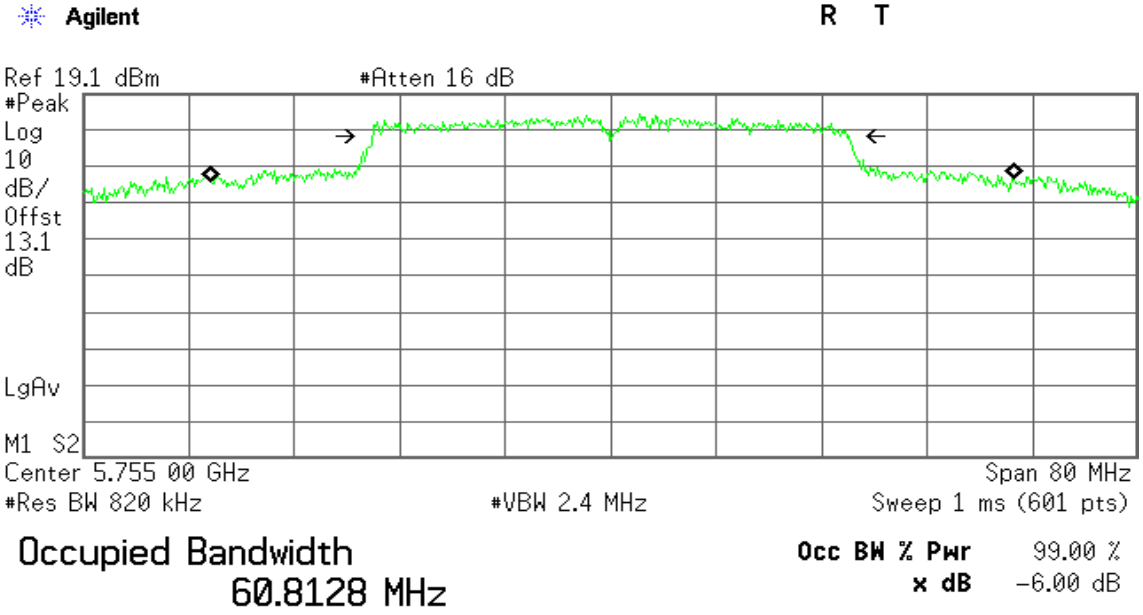

Occupied Bandwidth
17.7564 MHz

**Occ BW % Pwr** 99.00 %
**x dB** -6.00 dB

**Transmit Freq Error** -26.320 kHz
**x dB Bandwidth** 17.437 MHz

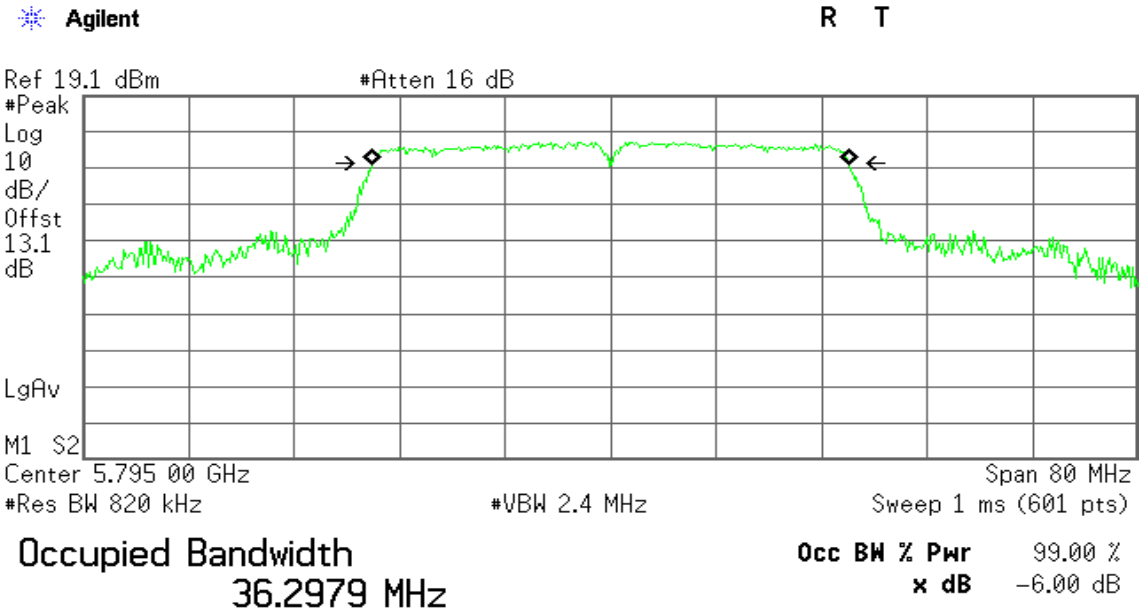
## IEEE 802.11n HT 40 mode / 5755 ~ 5795MHz / Chain 0

### CH Low




**Transmit Freq Error** 107.294 kHz
**x dB Bandwidth** 36.230 MHz

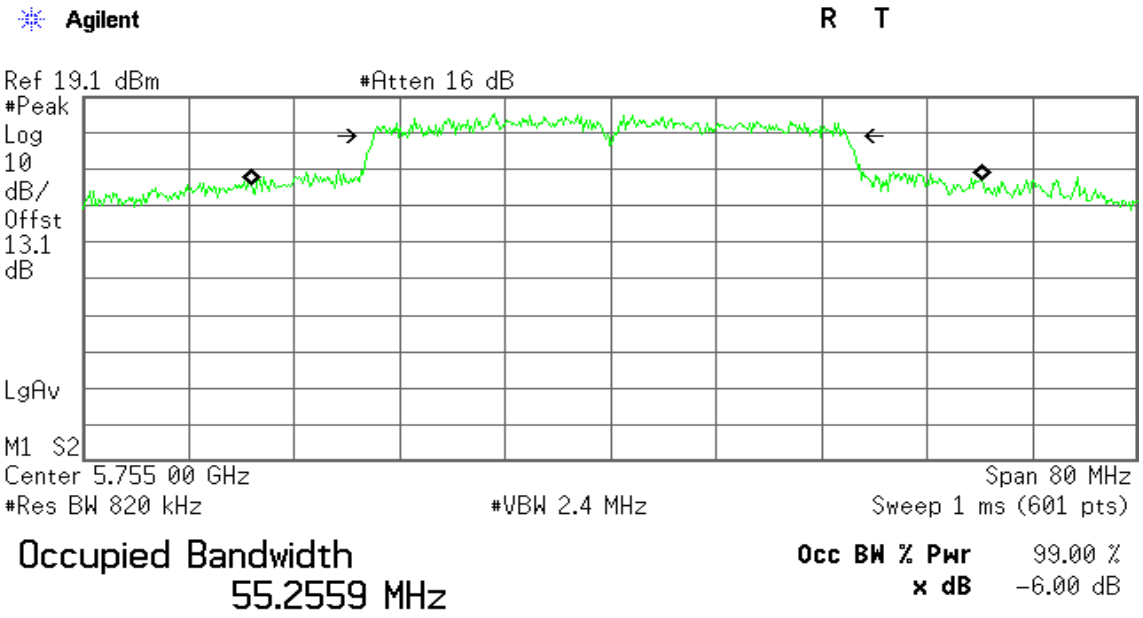
### CH High




**Transmit Freq Error** 16.108 kHz
**x dB Bandwidth** 36.283 MHz

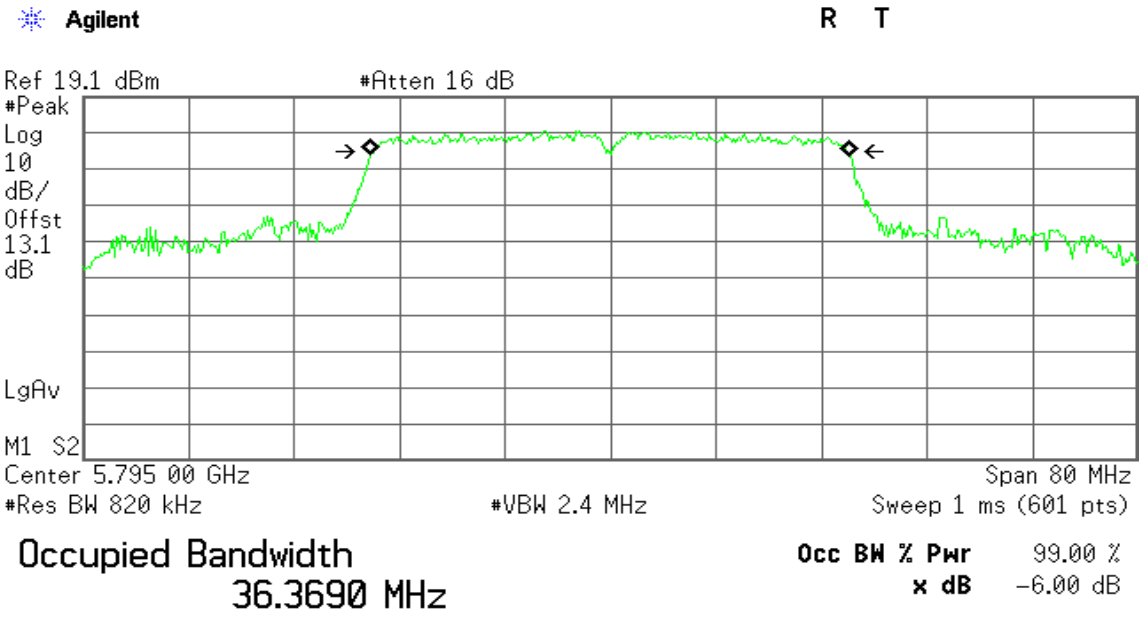
## IEEE 802.11n HT 40 mode / 5755 ~ 5795MHz / Chain 1

### CH Low




| | |
|---|---|
| **Transmit Freq Error** | 462.069 kHz |
| **x dB Bandwidth** | 35.950 MHz |

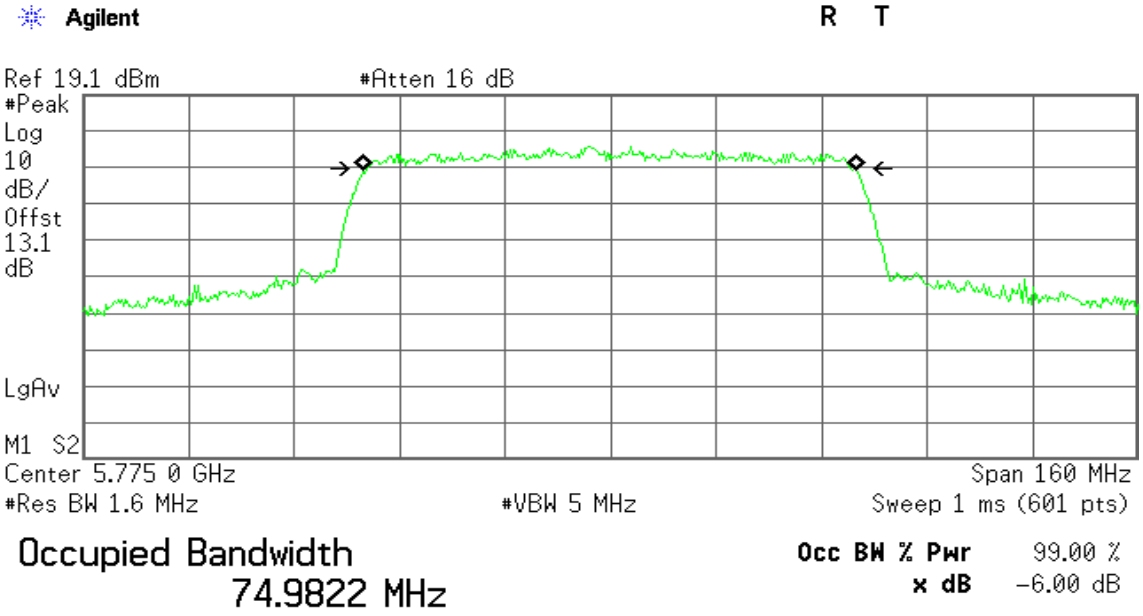
### CH High




| | |
|---|---|
| **Transmit Freq Error** | -24.969 kHz |
| **x dB Bandwidth** | 36.129 MHz |

## IEEE 802.11ac VHT80 Mode / 5775MHz / Chain 0

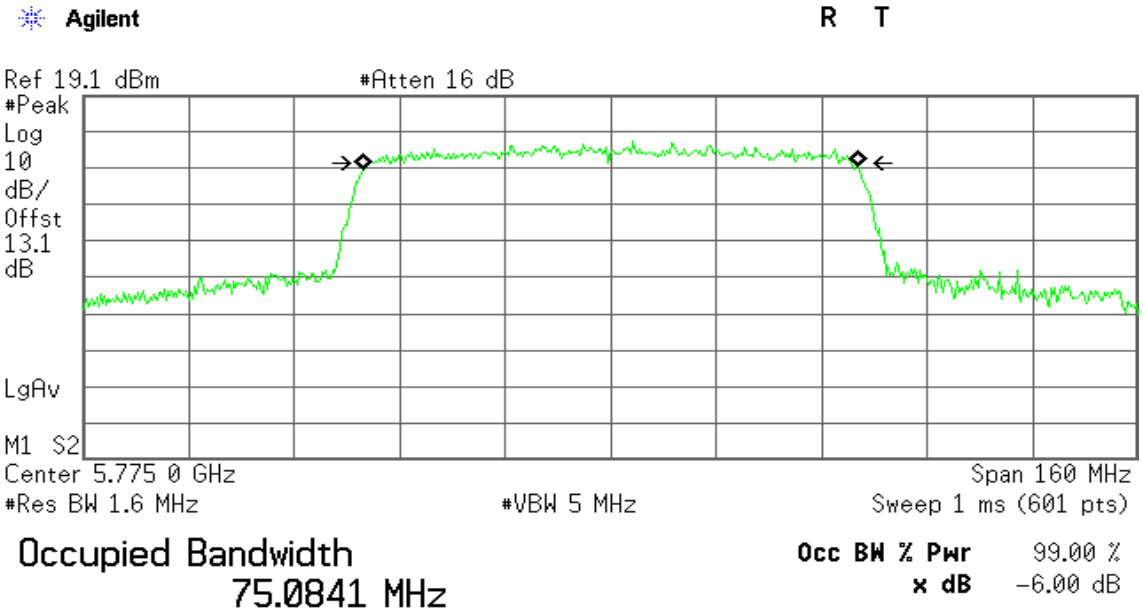
### CH Mid




| | |
|---|---|
| **Transmit Freq Error** | -88.615 kHz |
| **x dB Bandwidth** | 74.398 MHz |

## IEEE 802.11ac VHT80 Mode / 5775MHz / Chain 1

### CH Mid

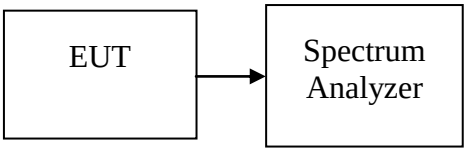



| | |
|---|---|
| **Transmit Freq Error** | 33.566 kHz |
| **x dB Bandwidth** | 74.140 MHz |

## 7.2 MAXIMUM CONDUCTED OUTPUT POWER

**Test Configuration**

*The EUT was connected to a spectrum analyzer through a 50Ω RF cable.*




## TEST PROCEDURE

Set span to encompass the entire emission bandwidth (EBW) of the signal.

Set RBW = 1 MHz / Set VBW = 3 MHz.

Use sample detector mode if bin width (i.e., span/number of points in spectrum display) < 0.5 RBW. Otherwise use peak detector mode. Use a video trigger with the trigger level set to enable triggering only on full power pulses. Transmitter must operate at full control power for entire sweep of every sweep. If the device transmits continuously, with no off intervals or reduced power intervals, the trigger may be set to "free run".·Trace average 100 traces in power averaging mode. Compute power by integrating the spectrum across the 26 dB EBW of the signal. The integration can be performed using the spectrum analyzer's band power measurement function with band limits set equal to the EBW band edges or by summing power levels in each 1 MHz band in linear power terms. The 1 MHz band power levels to be summed can be obtained by averaging, in linear power terms, power levels in each frequency bin across the 1 MHz.

## TEST RESULTS

*No non-compliance noted*

## Test Data

### Test mode: IEEE 802.11a mode / 5180 ~ 5240MHz

| Channel | Frequency (MHz) | Chain 0 Output Power (dBm) | Chain 1 Output Power (dBm) | Total Maximum Conducted Output Power (dBm) | Limit (dBm) |
|---|---|---|---|---|---|
| Low | 5180 | 17.27 | 17.96 | 20.63 | 28.49 |
| Mid | 5220 | 21.26 | 21.49 | **24.38** | 28.49 |
| High | 5240 | 21.02 | 21.05 | 24.04 | 28.49 |

### Test mode: IEEE 802.11n HT 20 mode / 5180 ~ 5240MHz

| Channel | Frequency (MHz) | Chain 0 Output Power (dBm) | Chain 1 Output Power (dBm) | Total Maximum Conducted Output Power (dBm) | Limit (dBm) |
|---|---|---|---|---|---|
| Low | 5180 | 17.57 | 18.23 | 20.92 | 28.49 |
| Mid | 5220 | 21.17 | 21.57 | **24.38** | 28.49 |
| High | 5240 | 16.59 | 16.62 | 19.61 | 28.49 |

### Test mode: IEEE 802.11n HT 40 mode / 5190 ~ 5230MHz

| Channel | Frequency (MHz) | Chain 0 Output Power (dBm) | Chain 1 Output Power (dBm) | Total Maximum Conducted Output Power (dBm) | Limit (dBm) |
|---|---|---|---|---|---|
| Low | 5190 | 13.62 | 14.25 | 16.96 | 28.49 |
| High | 5230 | 16.60 | 17.23 | **19.94** | 28.49 |

### Test mode: IEEE 802.11ac VHT80 Mode / 5210MHz

| Channel | Frequency (MHz) | Chain 0 Output Power (dBm) | Chain 1 Output Power (dBm) | Total Maximum Conducted Output Power (dBm) | Limit (dBm) |
|---|---|---|---|---|---|
| Mid | 5210 | 11.31 | 11.63 | **14.48** | 28.49 |

***Remark:***

*1. Total Output Power (w) = Chain 0 (10^(Output Power /10)/1000) + Chain 1 (10^(Output Power /10)/1000))*

**Test mode: IEEE 802.11a mode / 5745 ~ 5825MHz**

| Channel | Frequency (MHz) | Chain 0 Output Power (dBm) | Chain 1 Output Power (dBm) | Total Maximum Conducted Output Power (dBm) | Limit (dBm) |
|---|---|---|---|---|---|
| Low | 5745 | 20.81 | 19.99 | 23.42 | 28.49 |
| Mid | 5785 | 21.07 | 20.11 | **23.62** | 28.49 |
| High | 5825 | 14.63 | 14.22 | 17.44 | 28.49 |

**Test mode: IEEE 802.11n HT 20 mode / 5745~5825MHz**

| Channel | Frequency (MHz) | Chain 0 Output Power (dBm) | Chain 1 Output Power (dBm) | Total Maximum Conducted Output Power (dBm) | Limit (dBm) |
|---|---|---|---|---|---|
| Low | 5745 | 20.71 | 20.35 | 23.54 | 28.49 |
| Mid | 5785 | 21.26 | 20.57 | **23.94** | 28.49 |
| High | 5825 | 14.22 | 13.80 | 17.02 | 28.49 |

**Test mode: IEEE 802.11n HT 40 mode / 5755 ~ 5795MHz**

| Channel | Frequency (MHz) | Chain 0 Output Power (dBm) | Chain 1 Output Power (dBm) | Total Maximum Conducted Output Power (dBm) | Limit (dBm) |
|---|---|---|---|---|---|
| Low | 5755 | 21.09 | 20.44 | **23.79** | 28.49 |
| High | 5795 | 15.51 | 15.61 | 18.57 | 28.49 |

**Test mode: IEEE 802.11ac VHT80 Mode / 5775MHz**

| Channel | Frequency (MHz) | Chain 0 Output Power (dBm) | Chain 1 Output Power (dBm) | Total Maximum Conducted Output Power (dBm) | Limit (dBm) |
|---|---|---|---|---|---|
| Mid | 5775 | 9.07 | 9.71 | **12.41** | 28.49 |

***Remark:***

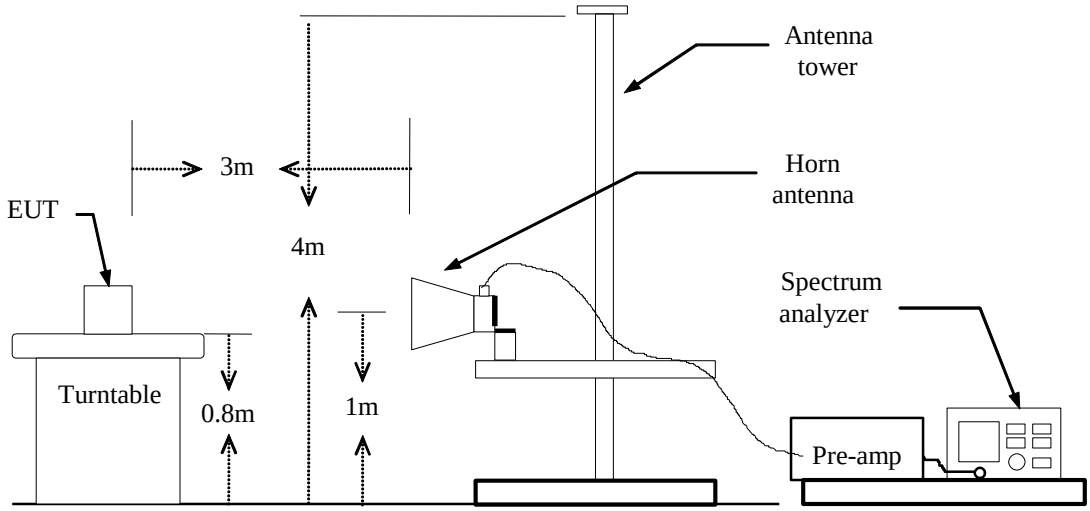
*1. Total Output Power (w) = Chain 0 (10^(Output Power /10)/1000) + Chain 1 (10^(Output Power /10)/1000))*

## 7.3 BAND EDGES MEASUREMENT

## LIMIT

According to §15.407(b),
(1) The provisions of Section 15.205 of this part apply to intentional radiators operating under this section.
(2) When measuring the emission limits, the nominal carrier frequency shall be adjusted as close to the upper and lower frequency block edges as the design of the equipment permits.

**Test Configuration**




## TEST PROCEDURE

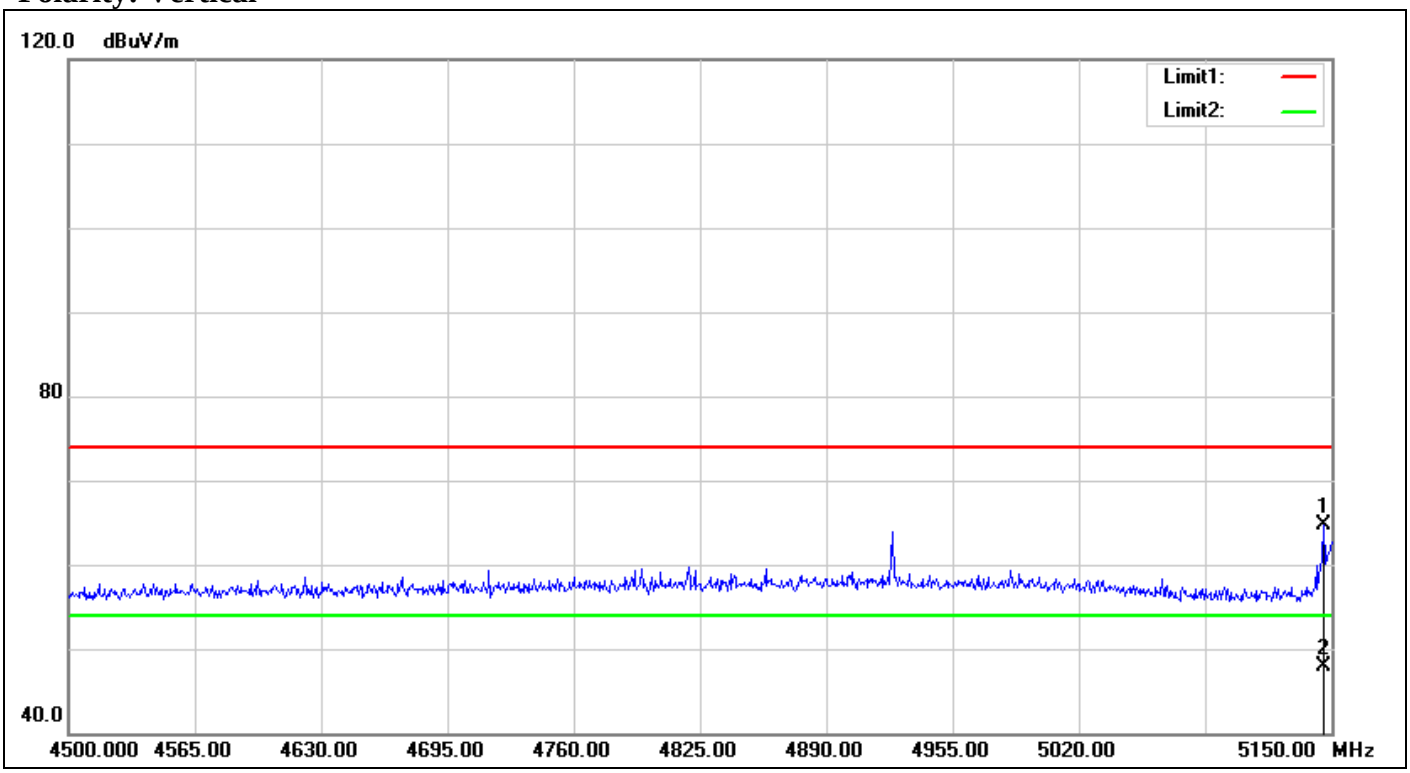
1. The EUT is placed on a turntable, which is 0.8m above the ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emission.
4. Set the spectrum analyzer in the following setting in order to capture the lower and upper band-edges of the emission:
   (a) PEAK: RBW=1MHz / VBW=3MHz / Sweep=AUTO
   (b) AVERAGE: RBW=1MHz,
   if duty cycle≧98%, VBW=10Hz.
   if duty cycle<98% VBW=1/T.
   **IEEE 802.11a mode:** = 88%, VBW=750Hz
   **IEEE 802.11n HT 20 MHz mode:** = 78%, VBW=1.5KHz
   **IEEE 802.11n HT 40 MHz mode:** = 65%, VBW=3KHz
   **IEEE 802.11ac VHT 80 MHz mode:** = 78%, VBW=1.5KHz
5. Repeat the procedures until all the PEAK and AVERAGE versus POLARIZATION are measured.

## TEST RESULTS

Refer to attach spectrum analyzer data chart.

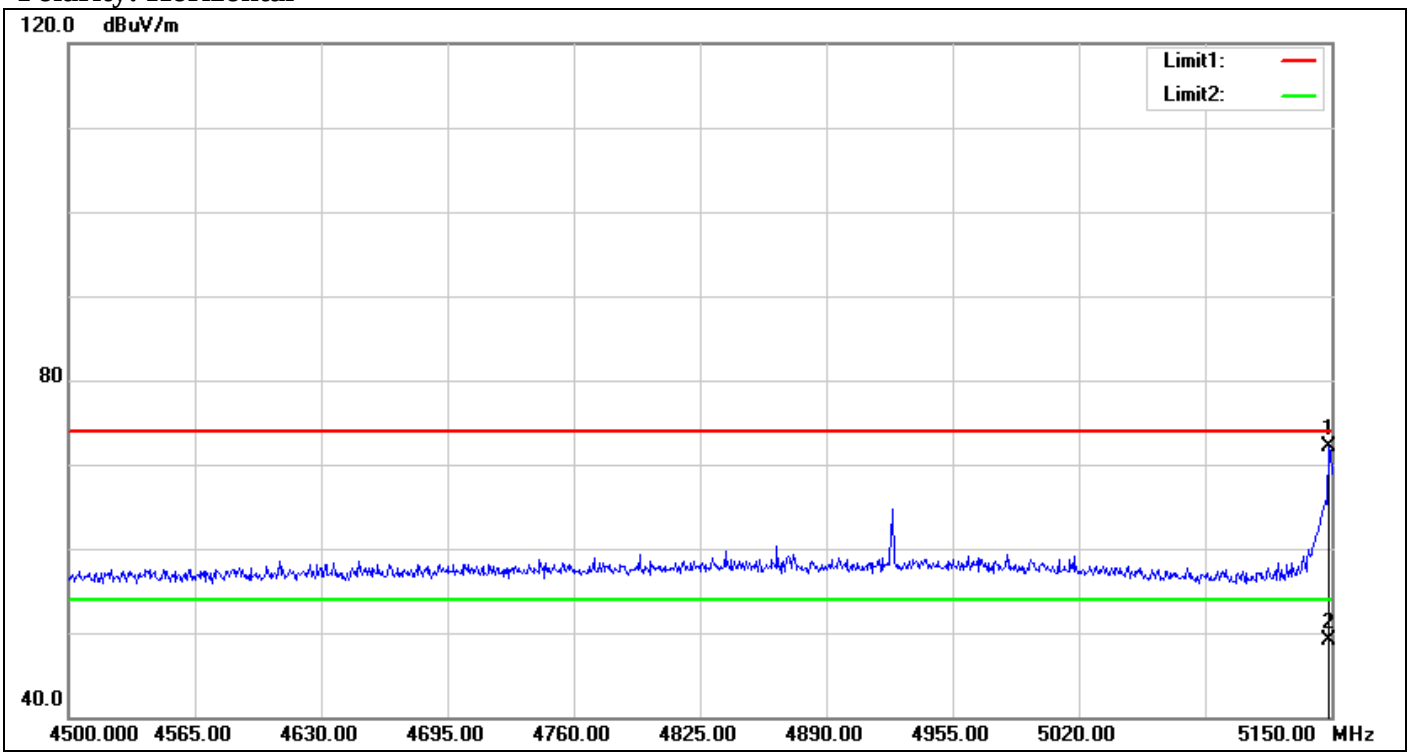
## Band Edges (IEEE 802.11a mode / 5180 MHz)

## Polarity: Vertical




| No. | Frequency | Reading | Correct | Result | Limit | Margin | Height | Degree | Remark |
|---|---|---|---|---|---|---|---|---|---|
| | (MHz) | (dBuV) | Factor(dB/m) | (dBuV/m) | (dBuV/m) | (dB) | (cm) | ( ° ) | |
| 1 | 5146.100 | 61.61 | 3.01 | 64.62 | 74.00 | -9.38 | 100 | 21 | peak |
| 2 | 5146.100 | 44.99 | 3.01 | 48.00 | 54.00 | -6.00 | 100 | 21 | AVG |

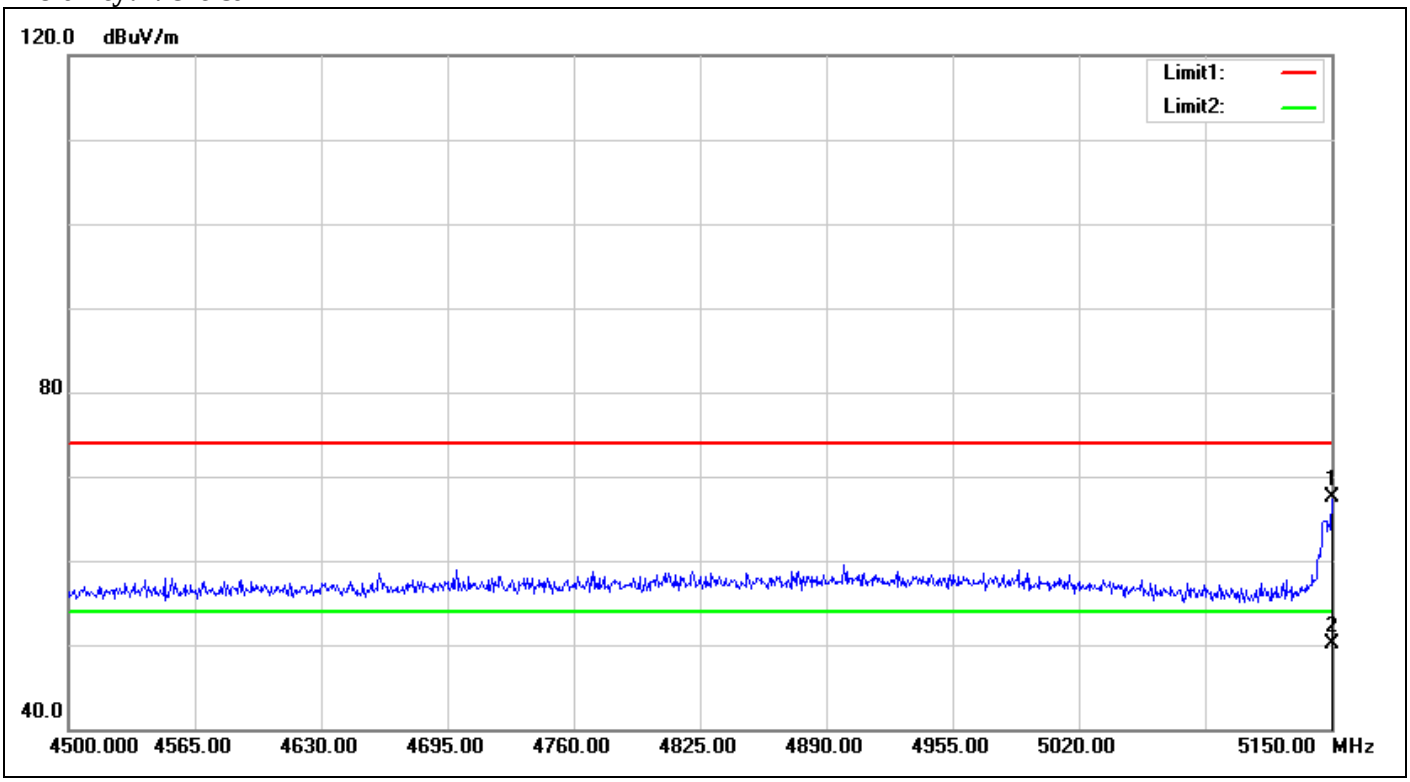
**Polarity: Horizontal**




| No. | Frequency | Reading | Correct | Result | Limit | Margin | Height | Degree | Remark |
|---|---|---|---|---|---|---|---|---|---|
| | (MHz) | (dBuV) | Factor(dB/m) | (dBuV/m) | (dBuV/m) | (dB) | (cm) | ( ° ) | |
| 1 | 5148.700 | 66.98 | 3.03 | 70.01 | 74.00 | -3.99 | 100 | 95 | peak |
| 2 | 5148.700 | 46.09 | 3.03 | 49.12 | 54.00 | -4.88 | 100 | 95 | AVG |

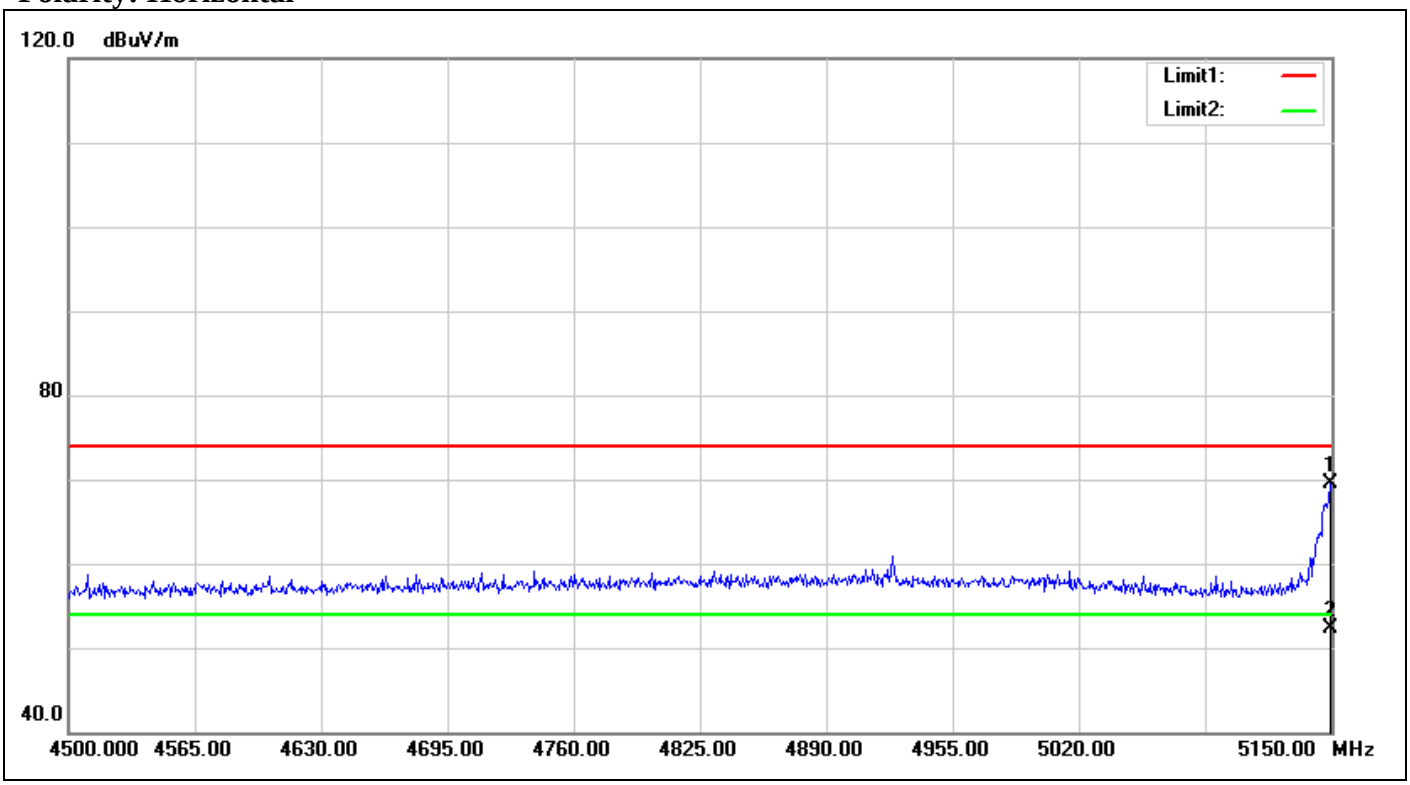
**Band Edges (IEEE 802.11n HT 20 mode / 5180 MHz)**

**Polarity: Vertical**




| No. | Frequency | Reading | Correct | Result | Limit | Margin | Height | Degree | Remark |
|---|---|---|---|---|---|---|---|---|---|
| | (MHz) | (dBuV) | Factor(dB/m) | (dBuV/m) | (dBuV/m) | (dB) | (cm) | ( ° ) | |
| 1 | 5150.000 | 64.46 | 3.04 | 67.50 | 74.00 | -6.50 | 100 | 109 | peak |
| 2 | 5150.000 | 47.04 | 3.04 | 50.08 | 54.00 | -3.92 | 100 | 109 | AVG |

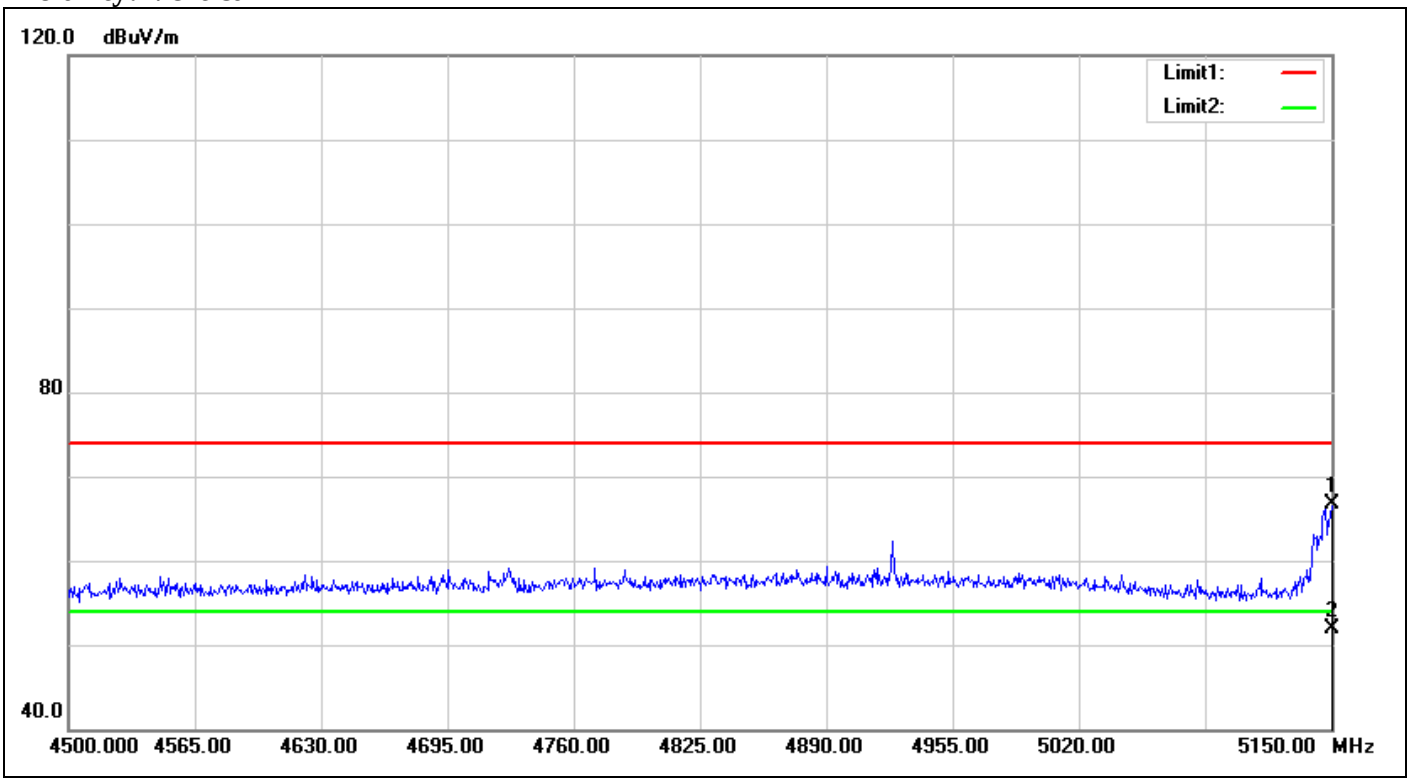
**Polarity: Horizontal**




| No. | Frequency | Reading | Correct | Result | Limit | Margin | Height | Degree | Remark |
|---|---|---|---|---|---|---|---|---|---|
| | (MHz) | (dBuV) | Factor(dB/m) | (dBuV/m) | (dBuV/m) | (dB) | (cm) | ( ° ) | |
| 1 | 5149.350 | 66.54 | 3.04 | 69.58 | 74.00 | -4.42 | 100 | 3 | peak |
| 2 | 5149.350 | 47.30 | 3.04 | 50.34 | 54.00 | -3.66 | 100 | 3 | AVG |

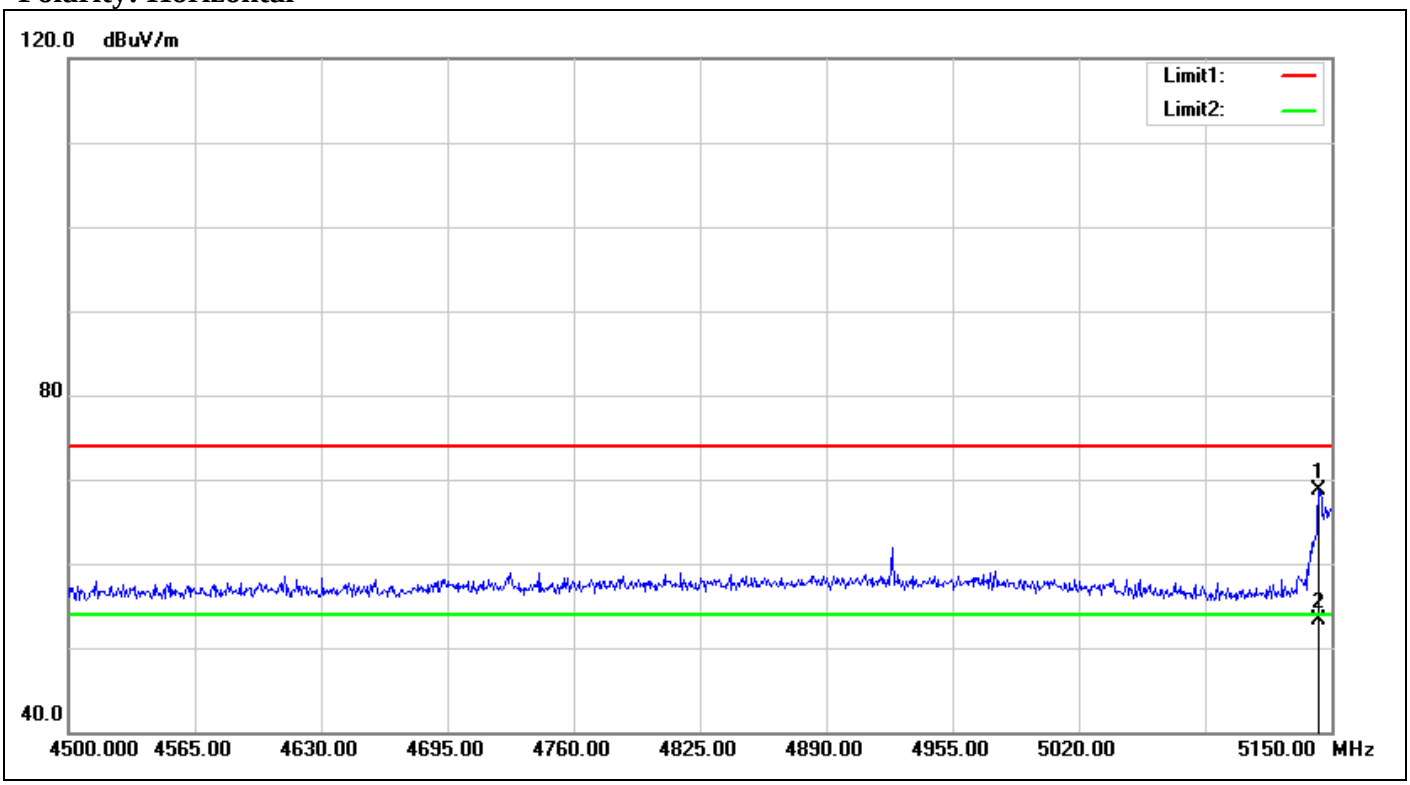
**Band Edges (IEEE 802.11n HT 40 mode / 5190 MHz)**

**Polarity: Vertical**




| No. | Frequency | Reading | Correct | Result | Limit | Margin | Height | Degree | Remark |
|---|---|---|---|---|---|---|---|---|---|
| | (MHz) | (dBuV) | Factor(dB/m) | (dBuV/m) | (dBuV/m) | (dB) | (cm) | ( ° ) | |
| 1 | 5150.000 | 63.72 | 3.04 | 66.76 | 74.00 | -7.24 | 100 | 204 | peak |
| 2 | 5150.000 | 47.82 | 3.04 | 50.86 | 54.00 | -3.14 | 100 | 204 | AVG |

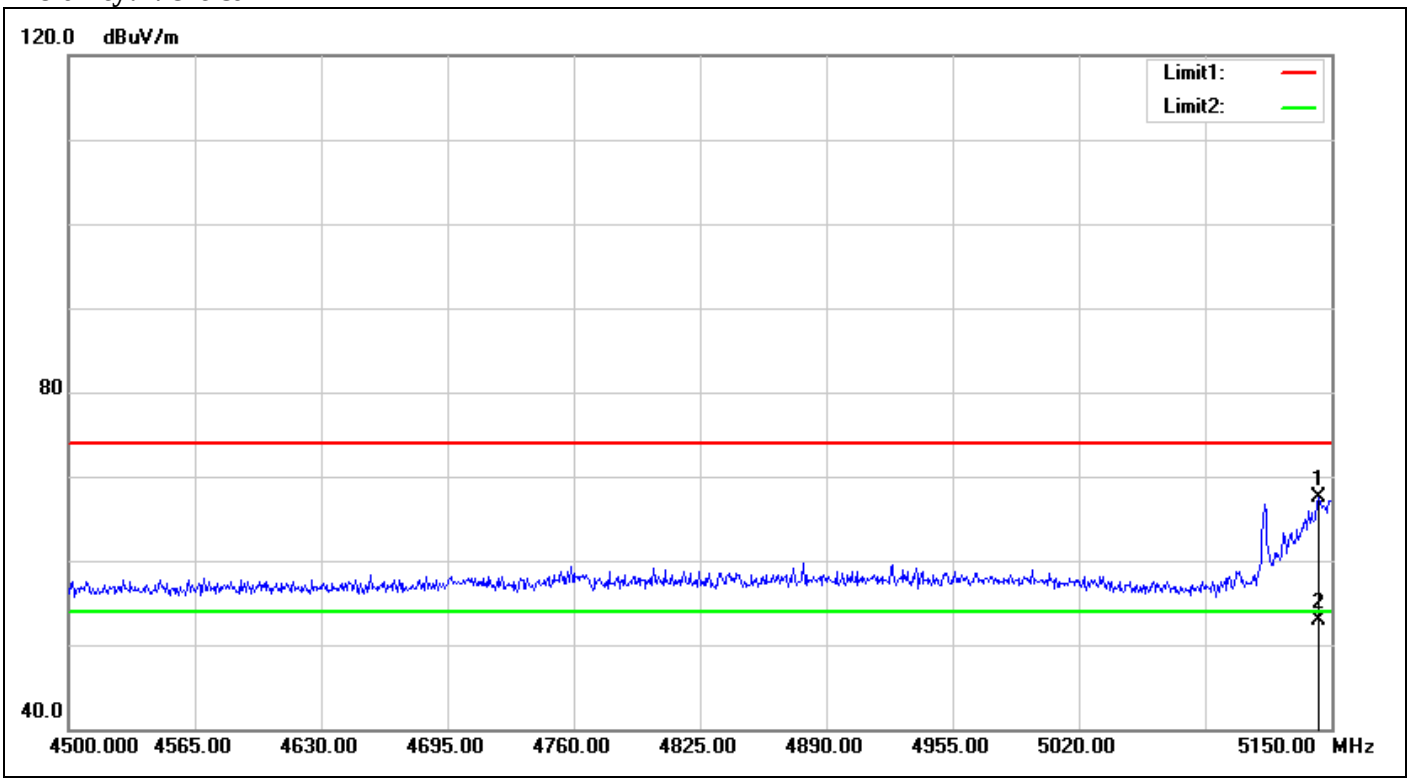
**Polarity: Horizontal**




| No. | Frequency | Reading | Correct | Result | Limit | Margin | Height | Degree | Remark |
|---|---|---|---|---|---|---|---|---|---|
| | (MHz) | (dBuV) | Factor(dB/m) | (dBuV/m) | (dBuV/m) | (dB) | (cm) | ( ° ) | |
| 1 | 5143.500 | 65.73 | 3.00 | 68.73 | 74.00 | -5.27 | 100 | 284 | peak |
| 2 | 5143.500 | 47.36 | 3.00 | 50.36 | 54.00 | -3.64 | 100 | 284 | AVG |

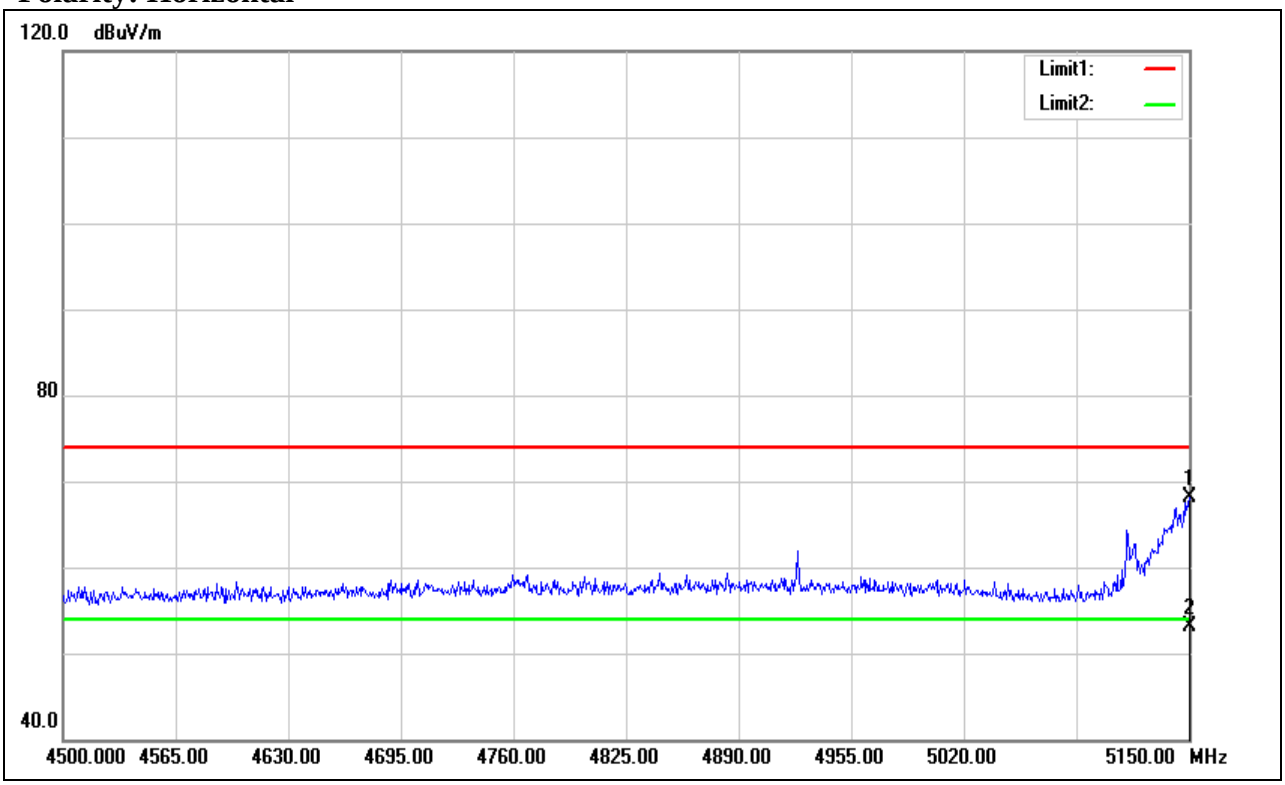
**Band Edges (IEEE 802.11ac VHT80 Mode / CH 5210 MHz)**

**Polarity: Vertical**




| No. | Frequency | Reading | Correct | Result | Limit | Margin | Height | Degree | Remark |
|---|---|---|---|---|---|---|---|---|---|
| | (MHz) | (dBuV) | Factor(dB/m) | (dBuV/m) | (dBuV/m) | (dB) | (cm) | ( ° ) | |
| 1 | 5143.500 | 64.40 | 3.00 | 67.40 | 74.00 | -6.60 | 100 | 193 | peak |
| 2 | 5143.500 | 47.83 | 3.00 | 50.83 | 54.00 | -3.17 | 100 | 193 | AVG |

**Polarity: Horizontal**




| No. | Frequency | Reading | Correct | Result | Limit | Margin | Height | Degree | Remark |
|---|---|---|---|---|---|---|---|---|---|
| | (MHz) | (dBuV) | Factor(dB/m) | (dBuV/m) | (dBuV/m) | (dB) | (cm) | ( ° ) | |
| 1 | 5150.000 | 65.16 | 3.04 | 68.20 | 74.00 | -5.80 | 100 | 36 | peak |
| 2 | 5150.000 | 47.00 | 3.04 | 50.04 | 54.00 | -3.96 | 100 | 36 | AVG |

## 7.4 PEAK POWER SPECTRAL DENSITY

## LIMIT

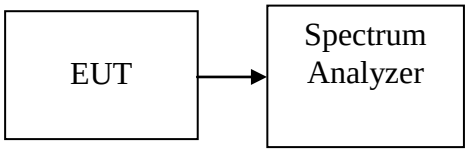
According to §15.407(a),

(1) For the band 5.15-5.25 GHz, the peak power spectral density shall not exceed 4dBm in any 1MHz band.

(2) For the band 5.25-5.35 GHz and 5.47-5.725 GHz bands, the peak power spectral density shall not exceed 11dBm in any 1MHz band.

*If transmitting antennas of directional gain greater than 6dBi are used, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.*

**Test Configuration**




## TEST PROCEDURE

1. Place the EUT on the table and set it in transmitting mode.
   Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
2. Set the spectrum analyzer as RBW = 1MHz, VBW = 3MHz, Span = Sweep= AUTO
3. Record the max. reading.
4. Repeat the above procedure until the measurements for all frequencies are completed

## TEST RESULTS

*No non-compliance noted*

## Test Data

### Test mode: IEEE 802.11a mode / 5180 ~ 5240MHz

| Channel | Frequency (MHz) | Chain 0 PPSD (dBm) | Chain 1 PPSD (dBm) | PPSD (dBm) | Limit (dBm) | Result |
|---|---|---|---|---|---|---|
| Low | 5180 | 6.37 | 6.21 | 9.30 | 15.49 | PASS |
| Mid | 5220 | 9.21 | 8.86 | 12.05 | 15.49 | PASS |
| High | 5240 | 9.07 | 9.12 | 12.11 | 15.49 | PASS |

### Test mode: IEEE 802.11n HT 20 mode / 5180 ~ 5240MHz

| Channel | Frequency (MHz) | Chain 0 PPSD (dBm) | Chain 1 PPSD (dBm) | PPSD (dBm) | Limit (dBm) | Result |
|---|---|---|---|---|---|---|
| Low | 5180 | 5.80 | 5.88 | 8.85 | 15.49 | PASS |
| Mid | 5220 | 8.68 | 8.63 | 11.67 | 15.49 | PASS |
| High | 5240 | 4.42 | 4.24 | 7.34 | 15.49 | PASS |

### Test mode: IEEE 802.11n HT 40 mode / 5190 ~ 5230MHz

| Channel | Frequency (MHz) | Chain 0 PPSD (dBm) | Chain 1 PPSD (dBm) | PPSD (dBm) | Limit (dBm) | Result |
|---|---|---|---|---|---|---|
| Low | 5190 | -2.96 | -1.99 | 0.56 | 15.49 | PASS |
| High | 5230 | 0.24 | 0.79 | 3.53 | 15.49 | PASS |

### Test mode: IEEE 802.11ac VHT80 Mode / 5210MHz

| Channel | Frequency (MHz) | Chain 0 PPSD (dBm) | Chain 1 PPSD (dBm) | PPSD (dBm) | Limit (dBm) | Result |
|---|---|---|---|---|---|---|
| Mid | 5210 | -7.65 | -6.07 | -3.78 | 15.49 | PASS |

***Remark:***

*1. Total PPSD (dBm) = 10*LOG(10^(Chain 0 PPSD / 10)+10^(Chain 1 PPSD /10))*

**Test mode: IEEE 802.11a mode/ 5745 ~ 5825MHz**

| Channel | Frequency (MHz) | Chain 0 PPSD (dBm) | Chain 1 PPSD (dBm) | PPSD (dBm) | Limit (dBm) | Result |
|---|---|---|---|---|---|---|
| Low | 5745 | 5.92 | 6.28 | 9.11 | 15.49 | PASS |
| Mid | 5785 | 6.14 | 6.21 | 9.19 | 15.49 | PASS |
| High | 5825 | 0.43 | 1.41 | 3.96 | 15.49 | PASS |

**Test mode: IEEE 802.11n HT 20 mode / 5745 ~ 5825MHz**

| Channel | Frequency (MHz) | Chain 0 PPSD (dBm) | Chain 1 PPSD (dBm) | PPSD (dBm) | Limit (dBm) | Result |
|---|---|---|---|---|---|---|
| Low | 5745 | 4.61 | 5.49 | 8.08 | 15.49 | PASS |
| Mid | 5785 | 4.89 | 4.89 | 7.90 | 15.49 | PASS |
| High | 5825 | -1.53 | -0.14 | 2.23 | 15.49 | PASS |

**Test mode: IEEE 802.11n HT 40 mode / 5755 ~ 5795MHz**

| Channel | Frequency (MHz) | Chain 0 PPSD (dBm) | Chain 1 PPSD (dBm) | PPSD (dBm) | Limit (dBm) | Result |
|---|---|---|---|---|---|---|
| Low | 5755 | 0.97 | 1.59 | 4.30 | 15.49 | PASS |
| High | 5795 | -4.58 | -4.58 | -1.57 | 15.49 | PASS |

**Test mode: IEEE 802.11ac VHT80 Mode / 5775MHz**

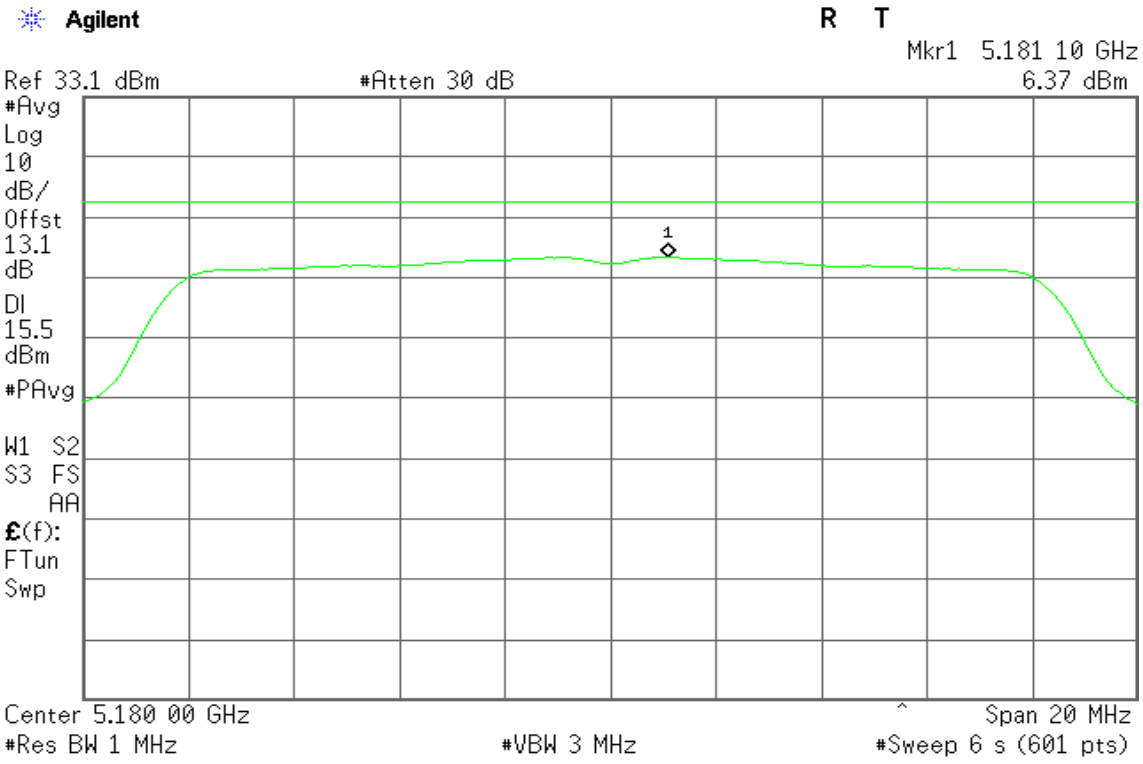
| Channel | Frequency (MHz) | Chain 0 PPSD (dBm) | Chain 1 PPSD (dBm) | PPSD (dBm) | Limit (dBm) | Result |
|---|---|---|---|---|---|---|
| Mid | 5775 | -12.97 | -11.55 | -9.19 | 15.49 | PASS |

***Remark:***

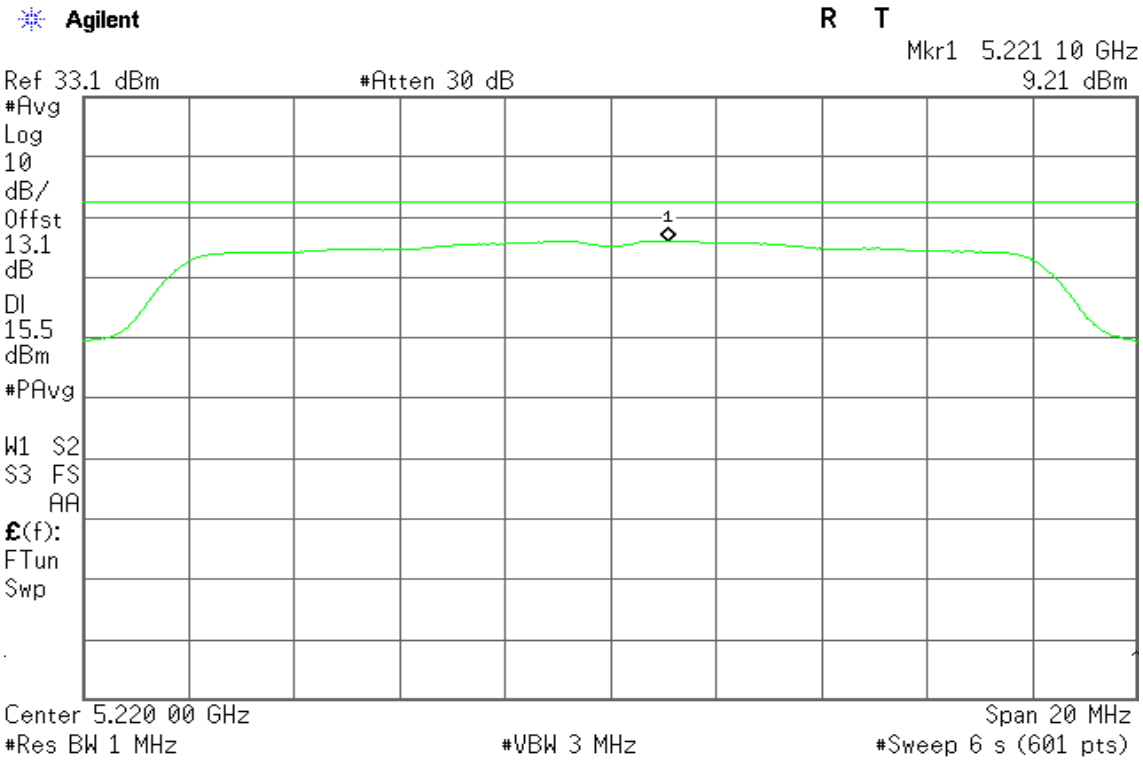
*1. Total PPSD (dBm) = 10*LOG(10^(Chain 0 PPSD / 10)+10^(Chain 1 PPSD /10))*

**Test Plot**
**IEEE 802.11a mode / 5180 ~ 5240MHz / Chain 0**

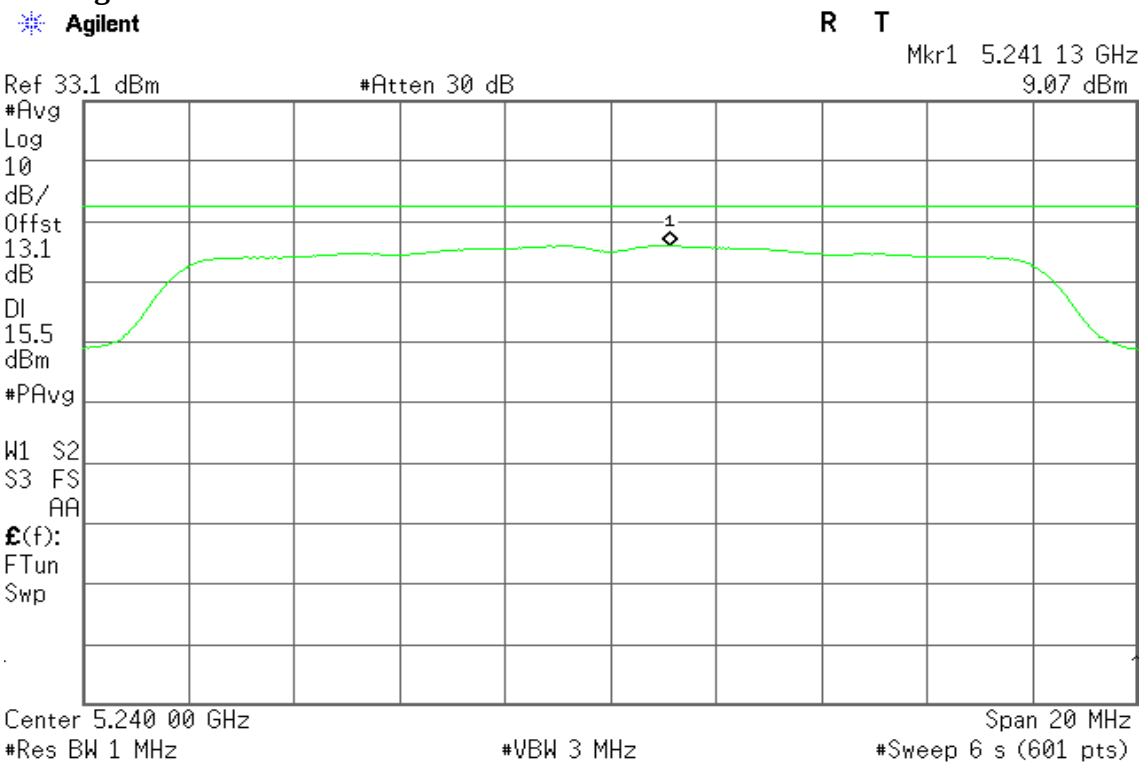
**CH Low**




**CH Mid**

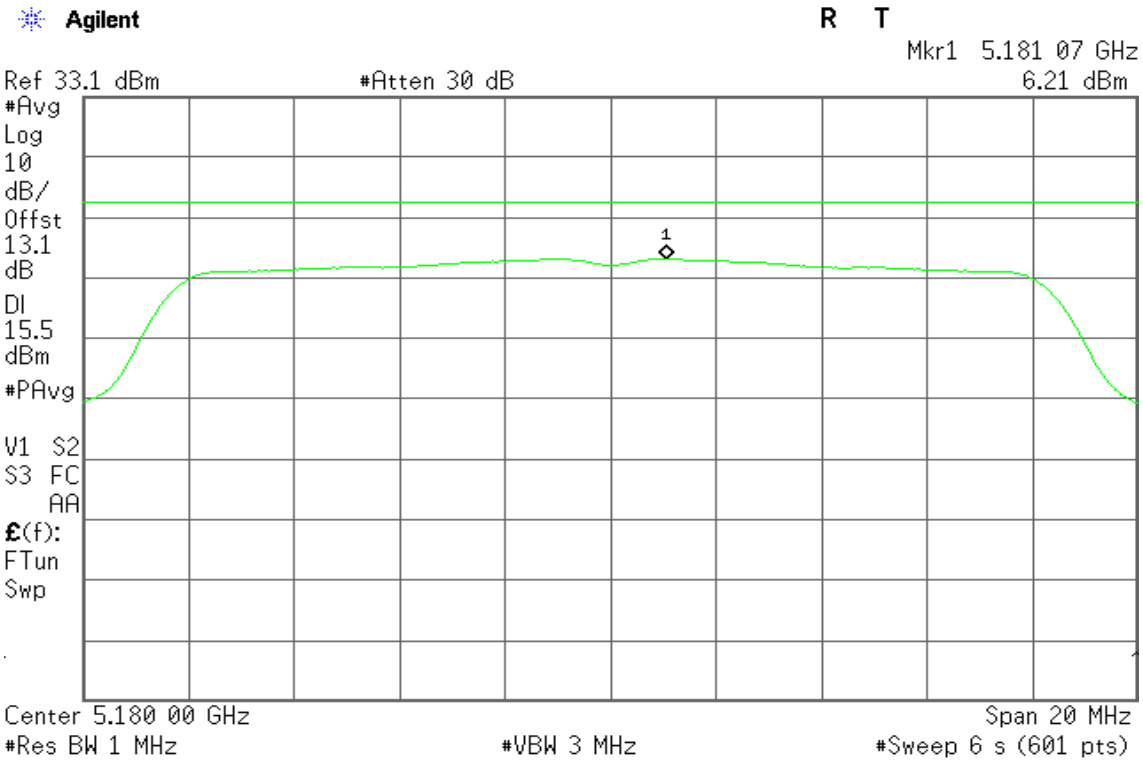


## CH High

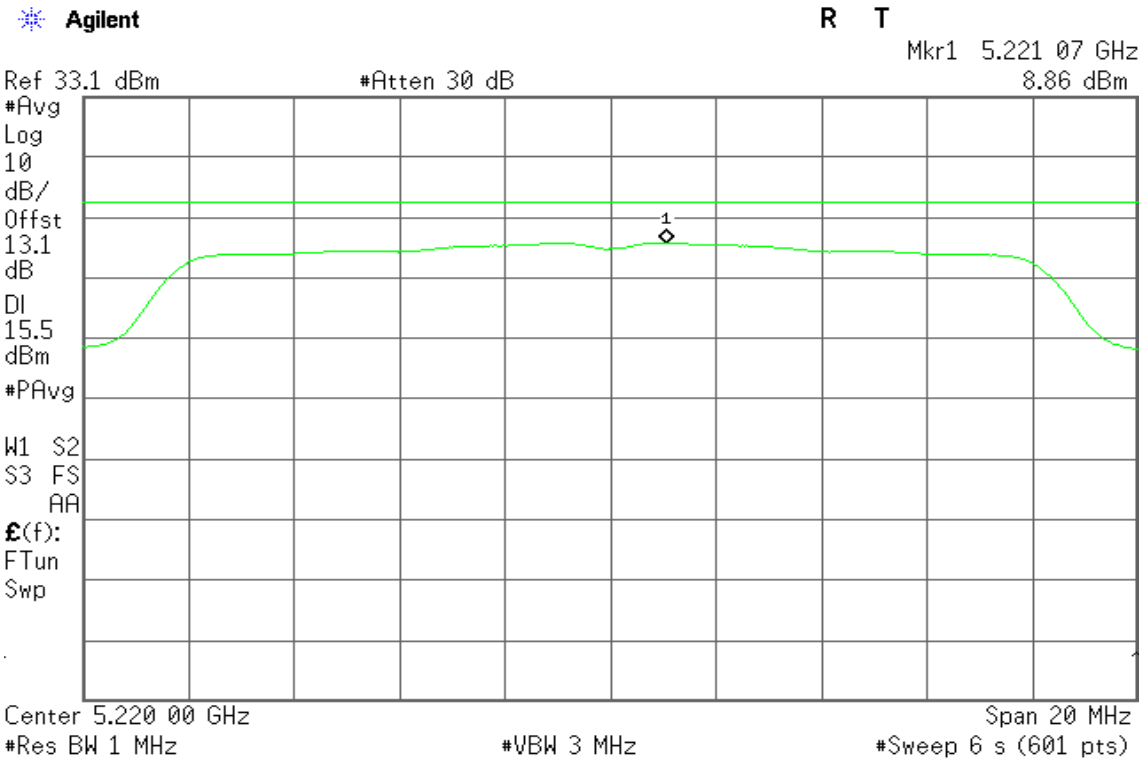



## IEEE 802.11a mode / 5180 ~ 5240MHz / Chain 1

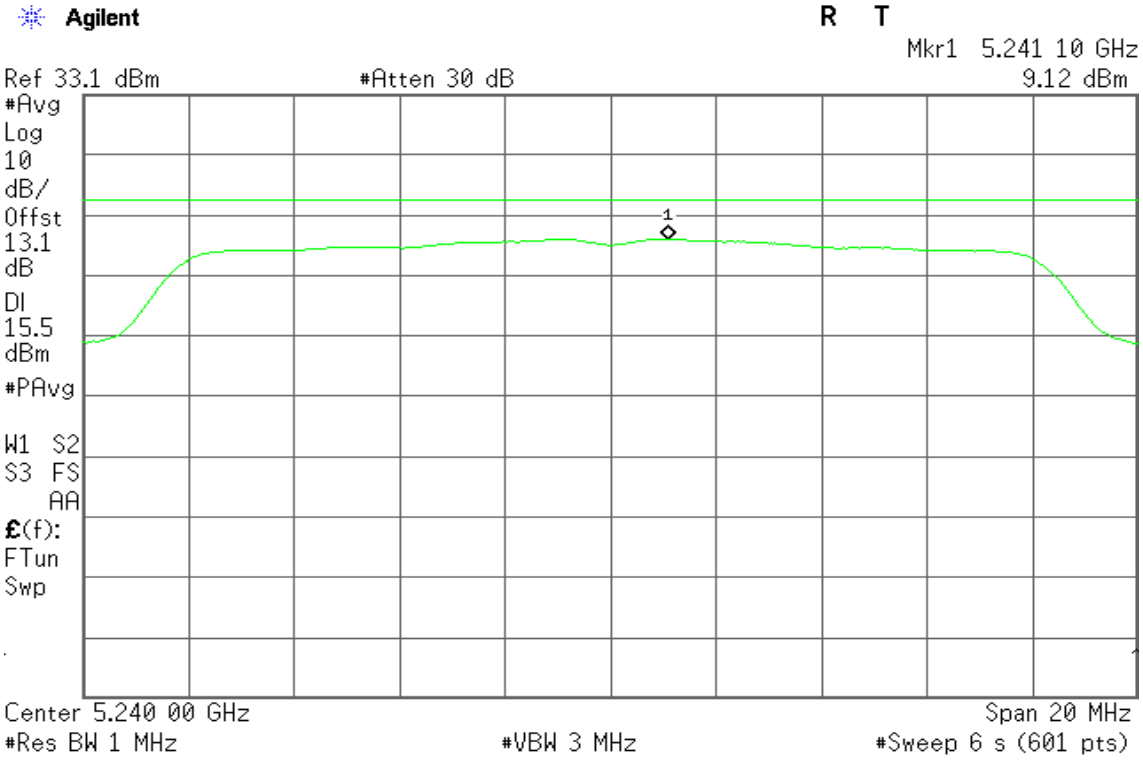
## CH Low



## CH Mid

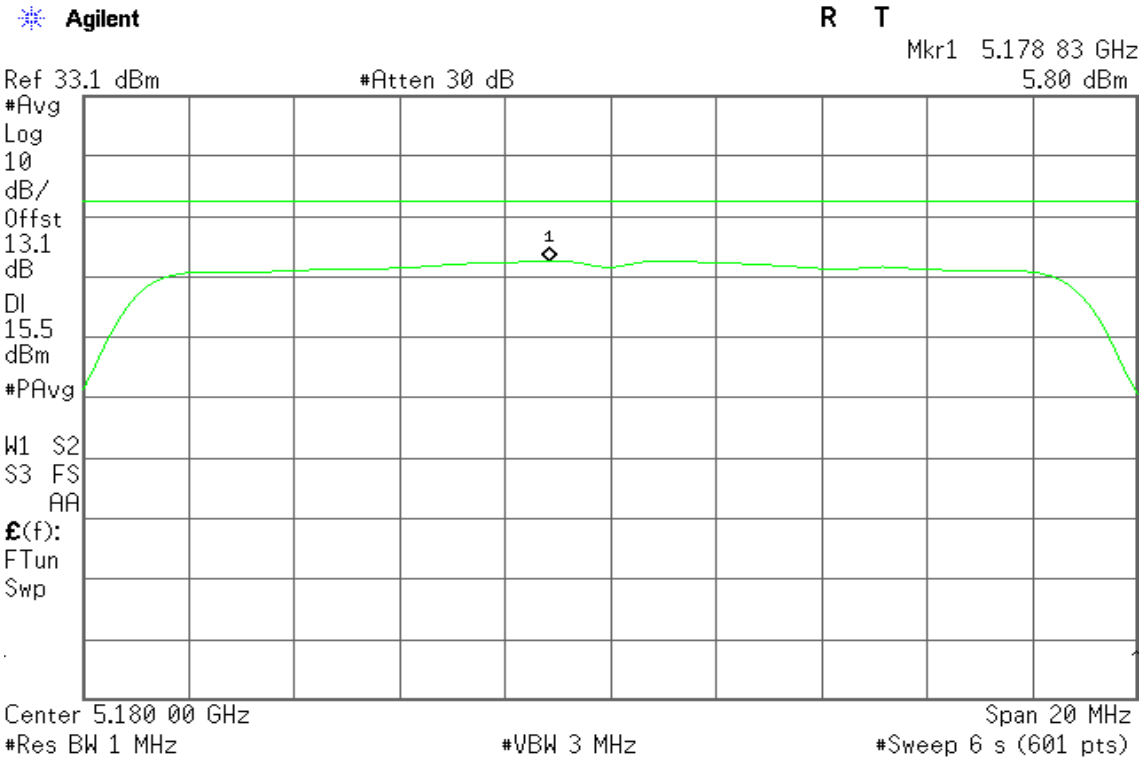



## CH High

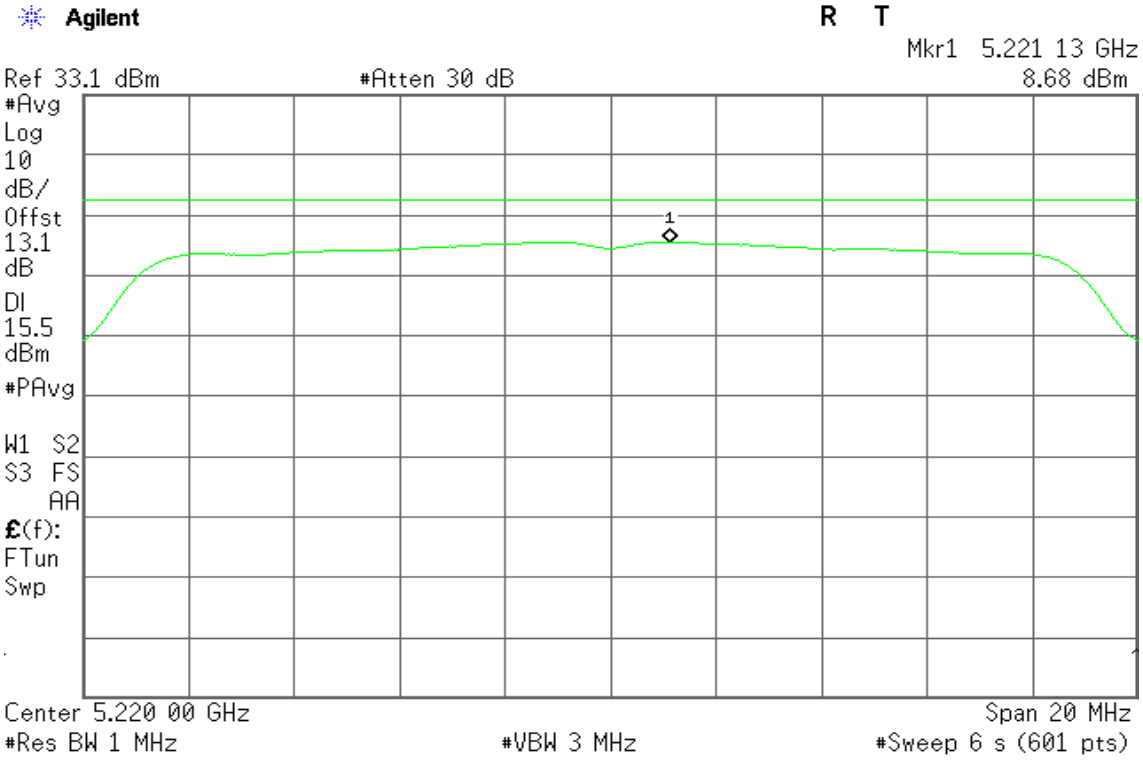


## IEEE 802.11n HT 20 mode / 5180 ~ 5240MHz / Chain 0

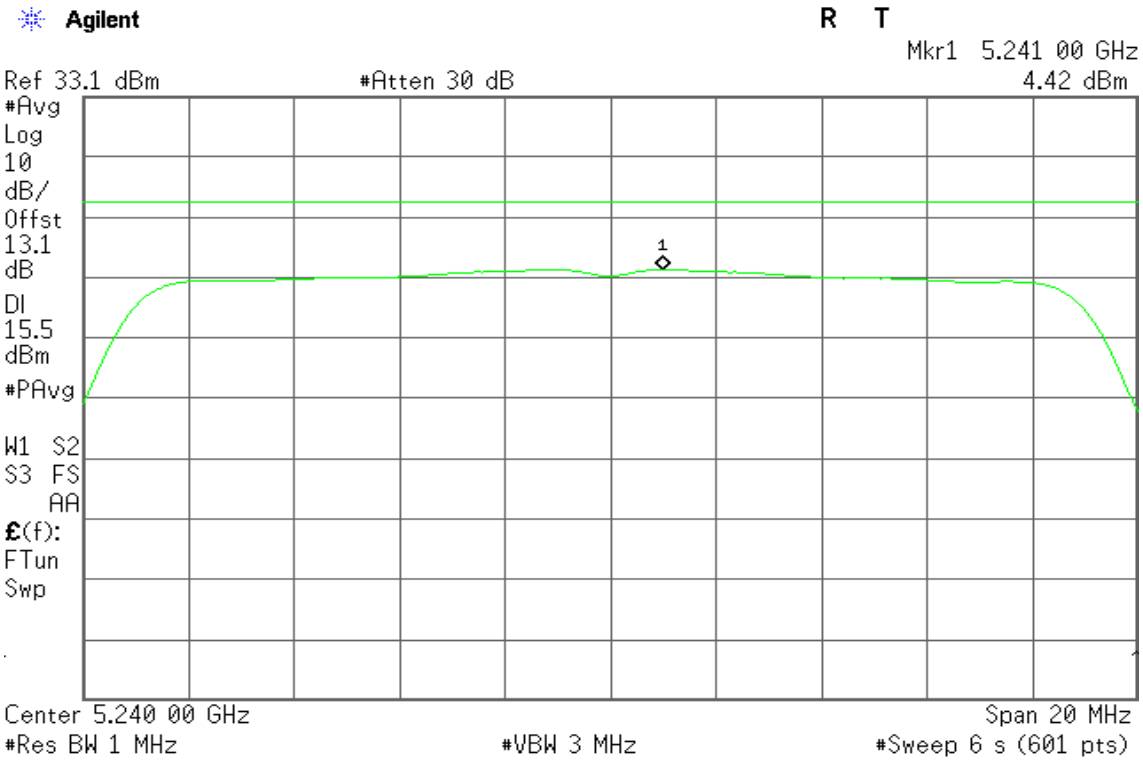
### CH Low




### CH Mid

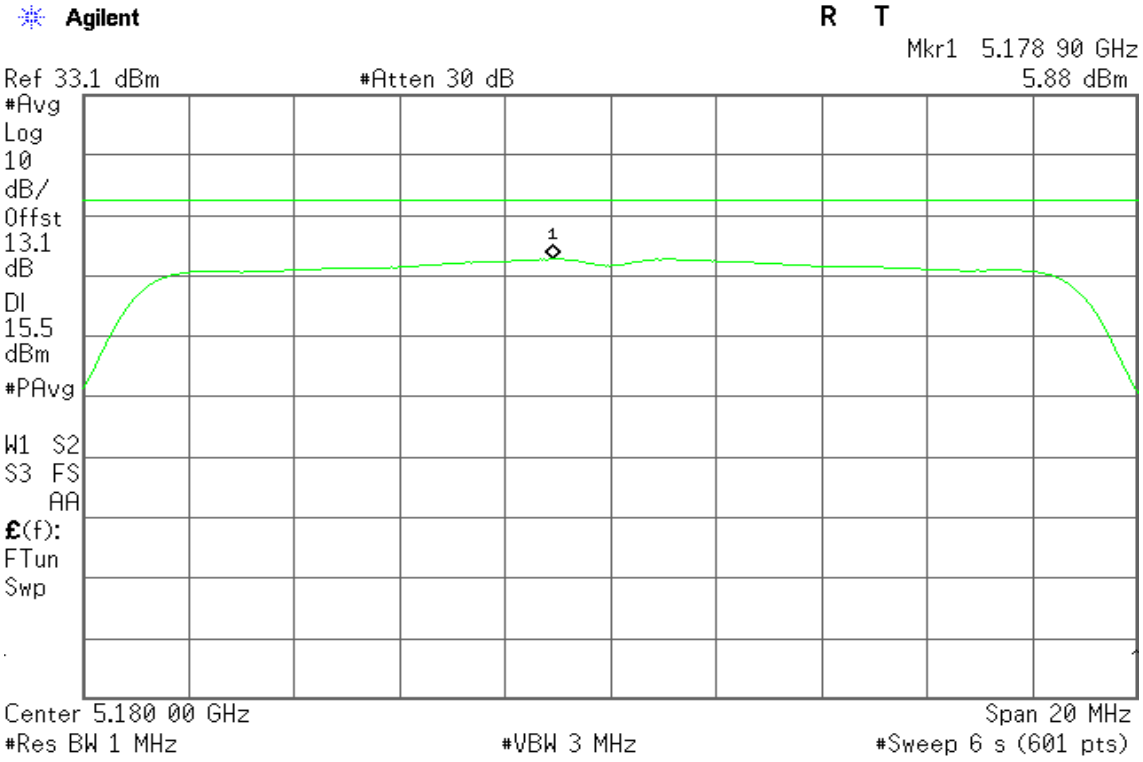


## CH High

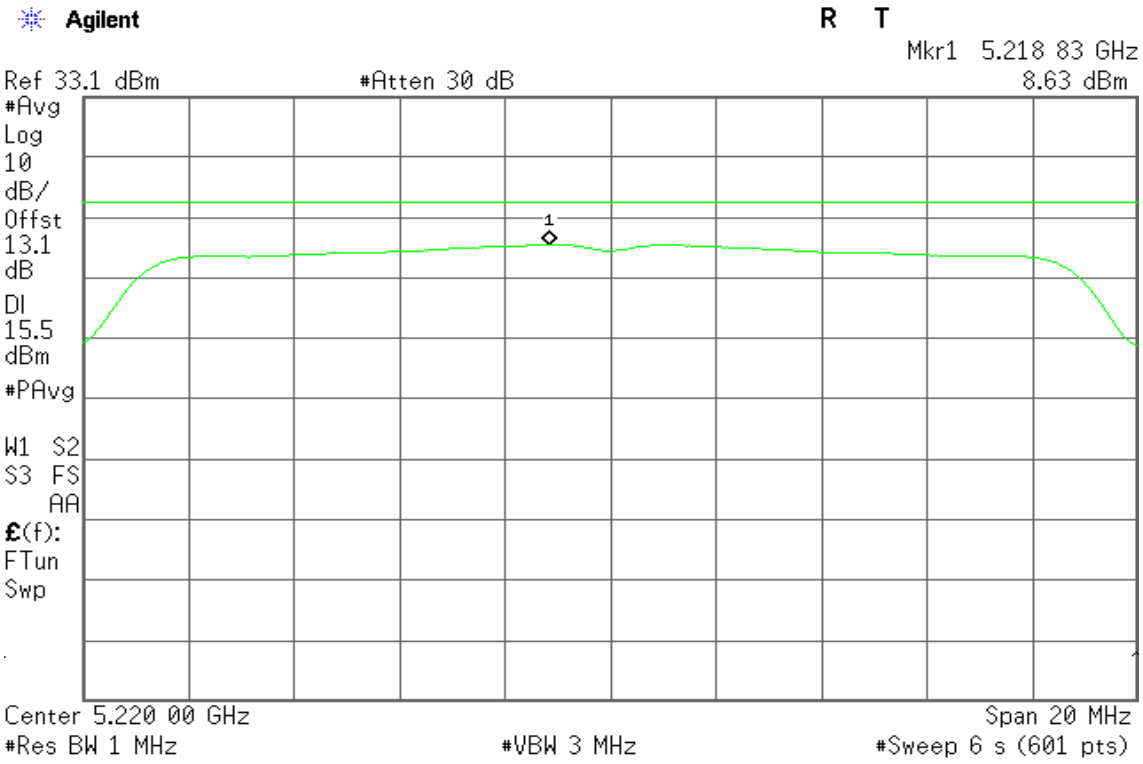



## IEEE 802.11n HT 20 mode / 5180 ~ 5240MHz / Chain 1

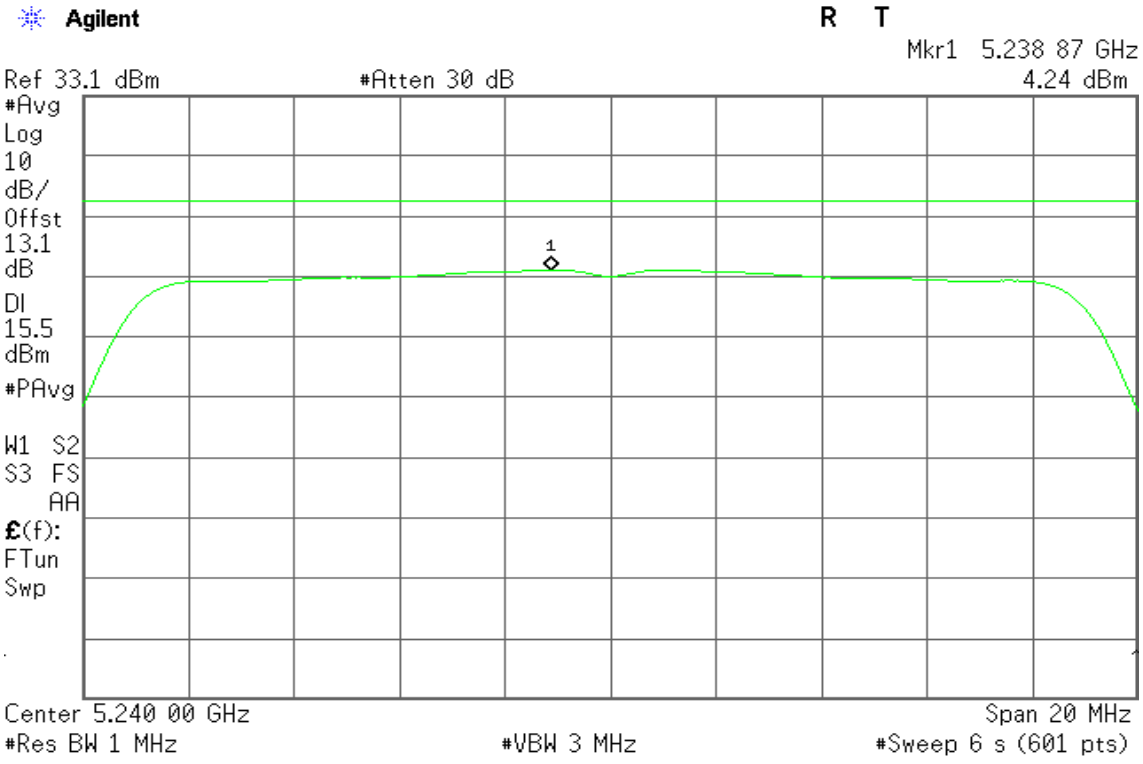
## CH Low



## CH Mid

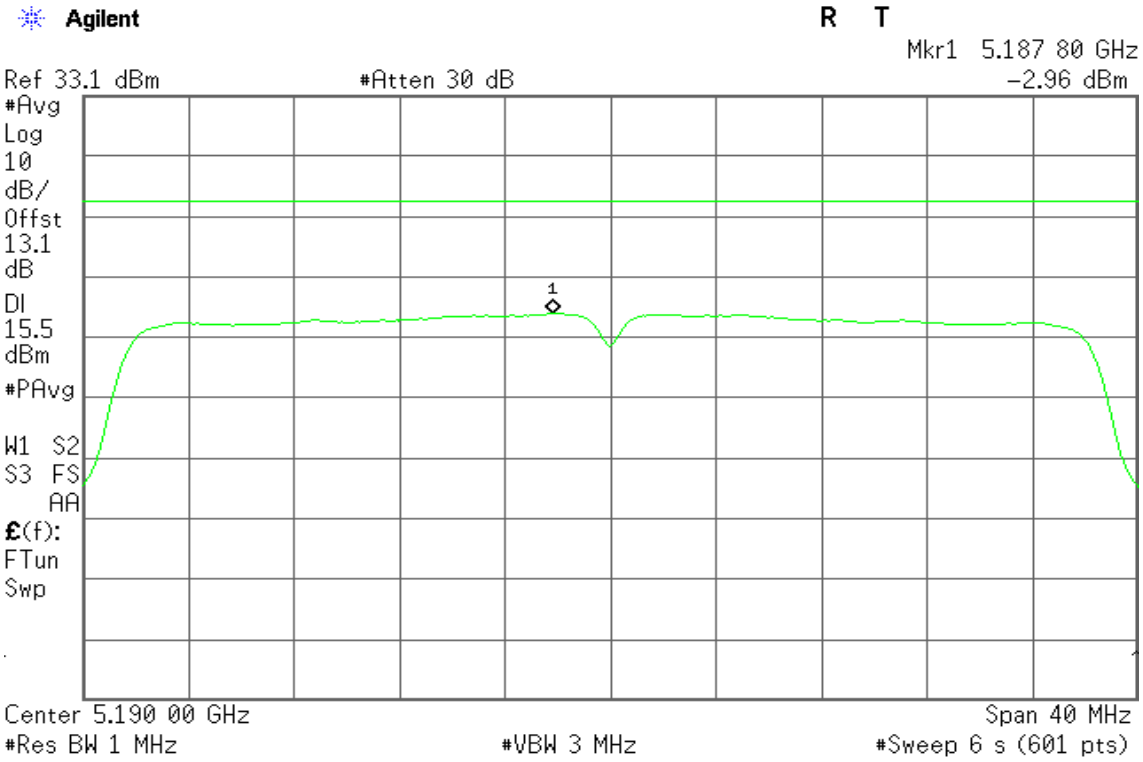



## CH High

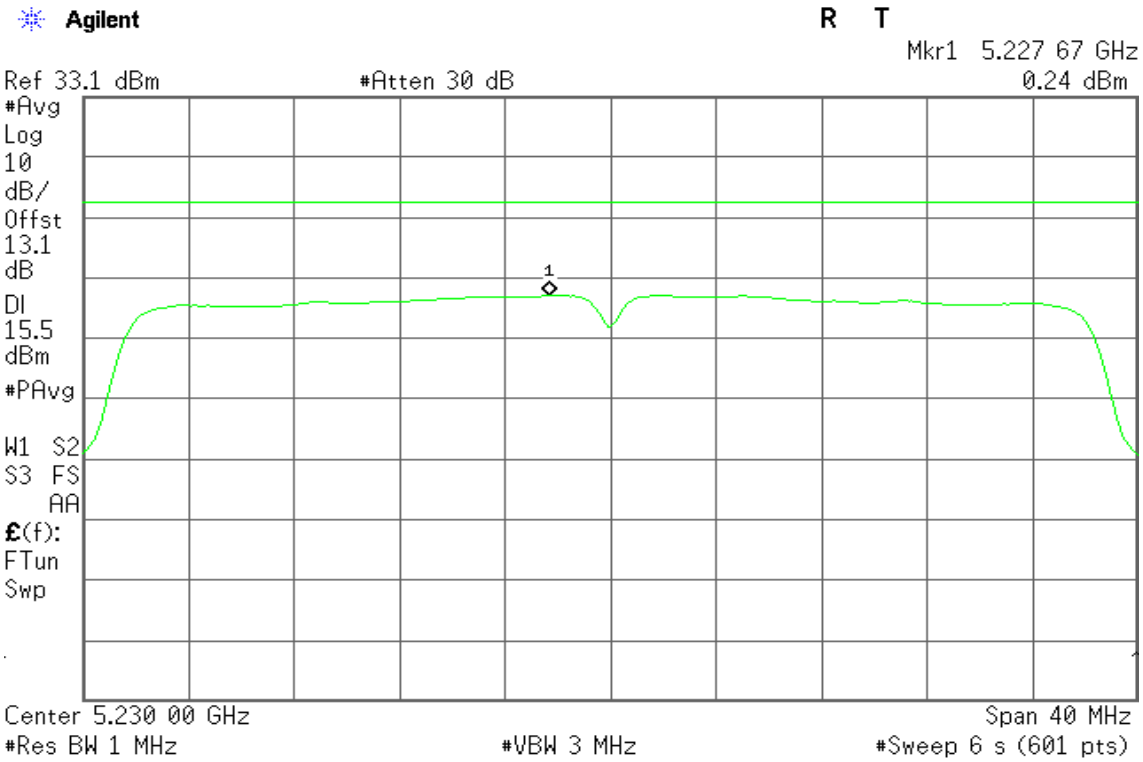


## IEEE 802.11n HT 40 mode / 5190 ~ 5230MHz / Chain 0

### CH Low

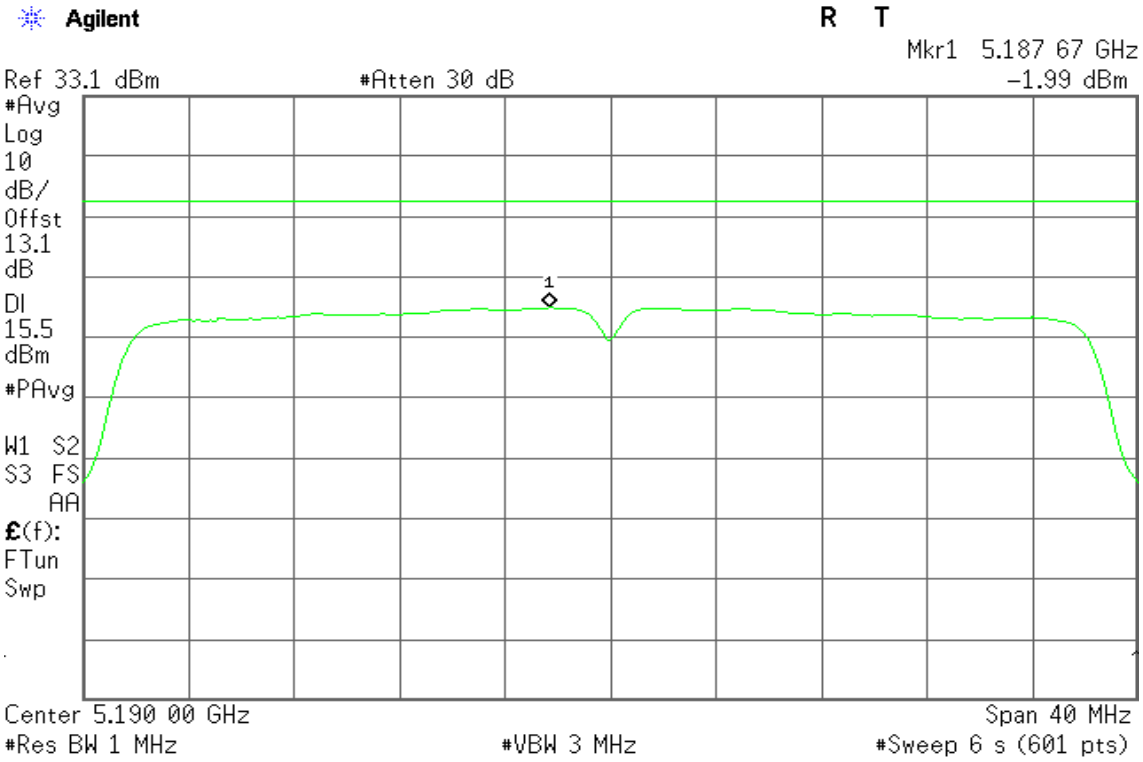



### CH High

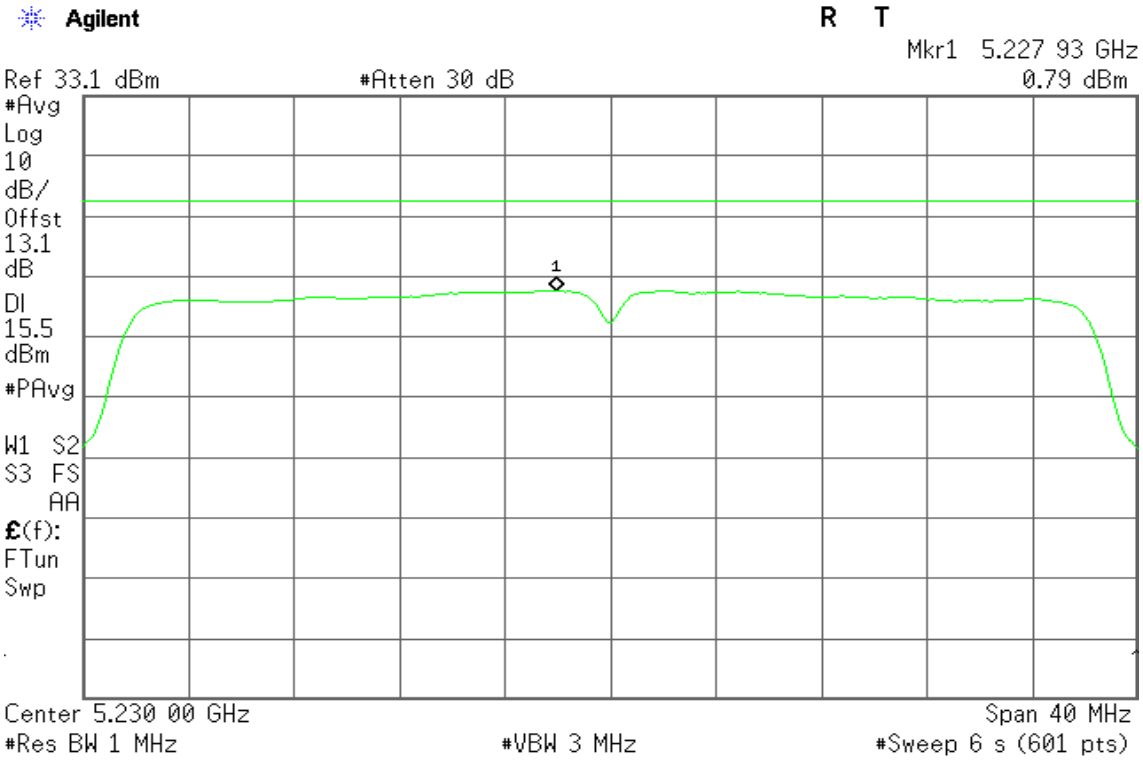


## IEEE 802.11n HT 40 mode / 5190 ~ 5230MHz / Chain 1

### CH Low

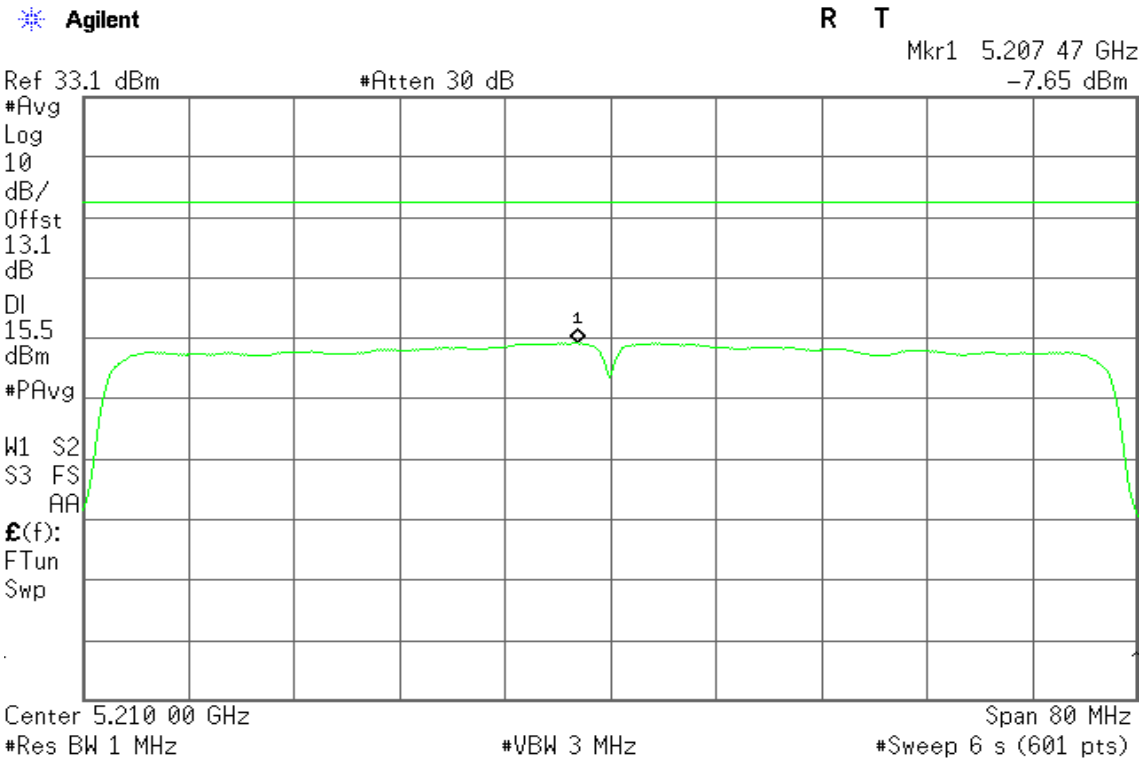



### CH High



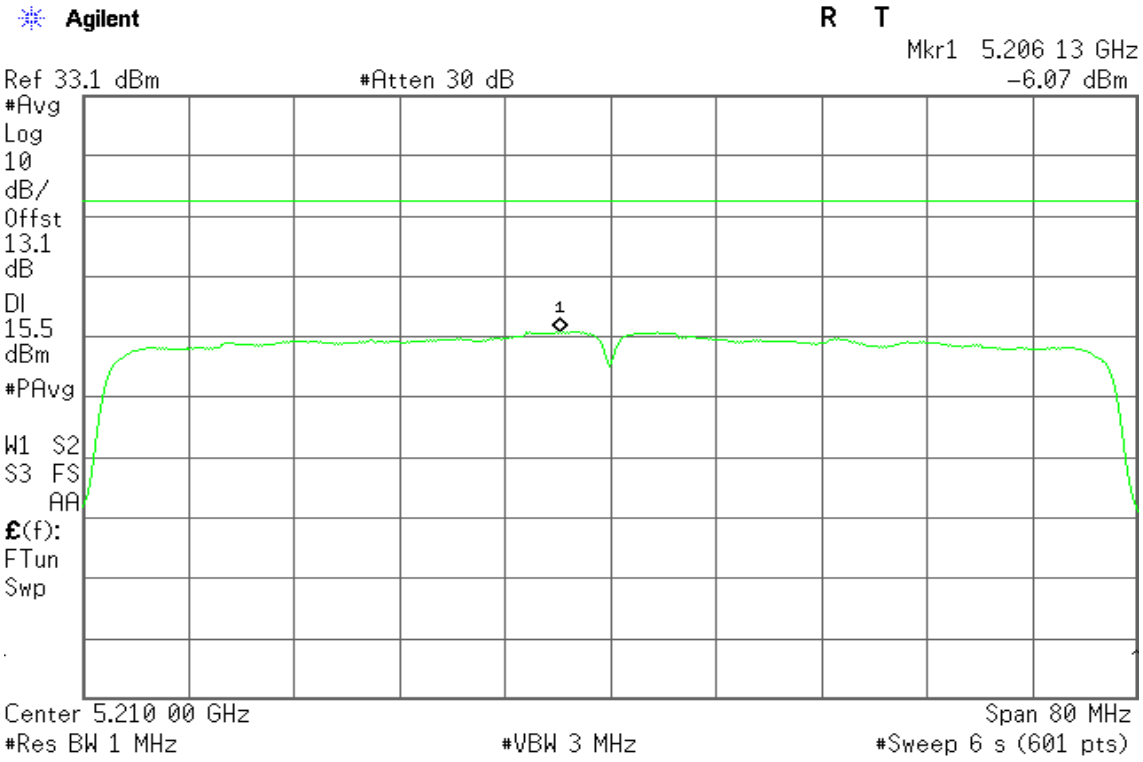
## IEEE 802.11ac VHT80 Mode / 5210MHz / Chain 0

**CH Mid**



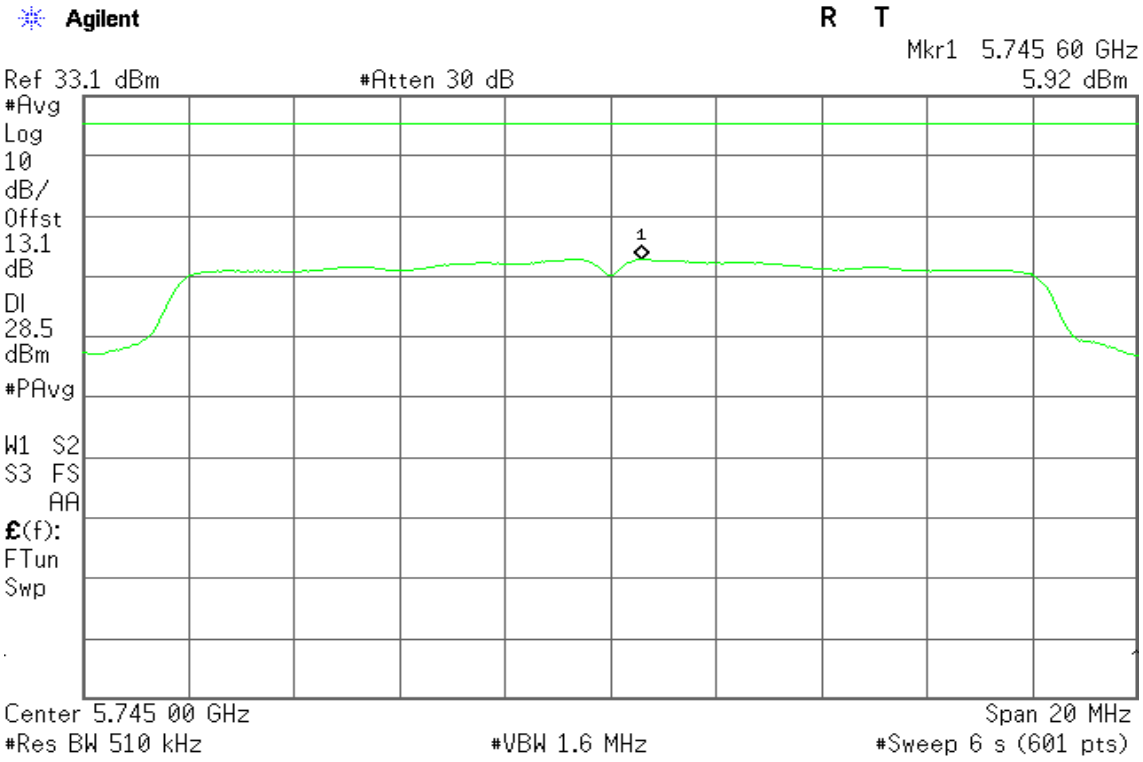

## IEEE 802.11ac VHT80 Mode / 5210MHz / Chain 1

**CH Mid**

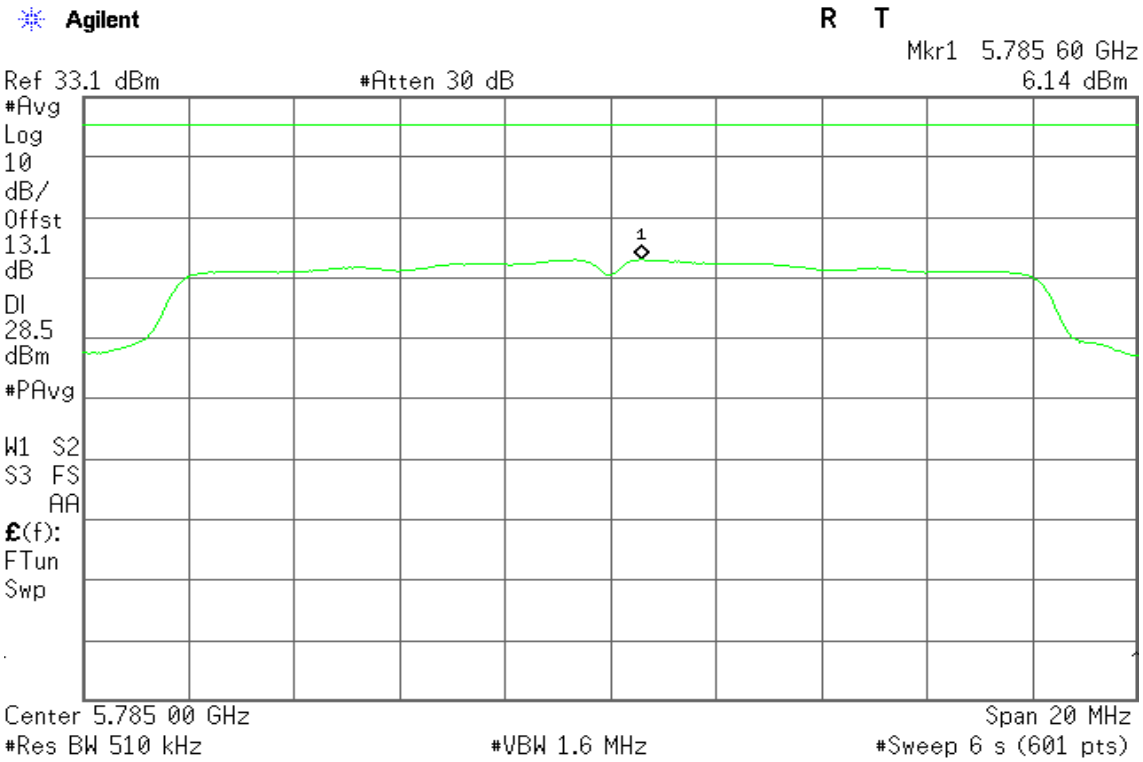


## IEEE 802.11a mode / 5745 ~ 5825MHz / Chain 0

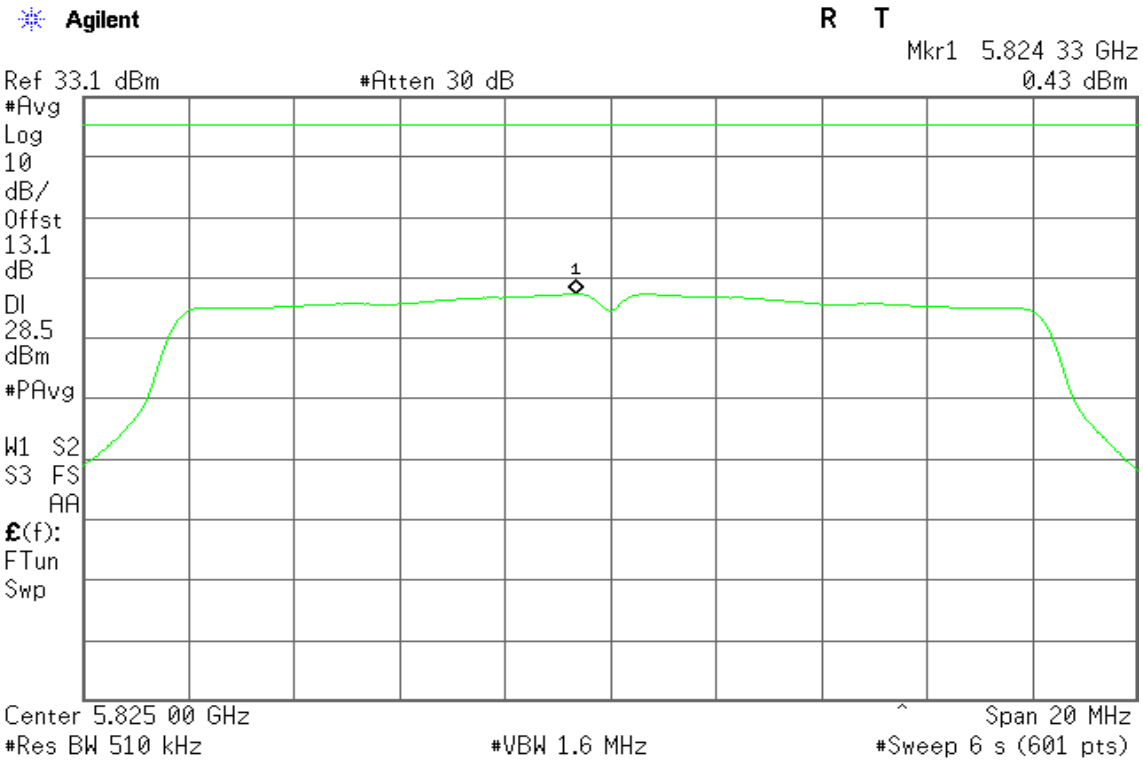
### CH Low




### CH Mid

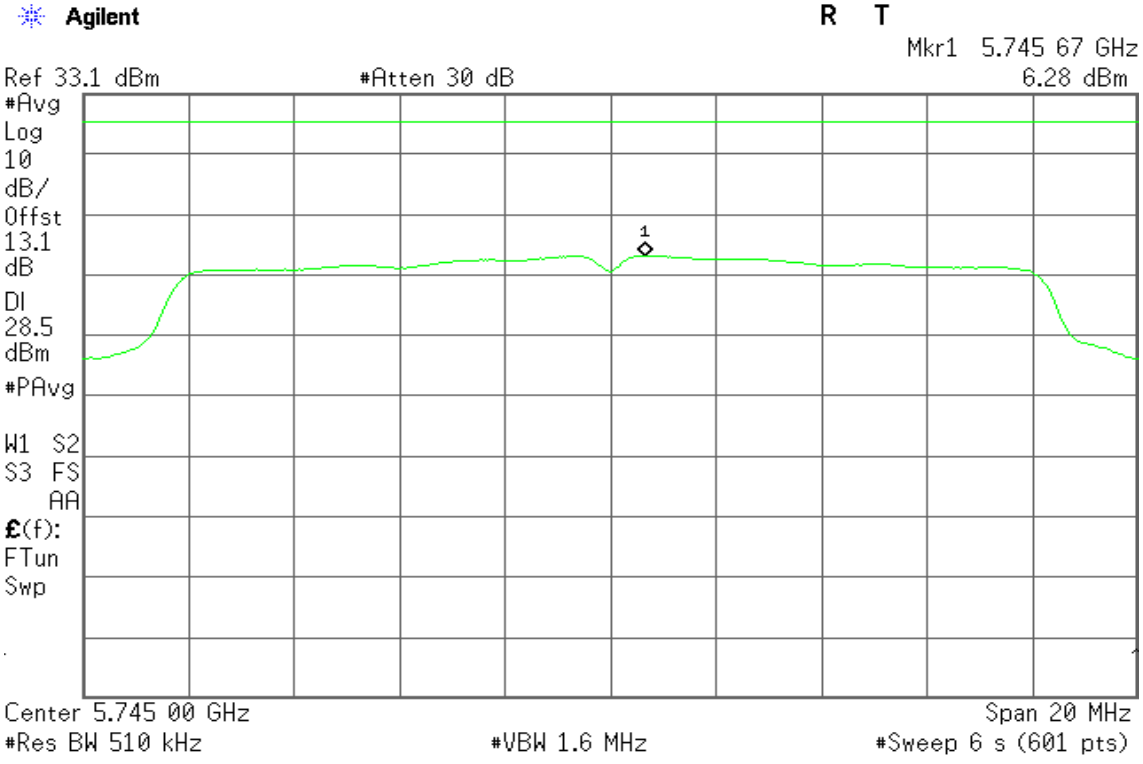


## CH High

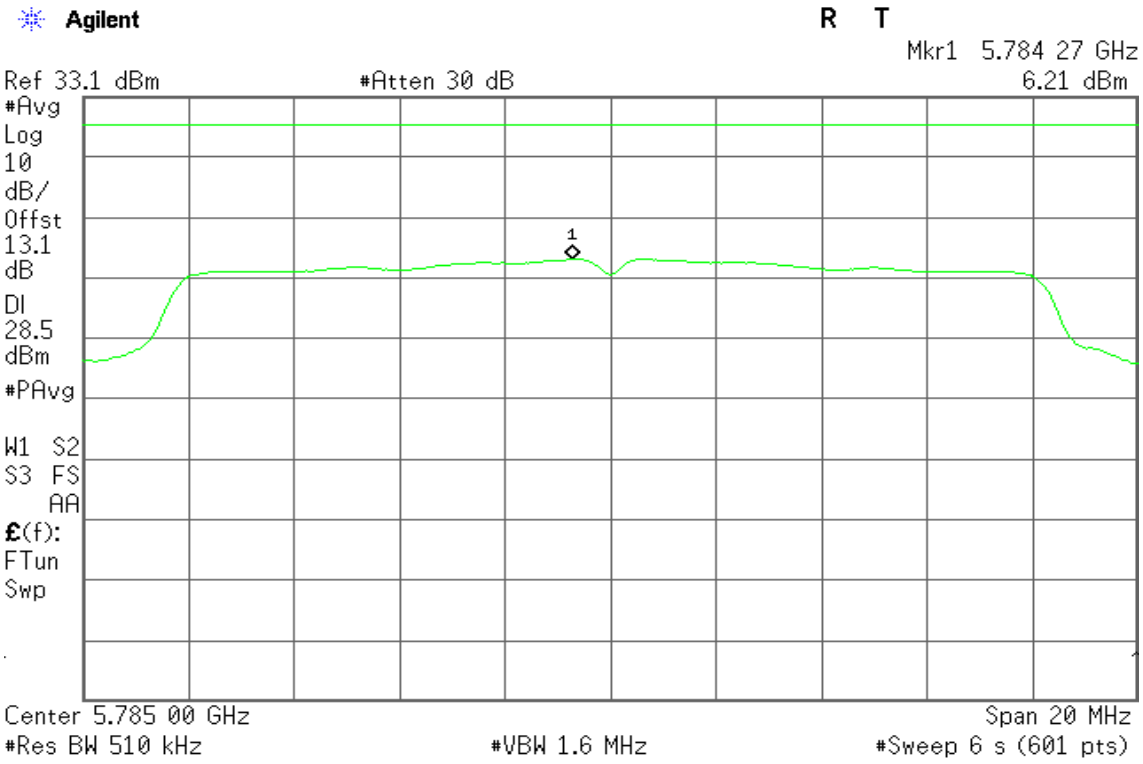



## IEEE 802.11a mode / 5745 ~ 5825MHz / Chain 1

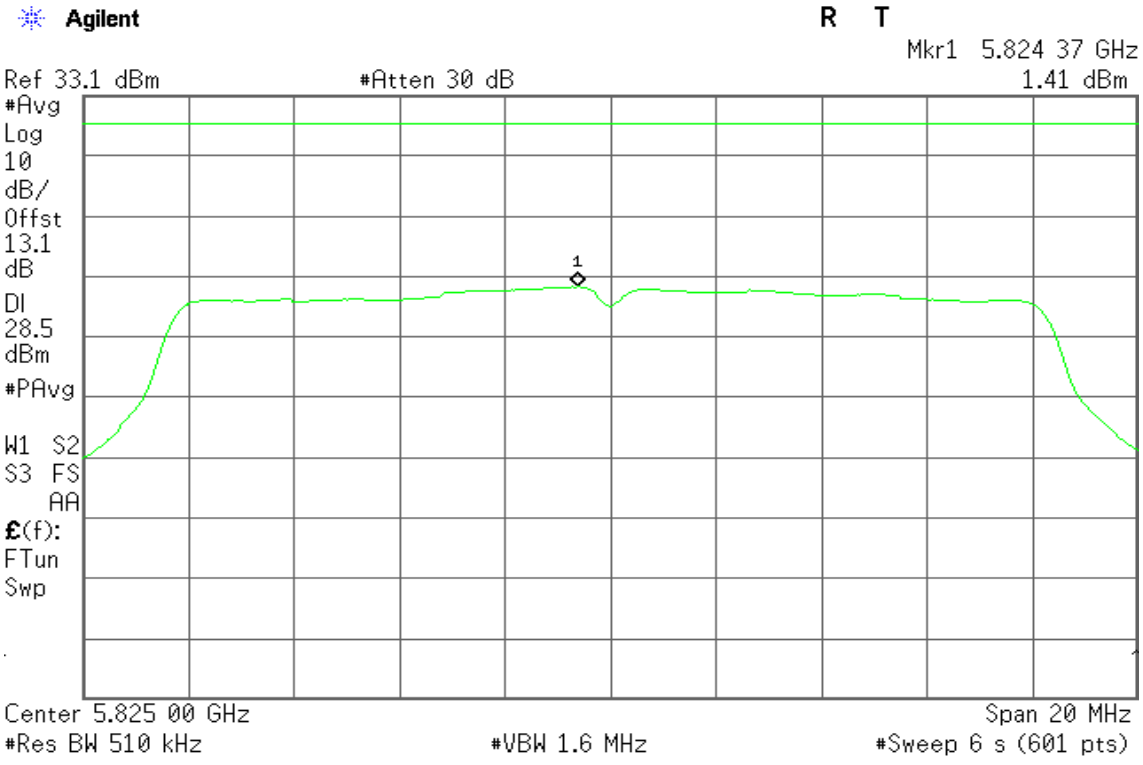
## CH Low



## CH Mid

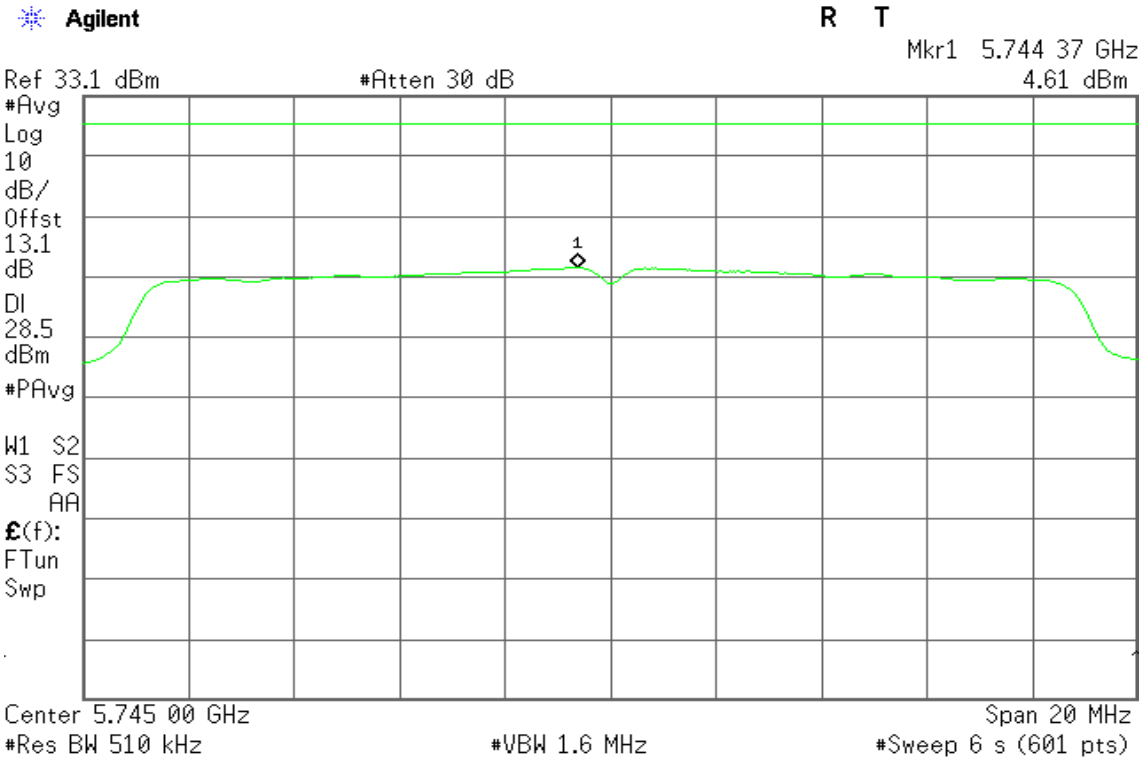



## CH High

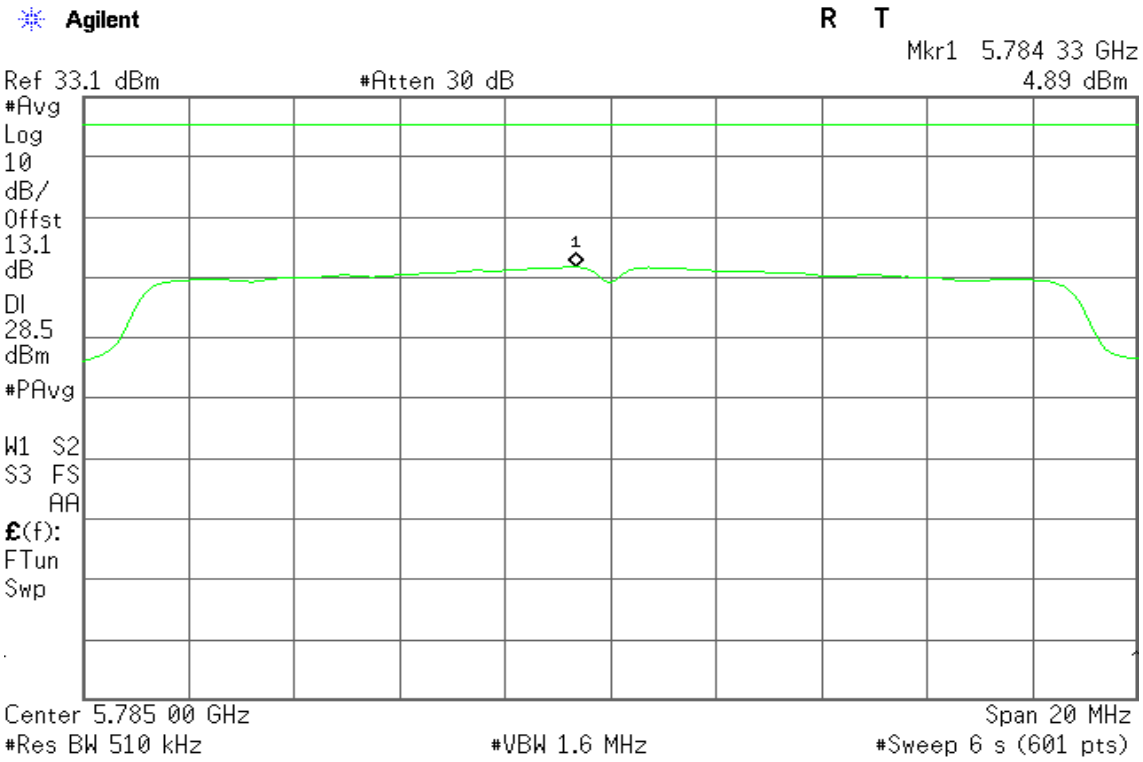


## IEEE 802.11n HT 20 mode / 5745 ~ 5825MHz / Chain 0

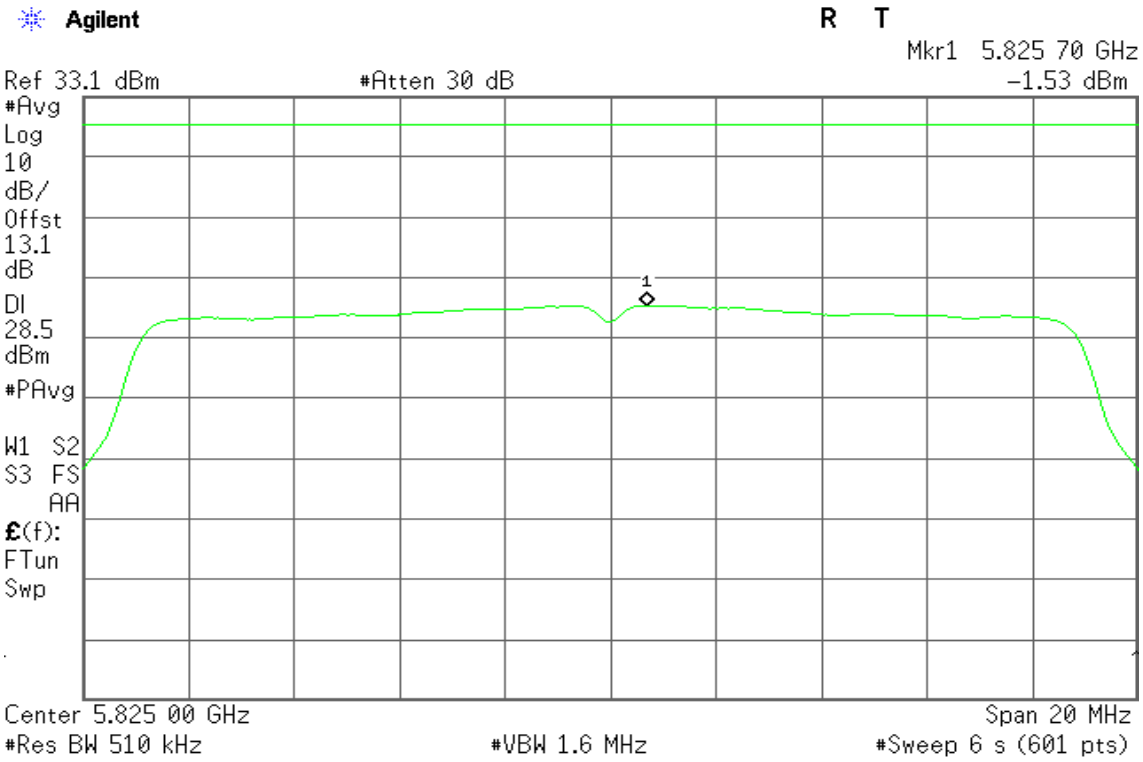
### CH Low




### CH Mid

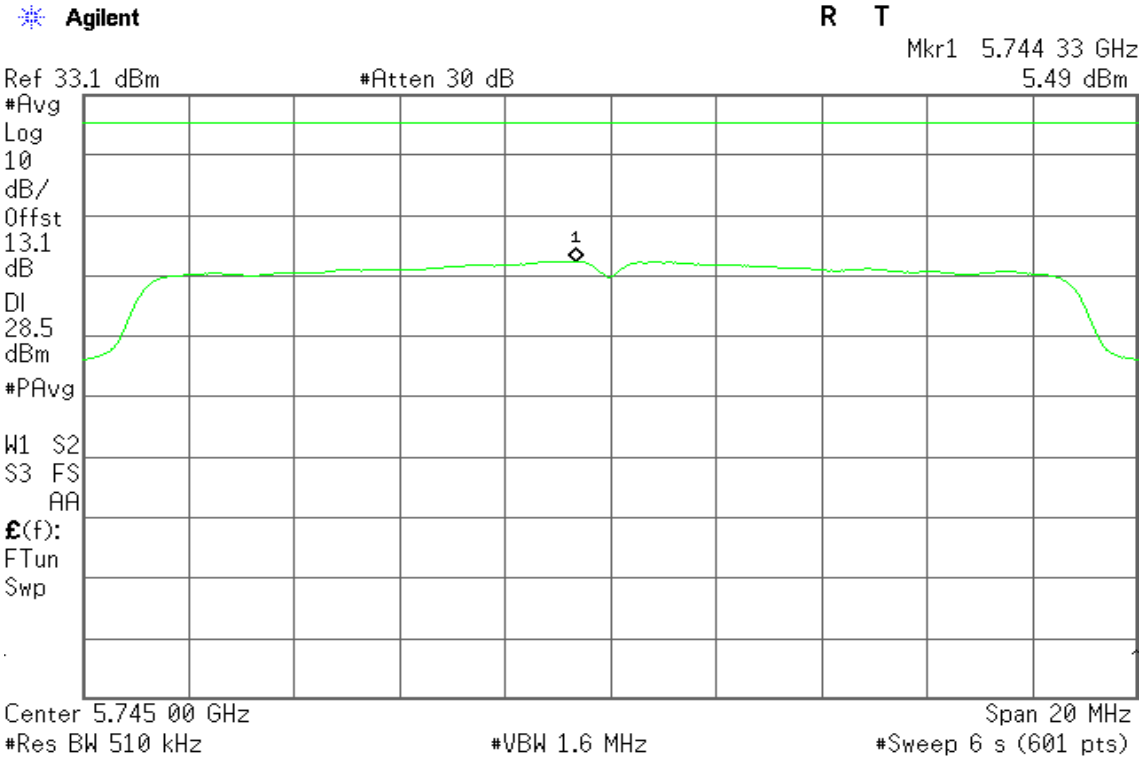


## CH High

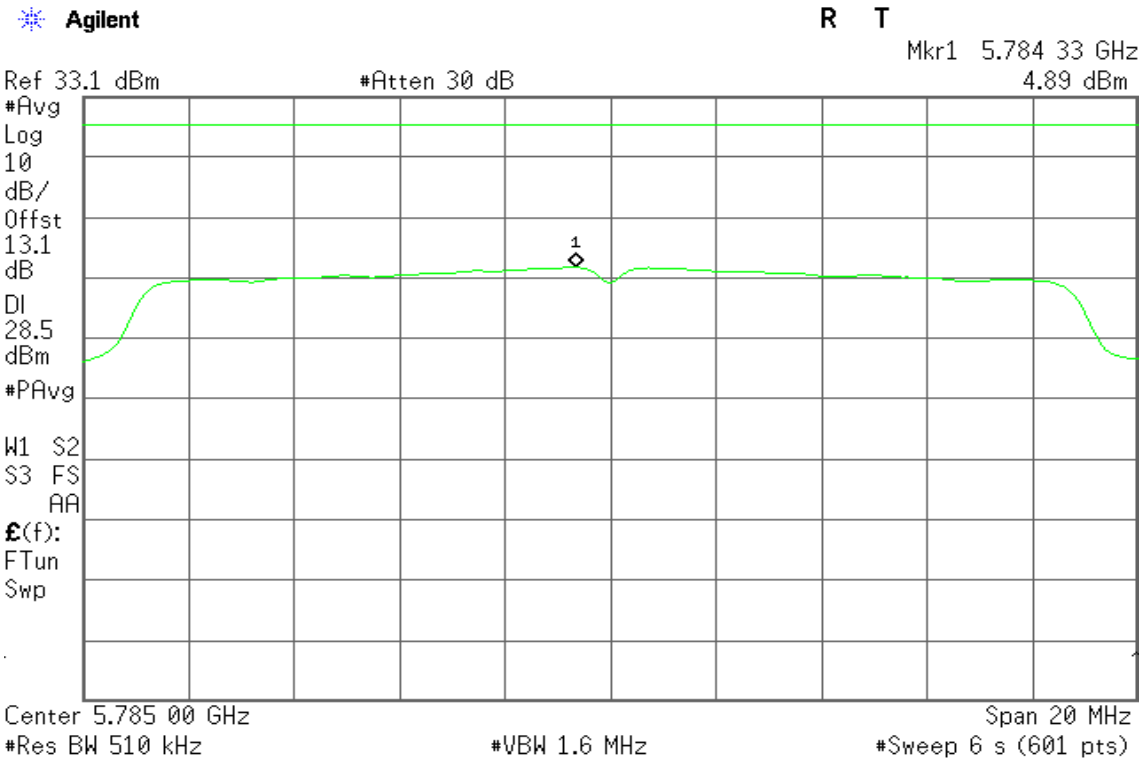



## IEEE 802.11n HT 20 mode / 5745 ~ 5825MHz / Chain 1

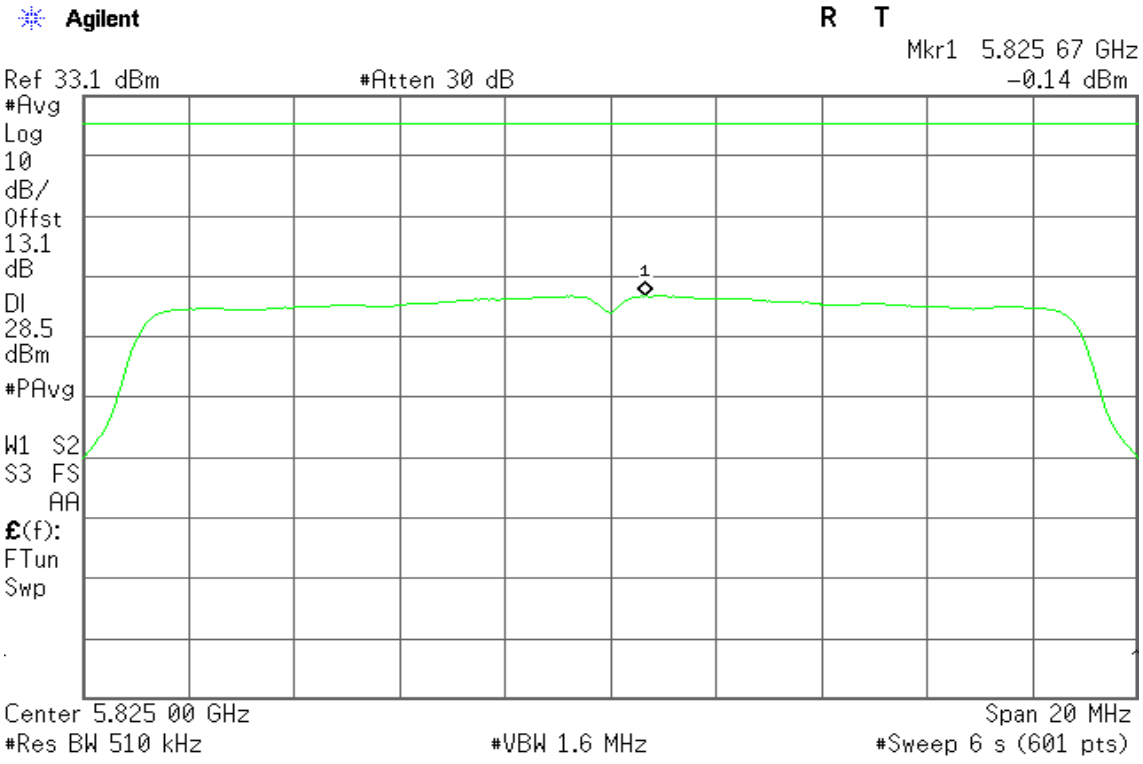
## CH Low



## CH Mid

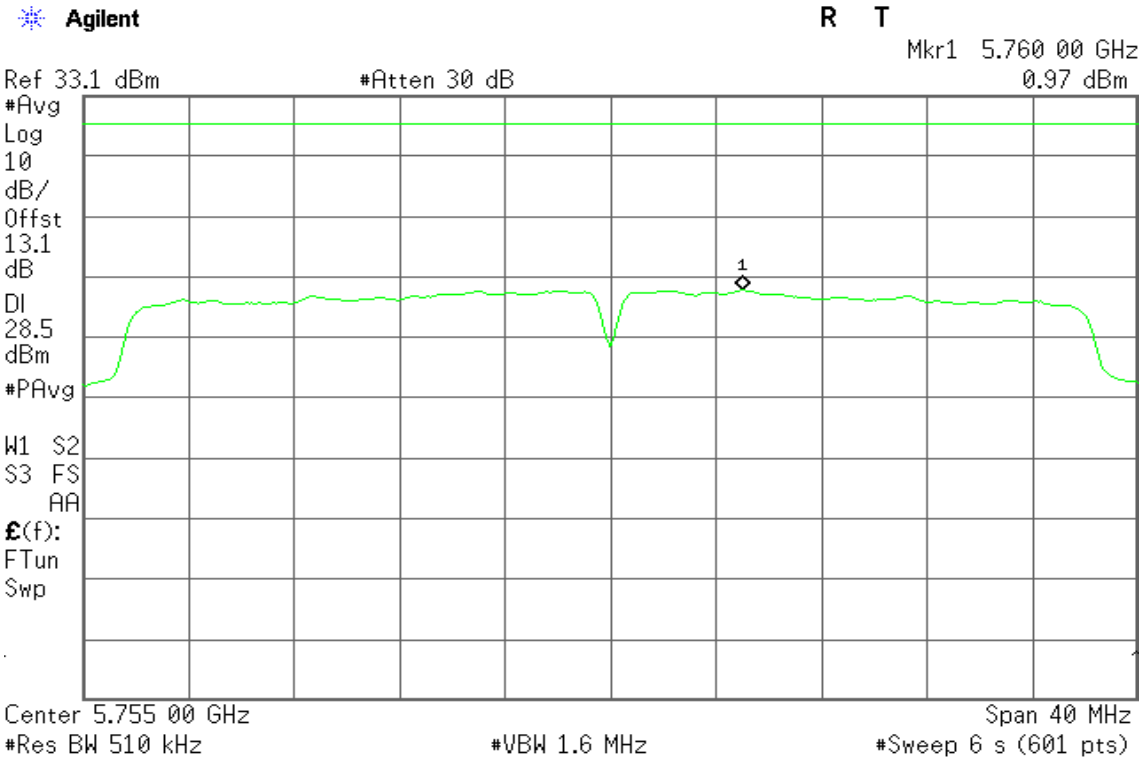



## CH High

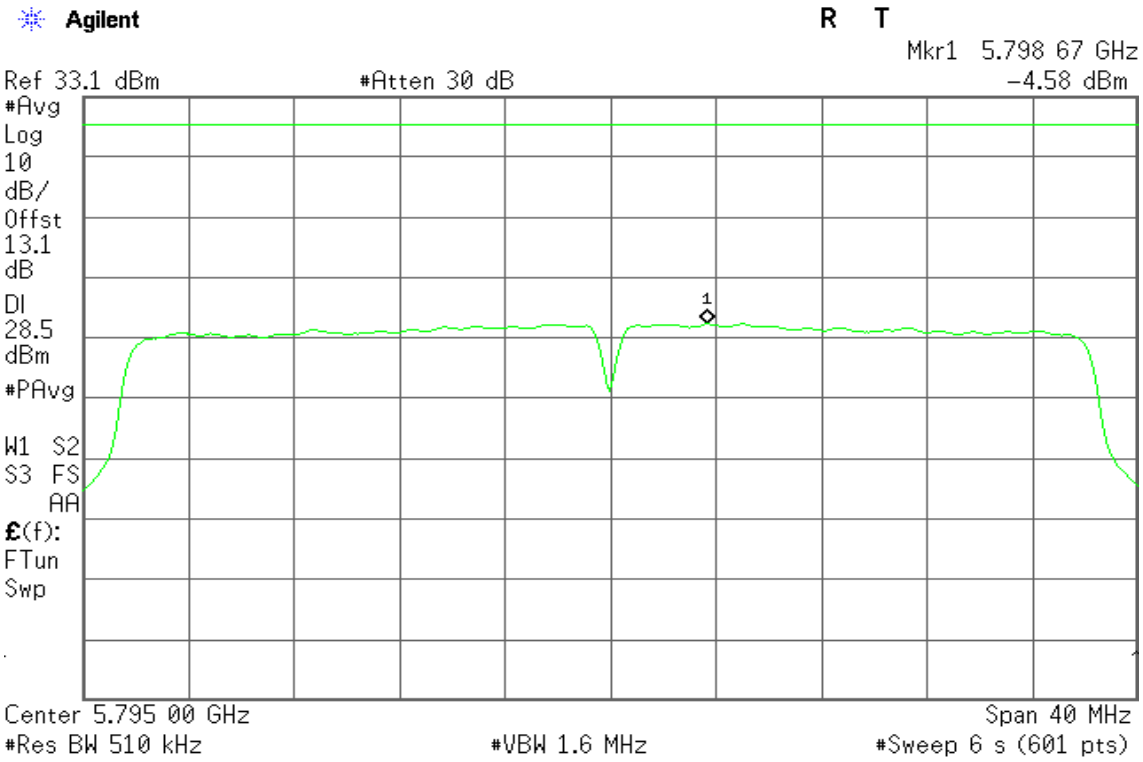


## IEEE 802.11n HT 40 mode / 5755 ~ 5795MHz / Chain 0

### CH Low

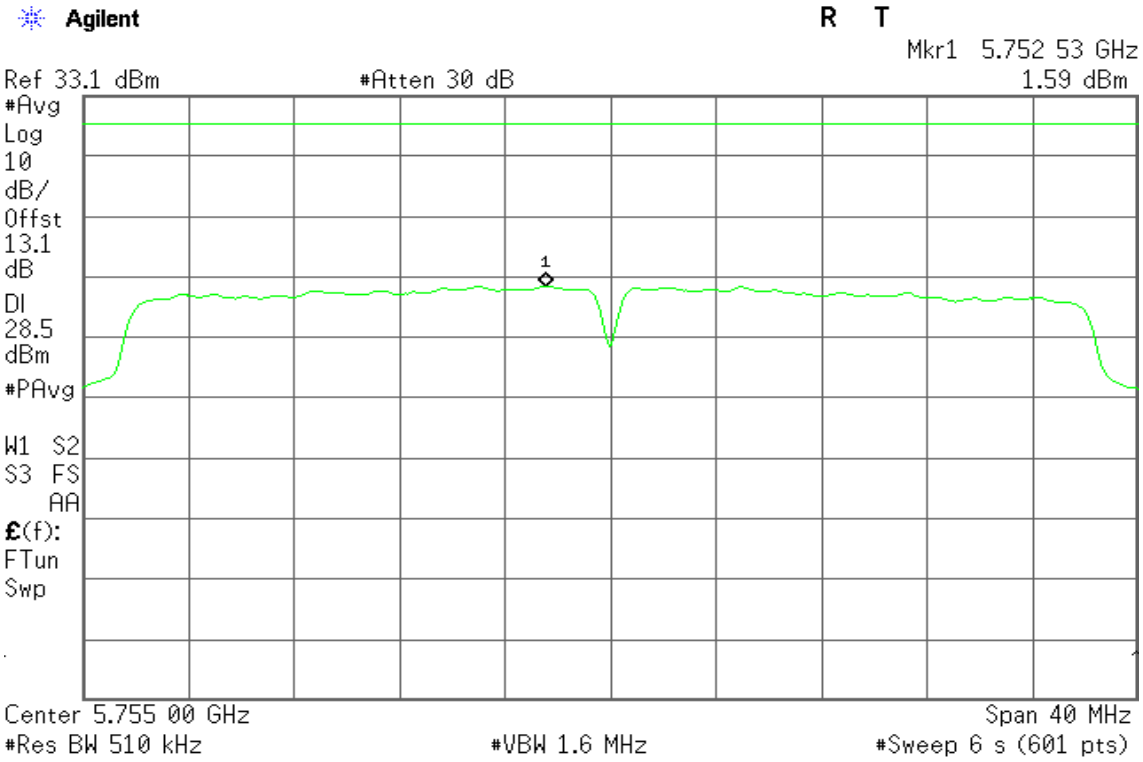



### CH High

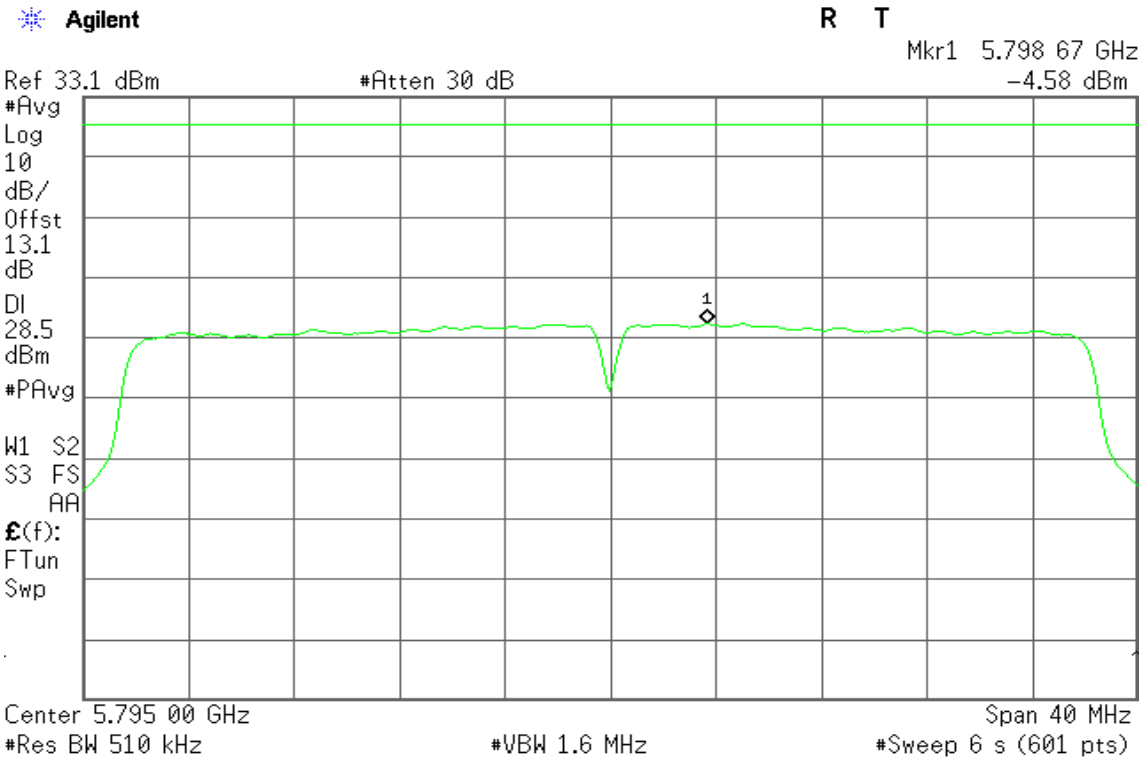


## IEEE 802.11n HT 40 mode / 5755 ~ 5795MHz / Chain 1

### CH Low

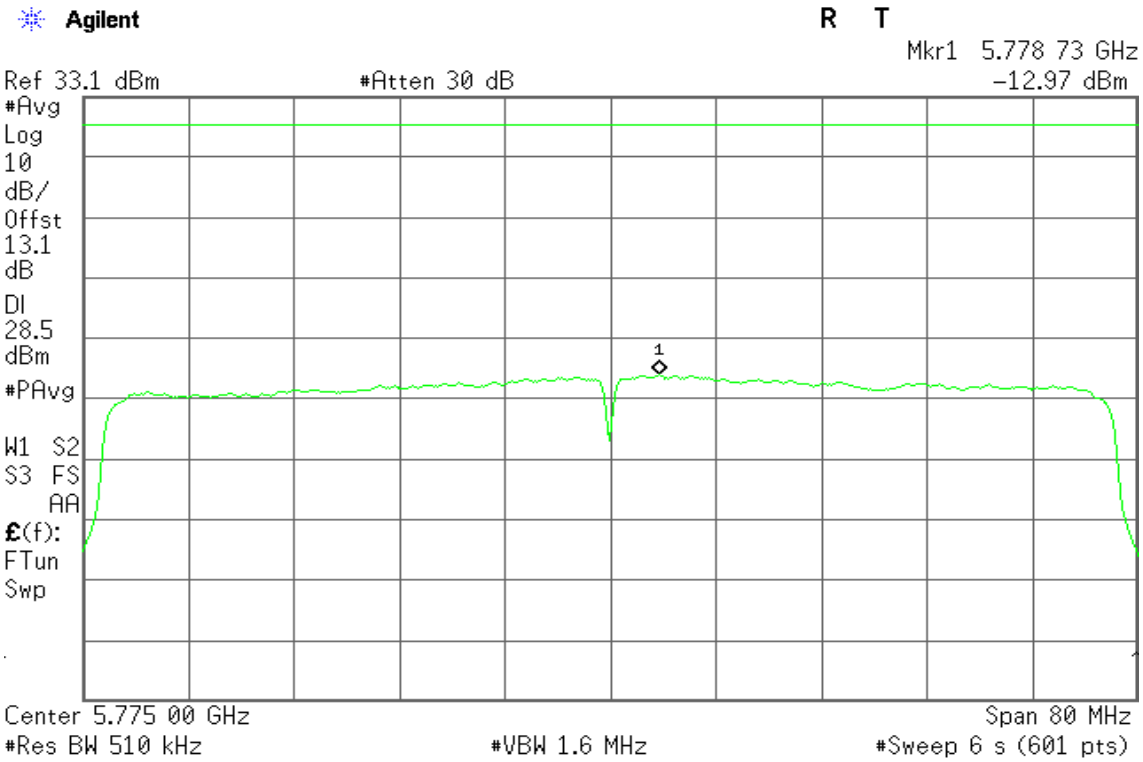



### CH High



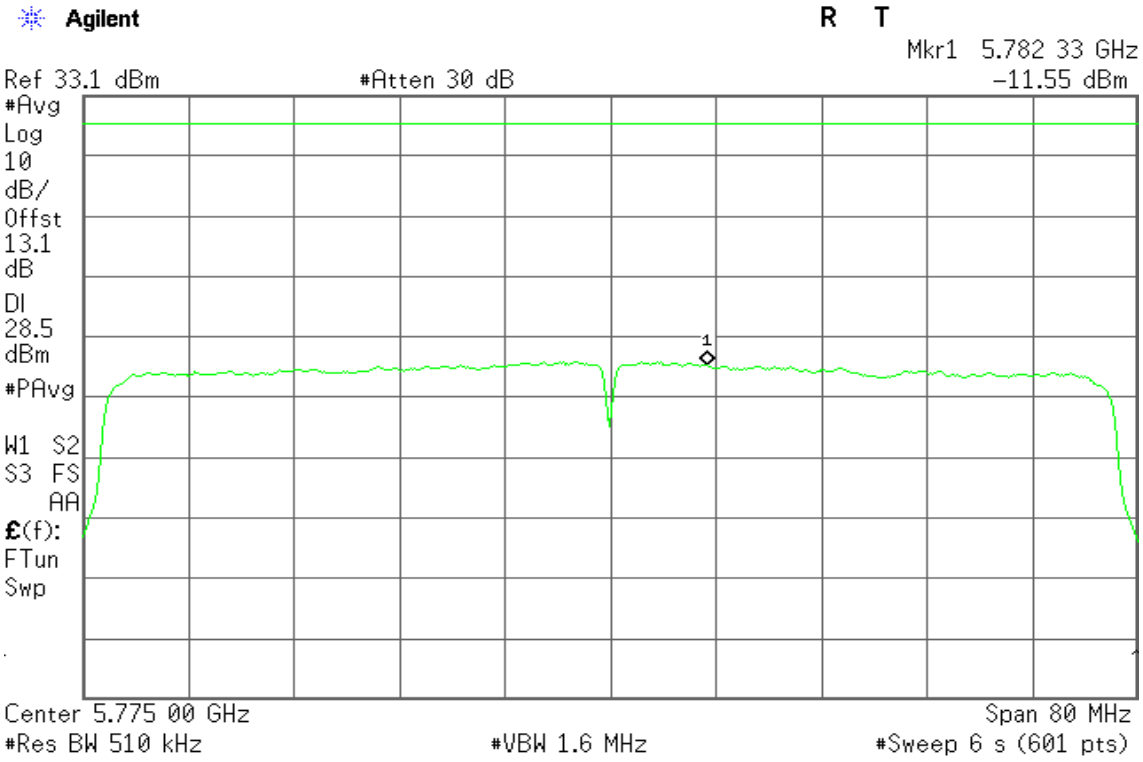
## IEEE 802.11ac VHT80 Mode / 5775MHz / Chain 0

**CH Mid**




## IEEE 802.11ac VHT80 Mode / 5775MHz / Chain 1

**CH Mid**



## 7.5 RADIATED UNDESIRABLE EMISSION

1. According to §15.209(a), except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

| Frequency (MHz) | Field Strength (μV/m) | Measurement Distance (m) |
|---|---|---|
| 0.009 - 0.490 | 2400/F(kHz) | 300 |
| 0.490 - 1.705 | 24000/F(kHz) | 30 |
| 1.705 – 30.0 | 30 | 30 |
| 30-88 | 100 | 3 |
| 88-216 | 150 | 3 |
| 216-960 | 200 | 3 |
| Above 960 | 500 | 3 |

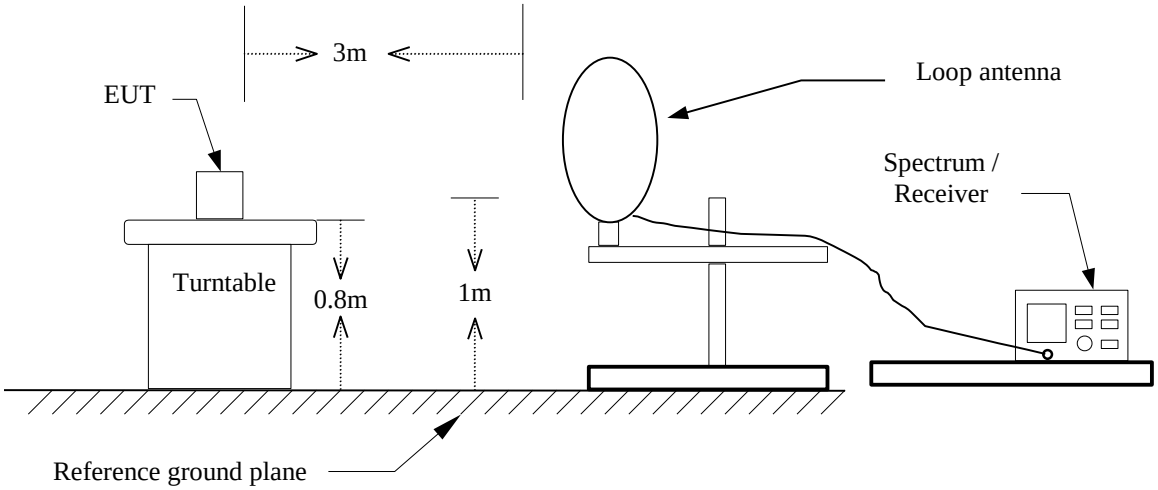
***Remark:*** *Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.*

2. In the emission table above, the tighter limit applies at the band edges.

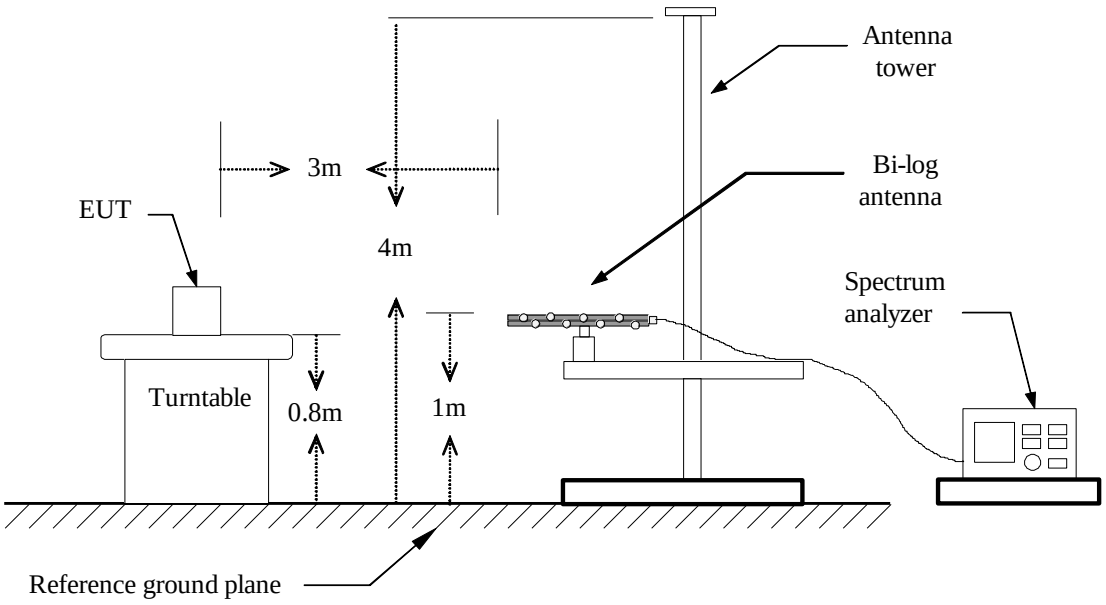
| Frequency (MHz) | Field Strength (μV/m at 3-meter) | Field Strength (dBμV/m at 3-meter) |
|---|---|---|
| 0.009 - 0.490 | 2400/F(kHz) +80 | 20LOG((2400/F(kHz))+80) |
| 0.490 - 1.705 | 24000/F(kHz) +40 | 20LOG((24000/F(kHz))+40) |
| 1.705 – 30.0 | 30 | 69.54 |
| 30-88 | 100 | 40 |
| 88-216 | 150 | 43.5 |
| 216-960 | 200 | 46 |
| Above 960 | 500 | 54 |

## Test Configuration

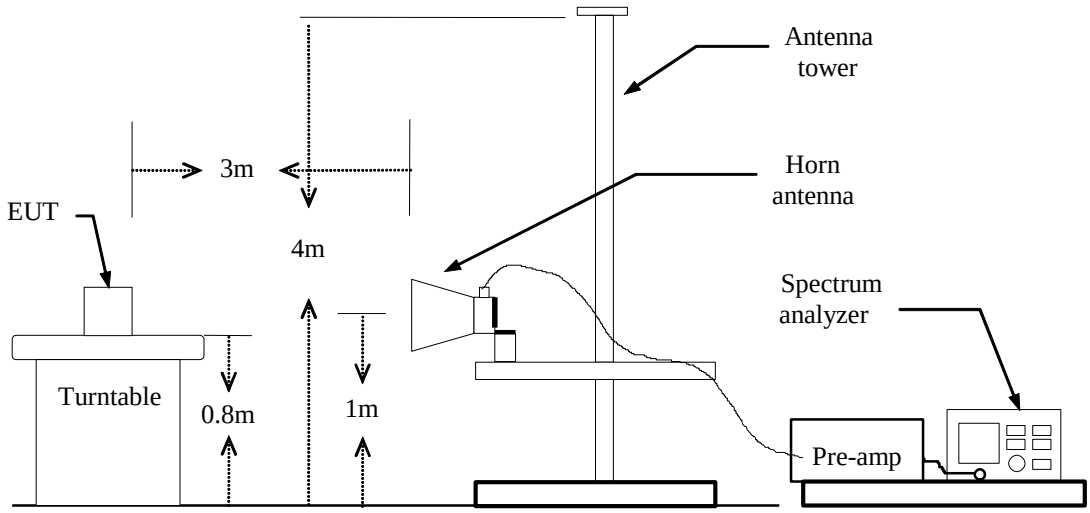
### 9kHz ~ 30MHz




### 30MHz ~ 1GHz



**Above 1 GHz**


Antenna
tower
3m
Horn
antenna
EUT
4m
Spectrum
analyzer
Turntable
0.8m
1m
Pre-amp

## TEST PROCEDURE

1. The EUT is placed on a turntable, which is 0.8m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Set the spectrum analyzer in the following setting as:

   Below 1GHz:

   RBW=100kHz / VBW=300kHz / Sweep=AUTO

   Above 1GHz:

   (a) PEAK: RBW=1MHz / VBW=3MHz / Sweep=AUTO
   (b) AVERAGE: RBW=1MHz,
   if duty cycle≧98%, VBW=10Hz.
   if duty cycle<98% VBW=1/T.
   **IEEE 802.11a mode:** = 88%, VBW=750Hz
   **IEEE 802.11n HT 20 MHz mode:** = 78%, VBW=1.5KHz
   **IEEE 802.11n HT 40 MHz mode:** = 65%, VBW=3KHz
   **IEEE 802.11ac VHT 80 MHz mode:** = 78%, VBW=1.5KHz
7. Repeat above procedures until the measurements for all frequencies are complete.

# TEST RESULTS

## Below 1 GHz

**Operation Mode:** Normal Link **Test Date:** June 10, 2015

**Temperature:** 27℃ **Tested by:** Jason Lu

**Humidity:** 53% RH **Polarity:** Ver. / Hor.

| Frequency (MHz) | Reading (dBuV) | Correction Factor (dB/m) | Result (dBuV/m) | Limit 3m (dBuV/m) | Margin (dB) | Detector Mode (PK/QP) | Ant.Pol. (H/V) |
|---|---|---|---|---|---|---|---|
| 102.7500 | 46.42 | -20.43 | 25.99 | 43.50 | -17.51 | Peak | V |
| 180.3500 | 44.41 | -19.32 | 25.09 | 43.50 | -18.41 | Peak | V |
| 359.8000 | 46.45 | -14.96 | 31.49 | 46.00 | -14.51 | Peak | V |
| 551.8600 | 40.20 | -10.98 | 29.22 | 46.00 | -16.78 | Peak | V |
| 600.3600 | 35.36 | -10.50 | 24.86 | 46.00 | -21.14 | Peak | V |
| 797.2700 | 34.55 | -7.41 | 27.14 | 46.00 | -18.86 | Peak | V |
| | | | | | | | |
| 121.1800 | 44.23 | -17.39 | 26.84 | 43.50 | -16.66 | Peak | H |
| 167.7400 | 47.73 | -18.69 | 29.04 | 43.50 | -14.46 | Peak | H |
| 359.8000 | 52.00 | -14.96 | 37.04 | 46.00 | -8.96 | Peak | H |
| 503.3600 | 40.70 | -11.77 | 28.93 | 46.00 | -17.07 | Peak | H |
| 695.4200 | 39.89 | -8.84 | 31.05 | 46.00 | -14.95 | Peak | H |
| 798.2400 | 42.96 | -7.40 | 35.56 | 46.00 | -10.44 | Peak | H |

***Remark:***

1. *Measuring frequencies from 30 MHz to the 1GHz.*
2. *Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using peak/quasi-peak detector mode.*
3. *Quasi-peak test would be performed if the peak result were greater than the quasi-peak limit or as required by the applicant.*
4. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*
5. *Margin (dB) = Remark result (dBuV/m) – Quasi-peak limit (dBuV/m).*

**Above 1 GHz**

| | | | |
|---|---|---|---|
| **Operation Mode:** | Tx / IEEE 802.11a mode / 5180 ~ 5240MHz / CH Low | **Test Date:** | June 10, 2015 |
| **Temperature:** | 27℃ | **Tested by:** | Jason Lu |
| **Humidity:** | 53% RH | **Polarity:** | Ver. / Hor. |

| Frequency (MHz) | Reading (dBuV) | Correction (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark | Ant.Pol. (H/V) |
|---|---|---|---|---|---|---|---|
| 2463.000 | 55.44 | -3.37 | 52.07 | 74.00 | -21.93 | peak | V |
| 10360.000 | 35.71 | 16.52 | 52.23 | 74.00 | -21.77 | peak | V |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 2456.000 | 55.41 | -3.40 | 52.01 | 74.00 | -21.99 | peak | H |
| 10360.000 | 35.51 | 16.52 | 52.03 | 74.00 | -21.97 | peak | H |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

***Remark:***

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average limit.*
4. *Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.*
5. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*
6. *Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).*

| | | | |
|---|---|---|---|
| **Operation Mode:** | Tx / IEEE 802.11a mode / 5180 ~ 5240MHz / CH Mid | **Test Date:** | June 10, 2015 |
| **Temperature:** | 27℃ | **Tested by:** | Jason Lu |
| **Humidity:** | 53% RH | **Polarity:** | Ver. / Hor. |

| Frequency (MHz) | Reading (dBuV) | Correction (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark | Ant.Pol. (H/V) |
|---|---|---|---|---|---|---|---|
| 3016.000 | 53.48 | -2.07 | 51.41 | 74.00 | -22.59 | peak | V |
| 10440.000 | 34.40 | 16.89 | 51.29 | 74.00 | -22.71 | peak | V |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 2456.000 | 54.73 | -3.40 | 51.33 | 74.00 | -22.67 | peak | H |
| 10440.000 | 45.66 | 16.89 | 62.55 | 74.00 | -11.45 | peak | H |
| 10440.000 | 33.79 | 16.89 | 50.68 | 54.00 | -3.32 | AVG | H |
| 15670.000 | 45.50 | 19.15 | 64.65 | 74.00 | -9.35 | peak | H |
| 15670.000 | 31.64 | 19.15 | 50.79 | 54.00 | -3.21 | AVG | H |
| N/A | | | | | | | |

***Remark:***

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average limit.*
4. *Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.*
5. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*
6. *Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).*

| | | | |
|---|---|---|---|
| **Operation Mode:** | Tx / IEEE 802.11a mode / 5180 ~ 5240MHz / CH High | **Test Date:** | June 10, 2015 |
| **Temperature:** | 27℃ | **Tested by:** | Jason Lu |
| **Humidity:** | 53% RH | **Polarity:** | Ver. / Hor. |

| Frequency (MHz) | Reading (dBuV) | Correction (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark | Ant.Pol. (H/V) |
|---|---|---|---|---|---|---|---|
| 2456.000 | 55.48 | -3.40 | 52.08 | 74.00 | -21.92 | peak | V |
| 10480.000 | 32.97 | 17.07 | 50.04 | 74.00 | -23.96 | peak | V |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 2463.000 | 54.66 | -3.37 | 51.29 | 74.00 | -22.71 | peak | H |
| 10480.000 | 42.82 | 17.07 | 59.89 | 74.00 | -14.11 | peak | H |
| 10480.000 | 33.39 | 17.07 | 50.46 | 54.00 | -3.54 | AVG | H |
| 15720.000 | 47.76 | 19.19 | 66.95 | 74.00 | -7.05 | peak | H |
| 15720.000 | 31.59 | 19.19 | 50.78 | 54.00 | -3.22 | AVG | H |
| N/A | | | | | | | |

***Remark:***

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average limit.*
4. *Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.*
5. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*
6. *Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).*

| | | | |
|---|---|---|---|
| **Operation Mode:** | Tx / IEEE 802.11n HT 20 mode / 5180 ~ 5240MHz / CH Low | **Test Date:** | June 10, 2015 |
| **Temperature:** | 27℃ | **Tested by:** | Jason Lu |
| **Humidity:** | 53% RH | **Polarity:** | Ver. / Hor. |

| Frequency (MHz) | Reading (dBuV) | Correction (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark | Ant.Pol. (H/V) |
|---|---|---|---|---|---|---|---|
| 2274.000 | 53.31 | -4.33 | 48.98 | 74.00 | -25.02 | peak | V |
| 10370.000 | 35.44 | 16.57 | 52.01 | 74.00 | -21.99 | peak | V |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 2701.000 | 53.99 | -2.71 | 51.28 | 74.00 | -22.72 | peak | H |
| 10360.000 | 34.57 | 16.52 | 51.09 | 74.00 | -22.91 | peak | H |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

***Remark:***

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average limit.*
4. *Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.*
5. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*
6. *Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).*

| | | | |
|---|---|---|---|
| **Operation Mode:** | Tx / IEEE 802.11n HT 20 mode / 5180 ~ 5240MHz / CH Mid | **Test Date:** | June 10, 2015 |
| **Temperature:** | 27℃ | **Tested by:** | Jason Lu |
| **Humidity:** | 53% RH | **Polarity:** | Ver. / Hor. |

| Frequency (MHz) | Reading (dBuV) | Correction (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark | Ant.Pol. (H/V) |
|---|---|---|---|---|---|---|---|
| 1658.000 | 55.77 | -6.69 | 49.08 | 74.00 | -24.92 | peak | V |
| 10440.000 | 34.09 | 16.89 | 50.98 | 74.00 | -23.02 | peak | V |
| 15660.000 | 40.69 | 19.14 | 59.83 | 74.00 | -14.17 | peak | V |
| 15660.000 | 31.35 | 19.14 | 50.49 | 54.00 | -3.51 | AVG | V |
| N/A | | | | | | | |
| | | | | | | | |
| 2463.000 | 55.03 | -3.37 | 51.66 | 74.00 | -22.34 | peak | H |
| 10440.000 | 41.98 | 16.89 | 58.87 | 74.00 | -15.13 | peak | H |
| 10440.000 | 32.59 | 16.89 | 49.48 | 54.00 | -4.52 | AVG | H |
| 15660.000 | 45.00 | 19.14 | 64.14 | 74.00 | -9.86 | peak | H |
| 15660.000 | 31.22 | 19.14 | 50.36 | 54.00 | -3.64 | AVG | H |
| N/A | | | | | | | |

***Remark:***

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average limit.*
4. *Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.*
5. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*
6. *Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).*

**Operation Mode:** Tx / IEEE 802.11n HT 20 mode / 5180 ~ 5240MHz / CH High **Test Date:** June 10, 2015

**Temperature:** 27℃ **Tested by:** Jason Lu

**Humidity:** 53% RH **Polarity:** Ver. / Hor.

| Frequency (MHz) | Reading (dBuV) | Correction (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark | Ant.Pol. (H/V) |
|---|---|---|---|---|---|---|---|
| 1651.000 | 57.60 | -6.73 | 50.87 | 74.00 | -23.13 | peak | V |
| 10470.000 | 34.67 | 17.02 | 51.69 | 74.00 | -22.31 | peak | V |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 2869.000 | 53.81 | -2.37 | 51.44 | 74.00 | -22.56 | peak | H |
| 10480.000 | 42.74 | 17.07 | 59.81 | 74.00 | -14.19 | peak | H |
| 10480.000 | 30.23 | 17.07 | 47.30 | 54.00 | -6.70 | AVG | H |
| 15720.000 | 46.24 | 19.19 | 65.43 | 74.00 | -8.57 | peak | H |
| 15720.000 | 31.57 | 19.19 | 50.76 | 54.00 | -3.24 | AVG | H |
| N/A | | | | | | | |

***Remark:***

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average limit.*
4. *Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.*
5. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*
6. *Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).*

| | | | |
|---|---|---|---|
| **Operation Mode:** | Tx / IEEE 802.11n HT 40 mode / 5190 ~ 5230MHz / CH Low | **Test Date:** | June 10, 2015 |
| **Temperature:** | 27℃ | **Tested by:** | Jason Lu |
| **Humidity:** | 53% RH | **Polarity:** | Ver. / Hor. |

| Frequency (MHz) | Reading (dBuV) | Correction (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark | Ant.Pol. (H/V) |
|---|---|---|---|---|---|---|---|
| 2463.000 | 54.64 | -3.37 | 51.27 | 74.00 | -22.73 | peak | V |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 2463.000 | 54.31 | -3.37 | 50.94 | 74.00 | -23.06 | peak | H |
| 10380.000 | 35.33 | 16.62 | 51.95 | 74.00 | -22.05 | peak | H |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

***Remark:***

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average limit.*
4. *Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.*
5. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*
6. *Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).*

| | | | |
|---|---|---|---|
| **Operation Mode:** | Tx / IEEE 802.11n HT 40 mode / 5190 ~ 5230MHz / CH High | **Test Date:** | June 10, 2015 |
| **Temperature:** | 27℃ | **Tested by:** | Jason Lu |
| **Humidity:** | 53% RH | **Polarity:** | Ver. / Hor. |

| Frequency (MHz) | Reading (dBuV) | Correction (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark | Ant.Pol. (H/V) |
|---|---|---|---|---|---|---|---|
| 2463.000 | 54.98 | -3.37 | 51.61 | 74.00 | -22.39 | peak | V |
| 10460.000 | 38.02 | 16.98 | 55.00 | 74.00 | -19.00 | peak | V |
| 10460.000 | 26.96 | 16.98 | 43.94 | 54.00 | -10.06 | AVG | V |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 2785.000 | 54.22 | -2.54 | 51.68 | 74.00 | -22.32 | peak | H |
| 10460.000 | 41.06 | 16.98 | 58.04 | 74.00 | -15.96 | peak | H |
| 10460.000 | 29.83 | 16.98 | 46.81 | 54.00 | -7.19 | AVG | H |
| 15690.000 | 44.79 | 19.17 | 63.96 | 74.00 | -10.04 | peak | H |
| 15690.000 | 31.04 | 19.17 | 50.21 | 54.00 | -3.79 | AVG | H |
| N/A | | | | | | | |

***Remark:***

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average limit.*
4. *Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.*
5. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*
6. *Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).*

| | | | |
|---|---|---|---|
| **Operation Mode:** | Tx / IEEE 802.11ac VHT80 Mode / 5210MHz / CH Mid | **Test Date:** | June 10, 2015 |
| **Temperature:** | 27℃ | **Tested by:** | Jason Lu |
| **Humidity:** | 53% RH | **Polarity:** | Ver. / Hor. |

| Frequency (MHz) | Reading (dBuV) | Correction (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark | Ant.Pol. (H/V) |
|---|---|---|---|---|---|---|---|
| 1658.000 | 58.23 | -6.69 | 51.54 | 74.00 | -22.46 | peak | V |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 2456.000 | 54.81 | -3.40 | 51.41 | 74.00 | -22.59 | peak | H |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

***Remark:***

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average limit.*
4. *Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.*
5. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*
6. *Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).*

| | | | |
|---|---|---|---|
| **Operation Mode:** | Tx / IEEE 802.11a mode / 5745 ~ 5825MHz / CH Low | **Test Date:** | June 10, 2015 |
| **Temperature:** | 27℃ | **Tested by:** | Jason Lu |
| **Humidity:** | 53% RH | **Polarity:** | Ver. / Hor. |

| Frequency (MHz) | Reading (dBuV) | Correction (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark | Ant.Pol. (H/V) |
|---|---|---|---|---|---|---|---|
| 2463.000 | 55.35 | -3.37 | 51.98 | 74.00 | -22.02 | peak | V |
| 11490.000 | 35.07 | 16.78 | 51.85 | 74.00 | -22.15 | peak | V |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 2456.000 | 55.69 | -3.40 | 52.29 | 74.00 | -21.71 | peak | H |
| 11490.000 | 42.17 | 16.78 | 58.95 | 74.00 | -15.05 | peak | H |
| 11490.000 | 33.80 | 16.78 | 50.58 | 54.00 | -3.42 | AVG | H |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |

***Remark:***

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average limit.*
4. *Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.*
5. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*
6. *Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).*

| | | | |
|---|---|---|---|
| **Operation Mode:** | Tx / IEEE 802.11a mode / 5745 ~ 5825MHz / CH Mid | **Test Date:** | June 10, 2015 |
| **Temperature:** | 27℃ | **Tested by:** | Jason Lu |
| **Humidity:** | 53% RH | **Polarity:** | Ver. / Hor. |

| Frequency (MHz) | Reading (dBuV) | Correction (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark | Ant.Pol. (H/V) |
|---|---|---|---|---|---|---|---|
| 2463.000 | 55.13 | -3.37 | 51.76 | 74.00 | -22.24 | peak | V |
| 11580.000 | 33.64 | 16.85 | 50.49 | 74.00 | -23.51 | peak | V |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 2575.000 | 54.34 | -2.97 | 51.37 | 74.00 | -22.63 | peak | H |
| 11570.000 | 44.40 | 16.84 | 61.24 | 74.00 | -12.76 | peak | H |
| 11570.000 | 33.24 | 16.84 | 50.08 | 54.00 | -3.92 | AVG | H |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |

***Remark:***

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average limit.*
4. *Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.*
5. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*
6. *Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).*

| | | | |
|---|---|---|---|
| **Operation Mode:** | Tx / IEEE 802.11a mode / 5745 ~ 5825MHz / CH High | **Test Date:** | June 10, 2015 |
| **Temperature:** | 27℃ | **Tested by:** | Jason Lu |
| **Humidity:** | 53% RH | **Polarity:** | Ver. / Hor. |

| Frequency (MHz) | Reading (dBuV) | Correction (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark | Ant.Pol. (H/V) |
|---|---|---|---|---|---|---|---|
| 2596.000 | 53.50 | -2.93 | 50.57 | 74.00 | -23.43 | peak | V |
| 11650.000 | 34.88 | 16.91 | 51.79 | 74.00 | -22.21 | peak | V |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 2463.000 | 55.58 | -3.37 | 52.21 | 74.00 | -21.79 | peak | H |
| 11650.000 | 35.10 | 16.91 | 52.01 | 74.00 | -21.99 | peak | H |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

***Remark:***

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average limit.*
4. *Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.*
5. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*
6. *Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).*

| | | | |
|---|---|---|---|
| **Operation Mode:** | Tx / IEEE 802.11n HT 20 mode / 5745 ~ 5825MHz / CH Low | **Test Date:** | June 10, 2015 |
| **Temperature:** | 27℃ | **Tested by:** | Jason Lu |
| **Humidity:** | 53% RH | **Polarity:** | Ver. / Hor. |

| Frequency (MHz) | Reading (dBuV) | Correction (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark | Ant.Pol. (H/V) |
|---|---|---|---|---|---|---|---|
| 1658.000 | 56.01 | -6.69 | 49.32 | 74.00 | -24.68 | peak | V |
| 11490.000 | 35.20 | 16.78 | 51.98 | 74.00 | -22.02 | peak | V |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 2463.000 | 55.92 | -3.37 | 52.55 | 74.00 | -21.45 | peak | H |
| 11490.000 | 42.38 | 16.78 | 59.16 | 74.00 | -14.84 | peak | H |
| 11490.000 | 33.46 | 16.78 | 50.24 | 54.00 | -3.76 | AVG | H |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |

***Remark:***

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average limit.*
4. *Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.*
5. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*
6. *Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).*

| | | | |
|---|---|---|---|
| **Operation Mode:** | Tx / IEEE 802.11n HT 20 mode / 5745 ~ 5825MHz / CH Mid | **Test Date:** | June 10, 2015 |
| **Temperature:** | 27℃ | **Tested by:** | Jason Lu |
| **Humidity:** | 53% RH | **Polarity:** | Ver. / Hor. |

| Frequency (MHz) | Reading (dBuV) | Correction (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark | Ant.Pol. (H/V) |
|---|---|---|---|---|---|---|---|
| 2680.000 | 54.18 | -2.76 | 51.42 | 74.00 | -22.58 | peak | V |
| 11580.000 | 33.92 | 16.85 | 50.77 | 74.00 | -23.23 | peak | V |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 2792.000 | 53.51 | -2.53 | 50.98 | 74.00 | -23.02 | peak | H |
| 11570.000 | 44.81 | 16.84 | 61.65 | 74.00 | -12.35 | peak | H |
| 11570.000 | 32.99 | 16.84 | 49.83 | 54.00 | -4.17 | AVG | H |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |

***Remark:***

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average limit.*
4. *Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.*
5. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*
6. *Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).*

| | | | |
|---|---|---|---|
| **Operation Mode:** | Tx / IEEE 802.11n HT 20 mode / 5745 ~ 5825MHz / CH High | **Test Date:** | June 10, 2015 |
| **Temperature:** | 27℃ | **Tested by:** | Jason Lu |
| **Humidity:** | 53% RH | **Polarity:** | Ver. / Hor. |

| Frequency (MHz) | Reading (dBuV) | Correction (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark | Ant.Pol. (H/V) |
|---|---|---|---|---|---|---|---|
| 2463.000 | 57.15 | -3.37 | 53.78 | 74.00 | -20.22 | peak | V |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 2463.000 | 54.90 | -3.37 | 51.53 | 74.00 | -22.47 | peak | H |
| 11650.000 | 34.90 | 16.91 | 51.81 | 74.00 | -22.19 | peak | H |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

***Remark:***

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average limit.*
4. *Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.*
5. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*
6. *Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).*

| | | | |
|---|---|---|---|
| **Operation Mode:** | Tx / IEEE 802.11n HT 40 mode / 5755 ~ 5795MHz / CH Low | **Test Date:** | June 10, 2015 |
| **Temperature:** | 27℃ | **Tested by:** | Jason Lu |
| **Humidity:** | 53% RH | **Polarity:** | Ver. / Hor. |

| Frequency (MHz) | Reading (dBuV) | Correction (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark | Ant.Pol. (H/V) |
|---|---|---|---|---|---|---|---|
| 2463.000 | 56.39 | -3.37 | 53.02 | 74.00 | -20.98 | peak | V |
| 11520.000 | 38.21 | 16.80 | 55.01 | 74.00 | -18.99 | peak | V |
| 11520.000 | 26.45 | 16.80 | 43.25 | 54.00 | -10.75 | AVG | V |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 2673.000 | 53.75 | -2.77 | 50.98 | 74.00 | -23.02 | peak | H |
| 11510.000 | 42.72 | 16.79 | 59.51 | 74.00 | -14.49 | peak | H |
| 11510.000 | 30.59 | 16.79 | 47.38 | 54.00 | -6.62 | AVG | H |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |

***Remark:***

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average limit.*
4. *Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.*
5. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*
6. *Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).*

**Operation Mode:** Tx / IEEE 802.11n HT 40 mode / 5755 ~ 5795MHz / CH High **Test Date:** June 10, 2015

**Temperature:** 27℃ **Tested by:** Jason Lu

**Humidity:** 53% RH **Polarity:** Ver. / Hor.

| Frequency (MHz) | Reading (dBuV) | Correction (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark | Ant.Pol. (H/V) |
|---|---|---|---|---|---|---|---|
| 2463.000 | 55.10 | -3.37 | 51.73 | 74.00 | -22.27 | peak | V |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 2876.000 | 54.14 | -2.36 | 51.78 | 74.00 | -22.22 | peak | H |
| 11590.000 | 41.90 | 16.86 | 58.76 | 74.00 | -15.24 | peak | H |
| 11590.000 | 32.81 | 16.86 | 49.67 | 54.00 | -4.33 | AVG | H |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |

***Remark:***

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average limit.*
4. *Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.*
5. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*
6. *Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).*

| | | | |
|---|---|---|---|
| **Operation Mode:** | Tx / IEEE 802.11ac VHT80 Mode / 5775MHz / CH Mid | **Test Date:** | June 10, 2015 |
| **Temperature:** | 27℃ | **Tested by:** | Jason Lu |
| **Humidity:** | 53% RH | **Polarity:** | Ver. / Hor. |

| Frequency (MHz) | Reading (dBuV) | Correction (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark | Ant.Pol. (H/V) |
|---|---|---|---|---|---|---|---|
| 2463.000 | 55.84 | -3.37 | 52.47 | 74.00 | -21.53 | peak | V |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 2729.000 | 53.88 | -2.66 | 51.22 | 74.00 | -22.78 | peak | H |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

***Remark:***

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average limit or as required by the applicant.*
4. *Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.*
5. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*
6. *Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).*

## 7.6 POWERLINE CONDUCTED EMISSIONS

**LIMIT**

According to §15.207(a), except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 μH/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

| Frequency Range (MHz) | Limits (dBμV) | |
|---|---|---|
| | Quasi-peak | Average |
| 0.15 to 0.50 | 66 to 56* | 56 to 46* |
| 0.50 to 5 | 56 | 46 |
| 5 to 30 | 60 | 50 |

** Decreases with the logarithm of the frequency.*

**TEST CONFIGURATION**

See test photographs attached in Appendix 1 for the actual connections between EUT and support equipment.

## TEST PROCEDURE

1. The EUT was placed on a table, which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. Repeat above procedures until all frequency measured were complete.

## TEST RESULTS

The initial step in collecting conducted data is a spectrum analyzer peak scan of the measurement range. Significant peaks are then marked as shown on the following data page, and these signals are then quasi-peaked.

### Test Data

| | | | |
|---|---|---|---|
| **Operation Mode:** | Normal Link | **Test Date:** | June 10, 2015 |
| **Temperature:** | 24℃ | **Tested by:** | Sehni Hu |
| **Humidity:** | 50% RH | | |

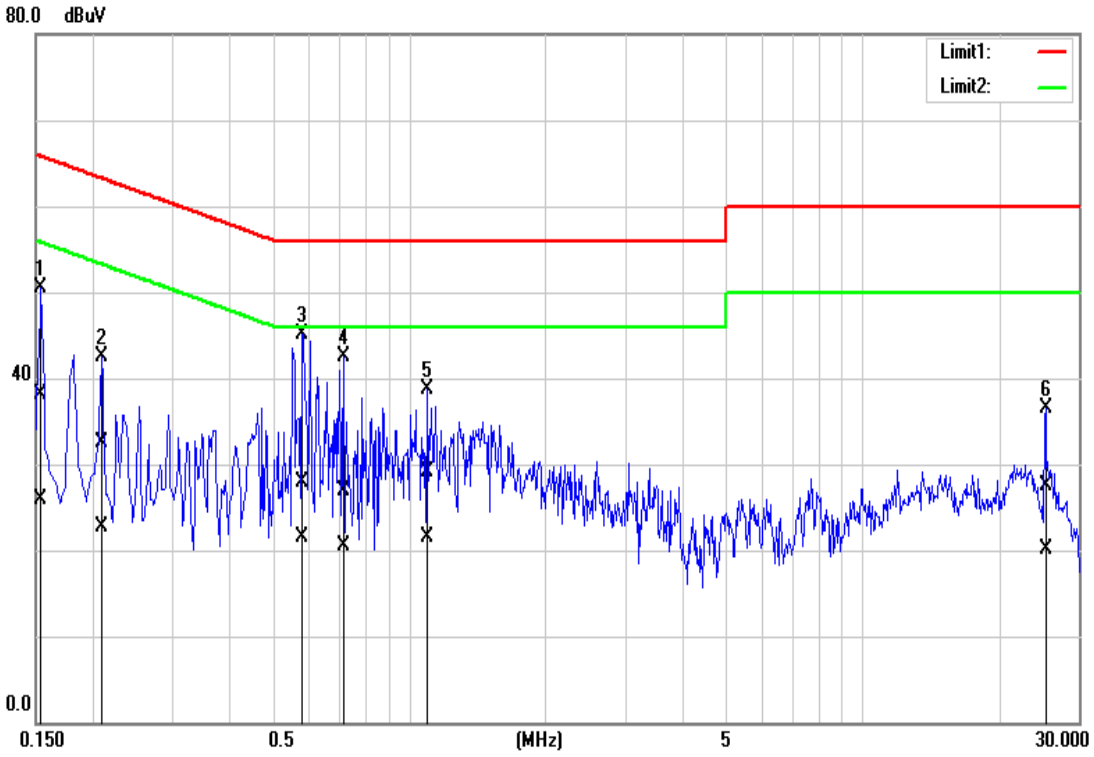
| Freq. (MHz) | QP Reading (dBuV) | AV Reading (dBuV) | Corr. factor (dB/m) | QP Result (dBuV/m) | AV Result (dBuV/m) | QP Limit (dBuV) | AV Limit (dBuV) | QP Margin (dB) | AV Margin (dB) | Note |
|---|---|---|---|---|---|---|---|---|---|---|
| 0.1539 | 28.45 | 16.27 | 9.61 | 38.06 | 25.88 | 65.78 | 55.79 | -27.72 | -29.91 | L1 |
| 0.2100 | 22.86 | 13.16 | 9.62 | 32.48 | 22.78 | 63.20 | 53.21 | -30.72 | -30.43 | L1 |
| 0.5820 | 18.22 | 11.92 | 9.63 | 27.85 | 21.55 | 56.00 | 46.00 | -28.15 | -24.45 | L1 |
| 0.7180 | 17.30 | 10.92 | 9.64 | 26.94 | 20.56 | 56.00 | 46.00 | -29.06 | -25.44 | L1 |
| 1.0940 | 19.46 | 11.93 | 9.65 | 29.11 | 21.58 | 56.00 | 46.00 | -26.89 | -24.42 | L1 |
| 25.3420 | 17.65 | 10.07 | 9.95 | 27.60 | 20.02 | 60.00 | 50.00 | -32.40 | -29.98 | L1 |
| | | | | | | | | | | |
| 0.1540 | 29.45 | 13.52 | 9.66 | 39.11 | 23.18 | 65.78 | 55.78 | -26.67 | -32.60 | L2 |
| 0.1820 | 25.68 | 10.31 | 9.67 | 35.35 | 19.98 | 64.39 | 54.39 | -29.04 | -34.41 | L2 |
| 0.4140 | 21.49 | 18.36 | 9.67 | 31.16 | 28.03 | 57.57 | 47.57 | -26.41 | -19.54 | L2 |
| 0.5060 | 22.60 | 11.39 | 9.67 | 32.27 | 21.06 | 56.00 | 46.00 | -23.73 | -24.94 | L2 |
| 0.6860 | 18.78 | 10.55 | 9.68 | 28.46 | 20.23 | 56.00 | 46.00 | -27.54 | -25.77 | L2 |
| 21.8260 | 18.21 | 12.57 | 10.02 | 28.23 | 22.59 | 60.00 | 50.00 | -31.77 | -27.41 | L2 |

***Remark:***

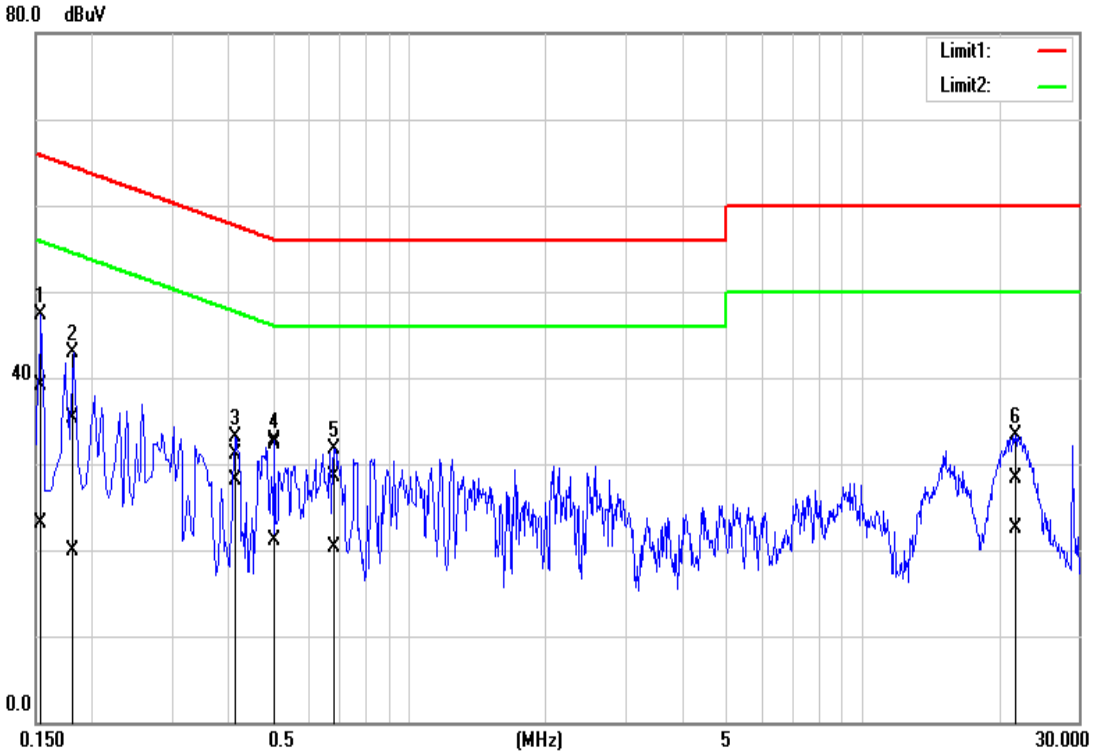
1. *Measuring frequencies from 0.15 MHz to 30MHz.*
2. *The emissions measured in frequency range from 0.15 MHz to 30MHz were made with an instrument using Quasi-peak detector and average detector.*
3. *The IF bandwidth of SPA between 0.15MHz to 30MHz was 10kHz; the IF bandwidth of Test Receiver between 0.15MHz to 30MHz was 9kHz;*
4. *L1 = Line One (Live Line) / L2 = Line Two (Neutral Line)*

## Test Plots

### *Conducted emissions (Line 1)*




### *Conducted emissions (Line 2)*

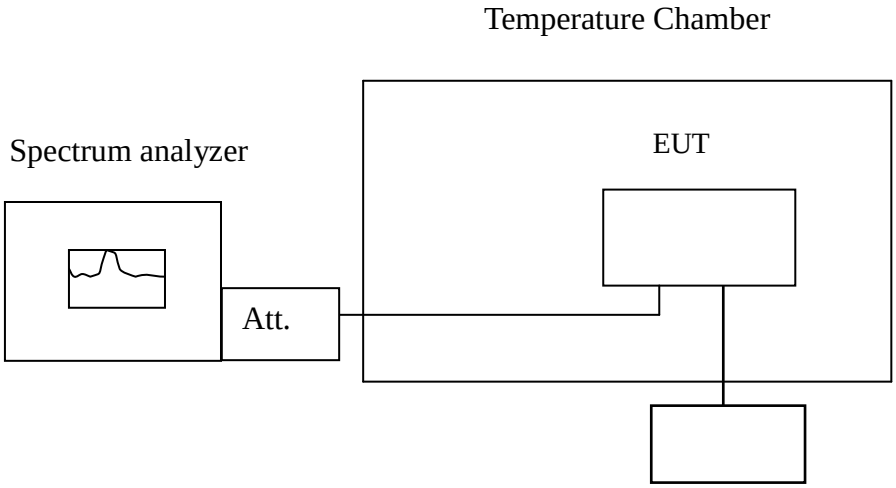


## 7.7 FREQUENCY STABILITY

## LIMIT

According to §15.407(g), 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.

**Test Configuration**




***Remark:*** *Measurement setup for testing on Antenna connector*

## TEST PROCEDURE

The equipment under test was connected to an external AC or DC power supply and input rated voltage. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators. The EUT was placed inside the temperature chamber. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 20°C operating frequency as reference frequency. Turn EUT off and set the chamber temperature to –20°C. After the temperature stabilized for approximately 30 minutes recorded the frequency. Repeat step measure with 10°C increased per stage until the highest temperature of +50°C reached.

## TEST RESULTS

*No non-compliance noted.*

**IEEE 802.11a mode / 5180 ~ 5240 MHz / Chain 0:**

**CH Low**

| Operating Frequency: 5180 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | Voltage (V) | Measured Frequency (MHz) | Limit Range | Test Result |
| 50 | 110 | 5180.010262 | 5150~5250 | Pass |
| 40 | 110 | 5180.004819 | 5150~5250 | Pass |
| 30 | 110 | 5179.994599 | 5150~5250 | Pass |
| 20 | 110 | 5179.998449 | 5150~5250 | Pass |
| 10 | 110 | 5179.990700 | 5150~5250 | Pass |
| 0 | 110 | 5180.002601 | 5150~5250 | Pass |
| -10 | 110 | 5179.991130 | 5150~5250 | Pass |
| -20 | 110 | 5179.995339 | 5150~5250 | Pass |

| Operating Frequency: 5180 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | Voltage (V) | Measured Frequency (MHz) | Limit Range | Test Result |
| 20 | 93.5 | 5179.993072 | 5150~5250 | Pass |
| | 110 | 5180.010771 | 5150~5250 | Pass |
| | 126.5 | 5179.995781 | 5150~5250 | Pass |

## CH Mid

| Operating Frequency: 5220 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | **Voltage (V)** | **Measured Frequency (MHz)** | **Limit Range** | **Test Result** |
| 50 | 110 | 5220.010922 | 5150~5250 | Pass |
| 40 | 110 | 5220.003257 | 5150~5250 | Pass |
| 30 | 110 | 5219.990591 | 5150~5250 | Pass |
| 20 | 110 | 5219.997317 | 5150~5250 | Pass |
| 10 | 110 | 5219.991767 | 5150~5250 | Pass |
| 0 | 110 | 5220.008206 | 5150~5250 | Pass |
| -10 | 110 | 5219.993519 | 5150~5250 | Pass |
| -20 | 110 | 5220.008605 | 5150~5250 | Pass |

| Operating Frequency: 5220 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | **Voltage (V)** | **Measured Frequency (MHz)** | **Limit Range** | **Test Result** |
| 20 | 93.5 | 5219.997783 | 5150~5250 | Pass |
| | 110 | 5220.007431 | 5150~5250 | Pass |
| | 126.5 | 5219.998563 | 5150~5250 | Pass |

## CH High

| Operating Frequency: 5240 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | Voltage (V) | Measured Frequency (MHz) | Limit Range | Test Result |
| 50 | 110 | 5240.008365 | 5150~5250 | Pass |
| 40 | 110 | 5239.991132 | 5150~5250 | Pass |
| 30 | 110 | 5239.991015 | 5150~5250 | Pass |
| 20 | 110 | 5239.997893 | 5150~5250 | Pass |
| 10 | 110 | 5239.996002 | 5150~5250 | Pass |
| 0 | 110 | 5239.997861 | 5150~5250 | Pass |
| -10 | 110 | 5239.999318 | 5150~5250 | Pass |
| -20 | 110 | 5239.991273 | 5150~5250 | Pass |

| Operating Frequency: 5240 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | Voltage (V) | Measured Frequency (MHz) | Limit Range | Test Result |
| 20 | 93.5 | 5240.004052 | 5150~5250 | Pass |
| | 110 | 5239.991657 | 5150~5250 | Pass |
| | 126.5 | 5239.995626 | 5150~5250 | Pass |

**IEEE 802.11a mode / 5180 ~ 5240 MHz / Chain 1:**

**CH Low**

| Operating Frequency: 5180 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | Voltage (V) | Measured Frequency (MHz) | Limit Range | Test Result |
| 50 | 110 | 5180.005249 | 5150~5250 | Pass |
| 40 | 110 | 5180.000203 | 5150~5250 | Pass |
| 30 | 110 | 5179.997077 | 5150~5250 | Pass |
| 20 | 110 | 5180.002670 | 5150~5250 | Pass |
| 10 | 110 | 5179.995443 | 5150~5250 | Pass |
| 0 | 110 | 5179.998337 | 5150~5250 | Pass |
| -10 | 110 | 5180.010558 | 5150~5250 | Pass |
| -20 | 110 | 5180.002544 | 5150~5250 | Pass |

| Operating Frequency: 5180 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | Voltage (V) | Measured Frequency (MHz) | Limit Range | Test Result |
| 20 | 93.5 | 5180.007833 | 5150~5250 | Pass |
| | 110 | 5180.004421 | 5150~5250 | Pass |
| | 126.5 | 5180.007216 | 5150~5250 | Pass |

## CH Mid

| Operating Frequency: 5220 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | **Voltage (V)** | **Measured Frequency (MHz)** | **Limit Range** | **Test Result** |
| 50 | 110 | 5220.010525 | 5150~5250 | Pass |
| 40 | 110 | 5219.994360 | 5150~5250 | Pass |
| 30 | 110 | 5219.996437 | 5150~5250 | Pass |
| 20 | 110 | 5220.003631 | 5150~5250 | Pass |
| 10 | 110 | 5219.996536 | 5150~5250 | Pass |
| 0 | 110 | 5220.006560 | 5150~5250 | Pass |
| -10 | 110 | 5219.991689 | 5150~5250 | Pass |
| -20 | 110 | 5219.990226 | 5150~5250 | Pass |

| Operating Frequency: 5220 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | **Voltage (V)** | **Measured Frequency (MHz)** | **Limit Range** | **Test Result** |
| 20 | 93.5 | 5219.999244 | 5150~5250 | Pass |
| | 110 | 5220.001091 | 5150~5250 | Pass |
| | 126.5 | 5219.994755 | 5150~5250 | Pass |

## CH High

| Operating Frequency: 5240 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | Voltage (V) | Measured Frequency (MHz) | Limit Range | Test Result |
| 50 | 110 | 5239.995551 | 5150~5250 | Pass |
| 40 | 110 | 5239.995422 | 5150~5250 | Pass |
| 30 | 110 | 5239.999299 | 5150~5250 | Pass |
| 20 | 110 | 5240.002240 | 5150~5250 | Pass |
| 10 | 110 | 5239.996782 | 5150~5250 | Pass |
| 0 | 110 | 5240.005455 | 5150~5250 | Pass |
| -10 | 110 | 5240.010460 | 5150~5250 | Pass |
| -20 | 110 | 5240.005726 | 5150~5250 | Pass |

| Operating Frequency: 5240 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | Voltage (V) | Measured Frequency (MHz) | Limit Range | Test Result |
| 20 | 93.5 | 5240.007564 | 5150~5250 | Pass |
| | 110 | 5239.996083 | 5150~5250 | Pass |
| | 126.5 | 5239.994461 | 5150~5250 | Pass |

**IEEE 802.11n HT 20 mode / 5180 ~ 5240 MHz / Chain 0:**

**CH Low**

| Operating Frequency: 5180 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | **Voltage (V)** | **Measured Frequency (MHz)** | **Limit Range** | **Test Result** |
| 50 | 110 | 5179.992995 | 5150~5250 | Pass |
| 40 | 110 | 5180.001959 | 5150~5250 | Pass |
| 30 | 110 | 5180.002708 | 5150~5250 | Pass |
| 20 | 110 | 5180.000062 | 5150~5250 | Pass |
| 10 | 110 | 5180.007776 | 5150~5250 | Pass |
| 0 | 110 | 5180.006101 | 5150~5250 | Pass |
| -10 | 110 | 5180.003511 | 5150~5250 | Pass |
| -20 | 110 | 5179.998902 | 5150~5250 | Pass |

| Operating Frequency: 5180 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | **Voltage (V)** | **Measured Frequency (MHz)** | **Limit Range** | **Test Result** |
| 20 | 93.5 | 5180.003217 | 5150~5250 | Pass |
| | 110 | 5180.007209 | 5150~5250 | Pass |
| | 126.5 | 5179.992342 | 5150~5250 | Pass |

## CH Mid

| Operating Frequency: 5220 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | **Voltage (V)** | **Measured Frequency (MHz)** | **Limit Range** | **Test Result** |
| 50 | 110 | 5219.997827 | 5150~5250 | Pass |
| 40 | 110 | 5219.995749 | 5150~5250 | Pass |
| 30 | 110 | 5220.002038 | 5150~5250 | Pass |
| 20 | 110 | 5220.005966 | 5150~5250 | Pass |
| 10 | 110 | 5220.006090 | 5150~5250 | Pass |
| 0 | 110 | 5219.993602 | 5150~5250 | Pass |
| -10 | 110 | 5220.000457 | 5150~5250 | Pass |
| -20 | 110 | 5220.010159 | 5150~5250 | Pass |

| Operating Frequency: 5220 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | **Voltage (V)** | **Measured Frequency (MHz)** | **Limit Range** | **Test Result** |
| 20 | 93.5 | 5220.00266 | 5150~5250 | Pass |
| | 110 | 5219.991411 | 5150~5250 | Pass |
| | 126.5 | 5219.990421 | 5150~5250 | Pass |

## CH High

| Operating Frequency: 5240 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | Voltage (V) | Measured Frequency (MHz) | Limit Range | Test Result |
| 50 | 110 | 5239.997634 | 5150~5250 | Pass |
| 40 | 110 | 5240.006172 | 5150~5250 | Pass |
| 30 | 110 | 5239.999323 | 5150~5250 | Pass |
| 20 | 110 | 5240.001467 | 5150~5250 | Pass |
| 10 | 110 | 5240.002618 | 5150~5250 | Pass |
| 0 | 110 | 5240.002302 | 5150~5250 | Pass |
| -10 | 110 | 5240.008394 | 5150~5250 | Pass |
| -20 | 110 | 5239.998456 | 5150~5250 | Pass |

| Operating Frequency: 5240 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | Voltage (V) | Measured Frequency (MHz) | Limit Range | Test Result |
| 20 | 93.5 | 5239.992121 | 5150~5250 | Pass |
| | 110 | 5240.002378 | 5150~5250 | Pass |
| | 126.5 | 5240.00577 | 5150~5250 | Pass |

## IEEE 802.11n HT 20 mode / 5180 ~ 5240 MHz / Chain 1:

## CH Low

| Operating Frequency: 5180 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | Voltage (V) | Measured Frequency (MHz) | Limit Range | Test Result |
| 50 | 110 | 5179.990019 | 5150~5250 | Pass |
| 40 | 110 | 5179.993601 | 5150~5250 | Pass |
| 30 | 110 | 5179.999754 | 5150~5250 | Pass |
| 20 | 110 | 5179.992005 | 5150~5250 | Pass |
| 10 | 110 | 5179.990068 | 5150~5250 | Pass |
| 0 | 110 | 5180.000894 | 5150~5250 | Pass |
| -10 | 110 | 5179.991149 | 5150~5250 | Pass |
| -20 | 110 | 5179.990877 | 5150~5250 | Pass |

| Operating Frequency: 5180 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | Voltage (V) | Measured Frequency (MHz) | Limit Range | Test Result |
| 20 | 93.5 | 5180.001132 | 5150~5250 | Pass |
| | 110 | 5180.003451 | 5150~5250 | Pass |
| | 126.5 | 5179.994846 | 5150~5250 | Pass |

## CH Mid

| Operating Frequency: 5220 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | **Voltage (V)** | **Measured Frequency (MHz)** | **Limit Range** | **Test Result** |
| 50 | 110 | 5220.003093 | 5150~5250 | Pass |
| 40 | 110 | 5220.003891 | 5150~5250 | Pass |
| 30 | 110 | 5220.003758 | 5150~5250 | Pass |
| 20 | 110 | 5220.010571 | 5150~5250 | Pass |
| 10 | 110 | 5220.006635 | 5150~5250 | Pass |
| 0 | 110 | 5220.000842 | 5150~5250 | Pass |
| -10 | 110 | 5220.007961 | 5150~5250 | Pass |
| -20 | 110 | 5219.991303 | 5150~5250 | Pass |

| Operating Frequency: 5220 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | **Voltage (V)** | **Measured Frequency (MHz)** | **Limit Range** | **Test Result** |
| 20 | 93.5 | 5219.999709 | 5150~5250 | Pass |
| | 110 | 5219.996528 | 5150~5250 | Pass |
| | 126.5 | 5220.007353 | 5150~5250 | Pass |

## CH High

| Operating Frequency: 5240 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | Voltage (V) | Measured Frequency (MHz) | Limit Range | Test Result |
| 50 | 110 | 5239.994322 | 5150~5250 | Pass |
| 40 | 110 | 5240.000868 | 5150~5250 | Pass |
| 30 | 110 | 5239.999585 | 5150~5250 | Pass |
| 20 | 110 | 5240.004188 | 5150~5250 | Pass |
| 10 | 110 | 5239.990384 | 5150~5250 | Pass |
| 0 | 110 | 5239.999653 | 5150~5250 | Pass |
| -10 | 110 | 5240.007106 | 5150~5250 | Pass |
| -20 | 110 | 5240.004629 | 5150~5250 | Pass |

| Operating Frequency: 5240 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | Voltage (V) | Measured Frequency (MHz) | Limit Range | Test Result |
| 20 | 93.5 | 5239.998399 | 5150~5250 | Pass |
| | 110 | 5239.993007 | 5150~5250 | Pass |
| | 126.5 | 5239.994476 | 5150~5250 | Pass |

**IEEE 802.11n HT 40 mode / 5190 ~ 5230 MHz / Chain 0:**

**CH Low**

| Operating Frequency: 5190 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | Voltage (V) | Measured Frequency (MHz) | Limit Range | Test Result |
| 50 | 110 | 5190.003419 | 5150~5250 | Pass |
| 40 | 110 | 5189.997686 | 5150~5250 | Pass |
| 30 | 110 | 5190.009808 | 5150~5250 | Pass |
| 20 | 110 | 5189.996624 | 5150~5250 | Pass |
| 10 | 110 | 5190.004968 | 5150~5250 | Pass |
| 0 | 110 | 5190.009572 | 5150~5250 | Pass |
| -10 | 110 | 5189.994152 | 5150~5250 | Pass |
| -20 | 110 | 5190.010364 | 5150~5250 | Pass |

| Operating Frequency: 5190 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | Voltage (V) | Measured Frequency (MHz) | Limit Range | Test Result |
| 20 | 93.5 | 5190.004143 | 5150~5250 | Pass |
| | 110 | 5190.008444 | 5150~5250 | Pass |
| | 126.5 | 5190.002649 | 5150~5250 | Pass |

## CH High

| Operating Frequency: 5230 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | **Voltage (V)** | **Measured Frequency (MHz)** | **Limit Range** | **Test Result** |
| 50 | 110 | 5230.006909 | 5150~5250 | Pass |
| 40 | 110 | 5229.990890 | 5150~5250 | Pass |
| 30 | 110 | 5230.006983 | 5150~5250 | Pass |
| 20 | 110 | 5229.996203 | 5150~5250 | Pass |
| 10 | 110 | 5229.993522 | 5150~5250 | Pass |
| 0 | 110 | 5230.006190 | 5150~5250 | Pass |
| -10 | 110 | 5230.000598 | 5150~5250 | Pass |
| -20 | 110 | 5229.990306 | 5150~5250 | Pass |

| Operating Frequency: 5230 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | **Voltage (V)** | **Measured Frequency (MHz)** | **Limit Range** | **Test Result** |
| 20 | 93.5 | 5229.993459 | 5150~5250 | Pass |
| | 110 | 5229.992991 | 5150~5250 | Pass |
| | 126.5 | 5230.004482 | 5150~5250 | Pass |

## IEEE 802.11n HT 40 mode / 5190 ~ 5230 MHz / Chain 1:

## CH Low

| Operating Frequency: 5190 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | Voltage (V) | Measured Frequency (MHz) | Limit Range | Test Result |
| 50 | 110 | 5189.998471 | 5150~5250 | Pass |
| 40 | 110 | 5190.008318 | 5150~5250 | Pass |
| 30 | 110 | 5189.998474 | 5150~5250 | Pass |
| 20 | 110 | 5189.999380 | 5150~5250 | Pass |
| 10 | 110 | 5190.009664 | 5150~5250 | Pass |
| 0 | 110 | 5189.994782 | 5150~5250 | Pass |
| -10 | 110 | 5189.990290 | 5150~5250 | Pass |
| -20 | 110 | 5190.000224 | 5150~5250 | Pass |

| Operating Frequency: 5190 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | Voltage (V) | Measured Frequency (MHz) | Limit Range | Test Result |
| 20 | 93.5 | 5189.999228 | 5150~5250 | Pass |
| | 110 | 5190.00763 | 5150~5250 | Pass |
| | 126.5 | 5190.001842 | 5150~5250 | Pass |

## CH High

| Operating Frequency: 5230 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | **Voltage (V)** | **Measured Frequency (MHz)** | **Limit Range** | **Test Result** |
| 50 | 110 | 5230.004574 | 5150~5250 | Pass |
| 40 | 110 | 5230.009656 | 5150~5250 | Pass |
| 30 | 110 | 5230.005253 | 5150~5250 | Pass |
| 20 | 110 | 5229.997465 | 5150~5250 | Pass |
| 10 | 110 | 5230.006442 | 5150~5250 | Pass |
| 0 | 110 | 5229.992127 | 5150~5250 | Pass |
| -10 | 110 | 5230.001909 | 5150~5250 | Pass |
| -20 | 110 | 5229.990259 | 5150~5250 | Pass |

| Operating Frequency: 5230 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | **Voltage (V)** | **Measured Frequency (MHz)** | **Limit Range** | **Test Result** |
| 20 | 93.5 | 5229.99345 | 5150~5250 | Pass |
| | 110 | 5229.991688 | 5150~5250 | Pass |
| | 126.5 | 5230.008561 | 5150~5250 | Pass |

## IEEE 802.11ac VHT80 Mode / Chain 0:

## CH Mid

| Operating Frequency: 5210 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | **Voltage (V)** | **Measured Frequency (MHz)** | **Limit Range** | **Test Result** |
| 50 | 110 | 5210.005483 | 5150~5250 | Pass |
| 40 | 110 | 5210.010740 | 5150~5250 | Pass |
| 30 | 110 | 5210.007717 | 5150~5250 | Pass |
| 20 | 110 | 5210.000003 | 5150~5250 | Pass |
| 10 | 110 | 5209.995709 | 5150~5250 | Pass |
| 0 | 110 | 5210.008090 | 5150~5250 | Pass |
| -10 | 110 | 5210.005430 | 5150~5250 | Pass |
| -20 | 110 | 5209.997898 | 5150~5250 | Pass |

| Operating Frequency: 5210 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | **Voltage (V)** | **Measured Frequency (MHz)** | **Limit Range** | **Test Result** |
| 20 | 93.5 | 5210.010613 | 5150~5250 | Pass |
| | 110 | 5209.998255 | 5150~5250 | Pass |
| | 126.5 | 5210.009034 | 5150~5250 | Pass |

## IEEE 802.11ac VHT80 Mode / Chain 1:

## CH Mid

| Operating Frequency: 5210 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | **Voltage (V)** | **Measured Frequency (MHz)** | **Limit Range** | **Test Result** |
| 50 | 110 | 5210.007713 | 5150~5250 | Pass |
| 40 | 110 | 5209.991566 | 5150~5250 | Pass |
| 30 | 110 | 5209.992335 | 5150~5250 | Pass |
| 20 | 110 | 5209.995950 | 5150~5250 | Pass |
| 10 | 110 | 5209.994937 | 5150~5250 | Pass |
| 0 | 110 | 5210.003710 | 5150~5250 | Pass |
| -10 | 110 | 5210.000190 | 5150~5250 | Pass |
| -20 | 110 | 5209.996602 | 5150~5250 | Pass |

| Operating Frequency: 5210 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | **Voltage (V)** | **Measured Frequency (MHz)** | **Limit Range** | **Test Result** |
| 20 | 93.5 | 5210.00963 | 5150~5250 | Pass |
| | 110 | 5209.990886 | 5150~5250 | Pass |
| | 126.5 | 5209.992527 | 5150~5250 | Pass |