# FCC 47 CFR PART 15 SUBPART E

# TEST REPORT

## For

## 802.11ac/b/g/n USB module

## Model: WUBM-273ACN

## Trade Name: N/A

*Issued to*

**Teradek, LLC**
**34B Mauchly Irvine, CA 92618 United States**

*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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**service@ccsrf.com**
**Issued Date: January 12, 2016**

Testing Laboratory
1309

# Revision History

| Rev. | | Issue Date | | Revisions | Effect Page | Revised By |
|---|---|---|---|---|---|---|
| 00 | | January 12, 2016 | | Initial Issue | ALL | Kelly Cheng |

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# 1. TEST RESULT CERTIFICATION

**Applicant:** Teradek, LLC
34B Mauchly Irvine, CA 92618 United States

**Equipment Under Test:** 802.11ac/b/g/n USB module

**Trade Name:** N/A

**Model:** WUBM-273ACN

**Date of Test:** December 27, 2014 ~ January 5, 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 C63.4: 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>802.11ac/b/g/n USB module</td></tr>
<tr><td>Trade Name</td><td>N/A</td></tr>
<tr><td>Model Number</td><td>WUBM-273ACN</td></tr>
<tr><td>Model Discrepancy</td><td>N/A</td></tr>
<tr><td>Received Date</td><td>November 26, 2015</td></tr>
<tr><td>Power Supply</td><td>Powered from host device</td></tr>
<tr><td>Operating Frequency Range & Number of Channels</td><td>
<table>
<tr><th></th><th>Mode</th><th>Frequency Range (MHz)</th><th>Number of Channels</th></tr>
<tr><td rowspan="4">UNII Band I</td><td>IEEE 802.11a</td><td>5180 – 5240</td><td>4 Channels</td></tr>
<tr><td>IEEE 802.11n HT 20 mode</td><td>5180 – 5240</td><td>4 Channels</td></tr>
<tr><td>IEEE 802.11n HT 40 mode</td><td>5190 – 5230</td><td>2 Channels</td></tr>
<tr><td>IEEE 802.11ac80 mode</td><td>5210</td><td>1 Channels</td></tr>
<tr><td rowspan="4">UNII Band IV</td><td>IEEE 802.11a</td><td>5745 – 5825</td><td>5 Channels</td></tr>
<tr><td>IEEE 802.11n HT 20 mode</td><td>5745 – 5825</td><td>5 Channels</td></tr>
<tr><td>IEEE 802.11n HT 40 mode</td><td>5755 – 5795</td><td>2 Channels</td></tr>
<tr><td>IEEE 802.11ac80 mode</td><td>5775</td><td>1 Channels</td></tr>
</table>
</td></tr>
<tr><td>Transmit Power</td><td>IEEE 802.11a mode / 5180 ~ 5240MHz: 22.10dBm<br>IEEE 802.11n HT 20 mode / 5180 ~ 5240MHz: 22.46dBm<br>IEEE 802.11n HT 40 mode / 5190 ~ 5230MHz: 22.61dBm<br>IEEE 802.11ac80 mode / 5210MHz: 22.87dBm<br>IEEE 802.11a mode / 5745 ~ 5825MHz: 22.30dBm<br>IEEE 802.11n HT 20 mode / 5745 ~ 5825MHz: 22.87dBm<br>IEEE 802.11n HT 40 mode / 5755 ~ 5795MHz: 22.66dBm<br>IEEE 802.11ac80 mode / 5775MHz: 22.87dBm</td></tr>
<tr><td>Modulation Technique</td><td>OFDM (QPSK, BPSK, 16-QAM, 64-QAM)</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 (6.50, 13.00, 19.50, 26.00, 39.00, 52.00, 58.50, 65.00, 78.00, 104.0, 117.0, 130.0,<br>156.0, 175.5, 195.0Mbps)<br>IEEE 802.11n HT 40 mode: OFDM (13.50, 27.00, 40.50, 54.00, 81.00, 108.0, 121.5, 135.0, 162.0, 216.0, 243.0, 270.0, 324.0, 364.5, 405.0Mbps)<br>IEEE 802.11ac80 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 Designation</td><td>1. SparkLAN / WUBM-273ACN<br>printed Antenna / Gain: 1.68dBi<br>MIMO: Total ANT=1.68+10*LOG(2)=4.68dBi (Numeric gain: 2.93)<br>2. LCT / DFE_ACBSMA-BGP<br>Dipole Antenna / Gain: 5dBi<br>MIMO: Total ANT=5+10*LOG(2)=8dBi (Numeric gain: 6.30)</td></tr>
</table>

## Operation Frequency

| UNLICENSED NATIONAL INFORMATION INFRASTRUCTURE (U-NII) | |
|---|---|
| **CHANNEL** | **MHz** |
| 36 | 5180 |
| 38 | 5190 |
| 40 | 5200 |
| 46 | 5230 |
| 48 | 5240 |
| 52 | 5260 |
| 54 | 5270 |
| 62 | 5310 |
| 64 | 5350 |
| 149 | 5745 |
| 153 | 5765 |
| 157 | 5785 |
| 161 | 5805 |
| 165 | 5825 |

***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: **2AFNQ-WUBM273ACN** filing to comply with Section 15.407 of the FCC Part 15, Subpart E Rules.*
3. *Client consigns two types to test (model number: WUBM-273ACN). Therefore, the testing Lab. just guarantees the unit, which has been tested.*
4. *There are four types for sale is just for marketing purpose only, please see as below:*

| ***Model*** | ***Type*** |
|---|---|
| *WUBM-273ACN* | *12pin wafer connector + dipole antenna* |
| | *USB 3.0 type A + dipole antenna* |
| | *USB 3.0 type A + printed antenna* |
| | *12pin wafer connector + printed antenna* |

# 3. TEST METHODOLOGY

Both conducted and radiated testing was performed according to the procedures in ANSI C63.4 Radiated testing was performed at an antenna to EUT distance 3 meters.

## 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 C63.4, 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 0.8 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 C63.4.

## 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 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.

After verification, all tests were carried out with the worst case test modes as shown below except radiated spurious emission below 1GHz and power line conducted emissions below 30MHz, which worst case was in normal link mode only.

**UNII 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 6Mbps 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 802.11n HT 80 MHz Channel for 5210MHz:**
Channel Low(5210MHz) with 29.3Mbps data rate were chosen for full testing.

**UNII Band VI:**

**IEEE 802.11a mode:**
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:**
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:**
Channel Low(5755MHz) and Channel High(5795MHz) with 13.5Mbps data rate were chosen for full testing.

**IEEE 802.11ac80 mode:**
Channel Low(5775MHz) with 29.3Mbps 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 | MY43360131 | 03/26/2015 |
| Power Meter | Anritsu | ML2495A | 1012009 | 06/03/2015 |
| Power Sensor | Anritsu | MA2411A | 0917072 | 06/03/2015 |

| 3M Chamber Test Site | | | | |
|---|---|---|---|---|
| **Name of Equipment** | **Manufacturer** | **Model** | **Serial Number** | **Calibration Due** |
| Spectrum Analyzer | Agilent | E4446A | US42510268 | 11/04/2015 |
| EMI Test Receiver | R&S | ESCI | 100064 | 02/16/2015 |
| Pre-Amplifier | Mini-Circults | ZFL-1000LN | SF350700823 | 01/11/2015 |
| Pre-Amplifier | MITEQ | AFS44-00102650 -42-10P-44 | 1415367 | 11/17/2015 |
| Bilog Antenna | Sunol Sciences | JB3 | A030105 | 09/30/2015 |
| Horn Antenna | EMCO | 3117 | 00055165 | 02/16/2015 |
| Horn Antenna | EMCO | 3116 | 2487 | 10/08/2015 |
| Loop Antenna | EMCO | 6502 | 8905/2356 | 06/11/2015 |
| 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 |
| Site NSA | CCS | N/A | N/A | 12/20/2015 |
| Test S/W | EZ-EMC (CCS-3A1RE) | | | |

| Conducted Emission room # A | | | | |
|---|---|---|---|---|
| **Name of Equipment** | **Manufacturer** | **Model** | **Serial Number** | **Calibration Due** |
| EMI Test Receiver | R&S | ESI | 101203 | 09/11/2015 |
| LISN | R&S | ESH3-Z5 | 848773/014 | 12/04/2015 |
| Coaxial Cable | Commate | CFD300-NL | NA | 12/04/2015 |
| Test S/W | CCS-3A1-CE | | | |

## 4.3 MEASUREMENT UNCERTAINTY

| PARAMETER | UNCERTAINTY |
|---|---|
| Powerline Conducted Emission | +/- 1.2159 |
| 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.
Tel: 886-2-2217-0894 / Fax: 886-2-2217-1029

☒ No.11, Wugong 6th Rd., Wugu Dist., New Taipei City 24891, Taiwan. (R.O.C.)
Tel: 886-2-2299-9720 / Fax: 886-2-2298-4045

☐ No.81-1, Lane 210, Bade 2nd Rd., Lujhu Township, Taoyuan County 33841, TAIWAN, R.O.C.
Tel: 886-3-324-0332 / Fax: 886-3-324-5235

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 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, ETSI EN 300 440-1, ETSI EN 300 440-2, ETSI EN 300 328, ETSI EN 300 220-1, ETSI EN 300 220-2, ETSI EN 301 893, 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 II for the actual connections between EUT and support equipment.

## 6.2 SUPPORT EQUIPMENT

| No | Equipment | Brand | Model | Series No. | FCC ID | Data Cable | Power Cord |
|---|---|---|---|---|---|---|---|
| 1 | Notebook PC | DELL | PP19L | 7B3ZP1S | N/A | 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.*

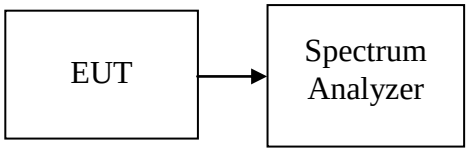
# 7. FCC PART 15 REQUIREMENTS

## 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 = 50MHz, and Sweep = auto.
   Or 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) | Bandwidth (MHz) |
|---|---|---|
| Low | 5180 | 32.854 |
| Mid | 5220 | 34.763 |
| High | 5240 | 31.148 |

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

| Channel | Frequency (MHz) | Bandwidth (MHz) |
|---|---|---|
| Low | 5180 | 32.760 |
| Mid | 5220 | 29.638 |
| High | 5240 | 30.743 |

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

| Channel | Frequency (MHz) | Bandwidth (MHz) |
|---|---|---|
| Low | 5180 | 31.417 |
| Mid | 5220 | 30.351 |
| High | 5240 | 22.896 |

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

| Channel | Frequency (MHz) | Bandwidth (MHz) |
|---|---|---|
| Low | 5190 | 41.484 |
| High | 5230 | 49.404 |

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

| Channel | Frequency (MHz) | Bandwidth (MHz) |
|---|---|---|
| Low | 5190 | 41.286 |
| High | 5230 | 41.553 |

**Test mode: IEEE 802.11ac80 mode / 5210MHz / Chain 0**

| Channel | Frequency (MHz) | Bandwidth (B) (MHz) |
|---|---|---|
| Mid | 5210 | 81.259 |

**Test mode: IEEE 802.11ac80 mode/ 5210MHz / Chain 1**

| Channel | Frequency (MHz) | Bandwidth (B) (MHz) |
|---|---|---|
| Mid | 5210 | 81.086 |

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

| Channel | Frequency (MHz) | Bandwidth (MHz) |
|---|---|---|
| Low | 5745 | 16.621 |
| Mid | 5785 | 16.549 |
| High | 5825 | 16.498 |

**Test mode: IEEE 802.11n HT 20 mode / 5745 ~ 5825MHz / Chain 0**

| Channel | Frequency (MHz) | Bandwidth (MHz) |
|---|---|---|
| Low | 5745 | 17.526 |
| Mid | 5785 | 17.511 |
| High | 5825 | 17.174 |

**Test mode: IEEE 802.11n HT 20 mode / 5745 ~ 5825MHz / Chain 1**

| Channel | Frequency (MHz) | Bandwidth (MHz) |
|---|---|---|
| Low | 5745 | 17.199 |
| Mid | 5785 | 16.875 |
| High | 5825 | 17.486 |

**Test mode: IEEE 802.11n HT 40 mode / 5755 ~ 5795MHz / Chain 0**

| Channel | Frequency (MHz) | Bandwidth (MHz) |
|---|---|---|
| Low | 5755 | 36.362 |
| High | 5795 | 36.075 |

**Test mode: IEEE 802.11n HT 40 mode/ 5755 ~ 5795MHz / Chain 1**

| Channel | Frequency (MHz) | Bandwidth (MHz) |
|---|---|---|
| Low | 5755 | 35.763 |
| High | 5795 | 35.895 |

**Test mode: IEEE 802.11ac80 mode / 5775MHz / Chain 0**

| Channel | Frequency (MHz) | Bandwidth (B) (MHz) |
|---|---|---|
| Mid | 5290 | 74.471 |

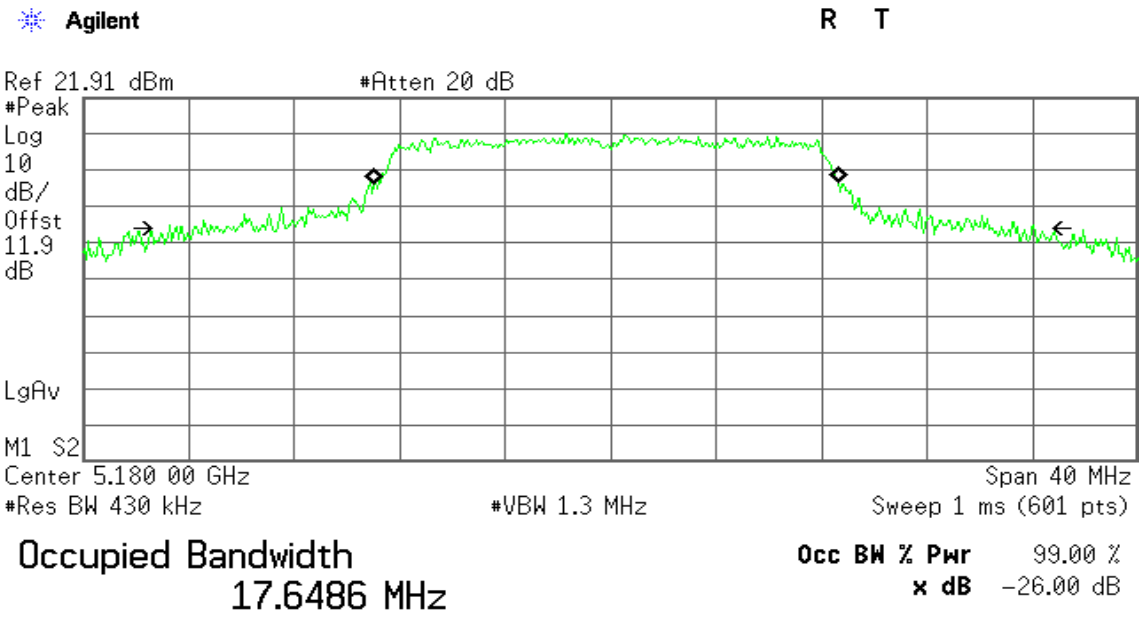
**Test mode: IEEE 802.11ac80 mode/ 5775MHz / Chain 1**

| Channel | Frequency (MHz) | Bandwidth (B) (MHz) |
|---|---|---|
| Mid | 5290 | 74.360 |

## Test Plot

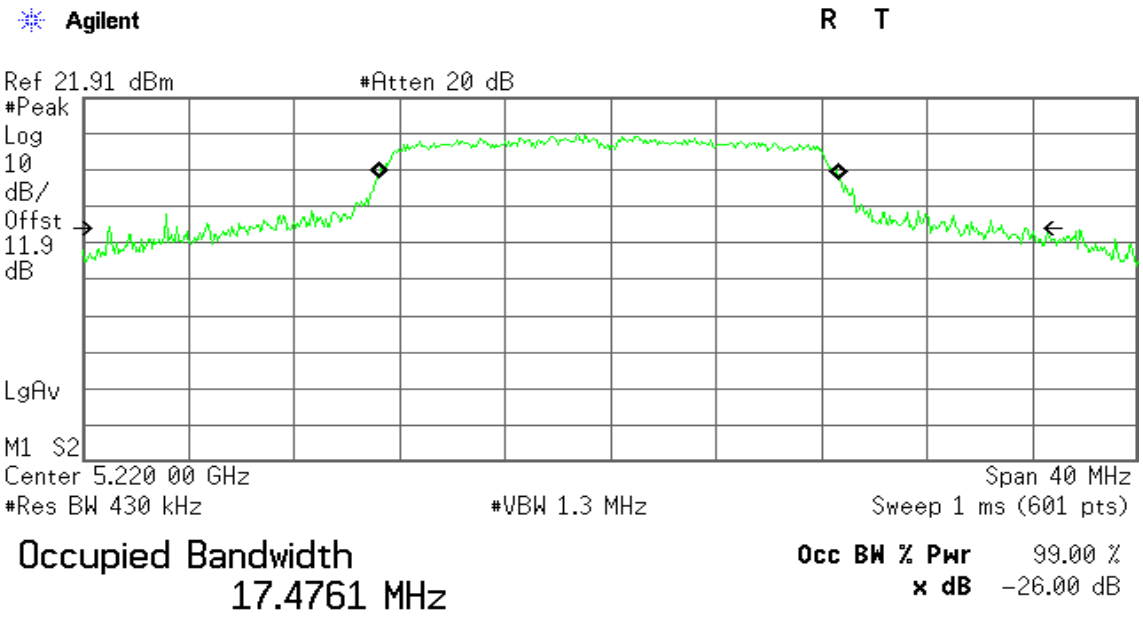
## IEEE 802.11a mode / 5180 ~ 5240MHz

### CH Low



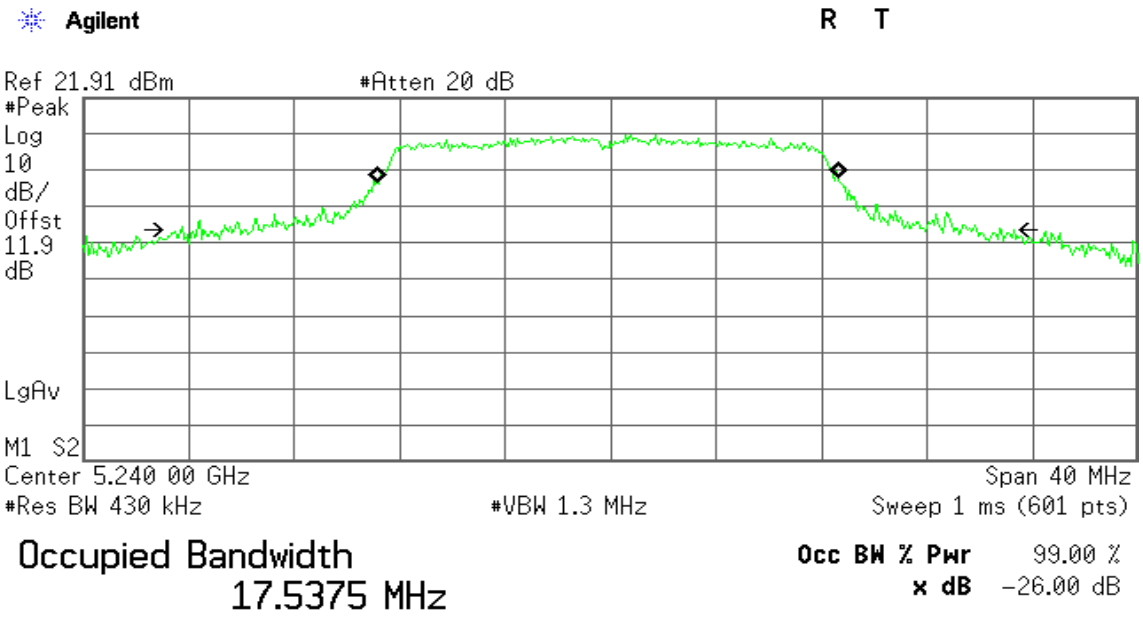

**Transmit Freq Error** −145.668 kHz
**x dB Bandwidth** 32.854 MHz

### CH Mid




**Transmit Freq Error** −64.487 kHz
**x dB Bandwidth** 34.763 MHz

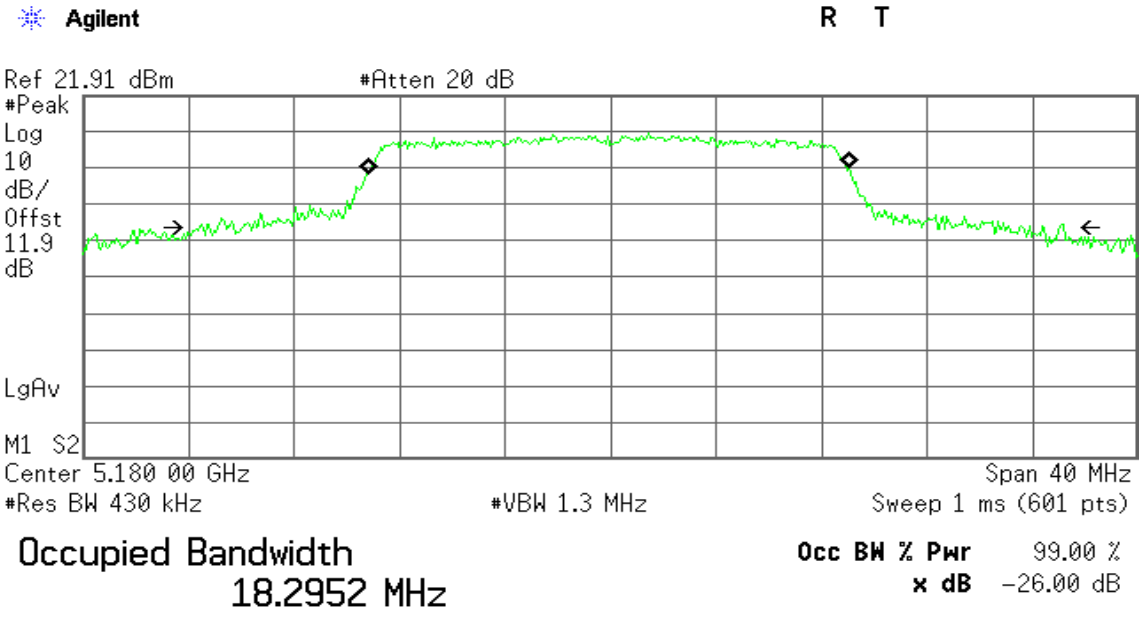
## CH High




**Transmit Freq Error** −121.816 kHz
**x dB Bandwidth** 31.148 MHz

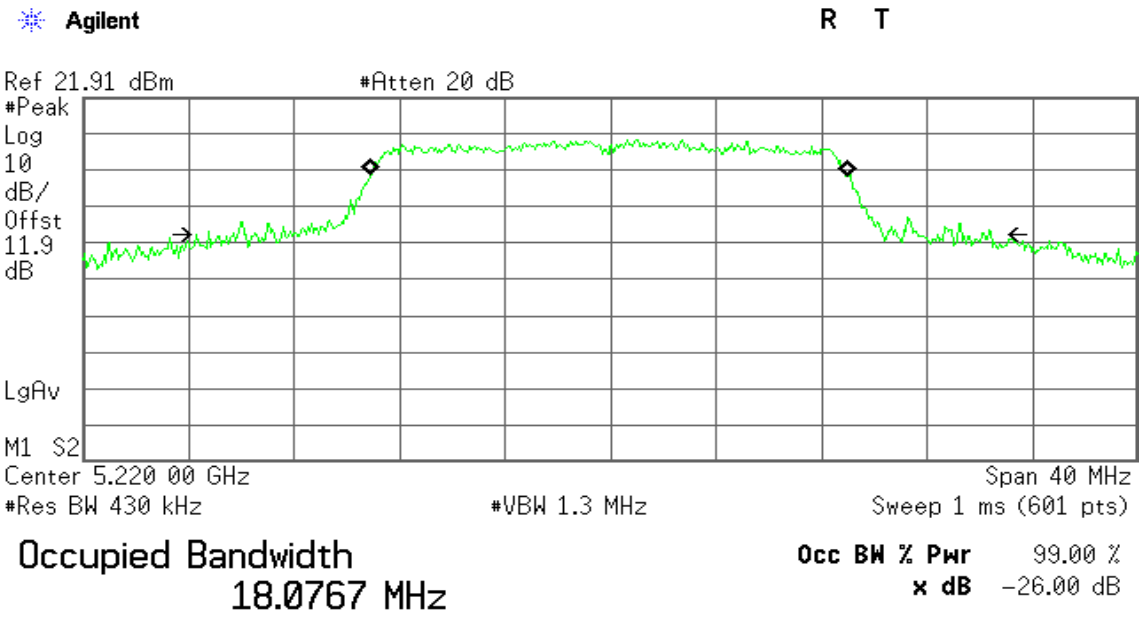
## IEEE 802.11n HT 20 mode / 5180 ~ 5240MHz / Chain 0

## CH Low




**Transmit Freq Error** −83.805 kHz
**x dB Bandwidth** 32.760 MHz

## CH Mid

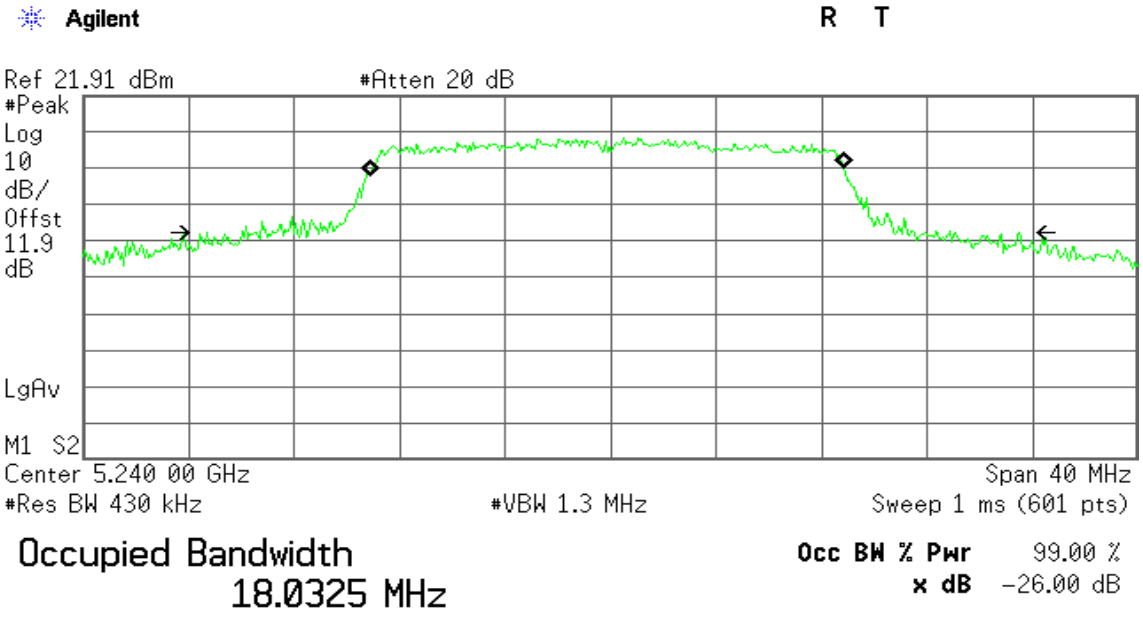



Occupied Bandwidth
18.0767 MHz

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

**Transmit Freq Error** -62.192 kHz
**x dB Bandwidth** 29.638 MHz

## CH High



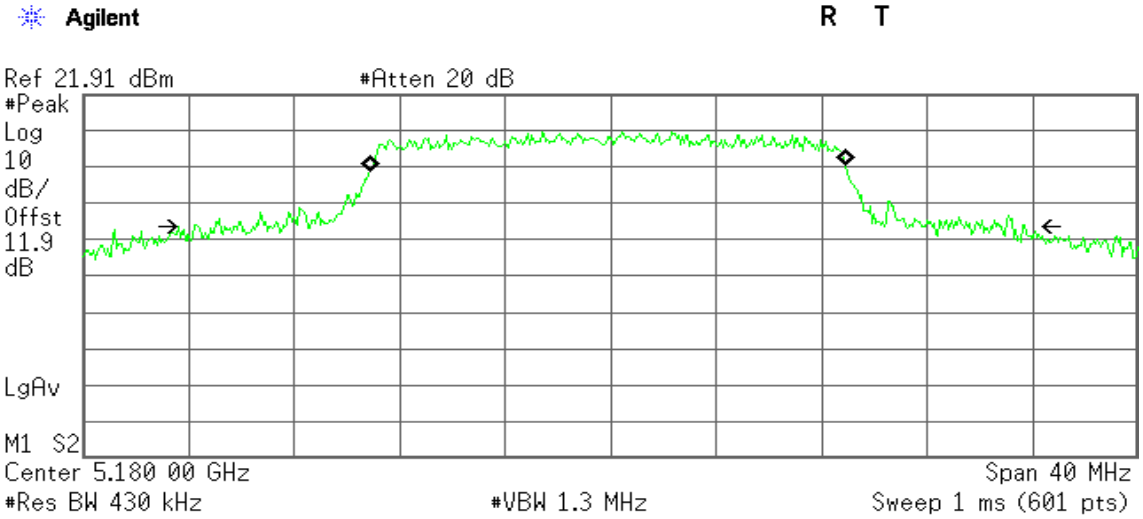

Occupied Bandwidth
18.0325 MHz

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

**Transmit Freq Error** -127.355 kHz
**x dB Bandwidth** 30.743 MHz

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

### CH Low

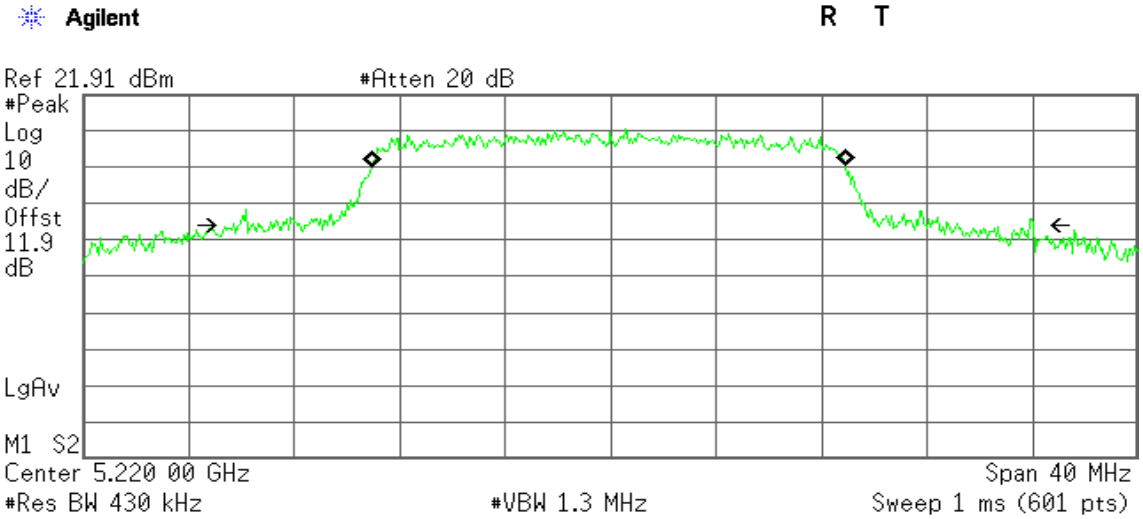



Occupied Bandwidth
18.0487 MHz

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

**Transmit Freq Error** -96.802 kHz
**x dB Bandwidth** 31.417 MHz

### CH Mid

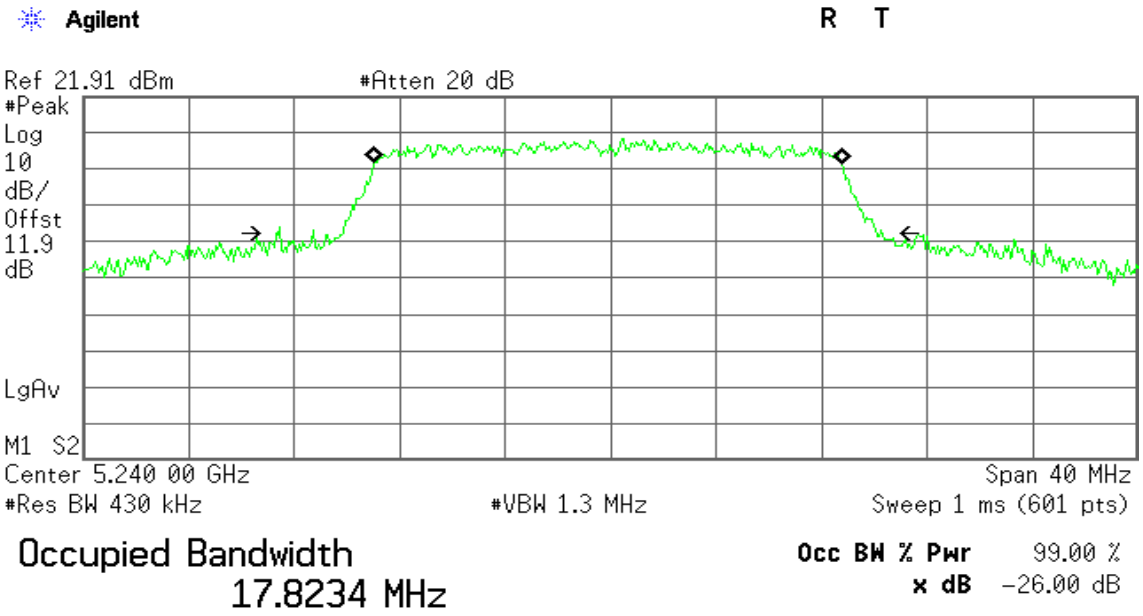



Occupied Bandwidth
17.9870 MHz

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

**Transmit Freq Error** -81.444 kHz
**x dB Bandwidth** 30.351 MHz

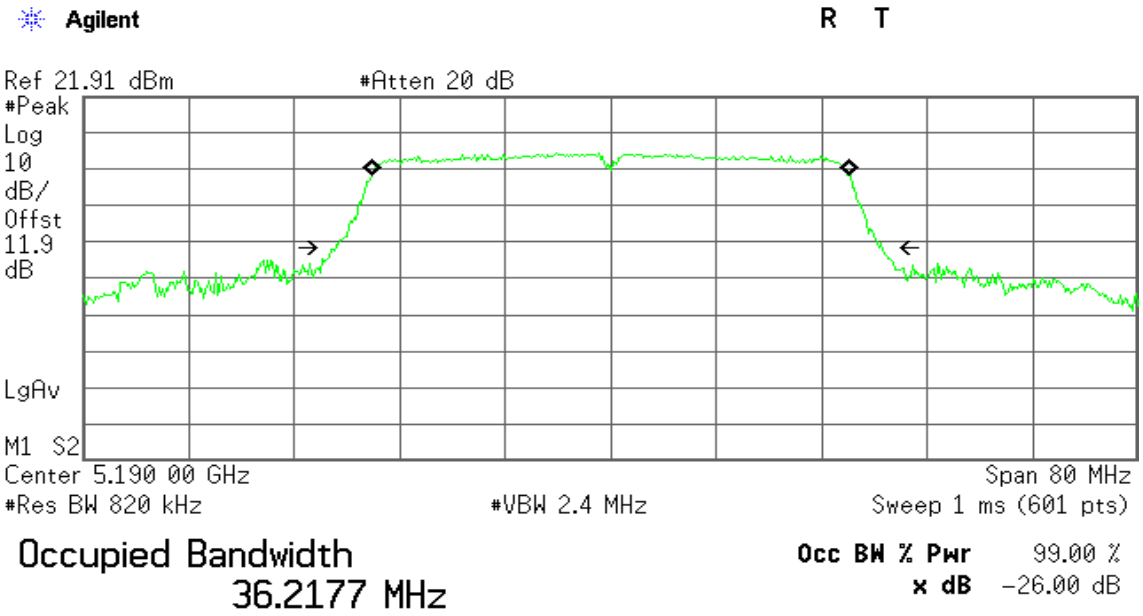
## CH High




**Transmit Freq Error** −96.616 kHz
**x dB Bandwidth** 22.896 MHz

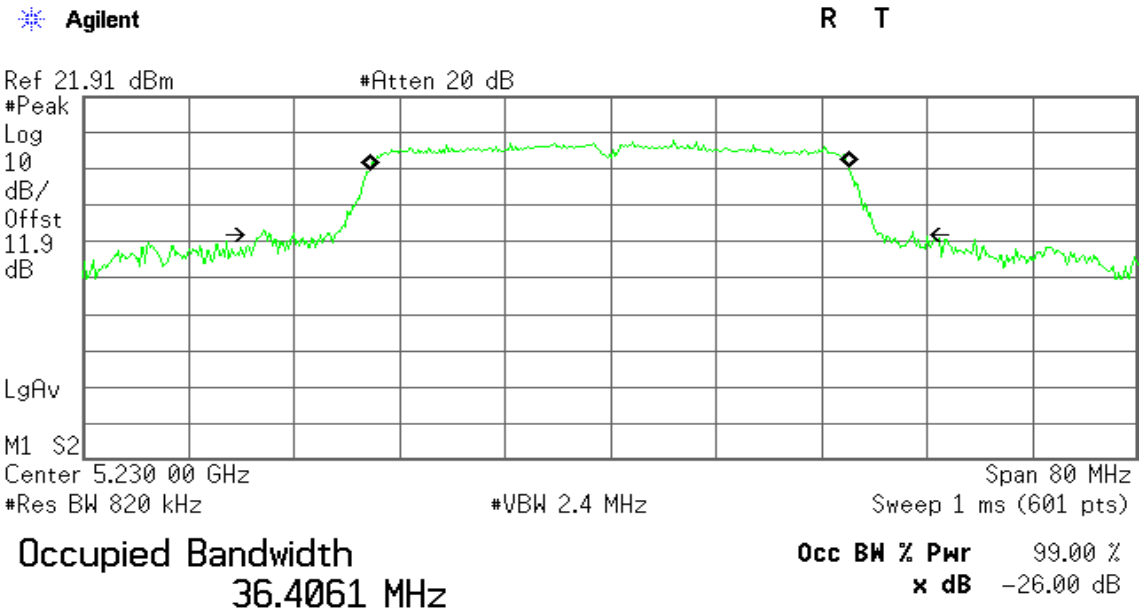
## IEEE 802.11n HT 40 mode / 5190 ~ 5230MHz / Chain 0

## CH Low




**Transmit Freq Error** −41.989 kHz
**x dB Bandwidth** 41.484 MHz

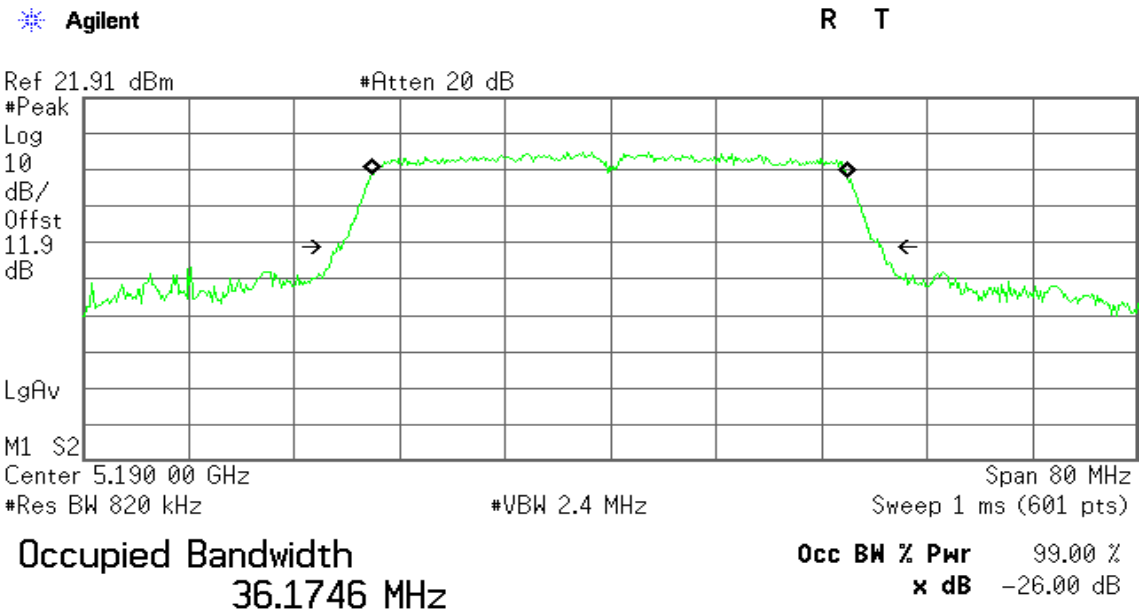
## CH High




**Transmit Freq Error** −119.493 kHz
**x dB Bandwidth** 49.404 MHz

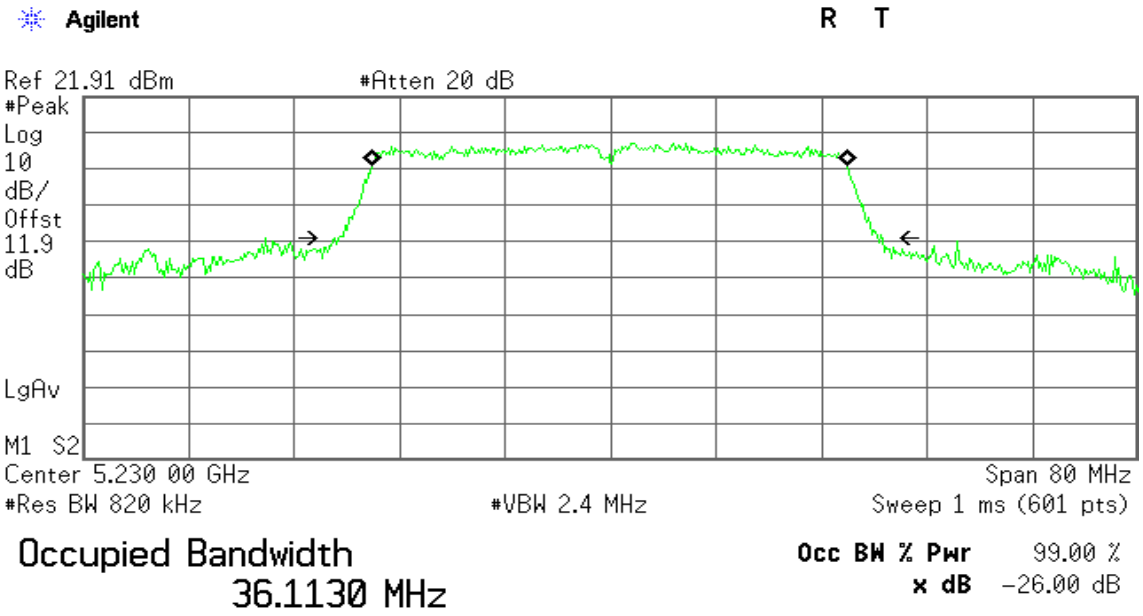
## IEEE 802.11n HT 40 mode / 5190 ~ 5230MHz / Chain 1

## CH Low




**Transmit Freq Error** −83.488 kHz
**x dB Bandwidth** 41.286 MHz

## CH High

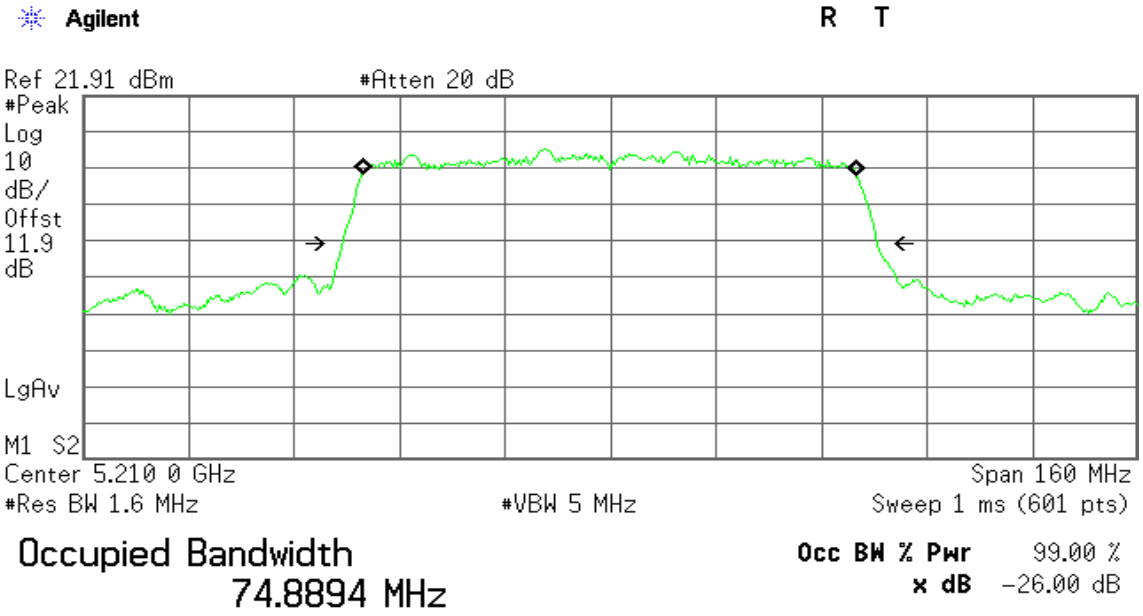



Occupied Bandwidth
36.1130 MHz

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

**Transmit Freq Error** -106.708 kHz
**x dB Bandwidth** 41.553 MHz

## IEEE 802.11ac80 mode / 5210MHz / Chain 0

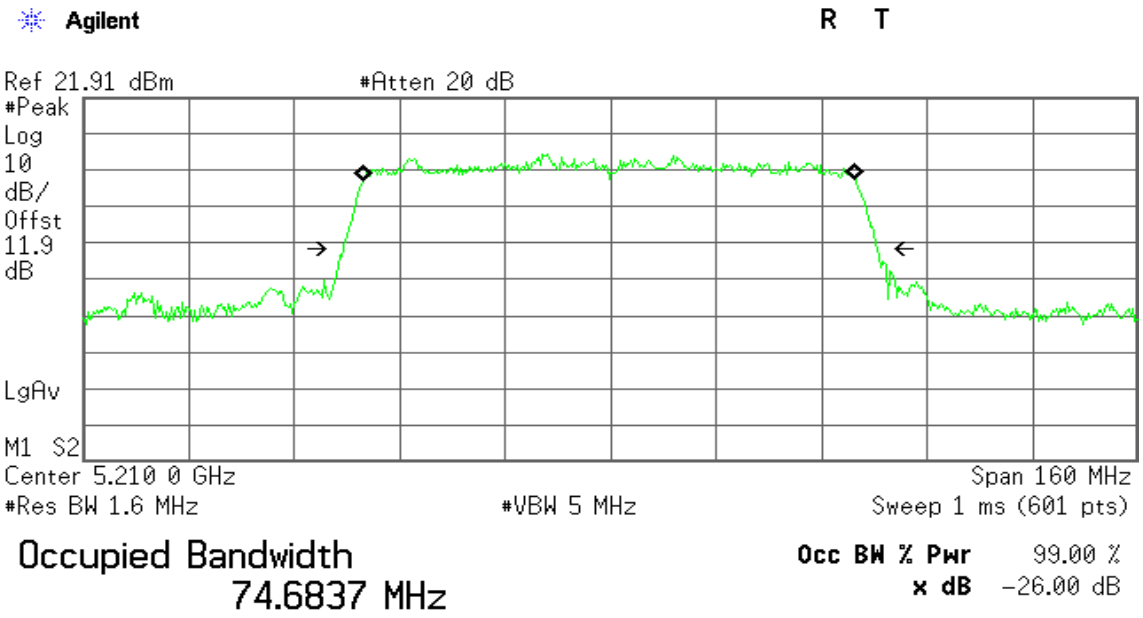



Occupied Bandwidth
74.8894 MHz

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

**Transmit Freq Error** -158.030 kHz
**x dB Bandwidth** 81.259 MHz

## IEEE 802.11ac80 mode / 5210MHz / Chain 1



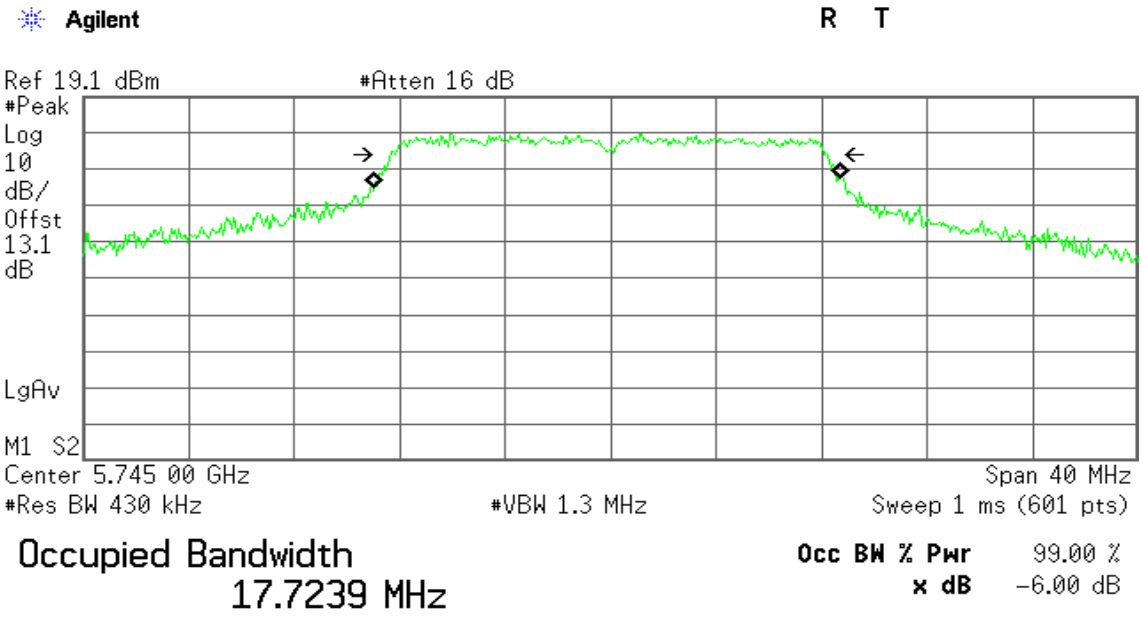

Occupied Bandwidth
74.6837 MHz

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

**Transmit Freq Error** -171.445 kHz
**x dB Bandwidth** 81.086 MHz

## IEEE 802.11a mode / 5745 ~ 5825MHz

### CH Low

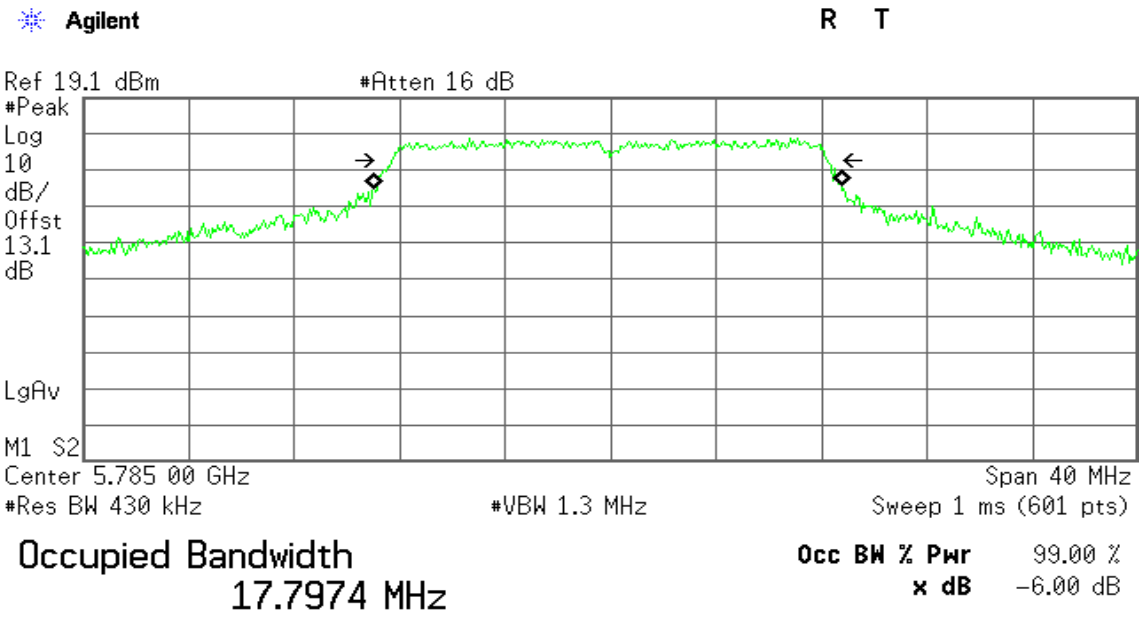



Occupied Bandwidth
17.7239 MHz

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

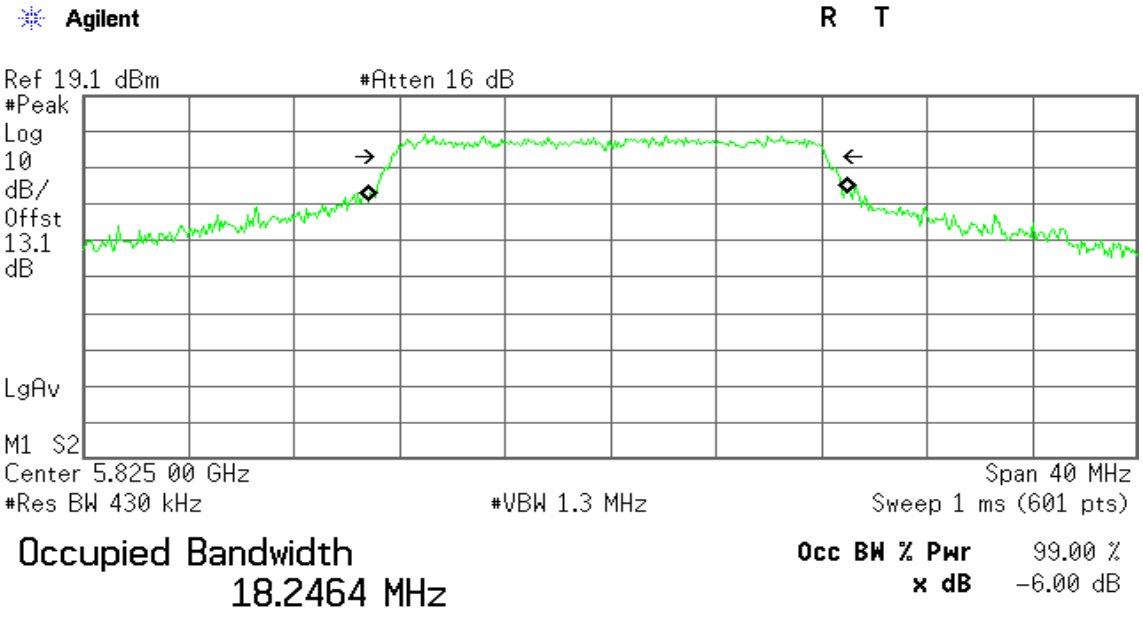
**Transmit Freq Error** -110.348 kHz
**x dB Bandwidth** 16.621 MHz

## CH Mid




| | |
|---|---|
| **Transmit Freq Error** | -125.531 kHz |
| **x dB Bandwidth** | 16.549 MHz |

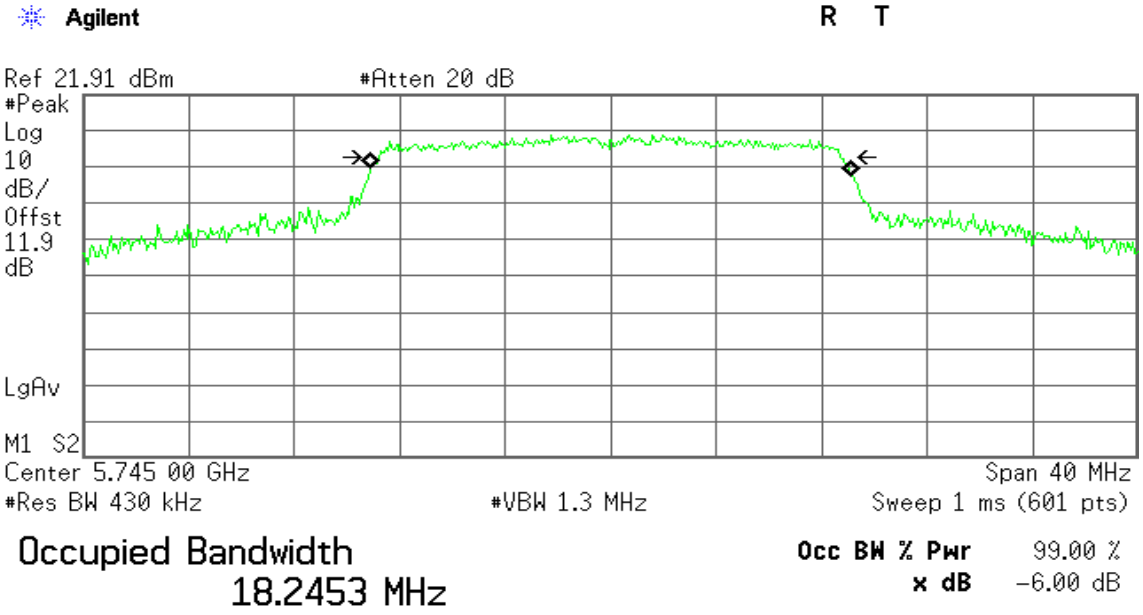
## CH High




| | |
|---|---|
| **Transmit Freq Error** | -103.782 kHz |
| **x dB Bandwidth** | 16.498 MHz |

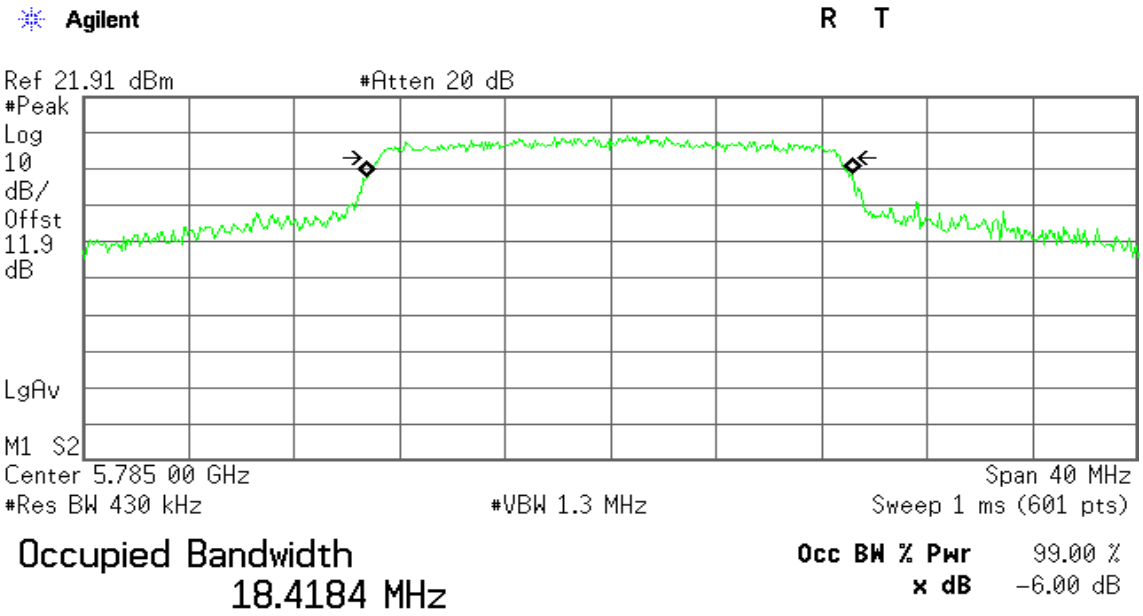
## IEEE 802.11n HT 20 mode / 5745 ~ 5825MHz / Chain 0

### CH Low



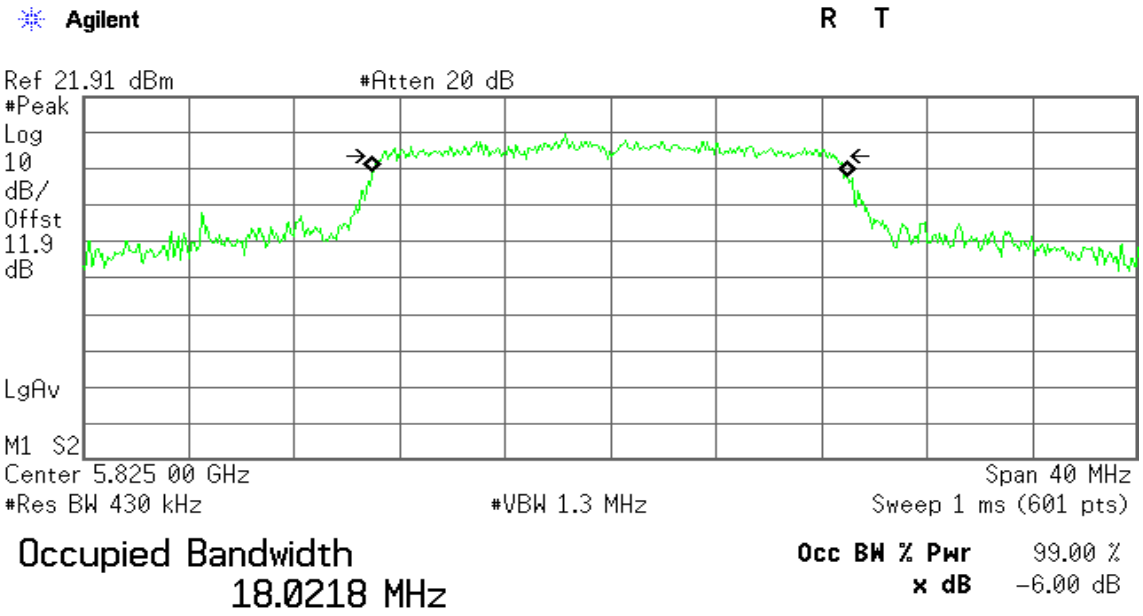

**Transmit Freq Error** 9.986 kHz
**x dB Bandwidth** 17.526 MHz

### CH Mid




**Transmit Freq Error** -37.499 kHz
**x dB Bandwidth** 17.511 MHz

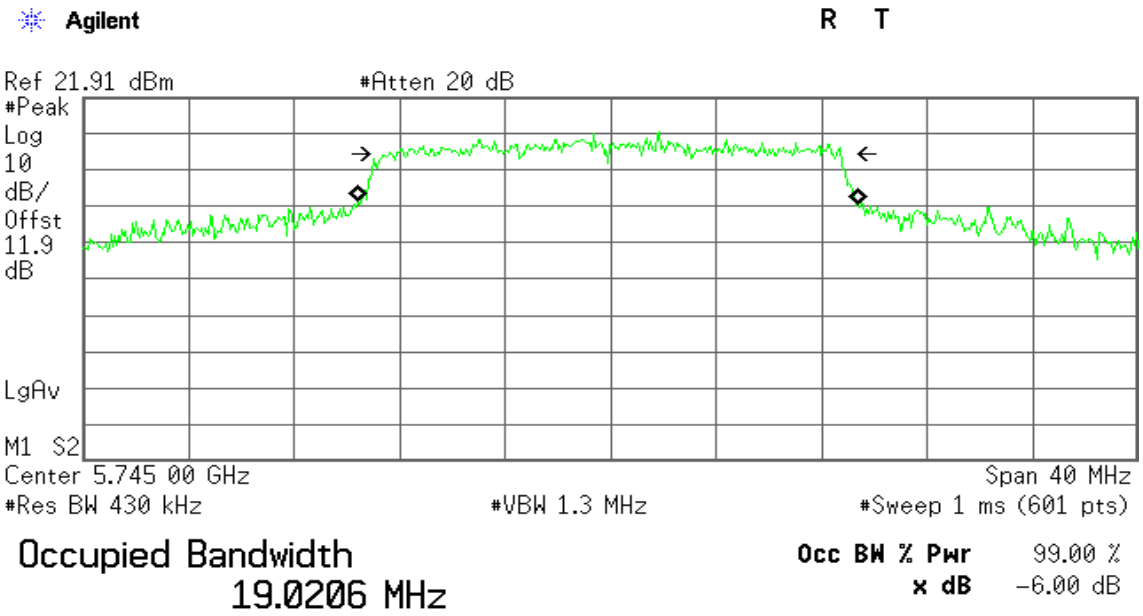
## CH High




**Transmit Freq Error** -26.162 kHz
**x dB Bandwidth** 17.174 MHz

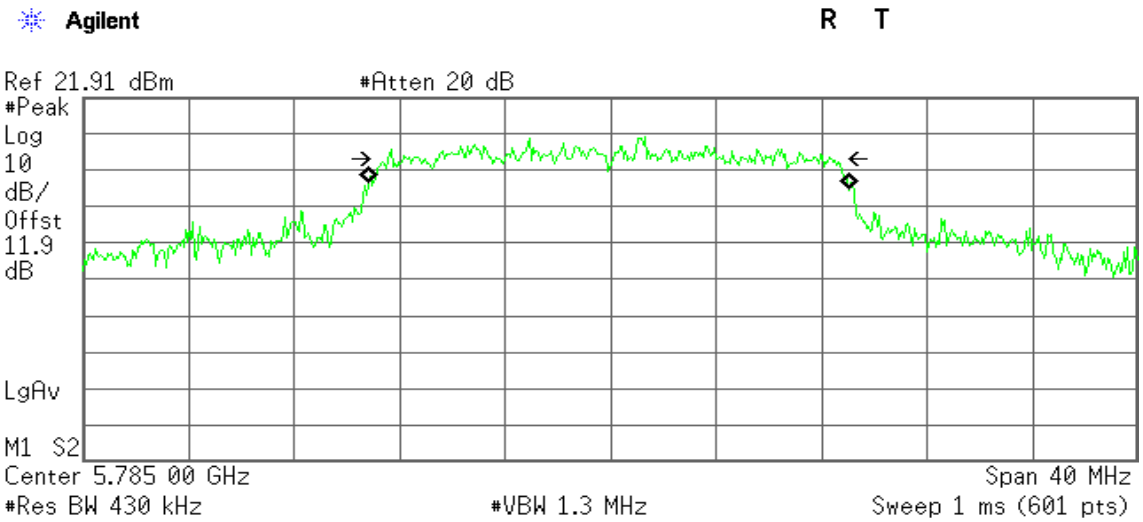
## IEEE 802.11n HT 20 mode / 5745 ~ 5825MHz / Chain 1

## CH Low




**Transmit Freq Error** -82.629 kHz
**x dB Bandwidth** 17.199 MHz

## CH Mid

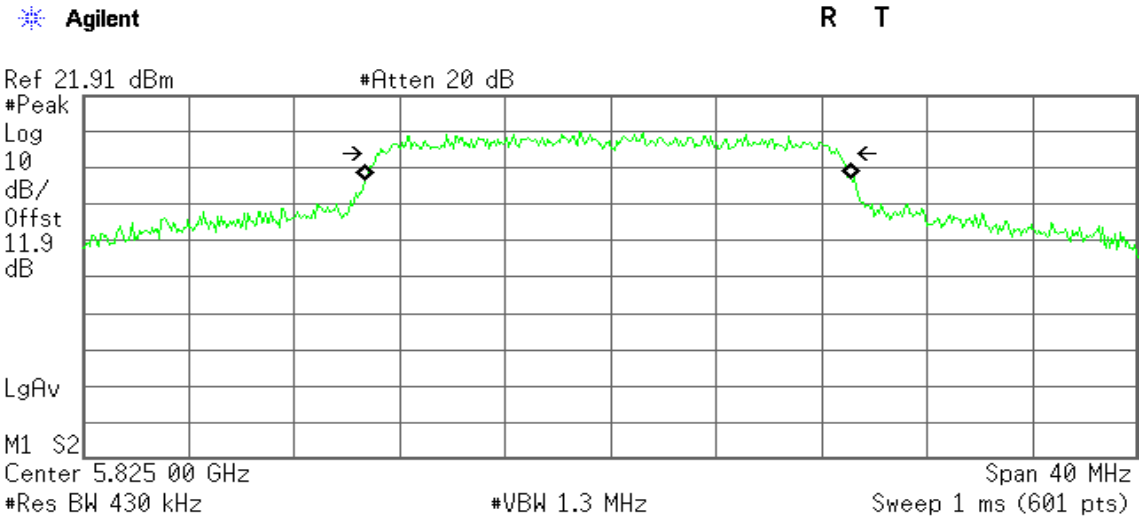



Occupied Bandwidth
18.2543 MHz

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

| | |
|---|---|
| **Transmit Freq Error** | -70.484 kHz |
| **x dB Bandwidth** | 16.875 MHz |

## CH High



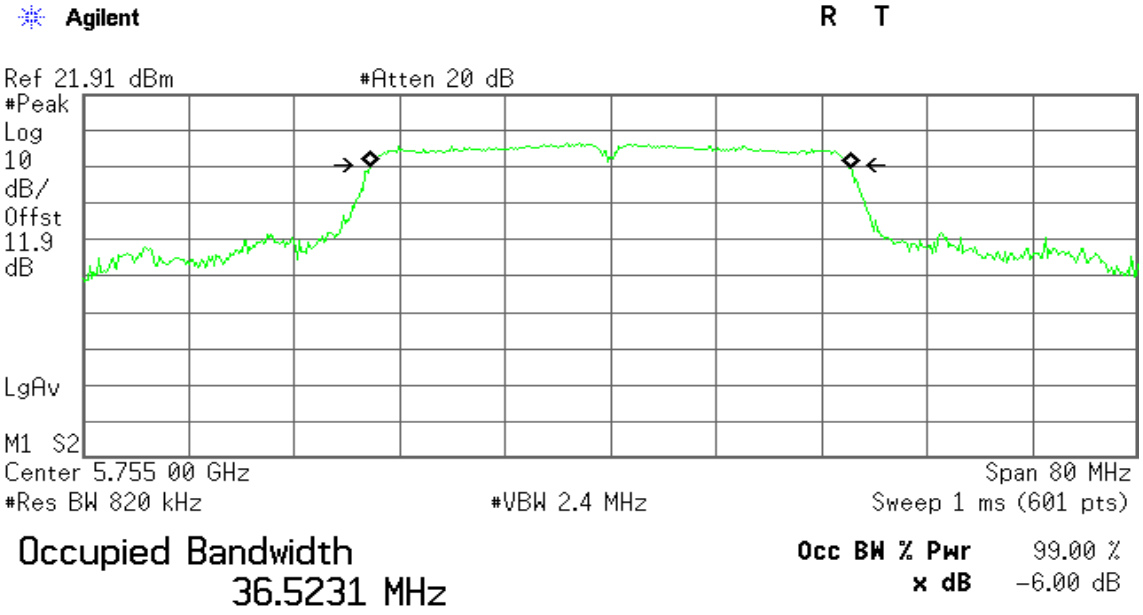

Occupied Bandwidth
18.4769 MHz

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

| | |
|---|---|
| **Transmit Freq Error** | -87.365 kHz |
| **x dB Bandwidth** | 17.486 MHz |

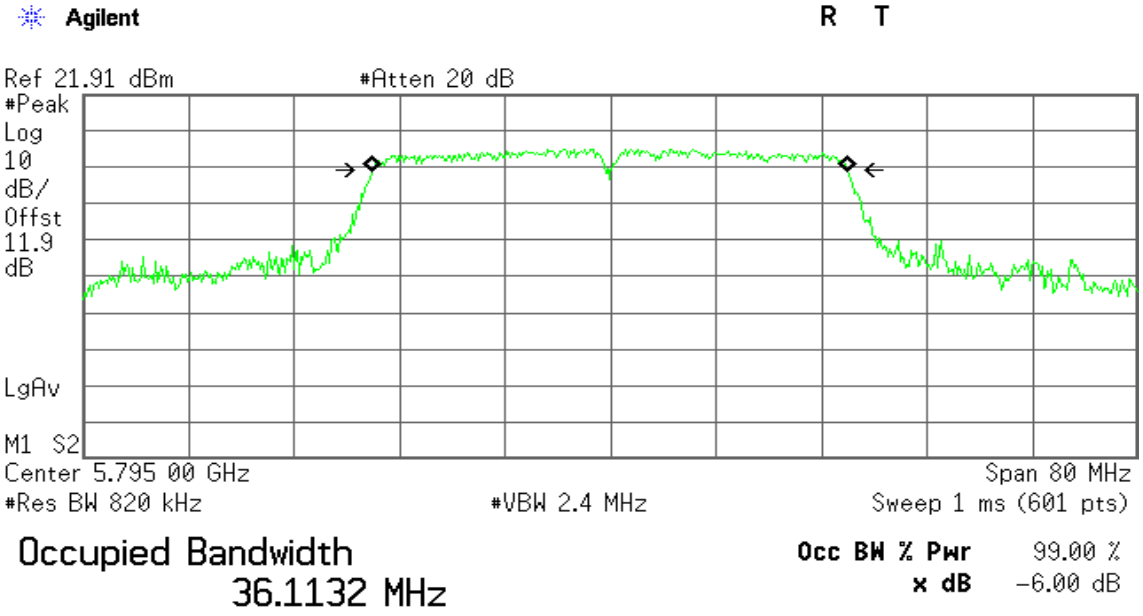
## IEEE 802.11n HT 40 mode / 5755 ~ 5795MHz / Chain 0

### CH Low




**Transmit Freq Error** −57.873 kHz
**x dB Bandwidth** 36.362 MHz

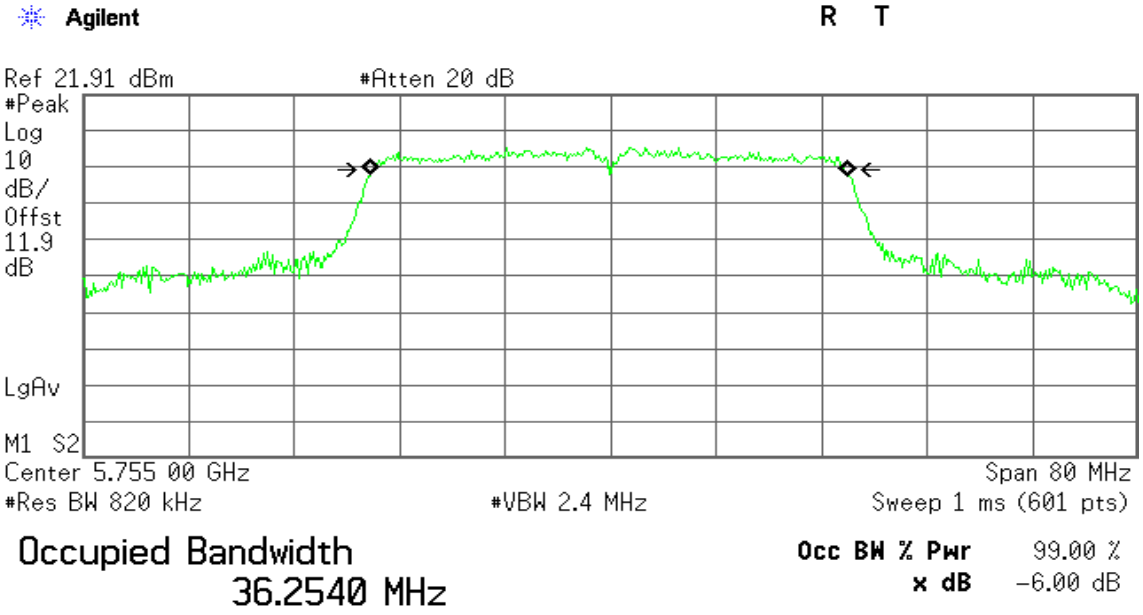
### CH High




**Transmit Freq Error** −40.040 kHz
**x dB Bandwidth** 36.075 MHz

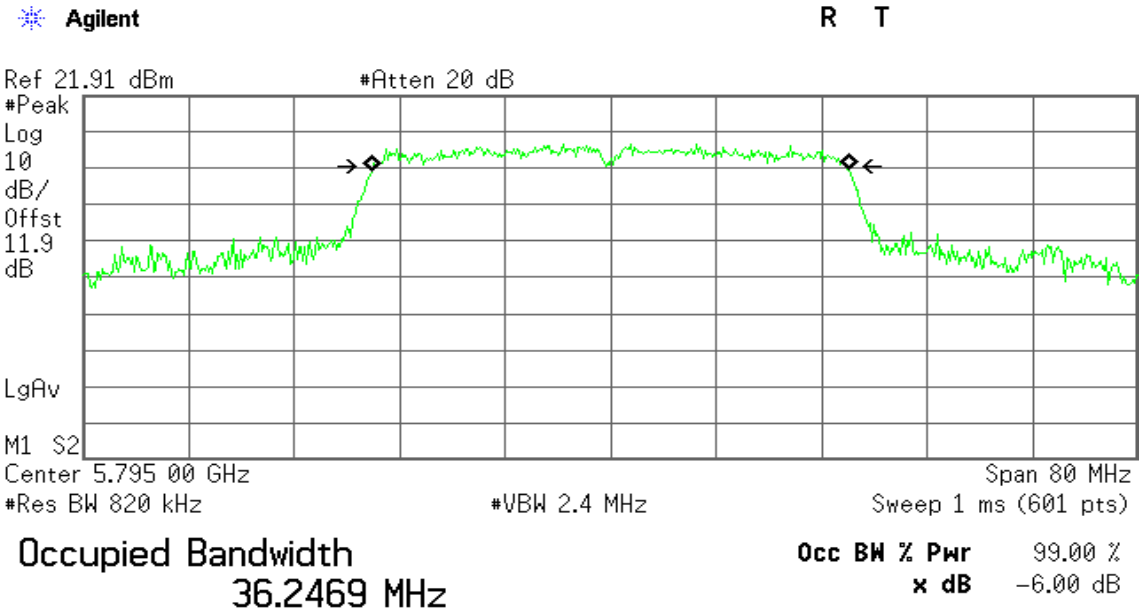
## IEEE 802.11n HT 40 mode / 5755 ~ 5795MHz / Chain 1

### CH Low



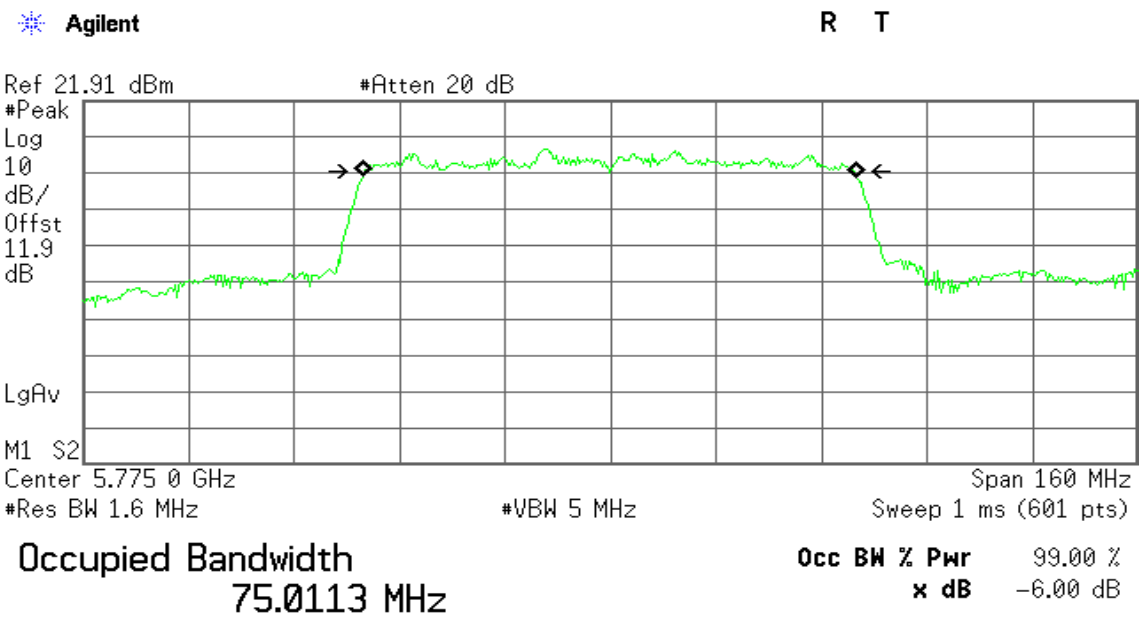

**Transmit Freq Error** −100.943 kHz
**x dB Bandwidth** 35.763 MHz

### CH High




**Transmit Freq Error** −19.470 kHz
**x dB Bandwidth** 35.895 MHz

## IEEE 802.11ac80 mode / 5775MHz / Chain 0

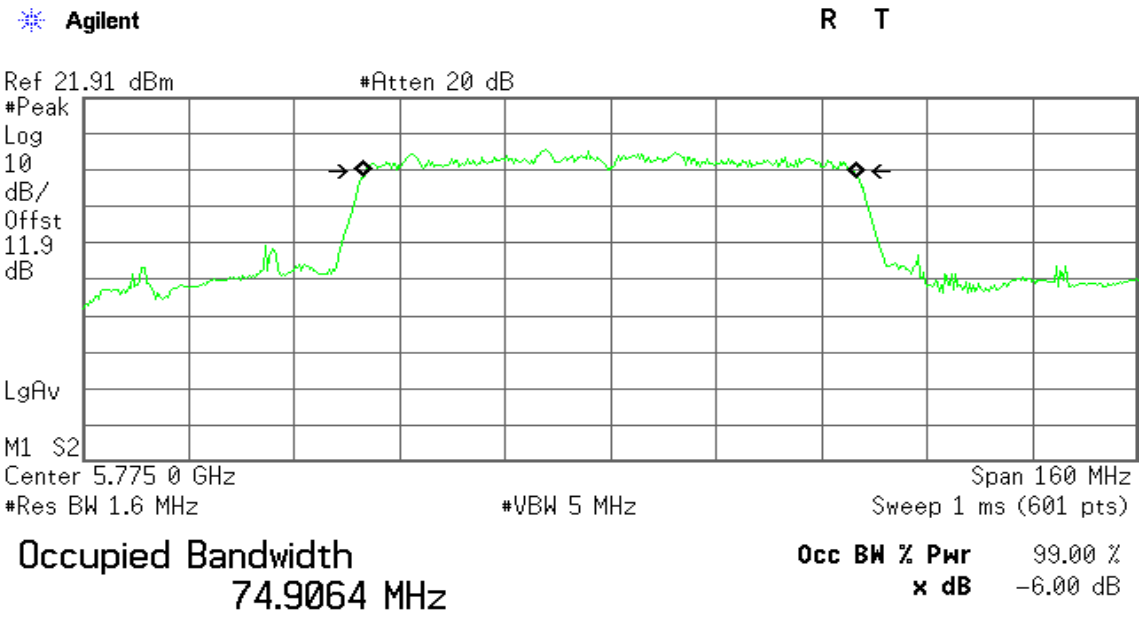



Occupied Bandwidth
75.0113 MHz

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

**Transmit Freq Error** -47.954 kHz
**x dB Bandwidth** 74.471 MHz

## IEEE 802.11ac80 mode / 5775MHz / Chain 1




Occupied Bandwidth
74.9064 MHz

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

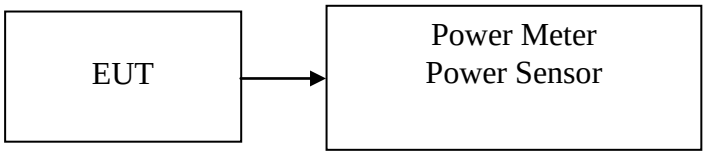
**Transmit Freq Error** -58.001 kHz
**x dB Bandwidth** 74.360 MHz

## 7.2 AVERAGE POWER

### LIMIT

None; for reporting purposes only.

**Test Configuration**




### TEST PROCEDURE

The transmitter output is connected to the Power Meter. The Power Meter is set to the avg power detection.

### TEST RESULTS

*No non-compliance noted.*

## Test Data

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

| Channel | Frequency (MHz) | Maximum Conducted Output Power (dBm) | Limit (dBm) |
|---|---|---|---|
| Low | 5180 | 19.67 | 24.00 |
| Mid | 5220 | 19.34 | |
| High | 5240 | 19.31 | |

### 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 | 19.02 | 17.75 | 21.44 | 24.00 |
| Mid | 5220 | 18.54 | 17.05 | 20.87 | |
| High | 5240 | 18.44 | 16.51 | 20.59 | |

### 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 | 14.11 | 13.59 | 16.87 | 24.00 |
| High | 5230 | 16.14 | 15.34 | 18.77 | |

### Test mode: IEEE 802.11n HT 80 MHz 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 | 12.82 | 12.27 | 15.56 | 24.00 |

***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) | Maximum Conducted Output Power (dBm) | Limit (dBm) |
|---|---|---|---|
| Low | 5745 | 20.25 | 24.00 |
| Mid | 5785 | 20.42 | 24.00 |
| High | 5825 | 20.65 | 24.00 |

### 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 | 19.31 | 18.47 | 21.92 | 30.00 |
| Mid | 5785 | 19.33 | 18.65 | 22.01 | |
| High | 5825 | 19.45 | 18.69 | 22.10 | |

### 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 | 15.74 | 15.15 | 18.47 | 30.00 |
| High | 5795 | 15.39 | 15.20 | 18.31 | |

### Test mode: IEEE 802.11n HT 80 MHz mode / 5775MHz

| Channel | Frequency (MHz) | Chain 0 Output Power (dBm) | Chain 1 Output Power (dBm) | Total Maximum Conducted Output Power (dBm) | Limit (dBm) |
|---|---|---|---|---|---|
| Mid | 5755 | 13.90 | 14.68 | 17.32 | 30.00 |

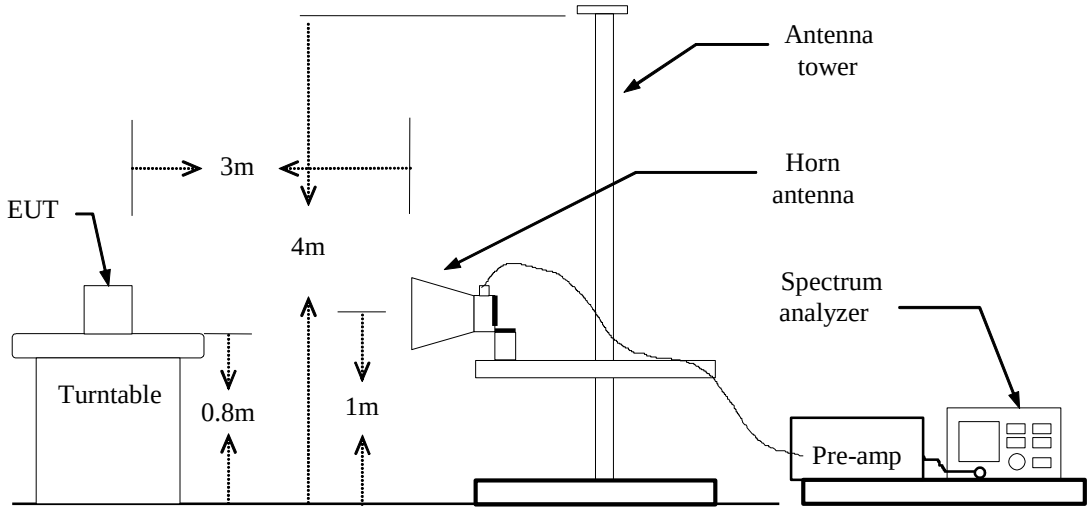
***Remark:*** *1. Total PPSD (dBm) = 10*LOG(10^(Chain 0 PPSD / 10)+10^(Chain 1 PPSD /10))*

## 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=VBW=1MHz / Sweep=AUTO
   (b) AVERAGE: RBW=1MHz / VBW=10Hz / Sweep=AUTO
5. Repeat the procedures until all the PEAK and AVERAGE versus POLARIZATION are measured.

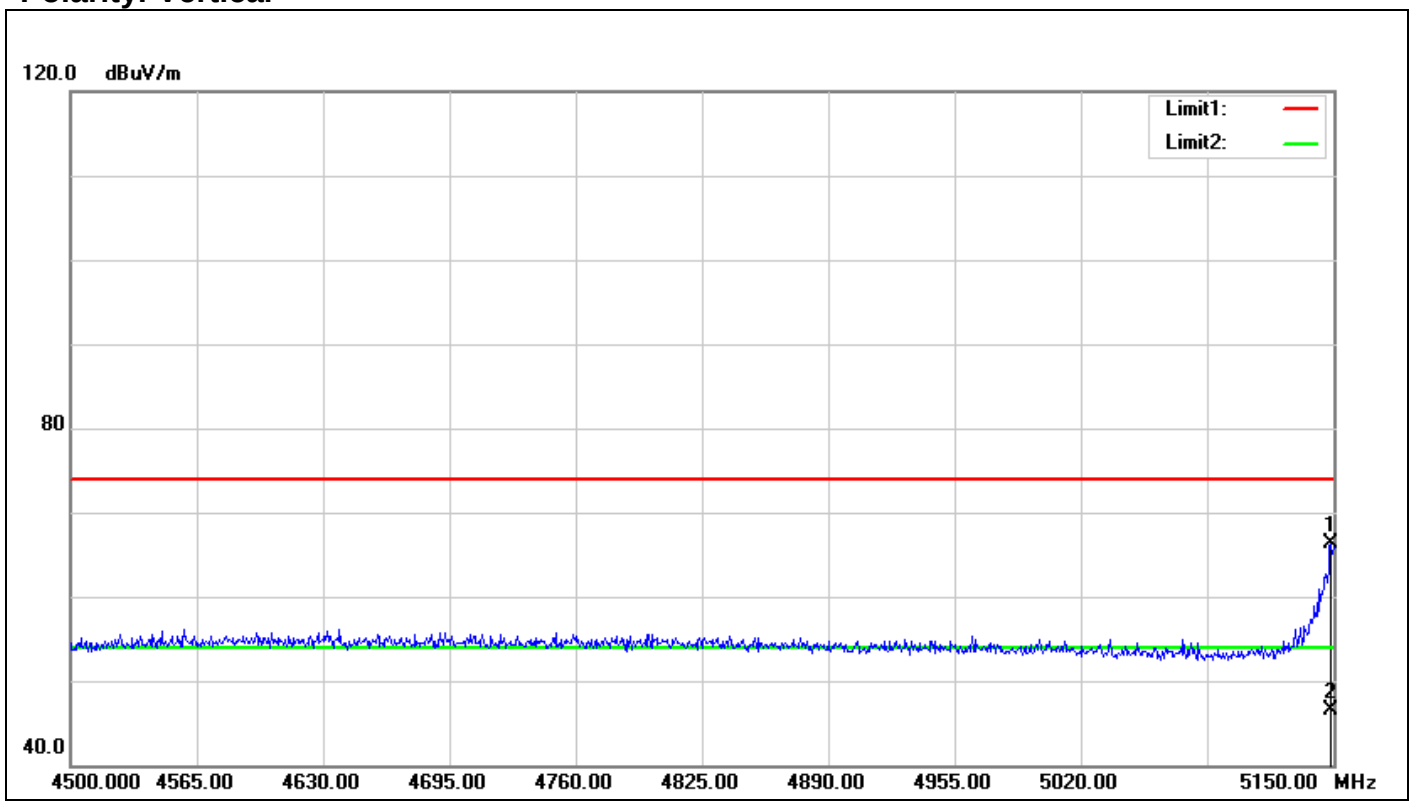
### TEST RESULTS

Refer to attach spectrum analyzer data chart.

## For printed Antenna

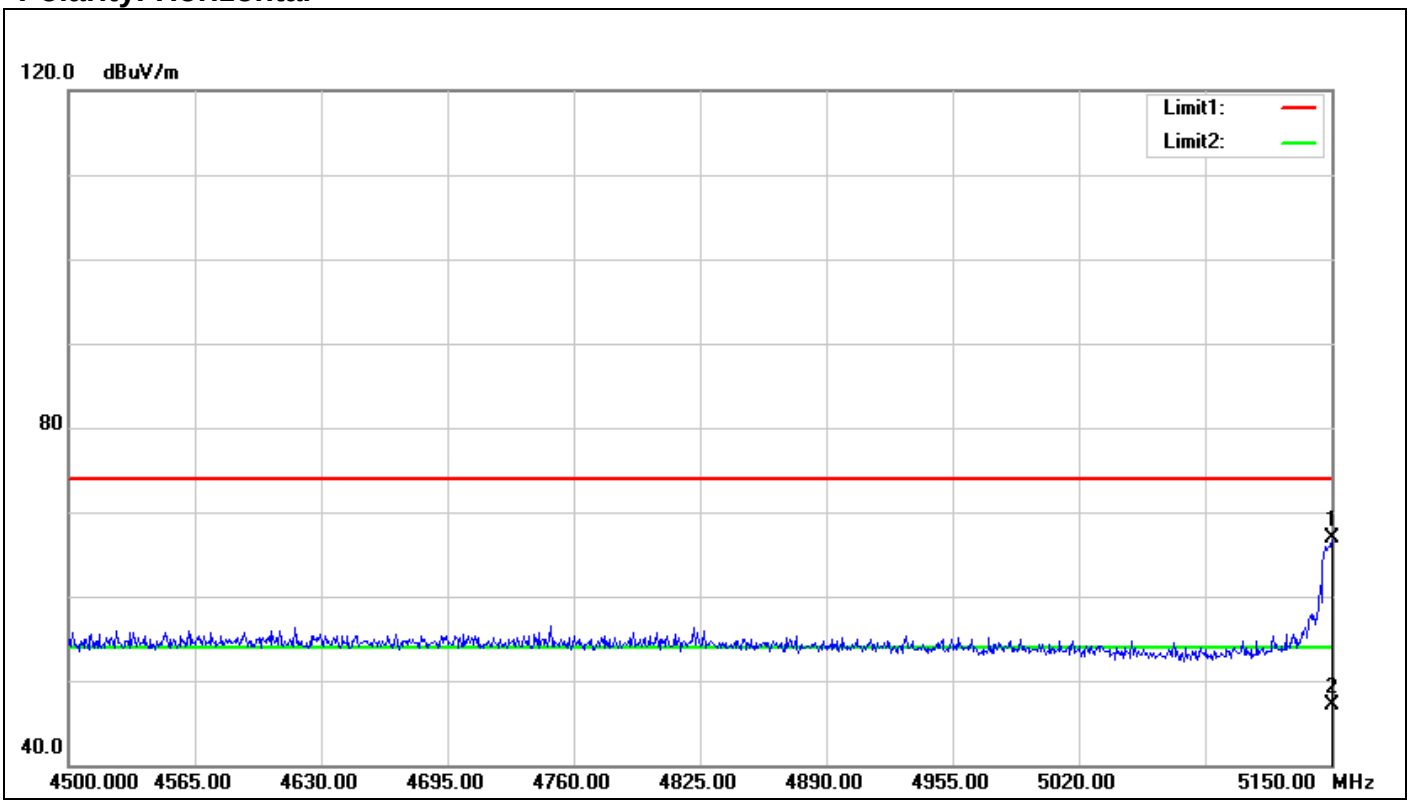
### Band Edges (IEEE 802.11a mode / 5180 MHz)

### Polarity: Vertical




| No. | Frequency (MHz) | Reading (dBuV) | Correct Factor(dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Height (cm) | Degree ( ° ) | Remark |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 5148.700 | 63.22 | 3.03 | 66.25 | 74.00 | -7.75 | 100 | 248 | peak |
| 2 | 5148.700 | 43.50 | 3.03 | 46.53 | 54.00 | -7.47 | 100 | 248 | AVG |

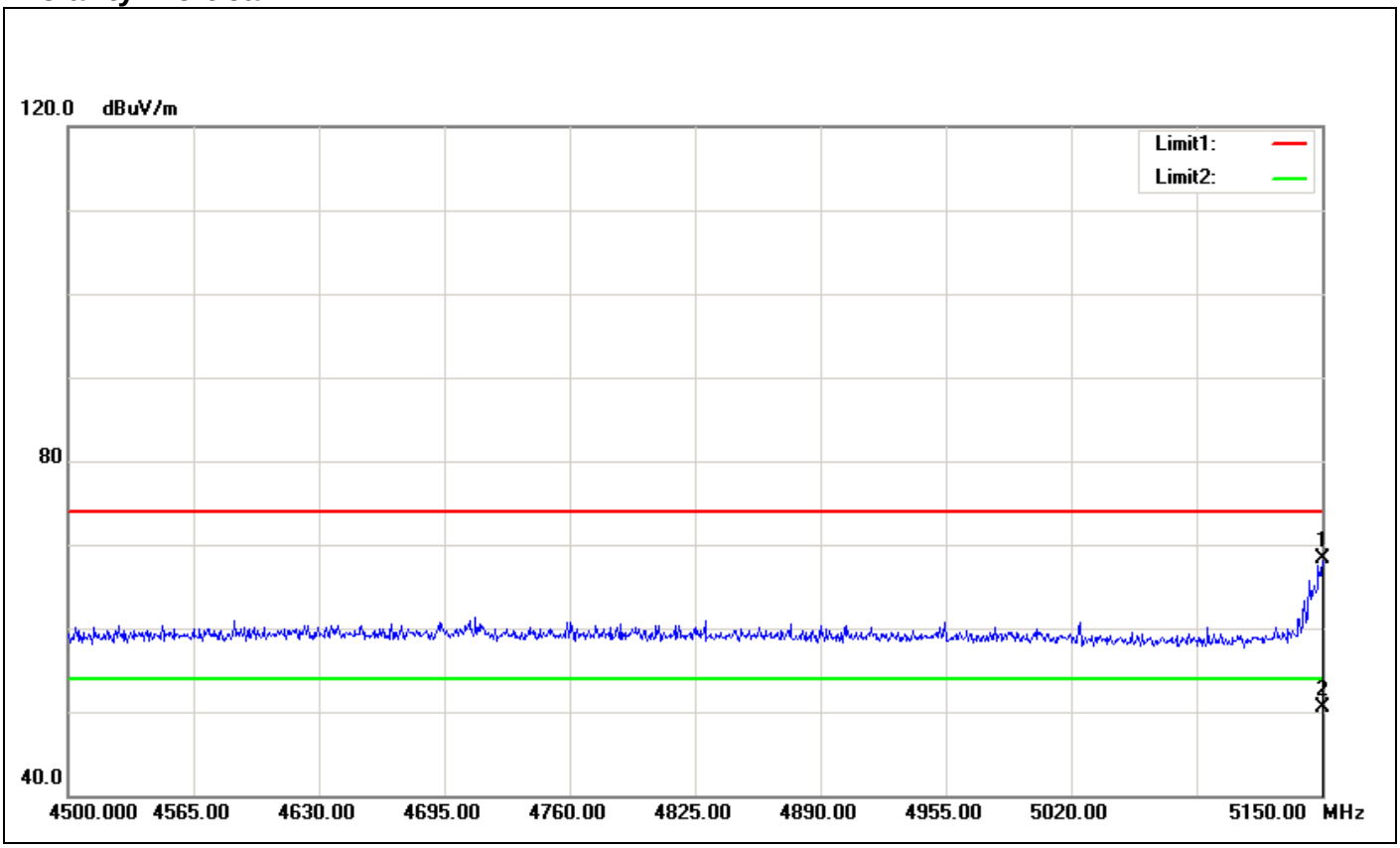
## Polarity: Horizontal




| No. | Frequency (MHz) | Reading (dBuV) | Correct Factor(dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Height (cm) | Degree ( ° ) | Remark |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 5150.000 | 63.87 | 3.04 | 66.91 | 74.00 | -7.09 | 100 | 250 | peak |
| 2 | 5150.000 | 44.15 | 3.04 | 47.19 | 54.00 | -6.81 | 100 | 250 | AVG |

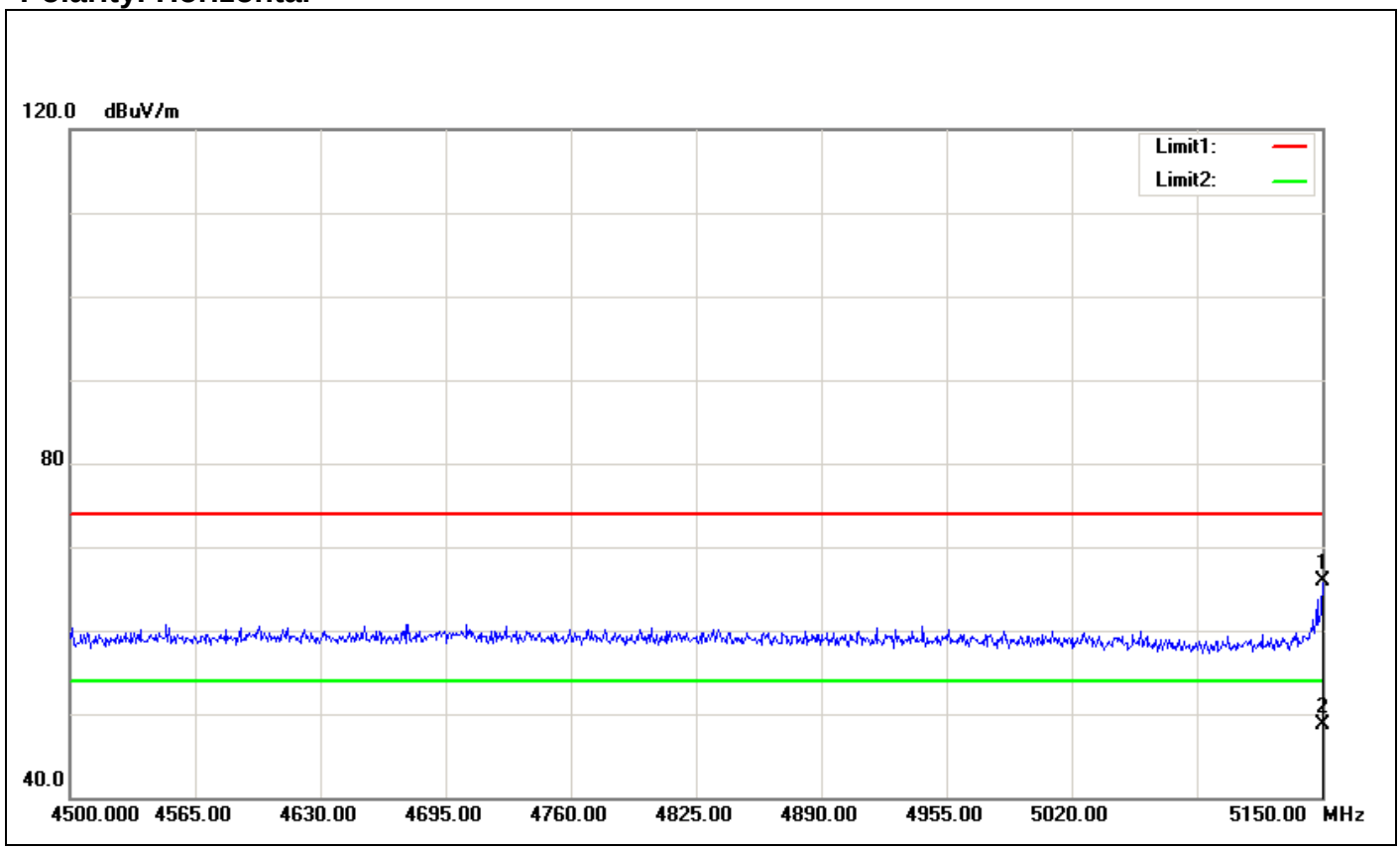
## Band Edges (IEEE 802.11n HT 20 mode / 5180 MHz)

## 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 | 60.57 | 7.74 | 68.31 | 74.00 | -5.69 | 100 | 0 | peak |
| 2 | 5150.000 | 42.71 | 7.74 | 50.45 | 54.00 | -3.55 | 100 | 0 | AVG |

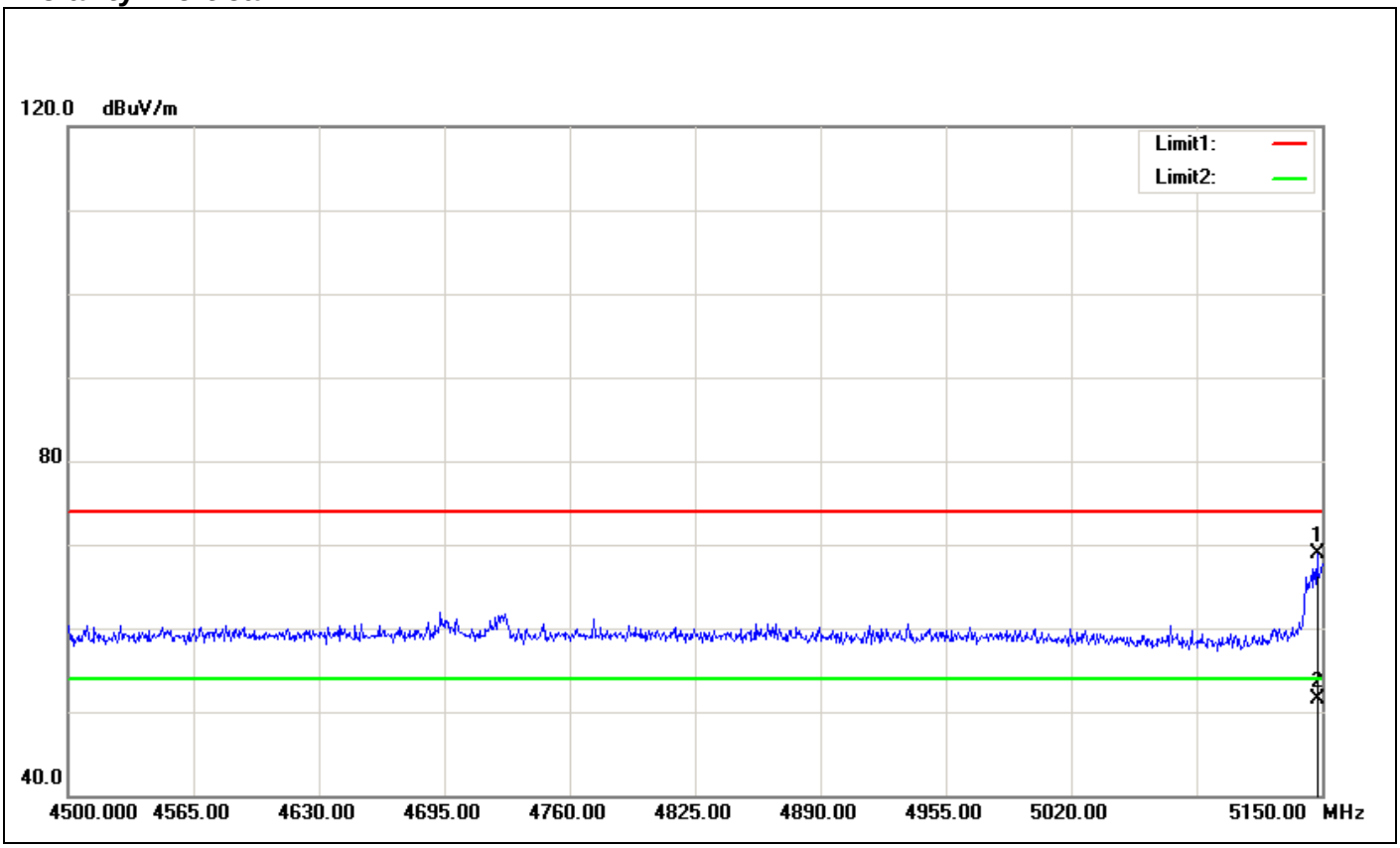
## Polarity: Horizontal




| No. | Frequency | Reading | Correct | Result | Limit | Margin | Height | Degree | Remark |
|---|---|---|---|---|---|---|---|---|---|
| | (MHz) | (dBuV) | Factor(dB/m) | (dBuV/m) | (dBuV/m) | (dB) | (cm) | ( ° ) | |
| 1 | 5150.000 | 58.20 | 7.74 | 65.94 | 74.00 | -8.06 | 100 | 115 | peak |
| 2 | 5150.000 | 40.87 | 7.74 | 48.61 | 54.00 | -5.39 | 100 | 115 | AVG |

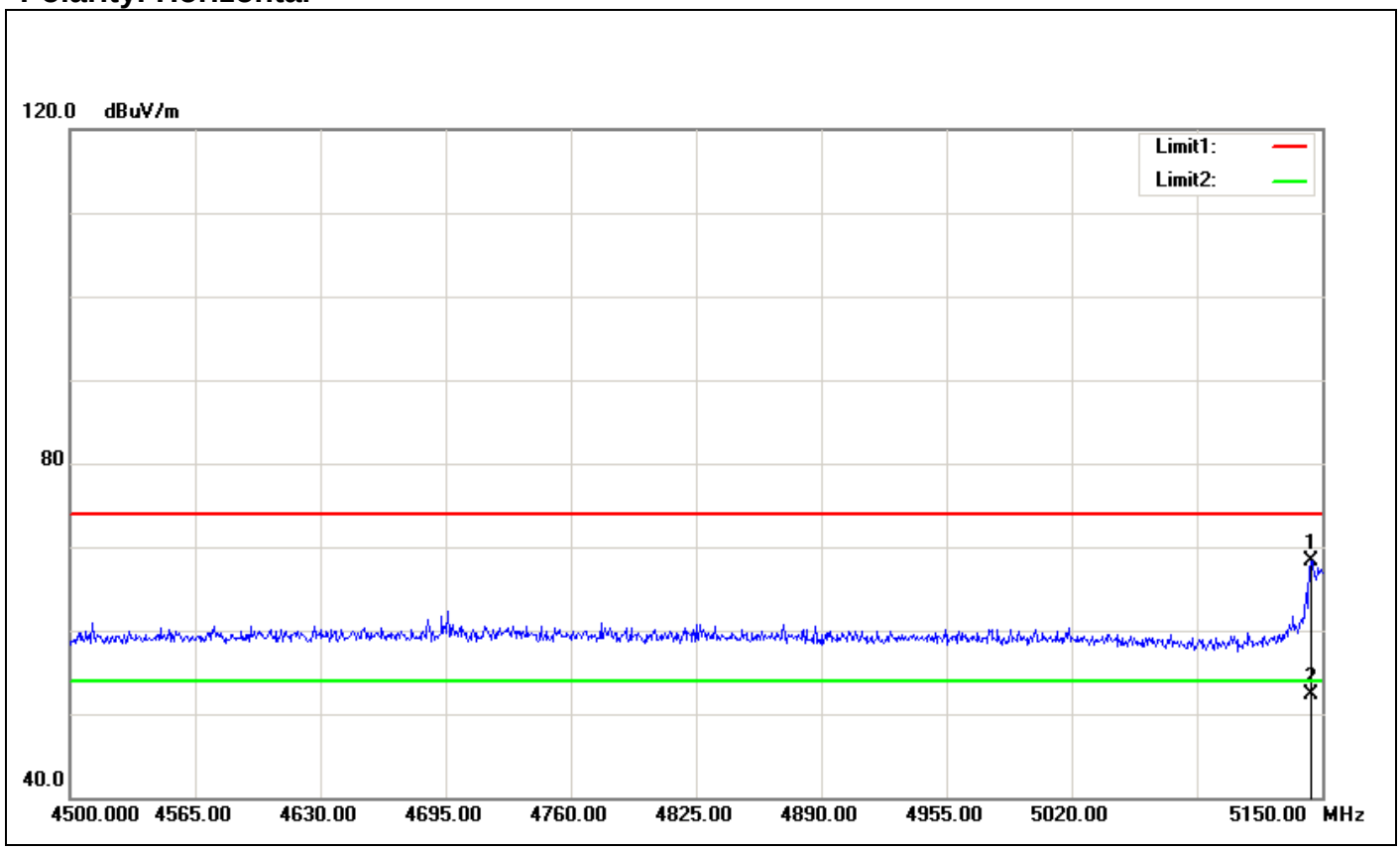
## Band Edges (IEEE 802.11n HT 40 mode / 5190 MHz)

## Polarity: Vertical




| No. | Frequency | Reading | Correct | Result | Limit | Margin | Height | Degree | Remark |
|---|---|---|---|---|---|---|---|---|---|
| | (MHz) | (dBuV) | Factor(dB/m) | (dBuV/m) | (dBuV/m) | (dB) | (cm) | ( ° ) | |
| 1 | 5147.400 | 61.23 | 7.73 | 68.96 | 74.00 | -5.04 | 100 | 258 | peak |
| 2 | 5147.400 | 43.70 | 7.73 | 51.43 | 54.00 | -2.57 | 100 | 258 | AVG |

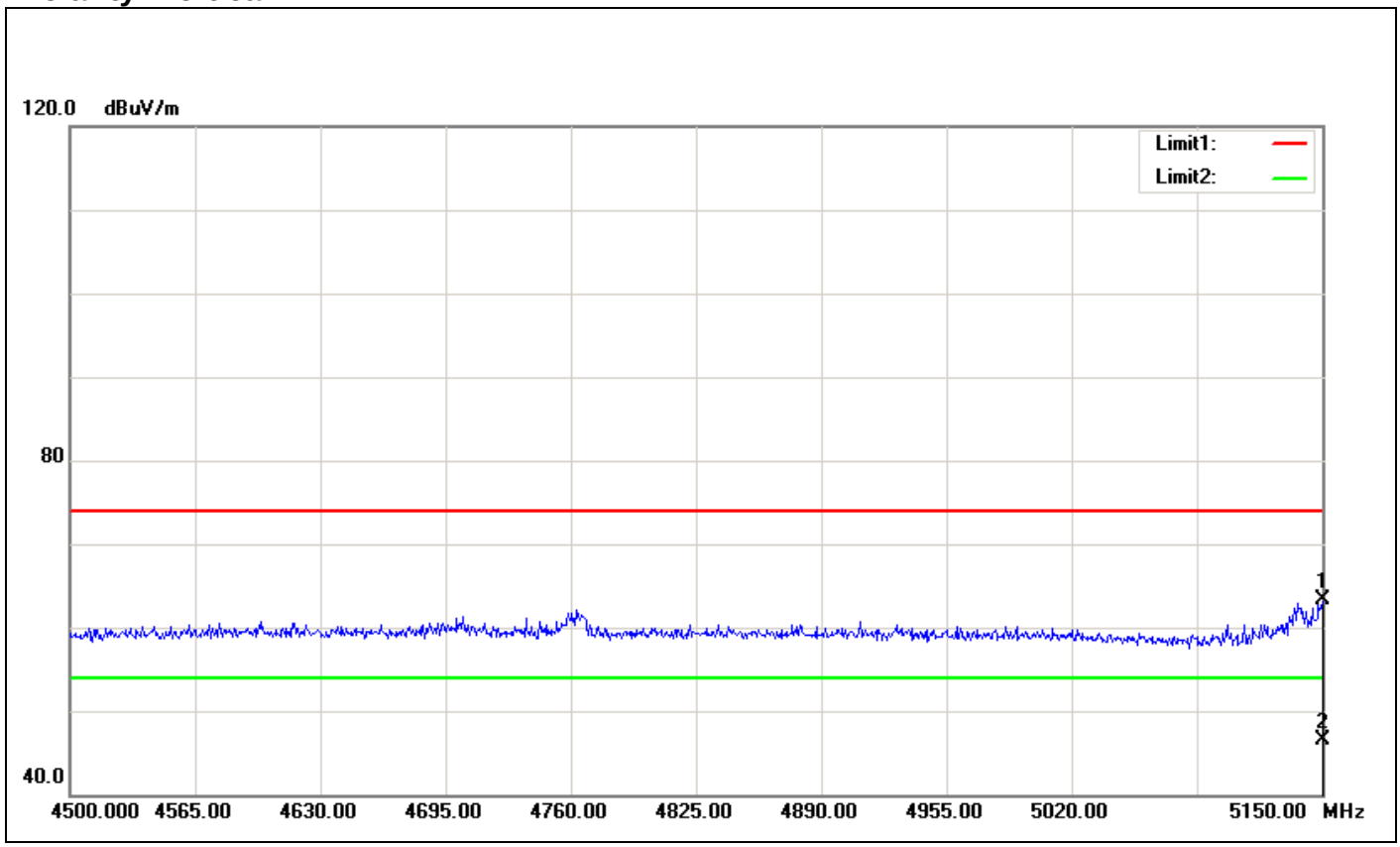
## Polarity: Horizontal




| No. | Frequency | Reading | Correct | Result | Limit | Margin | Height | Degree | Remark |
|---|---|---|---|---|---|---|---|---|---|
| | (MHz) | (dBuV) | Factor(dB/m) | (dBuV/m) | (dBuV/m) | (dB) | (cm) | ( ° ) | |
| 1 | 5144.150 | 60.60 | 7.72 | 68.32 | 74.00 | -5.68 | 100 | 1 | peak |
| 2 | 5144.150 | 44.48 | 7.72 | 52.20 | 54.00 | -1.80 | 100 | 1 | AVG |

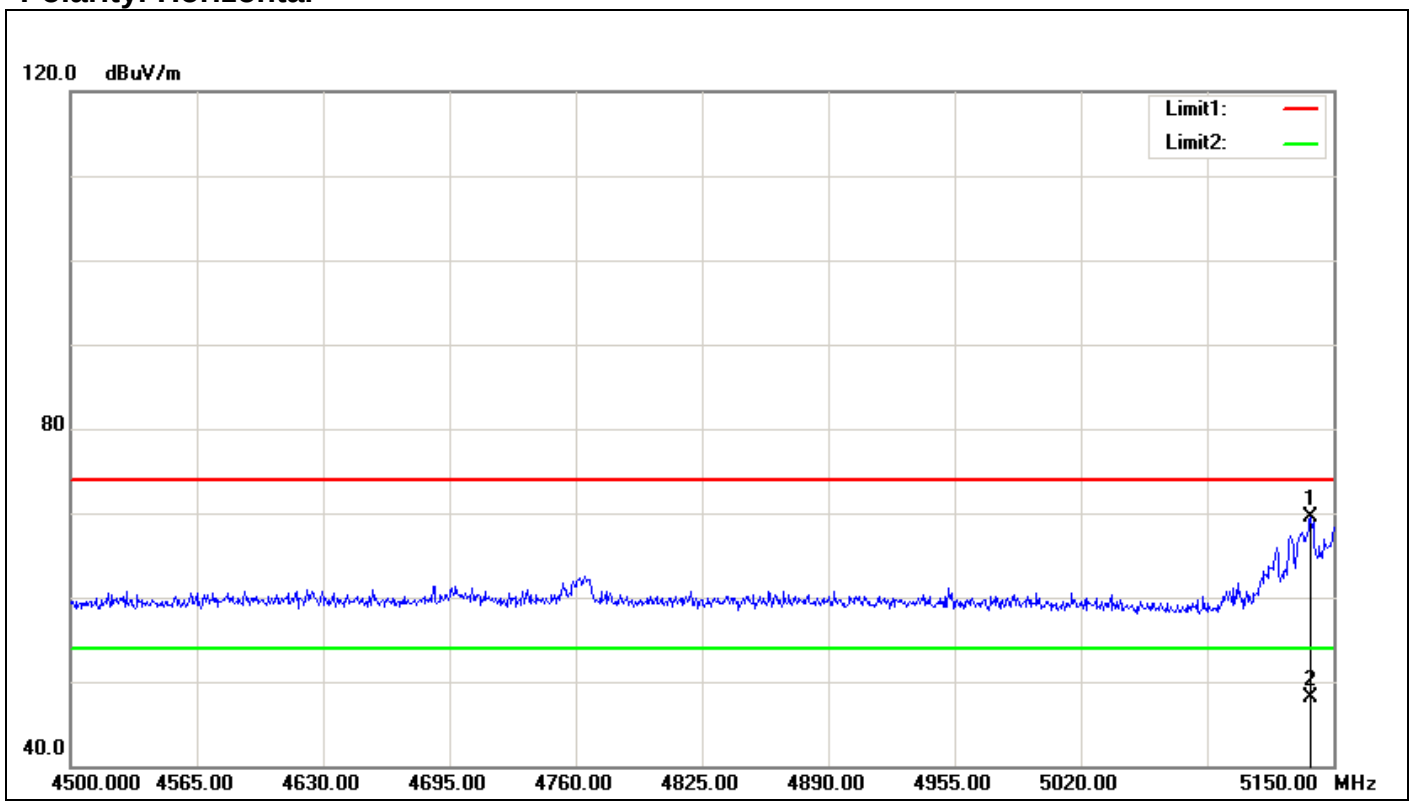
## Band Edges (IEEE 802.11n HT 80 MHz mode / CH 5210 MHz)

## Polarity: Vertical




| No. | Frequency | Reading | Correct | Result | Limit | Margin | Height | Degree | Remark |
|---|---|---|---|---|---|---|---|---|---|
| | (MHz) | (dBuV) | Factor(dB/m) | (dBuV/m) | (dBuV/m) | (dB) | (cm) | ( ° ) | |
| 1 | 5150.000 | 55.51 | 7.74 | 63.25 | 74.00 | -10.75 | 100 | 59 | peak |
| 2 | 5150.000 | 38.85 | 7.74 | 46.59 | 54.00 | -7.41 | 100 | 59 | AVG |

## Polarity: Horizontal

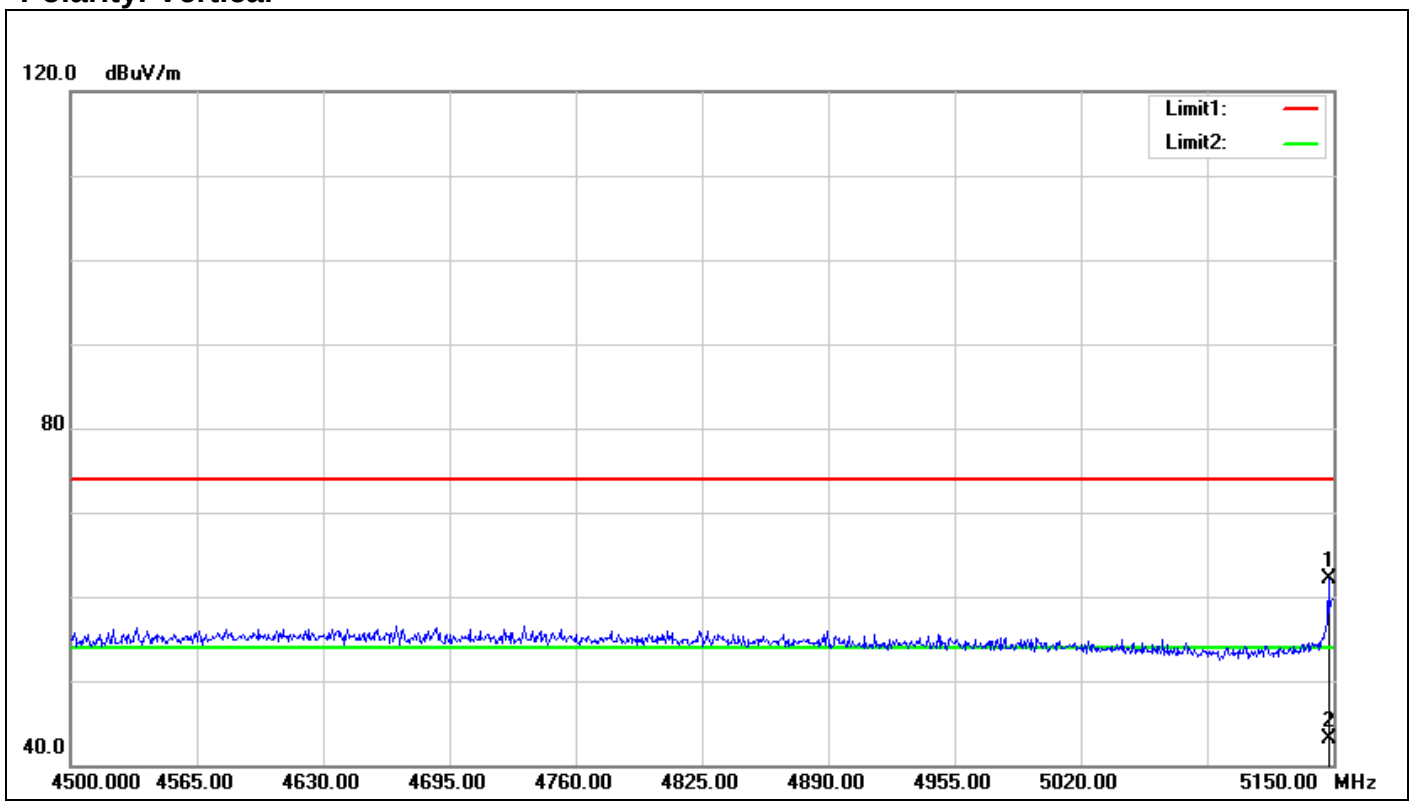



| No. | Frequency | Reading | Correct | Result | Limit | Margin | Height | Degree | Remark |
|---|---|---|---|---|---|---|---|---|---|
| | (MHz) | (dBuV) | Factor(dB/m) | (dBuV/m) | (dBuV/m) | (dB) | (cm) | ( ° ) | |
| 1 | 5138.300 | 61.80 | 7.69 | 69.49 | 74.00 | -4.51 | 100 | 28 | peak |
| 2 | 5138.300 | 40.46 | 7.69 | 48.15 | 54.00 | -5.85 | 100 | 28 | AVG |

## For Dipole Antenna

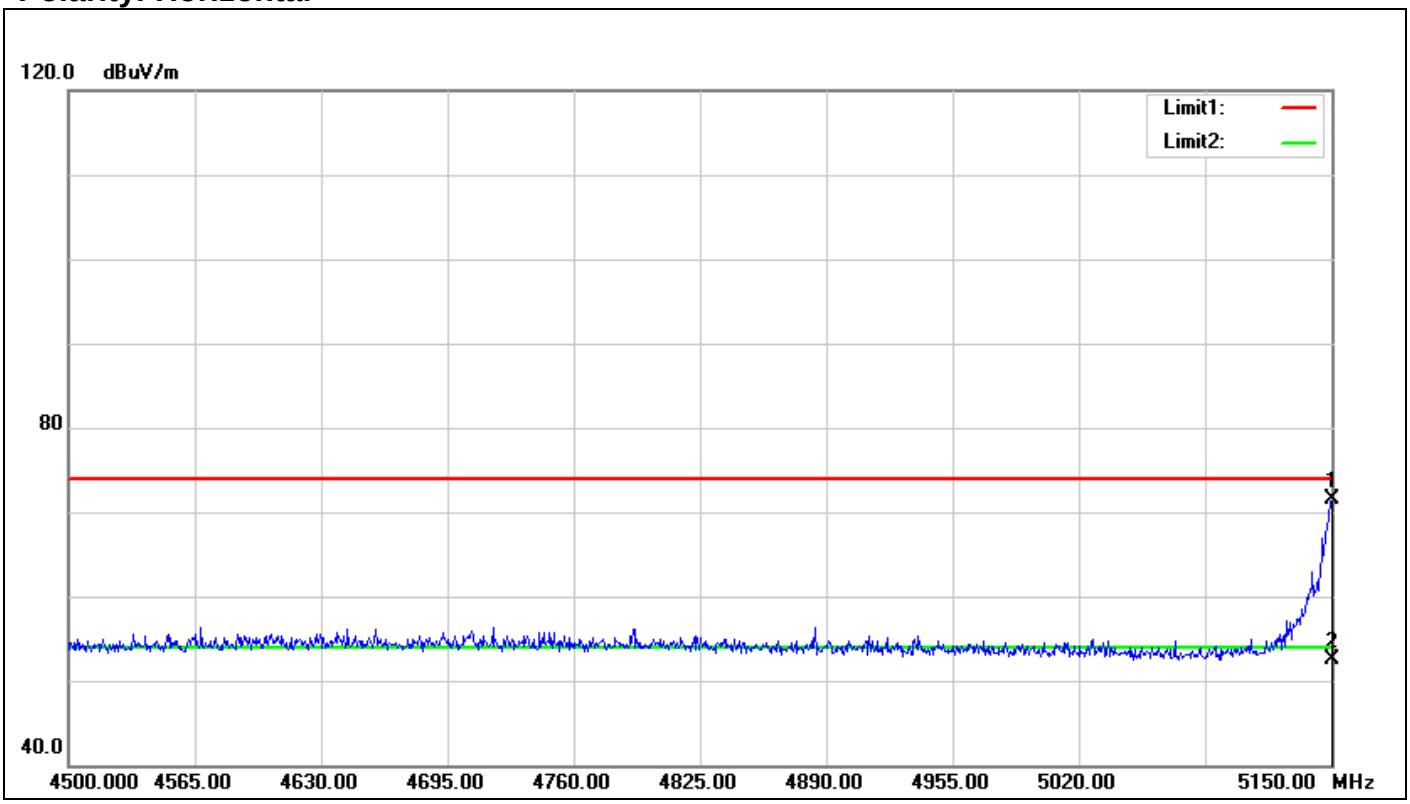
### Band Edges (IEEE 802.11a mode / 5180 MHz)

### Polarity: Vertical




| No. | Frequency (MHz) | Reading (dBuV) | Correct Factor(dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Height (cm) | Degree ( ° ) | Remark |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 5147.400 | 59.06 | 3.02 | 62.08 | 74.00 | -11.92 | 100 | 241 | peak |
| 2 | 5147.400 | 40.00 | 3.02 | 43.02 | 54.00 | -10.98 | 100 | 241 | AVG |

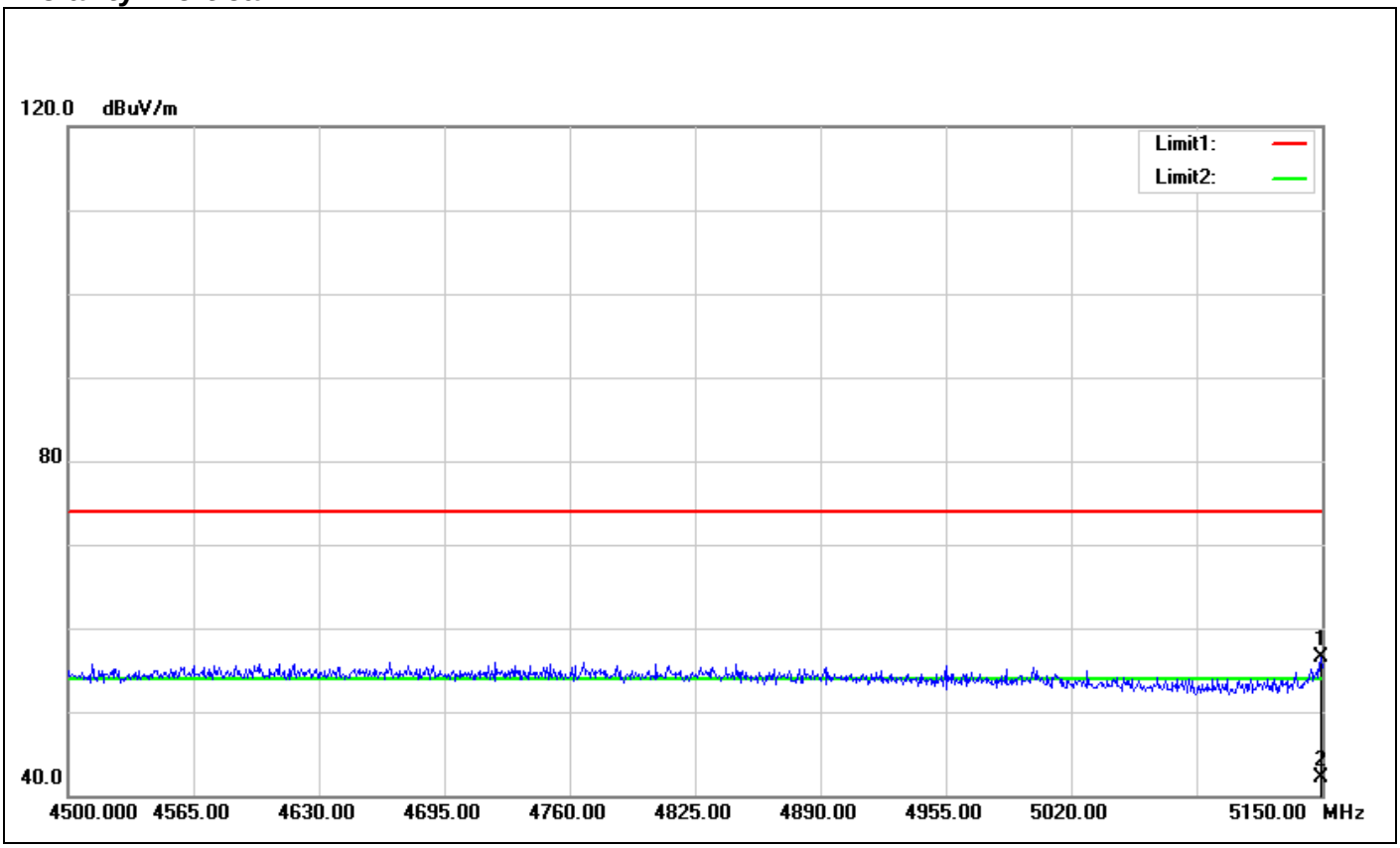
## Polarity: Horizontal




| No. | Frequency (MHz) | Reading (dBuV) | Correct Factor(dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Height (cm) | Degree ( ° ) | Remark |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 5150.000 | 68.44 | 3.04 | 71.48 | 74.00 | -2.52 | 100 | 155 | peak |
| 2 | 5150.000 | 49.50 | 3.04 | 52.54 | 54.00 | -1.46 | 100 | 155 | AVG |

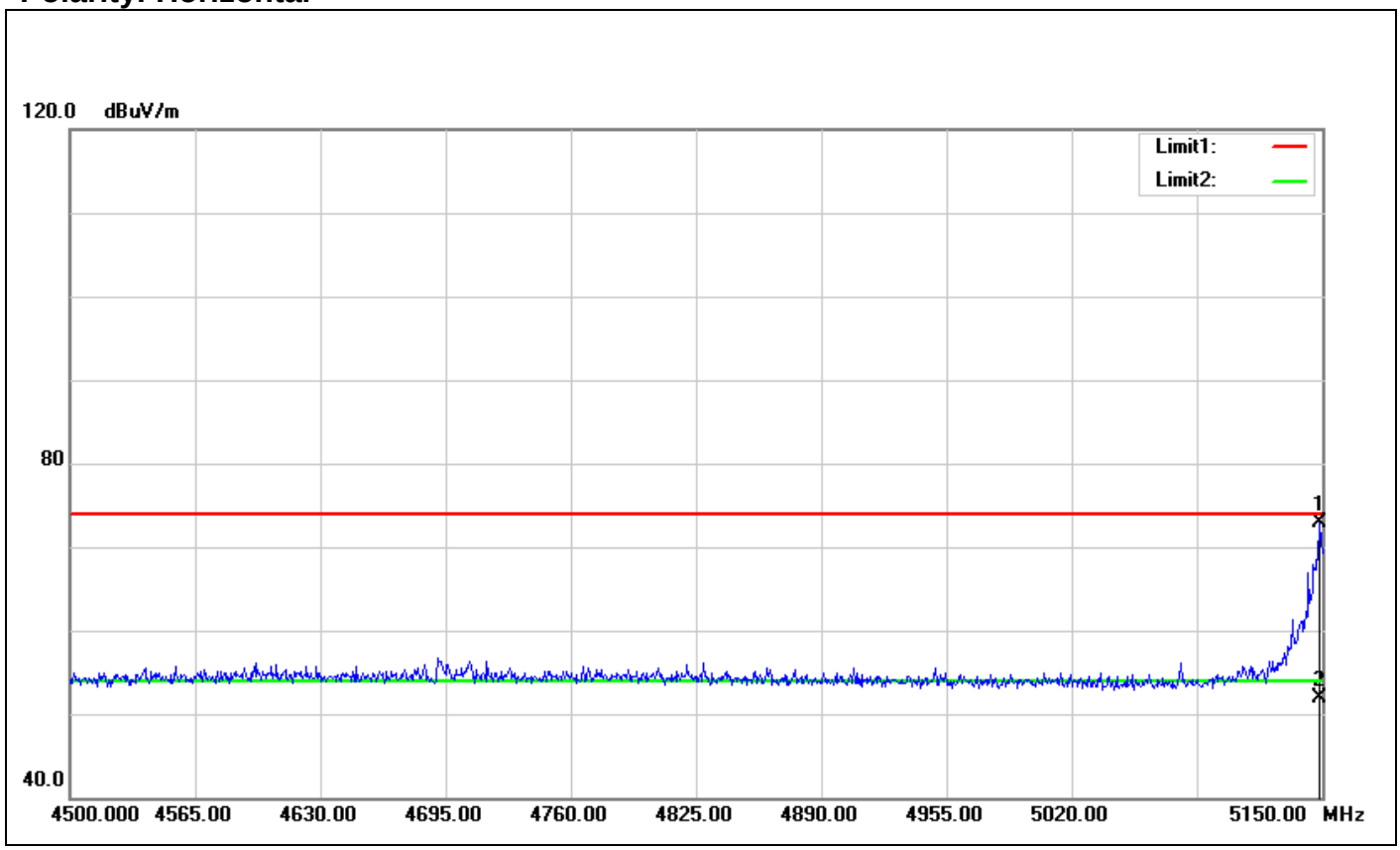
## Band Edges (IEEE 802.11n HT 20 mode / 5180 MHz)

## Polarity: Vertical




| No. | Frequency | Reading | Correct | Result | Limit | Margin | Height | Degree | Remark |
|---|---|---|---|---|---|---|---|---|---|
| | (MHz) | (dBuV) | Factor(dB/m) | (dBuV/m) | (dBuV/m) | (dB) | (cm) | ( ° ) | |
| 1 | 5149.350 | 53.44 | 3.04 | 56.48 | 74.00 | -17.52 | 100 | 194 | peak |
| 2 | 5149.350 | 38.98 | 3.04 | 42.02 | 54.00 | -11.98 | 100 | 194 | AVG |

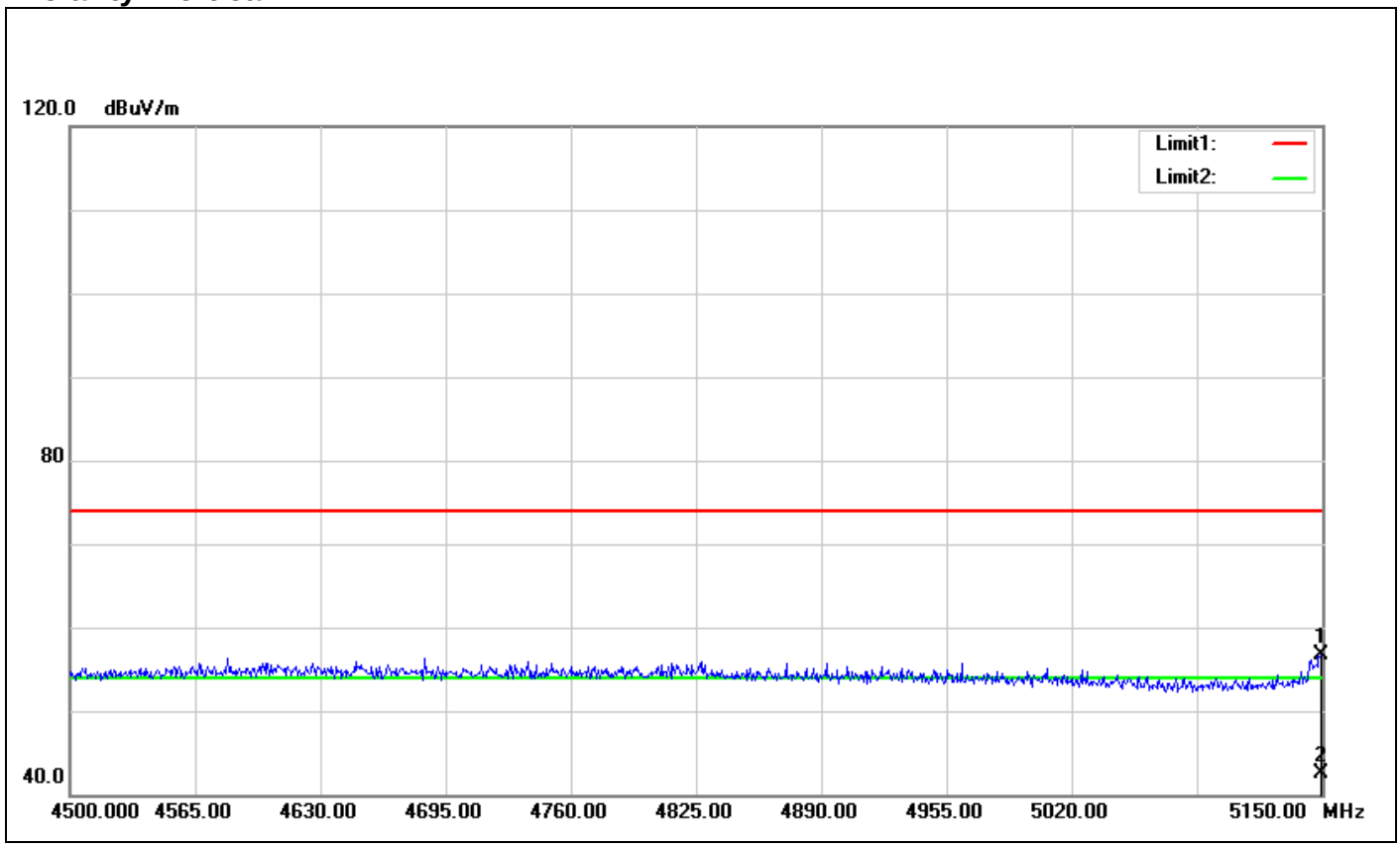
## Polarity: Horizontal




| No. | Frequency | Reading | Correct | Result | Limit | Margin | Height | Degree | Remark |
|---|---|---|---|---|---|---|---|---|---|
| | (MHz) | (dBuV) | Factor(dB/m) | (dBuV/m) | (dBuV/m) | (dB) | (cm) | ( ° ) | |
| 1 | 5148.700 | 69.91 | 3.03 | 72.94 | 74.00 | -1.06 | 100 | 321 | peak |
| 2 | 5148.700 | 48.78 | 3.03 | 51.81 | 54.00 | -2.19 | 100 | 321 | AVG |

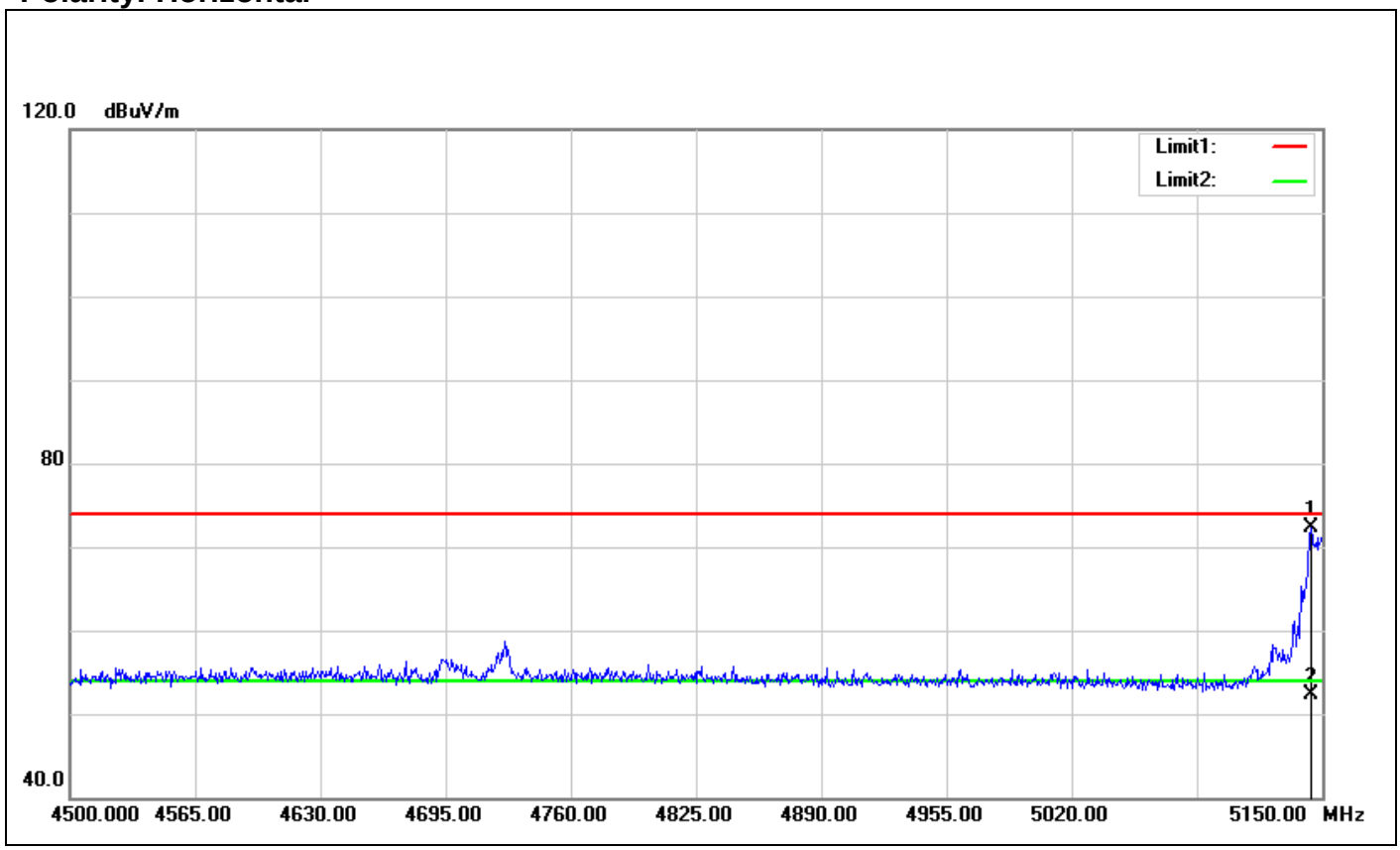
## Band Edges (IEEE 802.11n HT 40 mode / 5190 MHz)

## Polarity: Vertical




| No. | Frequency | Reading | Correct | Result | Limit | Margin | Height | Degree | Remark |
|---|---|---|---|---|---|---|---|---|---|
| | (MHz) | (dBuV) | Factor(dB/m) | (dBuV/m) | (dBuV/m) | (dB) | (cm) | ( ° ) | |
| 1 | 5149.350 | 53.73 | 3.04 | 56.77 | 74.00 | -17.23 | 100 | 274 | peak |
| 2 | 5149.350 | 39.46 | 3.04 | 42.50 | 54.00 | -11.50 | 100 | 274 | AVG |

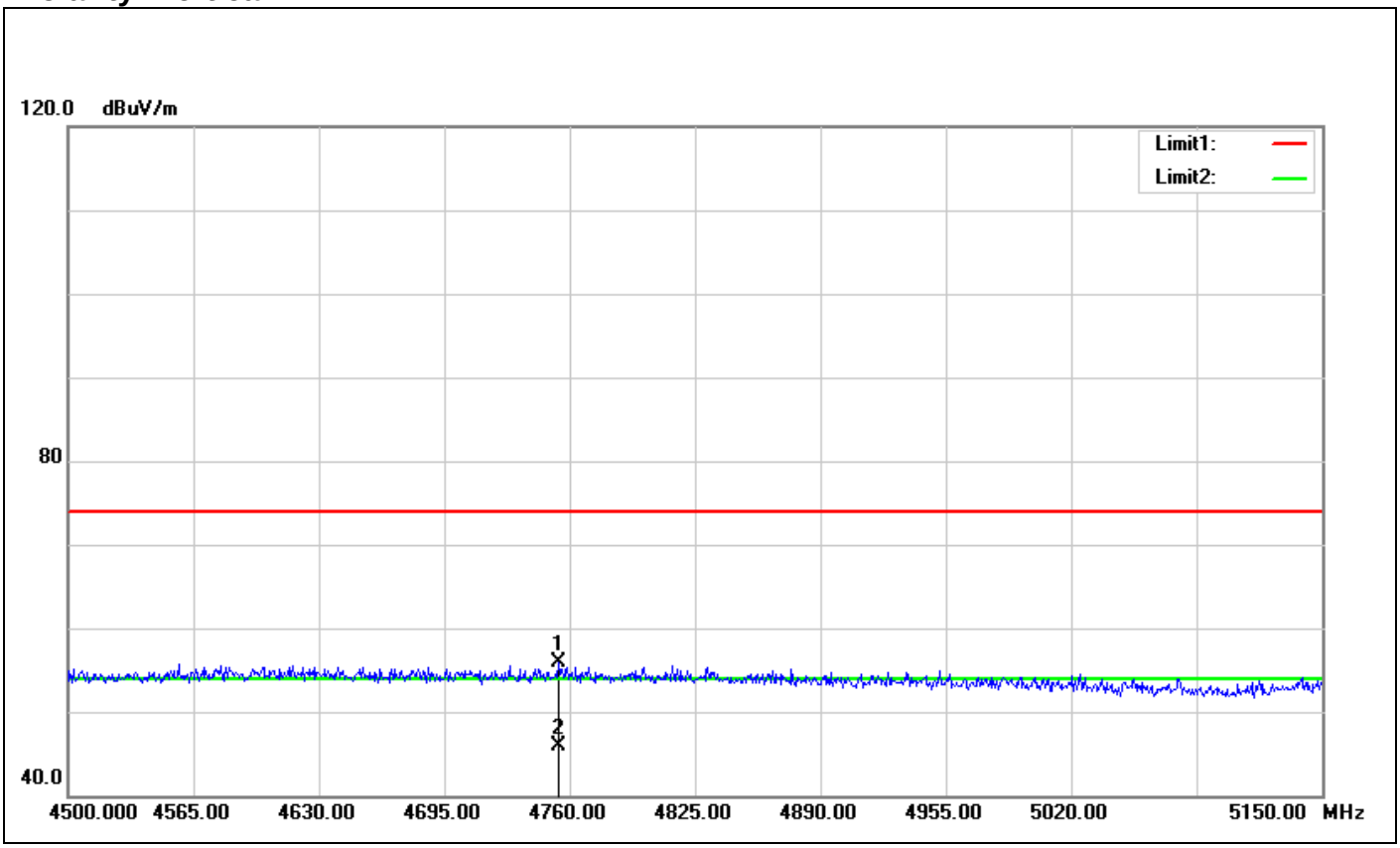
## Polarity: Horizontal




| No. | Frequency | Reading | Correct | Result | Limit | Margin | Height | Degree | Remark |
|---|---|---|---|---|---|---|---|---|---|
| | (MHz) | (dBuV) | Factor(dB/m) | (dBuV/m) | (dBuV/m) | (dB) | (cm) | ( ° ) | |
| 1 | 5144.150 | 69.32 | 3.00 | 72.32 | 74.00 | -1.68 | 100 | 23 | peak |
| 2 | 5144.150 | 49.26 | 3.00 | 52.26 | 54.00 | -1.74 | 100 | 23 | AVG |

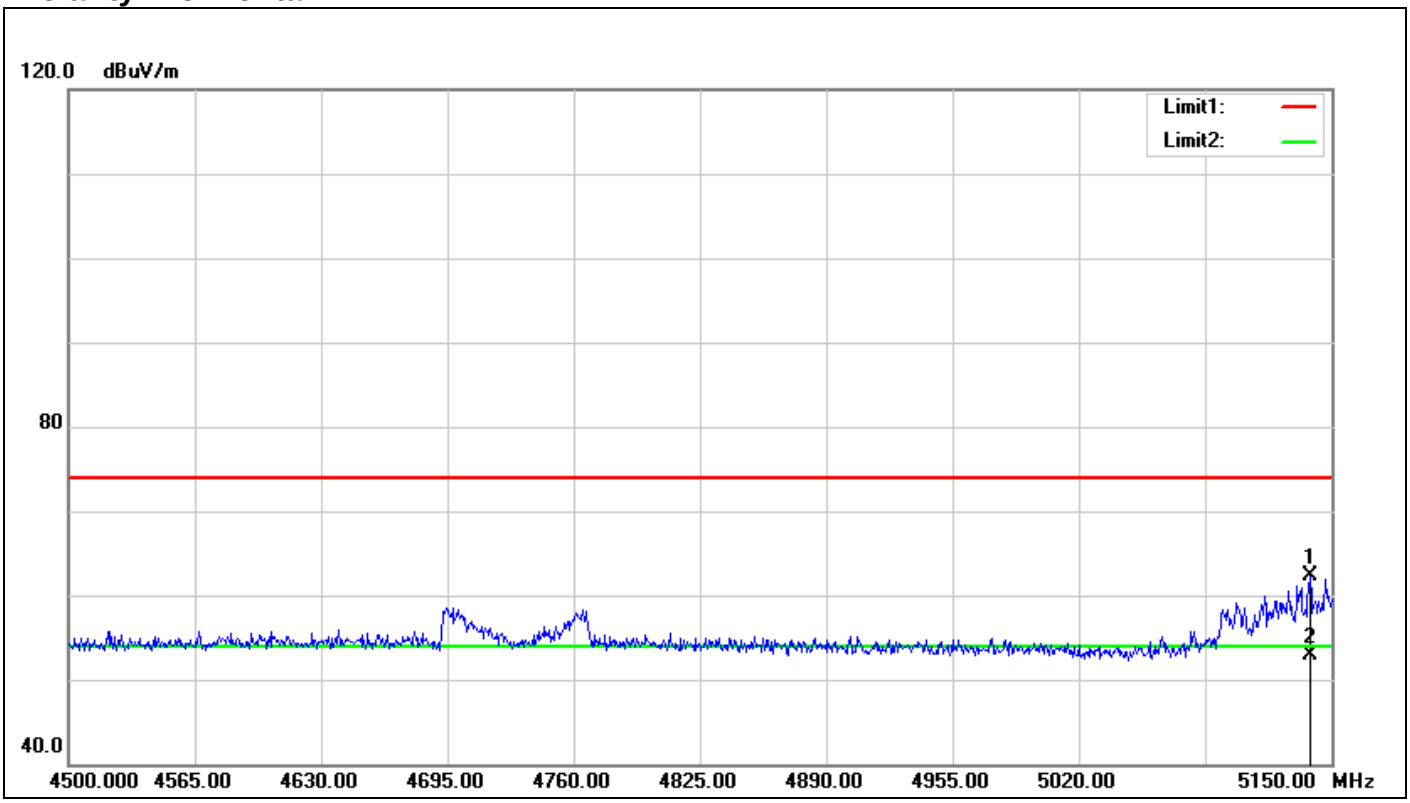
## Band Edges (IEEE 802.11n HT 80 MHz mode / CH 5210 MHz)

## Polarity: Vertical




| No. | Frequency | Reading | Correct | Result | Limit | Margin | Height | Degree | Remark |
|---|---|---|---|---|---|---|---|---|---|
| | (MHz) | (dBuV) | Factor(dB/m) | (dBuV/m) | (dBuV/m) | (dB) | (cm) | ( ° ) | |
| 1 | 4754.150 | 52.12 | 3.87 | 55.99 | 74.00 | -18.01 | 100 | 142 | peak |
| 2 | 4754.150 | 41.99 | 3.87 | 45.86 | 54.00 | -8.14 | 100 | 142 | AVG |

## Polarity: Horizontal




| No. | Frequency (MHz) | Reading (dBuV) | Correct Factor(dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Height (cm) | Degree ( ° ) | Remark |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 5138.950 | 59.33 | 2.96 | 62.29 | 74.00 | -11.71 | 100 | 222 | peak |
| 2 | 5138.950 | 50.02 | 2.96 | 52.98 | 54.00 | -1.02 | 100 | 222 | AVG |

## 7.4 PEAK POWER SPECTRAL DENSITY

### LIMIT

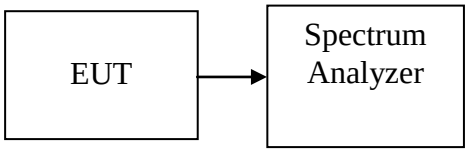
According to §15.407(a),

(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, 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 = 50MHz, Sweep=1ms
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) | PPSD (dBm) | Limit (dBm) | Result |
|---|---|---|---|---|
| Low | 5180 | 7.47 | 4.00 | PASS |
| Mid | 5220 | 6.32 | | PASS |
| High | 5240 | 6.55 | | 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 | 6.15 | 6.45 | 9.31 | 2 | PASS |
| Mid | 5220 | 4.85 | 6.39 | 8.70 | | PASS |
| High | 5240 | 5.08 | 6.35 | 8.77 | | 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 | -0.89 | -2.05 | 1.58 | 2 | PASS |
| High | 5230 | 0.56 | 0.39 | 3.49 | | PASS |

### Test mode: IEEE 802.11n HT 80 MHz mode / 5210MHz

| Channel | Frequency (MHz) | Chain 0 PPSD (dBm) | Chain 1 PPSD (dBm) | PPSD (dBm) | Limit (dBm) | Result |
|---|---|---|---|---|---|---|
| Mid | 5210 | -7.93 | -8.74 | -5.31 | 2 | PASS |

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

*2. The maximum antenna gain is8.9dBi; therefore the reduction due to antenna gain is 2dBi, so the limit is 2dBm.*

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

| Channel | Frequency (MHz) | PPSD (dBm) | Limit (dBm) | Result |
|---|---|---|---|---|
| Low | 5745 | 1.69 | 8.00 | PASS |
| Mid | 5785 | 1.46 | | PASS |
| High | 5825 | 1.36 | | 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 | 5.14 | 4.13 | 7.67 | 6 | PASS |
| Mid | 5785 | 4.58 | 3.89 | 7.26 | | PASS |
| High | 5825 | 5.70 | 5.20 | 8.47 | | 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 | -2.18 | -3.40 | 0.26 | 6 | PASS |
| High | 5795 | -2.53 | -3.31 | 0.11 | | PASS |

### Test mode: IEEE 802.11n HT 80 MHz mode / 5775MHz

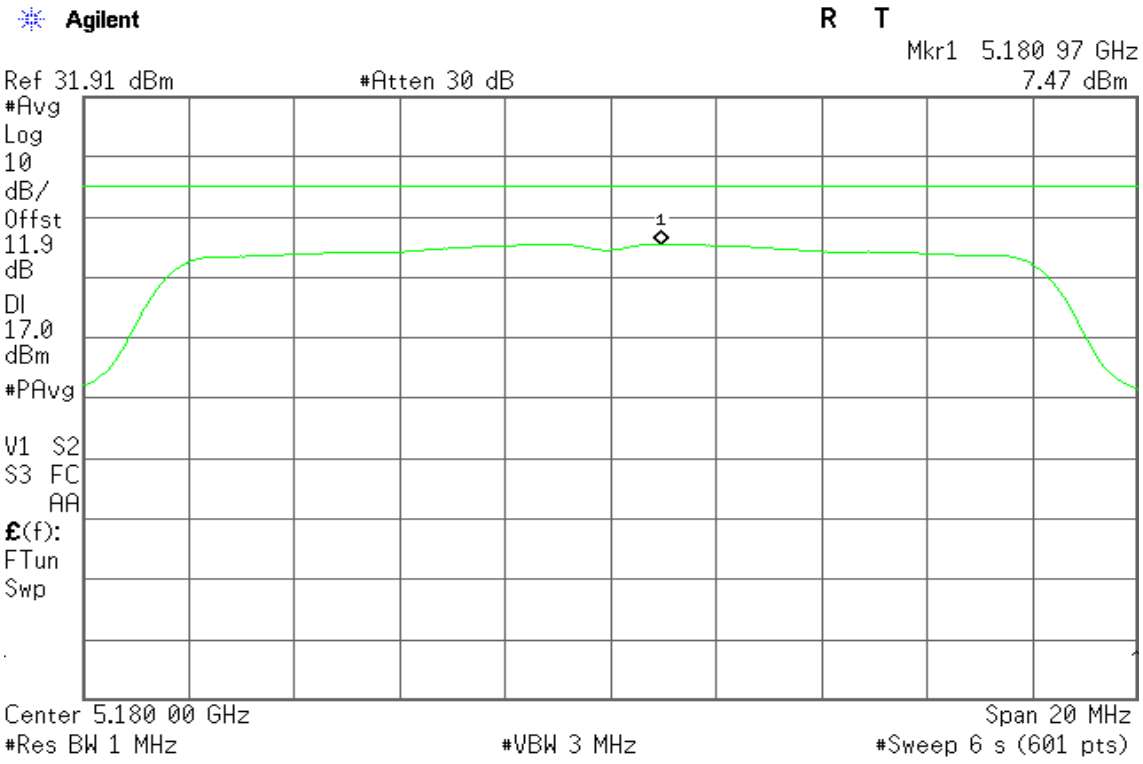
| Channel | Frequency (MHz) | Chain 0 PPSD (dBm) | Chain 1 PPSD (dBm) | PPSD (dBm) | Limit (dBm) | Result |
|---|---|---|---|---|---|---|
| Mid | 5775 | -9.14 | -9.26 | -6.19 | 6 | PASS |

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

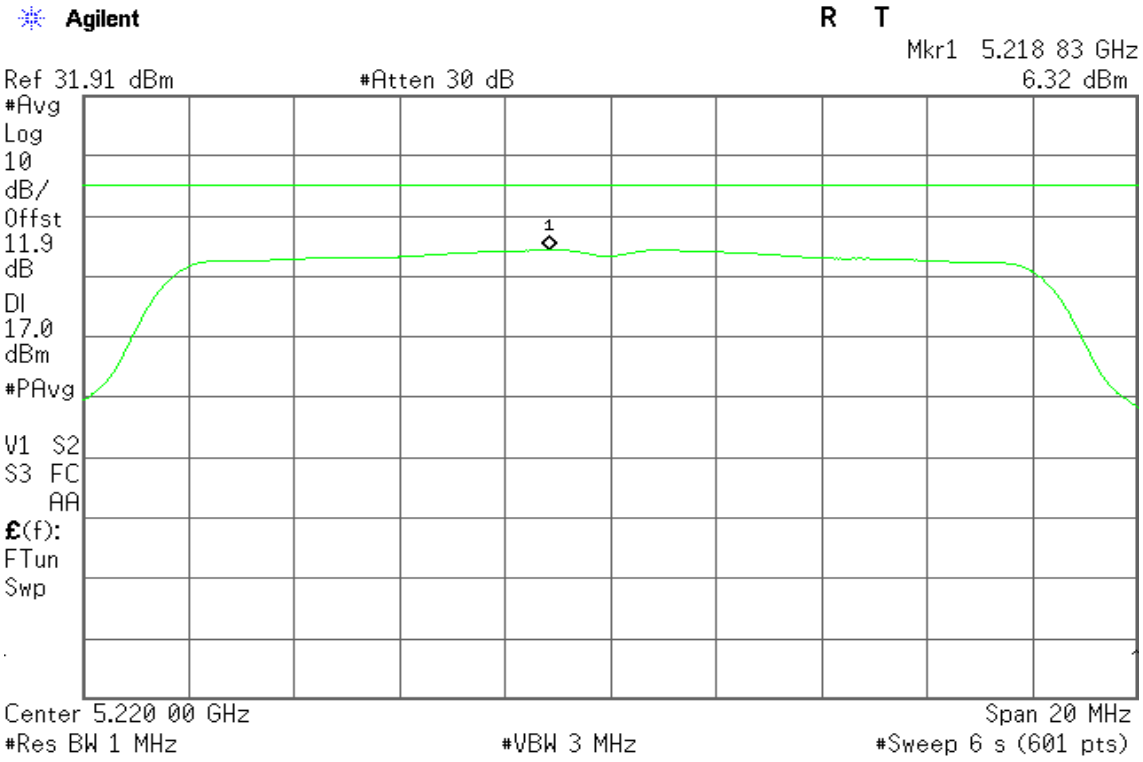
*2. The maximum antenna gain is 8dBi; therefore the reduction due to antenna gain is 2dBi, so the limit is 6dBm.*

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

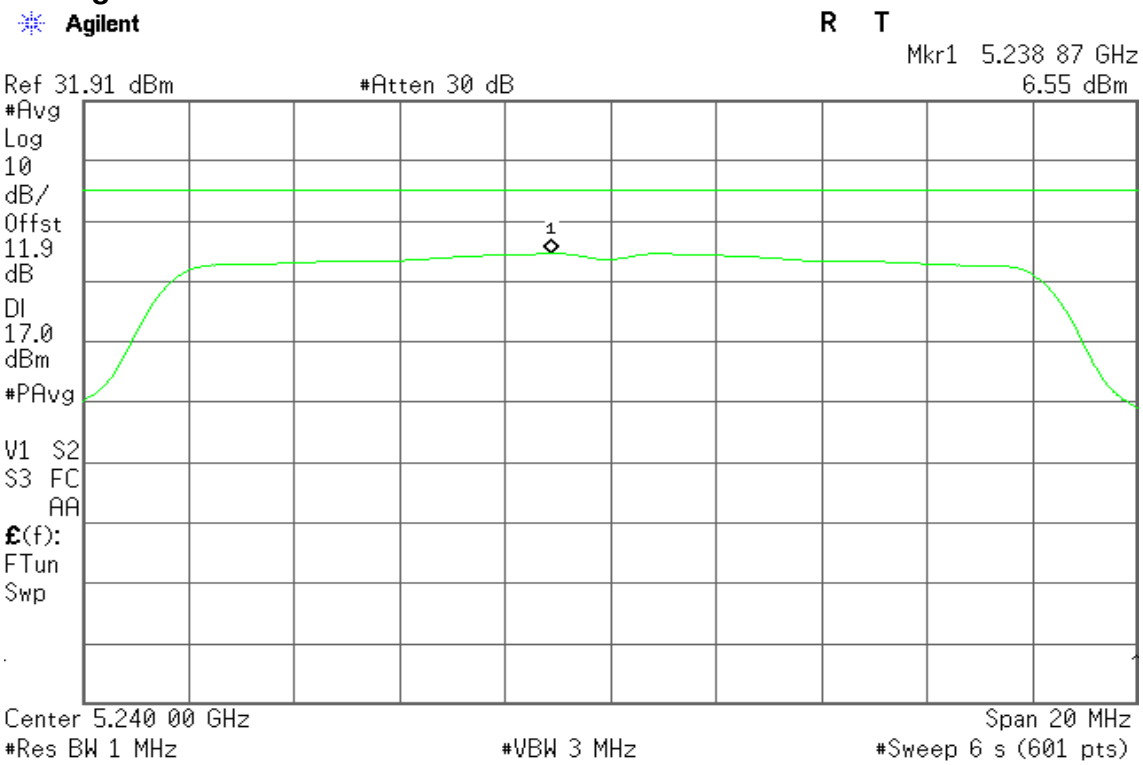
### CH Low




### CH Mid

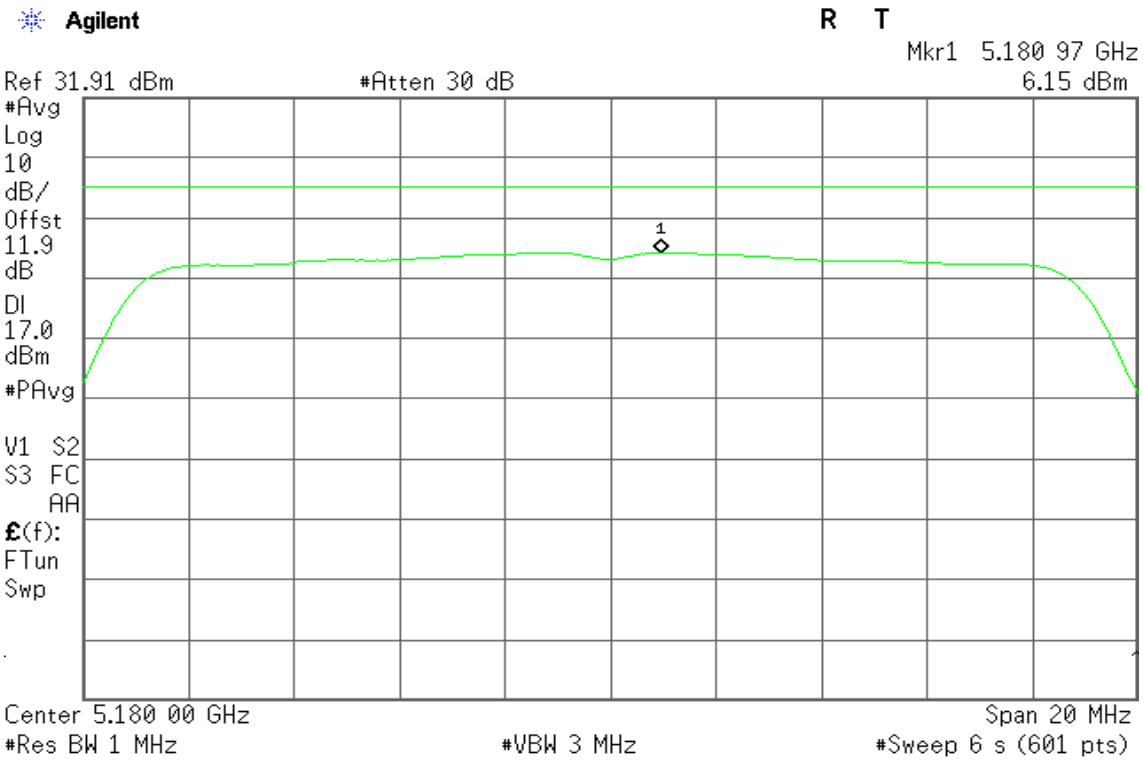


## CH High

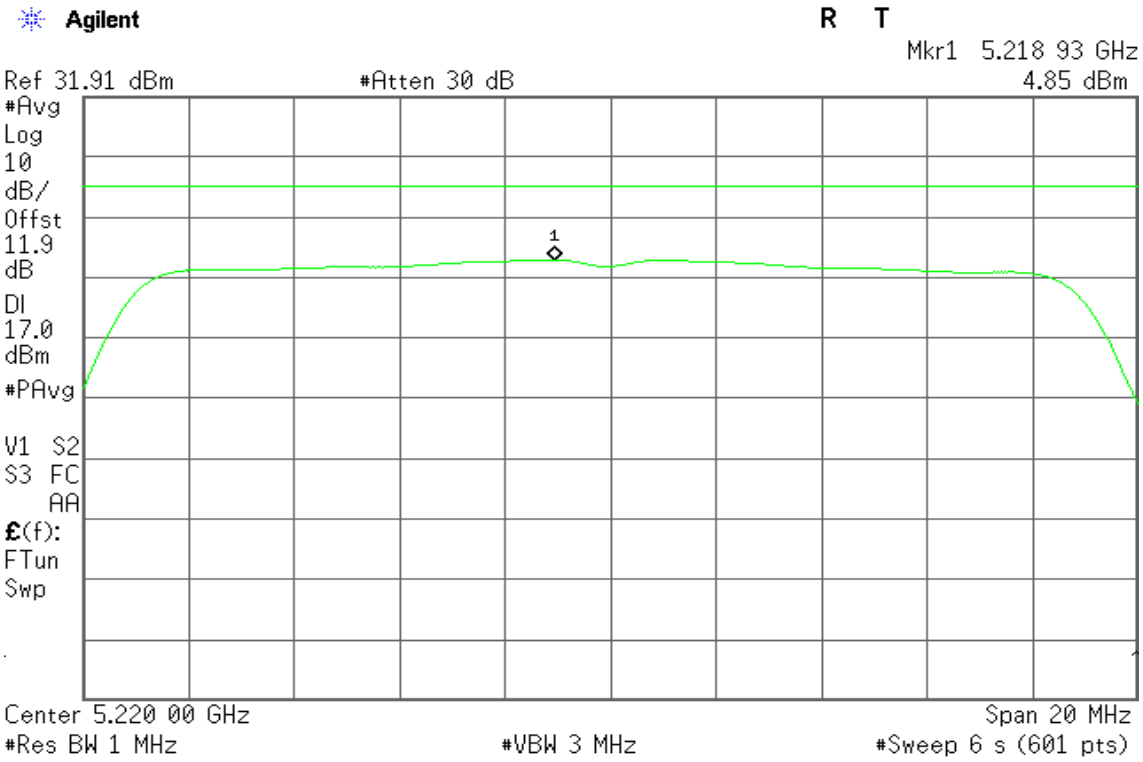



## IEEE 802.11n HT 20 mode / 5180 ~ 5240MHz / Chain 0

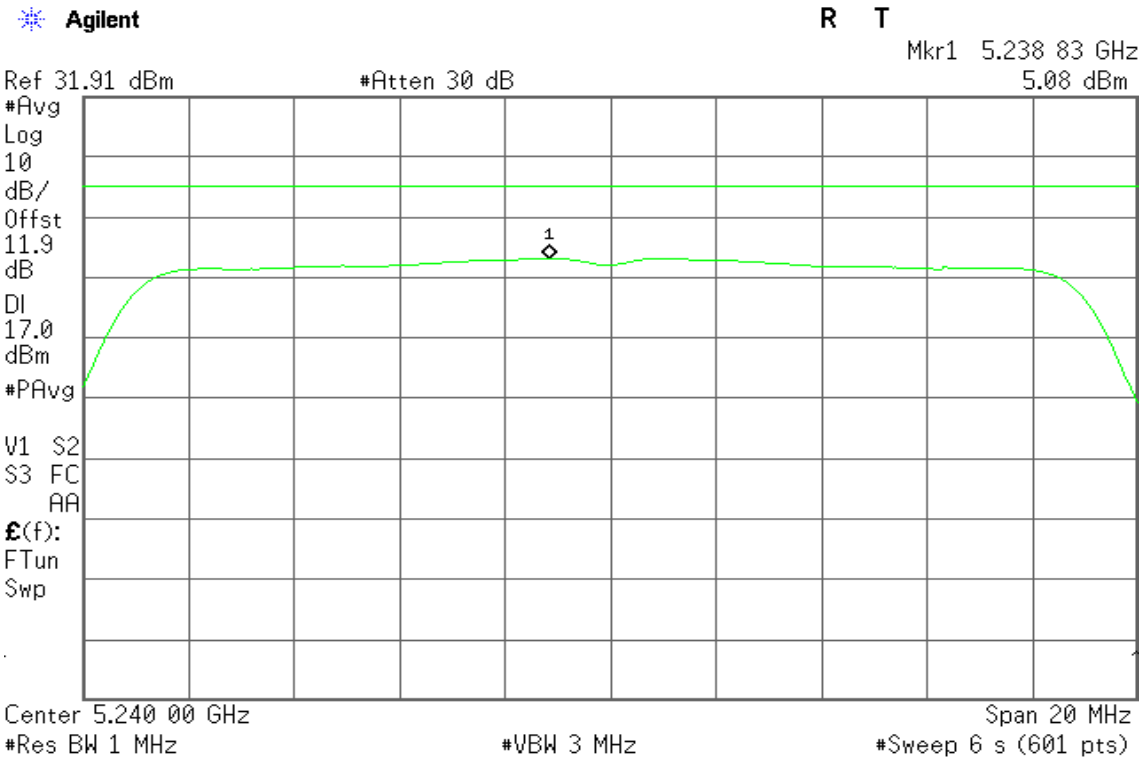
## CH Low



## CH Mid

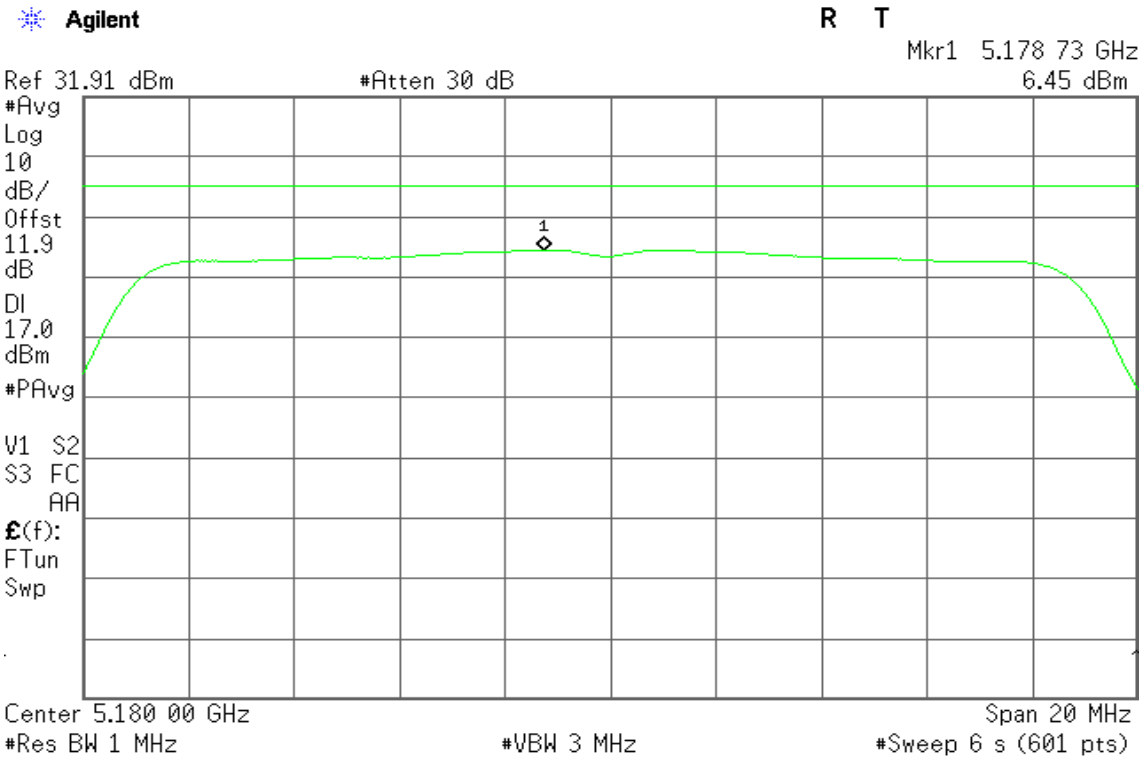



## CH High

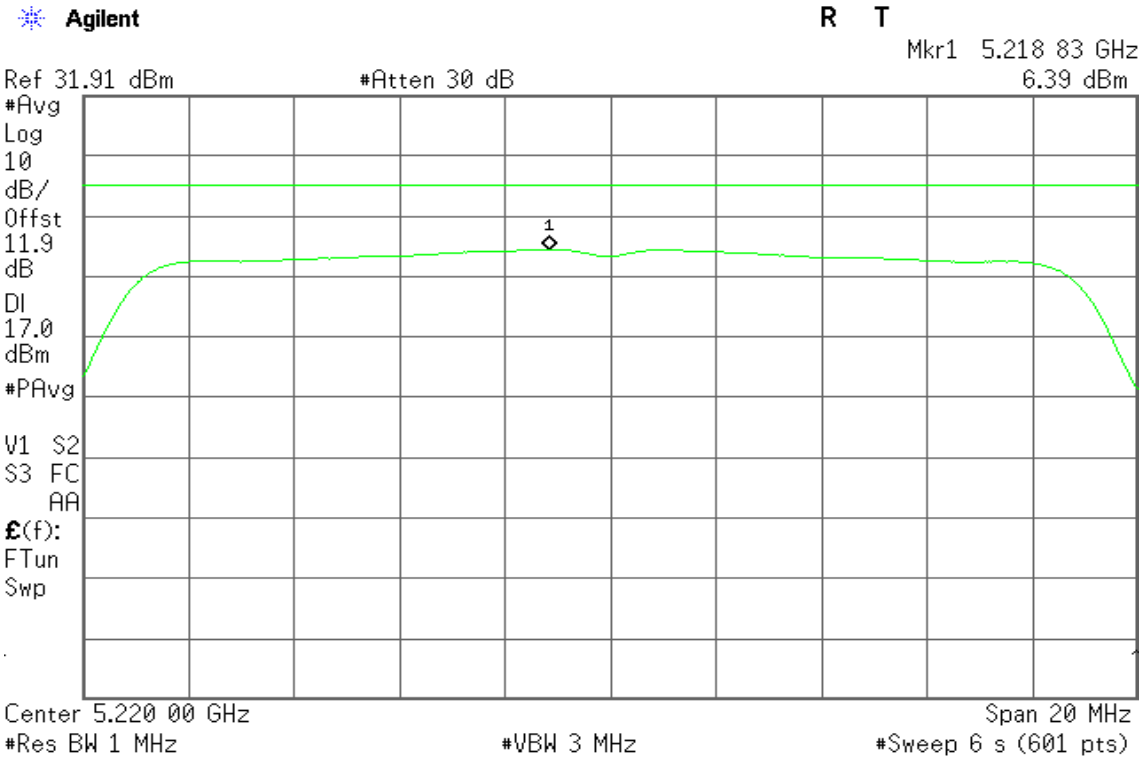


## IEEE 802.11n HT 20 mode / 5180 ~ 5240MHz / Chain 1

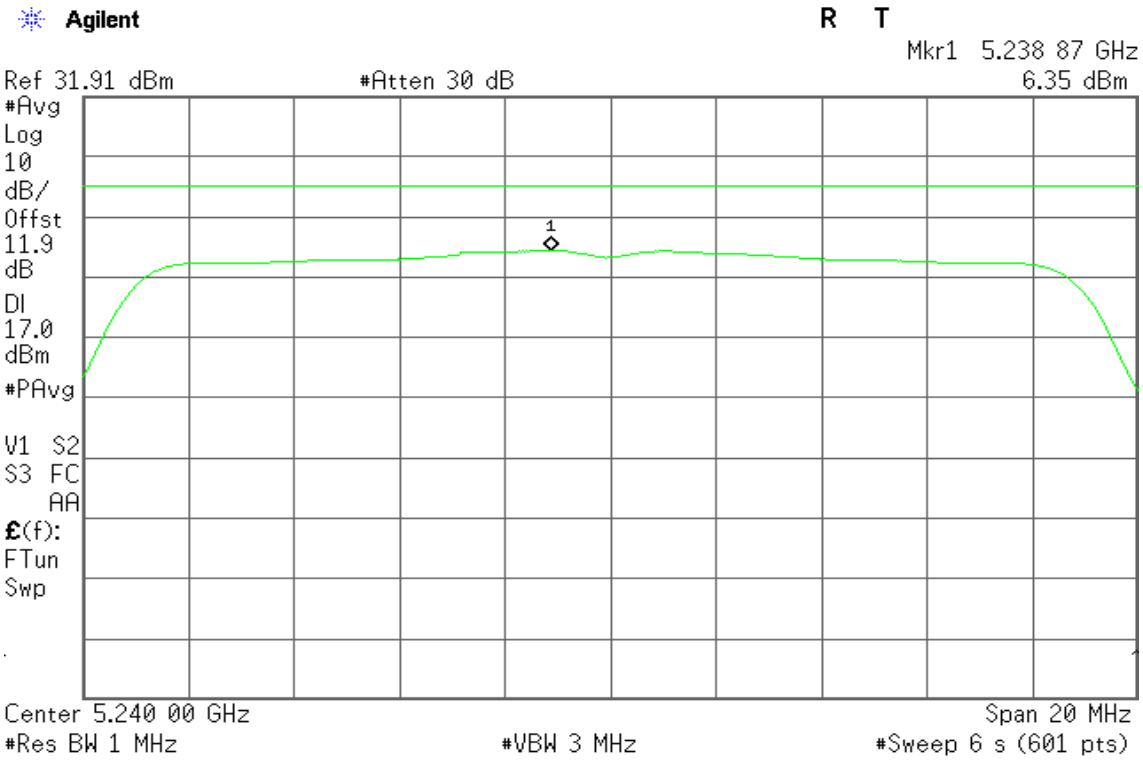
### CH Low




### CH Mid

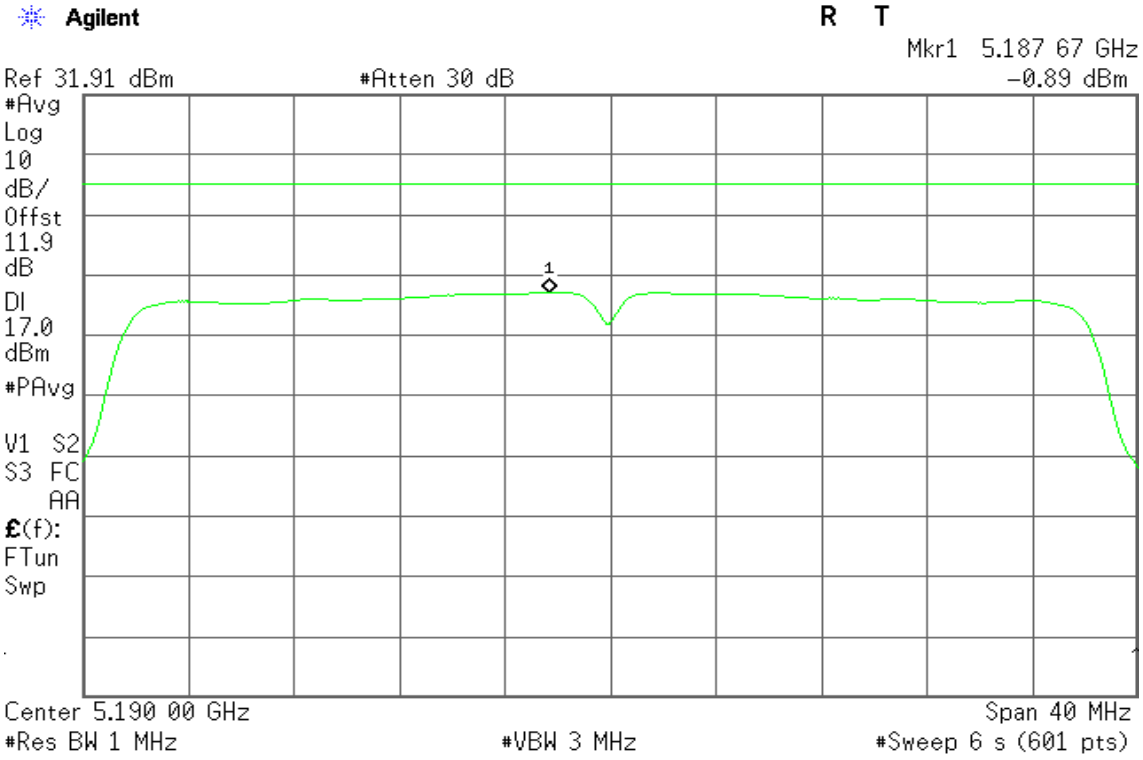


## CH High

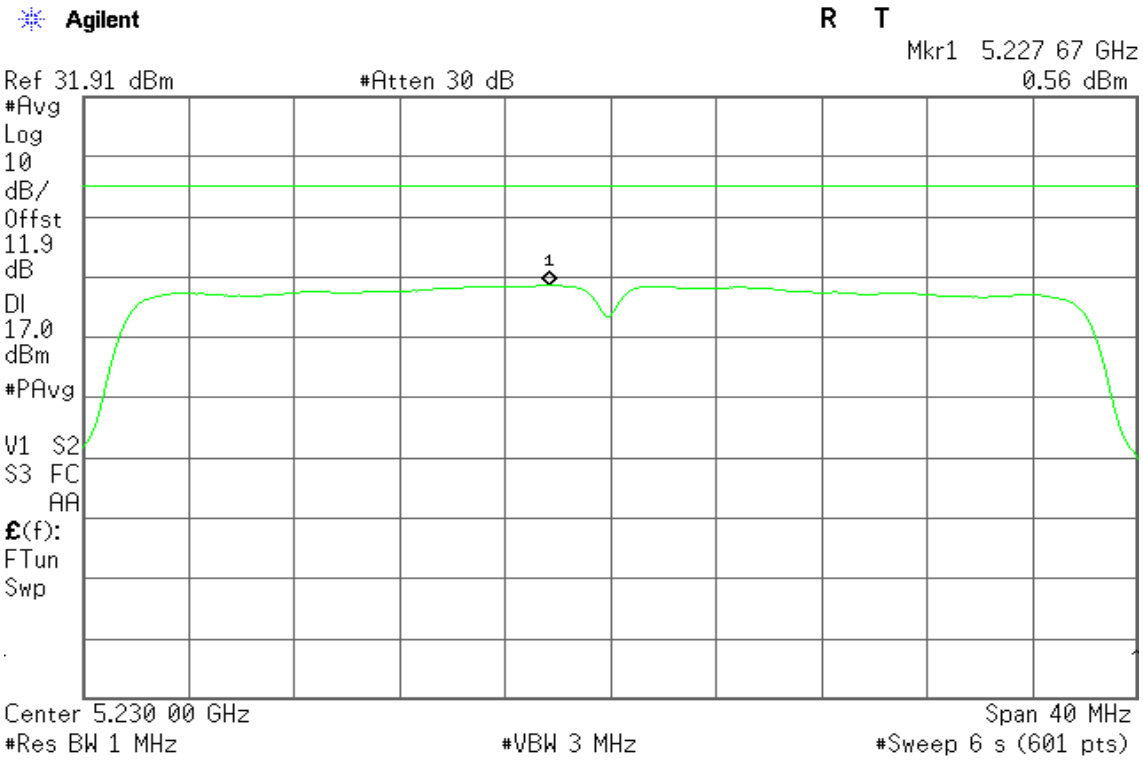



## IEEE 802.11n HT 40 mode / 5190 ~ 5230MHz / Chain 0

## CH Low

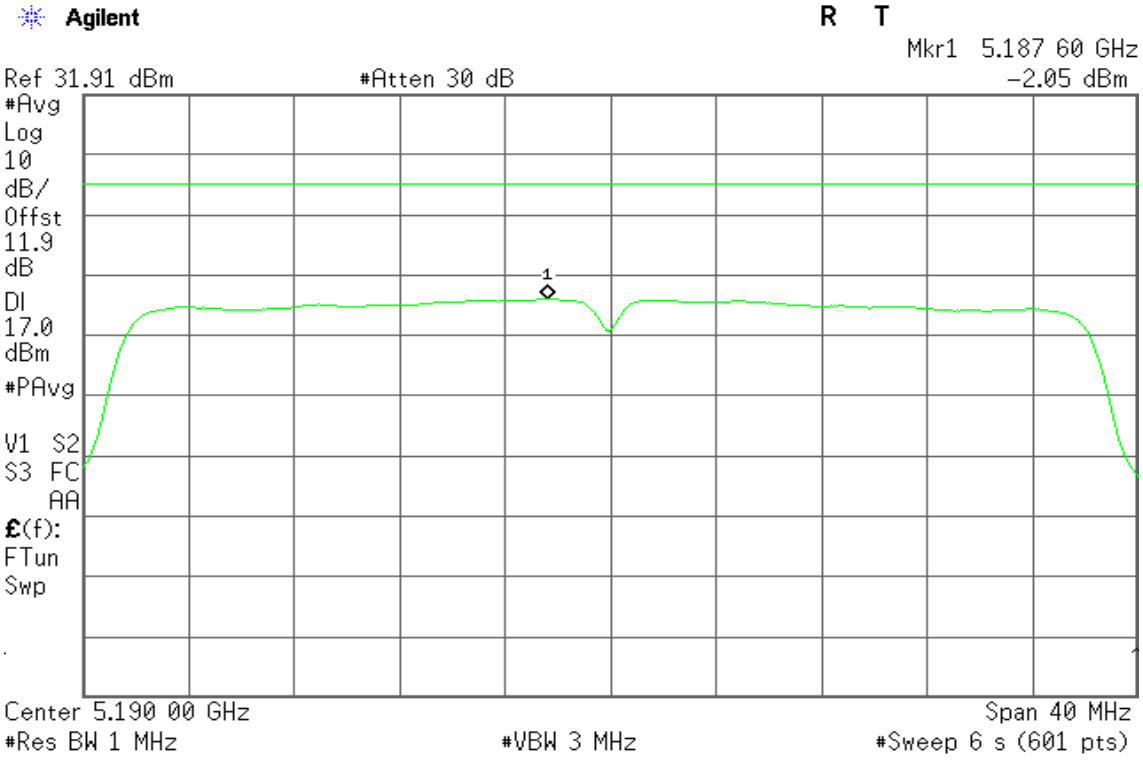


## CH High

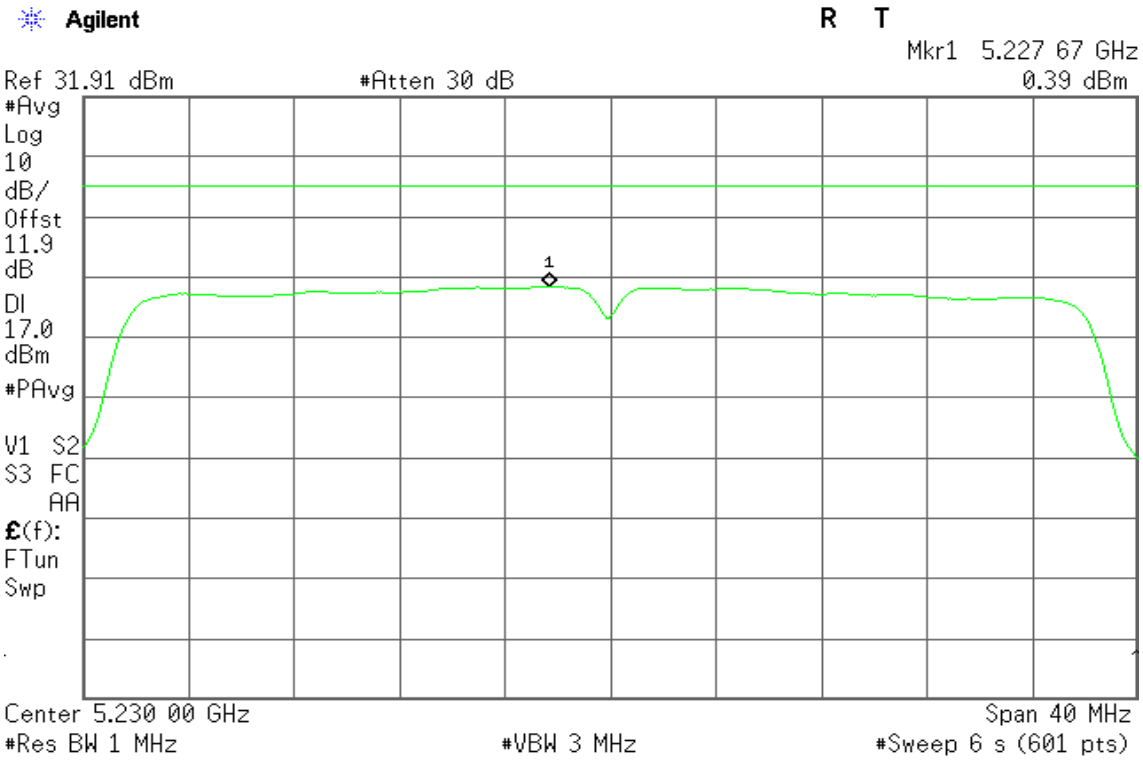



## IEEE 802.11n HT 40 mode / 5190 ~ 5230MHz / Chain 1

## CH Low

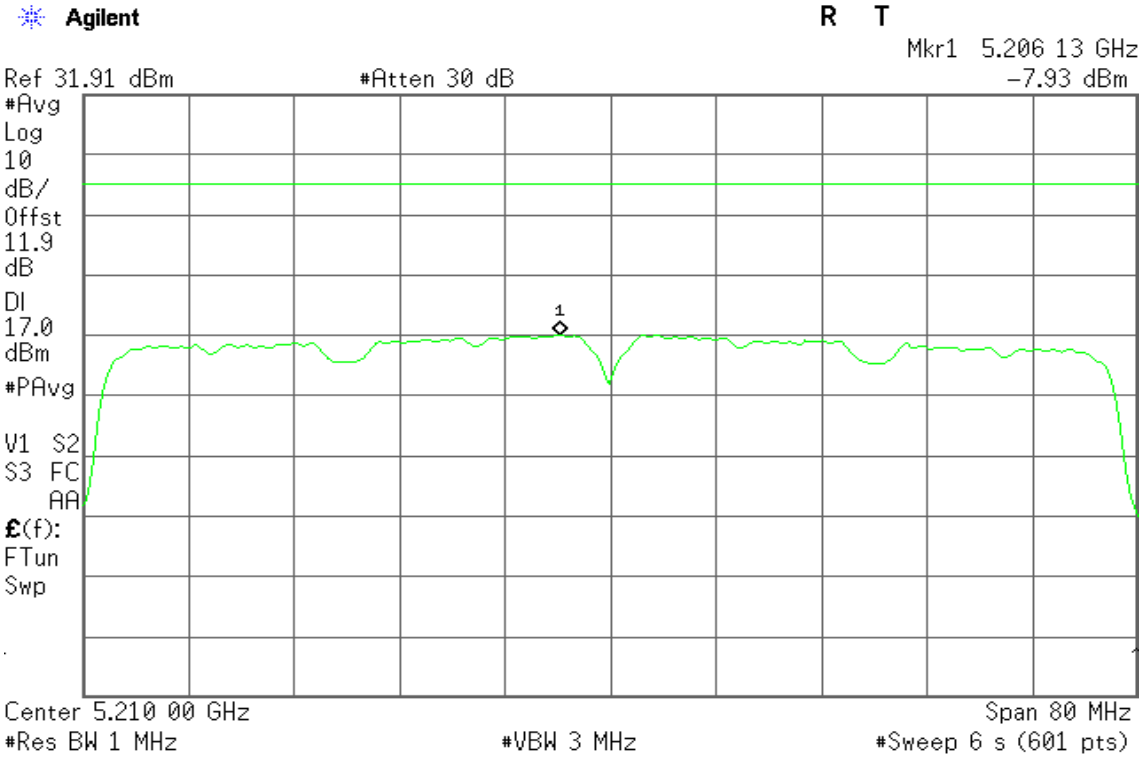


## CH High



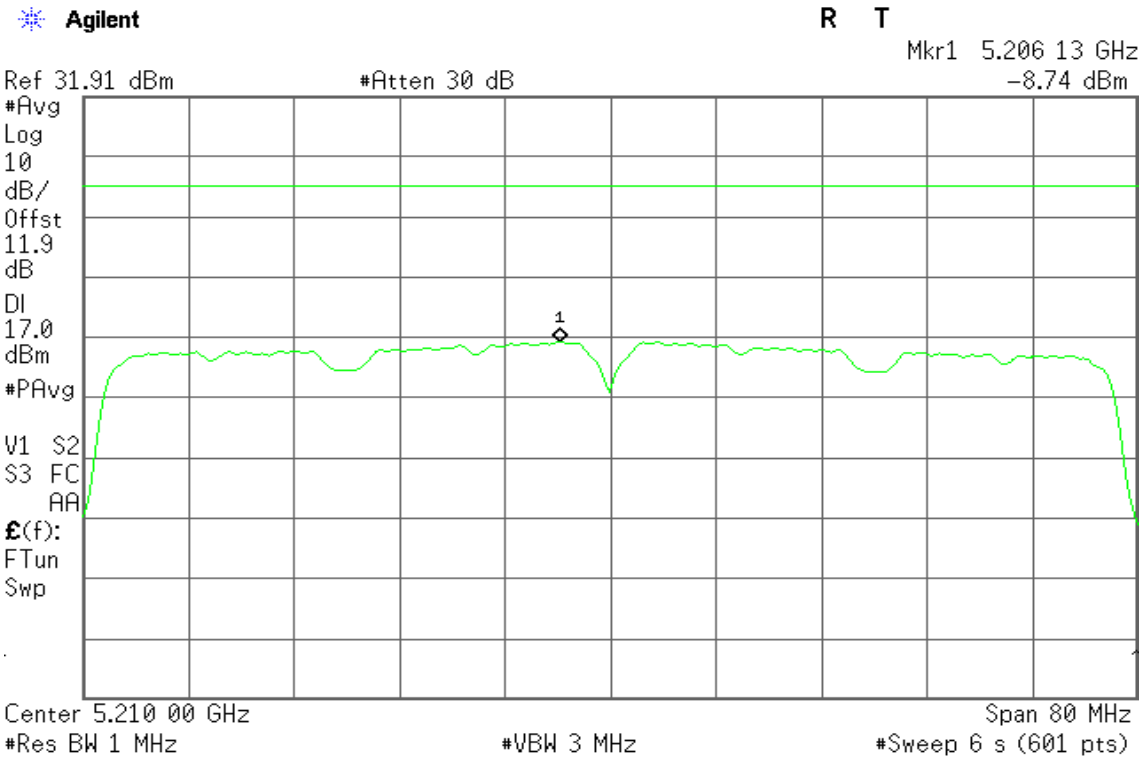

## IEEE 802.11n HT 80 MHz mode / 5210MHz / Chain 0

## CH Mid



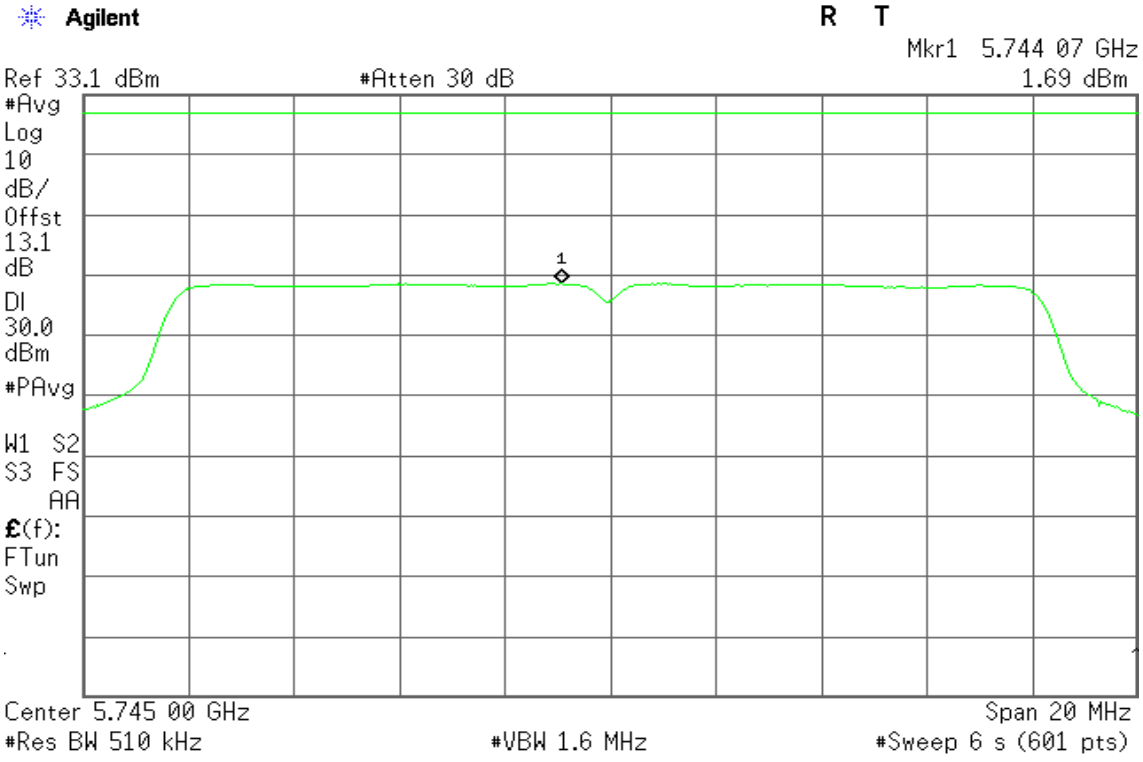
## IEEE 802.11n HT 80 MHz mode / 5210MHz / Chain 1

### CH Mid

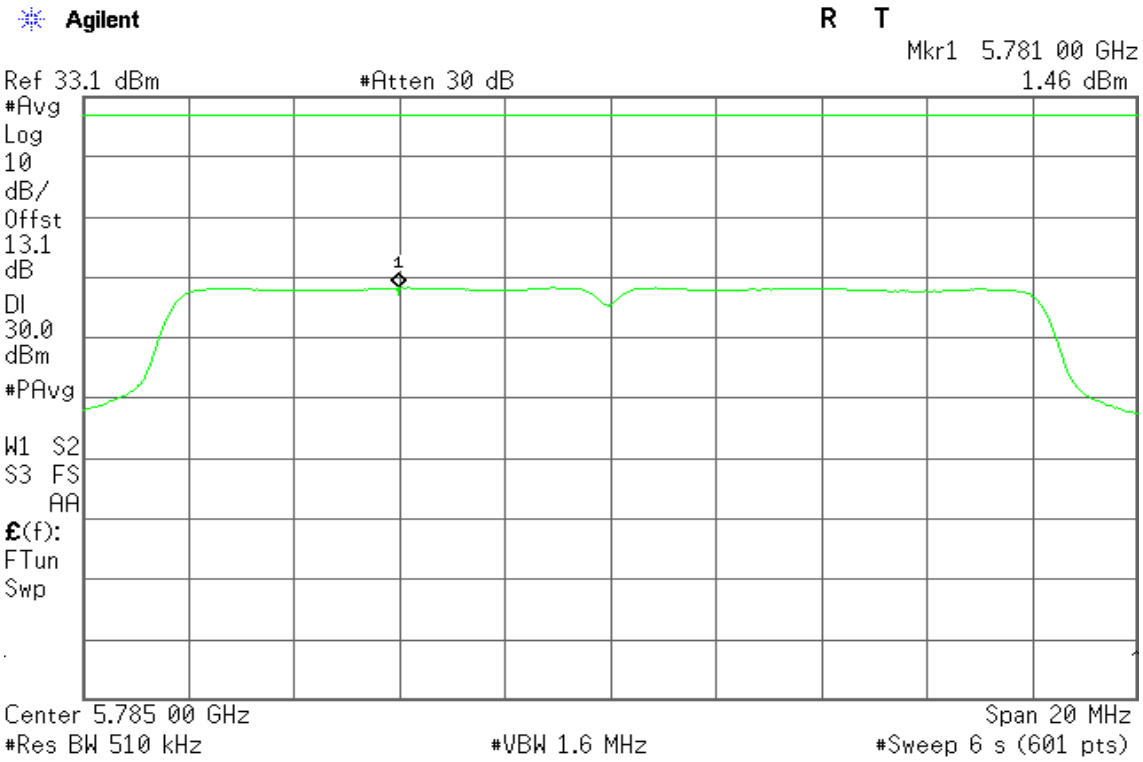



## IEEE 802.11a mode / 5745 ~ 5825MHz

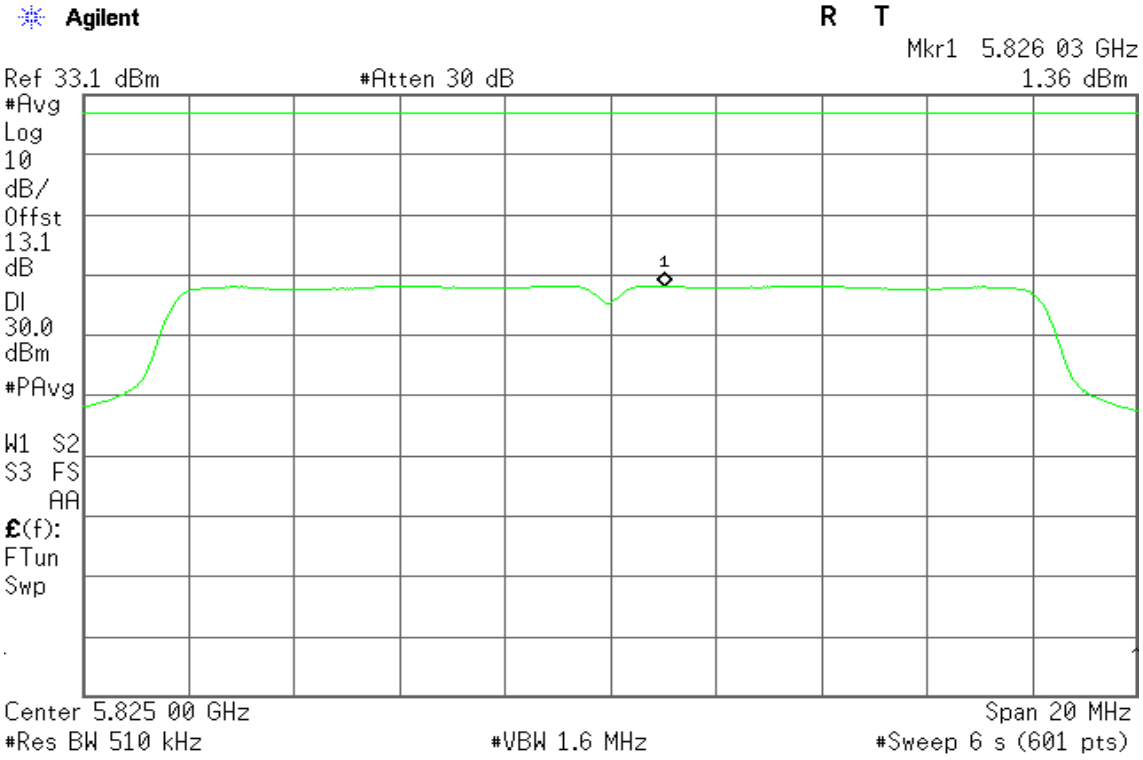
### CH Low



## CH Mid

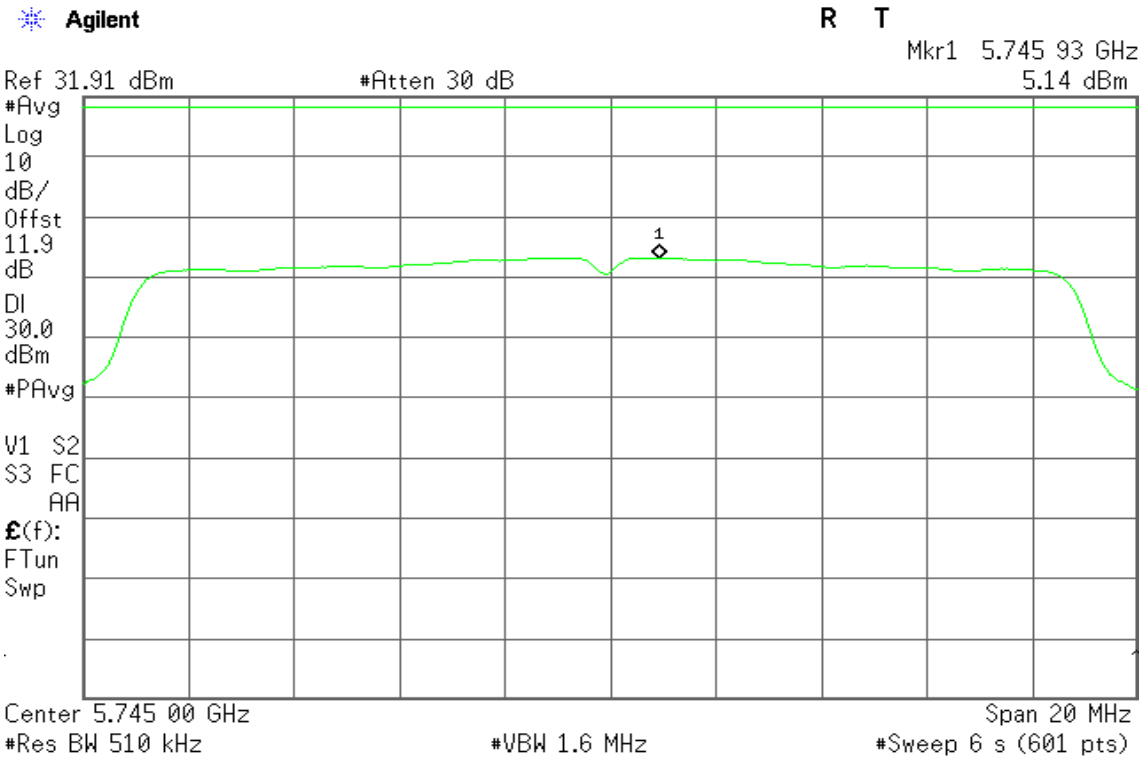



## CH High

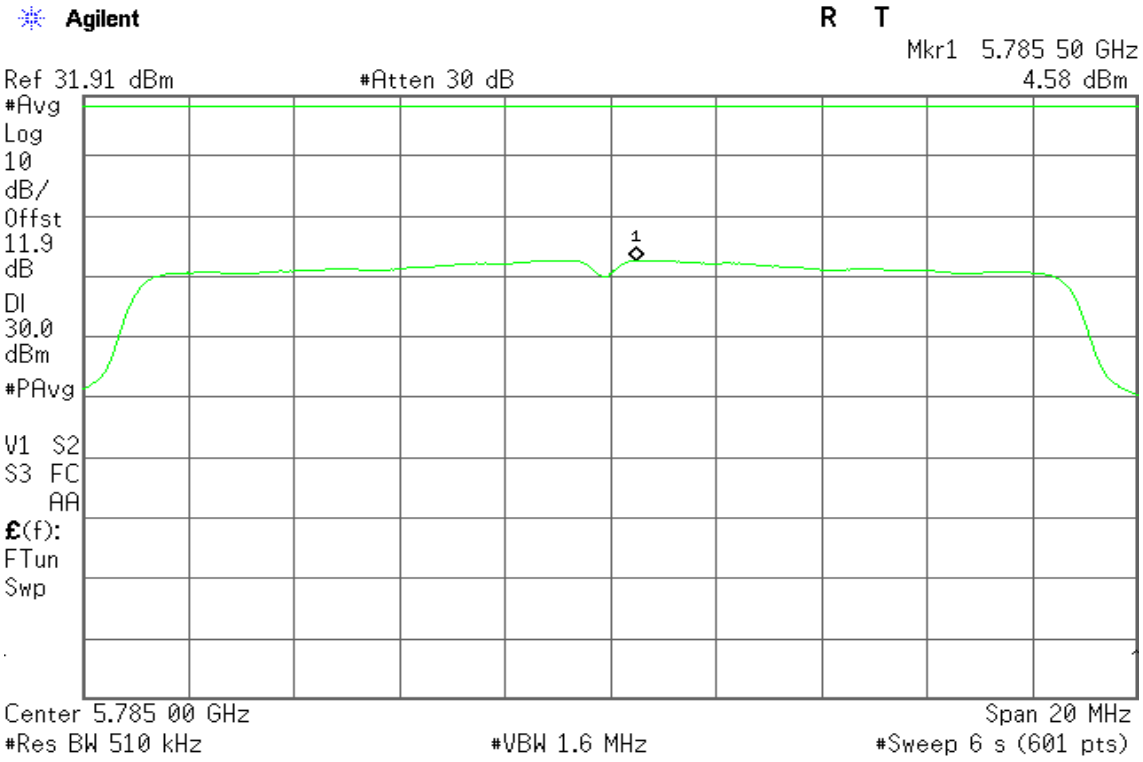


## IEEE 802.11n HT 20 mode / 5745 ~ 5825MHz / Chain 0

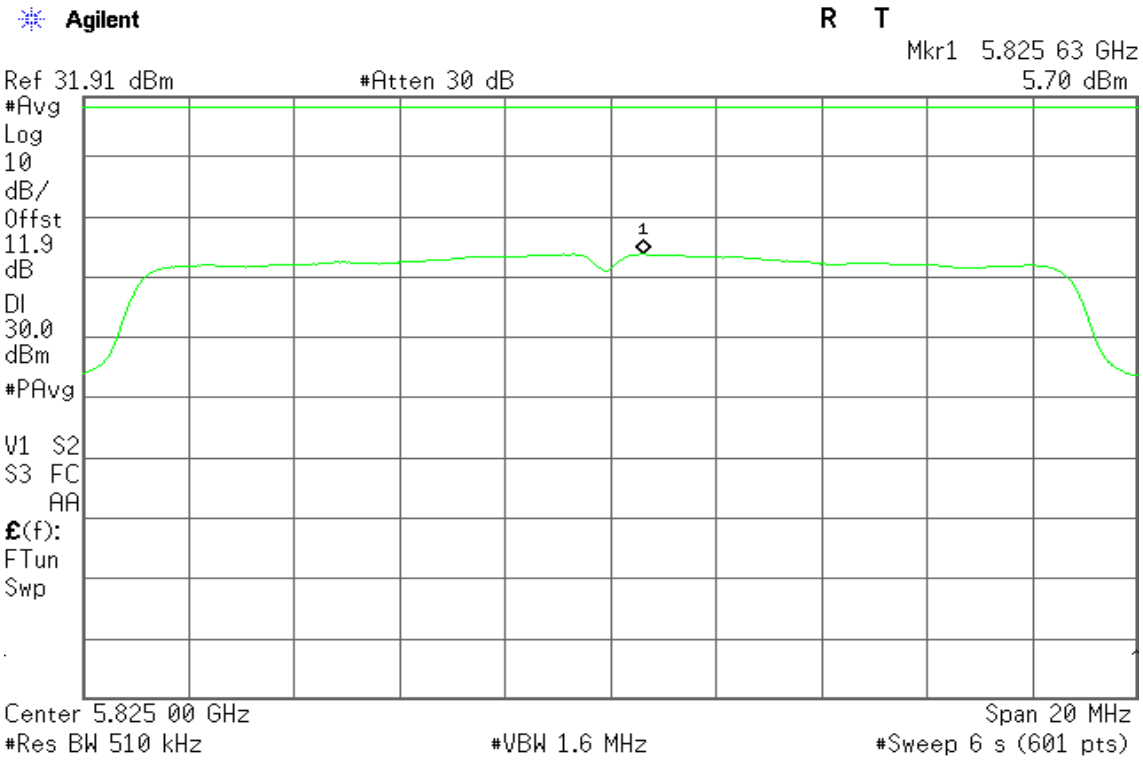
### CH Low




### CH Mid

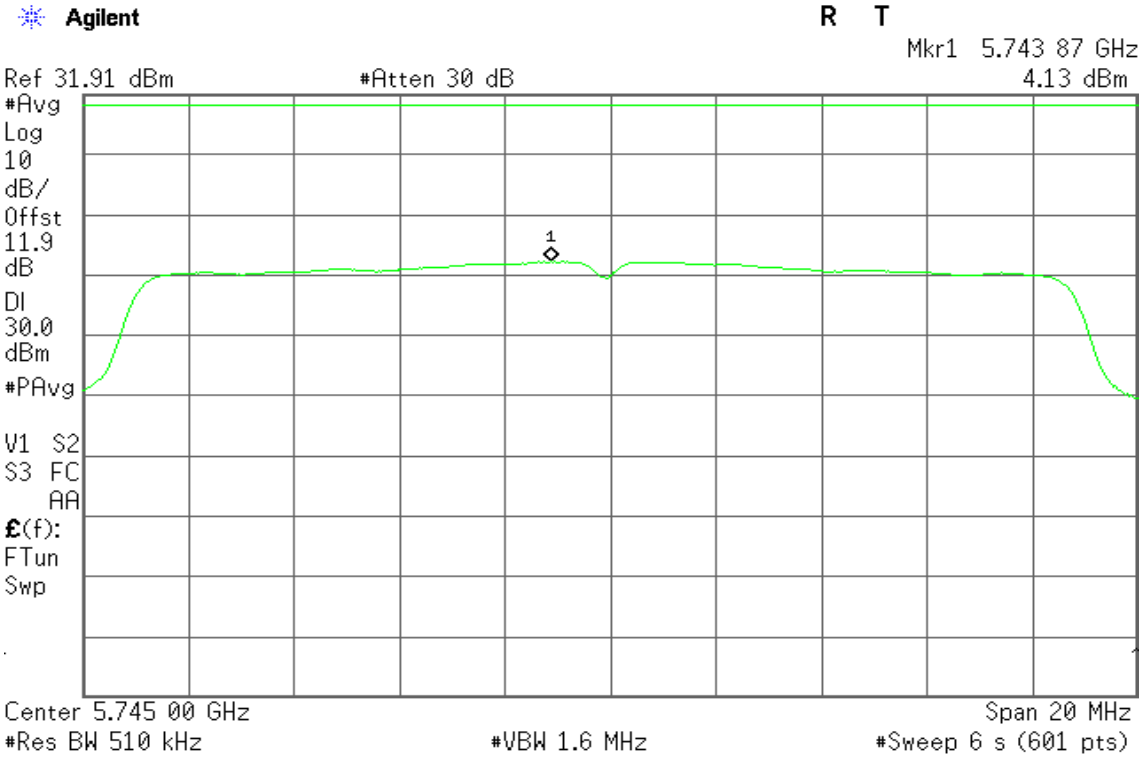


## CH High

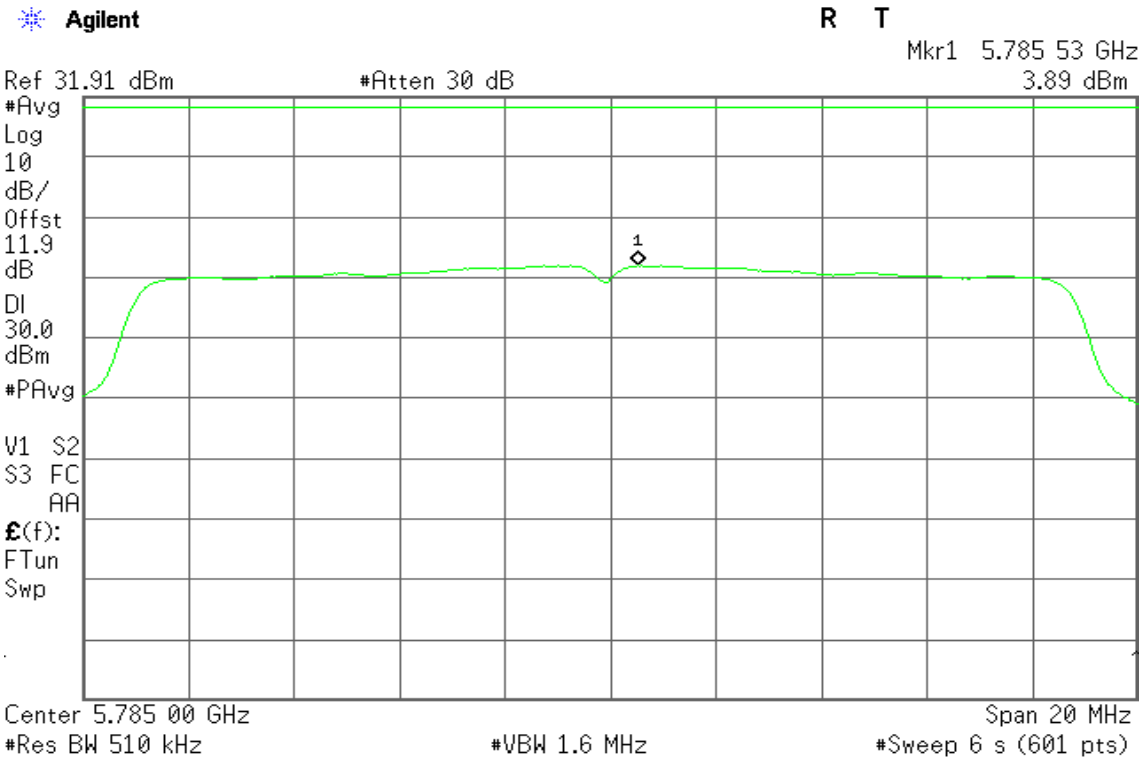



## IEEE 802.11n HT 20 mode / 5745 ~ 5825MHz / Chain 1

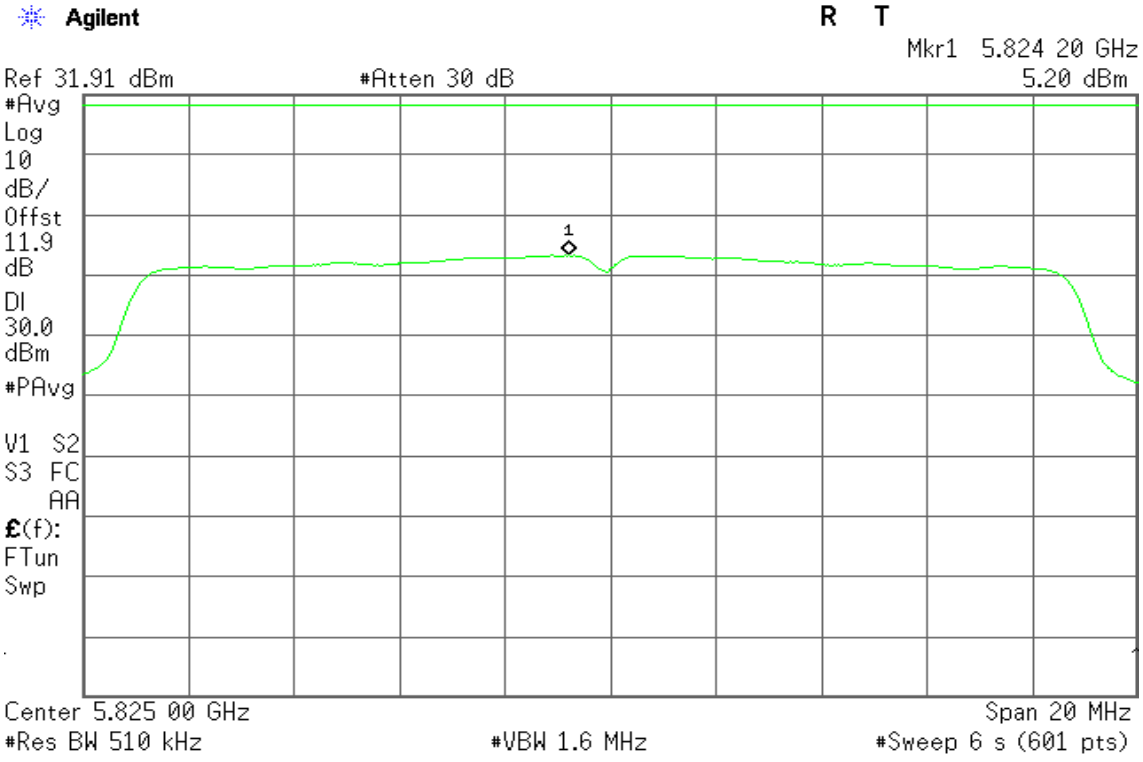
## CH Low



## CH Mid

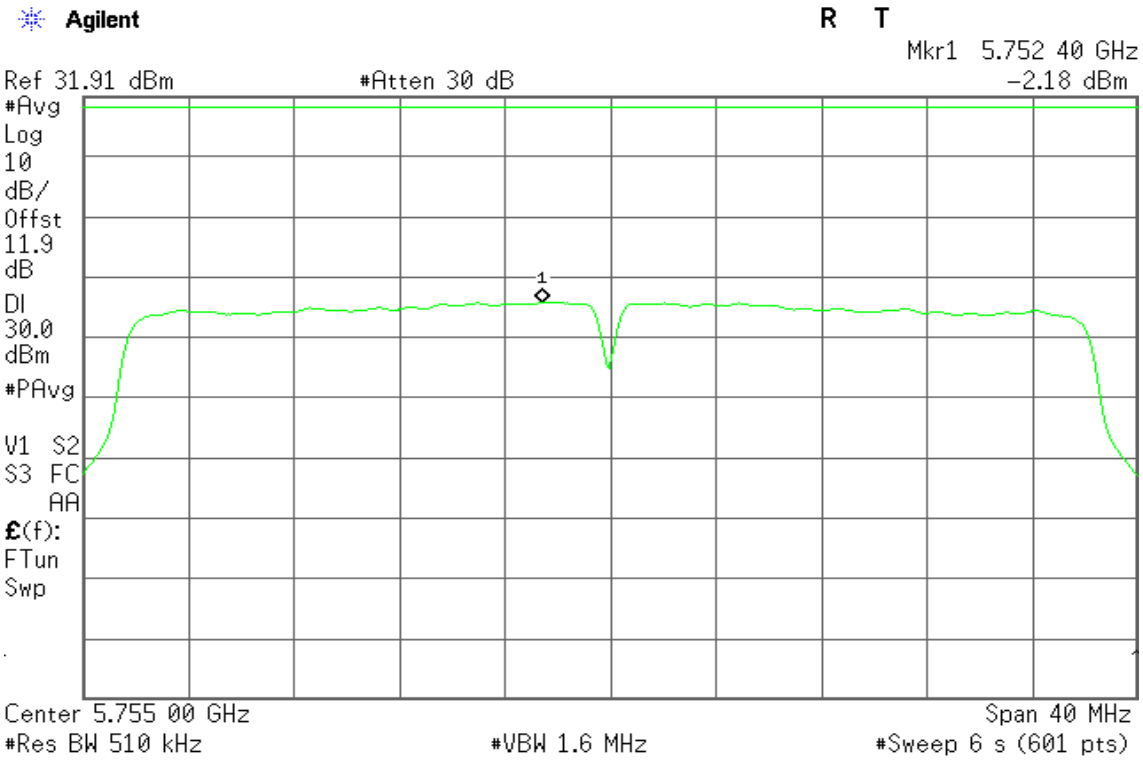



## CH High

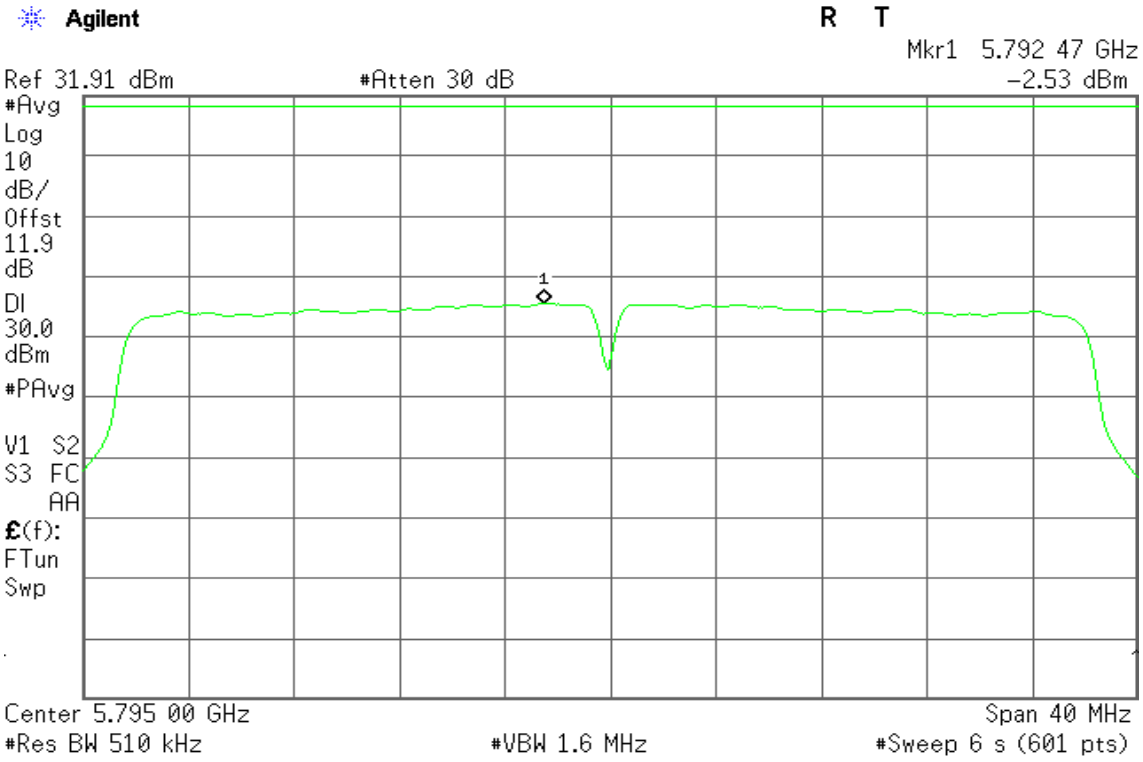


## IEEE 802.11n HT 40 mode / 5755 ~ 5795MHz / Chain 0

### CH Low

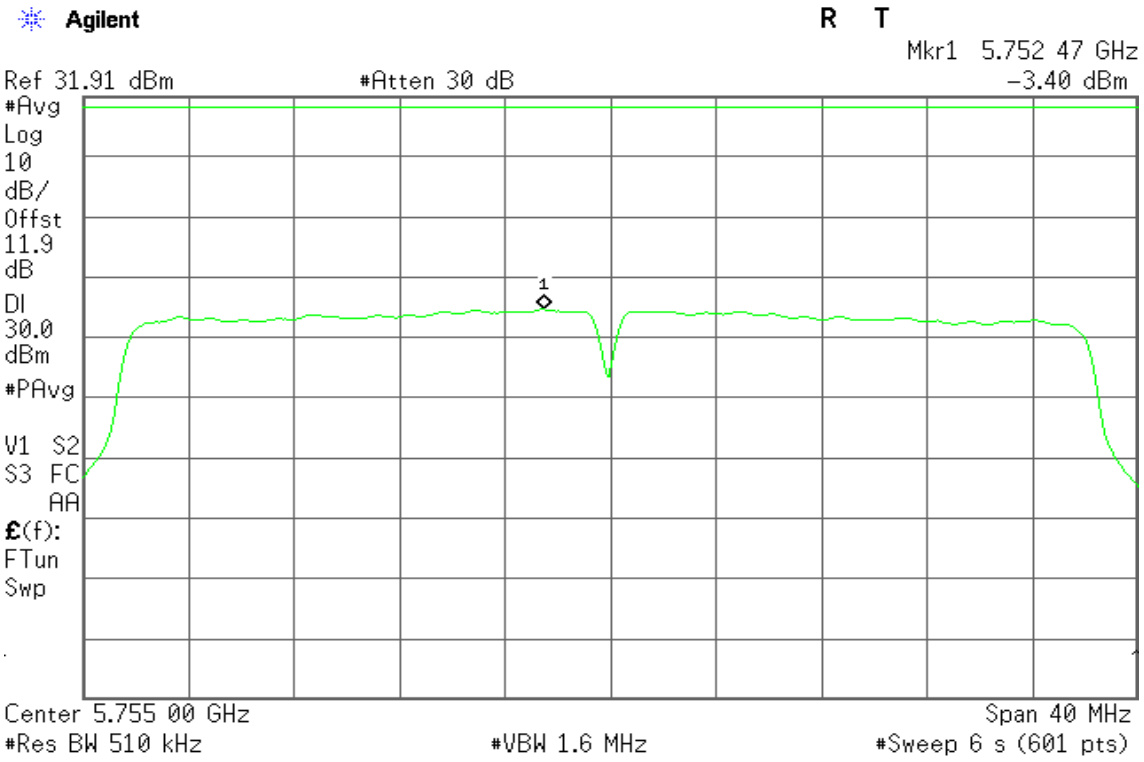



### CH High

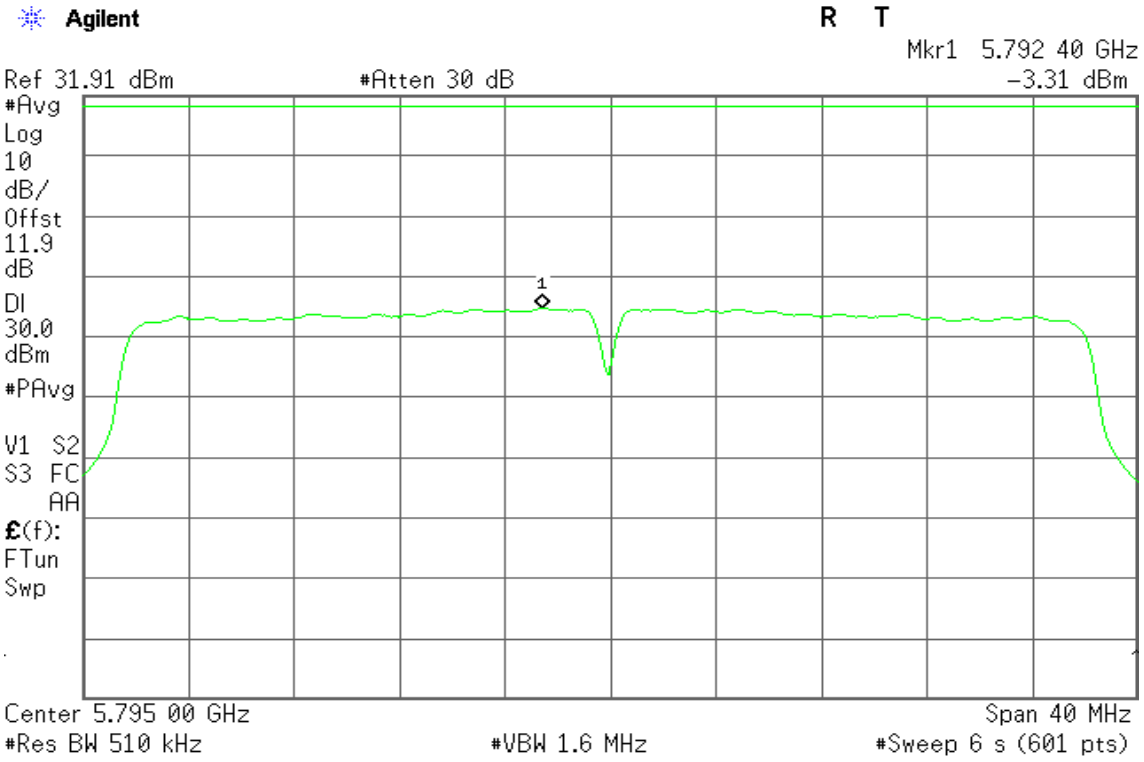


## IEEE 802.11n HT 40 mode / 5755 ~ 5795MHz / Chain 1

### CH Low

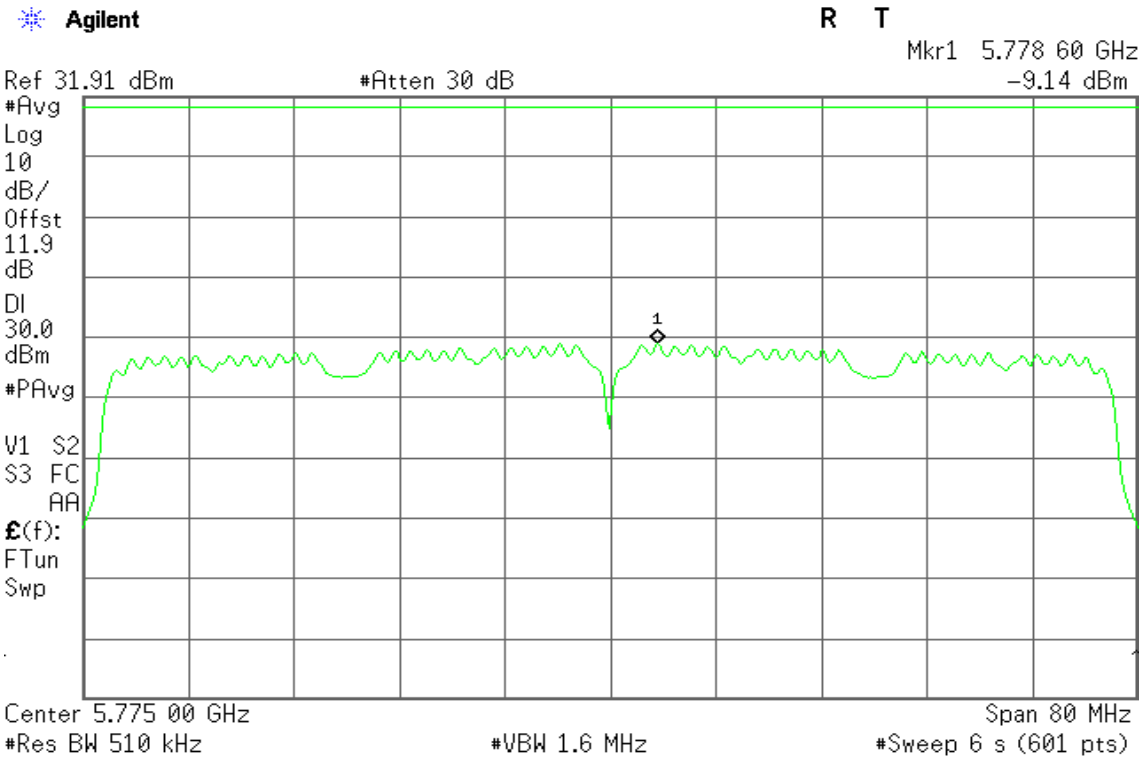



### CH High



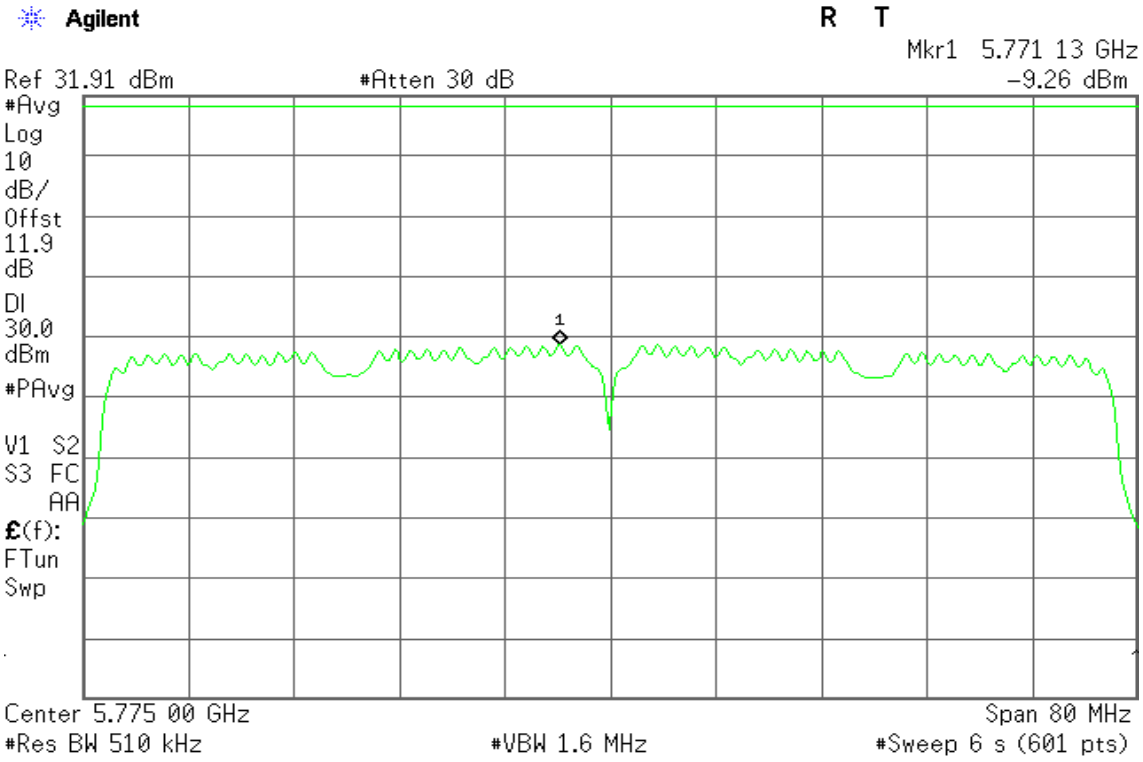
## IEEE 802.11n HT 80 MHz mode / 5775MHz / Chain 0

### CH Mid




## IEEE 802.11n HT 80 MHz 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 |

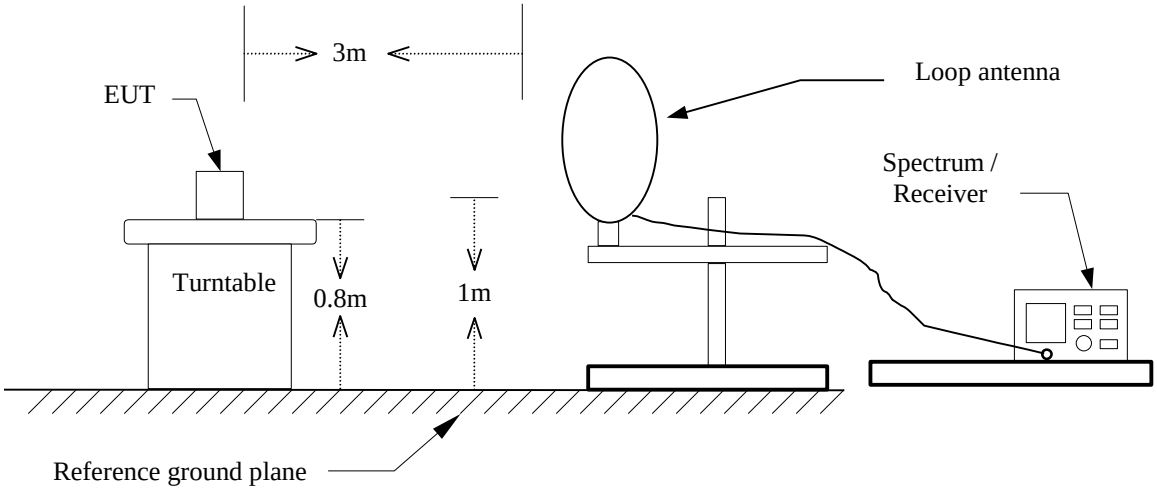
***Remark:*** *Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections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

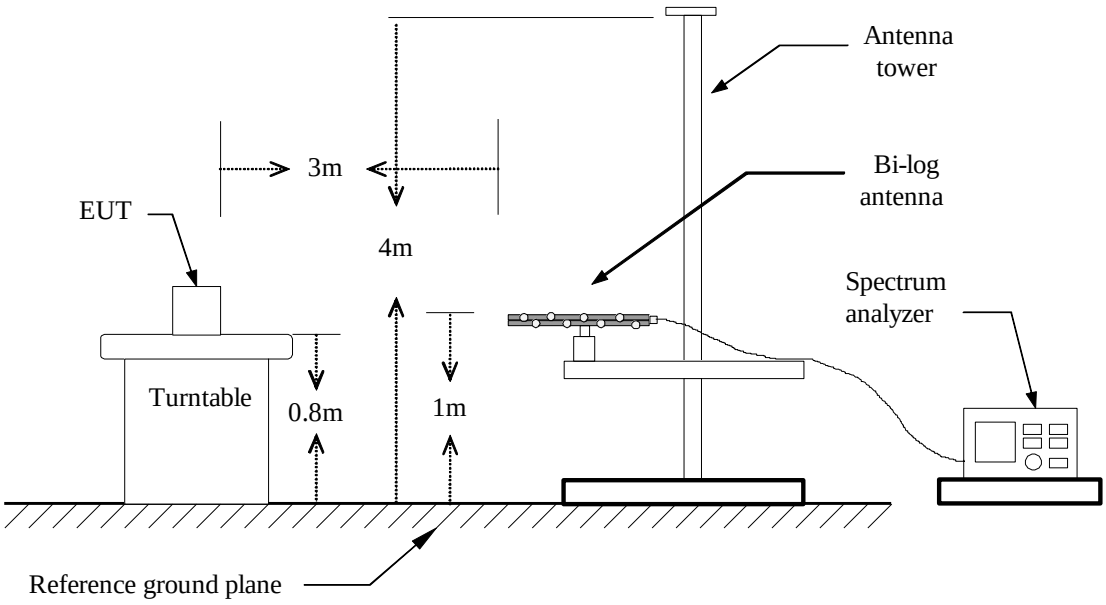
| Frequency (MHz) | Field Strength (μV/m at 3-meter) | Field Strength (dBμV/m at 3-meter) |
|---|---|---|
| 0.009 - 0.490 | 2400/F(kHz) +80 | 20LOG((2400/F(kHz))+80) |
| 0.490 - 1.705 | 24000/F(kHz) +40 | 20LOG((24000/F(kHz))+40) |
| 1.705 – 30.0 | 30 | 69.54 |
| 30-88 | 100 | 40 |
| 88-216 | 150 | 43.5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

## Test Configuration

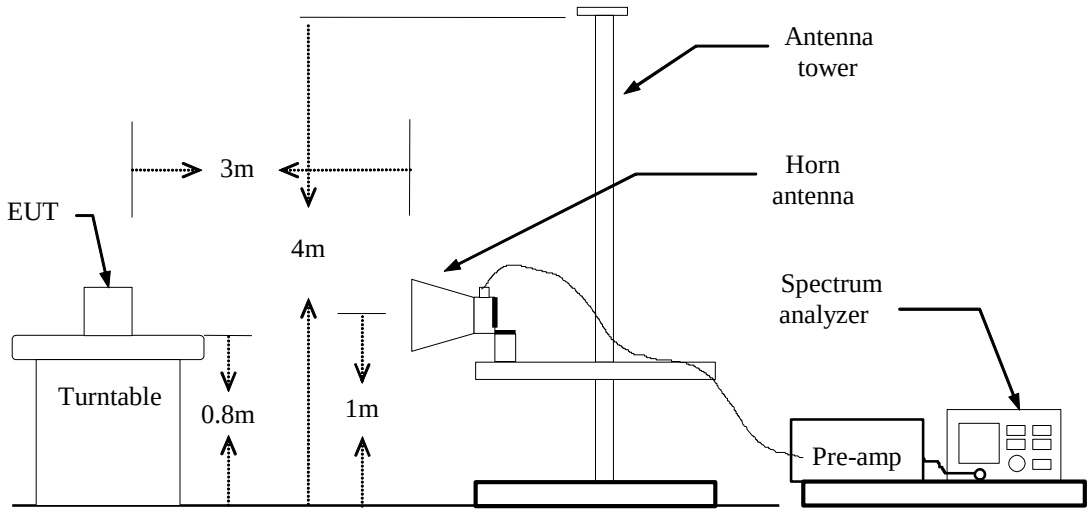
### 9kHz ~ 30MHz




### 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=VBW=1MHz / Sweep=AUTO

   (b) AVERAGE: RBW=1MHz / VBW=10Hz / Sweep=AUTO
7. Repeat above procedures until the measurements for all frequencies are complete.

## For printed Antenna

### Below 1 GHz

**Operation Mode:** Normal Link
**Test Date:** December 29, 2014
**Temperature:** 27°C
**Tested by:** Andy Shi
**Humidity:** 53% RH
**Polarity:** Ver. / Hor.

| Frequency (MHz) | Reading (dBuV) | Correction Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark | Ant.Pol. (H/V) |
|---|---|---|---|---|---|---|---|
| 98.8700 | 39.35 | -21.19 | 18.16 | 43.50 | -25.34 | peak | V |
| 280.2600 | 34.22 | -16.76 | 17.46 | 46.00 | -28.54 | peak | V |
| 456.8000 | 28.83 | -12.55 | 16.28 | 46.00 | -29.72 | peak | V |
| 665.3500 | 31.64 | -9.15 | 22.49 | 46.00 | -23.51 | peak | V |
| 719.6700 | 26.09 | -8.43 | 17.66 | 46.00 | -28.34 | peak | V |
| 951.5000 | 25.06 | -5.46 | 19.60 | 46.00 | -26.40 | peak | V |
| | | | | | | | |
| 120.2100 | 33.43 | -17.37 | 16.06 | 43.50 | -27.44 | peak | H |
| 239.5200 | 35.19 | -18.62 | 16.57 | 46.00 | -29.43 | peak | H |
| 335.5500 | 35.79 | -15.54 | 20.25 | 46.00 | -25.75 | peak | H |
| 455.8300 | 28.07 | -12.56 | 15.51 | 46.00 | -30.49 | peak | H |
| 665.3500 | 40.63 | -9.15 | 31.48 | 46.00 | -14.52 | peak | H |
| 832.1900 | 25.46 | -6.99 | 18.47 | 46.00 | -27.53 | peak | H |

***Remark:***

1. *No emission found between lowest internal used/generated frequency to 30MHz (9kHz~30MHz)*
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.*
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) – Quasi-peak limit (dBuV/m).*

**Above 1 GHz**

| | | | |
|---|---|---|---|
| **Operation Mode:** | Tx / IEEE 802.11a mode / 5180 ~ 5240MHz / CH Low | **Test Date:** | December 30, 2014 |
| **Temperature:** | 27°C | **Tested by:** | Andy Shi |
| **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) |
|---|---|---|---|---|---|---|---|
| 1924.000 | 57.12 | -5.28 | 51.84 | 74.00 | -22.16 | peak | V |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
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| | | | | | | | |
| | | | | | | | |
| 3779.000 | 52.41 | 0.28 | 52.69 | 74.00 | -21.31 | peak | H |
| N/A | | | | | | | |
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***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:** | December 30, 2014 |
| **Temperature:** | 27°C | **Tested by:** | Andy Shi |
| **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) |
|---|---|---|---|---|---|---|---|
| 2330.000 | 53.46 | -4.22 | 49.24 | 74.00 | -24.76 | peak | V |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 1735.000 | 59.03 | -6.28 | 52.75 | 74.00 | -21.25 | peak | H |
| N/A | | | | | | | |
| | | | | | | | |
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***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:** | December 30, 2014 |
| **Temperature:** | 27°C | **Tested by:** | Andy Shi |
| **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) |
|---|---|---|---|---|---|---|---|
| 2330.000 | 51.93 | -4.22 | 47.71 | 74.00 | -26.29 | peak | V |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 4171.000 | 50.74 | 1.88 | 52.62 | 74.00 | -21.38 | peak | H |
| N/A | | | | | | | |
| | | | | | | | |
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***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:** | December 31, 2014 |
| **Temperature:** | 27°C | **Tested by:** | Andy Shi |
| **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) |
|---|---|---|---|---|---|---|---|
| 3702.000 | 53.85 | 3.84 | 57.69 | 74.00 | -16.31 | peak | V |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 3660.000 | 53.39 | 3.67 | 57.06 | 74.00 | -16.94 | 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:** | December 31, 2014 |
| **Temperature:** | 27°C | **Tested by:** | Andy Shi |
| **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) |
|---|---|---|---|---|---|---|---|
| 4108.000 | 51.44 | 5.55 | 56.99 | 74.00 | -17.01 | peak | V |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 4402.000 | 52.13 | 6.82 | 58.95 | 74.00 | -15.05 | 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 20 mode / 5180 ~ 5240MHz / CH High | **Test Date:** | December 31, 2014 |
| **Temperature:** | 27°C | **Tested by:** | Andy Shi |
| **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) |
|---|---|---|---|---|---|---|---|
| 3772.000 | 52.42 | 4.13 | 56.55 | 74.00 | -17.45 | peak | V |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 4150.000 | 51.76 | 5.73 | 57.49 | 74.00 | -16.51 | 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 Low | **Test Date:** | December 31, 2014 |
| **Temperature:** | 27°C | **Tested by:** | Andy Shi |
| **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) |
|---|---|---|---|---|---|---|---|
| 3737.000 | 54.35 | 3.99 | 58.34 | 74.00 | -15.66 | peak | V |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 3688.000 | 53.23 | 3.78 | 57.01 | 74.00 | -16.99 | 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 40 mode / 5190 ~ 5230MHz / CH High | **Test Date:** | December 31, 2014 |
| **Temperature:** | 27°C | **Tested by:** | Andy Shi |
| **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) |
|---|---|---|---|---|---|---|---|
| 3716.000 | 53.42 | 3.90 | 57.32 | 74.00 | -16.68 | peak | V |
| N/A | | | | | | | |
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| | | | | | | | |
| 4262.000 | 50.71 | 6.22 | 56.93 | 74.00 | -17.07 | peak | H |
| N/A | | | | | | | |
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***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 802.11ac80 mode / 5210MHz | **Test Date:** | December 31, 2014 |
| **Temperature:** | 27°C | **Tested by:** | Andy Shi |
| **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) |
|---|---|---|---|---|---|---|---|
| 3737.000 | 53.13 | 3.99 | 57.12 | 74.00 | -16.88 | peak | V |
| N/A | | | | | | | |
| | | | | | | | |
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| | | | | | | | |
| 2540.000 | 51.11 | -0.16 | 50.95 | 74.00 | -23.05 | peak | H |
| N/A | | | | | | | |
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***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:** | December 30, 2014 |
| **Temperature:** | 27°C | **Tested by:** | Andy Shi |
| **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) |
|---|---|---|---|---|---|---|---|
| 2330.000 | 53.59 | -4.22 | 49.37 | 74.00 | -24.63 | peak | V |
| N/A | | | | | | | |
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| | | | | | | | |
| 1336.000 | 53.72 | -8.25 | 45.47 | 74.00 | -28.53 | peak | H |
| N/A | | | | | | | |
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***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:** | December 30, 2014 |
| **Temperature:** | 27°C | **Tested by:** | Andy Shi |
| **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) |
|---|---|---|---|---|---|---|---|
| 2330.000 | 53.60 | -4.22 | 49.38 | 74.00 | -24.62 | peak | V |
| N/A | | | | | | | |
| | | | | | | | |
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| | | | | | | | |
| | | | | | | | |
| 2183.000 | 49.54 | -4.52 | 45.02 | 74.00 | -28.98 | peak | H |
| N/A | | | | | | | |
| | | | | | | | |
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***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:** | December 30, 2014 |
| **Temperature:** | 27°C | **Tested by:** | Andy Shi |
| **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) |
|---|---|---|---|---|---|---|---|
| 1924.000 | 57.79 | -5.28 | 52.51 | 74.00 | -21.49 | peak | V |
| N/A | | | | | | | |
| | | | | | | | |
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| | | | | | | | |
| 1329.000 | 53.65 | -8.28 | 45.37 | 74.00 | -28.63 | peak | H |
| N/A | | | | | | | |
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***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:** | December 31, 2014 |
| **Temperature:** | 27°C | **Tested by:** | Andy Shi |
| **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) |
|---|---|---|---|---|---|---|---|
| 3646.000 | 52.97 | 3.61 | 56.58 | 74.00 | -17.42 | peak | V |
| N/A | | | | | | | |
| | | | | | | | |
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| | | | | | | | |
| 4367.000 | 51.82 | 6.67 | 58.49 | 74.00 | -15.51 | peak | H |
| N/A | | | | | | | |
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***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:** | December 31, 2014 |
| **Temperature:** | 27°C | **Tested by:** | Andy Shi |
| **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) |
|---|---|---|---|---|---|---|---|
| 4535.000 | 51.79 | 7.34 | 59.13 | 74.00 | -14.87 | peak | V |
| N/A | | | | | | | |
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| | | | | | | | |
| 4115.000 | 51.63 | 5.58 | 57.21 | 74.00 | -16.79 | peak | H |
| N/A | | | | | | | |
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***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:** | December 31, 2014 |
| **Temperature:** | 27°C | **Tested by:** | Andy Shi |
| **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) |
|---|---|---|---|---|---|---|---|
| 4885.000 | 52.11 | 8.27 | 60.38 | 74.00 | -13.62 | peak | V |
| N/A | | | | | | | |
| | | | | | | | |
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| | | | | | | | |
| 3695.000 | 53.17 | 3.81 | 56.98 | 74.00 | -17.02 | peak | H |
| N/A | | | | | | | |
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***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:** | December 31, 2014 |
| **Temperature:** | 27°C | **Tested by:** | Andy Shi |
| **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) |
|---|---|---|---|---|---|---|---|
| 3737.000 | 54.35 | 3.99 | 58.34 | 74.00 | -15.66 | peak | V |
| N/A | | | | | | | |
| | | | | | | | |
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| | | | | | | | |
| 3688.000 | 53.23 | 3.78 | 57.01 | 74.00 | -16.99 | peak | H |
| N/A | | | | | | | |
| | | | | | | | |
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***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:** | December 31, 2014 |
| **Temperature:** | 27°C | **Tested by:** | Andy Shi |
| **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) |
|---|---|---|---|---|---|---|---|
| 3716.000 | 53.42 | 3.90 | 57.32 | 74.00 | -16.68 | peak | V |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 4262.000 | 50.71 | 6.22 | 56.93 | 74.00 | -17.07 | peak | H |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
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| | | | | | | | |

***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 802.11ac80 mode / 5755MHz | **Test Date:** | December 31, 2014 |
| **Temperature:** | 27°C | **Tested by:** | Andy Shi |
| **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) |
|---|---|---|---|---|---|---|---|
| 3772.000 | 52.89 | 4.13 | 57.02 | 74.00 | -16.98 | peak | V |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 4654.000 | 52.31 | 7.66 | 59.97 | 74.00 | -14.03 | peak | H |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
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***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).*

## For Dipole Antenna

### Below 1 GHz

**Operation Mode:** Normal Link
**Test Date:** December 27, 2014
**Temperature:** 27°C
**Tested by:** Andy Shi
**Humidity:** 53% RH
**Polarity:** Ver. / Hor.

| Frequency (MHz) | Reading (dBuV) | Correction Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark | Ant.Pol. (H/V) |
|---|---|---|---|---|---|---|---|
| 57.1600 | 55.75 | -23.64 | 32.11 | 40.00 | -7.89 | peak | V |
| 205.5700 | 41.09 | -17.94 | 23.15 | 43.50 | -20.35 | peak | V |
| 335.5500 | 50.16 | -15.54 | 34.62 | 46.00 | -11.38 | peak | V |
| 498.5100 | 45.77 | -11.85 | 33.92 | 46.00 | -12.08 | peak | V |
| 665.3500 | 46.17 | -9.15 | 37.02 | 46.00 | -8.98 | peak | V |
| 914.6400 | 36.99 | -5.96 | 31.03 | 46.00 | -14.97 | peak | V |
| | | | | | | | |
| 57.1600 | 55.24 | -23.64 | 31.60 | 40.00 | -8.40 | peak | H |
| 239.5200 | 48.93 | -18.62 | 30.31 | 46.00 | -15.69 | peak | H |
| 365.6200 | 52.86 | -14.82 | 38.04 | 46.00 | -7.96 | peak | H |
| 566.4100 | 37.68 | -10.84 | 26.84 | 46.00 | -19.16 | peak | H |
| 665.3500 | 46.25 | -9.15 | 37.10 | 46.00 | -8.90 | peak | H |
| 832.1900 | 40.82 | -6.99 | 33.83 | 46.00 | -12.17 | peak | H |

***Remark:***

1. *No emission found between lowest internal used/generated frequency to 30MHz (9kHz~30MHz)*
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.*
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) – Quasi-peak limit (dBuV/m).*

**Above 1 GHz**

| | | | |
|---|---|---|---|
| **Operation Mode:** | Tx / IEEE 802.11a mode / 5180 ~ 5240MHz / CH Low | **Test Date:** | December 28, 2014 |
| **Temperature:** | 27°C | **Tested by:** | Andy Shi |
| **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) |
|---|---|---|---|---|---|---|---|
| 3086.000 | 52.11 | -1.90 | 50.21 | 74.00 | -23.79 | peak | V |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 3135.000 | 51.67 | -1.79 | 49.88 | 74.00 | -24.12 | peak | H |
| N/A | | | | | | | |
| | | | | | | | |
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***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:** | December 28, 2014 |
| **Temperature:** | 27°C | **Tested by:** | Andy Shi |
| **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) |
|---|---|---|---|---|---|---|---|
| 2330.000 | 54.15 | -4.22 | 49.93 | 74.00 | -24.07 | peak | V |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 3233.000 | 52.40 | -1.55 | 50.85 | 74.00 | -23.15 | peak | H |
| N/A | | | | | | | |
| | | | | | | | |
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***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:** | December 28, 2014 |
| **Temperature:** | 27°C | **Tested by:** | Andy Shi |
| **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) |
|---|---|---|---|---|---|---|---|
| 2330.000 | 52.36 | -4.22 | 48.14 | 74.00 | -25.86 | peak | V |
| N/A | | | | | | | |
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| 2491.000 | 50.16 | -3.20 | 46.96 | 74.00 | -27.04 | peak | H |
| N/A | | | | | | | |
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***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:** | December 28, 2014 |
| **Temperature:** | 27°C | **Tested by:** | Andy Shi |
| **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) |
|---|---|---|---|---|---|---|---|
| 1959.000 | 50.87 | -5.10 | 45.77 | 74.00 | -28.23 | peak | V |
| N/A | | | | | | | |
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| 2743.000 | 50.02 | -2.63 | 47.39 | 74.00 | -26.61 | peak | H |
| N/A | | | | | | | |
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***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:** | December 28, 2014 |
| **Temperature:** | 27°C | **Tested by:** | Andy Shi |
| **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) |
|---|---|---|---|---|---|---|---|
| 2484.000 | 51.58 | -3.27 | 48.31 | 74.00 | -25.69 | peak | V |
| N/A | | | | | | | |
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| | | | | | | | |
| 2624.000 | 49.97 | -2.87 | 47.10 | 74.00 | -26.90 | peak | H |
| N/A | | | | | | | |
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***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:** | December 28, 2014 |
| **Temperature:** | 27°C | **Tested by:** | Andy Shi |
| **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) |
|---|---|---|---|---|---|---|---|
| 2330.000 | 52.15 | -4.22 | 47.93 | 74.00 | -26.07 | peak | V |
| N/A | | | | | | | |
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| | | | | | | | |
| 2554.000 | 51.14 | -3.01 | 48.13 | 74.00 | -25.87 | peak | H |
| N/A | | | | | | | |
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***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:** | December 28, 2014 |
| **Temperature:** | 27°C | **Tested by:** | Andy Shi |
| **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) |
|---|---|---|---|---|---|---|---|
| 1952.000 | 51.40 | -5.13 | 46.27 | 74.00 | -27.73 | peak | V |
| N/A | | | | | | | |
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| | | | | | | | |
| 2330.000 | 50.64 | -4.22 | 46.42 | 74.00 | -27.58 | peak | H |
| N/A | | | | | | | |
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***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:** | December 28, 2014 |
| **Temperature:** | 27°C | **Tested by:** | Andy Shi |
| **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) |
|---|---|---|---|---|---|---|---|
| 2330.000 | 50.88 | -4.22 | 46.66 | 74.00 | -27.34 | peak | V |
| N/A | | | | | | | |
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| | | | | | | | |
| 1952.000 | 50.93 | -5.13 | 45.80 | 74.00 | -28.20 | peak | H |
| N/A | | | | | | | |
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***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 802.11ac80 mode / 5210MHz | **Test Date:** | December 28, 2014 |
| **Temperature:** | 27°C | **Tested by:** | Andy Shi |
| **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) |
|---|---|---|---|---|---|---|---|
| 2659.000 | 50.06 | -2.80 | 47.26 | 74.00 | -26.74 | peak | V |
| N/A | | | | | | | |
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| 2638.000 | 50.13 | -2.84 | 47.29 | 74.00 | -26.71 | peak | H |
| N/A | | | | | | | |
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***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:** | December 28, 2014 |
| **Temperature:** | 27°C | **Tested by:** | Andy Shi |
| **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) |
|---|---|---|---|---|---|---|---|
| 1952.000 | 52.58 | -5.13 | 47.45 | 74.00 | -26.55 | peak | V |
| N/A | | | | | | | |
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| | | | | | | | |
| 1945.000 | 50.80 | -5.17 | 45.63 | 74.00 | -28.37 | peak | H |
| N/A | | | | | | | |
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***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:** | December 28, 2014 |
| **Temperature:** | 27°C | **Tested by:** | Andy Shi |
| **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) |
|---|---|---|---|---|---|---|---|
| 2421.000 | 51.17 | -3.63 | 47.54 | 74.00 | -26.46 | peak | V |
| N/A | | | | | | | |
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| | | | | | | | |
| 1952.000 | 50.36 | -5.13 | 45.23 | 74.00 | -28.77 | peak | H |
| N/A | | | | | | | |
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***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:** | December 28, 2014 |
| **Temperature:** | 27°C | **Tested by:** | Andy Shi |
| **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) |
|---|---|---|---|---|---|---|---|
| 2330.000 | 51.70 | -4.22 | 47.48 | 74.00 | -26.52 | peak | V |
| N/A | | | | | | | |
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| | | | | | | | |
| 2743.000 | 48.91 | -2.63 | 46.28 | 74.00 | -27.72 | peak | H |
| N/A | | | | | | | |
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***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:** | December 28, 2014 |
| **Temperature:** | 27°C | **Tested by:** | Andy Shi |
| **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) |
|---|---|---|---|---|---|---|---|
| 2085.000 | 50.09 | -4.97 | 45.12 | 74.00 | -28.88 | peak | V |
| N/A | | | | | | | |
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| | | | | | | | |
| 1952.000 | 51.56 | -5.13 | 46.43 | 74.00 | -27.57 | peak | H |
| N/A | | | | | | | |
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***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:** | December 28, 2014 |
| **Temperature:** | 27°C | **Tested by:** | Andy Shi |
| **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) |
|---|---|---|---|---|---|---|---|
| 1952.000 | 51.30 | -5.13 | 46.17 | 74.00 | -27.83 | peak | V |
| N/A | | | | | | | |
| | | | | | | | |
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| | | | | | | | |
| 2589.000 | 49.32 | -2.94 | 46.38 | 74.00 | -27.62 | peak | H |
| N/A | | | | | | | |
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***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:** | December 28, 2014 |
| **Temperature:** | 27°C | **Tested by:** | Andy Shi |
| **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) |
|---|---|---|---|---|---|---|---|
| 2330.000 | 51.20 | -4.22 | 46.98 | 74.00 | -27.02 | peak | V |
| N/A | | | | | | | |
| | | | | | | | |
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| | | | | | | | |
| | | | | | | | |
| 2561.000 | 49.38 | -3.00 | 46.38 | 74.00 | -27.62 | peak | H |
| N/A | | | | | | | |
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***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:** | December 28, 2014 |
| **Temperature:** | 27°C | **Tested by:** | Andy Shi |
| **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) |
|---|---|---|---|---|---|---|---|
| 2330.000 | 51.25 | -4.22 | 47.03 | 74.00 | -26.97 | peak | V |
| N/A | | | | | | | |
| | | | | | | | |
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| | | | | | | | |
| 2428.000 | 49.85 | -3.58 | 46.27 | 74.00 | -27.73 | peak | H |
| N/A | | | | | | | |
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***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:** | December 28, 2014 |
| **Temperature:** | 27°C | **Tested by:** | Andy Shi |
| **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) |
|---|---|---|---|---|---|---|---|
| 2330.000 | 51.02 | -4.22 | 46.80 | 74.00 | -27.20 | peak | V |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 1952.000 | 51.27 | -5.13 | 46.14 | 74.00 | -27.86 | 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 802.11ac80 mode / 5755MHz | **Test Date:** | December 28, 2014 |
| **Temperature:** | 27°C | **Tested by:** | Andy Shi |
| **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) |
|---|---|---|---|---|---|---|---|
| 2330.000 | 51.98 | -4.22 | 47.76 | 74.00 | -26.24 | peak | V |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 2638.000 | 49.54 | -2.84 | 46.70 | 74.00 | -27.30 | 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).*

## 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.

**For printed Antenna**

**Test Data**

| | | | |
|---|---|---|---|
| **Operation Mode:** | Normal Link | **Test Date:** | January 5, 2015 |
| **Temperature:** | 24°C | **Tested by:** | Sehni Hu |
| **Humidity:** | 50% RH | | |

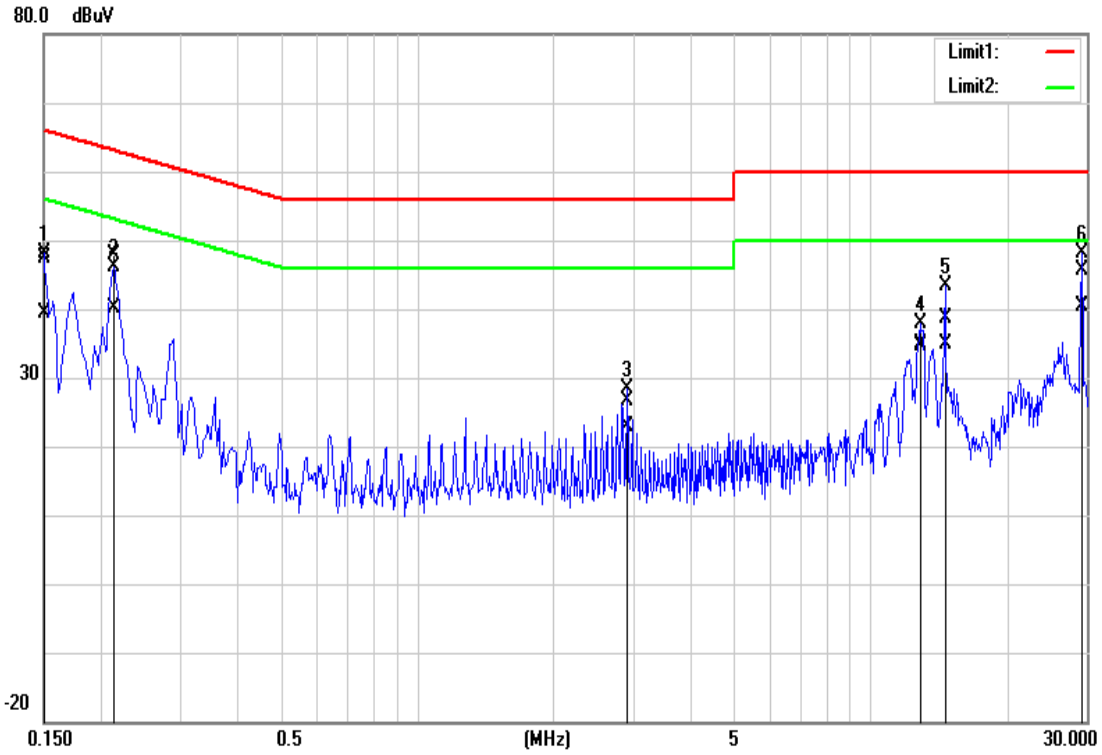
| Freq. (MHz) | QP Reading (dBuV) | AV Reading (dBuV) | Corr. factor (dB/m) | QP Result (dBuV/m) | AV Result (dBuV/m) | QP Limit (dBuV) | AV Limit (dBuV) | QP Margin (dB) | AV Margin (dB) | Note |
|---|---|---|---|---|---|---|---|---|---|---|
| 0.1500 | 37.49 | 29.61 | 9.87 | 47.36 | 39.48 | 65.99 | 56.00 | -18.63 | -16.52 | L1 |
| 0.2123 | 38.01 | 30.21 | 9.87 | 47.88 | 40.08 | 63.11 | 53.11 | -15.23 | -13.03 | L1 |
| 2.9095 | 16.71 | 12.95 | 9.98 | 26.69 | 22.93 | 56.00 | 46.00 | -29.31 | -23.07 | L1 |
| 12.8623 | 24.72 | 24.37 | 10.22 | 34.94 | 34.59 | 60.00 | 50.00 | -25.06 | -15.41 | L1 |
| 14.6266 | 28.33 | 24.57 | 10.26 | 38.59 | 34.83 | 60.00 | 50.00 | -21.41 | -15.17 | L1 |
| 29.2502 | 34.95 | 29.67 | 10.74 | 45.69 | 40.41 | 60.00 | 50.00 | -14.31 | -9.59 | L1 |
| | | | | | | | | | | |
| 0.1539 | 32.97 | 24.50 | 9.63 | 42.60 | 34.13 | 65.78 | 55.79 | -23.18 | -21.66 | L2 |
| 0.2136 | 37.94 | 30.19 | 9.64 | 47.58 | 39.83 | 63.06 | 53.06 | -15.48 | -13.23 | L2 |
| 2.9103 | 17.32 | 13.83 | 9.76 | 27.08 | 23.59 | 56.00 | 46.00 | -28.92 | -22.41 | L2 |
| 12.9290 | 24.42 | 23.95 | 10.06 | 34.48 | 34.01 | 60.00 | 50.00 | -25.52 | -15.99 | L2 |
| 14.6262 | 30.40 | 26.67 | 10.11 | 40.51 | 36.78 | 60.00 | 50.00 | -19.49 | -13.22 | L2 |
| 29.2498 | 36.39 | 31.12 | 10.64 | 47.03 | 41.76 | 60.00 | 50.00 | -12.97 | -8.24 | L2 |

***Remark:***

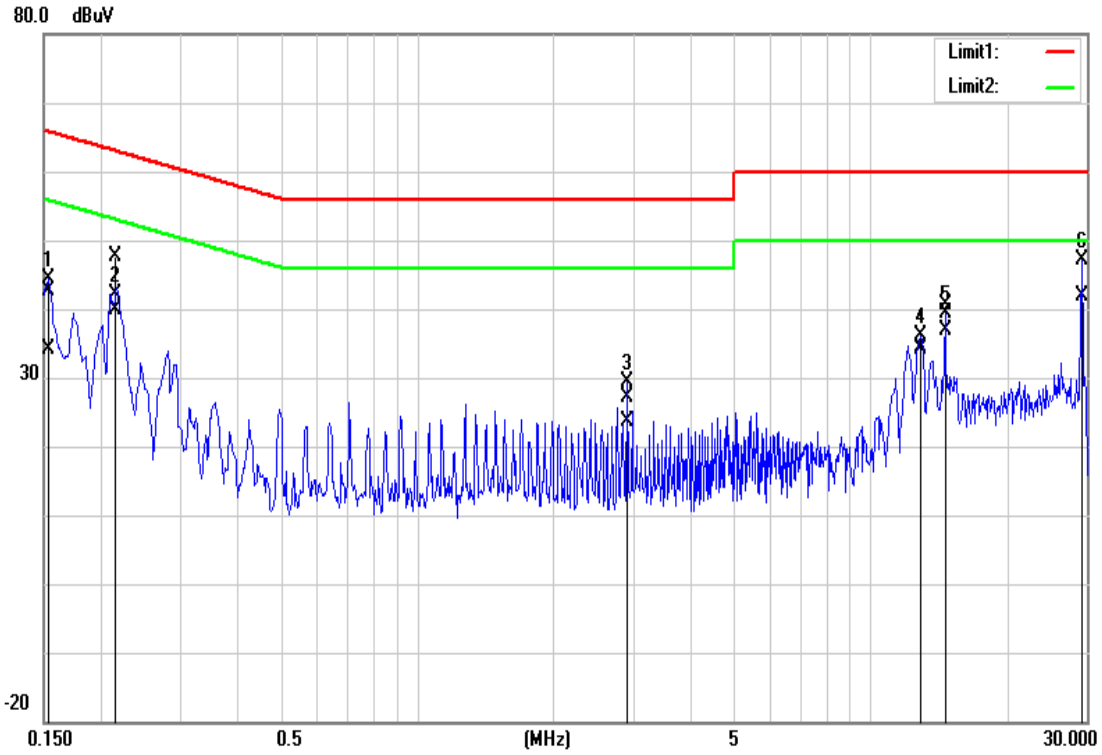
1. *Measuring frequencies from 0.15 MHz to 30MHz.*
2. *The emissions measured in frequency range from 0.15 MHz to 30MHz were made with an instrument using Quasi-peak detector and average detector.*
3. *The IF bandwidth of SPA between 0.15MHz and 30MHz was 10 kHz; the IF bandwidth of Test Receiver between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

## Test Plots

### *Conducted emissions (Line 1)*




### *Conducted emissions (Line 2)*



**For Dipole Antenna**

**Test Data**

| | | | |
|---|---|---|---|
| **Operation Mode:** | Normal Link | **Test Date:** | January 5, 2015 |
| **Temperature:** | 24°C | **Tested by:** | Sehni Hu |
| **Humidity:** | 50% RH | | |

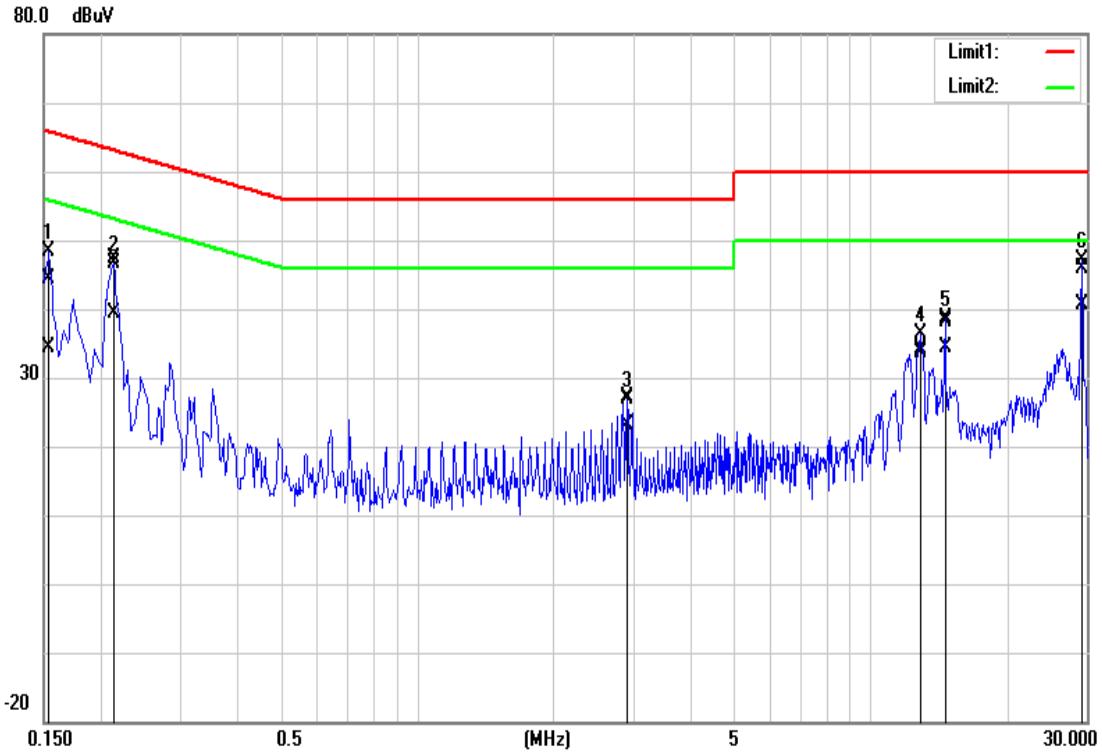
| Freq. (MHz) | QP Reading (dBuV) | AV Reading (dBuV) | Corr. factor (dB/m) | QP Result (dBuV/m) | AV Result (dBuV/m) | QP Limit (dBuV) | AV Limit (dBuV) | QP Margin (dB) | AV Margin (dB) | Note |
|---|---|---|---|---|---|---|---|---|---|---|
| 0.1539 | 34.40 | 24.61 | 9.87 | 44.27 | 34.48 | 65.78 | 55.79 | -21.51 | -21.31 | L1 |
| 0.2110 | 37.60 | 29.39 | 9.87 | 47.47 | 39.26 | 63.16 | 53.17 | -15.69 | -13.91 | L1 |
| 2.9089 | 17.03 | 13.10 | 9.98 | 27.01 | 23.08 | 56.00 | 46.00 | -28.99 | -22.92 | L1 |
| 12.8598 | 23.80 | 23.37 | 10.22 | 34.02 | 33.59 | 60.00 | 50.00 | -25.98 | -16.41 | L1 |
| 14.6243 | 27.86 | 24.14 | 10.26 | 38.12 | 34.40 | 60.00 | 50.00 | -21.88 | -15.60 | L1 |
| 29.2500 | 35.16 | 29.87 | 10.74 | 45.90 | 40.61 | 60.00 | 50.00 | -14.10 | -9.39 | L1 |
| | | | | | | | | | | |
| 0.1539 | 34.11 | 25.47 | 9.63 | 43.74 | 35.10 | 65.78 | 55.79 | -22.04 | -20.69 | L2 |
| 0.2124 | 38.20 | 30.33 | 9.64 | 47.84 | 39.97 | 63.11 | 53.11 | -15.27 | -13.14 | L2 |
| 2.7670 | 16.21 | 13.15 | 9.76 | 25.97 | 22.91 | 56.00 | 46.00 | -30.03 | -23.09 | L2 |
| 12.9270 | 25.70 | 25.12 | 10.06 | 35.76 | 35.18 | 60.00 | 50.00 | -24.24 | -14.82 | L2 |
| 14.6250 | 28.54 | 24.79 | 10.11 | 38.65 | 34.90 | 60.00 | 50.00 | -21.35 | -15.10 | L2 |
| 29.2490 | 35.86 | 30.57 | 10.64 | 46.50 | 41.21 | 60.00 | 50.00 | -13.50 | -8.79 | L2 |

***Remark:***

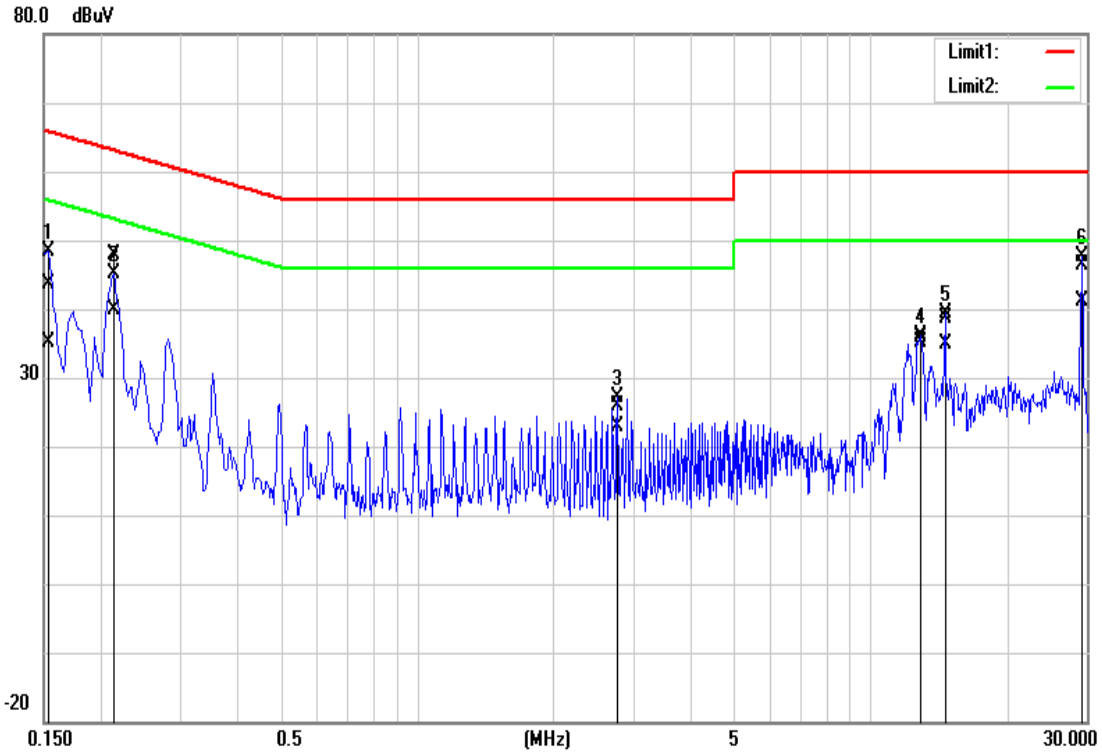
1. *Measuring frequencies from 0.15 MHz to 30MHz.*
2. *The emissions measured in frequency range from 0.15 MHz to 30MHz were made with an instrument using Quasi-peak detector and average detector.*
3. *The IF bandwidth of SPA between 0.15MHz and 30MHz was 10 kHz; the IF bandwidth of Test Receiver between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

## Test Plots

### *Conducted emissions (Line 1)*




### *Conducted emissions (Line 2)*

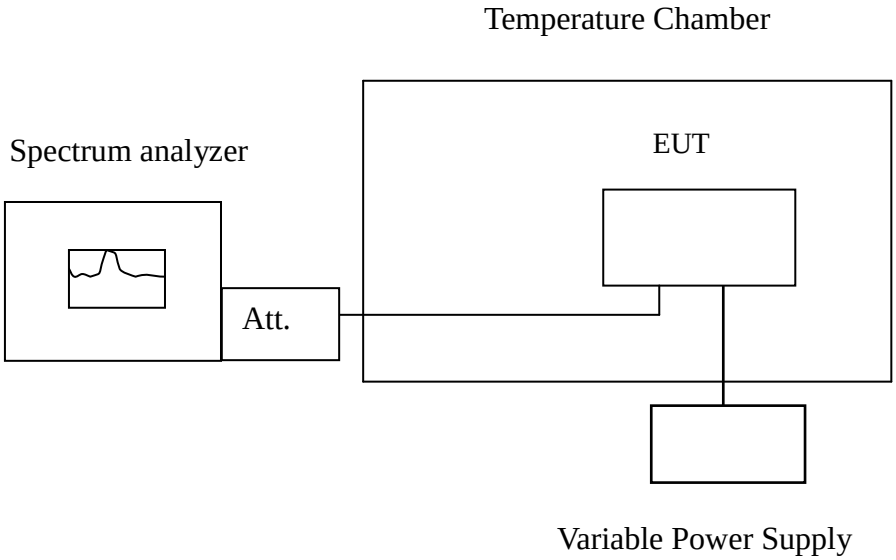


# 7.7 FREQUENCY STABILITY

## 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:**

**CH Low**

| Operating Frequency: 5180 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | **Voltage (V)** | **Measured Frequency (MHz)** | **Limit Range** | **Test Result** |
| 50 | 5 | 5180.009649 | 5150~5250 | Pass |
| 40 | 5 | 5180.010537 | 5150~5250 | Pass |
| 30 | 5 | 5180.000086 | 5150~5250 | Pass |
| 20 | 5 | 5180.009531 | 5150~5250 | Pass |
| 10 | 5 | 5180.003892 | 5150~5250 | Pass |
| 0 | 5 | 5180.000580 | 5150~5250 | Pass |
| -10 | 5 | 5179.997039 | 5150~5250 | Pass |
| -20 | 5 | 5180.001323 | 5150~5250 | Pass |

| Operating Frequency: 5180 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | **Voltage (V)** | **Measured Frequency (MHz)** | **Limit Range** | **Test Result** |
| 20 | 4.25 | 5180.01047 | 5150~5250 | Pass |
| | 5 | 5180.003178 | 5150~5250 | Pass |
| | 5.75 | 5180.002212 | 5150~5250 | Pass |

## CH Mid

| Operating Frequency: 5220 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | Voltage (V) | Measured Frequency (MHz) | Limit Range | Test Result |
| 50 | 5 | 5220.005888 | 5150~5250 | Pass |
| 40 | 5 | 5220.006549 | 5150~5250 | Pass |
| 30 | 5 | 5220.004778 | 5150~5250 | Pass |
| 20 | 5 | 5219.991192 | 5150~5250 | Pass |
| 10 | 5 | 5220.009712 | 5150~5250 | Pass |
| 0 | 5 | 5220.004359 | 5150~5250 | Pass |
| -10 | 5 | 5220.000760 | 5150~5250 | Pass |
| -20 | 5 | 5219.990132 | 5150~5250 | Pass |

| Operating Frequency: 5220 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | Voltage (V) | Measured Frequency (MHz) | Limit Range | Test Result |
| 20 | 4.25 | 5219.999527 | 5150~5250 | Pass |
| | 5 | 5219.994812 | 5150~5250 | Pass |
| | 5.75 | 5219.994693 | 5150~5250 | Pass |

## CH High

| Operating Frequency: 5240 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | Voltage (V) | Measured Frequency (MHz) | Limit Range | Test Result |
| 50 | 5 | 5240.001720 | 5150~5250 | Pass |
| 40 | 5 | 5240.009224 | 5150~5250 | Pass |
| 30 | 5 | 5239.991331 | 5150~5250 | Pass |
| 20 | 5 | 5239.999665 | 5150~5250 | Pass |
| 10 | 5 | 5240.009823 | 5150~5250 | Pass |
| 0 | 5 | 5240.010854 | 5150~5250 | Pass |
| -10 | 5 | 5240.010172 | 5150~5250 | Pass |
| -20 | 5 | 5240.003138 | 5150~5250 | Pass |

| Operating Frequency: 5240 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | Voltage (V) | Measured Frequency (MHz) | Limit Range | Test Result |
| 20 | 4.25 | 5239.994796 | 5150~5250 | Pass |
| | 5 | 5240.01083 | 5150~5250 | Pass |
| | 5.75 | 5239.999967 | 5150~5250 | Pass |

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

## CH Low

| Operating Frequency: 5180 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | Voltage (V) | Measured Frequency (MHz) | Limit Range | Test Result |
| 50 | 5 | 5180.002203 | 5150~5250 | Pass |
| 40 | 5 | 5179.998005 | 5150~5250 | Pass |
| 30 | 5 | 5180.010271 | 5150~5250 | Pass |
| 20 | 5 | 5180.009189 | 5150~5250 | Pass |
| 10 | 5 | 5180.006122 | 5150~5250 | Pass |
| 0 | 5 | 5179.995514 | 5150~5250 | Pass |
| -10 | 5 | 5179.991699 | 5150~5250 | Pass |
| -20 | 5 | 5180.009129 | 5150~5250 | Pass |

| Operating Frequency: 5180 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | Voltage (V) | Measured Frequency (MHz) | Limit Range | Test Result |
| 20 | 4.25 | 5180.002932 | 5150~5250 | Pass |
| | 5 | 5180.008263 | 5150~5250 | Pass |
| | 5.75 | 5179.997 | 5150~5250 | Pass |

## CH Mid

| Operating Frequency: 5220 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | Voltage (V) | Measured Frequency (MHz) | Limit Range | Test Result |
| 50 | 5 | 5220.005907 | 5150~5250 | Pass |
| 40 | 5 | 5220.001078 | 5150~5250 | Pass |
| 30 | 5 | 5220.004354 | 5150~5250 | Pass |
| 20 | 5 | 5219.998562 | 5150~5250 | Pass |
| 10 | 5 | 5219.995991 | 5150~5250 | Pass |
| 0 | 5 | 5219.996946 | 5150~5250 | Pass |
| -10 | 5 | 5220.004058 | 5150~5250 | Pass |
| -20 | 5 | 5219.993839 | 5150~5250 | Pass |

| Operating Frequency: 5220 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | Voltage (V) | Measured Frequency (MHz) | Limit Range | Test Result |
| 20 | 4.25 | 5220.00589 | 5150~5250 | Pass |
| | 5 | 5220.006198 | 5150~5250 | Pass |
| | 5.75 | 5219.990631 | 5150~5250 | Pass |

## CH High

| Operating Frequency: 5240 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | Voltage (V) | Measured Frequency (MHz) | Limit Range | Test Result |
| 50 | 5 | 5239.994985 | 5150~5250 | Pass |
| 40 | 5 | 5239.992685 | 5150~5250 | Pass |
| 30 | 5 | 5239.991672 | 5150~5250 | Pass |
| 20 | 5 | 5240.007865 | 5150~5250 | Pass |
| 10 | 5 | 5239.991803 | 5150~5250 | Pass |
| 0 | 5 | 5240.009100 | 5150~5250 | Pass |
| -10 | 5 | 5239.996604 | 5150~5250 | Pass |
| -20 | 5 | 5240.001042 | 5150~5250 | Pass |

| Operating Frequency: 5240 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | Voltage (V) | Measured Frequency (MHz) | Limit Range | Test Result |
| 20 | 4.25 | 5240.007613 | 5150~5250 | Pass |
| | 5 | 5240.000221 | 5150~5250 | Pass |
| | 5.75 | 5239.991156 | 5150~5250 | Pass |

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

## CH Low

| Operating Frequency: 5190 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | Voltage (V) | Measured Frequency (MHz) | Limit Range | Test Result |
| 50 | 5 | 5190.007693 | 5150~5250 | Pass |
| 40 | 5 | 5189.990446 | 5150~5250 | Pass |
| 30 | 5 | 5190.005361 | 5150~5250 | Pass |
| 20 | 5 | 5190.003162 | 5150~5250 | Pass |
| 10 | 5 | 5190.002723 | 5150~5250 | Pass |
| 0 | 5 | 5189.995872 | 5150~5250 | Pass |
| -10 | 5 | 5190.004324 | 5150~5250 | Pass |
| -20 | 5 | 5189.994567 | 5150~5250 | Pass |

| Operating Frequency: 5190 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | Voltage (V) | Measured Frequency (MHz) | Limit Range | Test Result |
| 20 | 4.25 | 5190.005061 | 5150~5250 | Pass |
| | 5 | 5190.010814 | 5150~5250 | Pass |
| | 5.75 | 5190.009377 | 5150~5250 | Pass |

## CH High

| Operating Frequency: 5230 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | Voltage (V) | Measured Frequency (MHz) | Limit Range | Test Result |
| 50 | 5 | 5229.993421 | 5150~5250 | Pass |
| 40 | 5 | 5230.008717 | 5150~5250 | Pass |
| 30 | 5 | 5230.001452 | 5150~5250 | Pass |
| 20 | 5 | 5229.990404 | 5150~5250 | Pass |
| 10 | 5 | 5229.994468 | 5150~5250 | Pass |
| 0 | 5 | 5229.991051 | 5150~5250 | Pass |
| -10 | 5 | 5230.002620 | 5150~5250 | Pass |
| -20 | 5 | 5230.001910 | 5150~5250 | Pass |

| Operating Frequency: 5230 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | Voltage (V) | Measured Frequency (MHz) | Limit Range | Test Result |
| 20 | 4.25 | 5229.995064 | 5150~5250 | Pass |
| | 5 | 5230.0049 | 5150~5250 | Pass |
| | 5.75 | 5229.996917 | 5150~5250 | Pass |

## IEEE 802.11ac80 mode / 5210 MHz:

| Operating Frequency: 5210 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | Voltage (V) | Measured Frequency (MHz) | Limit Range | Test Result |
| 50 | 5 | 5210.007203 | 5150~5250 | Pass |
| 40 | 5 | 5210.003347 | 5150~5250 | Pass |
| 30 | 5 | 5210.005473 | 5150~5250 | Pass |
| 20 | 5 | 5209.992217 | 5150~5250 | Pass |
| 10 | 5 | 5210.004190 | 5150~5250 | Pass |
| 0 | 5 | 5209.997134 | 5150~5250 | Pass |
| -10 | 5 | 5210.000749 | 5150~5250 | Pass |
| -20 | 5 | 5210.003055 | 5150~5250 | Pass |

| Operating Frequency: 5210 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | Voltage (V) | Measured Frequency (MHz) | Limit Range | Test Result |
| 20 | 4.25 | 5210.001203 | 5150~5250 | Pass |
| | 5 | 5210.002338 | 5150~5250 | Pass |
| | 5.75 | 5209.99694 | 5150~5250 | Pass |