# FCC 47 CFR PART 15 SUBPART E & INDUSTRY CANADA RSS-210

# TEST REPORT

## For

## Tablet Computer

## Model: WT10PE-A

## Trade Name: TOSHIBA

*Issued to*

**Pegatron Corporation**
**5F, NO. 76, LIGONG ST., BEITOU DISTRICT,**
**TAIPEI CITY 112, TAIWAN (R.O.C.)**

*Issued by*

**Compliance Certification Services Inc.**
**No.11, Wugong 6th Rd., Wugu Dist.,**
**New Taipei City 24891, Taiwan. (R.O.C.)**
**http://www.ccsrf.com**
**service@ccsrf.com**
**Issued Date: September 9, 2014**

Testing Laboratory
1309

## Revision History

| Rev. | | Issue Date | | Revisions | Effect Page | Revised By |
|---|---|---|---|---|---|---|
| 00 | | September 9, 2014 | | Initial Issue | ALL | Kelly Cheng |

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# 1. TEST RESULT CERTIFICATION

| | |
|---|---|
| **Applicant:** | Pegatron Corporation<br>5F, NO. 76, LIGONG ST., BEITOU DISTRICT, TAIPEI CITY 112, TAIWAN (R.O.C.) |
| **Manufacturer:** | Toshiba Corporation<br>1-1, Shibaura 1-Chome, Minato-Ku, Tokyo, 105-8001, Japan |
| **Equipment Under Test:** | Tablet Computer |
| **Trade Name:** | TOSHIBA |
| **Model:** | WT10PE-A |
| **Date of Test:** | August 30 ~ September 2, 2014 |

| **APPLICABLE STANDARDS** | |
|---|---|
| **STANDARD** | **TEST RESULT** |
| FCC 47 CFR Part 15 Subpart E &<br>Industry Canada RSS-210 Issue 8 December, 2010 | 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 and Industry Canada RSS-210 Issue 8.

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

*Approved by:*

Miller Lee
Section Manager
Compliance Certification Services Inc.

*Reviewed by:*

Angel Cheng
Section Manager
Compliance Certification Services Inc.

# 2. EUT DESCRIPTION

<table>
<tr><td>Product</td><td colspan="3">Tablet Computer</td></tr>
<tr><td>Trade Name</td><td colspan="3">TOSHIBA</td></tr>
<tr><td>Model Number</td><td colspan="3">WT10PE-A</td></tr>
<tr><td>Model Discrepancy</td><td colspan="3">N/A</td></tr>
<tr><td>Received Date</td><td colspan="3">August 14, 2014</td></tr>
<tr><td>WLAN Manufacturer</td><td>AzureWave</td><td>Model</td><td>AW-AH640(BCM43340)</td></tr>
<tr><td>Power Supply</td><td colspan="3">1. VDC from Power Adapter<br>Chicony / W12-010N3C<br>I/P: 100-240V~ 50/60Hz, 0.3A<br>O/P: 5VDC, 2A<br>2. Powered from host device via USB Cable<br>3. Power from Battery<br>LG (Trademark: Toshiba) / PA5204U-1BRS<br>Rating: 3.75V, 5820mAh</td></tr>
<tr><td>Operating Frequency Range &<br>Number of Channels</td><td colspan="3">
<table>
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<tr><td>IEEE 802.11n HT 20 MHz</td><td>5180 – 5240</td><td>4 Channels</td></tr>
<tr><td>IEEE 802.11n HT 40 MHz</td><td>5190 ~ 5230</td><td>2 Channels</td></tr>
<tr><td rowspan="3">UNII Band II</td><td>IEEE 802.11a</td><td>5260 - 5320</td><td>4 Channels</td></tr>
<tr><td>IEEE 802.11n HT 20 MHz</td><td>5260 - 5320</td><td>4 Channels</td></tr>
<tr><td>IEEE 802.11n HT 40 MHz</td><td>5270 - 5310</td><td>2 Channels</td></tr>
<tr><td rowspan="3">UNII Band III</td><td>IEEE 802.11a</td><td>5500 - 5700</td><td>11 Channels</td></tr>
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<tr><td>IEEE 802.11n HT 40 MHz</td><td>5510 - 5670</td><td>5 Channels</td></tr>
</table>
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<table>
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<tr><td>IEEE 802.11n HT 20 MHz</td><td>5180 – 5240</td><td>9.50</td><td>0.0089</td></tr>
<tr><td>IEEE 802.11n HT 40 MHz</td><td>5190 ~ 5230</td><td>9.96</td><td>0.0099</td></tr>
<tr><td rowspan="3">UNII Band II</td><td>IEEE 802.11a</td><td>5260 - 5320</td><td>10.84</td><td>0.0121</td></tr>
<tr><td>IEEE 802.11n HT 20 MHz</td><td>5260 - 5320</td><td>9.90</td><td>0.0098</td></tr>
<tr><td>IEEE 802.11n HT 40 MHz</td><td>5270 - 5310</td><td>9.96</td><td>0.0099</td></tr>
<tr><td rowspan="3">UNII Band III</td><td>IEEE 802.11a</td><td>5500 - 5700</td><td>10.88</td><td>0.0122</td></tr>
<tr><td>IEEE 802.11n HT 20 MHz</td><td>5500 – 5700</td><td>9.58</td><td>0.0091</td></tr>
<tr><td>IEEE 802.11n HT 40 MHz</td><td>5510 - 5670</td><td>9.93</td><td>0.0098</td></tr>
</table>
</td></tr>
<tr><td>Modulation Technique</td><td colspan="3">OFDM (QPSK, BPSK, 16-QAM, 64-QAM)</td></tr>
<tr><td>Transmit Data Rate</td><td colspan="3">IEEE 802.11a mode: 54, 48, 36, 24, 18, 12, 9, 6 Mbps<br>IEEE 802.11n HT 20 MHz: OFDM (6.5, 7.2, 13, 14.4, 14.44, 19.5, 21.7, 26, 28.89, 28.9, 39, 43.3, 43.33 52, 57.78, 57.8, 58.5, 65.0, 72.2, 78, 86.67, 104, 115.56, 117, 130, 144.44 Mbps)<br>IEEE 802.11n HT 40 MHz: OFDM (13.5, 15, 27, 30, 40.5, 45, 54, 60, 81, 90, 108, 120, 121.5, 135, 150, 162, 180, 216, 240, 243, 270, 300 Mbps)</td></tr>
<tr><td>Antenna Specification</td><td colspan="3">YAGEO / ANT1003LL15R2455A<br>Chip Antenna / Gain: 1.5dBi</td></tr>
<tr><td>Accessory</td><td colspan="3">TOSHIBA / WACOM AES stylus with 1 side switch</td></tr>
</table>

**Operation Frequency:**

| UNLICENSED NATIONAL INFORMATION INFRASTRUCTURE (U-NII) | |
|---|---|
| **CHANNEL** | **MHz** |
| 36 | 5180 |
| 38 | 5190 |
| 40 | 5200 |
| 44 | 5220 |
| 46 | 5230 |
| 48 | 5240 |
| 52 | 5260 |
| 54 | 5270 |
| 56 | 5280 |
| 60 | 5300 |
| 62 | 5310 |
| 64 | 5320 |
| 100 | 5500 |
| 102 | 5510 |
| 104 | 5520 |
| 108 | 5540 |
| 110 | 5550 |
| 112 | 5560 |
| 116 | 5580 |
| 118 | 5590 |
| 120 | 5600 |
| 124 | 5620 |
| 126 | 5630 |
| 128 | 5640 |
| 132 | 5660 |
| 134 | 5670 |
| 136 | 5680 |
| 140 | 5700 |
| 149 | 5745 |
| 153 | 5765 |
| 157 | 5785 |
| 161 | 5805 |
| 165 | 5825 |

***Remark:*** *The sample selected for test was engineering sample that approximated to production product and was provided by manufacturer.*

# 3. TEST METHODOLOGY

Both conducted and radiated testing was performed according to the procedures in ANSI C63.4: 2009 Radiated testing was performed at an antenna to EUT distance 3 meters.

The tests documented in this report were performed in accordance with ANSI C63.4: 2009 and FCC CFR 47 Part 15.207, 15.209 and 15.407, RSS-GEN Issue 2, and RSS-210 Issue 8.

## 3.1EUT 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.

## 3.2EUT 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.

## 3.3GENERAL 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: 2003.

## 3.4FCC 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.

## 3.5DESCRIPTION OF TEST MODES

The EUT (Model: WT10PE-A) had been tested under operating condition.

The EUT is a 1x1 configuration spatial MIMO (1Tx & 1Rx) without beam forming function. The 1x1 configuration is implemented with three outside TX & RX chains

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, which worst case was in normal link mode only.

**UNII Band I:**

**IEEE 802.11a for 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 MHz for 5180 ~ 5240MHz:**
Channel Low (5180MHz), Channel Mid (5220MHz) and Channel High (5240MHz) with 6.5Mbps data rate were chosen for full testing.

**IEEE 802.11n HT 40 MHz Channel for 5190 ~ 5230MHz:**
Channel Low (5190MHz) and Channel High (5230MHz) with 13.5Mbps data rate were chosen for full testing.

**UNII Band II:**

**IEEE 802.11a for 5260 ~ 5320MHz:**
Channel Low (5260MHz), Channel Mid (5280MHz) and Channel High (5320MHz) with 6Mbps data rate were chosen for full testing.

**IEEE 802.11n HT 20 MHz for 5260 ~ 5320MHz:**
Channel Low (5260MHz), Channel Mid (5280MHz) and Channel High (5320MHz) with 6.5Mbps data rate were chosen for full testing.

**IEEE 802.11n HT 40 MHz for 5270 ~ 5310MHz:**

Channel Low (5270MHz) and Channel High (5310MHz) with 13.5Mbps data rate were chosen for full testing.

**UNII Band III:**

**IEEE 802.11a for 5500 ~ 5700MHz:**
Channel Low (5500MHz), Channel Mid (5580MHz) and Channel High (5700MHz) with 6Mbps data rate were chosen for full testing.

**IEEE 802.11n HT 20 MHz for 5500 ~ 5700MHz:**
Channel Low (5500MHz), Channel Mid (5580MHz) and Channel High (5700MHz) with 6.5Mbps data rate were chosen for full testing.

**IEEE 802.11n HT 40 MHz for 5510 ~ 5670MHz:**
Channel Low (5510MHz), Channel Mid (5550MHz) and Channel High (5670MHz) with 13.5Mbps data rate were chosen for full testing.

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

# 4. INSTRUMENT CALIBRATION

## 4.1MEASURING 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.

## 4.2MEASUREMENT 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 | 03/19/2015 |
| 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 | 11/05/2014 |
| EMI Test Receiver | R&S | ESCI | 100064 | 02/27/2015 |
| Pre-Amplifier | Mini-Circults | ZFL-1000LN | SF350700823 | 01/11/2015 |
| Pre-Amplifier | MITEQ | AFS44-00102650-42-10P-44 | 1415367 | 11/18/2014 |
| Bilog Antenna | Sunol Sciences | JB3 | A030105 | 10/01/2014 |
| Horn Antenna | EMCO | 3117 | 00055165 | 02/12/2015 |
| Horn Antenna | EMCO | 3116 | 2487 | 10/09/2014 |
| Loop Antenna | EMCO | 6502 | 8905/2356 | 06/08/2015 |
| 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 | 12/21/2014 |
| 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 | 09/12/2014 |
| LISN | R&S | ESH3-Z5 | 848773/014 | 12/05/2014 |
| Coaxial Cable | Commate | CFD300-NL | NA | 12/05/2014 |
| Test S/W | CCS-3A1-CE | | | |

| Dynamic Frequency Selection | | | | |
|---|---|---|---|---|
| **Name of Equipment** | **Manufacturer** | **Model** | **Serial Number** | **Calibration Due** |
| Vector Signal Generator | R&S | SMU 200A | 101480 | 12/04/2014 |
| Spectrum Analyzer | R&S | FSU | 100258 | 09/02/2015 |

## 4.3MEASUREMENT UNCERTAINTY

| PARAMETER | UNCERTAINTY |
|---|---|
| Powerline Conducted Emission | +/- 1.2159 |
| 3M Semi Anechoic Chamber / 30M~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

## 5.1FACILITIES

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., Luchu Hsiang, Taoyuan Hsien 338, Taiwan
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.

## 5.2EQUIPMENT

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."

## 5.3LABORATORY ACCREDITATIONS AND LISTING

The test facilities used to perform radiated and conducted emissions tests are accredited by American Association for Laboratory Accreditation Program for the specific scope accreditation under Lab Code: 0824-01 to perform Electromagnetic Interference tests according to FCC Part 15 and CISPR 22 requirements. In addition, the test facilities are listed with Industry Canada, Certification and Engineering Bureau, IC 2324G-1 for 3M Semi Anechoic Chamber A, 2324G-2 for 3M Semi Anechoic Chamber B.

# 5.4TABLE OF ACCREDITATIONS AND LISTINGS

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

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

# 6. SETUP OF EQUIPMENT UNDER TEST

## 6.1 SETUP CONFIGURATION OF EUT

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

## 6.2 SUPPORT EQUIPMENT

| No. | Device Type | Brand | Model | Series No. | FCC ID | Data Cable | Power Cord |
|---|---|---|---|---|---|---|---|
| 1 | Notebook PC | HP | dv6-1332TX | CNF9491GPS | PD9112BNHU | N/A | AC I/P: Unshielded, 1.8m DC O/P: Unshielded, 1.8m with a core |
| 2 | LCD Monitor | samsung | E1720NR | YDSHVEZ300001K | N/A | Shielded, 1.8m with 2 cores | Unshielded, 1.8m |
| 3 | USB Keyboard | Logitech | Y-U0009 | 820-003254 | N/A | N/A | N/A |
| 4 | USB Mouse | Logitech | M-U0026 | 810-002147 | N/A | N/A | N/A |
| 5 | Wireless N600 Gigabit | D-Link | DIR-826 | QBQ91C6000056 | KA2IR826LMO1 | N/A | N/A |

***Remark:***

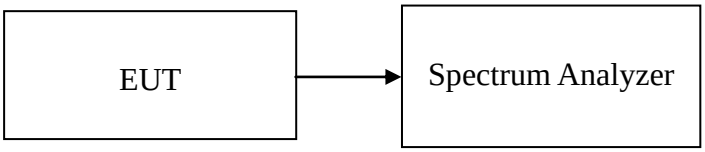
1. *All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.*
2. *Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.*

# 7. FCC PART 15 REQUIREMENTS & RSS 210 REQUIREMENTS

## 7.1 99% BANDWIDTH

**Test Configuration**

## TEST PROCEDURE




The resolution bandwidth shall be set to as close to 1% of the selected span as is possible without being below 1%. The video bandwidth shall be set to 3 times the resolution bandwidth. Video averaging is not permitted. Where practical, a sampling detector shall be used since a peak or, peak hold.

## TEST RESULTS

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

| Channel | Frequency (MHz) | Bandwidth (MHz) |
|---|---|---|
| Low | 5180 | 16.7710 |
| Mid | 5220 | 16.7221 |
| High | 5240 | 16.7662 |

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

| Channel | Frequency (MHz) | Bandwidth (MHz) |
|---|---|---|
| Low | 5180 | 17.5386 |
| Mid | 5220 | 17.5813 |
| High | 5240 | 17.5689 |

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

| Channel | Frequency (MHz) | Bandwidth (MHz) |
|---|---|---|
| Low | 5190 | 36.2944 |
| High | 5230 | 36.1161 |

**Test mode: IEEE 802.11a mode / 5260 ~ 5320MHz**

| Channel | Frequency (MHz) | Bandwidth (MHz) |
|---|---|---|
| Low | 5260 | 16.7523 |
| Mid | 5280 | 16.6951 |
| High | 5320 | 16.7580 |

**Test mode: IEEE 802.11n HT 20 MHz mode / 5260 ~ 5320MHz**

| Channel | Frequency (MHz) | Bandwidth (MHz) |
|---|---|---|
| Low | 5260 | 17.6458 |
| Mid | 5280 | 17.6357 |
| High | 5320 | 17.5833 |

**Test mode: IEEE 802.11n HT 40 MHz mode / 5270 ~ 5310MHz**

| Channel | Frequency (MHz) | Bandwidth (MHz) |
|---|---|---|
| Low | 5270 | 36.3838 |
| High | 5310 | 36.3309 |

**Test mode: IEEE 802.11a mode / 5500 ~ 5700MHz**

| Channel | Frequency (MHz) | Bandwidth (MHz) |
|---|---|---|
| Low | 5500 | 16.6826 |
| Mid | 5580 | 16.6963 |
| High | 5700 | 16.6956 |

**Test mode: IEEE 802.11n HT 20 MHz mode / 5500 ~ 5700MHz**

| Channel | Frequency (MHz) | Bandwidth (MHz) |
|---|---|---|
| Low | 5500 | 17.5873 |
| Mid | 5580 | 17.5907 |
| High | 5700 | 17.5710 |

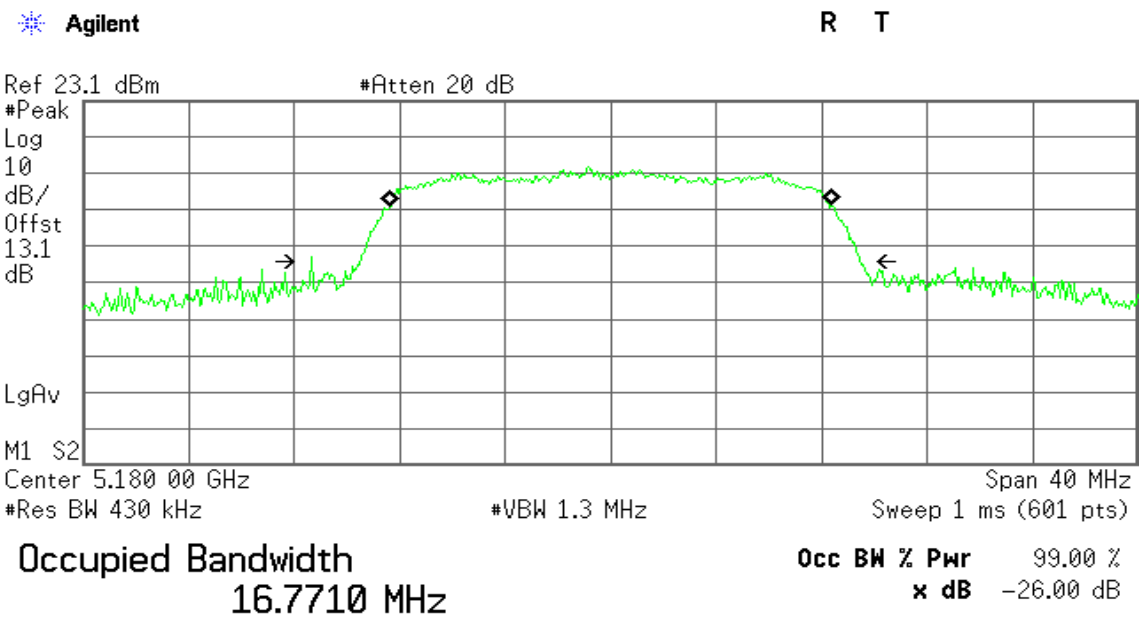
**Test mode: IEEE 802.11n HT 40 MHz mode / 5510 ~ 5670MHz**

| Channel | Frequency (MHz) | Bandwidth (MHz) |
|---|---|---|
| Low | 5510 | 36.4092 |
| Mid | 5550 | 36.2258 |
| High | 5670 | 36.1270 |

## Test Plot

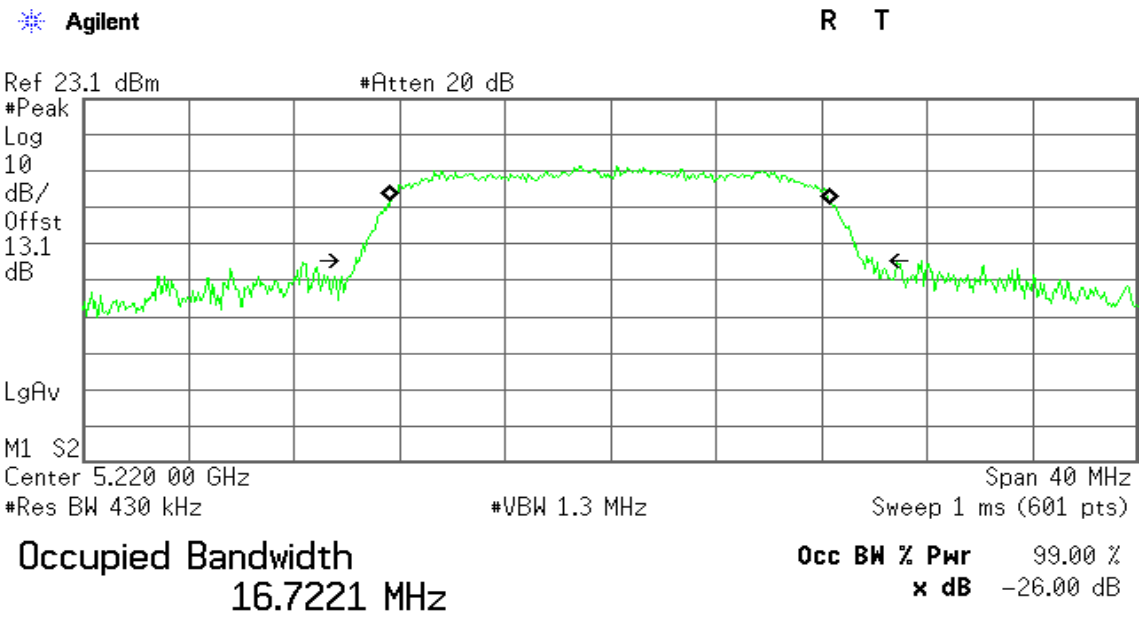
## IEEE 802.11a mode / 5180 ~ 5240MHz

### 99% Bandwidth (CH Low)



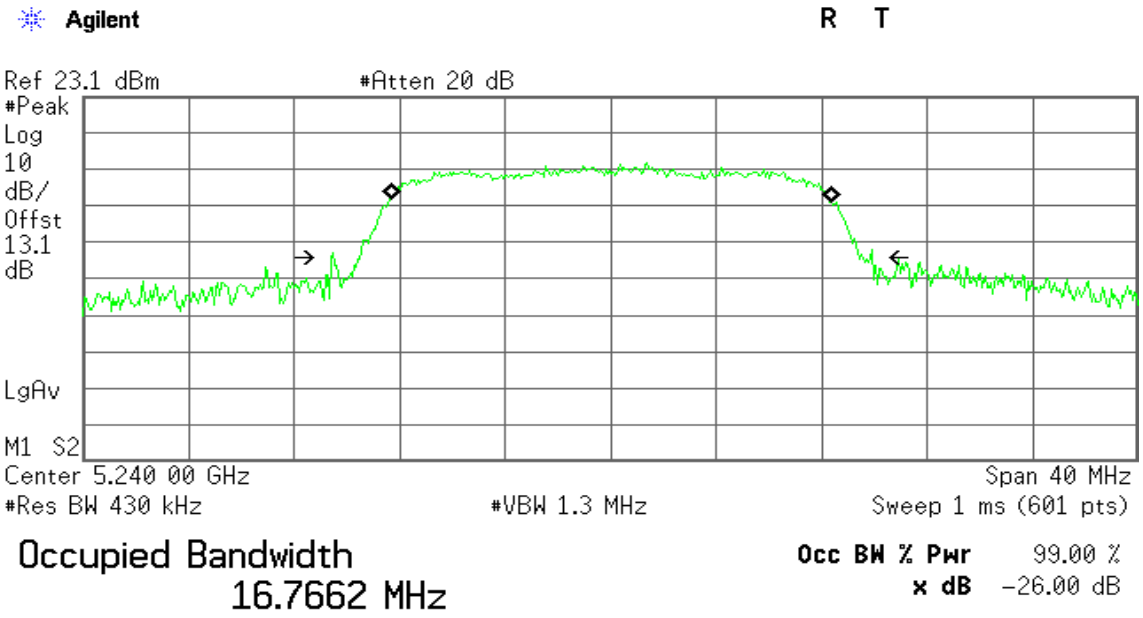

**Transmit Freq Error** -5.148 kHz
**x dB Bandwidth** 20.825 MHz

### 99% Bandwidth (CH Mid)




**Transmit Freq Error** -6.033 kHz
**x dB Bandwidth** 19.637 MHz

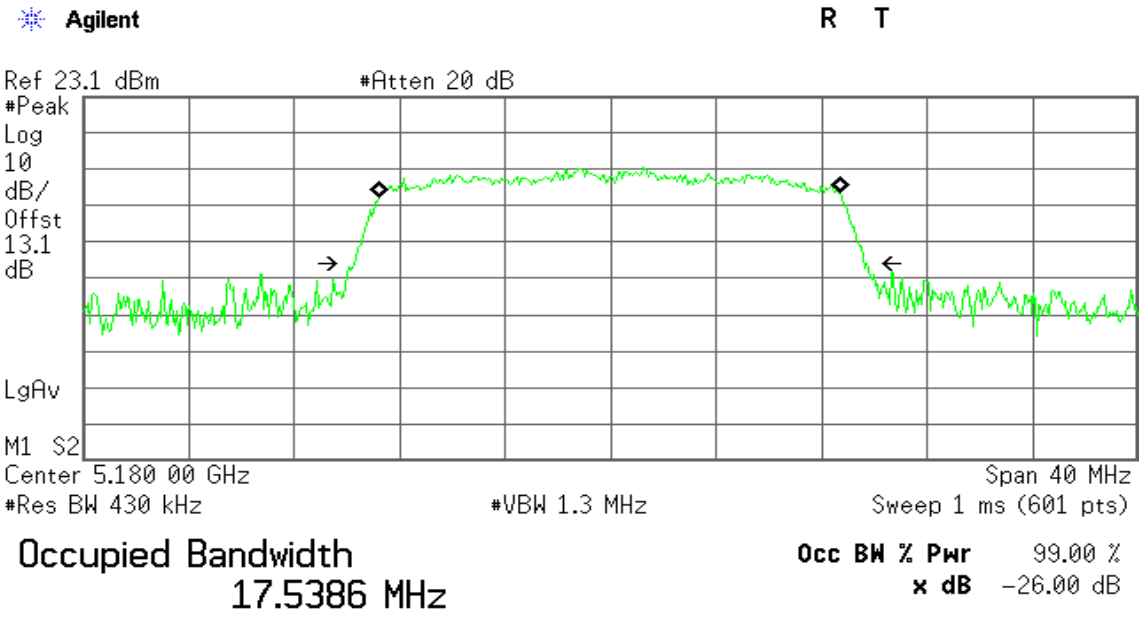
### 99% Bandwidth (CH High)




**Transmit Freq Error** 17.299 kHz
**x dB Bandwidth** 20.570 MHz

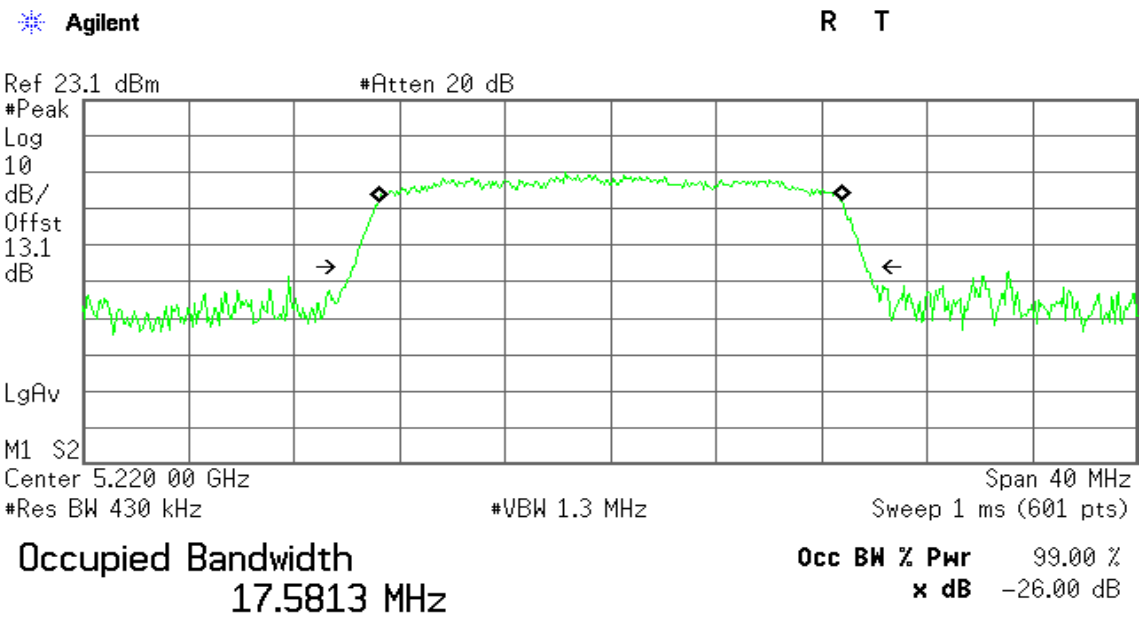
**<u>IEEE 802.11n HT 20 MHz mode / 5180 ~ 5240MHz</u>**

### 99% Bandwidth (CH Low)



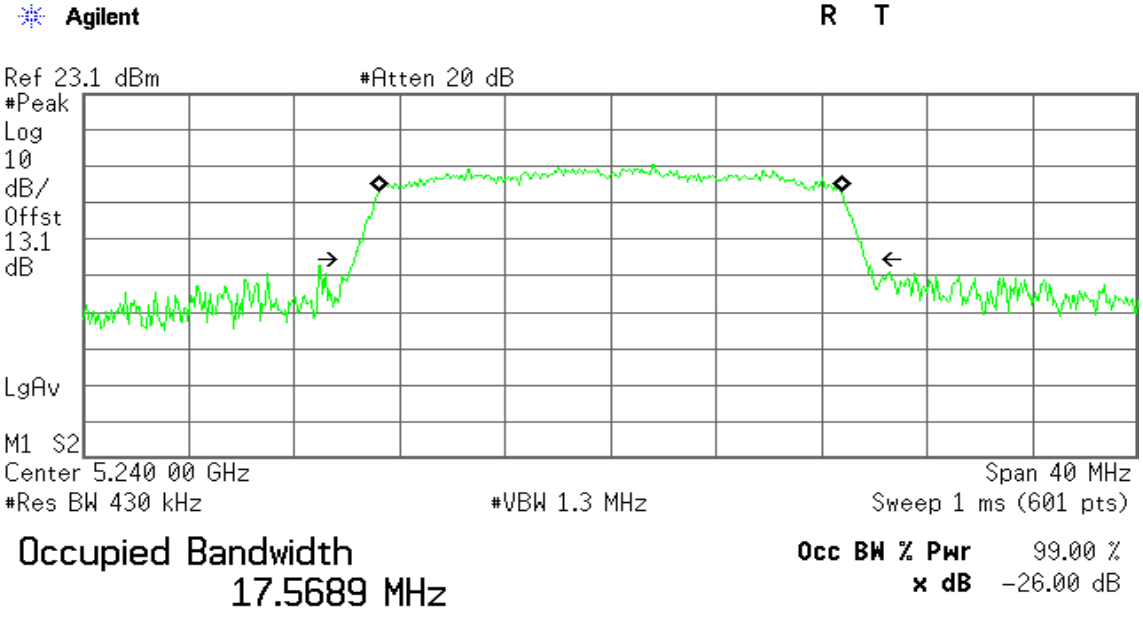

**Transmit Freq Error** -27.433 kHz
**x dB Bandwidth** 19.360 MHz

## 99% Bandwidth (CH Mid)




**Transmit Freq Error** −23.397 kHz
**x dB Bandwidth** 19.494 MHz

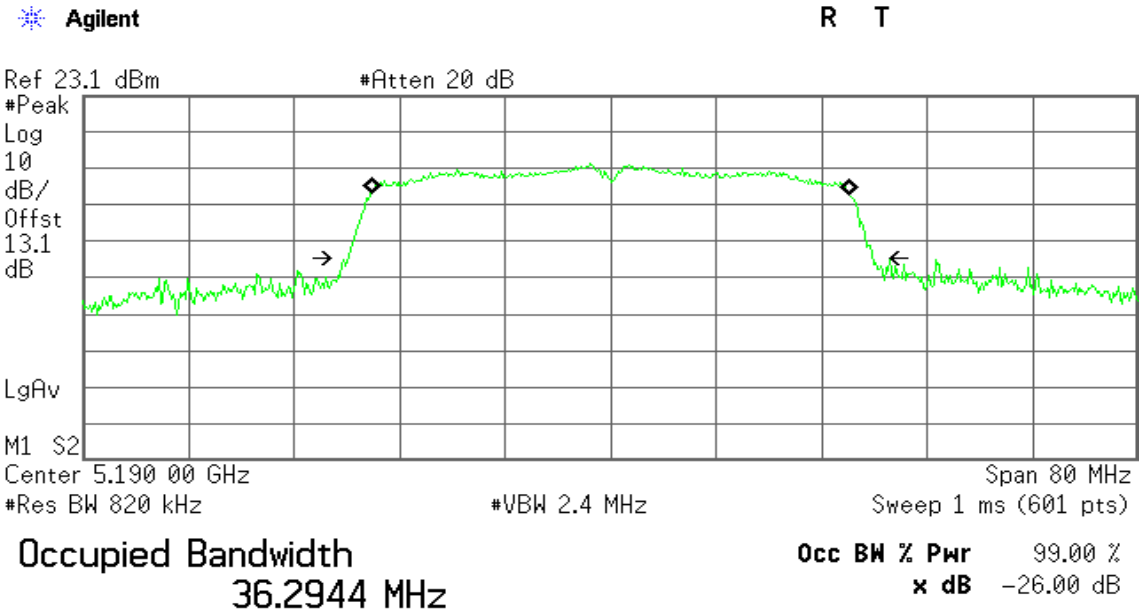
## 99% Bandwidth (CH High)




**Transmit Freq Error** −16.486 kHz
**x dB Bandwidth** 19.378 MHz

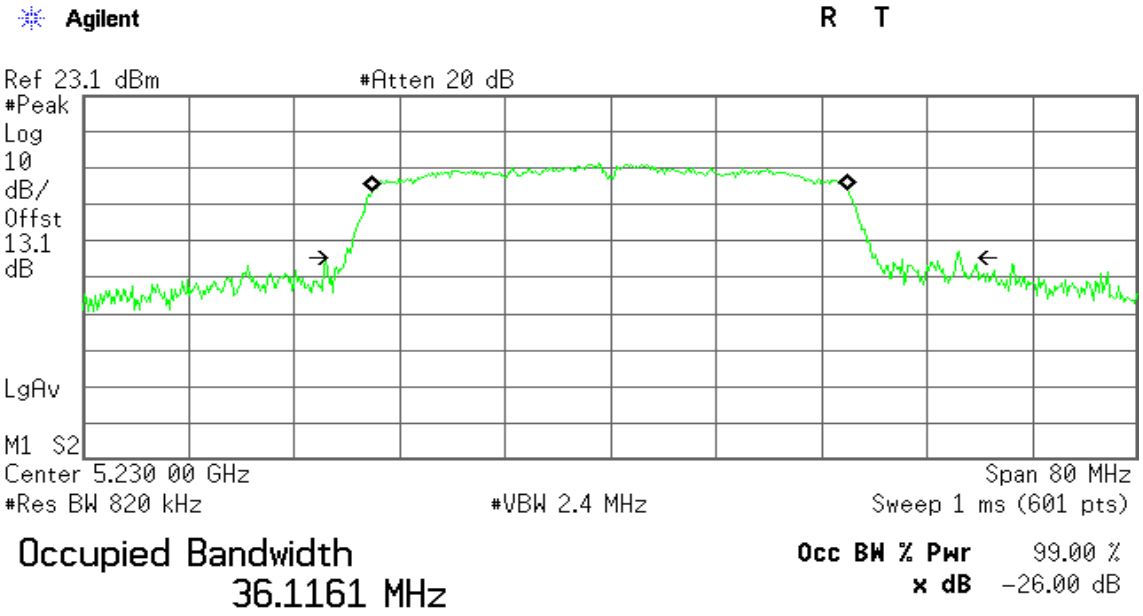
## IEEE 802.11n HT 40 MHz mode / 5190 ~ 5230MHz

### 99% Bandwidth (CH Low)




**Transmit Freq Error** −7.856 kHz
**x dB Bandwidth** 39.855 MHz

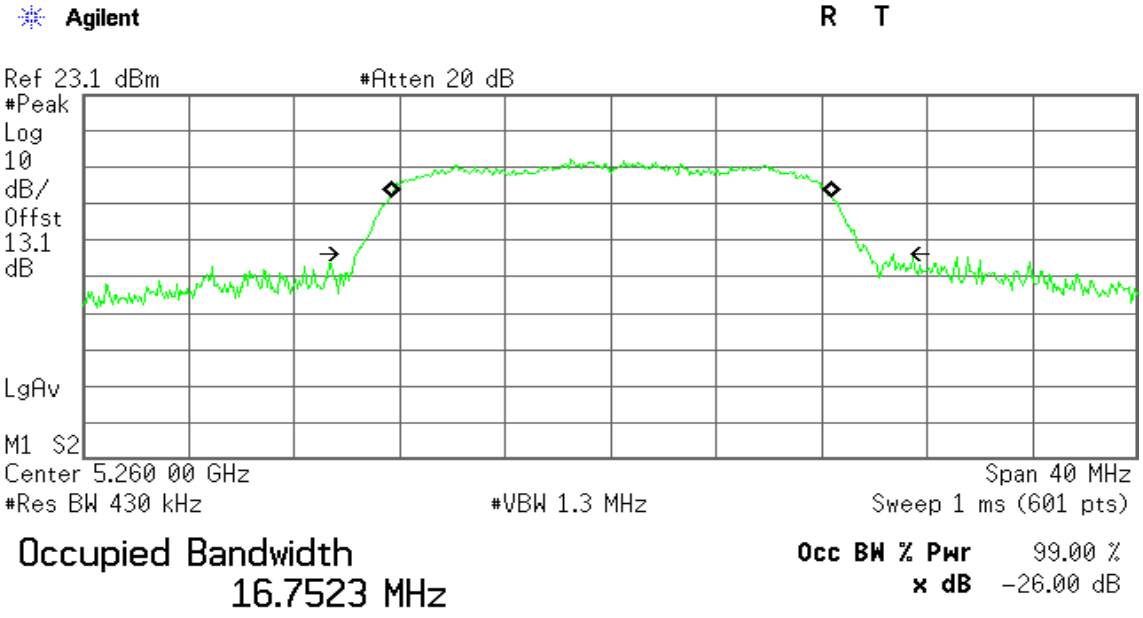
### 99% Bandwidth (CH High)




**Transmit Freq Error** −37.173 kHz
**x dB Bandwidth** 46.609 MHz

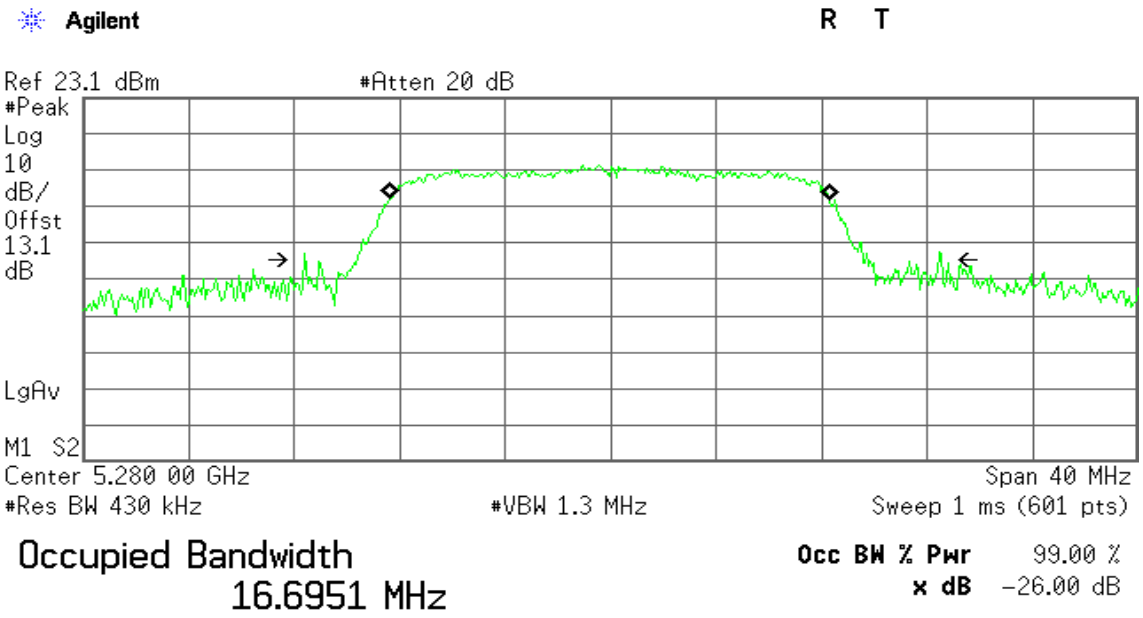
## IEEE 802.11a mode / 5260 ~ 5320MHz

### 99% Bandwidth (CH Low)



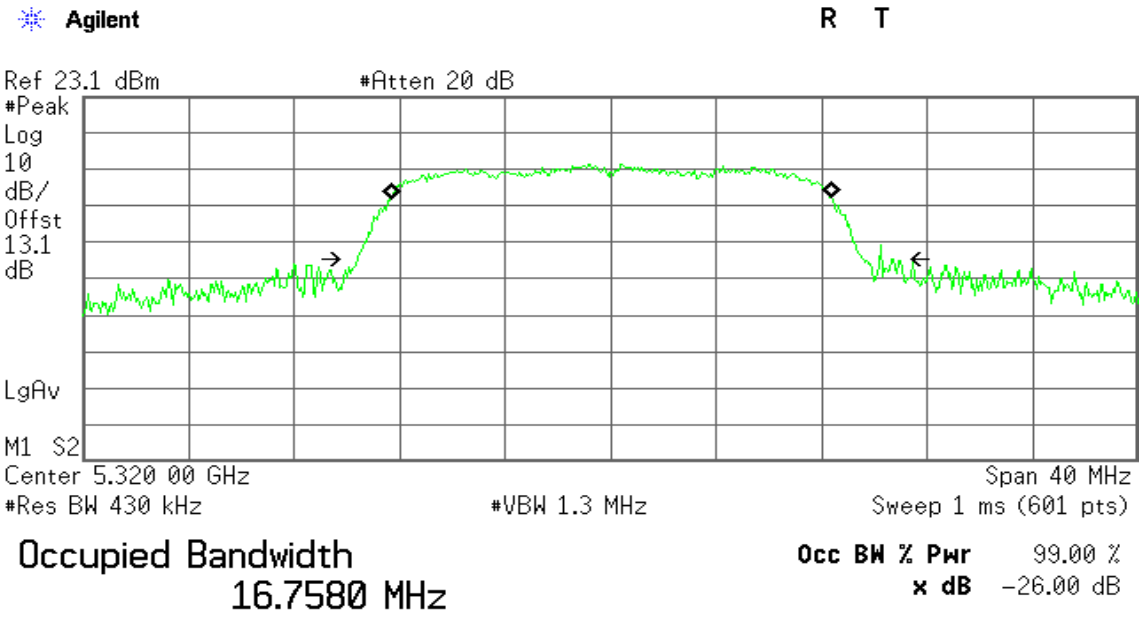

**Transmit Freq Error** 28.519 kHz
**x dB Bandwidth** 20.397 MHz

### 99% Bandwidth (CH Mid)




**Transmit Freq Error** -21.889 kHz
**x dB Bandwidth** 24.186 MHz

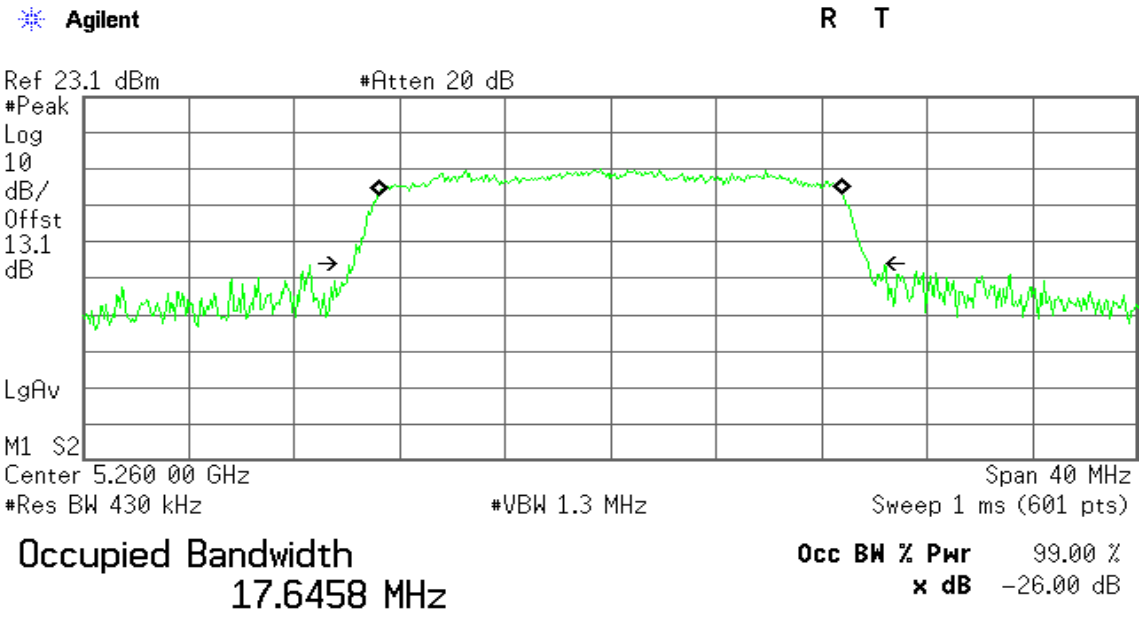
### 99% Bandwidth (CH High)




**Transmit Freq Error** 14.003 kHz
**x dB Bandwidth** 20.344 MHz

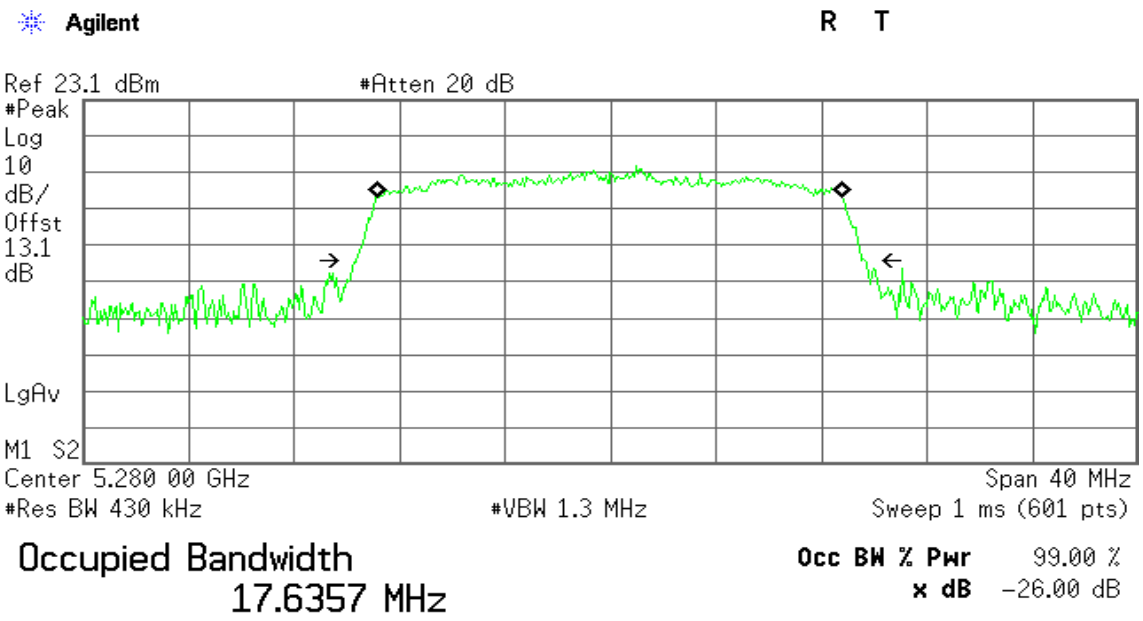
**<u>IEEE 802.11n HT 20 MHz mode / 5260 ~ 5320MHz</u>**

### 99% Bandwidth (CH Low)



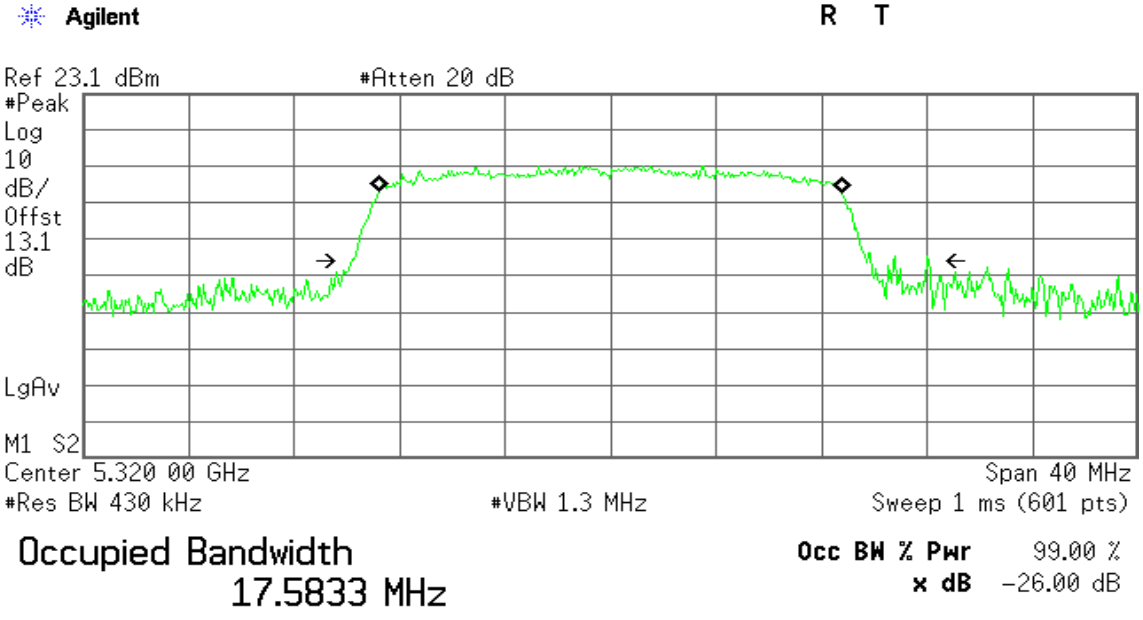

**Transmit Freq Error** -6.818 kHz
**x dB Bandwidth** 19.551 MHz

## 99% Bandwidth (CH Mid)




**Transmit Freq Error** -30.667 kHz
**x dB Bandwidth** 19.334 MHz

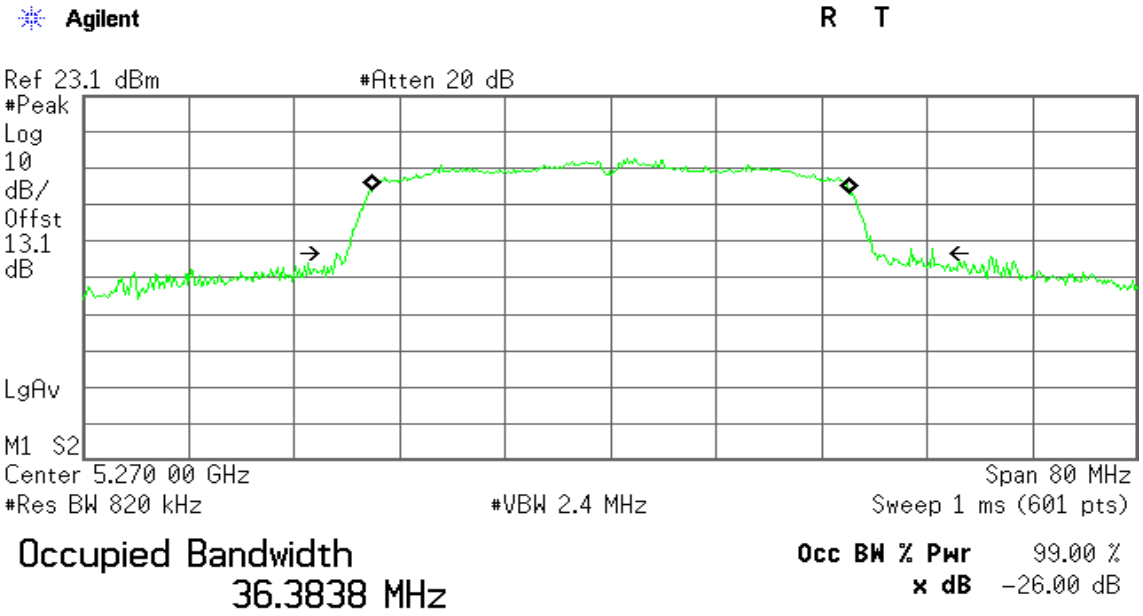
## 99% Bandwidth (CH High)




**Transmit Freq Error** -15.871 kHz
**x dB Bandwidth** 21.854 MHz

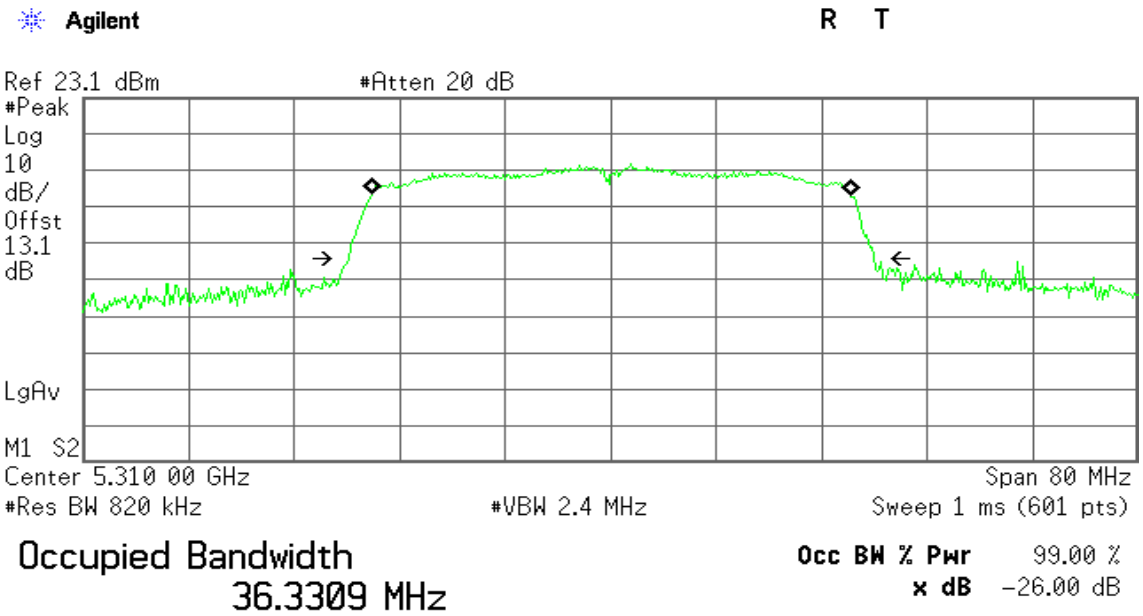
## IEEE 802.11n HT 40 MHz mode / 5270 ~ 5310MHz

### 99% Bandwidth (CH Low)




| | |
|---|---|
| **Transmit Freq Error** | 5.726 kHz |
| **x dB Bandwidth** | 45.263 MHz |

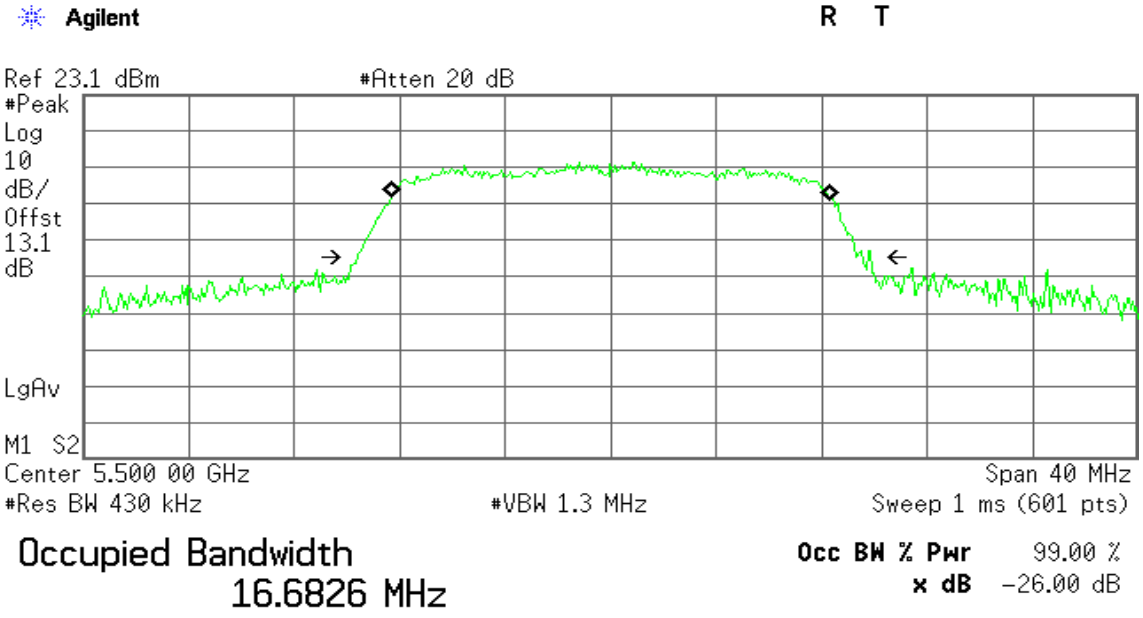
### 99% Bandwidth (CH High)




| | |
|---|---|
| **Transmit Freq Error** | 64.352 kHz |
| **x dB Bandwidth** | 39.916 MHz |

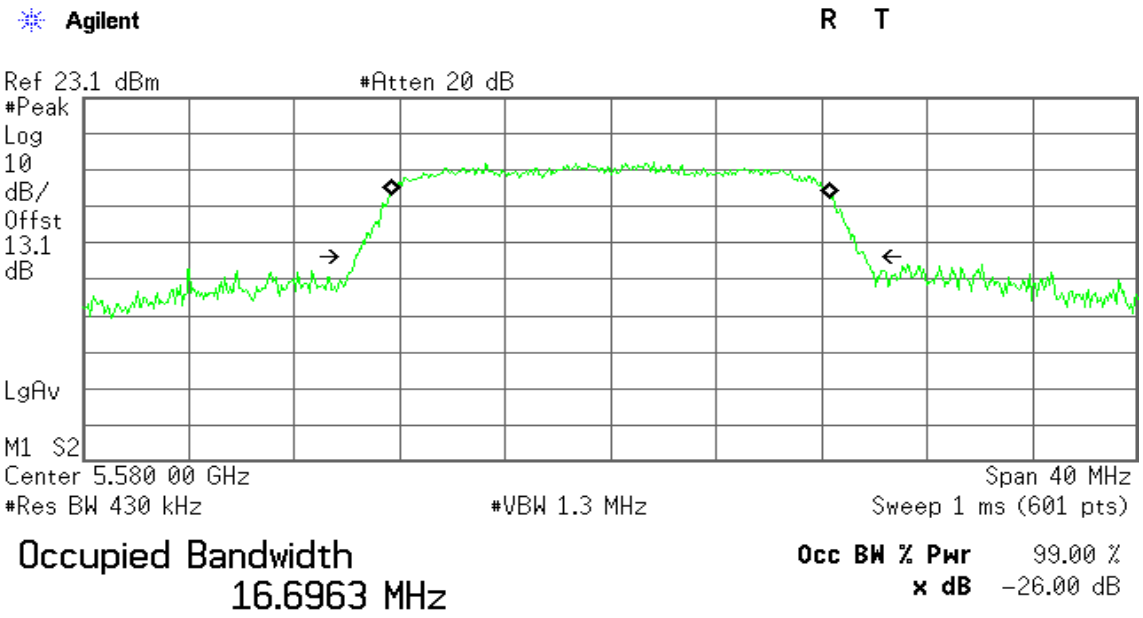
**Test mode: IEEE 802.11a mode / 5500 ~ 5700MHz**

**99% Bandwidth (CH Low)**



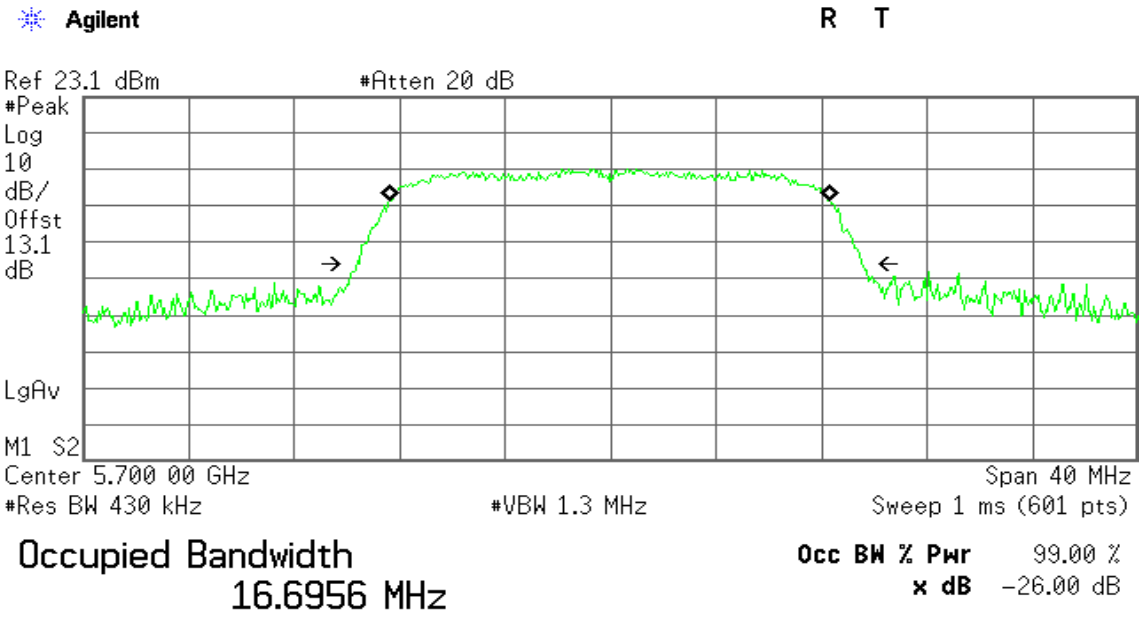

**Transmit Freq Error** 12.316 kHz
**x dB Bandwidth** 19.517 MHz

**99% Bandwidth (CH Mid)**




**Transmit Freq Error** -2.244 kHz
**x dB Bandwidth** 19.365 MHz

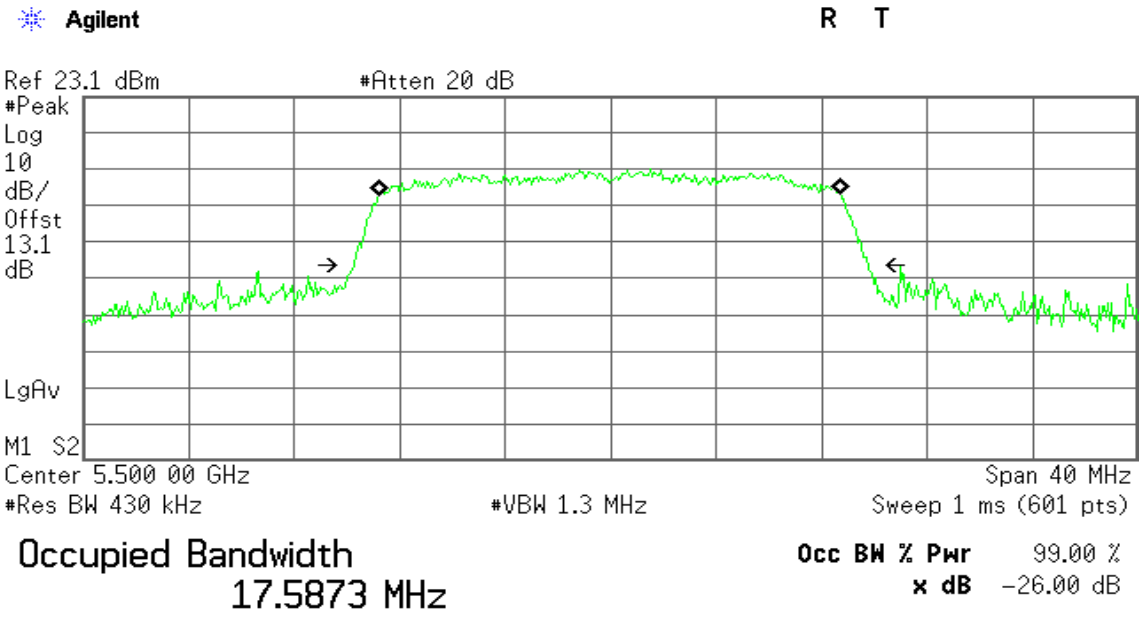
### 99% Bandwidth (CH High)




**Transmit Freq Error** −24.278 kHz
**x dB Bandwidth** 19.158 MHz

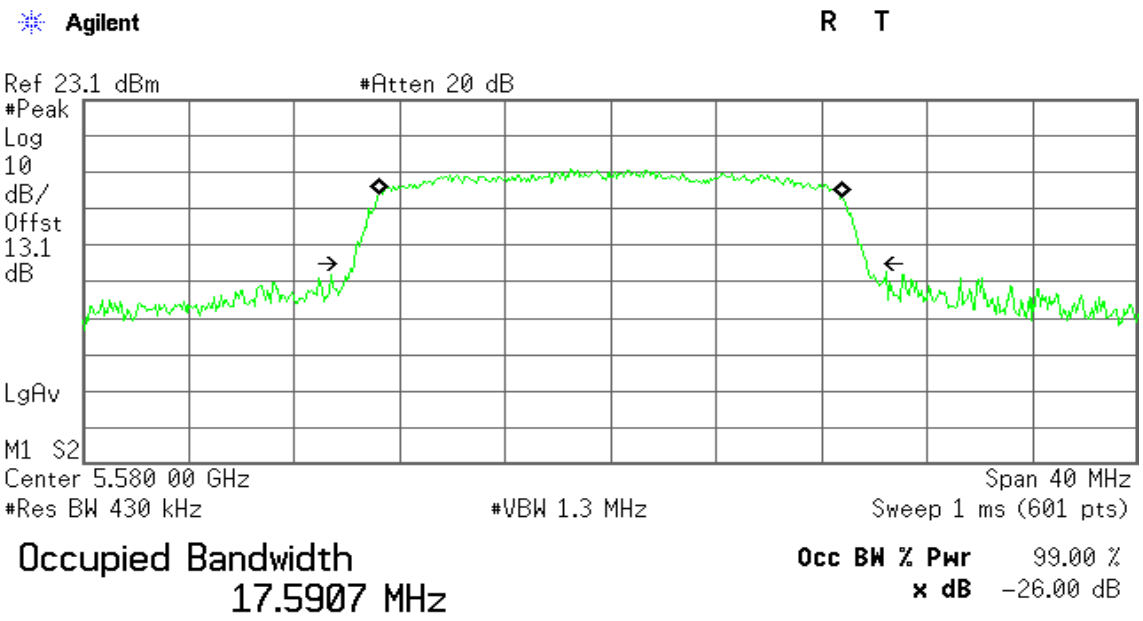
**IEEE 802.11n HT 20 MHz mode / 5500 ~ 5700MHz**

### 99% Bandwidth (CH Low)



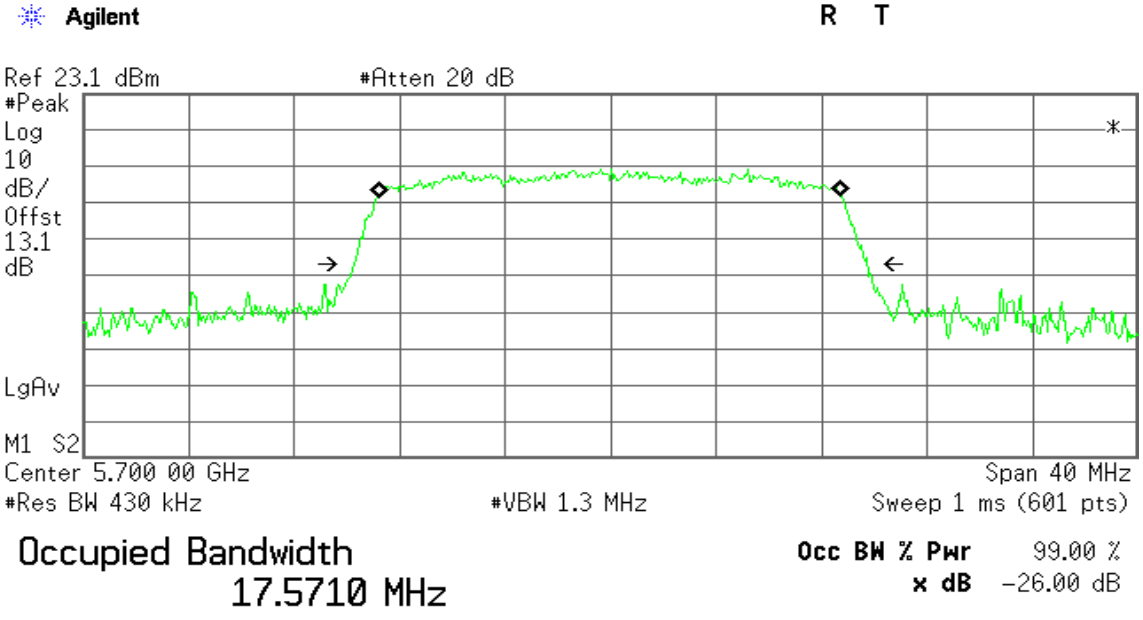

**Transmit Freq Error** −29.168 kHz
**x dB Bandwidth** 19.524 MHz

## 99% Bandwidth (CH Mid)




**Transmit Freq Error** −22.254 kHz
**x dB Bandwidth** 19.495 MHz

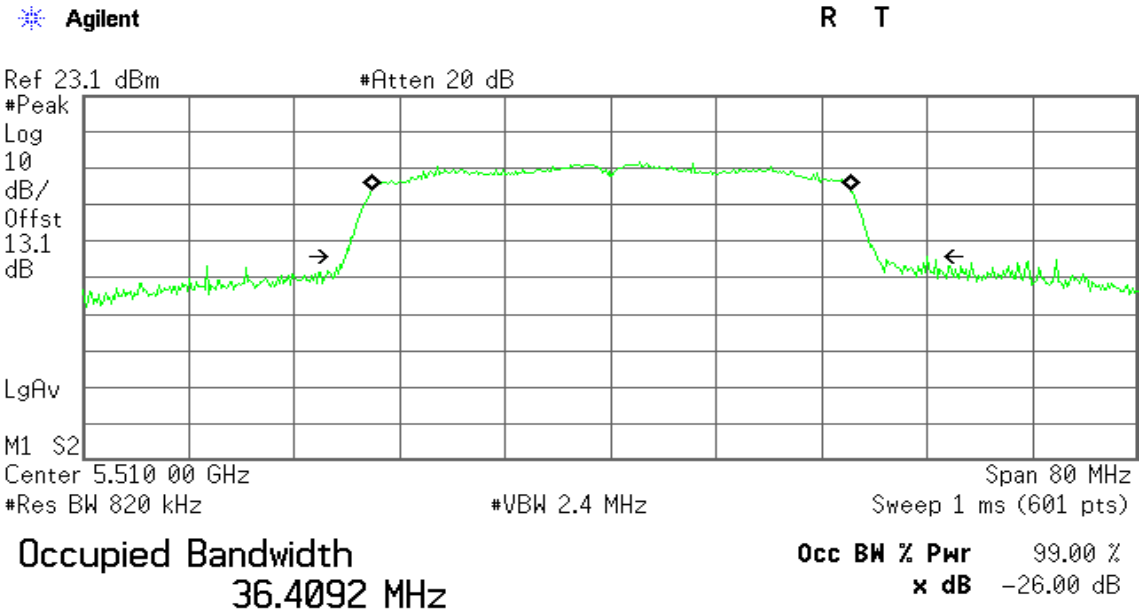
## 99% Bandwidth (CH High)




**Transmit Freq Error** −42.988 kHz
**x dB Bandwidth** 19.502 MHz

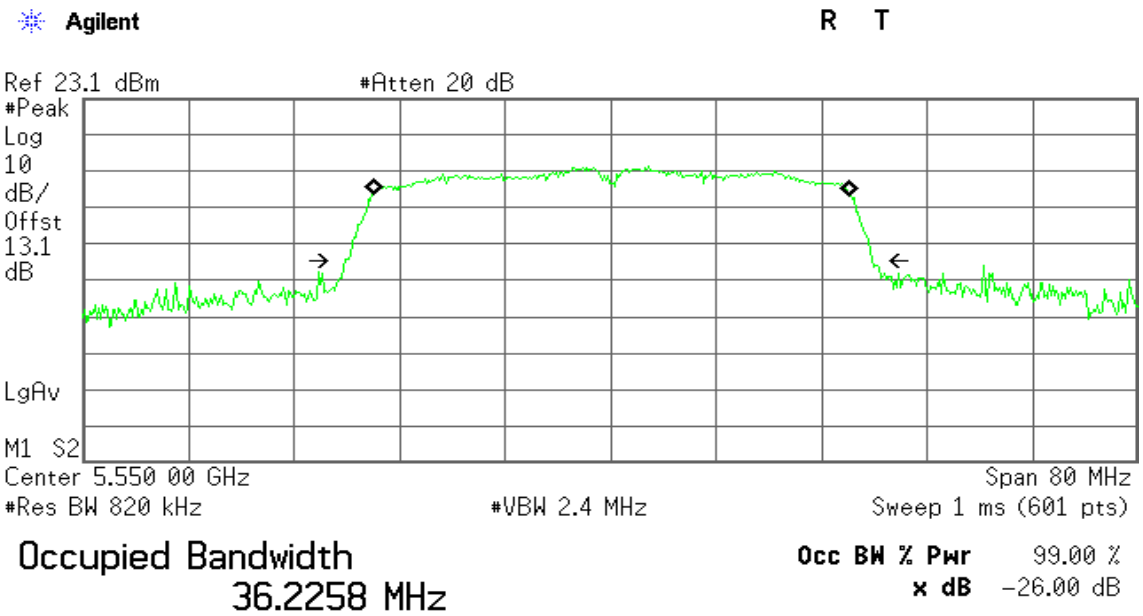
## IEEE 802.11n HT 40 MHz mode / 5510 ~ 5670MHz

### 99% Bandwidth (CH Low)



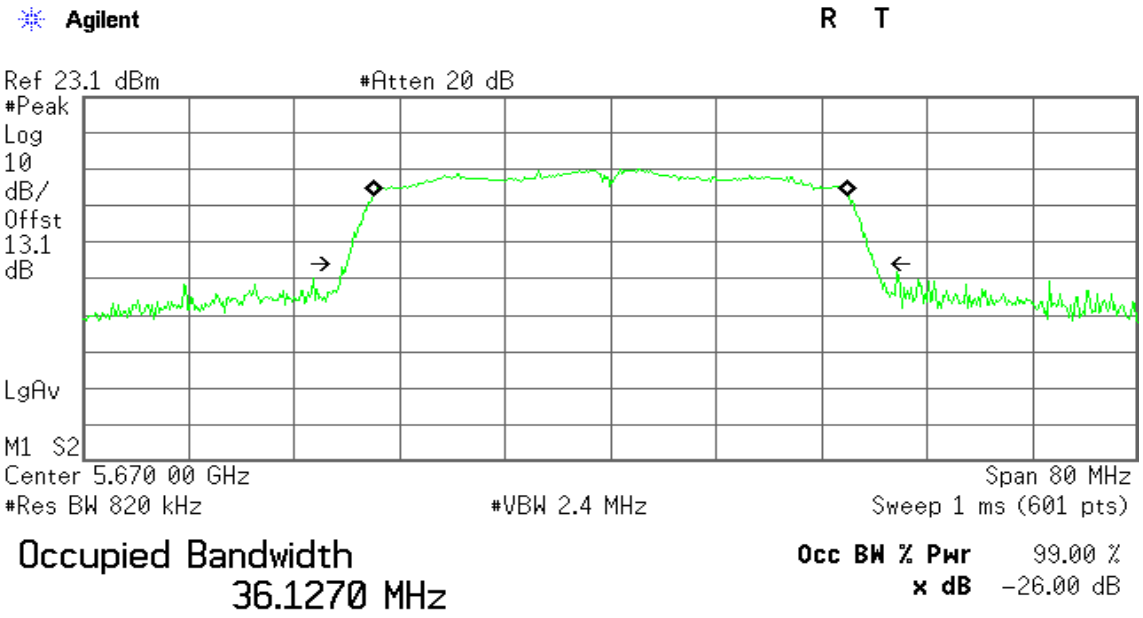

| | |
|---|---|
| **Transmit Freq Error** | 51.391 kHz |
| **x dB Bandwidth** | 44.121 MHz |

### 99% Bandwidth (CH Mid)




| | |
|---|---|
| **Transmit Freq Error** | 65.709 kHz |
| **x dB Bandwidth** | 40.046 MHz |

## 99% Bandwidth (CH High)




Occupied Bandwidth
36.1270 MHz

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

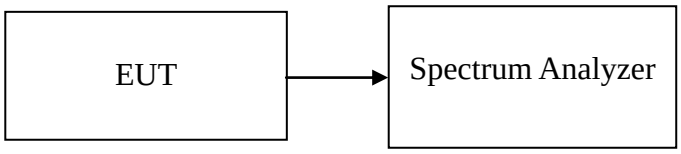
**Transmit Freq Error** 8.798 Hz
**x dB Bandwidth** 40.017 MHz

## 7.2 26 DB EMISSION BANDWIDTH

## LIMIT

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

**Test Configuration**




## TEST PROCEDURE

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

## TEST RESULTS

*No non-compliance noted*

## Test Data

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

| Channel | Frequency (MHz) | Bandwidth (B) (MHz) |
|---|---|---|
| Low | 5180 | 20.825 |
| Mid | 5220 | 19.637 |
| High | 5240 | 20.570 |

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

| Channel | Frequency (MHz) | Bandwidth (B) (MHz) |
|---|---|---|
| Low | 5180 | 19.360 |
| Mid | 5220 | 19.494 |
| High | 5240 | 19.378 |

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

| Channel | Frequency (MHz) | Bandwidth (B) (MHz) |
|---|---|---|
| Low | 5190 | 39.855 |
| High | 5230 | 46.609 |

**Test mode: IEEE 802.11a mode / 5260 ~ 5320MHz**

| Channel | Frequency (MHz) | Bandwidth (B) (MHz) |
|---|---|---|
| Low | 5260 | 20.397 |
| Mid | 5280 | 24.186 |
| High | 5320 | 20.344 |

**Test mode: IEEE 802.11n HT 20 MHz mode / 5260 ~ 5320MHz**

| Channel | Frequency (MHz) | Bandwidth (B) (MHz) |
|---|---|---|
| Low | 5180 | 19.551 |
| Mid | 5260 | 19.334 |
| High | 5320 | 21.854 |

**Test mode: IEEE 802.11n HT 40 MHz mode / 5270 ~ 5310MHz**

| Channel | Frequency (MHz) | Bandwidth (B) (MHz) |
|---|---|---|
| Low | 5190 | 45.263 |
| High | 5310 | 39.916 |

**Test mode: IEEE 802.11a mode / 5500 ~ 5700MHz**

| Channel | Frequency (MHz) | Bandwidth (MHz) |
|---|---|---|
| Low | 5500 | 19.517 |
| Mid | 5580 | 19.365 |
| High | 5700 | 19.158 |

**Test mode: IEEE 802.11n HT 20 MHz mode / 5500 ~ 5700MHz**

| Channel | Frequency (MHz) | Bandwidth (MHz) |
|---|---|---|
| Low | 5500 | 19.524 |
| Mid | 5580 | 19.495 |
| High | 5700 | 19.502 |

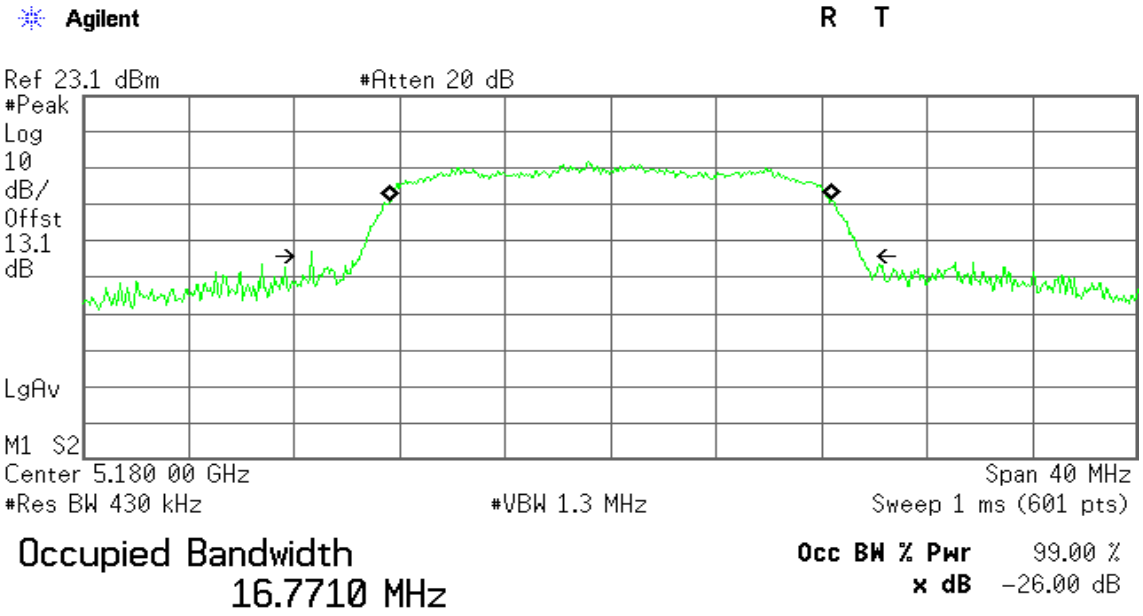
**Test mode: IEEE 802.11n HT 40 MHz mode / 5510 ~ 5670MHz**

| Channel | Frequency (MHz) | Bandwidth (MHz) |
|---|---|---|
| Low | 5510 | 44.121 |
| Mid | 5550 | 40.046 |
| High | 5670 | 40.017 |

## Test Plot

### IEEE 802.11a for 5180 ~ 5240MHz

### CH Low

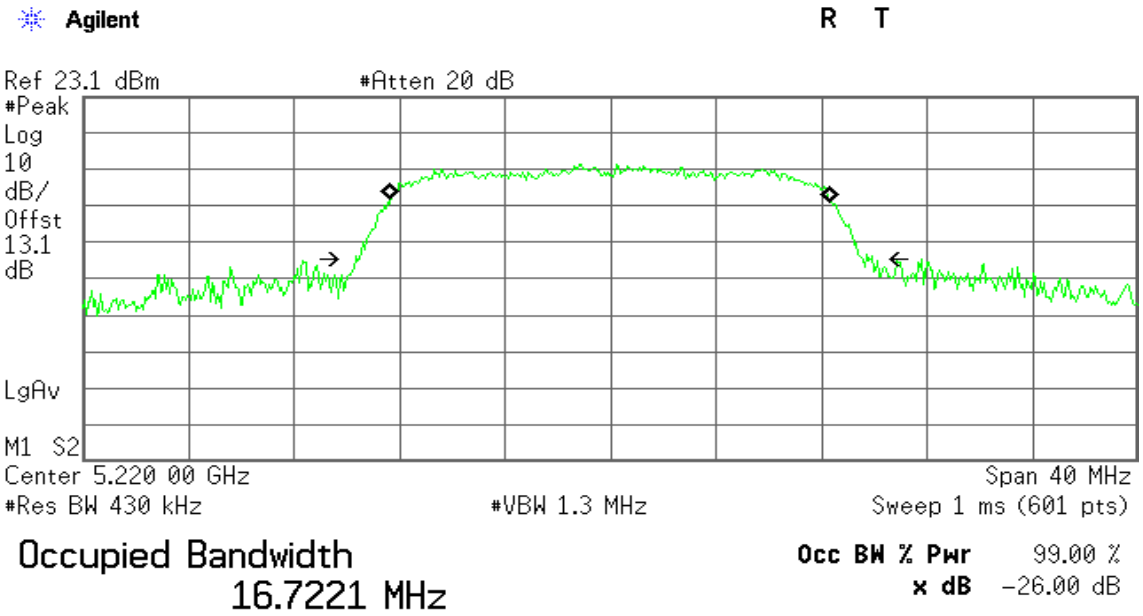



Occupied Bandwidth
16.7710 MHz

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

**Transmit Freq Error** -5.148 kHz
**x dB Bandwidth** 20.825 MHz

### CH Mid

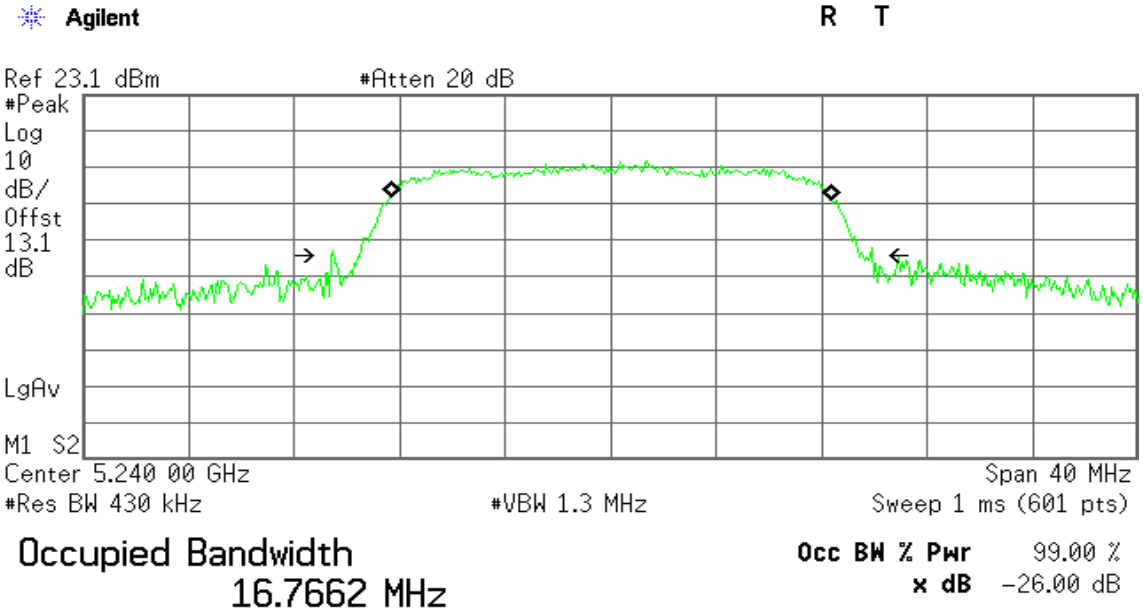



Occupied Bandwidth
16.7221 MHz

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

**Transmit Freq Error** -6.033 kHz
**x dB Bandwidth** 19.637 MHz

**CH High**



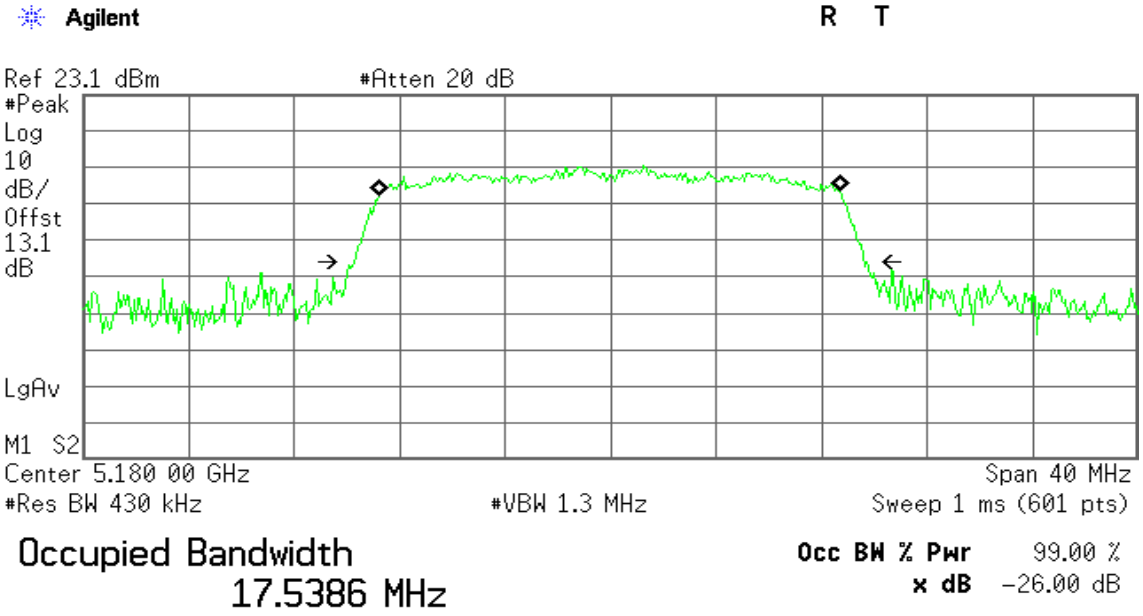

Occupied Bandwidth
16.7662 MHz

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

**Transmit Freq Error** 17.299 kHz
**x dB Bandwidth** 20.570 MHz

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

**CH Low**

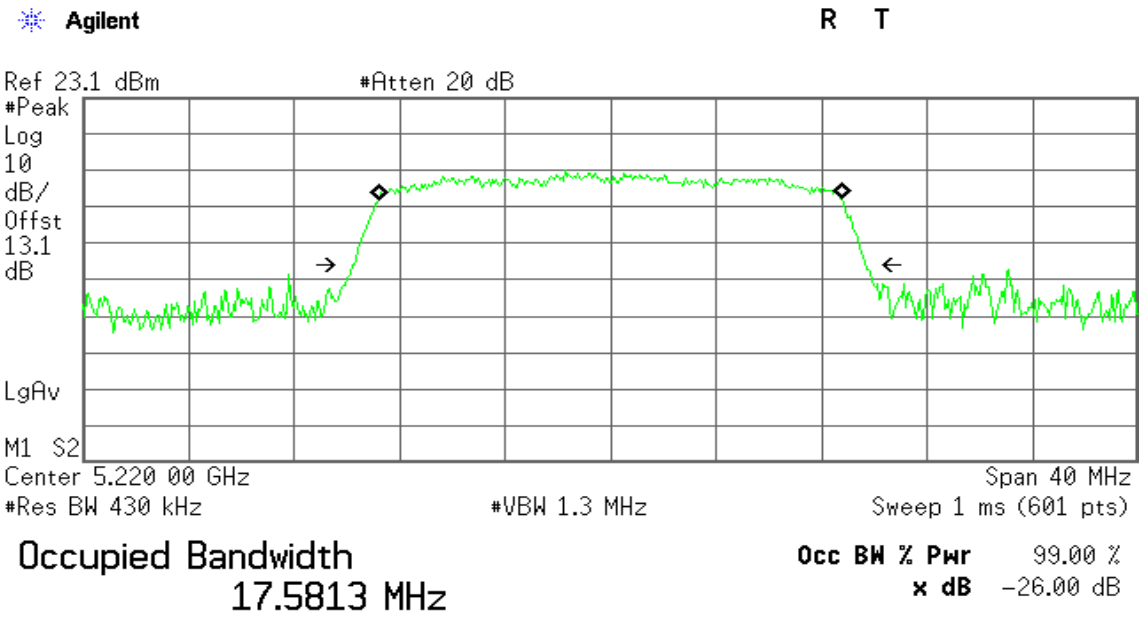



Occupied Bandwidth
17.5386 MHz

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

**Transmit Freq Error** -27.433 kHz
**x dB Bandwidth** 19.360 MHz

## CH Mid

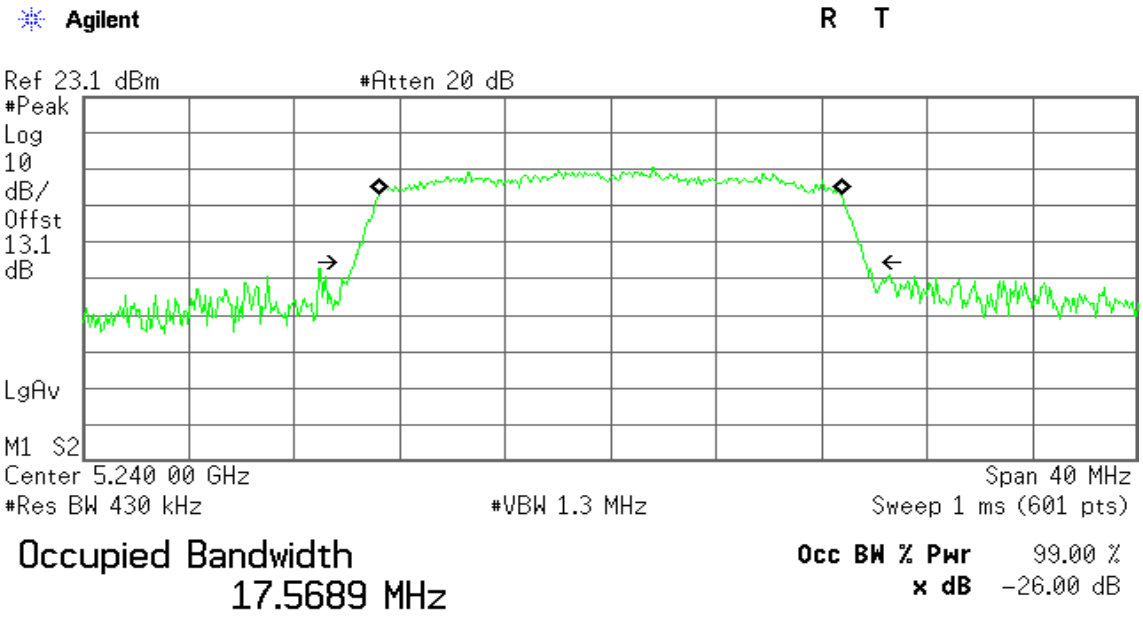



Occupied Bandwidth
17.5813 MHz

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

**Transmit Freq Error** -23.397 kHz
**x dB Bandwidth** 19.494 MHz

## CH High



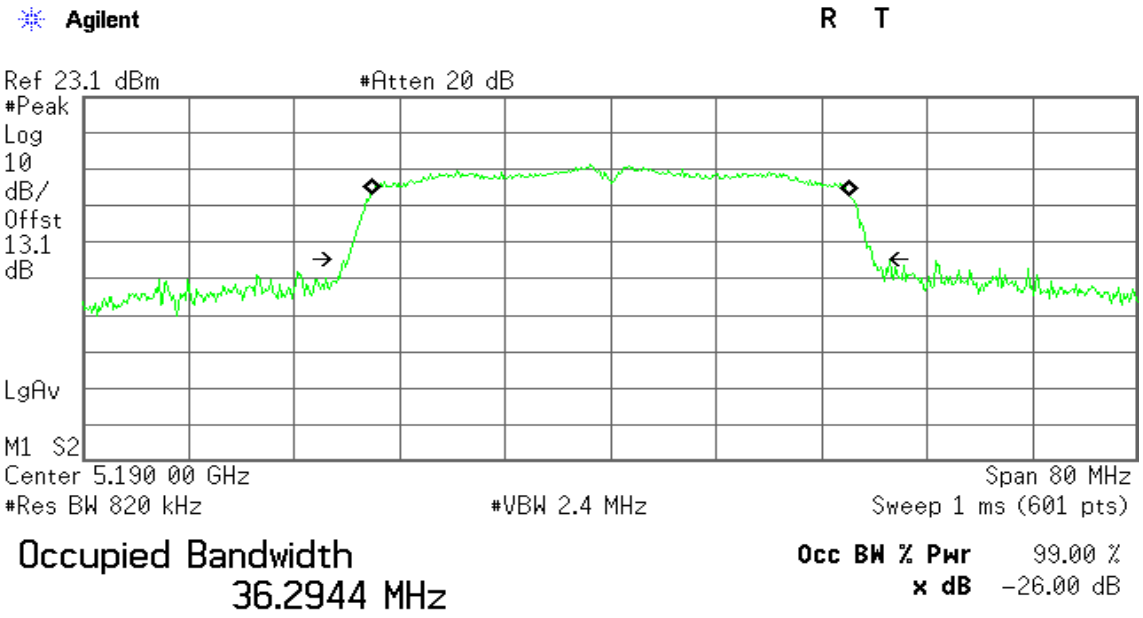

Occupied Bandwidth
17.5689 MHz

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

**Transmit Freq Error** -16.486 kHz
**x dB Bandwidth** 19.378 MHz

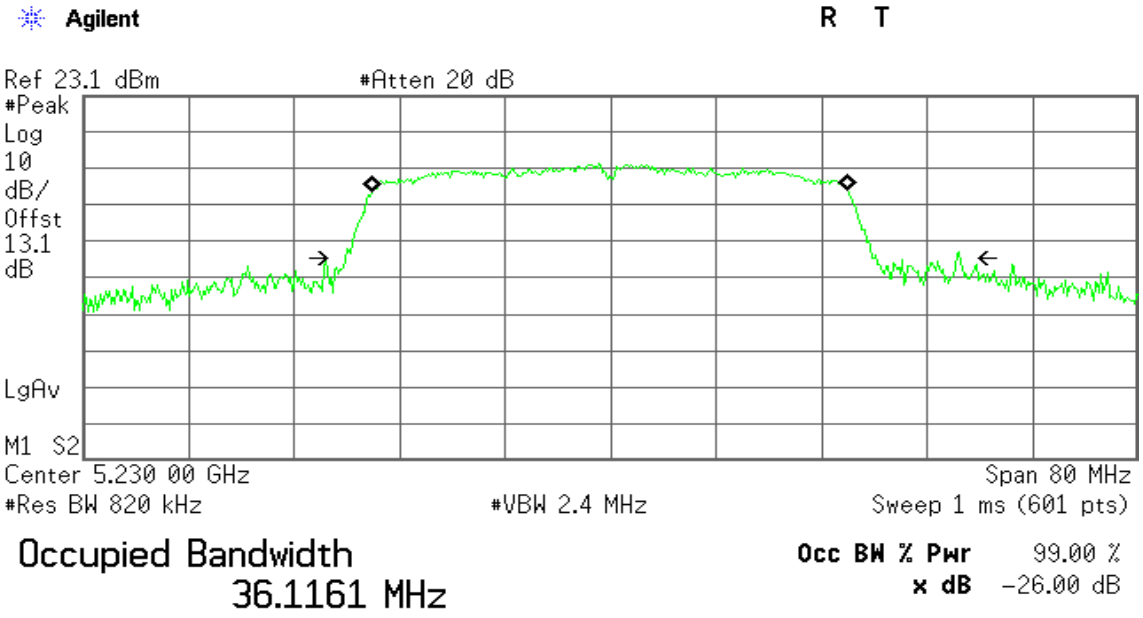
## IEEE 802.11n HT 40 MHz mode / 5190 ~ 5230MHz

### CH Low




**Transmit Freq Error** −7.856 kHz
**x dB Bandwidth** 39.855 MHz

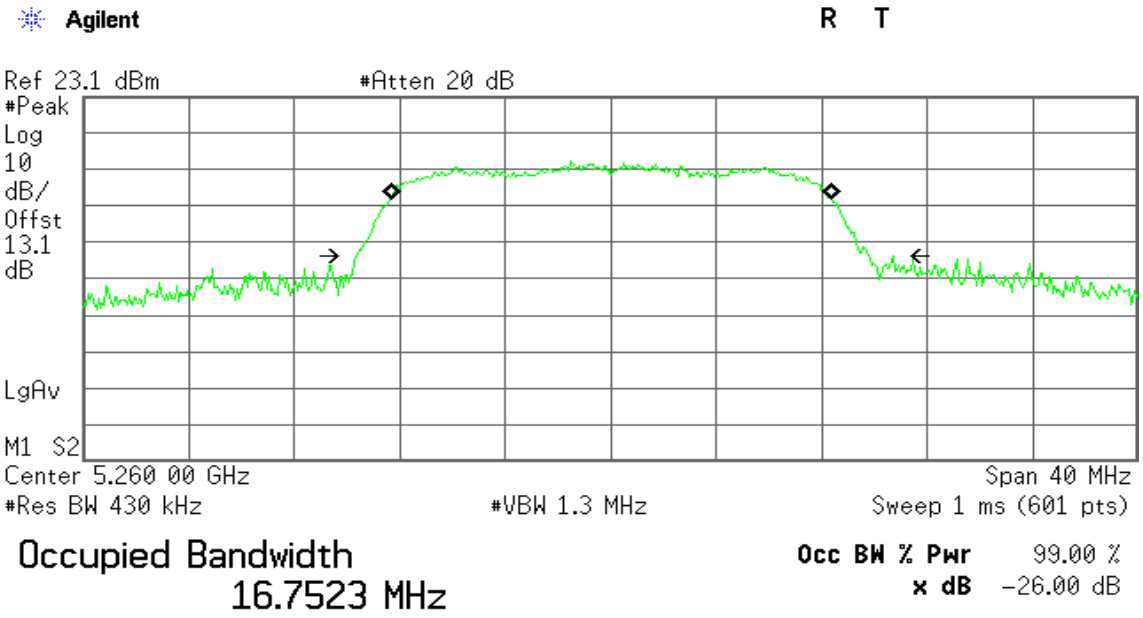
### CH High




**Transmit Freq Error** −37.173 kHz
**x dB Bandwidth** 46.609 MHz

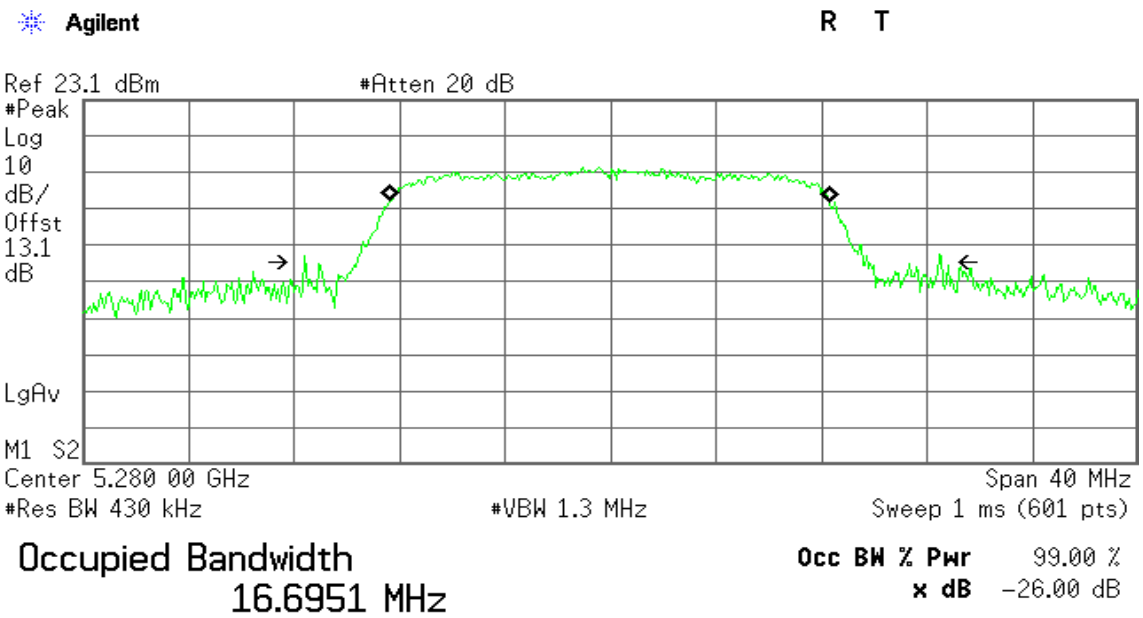
## IEEE 802.11a mode / 5260 ~ 5320MHz

### CH Low



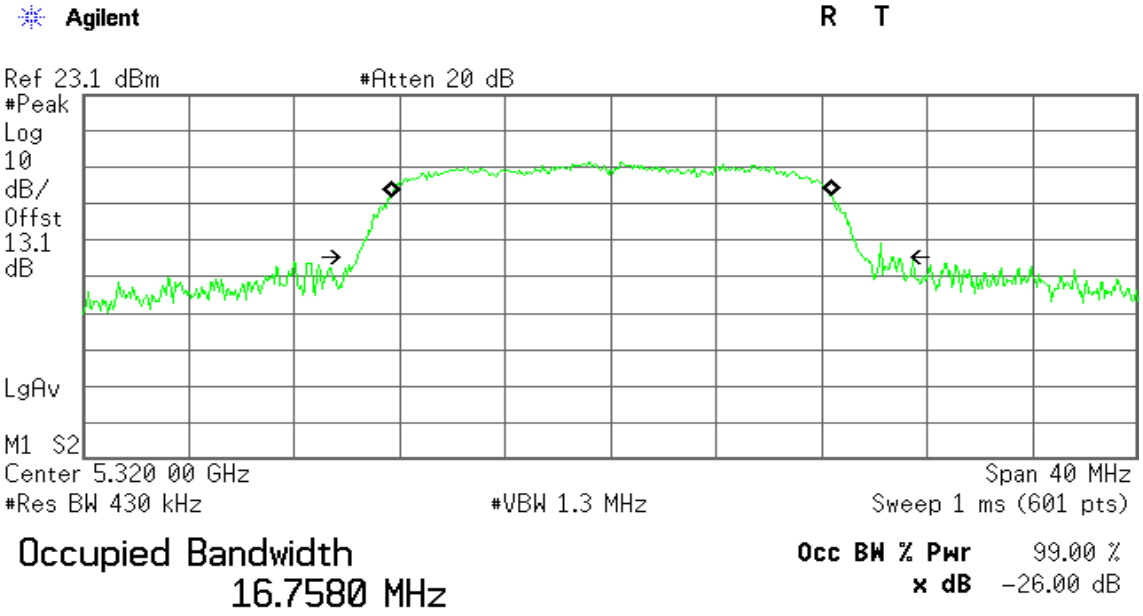

| | |
|---|---|
| **Transmit Freq Error** | 28.519 kHz |
| **x dB Bandwidth** | 20.397 MHz |

### CH Mid




| | |
|---|---|
| **Transmit Freq Error** | -21.889 kHz |
| **x dB Bandwidth** | 24.186 MHz |

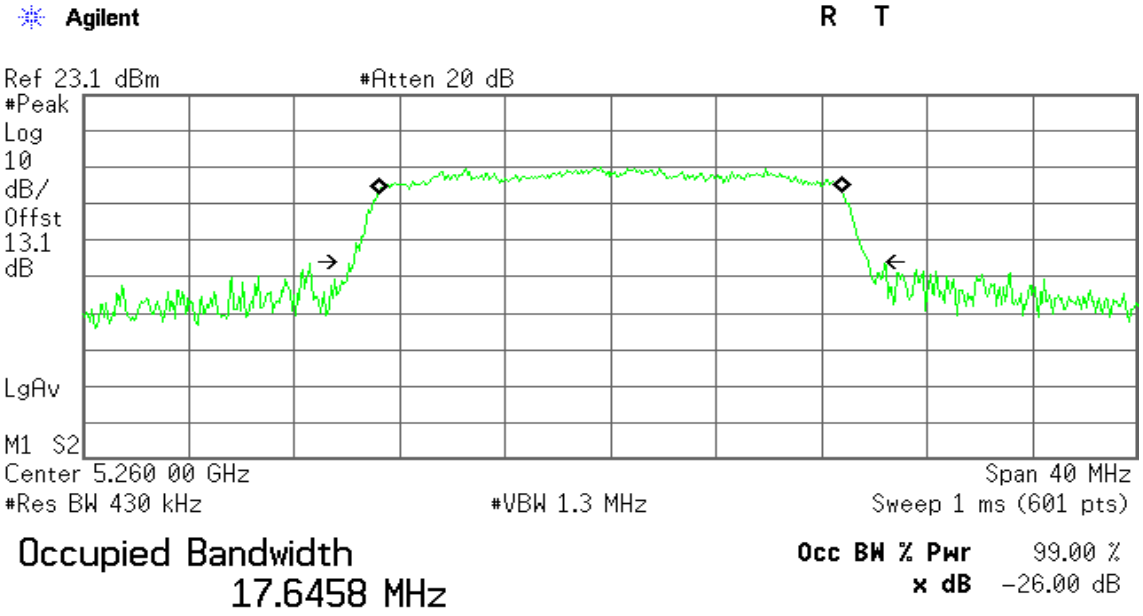
**CH High**




| | |
|---|---|
| **Transmit Freq Error** | 14.003 kHz |
| **x dB Bandwidth** | 20.344 MHz |

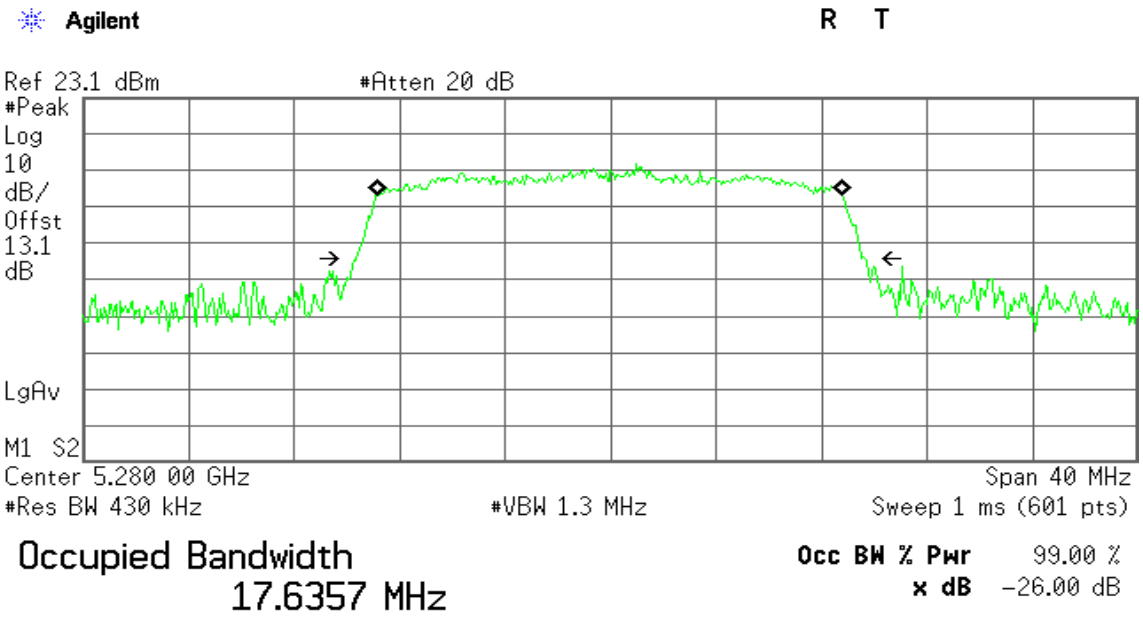
**IEEE 802.11n HT 20 MHz mode / 5260 ~ 5320MHz**

**CH Low**




| | |
|---|---|
| **Transmit Freq Error** | -6.818 kHz |
| **x dB Bandwidth** | 19.551 MHz |

## CH Mid

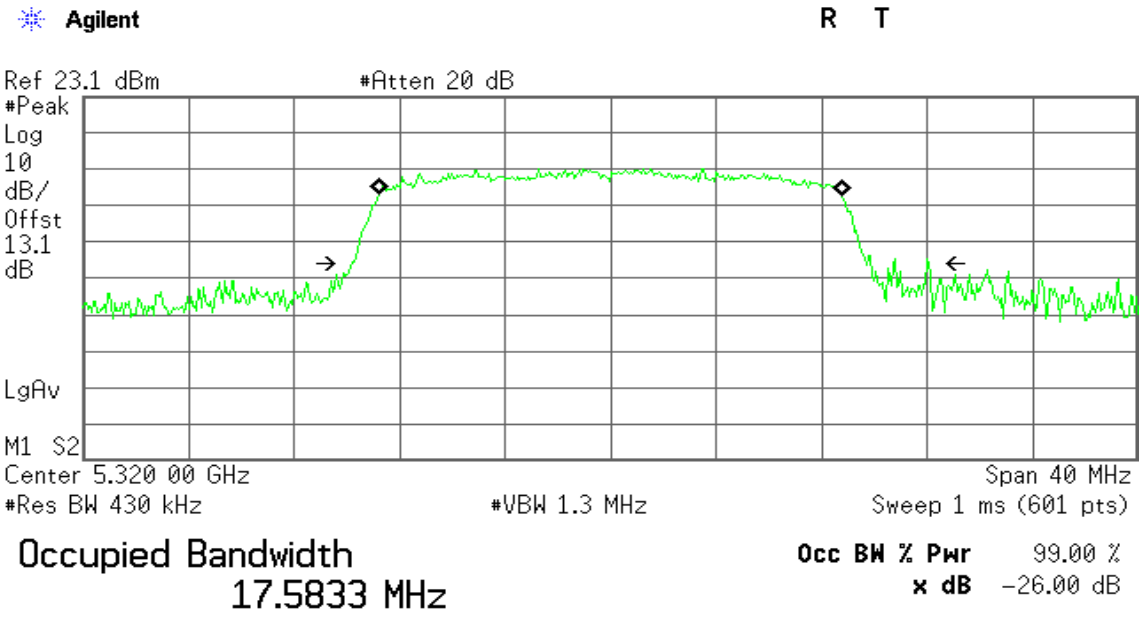



Occupied Bandwidth
17.6357 MHz

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

**Transmit Freq Error** -30.667 kHz
**x dB Bandwidth** 19.334 MHz

## CH High



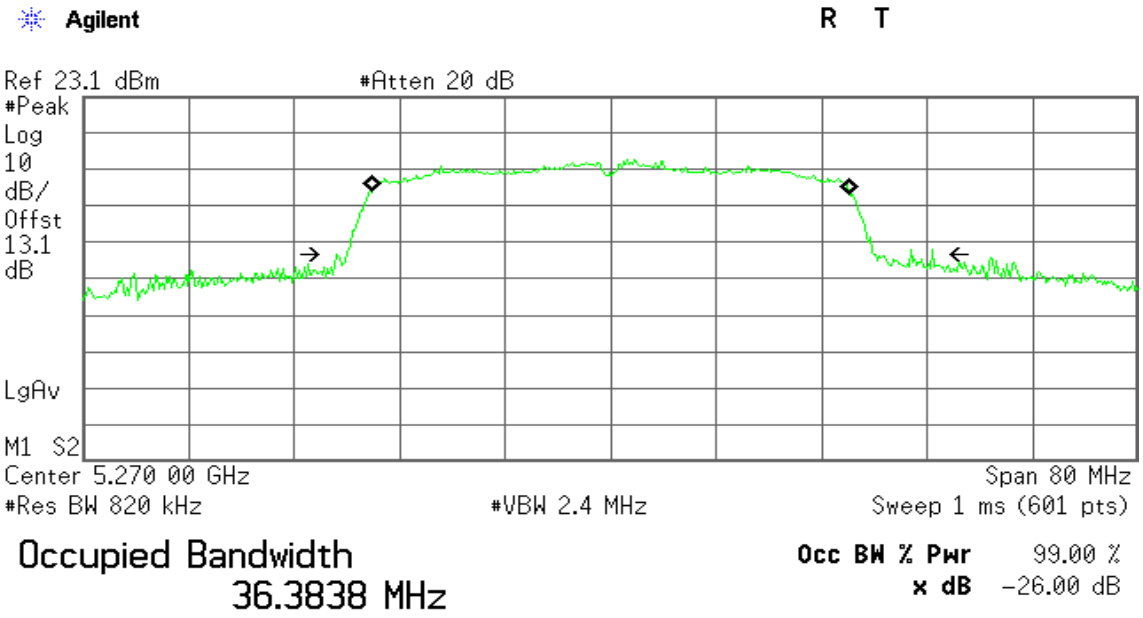

Occupied Bandwidth
17.5833 MHz

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

**Transmit Freq Error** -15.871 kHz
**x dB Bandwidth** 21.854 MHz

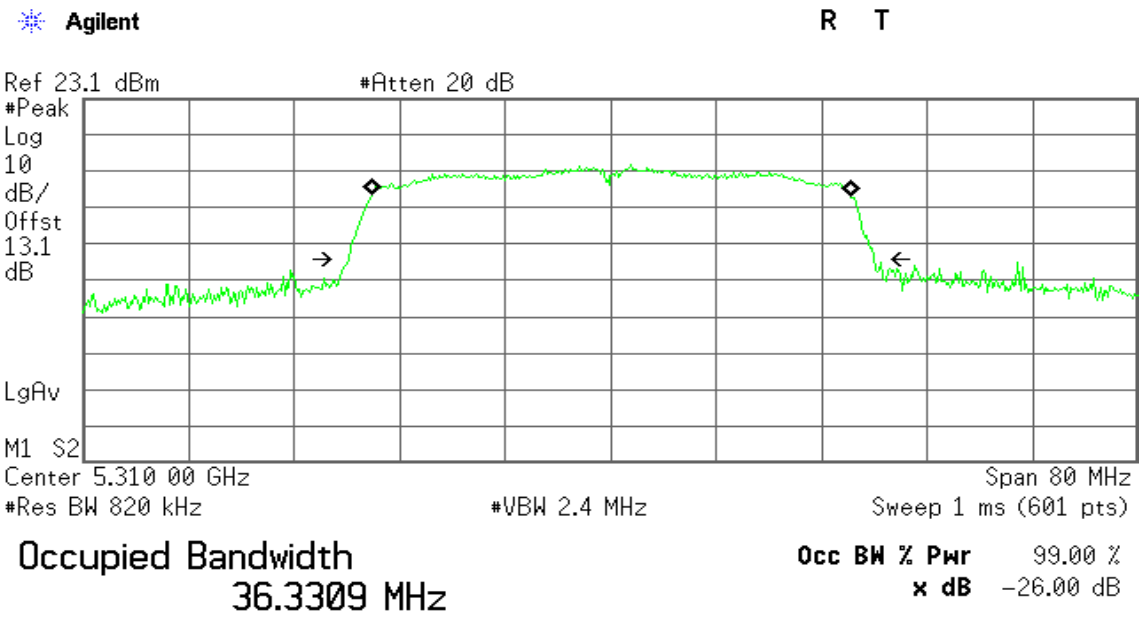
## IEEE 802.11n HT 40 MHz mode / 5270 ~ 5310MHz

### CH Low




**Transmit Freq Error** 5.726 kHz
**x dB Bandwidth** 45.263 MHz

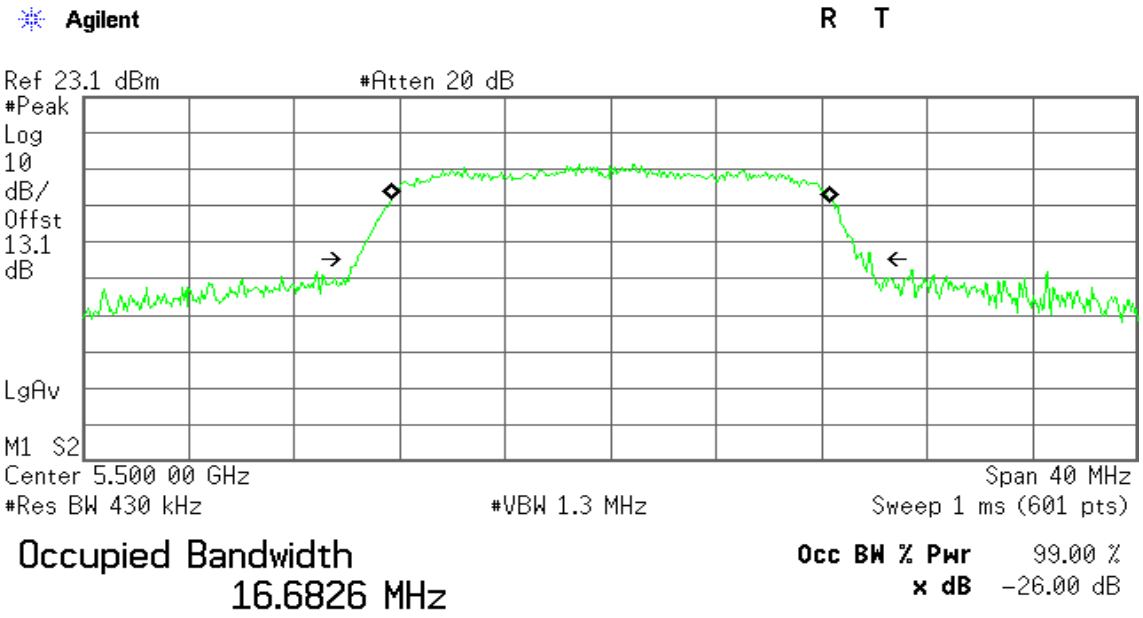
### CH High




**Transmit Freq Error** 64.352 kHz
**x dB Bandwidth** 39.916 MHz

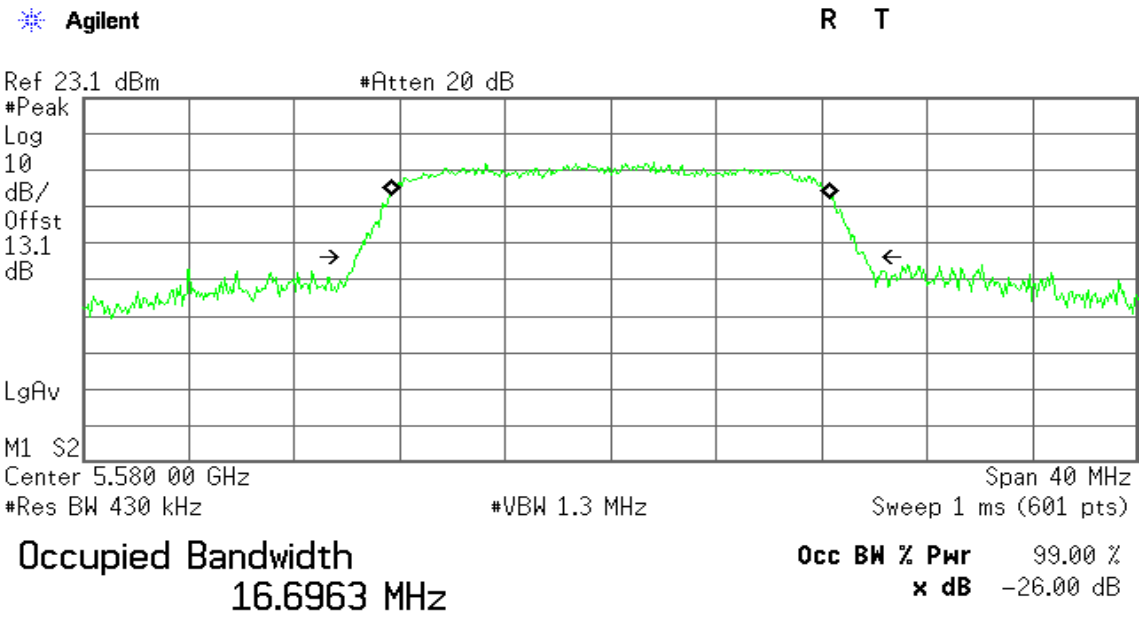
## IEEE 802.11a mode / 5500 ~ 5700MHz

### CH Low



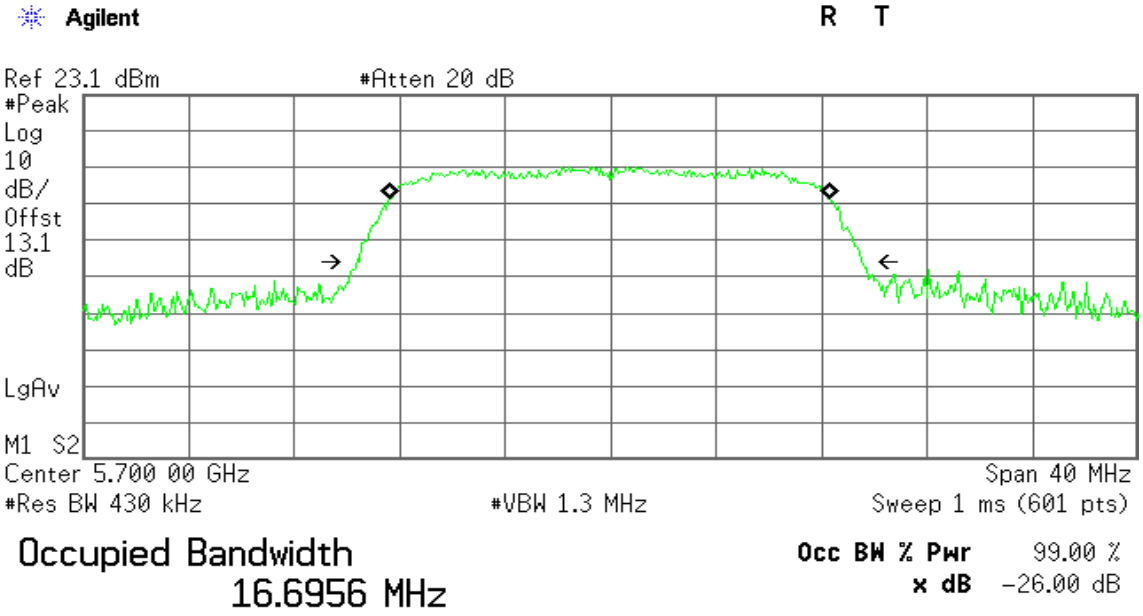

| | |
|---|---|
| **Transmit Freq Error** | 12.316 kHz |
| **x dB Bandwidth** | 19.517 MHz |

### CH Mid




| | |
|---|---|
| **Transmit Freq Error** | -2.244 kHz |
| **x dB Bandwidth** | 19.365 MHz |

**CH High**



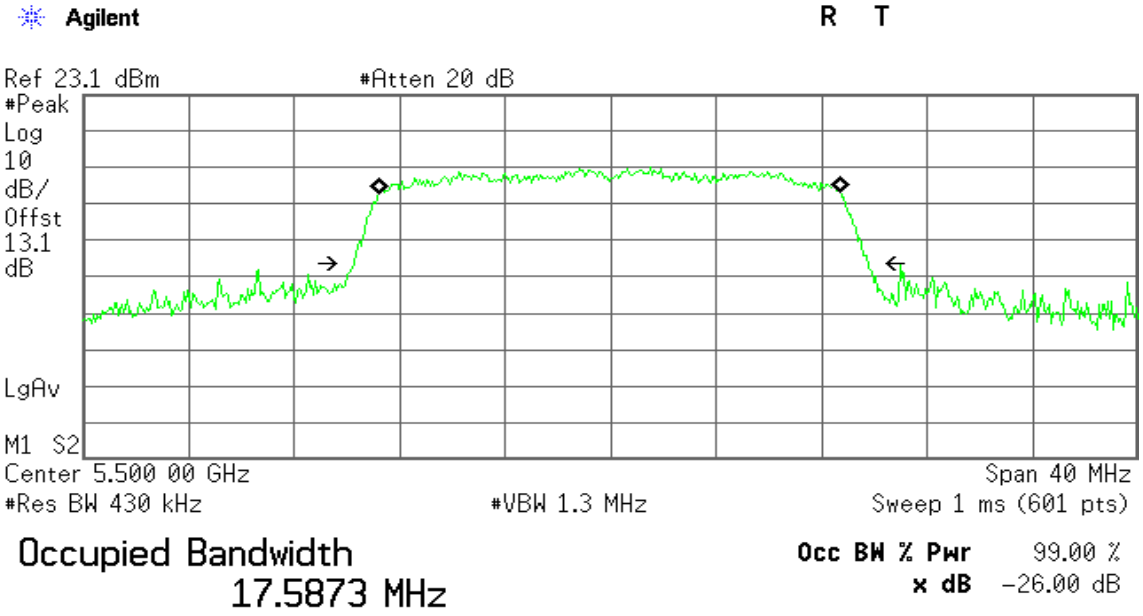

Occupied Bandwidth
16.6956 MHz

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

**Transmit Freq Error** -24.278 kHz
**x dB Bandwidth** 19.158 MHz

**IEEE 802.11n HT 20 MHz mode / 5500 ~ 5700MHz**

**CH Low**

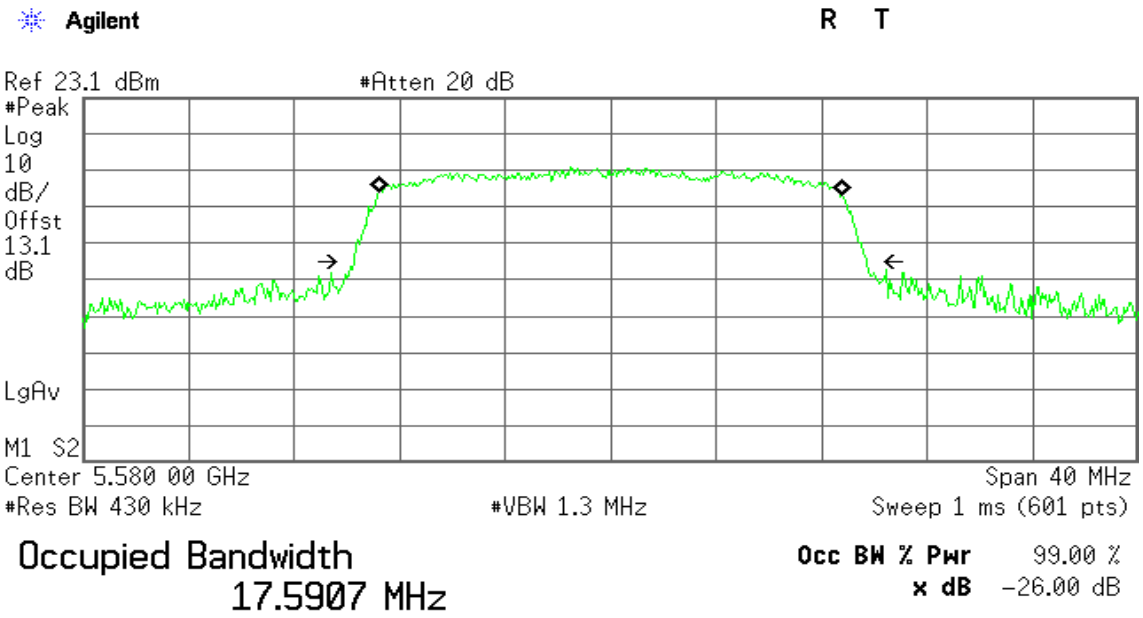



Occupied Bandwidth
17.5873 MHz

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

**Transmit Freq Error** -29.168 kHz
**x dB Bandwidth** 19.524 MHz

## CH Mid

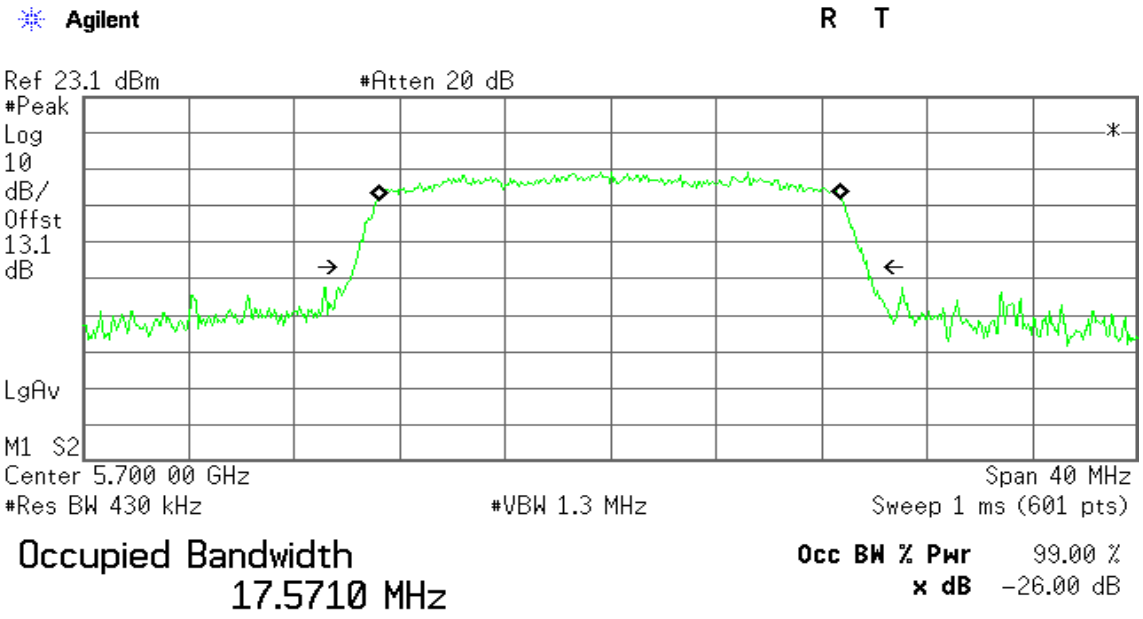



Occupied Bandwidth
17.5907 MHz

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

**Transmit Freq Error** -22.254 kHz
**x dB Bandwidth** 19.495 MHz

## CH High



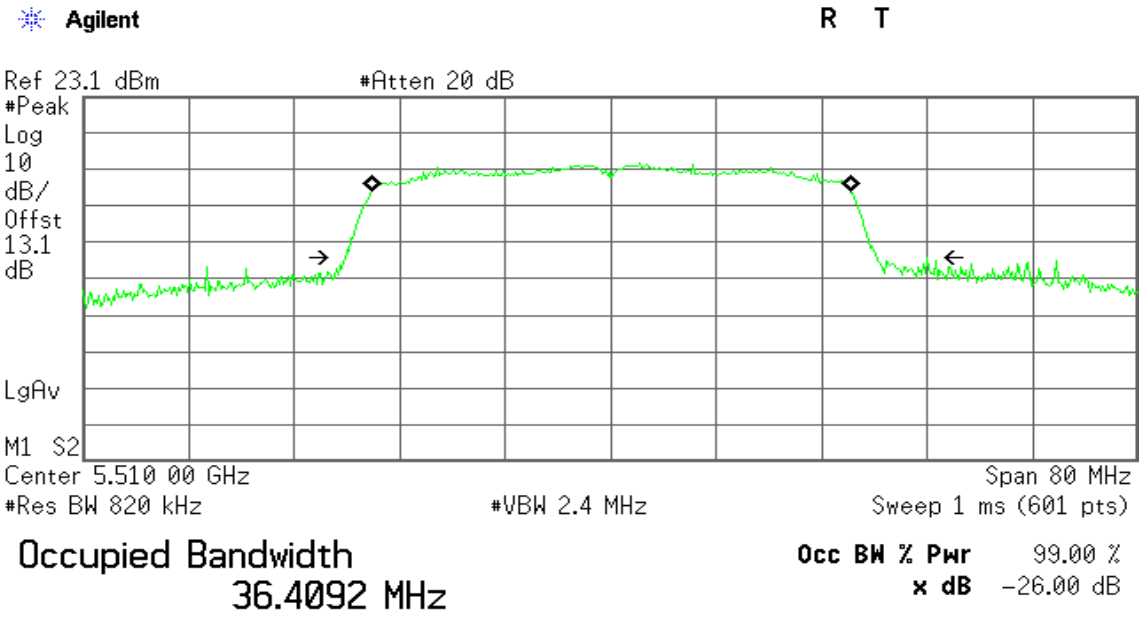

Occupied Bandwidth
17.5710 MHz

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

**Transmit Freq Error** -42.988 kHz
**x dB Bandwidth** 19.502 MHz

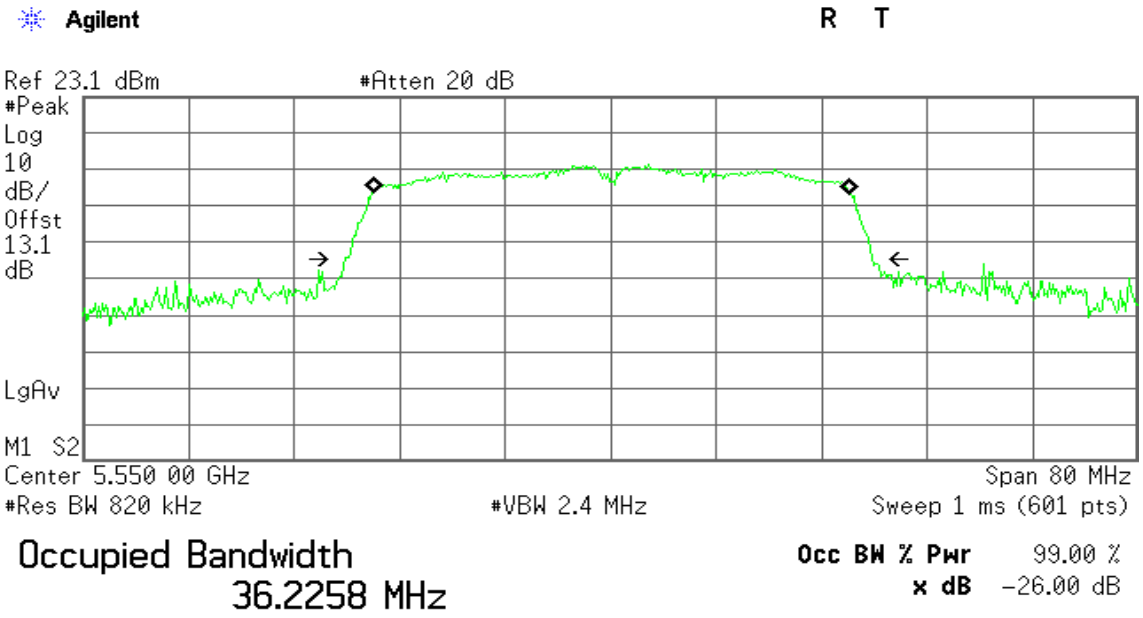
## IEEE 802.11n HT 40 MHz mode / 5510 ~ 5670MHz

### CH Low



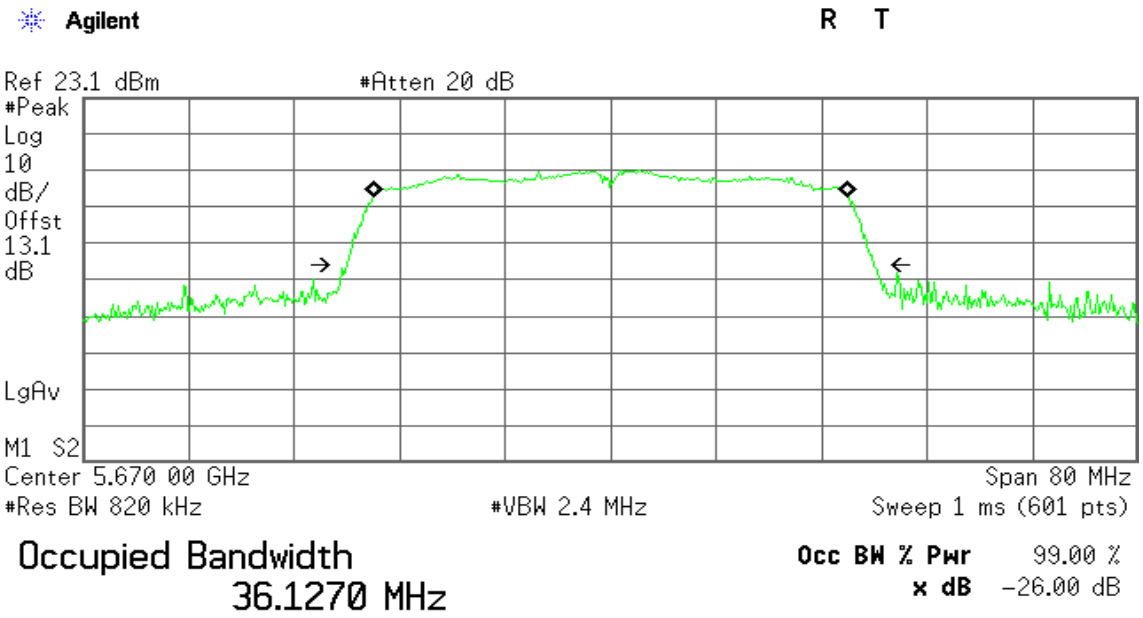

| | |
|---|---|
| **Transmit Freq Error** | 51.391 kHz |
| **x dB Bandwidth** | 44.121 MHz |

### CH Mid




| | |
|---|---|
| **Transmit Freq Error** | 65.709 kHz |
| **x dB Bandwidth** | 40.046 MHz |

## CH High




Occupied Bandwidth
36.1270 MHz

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

**Transmit Freq Error** 8.798 Hz
**x dB Bandwidth** 40.017 MHz

## 7.3 MAXIMUM CONDUCTED OUTPUT POWER

## LIMIT

**According to §15.407(a),**

(1) For the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 50 mW or 4 dBm + 10log B, where B is the 26 dB emission bandwidth in MHz.

(2) For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10log B, where B is the 26 dB emission bandwidth in MHz.

*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.*

**According to RSS-210 §A9.2,**

(1) For the band 5150-5250 MHz, the maximum equivalent isotropically radiated power (e.i.r.p.) shall not exceed 200 mW or 10 + 10 $Log_{10}$ B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz. The e.i.r.p. spectral density shall not exceed 10 dBm in any 1.0 MHz band.

(2) For the band 5250-5350 MHz and 5470-5725 MHz, the maximum conducted output power shall not exceed 250 mW or 11 + 10 Log10 B, dBm, whichever power is less. The power spectral density shall not exceed 11 dBm in any 1.0 MHz band. The maximum e.i.r.p. shall not exceed 1.0 W or 17 + 10 Log10 B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz.

*In addition, devices with maximum e.i.r.p. greater than 500 mW shall implement TPC in order to have the capability to operate at least 6 dB below the maximum permitted e.i.r.p. of 1 W.*
*The peak power shall not exceed the limit as follow:*

## Specified Limit of the Peak Power

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

| Channel | Frequency (MHz) | 26 dB Bandwidth (B) (MHz) | 10 Log B (dB) | 4 + 10 Log B (dBm) | Maximum Conducted Output Power Limit (dBm) |
|---|---|---|---|---|---|
| Low | 5180 | 20.825 | 13.19 | 17.19 | 17.00 |
| Mid | 5220 | 19.637 | 12.93 | 16.93 | 17.00 |
| High | 5240 | 20.570 | 13.13 | 17.13 | 17.00 |

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

| Channel | Frequency (MHz) | 26 dB Bandwidth (B) (MHz) | 10 Log B (dB) | 4 + 10 Log B (dBm) | Maximum Conducted Output Power Limit (dBm) |
|---|---|---|---|---|---|
| Low | 5180 | 19.360 | 12.87 | 16.87 | 17.00 |
| Mid | 5220 | 19.494 | 12.90 | 16.90 | 17.00 |
| High | 5240 | 19.378 | 12.87 | 16.87 | 17.00 |

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

| Channel | Frequency (MHz) | 26 dB Bandwidth (B) (MHz) | 10 Log B (dB) | 4 + 10 Log B (dBm) | Maximum Conducted Output Power Limit (dBm) |
|---|---|---|---|---|---|
| Low | 5190 | 39.855 | 16.00 | 20.00 | 17.00 |
| High | 5230 | 46.609 | 16.68 | 20.68 | 17.00 |

**Test mode: IEEE 802.11a mode / 5260 ~ 5320MHz**

| Channel | Frequency (MHz) | 26 dB Bandwidth (B) (MHz) | 10 Log B (dB) | 11 + 10 Log B (dBm) | Maximum Conducted Output Power Limit (dBm) |
|---|---|---|---|---|---|
| Low | 5260 | 20.397 | 13.10 | 24.10 | 24.00 |
| Mid | 5280 | 24.186 | 13.84 | 24.84 | 24.00 |
| High | 5320 | 20.344 | 13.08 | 24.08 | 24.00 |

**Test mode: IEEE 802.11n HT 20 MHz Channel mode / 5260 ~ 5320MHz**

| Channel | Frequency (MHz) | 26 dB Bandwidth (B) (MHz) | 10 Log B (dB) | 11 + 10 Log B (dBm) | Maximum Conducted Output Power Limit (dBm) |
|---|---|---|---|---|---|
| Low | 5260 | 19.551 | 12.91 | 23.91 | 24.00 |
| Mid | 5280 | 19.334 | 12.86 | 23.86 | 24.00 |
| High | 5320 | 21.854 | 13.40 | 24.40 | 24.00 |

**Test mode: IEEE 802.11n HT 40 MHz mode / 5270 ~ 5310MHz**

| Channel | Frequency (MHz) | 26 dB Bandwidth (B) (MHz) | 10 Log B (dB) | 11 + 10 Log B (dBm) | Maximum Conducted Output Power Limit (dBm) |
|---|---|---|---|---|---|
| Low | 5270 | 45.263 | 16.56 | 27.56 | 24.00 |
| High | 5310 | 39.916 | 16.01 | 27.01 | 24.00 |

**Test mode: IEEE 802.11a mode / 5500 ~ 5700MHz**

| Channel | Frequency (MHz) | 26 dB Bandwidth (B) (MHz) | 10 Log B (dB) | 11 + 10 Log B (dBm) | Maximum Conducted Output Power Limit (dBm) |
|---|---|---|---|---|---|
| Low | 5500 | 19.517 | 12.90 | 23.90 | 24.00 |
| Mid | 5580 | 19.365 | 12.87 | 23.87 | 24.00 |
| High | 5700 | 19.158 | 12.82 | 23.82 | 24.00 |

**Test mode: IEEE 802.11n HT 20 MHz Channel mode/ 5500 ~ 5700MHz**

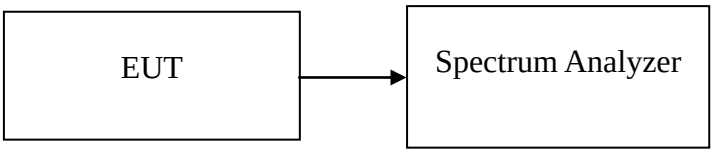
| Channel | Frequency (MHz) | 26 dB Bandwidth (B) (MHz) | 10 Log B (dB) | 11 + 10 Log B (dBm) | Maximum Conducted Output Power Limit (dBm) |
|---|---|---|---|---|---|
| Low | 5500 | 19.524 | 12.91 | 23.91 | 24.00 |
| Mid | 5580 | 19.495 | 12.90 | 23.90 | 24.00 |
| High | 5700 | 19.502 | 12.90 | 23.90 | 24.00 |

**Test mode: IEEE 802.11n HT 40 MHz mode / 5510 ~ 5670MHz**

| Channel | Frequency (MHz) | 26 dB Bandwidth (B) (MHz) | 10 Log B (dB) | 11 + 10 Log B (dBm) | Maximum Conducted Output Power Limit (dBm) |
|---|---|---|---|---|---|
| Low | 5510 | 44.121 | 16.45 | 27.45 | 24.00 |
| Mid | 5550 | 40.046 | 16.03 | 27.03 | 24.00 |
| High | 5670 | 40.017 | 16.02 | 27.02 | 24.00 |

**Test Configuration**

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




## TEST PROCEDURE

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

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

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

## TEST RESULTS

*No non-compliance noted*

## Test Data

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

| Channel | Frequency (MHz) | Maximum Conducted Output Power (dBm) | Limit (dBm) |
|---|---|---|---|
| Low | 5180 | 10.60 | 17.00 |
| Mid | 5220 | ***10.64** | 17.00 |
| High | 5240 | 10.41 | 17.00 |

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

| Channel | Frequency (MHz) | Maximum Conducted Output Power (dBm) | Limit (dBm) |
|---|---|---|---|
| Low | 5180 | ***9.50** | 17.00 |
| Mid | 5220 | 9.35 | 17.00 |
| High | 5240 | 9.23 | 17.00 |

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

| Channel | Frequency (MHz) | Maximum Conducted Output Power (dBm) | Limit (dBm) |
|---|---|---|---|
| Low | 5190 | 9.26 | 17.00 |
| High | 5230 | ***9.96** | 17.00 |

### Test mode: IEEE 802.11a mode / 5260 ~ 5320MHz

| Channel | Frequency (MHz) | Maximum Conducted Output Power (dBm) | Limit (dBm) |
|---|---|---|---|
| Low | 5260 | 10.34 | 24.00 |
| Mid | 5280 | 10.32 | 24.00 |
| High | 5320 | ***10.84** | 24.00 |

### Test mode: IEEE 802.11n HT 20 MHz Channel mode / 5260 ~ 5320MHz

| Channel | Frequency (MHz) | Maximum Conducted Output Power (dBm) | Limit (dBm) |
|---|---|---|---|
| Low | 5260 | 9.22 | 24.00 |
| Mid | 5280 | 9.39 | 24.00 |
| High | 5320 | ***9.90** | 24.00 |

### Test mode: IEEE 802.11n HT 40 MHz mode / 5270 ~ 5310MHz

| Channel | Frequency (MHz) | Maximum Conducted Output Power (dBm) | Limit (dBm) |
|---|---|---|---|
| Low | 5270 | ***9.96** | 24.00 |
| High | 5310 | 9.58 | 24.00 |

**Test mode: IEEE 802.11a mode / 5500 ~ 5700MHz**

| Channel | Frequency (MHz) | Maximum Conducted Output Power (dBm) | Limit (dBm) |
|---|---|---|---|
| Low | 5500 | 10.43 | 24.00 |
| Mid | 5580 | 10.81 | 24.00 |
| High | 5700 | ***10.88** | 24.00 |

**Test mode: IEEE 802.11n HT 20 MHz Channel mode / 5500 ~ 5700MHz**

| Channel | Frequency (MHz) | Maximum Conducted Output Power (dBm) | Limit (dBm) |
|---|---|---|---|
| Low | 5500 | 9.41 | 24.00 |
| Mid | 5580 | ***9.58** | 24.00 |
| High | 5700 | 9.47 | 24.00 |

**Test mode: IEEE 802.11n HT 40 MHz mode / 5510 ~ 5670MHz**

| Channel | Frequency (MHz) | Maximum Conducted Output Power (dBm) | Limit (dBm) |
|---|---|---|---|
| Low | 5510 | ***9.93** | 24.00 |
| Mid | 5550 | 9.20 | 24.00 |
| High | 5670 | 9.46 | 24.00 |

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

## 7.4 BAND EDGES MEASUREMENT

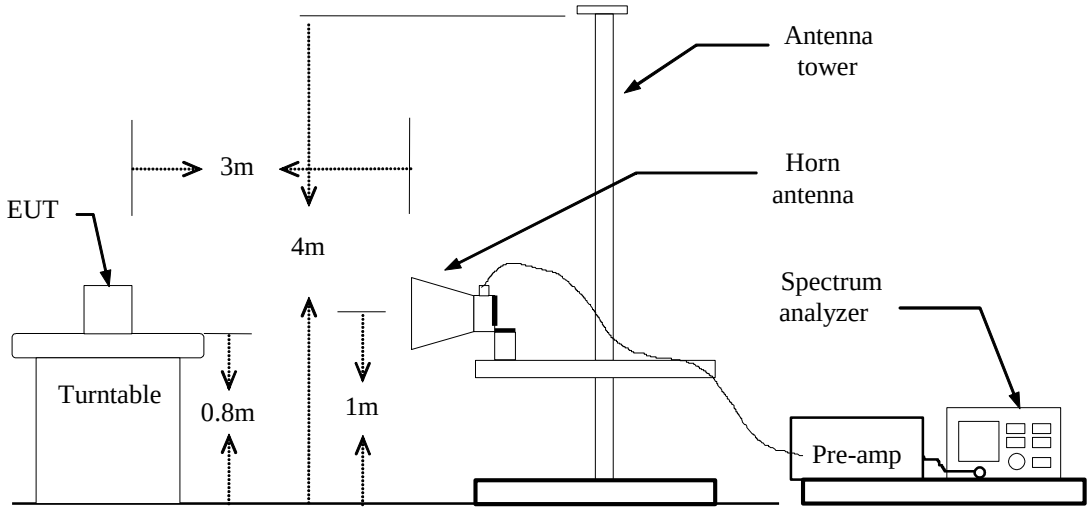
### LIMIT

According to §15.407(b) & RSS-210 §A8.5,

(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

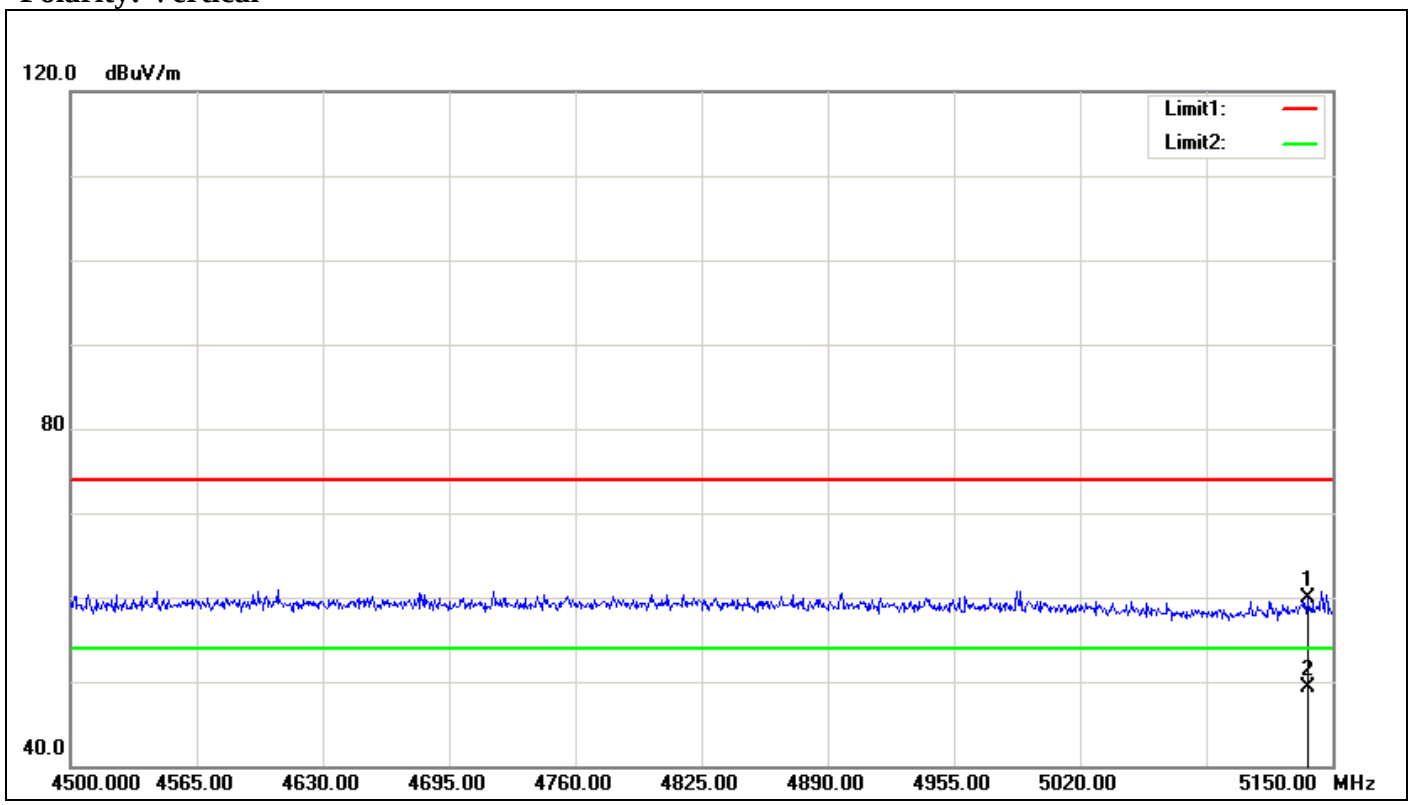
1. The EUT is placed on a turntable, which is 0.8m above the ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emission.
4. Set the 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=300Hz / 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.

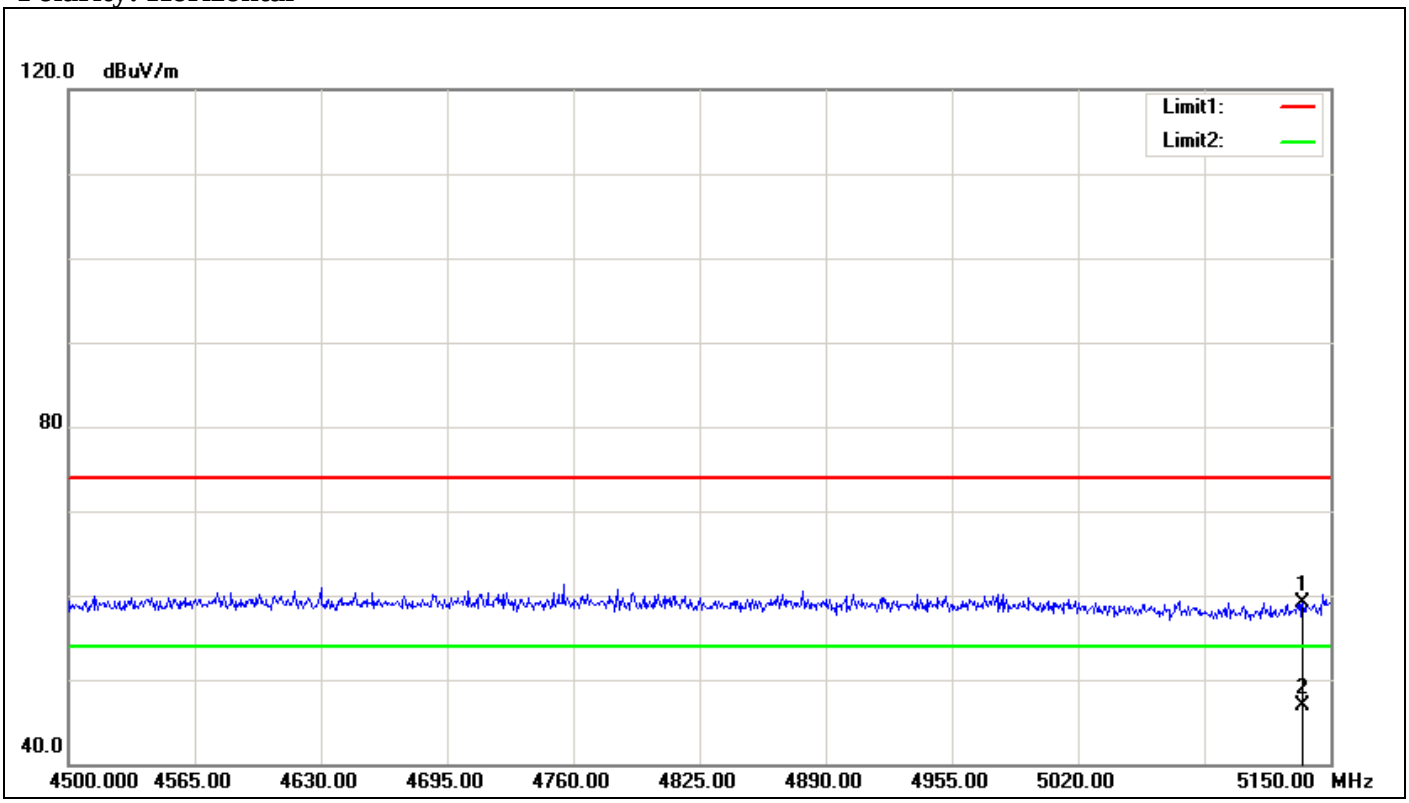
## Band Edges (IEEE 802.11a mode / 5180 MHz)

## Polarity: Vertical




| No. | Frequency | Reading | Correct | Result | Limit | Margin | Height | Degree | Remark |
|---|---|---|---|---|---|---|---|---|---|
| | (MHz) | (dBuV) | Factor(dB/m) | (dBuV/m) | (dBuV/m) | (dB) | (cm) | ( ° ) | |
| 1 | 5137.000 | 52.31 | 7.69 | 60.00 | 74.00 | -14.00 | | | peak |
| 2 | 5137.000 | 41.63 | 7.69 | 49.32 | 54.00 | -4.68 | | | AVG |

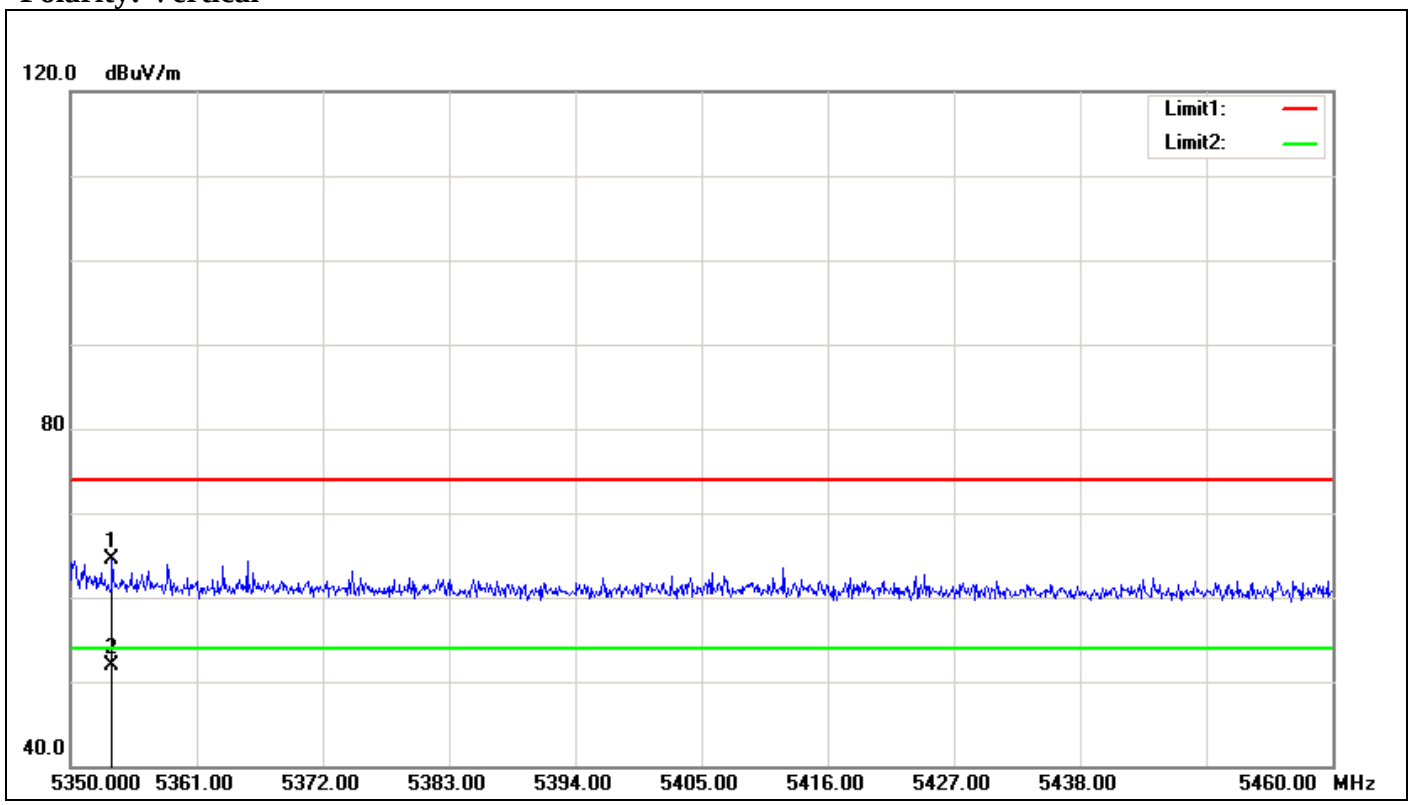
**Polarity: Horizontal**




| No. | Frequency | Reading | Correct | Result | Limit | Margin | Height | Degree | Remark |
|---|---|---|---|---|---|---|---|---|---|
| | (MHz) | (dBuV) | Factor(dB/m) | (dBuV/m) | (dBuV/m) | (dB) | (cm) | ( ° ) | |
| 1 | 5135.700 | 51.40 | 7.68 | 59.08 | 74.00 | -14.92 | | | peak |
| 2 | 5135.700 | 39.19 | 7.68 | 46.87 | 54.00 | -7.13 | | | AVG |

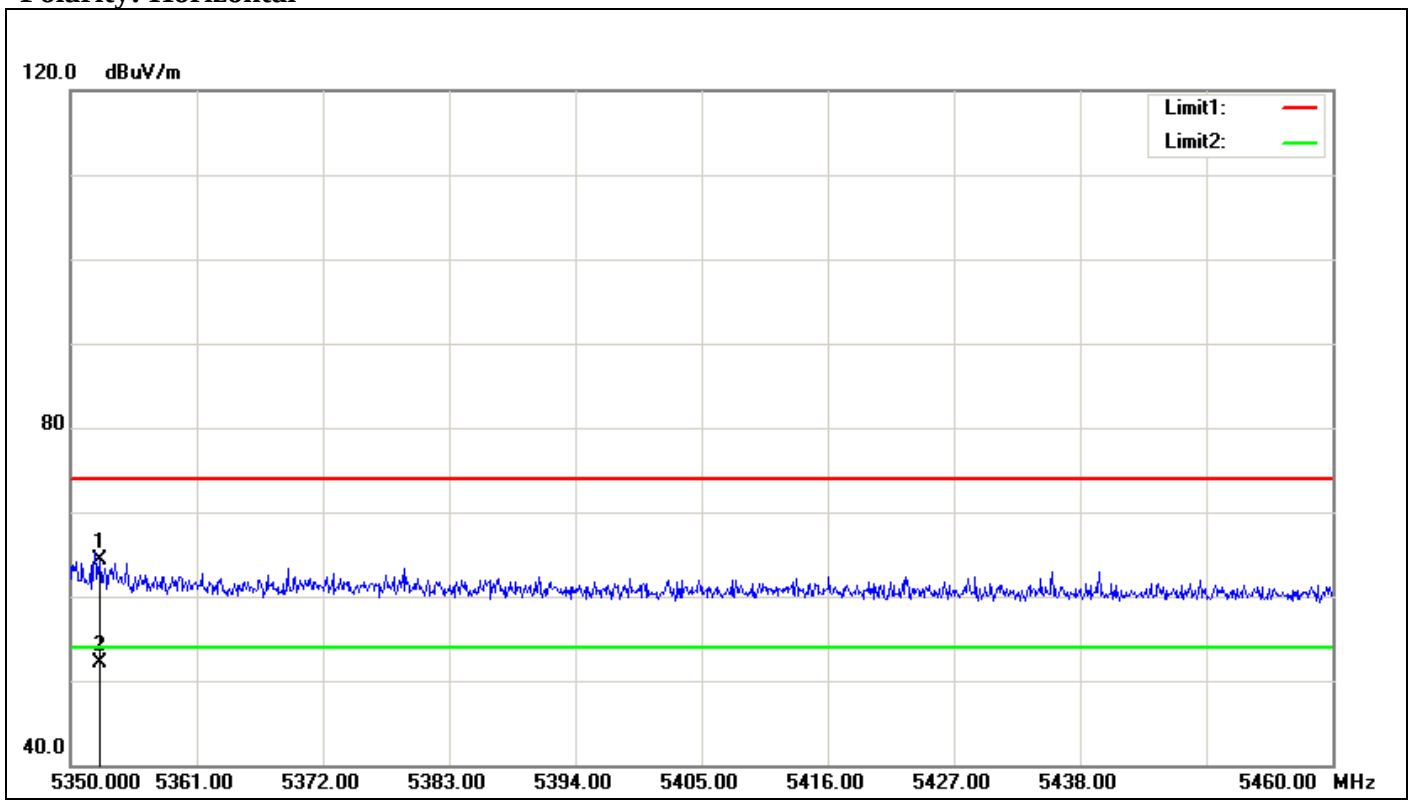
## Band Edges (IEEE 802.11a mode / 5320 MHz

## Polarity: Vertical




| No. | Frequency | Reading | Correct | Result | Limit | Margin | Height | Degree | Remark |
|---|---|---|---|---|---|---|---|---|---|
| | (MHz) | (dBuV) | Factor(dB/m) | (dBuV/m) | (dBuV/m) | (dB) | (cm) | ( ° ) | |
| 1 | 5353.630 | 54.72 | 9.79 | 64.51 | 74.00 | -9.49 | | | peak |
| 2 | 5353.630 | 42.03 | 9.79 | 51.82 | 54.00 | -2.18 | | | AVG |

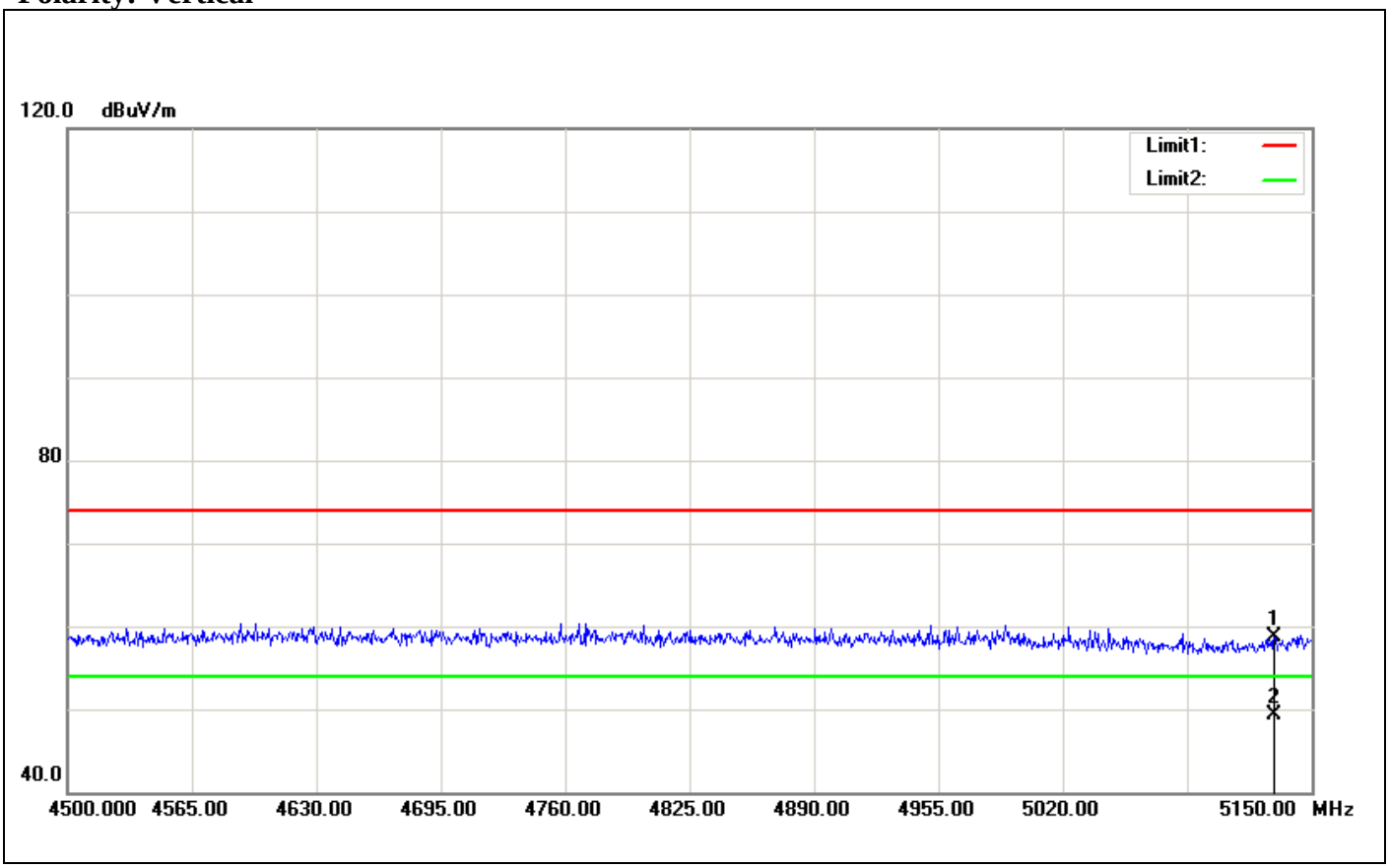
**Polarity: Horizontal**




| No. | Frequency | Reading | Correct | Result | Limit | Margin | Height | Degree | Remark |
|---|---|---|---|---|---|---|---|---|---|
| | (MHz) | (dBuV) | Factor(dB/m) | (dBuV/m) | (dBuV/m) | (dB) | (cm) | ( ° ) | |
| 1 | 5352.530 | 54.61 | 9.78 | 64.39 | 74.00 | -9.61 | | | peak |
| 2 | 5352.530 | 42.32 | 9.78 | 52.10 | 54.00 | -1.90 | | | AVG |

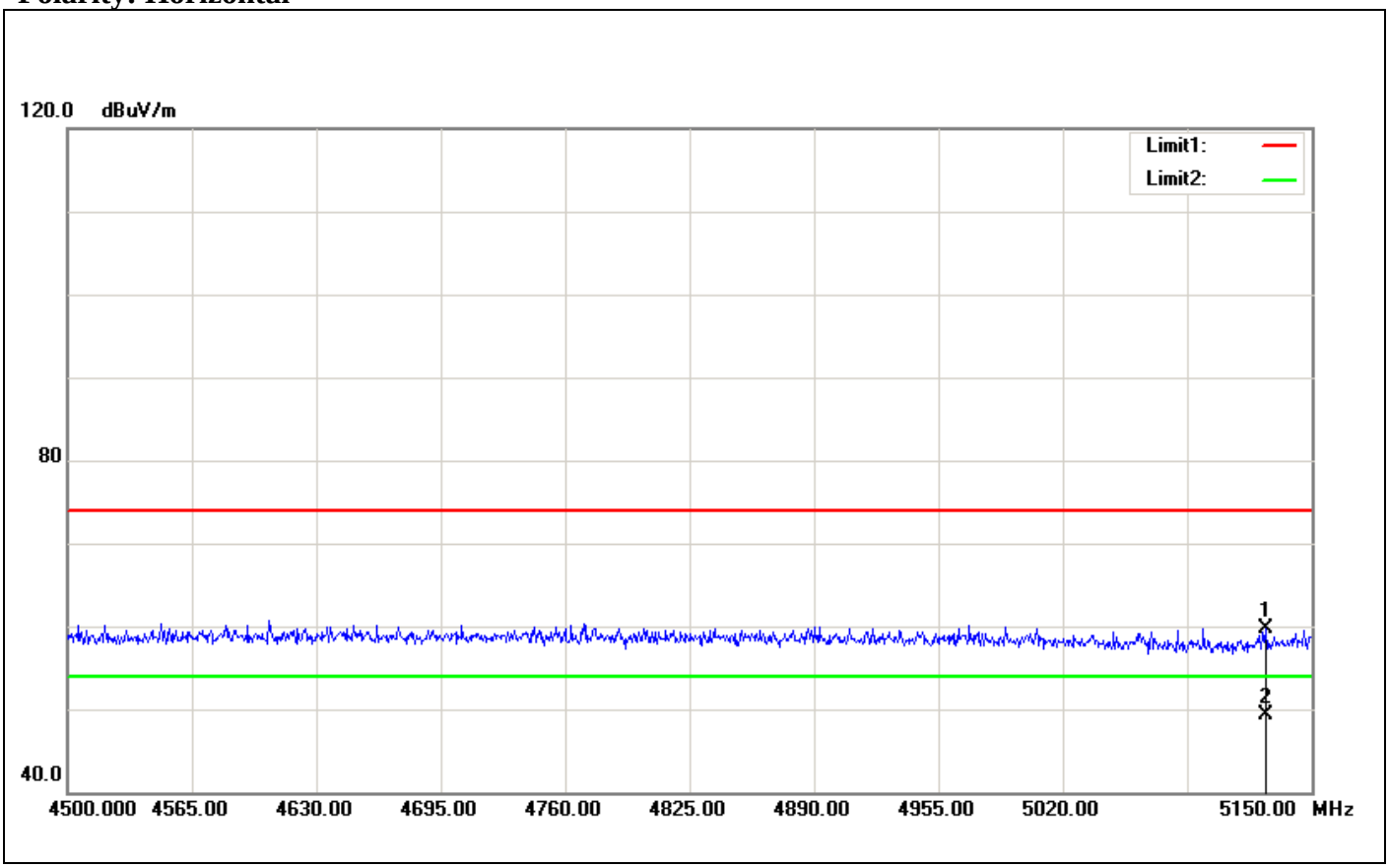
**Band Edges (IEEE 802.11n HT 20 MHz Channel mode / 5180 MHz)**

**Polarity: Vertical**




| No. | Frequency | Reading | Correct | Result | Limit | Margin | Height | Degree | Remark |
|---|---|---|---|---|---|---|---|---|---|
| | (MHz) | (dBuV) | Factor(dB/m) | (dBuV/m) | (dBuV/m) | (dB) | (cm) | ( ° ) | |
| 1 | 5130.500 | 50.98 | 7.66 | 58.64 | 74.00 | -15.36 | | | peak |
| 2 | 5130.500 | 41.63 | 7.66 | 49.29 | 54.00 | -4.71 | | | AVG |

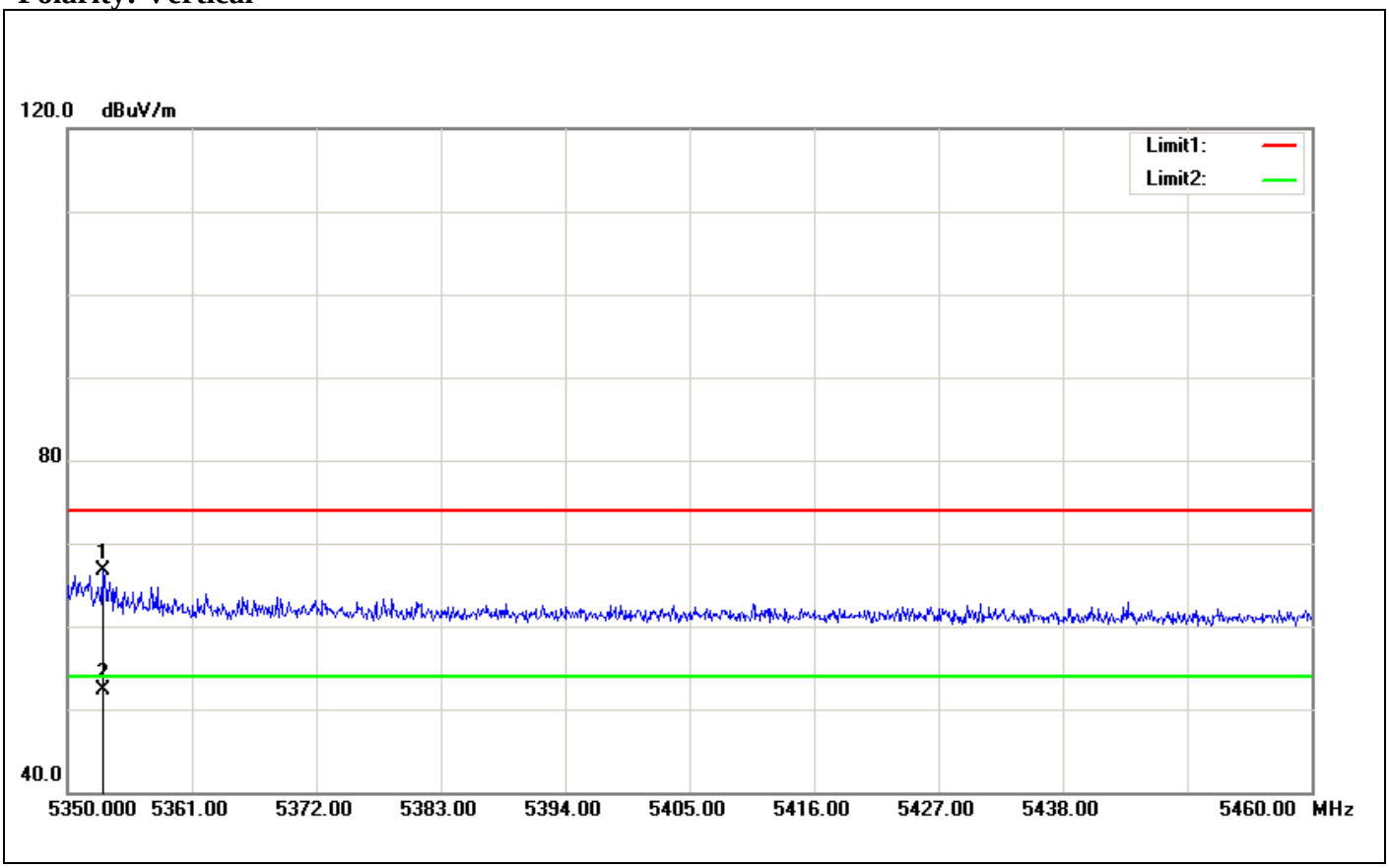
**Polarity: Horizontal**




| No. | Frequency | Reading | Correct | Result | Limit | Margin | Height | Degree | Remark |
|---|---|---|---|---|---|---|---|---|---|
| | (MHz) | (dBuV) | Factor(dB/m) | (dBuV/m) | (dBuV/m) | (dB) | (cm) | ( ° ) | |
| 1 | 5125.950 | 52.02 | 7.64 | 59.66 | 74.00 | -14.34 | | | peak |
| 2 | 5125.950 | 41.61 | 7.64 | 49.25 | 54.00 | -4.75 | | | AVG |

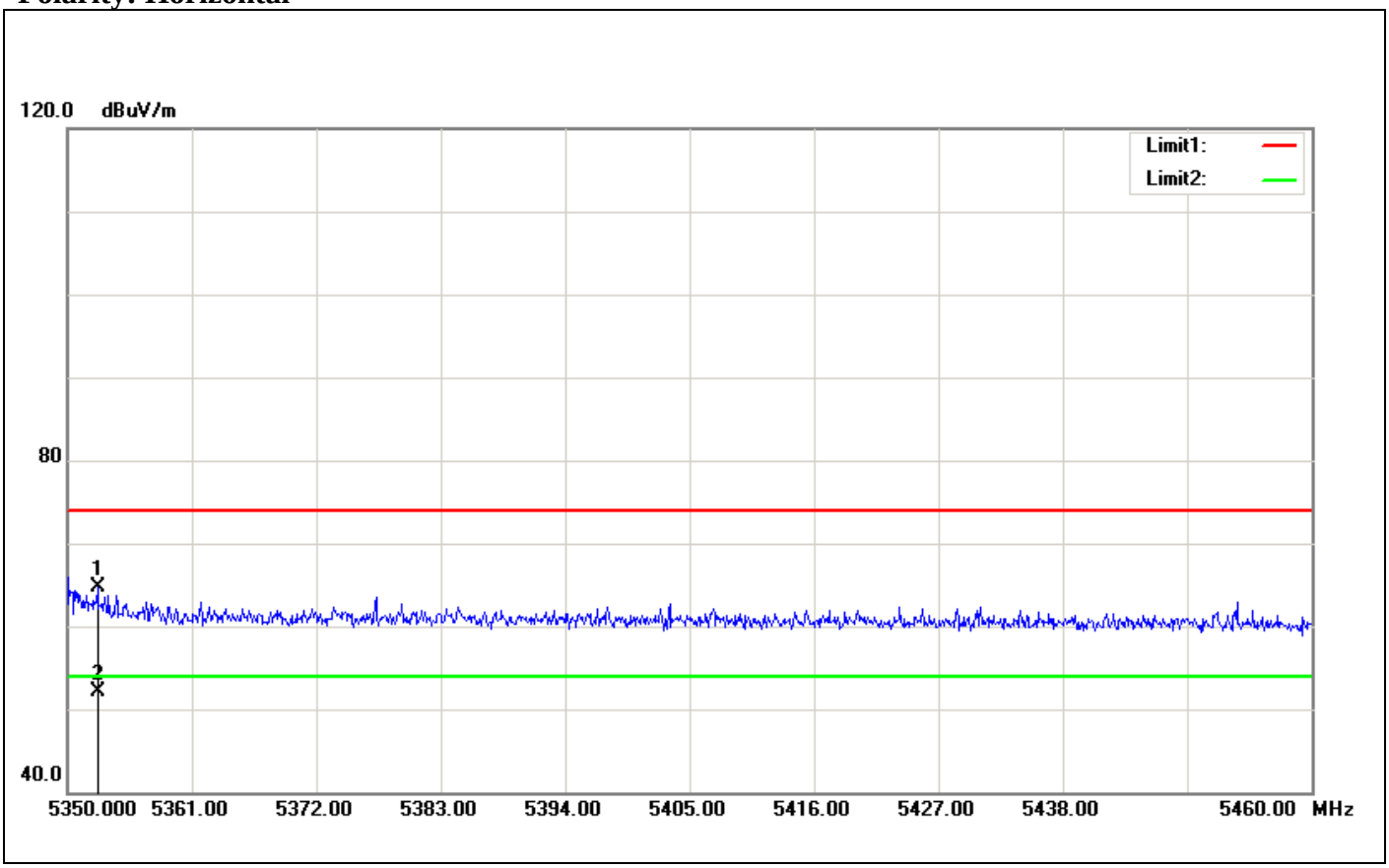
**Band Edges (IEEE 802.11n HT 20 MHz Channel mode / 5320 MHz)**

**Polarity: Vertical**




| No. | Frequency | Reading | Correct | Result | Limit | Margin | Height | Degree | Remark |
|---|---|---|---|---|---|---|---|---|---|
| | (MHz) | (dBuV) | Factor(dB/m) | (dBuV/m) | (dBuV/m) | (dB) | (cm) | ( ° ) | |
| 1 | 5353.080 | 56.86 | 9.79 | 66.65 | 74.00 | -7.35 | | | peak |
| 2 | 5353.080 | 42.46 | 9.79 | 52.25 | 54.00 | -1.75 | | | AVG |

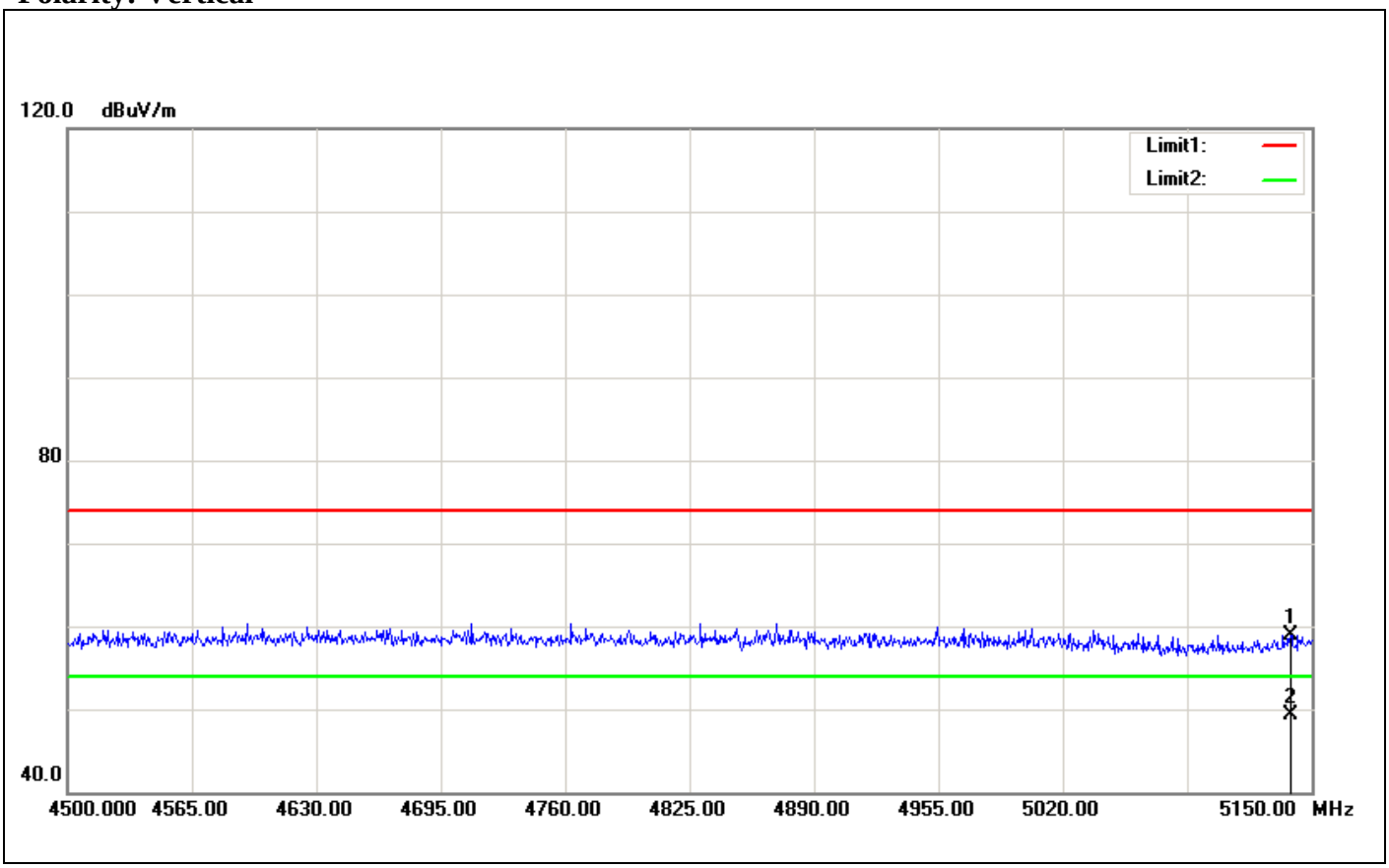
**Polarity: Horizontal**




| No. | Frequency | Reading | Correct | Result | Limit | Margin | Height | Degree | Remark |
|---|---|---|---|---|---|---|---|---|---|
| | (MHz) | (dBuV) | Factor(dB/m) | (dBuV/m) | (dBuV/m) | (dB) | (cm) | ( ° ) | |
| 1 | 5352.640 | 54.86 | 9.78 | 64.64 | 74.00 | -9.36 | | | peak |
| 2 | 5352.640 | 42.36 | 9.78 | 52.14 | 54.00 | -1.86 | | | AVG |

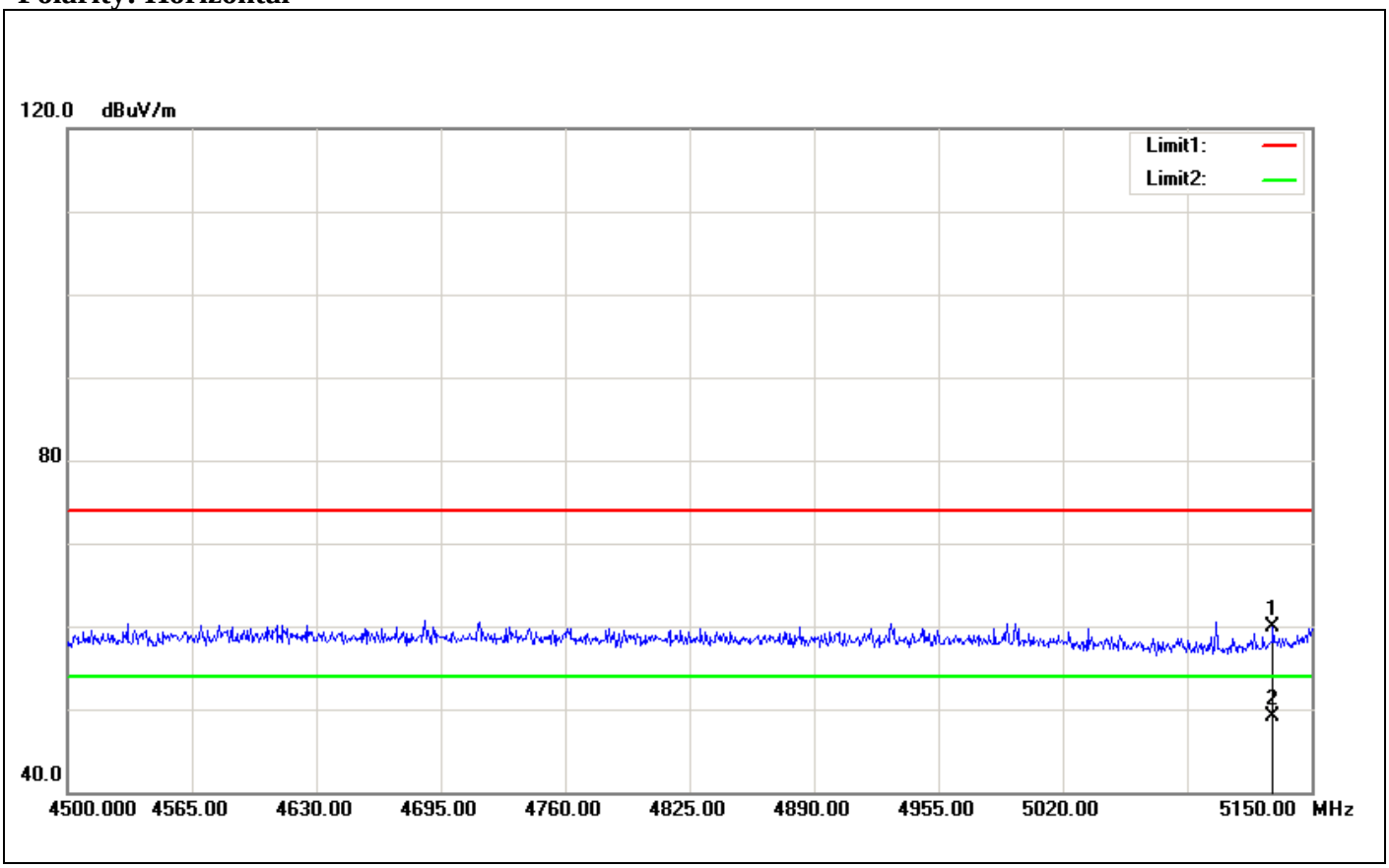
**Band Edges (IEEE 802.11n HT 40 MHz mode / 5190 MHz)**

**Polarity: Vertical**




| No. | Frequency | Reading | Correct | Result | Limit | Margin | Height | Degree | Remark |
|---|---|---|---|---|---|---|---|---|---|
| | (MHz) | (dBuV) | Factor(dB/m) | (dBuV/m) | (dBuV/m) | (dB) | (cm) | ( ° ) | |
| 1 | 5138.950 | 51.22 | 7.70 | 58.92 | 74.00 | -15.08 | | | peak |
| 2 | 5138.950 | 41.54 | 7.70 | 49.24 | 54.00 | -4.76 | | | AVG |

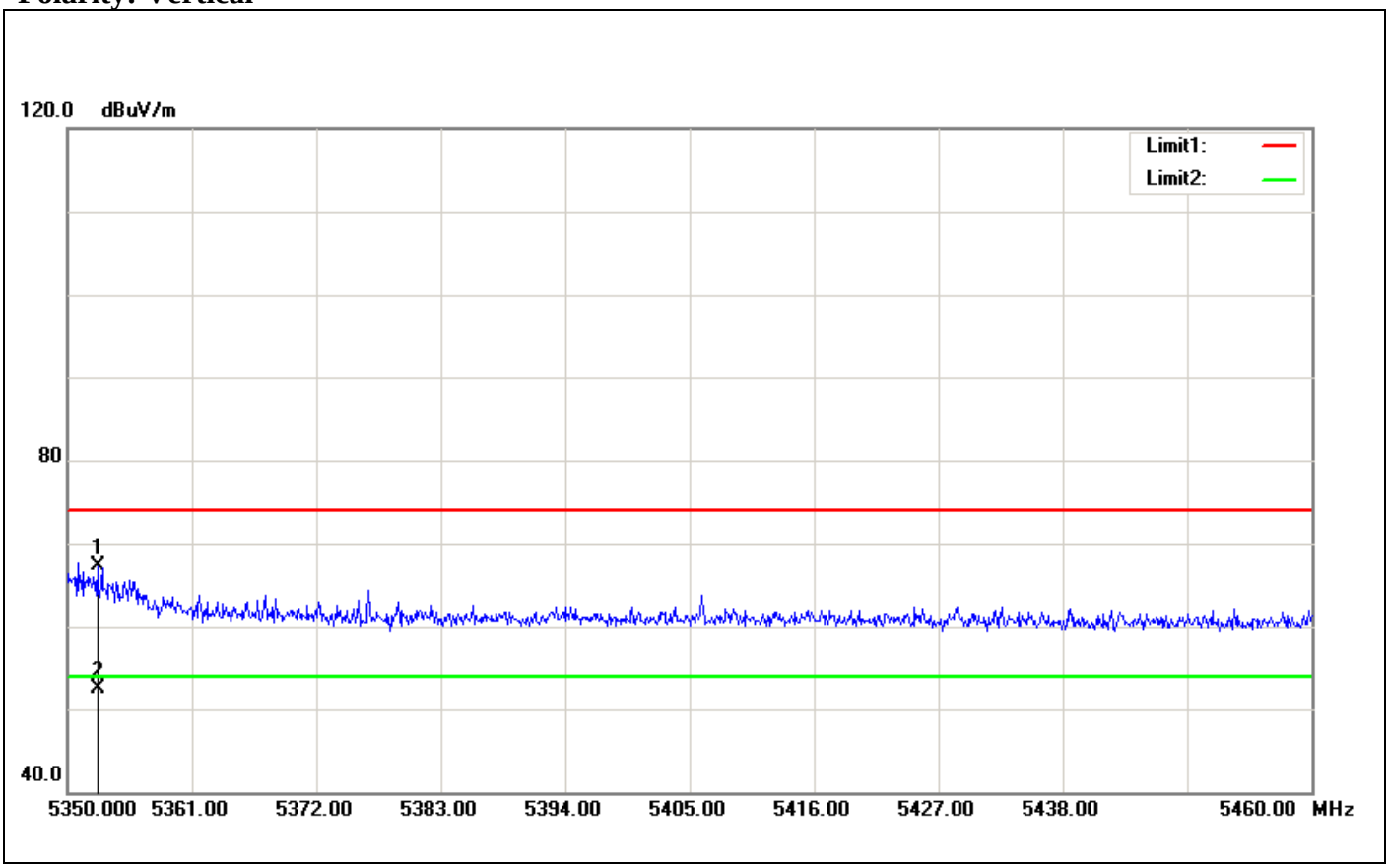
**Polarity: Horizontal**




| No. | Frequency | Reading | Correct | Result | Limit | Margin | Height | Degree | Remark |
|---|---|---|---|---|---|---|---|---|---|
| | (MHz) | (dBuV) | Factor(dB/m) | (dBuV/m) | (dBuV/m) | (dB) | (cm) | ( ° ) | |
| 1 | 5129.850 | 52.24 | 7.66 | 59.90 | 74.00 | -14.10 | | | peak |
| 2 | 5129.850 | 41.52 | 7.66 | 49.18 | 54.00 | -4.82 | | | AVG |

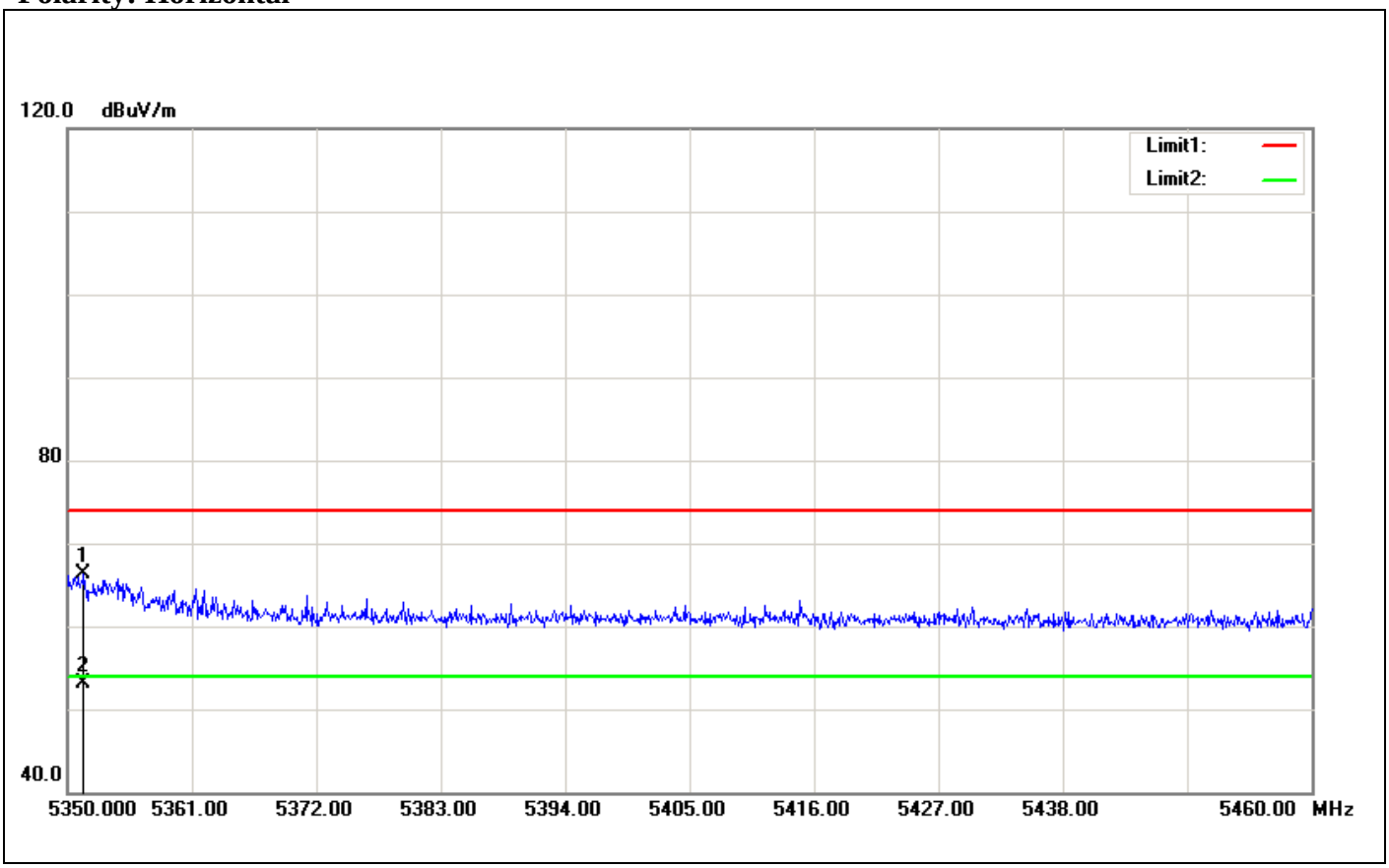
**Band Edges (IEEE 802.11n HT 40 MHz mode / CH 5310 MHz)**

**Polarity: Vertical**




| No. | Frequency | Reading | Correct | Result | Limit | Margin | Height | Degree | Remark |
|---|---|---|---|---|---|---|---|---|---|
| | (MHz) | (dBuV) | Factor(dB/m) | (dBuV/m) | (dBuV/m) | (dB) | (cm) | ( ° ) | |
| 1 | 5352.640 | 57.53 | 9.78 | 67.31 | 74.00 | -6.69 | | | peak |
| 2 | 5352.640 | 42.77 | 9.78 | 52.55 | 54.00 | -1.45 | | | 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 | 5351.430 | 56.59 | 9.77 | 66.36 | 74.00 | -7.64 | | | peak |
| 2 | 5351.430 | 43.38 | 9.77 | 53.15 | 54.00 | -0.85 | | | AVG |

## 7.5 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.

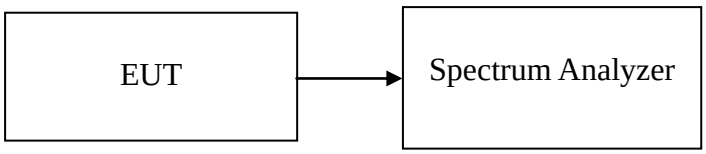
According to RSS-210 §A9.2,

(1) The e.i.r.p. spectral density shall not exceed 10 dBm in any 1.0 MHz band.

(2) The power spectral density shall not exceed 11 dBm in any 1.0 MHz band.

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

**Test Configuration**




## TEST PROCEDURE

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

## TEST RESULTS

*No non-compliance noted*

## Test Data

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

| Channel | Frequency (MHz) | PPSD (dBm) | Limit (dBm) | Result |
|---|---|---|---|---|
| Low | 5180 | -0.12 | 4.00 | PASS |
| Mid | 5220 | 0.02 | 4.00 | PASS |
| High | 5240 | 0.13 | 4.00 | PASS |

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

| Channel | Frequency (MHz) | PPSD (dBm) | Limit (dBm) | Result |
|---|---|---|---|---|
| Low | 5180 | -1.18 | 4.00 | PASS |
| Mid | 5220 | -0.93 | 4.00 | PASS |
| High | 5240 | -0.77 | 4.00 | PASS |

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

| Channel | Frequency (MHz) | PPSD (dBm) | Limit (dBm) | Result |
|---|---|---|---|---|
| Low | 5190 | -3.93 | 4.00 | PASS |
| High | 5230 | -3.09 | 4.00 | PASS |

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

**Test mode: IEEE 802.11a mode/ 5260 ~ 5320MHz**

| Channel | Frequency (MHz) | PPSD (dBm) | Limit (dBm) | Result |
|---|---|---|---|---|
| Low | 5260 | 0.37 | 11.00 | PASS |
| Mid | 5280 | 0.31 | 11.00 | PASS |
| High | 5320 | 0.45 | 11.00 | PASS |

**Test mode: IEEE 802.11n HT 20 MHz Channel mode / 5260 ~ 5320MHz**

| Channel | Frequency (MHz) | PPSD (dBm) | Limit (dBm) | Result |
|---|---|---|---|---|
| Low | 5260 | -0.69 | 11.00 | PASS |
| Mid | 5280 | -0.59 | 11.00 | PASS |
| High | 5320 | -0.08 | 11.00 | PASS |

**Test mode: IEEE 802.11n HT 40 MHz mode / 5270 ~ 5310MHz**

| Channel | Frequency (MHz) | PPSD (dBm) | Limit (dBm) | Result |
|---|---|---|---|---|
| Low | 5270 | -2.68 | 11.00 | PASS |
| High | 5310 | -3.46 | 11.00 | PASS |

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

**Test mode: IEEE 802.11a mode / 5500 ~ 5700MHz**

| Channel | Frequency (MHz) | PPSD (dBm) | Limit (dBm) | Result |
|---|---|---|---|---|
| Low | 5500 | 0.17 | 11.00 | PASS |
| Mid | 5580 | 1.09 | 11.00 | PASS |
| High | 5700 | -0.32 | 11.00 | PASS |

**Test mode: IEEE 802.11n HT 20 MHz Channel mode / 5500 ~ 5700MHz**

| Channel | Frequency (MHz) | PPSD (dBm) | Limit (dBm) | Result |
|---|---|---|---|---|
| Low | 5500 | -0.81 | 11.00 | PASS |
| Mid | 5580 | -0.12 | 11.00 | PASS |
| High | 5700 | -1.51 | 11.00 | PASS |

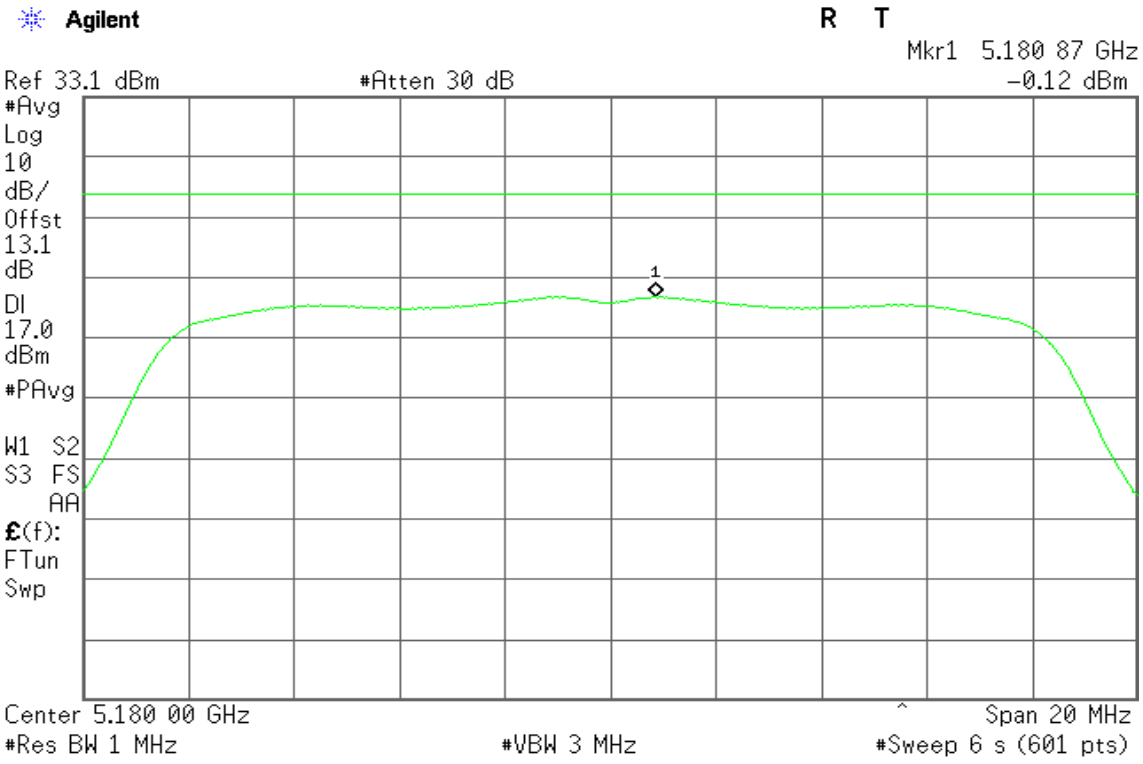
**Test mode: IEEE 802.11n HT 40 MHz mode / 5510 ~ 5670MHz**

| Channel | Frequency (MHz) | PPSD (dBm) | Limit (dBm) | Result |
|---|---|---|---|---|
| Low | 5510 | -3.03 | 11.00 | PASS |
| Mid | 5550 | -3.07 | 11.00 | PASS |
| High | 5670 | -4.12 | 11.00 | PASS |

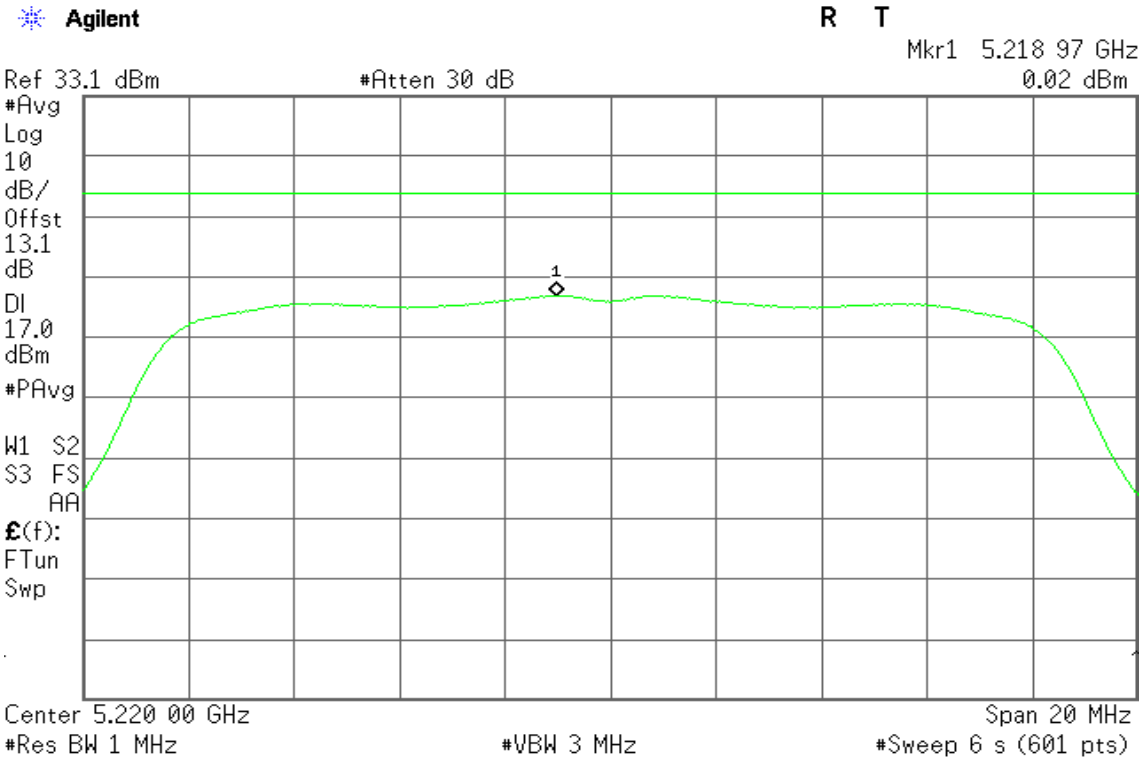
***Remark:*** *Total PPSD (dBm) = 10*LOG(10^(Chain 0 PPSD / 10)+10^(Chain 1 PPSD /10)*

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

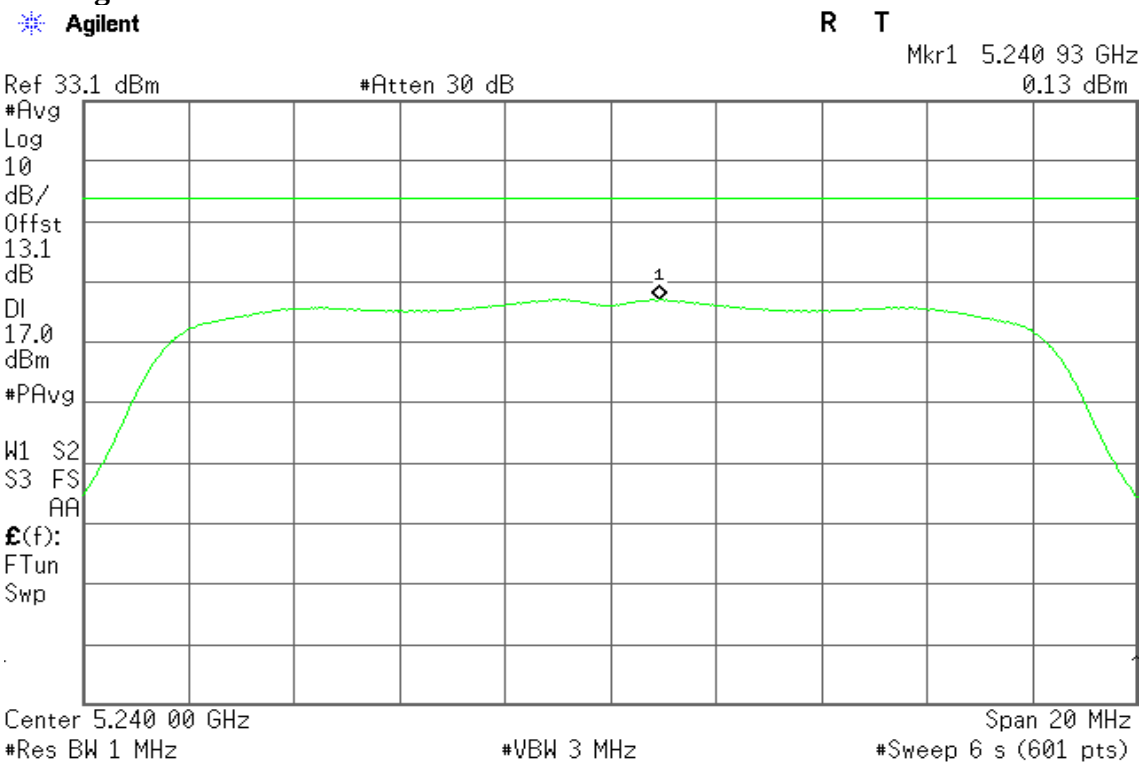
### CH Low




### CH Mid

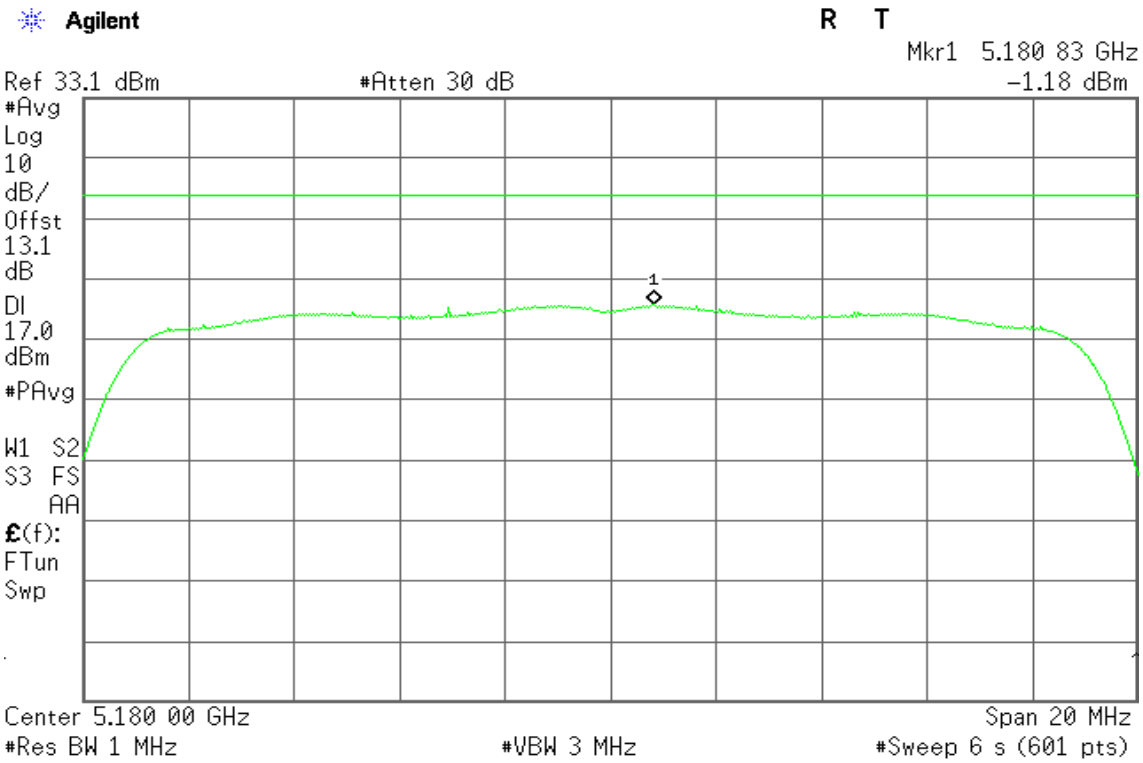


**CH High**

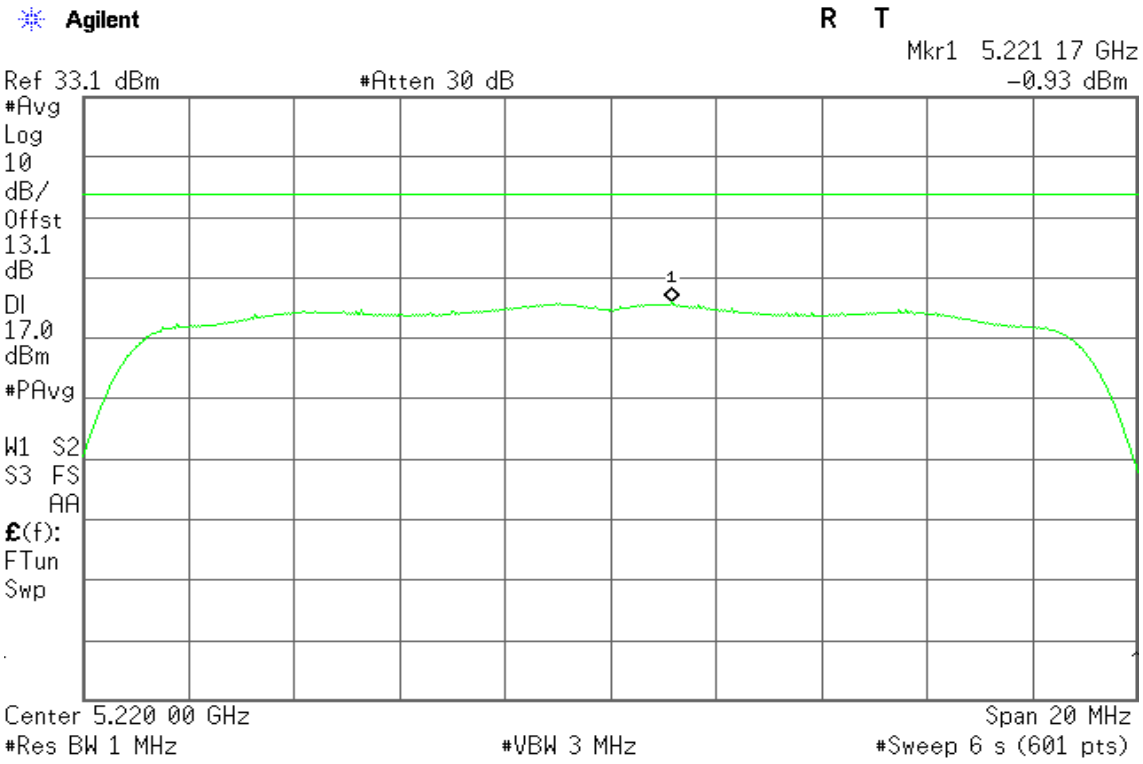



**IEEE 802.11n HT 20 MHz Channel mode / 5180 ~ 5240MHz**

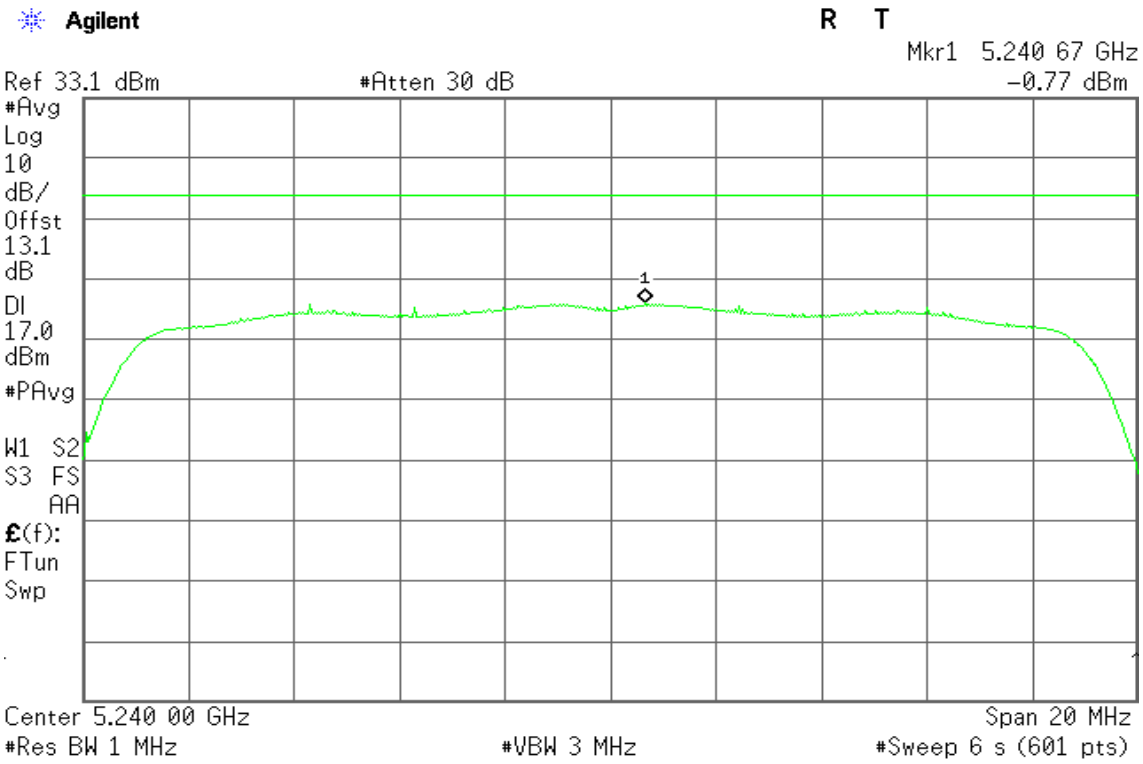
**CH Low**



## CH Mid

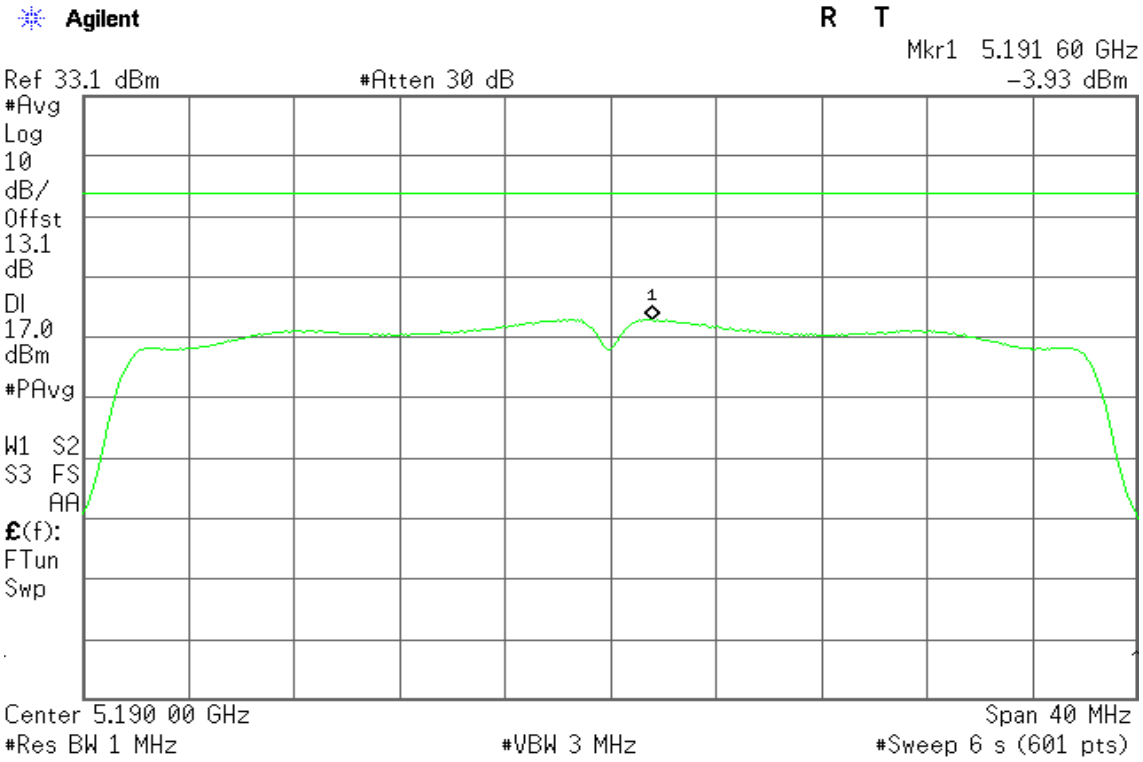



## CH High

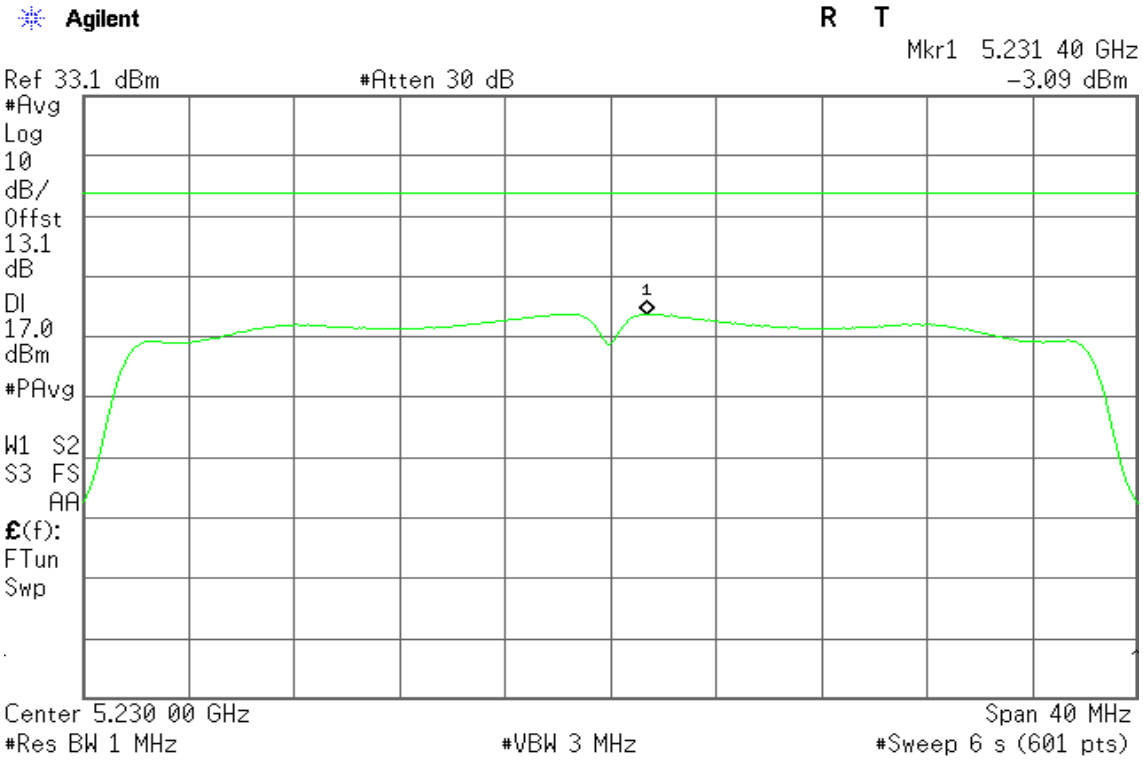


## IEEE 802.11n HT 40 MHz mode / 5190 ~ 5230MHz

### CH Low

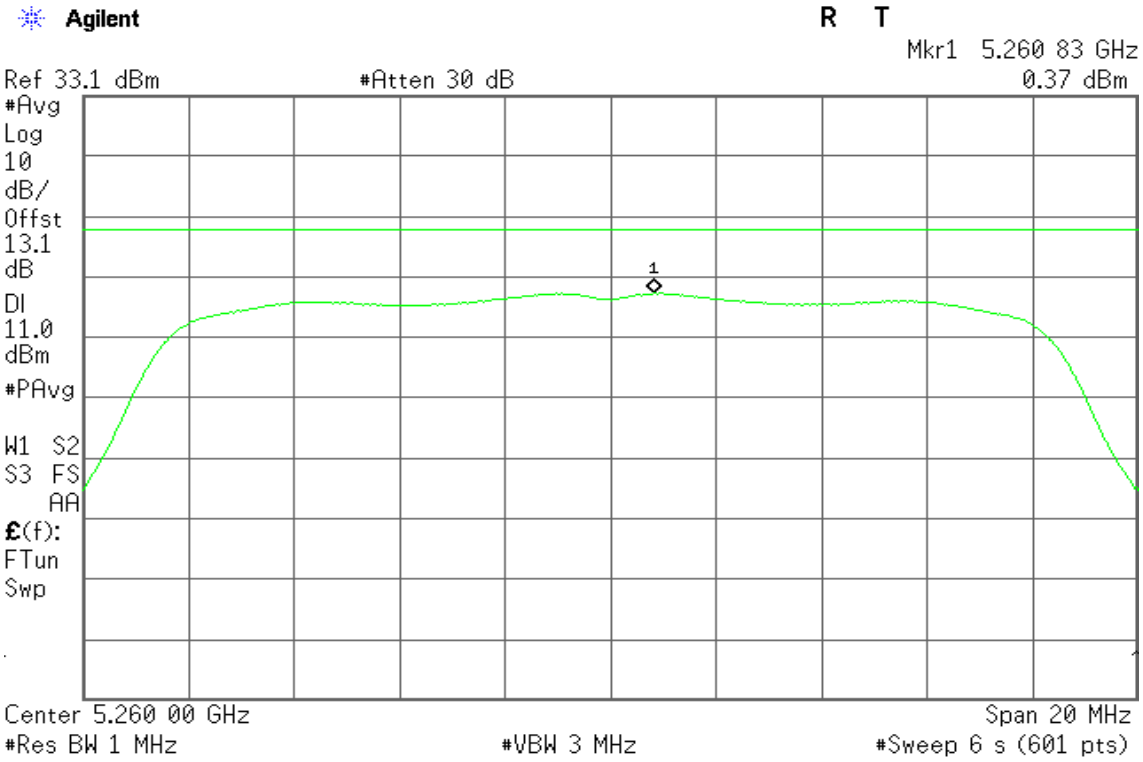



### CH High

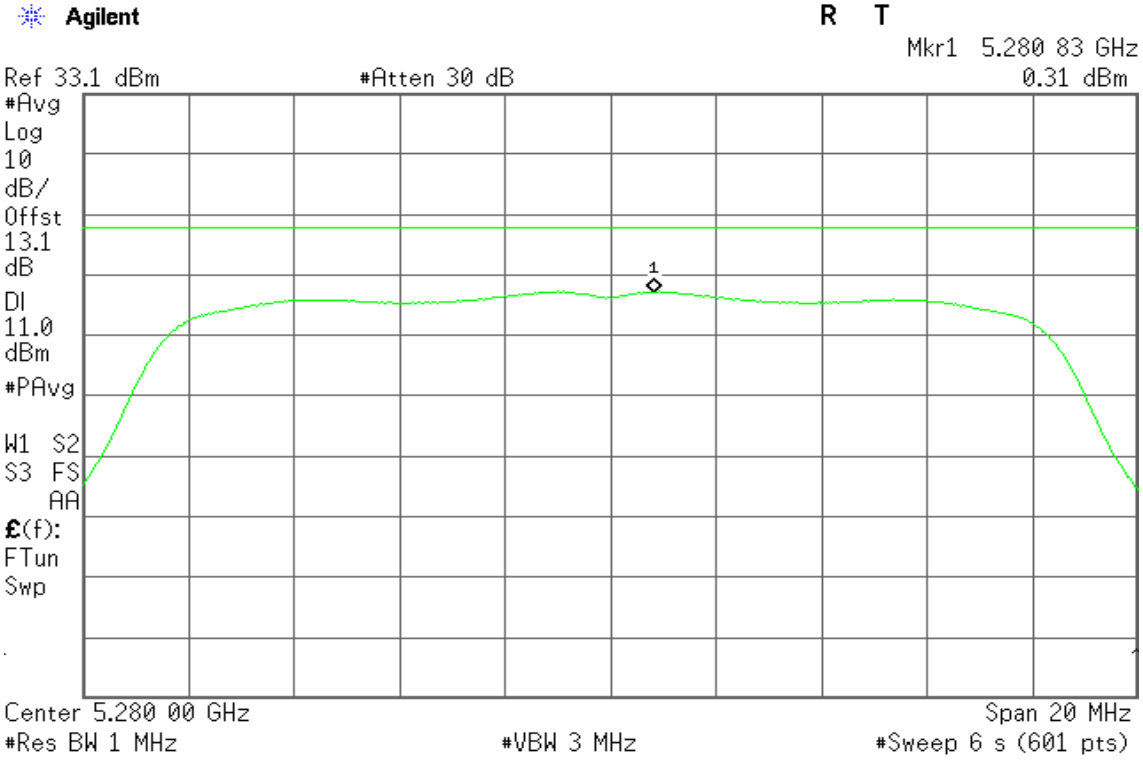


## IEEE 802.11a mode / 5260 ~ 5320MHz

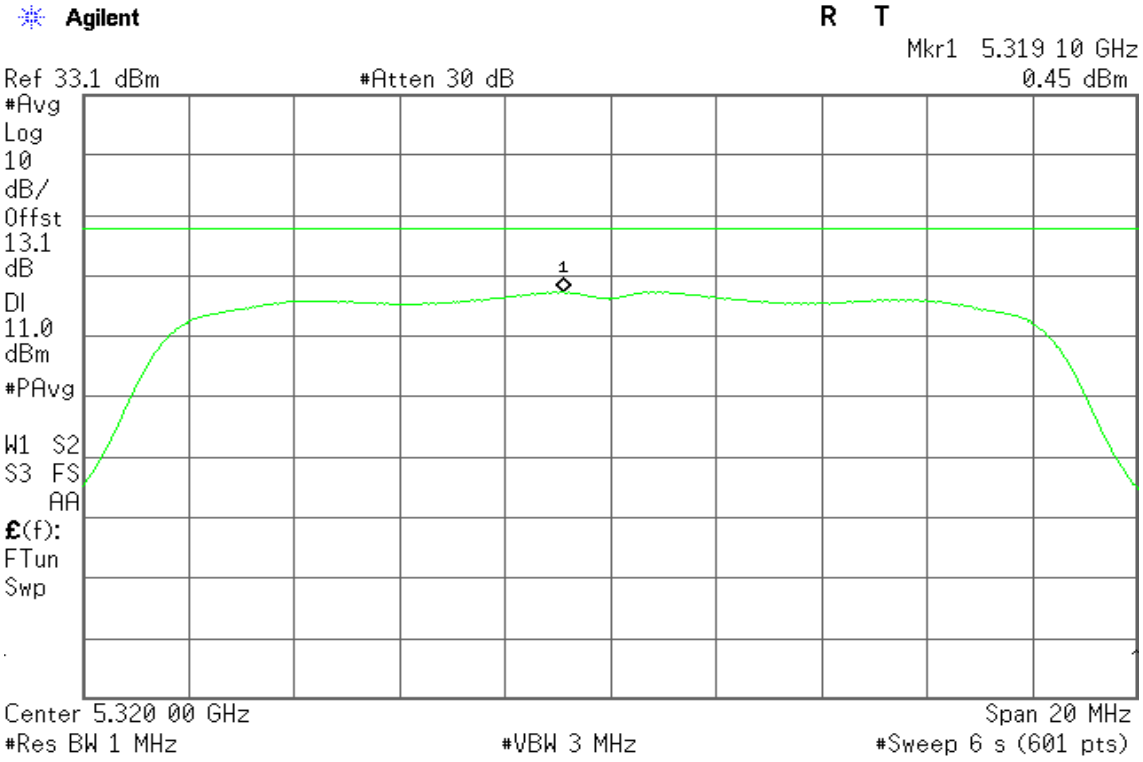
### CH Low




### CH Mid

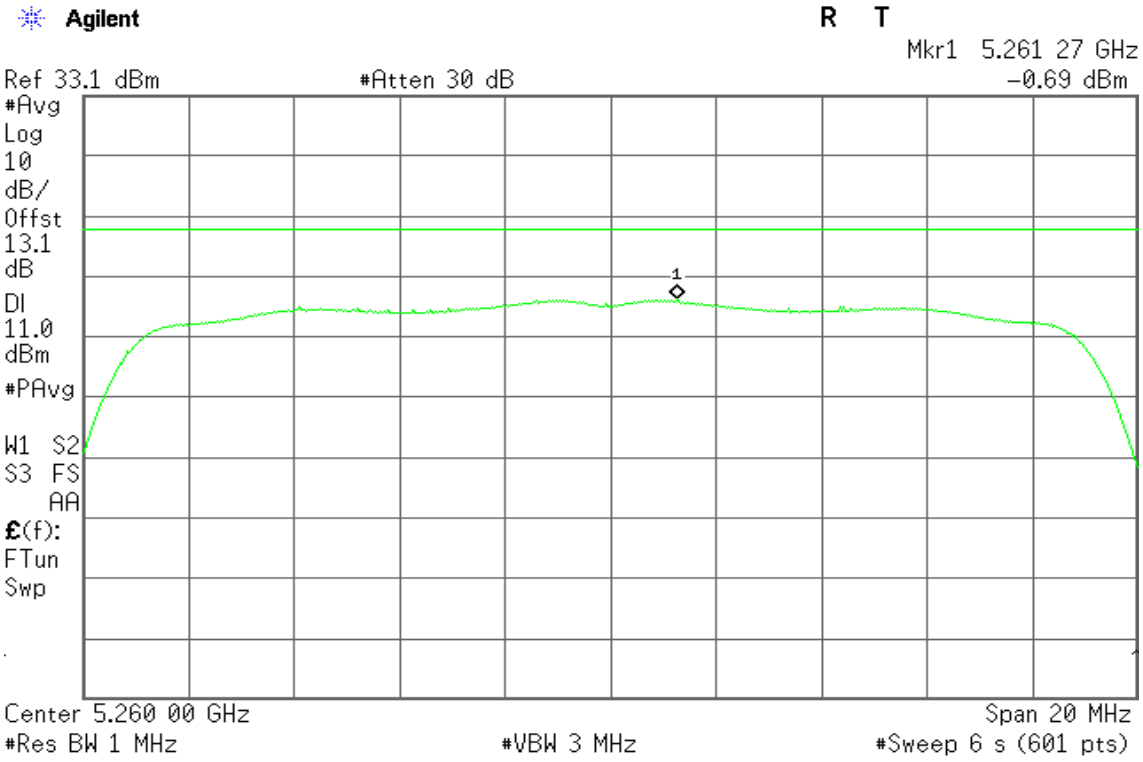


**CH High**

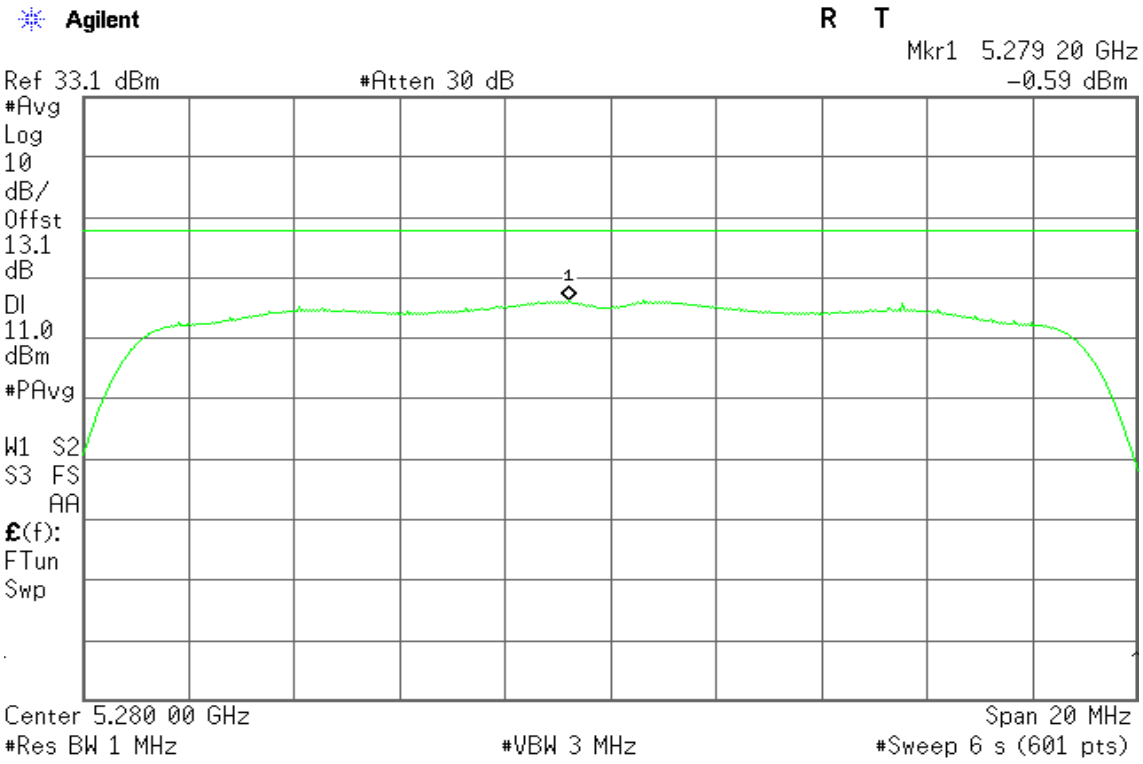



**IEEE 802.11n HT 20 MHz Channel mode / 5260 ~ 5320MHz**

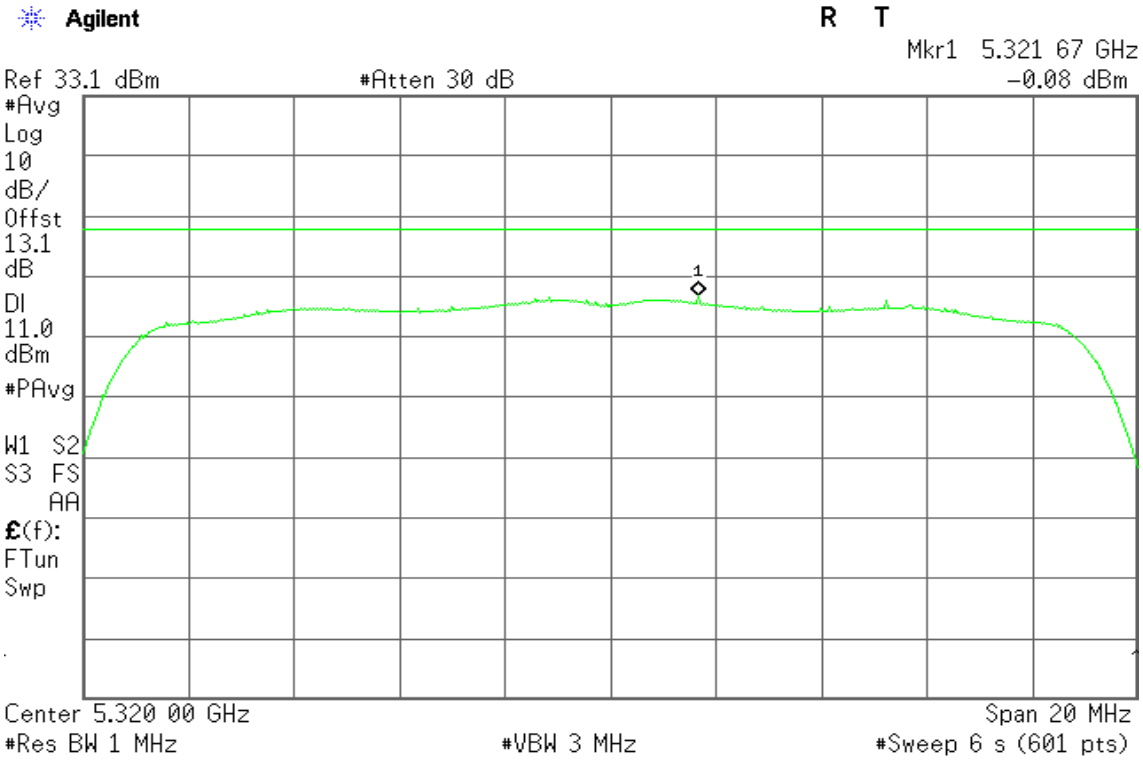
**CH Low**



## CH Mid

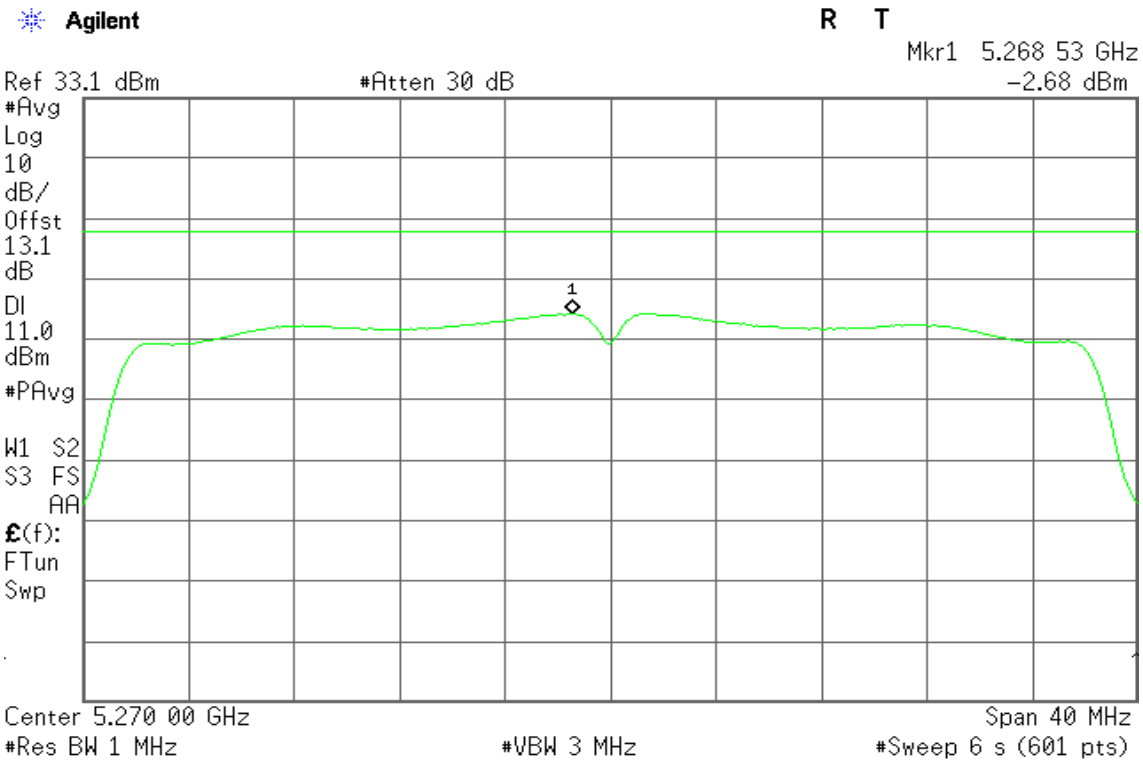



## CH High

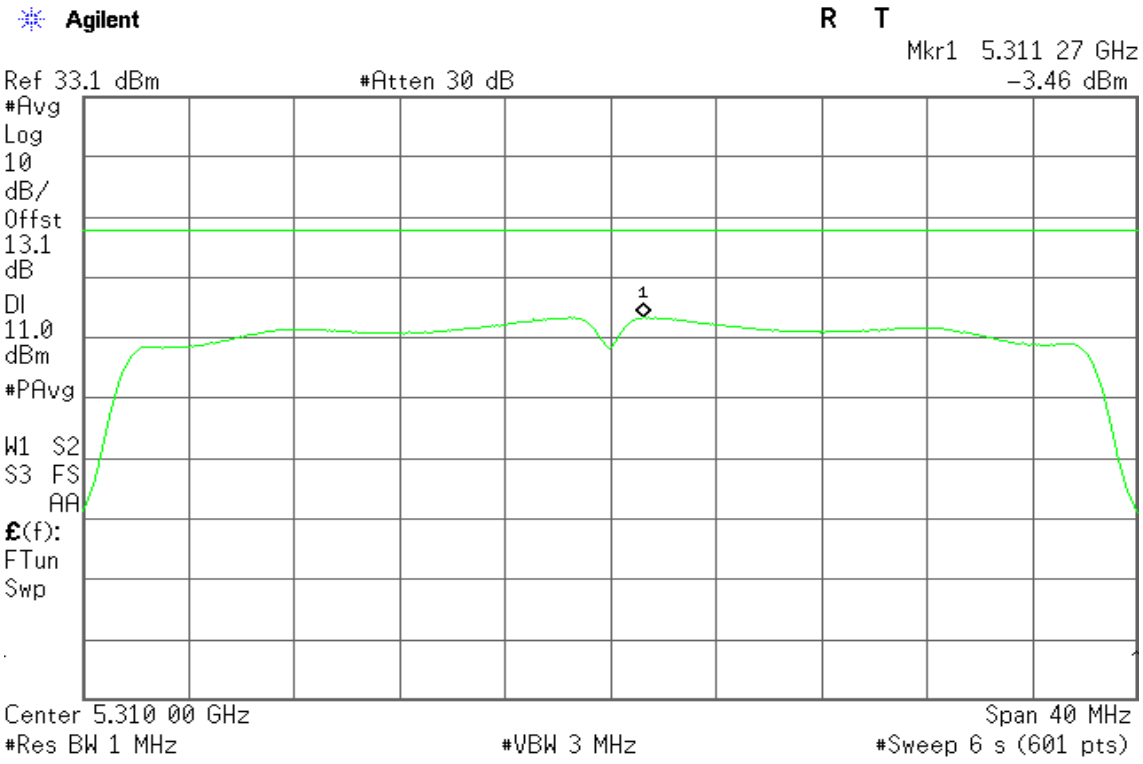


## IEEE 802.11n HT 40 MHz mode / 5270 ~ 5310MHz

### CH Low

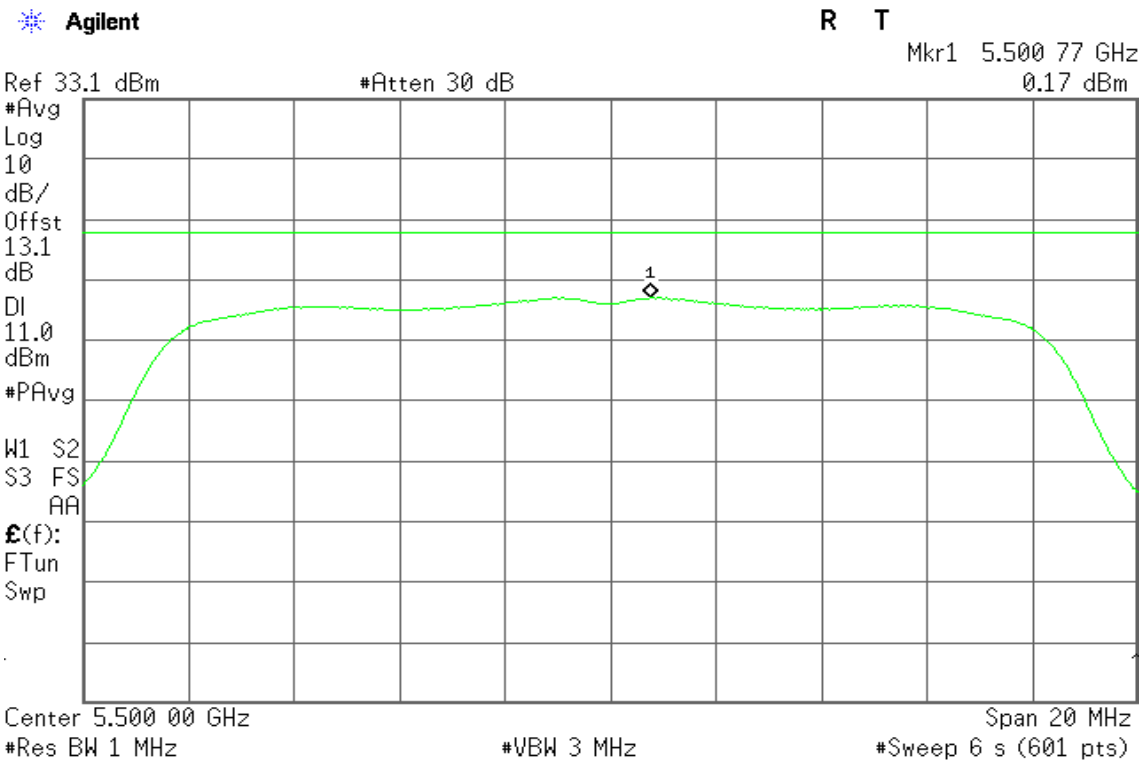



### CH High

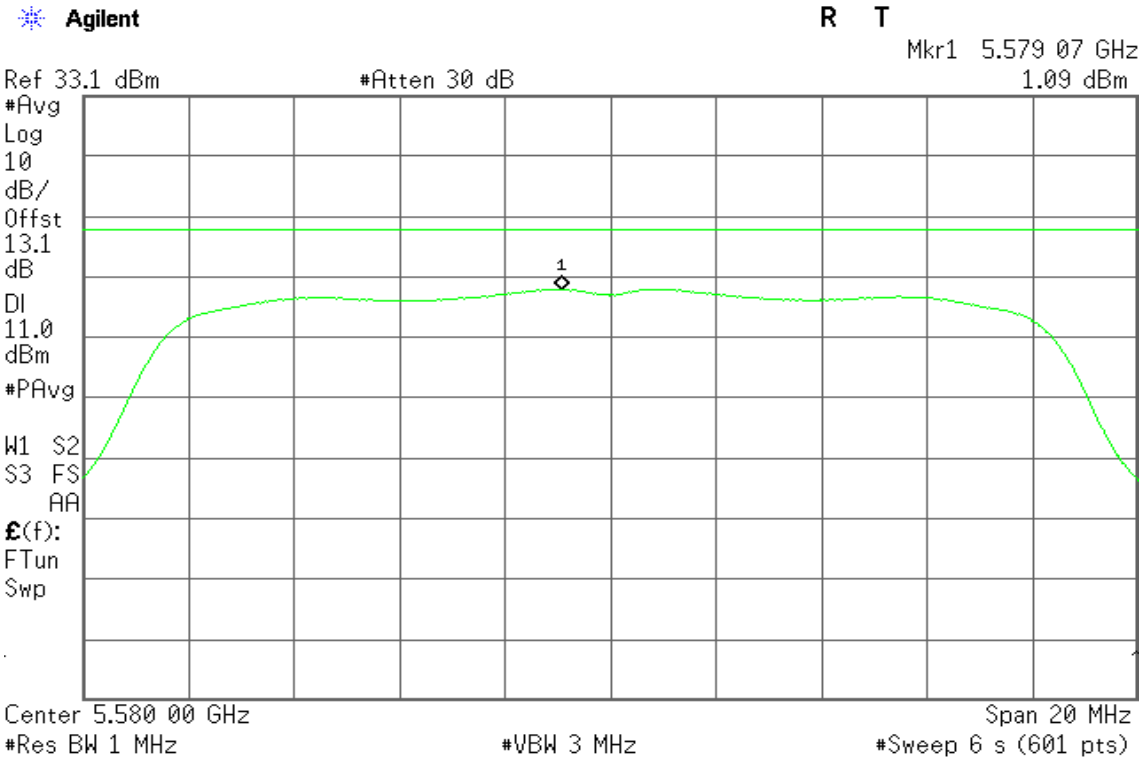


**Test mode: IEEE 802.11a mode / 5500 ~ 5700MHz**

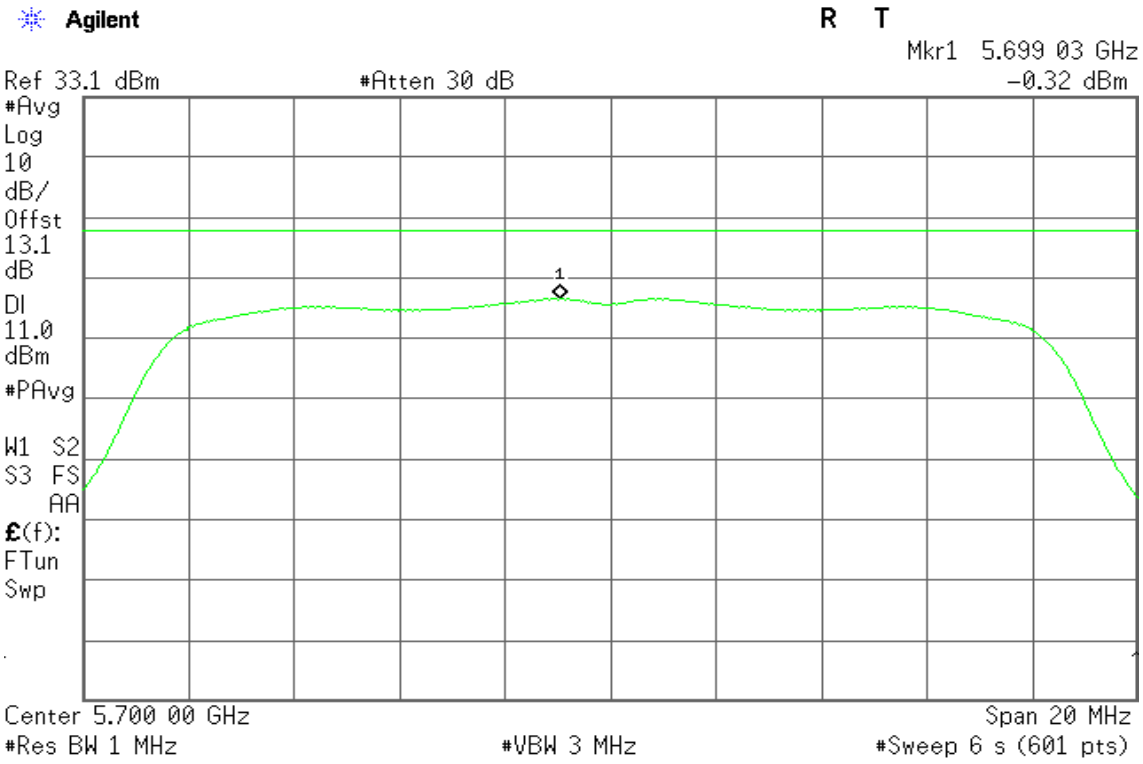
**CH Low**




**CH Mid**

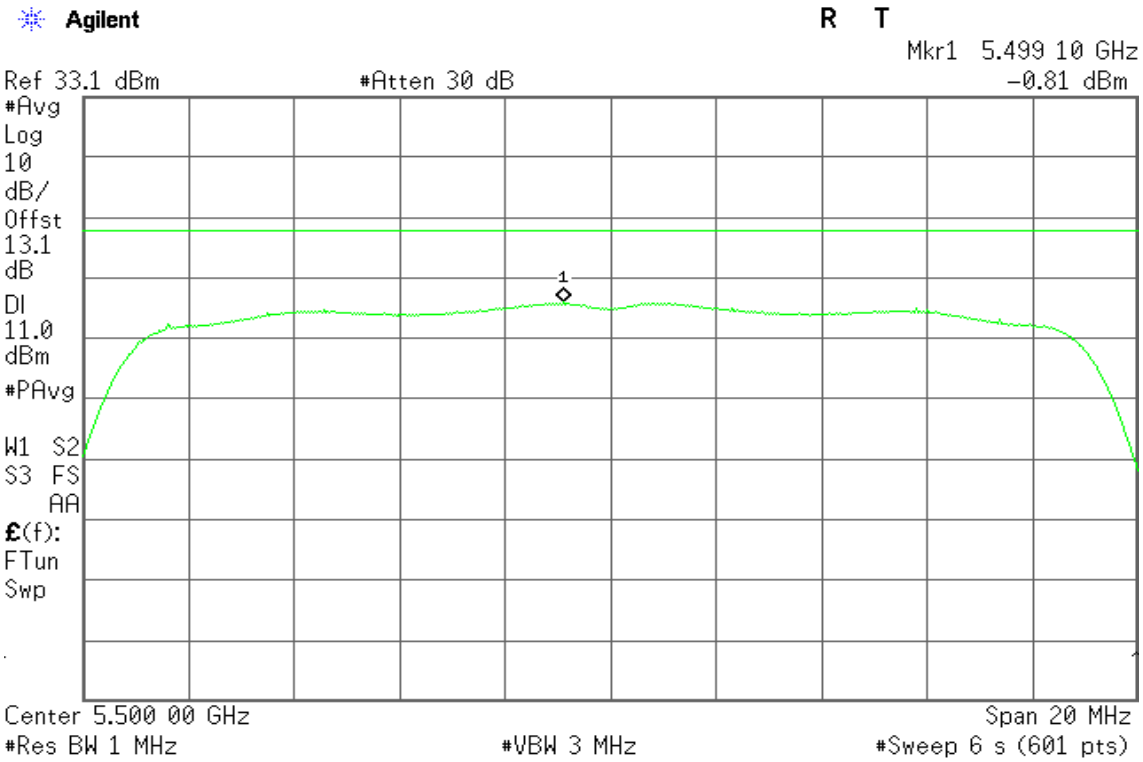


## CH High

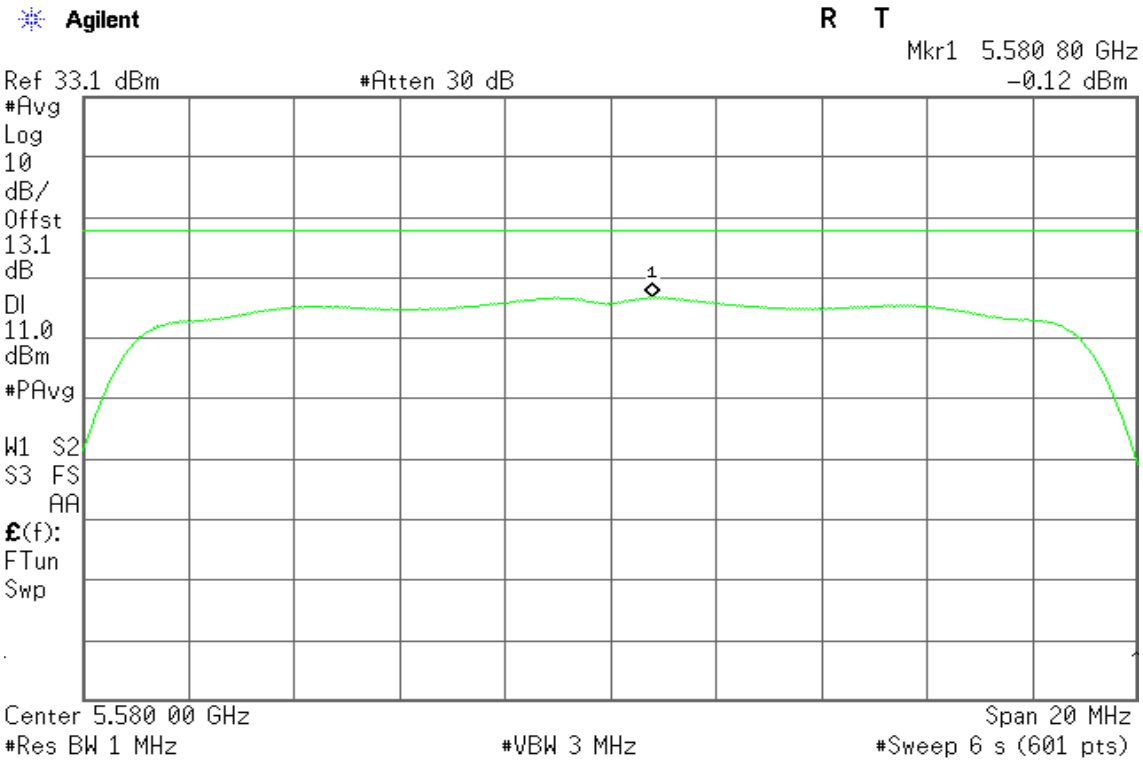



## IEEE 802.11n HT 20 MHz Channel mode / 5500 ~ 5700MHz

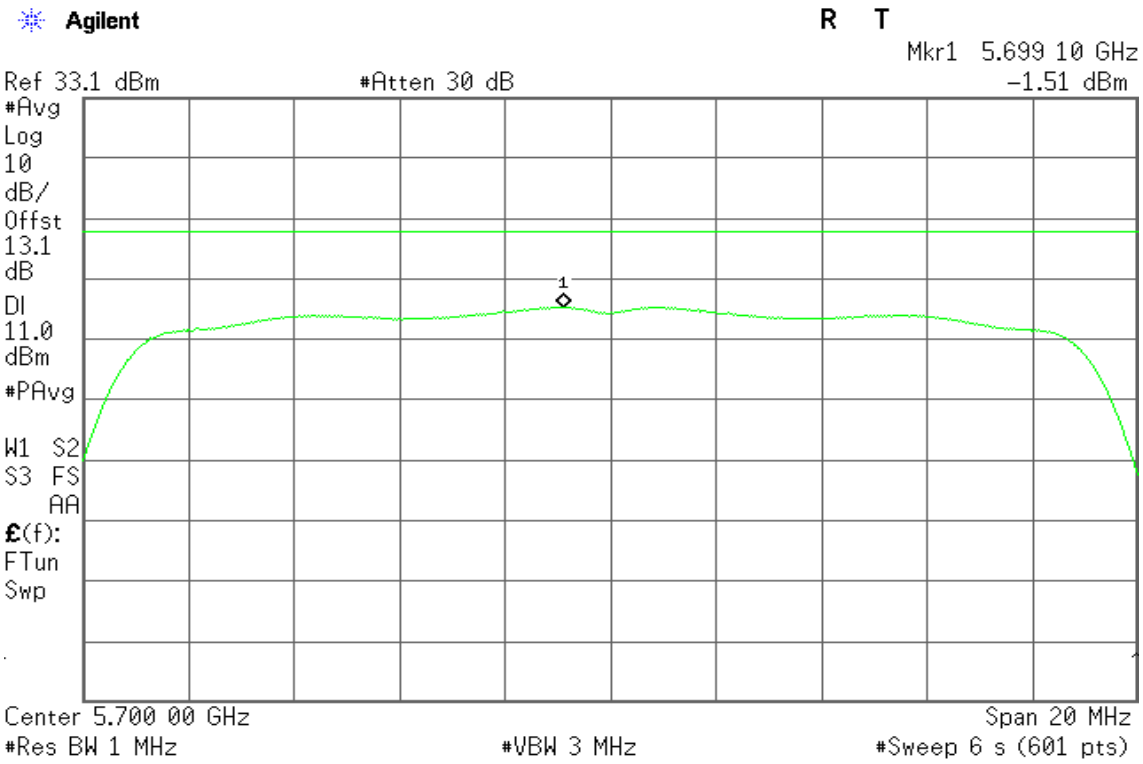
## CH Low



## CH Mid

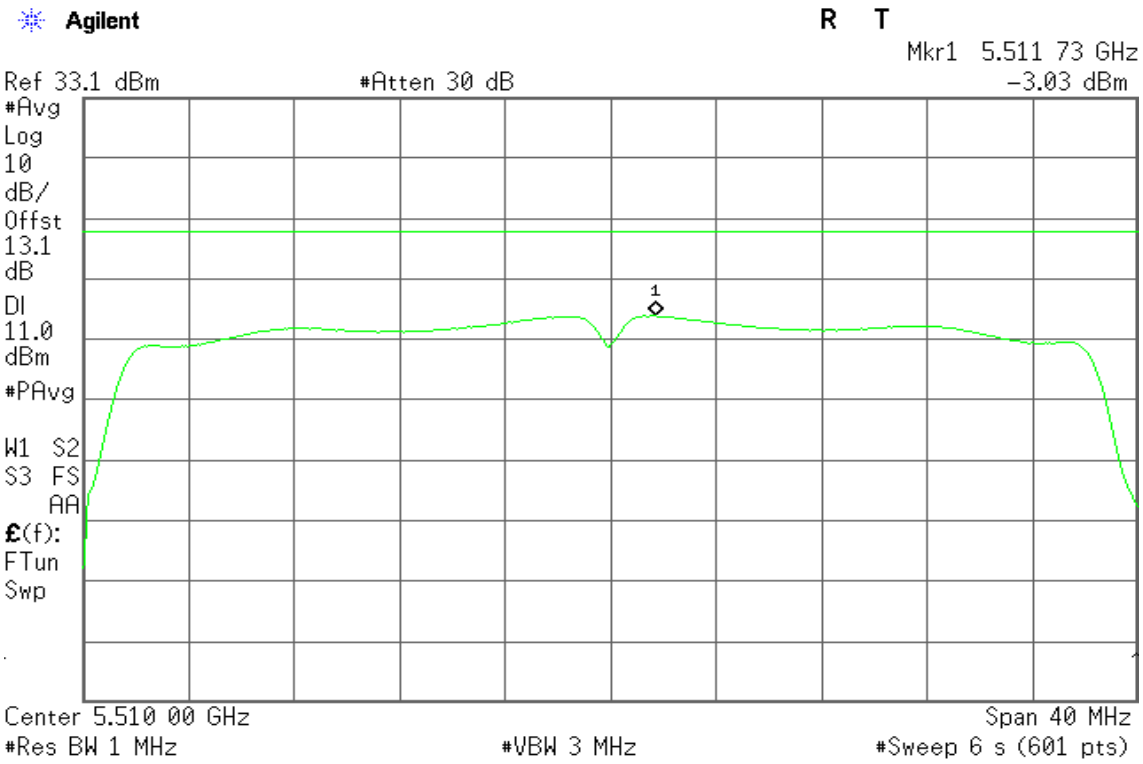



## CH High

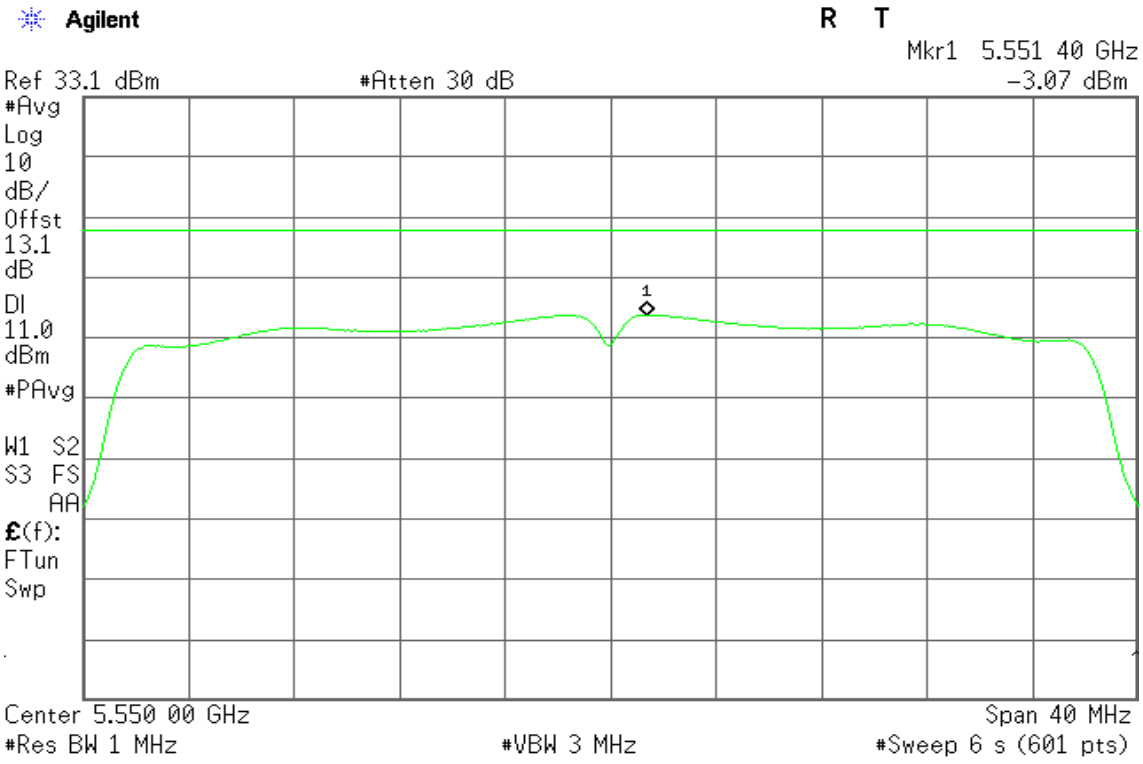


## IEEE 802.11n HT 40 MHz mode / 5510 ~ 5670MHz

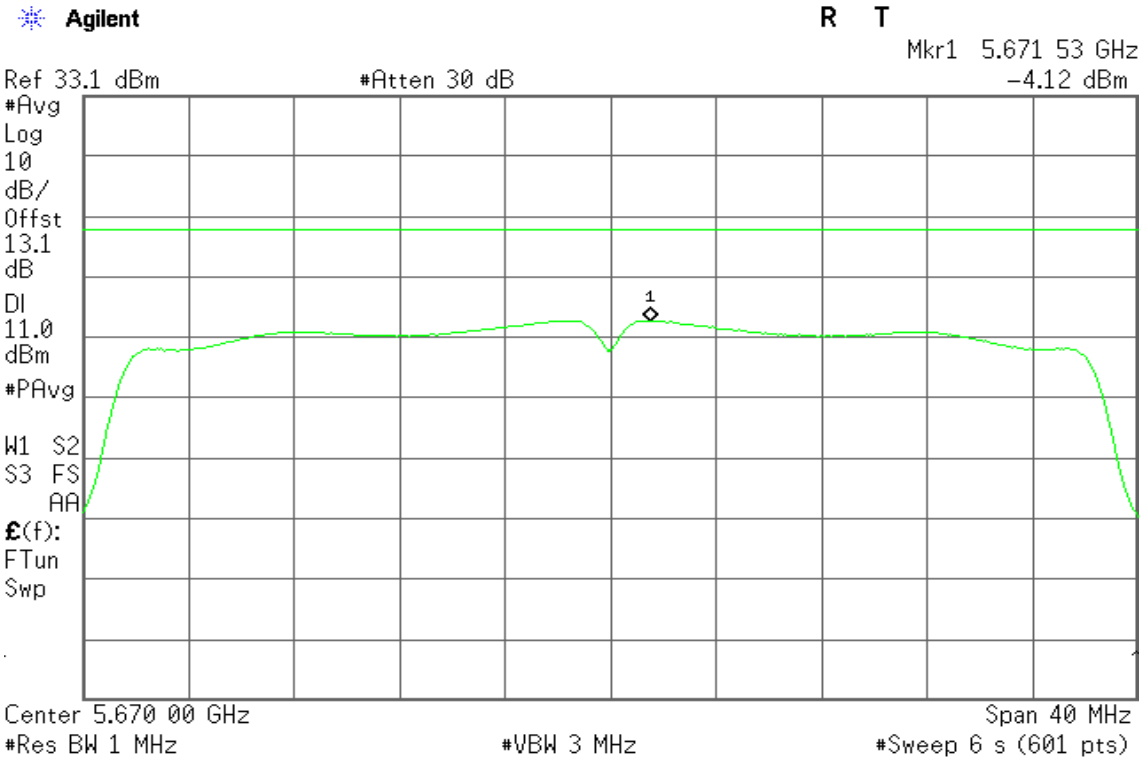
### CH Low




### CH Mid



## CH High


Agilent
R T
Mkr1 5.671 53 GHz
Ref 33.1 dBm
#Atten 30 dB
-4.12 dBm
#Avg
Log
10
dB/
Offst
13.1
dB
Dl
11.0
dBm
#PAvg
W1 S2
S3 FS
AA
£(f):
FTun
Swp
1
Center 5.670 00 GHz
Span 40 MHz
#Res BW 1 MHz
#VBW 3 MHz
#Sweep 6 s (601 pts)

## 7.6 RADIATED UNDESIRABLE EMISSION

1. According to §15.209(a) & RSS-210 §A9.3, 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) |
|---|---|---|
| 30-88 | 100* | 3 |
| 88-216 | 150* | 3 |
| 216-960 | 200* | 3 |
| Above 960 | 500 | 3 |

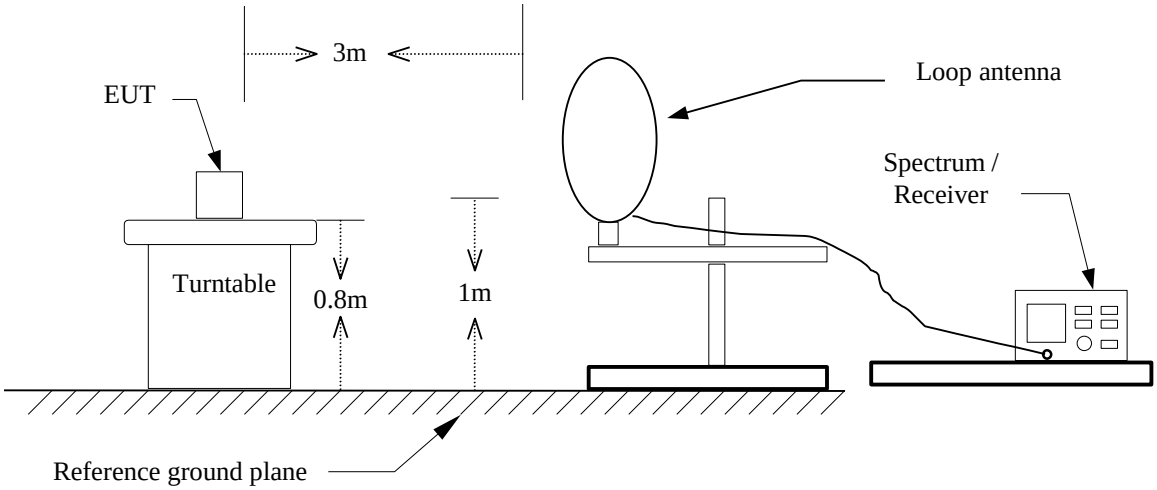
***Remark:*** *Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections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

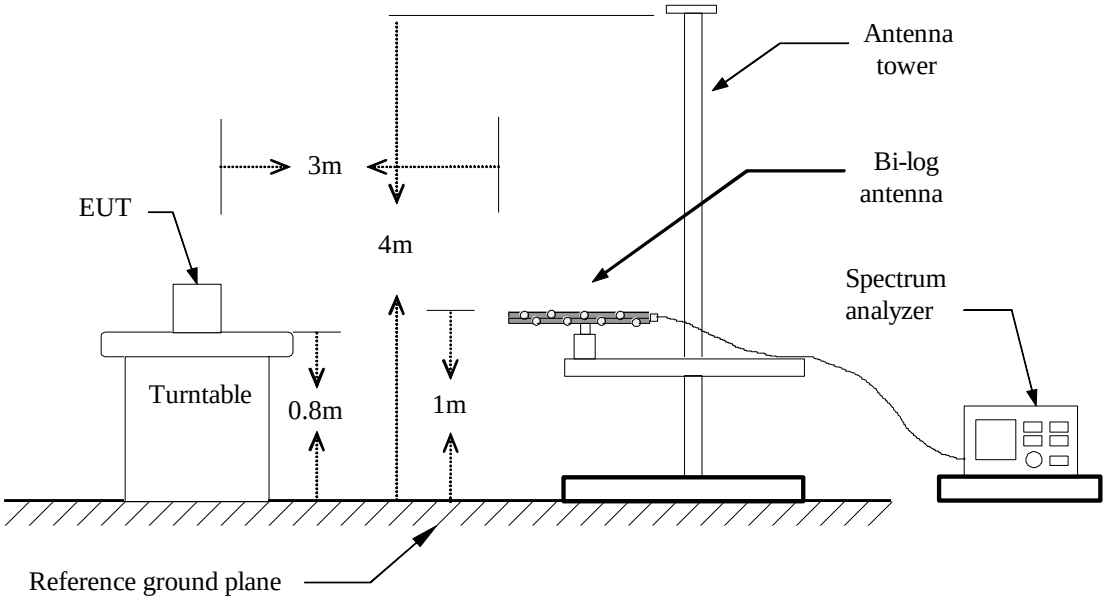
| Frequency (MHz) | Field Strength (μV/m at 3-meter) | Field Strength (dBμV/m at 3-meter) |
|---|---|---|
| 30-88 | 100 | 40 |
| 88-216 | 150 | 43.5 |
| 216-960 | 200 | 46 |
| Above 960 | 500 | 54 |

## Test Configuration

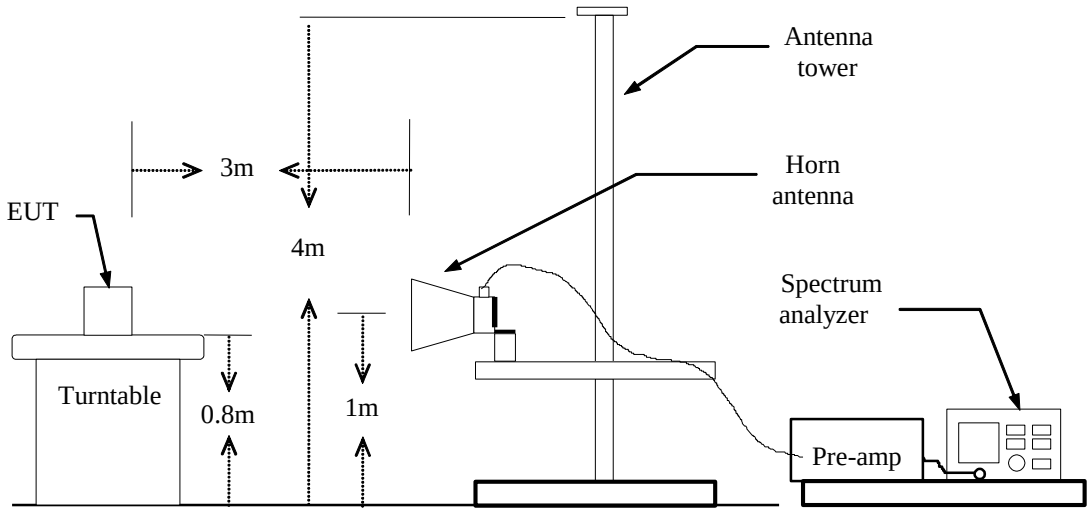
### 9kHz ~ 30MHz




### 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=300Hz / Sweep=AUTO
7. Repeat above procedures until the measurements for all frequencies are complete.

**Below 1 GHz**

**Operation Mode:** Normal Link **Test Date:** August 30, 2014

**Temperature:** 27°C **Tested by:** Dennis Lee

**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) |
|---|---|---|---|---|---|---|---|
| 50.3700 | 51.75 | -22.94 | 28.81 | 40.00 | -11.19 | Peak | V |
| 184.2300 | 47.91 | -18.97 | 28.94 | 43.50 | -14.56 | Peak | V |
| 280.2600 | 48.30 | -16.76 | 31.54 | 46.00 | -14.46 | Peak | V |
| 458.7400 | 39.98 | -12.51 | 27.47 | 46.00 | -18.53 | Peak | V |
| 666.3200 | 44.19 | -9.14 | 35.05 | 46.00 | -10.95 | Peak | V |
| 749.7400 | 36.70 | -7.88 | 28.82 | 46.00 | -17.18 | Peak | V |
| | | | | | | | |
| 51.3400 | 43.62 | -23.04 | 20.58 | 40.00 | -19.42 | Peak | H |
| 184.2300 | 40.74 | -18.97 | 21.77 | 43.50 | -21.73 | Peak | H |
| 280.2600 | 53.26 | -16.76 | 36.50 | 46.00 | -9.50 | Peak | H |
| 320.0300 | 49.41 | -15.92 | 33.49 | 46.00 | -12.51 | Peak | H |
| 666.3200 | 44.00 | -9.14 | 34.86 | 46.00 | -11.14 | Peak | H |
| 749.7400 | 41.13 | -7.88 | 33.25 | 46.00 | -12.75 | Peak | H |

***Remark:***

1 *Measuring frequencies from 30 MHz to the 1GHz.*

2 *Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using peak/quasi-peak detector mode.*

3 *Quasi-peak test would be performed if the peak result were greater than the quasi-peak limit or as required by the applicant.*

4 *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*

5 *Margin (dB) = Remark result (dBuV/m) – Quasi-peak limit (dBuV/m).*

**Above 1 GHz**

| | | | |
|---|---|---|---|
| **Operation Mode:** | Tx / IEEE 802.11a mode / 5180 ~ 5240MHz / CH Low | **Test Date:** | September 2, 2014 |
| **Temperature:** | 27℃ | **Tested by:** | David Shu |
| **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) |
|---|---|---|---|---|---|---|---|
| 3247.000 | 52.72 | 2.01 | 54.73 | 74.00 | -19.27 | peak | V |
| N/A | | | | | | | |
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| | | | | | | | |
| 3688.000 | 53.20 | 3.78 | 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 802.11a mode / 5180 ~ 5240MHz / CH Mid | **Test Date:** | September 2, 2014 |
| **Temperature:** | 27℃ | **Tested by:** | David Shu |
| **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) |
|---|---|---|---|---|---|---|---|
| 3324.000 | 52.00 | -1.33 | 50.67 | 74.00 | -23.33 | peak | V |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 3051.000 | 51.81 | -1.99 | 49.82 | 74.00 | -24.18 | 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:** | September 2, 2014 |
| **Temperature:** | 27℃ | **Tested by:** | David Shu |
| **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) |
|---|---|---|---|---|---|---|---|
| 3079.000 | 52.29 | -1.92 | 50.37 | 74.00 | -23.63 | peak | V |
| N/A | | | | | | | |
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| | | | | | | | |
| | | | | | | | |
| 1945.000 | 54.57 | -5.17 | 49.40 | 74.00 | -24.60 | 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 MHz Channel mode / 5180 ~ 5240MHz / CH Low | **Test Date:** | September 2, 2014 |
| **Temperature:** | 27℃ | **Tested by:** | David Shu |
| **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 | 52.69 | 1.39 | 54.08 | 74.00 | -19.92 | peak | V |
| N/A | | | | | | | |
| | | | | | | | |
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| | | | | | | | |
| 3198.000 | 51.98 | -1.63 | 50.35 | 74.00 | -23.65 | 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 MHz Channel mode / 5180 ~ 5240MHz / CH Mid | **Test Date:** | September 2, 2014 |
| **Temperature:** | 27℃ | **Tested by:** | David Shu |
| **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) |
|---|---|---|---|---|---|---|---|
| 3422.000 | 51.16 | -1.10 | 50.06 | 74.00 | -23.94 | peak | V |
| N/A | | | | | | | |
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| | | | | | | | |
| 3205.000 | 52.07 | -1.62 | 50.45 | 74.00 | -23.55 | 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 MHz Channel mode / 5180 ~ 5240MHz / CH High | **Test Date:** | September 2, 2014 |
| **Temperature:** | 27℃ | **Tested by:** | David Shu |
| **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) |
|---|---|---|---|---|---|---|---|
| 3093.000 | 51.13 | -1.89 | 49.24 | 74.00 | -24.76 | peak | V |
| N/A | | | | | | | |
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| | | | | | | | |
| | | | | | | | |
| 3310.000 | 51.72 | -1.37 | 50.35 | 74.00 | -23.65 | 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 MHz mode / 5190 ~ 5230MHz / CH Low | **Test Date:** | September 2, 2014 |
| **Temperature:** | 27℃ | **Tested by:** | David Shu |
| **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) |
|---|---|---|---|---|---|---|---|
| 3387.000 | 52.08 | 2.56 | 54.64 | 74.00 | -19.36 | peak | V |
| N/A | | | | | | | |
| | | | | | | | |
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| | | | | | | | |
| | | | | | | | |
| 3240.000 | 52.21 | 1.99 | 54.20 | 74.00 | -19.80 | 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 MHz mode / 5190 ~ 5230MHz / CH High | **Test Date:** | September 2, 2014 |
| **Temperature:** | 27°C | **Tested by:** | David Shu |
| **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) |
|---|---|---|---|---|---|---|---|
| 3205.000 | 51.71 | -1.62 | 50.09 | 74.00 | -23.91 | peak | V |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 3338.000 | 51.99 | -1.30 | 50.69 | 74.00 | -23.31 | 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 / 5260 ~ 5320MHz / CH Low | **Test Date:** | September 2, 2014 |
| **Temperature:** | 27℃ | **Tested by:** | David Shu |
| **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) |
|---|---|---|---|---|---|---|---|
| 3233.000 | 51.88 | -1.55 | 50.33 | 74.00 | -23.67 | peak | V |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 3261.000 | 52.60 | -1.48 | 51.12 | 74.00 | -22.88 | 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 / 5260 ~ 5320MHz / CH Mid | **Test Date:** | September 2, 2014 |
| **Temperature:** | 27℃ | **Tested by:** | David Shu |
| **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) |
|---|---|---|---|---|---|---|---|
| 3359.000 | 51.98 | -1.25 | 50.73 | 74.00 | -23.27 | peak | V |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 3261.000 | 51.96 | -1.48 | 50.48 | 74.00 | -23.52 | 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 / 5260 ~ 5320MHz / CH High | **Test Date:** | September 2, 2014 |
| **Temperature:** | 27°C | **Tested by:** | David Shu |
| **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) |
|---|---|---|---|---|---|---|---|
| 3709.000 | 53.12 | 3.87 | 56.99 | 74.00 | -17.01 | peak | V |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 3695.000 | 53.26 | 3.81 | 57.07 | 74.00 | -16.93 | 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 MHz Channel mode / 5260 ~ 5320MHz / CH Low | **Test Date:** | September 2, 2014 |
| **Temperature:** | 27℃ | **Tested by:** | David Shu |
| **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) |
|---|---|---|---|---|---|---|---|
| 3352.000 | 51.92 | -1.27 | 50.65 | 74.00 | -23.35 | peak | V |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 3198.000 | 52.04 | -1.63 | 50.41 | 74.00 | -23.59 | 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 MHz Channel mode / 5260 ~ 5320MHz / CH Mid | **Test Date:** | September 2, 2014 |
| **Temperature:** | 27℃ | **Tested by:** | David Shu |
| **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) |
|---|---|---|---|---|---|---|---|
| 3051.000 | 51.31 | -1.99 | 49.32 | 74.00 | -24.68 | peak | V |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 2897.000 | 49.25 | -2.32 | 46.93 | 74.00 | -27.07 | 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 802.11n HT 20 MHz Channel mode / 5260 ~ 5320MHz / CH High | **Test Date:** | September 2, 2014 |
| **Temperature:** | 27℃ | **Tested by:** | David Shu |
| **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) |
|---|---|---|---|---|---|---|---|
| 3632.000 | 52.75 | 3.55 | 56.30 | 74.00 | -17.70 | peak | V |
| N/A | | | | | | | |
| | | | | | | | |
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| 3345.000 | 52.92 | 2.40 | 55.32 | 74.00 | -18.68 | 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 MHz mode / 5270 ~ 5310MHz / CH Low | **Test Date:** | September 2, 2014 |
| **Temperature:** | 27℃ | **Tested by:** | David Shu |
| **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) |
|---|---|---|---|---|---|---|---|
| 3128.000 | 51.23 | -1.80 | 49.43 | 74.00 | -24.57 | peak | V |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 3289.000 | 51.28 | -1.42 | 49.86 | 74.00 | -24.14 | 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 MHz mode / 5270 ~ 5310MHz / CH High | **Test Date:** | September 2, 2014 |
| **Temperature:** | 27℃ | **Tested by:** | David Shu |
| **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) |
|---|---|---|---|---|---|---|---|
| 3695.000 | 51.72 | 3.81 | 55.53 | 74.00 | -18.47 | peak | V |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 3688.000 | 52.87 | 3.78 | 56.65 | 74.00 | -17.35 | 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 / 5500 ~ 5700MHz / CH Low | **Test Date:** | September 2, 2014 |
| **Temperature:** | 27℃ | **Tested by:** | David Shu |
| **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) |
|---|---|---|---|---|---|---|---|
| 3380.000 | 51.81 | -1.20 | 50.61 | 74.00 | -23.39 | peak | V |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 3933.000 | 50.48 | 0.94 | 51.42 | 74.00 | -22.58 | peak | H |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

***Remark:***

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

| | | | |
|---|---|---|---|
| **Operation Mode:** | Tx / IEEE 802.11a mode / 5500 ~ 5700MHz /CH Mid | **Test Date:** | September 2, 2014 |
| **Temperature:** | 27℃ | **Tested by:** | David Shu |
| **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) |
|---|---|---|---|---|---|---|---|
| 3114.000 | 51.46 | -1.84 | 49.62 | 74.00 | -24.38 | peak | V |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 2827.000 | 49.10 | -2.46 | 46.64 | 74.00 | -27.36 | 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 or as required by the applicant.*
4. *Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.*
5. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*
6. *Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).*

| | | | |
|---|---|---|---|
| **Operation Mode:** | Tx / IEEE 802.11a mode / 5500 ~ 5700MHz / CH High | **Test Date:** | September 2, 2014 |
| **Temperature:** | 27℃ | **Tested by:** | David Shu |
| **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) |
|---|---|---|---|---|---|---|---|
| 3310.000 | 52.26 | -1.37 | 50.89 | 74.00 | -23.11 | peak | V |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 3639.000 | 50.40 | -0.32 | 50.08 | 74.00 | -23.92 | 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 or as required by the applicant.*
4. *Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.*
5. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*
6. *Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).*

| | | | |
|---|---|---|---|
| **Operation Mode:** | Tx / IEEE 802.11n HT 20 MHz Channel mode / 5500 ~ 5700MHz / CH Low | **Test Date:** | September 2, 2014 |
| **Temperature:** | 27℃ | **Tested by:** | David Shu |
| **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) |
|---|---|---|---|---|---|---|---|
| 3226.000 | 52.25 | -1.57 | 50.68 | 74.00 | -23.32 | peak | V |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 3317.000 | 51.97 | -1.35 | 50.62 | 74.00 | -23.38 | 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 or as required by the applicant.*
4. *Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.*
5. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*
6. *Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).*

| | | | |
|---|---|---|---|
| **Operation Mode:** | Tx / IEEE 802.11n HT 20 MHz Channel mode / 5500 ~ 5700MHz / CH Mid | **Test Date:** | September 2, 2014 |
| **Temperature:** | 27℃ | **Tested by:** | David Shu |
| **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) |
|---|---|---|---|---|---|---|---|
| 3317.000 | 51.30 | -1.35 | 49.95 | 74.00 | -24.05 | peak | V |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 3275.000 | 52.06 | -1.45 | 50.61 | 74.00 | -23.39 | peak | H |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

***Remark:***

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

| | | | |
|---|---|---|---|
| **Operation Mode:** | Tx / IEEE 802.11n HT 20 MHz Channel mode / 5500 ~ 5700MHz / CH High | **Test Date:** | September 2, 2014 |
| **Temperature:** | 27℃ | **Tested by:** | David Shu |
| **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) |
|---|---|---|---|---|---|---|---|
| 3331.000 | 51.90 | -1.32 | 50.58 | 74.00 | -23.42 | peak | V |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 3072.000 | 51.76 | -1.94 | 49.82 | 74.00 | -24.18 | peak | H |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

***Remark:***

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

| | | | |
|---|---|---|---|
| **Operation Mode:** | Tx / IEEE 802.11n HT 40 MHz mode / 5510 ~ 5670MHz / CH Low | **Test Date:** | September 2, 2014 |
| **Temperature:** | 27℃ | **Tested by:** | David Shu |
| **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) |
|---|---|---|---|---|---|---|---|
| 3275.000 | 51.48 | -1.45 | 50.03 | 74.00 | -23.97 | peak | V |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 3086.000 | 50.77 | -1.90 | 48.87 | 74.00 | -25.13 | peak | H |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

***Remark:***

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

| | | | |
|---|---|---|---|
| **Operation Mode:** | Tx / IEEE 802.11n HT 40 MHz mode / 5510 ~ 5670MHz / CH Mid | **Test Date:** | September 2, 2014 |
| **Temperature:** | 27℃ | **Tested by:** | David Shu |
| **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) |
|---|---|---|---|---|---|---|---|
| 3156.000 | 51.49 | -1.74 | 49.75 | 74.00 | -24.25 | peak | V |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 3275.000 | 51.60 | -1.45 | 50.15 | 74.00 | -23.85 | peak | H |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

***Remark:***

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

| | | | |
|---|---|---|---|
| **Operation Mode:** | Tx / IEEE 802.11n HT 40 MHz mode / 5510 ~ 5670MHz / CH High | **Test Date:** | September 2, 2014 |
| **Temperature:** | 27℃ | **Tested by:** | David Shu |
| **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) |
|---|---|---|---|---|---|---|---|
| 3233.000 | 51.91 | -1.55 | 50.36 | 74.00 | -23.64 | peak | V |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 3317.000 | 51.67 | -1.35 | 50.32 | 74.00 | -23.68 | peak | H |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

***Remark:***

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

## 7.7 POWERLINE CONDUCTED EMISSIONS

**LIMIT**

According to §15.207(a) & RSS-Gen §7.2.4, 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 II for the actual connections between EUT and support equipment.

## TEST PROCEDURE

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

# TEST RESULTS

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

**Test Data**

| | | | |
|---|---|---|---|
| **Operation Mode:** | Normal Link | **Test Date:** | September 1, 2014 |
| **Temperature:** | 26℃ | **Tested by:** | Sehni Hu |
| **Humidity:** | 60% RH | | |

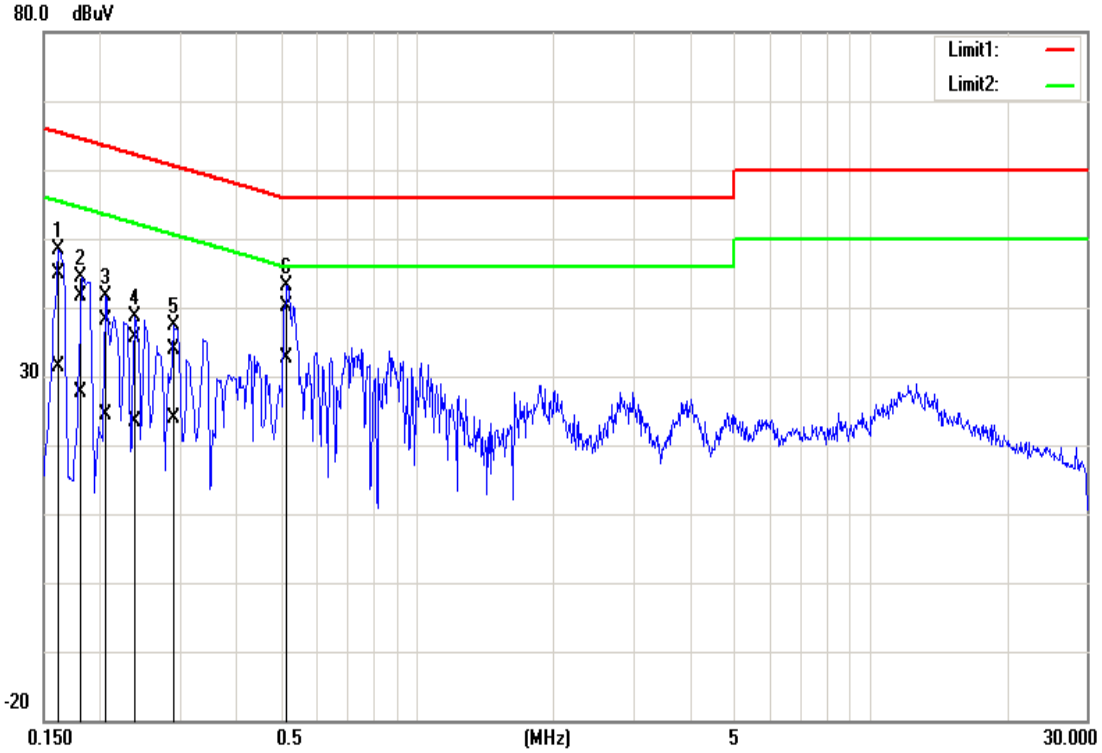
| Freq. (MHz) | QP Reading (dBuV) | AV Reading (dBuV) | Corr. factor (dB) | QP Result (dBuV) | AV Result (dBuV) | QP Limit (dBuV) | AV Limit (dBuV) | QP Margin (dB) | AV Margin (dB) | Note |
|---|---|---|---|---|---|---|---|---|---|---|
| 0.1620 | 44.81 | 31.21 | 0.19 | 45.00 | 31.40 | 65.36 | 55.36 | -20.36 | -23.96 | L1 |
| 0.1820 | 41.35 | 27.44 | 0.19 | 41.54 | 27.63 | 64.39 | 54.39 | -22.85 | -26.76 | L1 |
| 0.2060 | 37.97 | 24.27 | 0.19 | 38.16 | 24.46 | 63.37 | 53.37 | -25.21 | -28.91 | L1 |
| 0.2380 | 35.40 | 23.31 | 0.19 | 35.59 | 23.50 | 62.17 | 52.17 | -26.58 | -28.67 | L1 |
| 0.2900 | 33.62 | 23.60 | 0.19 | 33.81 | 23.79 | 60.52 | 50.52 | -26.71 | -26.73 | L1 |
| 0.5180 | 39.89 | 32.36 | 0.20 | 40.09 | 32.56 | 56.00 | 46.00 | -15.91 | -13.44 | L1 |
| | | | | | | | | | | |
| 0.1500 | 43.98 | 30.53 | 0.10 | 44.08 | 30.63 | 66.00 | 56.00 | -21.92 | -25.37 | L2 |
| 0.1700 | 42.62 | 29.45 | 0.10 | 42.72 | 29.55 | 64.96 | 54.96 | -22.24 | -25.41 | L2 |
| 0.1986 | 37.76 | 23.97 | 0.10 | 37.86 | 24.07 | 63.67 | 53.67 | -25.81 | -29.60 | L2 |
| 0.2260 | 34.94 | 24.27 | 0.10 | 35.04 | 24.37 | 62.60 | 52.60 | -27.56 | -28.23 | L2 |
| 0.2500 | 32.74 | 20.03 | 0.10 | 32.84 | 20.13 | 61.76 | 51.76 | -28.92 | -31.63 | L2 |
| 0.5260 | 43.58 | 37.21 | 0.10 | 43.68 | 37.31 | 56.00 | 46.00 | -12.32 | -8.69 | L2 |

***Remark:***

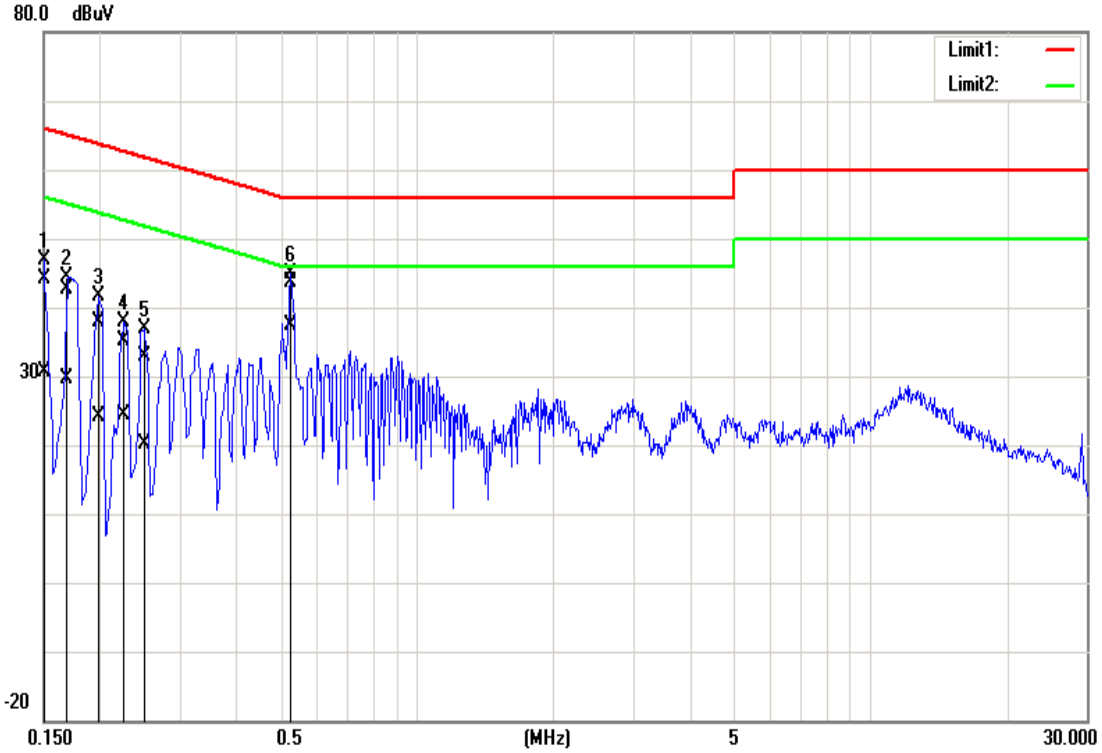
1. *Measuring frequencies from 0.15 MHz to 30MHz.*
2. *The emissions measured in frequency range from 0.15 MHz to 30MHz were made with an instrument using Quasi-peak detector and average detector.*
3. *The IF bandwidth of SPA between 0.15MHz to 30MHz was 10kHz; the IF bandwidth of Test Receiver between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

## Test Plots

### *Conducted emissions (Line 1)*




### *Conducted emissions (Line 2)*

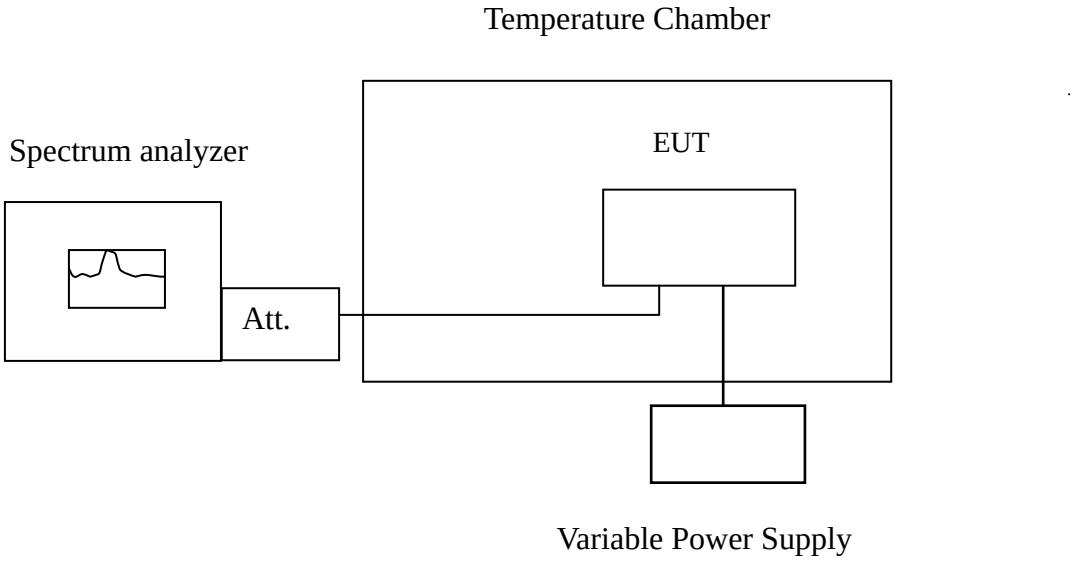


# 7.8 FREQUENCY STABILITY

## LIMIT

According to §15.407(g) & RSS-210 §A9.5(5), 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 operational description.

**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 | 110 | 5180.008393 | 5150~5250 | Pass |
| 40 | 110 | 5180.002626 | 5150~5250 | Pass |
| 30 | 110 | 5179.994113 | 5150~5250 | Pass |
| 20 | 110 | 5180.010832 | 5150~5250 | Pass |
| 10 | 110 | 5179.996620 | 5150~5250 | Pass |
| 0 | 110 | 5180.000061 | 5150~5250 | Pass |
| -10 | 110 | 5180.002289 | 5150~5250 | Pass |
| -20 | 110 | 5180.001585 | 5150~5250 | Pass |

| Operating Frequency: 5180 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | **Voltage (V)** | **Measured Frequency (MHz)** | **Limit Range** | **Test Result** |
| 20 | 94 | 5180.004054 | 5150~5250 | Pass |
| | 110 | 5180.005435 | 5150~5250 | Pass |
| | 127 | 5179.995769 | 5150~5250 | Pass |

## CH Mid

| Operating Frequency: 5220 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | **Voltage (V)** | **Measured Frequency (MHz)** | **Limit Range** | **Test Result** |
| 50 | 110 | 5220.000852 | 5150~5250 | Pass |
| 40 | 110 | 5220.007641 | 5150~5250 | Pass |
| 30 | 110 | 5220.009987 | 5150~5250 | Pass |
| 20 | 110 | 5219.990009 | 5150~5250 | Pass |
| 10 | 110 | 5220.000728 | 5150~5250 | Pass |
| 0 | 110 | 5219.996277 | 5150~5250 | Pass |
| -10 | 110 | 5219.997740 | 5150~5250 | Pass |
| -20 | 110 | 5220.006504 | 5150~5250 | Pass |

| Operating Frequency: 5220 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | **Voltage (V)** | **Measured Frequency (MHz)** | **Limit Range** | **Test Result** |
| 20 | 94 | 5220.003838 | 5150~5250 | Pass |
| | 110 | 5219.99423 | 5150~5250 | Pass |
| | 127 | 5219.998909 | 5150~5250 | Pass |

## CH High

| Operating Frequency: 5240 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | **Voltage (V)** | **Measured Frequency (MHz)** | **Limit Range** | **Test Result** |
| 50 | 110 | 5240.003698 | 5150~5250 | Pass |
| 40 | 110 | 5240.004115 | 5150~5250 | Pass |
| 30 | 110 | 5240.004109 | 5150~5250 | Pass |
| 20 | 110 | 5240.001058 | 5150~5250 | Pass |
| 10 | 110 | 5240.005181 | 5150~5250 | Pass |
| 0 | 110 | 5240.009466 | 5150~5250 | Pass |
| -10 | 110 | 5239.992182 | 5150~5250 | Pass |
| -20 | 110 | 5239.994360 | 5150~5250 | Pass |

| Operating Frequency: 5240 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | **Voltage (V)** | **Measured Frequency (MHz)** | **Limit Range** | **Test Result** |
| 20 | 94 | 5239.994961 | 5150~5250 | Pass |
| | 110 | 5240.009847 | 5150~5250 | Pass |
| | 127 | 5239.993709 | 5150~5250 | Pass |

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

## CH Low

| Operating Frequency: 5180 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | **Voltage (V)** | **Measured Frequency (MHz)** | **Limit Range** | **Test Result** |
| 50 | 110 | 5180.001416 | 5150~5250 | Pass |
| 40 | 110 | 5180.010614 | 5150~5250 | Pass |
| 30 | 110 | 5179.993741 | 5150~5250 | Pass |
| 20 | 110 | 5179.998857 | 5150~5250 | Pass |
| 10 | 110 | 5180.001900 | 5150~5250 | Pass |
| 0 | 110 | 5179.995325 | 5150~5250 | Pass |
| -10 | 110 | 5179.995573 | 5150~5250 | Pass |
| -20 | 110 | 5179.993439 | 5150~5250 | Pass |

| Operating Frequency: 5180 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | **Voltage (V)** | **Measured Frequency (MHz)** | **Limit Range** | **Test Result** |
| 20 | 94 | 5179.994581 | 5150~5250 | Pass |
| | 110 | 5179.998195 | 5150~5250 | Pass |
| | 127 | 5180.006948 | 5150~5250 | Pass |

## CH Mid

| Operating Frequency: 5220 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | **Voltage (V)** | **Measured Frequency (MHz)** | **Limit Range** | **Test Result** |
| 50 | 110 | 5220.010866 | 5150~5250 | Pass |
| 40 | 110 | 5219.993241 | 5150~5250 | Pass |
| 30 | 110 | 5220.001070 | 5150~5250 | Pass |
| 20 | 110 | 5219.999735 | 5150~5250 | Pass |
| 10 | 110 | 5220.001893 | 5150~5250 | Pass |
| 0 | 110 | 5220.008415 | 5150~5250 | Pass |
| -10 | 110 | 5219.998436 | 5150~5250 | Pass |
| -20 | 110 | 5219.997810 | 5150~5250 | Pass |

| Operating Frequency: 5220 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | **Voltage (V)** | **Measured Frequency (MHz)** | **Limit Range** | **Test Result** |
| 20 | 94 | 5219.99087 | 5150~5250 | Pass |
| | 110 | 5219.998905 | 5150~5250 | Pass |
| | 127 | 5220.002749 | 5150~5250 | Pass |

## CH High

| Operating Frequency: 5240 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | Voltage (V) | Measured Frequency (MHz) | Limit Range | Test Result |
| 50 | 110 | 5240.008386 | 5150~5250 | Pass |
| 40 | 110 | 5239.995716 | 5150~5250 | Pass |
| 30 | 110 | 5240.009717 | 5150~5250 | Pass |
| 20 | 110 | 5240.006968 | 5150~5250 | Pass |
| 10 | 110 | 5240.003625 | 5150~5250 | Pass |
| 0 | 110 | 5239.992488 | 5150~5250 | Pass |
| -10 | 110 | 5240.000500 | 5150~5250 | Pass |
| -20 | 110 | 5239.991731 | 5150~5250 | Pass |

| Operating Frequency: 5240 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | Voltage (V) | Measured Frequency (MHz) | Limit Range | Test Result |
| 20 | 94 | 5240.007814 | 5150~5250 | Pass |
| | 110 | 5240.009125 | 5150~5250 | Pass |
| | 127 | 5240.0034 | 5150~5250 | Pass |

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

## CH Low

| Operating Frequency: 5190 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | Voltage (V) | Measured Frequency (MHz) | Limit Range | Test Result |
| 50 | 110 | 5189.990344 | 5150~5250 | Pass |
| 40 | 110 | 5190.001494 | 5150~5250 | Pass |
| 30 | 110 | 5189.991352 | 5150~5250 | Pass |
| 20 | 110 | 5189.992092 | 5150~5250 | Pass |
| 10 | 110 | 5190.009198 | 5150~5250 | Pass |
| 0 | 110 | 5189.997560 | 5150~5250 | Pass |
| -10 | 110 | 5190.008113 | 5150~5250 | Pass |
| -20 | 110 | 5189.992211 | 5150~5250 | Pass |

| Operating Frequency: 5190 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | Voltage (V) | Measured Frequency (MHz) | Limit Range | Test Result |
| 20 | 94 | 5190.00471 | 5150~5250 | Pass |
| | 110 | 5189.991881 | 5150~5250 | Pass |
| | 127 | 5189.999523 | 5150~5250 | Pass |

## CH High

| Operating Frequency: 5230 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | **Voltage (V)** | **Measured Frequency (MHz)** | **Limit Range** | **Test Result** |
| 50 | 110 | 5230.003475 | 5150~5250 | Pass |
| 40 | 110 | 5230.001815 | 5150~5250 | Pass |
| 30 | 110 | 5229.995705 | 5150~5250 | Pass |
| 20 | 110 | 5229.997609 | 5150~5250 | Pass |
| 10 | 110 | 5229.999132 | 5150~5250 | Pass |
| 0 | 110 | 5229.997061 | 5150~5250 | Pass |
| -10 | 110 | 5230.005918 | 5150~5250 | Pass |
| -20 | 110 | 5229.996627 | 5150~5250 | Pass |

| Operating Frequency: 5230 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | **Voltage (V)** | **Measured Frequency (MHz)** | **Limit Range** | **Test Result** |
| 20 | 94 | 5230.008683 | 5150~5250 | Pass |
| | 110 | 5230.000079 | 5150~5250 | Pass |
| | 127 | 5229.993096 | 5150~5250 | Pass |

**IEEE 802.11a mode / 5260 ~ 5320 MHz:**

**CH Low**

| Operating Frequency: 5260 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | **Voltage (V)** | **Measured Frequency (MHz)** | **Limit Range** | **Test Result** |
| 50 | 110 | 5259.996055 | 5250~5350 | Pass |
| 40 | 110 | 5259.991266 | 5250~5350 | Pass |
| 30 | 110 | 5259.996042 | 5250~5350 | Pass |
| 20 | 110 | 5260.002058 | 5250~5350 | Pass |
| 10 | 110 | 5260.004256 | 5250~5350 | Pass |
| 0 | 110 | 5259.995418 | 5250~5350 | Pass |
| -10 | 110 | 5259.994575 | 5250~5350 | Pass |
| -20 | 110 | 5260.010886 | 5250~5350 | Pass |

| Operating Frequency: 5260 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | **Voltage (V)** | **Measured Frequency (MHz)** | **Limit Range** | **Test Result** |
| 20 | 94 | 5259.990781 | 5250~5350 | Pass |
| | 110 | 5259.990779 | 5250~5350 | Pass |
| | 127 | 5259.99531 | 5250~5350 | Pass |

## CH Mid

| Operating Frequency: 5280 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | Voltage (V) | Measured Frequency (MHz) | Limit Range | Test Result |
| 50 | 110 | 5280.003950 | 5250~5350 | Pass |
| 40 | 110 | 5280.004950 | 5250~5350 | Pass |
| 30 | 110 | 5279.993012 | 5250~5350 | Pass |
| 20 | 110 | 5279.996693 | 5250~5350 | Pass |
| 10 | 110 | 5279.999897 | 5250~5350 | Pass |
| 0 | 110 | 5279.998134 | 5250~5350 | Pass |
| -10 | 110 | 5279.995315 | 5250~5350 | Pass |
| -20 | 110 | 5280.000370 | 5250~5350 | Pass |

| Operating Frequency: 5280 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | Voltage (V) | Measured Frequency (MHz) | Limit Range | Test Result |
| 20 | 94 | 5279.999606 | 5250~5350 | Pass |
| | 110 | 5280.010767 | 5250~5350 | Pass |
| | 127 | 5279.998883 | 5250~5350 | Pass |

## CH High

| Operating Frequency: 5320 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | Voltage (V) | Measured Frequency (MHz) | Limit Range | Test Result |
| 50 | 110 | 5319.990345 | 5250~5350 | Pass |
| 40 | 110 | 5320.001025 | 5250~5350 | Pass |
| 30 | 110 | 5320.003800 | 5250~5350 | Pass |
| 20 | 110 | 5319.994119 | 5250~5350 | Pass |
| 10 | 110 | 5319.997135 | 5250~5350 | Pass |
| 0 | 110 | 5320.000741 | 5250~5350 | Pass |
| -10 | 110 | 5320.004133 | 5250~5350 | Pass |
| -20 | 110 | 5320.004172 | 5250~5350 | Pass |

| Operating Frequency: 5320 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | Voltage (V) | Measured Frequency (MHz) | Limit Range | Test Result |
| 20 | 94 | 5319.990345 | 5250~5350 | Pass |
| | 110 | 5320.005783 | 5250~5350 | Pass |
| | 127 | 5320.003451 | 5250~5350 | Pass |

## IEEE 802.11n HT 20 MHz Channel mode / 5260 ~ 5320 MHz:

## CH Low

| Operating Frequency: 5260 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | **Voltage (V)** | **Measured Frequency (MHz)** | **Limit Range** | **Test Result** |
| 50 | 110 | 5259.995796 | 5250~5350 | Pass |
| 40 | 110 | 5259.999223 | 5250~5350 | Pass |
| 30 | 110 | 5260.001687 | 5250~5350 | Pass |
| 20 | 110 | 5260.001118 | 5250~5350 | Pass |
| 10 | 110 | 5260.004523 | 5250~5350 | Pass |
| 0 | 110 | 5260.009653 | 5250~5350 | Pass |
| -10 | 110 | 5259.998165 | 5250~5350 | Pass |
| -20 | 110 | 5260.007161 | 5250~5350 | Pass |

| Operating Frequency: 5260 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | **Voltage (V)** | **Measured Frequency (MHz)** | **Limit Range** | **Test Result** |
| 20 | 94 | 5260.009545 | 5250~5350 | Pass |
| | 110 | 5260.008916 | 5250~5350 | Pass |
| | 127 | 5260.009834 | 5250~5350 | Pass |

## CH Mid

| Operating Frequency: 5280 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | **Voltage (V)** | **Measured Frequency (MHz)** | **Limit Range** | **Test Result** |
| 50 | 110 | 5280.009987 | 5250~5350 | Pass |
| 40 | 110 | 5279.995988 | 5250~5350 | Pass |
| 30 | 110 | 5280.008407 | 5250~5350 | Pass |
| 20 | 110 | 5280.004613 | 5250~5350 | Pass |
| 10 | 110 | 5280.002308 | 5250~5350 | Pass |
| 0 | 110 | 5280.007880 | 5250~5350 | Pass |
| -10 | 110 | 5279.994423 | 5250~5350 | Pass |
| -20 | 110 | 5279.996907 | 5250~5350 | Pass |

| Operating Frequency: 5280 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | **Voltage (V)** | **Measured Frequency (MHz)** | **Limit Range** | **Test Result** |
| 20 | 94 | 5279.994836 | 5250~5350 | Pass |
| | 110 | 5279.993205 | 5250~5350 | Pass |
| | 127 | 5280.003569 | 5250~5350 | Pass |

## CH High

| Operating Frequency: 5320 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | **Voltage (V)** | **Measured Frequency (MHz)** | **Limit Range** | **Test Result** |
| 50 | 110 | 5319.995131 | 5250~5350 | Pass |
| 40 | 110 | 5319.994885 | 5250~5350 | Pass |
| 30 | 110 | 5320.007460 | 5250~5350 | Pass |
| 20 | 110 | 5319.995964 | 5250~5350 | Pass |
| 10 | 110 | 5319.990824 | 5250~5350 | Pass |
| 0 | 110 | 5320.004925 | 5250~5350 | Pass |
| -10 | 110 | 5319.997334 | 5250~5350 | Pass |
| -20 | 110 | 5320.007586 | 5250~5350 | Pass |

| Operating Frequency: 5320 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | **Voltage (V)** | **Measured Frequency (MHz)** | **Limit Range** | **Test Result** |
| 20 | 94 | 5320.001598 | 5250~5350 | Pass |
| | 110 | 5320.008623 | 5250~5350 | Pass |
| | 127 | 5319.999832 | 5250~5350 | Pass |

## IEEE 802.11n HT 40 MHz mode / 5270 ~ 5310 MHz:

## CH Low

| Operating Frequency: 5270 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | **Voltage (V)** | **Measured Frequency (MHz)** | **Limit Range** | **Test Result** |
| 50 | 110 | 5269.999043 | 5250~5350 | Pass |
| 40 | 110 | 5270.009369 | 5250~5350 | Pass |
| 30 | 110 | 5269.999488 | 5250~5350 | Pass |
| 20 | 110 | 5270.002818 | 5250~5350 | Pass |
| 10 | 110 | 5270.006432 | 5250~5350 | Pass |
| 0 | 110 | 5270.003328 | 5250~5350 | Pass |
| -10 | 110 | 5269.996943 | 5250~5350 | Pass |
| -20 | 110 | 5270.000002 | 5250~5350 | Pass |

| Operating Frequency: 5270 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | **Voltage (V)** | **Measured Frequency (MHz)** | **Limit Range** | **Test Result** |
| 20 | 94 | 5270.009498 | 5250~5350 | Pass |
| | 110 | 5270.010601 | 5250~5350 | Pass |
| | 127 | 5269.998226 | 5250~5350 | Pass |

## CH High

| Operating Frequency: 5310 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | **Voltage (V)** | **Measured Frequency (MHz)** | **Limit Range** | **Test Result** |
| 50 | 110 | 5310.006526 | 5250~5350 | Pass |
| 40 | 110 | 5309.998658 | 5250~5350 | Pass |
| 30 | 110 | 5310.008423 | 5250~5350 | Pass |
| 20 | 110 | 5310.000463 | 5250~5350 | Pass |
| 10 | 110 | 5309.997521 | 5250~5350 | Pass |
| 0 | 110 | 5309.994992 | 5250~5350 | Pass |
| -10 | 110 | 5309.993667 | 5250~5350 | Pass |
| -20 | 110 | 5310.009751 | 5250~5350 | Pass |

| Operating Frequency: 5310 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | **Voltage (V)** | **Measured Frequency (MHz)** | **Limit Range** | **Test Result** |
| 20 | 94 | 5309.997477 | 5250~5350 | Pass |
| | 110 | 5309.991405 | 5250~5350 | Pass |
| | 127 | 5309.993603 | 5250~5350 | Pass |

**IEEE 802.11a mode / 5500 ~ 5700 MHz:**

**CH Low**

| Operating Frequency: 5500 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | **Voltage (V)** | **Measured Frequency (MHz)** | **Limit Range** | **Test Result** |
| 50 | 110 | 5499.990177 | 5470~5725 | Pass |
| 40 | 110 | 5500.010162 | 5470~5725 | Pass |
| 30 | 110 | 5499.991088 | 5470~5725 | Pass |
| 20 | 110 | 5499.990861 | 5470~5725 | Pass |
| 10 | 110 | 5500.009411 | 5470~5725 | Pass |
| 0 | 110 | 5499.992739 | 5470~5725 | Pass |
| -10 | 110 | 5499.991084 | 5470~5725 | Pass |
| -20 | 110 | 5500.005880 | 5470~5725 | Pass |

| Operating Frequency: 5500 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | **Voltage (V)** | **Measured Frequency (MHz)** | **Limit Range** | **Test Result** |
| 20 | 94 | 5500.000923 | 5470~5725 | Pass |
| | 110 | 5499.99467 | 5470~5725 | Pass |
| | 127 | 5499.997558 | 5470~5725 | Pass |

## CH Mid

| Operating Frequency: 5580 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | **Voltage (V)** | **Measured Frequency (MHz)** | **Limit Range** | **Test Result** |
| 50 | 110 | 5580.008251 | 5470~5725 | Pass |
| 40 | 110 | 5580.001584 | 5470~5725 | Pass |
| 30 | 110 | 5579.994567 | 5470~5725 | Pass |
| 20 | 110 | 5579.999243 | 5470~5725 | Pass |
| 10 | 110 | 5579.995772 | 5470~5725 | Pass |
| 0 | 110 | 5579.994944 | 5470~5725 | Pass |
| -10 | 110 | 5579.998361 | 5470~5725 | Pass |
| -20 | 110 | 5580.001534 | 5470~5725 | Pass |

| Operating Frequency: 5580 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | **Voltage (V)** | **Measured Frequency (MHz)** | **Limit Range** | **Test Result** |
| 20 | 94 | 5579.992237 | 5470~5725 | Pass |
| | 110 | 5580.001302 | 5470~5725 | Pass |
| | 127 | 5580.004288 | 5470~5725 | Pass |

## CH High

| Operating Frequency: 5700 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | Voltage (V) | Measured Frequency (MHz) | Limit Range | Test Result |
| 50 | 110 | 5699.993251 | 5470~5725 | Pass |
| 40 | 110 | 5699.996573 | 5470~5725 | Pass |
| 30 | 110 | 5700.004838 | 5470~5725 | Pass |
| 20 | 110 | 5700.008320 | 5470~5725 | Pass |
| 10 | 110 | 5700.002833 | 5470~5725 | Pass |
| 0 | 110 | 5700.000174 | 5470~5725 | Pass |
| -10 | 110 | 5700.008422 | 5470~5725 | Pass |
| -20 | 110 | 5699.996439 | 5470~5725 | Pass |

| Operating Frequency: 5700 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | Voltage (V) | Measured Frequency (MHz) | Limit Range | Test Result |
| 20 | 94 | 5700.007619 | 5470~5725 | Pass |
| | 110 | 5699.994203 | 5470~5725 | Pass |
| | 127 | 5699.998534 | 5470~5725 | Pass |

## IEEE 802.11n HT 20 MHz Channel mode / 5500 ~ 5700 MHz:

## CH Low

| Operating Frequency: 5500 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | **Voltage (V)** | **Measured Frequency (MHz)** | **Limit Range** | **Test Result** |
| 50 | 110 | 5500.002678 | 5470~5725 | Pass |
| 40 | 110 | 5500.000450 | 5470~5725 | Pass |
| 30 | 110 | 5500.000856 | 5470~5725 | Pass |
| 20 | 110 | 5500.003703 | 5470~5725 | Pass |
| 10 | 110 | 5499.993974 | 5470~5725 | Pass |
| 0 | 110 | 5500.008470 | 5470~5725 | Pass |
| -10 | 110 | 5500.002525 | 5470~5725 | Pass |
| -20 | 110 | 5500.007389 | 5470~5725 | Pass |

| Operating Frequency: 5500 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | **Voltage (V)** | **Measured Frequency (MHz)** | **Limit Range** | **Test Result** |
| 20 | 94 | 5499.997205 | 5470~5725 | Pass |
| | 110 | 5499.999901 | 5470~5725 | Pass |
| | 127 | 5500.005528 | 5470~5725 | Pass |

## CH Mid

| Operating Frequency: 5580 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | **Voltage (V)** | **Measured Frequency (MHz)** | **Limit Range** | **Test Result** |
| 50 | 110 | 5580.002950 | 5470~5725 | Pass |
| 40 | 110 | 5579.999278 | 5470~5725 | Pass |
| 30 | 110 | 5580.010829 | 5470~5725 | Pass |
| 20 | 110 | 5580.010495 | 5470~5725 | Pass |
| 10 | 110 | 5579.991329 | 5470~5725 | Pass |
| 0 | 110 | 5580.008953 | 5470~5725 | Pass |
| -10 | 110 | 5580.003504 | 5470~5725 | Pass |
| -20 | 110 | 5579.996038 | 5470~5725 | Pass |

| Operating Frequency: 5580 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | **Voltage (V)** | **Measured Frequency (MHz)** | **Limit Range** | **Test Result** |
| 20 | 94 | 5580.005295 | 5470~5725 | Pass |
| | 110 | 5580.005787 | 5470~5725 | Pass |
| | 127 | 5580.0051 | 5470~5725 | Pass |

## CH High

| Operating Frequency: 5700 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | **Voltage (V)** | **Measured Frequency (MHz)** | **Limit Range** | **Test Result** |
| 50 | 110 | 5699.990280 | 5470~5725 | Pass |
| 40 | 110 | 5699.999808 | 5470~5725 | Pass |
| 30 | 110 | 5700.008732 | 5470~5725 | Pass |
| 20 | 110 | 5699.995428 | 5470~5725 | Pass |
| 10 | 110 | 5700.009431 | 5470~5725 | Pass |
| 0 | 110 | 5699.997998 | 5470~5725 | Pass |
| -10 | 110 | 5700.003654 | 5470~5725 | Pass |
| -20 | 110 | 5700.006402 | 5470~5725 | Pass |

| Operating Frequency: 5700 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | **Voltage (V)** | **Measured Frequency (MHz)** | **Limit Range** | **Test Result** |
| 20 | 94 | 5700.004213 | 5470~5725 | Pass |
| | 110 | 5699.994772 | 5470~5725 | Pass |
| | 127 | 5700.001446 | 5470~5725 | Pass |

**IEEE 802.11n HT 40 MHz mode / 5510 ~ 5670 MHz:**

**CH Low**

| Operating Frequency: 5510 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | **Voltage (V)** | **Measured Frequency (MHz)** | **Limit Range** | **Test Result** |
| 50 | 110 | 5510.004263 | 5470~5725 | Pass |
| 40 | 110 | 5510.003857 | 5470~5725 | Pass |
| 30 | 110 | 5510.001502 | 5470~5725 | Pass |
| 20 | 110 | 5510.009251 | 5470~5725 | Pass |
| 10 | 110 | 5509.991989 | 5470~5725 | Pass |
| 0 | 110 | 5509.993545 | 5470~5725 | Pass |
| -10 | 110 | 5510.003422 | 5470~5725 | Pass |
| -20 | 110 | 5510.008604 | 5470~5725 | Pass |

| Operating Frequency: 5510 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (oC) | **Voltage (V)** | **Measured Frequency (MHz)** | **Limit Range** | **Test Result** |
| 20 | 94 | 5510.009112 | 5470~5725 | Pass |
| | 110 | 5510.002099 | 5470~5725 | Pass |
| | 127 | 5510.002089 | 5470~5725 | Pass |

## CH Mid

| Operating Frequency: 5550 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | **Voltage (V)** | **Measured Frequency (MHz)** | **Limit Range** | **Test Result** |
| 50 | 110 | 5550.003293 | 5470~5725 | Pass |
| 40 | 110 | 5550.001743 | 5470~5725 | Pass |
| 30 | 110 | 5550.002865 | 5470~5725 | Pass |
| 20 | 110 | 5549.999819 | 5470~5725 | Pass |
| 10 | 110 | 5550.001231 | 5470~5725 | Pass |
| 0 | 110 | 5550.007255 | 5470~5725 | Pass |
| -10 | 110 | 5550.000528 | 5470~5725 | Pass |
| -20 | 110 | 5549.996221 | 5470~5725 | Pass |

| Operating Frequency: 5550 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (oC) | **Voltage (V)** | **Measured Frequency (MHz)** | **Limit Range** | **Test Result** |
| 20 | 94 | 5550.009508 | 5470~5725 | Pass |
| | 110 | 5549.993772 | 5470~5725 | Pass |
| | 127 | 5550.005459 | 5470~5725 | Pass |

## CH High

| Operating Frequency: 5670 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | **Voltage (V)** | **Measured Frequency (MHz)** | **Limit Range** | **Test Result** |
| 50 | 110 | 5669.999712 | 5470~5725 | Pass |
| 40 | 110 | 5669.992619 | 5470~5725 | Pass |
| 30 | 110 | 5670.001558 | 5470~5725 | Pass |
| 20 | 110 | 5670.003136 | 5470~5725 | Pass |
| 10 | 110 | 5670.004302 | 5470~5725 | Pass |
| 0 | 110 | 5670.007743 | 5470~5725 | Pass |
| -10 | 110 | 5669.999377 | 5470~5725 | Pass |
| -20 | 110 | 5670.001958 | 5470~5725 | Pass |

| Operating Frequency: 5670 MHz | | | | |
|---|---|---|---|---|
| Environment Temperature (°C) | **Voltage (V)** | **Measured Frequency (MHz)** | **Limit Range** | **Test Result** |
| 20 | 94 | 5670.001805 | 5470~5725 | Pass |
| | 110 | 5670.008438 | 5470~5725 | Pass |
| | 127 | 5670.010375 | 5470~5725 | Pass |

## 7.9 DYNAMIC FREQUENCY SELECTION

## LIMIT

According to §15.407 (h) and FCC 06-96 appendix "compliance measurement procedures for unlicensed-national information infrastructure devices operating in the 5250-5350 MHz and 5470-5725 MHz bands incorporating dynamic frequency selection".

***Remark**: IC RSS-210* §A9.5 *is closely harmonized with FCC Part 15 DFS rules.*

**Table 1: Applicability of DFS requirements prior to use of a channel**

| Requirement | Operational Mode | | |
|---|---|---|---|
| | Master | Client (without radar detection) | Client(with radar detection) |
| Non-Occupancy Period | Yes | Not required | Yes |
| DFS Detection Threshold | Yes | Not required | Yes |
| Channel Availability Check Time | Yes | Not required | Not required |
| Uniform Spreading | Yes | Not required | Not required |

**Table 2: Applicability of DFS requirements during normal operation**

| Requirement | Operational Mode | | |
|---|---|---|---|
| | Master | Client (without radar detection) | Client(with radar detection) |
| DFS Detection Threshold | Yes | Not required | Yes |
| Channel Closing Transmission Time | Yes | Yes | Yes |
| Channel Move Time | Yes | Yes | Yes |

**Table 3: Interference Threshold values, Master or Client incorporating In-Service**

| Maximum Transmit Power | Value (see note) |
|---|---|
| >=200 Milliwatt | -64 dBm |
| < 200 Milliwatt | -62 dBm |

Note 1: This is the level at the input of the receiver assuming a 0 dBi receive antenna.
Note 2: Throughout these test procedures an additional 1 dB has been added to the amplitude of the test transmission waveforms to account for variations in measurement equipment. This will ensure that the test signal is at or above the detection threshold level to trigger a DFS response.

**Table 4: DFS Response requirement values**

| Parameter | Value |
|---|---|
| Non-occupancy period | 30 minutes |
| Channel Availability Check Time | 60 seconds |
| Channel Move Time | 10 seconds |
| Channel Closing Transmission Time | 200 milliseconds + approx. 60 milliseconds over remaining 10 second period |

The instant that the Channel Move Time and the Channel Closing Transmission Time begins is as follows:

- For the Short pulse radar Test Signals this instant is the end of the Burst.
- For the Frequency Hopping radar Test Signal, this instant is the end of the last radar burst generated.
- For the Long Pulse radar Test Signal this instant is the end of the 12 second period defining the radar transmission.

The Channel Closing Transmission Time is comprised of 200 milliseconds starting at the beginning of the Channel Move Time plus any additional intermittent control signals required to facilitate channel changes (an aggregate of approximately 60 milliseconds) during the remainder of the 10 second period. The aggregate duration of control signals will not count quiet periods in between transmissions.

**Table 5 – Short Pulse Radar Test Waveforms**

| Radar Type | Pulse Width (Microseconds) | PRI (Microseconds) | Pulses | Minimum Percentage of Successful Detection | Minimum Trials |
|---|---|---|---|---|---|
| 1 | 1 | 1428 | 18 | 60% | 30 |
| 2 | 1-5 | 150-230 | 23-29 | 60% | 30 |
| 3 | 6-10 | 200-500 | 16-18 | 60% | 30 |
| 4 | 11-20 | 200-500 | 12-16 | 60% | 30 |
| Aggregate (Radar Types 1-4) | | | | 80% | 120 |

**Table 6 – Long Pulse Radar Test Signal**

| Radar Waveform | Bursts | Pulses per Burst | Pulse Width (µsec) | Chirp Width (µsec) | PRI (µsec) | Minimum Percentage of Successful Detection | Minimum Trials |
|---|---|---|---|---|---|---|---|
| 5 | 8-20 | 1-3 | 50-100 | 5-20 | 1000-2000 | 80% | 30 |

**Table 7 – Frequency Hopping Radar Test Signal**

| Radar Waveform | Pulse Width (µsec) | PRI (µsec) | Burst Length (ms) | Pulses Per Hop | Hopping Rate (kHz) | Minimum Percentage of Successful Detection | Minimum Trials |
|---|---|---|---|---|---|---|---|
| 6 | 1 | 333 | 300 | 9 | 0.33 | 70% | 30 |

# DESCRIPTION OF EUT

## Overview Of EUT With Respect To §15.407 (H) Requirements

The firmware installed in the EUT during testing was:
Firmware Rev: 5.93.102.1

The EUT operates over the 5250-5350 MHz range as a Client Device that does not have radar detection capability.

The antenna assembly utilized with the EUT has a gain of 0.8 dBi.

The EUT uses one transmitter connected to two 50-ohm coaxial antenna ports via a diversity switch. Only one antenna port is connected to the test system since the EUT has one antenna only.

The Slave device associated with the EUT during these tests does not have radar detection capability.

WLAN traffic is generated by streaming the video file TestFile.mp2 "6 ½ Magic Hours" from the Master to the Slave in full motion video mode using the media player with the V2.61 Codec package.

TPC is not required since the maximum EIRP is less than 500 mW (27 dBm).

The EUT utilizes the 802.11a architecture, with a nominal channel bandwidth of 20 MHz.

The Master Device is a Cisco Aironet 802.11a/b/g Access Point, FCC ID: LDK102056.

The rated output power of the Master unit is < 23dBm (EIRP). Therefore the required interference threshold level is -62 dBm. After correction for antenna gain and procedural adjustments, the required conducted threshold at the antenna port is –62 + 5 = -57dBm.

The calibrated conducted DFS Detection Threshold level is set to -62 dBm. The tested level is lower than the required level hence it provides margin to the limit.

## Manufacturer's Statement Regarding Uniform Channel Spreading

The end product implements an automatic channel selection feature at startup such that operation commences on channels distributed across the entire set of allowed 5GHz channels. This feature will ensure uniform spreading is achieved while avoiding non-allowed channels due to prior radar events.

# TEST AND MEASUREMENT SYSTEM

## System Overview

The measurement system is based on a conducted test method.

The short pulse and long pulse signal generating system utilizes the NTIA software. The Vector Signal Generator has been validated by the NTIA. The hopping signal generating system utilizes the CCS simulated hopping method and system, which has been validated by the DoD, FCC and NTIA. The software selects waveform parameters from within the bounds of the signal type on a random basis using uniform distribution.

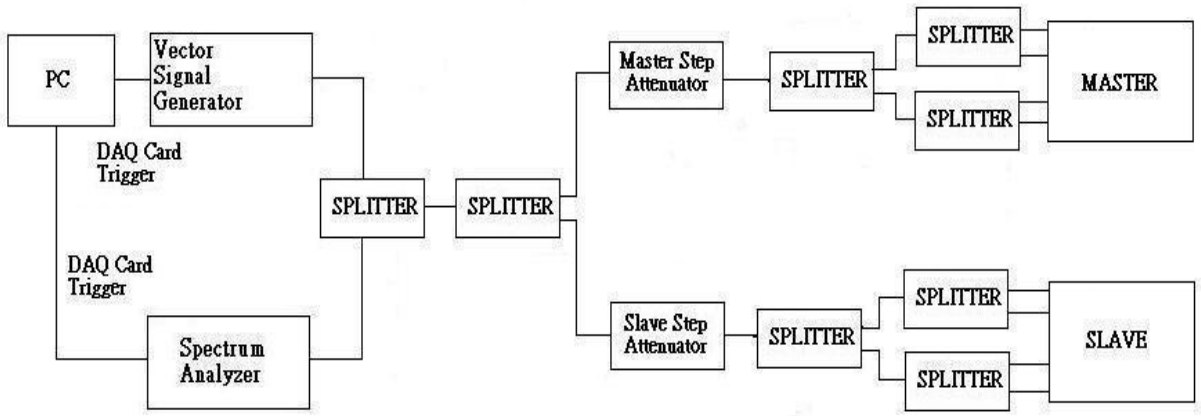
The short pulse types 2, 3 and 4, and the long pulse type 5 parameters are randomized at run-time.

The hopping type 6 pulse parameters are fixed while the hopping sequence is based on the August 2005 NTIA Hopping Frequency List. The initial starting point randomized at run-time and each subsequent starting point is incremented by 475. Each frequency in the 100-length segment is compared to the boundaries of the EUT Detection Bandwidth and the software creates a hopping burst pattern in accordance with Section 7.4.1.3 Method #2 Simulated Frequency Hopping Radar Waveform Generating Subsystem of FCC 06-96 APPENDIX. The frequency of the signal generator is incremented in 1 MHz steps from FL to FH for each successive trial. This incremental sequence is repeated as required to generate a minimum of 30 total trials and to maintain a uniform frequency distribution over the entire Detection Bandwidth.

The signal monitoring equipment consists of a spectrum analyzer set to display 8001 bins on the horizontal axis. The time-domain resolution is 2 msec / bin with a 16 second sweep time, meeting the 10 second short pulse reporting criteria. The aggregate ON time is calculated by multiplying the number of bins above a threshold during a particular observation period by the dwell time per bin, with the analyzer set to peak detection and max hold. The time-domain resolution is 3 msec / bin with a 24 second sweep time, meeting the 22 second long pulse reporting criteria and allowing a minimum of 10 seconds after the end of the long pulse waveform.

Should multiple RF ports be utilized for the Master and/or Slave devices (for example, for diversity or MIMO implementations), 50 ohm termination would be removed from the splitter so that connection can be established between splitter and the Master and/or Slave devices.

## Conducted Method System Block Diagram



**System Calibration**

Connect the spectrum analyzer to the test system in place of the master device. Set the signal generator to CW mode. Adjust the amplitude of the signal generator to yield a measured level of –62 dBm on the spectrum analyzer.

Without changing any of the instrument settings, reconnect the spectrum analyzer to the Common port of the Spectrum Analyzer Combiner/Divider and connect a 50 ohm load to the Master Device port of the test system.

Measure the amplitude and calculate the difference from –62 dBm. Adjust the Reference Level Offset of the spectrum analyzer to this difference. Confirm that the signal is displayed at –62 dBm. Readjust the RBW and VBW to 3 MHz, set the span to 10 MHz, and confirm that the signal is still displayed at –62 dBm.

The spectrum analyzer displays the level of the signal generator as received at the antenna ports of the Master Device. The interference detection threshold may be varied from the calibrated value of –62 dBm and the spectrum analyzer will still indicate the level as received by the Master Device.

Set the signal generator to produce a radar waveform, trigger a burst manually and measure the level on the spectrum analyzer. Readjust the amplitude of the signal generator as required so that the peak level of the waveform is at a displayed level equal to the required or desired interference detection threshold. Separate signal generator amplitude settings are determined as required for each radar type.

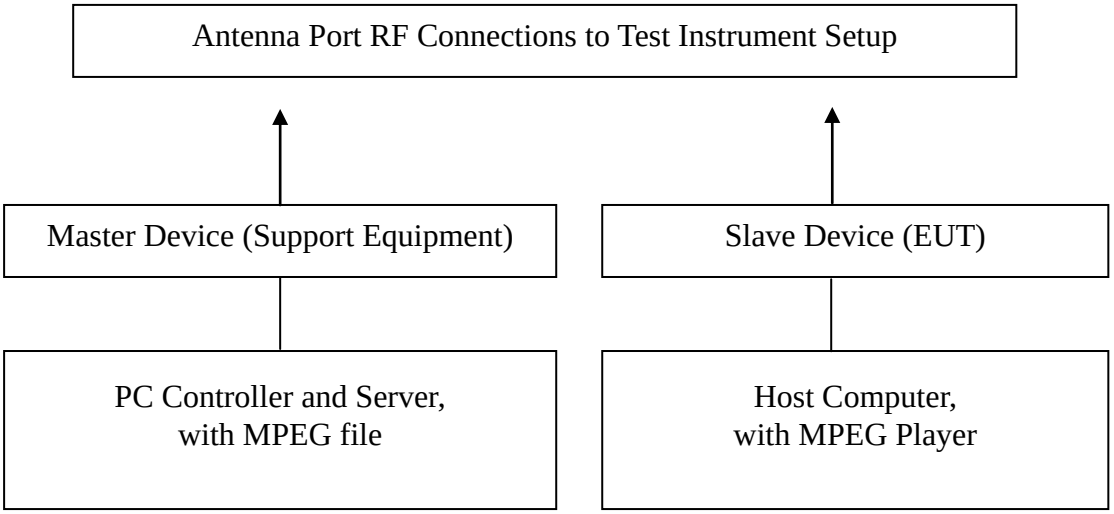
**Adjustment Of Displayed Traffic Level**

Establish a link between the Master and Slave, adjusting the Link Step Attenuator as needed to provide a suitable received level at the Master and Slave devices. Stream the video test file to generate WLAN traffic. Confirm that the WLAN traffic level, as displayed on the spectrum analyzer, is at lower amplitude than the radar detection threshold. Confirm that the displayed traffic is from the Master Device. For Master Device testing confirm that the displayed traffic does not include Slave Device traffic. For Slave Device testing confirm that the displayed traffic does not include Master Device traffic.

If a different setting of the Master Step Attenuator is required to meet the above conditions, perform a new System Calibration for the new Master Step Attenuator setting.

n

**Test Setup**



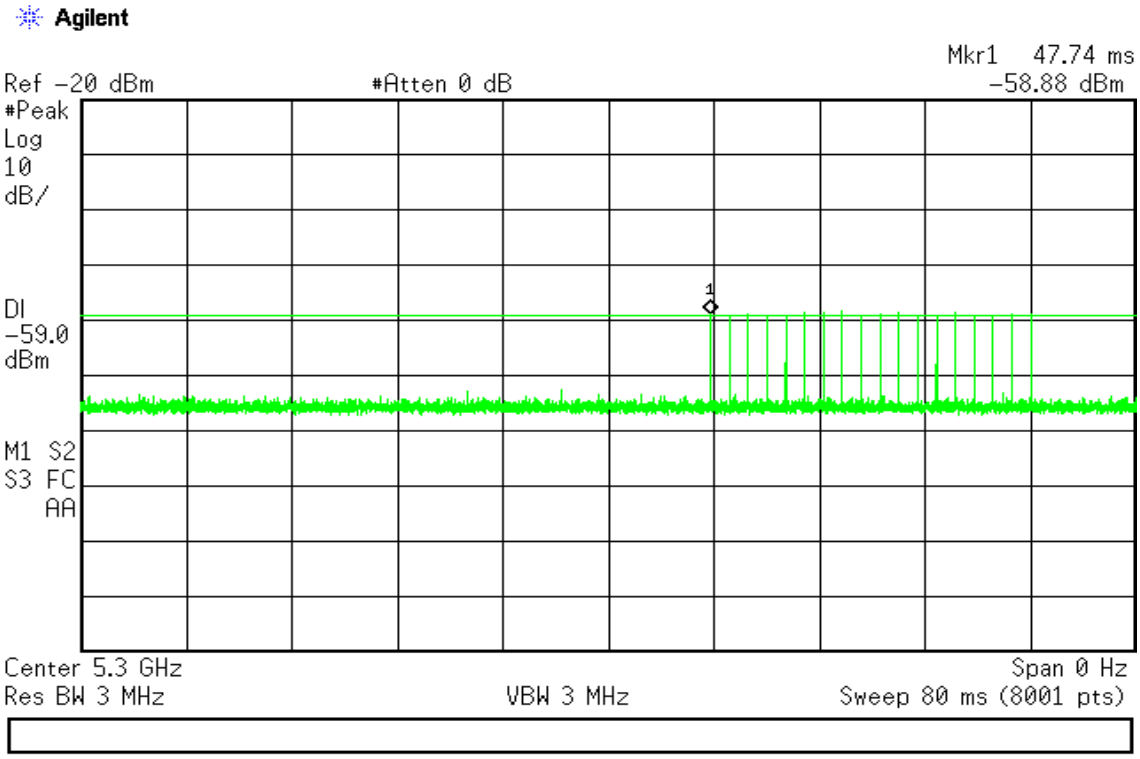

## TEST RESULTS

*No non-compliance noted*

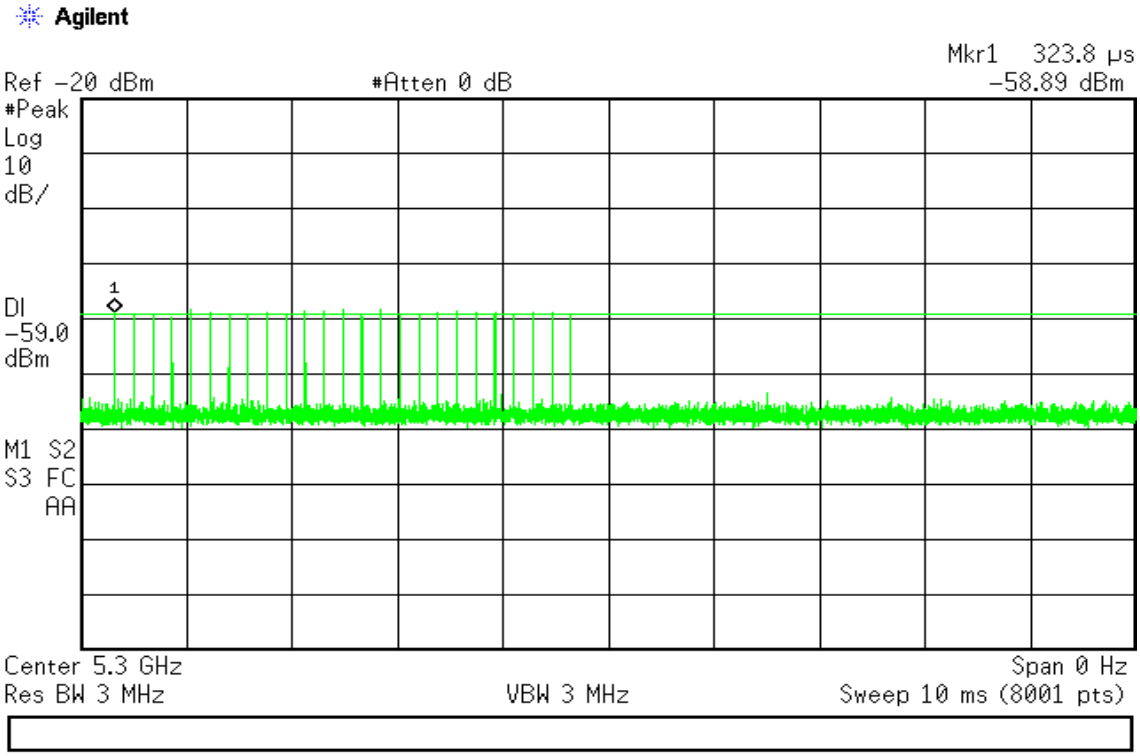
## Test Plot

## PLOTS OF RADAR WAVEFORMS

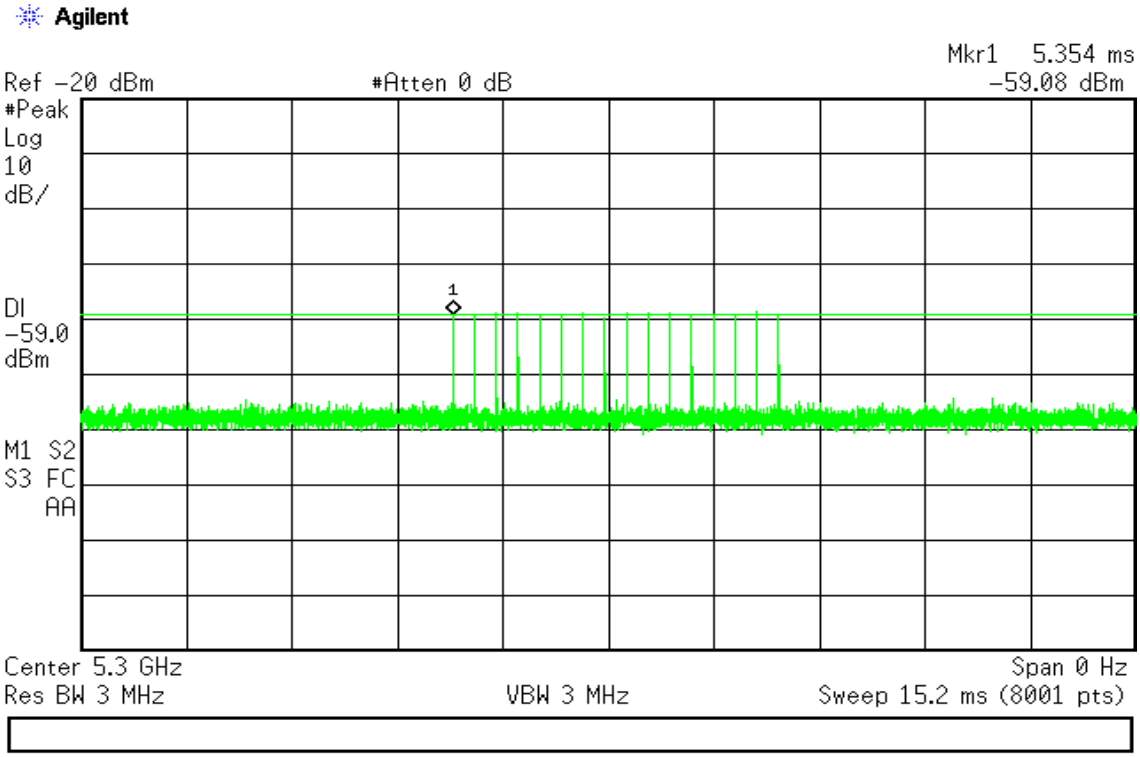
### Sample of Short Pulse Radar Type 1



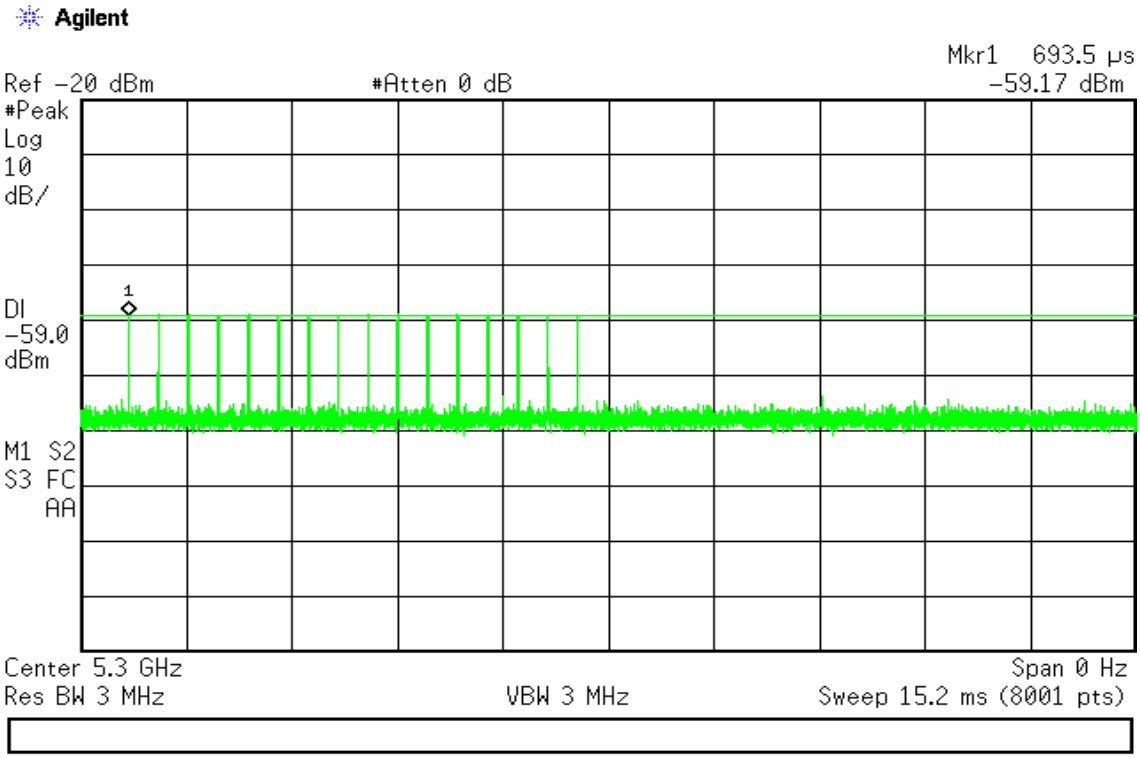

### Sample of Short Pulse Radar Type 2



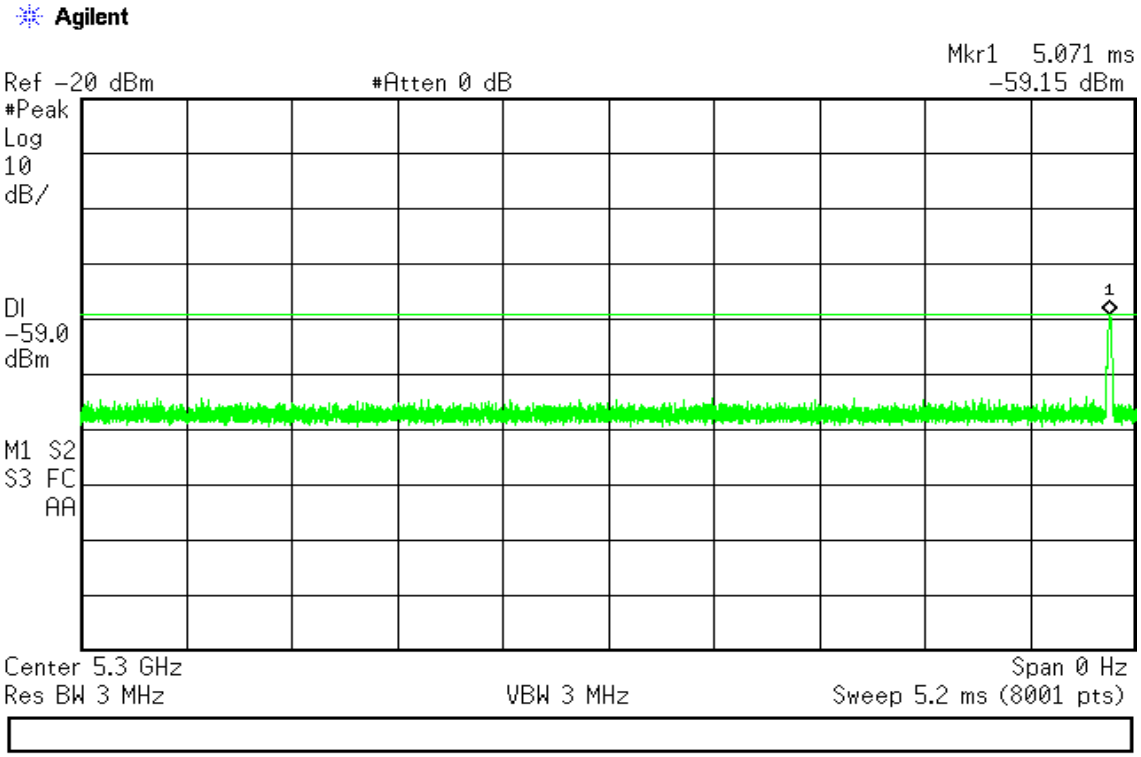
## Sample of Short Pulse Radar Type 3



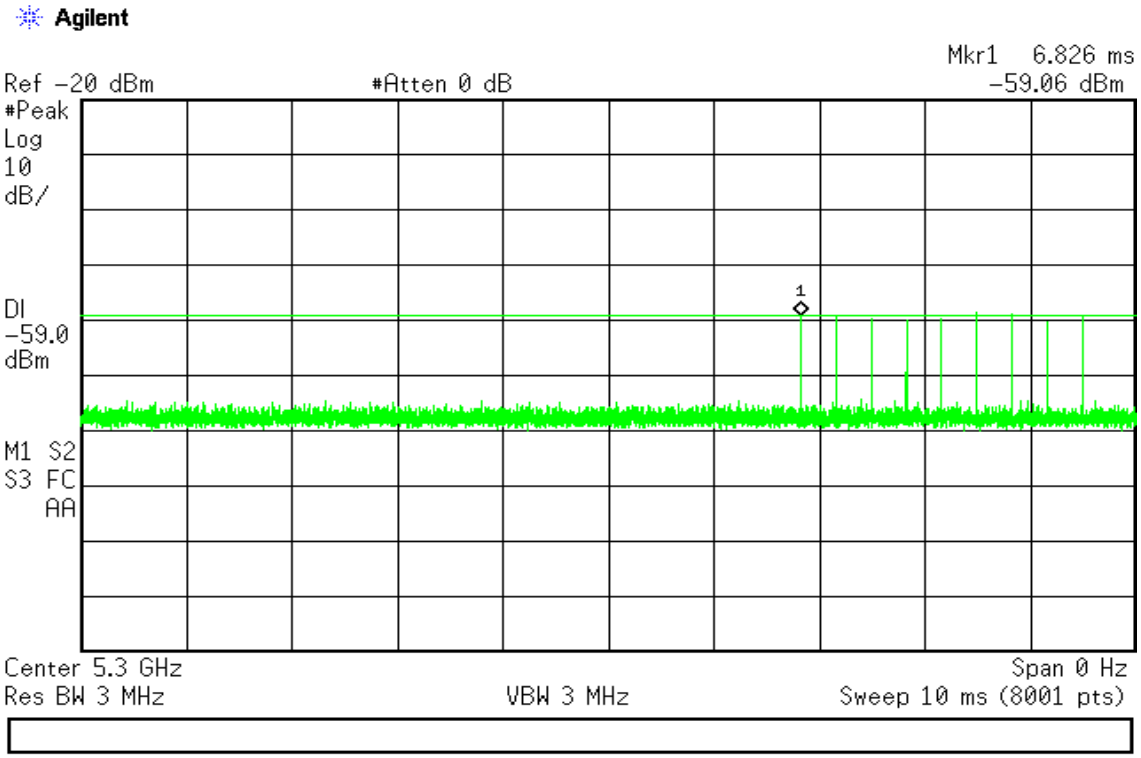

## Sample of Short Pulse Radar Type 4



## Sample of Long Pulse Radar Type 5

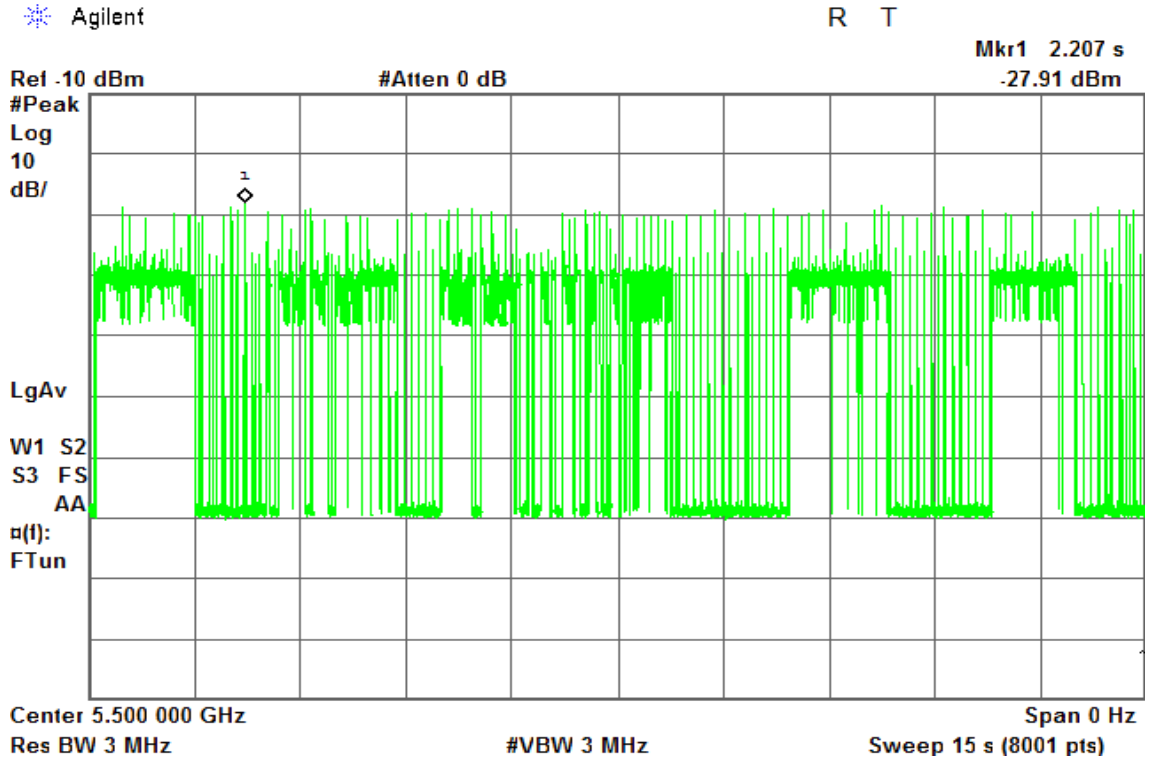



## Sample of Frequency Hopping Radar Type 6

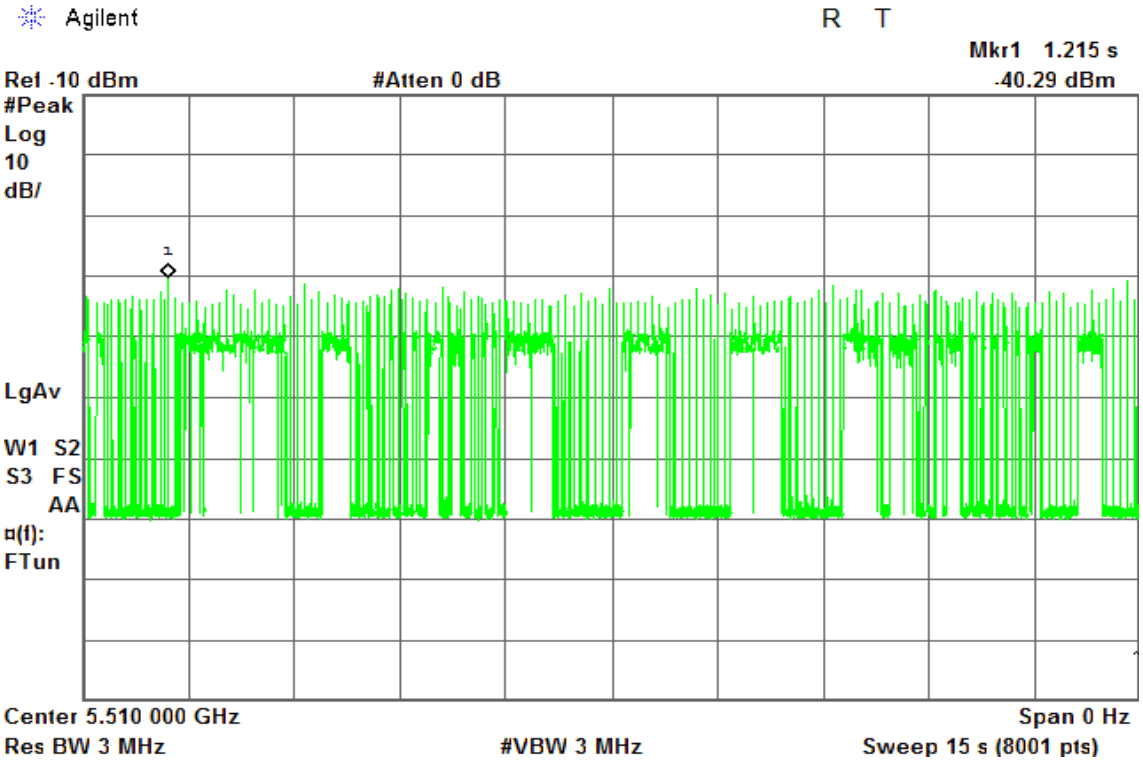


**Plot of WLAN Traffic from Slave**

**IEEE 802.11n HT 20 MHz mode**




**IEEE 802.11n HT 40 MHz mode**



# TEST CHANNEL AND METHOD

All tests were performed at a channel center frequency of 5300 MHz utilizing a conducted test method.

## CHANNEL MOVE TIME AND CHANNEL CLOSING TRANSMISSION TIME

### GENERAL REPORTING NOTES

The reference marker is set at the end of last radar pulse.

The delta marker is set at the end of the last WLAN transmission following the radar pulse. This delta is the channel move time.

The aggregate channel closing transmission time is calculated as follows:

Aggregate Transmission Time =

(Number of analyzer bins showing transmission) * (dwell time per bin)

The observation period over which the aggregate time is calculated

Begins at (Reference Marker + 200 msec) and

Ends no earlier than (Reference Marker + 10 sec).

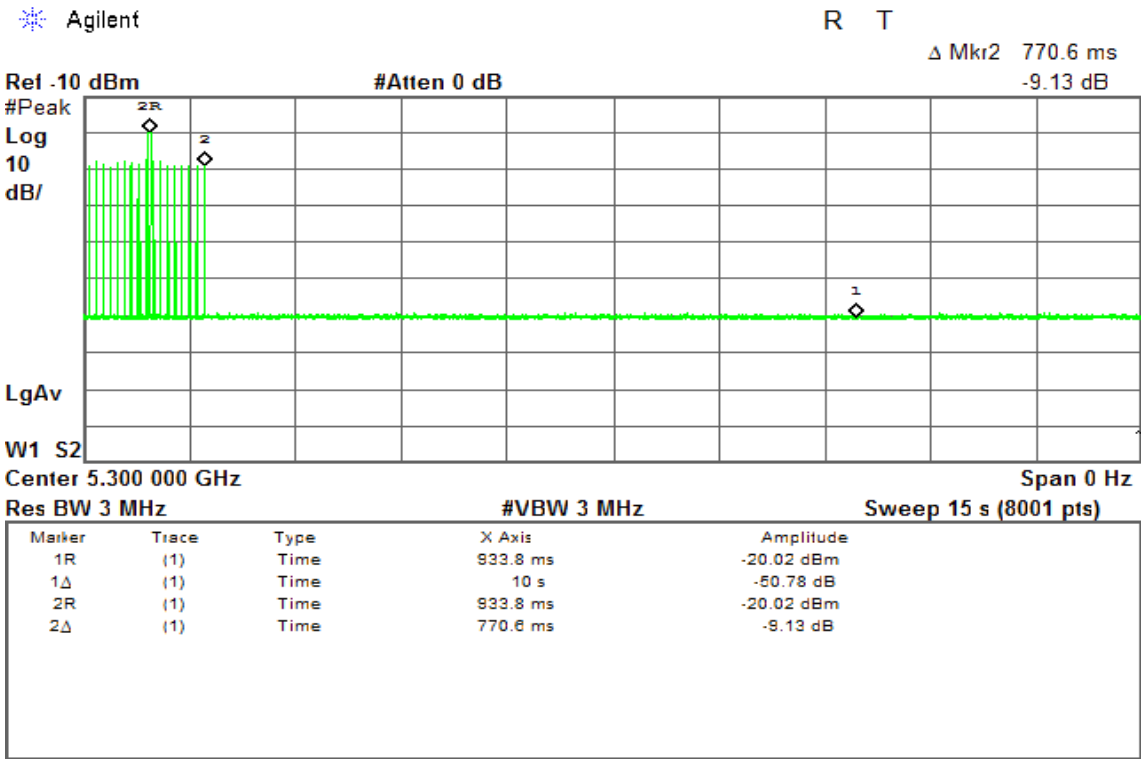
# LOW BAND RESULTS

## Bandwidth 20 MHz Mode

### Type 1 Channel Move Time Results

*No non-compliance noted.*

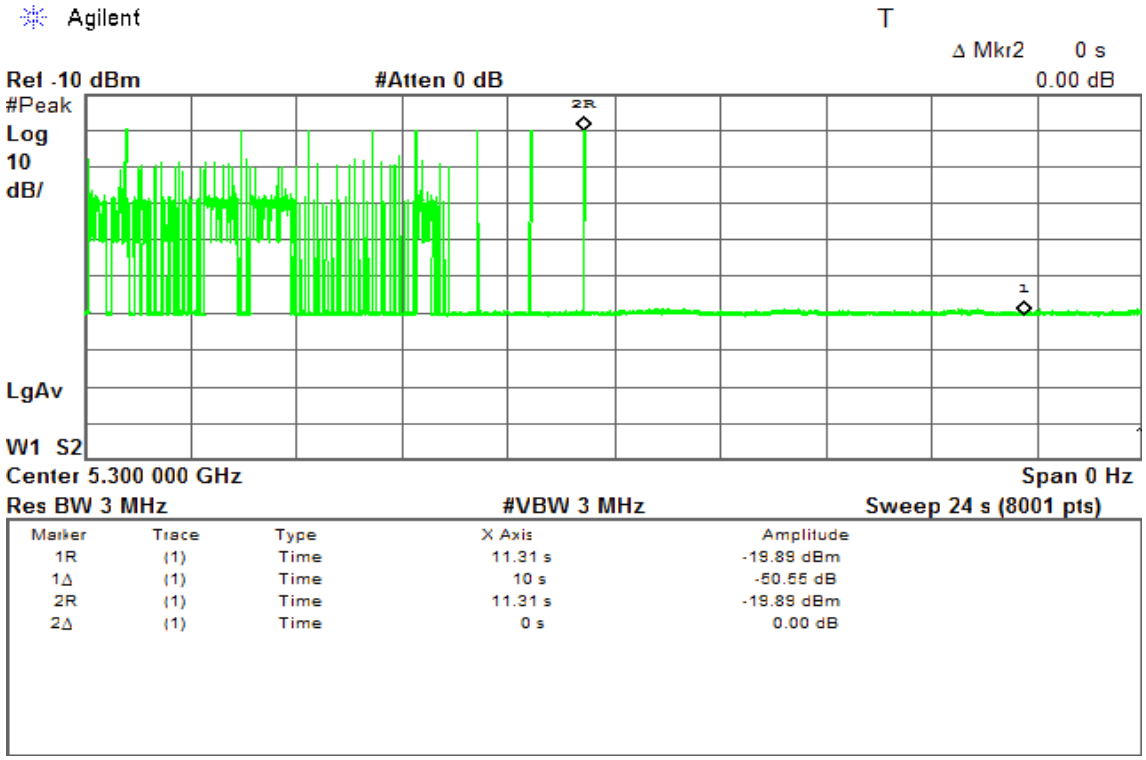
| Channel Move Time (s) | Limit (s) |
|---|---|
| 0.7706 | 10 |



## Type 5 Channel Move Time Results

*No non-compliance noted.*

| Channel Move Time (s) | Limit (s) |
|---|---|
| 0 | 10 |



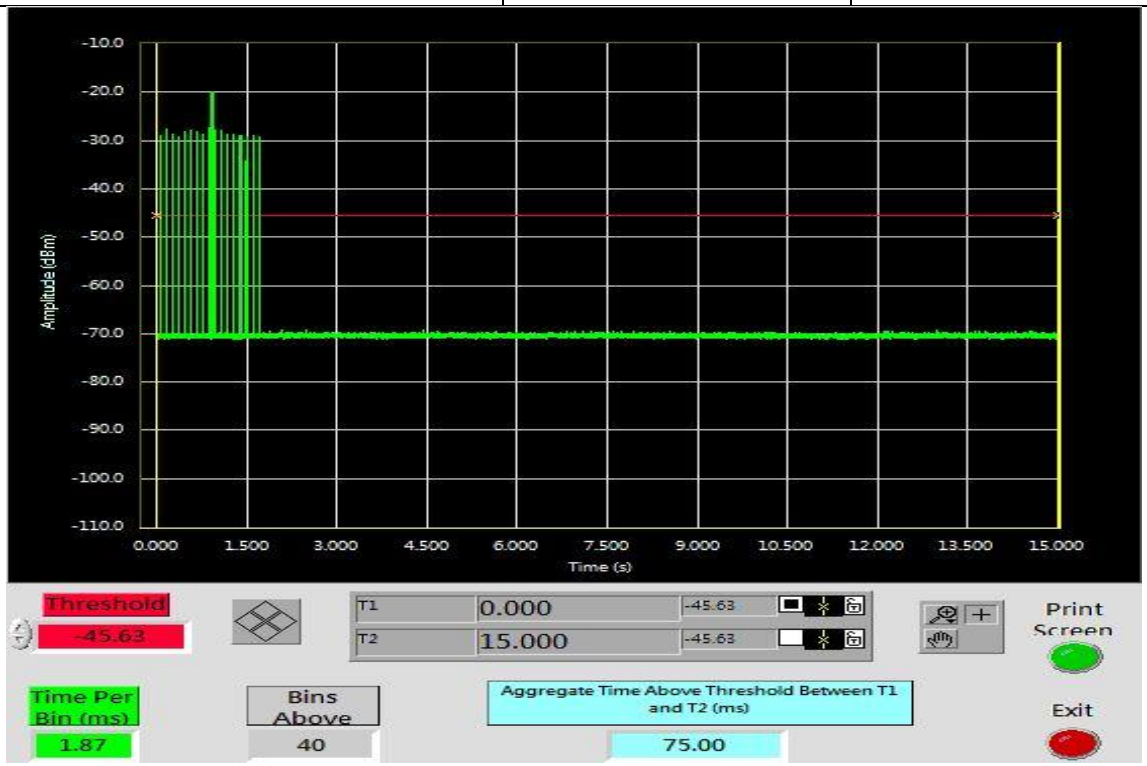
# Bandwidth 20 MHz Mode

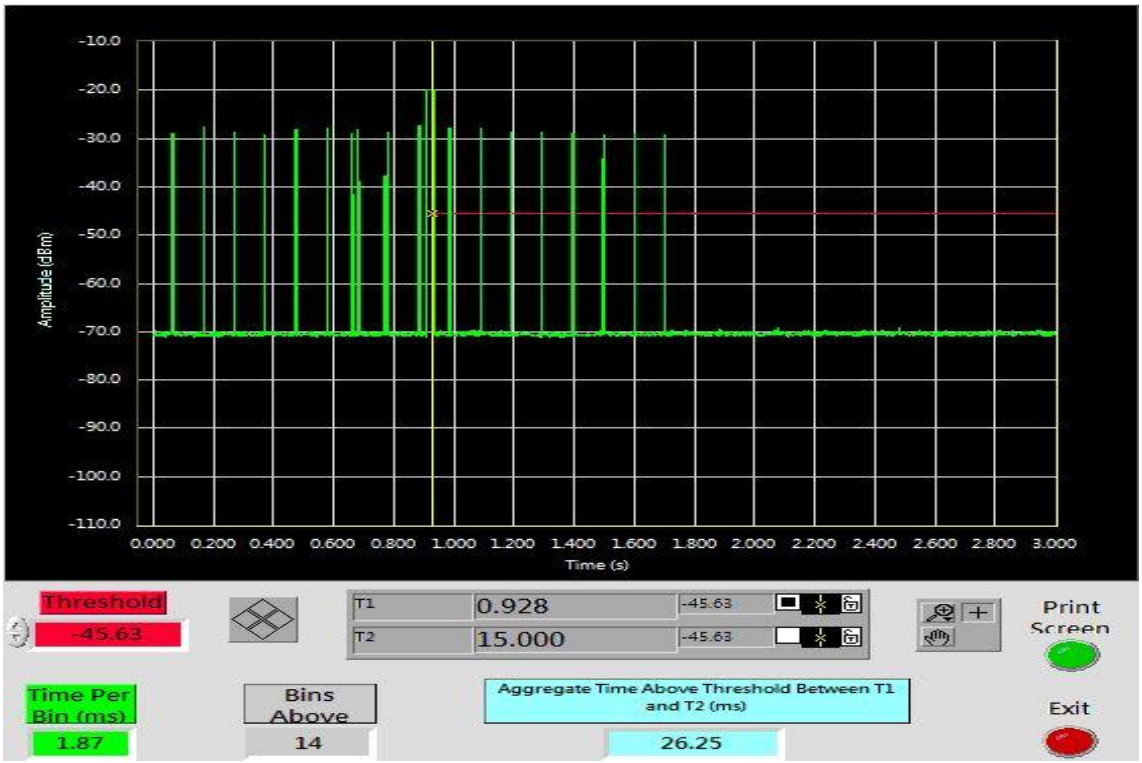
## Type 1 Channel Closing Transmission Time Results

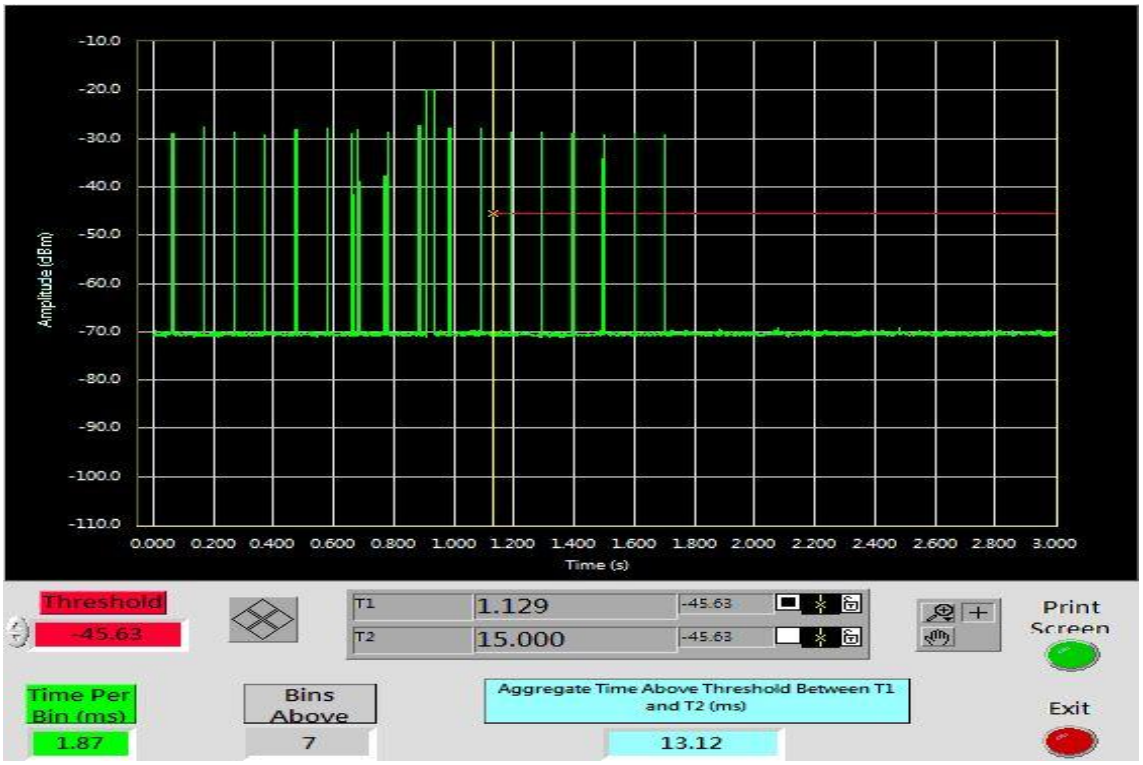
*No non-compliance noted.*

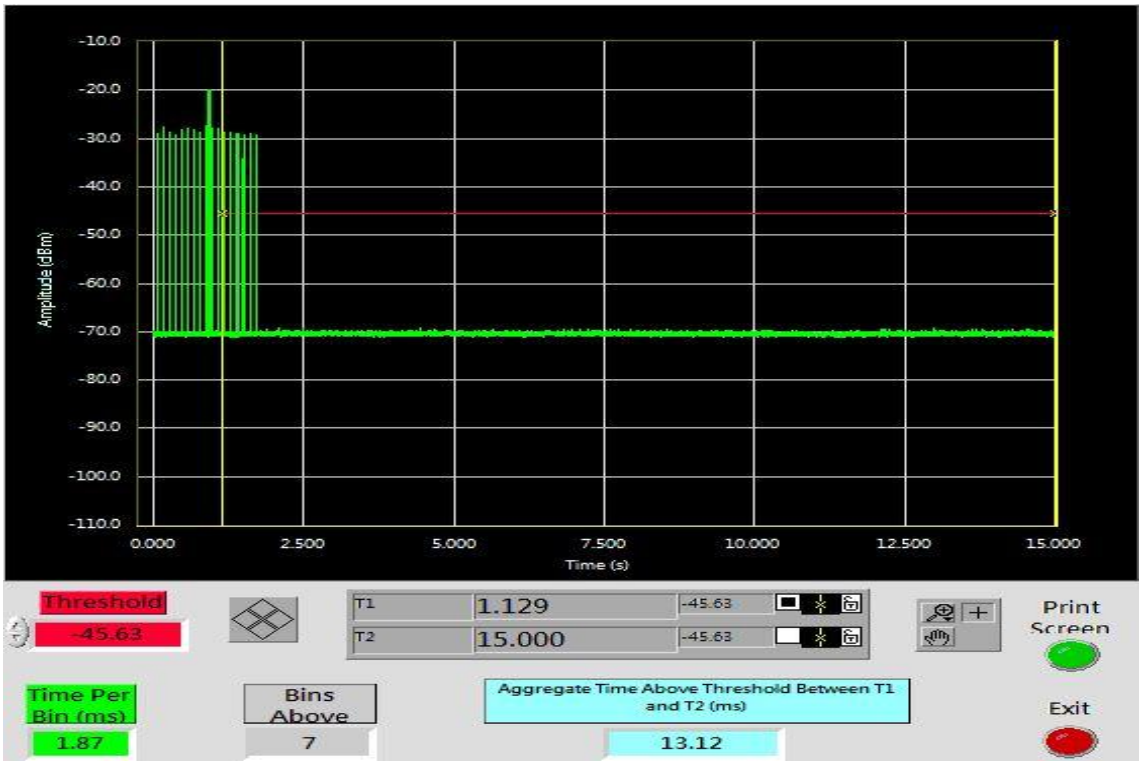
**For R1**

| Aggregate Transmission Time (ms) | Limit (ms) | Margin (ms) |
|---|---|---|
| 13.12 | 60 | -46.88 |



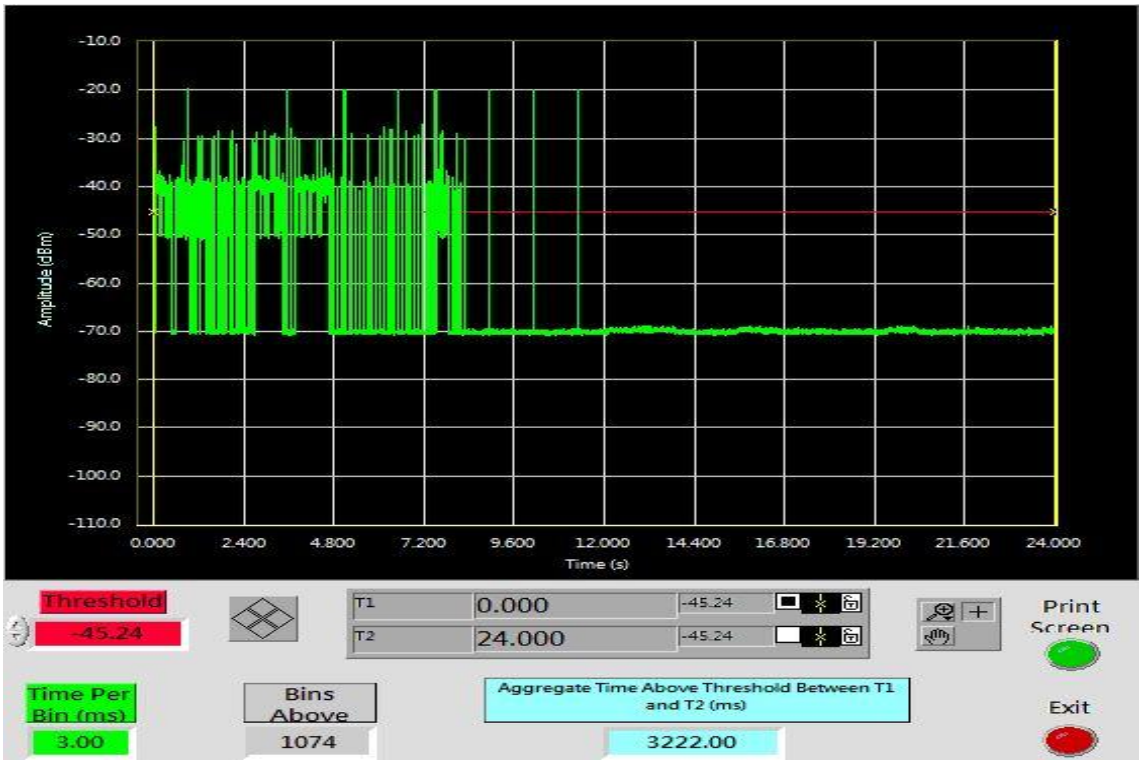



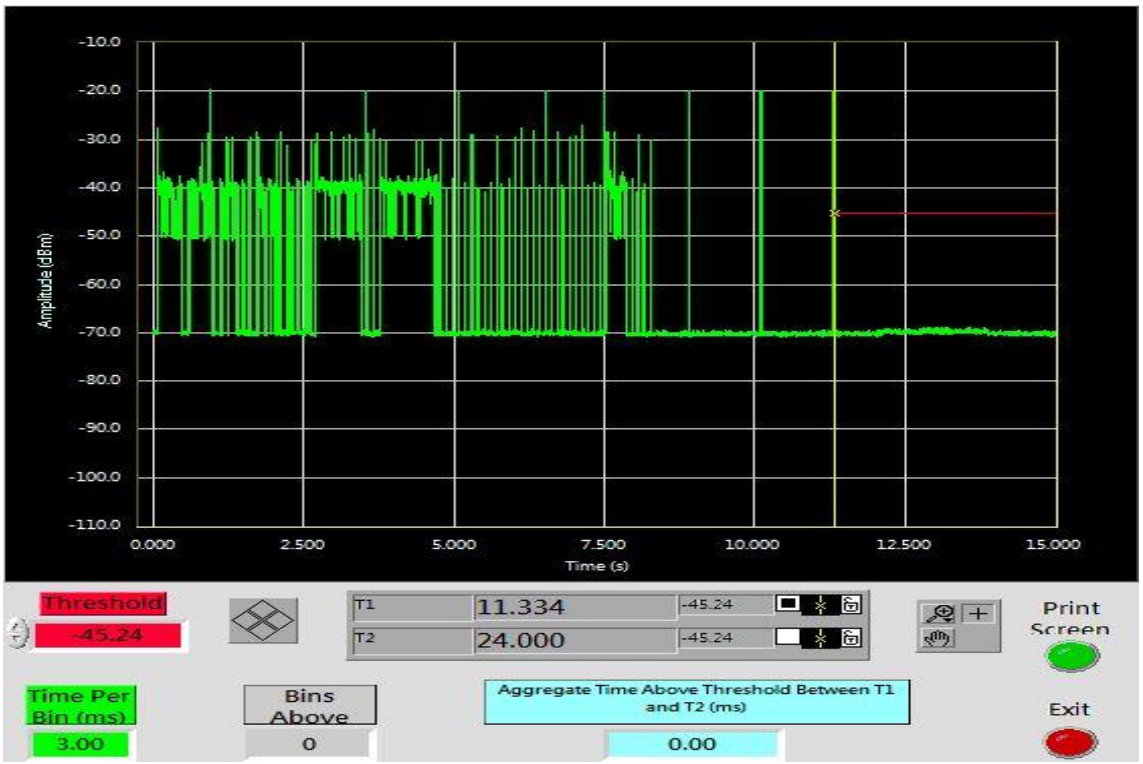

-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100.0
-110.0
Amplitude (dBm)
0.000 0.200 0.400 0.600 0.800 1.000 1.200 1.400 1.600 1.800 2.000 2.200 2.400 2.600 2.800 3.000
Time (s)
Threshold
-45.63
T1
1.129
-45.63
T2
15.000
-45.63
Print Screen
Exit
Time Per Bin (ms)
1.87
Bins Above
7
Aggregate Time Above Threshold Between T1 and T2 (ms)
13.12

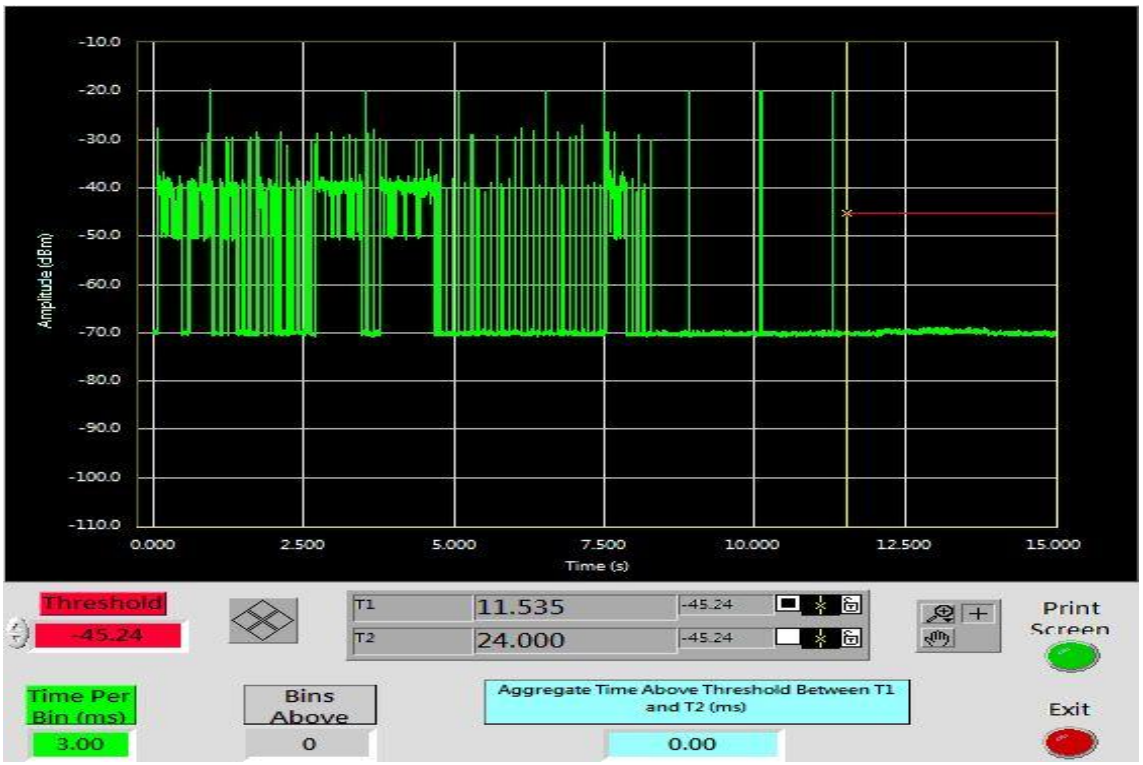

-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100.0
-110.0
Amplitude (dBm)
0.000 2.500 5.000 7.500 10.000 12.500 15.000
Time (s)
Threshold
-45.63
T1
1.129
-45.63
T2
15.000
-45.63
Print Screen
Exit
Time Per Bin (ms)
1.87
Bins Above
7
Aggregate Time Above Threshold Between T1 and T2 (ms)
13.12

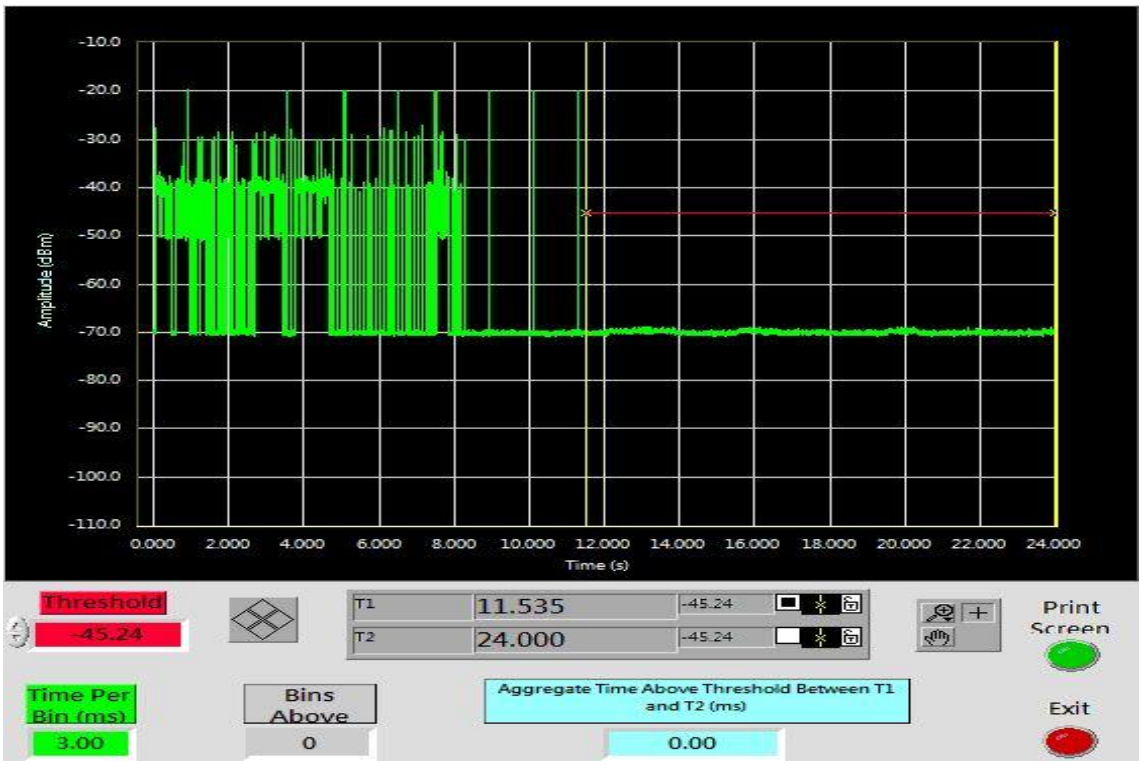
**For R5**

| Aggregate Transmission Time (ms) | Limit (ms) | Margin (ms) |
|---|---|---|
| 0 | 60 | -60 |




-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100.0
-110.0
Amplitude (dBm)
0.000
2.500
5.000
7.500
10.000
12.500
15.000
Time (s)
Threshold
-45.24
T1
11.535
-45.24
T2
24.000
-45.24
Print Screen
Time Per Bin (ms)
3.00
Bins Above
0
Aggregate Time Above Threshold Between T1 and T2 (ms)
0.00
Exit

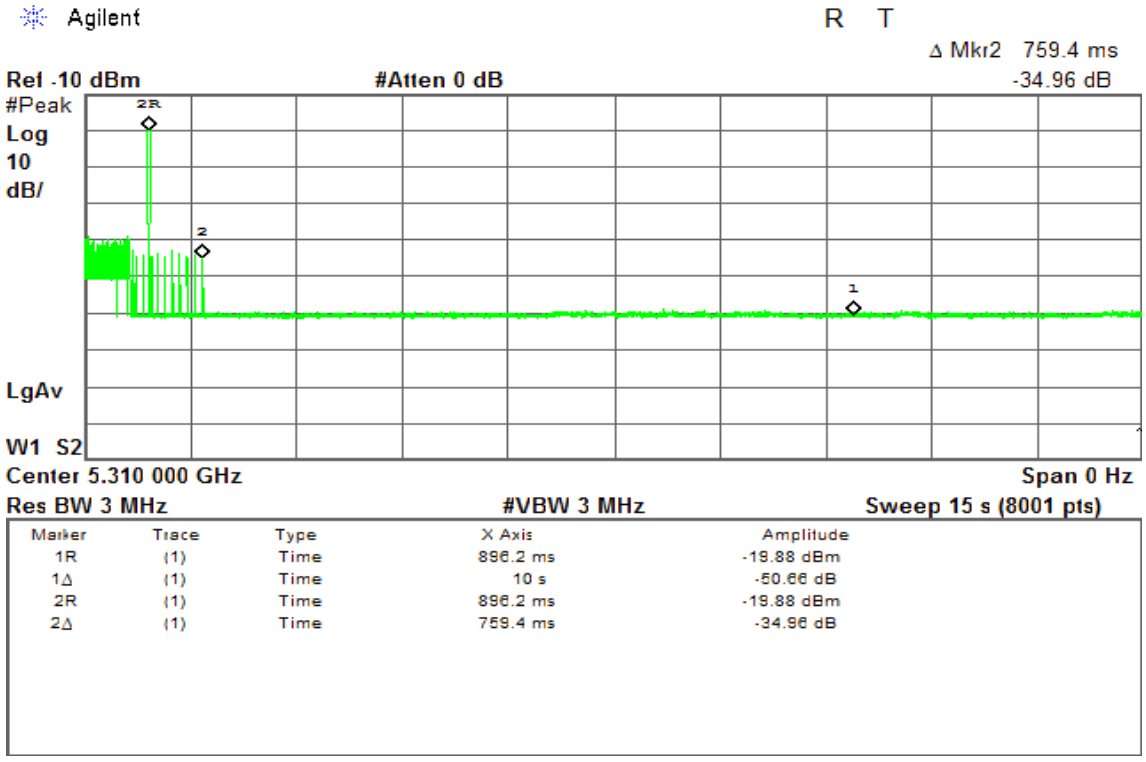

-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100.0
-110.0
Amplitude (dBm)
0.000
2.000
4.000
6.000
8.000
10.000
12.000
14.000
16.000
18.000
20.000
22.000
24.000
Time (s)
Threshold
-45.24
T1
11.535
-45.24
T2
24.000
-45.24
Print Screen
Time Per Bin (ms)
3.00
Bins Above
0
Aggregate Time Above Threshold Between T1 and T2 (ms)
0.00
Exit

# Bandwidth 40 MHz Mode

## Type 1 Channel Move Time Results

*No non-compliance noted.*

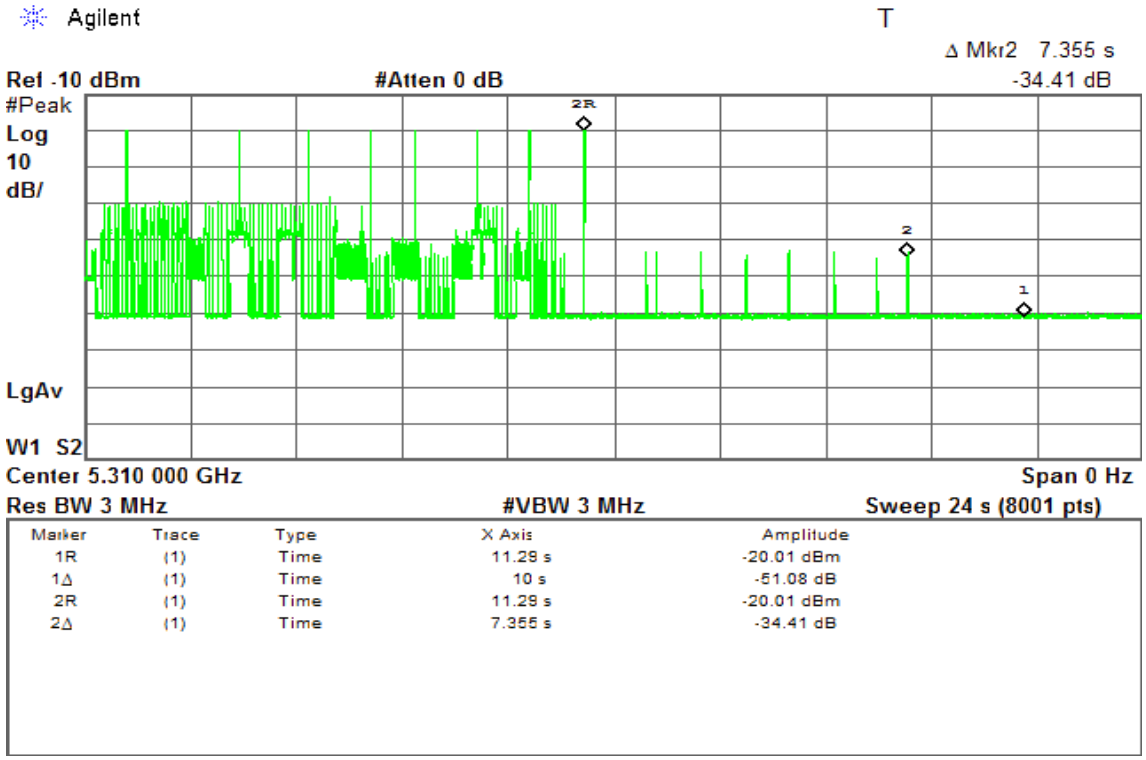
| Channel Move Time (s) | Limit (s) |
|---|---|
| 0.7594 | 10 |



## Type 5 Channel Move Time Results

*No non-compliance noted.*

| Channel Move Time (s) | Limit (s) |
|---|---|
| 7.355 | 10 |



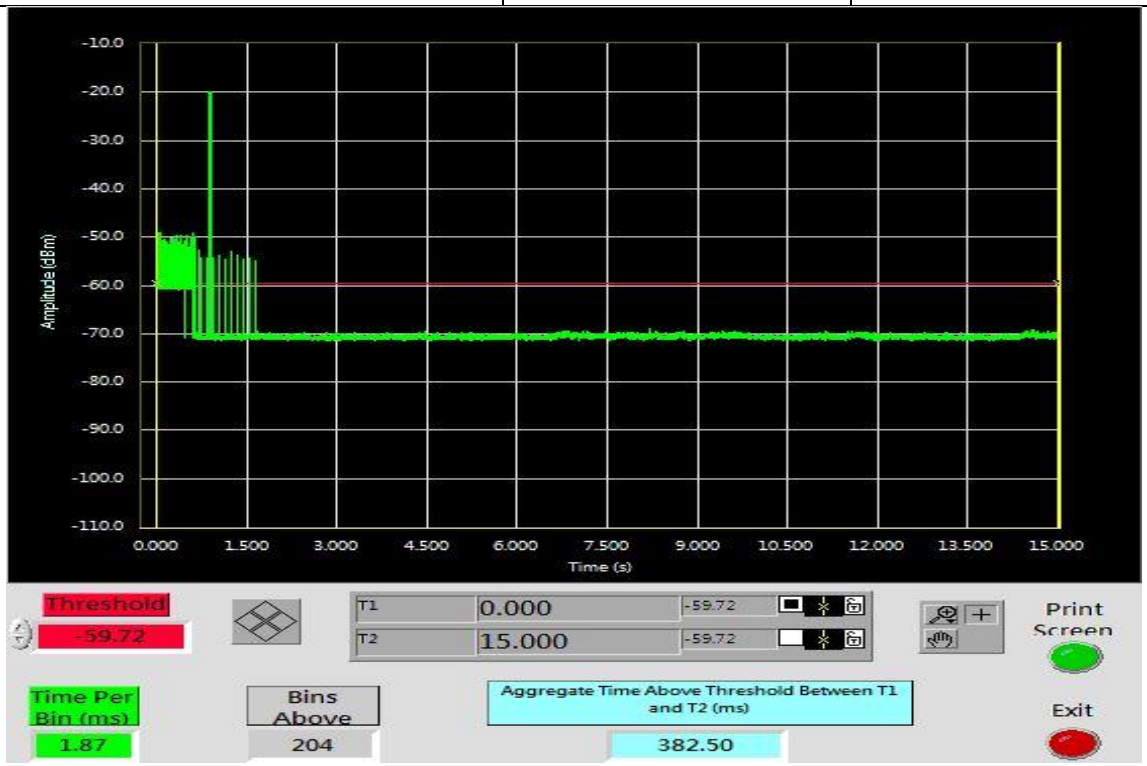
# Bandwidth 40 MHz Mode

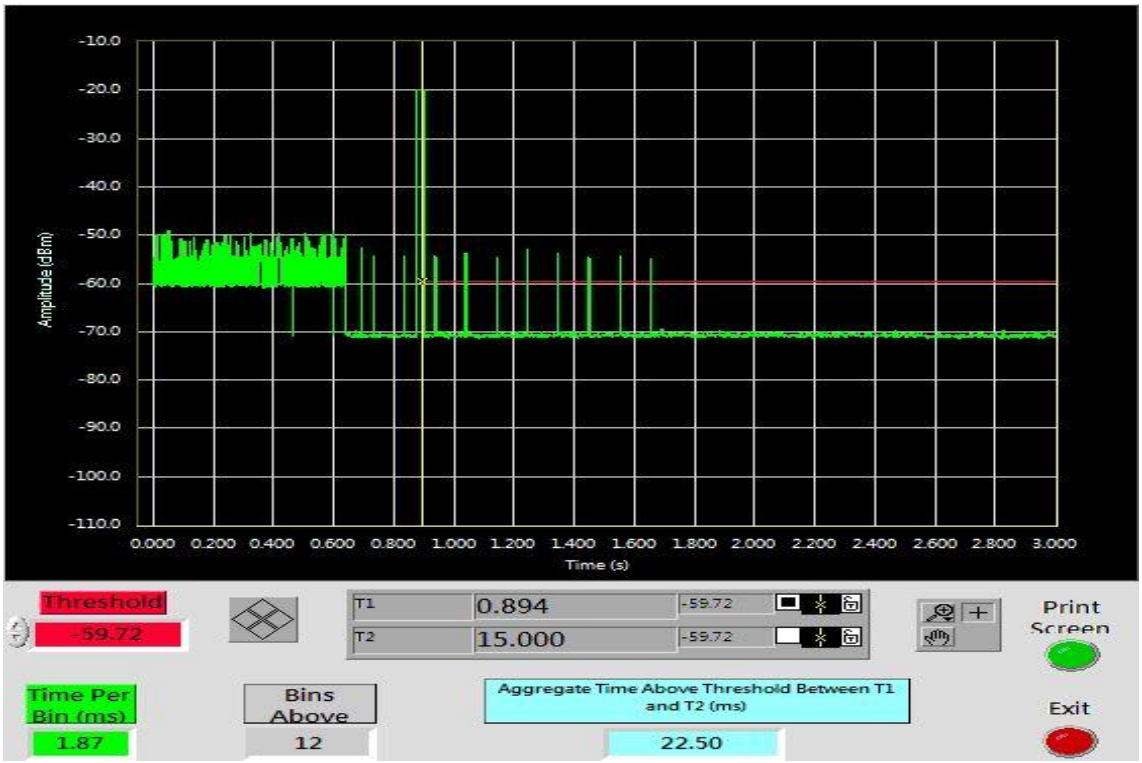
## Type 1 Channel Closing Transmission Time Results

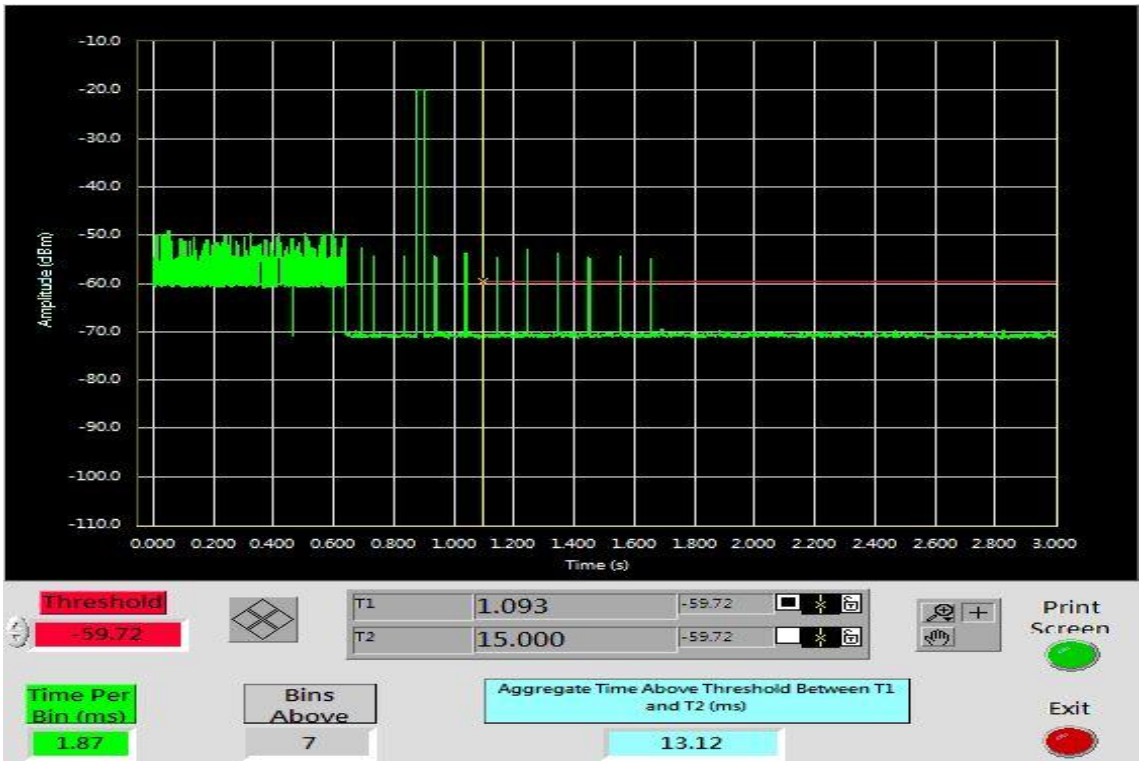
*No non-compliance noted.*

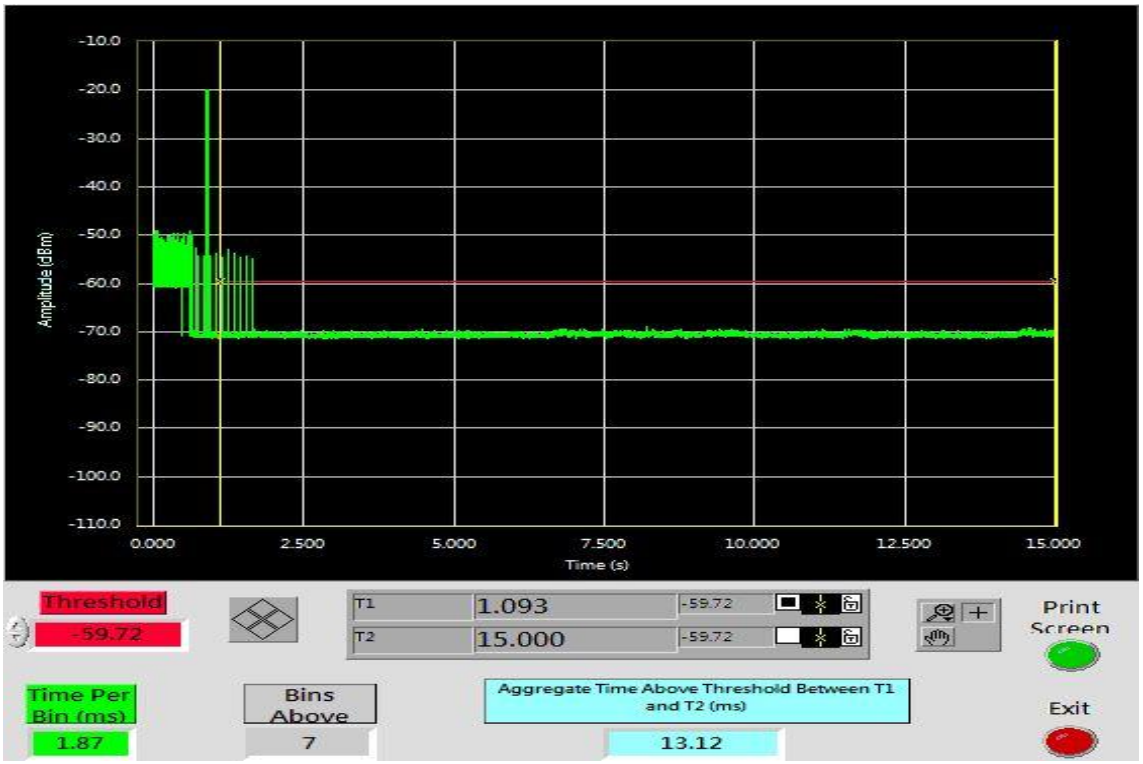
**For R1**

| Aggregate Transmission Time (ms) | Limit (ms) | Margin (ms) |
|---|---|---|
| 13.12 | 60 | -46.88 |



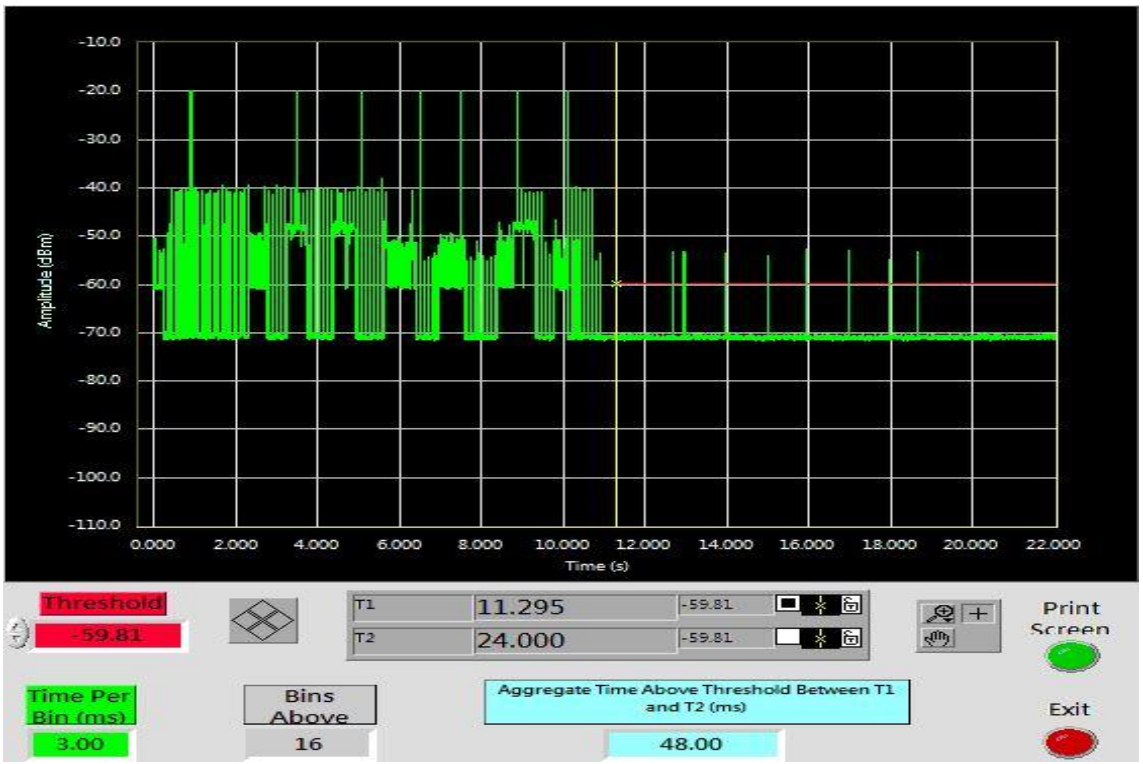



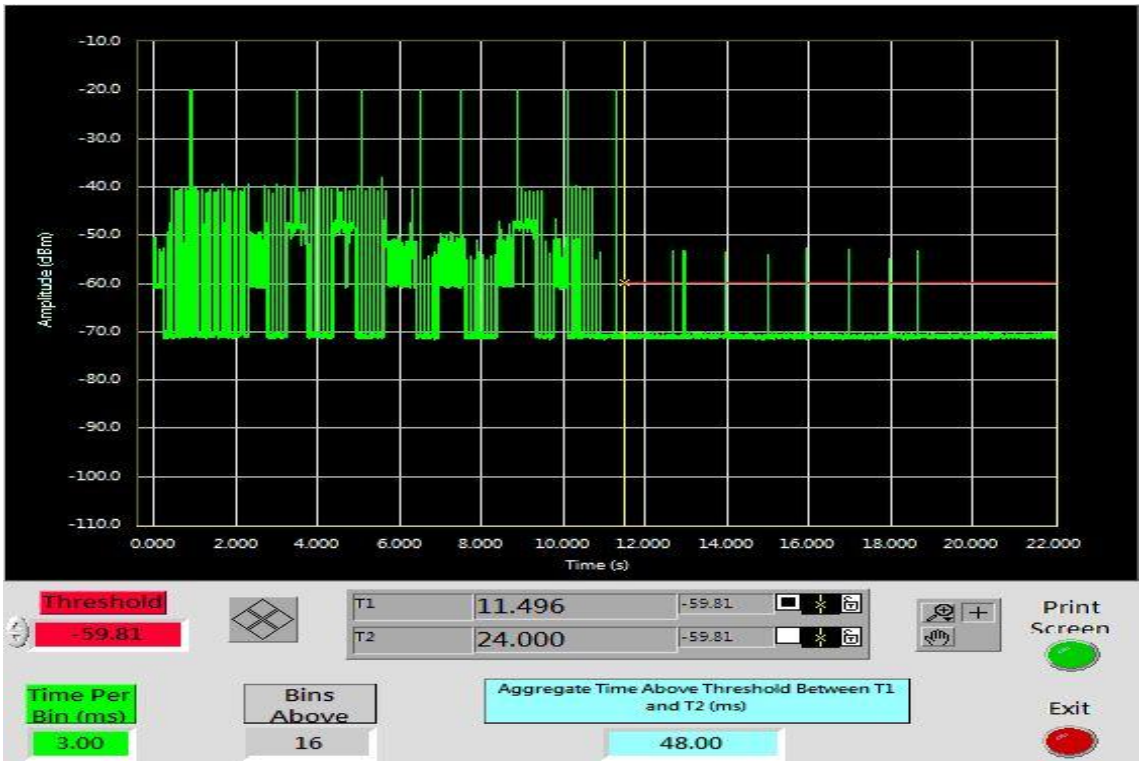

-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100.0
-110.0
Amplitude (dBm)
0.000 0.200 0.400 0.600 0.800 1.000 1.200 1.400 1.600 1.800 2.000 2.200 2.400 2.600 2.800 3.000
Time (s)
Threshold
-59.72
T1
1.093
-59.72
T2
15.000
-59.72
Print Screen
Exit
Time Per Bin (ms)
1.87
Bins Above
7
Aggregate Time Above Threshold Between T1 and T2 (ms)
13.12

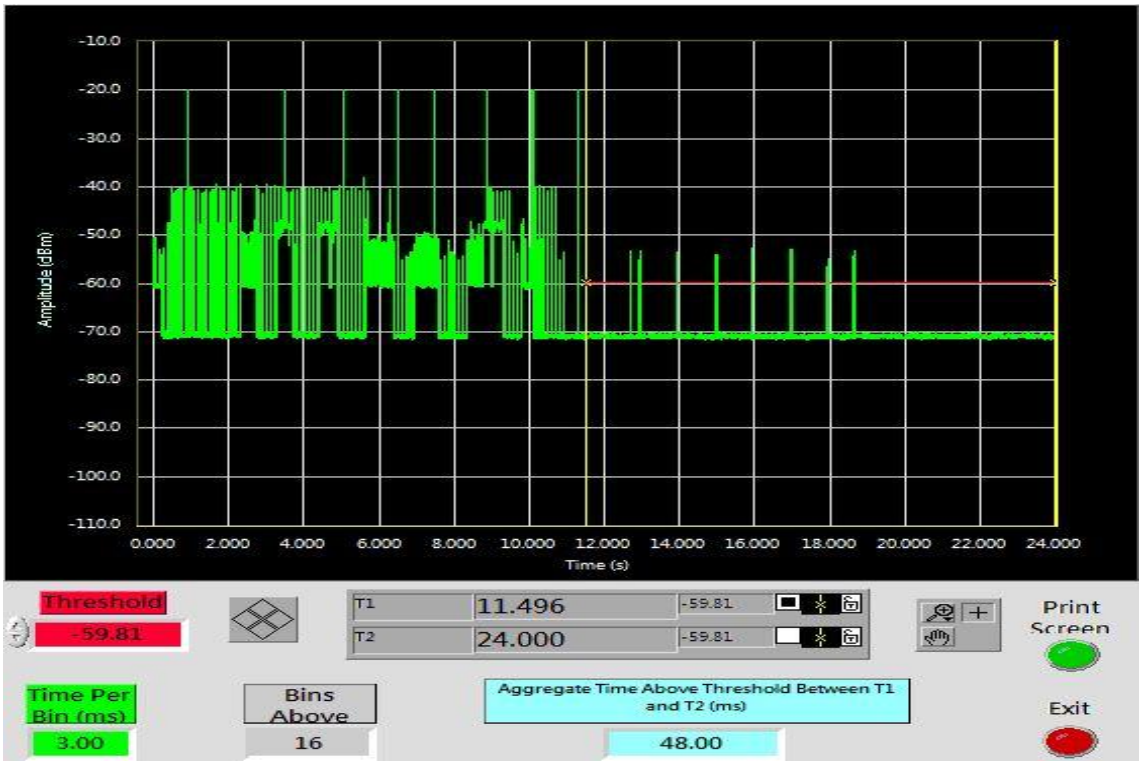

-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100.0
-110.0
Amplitude (dBm)
0.000 2.500 5.000 7.500 10.000 12.500 15.000
Time (s)
Threshold
-59.72
T1
1.093
-59.72
T2
15.000
-59.72
Print Screen
Exit
Time Per Bin (ms)
1.87
Bins Above
7
Aggregate Time Above Threshold Between T1 and T2 (ms)
13.12

**For R5**

| Aggregate Transmission Time (ms) | Limit (ms) | Margin (ms) |
|---|---|---|
| 48 | 60 | -12 |


-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100.0
-110.0
Amplitude (dBm)
0.000
2.000
4.000
6.000
8.000
10.000
12.000
14.000
16.000
18.000
20.000
22.000
Time (s)
Threshold
-59.81
T1
11.496
-59.81
T2
24.000
-59.81
Print Screen
Exit
Time Per Bin (ms)
3.00
Bins Above
16
Aggregate Time Above Threshold Between T1 and T2 (ms)
48.00


-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100.0
-110.0
Amplitude (dBm)
0.000
2.000
4.000
6.000
8.000
10.000
12.000
14.000
16.000
18.000
20.000
22.000
24.000
Time (s)
Threshold
-59.81
T1
11.496
-59.81
T2
24.000
-59.81
Print Screen
Exit
Time Per Bin (ms)
3.00
Bins Above
16
Aggregate Time Above Threshold Between T1 and T2 (ms)
48.00

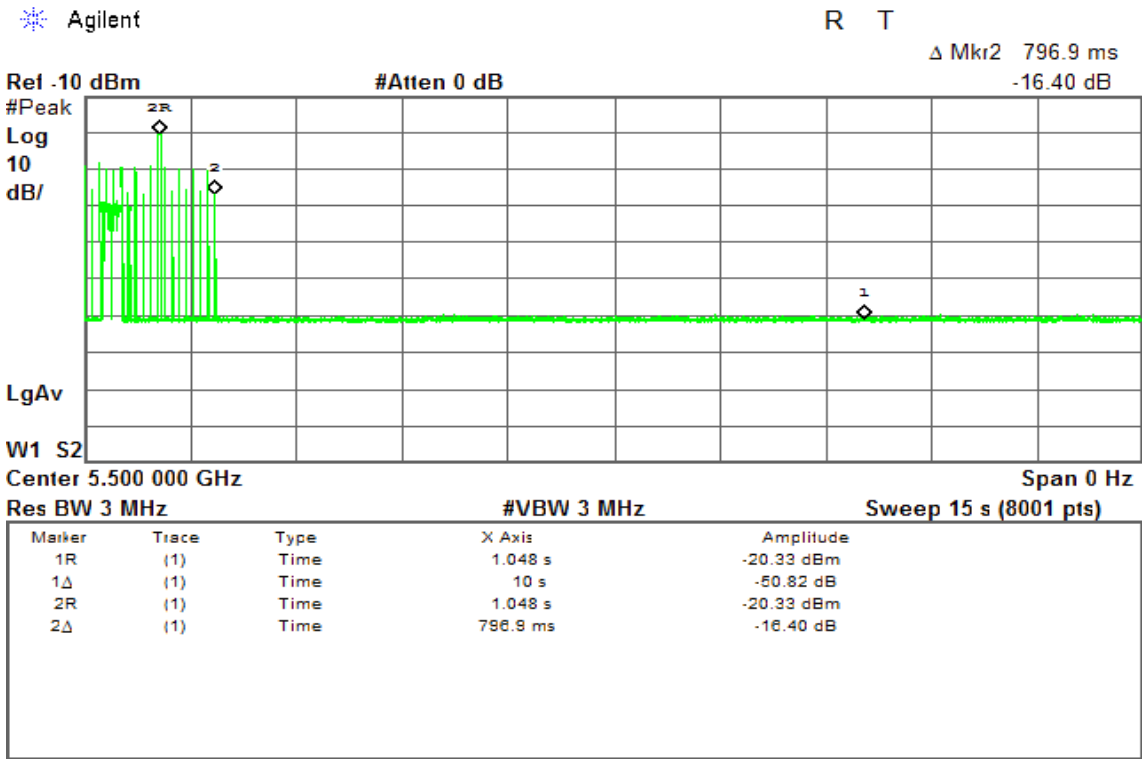
# HIGH BAND RESULTS

## Bandwidth 20 MHz Mode

### Type 1 Channel Move Time Results

*No non-compliance noted.*

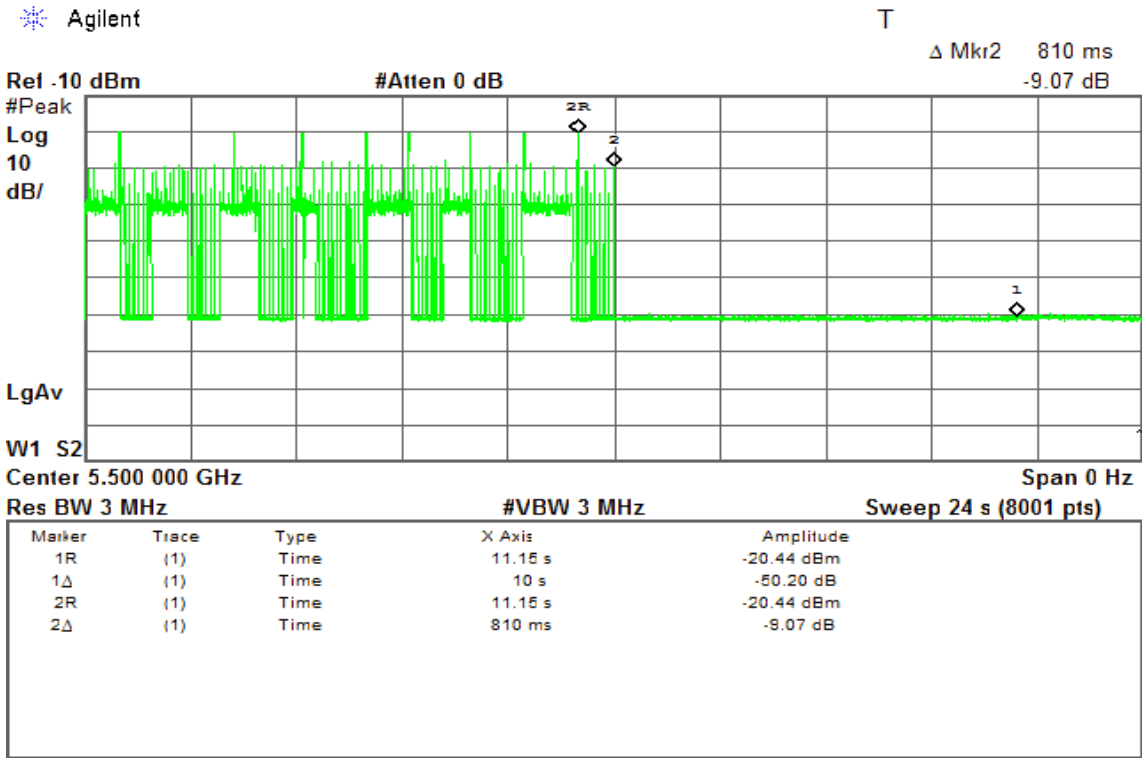
| Channel Move Time (s) | Limit (s) |
|---|---|
| 0.7969 | 10 |



## Type 5 Channel Move Time Results

*No non-compliance noted.*

| Channel Move Time (s) | Limit (s) |
|---|---|
| 0.810 | 10 |



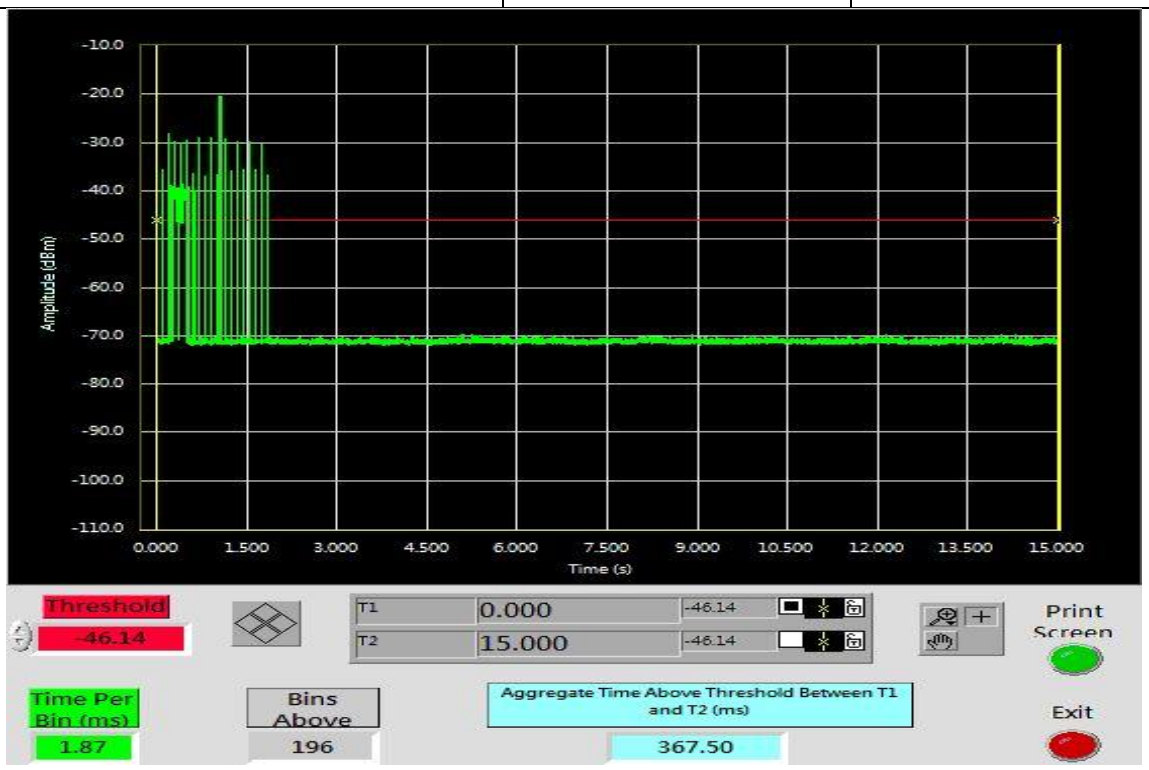
# Bandwidth 20 MHz Mode

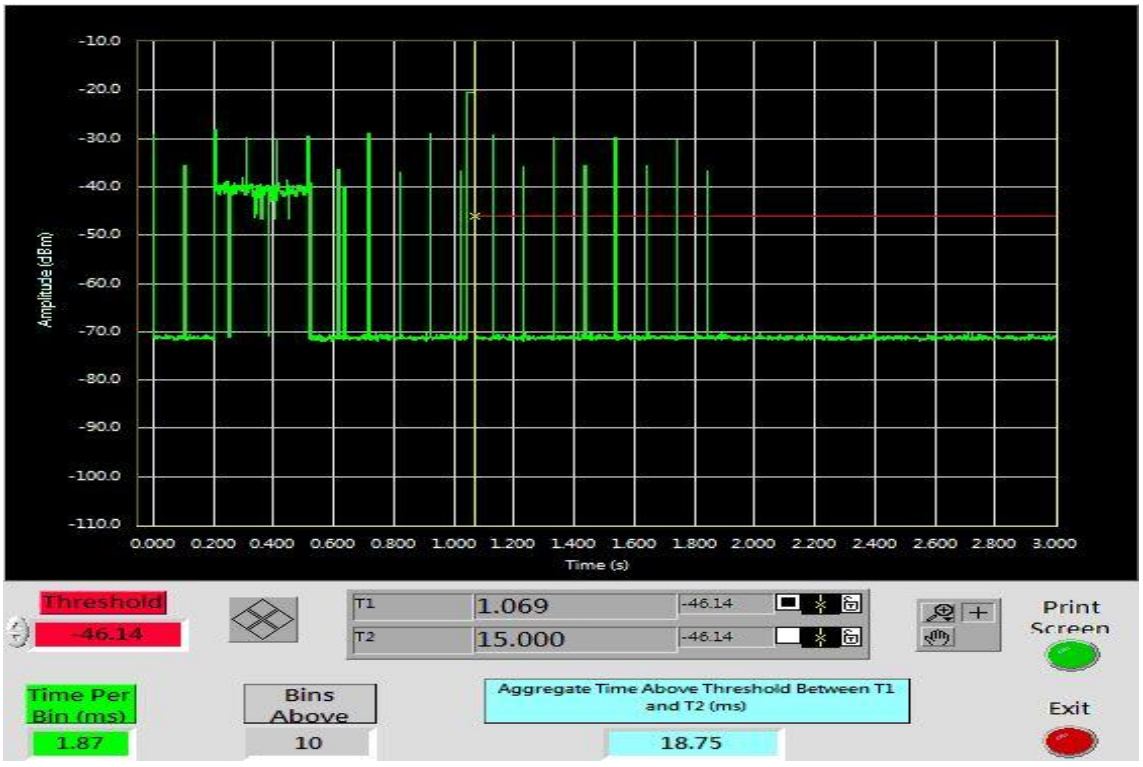
## Type 1 Channel Closing Transmission Time Results

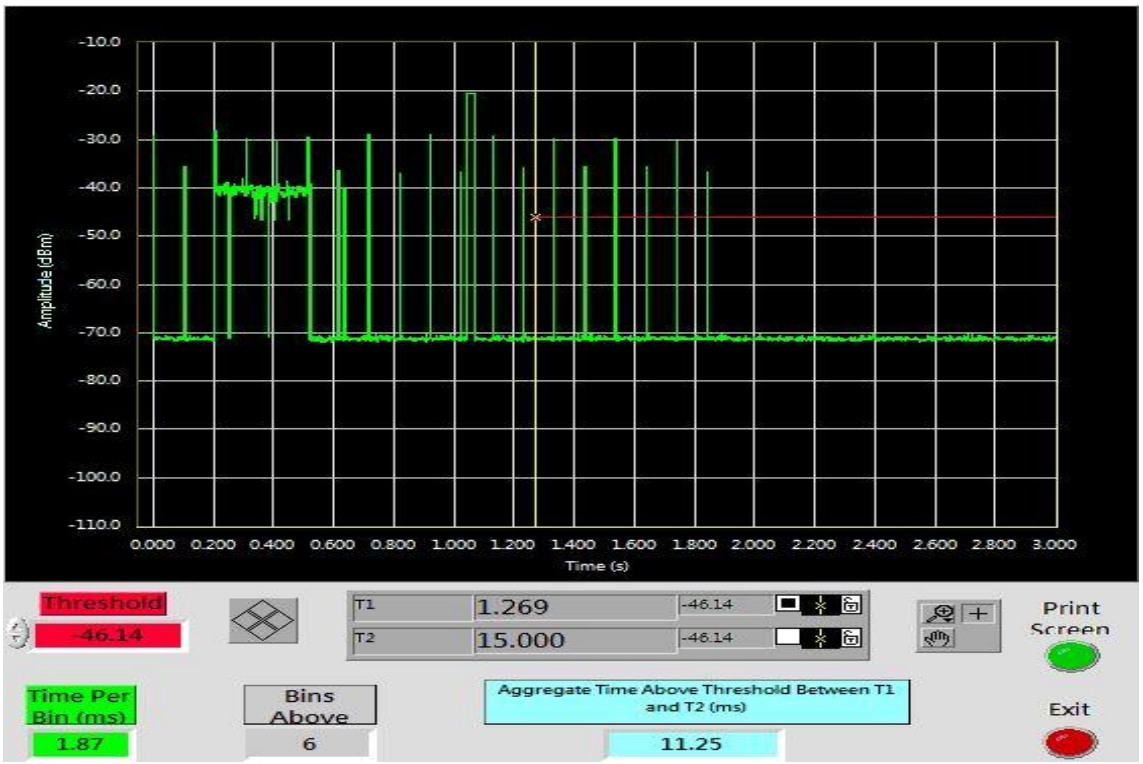
*No non-compliance noted.*

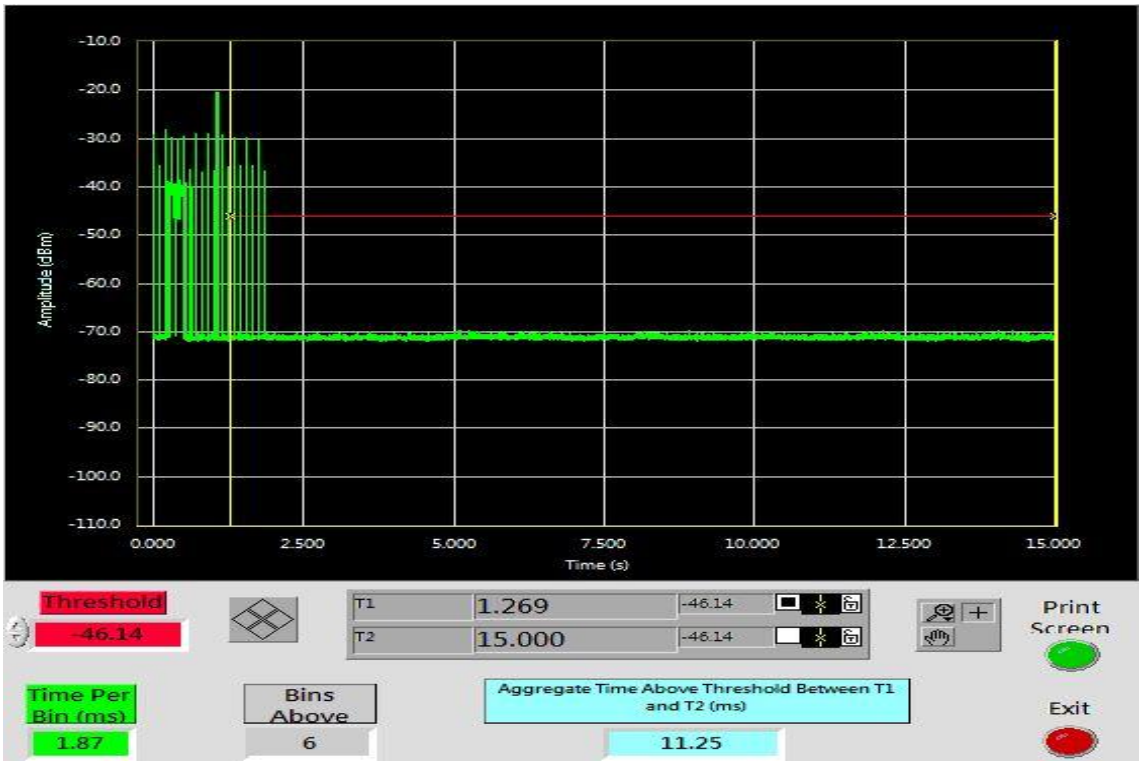
**For R1**

| Aggregate Transmission Time (ms) | Limit (ms) | Margin (ms) |
|---|---|---|
| 11.25 | 60 | -48.75 |



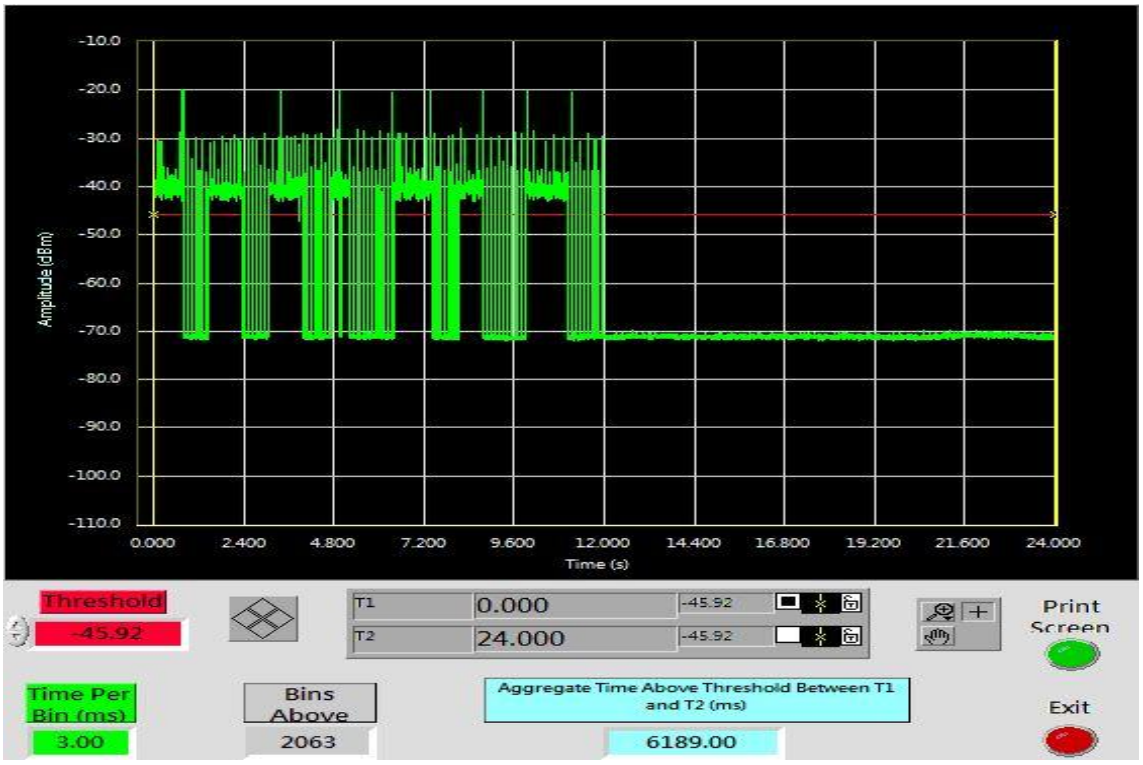



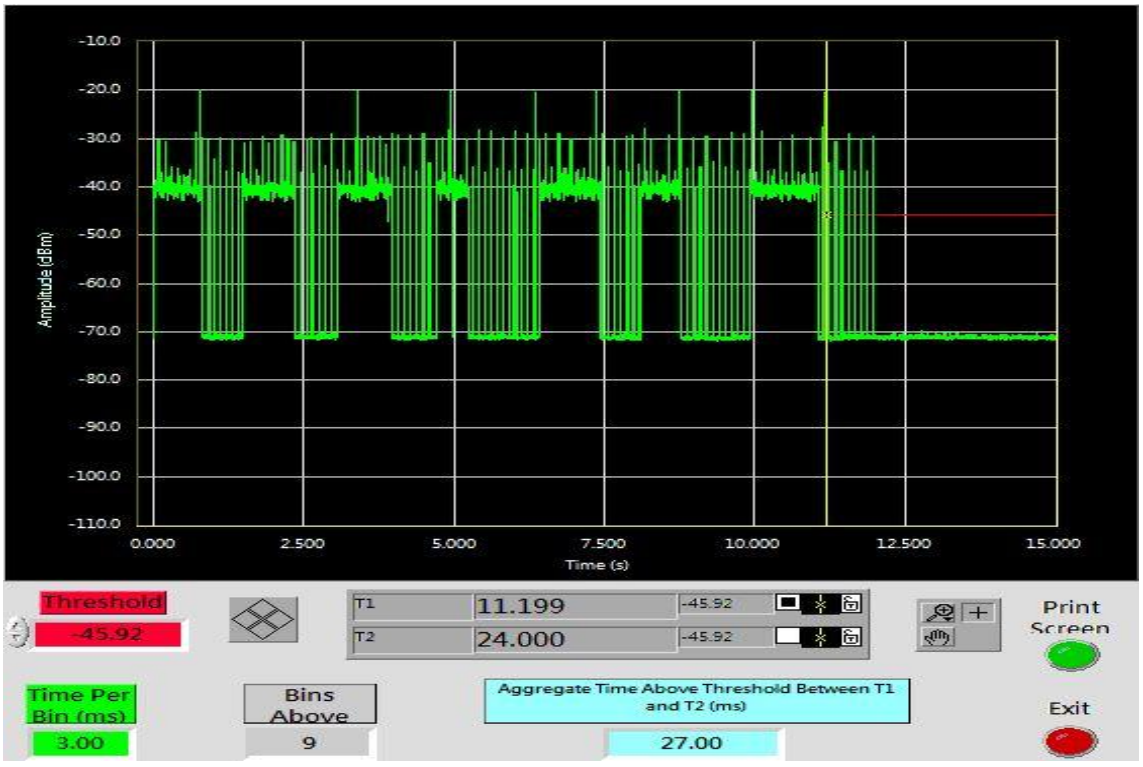

-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100.0
-110.0
Amplitude (dBm)
0.000 0.200 0.400 0.600 0.800 1.000 1.200 1.400 1.600 1.800 2.000 2.200 2.400 2.600 2.800 3.000
Time (s)
Threshold
-46.14
T1 1.269 -46.14
T2 15.000 -46.14
Print Screen
Time Per Bin (ms)
1.87
Bins Above
6
Aggregate Time Above Threshold Between T1 and T2 (ms)
11.25
Exit

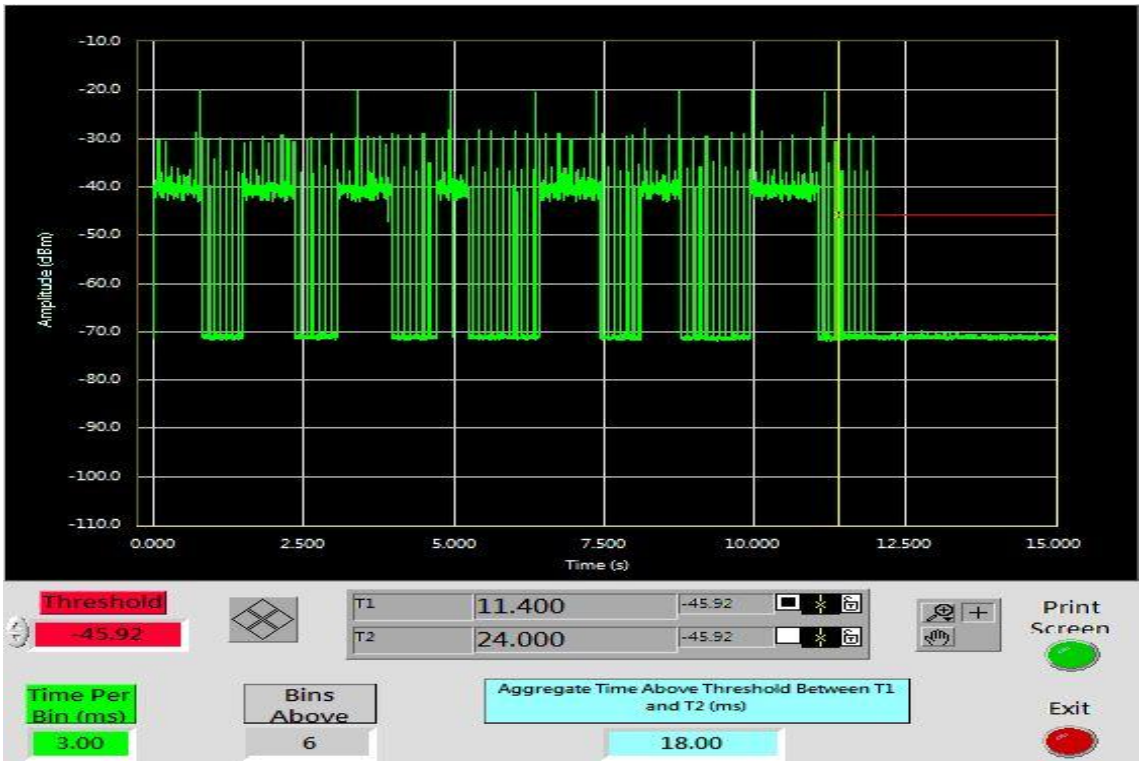

-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100.0
-110.0
Amplitude (dBm)
0.000 2.500 5.000 7.500 10.000 12.500 15.000
Time (s)
Threshold
-46.14
T1 1.269 -46.14
T2 15.000 -46.14
Print Screen
Time Per Bin (ms)
1.87
Bins Above
6
Aggregate Time Above Threshold Between T1 and T2 (ms)
11.25
Exit

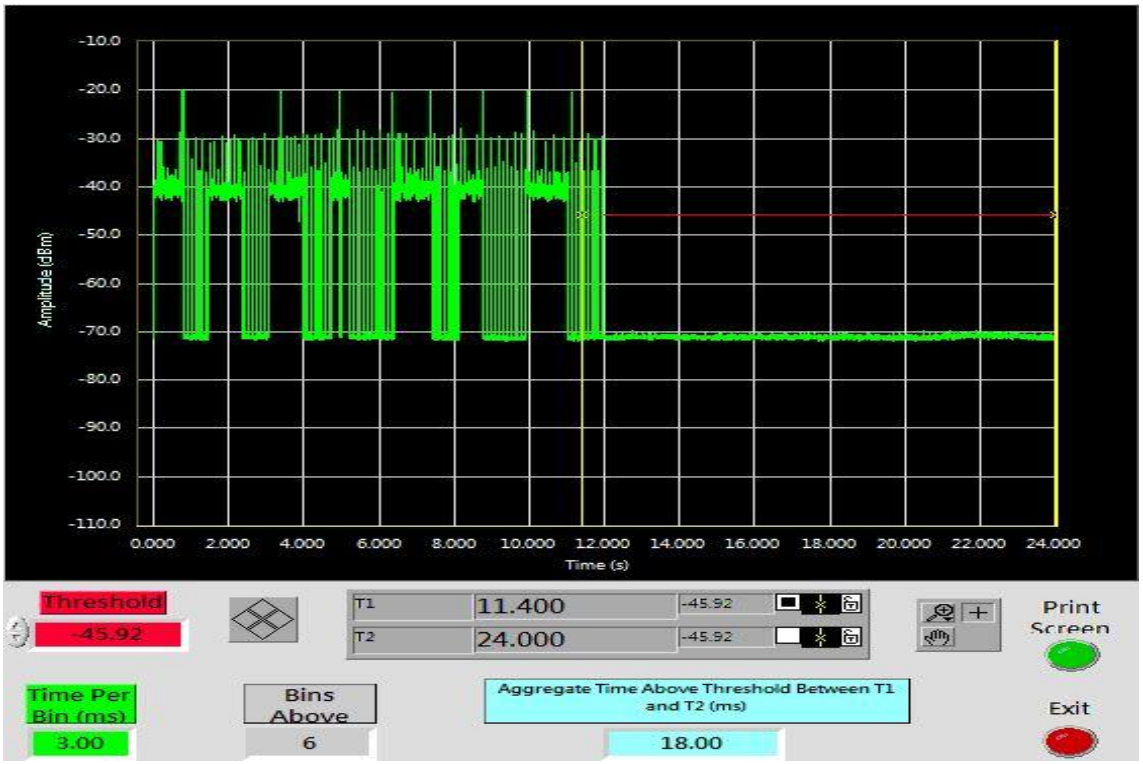
**For R5**

| Aggregate Transmission Time (ms) | Limit (ms) | Margin (ms) |
|---|---|---|
| 18 | 60 | -42 |




-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100.0
-110.0
Amplitude (dBm)
0.000
2.500
5.000
7.500
10.000
12.500
15.000
Time (s)
Threshold
-45.92
T1
11.400
-45.92
T2
24.000
-45.92
Print Screen
Exit
Time Per Bin (ms)
3.00
Bins Above
6
Aggregate Time Above Threshold Between T1 and T2 (ms)
18.00

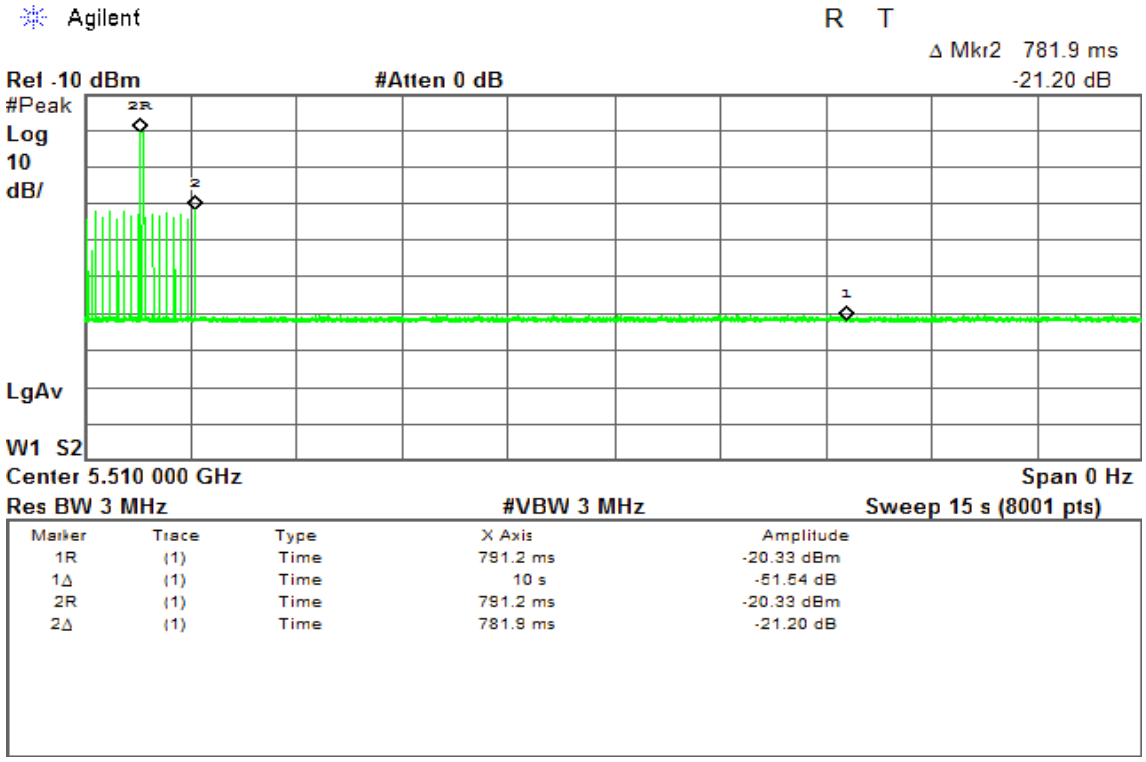

-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100.0
-110.0
Amplitude (dBm)
0.000
2.000
4.000
6.000
8.000
10.000
12.000
14.000
16.000
18.000
20.000
22.000
24.000
Time (s)
Threshold
-45.92
T1
11.400
-45.92
T2
24.000
-45.92
Print Screen
Exit
Time Per Bin (ms)
3.00
Bins Above
6
Aggregate Time Above Threshold Between T1 and T2 (ms)
18.00

# Bandwidth 40 MHz Mode

## Type 1 Channel Move Time Results

*No non-compliance noted.*

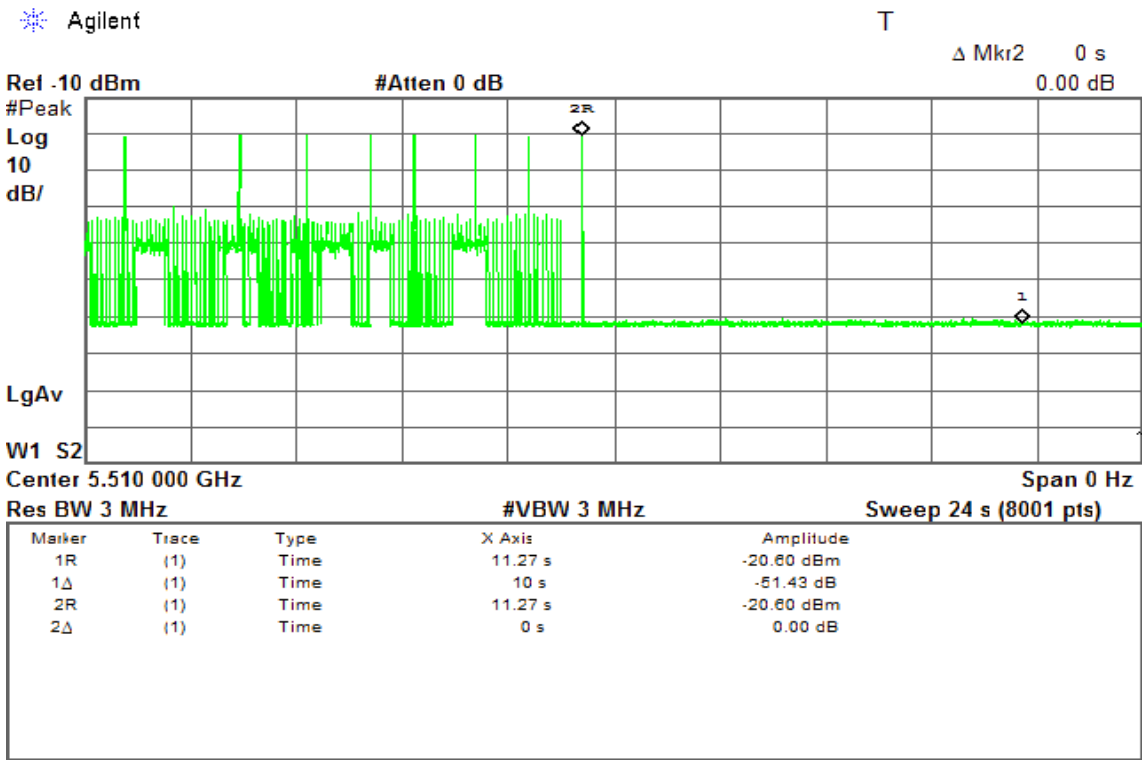
| Channel Move Time (s) | Limit (s) |
|---|---|
| 0.7819 | 10 |



## Type 5 Channel Move Time Results

*No non-compliance noted.*

| Channel Move Time (s) | Limit (s) |
|---|---|
| 0 | 10 |



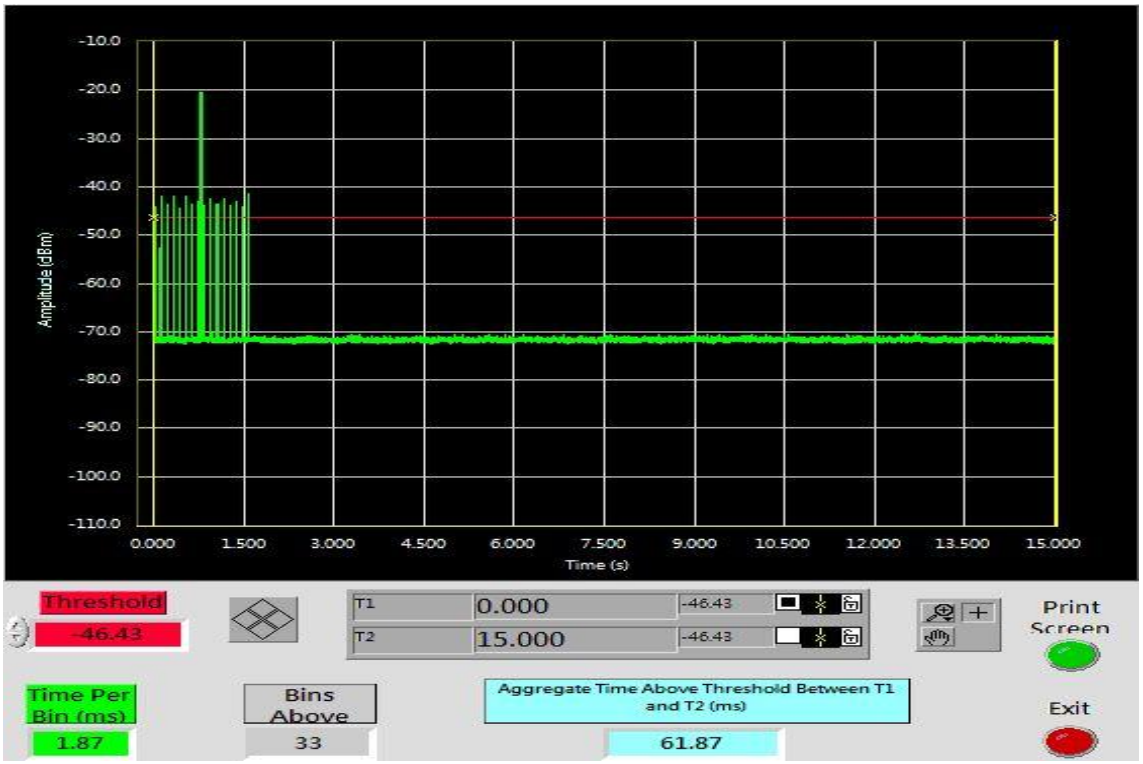
# Bandwidth 40 MHz Mode

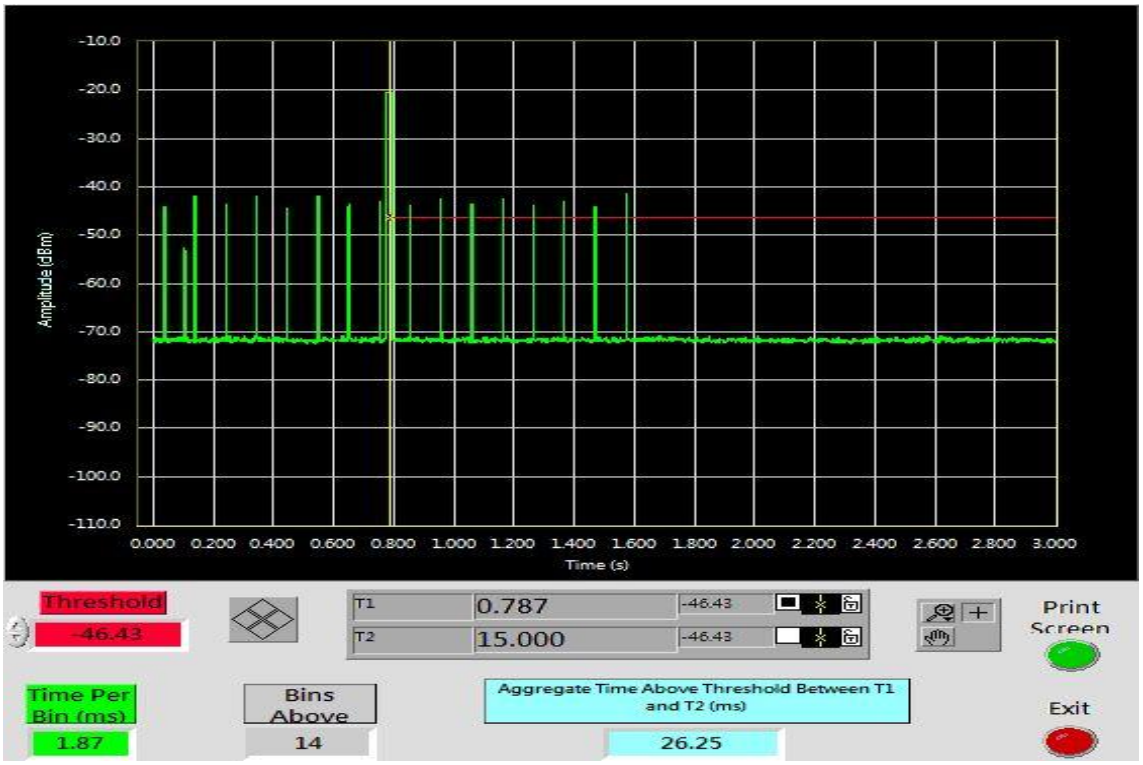
## Type 1 Channel Closing Transmission Time Results

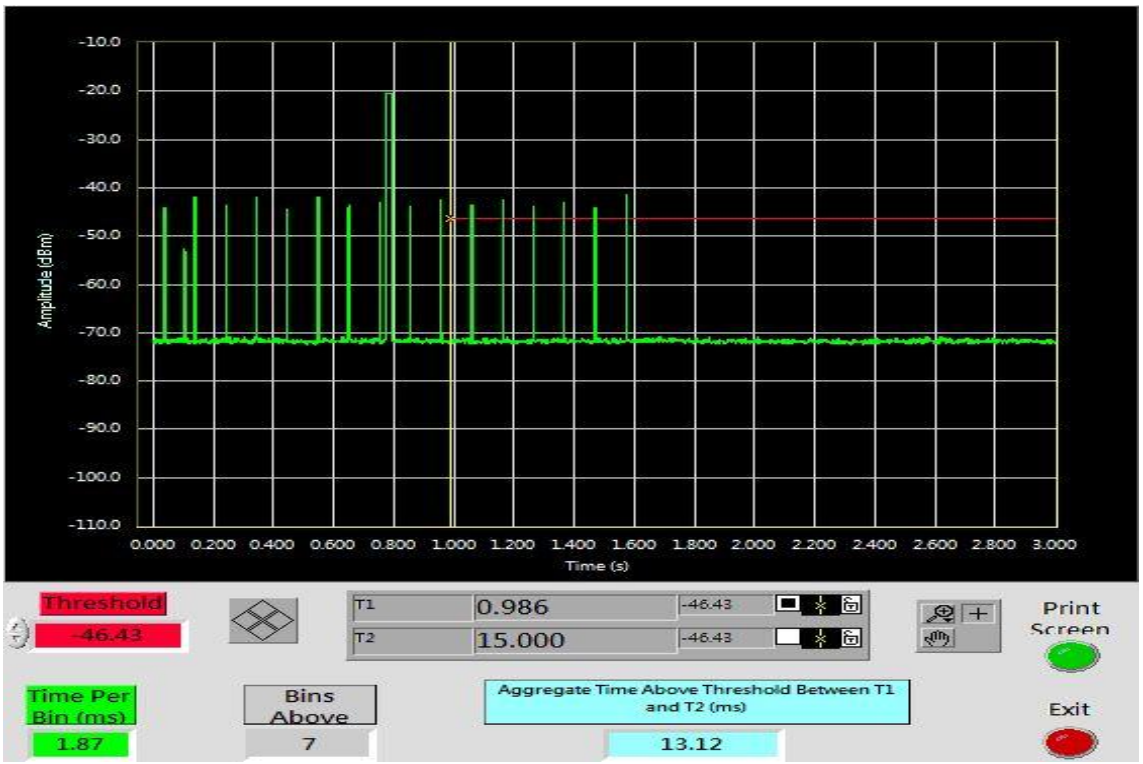
*No non-compliance noted.*

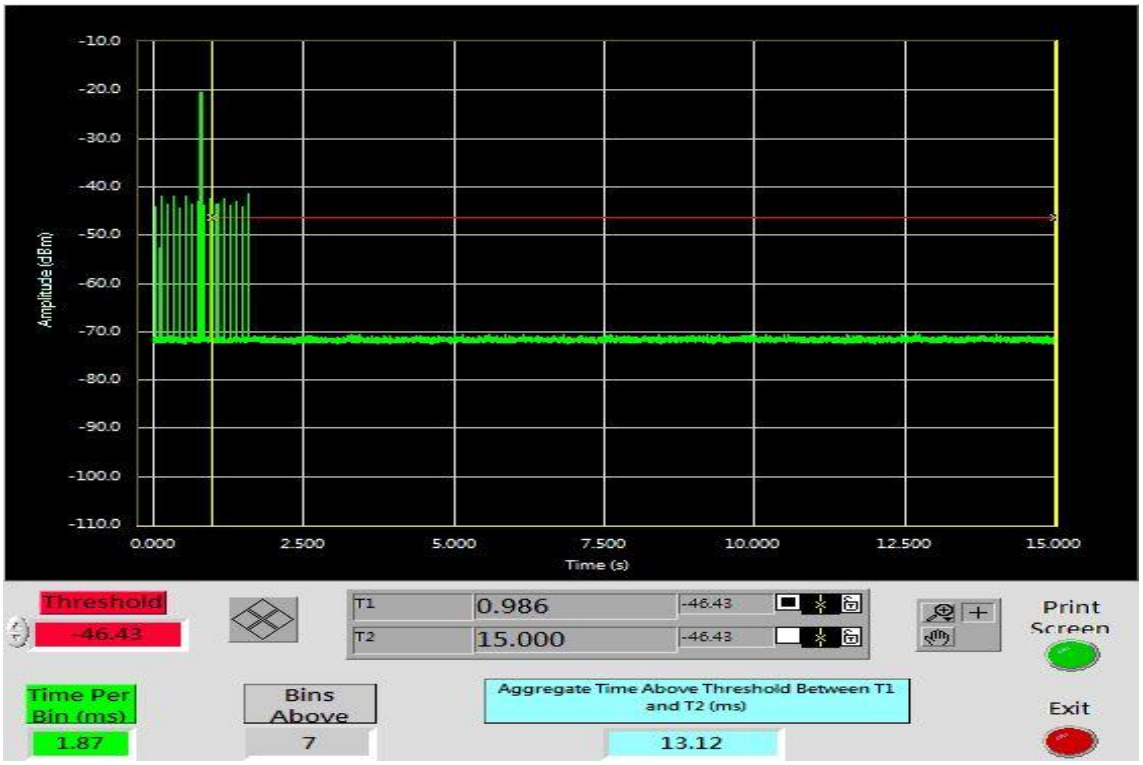
**For R1**

| Aggregate Transmission Time (ms) | Limit (ms) | Margin (ms) |
|---|---|---|
| 13.12 | 60 | -47.88 |



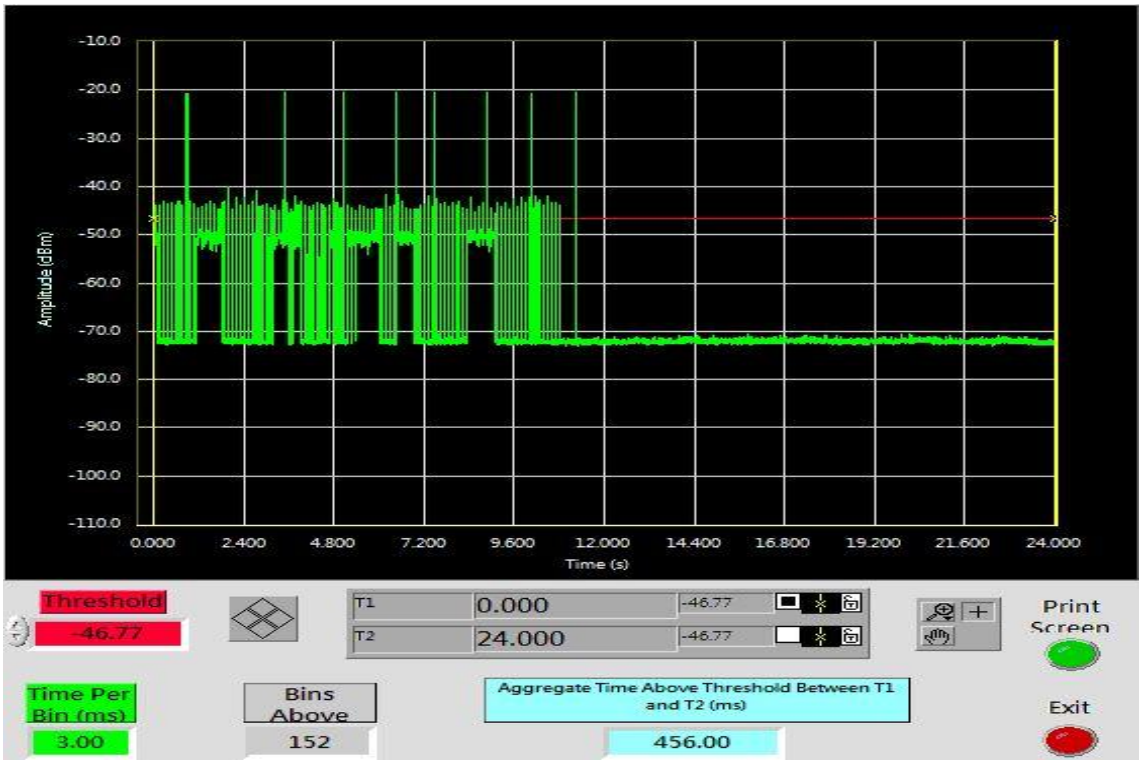



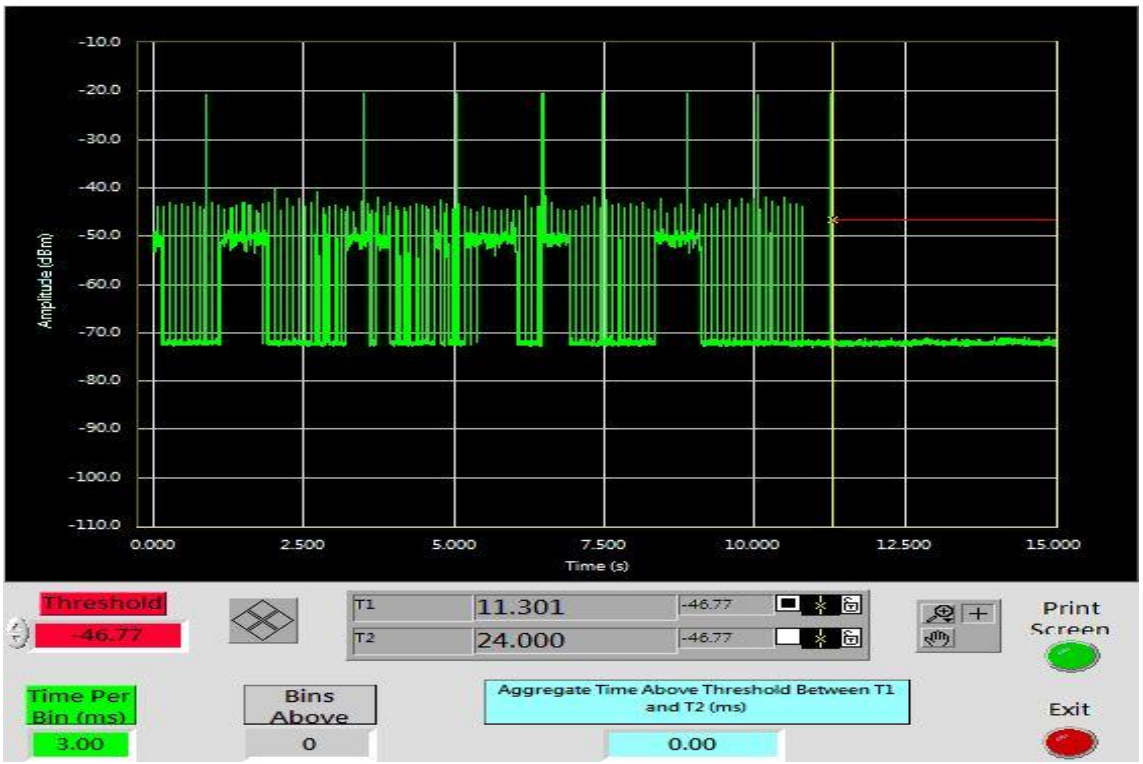

-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100.0
-110.0
Amplitude (dBm)
0.000 0.200 0.400 0.600 0.800 1.000 1.200 1.400 1.600 1.800 2.000 2.200 2.400 2.600 2.800 3.000
Time (s)
Threshold
-46.43
T1 0.986 -46.43
T2 15.000 -46.43
Print Screen
Time Per Bin (ms)
1.87
Bins Above
7
Aggregate Time Above Threshold Between T1 and T2 (ms)
13.12
Exit

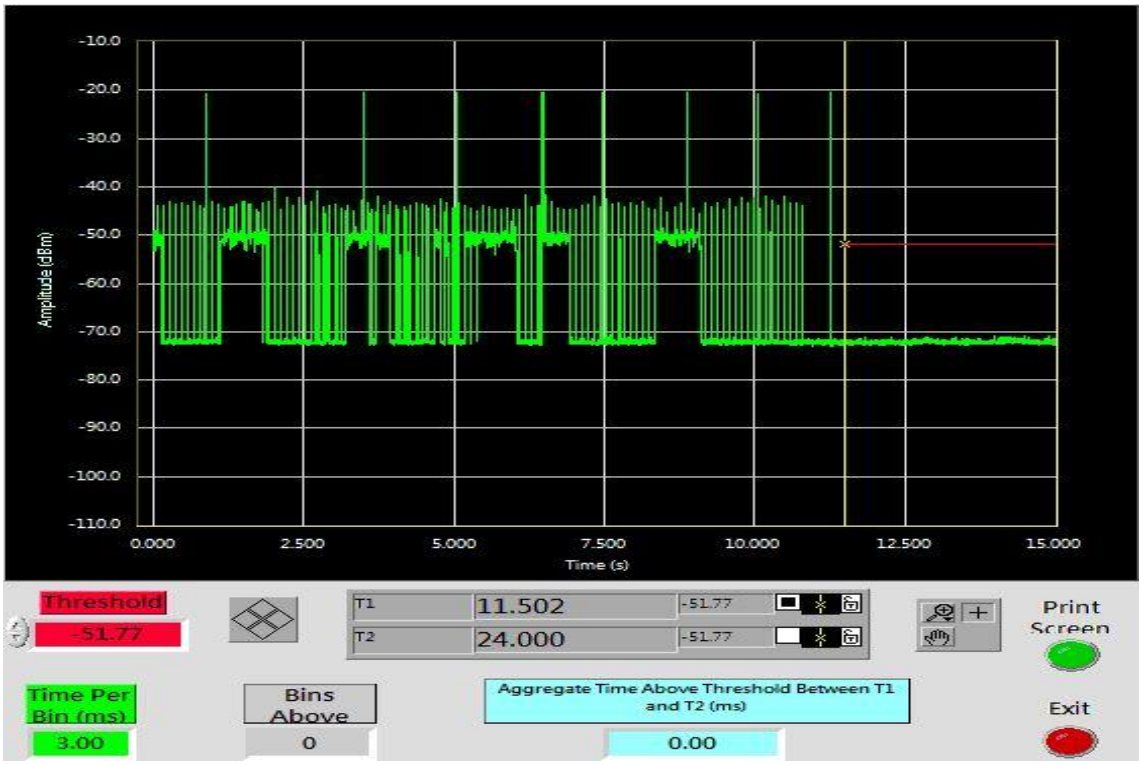

-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100.0
-110.0
Amplitude (dBm)
0.000 2.500 5.000 7.500 10.000 12.500 15.000
Time (s)
Threshold
-46.43
T1 0.986 -46.43
T2 15.000 -46.43
Print Screen
Time Per Bin (ms)
1.87
Bins Above
7
Aggregate Time Above Threshold Between T1 and T2 (ms)
13.12
Exit

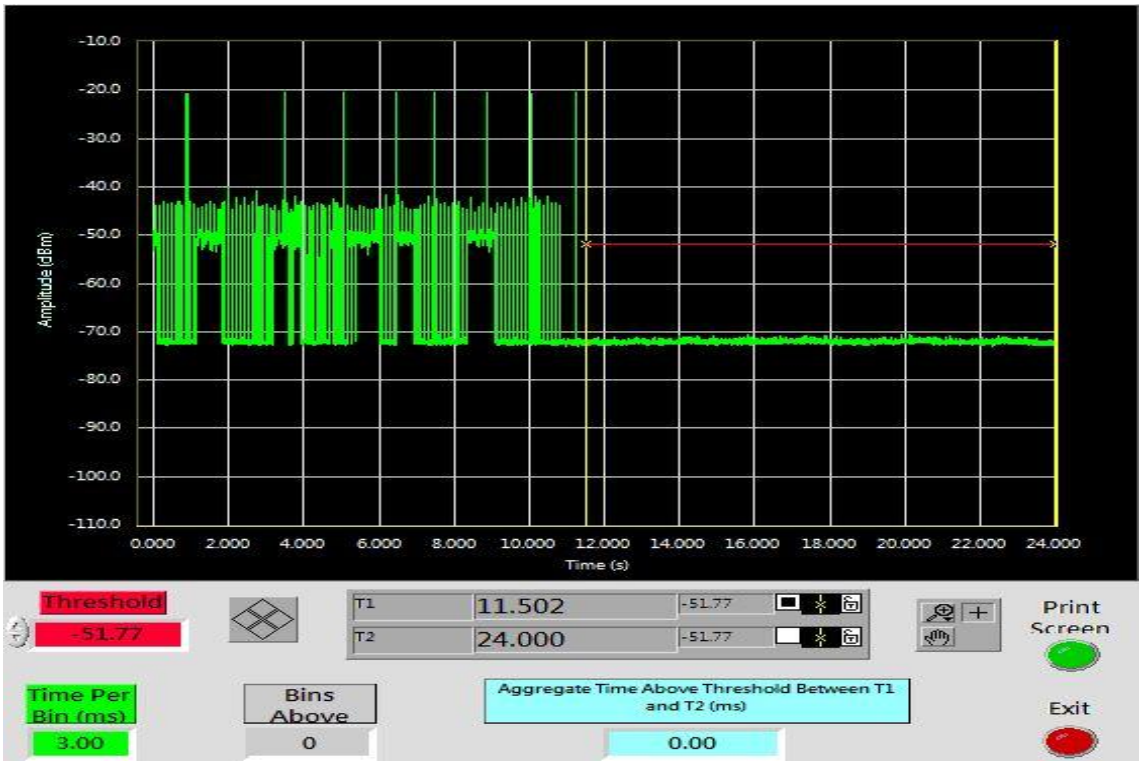
**For R5**

| Aggregate Transmission Time (ms) | Limit (ms) | Margin (ms) |
|---|---|---|
| 0 | 60 | -60 |




-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100.0
-110.0
Amplitude (dBm)
0.000
2.500
5.000
7.500
10.000
12.500
15.000
Time (s)
Threshold
-51.77
T1
11.502
-51.77
T2
24.000
-51.77
Print Screen
Exit
Time Per Bin (ms)
3.00
Bins Above
0
Aggregate Time Above Threshold Between T1 and T2 (ms)
0.00


-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100.0
-110.0
Amplitude (dBm)
0.000
2.000
4.000
6.000
8.000
10.000
12.000
14.000
16.000
18.000
20.000
22.000
24.000
Time (s)
Threshold
-51.77
T1
11.502
-51.77
T2
24.000
-51.77
Print Screen
Exit
Time Per Bin (ms)
3.00
Bins Above
0
Aggregate Time Above Threshold Between T1 and T2 (ms)
0.00

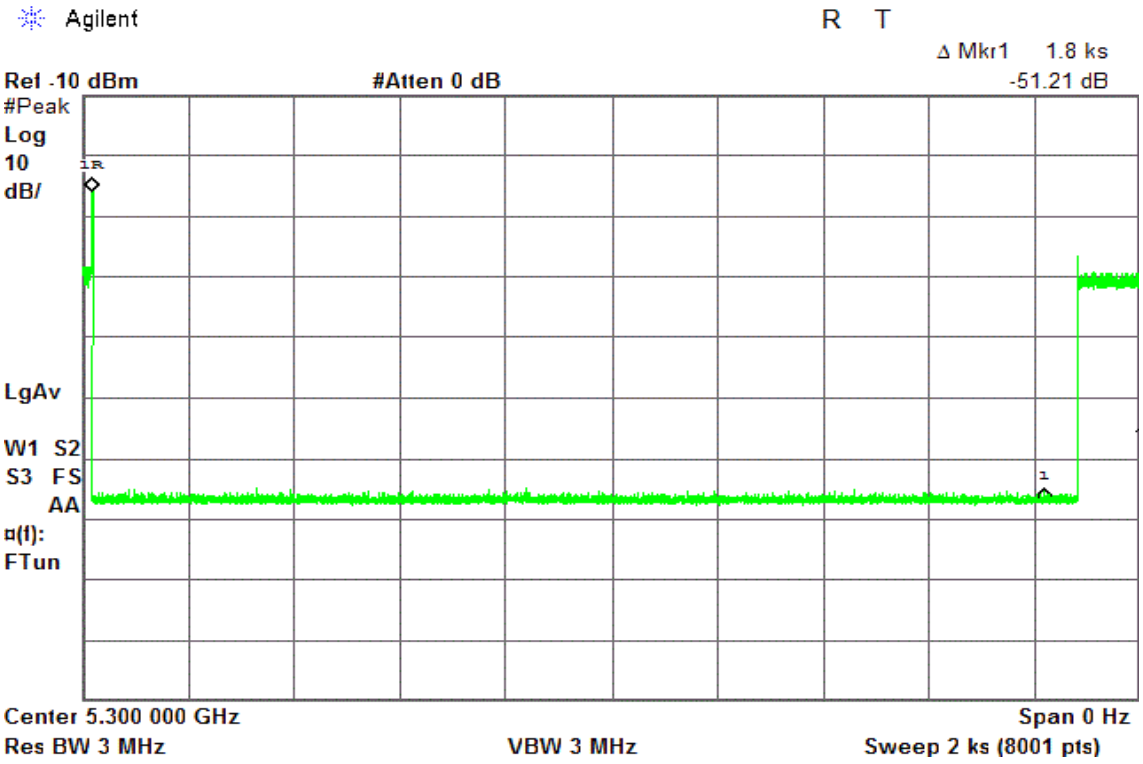
# NON-OCCUPANCY PERIOD

## LOW BAND RESULTS / Bandwidth 20 MHz Mode

### Type 1 Non-Occupancy Period Test Results

*No non-compliance noted.*

No EUT transmissions were observed on the test channel during the 30 minute observation time.

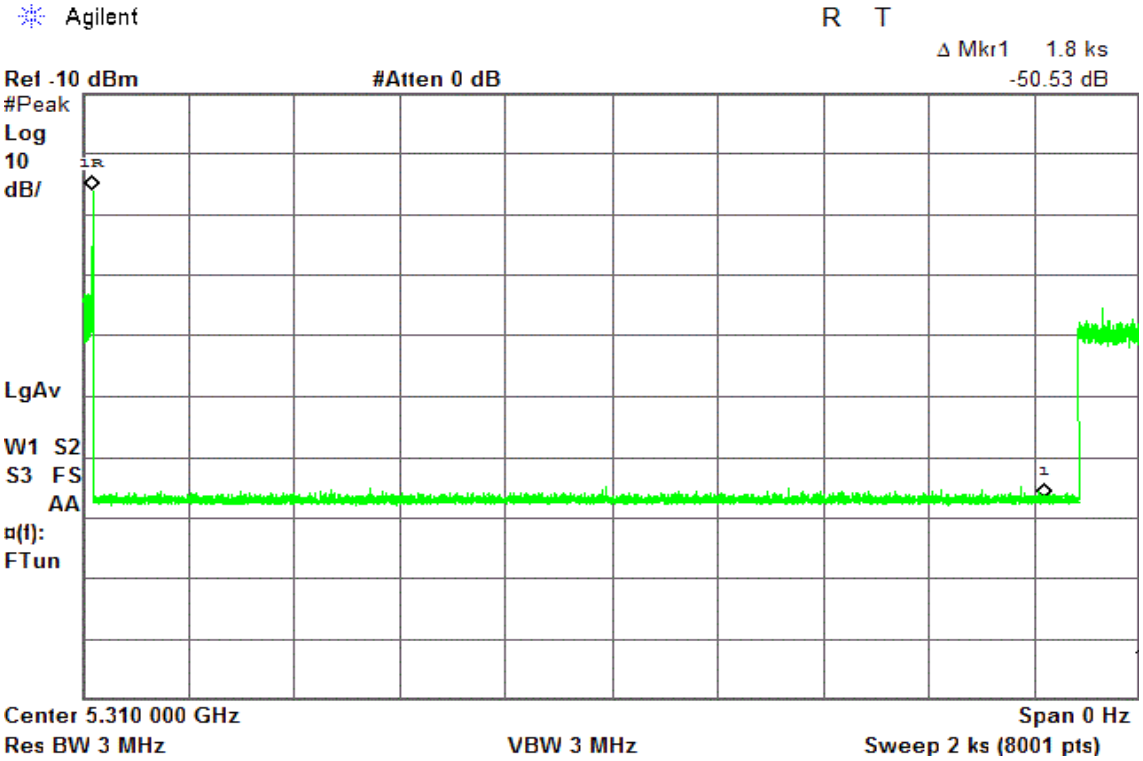


# LOW BAND RESULTS / Bandwidth 40 MHz Mode

## Type 1 Non-Occupancy Period Test Results

*No non-compliance noted.*

No EUT transmissions were observed on the test channel during the 30 minute observation time.

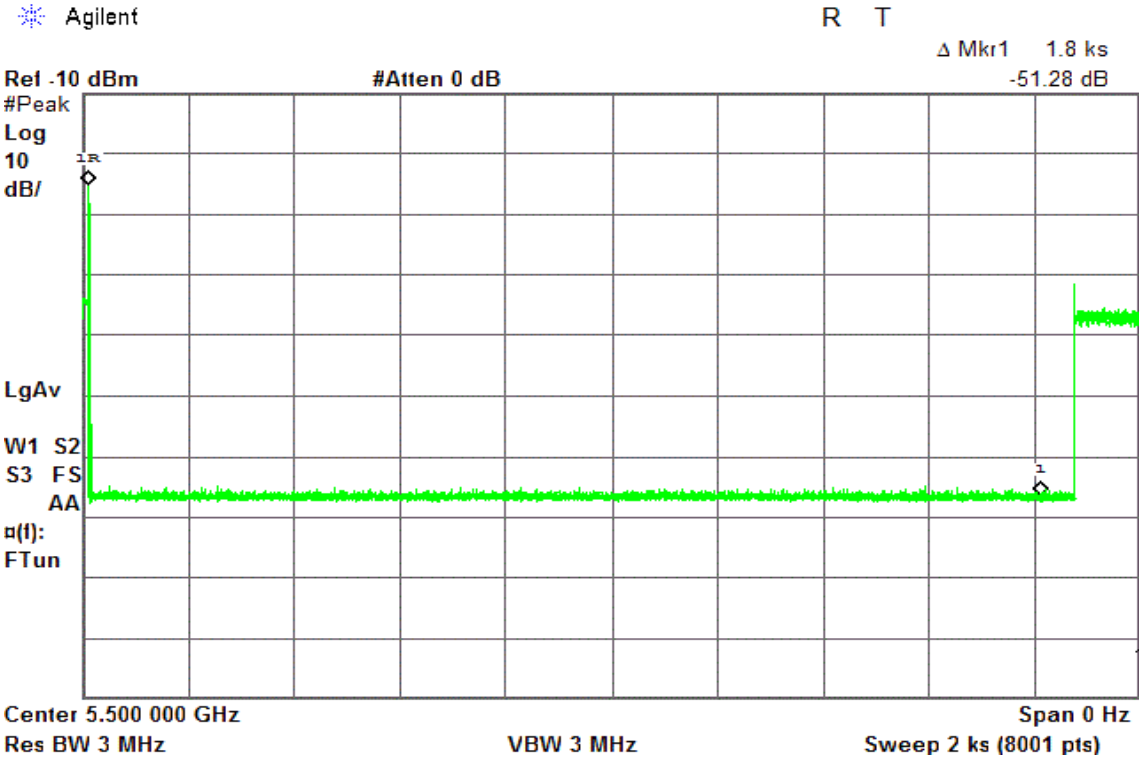


# HIGH BAND RESULTS / Bandwidth 20 MHz Mode

## Type 1 Non-Occupancy Period Test Results

*No non-compliance noted.*

No EUT transmissions were observed on the test channel during the 30 minute observation time.

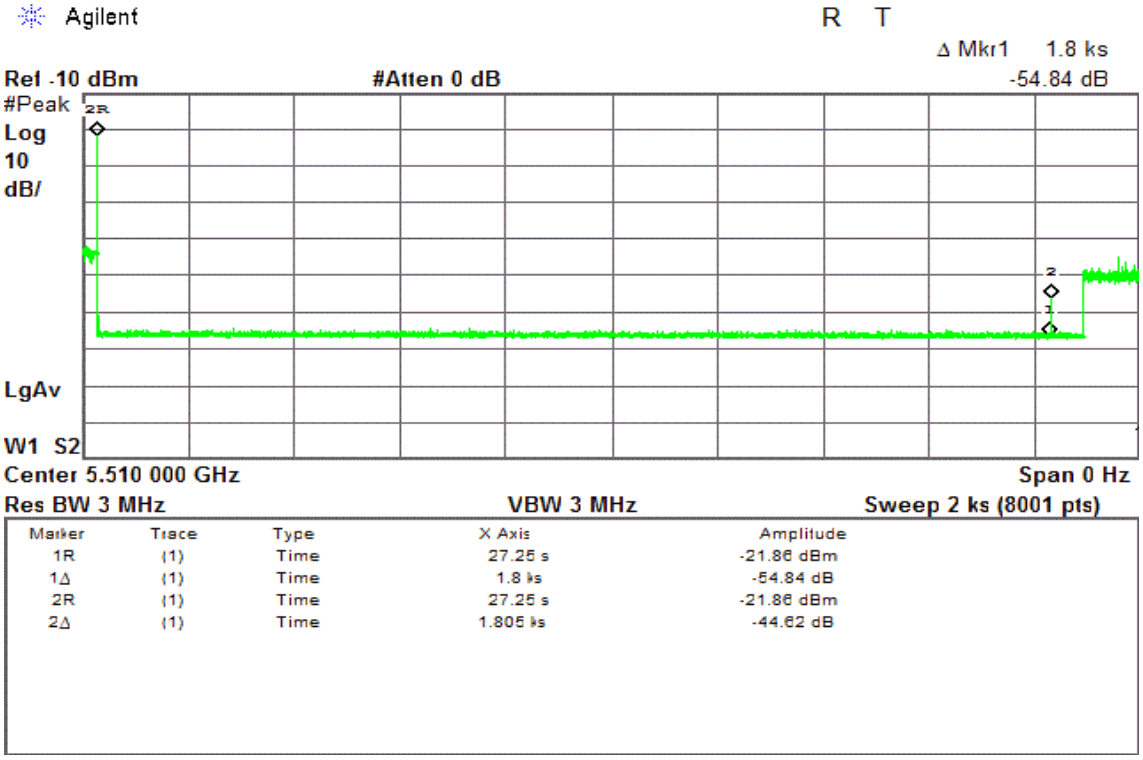


# HIGH BAND RESULTS / Bandwidth 40 MHz Mode

## Type 1 Non-Occupancy Period Test Results

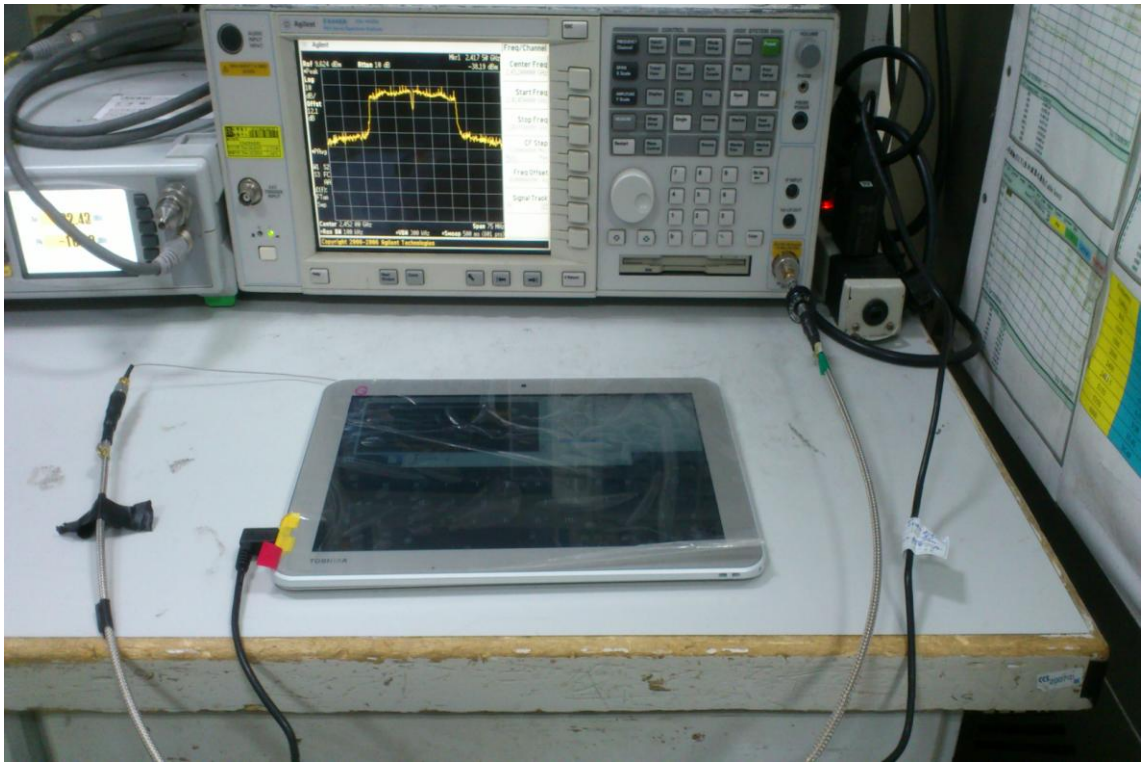
*No non-compliance noted.*

No EUT transmissions were observed on the test channel during the 30 minute observation time.

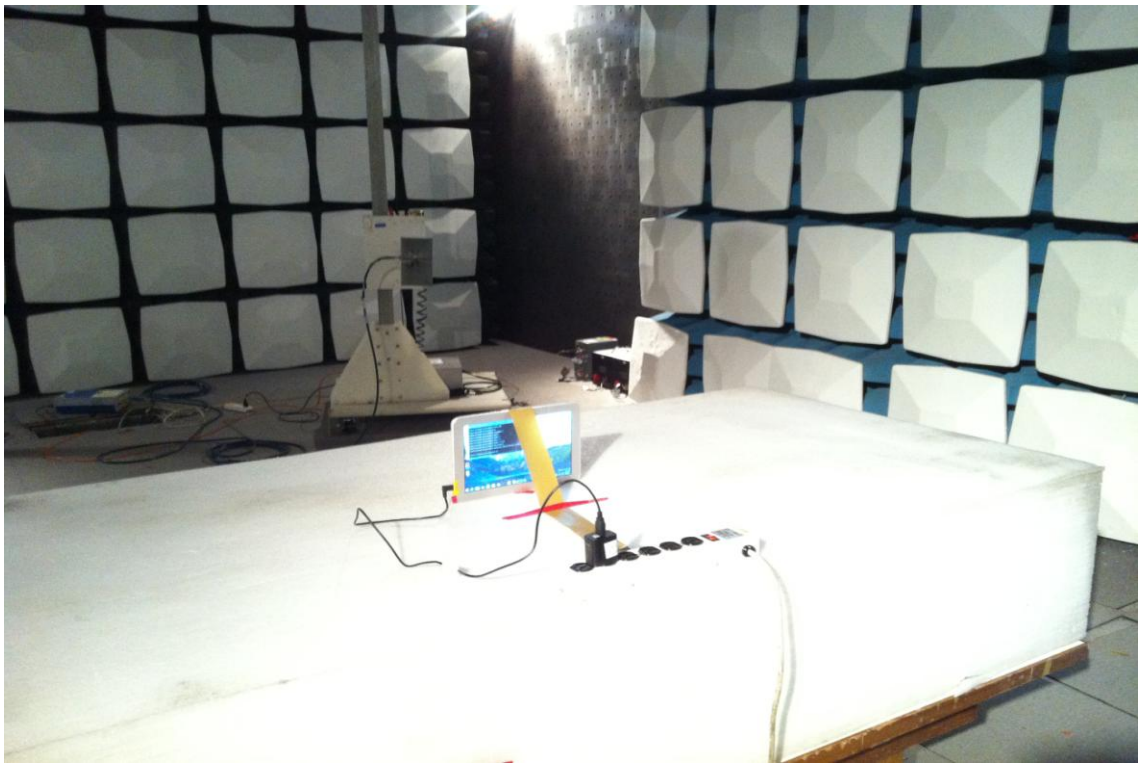


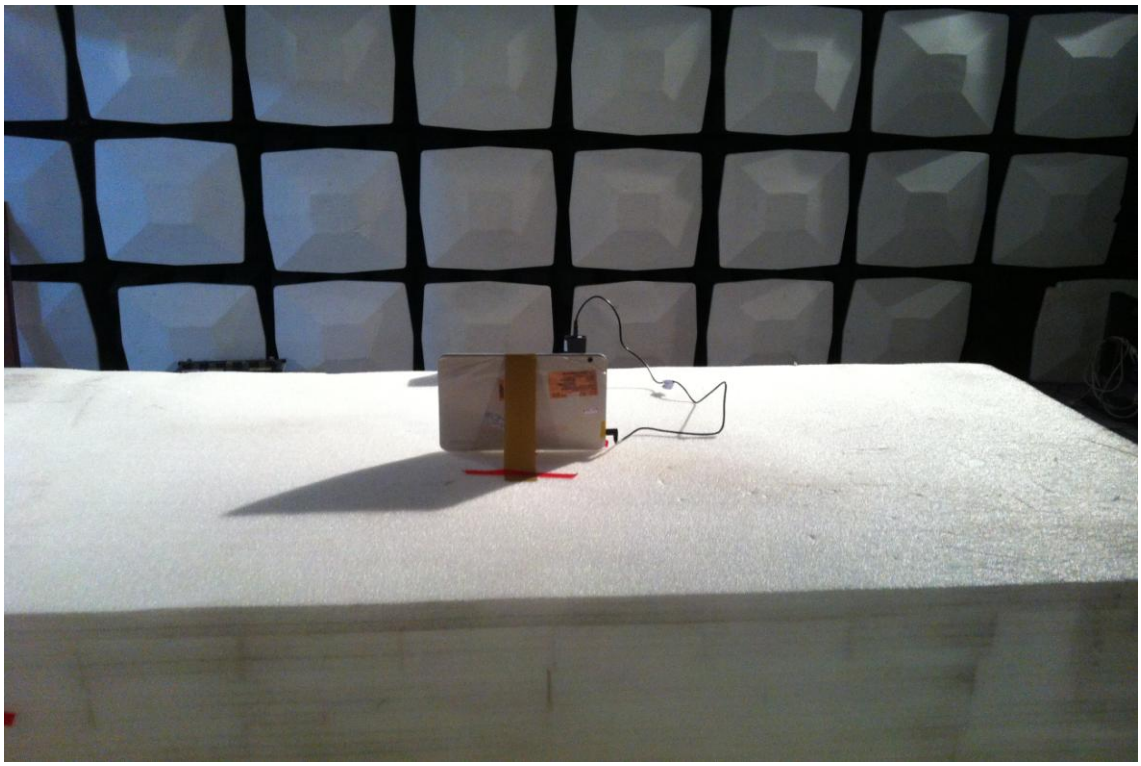
# APPENDIX I
# PHOTOGRAPHS OF TEST SETUP

## Conducted Emission Set Up Photo

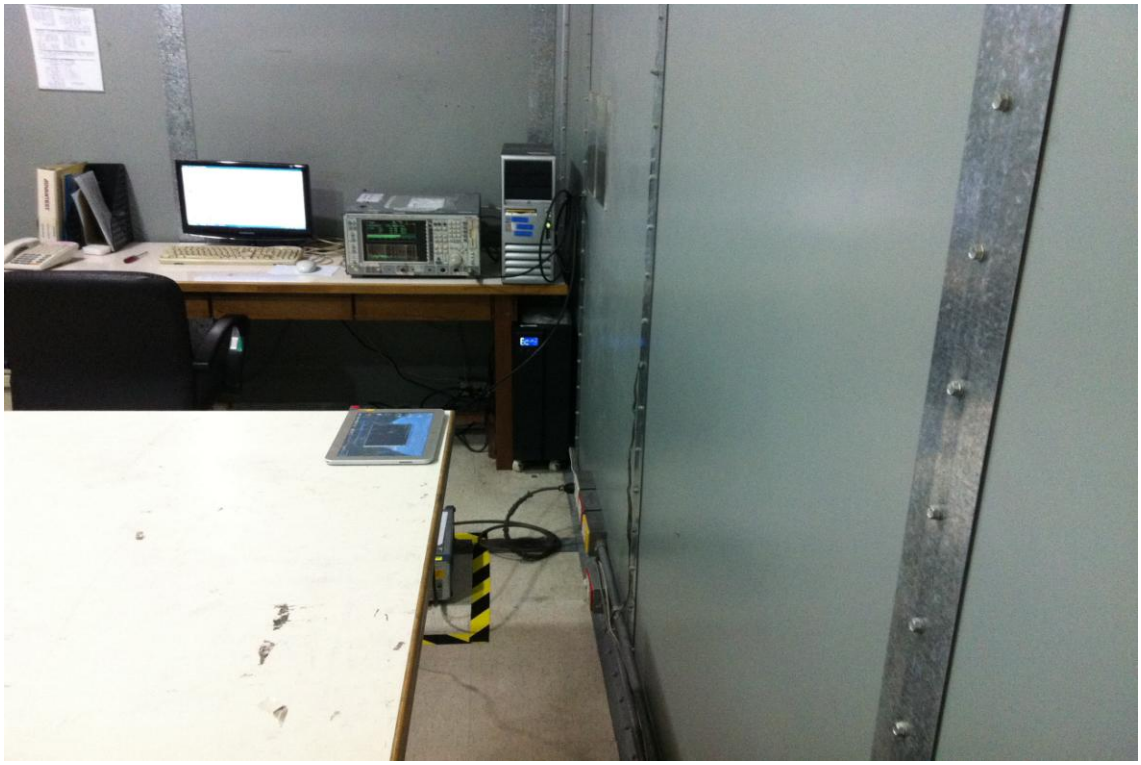


# Radiated Emission Set up Photos





# Powerline Conducted Emissions Setup Photos



# Dynamic Frequency Selection Set Up Photo