FCC 47 CFR PART 15 SUBPART E &
INDUSTRY CANADA RSS-247

TEST REPORT

For

Product	Model
Wi-Fi (11a/b/g/n/ac 2Tx2R)+BT (V4.1LE) USB Combo Module	WCBN4507R
	WCBN4508R
Wi-Fi (11a/b/g/n 2Tx2R)+BT (V4.1LE) USB Combo Module	WCBN4507R(32U)
	WCBN4508R(32U)

Trade Name: LITE-ON

Issued to

Lite-On Technology Cop.
Bldg. C, 90, Chien 1 Road, Chung Ho, New Taipei City 23585, Taiwan, R.O.C

Issued by

Compliance Certification Services Inc.
No.11, Wugong 6th Rd., Wugu Dist.,
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Issued Date: August 28, 2015

Testing Laboratory
1309

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Revision History

Rev.		Issue Date		Revisions	Effect Page	Revised By
00		August 28, 2015		Initial Issue	ALL	Doris Chu

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1. TEST RESULT CERTIFICATION

Applicant: Lite-On Technology Cop.
Bldg. C, 90, Chien 1 Road, Chung Ho, New Taipei City 23585, Taiwan, R.O.C

Manufacturer: LITE-ON TECHNOLOGY (Changzhou) CO., LTD
A9 Building,No.88 Yanghu Road, Wujin Hi-Tech Industrial Development Zone ,Changzhou City,Jiangsu Province 213100 China

Equipment Under Test / Model Number:

Product	Model
Wi-Fi (11a/b/g/n/ac 2Tx2R)+BT (V4.1LE) USB Combo Module	WCBN4507R
	WCBN4508R
Wi-Fi (11a/b/g/n 2Tx2R)+BT (V4.1LE) USB Combo Module	WCBN4507R(32U)
	WCBN4508R(32U)

Trade Name: LITE-ON

Date of Test: August 25, 2015

APPLICABLE STANDARDS	
STANDARD	**TEST RESULT**
FCC 47 CFR Part 15 Subpart E & Industry Canada RSS-247 Issue 1	No non-compliance noted

We hereby certify that:

Compliance Certification Services Inc. tested the above equipment. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10: 2013 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-247 Issue 1.

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

Approved by:

Miller Lee
Manager
Compliance Certification Services Inc.

Reviewed by:

Angel Cheng
Section Manager
Compliance Certification Services Inc.

2. EUT DESCRIPTION

<table>
<tr><td rowspan="5">Product / Model Number</td><td colspan="5">Product</td><td>Model</td></tr>
<tr><td colspan="5" rowspan="2">Wi-Fi (11a/b/g/n/ac 2Tx2R)+BT (V4.1LE) USB Combo Module</td><td>WCBN4507R</td></tr>
<tr><td>WCBN4508R</td></tr>
<tr><td colspan="5" rowspan="2">Wi-Fi (11a/b/g/n 2Tx2R)+BT (V4.1LE) USB Combo Module</td><td>WCBN4507R(32U)</td></tr>
<tr><td>WCBN4508R(32U)</td></tr>
<tr><td>Trade Name</td><td colspan="6">LITE-ON</td></tr>
<tr><td>Model Discrepancy</td><td colspan="6">MT7662U – 802.11abgn + ac + BT (WCBN4507R / WCBN4508R)
MT7632U – 802.11abgn + BT (WCBN4507R(32U) / WCBN4508R(32U))</td></tr>
<tr><td>Received Date</td><td colspan="6">July 27, 2015</td></tr>
<tr><td>Power Supply</td><td colspan="6">Power form host device</td></tr>
<tr><td>Operating Frequency Range &
Number of Channels</td><td colspan="6"><table>
<tr><th></th><th>Mode</th><th>Frequency Range (MHz)</th><th>Number of Channels</th></tr>
<tr><td rowspan="4">UNII Band I</td><td>IEEE 802.11a</td><td>5180 – 5240</td><td>4 Channels</td></tr>
<tr><td>IEEE 802.11n HT 20 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>IEEE 802.11ac VHT 80 MHz</td><td>5210</td><td>1 Channels</td></tr>
<tr><td rowspan="4">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>IEEE 802.11ac VHT 80 MHz</td><td>5290</td><td>1 Channels</td></tr>
<tr><td rowspan="4">UNII Band III</td><td>IEEE 802.11a</td><td>5500 ~ 5720</td><td>12 Channels</td></tr>
<tr><td>IEEE 802.11n HT 20 MHz</td><td>5500 ~ 5720</td><td>12 Channels</td></tr>
<tr><td>IEEE 802.11n HT 40 MHz</td><td>5510 ~ 5710</td><td>6 Channels</td></tr>
<tr><td>IEEE 802.11ac VHT 80 MHz</td><td>5530 ~ 5690</td><td>3 Channels</td></tr>
</table></td></tr>
<tr><td>Transmit Power</td><td colspan="6"><table>
<tr><th></th><th>Mode</th><th>Frequency Range (MHz)</th><th>Output Power (dBm)</th><th>Output Power (w)</th></tr>
<tr><td rowspan="4">UNII Band I</td><td>IEEE 802.11a</td><td>5180 – 5240</td><td>14.86</td><td>0.0306</td></tr>
<tr><td>IEEE 802.11n HT 20 MHz</td><td>5180 – 5240</td><td>13.79</td><td>0.0239</td></tr>
<tr><td>IEEE 802.11n HT 40 MHz</td><td>5190 ~ 5230</td><td>14.31</td><td>0.0270</td></tr>
<tr><td>IEEE 802.11ac VHT 80 MHz</td><td>5210</td><td>13.72</td><td>0.0236</td></tr>
<tr><td rowspan="4">UNII Band II</td><td>IEEE 802.11a</td><td>5260 - 5320</td><td>14.86</td><td>0.0306</td></tr>
<tr><td>IEEE 802.11n HT 20 MHz</td><td>5260 - 5320</td><td>17.66</td><td>0.0583</td></tr>
<tr><td>IEEE 802.11n HT 40 MHz</td><td>5270 ~ 5310</td><td>15.73</td><td>0.0374</td></tr>
<tr><td>IEEE 802.11ac VHT 80 MHz</td><td>5290</td><td>15.71</td><td>0.0372</td></tr>
<tr><td rowspan="4">UNII Band III</td><td>IEEE 802.11a</td><td>5500 ~ 5720</td><td>14.76</td><td>0.0299</td></tr>
<tr><td>IEEE 802.11n HT 20 MHz</td><td>5500 ~ 5720</td><td>17.78</td><td>0.0600</td></tr>
<tr><td>IEEE 802.11n HT 40 MHz</td><td>5510 ~ 5710</td><td>15.73</td><td>0.0374</td></tr>
<tr><td>IEEE 802.11ac VHT 80 MHz</td><td>5530 ~ 5690</td><td>15.76</td><td>0.0377</td></tr>
</table></td></tr>
<tr><td>Modulation Technique</td><td colspan="6">OFDM (QPSK, BPSK, 16-QAM, 64-QAM)</td></tr>
<tr><td>Transmit Data Rate</td><td colspan="6">EEE 802.11a mode: 54, 48, 36, 24, 18, 12, 9, 6 Mbps
IEEE 802.11n HT 20 mode: OFDM (6.5, 7.2, 13, 14.4, 14.44, 19.5, 21.7, 26, 28.89, 28.9, 39, 43.3, 43.33 52, 57.78, 57.8, 58.5, 65.0, 72.2, 78, 86.67, 104, 115.56, 117, 130, 144.44 Mbps)
IEEE 802.11n HT 40 mode: OFDM (13.5, 15, 27, 30, 40.5, 45, 54, 60, 81, 90, 108, 120, 121.5, 135, 150, 162, 180, 216, 240, 243, 270, 300 Mbps)
IEEE 802.11n HT 80 mode: OFDM (29.3, 58.5, 87.8, 117, 175.5, 234, 263.3, 292.5, 351, 390, 468, 526.5, 585, 702, 780 Mbps)</td></tr>
</table>

Antenna Specification	1. Tyco PCB Antenna 2195488-2: 0.96 dBi 2195488-3: 3.54 dBi 2. Walsin PCB Antenna RFPCA311131IMLB701: 5.54 dBi RFPCA311148IMLB701: 5.53 dBi MIMO:10*LOG(((10^(5.54 / 20)+10^(5.53 /20))^2)/2)= 8.55 dBi

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 C63.10: 2013 Radiated testing was performed at an antenna to EUT distance 3 meters.

The tests documented in this report were performed in accordance with ANSI C63.10: 2013 and FCC CFR 47 Part 15.207, 15.209 and 15.407, RSS-GEN Issue 2, and RSS-247 Issue 1.

3.1 EUT CONFIGURATION

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

3.2 EUT EXERCISE

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

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

3.3 GENERAL TEST PROCEDURES

Conducted Emissions

The EUT is placed on the turntable, which is positioned at 0.8 m above the ground plane. According to the requirements in ANSI C63.10: 2013, the conducted emission from the EUT is measured in the frequency range between 0.15 MHz and 30MHz, using the CISPR Quasi-Peak detector mode.

Radiated Emissions

The EUT is placed on the turntable, which is 1.5 m above the ground plane. The turntable is then rotated for 360 degrees to determine the proper orientation for the maximum emission level. The EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emission level. And, each emission is to be maximized by changing the horizontal and vertical polarization of the receiving antenna. In order to find out the maximum emissions, exploratory radiated emission measurements were made according to the requirements in ANSI C63.10: 2013.

3.4 FCC PART 15.205 RESTRICTED BANDS OF OPERATIONS

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

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

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

[2] Above 38.6

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

3.5 DESCRIPTION OF TEST MODES

The EUT (model: WCBN4507R) had been tested under operating condition.

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

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

After verification, all tests were carried out with the worst case test modes as shown below except radiated spurious emission below 1GHz, 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.

IEEE 802.11ac VHT 80 MHz Channel for 5210MHz:
Channel Low(5210MHz) with 29.3Mbps 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.

IEEE 802.11ac VHT 80 MHz for 5290MHz:

Channel Low(5290MHz) with 29.3Mbps data rate were chosen for full testing.

UNII Band III:

IEEE 802.11a for 5500 ~ 5720MHz:
Channel Low (5500MHz), Channel Mid (5580MHz) and Channel High (5720MHz) with 6Mbps data rate were chosen for full testing.

IEEE 802.11n HT 20 MHz for 5500 ~ 5720MHz:
Channel Low (5500MHz), Channel Mid (5580MHz) and Channel High (5720MHz) with 6.5Mbps data rate were chosen for full testing.

IEEE 802.11n HT 40 MHz for 5510 ~ 5710MHz:
Channel Low (5510MHz), Channel Mid (5550MHz) and Channel High (5710MHz) with 13.5Mbps data rate were chosen for full testing.

IEEE 802.11ac VHT 80 MHz for 5530 ~ 5690MHz:
Channel Low (5530MHz) and Channel High (5690MHz) with 29.3Mbps 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 (Y axis) and the worst case was recorded.

4. INSTRUMENT CALIBRATION

4.1 MEASURING INSTRUMENT CALIBRATION

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

4.2 MEASUREMENT EQUIPMENT USED

Equipment Used for Emissions Measurement

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

Conducted Emissions Test Site				
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
Spectrum Analyzer	Agilent	E4446A	US42510252	11/23/2015
Thermostatic/Humidity Chamber	TAICHY	MHG-150LF	930619	10/07/2015
AC Power Source	EXTECH	6205	1140845	N.C.R
DC Power Supply	ABM	8301HD	D011531	N.C.R
Power Meter	Anritsu	ML2495A	1012009	07/07/2016
Power Sensor	Anritsu	MA2411A	0917072	07/07/2016
Spectrum Analyzer	ROHDE&SCHWARZ	FSV40	101073	07/19/2016

Wugu 966 Chamber A				
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
Spectrum Analyzer	Agilent	E4446A	US42510268	01/25/2016
EMI Test Receiver	R&S	ESCI	100064	06/03/2016
Bilog Antenna	Sunol Sciences	JB3	A030105	08/05/2016
Horn Antenna	EMCO	3117	00055165	01/26/2016
Horn Antenna	EMCO	3116	26370	12/25/2015
Turn Table	CCS	CC-T-1F	N/A	N.C.R
Antenna Tower	CCS	CC-A-1F	N/A	N.C.R
Controller	CCS	CC-C-1F	N/A	N.C.R
Pre-Amplifier	MITEQ	1652-3000	1490939	08/09/2016
Pre-Amplifier	EMC	EMC 012635	980151	06/04/2016
Pre-Amplifier	MITEQ	AMF-6F-260400-40-8P	985646	12/25/2015
Coaxial Cable	Huber+Suhner	102	29212/2	12/25/2015
Coaxial Cable	Huber+Suhner	102	29406/2	12/25/2015
Test S/W	EZ-EMC (CCS-3A1RE)			

4.3 MEASUREMENT UNCERTAINTY

PARAMETER	UNCERTAINTY
Powerline Conducted Emission	N/A
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

5.1 FACILITIES

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

☐ No.199, Chunghsen Road, Hsintien City, Taipei Hsien, Taiwan, R.O.C.
Tel: 886-2-2217-0894 / Fax: 886-2-2217-1029

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

☐ No.81-1, Lane 210, Bade 2nd Rd., 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 C63.10: 2013 and CISPR Publication 22.

5.2 EQUIPMENT

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

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

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

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

5.3 LABORATORY 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.

5.4 TABLE OF ACCREDITATIONS AND LISTINGS

Country	Agency	Scope of Accreditation	Logo
USA	FCC	3M Semi Anechoic Chamber (FCC MRA: TW1039) to perform FCC Part 15 measurements	FCC MRA: TW1039
Taiwan	TAF	LP0002, RTTE01, FCC Method-47 CFR Part 15 Subpart C, D, E, RSS-247, RSS-310 IDA TS SRD, AS/NZS 4268, AS/NZS 4771, TS 12.1 & 12,2, ETSI EN 300 440-1, ETSI EN 300 440-2, ETSI EN 300 328, ETSI EN 300 220-1, ETSI EN 300 220-2, ETSI EN 301 893, ETSI EN 301 489-1/3/7/17 FCC OET Bulletin 65 + Supplement C, EN 50360, EN 50361, EN 50371, RSS 102, EN 50383, EN 50385, EN 50392, IEC 62209, CNS 14958-1, CNS 14959 FCC Method –47 CFR Part 15 Subpart B IEC / EN 61000-3-2, IEC / EN 61000-3-3, 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 IC 2324G-1 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	ASUS	M5200AE	5BN0AG019631	PD9WM3B2100	N/A	AC I/P: Unshielded, 1.8m with a core DC O/P: Unshielded, 1.8m

Remark:

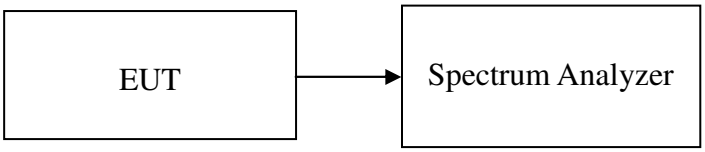
1. *All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.*
2. *Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.*

7. FCC PART 15 REQUIREMENTS & RSS-247 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)	99% Bandwidth (MHz)
36	5180	17.3920
44	5220	17.7634
48	5240	17.5471

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

Channel	Frequency (MHz)	99% Bandwidth (MHz)
36	5180	17.8111
44	5220	17.8560
48	5240	17.8278

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

Channel	Frequency (MHz)	99% Bandwidth (MHz)
36	5180	17.8987
44	5220	17.8597
48	5240	17.8246

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

Channel	Frequency (MHz)	99% Bandwidth (MHz)
38	5190	36.2767
46	5230	36.2606

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

Channel	Frequency (MHz)	99% Bandwidth (MHz)
38	5190	36.1719
46	5230	36.1668

Test mode: IEEE 802.11ac VHT 80 MHz mode / 5210MHz / Chain 0

Channel	Frequency (MHz)	99% Bandwidth (MHz)
42	5210	76.0192

Test mode: IEEE 802.11ac VHT 80 MHz mode / 5210MHz / Chain 1

Channel	Frequency (MHz)	99% Bandwidth (MHz)
42	5210	75.9763

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

Channel	Frequency (MHz)	99% Bandwidth (MHz)
52	5260	17.5551
56	5280	17.7024
64	5320	17.4054

Test mode: IEEE 802.11n HT 20 MHz Channel mode / 5260 ~ 5320MHz / Chain 0

Channel	Frequency (MHz)	99% Bandwidth (MHz)
52	5260	17.9116
56	5280	17.7972
64	5320	17.8402

Test mode: IEEE 802.11n HT 20 MHz Channel mode / 5260 ~ 5320MHz / Chain 1

Channel	Frequency (MHz)	99% Bandwidth (MHz)
52	5260	17.8295
56	5280	17.7876
64	5320	17.7933

Test mode: IEEE 802.11n HT 40 MHz mode / 5270 ~ 5310MHz / Chain 0

Channel	Frequency (MHz)	99% Bandwidth (MHz)
54	5270	36.3174
62	5310	36.2964

Test mode: IEEE 802.11n HT 40 MHz mode / 5270 ~ 5310MHz / Chain 1

Channel	Frequency (MHz)	99% Bandwidth (MHz)
54	5270	36.1674
62	5310	36.1654

Test mode: IEEE 802.11ac VHT 80 MHz mode / 5290MHz / Chain 0

Channel	Frequency (MHz)	99% Bandwidth (MHz)
58	5290	75.7802

Test mode: IEEE 802.11ac VHT 80 MHz mode / 5290MHz / Chain 1

Channel	Frequency (MHz)	99% Bandwidth (MHz)
58	5290	75.7356

Test mode: IEEE 802.11a mode / 5500 ~ 5720MHz

Channel	Frequency (MHz)	99% Bandwidth (MHz)
100	5500	17.3555
116	5580	17.7023
140	5700	17.3371
144	5720	16.8176

Test mode: IEEE 802.11n HT 20 MHz Channel mode / 5500 ~ 5720MHz / Chain 0

Channel	Frequency (MHz)	99% Bandwidth (MHz)
100	5500	17.8539
116	5580	17.8516
140	5700	17.8032
144	5720	17.9882

Test mode: IEEE 802.11n HT 20 MHz Channel mode / 5500 ~ 5720MHz / Chain 1

Channel	Frequency (MHz)	99% Bandwidth (MHz)
100	5500	18.0439
116	5580	17.8993
140	5700	17.7901
144	5720	17.7488

Test mode: IEEE 802.11n HT 40 MHz mode / 5510 ~ 5710MHz / Chain 0

Channel	Frequency (MHz)	99% Bandwidth (MHz)
102	5510	36.1069
118	5590	36.9233
134	5670	36.4020
142	5710	36.2013

Test mode: IEEE 802.11n HT 40 MHz mode / 5510 ~ 5710MHz / Chain 1

Channel	Frequency (MHz)	99% Bandwidth (MHz)
102	5510	36.3751
118	5590	36.3156
134	5670	36.2256
142	5710	36.1712

Test mode: IEEE 802.11ac VHT 80 MHz mode / 5530 ~ 5690MHz / Chain 0

Channel	Frequency (MHz)	99% Bandwidth (MHz)
106	5530	75.8542
122	5610	76.8355
138	5690	75.7467

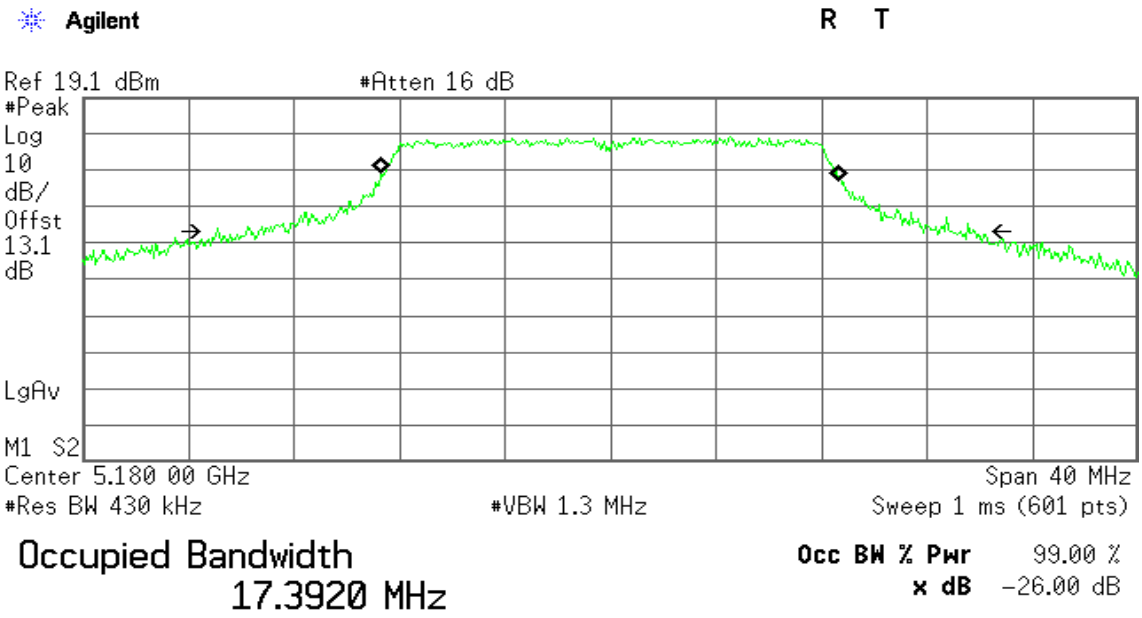
Test mode: IEEE 802.11ac VHT 80 MHz mode / 5530 ~ 5690MHz / Chain 1

Channel	Frequency (MHz)	99% Bandwidth (MHz)
106	5530	76.0491
122	5610	78.1100
138	5690	75.7323

Test Plot

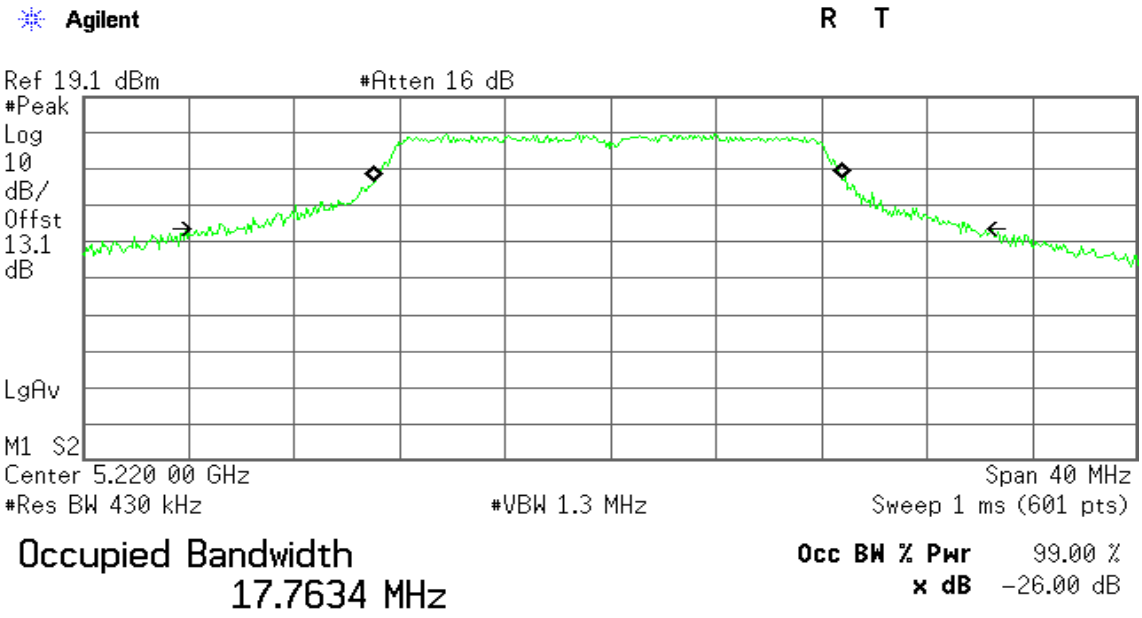
IEEE 802.11a mode / 5180 ~ 5240MHz

99% Bandwidth (5180 MHz)



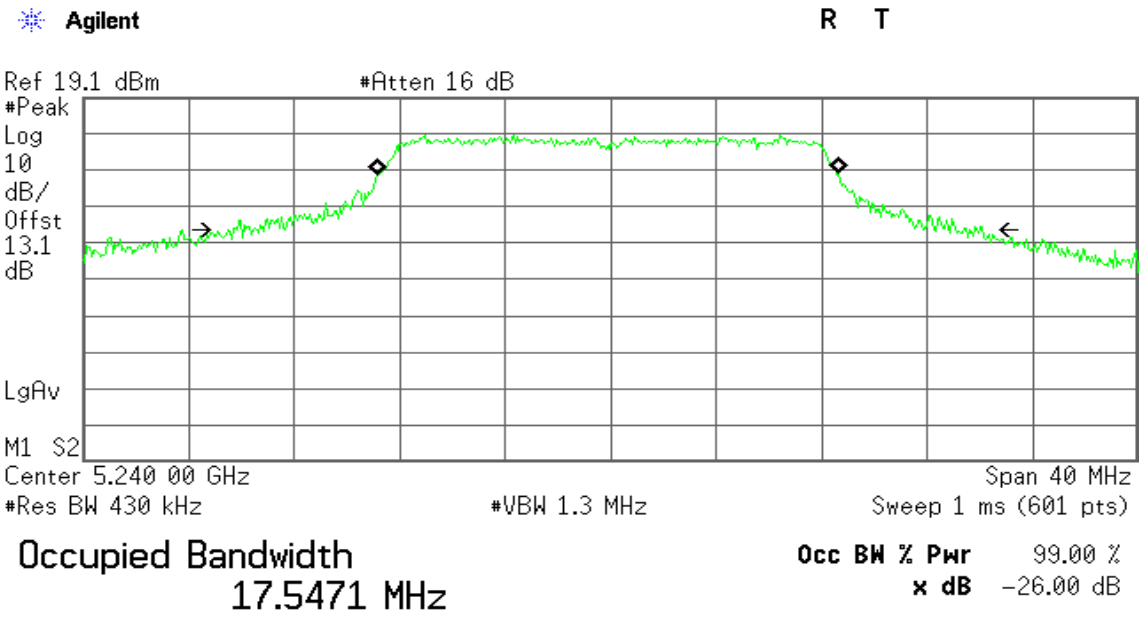
Transmit Freq Error -20.520 kHz
x dB Bandwidth 28.705 MHz

99% Bandwidth (5220 MHz)



Transmit Freq Error -94.538 kHz
x dB Bandwidth 28.837 MHz

99% Bandwidth (5240 MHz)



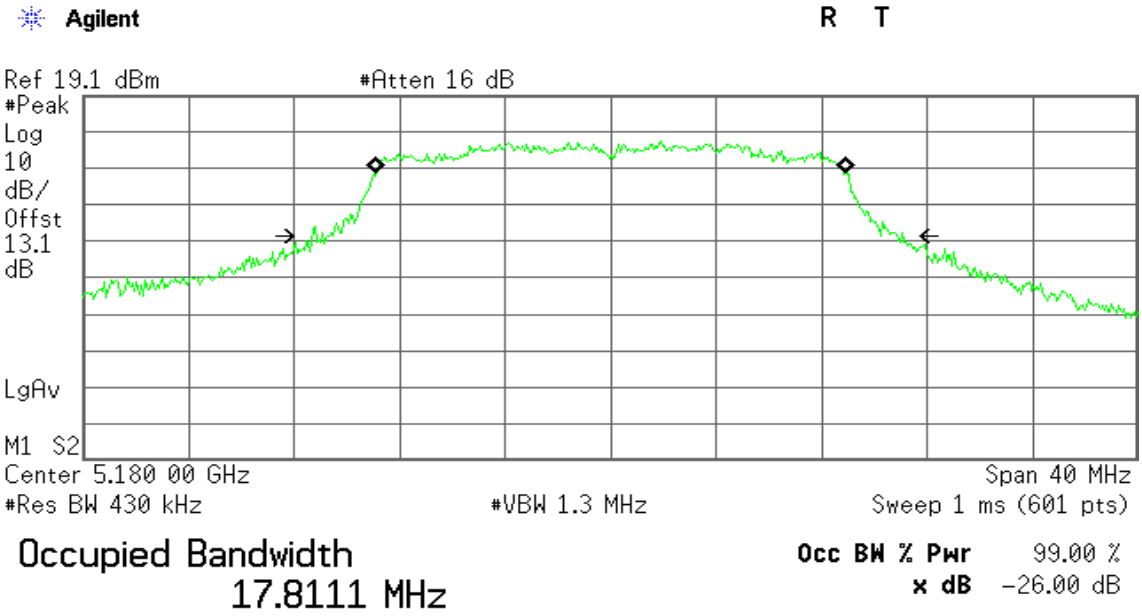
Occupied Bandwidth
17.5471 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error -96.462 kHz
x dB Bandwidth 28.560 MHz

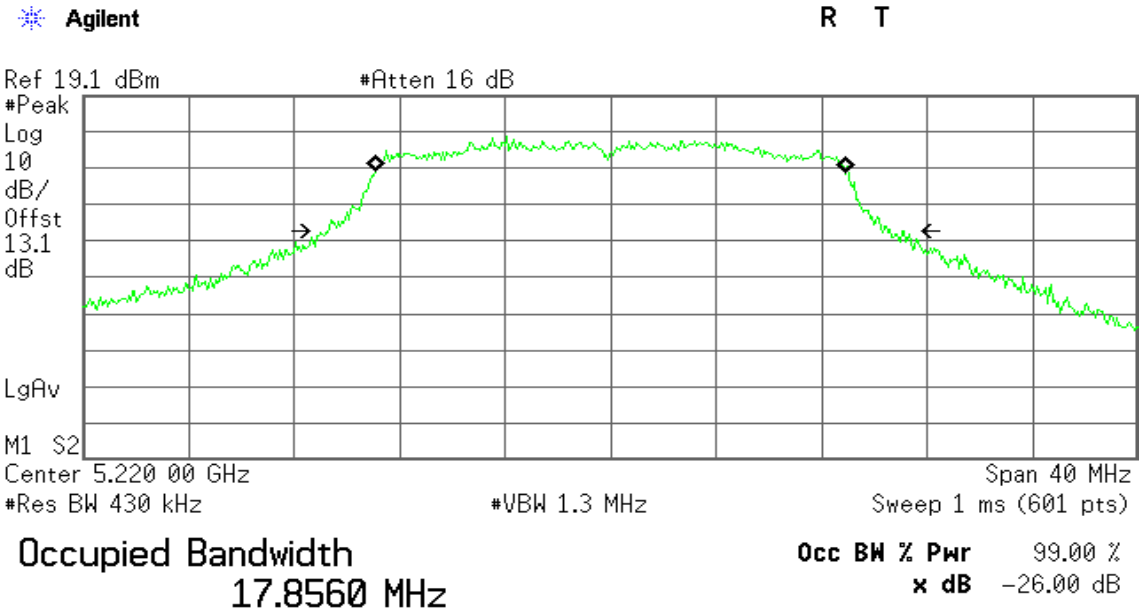
IEEE 802.11n HT 20 MHz Channel mode / 5180 ~ 5240MHz / Chain 0

99% Bandwidth (5180 MHz)



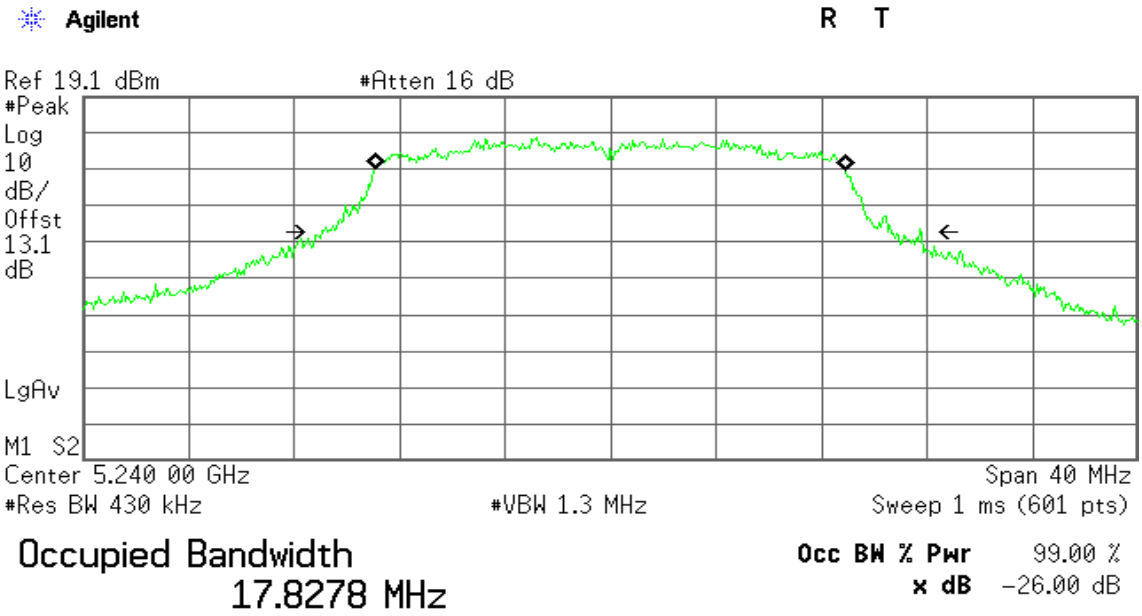
Transmit Freq Error -5.024 kHz
x dB Bandwidth 22.411 MHz

99% Bandwidth (5220 MHz)



Transmit Freq Error 2.696 kHz
x dB Bandwidth 21.855 MHz

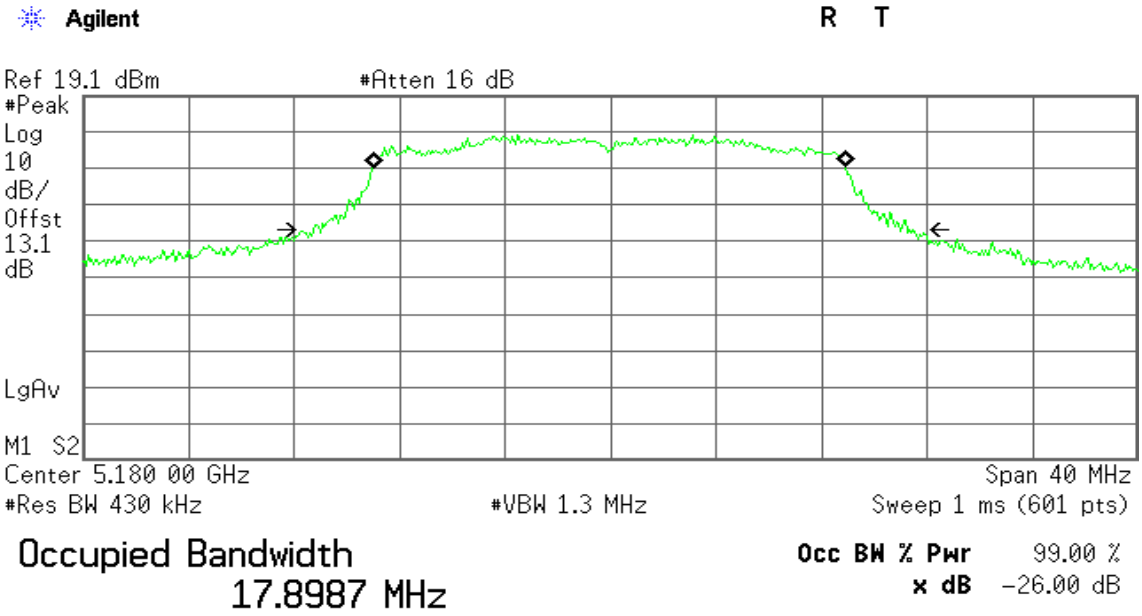
99% Bandwidth (5240 MHz)



Transmit Freq Error	-4.381 kHz
x dB Bandwidth	22.727 MHz

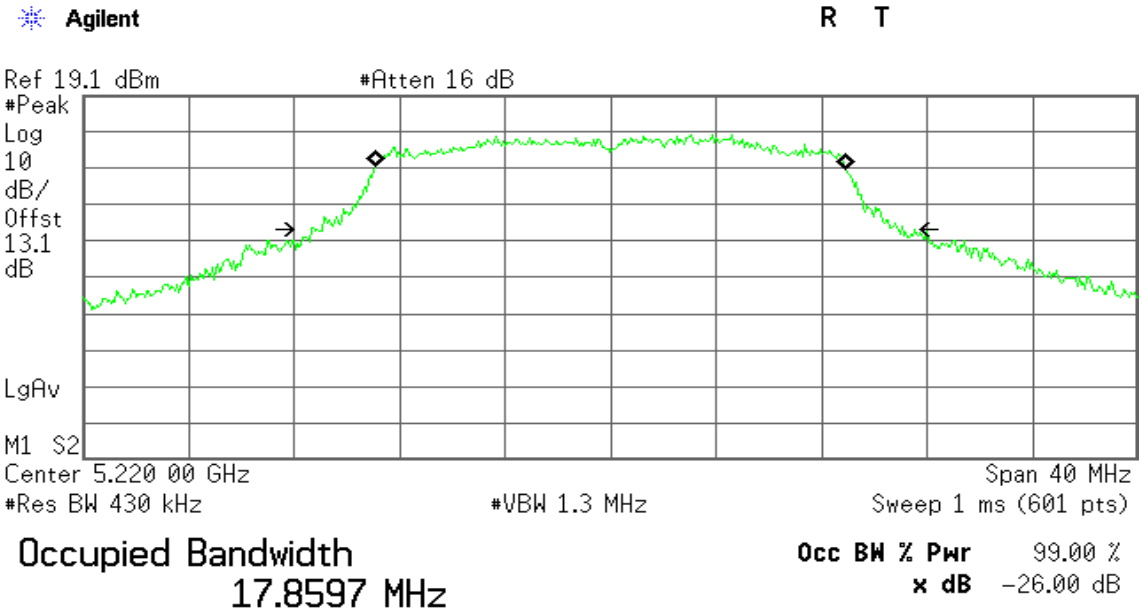
IEEE 802.11n HT 20 MHz Channel mode / 5180 ~ 5240MHz / Chain 1

99% Bandwidth (5180 MHz)



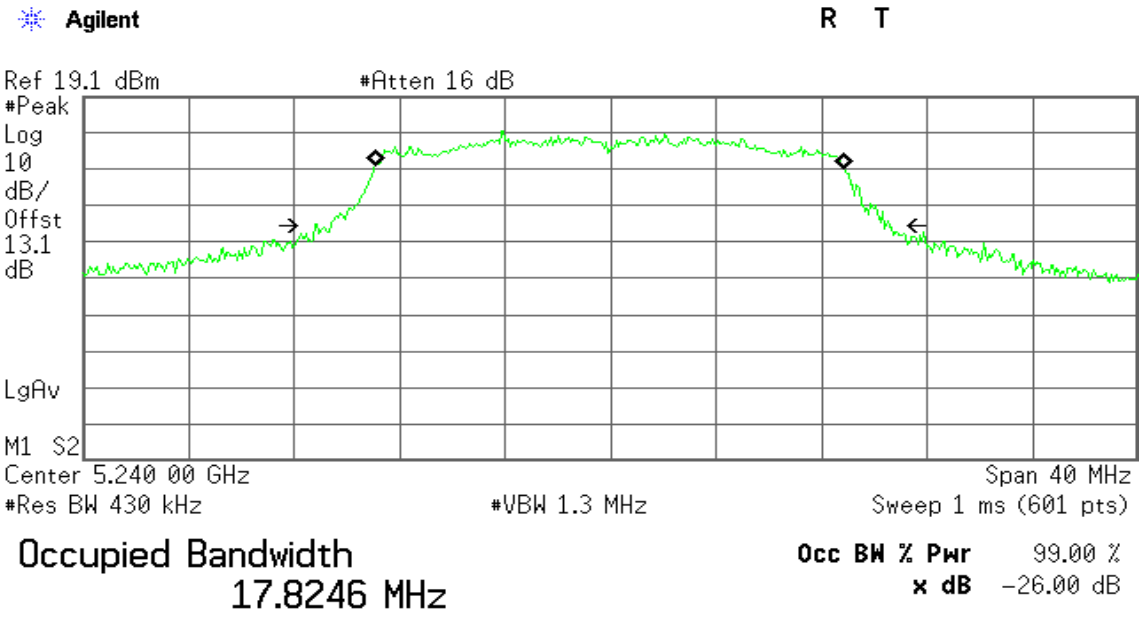
Transmit Freq Error −31.228 kHz
x dB Bandwidth 22.740 MHz

99% Bandwidth (5220 MHz)



Transmit Freq Error 4.428 kHz
x dB Bandwidth 22.439 MHz

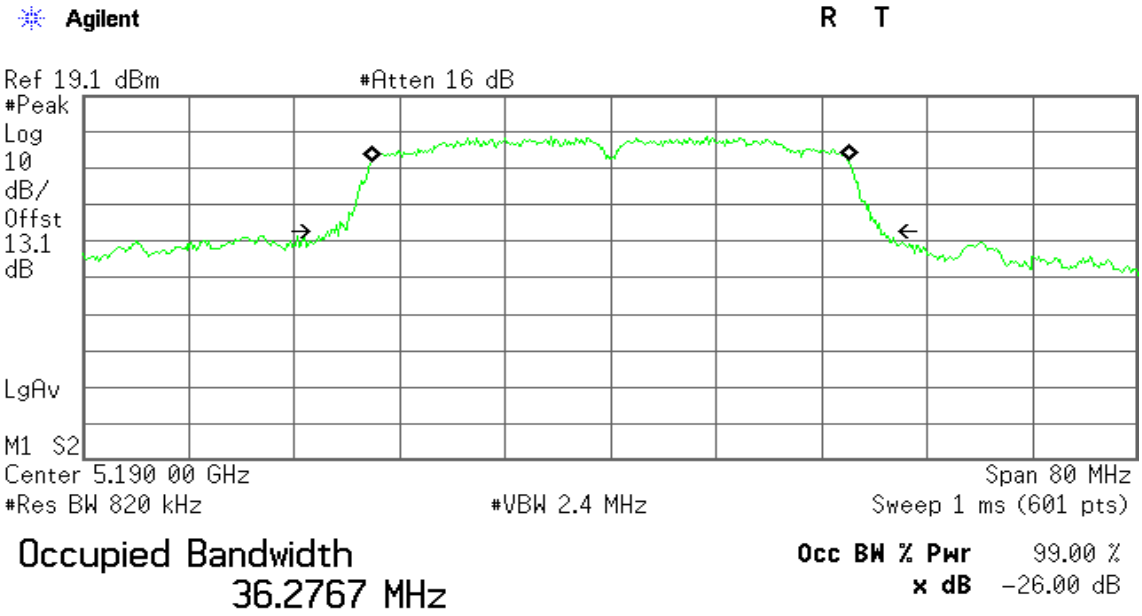
99% Bandwidth (5240 MHz)



Transmit Freq Error	-19.207 kHz
x dB Bandwidth	21.784 MHz

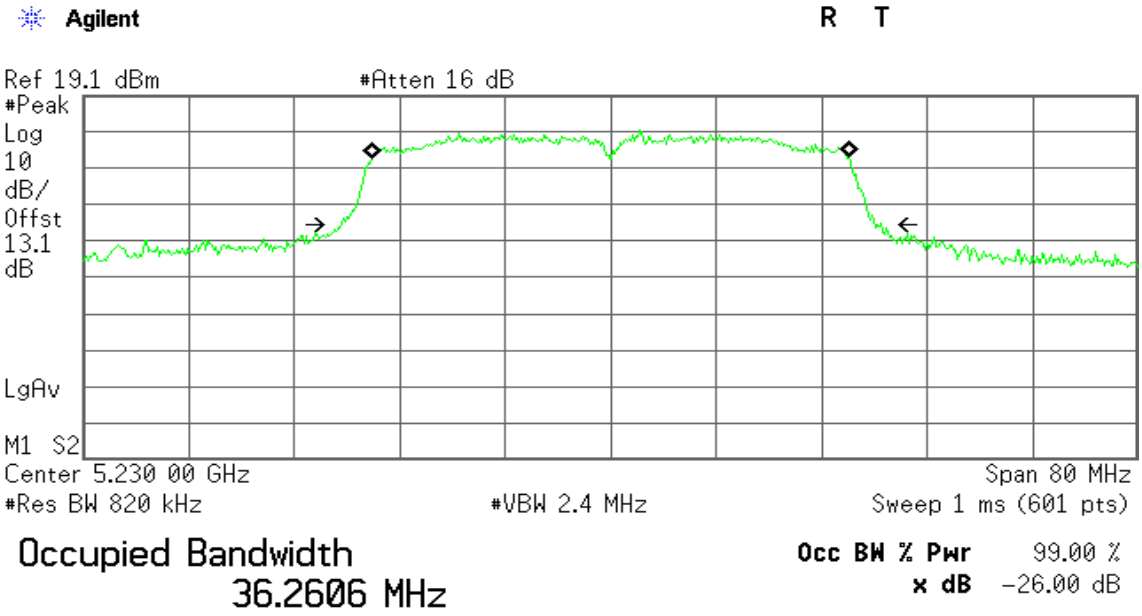
IEEE 802.11n HT 40 MHz mode / 5190 ~ 5230MHz / Chain 0

99% Bandwidth (5190 MHz)



Transmit Freq Error -59.486 kHz
x dB Bandwidth 42.017 MHz

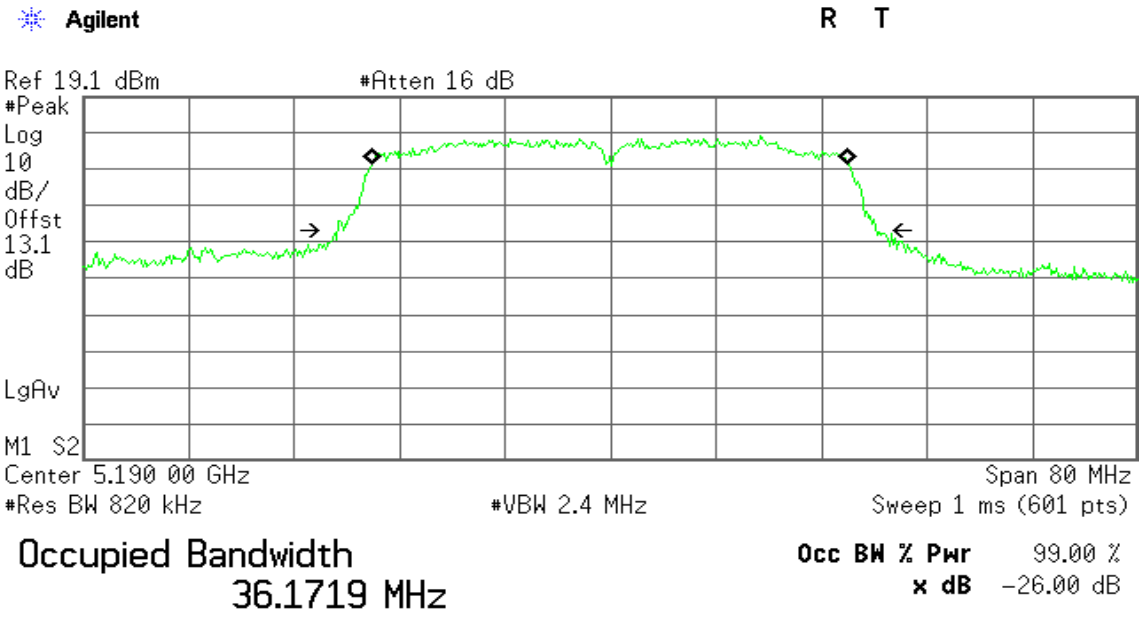
99% Bandwidth (5230 MHz)



Transmit Freq Error -44.475 kHz
x dB Bandwidth 40.995 MHz

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

99% Bandwidth (5190 MHz)

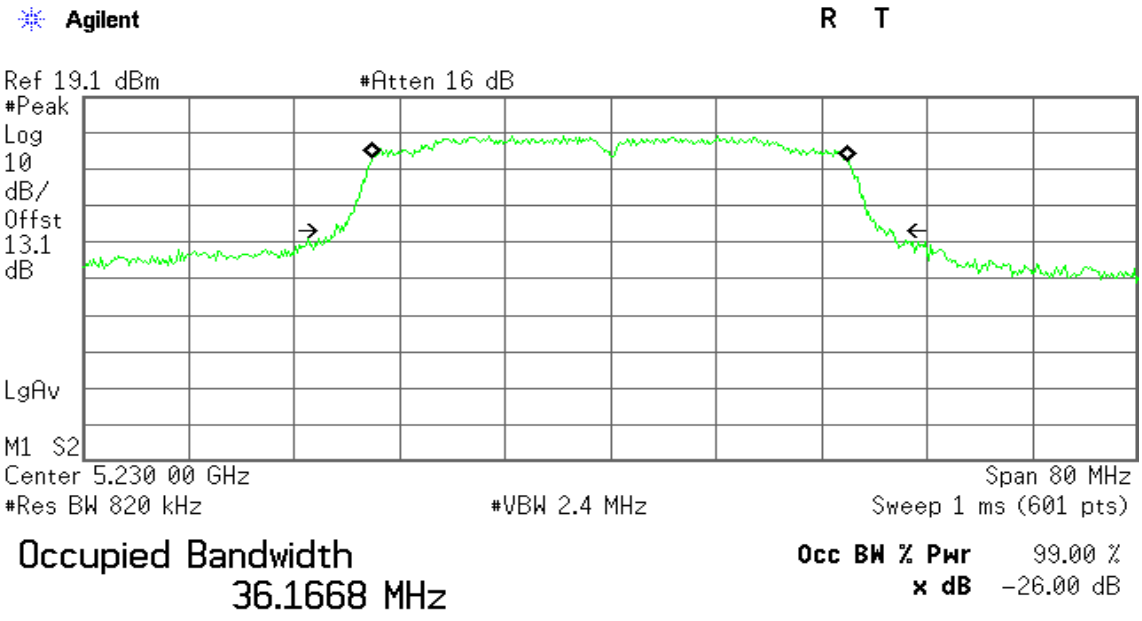


Occupied Bandwidth
36.1719 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error -43.597 kHz
x dB Bandwidth 40.929 MHz

99% Bandwidth (5230 MHz)



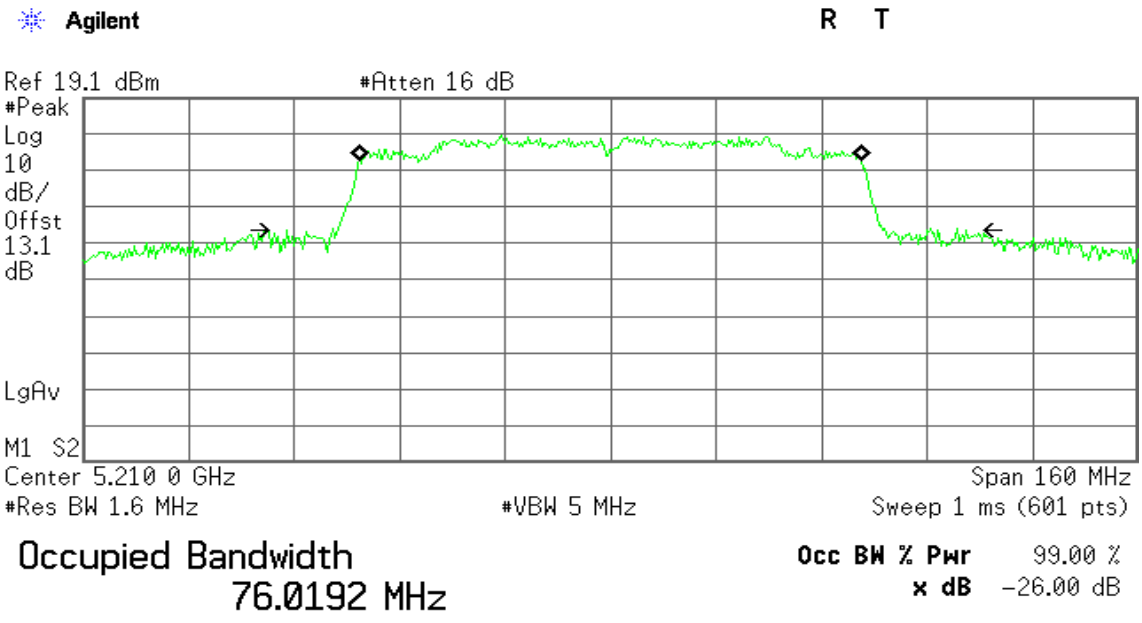
Occupied Bandwidth
36.1668 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error -42.012 kHz
x dB Bandwidth 42.149 MHz

IEEE 802.11ac VHT 80 MHz mode / 5210MHz / Chain 0

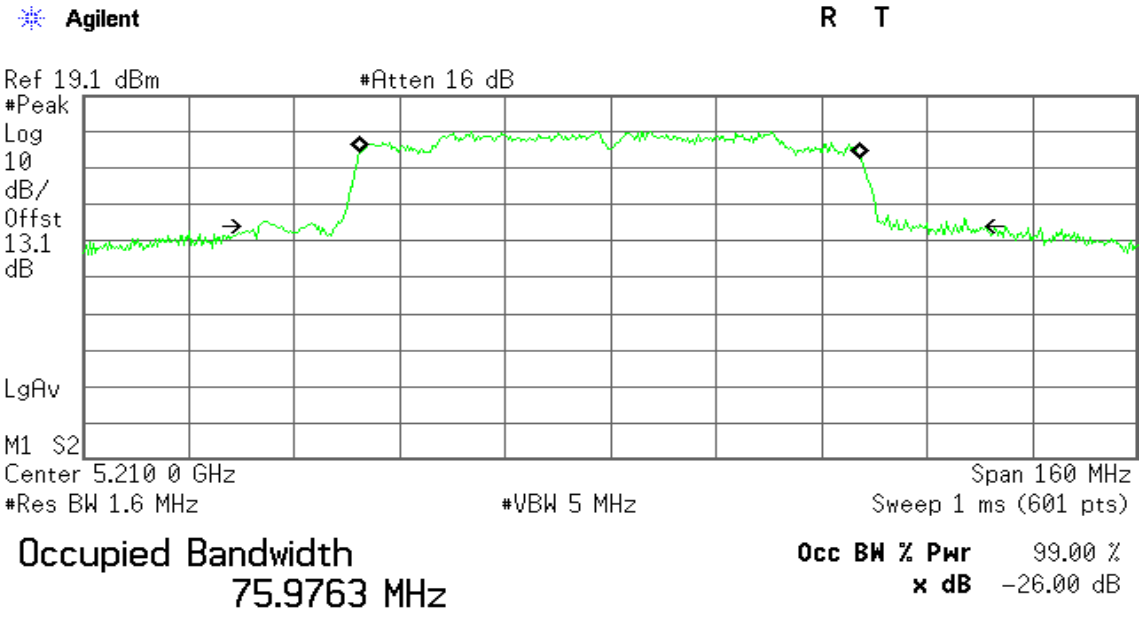
99% Bandwidth (5210 MHz)



Transmit Freq Error	9.387 kHz
x dB Bandwidth	102.960 MHz

IEEE 802.11ac VHT 80 MHz mode / 5210MHz / Chain 1

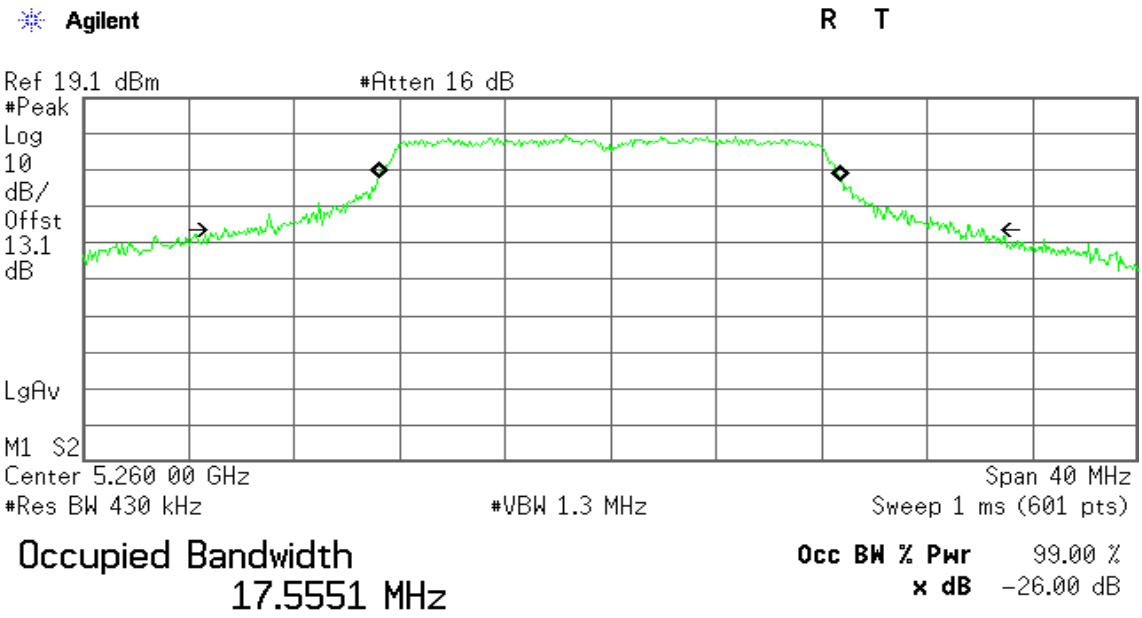
99% Bandwidth (5210 MHz)



Transmit Freq Error	-83.996 kHz
x dB Bandwidth	107.273 MHz

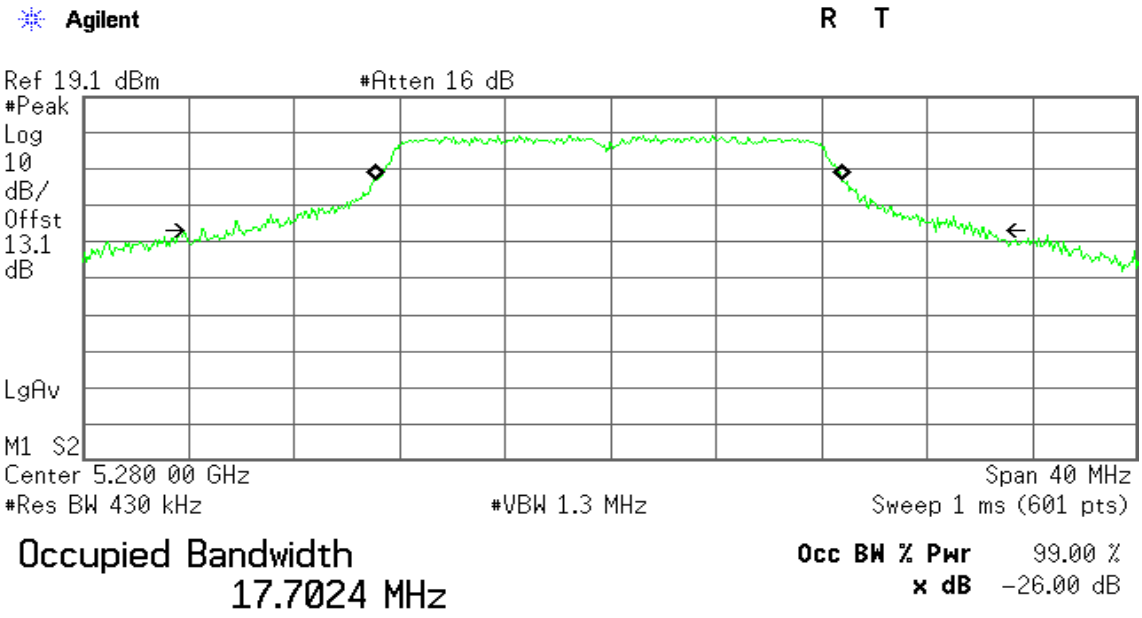
IEEE 802.11a mode / 5260 ~ 5320MHz

99% Bandwidth (5260 MHz)



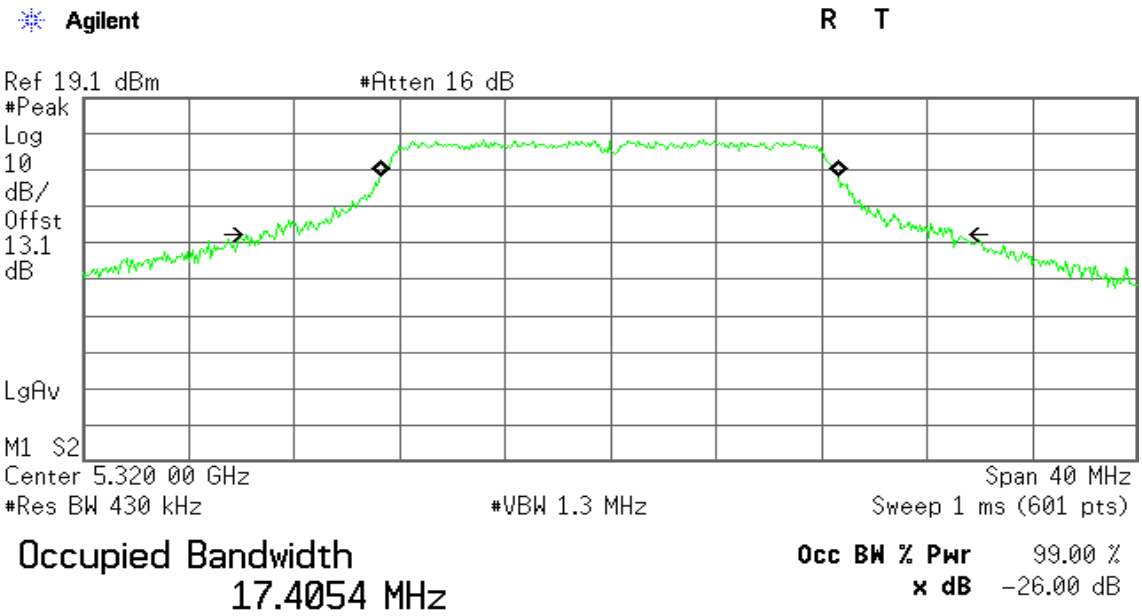
Transmit Freq Error -52.429 kHz
x dB Bandwidth 28.751 MHz

99% Bandwidth (5280 MHz)



Transmit Freq Error -52.445 kHz
x dB Bandwidth 29.820 MHz

99% Bandwidth (5320 MHz)



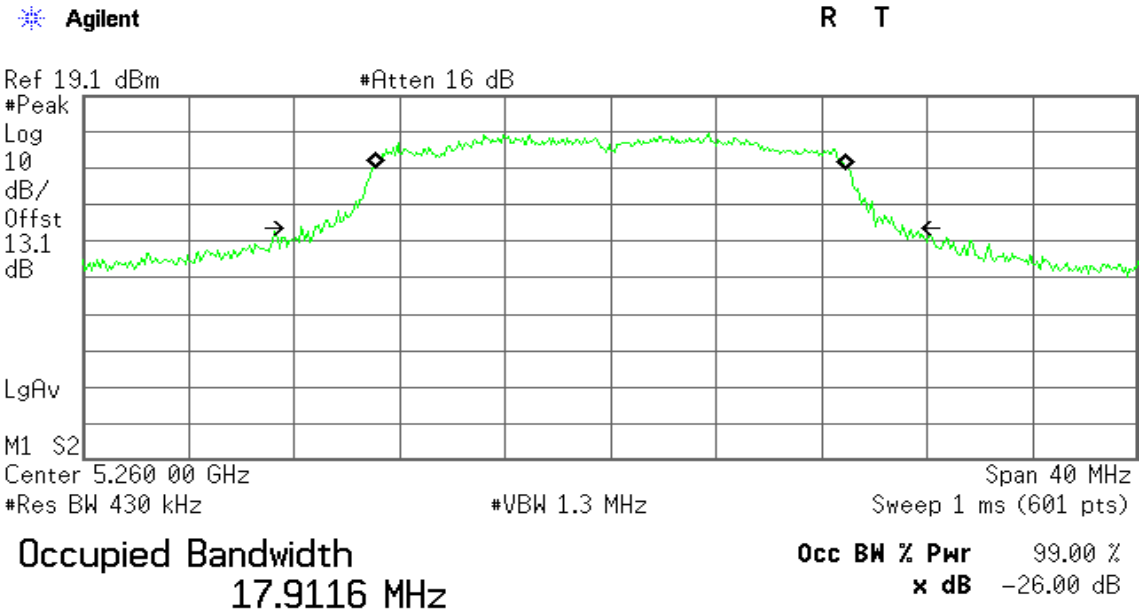
Occupied Bandwidth
17.4054 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error -50.249 kHz
x dB Bandwidth 26.233 MHz

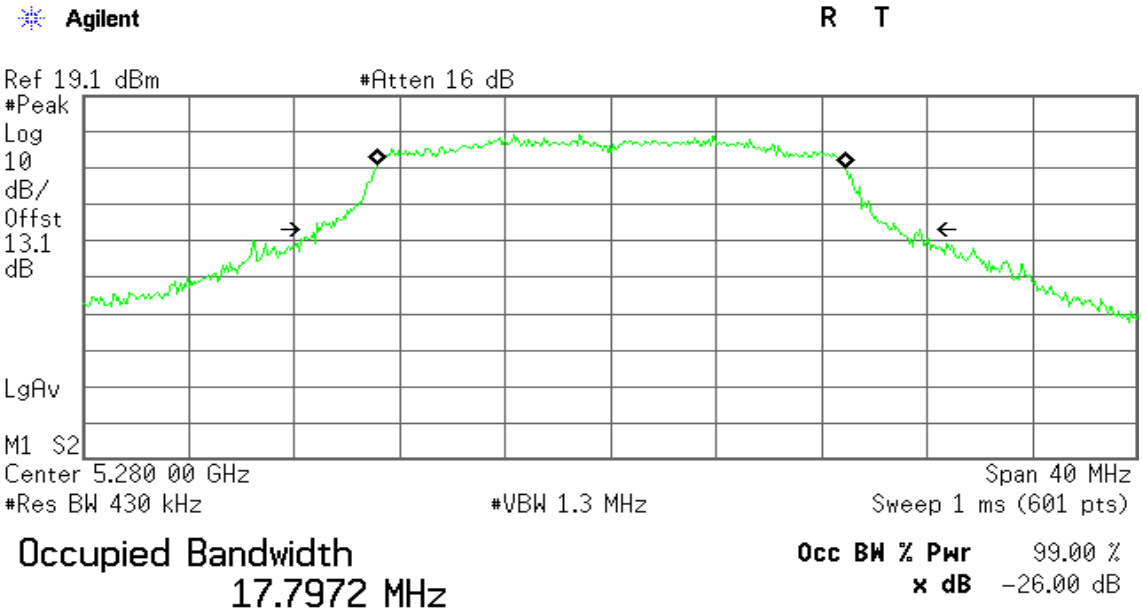
IEEE 802.11n HT 20 MHz Channel mode / 5260 ~ 5320MHz / Chain 0

99% Bandwidth (5260 MHz)



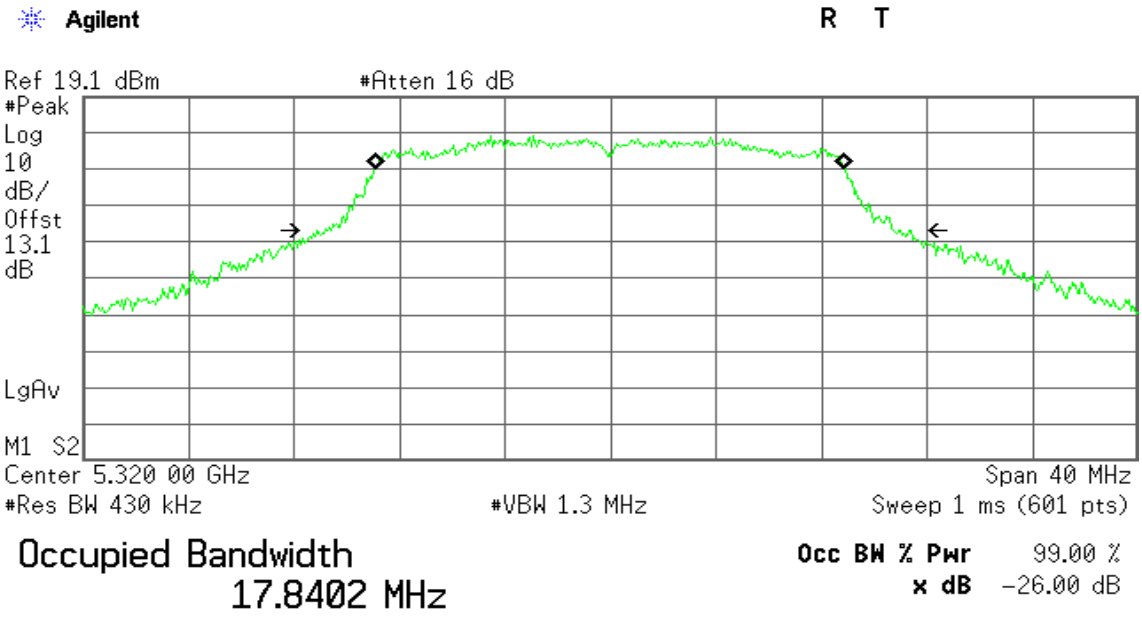
Transmit Freq Error 2.328 kHz
x dB Bandwidth 22.843 MHz

99% Bandwidth (5280 MHz)



Transmit Freq Error 12.629 kHz
x dB Bandwidth 22.898 MHz

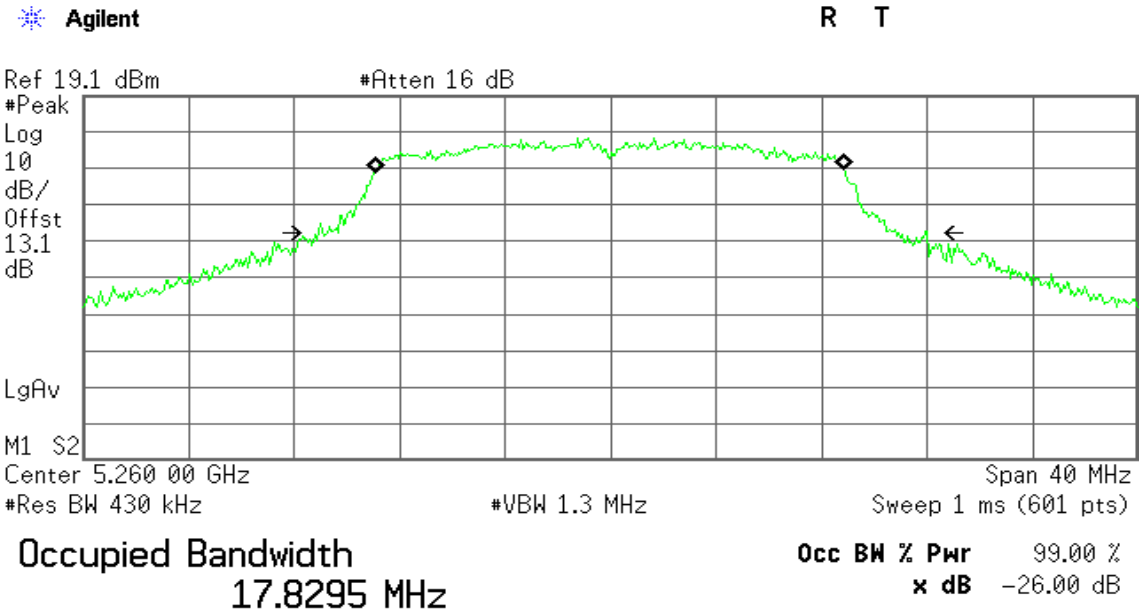
99% Bandwidth (5320 MHz)



Transmit Freq Error	-38.653 kHz
x dB Bandwidth	22.542 MHz

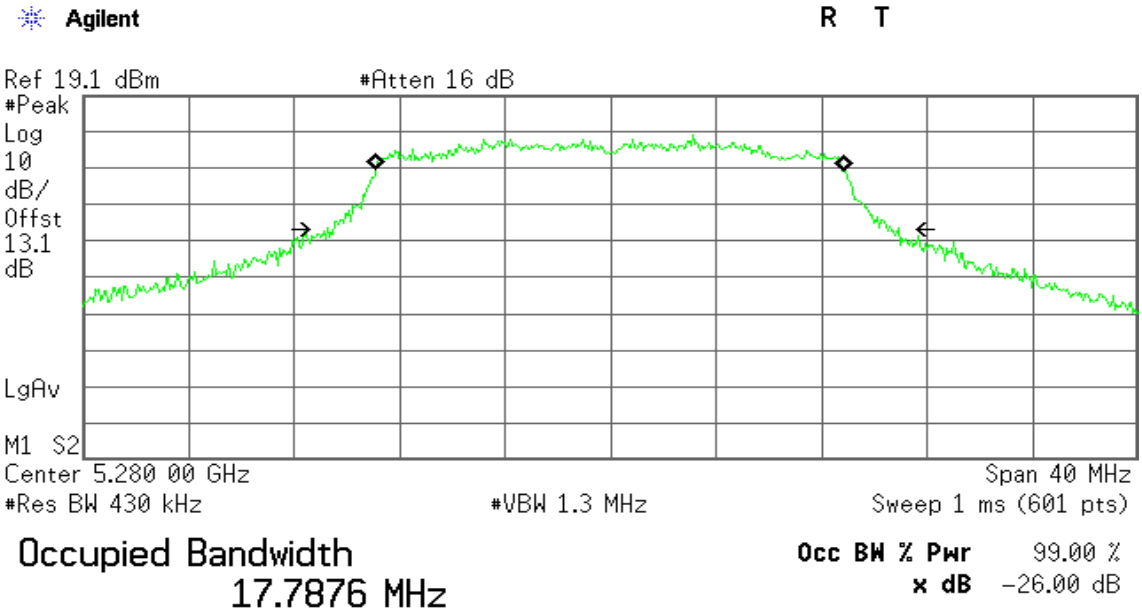
IEEE 802.11n HT 20 MHz Channel mode / 5260 ~ 5320MHz / Chain 1

99% Bandwidth (5260 MHz)



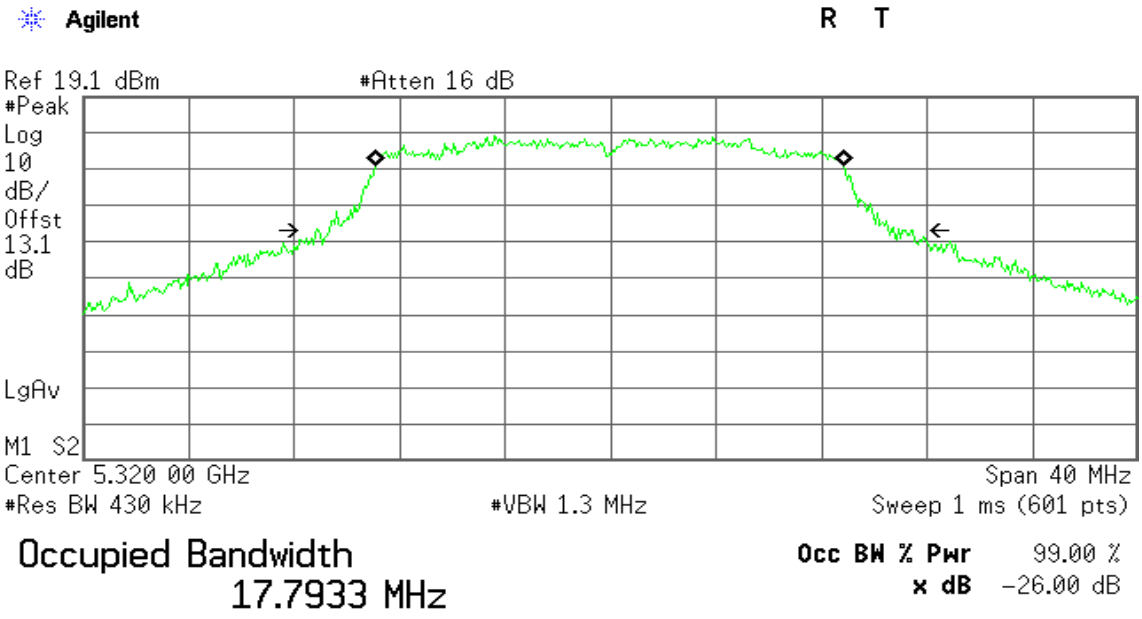
Transmit Freq Error -21.760 kHz
x dB Bandwidth 23.092 MHz

99% Bandwidth (5280 MHz)



Transmit Freq Error -17.329 kHz
x dB Bandwidth 21.692 MHz

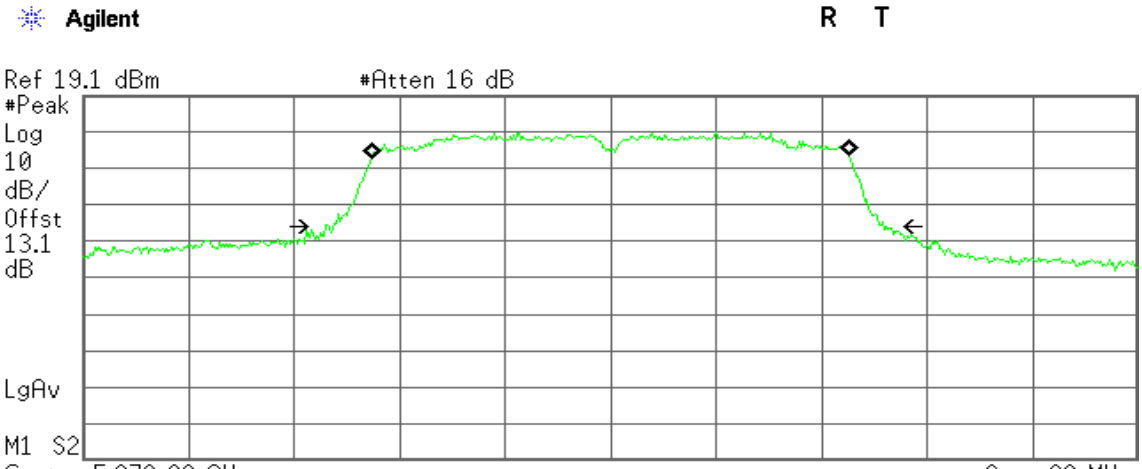
99% Bandwidth (5320 MHz)



Transmit Freq Error	-21.225 kHz
x dB Bandwidth	22.645 MHz

IEEE 802.11n HT 40 MHz mode / 5270 ~ 5310MHz / Chain 0

99% Bandwidth (5270 MHz)

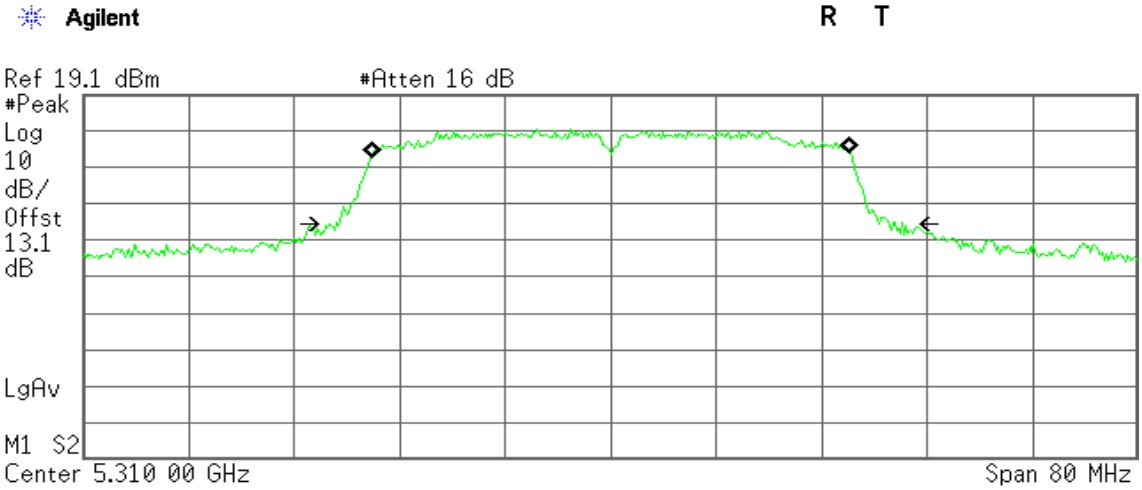


Occupied Bandwidth
36.3174 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error -25.010 kHz
x dB Bandwidth 42.621 MHz

99% Bandwidth (5310 MHz)



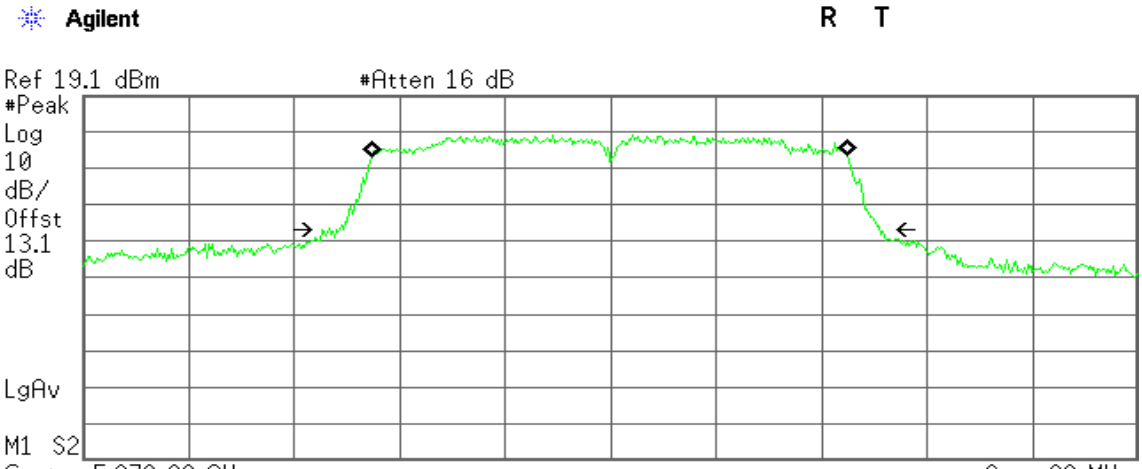
Occupied Bandwidth
36.2964 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error 22.484 kHz
x dB Bandwidth 43.010 MHz

IEEE 802.11n HT 40 MHz mode / 5270 ~ 5310MHz / Chain 1

99% Bandwidth (5270 MHz)

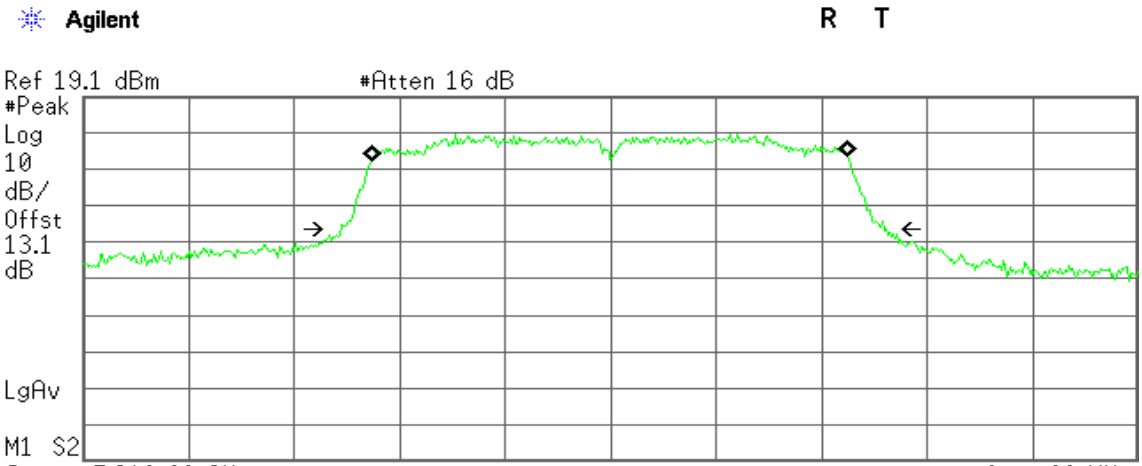


Occupied Bandwidth
36.1674 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error -61.410 kHz
x dB Bandwidth 41.855 MHz

99% Bandwidth (5310 MHz)



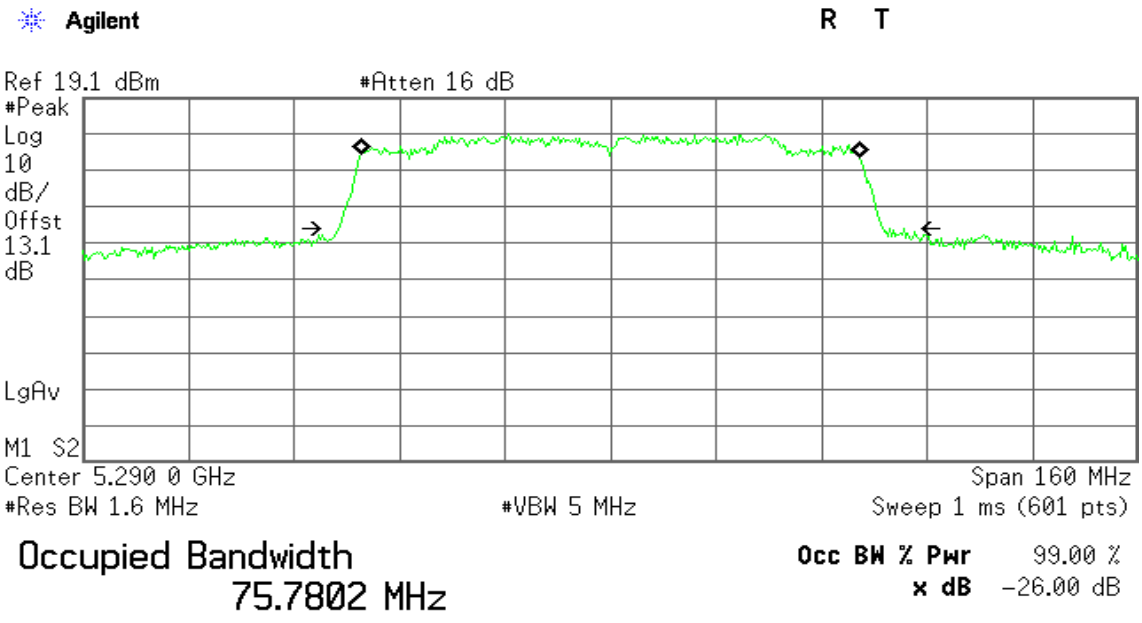
Occupied Bandwidth
36.1654 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error -35.653 kHz
x dB Bandwidth 41.261 MHz

IEEE 802.11ac VHT 80 MHz mode / 5290MHz / Chain 0

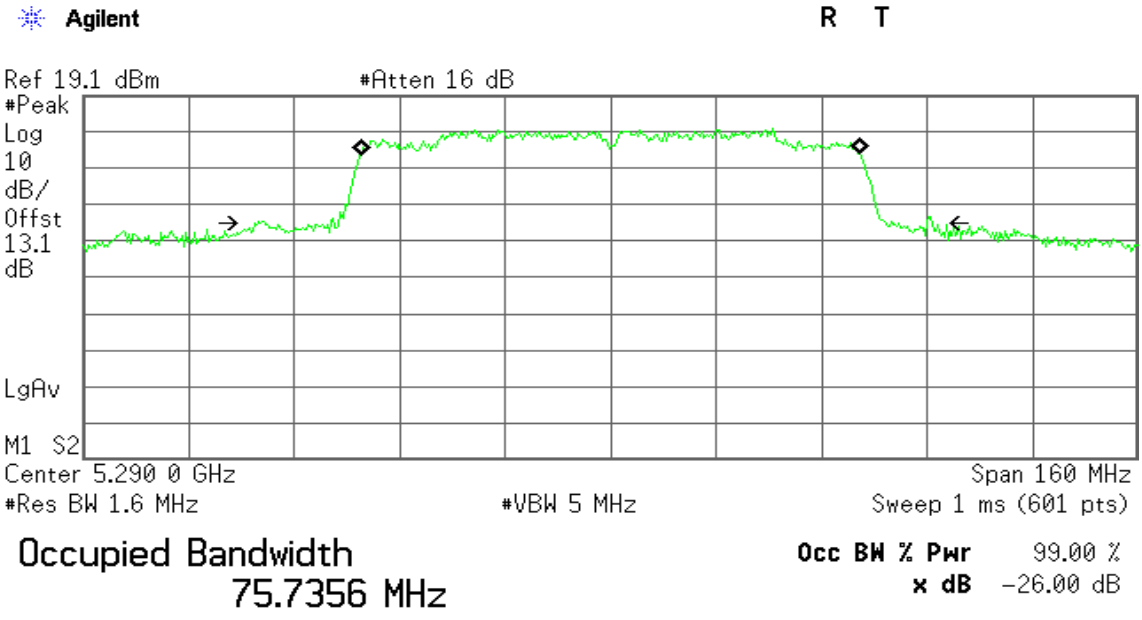
99% Bandwidth (5290 MHz)



Transmit Freq Error -43.728 kHz
x dB Bandwidth 85.874 MHz

IEEE 802.11ac VHT 80 MHz mode / 5290MHz / Chain 1

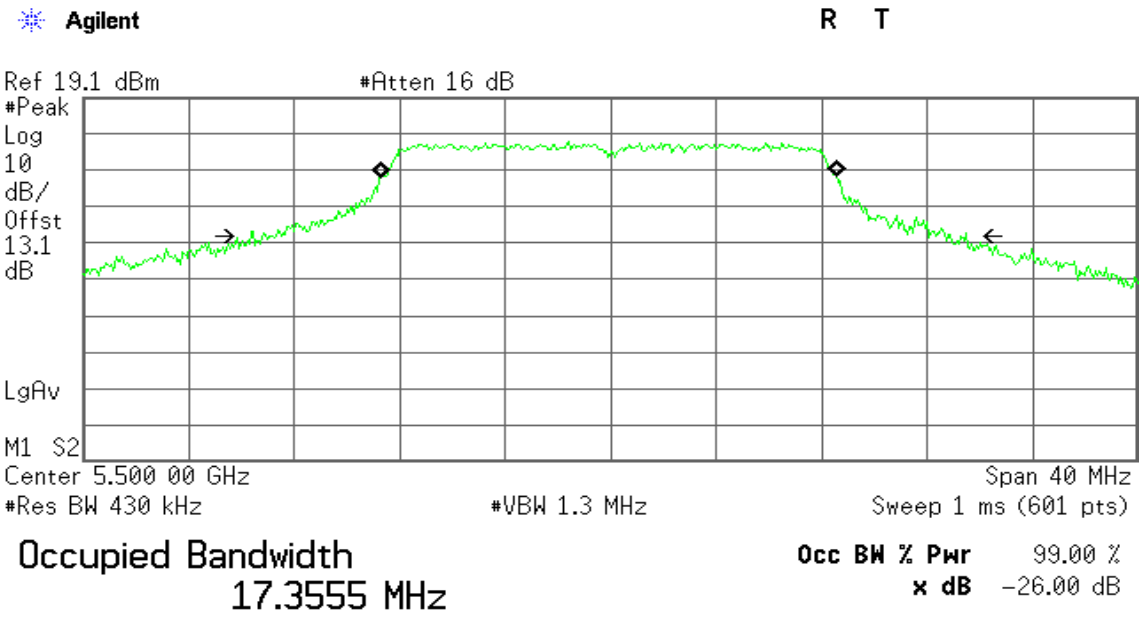
99% Bandwidth (5290 MHz)



Transmit Freq Error -4.173 kHz
x dB Bandwidth 102.643 MHz

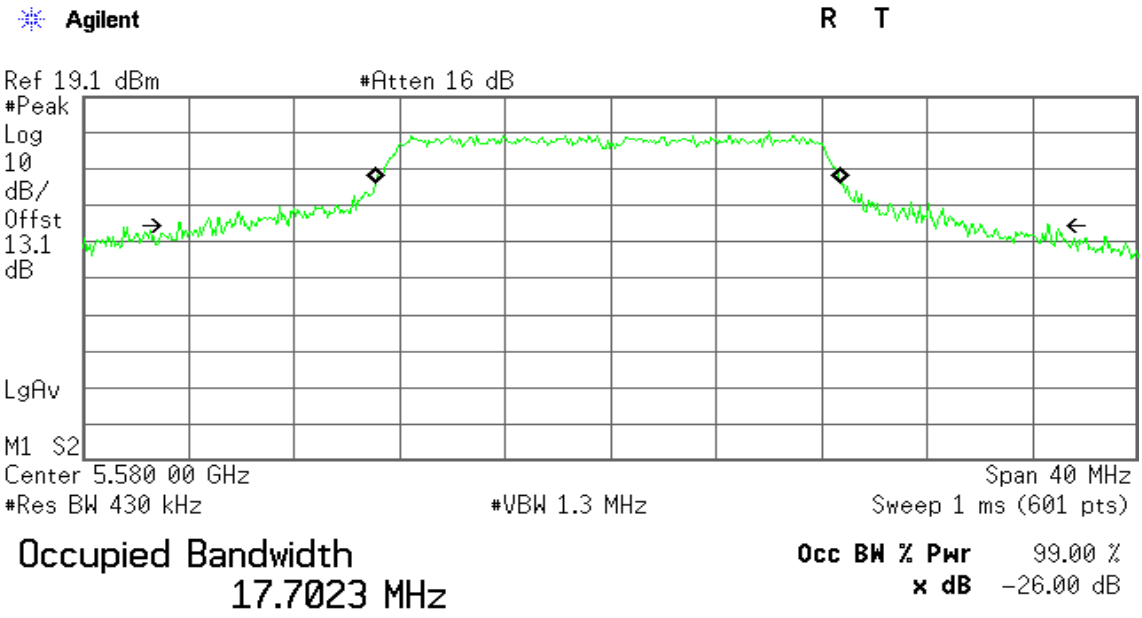
Test mode: IEEE 802.11a mode / 5500 ~ 5720MHz

99% Bandwidth (5500 MHz)



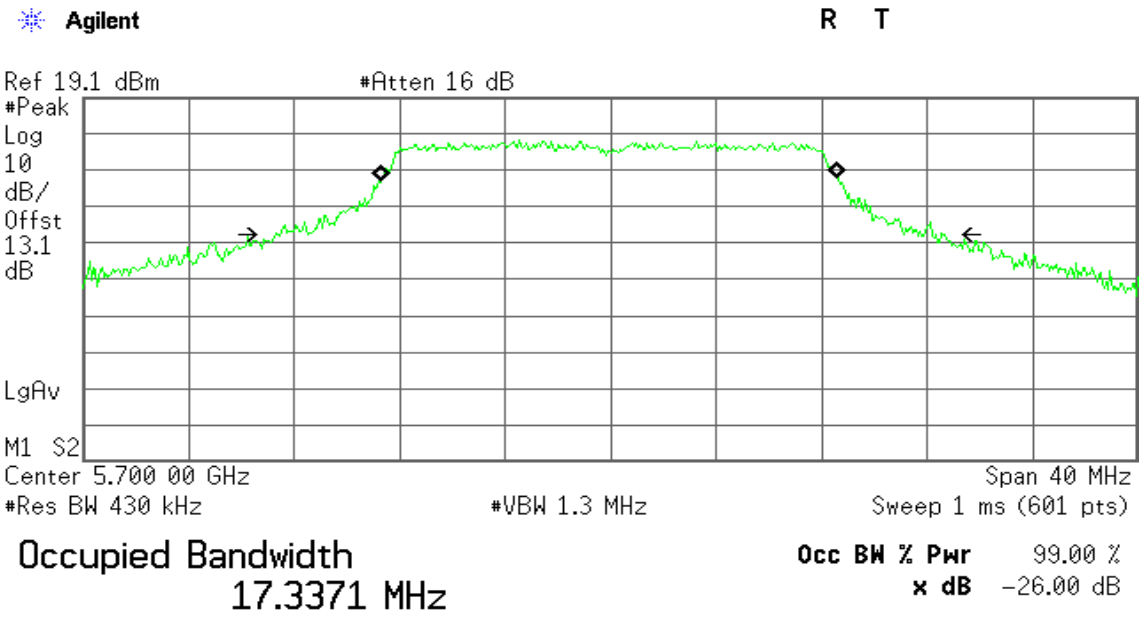
Transmit Freq Error -81.345 kHz
x dB Bandwidth 27.121 MHz

99% Bandwidth (5580 MHz)



Transmit Freq Error -91.845 kHz
x dB Bandwidth 33.066 MHz

99% Bandwidth (5700 MHz)

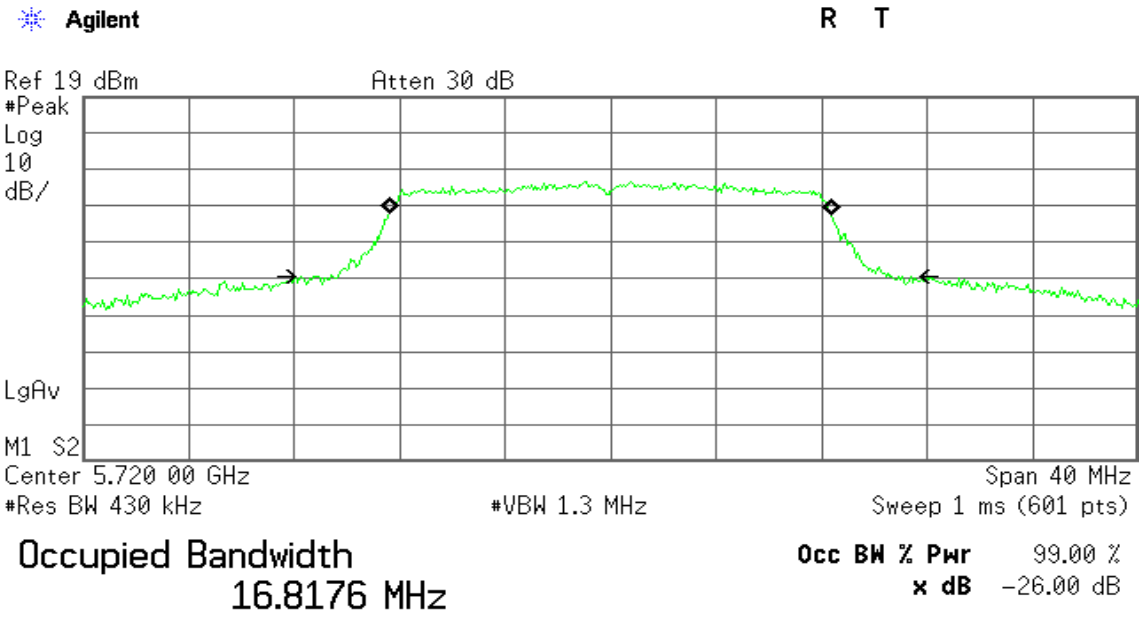


Occupied Bandwidth
17.3371 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error -39.654 kHz
x dB Bandwidth 25.375 MHz

99% Bandwidth (5720 MHz)



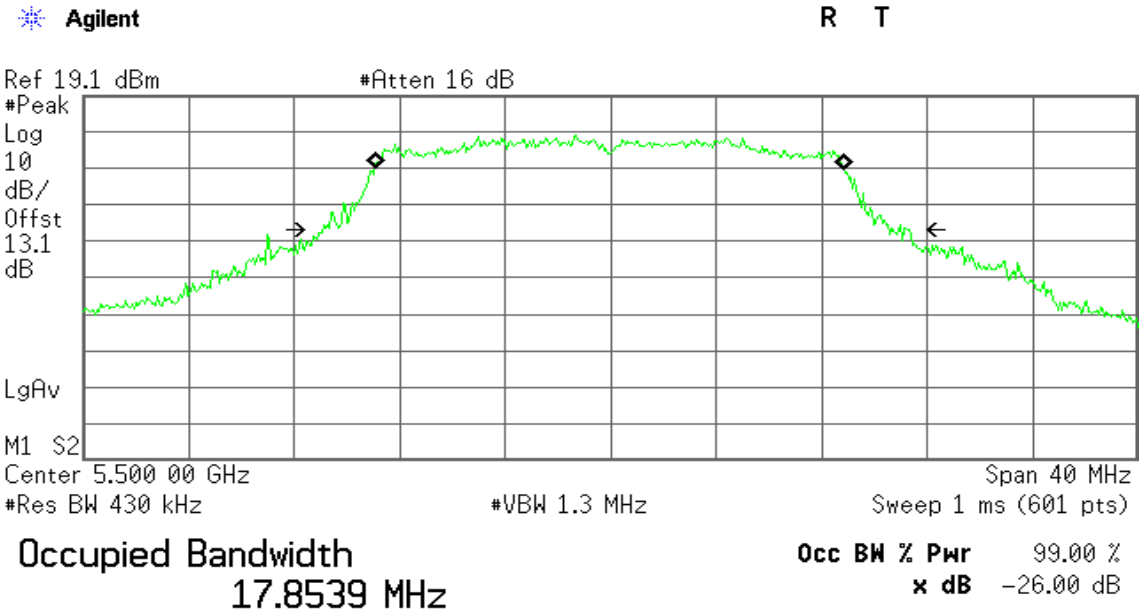
Occupied Bandwidth
16.8176 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error -13.574 kHz
x dB Bandwidth 22.346 MHz

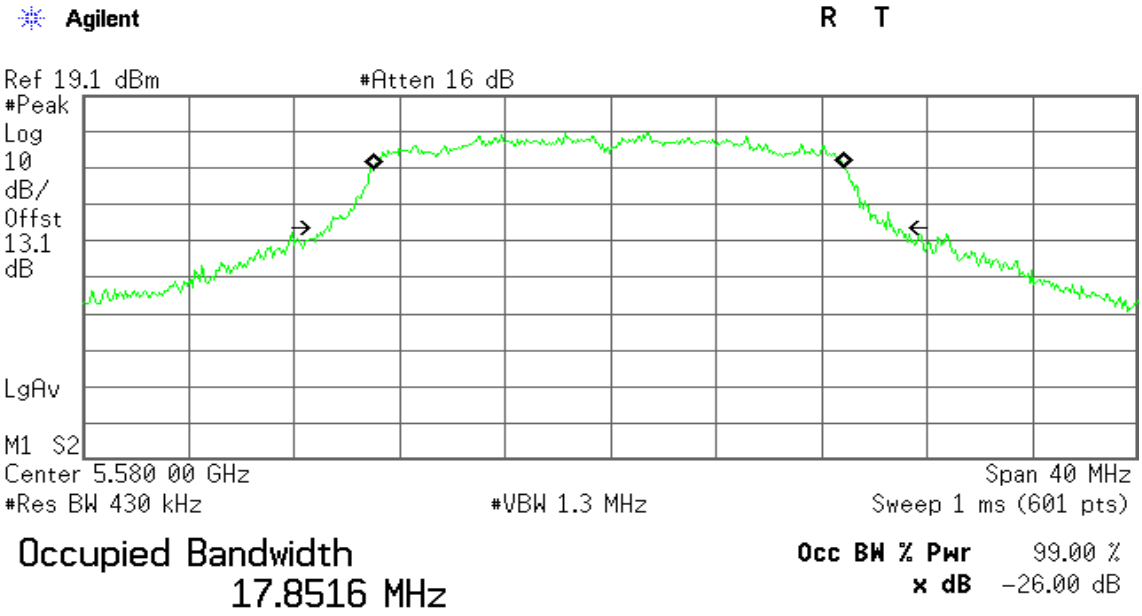
IEEE 802.11n HT 20 MHz Channel mode / 5500 ~ 5720MHz / Chain 0

99% Bandwidth (5500 MHz)



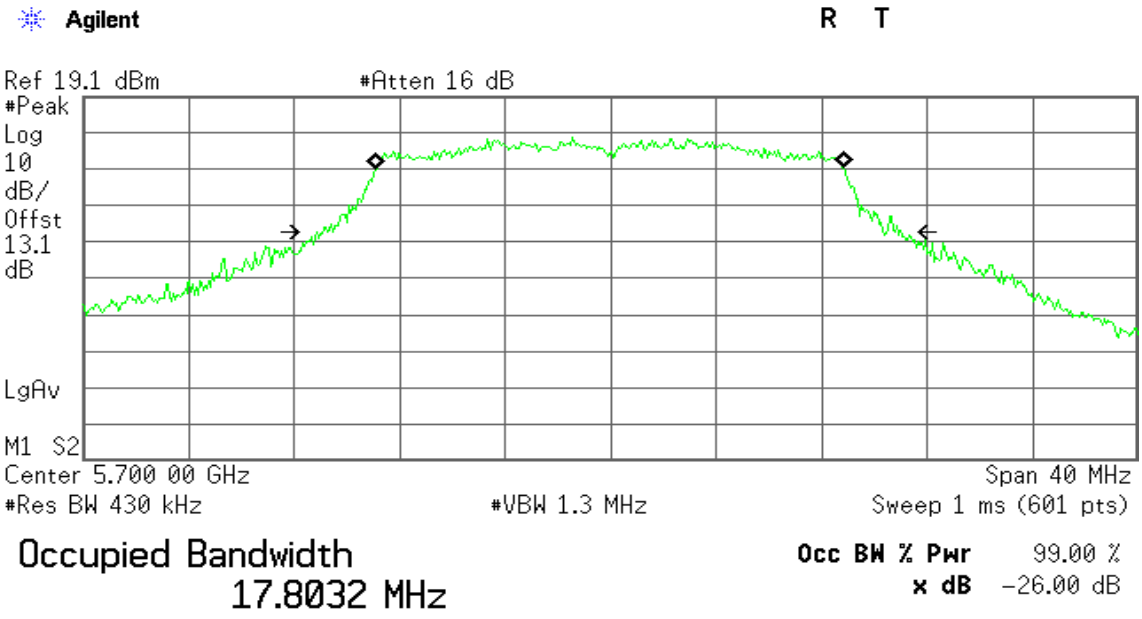
Transmit Freq Error -34.931 kHz
x dB Bandwidth 22.248 MHz

99% Bandwidth (5580 MHz)



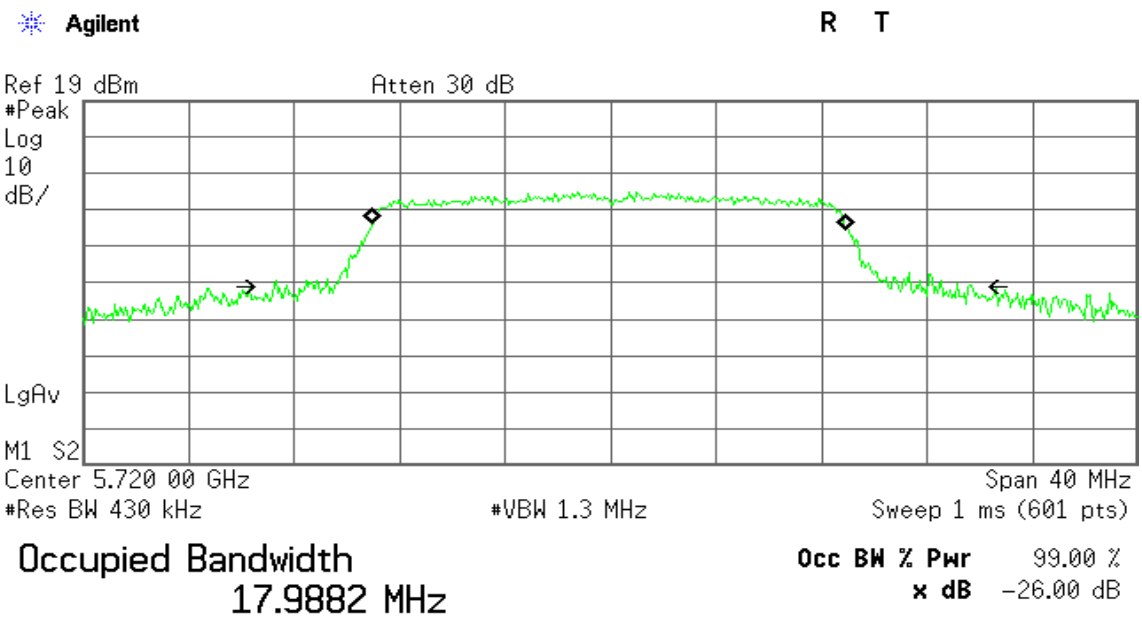
Transmit Freq Error -58.778 kHz
x dB Bandwidth 21.461 MHz

99% Bandwidth (5700MHz)



Transmit Freq Error -40.800 kHz
x dB Bandwidth 22.170 MHz

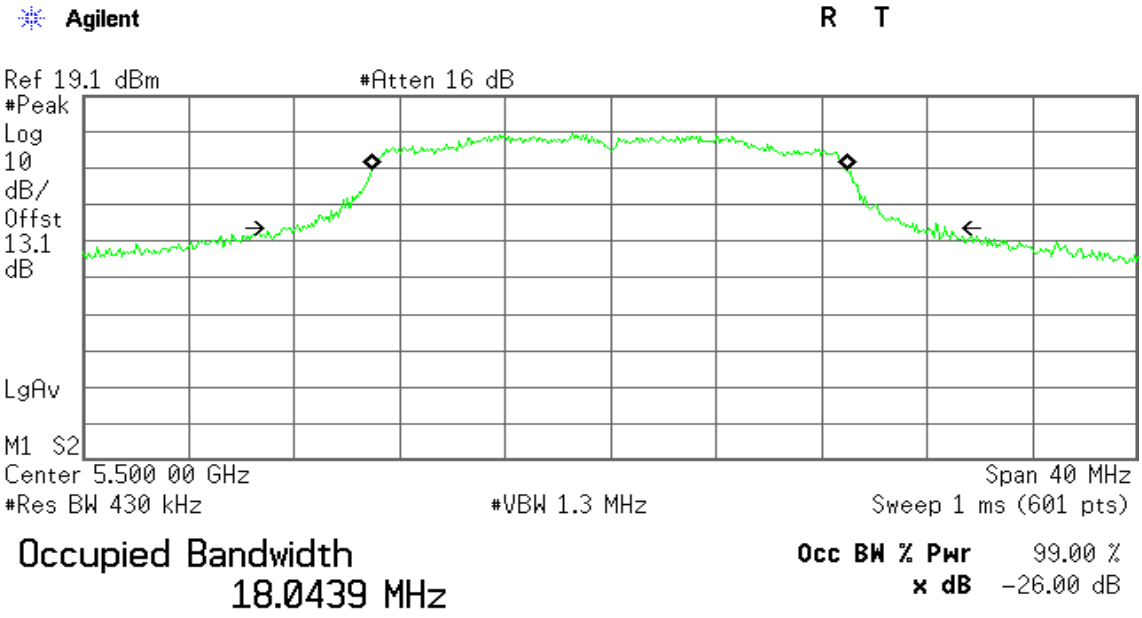
99% Bandwidth (5720MHz)



Transmit Freq Error -55.588 kHz
x dB Bandwidth 26.458 MHz

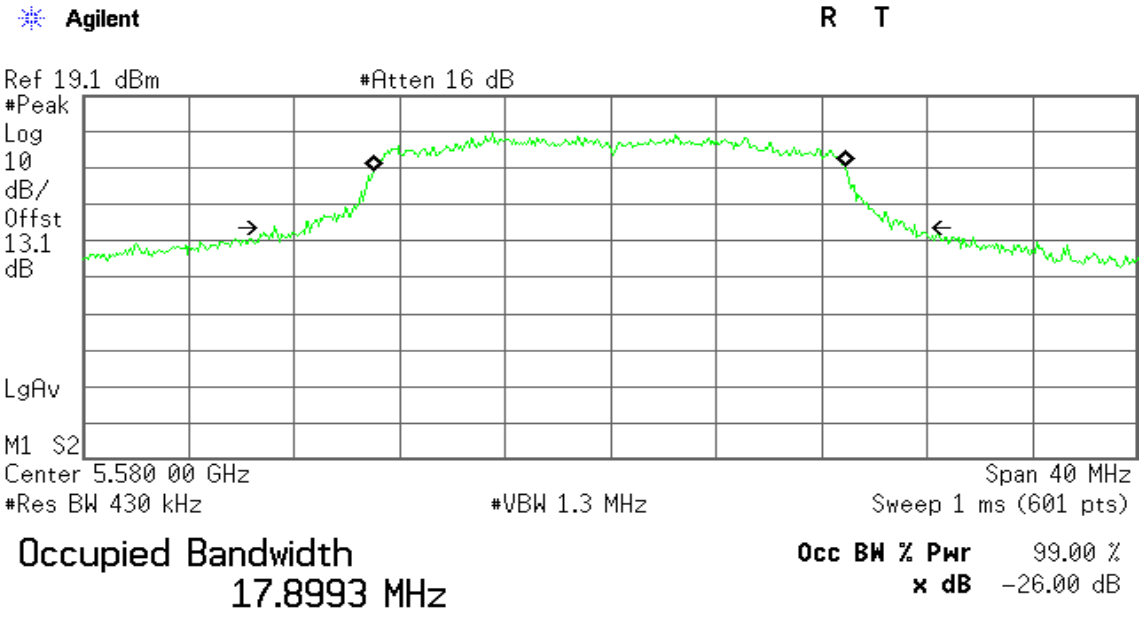
IEEE 802.11n HT 20 MHz Channel mode / 5500 ~ 5720MHz / Chain 1

99% Bandwidth (5500 MHz)



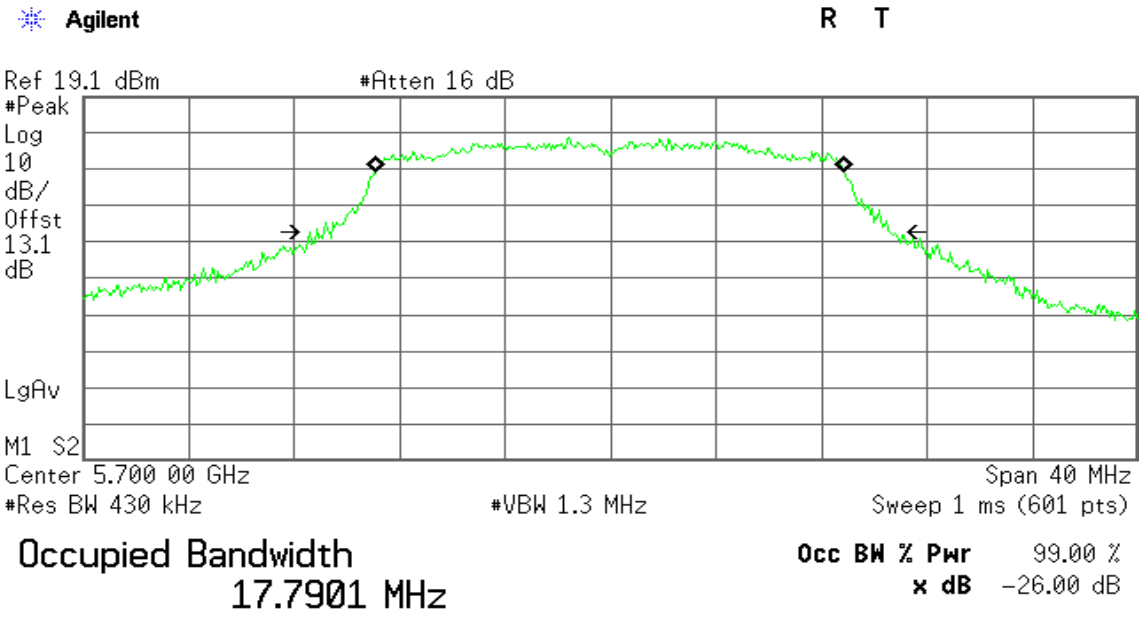
Transmit Freq Error -30.965 kHz
x dB Bandwidth 25.120 MHz

99% Bandwidth (5580 MHz)



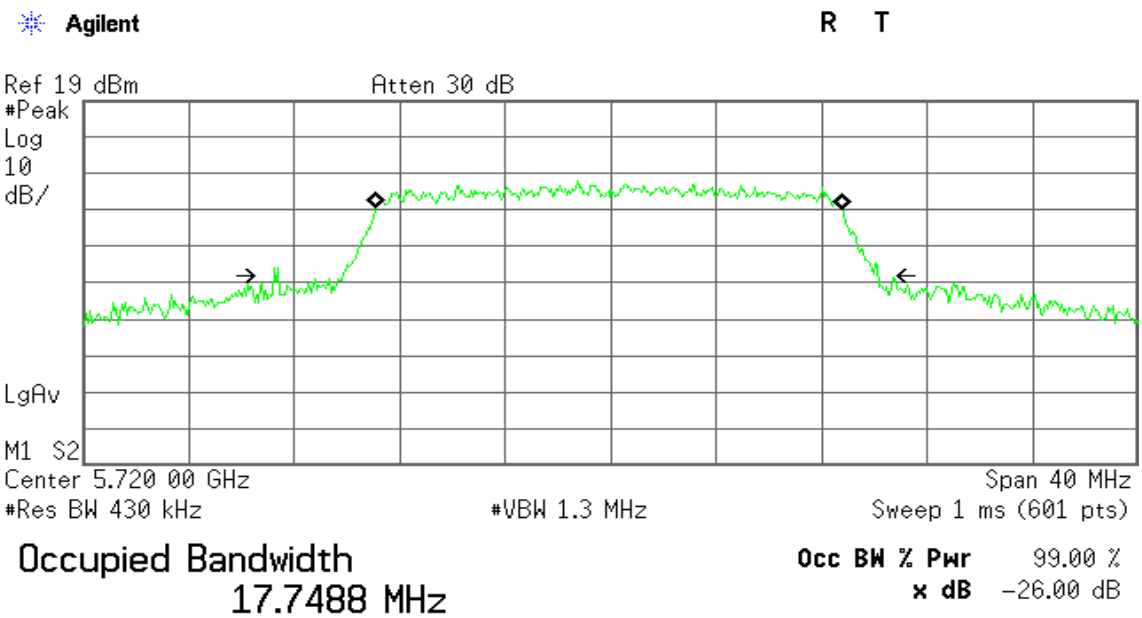
Transmit Freq Error -44.733 kHz
x dB Bandwidth 24.296 MHz

99% Bandwidth (5700 MHz)



Transmit Freq Error -31.841 kHz
x dB Bandwidth 21.753 MHz

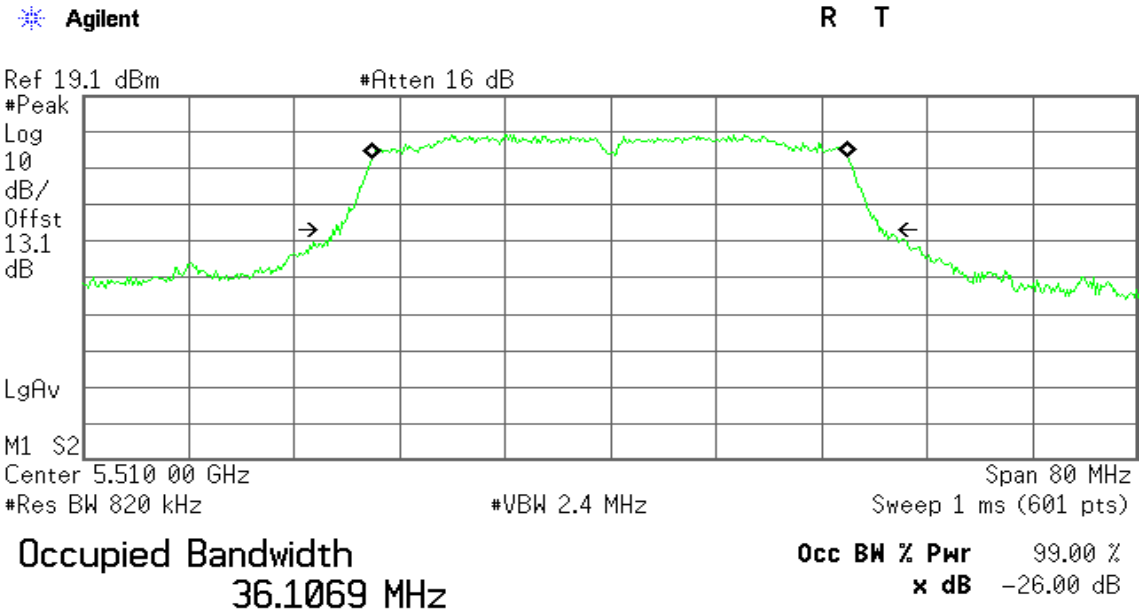
99% Bandwidth (5720 MHz)



Transmit Freq Error -57.864 kHz
x dB Bandwidth 22.944 MHz

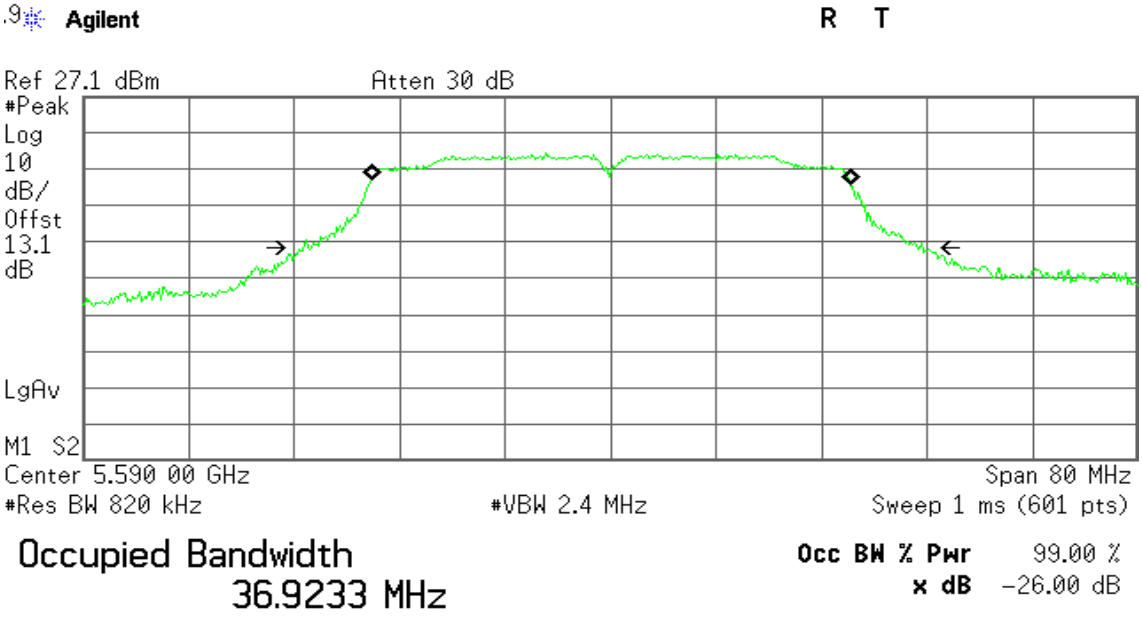
IEEE 802.11n HT 40 MHz mode / 5510 ~ 5710MHz / Chain 0

99% Bandwidth (5510 MHz)



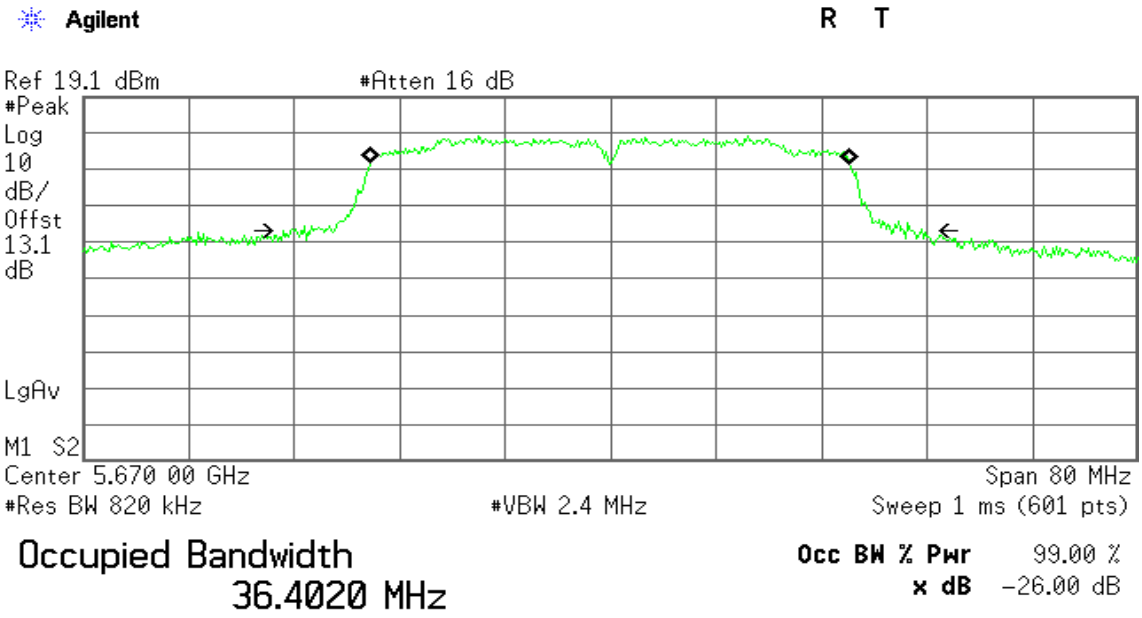
Transmit Freq Error −37.048 kHz
x dB Bandwidth 41.449 MHz

99% Bandwidth (5590 MHz)



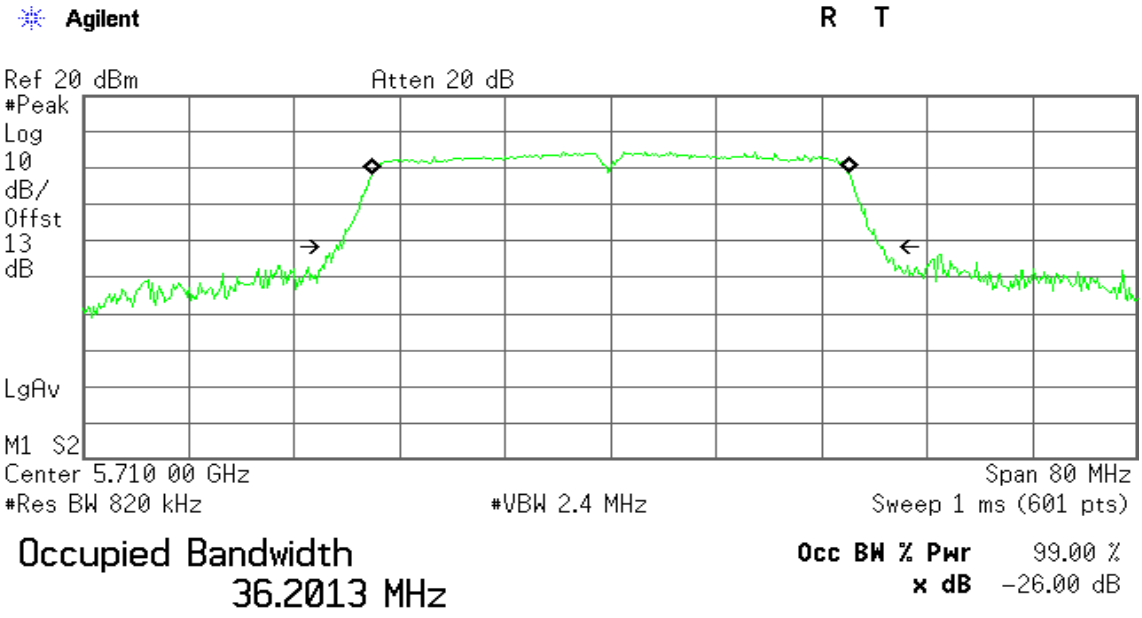
Transmit Freq Error 24.458 kHz
x dB Bandwidth 46.989 MHz

99% Bandwidth (5670 MHz)



Transmit Freq Error -50.869 kHz
x dB Bandwidth 47.908 MHz

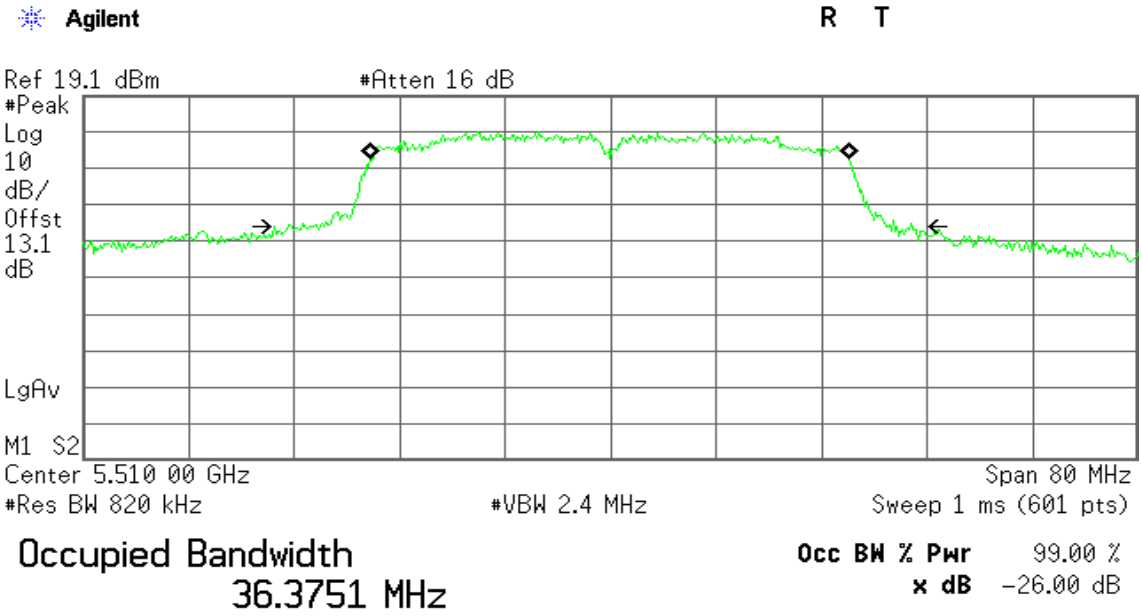
99% Bandwidth (5710 MHz)



Transmit Freq Error -15.045 kHz
x dB Bandwidth 41.525 MHz

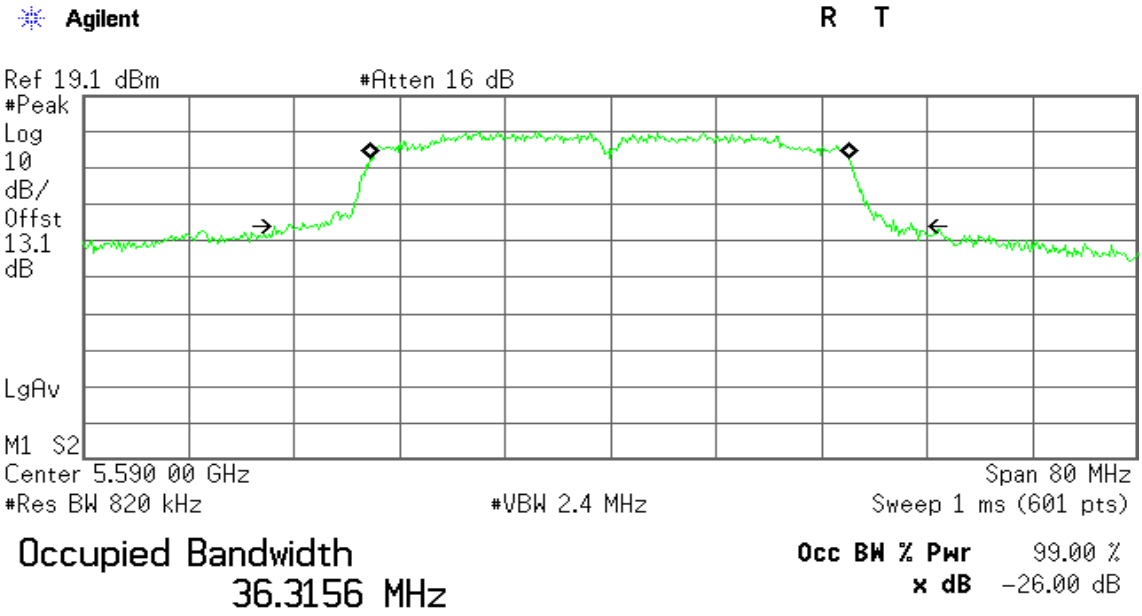
IEEE 802.11n HT 40 MHz mode / 5510 ~ 5710MHz / Chain 1

99% Bandwidth (5510 MHz)



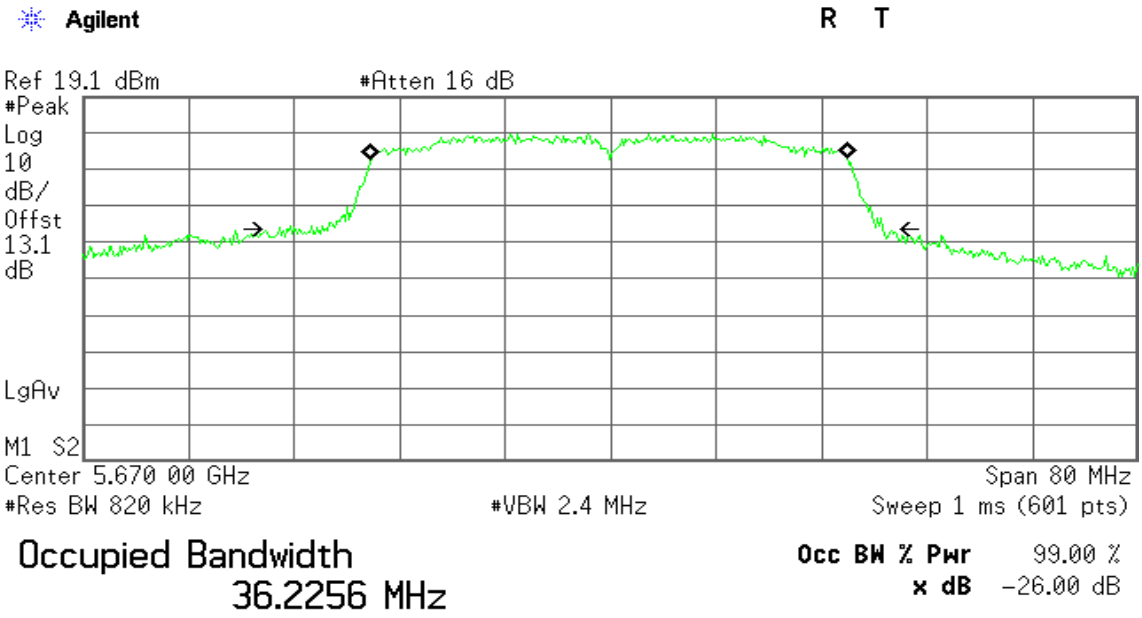
Transmit Freq Error -111.505 kHz
x dB Bandwidth 47.302 MHz

99% Bandwidth (5590 MHz)



Transmit Freq Error -111.105 kHz
x dB Bandwidth 47.232 MHz

99% Bandwidth (5670 MHz)

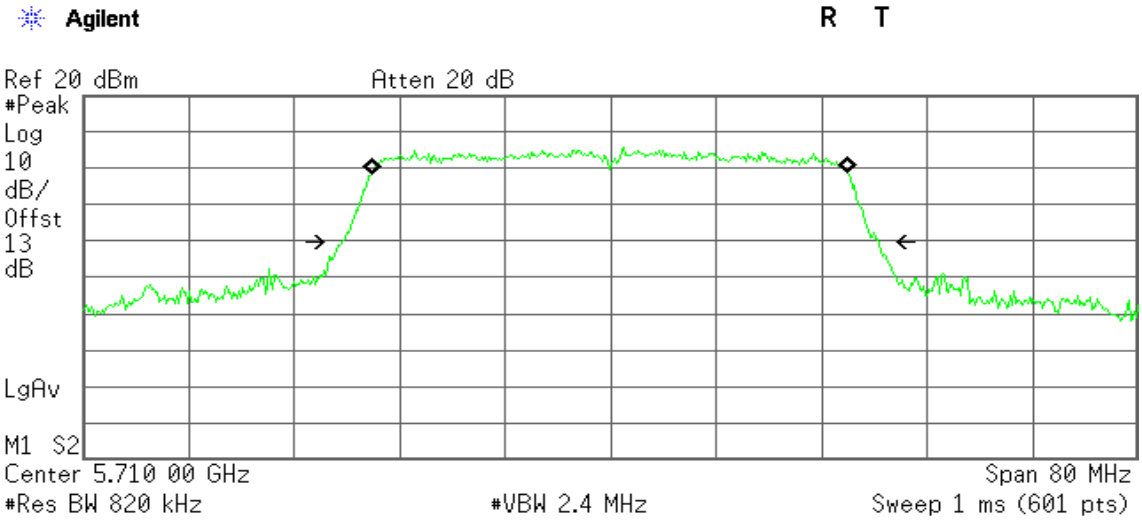


Occupied Bandwidth
36.2256 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error -90.399 kHz
x dB Bandwidth 45.749 MHz

99% Bandwidth (5710MHz)



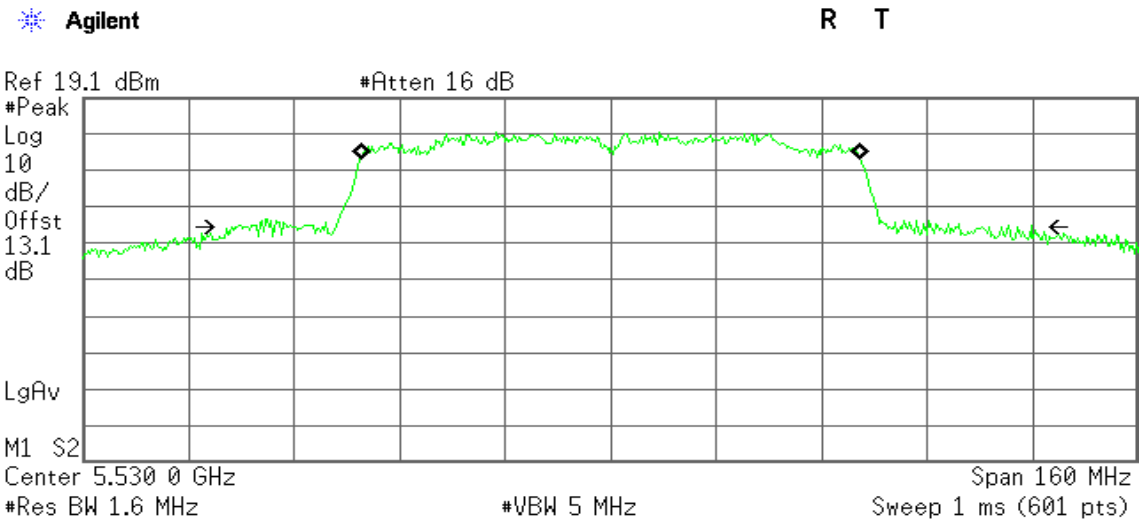
Occupied Bandwidth
36.1712 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error -89.594 kHz
x dB Bandwidth 40.723 MHz

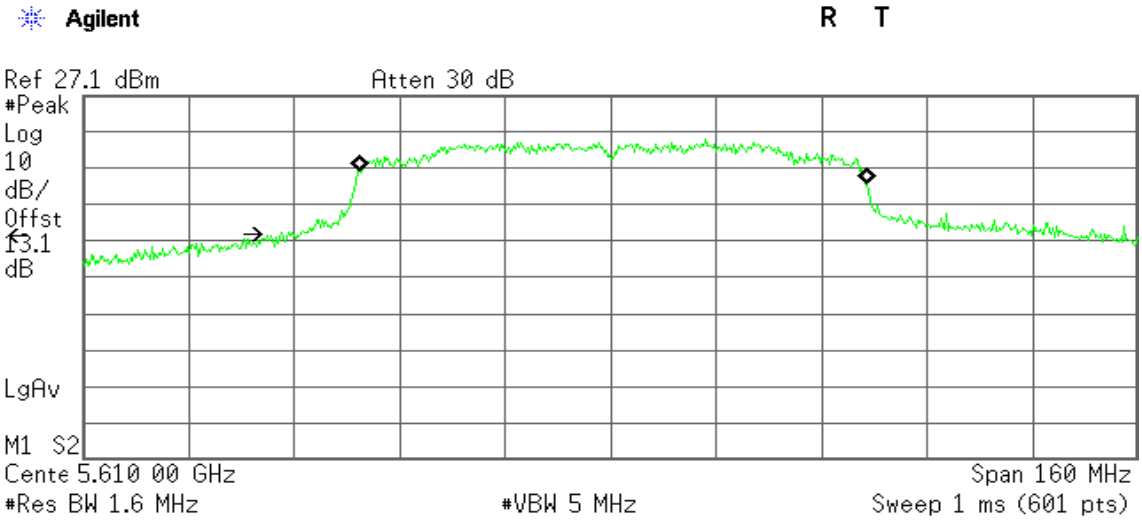
IEEE 802.11ac VHT 80 MHz mode / 5530 ~ 5690MHz/ Chain 0

99% Bandwidth (5530 MHz)



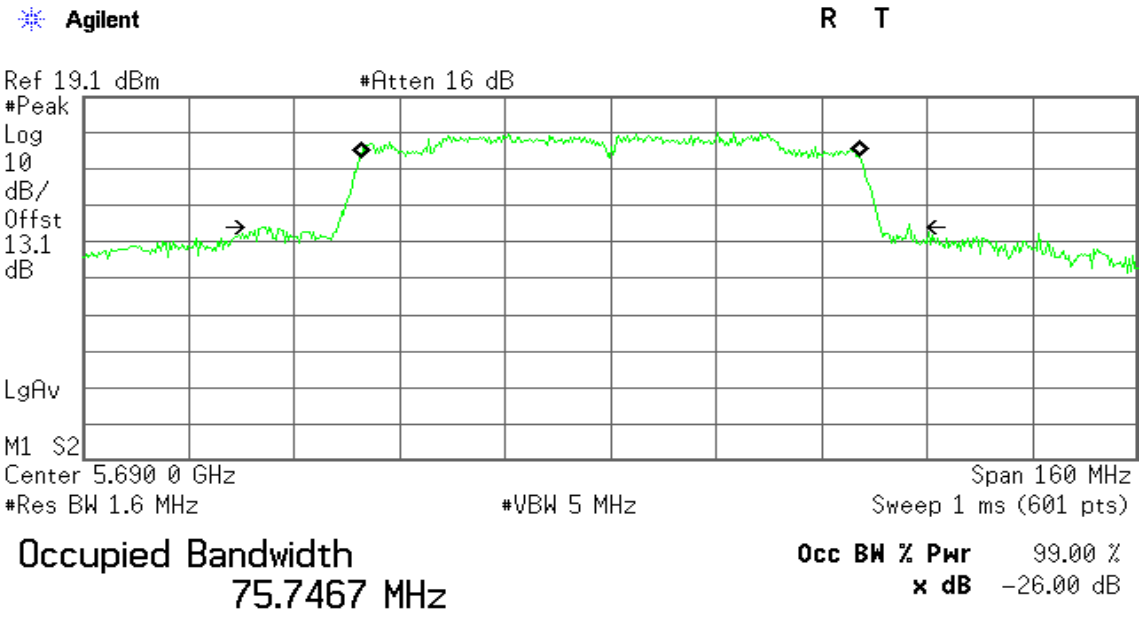
Transmit Freq Error 38.214 kHz
x dB Bandwidth 121.134 MHz

99% Bandwidth (5610 MHz)



Transmit Freq Error 416.002 kHz
x dB Bandwidth 128.062 MHz

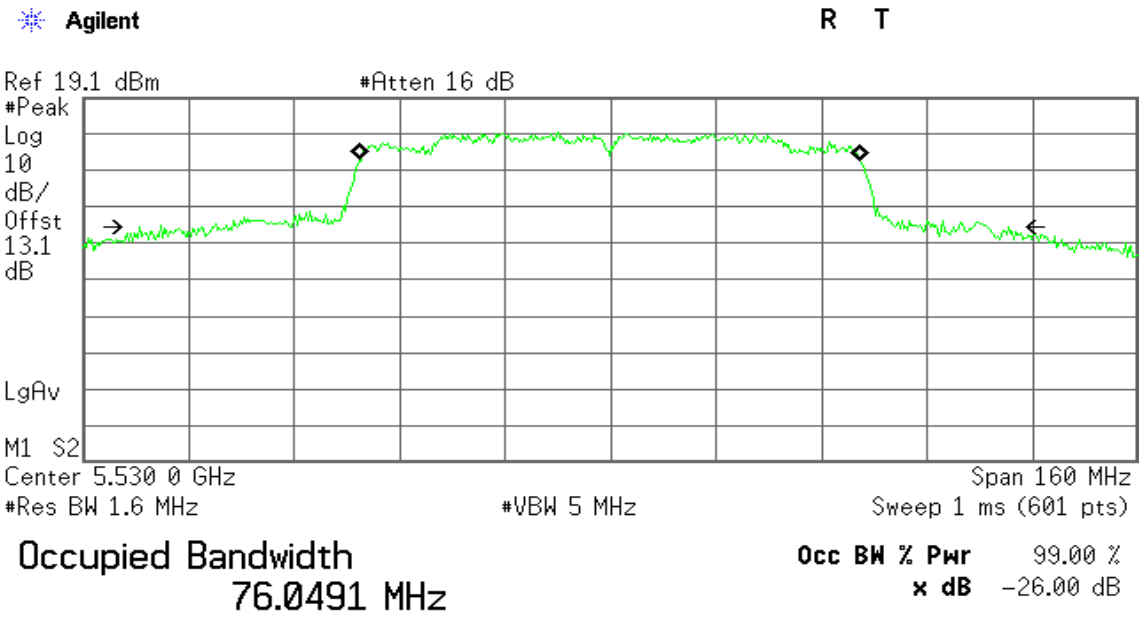
99% Bandwidth (5690 MHz)



Transmit Freq Error	-76.628 kHz
x dB Bandwidth	98.344 MHz

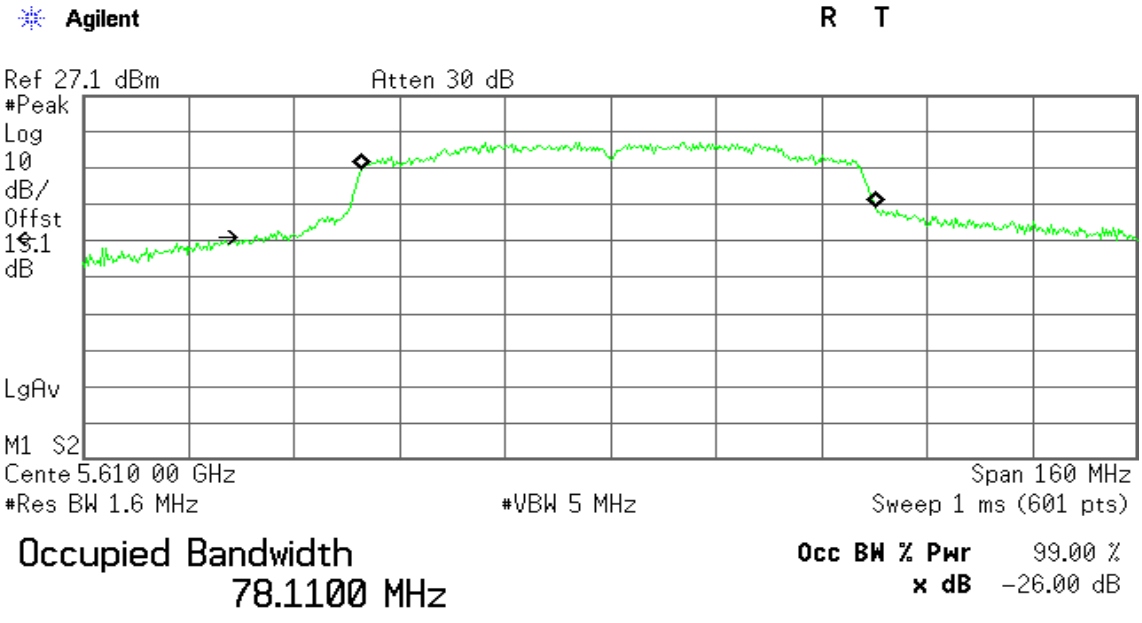
IEEE 802.11ac VHT 80 MHz mode / 5530 ~ 5690MHz/ Chain 1

99% Bandwidth (5530 MHz)



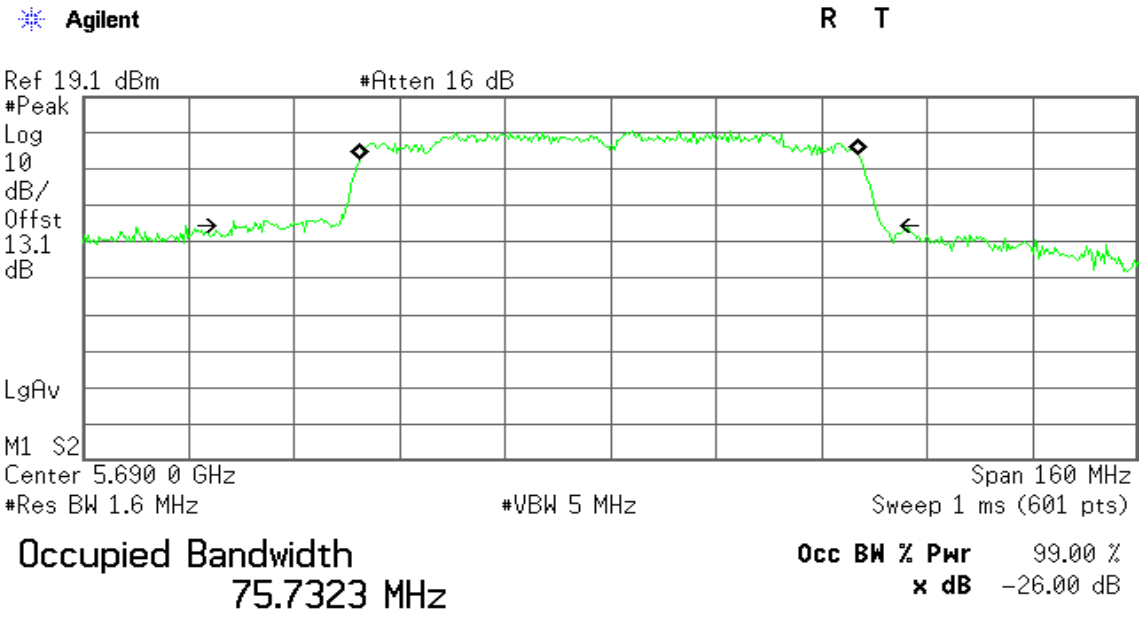
Transmit Freq Error	-122.310 kHz
x dB Bandwidth	131.790 MHz

99% Bandwidth (5610 MHz)



Transmit Freq Error	1.209 MHz
x dB Bandwidth	133.340 MHz

99% Bandwidth (5690 MHz)



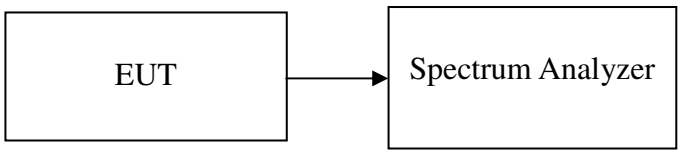
Transmit Freq Error	-154.767 kHz
x dB Bandwidth	98.497 MHz

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)	26db Bandwidth (MHz)
36	5180	28.705
44	5220	28.837
48	5240	28.560

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

Channel	Frequency (MHz)	26db Bandwidth (MHz)
36	5180	22.411
44	5220	21.855
48	5240	22.727

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

Channel	Frequency (MHz)	26db Bandwidth (MHz)
36	5180	22.740
44	5220	22.439
48	5240	21.784

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

Channel	Frequency (MHz)	26db Bandwidth (MHz)
38	5190	42.017
46	5230	40.995

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

Channel	Frequency (MHz)	26db Bandwidth (MHz)
38	5190	40.929
46	5230	42.149

Test mode: IEEE 802.11ac VHT 80 MHz mode / 5210MHz / Chain 0

Channel	Frequency (MHz)	26db Bandwidth (MHz)
42	5210	102.960

Test mode: IEEE 802.11ac VHT 80 MHz mode / 5210MHz / Chain 1

Channel	Frequency (MHz)	26db Bandwidth (MHz)
42	5210	107.273

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

Channel	Frequency (MHz)	26db Bandwidth (MHz)
52	5260	28.751
56	5280	29.820
64	5320	26.233

Test mode: IEEE 802.11n HT 20 MHz Channel mode / 5260 ~ 5320MHz / Chain 0

Channel	Frequency (MHz)	26db Bandwidth (MHz)
52	5180	22.843
56	5260	22.898
64	5320	22.542

Test mode: IEEE 802.11n HT 20 MHz Channel mode / 5260 ~ 5320MHz / Chain 1

Channel	Frequency (MHz)	26db Bandwidth (MHz)
52	5180	23.092
56	5260	21.692
64	5320	22.645

Test mode: IEEE 802.11n HT 40 MHz mode / 5270 ~ 5310MHz / Chain 0

Channel	Frequency (MHz)	26db Bandwidth (MHz)
54	5270	42.621
62	5310	43.010

Test mode: IEEE 802.11n HT 40 MHz mode/ 5270 ~ 5310MHz / Chain 1

Channel	Frequency (MHz)	26db Bandwidth (MHz)
54	5270	41.855
62	5310	41.261

Test mode: IEEE 802.11ac VHT 80 MHz mode / 5290MHz / Chain 0

Channel	Frequency (MHz)	26db Bandwidth (MHz)
58	5290	85.874

Test mode: IEEE 802.11ac VHT 80 MHz mode / 5290MHz / Chain 1

Channel	Frequency (MHz)	26db Bandwidth (MHz)
58	5290	102.643

Test mode: IEEE 802.11a mode / 5500 ~ 5720MHz

Channel	Frequency (MHz)	26db Bandwidth (MHz)
100	5500	27.121
116	5580	33.066
140	5700	25.375
144	5720 (Band III)	18.8
144	5720 (Band IV)	10.8

BAND III = mark 2 – 3R=18.8
BAND IV = (3R+3Δ) - mark 2=10.8

Test mode: IEEE 802.11n HT 20 MHz Channel mode / 5500 ~ 5720MHz / Chain 0

Channel	Frequency (MHz)	26db Bandwidth (MHz)
100	5500	22.248
116	5580	21.461
140	5700	22.170
144	5720 (Band III)	18.87
144	5720 (Band IV)	10.6

BAND III = mark 2 – 3R=18.87
BAND IV = (3R+3Δ) - mark 2=10.6

Test mode: IEEE 802.11n HT 20 MHz Channel mode / 5500 ~ 5720MHz / Chain 1

Channel	Frequency (MHz)	26db Bandwidth (MHz)
100	5500	25.120
116	5580	24.296
140	5700	21.753
144	5720 (Band III)	16.6
144	5720 (Band IV)	5.47

BAND III = mark 2 – 3R=16.6
BAND IIII = (3R+3Δ) - mark2=5.47

Test mode: IEEE 802.11n HT 40 MHz mode / 5510 ~ 5710MHz / Chain 0

Channel	Frequency (MHz)	26db Bandwidth (MHz)
102	5510	41.449
118	5590	46.989
134	5670	47.908
142	5710 (Band III)	35.4
142	5710 (Band IV)	5.67

BAND III = mark 2 – 3R=35.4
BAND IV = (3R+3Δ) - mark2=5.67

Test mode: IEEE 802.11n HT 40 MHz mode / 5510 ~ 5710MHz / Chain 1

Channel	Frequency (MHz)	26db Bandwidth (MHz)
102	5510	47.302
118	5590	47.232
134	5670	45.749
142	5710 (Band III)	35.27
142	5710 (Band IV)	5.13

BAND III = mark 2 - 3R=35.27
BAND IV = (3R+3Δ) – mark 2=5.13

Test mode: IEEE 802.11ac VHT 80 MHz mode / 5530 ~ 5690MHz / Chain 0

Channel	Frequency (MHz)	26db Bandwidth (MHz)
106	5530	121.134
122	5610	128.062
138	5690 (Band III)	75.8
138	5690 (Band IV)	5.8

BAND III = mark 2 - 3R=75.8
BAND IV = (3R+3Δ) – mark 2=5.8

Test mode: IEEE 802.11ac VHT 80 MHz mode / 5530 ~ 5690MHz / Chain 1

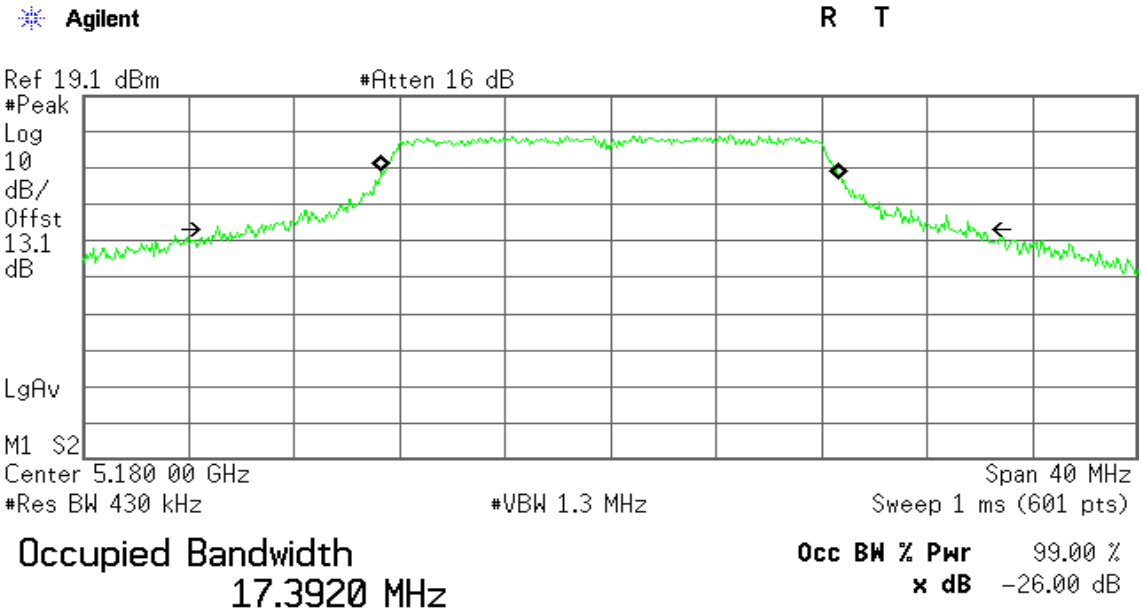
Channel	Frequency (MHz)	26db Bandwidth (MHz)
106	5530	131.790
122	5610	133.340
138	5690 (Band III)	87.8
138	5690 (Band IV)	6.9

BAND III = mark 2 - 3R=87.8
BAND IV = (3R+3Δ) – mark 2=6.9

Test Plot

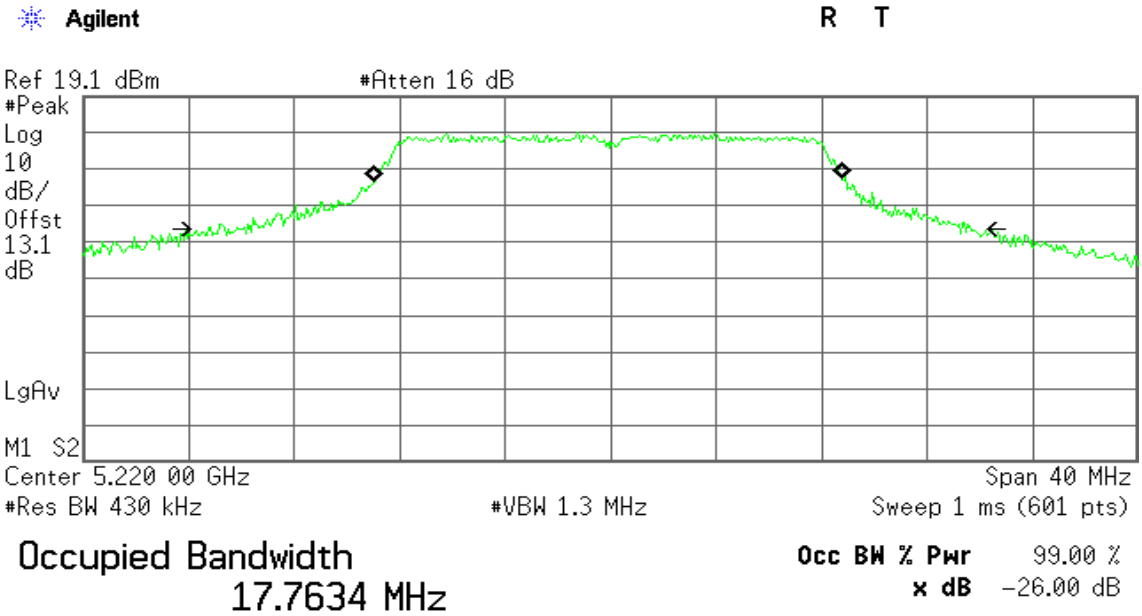
IEEE 802.11a for 5180 ~ 5240MHz

5180 MHz



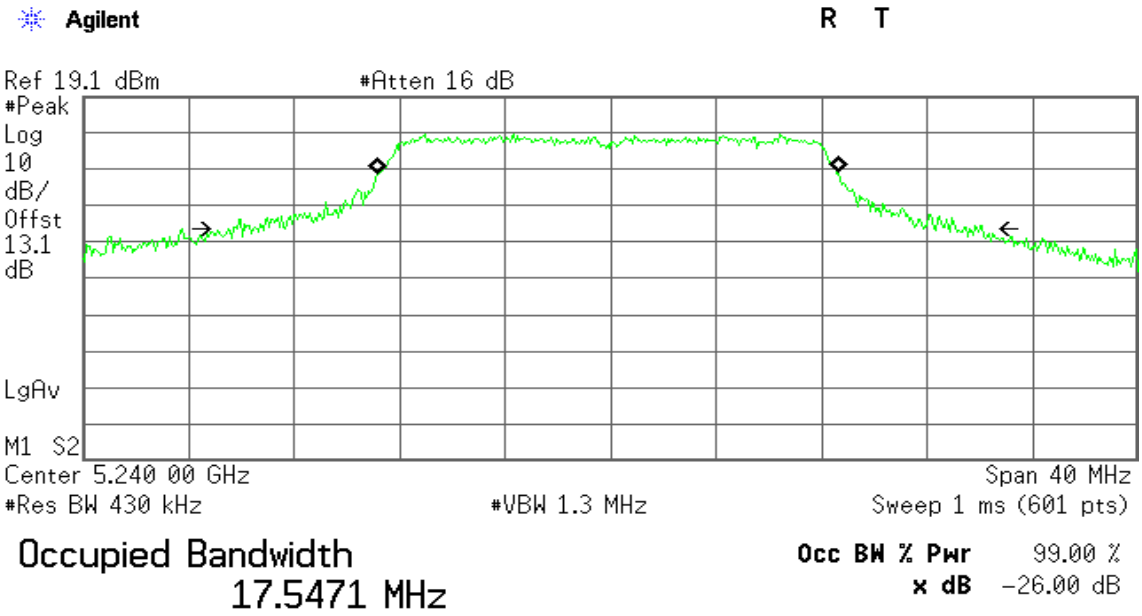
Transmit Freq Error −20.520 kHz
x dB Bandwidth 28.705 MHz

5220 MHz



Transmit Freq Error −94.538 kHz
x dB Bandwidth 28.837 MHz

5240 MHz



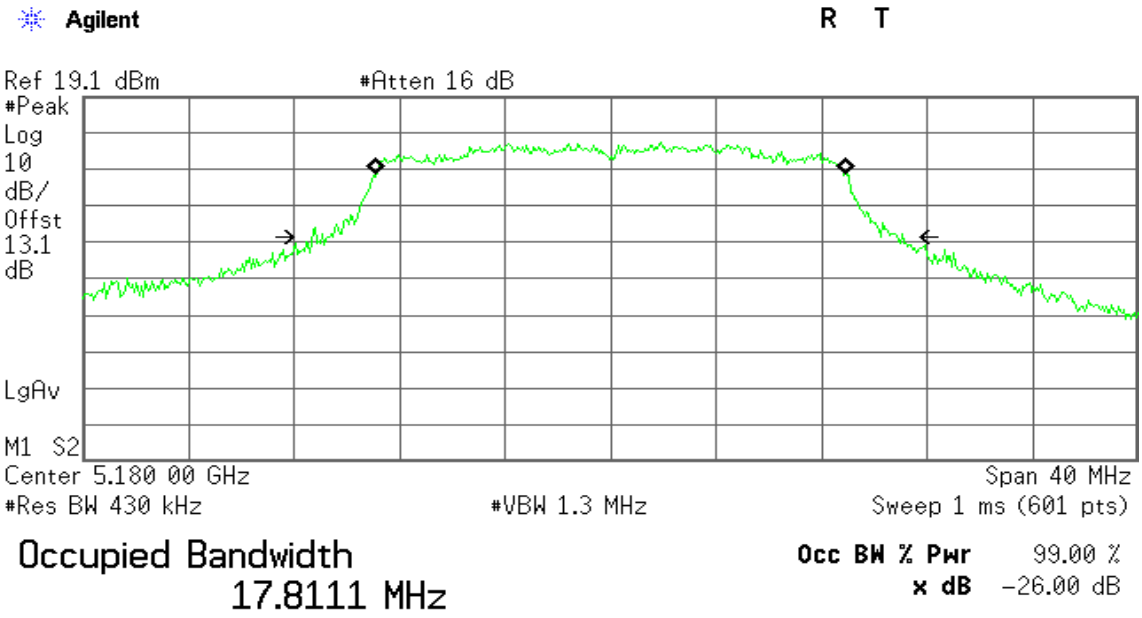
Occupied Bandwidth
17.5471 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error -96.462 kHz
x dB Bandwidth 28.560 MHz

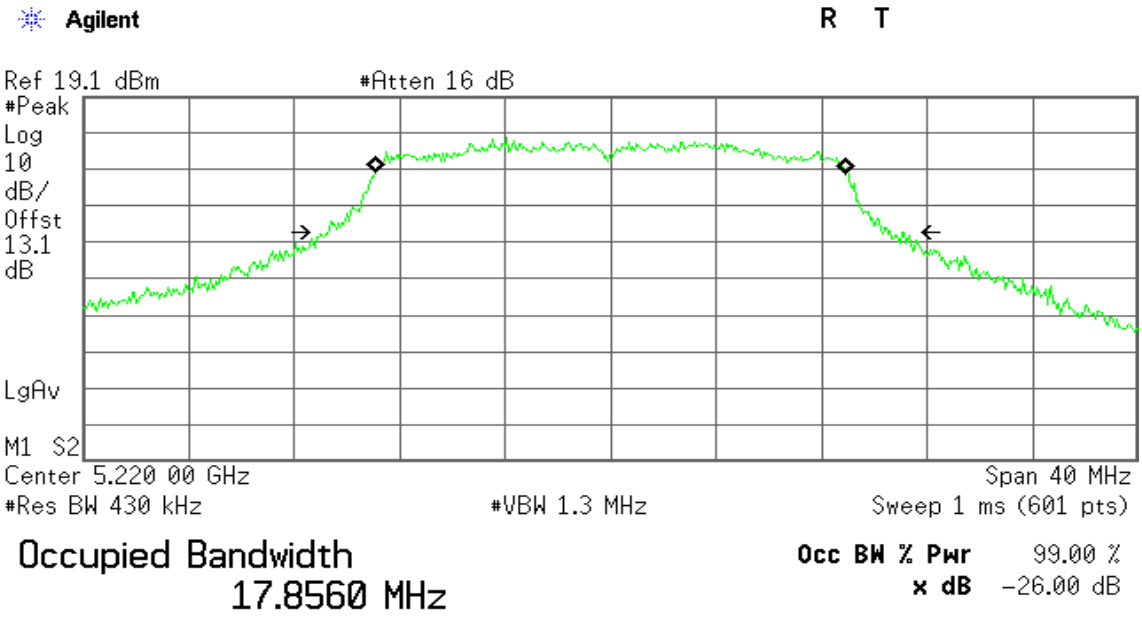
IEEE 802.11n HT 20 MHz Channel mode / 5180 ~ 5240MHz / Chain 0

5180 MHz



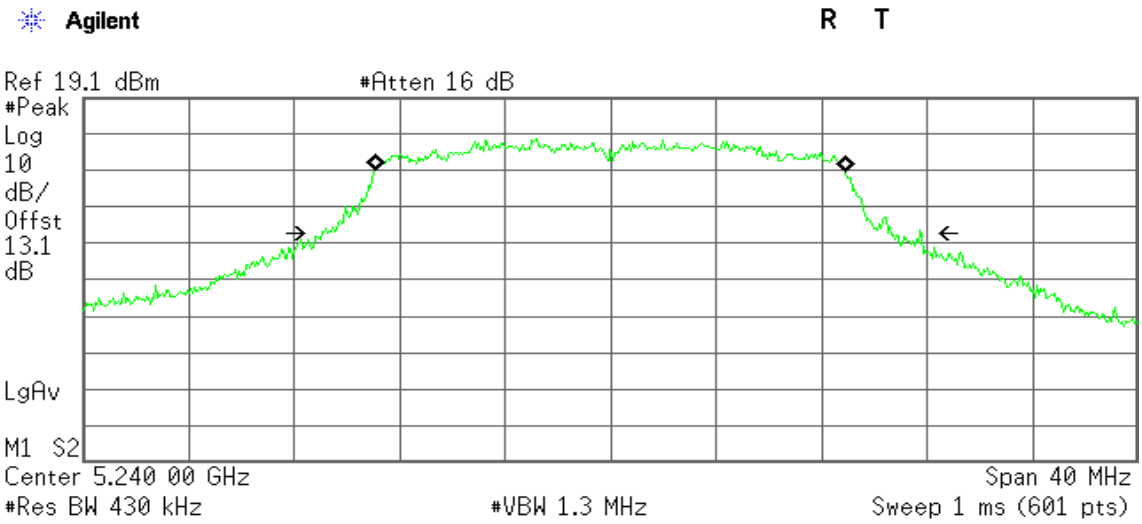
Transmit Freq Error -5.024 kHz
x dB Bandwidth 22.411 MHz

5220 MHz



Transmit Freq Error 2.696 kHz
x dB Bandwidth 21.855 MHz

5240 MHz



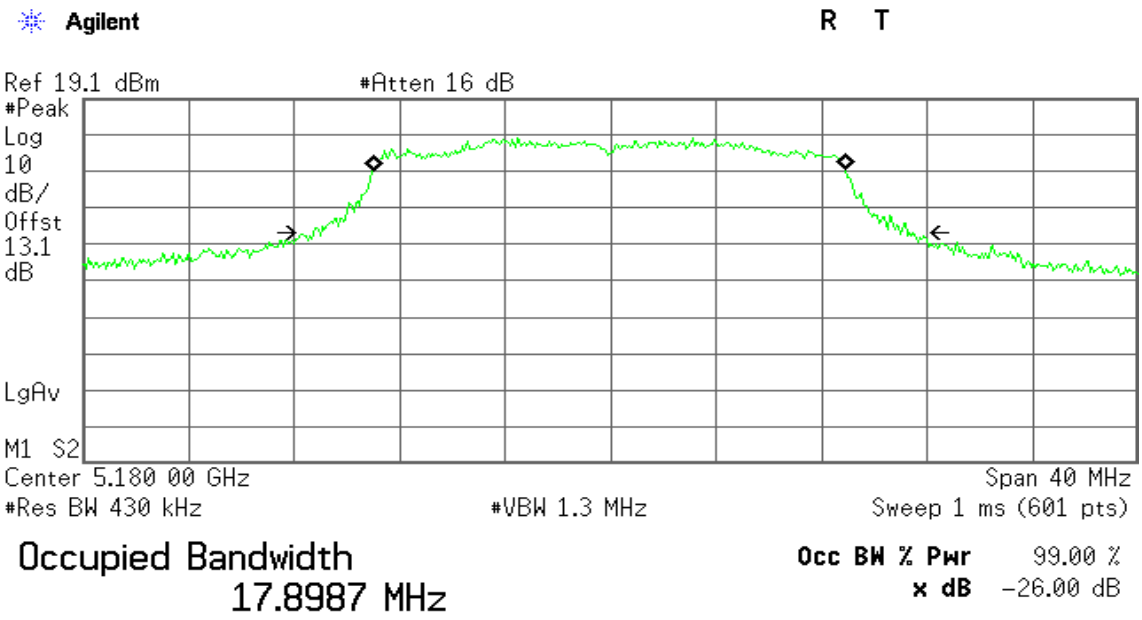
Occupied Bandwidth
17.8278 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error -4.381 kHz
x dB Bandwidth 22.727 MHz

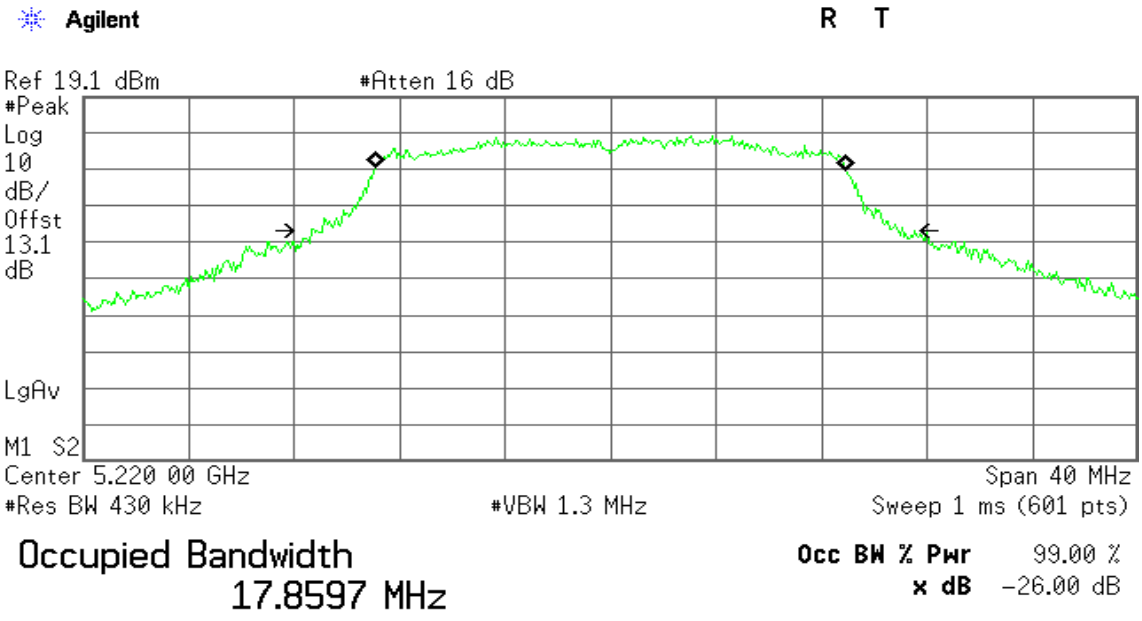
IEEE 802.11n HT 20 MHz Channel mode / 5180 ~ 5240MHz / Chain 1

5180 MHz



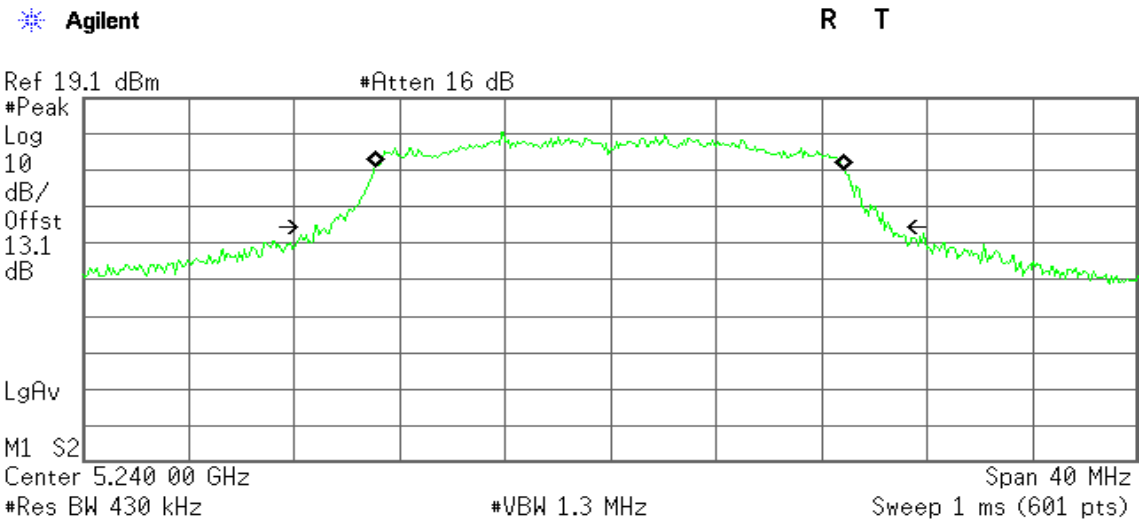
Transmit Freq Error −31.228 kHz
x dB Bandwidth 22.740 MHz

5220 MHz



Transmit Freq Error 4.428 kHz
x dB Bandwidth 22.439 MHz

5240 MHz



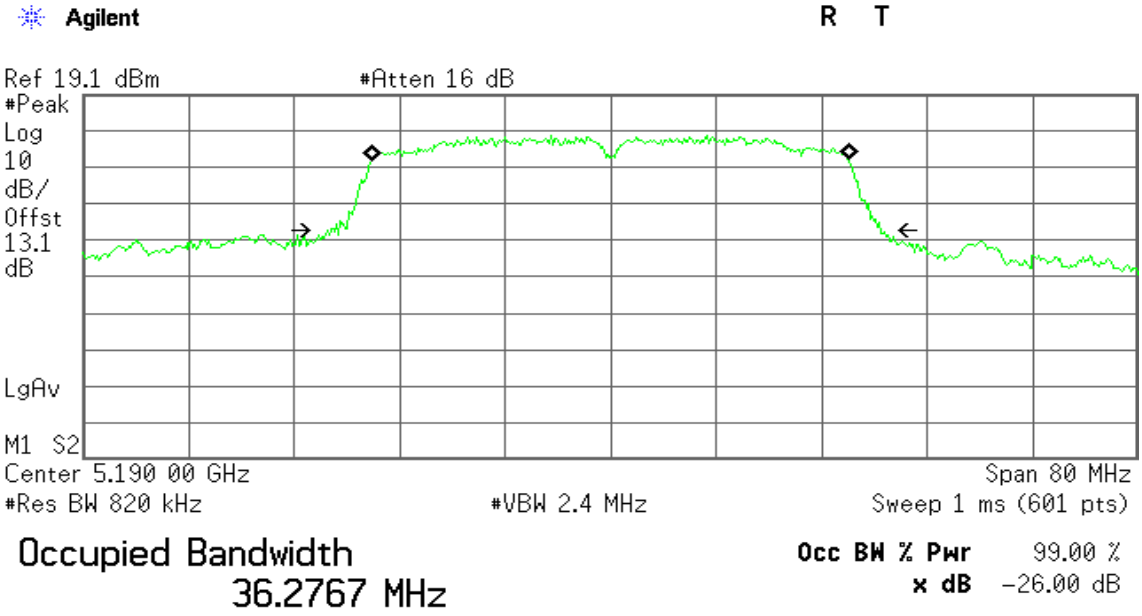
Occupied Bandwidth
17.8246 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error -19.207 kHz
x dB Bandwidth 21.784 MHz

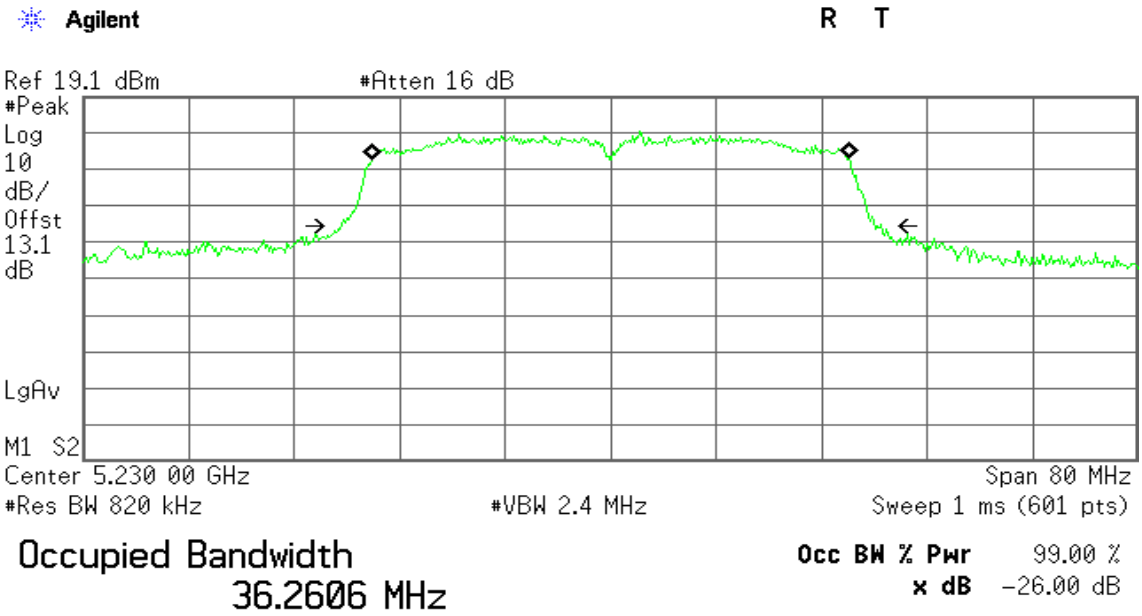
IEEE 802.11n HT 40 MHz mode / 5190 ~ 5230MHz / Chain 0

5190 MHz



Transmit Freq Error −59.486 kHz
x dB Bandwidth 42.017 MHz

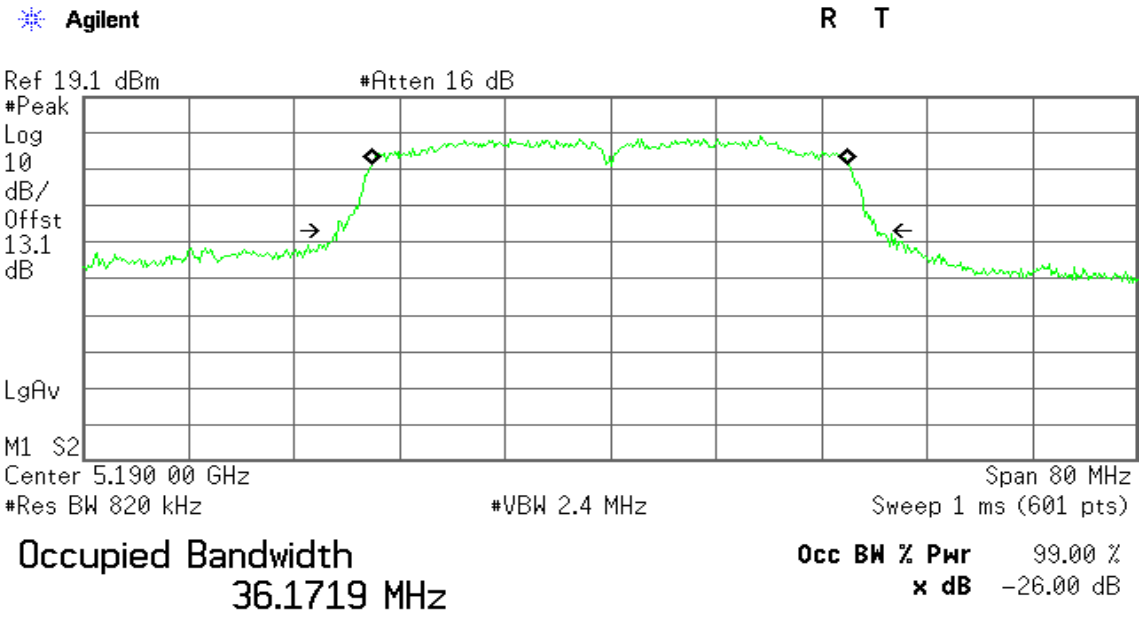
5230 MHz



Transmit Freq Error −44.475 kHz
x dB Bandwidth 40.995 MHz

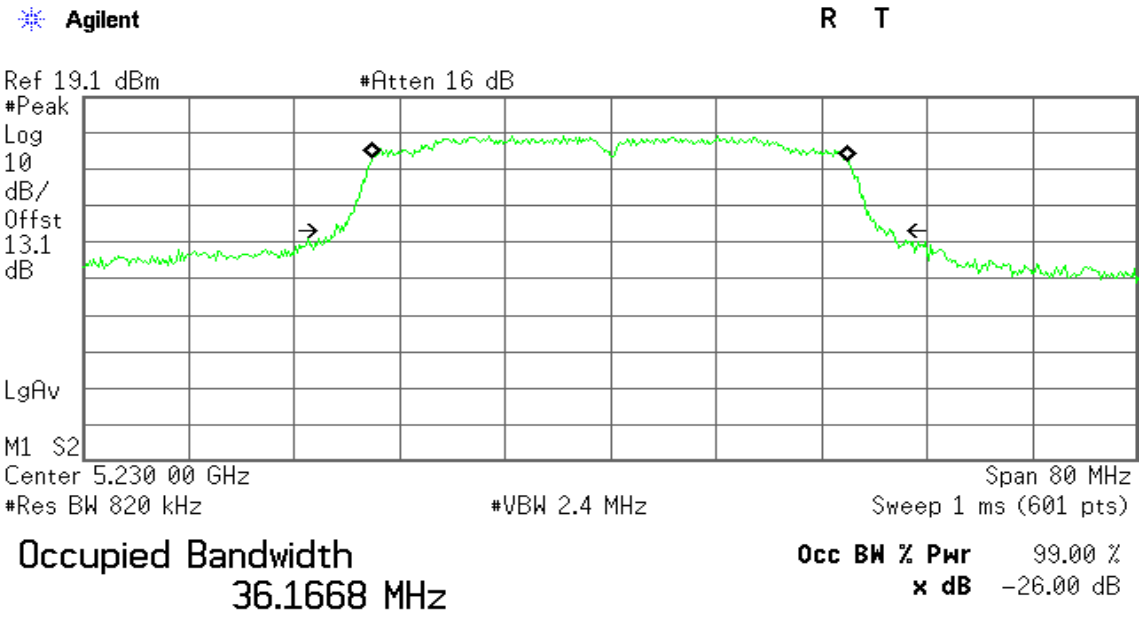
IEEE 802.11n HT 40 MHz mode / 5190 ~ 5230MHz / Chain 1

5190 MHz



Transmit Freq Error -43.597 kHz
x dB Bandwidth 40.929 MHz

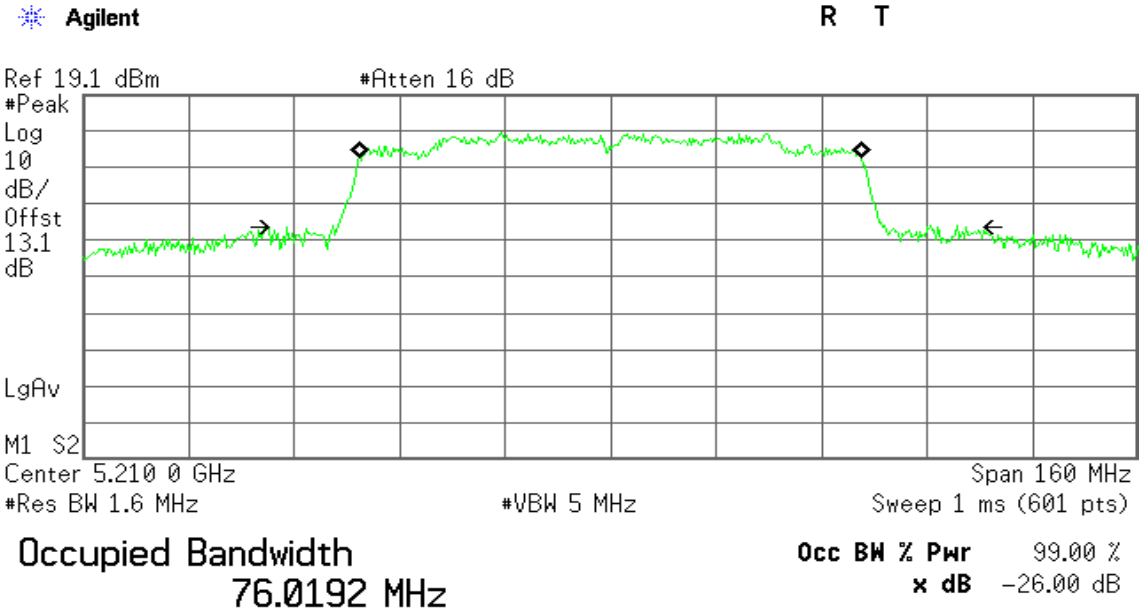
5230 MHz



Transmit Freq Error -42.012 kHz
x dB Bandwidth 42.149 MHz

IEEE 802.11ac VHT 80 MHz mode / 5210MHz / Chain 0

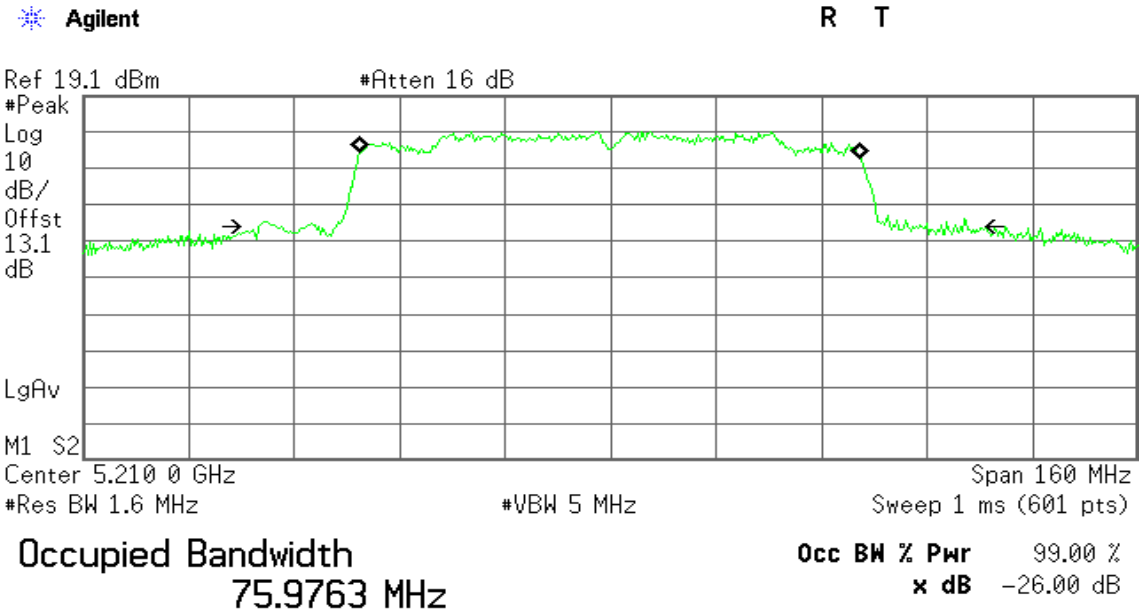
5210 MHz



Transmit Freq Error 9.387 kHz
x dB Bandwidth 102.960 MHz

IEEE 802.11ac VHT 80 MHz mode / 5210MHz / Chain 1

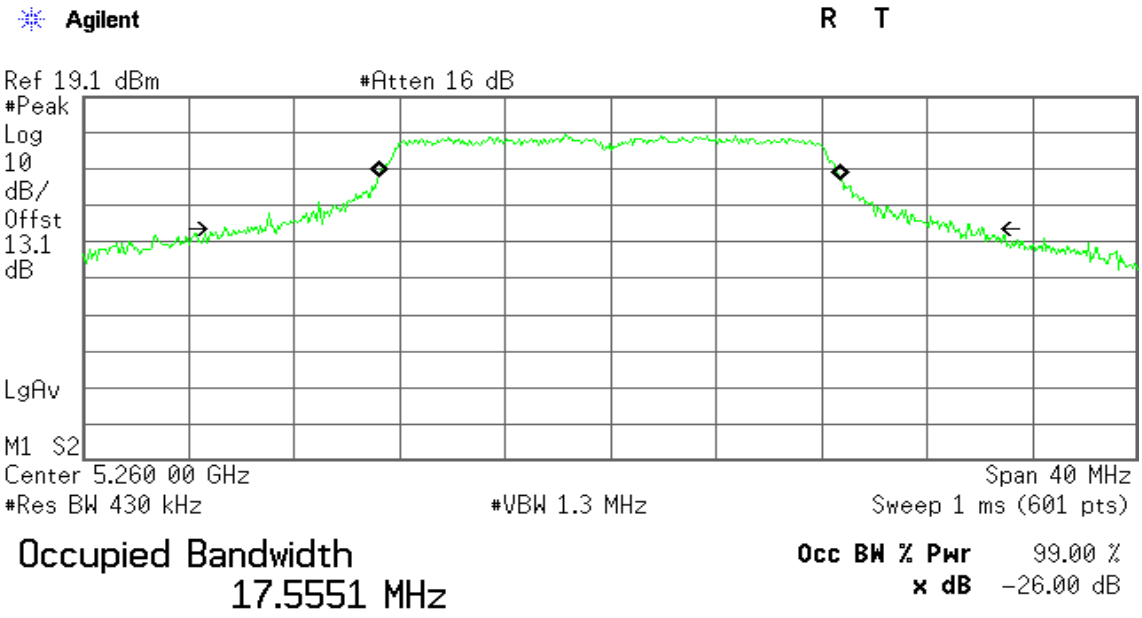
5210 MHz



Transmit Freq Error -83.996 kHz
x dB Bandwidth 107.273 MHz

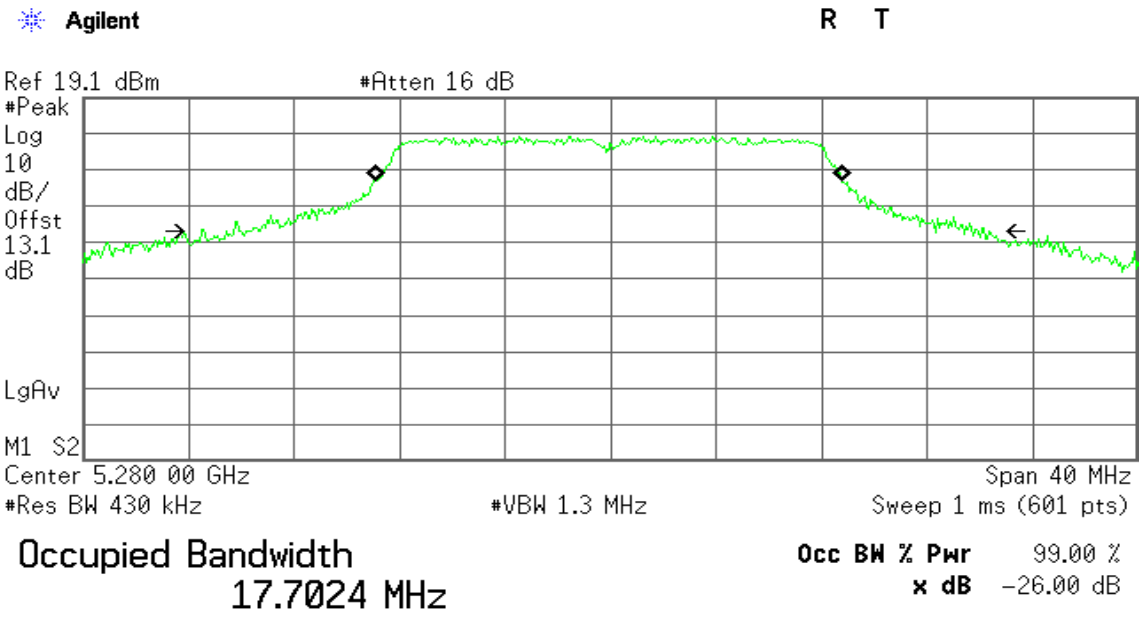
IEEE 802.11a mode / 5260 ~ 5320MHz

5260 MHz



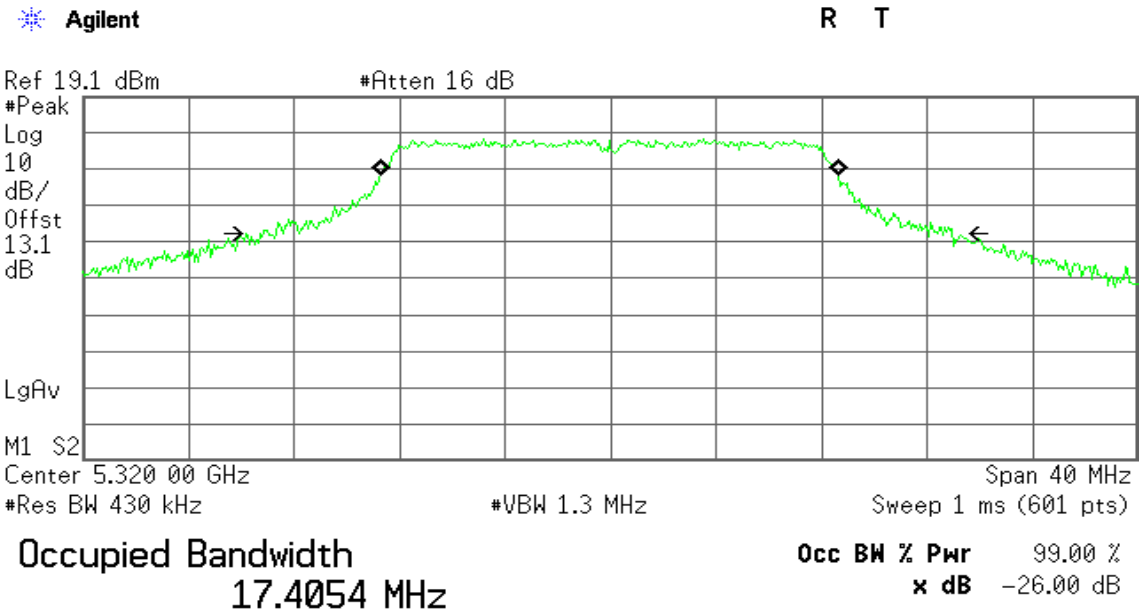
Transmit Freq Error -52.429 kHz
x dB Bandwidth 28.751 MHz

5280 MHz



Transmit Freq Error -52.445 kHz
x dB Bandwidth 29.820 MHz

5320 MHz



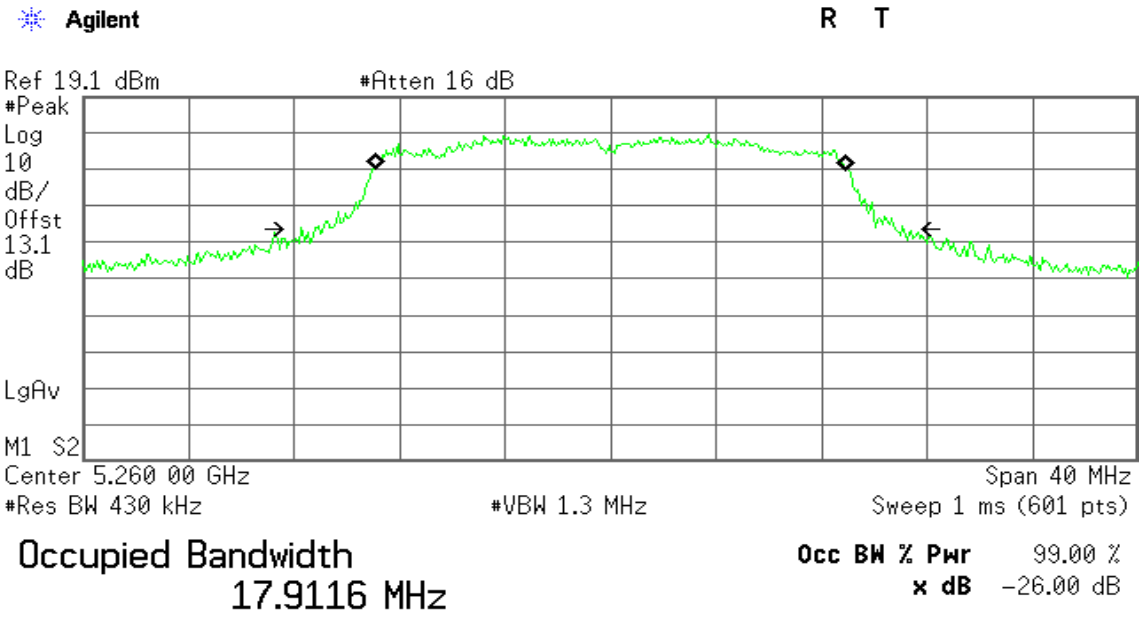
Occupied Bandwidth
17.4054 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error -50.249 kHz
x dB Bandwidth 26.233 MHz

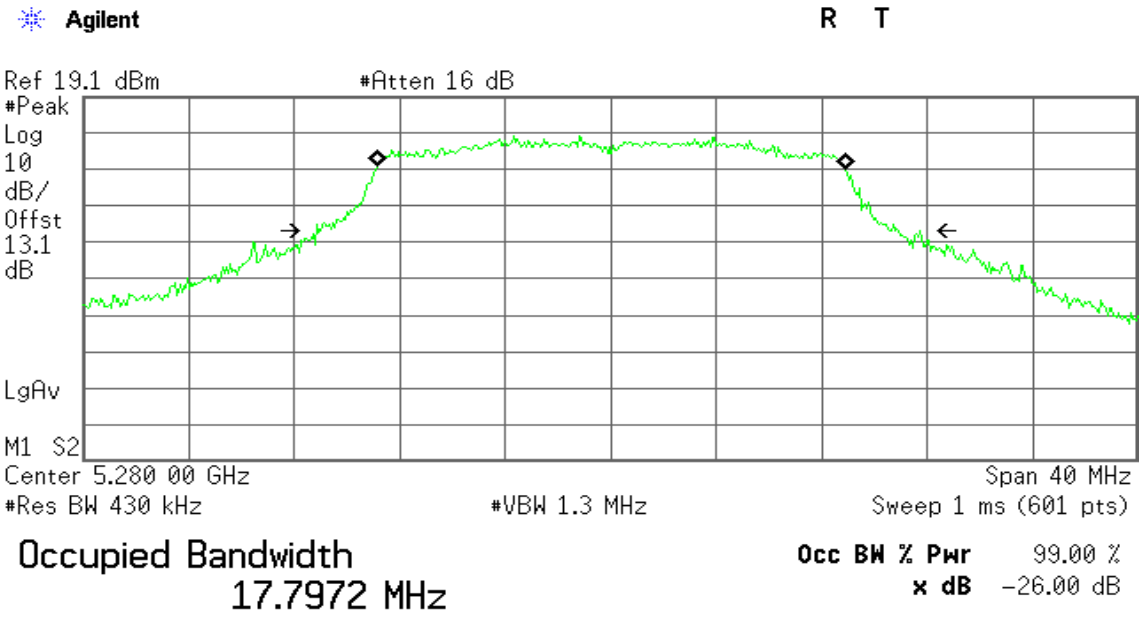
IEEE 802.11n HT 20 MHz Channel mode / 5260 ~ 5320MHz / Chain 0

5260 MHz



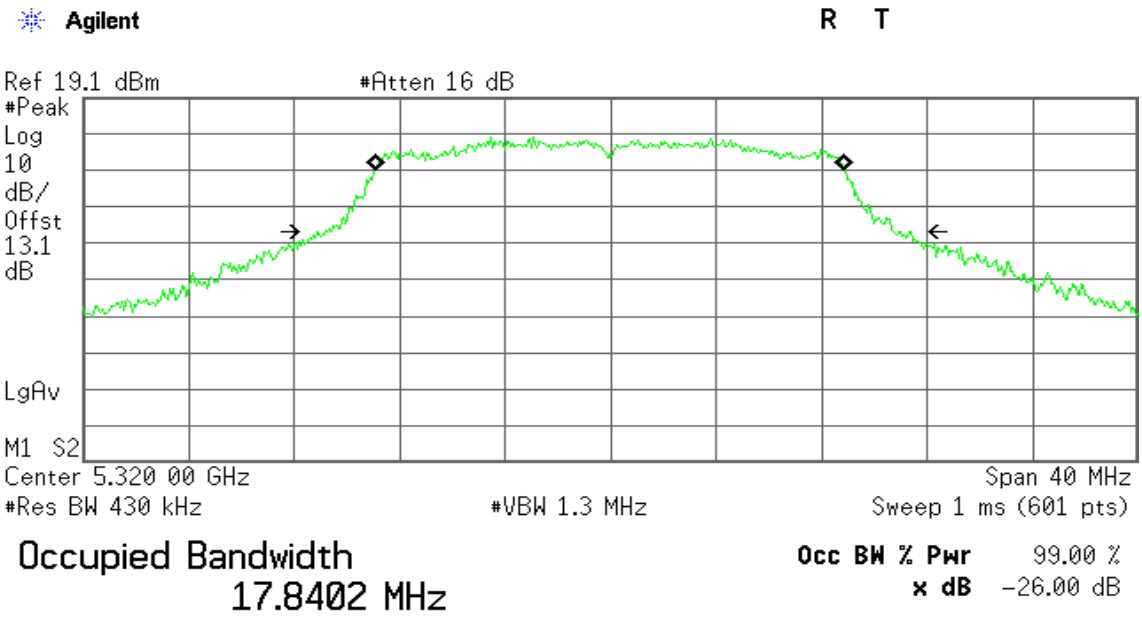
Transmit Freq Error 2.328 kHz
x dB Bandwidth 22.843 MHz

5280 MHz



Transmit Freq Error 12.629 kHz
x dB Bandwidth 22.898 MHz

5320 MHz



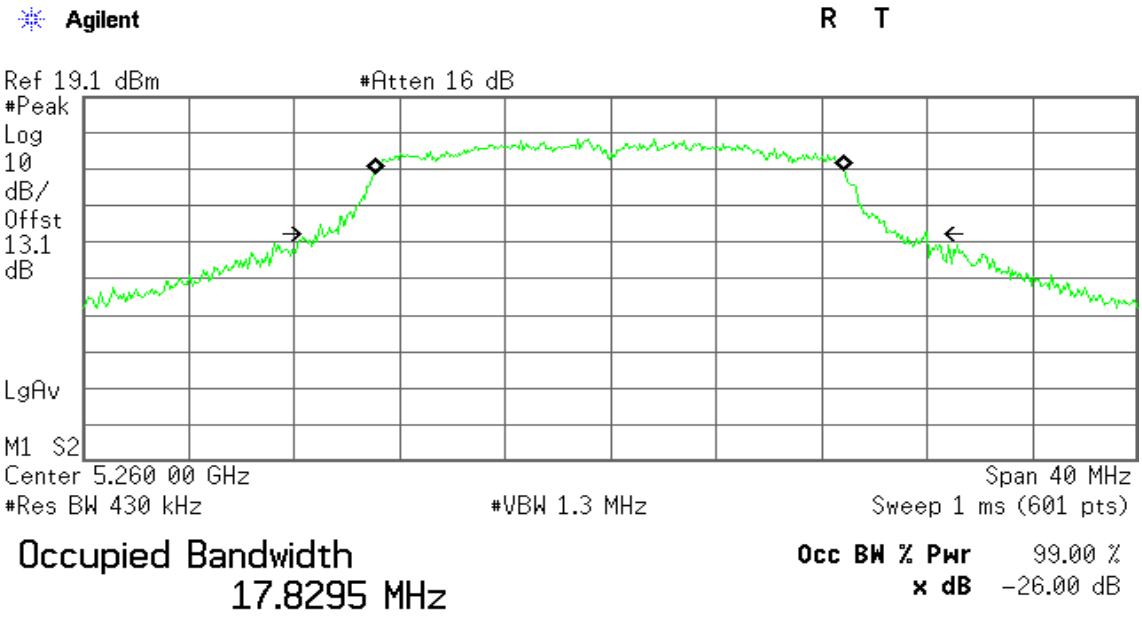
Occupied Bandwidth
17.8402 MHz

Occ BW % Pwr	99.00 %
x dB	-26.00 dB

Transmit Freq Error	-38.653 kHz
x dB Bandwidth	22.542 MHz

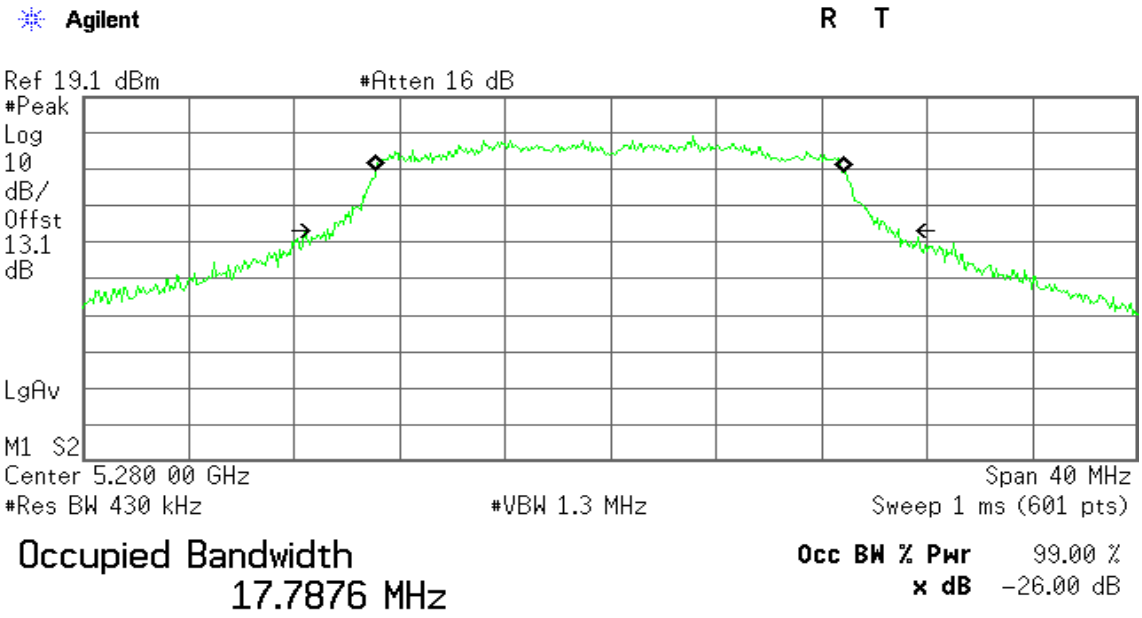
IEEE 802.11n HT 20 MHz Channel mode / 5260 ~ 5320MHz / Chain 1

5260 MHz



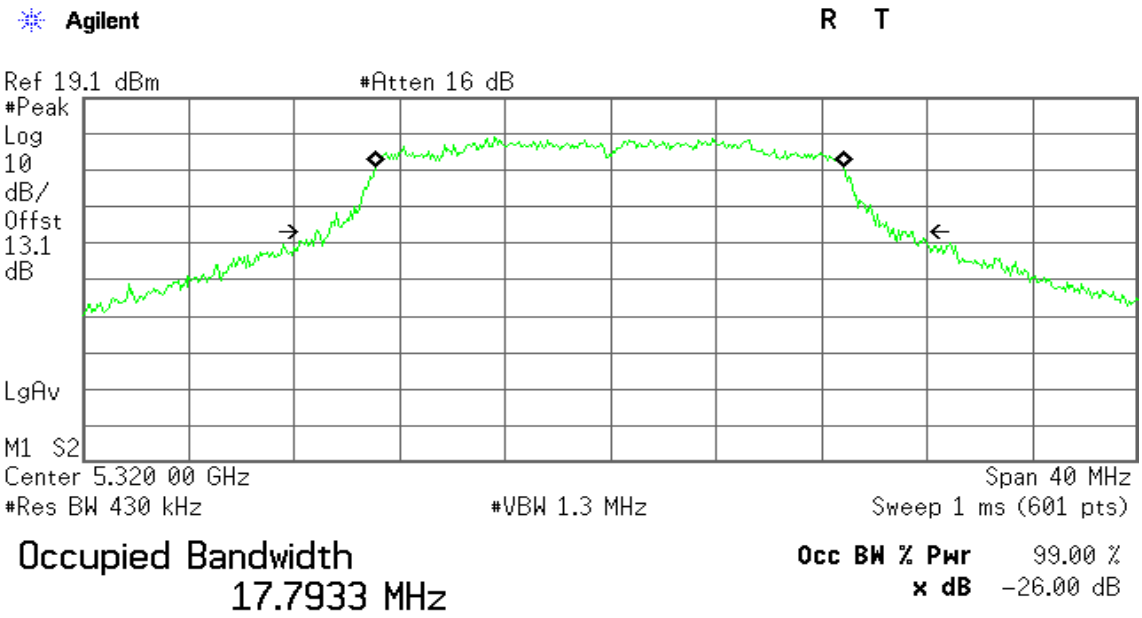
Transmit Freq Error -21.760 kHz
x dB Bandwidth 23.092 MHz

5280 MHz



Transmit Freq Error -17.329 kHz
x dB Bandwidth 21.692 MHz

5320 MHz



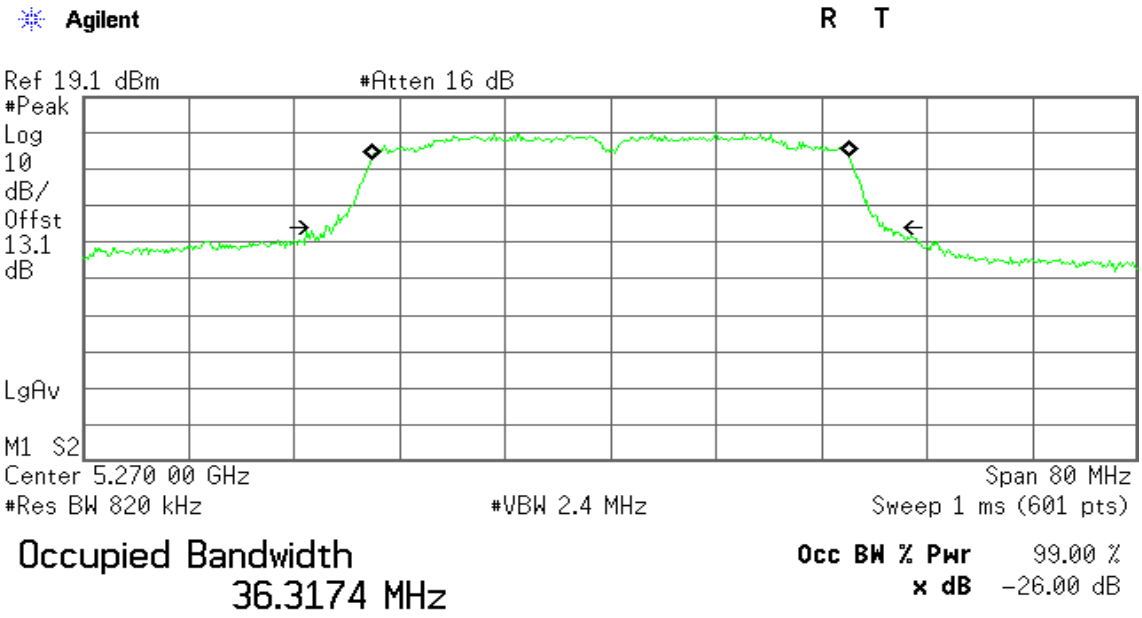
Occupied Bandwidth
17.7933 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error -21.225 kHz
x dB Bandwidth 22.645 MHz

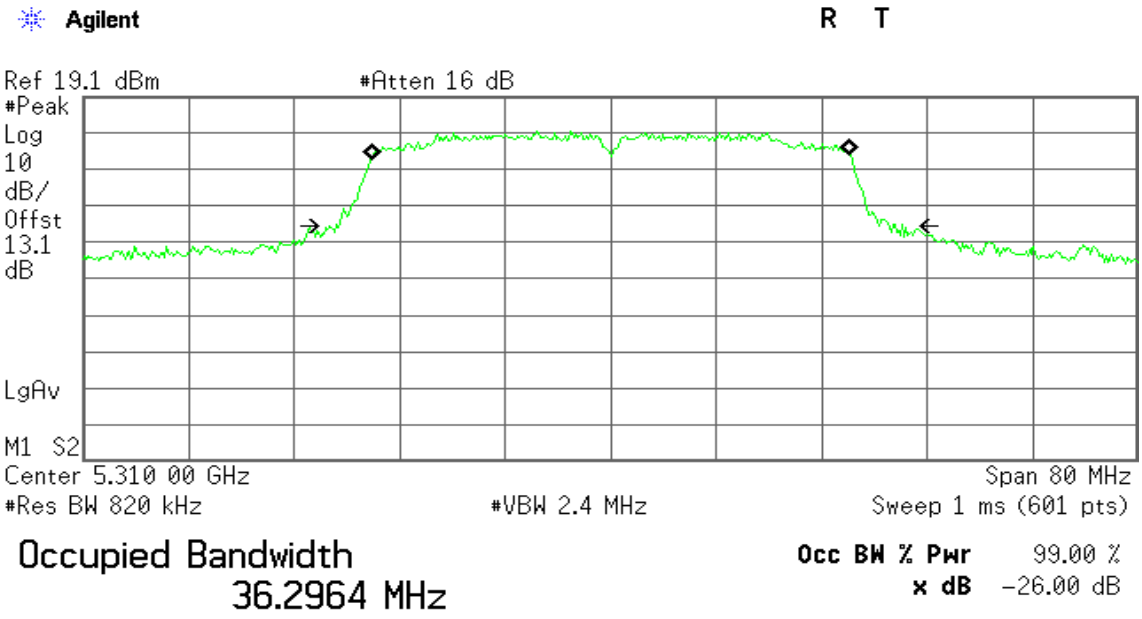
IEEE 802.11n HT 40 MHz mode / 5270 ~ 5310MHz / Chain 0

5270 MHz



Transmit Freq Error -25.010 kHz
x dB Bandwidth 42.621 MHz

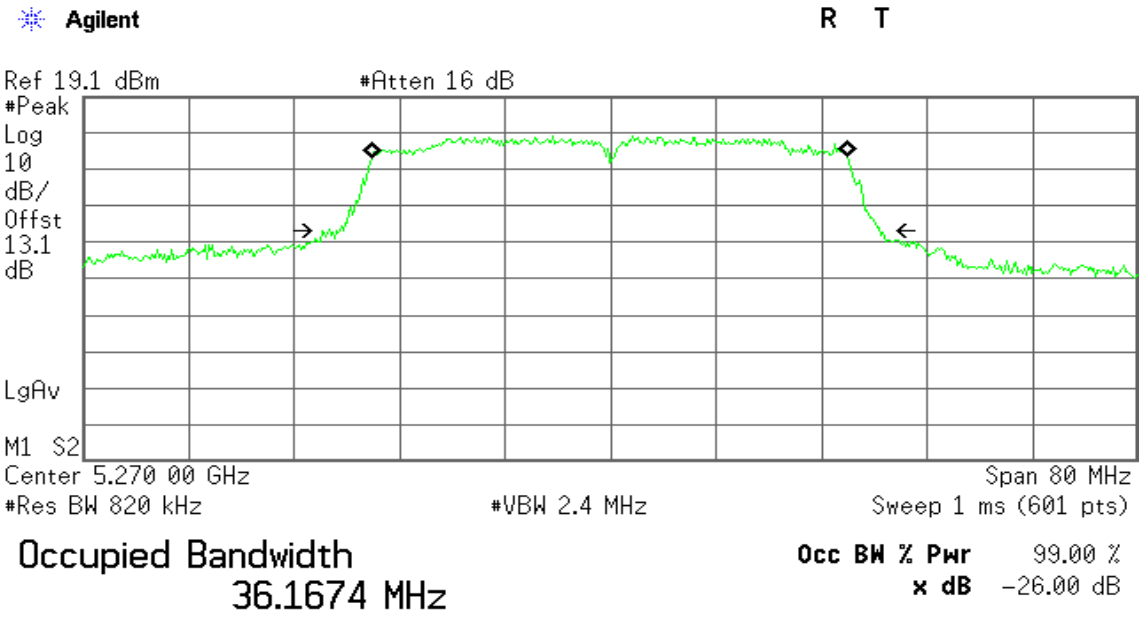
5310 MHz



Transmit Freq Error 22.484 kHz
x dB Bandwidth 43.010 MHz

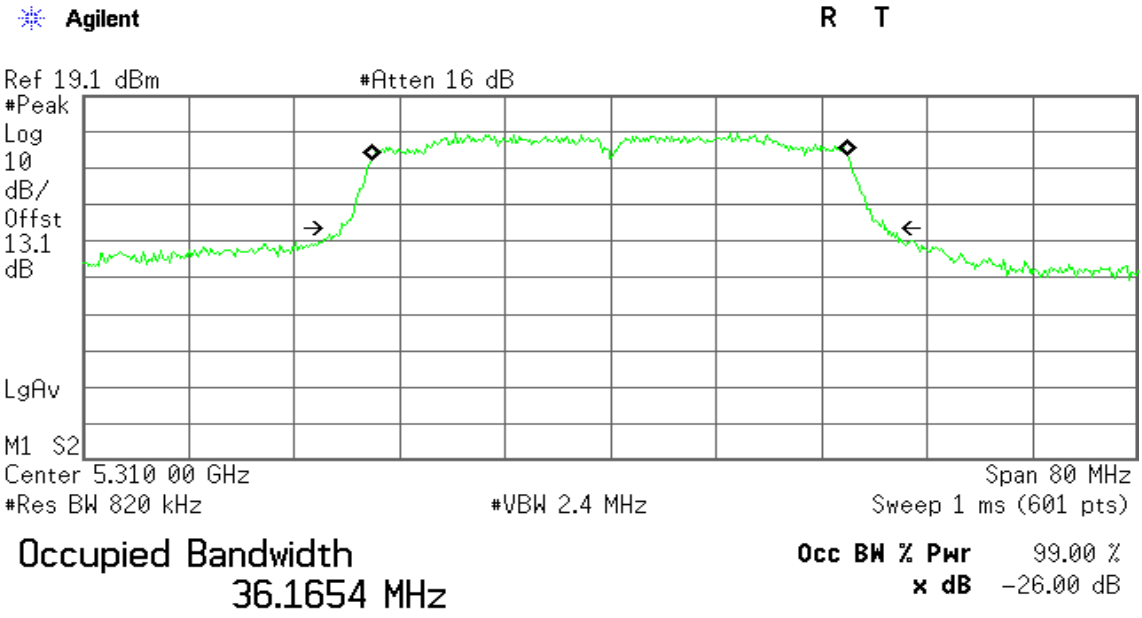
IEEE 802.11n HT 40 MHz mode / 5270 ~ 5310MHz / Chain 1

5270 MHz



Transmit Freq Error -61.410 kHz
x dB Bandwidth 41.855 MHz

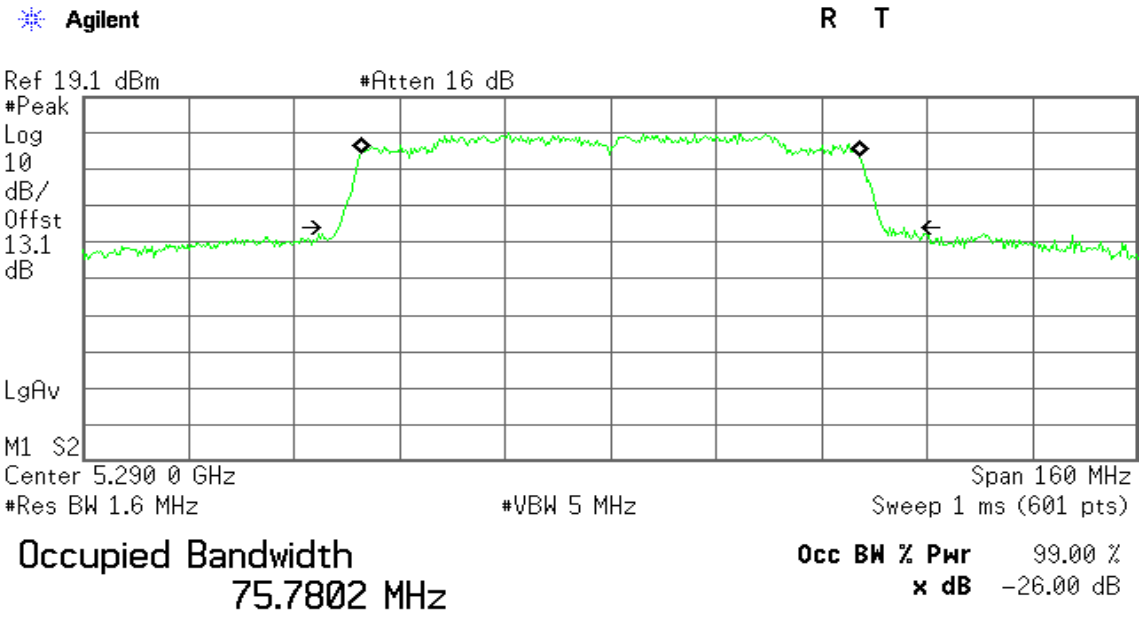
5310 MHz



Transmit Freq Error -35.653 kHz
x dB Bandwidth 41.261 MHz

IEEE 802.11ac VHT 80 MHz mode / 5290MHz / Chain 0

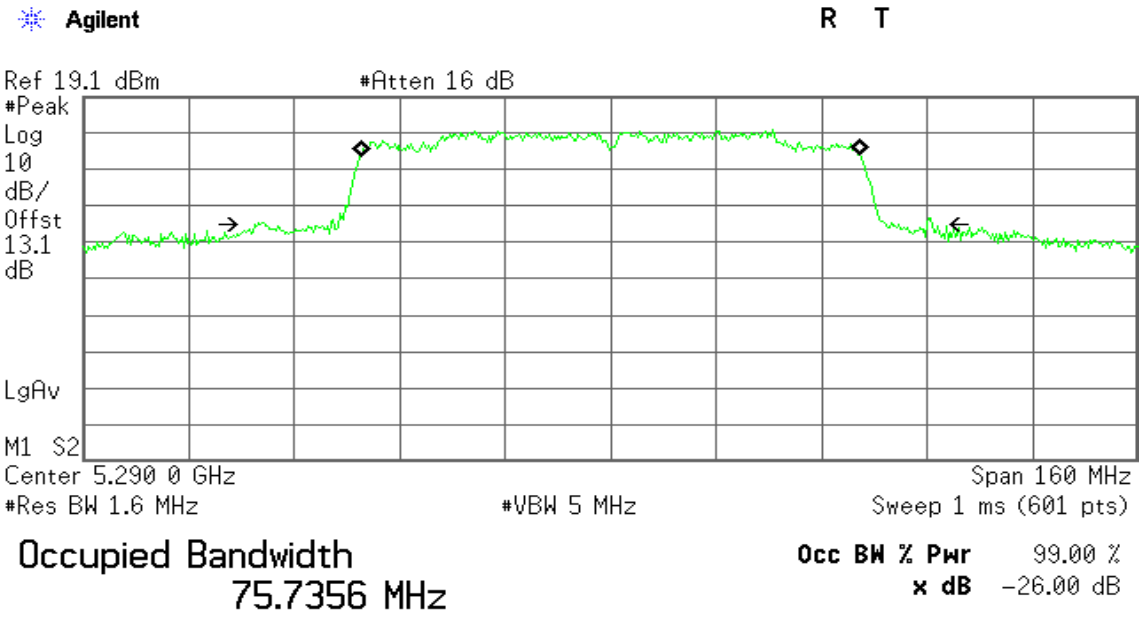
5290 MHz



Transmit Freq Error	-43.728 kHz
x dB Bandwidth	85.874 MHz

IEEE 802.11ac VHT 80 MHz mode / 5290MHz / Chain 1

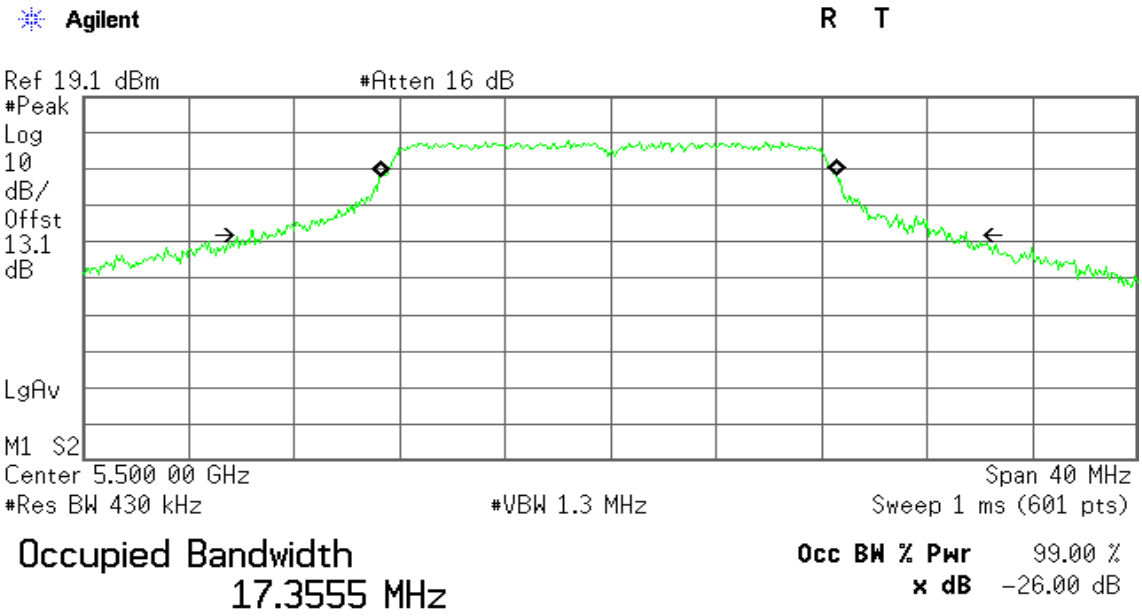
5290 MHz



Transmit Freq Error	-4.173 kHz
x dB Bandwidth	102.643 MHz

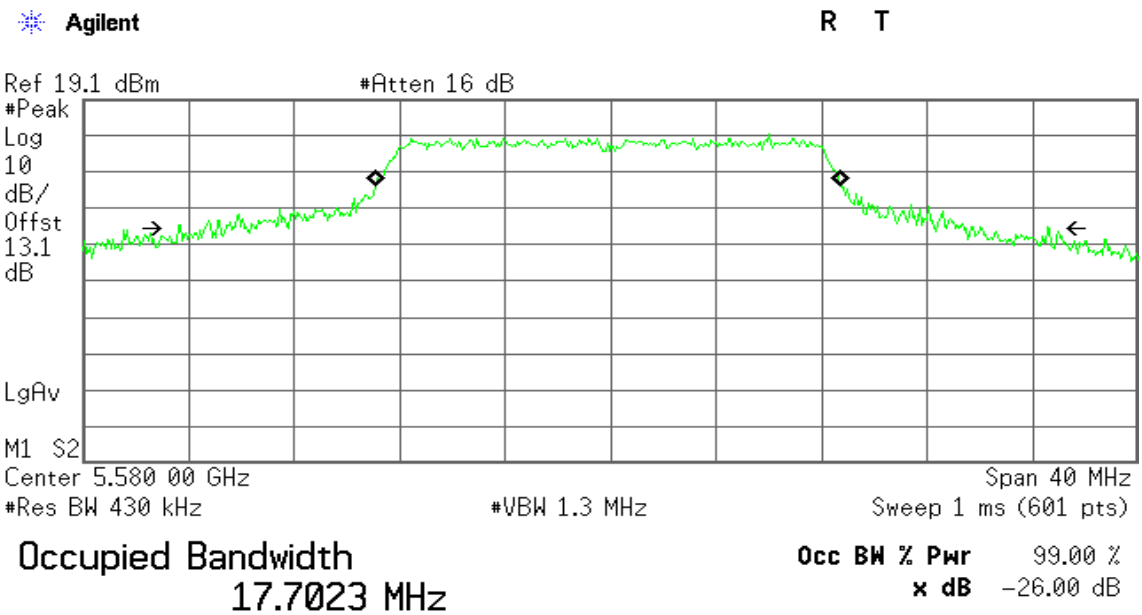
Test mode: IEEE 802.11a mode / 5500 ~ 5720MHz

5500 MHz



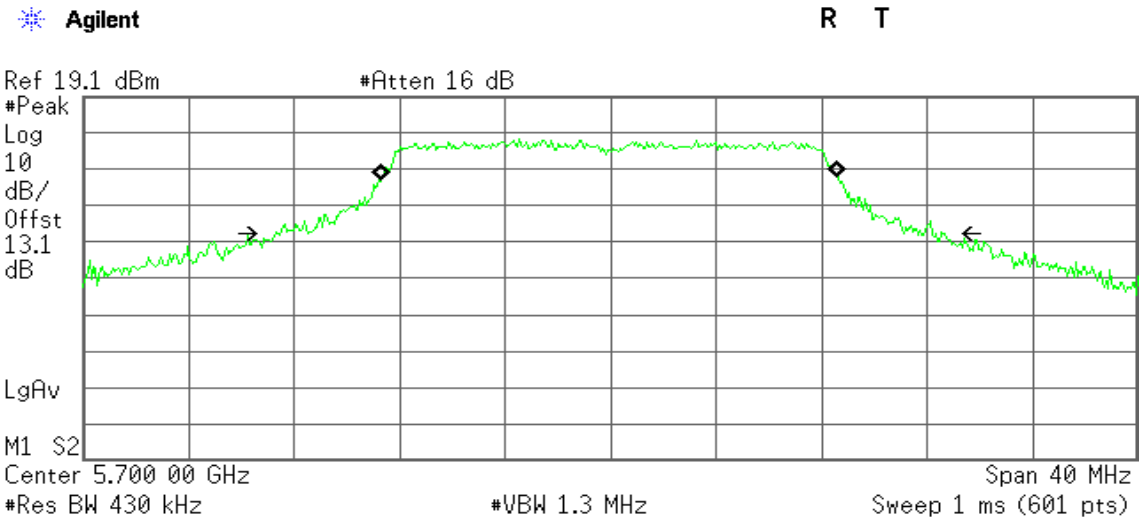
Transmit Freq Error -81.345 kHz
x dB Bandwidth 27.121 MHz

5580 MHz



Transmit Freq Error -91.845 kHz
x dB Bandwidth 33.066 MHz

5700 MHz

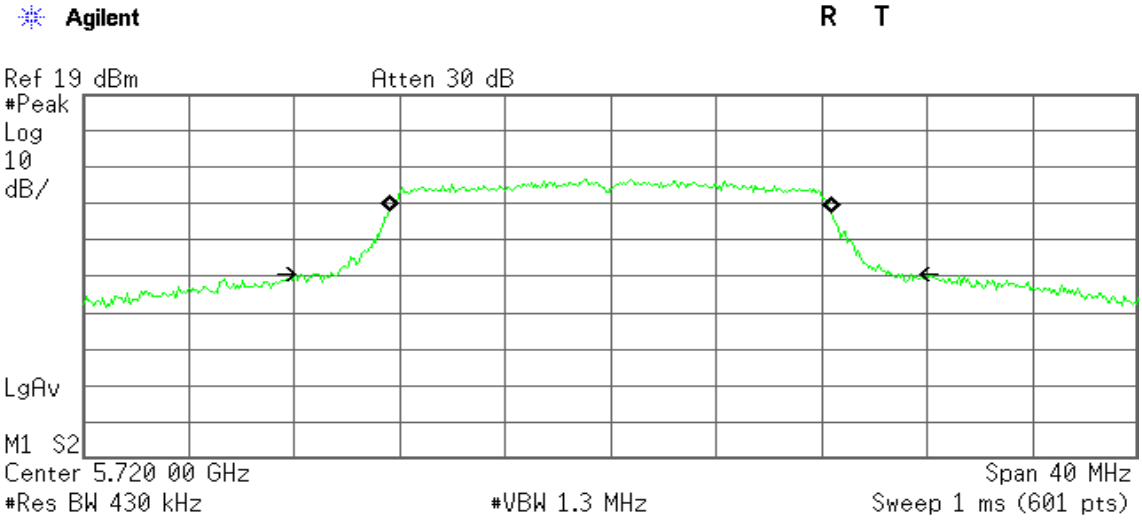


Occupied Bandwidth
17.3371 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error -39.654 kHz
x dB Bandwidth 25.375 MHz

5720 MHz (Band III)

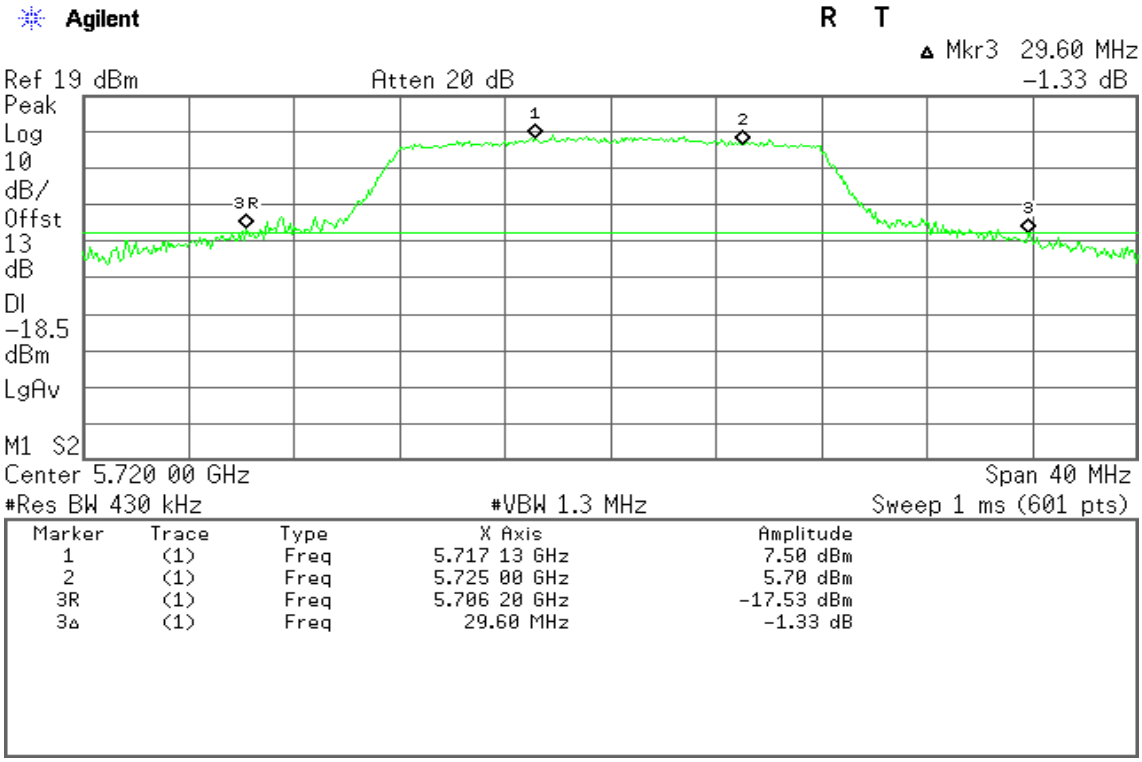


Occupied Bandwidth
16.8176 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

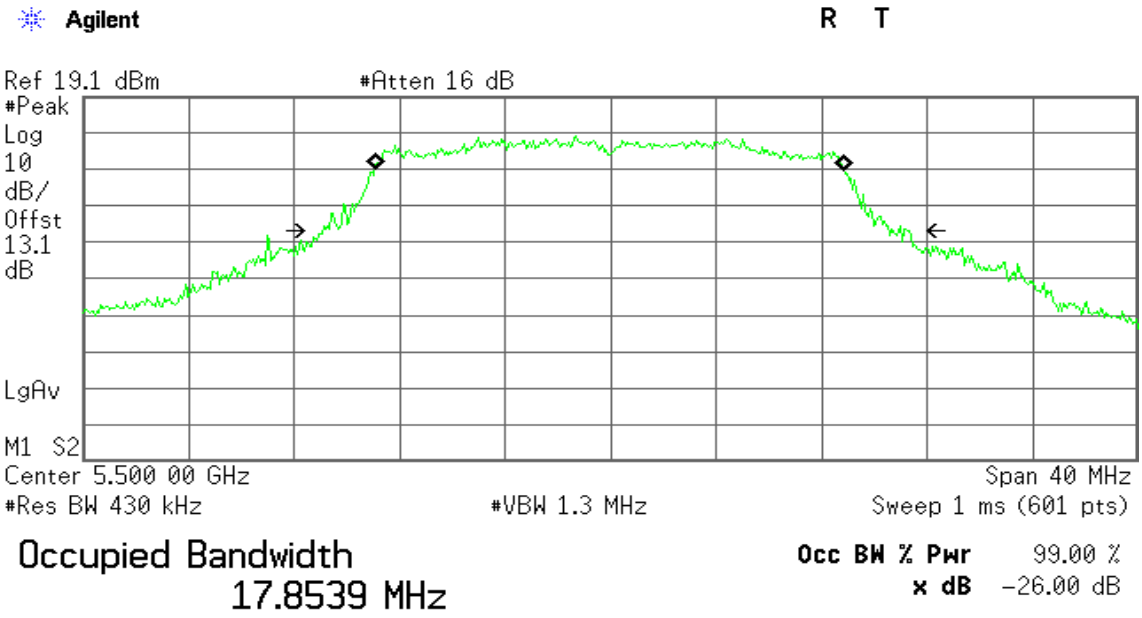
Transmit Freq Error -13.574 kHz
x dB Bandwidth 22.346 MHz

5720 MHz (Band IV)



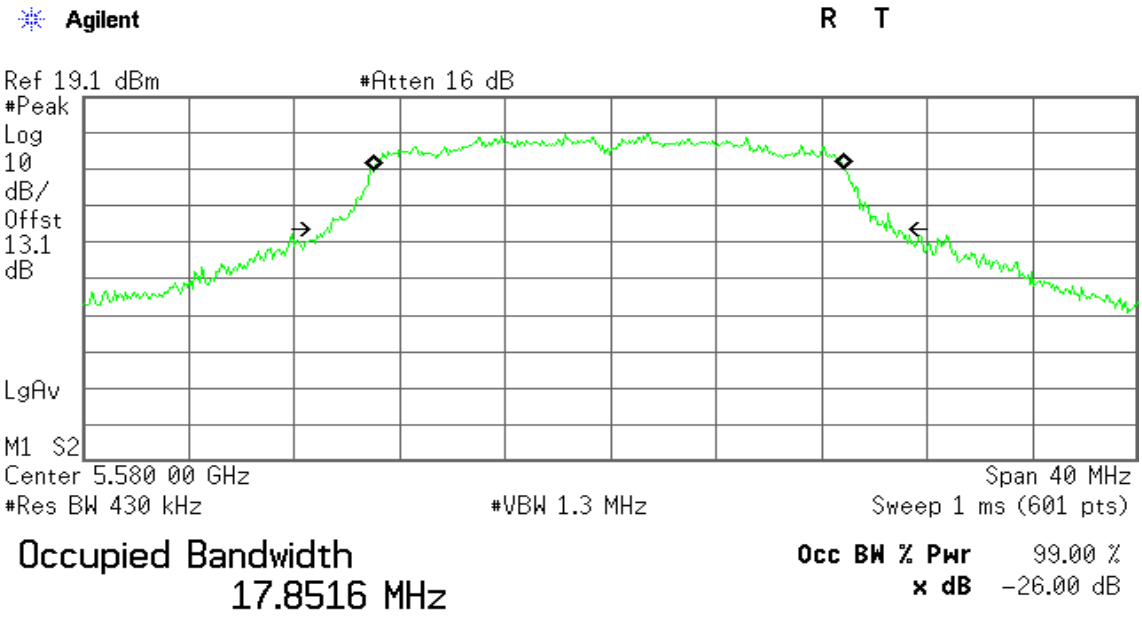
IEEE 802.11n HT 20 MHz Channel mode / 5500 ~ 5720MHz / Chain 0

5500 MHz



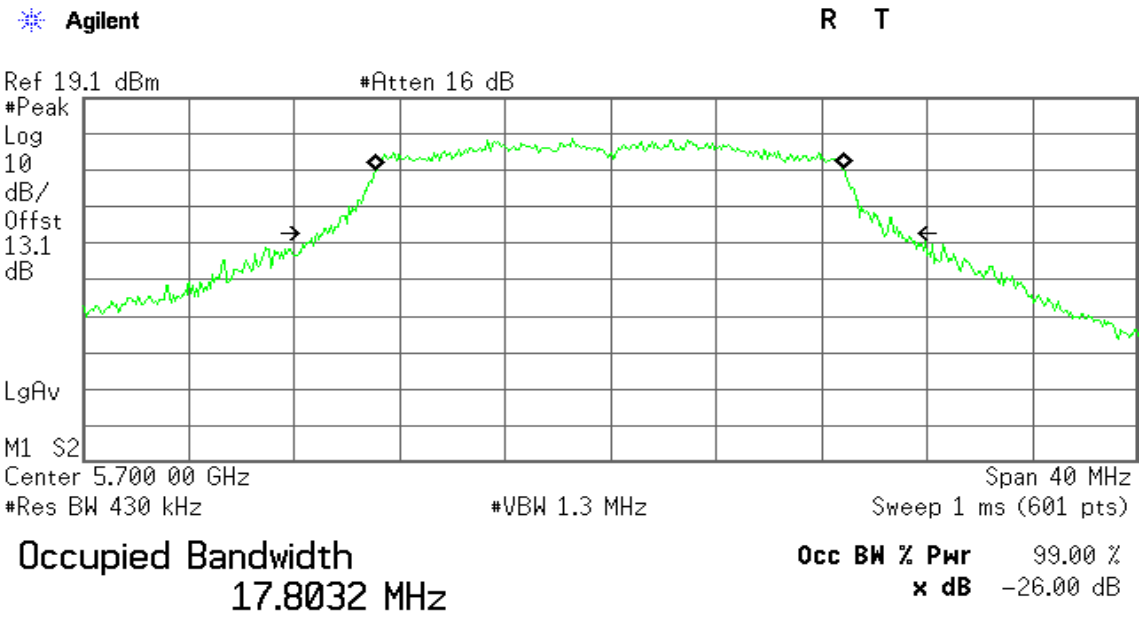
Transmit Freq Error -34.931 kHz
x dB Bandwidth 22.248 MHz

5580 MHz



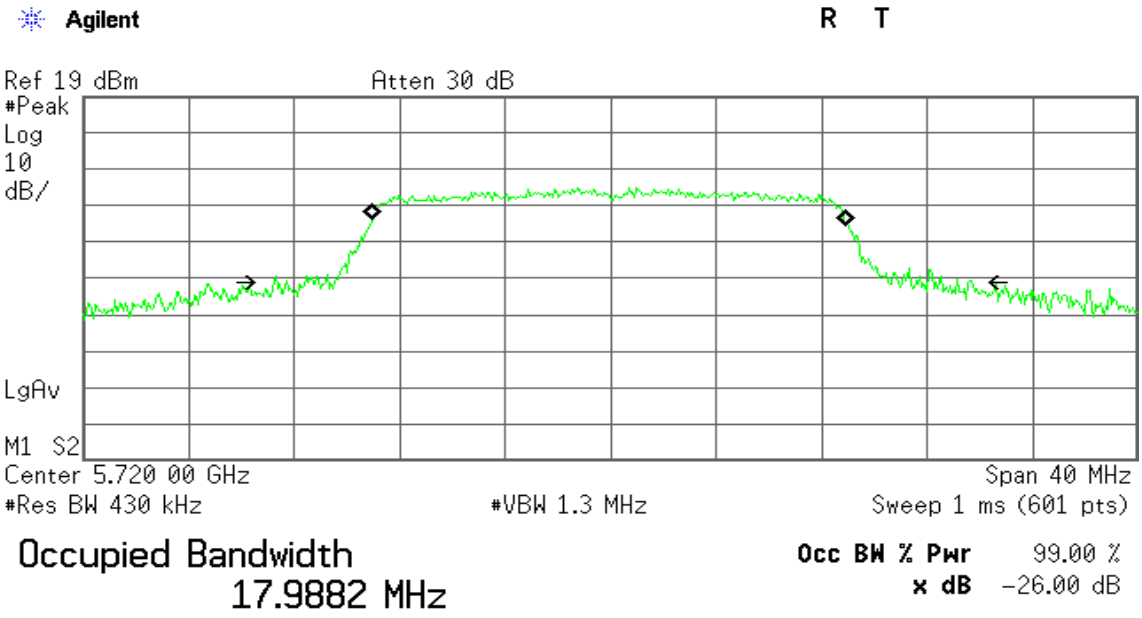
Transmit Freq Error -58.778 kHz
x dB Bandwidth 21.461 MHz

5700 MHz



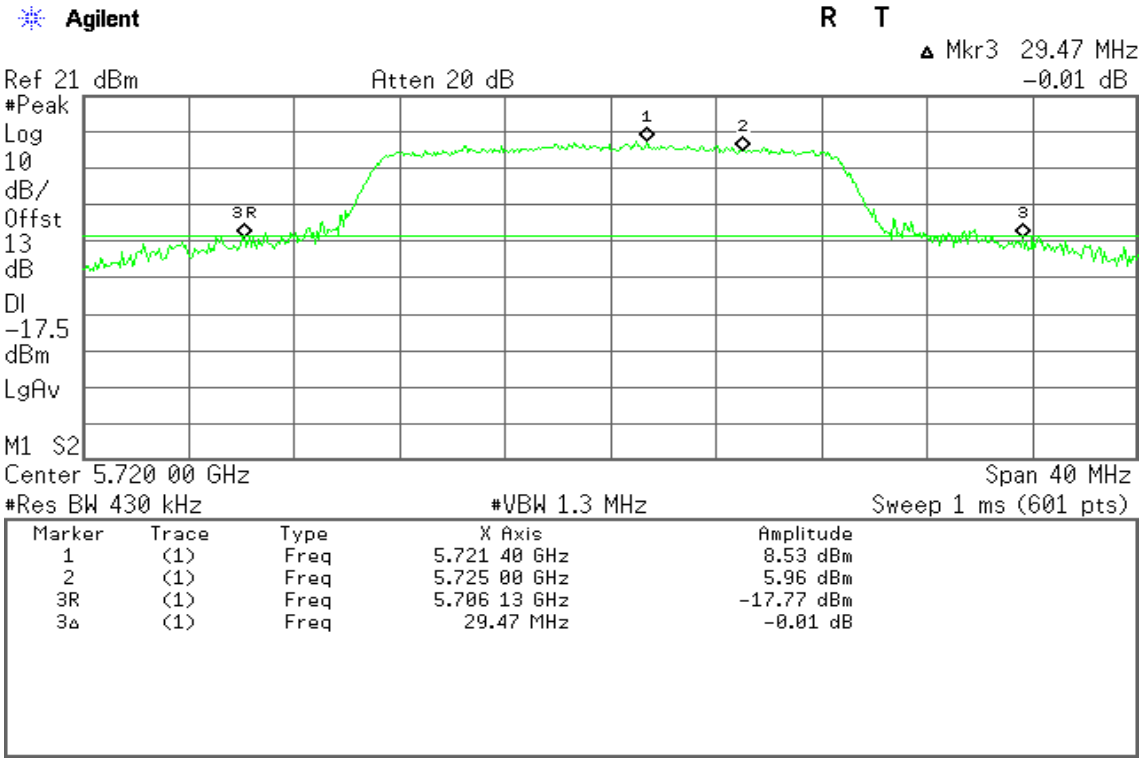
Transmit Freq Error	-40.800 kHz
x dB Bandwidth	22.170 MHz

5720 MHz (Band III)



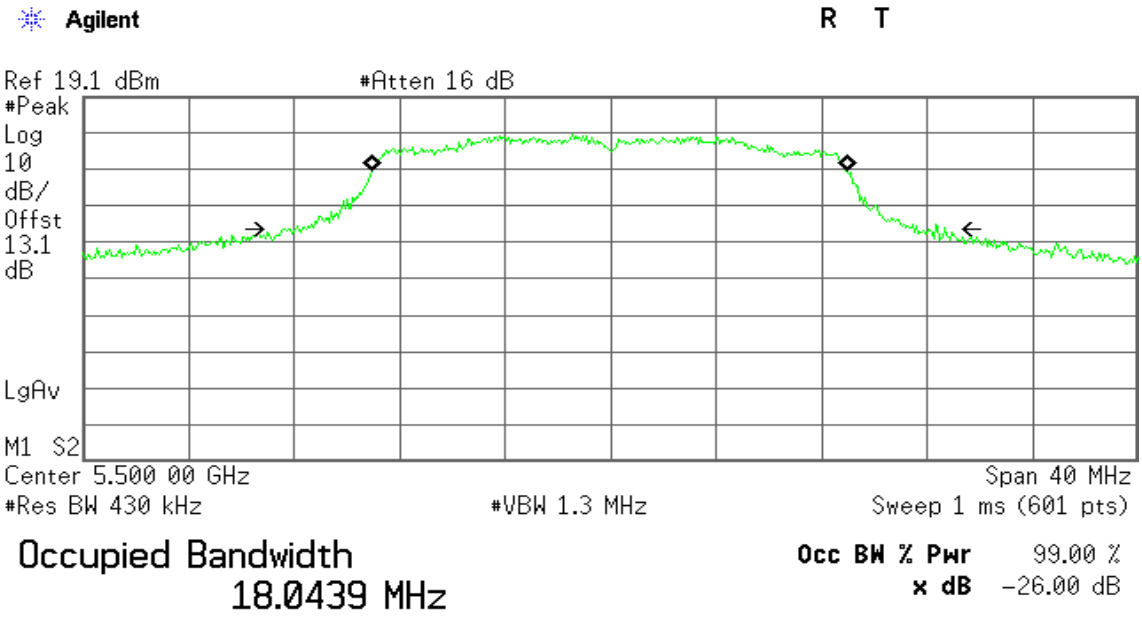
Transmit Freq Error	-55.588 kHz
x dB Bandwidth	26.458 MHz

5720 MHz (Band IV)



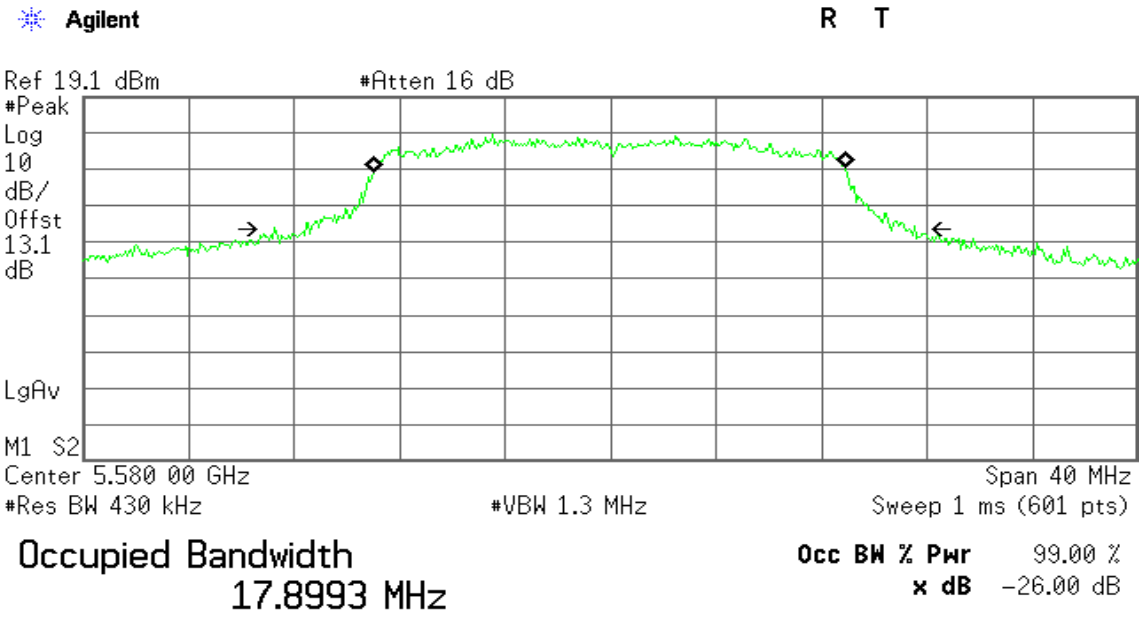
IEEE 802.11n HT 20 MHz Channel mode / 5500 ~ 5720MHz / Chain 1

5500 MHz



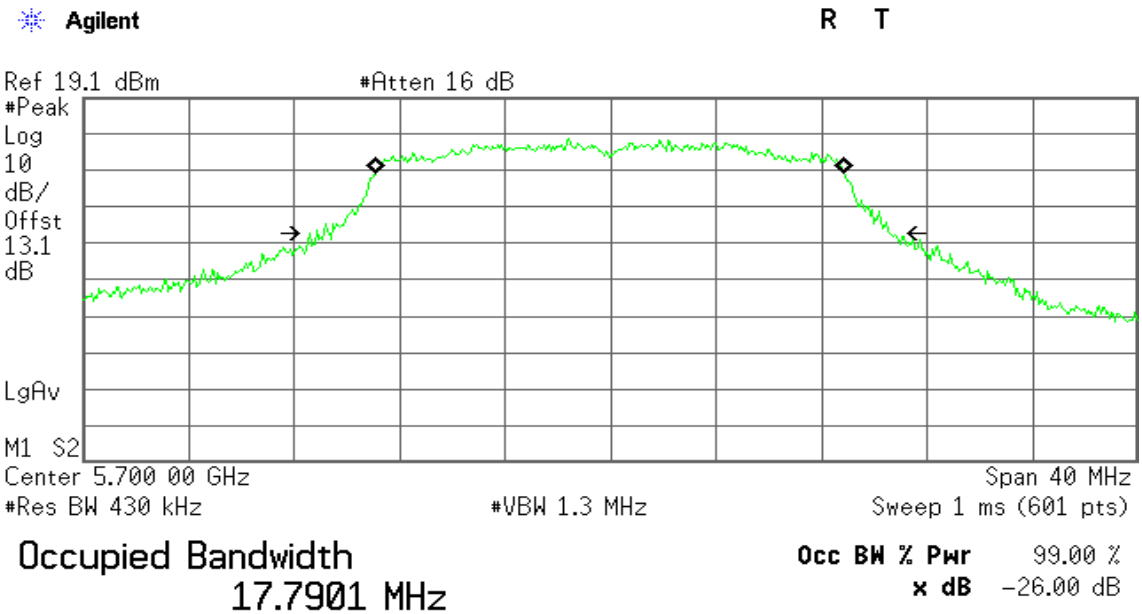
Transmit Freq Error -30.965 kHz
x dB Bandwidth 25.120 MHz

5580 MHz



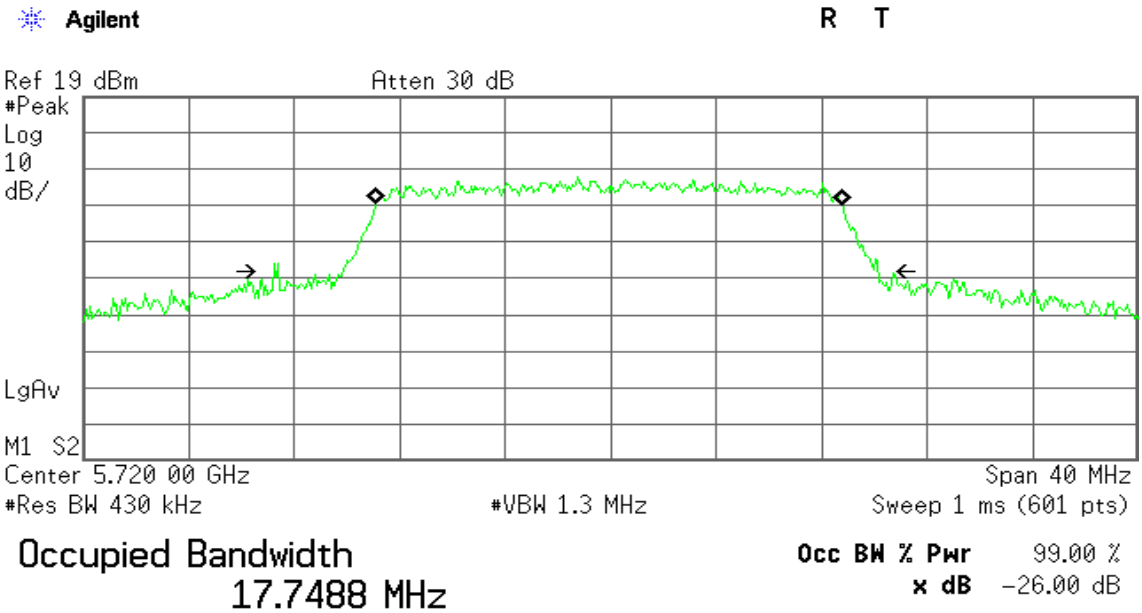
Transmit Freq Error -44.733 kHz
x dB Bandwidth 24.296 MHz

5700 MHz



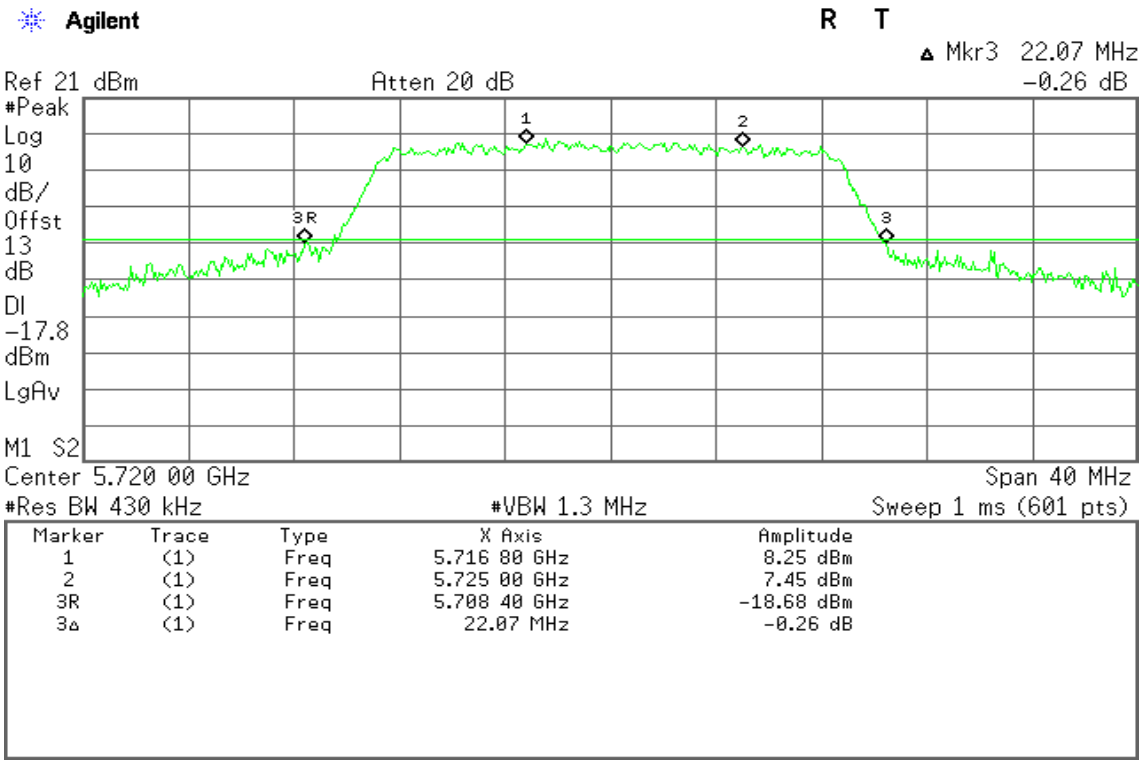
Transmit Freq Error	-31.841 kHz
x dB Bandwidth	21.753 MHz

5720 MHz (Band III)



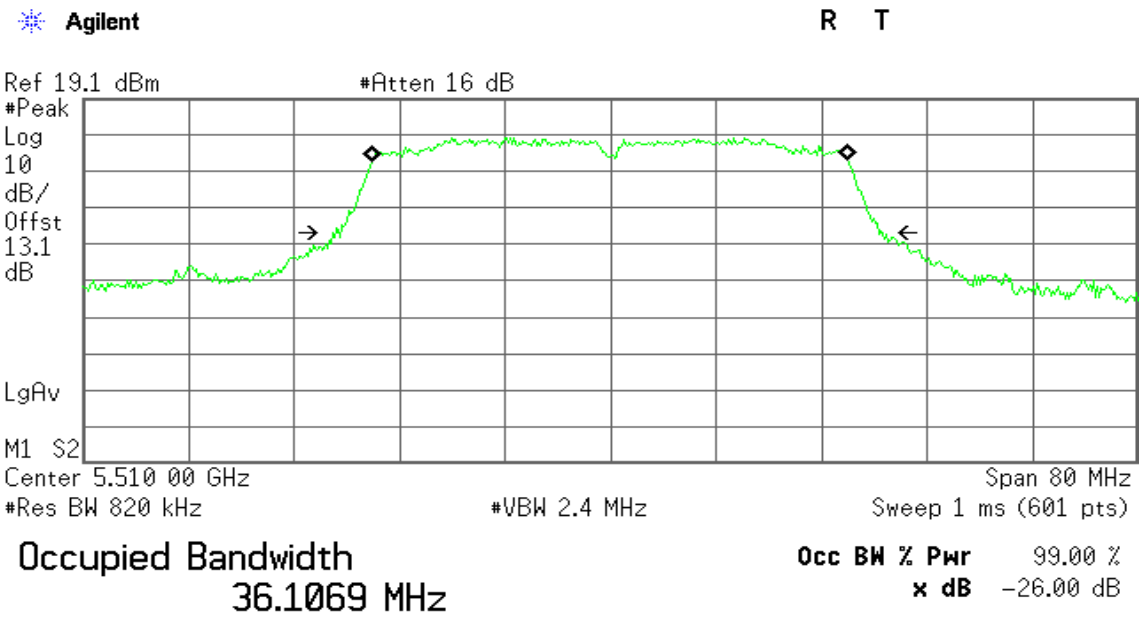
Transmit Freq Error	-57.864 kHz
x dB Bandwidth	22.944 MHz

5720 MHz (Band IV)



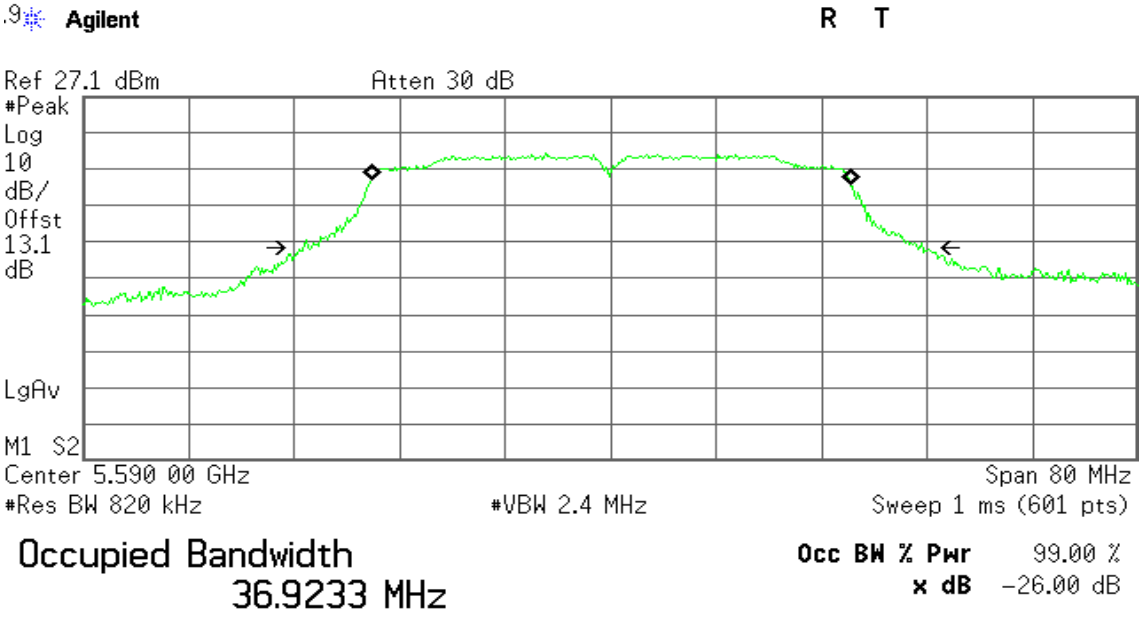
IEEE 802.11n HT 40 MHz mode / 5510 ~ 5710MHz / Chain 0

5510 MHz



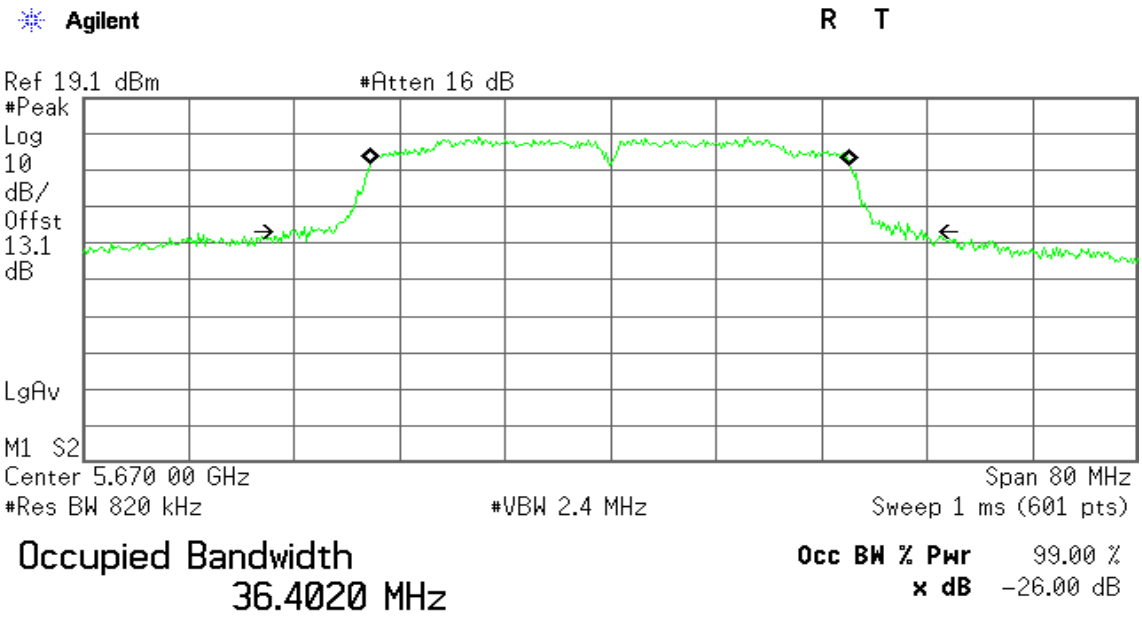
Transmit Freq Error -37.048 kHz
x dB Bandwidth 41.449 MHz

5590 MHz



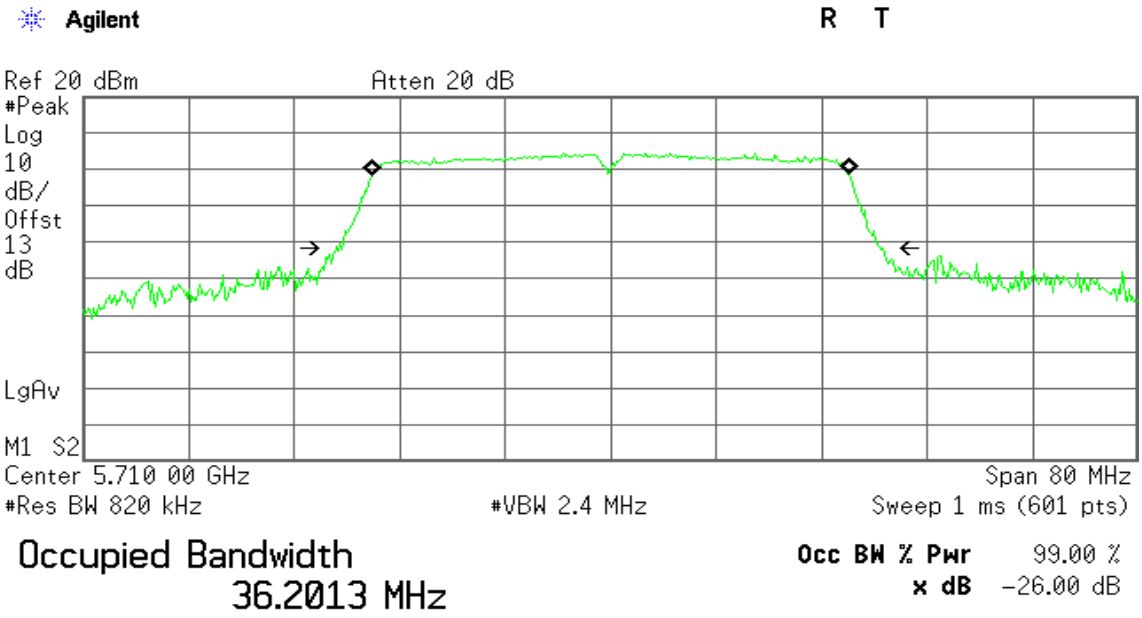
Transmit Freq Error 24.458 kHz
x dB Bandwidth 46.989 MHz

5670 MHz



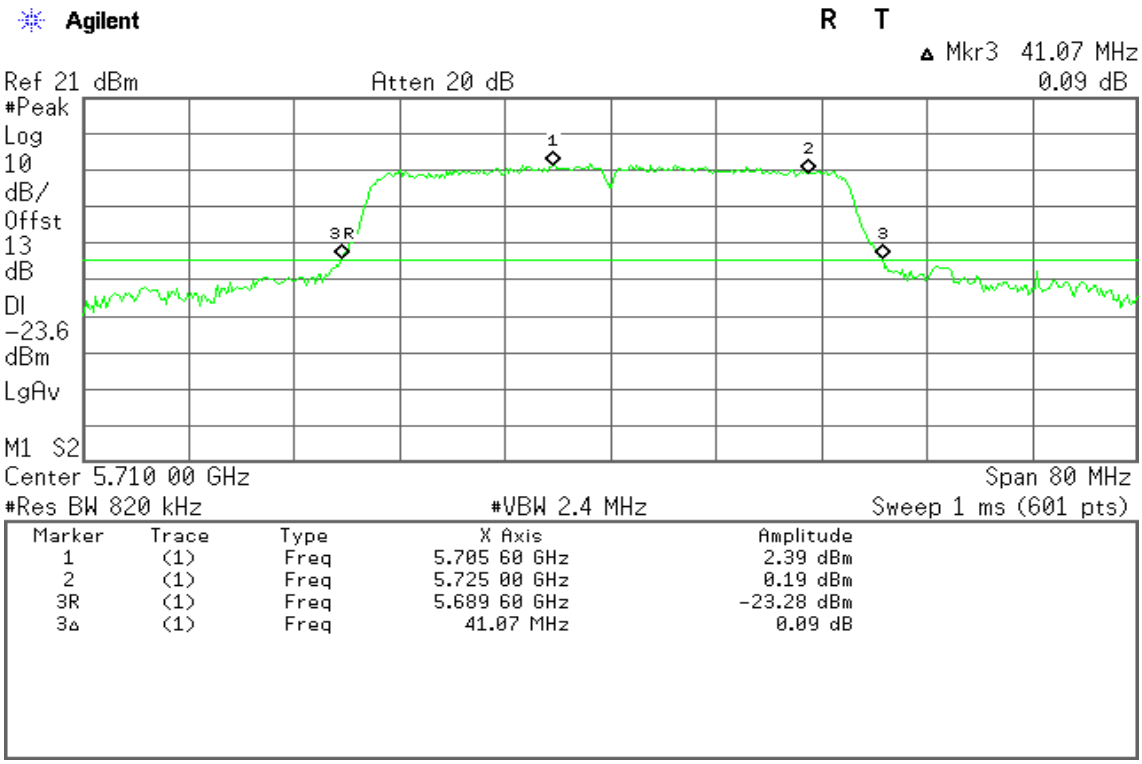
Transmit Freq Error −50.869 kHz
x dB Bandwidth 47.908 MHz

5710 MHz (Band III)



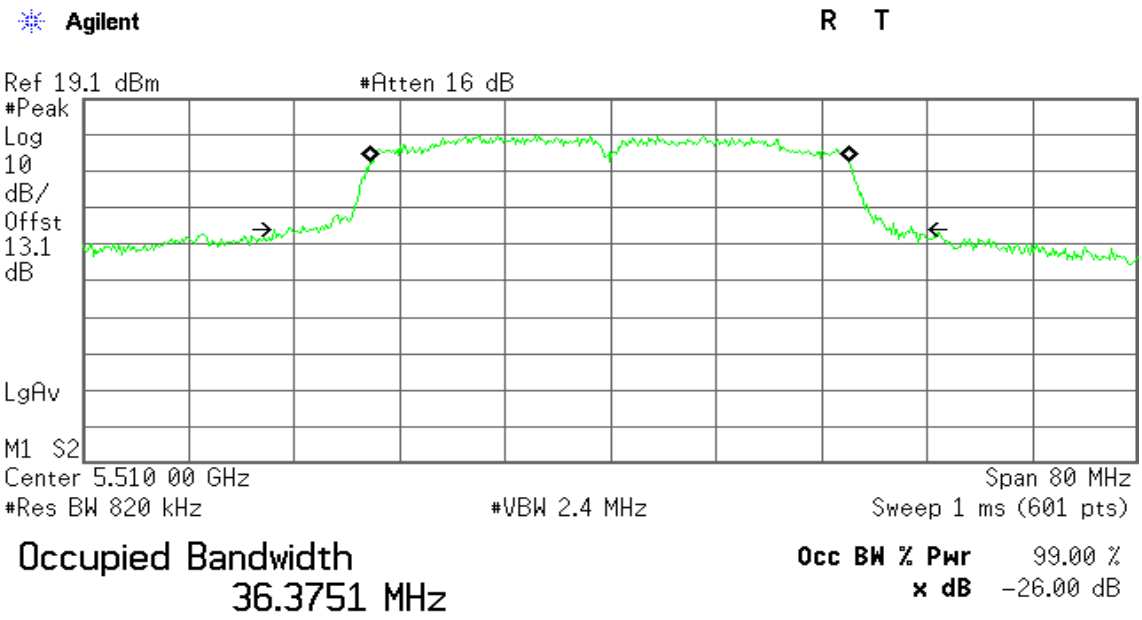
Transmit Freq Error −15.045 kHz
x dB Bandwidth 41.525 MHz

5710 MHz (Band IV)



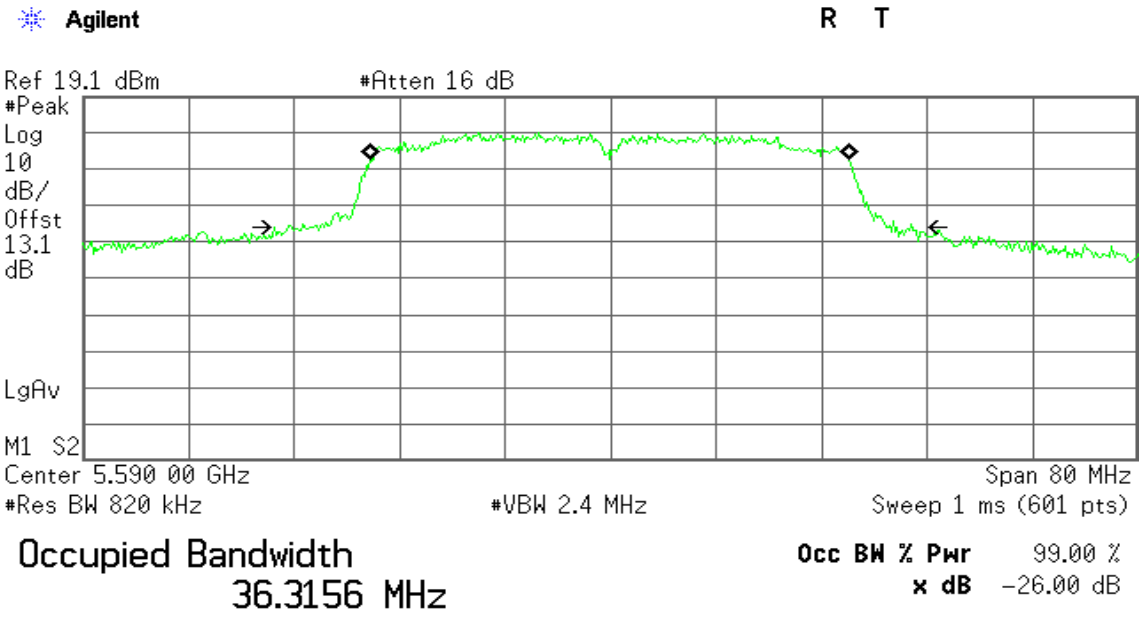
IEEE 802.11n HT 40 MHz mode / 5510 ~ 5710MHz / Chain 1

5510 MHz



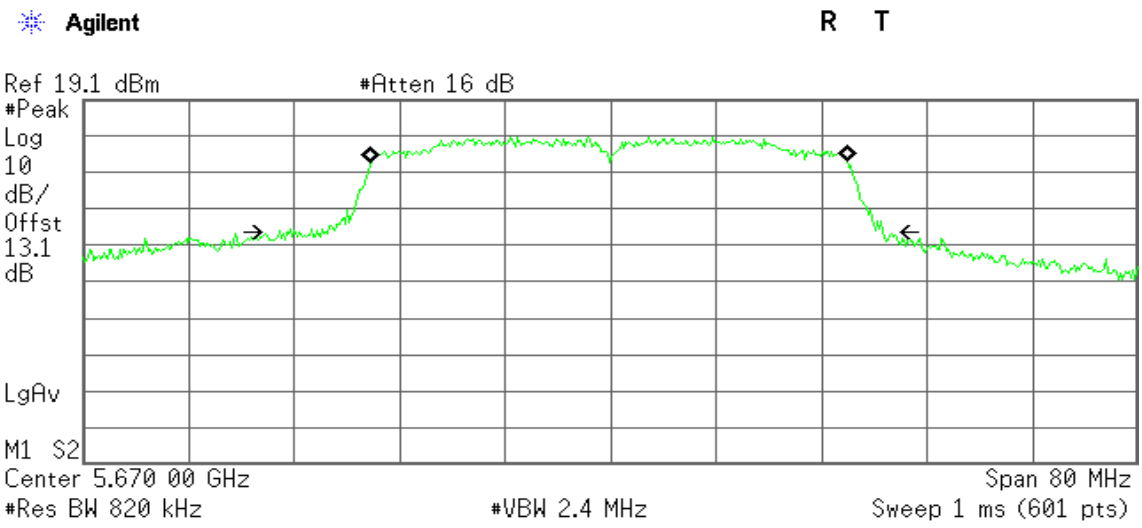
Transmit Freq Error -111.505 kHz
x dB Bandwidth 47.302 MHz

5590 MHz



Transmit Freq Error -111.105 kHz
x dB Bandwidth 47.232 MHz

5670 MHz

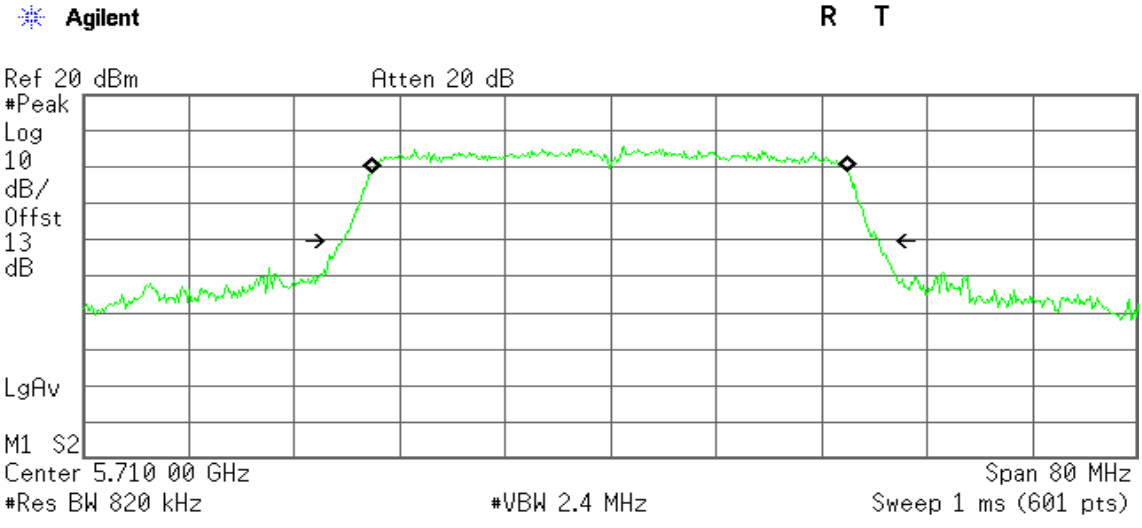


Occupied Bandwidth
36.2256 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error -90.399 kHz
x dB Bandwidth 45.749 MHz

5710 MHz (Band III)

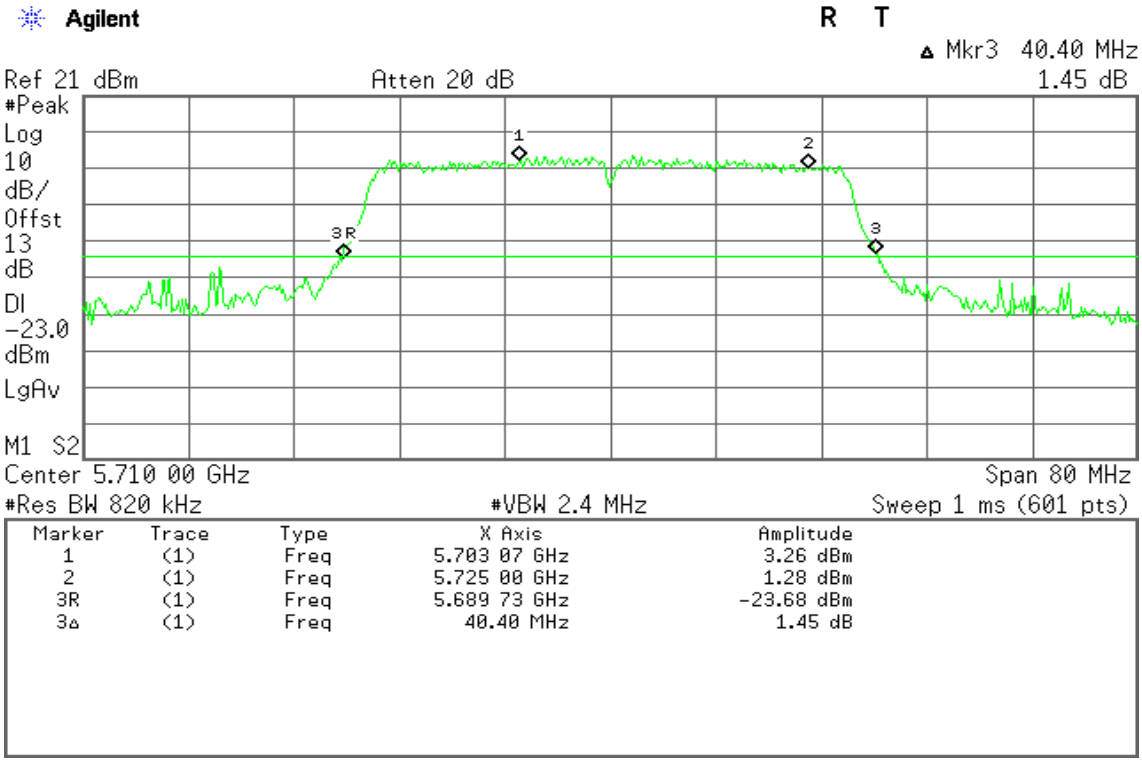


Occupied Bandwidth
36.1712 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

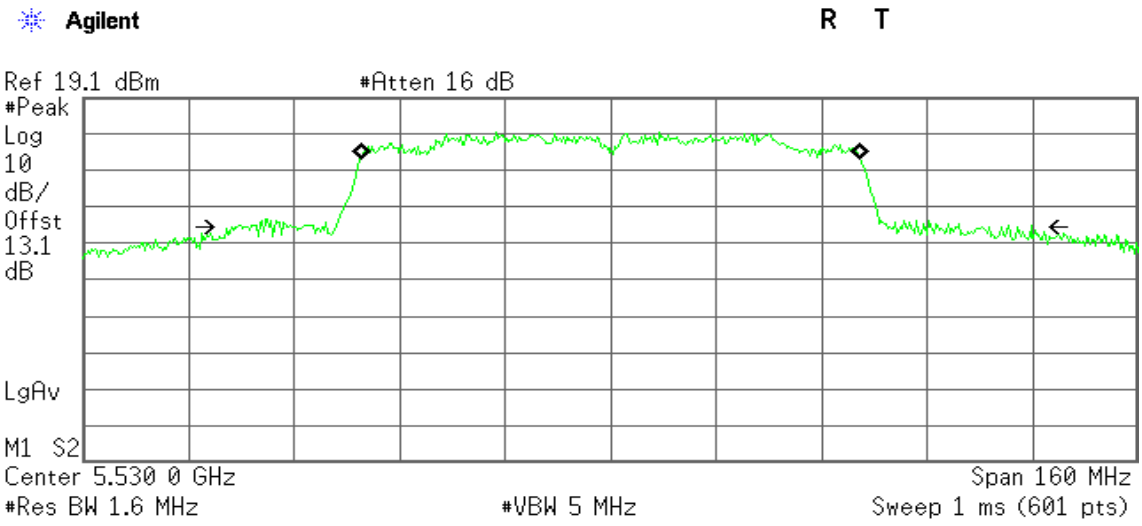
Transmit Freq Error -89.594 kHz
x dB Bandwidth 40.723 MHz

5710 MHz (Band IV)



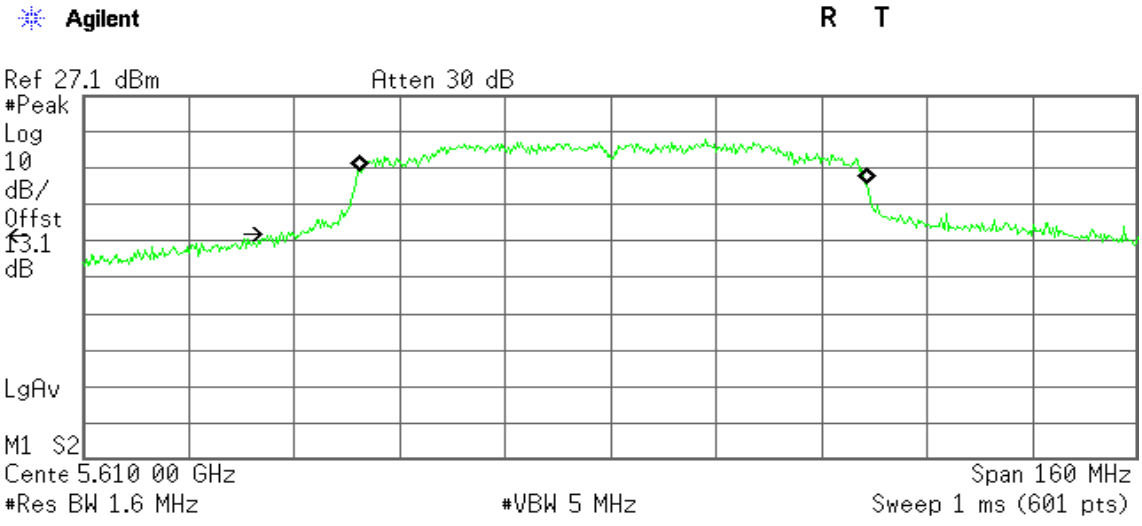
IEEE 802.11ac VHT 80 MHz mode / 5530 ~ 5690MHz/ Chain 0

5530 MHz



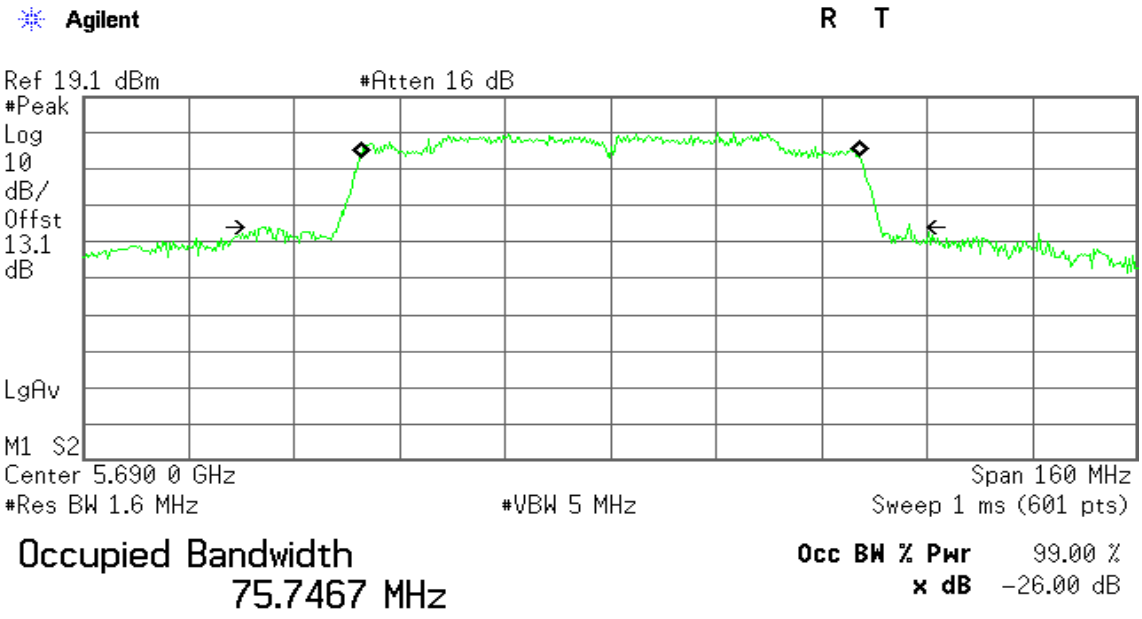
Transmit Freq Error	38.214 kHz
x dB Bandwidth	121.134 MHz

5610 MHz



Transmit Freq Error	416.002 kHz
x dB Bandwidth	128.062 MHz

5690 MHz (Band III)

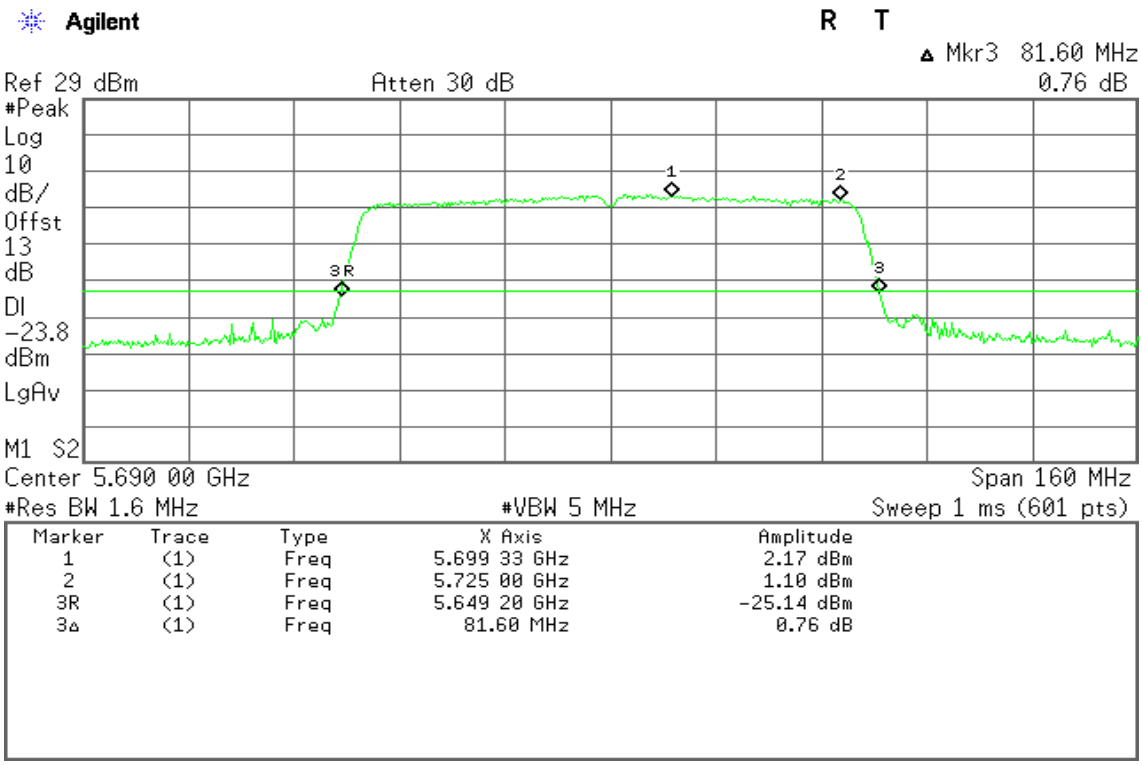


Occupied Bandwidth
75.7467 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error -76.628 kHz
x dB Bandwidth 98.344 MHz

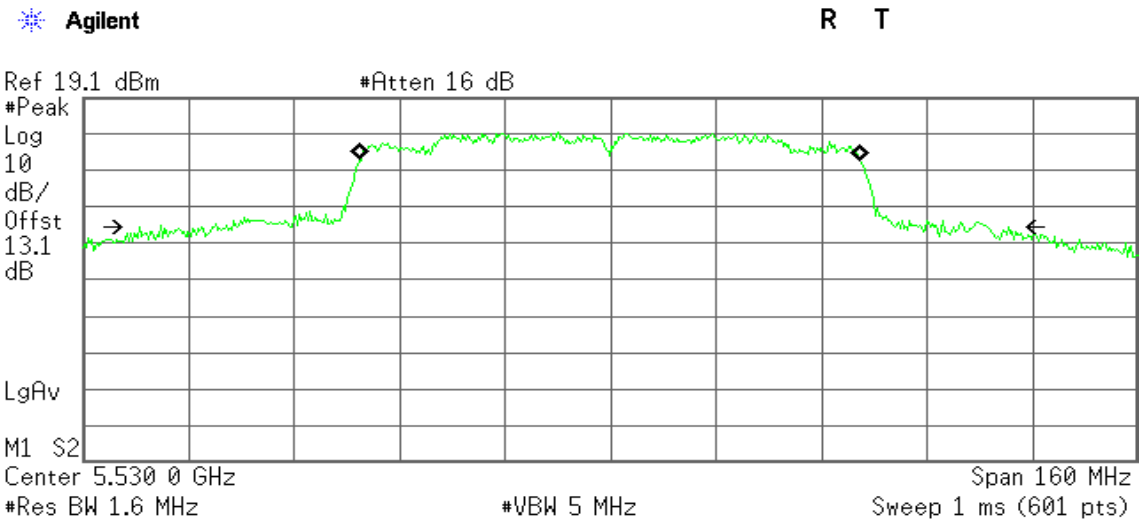
5690 MHz (Band IV)



Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	5.699 33 GHz	2.17 dBm
2	(1)	Freq	5.725 00 GHz	1.10 dBm
3R	(1)	Freq	5.649 20 GHz	-25.14 dBm
3Δ	(1)	Freq	81.60 MHz	0.76 dB

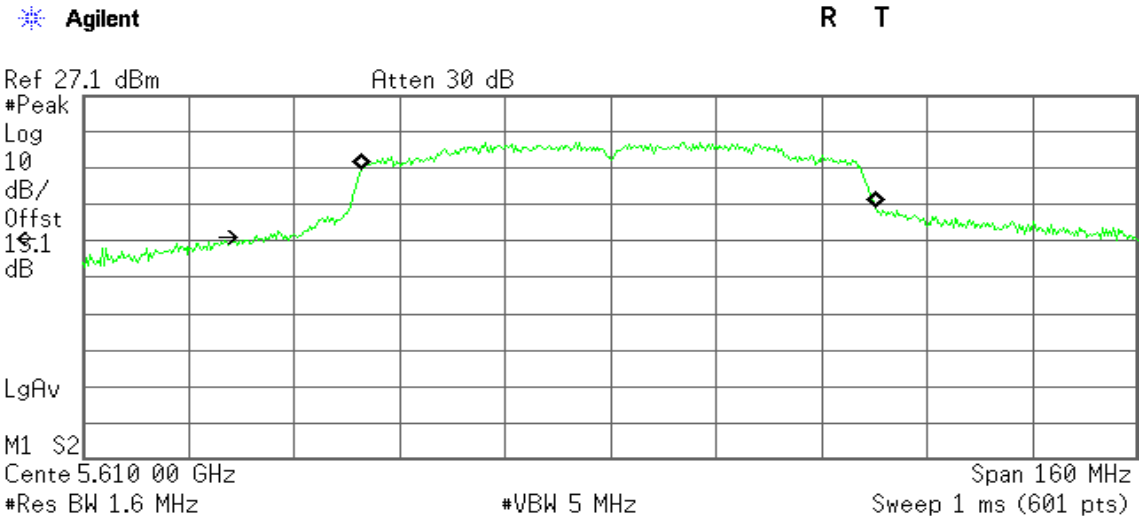
IEEE 802.11ac VHT 80 MHz mode / 5530 ~ 5690MHz/ Chain 1

5530 MHz



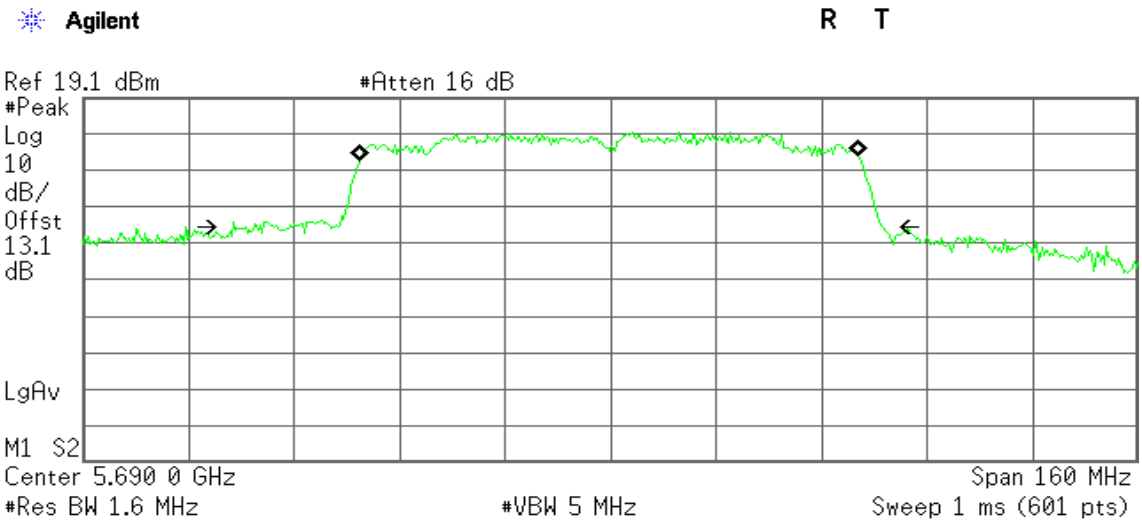
Transmit Freq Error	-122.310 kHz
x dB Bandwidth	131.790 MHz

5610 MHz



Transmit Freq Error	1.209 MHz
x dB Bandwidth	133.340 MHz

5690 MHz (Band III)

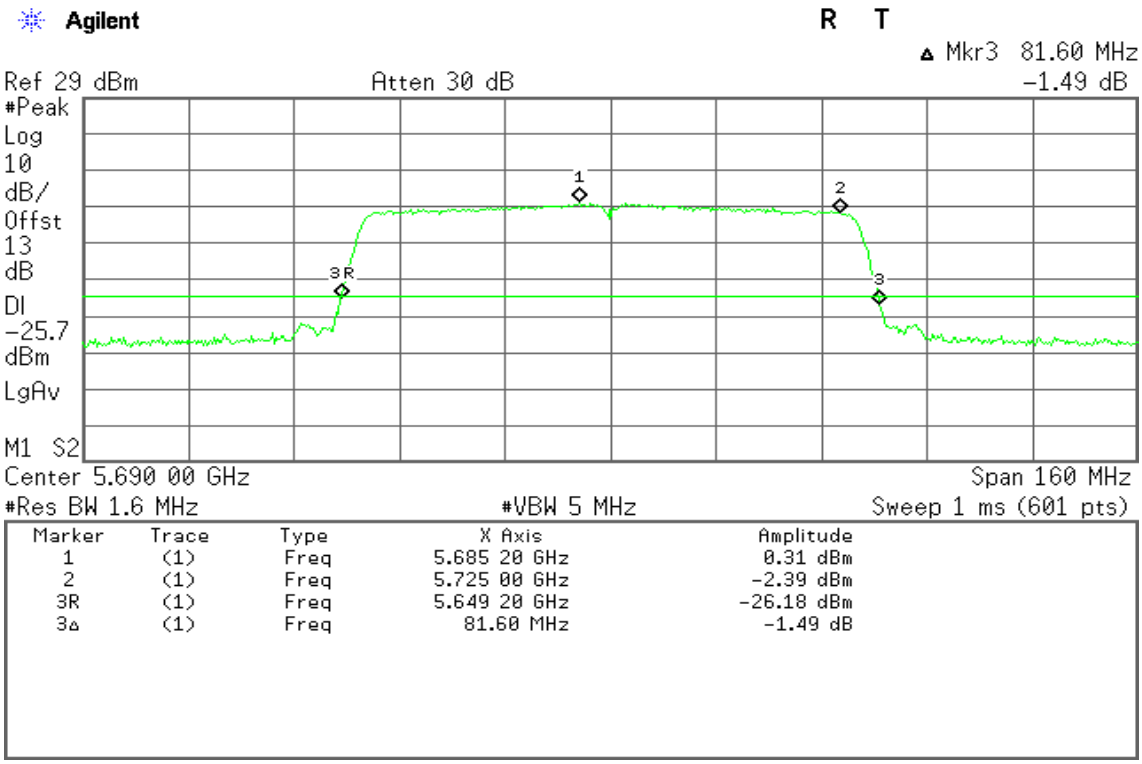


Occupied Bandwidth
75.7323 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error -154.767 kHz
x dB Bandwidth 98.497 MHz

5690 MHz (Band IV)



Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	5.685 20 GHz	0.31 dBm
2	(1)	Freq	5.725 00 GHz	-2.39 dBm
3R	(1)	Freq	5.649 20 GHz	-26.18 dBm
3Δ	(1)	Freq	81.60 MHz	-1.49 dB

7.3 MAXIMUM CONDUCTED OUTPUT POWER

LIMIT

According to §15.407(a)

For the band 5.15-5.25 GHz, 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency band 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-247,

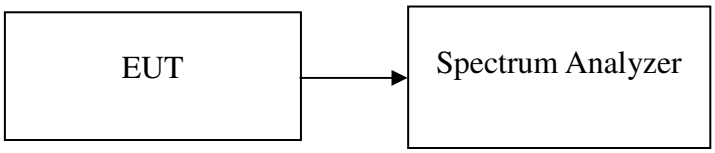
(1) For the band 5150-5250 MHz, the maximum equivalent isotropically radiated power (e.i.r.p.) shall not exceed 200 mW or 10 + 10 Log10 B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz. The e.i.r.p. spectral density shall not exceed 10 dBm in any 1.0 MHz band.

(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:

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)	FCC Limit (dBm)	IC EIRP (mW)	IC Limit (mW)
36	5180	***14.86**	24.00	109.53	200
44	5220	14.86	24.00	109.53	200
48	5240	14.76	24.00	107.03	200

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

Channel	Frequency (MHz)	Chain 0 Output Power (dBm)	Chain 1 Output Power (dBm)	Total Maximum Conducted Output Power (dBm)	FCC Limit (dBm)	IC EIRP (mW)	IC Limit (mW)
36	5180	10.91	10.64	***13.79**	21.45	171.07	200
44	5220	10.49	10.62	13.56	21.45	162.56	200
48	5240	10.52	10.59	13.56	21.45	162.55	200

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

Channel	Frequency (MHz)	Chain 0 Output Power (dBm)	Chain 1 Output Power (dBm)	Total Maximum Conducted Output Power (dBm)	FCC Limit (dBm)	IC EIRP (mW)	IC Limit (mW)
38	5190	11.34	11.06	14.21	21.45	188.63	200
46	5230	11.24	11.36	***14.31**	21.45	192.94	200

Test mode: IEEE 802.11ac VHT 80 MHz mode / 5210MHz

Channel	Frequency (MHz)	Chain 0 Output Power (dBm)	Chain 1 Output Power (dBm)	Total Maximum Conducted Output Power (dBm)	FCC Limit (dBm)	IC EIRP (mW)	IC Limit (mW)
42	5210	10.75	10.66	***13.72**	21.45	168.31	200

Remark:

1. Total Output Power (w) = Chain 0 (10^(Output Power /10)/1000)+ Chain 1 (10^(Output Power /10)/1000)
2. The maximum antenna gain is 8.55dBi; therefore the reduction due to antenna gain is 2.55dBi, so the limit is 21.45dBm.

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

Channel	Frequency (MHz)	Maximum Conducted Output Power (dBm)	Limit (dBm)
52	5260	***14.86**	24.00
56	5280	14.86	24.00
64	5320	14.66	24.00

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

Channel	Frequency (MHz)	Chain 0 Output Power (dBm)	Chain 1 Output Power (dBm)	Total Maximum Conducted Output Power (dBm)	Limit (dBm)
52	5260	14.56	14.73	***17.66**	21.45
56	5280	14.52	14.72	17.63	21.45
64	5320	14.59	14.49	17.55	21.45

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

Channel	Frequency (MHz)	Chain 0 Output Power (dBm)	Chain 1 Output Power (dBm)	Total Maximum Conducted Output Power (dBm)	Limit (dBm)
54	5270	12.60	12.76	15.69	21.45
62	5310	12.80	12.65	***15.73**	21.45

Test mode: IEEE 802.11ac VHT 80 MHz mode / 5290MHz

Channel	Frequency (MHz)	Chain 0 Output Power (dBm)	Chain 1 Output Power (dBm)	Total Maximum Conducted Output Power (dBm)	Limit (dBm)
58	5290	12.75	12.65	***15.71**	21.45

Remark:

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

2. The maximum antenna gain is 8.55dBi; therefore the reduction due to antenna gain is 2.55dBi, so the limit is 21.45dBm.

Test mode: IEEE 802.11a mode / 5500 ~ 5720MHz

Channel	Frequency (MHz)	Maximum Conducted Output Power (dBm)	Limit (dBm)
100	5500	***14.76**	24.00
116	5580	14.66	24.00
140	5700	14.66	24.00
144	5720	14.07 (Band III)	24.00
144	5720	6.89 (Band IV)	30.00

Test mode: IEEE 802.11n HT 20 MHz Channel mode / 5500 ~ 5720MHz

Channel	Frequency (MHz)	Chain 0 Output Power (dBm)	Chain 1 Output Power (dBm)	Total Maximum Conducted Output Power (dBm)	Limit (dBm)
100	5500	14.57	14.75	17.67	21.45
116	5580	14.52	14.75	17.65	21.45
140	5700	14.80	14.74	***17.78**	21.45
144	5720	14.20	9.87	15.56 (Band III)	21.45
144	5720	7.91	8.83	11.40 (Band IV)	27.45

Test mode: IEEE 802.11n HT 40 MHz mode / 5510 ~ 5710MHz

Channel	Frequency (MHz)	Chain 0 Output Power (dBm)	Chain 1 Output Power (dBm)	Total Maximum Conducted Output Power (dBm)	Limit (dBm)
102	5510	12.50	12.71	15.61	21.45
118	5590	12.62	12.65	15.64	21.45
134	5670	12.80	12.65	***15.73**	21.45
142	5710	11.67	12.51	15.12 (Band III)	21.45
142	5710	1.04	2.18	4.66 (Band IV)	27.45

Test mode: IEEE 802.11ac VHT 80 MHz mode / 5530 ~ 5690MHz

Channel	Frequency (MHz)	Chain 0 Output Power (dBm)	Chain 1 Output Power (dBm)	Total Maximum Conducted Output Power (dBm)	Limit (dBm)
106	5530	12.75	12.65	15.71	21.45
138	5610	12.65	12.85	***15.76**	21.45
138	5690	13.10	10.64	15.05 (Band III)	21.45
138	5690	-0.55	-4.18	-1.01 (Band IV)	27.45

Remark:

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

2. Band III: The maximum antenna gain is 8.55dBi; therefore the reduction due to antenna gain is 2.55dBi, so the limit is 21.45dBm.

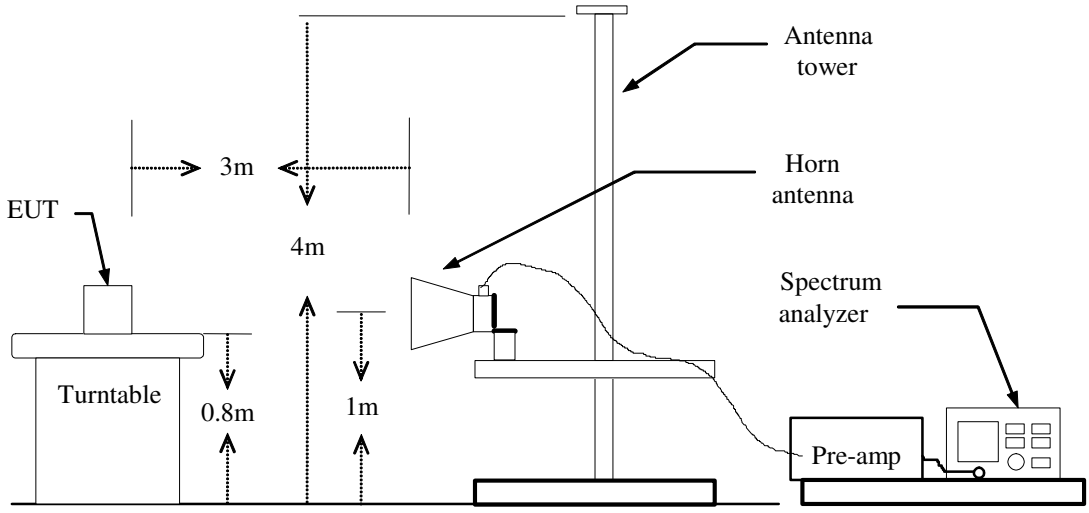
3. Band IV: The maximum antenna gain is 8.55dBi; therefore the reduction due to antenna gain is 2.55dBi, so the limit is 27.45 dBm.

7.4 BAND EDGES MEASUREMENT

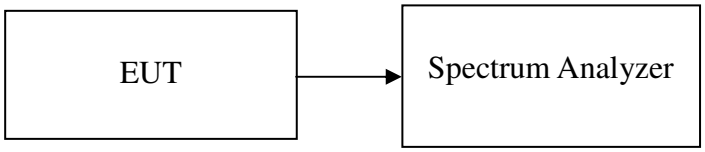
LIMIT

According to §15.407 & RSS-247 §, in any 100 kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator in operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in 15.209(a) (see Section 15.205(c)).

Test Configuration



For Conducted



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,
   if duty cycle≧98%, VBW=10Hz.
   if duty cycle<98% VBW=1/T.
   IEEE 802.11a mode: = 88%, VBW= 750Hz
   IEEE 802.11n HT 20 MHz mode: = 78%, VBW= 1.5KHz
   IEEE 802.11n HT 40 MHz mode: = 64%, VBW= 3KHz
   IEEE 802.11ac VHT 80 MHz mode: = 26%, VBW= 15KHz
5. Repeat the procedures until all the PEAK and AVERAGE versus POLARIZATION are measured.
6. Result = Spectrum Reading + cable loss(spectrum to Amp) - Amp Gain + Cable loss(Amp to receive Ant)+ Receive Ant

For Conducted
Conducted RF measurements of the transmitter output were made to confirm that the EUT antenna port conducted emissions meet the specified limit and to identify any spurious signals that require further investigation or measurements on the radiated emissions site.

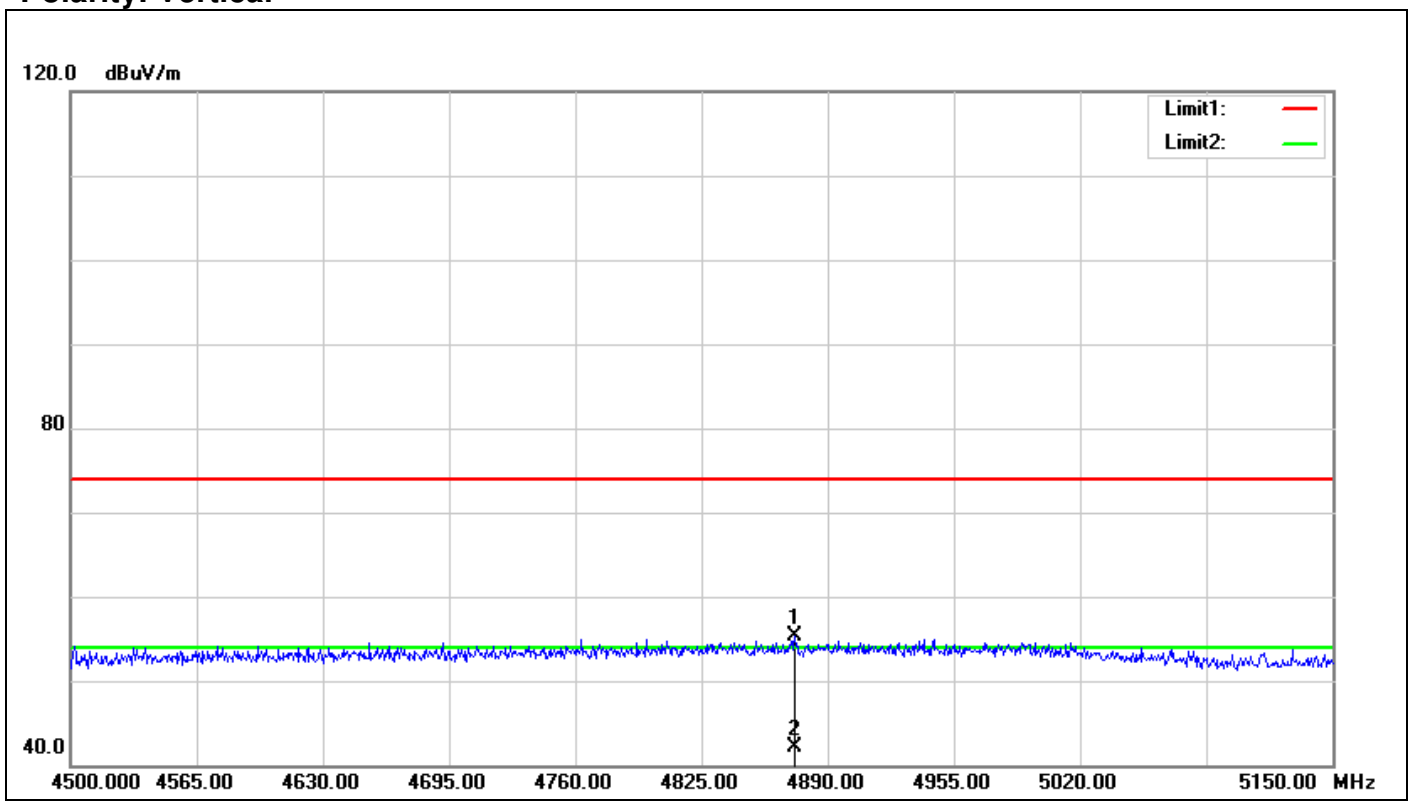
The transmitter output is connected to the spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 100 kHz.

TEST RESULTS

Refer to attach spectrum analyzer data chart.

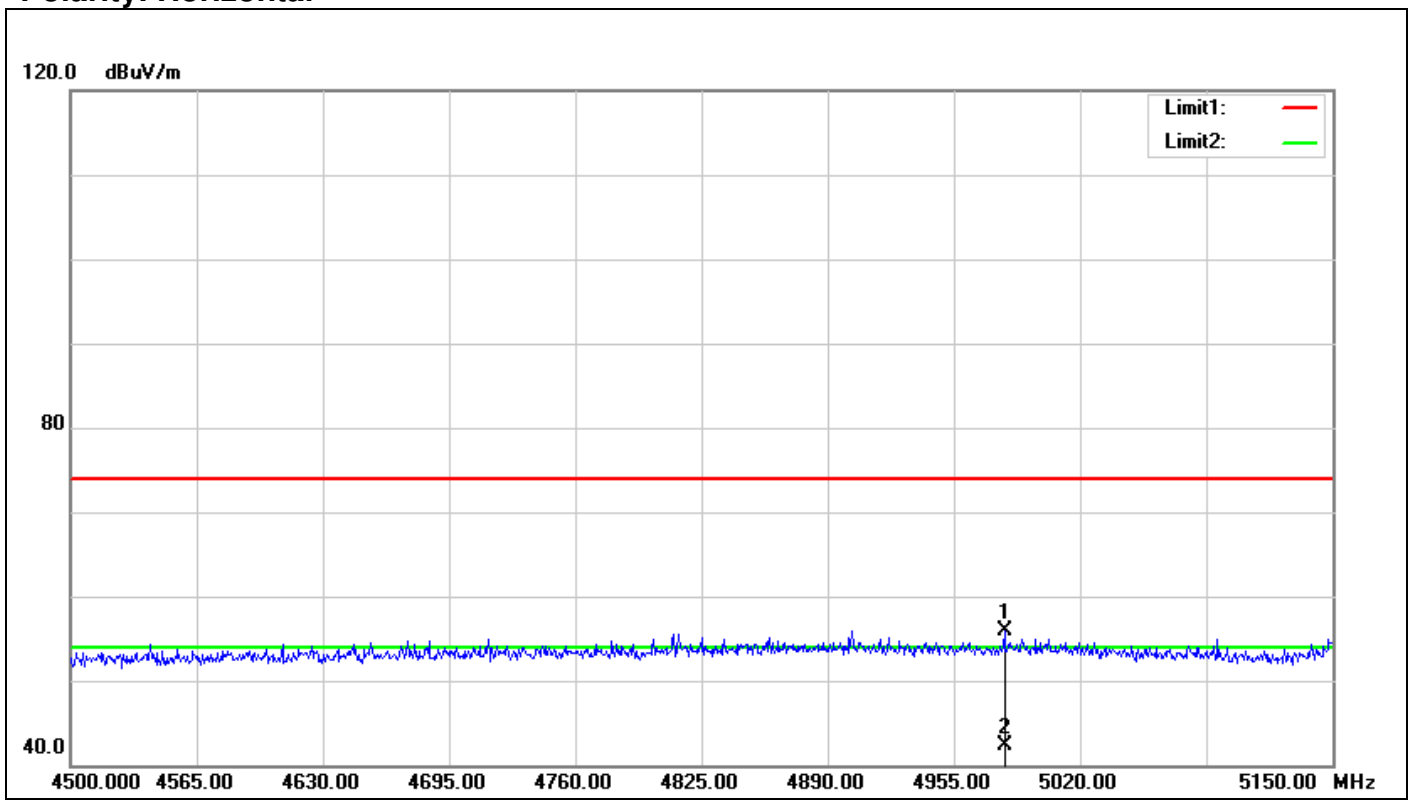
Band Edges (IEEE 802.11a mode / CH 5180 MHz)

Polarity: Vertical



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)	
1	4873.100	51.32	3.93	55.25	74.00	-18.75	100	277	peak
2	4873.100	38.16	3.93	42.09	54.00	-11.91	100	277	AVG

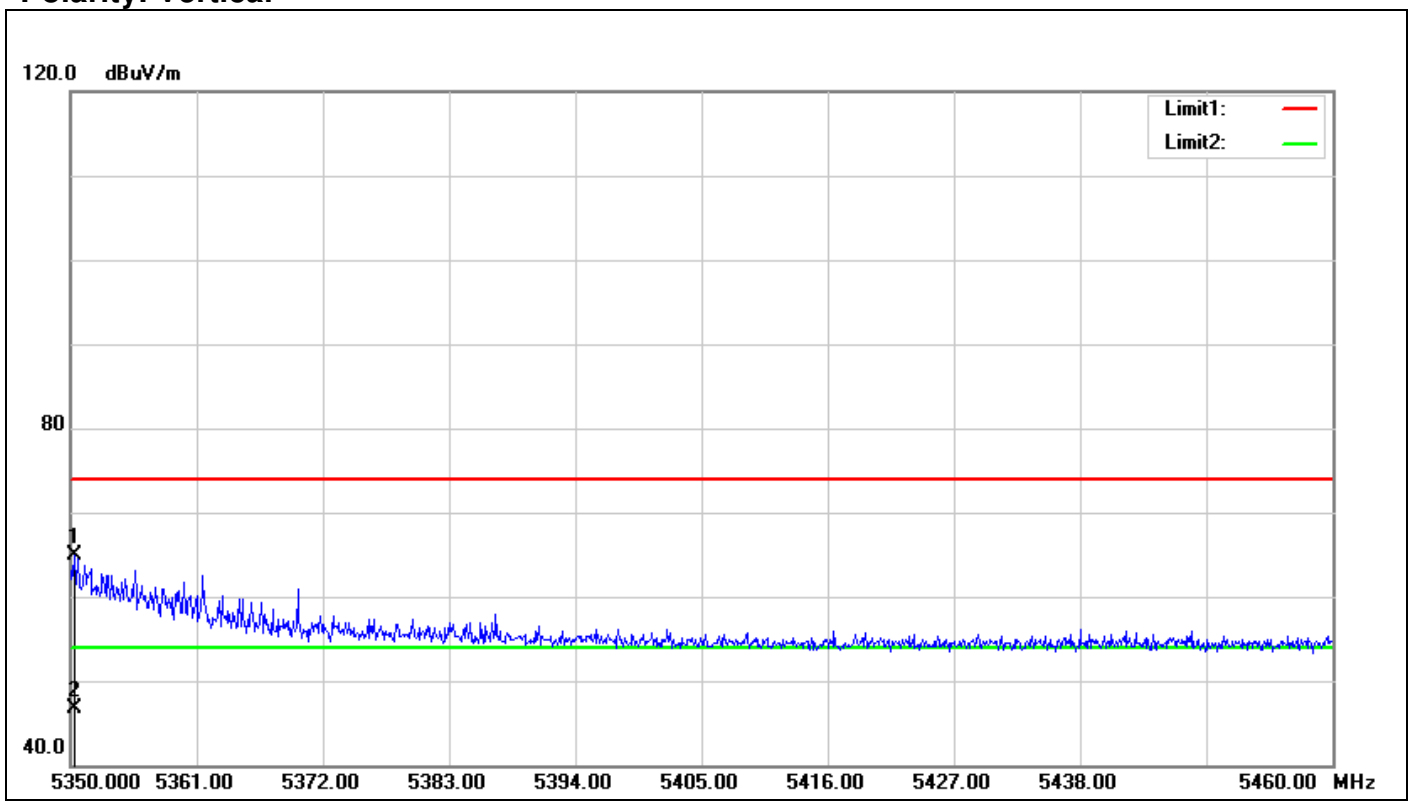
Polarity: Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (°)	Remark
1	4981.000	51.96	3.94	55.90	74.00	-18.10	100	243	peak
2	4981.000	38.46	3.94	42.40	54.00	-11.60	100	243	AVG

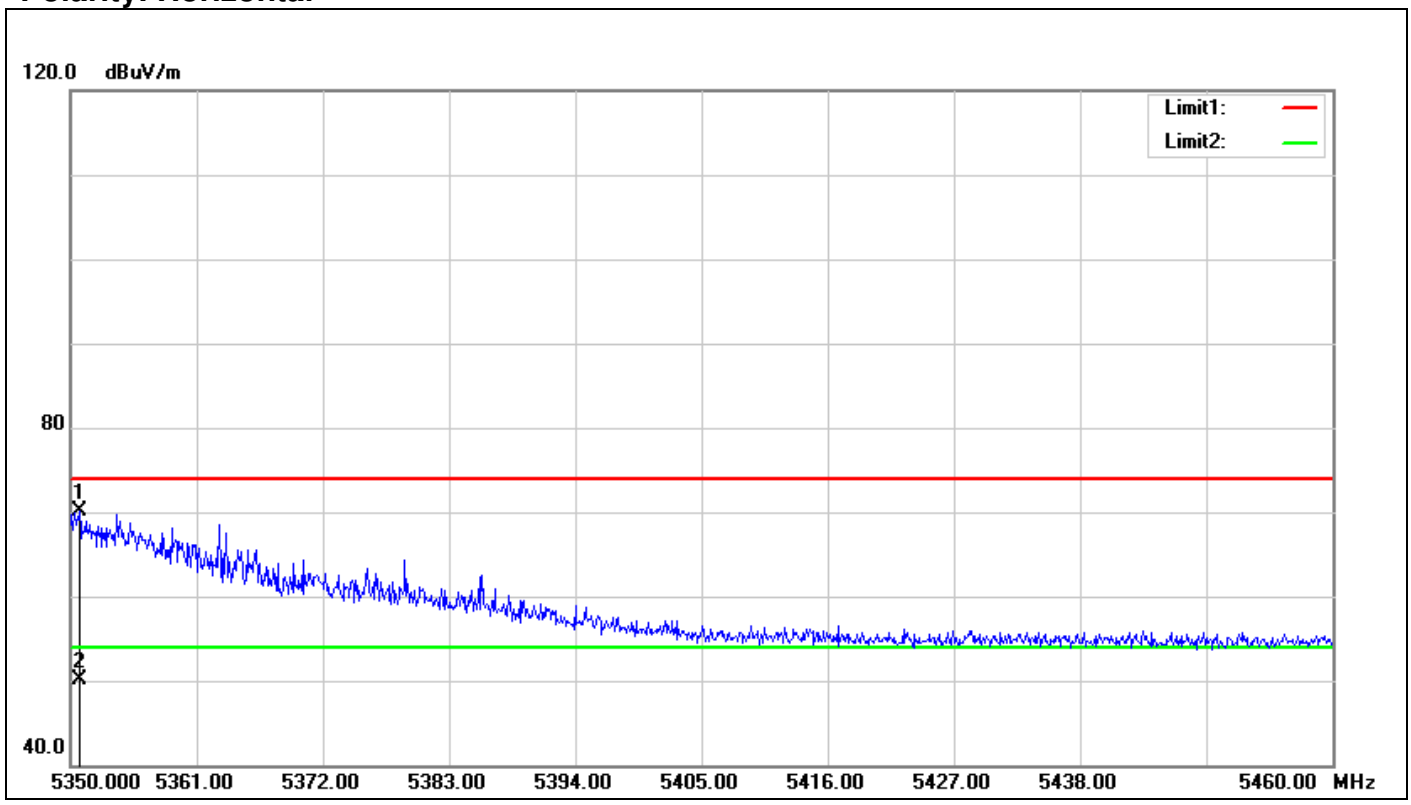
Band Edges (IEEE 802.11a mode / CH 5320 MHz)

Polarity: Vertical



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (°)	Remark
1	5350.330	59.55	5.31	64.86	74.00	-9.14	100	82	peak
2	5350.330	41.32	5.31	46.63	54.00	-7.37	100	82	AVG

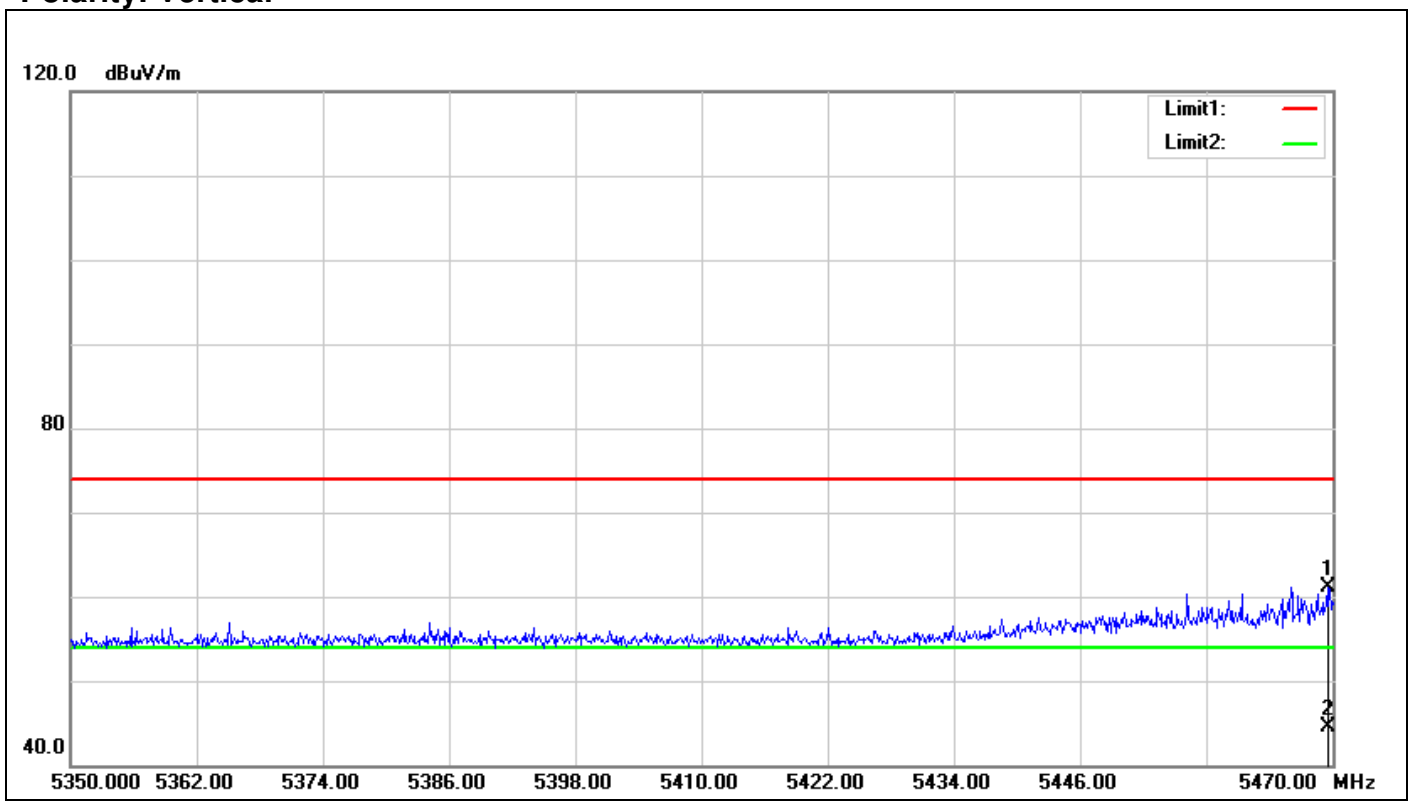
Polarity: Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (°)	Remark
1	5350.770	64.78	5.32	70.10	74.00	-3.90	100	45	peak
2	5350.770	44.87	5.32	50.19	54.00	-3.81	100	45	AVG

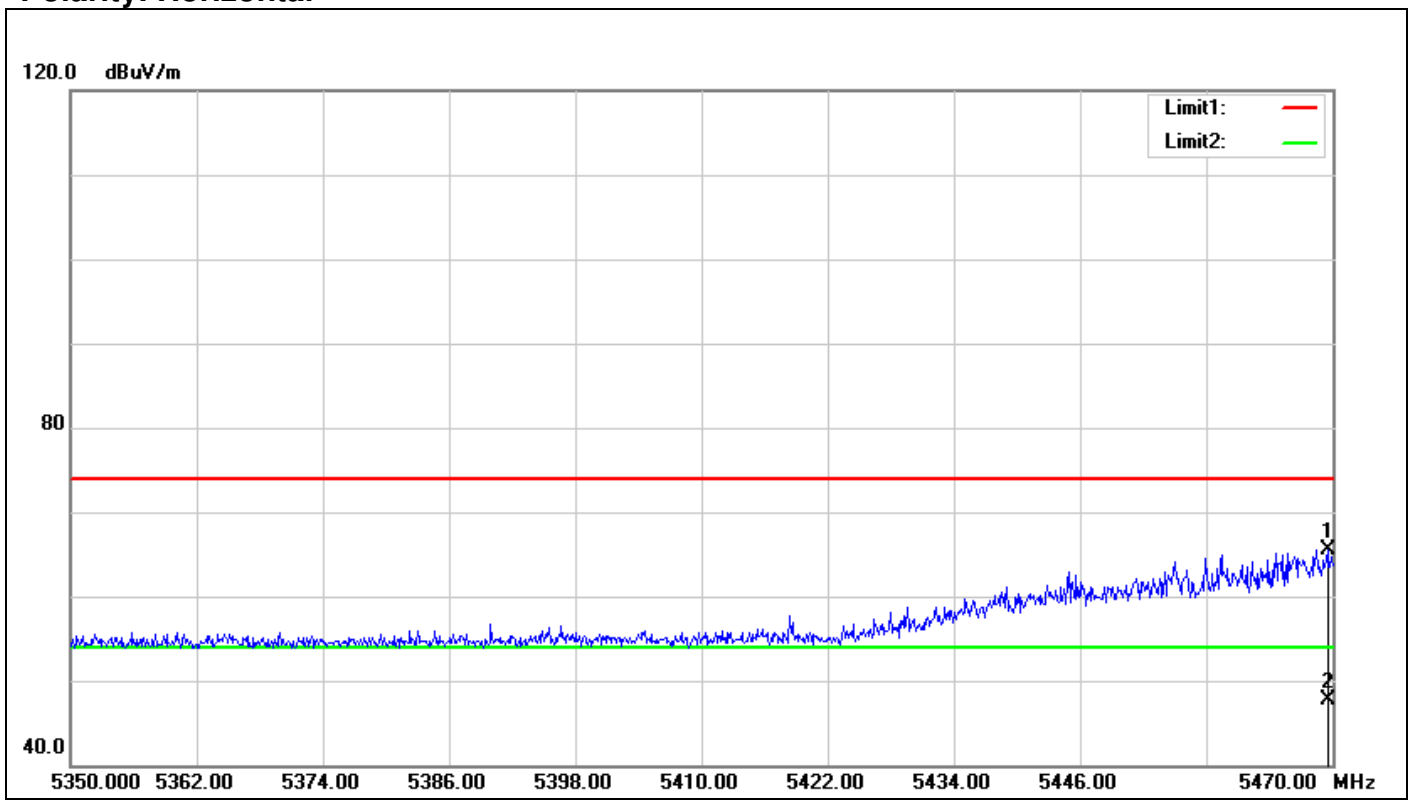
Band Edges (IEEE 802.11a mode / CH 5500 MHz)

Polarity: Vertical



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)	
1	5469.520	55.73	5.39	61.12	74.00	-12.88	100	42	peak
2	5469.520	39.17	5.39	44.56	54.00	-9.44	100	42	AVG

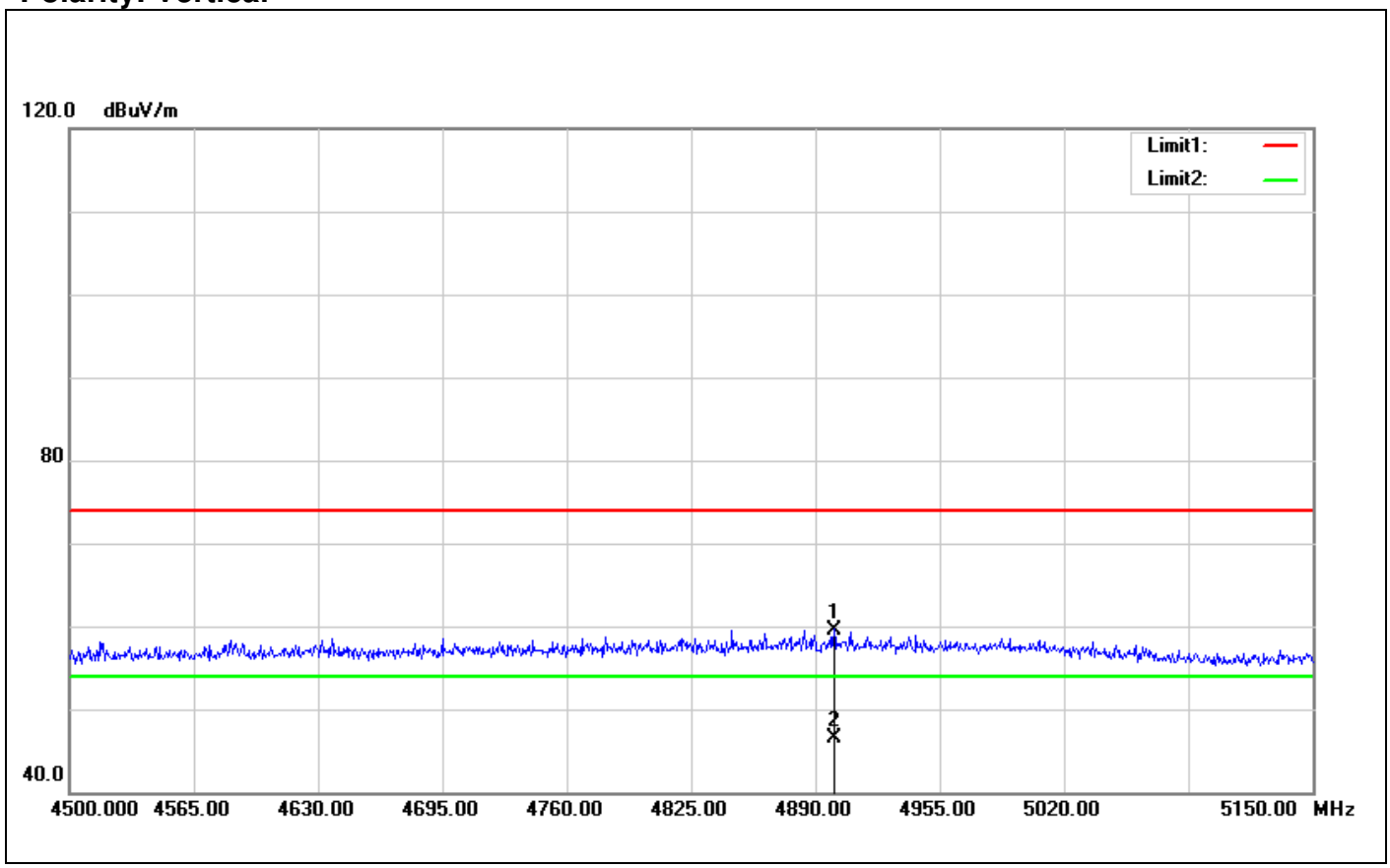
Polarity: Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (°)	Remark
1	5469.520	60.19	5.39	65.58	74.00	-8.42	100	53	peak
2	5469.520	42.22	5.39	47.61	54.00	-6.39	100	53	AVG

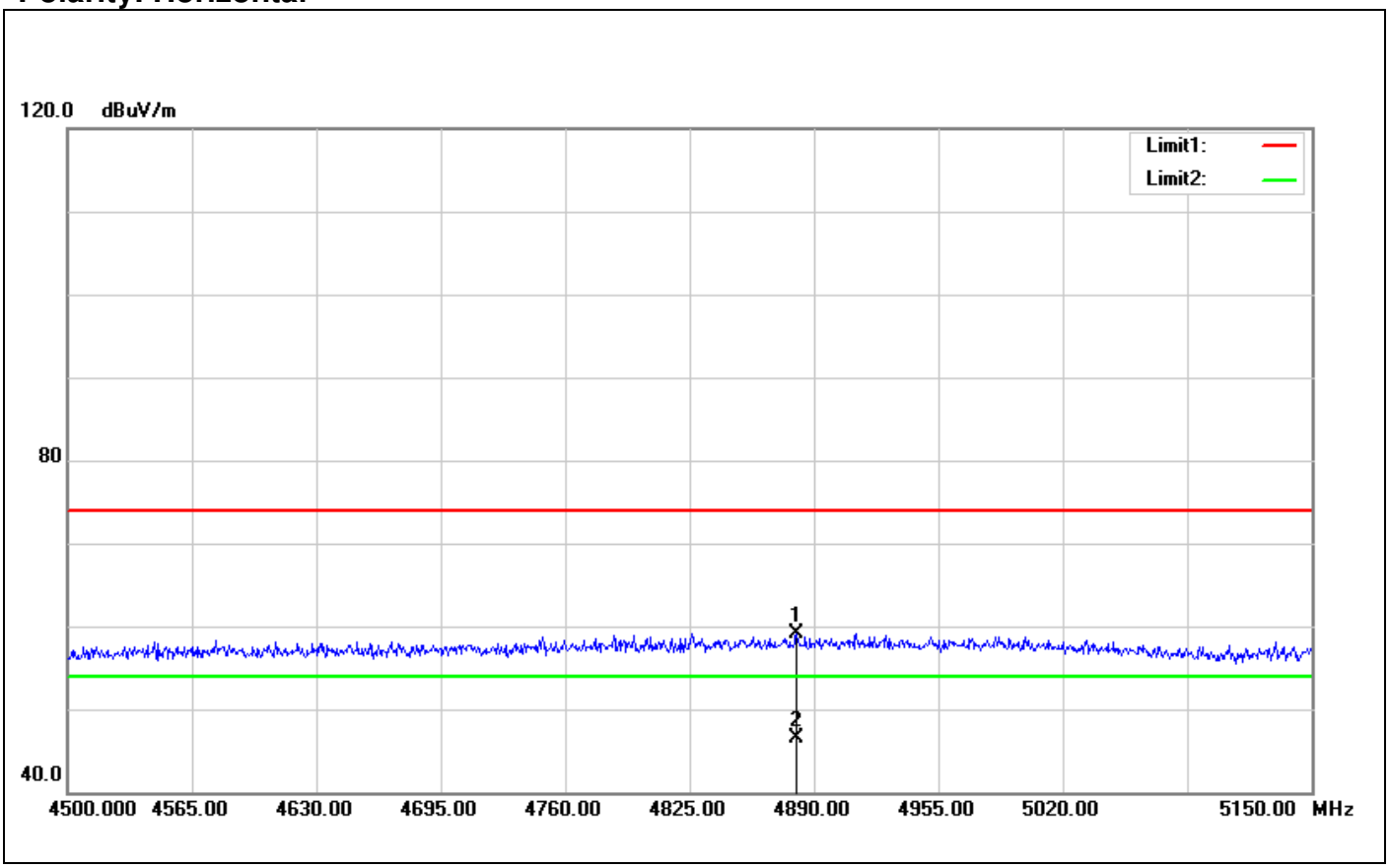
Band Edges (IEEE 802.11n HT 20 MHz Channel mode / CH 5180 MHz)

Polarity: Vertical



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)	
1	4899.750	55.72	3.88	59.60	74.00	-14.40	100	288	peak
2	4899.750	42.56	3.88	46.44	54.00	-7.56	100	288	AVG

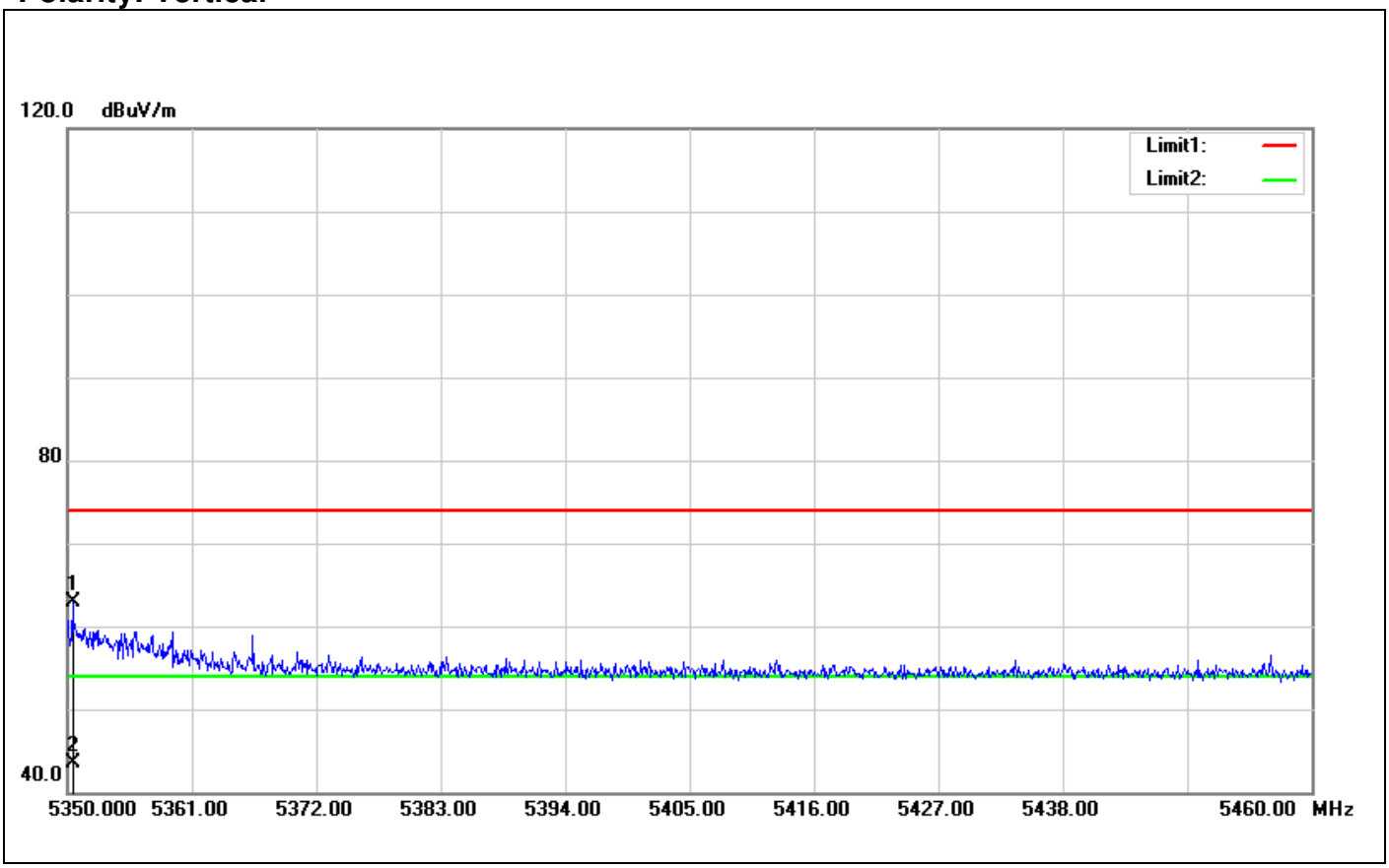
Polarity: Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)	
1	4880.900	55.27	3.91	59.18	74.00	-14.82	100	142	peak
2	4880.900	42.54	3.91	46.45	54.00	-7.55	100	142	AVG

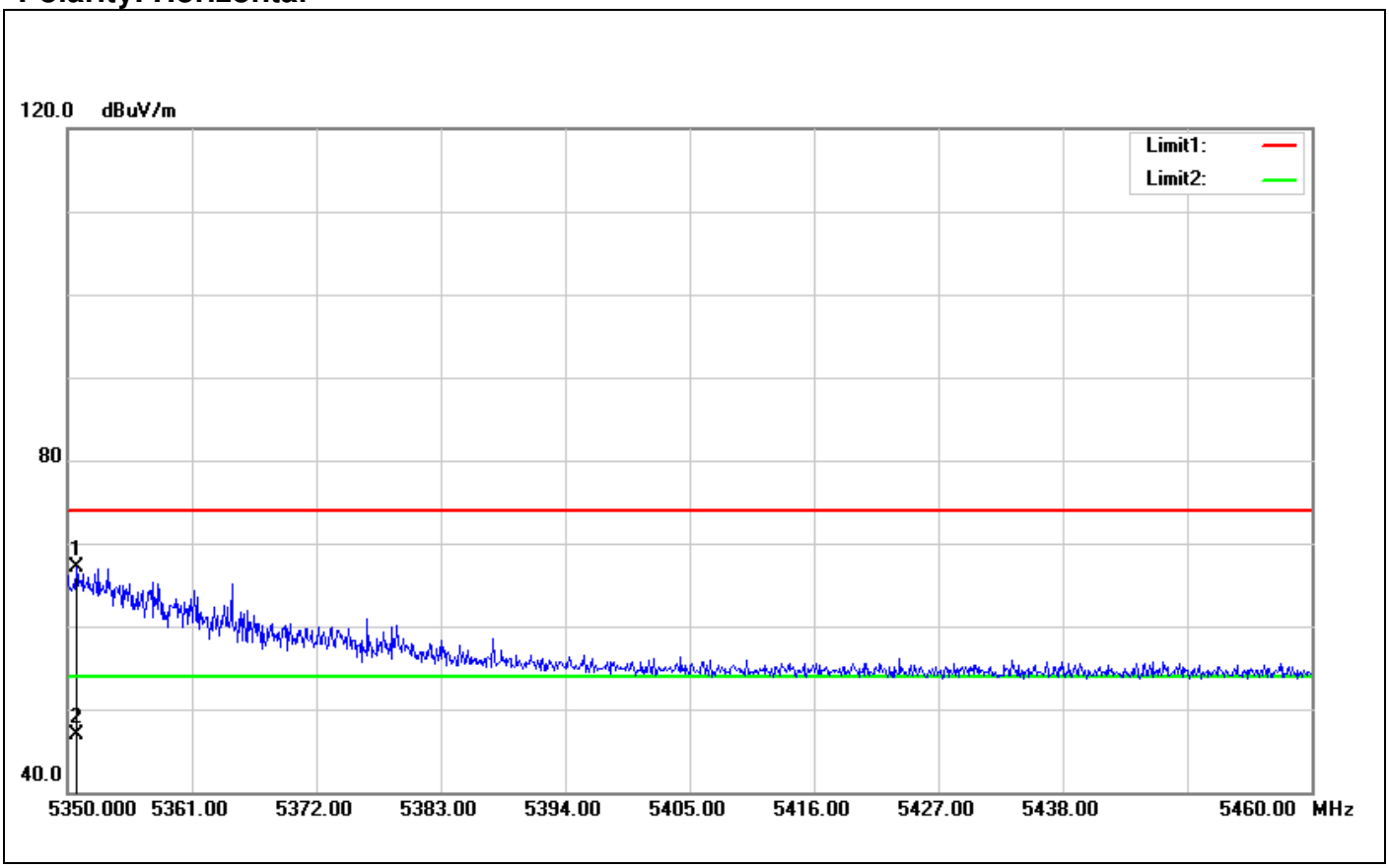
Band Edges (IEEE 802.11n HT 20 MHz Channel mode / CH 5320 MHz)

Polarity: Vertical



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)	
1	5350.440	57.58	5.31	62.89	74.00	-11.11	100	119	peak
2	5350.440	38.28	5.31	43.59	54.00	-10.41	100	119	AVG

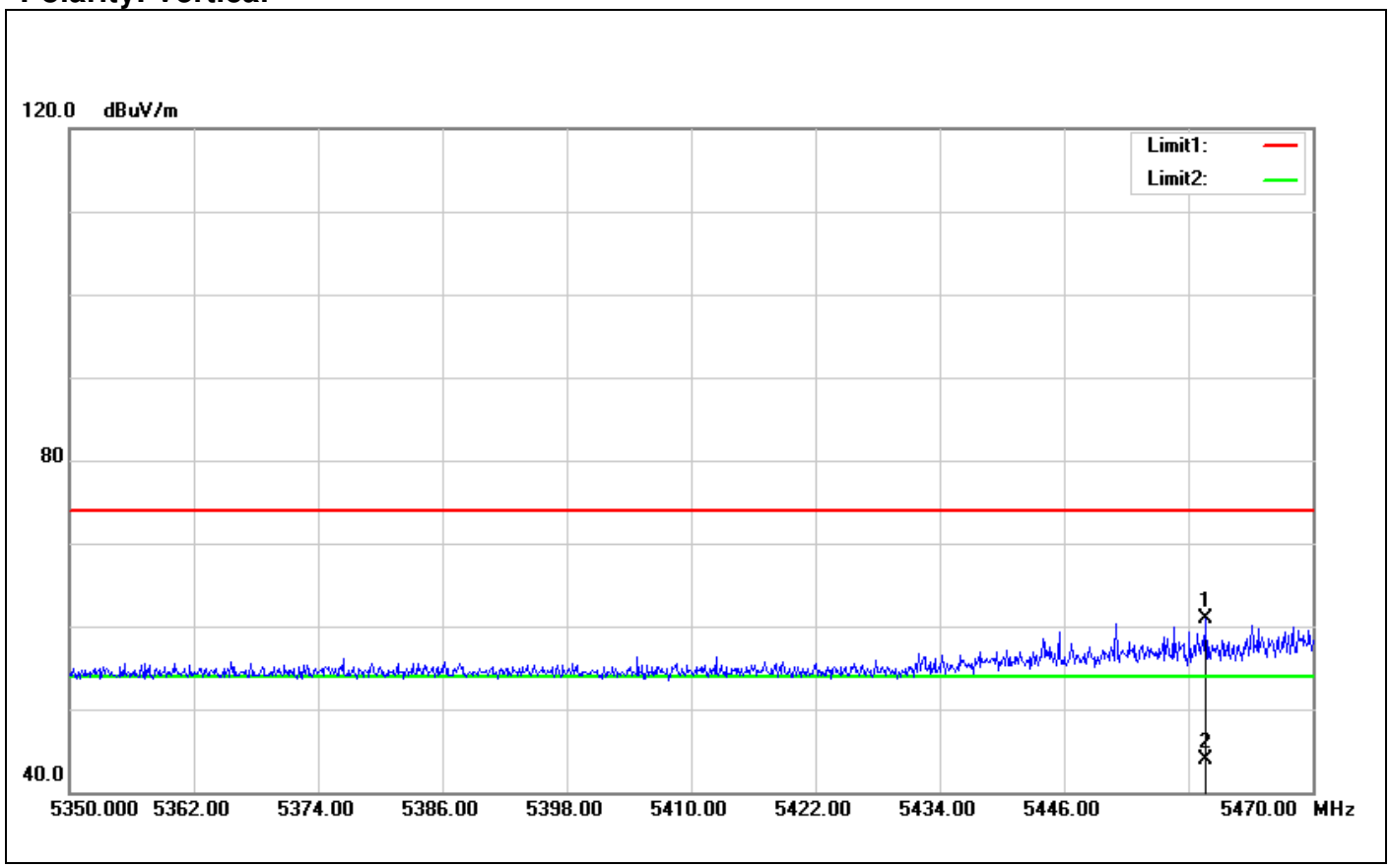
Polarity: Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)	
1	5350.770	61.86	5.32	67.18	74.00	-6.82	100	204	peak
2	5350.770	41.64	5.32	46.96	54.00	-7.04	100	204	AVG

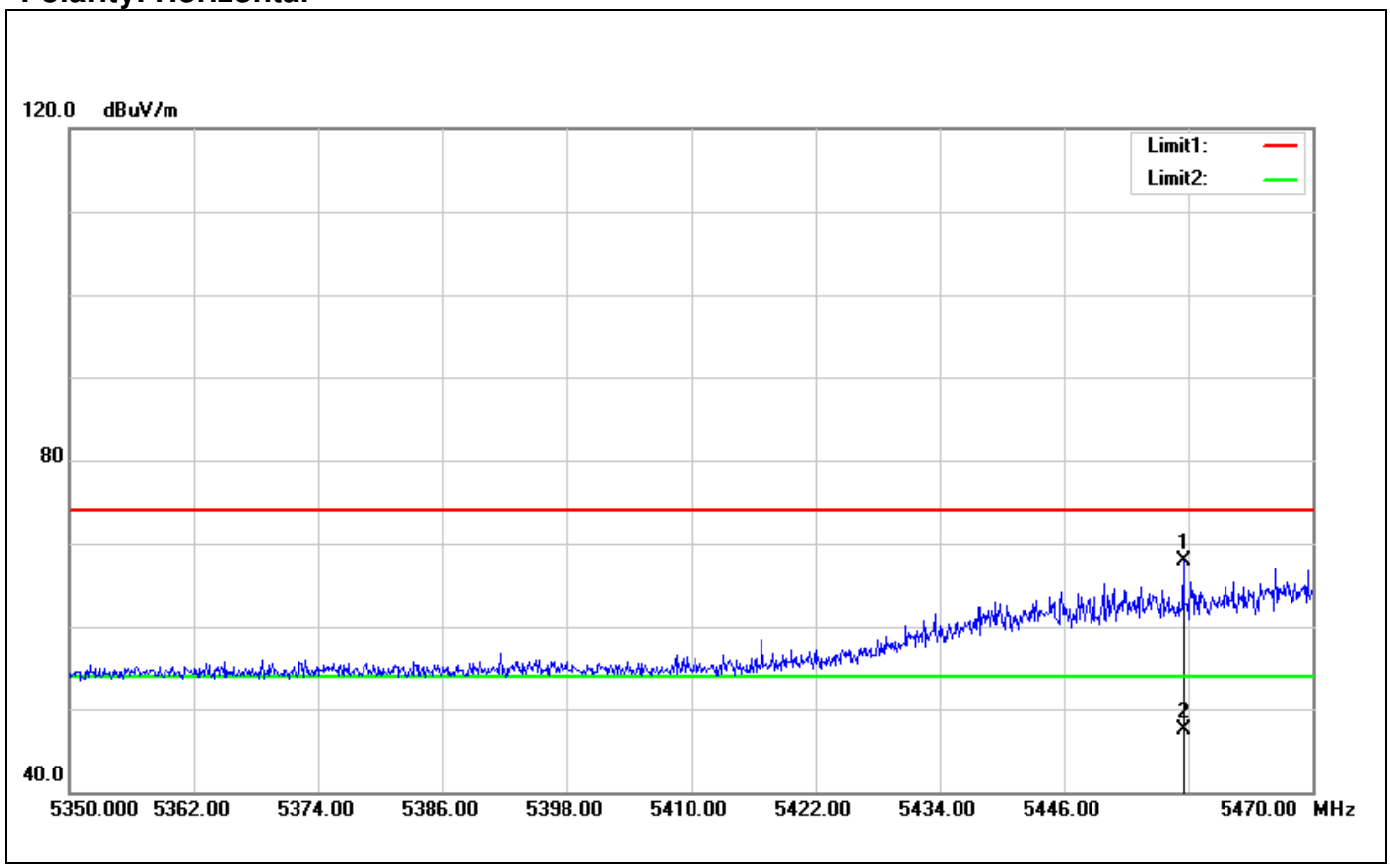
Band Edges (IEEE 802.11n HT 20 MHz Channel mode / CH 5500 MHz)

Polarity: Vertical



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)	
1	5459.680	55.45	5.44	60.89	74.00	-13.11	100	79	peak
2	5459.680	38.38	5.44	43.82	54.00	-10.18	100	79	AVG

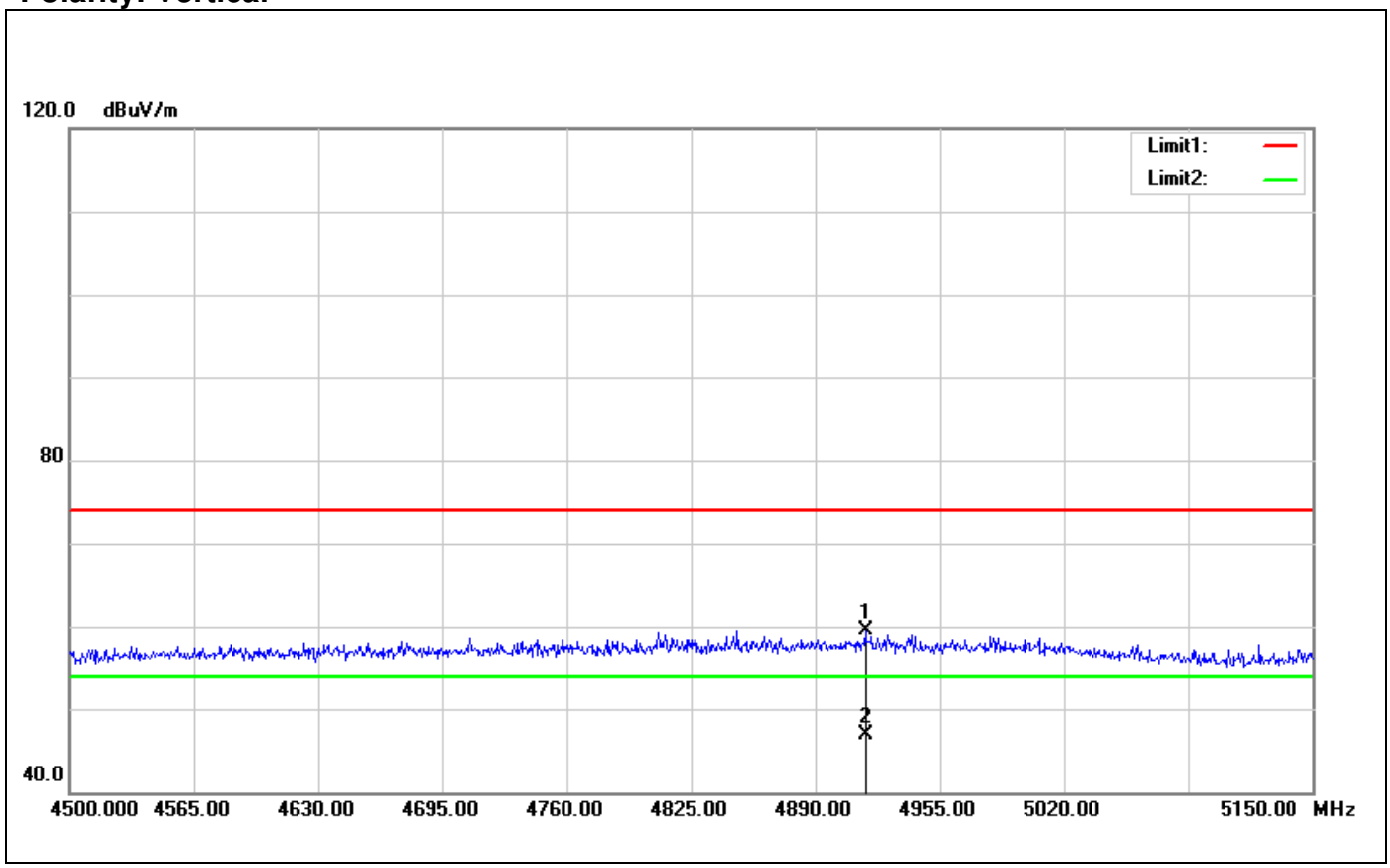
Polarity: Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)	
1	5457.520	62.43	5.45	67.88	74.00	-6.12	100	40	peak
2	5457.520	42.02	5.45	47.47	54.00	-6.53	100	40	AVG

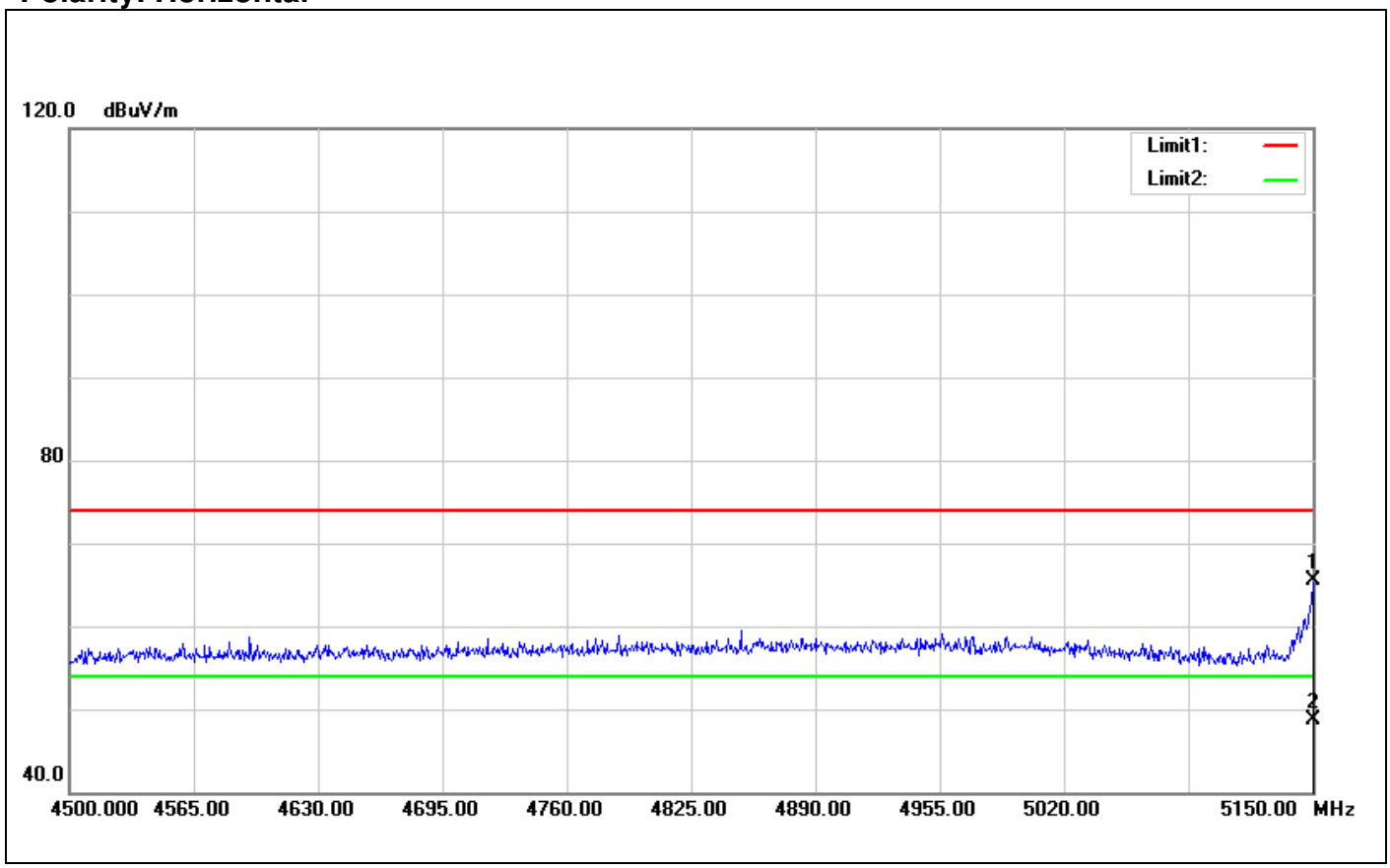
Band Edges (IEEE 802.11n HT 40 MHz mode / CH 5190 MHz)

Polarity: Vertical



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)	
1	4916.000	55.61	3.89	59.50	74.00	-14.50	100	219	peak
2	4916.000	42.97	3.89	46.86	54.00	-7.14	100	219	AVG

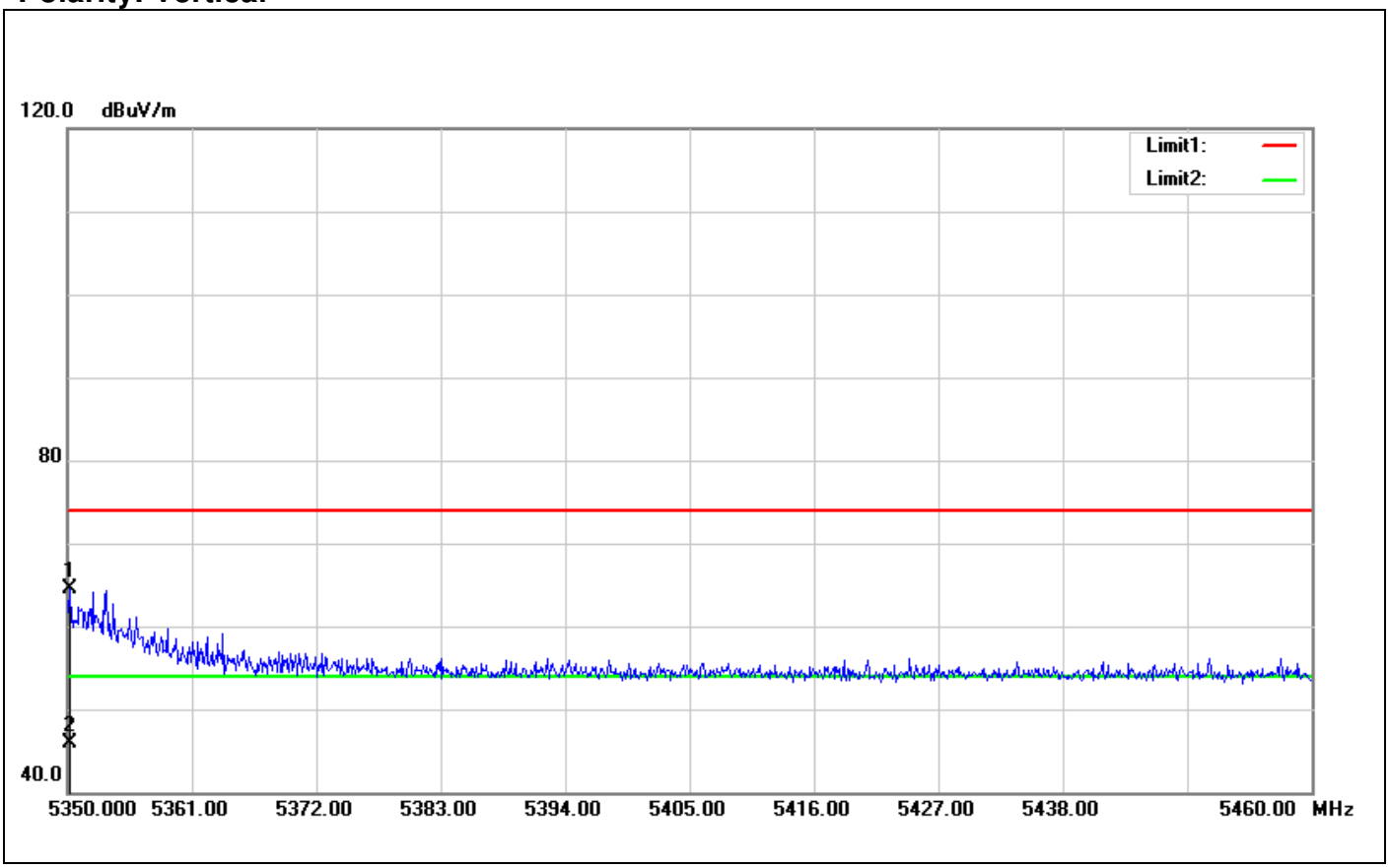
Polarity: Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)	
1	5150.000	62.37	3.04	65.41	74.00	-8.59	100	94	peak
2	5150.000	45.59	3.04	48.63	54.00	-5.37	100	94	AVG

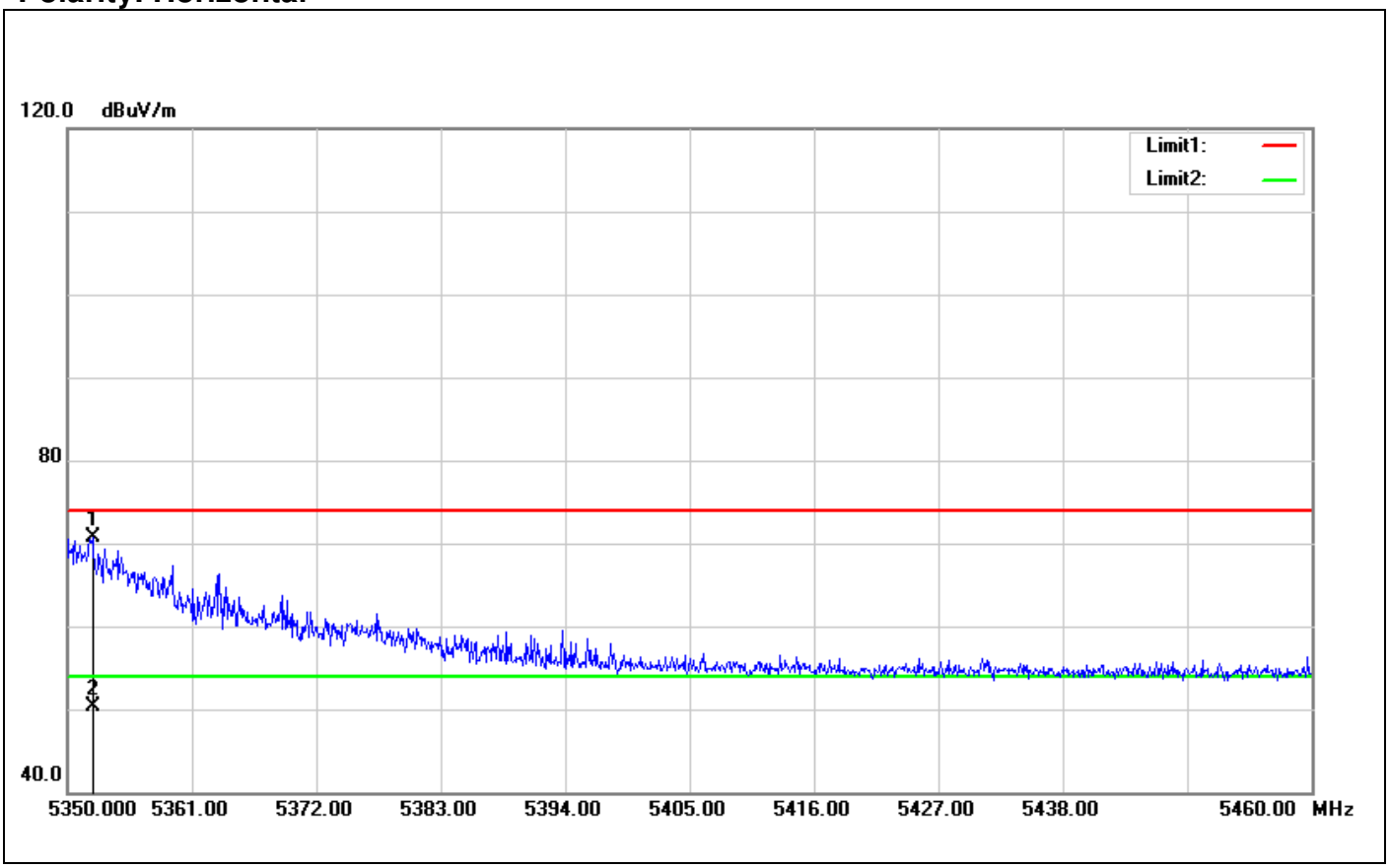
Band Edges (IEEE 802.11n HT 40 MHz mode / CH 5310 MHz)

Polarity: Vertical



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)	
1	5350.220	59.27	5.31	64.58	74.00	-9.42	100	354	peak
2	5350.220	40.66	5.31	45.97	54.00	-8.03	100	354	AVG

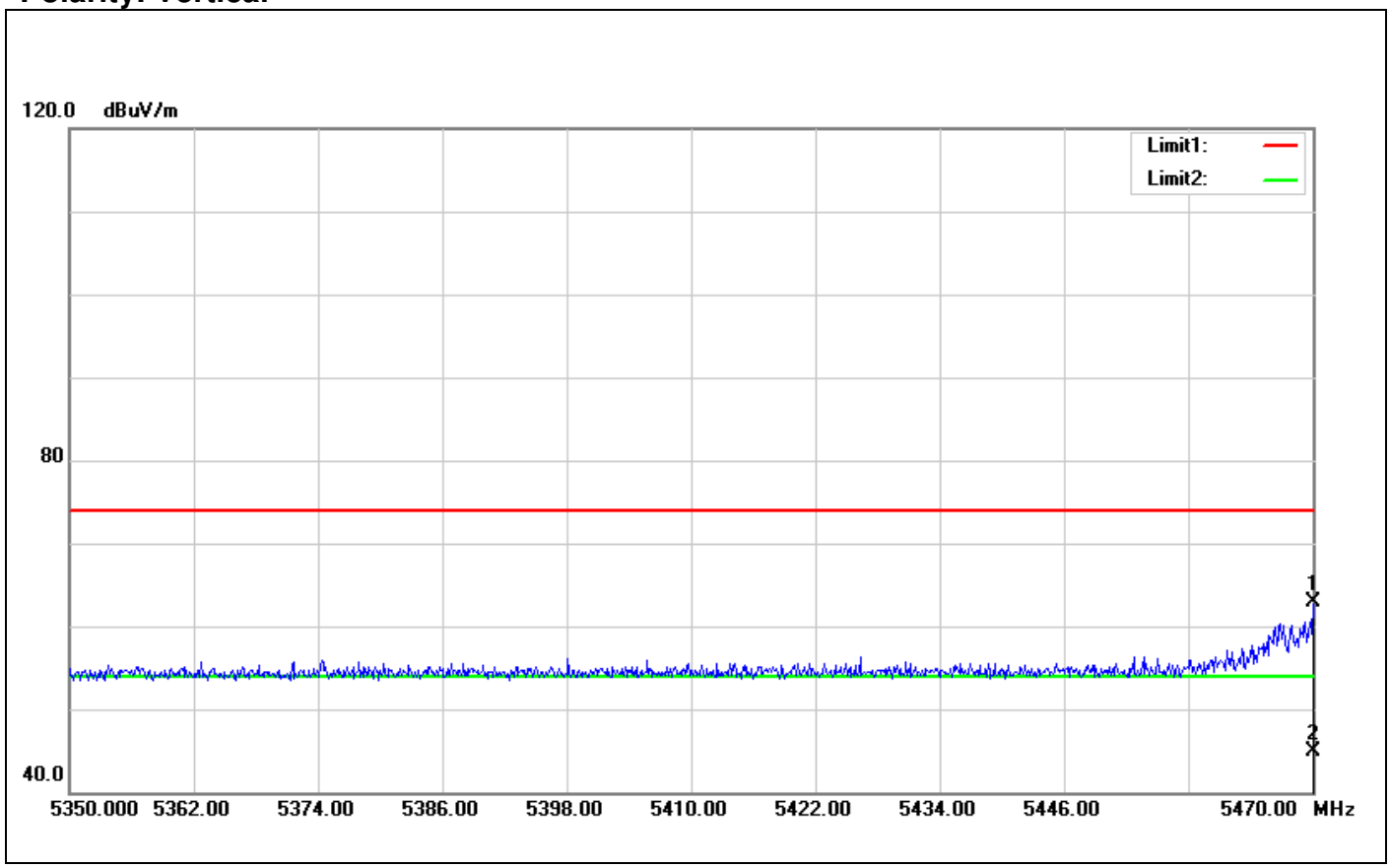
Polarity: Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)	
1	5352.200	65.40	5.33	70.73	74.00	-3.27	100	270	peak
2	5352.200	44.99	5.33	50.32	54.00	-3.68	100	270	AVG

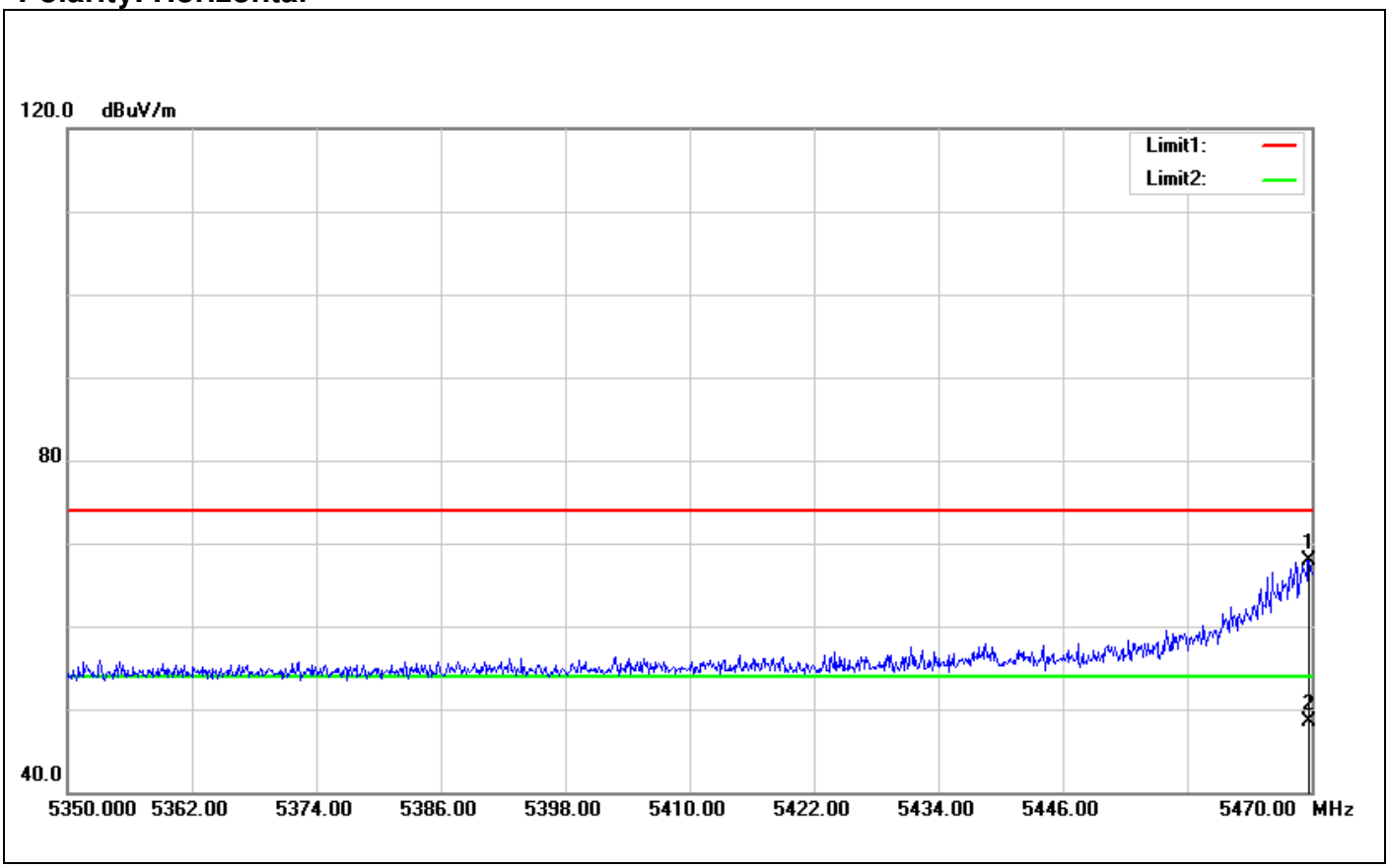
Band Edges (IEEE 802.11n HT 40 MHz mode / CH 5510 MHz)

Polarity: Vertical



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)	
1	5470.000	57.60	5.39	62.99	74.00	-11.01	100	97	peak
2	5470.000	39.61	5.39	45.00	54.00	-9.00	100	97	AVG

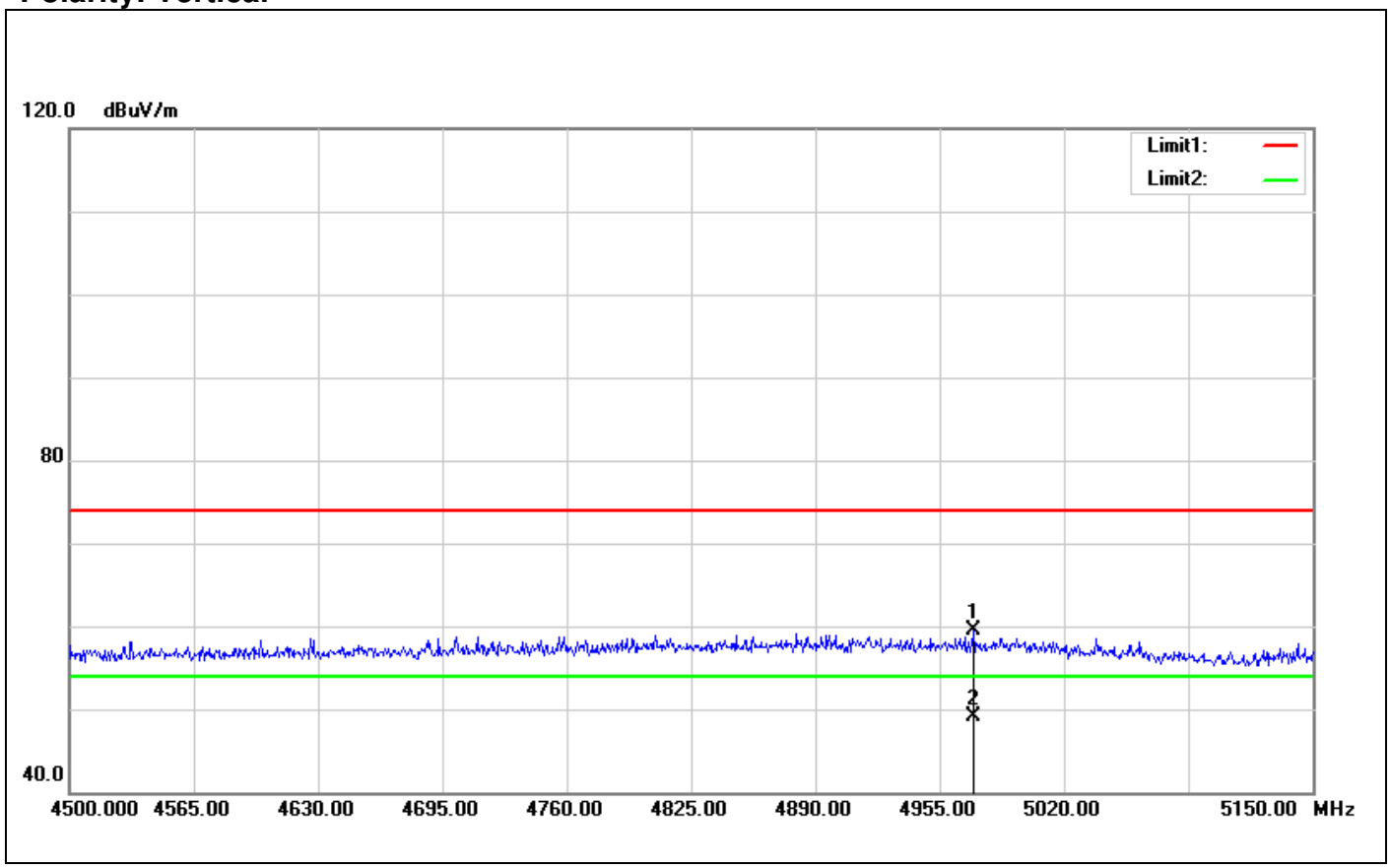
Polarity: Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)	
1	5469.760	62.58	5.39	67.97	74.00	-6.03	100	104	peak
2	5469.760	43.14	5.39	48.53	54.00	-5.47	100	104	AVG

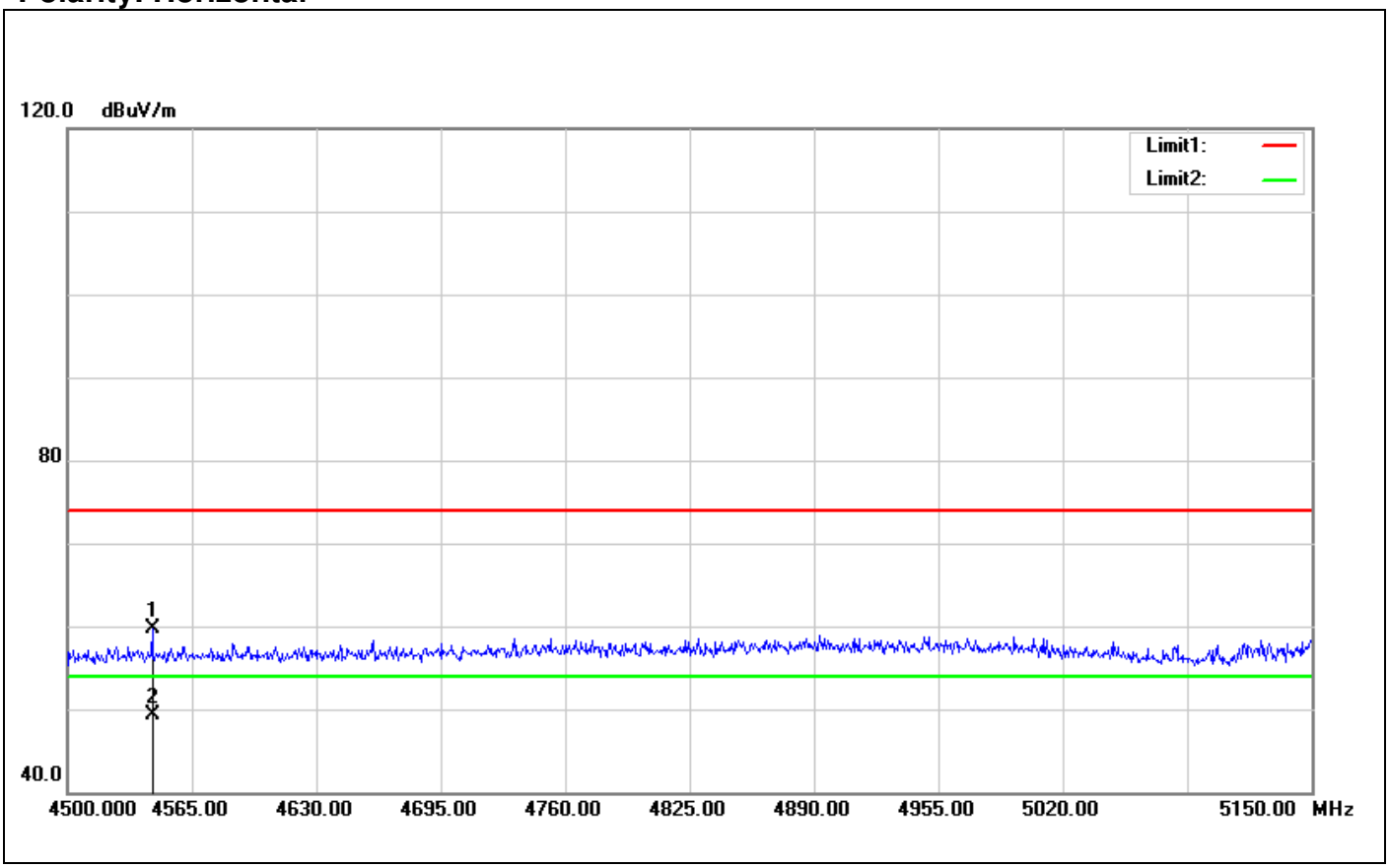
Band Edges (IEEE 802.11ac VHT 80 MHz mode / CH 5210 MHz)

Polarity: Vertical



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)	
1	4972.550	55.50	3.94	59.44	74.00	-14.56	100	233	peak
2	4972.550	45.09	3.94	49.03	54.00	-4.97	100	233	AVG

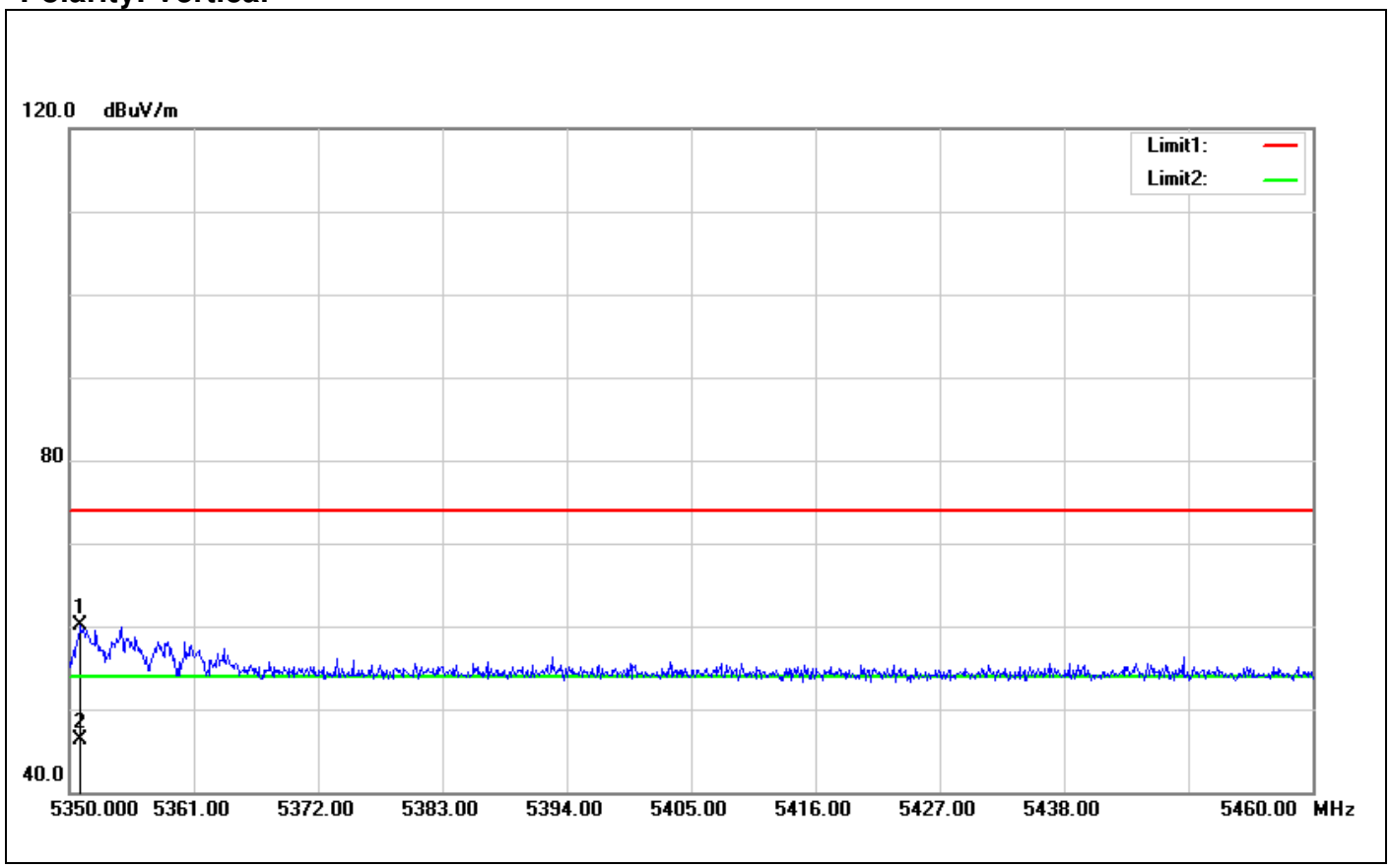
Polarity: Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)	
1	4544.200	56.36	3.32	59.68	74.00	-14.32	100	313	peak
2	4544.200	45.88	3.32	49.20	54.00	-4.80	100	313	AVG

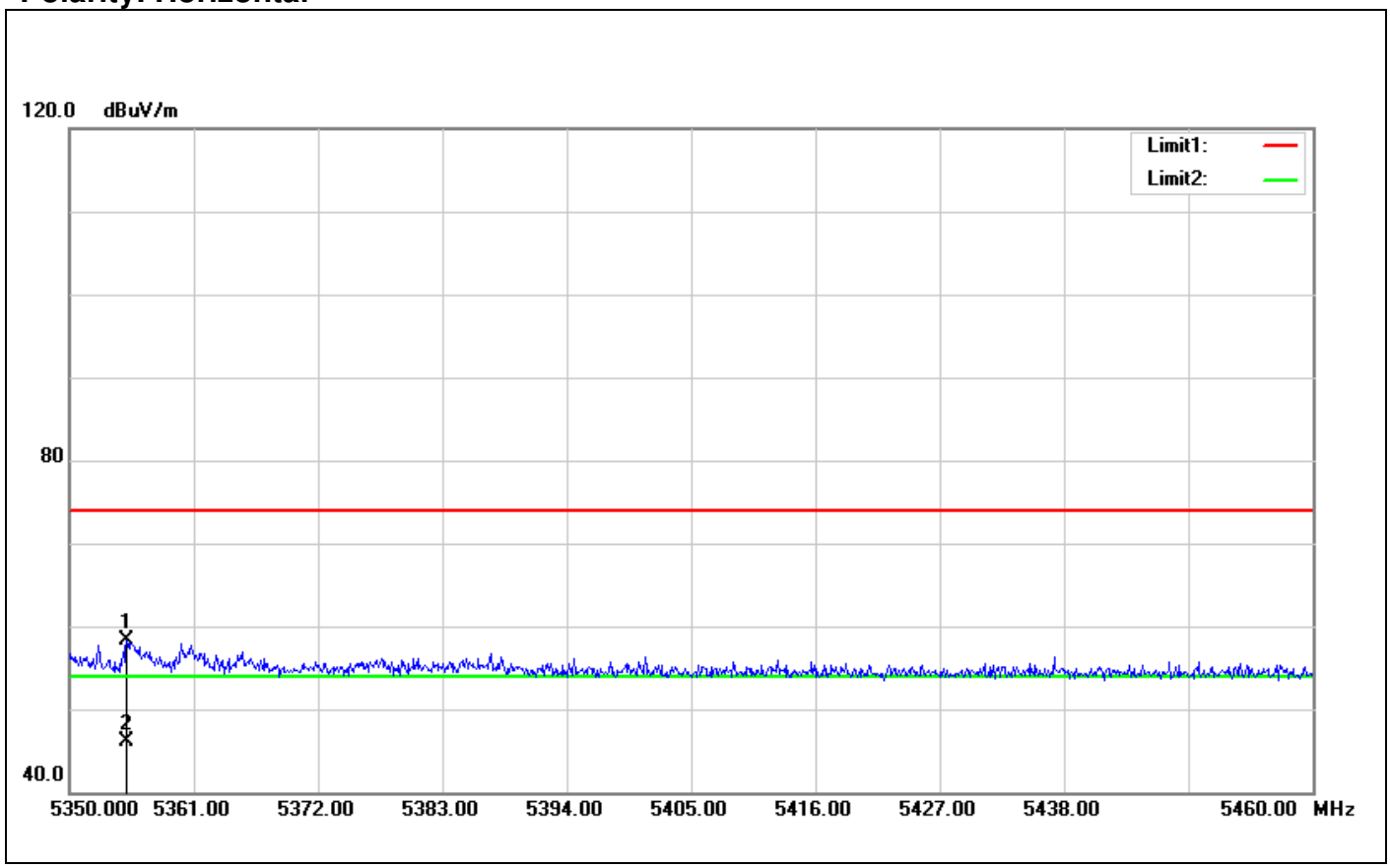
Band Edges (IEEE 802.11ac VHT 80 MHz mode / CH 5290 MHz)

Polarity: Vertical



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)	
1	5350.990	54.82	5.32	60.14	74.00	-13.86	100	96	peak
2	5350.990	41.07	5.32	46.39	54.00	-7.61	100	96	AVG

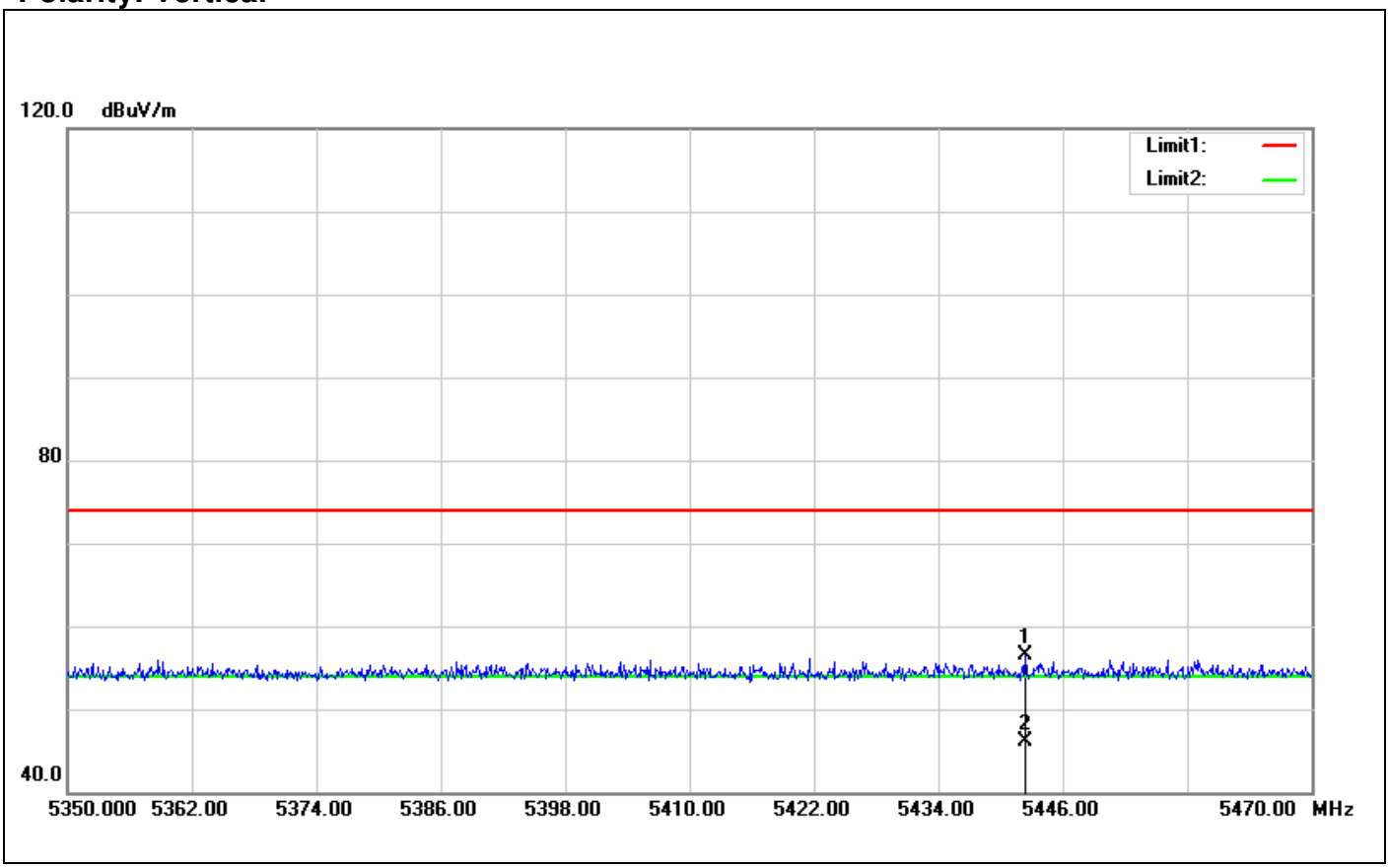
Polarity: Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)	
1	5355.060	52.92	5.35	58.27	74.00	-15.73	100	114	peak
2	5355.060	40.73	5.35	46.08	54.00	-7.92	100	114	AVG

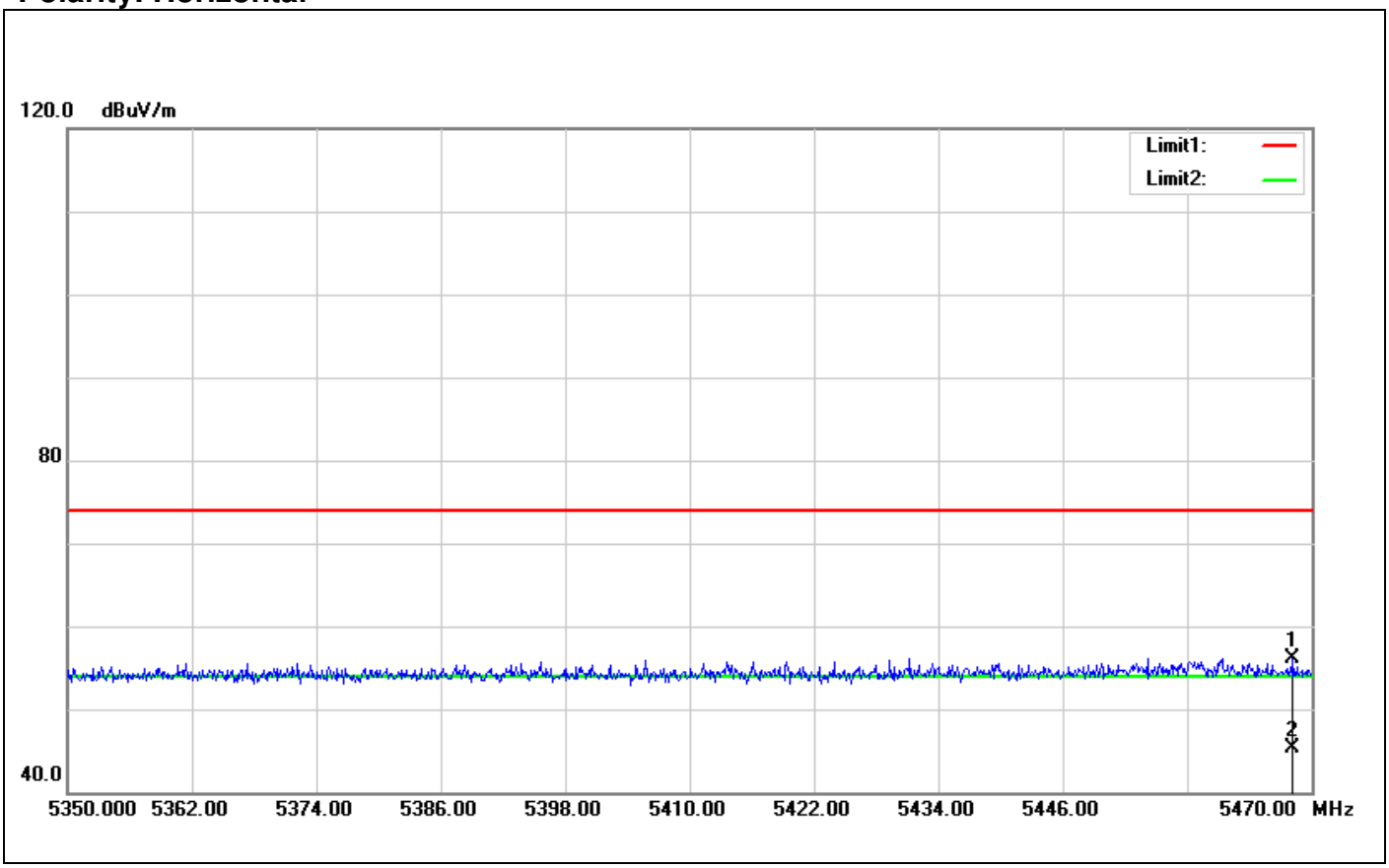
Band Edges (IEEE 802.11ac VHT 80 MHz mode / CH 5530 MHz)

Polarity: Vertical



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)	
1	5442.400	51.07	5.52	56.59	74.00	-17.41	100	0	peak
2	5442.400	40.67	5.52	46.19	54.00	-7.81	100	0	AVG

Polarity: Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)	
1	5468.200	50.75	5.40	56.15	74.00	-17.85	100	152	peak
2	5468.200	39.85	5.40	45.25	54.00	-8.75	100	152	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 11dBm 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.

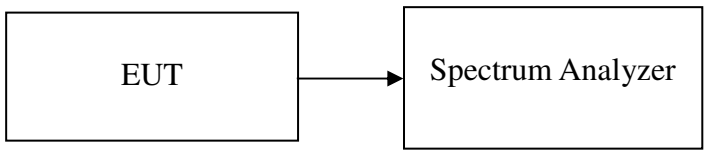
According to RSS-247,

(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)	Margin	Result
36	5180	3.24	11.00	-7.76	PASS
44	5220	2.83	11.00	-8.17	PASS
48	5240	2.86	11.00	-8.14	PASS

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

Channel	Frequency (MHz)	Chain 0 PPSD (dBm)	Chain 1 PPSD (dBm)	PPSD (dBm)	Limit (dBm)	Margin	Result
36	5180	1.94	2.11	5.04	8.45	-3.41	PASS
44	5220	1.35	1.61	4.49	8.45	-3.96	PASS
48	5240	1.77	1.97	4.88	8.45	-3.57	PASS

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

Channel	Frequency (MHz)	Chain 0 PPSD (dBm)	Chain 1 PPSD (dBm)	PPSD (dBm)	Limit (dBm)	Margin	Result
38	5190	-4.22	-3.78	-0.98	8.45	-9.43	PASS
46	5230	-3.89	-3.28	-0.56	8.45	-9.01	PASS

Test mode: IEEE 802.11ac VHT 80 MHz mode / 5210MHz

Channel	Frequency (MHz)	Chain 0 PPSD (dBm)	Chain 1 PPSD (dBm)	PPSD (dBm)	Limit (dBm)	Margin	Result
42	5210	-1.92	-4.54	-0.03	8.45	-8.48	PASS

Remark:
*1. Total PPSD (dBm) = 10*LOG(10^(Chain 0 PPSD / 10)+10^(Chain 1 PPSD /10))*
2. The maximum antenna gain is 8.55dBi; therefore the reduction due to antenna gain is 2.55dBi, so the limit is 8.45dBm.

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

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin	Result
52	5260	2.89	11.00	-8.11	PASS
56	5280	3.15	11.00	-7.85	PASS
64	5320	2.49	11.00	-8.51	PASS

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

Channel	Frequency (MHz)	Chain 0 PPSD (dBm)	Chain 1 PPSD (dBm)	PPSD (dBm)	Limit (dBm)	Margin	Result
52	5260	2.03	1.57	4.82	8.45	-3.63	PASS
56	5280	1.74	1.70	4.73	8.45	-3.72	PASS
64	5320	1.34	1.38	4.37	8.45	-4.08	PASS

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

Channel	Frequency (MHz)	Chain 0 PPSD (dBm)	Chain 1 PPSD (dBm)	PPSD (dBm)	Limit (dBm)	Margin	Result
54	5270	-3.29	-4.43	-0.81	8.45	-9.26	PASS
62	5310	-3.63	-4.38	-0.98	8.45	-9.43	PASS

Test mode: IEEE 802.11ac VHT 80 MHz mode / 5290MHz

Channel	Frequency (MHz)	Chain 0 PPSD (dBm)	Chain 1 PPSD (dBm)	PPSD (dBm)	Limit (dBm)	Margin	Result
58	5290	-3.03	-2.71	0.14	8.45	-8.31	PASS

Remark:
*1. Total PPSD (dBm) = 10*LOG(10^(Chain 0 PPSD / 10)+10^(Chain 1 PPSD /10))*
2. The maximum antenna gain is 8.55dBi; therefore the reduction due to antenna gain is 2.55dBi, so the limit is 8.45dBm.

Test mode: IEEE 802.11a mode / 5500 ~ 5720MHz

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin	Result
100	5500	2.69	11.00	-8.31	PASS
116	5580	1.97	11.00	-9.03	PASS
140	5700	2.42	11.00	-8.58	PASS
144	5720 (Band III)	2.02	11.00	-8.98	PASS
144	5720 (Band IV)	-1.17	30.00/500kHz	-31.17	PASS

Test mode: IEEE 802.11n HT 20 MHz Channel mode / 5500 ~ 5720MHz

Channel	Frequency (MHz)	Chain 0 PPSD (dBm)	Chain 1 PPSD (dBm)	PPSD (dBm)	Limit (dBm)	Margin	Result
100	5500	1.75	0.89	4.35	8.45	-4.1	PASS
116	5580	1.38	1.27	4.34	8.45	-4.11	PASS
140	5700	1.55	1.07	4.33	8.45	-4.12	PASS
144	5720 (Band III)	2.18	2.32	5.26	8.45	-3.19	PASS
144	5720 (Band IV)	-2.48	-2.55	0.50	27.45/500kHz	-26.95	PASS

Test mode: IEEE 802.11n HT 40 MHz mode / 5510 ~ 5710MHz

Channel	Frequency (MHz)	Chain 0 PPSD (dBm)	Chain 1 PPSD (dBm)	PPSD (dBm)	Limit (dBm)	Margin	Result
102	5510	-4.00	-4.55	-1.26	8.45	-9.71	PASS
118	5590	-3.91	-4.23	-1.06	8.45	-9.51	PASS
134	5670	-4.46	-4.30	-1.37	8.45	-9.82	PASS
142	5710 (Band III)	-1.87	-1.51	1.32	8.45	-7.13	PASS
142	5710 (Band IV)	-14.34	-13.64	-10.97	27.45/500kHz	-38.42	PASS

Test mode: IEEE 802.11ac VHT 80 MHz mode / 5530 ~ 5690MHz

Channel	Frequency (MHz)	Chain 0 PPSD (dBm)	Chain 1 PPSD (dBm)	PPSD (dBm)	Limit (dBm)	Margin	Result
106	5530	-5.30	-0.50	0.74	8.45	-7.71	PASS
122	5610	-1.35	-2.50	1.12	8.45	-7.33	PASS
138	5690 (Band III)	-1.43	-2.93	0.89	8.45	-7.56	PASS
138	5690 (Band IV)	-13.90	-17.68	-12.38	27.45/500kHz	-39.83	PASS

Remark:

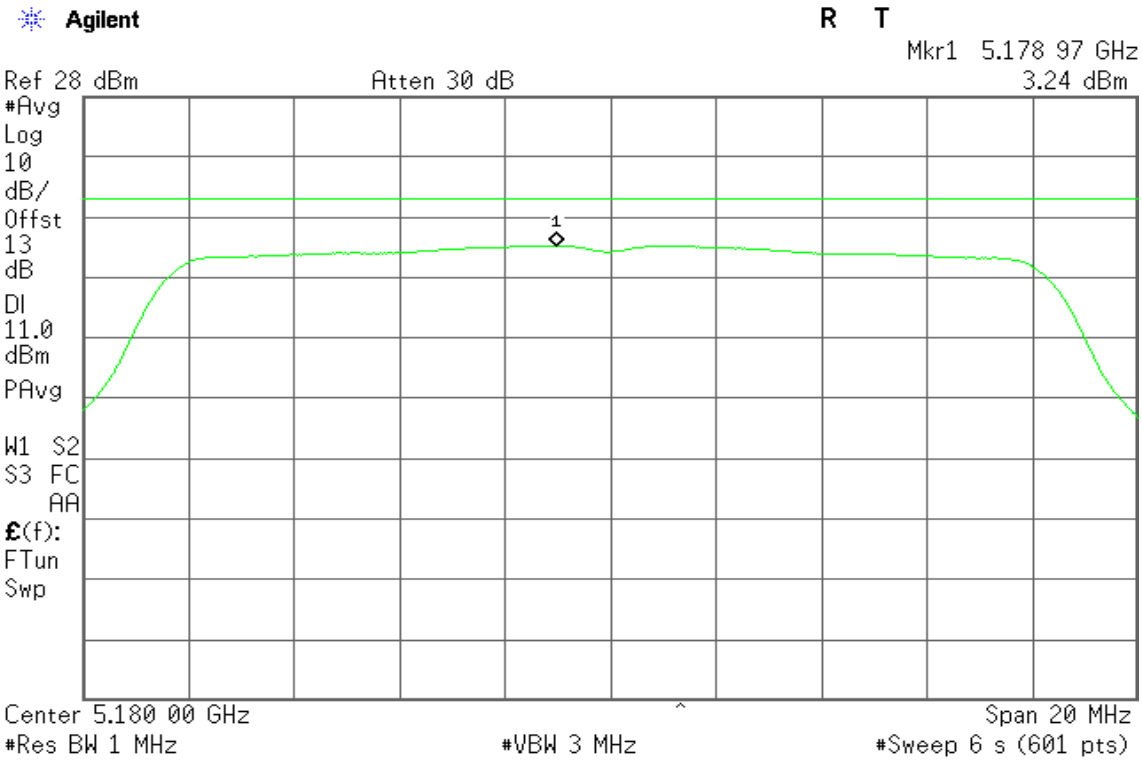
*1. Total PPSD (dBm) = 10*LOG(10^(Chain 0 PPSD / 10)+10^(Chain 1 PPSD /10))*

2. Band III: The maximum antenna gain is 8.55dBi; therefore the reduction due to antenna gain is 2.55dBi, so the limit is 8.45dBm.

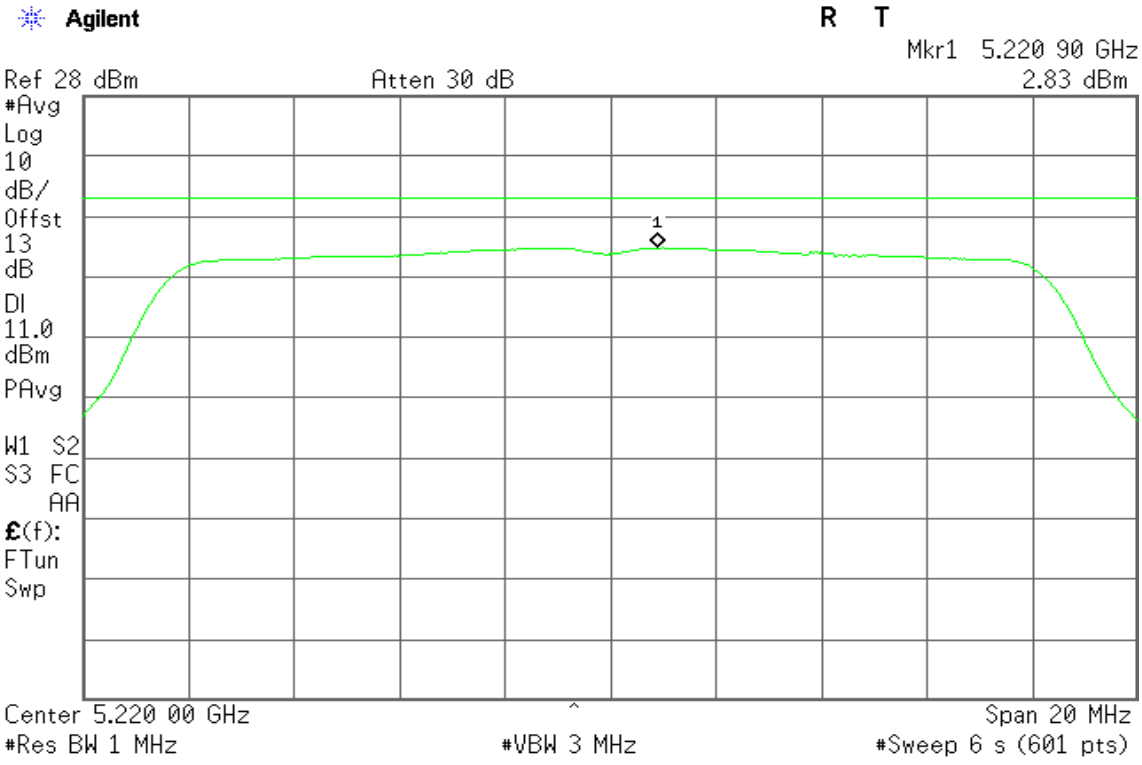
3. Band IV: The maximum antenna gain is 8.55dBi; therefore the reduction due to antenna gain is 2.55dBi, so the limit is 27.45 dBm.

Test Plot
IEEE 802.11a mode / 5180 ~ 5240MHz

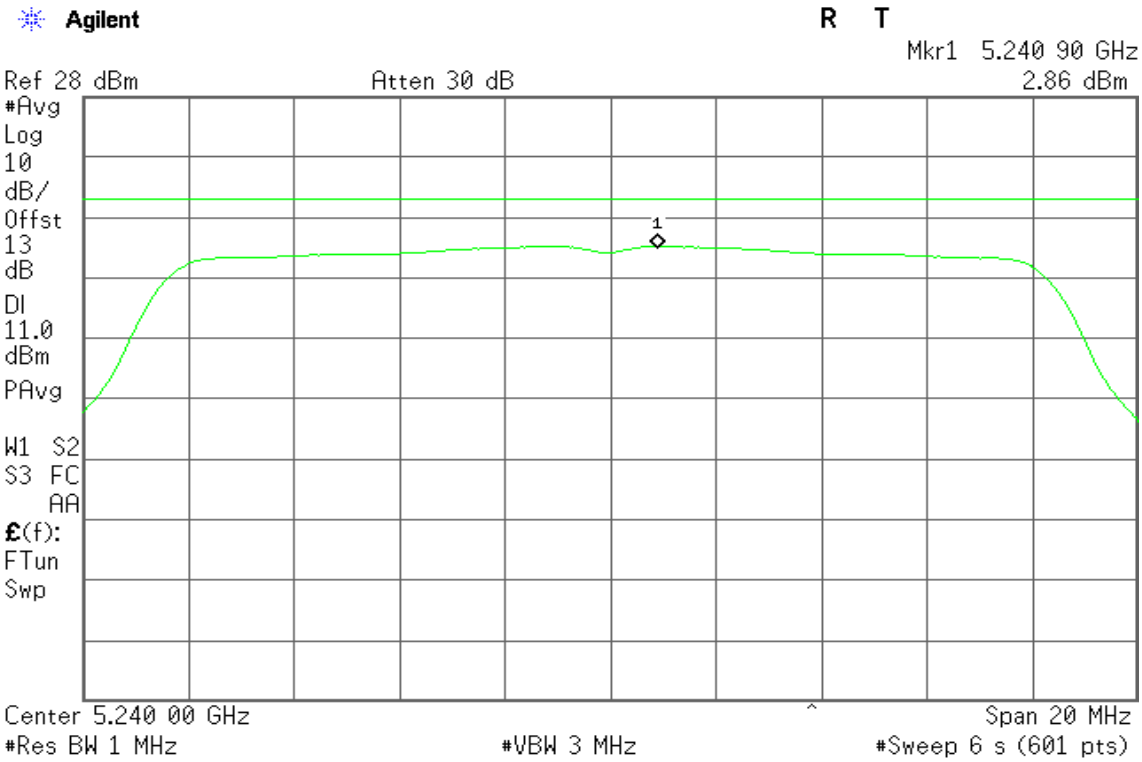
5180 MHz



5220 MHz

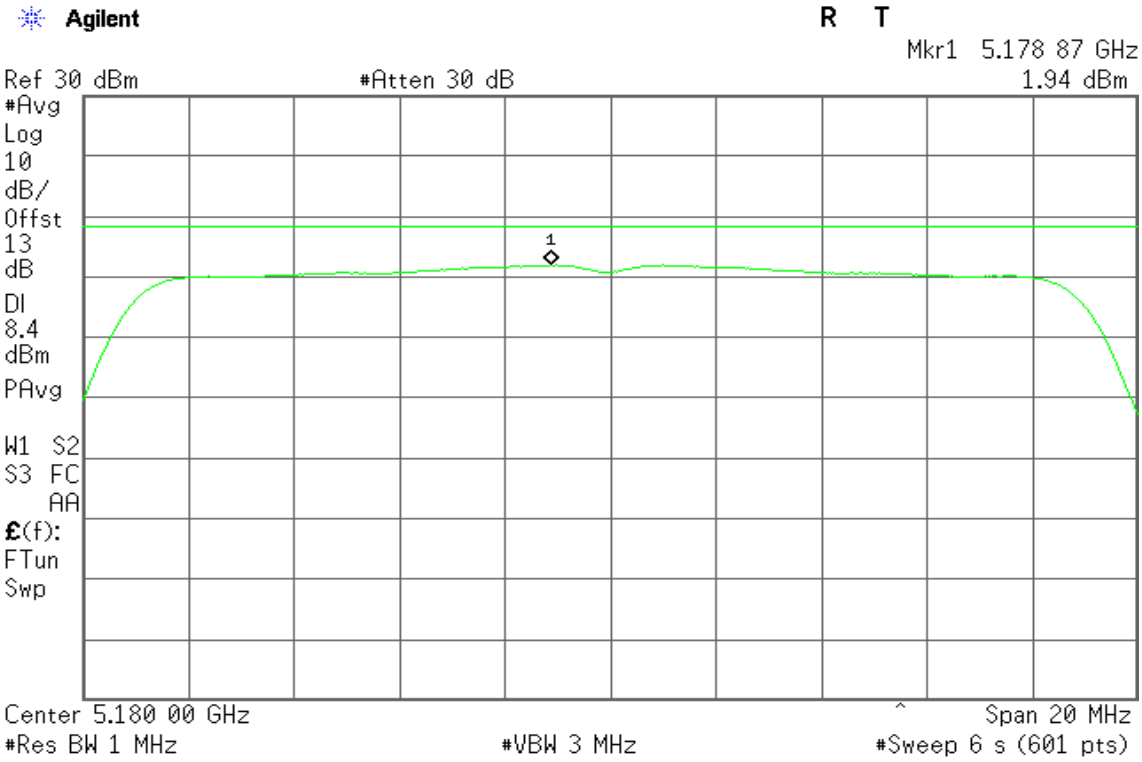


5240 MHz

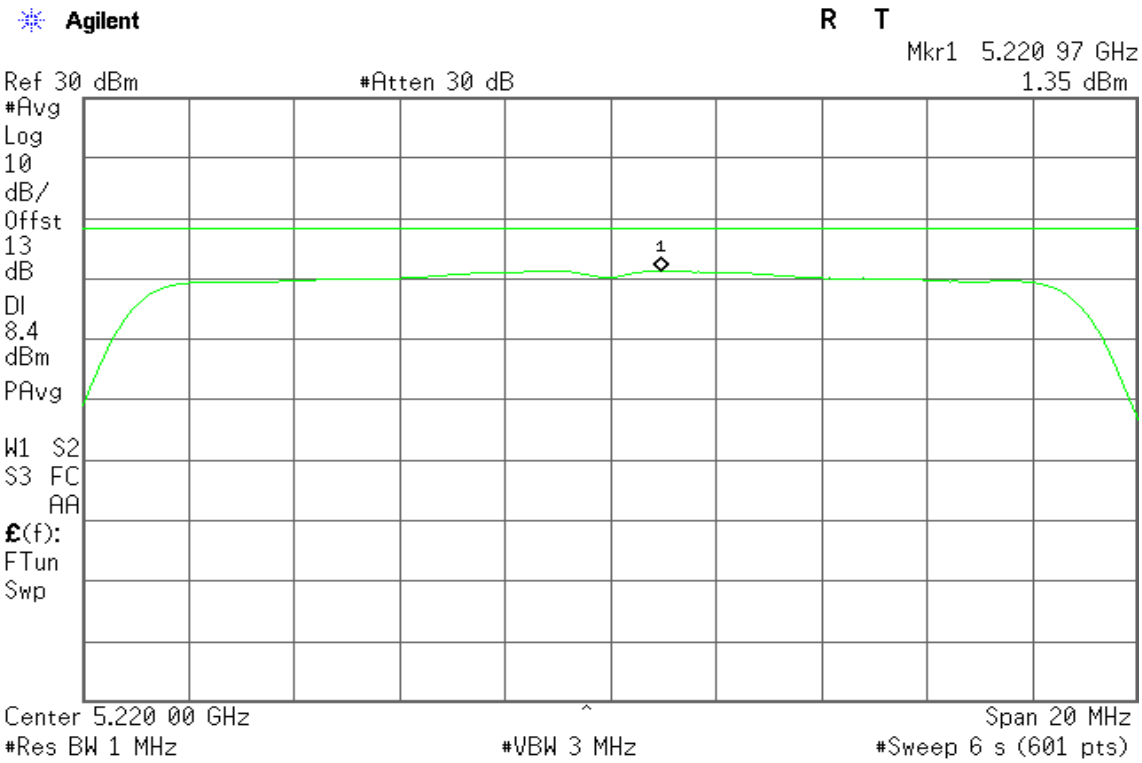

Agilent
R T
Mkr1 5.240 90 GHz
2.86 dBm
Ref 28 dBm
Atten 30 dB
#Avg
Log
10
dB/
Offst
13
dB
Dl
11.0
dBm
PAvg
W1 S2
S3 FC
AA
£(f):
FTun
Swp
1
Center 5.240 00 GHz
Span 20 MHz
#Res BW 1 MHz
#VBW 3 MHz
#Sweep 6 s (601 pts)

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

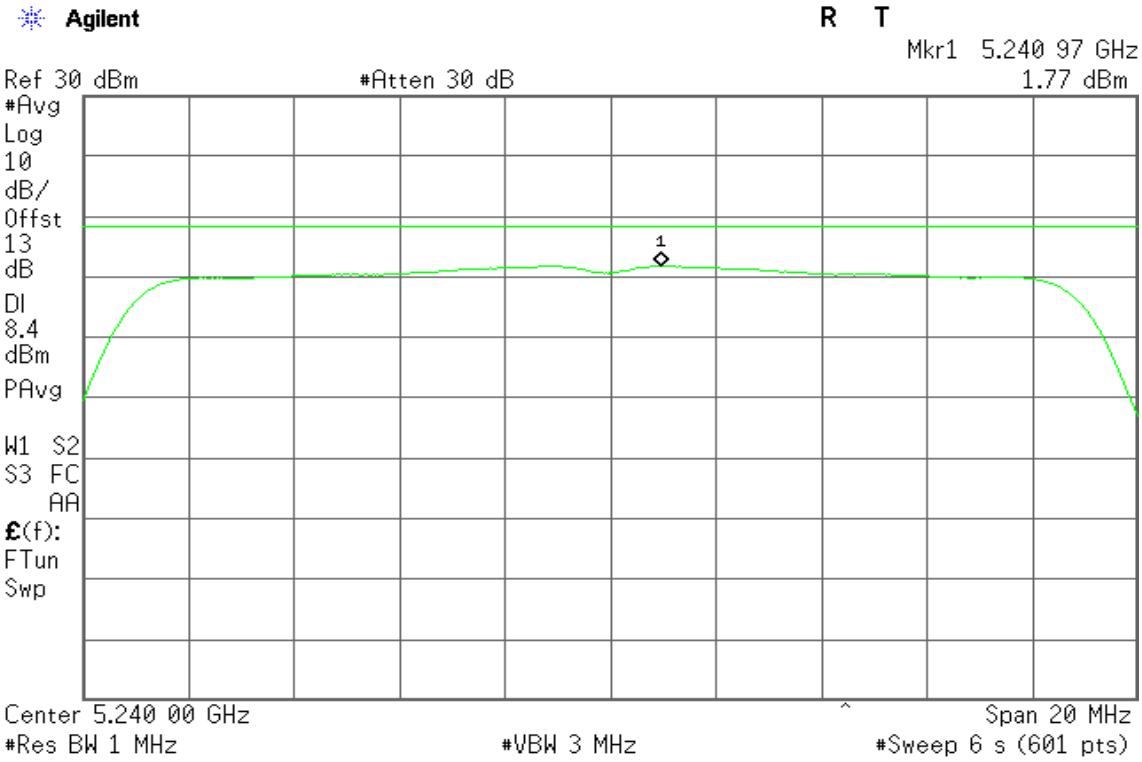
5180 MHz



5220 MHz

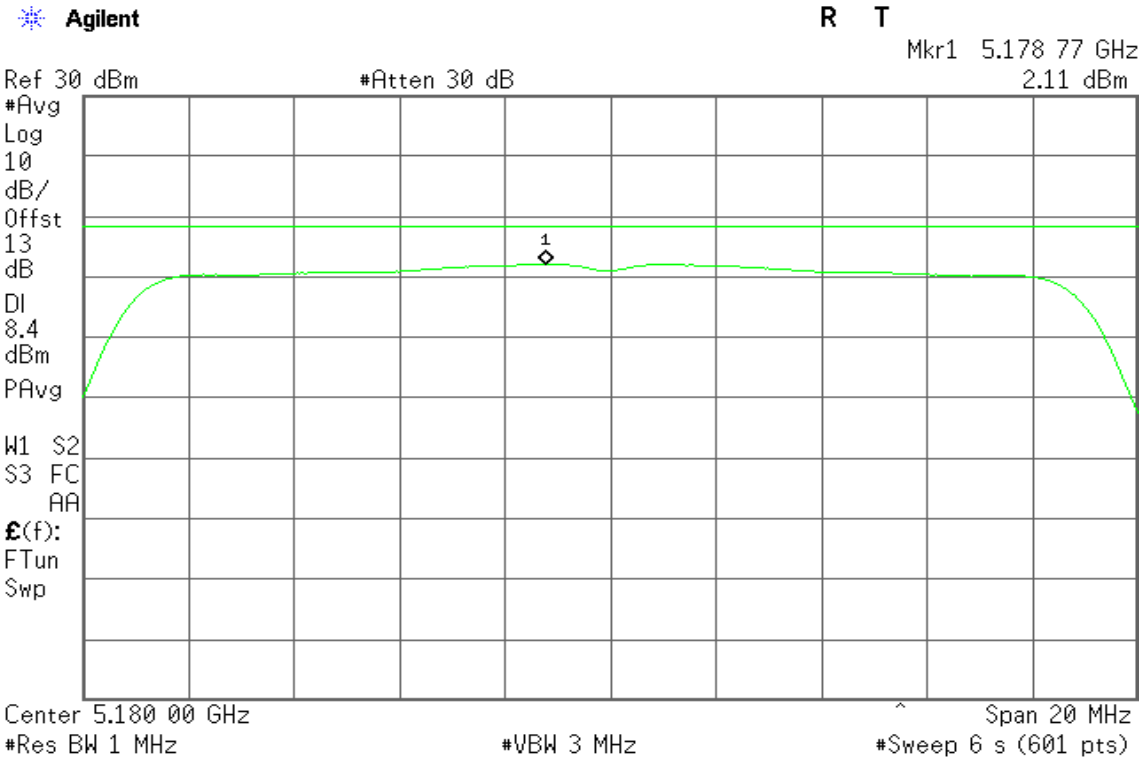


5240 MHz

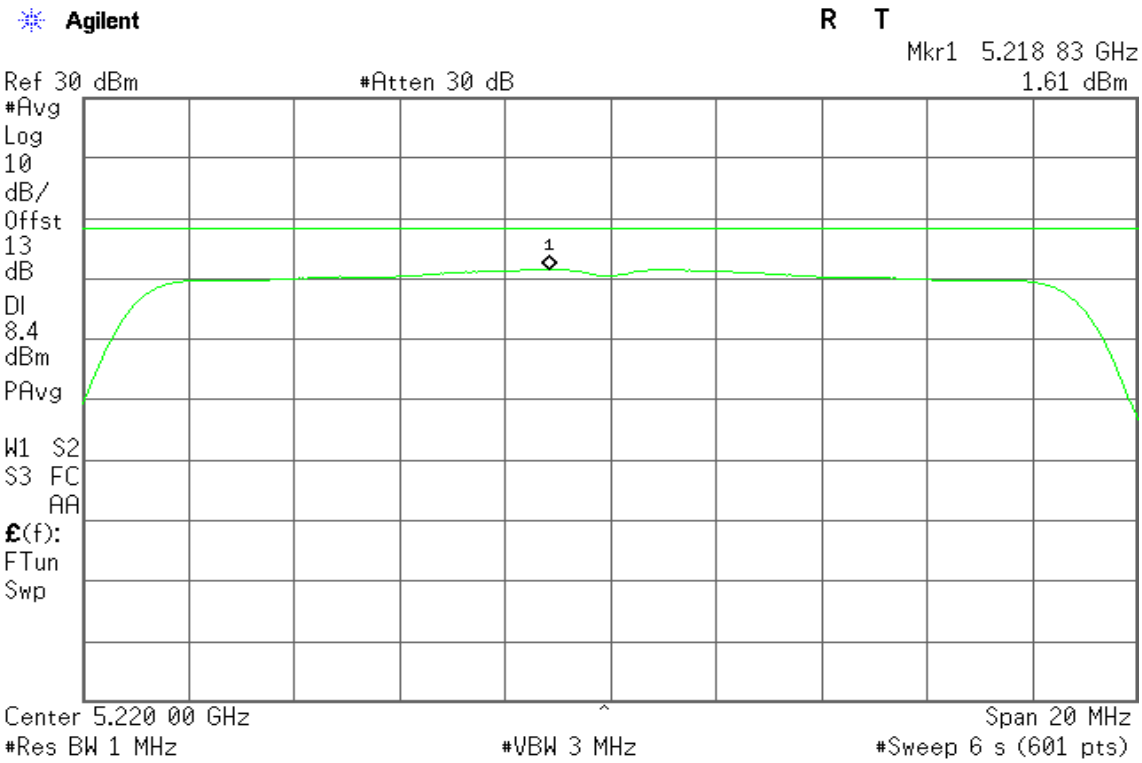

Agilent
R T
Mkr1 5.240 97 GHz
1.77 dBm
Ref 30 dBm
#Atten 30 dB
#Avg
Log
10
dB/
Offst
13
dB
Dl
8.4
dBm
PAvg
W1 S2
S3 FC
AA
£(f):
FTun
Swp
1
Center 5.240 00 GHz
Span 20 MHz
#Res BW 1 MHz
#VBW 3 MHz
#Sweep 6 s (601 pts)

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

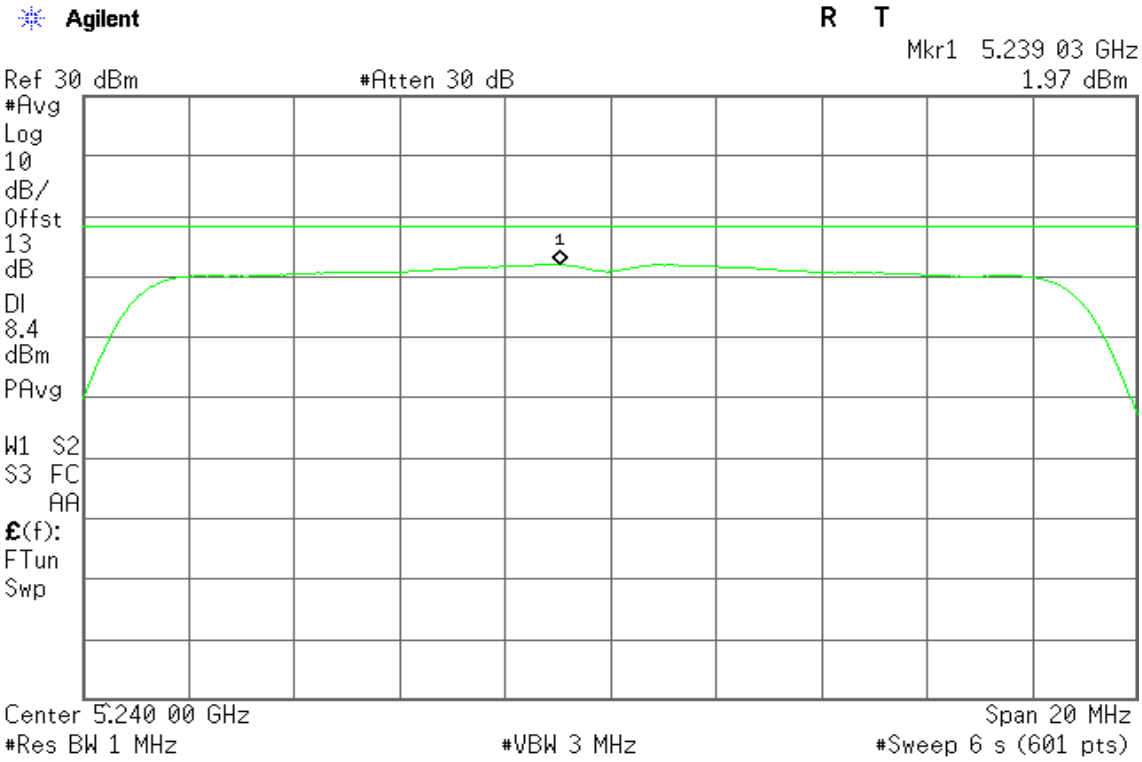
5180 MHz



5220 MHz

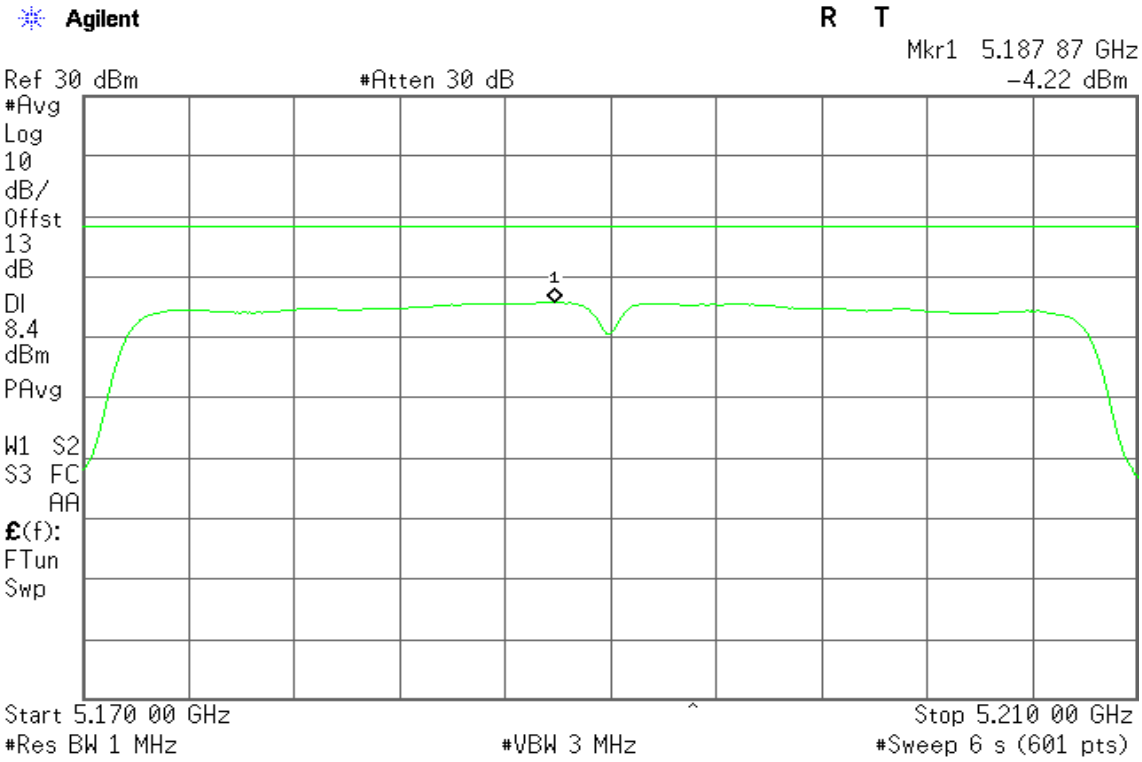


5240 MHz

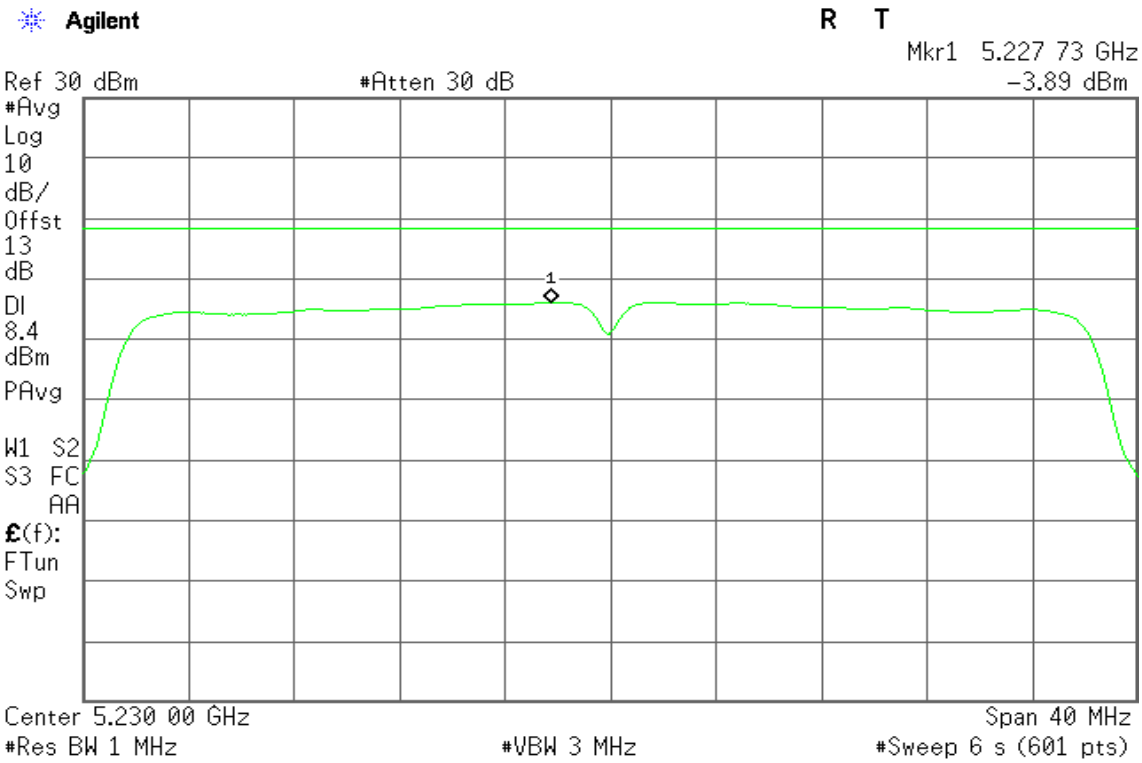

Agilent
R T
Mkr1 5.239 03 GHz
1.97 dBm
Ref 30 dBm
#Atten 30 dB
#Avg
Log
10
dB/
Offst
13
dB
Dl
8.4
dBm
PAvg
W1 S2
S3 FC
AA
£(f):
FTun
Swp
1
Center 5.240 00 GHz
Span 20 MHz
#Res BW 1 MHz
#VBW 3 MHz
#Sweep 6 s (601 pts)

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

5190 MHz

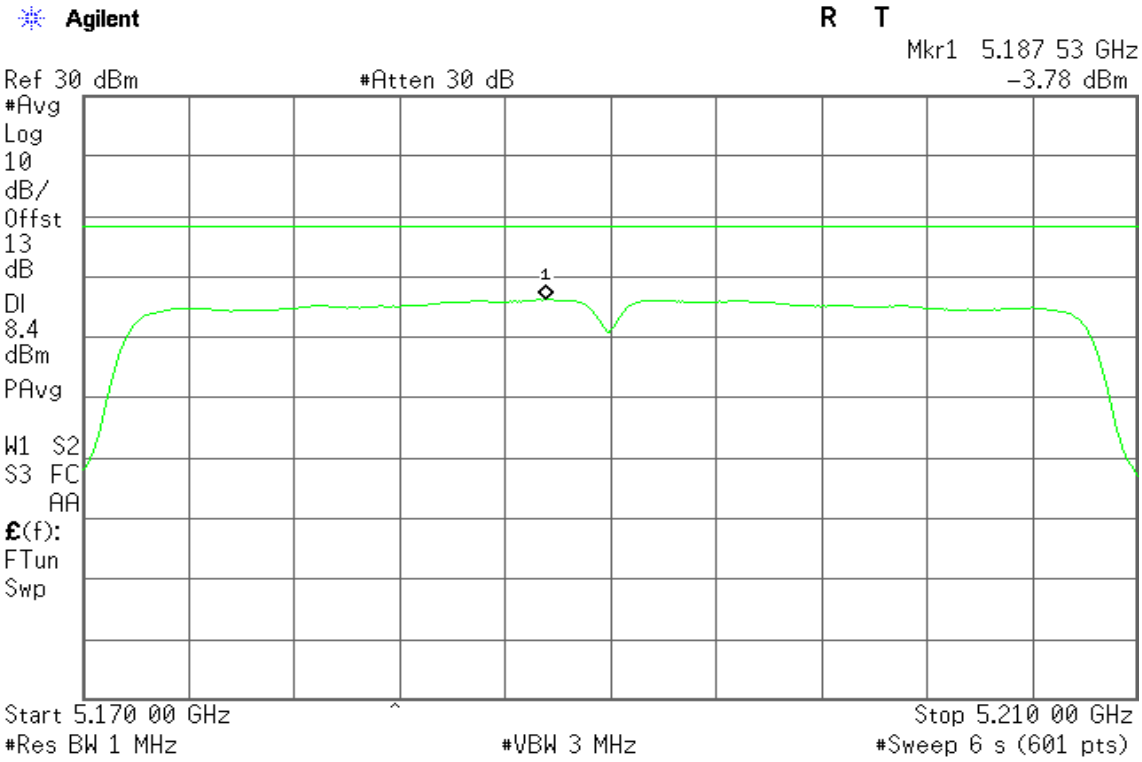


5230 MHz

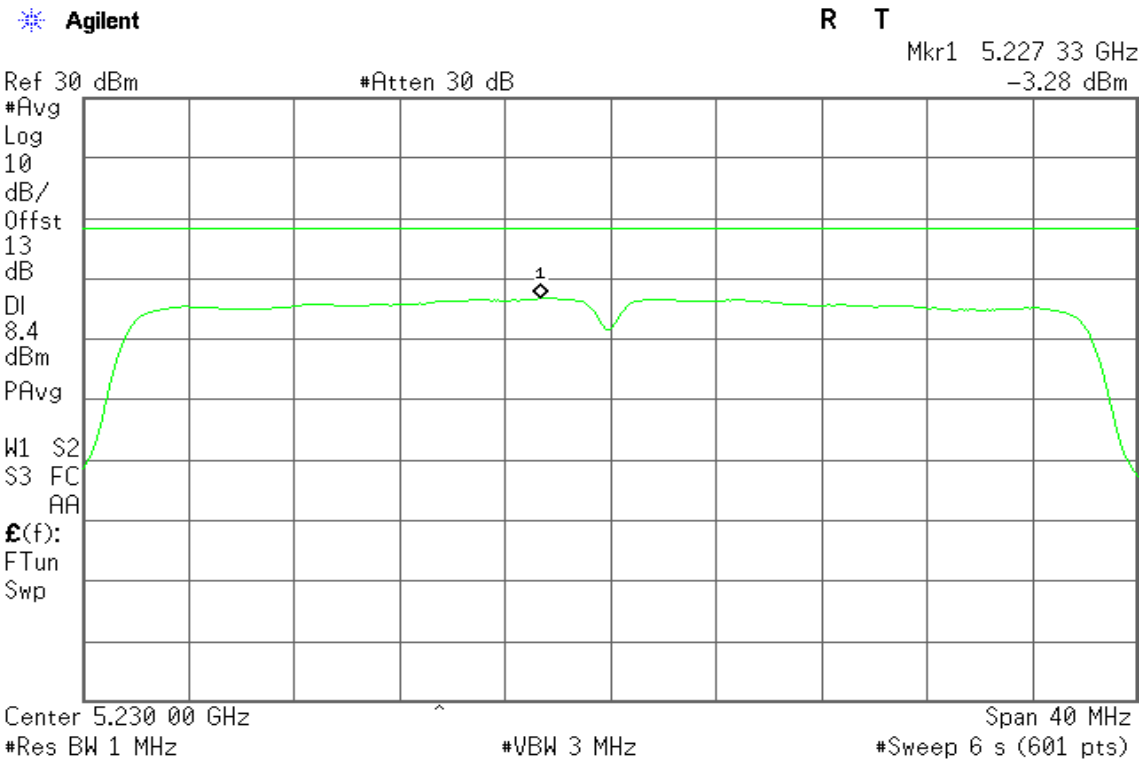


IEEE 802.11n HT 40 MHz mode / 5190 ~ 5230MHz / Chain 1

5190 MHz

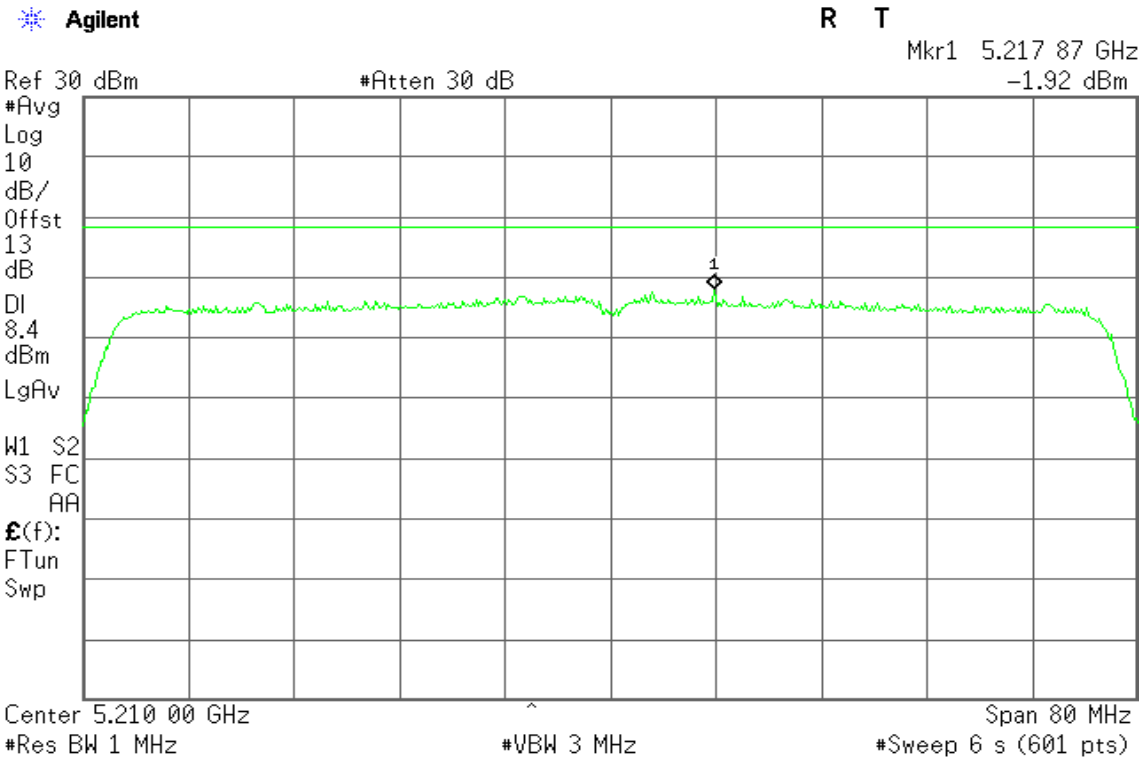


5230 MHz



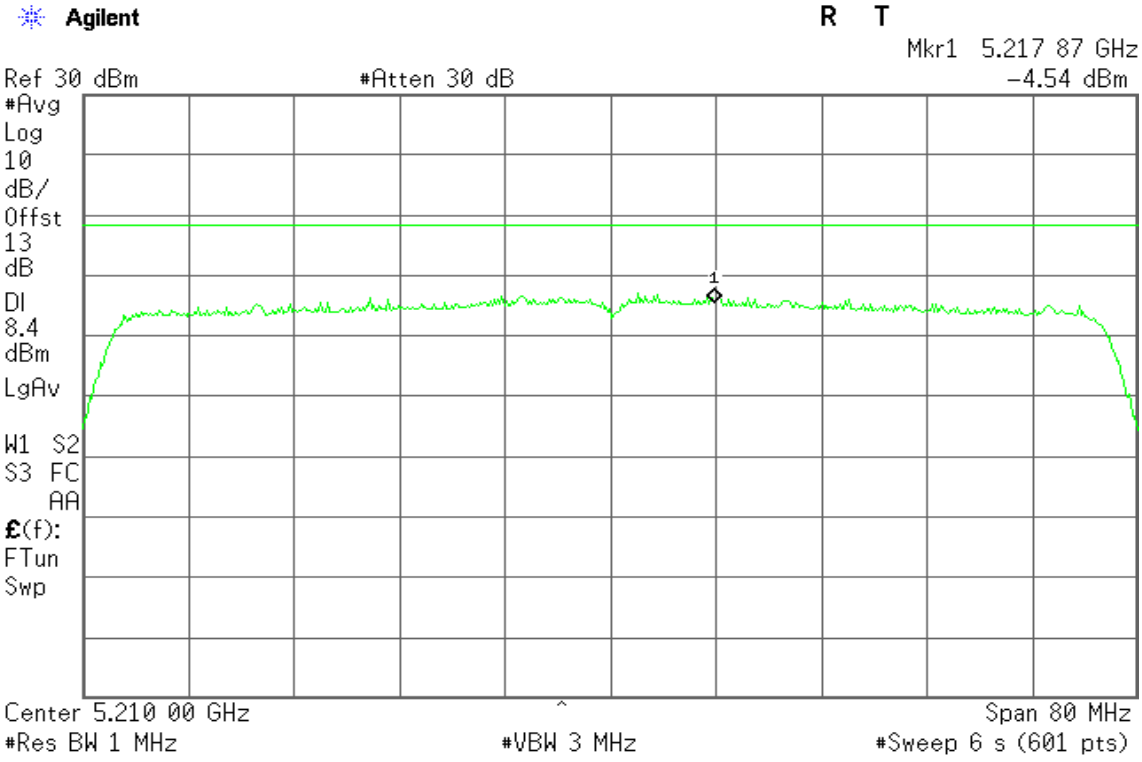
IEEE 802.11ac VHT 80 MHz mode / 5210MHz/ Chain 0

5210 MHz



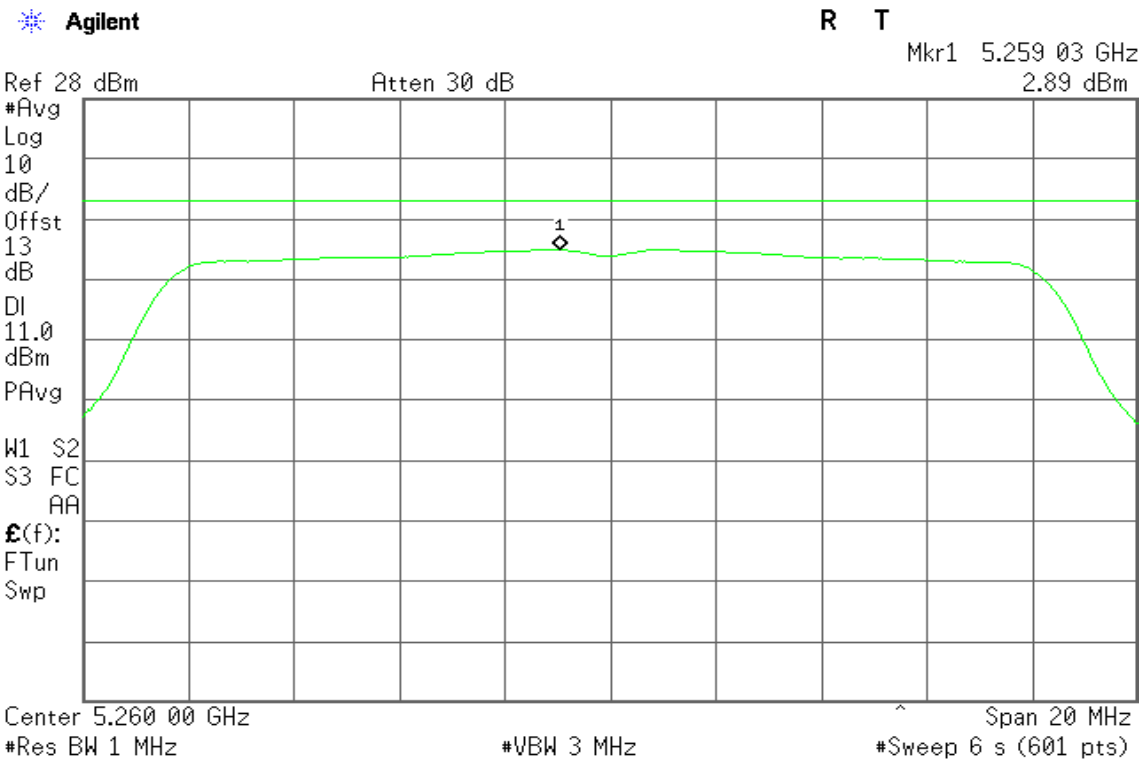
IEEE 802.11ac VHT 80 MHz mode / 5210MHz/ Chain 1

5210 MHz

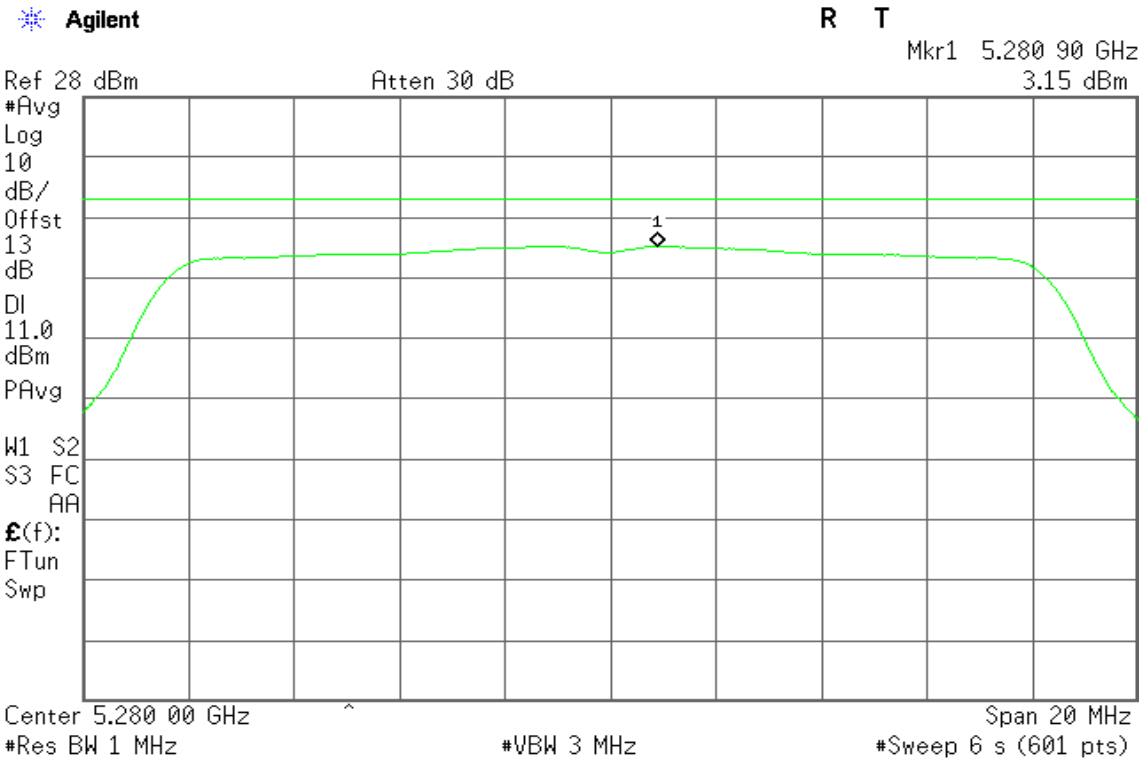


IEEE 802.11a mode / 5260 ~ 5320MHz

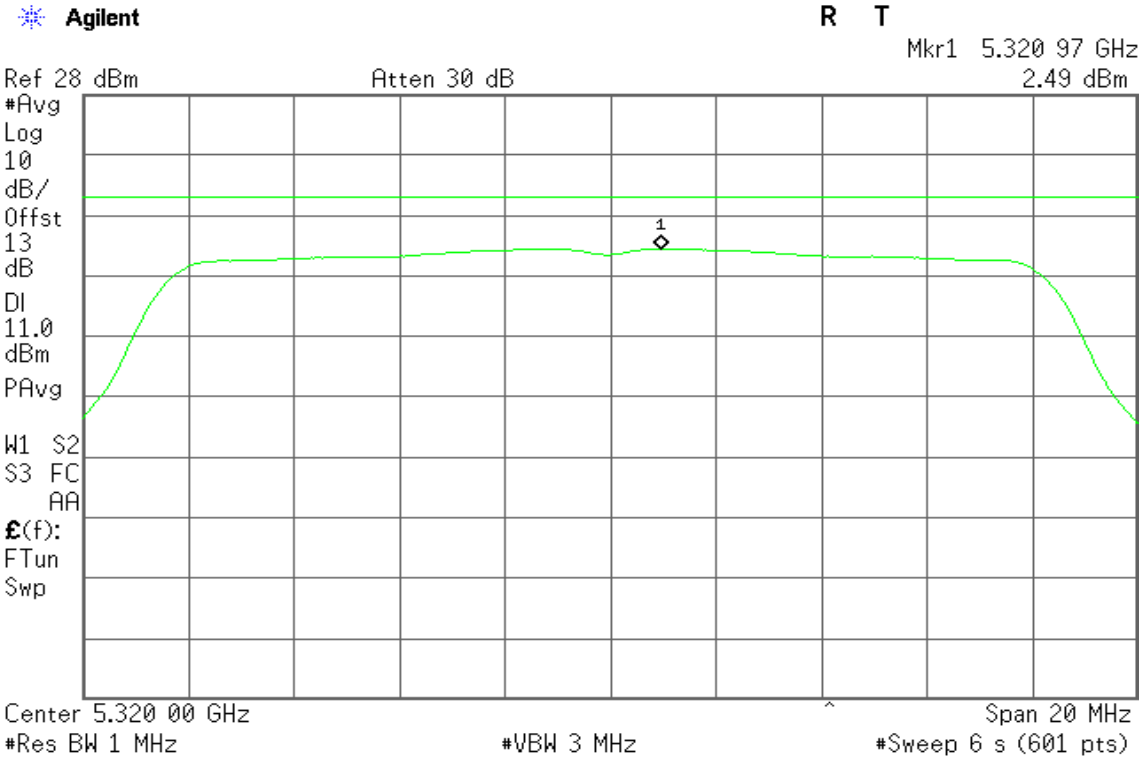
5260 MHz



5280 MHz

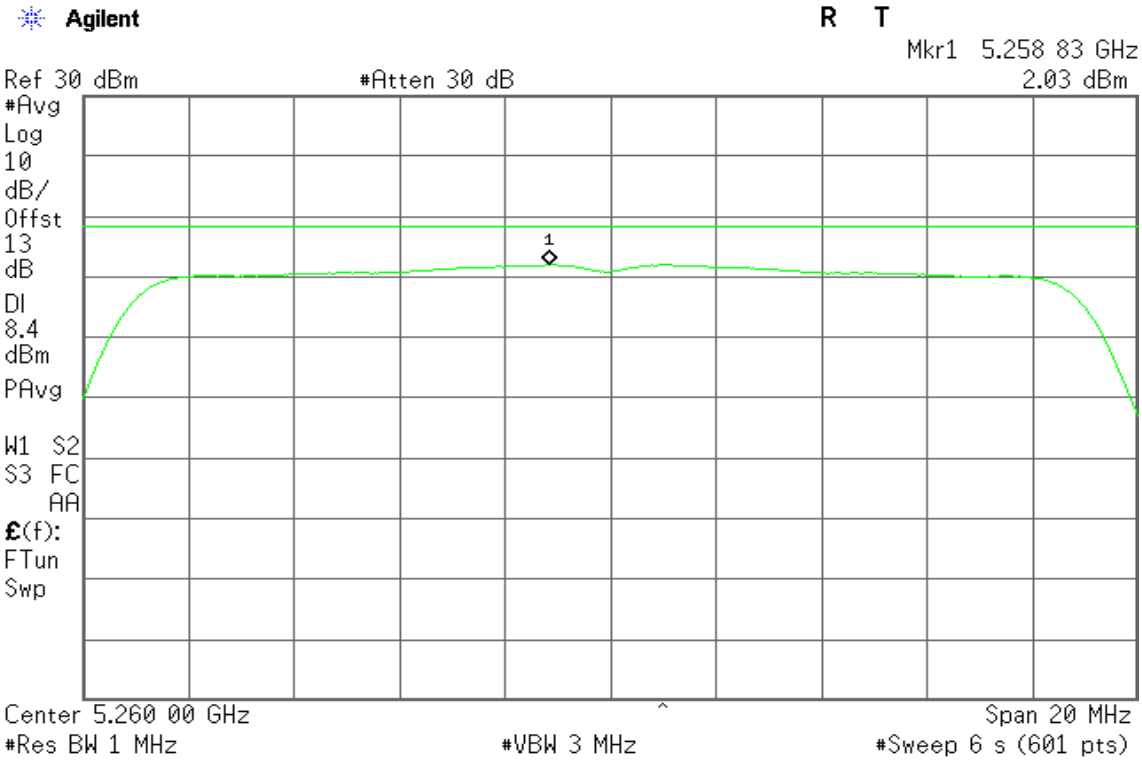


5320 MHz

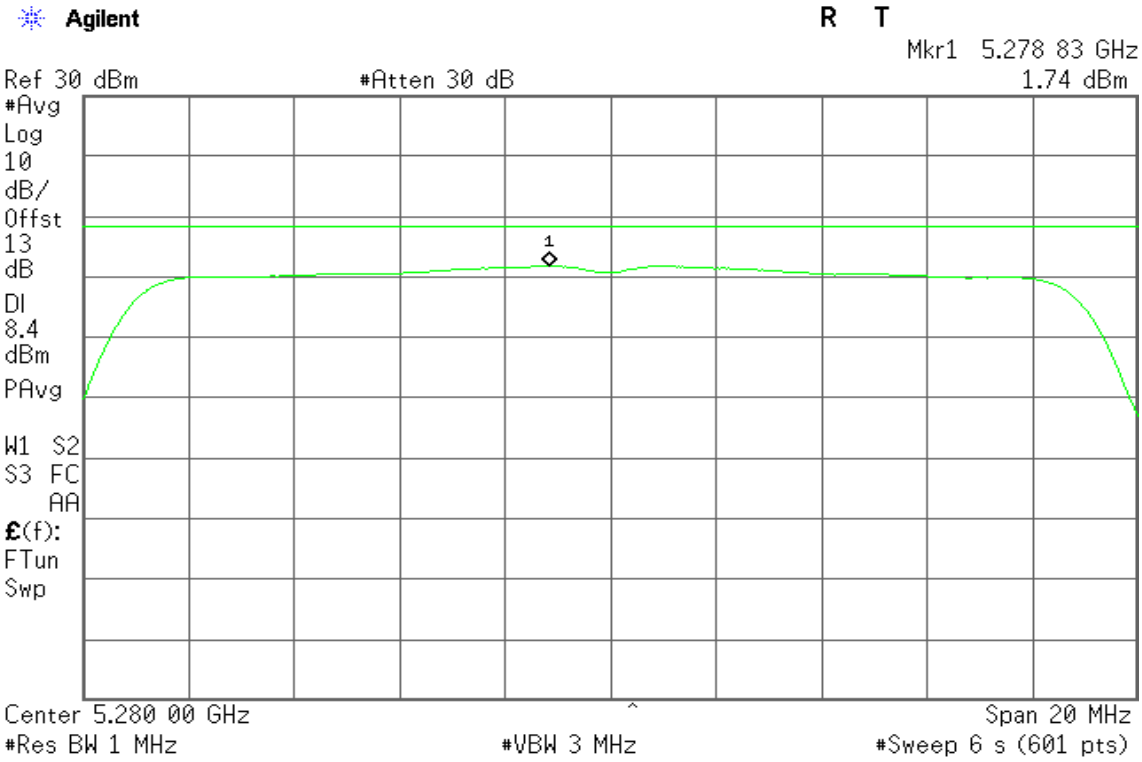

Agilent
R T
Mkr1 5.320 97 GHz
2.49 dBm
Ref 28 dBm
Atten 30 dB
#Avg
Log
10
dB/
Offst
13
dB
Dl
11.0
dBm
PAvg
W1 S2
S3 FC
AA
£(f):
FTun
Swp
1
Center 5.320 00 GHz
#Res BW 1 MHz
#VBW 3 MHz
Span 20 MHz
#Sweep 6 s (601 pts)

IEEE 802.11n HT 20 MHz Channel mode / 5260 ~ 5320MHz / Chain 0

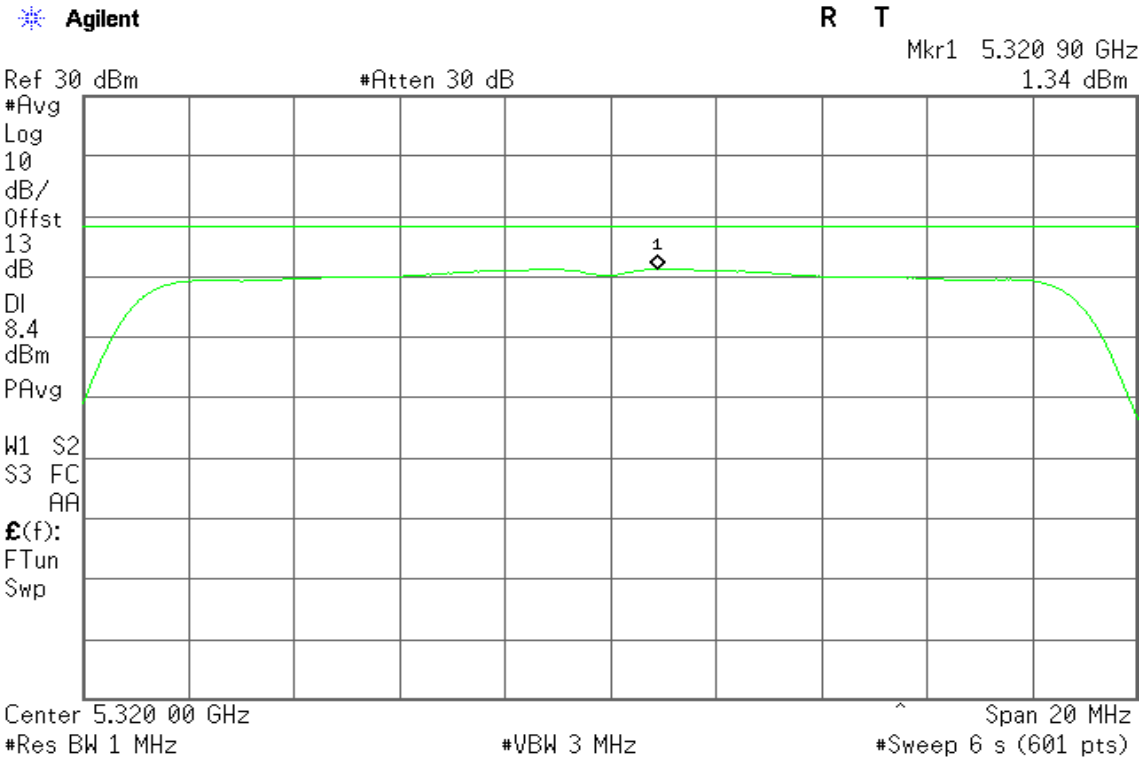
5260 MHz



5280 MHz

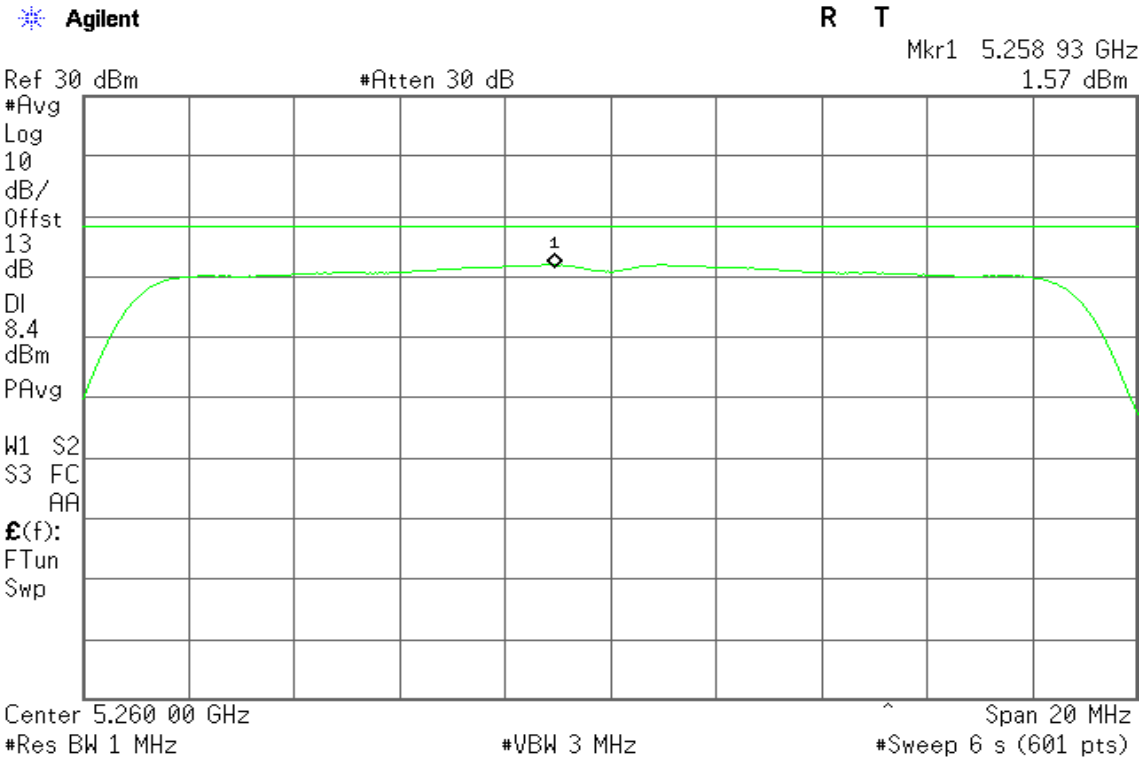


5320 MHz

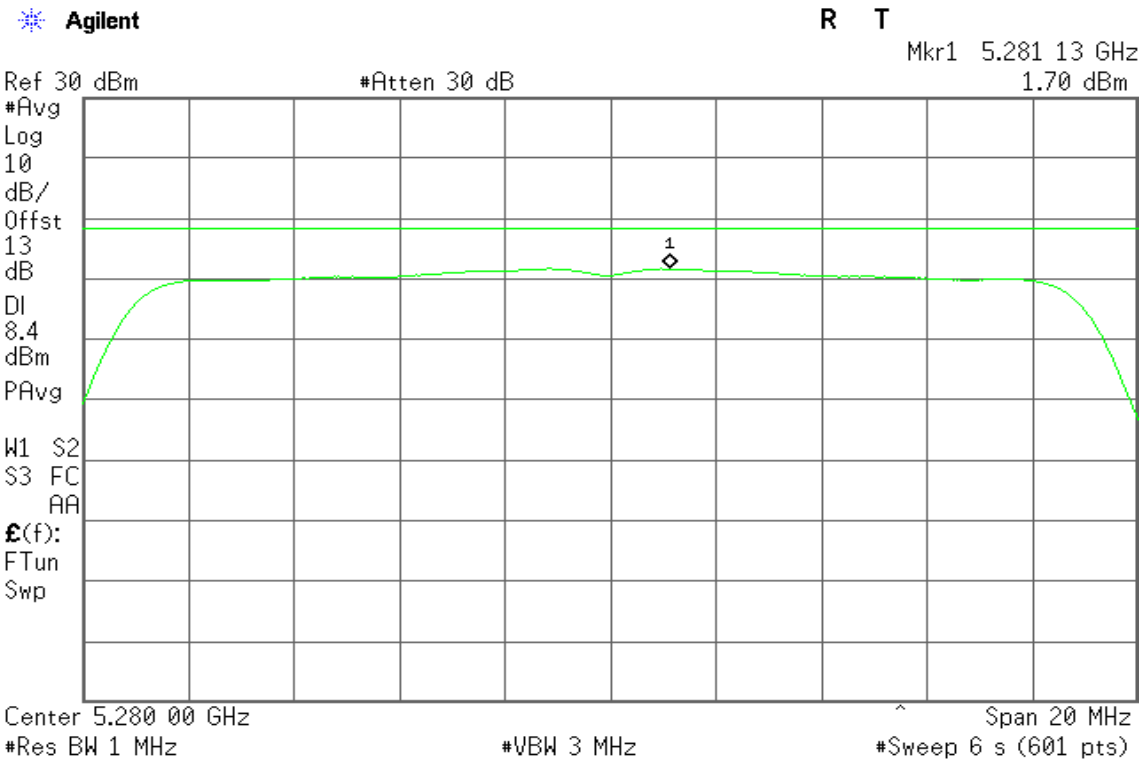

Agilent
R T
Mkr1 5.320 90 GHz
1.34 dBm
Ref 30 dBm
#Atten 30 dB
#Avg
Log
10
dB/
Offst
13
dB
Dl
8.4
dBm
PAvg
W1 S2
S3 FC
AA
£(f):
FTun
Swp
1
Center 5.320 00 GHz
Span 20 MHz
#Res BW 1 MHz
#VBW 3 MHz
#Sweep 6 s (601 pts)

IEEE 802.11n HT 20 MHz Channel mode / 5260 ~ 5320MHz / Chain 1

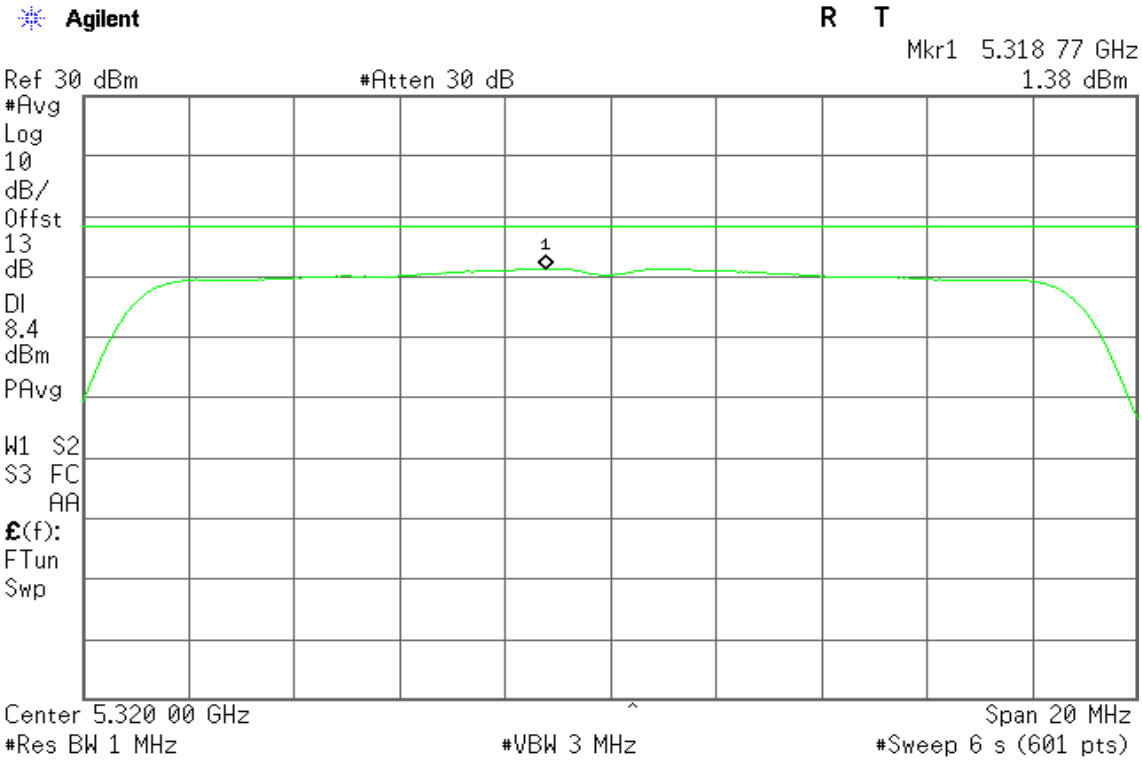
5260 MHz



5280 MHz

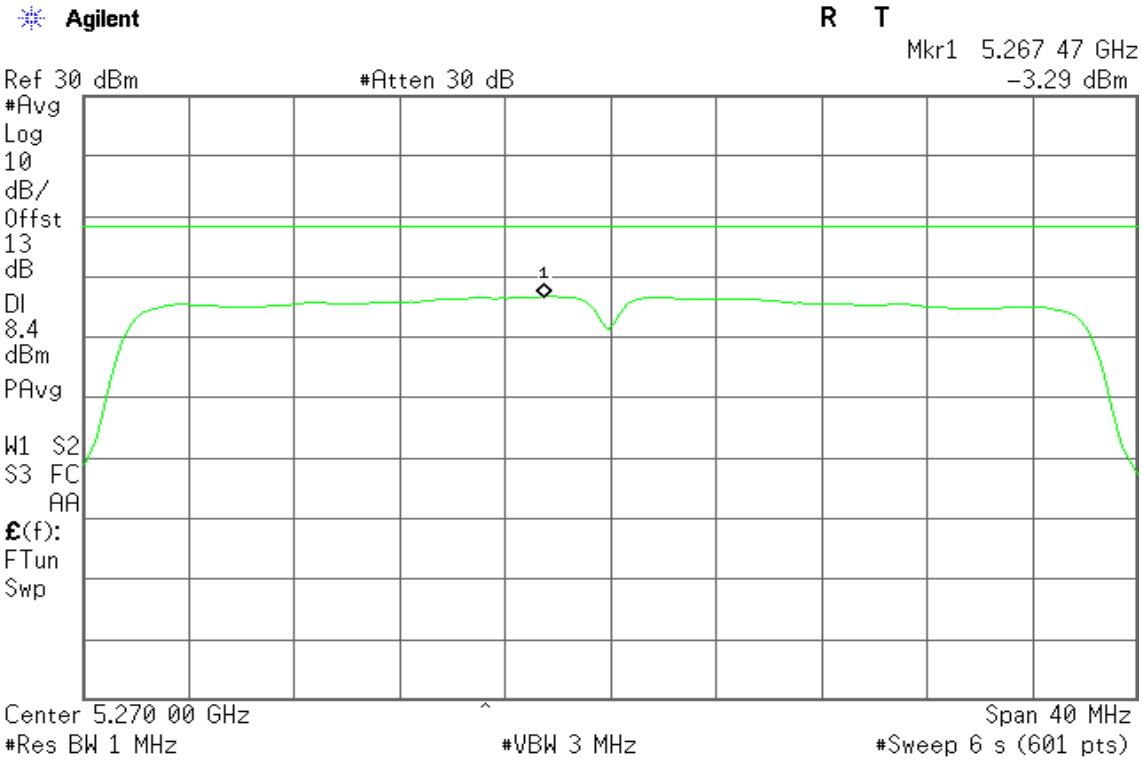


5320 MHz

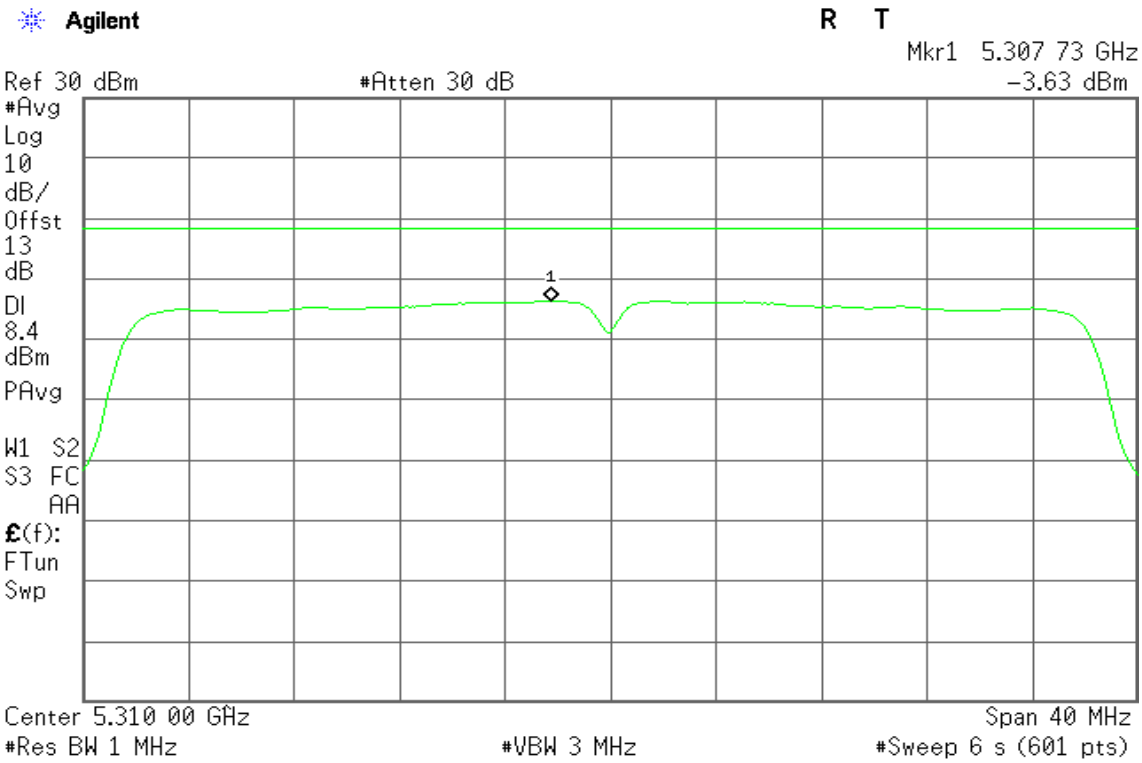

Agilent
R T
Mkr1 5.318 77 GHz
1.38 dBm
Ref 30 dBm
#Atten 30 dB
#Avg
Log
10
dB/
Offst
13
dB
Dl
8.4
dBm
PAvg
W1 S2
S3 FC
AA
£(f):
FTun
Swp
1
Center 5.320 00 GHz
#Res BW 1 MHz
#VBW 3 MHz
Span 20 MHz
#Sweep 6 s (601 pts)

IEEE 802.11n HT 40 MHz mode / 5270 ~ 5310MHz / Chain 0

5270 MHz

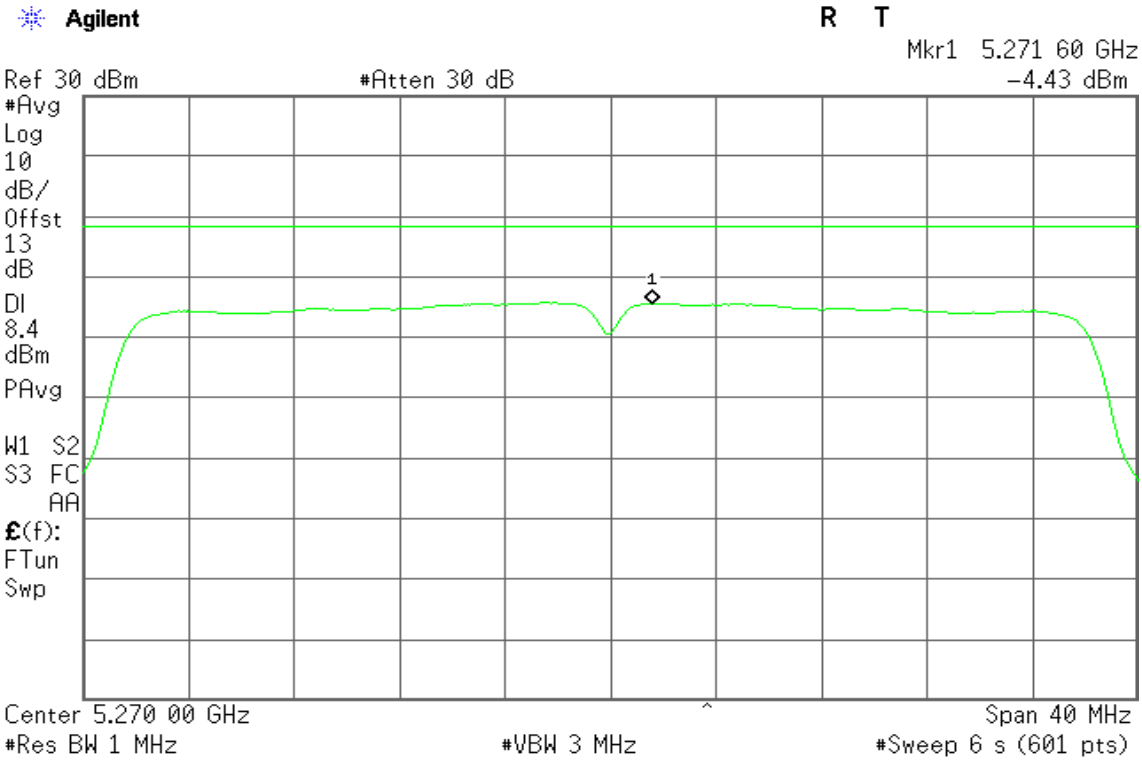


5310 MHz

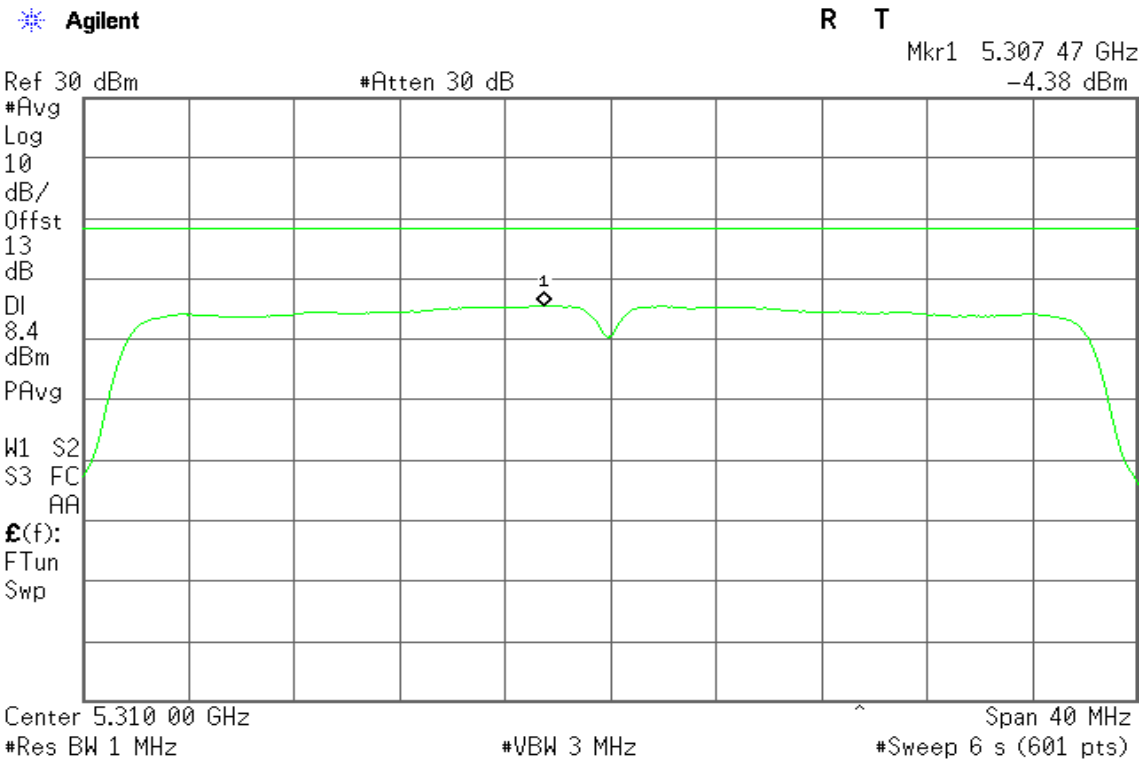


IEEE 802.11n HT 40 MHz mode / 5270 ~ 5310MHz / Chain 1

5270 MHz

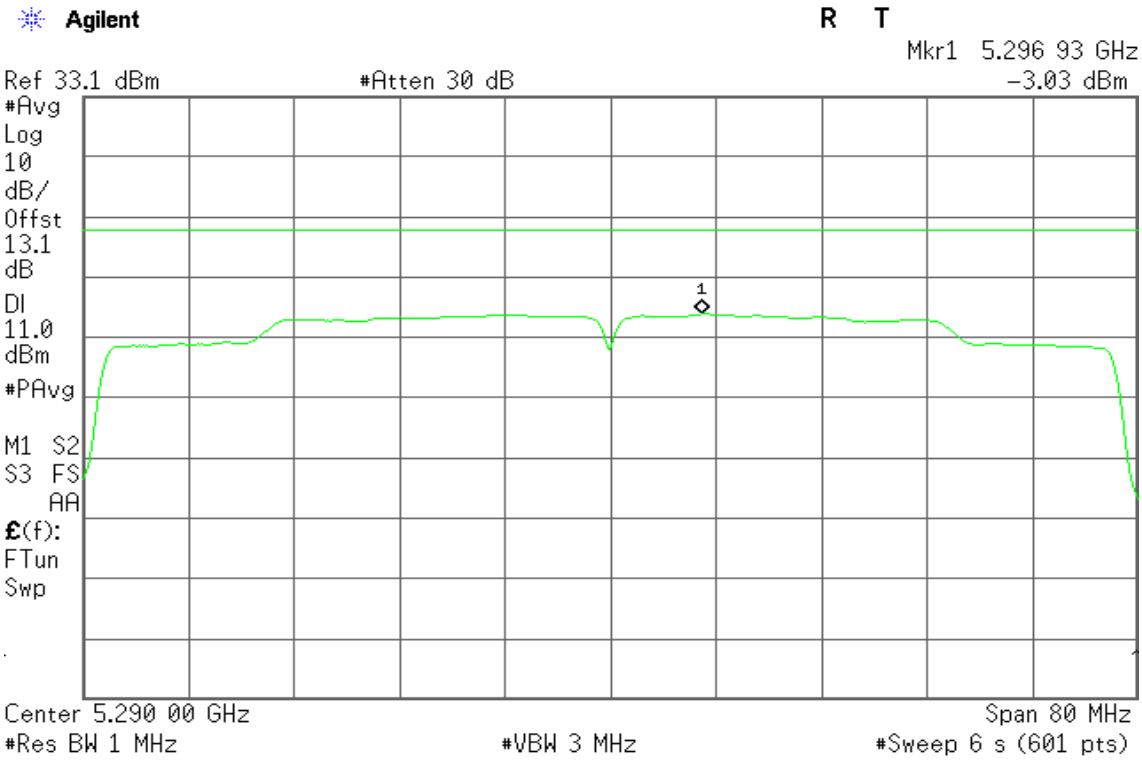


5310 MHz



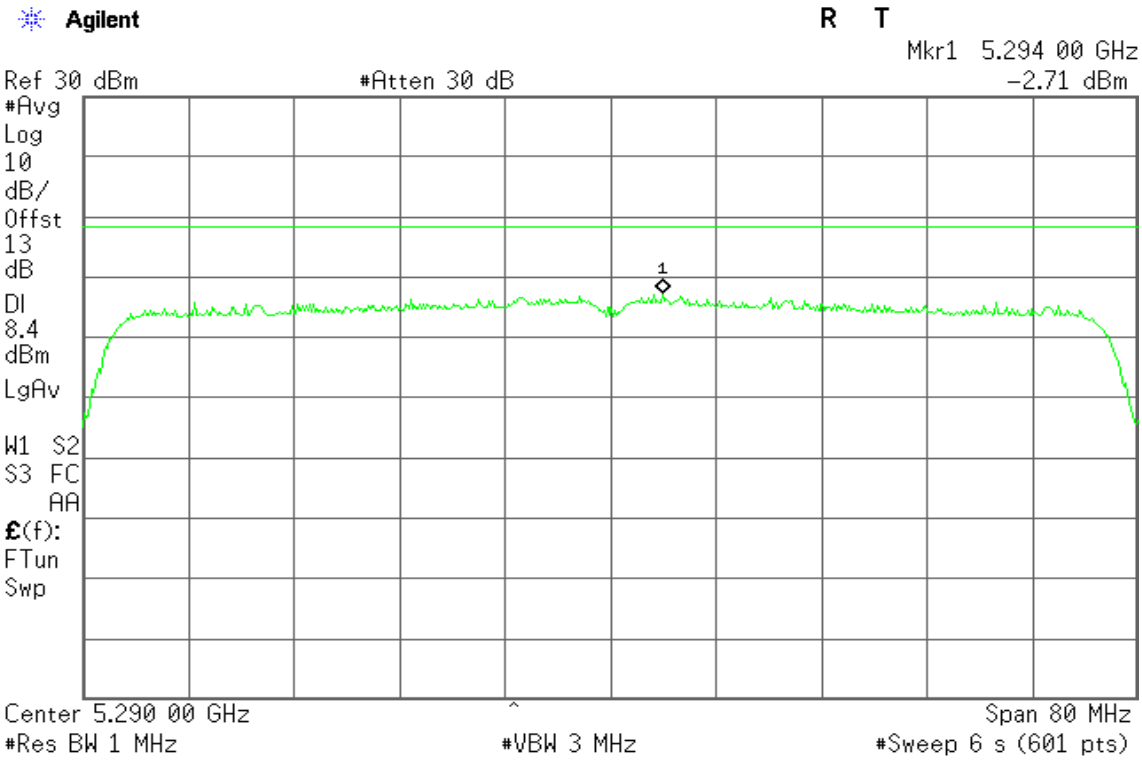
IEEE 802.11ac VHT 80 MHz mode / 5290MHz / Chain 0

5290 MHz



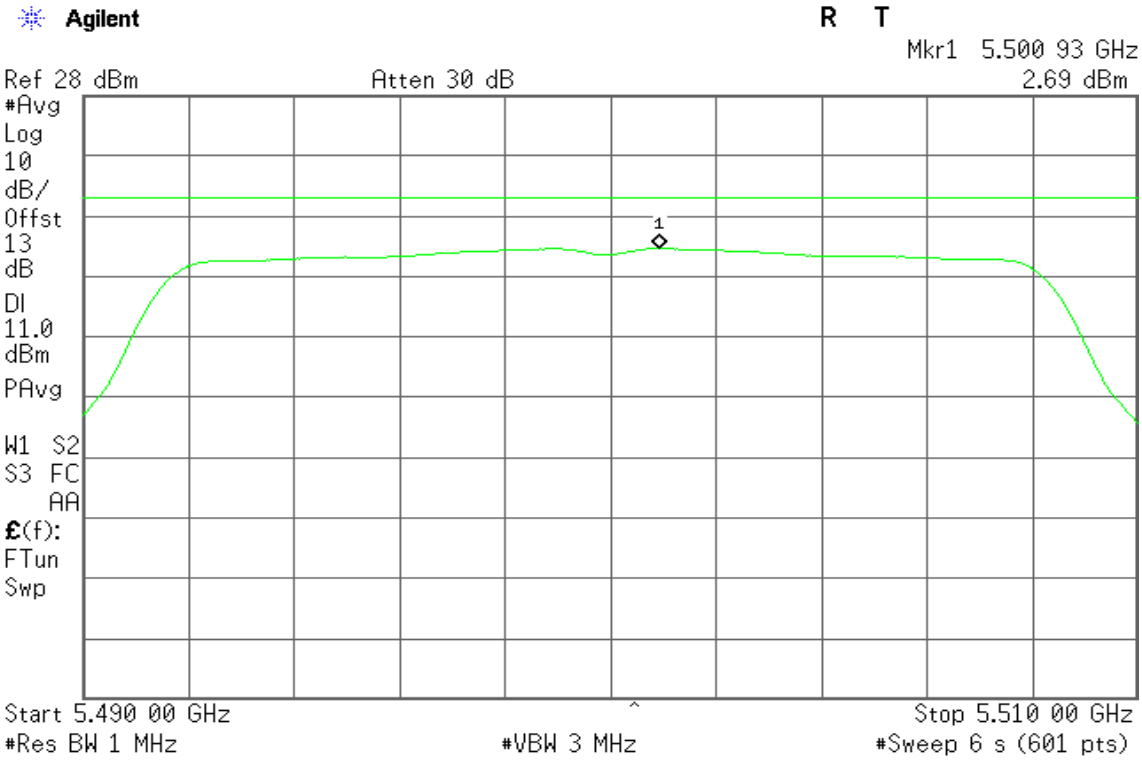
IEEE 802.11ac VHT 80 MHz mode / 5290MHz / Chain 1

5290 MHz

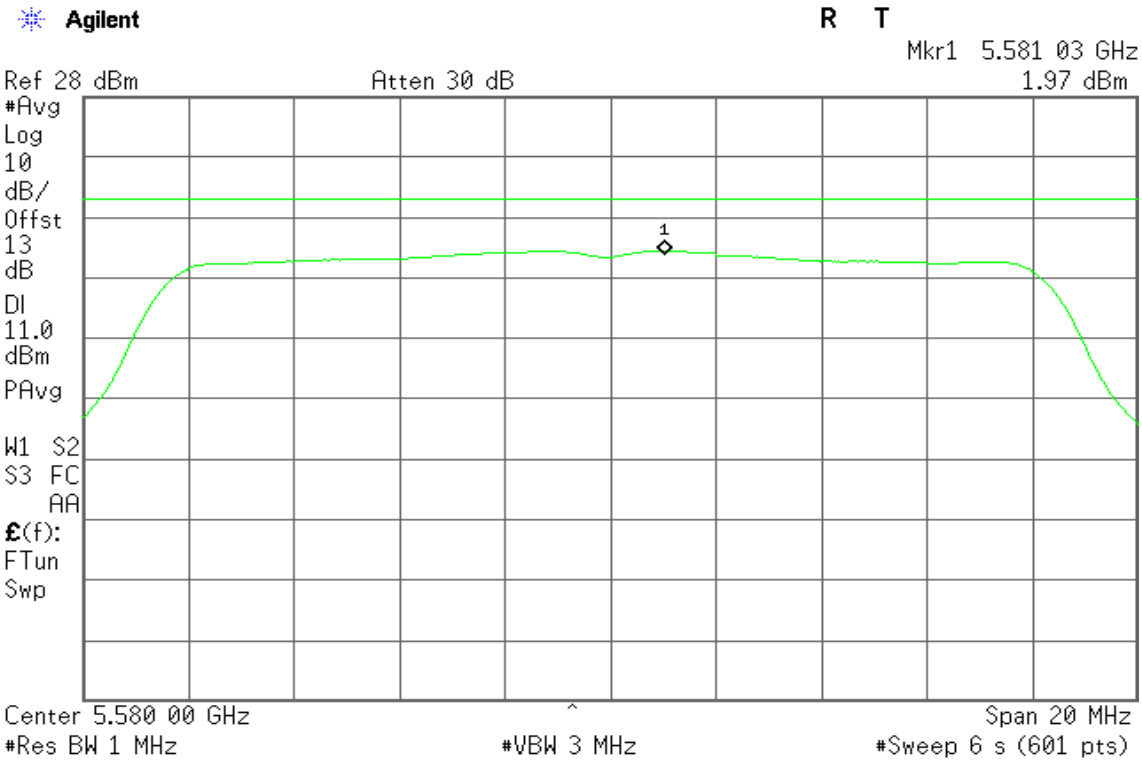


Test mode: IEEE 802.11a mode / 5500 ~ 5720MHz

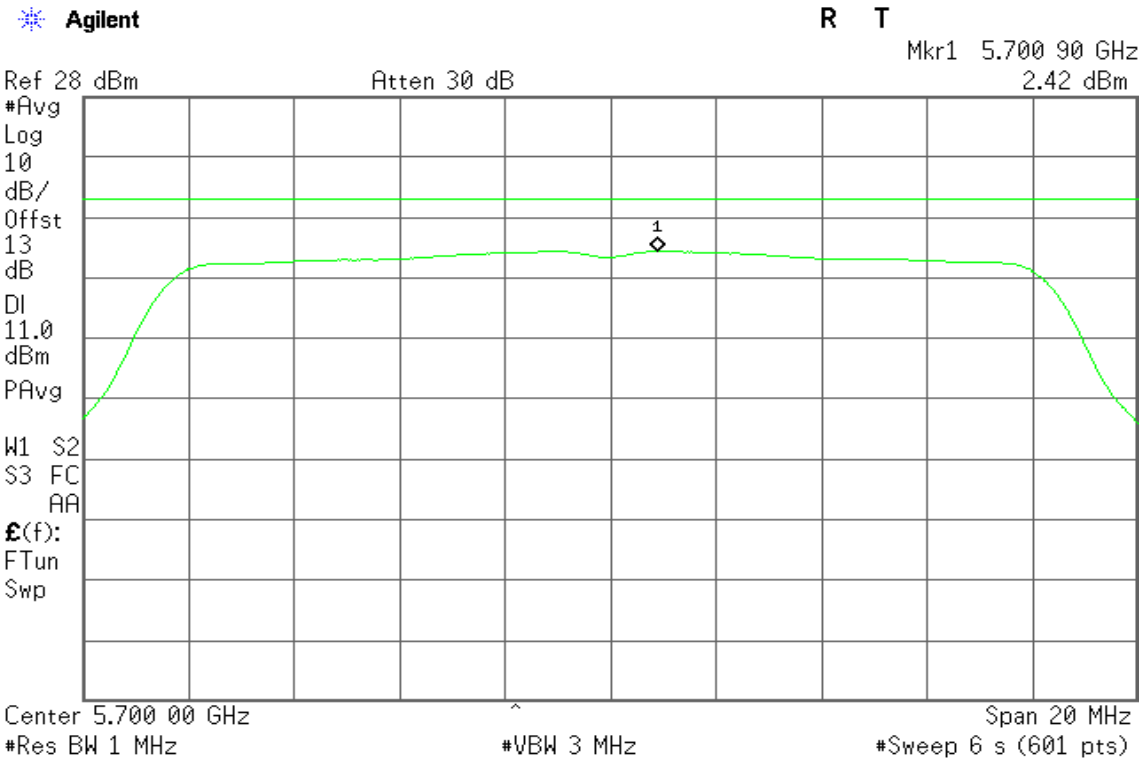
5500 MHz



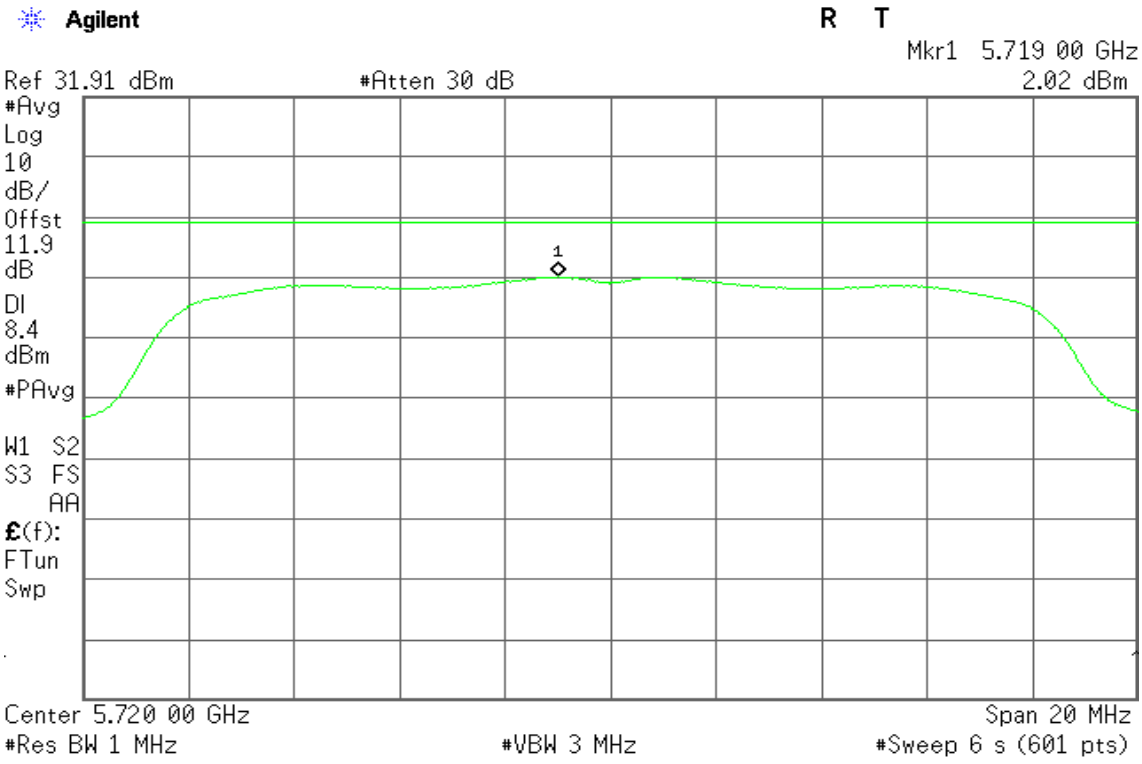
5580 MHz



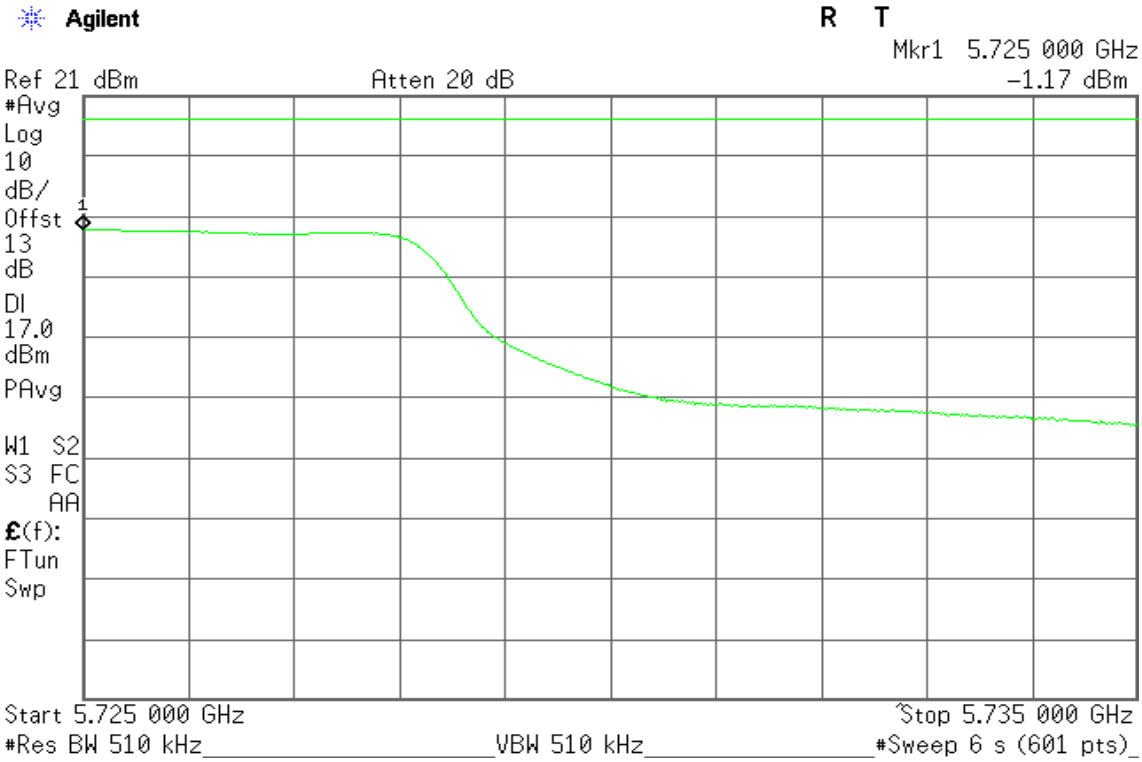
5700 MHz



5720 MHz (Band III)

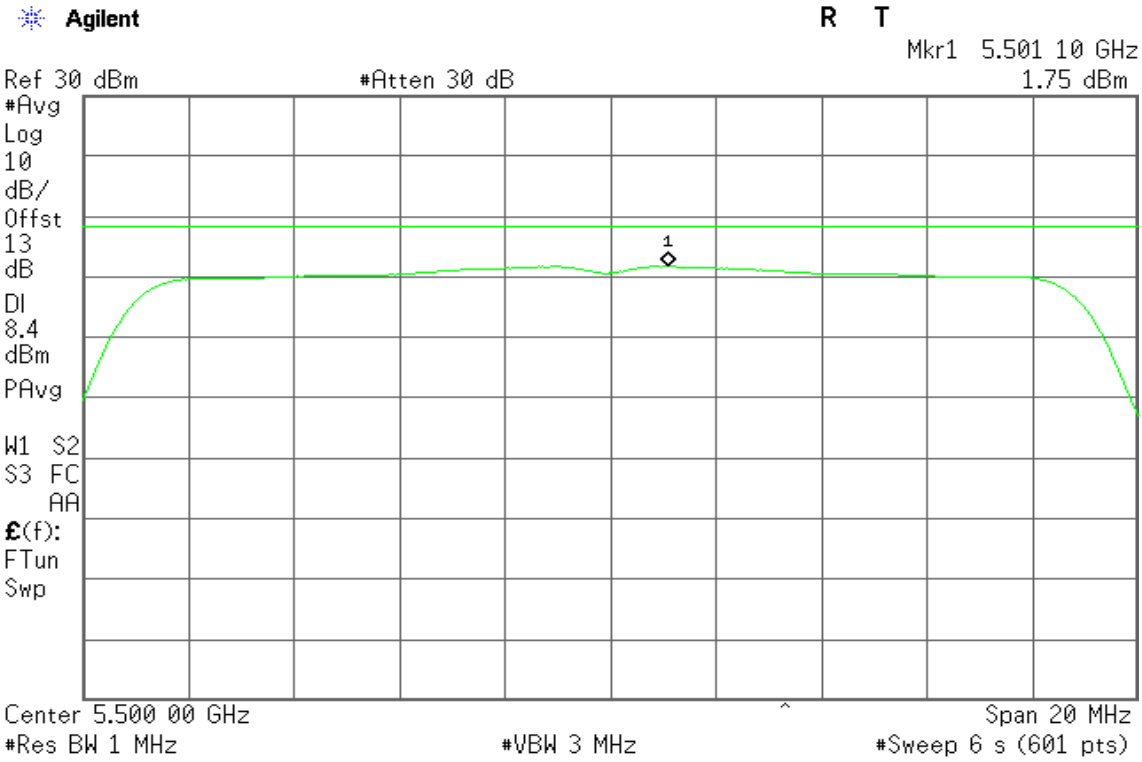


5720 MHz (Band IV)

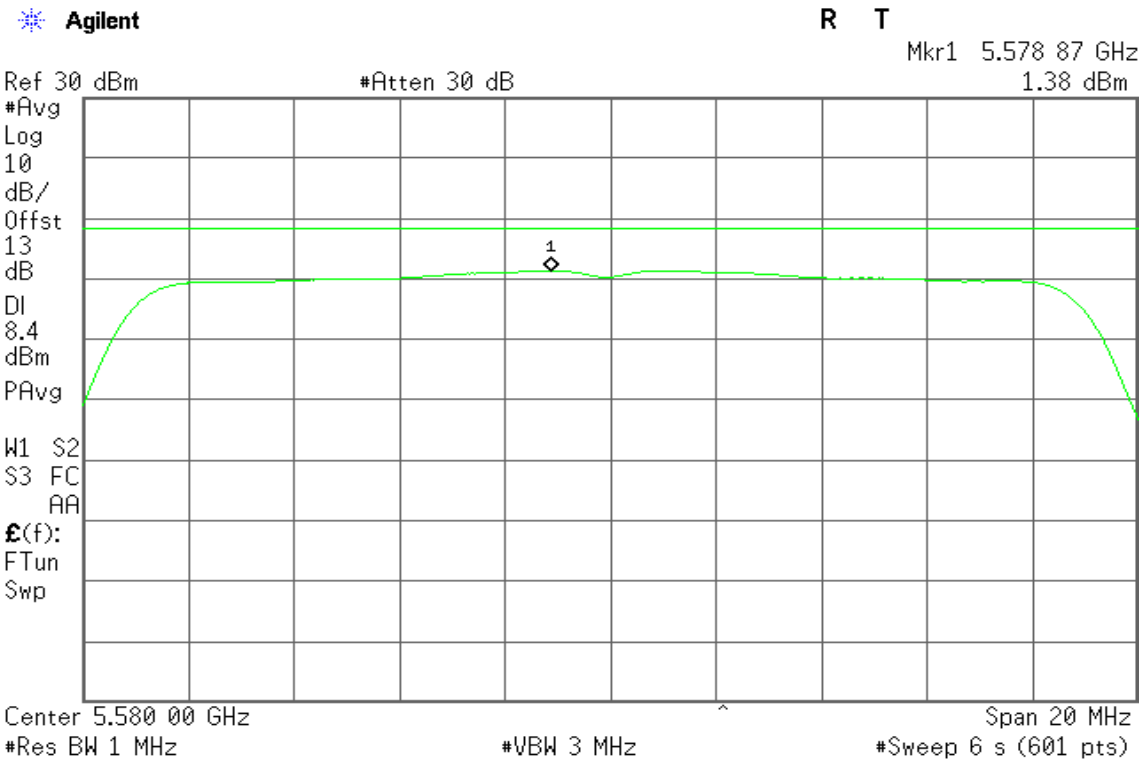


IEEE 802.11n HT 20 MHz Channel mode / 5500 ~ 5720MHz / Chain 0

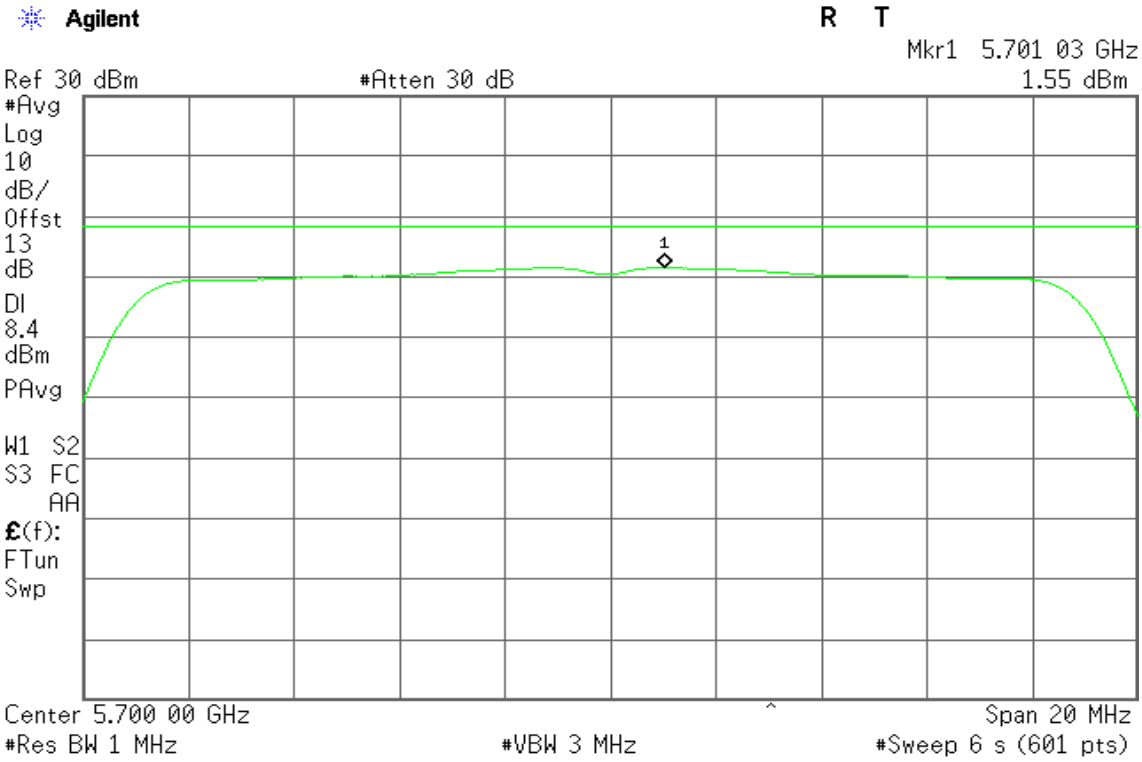
5500 MHz



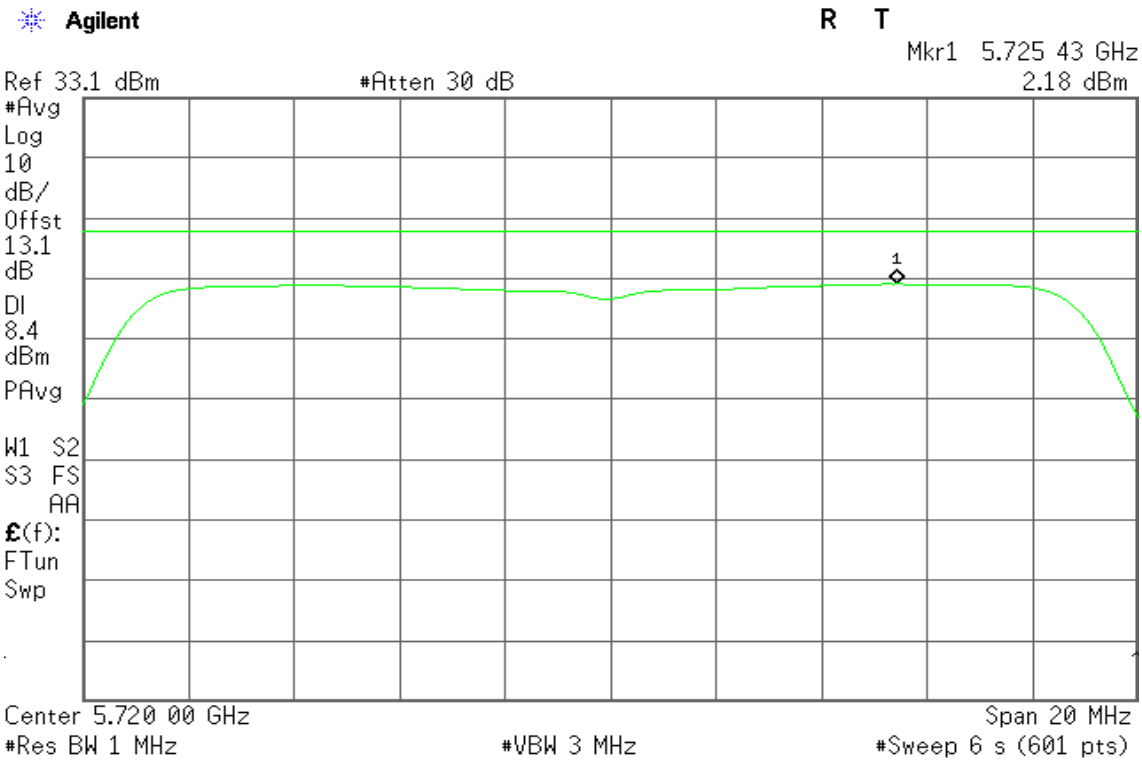
5580 MHz



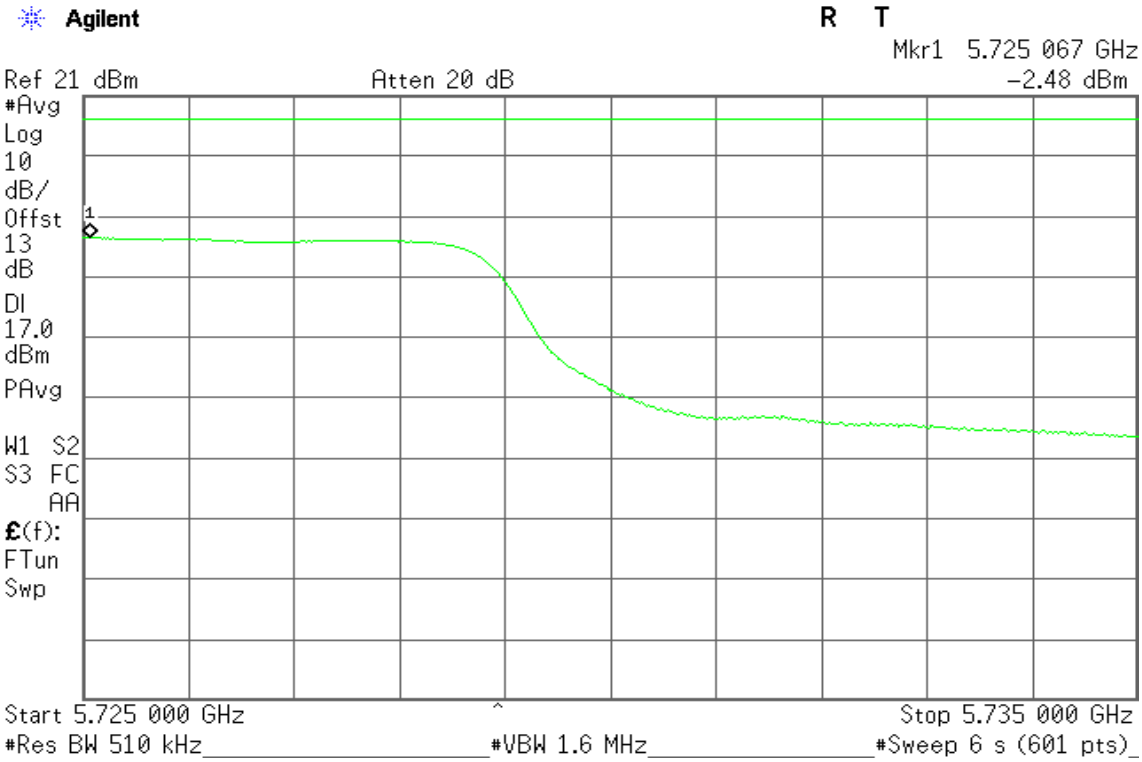
5700 MHz



5720 MHz (Band III)

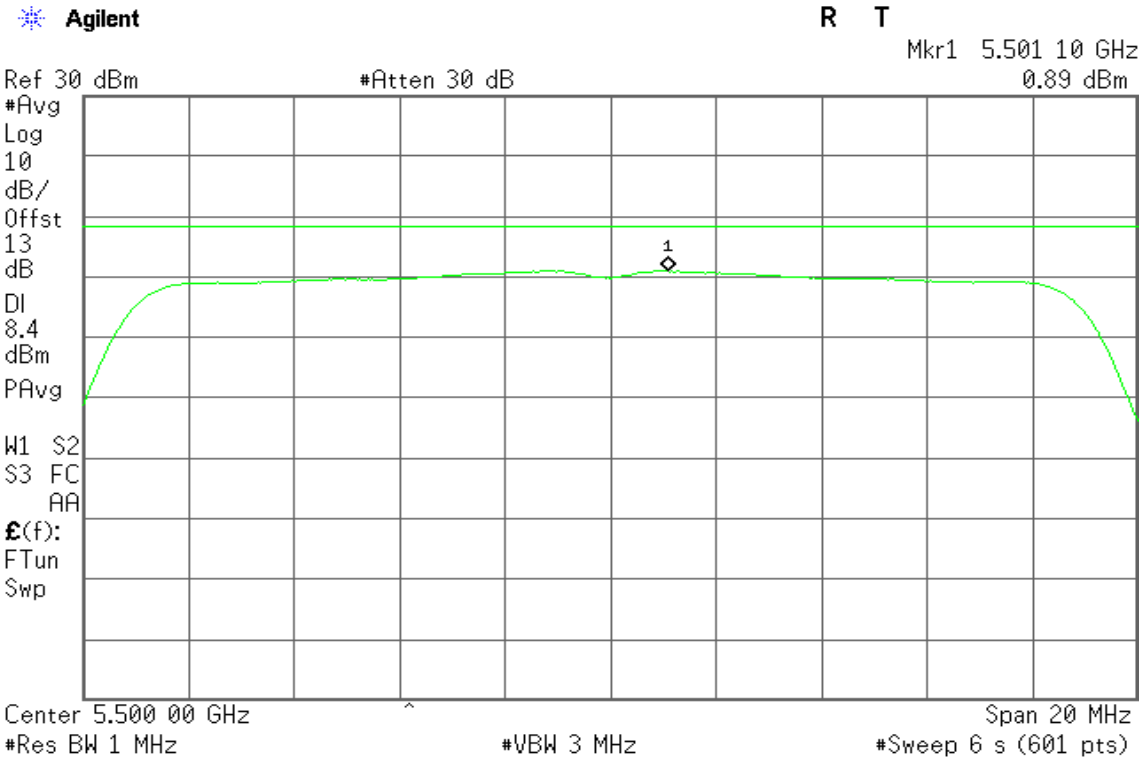


5720 MHz (Band IV)

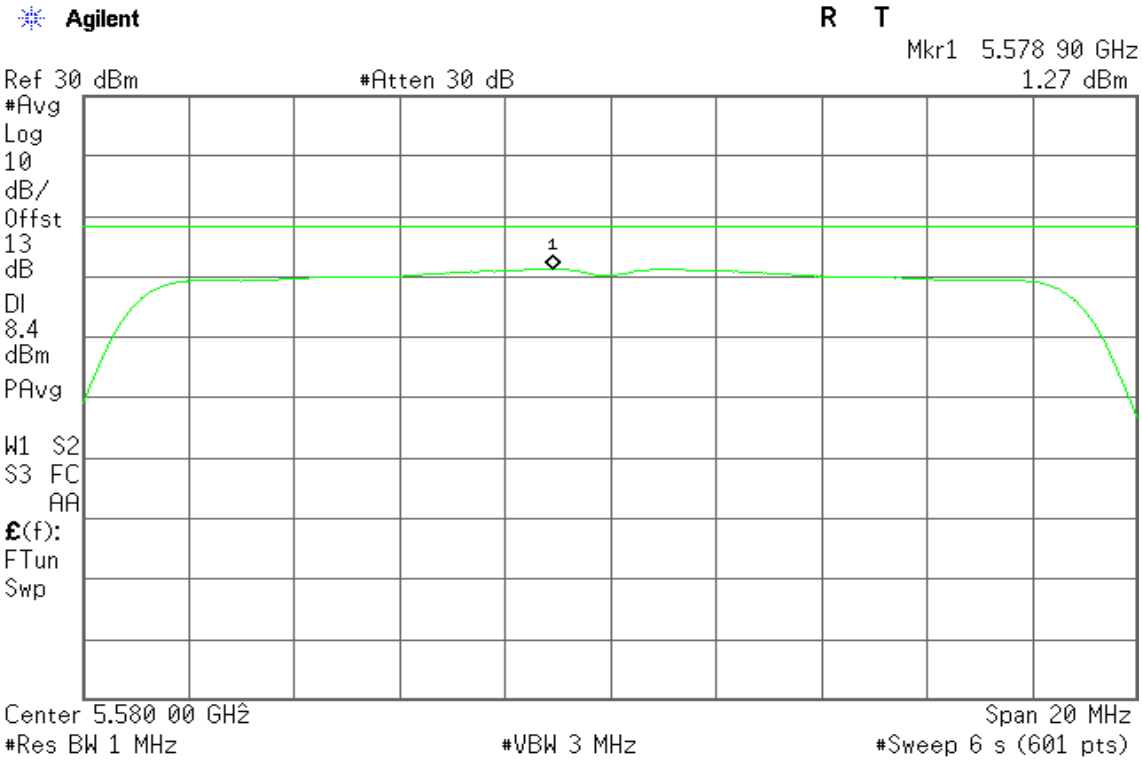


IEEE 802.11n HT 20 MHz Channel mode / 5500 ~ 5720MHz / Chain 1

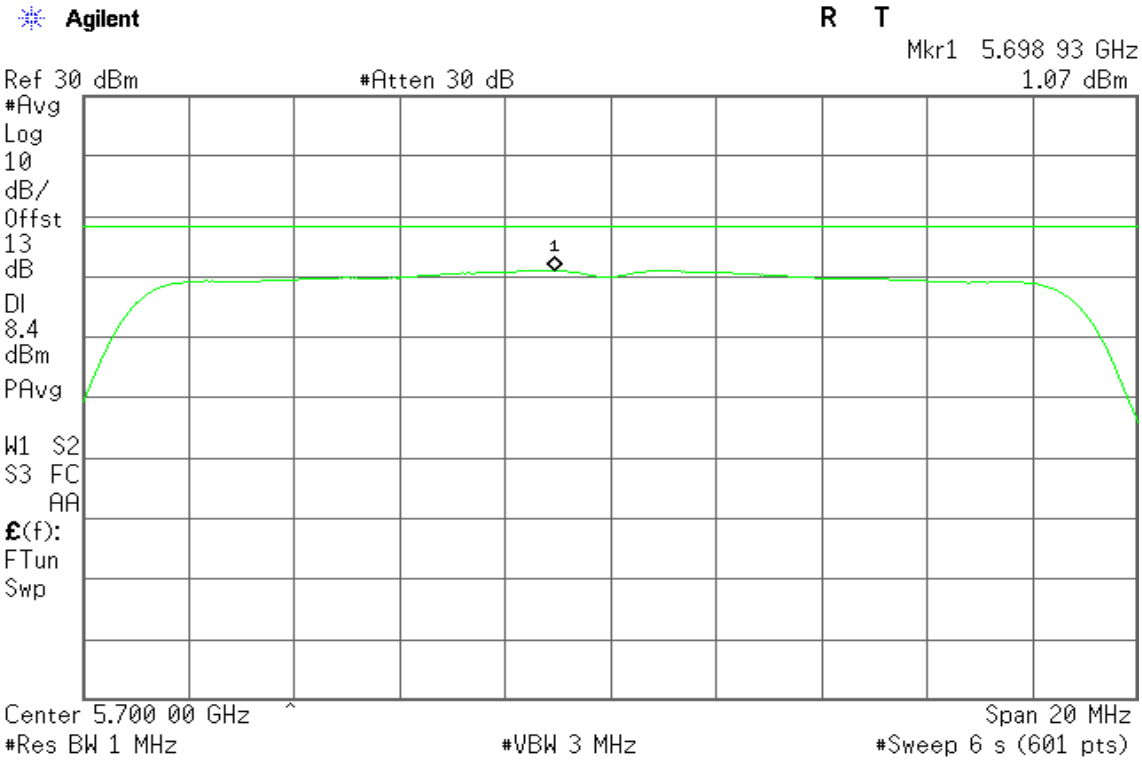
5500 MHz



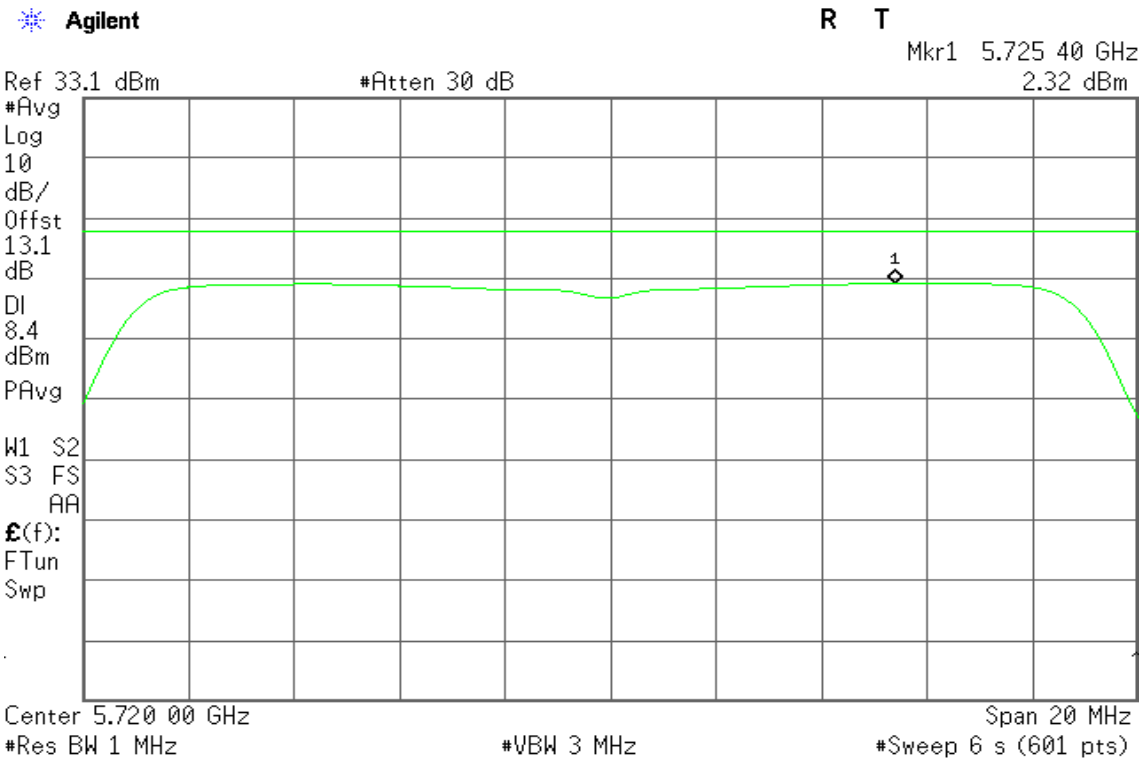
5580 MHz



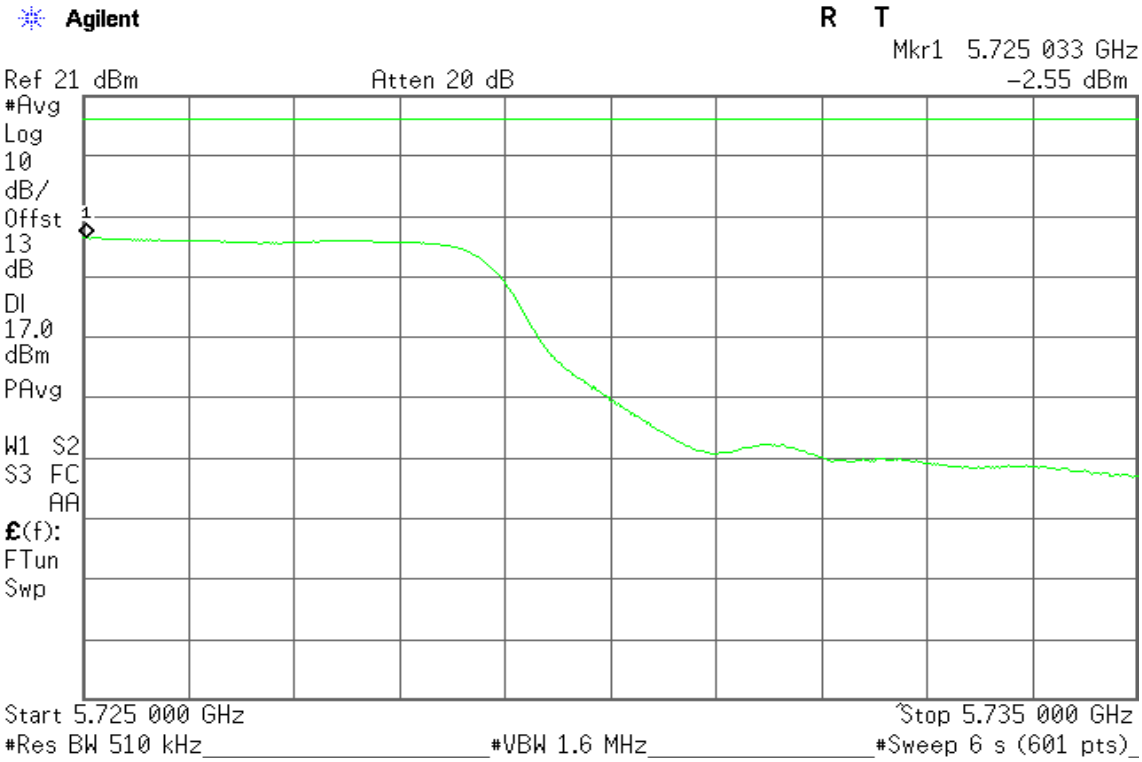
5700 MHz



5720 MHz (Band III)

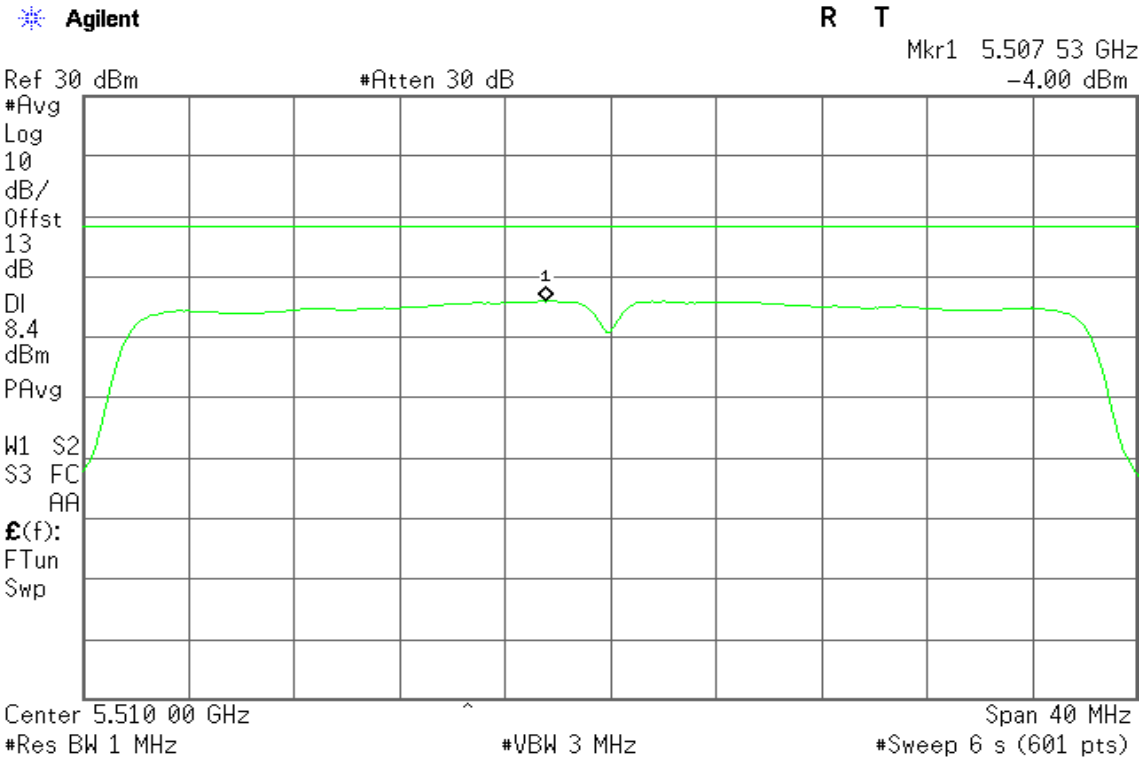


5720 MHz (Band IV)

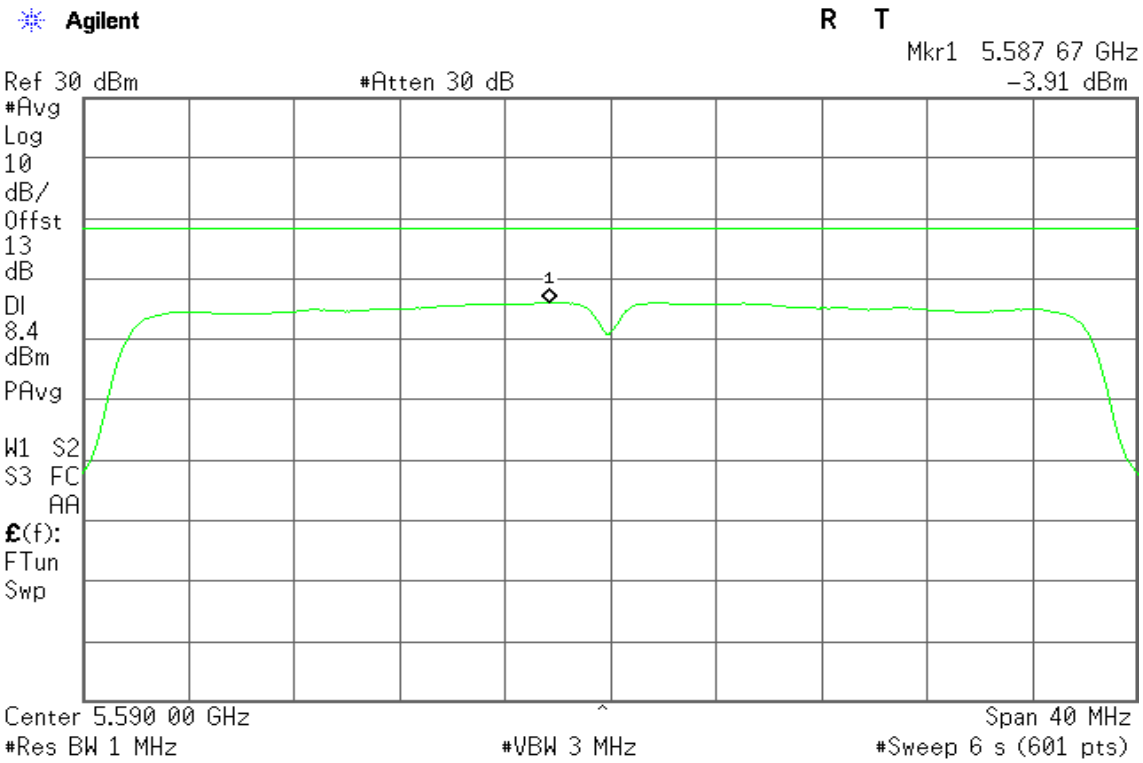


IEEE 802.11n HT 40 MHz mode / 5510 ~ 5710MHz / Chain 0

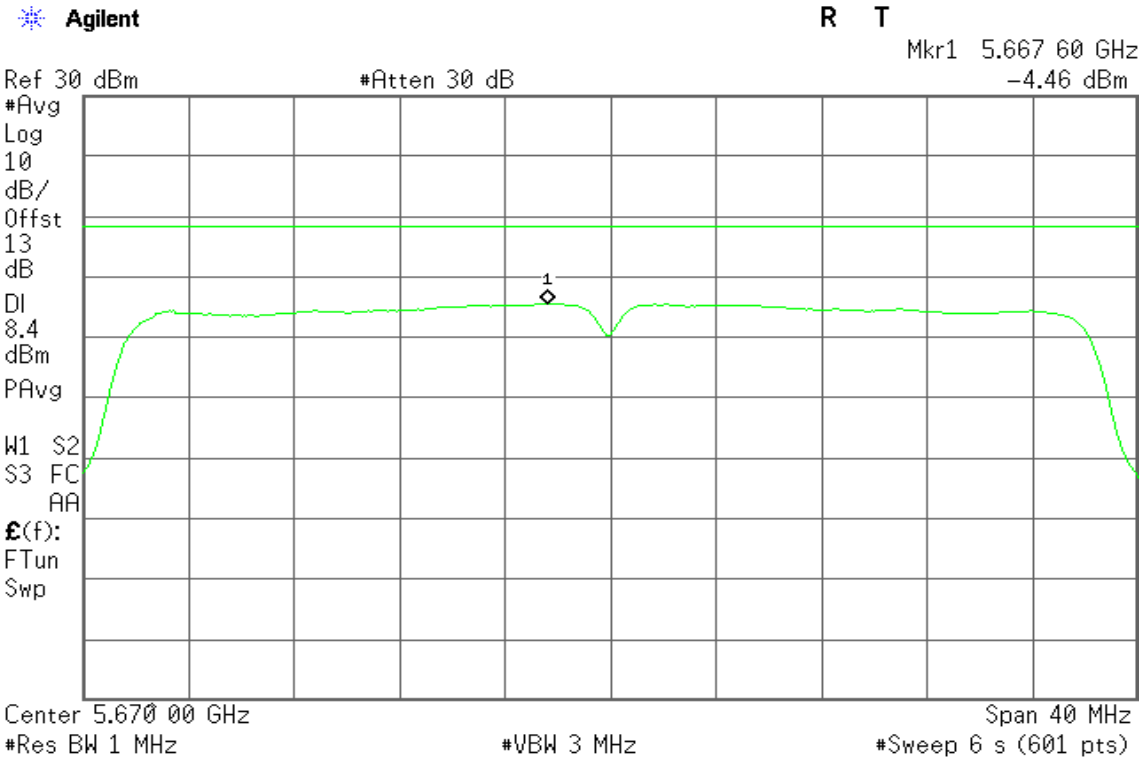
5510 MHz



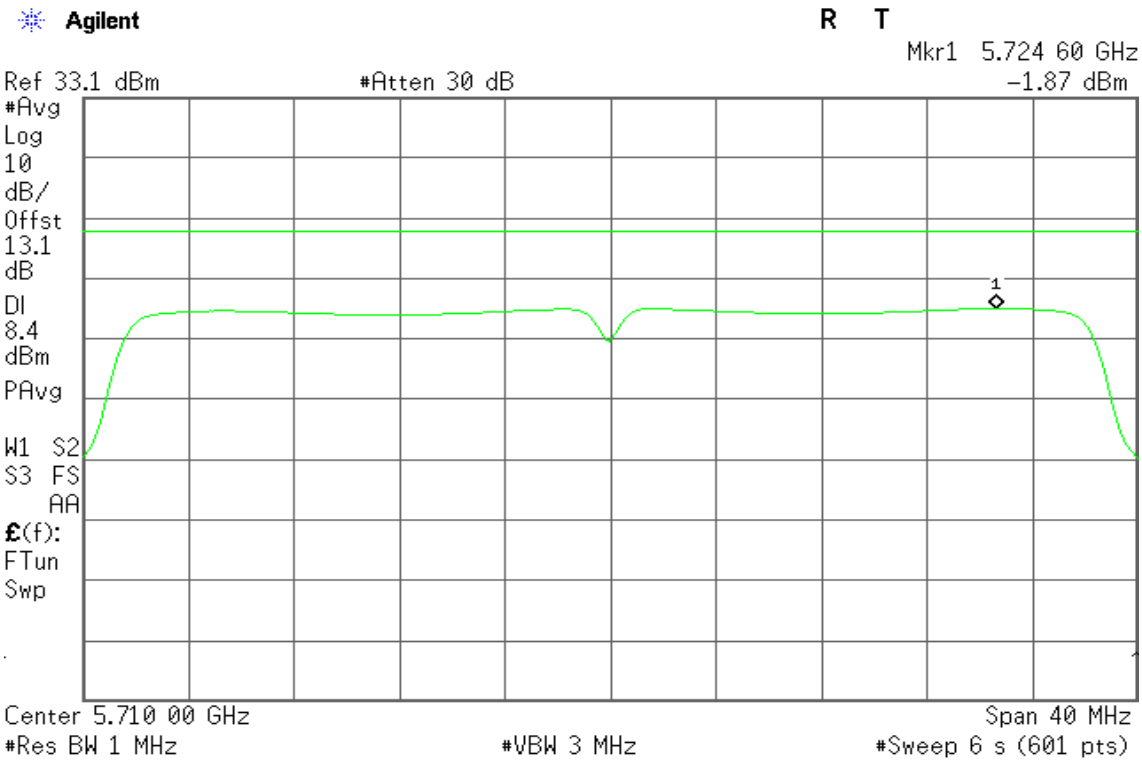
5590 MHz



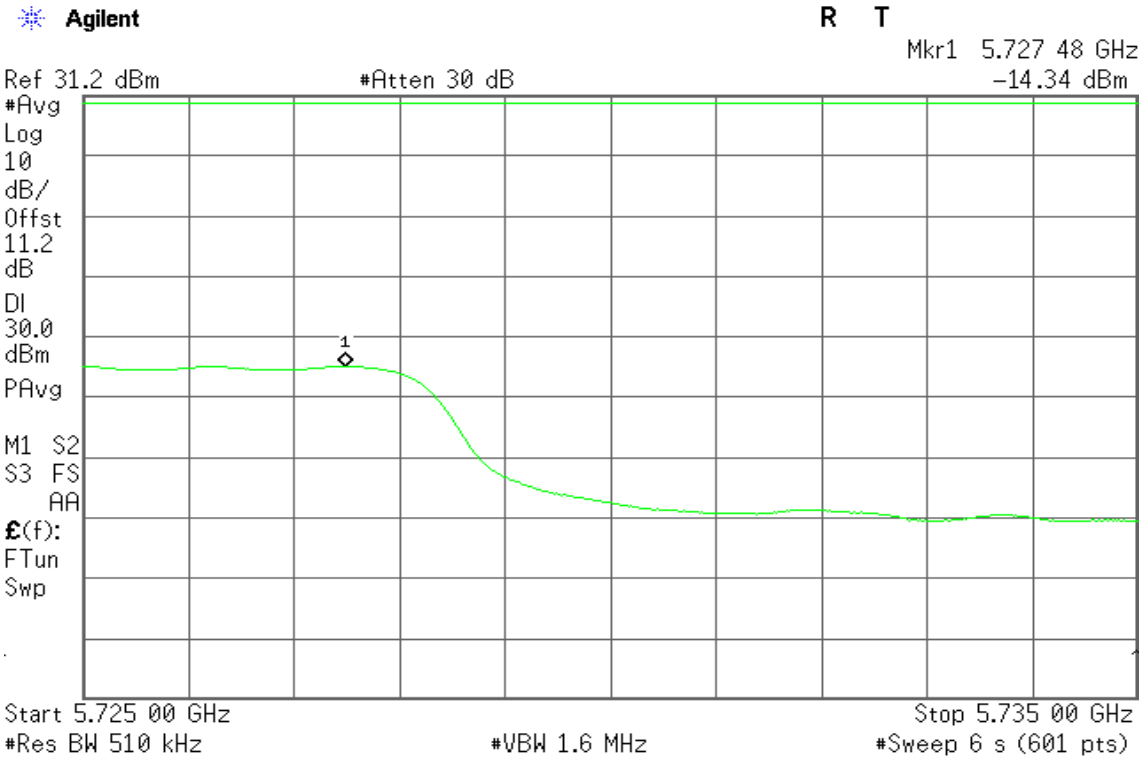
5670 MHz



5710 MHz (Band III)

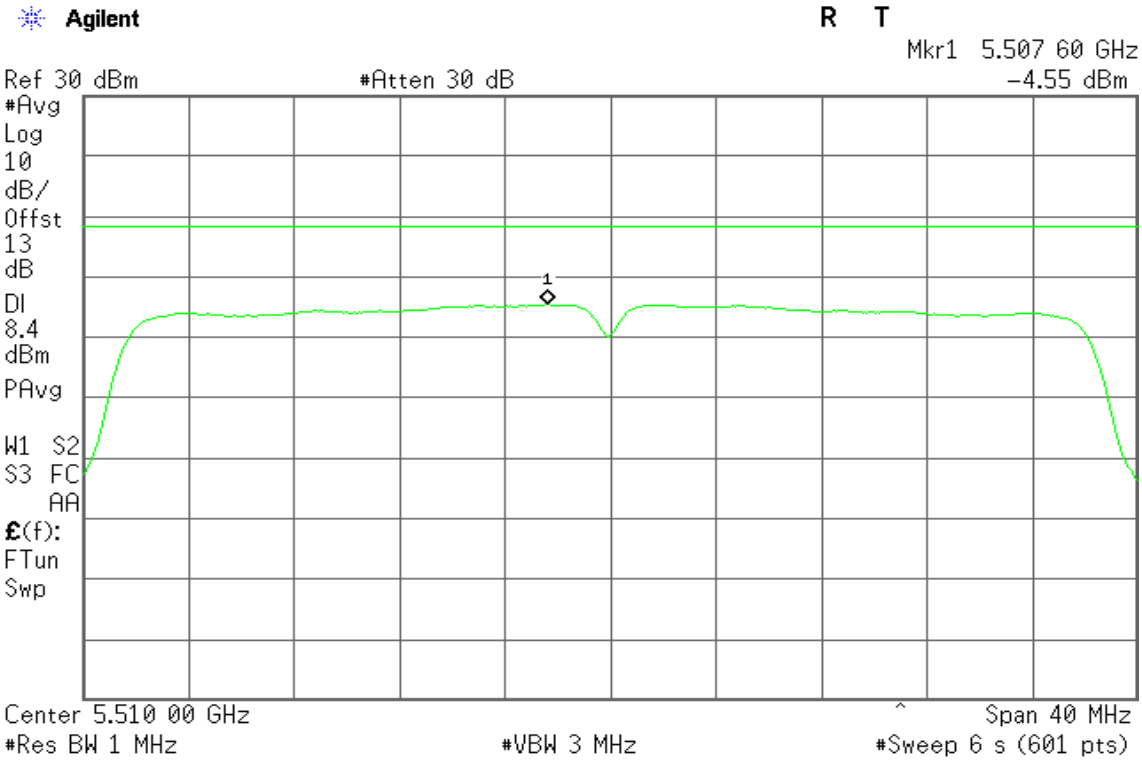


5710 MHz (Band IV)

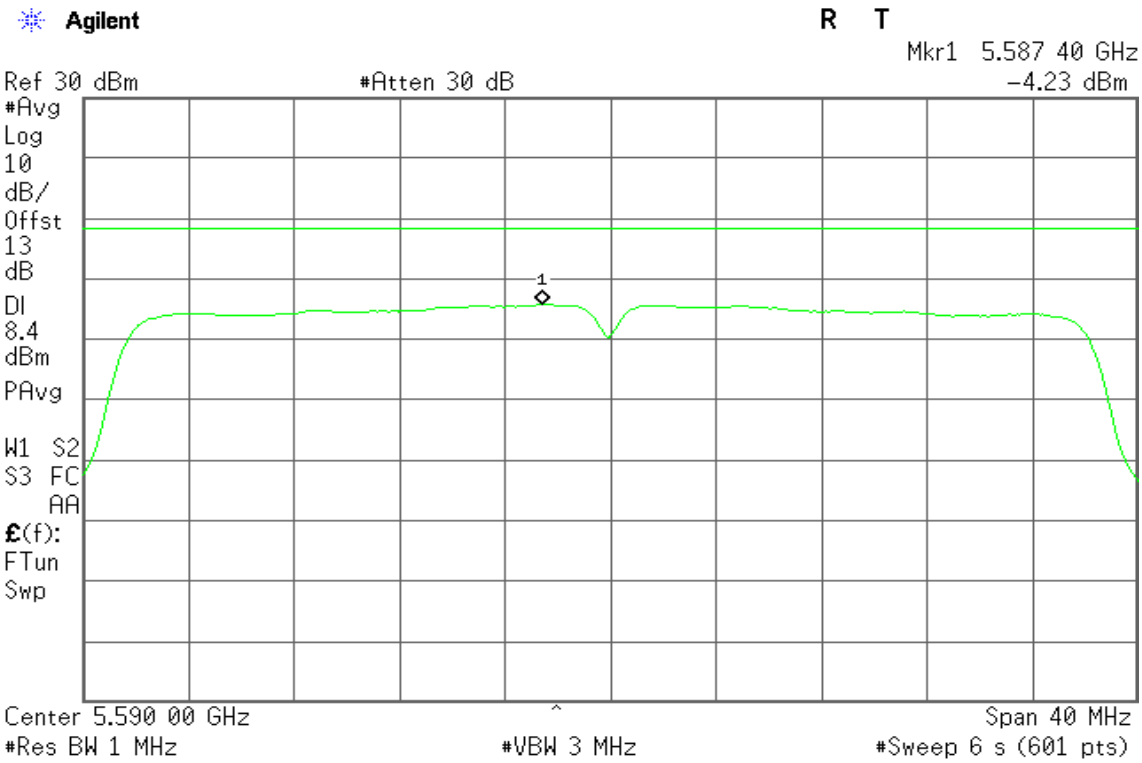


IEEE 802.11n HT 40 MHz mode / 5510 ~ 5710MHz / Chain 1

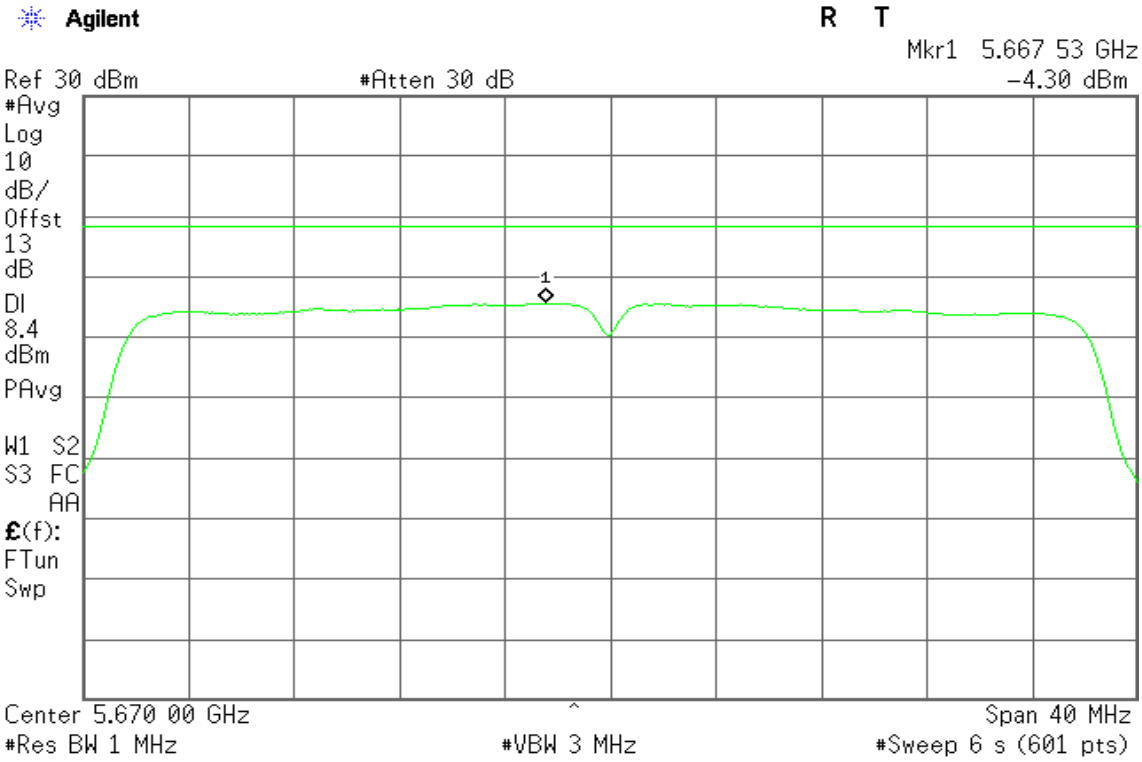
5510 MHz



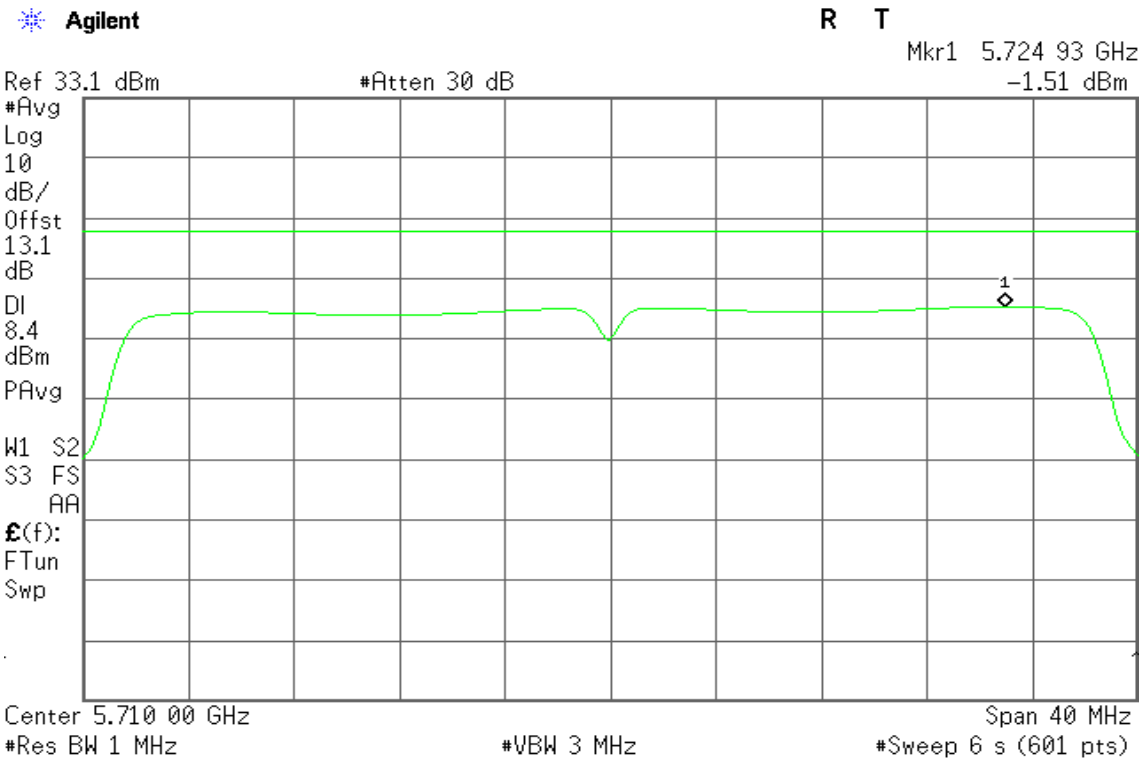
5590 MHz



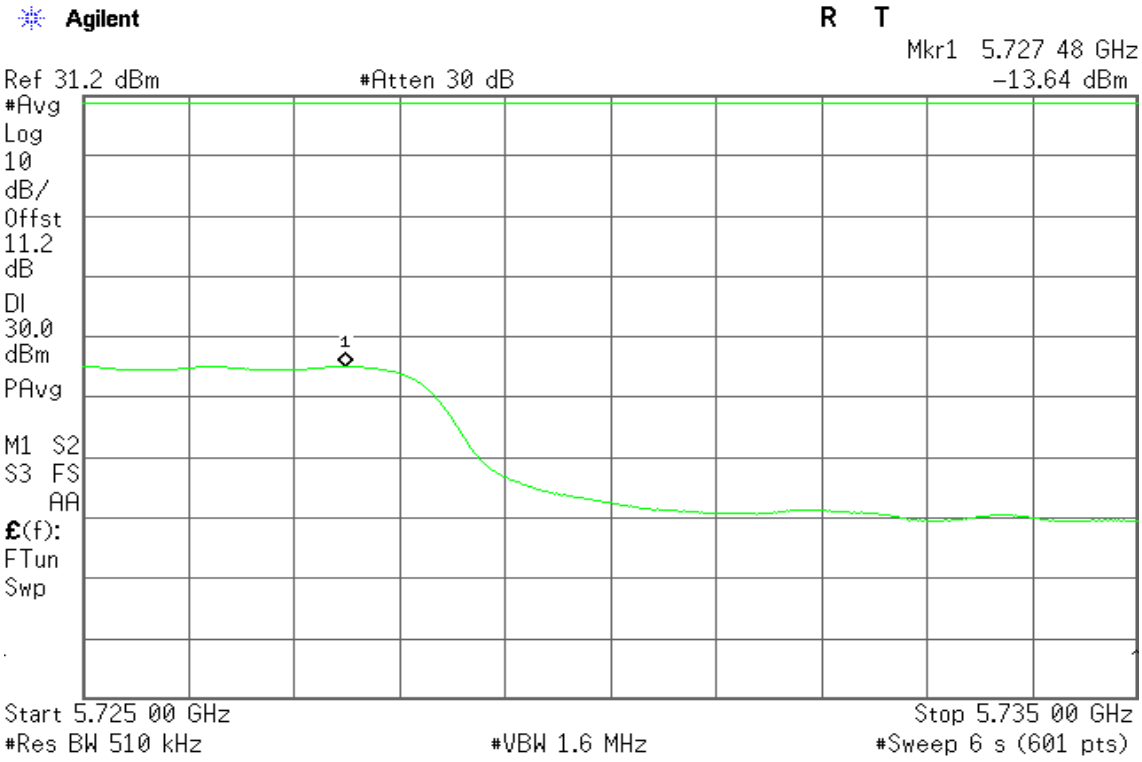
5670 MHz



5710 MHz (Band III)

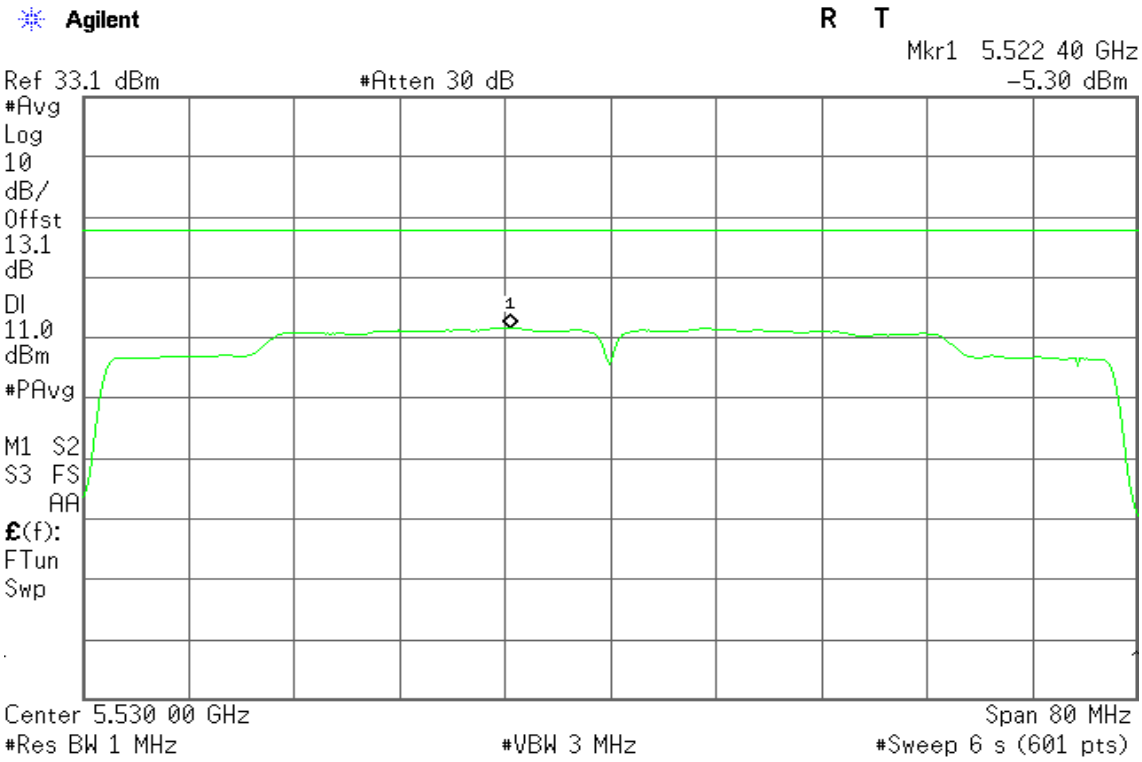


5710 MHz (Band IV)

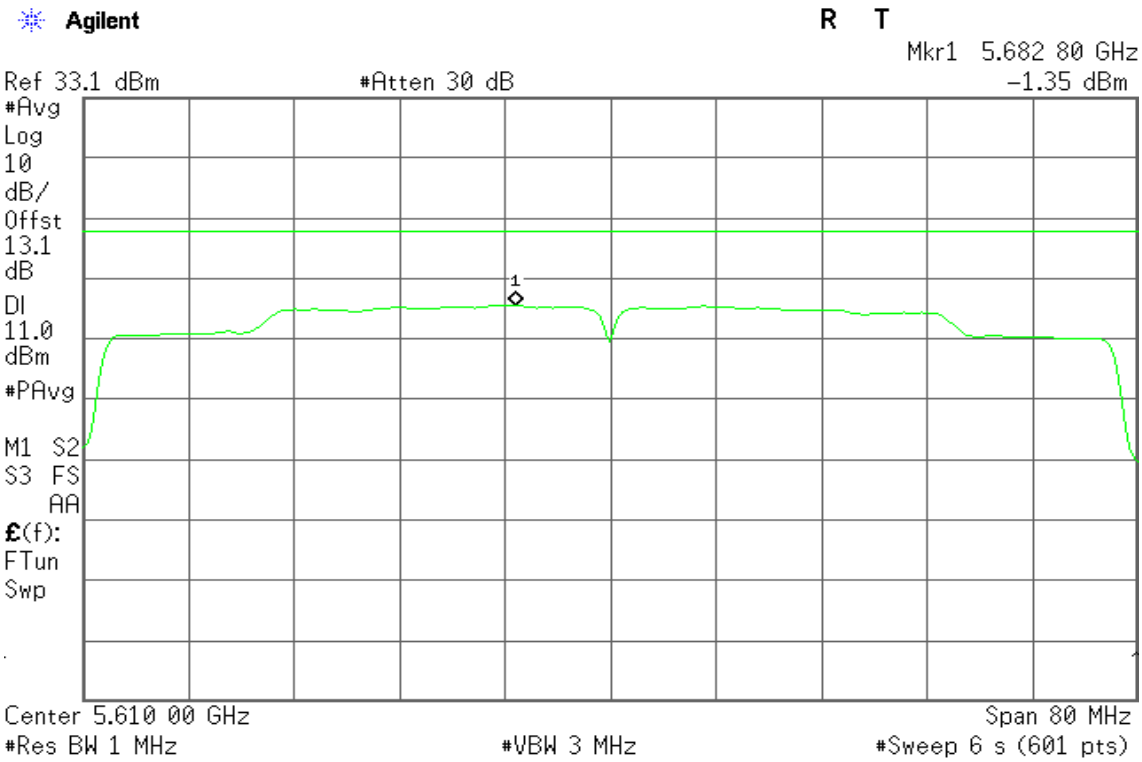


IEEE 802.11ac VHT 80 MHz mode / 5530 ~ 5690MHz / Chain 0

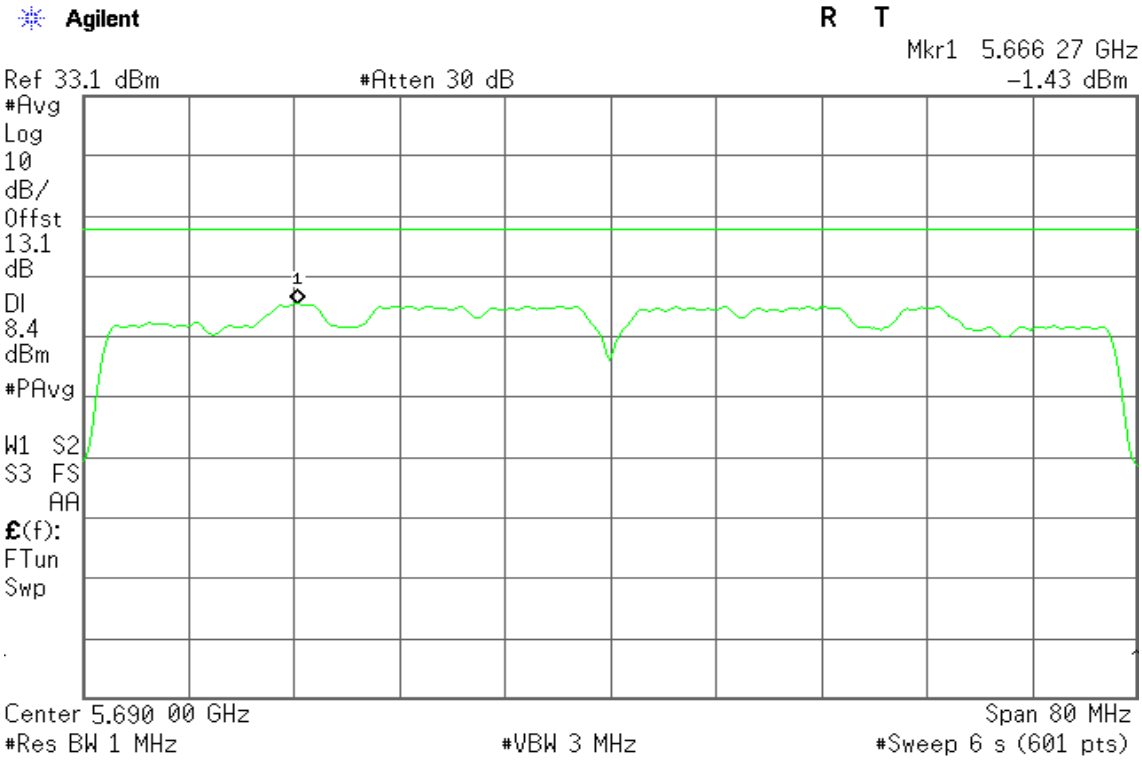
5530 MHz



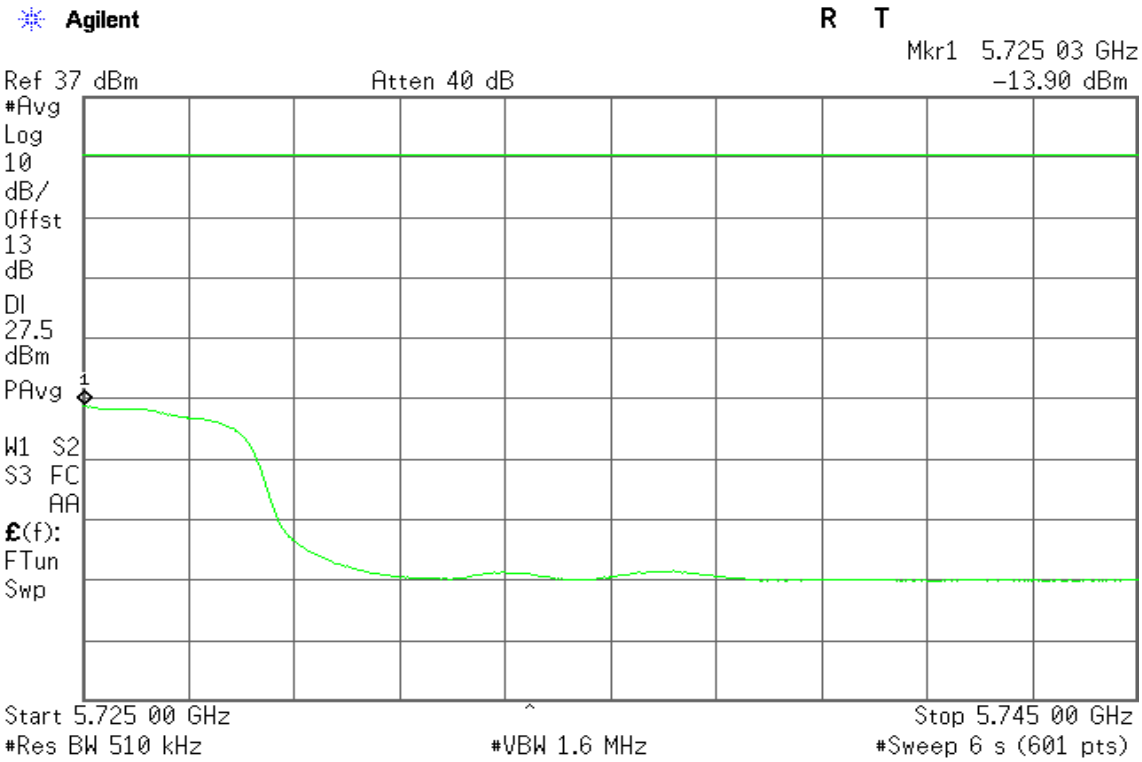
5610 MHz



5690 MHz (Band III)

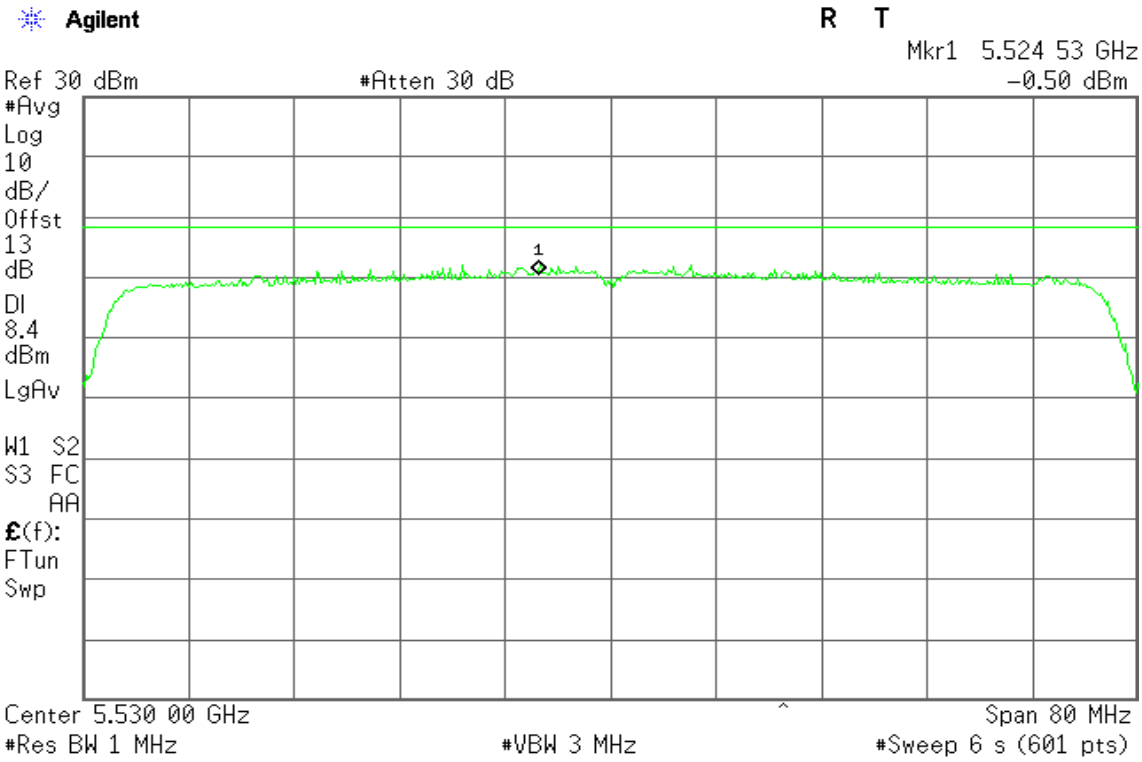


5690 MHz (Band IV)

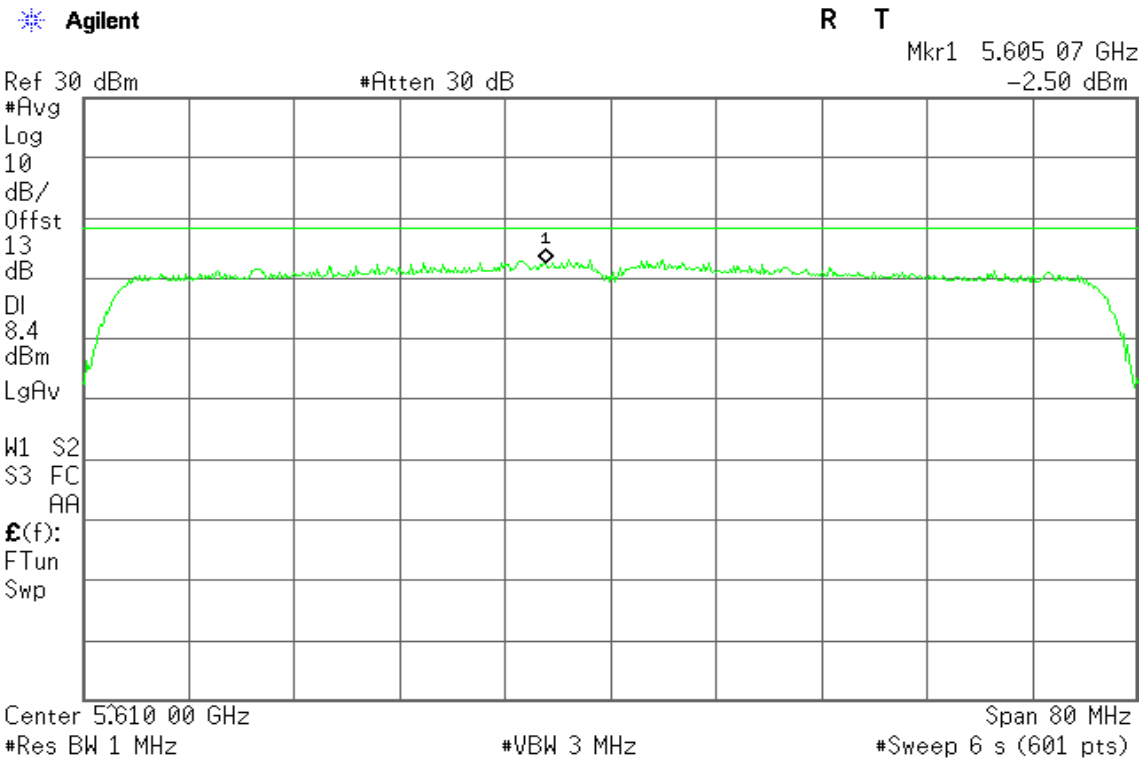


IEEE 802.11ac VHT 80 MHz mode / 5530 ~ 5690MHz / Chain 1

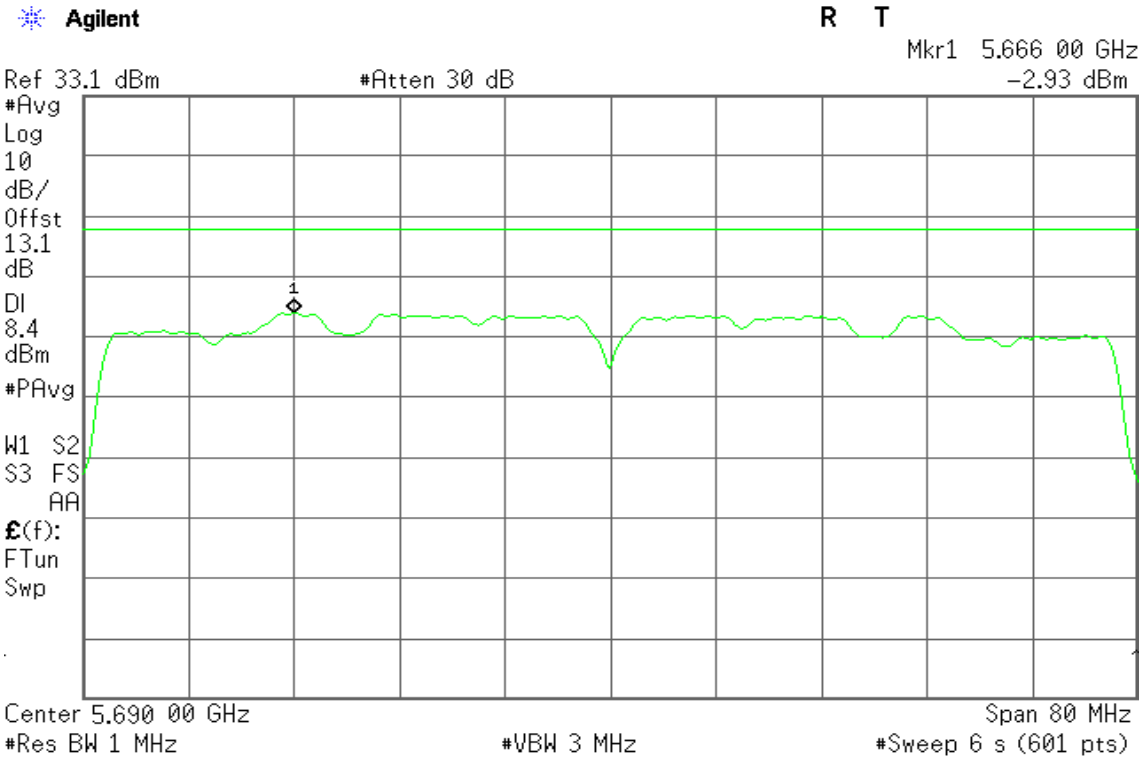
5530 MHz



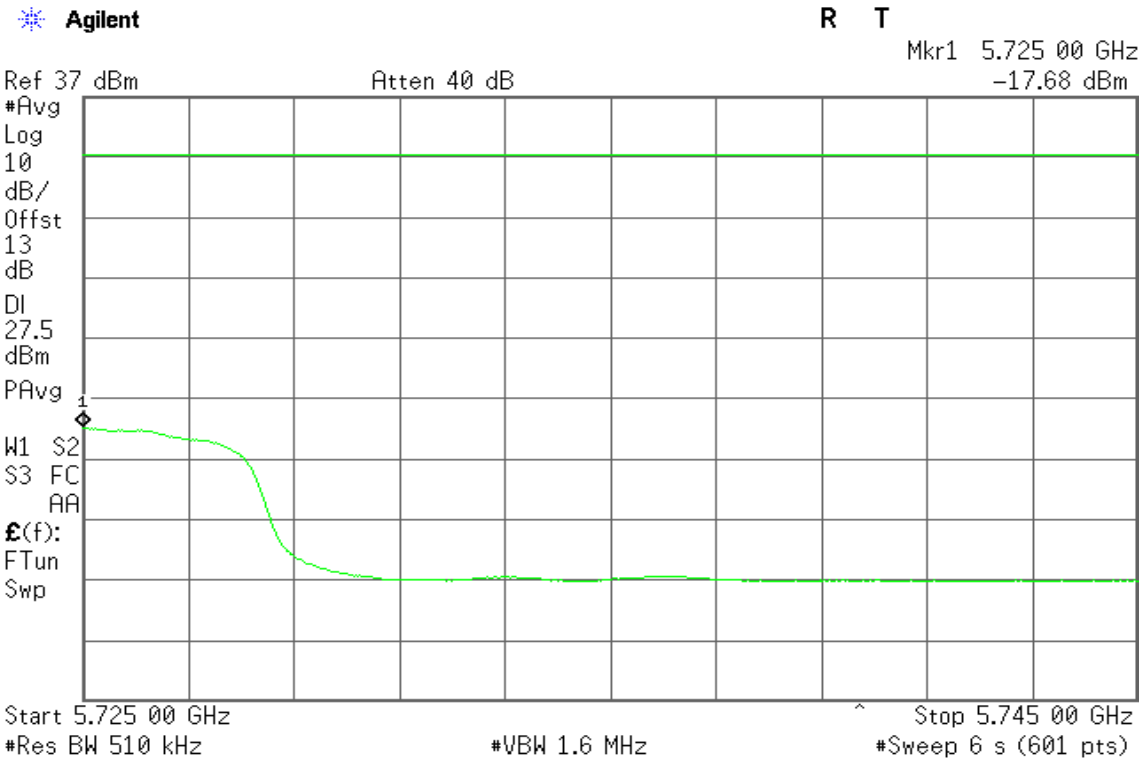
5610 MHz



5690 MHz (Band III)



5690 MHz (Band IV)



7.6 RADIATED UNDESIRABLE EMISSION

1. According to §15.209(a) & RSS-247, 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

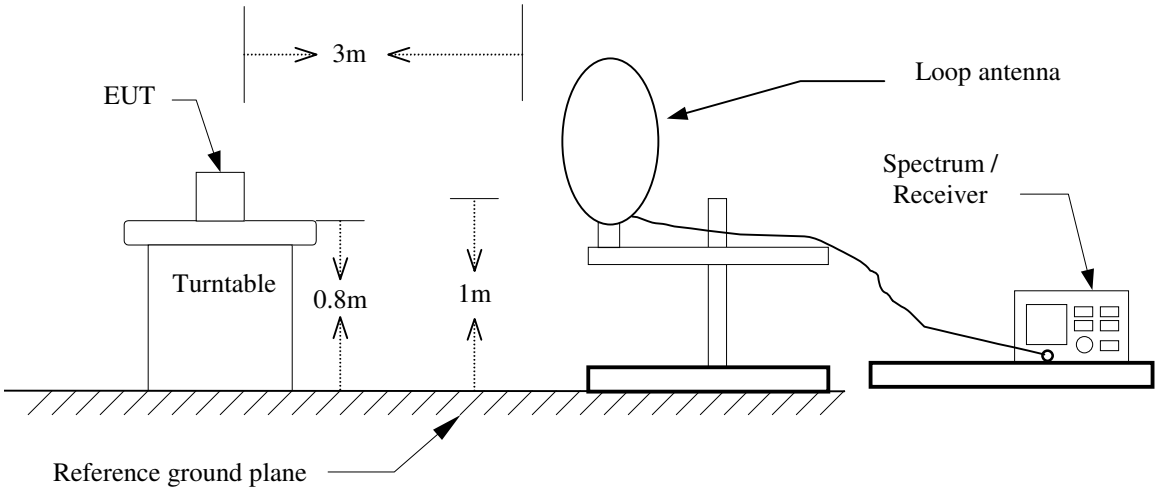
Remark: *Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of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

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

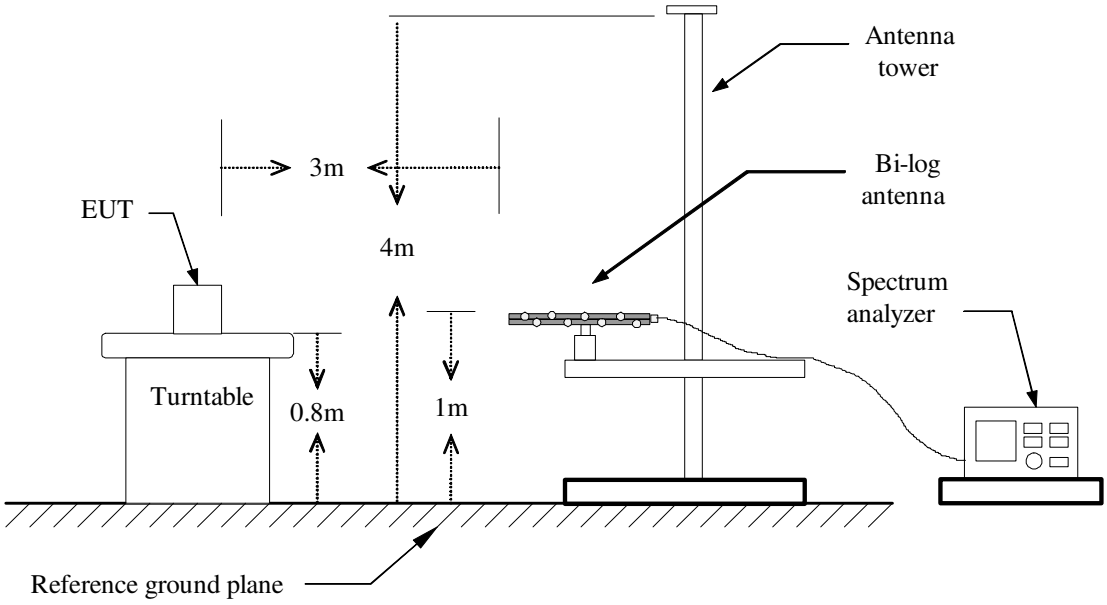
Frequency (MHz)	Field Strength (μV/m at 3-meter)	Field Strength (dBμV/m at 3-meter)
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

Test Configuration

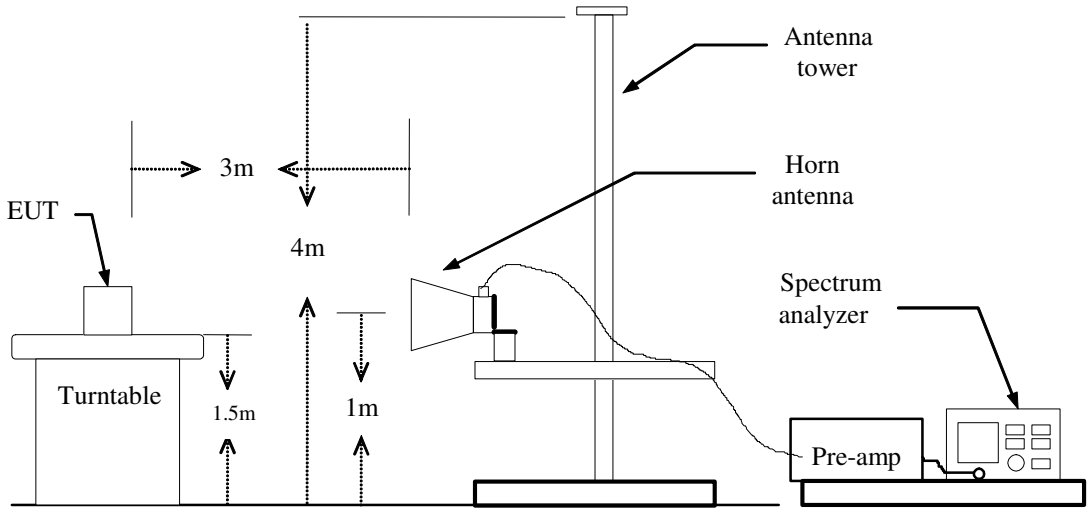
9kHz ~ 30MHz



30MHz ~ 1GHz



Above 1 GHz


Antenna
tower
3m
Horn
antenna
EUT
4m
Spectrum
analyzer
Turntable
1.5m
1m
Pre-amp

TEST PROCEDURE

1. The EUT is placed on a turntable, which is 1.5m 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,
   if duty cycle≧98%, VBW=10Hz.
   if duty cycle<98% VBW=1/T.
   IEEE 802.11a mode: = 88%, VBW= 750Hz
   IEEE 802.11n HT 20 MHz mode: = 78%, VBW= 1.5KHz
   IEEE 802.11n HT 40 MHz mode: = 64%, VBW= 3KHz
   IEEE 802.11ac VHT 80 MHz mode: = 26%, VBW= 15KHz

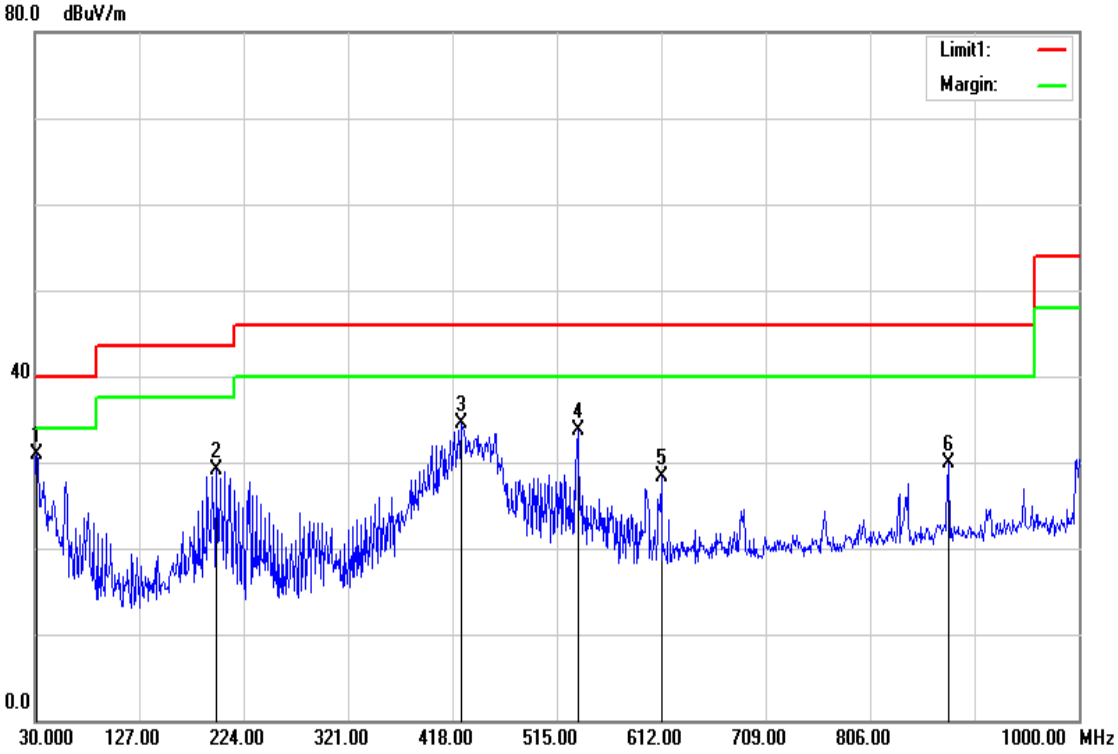
7. Repeat above procedures until the measurements for all frequencies are complete.
8. Result = Spectrum Reading + cable loss(spectrum to Amp) - Amp Gain + Cable loss(Amp to receive Ant)+ Receive Ant

Below 1 GHz

Operation Mode: Normal Link **Test Date:** August 25, 2015

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

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



Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Pol. (H/V)
31.9400	42.16	-11.29	30.87	40.00	-9.13	Peak	V
198.7800	46.74	-17.64	29.10	43.50	-14.40	Peak	V
425.7600	47.82	-13.32	34.50	46.00	-11.50	Peak	V
534.4000	45.04	-11.26	33.78	46.00	-12.22	Peak	V
612.0000	38.48	-10.22	28.26	46.00	-17.74	Peak	V
878.7500	36.23	-6.42	29.81	46.00	-16.19	Peak	V

Remark:

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

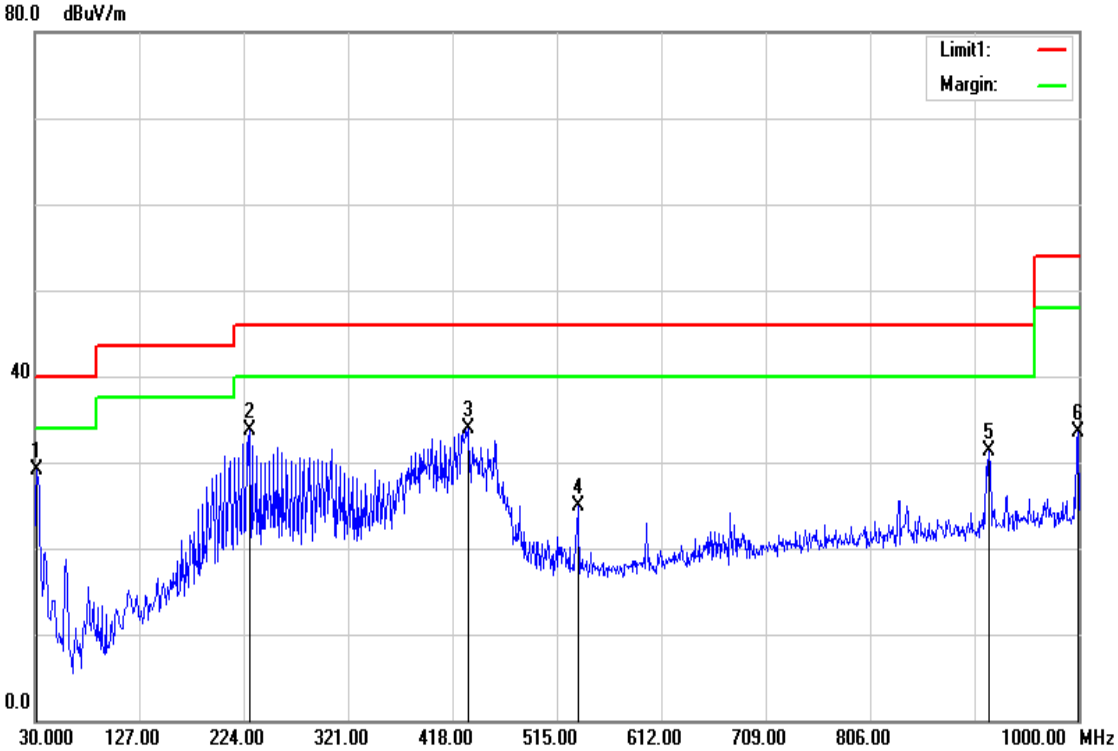
2 *Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using peak/quasi-peak detector mode.*

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).*

Operation Mode:	Normal Link	**Test Date:**	August 25, 2015
Temperature:	27℃	**Tested by:**	Jason Lu
Humidity:	53% RH	**Polarity:**	Hor.



Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Pol. (H/V)
31.9400	40.41	-11.29	29.12	40.00	-10.88	peak	H
229.8200	52.55	-18.81	33.74	46.00	-12.26	peak	H
432.5500	46.94	-13.13	33.81	46.00	-12.19	peak	H
534.4000	36.17	-11.26	24.91	46.00	-21.09	peak	H
916.5800	37.17	-5.93	31.24	46.00	-14.76	peak	H
999.0300	38.27	-4.70	33.57	54.00	-20.43	peak	H

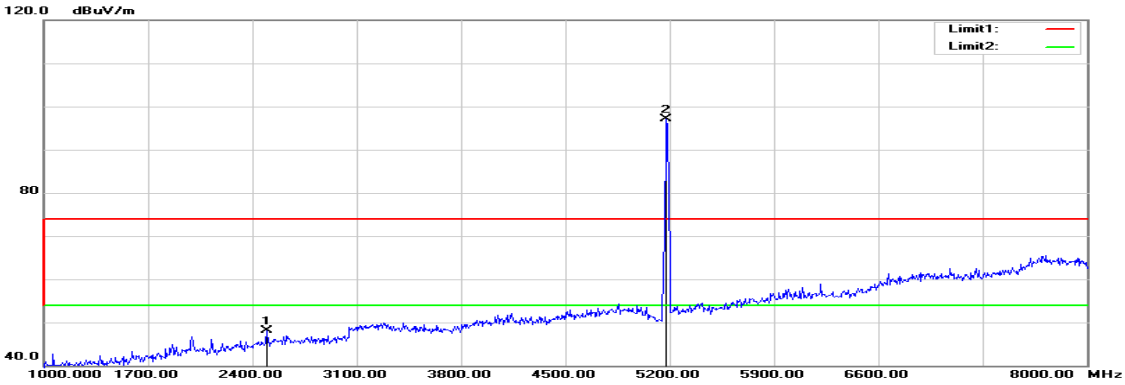
Remark:

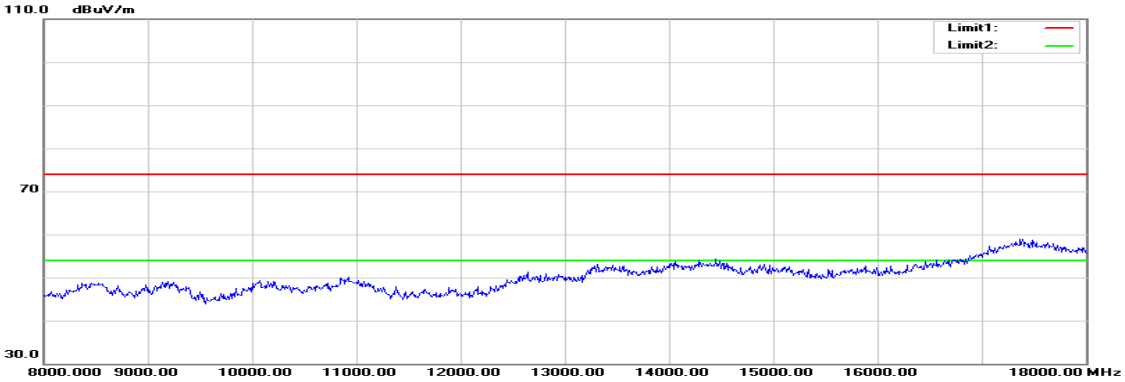
1. *No emission found between lowest internal used/generated frequency to 30MHz (9kHz~30MHz).*
2. *Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using peak/quasi-peak detector mode.*
3. *Quasi-peak test would be performed if the peak result were greater than the quasi-peak limit 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).*

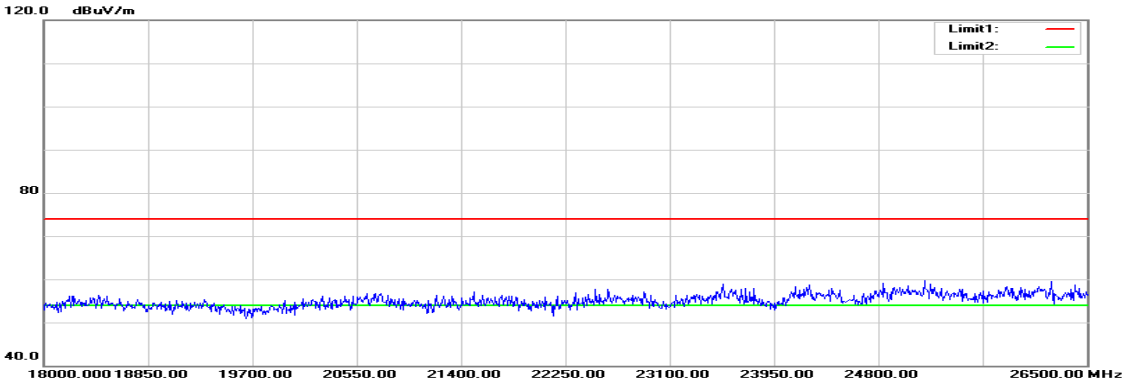
Above 1 GHz

Tx / IEEE 802.11a mode / 5180 MHz

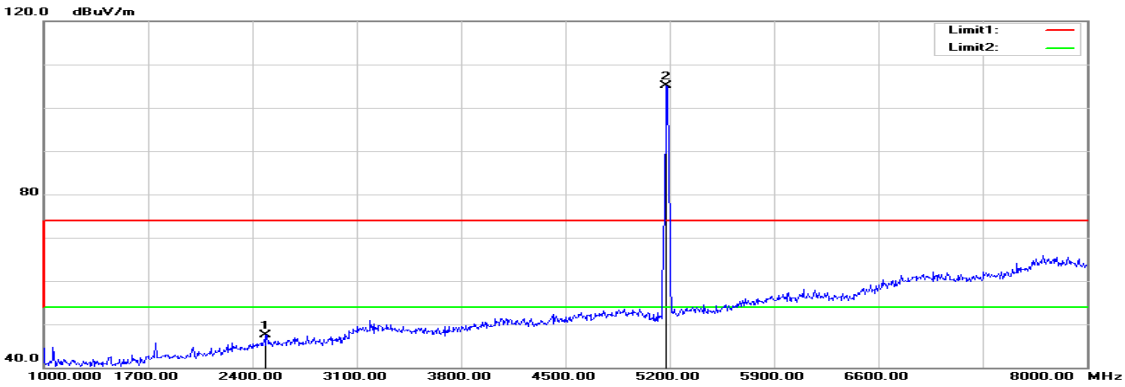
Polarity: Vertical

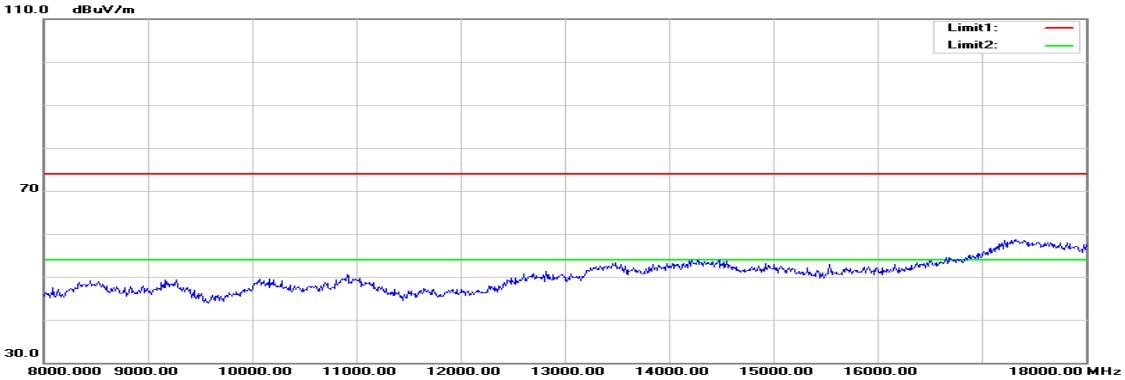


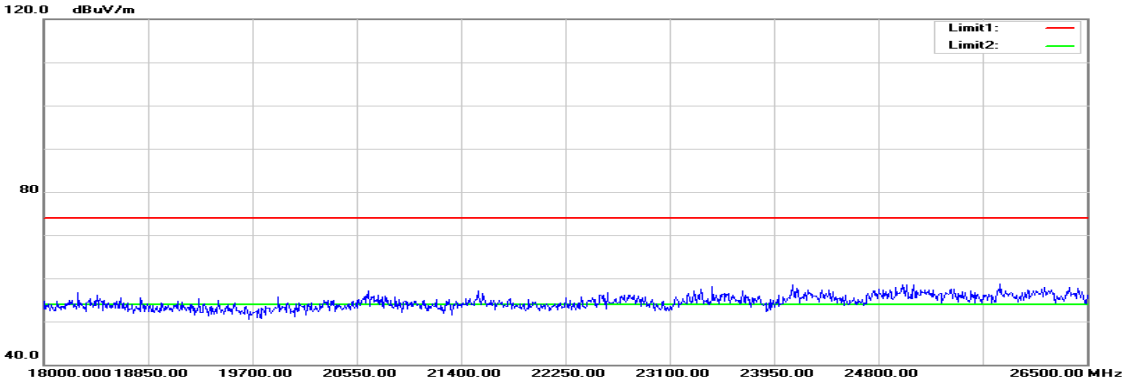




Polarity: Horizontal







Operation Mode:	Tx / IEEE 802.11a mode / 5180 MHz	**Test Date:**	August 25, 2015
Temperature:	27℃	**Tested by:**	Jason Lu
Humidity:	53% RH	**Polarity:**	Ver. / Hor.

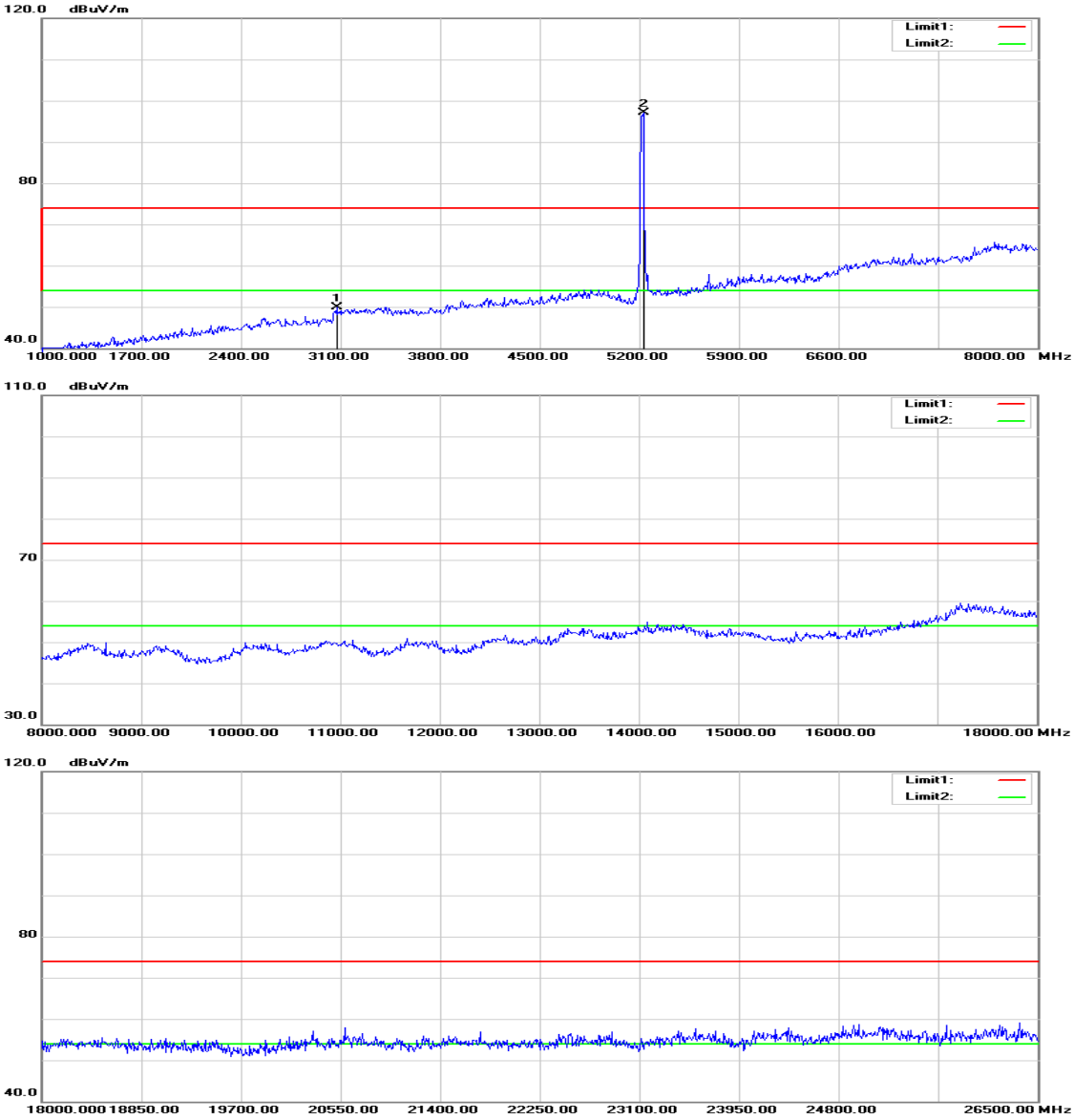
Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Pol. (H/V)
2498.000	51.15	-3.14	48.01	74.00	-25.99	peak	V
N/A							
2491.000	50.66	-3.20	47.46	74.00	-26.54	peak	H
N/A							

Remark:

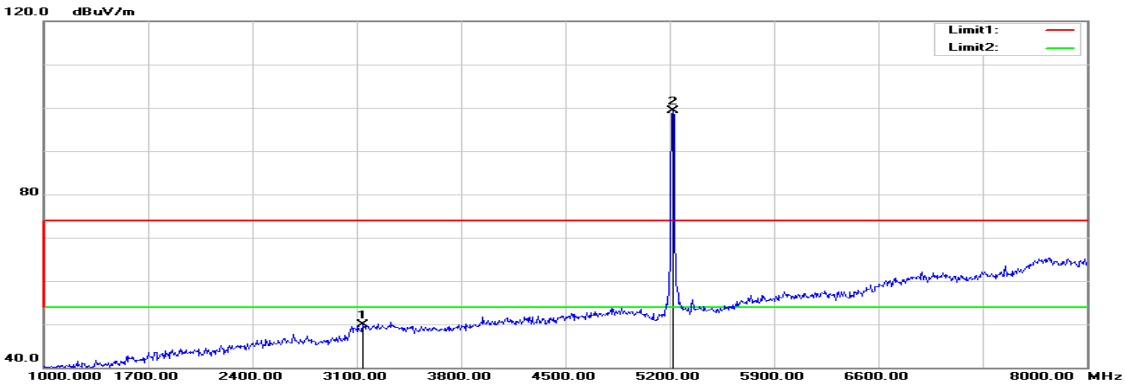
1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average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

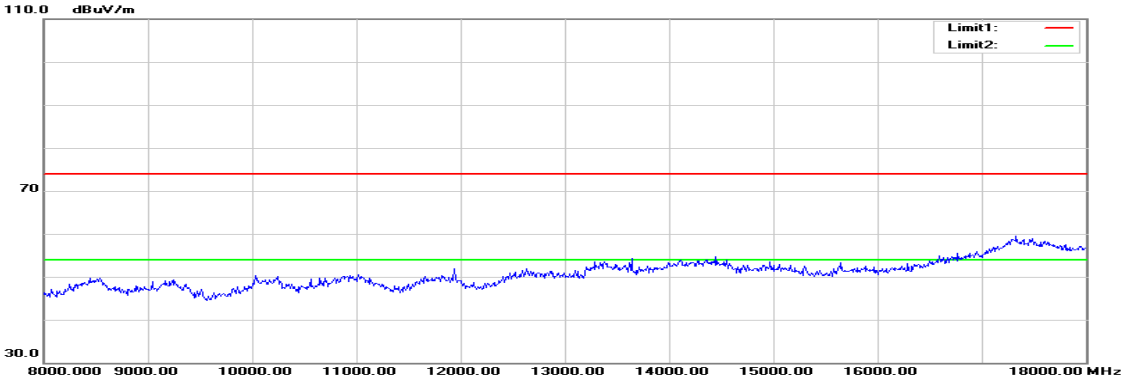
Tx / IEEE 802.11a mode / 5220 MHz

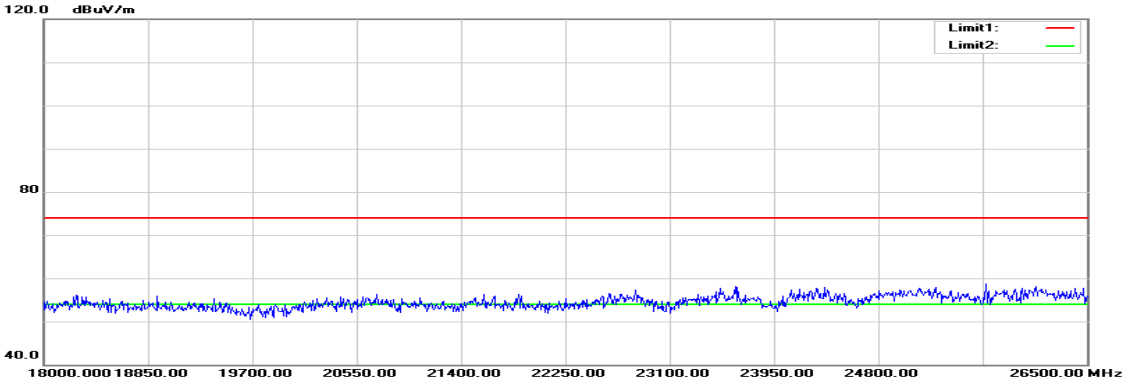
Polarity: Vertical



Polarity: Horizontal







Operation Mode:	Tx / IEEE 802.11a mode / 5220 MHz	**Test Date:**	August 25, 2015
Temperature:	27℃	**Tested by:**	Jason Lu
Humidity:	53% RH	**Polarity:**	Ver. / Hor.

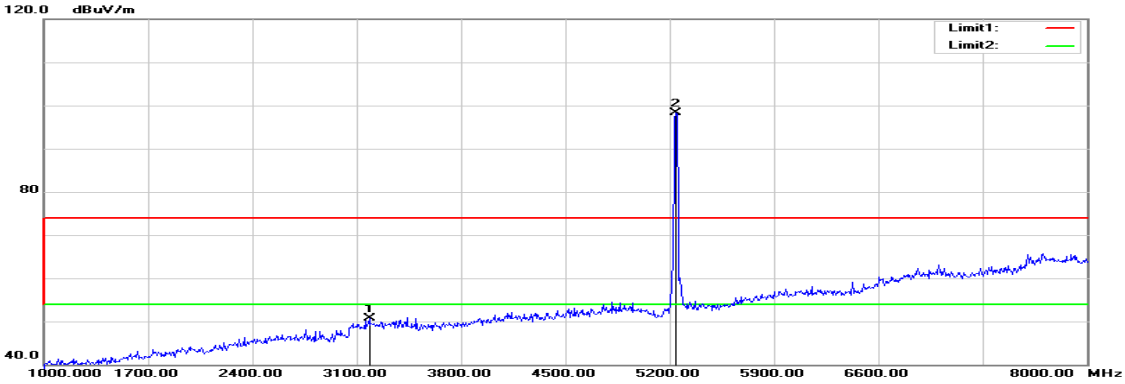
Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Pol. (H/V)
3072.000	51.82	-1.94	49.88	74.00	-24.12	peak	V
N/A							
3142.000	51.68	-1.77	49.91	74.00	-24.09	peak	H
N/A							

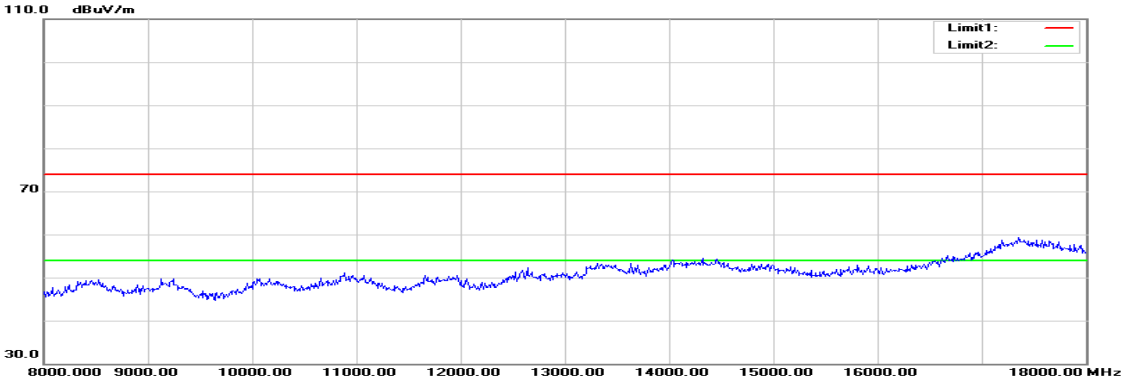
Remark:

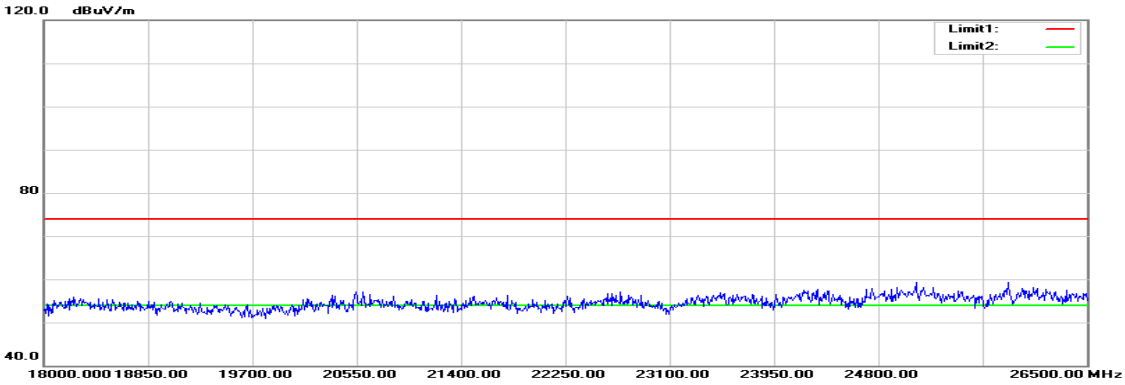
1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average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

Tx / IEEE 802.11a mode / 5240 MHz

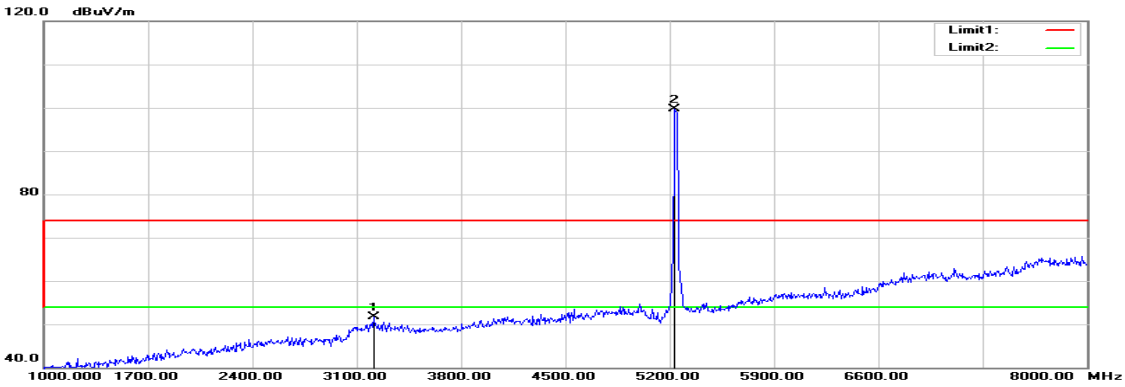
Polarity: Vertical

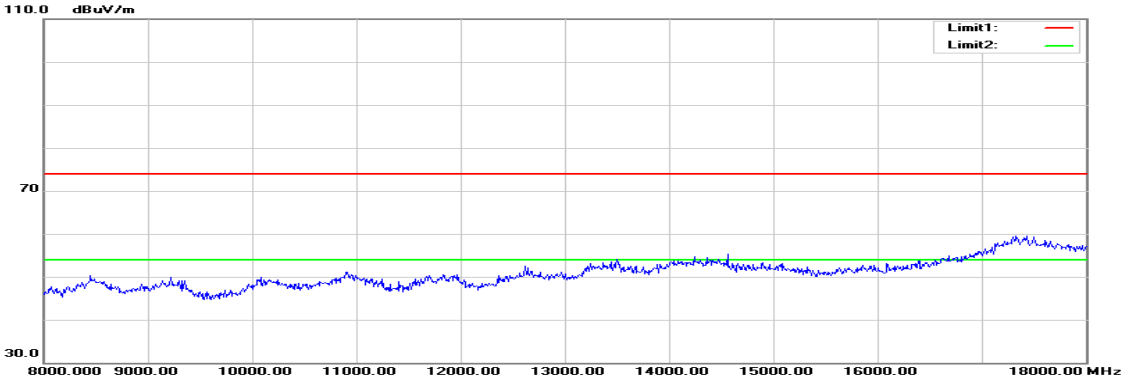


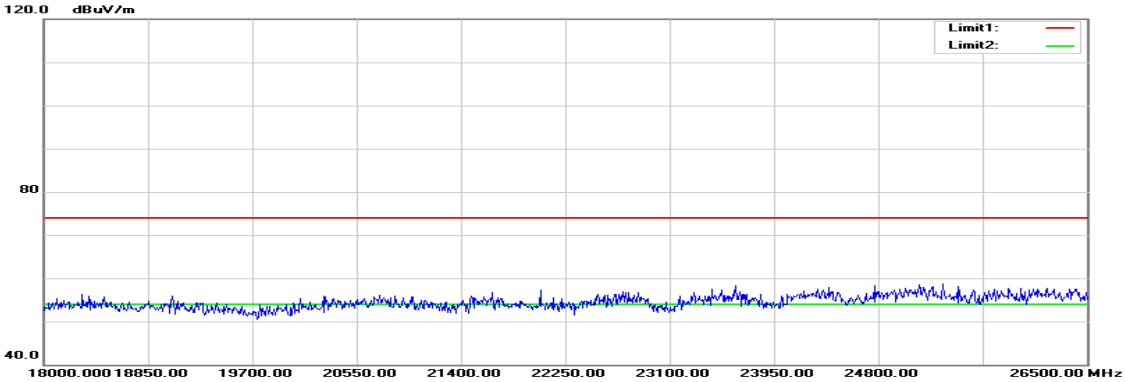




Polarity: Horizontal







Operation Mode:	Tx / IEEE 802.11a mode / 5240 MHz	**Test Date:**	August 25, 2015
Temperature:	27℃	**Tested by:**	Jason Lu
Humidity:	53% RH	**Polarity:**	Ver. / Hor.

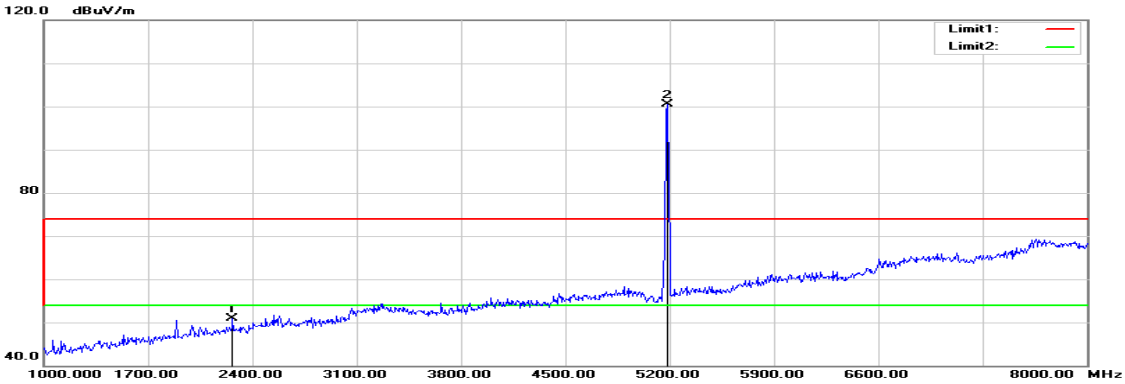
Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Pol. (H/V)
3184.000	52.42	-1.67	50.75	74.00	-23.25	peak	V
N/A							
3212.000	53.36	-1.60	51.76	74.00	-22.24	peak	H
N/A							

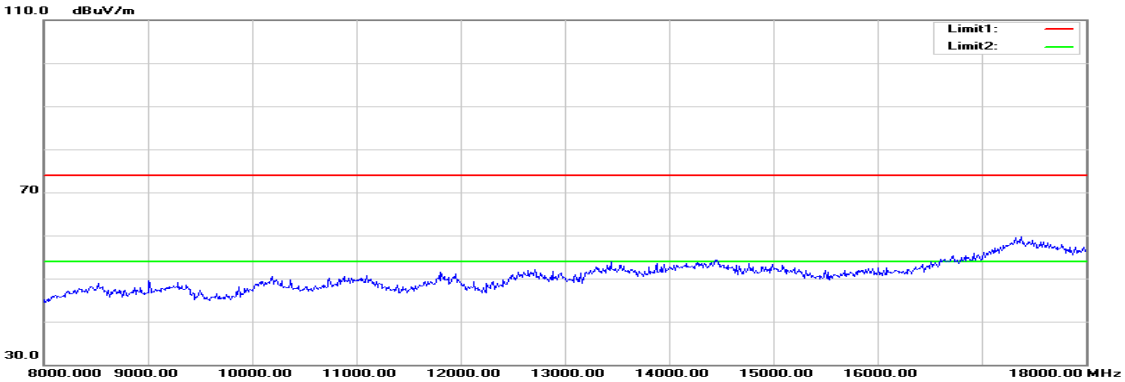
Remark:

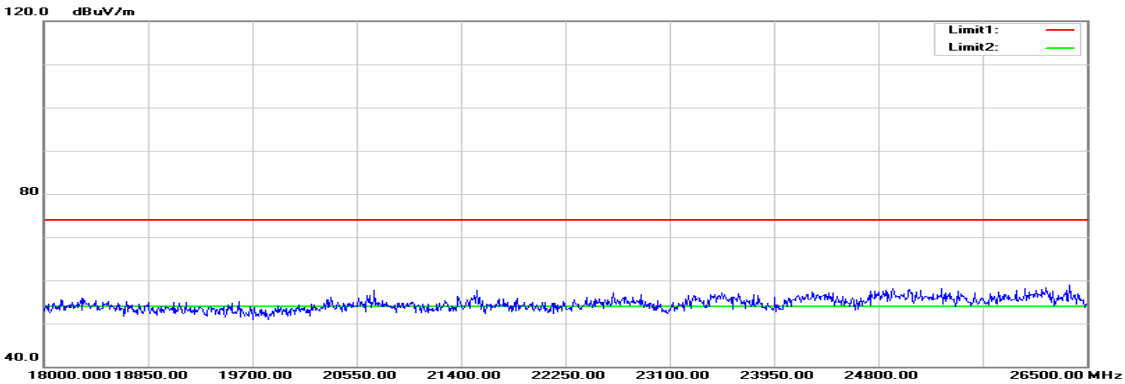
1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average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

Tx / IEEE 802.11n HT 20 MHz Channel mode / 5180 MHz

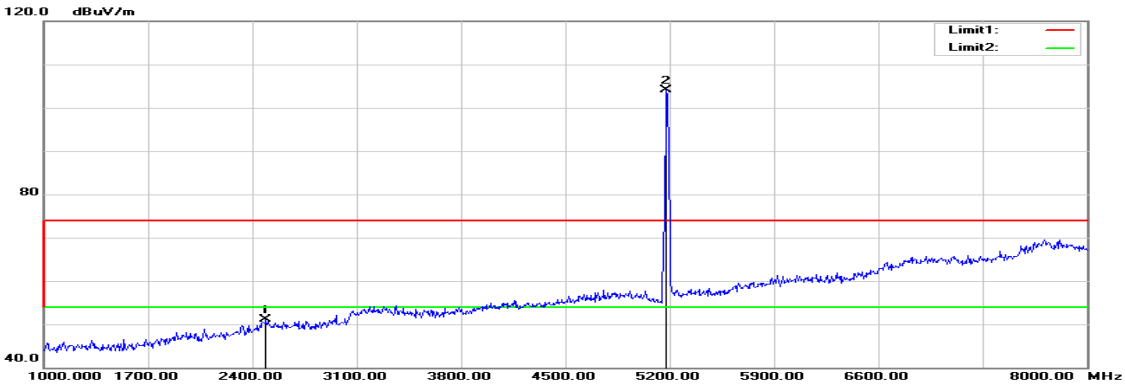
Polarity: Vertical

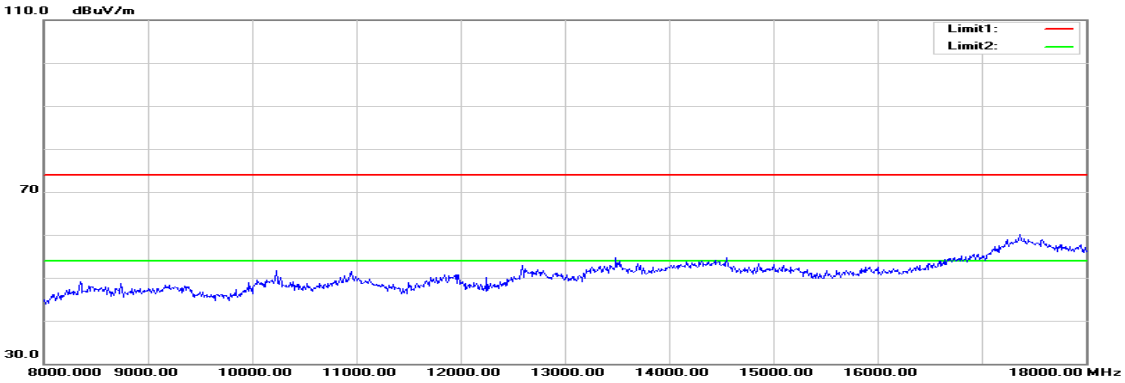


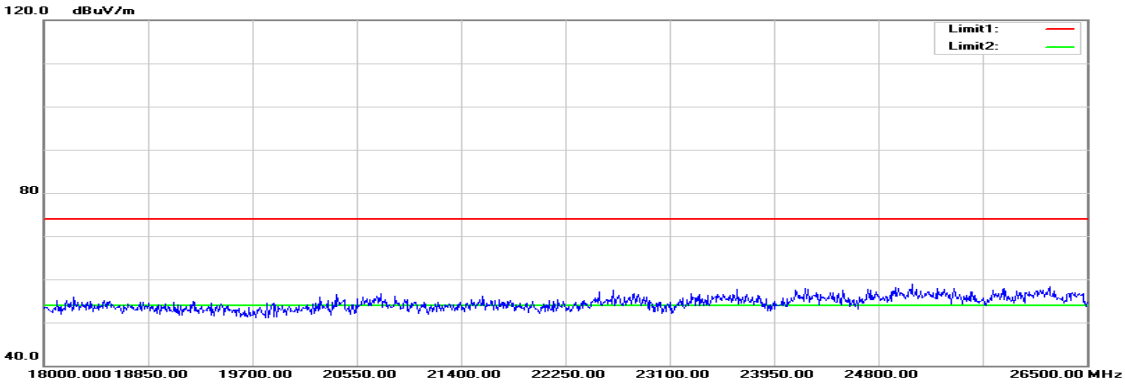




Polarity: Horizontal







Operation Mode:	Tx / IEEE 802.11n HT 20 MHz Channel mode / 5180 MHz	**Test Date:**	August 25, 2015
Temperature:	27℃	**Tested by:**	Jason Lu
Humidity:	53% RH	**Polarity:**	Ver. / Hor.

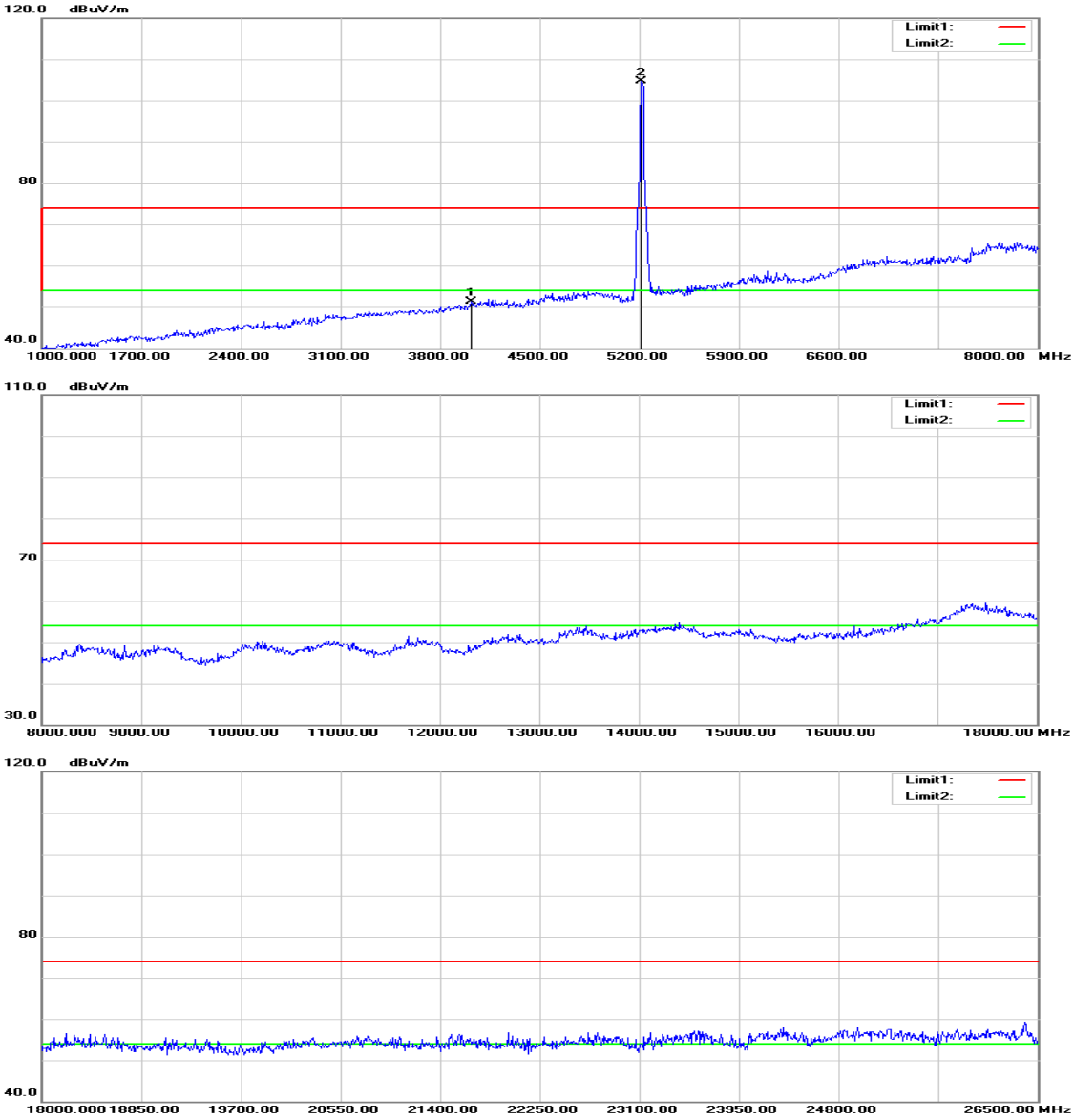
Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Pol. (H/V)
2267.000	55.19	-4.34	50.85	74.00	-23.15	peak	V
N/A							
2491.000	54.39	-3.20	51.19	74.00	-22.81	peak	H
N/A							

Remark:

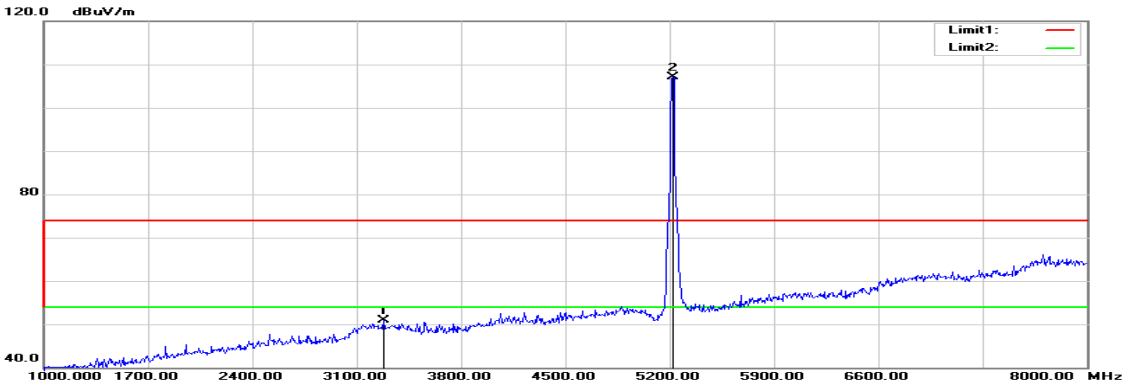
1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average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

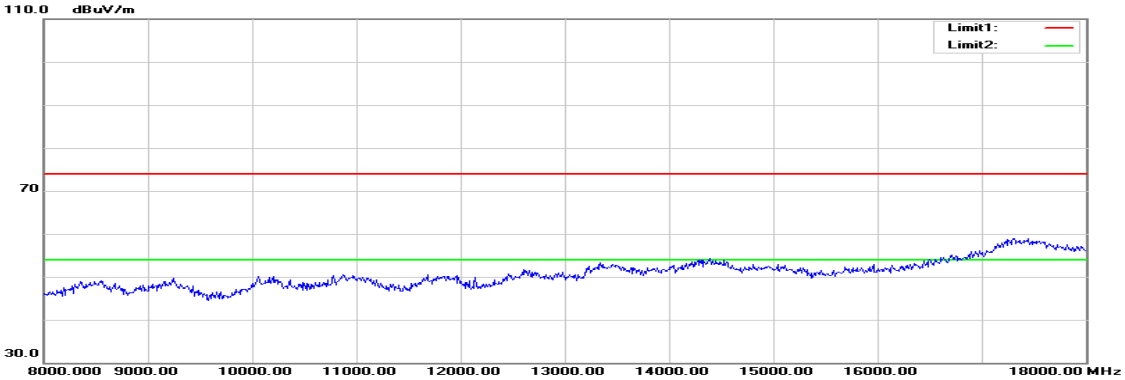
Tx / IEEE 802.11n HT 20 MHz Channel mode / 5220 MHz

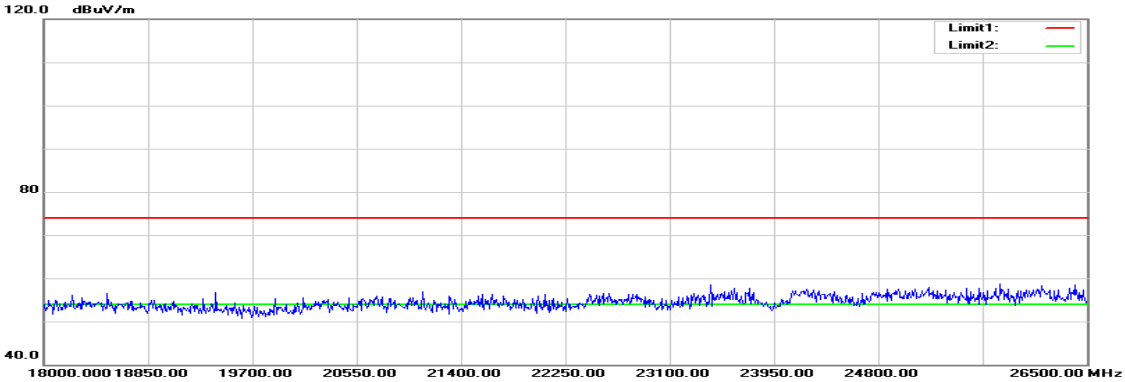
Polarity: Vertical



Polarity: Horizontal







Operation Mode:	Tx / IEEE 802.11n HT 20 MHz Channel mode / 5220 MHz	**Test Date:**	August 25, 2015
Temperature:	27℃	**Tested by:**	Jason Lu
Humidity:	53% RH	**Polarity:**	Ver. / Hor.

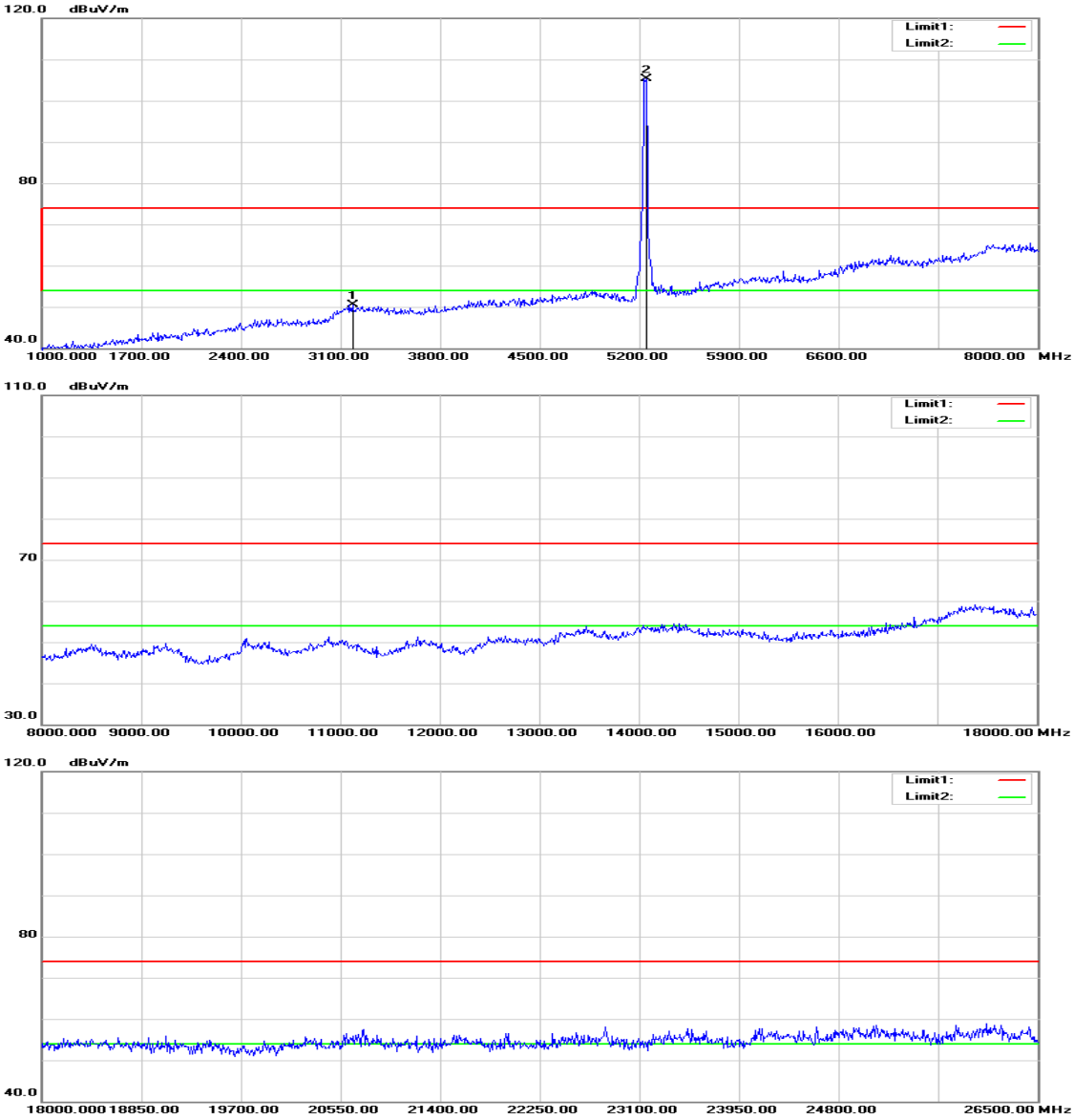
Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Pol. (H/V)
4017.000	50.10	1.29	51.39	74.00	-22.61	peak	V
N/A							
3282.000	52.30	-1.43	50.87	74.00	-23.13	peak	H
N/A							

Remark:

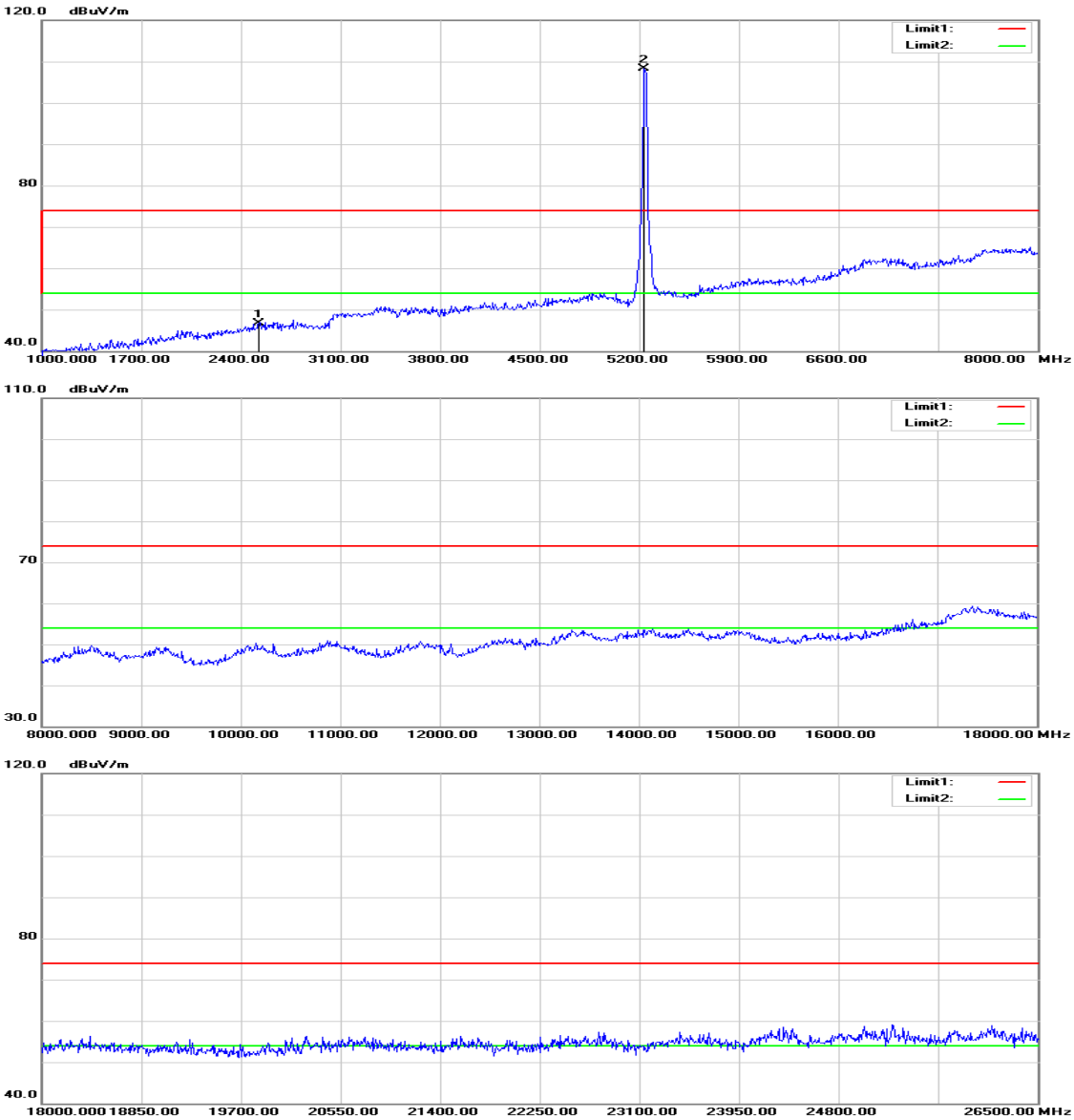
1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average limit.*
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).*

Tx / IEEE 802.11n HT 20 MHz Channel mode / 5240 MHz

Polarity: Vertical



Polarity: Horizontal



Operation Mode:	Tx / IEEE 802.11n HT 20 MHz Channel mode / 5240 MHz	**Test Date:**	August 25, 2015
Temperature:	27℃	**Tested by:**	Jason Lu
Humidity:	53% RH	**Polarity:**	Ver. / Hor.

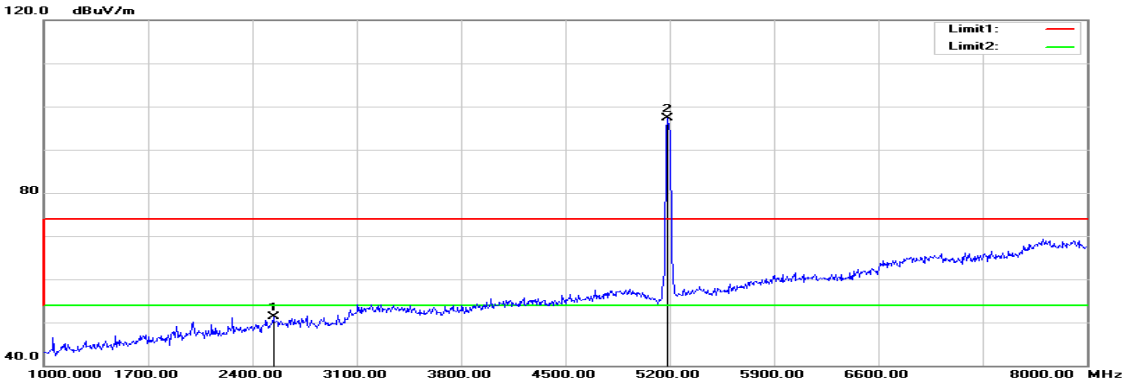
Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Pol. (H/V)
3184.000	52.26	-1.67	50.59	74.00	-23.41	peak	V
N/A							
2526.000	49.86	-3.07	46.79	74.00	-27.21	peak	H
N/A							

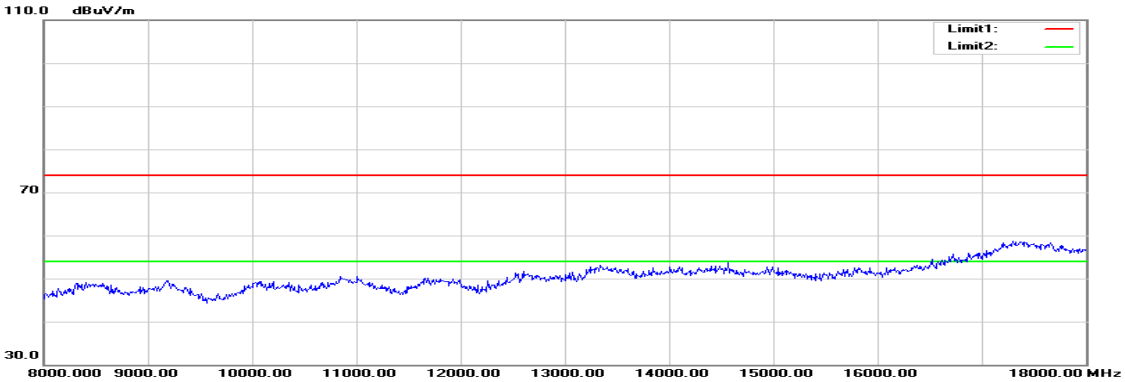
Remark:

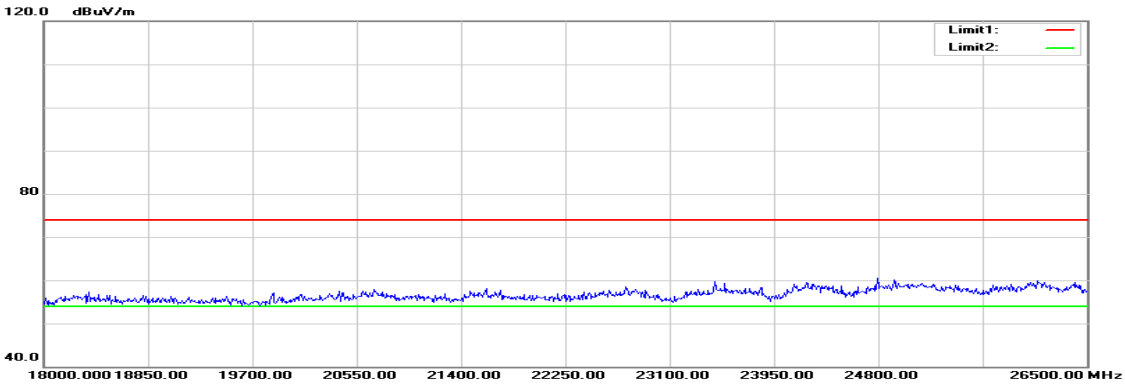
1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average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

Tx / IEEE 802.11n HT 40 MHz mode / 5190 MHz

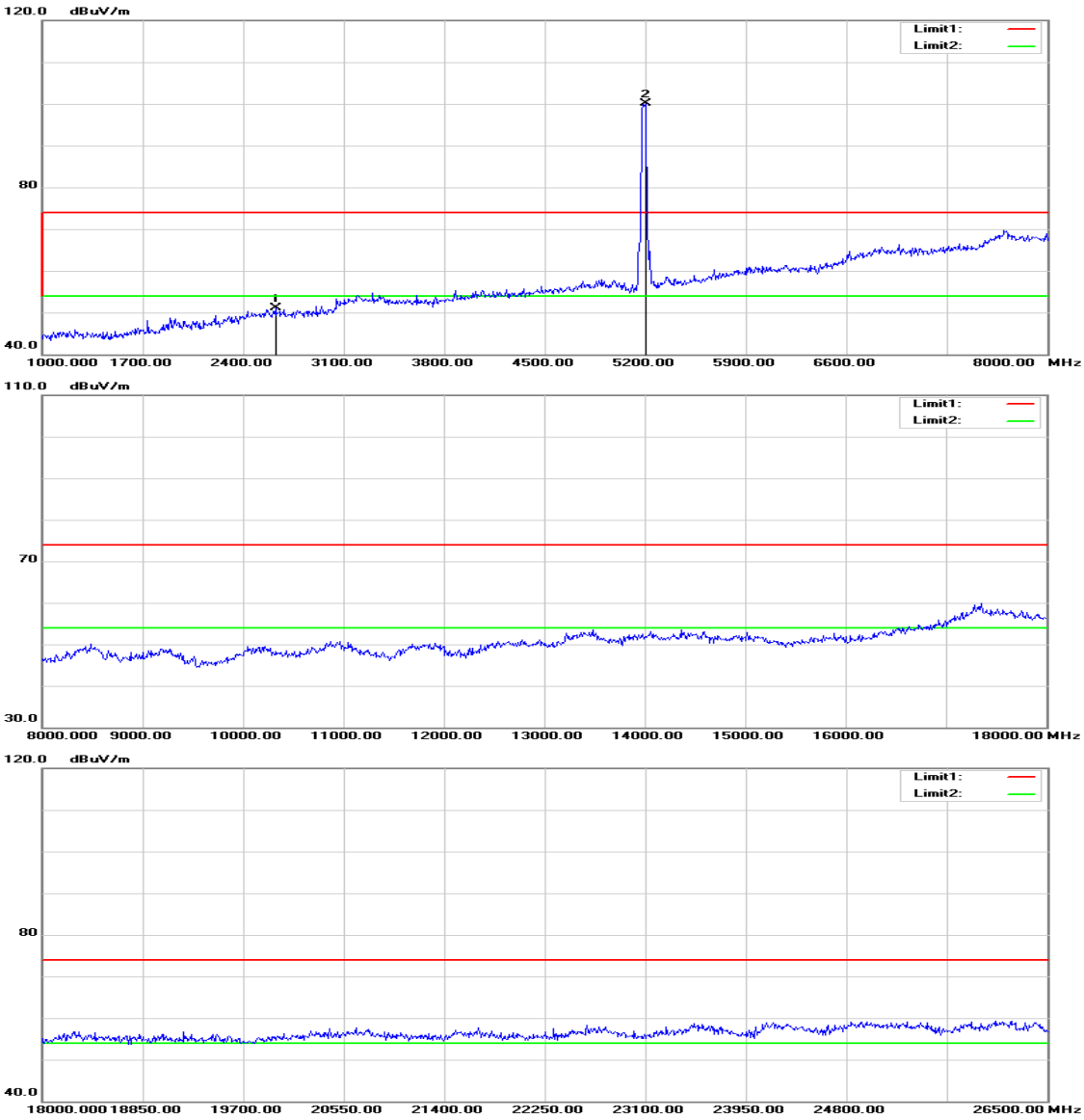
Polarity: Vertical







Polarity: Horizontal



Operation Mode:	Tx / IEEE 802.11n HT 40 MHz mode / 5190 MHz	**Test Date:**	August 25, 2015
Temperature:	27℃	**Tested by:**	Jason Lu
Humidity:	53% RH	**Polarity:**	Ver. / Hor.

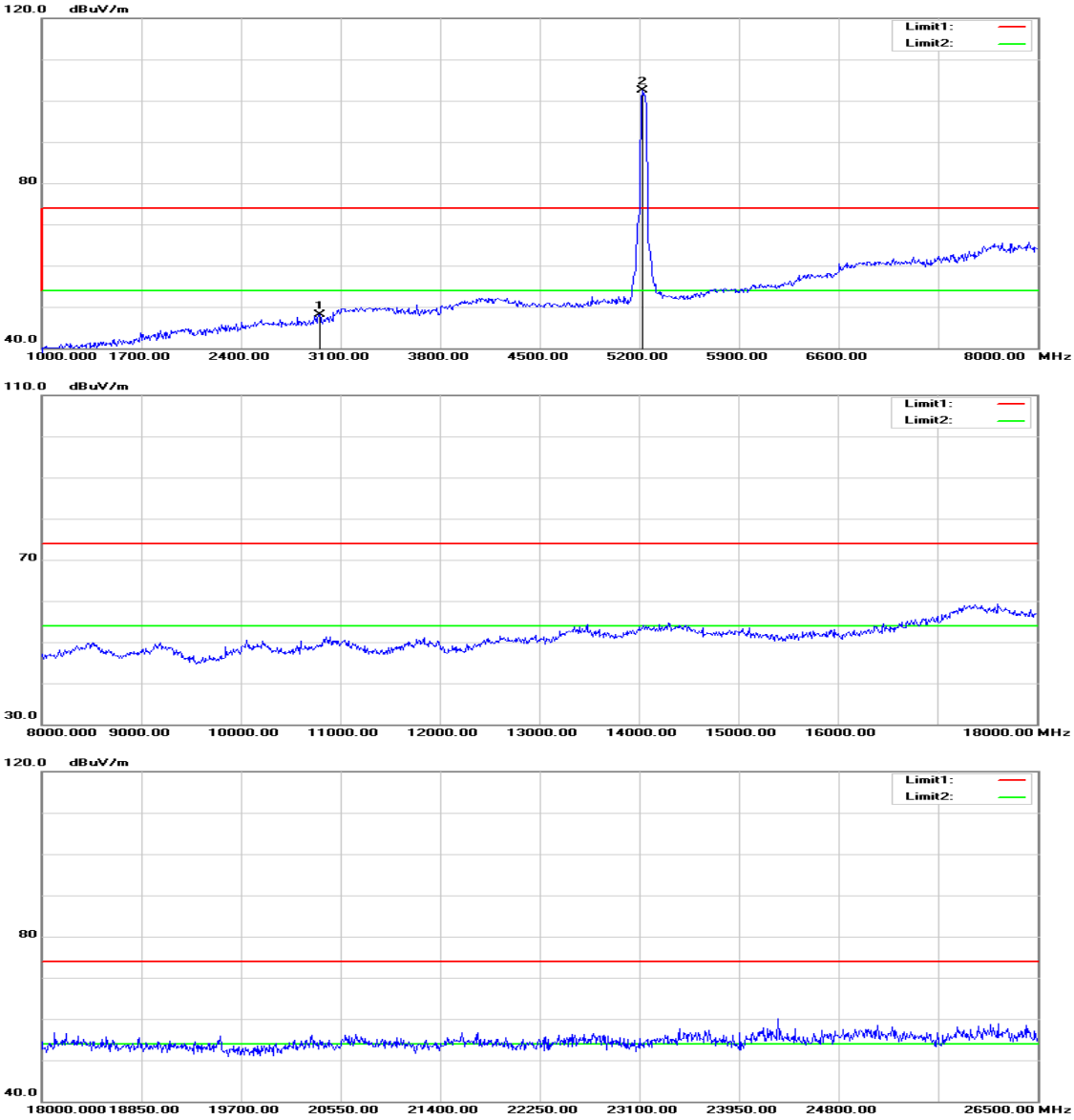
Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Pol. (H/V)
2540.000	54.37	-3.04	51.33	74.00	-22.67	peak	V
N/A							
2624.000	53.93	-2.87	51.06	74.00	-22.94	peak	H
N/A							

Remark:

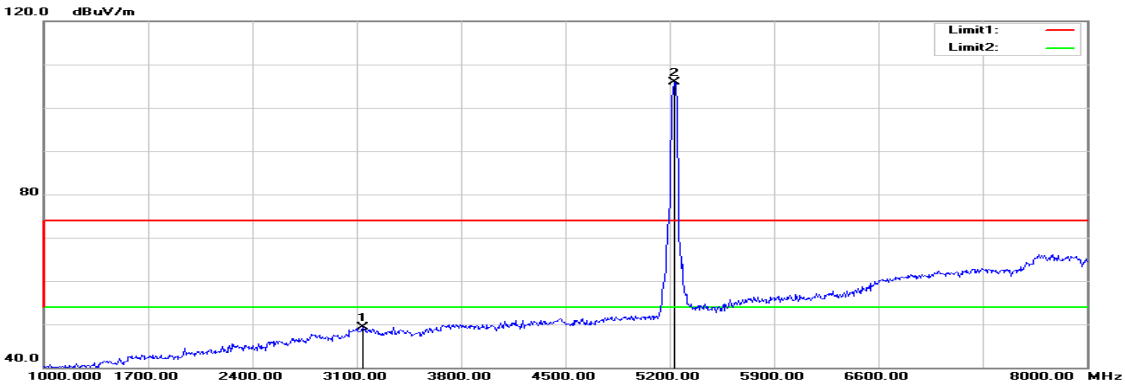
1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average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

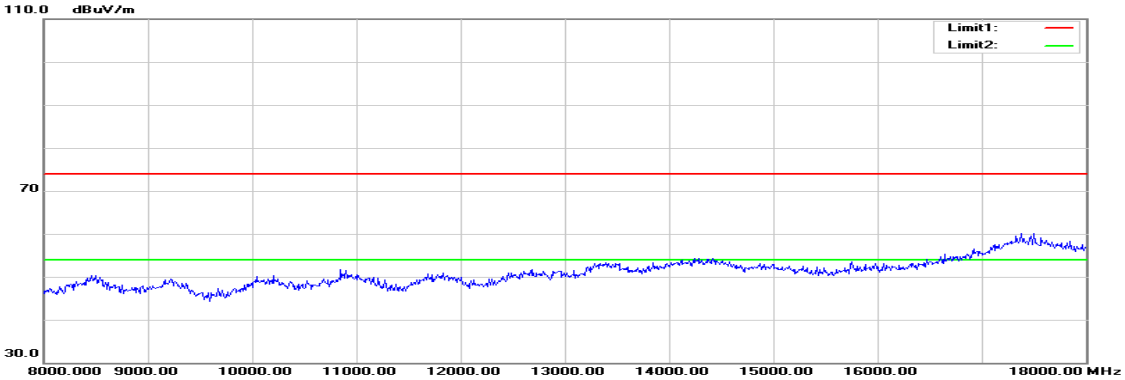
Tx / IEEE 802.11n HT 40 MHz mode / 5230 MHz

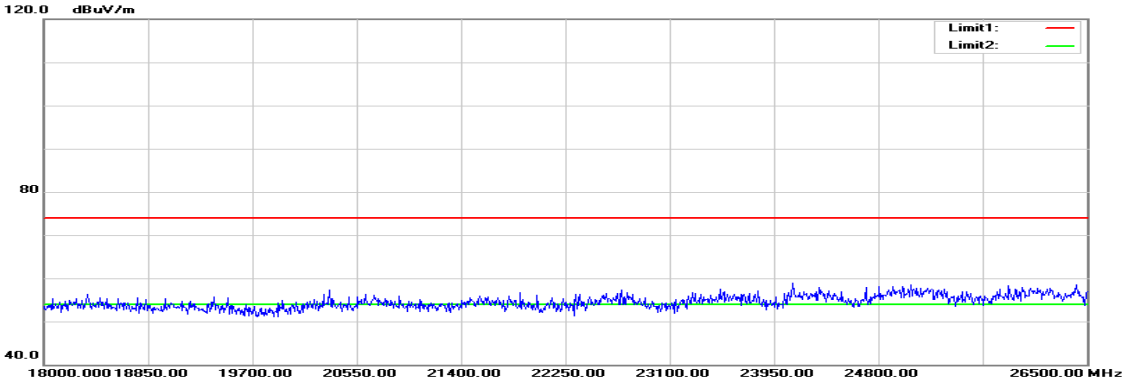
Polarity: Vertical



Polarity: Horizontal







Operation Mode:	Tx / IEEE 802.11n HT 40 MHz mode / 5230 MHz	**Test Date:**	August 25, 2015
Temperature:	27℃	**Tested by:**	Jason Lu
Humidity:	53% RH	**Polarity:**	Ver. / Hor.

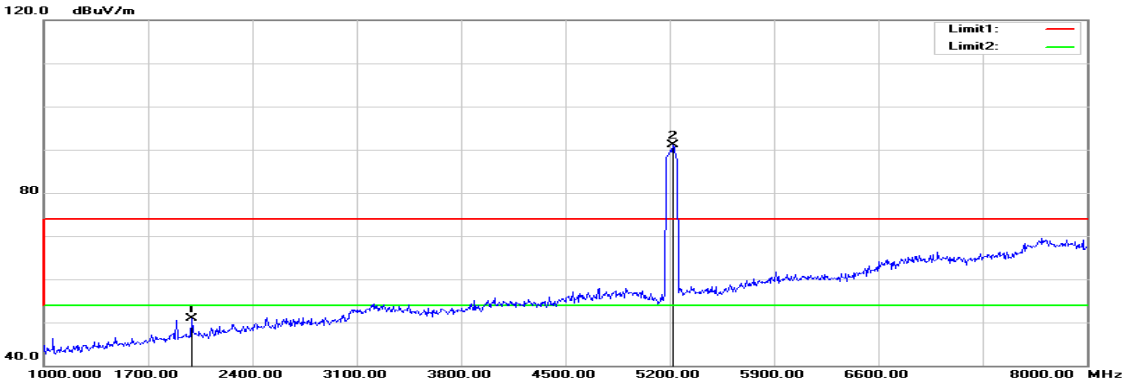
Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Pol. (H/V)
2953.000	50.29	-2.20	48.09	74.00	-25.91	peak	V
N/A							
3142.000	51.05	-1.77	49.28	74.00	-24.72	peak	H
N/A							

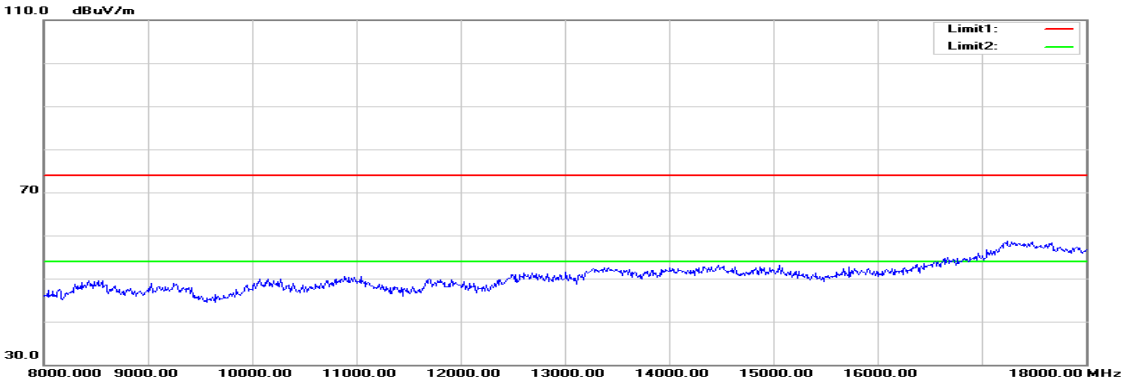
Remark:

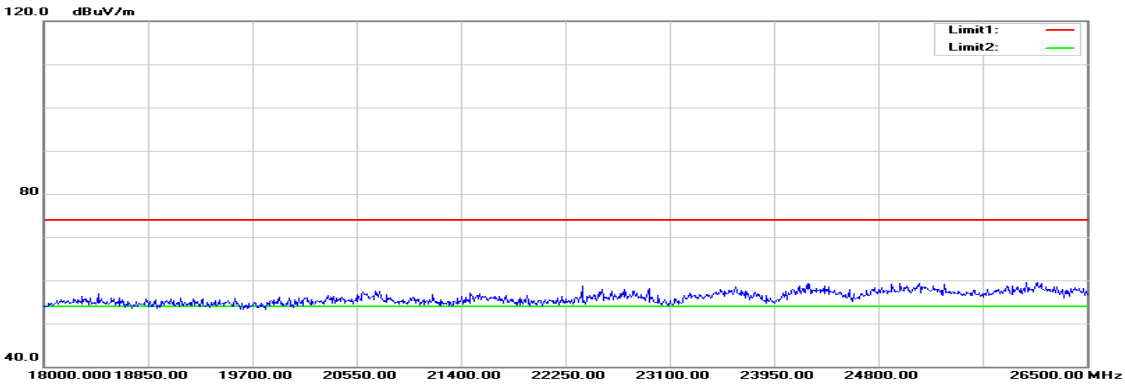
1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average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

Tx / IEEE 802.11ac VHT 80 MHz mode / 5210MHz

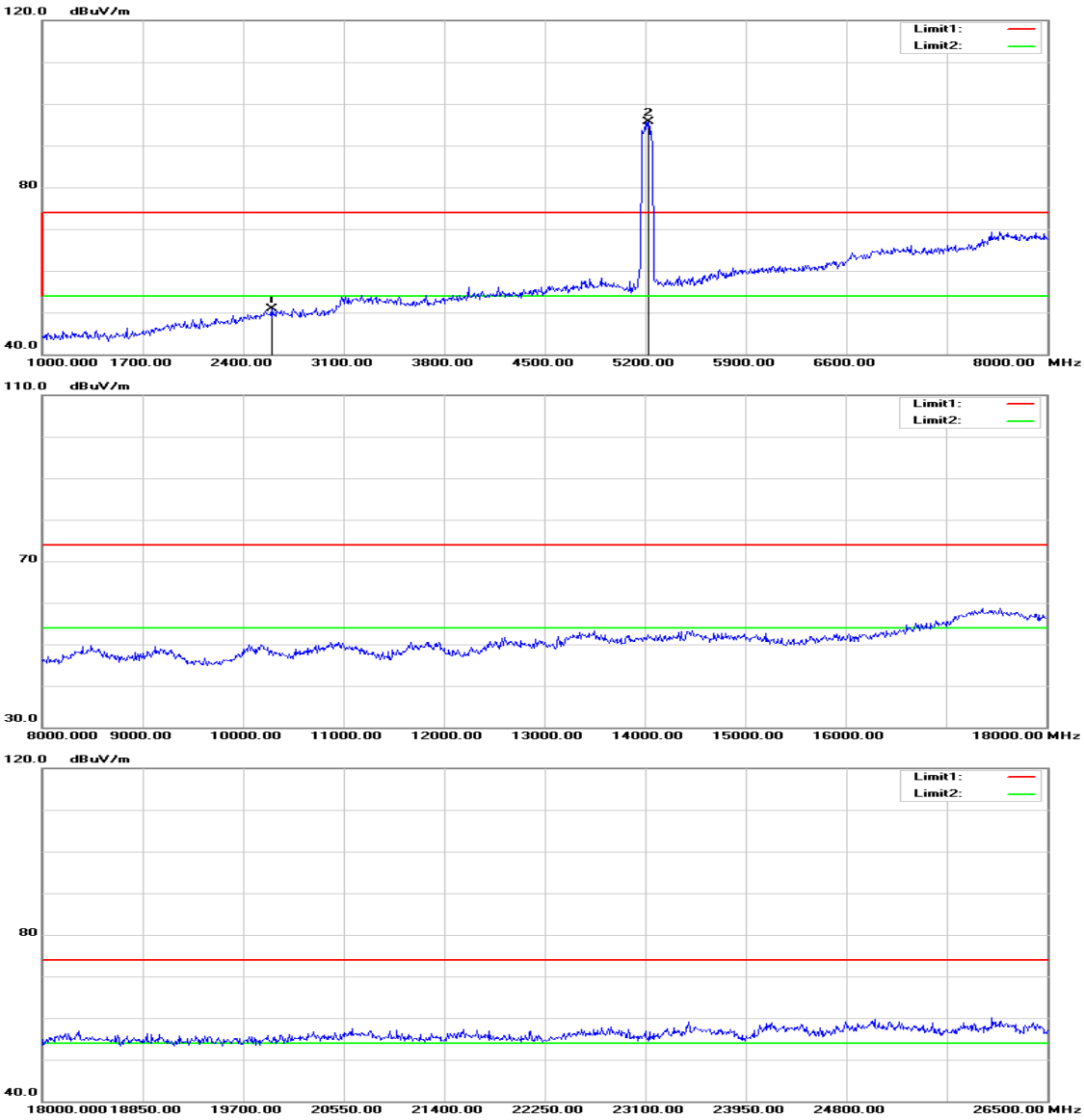
Polarity: Vertical







Polarity: Horizontal



Operation Mode:	Tx / IEEE 802.11ac VHT 80 MHz mode / 5210MHz	**Test Date:**	August 25, 2015
Temperature:	27℃	**Tested by:**	Jason Lu
Humidity:	53% RH	**Polarity:**	Ver. / Hor.

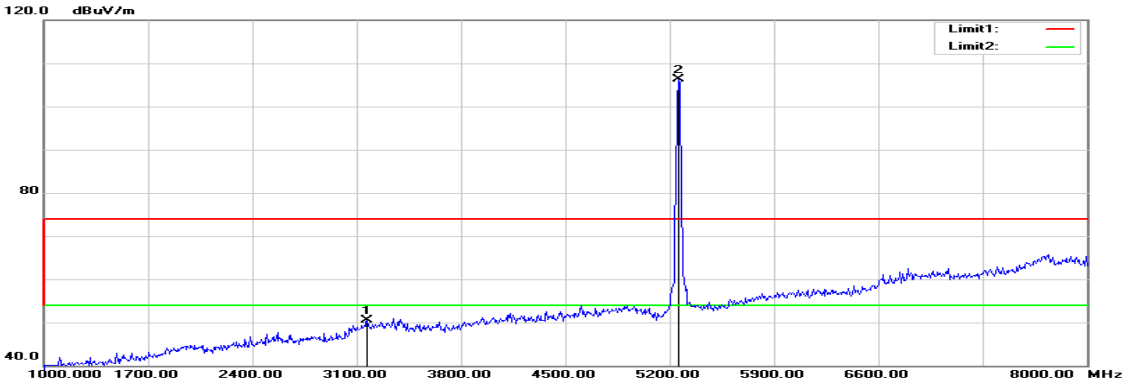
Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Pol. (H/V)
1994.000	55.91	-4.91	51.00	74.00	-23.00	peak	V
N/A							
2596.000	53.89	-2.93	50.96	74.00	-23.04	peak	H
N/A							

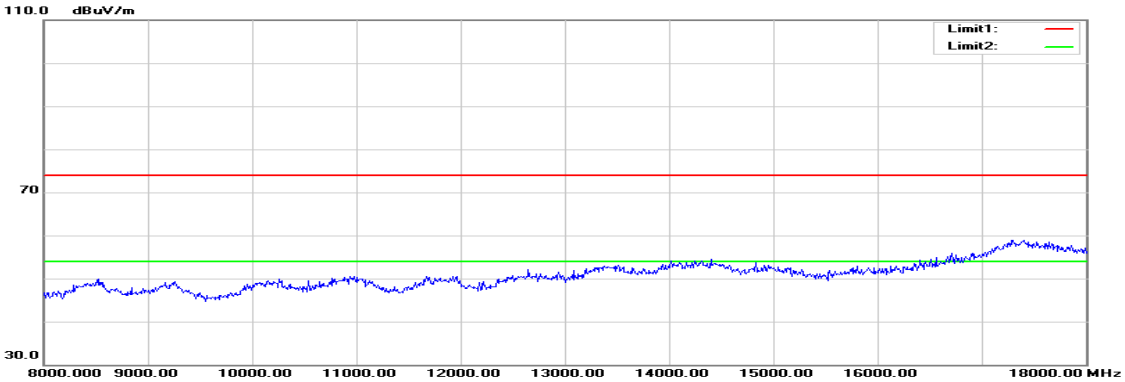
Remark:

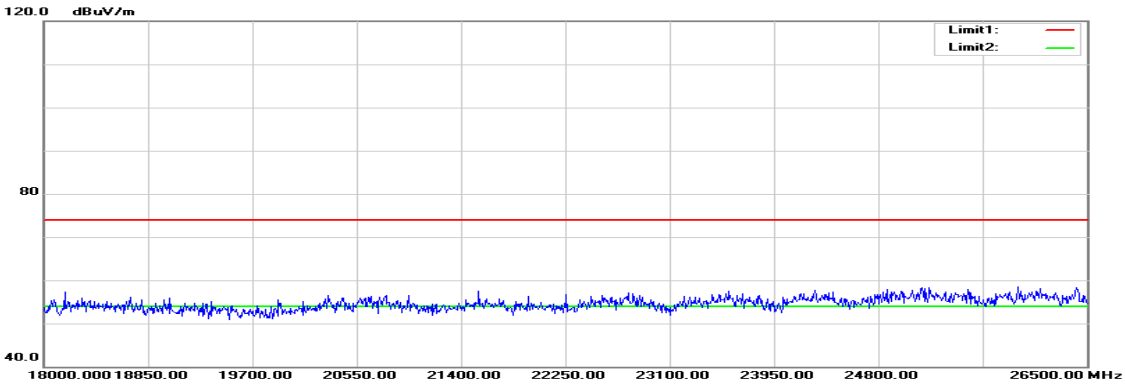
1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average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

Tx / IEEE 802.11a mode / 5260 MHz

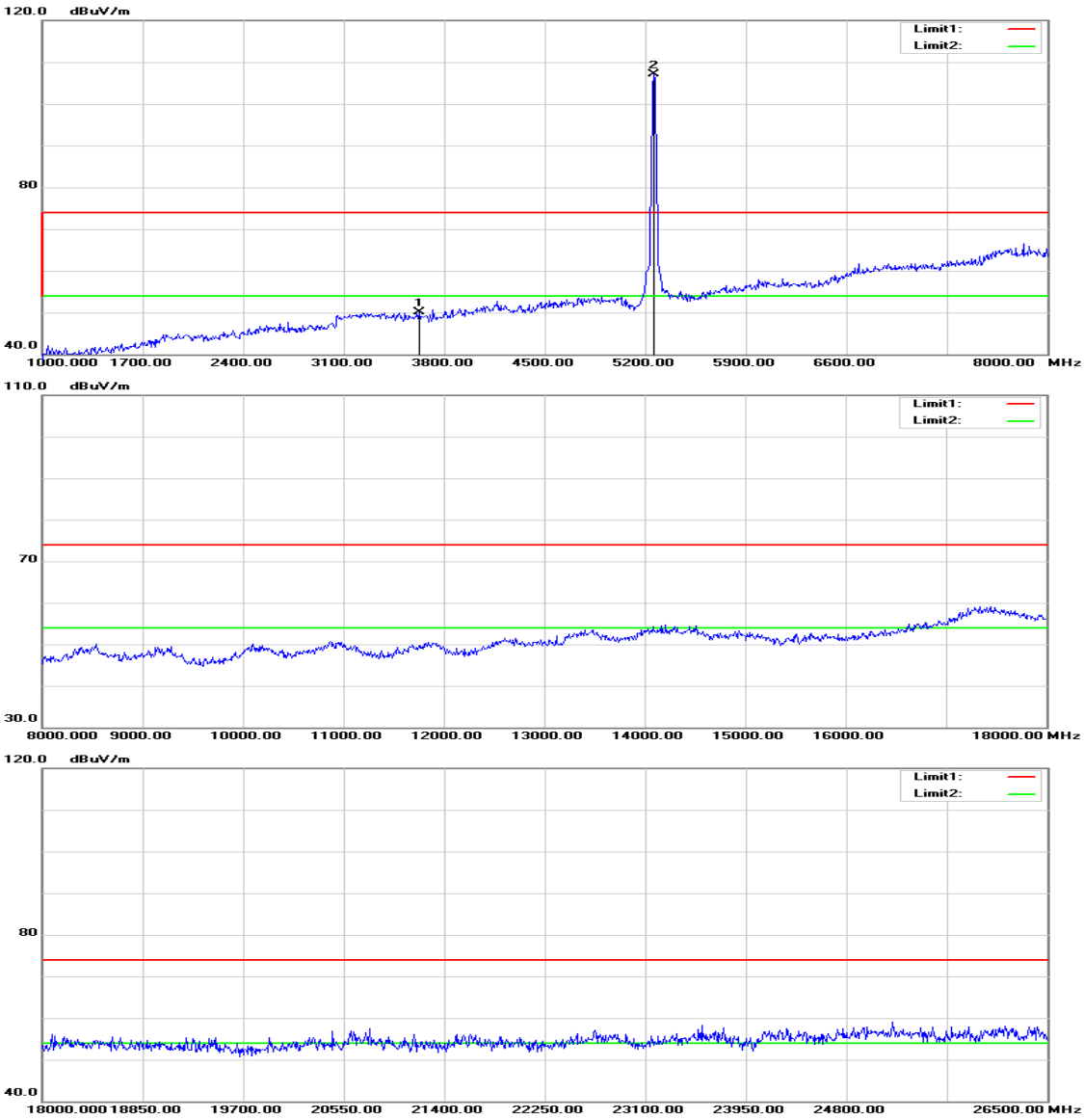
Polarity: Vertical







Polarity: Horizontal



Operation Mode:	Tx / IEEE 802.11a mode / 5260 MHz	**Test Date:**	August 25, 2015
Temperature:	27℃	**Tested by:**	Jason Lu
Humidity:	53% RH	**Polarity:**	Ver. / Hor.

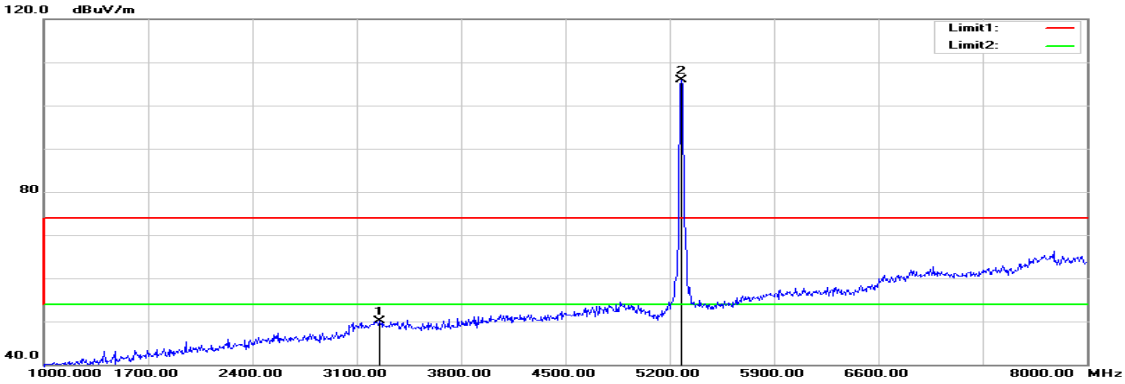
Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Pol. (H/V)
3170.000	52.24	-1.70	50.54	74.00	-23.46	peak	V
N/A							
3625.000	50.47	-0.38	50.09	74.00	-23.91	peak	H
N/A							

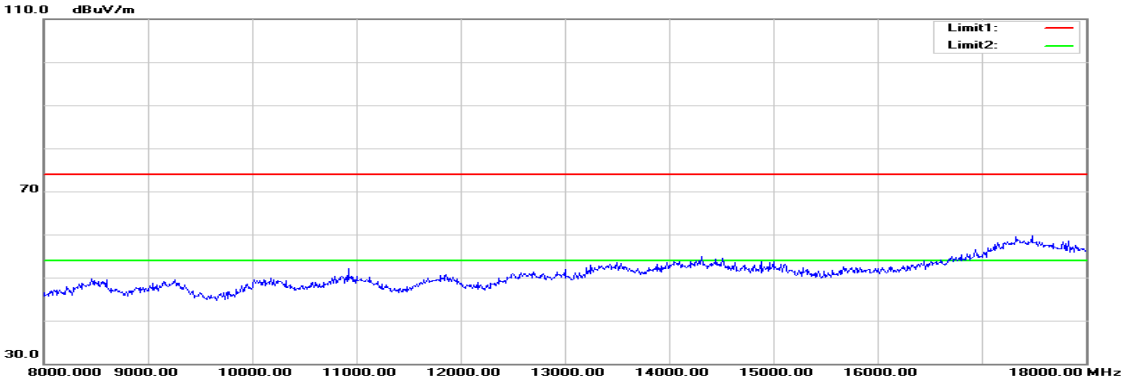
Remark:

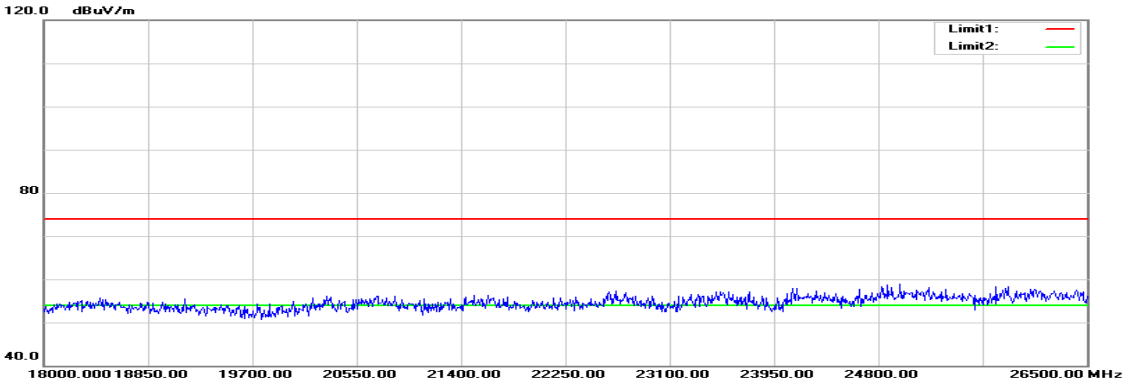
1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average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

Tx / IEEE 802.11a mode / 5280 MHz

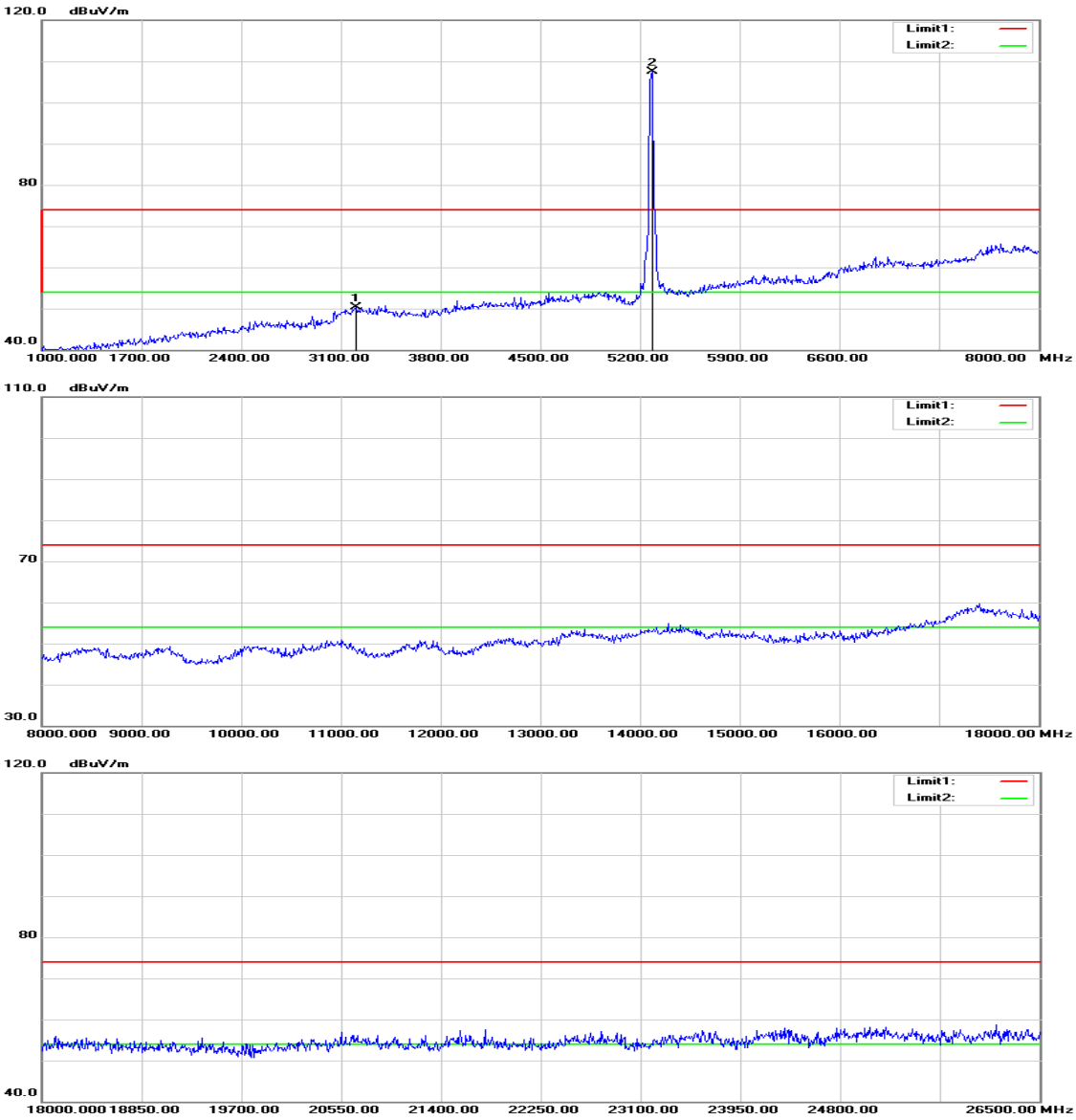
Polarity: Vertical







Polarity: Horizontal



Operation Mode:	Tx / IEEE 802.11a mode / 5280 MHz	**Test Date:**	August 25, 2015
Temperature:	27℃	**Tested by:**	Jason Lu
Humidity:	53% RH	**Polarity:**	Ver. / Hor.

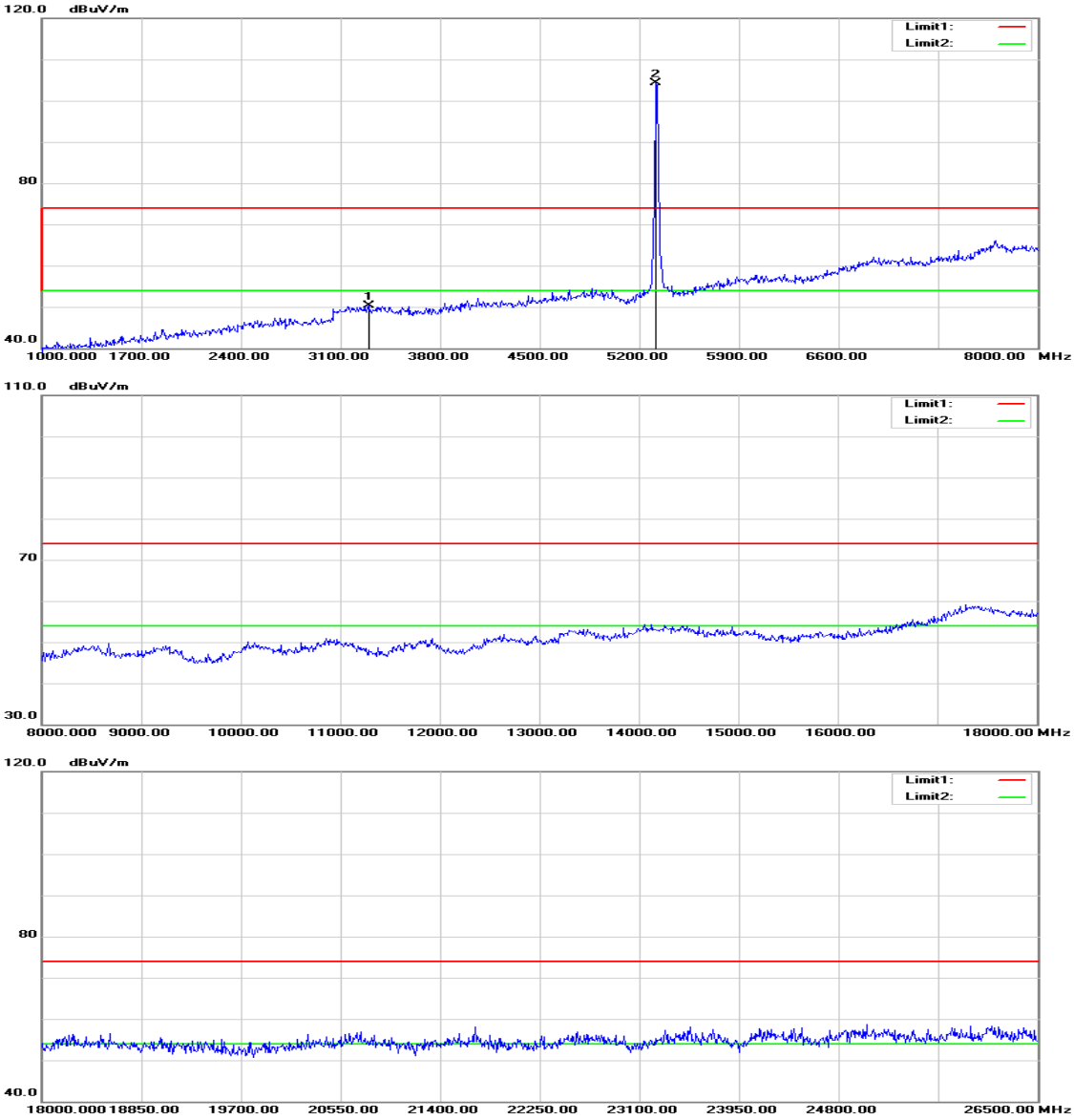
Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Pol. (H/V)
3254.000	51.53	-1.50	50.03	74.00	-23.97	peak	V
N/A							
3205.000	51.91	-1.62	50.29	74.00	-23.71	peak	H
N/A							

Remark:

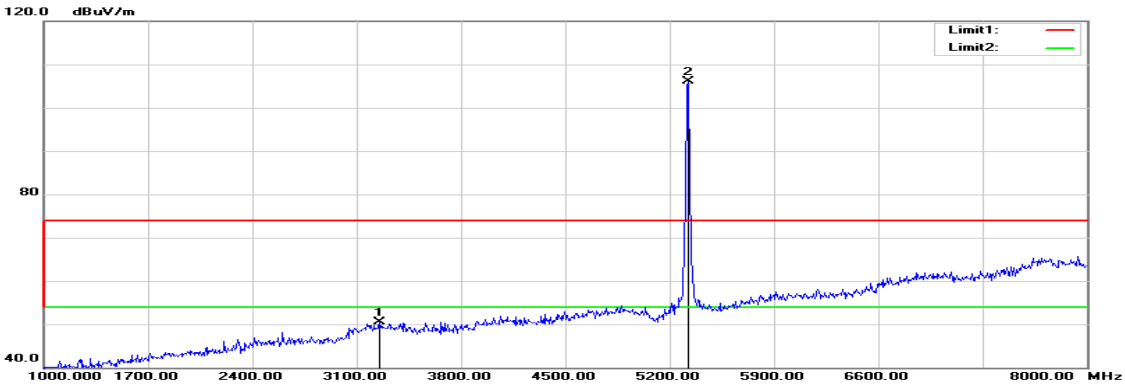
1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average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

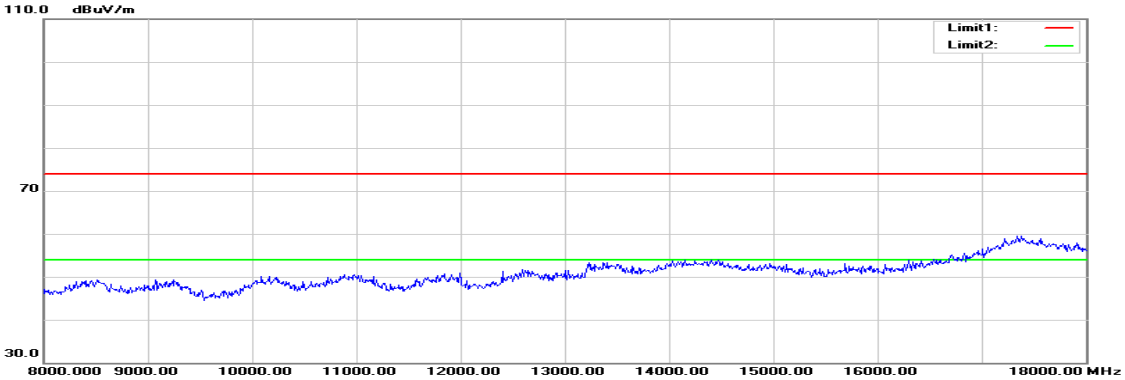
Tx / IEEE 802.11a mode / 5320 MHz

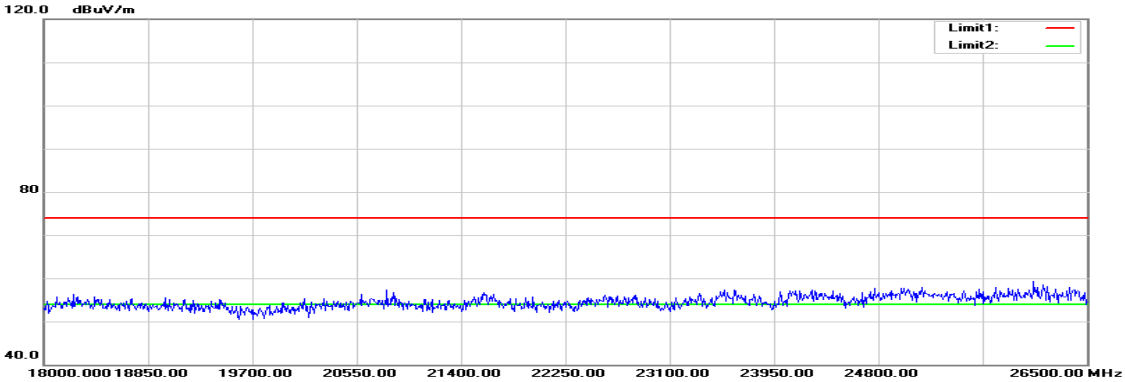
Polarity: Vertical



Polarity: Horizontal







Operation Mode:	Tx / IEEE 802.11a mode / 5320 MHz	**Test Date:**	August 25, 2015
Temperature:	27℃	**Tested by:**	Jason Lu
Humidity:	53% RH	**Polarity:**	Ver. / Hor.

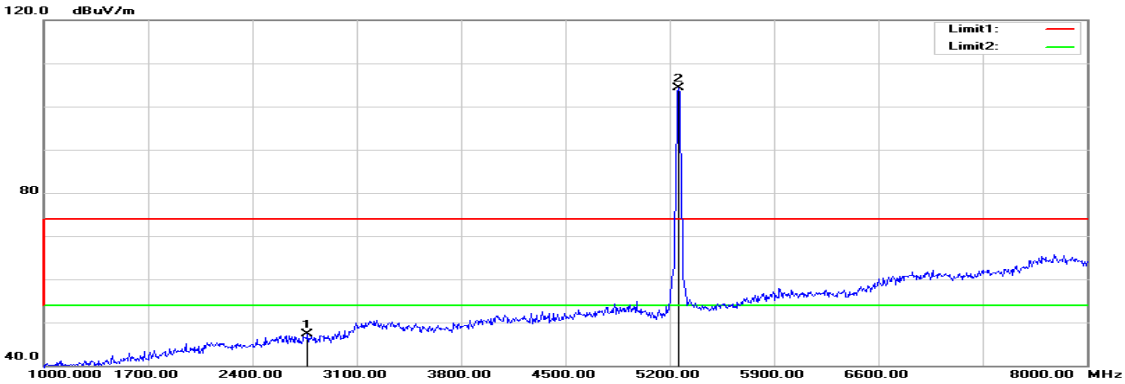
Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Pol. (H/V)
3296.000	51.64	-1.40	50.24	74.00	-23.76	peak	V
N/A							
3254.000	52.00	-1.50	50.50	74.00	-23.50	peak	H
N/A							

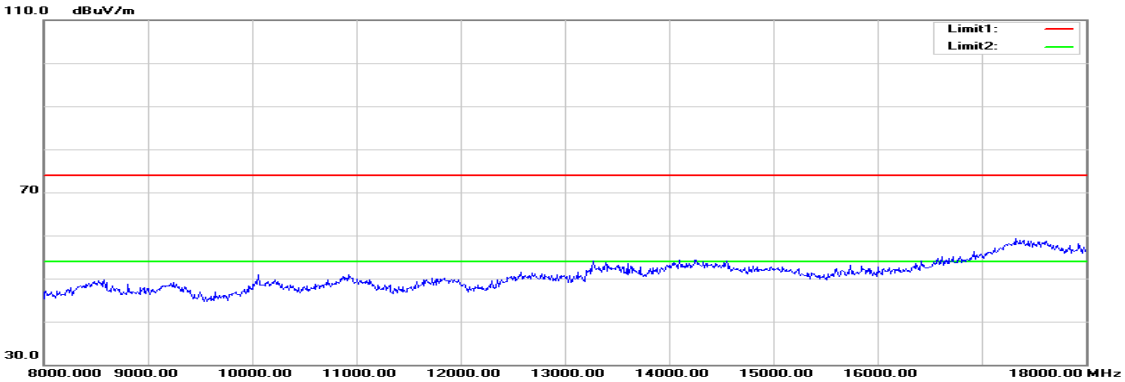
Remark:

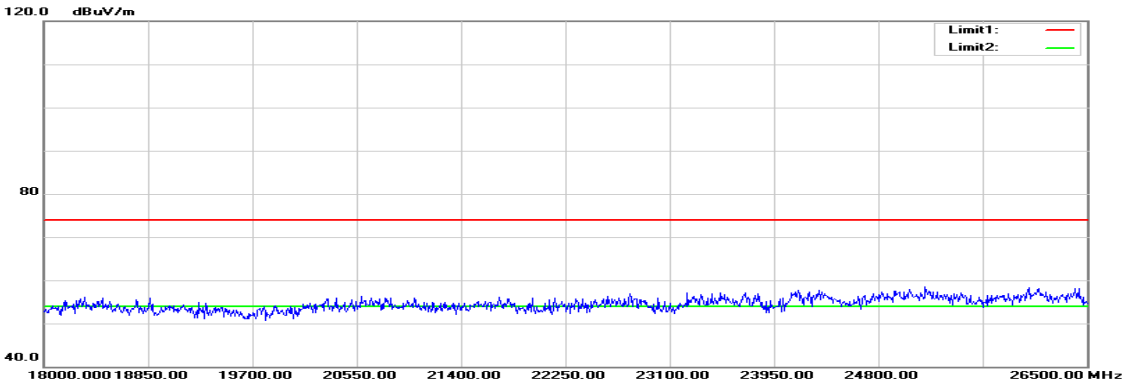
1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average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

Tx / IEEE 802.11n HT 20 MHz Channel mode / 5260 MHz

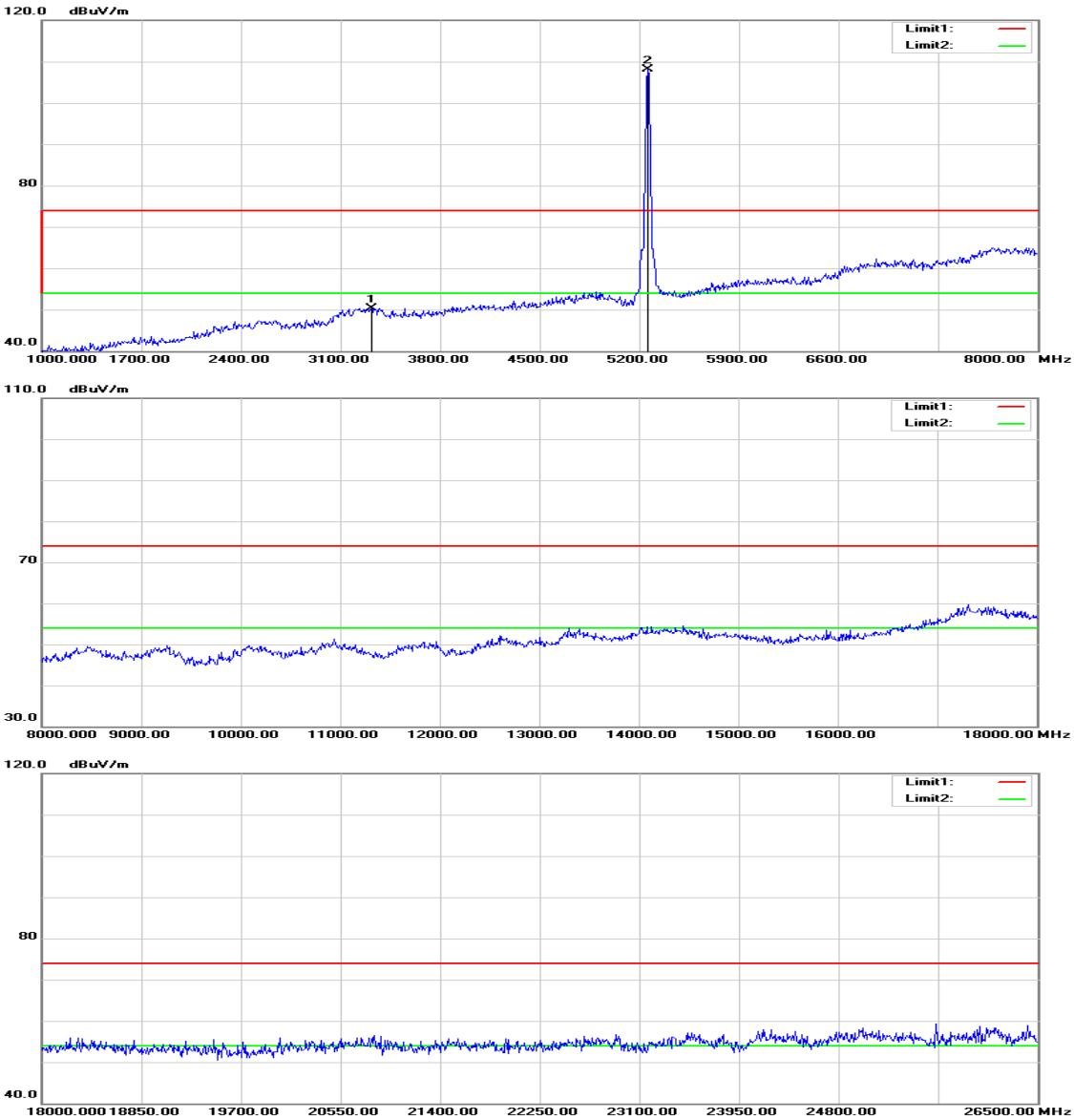
Polarity: Vertical







Polarity: Horizontal



Operation Mode:	Tx / IEEE 802.11n HT 20 MHz Channel mode / 5260 MHz	**Test Date:**	August 25, 2015
Temperature:	27℃	**Tested by:**	Jason Lu
Humidity:	53% RH	**Polarity:**	Ver. / Hor.

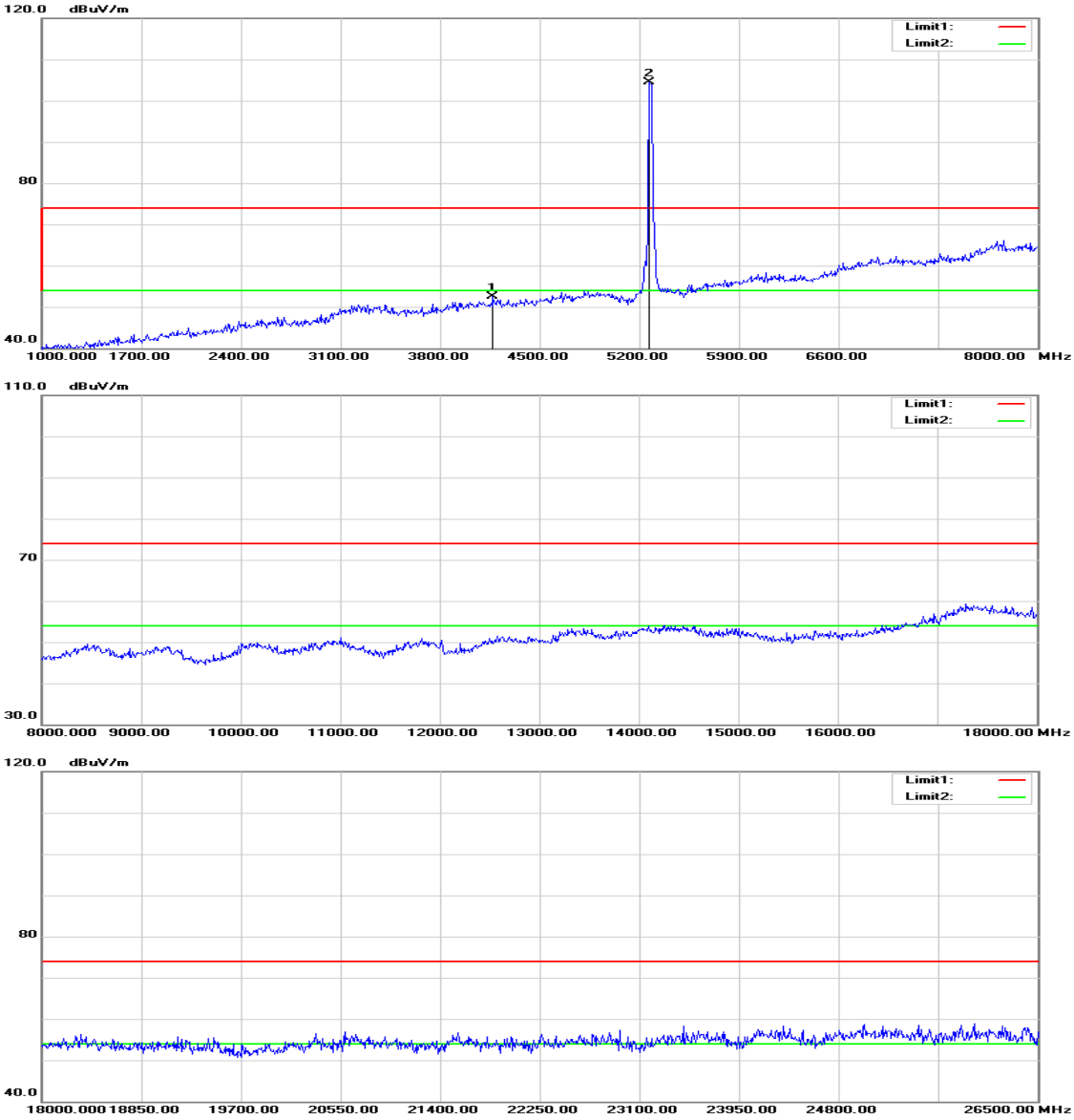
Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Pol. (H/V)
2771.000	49.79	-2.57	47.22	74.00	-26.78	peak	V
N/A							
3317.000	51.64	-1.35	50.29	74.00	-23.71	peak	H
N/A							

Remark:

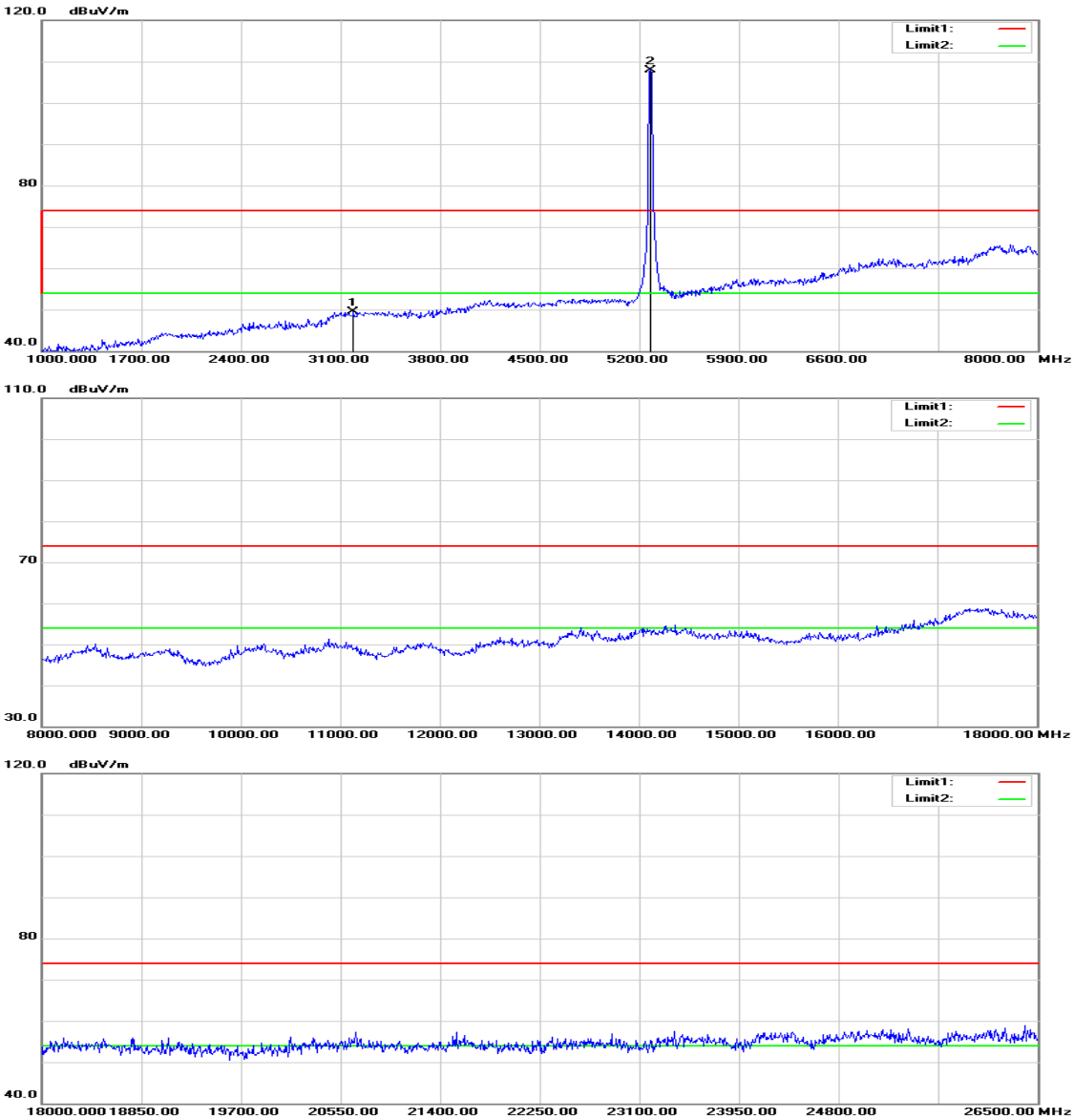
1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average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

Tx / IEEE 802.11n HT 20 MHz Channel mode / 5280 MHz

Polarity: Vertical



Polarity: Horizontal



Operation Mode:	Tx / IEEE 802.11n HT 20 MHz Channel mode / 5280 MHz	**Test Date:**	August 25, 2015
Temperature:	27℃	**Tested by:**	Jason Lu
Humidity:	53% RH	**Polarity:**	Ver. / Hor.

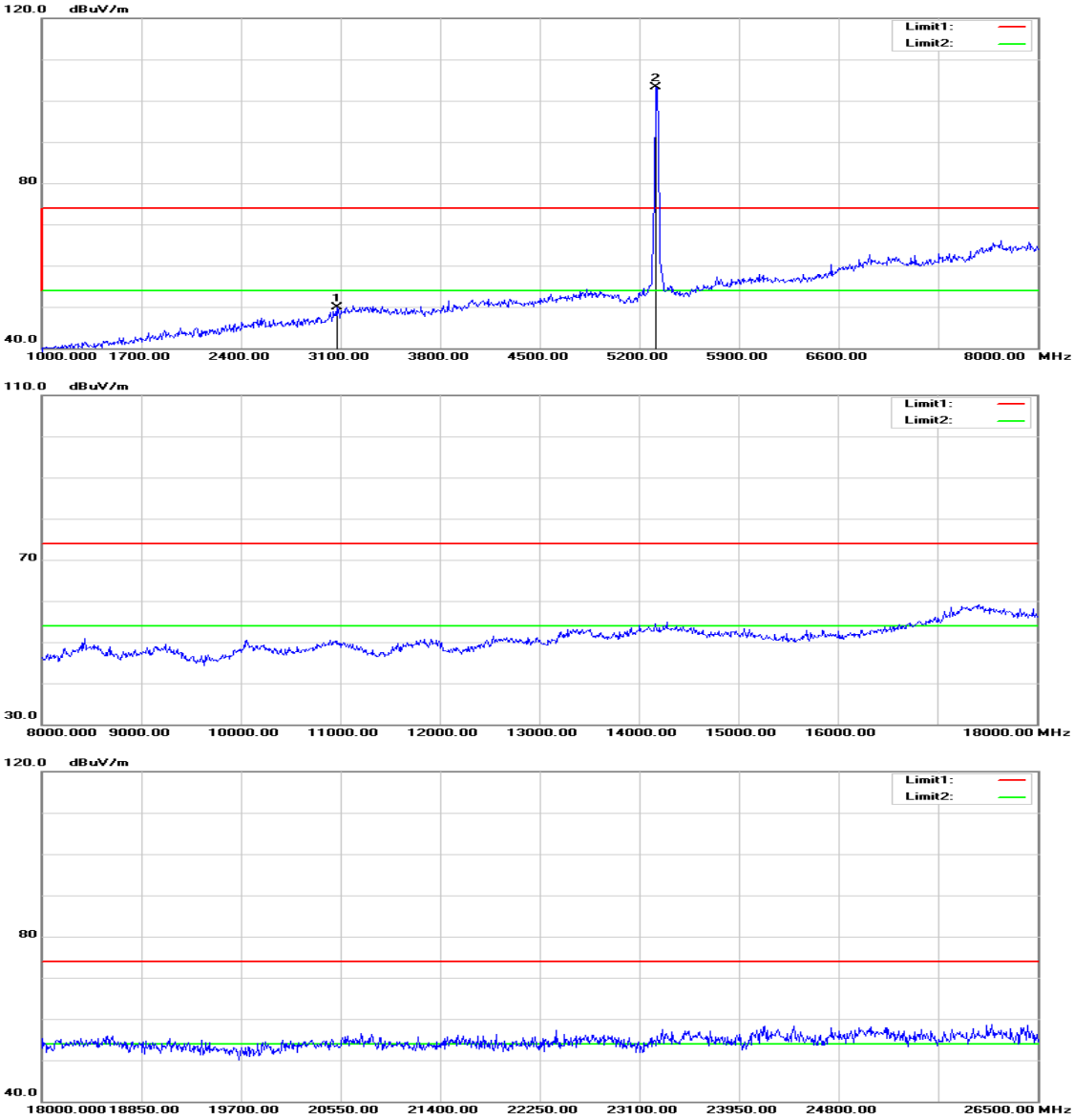
Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Pol. (H/V)
4171.000	50.70	1.88	52.58	74.00	-21.42	peak	V
N/A							
3191.000	51.16	-1.65	49.51	74.00	-24.49	peak	H
N/A							

Remark:

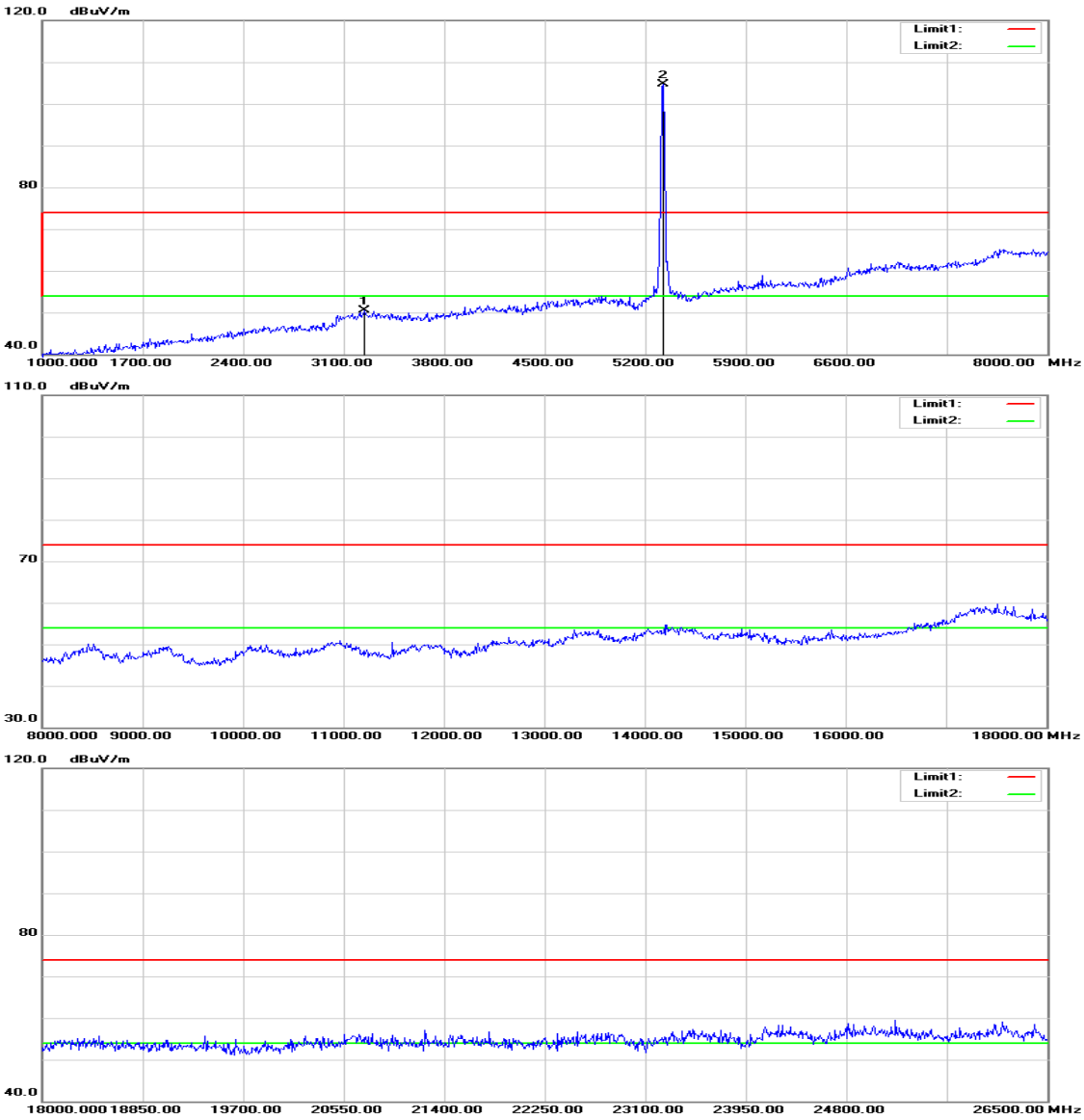
1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average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

Tx / IEEE 802.11n HT 20 MHz Channel mode / 5320 MHz

Polarity: Vertical



Polarity: Horizontal



Operation Mode:	Tx / IEEE 802.11n HT 20 MHz Channel mode / 5320 MHz	**Test Date:**	August 25, 2015
Temperature:	27℃	**Tested by:**	Jason Lu
Humidity:	53% RH	**Polarity:**	Ver. / Hor.

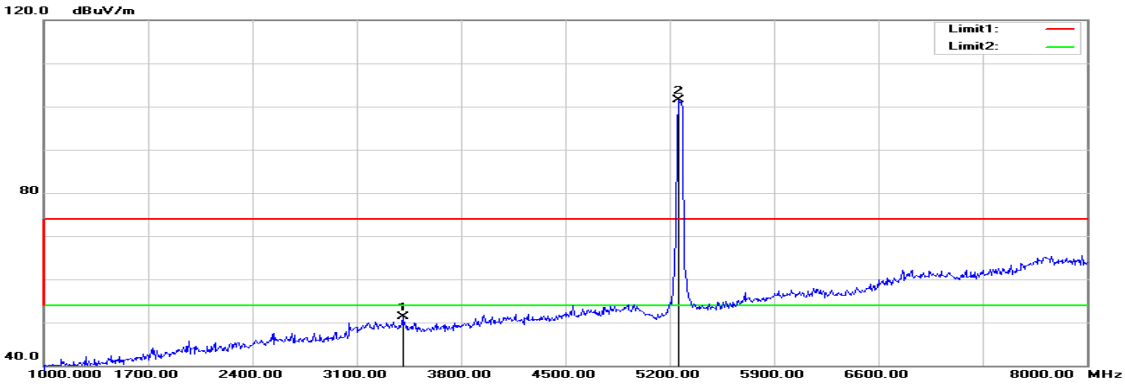
Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Pol. (H/V)
3072.000	51.89	-1.94	49.95	74.00	-24.05	peak	V
N/A							
3247.000	51.95	-1.52	50.43	74.00	-23.57	peak	H
N/A							

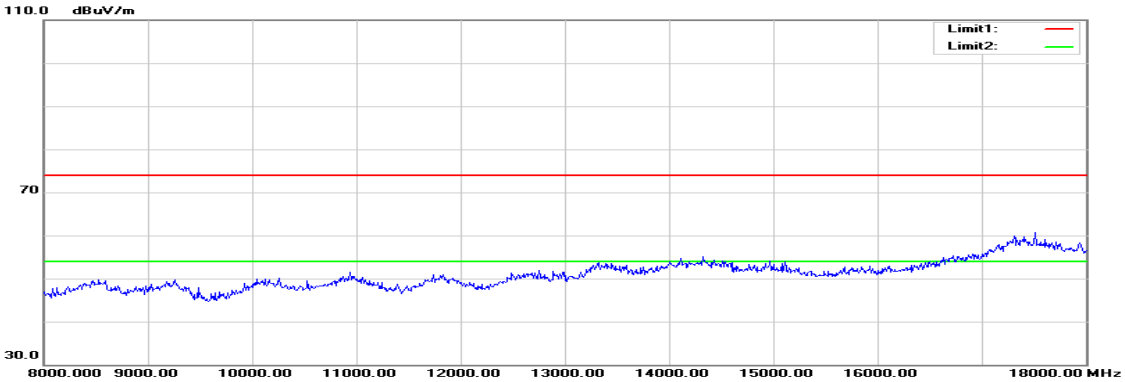
Remark:

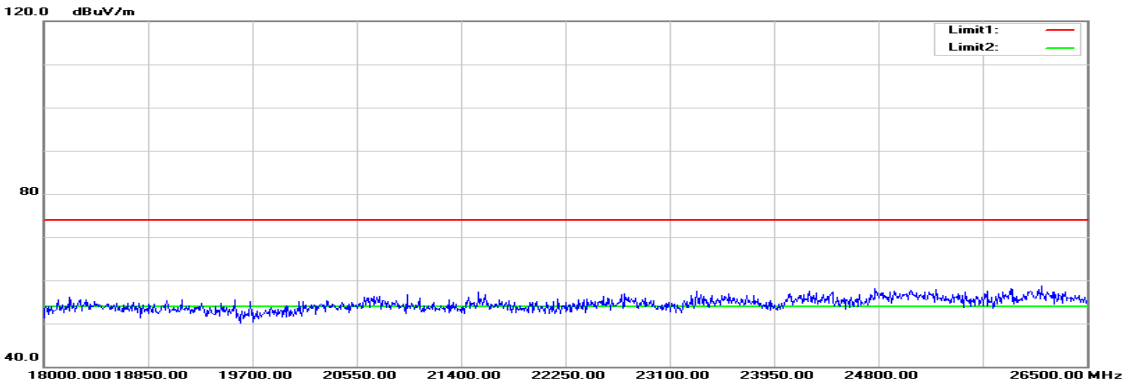
1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average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

Tx / IEEE 802.11n HT 40 MHz mode / 5270 MHz

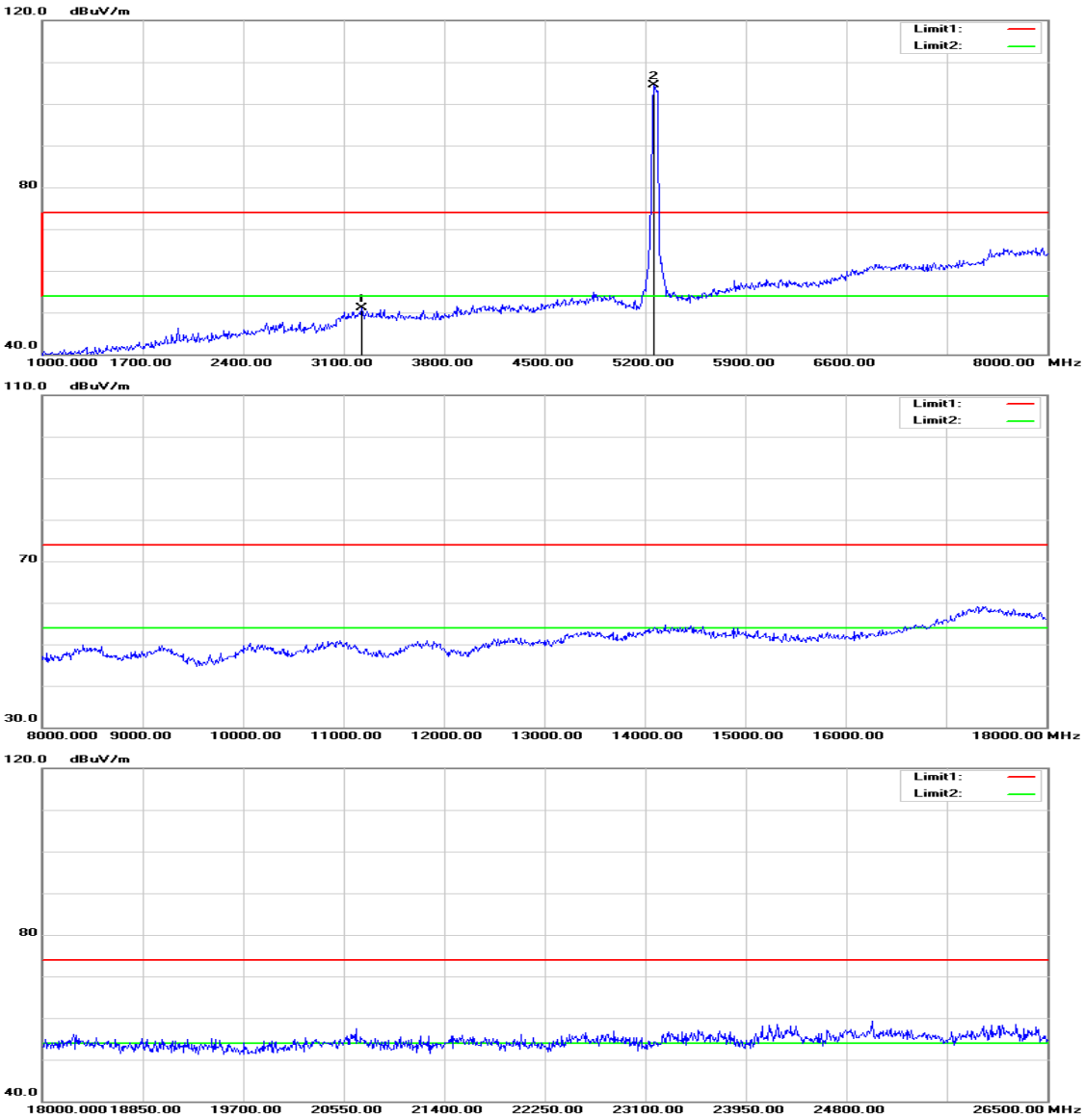
Polarity: Vertical







Polarity: Horizontal



Operation Mode:	Tx / IEEE 802.11n HT 40 MHz mode / 5270 MHz	**Test Date:**	August 25, 2015
Temperature:	27℃	**Tested by:**	Jason Lu
Humidity:	53% RH	**Polarity:**	Ver. / Hor.

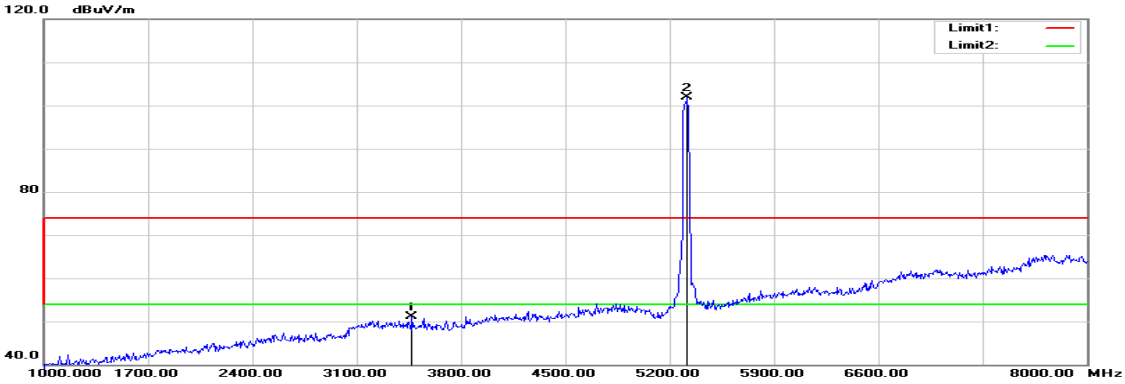
Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Pol. (H/V)
3408.000	52.52	-1.13	51.39	74.00	-22.61	peak	V
N/A							
3226.000	52.65	-1.57	51.08	74.00	-22.92	peak	H
N/A							

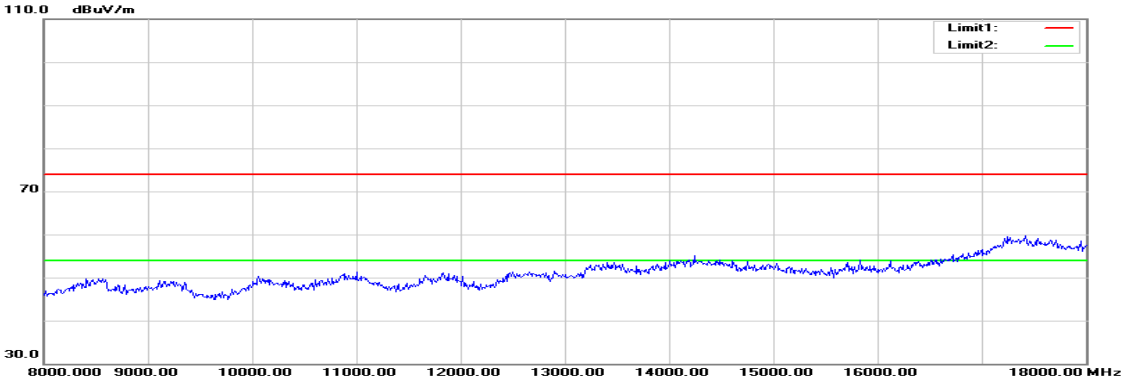
Remark:

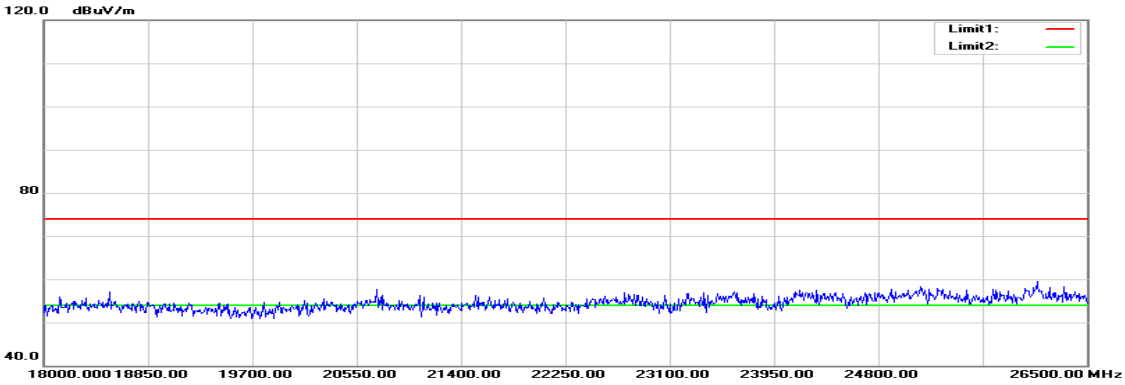
1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average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

Tx / IEEE 802.11n HT 40 MHz mode / 5310 MHz

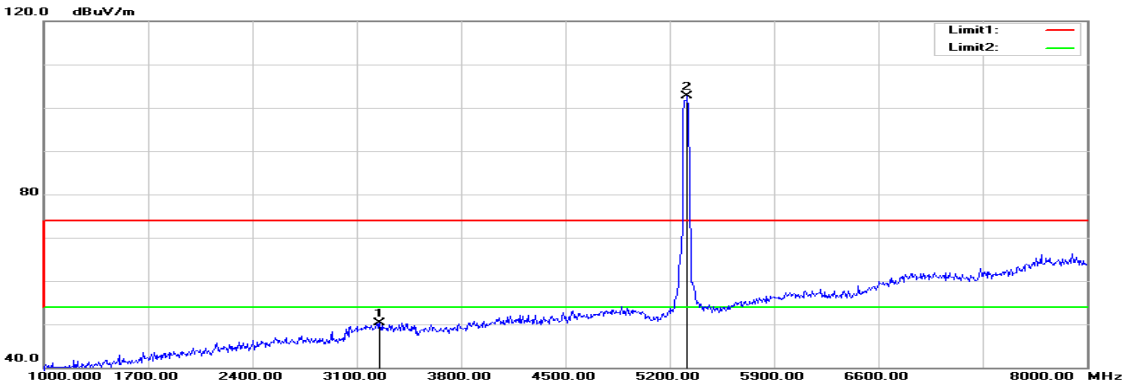
Polarity: Vertical

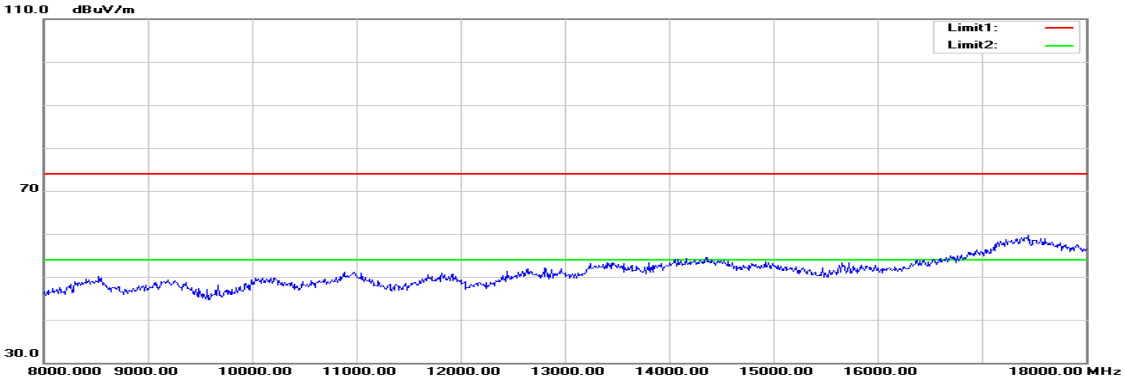


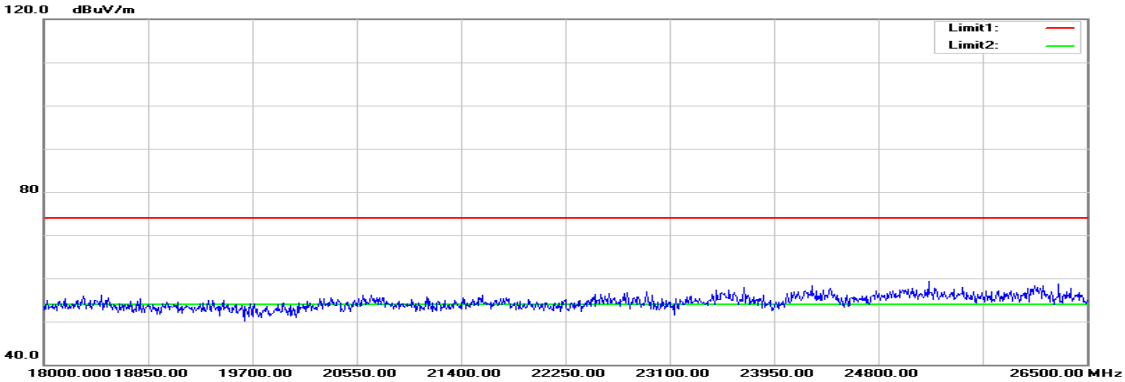




Polarity: Horizontal







Operation Mode:	Tx / IEEE 802.11n HT 40 MHz mode / 5310 MHz	**Test Date:**	August 25, 2015
Temperature:	27℃	**Tested by:**	Jason Lu
Humidity:	53% RH	**Polarity:**	Ver. / Hor.

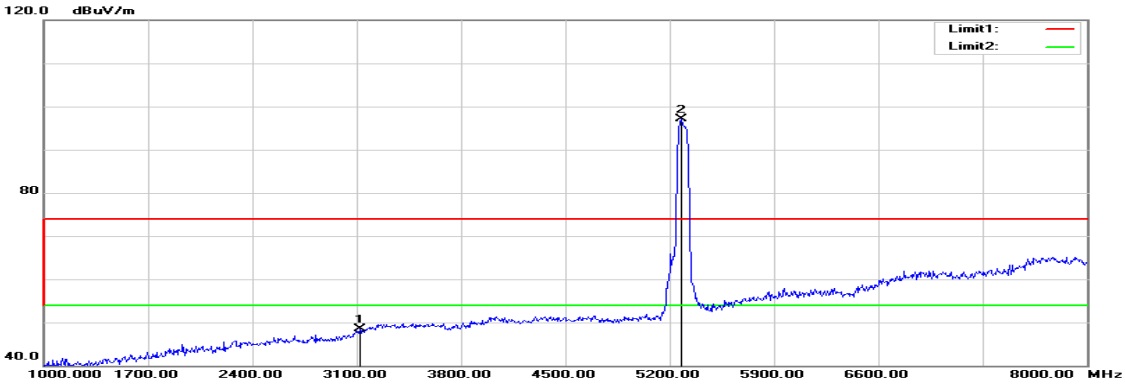
Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Pol. (H/V)
3471.000	52.13	-0.98	51.15	74.00	-22.85	peak	V
N/A							
3254.000	51.81	-1.50	50.31	74.00	-23.69	peak	H
N/A							

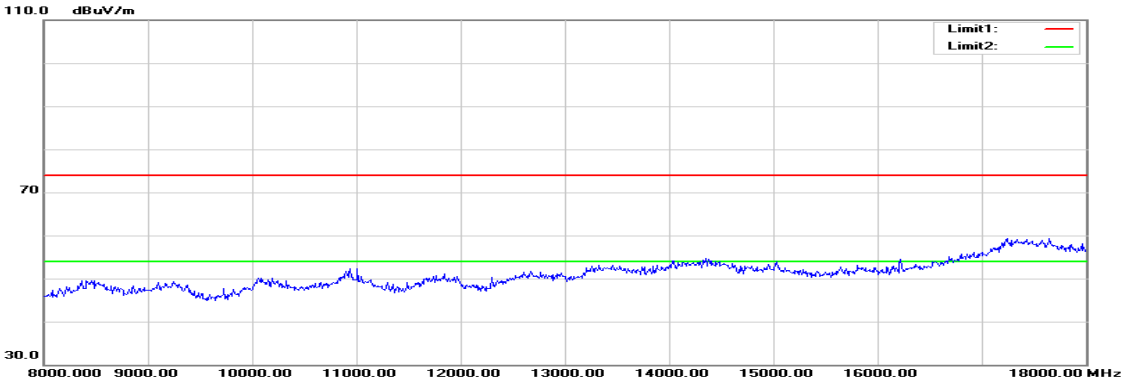
Remark:

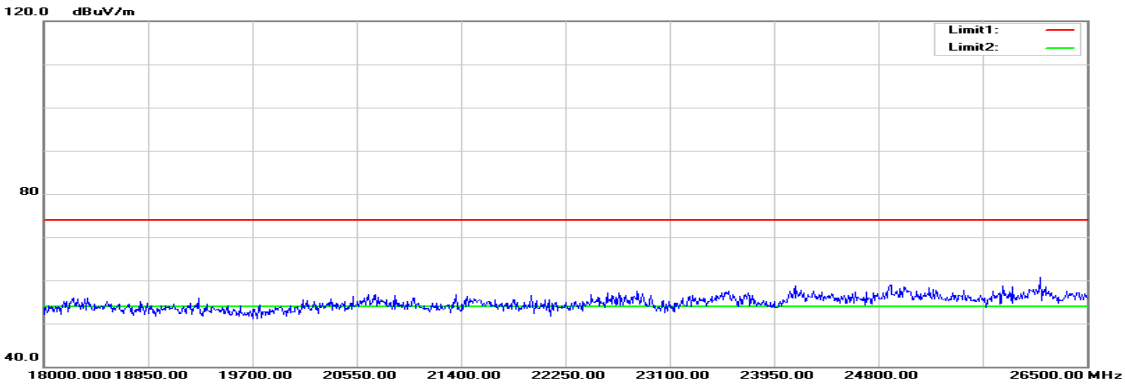
1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average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

Tx / IEEE 802.11ac VHT 80 MHz mode / 5290 MHz

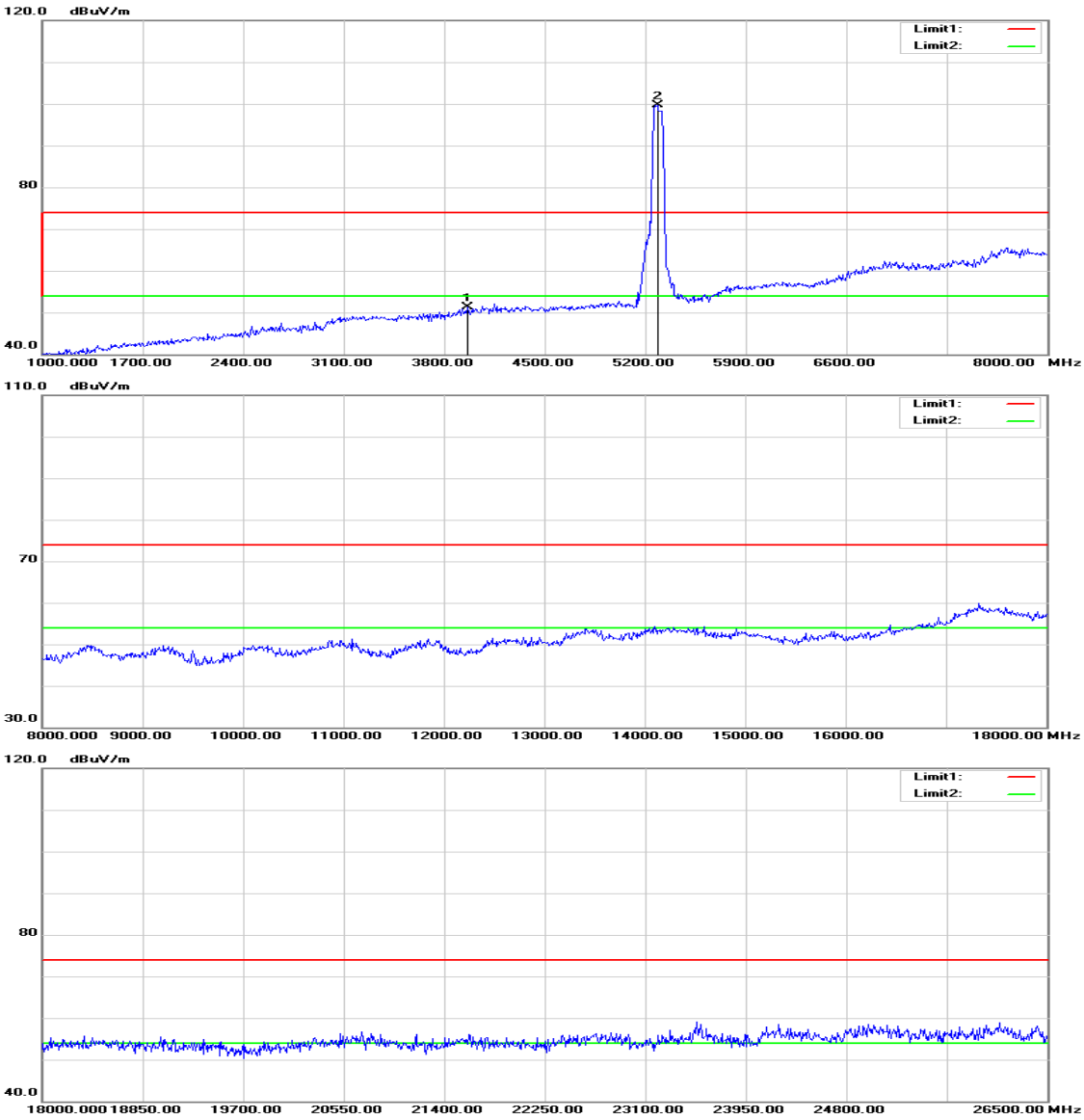
Polarity: Vertical







Polarity: Horizontal



Operation Mode:	Tx / IEEE 802.11ac VHT 80 MHz mode / 5290 MHz	**Test Date:**	August 25, 2015
Temperature:	27℃	**Tested by:**	Jason Lu
Humidity:	53% RH	**Polarity:**	Ver. / Hor.

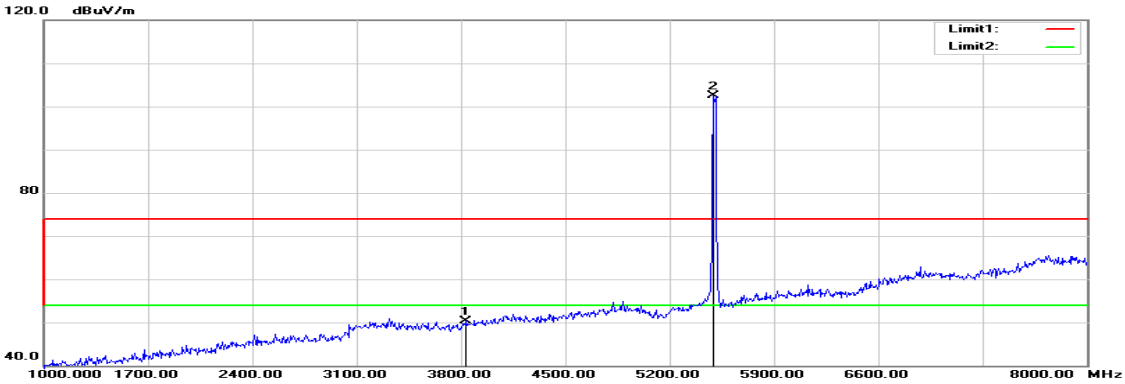
Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Pol. (H/V)
3121.000	50.23	-1.82	48.41	74.00	-25.59	peak	V
N/A							
3961.000	50.22	1.06	51.28	74.00	-22.72	peak	H
N/A							

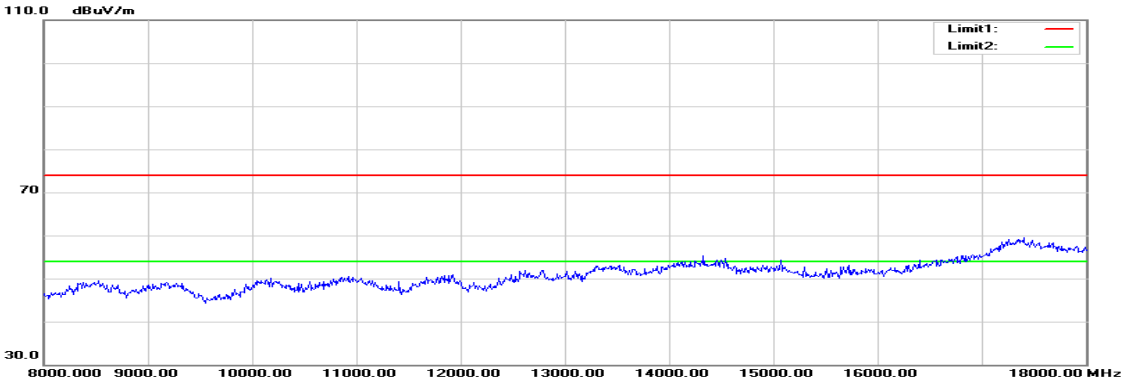
Remark:

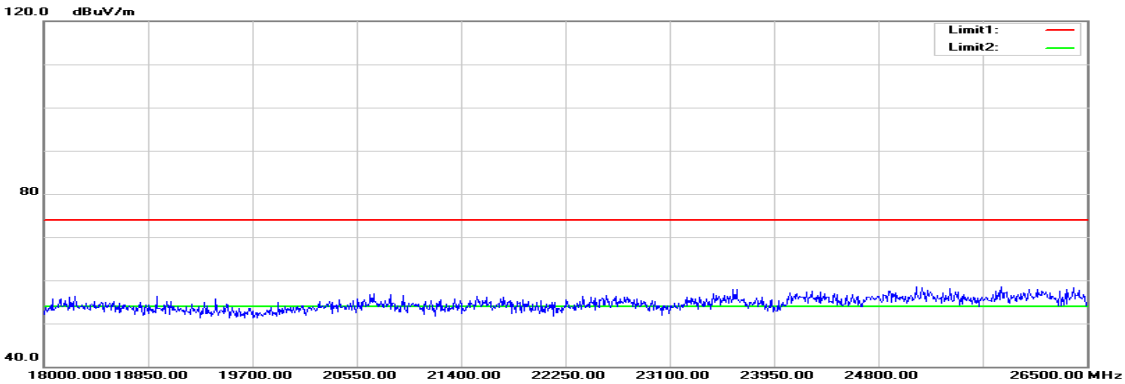
1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average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

Tx / IEEE 802.11a mode / 5500 MHz

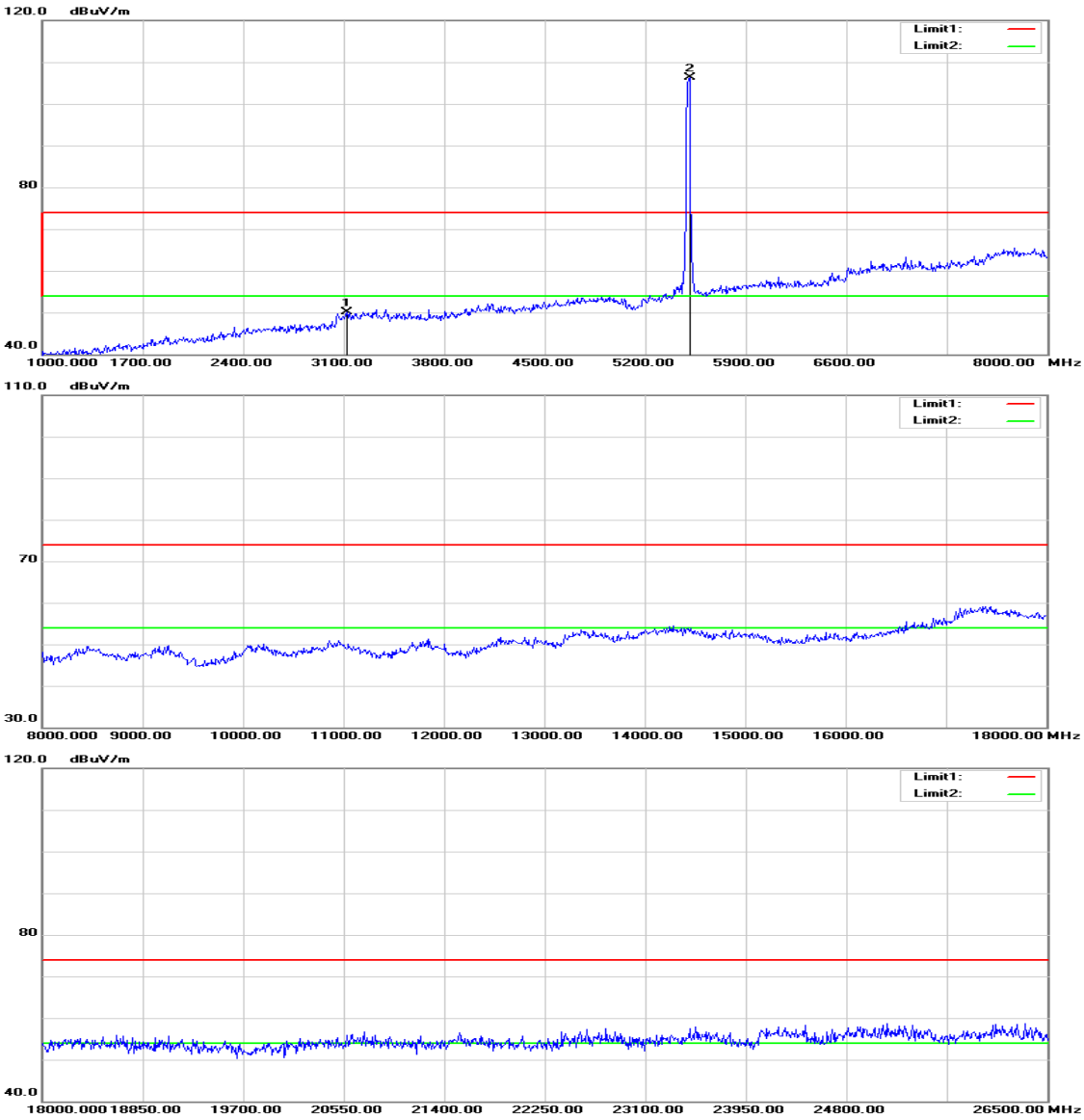
Polarity: Vertical







Polarity: Horizontal



Operation Mode:	Tx / IEEE 802.11a mode / 5500 MHz	**Test Date:**	August 25, 2015
Temperature:	27℃	**Tested by:**	Jason Lu
Humidity:	53% RH	**Polarity:**	Ver. / Hor.

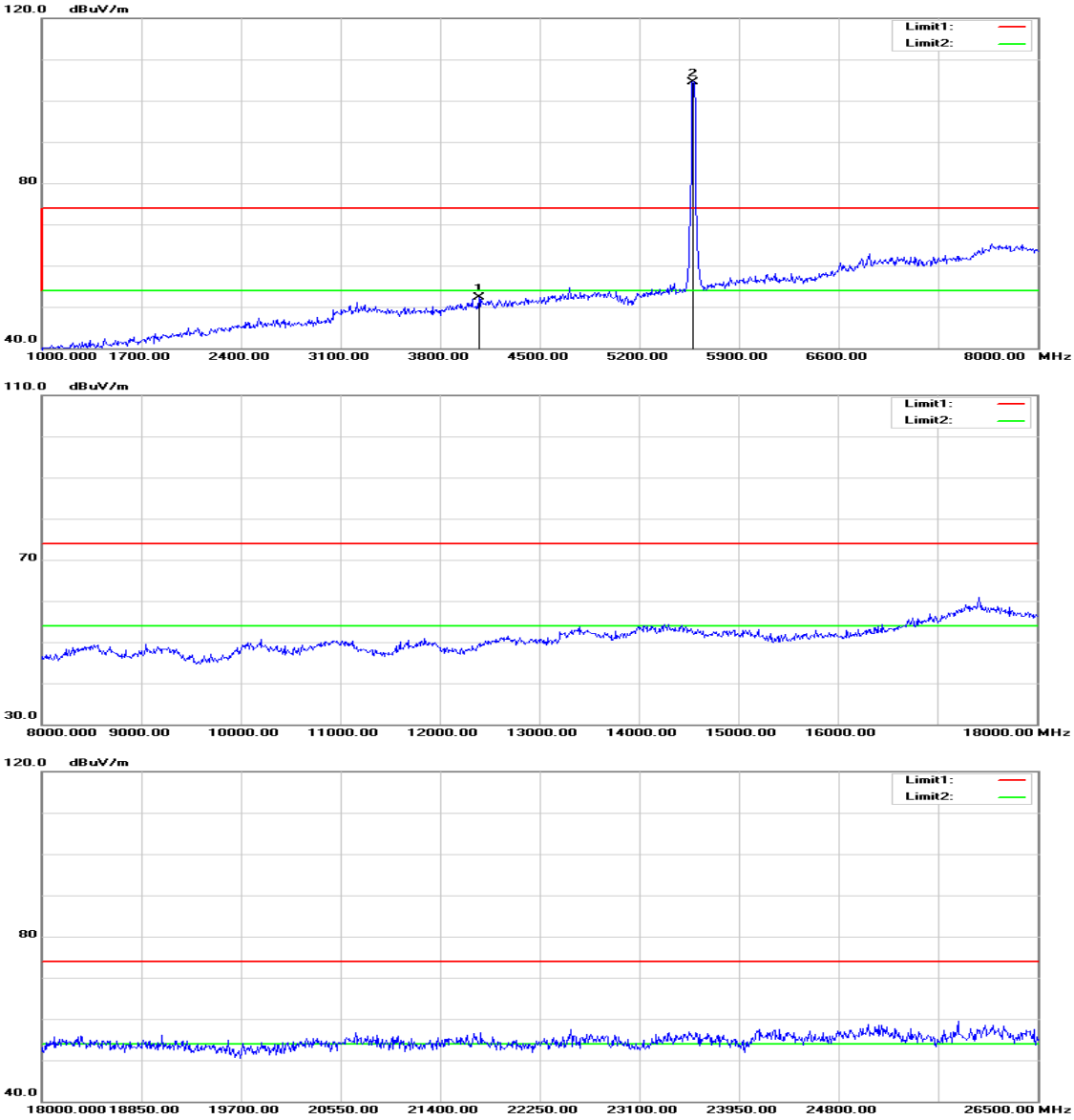
Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Pol. (H/V)
3835.000	49.88	0.52	50.40	74.00	-23.60	peak	V
N/A							
3121.000	51.92	-1.82	50.10	74.00	-23.90	peak	H
N/A							

Remark:

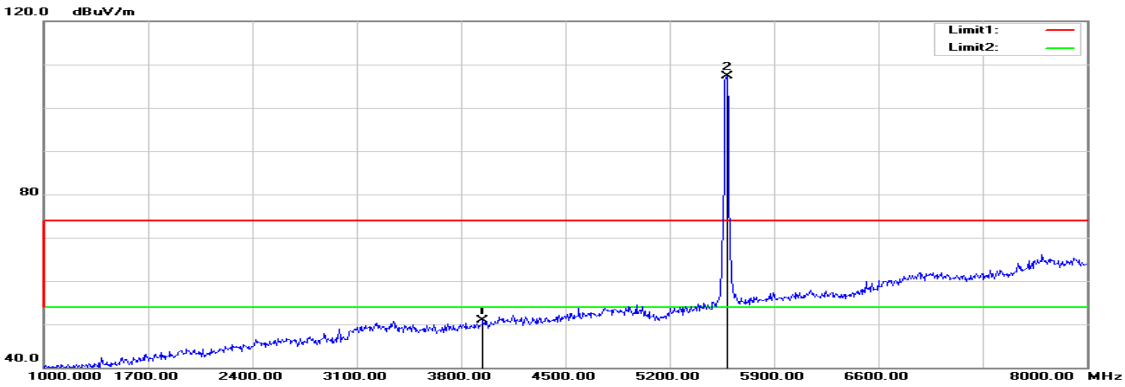
1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average 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).*

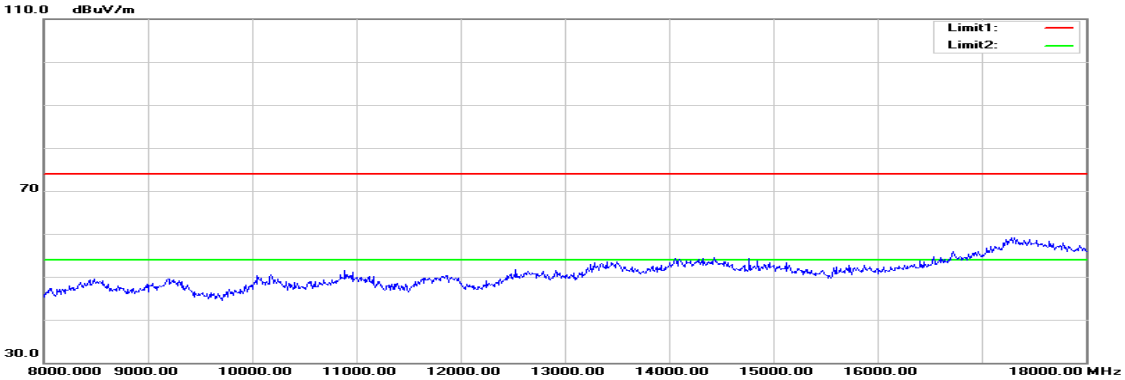
Tx / IEEE 802.11a mode / 5580 MHz

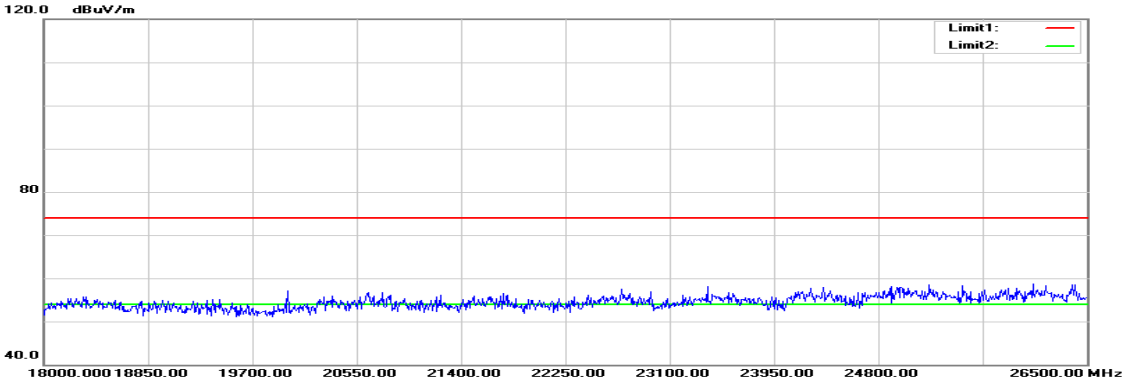
Polarity: Vertical



Polarity: Horizontal







Operation Mode:	Tx / IEEE 802.11a mode / 5580 MHz	**Test Date:**	August 25, 2015
Temperature:	27℃	**Tested by:**	Jason Lu
Humidity:	53% RH	**Polarity:**	Ver. / Hor.

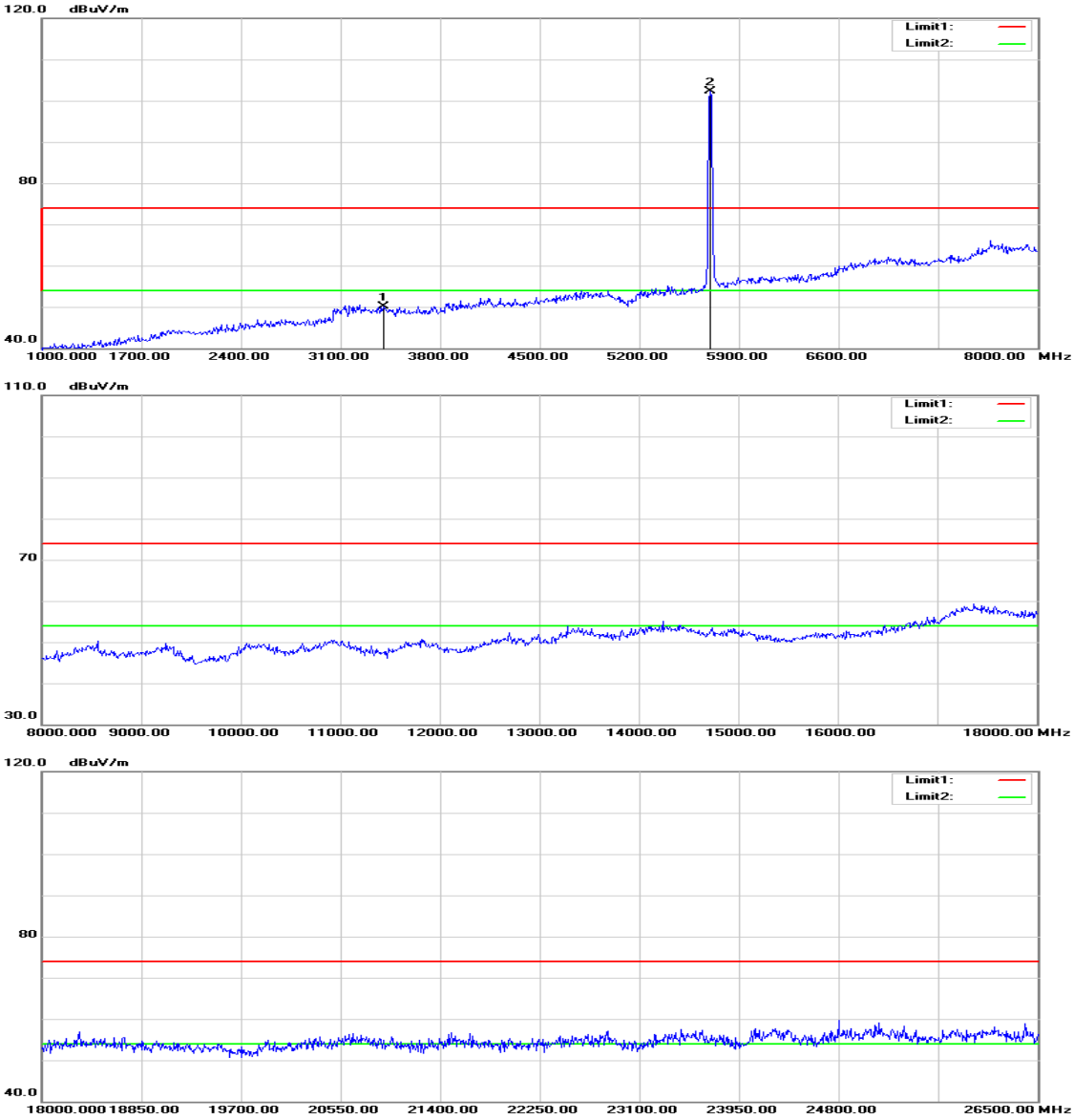
Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Pol. (H/V)
4073.000	50.82	1.51	52.33	74.00	-21.67	peak	V
N/A							
3947.000	49.91	1.00	50.91	74.00	-23.09	peak	H
N/A							

Remark:

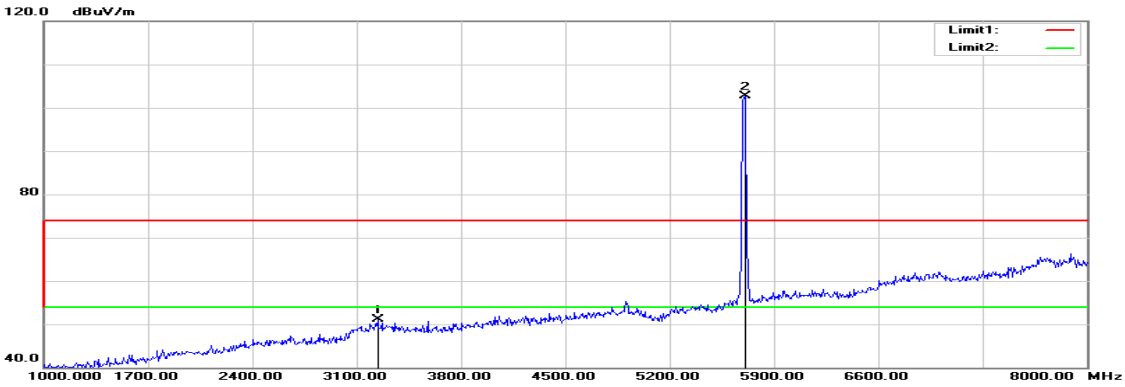
1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average 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).*

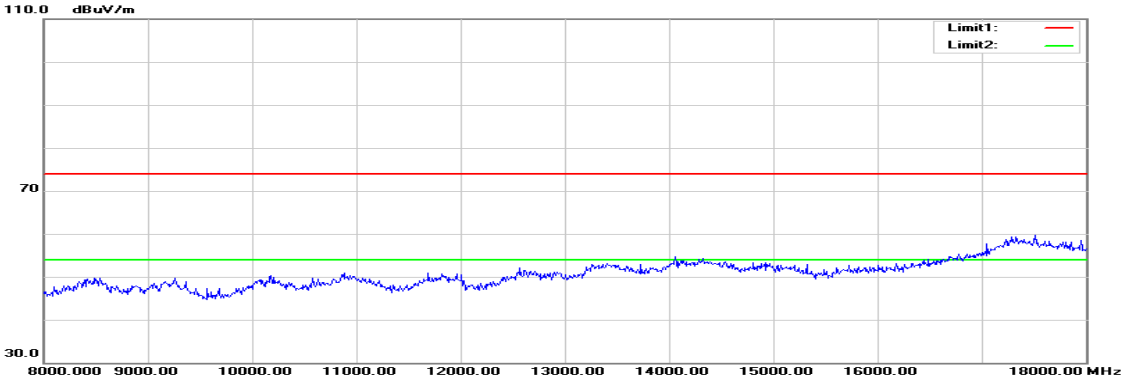
Tx / IEEE 802.11a mode / 5700 MHz

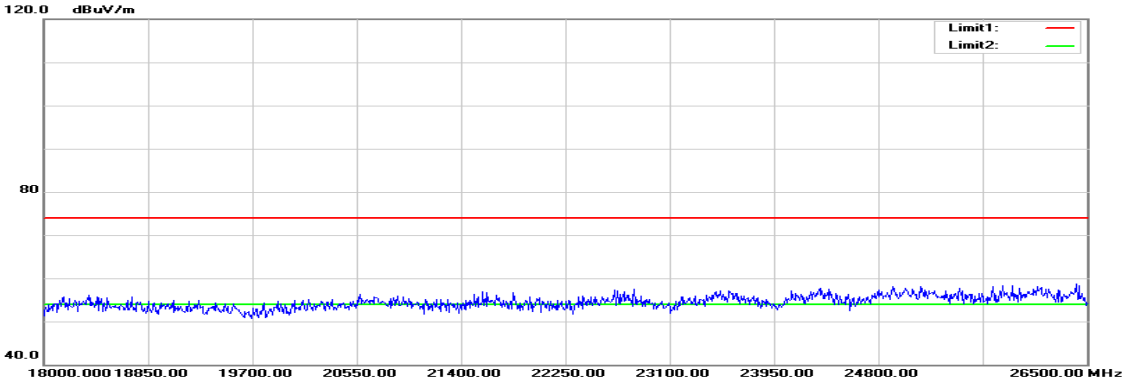
Polarity: Vertical



Polarity: Horizontal







Operation Mode:	Tx / IEEE 802.11a mode / 5700 MHz	**Test Date:**	August 25, 2015
Temperature:	27℃	**Tested by:**	Jason Lu
Humidity:	53% RH	**Polarity:**	Ver. / Hor.

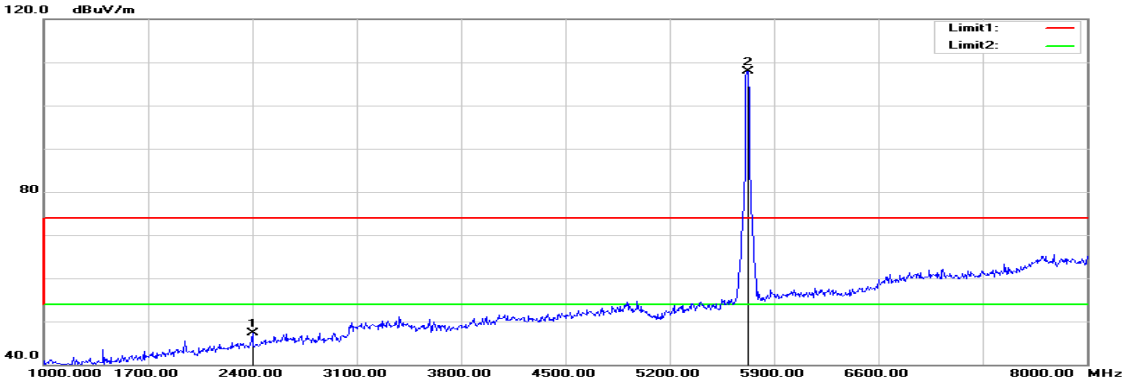
Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Pol. (H/V)
3401.000	51.34	-1.15	50.19	74.00	-23.81	peak	V
N/A							
3240.000	52.65	-1.53	51.12	74.00	-22.88	peak	H
N/A							

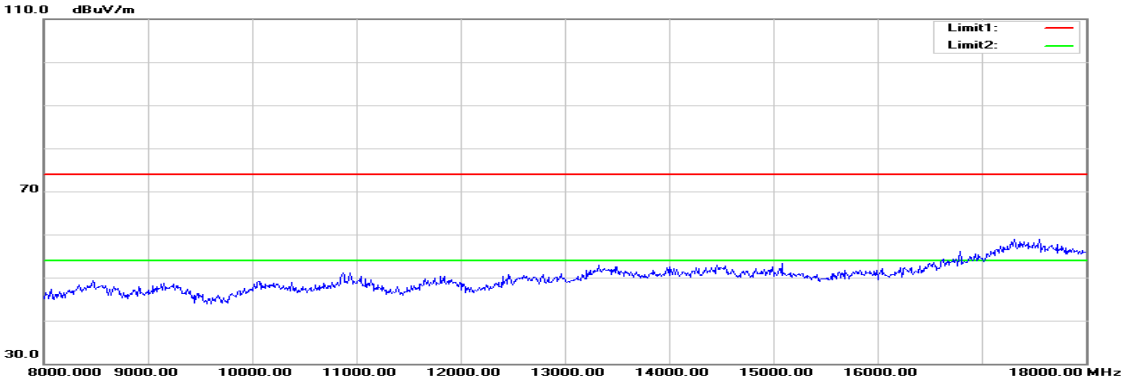
Remark:

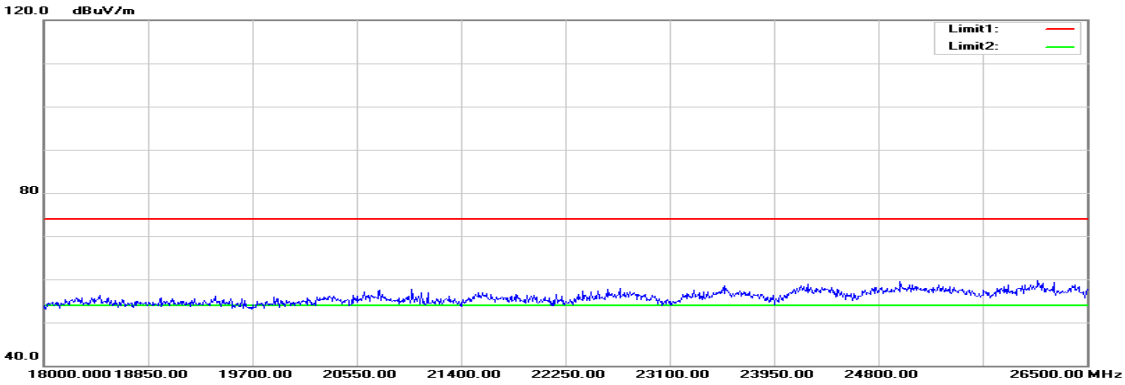
1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average 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).*

Tx / IEEE 802.11a mode / 5720 MHz

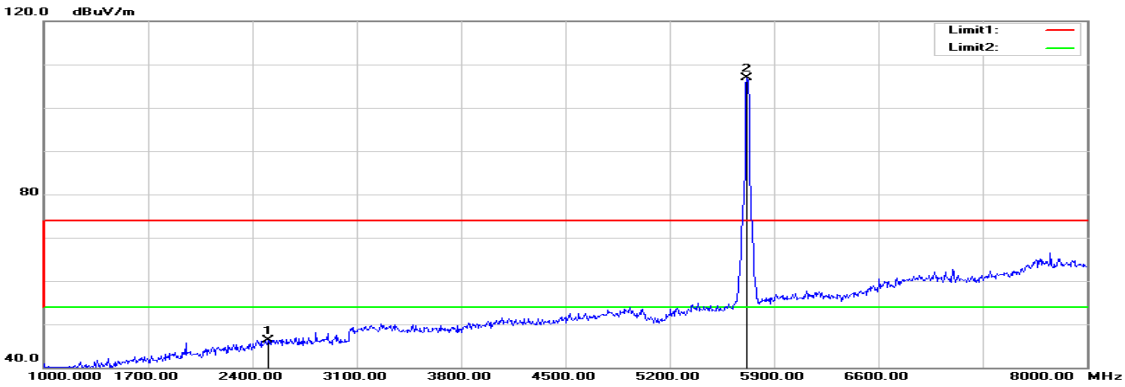
Polarity: Vertical

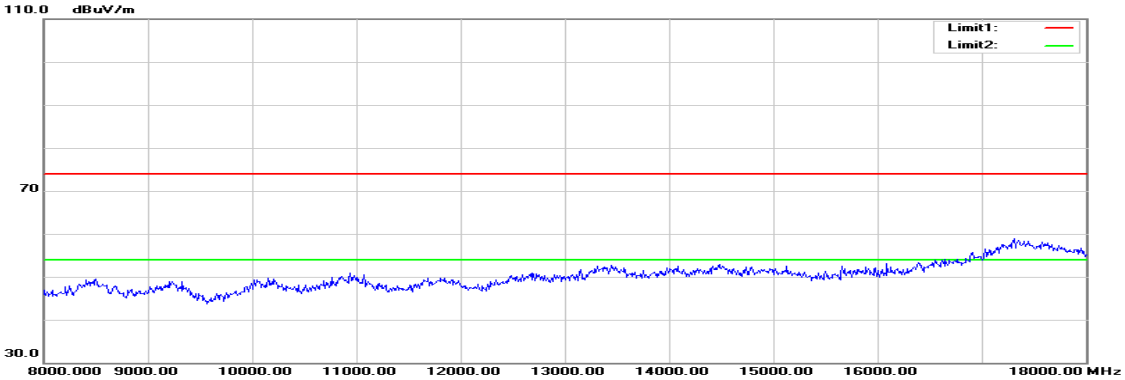


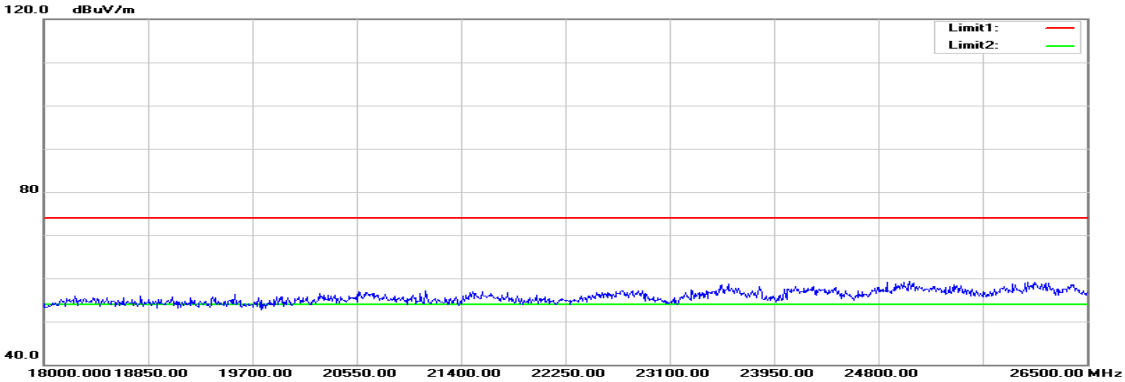




Polarity: Horizontal







Operation Mode:	Tx / IEEE 802.11a mode / 5720 MHz	**Test Date:**	August 25, 2015
Temperature:	27℃	**Tested by:**	Jason Lu
Humidity:	53% RH	**Polarity:**	Ver. / Hor.

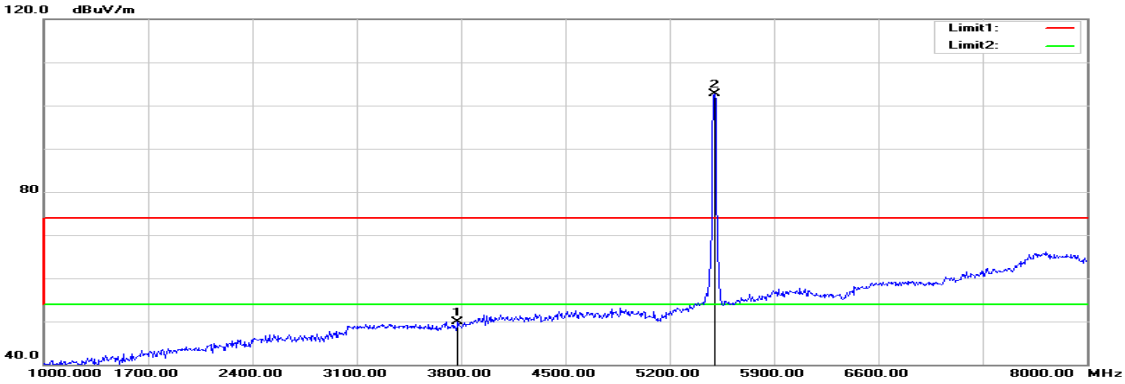
Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Pol. (H/V)
2400.000	50.90	-3.69	47.21	74.00	-26.79	peak	V
N/A							
2505.000	49.48	-3.11	46.37	74.00	-27.63	peak	H
N/A							

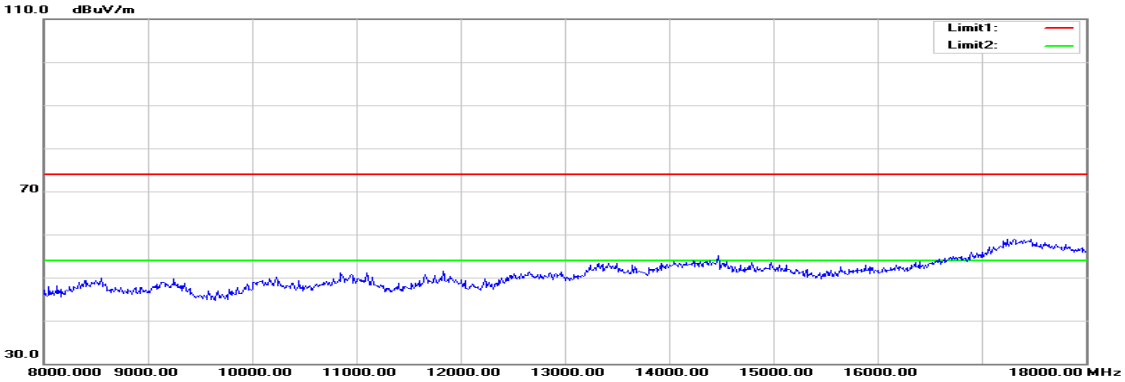
Remark:

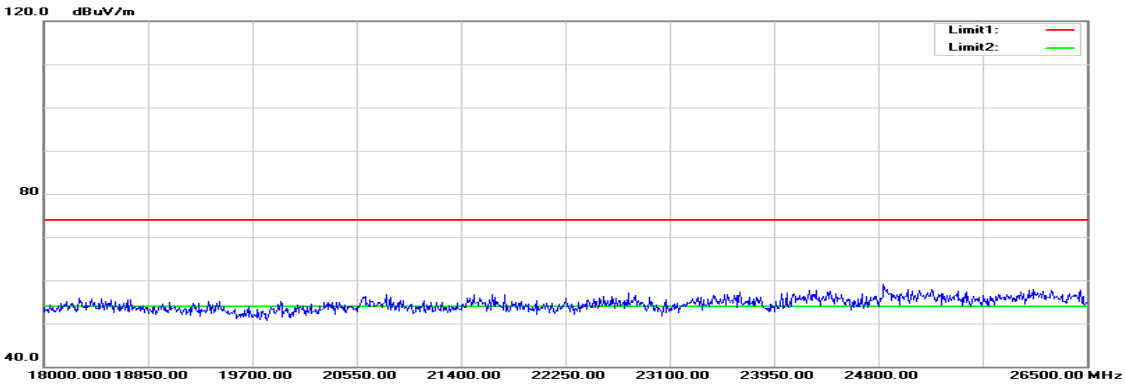
1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average 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).*

Tx / IEEE 802.11n HT 20 MHz Channel mode / 5500 MHz

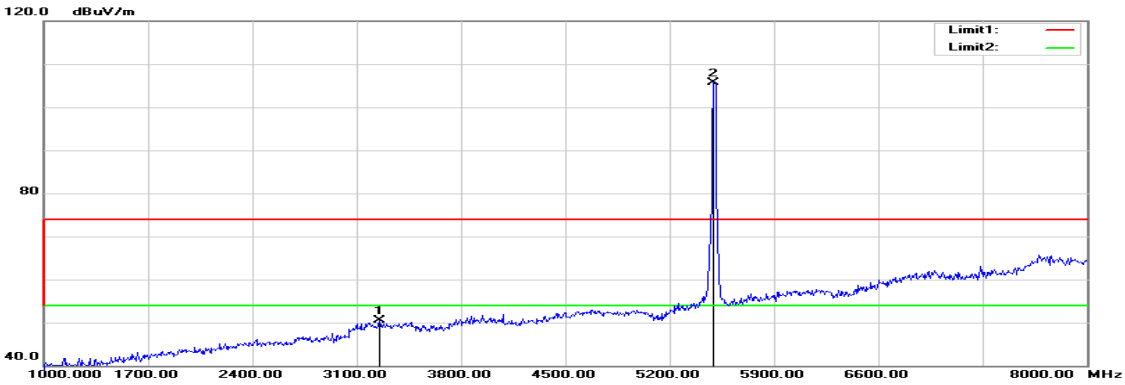
Polarity: Vertical

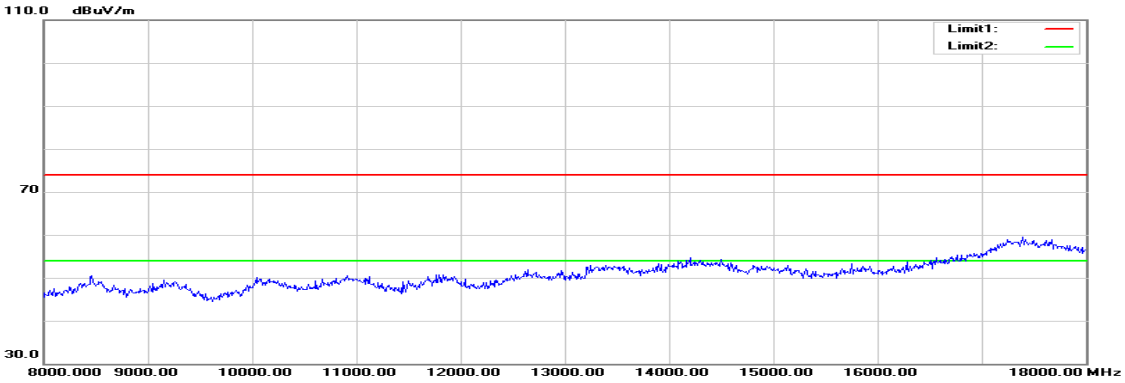


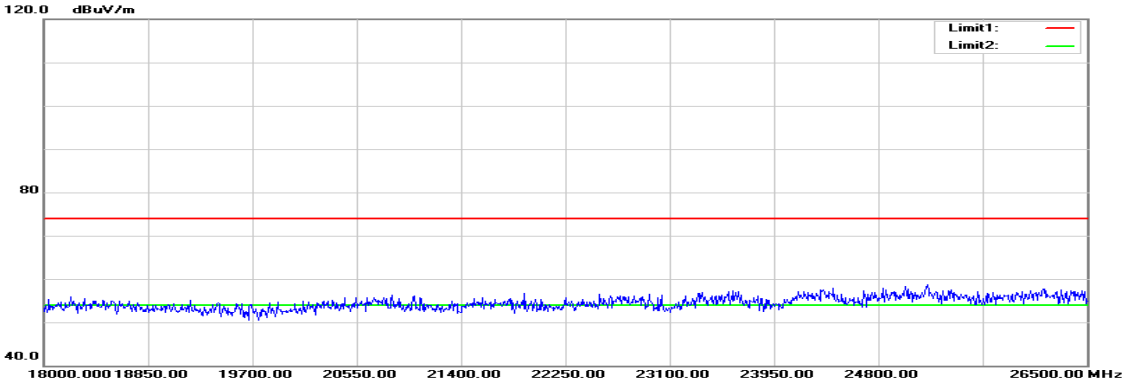




Polarity: Horizontal







Operation Mode:	Tx / IEEE 802.11n HT 20 MHz Channel mode / 5500 MHz	**Test Date:**	August 25, 2015
Temperature:	27℃	**Tested by:**	Jason Lu
Humidity:	53% RH	**Polarity:**	Ver. / Hor.

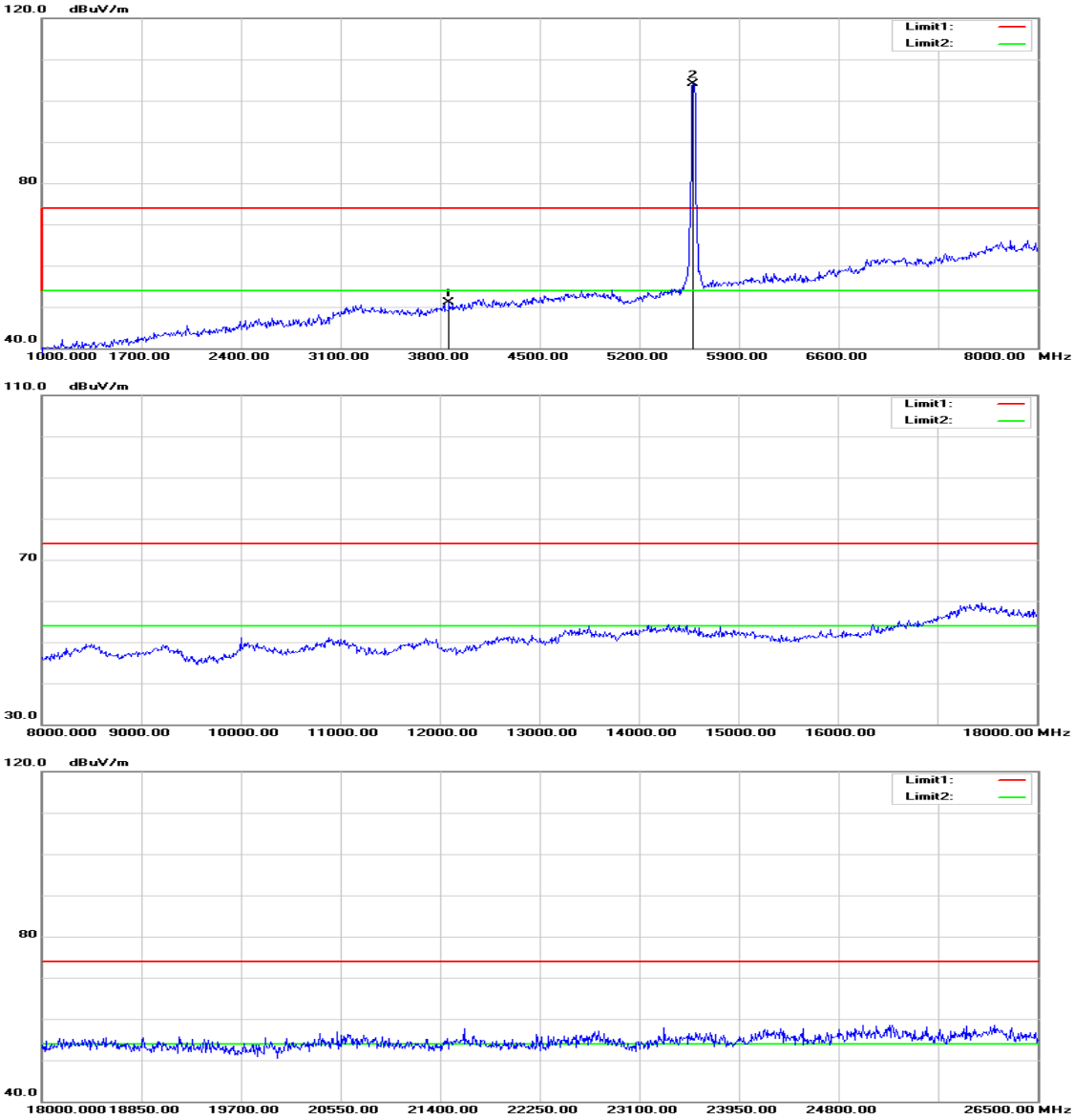
Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Pol. (H/V)
3779.000	49.70	0.28	49.98	74.00	-24.02	peak	V
N/A							
3254.000	52.02	-1.50	50.52	74.00	-23.48	peak	H
N/A							

Remark:

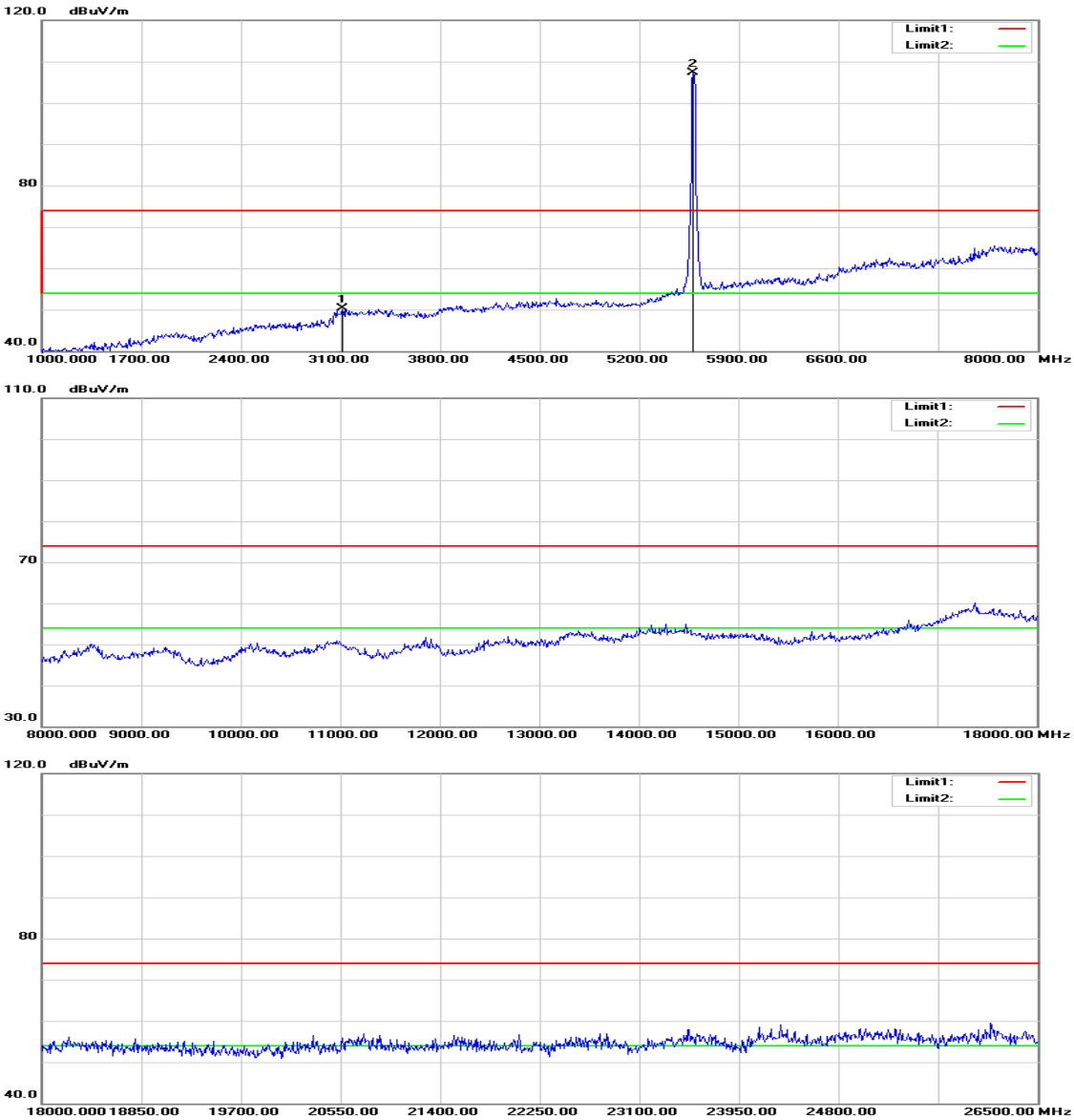
1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average 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).*

Tx / IEEE 802.11n HT 20 MHz Channel mode / 5580 MHz

Polarity: Vertical



Polarity: Horizontal



Operation Mode:	Tx / IEEE 802.11n HT 20 MHz Channel mode / 5580 MHz	**Test Date:**	August 25, 2015
Temperature:	27℃	**Tested by:**	Jason Lu
Humidity:	53% RH	**Polarity:**	Ver. / Hor.

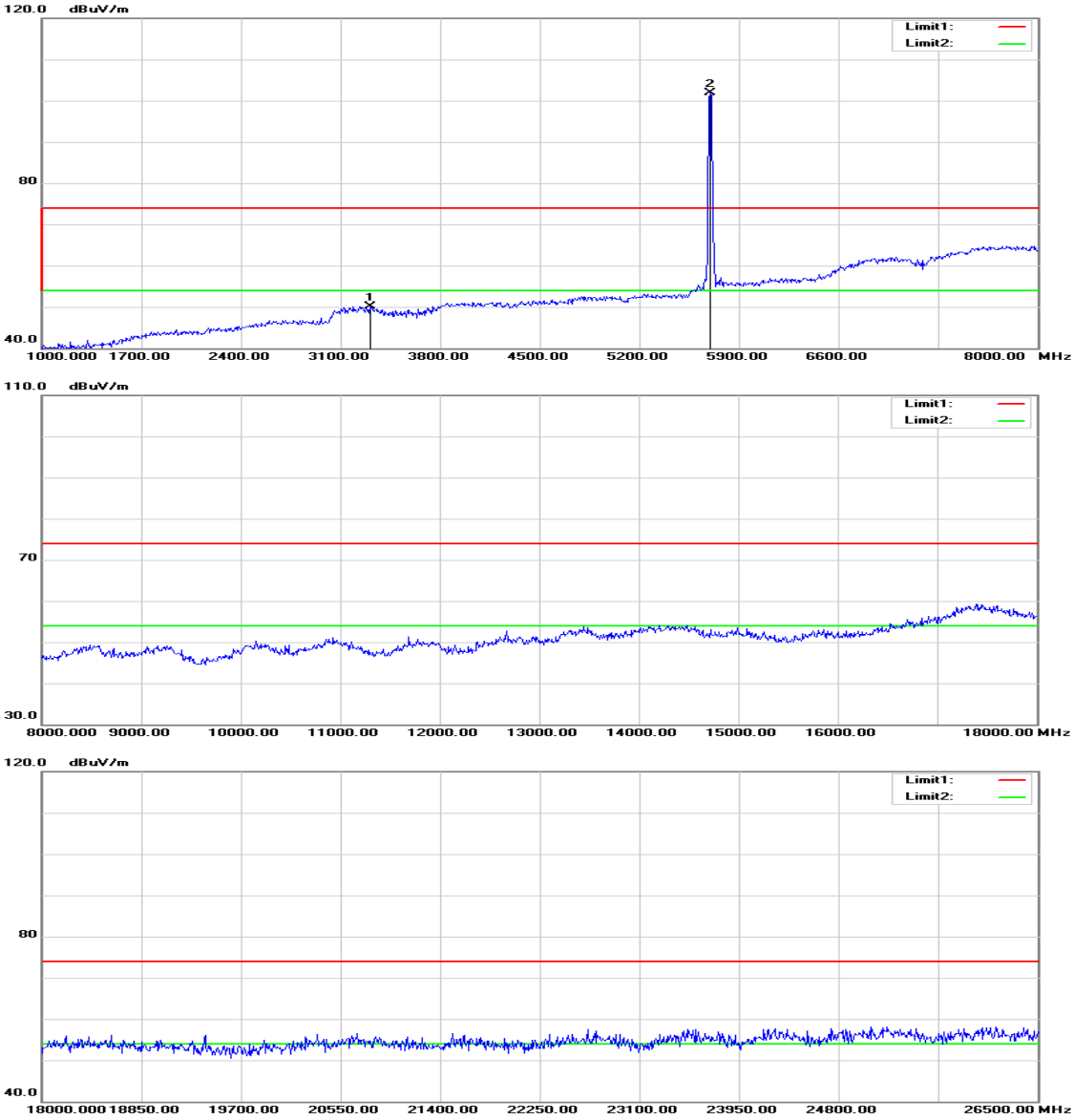
Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Pol. (H/V)
3863.000	50.46	0.64	51.10	74.00	-22.90	peak	V
N/A							
3114.000	52.04	-1.84	50.20	74.00	-23.80	peak	H
N/A							

Remark:

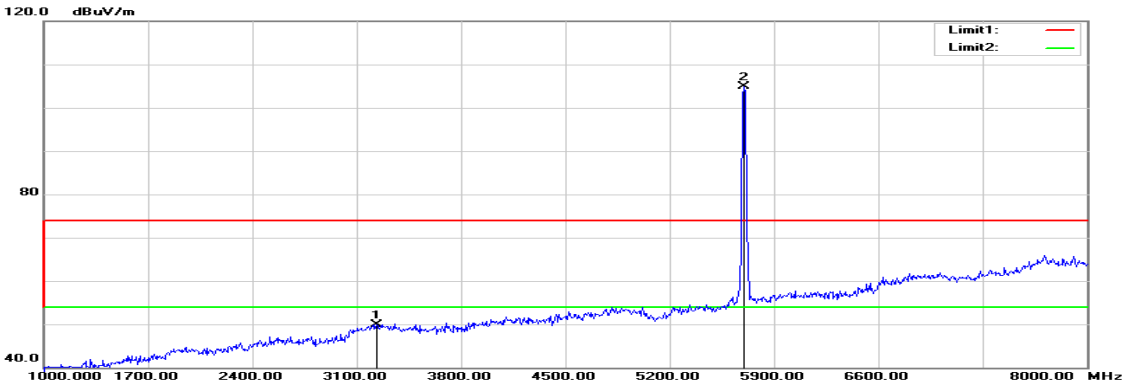
1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average 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).*

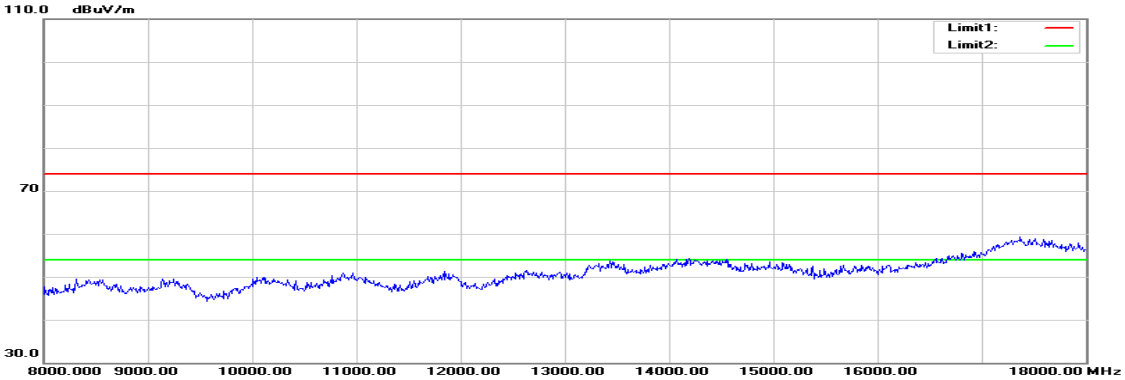
Tx / IEEE 802.11n HT 20 MHz Channel mode / 5700 MHz

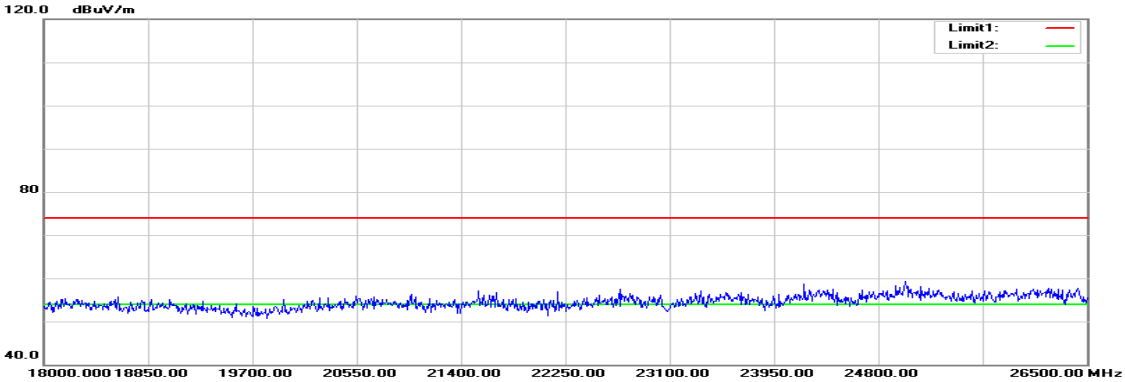
Polarity: Vertical



Polarity: Horizontal







Operation Mode:	Tx / IEEE 802.11n HT 20 MHz Channel mode / 5700 MHz	**Test Date:**	August 25, 2015
Temperature:	27℃	**Tested by:**	Jason Lu
Humidity:	53% RH	**Polarity:**	Ver. / Hor.

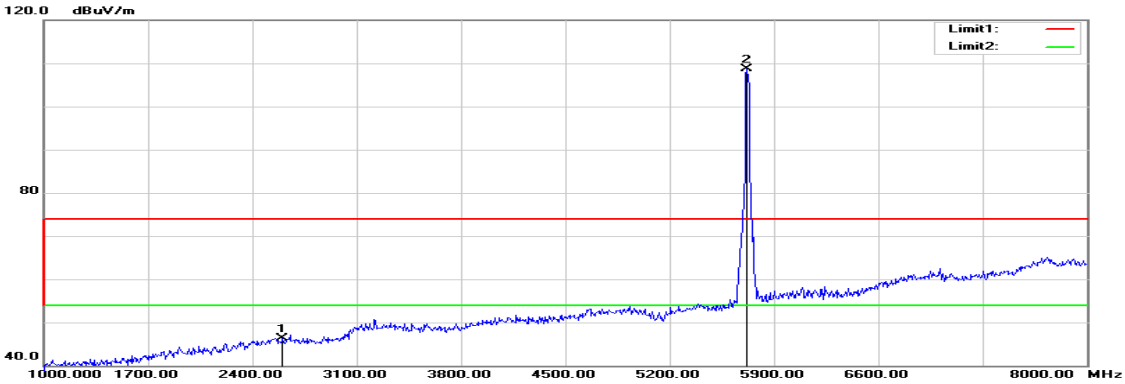
Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Pol. (H/V)
3310.000	51.50	-1.37	50.13	74.00	-23.87	peak	V
N/A							
3233.000	51.54	-1.55	49.99	74.00	-24.01	peak	H
N/A							

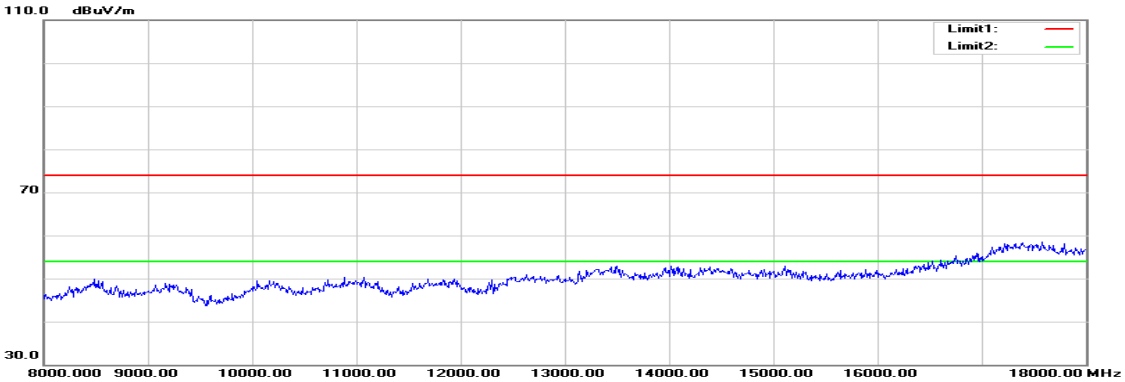
Remark:

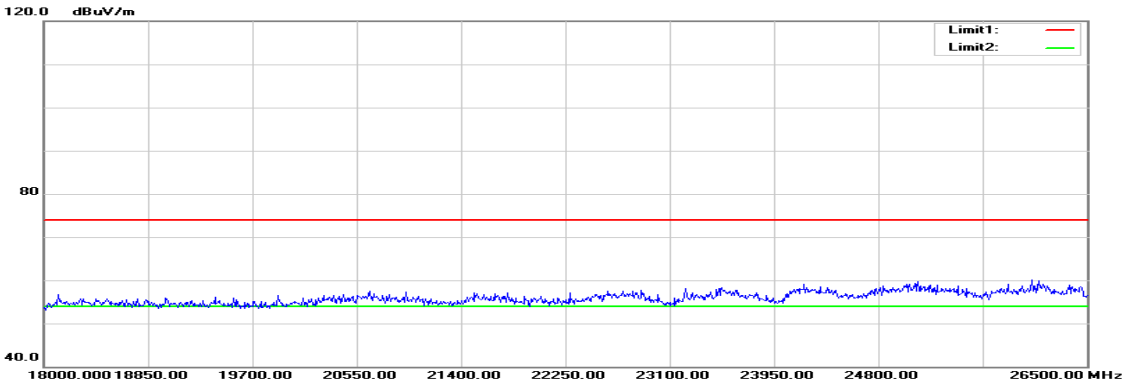
1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average 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).*

Tx / IEEE 802.11n HT 20 MHz Channel mode / 5720 MHz

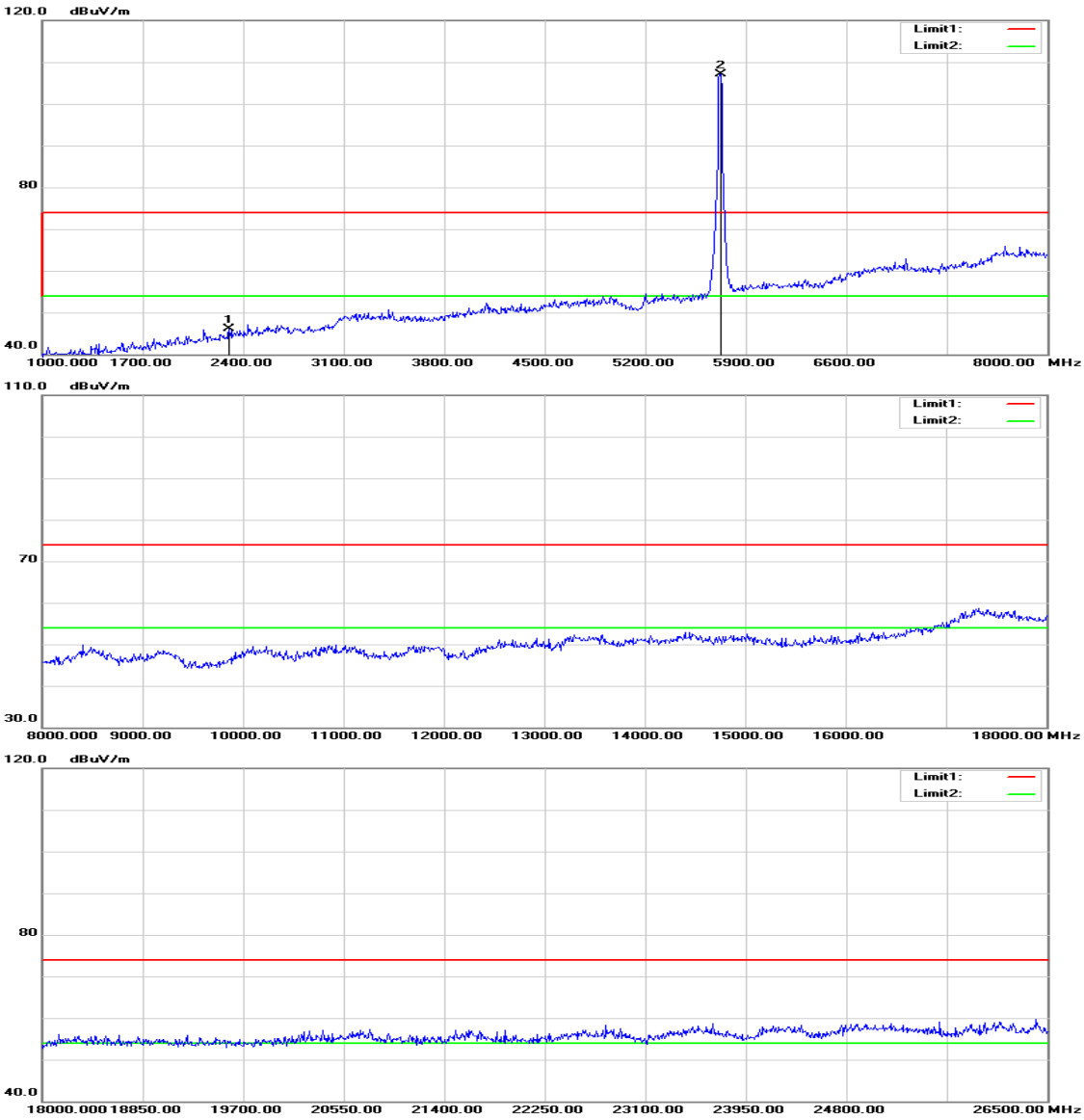
Polarity: Vertical







Polarity: Horizontal



Operation Mode:	Tx / IEEE 802.11n HT 20 MHz Channel mode / 5720 MHz	**Test Date:**	August 25, 2015
Temperature:	27℃	**Tested by:**	Jason Lu
Humidity:	53% RH	**Polarity:**	Ver. / Hor.

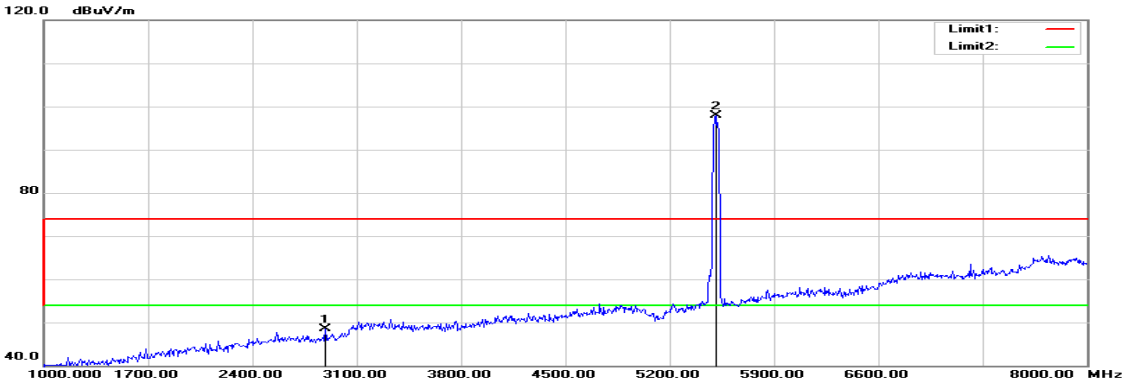
Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Pol. (H/V)
2603.000	49.30	-2.91	46.39	74.00	-27.61	peak	V
N/A							
2302.000	50.41	-4.29	46.12	74.00	-27.88	peak	H
N/A							

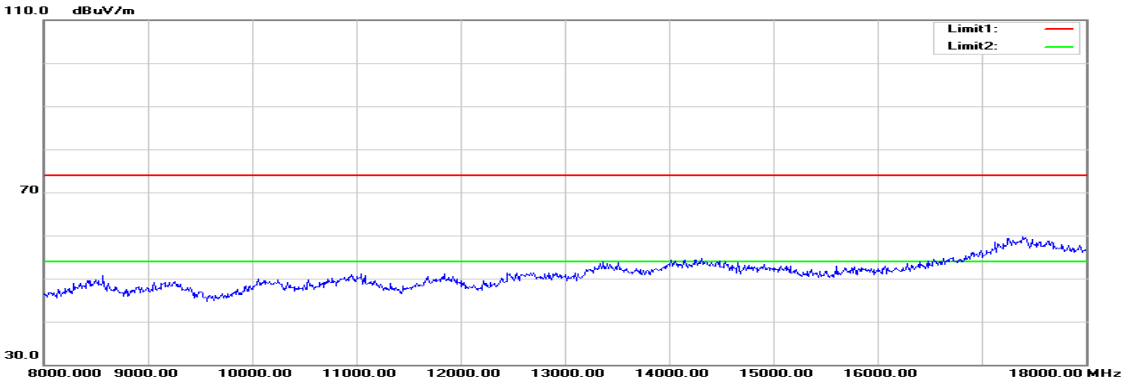
Remark:

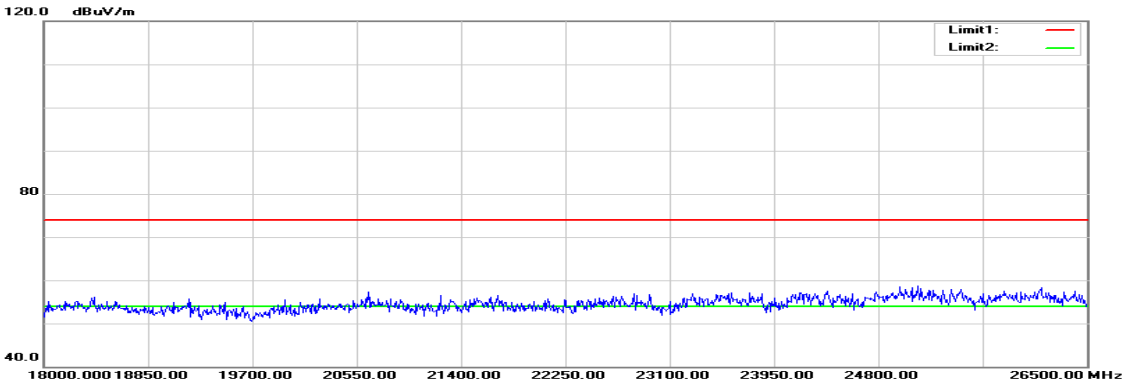
1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average 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).*

Tx / IEEE 802.11n HT 40 MHz mode / 5510 MHz

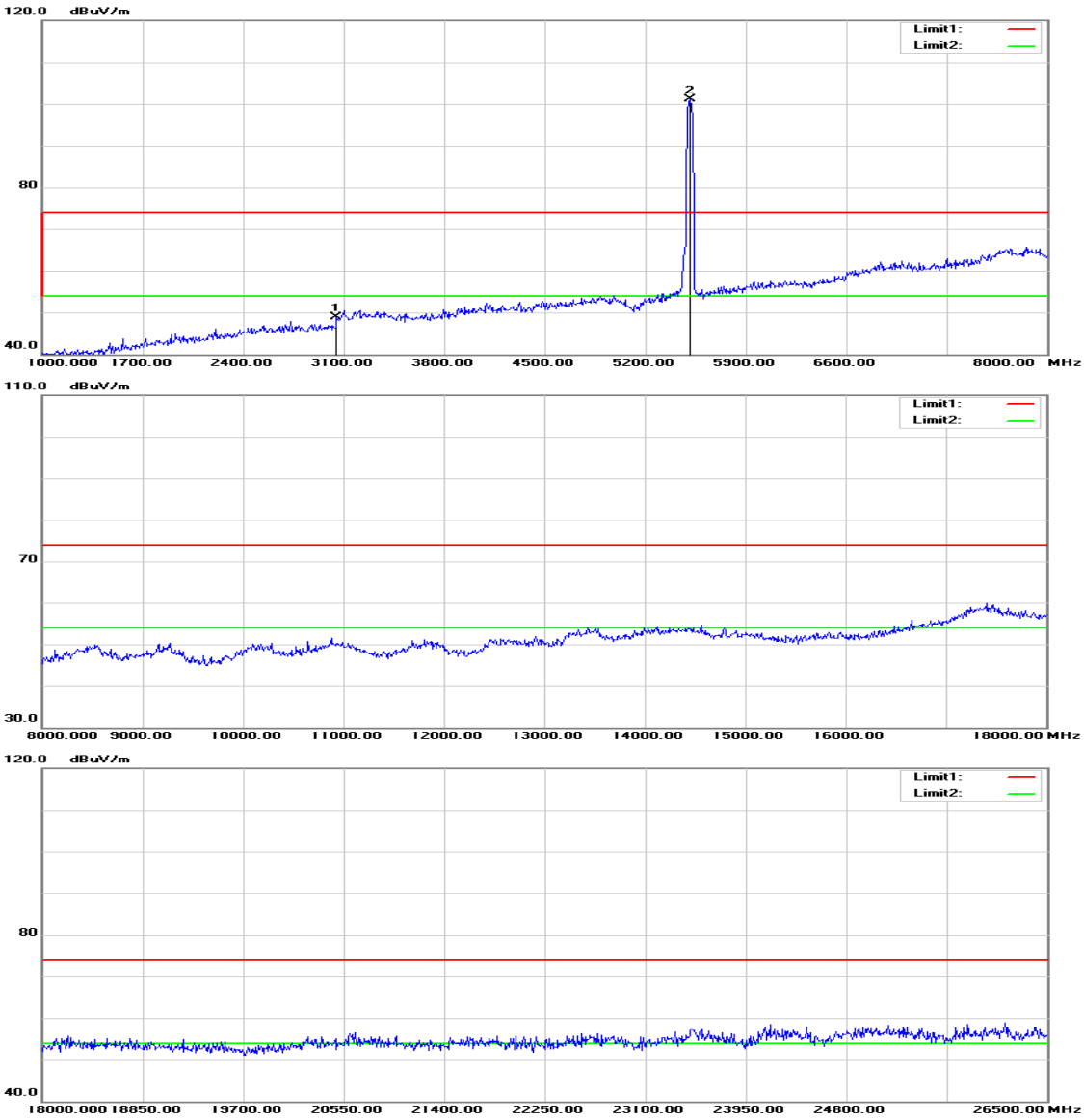
Polarity: Vertical







Polarity: Horizontal



Operation Mode:	Tx / IEEE 802.11n HT 40 MHz mode / 5510 MHz	**Test Date:**	August 25, 2015
Temperature:	27℃	**Tested by:**	Jason Lu
Humidity:	53% RH	**Polarity:**	Ver. / Hor.

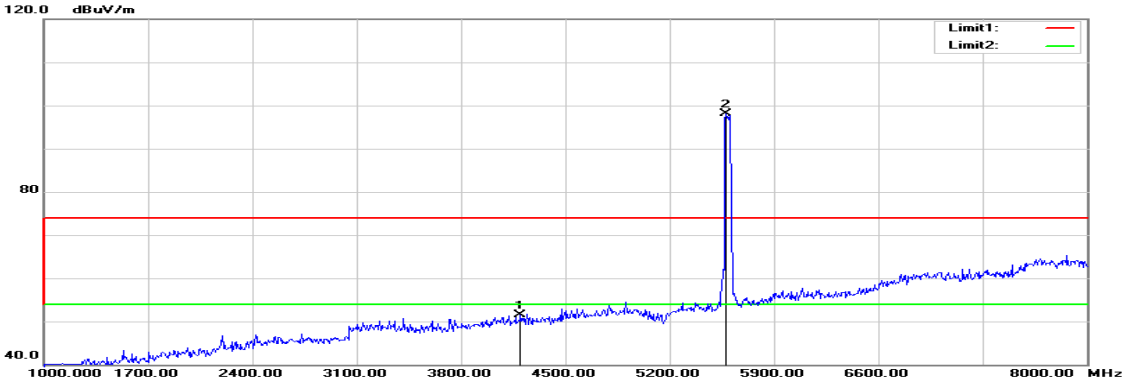
Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Pol. (H/V)
2890.000	50.87	-2.33	48.54	74.00	-25.46	peak	V
N/A							
3051.000	50.93	-1.99	48.94	74.00	-25.06	peak	H
N/A							

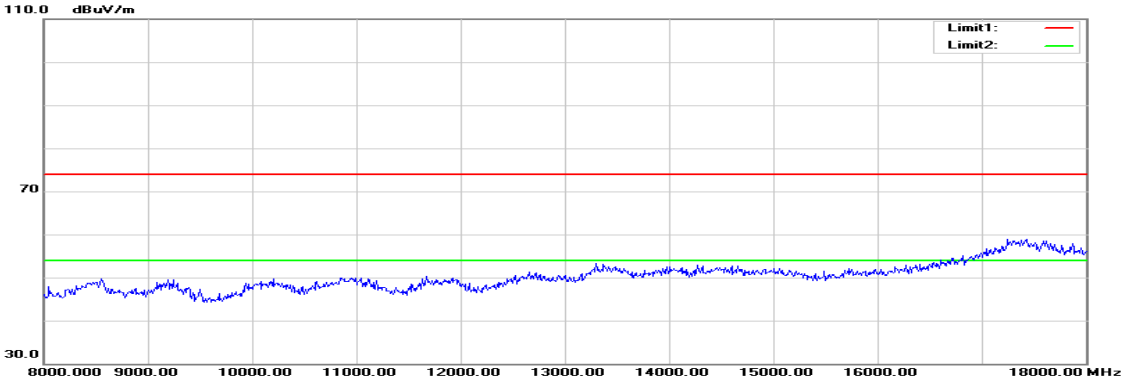
Remark:

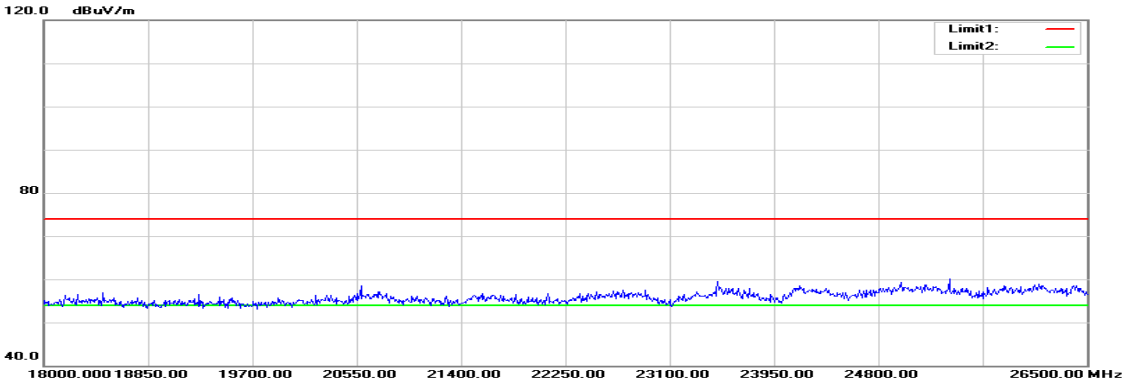
1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average 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).*

Tx / IEEE 802.11n HT 40 MHz mode / 5590 MHz

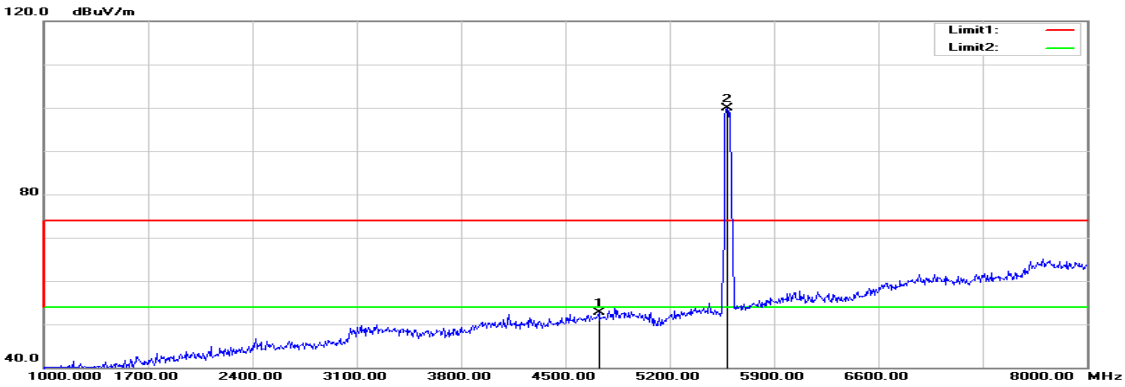
Polarity: Vertical

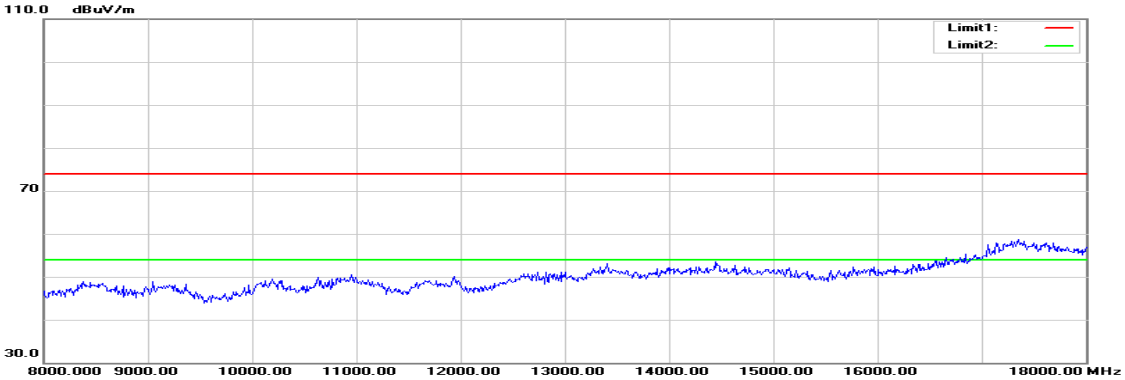


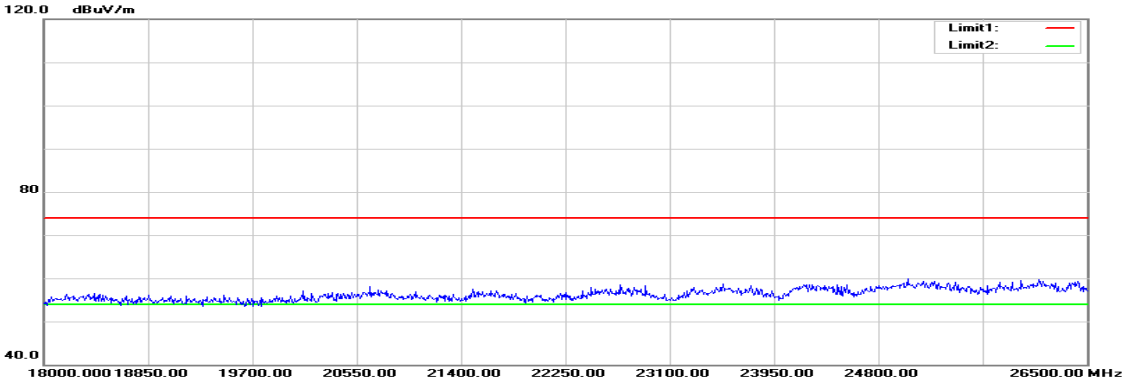




Polarity: Horizontal







Operation Mode:	Tx / IEEE 802.11n HT 40 MHz mode / 5590 MHz	**Test Date:**	August 25, 2015
Temperature:	27℃	**Tested by:**	Jason Lu
Humidity:	53% RH	**Polarity:**	Ver. / Hor.

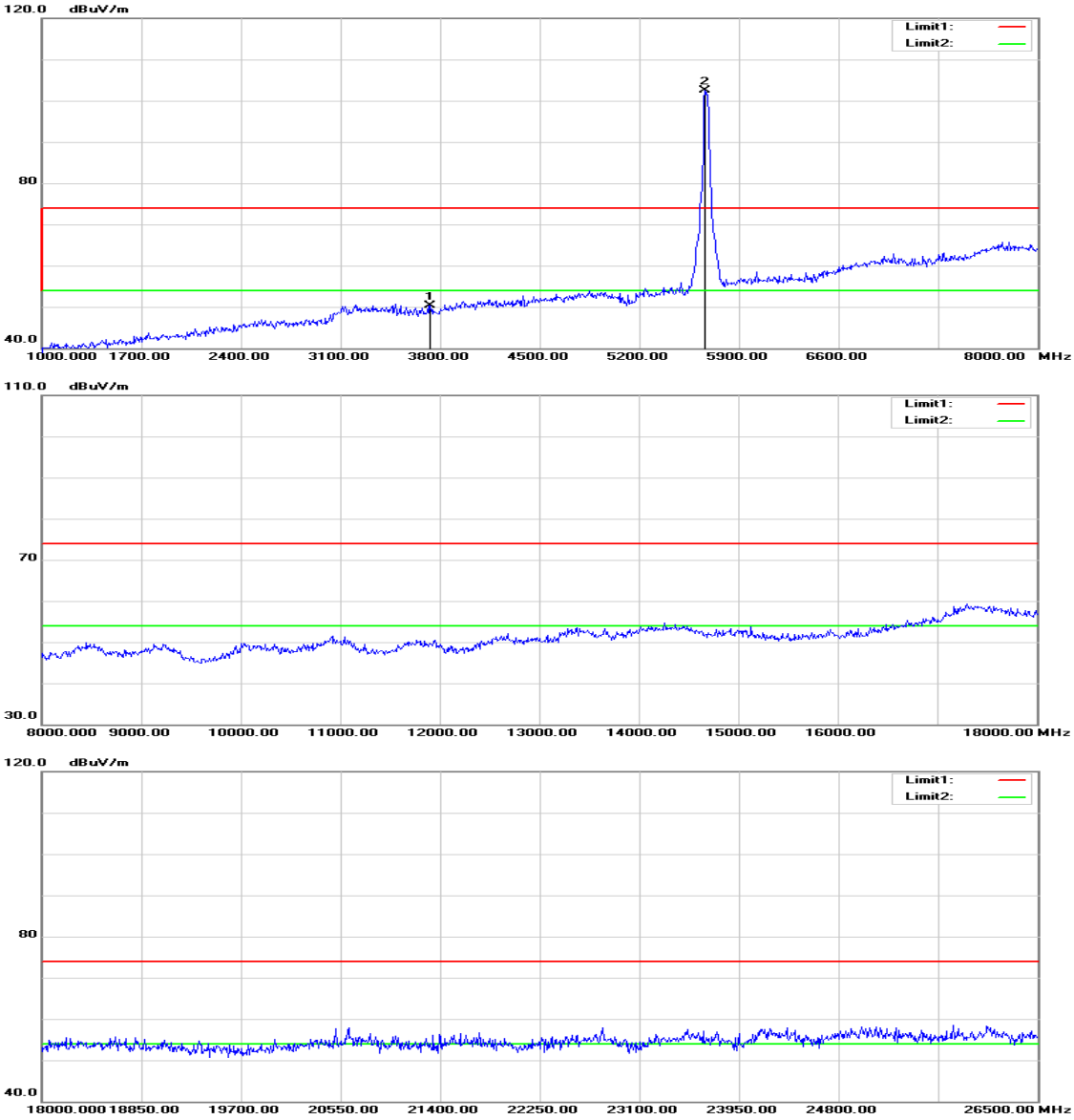
Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Pol. (H/V)
4199.000	49.51	1.98	51.49	74.00	-22.51	peak	V
N/A							
4724.000	48.90	3.75	52.65	74.00	-21.35	peak	H
N/A							

Remark:

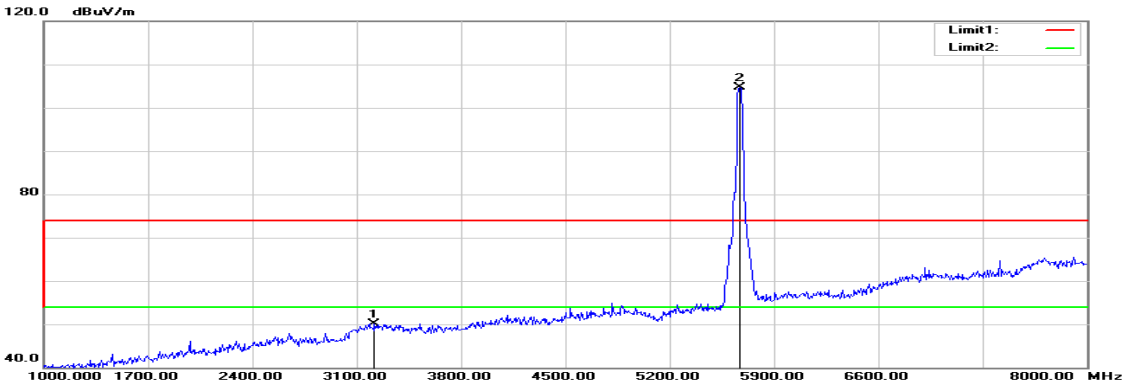
1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average 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).*

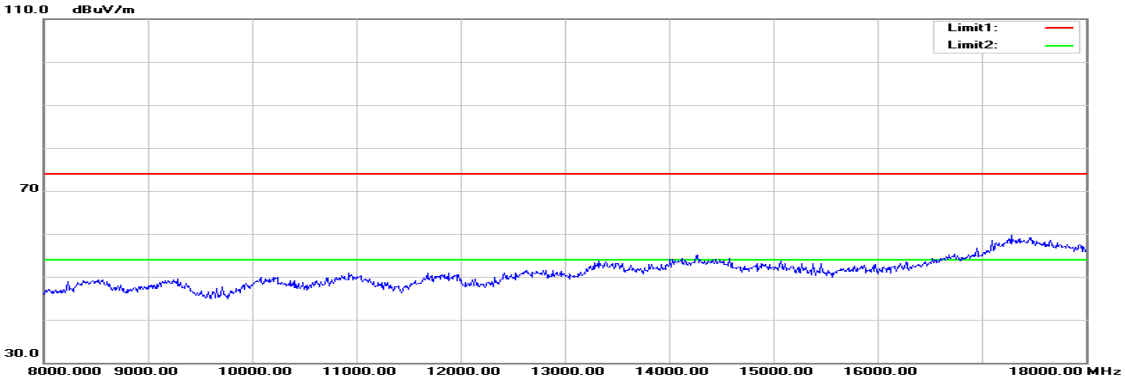
Tx / IEEE 802.11n HT 40 MHz mode / 5670 MHz

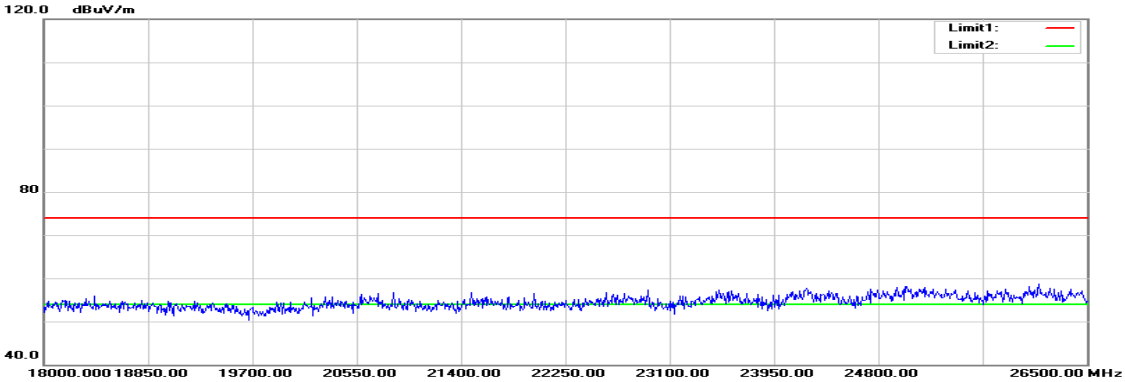
Polarity: Vertical



Polarity: Horizontal







Operation Mode:	Tx / IEEE 802.11n HT 40 MHz mode / 5670 MHz	**Test Date:**	August 25, 2015
Temperature:	27℃	**Tested by:**	Jason Lu
Humidity:	53% RH	**Polarity:**	Ver. / Hor.

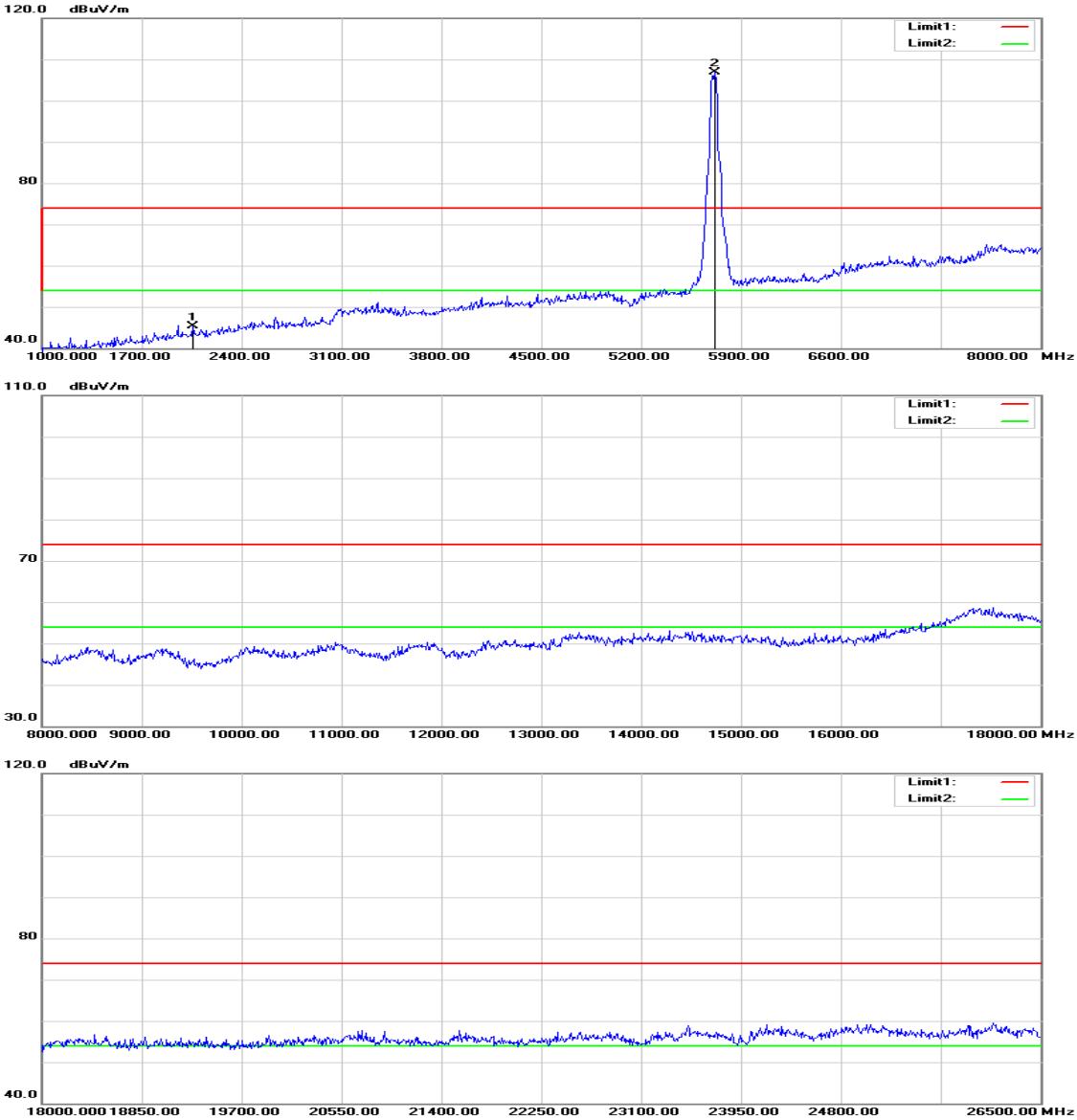
Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Pol. (H/V)
3730.000	50.25	0.07	50.32	74.00	-23.68	peak	V
N/A							
3219.000	51.76	-1.58	50.18	74.00	-23.82	peak	H
N/A							

Remark:

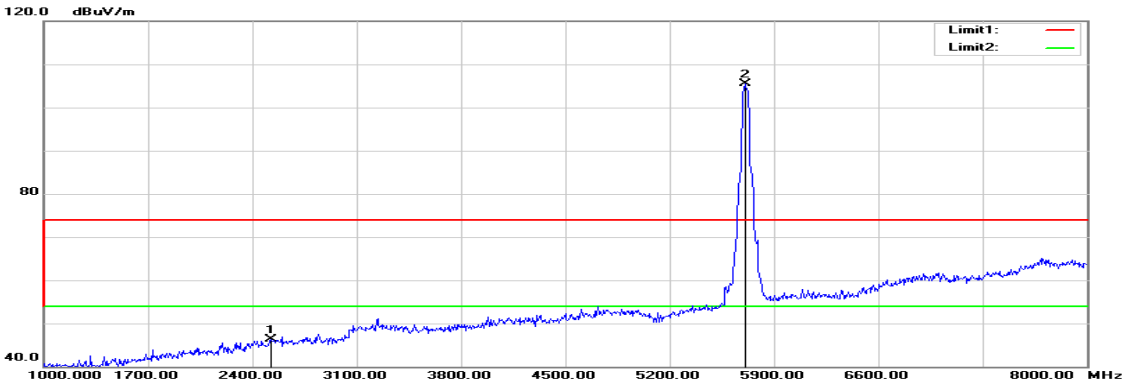
1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average 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).*

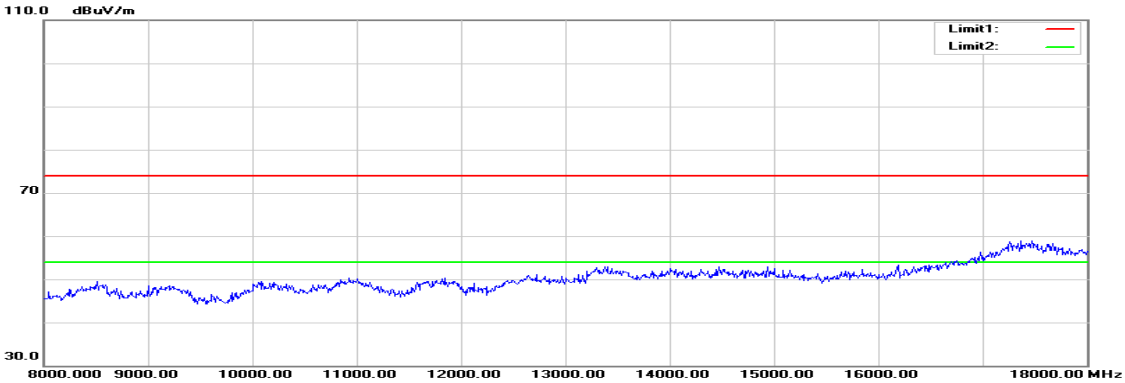
Tx / IEEE 802.11n HT 40 MHz mode / 5710 MHz

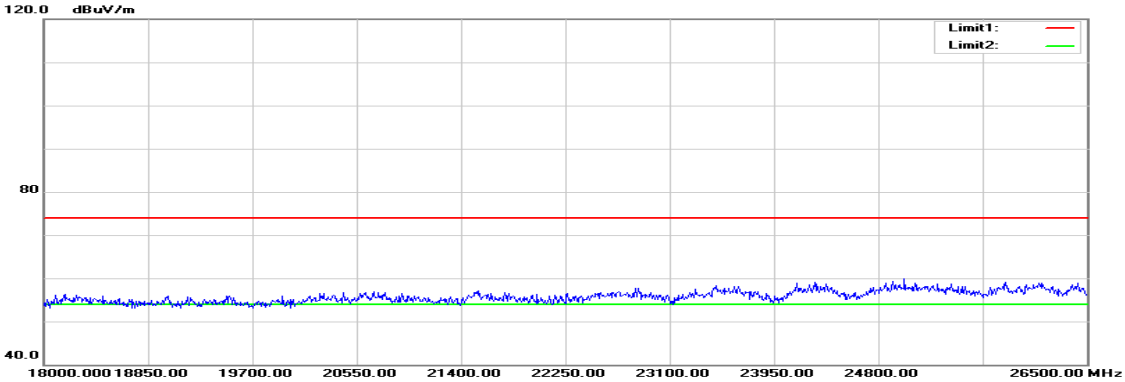
Polarity: Vertical



Polarity: Horizontal







Operation Mode:	Tx / IEEE 802.11n HT 40 MHz mode / 5710 MHz	**Test Date:**	August 25, 2015
Temperature:	27℃	**Tested by:**	Jason Lu
Humidity:	53% RH	**Polarity:**	Ver. / Hor.

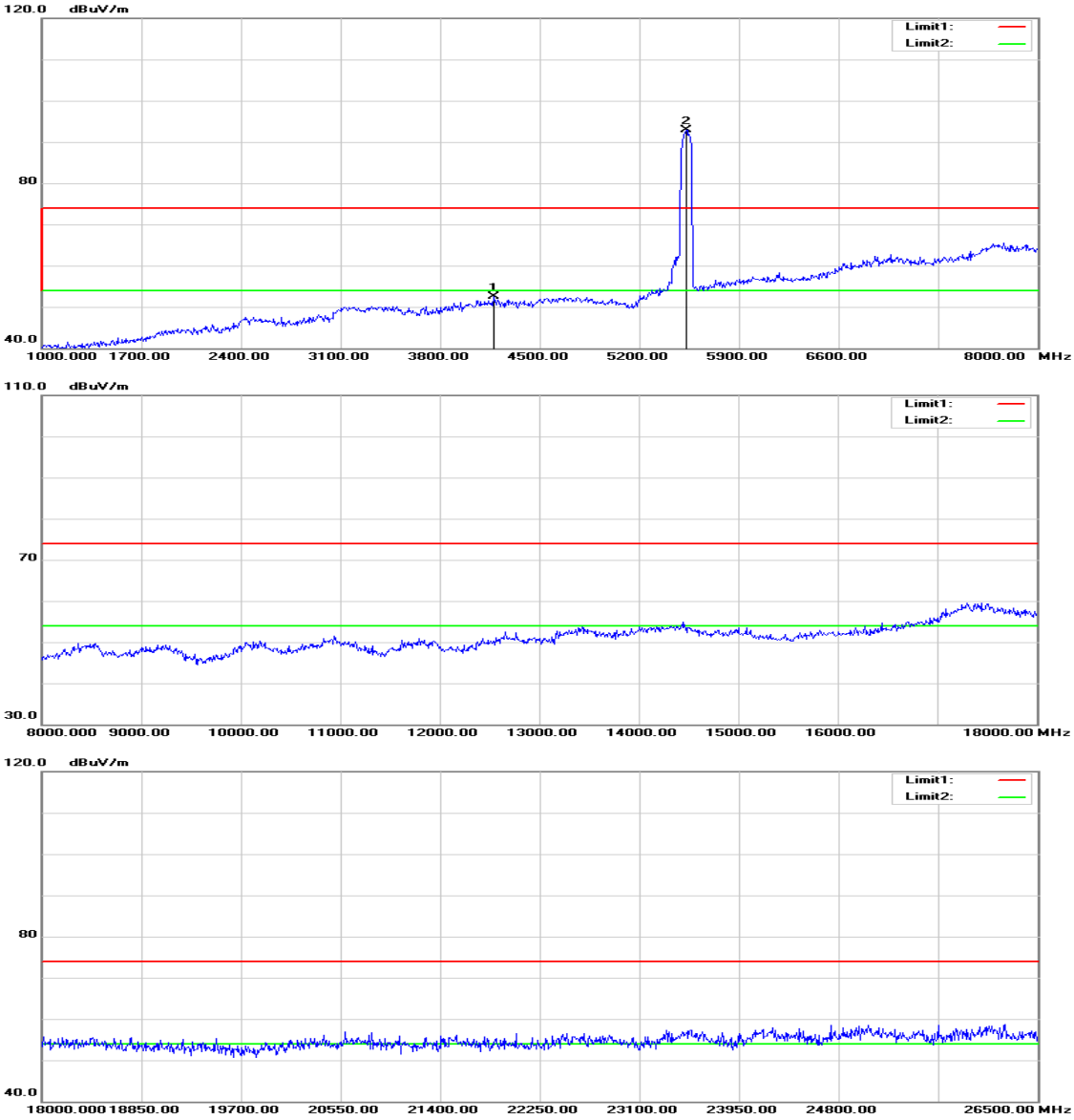
Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Pol. (H/V)
2057.000	50.18	-4.94	45.24	74.00	-28.76	peak	V
N/A							
2526.000	49.29	-3.07	46.22	74.00	-27.78	peak	H
N/A							

Remark:

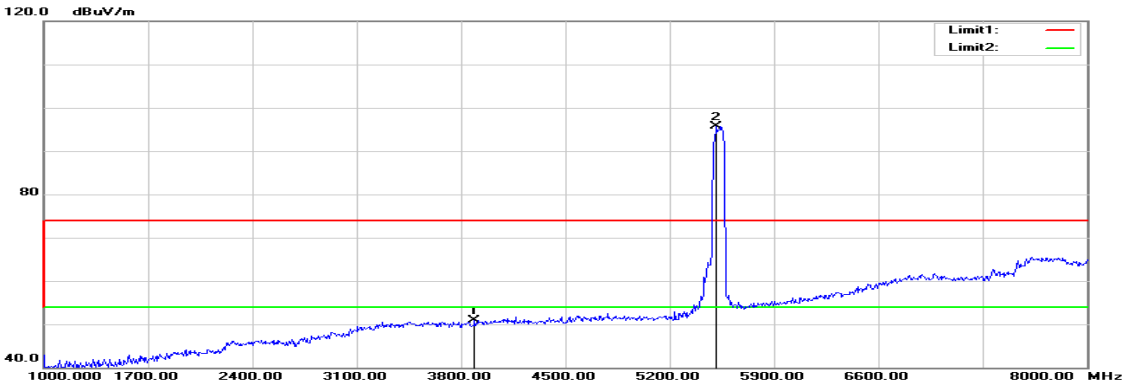
1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average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

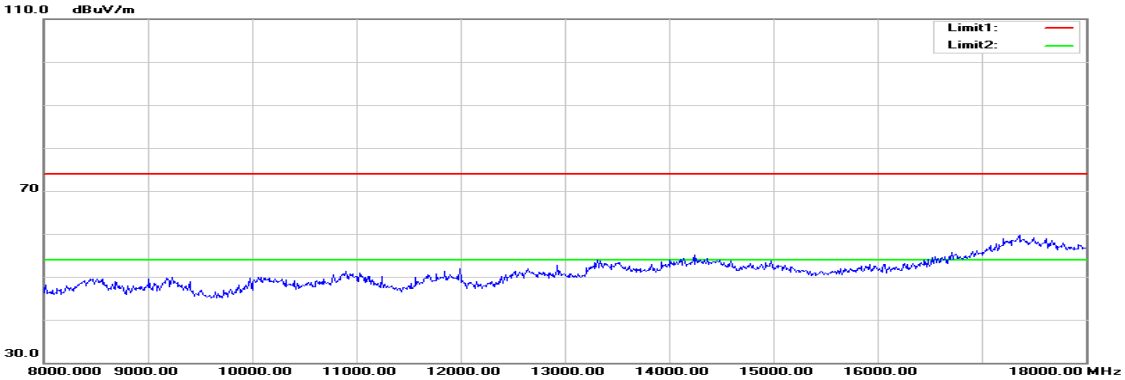
Tx / IEEE 802.11ac VHT 80 MHz mode / 5530 MHz

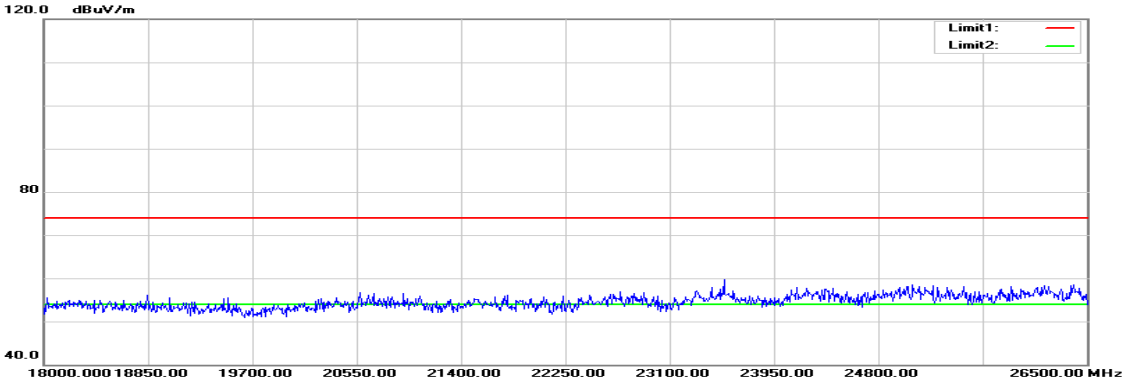
Polarity: Vertical



Polarity: Horizontal







Operation Mode:	Tx / IEEE 802.11ac VHT 80 MHz mode / 5530 MHz	**Test Date:**	August 25, 2015
Temperature:	27℃	**Tested by:**	Jason Lu
Humidity:	53% RH	**Polarity:**	Ver. / Hor.

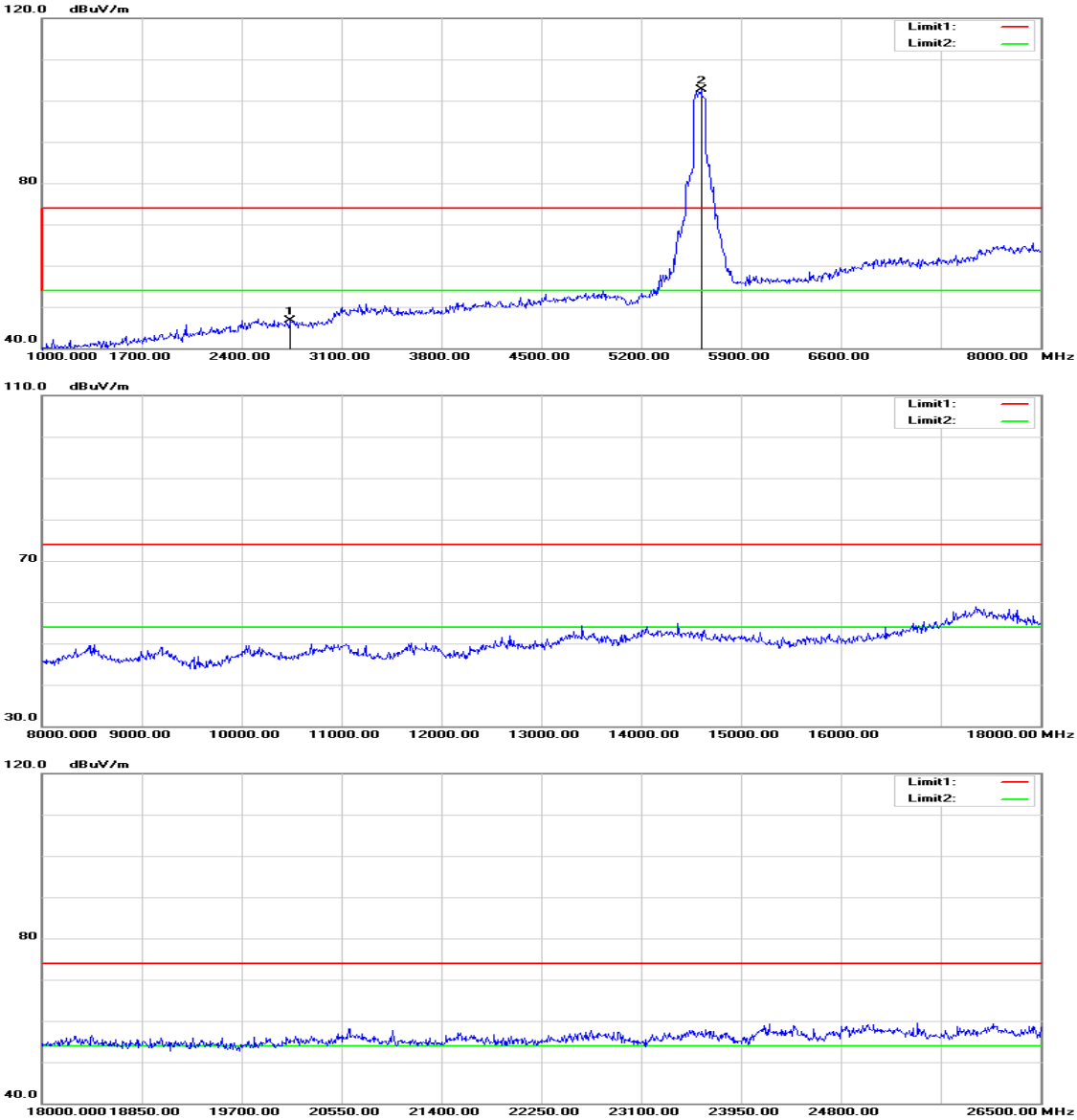
Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Pol. (H/V)
4178.000	50.55	1.90	52.45	74.00	-21.55	peak	V
N/A							
3891.000	50.06	0.76	50.82	74.00	-23.18	peak	H
N/A							

Remark:

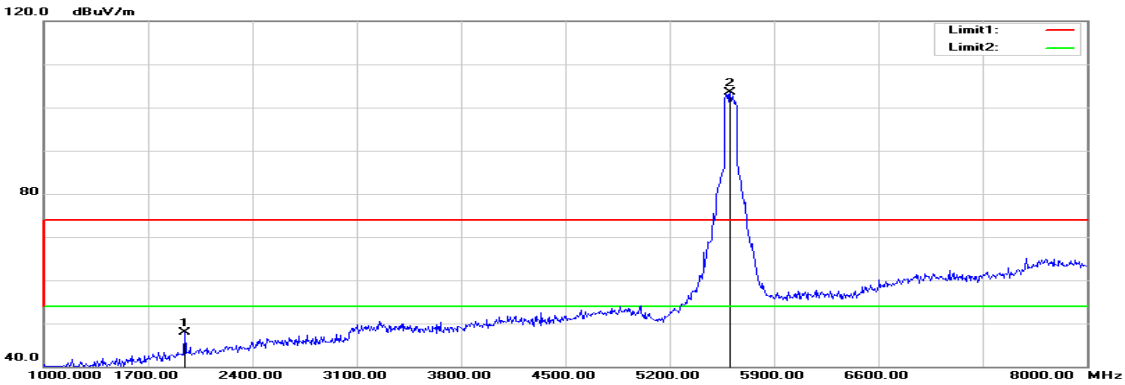
1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average 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).*

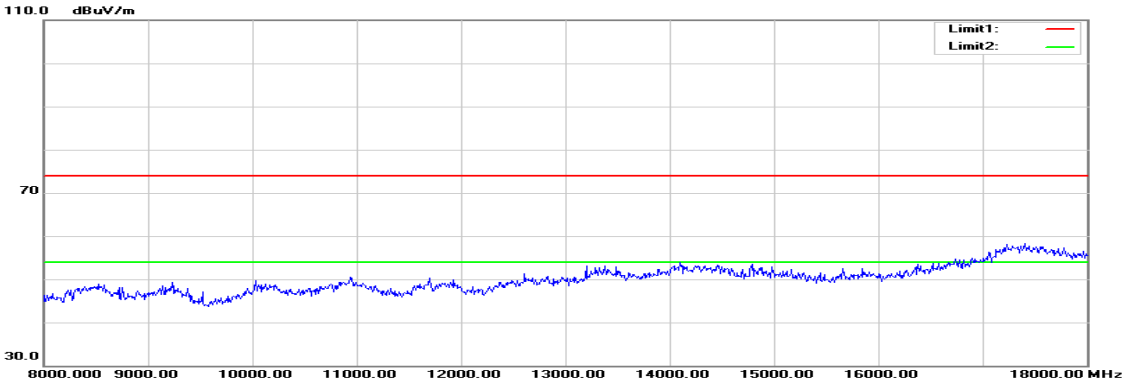
Tx / IEEE 802.11ac VHT 80 MHz mode / 5610 MHz

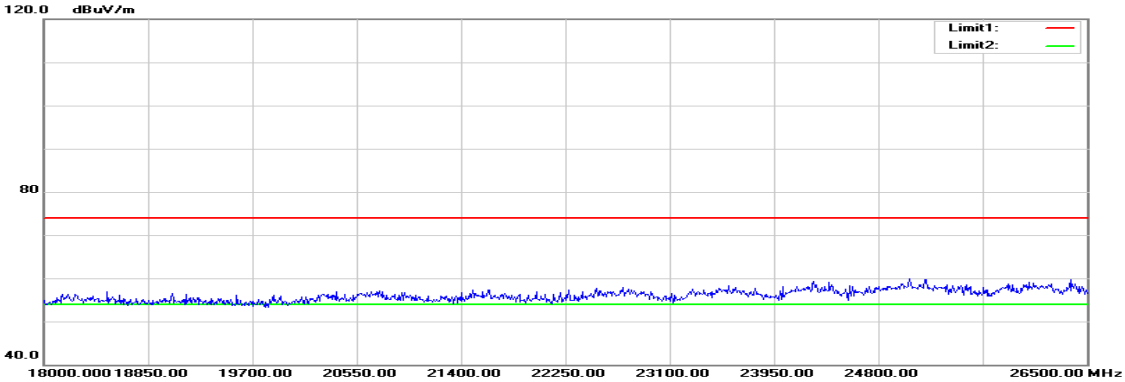
Polarity: Vertical



Polarity: Horizontal







Operation Mode:	Tx / IEEE 802.11ac VHT 80 MHz mode / 5610 MHz	**Test Date:**	August 25, 2015
Temperature:	27℃	**Tested by:**	Jason Lu
Humidity:	53% RH	**Polarity:**	Ver. / Hor.

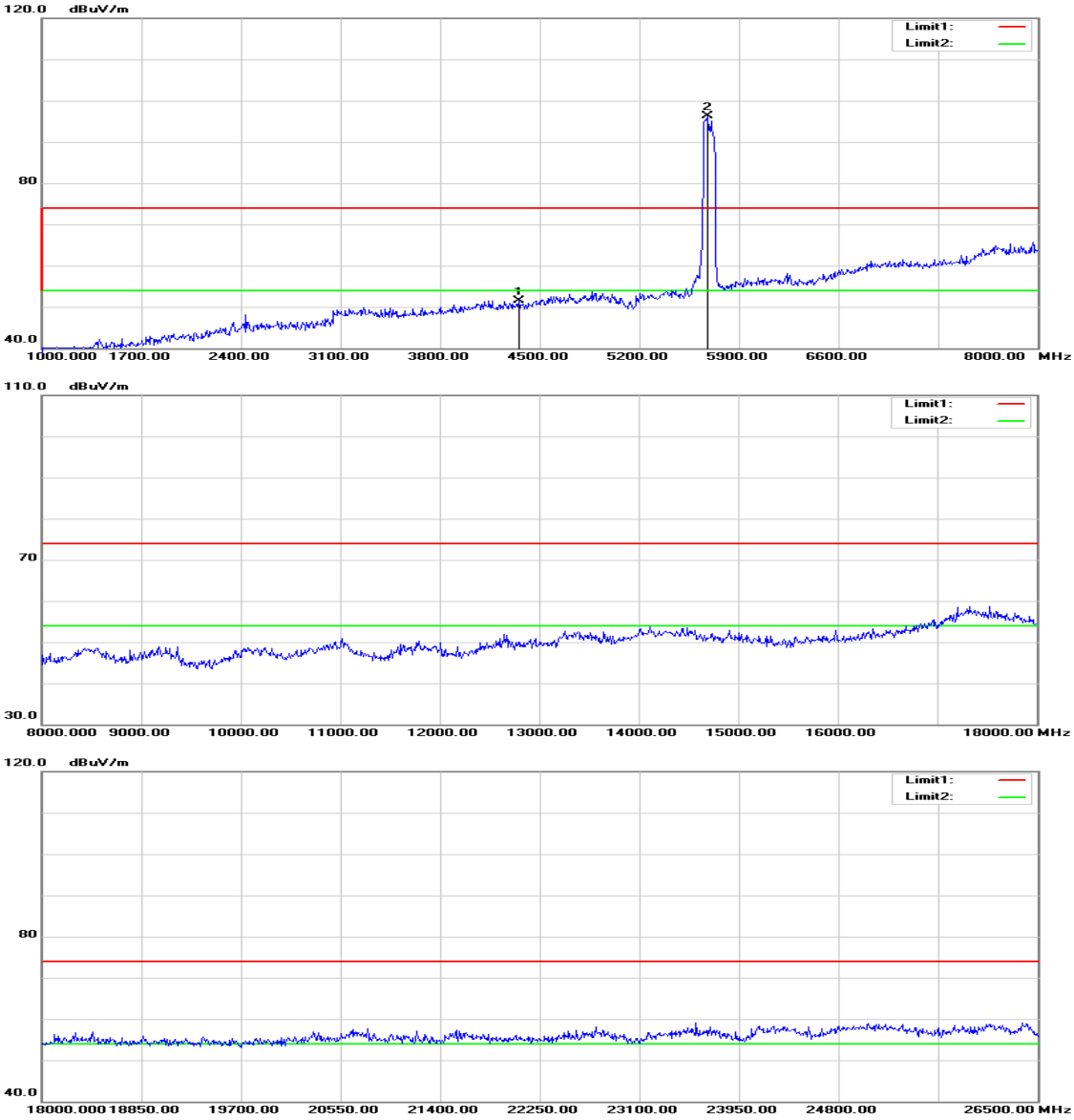
Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Pol. (H/V)
2743.000	49.35	-2.63	46.72	74.00	-27.28	peak	V
N/A							
1945.000	53.02	-5.17	47.85	74.00	-26.15	peak	H
N/A							

Remark:

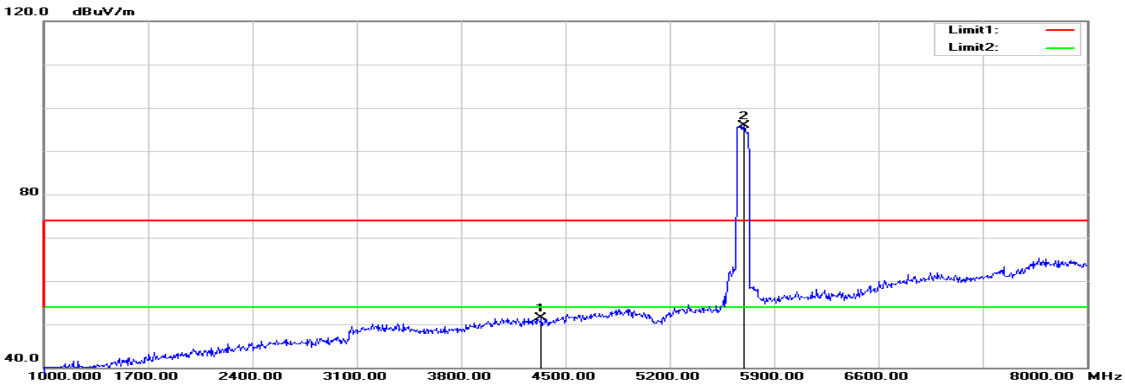
1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average 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).*

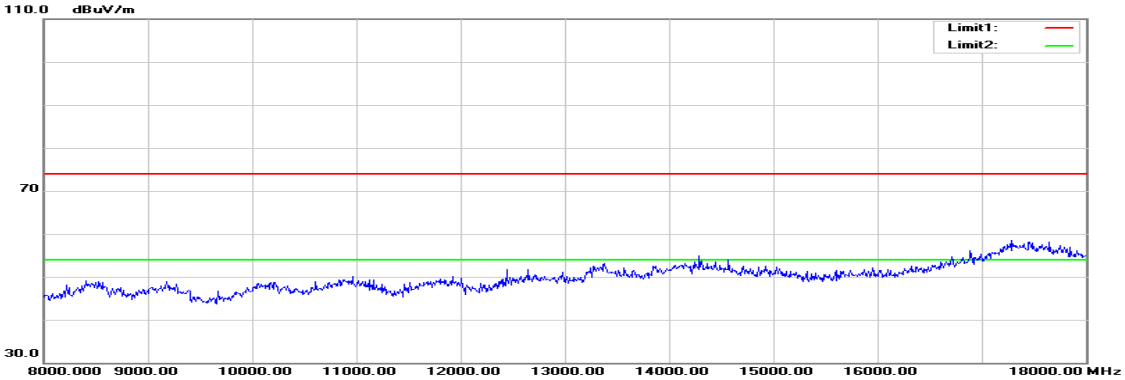
Tx / IEEE 802.11ac VHT 80 MHz mode / 5690 MHz

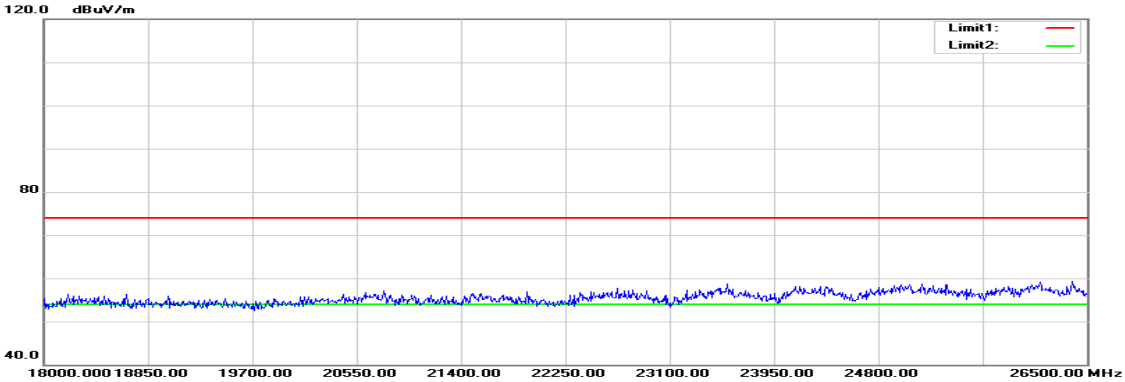
Polarity: Vertical



Polarity: Horizontal







Operation Mode:	Tx / IEEE 802.11ac VHT 80 MHz mode / 5690 MHz	**Test Date:**	August 25, 2015
Temperature:	27℃	**Tested by:**	Jason Lu
Humidity:	53% RH	**Polarity:**	Ver. / Hor.

Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Pol. (H/V)
4353.000	49.01	2.56	51.57	74.00	-22.43	peak	V
N/A							
4339.000	49.08	2.51	51.59	74.00	-22.41	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

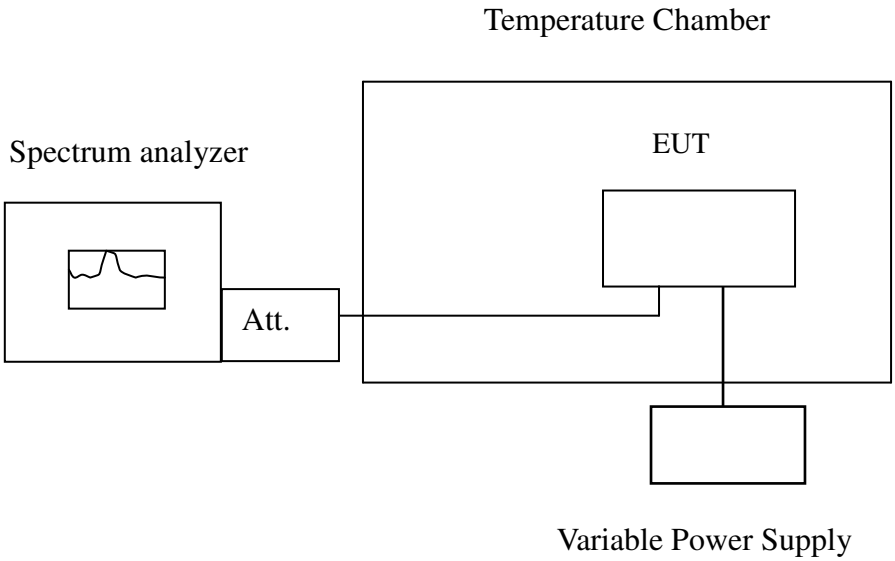
Not applicable, because EUT not connect to AC Main Source direct.

7.8 FREQUENCY STABILITY

LIMIT

According to §15.407(g) & RSS-247, 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	5	5179.991144	5150~5250	Pass
40	5	5180.010383	5150~5250	Pass
30	5	5180.005927	5150~5250	Pass
20	5	5180.004991	5150~5250	Pass
10	5	5179.996327	5150~5250	Pass
0	5	5179.996771	5150~5250	Pass
-10	5	5180.008750	5150~5250	Pass
-20	5	5179.994318	5150~5250	Pass

Operating Frequency: 5180 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
20	4.25	5180.004638	5150~5250	Pass
	5	5179.992297	5150~5250	Pass
	5.75	5180.003736	5150~5250	Pass

CH High

Operating Frequency: 5240 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
50	5	5239.991350	5150~5250	Pass
40	5	5239.994215	5150~5250	Pass
30	5	5239.999533	5150~5250	Pass
20	5	5239.993063	5150~5250	Pass
10	5	5239.997580	5150~5250	Pass
0	5	5239.991716	5150~5250	Pass
-10	5	5240.001219	5150~5250	Pass
-20	5	5240.009155	5150~5250	Pass

Operating Frequency: 5240 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
20	4.25	5239.998441	5150~5250	Pass
	5	5239.996229	5150~5250	Pass
	5.75	5240.008222	5150~5250	Pass

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

CH Low

Operating Frequency: 5180 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
50	5	5179.997398	5150~5250	Pass
40	5	5180.010403	5150~5250	Pass
30	5	5180.009517	5150~5250	Pass
20	5	5180.004662	5150~5250	Pass
10	5	5180.008972	5150~5250	Pass
0	5	5179.994329	5150~5250	Pass
-10	5	5179.994798	5150~5250	Pass
-20	5	5179.990793	5150~5250	Pass

Operating Frequency: 5180 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
20	4.25	5180.000092	5150~5250	Pass
	5	5180.001533	5150~5250	Pass
	5.75	5180.006411	5150~5250	Pass

CH High

Operating Frequency: 5240 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
50	5	5239.990293	5150~5250	Pass
40	5	5239.994653	5150~5250	Pass
30	5	5239.997334	5150~5250	Pass
20	5	5240.003243	5150~5250	Pass
10	5	5239.991406	5150~5250	Pass
0	5	5239.993214	5150~5250	Pass
-10	5	5239.992690	5150~5250	Pass
-20	5	5239.997668	5150~5250	Pass

Operating Frequency: 5240 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
20	4.25	5239.99618	5150~5250	Pass
	5	5239.997856	5150~5250	Pass
	5.75	5239.997439	5150~5250	Pass

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

CH Low

Operating Frequency: 5180 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
50	5	5179.990739	5150~5250	Pass
40	5	5179.990654	5150~5250	Pass
30	5	5180.007144	5150~5250	Pass
20	5	5180.009696	5150~5250	Pass
10	5	5179.997924	5150~5250	Pass
0	5	5179.998986	5150~5250	Pass
-10	5	5179.990425	5150~5250	Pass
-20	5	5179.992433	5150~5250	Pass

Operating Frequency: 5180 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
20	4.25	5179.992765	5150~5250	Pass
	5	5180.0029	5150~5250	Pass
	5.75	5179.992776	5150~5250	Pass

CH High

Operating Frequency: 5240 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
50	5	5239.996207	5150~5250	Pass
40	5	5239.990981	5150~5250	Pass
30	5	5239.992510	5150~5250	Pass
20	5	5240.008709	5150~5250	Pass
10	5	5239.992321	5150~5250	Pass
0	5	5240.009462	5150~5250	Pass
-10	5	5239.995787	5150~5250	Pass
-20	5	5240.010773	5150~5250	Pass

Operating Frequency: 5240 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
20	4.25	5239.997861	5150~5250	Pass
	5	5240.008152	5150~5250	Pass
	5.75	5240.000169	5150~5250	Pass

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

CH Low

Operating Frequency: 5190 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
50	5	5190.008136	5150~5250	Pass
40	5	5190.007782	5150~5250	Pass
30	5	5189.998144	5150~5250	Pass
20	5	5190.005196	5150~5250	Pass
10	5	5190.003740	5150~5250	Pass
0	5	5190.003312	5150~5250	Pass
-10	5	5190.008370	5150~5250	Pass
-20	5	5189.993199	5150~5250	Pass

Operating Frequency: 5190 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
20	4.25	5190.004109	5150~5250	Pass
	5	5190.008724	5150~5250	Pass
	5.75	5190.007978	5150~5250	Pass

CH High

Operating Frequency: 5230 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
50	5	5230.003896	5150~5250	Pass
40	5	5230.000128	5150~5250	Pass
30	5	5229.994976	5150~5250	Pass
20	5	5229.994695	5150~5250	Pass
10	5	5230.008216	5150~5250	Pass
0	5	5229.995093	5150~5250	Pass
-10	5	5230.010528	5150~5250	Pass
-20	5	5229.994510	5150~5250	Pass

Operating Frequency: 5230 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
20	4.25	5229.990336	5150~5250	Pass
	5	5230.001732	5150~5250	Pass
	5.75	5230.003314	5150~5250	Pass

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

CH Low

Operating Frequency: 5190 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
50	5	5189.994218	5150~5250	Pass
40	5	5190.008643	5150~5250	Pass
30	5	5189.993607	5150~5250	Pass
20	5	5189.996189	5150~5250	Pass
10	5	5190.001613	5150~5250	Pass
0	5	5190.003444	5150~5250	Pass
-10	5	5190.003857	5150~5250	Pass
-20	5	5190.002518	5150~5250	Pass

Operating Frequency: 5190 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
20	4.25	5190.010379	5150~5250	Pass
	5	5189.997606	5150~5250	Pass
	5.75	5190.003136	5150~5250	Pass

CH High

Operating Frequency: 5230 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
50	5	5230.005362	5150~5250	Pass
40	5	5229.999128	5150~5250	Pass
30	5	5230.004231	5150~5250	Pass
20	5	5230.001132	5150~5250	Pass
10	5	5230.010247	5150~5250	Pass
0	5	5230.002526	5150~5250	Pass
-10	5	5229.995570	5150~5250	Pass
-20	5	5230.005137	5150~5250	Pass

Operating Frequency: 5230 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
20	4.25	5230.002493	5150~5250	Pass
	5	5229.993661	5150~5250	Pass
	5.75	5229.992397	5150~5250	Pass

IEEE 802.11ac VHT 80 MHz mode / 5210 MHz / Chain 0:

CH Mid

Operating Frequency: 5210 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
50	5	5209.998325	5150~5250	Pass
40	5	5210.001314	5150~5250	Pass
30	5	5209.990918	5150~5250	Pass
20	5	5209.995609	5150~5250	Pass
10	5	5210.004564	5150~5250	Pass
0	5	5210.005879	5150~5250	Pass
-10	5	5209.990077	5150~5250	Pass
-20	5	5209.999965	5150~5250	Pass

Operating Frequency: 5210 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
20	4.25	5210.006327	5150~5250	Pass
	5	5209.998221	5150~5250	Pass
	5.75	5209.992679	5150~5250	Pass

IEEE 802.11ac VHT 80 MHz mode / 5210 MHz / Chain 1:

CH Mid

Operating Frequency: 5210 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
50	5	5210.009327	5150~5250	Pass
40	5	5210.000229	5150~5250	Pass
30	5	5210.008760	5150~5250	Pass
20	5	5209.992707	5150~5250	Pass
10	5	5209.995019	5150~5250	Pass
0	5	5209.999927	5150~5250	Pass
-10	5	5210.001035	5150~5250	Pass
-20	5	5210.010955	5150~5250	Pass

Operating Frequency: 5210 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
20	4.25	5209.997528	5150~5250	Pass
	5	5210.010267	5150~5250	Pass
	5.75	5210.000095	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	5	5260.003341	5250~5350	Pass
40	5	5259.997856	5250~5350	Pass
30	5	5259.993985	5250~5350	Pass
20	5	5259.995105	5250~5350	Pass
10	5	5260.005303	5250~5350	Pass
0	5	5260.007741	5250~5350	Pass
-10	5	5260.009185	5250~5350	Pass
-20	5	5260.008962	5250~5350	Pass

Operating Frequency: 5260 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
20	4.25	5260.004396	5250~5350	Pass
	5	5259.998962	5250~5350	Pass
	5.75	5260.005227	5250~5350	Pass

CH High

Operating Frequency: 5320 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
50	5	5320.001352	5250~5350	Pass
40	5	5319.996059	5250~5350	Pass
30	5	5319.999503	5250~5350	Pass
20	5	5319.992045	5250~5350	Pass
10	5	5319.992934	5250~5350	Pass
0	5	5320.005413	5250~5350	Pass
-10	5	5319.995608	5250~5350	Pass
-20	5	5319.999390	5250~5350	Pass

Operating Frequency: 5320 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
20	4.25	5320.010766	5250~5350	Pass
	5	5319.997253	5250~5350	Pass
	5.75	5320.010803	5250~5350	Pass

IEEE 802.11n HT 20 MHz Channel mode / 5260 ~ 5320 MHz / Chain 0:

CH Low

Operating Frequency: 5260 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
50	5	5260.008270	5250~5350	Pass
40	5	5260.006284	5250~5350	Pass
30	5	5260.010958	5250~5350	Pass
20	5	5260.010443	5250~5350	Pass
10	5	5259.999721	5250~5350	Pass
0	5	5260.009867	5250~5350	Pass
-10	5	5260.009697	5250~5350	Pass
-20	5	5260.003819	5250~5350	Pass

Operating Frequency: 5260 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
20	4.25	5259.999811	5250~5350	Pass
	5	5259.993414	5250~5350	Pass
	5.75	5260.007415	5250~5350	Pass

CH High

Operating Frequency: 5320 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
50	5	5320.007465	5250~5350	Pass
40	5	5320.003200	5250~5350	Pass
30	5	5320.000154	5250~5350	Pass
20	5	5320.009913	5250~5350	Pass
10	5	5319.998212	5250~5350	Pass
0	5	5319.996155	5250~5350	Pass
-10	5	5319.995320	5250~5350	Pass
-20	5	5319.992781	5250~5350	Pass

Operating Frequency: 5320 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
20	4.25	5320.008904	5250~5350	Pass
	5	5320.002039	5250~5350	Pass
	5.75	5319.994618	5250~5350	Pass

IEEE 802.11n HT 20 MHz Channel mode / 5260 ~ 5320 MHz / Chain 1:

CH Low

Operating Frequency: 5260 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
50	5	5259.994420	5250~5350	Pass
40	5	5259.996530	5250~5350	Pass
30	5	5259.995559	5250~5350	Pass
20	5	5259.994007	5250~5350	Pass
10	5	5260.000235	5250~5350	Pass
0	5	5260.007376	5250~5350	Pass
-10	5	5260.007621	5250~5350	Pass
-20	5	5260.004989	5250~5350	Pass

Operating Frequency: 5260 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
20	4.25	5260.001966	5250~5350	Pass
	5	5260.008246	5250~5350	Pass
	5.75	5260.003071	5250~5350	Pass

CH High

Operating Frequency: 5320 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
50	5	5319.998865	5250~5350	Pass
40	5	5319.994473	5250~5350	Pass
30	5	5319.997282	5250~5350	Pass
20	5	5320.005036	5250~5350	Pass
10	5	5320.002175	5250~5350	Pass
0	5	5320.000856	5250~5350	Pass
-10	5	5320.007535	5250~5350	Pass
-20	5	5320.004693	5250~5350	Pass

Operating Frequency: 5320 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
20	4.25	5320.007193	5250~5350	Pass
	5	5320.001026	5250~5350	Pass
	5.75	5320.01049	5250~5350	Pass

IEEE 802.11n HT 40 MHz mode / 5270 ~ 5310 MHz / Chain 0:

CH Low

Operating Frequency: 5270 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
50	5	5269.999336	5250~5350	Pass
40	5	5270.006499	5250~5350	Pass
30	5	5269.995536	5250~5350	Pass
20	5	5270.007298	5250~5350	Pass
10	5	5269.994123	5250~5350	Pass
0	5	5269.991825	5250~5350	Pass
-10	5	5269.993029	5250~5350	Pass
-20	5	5269.996963	5250~5350	Pass

Operating Frequency: 5270 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
20	4.25	5270.006291	5250~5350	Pass
	5	5270.0072	5250~5350	Pass
	5.75	5270.00974	5250~5350	Pass

CH High

Operating Frequency: 5310 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
50	5	5310.009323	5250~5350	Pass
40	5	5310.003400	5250~5350	Pass
30	5	5309.993522	5250~5350	Pass
20	5	5310.003163	5250~5350	Pass
10	5	5309.997367	5250~5350	Pass
0	5	5309.991822	5250~5350	Pass
-10	5	5310.001539	5250~5350	Pass
-20	5	5310.000732	5250~5350	Pass

Operating Frequency: 5310 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
20	4.25	5309.993722	5250~5350	Pass
	5	5310.003145	5250~5350	Pass
	5.75	5309.997133	5250~5350	Pass

IEEE 802.11n HT 40 MHz mode / 5270 ~ 5310 MHz / Chain 1:

CH Low

Operating Frequency: 5270 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
50	5	5269.990240	5250~5350	Pass
40	5	5270.006286	5250~5350	Pass
30	5	5269.998427	5250~5350	Pass
20	5	5269.990841	5250~5350	Pass
10	5	5270.001300	5250~5350	Pass
0	5	5270.006259	5250~5350	Pass
-10	5	5269.992947	5250~5350	Pass
-20	5	5269.993109	5250~5350	Pass

Operating Frequency: 5270 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
20	4.25	5270.002297	5250~5350	Pass
	5	5270.007757	5250~5350	Pass
	5.75	5269.992557	5250~5350	Pass

CH High

Operating Frequency: 5310 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
50	5	5310.003795	5250~5350	Pass
40	5	5309.998991	5250~5350	Pass
30	5	5310.005190	5250~5350	Pass
20	5	5310.004845	5250~5350	Pass
10	5	5310.003665	5250~5350	Pass
0	5	5309.998447	5250~5350	Pass
-10	5	5310.010799	5250~5350	Pass
-20	5	5310.003839	5250~5350	Pass

Operating Frequency: 5310 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
20	4.25	5310.001146	5250~5350	Pass
	5	5309.991656	5250~5350	Pass
	5.75	5309.992422	5250~5350	Pass

IEEE 802.11ac VHT 80 MHz mode / 5290 MHz / Chain 0:

CH Mid

Operating Frequency: 5290 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
50	5	5289.995976	5150~5250	Pass
40	5	5290.006881	5150~5250	Pass
30	5	5290.010648	5150~5250	Pass
20	5	5290.006751	5150~5250	Pass
10	5	5290.004125	5150~5250	Pass
0	5	5289.993651	5150~5250	Pass
-10	5	5290.001296	5150~5250	Pass
-20	5	5290.001023	5150~5250	Pass

Operating Frequency: 5290 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
20	4.25	5289.993586	5150~5250	Pass
	5	5290.006966	5150~5250	Pass
	5.75	5289.992248	5150~5250	Pass

IEEE 802.11ac VHT 80 MHz mode / 5290 MHz / Chain 1:

CH Mid

Operating Frequency: 5290 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
50	5	5290.005775	5150~5250	Pass
40	5	5289.995443	5150~5250	Pass
30	5	5289.997127	5150~5250	Pass
20	5	5289.999007	5150~5250	Pass
10	5	5290.007013	5150~5250	Pass
0	5	5289.992084	5150~5250	Pass
-10	5	5290.003957	5150~5250	Pass
-20	5	5289.993462	5150~5250	Pass

Operating Frequency: 5290 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
20	4.25	5289.999502	5150~5250	Pass
	5	5289.996572	5150~5250	Pass
	5.75	5289.991958	5150~5250	Pass

IEEE 802.11a mode / 5500 ~ 5720 MHz:

CH Low

Operating Frequency: 5500 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
50	5	5499.997207	5470~5725	Pass
40	5	5500.006707	5470~5725	Pass
30	5	5500.010373	5470~5725	Pass
20	5	5500.003934	5470~5725	Pass
10	5	5500.007992	5470~5725	Pass
0	5	5500.008237	5470~5725	Pass
-10	5	5499.993650	5470~5725	Pass
-20	5	5500.010263	5470~5725	Pass

Operating Frequency: 5500 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
20	4.25	5500.007257	5470~5725	Pass
	5	5500.000274	5470~5725	Pass
	5.75	5500.00548	5470~5725	Pass

CH High

Operating Frequency: 5700 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
50	5	5700.007491	5470~5725	Pass
40	5	5699.992934	5470~5725	Pass
30	5	5699.998971	5470~5725	Pass
20	5	5700.001478	5470~5725	Pass
10	5	5700.010295	5470~5725	Pass
0	5	5700.007676	5470~5725	Pass
-10	5	5700.000271	5470~5725	Pass
-20	5	5699.997959	5470~5725	Pass

Operating Frequency: 5700 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
20	4.25	5700.007296	5470~5725	Pass
	5	5700.010429	5470~5725	Pass
	5.75	5700.010784	5470~5725	Pass

IEEE 802.11n HT 20 MHz Channel mode / 5500 ~ 5720 MHz / Chain 0:

CH Low

Operating Frequency: 5500 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
50	5	5499.990782	5470~5725	Pass
40	5	5500.005704	5470~5725	Pass
30	5	5499.994456	5470~5725	Pass
20	5	5499.991912	5470~5725	Pass
10	5	5500.002495	5470~5725	Pass
0	5	5500.002962	5470~5725	Pass
-10	5	5499.993552	5470~5725	Pass
-20	5	5499.994158	5470~5725	Pass

Operating Frequency: 5500 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
20	4.25	5499.992858	5470~5725	Pass
	5	5500.007502	5470~5725	Pass
	5.75	5499.996004	5470~5725	Pass

CH High

Operating Frequency: 5700 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
50	5	5700.009822	5470~5725	Pass
40	5	5700.009847	5470~5725	Pass
30	5	5700.003074	5470~5725	Pass
20	5	5699.998557	5470~5725	Pass
10	5	5699.999752	5470~5725	Pass
0	5	5699.996984	5470~5725	Pass
-10	5	5700.010722	5470~5725	Pass
-20	5	5699.998908	5470~5725	Pass

Operating Frequency: 5700 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
20	4.25	5700.00092	5470~5725	Pass
	5	5700.001272	5470~5725	Pass
	5.75	5700.008086	5470~5725	Pass

IEEE 802.11n HT 20 MHz Channel mode / 5500 ~ 5720 MHz / Chain 1:

CH Low

Operating Frequency: 5500 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
50	5	5500.005669	5470~5725	Pass
40	5	5500.007813	5470~5725	Pass
30	5	5499.997570	5470~5725	Pass
20	5	5499.993786	5470~5725	Pass
10	5	5499.992053	5470~5725	Pass
0	5	5500.005964	5470~5725	Pass
-10	5	5499.994717	5470~5725	Pass
-20	5	5499.999206	5470~5725	Pass

Operating Frequency: 5500 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
20	4.25	5499.99115	5470~5725	Pass
	5	5500.001503	5470~5725	Pass
	5.75	5500.002267	5470~5725	Pass

CH High

Operating Frequency: 5720 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
50	5	5700.000616	5470~5725	Pass
40	5	5699.997604	5470~5725	Pass
30	5	5699.995569	5470~5725	Pass
20	5	5699.993368	5470~5725	Pass
10	5	5700.006166	5470~5725	Pass
0	5	5700.001461	5470~5725	Pass
-10	5	5700.003158	5470~5725	Pass
-20	5	5700.004372	5470~5725	Pass

Operating Frequency: 5720 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
20	4.25	5700.004085	5470~5725	Pass
	5	5700.005602	5470~5725	Pass
	5.75	5700.001626	5470~5725	Pass

IEEE 802.11n HT 40 MHz mode / 5510 ~ 5710 MHz / Chain 0:

CH Low

Operating Frequency: 5510 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
50	5	5510.000713	5470~5725	Pass
40	5	5509.994852	5470~5725	Pass
30	5	5510.008084	5470~5725	Pass
20	5	5510.009253	5470~5725	Pass
10	5	5509.990159	5470~5725	Pass
0	5	5509.992536	5470~5725	Pass
-10	5	5509.995752	5470~5725	Pass
-20	5	5509.997356	5470~5725	Pass

Operating Frequency: 5510 MHz				
Environment Temperature (oC)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
20	4.25	5509.992547	5470~5725	Pass
	5	5509.993443	5470~5725	Pass
	5.75	5509.995513	5470~5725	Pass

CH High

Operating Frequency: 5670 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
50	5	5669.996072	5470~5725	Pass
40	5	5670.000422	5470~5725	Pass
30	5	5669.994008	5470~5725	Pass
20	5	5670.008071	5470~5725	Pass
10	5	5670.001024	5470~5725	Pass
0	5	5670.002337	5470~5725	Pass
-10	5	5670.000355	5470~5725	Pass
-20	5	5670.009196	5470~5725	Pass

Operating Frequency: 5670 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
20	4.25	5670.001788	5470~5725	Pass
	5	5669.99808	5470~5725	Pass
	5.75	5669.996054	5470~5725	Pass

IEEE 802.11n HT 40 MHz mode / 5510 ~ 5710 MHz / Chain 1:

CH Low

Operating Frequency: 5510 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
50	5	5509.997137	5470~5725	Pass
40	5	5510.006844	5470~5725	Pass
30	5	5510.004462	5470~5725	Pass
20	5	5510.008377	5470~5725	Pass
10	5	5510.004416	5470~5725	Pass
0	5	5510.002526	5470~5725	Pass
-10	5	5509.996892	5470~5725	Pass
-20	5	5509.994337	5470~5725	Pass

Operating Frequency: 5510 MHz				
Environment Temperature (oC)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
20	4.25	5510.004311	5470~5725	Pass
	5	5509.996919	5470~5725	Pass
	5.75	5509.994813	5470~5725	Pass

CH High

Operating Frequency: 5670 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
50	5	5669.992567	5470~5725	Pass
40	5	5670.002675	5470~5725	Pass
30	5	5670.005112	5470~5725	Pass
20	5	5670.004405	5470~5725	Pass
10	5	5669.996042	5470~5725	Pass
0	5	5670.004152	5470~5725	Pass
-10	5	5669.995482	5470~5725	Pass
-20	5	5670.010739	5470~5725	Pass

Operating Frequency: 5670 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
20	4.25	5669.994033	5470~5725	Pass
	5	5670.008933	5470~5725	Pass
	5.75	5669.991788	5470~5725	Pass

IEEE 802.11ac VHT 80 MHz mode / 5530 ~ 5690 MHz / Chain 0:

CH Low

Operating Frequency: 5530 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
50	5	5530.006191	5470~5725	Pass
40	5	5529.999546	5470~5725	Pass
30	5	5529.994472	5470~5725	Pass
20	5	5530.005888	5470~5725	Pass
10	5	5529.992932	5470~5725	Pass
0	5	5529.994791	5470~5725	Pass
-10	5	5529.994283	5470~5725	Pass
-20	5	5529.990111	5470~5725	Pass

Operating Frequency: 5530 MHz				
Environment Temperature (oC)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
20	4.25	5530.010325	5470~5725	Pass
	5	5529.997218	5470~5725	Pass
	5.75	5529.990482	5470~5725	Pass

CH High

Operating Frequency: 5690 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
50	5	5689.998767	5470~5725	Pass
40	5	5690.006238	5470~5725	Pass
30	5	5689.998162	5470~5725	Pass
20	5	5690.003861	5470~5725	Pass
10	5	5689.990336	5470~5725	Pass
0	5	5689.990662	5470~5725	Pass
-10	5	5689.996111	5470~5725	Pass
-20	5	5689.998722	5470~5725	Pass

Operating Frequency: 5690 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
20	4.25	5690.001854	5470~5725	Pass
	5	5689.999332	5470~5725	Pass
	5.75	5690.006278	5470~5725	Pass

IEEE 802.11ac VHT 80 MHz mode / 5530 ~ 5690 MHz / Chain 1:

CH Low

Operating Frequency: 5530 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
50	5	5530.008020	5470~5725	Pass
40	5	5530.005977	5470~5725	Pass
30	5	5530.006726	5470~5725	Pass
20	5	5530.003035	5470~5725	Pass
10	5	5529.996834	5470~5725	Pass
0	5	5530.008261	5470~5725	Pass
-10	5	5530.009546	5470~5725	Pass
-20	5	5529.991584	5470~5725	Pass

Operating Frequency: 5530 MHz				
Environment Temperature (oC)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
20	4.25	5530.000112	5470~5725	Pass
	5	5529.997009	5470~5725	Pass
	5.75	5529.999489	5470~5725	Pass

CH High

Operating Frequency: 5690 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
50	5	5690.007005	5470~5725	Pass
40	5	5689.990780	5470~5725	Pass
30	5	5690.009777	5470~5725	Pass
20	5	5690.007502	5470~5725	Pass
10	5	5689.996070	5470~5725	Pass
0	5	5690.004119	5470~5725	Pass
-10	5	5689.995301	5470~5725	Pass
-20	5	5689.996686	5470~5725	Pass

Operating Frequency: 5690 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
20	4.25	5690.006935	5470~5725	Pass
	5	5690.000442	5470~5725	Pass
	5.75	5689.991509	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 bDFSands incorporating dynamic frequency selection".

***Remark**: IC RSS-247 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
U-NII Detection Bandwidth	Yes	Not required	Yes

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
U-NII Detection Bandwidth	Yes	Not required	Yes

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

Maximum Transmit Power	Value (see note)
EIRP ≥ 200 milliwatt	-64 dBm
EIRP < 200 milliwatt and power spectral density < 10 dBm/MHz	-62 dBm
EIRP < 200 milliwatt that do not meet the power spectral density requirement	-64 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.
Note3: EIRP is based on the highest antenna gain. For MIMO devices refer to KDB Publication 662911 D01.

Table 4: DFS Response requirement values

Parameter	Value
Non-occupancy period	Minimum 30 minutes
Channel Availability Check Time	60 seconds
Channel Move Time	10 seconds See Note 1.
Channel Closing Transmission Time	200 milliseconds + approx. 60 milliseconds over remaining 10 second period See Notes 1 and 2.
U-NII Detection Bandwidth	Minimum 100% of the U-NII 99% transmission power bandwidth. See Note 3.
Note 1: Channel Move Time and the Channel Closing Transmission Time should be performed with Radar Type 0. The measurement timing begins at the end of the Radar Type 0 burst. Note 2: 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 a Channel move (an aggregate of 60 milliseconds) during the remainder of the 10 second period. The aggregate duration of control signals will not count quiet periods in between transmissions. Note 3: During the U-NII Detection Bandwidth detection test, radar type 0 should be used. For each frequency step the minimum percentage of detection is 90 percent. Measurements are performed with no data traffic.	

Table 5 – Short Pulse Radar Test Waveforms

Radar Type	Pulse Width (Microseconds)	PRI (Microseconds)	Pulses	Minimum Percentage of Successful Detection	Minimum Trials
0	1	1428	18	See Note 1	See Note 1
1	1	Test A: 15 unique PRI values randomly selected from the list of 23 PRI values in Table 5a	$\text{Roundup}\left\{\left(\frac{1}{360}\right)\cdot\left(\frac{19\cdot 10^6}{\text{PRI}_{\mu\text{sec}}}\right)\right\}$	60%	30
		Test B: 15 unique PRI values randomly selected within the range of 518-3066 µsec, with a minimum increment of 1 µsec, excluding PRI values selected in Test A			
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
Note 1: Short Pulse Radar Type 0 should be used for the detection bandwidth test, channel move time, and channel closing time tests.					

Table 6 – Long Pulse Radar Test Signal

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

Table 7 – Frequency Hopping Radar Test Signal

Radar Waveform	Pulse Width (µsec)	PRI (µsec)	Pulses Per Hop	Hopping Rate (kHz)	Hopping Sequence Length (msec)	Minimum Percentage of Successful Detection	Minimum Trials
6	1	333	9	0.33	**300**	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: 5.1.19.0

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 5.54dBi.

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.

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

The Master Device is a Wi-Fi (11a/b/g/n/ac 2Tx2R)+BT (V4.1LE) USB Combo Module, FCC ID: PPQ-WCBN4507R.

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 -57 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.

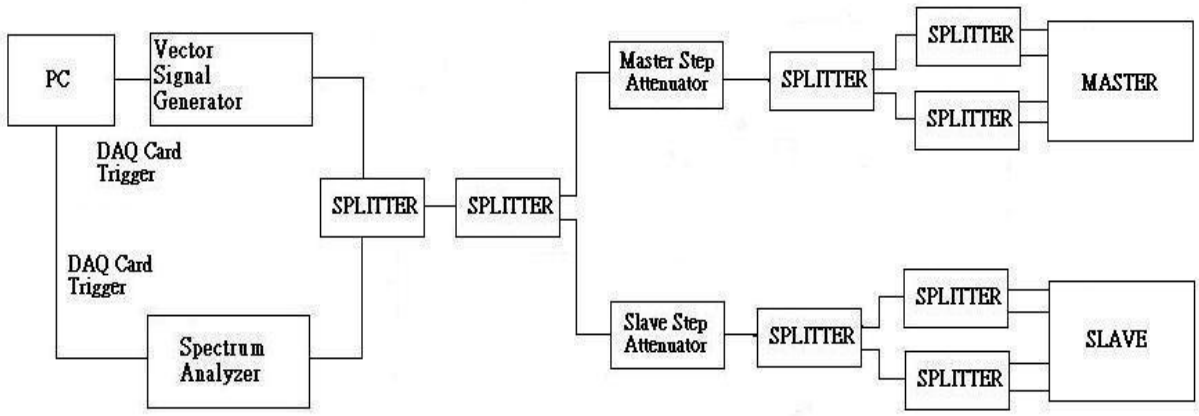
The short pulse types 2, 3 and 4, and the long pulse type 5 parameters are randomized at run-time.

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.

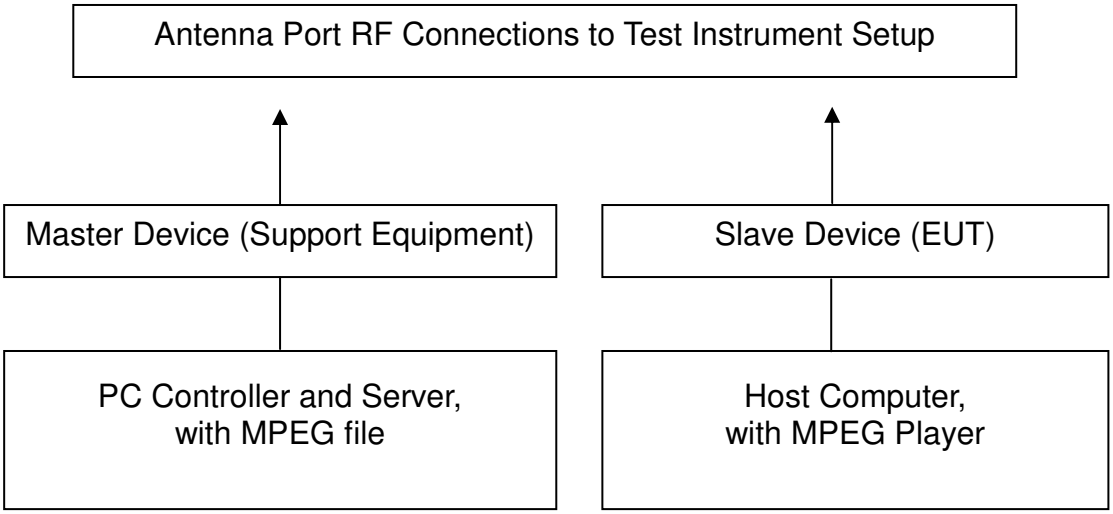
Set the signal generator to produce a radar waveform, trigger a burst manually and measure the level on the spectrum analyzer. Readjust the amplitude of the signal generator as required so that the peak level of the waveform is at a displayed level equal to the required or desired interference detection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

Test Setup



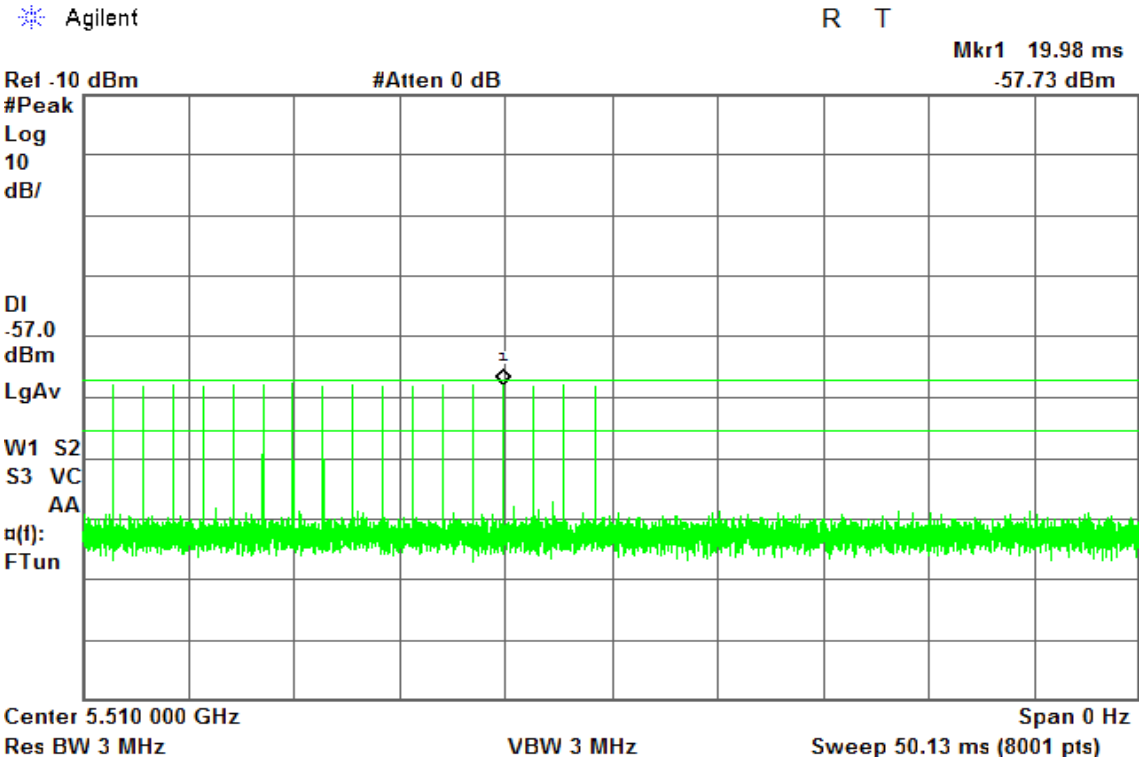
TEST RESULTS

No non-compliance noted

Test Plot

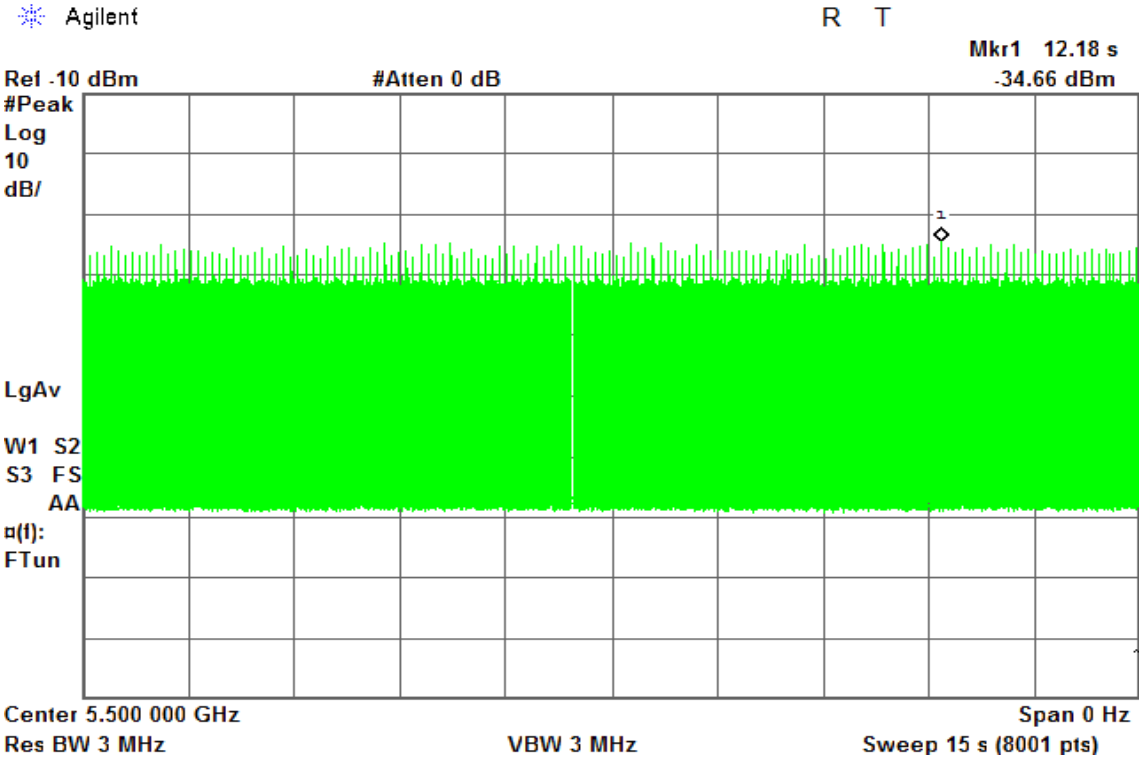
PLOTS OF RADAR WAVEFORMS

Sample of Short Pulse Radar Type 0

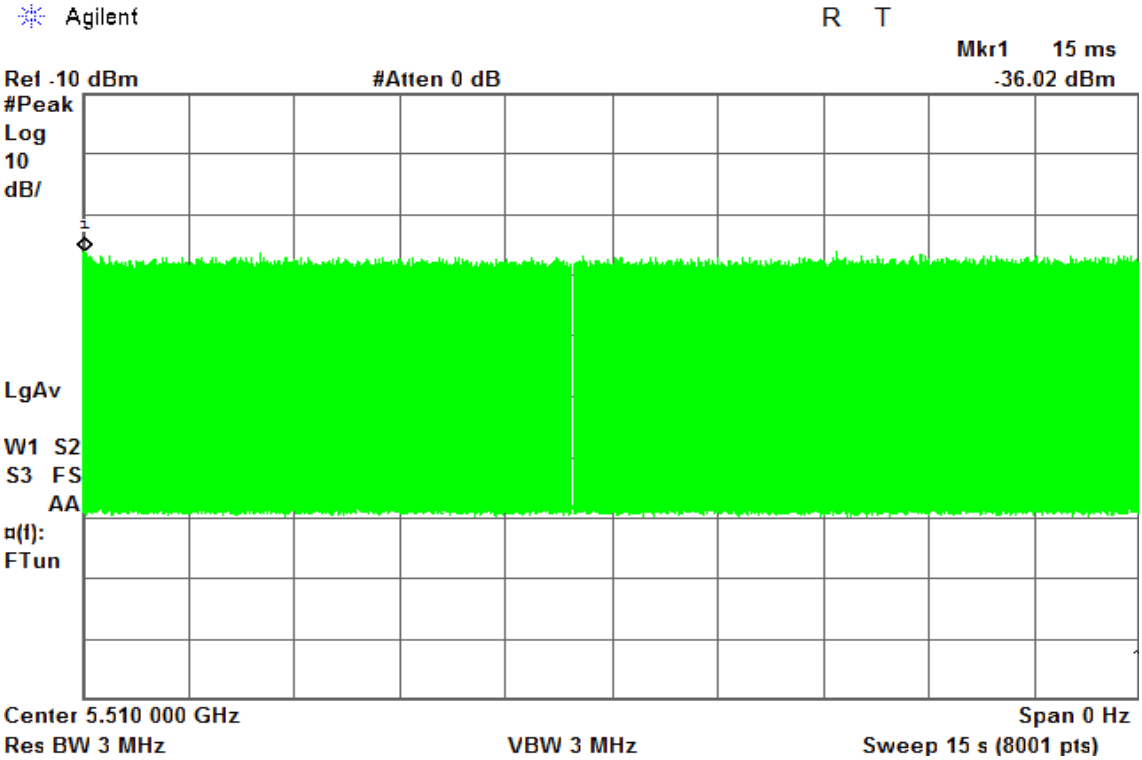


Plot of WLAN Traffic from Slave

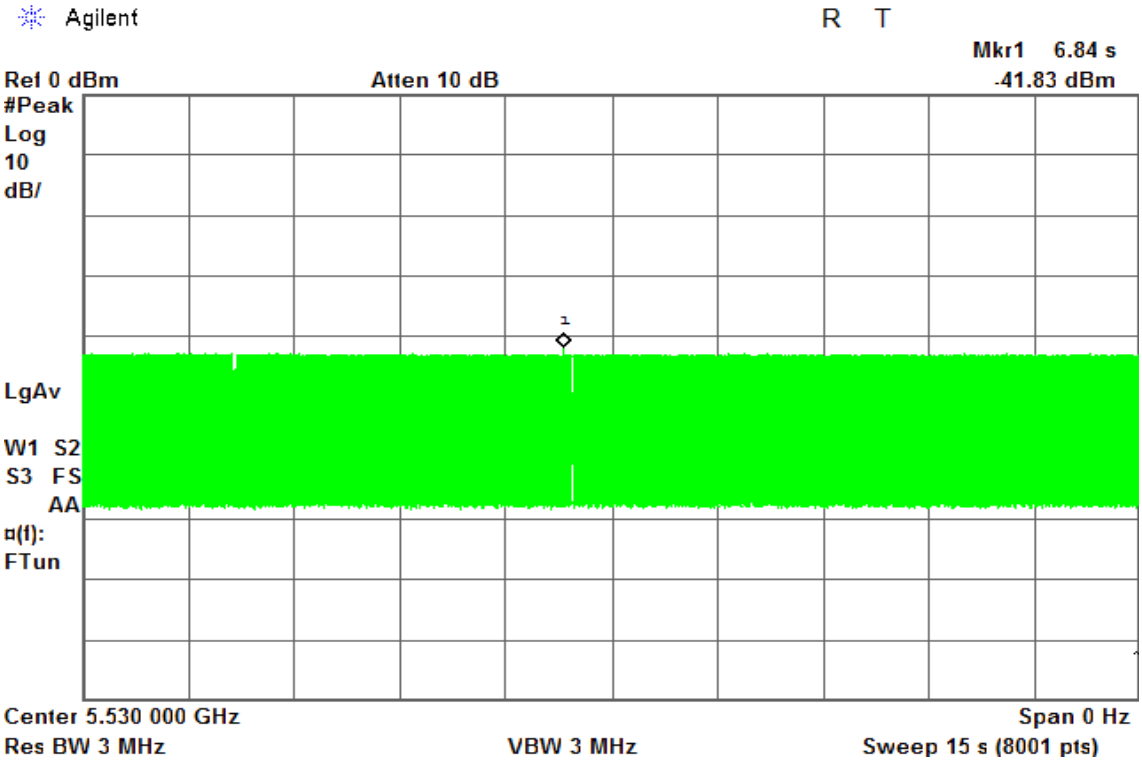
IEEE 802.11n HT 20 MHz mode



IEEE 802.11n HT 40 MHz mode



IEEE 802.11ac VHT 80 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).

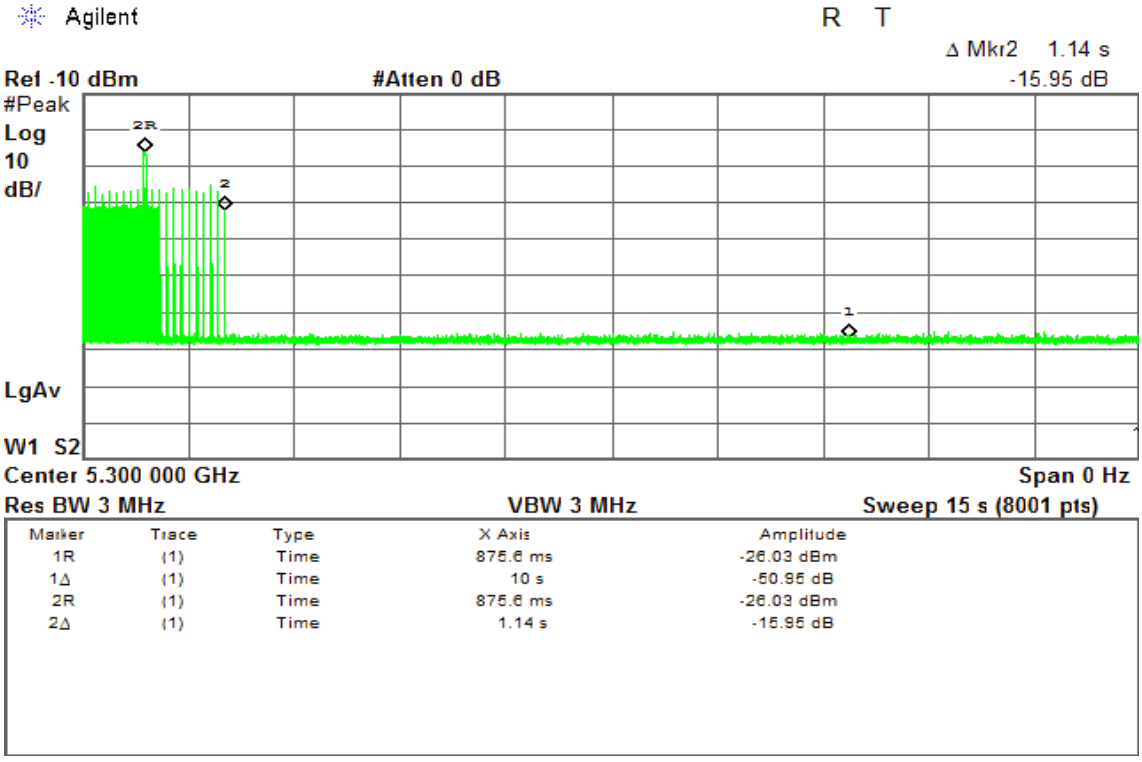
UNII Band II

IEEE 802.11n HT 20 MHz Channel mode

Type 1 Channel Move Time Results

No non-compliance noted.

Channel Move Time (s)	Limit (s)
1.14	10

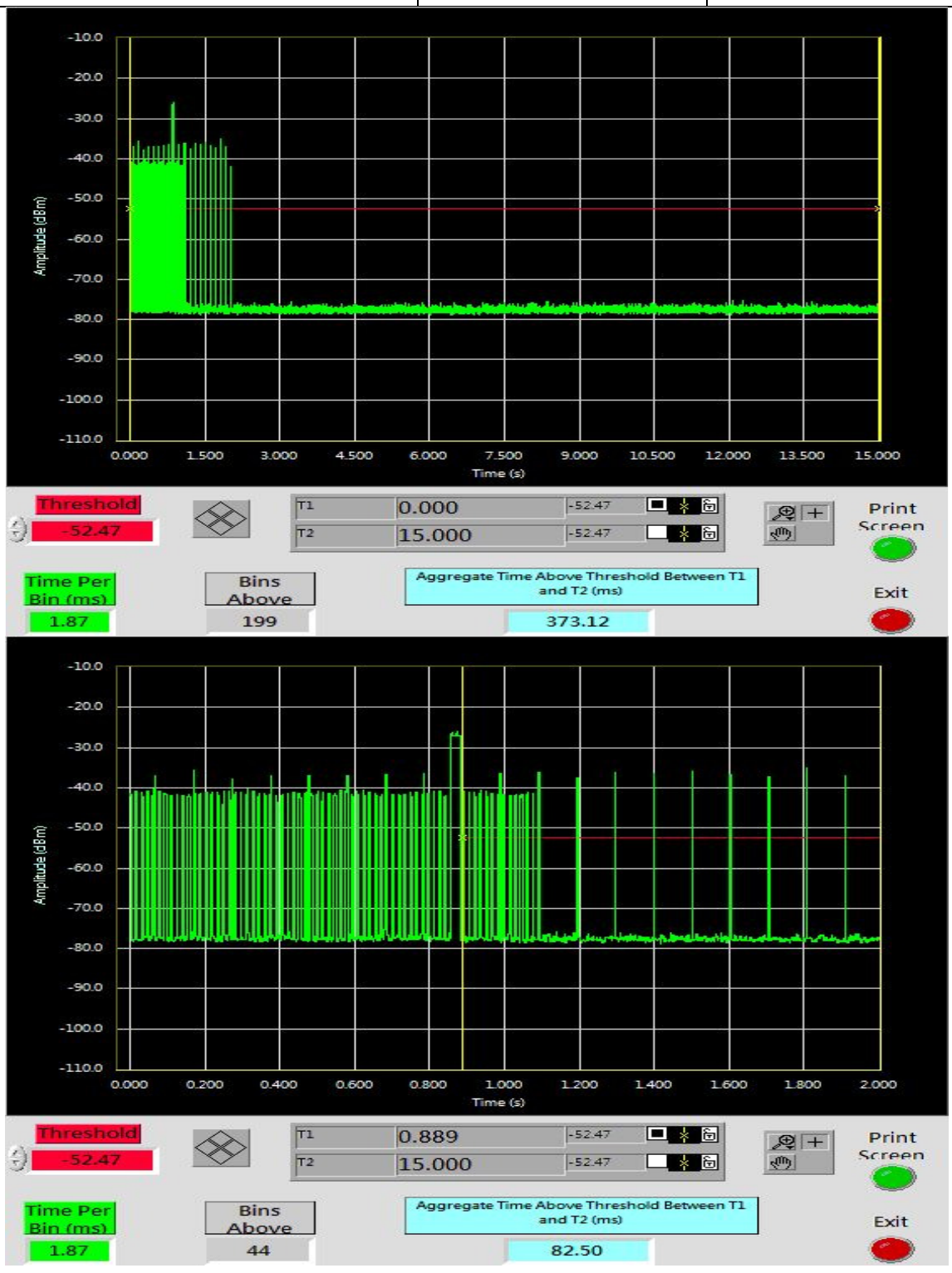


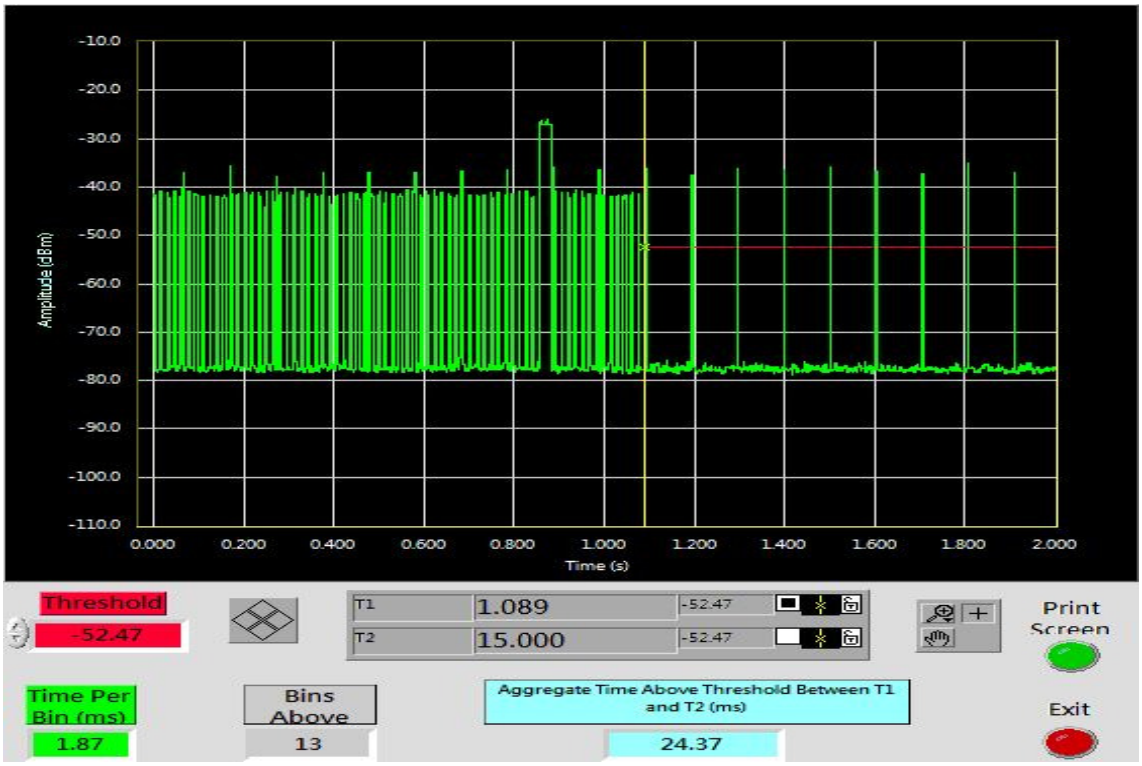
IEEE 802.11n HT 20 MHz Channel mode

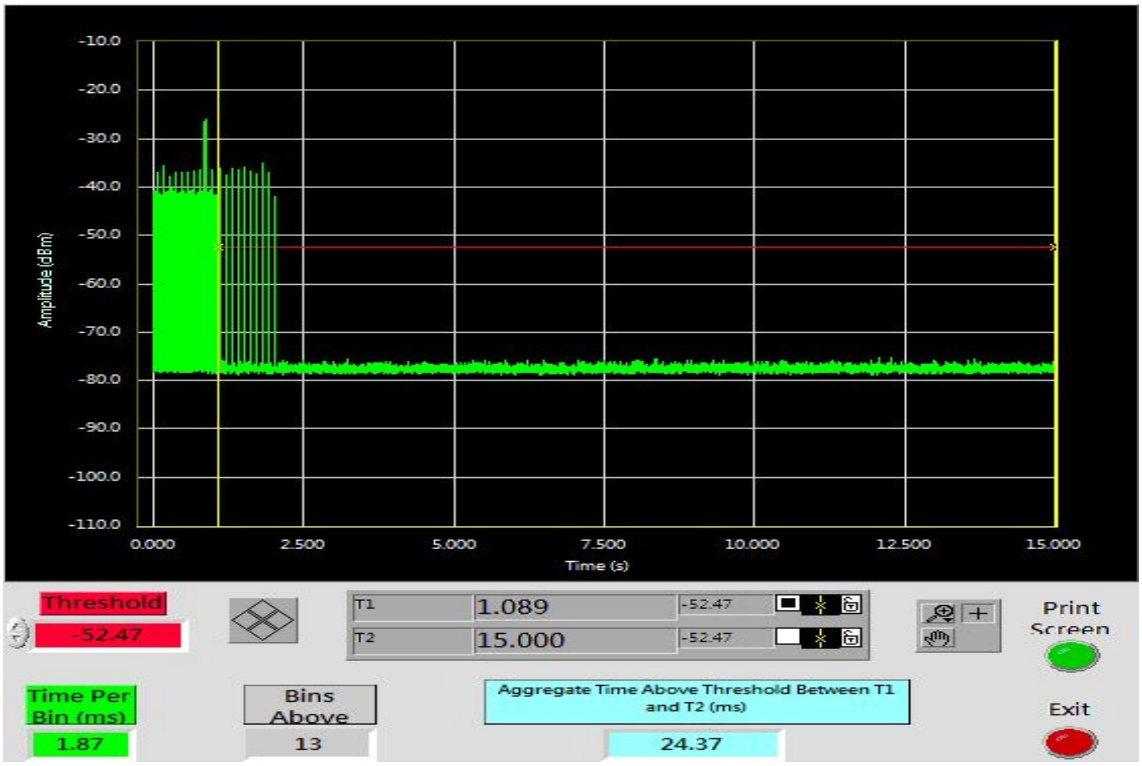
Type 1 Channel Closing Transmission Time Results

No non-compliance noted.

Aggregate Transmission Time (ms)	Limit (ms)	Margin (ms)
24.37	60	-35.63




-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
Time (s)
Threshold
-52.47
T1
1.089
-52.47
T2
15.000
-52.47
Print Screen
Exit
Time Per Bin (ms)
1.87
Bins Above
13
Aggregate Time Above Threshold Between T1 and T2 (ms)
24.37

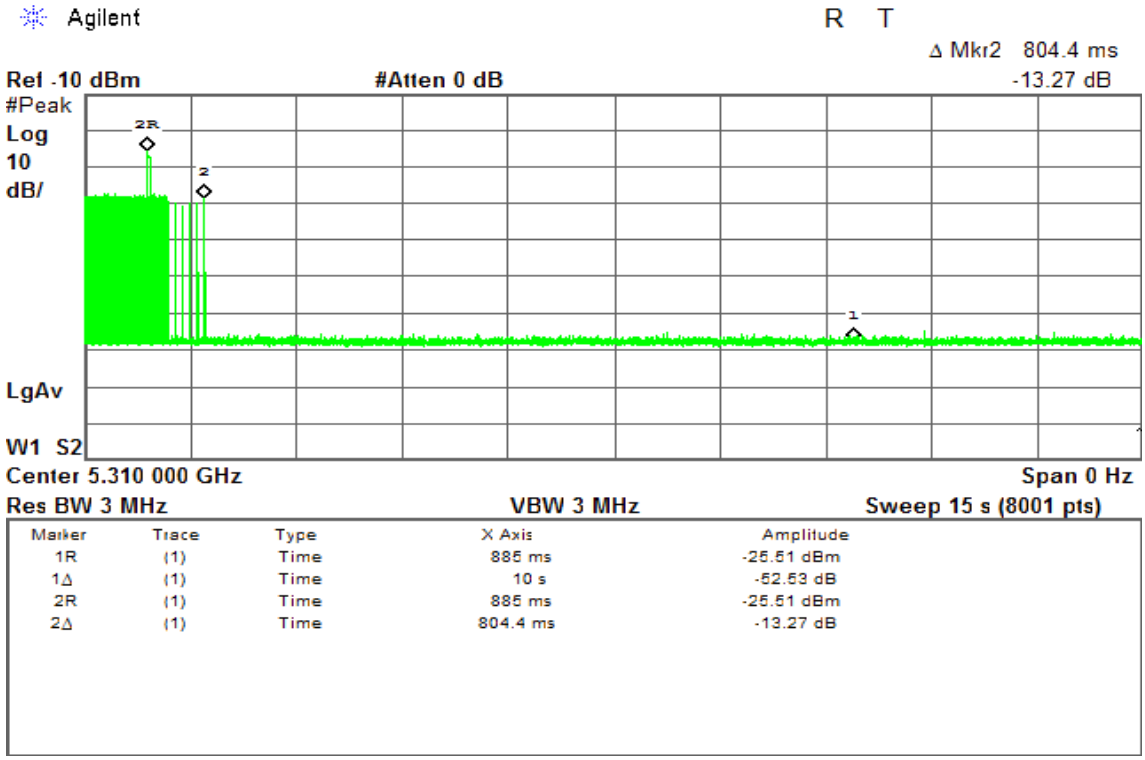

-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100.0
-110.0
Amplitude (dBm)
0.000
2.500
5.000
7.500
10.000
12.500
15.000
Time (s)
Threshold
-52.47
T1
1.089
-52.47
T2
15.000
-52.47
Print Screen
Exit
Time Per Bin (ms)
1.87
Bins Above
13
Aggregate Time Above Threshold Between T1 and T2 (ms)
24.37

IEEE 802.11n HT 40 MHz mode

Type 1 Channel Move Time Results

No non-compliance noted.

Channel Move Time (ms)	Limit (s)
804.4	10

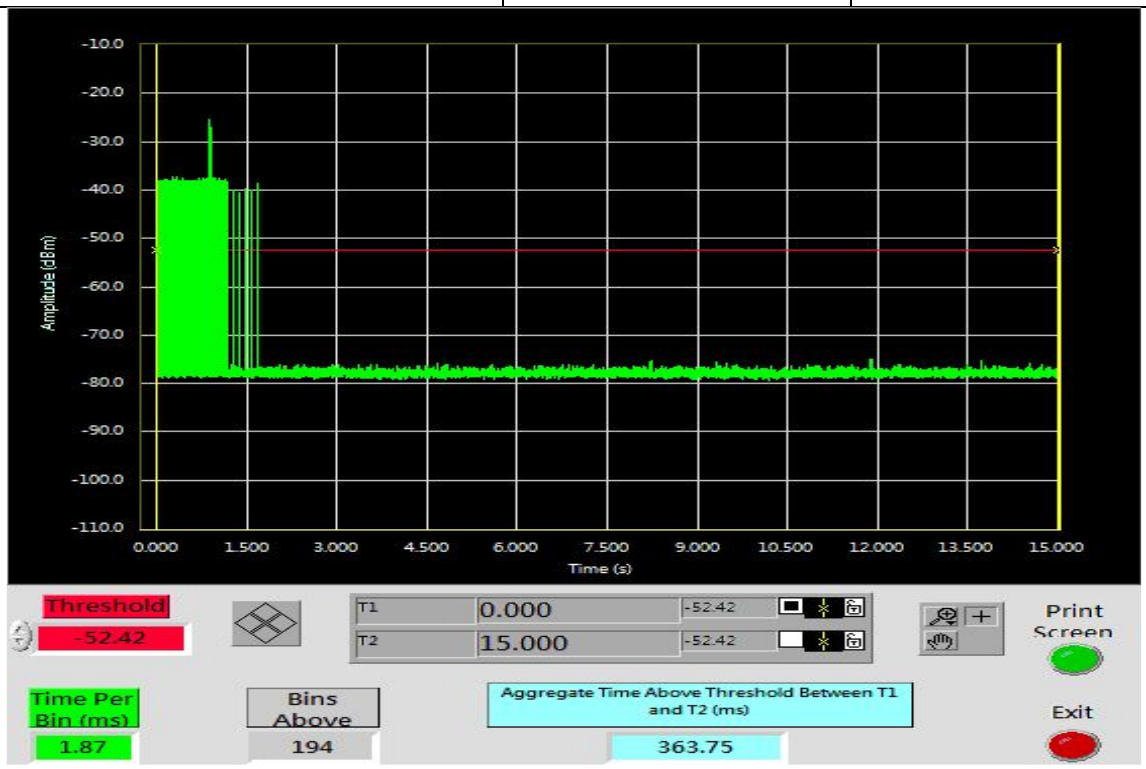


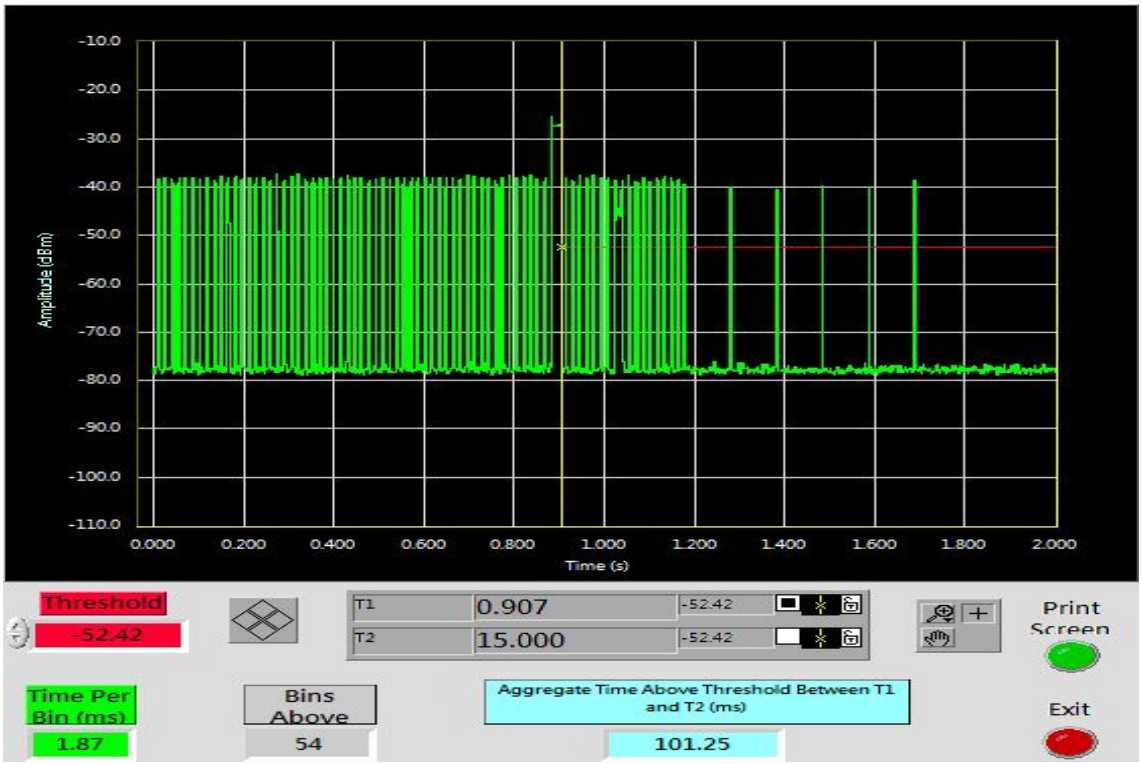
IEEE 802.11n HT 40 MHz mode

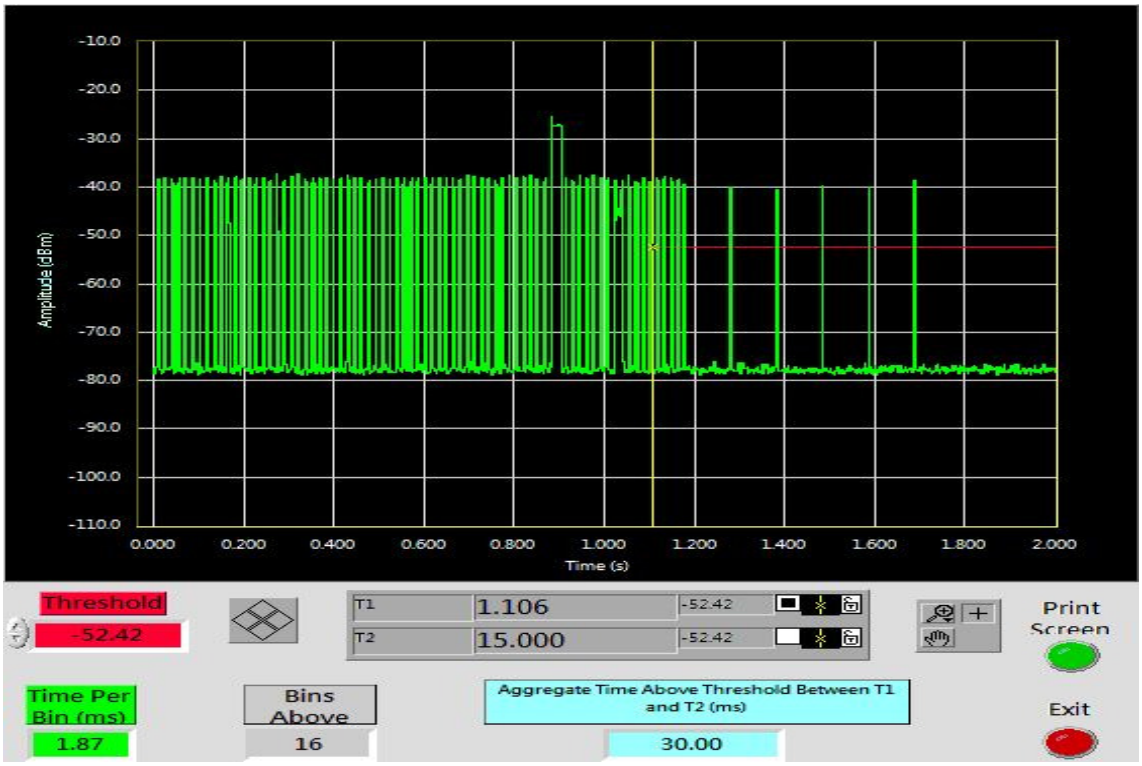
Type 1 Channel Closing Transmission Time Results

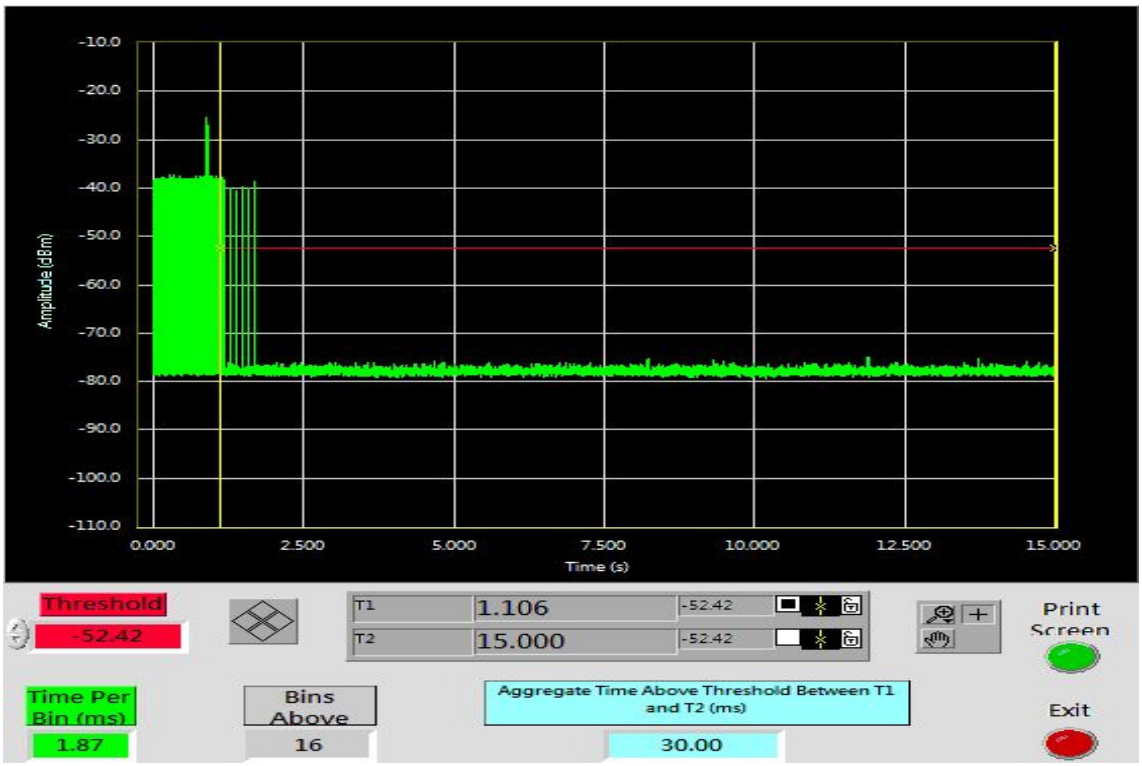
No non-compliance noted.

Aggregate Transmission Time (ms)	Limit (ms)	Margin (ms)
30	60	-30






-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
Time (s)
Threshold
-52.42
T1
1.106
-52.42
T2
15.000
-52.42
Print Screen
Exit
Time Per Bin (ms)
1.87
Bins Above
16
Aggregate Time Above Threshold Between T1 and T2 (ms)
30.00

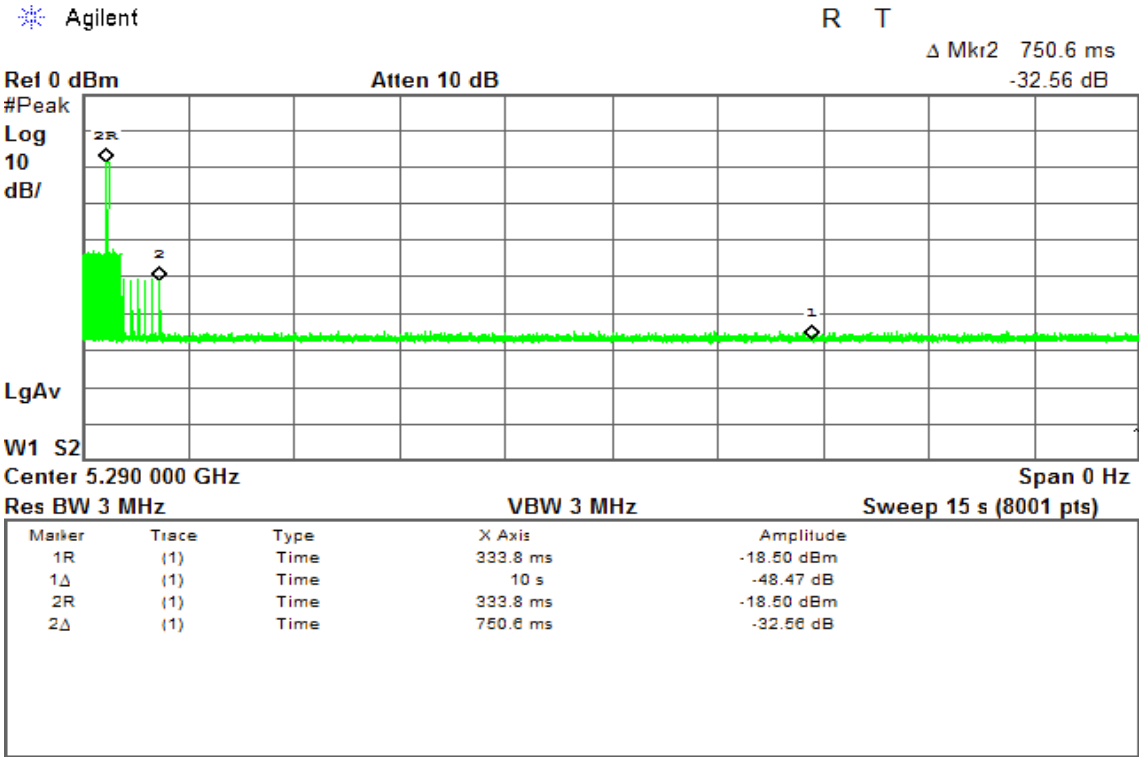

-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100.0
-110.0
Amplitude (dBm)
0.000
2.500
5.000
7.500
10.000
12.500
15.000
Time (s)
Threshold
-52.42
T1
1.106
-52.42
T2
15.000
-52.42
Print Screen
Exit
Time Per Bin (ms)
1.87
Bins Above
16
Aggregate Time Above Threshold Between T1 and T2 (ms)
30.00

IEEE 802.11 ac VHT 80 MHz Channel mode

Type 1 Channel Move Time Results

No non-compliance noted.

Channel Move Time (ms)	Limit (s)
750.6	10

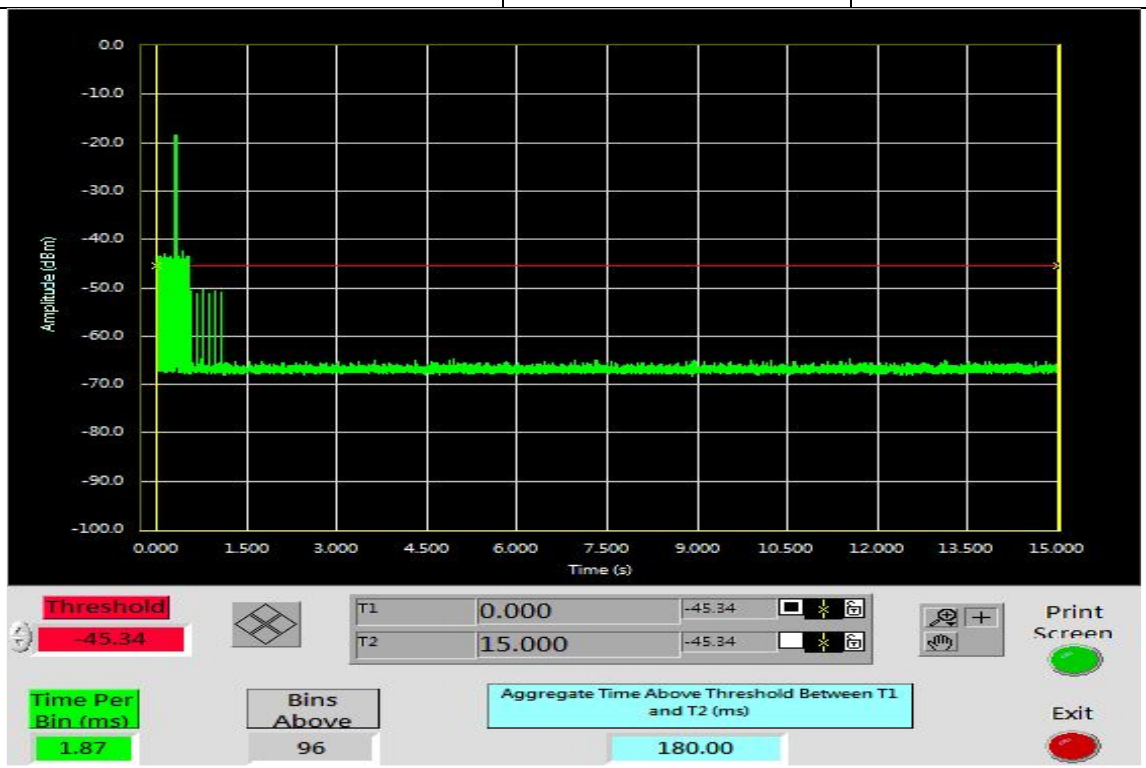


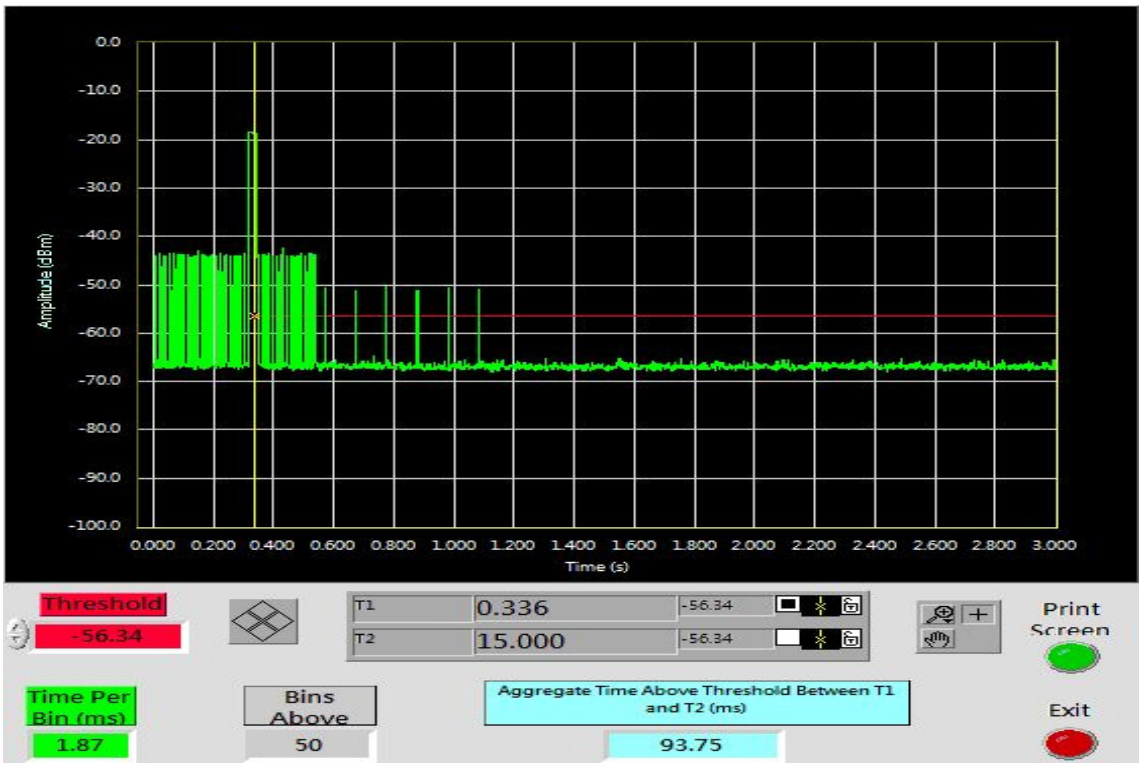
IEEE 802.11 ac VHT 80 MHz Channel mode

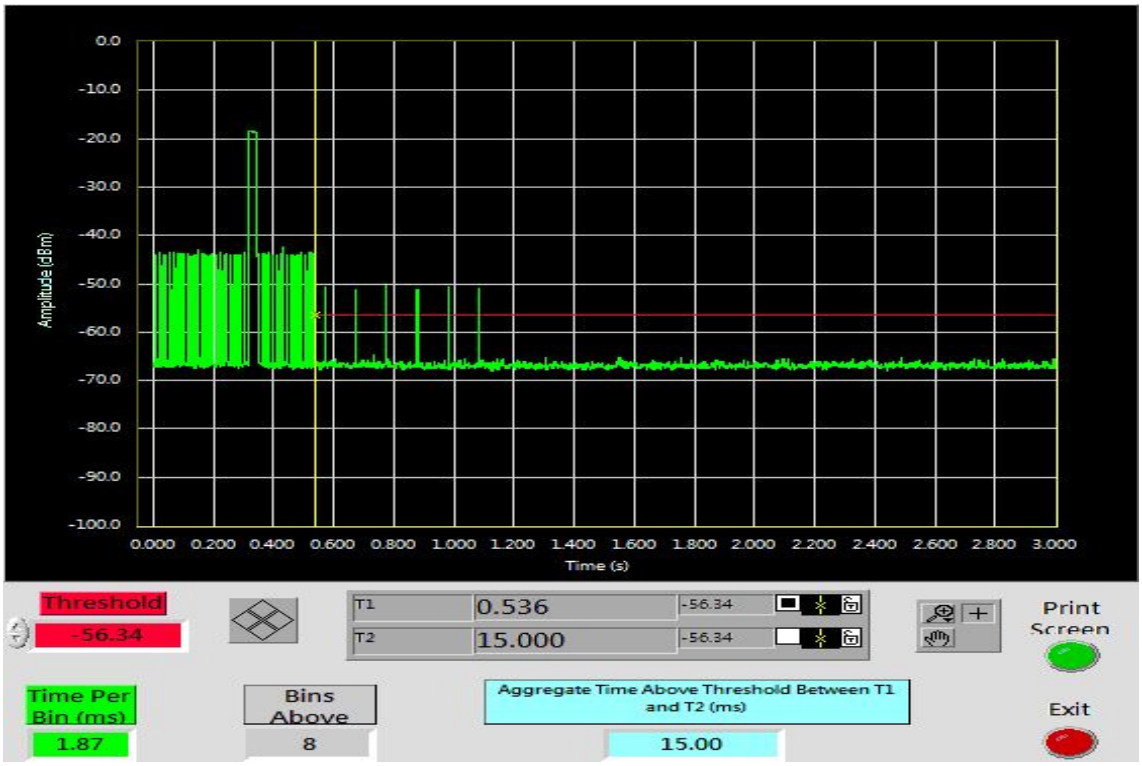
Type 1 Channel Closing Transmission Time Results

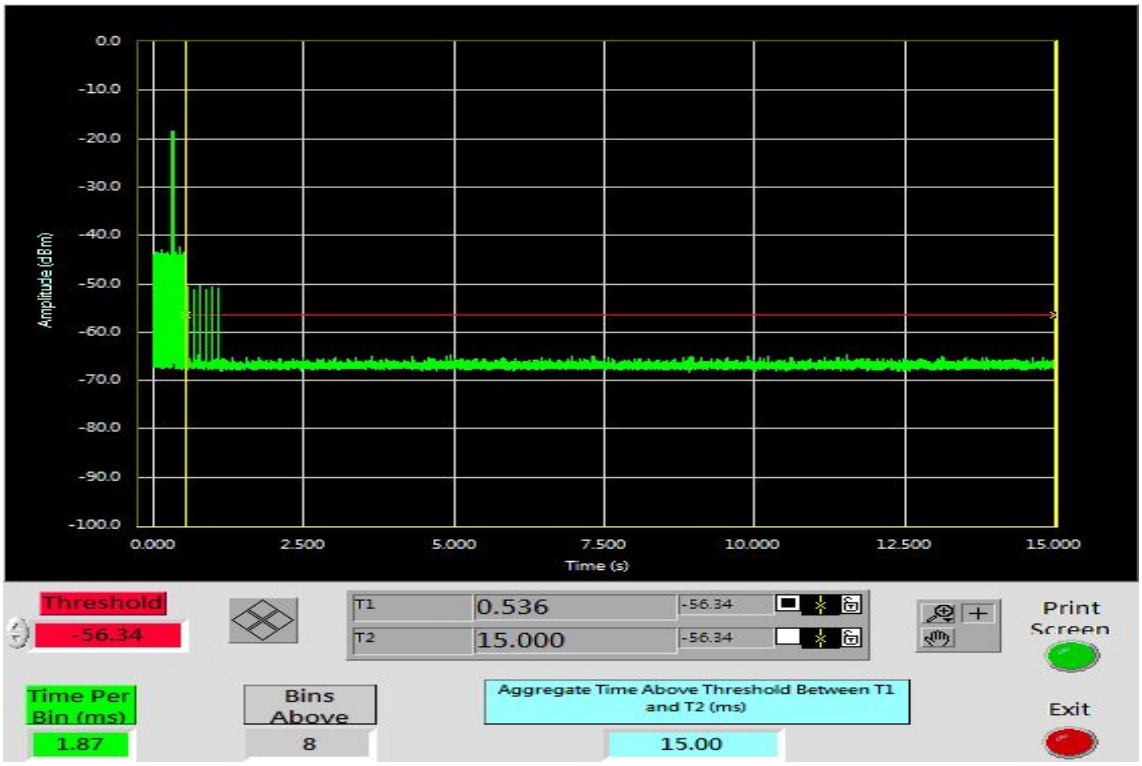
No non-compliance noted.

Aggregate Transmission Time (ms)	Limit (ms)	Margin (ms)
15	60	-45






0.0
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100.0
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
-56.34
T1
0.536
-56.34
T2
15.000
-56.34
Print Screen
Time Per Bin (ms)
1.87
Bins Above
8
Aggregate Time Above Threshold Between T1 and T2 (ms)
15.00
Exit


0.0
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100.0
Amplitude (dBm)
0.000 2.500 5.000 7.500 10.000 12.500 15.000
Time (s)
Threshold
-56.34
T1
0.536
-56.34
T2
15.000
-56.34
Print Screen
Time Per Bin (ms)
1.87
Bins Above
8
Aggregate Time Above Threshold Between T1 and T2 (ms)
15.00
Exit

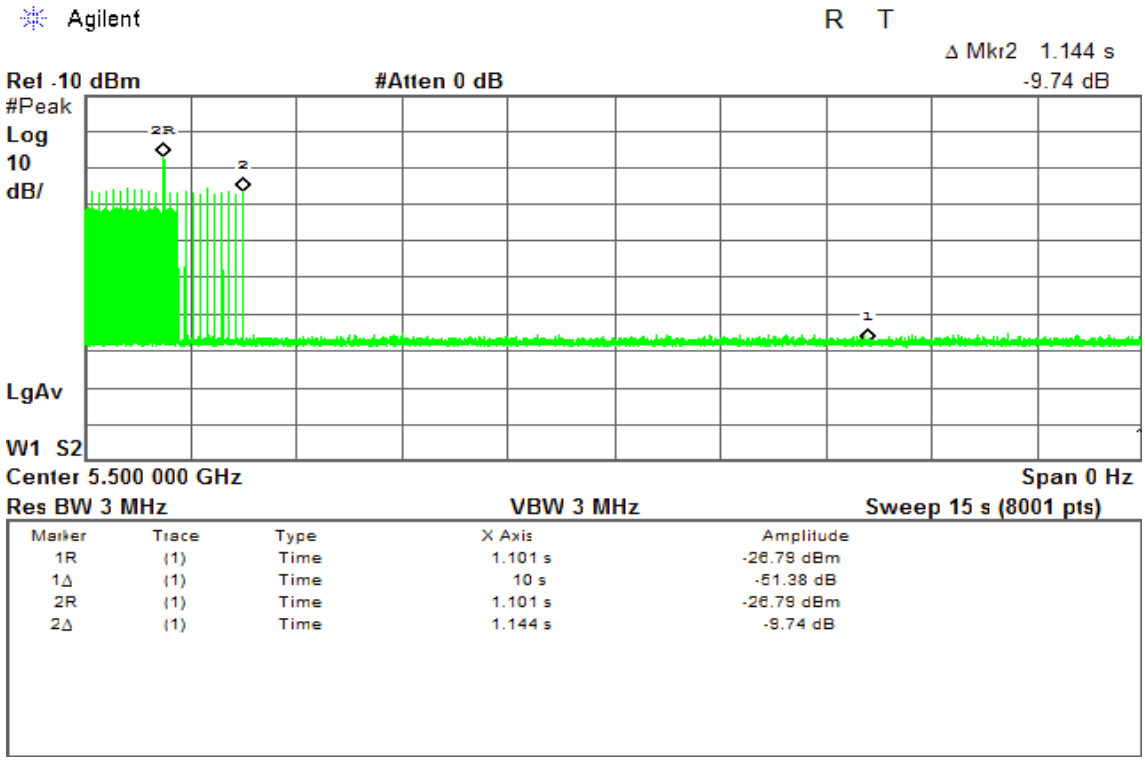
UNII Band III

IEEE 802.11n HT 20 MHz Channel mode

Type 1 Channel Move Time Results

No non-compliance noted.

Channel Move Time (s)	Limit (s)
1.144	10

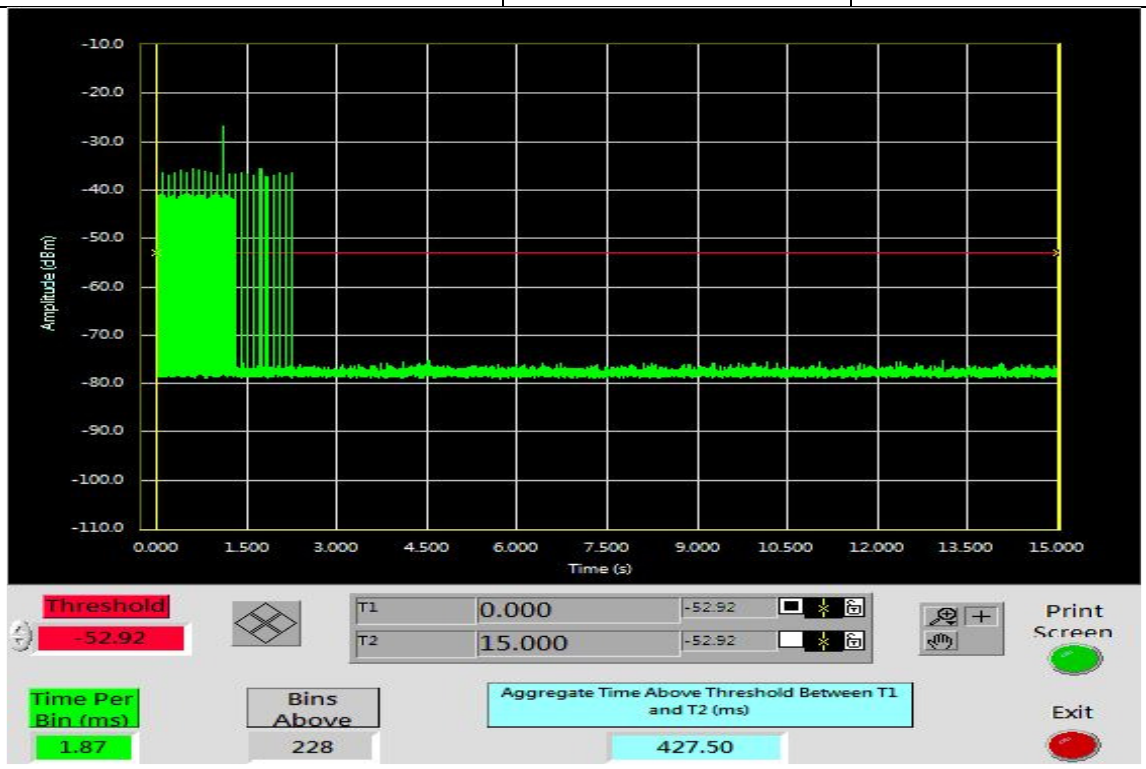


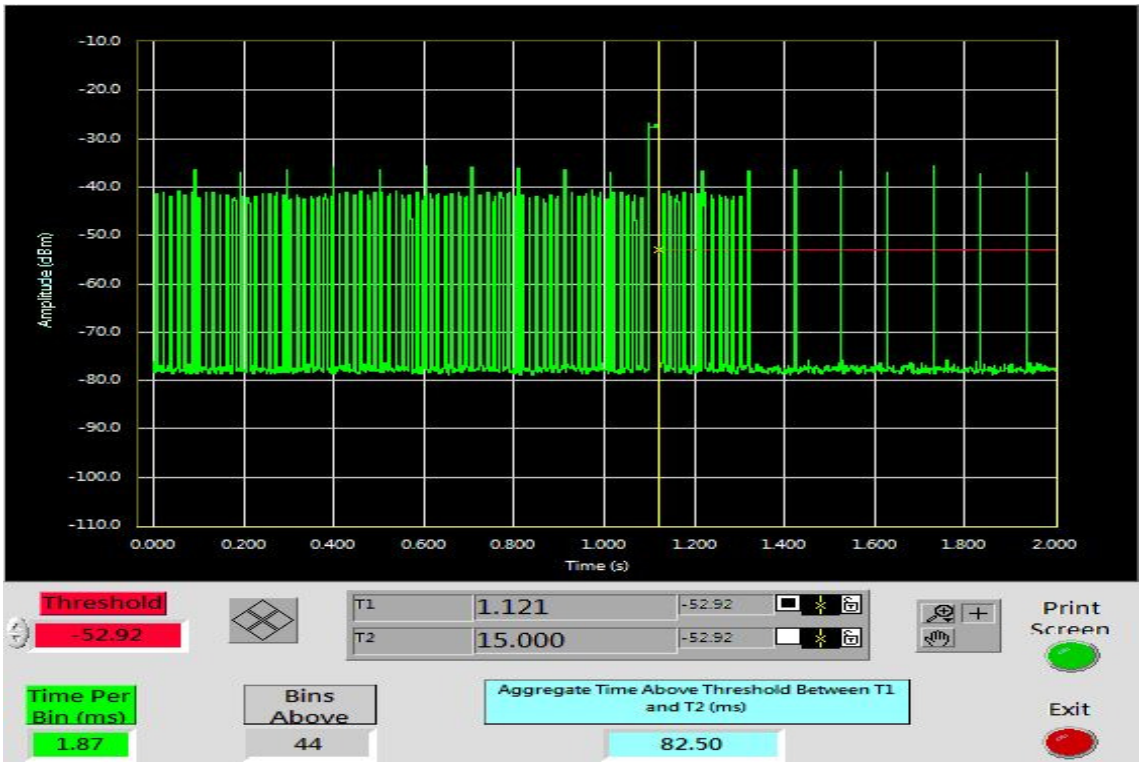
IEEE 802.11n HT 20 MHz Channel mode

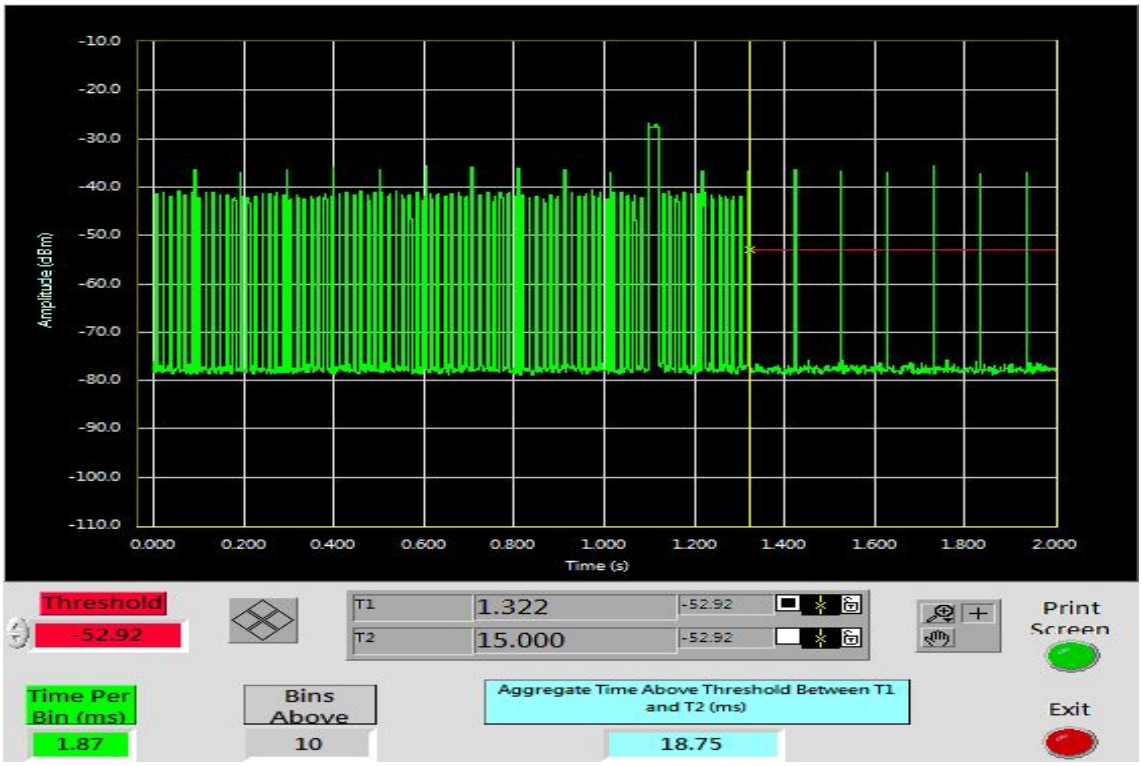
Type 1 Channel Closing Transmission Time Results

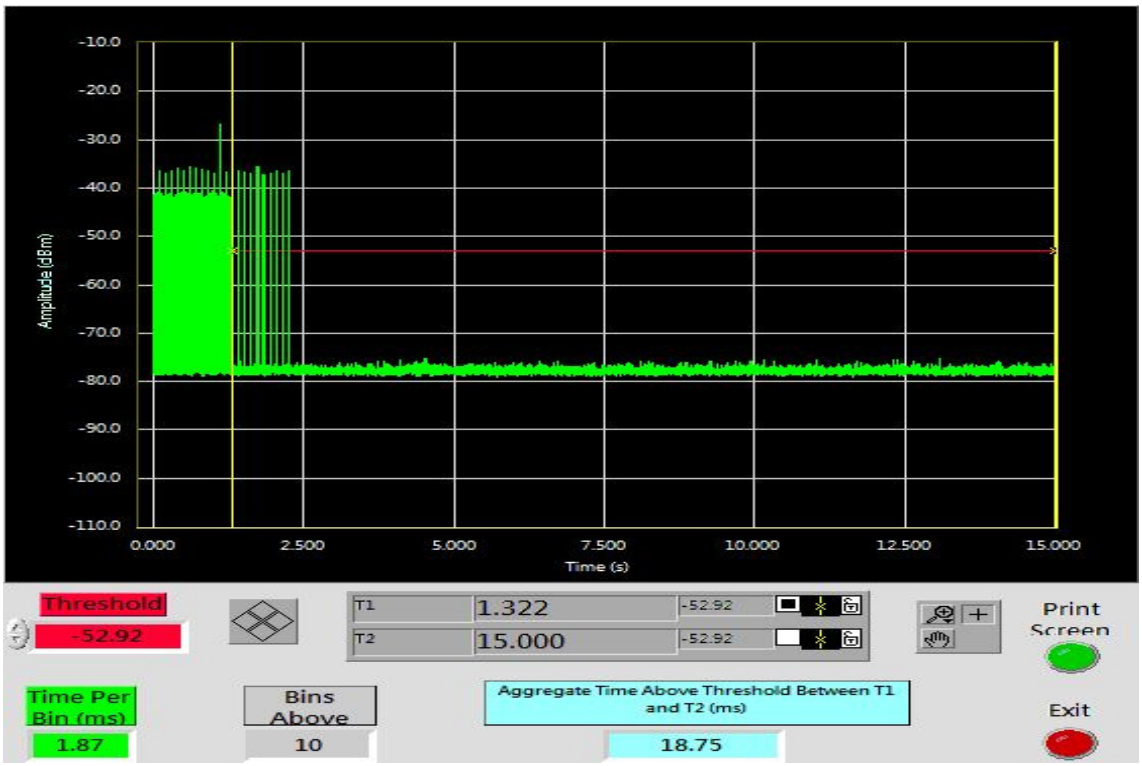
No non-compliance noted.

Aggregate Transmission Time (ms)	Limit (ms)	Margin (ms)
18.75	60	-41.25






-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
Time (s)
Threshold
-52.92
T1
1.322
-52.92
T2
15.000
-52.92
Print Screen
Exit
Time Per Bin (ms)
1.87
Bins Above
10
Aggregate Time Above Threshold Between T1 and T2 (ms)
18.75

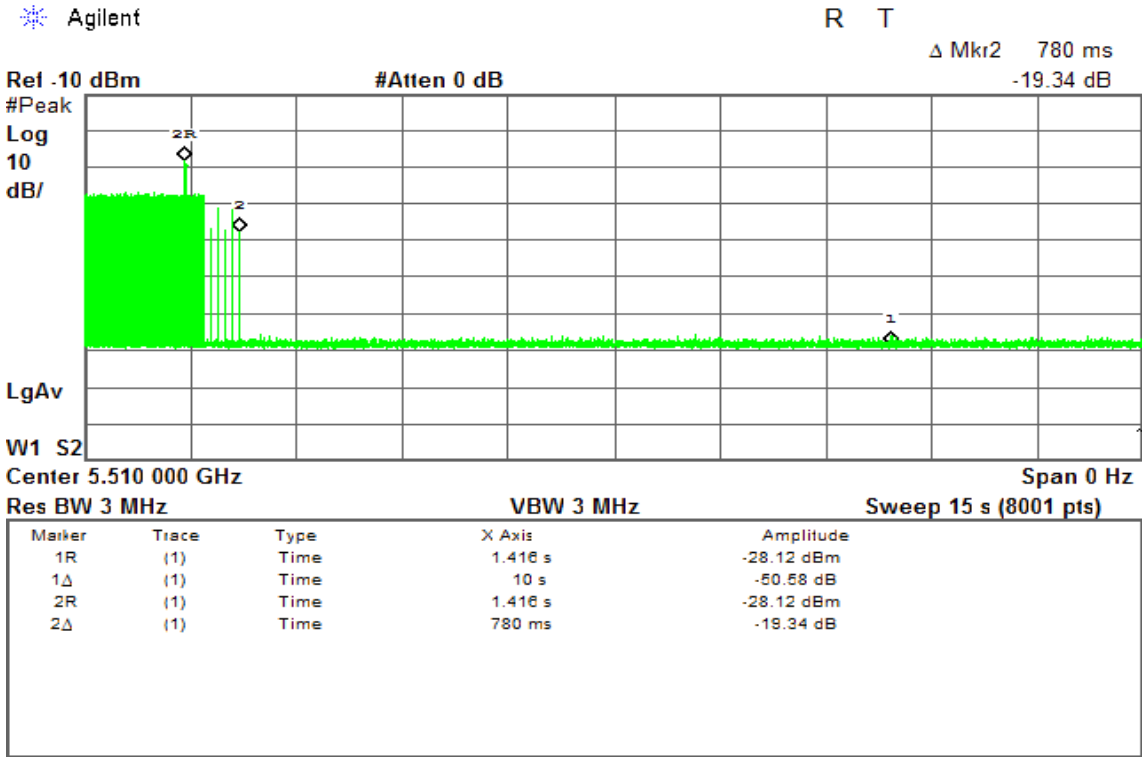

-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100.0
-110.0
Amplitude (dBm)
0.000
2.500
5.000
7.500
10.000
12.500
15.000
Time (s)
Threshold
-52.92
T1
1.322
-52.92
T2
15.000
-52.92
Print Screen
Exit
Time Per Bin (ms)
1.87
Bins Above
10
Aggregate Time Above Threshold Between T1 and T2 (ms)
18.75

IEEE 802.11n HT 40 MHz mode

Type 1 Channel Move Time Results

No non-compliance noted.

Channel Move Time (ms)	Limit (s)
780	10

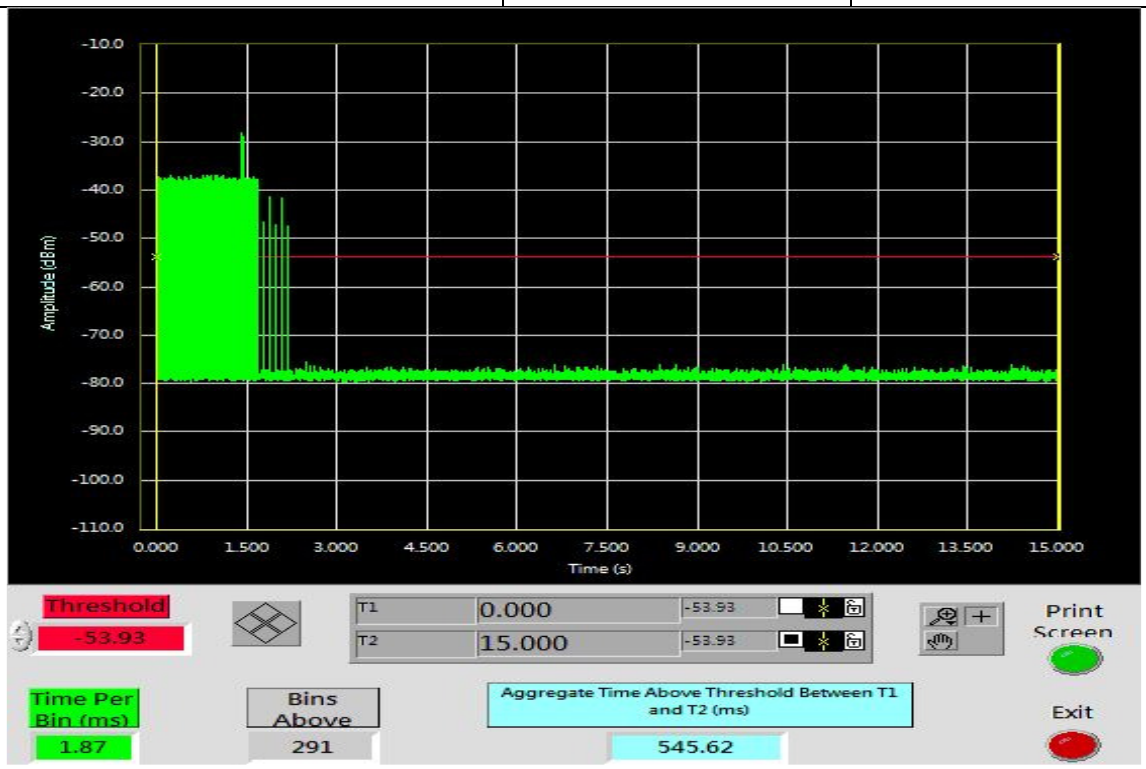


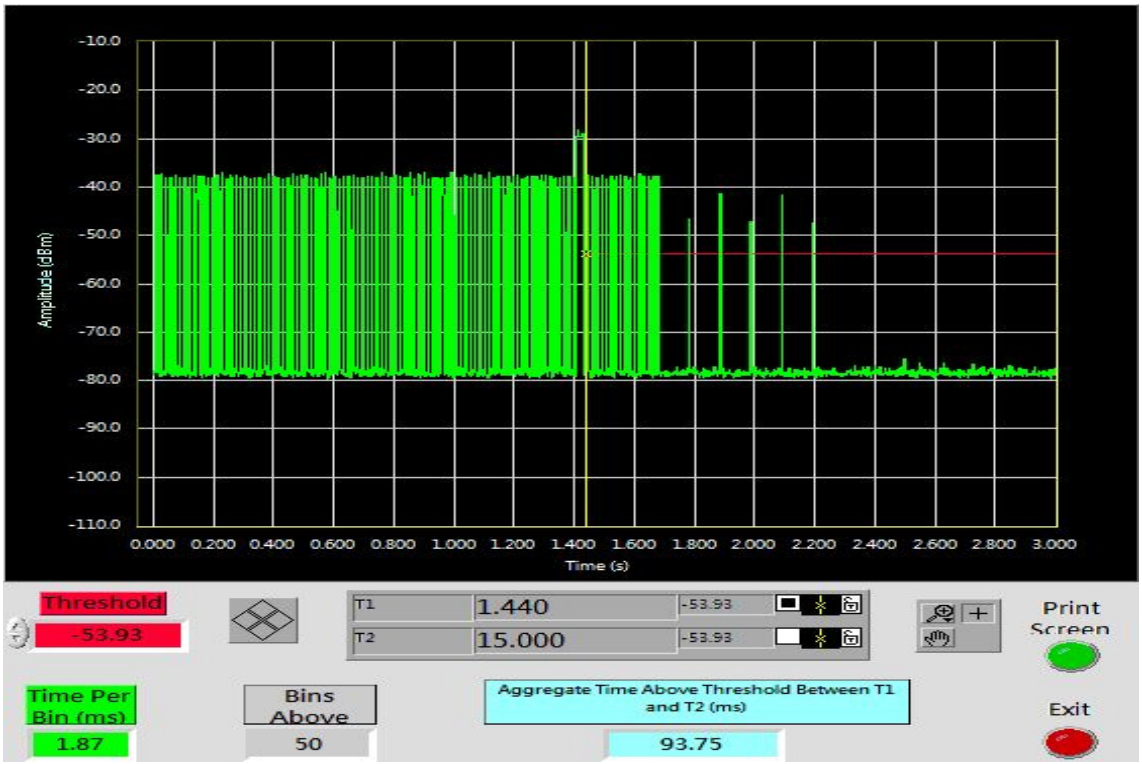
IEEE 802.11n HT 40 MHz mode

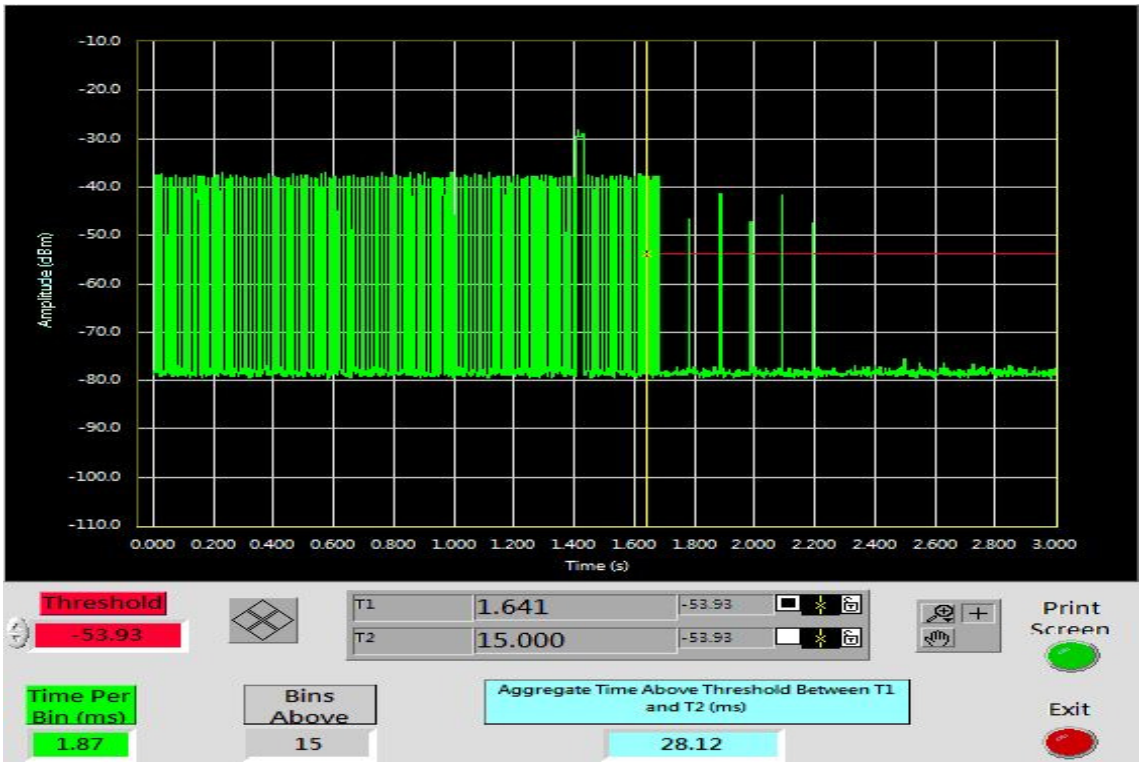
Type 1 Channel Closing Transmission Time Results

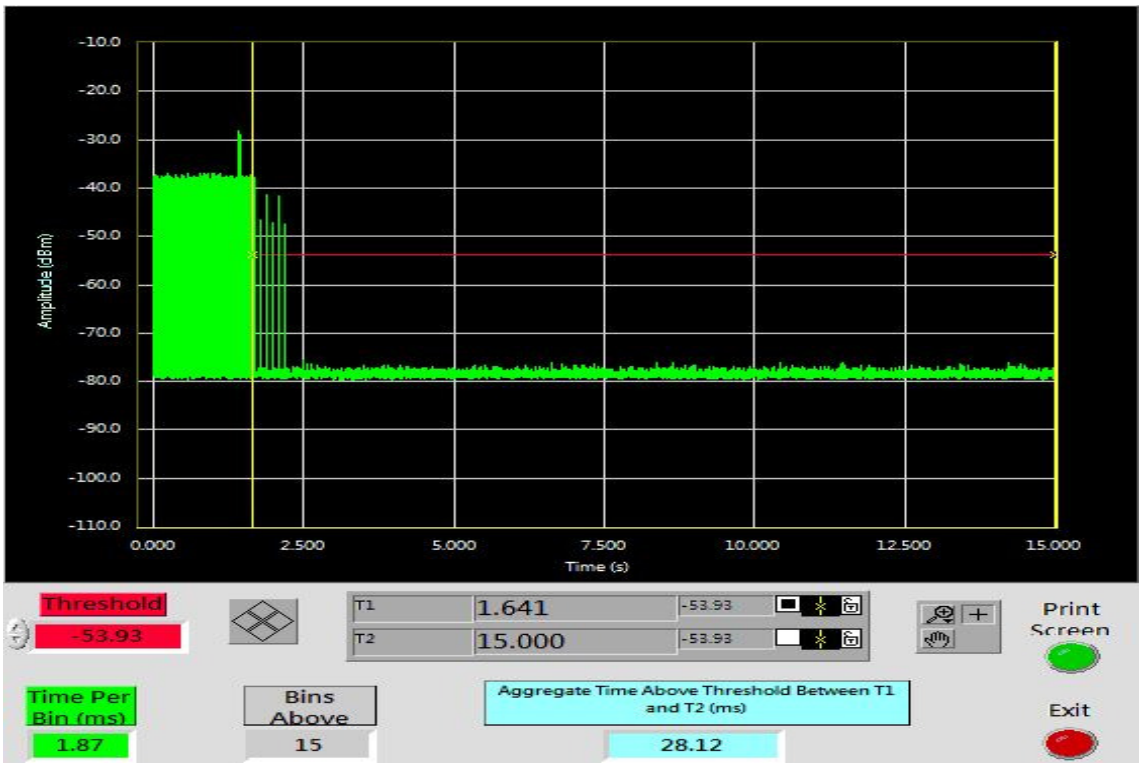
No non-compliance noted.

Aggregate Transmission Time (ms)	Limit (ms)	Margin (ms)
28.12	60	-31.88






-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
-53.93
T1 1.641 -53.93
T2 15.000 -53.93
Print Screen
Exit
Time Per Bin (ms)
1.87
Bins Above
15
Aggregate Time Above Threshold Between T1 and T2 (ms)
28.12

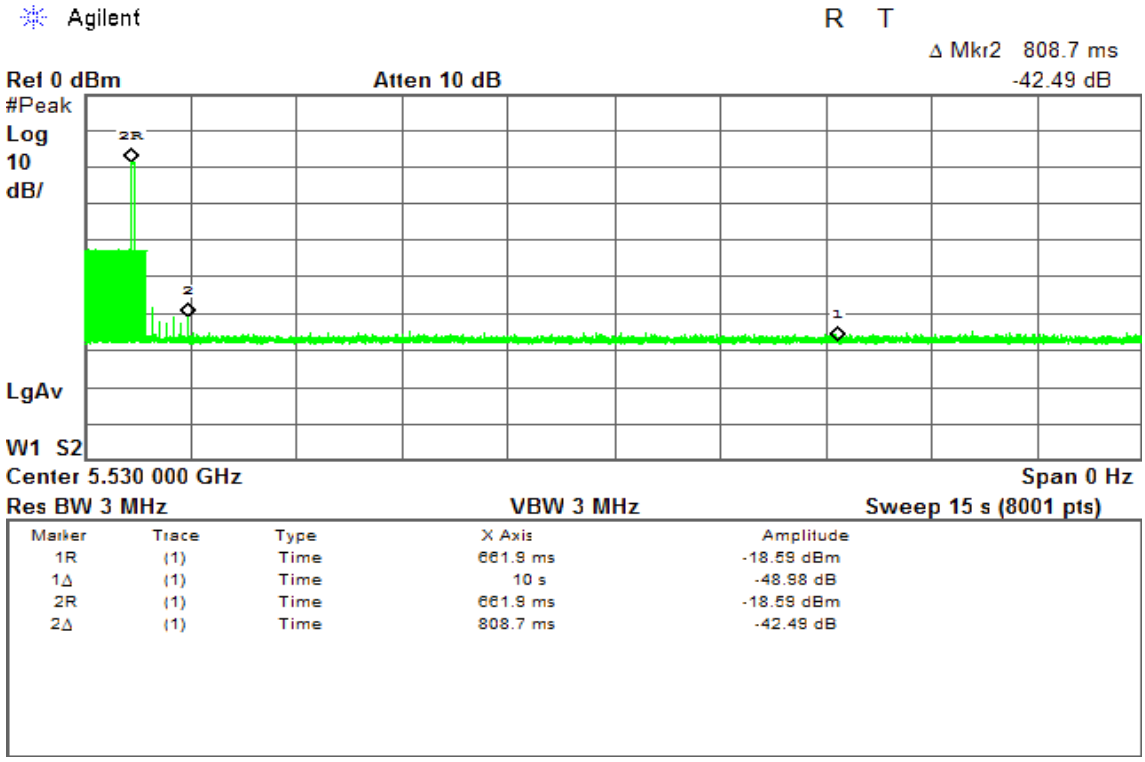

-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100.0
-110.0
Amplitude (dBm)
0.000 2.500 5.000 7.500 10.000 12.500 15.000
Time (s)
Threshold
-53.93
T1 1.641 -53.93
T2 15.000 -53.93
Print Screen
Exit
Time Per Bin (ms)
1.87
Bins Above
15
Aggregate Time Above Threshold Between T1 and T2 (ms)
28.12

IEEE 802.11 ac VHT 80 MHz Channel mode

Type 1 Channel Move Time Results

No non-compliance noted.

Channel Move Time (ms)	Limit (s)
808.7	10

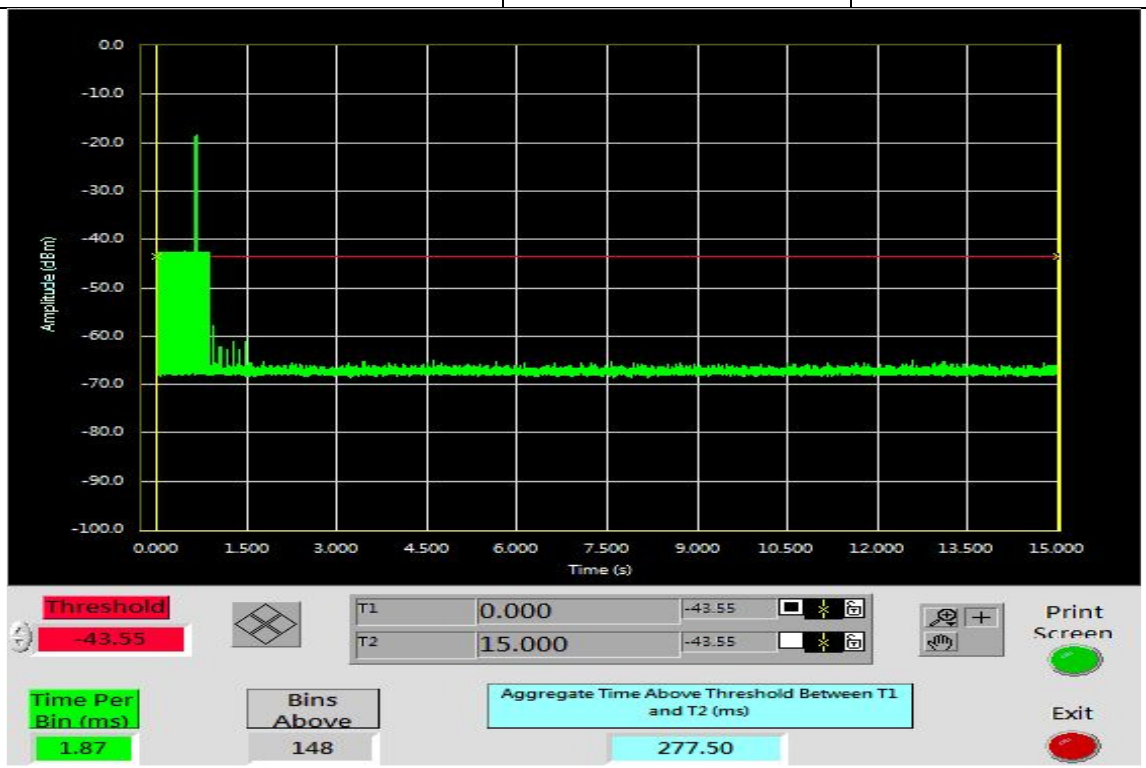


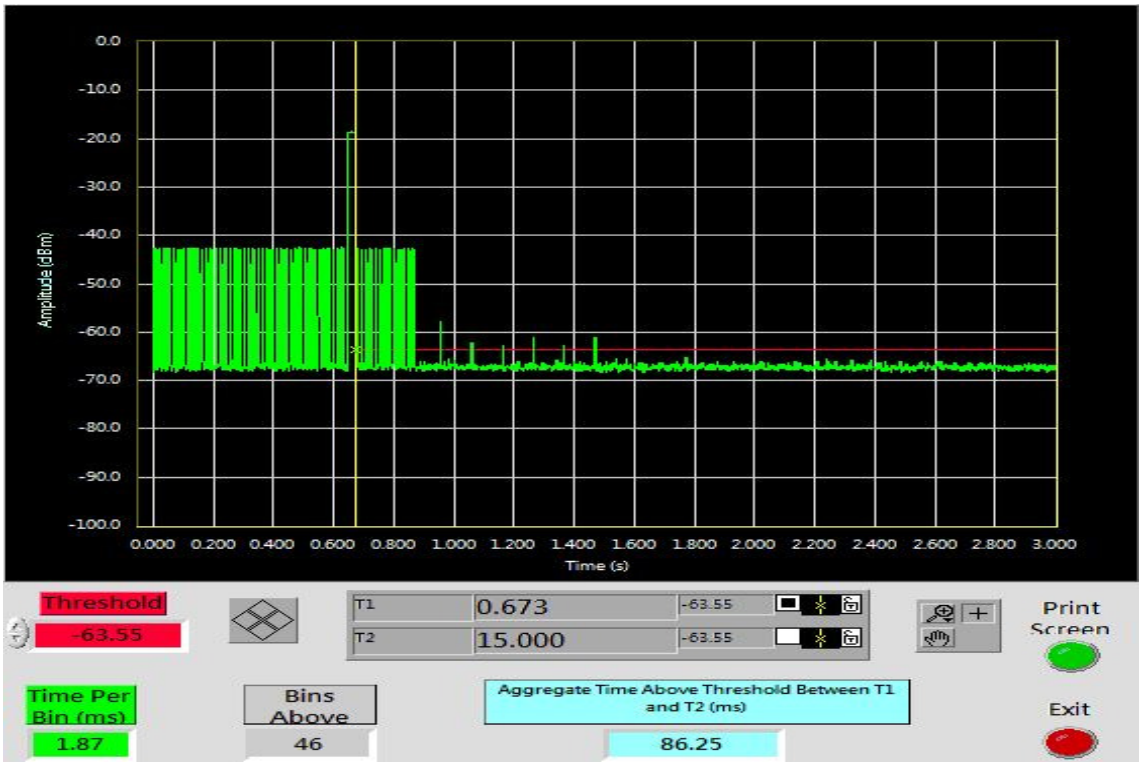
IEEE 802.11 ac VHT 80 MHz Channel mode

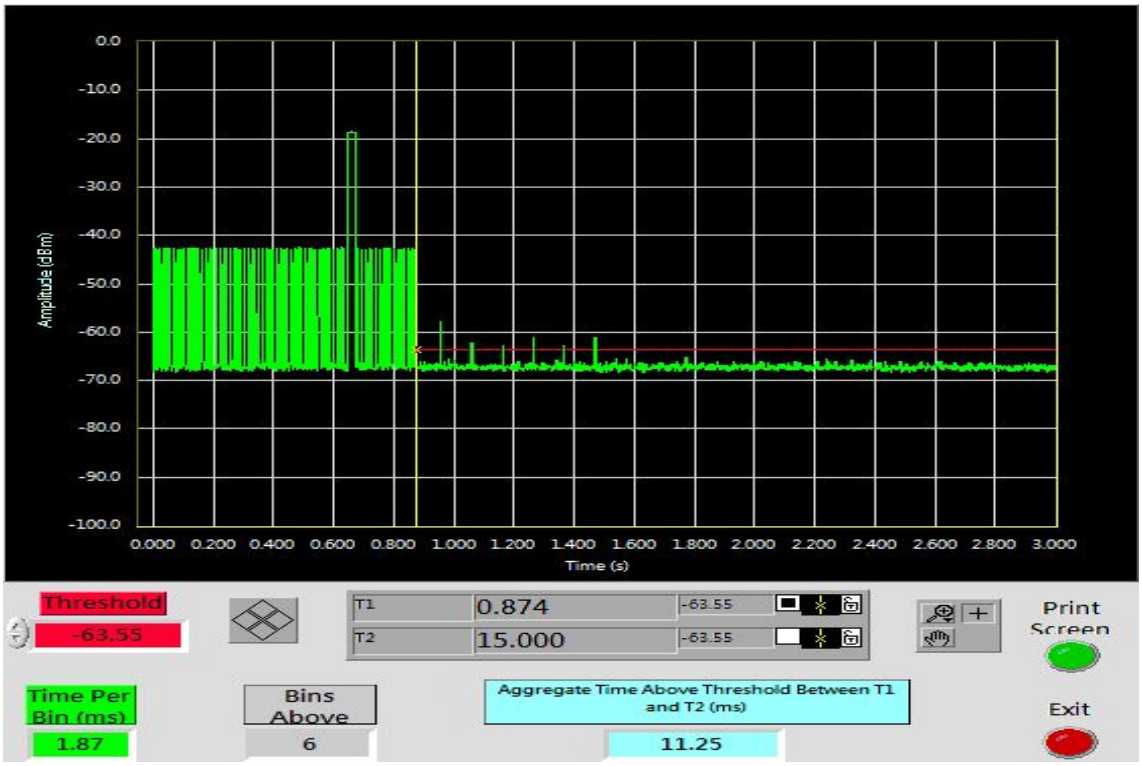
Type 1 Channel Closing Transmission Time Results

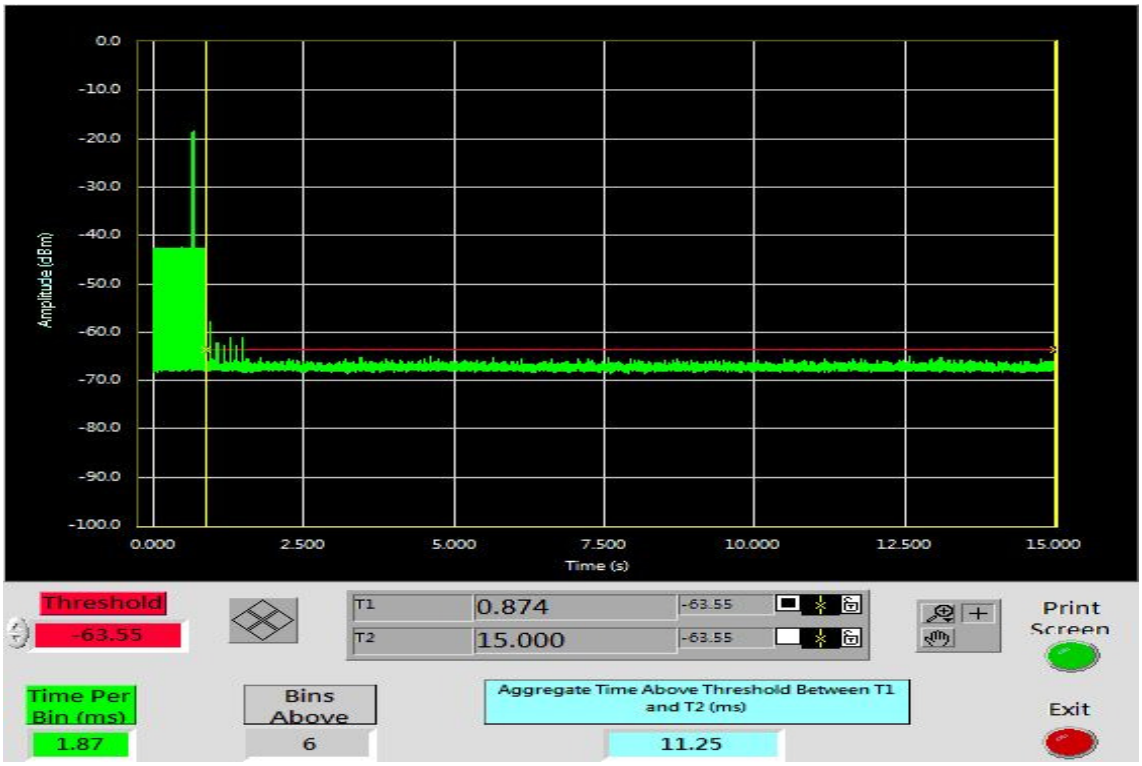
No non-compliance noted.

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






0.0
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100.0
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
-63.55
T1
0.874
-63.55
T2
15.000
-63.55
Print Screen
Time Per Bin (ms)
1.87
Bins Above
6
Aggregate Time Above Threshold Between T1 and T2 (ms)
11.25
Exit


0.0
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100.0
Amplitude (dBm)
0.000 2.500 5.000 7.500 10.000 12.500 15.000
Time (s)
Threshold
-63.55
T1
0.874
-63.55
T2
15.000
-63.55
Print Screen
Time Per Bin (ms)
1.87
Bins Above
6
Aggregate Time Above Threshold Between T1 and T2 (ms)
11.25
Exit

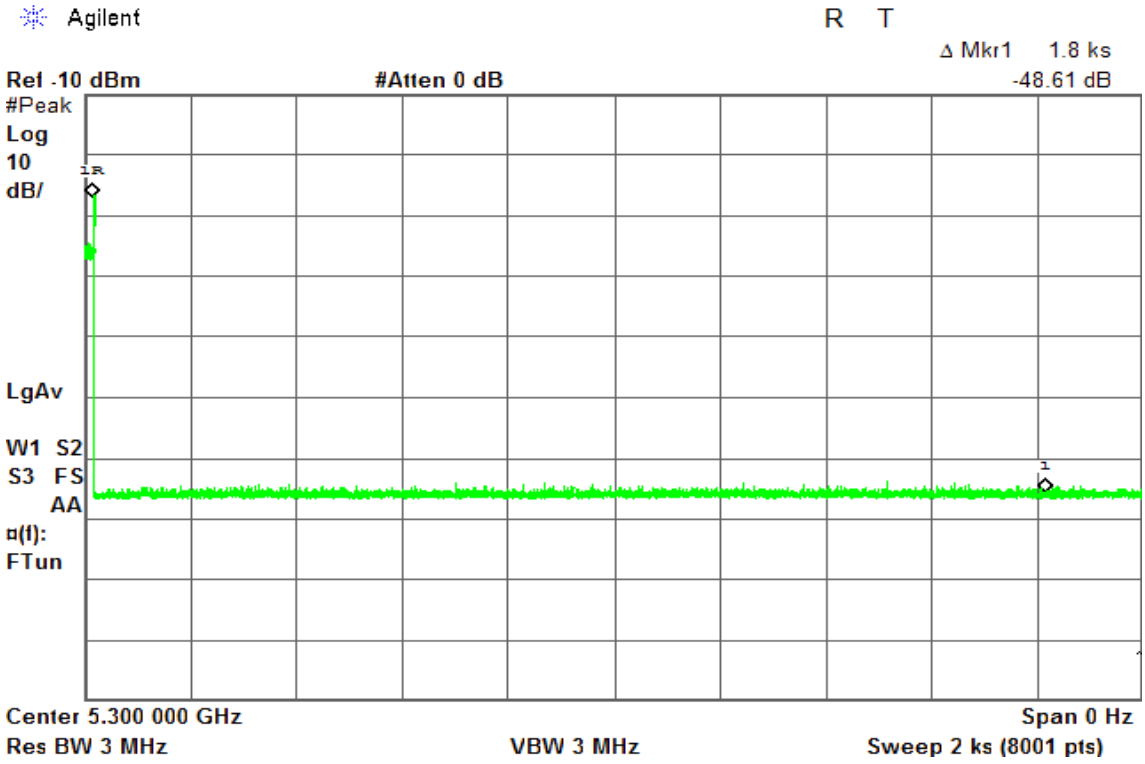
NON-OCCUPANCY PERIOD

UNII Band II / IEEE 802.11n HT 20 MHz Channel 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.

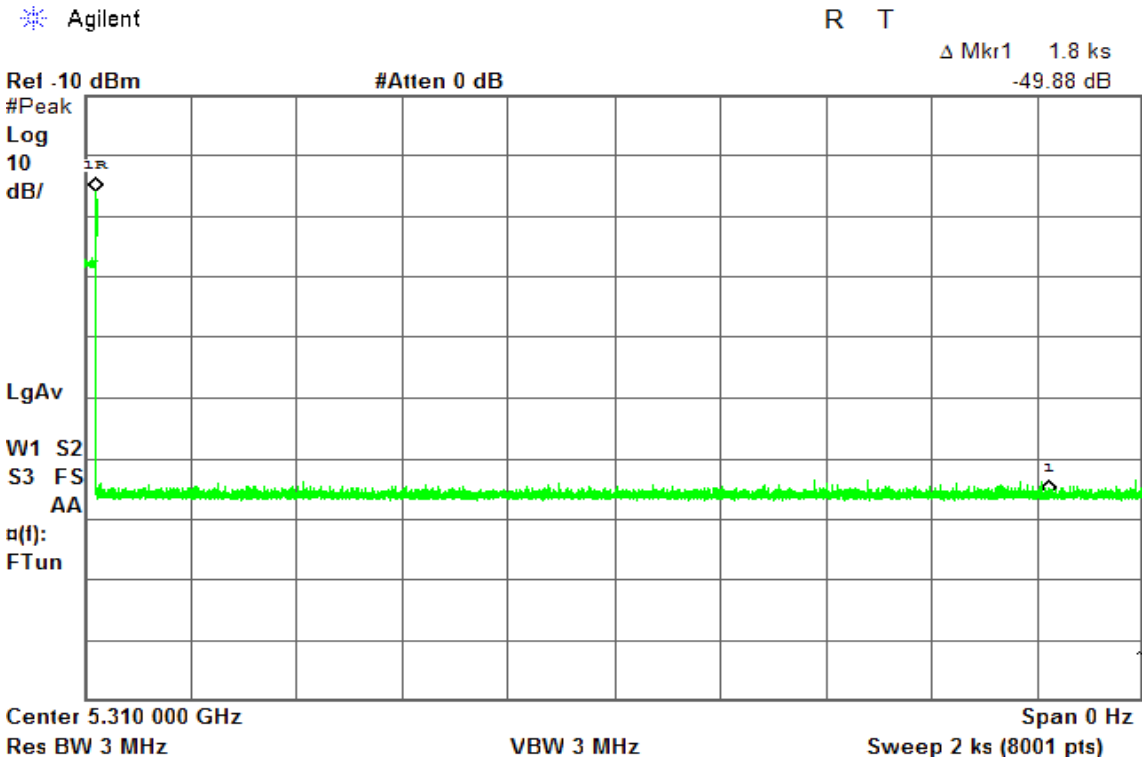


UNII Band II / IEEE 802.11n HT 40 MHz mode

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.

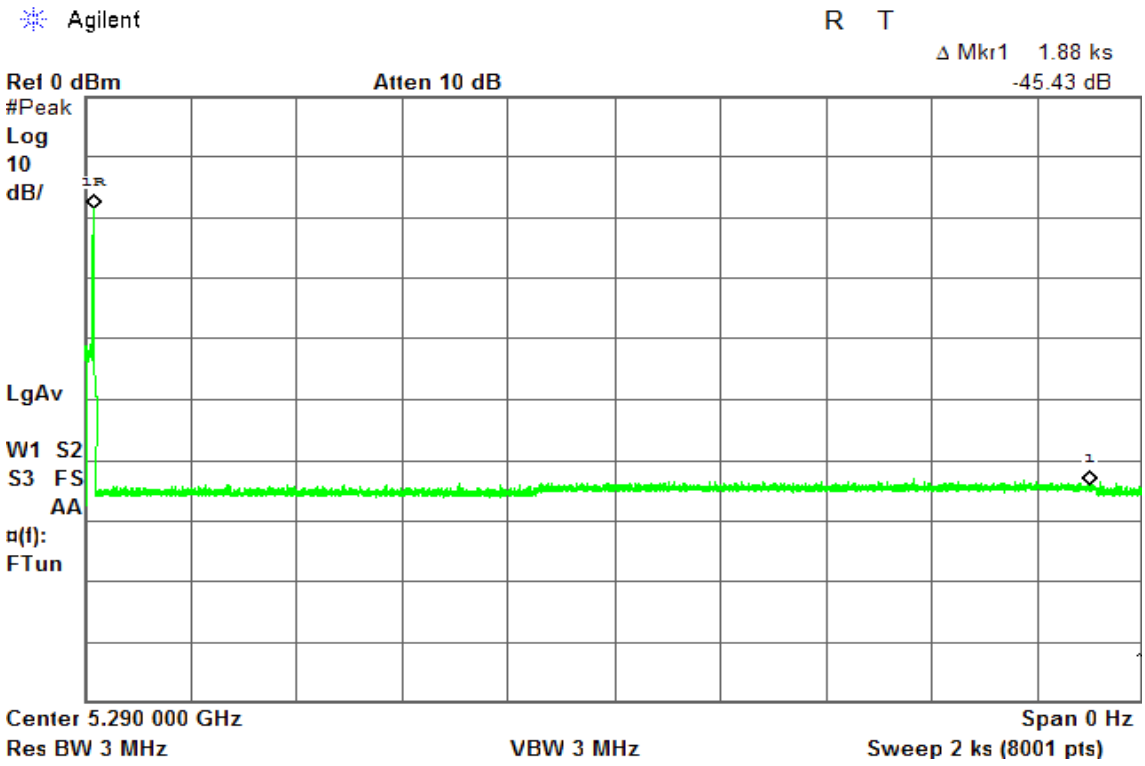


UNII Band II / IEEE 802.11n VHT 80 MHz mode

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.

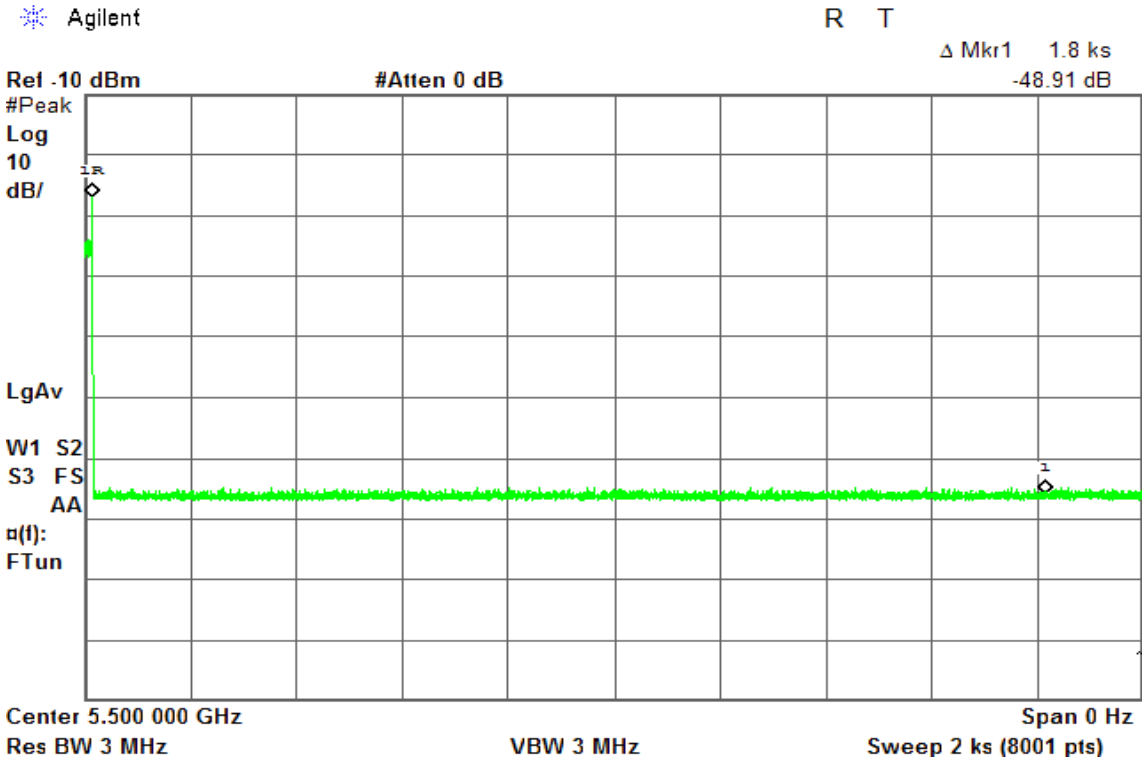


UNII Band III / IEEE 802.11n HT 20 MHz Channel mode

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.

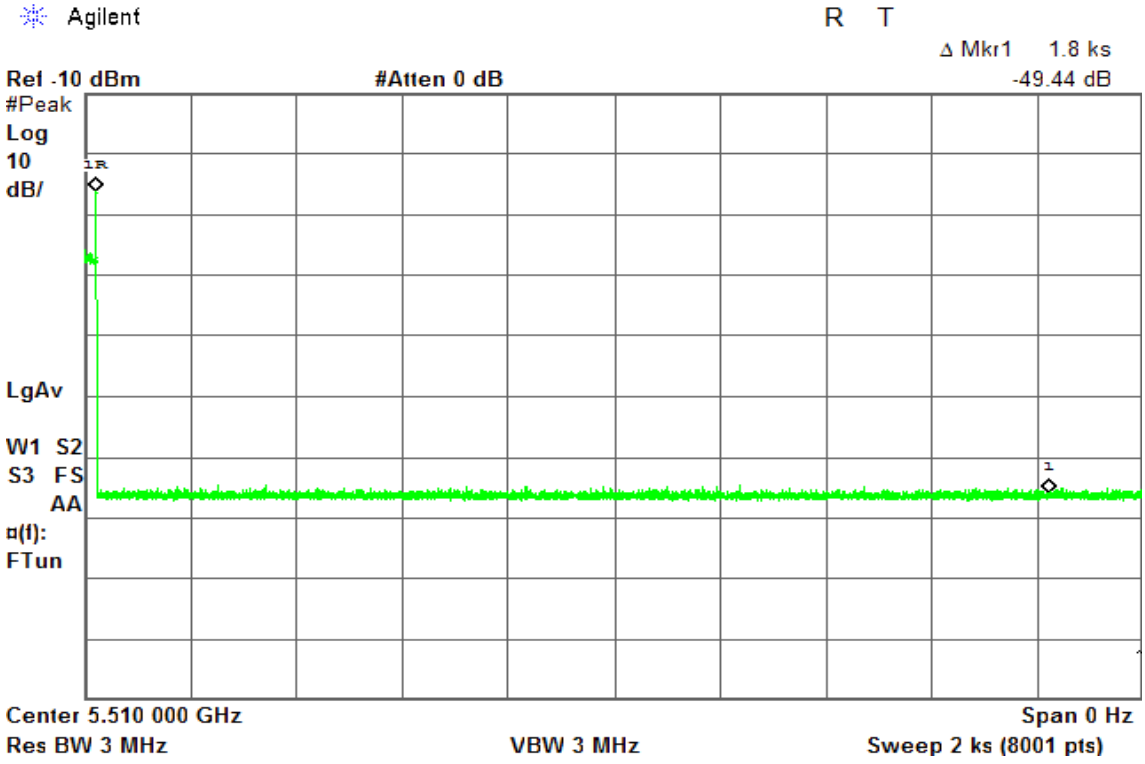


UNII Band III / IEEE 802.11n HT 40 MHz mode

Type 1 Non-Occupancy Period Test Results

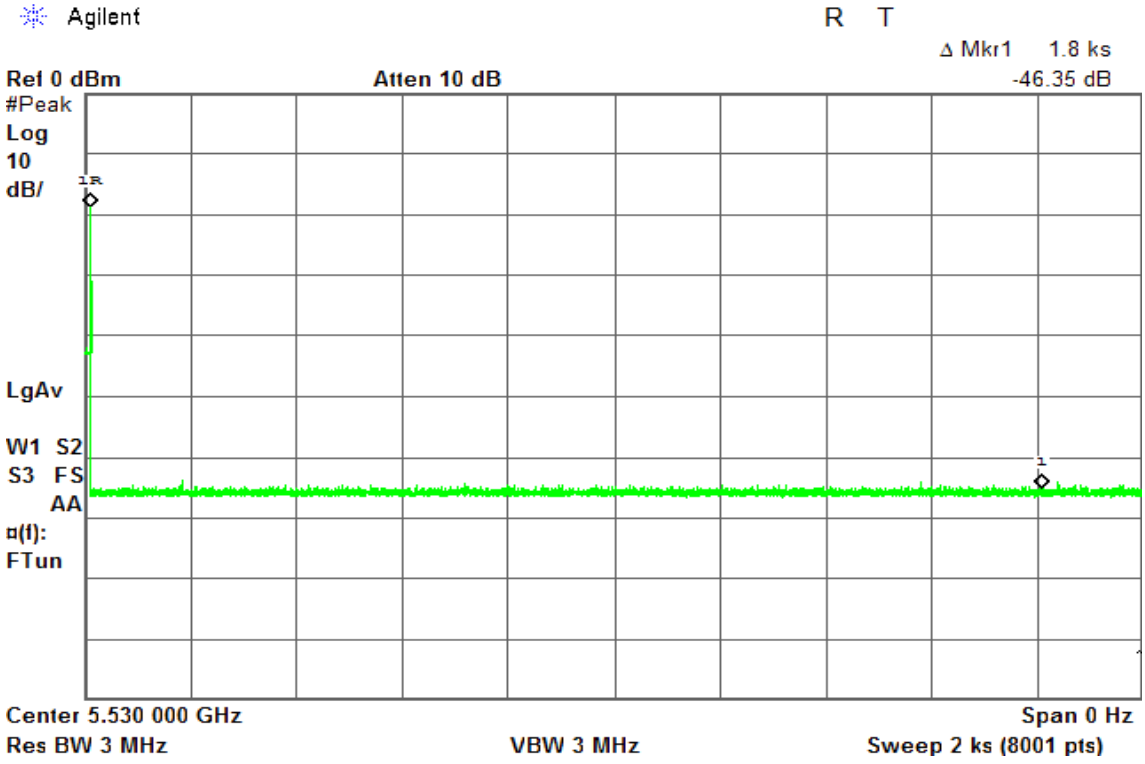
No non-compliance noted.

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



UNII Band III / IEEE 802.11n VHT 80 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.