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FCC RADIO TEST REPORT

| | |
|------------------------|---|
| Applicant's company | Cisco Systems, Inc. |
| Applicant Address | 170 West Tasman Drive, San Jose, CA 95134 USA |
| FCC ID | UDX-60047015 |
| Manufacturer's company | Cisco Systems, Inc. |
| Manufacturer Address | 170 West Tasman Drive, San Jose, CA 95134 USA |

| | |
|-------------------|---------------------------------------|
| Product Name | 802.11 a/b/g/n/ac Wireless Router |
| Brand Name | CISCO |
| Model No. | MX65W-HW |
| Test Rule Part(s) | 47 CFR FCC Part 15 Subpart E § 15.407 |
| Test Freq. Range | 5250 ~ 5350MHz / 5470 ~ 5725MHz |
| Test Freq. Range | Oct. 21, 2015 |
| Final Test Date | Dec. 23, 2015 |
| Submission Type | Original Equipment |

Statement

Test result included is for the IEEE 802.11n and IEEE 802.11a/ac of the product.

The test result in this report refers exclusively to the presented test model / sample.

Without written approval of SPORTON International Inc., the test report shall not be reproduced except in full.

The measurements and test results shown in this test report were made in accordance with the procedures and found in compliance with the limit given in **ANSI C63.10-2013, 47 CFR FCC Part 15 Subpart E,**

KDB789033 D02 v01r01, KDB662911 D01 v02r01,

The test equipment used to perform the test is calibrated and traceable to NML/ROC.



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History of This Test Report



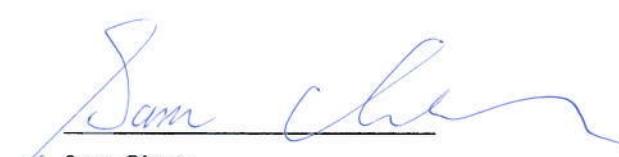
Report No.: FR5O1504AC

Project No: CB10412322

1. VERIFICATION OF COMPLIANCE

Product Name : 802.11a/b/g/n/ac Wireless Router
Brand Name : CISCO
Model No. : MX65W-HW
Applicant : Cisco Systems, Inc.
Test Rule Part(s) : 47 CFR FCC Part 15 Subpart E § 15.407

Sportun International as requested by the applicant to evaluate the EMC performance of the product sample received on Oct. 21, 2015 would like to declare that the tested sample has been evaluated and found to be in compliance with the tested rule parts. The data recorded as well as the test configuration specified is true and accurate for showing the sample's EMC nature.



Sam Chen

SPORTON INTERNATIONAL INC.

2. SUMMARY OF THE TEST RESULT

| Applied Standard: 47 CFR FCC Part 15 Subpart E | | | | |
|--|--------------|--|----------|-------------|
| Part | Rule Section | Description of Test | Result | Under Limit |
| 4.1 | 15.207 | AC Power Line Conducted Emissions | Complies | 10.84 dB |
| 4.2 | 15.407(a) | 26dB Spectrum Bandwidth and 99% Occupied Bandwidth | Complies | - |
| 4.3 | 15.407(e) | 6dB Spectrum Bandwidth | Complies | - |
| 4.4 | 15.407(a) | Maximum Conducted Output Power | Complies | 2.10 dB |
| 4.5 | 15.407(a) | Power Spectral Density | Complies | 1.87 dB |
| 4.6 | 15.407(b) | Radiated Emissions | Complies | 3.29 dB |
| 4.7 | 15.407(b) | Band Edge Emissions | Complies | 0.08 dB |
| 4.8 | 15.407(g) | Frequency Stability | Complies | - |
| 4.9 | 15.203 | Antenna Requirements | Complies | - |

3. GENERAL INFORMATION

3.1. Product Details

| Items | Description |
|--------------------------|---|
| Product Type | WLAN (1TX/2TX, 1RX/2RX) |
| Radio Type | Intentional Transceiver |
| Power Type | From power adapter |
| Modulation | IEEE 802.11a: OFDM IEEE 802.11n/ac: see the below table |
| Data Modulation | IEEE 802.11a/n: OFDM (BPSK / QPSK / 16QAM / 64QAM) IEEE 802.11ac: OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM) |
| Data Rate (Mbps) | IEEE 802.11a: OFDM (6/9/12/18/24/36/48/54) IEEE 802.11n/ac: see the below table |
| Frequency Range | 5250 ~ 5350MHz / 5470 ~ 5725MHz |
| Channel Number | 13 for 20MHz bandwidth; 6 for 40MHz bandwidth 3 for 80MHz bandwidth |
| Channel Band Width (99%) | <p><For 1TX></p> <p>Band 2: IEEE 802.11a: 17.02 MHz IEEE 802.11ac MCS0/Nss1 (VHT20): 17.97 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 37.05 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 75.83 MHz</p> <p>Band 3: IEEE 802.11a: 17.11 MHz IEEE 802.11ac MCS0/Nss1 (VHT20): 18.06 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 37.05 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 76.12 MHz</p> <p><For 2TX></p> <p>Band 2: IEEE 802.11a: 17.02 MHz IEEE 802.11ac MCS0/Nss1 (VHT20): 18.06 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 37.04 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 75.83 MHz</p> <p>Band 3: IEEE 802.11a: 17.10 MHz IEEE 802.11ac MCS0/Nss1 (VHT20): 17.97 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 37.04 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 75.83 MHz</p> |

| | |
|--------------------------------|---|
| Maximum Conducted Output Power | <p><For 1TX></p> <p>Band 2:</p> <p>IEEE 802.11a: 18.91 dBm</p> <p>IEEE 802.11ac MCS0/Nss1 (VHT20): 18.86 dBm</p> <p>IEEE 802.11ac MCS0/Nss1 (VHT40): 18.86 dBm</p> <p>IEEE 802.11ac MCS0/Nss1 (VHT80): 17.12 dBm</p> <p>Band 3:</p> <p>IEEE 802.11a: 18.73 dBm</p> <p>IEEE 802.11ac MCS0/Nss1 (VHT20): 18.86 dBm</p> <p>IEEE 802.11ac MCS0/Nss1 (VHT40): 18.91 dBm</p> <p>IEEE 802.11ac MCS0/Nss1 (VHT80): 18.21 dBm</p> <p><For 2TX></p> <p>Band 2:</p> <p>IEEE 802.11a: 21.88 dBm</p> <p>IEEE 802.11ac MCS0/Nss1 (VHT20): 21.88 dBm</p> <p>IEEE 802.11ac MCS0/Nss1 (VHT40): 21.53 dBm</p> <p>IEEE 802.11ac MCS0/Nss1 (VHT80): 20.31 dBm</p> <p>Band 3:</p> <p>IEEE 802.11a: 21.75 dBm</p> <p>IEEE 802.11ac MCS0/Nss1 (VHT20): 21.63 dBm</p> <p>IEEE 802.11ac MCS0/Nss1 (VHT40): 21.66 dBm</p> <p>IEEE 802.11ac MCS0/Nss1 (VHT80): 19.46 dBm</p> |
| Carrier Frequencies | Please refer to section 3.4 |
| Antenna | Please refer to section 3.3 |

Note: The MIMO transmission mode is correlated.

| Items | Description | |
|-----------------------------|---|--|
| Communication Mode | <input checked="" type="checkbox"/> IP Based (Load Based) | <input type="checkbox"/> Frame Based |
| TPC Function | <input checked="" type="checkbox"/> With TPC | <input type="checkbox"/> Without TPC |
| Weather Band (5600~5650MHz) | <input type="checkbox"/> With 5600~5650MHz | <input checked="" type="checkbox"/> Without 5600~5650MHz |
| Beamforming Function | <input type="checkbox"/> With beamforming | <input checked="" type="checkbox"/> Without beamforming |

Antenna and Band width

| Antenna | Single (TX) | | Two (TX) | |
|-----------------|-------------|--------|----------|--------|
| Band width Mode | 20 MHz | 40 MHz | 20 MHz | 40 MHz |
| IEEE 802.11a | V | X | V | X |
| IEEE 802.11n | V | V | V | V |
| IEEE 802.11ac | V | V | V | V |

IEEE 11n/ac Spec.

| Protocol | Number of Transmit Chains (NTX) | Data Rate / MCS |
|------------------|---------------------------------|------------------------------|
| 802.11n (HT20) | 1, 2 | MCS0-7, MCS0-15 |
| 802.11n (HT40) | 1, 2 | MCS0-7, MCS0-15 |
| 802.11ac (VHT20) | 1, 2 | MCS 0-9/Nss1, MCS 0-9/Nss1-2 |
| 802.11ac (VHT40) | 1, 2 | MCS 0-9/Nss1, MCS 0-9/Nss1-2 |
| 802.11ac (VHT80) | 1, 2 | MCS 0-9/Nss1, MCS 0-9/Nss1-2 |

Note 1: IEEE Std. 802.11n modulation consists of HT20 and HT40 (HT: High Throughput).

Then EUT supports HT20 and HT40.

Note 2: IEEE Std. 802.11ac modulation consists of VHT20, VHT40, VHT80 and VHT160 (VHT: Very High Throughput). Then EUT supports VHT20, VHT40, VHT80 in 5GHz.

Note 3: Modulation modes consist of below configuration:

HT20/HT40: IEEE 802.11n, VHT20/VHT40: IEEE 802.11ac

3.2. Accessories

| Power | Brand | Model | Rating |
|---------|-------|--------------|--|
| Adapter | CISCO | MA-PWR-90WAC | INPUT: 100-240V~2A 50-60Hz OUTPUT: 54V, 1.67A |

3.3. Table for Filed Antenna

| Ant. | Brand | P/N | Antenna Type | Connector |
|------|-----------|---------------|--------------|--------------|
| 1 | Grand-Tek | 1034G00000050 | Dipole Ant. | Reversed-SMA |
| 2 | Grand-Tek | 1034G00000050 | Dipole Ant. | Reversed-SMA |

| TX Function | Antenna Gain (dBi) | | Composite Gain (dBi) | |
|-------------|--------------------|------|----------------------|------|
| | 2.4GHz | 5GHz | 2.4GHz | 5GHz |
| 1 | 2.6 | 3.3 | - | - |
| 2 | - | - | 2.0 | 3.3 |

Note: The EUT has two antennas.

<For 2.4GHz Band>

For IEEE 802.11b/g/n/ac mode <1TX/1RX>:

Only Chain 1 can be used as transmitting antenna and receiving antenna.

For IEEE 802.11b/g/n/ac mode <2TX/2RX>:

Chain 1 and Chain 2 will transmit/receive the same signal simultaneously.

Chain 1 and Chain 2 can be used as transmitting/receiving antennas.

<For 5GHz Band>

For IEEE 802.11a/n/ac mode <1TX/1RX>:

Only Chain 1 can be used as transmitting antenna and receiving antenna.

For IEEE 802.11a/n/ac mode <2TX/2RX>:

Chain 1 and Chain 2 will transmit/receive the same signal simultaneously.

Chain 1 and Chain 2 can be used as transmitting/receiving antennas.



(Connect to Chain 1 for 2.4GHz and

(Connect to Chain 2 for 2.4GHz connect to Chain 2 for 5GHz)

and connect to Chain 1 for 5GHz)

3.4. Table for Carrier Frequencies

There are three bandwidth systems.

For 20MHz bandwidth systems, use Channel 52, 56, 60, 64, 100, 104, 108, 112, 116, 132, 136, 140, 144.

For 40MHz bandwidth systems, use Channel 54, 62, 102, 110, 134, 142.

For 80MHz bandwidth systems, use Channel 58, 106, 138.

| Frequency Band | Channel No. | Frequency | Channel No. | Frequency |
|-------------------------|-------------|-----------|-------------|-----------|
| 5250~5350 MHz Band 2 | 52 | 5260 MHz | 60 | 5300 MHz |
| | 54 | 5270 MHz | 62 | 5310 MHz |
| | 56 | 5280 MHz | 64 | 5320 MHz |
| | 58 | 5290 MHz | - | - |
| 5470~5725 MHz Band 3 | 100 | 5500 MHz | 132 | 5660 MHz |
| | 102 | 5510 MHz | 134 | 5670 MHz |
| | 104 | 5520 MHz | 136 | 5680 MHz |
| | 106 | 5530 MHz | 138 | 5690 MHz |
| | 108 | 5540 MHz | 140 | 5700 MHz |
| | 110 | 5550 MHz | 142 | 5710 MHz |
| | 112 | 5560 MHz | 144 | 5720 MHz |
| | 116 | 5580 MHz | - | - |

3.5. Table for Test Modes

Preliminary tests were performed in different data rate to find the worst radiated emission. The data rate shown in the table below is the worst-case rate with respect to the specific test item. Investigation has been done on all the possible configurations for searching the worst cases. The following table is a list of the test modes shown in this test report.

| Test Items | Mode | | Data Rate | Channel | TX | Chain |
|-----------------------------|-------------|----------|-----------|------------------------------|----|-------|
| AC Power Conducted Emission | Normal Link | | - | - | - | - |
| Max. Conducted Output Power | 11a/BPSK | Band 2-3 | 6Mbps | 52/60/64/100/ 116/140/144 | 1 | 1 |
| | 11ac VHT20 | Band 2-3 | MCS0/Nss1 | 52/60/64/100/ 116/140/144 | 1 | 1 |
| | 11ac VHT40 | Band 2-3 | MCS0/Nss1 | 54/62/102/110/ 134/142 | 1 | 1 |
| | 11ac VHT80 | Band 2-3 | MCS0/Nss1 | 58/106/138 | 1 | 1 |
| | 11a/BPSK | Band 2-3 | 6Mbps | 52/60/64/100/ 116/140/144 | 2 | 1+2 |
| | 11ac VHT20 | Band 2-3 | MCS0/Nss1 | 52/60/64/100/ 116/140/144 | 2 | 1+2 |
| | 11ac VHT40 | Band 2-3 | MCS0/Nss1 | 54/62/102/110/ 134/142 | 2 | 1+2 |
| | 11ac VHT80 | Band 2-3 | MCS0/Nss1 | 58/106/138 | 2 | 1+2 |
| Power Spectral Density | 11a/BPSK | Band 2-3 | 6Mbps | 52/60/64/100/ 116/140/144 | 1 | 1 |
| | 11ac VHT20 | Band 2-3 | MCS0/Nss1 | 52/60/64/100/ 116/140/144 | 1 | 1 |
| | 11ac VHT40 | Band 2-3 | MCS0/Nss1 | 54/62/102/110/ 134/142 | 1 | 1 |
| | 11ac VHT80 | Band 2-3 | MCS0/Nss1 | 58/106/138 | 1 | 1 |
| | 11a/BPSK | Band 2-3 | 6Mbps | 52/60/64/100/ 116/140/144 | 2 | 1+2 |
| | 11ac VHT20 | Band 2-3 | MCS0/Nss1 | 52/60/64/100/ 116/140/144 | 2 | 1+2 |
| | 11ac VHT40 | Band 2-3 | MCS0/Nss1 | 54/62/102/110/ 134/142 | 2 | 1+2 |

| | | | | | | |
|---|-------------|----------|-----------|------------------------------|---|-----|
| | 11ac VHT80 | Band 2-3 | MCS0/Nss1 | 58/106/138 | 2 | 1+2 |
| 26dB Spectrum Bandwidth 99% Occupied Bandwidth Measurement | 11a/BPSK | Band 2-3 | 6Mbps | 52/60/64/100/ 116/140/144 | 1 | 1 |
| | 11ac VHT20 | Band 2-3 | MCS0/Nss1 | 52/60/64/100/ 116/140/144 | 1 | 1 |
| | 11ac VHT40 | Band 2-3 | MCS0/Nss1 | 54/62/102/110/134 /142 | 1 | 1 |
| | 11ac VHT80 | Band 2-3 | MCS0/Nss1 | 58/106/138 | 1 | 1 |
| | 11a/BPSK | Band 2-3 | 6Mbps | 52/60/64/100/ 116/140/144 | 2 | 1+2 |
| | 11ac VHT20 | Band 2-3 | MCS0/Nss1 | 52/60/64/100/ 116/140/144 | 2 | 1+2 |
| | 11ac VHT40 | Band 2-3 | MCS0/Nss1 | 54/62/102/110/ 134/142 | 2 | 1+2 |
| | 11ac VHT80 | Band 2-3 | MCS0/Nss1 | 58/106/138 | 2 | 1+2 |
| 6dB Spectrum Bandwidth Measurement | 11a/BPSK | Band 4 | 6Mbps | 144 | 1 | 1 |
| | 11ac VHT20 | Band 4 | MCS0/Nss1 | 144 | 1 | 1 |
| | 11ac VHT40 | Band 4 | MCS0/Nss1 | 142 | 1 | 1 |
| | 11ac VHT80 | Band 4 | MCS0/Nss1 | 138 | 1 | 1 |
| | 11a/BPSK | Band 4 | 6Mbps | 144 | 2 | 1+2 |
| | 11ac VHT20 | Band 4 | MCS0/Nss1 | 144 | 2 | 1+2 |
| | 11ac VHT40 | Band 4 | MCS0/Nss1 | 142 | 2 | 1+2 |
| | 11ac VHT80 | Band 4 | MCS0/Nss1 | 138 | 2 | 1+2 |
| Radiated Emission Below 1GHz | Normal Link | | - | - | - | - |
| Radiated Emission Above 1GHz | 11a/BPSK | Band 2-3 | 6Mbps | 52/60/64/100/ 116/140/144 | 1 | 1 |
| | 11ac VHT20 | Band 2-3 | MCS0/Nss1 | 52/60/64/100/ 116/140/144 | 1 | 1 |
| | 11ac VHT40 | Band 2-3 | MCS0/Nss1 | 54/62/102/110/ 134/142 | 1 | 1 |
| | 11ac VHT80 | Band 2-3 | MCS0/Nss1 | 58/106/138 | 1 | 1 |
| | 11a/BPSK | Band 2-3 | 6Mbps | 52/60/64/100/ 116/140/144 | 2 | 1+2 |
| | 11ac VHT20 | Band 2-3 | MCS0/Nss1 | 52/60/64/100/ 116/140/144 | 2 | 1+2 |

| | | | | | | |
|---------------------|------------|----------|-----------|------------------------------|---|-----|
| | 11ac VHT40 | Band 2-3 | MCS0/Nss1 | 54/62/102/110/ 134/142 | 2 | 1+2 |
| | 11ac VHT80 | Band 2-3 | MCS0/Nss1 | 58/106/138 | 2 | 1+2 |
| Band Edge Emission | 11a/BPSK | Band 2-3 | 6Mbps | 52/60/64/100/ 116/140/144 | 1 | 1 |
| | 11ac VHT20 | Band 2-3 | MCS0/Nss1 | 52/60/64/100/ 116/140/144 | 1 | 1 |
| | 11ac VHT40 | Band 2-3 | MCS0/Nss1 | 54/62/102/110/ 134/142 | 1 | 1 |
| | 11ac VHT80 | Band 2-3 | MCS0/Nss1 | 58/106/138 | 1 | 1 |
| | 11a/BPSK | Band 2-3 | 6Mbps | 52/60/64/100/ 116/140/144 | 2 | 1+2 |
| | 11ac VHT20 | Band 2-3 | MCS0/Nss1 | 52/60/64/100/ 116/140/144 | 2 | 1+2 |
| | 11ac VHT40 | Band 2-3 | MCS0/Nss1 | 54/62/102/110/ 134/142 | 2 | 1+2 |
| | 11ac VHT80 | Band 2-3 | MCS0/Nss1 | 58/106/138 | 2 | 1+2 |
| Frequency Stability | 20 MHz | Band 2-3 | - | 60/116 | - | 2 |
| | 40 MHz | Band 2-3 | - | 62/110 | - | 2 |
| | 80 MHz | Band 2-3 | - | 58/106 | - | 2 |

Note 1: VHT20/VHT40 covers HT20/HT40, due to same modulation. The power setting for 802.11n HT20 and HT40 are the same or lower than 802.11ac VHT20 and VHT40.

Note 2: The test configuration and test modes written in this test report are designated by the applicant.

The following test modes were performed for all tests:

For Conducted Emission test:

Mode 1. Norman Link

For Radiated Emission test <Below 1GHz>:

Mode 1. Norman Link - Place EUT in Y axis

Mode 2. Norman Link - Place EUT in Z axis

Mode 2 is the worst case, so it was selected to record in this test report.

For Radiated Emission test <Above 1GHz>:

The EUT can be placed in Y-axis and Z-axis. After evaluating, Z-axis were the worst cases, so they're recorded in this report

**For Co-location MPE and Radiated Emission Co-location Test:**

The EUT could be applied with 2.4GHz WLAN function and 5GHz WLAN function; therefore Co-location Maximum Permissible Exposure (Please refer to FA5O1504AB) and Radiated Emission Co-location (please refer to Appendix B) tests are added for simultaneously transmit between 2.4GHz WLAN function and 5GHz WLAN function.

3.6. Table for Testing Locations

| Test Site Location | | | | | |
|--------------------|---------------|----------|--------------|-------------|---------------|
| Test Site No. | Site Category | Location | FCC Reg. No. | IC File No. | VCCI Reg. No. |
| 03CH01-CB | SAC | Hsin Chu | 262045 | IC 4086D | - |
| CO01-CB | Conduction | Hsin Chu | 262045 | IC 4086D | - |
| TH01-CB | OVEN Room | Hsin Chu | - | - | - |

Open Area Test Site (OATS); Semi Anechoic Chamber (SAC).

3.7. Table for Supporting Units**For Test Site No: CO01-CB**

| Support Unit | Brand | Model | FCC ID |
|---------------------------------------|---------|----------|--------|
| NB*6 | DELL | E6430 | DoC |
| PoE PD Simulator (Terminal System) | N/A | PDS-16 | N/A |
| Flash disk | Silicon | I-Series | DoC |

For Test Site No: 03CH01-CB

| Support Unit | Brand | Model | FCC ID |
|---------------------------------------|---------|-----------|--------|
| NB*5 | DELL | E4300 | DoC |
| NB | Apple | Mac Book | DoC |
| PoE PD Simulator (Terminal System) | N/A | PDS-16 | N/A |
| Flash disk | Silicon | Touch 835 | DoC |

For Test Site No: TH01-CB

| Support Unit | Brand | Model | FCC ID |
|--------------|-------|-------|--------|
| NB | DELL | E4300 | DoC |

3.8. Table for Parameters of Test Software Setting

During testing, Channel and Power Controlling Software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product.

<For 1TX>

| Test Software Version | Mtool 2.0.1.0 | | | | | | |
|--------------------------|----------------------|----------|----------|----------|----------|----------|---------|
| Mode | Test Frequency (MHz) | | | | | | |
| | NCB: 20MHz | | | | | | |
| | 5260 MHz | 5300 MHz | 5320 MHz | 5500 MHz | 5580 MHz | 5700 MHz | 5720MHz |
| 802.11a | 74 | 74 | 74 | 74 | 74 | 74 | 73 |
| 802.11ac MCS0/Nss1 VHT20 | 74 | 73 | 73 | 74 | 74 | 74 | 73 |
| Mode | NCB: 40MHz | | | | | | |
| 802.11ac MCS0/Nss1 VHT40 | 5270 MHz | 5310 MHz | 5510 MHz | 5550 MHz | 5670 MHz | 5710MHz | |
| | 76 | 76 | 76 | 76 | 76 | 76 | 75 |
| Mode | NCB: 80MHz | | | | | | |
| 802.11ac MCS0/Nss1 VHT80 | 5290 MHz | | 5530 MHz | | 5690 MHz | | |
| | 69 | | 73 | | 74 | | |

<For 2TX>

| Test Software Version | Mtool 2.0.1.0 | | | | | | |
|--------------------------|----------------------|----------|----------|----------|----------|----------|---------|
| Mode | Test Frequency (MHz) | | | | | | |
| | NCB: 20MHz | | | | | | |
| | 5260 MHz | 5300 MHz | 5320 MHz | 5500 MHz | 5580 MHz | 5700 MHz | 5720MHz |
| 802.11a | 73 | 73 | 73 | 73 | 73 | 72 | 73 |
| 802.11ac MCS0/Nss1 VHT20 | 73 | 73 | 73 | 73 | 73 | 73 | 73 |
| Mode | NCB: 40MHz | | | | | | |
| 802.11ac MCS0/Nss1 VHT40 | 5270 MHz | 5310 MHz | 5510 MHz | 5550 MHz | 5670 MHz | 5710MHz | |
| | 75 | 72 | 70 | 76 | 76 | 76 | 76 |
| Mode | NCB: 80MHz | | | | | | |
| 802.11ac MCS0/Nss1 VHT80 | 5290 MHz | | 5530 MHz | | 5690 MHz | | |
| | 69 | | 66 | | 75 | | |

3.9. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

3.10.Duty Cycle

<For 1TX>

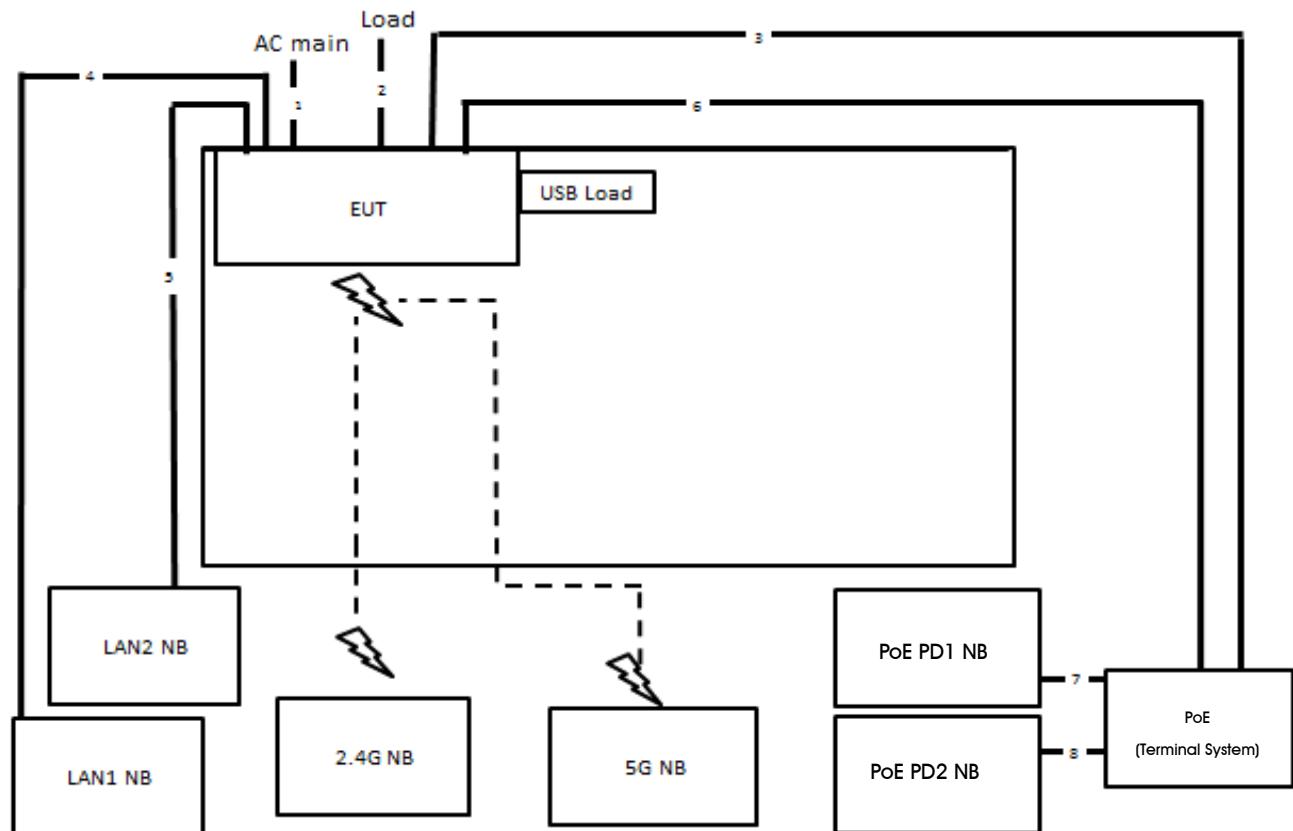
| Mode | On Time (ms) | On+Off Time (ms) | Duty Cycle (%) | Duty Factor (dB) | 1/T Minimum VBW (kHz) |
|--------------------------|-----------------|---------------------|-------------------|---------------------|--------------------------|
| 802.11a | 2.040 | 2.090 | 97.61% | 0.11 | 0.49 |
| 802.11ac MCS0/Nss1 VHT20 | 1.910 | 1.950 | 97.95% | 0.09 | 0.52 |
| 802.11ac MCS0/Nss1 VHT40 | 0.906 | 0.966 | 93.79% | 0.28 | 1.10 |
| 802.11ac MCS0/Nss1 VHT80 | 0.420 | 0.486 | 86.42% | 0.63 | 2.38 |

<For 2TX>

| Mode | On Time (ms) | On+Off Time (ms) | Duty Cycle (%) | Duty Factor (dB) | 1/T Minimum VBW (kHz) |
|--------------------------|-----------------|---------------------|-------------------|---------------------|--------------------------|
| 802.11a | 2.100 | 2.140 | 98.13% | 0.08 | 0.01 |
| 802.11ac MCS0/Nss1 VHT20 | 1.900 | 1.910 | 99.48% | 0.02 | 0.01 |
| 802.11ac MCS0/Nss1 VHT40 | 0.912 | 0.972 | 93.83% | 0.28 | 1.10 |
| 802.11ac MCS0/Nss1 VHT80 | 0.464 | 0.488 | 95.08% | 0.22 | 2.16 |

3.11. Test Configurations

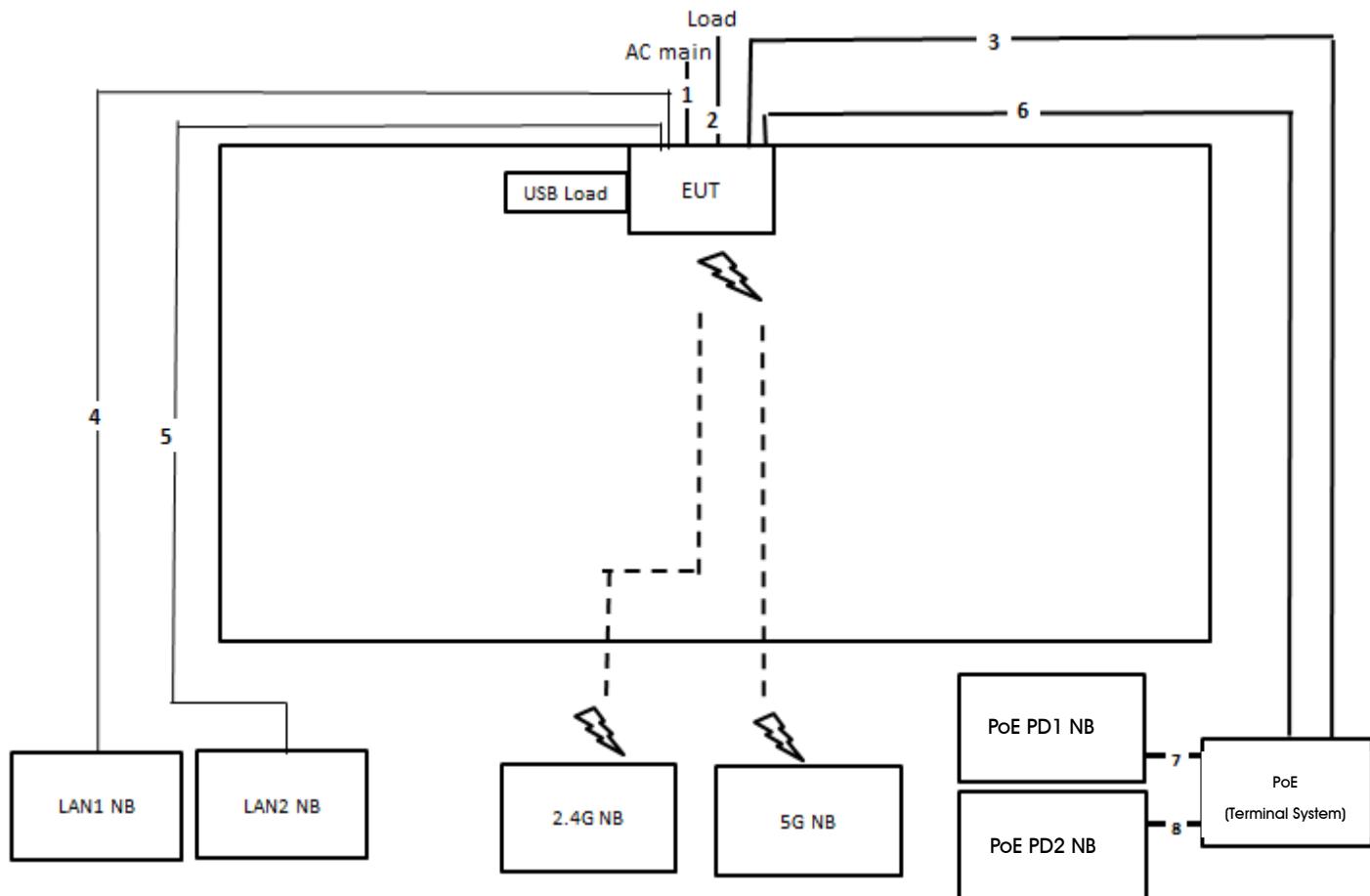
3.11.1. AC Power Line Conduction Emissions Test Configuration



| Item | Connection | Shielded | Length |
|------|---------------|----------|--------|
| 1 | Power cable | No | 3.8m |
| 2 | RJ-45 cable*8 | No | 1.5m |
| 3 | RJ-45 cable | No | 10m |
| 4 | RJ-45 cable | No | 10m |
| 5 | RJ-45 cable | No | 10m |
| 6 | RJ-45 cable | No | 10m |
| 7 | RJ-45 cable | No | 1.5m |
| 8 | RJ-45 cable | No | 1.5m |

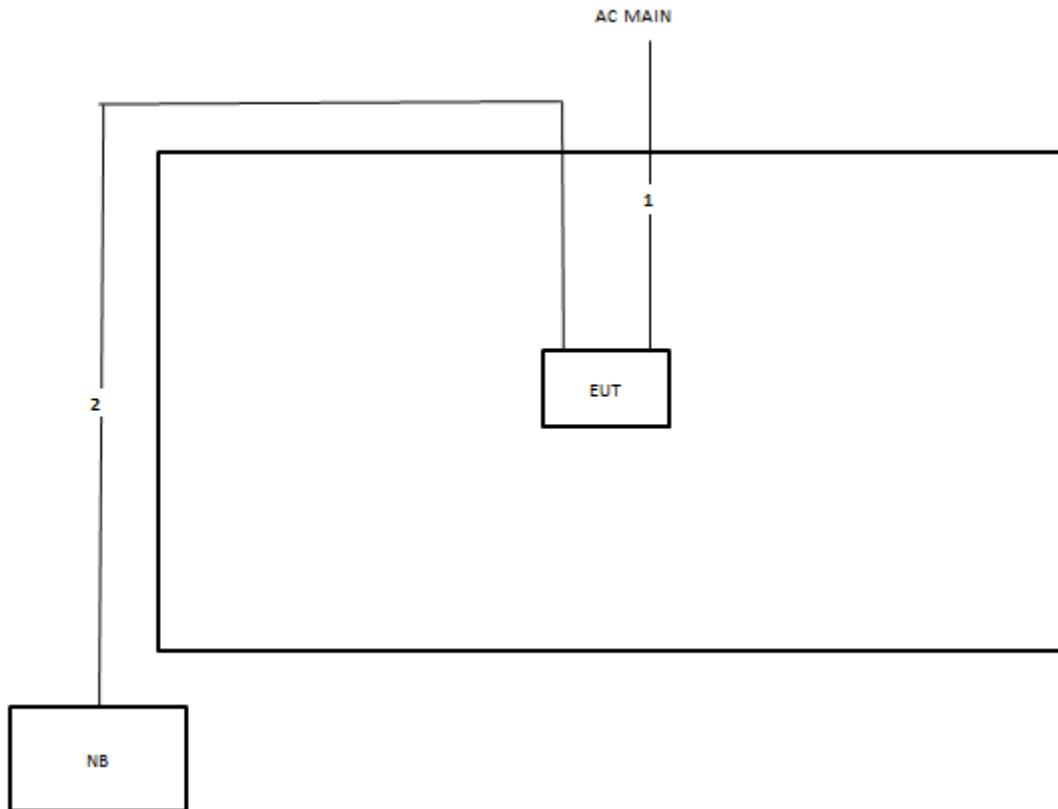
3.11.2. Radiation Emissions Test Configuration

Test Configuration: 30MHz~1GHz



| Item | Connection | Shielded | Length |
|------|---------------|----------|--------|
| 1 | Power cable | No | 3.8m |
| 2 | RJ-45 cable*8 | No | 1.5m |
| 3 | RJ-45 cable | No | 10m |
| 4 | RJ-45 cable | No | 10m |
| 5 | RJ-45 cable | No | 1.5m |
| 6 | RJ-45 cable | No | 1.5m |
| 7 | RJ-45 cable | No | 1m |
| 8 | RJ-45 cable | No | 1m |

Test Configuration: above 1GHz



| Item | Connection | Shielded | Length(m) |
|------|-------------|----------|-----------|
| 1 | Power cable | No | 3.8m |
| 2 | RJ-45 cable | No | 10m |

4. TEST RESULT

4.1. AC Power Line Conducted Emissions Measurement

4.1.1. Limit

For this product that is designed to connect to the 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 below limits table.

| Frequency (MHz) | QP Limit (dBuV) | AV Limit (dBuV) |
|-----------------|-----------------|-----------------|
| 0.15~0.5 | 66~56 | 56~46 |
| 0.5~5 | 56 | 46 |
| 5~30 | 60 | 50 |

4.1.2. Measuring Instruments and Setting

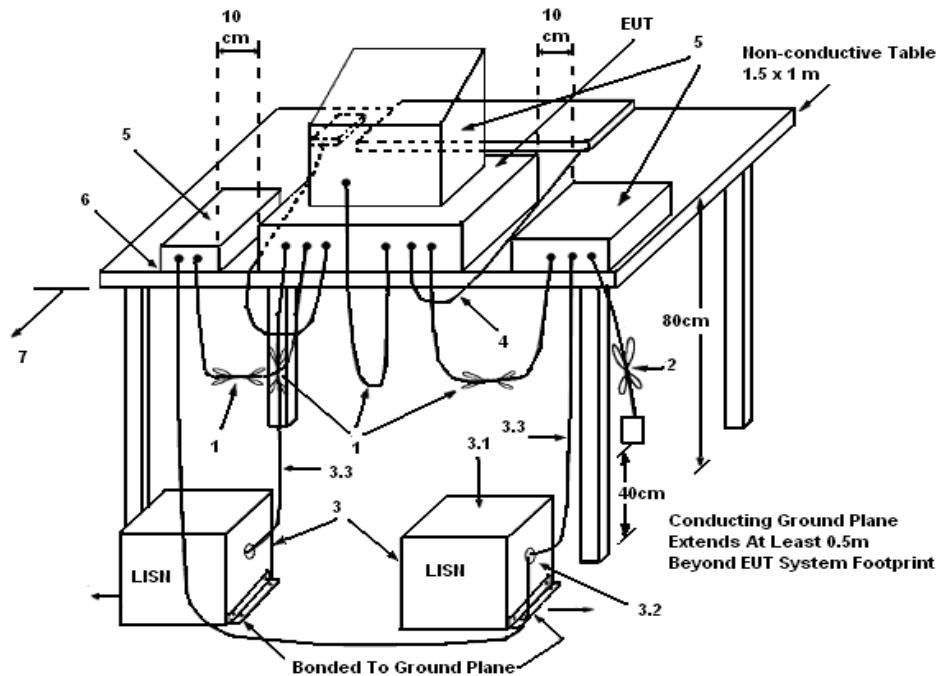
Please refer to section 5 of equipments list in this report. The following table is the setting of the receiver.

| Receiver Parameters | Setting |
|---------------------|----------|
| Attenuation | 10 dB |
| Start Frequency | 0.15 MHz |
| Stop Frequency | 30 MHz |
| IF Bandwidth | 9 kHz |

4.1.3. Test Procedures

1. Configure the EUT according to ANSI C63.10. The EUT or host of EUT has to be placed 0.4 meter far from the conducting wall of the shielding room and at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT or host of EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connected to the other LISNs. The LISN should provide 50uH/50ohms coupling impedance.
4. The frequency range from 150 kHz to 30 MHz was searched.
5. Set the test-receiver system to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
6. The measurement has to be done between each power line and ground at the power terminal.

4.1.4. Test Setup Layout



LEGEND:

- (1) Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- (2) I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- (3) EUT connected to one LISN. Unused LISN measuring port connectors shall be terminated in $50\ \Omega$. LISN can be placed on top of, or immediately beneath, reference ground plane.
 - (3.1) All other equipment powered from additional LISN(s).
 - (3.2) Multiple outlet strip can be used for multiple power cords of non-EUT equipment.
 - (3.3) LISN at least 80 cm from nearest part of EUT chassis.
- (4) Cables of hand-operated devices, such as keyboards, mice, etc., shall be placed as for normal use.
- (5) Non-EUT components of EUT system being tested.
- (6) Rear of EUT, including peripherals, shall all be aligned and flush with rear of tabletop.
- (7) Rear of tabletop shall be 40 cm removed from a vertical conducting plane that is bonded to the ground plane.

4.1.5. Test Deviation

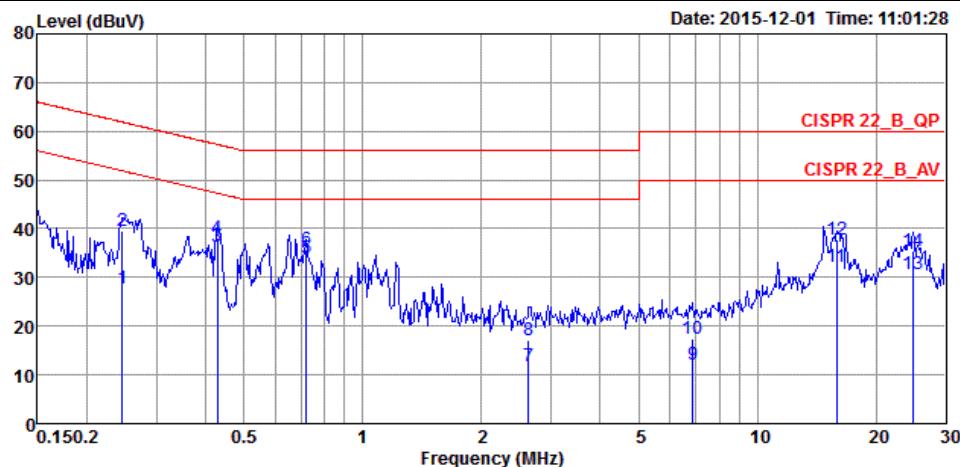
There is no deviation with the original standard.

4.1.6. EUT Operation during Test

The EUT was placed on the test table and programmed in normal function.

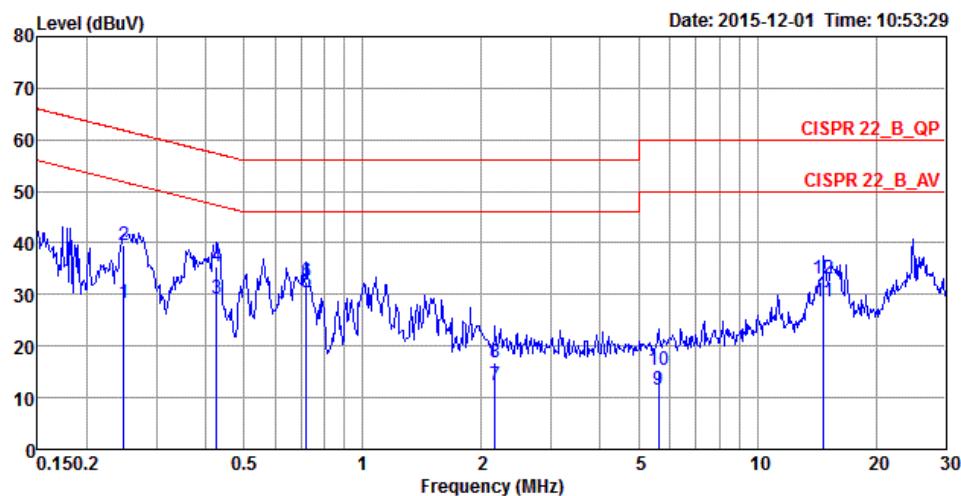
4.1.7. Results of AC Power Line Conducted Emissions Measurement

| | | | |
|----------------------|-------------|-----------------|------|
| Temperature | 25°C | Humidity | 58% |
| Test Engineer | Parody Lin | Phase | Line |
| Configuration | Normal Link | | |



| Freq | Level | Over Limit | Limit Line | Read Level | LISN Factor | Cable Loss | | Pol/Phase | Remark |
|------|---------|------------|------------|------------|-------------|------------|------|-----------|---------|
| | | | | | | MHz | dBuV | dB | |
| 1 | 0.2455 | 27.73 | -24.18 | 51.91 | 17.77 | 9.93 | 0.03 | LINE | Average |
| 2 | 0.2455 | 39.54 | -22.37 | 61.91 | 29.58 | 9.93 | 0.03 | LINE | QP |
| 3 | 0.4282 | 36.45 | -10.84 | 47.29 | 26.48 | 9.93 | 0.04 | LINE | Average |
| 4 | 0.4282 | 38.07 | -19.22 | 57.29 | 28.10 | 9.93 | 0.04 | LINE | QP |
| 5 | 0.7198 | 33.97 | -12.03 | 46.00 | 23.98 | 9.95 | 0.04 | LINE | Average |
| 6 | 0.7198 | 35.63 | -20.37 | 56.00 | 25.64 | 9.95 | 0.04 | LINE | QP |
| 7 | 2.6360 | 11.71 | -34.29 | 46.00 | 1.66 | 10.00 | 0.05 | LINE | Average |
| 8 | 2.6360 | 17.01 | -38.99 | 56.00 | 6.96 | 10.00 | 0.05 | LINE | QP |
| 9 | 6.8776 | 12.22 | -37.78 | 50.00 | 1.99 | 10.11 | 0.12 | LINE | Average |
| 10 | 6.8776 | 17.43 | -42.57 | 60.00 | 7.20 | 10.11 | 0.12 | LINE | QP |
| 11 | 15.8854 | 32.28 | -17.72 | 50.00 | 21.67 | 10.35 | 0.26 | LINE | Average |
| 12 | 15.8854 | 37.64 | -22.36 | 60.00 | 27.03 | 10.35 | 0.26 | LINE | QP |
| 13 | 24.7904 | 30.80 | -19.20 | 50.00 | 19.97 | 10.56 | 0.27 | LINE | Average |
| 14 | 24.7904 | 35.42 | -24.58 | 60.00 | 24.59 | 10.56 | 0.27 | LINE | QP |

| | | | |
|----------------------|-------------|-----------------|---------|
| Temperature | 25°C | Humidity | 58% |
| Test Engineer | Parody Lin | Phase | Neutral |
| Configuration | Normal Link | | |



| Freq | Level | Over Limit | | Read Line | LISN Factor | Cable Loss | | Pol/Phase | Remark |
|------|---------|------------|--------|-----------|-------------|------------|------|-----------|---------|
| | | MHz | dBuV | | | dB | dBuV | | |
| 1 | 0.2481 | 28.20 | -23.62 | 51.82 | 18.38 | 9.79 | 0.03 | NEUTRAL | Average |
| 2 | 0.2481 | 39.44 | -22.38 | 61.82 | 29.62 | 9.79 | 0.03 | NEUTRAL | QP |
| 3 | 0.4260 | 29.10 | -18.23 | 47.33 | 19.27 | 9.79 | 0.04 | NEUTRAL | Average |
| 4 | 0.4260 | 35.50 | -21.83 | 57.33 | 25.67 | 9.79 | 0.04 | NEUTRAL | QP |
| 5 | 0.7198 | 30.42 | -15.58 | 46.00 | 20.58 | 9.80 | 0.04 | NEUTRAL | Average |
| 6 | 0.7198 | 32.54 | -23.46 | 56.00 | 22.70 | 9.80 | 0.04 | NEUTRAL | QP |
| 7 | 2.1668 | 12.27 | -33.73 | 46.00 | 2.37 | 9.84 | 0.06 | NEUTRAL | Average |
| 8 | 2.1668 | 16.87 | -39.13 | 56.00 | 6.97 | 9.84 | 0.06 | NEUTRAL | QP |
| 9 | 5.6234 | 11.47 | -38.53 | 50.00 | 1.43 | 9.92 | 0.12 | NEUTRAL | Average |
| 10 | 5.6234 | 15.24 | -44.76 | 60.00 | 5.20 | 9.92 | 0.12 | NEUTRAL | QP |
| 11 | 14.7497 | 28.52 | -21.48 | 50.00 | 18.16 | 10.10 | 0.26 | NEUTRAL | Average |
| 12 | 14.7497 | 33.00 | -27.00 | 60.00 | 22.64 | 10.10 | 0.26 | NEUTRAL | QP |

Note:

Level = Read Level + LISN Factor + Cable Loss.

4.2. 26dB Bandwidth and 99% Occupied Bandwidth Measurement

4.2.1. Limit

No restriction limits.

4.2.2. Measuring Instruments and Setting

Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

| 26dB Bandwidth | |
|------------------------|--|
| Spectrum Parameters | Setting |
| Attenuation | Auto |
| Span Frequency | > 26dB Bandwidth |
| RBW | Approximately 1% of the emission bandwidth |
| VBW | VBW > RBW |
| Detector | Peak |
| Trace | Max Hold |
| Sweep Time | Auto |
| 99% Occupied Bandwidth | |
| Spectrum Parameters | Setting |
| Span | 1.5 times to 5.0 times the OBW |
| RBW | 1 % to 5 % of the OBW |
| VBW | $\geq 3 \times$ RBW |
| Detector | Peak |
| Trace | Max Hold |

4.2.3. Test Procedures

1. The transmitter was conducted to the spectrum analyzer in peak hold mode.
2. Measure the maximum width of the emission that is 26 dB down from the peak of the emission.
3. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.
4. Measurement perform conducted of each port.

4.2.4. Test Setup Layout

This test setup layout is the same as that shown in section 4.5.4

4.2.5. Test Deviation

There is no deviation with the original standard.

4.2.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

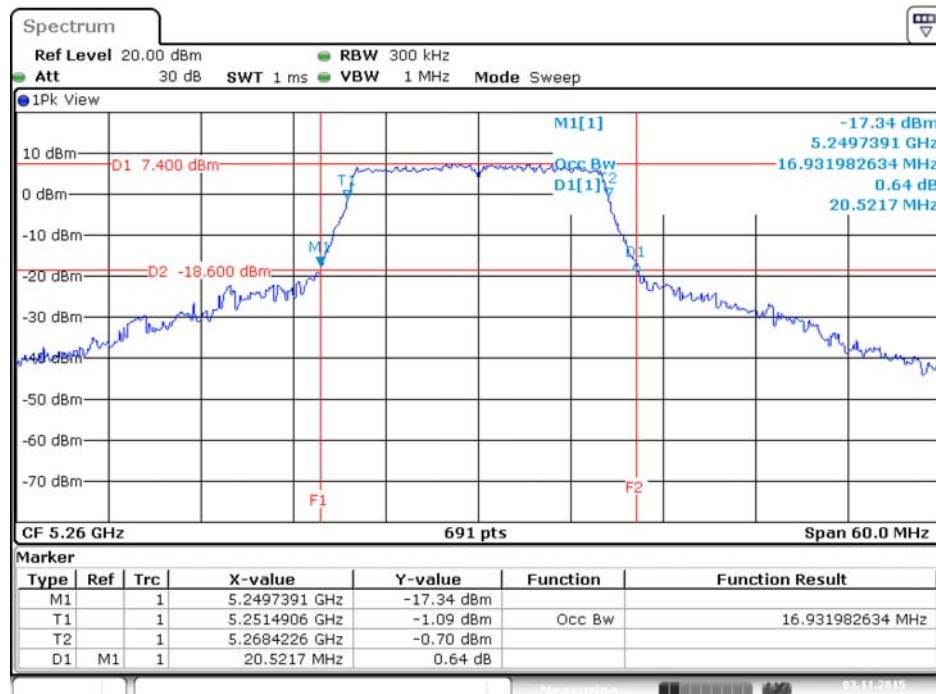
4.2.7. Test Result of 26dB Bandwidth and 99% Occupied Bandwidth

<For 1TX>

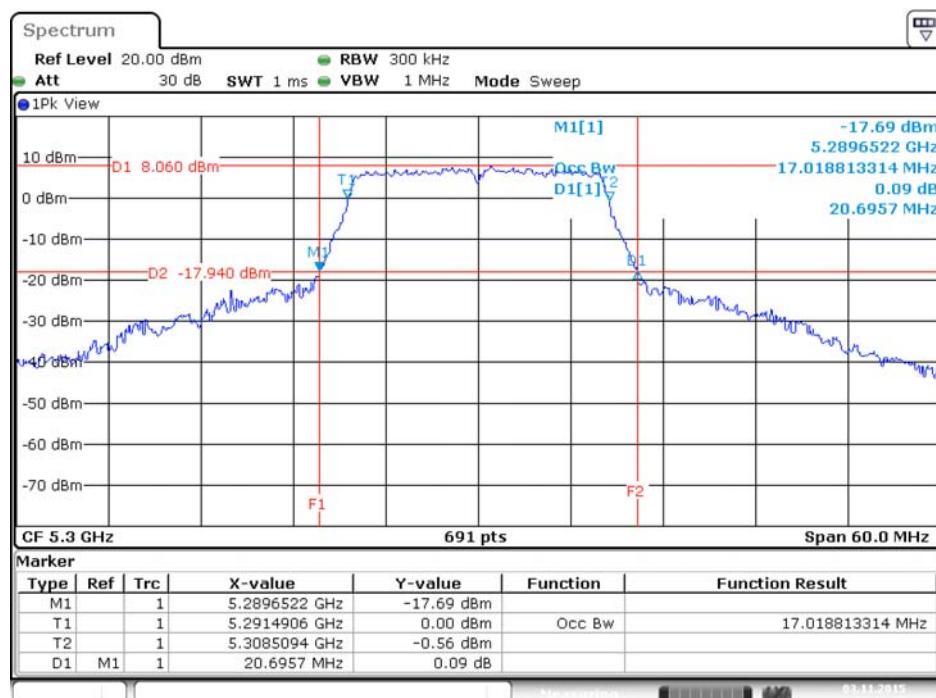
| | | | |
|----------------------|----------|-----------------|-----|
| Temperature | 25°C | Humidity | 58% |
| Test Engineer | Mars Lin | | |

| Mode | Frequency | 26dB Bandwidth (MHz) | 99% Occupied Bandwidth (MHz) |
|-----------------------------|------------------|-----------------------------|-------------------------------------|
| 802.11a | 5260 MHz | 20.52 | 16.93 |
| | 5300 MHz | 20.70 | 17.02 |
| | 5320 MHz | 20.52 | 17.02 |
| | 5500 MHz | 20.43 | 16.93 |
| | 5580 MHz | 20.78 | 16.93 |
| | 5700 MHz | 20.78 | 17.11 |
| 802.11ac MCS0/Nss1 VHT20 | 5260 MHz | 20.87 | 17.97 |
| | 5300 MHz | 21.91 | 17.97 |
| | 5320 MHz | 20.61 | 17.97 |
| | 5500 MHz | 21.39 | 18.06 |
| | 5580 MHz | 21.22 | 17.97 |
| | 5700 MHz | 23.30 | 18.06 |
| 802.11ac MCS0/Nss1 VHT40 | 5270 MHz | 46.81 | 36.90 |
| | 5310 MHz | 45.22 | 37.05 |
| | 5510 MHz | 51.30 | 36.90 |
| | 5550 MHz | 49.86 | 36.90 |
| | 5670 MHz | 61.01 | 37.05 |
| 802.11ac MCS0/Nss1 VHT80 | 5290 MHz | 90.14 | 75.83 |
| | 5530 MHz | 88.12 | 76.12 |

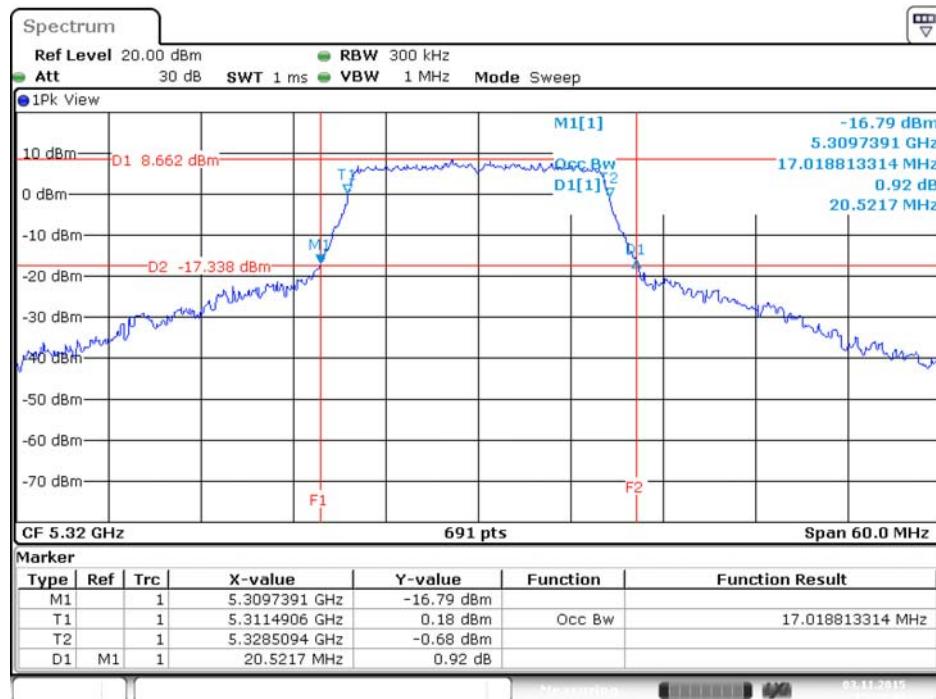
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 / 5260 MHz



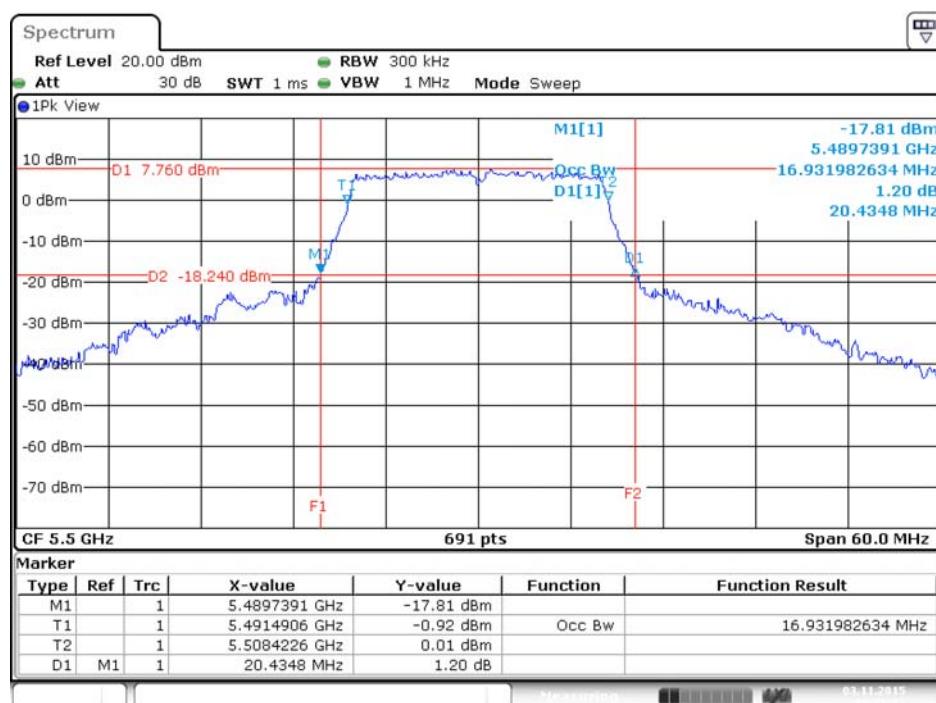
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 / 5300 MHz



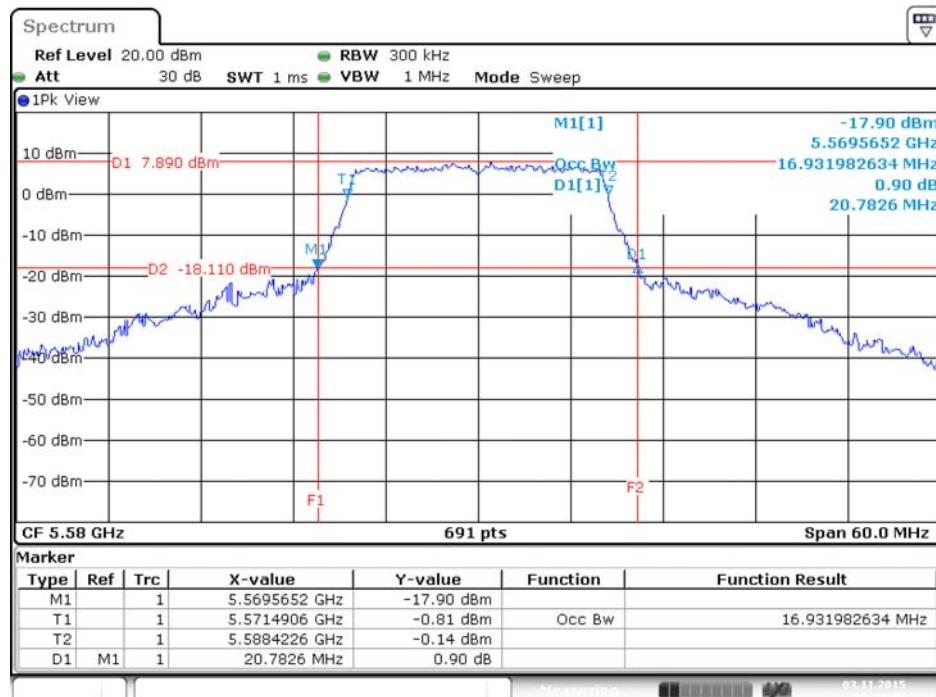
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 / 5320 MHz



26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 / 5500 MHz

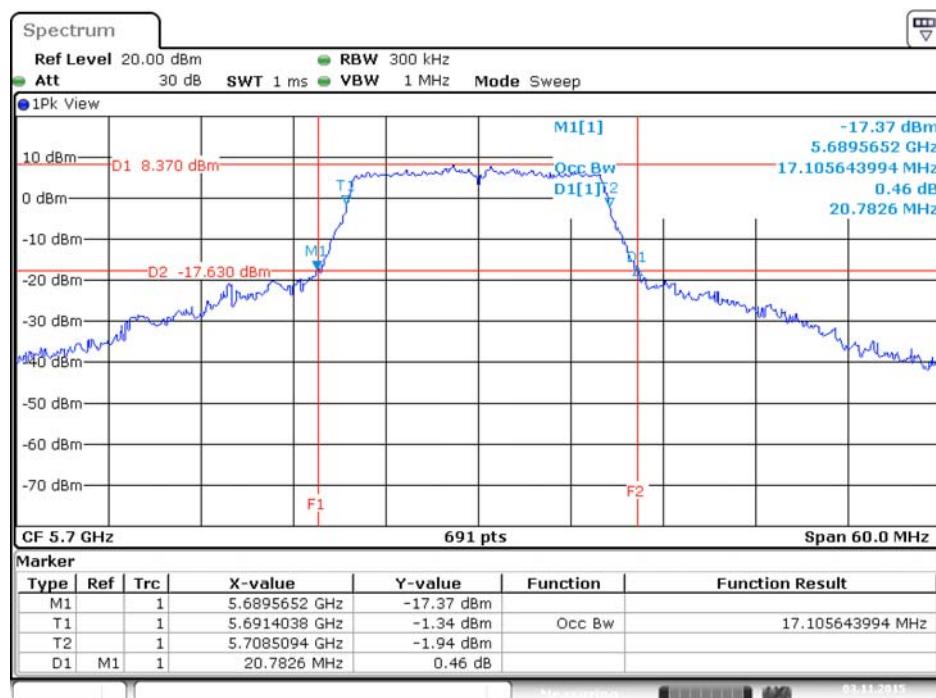


26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 / 5580 MHz



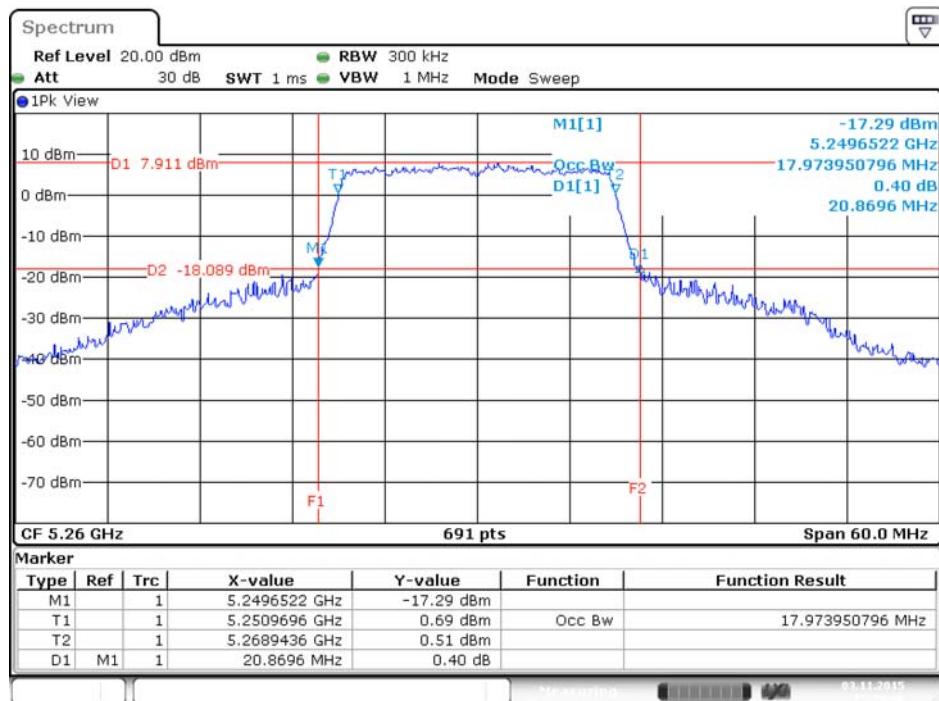
Date: 3.NOV.2015 15:22:05

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 / 5700 MHz

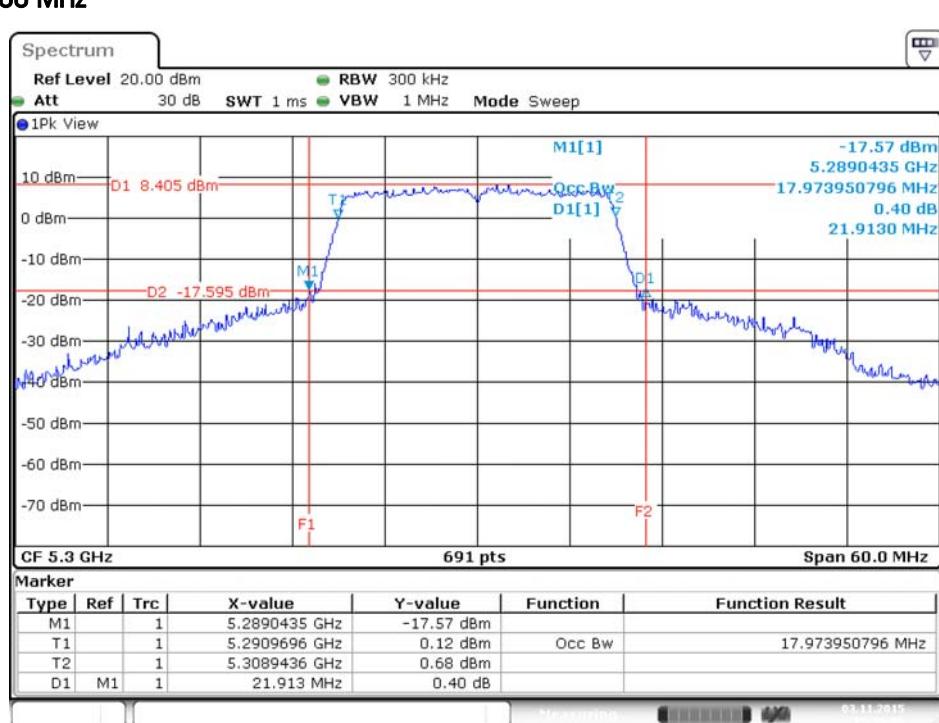


Date: 3.NOV.2015 15:22:44

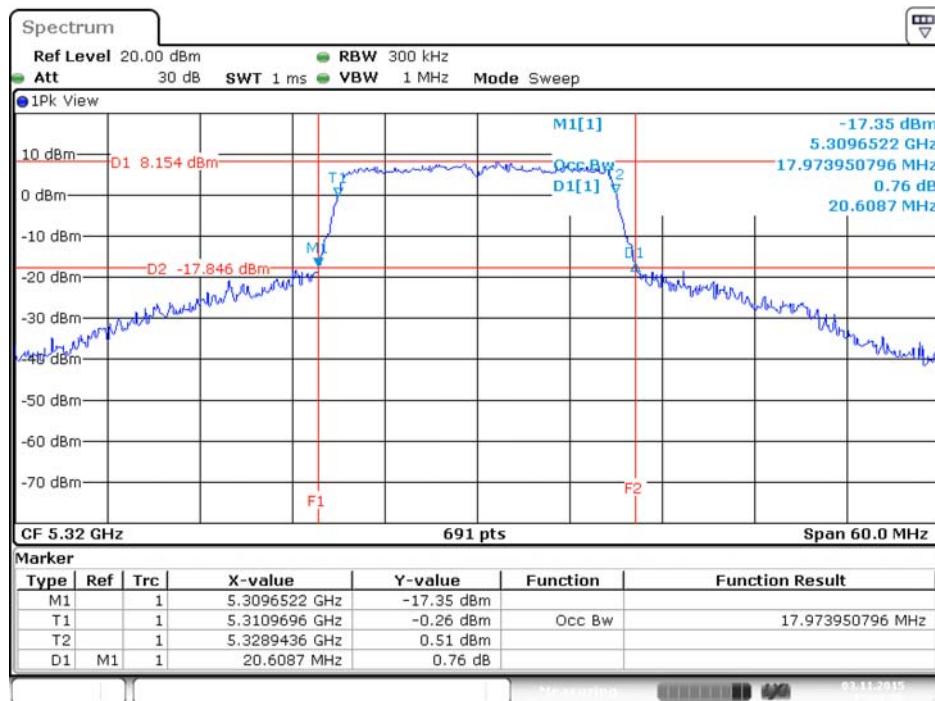
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 / 5260 MHz



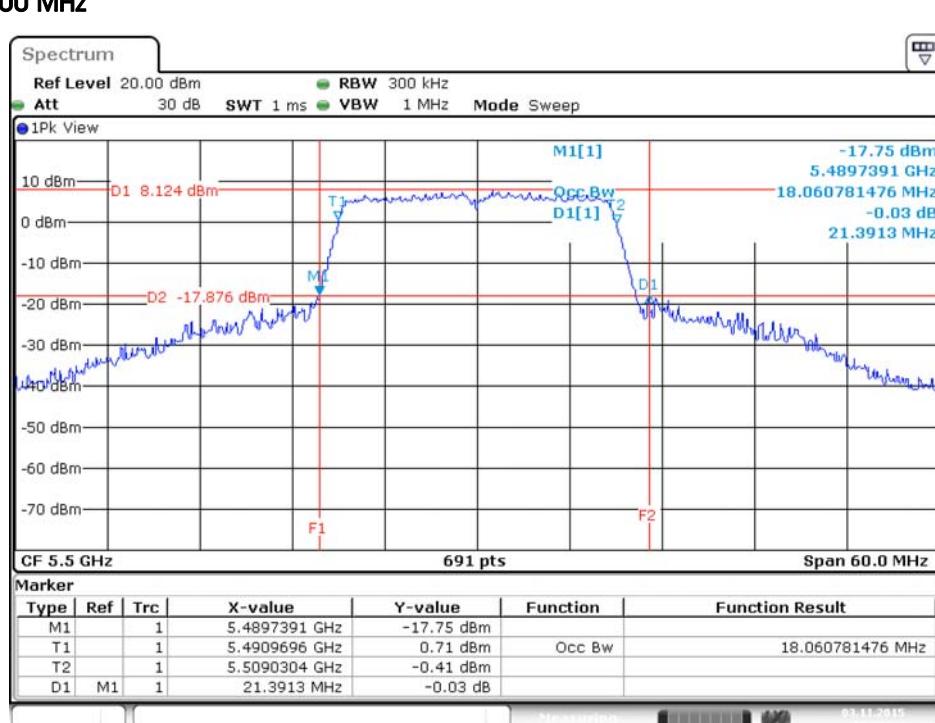
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 / 5300 MHz



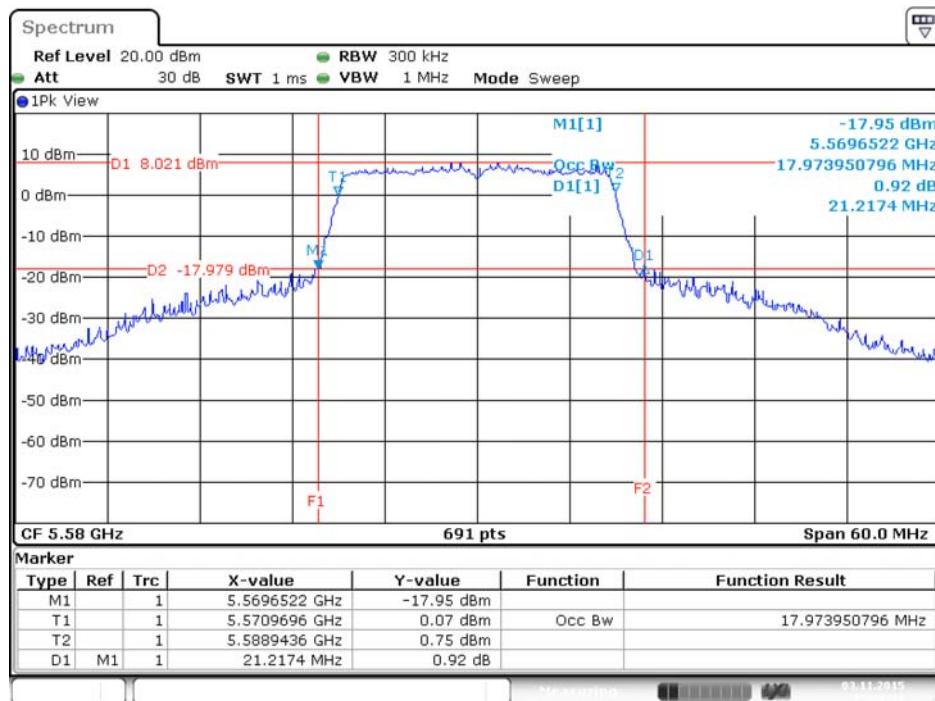
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 / 5320 MHz



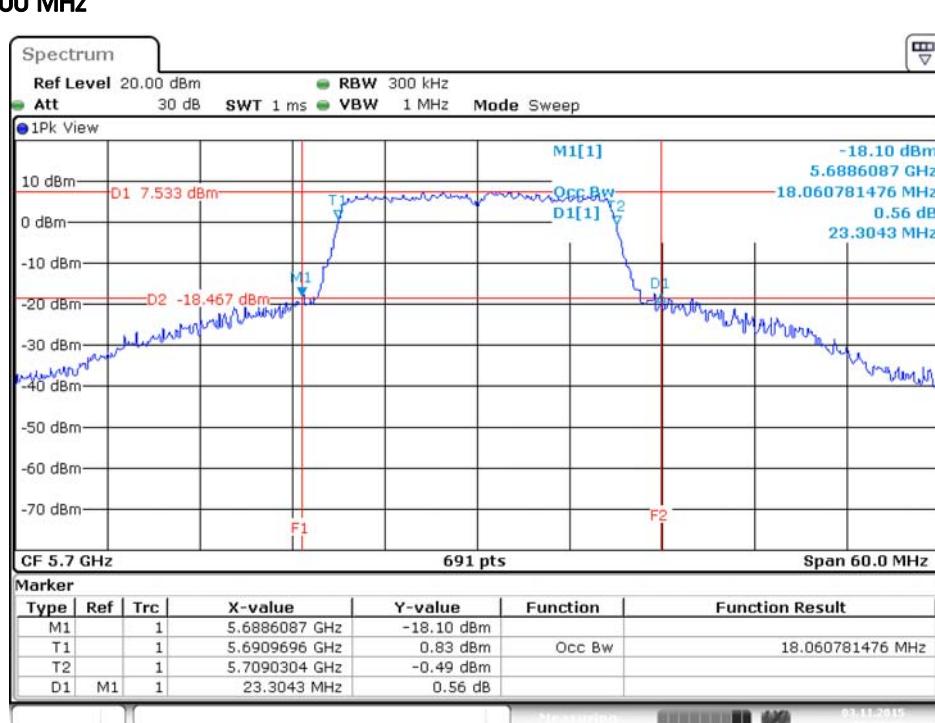
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 / 5500 MHz



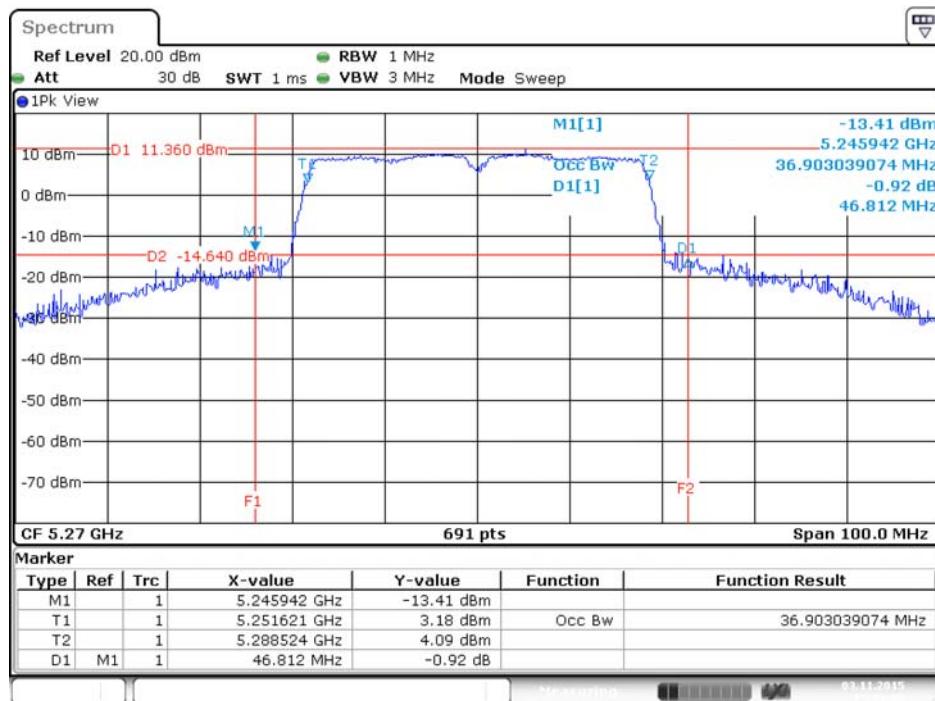
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 / 5580 MHz



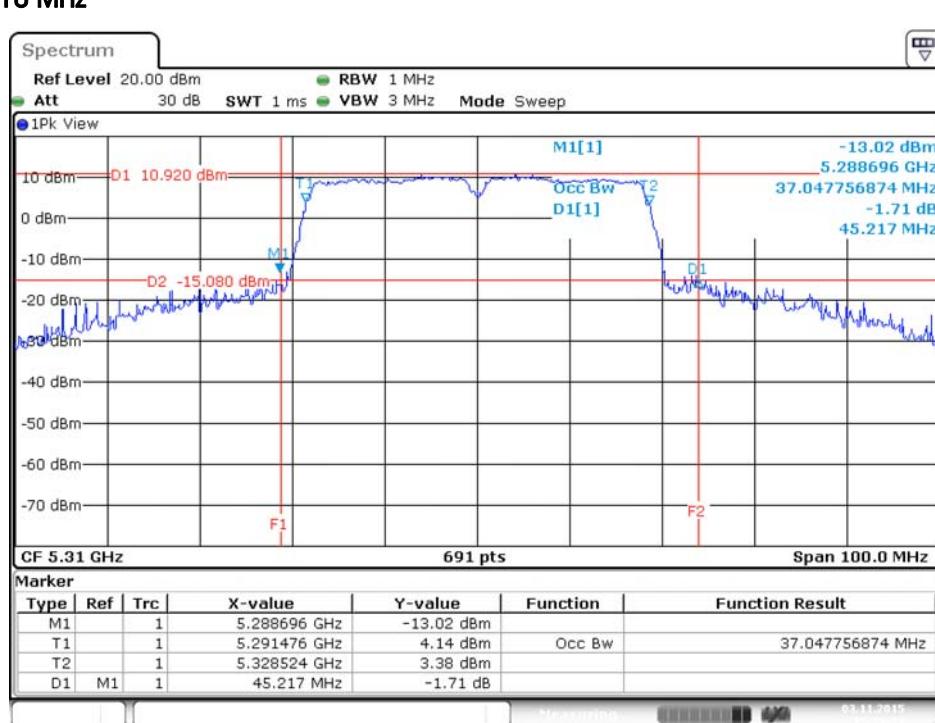
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 / 5700 MHz



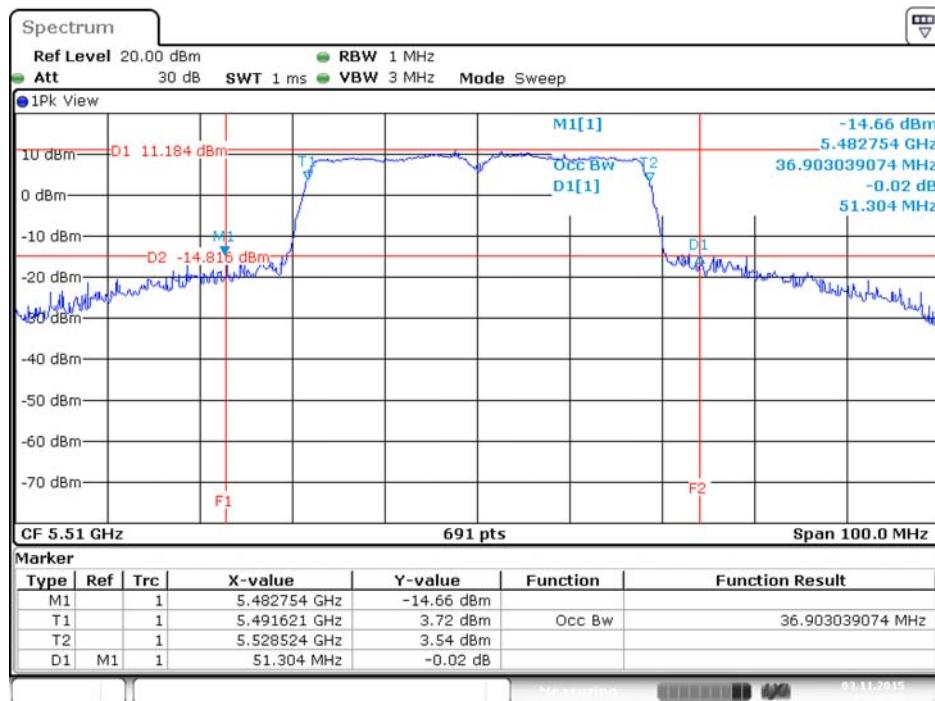
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 / 5270 MHz



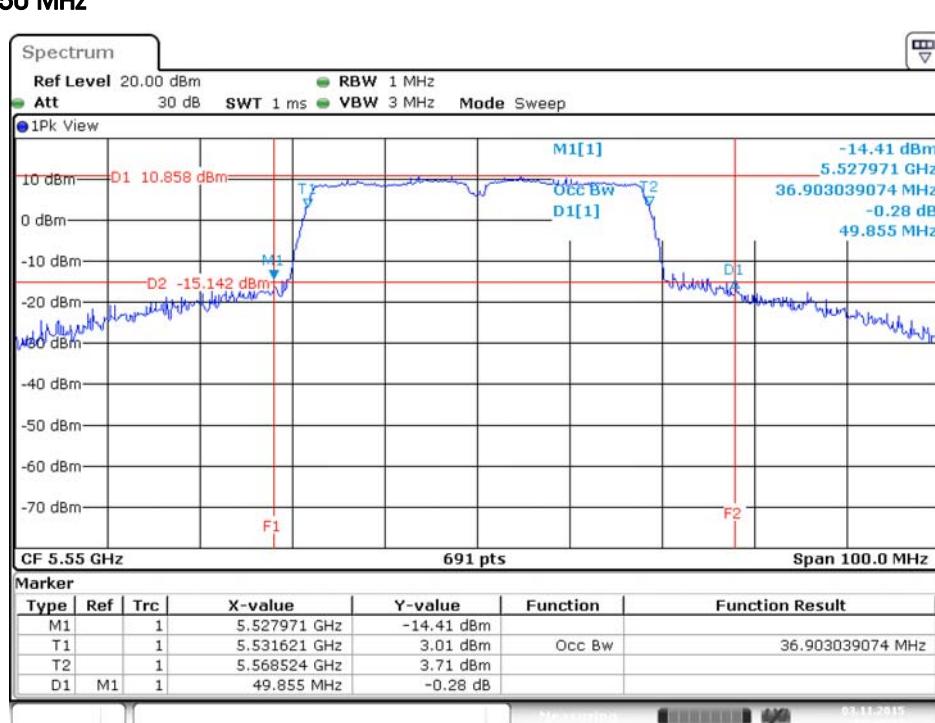
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 / 5310 MHz



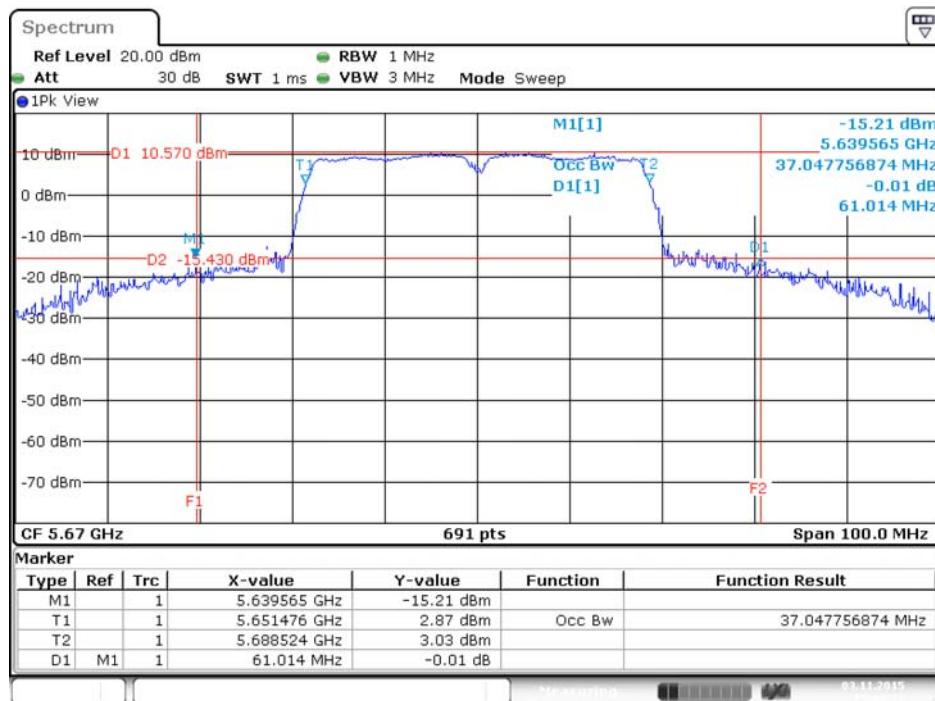
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 / 5510 MHz



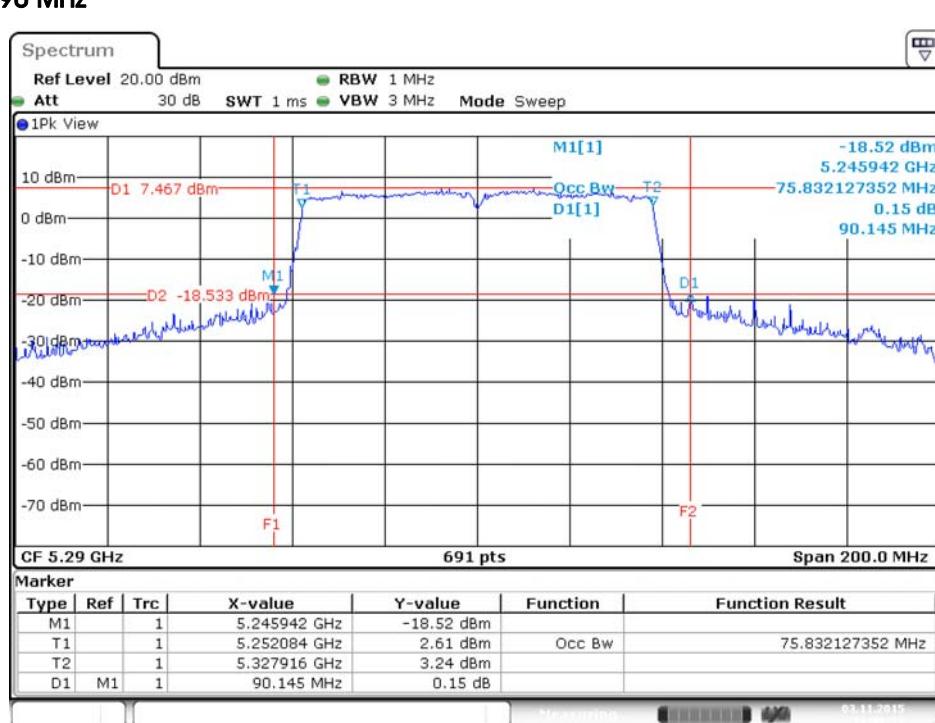
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 / 5550 MHz



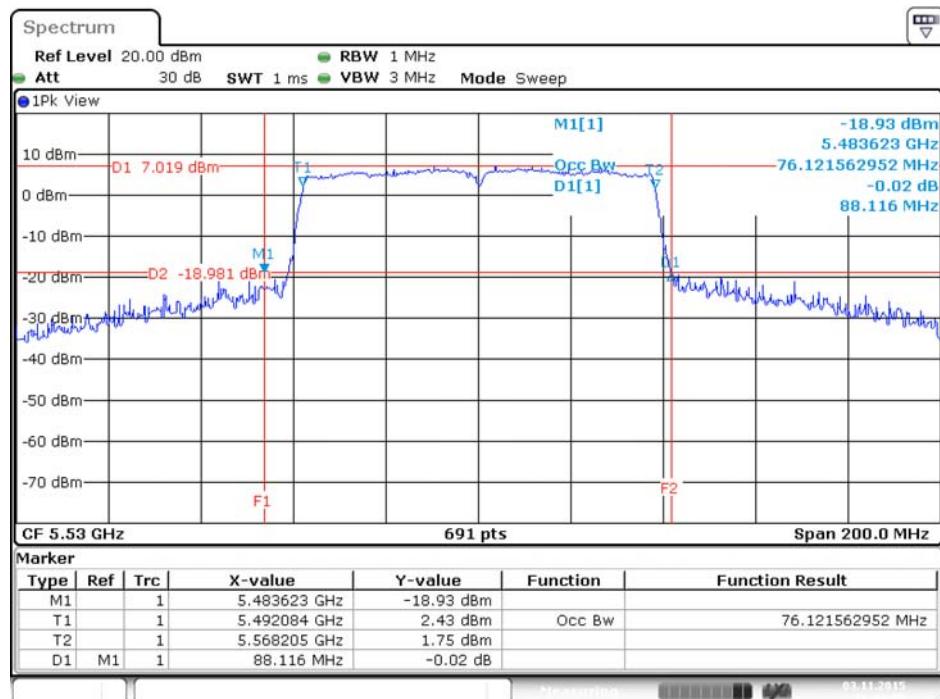
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 / 5670 MHz



26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 / 5290 MHz



26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 / 5530 MHz



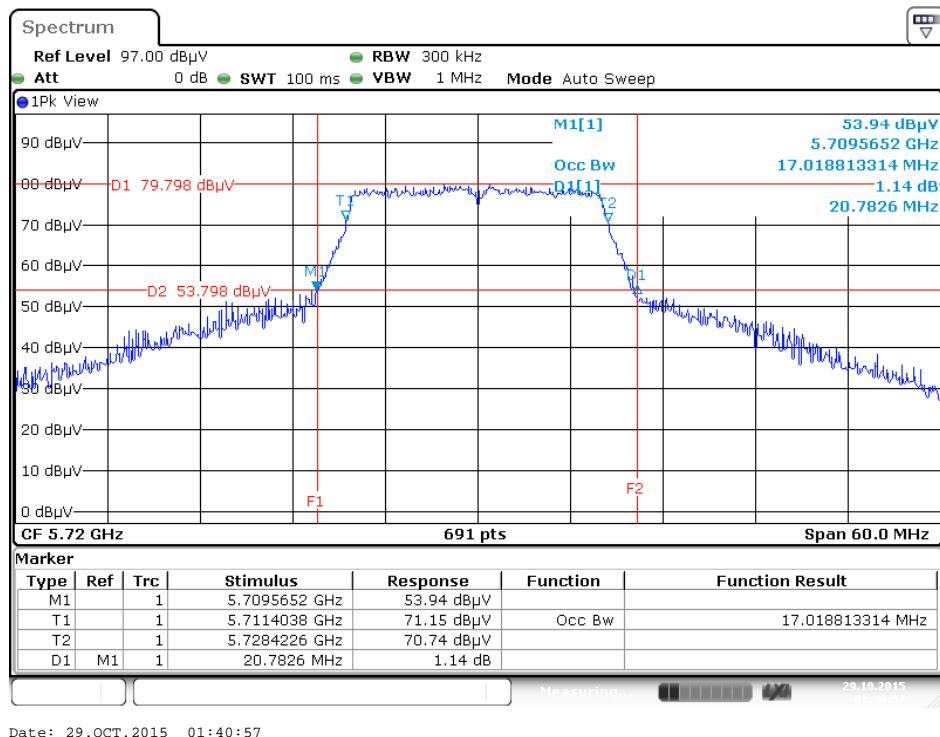
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Straddle Channel

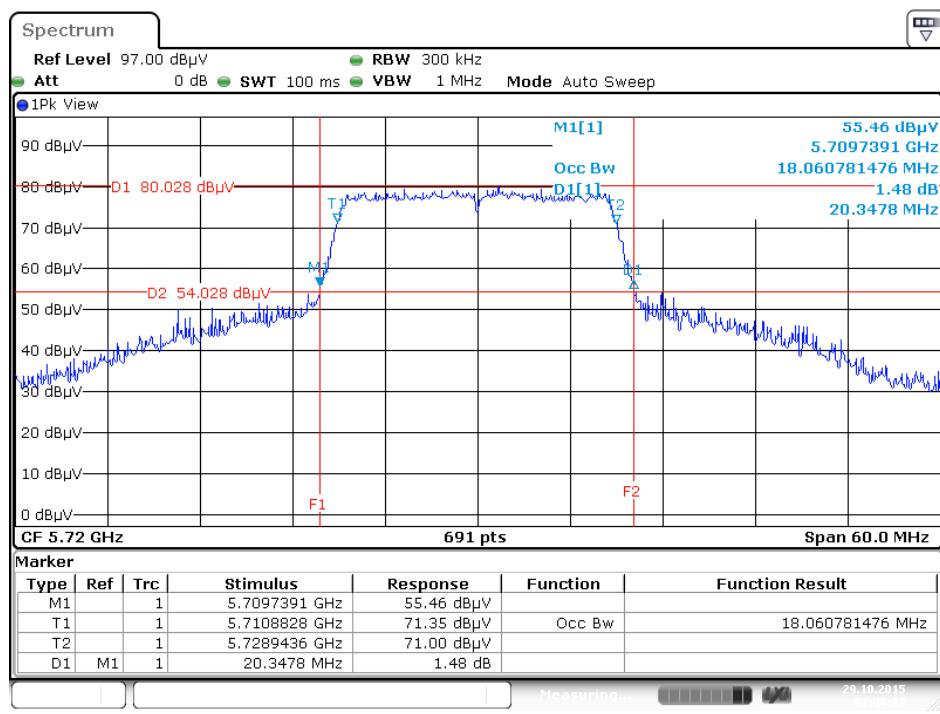
| Mode | Frequency | 26dB BW (MHz) | 99% OBW (MHz) | 26dB BW F1 (MHz) | 99% OBW T1 (MHz) | UNII 2C 26dB BW (MHz) | UNII 3 26dB BW (MHz) | UNII 2C 99% BW (MHz) | UNII 3 99% BW (MHz) |
|-----------------------------|------------------|------------------------------|------------------------------|---------------------------------|---------------------------------|--|---|-------------------------------------|------------------------------------|
| 802.11a | 5720 MHz | 20.78 | 17.02 | 5709.57 | 5711.40 | 15.43 | 5.35 | 13.60 | 3.42 |
| 802.11ac MCS0/Nss1 VHT20 | 5720 MHz | 20.35 | 18.06 | 5709.74 | 5710.88 | 15.26 | 5.09 | 14.12 | 3.94 |
| 802.11ac MCS0/Nss1 VHT40 | 5710 MHz | 51.16 | 36.90 | 5683.62 | 5691.48 | 41.38 | 9.78 | 33.52 | 3.38 |
| 802.11ac MCS0/Nss1 VHT80 | 5690 MHz | 88.70 | 75.83 | 5648.26 | 5652.08 | 76.74 | 11.96 | 72.92 | 2.92 |

Straddle Channel

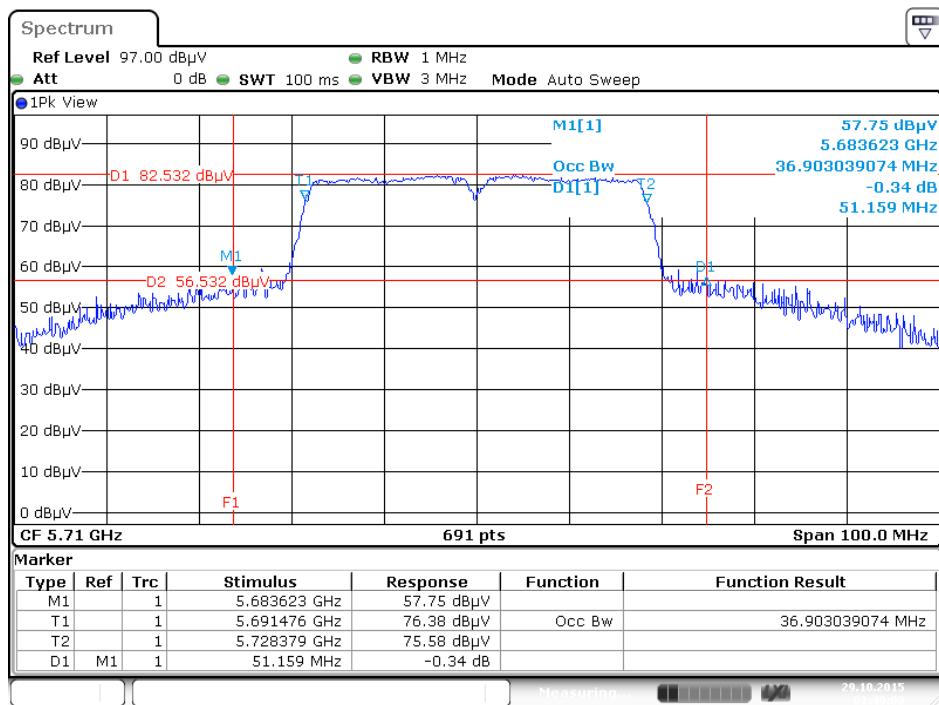
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 / 5720 MHz



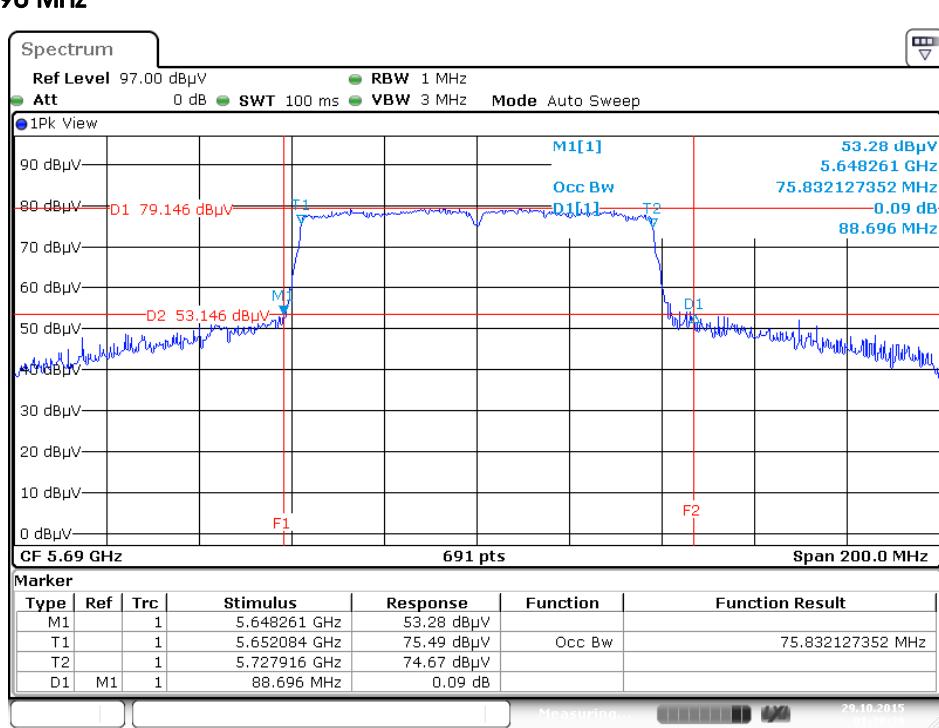
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 / 5720 MHz



26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 / 5710 MHz



26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 / 5690 MHz

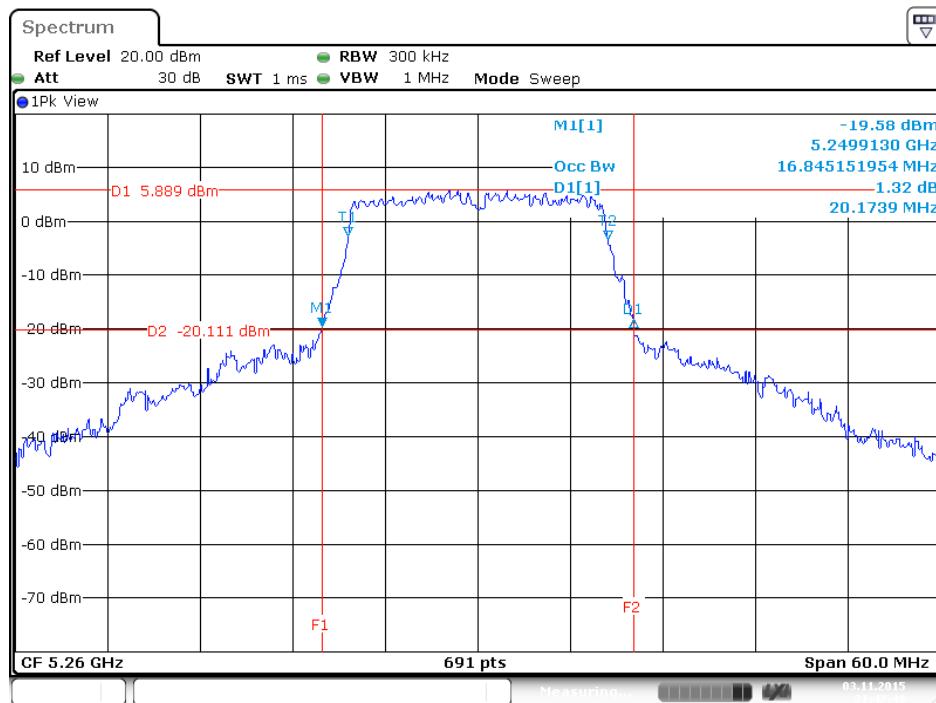


<For 2TX>

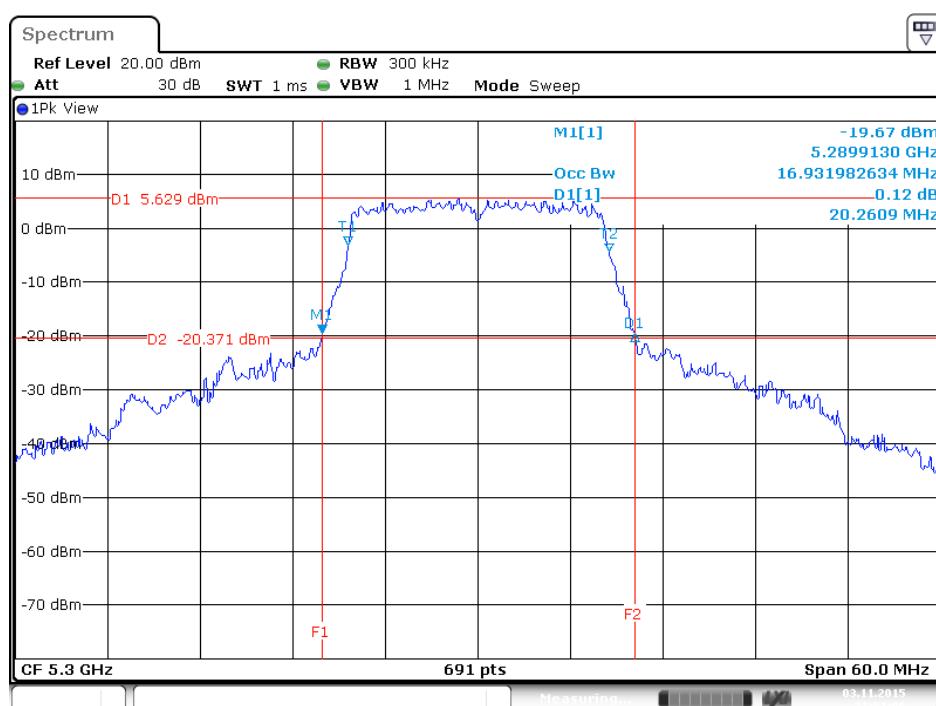
| | | | |
|----------------------|----------|-----------------|-----|
| Temperature | 25°C | Humidity | 58% |
| Test Engineer | Mars Lin | | |

| Mode | Frequency | 26dB Bandwidth (MHz) | | 99% Occupied Bandwidth (MHz) | |
|-----------------------------|------------------|-----------------------------|----------------|-------------------------------------|----------------|
| | | Chain 1 | Chain 2 | Chain 1 | Chain 2 |
| 802.11a | 5260 MHz | 20.17 | 20.78 | 16.84 | 17.02 |
| | 5300 MHz | 20.26 | 21.13 | 16.93 | 16.93 |
| | 5320 MHz | 20.17 | 21.04 | 16.93 | 17.01 |
| | 5500 MHz | 20.60 | 20.43 | 16.84 | 17.01 |
| | 5580 MHz | 21.82 | 20.86 | 16.93 | 17.01 |
| | 5700 MHz | 22.86 | 22.34 | 17.01 | 17.10 |
| 802.11ac MCS0/Nss1 VHT20 | 5260 MHz | 20.60 | 20.60 | 17.80 | 18.06 |
| | 5300 MHz | 21.21 | 23.91 | 17.80 | 17.97 |
| | 5320 MHz | 20.43 | 22.86 | 17.80 | 17.97 |
| | 5500 MHz | 22.52 | 23.30 | 17.80 | 17.97 |
| | 5580 MHz | 25.30 | 20.87 | 17.88 | 17.97 |
| | 5700 MHz | 23.47 | 26.26 | 17.97 | 17.80 |
| 802.11ac MCS0/Nss1 VHT40 | 5270 MHz | 45.07 | 51.45 | 36.75 | 37.04 |
| | 5310 MHz | 41.30 | 41.44 | 36.75 | 36.75 |
| | 5510 MHz | 40.43 | 41.01 | 36.75 | 36.90 |
| | 5550 MHz | 56.37 | 59.85 | 37.04 | 36.75 |
| | 5670 MHz | 56.81 | 59.42 | 37.04 | 37.04 |
| 802.11ac MCS0/Nss1 VHT80 | 5290 MHz | 82.02 | 82.60 | 75.83 | 75.83 |
| | 5530 MHz | 82.31 | 83.76 | 75.83 | 75.83 |

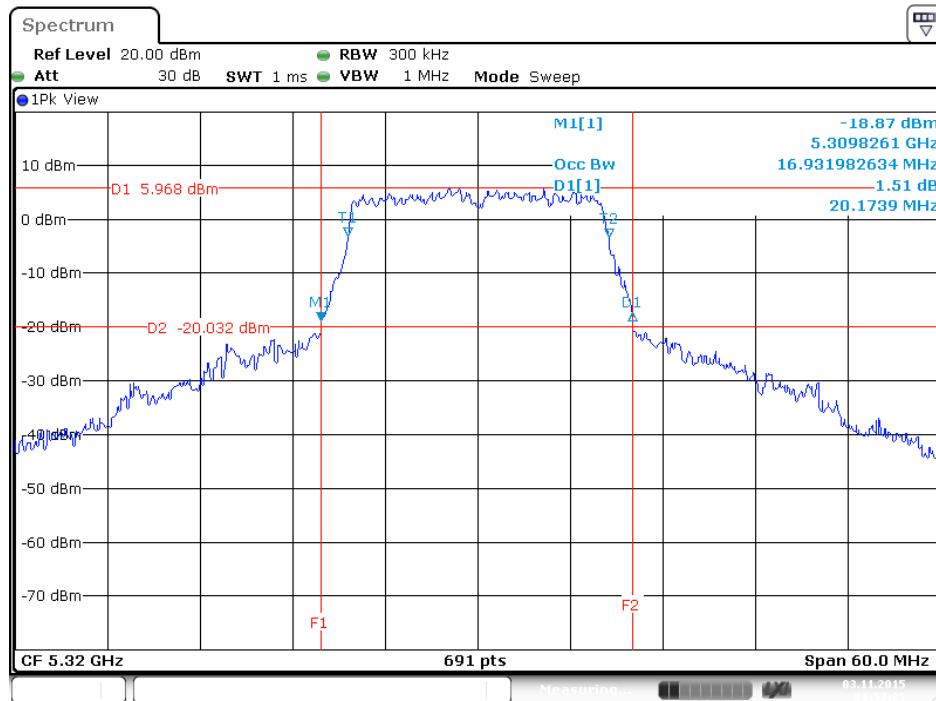
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 / 5260 MHz



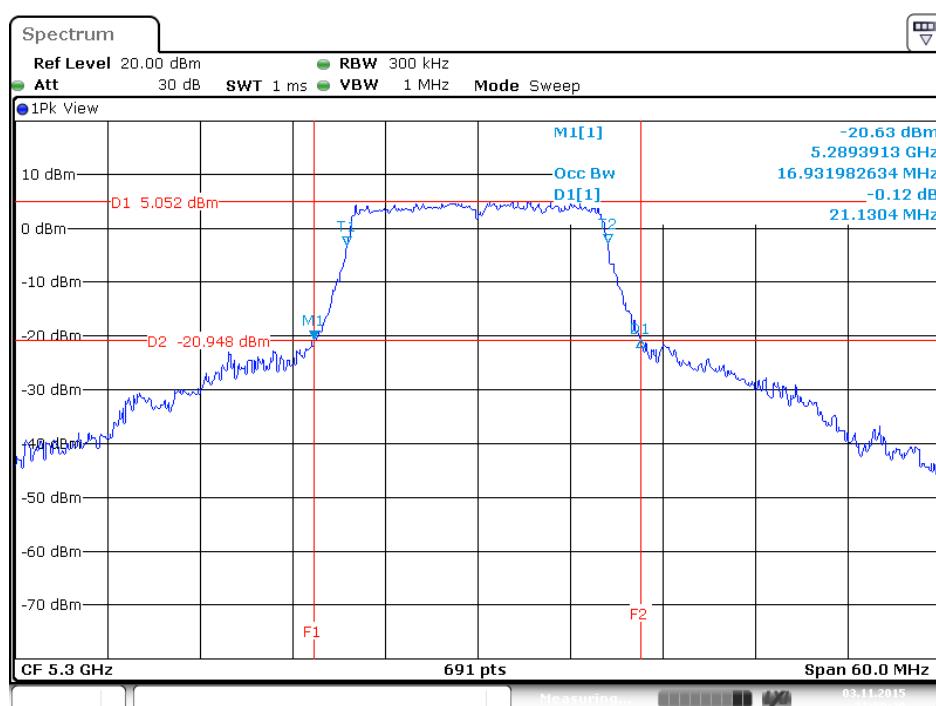
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 / 5300 MHz



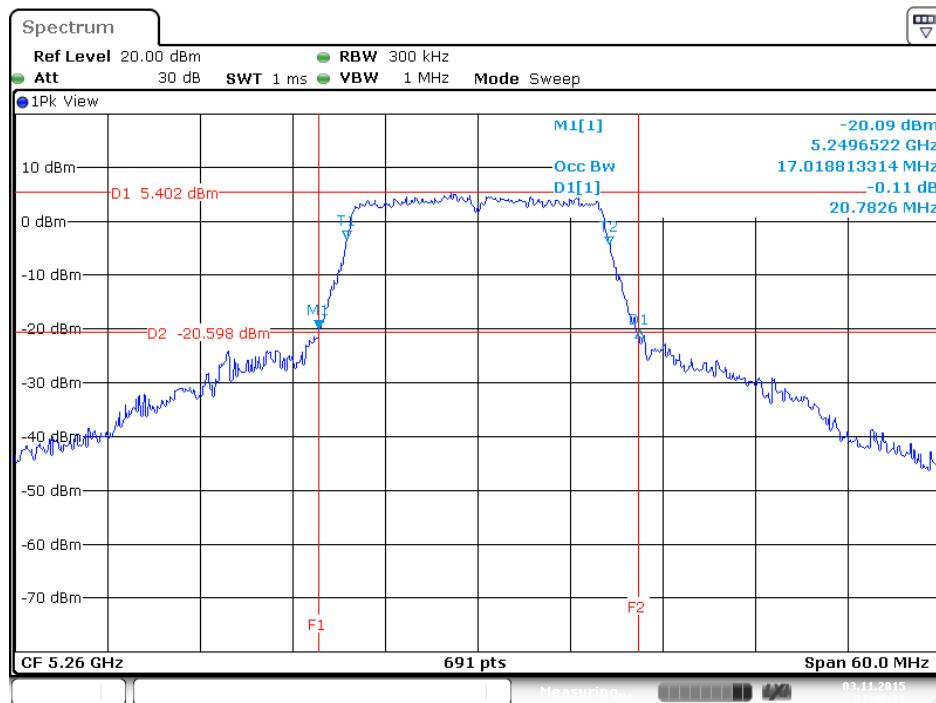
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 / 5320 MHz



26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 2 / 5260 MHz

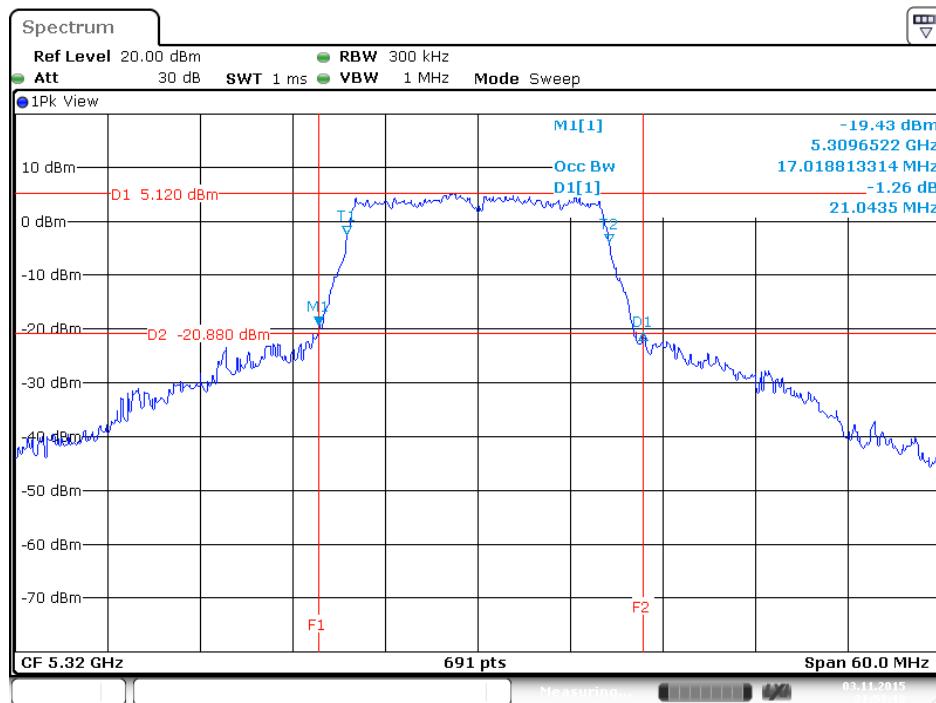


26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 2/ 5300 MHz



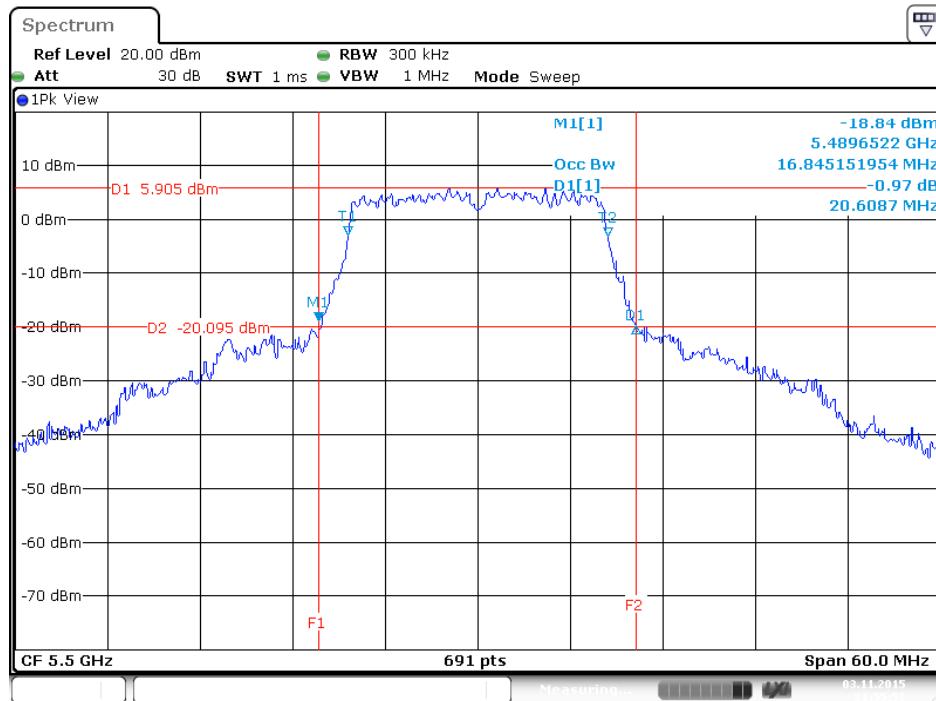
Date: 3.NOV.2015 21:48:21

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 2 / 5320 MHz



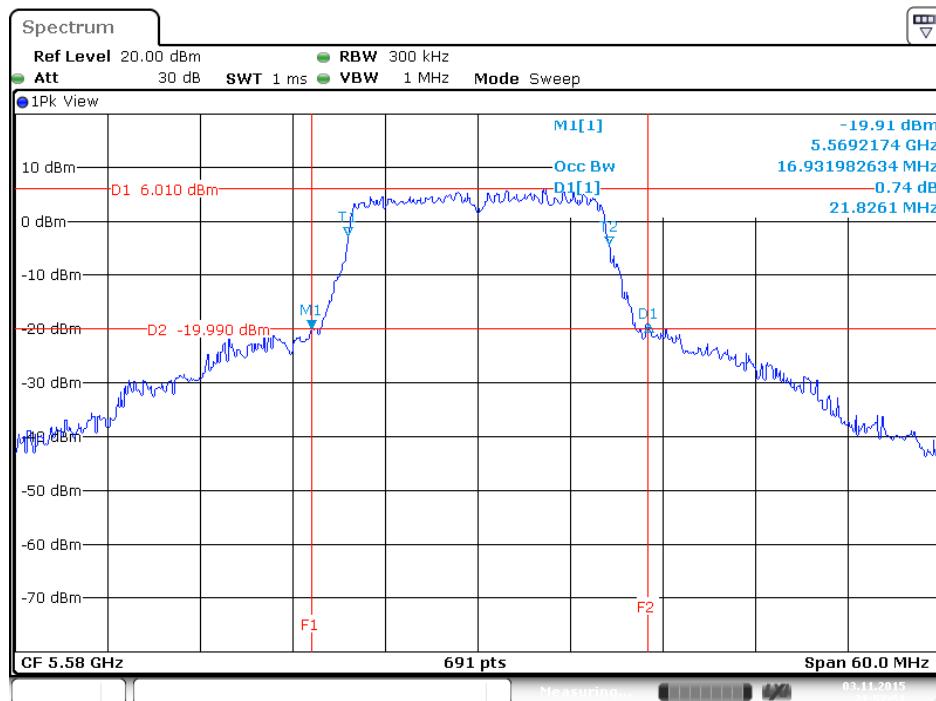
Date: 3.NOV.2015 21:53:18

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 / 5500 MHz



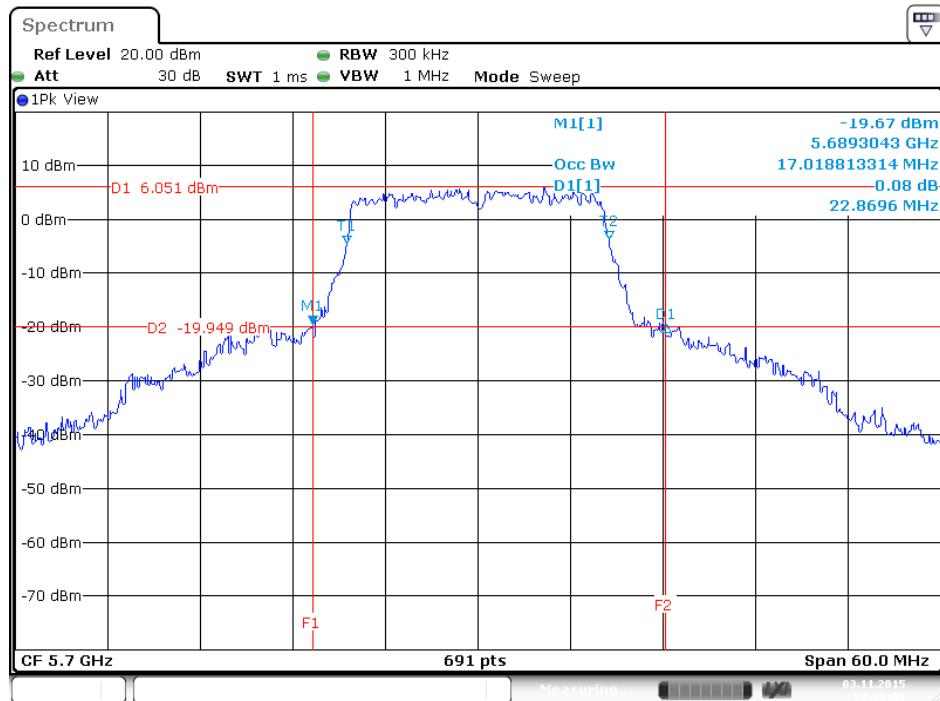
Date: 3.NOV.2015 21:55:58

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 / 5580 MHz



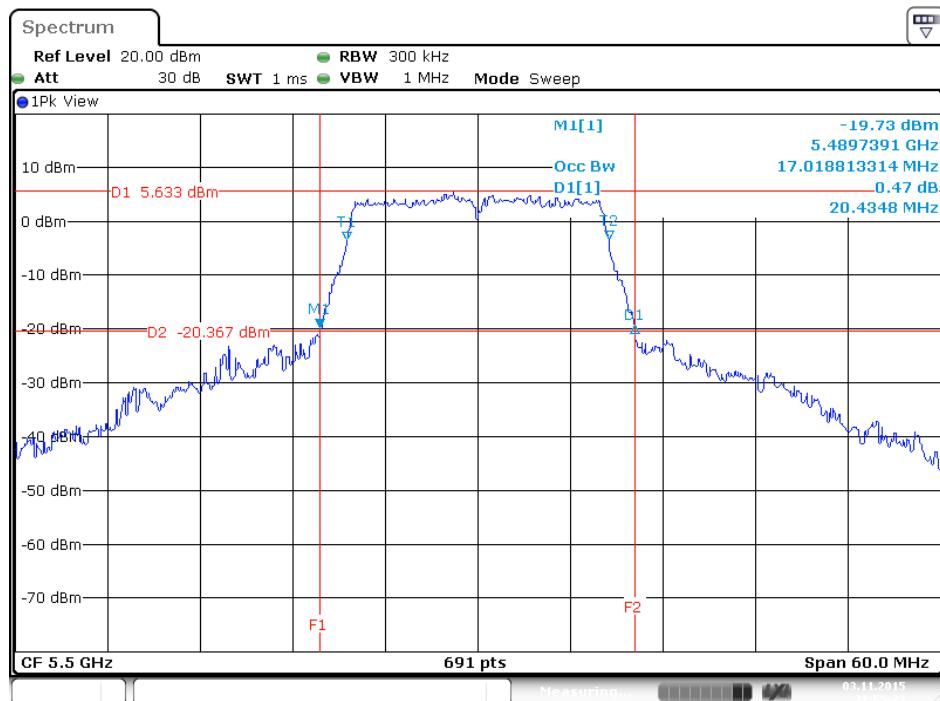
Date: 3.NOV.2015 21:57:51

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 / 5700 MHz



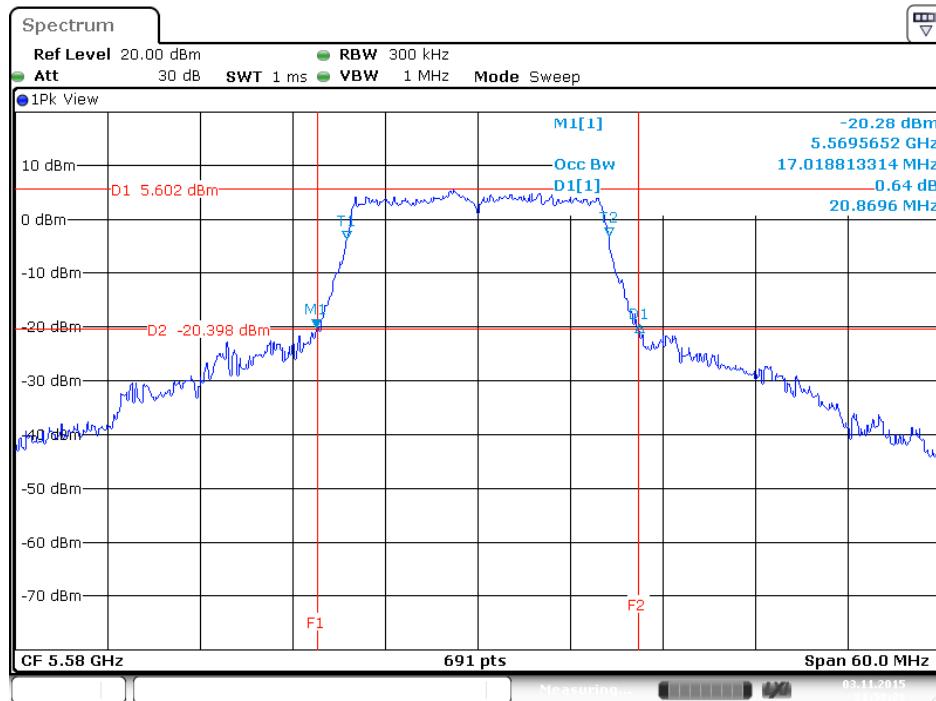
Date: 3.NOV.2015 22:00:08

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 2 / 5500 MHz

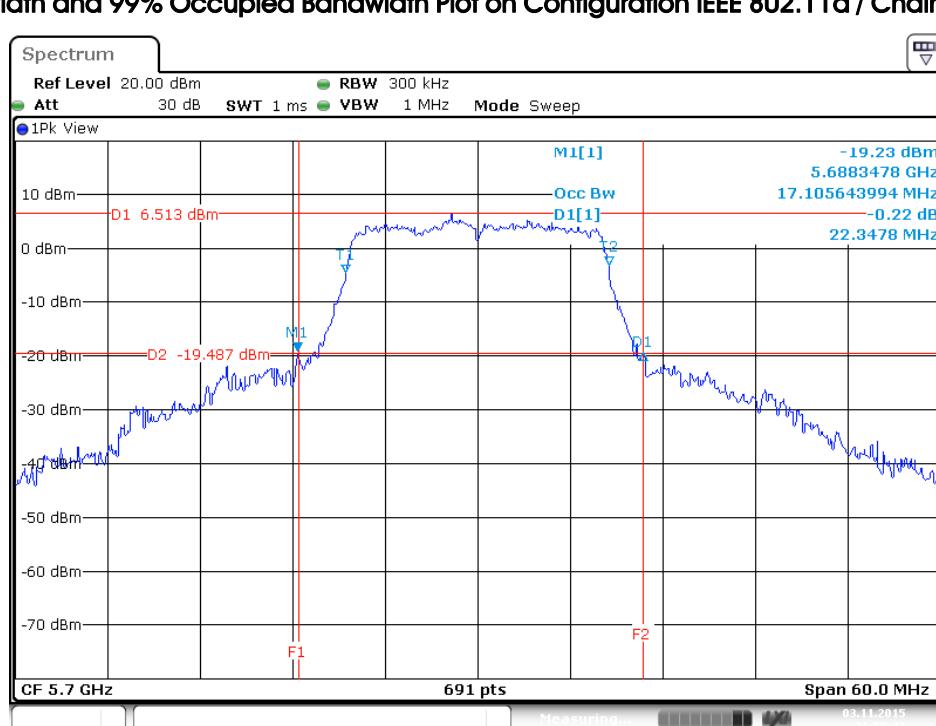


Date: 3.NOV.2015 21:55:23

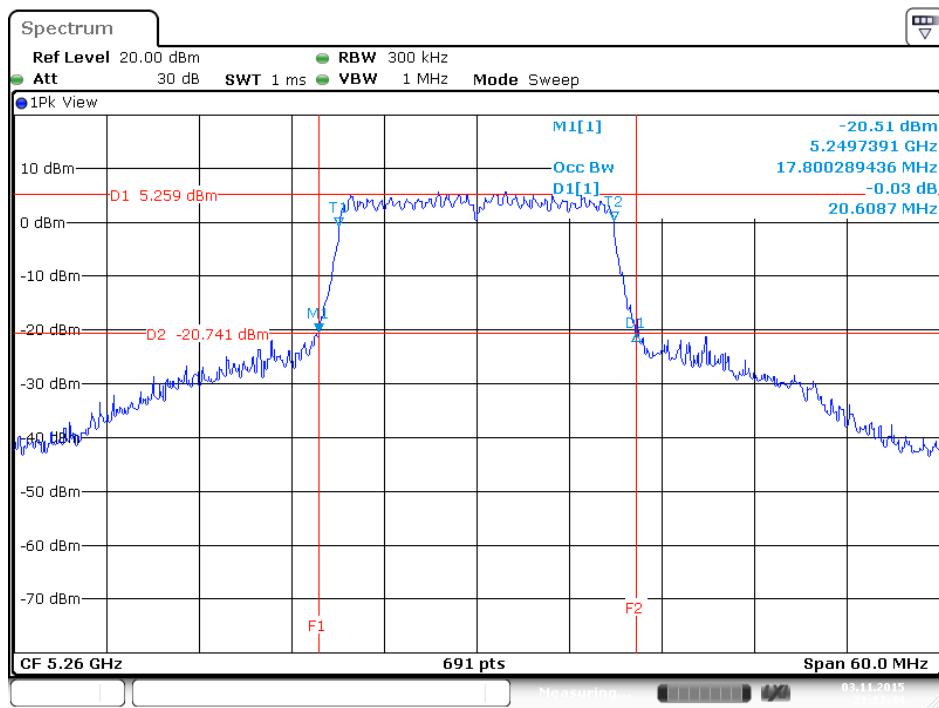
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 2 / 5580 MHz



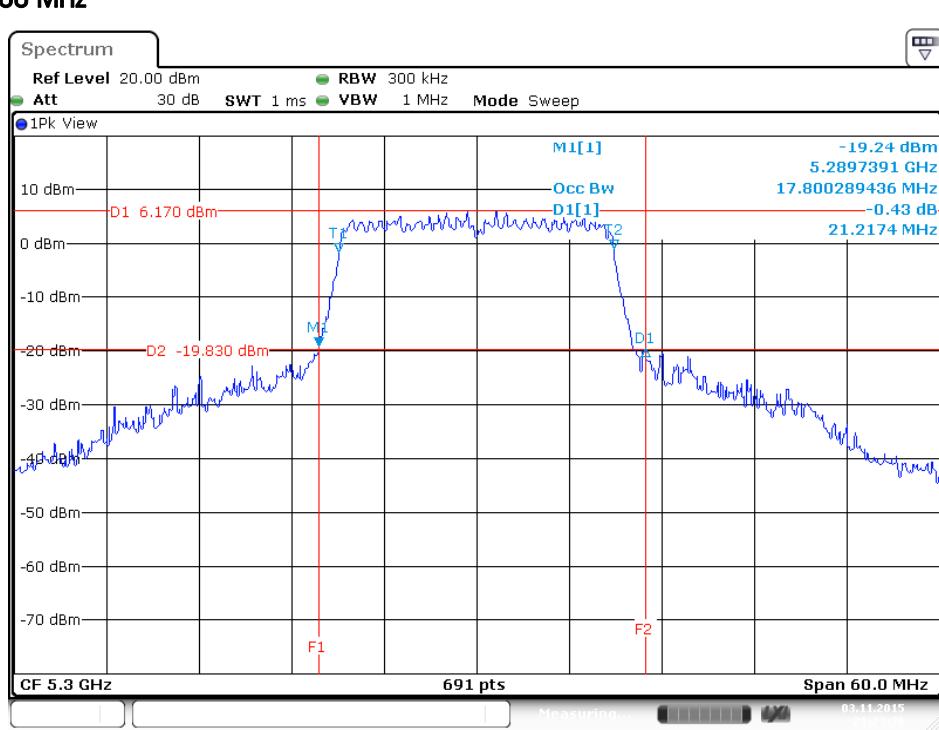
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 2 / 5700 MHz



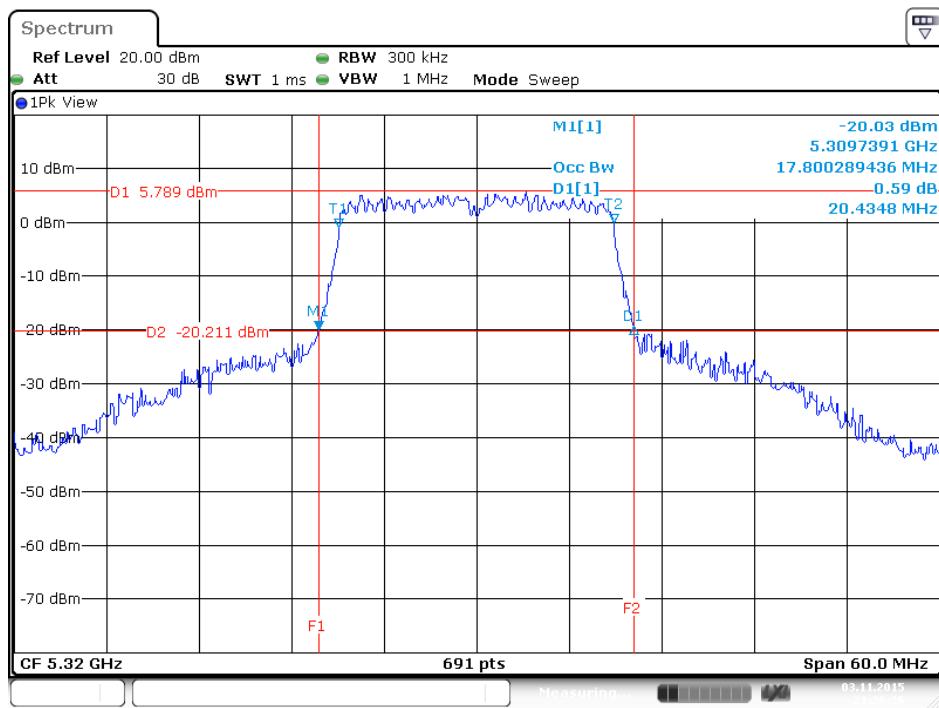
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 / 5260 MHz



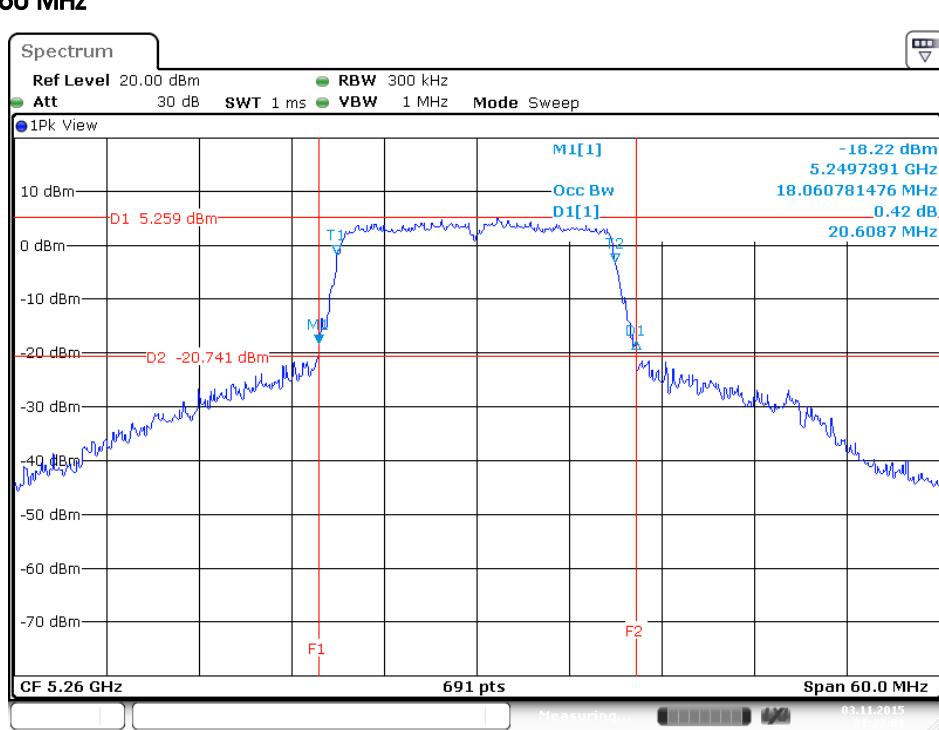
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 / 5300 MHz



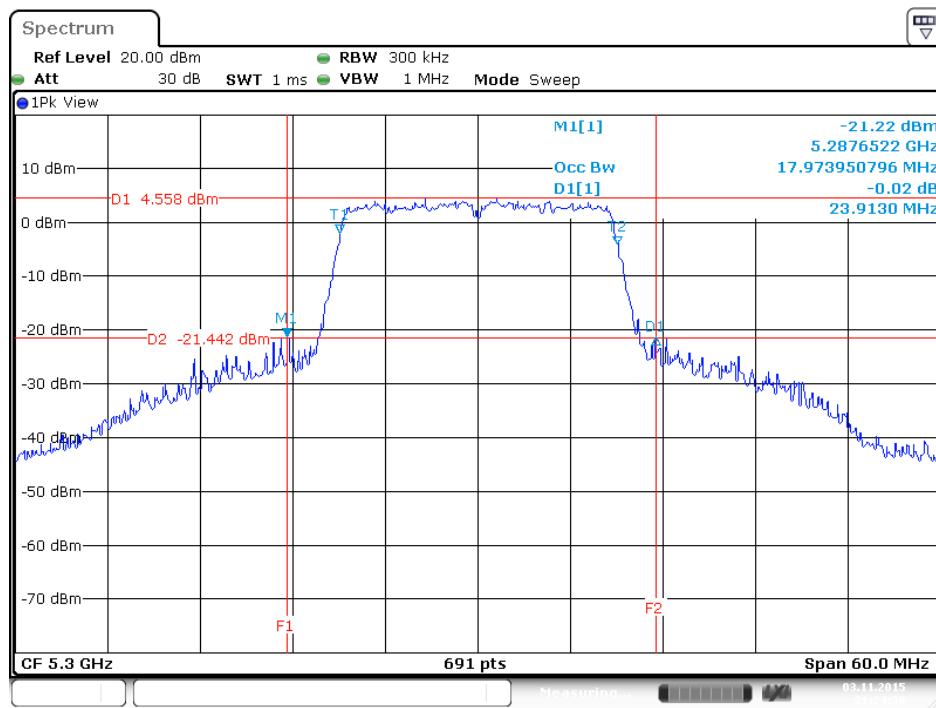
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 / 5320 MHz



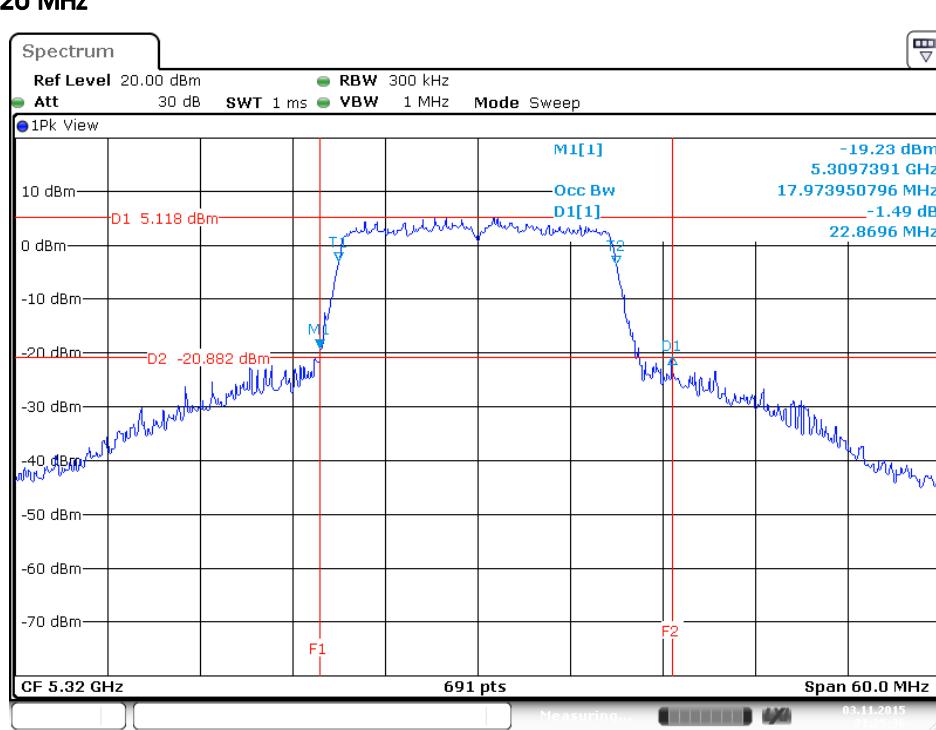
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 2 / 5260 MHz



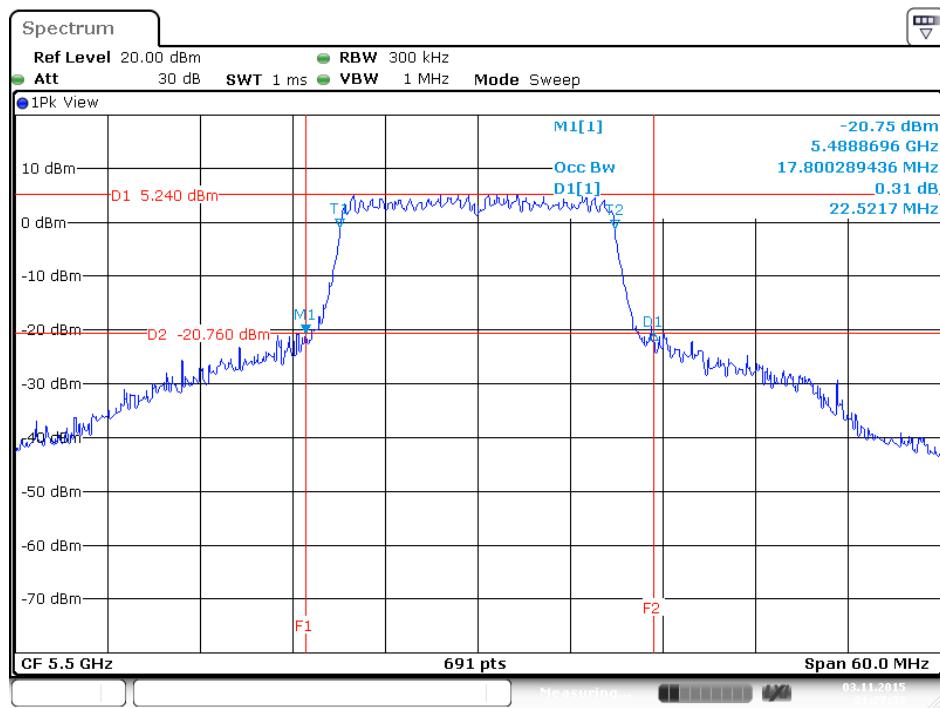
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 2 / 5300 MHz



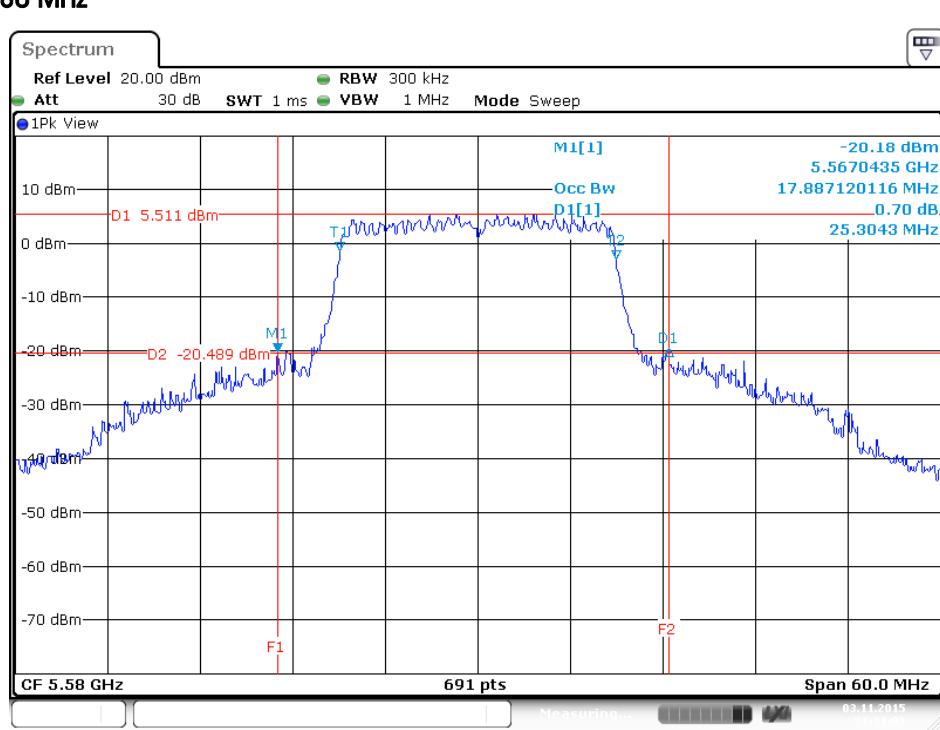
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 2 / 5320 MHz



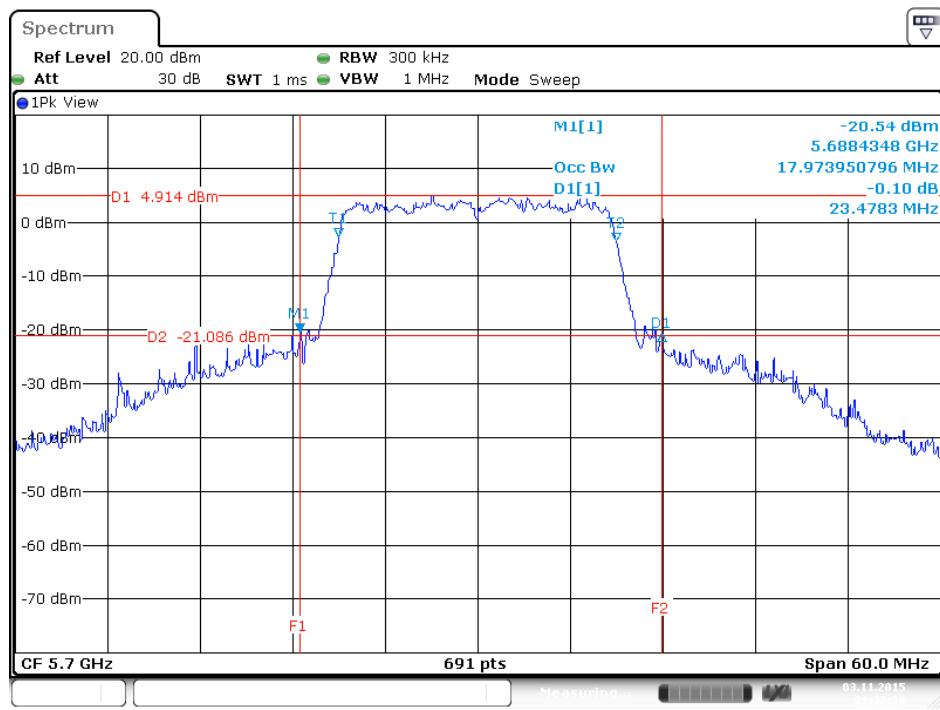
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 / 5500 MHz



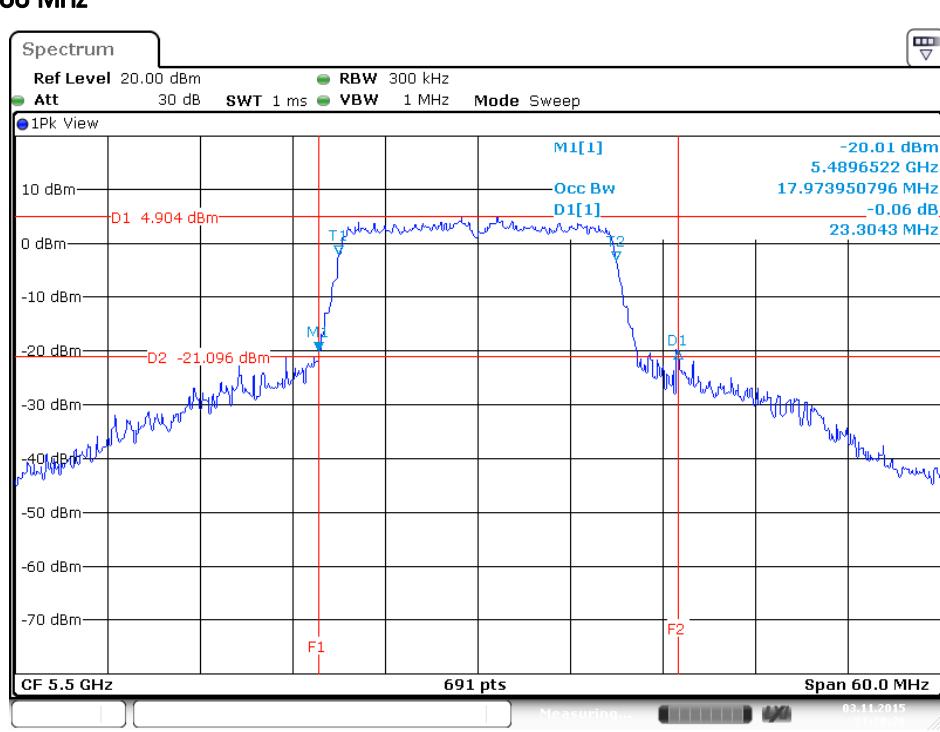
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 / 5580 MHz



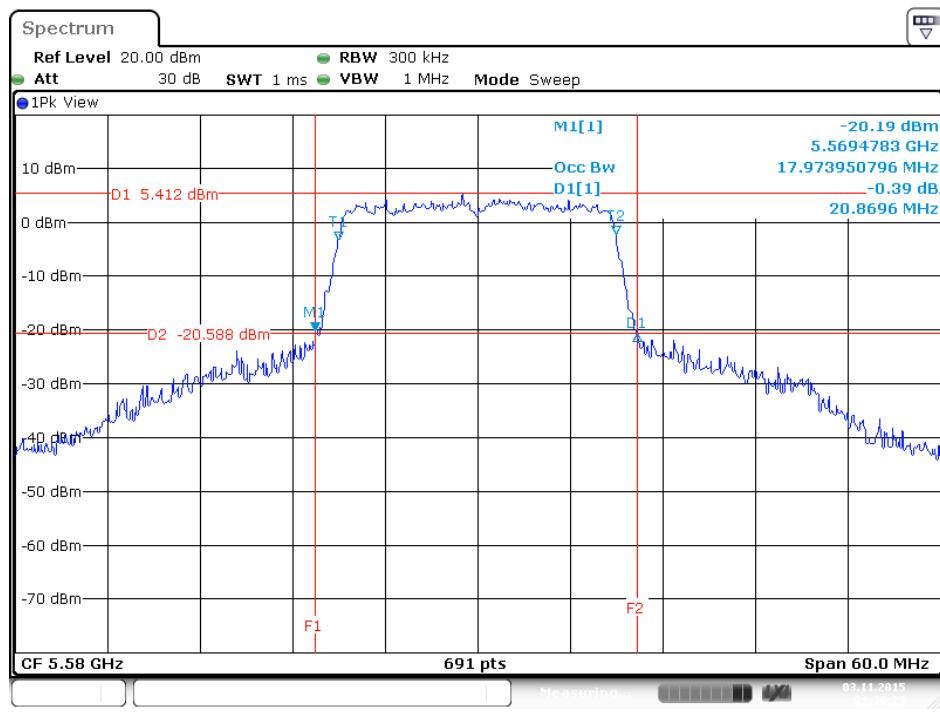
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 / 5700 MHz



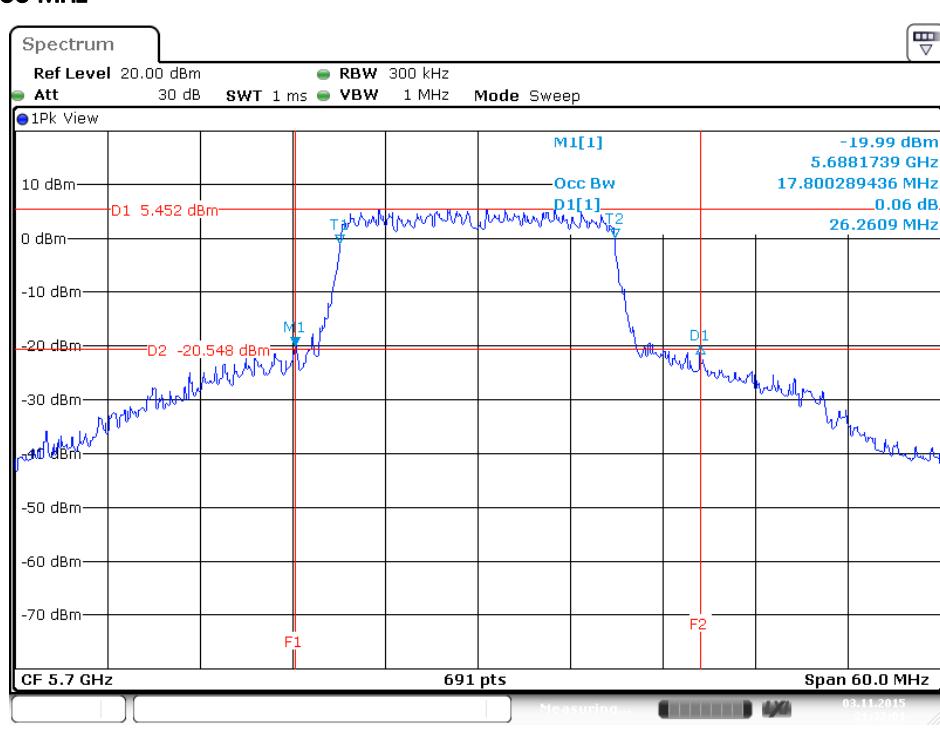
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 2 / 5500 MHz



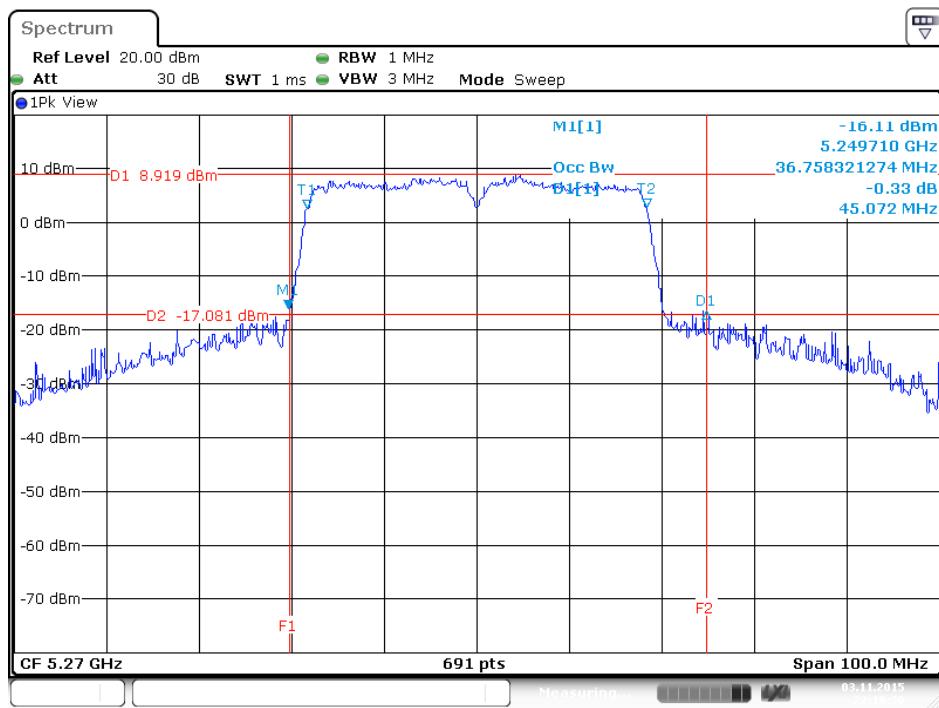
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 2 / 5580 MHz



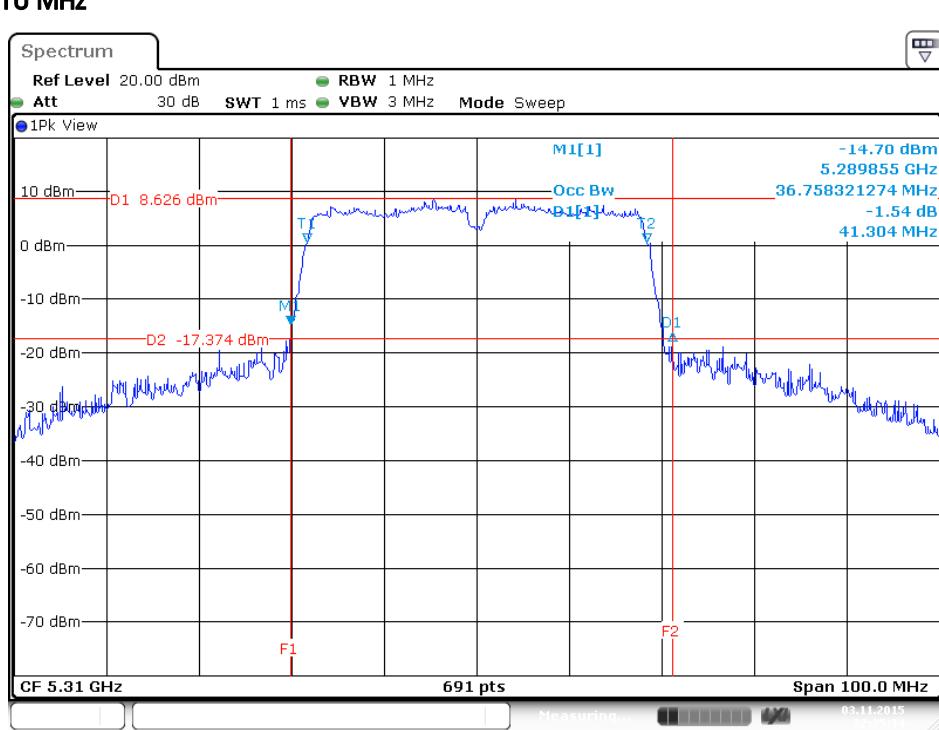
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 2 / 5700 MHz



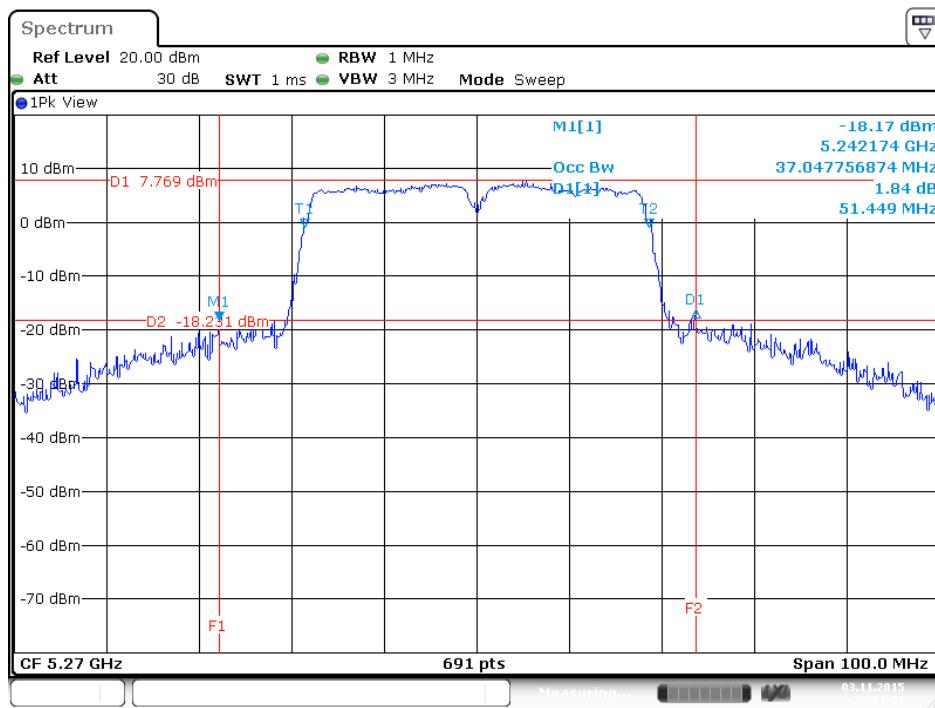
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 / 5270 MHz



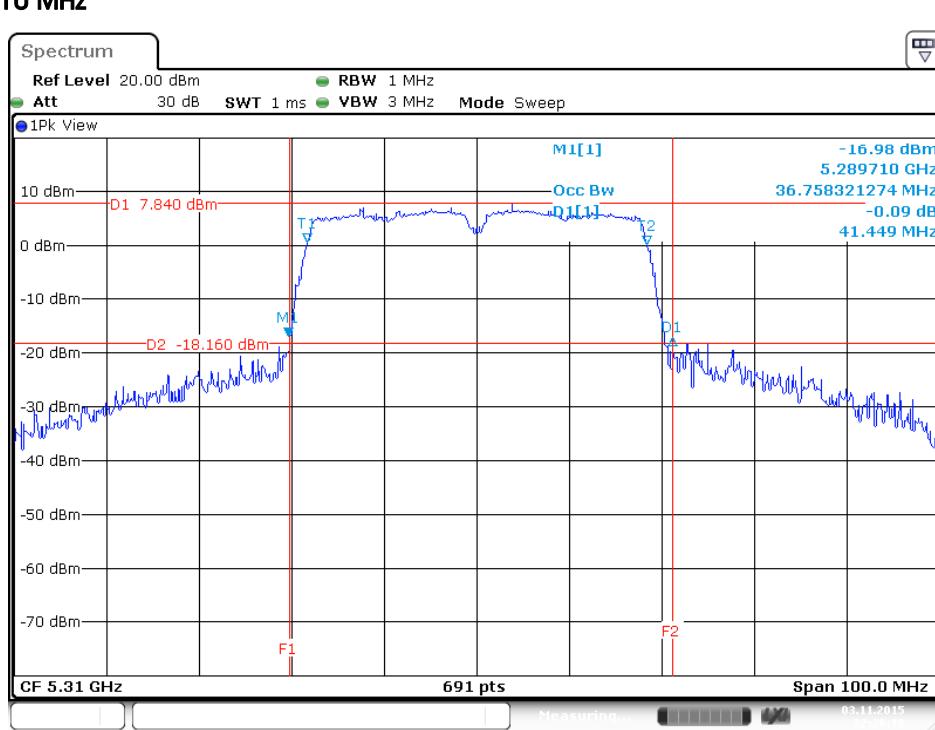
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 / 5310 MHz



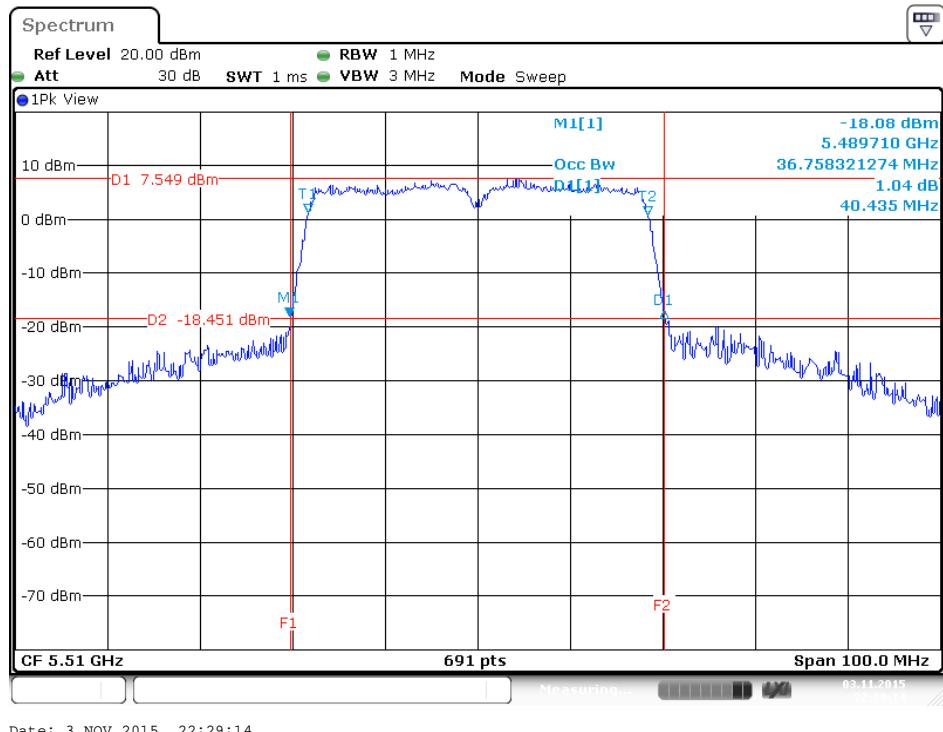
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 2 / 5270 MHz



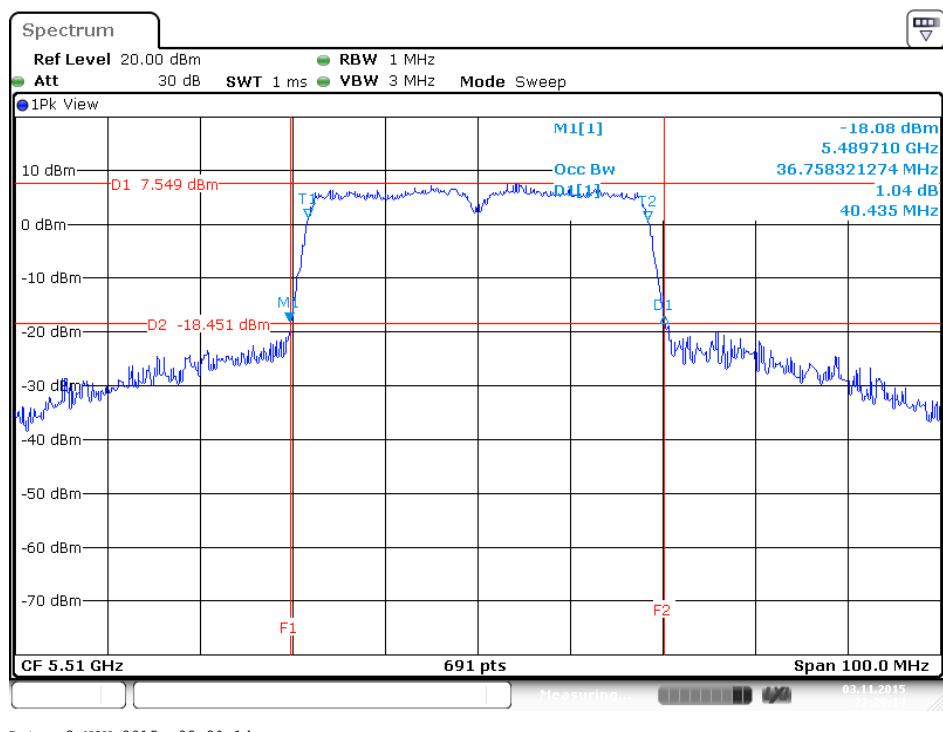
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 2 / 5310 MHz



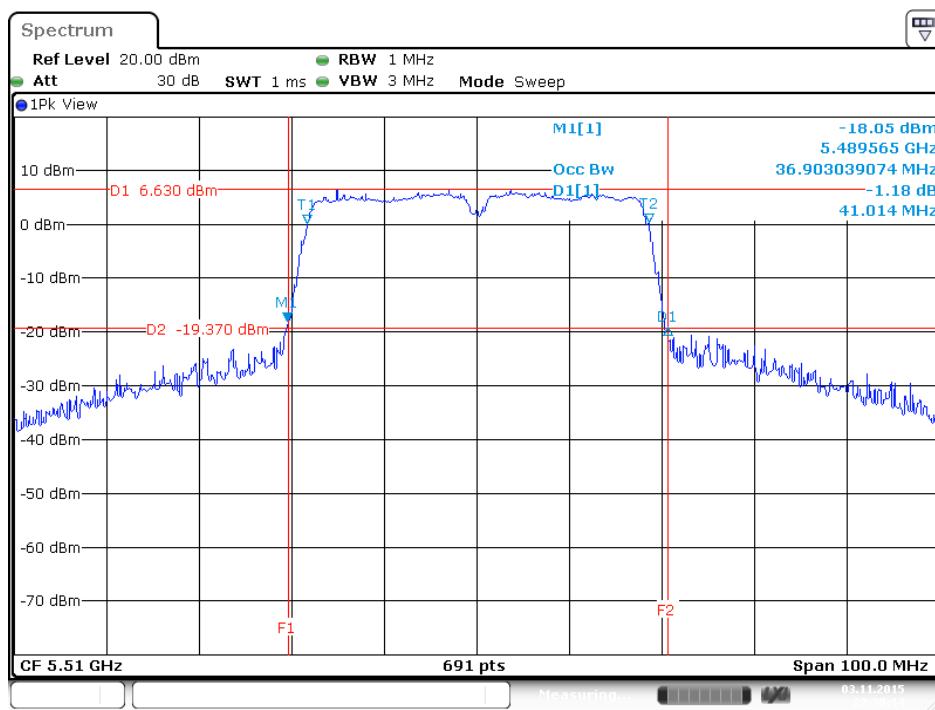
**26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 /
Chain 1 / 5510 MHz**



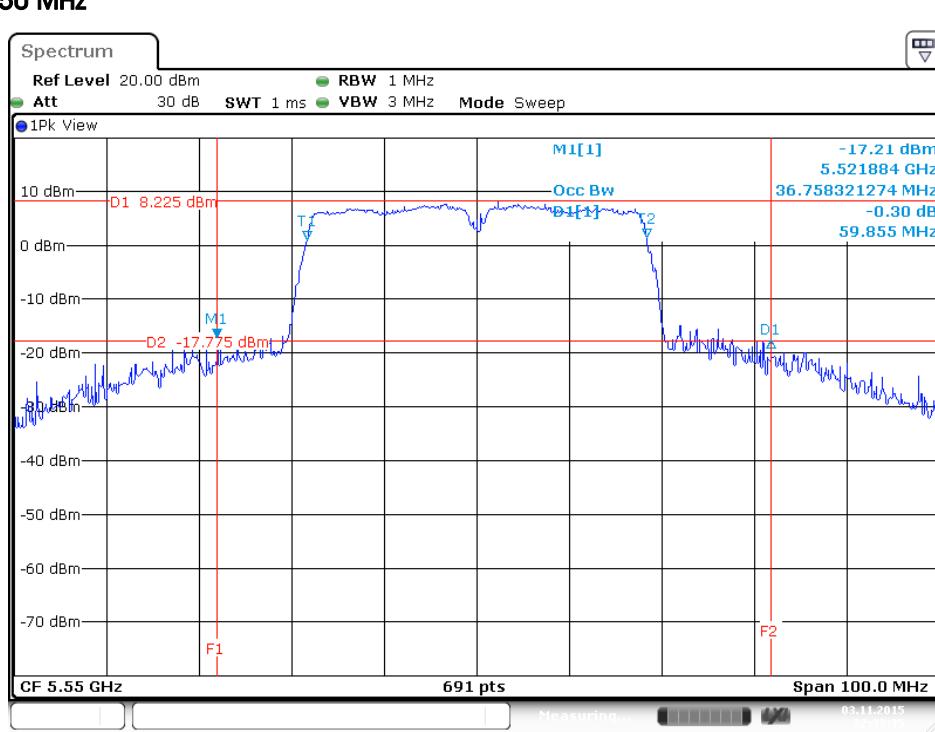
**26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 /
Chain 1 / 5550 MHz**



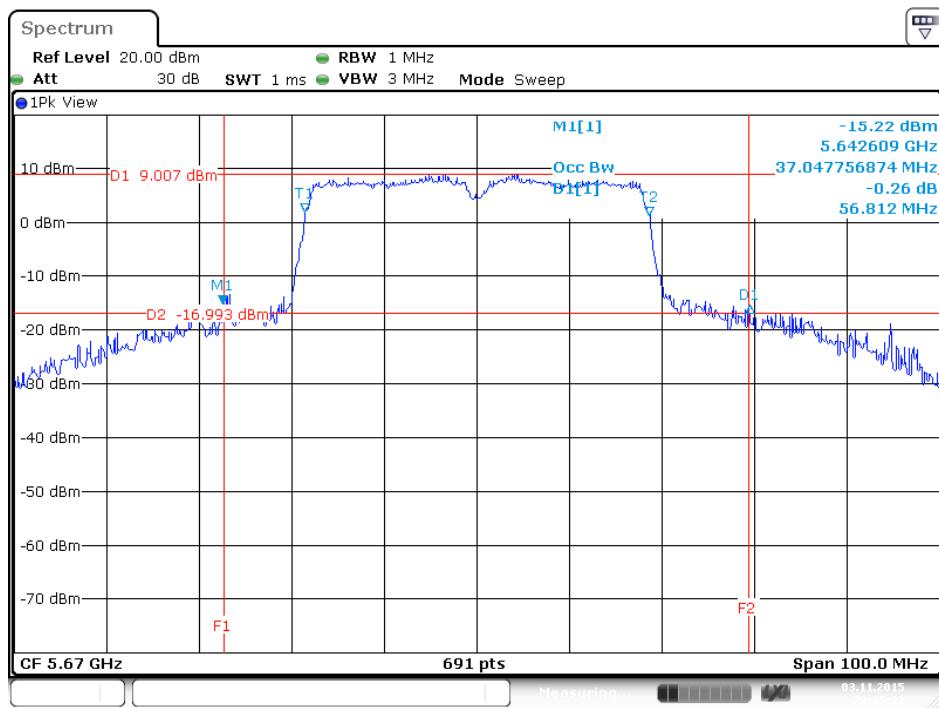
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 / 5510 MHz



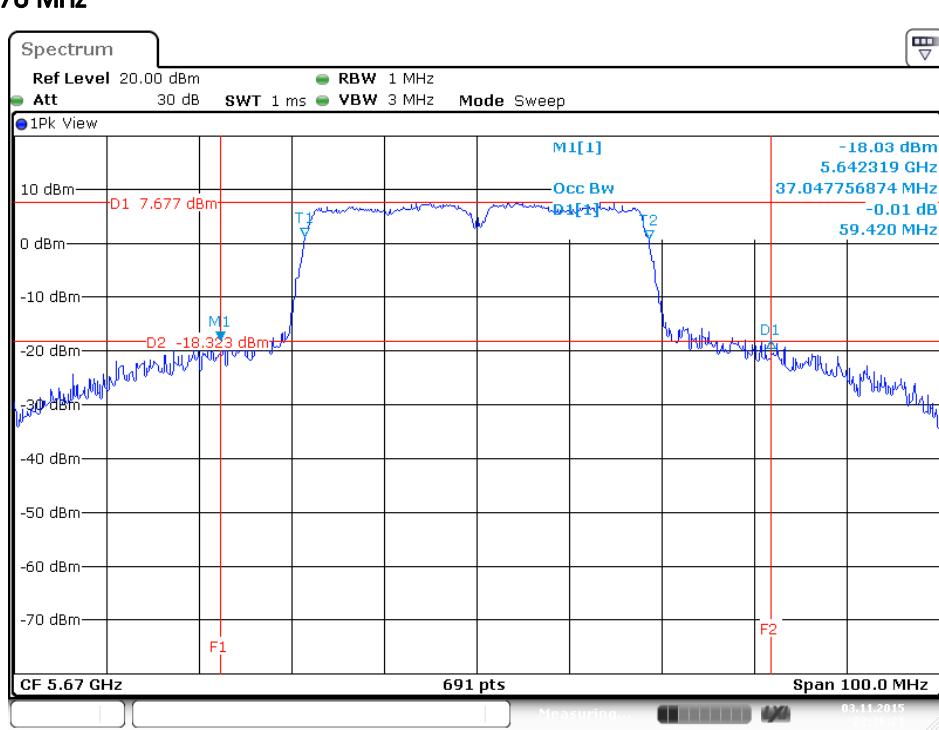
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 2 / 5550 MHz



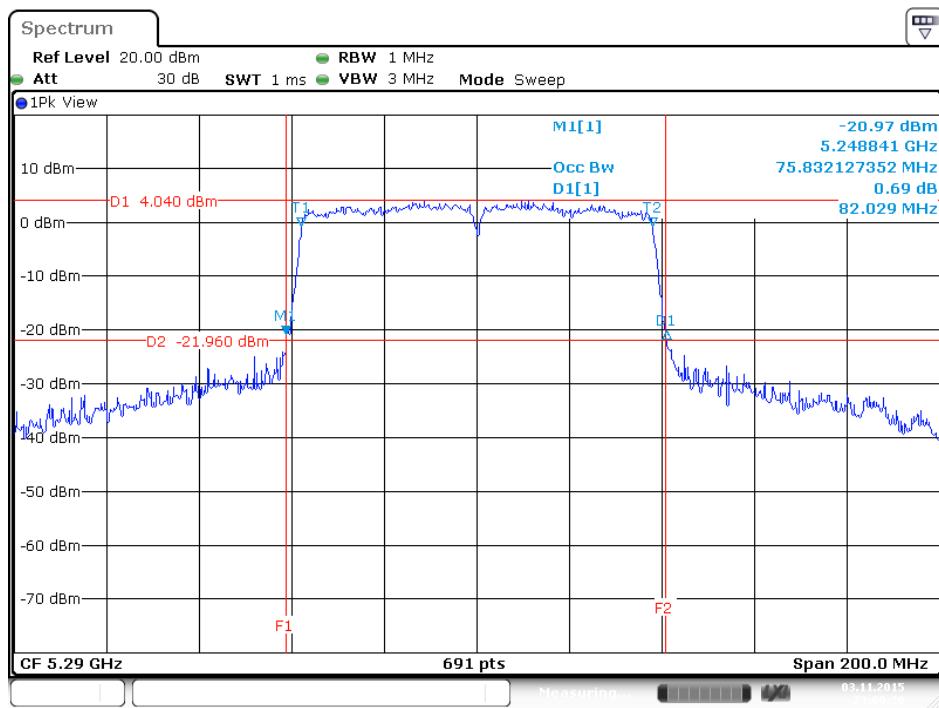
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 / 5670 MHz



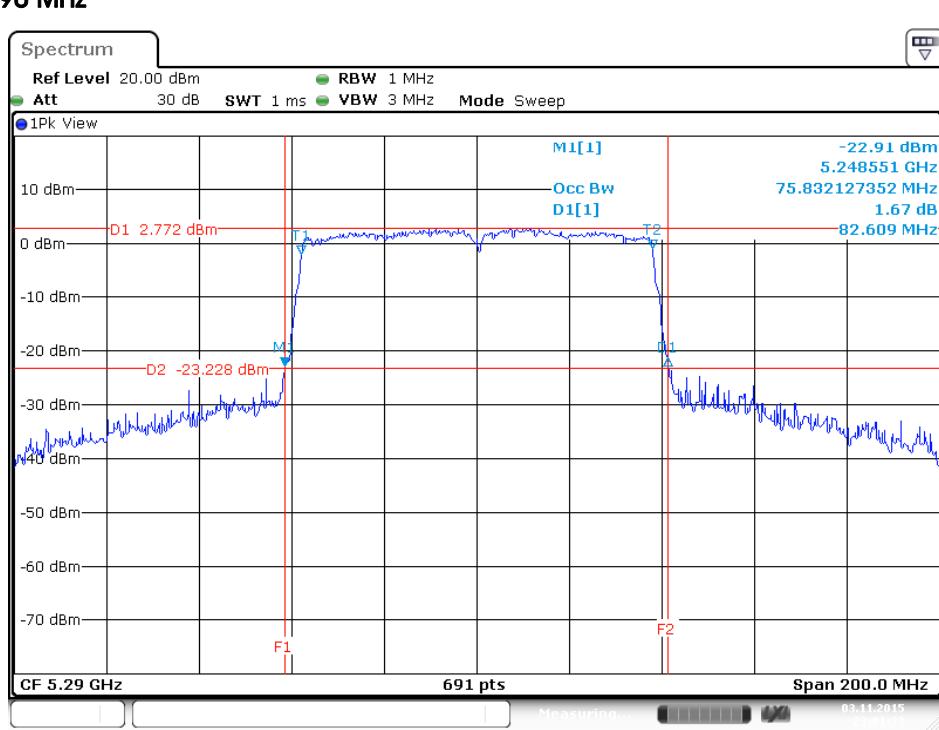
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 2 / 5670 MHz



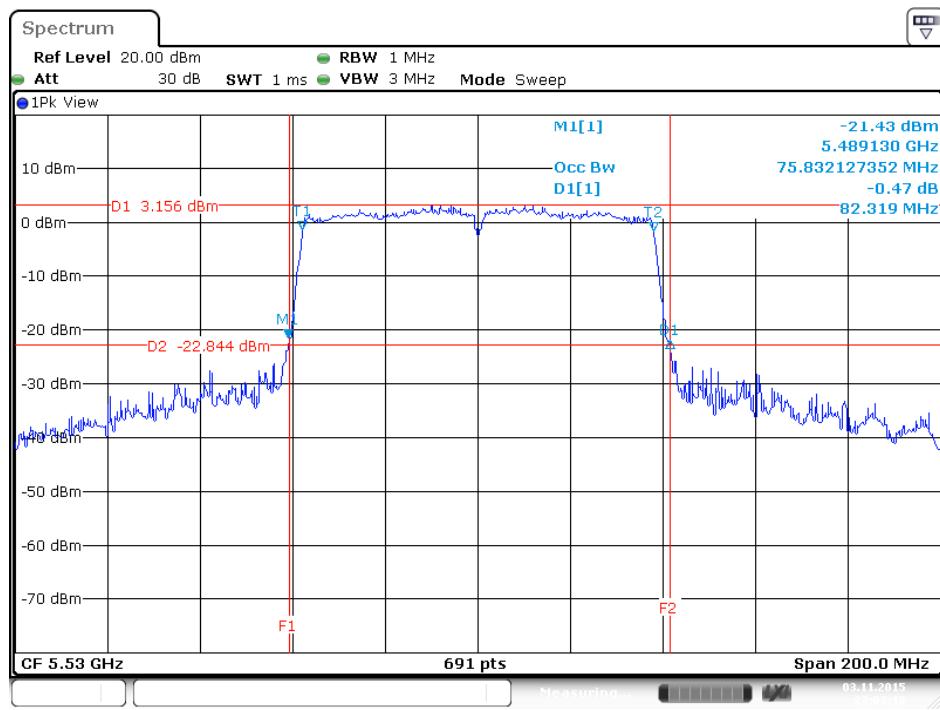
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 / 5290 MHz



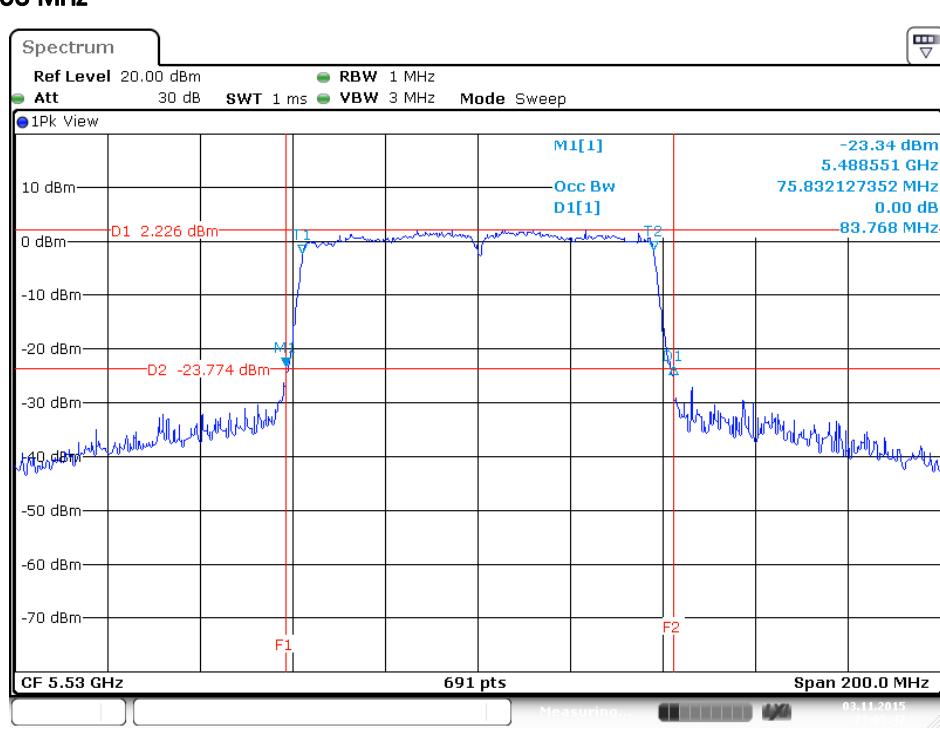
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 2 / 5290 MHz



26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 / 5530 MHz



26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 2 / 5530 MHz



Straddle Channel
Chain 1

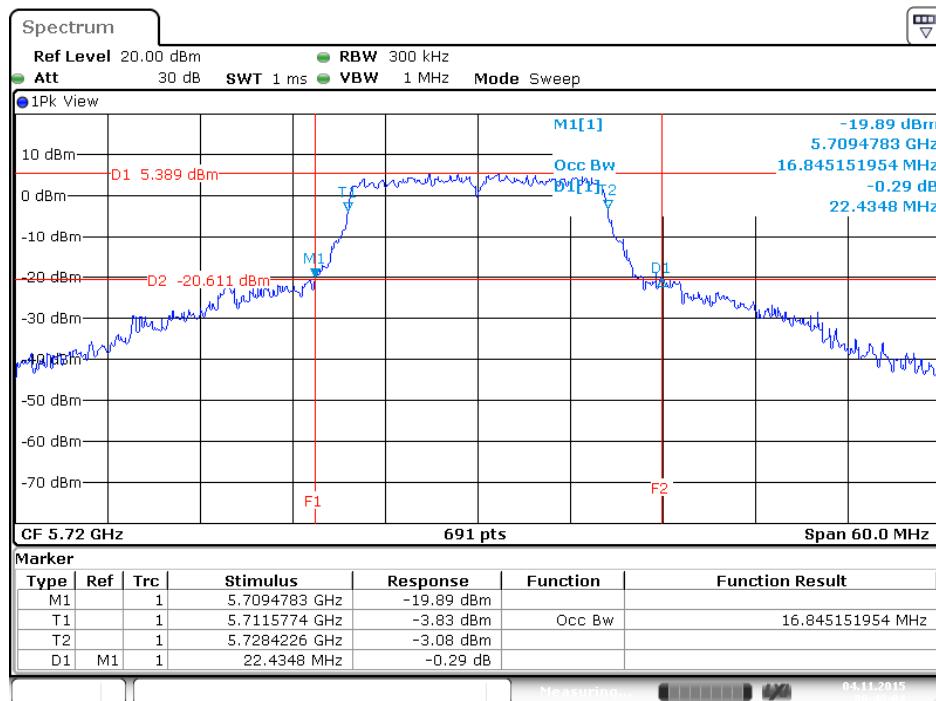
| Mode | Frequency | 26dB BW (MHz) | 99% OBW (MHz) | 26dB BW F1 (MHz) | 99% OBW T1 (MHz) | UNII 2C 26dB BW (MHz) | UNII 3 26dB BW (MHz) | UNII 2C 99% BW (MHz) | UNII 3 99% BW (MHz) |
|-----------------------------|-----------|---------------------|---------------------|------------------------|------------------------|--------------------------------|-------------------------------|----------------------------|---------------------------|
| 802.11a | 5720 MHz | 22.43 | 16.84 | 5709.48 | 5711.58 | 15.52 | 6.91 | 13.42 | 3.42 |
| 802.11ac MCS0/Nss1 VHT20 | 5720 MHz | 25.21 | 17.97 | 5708.61 | 5710.97 | 16.39 | 8.82 | 14.03 | 3.94 |
| 802.11ac MCS0/Nss1 VHT40 | 5710 MHz | 51.88 | 36.90 | 5685.94 | 5691.62 | 39.06 | 12.83 | 33.38 | 3.52 |
| 802.11ac MCS0/Nss1 VHT80 | 5690 MHz | 100.29 | 76.12 | 5647.68 | 5652.08 | 77.32 | 22.97 | 72.92 | 3.20 |

Chain 2

| Mode | Frequency | 26dB BW (MHz) | 99% OBW (MHz) | 26dB BW F1 (MHz) | 99% OBW T1 (MHz) | UNII 2C 26dB BW (MHz) | UNII 3 26dB BW (MHz) | UNII 2C 99% BW (MHz) | UNII 3 99% BW (MHz) |
|-----------------------------|-----------|---------------------|---------------------|------------------------|------------------------|--------------------------------|-------------------------------|----------------------------|---------------------------|
| 802.11a | 5720 MHz | 21.82 | 16.93 | 5709.04 | 5711.49 | 15.96 | 5.86 | 13.51 | 3.42 |
| 802.11ac MCS0/Nss1 VHT20 | 5720 MHz | 23.30 | 18.06 | 5708.00 | 5710.88 | 17.00 | 6.30 | 14.12 | 3.94 |
| 802.11ac MCS0/Nss1 VHT40 | 5710 MHz | 47.68 | 36.75 | 5688.55 | 5691.62 | 36.45 | 11.23 | 33.38 | 3.37 |
| 802.11ac MCS0/Nss1 VHT80 | 5690 MHz | 100.29 | 75.83 | 5642.75 | 5652.08 | 82.25 | 18.04 | 72.92 | 2.91 |

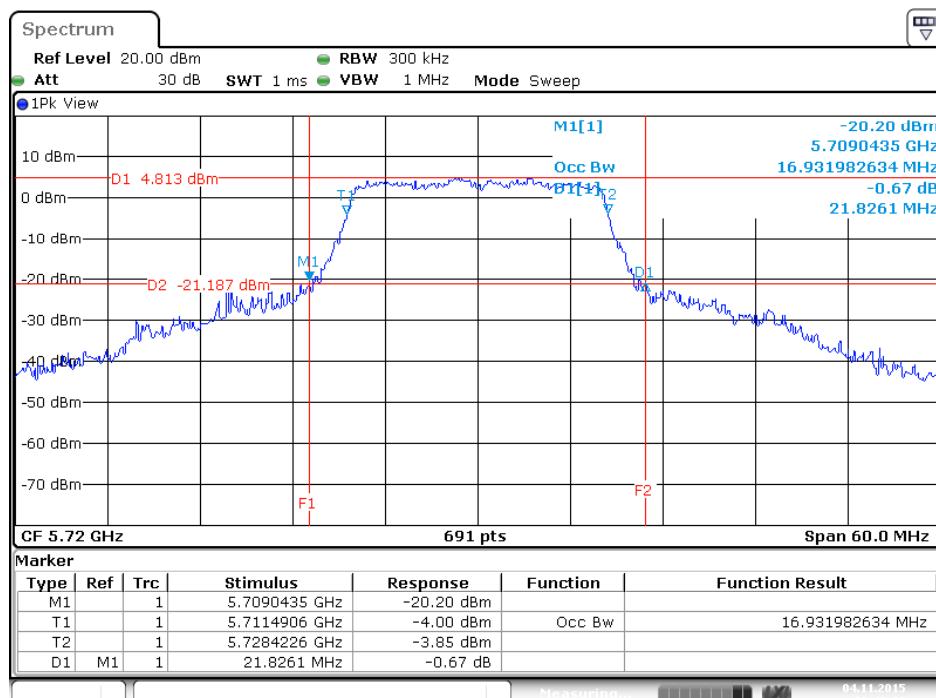
Straddle Channel

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 / 5720 MHz



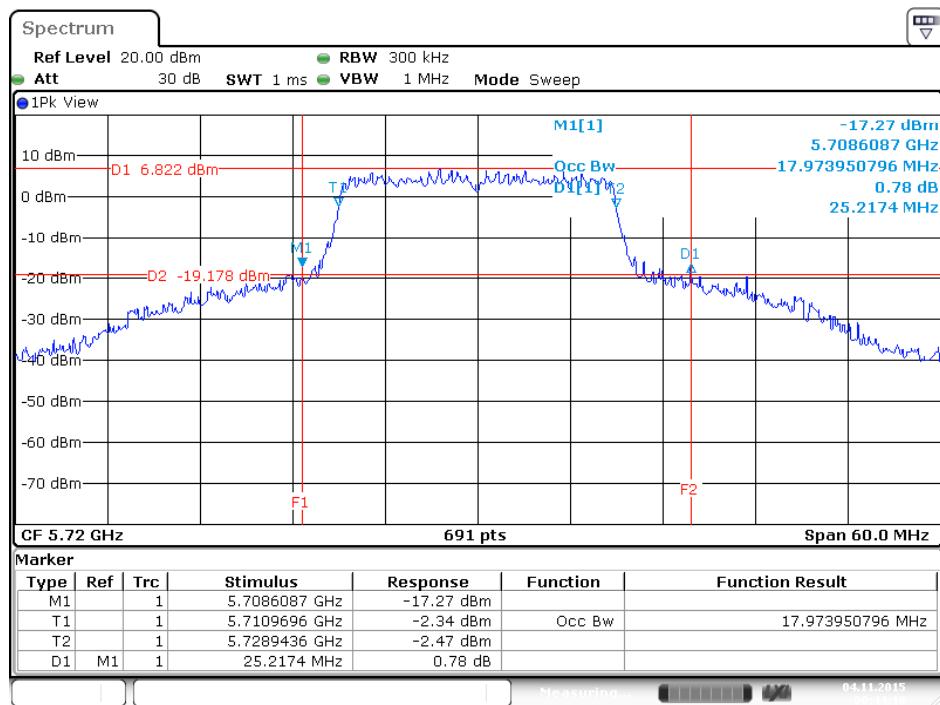
Date: 4.NOV.2015 00:48:04

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 2 / 5720 MHz



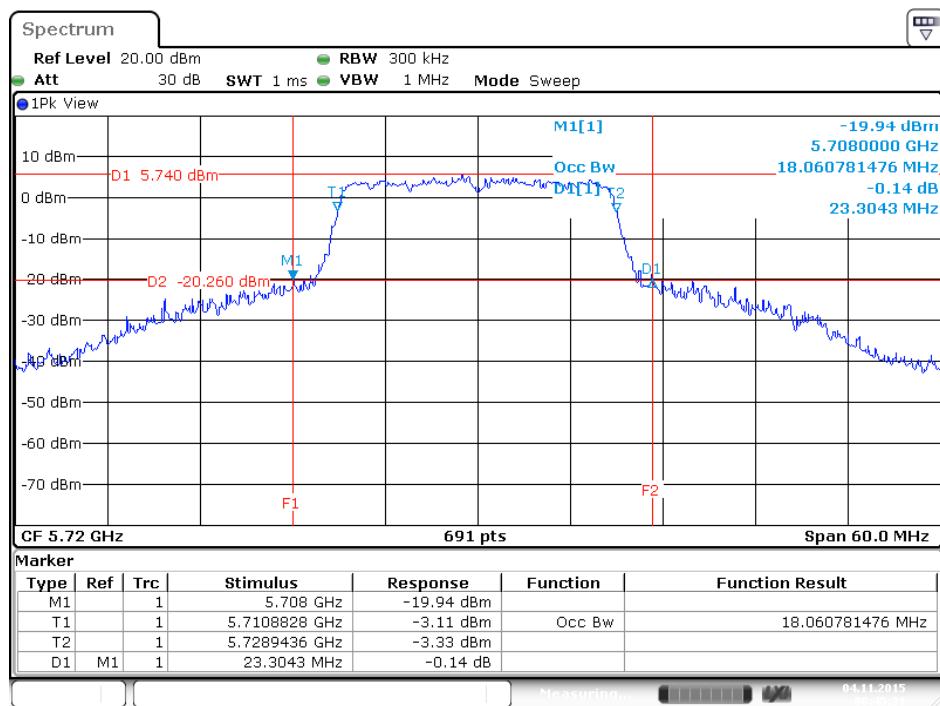
Date: 4.NOV.2015 00:48:33

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 / 5720 MHz



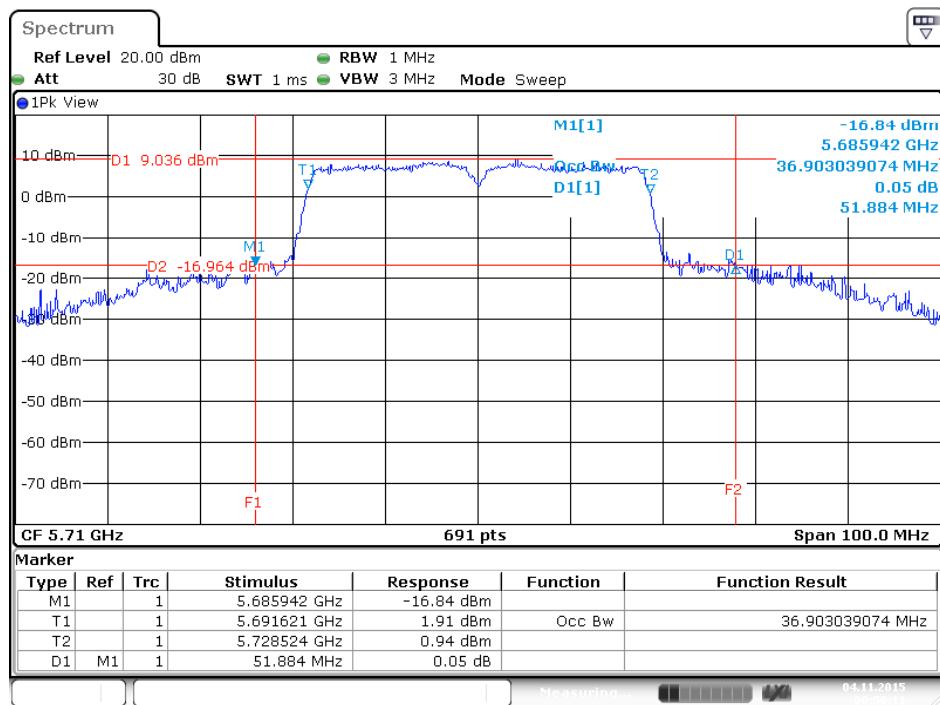
Date: 4.NOV.2015 00:44:19

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 2 / 5720 MHz



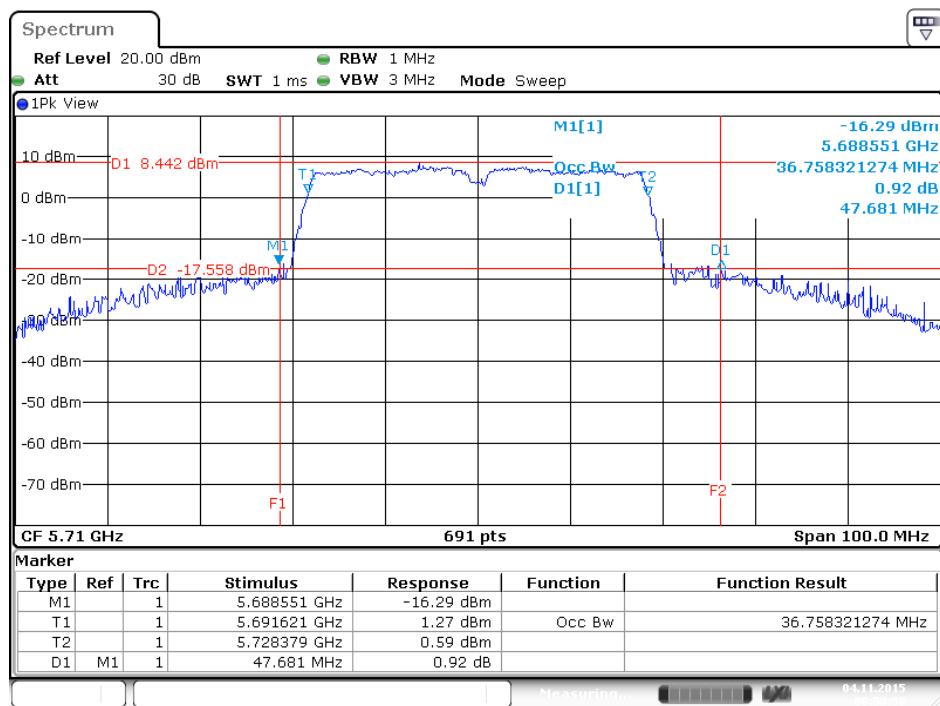
Date: 4.NOV.2015 00:45:21

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 / 5710 MHz



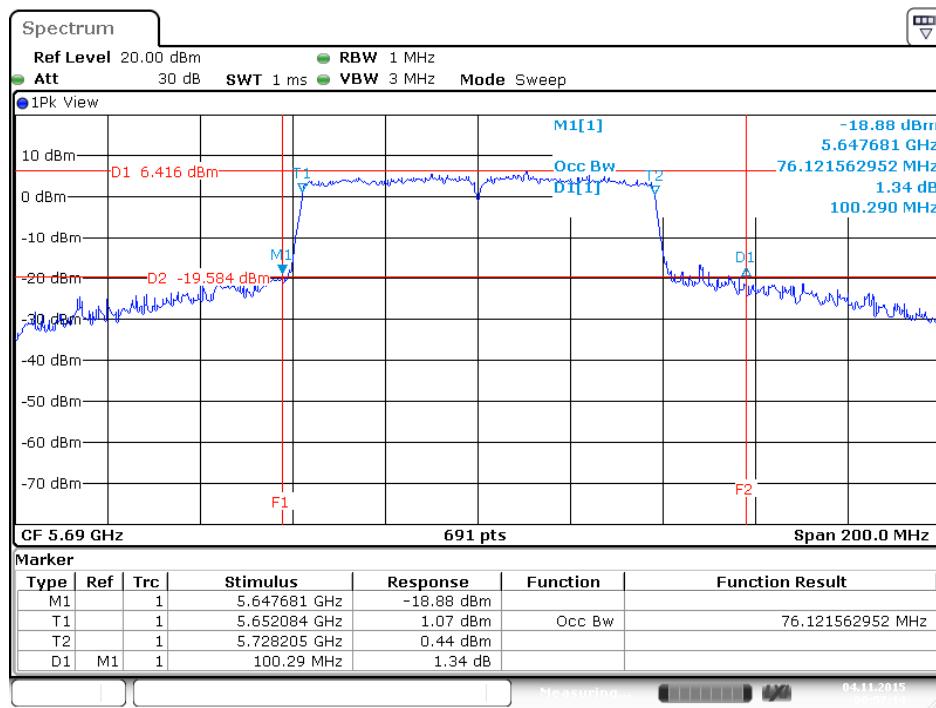
Date: 4.NOV.2015 00:50:11

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 2 / 5710 MHz



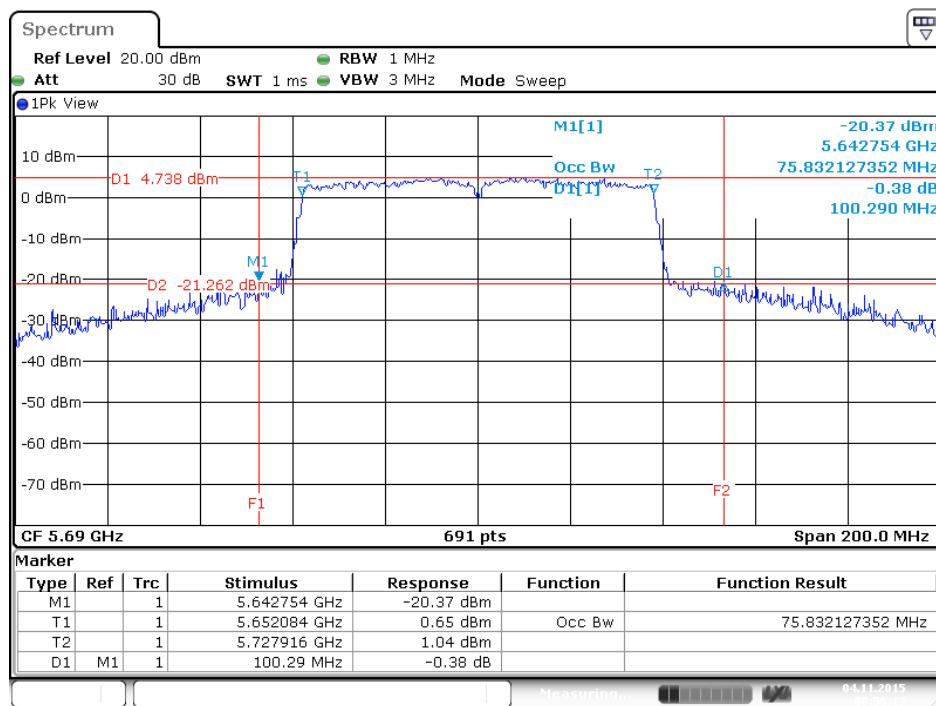
Date: 4.NOV.2015 00:50:50

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 / 5690 MHz



Date: 4.NOV.2015 00:57:14

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 2 / 5690 MHz



Date: 4.NOV.2015 00:56:12

4.3. 6dB Spectrum Bandwidth Measurement

4.3.1. Limit

For digital modulation systems, the minimum 6dB bandwidth shall be at least 500 kHz.

4.3.2. Measuring Instruments and Setting

Please refer to section 5 of equipments list in this report. The following table is the setting of spectrum analyzer.

| 6dB Spectrum Bandwidth | |
|------------------------|---------------------|
| Spectrum Parameters | Setting |
| Attenuation | Auto |
| Span Frequency | > 6dB Bandwidth |
| RBW | 100kHz |
| VBW | $\geq 3 \times RBW$ |
| Detector | Peak |
| Trace | Max Hold |
| Sweep Time | Auto |

4.3.3. Test Procedures

1. The transmitter was conducted to the spectrum analyzer in peak hold mode.
2. Test was performed in accordance with KDB789033 D02 v01 for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices - section (C) Emission Bandwidth.
3. Multiple antenna system was performed in accordance with KDB662911 D01 v02r01 Emissions Testing of Transmitters with Multiple Outputs in the Same Band.
4. Measurement perform conducted of each port.
5. Measured the spectrum width with power higher than 6dB below carrier.

4.3.4. Test Setup Layout

This test setup layout is the same as that shown in section 4.5.4.

4.3.5. Test Deviation

There is no deviation with the original standard.

4.3.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.3.7. Test Result of 6dB Spectrum Bandwidth

<For 1TX>

| | | | |
|---------------|----------|----------|-----|
| Temperature | 25°C | Humidity | 59% |
| Test Engineer | Mars Lin | | |

Straddle Channel

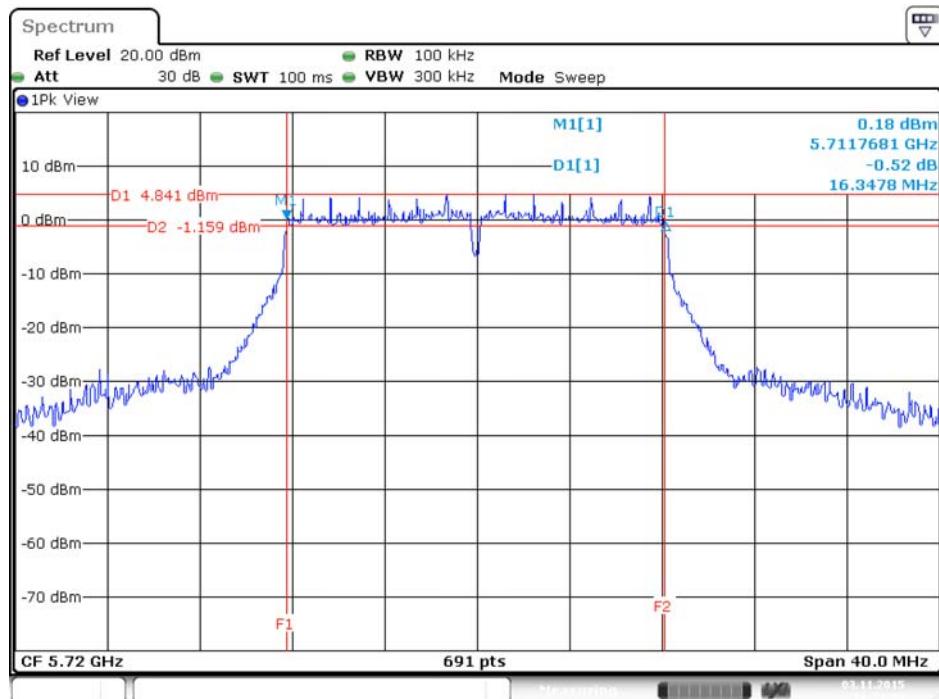
| Mode | Frequency | 6dB BW (MHz) | 6dB BW F2 (MHz) | UNII 3 BW (MHz) | Min. Limit (kHz) | Test Result |
|--------------------------|-----------|--------------|-----------------|-----------------|------------------|-------------|
| 802.11a | 5720 MHz | 16.35 | 5711.76 | 3.11 | 500.00 | Complies |
| 802.11ac MCS0/Nss1 VHT20 | 5720 MHz | 17.57 | 5711.13 | 3.70 | 500.00 | Complies |
| 802.11ac MCS0/Nss1 VHT40 | 5710 MHz | 36.29 | 5691.80 | 3.09 | 500.00 | Complies |
| 802.11ac MCS0/Nss1 VHT80 | 5690 MHz | 75.36 | 5652.32 | 2.68 | 500.00 | Complies |

Note: All the test values were listed in the report.

For plots, only the channel with worse result was shown.

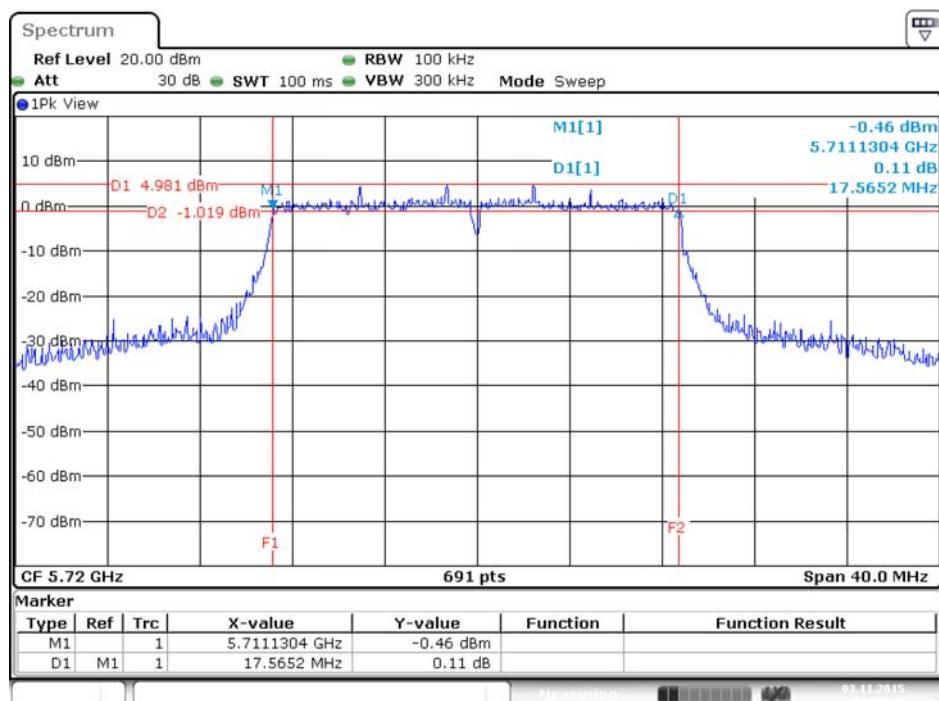
Straddle Channel

6 dB Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 / 5720 MHz



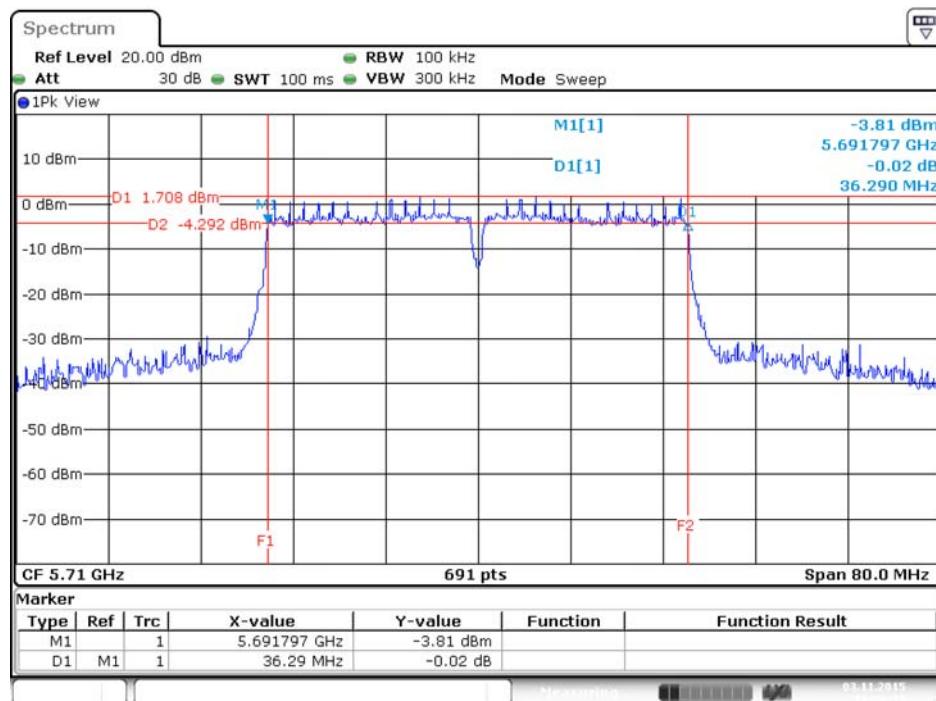
Date: 3.NOV.2015 16:23:29

6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 / 5720 MHz



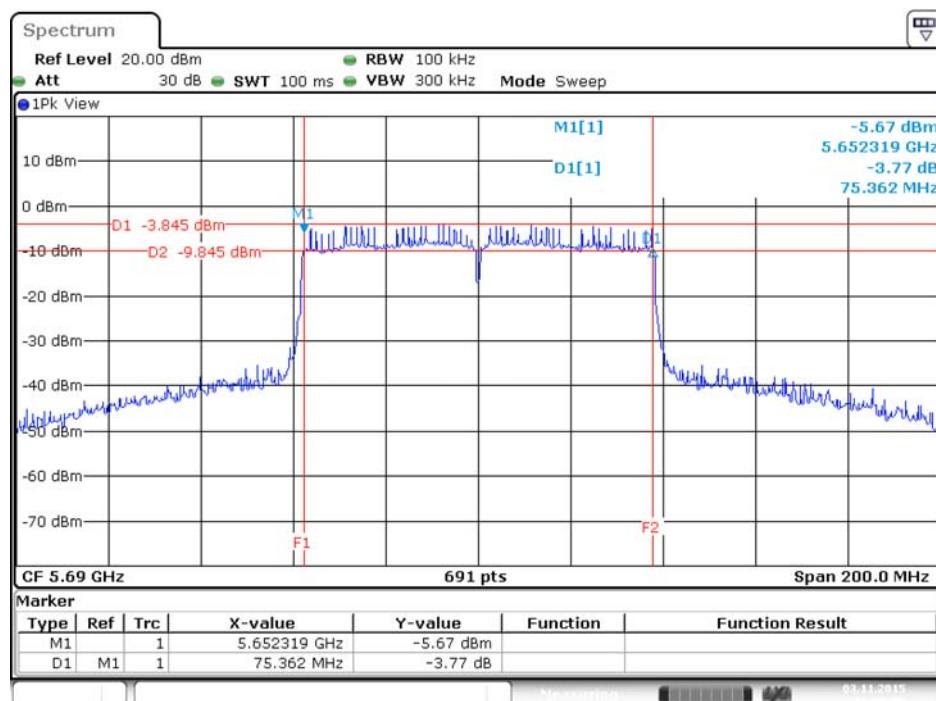
Date: 3.NOV.2015 16:25:53

6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 / 5710 MHz



Date: 3.NOV.2015 16:26:39

6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 / 5690 MHz



Date: 3.NOV.2015 16:28:57



<For 2TX>

| | | | |
|---------------|----------|----------|-----|
| Temperature | 25°C | Humidity | 59% |
| Test Engineer | Mars Lin | | |

Straddle Channel**Chain 1**

| Mode | Frequency | 6dB BW (MHz) | 6dB BW M1 (MHz) | UNII 3 BW (MHz) | Min. Limit (kHz) | Test Result |
|--------------------------|-----------|--------------|-----------------|-----------------|------------------|-------------|
| 802.11a | 5720 MHz | 16.34 | 5711.77 | 3.11 | 500.00 | Complies |
| 802.11ac MCS0/Nss1 VHT20 | 5720 MHz | 17.62 | 5711.13 | 3.75 | 500.00 | Complies |
| 802.11ac MCS0/Nss1 VHT40 | 5710 MHz | 36.29 | 5691.80 | 3.09 | 500.00 | Complies |
| 802.11ac MCS0/Nss1 VHT80 | 5690 MHz | 75.94 | 5653.19 | 4.13 | 500.00 | Complies |

Chain 2

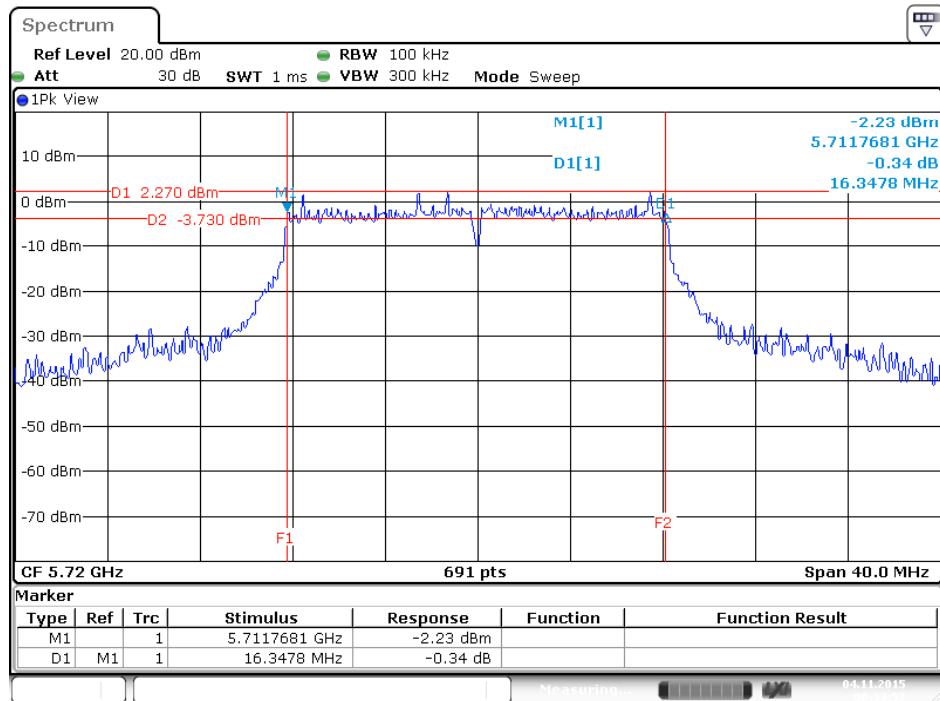
| Mode | Frequency | 6dB BW (MHz) | 6dB BW M1 (MHz) | UNII 3 BW (MHz) | Min. Limit (kHz) | Test Result |
|--------------------------|-----------|--------------|-----------------|-----------------|------------------|-------------|
| 802.11a | 5720 MHz | 16.34 | 5711.77 | 3.11 | 500.00 | Complies |
| 802.11ac MCS0/Nss1 VHT20 | 5720 MHz | 17.62 | 5711.13 | 3.75 | 500.00 | Complies |
| 802.11ac MCS0/Nss1 VHT40 | 5710 MHz | 36.29 | 5691.80 | 3.09 | 500.00 | Complies |
| 802.11ac MCS0/Nss1 VHT80 | 5690 MHz | 75.65 | 5652.03 | 2.68 | 500.00 | Complies |

Note: All the test values were listed in the report.

For plots, only the channel with worse result was shown.

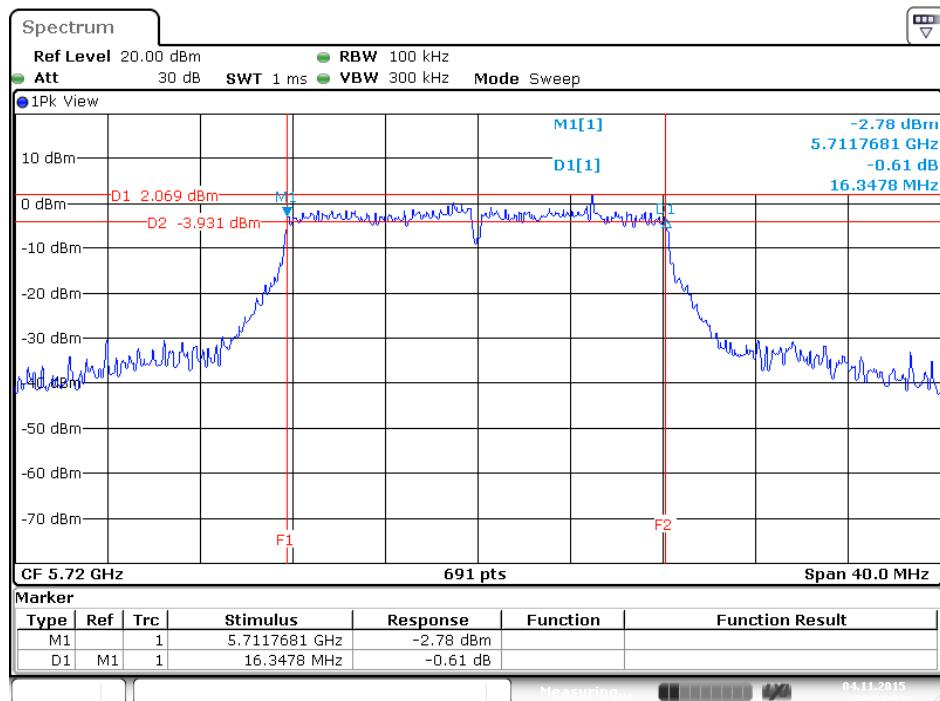
Straddle Channel

6 dB Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 / 5720 MHz



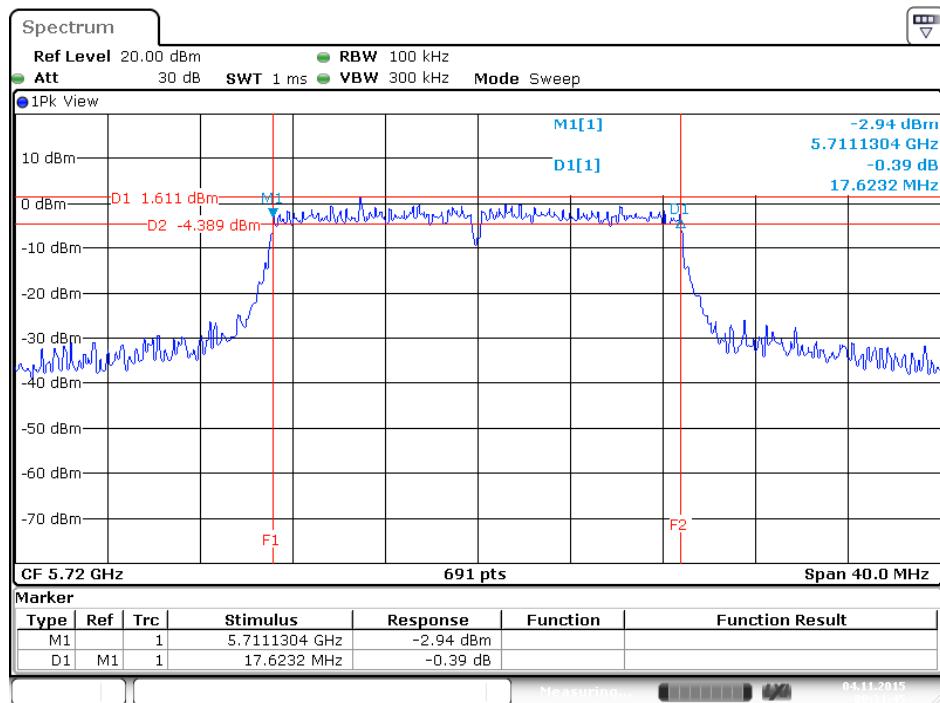
Date: 4.NOV.2015 00:33:57

6 dB Bandwidth Plot on Configuration IEEE 802.11a / Chain 2 / 5720 MHz



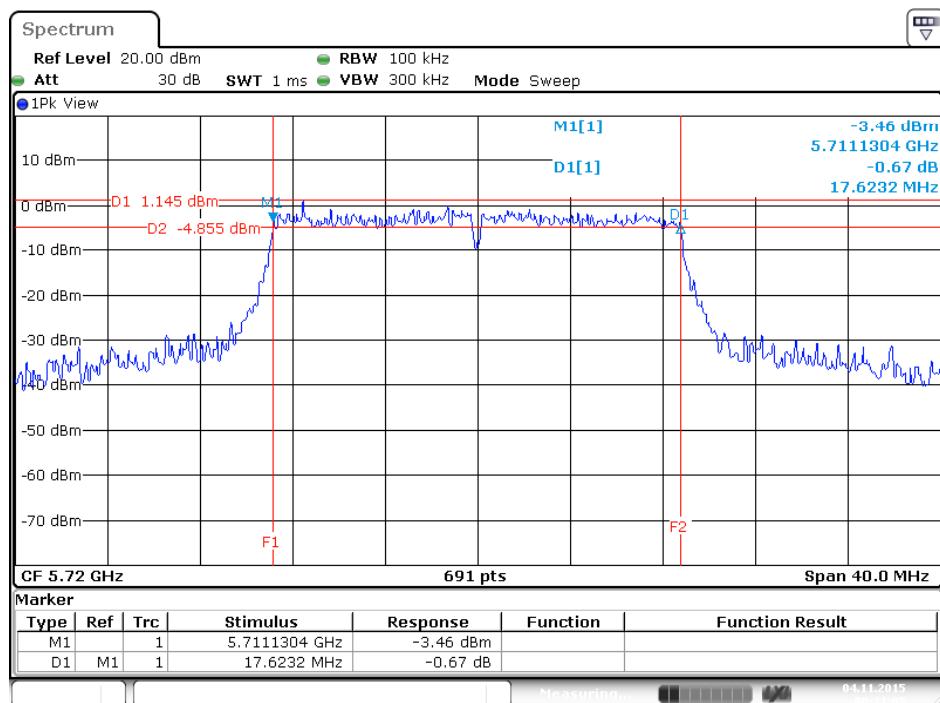
Date: 4.NOV.2015 00:34:22

6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 / 5720 MHz



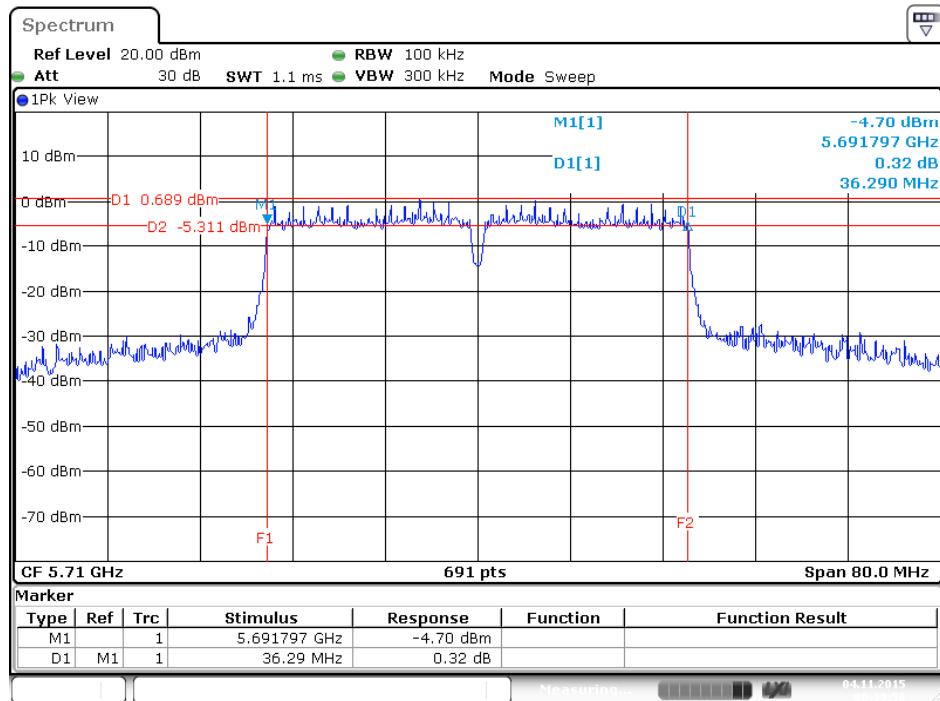
Date: 4.NOV.2015 00:31:45

6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 2 / 5720 MHz



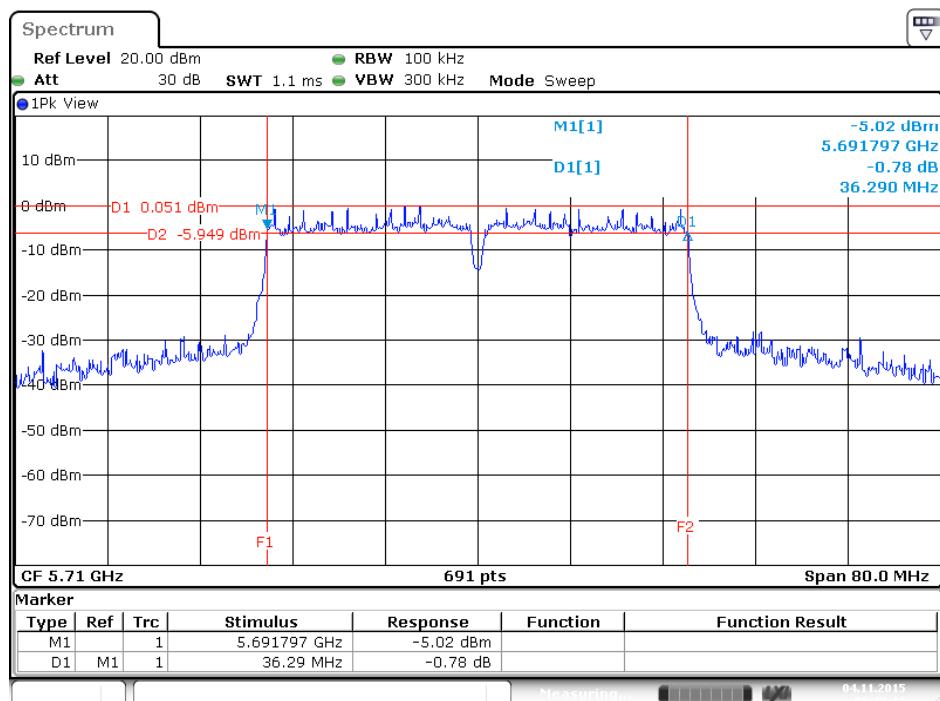
Date: 4.NOV.2015 00:31:05

6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 / 5710 MHz



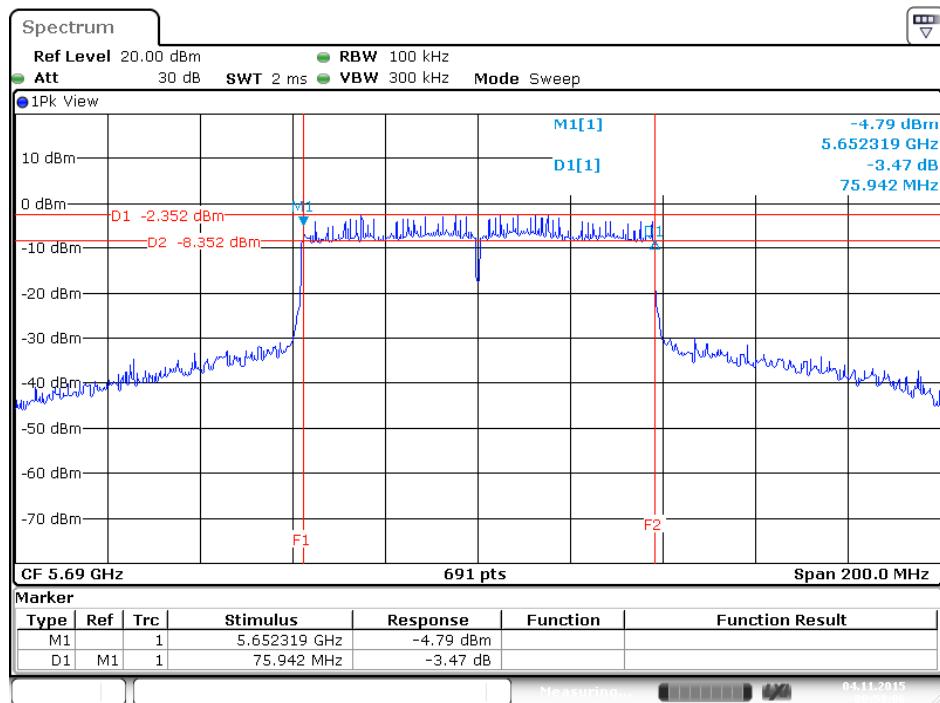
Date: 4.NOV.2015 00:39:50

6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 2 / 5710 MHz

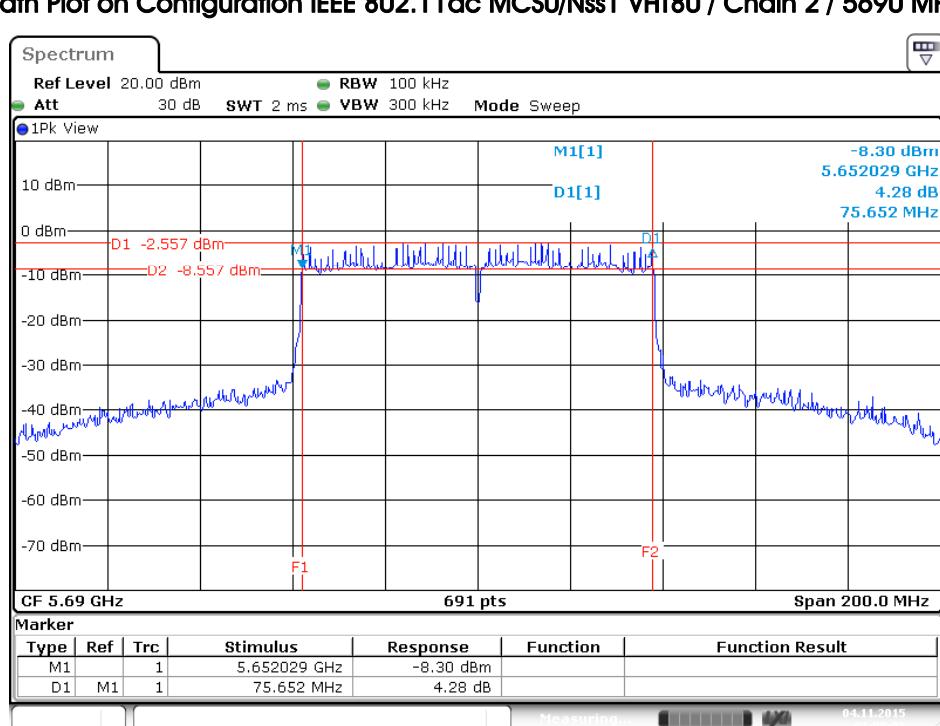


Date: 4.NOV.2015 00:39:11

6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 / 5690 MHz



6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 2 / 5690 MHz



4.4. Maximum Conducted Output Power Measurement

4.4.1. Limit

| Frequency Band | | Limit |
|-------------------------------------|-----------------|--|
| <input checked="" type="checkbox"/> | 5.25-5.35 GHz | The maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW (24dBm) or 11 dBm $10 \log B$, where B is the 26 dB emission bandwidth in megahertz. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. |
| <input checked="" type="checkbox"/> | 5.470-5.725 GHz | |

4.4.2. Measuring Instruments and Setting

For other channel:

Please refer to section 5 of equipments list in this report. The following table is the setting of the power meter.

| Power Meter Parameter | Setting |
|-----------------------|---------|
| Detector | AVERAGE |

For straddle channel:

Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

| Spectrum Parameter | Setting |
|--------------------|--|
| Attenuation | Auto |
| Span Frequency | Encompass the entire emissions bandwidth (EBW) of the signal |
| RBW | 1000 kHz |
| VBW | 3000 kHz |
| Detector | RMS |
| Trace | Average Sweep count 100 |
| Sweep Time | Auto |

4.4.3. Test Procedures

For other channel:

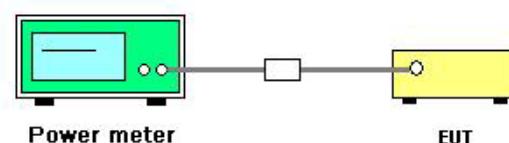
1. The transmitter output (antenna port) was connected to the power meter.
2. Test was performed in accordance with KDB789033 D02 v01r01 for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices - section (E) Maximum conducted output power =>3. Measurement using a Power Meter (PM) =>b) Method PM-G (Measurement using a gated RF average power meter).
3. Multiple antenna systems was performed in accordance with KDB662911 D01 v02r01 Emissions Testing of Transmitters with Multiple Outputs in the Same Band.
4. When measuring maximum conducted output power with multiple antenna systems, add every result of the values by mathematic formula.

For straddle channel:

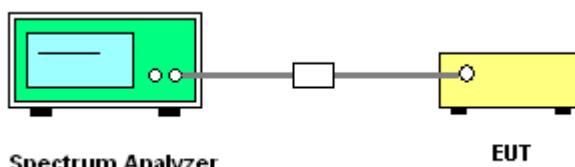
1. The transmitter output (antenna port) was connected to the spectrum analyzer.
2. Test was performed in accordance with FCC Public Notice DA 02-2138, August 30, 2002.

4.4.4. Test Setup Layout

For other channel:



For straddle channel:



4.4.5. Test Deviation

There is no deviation with the original standard.

4.4.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.4.7. Test Result of Maximum Conducted Output Power

<For 1TX>

| | | | |
|----------------------|----------|------------------|-----------------------------|
| Temperature | 25°C | Humidity | 58% |
| Test Engineer | Mars Lin | Test Date | Oct. 29, 2015~Dec. 23, 2015 |

| Mode | Frequency | Conducted Power (dBm) | Max. Limit (dBm) | Result |
|-----------------------------|------------------|------------------------------|-------------------------|---------------|
| 802.11a | 5260 MHz | 18.82 | 23.98 | Complies |
| | 5300 MHz | 18.91 | 23.98 | Complies |
| | 5320 MHz | 18.91 | 23.98 | Complies |
| | 5500 MHz | 18.72 | 23.98 | Complies |
| | 5580 MHz | 18.73 | 23.98 | Complies |
| | 5700 MHz | 18.71 | 23.98 | Complies |
| 802.11ac MCS0/Nss1 VHT20 | 5260 MHz | 18.86 | 23.98 | Complies |
| | 5300 MHz | 18.72 | 23.98 | Complies |
| | 5320 MHz | 18.77 | 23.98 | Complies |
| | 5500 MHz | 18.86 | 23.98 | Complies |
| | 5580 MHz | 18.83 | 23.98 | Complies |
| | 5700 MHz | 18.83 | 23.98 | Complies |
| 802.11ac MCS0/Nss1 VHT40 | 5270 MHz | 18.86 | 23.98 | Complies |
| | 5310 MHz | 18.73 | 23.98 | Complies |
| | 5510 MHz | 18.91 | 23.98 | Complies |
| | 5550 MHz | 18.77 | 23.98 | Complies |
| | 5670 MHz | 18.82 | 23.98 | Complies |
| 802.11ac MCS0/Nss1 VHT80 | 5290 MHz | 17.12 | 23.98 | Complies |
| | 5530 MHz | 18.21 | 23.98 | Complies |

Straddle Channel

| Mode | Frequency | Conducted Power (dBm) | Max. Limit (dBm) | Result |
|-----------------------------|--------------------|-----------------------|------------------|----------|
| 802.11a | 5720 MHz (UNII 2C) | 16.97 | 22.89 | Complies |
| | 5720 MHz (UNII 3) | 10.38 | 30.00 | Complies |
| 802.11ac MCS0/Nss1 VHT20 | 5720 MHz (UNII 2C) | 16.68 | 22.84 | Complies |
| | 5720 MHz (UNII 3) | 10.86 | 30.00 | Complies |
| 802.11ac MCS0/Nss1 VHT40 | 5710 MHz (UNII 2C) | 17.05 | 23.98 | Complies |
| | 5710 MHz (UNII 3) | 6.68 | 30.00 | Complies |
| 802.11ac MCS0/Nss1 VHT80 | 5690 MHz (UNII 2C) | 17.74 | 23.98 | Complies |
| | 5690 MHz (UNII 3) | 3.59 | 30.00 | Complies |

Note: 5720MHz power limit=23.98dBm or $11+10\log(B)$; $11+10\log(15.43)=22.89$ dBm<23.98dBm,

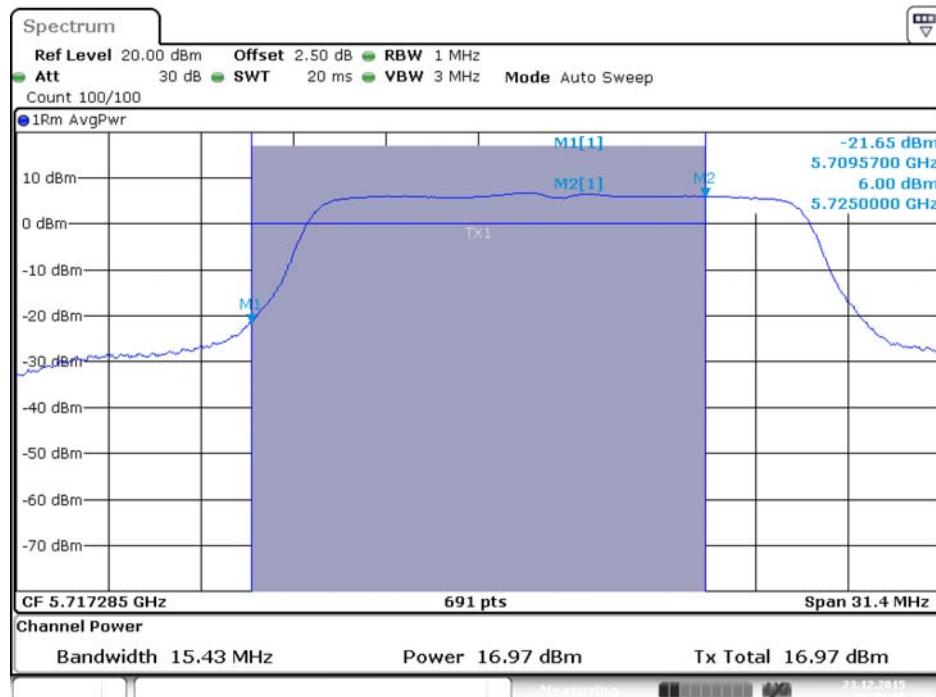
so power limit=22.89dBm

Note: 5720MHz power limit=23.98dBm or $11+10\log(B)$; $11+10\log(15.26)=22.84$ dBm<23.98dBm,

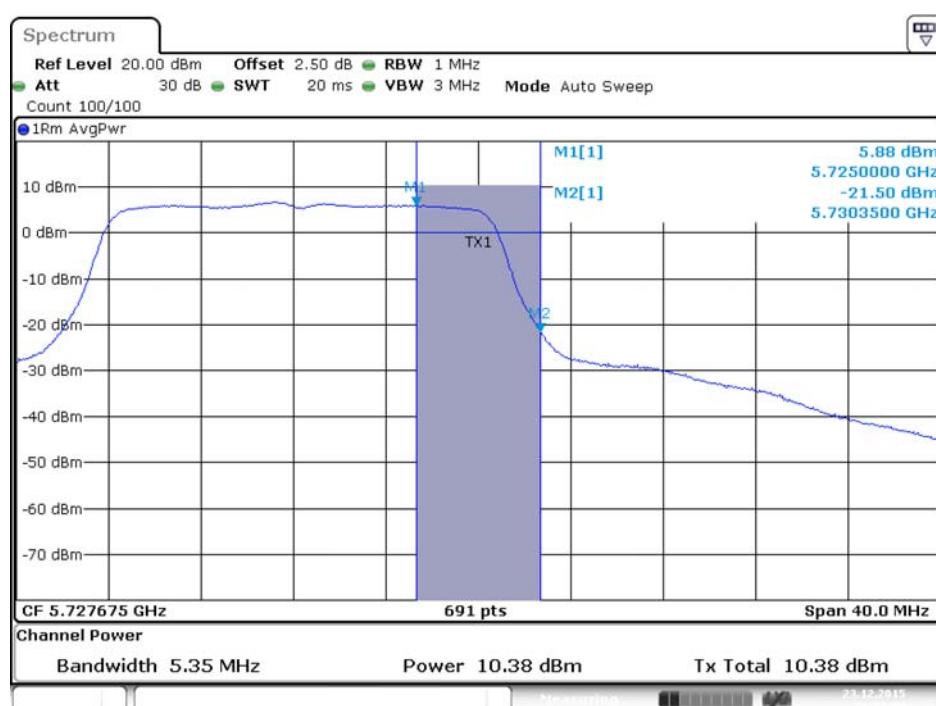
so power limit=22.84dBm

Straddle Channel

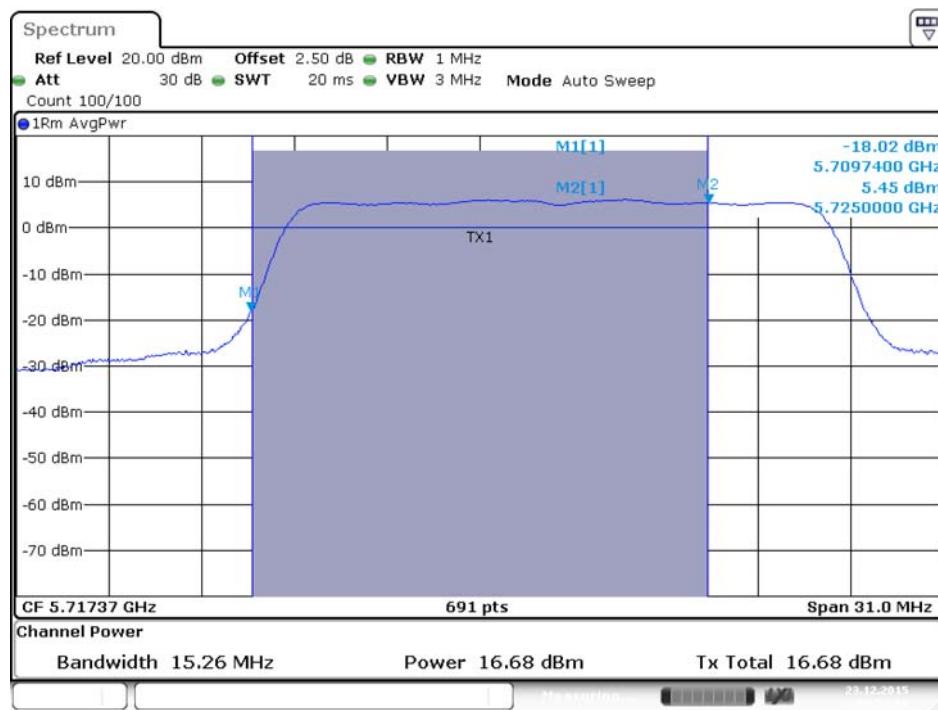
Conducted Output Power Plot on Configuration IEEE 802.11a / Chain 1 / 5720 MHz (UNII 2C)



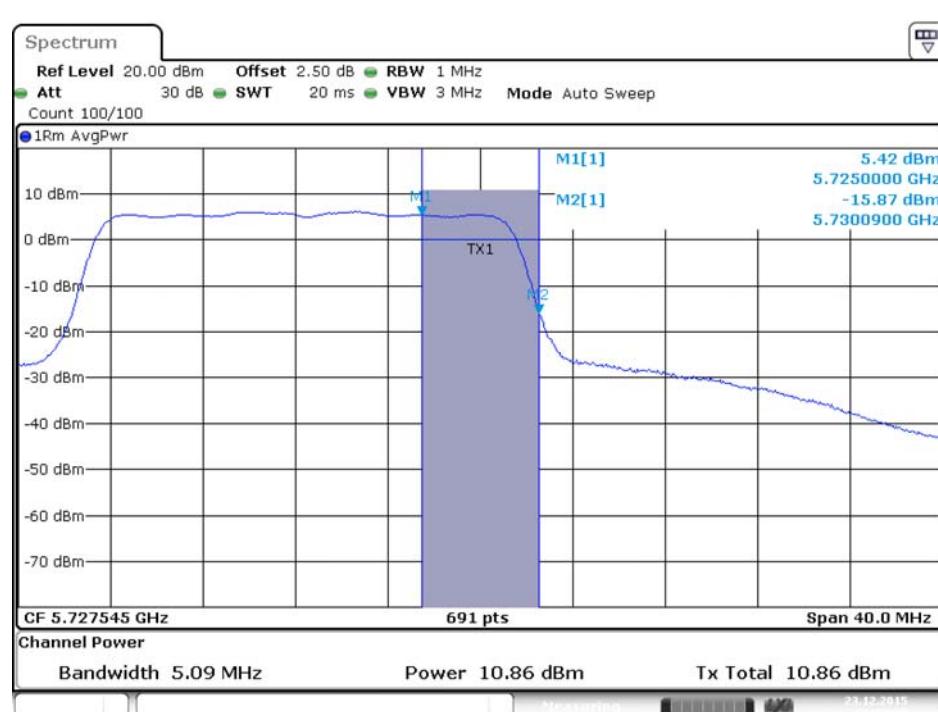
Conducted Output Power Plot on Configuration IEEE 802.11a / Chain 1 / 5720 MHz (UNII 3)



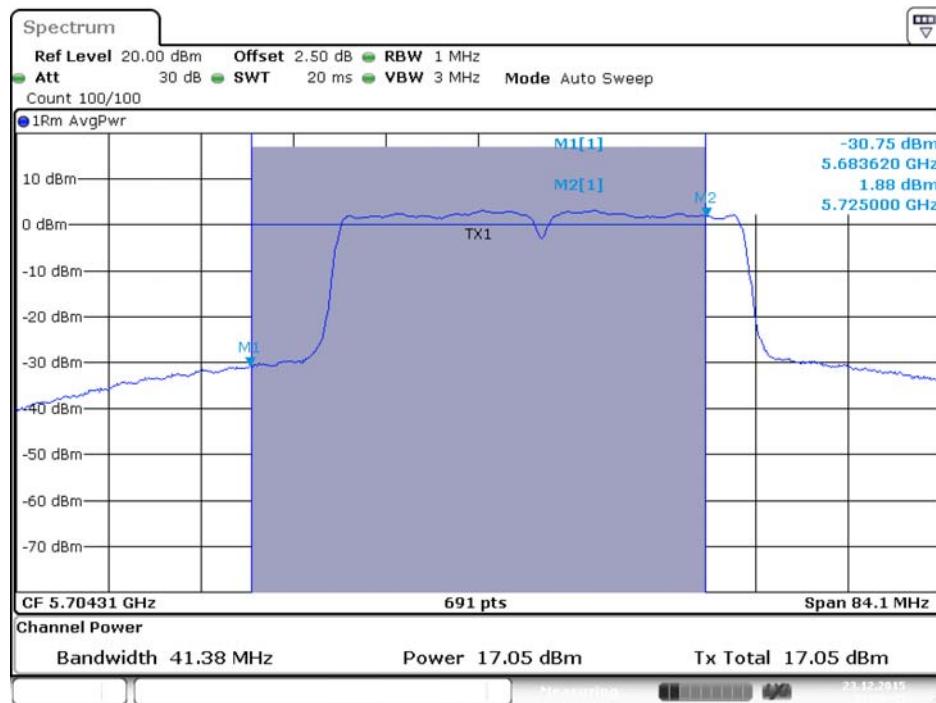
Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 / 5720 MHz (UNII 2C)



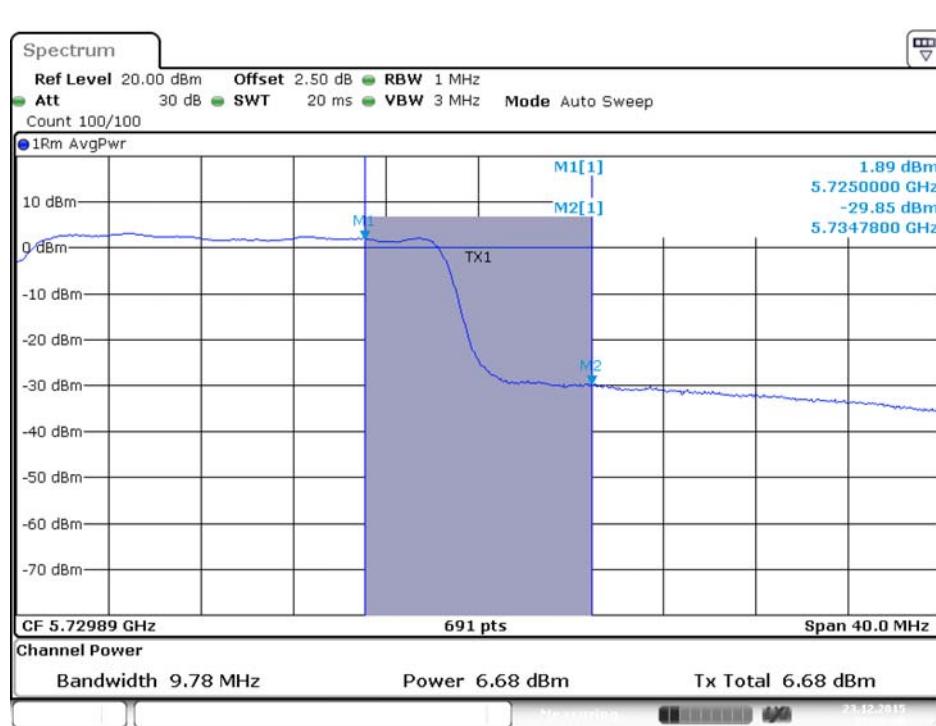
Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 / 5720 MHz (UNII 3)



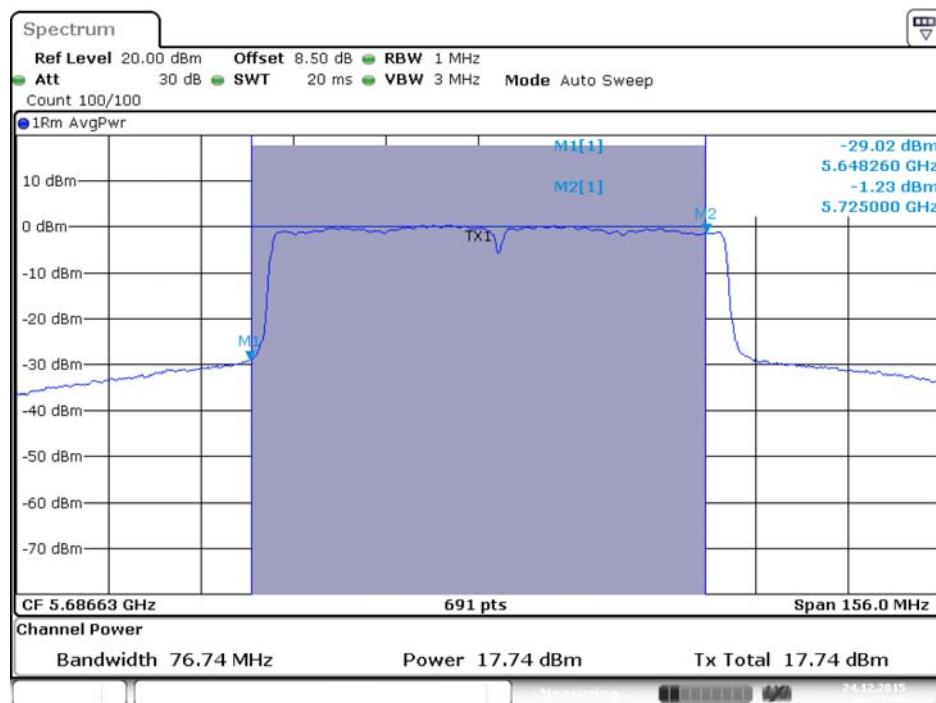
Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 / 5710 MHz (UNII 2C)



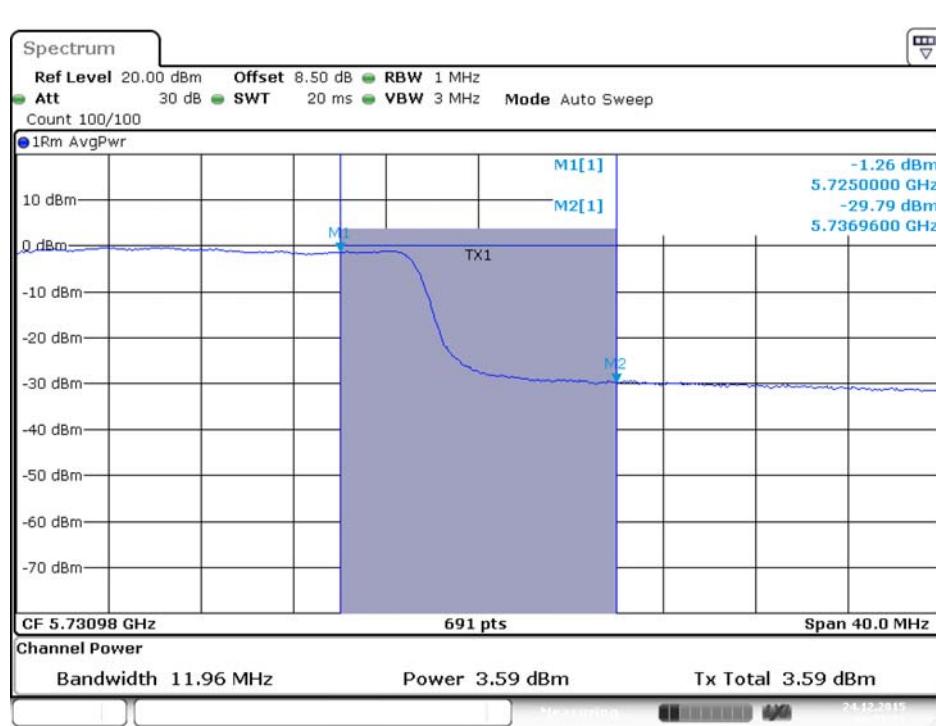
Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 / 5710 MHz (UNII 3)



Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 / 5690 MHz (UNII 2C)



Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 / 5690 MHz (UNII 3)



<For 2TX>

| | | | |
|----------------------|----------|------------------|-----------------------------|
| Temperature | 25°C | Humidity | 58% |
| Test Engineer | Mars Lin | Test Date | Oct. 29, 2015~Dec. 23, 2015 |

| Mode | Frequency | Conducted Power (dBm) | | | Max. Limit (dBm) | Result |
|--------------------------------|------------------|------------------------------|----------------|--------------|-------------------------|---------------|
| | | Chain 1 | Chain 2 | Total | | |
| 802.11a | 5260 MHz | 18.64 | 18.83 | 21.75 | 23.98 | Complies |
| | 5300 MHz | 18.72 | 18.94 | 21.84 | 23.98 | Complies |
| | 5320 MHz | 18.78 | 18.96 | 21.88 | 23.98 | Complies |
| | 5500 MHz | 18.59 | 18.88 | 21.75 | 23.98 | Complies |
| | 5580 MHz | 18.56 | 18.73 | 21.66 | 23.98 | Complies |
| | 5700 MHz | 18.25 | 18.38 | 21.33 | 23.98 | Complies |
| 802.11ac MCS0/Nss1 VHT20 | 5260 MHz | 18.61 | 18.77 | 21.70 | 23.98 | Complies |
| | 5300 MHz | 18.73 | 18.84 | 21.80 | 23.98 | Complies |
| | 5320 MHz | 18.82 | 18.91 | 21.88 | 23.98 | Complies |
| | 5500 MHz | 18.41 | 18.76 | 21.60 | 23.98 | Complies |
| | 5580 MHz | 18.39 | 18.83 | 21.63 | 23.98 | Complies |
| | 5700 MHz | 18.43 | 18.69 | 21.57 | 23.98 | Complies |
| 802.11ac MCS0/Nss1 VHT40 | 5270 MHz | 18.38 | 18.66 | 21.53 | 23.98 | Complies |
| | 5310 MHz | 17.56 | 17.93 | 20.76 | 23.98 | Complies |
| | 5510 MHz | 16.94 | 17.33 | 20.15 | 23.98 | Complies |
| | 5550 MHz | 18.42 | 18.87 | 21.66 | 23.98 | Complies |
| | 5670 MHz | 18.44 | 18.71 | 21.59 | 23.98 | Complies |
| 802.11ac MCS0/Nss1 VHT80 | 5290 MHz | 17.23 | 17.37 | 20.31 | 23.98 | Complies |
| | 5530 MHz | 16.27 | 16.62 | 19.46 | 23.98 | Complies |

Straddle Channel

| Mode | Frequency | Conducted Power (dBm) | | | Max. Limit (dBm) | Result |
|-----------------------------|--------------------|-----------------------|---------|-------|------------------|----------|
| | | Chain 1 | Chain 2 | Total | | |
| 802.11a | 5720 MHz (UNII 2C) | 17.57 | 17.81 | 20.70 | 22.91 | Complies |
| | 5720 MHz (UNII 3) | 11.26 | 11.18 | 14.23 | 30.00 | Complies |
| 802.11ac MCS0/Nss1 VHT20 | 5720 MHz (UNII 2C) | 17.40 | 17.55 | 20.49 | 23.15 | Complies |
| | 5720 MHz (UNII 3) | 11.66 | 11.61 | 14.65 | 30.00 | Complies |
| 802.11ac MCS0/Nss1 VHT40 | 5710 MHz (UNII 2C) | 18.38 | 18.33 | 21.37 | 23.98 | Complies |
| | 5710 MHz (UNII 3) | 8.04 | 7.80 | 10.93 | 30.00 | Complies |
| 802.11ac MCS0/Nss1 VHT80 | 5690 MHz (UNII 2C) | 18.52 | 18.49 | 21.52 | 23.98 | Complies |
| | 5690 MHz (UNII 3) | 4.56 | 4.27 | 7.43 | 30.00 | Complies |

Note: 5720MHz power limit=23.98dBm or $11+10\log(B)$; $11+10\log(15.52)=22.91$ dBm < 23.98 dBm, so

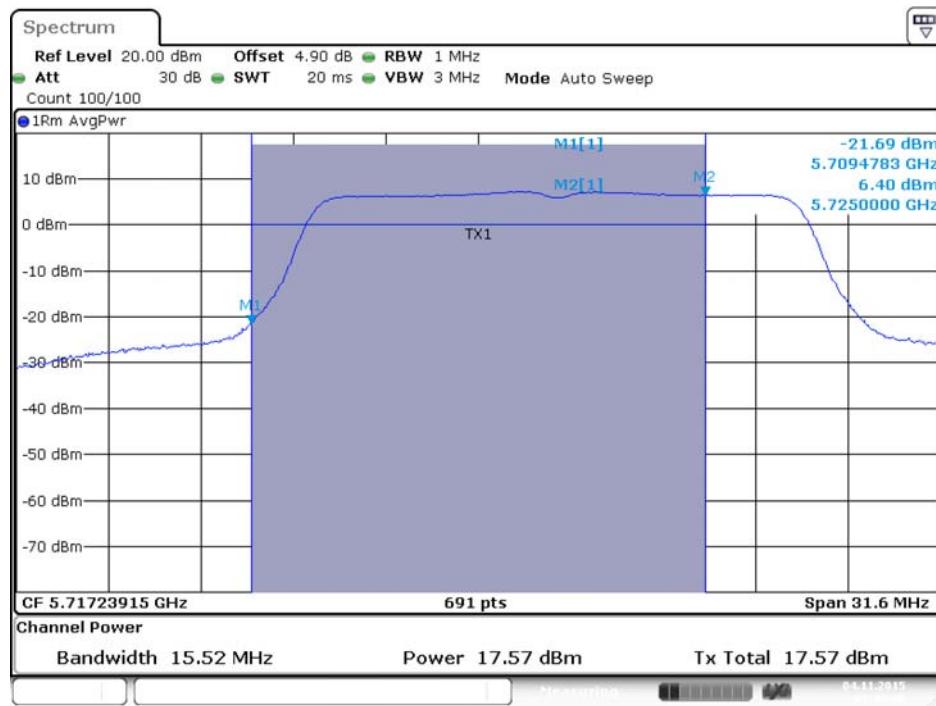
power limit=22.91 dBm

Note: 5720MHz power limit=23.98dBm or $11+10\log(B)$; $11+10\log(16.39)=23.15$ dBm < 23.98 dBm, so

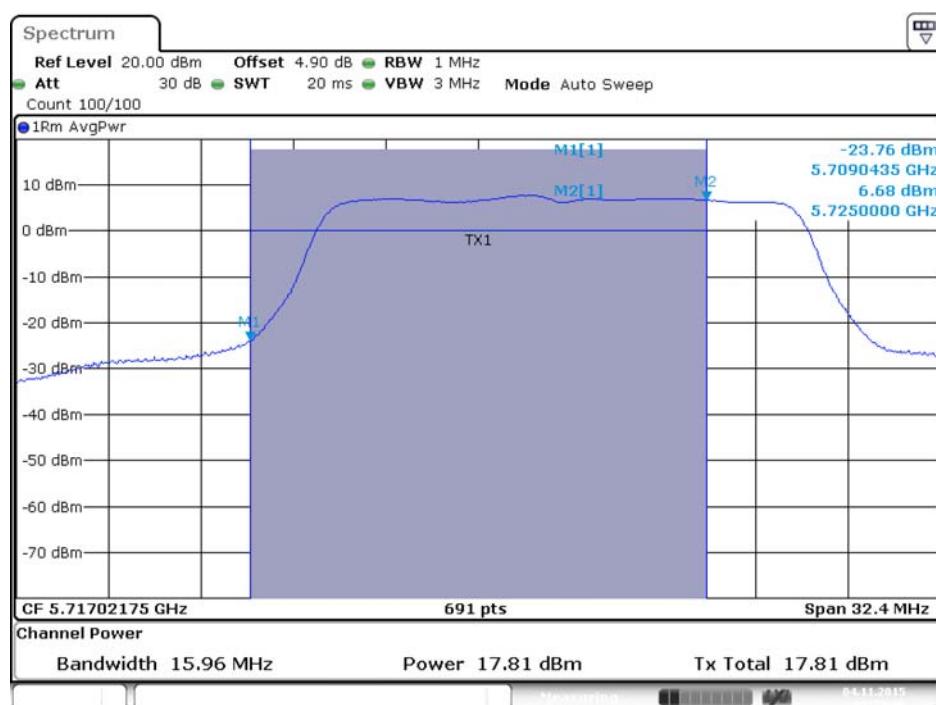
power limit=23.15 dBm

Straddle Channel

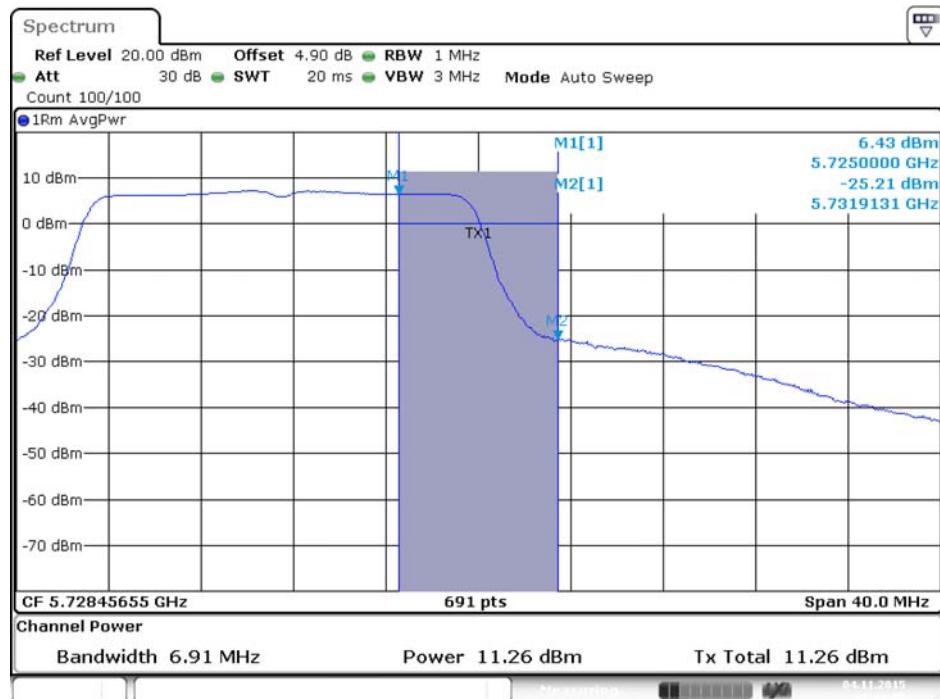
Conducted Output Power Plot on Configuration IEEE 802.11a / Chain 1 / 5720 MHz (UNII 2C)



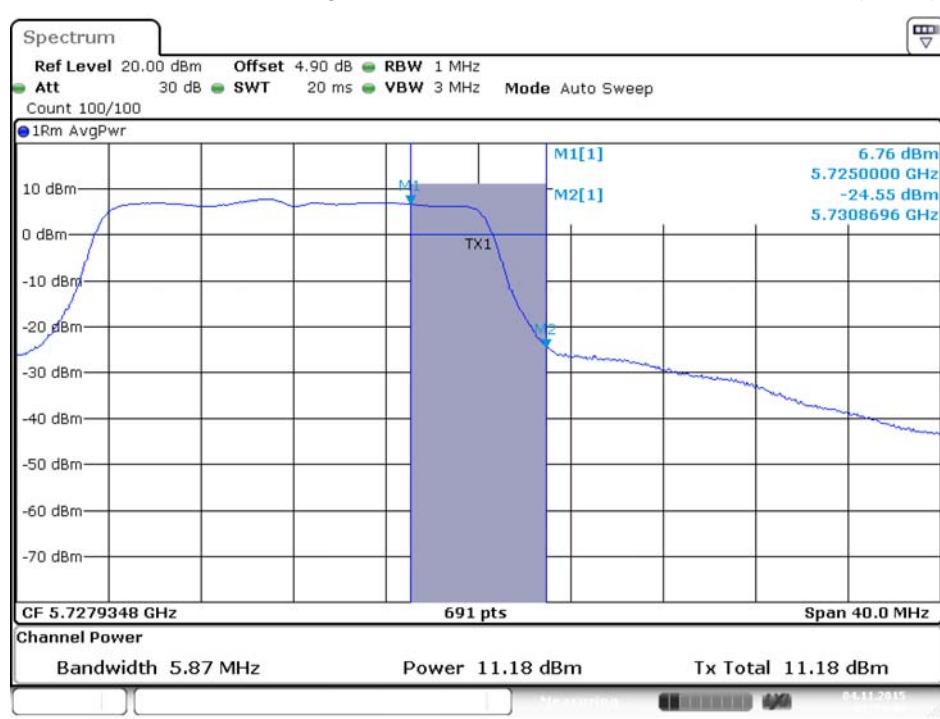
Conducted Output Power Plot on Configuration IEEE 802.11a / Chain 2 / 5720 MHz (UNII 2C)



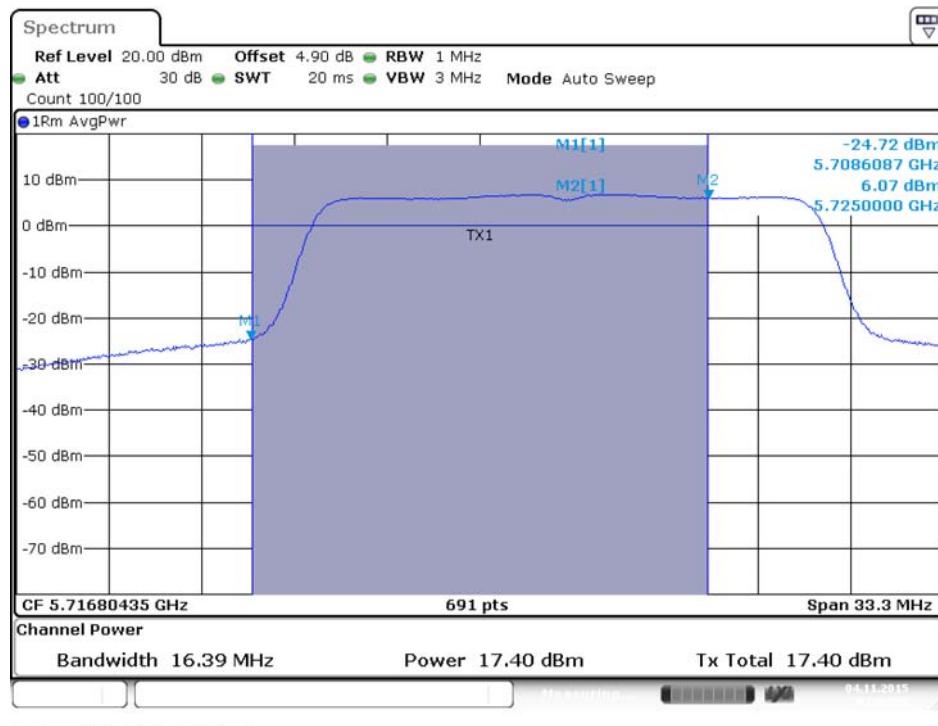
Conducted Output Power Plot on Configuration IEEE 802.11a / Chain 1 / 5720 MHz (UNII 3)



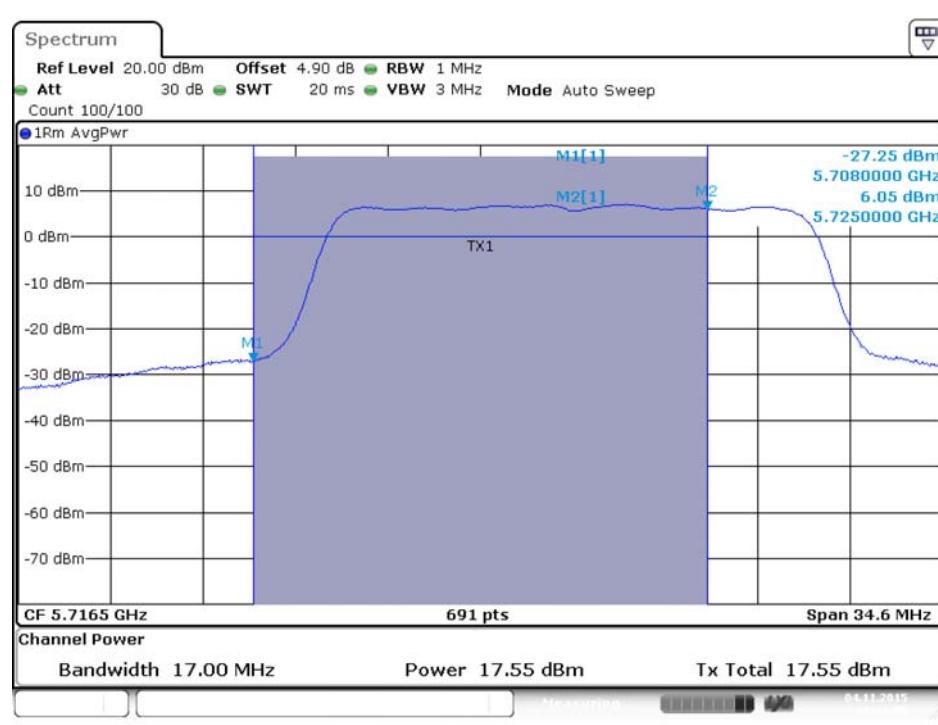
Conducted Output Power Plot on Configuration IEEE 802.11a / Chain 2 / 5720 MHz (UNII 3)



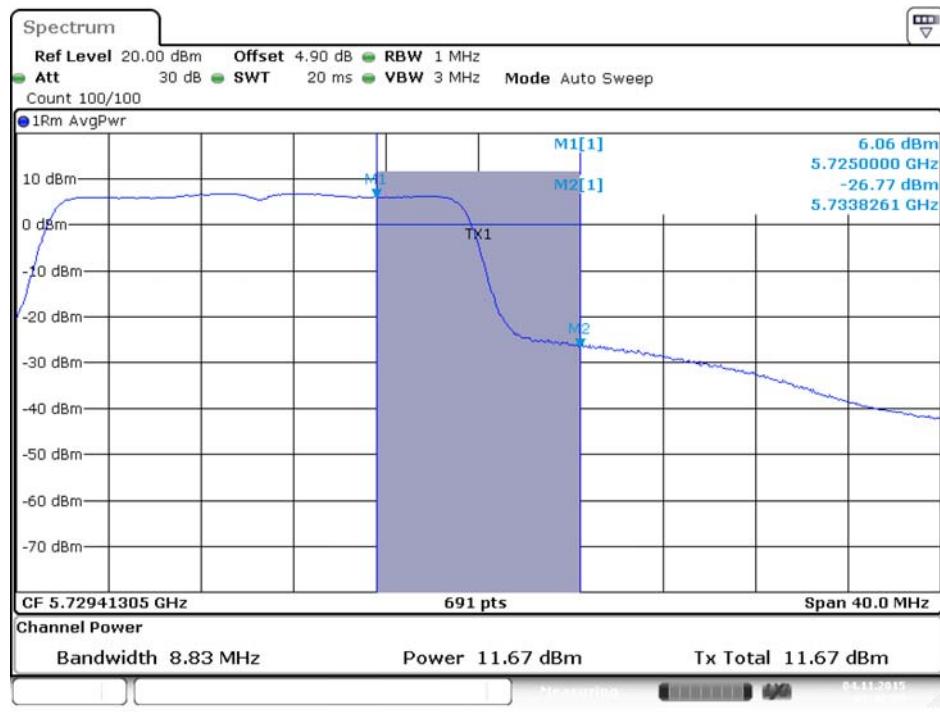
Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 / 5720 MHz (UNII 2C)



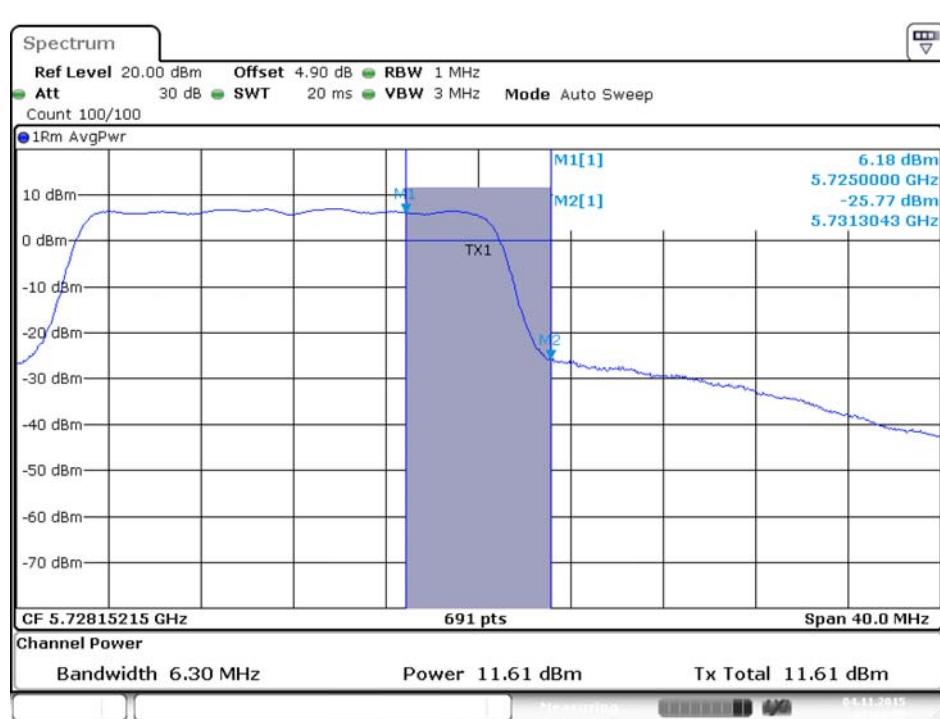
Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 2 / 5720 MHz (UNII 2C)



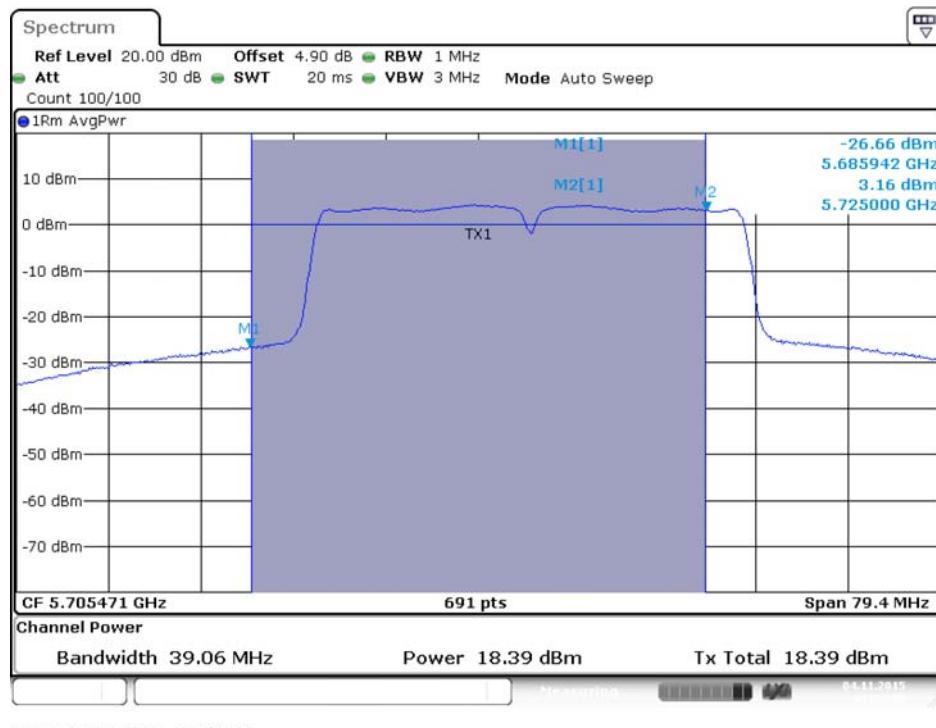
Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 / 5720 MHz (UNII 3)



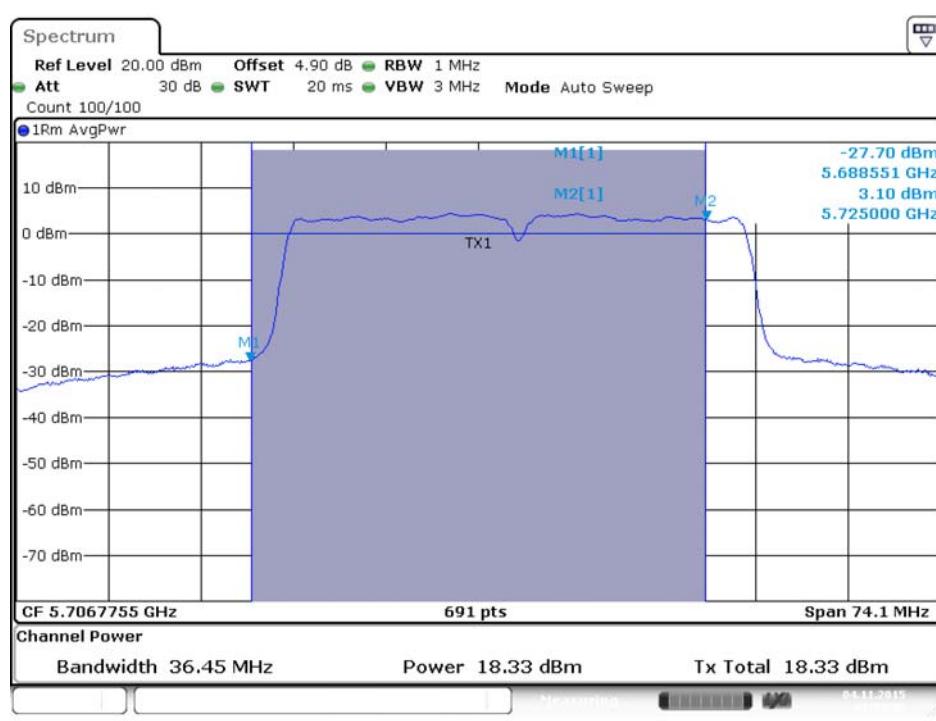
Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 2 / 5720 MHz (UNII 3)



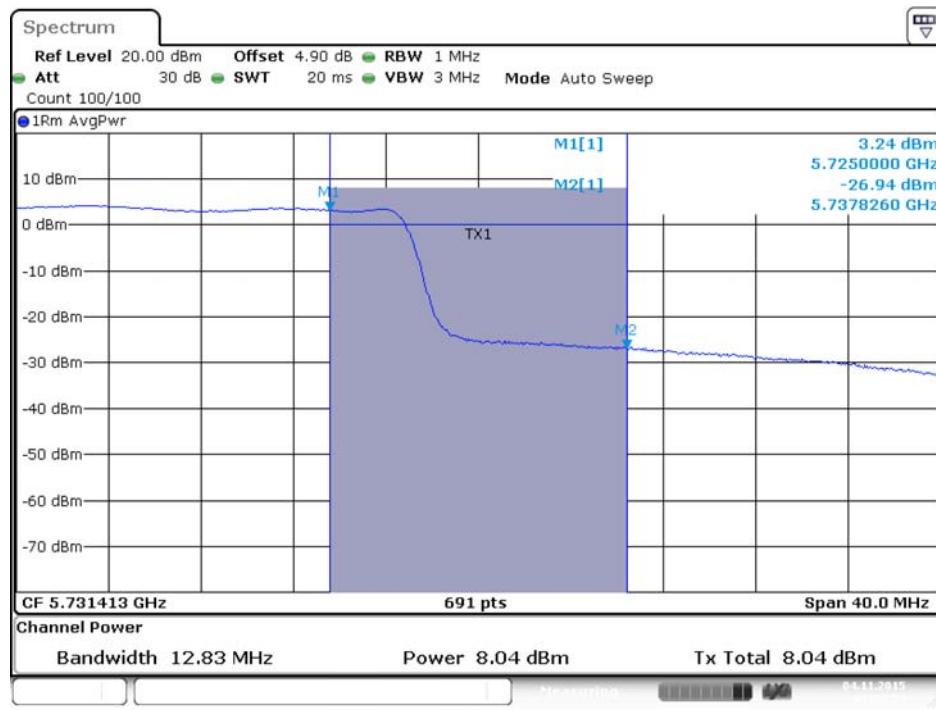
Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 / 5710 MHz (UNII 2C)



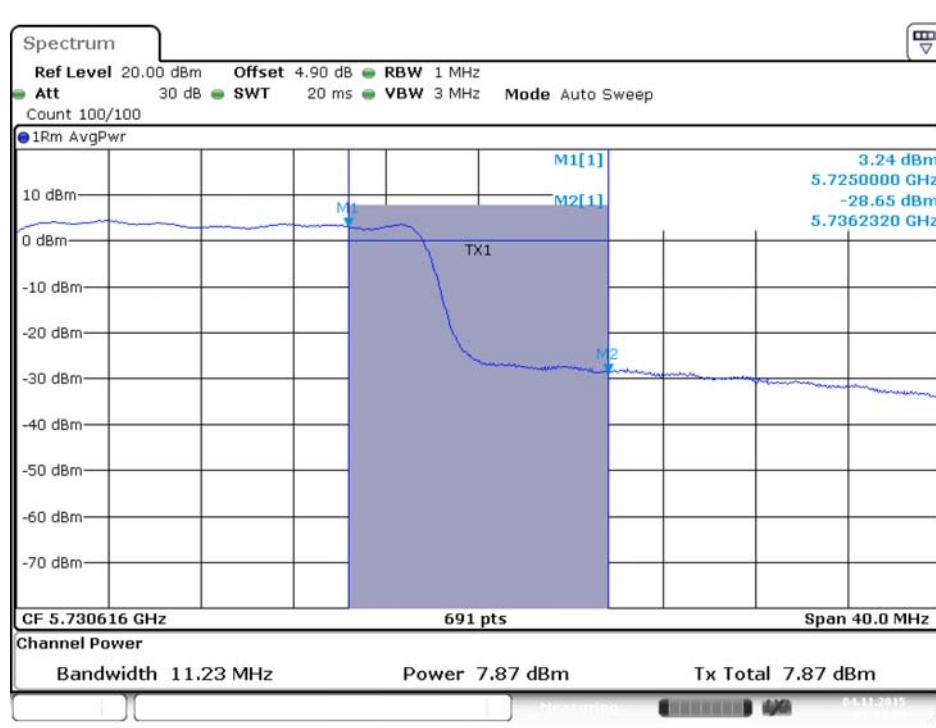
Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 2 / 5710 MHz (UNII 2C)



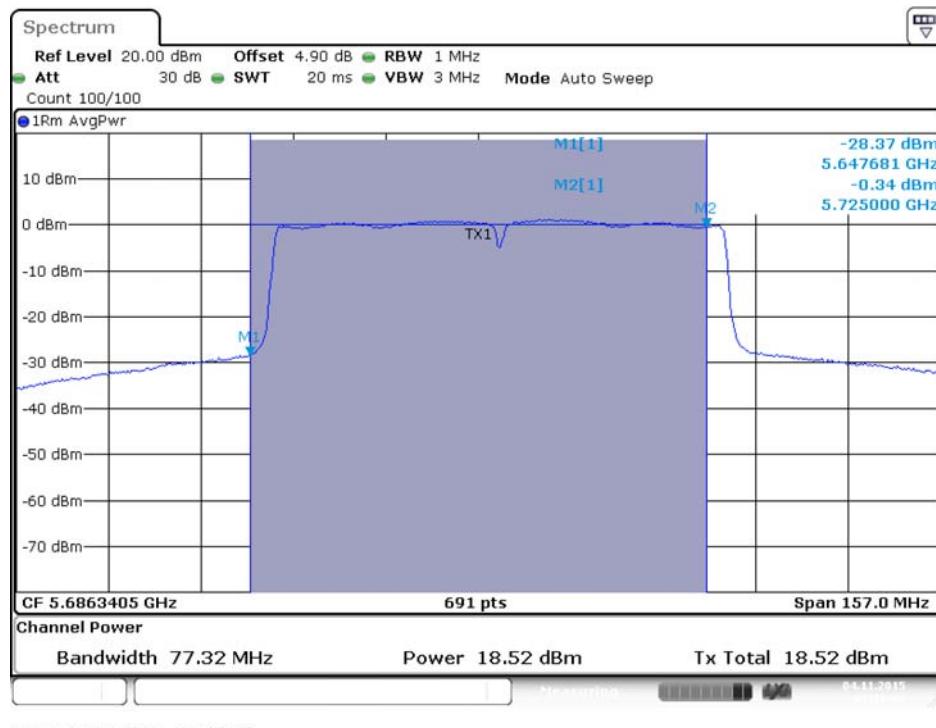
Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 / 5710 MHz (UNII 3)



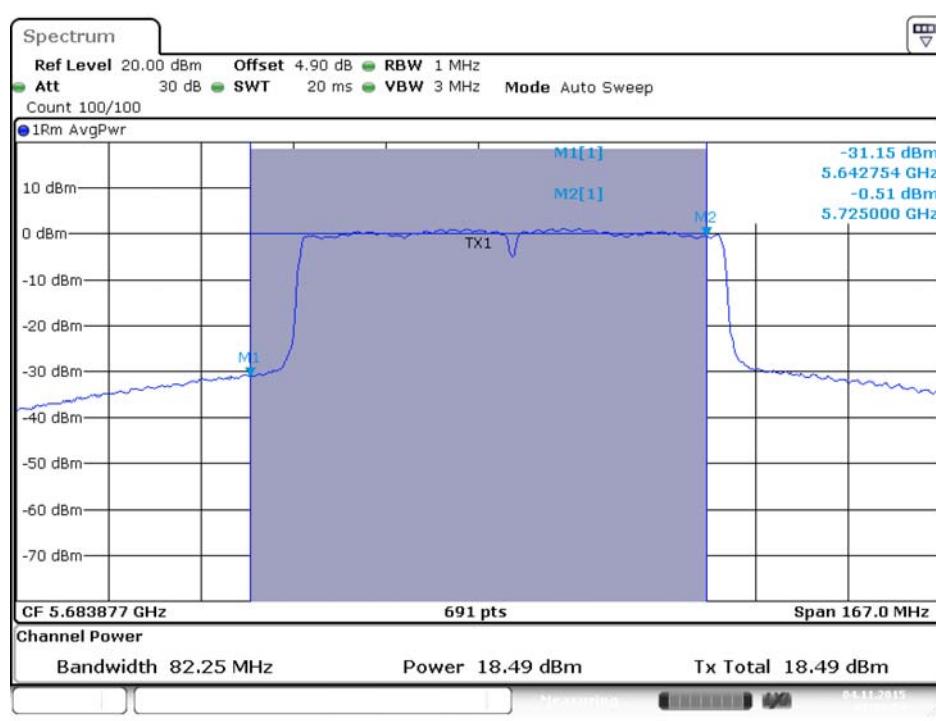
Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 2 / 5710 MHz (UNII 3)



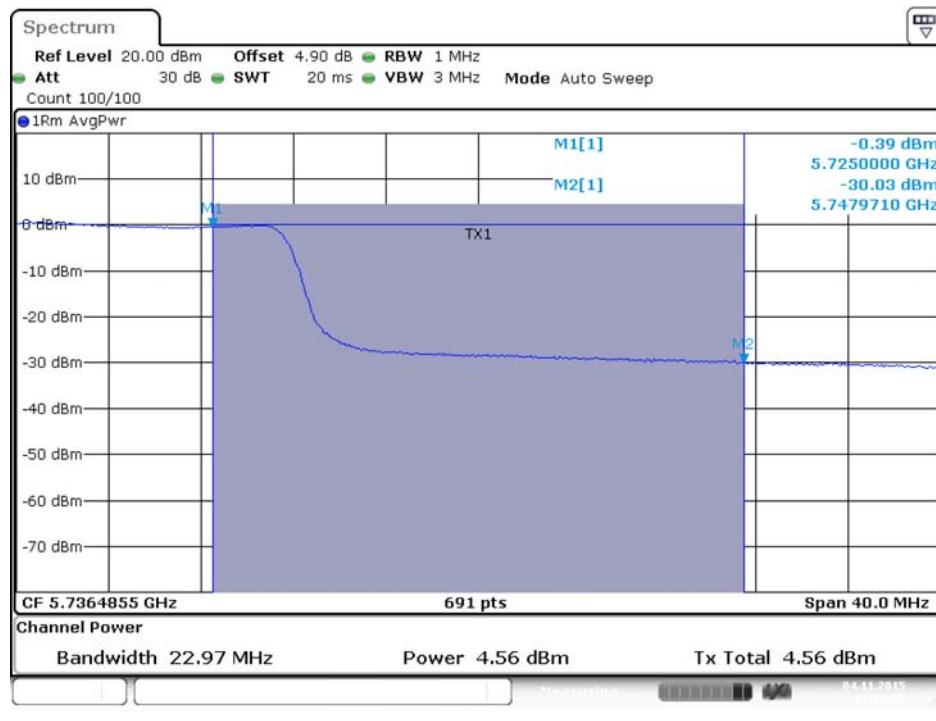
Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 / 5690 MHz (UNII 2C)



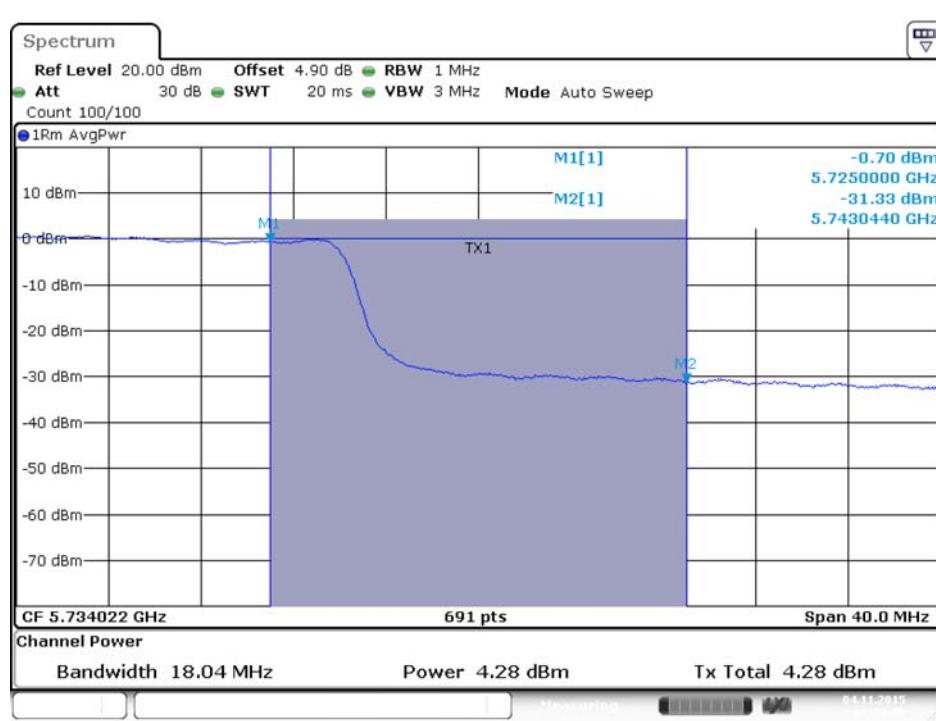
Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 2 / 5690 MHz (UNII 2C)



Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 / 5690 MHz (UNII 3)



Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 2 / 5690 MHz (UNII 3)



4.5. Power Spectral Density Measurement

4.5.1. Limit

The following table is power spectral density limits and decrease power density limit rule refer to section 4.4.1.

| Frequency Band | Limit |
|---|------------|
| <input checked="" type="checkbox"/> 5.25-5.35 GHz | 11 dBm/MHz |
| <input checked="" type="checkbox"/> 5.470-5.725 GHz | 11 dBm/MHz |

4.5.2. Measuring Instruments and Setting

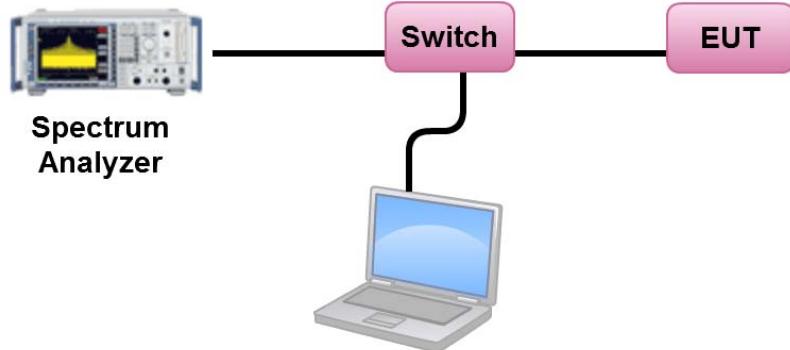
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

| Spectrum Parameter | Setting |
|--------------------|--|
| Attenuation | Auto |
| Span Frequency | Encompass the entire emissions bandwidth (EBW) of the signal |
| RBW | 1000 kHz |
| VBW | 3000 kHz |
| Detector | RMS |
| Trace | AVERAGE |
| Sweep Time | Auto |
| Trace Average | 100 times |

4.5.3. Test Procedures

1. The transmitter output (antenna port) was connected RF switch to the spectrum analyzer.
2. Test was performed in accordance with KDB789033 D02 v01r01 for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices - section (F) Maximum Power Spectral Density (PSD).
3. Multiple antenna systems was performed in accordance KDB662911 D01 v02r01 in-Band Power Spectral Density (PSD) Measurements (a) Measure and sum the spectra across the outputs.
4. When measuring first spectral bin of output 1 is summed with that in the first spectral bin of output 2 and that from the first spectral bin of output 3 and so on up to the Nth output to obtain the value for the first frequency bin of the summed spectrum. The summed spectrum value for each of the other frequency bins is computed in the same way.

4.5.4. Test Setup Layout



4.5.5. Test Deviation

There is no deviation with the original standard.

4.5.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.5.7. Test Result of Power Spectral Density

<For 1TX>

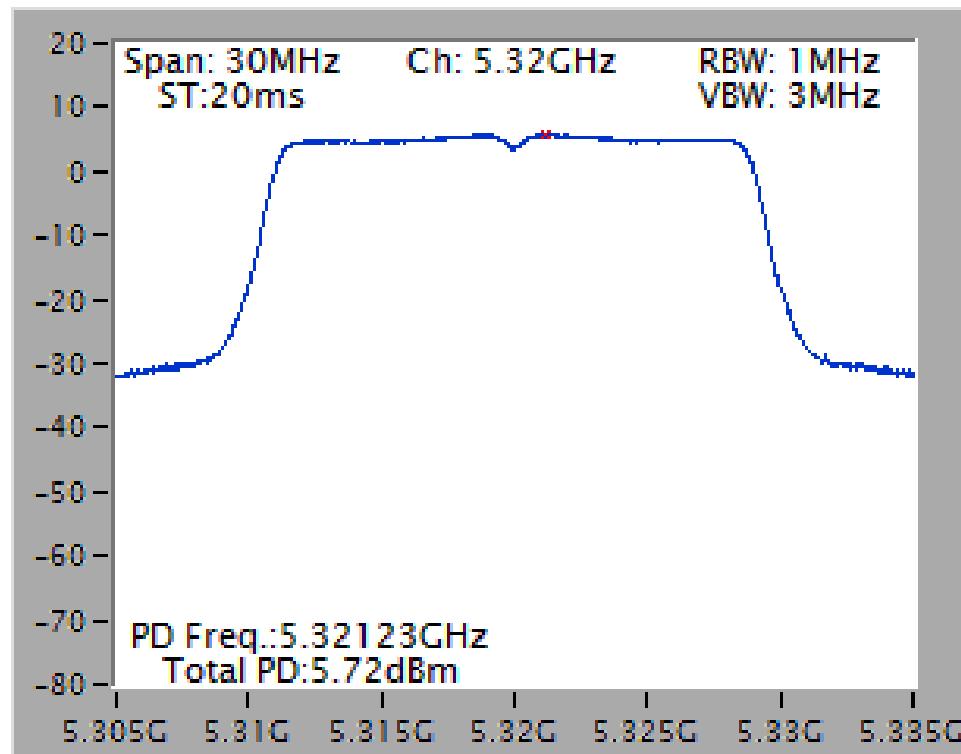
| | | | |
|----------------------|----------|-----------------|-----|
| Temperature | 25°C | Humidity | 58% |
| Test Engineer | Mars Lin | | |

| Mode | Frequency | Power Density (dBm/MHz) | Max. Limit (dBm/MHz) | Result |
|-----------------|------------------|------------------------------------|---------------------------------|---------------|
| 802.11a | 5260 MHz | 5.68 | 11.00 | Complies |
| | 5300 MHz | 5.60 | 11.00 | Complies |
| | 5320 MHz | 5.72 | 11.00 | Complies |
| | 5500 MHz | 5.38 | 11.00 | Complies |
| | 5580 MHz | 5.50 | 11.00 | Complies |
| | 5700 MHz | 5.27 | 11.00 | Complies |
| 802.11ac | 5260 MHz | 5.64 | 11.00 | Complies |
| | 5300 MHz | 5.62 | 11.00 | Complies |
| | 5320 MHz | 5.60 | 11.00 | Complies |
| | 5500 MHz | 5.33 | 11.00 | Complies |
| | 5580 MHz | 5.39 | 11.00 | Complies |
| | 5700 MHz | 5.63 | 11.00 | Complies |
| MCS0/Nss1 VHT20 | 5270 MHz | 2.79 | 11.00 | Complies |
| | 5310 MHz | 2.69 | 11.00 | Complies |
| | 5510 MHz | 2.71 | 11.00 | Complies |
| | 5550 MHz | 2.81 | 11.00 | Complies |
| | 5670 MHz | 2.74 | 11.00 | Complies |
| | 802.11ac | 5290 MHz | -2.28 | 11.00 |
| MCS0/Nss1 VHT40 | 5530 MHz | -1.44 | 11.00 | Complies |

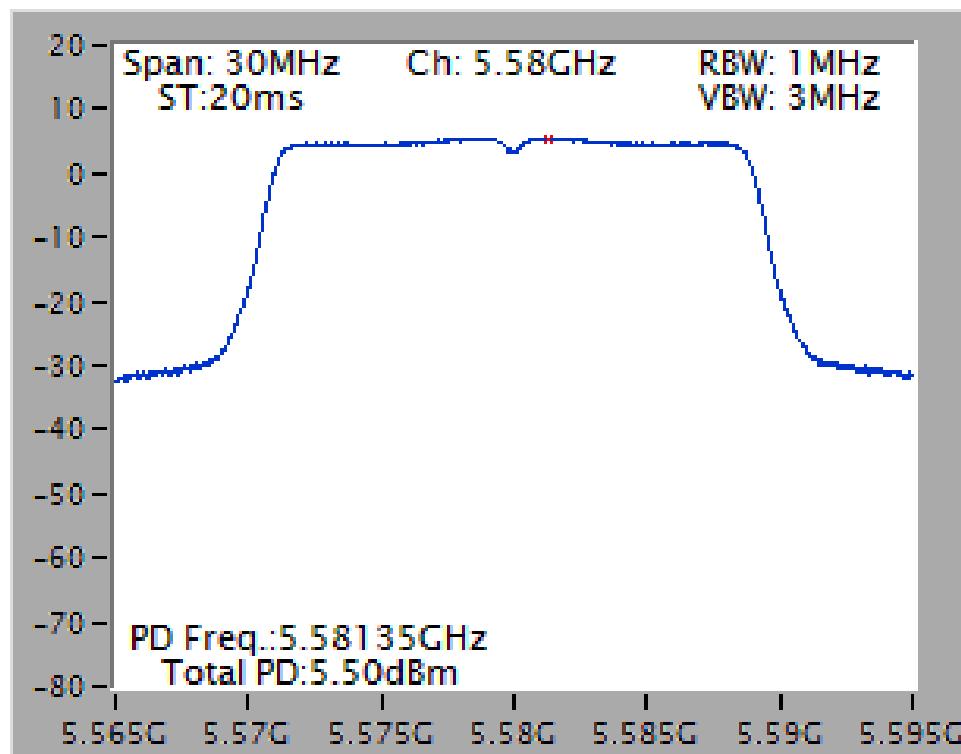
Note: All the test values were listed in the report.

For plots, only the channel with worse result was shown.

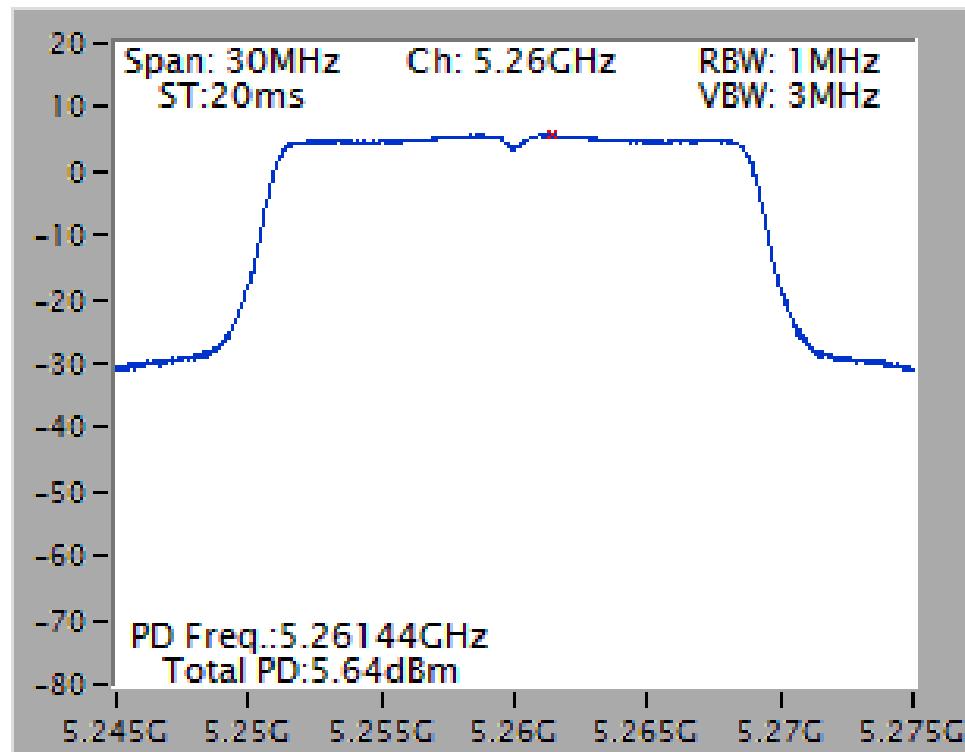
Power Density Plot on Configuration IEEE 802.11a / Chain 1 / 5320 MHz



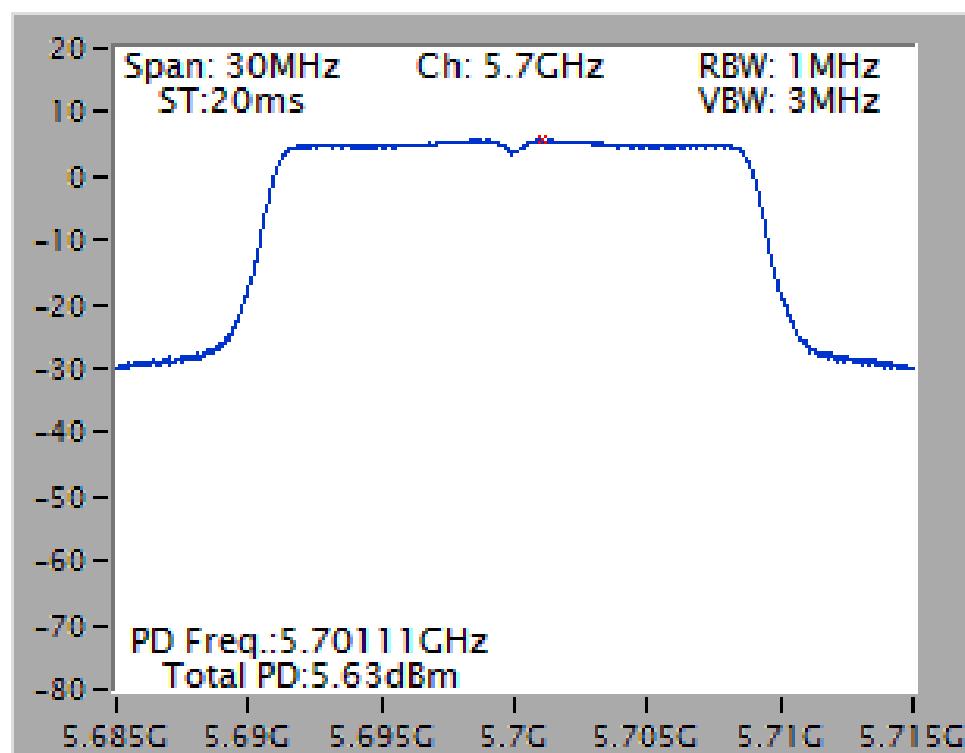
Power Density Plot on Configuration IEEE 802.11a / Chain 1 / 5580 MHz



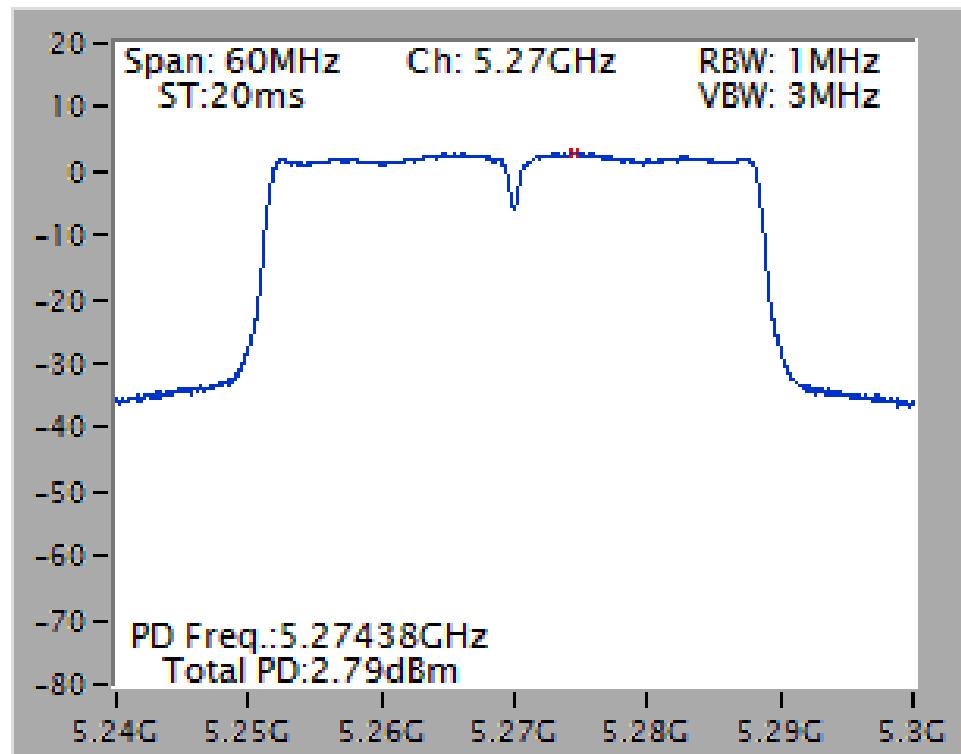
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 / 5260 MHz



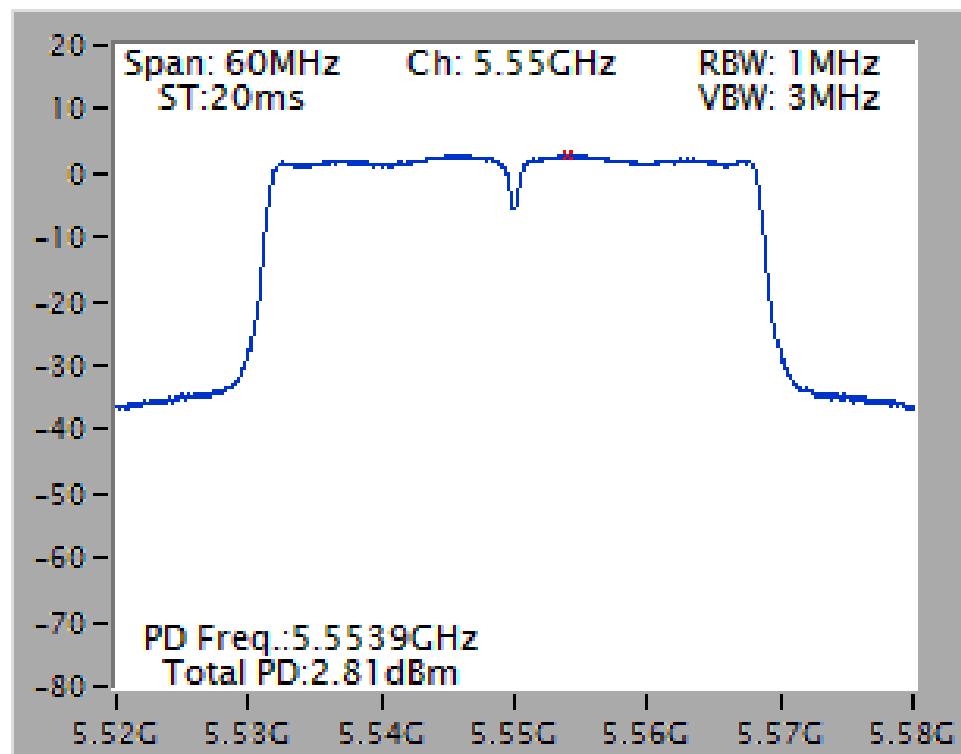
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 / 5700 MHz



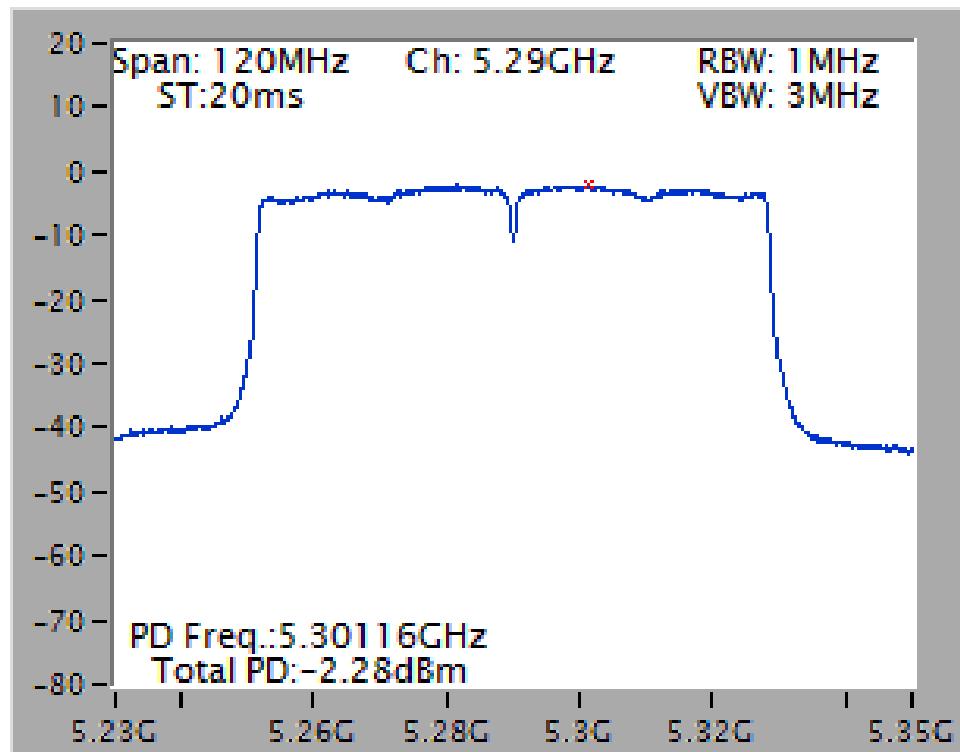
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 / 5270 MHz



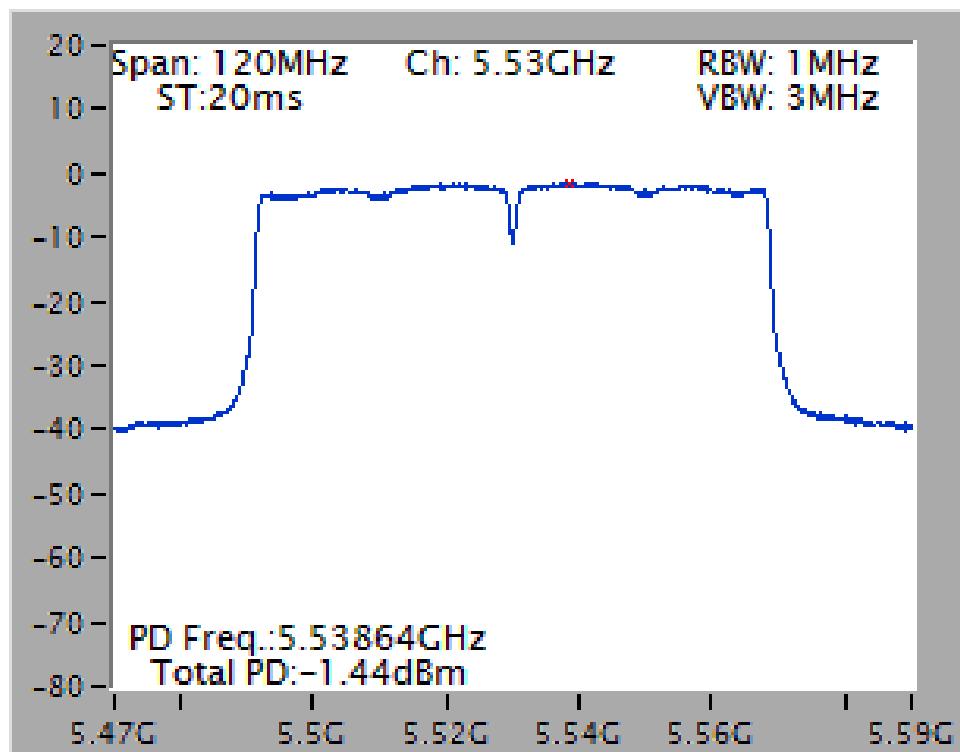
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 / 5550 MHz



Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 / 5290 MHz



Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 / 5530 MHz



Straddle Channel

Configuration IEEE 802.11a / Chain 1

| Channel | Frequency | Power Density (dBm/MHz) | Max. Limit (dBm/MHz) | Result |
|---------|-----------------------|-------------------------|----------------------|----------|
| 144 | 5720 MHz (UNII 2C) | 5.33 | 11.00 | Complies |

| Channel | Frequency | Power Density (dBm/MHz) | 10log(500kHz/RBW) Factor (dB) | Power Density (dBm/500kHz) | Power Density Limit (dBm/500kHz) | Result |
|---------|----------------------|-------------------------|-------------------------------|----------------------------|----------------------------------|----------|
| 144 | 5720 MHz (UNII 3) | 4.51 | -3.01 | 1.50 | 30.00 | Complies |

Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1

| Channel | Frequency | Power Density (dBm/MHz) | Max. Limit (dBm/MHz) | Result |
|---------|-----------------------|-------------------------|----------------------|----------|
| 144 | 5720 MHz (UNII 2C) | 5.76 | 11.00 | Complies |

| Channel | Frequency | Power Density (dBm/MHz) | 10log(500kHz/RBW) Factor (dB) | Power Density (dBm/500kHz) | Power Density Limit (dBm/500kHz) | Result |
|---------|----------------------|-------------------------|-------------------------------|----------------------------|----------------------------------|----------|
| 144 | 5720 MHz (UNII 3) | 5.20 | -3.01 | 2.19 | 30.00 | Complies |

Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1

| Channel | Frequency | Power Density (dBm/MHz) | Max. Limit (dBm/MHz) | Result |
|---------|-----------------------|-------------------------|----------------------|----------|
| 142 | 5710 MHz (UNII 2C) | 2.86 | 11.00 | Complies |

| Channel | Frequency | Power Density (dBm/MHz) | 10log(500kHz/RBW) Factor (dB) | Power Density (dBm/500kHz) | Power Density Limit (dBm/500kHz) | Result |
|---------|----------------------|-------------------------|----------------------------------|----------------------------|----------------------------------|----------|
| 142 | 5710 MHz (UNII 3) | 1.97 | -3.01 | -1.04 | 30.00 | Complies |

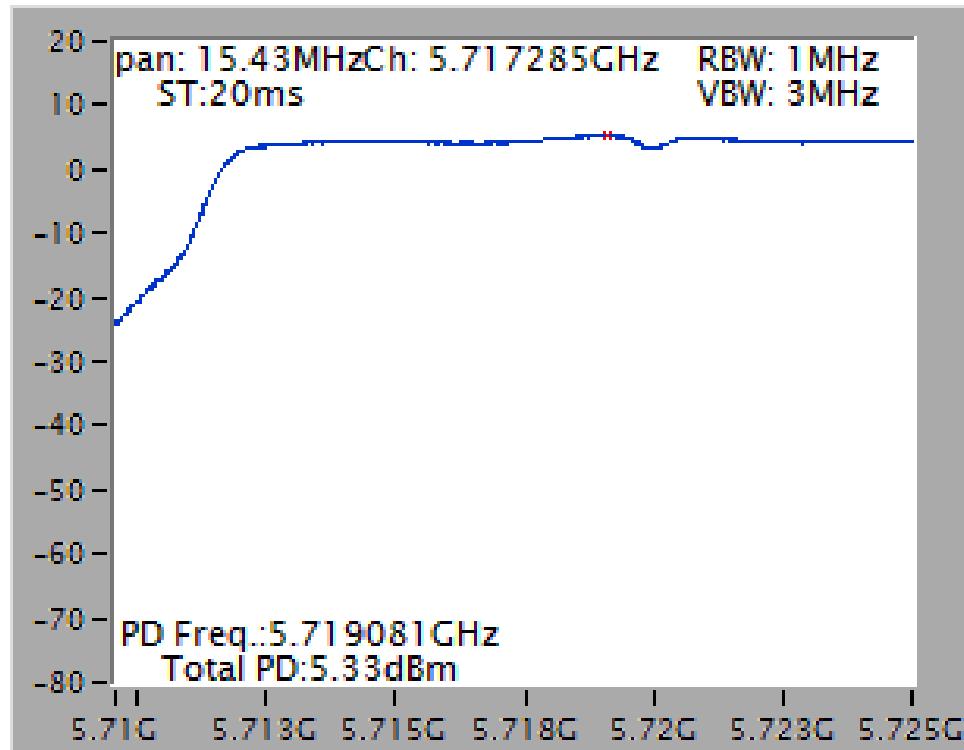
Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1

| Channel | Frequency | Power Density (dBm/MHz) | Max. Limit (dBm/MHz) | Result |
|---------|-----------------------|-------------------------|----------------------|----------|
| 138 | 5690 MHz (UNII 2C) | -0.98 | 11.00 | Complies |

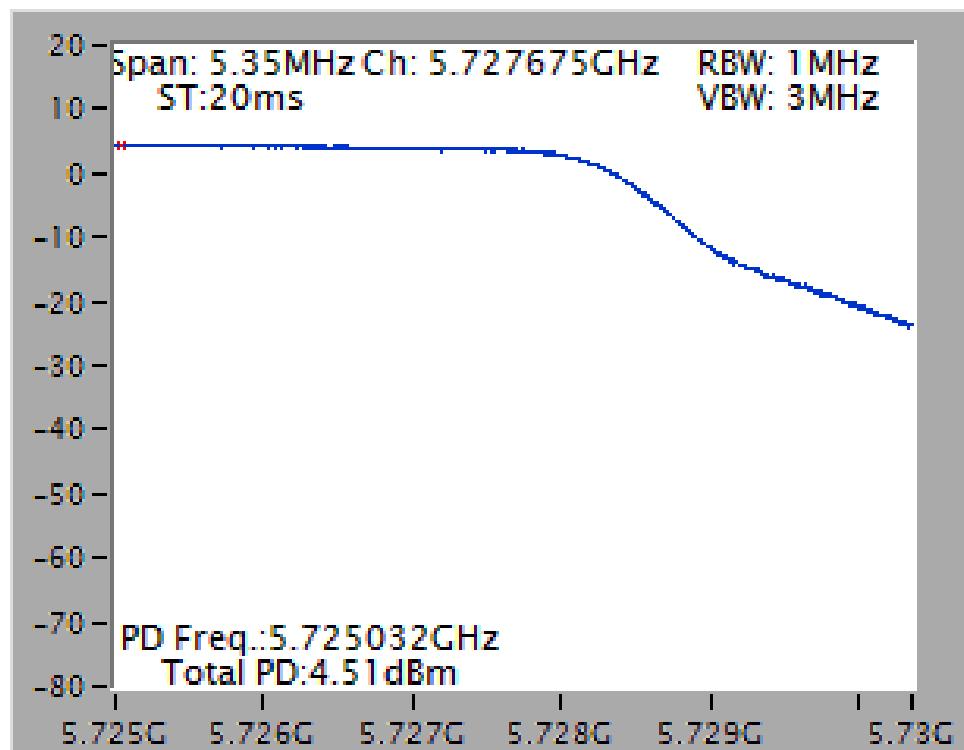
| Channel | Frequency | Power Density (dBm/MHz) | 10log(500kHz/RBW) Factor (dB) | Power Density (dBm/500kHz) | Power Density Limit (dBm/500kHz) | Result |
|---------|----------------------|-------------------------|----------------------------------|----------------------------|----------------------------------|----------|
| 138 | 5690 MHz (UNII 3) | -2.42 | -3.01 | -5.43 | 30.00 | Complies |

Straddle Channel

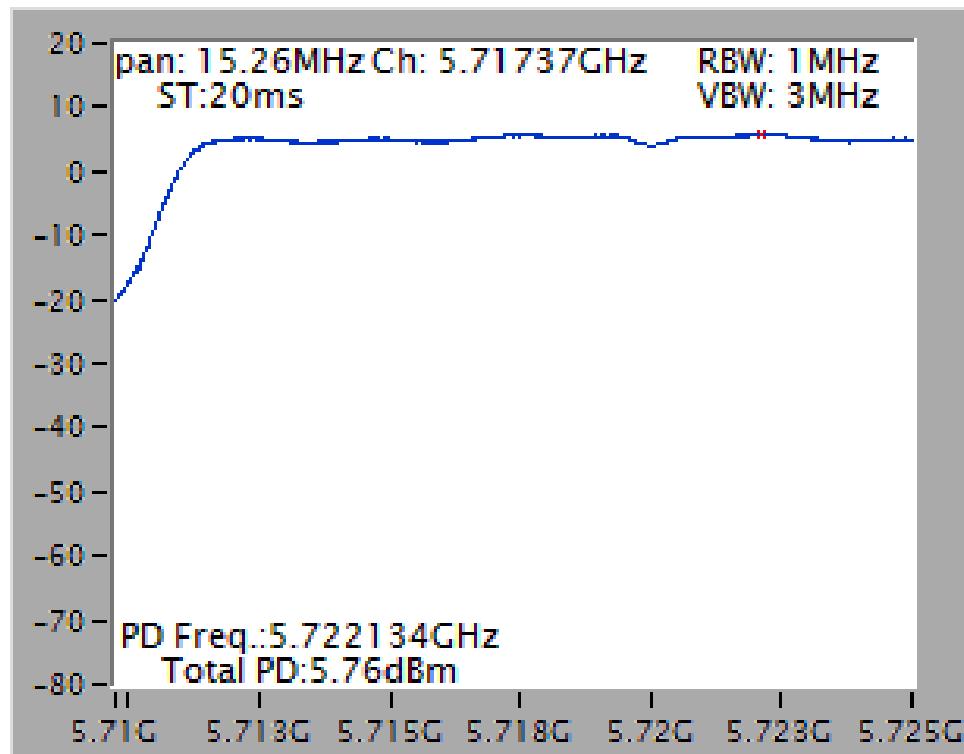
Power Density Plot on Configuration IEEE 802.11a / Chain 1 / 5720 MHz (UNII 2C)



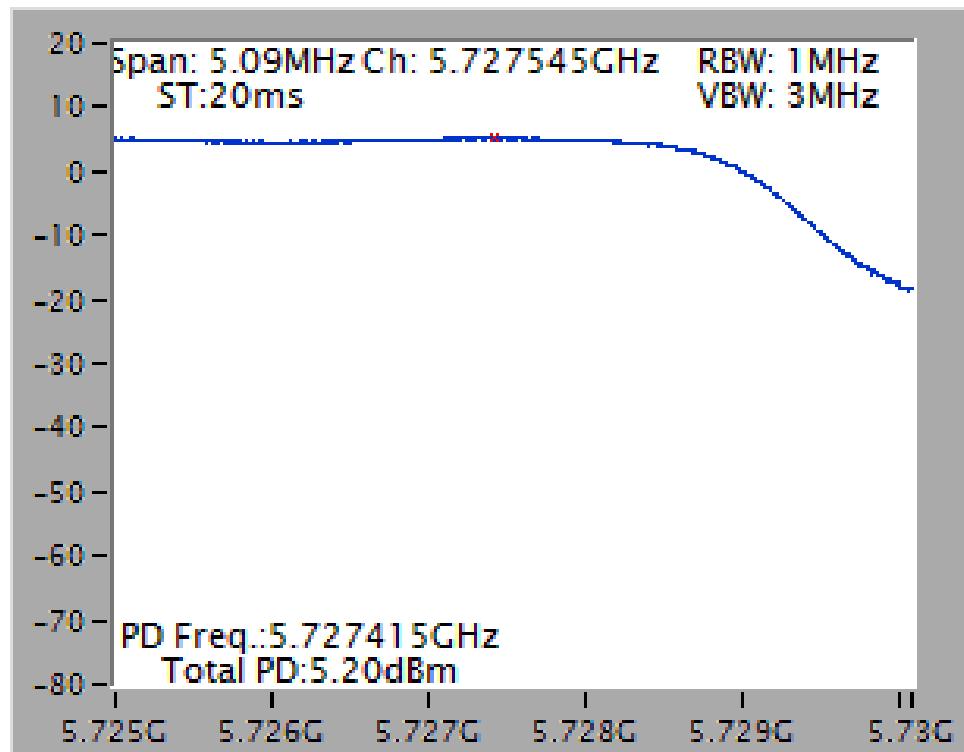
Power Density Plot on Configuration IEEE 802.11a / Chain 1 / 5720 MHz (UNII 3)



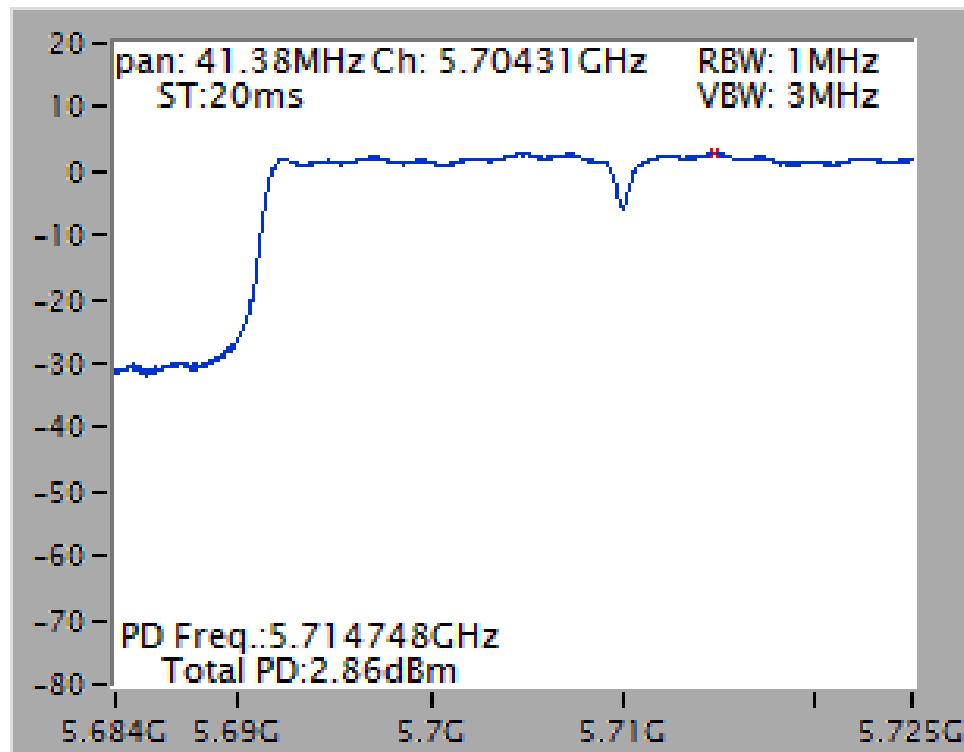
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1/ 5720 MHz (UNII 2C)



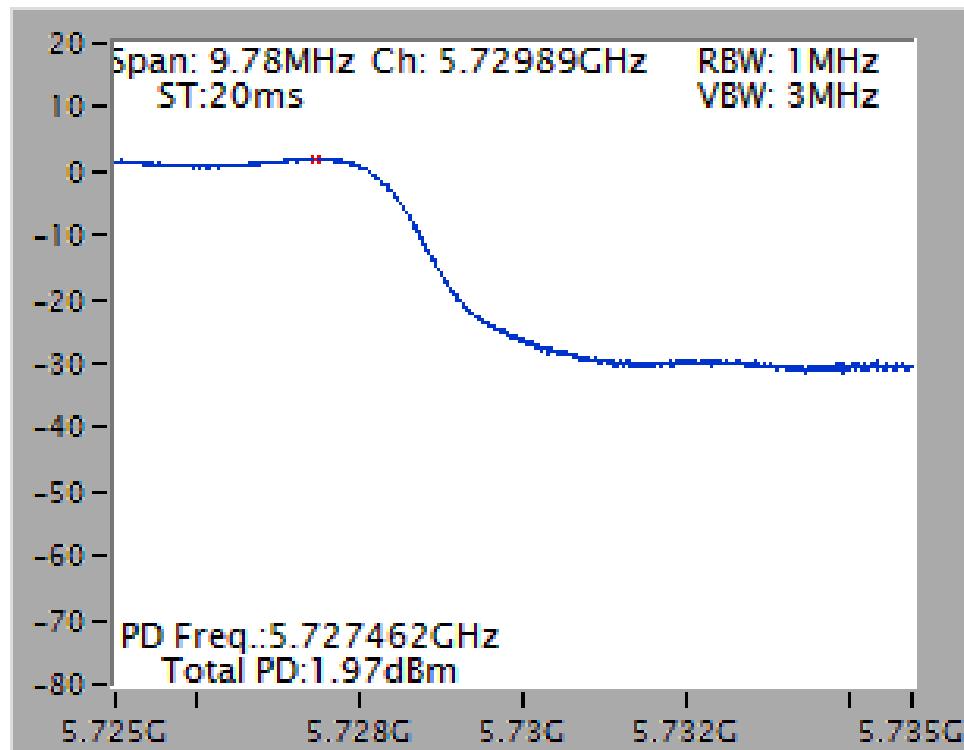
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1/ 5720 MHz (UNII 3)



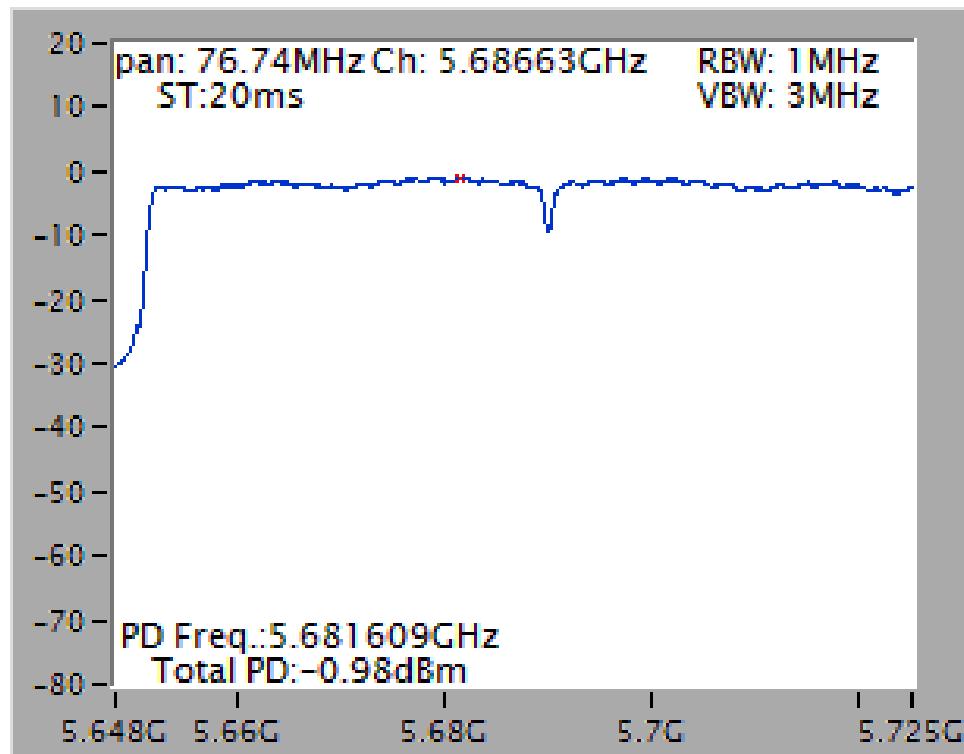
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 / 5710 MHz (UNII 2C)



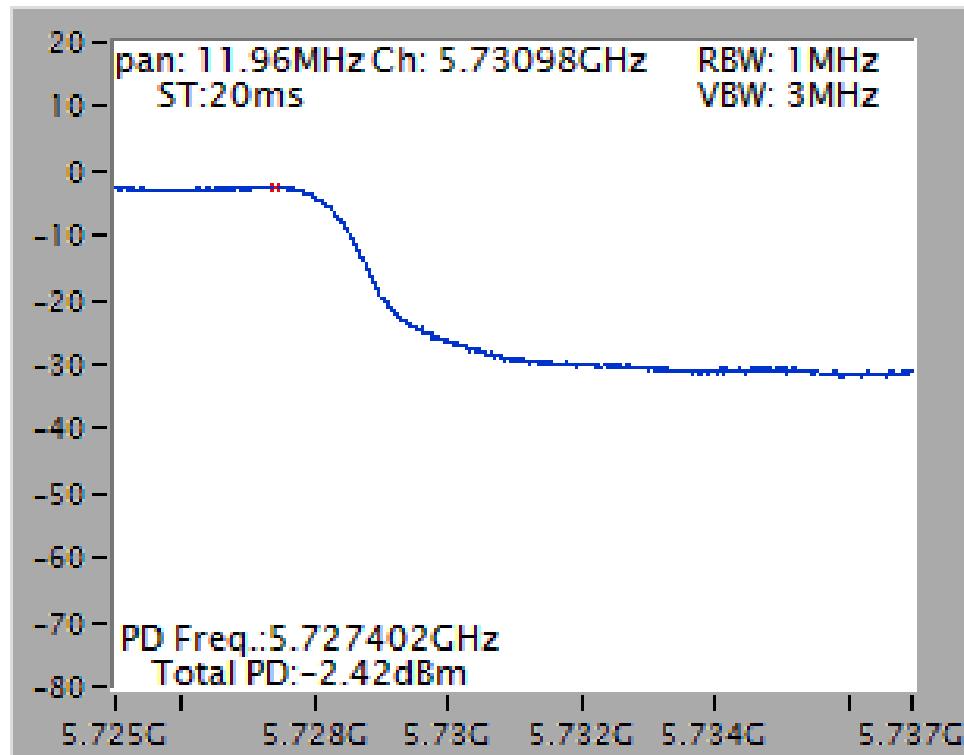
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 / 5710 MHz (UNII 3)



Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 / 5690 MHz (UNII 2C)



Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 / 5690 MHz (UNII 3)



<For 2TX>

| | | | |
|--------------------|----------|-----------------|-----|
| Temperature | 25°C | Humidity | 58% |
| Test Engineer | Mars Lin | | |

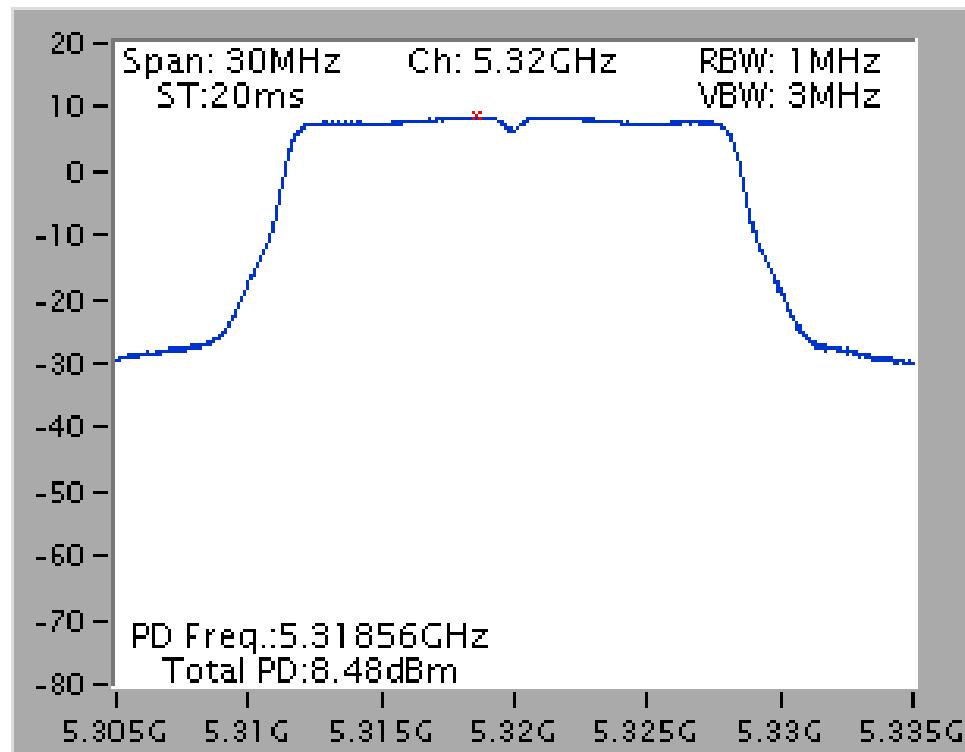
| Mode | Frequency | Power Density (dBm/MHz) | Max. Limit (dBm/MHz) | Result |
|-----------------------------|------------------|------------------------------------|---------------------------------|---------------|
| 802.11a | 5260 MHz | 8.36 | 10.69 | Complies |
| | 5300 MHz | 8.40 | 10.69 | Complies |
| | 5320 MHz | 8.48 | 10.69 | Complies |
| | 5500 MHz | 8.32 | 10.69 | Complies |
| | 5580 MHz | 8.48 | 10.69 | Complies |
| | 5700 MHz | 8.74 | 10.69 | Complies |
| 802.11ac MCS0/Nss1 VHT20 | 5260 MHz | 8.60 | 10.69 | Complies |
| | 5300 MHz | 8.66 | 10.69 | Complies |
| | 5320 MHz | 8.71 | 10.69 | Complies |
| | 5500 MHz | 8.59 | 10.69 | Complies |
| | 5580 MHz | 8.74 | 10.69 | Complies |
| | 5700 MHz | 8.82 | 10.69 | Complies |
| 802.11ac MCS0/Nss1 VHT40 | 5270 MHz | 5.87 | 10.69 | Complies |
| | 5310 MHz | 5.03 | 10.69 | Complies |
| | 5510 MHz | 4.56 | 10.69 | Complies |
| | 5550 MHz | 5.91 | 10.69 | Complies |
| | 5670 MHz | 5.83 | 10.69 | Complies |
| 802.11ac MCS0/Nss1 VHT80 | 5290 MHz | 1.06 | 10.69 | Complies |
| | 5530 MHz | 1.01 | 10.69 | Complies |

Note: $Directional\ Gain = 10 \log \left[\frac{\sum_{j=1}^{N_{SS}} \left(\sum_{K=1}^{N_{ANT}} g_{j,k} \right)^2}{N_{ANT}} \right] = 6.31\text{dBi} < 6\text{dBi}$, so limit = $11 - (6.31 - 6) = 10.69\text{ dBm/MHz}$

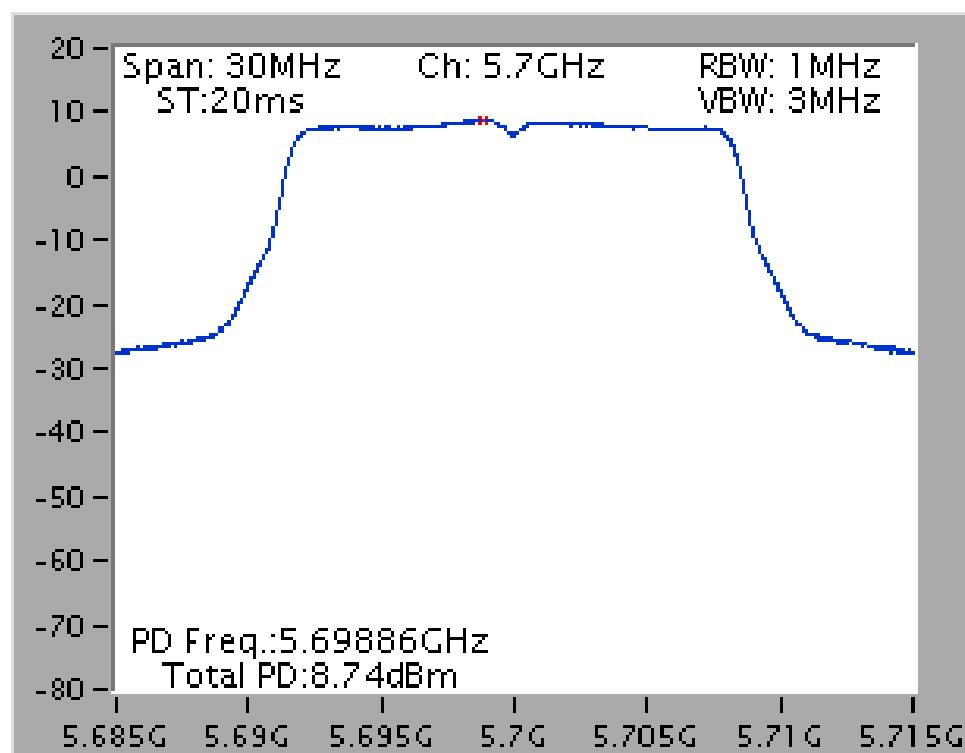
Note: All the test values were listed in the report.

For plots, only the channel with worse result was shown.

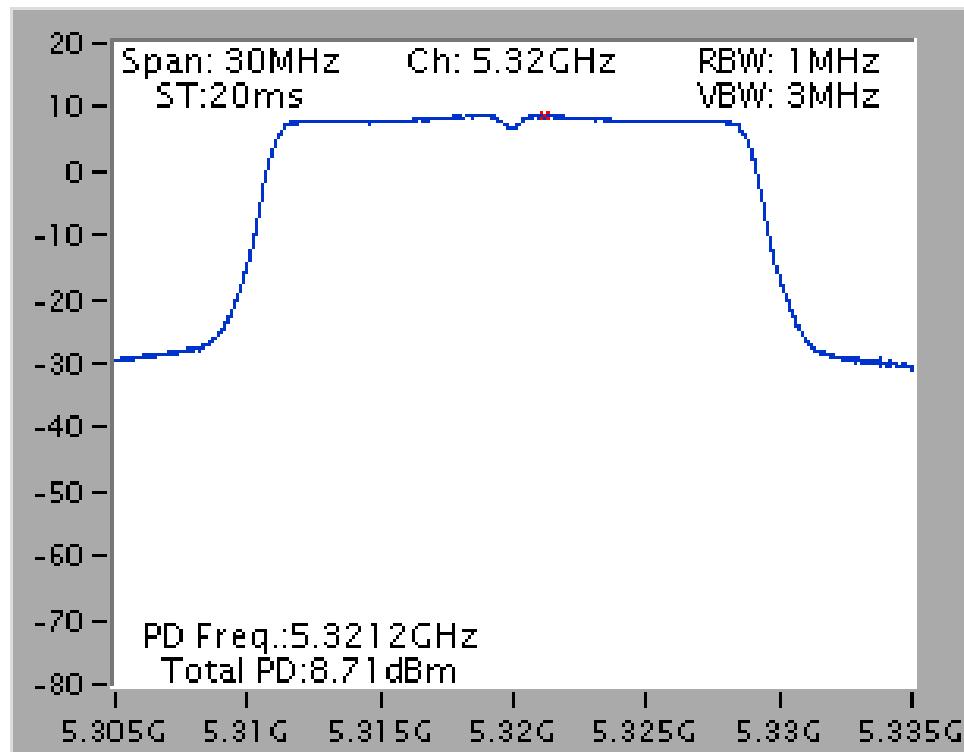
Power Density Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 / 5320 MHz



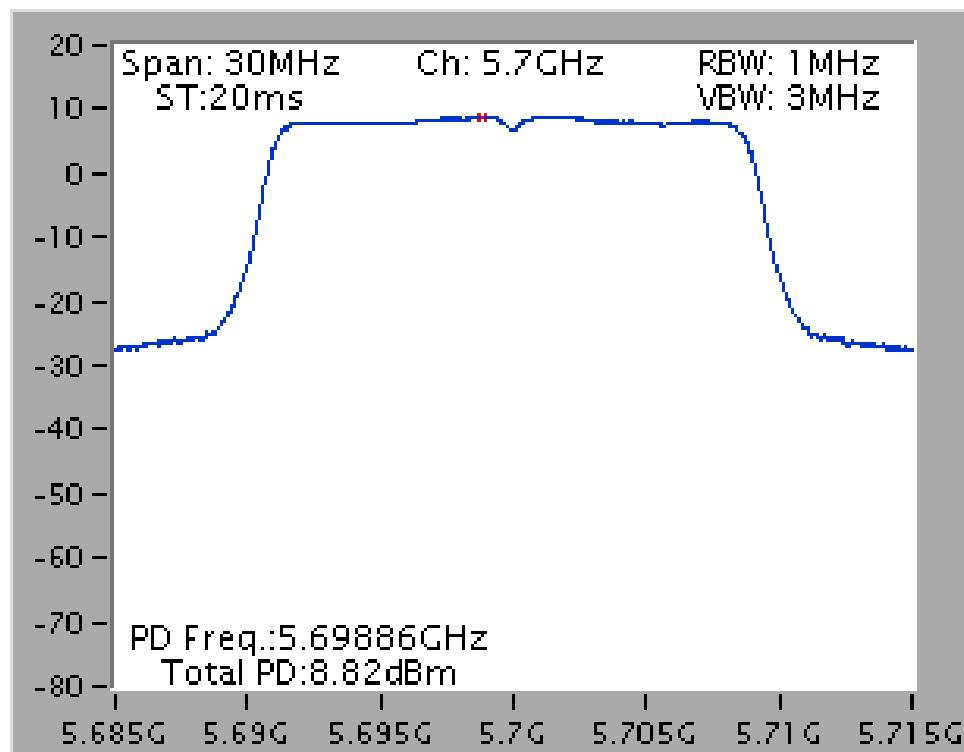
Power Density Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 / 5700 MHz



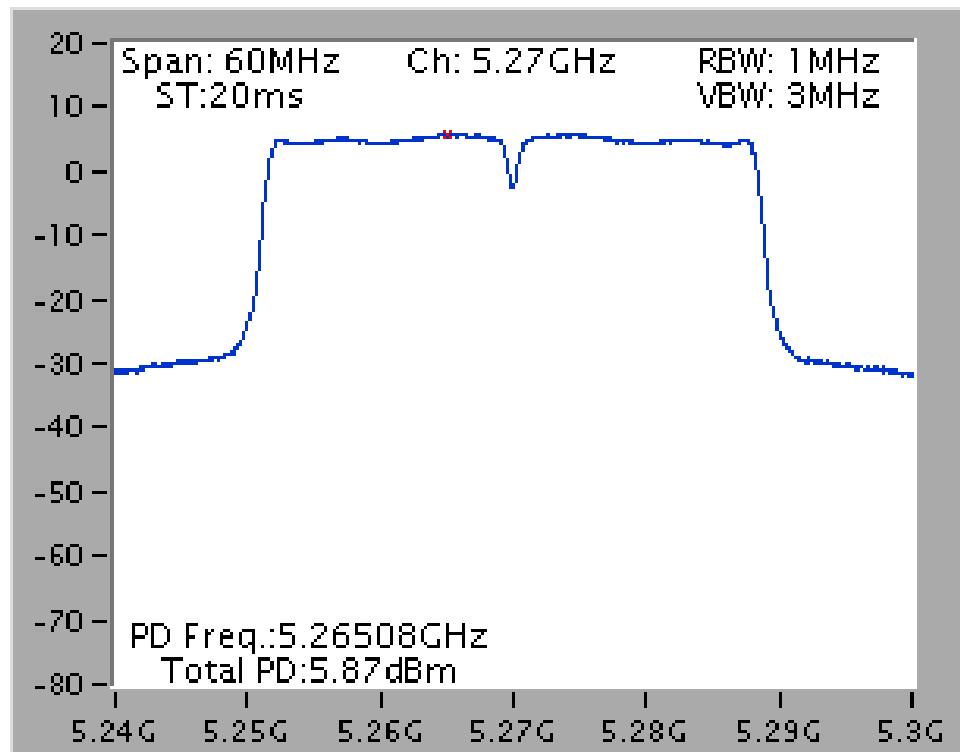
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 / 5320 MHz



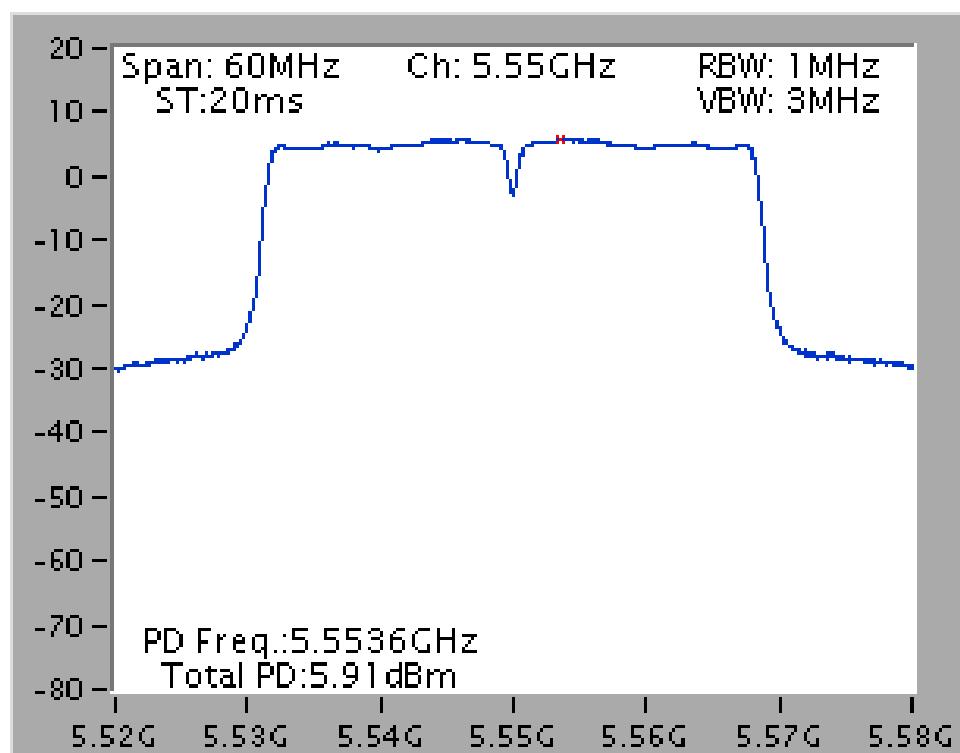
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 / 5700 MHz



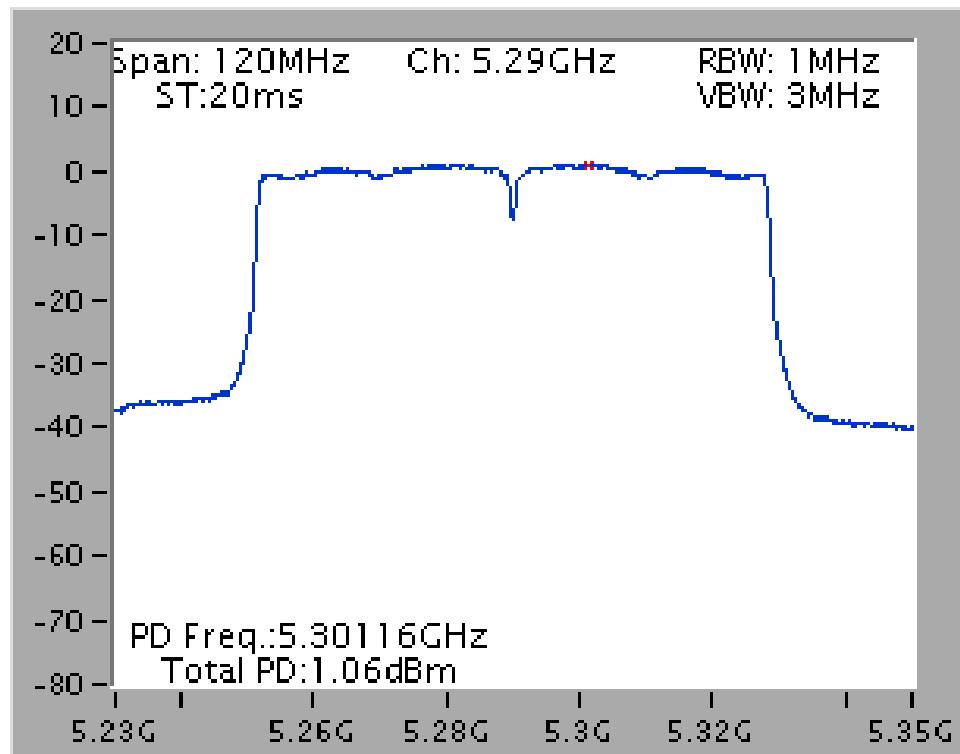
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 / 5270 MHz



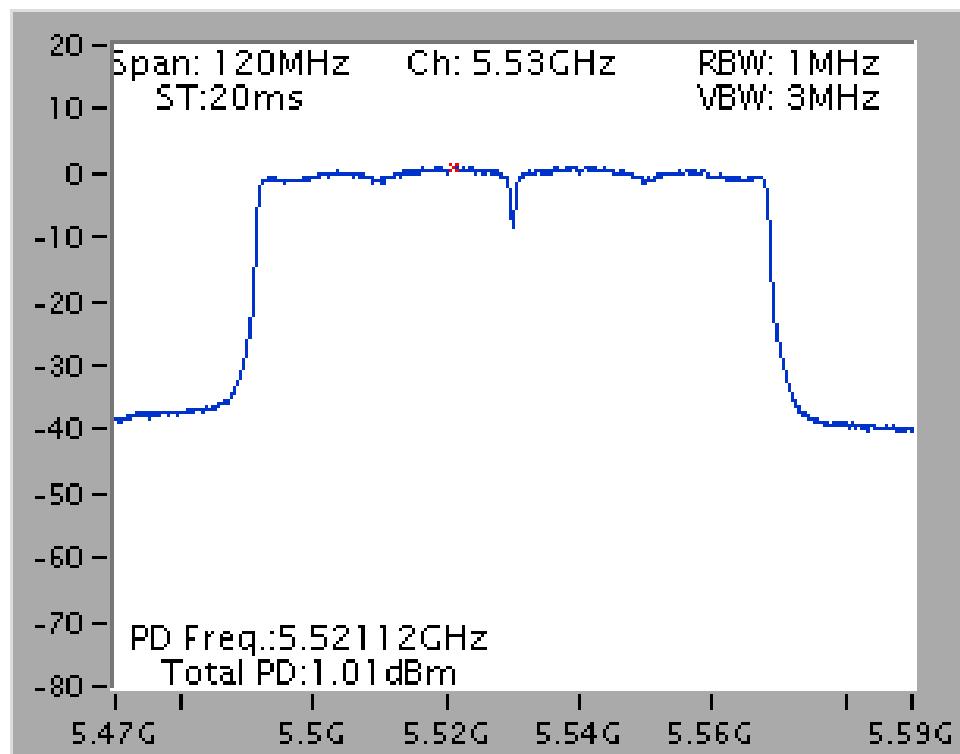
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 / 5550 MHz



Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 / 5290 MHz



Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 / 5530 MHz



Straddle Channel

Configuration IEEE 802.11a / Chain 1 + Chain 2

| Channel | Frequency | Power Density (dBm/MHz) | Max. Limit (dBm/MHz) | Result |
|---------|-----------------------|-------------------------|----------------------|----------|
| 144 | 5720 MHz (UNII 2C) | 8.29 | 10.69 | Complies |

Note: $\text{Directional Gain} = 10 \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{K=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right] = 6.31 \text{ dBi} < 6 \text{ dBi}$, so limit = $11 - (6.31 - 6) = 10.69 \text{ dBm/MHz}$

| Channel | Frequency | Power Density (dBm/MHz) | 10log(500kHz/RBW) Factor (dB) | Power Density (dBm/500kHz) | Power Density Limit (dBm/500kHz) | Result |
|---------|----------------------|-------------------------|----------------------------------|----------------------------|----------------------------------|----------|
| 144 | 5720 MHz (UNII 3) | 7.19 | -3.01 | 4.18 | 29.69 | Complies |

Note: $\text{Directional Gain} = 10 \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{K=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right] = 6.31 \text{ dBi} < 6 \text{ dBi}$, so limit = $30 - (6.31 - 6) = 29.69 \text{ dBm/500kHz}$

Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2

| Channel | Frequency | Power Density (dBm/MHz) | Max. Limit (dBm/MHz) | Result |
|---------|-----------------------|-------------------------|----------------------|----------|
| 144 | 5720 MHz (UNII 2C) | 8.09 | 10.69 | Complies |

Note: $\text{Directional Gain} = 10 \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{K=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right] = 6.31 \text{ dBi} < 6 \text{ dBi}$, so limit = $11 - (6.31 - 6) = 10.69 \text{ dBm/MHz}$

| Channel | Frequency | Power Density (dBm/MHz) | 10log(500kHz/RBW) Factor (dB) | Power Density (dBm/500kHz) | Power Density Limit (dBm/500kHz) | Result |
|---------|----------------------|-------------------------|----------------------------------|----------------------------|----------------------------------|----------|
| 144 | 5720 MHz (UNII 3) | 7.25 | -3.01 | 4.24 | 29.69 | Complies |

Note: $\text{Directional Gain} = 10 \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{K=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right] = 6.31 \text{ dBi} < 6 \text{ dBi}$, so limit = $30 - (6.31 - 6) = 29.69 \text{ dBm/500kHz}$

Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2

| Channel | Frequency | Power Density (dBm/MHz) | Max. Limit (dBm/MHz) | Result |
|---------|-----------------------|-------------------------|----------------------|----------|
| 142 | 5710 MHz (UNII 2C) | 5.52 | 10.69 | Complies |

Note: $\text{Directional Gain} = 10 \log \left[\frac{\sum_{j=1}^{N_{\text{SS}}} \left(\sum_{K=1}^{N_{\text{ANT}}} g_{j,k} \right)^2}{N_{\text{ANT}}} \right] = 6.31 \text{ dBi} < 6 \text{ dBi}$, so limit = $11 - (6.31 - 6) = 10.69 \text{ dBm/MHz}$

| Channel | Frequency | Power Density (dBm/MHz) | 10log(500kHz/RBW) Factor (dB) | Power Density (dBm/500kHz) | Power Density Limit (dBm/500kHz) | Result |
|---------|----------------------|-------------------------|-------------------------------|----------------------------|----------------------------------|----------|
| 142 | 5710 MHz (UNII 3) | 4.20 | -3.01 | 1.19 | 29.69 | Complies |

Note: $\text{Directional Gain} = 10 \log \left[\frac{\sum_{j=1}^{N_{\text{SS}}} \left(\sum_{K=1}^{N_{\text{ANT}}} g_{j,k} \right)^2}{N_{\text{ANT}}} \right] = 6.31 \text{ dBi} < 6 \text{ dBi}$, so limit = $30 - (6.31 - 6) = 29.69 \text{ dBm/500kHz}$

Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2

| Channel | Frequency | Power Density (dBm/MHz) | Max. Limit (dBm/MHz) | Result |
|---------|-----------------------|-------------------------|----------------------|----------|
| 138 | 5690 MHz (UNII 2C) | 2.00 | 10.69 | Complies |

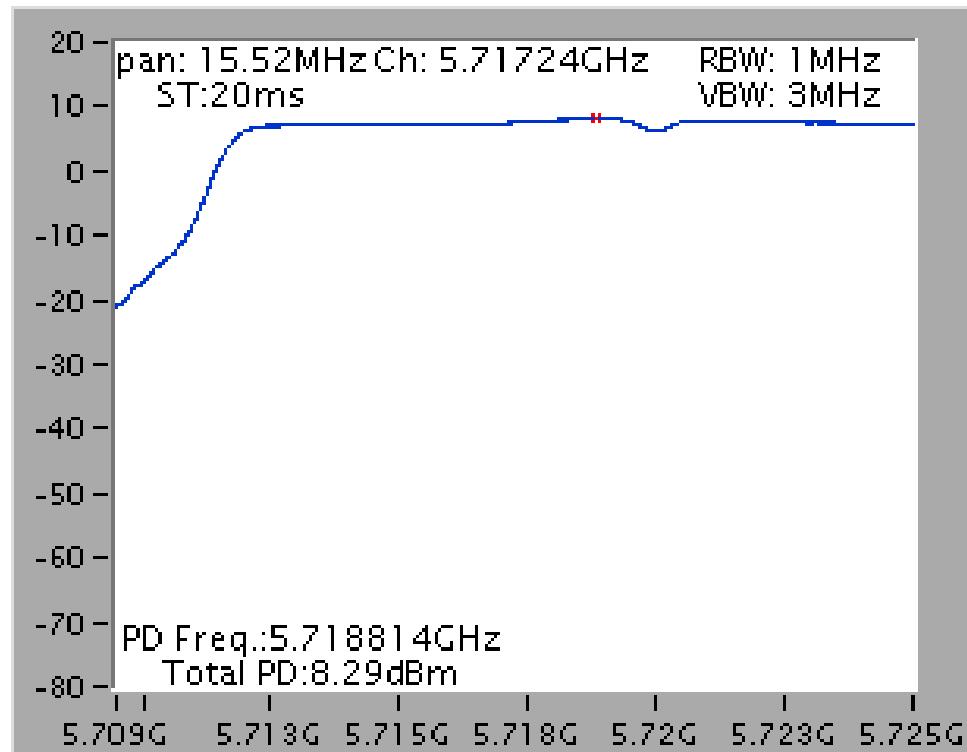
Note: $\text{Directional Gain} = 10 \log \left[\frac{\sum_{j=1}^{N_{\text{SS}}} \left(\sum_{K=1}^{N_{\text{ANT}}} g_{j,k} \right)^2}{N_{\text{ANT}}} \right] = 6.31 \text{ dBi} < 6 \text{ dBi}$, so limit = $11 - (6.31 - 6) = 10.69 \text{ dBm/MHz}$

| Channel | Frequency | Power Density (dBm/MHz) | 10log(500kHz/RBW) Factor (dB) | Power Density (dBm/500kHz) | Power Density Limit (dBm/500kHz) | Result |
|---------|----------------------|-------------------------|-------------------------------|----------------------------|----------------------------------|----------|
| 138 | 5690 MHz (UNII 3) | 0.66 | -3.01 | -2.35 | 29.69 | Complies |

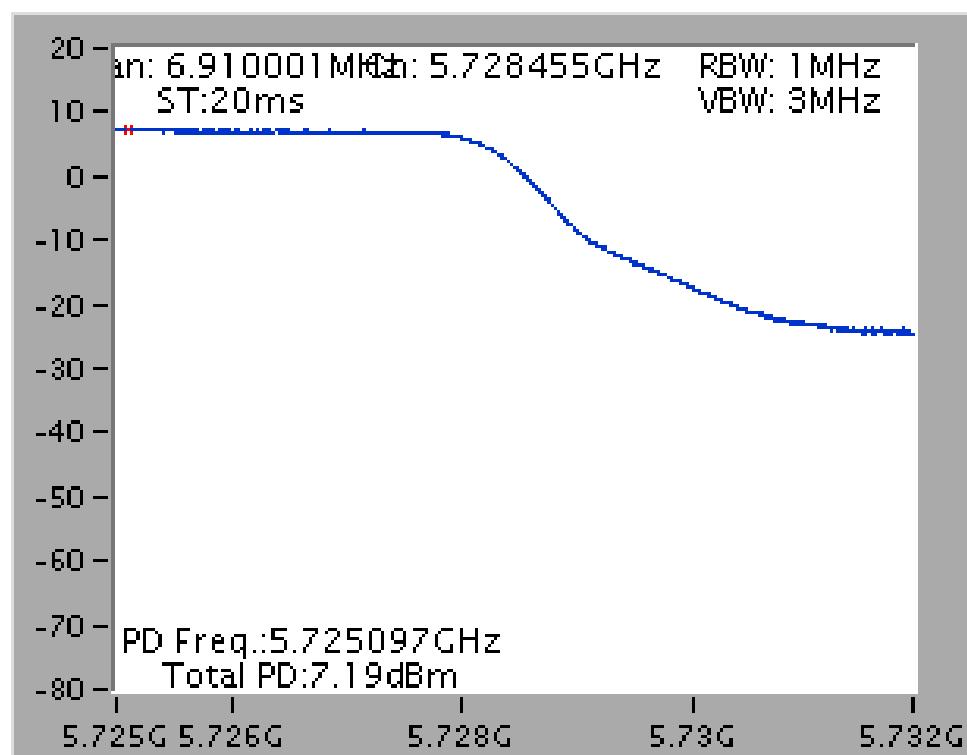
Note: $\text{Directional Gain} = 10 \log \left[\frac{\sum_{j=1}^{N_{\text{SS}}} \left(\sum_{K=1}^{N_{\text{ANT}}} g_{j,k} \right)^2}{N_{\text{ANT}}} \right] = 6.31 \text{ dBi} < 6 \text{ dBi}$, so limit = $30 - (6.31 - 6) = 29.69 \text{ dBm/500kHz}$

Straddle Channel

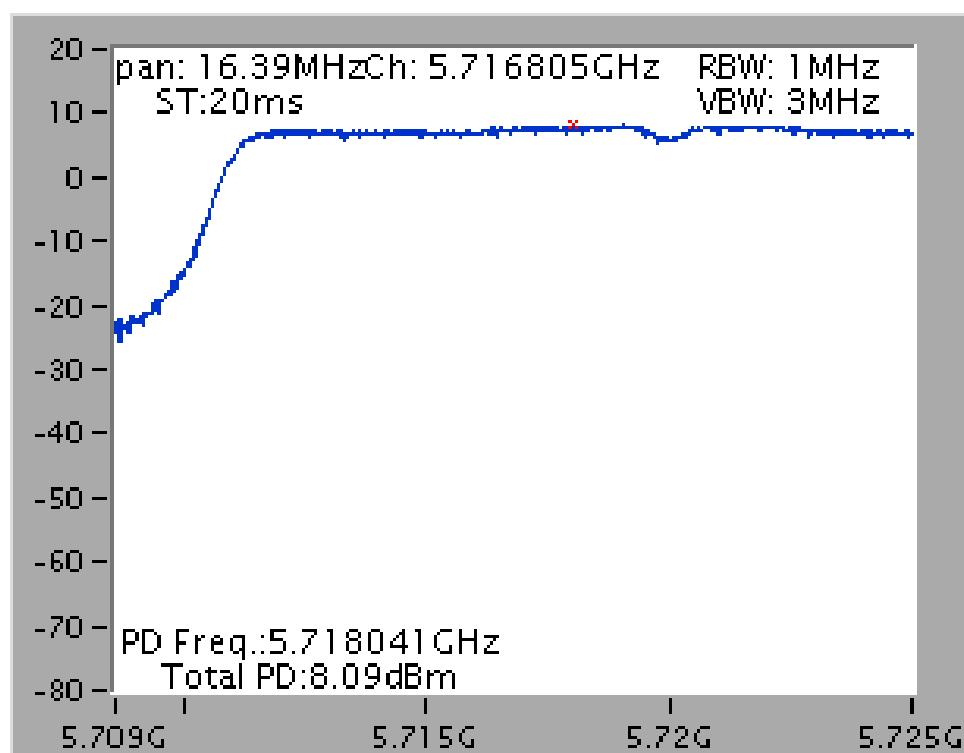
Power Density Plot on Configuration IEEE 802.11a / Chain 1+Chain 2 / 5720 MHz (UNII 2C)



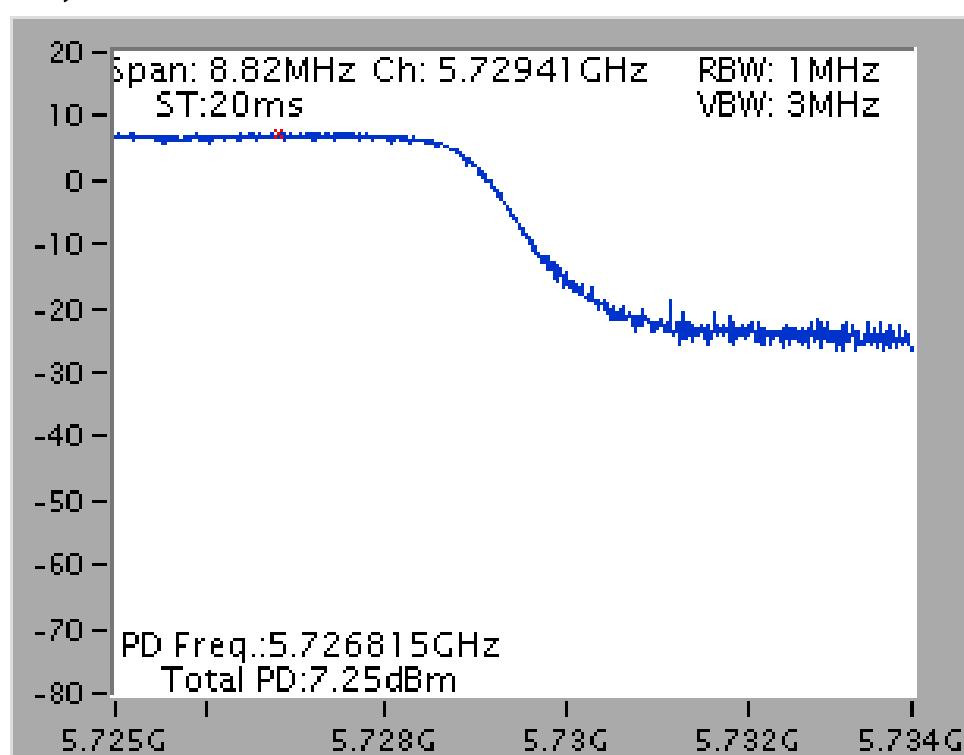
Power Density Plot on Configuration IEEE 802.11a / Chain 1+Chain 2 / 5720 MHz (UNII 3)



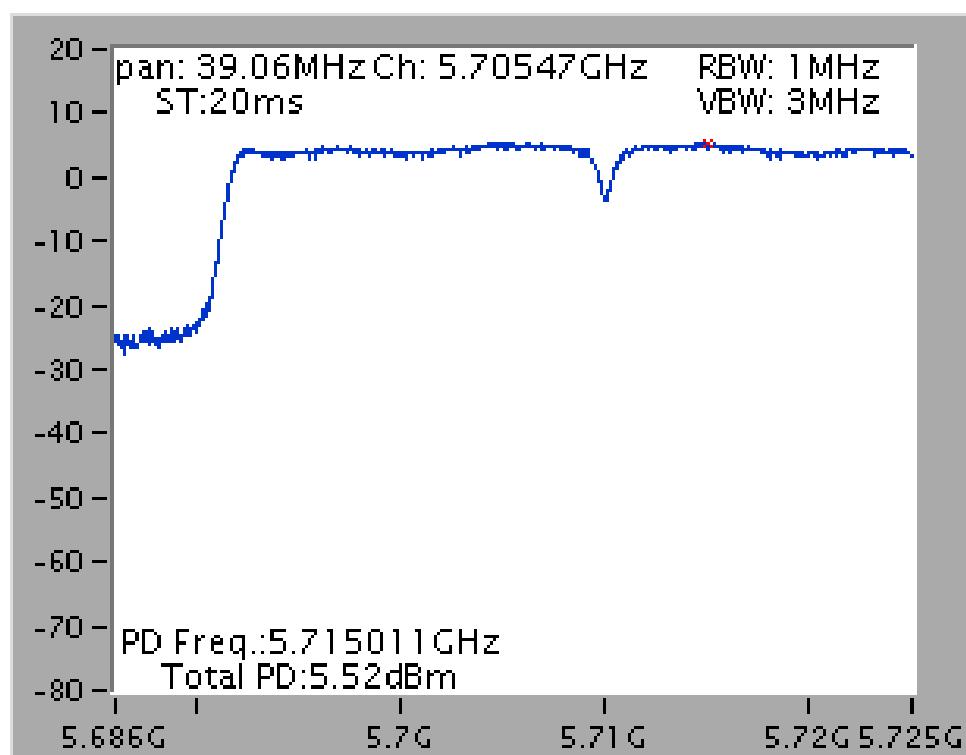
**Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 /
5720 MHz (UNII 2C)**



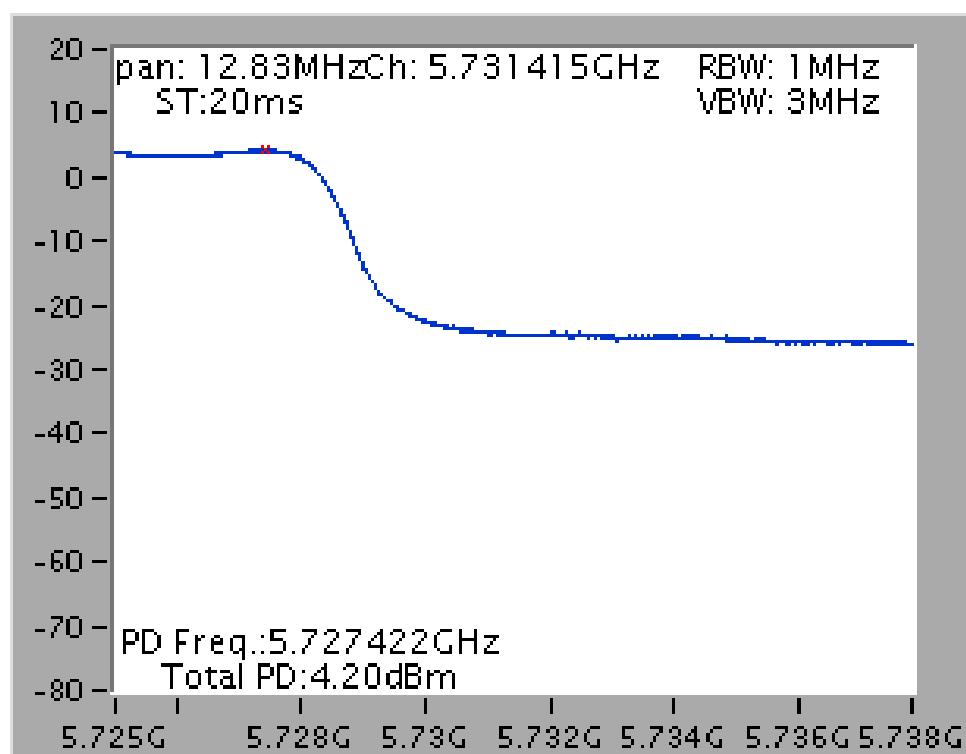
**Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 /
5720 MHz (UNII 3)**



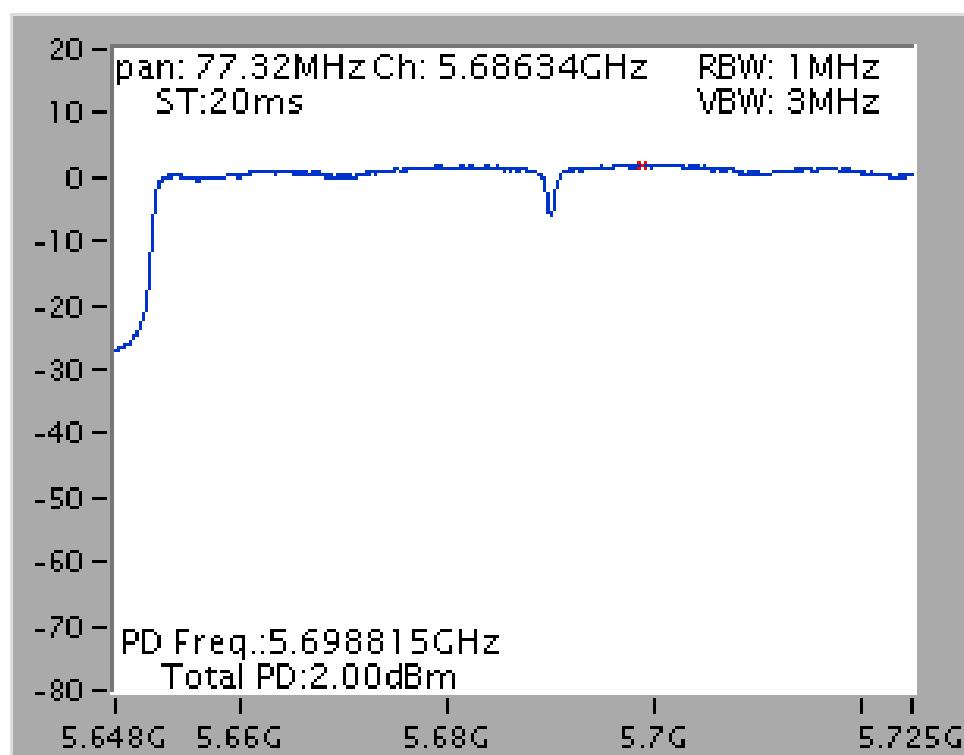
**Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 /
5710 MHz (UNII 2C)**



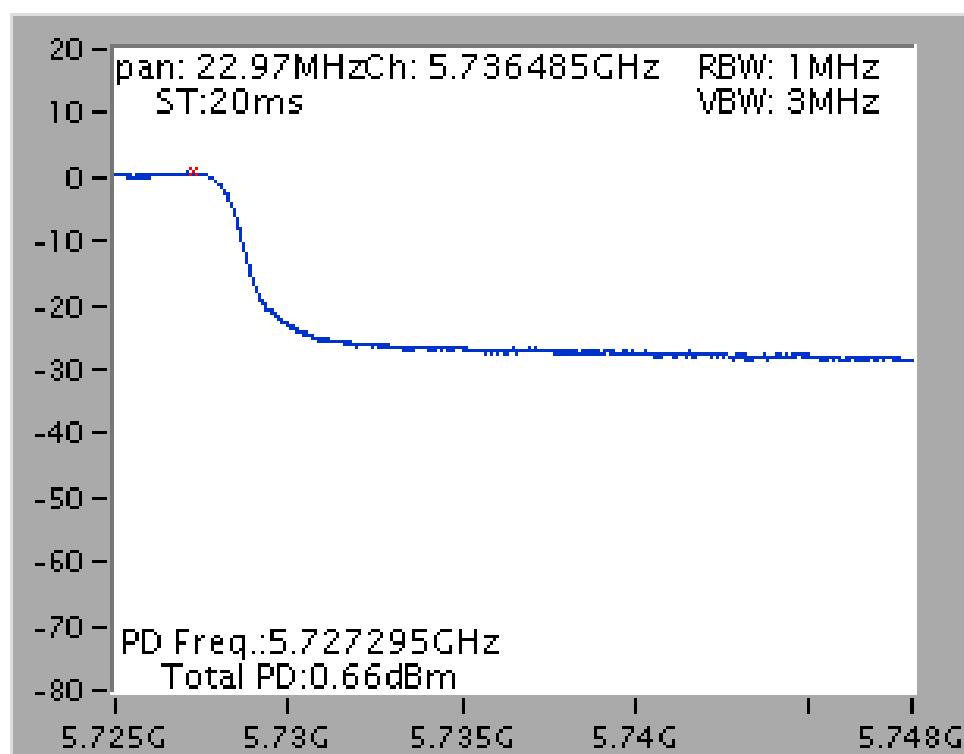
**Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2/
5710 MHz (UNII 3)**



**Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 /
5690 MHz (UNII 2C)**



**Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 /
5690 MHz (UNII 3)**



4.6. Radiated Emissions Measurement

4.6.1. Limit

For transmitters operating in the 5.25-5.35 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

For transmitters operating in the 5.470-5.725 GHz band: all emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

In addition, In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

| Frequencies (MHz) | Field Strength (micorvolts/meter) | Measurement Distance (meters) |
|----------------------|--------------------------------------|----------------------------------|
| 0.009~0.490 | 2400/F(kHz) | 300 |
| 0.490~1.705 | 24000/F(kHz) | 30 |
| 1.705~30.0 | 30 | 30 |
| 30~88 | 100 | 3 |
| 88~216 | 150 | 3 |
| 216~960 | 200 | 3 |
| Above 960 | 500 | 3 |

4.6.2. Measuring Instruments and Setting

Please refer to section 5 of equipments list in this report. The following table is the setting of spectrum analyzer and receiver.

| Spectrum Parameter | Setting |
|---|---|
| Attenuation | Auto |
| Start Frequency | 1000 MHz |
| Stop Frequency | 40 GHz |
| RBW / VBW (Emission in restricted band) | 1MHz / 3MHz for Peak, 1MHz / 1/T for Average |
| RBW / VBW (Emission in non-restricted band) | 1MHz / 3MHz for peak |

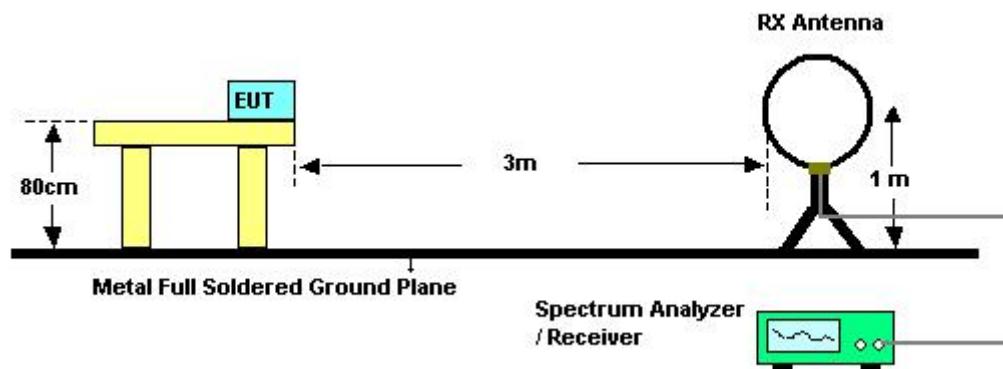
| Receiver Parameter | Setting |
|------------------------|-----------------------------------|
| Attenuation | Auto |
| Start ~ Stop Frequency | 9kHz~150kHz / RBW 200Hz for QP |
| Start ~ Stop Frequency | 150kHz~30MHz / RBW 9kHz for QP |
| Start ~ Stop Frequency | 30MHz~1000MHz / RBW 120kHz for QP |

4.6.3. Test Procedures

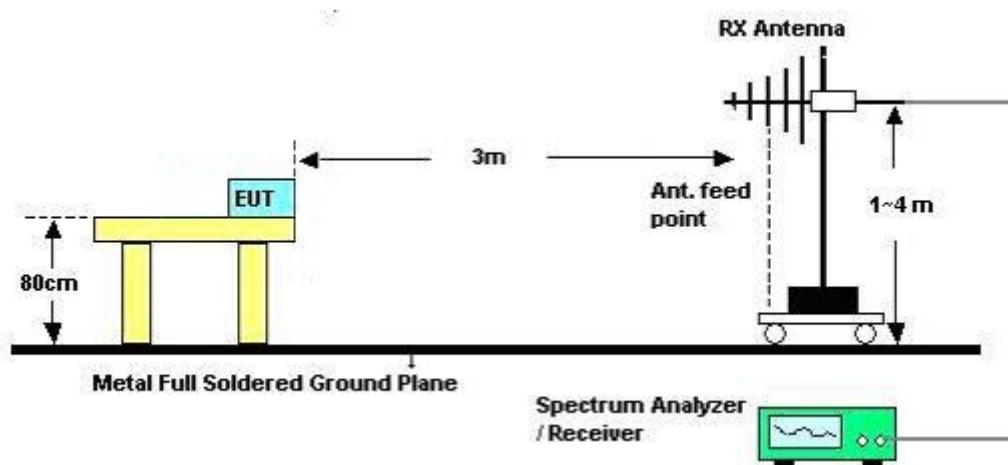
1. Configure the EUT according to ANSI C63.10. The EUT was placed on the top of the turntable 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 1m & 3m far away from the turntable.
2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
4. For each suspected emissions, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
6. For emissions above 1GHz, use 1MHz VBW and 3MHz RBW for peak reading. Then 1MHz RBW and 1/T VBW for average reading in spectrum analyzer.
7. If the emissions level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz.
8. For testing above 1GHz, the emissions level of the EUT in peak mode was lower than average limit (that means the emissions level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
9. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High – Low scan is not required in this case.

4.6.4. Test Setup Layout

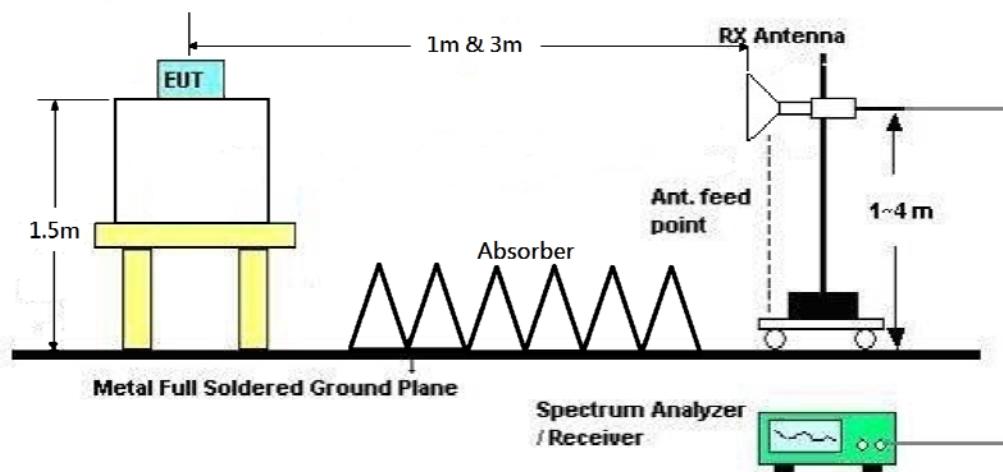
For Radiated Emissions: 9kHz ~30MHz



For Radiated Emissions: 30MHz~1GHz



For Radiated Emissions: Above 1GHz





4.6.5. Test Deviation

There is no deviation with the original standard.

4.6.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.6.7. Results of Radiated Emissions (9kHz~30MHz)

| | | | |
|---------------|---------------|----------------|-------------|
| Temperature | 25°C | Humidity | 59% |
| Test Engineer | Peter Wu | Configurations | Normal Link |
| Test Date | Dec. 07, 2015 | Test Mode | Mode 2 |

| Freq. (MHz) | Level (dBuV) | Over Limit (dB) | Limit Line (dBuV) | Remark |
|----------------|-----------------|--------------------|----------------------|----------|
| - | - | - | - | See Note |

Note:

The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.

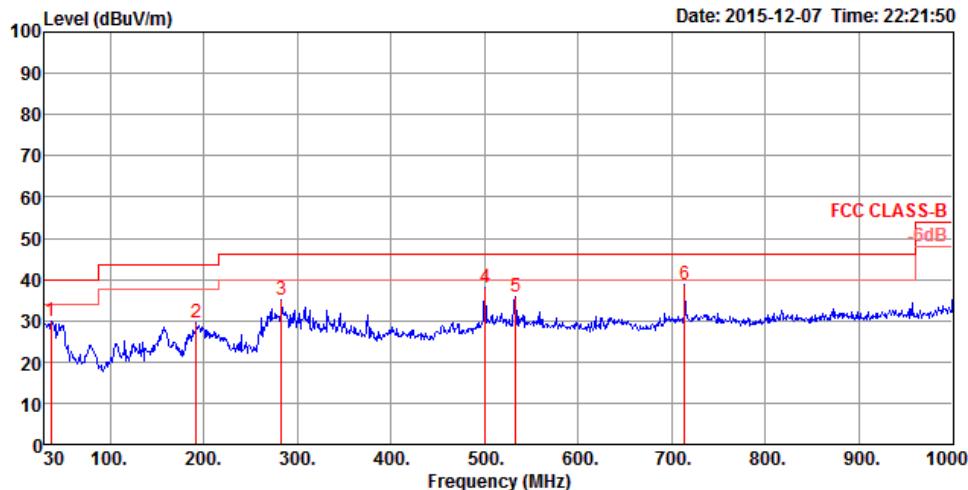
Distance extrapolation factor = $40 \log (\text{specific distance} / \text{test distance})$ (dB);

Limit line = specific limits (dBuV) + distance extrapolation factor.

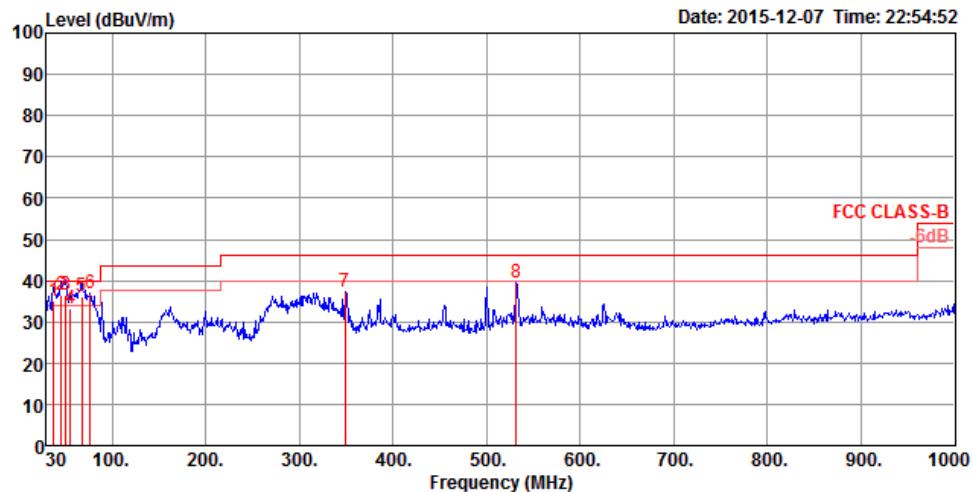
4.6.8. Results of Radiated Emissions (30MHz~1GHz)

| | | | |
|----------------------|----------|-----------------------|-------------|
| Temperature | 25°C | Humidity | 59% |
| Test Engineer | Peter Wu | Configurations | Normal Link |
| Test Mode | Mode 2 | | |

Horizontal



| Freq | Level | Limit | | Over Limit | Read Level | Cable Loss | Antenna Factor | Preamp Factor | A/Pos | T/Pos | Remark | Pol/Phase |
|------|--------|--------|-------|------------|------------|------------|----------------|---------------|-------|-------|--------|------------|
| | | Line | dB | | | | | | | | | |
| MHz | dBuV/m | dBuV/m | dB | dB | dBuV | dB | dB/m | dB | cm | deg | | |
| 1 | 36.79 | 29.81 | 40.00 | -10.19 | 45.69 | 0.53 | 15.99 | 32.40 | 200 | 360 | Peak | HORIZONTAL |
| 2 | 191.99 | 29.49 | 43.50 | -14.01 | 50.66 | 1.20 | 9.96 | 32.33 | 200 | 360 | Peak | HORIZONTAL |
| 3 | 283.17 | 35.03 | 46.00 | -10.97 | 52.26 | 1.43 | 13.63 | 32.29 | 200 | 360 | Peak | HORIZONTAL |
| 4 | 500.45 | 38.01 | 46.00 | -7.99 | 50.30 | 1.94 | 18.12 | 32.35 | 200 | 360 | Peak | HORIZONTAL |
| 5 | 533.43 | 35.87 | 46.00 | -10.13 | 47.67 | 2.00 | 18.57 | 32.37 | 200 | 360 | Peak | HORIZONTAL |
| 6 | 713.85 | 38.84 | 46.00 | -7.16 | 48.90 | 2.30 | 19.98 | 32.34 | 200 | 360 | Peak | HORIZONTAL |

Vertical


| Freq | Level | Limit | | Over Limit | Read Level | Cable Loss | Antenna Factor | Preamplifier Factor | A/Pos | T/Pos | Remark | Pol/Phase |
|------|--------|--------|-------|------------|------------|------------|----------------|---------------------|-------|-------|--------|-----------|
| | | Line | dB | | | | | | | | | |
| MHz | dBuV/m | dBuV/m | | | | | | | | | | |
| 1 | 37.76 | 34.99 | 40.00 | -5.01 | 51.50 | 0.53 | 15.36 | 32.40 | 200 | 0 | QP | VERTICAL |
| 2 | 45.52 | 36.37 | 40.00 | -3.63 | 57.10 | 0.60 | 11.08 | 32.41 | 200 | 0 | QP | VERTICAL |
| 3 | 50.37 | 36.71 | 40.00 | -3.29 | 59.50 | 0.61 | 9.01 | 32.41 | 200 | 0 | QP | VERTICAL |
| 4 | 55.22 | 33.21 | 40.00 | -6.79 | 57.11 | 0.65 | 7.86 | 32.41 | 200 | 0 | QP | VERTICAL |
| 5 | 67.83 | 36.13 | 40.00 | -3.87 | 61.10 | 0.71 | 6.72 | 32.40 | 200 | 0 | QP | VERTICAL |
| 6 | 76.56 | 36.77 | 40.00 | -3.23 | 61.12 | 0.76 | 7.29 | 32.40 | 200 | 0 | Peak | VERTICAL |
| 7 | 349.13 | 37.34 | 46.00 | -8.66 | 52.77 | 1.61 | 15.27 | 32.31 | 200 | 0 | Peak | VERTICAL |
| 8 | 531.49 | 39.42 | 46.00 | -6.58 | 51.24 | 2.00 | 18.55 | 32.37 | 200 | 0 | Peak | VERTICAL |

Note:

The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamplifier Factor = Level.

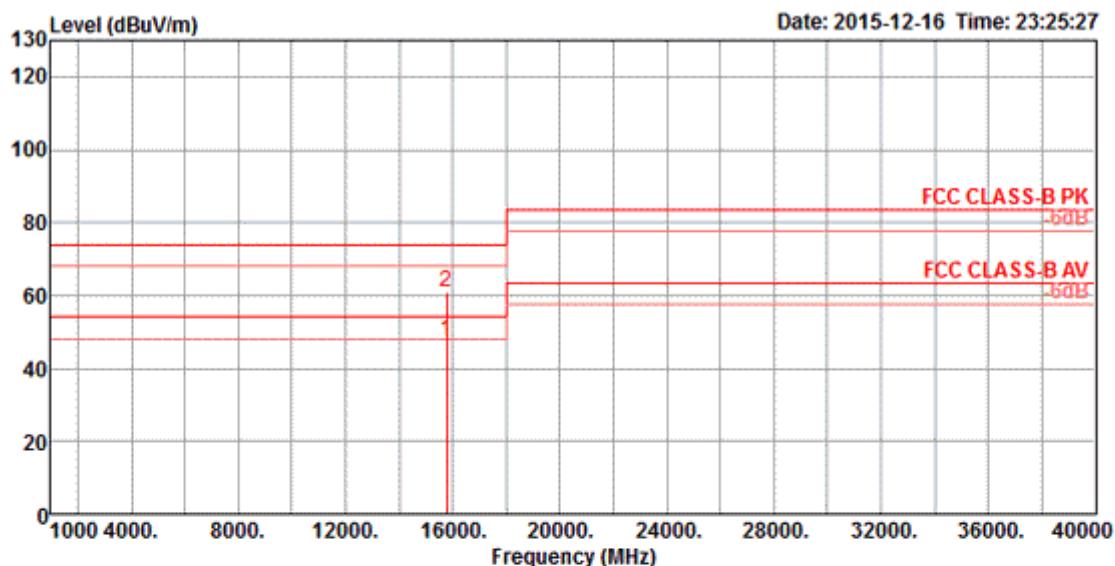


4.6.9. Results for Radiated Emissions (1GHz~40GHz)

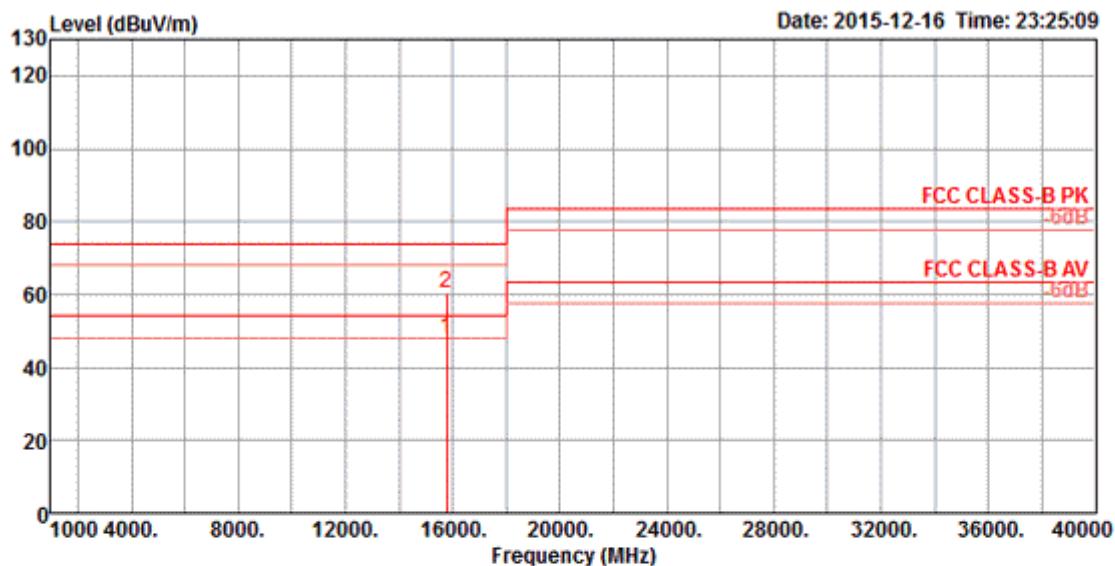
<For 1TX>

| | | | |
|---------------|----------|----------------|---------------------------------|
| Temperature | 25°C | Humidity | 59% |
| Test Engineer | Peter Wu | Configurations | IEEE 802.11a CH 52 / Chain 1 |

Horizontal

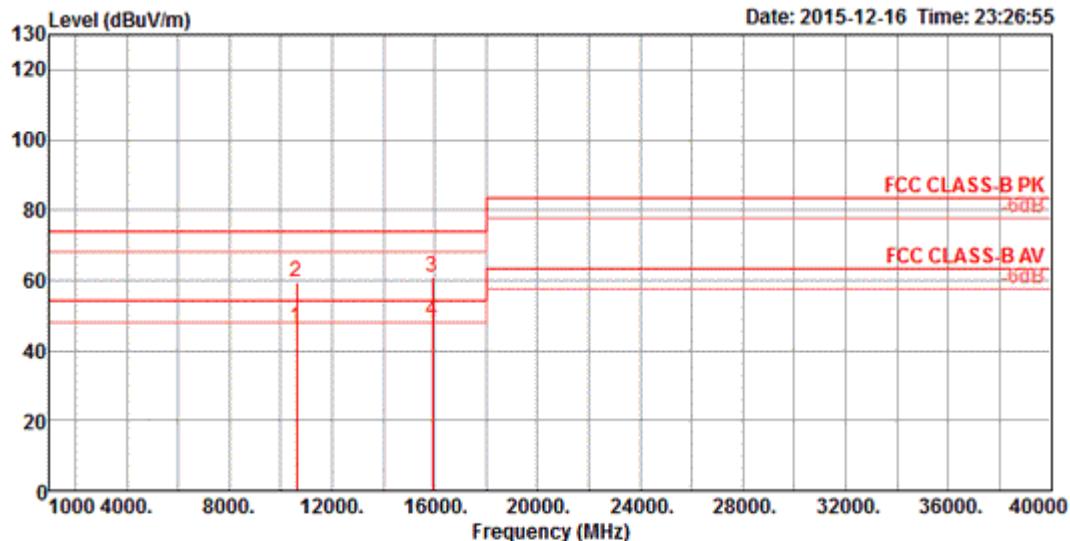


| Freq | Level | Limit | Over | Read | Cable | Preamp | Antenna | T/Pos | A/Pos | | | |
|------|----------|--------|-------|--------|-------|--------|---------|-----------|------------|-----|-----|---------|
| | | Line | Limit | Level | Loss | Factor | Factor | Pol/Phase | | | | |
| MHz | dBuV/m | dBuV/m | | dB | dBuV | | dB | dB/m | | deg | cm | |
| 1 | 15780.03 | 47.62 | 54.00 | -6.38 | 31.76 | 13.28 | 35.39 | 37.97 | HORIZONTAL | 336 | 104 | Average |
| 2 | 15780.54 | 60.69 | 74.00 | -13.31 | 44.83 | 13.28 | 35.39 | 37.97 | HORIZONTAL | 336 | 104 | Peak |

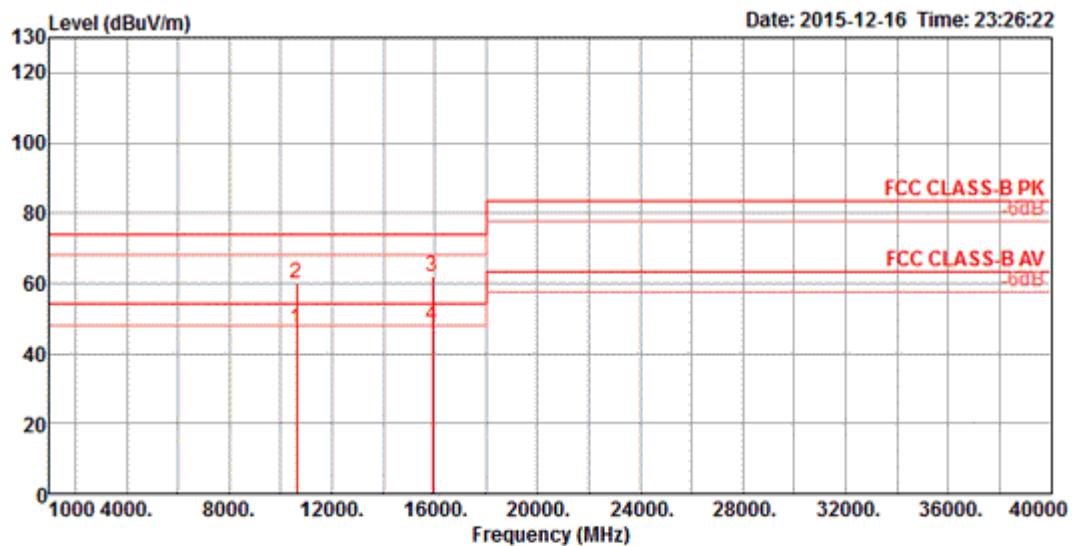
Vertical


| | Freq | Level | Limit | Over | Read | Cable | Preamp | Antenna | T/Pos | A/Pos | Remark |
|---|----------|--------|--------|--------|-------|-------|--------|---------|----------|-------|-------------|
| | MHz | dBuV/m | dBuV/m | dB | dBuV | dB | dB | dB/m | deg | cm | |
| 1 | 15779.77 | 47.83 | 54.00 | -6.17 | 31.97 | 13.28 | 35.39 | 37.97 | VERTICAL | 342 | 106 Average |
| 2 | 15780.38 | 60.39 | 74.00 | -13.61 | 44.53 | 13.28 | 35.39 | 37.97 | VERTICAL | 342 | 106 Peak |

| | | | |
|----------------------|----------|-----------------------|---------------------------------|
| Temperature | 25°C | Humidity | 58% |
| Test Engineer | Peter Wu | Configurations | IEEE 802.11a CH 60 / Chain 1 |

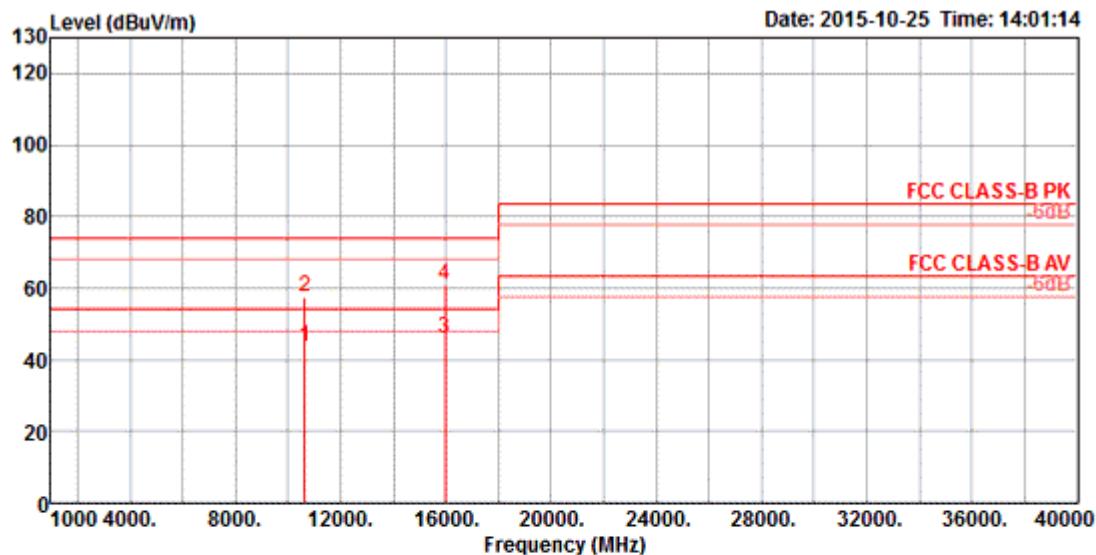
Horizontal


| Freq | Level | Limit | | Over Limit | Read Level | Cable PreampAntenna | | | T/Pos | A/Pos | Remark |
|------|----------|--------|-------|------------|------------|---------------------|---------------|----------------|------------|-------|-------------|
| | | Line | Cable | | | Loss | Preamp Factor | Antenna Factor | | | |
| MHz | dBuV/m | dBuV/m | dB | dBuV | dB | dB | dB/m | deg | cm | | |
| 1 | 10600.70 | 46.65 | 54.00 | -7.35 | 30.43 | 11.30 | 34.96 | 39.88 | HORIZONTAL | 316 | 102 Average |
| 2 | 10600.76 | 59.60 | 74.00 | -14.40 | 43.38 | 11.30 | 34.96 | 39.88 | HORIZONTAL | 316 | 102 Peak |
| 3 | 15899.73 | 60.76 | 74.00 | -13.24 | 45.02 | 13.33 | 35.40 | 37.81 | HORIZONTAL | 326 | 104 Peak |
| 4 | 15899.91 | 48.22 | 54.00 | -5.78 | 32.48 | 13.33 | 35.40 | 37.81 | HORIZONTAL | 326 | 104 Average |

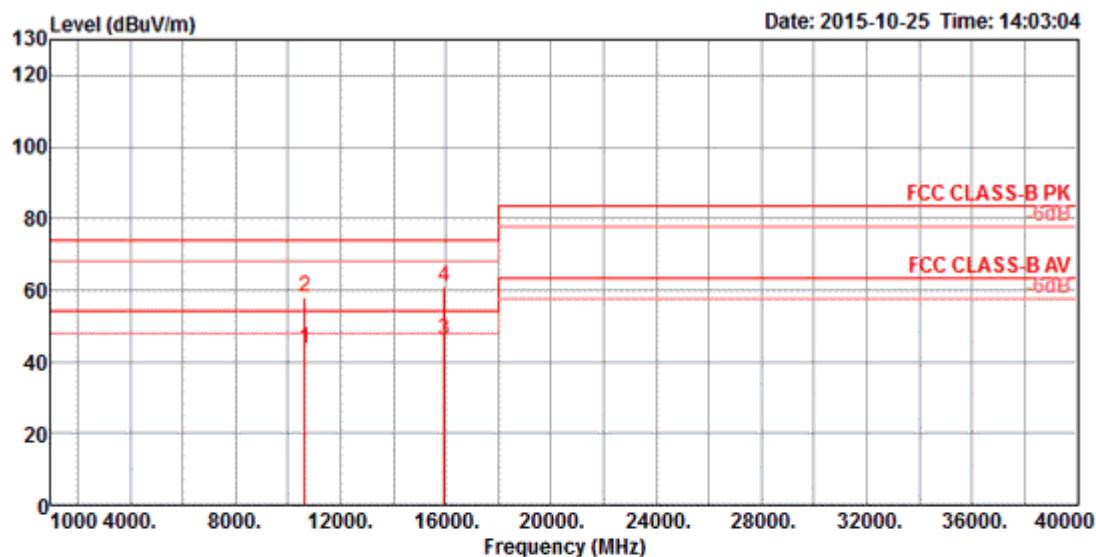
Vertical


| Freq | Level | Limit Line | Over Limit | Read Level | Cable PreampAntenna | | | T/Pos | A/Pos | Remark |
|------|----------|------------|------------|------------|---------------------|--------|------------------|-------|----------|--------------------|
| | | | | | Loss | Factor | Factor Pol/Phase | | | |
| MHz | dBuV/m | dBuV/m | dB | dBuV | dB | dB | dB/m | deg | cm | |
| 1 | 10599.92 | 47.00 | 54.00 | -7.00 | 30.78 | 11.30 | 34.96 | 39.88 | VERTICAL | 331 103 Average |
| 2 | 10600.55 | 60.14 | 74.00 | -13.86 | 43.92 | 11.30 | 34.96 | 39.88 | VERTICAL | 331 103 Peak |
| 3 | 15899.14 | 61.92 | 74.00 | -12.08 | 46.18 | 13.33 | 35.40 | 37.81 | VERTICAL | 329 101 Peak |
| 4 | 15900.72 | 47.86 | 54.00 | -6.14 | 32.12 | 13.33 | 35.40 | 37.81 | VERTICAL | 329 101 Average |

| | | | |
|----------------------|----------|-----------------------|---------------------------------|
| Temperature | 25°C | Humidity | 59% |
| Test Engineer | Peter Wu | Configurations | IEEE 802.11a CH 64 / Chain 1 |

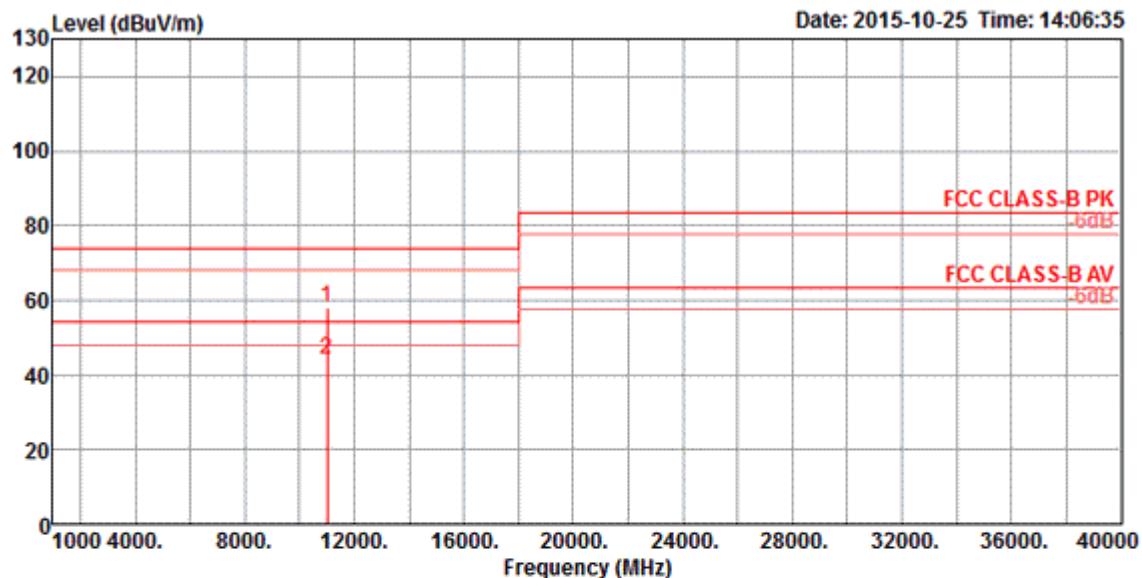
Horizontal


| Freq | Level | Limit | | Over Limit | Read Level | Cable PreampAntenna | | | A/Pos | T/Pos | Remark |
|------|----------|--------|-------|------------|------------|---------------------|----------------|----------------|-------|-------|---------|
| | | Line | Cable | | | Preamp Factor | Antenna Factor | Pol/Phase | | | |
| MHz | dBuV/m | dBuV/m | dB | dBuV | dB | dB | dB/m | | cm | deg | |
| 1 | 10639.88 | 43.48 | 54.00 | -10.52 | 27.18 | 11.31 | 34.99 | 39.98 VERTICAL | 171 | 158 | Average |
| 2 | 10643.94 | 57.66 | 74.00 | -16.34 | 41.36 | 11.31 | 34.99 | 39.98 VERTICAL | 171 | 158 | Peak |
| 3 | 15958.38 | 46.26 | 54.00 | -7.74 | 30.56 | 13.35 | 35.41 | 37.76 VERTICAL | 153 | 141 | Average |
| 4 | 15959.06 | 60.68 | 74.00 | -13.32 | 44.98 | 13.35 | 35.41 | 37.76 VERTICAL | 153 | 141 | Peak |

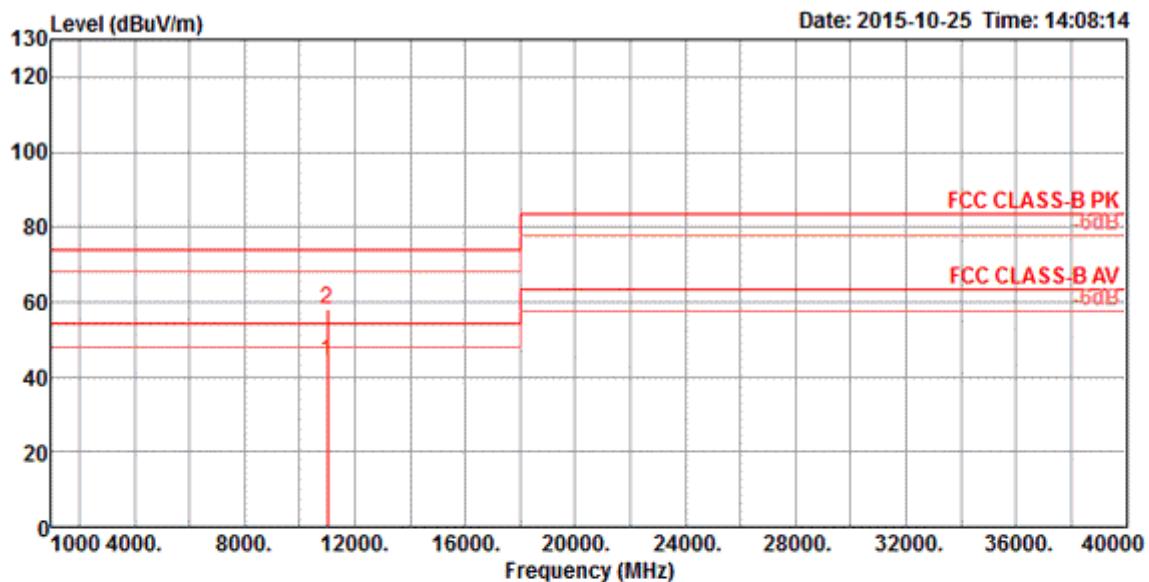
Vertical


| Freq | Level | Limit | | Over Limit | Read Level | Cable PreampAntenna | | | A/Pos | T/Pos | Remark |
|------|----------|--------|-------|------------|------------|---------------------|-------|-------|------------|-------|-------------|
| | | Line | dB | | | dBuV | dB | dB/m | | | |
| MHz | dBuV/m | dBuV/m | dB | dBuV | dB | dB | dB/m | cm | deg | | |
| 1 | 10639.72 | 43.51 | 54.00 | -10.49 | 27.21 | 11.31 | 34.99 | 39.98 | HORIZONTAL | 135 | 97 Average |
| 2 | 10643.68 | 58.12 | 74.00 | -15.88 | 41.82 | 11.31 | 34.99 | 39.98 | HORIZONTAL | 135 | 97 Peak |
| 3 | 15955.28 | 46.23 | 54.00 | -7.77 | 30.53 | 13.35 | 35.41 | 37.76 | HORIZONTAL | 145 | 117 Average |
| 4 | 15955.30 | 60.85 | 74.00 | -13.15 | 45.15 | 13.35 | 35.41 | 37.76 | HORIZONTAL | 145 | 117 Peak |

| | | | |
|----------------------|----------|-----------------------|----------------------------------|
| Temperature | 25°C | Humidity | 59% |
| Test Engineer | Peter Wu | Configurations | IEEE 802.11a CH 100 / Chain 1 |

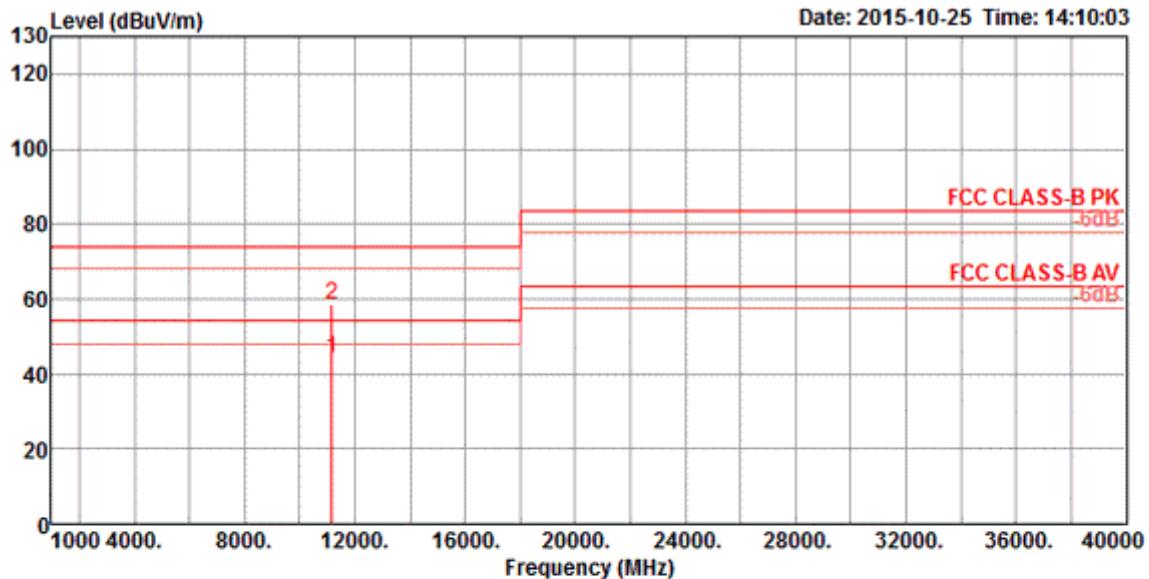
Horizontal


| Freq | Level | Limit | | Over Line Limit | Read Level | Cable Loss | Preamp Factor | Antenna Pol/Phase | A/Pos | T/Pos | Remark | |
|------|----------|-------|--------|-----------------|------------|------------|---------------|-------------------|------------|-------|--------|---------|
| | | MHz | dBuV/m | dBuV/m | dB | dBuV | dB | dB | dB/m | cm | deg | |
| 1 | 11000.12 | 57.87 | 74.00 | -16.13 | 41.60 | 11.24 | 35.17 | 40.20 | HORIZONTAL | 152 | 33 | Peak |
| 2 | 11000.44 | 44.32 | 54.00 | -9.68 | 28.05 | 11.24 | 35.17 | 40.20 | HORIZONTAL | 152 | 33 | Average |

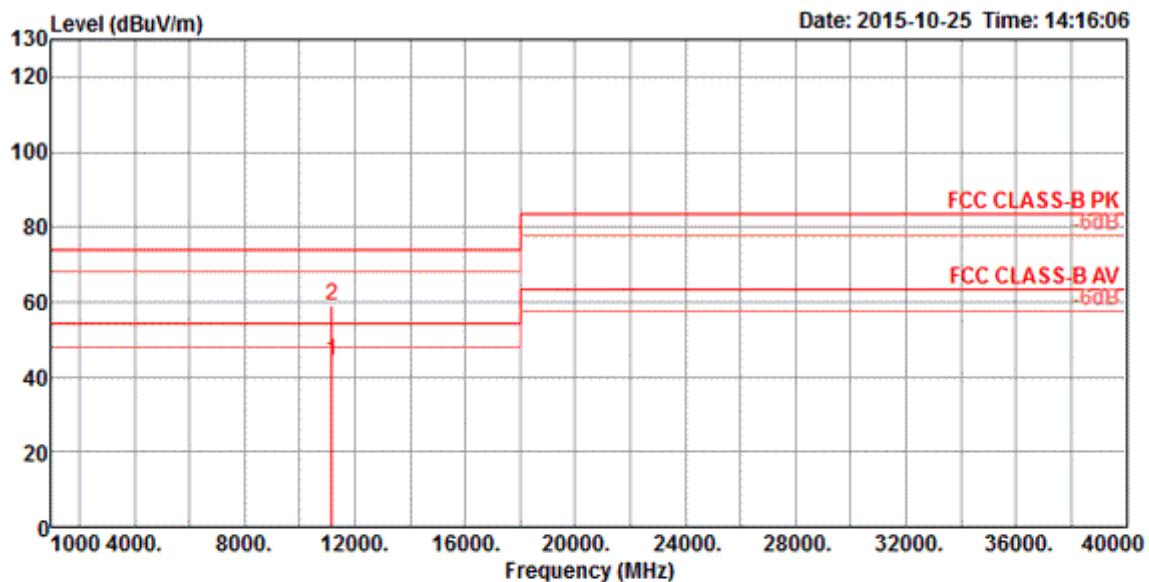
Vertical


| Freq | Level | Limit | | Over Limit | Read Level | Cable PreampAntenna | | | A/Pos | T/Pos | Remark |
|------|----------|--------|-------|------------|------------|---------------------|-------|-------|----------|-------|-------------|
| | | Line | dB | | | dBuV | dB | dB/m | | | |
| MHz | dBuV/m | dBuV/m | dB | | | | | | cm | deg | |
| 1 | 11003.38 | 44.35 | 54.00 | -9.65 | 28.07 | 11.25 | 35.17 | 40.20 | VERTICAL | 165 | 126 Average |
| 2 | 11003.74 | 58.05 | 74.00 | -15.95 | 41.77 | 11.25 | 35.17 | 40.20 | VERTICAL | 165 | 126 Peak |

| | | | |
|----------------------|----------|-----------------------|----------------------------------|
| Temperature | 25°C | Humidity | 59% |
| Test Engineer | Peter Wu | Configurations | IEEE 802.11a CH 116 / Chain 1 |

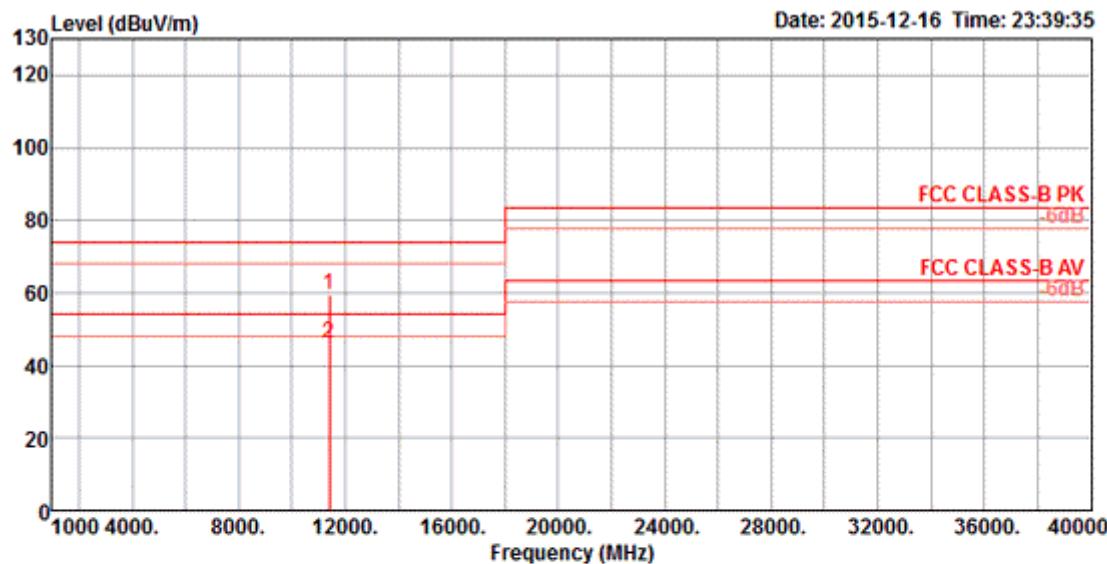
Horizontal


| Freq | Level | Limit | Over | Read | Cable | Preamp | Antenna | A/Pos | T/Pos | Remark |
|------|----------|--------|-------|--------|-------|--------|-----------|-------|----------|----------------------|
| | | Line | Limit | Level | Loss | Factor | Pol/Phase | | | |
| MHz | dBuV/m | dBuV/m | dB | dBuV | dB | dB | dB/m | cm | deg | |
| 1 | 11155.96 | 44.27 | 54.00 | -9.73 | 28.03 | 11.31 | 35.19 | 40.12 | VERTICAL | 174 153 Average |
| 2 | 11162.48 | 58.29 | 74.00 | -15.71 | 42.06 | 11.32 | 35.19 | 40.10 | VERTICAL | 174 153 Peak |

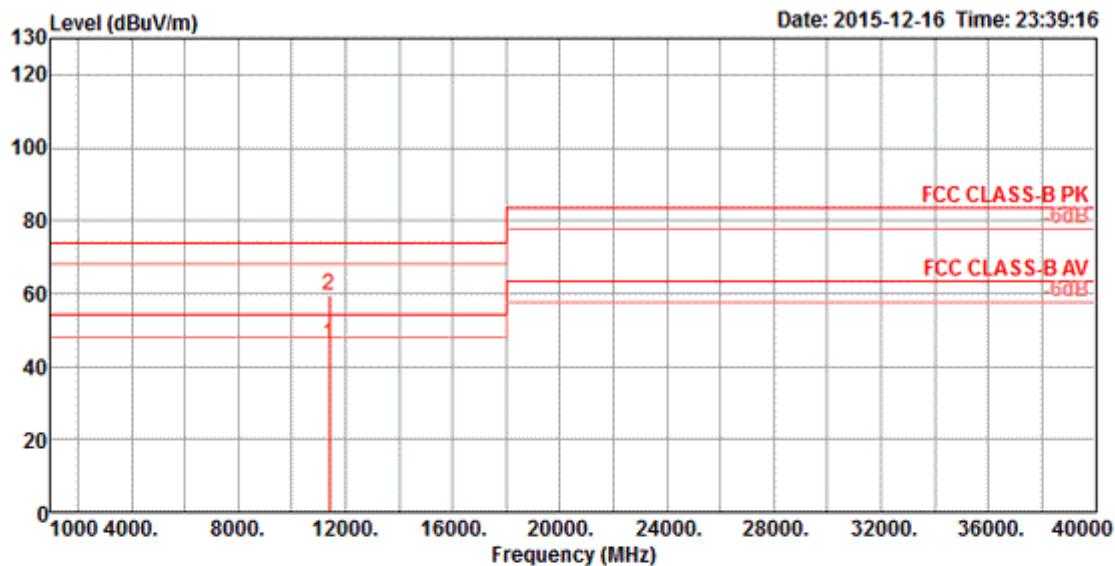
Vertical


| Freq | Level | Limit | | Over Limit | Read Level | Cable Loss | Preamp Factor | Antenna Factor | Pol/Phase | A/Pos | T/Pos | Remark |
|------|----------|--------|-------|------------|------------|------------|---------------|----------------|------------|-------|-------|---------|
| | | Line | dB | | | | | | | | | |
| MHz | dBuV/m | dBuV/m | dB | | dBuV | dB | | dB/m | | cm | deg | |
| 1 | 11156.38 | 44.26 | 54.00 | -9.74 | 28.02 | 11.31 | 35.19 | 40.12 | HORIZONTAL | 188 | 187 | Average |
| 2 | 11163.34 | 59.13 | 74.00 | -14.87 | 42.90 | 11.32 | 35.19 | 40.10 | HORIZONTAL | 188 | 187 | Peak |

| | | | |
|----------------------|----------|-----------------------|----------------------------------|
| Temperature | 25°C | Humidity | 59% |
| Test Engineer | Peter Wu | Configurations | IEEE 802.11a CH 140 / Chain 1 |

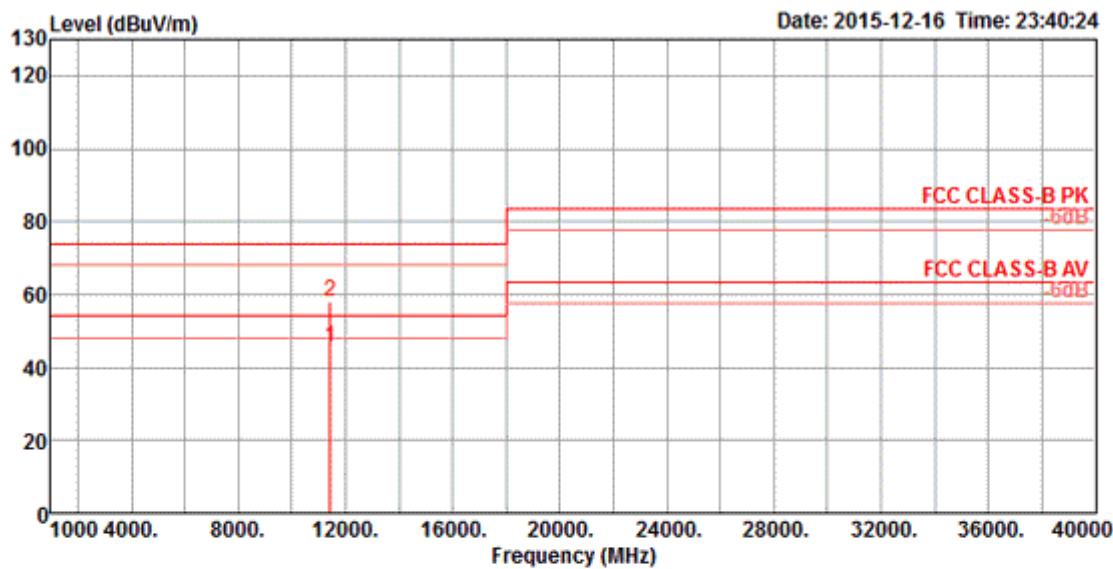
Horizontal


| Freq | Level | Limit | | | Over Limit | Read Level | Cable Loss | | | Preamp Factor | Antenna Pol/Phase | T/Pos | A/Pos | Remark |
|------|----------|--------|-----------|------------|------------|------------|------------|-------|------------|---------------|-------------------|---------|-------|--------|
| | | Line | Over Line | Read Level | | | dB | dBuV | dB | | | | | |
| MHz | dBuV/m | dBuV/m | dB | dBuV | dB | dB | dB | dB/m | deg | cm | | | | |
| 1 | 11399.92 | 59.55 | 74.00 | -14.45 | 43.05 | 11.68 | 35.22 | 40.04 | HORIZONTAL | 292 | 104 | Peak | | |
| 2 | 11400.46 | 46.17 | 54.00 | -7.83 | 29.67 | 11.68 | 35.22 | 40.04 | HORIZONTAL | 292 | 104 | Average | | |

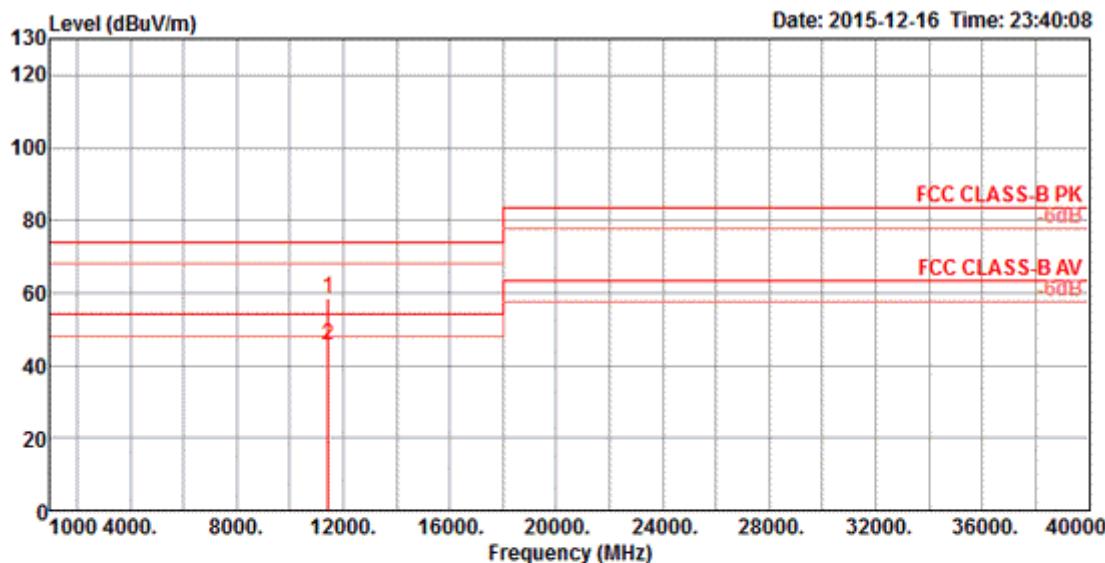
Vertical


| | Freq | Level | Limit | Over | Read | Cable | Preamp | Antenna | T/Pos | A/Pos | Remark |
|---|----------|--------|--------|--------|-------|-------|--------|---------|----------|-------|-------------|
| | MHz | dBuV/m | dBuV/m | dB | dBuV | dB | dB | dB/m | deg | cm | |
| 1 | 11400.55 | 46.27 | 54.00 | -7.73 | 29.77 | 11.68 | 35.22 | 40.04 | VERTICAL | 294 | 100 Average |
| 2 | 11400.88 | 59.50 | 74.00 | -14.50 | 43.00 | 11.68 | 35.22 | 40.04 | VERTICAL | 294 | 100 Peak |

| | | | |
|----------------------|----------|-----------------------|----------------------------------|
| Temperature | 25°C | Humidity | 59% |
| Test Engineer | Peter Wu | Configurations | IEEE 802.11a CH 144 / Chain 1 |

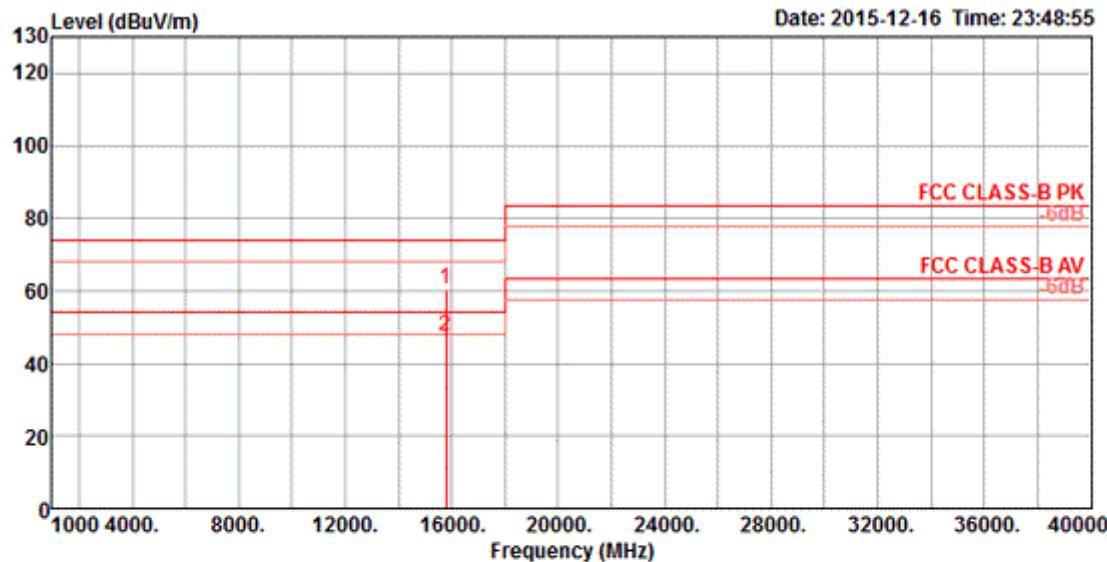
Horizontal


| Freq | Level | Limit | Over | Read | Cable | Preamp | Antenna | T/Pos | A/Pos | Remark |
|------------|--------|--------|--------|-------|-------|--------|-----------|------------|-------|-------------|
| | | Line | Limit | Level | Loss | Factor | Pol/Phase | deg | cm | |
| MHz | dBuV/m | dBuV/m | dB | dBuV | dB | dB | dB/m | | | |
| 1 11440.09 | 45.42 | 54.00 | -8.58 | 28.93 | 11.69 | 35.23 | 40.03 | HORIZONTAL | 298 | 102 Average |
| 2 11440.60 | 58.26 | 74.00 | -15.74 | 41.77 | 11.69 | 35.23 | 40.03 | HORIZONTAL | 298 | 102 Peak |

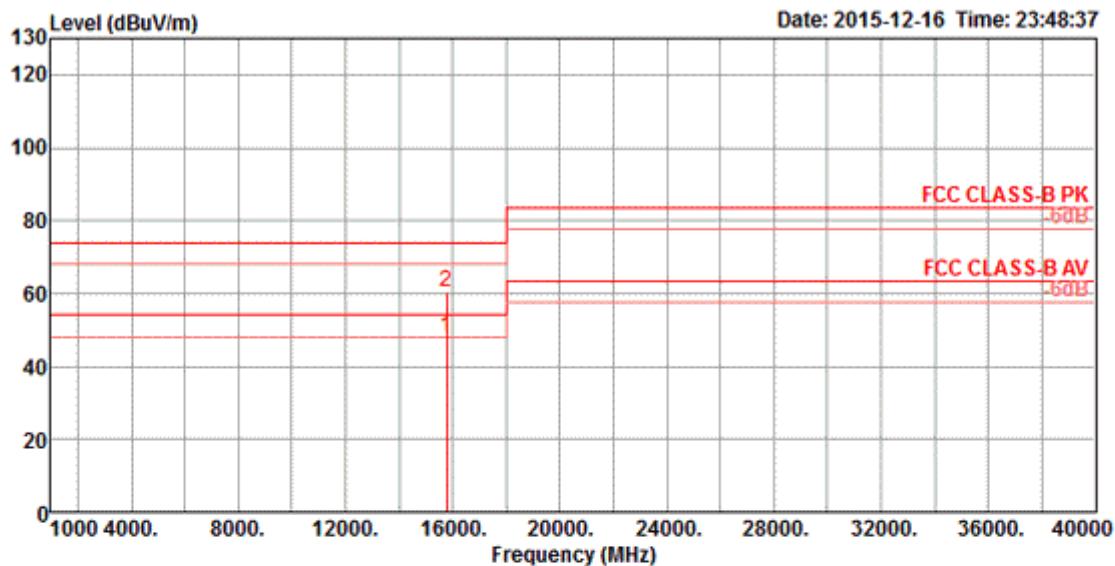
Vertical


| | Freq | Level | Limit Line | Over Limit | Read Level | Cable Loss | Preamp Factor | Antenna Factor | Pol/Phase | T/Pos | A/Pos | Remark |
|---|----------|--------|------------|------------|------------|------------|---------------|----------------|-----------|-------|-------|---------|
| | MHz | dBuV/m | dBuV/m | dB | dBuV | dB | dB | dB/m | | deg | cm | |
| 1 | 11440.10 | 58.31 | 74.00 | -15.69 | 41.82 | 11.69 | 35.23 | 40.03 | VERTICAL | 294 | 102 | Peak |
| 2 | 11440.54 | 45.73 | 54.00 | -8.27 | 29.24 | 11.69 | 35.23 | 40.03 | VERTICAL | 294 | 102 | Average |

| | | | |
|----------------------|----------|-----------------------|--|
| Temperature | 25°C | Humidity | 59% |
| Test Engineer | Peter Wu | Configurations | IEEE 802.11ac MCS0/Nss1 VHT20 CH 52 / Chain 1 |

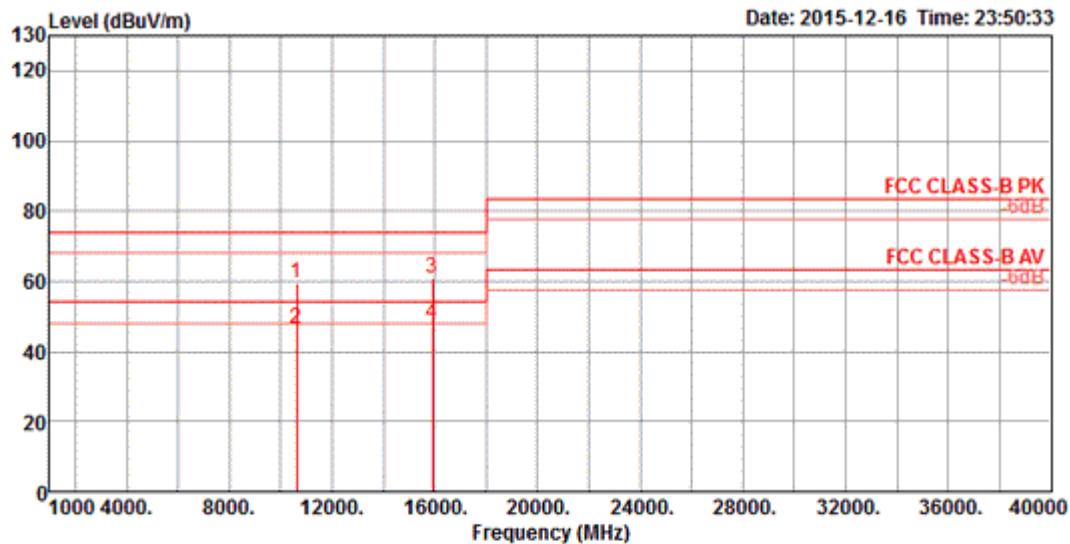
Horizontal


| Freq | Level | Limit | | Over Limit | Read Level | Cable PreampAntenna | | | T/Pos | A/Pos | Remark |
|------|----------|--------|-------|------------|------------|---------------------|-------|-------|------------|-------|-------------|
| | | Line | dB | | | dBuV | dB | dB/m | | | |
| MHz | dBuV/m | dBuV/m | dB | dBuV | dB | dB | dB/m | deg | cm | | |
| 1 | 15779.70 | 60.46 | 74.00 | -13.54 | 44.60 | 13.28 | 35.39 | 37.97 | HORIZONTAL | 282 | 107 Peak |
| 2 | 15780.21 | 47.58 | 54.00 | -6.42 | 31.72 | 13.28 | 35.39 | 37.97 | HORIZONTAL | 282 | 107 Average |

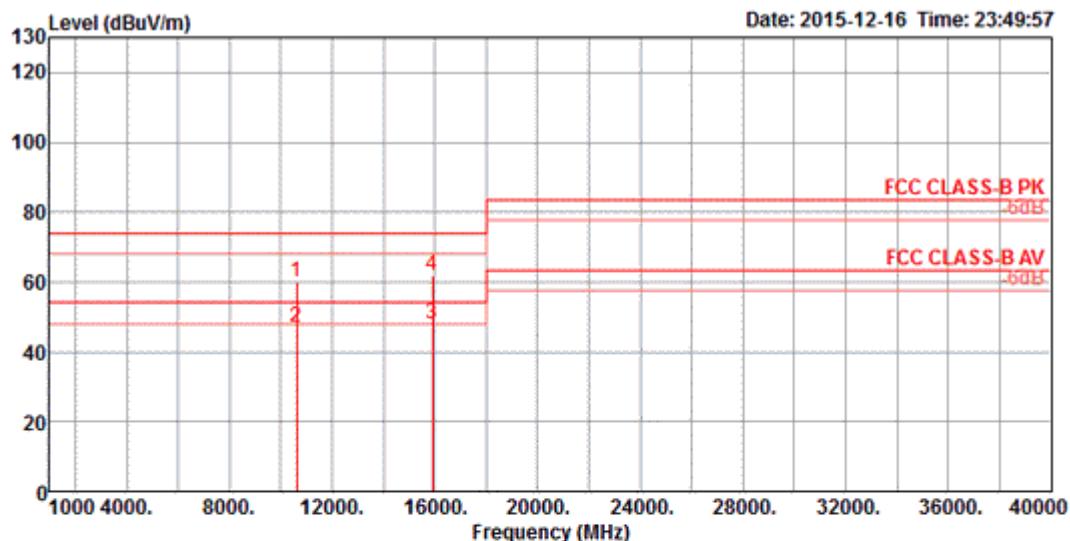
Vertical


| | Freq | Level | Limit | Over | Read | Cable | Preamp | Antenna | T/Pos | A/Pos | Remark |
|---|----------|--------|--------|--------|-------|-------|--------|---------|----------|-------|-------------|
| | MHz | dBuV/m | dBuV/m | dB | dBuV | dB | dB | dB/m | deg | cm | |
| 1 | 15780.56 | 47.74 | 54.00 | -6.26 | 31.88 | 13.28 | 35.39 | 37.97 | VERTICAL | 284 | 109 Average |
| 2 | 15780.60 | 60.67 | 74.00 | -13.33 | 44.81 | 13.28 | 35.39 | 37.97 | VERTICAL | 284 | 109 Peak |

| | | | |
|----------------------|----------|-----------------------|--|
| Temperature | 25°C | Humidity | 59% |
| Test Engineer | Peter Wu | Configurations | IEEE 802.11ac MCS0/Nss1 VHT20 CH 60 / Chain 1 |

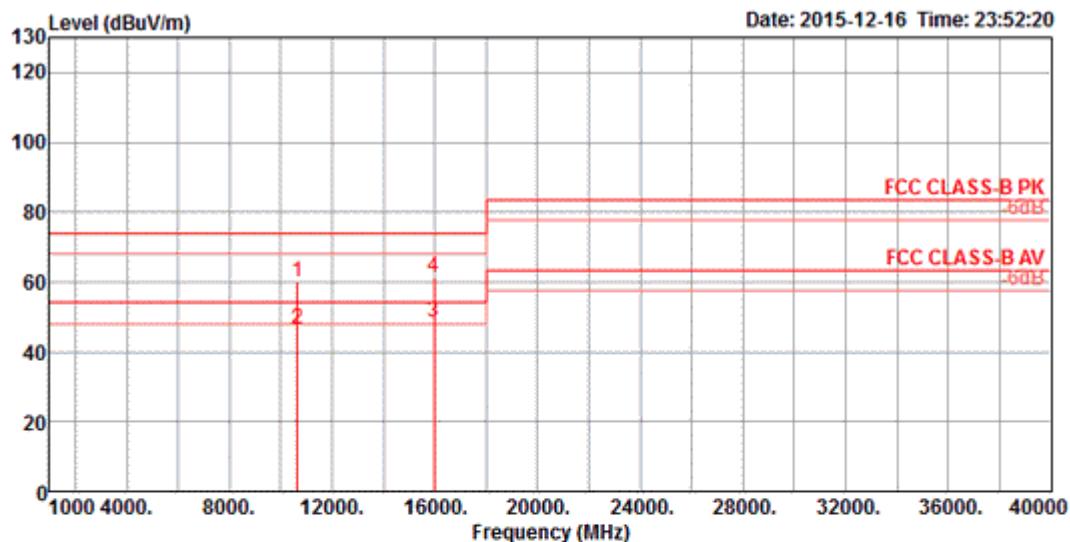
Horizontal


| Freq | Level | Limit Line | Over Limit | Read Level | Cable PreampAntenna | | | T/Pos | A/Pos | Remark |
|------|----------|------------|------------|------------|---------------------|---------------|-------------------|-------|------------|----------------------|
| | | | | | Cable Loss | Preamp Factor | Antenna Pol/Phase | | | |
| 1 | 10600.47 | 59.68 | 74.00 | -14.32 | 43.46 | 11.30 | 34.96 | 39.88 | HORIZONTAL | 281 105 Peak |
| 2 | 10600.66 | 46.66 | 54.00 | -7.34 | 30.44 | 11.30 | 34.96 | 39.88 | HORIZONTAL | 281 105 Average |
| 3 | 15899.03 | 61.08 | 74.00 | -12.92 | 45.34 | 13.33 | 35.40 | 37.81 | HORIZONTAL | 278 106 Peak |
| 4 | 15899.77 | 48.03 | 54.00 | -5.97 | 32.29 | 13.33 | 35.40 | 37.81 | HORIZONTAL | 278 106 Average |

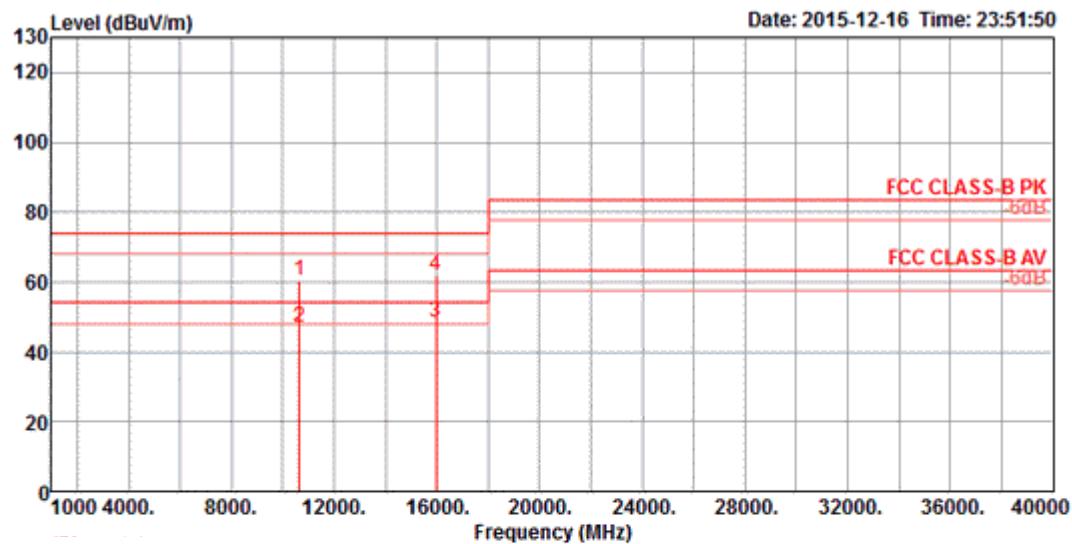
Vertical


| Freq | Level | Limit | | Over Limit | Read Level | Cable PreampAntenna | | | T/Pos | A/Pos | Remark |
|------------|--------|--------|--------|------------|------------|---------------------|---------------|----------------|-------|-------------|--------|
| | | Line | Cable | | | Loss | Preamp Factor | Antenna Factor | | | |
| MHz | dBuV/m | dBuV/m | dB | dBuV | dB | dB | dB/m | deg | cm | | |
| 1 10600.26 | 59.90 | 74.00 | -14.10 | 43.68 | 11.30 | 34.96 | 39.88 | VERTICAL | 278 | 106 Peak | |
| 2 10600.52 | 47.03 | 54.00 | -6.97 | 30.81 | 11.30 | 34.96 | 39.88 | VERTICAL | 278 | 106 Average | |
| 3 15899.37 | 47.95 | 54.00 | -6.05 | 32.21 | 13.33 | 35.40 | 37.81 | VERTICAL | 276 | 108 Average | |
| 4 15900.58 | 61.67 | 74.00 | -12.33 | 45.93 | 13.33 | 35.40 | 37.81 | VERTICAL | 276 | 108 Peak | |

| | | | |
|----------------------|----------|-----------------------|--|
| Temperature | 25°C | Humidity | 59% |
| Test Engineer | Peter Wu | Configurations | IEEE 802.11ac MCS0/Nss1 VHT20 CH 64 / Chain 1 |

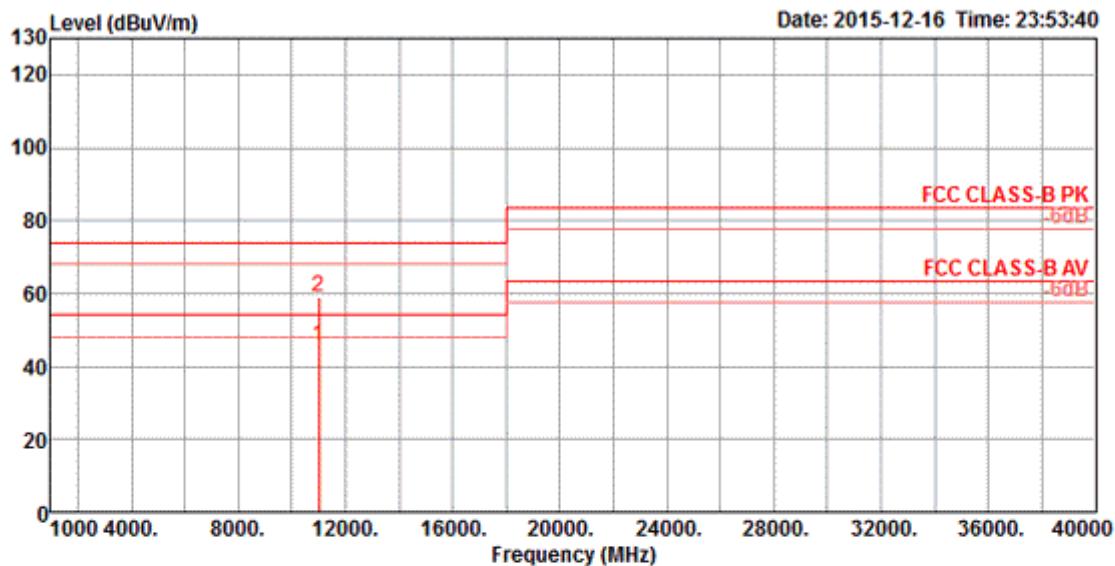
Horizontal


| Freq | Level | Limit Line | Over Limit | Read Level | Cable PreampAntenna | | | T/Pos | A/Pos | Remark |
|------|----------|------------|------------|------------|---------------------|---------------|-------------------|-------|------------|-----------------|
| | | | | | Cable Loss | Preamp Factor | Antenna Pol/Phase | | | |
| 1 | 10640.26 | 59.79 | 74.00 | -14.21 | 43.56 | 11.32 | 34.99 | 39.90 | HORIZONTAL | 268 104 Peak |
| 2 | 10640.88 | 46.38 | 54.00 | -7.62 | 30.15 | 11.32 | 34.99 | 39.90 | HORIZONTAL | 268 104 Average |
| 3 | 15959.14 | 48.29 | 54.00 | -5.71 | 32.60 | 13.35 | 35.41 | 37.75 | HORIZONTAL | 272 100 Average |
| 4 | 15959.87 | 61.19 | 74.00 | -12.81 | 45.50 | 13.35 | 35.41 | 37.75 | HORIZONTAL | 272 100 Peak |

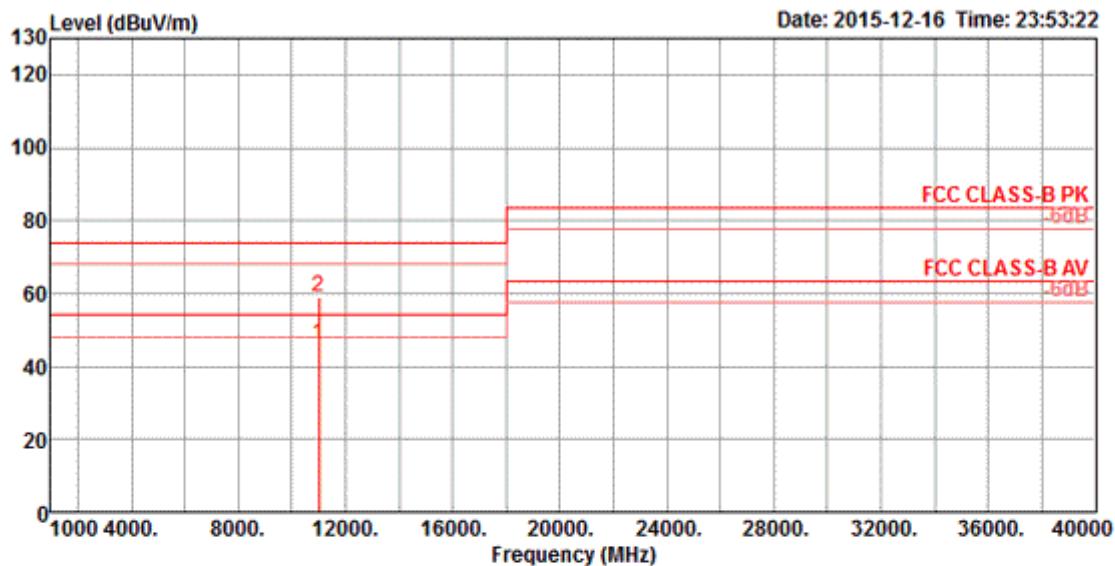
Vertical


| Freq | Level | Line | Over | Read | Cable | Preamp | Antenna | T/Pos | A/Pos | Remark |
|------|----------|--------|--------|--------|-------|--------|---------|-----------|----------|-----------------|
| | | | Limit | Level | Loss | Factor | Factor | Pol/Phase | deg | |
| | MHz | dBuV/m | dBuV/m | dB | dBuV | dB | dB | dB/m | | |
| 1 | 10640.12 | 60.27 | 74.00 | -13.73 | 44.04 | 11.32 | 34.99 | 39.90 | VERTICAL | 279 104 Peak |
| 2 | 10640.37 | 46.85 | 54.00 | -7.15 | 30.62 | 11.32 | 34.99 | 39.90 | VERTICAL | 279 104 Average |
| 3 | 15959.16 | 48.38 | 54.00 | -5.62 | 32.69 | 13.35 | 35.41 | 37.75 | VERTICAL | 275 102 Average |
| 4 | 15961.00 | 61.91 | 74.00 | -12.09 | 46.22 | 13.35 | 35.41 | 37.75 | VERTICAL | 275 102 Peak |

| | | | |
|----------------------|----------|-----------------------|---|
| Temperature | 25°C | Humidity | 59% |
| Test Engineer | Peter Wu | Configurations | IEEE 802.11ac MCS0/Nss1 VHT20 CH 100 / Chain 1 |

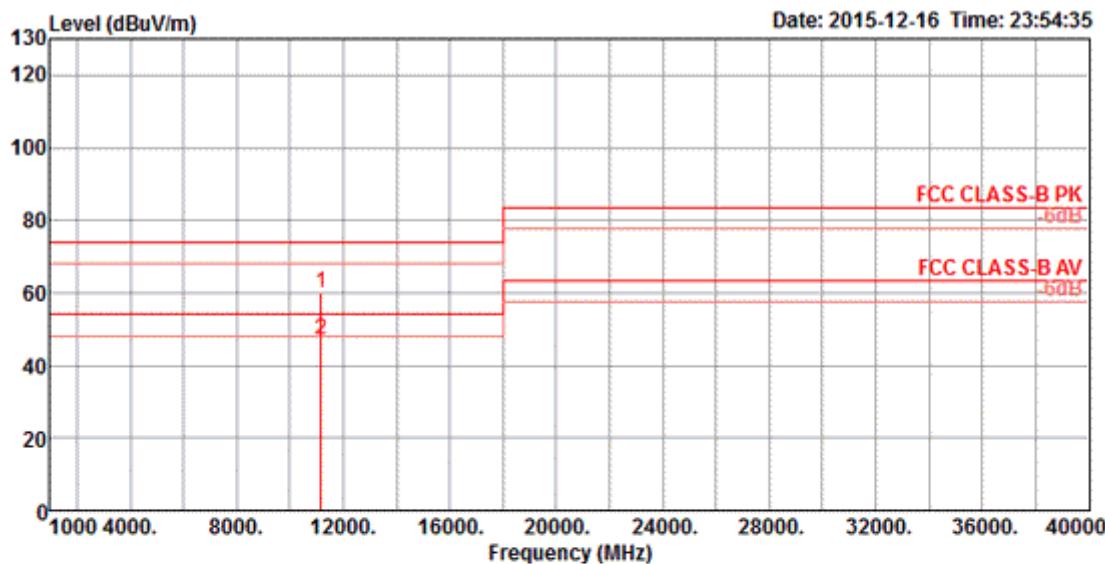
Horizontal


| Freq | Level | Limit | Over | Read | Cable | Preamp | Antenna | T/Pos | A/Pos | Remark |
|------------|--------|--------|--------|-------|-------|--------|-----------|------------|-------|-------------|
| | | Line | Limit | Level | Loss | Factor | Pol/Phase | deg | cm | |
| MHz | dBuV/m | dBuV/m | dB | dBuV | dB | dB | dB/m | | | |
| 1 10999.02 | 45.57 | 54.00 | -8.43 | 29.04 | 11.50 | 35.17 | 40.20 | HORIZONTAL | 260 | 104 Average |
| 2 11001.00 | 59.04 | 74.00 | -14.96 | 42.51 | 11.50 | 35.17 | 40.20 | HORIZONTAL | 260 | 104 Peak |

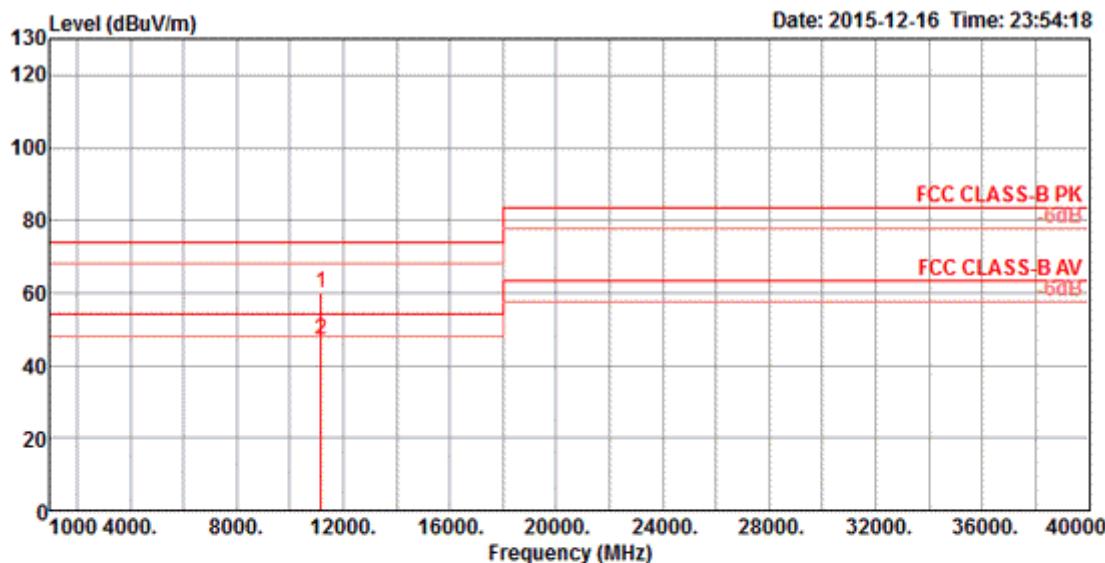
Vertical


| | Freq | Level | Limit | Over | Read | Cable | Preamp | Antenna | T/Pos | A/Pos | Remark |
|---|----------|--------|--------|--------|-------|-------|--------|---------|----------|-------|-------------|
| | MHz | dBuV/m | dBuV/m | dB | dBuV | dB | dB | dB/m | deg | cm | |
| 1 | 10999.46 | 45.89 | 54.00 | -8.11 | 29.36 | 11.50 | 35.17 | 40.20 | VERTICAL | 263 | 102 Average |
| 2 | 11000.98 | 58.78 | 74.00 | -15.22 | 42.25 | 11.50 | 35.17 | 40.20 | VERTICAL | 263 | 102 Peak |

| | | | |
|----------------------|----------|-----------------------|--|
| Temperature | 25°C | Humidity | 59% |
| Test Engineer | Peter Wu | Configurations | IEEE 802.11ac MCS0/Nss1 VHT20 CH 116 / Chain 1 |

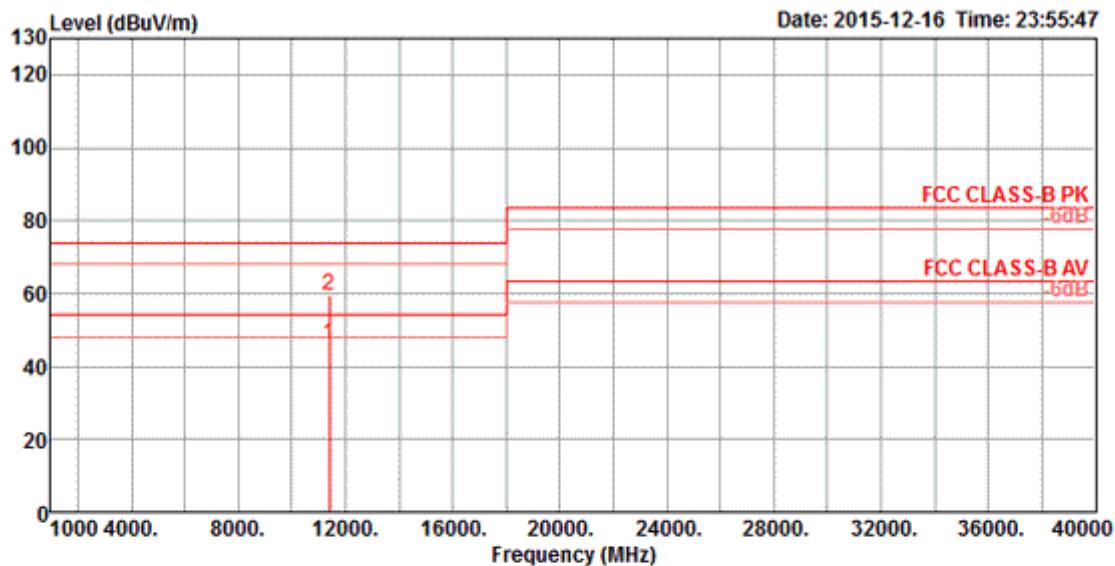
Horizontal


| Freq | Level | Limit | | Over Limit | Read Level | Cable PreampAntenna | | | T/Pos | A/Pos | Remark |
|------|----------|--------|-------|------------|------------|---------------------|-------|-------|------------|-------|-------------|
| | | Line | dB | | | dBuV | dB | dB/m | | | |
| MHz | dBuV/m | dBuV/m | dB | dBuV | dB | dB | dB/m | deg | cm | | |
| 1 | 11160.00 | 60.09 | 74.00 | -13.91 | 43.58 | 11.57 | 35.19 | 40.13 | HORIZONTAL | 249 | 110 Peak |
| 2 | 11160.89 | 46.88 | 54.00 | -7.12 | 30.37 | 11.57 | 35.19 | 40.13 | HORIZONTAL | 249 | 110 Average |

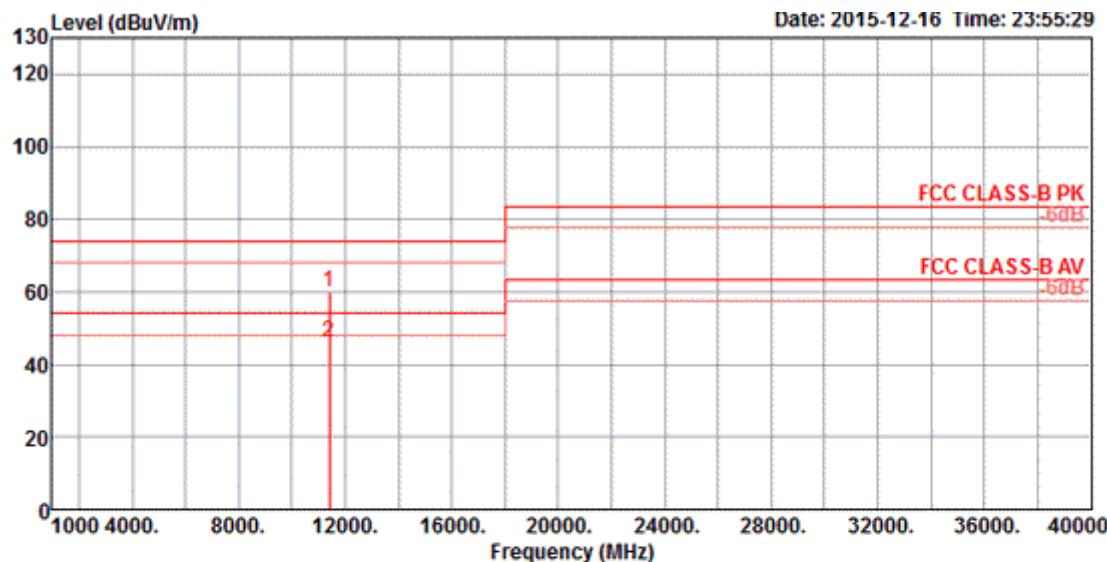
Vertical


| Freq | Level | Limit | | Over Limit | Read Level | Cable PreampAntenna | | | T/Pos | A/Pos | Remark |
|------|----------|--------|-------|------------|------------|---------------------|---------|-----------|----------|-------|-------------|
| | | Line | Cable | | | Preamp | Antenna | Pol/Phase | | | |
| MHz | dBuV/m | dBuV/m | dB | dBuV | dB | dB | dB/m | | deg | cm | |
| 1 | 11159.08 | 59.83 | 74.00 | -14.17 | 43.32 | 11.57 | 35.19 | 40.13 | VERTICAL | 251 | 107 Peak |
| 2 | 11160.85 | 46.99 | 54.00 | -7.01 | 30.48 | 11.57 | 35.19 | 40.13 | VERTICAL | 251 | 107 Average |

| | | | |
|----------------------|----------|-----------------------|--|
| Temperature | 25°C | Humidity | 59% |
| Test Engineer | Peter Wu | Configurations | IEEE 802.11ac MCS0/Nss1 VHT20 CH 140 / Chain 1 |

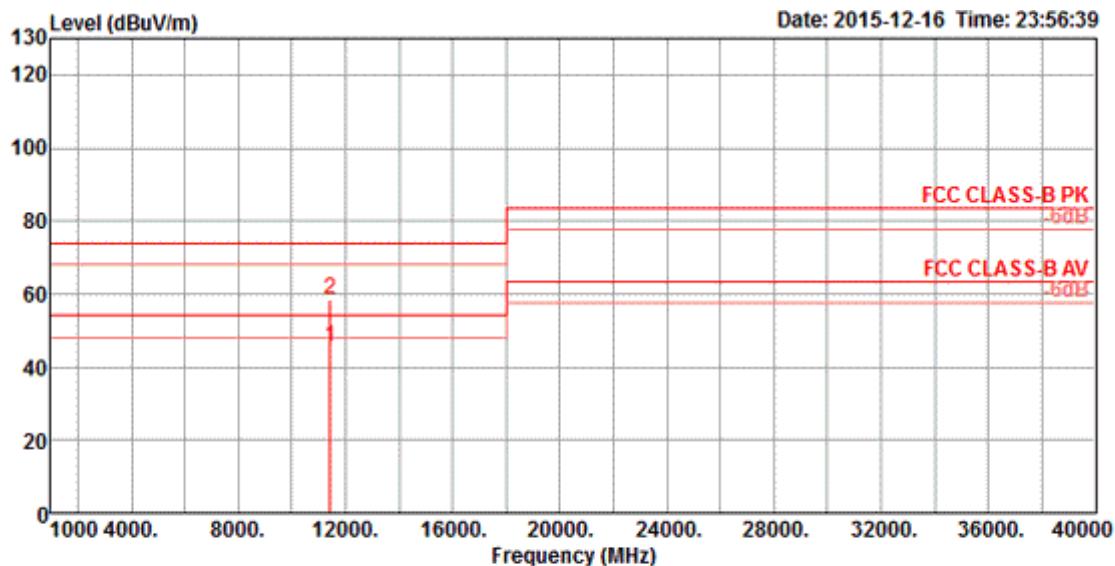
Horizontal


| Freq | Level | Limit | | Over Limit | Read Level | Cable PreampAntenna | | | T/Pos | A/Pos | Remark |
|------------|--------|--------|--------|------------|------------|---------------------|-------|------------|-------|-------|---------|
| | | Line | dB | | | dBuV | dB | dB/m | | | |
| MHz | dBuV/m | dBuV/m | dB | dBuV | dB | dB | dB/m | deg | cm | | |
| 1 11399.64 | 46.03 | 54.00 | -7.97 | 29.53 | 11.68 | 35.22 | 40.04 | HORIZONTAL | 224 | 104 | Average |
| 2 11400.38 | 59.28 | 74.00 | -14.72 | 42.78 | 11.68 | 35.22 | 40.04 | HORIZONTAL | 224 | 104 | Peak |

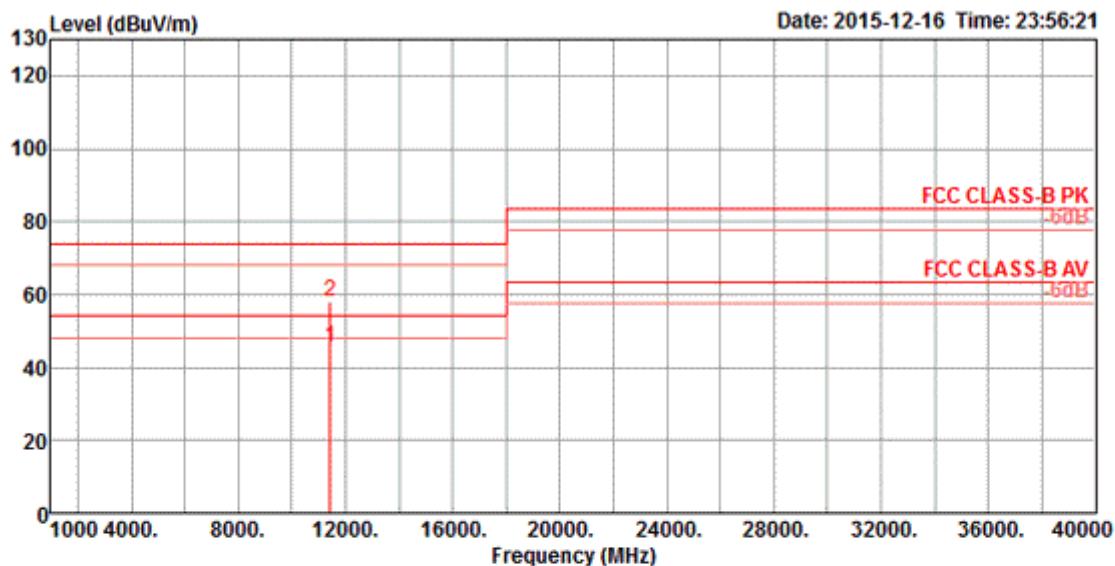
Vertical


| Freq | Limit | | Over Line Limit | Read Level | Cable PreampAntenna | | | T/Pos | A/Pos | Remark |
|------|----------|--------|-----------------|------------|---------------------|---------------|----------------|-------|----------|-----------------|
| | Level | Line | | | Cable Loss | Preamp Factor | Antenna Factor | | | |
| MHz | dBuV/m | dBuV/m | dB | dBuV | dB | dB | dB/m | deg | cm | |
| 1 | 11399.77 | 59.90 | 74.00 | -14.10 | 43.40 | 11.68 | 35.22 | 40.04 | VERTICAL | 234 108 Peak |
| 2 | 11400.72 | 46.26 | 54.00 | -7.74 | 29.76 | 11.68 | 35.22 | 40.04 | VERTICAL | 234 108 Average |

| | | | |
|----------------------|----------|-----------------------|--|
| Temperature | 25°C | Humidity | 59% |
| Test Engineer | Peter Wu | Configurations | IEEE 802.11ac MCS0/Nss1 VHT20 CH 144 / Chain 1 |

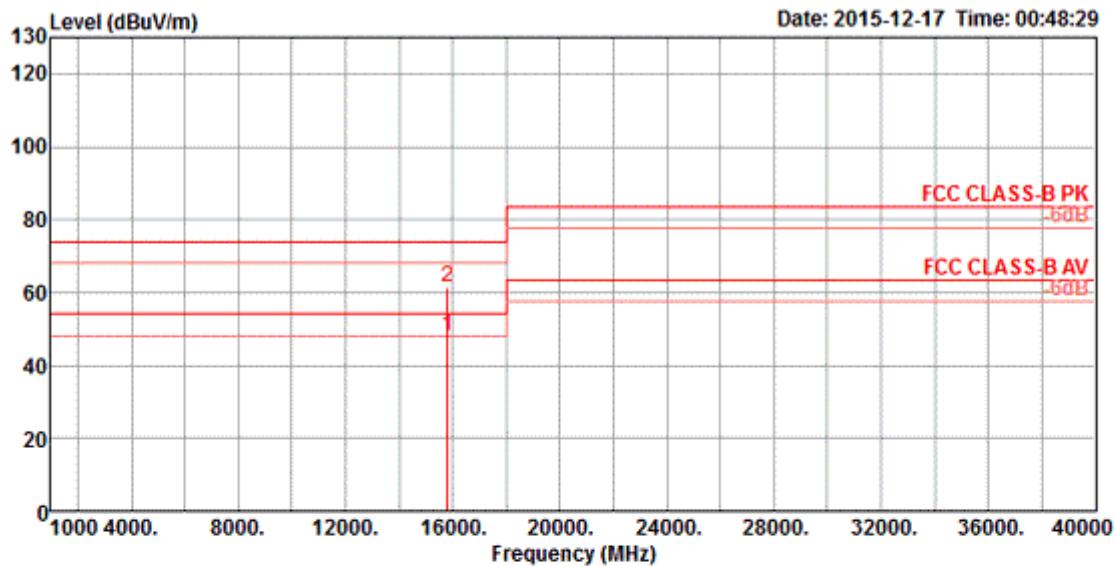
Horizontal


| Freq | Level | Limit | | Over Limit | Read Level | Cable Loss | | | Preamp Factor | Antenna Factor | Pol/Phase | T/Pos | A/Pos | Remark |
|------|----------|-------|-------|------------|------------|------------|-------|-------|---------------|----------------|-----------|-------|---------|--------|
| | | Line | dB | | | dBuV | dB | dB/m | | | | | | |
| 1 | 11439.63 | 45.46 | 54.00 | -8.54 | 28.97 | 11.69 | 35.23 | 40.03 | HORIZONTAL | | 231 | 101 | Average | |
| 2 | 11439.76 | 58.48 | 74.00 | -15.52 | 41.99 | 11.69 | 35.23 | 40.03 | HORIZONTAL | | 231 | 101 | Peak | |

Vertical


| | Freq | Level | Limit | Over | Read | Cable | Preamp | Antenna | T/Pos | A/Pos | Remark |
|---|----------|--------|--------|--------|-------|-------|--------|---------|----------|-------|-------------|
| | MHz | dBuV/m | dBuV/m | dB | dBuV | dB | dB | dB/m | deg | cm | |
| 1 | 11440.03 | 45.52 | 54.00 | -8.48 | 29.03 | 11.69 | 35.23 | 40.03 | VERTICAL | 225 | 103 Average |
| 2 | 11440.97 | 58.13 | 74.00 | -15.87 | 41.64 | 11.69 | 35.23 | 40.03 | VERTICAL | 225 | 103 Peak |

| | | | |
|----------------------|----------|-----------------------|---|
| Temperature | 25°C | Humidity | 59% |
| Test Engineer | Peter Wu | Configurations | IEEE 802.11ac MCS0/Nss1 VHT40 CH 54 / Chain 1 |

Horizontal


| Freq | Level | Limit | | Over Limit | Read Level | Cable Loss | | | Preamp Factor | Antenna Factor | T/Pos | A/Pos | Remark |
|------|----------|--------|-------|------------|------------|------------|-------|-------|---------------|----------------|-------|---------|--------|
| | | Line | dB | | | dBuV | dB | dB/m | | | | | |
| MHz | dBuV/m | dBuV/m | dB | dBuV | dB | dB | dB/m | | | | | | |
| 1 | 15809.49 | 47.98 | 54.00 | -6.02 | 32.15 | 13.30 | 35.39 | 37.92 | HORIZONTAL | 214 | 108 | Average | |
| 2 | 15809.90 | 61.50 | 74.00 | -12.50 | 45.67 | 13.30 | 35.39 | 37.92 | HORIZONTAL | 214 | 108 | Peak | |