



FCC 47 CFR PART 15 SUBPART E

TEST REPORT

For

1200Mbps 802.11ac Dual Band Ceiling Mount Wireless Access Point

Model: WDAP-C7200AC

Trade Name: PLANET

Issued to

Planet Technology Corporation

10F.,No.96, Minquan Rd., Xindian Dist., New Taipei City 231, Taiwan (R.O.C.)

Issued by

Compliance Certification Services Inc.

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

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Issued Date: November 3, 2014



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Revision History

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1. TEST RESULT CERTIFICATION

Applicant: Planet Technology Corporation
 10F.,No.96, Minquan Rd., Xindian Dist., New Taipei City 231,
 Taiwan (R.O.C.)

Equipment Under Test: 1200Mbps 802.11ac Dual Band Ceiling Mount Wireless Access
 Point

Trade Name: PLANET

Model: WDAP-C7200AC

Date of Test: October 6~10, 2014

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

We hereby certify that:

Compliance Certification Services Inc. tested the above equipment. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.4: 2009 and the energy emitted by the sample EUT tested as described in this report is in compliance with conducted and radiated emission limits of FCC Rules Part 15.407.

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

Approved by:

Reviewed by:

Miller Lee
 Section Manager
 Compliance Certification Services Inc.

Angel Cheng
 Section Manager
 Compliance Certification Services Inc.



2. EUT DESCRIPTION

| | | | | |
|---|--|-------------------------|-----------------------|--------------------|
| Product | 1200Mbps 802.11ac Dual Band Ceiling Mount Wireless Access Point | | | |
| Trade Name | PLANET | | | |
| Model Number | WDAP-C7200AC | | | |
| Model Discrepancy | N/A | | | |
| Received Date | July 3, 2014 | | | |
| Power Supply | Powered from POE. (DC 48V, 0.5A) | | | |
| Operating Frequency Range & Number of Channels | UNII Band I | Mode | Frequency Range (MHz) | Number of Channels |
| | | IEEE 802.11a | 5180 – 5240 | 4 Channels |
| | | IEEE 802.11n HT 20 mode | 5180 – 5240 | 4 Channels |
| | | IEEE 802.11n HT 40 mode | 5190 – 5230 | 2 Channels |
| | UNII Band IV | IEEE 802.11 ac80 mode | 5210 | 1 Channels |
| | | IEEE 802.11a | 5745 – 5825 | 5 Channels |
| | | IEEE 802.11n HT 20 mode | 5745 – 5825 | 5 Channels |
| | | IEEE 802.11n HT 40 mode | 5755 – 5795 | 2 Channels |
| IEEE 802.11 ac80 mode | 5775 | 1 Channels | | |
| Transmit Power | IEEE 802.11a mode / 5180 ~ 5240MHz: 11.56dBm IEEE 802.11n HT 20 mode / 5180 ~ 5240MHz: 15.35dBm IEEE 802.11n HT 40 mode / 5190 ~ 5230MHz: 15.26dBm IEEE 802.11 ac80 mode / 5210MHz: 15.17dBm IEEE 802.11a mode / 5745 ~ 5825MHz: 11.62dBm IEEE 802.11n HT 20 mode / 5745 ~ 5825MHz: 15.24dBm IEEE 802.11n HT 40 mode / 5755 ~ 5795MHz: 15.19dBm IEEE 802.11 ac80 mode / 5775MHz: 15.18dBm | | | |
| Modulation Technique | OFDM (QPSK, BPSK, 16-QAM, 64-QAM) | | | |
| Transmit Data Rate | IEEE 802.11a mode: 54, 48, 36, 24, 18, 12, 9, 6 Mbps IEEE 802.11n HT 20 mode: OFDM (6.50, 13.00, 19.50, 26.00, 39.00, 52.00, 58.50, 65.00, 78.00, 104.0, 117.0, 130.0, 156.0, 175.5, 195.0Mbps) IEEE 802.11n HT 40 mode: OFDM (13.50, 27.00, 40.50, 54.00, 81.00, 108.0, 121.5, 135.0, 162.0, 216.0, 243.0, 270.0, 324.0, 364.5, 405.0Mbps) IEEE 802.11 ac80 mode: OFDM (29.3, 58.5, 87.8, 117, 175.5, 234, 263.3, 292.5, 351, 390, 468, 526.5, 585, 702, 780 Mbps) | | | |
| Antenna Designation | PCB Antenna / Gain: 4dBi MIMO: Total ANT=4+10*LOG(2)=7dBi | | | |



Operation Frequency

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

Remark:

1. *The sample selected for test was engineering sample that approximated to production product and was provided by manufacturer.*
2. *This submittal(s) (test report) is intended for FCC ID: UL9-WDAPC7200AC filing to comply with Section 15.407 of the FCC Part 15, Subpart E Rules.*



3. TEST METHODOLOGY

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

3.1 EUT CONFIGURATION

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

3.2 EUT EXERCISE

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

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

3.3 GENERAL TEST PROCEDURES

Conducted Emissions

The EUT is placed on the turntable, which is positioned at 0.8 m above the ground plane. According to the requirements in Section 13.1.4.1 of ANSI C63.4, the conducted emission from the EUT is measured in the frequency range between 0.15 MHz and 30MHz, using the CISPR Quasi-Peak detector mode.

Radiated Emissions

The EUT is placed on the turntable, which is 0.8 m above the ground plane. The turntable is then rotated for 360 degrees to determine the proper orientation for the maximum emission level. The EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emission level. And, each emission is to be maximized by changing the horizontal and vertical polarization of the receiving antenna. In order to find out the maximum emissions, exploratory radiated emission measurements were made according to the requirements in Section 13.1.4.1 of ANSI C63.4.



3.4 FCC PART 15.205 RESTRICTED BANDS OF OPERATIONS

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

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

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

² Above 38.6

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



3.5 DESCRIPTION OF TEST MODES

The EUT (model: WDAP-C7200AC) had been tested under operating condition.

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

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

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

UNII Band I:

IEEE 802.11a mode / 5180 ~ 5240MHz:

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

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

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

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

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

IEEE 802.11n ac80 MHz Channel for 5210MHz:

Channel Low(5210MHz) with 29.3Mbps data rate were chosen for full testing.

UNII Band VI:

IEEE 802.11a mode:

Channel Low (5745MHz), Channel Mid (5785MHz) and Channel High (5825MHz) with 6Mbps data rate were chosen for full testing.

IEEE 802.11n HT 20 mode:

Channel Low(5745MHz), Channel Mid(5785MHz) and Channel High(5825MHz) with 6.5Mbps data rate were chosen for full testing.

IEEE 802.11n HT 40 mode:

Channel Low(5755MHz) and Channel High(5795MHz) with 13.5Mbps data rate were chosen for full testing.

IEEE 802.11 ac80 mode:

Channel Low(5775MHz) with 29.3Mbps data rate were chosen for full testing.



4. INSTRUMENT CALIBRATION

4.1 MEASURING INSTRUMENT CALIBRATION

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

4.2 MEASUREMENT EQUIPMENT USED

Equipment Used for Emissions Measurement

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

| Conducted Emissions Test Site | | | | |
|-------------------------------|--------------|---------|---------------|-----------------|
| Name of Equipment | Manufacturer | Model | Serial Number | Calibration Due |
| Spectrum Analyzer | Agilent | E4446A | MY43360131 | 03/26/2015 |
| Power Meter | Anritsu | ML2495A | 1012009 | 06/03/2015 |
| Power Sensor | Anritsu | MA2411A | 0917072 | 06/03/2015 |

| 3M Chamber Test Site | | | | |
|----------------------|--------------------|--------------------------|---------------|-----------------|
| Name of Equipment | Manufacturer | Model | Serial Number | Calibration Due |
| Spectrum Analyzer | Agilent | E4446A | US42510268 | 11/05/2014 |
| EMI Test Receiver | R&S | ESCI | 100064 | 02/27/2015 |
| Pre-Amplifier | Mini-Circuits | ZFL-1000LN | SF350700823 | 01/11/2015 |
| Pre-Amplifier | MITEQ | AFS44-00102650-42-10P-44 | 1415367 | 11/18/2014 |
| Bilog Antenna | Sunol Sciences | JB3 | A030105 | 10/01/2014 |
| Horn Antenna | EMCO | 3117 | 00055165 | 02/12/2015 |
| Horn Antenna | EMCO | 3116 | 2487 | 10/09/2014 |
| Loop Antenna | EMCO | 6502 | 8905/2356 | 06/08/2015 |
| Turn Table | CCS | CC-T-1F | N/A | N.C.R |
| Antenna Tower | CCS | CC-A-1F | N/A | N.C.R |
| Controller | CCS | CC-C-1F | N/A | N.C.R |
| Site NSA | CCS | N/A | N/A | 12/21/2014 |
| Test S/W | EZ-EMC (CCS-3A1RE) | | | |

| Conducted Emission room # A | | | | |
|-----------------------------|--------------|-----------|---------------|-----------------|
| Name of Equipment | Manufacturer | Model | Serial Number | Calibration Due |
| EMI Test Receiver | R&S | ESI | 101203 | 09/11/2015 |
| LISN | R&S | ESH3-Z5 | 848773/014 | 12/05/2014 |
| Coaxial Cable | Commate | CFD300-NL | NA | 12/05/2014 |
| Test S/W | CCS-3A1-CE | | | |



4.3 MEASUREMENT UNCERTAINTY

| PARAMETER | UNCERTAINTY |
|---------------------------------------|-------------|
| Powerline Conducted Emission | +/- 1.2159 |
| 3M Semi Anechoic Chamber / <200M | +/- 4.0138 |
| 3M Semi Anechoic Chamber / 200M~1000M | +/- 3.9483 |
| 3M Semi Anechoic Chamber / 1G~8G | +/- 2.5975 |
| 3M Semi Anechoic Chamber / 8G~18G | +/- 2.6112 |
| 3M Semi Anechoic Chamber / 18G~26G | +/- 2.7389 |
| 3M Semi Anechoic Chamber / 26G~40G | +/- 2.9683 |

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



5. FACILITIES AND ACCREDITATIONS

5.1 FACILITIES

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

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

Tel: 886-2-2217-0894 / Fax: 886-2-2217-1029

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

Tel: 886-2-2299-9720 / Fax: 886-2-2298-4045

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

Tel: 886-3-324-0332 / Fax: 886-3-324-5235

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.

5.2 EQUIPMENT

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




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

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

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



5.3 TABLE OF ACCREDITATIONS AND LISTINGS

| Country | Agency | Scope of Accreditation | Logo |
|---------|-----------------|--|--|
| USA | FCC | 3M Semi Anechoic Chamber (FCC MRA: TW1039) to perform FCC Part 15 measurements |  FCC MRA: TW1039 |
| Taiwan | TAF | LP0002, RTTE01, FCC Method-47 CFR Part 15 Subpart C, D, E, RSS-210, RSS-310 IDA TS SRD, AS/NZS 4268, AS/NZS 4771, TS 12.1 & 12.2, ETSI EN 300 440-1, ETSI EN 300 440-2, ETSI EN 300 328, ETSI EN 300 220-1, ETSI EN 300 220-2, ETSI EN 301 893, ETSI EN 301 489-1/3/7/17 FCC OET Bulletin 65 + Supplement C, EN 50360, EN 50361, EN 50371, RSS 102, EN 50383, EN 50385, EN 50392, IEC 62209, CNS 14958-1, CNS 14959 FCC Method -47 CFR Part 15 Subpart B IEC / EN 61000-3-2, IEC / EN 61000-3-3, IEC / EN 61000-4-2/3/4/5/6/8/11 |  |
| Canada | Industry Canada | 3M Semi Anechoic Chamber (IC 2324G-1 / IC 2324G-2) to perform |  |

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



6. SETUP OF EQUIPMENT UNDER TEST

6.1 SETUP CONFIGURATION OF EUT

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

6.2 SUPPORT EQUIPMENT

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

Remark:

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



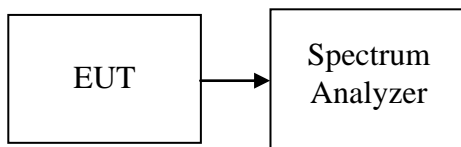
7. FCC PART 15 REQUIREMENTS

7.1 26 DB EMISSION BANDWIDTH

LIMIT

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

Test Configuration



TEST PROCEDURE

1. Place the EUT on the table and set it in the transmitting mode.
2. Remove the antenna from the EUT and then connect a low-loss RF cable from the antenna port to the spectrum analyzer.
3. Set the spectrum analyzer as $RBW = 1\%EBW$, $VBW = RBW$, $Span = 50MHz$, and $Sweep = auto$.
Or Set the spectrum analyzer as $RBW > 1\%EBW$, $VBW > RBW$, $Span > 26dB$ bandwidth, and $Sweep = auto$.
4. Mark the peak frequency and $-26dB$ (upper and lower) frequency.
5. Repeat until all the rest channels were investigated.



TEST RESULTS

No non-compliance noted

Test Data

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

| Channel | Frequency (MHz) | Bandwidth (MHz) |
|---------|-----------------|-----------------|
| Low | 5180 | 21.946 |
| Mid | 5220 | 21.752 |
| High | 5240 | 21.527 |

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

| Channel | Frequency (MHz) | Bandwidth (MHz) |
|---------|-----------------|-----------------|
| Low | 5180 | 22.298 |
| Mid | 5220 | 22.139 |
| High | 5240 | 22.337 |

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

| Channel | Frequency (MHz) | Bandwidth (MHz) |
|---------|-----------------|-----------------|
| Low | 5180 | 21.503 |
| Mid | 5220 | 21.680 |
| High | 5240 | 21.502 |

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

| Channel | Frequency (MHz) | Bandwidth (MHz) |
|---------|-----------------|-----------------|
| Low | 5190 | 44.415 |
| High | 5230 | 43.820 |

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

| Channel | Frequency (MHz) | Bandwidth (MHz) |
|---------|-----------------|-----------------|
| Low | 5190 | 43.315 |
| High | 5230 | 43.214 |

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

| Channel | Frequency (MHz) | Bandwidth (B) (MHz) |
|---------|-----------------|---------------------|
| Mid | 5210 | 82.774 |

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

| Channel | Frequency (MHz) | Bandwidth (B) (MHz) |
|---------|-----------------|---------------------|
| Mid | 5210 | 82.061 |



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

| Channel | Frequency (MHz) | Bandwidth (MHz) |
|---------|-----------------|-----------------|
| Low | 5745 | 16.574 |
| Mid | 5785 | 16.570 |
| High | 5825 | 16.573 |

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

| Channel | Frequency (MHz) | Bandwidth (MHz) |
|---------|-----------------|-----------------|
| Low | 5745 | 17.784 |
| Mid | 5785 | 17.762 |
| High | 5825 | 17.709 |

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

| Channel | Frequency (MHz) | Bandwidth (MHz) |
|---------|-----------------|-----------------|
| Low | 5745 | 17.699 |
| Mid | 5785 | 17.675 |
| High | 5825 | 17.697 |

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

| Channel | Frequency (MHz) | Bandwidth (MHz) |
|---------|-----------------|-----------------|
| Low | 5755 | 36.196 |
| High | 5795 | 36.683 |

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

| Channel | Frequency (MHz) | Bandwidth (MHz) |
|---------|-----------------|-----------------|
| Low | 5755 | 36.022 |
| High | 5795 | 36.089 |

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

| Channel | Frequency (MHz) | Bandwidth (B) (MHz) |
|---------|-----------------|---------------------|
| Mid | 5290 | 75.593 |

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

| Channel | Frequency (MHz) | Bandwidth (B) (MHz) |
|---------|-----------------|---------------------|
| Mid | 5290 | 75.529 |



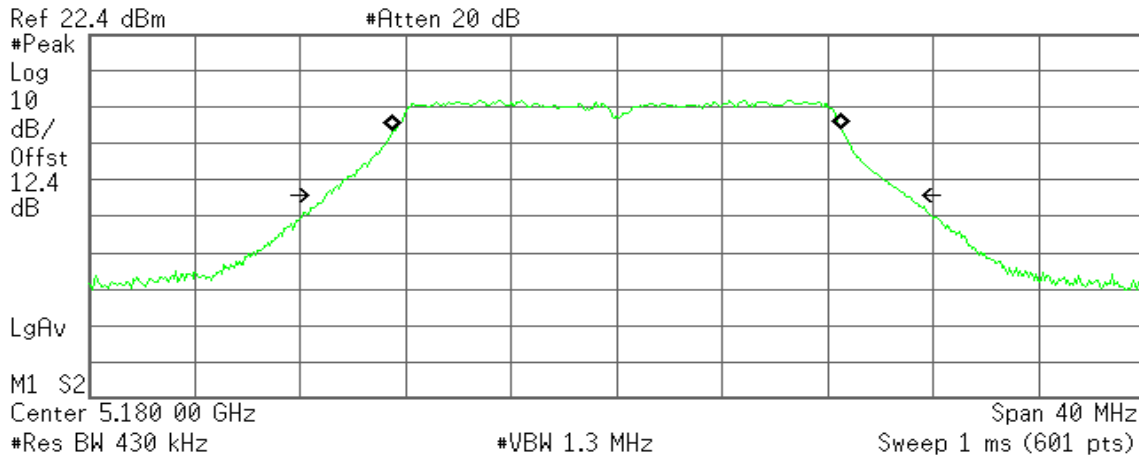
Test Plot

IEEE 802.11a mode / 5180 ~ 5240MHz

CH Low

Agilent

R T



Occupied Bandwidth

17.0602 MHz

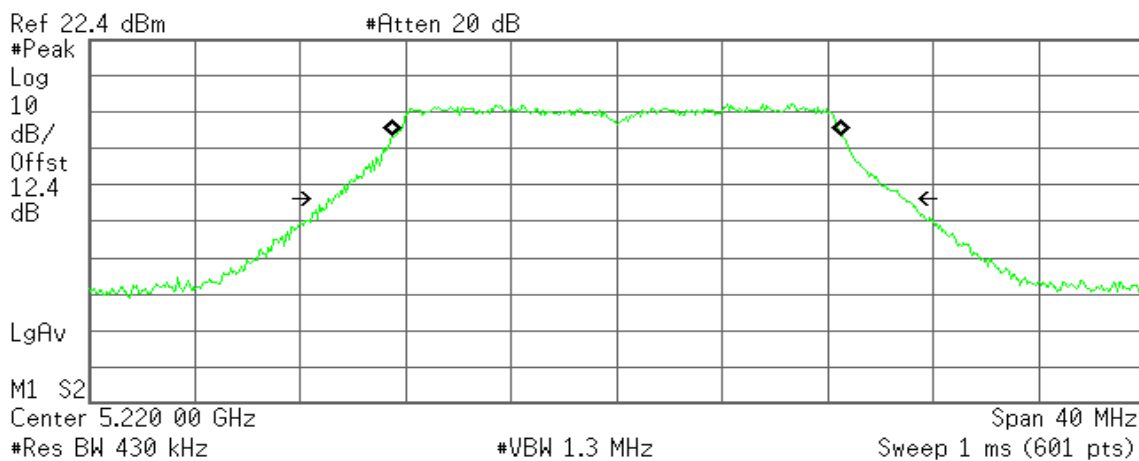
Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error 11.063 kHz
x dB Bandwidth 21.946 MHz

CH Mid

Agilent

R T



Occupied Bandwidth

17.0782 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

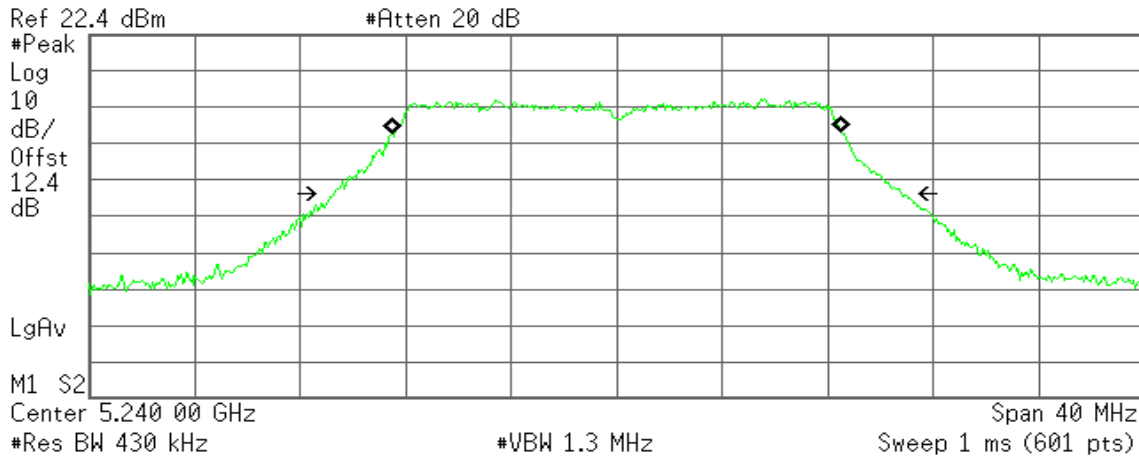
Transmit Freq Error 23.451 kHz
x dB Bandwidth 21.752 MHz



CH High

Agilent

R T



Occupied Bandwidth
17.0733 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

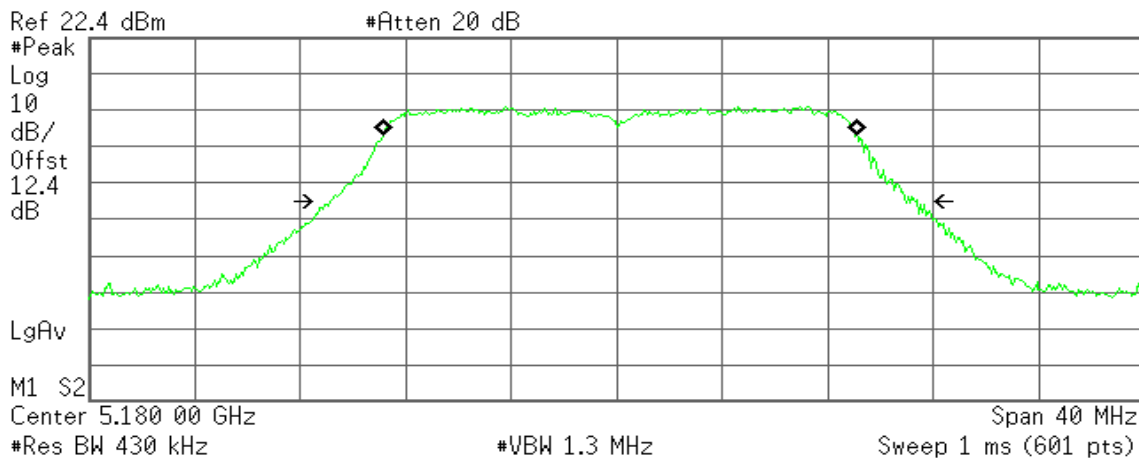
Transmit Freq Error 16.551 kHz
x dB Bandwidth 21.527 MHz

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

CH Low

Agilent

R T



Occupied Bandwidth
18.0245 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

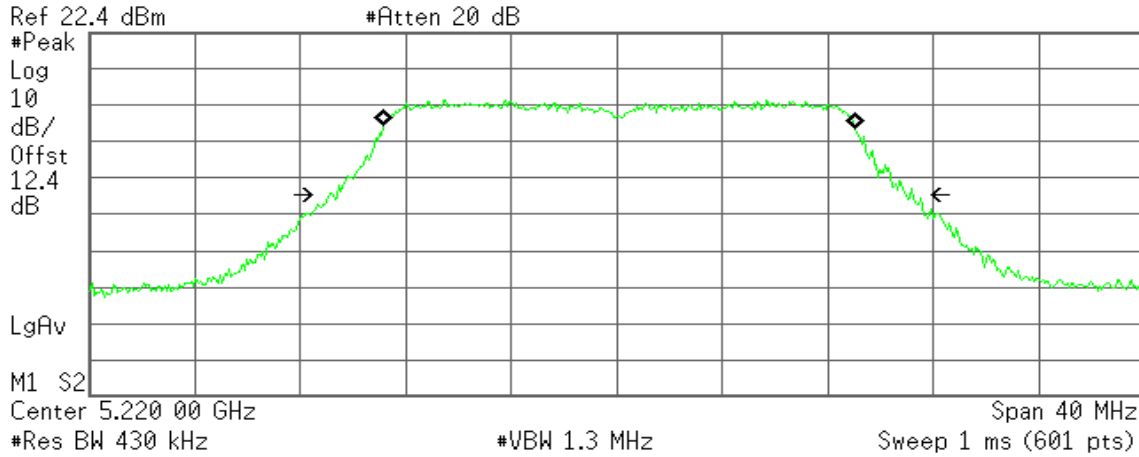
Transmit Freq Error 143.511 kHz
x dB Bandwidth 22.298 MHz



CH Mid

Agilent

R T



Occupied Bandwidth
17.9282 MHz

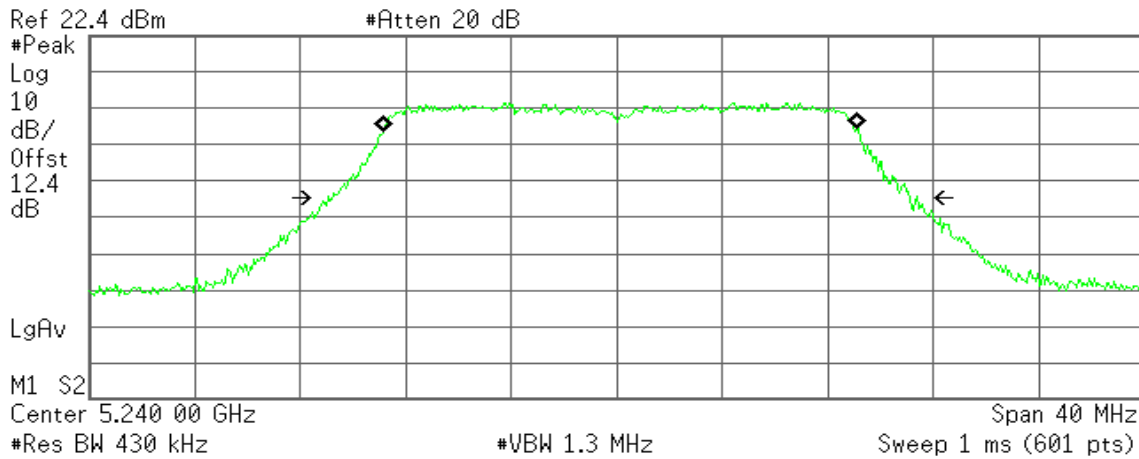
Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error 107.168 kHz
x dB Bandwidth 22.139 MHz

CH High

Agilent

R T



Occupied Bandwidth
18.0082 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error 146.174 kHz
x dB Bandwidth 22.337 MHz

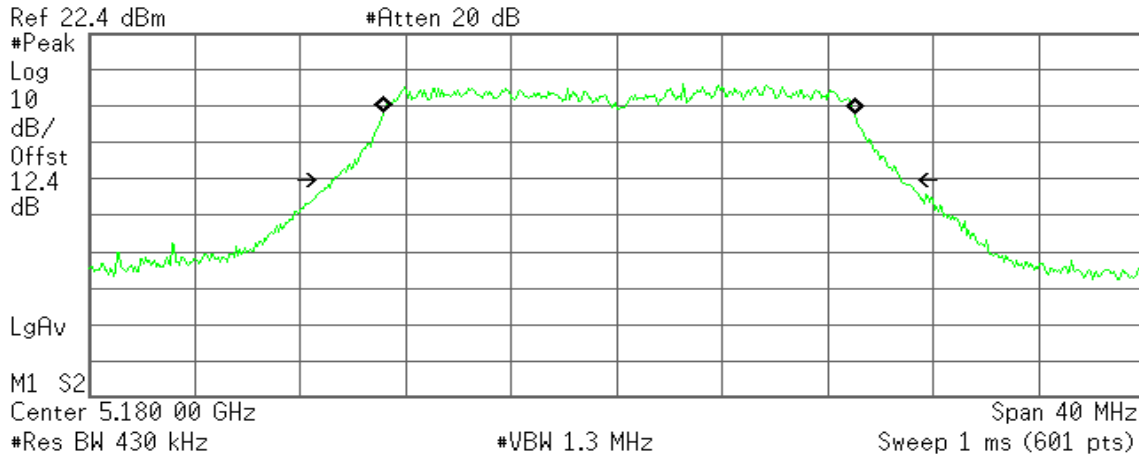


IEEE 802.11n HT 20 mode / 5180 ~ 5240MHz / Chain 1

CH Low

Agilent

R T



Occupied Bandwidth
17.9013 MHz

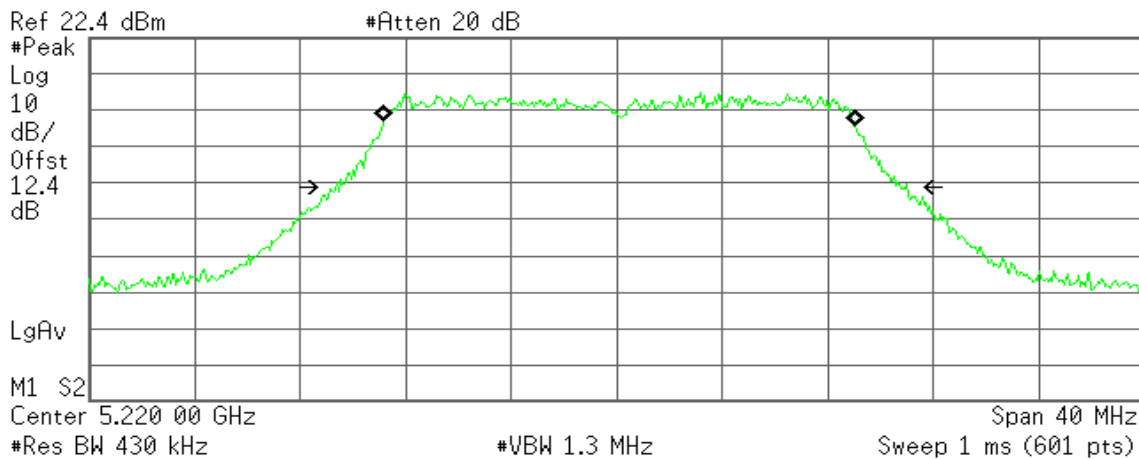
Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error 91.513 kHz
x dB Bandwidth 21.503 MHz

CH Mid

Agilent

R T



Occupied Bandwidth
17.8895 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

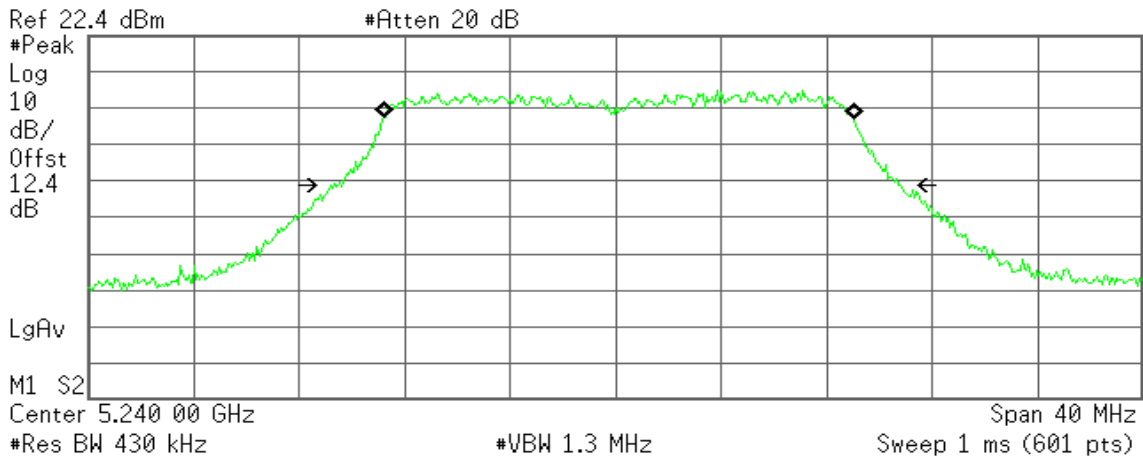
Transmit Freq Error 94.487 kHz
x dB Bandwidth 21.680 MHz



CH High

Agilent

R T



Occupied Bandwidth
17.8613 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

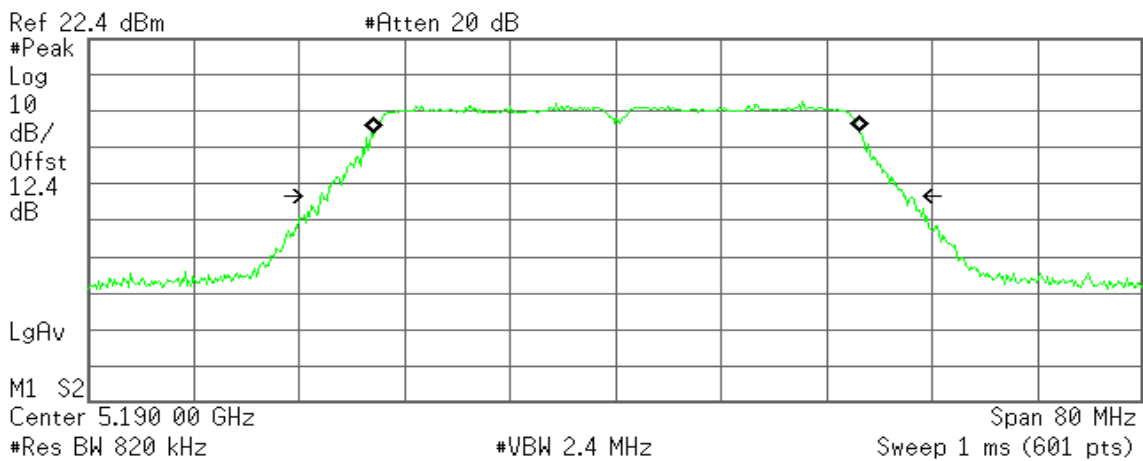
Transmit Freq Error 110.086 kHz
x dB Bandwidth 21.502 MHz

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

CH Low

Agilent

R T



Occupied Bandwidth
36.8020 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

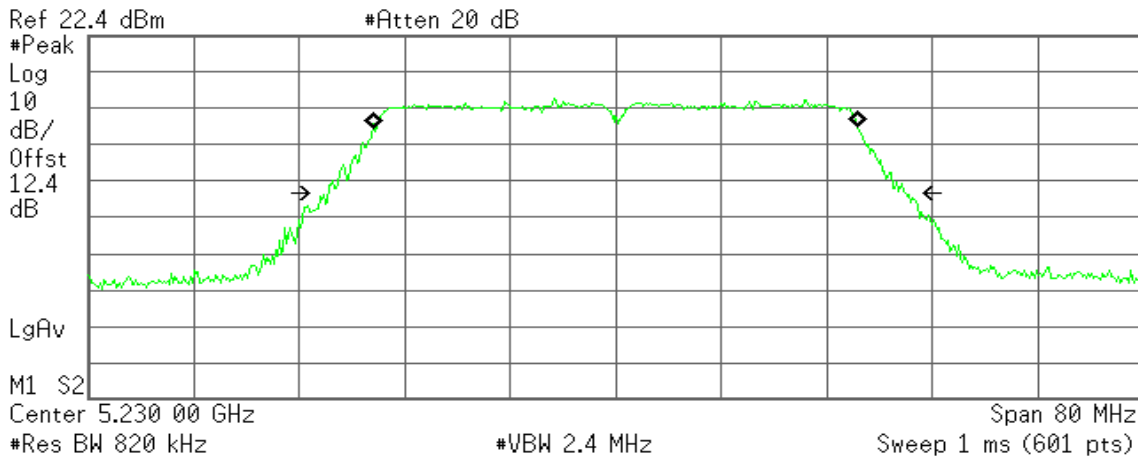
Transmit Freq Error 66.784 kHz
x dB Bandwidth 44.415 MHz



CH High

Agilent

R T



Occupied Bandwidth
36.7230 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

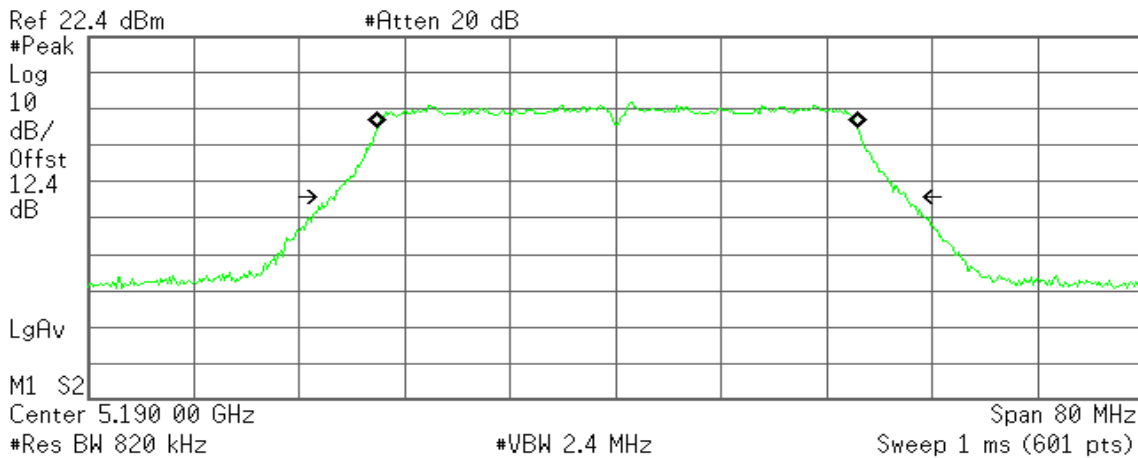
Transmit Freq Error 27.768 kHz
x dB Bandwidth 43.820 MHz

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

CH Low

Agilent

R T



Occupied Bandwidth
36.5022 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

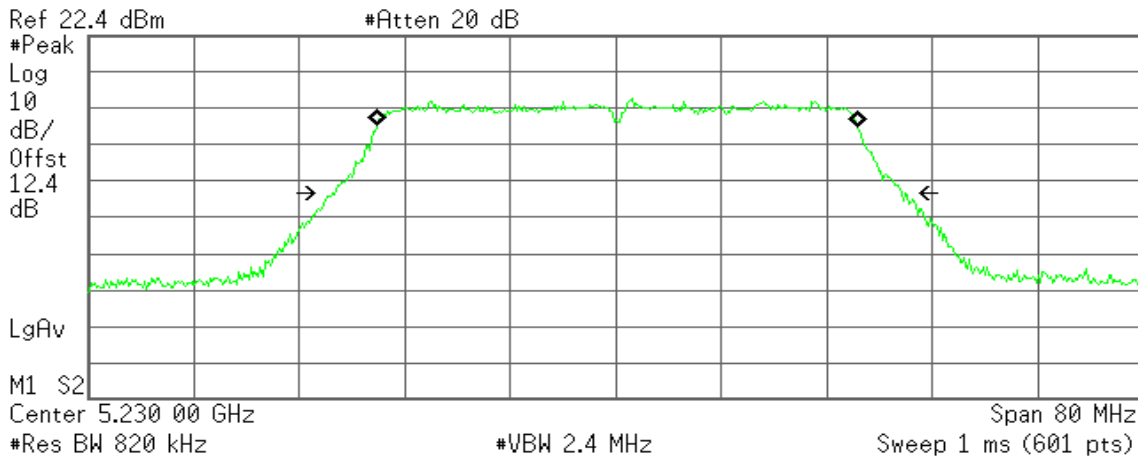
Transmit Freq Error 134.224 kHz
x dB Bandwidth 43.315 MHz



CH High

Agilent

R T



Occupied Bandwidth
36.5131 MHz

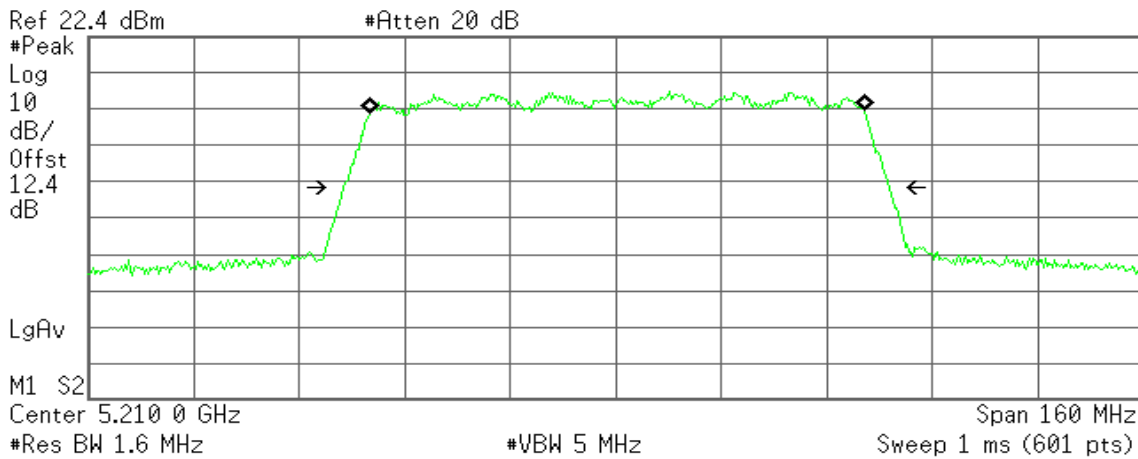
Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error 121.806 kHz
x dB Bandwidth 43.214 MHz

IEEE 802.11 ac80 mode / 5210MHz / Chain 0

Agilent

R T



Occupied Bandwidth
75.2190 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

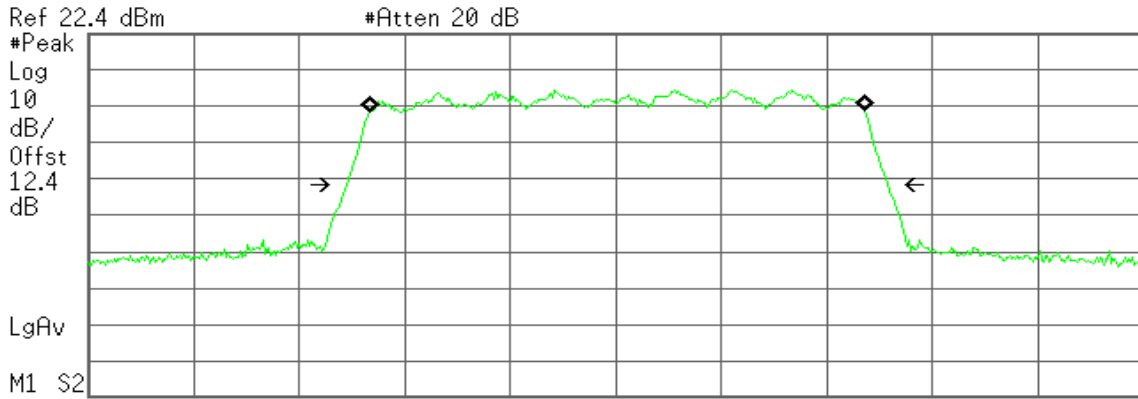
Transmit Freq Error 197.864 kHz
x dB Bandwidth 82.774 MHz



IEEE 802.11 ac80 mode / 5210MHz / Chain 1

Agilent

R T



Center 5.210 00 GHz Span 160 MHz
 #Res BW 1.6 MHz #VBW 5 MHz Sweep 1 ms (601 pts)

Occupied Bandwidth
75.1951 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

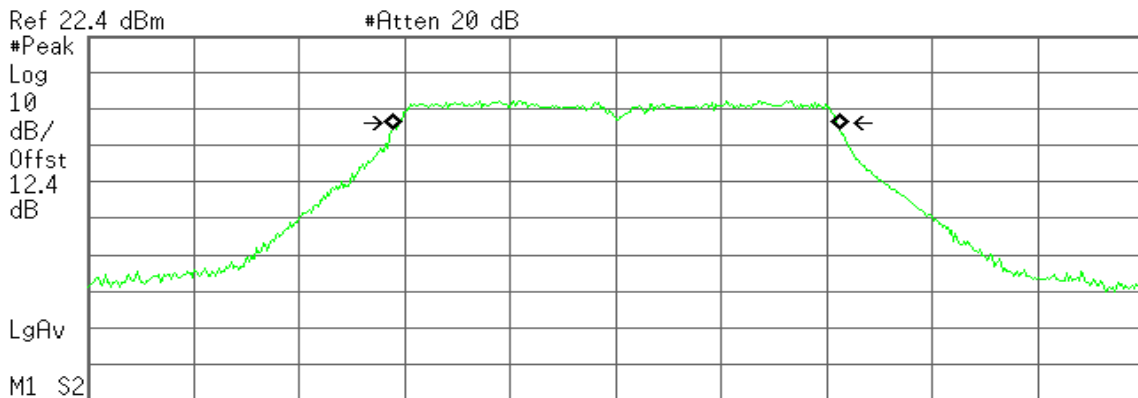
Transmit Freq Error 218.140 kHz
x dB Bandwidth 82.061 MHz

IEEE 802.11a mode / 5745 ~ 5825MHz

CH Low

Agilent

R T



Center 5.745 00 GHz Span 40 MHz
 #Res BW 430 kHz #VBW 1.3 MHz Sweep 1 ms (601 pts)

Occupied Bandwidth
17.0313 MHz

Occ BW % Pwr 99.00 %
x dB -6.00 dB

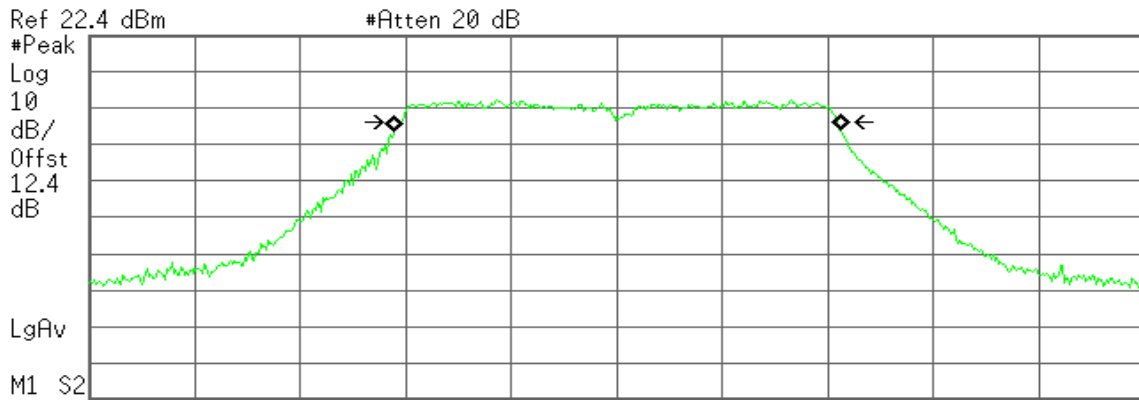
Transmit Freq Error 20.309 kHz
x dB Bandwidth 16.574 MHz



CH Mid

Agilent

R T



Occupied Bandwidth
16.9840 MHz

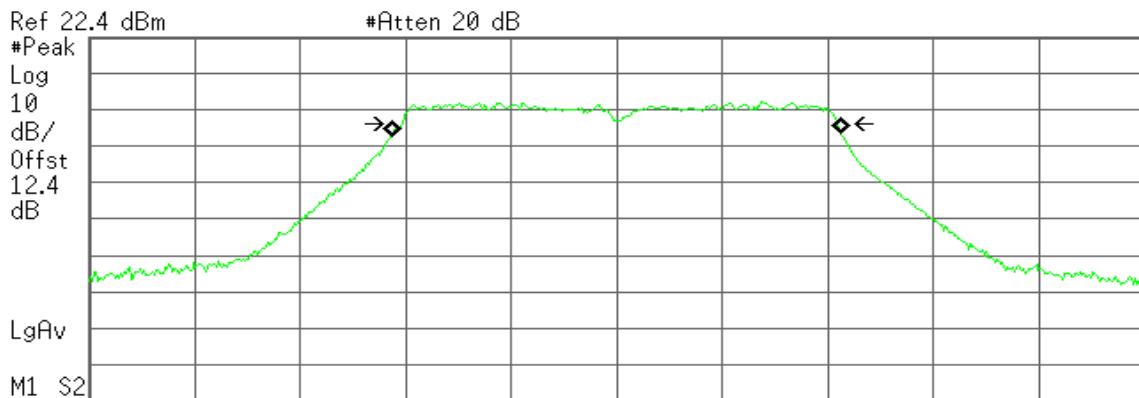
Occ BW % Pwr 99.00 %
x dB -6.00 dB

Transmit Freq Error 33.145 kHz
x dB Bandwidth 16.570 MHz

CH High

Agilent

R T



Occupied Bandwidth
17.0735 MHz

Occ BW % Pwr 99.00 %
x dB -6.00 dB

Transmit Freq Error -21.572 kHz
x dB Bandwidth 16.573 MHz

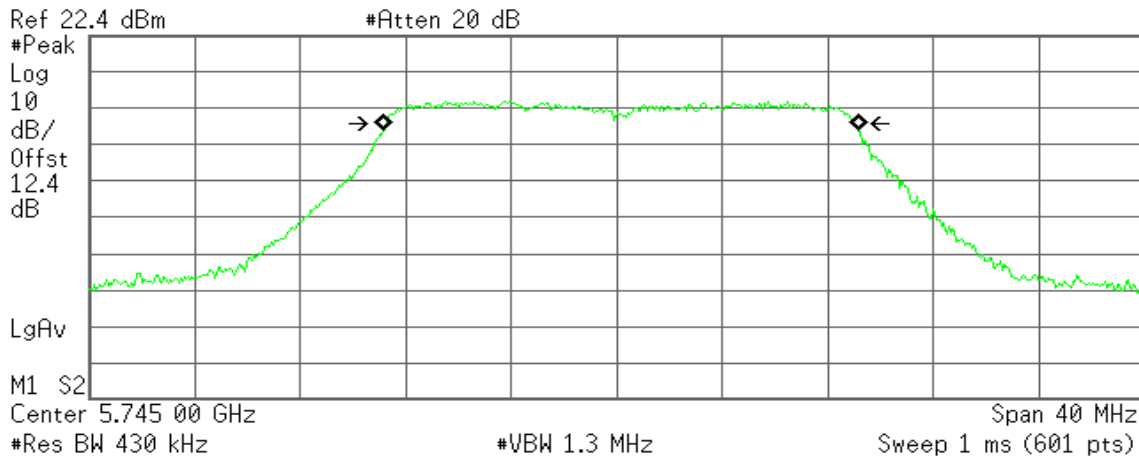


IEEE 802.11n HT 20 mode / 5745 ~ 5825MHz / Chain 0

CH Low

Agilent

R T



Occupied Bandwidth

18.0332 MHz

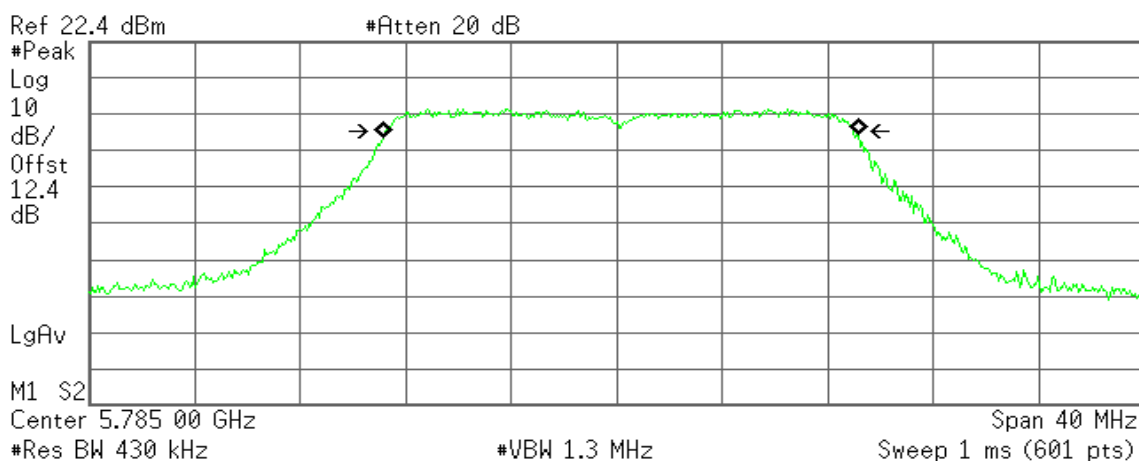
| | |
|---------------------|----------|
| Occ BW % Pwr | 99.00 % |
| x dB | -6.00 dB |

| | |
|----------------------------|-------------|
| Transmit Freq Error | 156.520 kHz |
| x dB Bandwidth | 17.784 MHz |

CH Mid

Agilent

R T



Occupied Bandwidth

18.0420 MHz

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

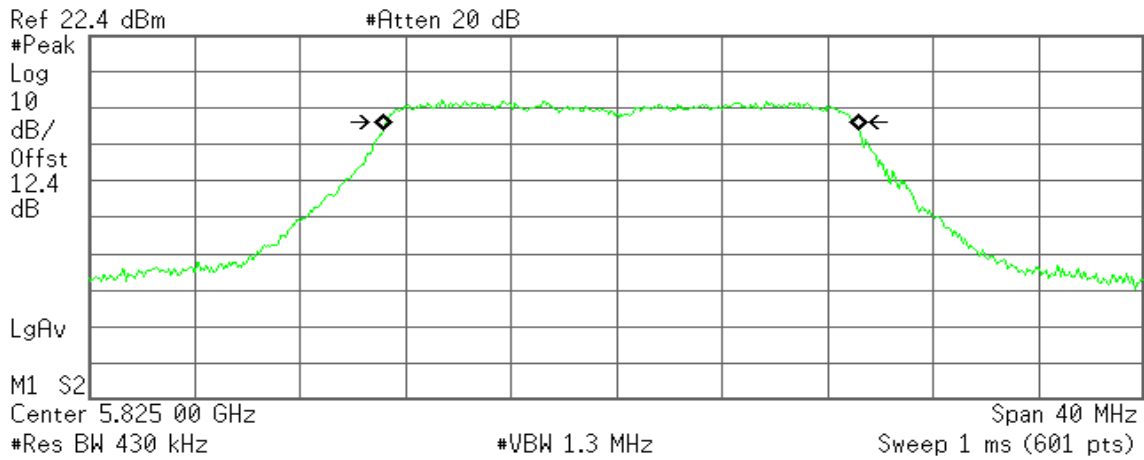
| | |
|----------------------------|-------------|
| Transmit Freq Error | 160.073 kHz |
| x dB Bandwidth | 17.762 MHz |



CH High

Agilent

R T



Occupied Bandwidth
18.0491 MHz

Occ BW % Pwr 99.00 %
x dB -6.00 dB

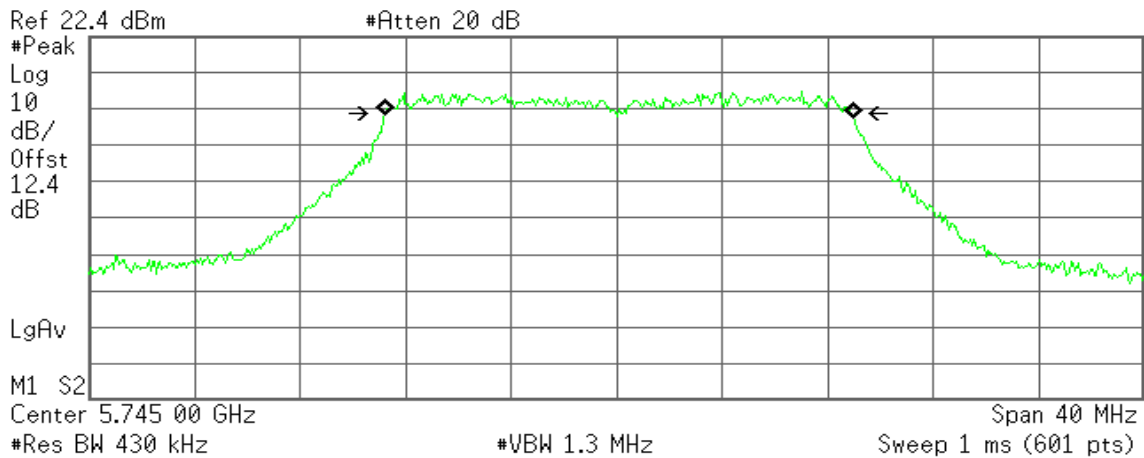
Transmit Freq Error 153.909 kHz
x dB Bandwidth 17.709 MHz

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

CH Low

Agilent

R T



Occupied Bandwidth
17.8420 MHz

Occ BW % Pwr 99.00 %
x dB -6.00 dB

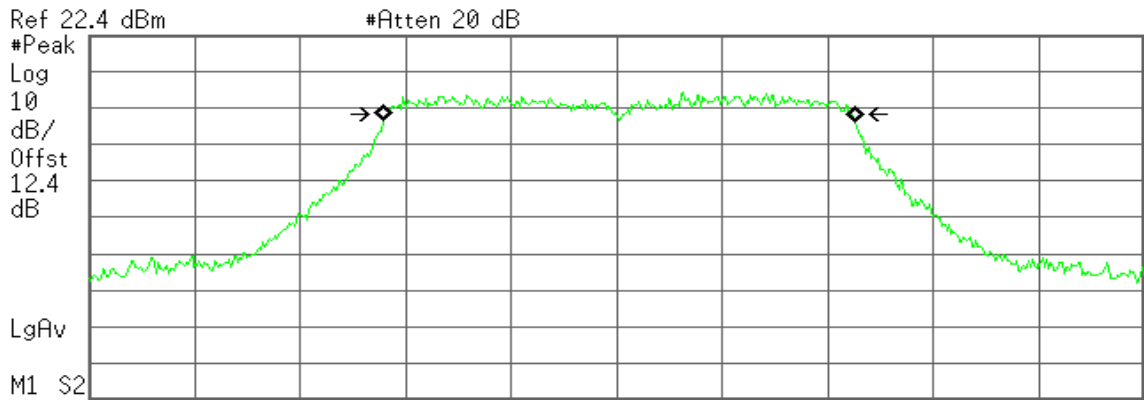
Transmit Freq Error 100.889 kHz
x dB Bandwidth 17.699 MHz



CH Mid

Agilent

R T



Occupied Bandwidth
17.8969 MHz

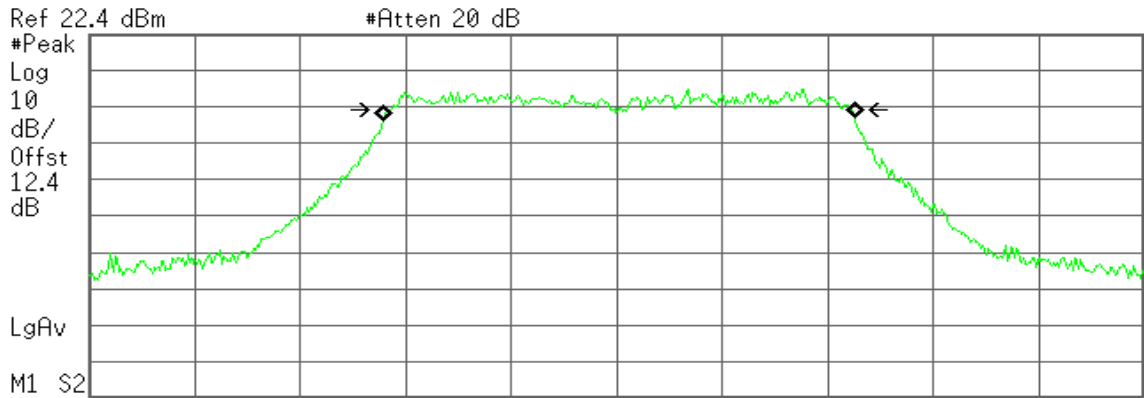
Occ BW % Pwr 99.00 %
x dB -6.00 dB

Transmit Freq Error 97.356 kHz
x dB Bandwidth 17.675 MHz

CH High

Agilent

R T



Occupied Bandwidth
17.8901 MHz

Occ BW % Pwr 99.00 %
x dB -6.00 dB

Transmit Freq Error 100.307 kHz
x dB Bandwidth 17.697 MHz

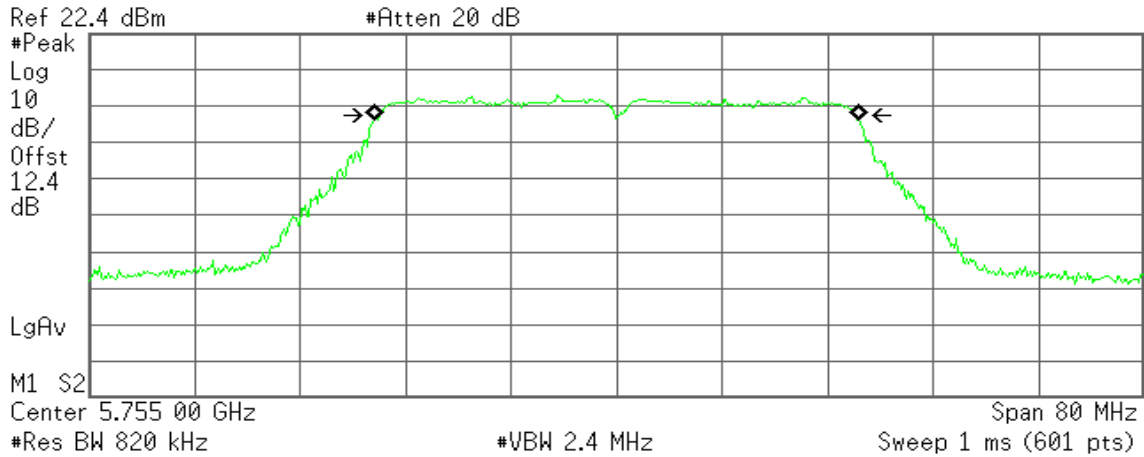


IEEE 802.11n HT 40 mode / 5755 ~ 5795MHz / Chain 0

CH Low

Agilent

R T



Occupied Bandwidth
36.8819 MHz

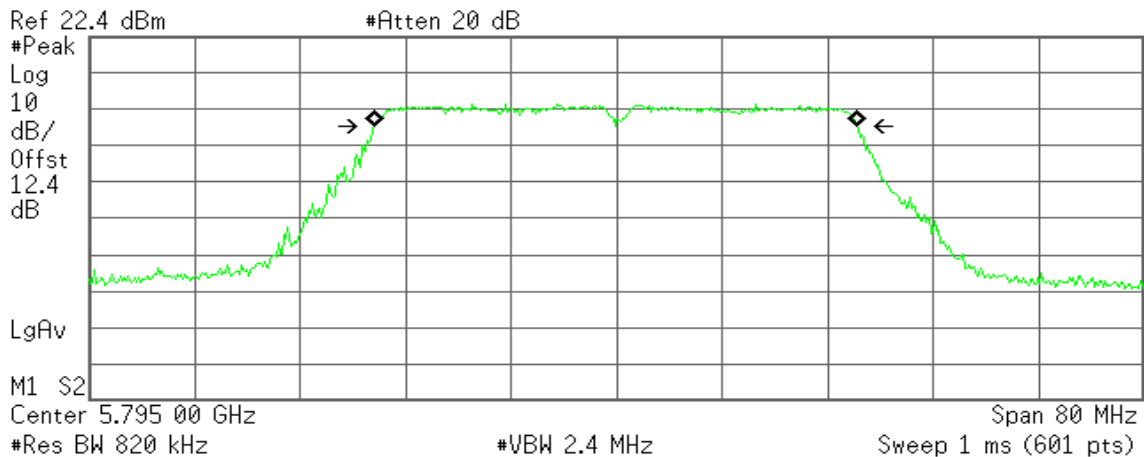
Occ BW % Pwr 99.00 %
x dB -6.00 dB

Transmit Freq Error -23.884 kHz
x dB Bandwidth 36.196 MHz

CH High

Agilent

R T



Occupied Bandwidth
36.7353 MHz

Occ BW % Pwr 99.00 %
x dB -6.00 dB

Transmit Freq Error -63.376 kHz
x dB Bandwidth 36.683 MHz

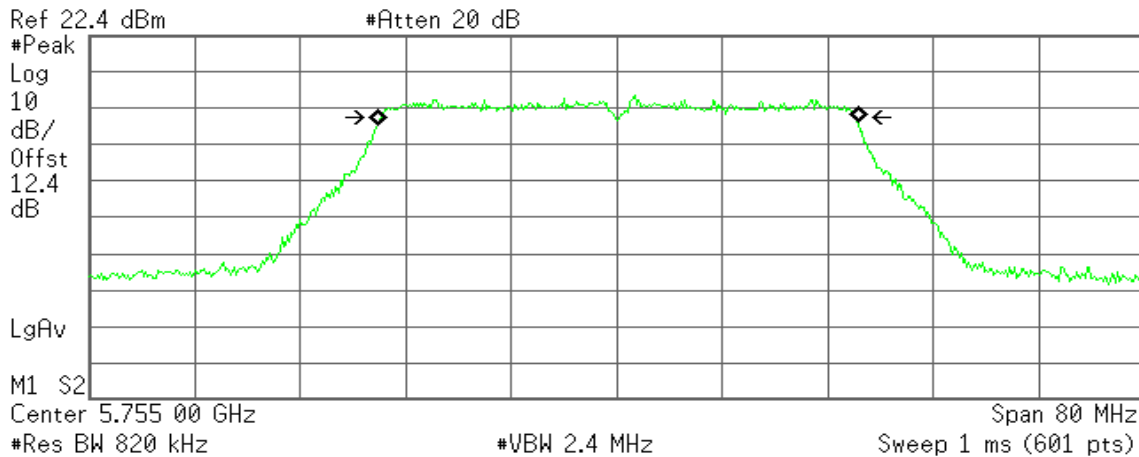


IEEE 802.11n HT 40 mode / 5755 ~ 5795MHz / Chain 1

CH Low

Agilent

R T



Occupied Bandwidth
36.5087 MHz

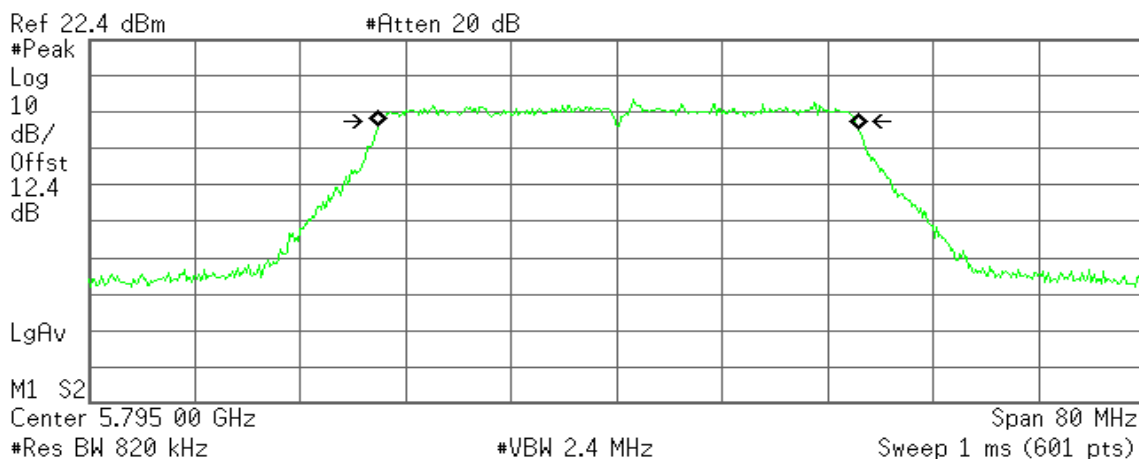
Occ BW % Pwr 99.00 %
x dB -6.00 dB

Transmit Freq Error 80.388 kHz
x dB Bandwidth 36.022 MHz

CH High

Agilent

R T



Occupied Bandwidth
36.4994 MHz

Occ BW % Pwr 99.00 %
x dB -6.00 dB

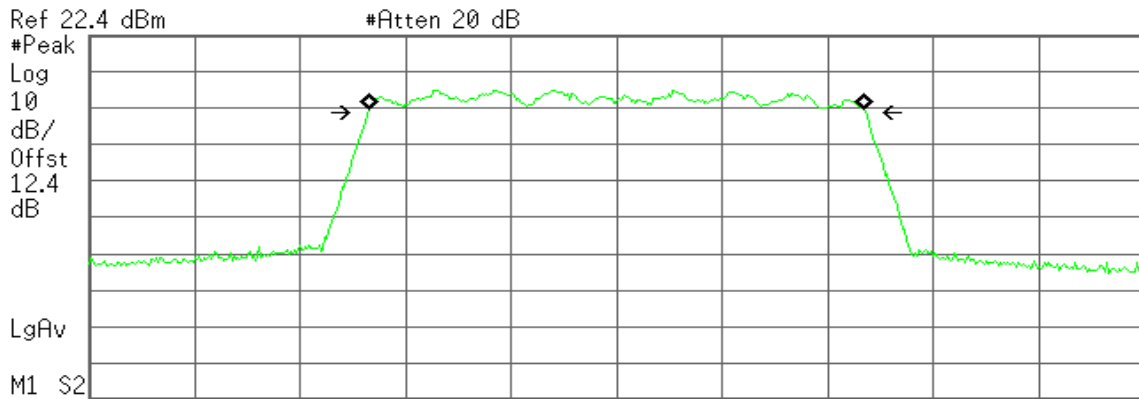
Transmit Freq Error 121.059 kHz
x dB Bandwidth 36.089 MHz



IEEE 802.11 ac80 mode / 5775MHz / Chain 0

Agilent

R T



Center 5.775 0 GHz Span 160 MHz
 #Res BW 1.6 MHz #VBW 5 MHz Sweep 1 ms (601 pts)

Occupied Bandwidth
75.2324 MHz

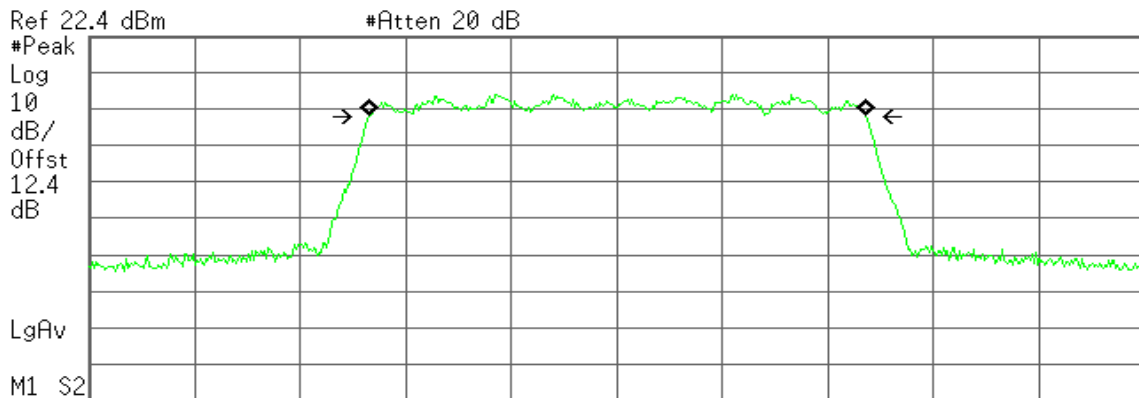
Occ BW % Pwr 99.00 %
x dB -6.00 dB

Transmit Freq Error 36.673 kHz
x dB Bandwidth 75.593 MHz

IEEE 802.11 ac80 mode / 5775MHz / Chain 1

Agilent

R T



Center 5.775 0 GHz Span 160 MHz
 #Res BW 1.6 MHz #VBW 5 MHz Sweep 1 ms (601 pts)

Occupied Bandwidth
75.2920 MHz

Occ BW % Pwr 99.00 %
x dB -6.00 dB

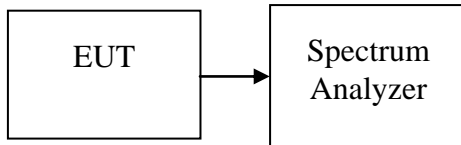
Transmit Freq Error 120.377 kHz
x dB Bandwidth 75.529 MHz



7.2 PEAK POWER

Test Configuration

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



TEST PROCEDURE

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

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

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

TEST RESULTS

No non-compliance noted

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

| Channel | Frequency (MHz) | Maximum Conducted Output Power (dBm) | Limit (dBm) |
|---------|-----------------|--------------------------------------|-------------|
| Low | 5180 | 21.85 | 30.00 |
| Mid | 5220 | 21.94 | |
| High | 5240 | 21.78 | |

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

| Channel | Frequency (MHz) | Chain 0 Output Power (dBm) | Chain 1 Output Power (dBm) | Total Maximum Conducted Output Power (dBm) | Limit (dBm) |
|---------|-----------------|----------------------------|----------------------------|--|-------------|
| Low | 5180 | 21.78 | 21.81 | 24.81 | 30.00 |
| Mid | 5220 | 21.93 | 21.44 | 24.70 | |
| High | 5240 | 21.98 | 21.70 | 24.85 | |

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

| Channel | Frequency (MHz) | Chain 0 Output Power (dBm) | Chain 1 Output Power (dBm) | Total Maximum Conducted Output Power (dBm) | Limit (dBm) |
|---------|-----------------|----------------------------|----------------------------|--|-------------|
| Low | 5190 | 21.77 | 21.55 | 24.67 | 30.00 |
| High | 5230 | 21.94 | 21.80 | 24.88 | |

Test mode: IEEE 802.11n ac80 MHz mode / 5210MHz

| Channel | Frequency (MHz) | Chain 0 Output Power (dBm) | Chain 1 Output Power (dBm) | Total Maximum Conducted Output Power (dBm) | Limit (dBm) |
|---------|-----------------|----------------------------|----------------------------|--|-------------|
| Mid | 5210 | 21.52 | 21.33 | 24.44 | 30.00 |

Remark: 1. Total PPSD (dBm) = $10 * \text{LOG}(10^{(\text{Chain 0 PPSD} / 10)} + 10^{(\text{Chain 1 PPSD} / 10)})$

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

| Channel | Frequency (MHz) | Maximum Conducted Output Power (dBm) | Limit (dBm) |
|---------|-----------------|--------------------------------------|-------------|
| Low | 5745 | 21.97 | 30.00 |
| Mid | 5785 | 21.83 | |
| High | 5825 | 21.78 | |

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

| Channel | Frequency (MHz) | Chain 0 Output Power (dBm) | Chain 1 Output Power (dBm) | Total Maximum Conducted Output Power (dBm) | Limit (dBm) |
|---------|-----------------|----------------------------|----------------------------|--|-------------|
| Low | 5745 | 21.91 | 21.73 | 24.83 | 30.00 |
| Mid | 5785 | 21.63 | 21.49 | 24.57 | |
| High | 5825 | 21.35 | 21.93 | 24.66 | |

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

| Channel | Frequency (MHz) | Chain 0 Output Power (dBm) | Chain 1 Output Power (dBm) | Total Maximum Conducted Output Power (dBm) | Limit (dBm) |
|---------|-----------------|----------------------------|----------------------------|--|-------------|
| Low | 5755 | 21.72 | 21.86 | 24.80 | 30.00 |
| High | 5795 | 21.50 | 21.49 | 24.51 | |

Test mode: IEEE 802.11n ac80 MHz mode / 5775MHz

| Channel | Frequency (MHz) | Chain 0 Output Power (dBm) | Chain 1 Output Power (dBm) | Total Maximum Conducted Output Power (dBm) | Limit (dBm) |
|---------|-----------------|----------------------------|----------------------------|--|-------------|
| Mid | 5775 | 21.83 | 21.26 | 24.56 | 30.00 |

Remark: 1. Total PPSD (dBm) = $10 * \text{LOG}(10^{(\text{Chain 0 PPSD} / 10)} + 10^{(\text{Chain 1 PPSD} / 10)})$

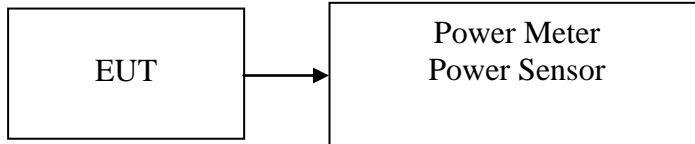


7.3 AVERAGE POWER

LIMIT

None; for reporting purposes only.

Test Configuration



TEST PROCEDURE

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

TEST RESULTS

No non-compliance noted.

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

| Channel | Frequency (MHz) | Maximum Conducted Output Power (dBm) | Limit (dBm) |
|---------|-----------------|--------------------------------------|-------------|
| Low | 5180 | 11.48 | 30.00 |
| Mid | 5220 | *11.56 | |
| High | 5240 | 11.40 | |

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

| Channel | Frequency (MHz) | Chain 0 Output Power (dBm) | Chain 1 Output Power (dBm) | Total Maximum Conducted Output Power (dBm) | Limit (dBm) |
|---------|-----------------|----------------------------|----------------------------|--|-------------|
| Low | 5180 | 11.78 | 12.51 | 15.17 | 30.00 |
| Mid | 5220 | 12.13 | 12.21 | 15.18 | |
| High | 5240 | 12.15 | 12.53 | *15.35 | |

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

| Channel | Frequency (MHz) | Chain 0 Output Power (dBm) | Chain 1 Output Power (dBm) | Total Maximum Conducted Output Power (dBm) | Limit (dBm) |
|---------|-----------------|----------------------------|----------------------------|--|-------------|
| Low | 5190 | 12.03 | 12.09 | 15.07 | 30.00 |
| High | 5230 | 12.25 | 12.24 | *15.26 | |

Test mode: IEEE 802.11n ac80 MHz mode / 5210MHz

| Channel | Frequency (MHz) | Chain 0 Output Power (dBm) | Chain 1 Output Power (dBm) | Total Maximum Conducted Output Power (dBm) | Limit (dBm) |
|---------|-----------------|----------------------------|----------------------------|--|-------------|
| Mid | 5210 | 12.27 | 12.05 | *15.17 | 30.00 |

Remark: 1. Total PPSD (dBm) = $10 * \text{LOG}(10^{(\text{Chain 0 PPSD} / 10)} + 10^{(\text{Chain 1 PPSD} / 10)})$

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

| Channel | Frequency (MHz) | Maximum Conducted Output Power (dBm) | Limit (dBm) |
|---------|-----------------|--------------------------------------|-------------|
| Low | 5745 | *11.62 | 30.00 |
| Mid | 5785 | 11.53 | |
| High | 5825 | 11.33 | |

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

| Channel | Frequency (MHz) | Chain 0 Output Power (dBm) | Chain 1 Output Power (dBm) | Total Maximum Conducted Output Power (dBm) | Limit (dBm) |
|---------|-----------------|----------------------------|----------------------------|--|-------------|
| Low | 5745 | 12.13 | 12.33 | *15.24 | 30.00 |
| Mid | 5785 | 11.91 | 12.26 | 15.10 | |
| High | 5825 | 11.63 | 12.63 | 15.17 | |

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

| Channel | Frequency (MHz) | Chain 0 Output Power (dBm) | Chain 1 Output Power (dBm) | Total Maximum Conducted Output Power (dBm) | Limit (dBm) |
|---------|-----------------|----------------------------|----------------------------|--|-------------|
| Low | 5755 | 12.14 | 12.22 | *15.19 | 30.00 |
| High | 5795 | 11.83 | 11.92 | 14.89 | |

Test mode: IEEE 802.11n ac80 MHz mode / 5775MHz

| Channel | Frequency (MHz) | Chain 0 Output Power (dBm) | Chain 1 Output Power (dBm) | Total Maximum Conducted Output Power (dBm) | Limit (dBm) |
|---------|-----------------|----------------------------|----------------------------|--|-------------|
| Mid | 5775 | 12.49 | 11.83 | *15.18 | 30.00 |

Remark: 1. Total PPSD (dBm) = $10 * \text{LOG}(10^{(\text{Chain 0 PPSD} / 10)} + 10^{(\text{Chain 1 PPSD} / 10)})$



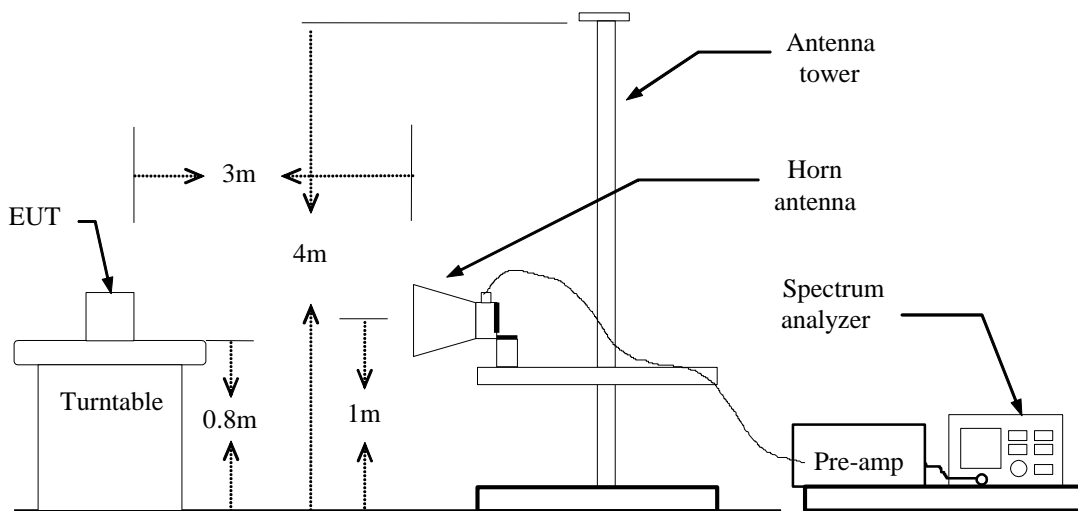
7.4 BAND EDGES MEASUREMENT

LIMIT

According to §15.407(b),

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

Test Configuration



TEST PROCEDURE

1. The EUT is placed on a turntable, which is 0.8m above the ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emission.
4. Set the spectrum analyzer in the following setting in order to capture the lower and upper band-edges of the emission:
 - (a) PEAK: RBW=VBW=1MHz / Sweep=AUTO
 - (b) AVERAGE: RBW=1MHz / VBW=300Hz / Sweep=AUTO
5. Repeat the procedures until all the PEAK and AVERAGE versus POLARIZATION are measured.

TEST RESULTS

Refer to attach spectrum analyzer data chart.



Band Edges (IEEE 802.11a mode / 5180 MHz)

Detector mode: Peak

Polarity: Vertical

Agilent

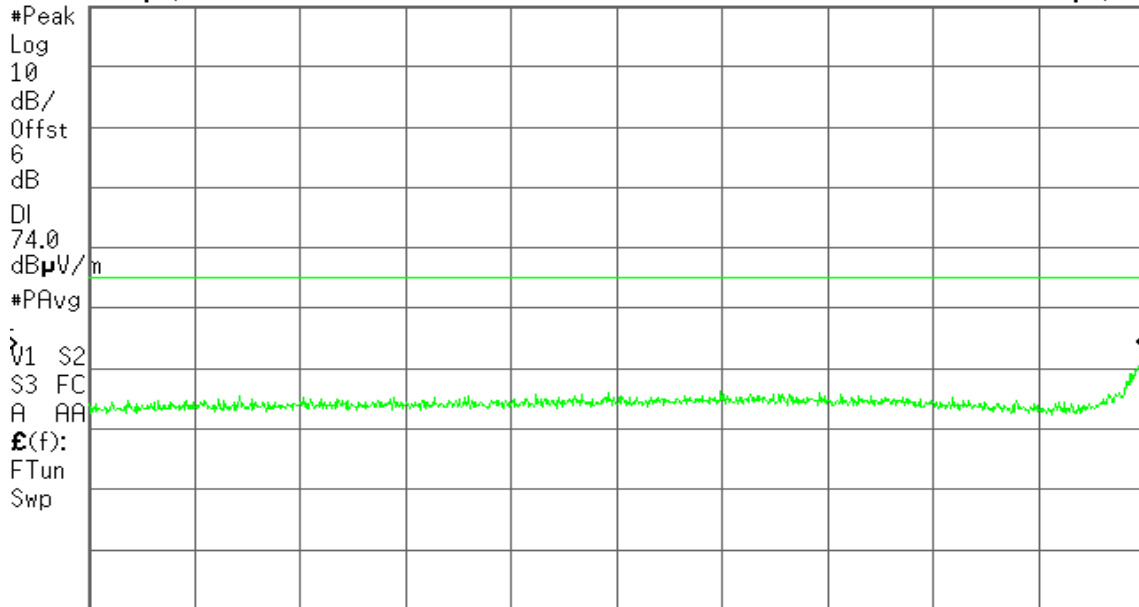
R T

Mkr1 5.150 0 GHz

62.37 dB μ V/m

Ref 119 dB μ V/m

#Atten 16 dB



Start 4.500 0 GHz

Stop 5.150 0 GHz

#Res BW 1 MHz

#VBW 3 MHz

#Sweep 100 ms (1001 pts)

Detector mode: Average

Polarity: Vertical

Agilent

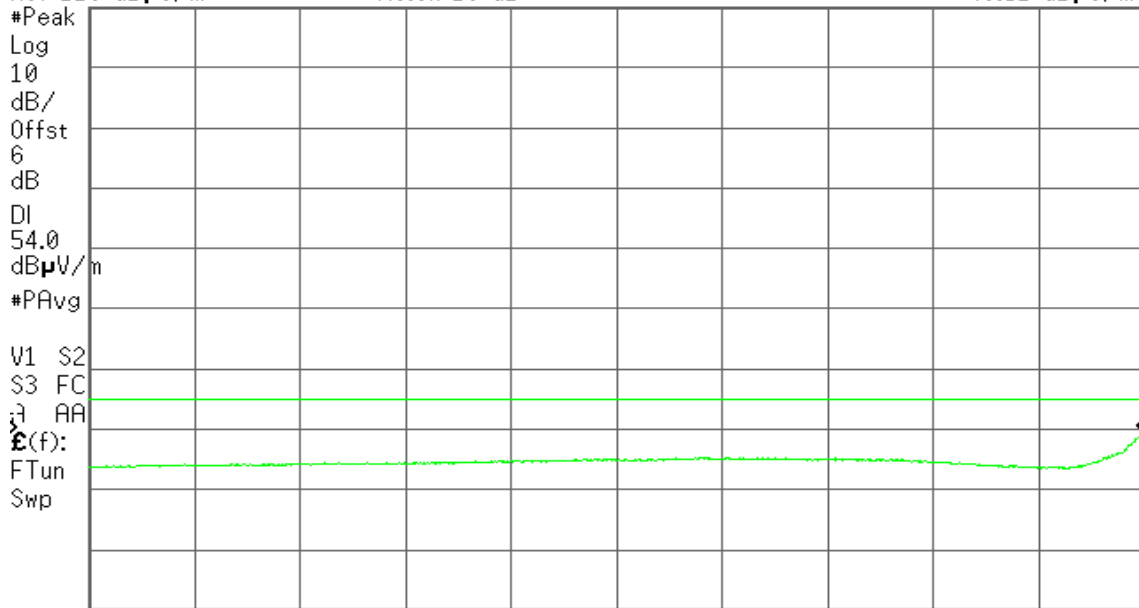
R T

Mkr1 5.150 0 GHz

48.51 dB μ V/m

Ref 119 dB μ V/m

#Atten 16 dB



Start 4.500 0 GHz

Stop 5.150 0 GHz

#Res BW 1 MHz

#VBW 510 Hz

Sweep 993.8 ms (1001 pts)



Detector mode: Peak

Polarity: Horizontal

Agilent

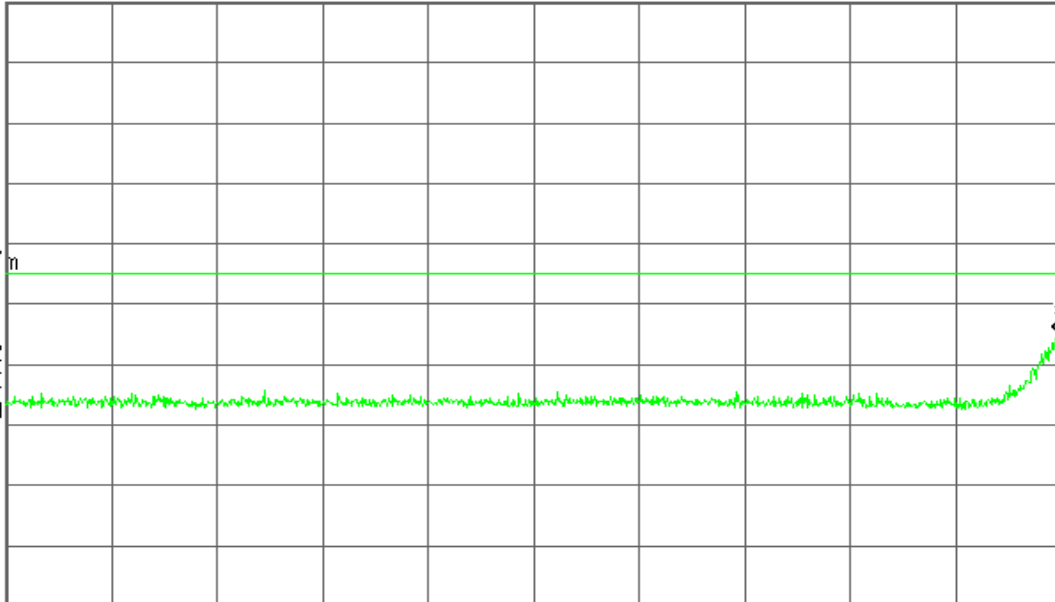
R T

Mkr1 5.148 7 GHz
64.14 dB μ V/m

Ref 119 dB μ V/m

#Atten 16 dB

#Peak
Log
10
dB/
Offst
6
dB
DI
74.0
dB μ V/m
#PAvg
>
M1 S2
S3 FC
A AA
£(f):
FTun
Swp



Start 4.500 0 GHz

Stop 5.150 0 GHz

#Res BW 1 MHz

#VBW 3 MHz

#Sweep 100 ms (1001 pts)

Detector mode: Average

Polarity: Horizontal

Agilent

R T

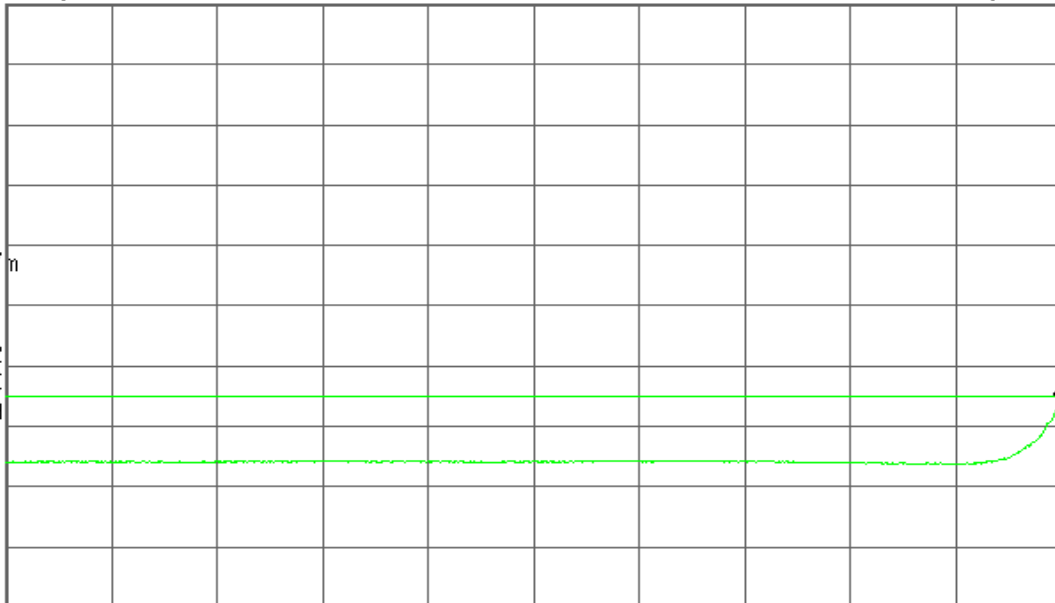
Mkr1 5.150 0 GHz
53.08 dB μ V/m

Ref 119 dB μ V/m

#Atten 16 dB

#Peak
Log
10
dB/
Offst
6
dB
DI
54.0
dB μ V/m
#PAvg

M1 S2
S3 FC
A AA
£(f):
FTun
Swp



Start 4.500 0 GHz

Stop 5.150 0 GHz

#Res BW 1 MHz

#VBW 510 Hz

Sweep 993.8 ms (1001 pts)



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

Detector mode: Peak

Polarity: Vertical

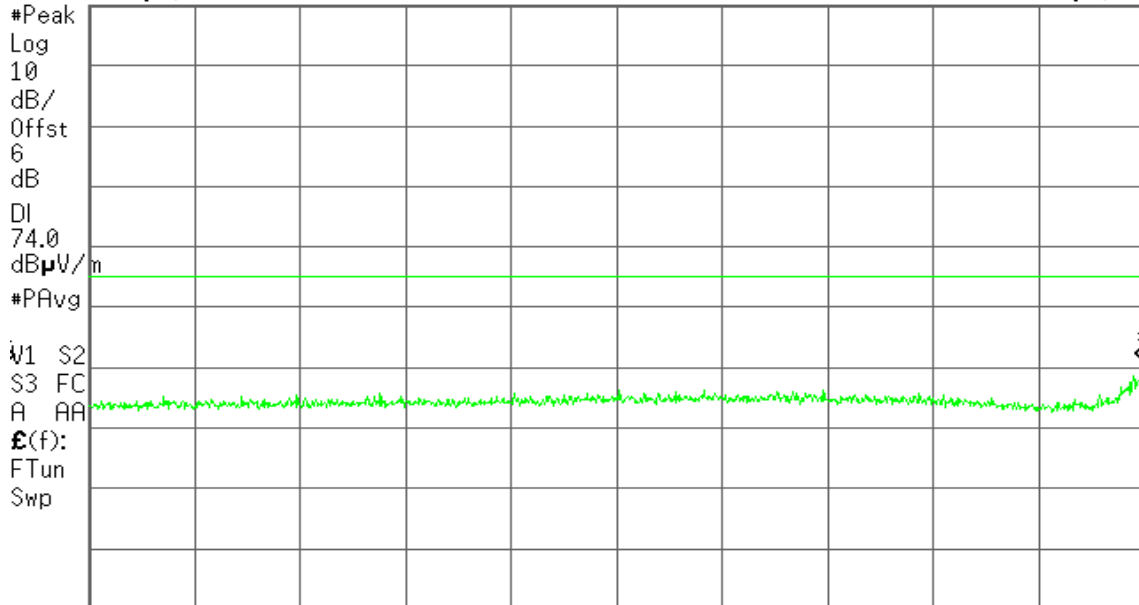
Agilent

R T

Mkr1 5.148 7 GHz
60.31 dB μ V/m

Ref 119 dB μ V/m

#Atten 16 dB



Start 4.500 0 GHz

Stop 5.150 0 GHz

#Res BW 1 MHz

#VBW 3 MHz

#Sweep 100 ms (1001 pts)

Detector mode: Average

Polarity: Vertical

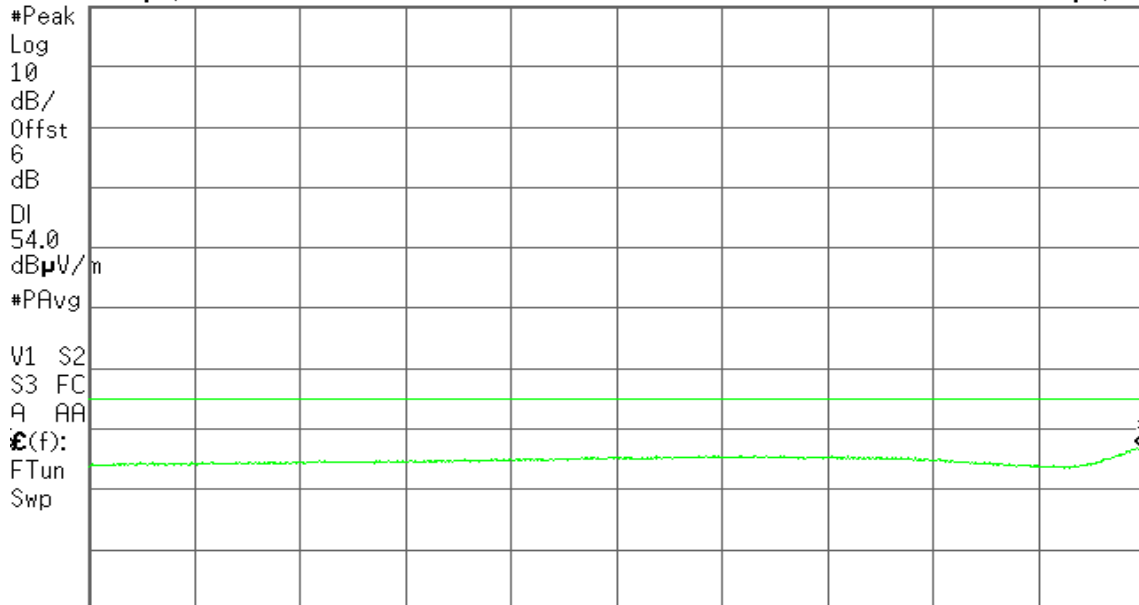
Agilent

R T

Mkr1 5.149 4 GHz
45.78 dB μ V/m

Ref 119 dB μ V/m

#Atten 16 dB



Start 4.500 0 GHz

Stop 5.150 0 GHz

#Res BW 1 MHz

#VBW 1.1 kHz

Sweep 460.8 ms (1001 pts)



Detector mode: Peak

Polarity: Horizontal

Agilent

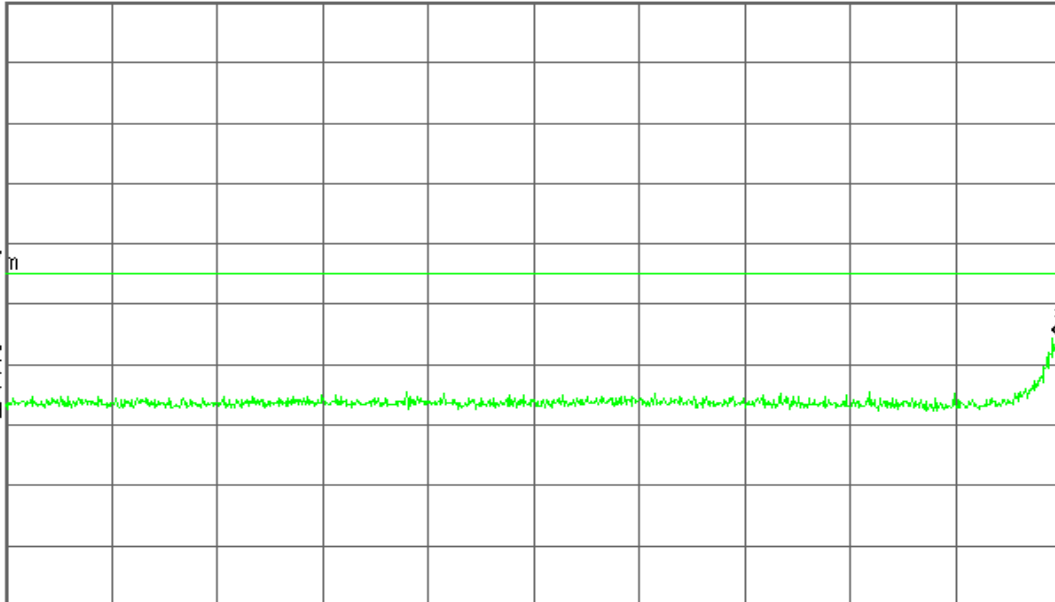
R T

Mkr1 5.148 7 GHz
63.66 dB μ V/m

Ref 119 dB μ V/m

#Atten 16 dB

#Peak
Log
10
dB/
Offst
6
dB
DI
74.0
dB μ V/m
#PAvg
M1 S2
S3 FC
A AA
£(f):
FTun
Swp



Start 4.500 0 GHz

Stop 5.150 0 GHz

#Res BW 1 MHz

#VBW 3 MHz

#Sweep 100 ms (1001 pts)

Detector mode: Average

Polarity: Horizontal

Agilent

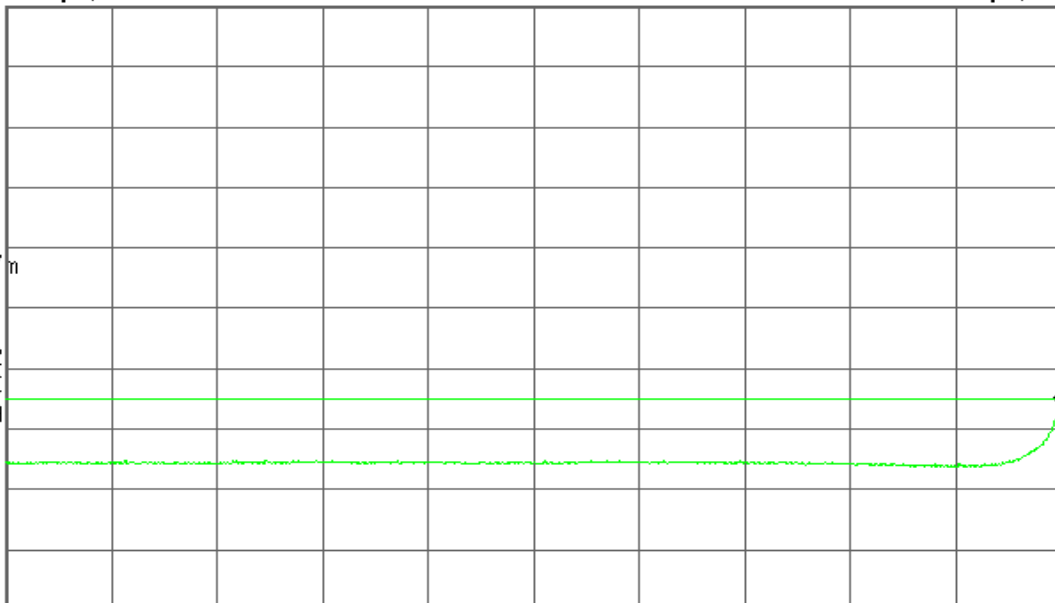
R T

Mkr1 5.150 0 GHz
53.00 dB μ V/m

Ref 119 dB μ V/m

#Atten 16 dB

#Peak
Log
10
dB/
Offst
6
dB
DI
54.0
dB μ V/m
#PAvg
M1 S2
S3 FC
A AA
£(f):
FTun
Swp



Start 4.500 0 GHz

Stop 5.150 0 GHz

#Res BW 1 MHz

#VBW 1.1 kHz

Sweep 460.8 ms (1001 pts)



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

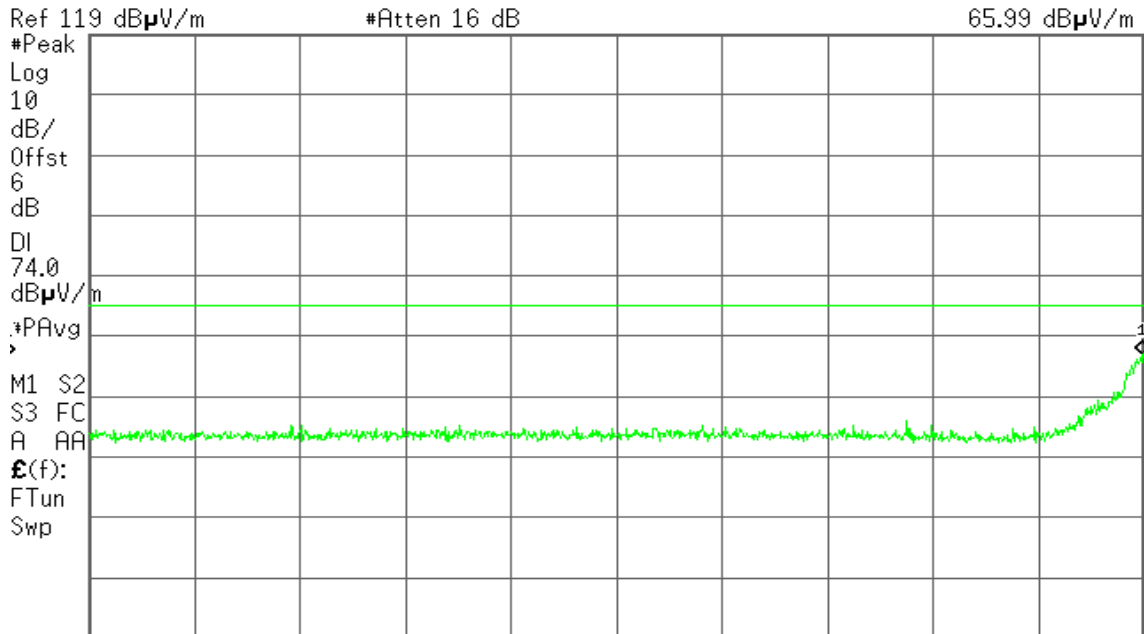
Detector mode: Peak

Polarity: Vertical

Agilent

R T

Mkr1 5.148 7 GHz
65.99 dBµV/m



#Res BW 1 MHz #VBW 3 MHz #Sweep 100 ms (1001 pts)

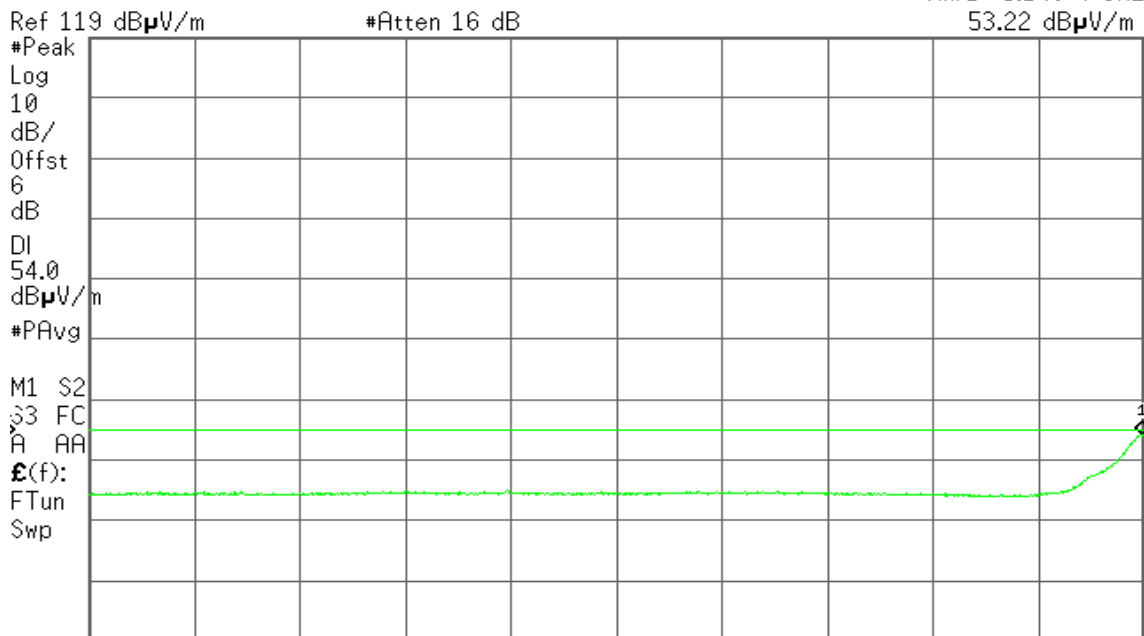
Detector mode: Average

Polarity: Vertical

Agilent

R T

Mkr1 5.149 4 GHz
53.22 dBµV/m



#Res BW 1 MHz #VBW 1.1 kHz Sweep 460.8 ms (1001 pts)



Detector mode: Peak

Polarity: Horizontal

Agilent

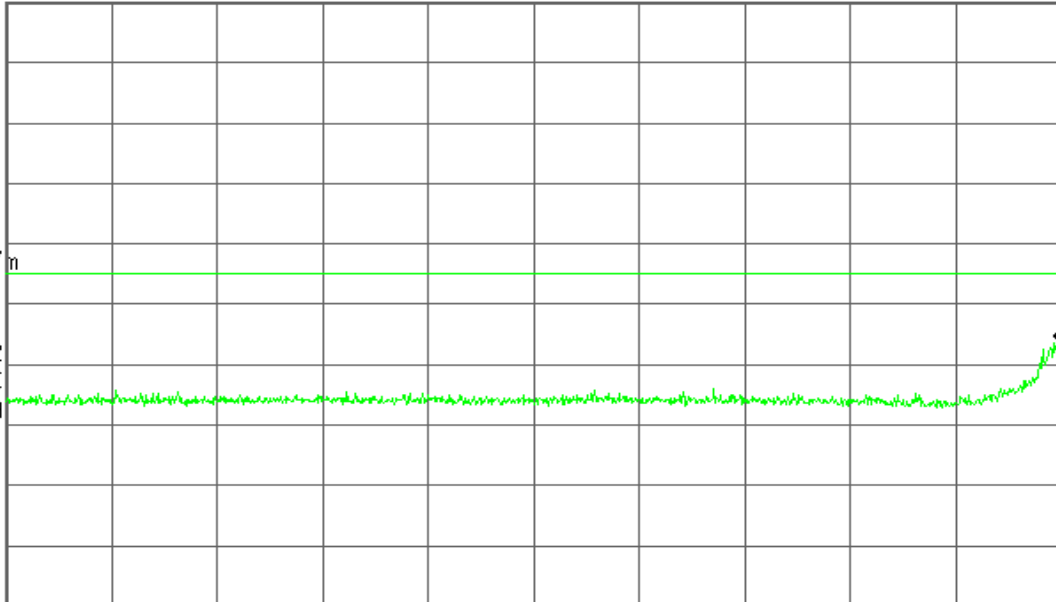
R T

Mkr1 5.150 0 GHz
62.63 dB μ V/m

Ref 119 dB μ V/m

#Atten 16 dB

#Peak
Log
10
dB/
Offst
6
dB
DI
74.0
dB μ V/m
#PAvg
M1 S2
S3 FC
A AA
£(f):
FTun
Swp



Start 4.500 0 GHz

Stop 5.150 0 GHz

#Res BW 1 MHz

#VBW 3 MHz

#Sweep 100 ms (1001 pts)

Detector mode: Average

Polarity: Horizontal

Agilent

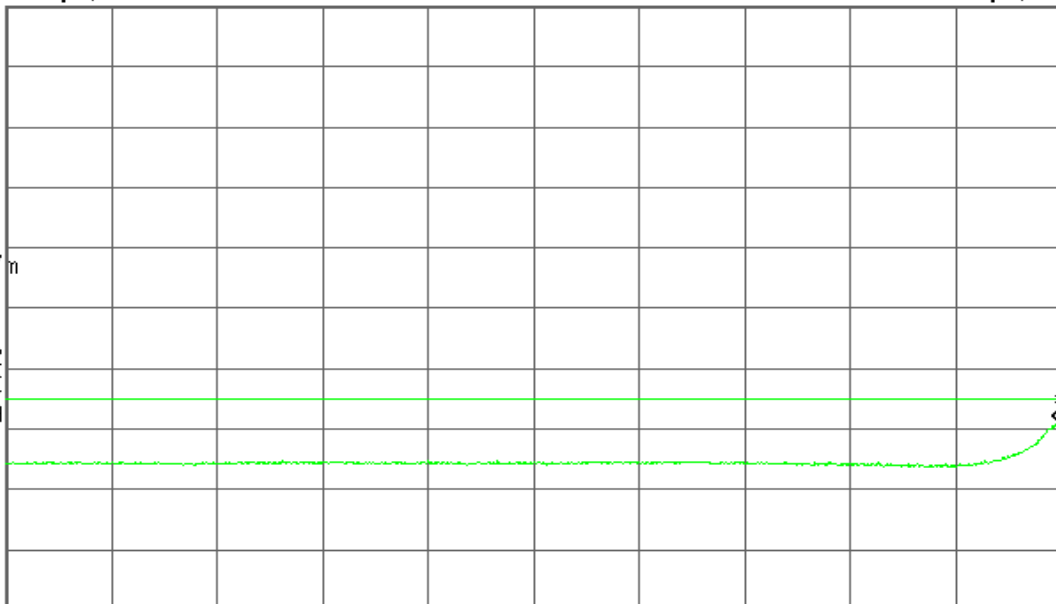
R T

Mkr1 5.148 7 GHz
49.99 dB μ V/m

Ref 119 dB μ V/m

#Atten 16 dB

#Peak
Log
10
dB/
Offst
6
dB
DI
54.0
dB μ V/m
#PAvg
M1 S2
S3 FC
A AA
£(f):
FTun
Swp



Start 4.500 0 GHz

Stop 5.150 0 GHz

#Res BW 1 MHz

#VBW 1.1 kHz

Sweep 460.8 ms (1001 pts)



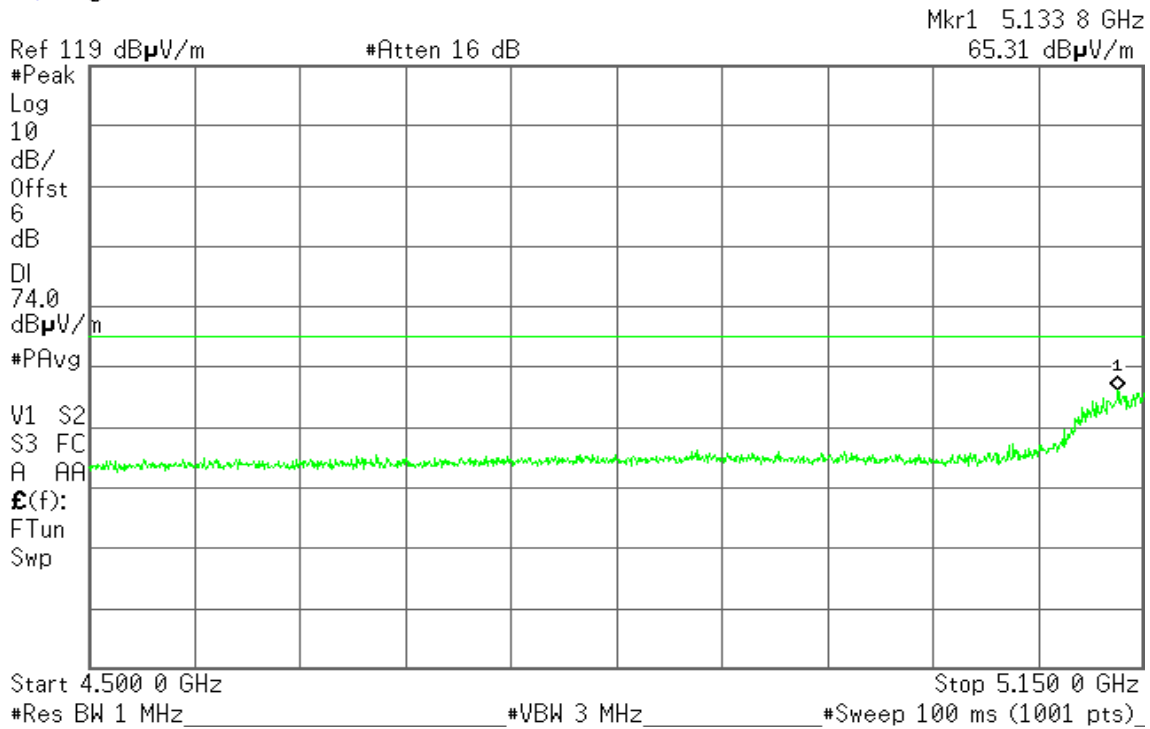
Band Edges (IEEE 802.11n ac80 MHz mode / CH 5210 MHz)

Detector mode: Peak

Polarity: Vertical

Agilent

R T

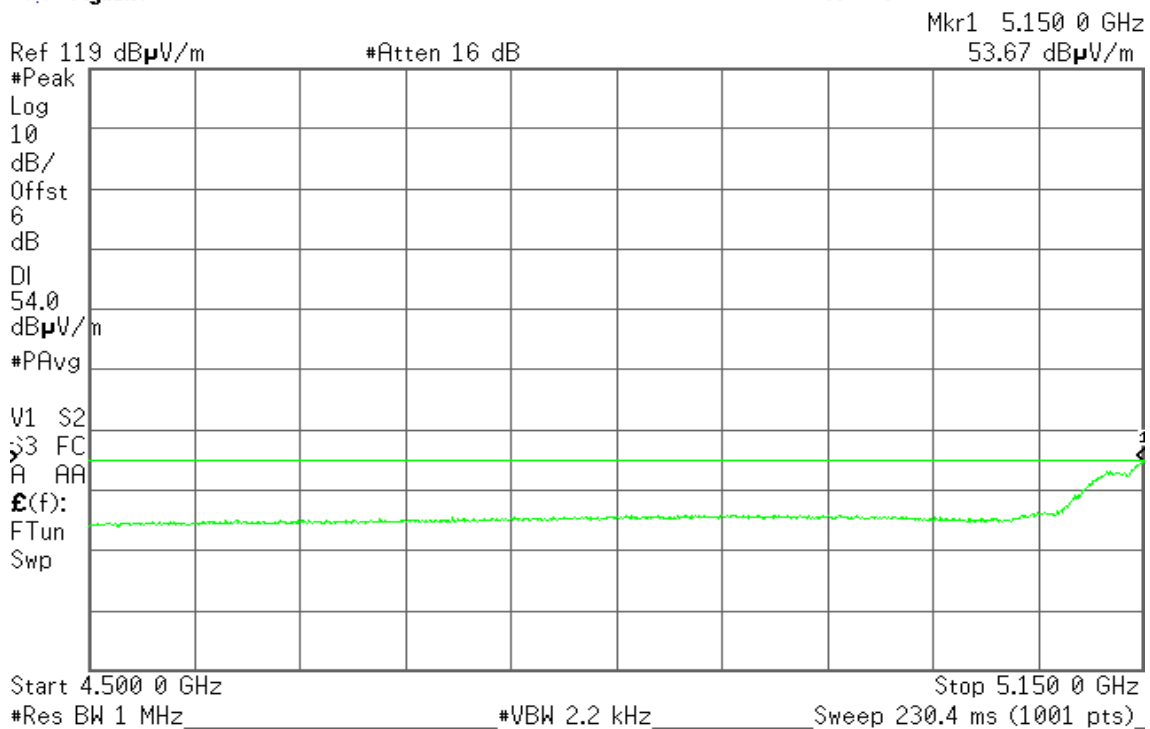


Detector mode: Average

Polarity: Vertical

Agilent

R T





Detector mode: Peak

Polarity: Horizontal

Agilent

R T

Mkr1 5.137 6 GHz
60.84 dBµV/m

Ref 119 dBµV/m

#Atten 16 dB

#Peak

Log

10

dB/

Offst

6

dB

DI

74.0

dBµV/m

#PAvg

V1 S2

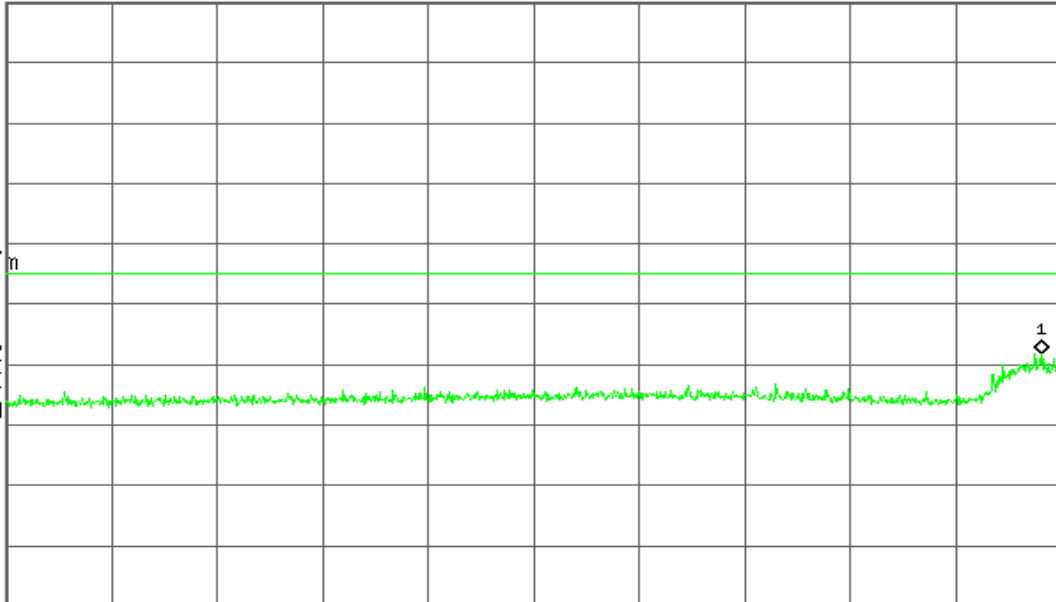
S3 FC

A AA

£(f):

FTun

Swp



Start 4.500 0 GHz

Stop 5.150 0 GHz

#Res BW 1 MHz

#VBW 3 MHz

#Sweep 100 ms (1001 pts)

Detector mode: Average

Polarity: Horizontal

Agilent

R T

Mkr1 5.147 4 GHz
49.48 dBµV/m

Ref 119 dBµV/m

#Atten 16 dB

#Peak

Log

10

dB/

Offst

6

dB

DI

54.0

dBµV/m

#PAvg

V1 S2

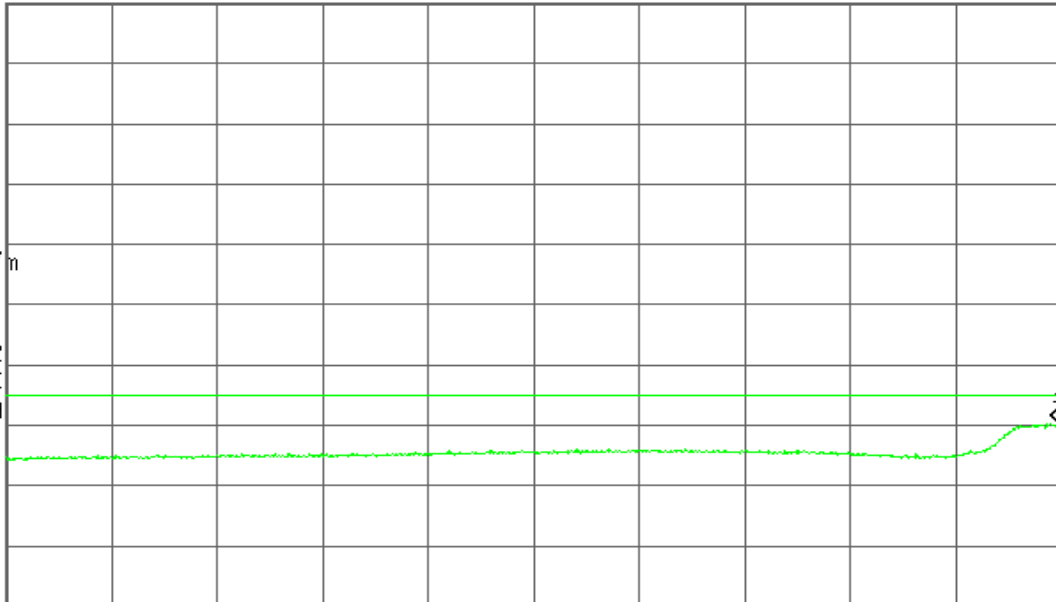
S3 FC

A AA

£(f):

FTun

Swp



Start 4.500 0 GHz

Stop 5.150 0 GHz

#Res BW 1 MHz

#VBW 2.2 kHz

Sweep 230.4 ms (1001 pts)



7.5 PEAK POWER SPECTRAL DENSITY

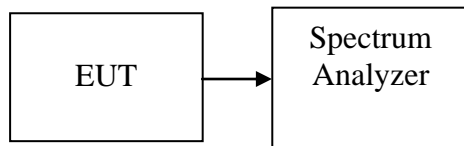
LIMIT

According to §15.407(a),

- (1) For the band 5.15-5.25 GHz, the peak power spectral density shall not exceed 4dBm in any 1MHz band.
- (2) For the band 5.25-5.35 GHz, the peak power spectral density shall not exceed 11dBm in any 1MHz band.

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

Test Configuration



TEST PROCEDURE

1. Place the EUT on the table and set it in transmitting mode.
Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
2. Set the spectrum analyzer as RBW = 1MHz, VBW = 3MHz, Span = 50MHz, Sweep=1ms
3. Record the max. reading.
4. Repeat the above procedure until the measurements for all frequencies are completed

TEST RESULTS

No non-compliance noted

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

| Channel | Frequency (MHz) | PPSD (dBm) | Limit (dBm) | Result |
|---------|-----------------|------------|-------------|--------|
| Low | 5180 | -0.58 | 4.00 | PASS |
| Mid | 5220 | 0 | | PASS |
| High | 5240 | 0.85 | | PASS |

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

| Channel | Frequency (MHz) | Chain 0 PPSD (dBm) | Chain 1 PPSD (dBm) | PPSD (dBm) | Limit (dBm) | Result |
|---------|-----------------|--------------------|--------------------|------------|-------------|--------|
| Low | 5180 | -0.75 | -2.54 | 1.46 | 3 | PASS |
| Mid | 5220 | 0.03 | -1.81 | 2.22 | | PASS |
| High | 5240 | 0.09 | -1.53 | 2.37 | | PASS |

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

| Channel | Frequency (MHz) | Chain 0 PPSD (dBm) | Chain 1 PPSD (dBm) | PPSD (dBm) | Limit (dBm) | Result |
|---------|-----------------|--------------------|--------------------|------------|-------------|--------|
| Low | 5190 | -7.03 | -3.66 | -2.02 | 3 | PASS |
| High | 5230 | -6.04 | -3.07 | -1.30 | | PASS |

Test mode: IEEE 802.11n ac80 MHz mode / 5210MHz

| Channel | Frequency (MHz) | Chain 0 PPSD (dBm) | Chain 1 PPSD (dBm) | PPSD (dBm) | Limit (dBm) | Result |
|---------|-----------------|--------------------|--------------------|------------|-------------|--------|
| Mid | 5210 | -4.18 | -4.59 | -1.37 | 3 | PASS |

Remark: 1. Total PPSD (dBm) = $10 * \text{LOG}(10^{(\text{Chain 0 PPSD} / 10)} + 10^{(\text{Chain 1 PPSD} / 10)})$

2. The maximum antenna gain is 7dBi; therefore the reduction due to antenna gain is 1dBi, so the limit is 3dBm.

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

| Channel | Frequency (MHz) | PPSD (dBm) | Limit (dBm) | Result |
|---------|-----------------|------------|-------------|--------|
| Low | 5745 | -2.04 | 8.00 | PASS |
| Mid | 5785 | -2.39 | | PASS |
| High | 5825 | -2.50 | | PASS |

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

| Channel | Frequency (MHz) | Chain 0 PPSD (dBm) | Chain 1 PPSD (dBm) | PPSD (dBm) | Limit (dBm) | Result |
|---------|-----------------|--------------------|--------------------|------------|-------------|--------|
| Low | 5745 | -3.71 | -3.02 | -0.34 | 5.1 | PASS |
| Mid | 5785 | -4.30 | -2.95 | -0.56 | | PASS |
| High | 5825 | -4.82 | -2.24 | -0.33 | | PASS |

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

| Channel | Frequency (MHz) | Chain 0 PPSD (dBm) | Chain 1 PPSD (dBm) | PPSD (dBm) | Limit (dBm) | Result |
|---------|-----------------|--------------------|--------------------|------------|-------------|--------|
| Low | 5755 | -7.38 | -5.45 | -3.30 | 5.1 | PASS |
| High | 5795 | -7.76 | -5.45 | -3.44 | | PASS |

Test mode: IEEE 802.11n ac80 MHz mode / 5775MHz

| Channel | Frequency (MHz) | Chain 0 PPSD (dBm) | Chain 1 PPSD (dBm) | PPSD (dBm) | Limit (dBm) | Result |
|---------|-----------------|--------------------|--------------------|------------|-------------|--------|
| Mid | 5775 | -8.32 | -8.33 | -5.31 | 5.1 | PASS |

Remark: 1. Total PPSD (dBm) = $10 * \text{LOG}(10^{(\text{Chain 0 PPSD} / 10)} + 10^{(\text{Chain 1 PPSD} / 10)})$

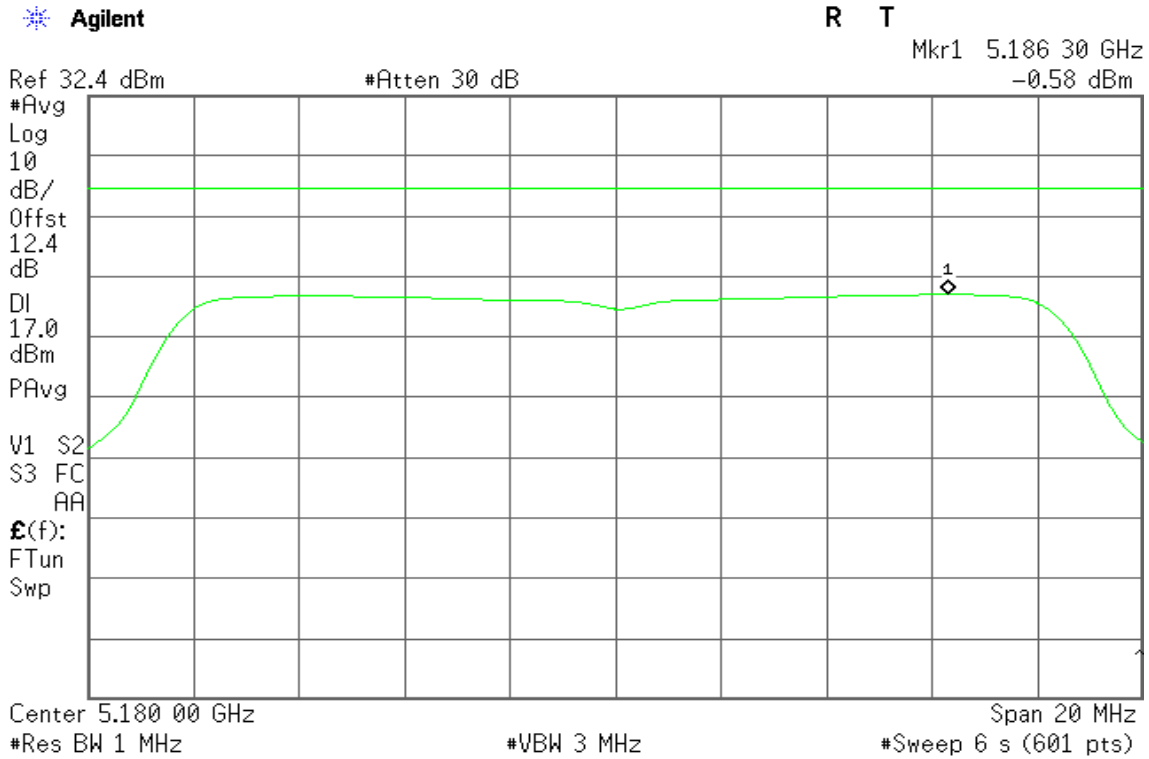
2. The maximum antenna gain is 8.9dBi; therefore the reduction due to antenna gain is 2.9dBi, so the limit is 5.1dBm.



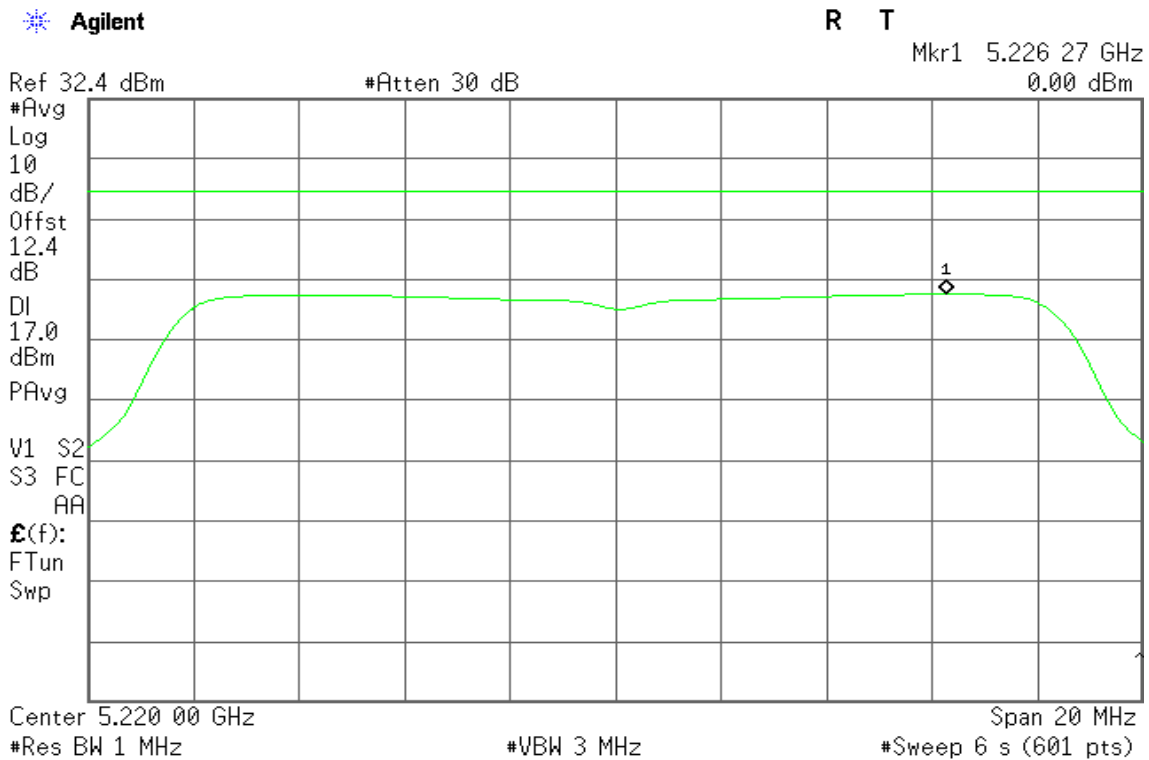
Test Plot

IEEE 802.11a mode / 5180 ~ 5240MHz

CH Low



CH Mid





CH High

Agilent

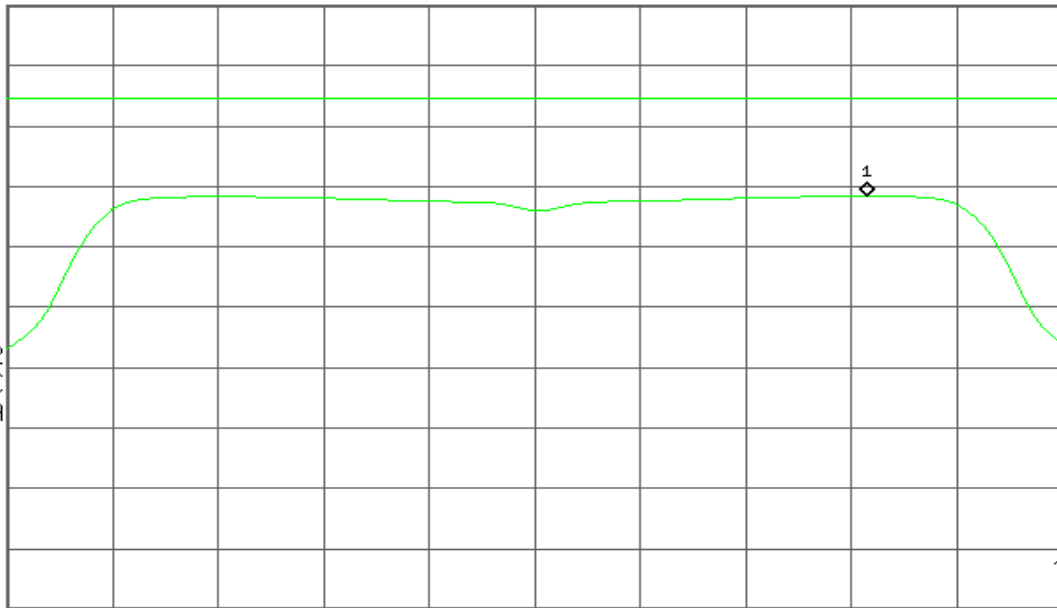
R T

Mkr1 5.246 30 GHz
0.85 dBm

Ref 32.4 dBm

#Atten 30 dB

#Avg
Log
10
dB/
Offst
12.4
dB
DI
17.0
dBm
PAvg
V1 S2
S3 FC
AA
£(f):
FTun
Swp



Center 5.240 00 GHz

Span 20 MHz

#Res BW 1 MHz

#VBW 3 MHz

#Sweep 6 s (601 pts)

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

CH Low

Agilent

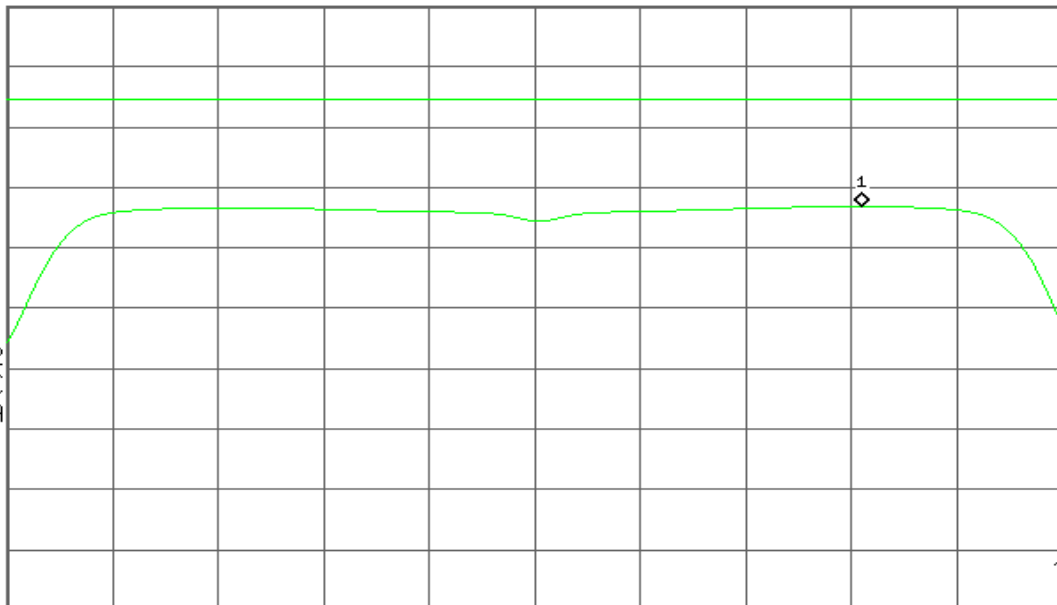
R T

Mkr1 5.186 20 GHz
-0.75 dBm

Ref 32.4 dBm

#Atten 30 dB

#Avg
Log
10
dB/
Offst
12.4
dB
DI
17.0
dBm
PAvg
V1 S2
S3 FC
AA
£(f):
FTun
Swp



Center 5.180 00 GHz

Span 20 MHz

#Res BW 1 MHz

#VBW 3 MHz

#Sweep 6 s (601 pts)

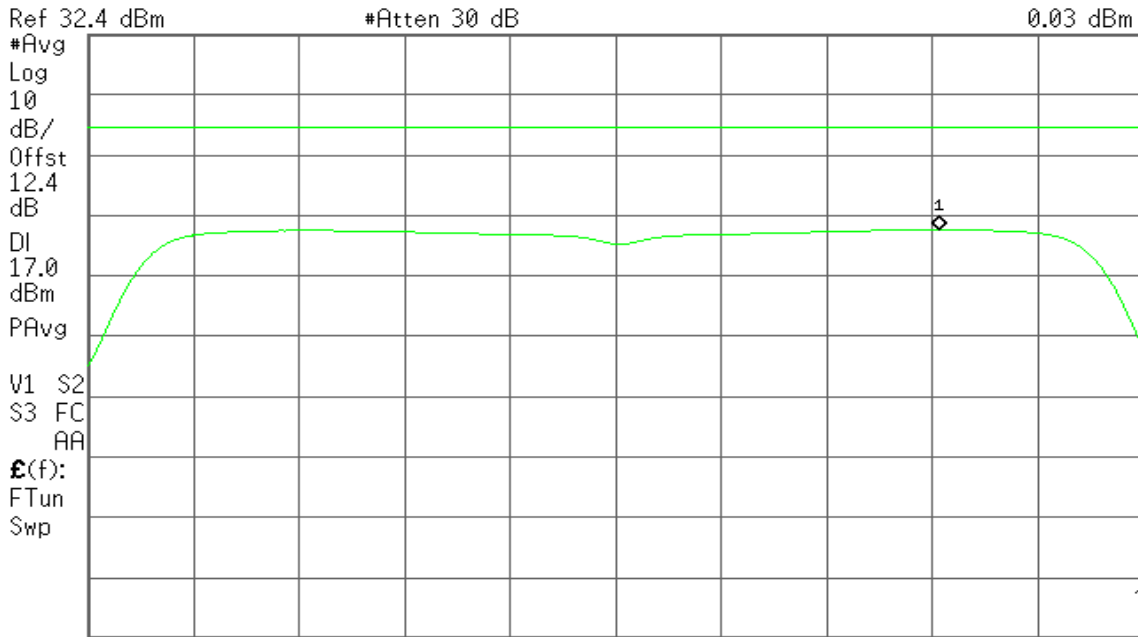


CH Mid

Agilent

R T

Mkr1 5.226 13 GHz
0.03 dBm

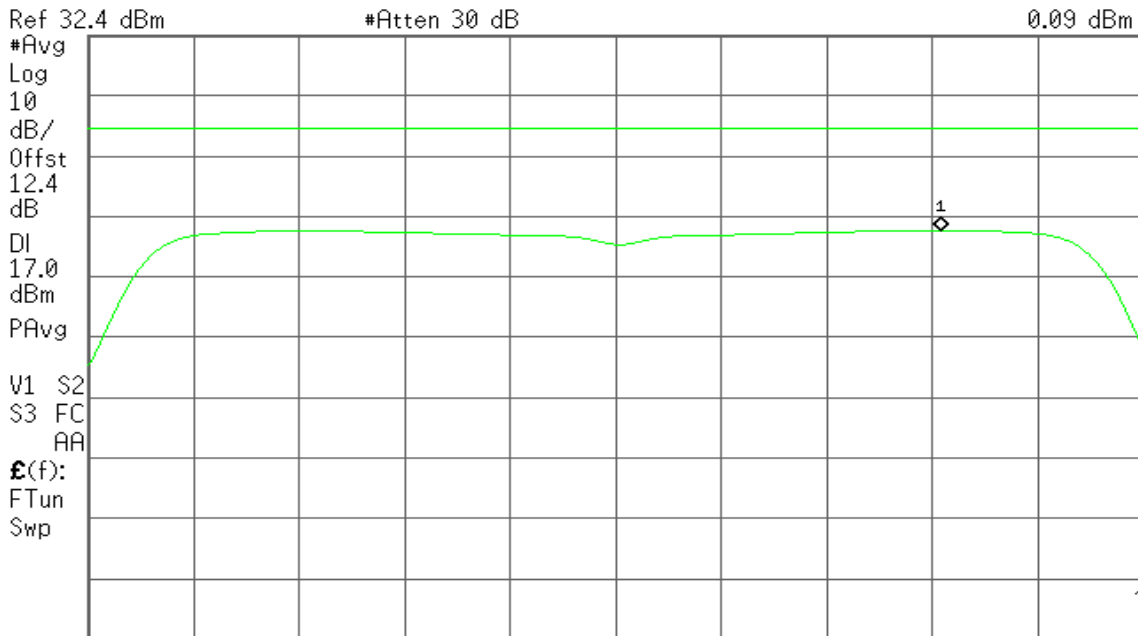


CH High

Agilent

R T

Mkr1 5.246 17 GHz
0.09 dBm





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

CH Low

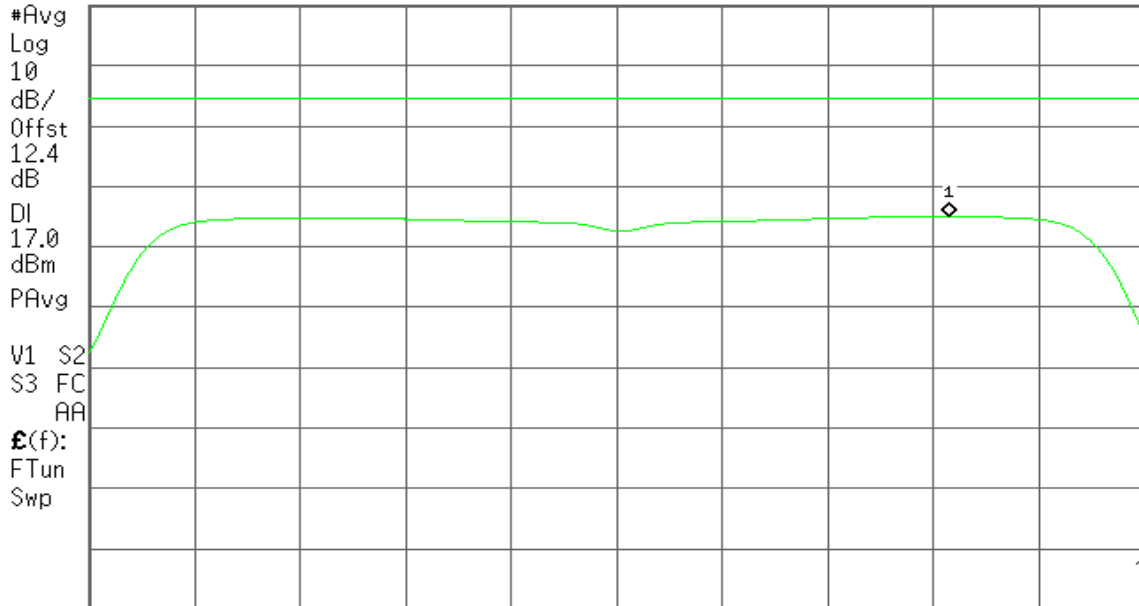
Agilent

R T

Mkr1 5.186 30 GHz
-2.54 dBm

Ref 32.4 dBm

#Atten 30 dB



Center 5.180 00 GHz

Span 20 MHz

#Res BW 1 MHz

#VBW 3 MHz

#Sweep 6 s (601 pts)

CH Mid

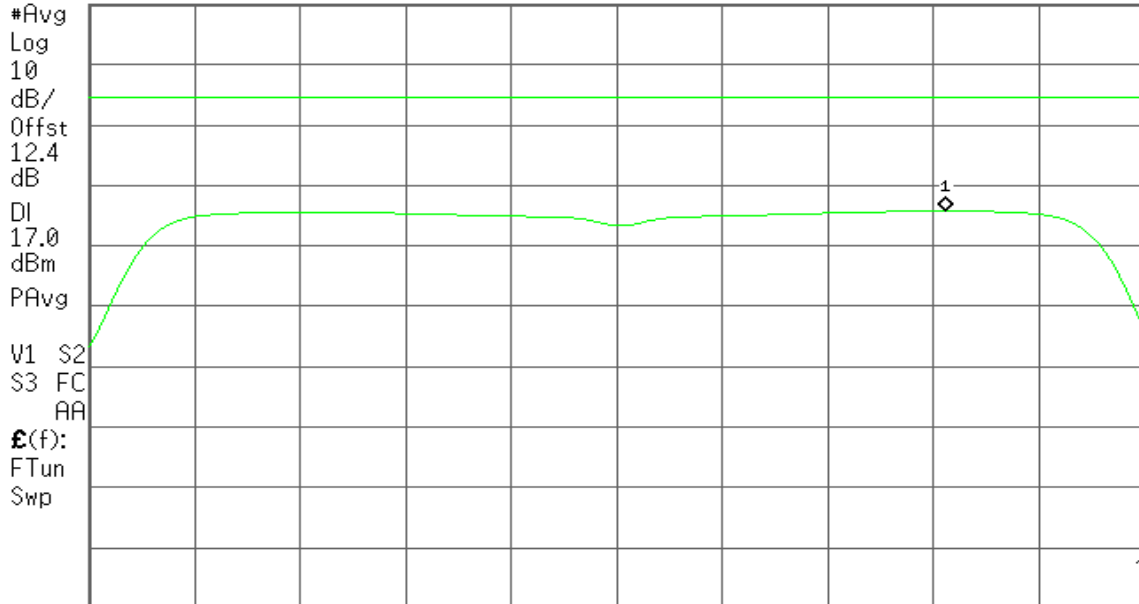
Agilent

R T

Mkr1 5.226 23 GHz
-1.81 dBm

Ref 32.4 dBm

#Atten 30 dB



Center 5.220 00 GHz

Span 20 MHz

#Res BW 1 MHz

#VBW 3 MHz

#Sweep 6 s (601 pts)

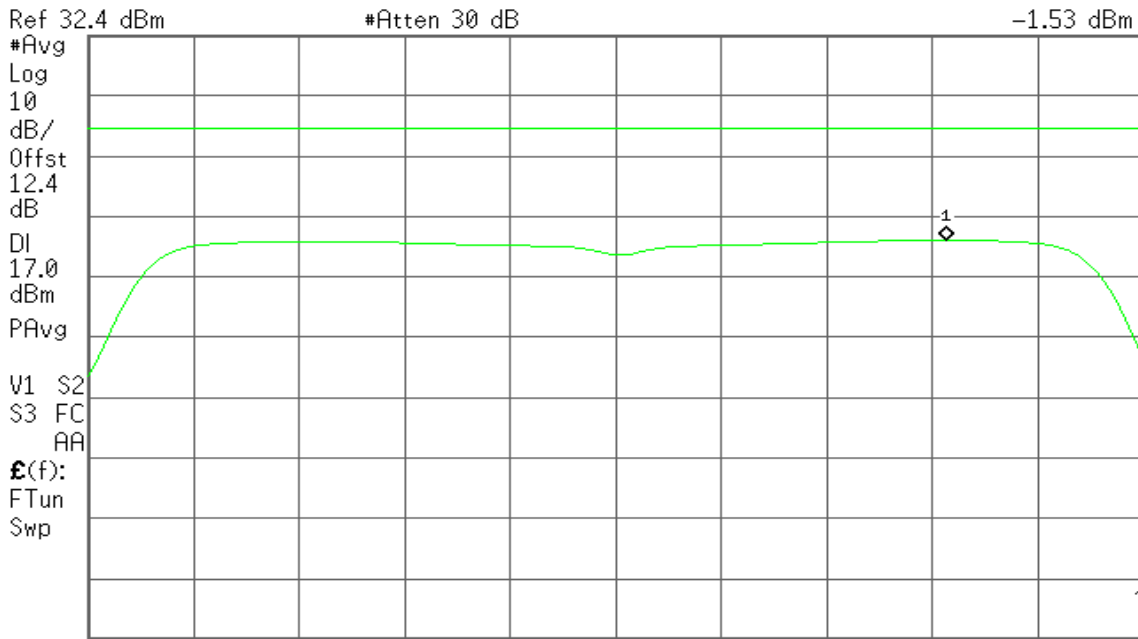


CH High

Agilent

R T

Mkr1 5.246 27 GHz
-1.53 dBm



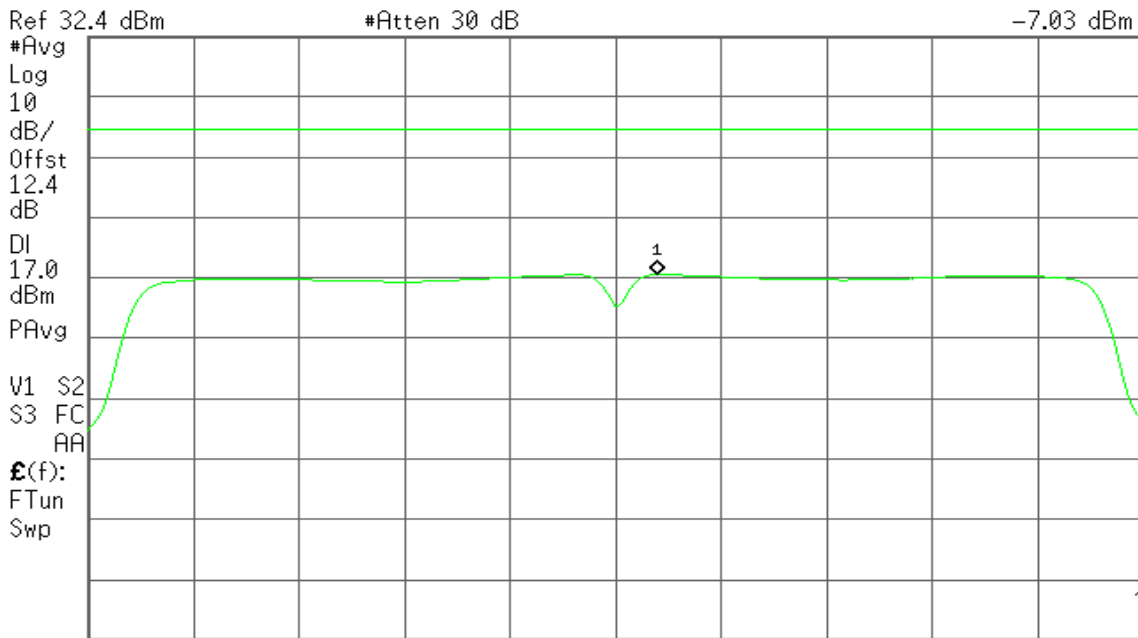
IEEE 802.11n HT 40 mode / 5190 ~ 5230MHz / Chain 0

CH Low

Agilent

R T

Mkr1 5.191 60 GHz
-7.03 dBm



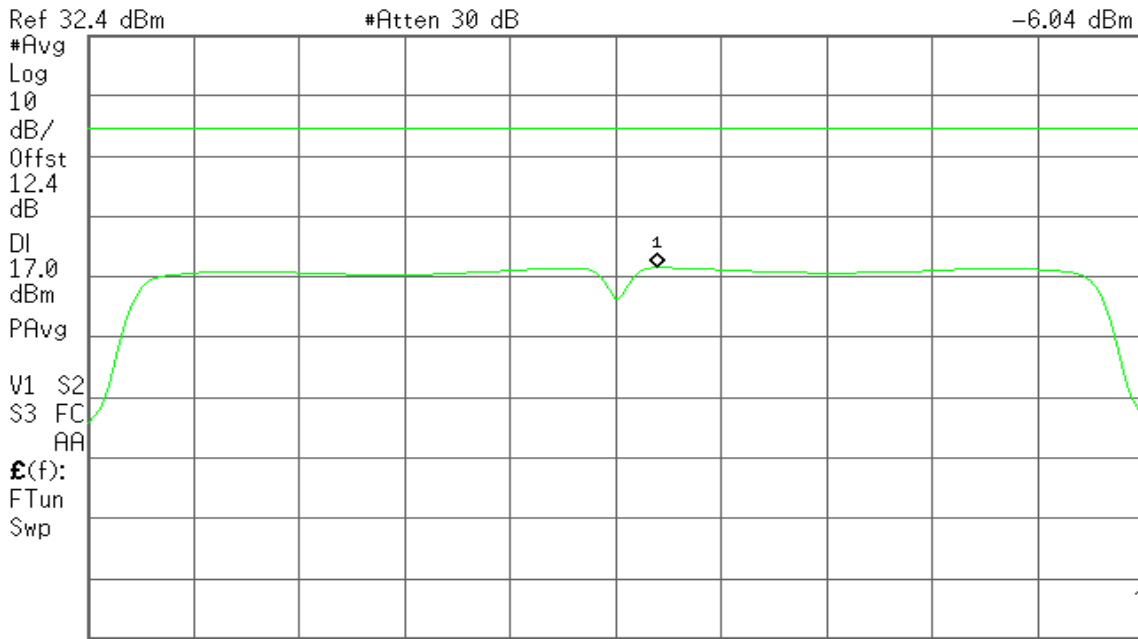


CH High

Agilent

R T

Mkr1 5.231 60 GHz
-6.04 dBm



Center 5.230 00 GHz Span 40 MHz
#Res BW 1 MHz #VBW 3 MHz #Sweep 6 s (601 pts)

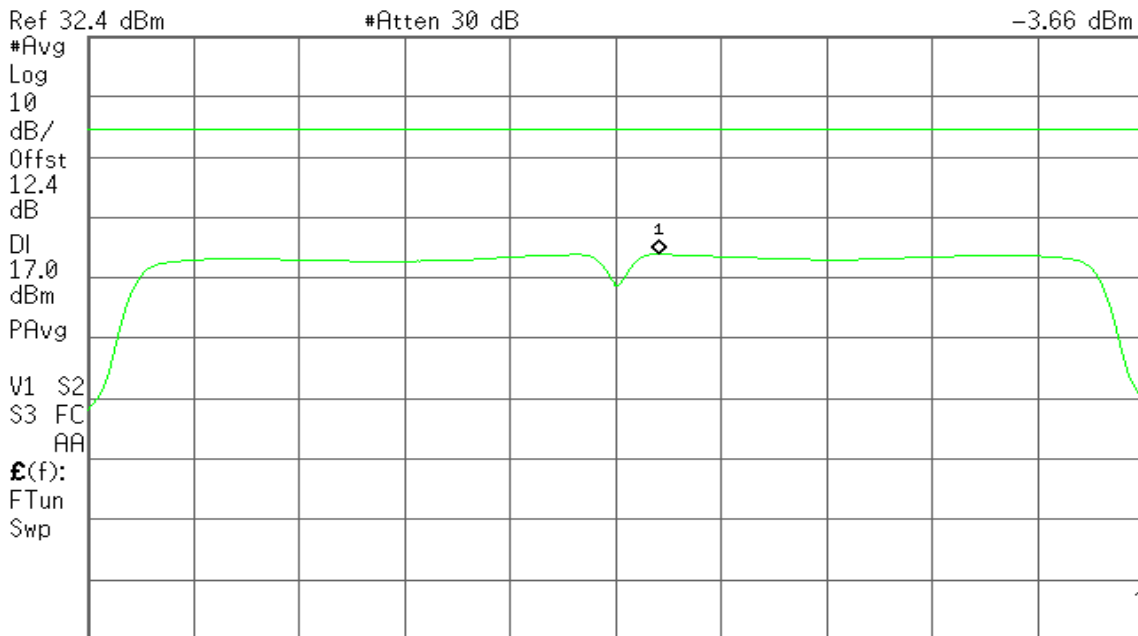
IEEE 802.11n HT 40 mode / 5190 ~ 5230MHz / Chain 1

CH Low

Agilent

R T

Mkr1 5.191 67 GHz
-3.66 dBm



Center 5.190 00 GHz Span 40 MHz
#Res BW 1 MHz #VBW 3 MHz #Sweep 6 s (601 pts)

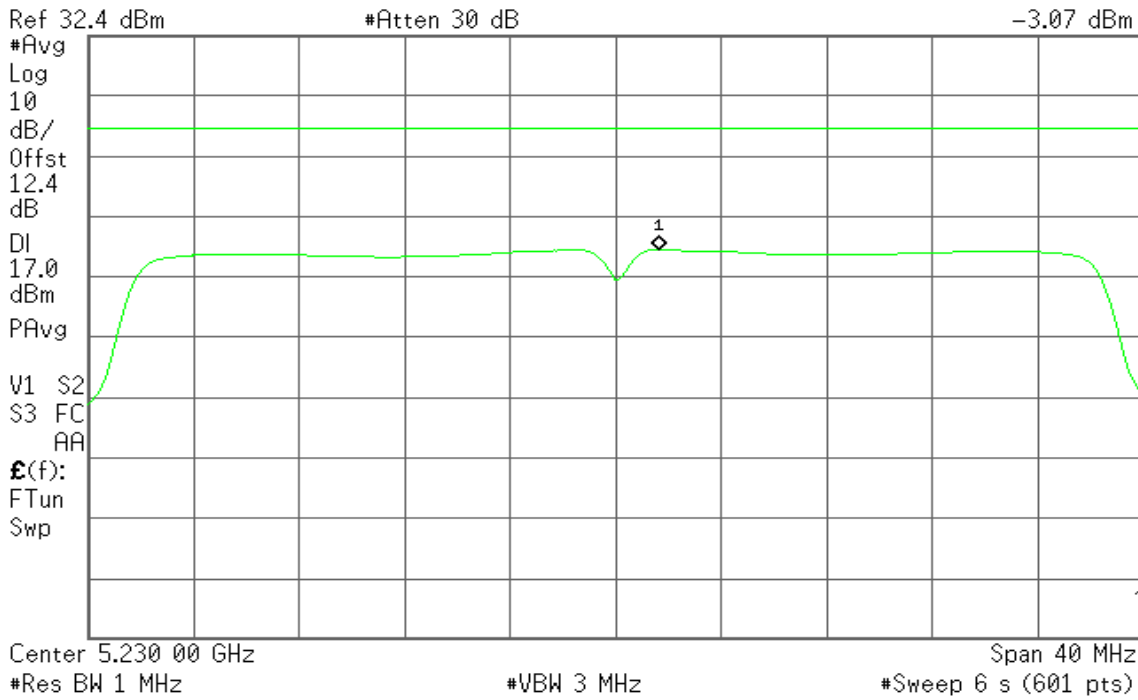


CH High

Agilent

R T

Mkr1 5.231 67 GHz
-3.07 dBm



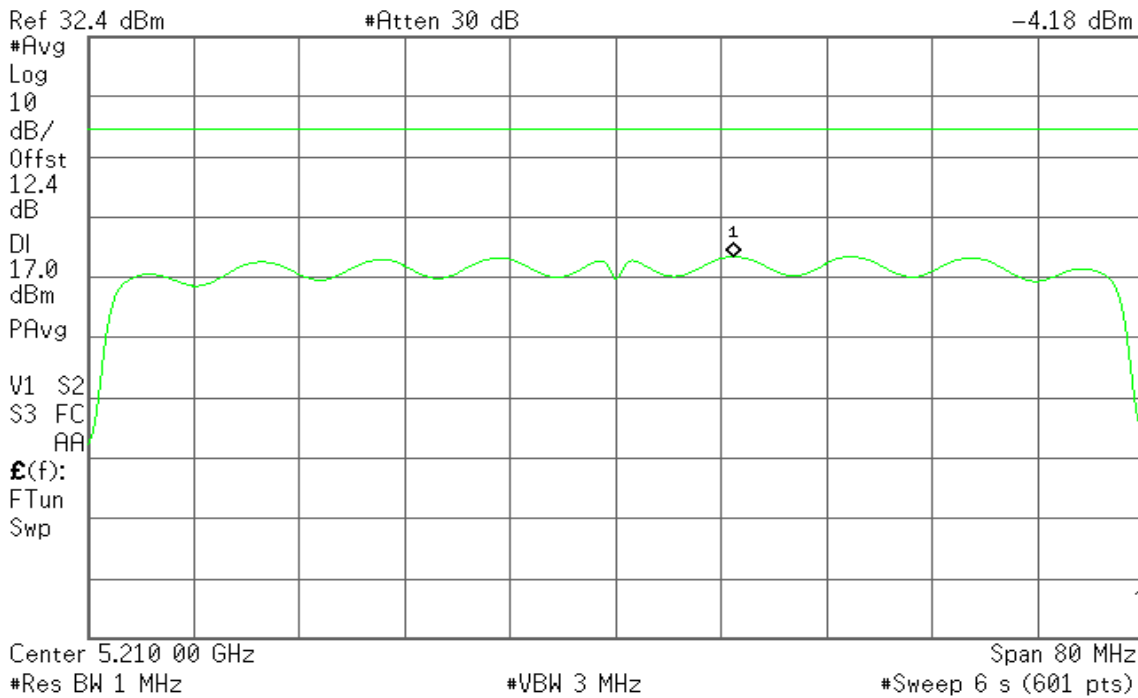
IEEE 802.11n ac80 MHz mode / 5210MHz / Chain 0

CH Mid

Agilent

R T

Mkr1 5.218 93 GHz
-4.18 dBm





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

CH Mid

Agilent

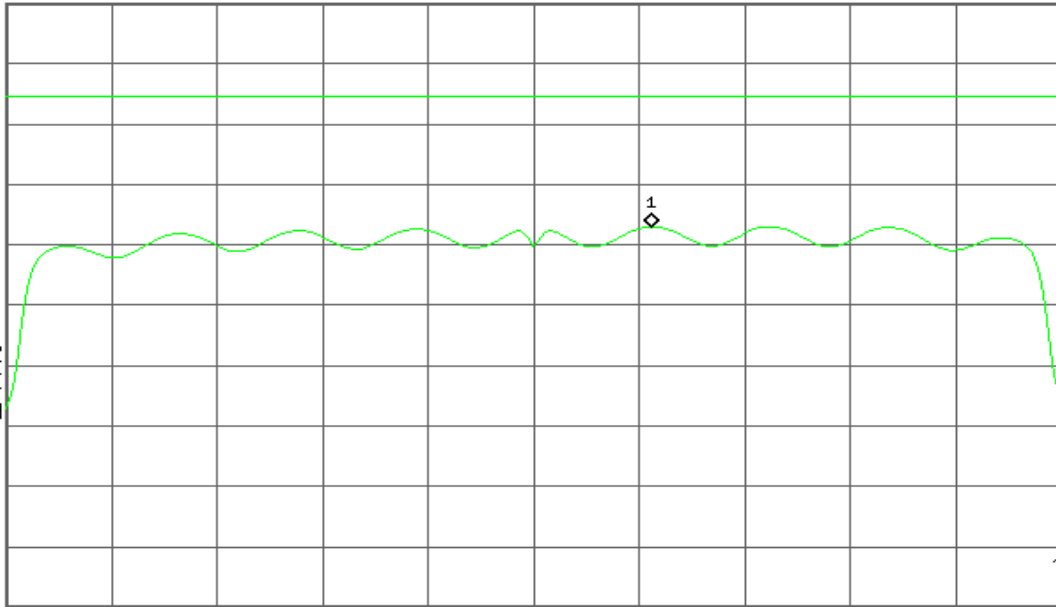
R T

Mkr1 5.218 93 GHz
-4.59 dBm

Ref 32.4 dBm

#Atten 30 dB

#Avg
Log
10
dB/
Offst
12.4
dB
DI
17.0
dBm
PAvg
V1 S2
S3 FC
AA
£(f):
FTun
Swp



Center 5.210 00 GHz

Span 80 MHz

#Res BW 1 MHz

#VBW 3 MHz

#Sweep 6 s (601 pts)

IEEE 802.11a mode / 5745 ~ 5825MHz

CH Low

Agilent

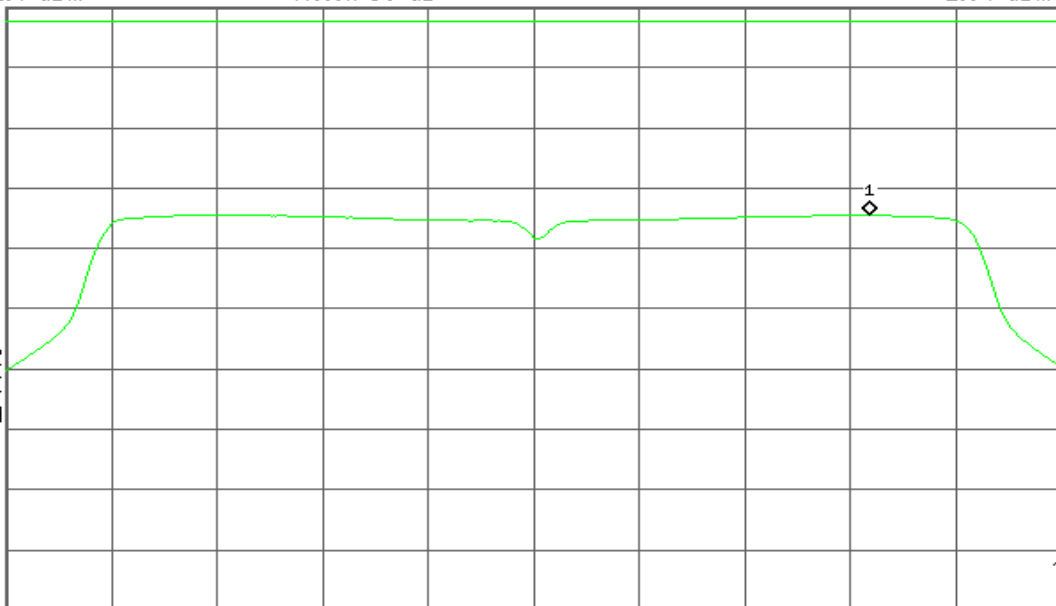
R T

Mkr1 5.751 37 GHz
-2.04 dBm

Ref 32.4 dBm

#Atten 30 dB

#Avg
Log
10
dB/
Offst
12.4
dB
DI
30.0
dBm
PAvg
V1 S2
S3 FC
AA
£(f):
FTun
Swp



Center 5.745 00 GHz

Span 20 MHz

#Res BW 510 kHz

#VBW 1.6 MHz

#Sweep 6 s (601 pts)

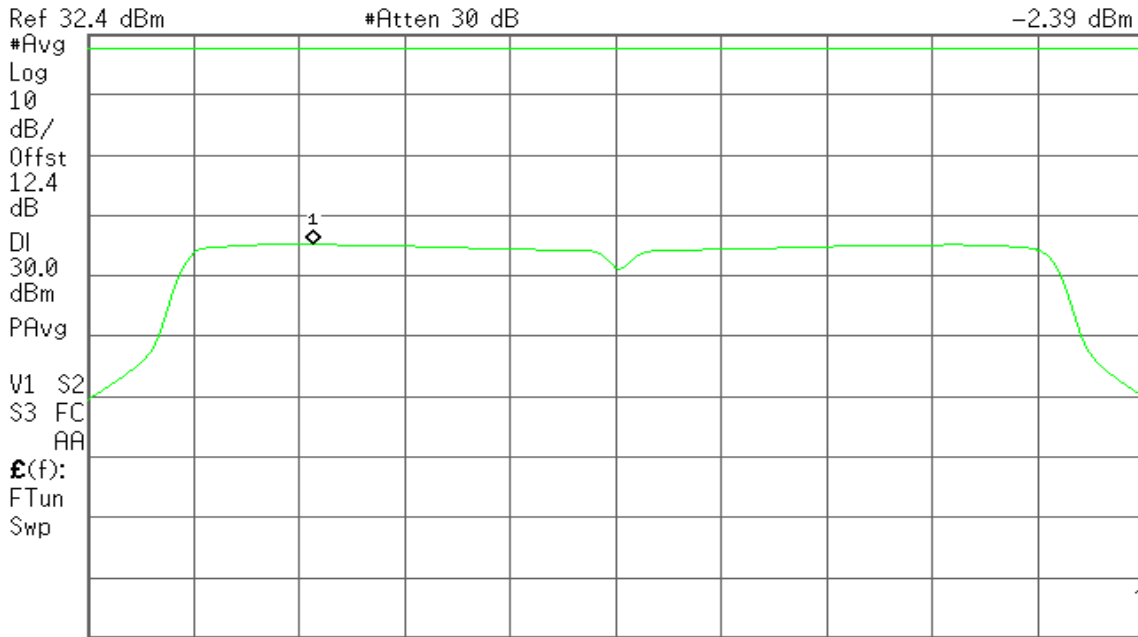


CH Mid

Agilent

R T

Mkr1 5.779 27 GHz
-2.39 dBm



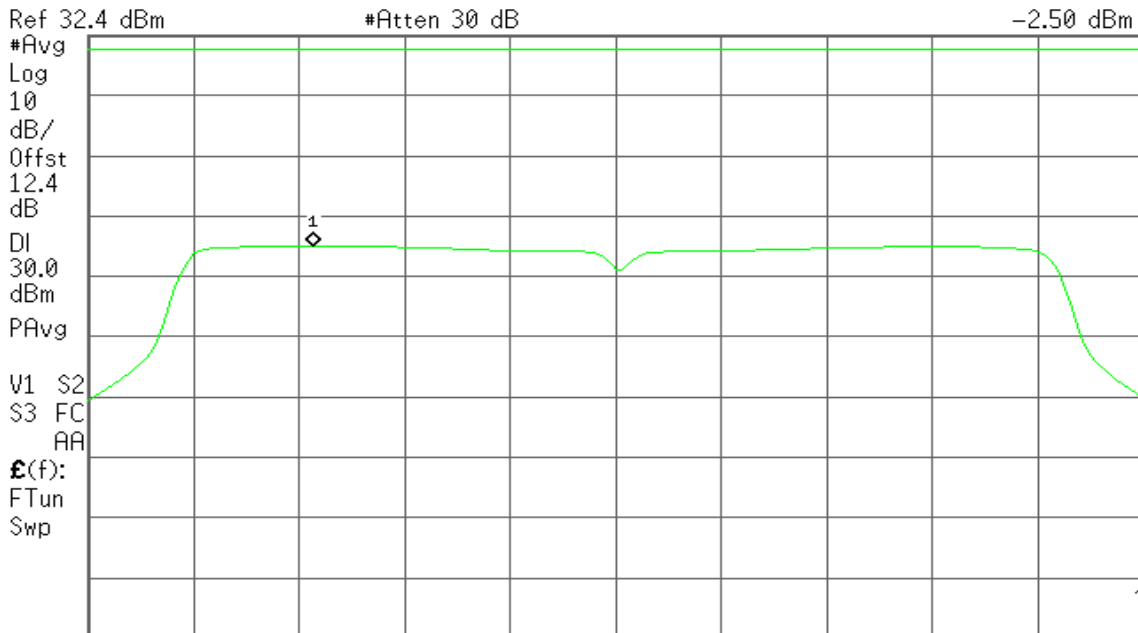
Center 5.785 00 GHz Span 20 MHz
#Res BW 510 kHz #VBW 1.6 MHz #Sweep 6 s (601 pts)

CH High

Agilent

R T

Mkr1 5.819 27 GHz
-2.50 dBm



Center 5.825 00 GHz Span 20 MHz
#Res BW 510 kHz #VBW 1.6 MHz #Sweep 6 s (601 pts)



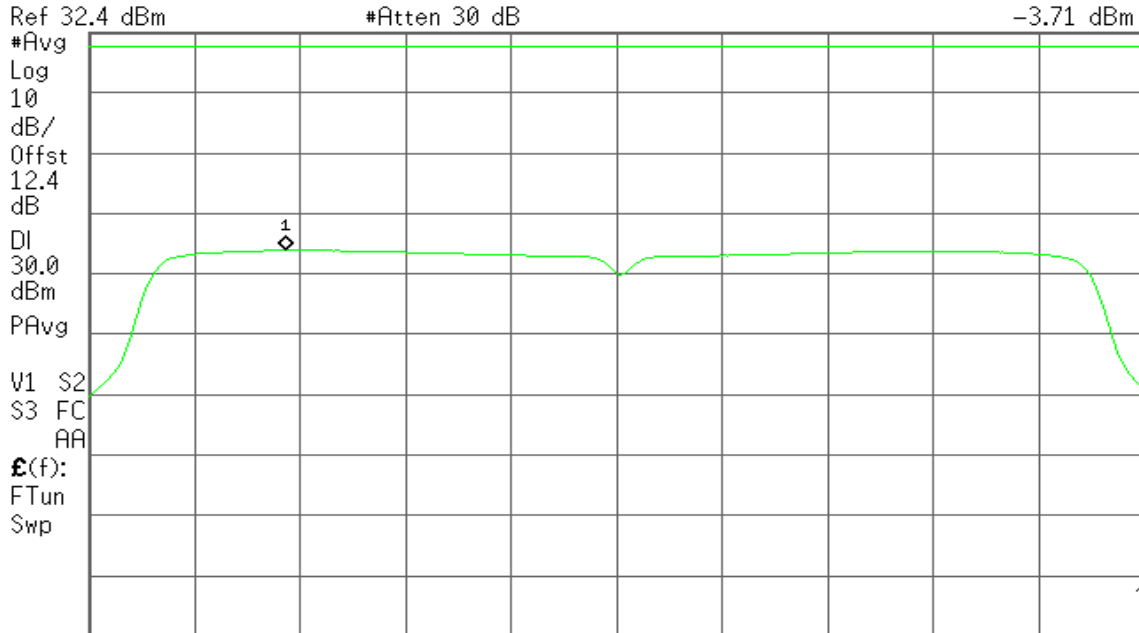
IEEE 802.11n HT 20 mode / 5745 ~ 5825MHz / Chain 0

CH Low

Agilent

R T

Mkr1 5.738 73 GHz
-3.71 dBm



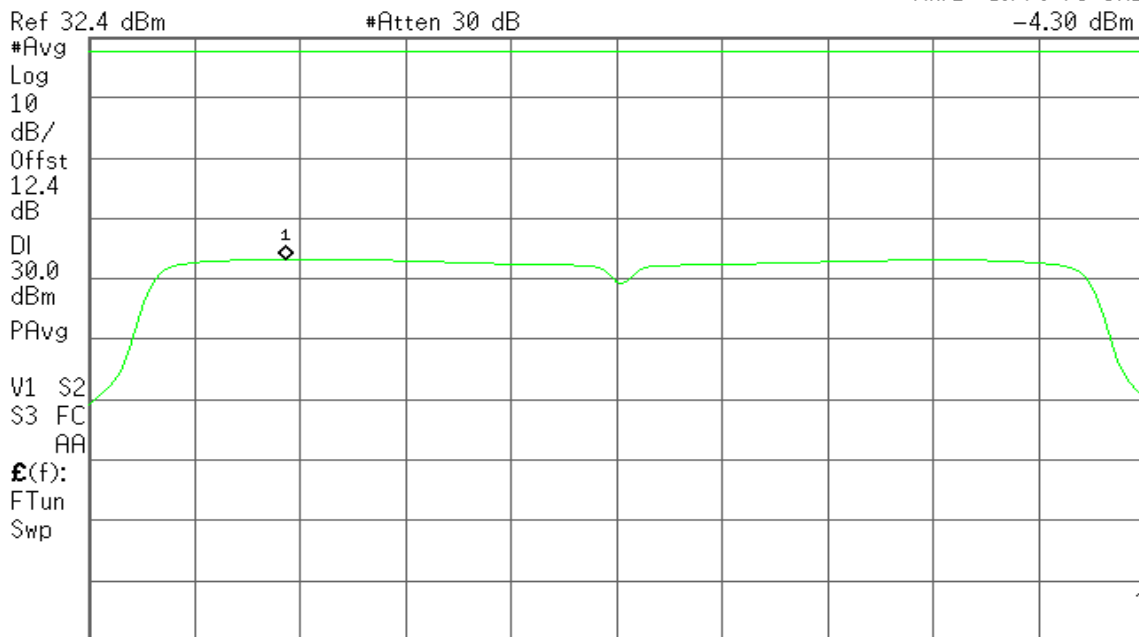
Center 5.745 00 GHz Span 20 MHz
#Res BW 510 kHz #VBW 1.6 MHz #Sweep 6 s (601 pts)

CH Mid

Agilent

R T

Mkr1 5.778 73 GHz
-4.30 dBm



Center 5.785 00 GHz Span 20 MHz
#Res BW 510 kHz #VBW 1.6 MHz #Sweep 6 s (601 pts)

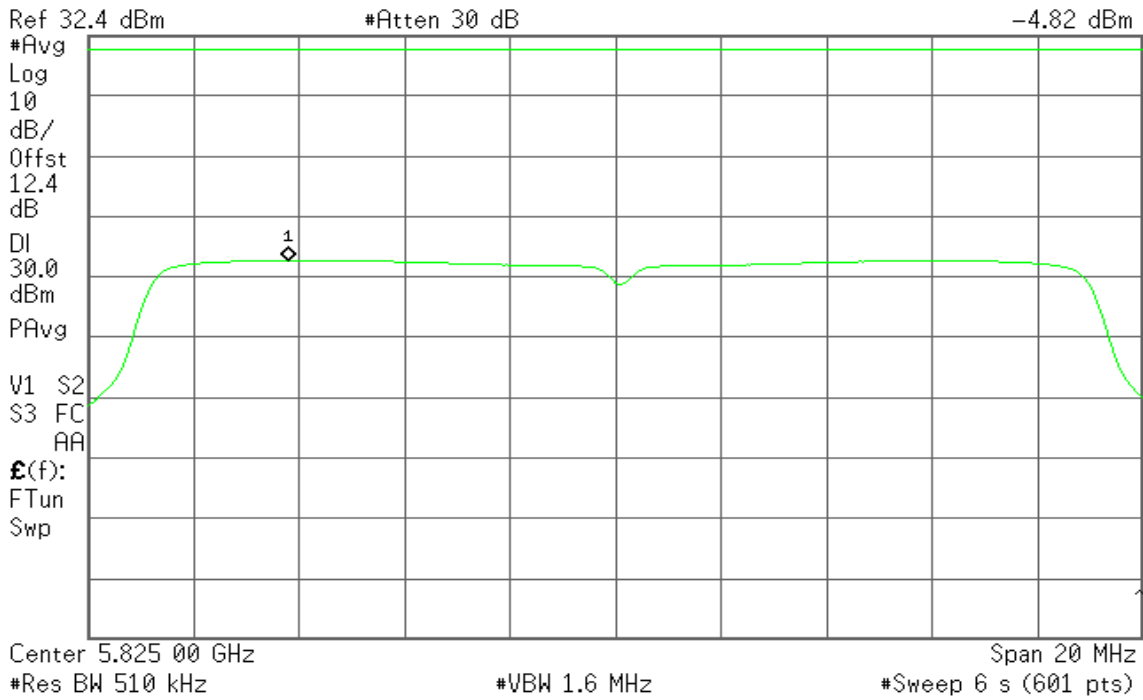


CH High

Agilent

R T

Mkr1 5.818 80 GHz
-4.82 dBm



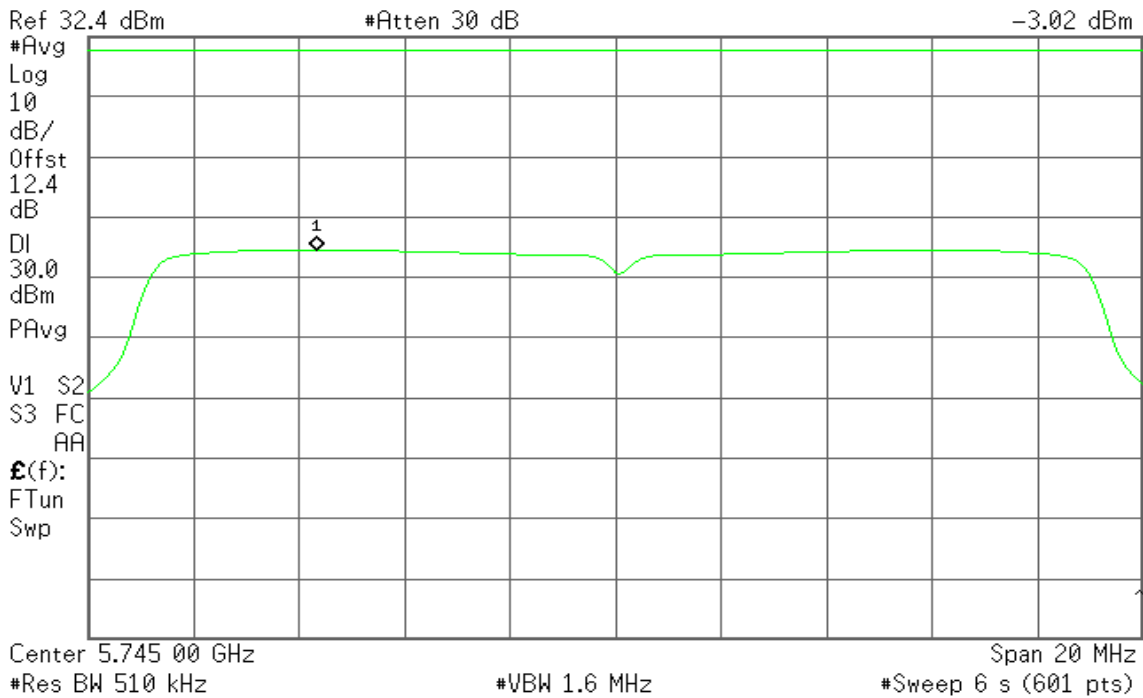
IEEE 802.11n HT 20 mode / 5745 ~ 5825MHz / Chain 1

CH Low

Agilent

R T

Mkr1 5.739 33 GHz
-3.02 dBm



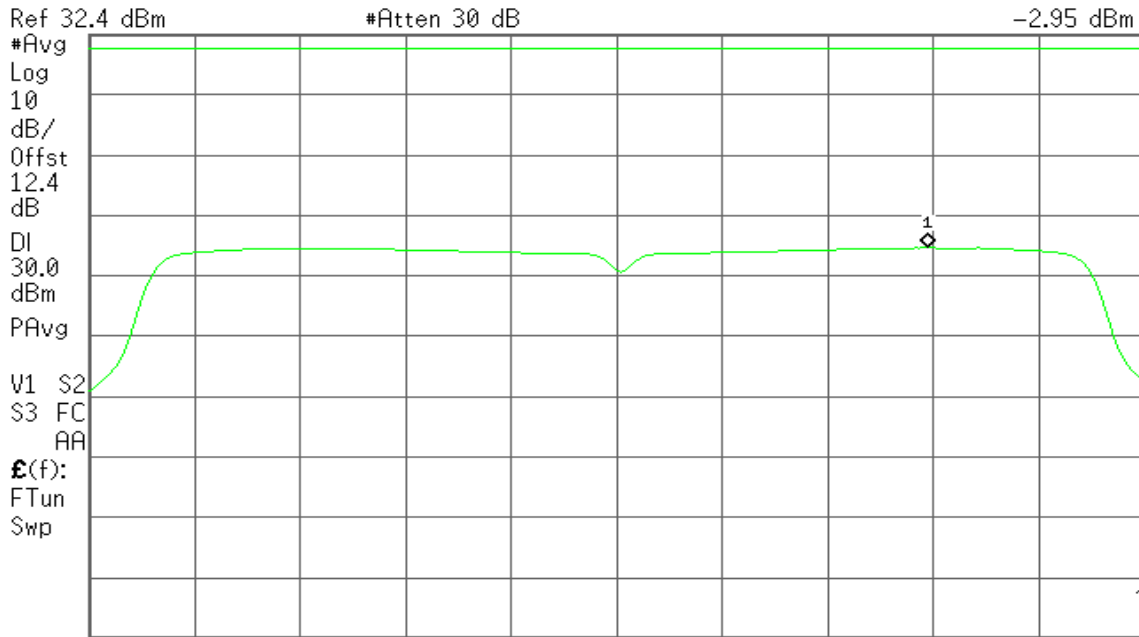


CH Mid

Agilent

R T

Mkr1 5.790 90 GHz
-2.95 dBm



Center 5.785 00 GHz

#Res BW 510 kHz

#VBW 1.6 MHz

Span 20 MHz

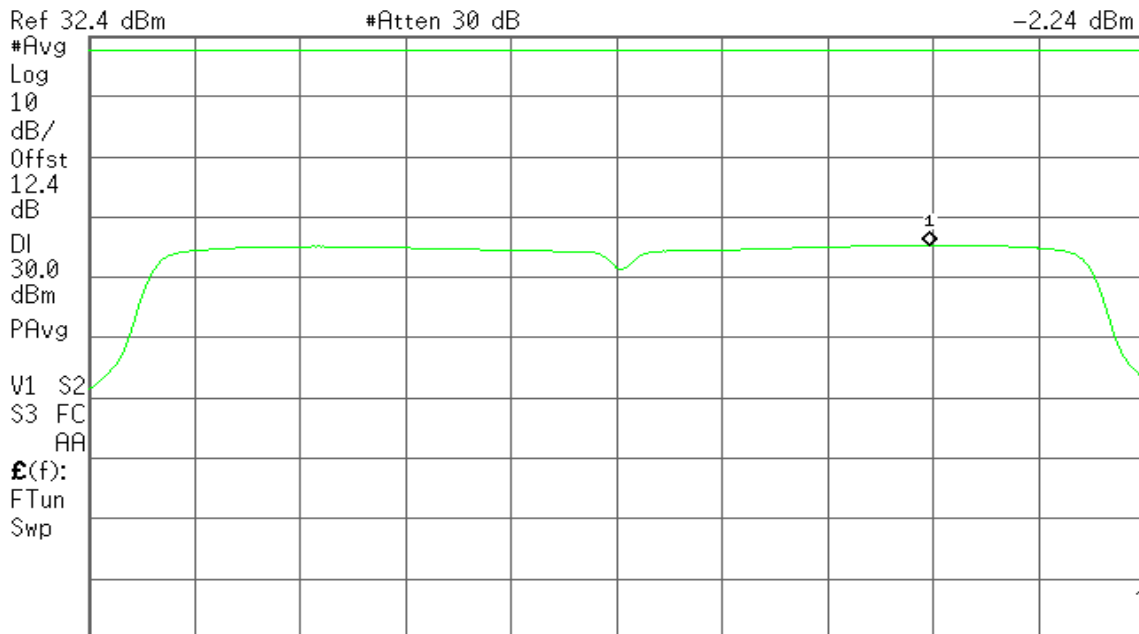
#Sweep 6 s (601 pts)

CH High

Agilent

R T

Mkr1 5.830 93 GHz
-2.24 dBm



Center 5.825 00 GHz

#Res BW 510 kHz

#VBW 1.6 MHz

Span 20 MHz

#Sweep 6 s (601 pts)



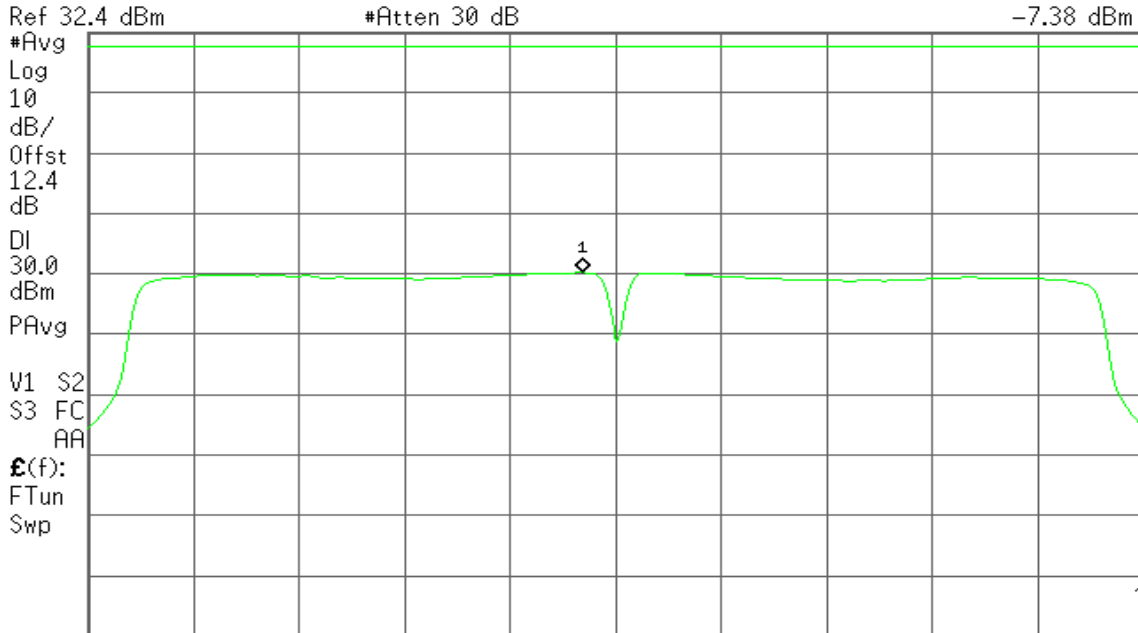
IEEE 802.11n HT 40 mode / 5755 ~ 5795MHz / Chain 0

CH Low

Agilent

R T

Mkr1 5.753 73 GHz
-7.38 dBm



Center 5.755 00 GHz

#Res BW 510 kHz

#VBW 1.6 MHz

Span 40 MHz

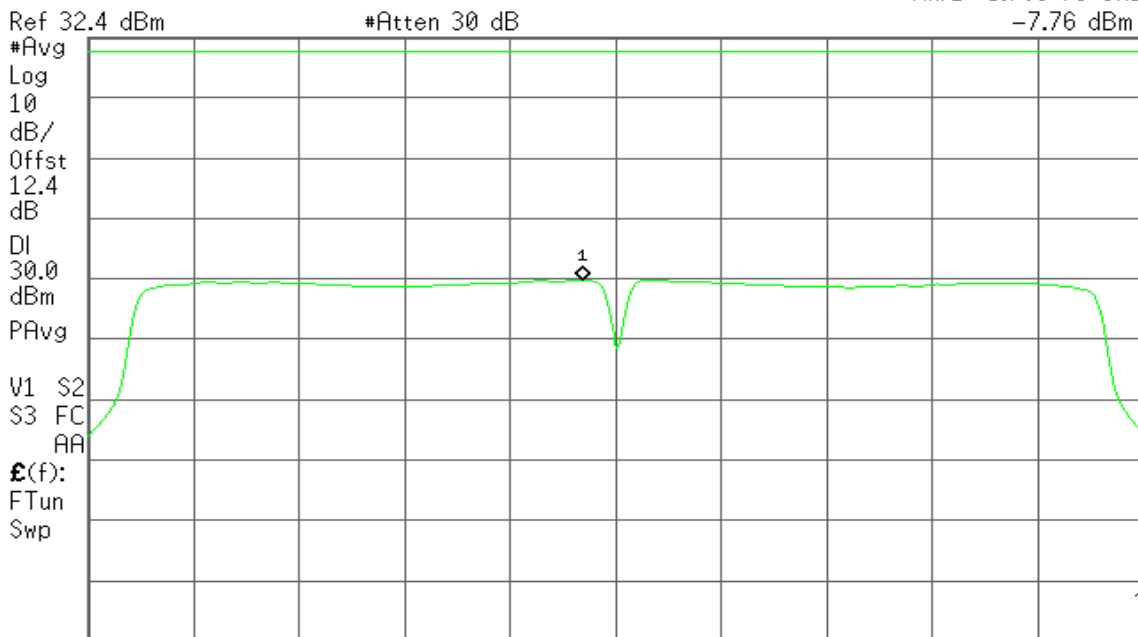
#Sweep 6 s (601 pts)

CH High

Agilent

R T

Mkr1 5.793 73 GHz
-7.76 dBm



Center 5.795 00 GHz

#Res BW 510 kHz

#VBW 1.6 MHz

Span 40 MHz

#Sweep 6 s (601 pts)



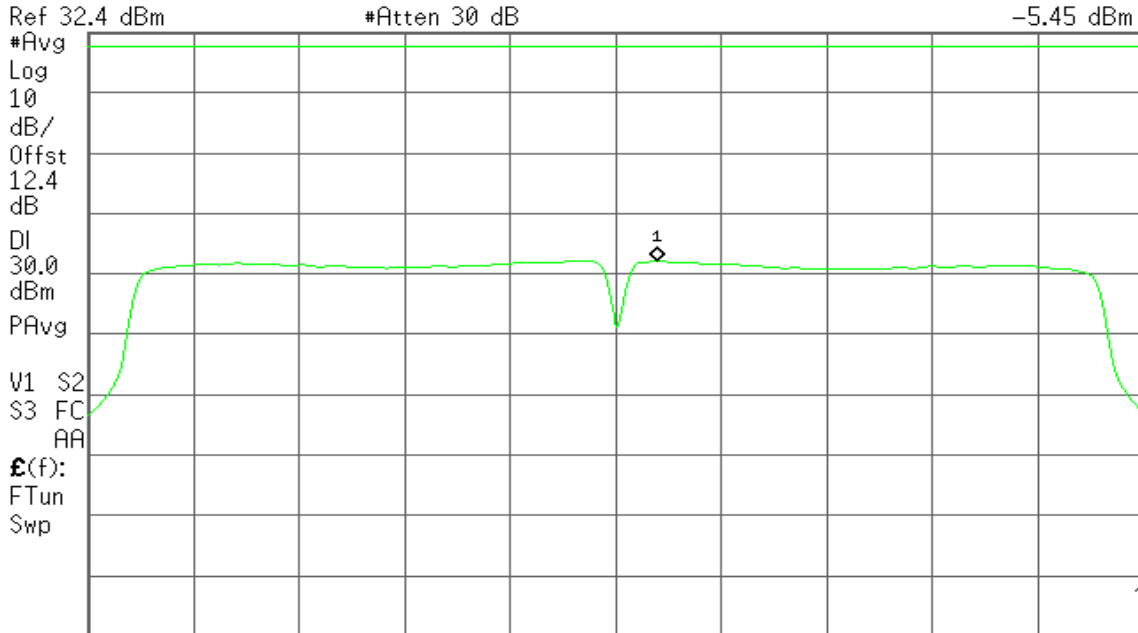
IEEE 802.11n HT 40 mode / 5755 ~ 5795MHz / Chain 1

CH Low

Agilent

R T

Mkr1 5.756 60 GHz
-5.45 dBm



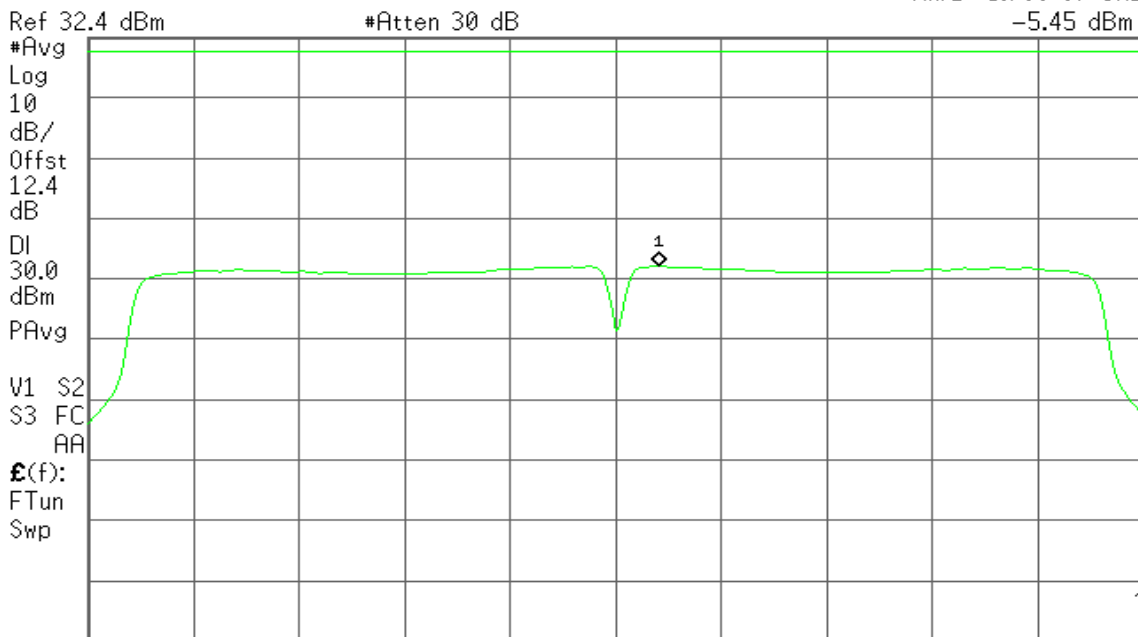
Center 5.755 00 GHz Span 40 MHz
#Res BW 510 kHz #VBW 1.6 MHz #Sweep 6 s (601 pts)

CH High

Agilent

R T

Mkr1 5.796 67 GHz
-5.45 dBm



Center 5.795 00 GHz Span 40 MHz
#Res BW 510 kHz #VBW 1.6 MHz #Sweep 6 s (601 pts)



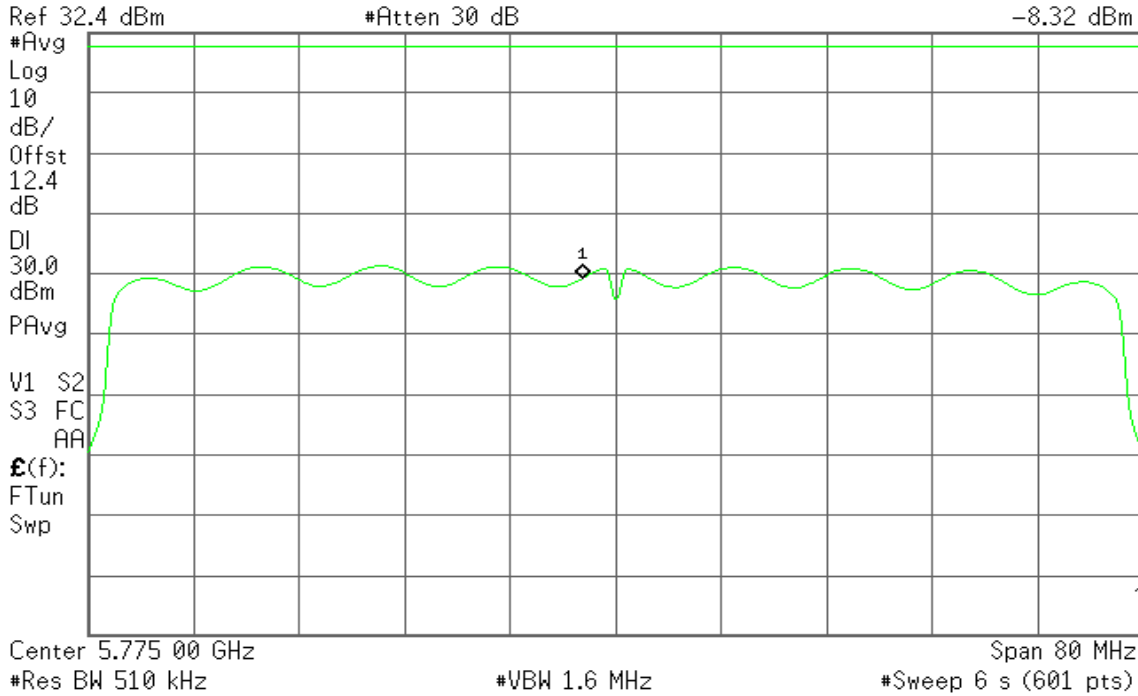
IEEE 802.11n ac80 MHz mode / 5775MHz / Chain 0

CH Mid

Agilent

R T

Mkr1 5.772 47 GHz
-8.32 dBm



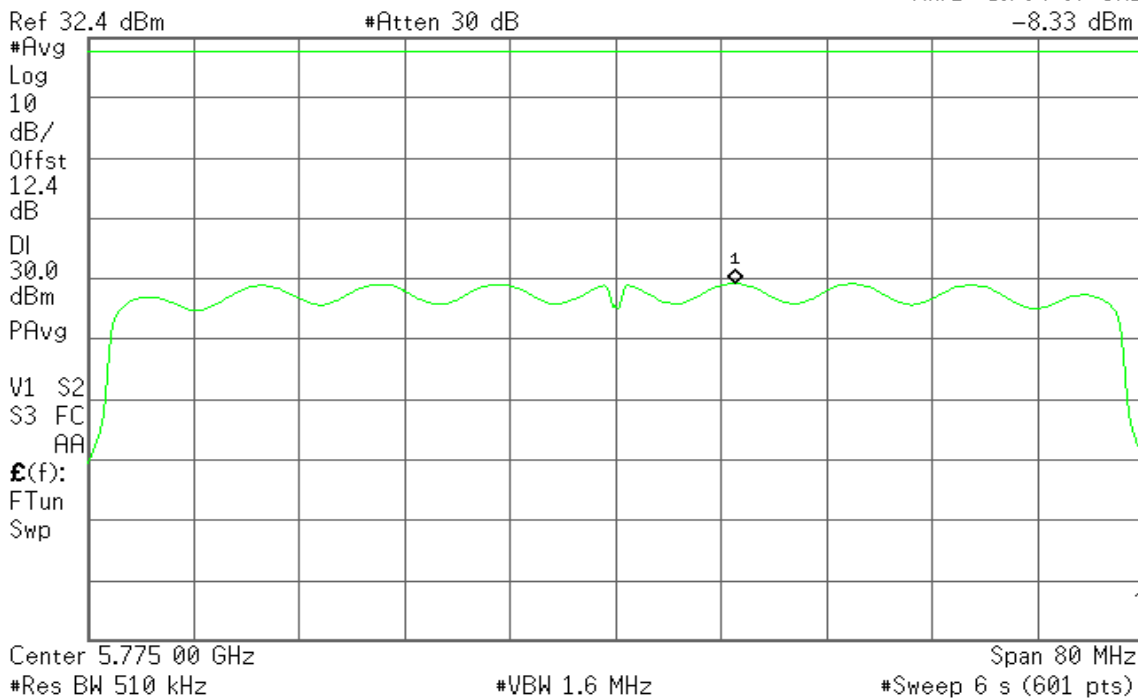
IEEE 802.11n ac80 MHz mode / 5775MHz / Chain 1

CH Mid

Agilent

R T

Mkr1 5.784 07 GHz
-8.33 dBm





7.6 RADIATED UNDESIRABLE EMISSION

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

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

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

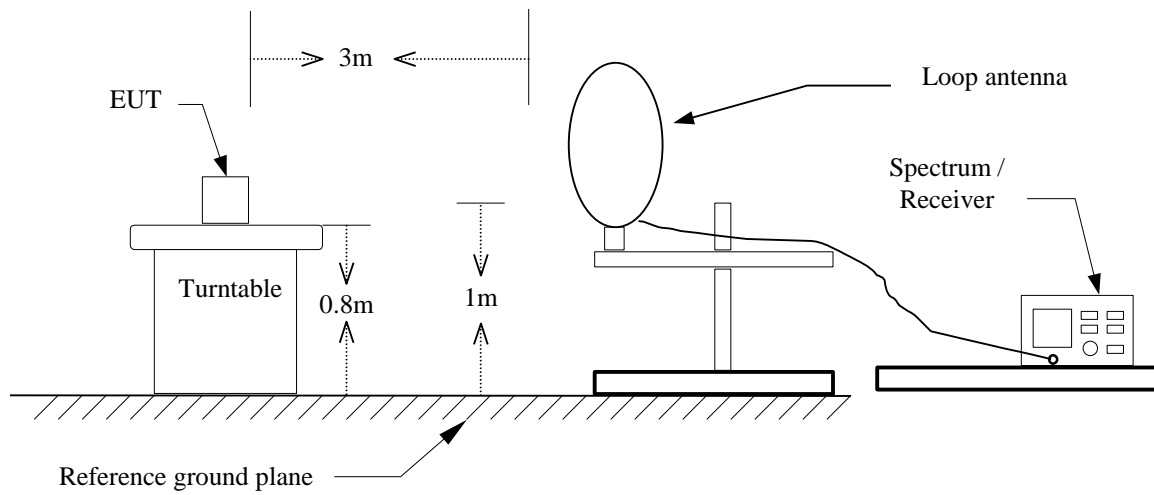
2. In the emission table above, the tighter limit applies at the band edges.

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

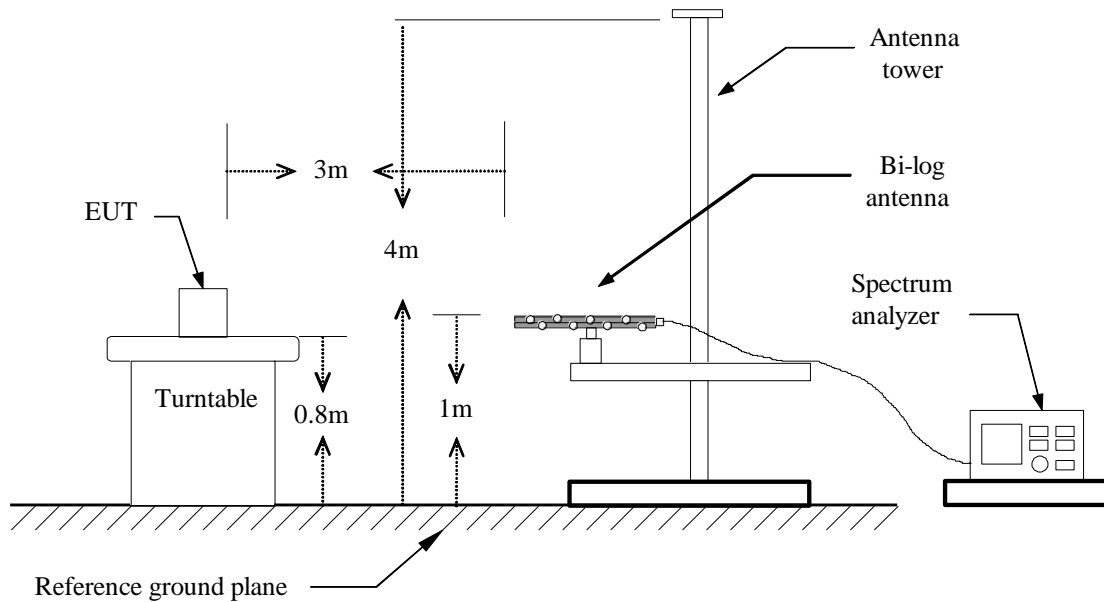


Test Configuration

9kHz ~ 30MHz

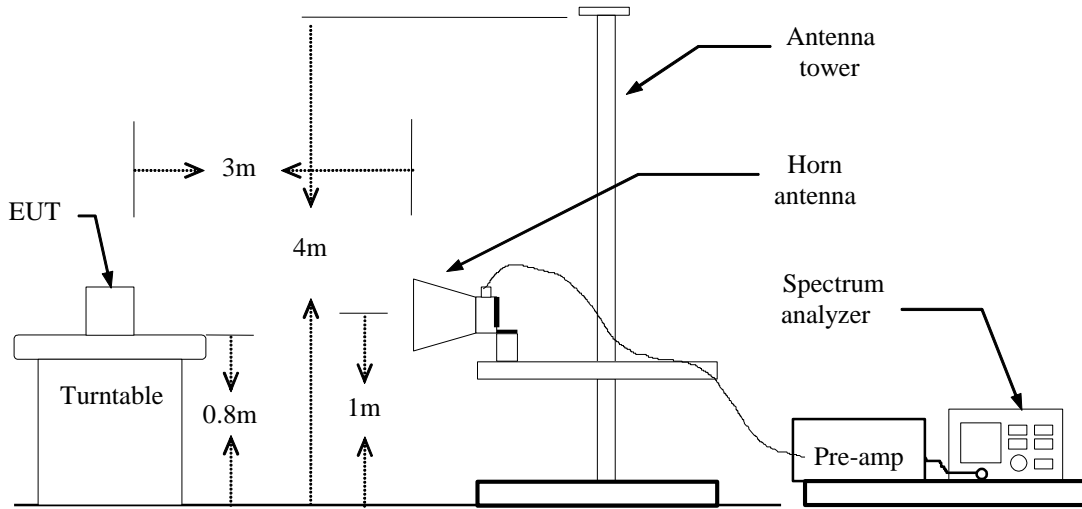


30MHz ~ 1GHz





Above 1 GHz





TEST PROCEDURE

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

Below 1GHz:

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

Above 1GHz:

(a) PEAK: RBW=VBW=1MHz / Sweep=AUTO

(b) AVERAGE: RBW=1MHz / VBW=300Hz / Sweep=AUTO

7. Repeat above procedures until the measurements for all frequencies are complete.

**Below 1 GHz****Operation Mode:** Normal Link**Test Date:** October 6, 2014**Temperature:** 27°C**Tested by:** Andy Shi**Humidity:** 53% RH**Polarity:** Ver. / Hor.

| Frequency (MHz) | Reading (dBuV) | Correction Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark | Ant.Pol. (H/V) |
|-----------------|----------------|--------------------------|-----------------|----------------|-------------|--------|----------------|
| 44.5500 | 51.46 | -19.79 | 31.67 | 40.00 | -8.33 | peak | V |
| 103.7200 | 49.32 | -20.26 | 29.06 | 43.50 | -14.44 | peak | V |
| 196.8400 | 49.57 | -17.82 | 31.75 | 43.50 | -11.75 | peak | V |
| 353.9800 | 49.97 | -15.10 | 34.87 | 46.00 | -11.13 | peak | V |
| 665.3500 | 38.78 | -9.15 | 29.63 | 46.00 | -16.37 | peak | V |
| 830.2500 | 39.48 | -7.02 | 32.46 | 46.00 | -13.54 | peak | V |
| 57.1600 | 52.73 | -23.64 | 29.09 | 40.00 | -10.91 | peak | H |
| 124.0900 | 46.24 | -17.44 | 28.80 | 43.50 | -14.70 | peak | H |
| 204.6000 | 52.15 | -17.87 | 34.28 | 43.50 | -9.22 | peak | H |
| 348.1600 | 50.87 | -15.23 | 35.64 | 46.00 | -10.36 | peak | H |
| 709.9700 | 36.27 | -8.61 | 27.66 | 46.00 | -18.34 | peak | H |
| 833.1600 | 44.15 | -6.98 | 37.17 | 46.00 | -8.83 | peak | H |

Remark:

1. No emission found between lowest internal used/generated frequency to 30MHz (9kHz~30MHz)
2. Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using peak/quasi-peak detector mode.
3. Quasi-peak test would be performed if the peak result were greater than the quasi-peak limit.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. $Margin (dB) = Remark\ result (dBuV/m) - Quasi-peak\ limit (dBuV/m)$.



Above 1 GHz

Operation Mode: Tx / IEEE 802.11a mode / 5180 ~ 5240MHz / CH Low **Test Date:** October 7, 2014

Temperature: 27°C **Tested by:** Andy Shi

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

| Frequency (MHz) | Reading (dBuV) | Correction (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark | Ant.Pol. (H/V) |
|-----------------|----------------|-------------------|-----------------|----------------|-------------|--------|----------------|
| 1994.000 | 52.65 | -4.91 | 47.74 | 74.00 | -26.26 | peak | V |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 2001.000 | 52.07 | -4.99 | 47.08 | 74.00 | -26.92 | peak | H |
| N/A | | | | | | | |
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Remark:

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



Operation Mode: Tx / IEEE 802.11a mode / 5180 ~ 5240MHz /CH Mid **Test Date:** October 7, 2014
Temperature: 27°C **Tested by:** Andy Shi
Humidity: 53% RH **Polarity:** Ver. / Hor.

| Frequency (MHz) | Reading (dBuV) | Correction (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark | Ant.Pol. (H/V) |
|-----------------|----------------|-------------------|-----------------|----------------|-------------|--------|----------------|
| 1196.000 | 59.31 | -9.98 | 49.33 | 74.00 | -24.67 | peak | V |
| 1595.000 | 56.90 | -7.48 | 49.42 | 74.00 | -24.58 | peak | V |
| 1791.000 | 56.87 | -6.27 | 50.60 | 74.00 | -23.40 | peak | V |
| 2421.000 | 53.97 | -3.67 | 50.30 | 74.00 | -23.70 | peak | V |
| N/A | | | | | | | |
| | | | | | | | |
| 1595.000 | 57.26 | -7.48 | 49.78 | 74.00 | -24.22 | peak | H |
| N/A | | | | | | | |
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Remark:

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



Operation Mode: Tx / IEEE 802.11a mode / 5180 ~ 5240MHz /CH High

Test Date: October 7, 2014

Temperature: 27°C

Tested by: Andy Shi

Humidity: 53% RH

Polarity: Ver. / Hor.

| Frequency (MHz) | Reading (dBuV) | Correction (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark | Ant.Pol. (H/V) |
|-----------------|----------------|-------------------|-----------------|----------------|-------------|--------|----------------|
| 1196.000 | 57.70 | -9.98 | 47.72 | 74.00 | -26.28 | peak | V |
| 1798.000 | 55.62 | -6.23 | 49.39 | 74.00 | -24.61 | peak | V |
| 1994.000 | 53.96 | -5.03 | 48.93 | 74.00 | -25.07 | peak | V |
| 10490.000 | 41.47 | 14.94 | 56.41 | 74.00 | -17.59 | peak | V |
| 10490.000 | 30.20 | 14.94 | 45.14 | 54.00 | -8.86 | AVG | V |
| N/A | | | | | | | |
| 1602.000 | 56.68 | -7.43 | 49.25 | 74.00 | -24.75 | peak | H |
| N/A | | | | | | | |
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Remark:

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



Operation Mode: Tx / IEEE 802.11n HT 20 mode / 5180 ~ 5240MHz / CH Low

Test Date: October 7, 2014

Temperature: 27°C

Tested by: Andy Shi

Humidity: 53% RH

Polarity: Ver. / Hor.

| Frequency (MHz) | Reading (dBuV) | Correction (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark | Ant.Pol. (H/V) |
|-----------------|----------------|-------------------|-----------------|----------------|-------------|--------|----------------|
| 4157.000 | 50.84 | 1.82 | 52.66 | 74.00 | -21.34 | peak | V |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 1511.000 | 54.46 | -7.99 | 46.47 | 74.00 | -27.53 | peak | H |
| N/A | | | | | | | |
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Remark:

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



Operation Mode: Tx / IEEE 802.11n HT 20 mode / 5180 ~ 5240MHz / CH Mid
Temperature: 27°C
Humidity: 53% RH

Test Date: October 7, 2014
Tested by: Andy Shi
Polarity: Ver. / Hor.

| Frequency (MHz) | Reading (dBuV) | Correction (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark | Ant.Pol. (H/V) |
|-----------------|----------------|-------------------|-----------------|----------------|-------------|--------|----------------|
| 1196.000 | 59.35 | -9.98 | 49.37 | 74.00 | -24.63 | peak | V |
| 1595.000 | 57.30 | -7.48 | 49.82 | 74.00 | -24.18 | peak | V |
| 1798.000 | 55.91 | -6.23 | 49.68 | 74.00 | -24.32 | peak | V |
| 1994.000 | 53.67 | -5.03 | 48.64 | 74.00 | -25.36 | peak | V |
| N/A | | | | | | | |
| | | | | | | | |
| 1595.000 | 60.89 | -7.48 | 53.41 | 74.00 | -20.59 | peak | H |
| 1595.000 | 45.57 | -7.48 | 38.09 | 54.00 | -15.91 | AVG | H |
| N/A | | | | | | | |
| | | | | | | | |
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Remark:

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



Operation Mode: Tx / IEEE 802.11n HT 20 mode / 5180 ~ 5240MHz / CH High

Test Date: October 7, 2014

Temperature: 27°C

Tested by: Andy Shi

Humidity: 53% RH

Polarity: Ver. / Hor.

| Frequency (MHz) | Reading (dBuV) | Correction (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark | Ant.Pol. (H/V) |
|-----------------|----------------|-------------------|-----------------|----------------|-------------|--------|----------------|
| 1196.000 | 59.25 | -9.98 | 49.27 | 74.00 | -24.73 | peak | V |
| 1399.000 | 57.69 | -8.70 | 48.99 | 74.00 | -25.01 | peak | V |
| 1595.000 | 57.28 | -7.48 | 49.80 | 74.00 | -24.20 | peak | V |
| 1798.000 | 56.52 | -6.23 | 50.29 | 74.00 | -23.71 | peak | V |
| 1994.000 | 54.60 | -5.03 | 49.57 | 74.00 | -24.43 | peak | V |
| N/A | | | | | | | |
| 1595.000 | 57.66 | -7.48 | 50.18 | 74.00 | -23.82 | peak | H |
| N/A | | | | | | | |
| | | | | | | | |
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Remark:

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



Operation Mode: Tx / IEEE 802.11n HT 40 mode / 5190 ~ 5230MHz / CH Low

Test Date: October 7, 2014

Temperature: 27°C

Tested by: Andy Shi

Humidity: 53% RH

Polarity: Ver. / Hor.

| Frequency (MHz) | Reading (dBuV) | Correction (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark | Ant.Pol. (H/V) |
|-----------------|----------------|-------------------|-----------------|----------------|-------------|--------|----------------|
| 1203.000 | 58.14 | -9.93 | 48.21 | 74.00 | -25.79 | peak | V |
| 1798.000 | 55.82 | -6.23 | 49.59 | 74.00 | -24.41 | peak | V |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 1238.000 | 53.27 | -9.71 | 43.56 | 74.00 | -30.44 | peak | H |
| N/A | | | | | | | |
| | | | | | | | |
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Remark:

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



Operation Mode: Tx / IEEE 802.11n HT 40 mode / 5190 ~ 5230MHz / CH High

Test Date: October 7, 2014

Temperature: 27°C

Tested by: Andy Shi

Humidity: 53% RH

Polarity: Ver. / Hor.

| Frequency (MHz) | Reading (dBuV) | Correction (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark | Ant.Pol. (H/V) |
|-----------------|----------------|-------------------|-----------------|----------------|-------------|--------|----------------|
| 1595.000 | 55.80 | -7.48 | 48.32 | 74.00 | -25.68 | peak | V |
| 1980.000 | 54.82 | -5.11 | 49.71 | 74.00 | -24.29 | peak | V |
| 2421.000 | 52.90 | -3.67 | 49.23 | 74.00 | -24.77 | peak | V |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 1602.000 | 58.61 | -7.43 | 51.18 | 74.00 | -22.82 | peak | H |
| 1602.000 | 43.01 | -7.43 | 35.58 | 54.00 | -18.42 | AVG | H |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

Remark:

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



Operation Mode: Tx / IEEE 802.11 ac80 mode / 5210MHz

Test Date: October 7, 2014

Temperature: 27°C

Tested by: Andy Shi

Humidity: 53% RH

Polarity: Ver. / Hor.

| Frequency (MHz) | Reading (dBuV) | Correction (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark | Ant.Pol. (H/V) |
|-----------------|----------------|-------------------|-----------------|----------------|-------------|--------|----------------|
| 1994.000 | 52.67 | -4.91 | 47.76 | 74.00 | -26.24 | peak | V |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 2400.000 | 51.91 | -3.69 | 48.22 | 74.00 | -25.78 | peak | H |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

Remark:

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



Operation Mode: Tx / IEEE 802.11a mode / 5745 ~ 5825MHz / CH Low **Test Date:** October 7, 2014
Temperature: 27°C **Tested by:** Andy Shi
Humidity: 53% RH **Polarity:** Ver. / Hor.

| Frequency (MHz) | Reading (dBuV) | Correction (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark | Ant.Pol. (H/V) |
|-----------------|----------------|-------------------|-----------------|----------------|-------------|--------|----------------|
| 1196.000 | 58.98 | -9.98 | 49.00 | 74.00 | -25.00 | peak | V |
| 1798.000 | 55.64 | -6.23 | 49.41 | 74.00 | -24.59 | peak | V |
| 11490.000 | 43.28 | 15.30 | 58.58 | 74.00 | -15.42 | peak | V |
| 11490.000 | 29.30 | 15.30 | 44.60 | 54.00 | -9.40 | AVG | V |
| N/A | | | | | | | |
| | | | | | | | |
| 1595.000 | 56.40 | -7.48 | 48.92 | 74.00 | -25.08 | peak | H |
| 2001.000 | 54.73 | -4.99 | 49.74 | 74.00 | -24.26 | peak | H |
| 11500.000 | 42.61 | 15.30 | 57.91 | 74.00 | -16.09 | peak | H |
| 11500.000 | 31.20 | 15.30 | 46.50 | 54.00 | -7.50 | AVG | H |
| N/A | | | | | | | |
| | | | | | | | |

Remark:

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



Operation Mode: Tx / IEEE 802.11a mode / 5745 ~ 5825MHz /CH Mid **Test Date:** October 7, 2014
Temperature: 27°C **Tested by:** Andy Shi
Humidity: 53% RH **Polarity:** Ver. / Hor.

| Frequency (MHz) | Reading (dBuV) | Correction (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark | Ant.Pol. (H/V) |
|-----------------|----------------|-------------------|-----------------|----------------|-------------|--------|----------------|
| 1595.000 | 57.33 | -7.48 | 49.85 | 74.00 | -24.15 | peak | V |
| 1798.000 | 56.86 | -6.23 | 50.63 | 74.00 | -23.37 | peak | V |
| 2435.000 | 53.84 | -3.60 | 50.24 | 74.00 | -23.76 | peak | V |
| 11570.000 | 43.44 | 15.30 | 58.74 | 74.00 | -15.26 | peak | V |
| 11570.000 | 30.40 | 15.30 | 45.70 | 54.00 | -8.30 | AVG | V |
| N/A | | | | | | | |
| 1595.000 | 57.93 | -7.48 | 50.45 | 74.00 | -23.55 | peak | H |
| N/A | | | | | | | |
| | | | | | | | |
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| | | | | | | | |

Remark:

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



Operation Mode: Tx / IEEE 802.11a mode / 5745 ~ 5825MHz /CH High

Test Date: October 7, 2014

Temperature: 27°C

Tested by: Andy Shi

Humidity: 53% RH

Polarity: Ver. / Hor.

| Frequency (MHz) | Reading (dBuV) | Correction (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark | Ant.Pol. (H/V) |
|-----------------|----------------|-------------------|-----------------|----------------|-------------|--------|----------------|
| 1595.000 | 57.46 | -7.48 | 49.98 | 74.00 | -24.02 | peak | V |
| 1791.000 | 55.91 | -6.27 | 49.64 | 74.00 | -24.36 | peak | V |
| 11650.000 | 41.16 | 15.31 | 56.47 | 74.00 | -17.53 | peak | V |
| 11650.000 | 34.29 | 15.31 | 49.60 | 54.00 | -4.40 | AVG | V |
| N/A | | | | | | | |
| | | | | | | | |
| 1602.000 | 57.55 | -7.43 | 50.12 | 74.00 | -23.88 | peak | H |
| N/A | | | | | | | |
| | | | | | | | |
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| | | | | | | | |

Remark:

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



Operation Mode: Tx / IEEE 802.11n HT 20 mode / 5745 ~ 5825MHz / CH Low

Test Date: October 7, 2014

Temperature: 27°C

Tested by: Andy Shi

Humidity: 53% RH

Polarity: Ver. / Hor.

| Frequency (MHz) | Reading (dBuV) | Correction (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark | Ant.Pol. (H/V) |
|-----------------|----------------|-------------------|-----------------|----------------|-------------|--------|----------------|
| 1196.000 | 58.88 | -9.98 | 48.90 | 74.00 | -25.10 | peak | V |
| 1595.000 | 56.96 | -7.48 | 49.48 | 74.00 | -24.52 | peak | V |
| 1791.000 | 55.82 | -6.27 | 49.55 | 74.00 | -24.45 | peak | V |
| 2001.000 | 54.16 | -4.99 | 49.17 | 74.00 | -24.83 | peak | V |
| 11490.000 | 43.18 | 15.30 | 58.48 | 74.00 | -15.52 | peak | V |
| 11490.000 | 33.40 | 15.30 | 48.70 | 54.00 | -5.30 | AVG | V |
| 1595.000 | 54.12 | -7.48 | 46.64 | 74.00 | -27.36 | peak | H |
| 1994.000 | 55.18 | -5.03 | 50.15 | 74.00 | -23.85 | peak | H |
| N/A | | | | | | | |
| | | | | | | | |
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Remark:

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



Operation Mode: Tx / IEEE 802.11n HT 20 mode / 5745 ~ 5825MHz / CH Mid
Temperature: 27°C
Humidity: 53% RH

Test Date: October 7, 2014
Tested by: Andy Shi
Polarity: Ver. / Hor.

| Frequency (MHz) | Reading (dBuV) | Correction (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark | Ant.Pol. (H/V) |
|-----------------|----------------|-------------------|-----------------|----------------|-------------|--------|----------------|
| 1595.000 | 57.84 | -7.48 | 50.36 | 74.00 | -23.64 | peak | V |
| 1791.000 | 55.24 | -6.27 | 48.97 | 74.00 | -25.03 | peak | V |
| 1994.000 | 55.50 | -5.03 | 50.47 | 74.00 | -23.53 | peak | V |
| 11570.000 | 45.62 | 15.30 | 60.92 | 74.00 | -13.08 | peak | V |
| 11570.000 | 33.61 | 15.30 | 48.91 | 54.00 | -5.09 | AVG | V |
| N/A | | | | | | | |
| 1595.000 | 56.71 | -7.48 | 49.23 | 74.00 | -24.77 | peak | H |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

Remark:

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



Operation Mode: Tx / IEEE 802.11n HT 20 mode / 5745 ~ 5825MHz / CH High

Test Date: October 7, 2014

Temperature: 27°C

Tested by: Andy Shi

Humidity: 53% RH

Polarity: Ver. / Hor.

| Frequency (MHz) | Reading (dBuV) | Correction (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark | Ant.Pol. (H/V) |
|-----------------|----------------|-------------------|-----------------|----------------|-------------|--------|----------------|
| 1791.000 | 55.19 | -6.27 | 48.92 | 74.00 | -25.08 | peak | V |
| 2400.000 | 54.35 | -3.73 | 50.62 | 74.00 | -23.38 | peak | V |
| 11650.000 | 43.84 | 15.31 | 59.15 | 74.00 | -14.85 | peak | V |
| 11650.000 | 27.59 | 15.31 | 42.90 | 54.00 | -11.10 | AVG | V |
| N/A | | | | | | | |
| | | | | | | | |
| 1602.000 | 57.27 | -7.43 | 49.84 | 74.00 | -24.16 | peak | H |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

Remark:

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



Operation Mode: Tx / IEEE 802.11n HT 40 mode / 5755 ~ 5795MHz / CH Low

Test Date: October 7, 2014

Temperature: 27°C

Tested by: Andy Shi

Humidity: 53% RH

Polarity: Ver. / Hor.

| Frequency (MHz) | Reading (dBuV) | Correction (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark | Ant.Pol. (H/V) |
|-----------------|----------------|-------------------|-----------------|----------------|-------------|--------|----------------|
| 1196.000 | 57.10 | -9.98 | 47.12 | 74.00 | -26.88 | peak | V |
| 1791.000 | 55.55 | -6.27 | 49.28 | 74.00 | -24.72 | peak | V |
| 2001.000 | 54.09 | -4.99 | 49.10 | 74.00 | -24.90 | peak | V |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 1595.000 | 56.31 | -7.48 | 48.83 | 74.00 | -25.17 | peak | H |
| 1994.000 | 54.53 | -5.03 | 49.50 | 74.00 | -24.50 | peak | H |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

Remark:

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



Operation Mode: Tx / IEEE 802.11n HT 40 mode / 5755 ~ 5795MHz / CH High

Test Date: October 7, 2014

Temperature: 27°C

Tested by: Andy Shi

Humidity: 53% RH

Polarity: Ver. / Hor.

| Frequency (MHz) | Reading (dBuV) | Correction (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark | Ant.Pol. (H/V) |
|-----------------|----------------|-------------------|-----------------|----------------|-------------|--------|----------------|
| 1196.000 | 58.80 | -9.98 | 48.82 | 74.00 | -25.18 | peak | V |
| 1602.000 | 57.78 | -7.43 | 50.35 | 74.00 | -23.65 | peak | V |
| 1798.000 | 55.49 | -6.23 | 49.26 | 74.00 | -24.74 | peak | V |
| 1994.000 | 55.18 | -5.03 | 50.15 | 74.00 | -23.85 | peak | V |
| N/A | | | | | | | |
| | | | | | | | |
| 1595.000 | 55.10 | -7.48 | 47.62 | 74.00 | -26.38 | peak | H |
| 1987.000 | 54.33 | -5.07 | 49.26 | 74.00 | -24.74 | peak | H |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

Remark:

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



Operation Mode: Tx / IEEE 802.11 ac80 mode / 5755MHz

Test Date: October 7, 2014

Temperature: 27°C

Tested by: Andy Shi

Humidity: 53% RH

Polarity: Ver. / Hor.

| Frequency (MHz) | Reading (dBuV) | Correction (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark | Ant.Pol. (H/V) |
|-----------------|----------------|-------------------|-----------------|----------------|-------------|--------|----------------|
| 2421.000 | 51.68 | -3.67 | 48.01 | 74.00 | -25.99 | peak | V |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 1595.000 | 53.69 | -7.48 | 46.21 | 74.00 | -27.79 | peak | H |
| N/A | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

Remark:

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



7.7 POWERLINE CONDUCTED EMISSIONS

LIMIT

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

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

* Decreases with the logarithm of the frequency.

TEST CONFIGURATION

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

TEST PROCEDURE

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



TEST RESULTS

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

Test Data

Operation Mode: Normal Link **Test Date:** October 10, 2014
Temperature: 26°C **Tested by:** Andy Shi
Humidity: 60% RH

| Freq. (MHz) | QP Reading (dBuV) | AV Reading (dBuV) | Corr. factor (dB) | QP Result (dBuV) | AV Result (dBuV) | QP Limit (dBuV) | AV Limit (dBuV) | QP Margin (dB) | AV Margin (dB) | Note |
|-------------|-------------------|-------------------|-------------------|------------------|------------------|-----------------|-----------------|----------------|----------------|------|
| 0.1780 | 49.17 | 49.17 | 0.00 | 49.17 | 49.17 | 64.58 | 54.58 | -15.41 | -5.41 | L1 |
| 0.3580 | 37.03 | 37.03 | 0.00 | 37.03 | 37.03 | 58.77 | 48.77 | -21.74 | -11.74 | L1 |
| 0.6620 | 33.83 | 33.83 | 0.00 | 33.83 | 33.83 | 56.00 | 46.00 | -22.17 | -12.17 | L1 |
| 1.2620 | 37.76 | 37.76 | 0.00 | 37.76 | 37.76 | 56.00 | 46.00 | -18.24 | -8.24 | L1 |
| 2.8740 | 35.85 | 35.85 | 0.00 | 35.85 | 35.85 | 56.00 | 46.00 | -20.15 | -10.15 | L1 |
| 6.9540 | 28.42 | 28.42 | 0.00 | 28.42 | 28.42 | 60.00 | 50.00 | -31.58 | -21.58 | L1 |
| 0.1780 | 43.30 | 43.30 | 0.00 | 43.30 | 43.30 | 64.58 | 54.58 | -21.28 | -11.28 | L2 |
| 0.3580 | 36.12 | 36.12 | 0.00 | 36.12 | 36.12 | 58.77 | 48.77 | -22.65 | -12.65 | L2 |
| 0.8900 | 35.46 | 35.46 | 0.00 | 35.46 | 35.46 | 56.00 | 46.00 | -20.54 | -10.54 | L2 |
| 1.4460 | 33.41 | 33.41 | 0.00 | 33.41 | 33.41 | 56.00 | 46.00 | -22.59 | -12.59 | L2 |
| 2.6580 | 36.51 | 36.51 | 0.00 | 36.51 | 36.51 | 56.00 | 46.00 | -19.49 | -9.49 | L2 |
| 18.2420 | 32.57 | 32.57 | 0.00 | 32.57 | 32.57 | 60.00 | 50.00 | -27.43 | -17.43 | L2 |

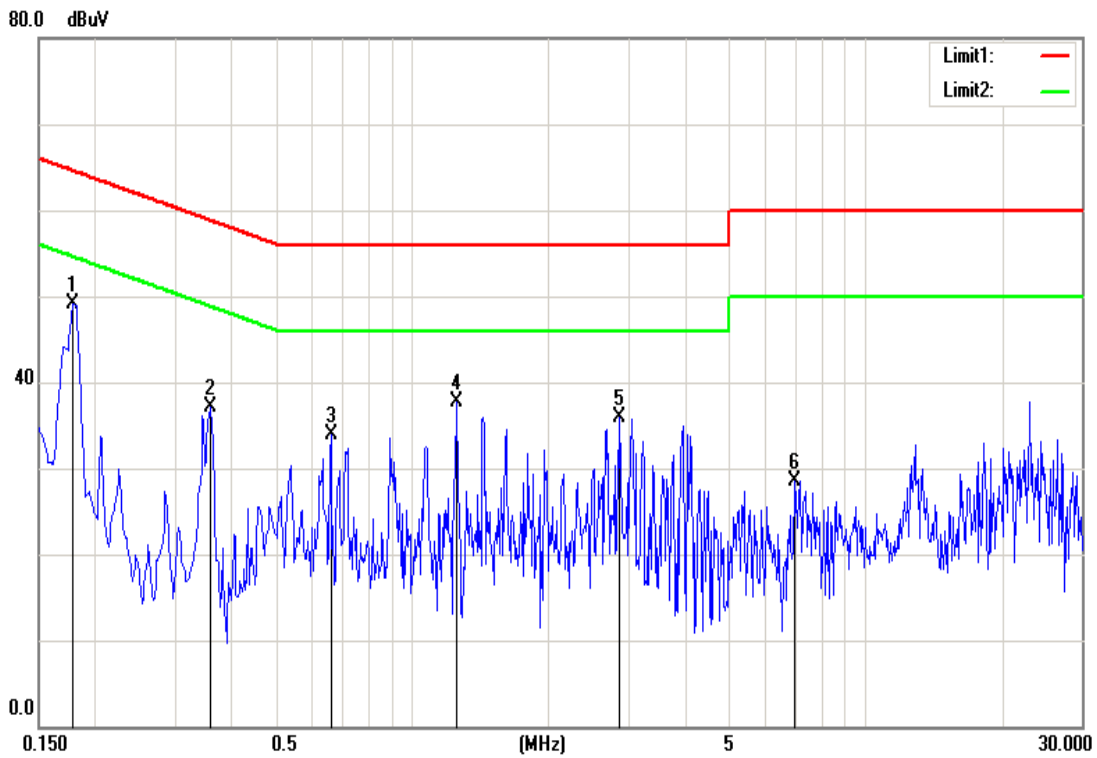
Remark:

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

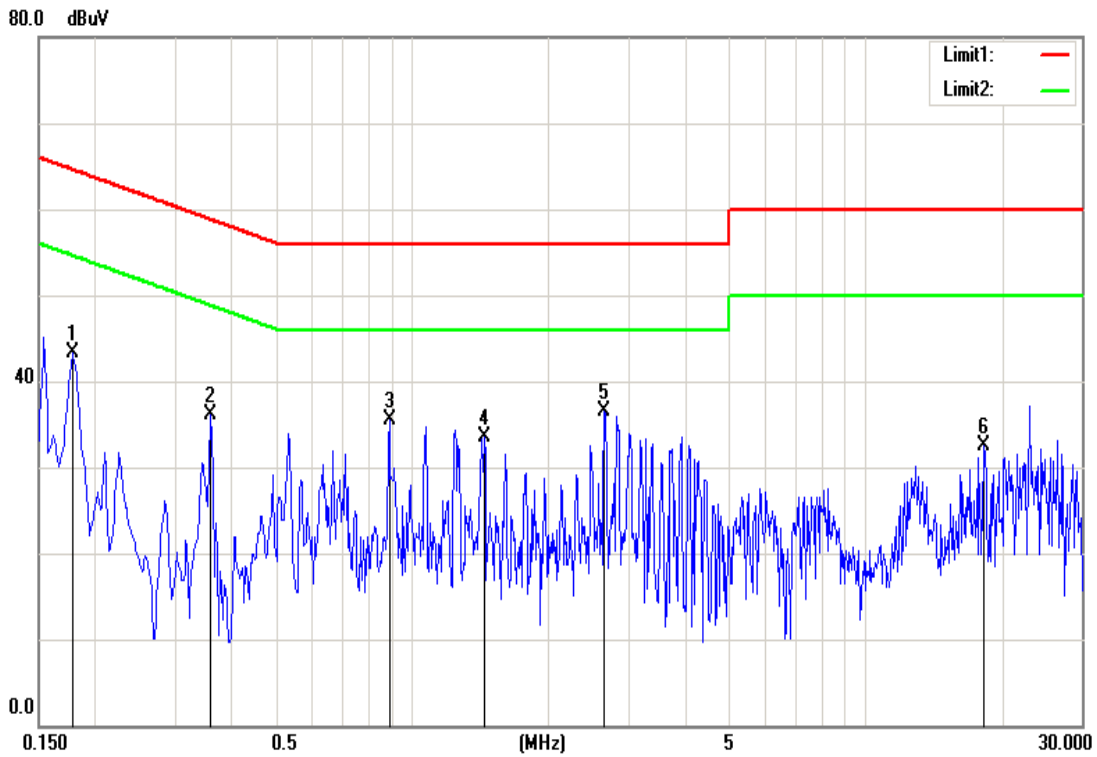


Test Plots

Conducted emissions (Line 1)



Conducted emissions (Line 2)



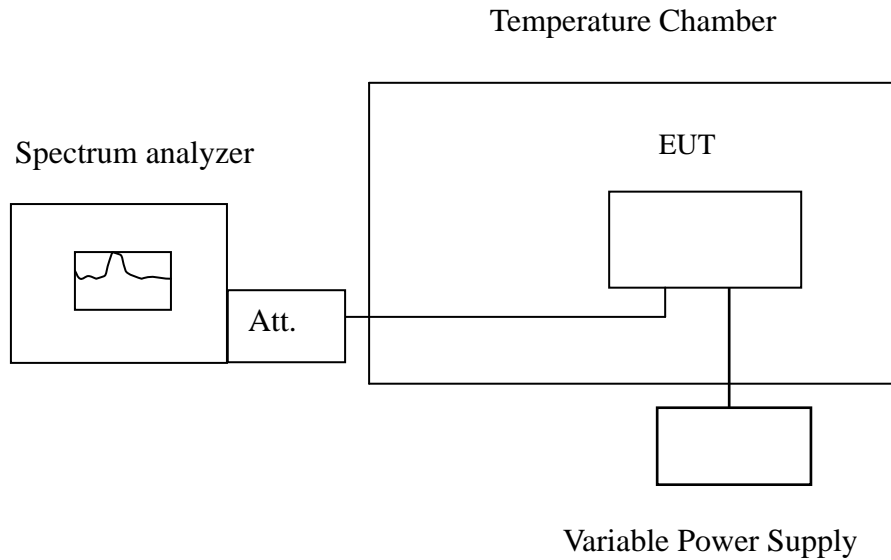


7.8 FREQUENCY STABILITY

LIMIT

According to §15.407(g), manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

Test Configuration



Remark: Measurement setup for testing on Antenna connector



TEST PROCEDURE

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

TEST RESULTS

No non-compliance noted.

IEEE 802.11a mode / 5180 ~ 5240 MHz:

CH Low

| Operating Frequency: 5180 MHz | | | | |
|-------------------------------|-------------|--------------------------|-------------|-------------|
| Environment Temperature (°C) | Voltage (V) | Measured Frequency (MHz) | Limit Range | Test Result |
| 50 | 110 | 5179.996452 | 5150~5250 | Pass |
| 40 | 110 | 5179.994115 | 5150~5250 | Pass |
| 30 | 110 | 5179.994372 | 5150~5250 | Pass |
| 20 | 110 | 5179.991272 | 5150~5250 | Pass |
| 10 | 110 | 5180.005031 | 5150~5250 | Pass |
| 0 | 110 | 5179.999159 | 5150~5250 | Pass |
| -10 | 110 | 5180.010225 | 5150~5250 | Pass |
| -20 | 110 | 5180.003929 | 5150~5250 | Pass |

| Operating Frequency: 5180 MHz | | | | |
|-------------------------------|-------------|--------------------------|-------------|-------------|
| Environment Temperature (°C) | Voltage (V) | Measured Frequency (MHz) | Limit Range | Test Result |
| 20 | 93.5 | 5180.007641 | 5150~5250 | Pass |
| | 110 | 5180.000449 | 5150~5250 | Pass |
| | 126.5 | 5180.008337 | 5150~5250 | Pass |



CH Mid

| Operating Frequency: 5220 MHz | | | | |
|-------------------------------|-------------|--------------------------|-------------|-------------|
| Environment Temperature (°C) | Voltage (V) | Measured Frequency (MHz) | Limit Range | Test Result |
| 50 | 110 | 5219.996134 | 5150~5250 | Pass |
| 40 | 110 | 5220.009473 | 5150~5250 | Pass |
| 30 | 110 | 5219.997023 | 5150~5250 | Pass |
| 20 | 110 | 5220.010949 | 5150~5250 | Pass |
| 10 | 110 | 5219.998929 | 5150~5250 | Pass |
| 0 | 110 | 5220.004872 | 5150~5250 | Pass |
| -10 | 110 | 5219.993527 | 5150~5250 | Pass |
| -20 | 110 | 5220.003980 | 5150~5250 | Pass |

| Operating Frequency: 5220 MHz | | | | |
|-------------------------------|-------------|--------------------------|-------------|-------------|
| Environment Temperature (°C) | Voltage (V) | Measured Frequency (MHz) | Limit Range | Test Result |
| 20 | 93.5 | 5220.003761 | 5150~5250 | Pass |
| | 110 | 5220.007711 | 5150~5250 | Pass |
| | 126.5 | 5219.995843 | 5150~5250 | Pass |



CH High

| Operating Frequency: 5240 MHz | | | | |
|-------------------------------|-------------|--------------------------|-------------|-------------|
| Environment Temperature (°C) | Voltage (V) | Measured Frequency (MHz) | Limit Range | Test Result |
| 50 | 110 | 5240.001422 | 5150~5250 | Pass |
| 40 | 110 | 5239.996994 | 5150~5250 | Pass |
| 30 | 110 | 5239.993952 | 5150~5250 | Pass |
| 20 | 110 | 5240.010237 | 5150~5250 | Pass |
| 10 | 110 | 5240.007036 | 5150~5250 | Pass |
| 0 | 110 | 5240.006670 | 5150~5250 | Pass |
| -10 | 110 | 5239.990997 | 5150~5250 | Pass |
| -20 | 110 | 5240.005808 | 5150~5250 | Pass |

| Operating Frequency: 5240 MHz | | | | |
|-------------------------------|-------------|--------------------------|-------------|-------------|
| Environment Temperature (°C) | Voltage (V) | Measured Frequency (MHz) | Limit Range | Test Result |
| 20 | 93.5 | 5240.001988 | 5150~5250 | Pass |
| | 110 | 5239.996416 | 5150~5250 | Pass |
| | 126.5 | 5240.002623 | 5150~5250 | Pass |



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

CH Low

| Operating Frequency: 5180 MHz | | | | |
|-------------------------------|-------------|--------------------------|-------------|-------------|
| Environment Temperature (°C) | Voltage (V) | Measured Frequency (MHz) | Limit Range | Test Result |
| 50 | 110 | 5180.000311 | 5150~5250 | Pass |
| 40 | 110 | 5180.010850 | 5150~5250 | Pass |
| 30 | 110 | 5179.996911 | 5150~5250 | Pass |
| 20 | 110 | 5180.009746 | 5150~5250 | Pass |
| 10 | 110 | 5180.008337 | 5150~5250 | Pass |
| 0 | 110 | 5179.993905 | 5150~5250 | Pass |
| -10 | 110 | 5180.009564 | 5150~5250 | Pass |
| -20 | 110 | 5180.010837 | 5150~5250 | Pass |

| Operating Frequency: 5180 MHz | | | | |
|-------------------------------|-------------|--------------------------|-------------|-------------|
| Environment Temperature (°C) | Voltage (V) | Measured Frequency (MHz) | Limit Range | Test Result |
| 20 | 93.5 | 5179.997911 | 5150~5250 | Pass |
| | 110 | 5179.993824 | 5150~5250 | Pass |
| | 126.5 | 5179.993152 | 5150~5250 | Pass |



CH Mid

| Operating Frequency: 5220 MHz | | | | |
|-------------------------------|-------------|--------------------------|-------------|-------------|
| Environment Temperature (°C) | Voltage (V) | Measured Frequency (MHz) | Limit Range | Test Result |
| 50 | 110 | 5220.003330 | 5150~5250 | Pass |
| 40 | 110 | 5220.003040 | 5150~5250 | Pass |
| 30 | 110 | 5220.007807 | 5150~5250 | Pass |
| 20 | 110 | 5219.994518 | 5150~5250 | Pass |
| 10 | 110 | 5219.999044 | 5150~5250 | Pass |
| 0 | 110 | 5220.004763 | 5150~5250 | Pass |
| -10 | 110 | 5220.003466 | 5150~5250 | Pass |
| -20 | 110 | 5220.008955 | 5150~5250 | Pass |

| Operating Frequency: 5220 MHz | | | | |
|-------------------------------|-------------|--------------------------|-------------|-------------|
| Environment Temperature (°C) | Voltage (V) | Measured Frequency (MHz) | Limit Range | Test Result |
| 20 | 93.5 | 5219.999816 | 5150~5250 | Pass |
| | 110 | 5220.008132 | 5150~5250 | Pass |
| | 126.5 | 5219.998225 | 5150~5250 | Pass |



CH High

| Operating Frequency: 5240 MHz | | | | |
|-------------------------------|-------------|--------------------------|-------------|-------------|
| Environment Temperature (°C) | Voltage (V) | Measured Frequency (MHz) | Limit Range | Test Result |
| 50 | 110 | 5240.005505 | 5150~5250 | Pass |
| 40 | 110 | 5239.995017 | 5150~5250 | Pass |
| 30 | 110 | 5240.001388 | 5150~5250 | Pass |
| 20 | 110 | 5240.006941 | 5150~5250 | Pass |
| 10 | 110 | 5240.004241 | 5150~5250 | Pass |
| 0 | 110 | 5239.994260 | 5150~5250 | Pass |
| -10 | 110 | 5239.993383 | 5150~5250 | Pass |
| -20 | 110 | 5239.993461 | 5150~5250 | Pass |

| Operating Frequency: 5240 MHz | | | | |
|-------------------------------|-------------|--------------------------|-------------|-------------|
| Environment Temperature (°C) | Voltage (V) | Measured Frequency (MHz) | Limit Range | Test Result |
| 20 | 93.5 | 5239.994392 | 5150~5250 | Pass |
| | 110 | 5240.003651 | 5150~5250 | Pass |
| | 126.5 | 5240.002186 | 5150~5250 | Pass |



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

CH Low

| Operating Frequency: 5180 MHz | | | | |
|-------------------------------|-------------|--------------------------|-------------|-------------|
| Environment Temperature (°C) | Voltage (V) | Measured Frequency (MHz) | Limit Range | Test Result |
| 50 | 110 | 5179.990461 | 5150~5250 | Pass |
| 40 | 110 | 5179.990120 | 5150~5250 | Pass |
| 30 | 110 | 5179.996984 | 5150~5250 | Pass |
| 20 | 110 | 5180.002203 | 5150~5250 | Pass |
| 10 | 110 | 5180.000348 | 5150~5250 | Pass |
| 0 | 110 | 5179.999489 | 5150~5250 | Pass |
| -10 | 110 | 5179.993744 | 5150~5250 | Pass |
| -20 | 110 | 5180.005713 | 5150~5250 | Pass |

| Operating Frequency: 5180 MHz | | | | |
|-------------------------------|-------------|--------------------------|-------------|-------------|
| Environment Temperature (°C) | Voltage (V) | Measured Frequency (MHz) | Limit Range | Test Result |
| 20 | 93.5 | 5180.005565 | 5150~5250 | Pass |
| | 110 | 5180.006199 | 5150~5250 | Pass |
| | 126.5 | 5179.996195 | 5150~5250 | Pass |



CH Mid

| Operating Frequency: 5220 MHz | | | | |
|-------------------------------|-------------|--------------------------|-------------|-------------|
| Environment Temperature (°C) | Voltage (V) | Measured Frequency (MHz) | Limit Range | Test Result |
| 50 | 110 | 5219.998351 | 5150~5250 | Pass |
| 40 | 110 | 5220.006960 | 5150~5250 | Pass |
| 30 | 110 | 5220.004080 | 5150~5250 | Pass |
| 20 | 110 | 5219.996554 | 5150~5250 | Pass |
| 10 | 110 | 5219.991619 | 5150~5250 | Pass |
| 0 | 110 | 5220.003743 | 5150~5250 | Pass |
| -10 | 110 | 5219.990754 | 5150~5250 | Pass |
| -20 | 110 | 5220.003445 | 5150~5250 | Pass |

| Operating Frequency: 5220 MHz | | | | |
|-------------------------------|-------------|--------------------------|-------------|-------------|
| Environment Temperature (°C) | Voltage (V) | Measured Frequency (MHz) | Limit Range | Test Result |
| 20 | 93.5 | 5219.993317 | 5150~5250 | Pass |
| | 110 | 5220.009665 | 5150~5250 | Pass |
| | 126.5 | 5220.003655 | 5150~5250 | Pass |



CH High

| Operating Frequency: 5240 MHz | | | | |
|-------------------------------|-------------|--------------------------|-------------|-------------|
| Environment Temperature (°C) | Voltage (V) | Measured Frequency (MHz) | Limit Range | Test Result |
| 50 | 110 | 5239.999712 | 5150~5250 | Pass |
| 40 | 110 | 5240.006100 | 5150~5250 | Pass |
| 30 | 110 | 5239.992314 | 5150~5250 | Pass |
| 20 | 110 | 5240.004588 | 5150~5250 | Pass |
| 10 | 110 | 5239.991881 | 5150~5250 | Pass |
| 0 | 110 | 5239.993251 | 5150~5250 | Pass |
| -10 | 110 | 5240.003933 | 5150~5250 | Pass |
| -20 | 110 | 5239.996613 | 5150~5250 | Pass |

| Operating Frequency: 5240 MHz | | | | |
|-------------------------------|-------------|--------------------------|-------------|-------------|
| Environment Temperature (°C) | Voltage (V) | Measured Frequency (MHz) | Limit Range | Test Result |
| 20 | 93.5 | 5239.996399 | 5150~5250 | Pass |
| | 110 | 5240.007159 | 5150~5250 | Pass |
| | 126.5 | 5240.002235 | 5150~5250 | Pass |



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

CH Low

| Operating Frequency: 5190 MHz | | | | |
|-------------------------------|-------------|--------------------------|-------------|-------------|
| Environment Temperature (°C) | Voltage (V) | Measured Frequency (MHz) | Limit Range | Test Result |
| 50 | 110 | 5189.992367 | 5150~5250 | Pass |
| 40 | 110 | 5190.003900 | 5150~5250 | Pass |
| 30 | 110 | 5190.003175 | 5150~5250 | Pass |
| 20 | 110 | 5189.996127 | 5150~5250 | Pass |
| 10 | 110 | 5190.005757 | 5150~5250 | Pass |
| 0 | 110 | 5190.000998 | 5150~5250 | Pass |
| -10 | 110 | 5189.990791 | 5150~5250 | Pass |
| -20 | 110 | 5189.991742 | 5150~5250 | Pass |

| Operating Frequency: 5190 MHz | | | | |
|-------------------------------|-------------|--------------------------|-------------|-------------|
| Environment Temperature (°C) | Voltage (V) | Measured Frequency (MHz) | Limit Range | Test Result |
| 20 | 93.5 | 5190.002875 | 5150~5250 | Pass |
| | 110 | 5189.995508 | 5150~5250 | Pass |
| | 126.5 | 5189.993467 | 5150~5250 | Pass |



CH High

| Operating Frequency: 5230 MHz | | | | |
|-------------------------------|-------------|--------------------------|-------------|-------------|
| Environment Temperature (°C) | Voltage (V) | Measured Frequency (MHz) | Limit Range | Test Result |
| 50 | 110 | 5229.997716 | 5150~5250 | Pass |
| 40 | 110 | 5229.990514 | 5150~5250 | Pass |
| 30 | 110 | 5229.995526 | 5150~5250 | Pass |
| 20 | 110 | 5230.006877 | 5150~5250 | Pass |
| 10 | 110 | 5229.997896 | 5150~5250 | Pass |
| 0 | 110 | 5230.008022 | 5150~5250 | Pass |
| -10 | 110 | 5230.005121 | 5150~5250 | Pass |
| -20 | 110 | 5230.007173 | 5150~5250 | Pass |

| Operating Frequency: 5230 MHz | | | | |
|-------------------------------|-------------|--------------------------|-------------|-------------|
| Environment Temperature (°C) | Voltage (V) | Measured Frequency (MHz) | Limit Range | Test Result |
| 20 | 93.5 | 5230.0015 | 5150~5250 | Pass |
| | 110 | 5229.992706 | 5150~5250 | Pass |
| | 126.5 | 5230.006557 | 5150~5250 | Pass |



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

CH Low

| Operating Frequency: 5190 MHz | | | | |
|-------------------------------|-------------|--------------------------|-------------|-------------|
| Environment Temperature (°C) | Voltage (V) | Measured Frequency (MHz) | Limit Range | Test Result |
| 50 | 110 | 5189.992399 | 5150~5250 | Pass |
| 40 | 110 | 5190.010885 | 5150~5250 | Pass |
| 30 | 110 | 5190.000809 | 5150~5250 | Pass |
| 20 | 110 | 5189.996278 | 5150~5250 | Pass |
| 10 | 110 | 5189.991585 | 5150~5250 | Pass |
| 0 | 110 | 5190.007618 | 5150~5250 | Pass |
| -10 | 110 | 5190.008247 | 5150~5250 | Pass |
| -20 | 110 | 5189.996993 | 5150~5250 | Pass |

| Operating Frequency: 5190 MHz | | | | |
|-------------------------------|-------------|--------------------------|-------------|-------------|
| Environment Temperature (°C) | Voltage (V) | Measured Frequency (MHz) | Limit Range | Test Result |
| 20 | 93.5 | 5190.007774 | 5150~5250 | Pass |
| | 110 | 5190.002951 | 5150~5250 | Pass |
| | 126.5 | 5190.004222 | 5150~5250 | Pass |



CH High

| Operating Frequency: 5230 MHz | | | | |
|-------------------------------|-------------|--------------------------|-------------|-------------|
| Environment Temperature (°C) | Voltage (V) | Measured Frequency (MHz) | Limit Range | Test Result |
| 50 | 110 | 5229.995433 | 5150~5250 | Pass |
| 40 | 110 | 5230.004964 | 5150~5250 | Pass |
| 30 | 110 | 5229.999746 | 5150~5250 | Pass |
| 20 | 110 | 5229.994578 | 5150~5250 | Pass |
| 10 | 110 | 5229.994606 | 5150~5250 | Pass |
| 0 | 110 | 5230.006817 | 5150~5250 | Pass |
| -10 | 110 | 5230.001941 | 5150~5250 | Pass |
| -20 | 110 | 5229.992303 | 5150~5250 | Pass |

| Operating Frequency: 5230 MHz | | | | |
|-------------------------------|-------------|--------------------------|-------------|-------------|
| Environment Temperature (°C) | Voltage (V) | Measured Frequency (MHz) | Limit Range | Test Result |
| 20 | 93.5 | 5230.00809 | 5150~5250 | Pass |
| | 110 | 5229.990421 | 5150~5250 | Pass |
| | 126.5 | 5230.010128 | 5150~5250 | Pass |



IEEE 802.11 ac80 mode / 5210 MHz / Chain 0

| Operating Frequency: 5210 MHz | | | | |
|-------------------------------|-------------|--------------------------|-------------|-------------|
| Environment Temperature (°C) | Voltage (V) | Measured Frequency (MHz) | Limit Range | Test Result |
| 50 | 110 | 5210.003472 | 5150~5250 | Pass |
| 40 | 110 | 5210.010052 | 5150~5250 | Pass |
| 30 | 110 | 5209.990154 | 5150~5250 | Pass |
| 20 | 110 | 5210.009797 | 5150~5250 | Pass |
| 10 | 110 | 5209.991046 | 5150~5250 | Pass |
| 0 | 110 | 5210.007304 | 5150~5250 | Pass |
| -10 | 110 | 5210.001199 | 5150~5250 | Pass |
| -20 | 110 | 5210.003468 | 5150~5250 | Pass |

| Operating Frequency: 5210 MHz | | | | |
|-------------------------------|-------------|--------------------------|-------------|-------------|
| Environment Temperature (°C) | Voltage (V) | Measured Frequency (MHz) | Limit Range | Test Result |
| 20 | 93.5 | 5209.995134 | 5150~5250 | Pass |
| | 110 | 5210.007331 | 5150~5250 | Pass |
| | 126.5 | 5210.009486 | 5150~5250 | Pass |



IEEE 802.11 ac80 mode / 5210 MHz / Chain 1

| Operating Frequency: 5210 MHz | | | | |
|-------------------------------|-------------|--------------------------|-------------|-------------|
| Environment Temperature (°C) | Voltage (V) | Measured Frequency (MHz) | Limit Range | Test Result |
| 50 | 110 | 5210.007001 | 5150~5250 | Pass |
| 40 | 110 | 5210.001894 | 5150~5250 | Pass |
| 30 | 110 | 5209.995051 | 5150~5250 | Pass |
| 20 | 110 | 5209.991201 | 5150~5250 | Pass |
| 10 | 110 | 5210.009468 | 5150~5250 | Pass |
| 0 | 110 | 5210.003940 | 5150~5250 | Pass |
| -10 | 110 | 5210.006192 | 5150~5250 | Pass |
| -20 | 110 | 5210.000660 | 5150~5250 | Pass |

| Operating Frequency: 5210 MHz | | | | |
|-------------------------------|-------------|--------------------------|-------------|-------------|
| Environment Temperature (°C) | Voltage (V) | Measured Frequency (MHz) | Limit Range | Test Result |
| 20 | 93.5 | 5209.998039 | 5150~5250 | Pass |
| | 110 | 5209.994209 | 5150~5250 | Pass |
| | 126.5 | 5210.004675 | 5150~5250 | Pass |