



FCC 47 CFR PART 15 SUBPART E

for

EO2

Model: EO2

Brand: N/A

Test Report Number:

C161010Z03-RP1-4

Issued Date: November 7, 2016

Issued for

Electric Objects Inc

95 Avenue B, 2nd Floor, New York, NY 10009, United States

Issued by:

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TESTING CERT #2861.01

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Revision History

| Rev. | Issue Date | Revisions | Effect Page | Revised By |
|------|------------------|---------------|-------------|--------------|
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1. TEST CERTIFICATION

| | |
|--------------|--|
| Product | EO2 |
| Model | EO2 |
| Brand | N/A |
| Tested | October 10~ November 7, 2016 |
| Applicant | Electric Objects Inc 95 Avenue B, 2nd Floor, New York, NY 10009, United States |
| Manufacturer | Electric Objects Inc 95 Avenue B, 2nd Floor, New York, NY 10009, United States |

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

We hereby certify that:

Compliance Certification Services (Shenzhen) Inc. tested the above equipment. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in **ANSI C63.10: 2013** and the energy emitted by the sample EUT tested as described in this report is in compliance with conducted and radiated emission limits of FCC Rules Part 15.407、FCC 14-30.

The TEST RESULTS of this report relate only to the tested sample identified in this report.

Approved by:

Sunday Hu
Supervisor of EMC Dept.
Compliance Certification Services (Shenzhen) Inc.

Reviewed by:

Ruby Zhang
Supervisor of Report Dept.
Compliance Certification Services (Shenzhen) Inc.



2. EUT DESCRIPTION

| | |
|---|--|
| Product | EO2 |
| Model Number | EO2 |
| Brand | N/A |
| Model Discrepancy | N/A |
| Serial Number | C161010Z03-RP1-4 |
| Received Date | October 10, 2016 |
| Power Supply | DC 12V supplied by adapter |
| Adapter Manufacturer Model No. | HUAXU ELECTRONICS FACTORY / HX36-1203000-E2 Input: 100-240V ~ 50/60Hz 1.0A Max Output: DC12V 3.0A Max. AC Input Cable: Unshielded 1.25m DC Output Cable: Unshielded 1.8m |
| Frequency Range | UNII Band I: IEEE 802.11a, 802.11n HT20 : 5180MHz ~ 5240MHz; UNII Band IV IEEE 802.11a, 802.11n HT20 : 5745MHz ~ 5825MHz |
| Transmit Power | UNII Band I: IEEE 802.11a: 8.78dBm IEEE 802.11n HT 20 MHz mode: 7.58dBm UNII Band IV IEEE 802.11a: 13.82dBm IEEE 802.11n HT 20 MHz mode: 12.49dBm |
| Modulation Technique | OFDM (QPSK, BPSK, 16-QAM, 64-QAM) |
| Transmit Data Rate | IEEE 802.11a mode: 48, 36, 24, 18, 12, 9, 6Mbps IEEE802.11n HT20MHz mode(800ns GI): 13,26,39,52,78,104,117,130Mbps |
| Number of Channels | UNII Band I: IEEE 802.11a, 802.11n HT20 : 4 Channels UNII Band IV IEEE 802.11a, 802.11n HT20 : 5 Channels |
| Antenna Specification | FPC Antenna with 3dBi gain (Max) |
| Channels Spacing | IEEE 802.11a, 802.11n HT20 : 20MHz |
| Temperature Range | 0°C ~ +40°C |
| Hardware Version | RMF0602 |
| Software Version | V1 |

Note: 1. The sample selected for test was engineering sample that approximated to production product and was provided by manufacturer.

**Operation Frequency:**

| UNLICENSED NATIONAL INFORMATION INFRASTRUCTURE (U-NII) | |
|--|------|
| CHANNEL | MHz |
| 36 | 5180 |
| 40 | 5200 |
| 44 | 5220 |
| 48 | 5240 |
| 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: 2AJPW-10D2AE filing to comply with Section 15.407 of the FCC Part 15, Subpart E Rules and FCC 14-30.



3. TEST METHODOLOGY

Both conducted and radiated testing was performed according to the procedures in ANSI C63.10. Radiated testing was performed at an antenna to EUT distance 3 meters.

The tests documented in this report were performed in accordance with ANSI C63.10: 2013 and FCC CFR 47 Part 15.207, 15.209, 15.407 and FCC 14-30.

Radio testing was performed according to KDB DA 02-2138, KDB 789033 D02, KDB 905462 D06;

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 C63.10, 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 (below 1GHz) /1.5m (Above 1GHz) 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 C63.10.



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 is a 1x1 configuration spatial (1TX & 1RX) without beam forming function. Software used to control the EUT for staying in continuous transmitting mode was programmed.

| Test Item | Test mode | Worse mode |
|--------------------|---------------------------|---------------|
| Conducted Emission | Mode 1: Play Video | Mode 1 |
| Radiated Emission | Mode 1: TX | Mode 1 |

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

UNII Band I:

IEEE 802.11a for 5180 ~ 5240MHz:

Channel Low (5180MHz), Channel Mid (5200MHz) and Channel High (5240MHz) with 6Mbps data rate were chosen for full testing.

IEEE 802.11n HT 20 MHz for 5180 ~ 5240MHz:

Channel Low (5180MHz), Channel Mid (5200MHz) and Channel High (5240MHz) with 13Mbps data rate were chosen for full testing.

UNII Band IV:

IEEE 802.11a for 5745 ~ 5825MHz:

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

IEEE 802.11n HT 20 MHz for 5745 ~ 5825MHz:

Channel Low (5745MHz), Channel Mid (5785MHz) and Channel High (5825MHz) with 13Mbps data rate were chosen for full testing.



4. SETUP OF EQUIPMENT UNDER TEST

4.1 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

| No. | Equipment | Model No. | Serial No. | FCC ID | Brand | Data Cable | Power Cord |
|-----|-----------|-----------|------------|--------|-------|------------|------------|
| 1 | N/A | | | | | | |

Note:

Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

4.2 CONFIGURATION OF SYSTEM UNDER TEST

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



5. FACILITIES AND ACCREDITATIONS

5.1 FACILITIES

All measurement facilities used to collect the measurement data are located at
**No.10-1 Mingkeda Logistics park, No.18, Huanguan South Rd., Guan Lan Town,
Baoan District, Shenzhen, China**

The sites are constructed in conformance with the requirements of ANSI C63.10, ANSI C63.7 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 ACCREDITATIONS

Our laboratories are accredited and approved by the following accreditation body according to ISO/IEC 17025.

| | |
|-------|------|
| USA | A2LA |
| China | CNAS |

The measuring facility of laboratories has been authorized or registered by the following approval agencies.

| | |
|--------|--------------------------------------|
| USA | FCC |
| Japan | VCCI(C-3478, R-3135, T-652, G-10624) |
| Canada | INDUSTRY CANADA |

Copies of granted accreditation certificates are available for downloading from our web site, <http://www.cssz.com>



5.4 MEASUREMENT UNCERTAINTY

| Parameter | Uncertainty |
|-------------------------------|--------------|
| RF frequency | +/- 1 * 10-5 |
| RF power conducted | +/- 1,5 dB |
| RF power radiated | +/- 6 dB |
| Spurious emissions, conducted | +/- 3 dB |
| Spurious emissions, radiated | +/- 6 dB |
| Humidity | +/- 5 % |
| Temperature | +/- 1°C |
| Time | +/-10 % |

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



6. FCC PART 15 REQUIREMENTS

6.1 26dB EMISSION BANDWIDTH

6.1.1 LIMIT

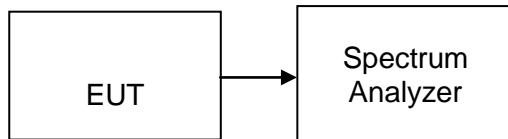
According to §15.403(c), for purposes of this subpart the emission bandwidth shall be determined by measuring the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, that are 26 dB down relative to the maximum level of the modulated 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.

6.1.2 MEASUREMENT EQUIPMENT USED

| Name of Equipment | Manufacturer | Model | Serial Number | Last Calibration | Due Calibration |
|-------------------|--------------|--------|---------------|------------------|-----------------|
| Spectrum Analyzer | Agilent | N9010A | MY52221469 | 02/21/2016 | 02/20/2017 |

Remark: Each piece of equipment is scheduled for calibration once a year.

6.1.3 TEST CONFIGURATION



6.1.4 TEST PROCEDURE

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



6.1.5 TEST RESULTS

No non-compliance noted

Test Data

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

| Channel | Frequency (MHz) | 26dB Bandwidth(B) (MHz) |
|---------|-----------------|-------------------------|
| Low | 5180 | 19.05 |
| Mid | 5200 | 18.93 |
| High | 5240 | 18.89 |

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

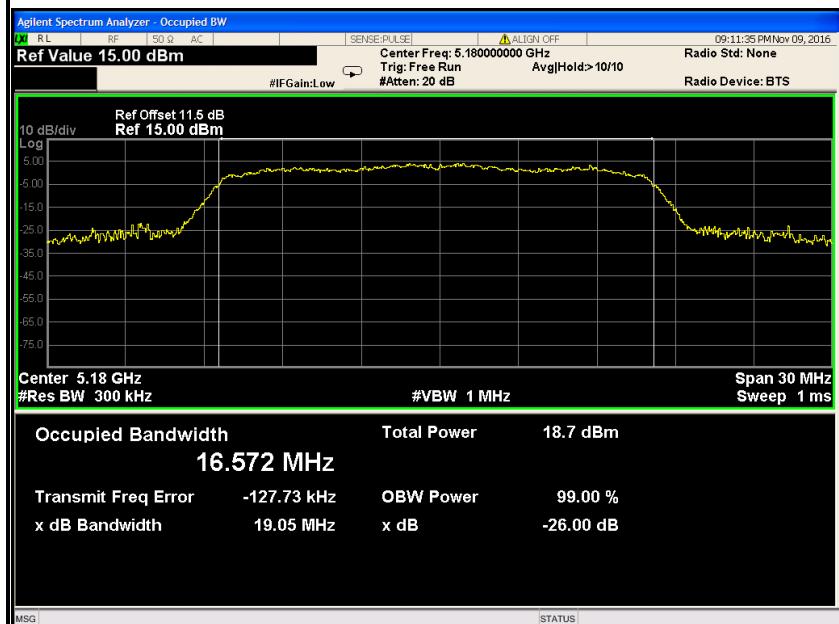
| Channel | Frequency (MHz) | 26dB Bandwidth(B) (MHz) |
|---------|-----------------|-------------------------|
| Low | 5180 | 19.21 |
| Mid | 5200 | 19.22 |
| High | 5240 | 19.12 |



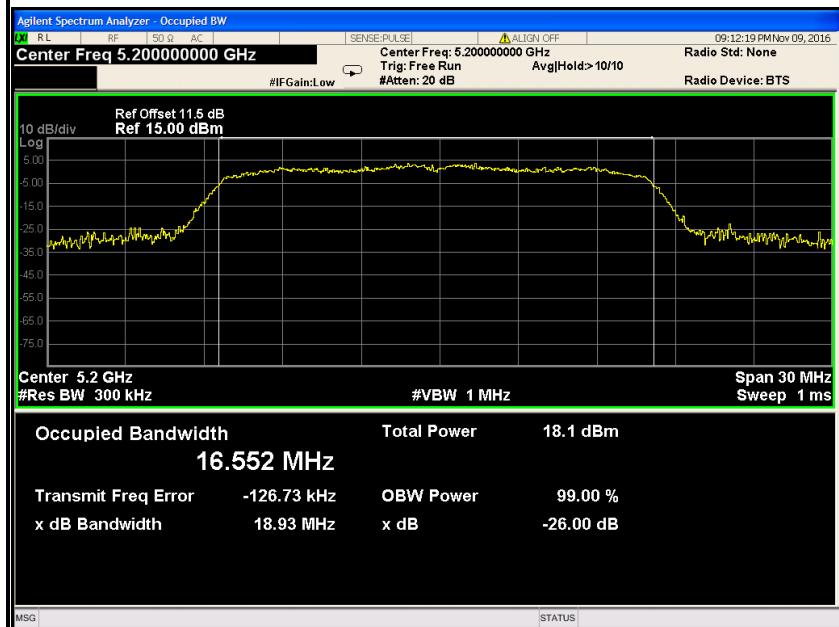
Test Plot

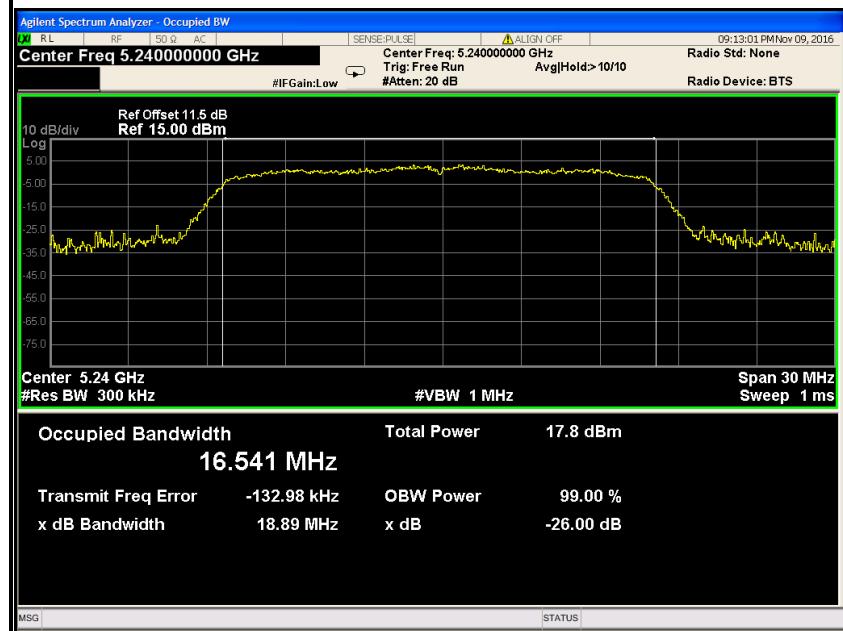
IEEE 802.11a mode / 5180 ~ 5240MHz

26dB Bandwidth (CH Low)



26dB Bandwidth (CH Mid)

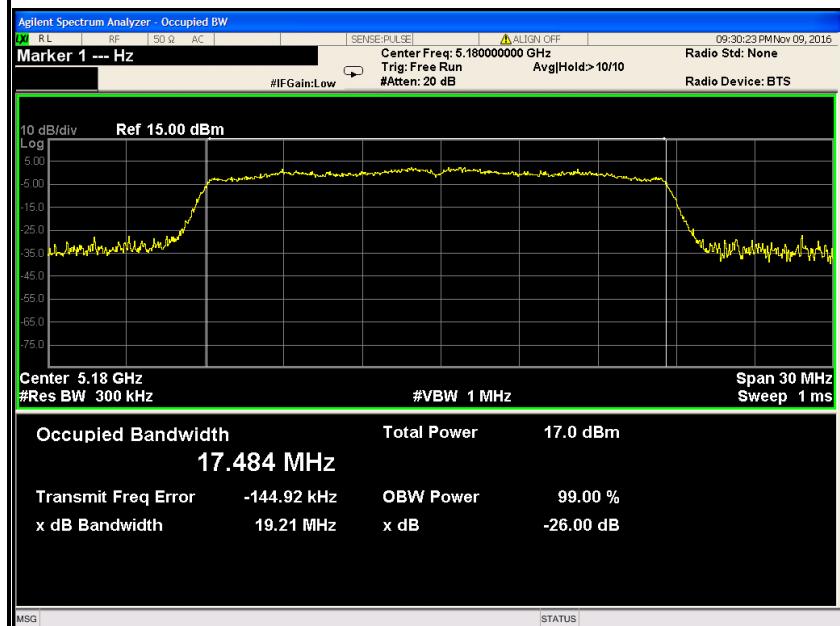


**26dB Bandwidth (CH High)**

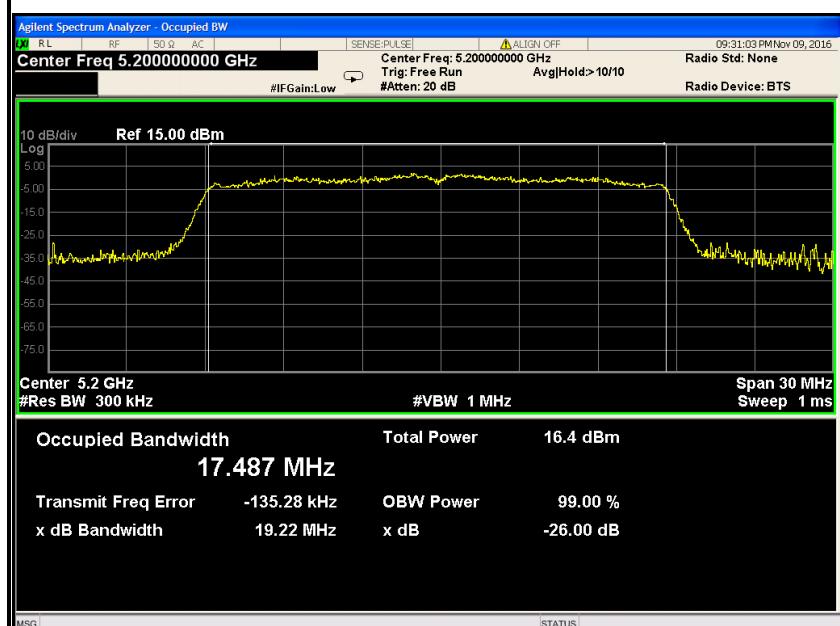


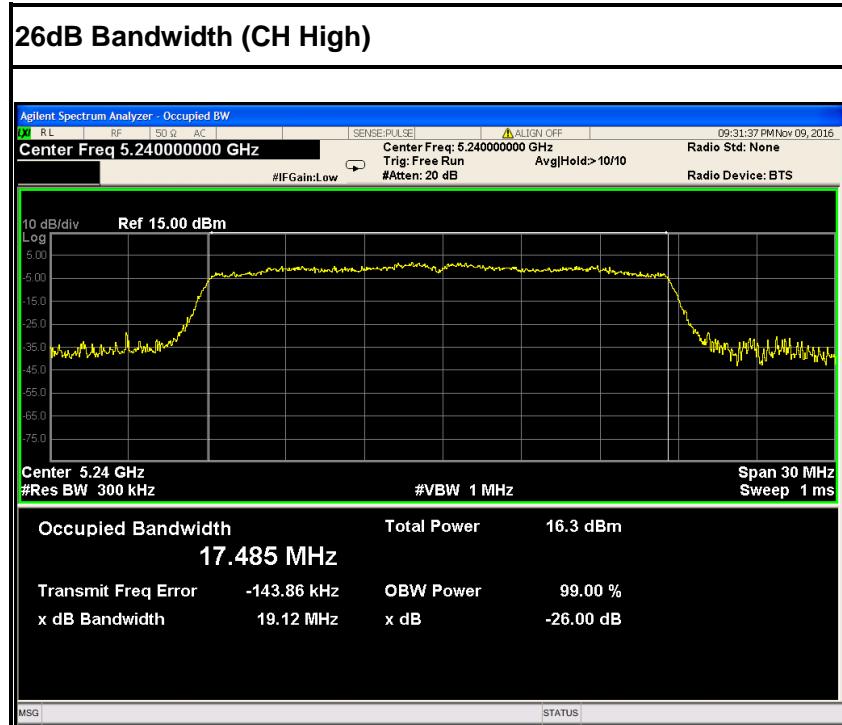
IEEE 802.11n HT 20 MHz mode / 5180 ~ 5240MHz

26dB Bandwidth (CH Low)



26dB Bandwidth (CH Mid)







6.2 6dB BANDWIDTH MEASUREMENT

6.2.1 LIMITS

According to §15.407(e), Within the 5.725-5.85 GHz band, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.

6.2.2 TEST INSTRUMENTS

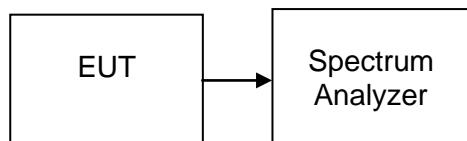
| Name of Equipment | Manufacturer | Model | Serial Number | Last Calibration | Calibration Due |
|-------------------|--------------|--------|---------------|------------------|-----------------|
| Spectrum Analyzer | Agilent | N9010A | MY52221469 | 02/21/2016 | 02/20/2017 |

6.2.3 TEST PROCEDURES (please refer to measurement standard)

8.1 Option 2:

The automatic bandwidth measurement capability of an instrument may be employed using the X dB bandwidth mode with X set to 6 dB, if the functionality described above (i.e., RBW = 100 kHz, VBW \geq 3 RBW, peak detector with maximum hold) is implemented by the instrumentation function. When using this capability, care shall be taken so that the bandwidth measurement is not influenced by any intermediate power nulls in the fundamental emission that might be \geq 6 dB.

6.2.4 TEST SETUP





6.2.5 TEST RESULTS

No non-compliance noted

Test Data

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

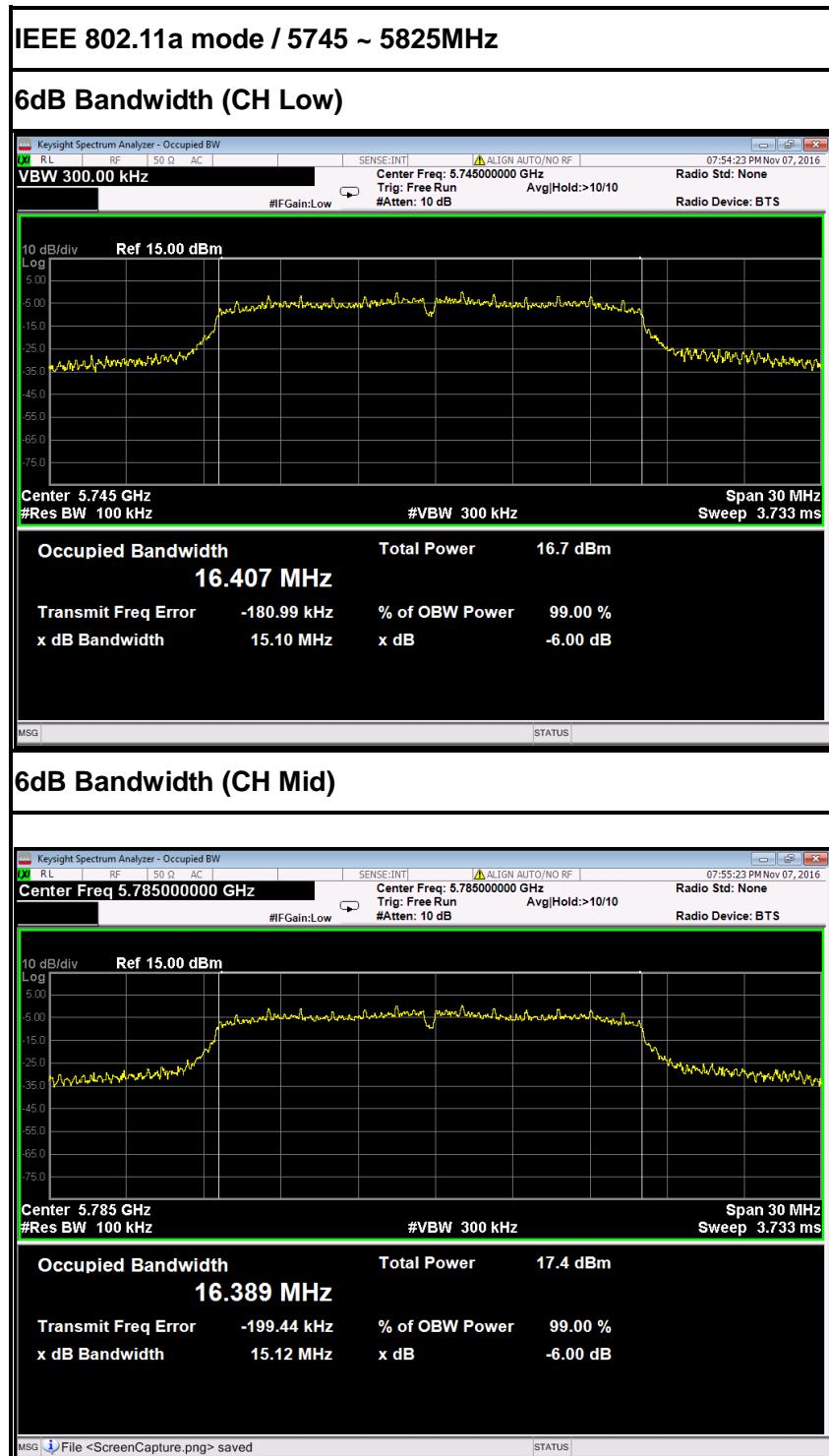
| Channel | Frequency (MHz) | 6dB Bandwidth(B) (MHz) | Limit (kHz) | Test Result |
|---------|-----------------|------------------------|-------------|-------------|
| Low | 5745 | 15.10 | >500 | PASS |
| Mid | 5785 | 15.12 | | PASS |
| High | 5825 | 15.11 | | PASS |

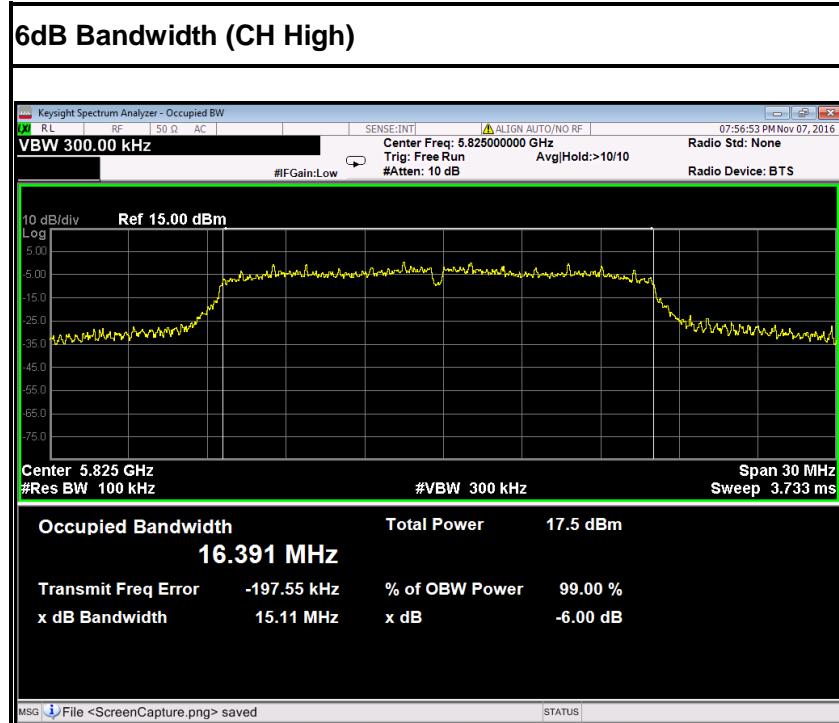
Test mode: IEEE 802.11n HT 20 MHz mode / 5745 ~ 5825MHz

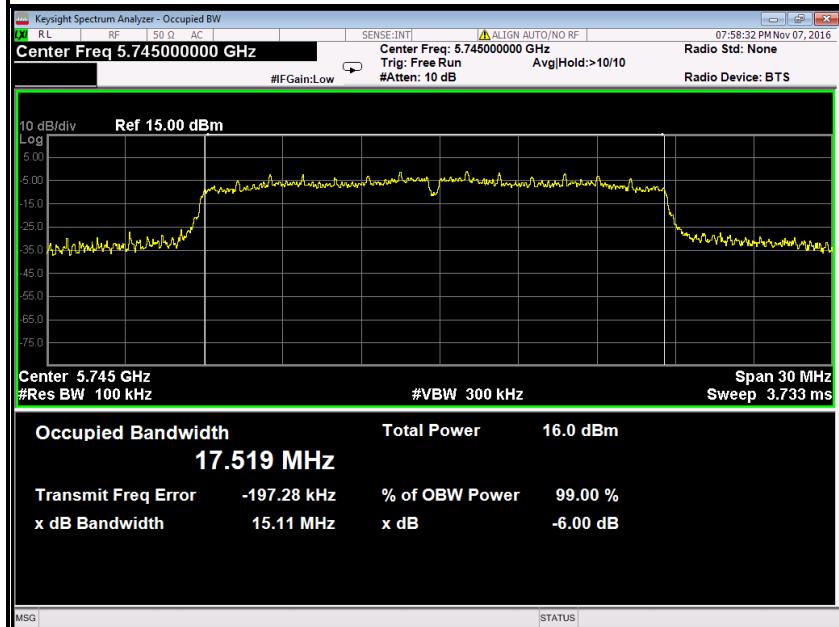
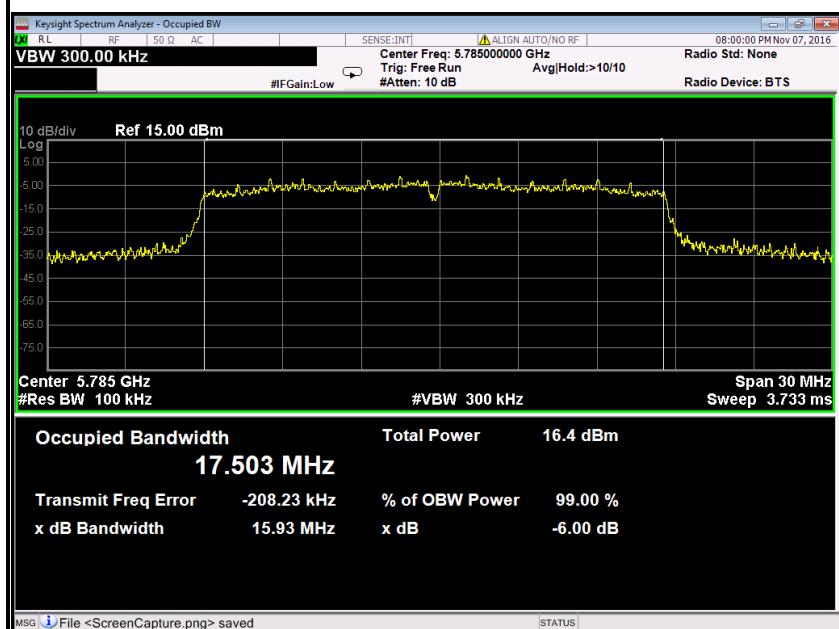
| Channel | Frequency (MHz) | 6dB Bandwidth(B) (MHz) | Limit (kHz) | Test Result |
|---------|-----------------|------------------------|-------------|-------------|
| Low | 5745 | 15.11 | >500 | PASS |
| Mid | 5785 | 15.93 | | PASS |
| High | 5825 | 15.11 | | PASS |

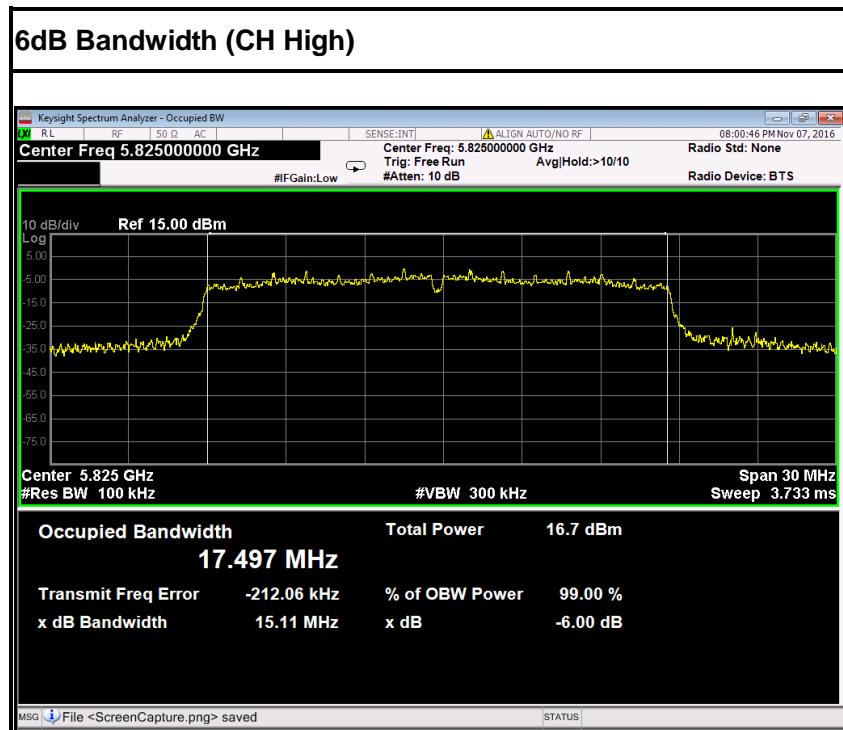


Test Plot





**IEEE 802.11n HT 20 MHz mode / 5745 ~ 5825MHz****6dB Bandwidth (CH Low)****6dB Bandwidth (CH Mid)**





6.3 ANTENNA GAIN

MEASUREMENT

The antenna gain of the complete system is calculated by the difference of radiated power in EIRP and the conducted power of the module. For normal WLAN devices, the OFDM mode is used.

MEASUREMENT PARAMETERS

| Measurement parameter | |
|-----------------------|----------|
| Detector | Peak |
| Sweep time | Auto |
| Resolution bandwidth | 3 MHz |
| Video bandwidth | 3 MHz |
| Trace-Mode | Max hold |

LIMITS

| FCC | IC |
|--------------|----|
| Antenna Gain | |
| 6 dBi | |

TEST RESULTS

IEEE 802.11a mode

| T _{nom} | V _{nom} | Lowest channel 5180MHz | Highest channel 5240MHz |
|---|----------------------------------|---------------------------|----------------------------|
| Conducted power [dBm] Measured with OFDM modulation | | 8.78 | 7.88 |
| Radiated power [dBm] Measured with OFDM modulation | | 11.53 | 10.84 |
| Gain [dBi] Calculated | | 2.75 | 2.96 |
| Measurement uncertainty | ± 1.5 dB (cond.) / ± 3 dB (rad.) | | |



6.4 OUTPUT POWER

6.4.1 LIMIT

According to §15.407(a)& FCC R&O FCC 14 - 30,

(1) For the band 5.15-5.25 GHz.

(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(2) For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or $11 \text{ dBm} + 10 \log B$, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.



(3) For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

Note to paragraph (a)(3): The Commission strongly recommends that parties employing U-NII devices to provide critical communications services should determine if there are any nearby Government radar systems that could affect their operation.

Specified Limit of the Output Power

Not applicable, Since the EUT without the band II and band III.

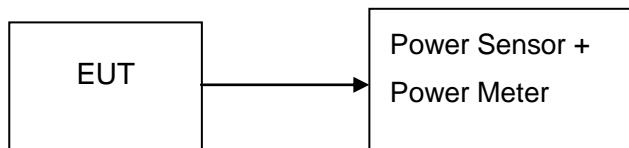


6.4.2 MEASUREMENT EQUIPMENT USED

| Name of Equipment | Manufacturer | Model | Serial Number | Last Calibration | Calibration Due |
|-------------------|--------------|---------|---------------|------------------|-----------------|
| Power Meter | Anritsu | ML2495A | 1204003 | 02/21/2016 | 02/20/2017 |
| Power Sensor | Anritsu | MA2411B | 1126150 | 02/21/2016 | 02/20/2017 |

Remark: Each piece of equipment is scheduled for calibration once a year.

6.4.3 TEST CONFIGURATIONS



6.4.4 TEST PROCEDURE

The EUT was connected to a Power Meter through a 50Ω RF cable.

6.4.5 TEST RESULTS

No non-compliance noted



6.4.6 TEST DATA

IEEE 802.11a mode / 5180 ~ 5240MHz

| Channel | Frequency (MHz) | Output Power (dBm) | Output Power (W) | Limit (dBm) | Result |
|---------|-----------------|--------------------|------------------|-------------|--------|
| Low | 5180 | 8.78 | 0.00755 | 24.00 | PASS |
| Mid | 5200 | 8.67 | 0.00736 | | PASS |
| High | 5240 | 7.88 | 0.00614 | | PASS |

IEEE 802.11a mode / 5745 ~ 5825MHz

| Channel | Frequency (MHz) | Output Power (dBm) | Output Power (W) | Limit (dBm) | Result |
|---------|-----------------|--------------------|------------------|-------------|--------|
| Low | 5745 | 11.24 | 0.01330 | 30.00 | PASS |
| Mid | 5785 | 13.82 | 0.02410 | | PASS |
| High | 5825 | 13.33 | 0.02153 | | PASS |

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

| Channel | Frequency (MHz) | Output Power (dBm) | Output Power (W) | Limit (dBm) | Result |
|---------|-----------------|--------------------|------------------|-------------|--------|
| Low | 5180 | 7.58 | 0.00573 | 24.00 | PASS |
| Mid | 5200 | 7.45 | 0.00556 | | PASS |
| High | 5240 | 6.47 | 0.00444 | | PASS |

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

| Channel | Frequency (MHz) | Output Power (dBm) | Output Power (W) | Limit (dBm) | Result |
|---------|-----------------|--------------------|------------------|-------------|--------|
| Low | 5745 | 13.13 | 0.02056 | 30.00 | PASS |
| Mid | 5785 | 13.03 | 0.02009 | | PASS |
| High | 5825 | 12.49 | 0.01774 | | PASS |



6.5 BAND EDGES MEASUREMENT

6.5.1 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.

6.5.2 MEASUREMENT EQUIPMENT USED

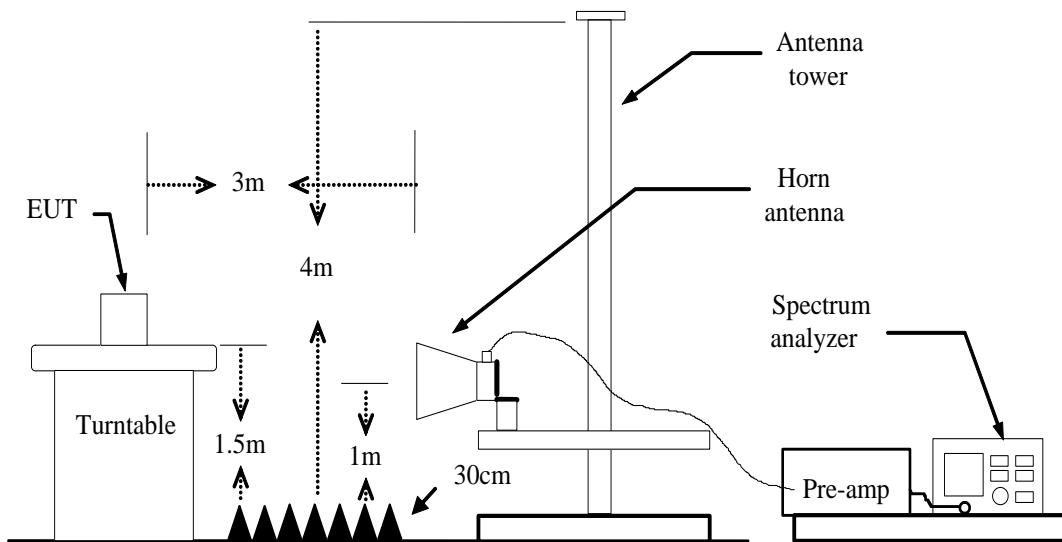
| Radiated Emission Test Site 966(2) | | | | | |
|------------------------------------|----------------|--------------------|---------------|------------------|-----------------|
| Name of Equipment | Manufacturer | Model Number | Serial Number | Last Calibration | Due Calibration |
| PSA Series Spectrum Analyzer | Agilent | N9010A | MY52221469 | 02/21/2016 | 02/20/2017 |
| EMI TEST RECEIVER | ROHDE&SCHWARZ | ESCI | 100783 | 02/21/2016 | 02/20/2017 |
| Amplifier | EMEC | EM330 | 060661 | 03/18/2016 | 03/17/2017 |
| High Noise Amplifier | Agilent | 8449B | 3008A01838 | 02/21/2016 | 02/20/2017 |
| Loop Antenna | COM-POWER | AL-130 | 121044 | 09/25/2016 | 09/24/2017 |
| Bilog Antenna | SCHAFFNER | CBL6143 | 5082 | 02/21/2016 | 02/20/2017 |
| Horn Antenna | SCHWARZBECK | BBHA9120 | D286 | 02/28/2016 | 02/27/2017 |
| Board-Band Horn Antenna | Schwarzbeck | BBHA 9170 | 9170-497 | 02/28/2016 | 02/27/2017 |
| Turn Table | N/A | N/A | N/A | N.C.R | N.C.R |
| Antenna Tower | SUNOL | TLT2 | N/A | N.C.R | N.C.R |
| Controller | Sunol Sciences | SC104V | 022310-1 | N.C.R | N.C.R |
| Controller | CT | N/A | N/A | N.C.R | N.C.R |
| Temp. / Humidity Meter | Anymetre | JR913 | N/A | 02/21/2016 | 02/20/2017 |
| Test S/W | FARAD | LZ-RF / CCS-SZ-3A2 | | | |

NOTE: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

2. The FCC Site Registration number is 101879.

3. N.C.R = No Calibration Required.

6.5.3 TEST CONFIGURATION



6.5.4 TEST PROCEDURE

1. The EUT is placed on a turntable, which is 1.5m 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=1 / VBW=3MHz / Sweep=AUTO
 - (b) AVERAGE: RBW=1MHz / VBW=680Hz / Sweep=AUTO / Detector=Peak
5. Repeat the procedures until all the PEAK and AVERAGE versus POLARIZATION are measured.



6.5.5 TEST RESULT

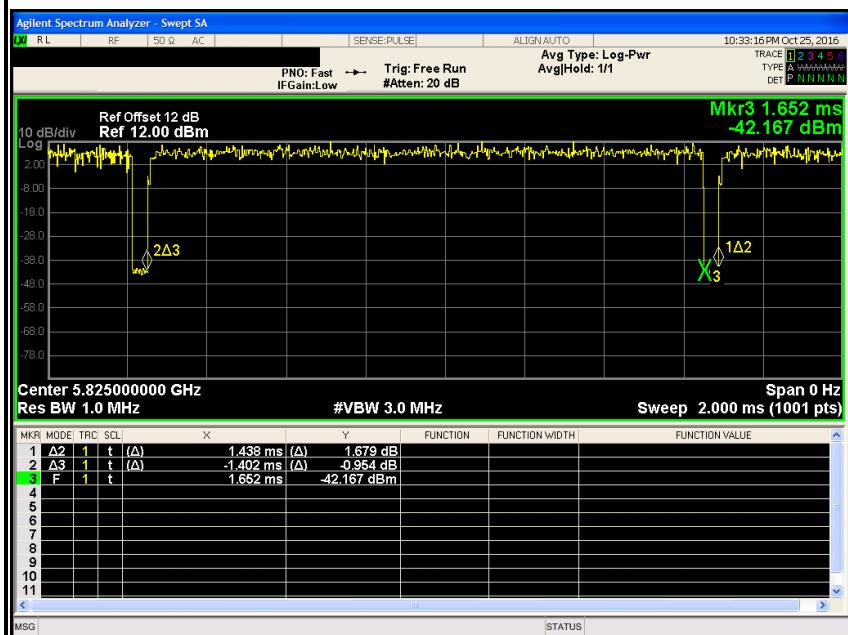
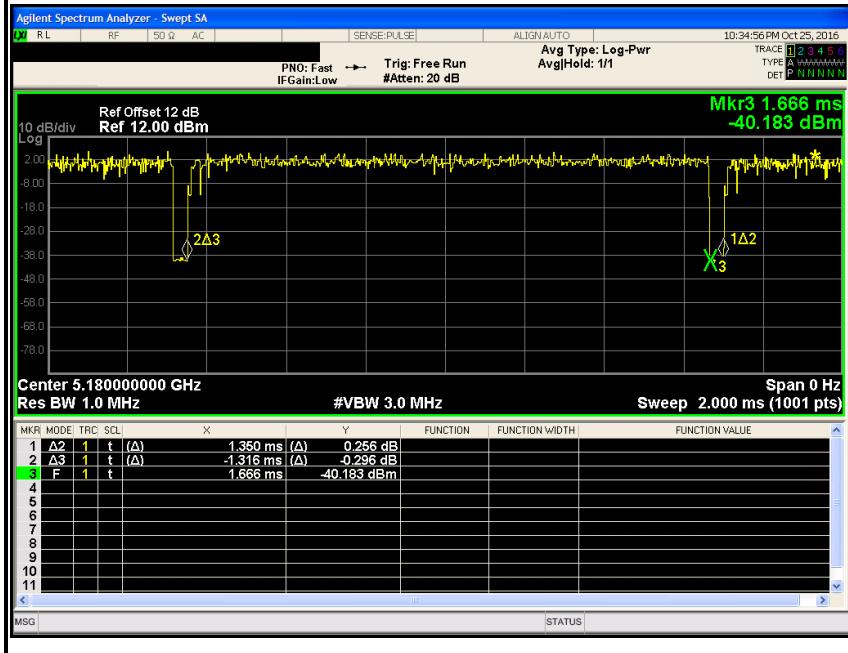
IEEE 802.11a mode / 5745 ~ 5825MHz

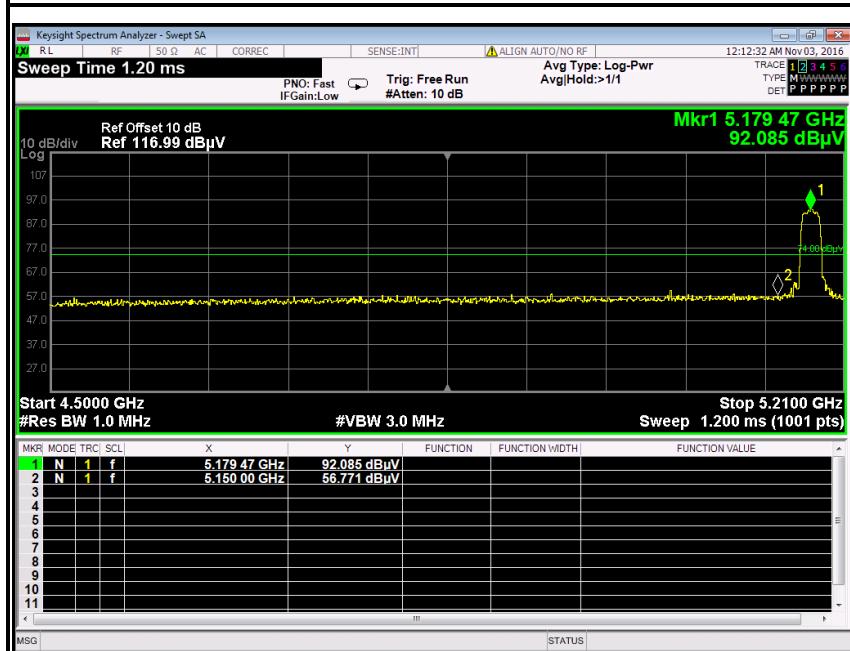
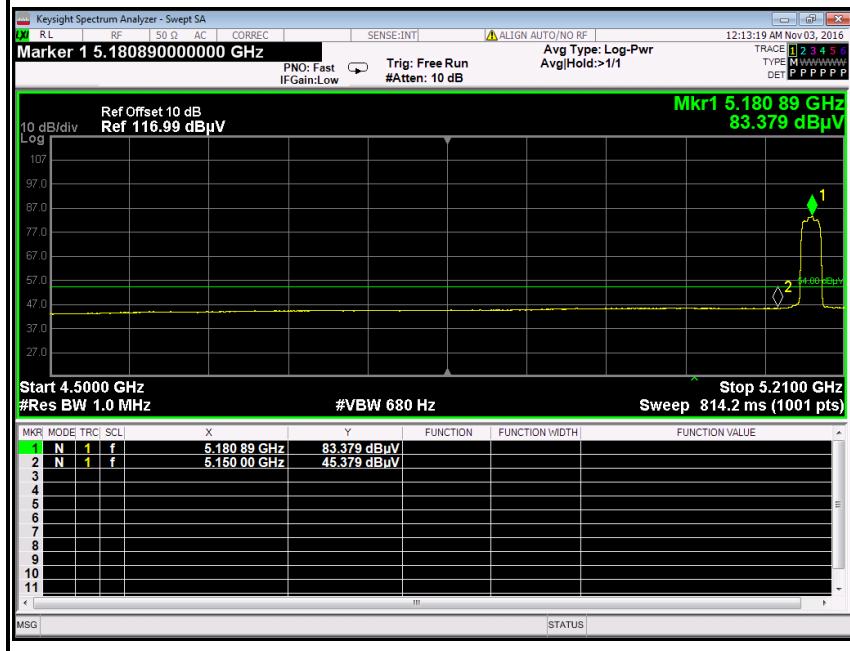
1. Operating Frequency: 5745-5825MHz
2. CH Low: 5745MHz, CH High: 5825MHz
3. 26dB bandwidth: CH Low: 25.37MHz, CH High: 29.12MHz
4. Frequency Range: 5732.3150MHz, 5839.5600MHz

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

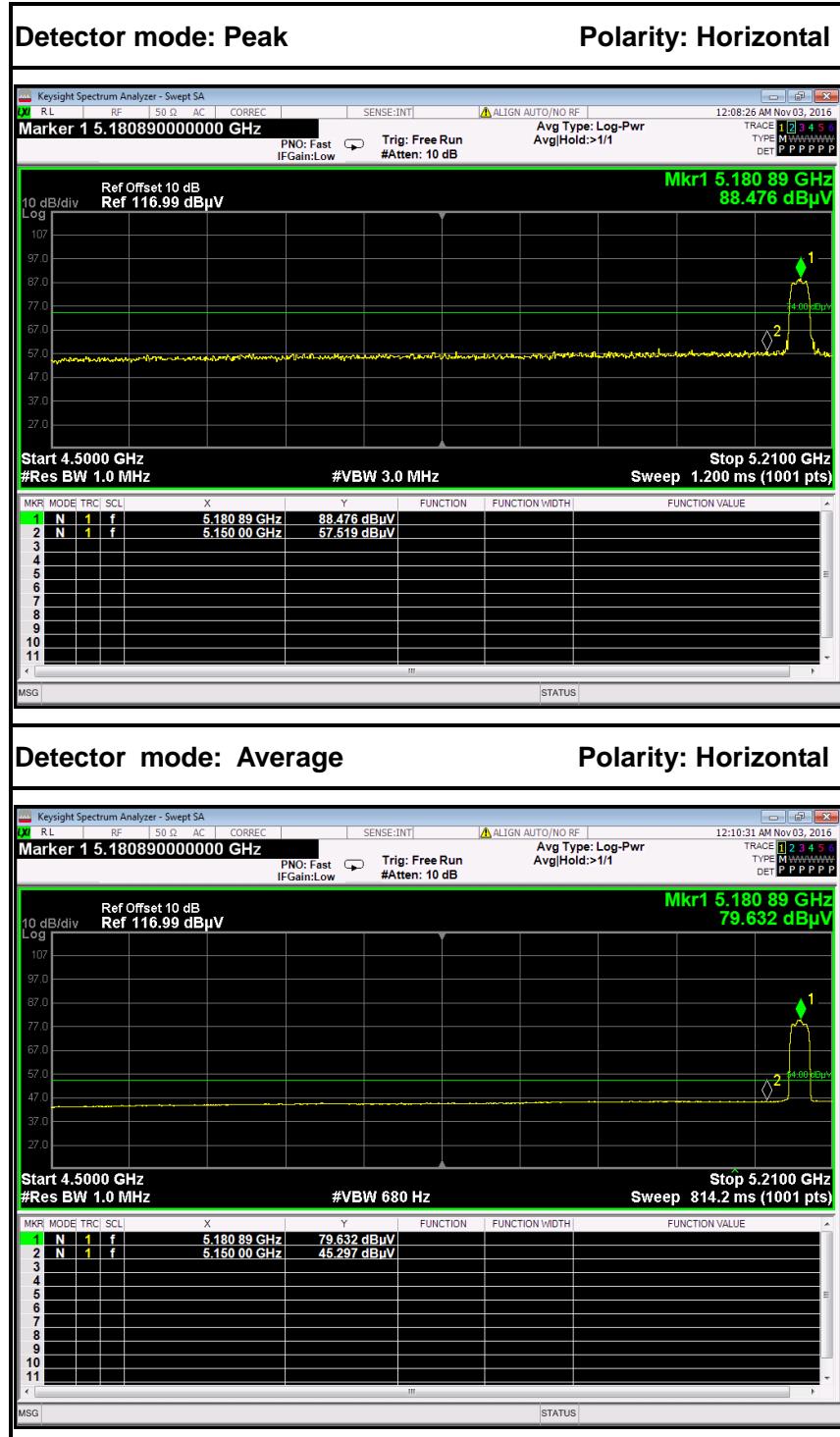
1. Operating Frequency: 5745-5825MHz
2. CH Low: 5745MHz, CH High: 5825MHz
3. 26dB bandwidth: CH Low: 24.10MHz, CH High: 28.85MHz
4. Frequency Range: 5732.9500MHz, 5839.4250MHz

Because the mentioned conditions, the test is not applicable.

**Duty Cycle Test Plot****IEEE 802.11a mode****IEEE 802.11n HT20 mode**

**Test Plot****IEEE 802.11a mode / 5180MHz****Detector mode: Peak****Polarity: Vertical****Detector mode: Average****Polarity: Vertical**

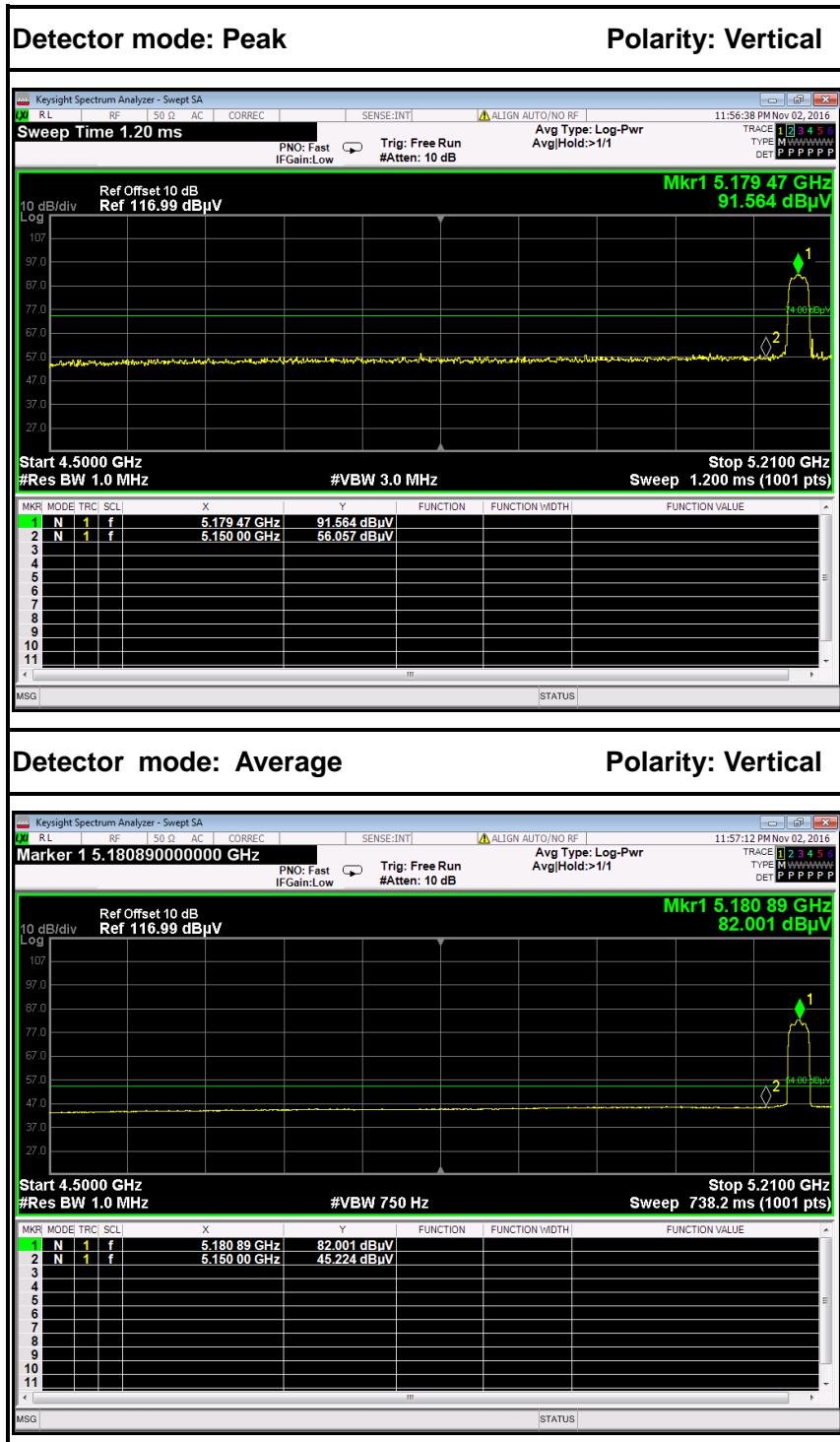
| No. | Frequency (MHz) | Reading (dBuV) | Corrected (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Antenna Pole |
|-----|-----------------|----------------|------------------|-----------------|----------------|-------------|----------|--------------|
| 1 | 5150.0000 | 62.37 | 5.60 | 56.77 | 74.00 | -17.23 | Peak | Vertical |
| 2 | 5150.0000 | 50.98 | 5.60 | 45.38 | 54.00 | -8.62 | Average | Vertical |



| No. | Frequency (MHz) | Reading (dB μ V) | Corrected (dB/m) | Result (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Detector | Antenna Pole |
|-----|-----------------|----------------------|------------------|-----------------------|----------------------|-------------|----------|--------------|
| 1 | 5150.0000 | 63.12 | 5.60 | 57.52 | 74.00 | -16.48 | Peak | Horizontal |
| 2 | 5150.0000 | 50.90 | 5.60 | 45.30 | 54.00 | -8.70 | Average | Horizontal |



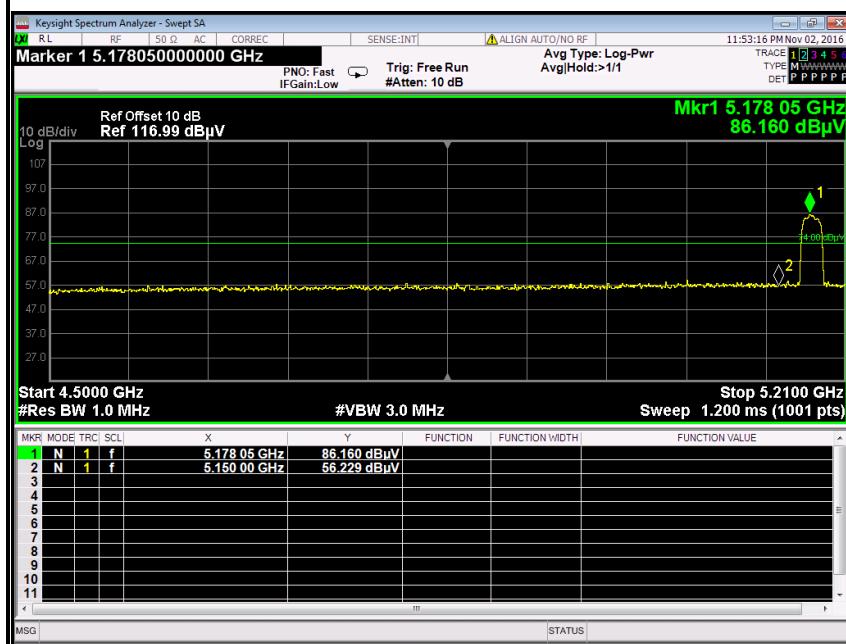
IEEE 802.11n HT 20 MHz mode / 5180 MHz



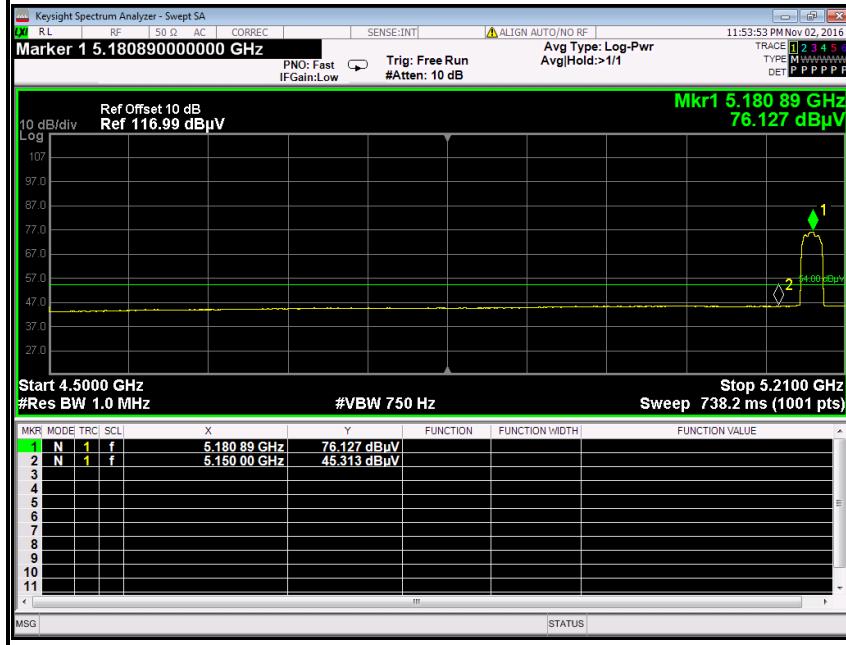
| No. | Frequency (MHz) | Reading (dBuV) | Corrected (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Antenna Pole |
|-----|-----------------|----------------|------------------|-----------------|----------------|-------------|----------|--------------|
| 1 | 5150.0000 | 61.66 | 5.60 | 56.06 | 74.00 | -17.94 | Peak | Vertical |
| 2 | 5150.0000 | 50.82 | 5.60 | 45.22 | 54.00 | -8.78 | Average | Vertical |



Detector mode: Peak Polarity: Horizontal



Detector mode: Average Polarity: Horizontal



| No. | Frequency (MHz) | Reading (dB μ V) | Corrected (dB/m) | Result (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Detector | Antenna Pole |
|-----|-----------------|----------------------|------------------|-----------------------|----------------------|-------------|----------|--------------|
| 1 | 5150.0000 | 61.83 | 5.60 | 56.23 | 74.00 | -17.77 | Peak | Horizontal |
| 2 | 5150.0000 | 50.91 | 5.60 | 45.31 | 54.00 | -8.69 | Average | Horizontal |



6.6 PEAK POWER SPECTRAL DENSITY

6.6.1 LIMIT

According to §15.407(a) & FCC R&O FCC 14-30

(1) For the band 5.15-5.25 GHz.

(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(2) For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or $11 \text{ dBm} + 10 \log B$, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.



(3) For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

Note to paragraph (a)(3): The Commission strongly recommends that parties employing U-NII devices to provide critical communications services should determine if there are any nearby Government radar systems that could affect their operation.

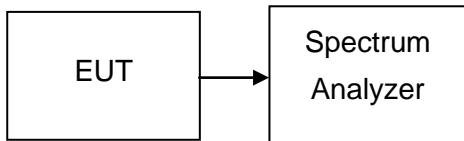
6.6.2 MEASUREMENT EQUIPMENT USED

| Name of Equipment | Manufacturer | Model | Serial Number | Last Calibration | Due Calibration |
|-------------------|--------------|--------|---------------|------------------|-----------------|
| Spectrum Analyzer | Agilent | N9010A | MY52221469 | 02/21/2016 | 02/20/2017 |

Remark: Each piece of equipment is scheduled for calibration once a year.



6.6.3 TEST CONFIGURATION



6.6.4 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. For devices operating in the bands 5.15-5.25 GHz, Set the spectrum analyzer as RBW = 1MHz, VBW = 3MHz, Span = 30MHz, Sweep=1ms
3. For devices operating in the bands 5.725-5.85 GHz, Set the spectrum analyzer as RBW = 500kHz, VBW = 1.5MHz, Span = 30MHz, Sweep=1ms
4. Record the max. reading.
5. Repeat the above procedure until the measurements for all frequencies are completed



6.6.5 TEST RESULTS

Test Data

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

| Channel | Frequency (MHz) | PPSD (dBm) | Limit (dBm) | Margin | Result |
|---------|-----------------|------------|-------------|---------|--------|
| Low | 5180 | 2.021 | 11 | -8.979 | PASS |
| Mid | 5200 | 1.360 | | -9.640 | PASS |
| High | 5240 | 0.974 | | -10.026 | PASS |

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

| Channel | Frequency (MHz) | PPSD (dBm) | factor | Limit (dBm) | Margin |
|---------|-----------------|------------|--------|-------------|---------|
| Low | 5745 | -0.817 | -3.01 | 30 | -33.827 |
| Mid | 5785 | 3.465 | | | -29.545 |
| High | 5825 | 3.770 | | | -29.240 |

Remark: factor = $10 \cdot \log_{10}(500/\text{RBW})$

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

| Channel | Frequency (MHz) | PPSD (dBm) | Limit (dBm) | Margin | Result |
|---------|-----------------|------------|-------------|---------|--------|
| Low | 5180 | 0.198 | 11 | -10.802 | PASS |
| Mid | 5200 | -0.206 | | -11.206 | PASS |
| High | 5240 | -0.426 | | -11.426 | PASS |

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

| Channel | Frequency (MHz) | PPSD (dBm) | factor | Limit (dBm) | Margin |
|---------|-----------------|------------|--------|-------------|---------|
| Low | 5745 | 2.195 | -3.01 | 30 | -30.815 |
| Mid | 5785 | 2.338 | | | -30.672 |
| High | 5825 | 3.093 | | | -29.917 |

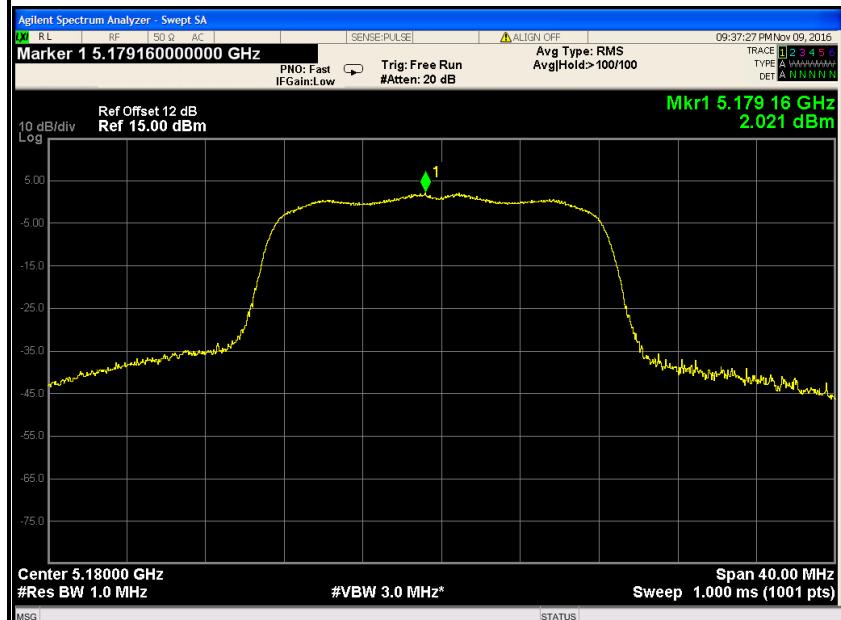
Remark: factor = $10 \cdot \log_{10}(500/\text{RBW})$



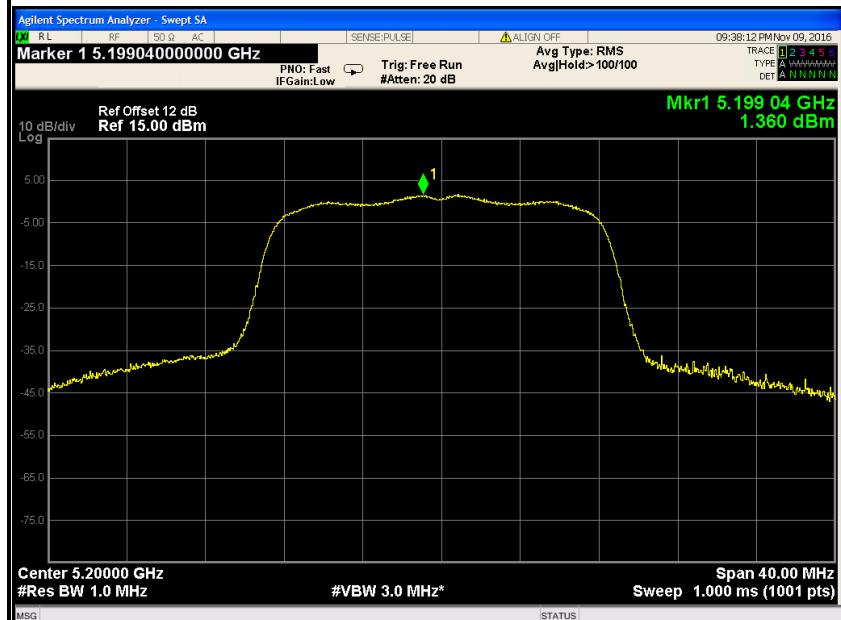
Test Plot

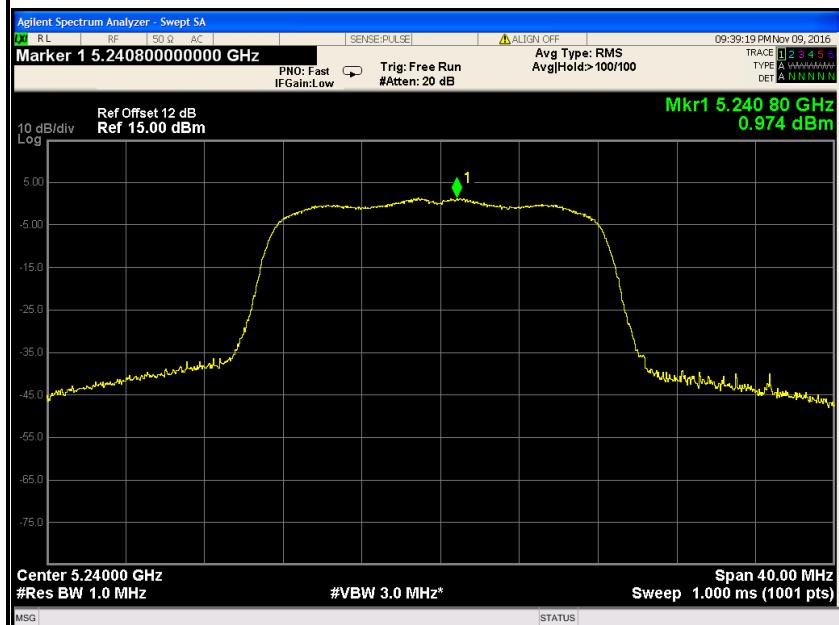
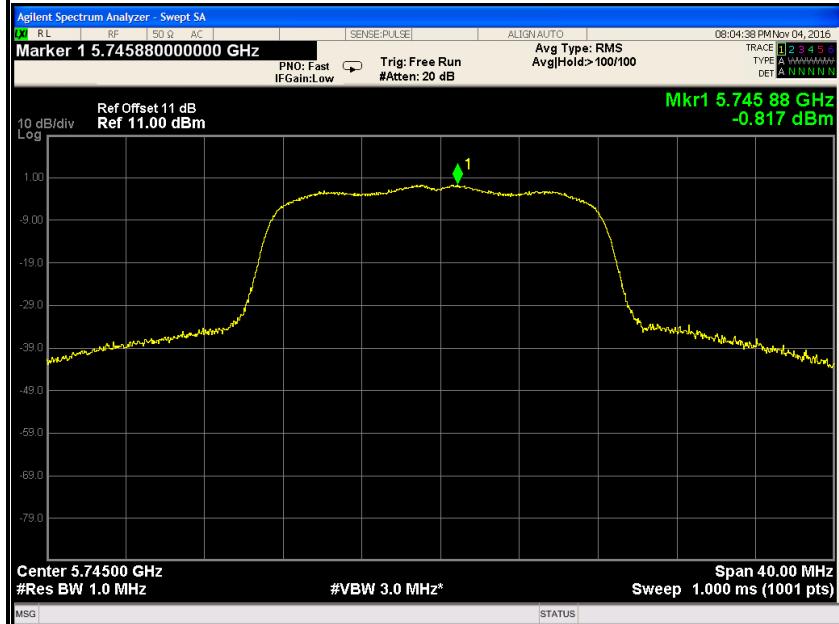
IEEE 802.11a mode / 5180 ~ 5240MHz

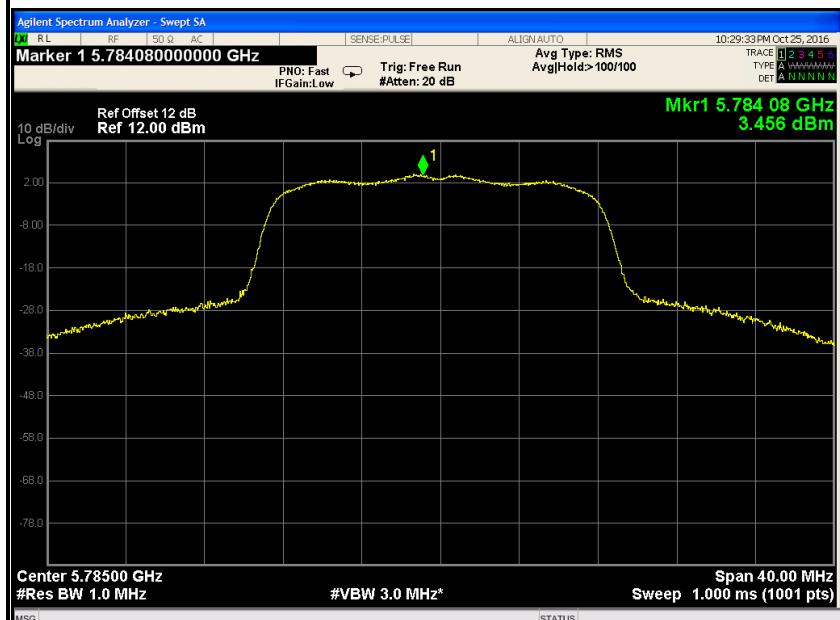
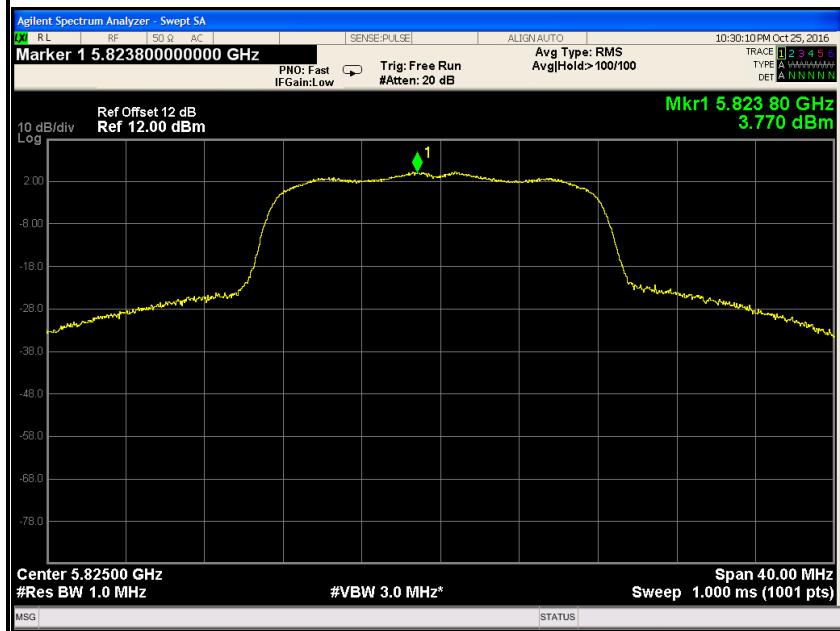
PPSD (CH Low)

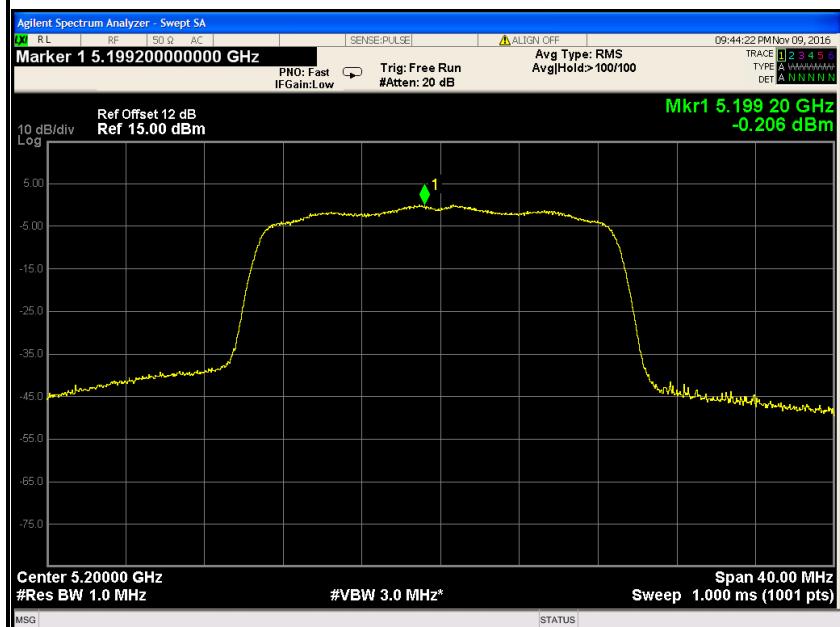


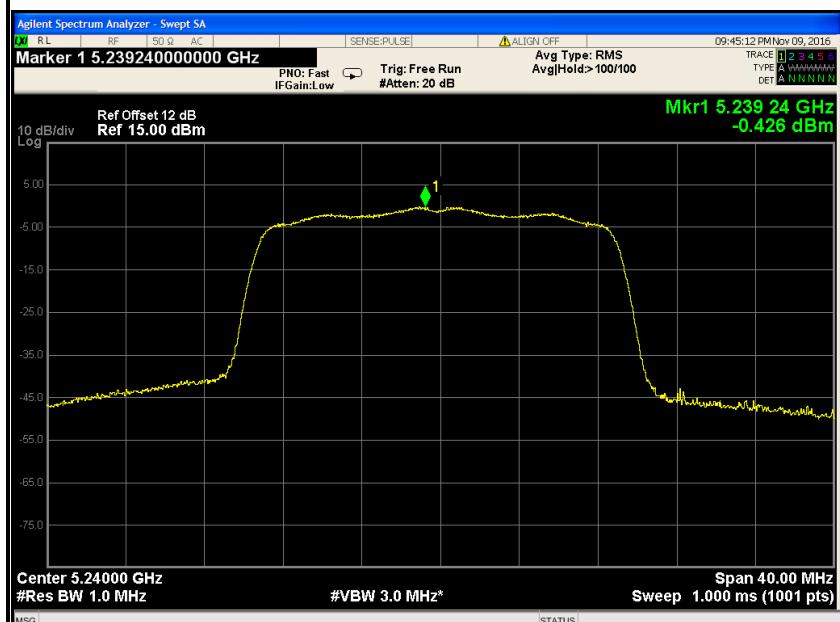
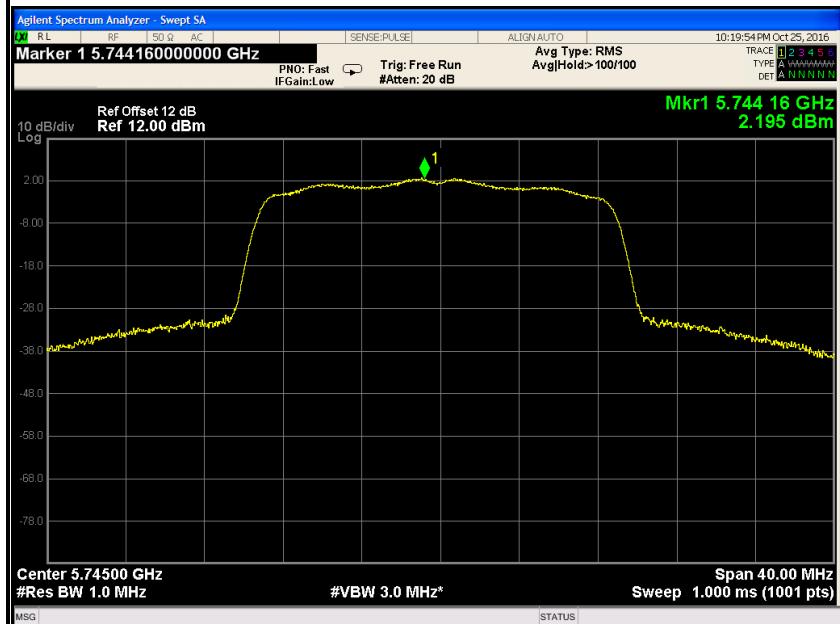
PPSD (CH Mid)

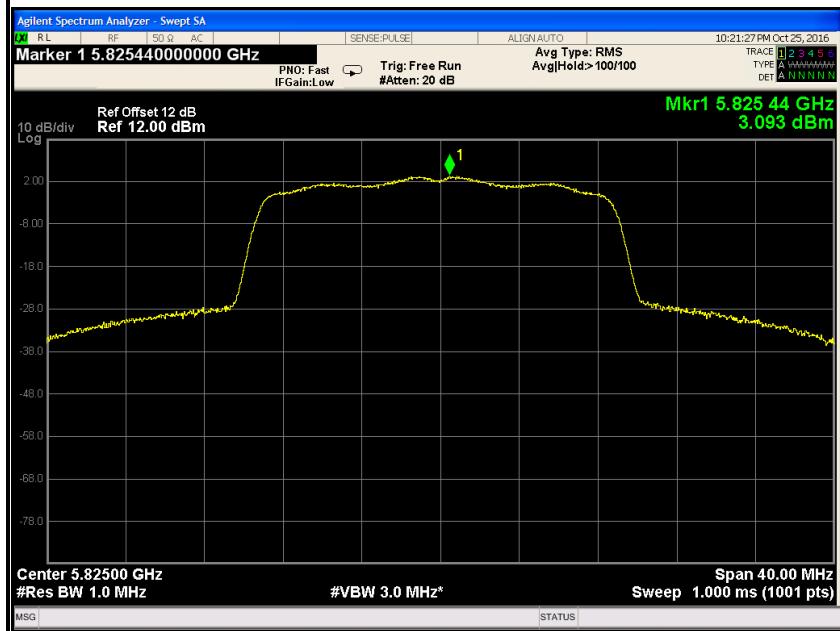


**PPSD (CH High)****IEEE 802.11a mode / 5745 ~ 5825MHz****PPSD (CH Low)**

**PPSD (CH Mid)****PPSD (CH High)**

**IEEE 802.11n HT 20 MHz mode / 5180 ~ 5240MHz****PPSD (CH Low)****PPSD (CH Mid)**

**PPSD (CH High)****IEEE 802.11n HT 20 MHz mode / 5745 ~ 5825MHz****PPSD (CH Low)**

**PPSD (CH Mid)****PPSD (CH High)**



6.7 RADIATED UNDESIRABLE EMISSION

6.7.1 LIMIT

- 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 (μ V/m) | Measurement Distance (m) |
|-----------------|-----------------------------|--------------------------|
| 30-88 | 100* | 3 |
| 88-216 | 150* | 3 |
| 216-960 | 200* | 3 |
| Above 960 | 500 | 3 |

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

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

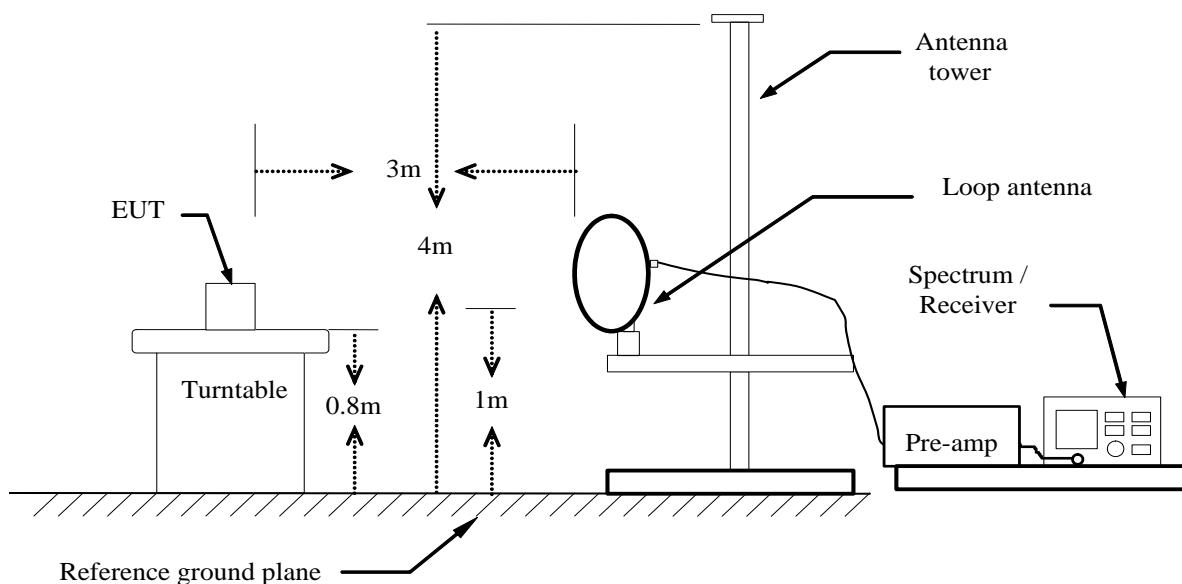
| Frequency (MHz) | Field Strength (μ V/m at 3-meter) | Field Strength (dB μ V/m at 3-meter) |
|-----------------|--|--|
| 30-88 | 100 | 40 |
| 88-216 | 150 | 43.5 |
| 216-960 | 200 | 46 |
| Above 960 | 500 | 54 |

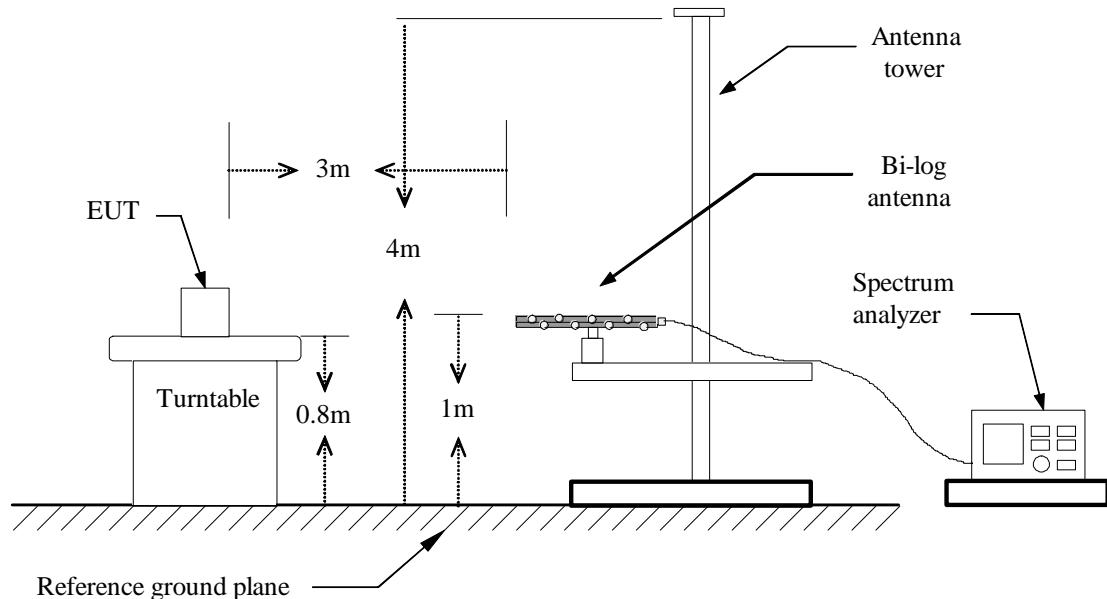
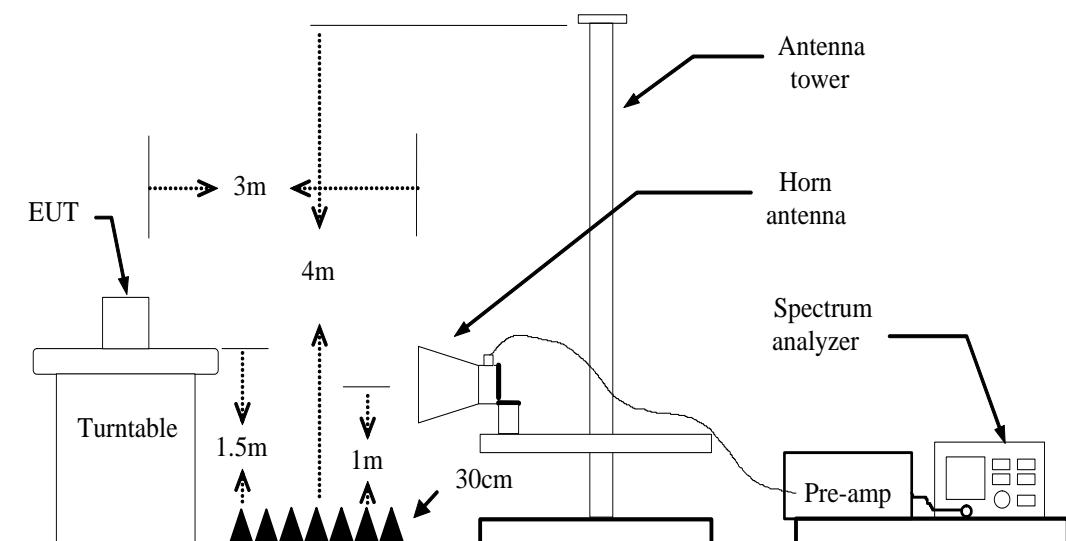
6.7.2 TEST INSTRUMENTS

| Radiated Emission Test Site 966(2) | | | | | |
|------------------------------------|----------------|--------------------|---------------|------------------|-----------------|
| Name of Equipment | Manufacturer | Model Number | Serial Number | Last Calibration | Due Calibration |
| PSA Series Spectrum Analyzer | Agilent | E4446A | US44300399 | 02/21/2016 | 02/20/2017 |
| EMI TEST RECEIVER | ROHDE&SCHWARZ | ESCI | 100783 | 02/21/2016 | 02/20/2017 |
| Amplifier | EMEC | EM330 | 060661 | 03/18/2016 | 03/17/2017 |
| High Noise Amplifier | Agilent | 8449B | 3008A01838 | 02/21/2016 | 02/20/2017 |
| Board-Band Horn Antenna | Schwarzbeck | BBHA 9170 | 9170-497 | 02/28/2016 | 02/27/2017 |
| Bilog Antenna | SCHAFFNER | CBL6143 | 5082 | 02/21/2016 | 02/20/2017 |
| Horn Antenna | SCHWARZBECK | BBHA9120 | D286 | 02/28/2016 | 02/27/2017 |
| Loop Antenna | COM-POWER | AL-130 | 121044 | 09/25/2016 | 09/24/2017 |
| Turn Table | N/A | N/A | N/A | N.C.R | N.C.R |
| Controller | Sunol Sciences | SC104V | 022310-1 | N.C.R | N.C.R |
| Controller | CT | N/A | N/A | N.C.R | N.C.R |
| Temp. / Humidity Meter | Anymetre | JR913 | N/A | 02/21/2016 | 02/20/2017 |
| Antenna Tower | SUNOL | TLT2 | N/A | N.C.R | N.C.R |
| Test S/W | FARAD | LZ-RF / CCS-SZ-3A2 | | | |

6.7.3 TEST CONFIGURATION

Below 30MHz



Below 1 GHz**Above 1 GHz**

For the actual test configuration, please refer to the related item – Photographs of the TEST CONFIGURATION.



6.7.4 MEASURING SETTING

The following table is the setting of spectrum analyzer and receiver.

| Spectrum Parameter | Setting |
|---|--|
| Attenuation | Auto |
| Start Frequency | 1000 MHz |
| Stop Frequency | 10th carrier harmonic |
| RB / VB (Emission in restricted band) | 1MHz / 1MHz for Peak, 1 MHz / 10Hz for Average |
| RB / VB (Emission in non-restricted band) | 1MHz / 1MHz for Peak, 1 MHz / 10Hz for Average |

| Receiver Parameter | Setting |
|------------------------|-----------------------------------|
| Attenuation | Auto |
| Start ~ Stop Frequency | 9kHz~150kHz / RB 200Hz for QP/AVG |
| Start ~ Stop Frequency | 150kHz~30MHz / RB 9kHz for QP/AVG |
| Start ~ Stop Frequency | 30MHz~1000MHz / RB 100kHz for QP |

6.7.5 TEST PROCEDURE

1) Sequence of testing 9 kHz to 30 MHz

Setup:

- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.
- If the EUT is a tabletop system, a rotatable table with 0.8 m height is used.
- If the EUT is a floor standing device, it is placed on the ground.
- Auxiliary equipment and cables were positioned to simulate normal operation conditions.
- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.
- The measurement distance is 3 meter.
- The EUT was set into operation.



Pre measurement:

- The turntable rotates from 0° to 315° using 45° steps.
- The antenna height is 0.8 meter.
- At each turntable position the analyzer sweeps with peak detection to find the maximum of all emissions

Final measurement:

- Identified emissions during the pre measurement the software maximizes by rotating the turntable position (0° to 360°) and by rotating the elevation axes (0° to 360°).
- The final measurement will be done in the position (turntable and elevation) causing the highest emissions with QPK detector.
- The final levels, frequency, measuring time, bandwidth, turntable position, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the pre measurement and the limit will be stored.

2) Sequence of testing 30 MHz to 1 GHz

Setup:

- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.
- If the EUT is a tabletop system, a table with 0.8 m height is used, which is placed on the ground plane.
- If the EUT is a floor standing device, it is placed on the ground plane with insulation between both.
- Auxiliary equipment and cables were positioned to simulate normal operation conditions
- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.
- The measurement distance is 3 meter.
- The EUT was set into operation.

Pre measurement:

- The turntable rotates from 0° to 315° using 45° steps.
- The antenna is polarized vertical and horizontal.



- The antenna height changes from 1 to 3 meter.
- At each turntable position, antenna polarization and height the analyzer sweeps three times in peak to find the maximum of all emissions.

Final measurement:

- The final measurement will be performed with minimum the six highest peaks.
- According to the maximum antenna and turntable positions of premeasurement the software maximize the peaks by changing turntable position ($\pm 45^\circ$) and antenna movement between 1 and 4 meter.
- The final measurement will be done with QP detector with an EMI receiver.
- The final levels, frequency, measuring time, bandwidth, antenna height, antenna polarization, turntable angle, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the premeasurement with marked maximum final measurements and the limit will be stored.

3) Sequence of testing 1 GHz to 18 GHz

Setup:

- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.
- If the EUT is a tabletop system, a rotatable table with 1.5 m height is used.
- If the EUT is a floor standing device, it is placed on the ground plane with insulation between both.
- Auxiliary equipment and cables were positioned to simulate normal operation conditions
- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.
- The measurement distance is 3 meter.
- The EUT was set into operation.

Pre measurement:

- The turntable rotates from 0° to 315° using 45° steps.
- The antenna is polarized vertical and horizontal.
- The antenna height scan range is 1 meter to 2.5 meter.
- At each turntable position and antenna polarization the analyzer sweeps with peak detection to find the maximum of all emissions.



Final measurement:

- The final measurement will be performed with minimum the six highest peaks.
- According to the maximum antenna and turntable positions of premeasurement the software maximize the peaks by changing turntable position ($\pm 45^\circ$) and antenna movement between 1 and 4 meter. This procedure is repeated for both antenna polarizations.
- The final measurement will be done in the position (turntable, EUT-table and antenna polarization) causing the highest emissions with Peak and Average detector.
- The final levels, frequency, measuring time, bandwidth, turntable position, EUT-table position, antenna polarization, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the pre measurement with marked maximum final measurements and the limit will be stored.

4) Sequence of testing above 18 GHz

Setup:

- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.
- If the EUT is a tabletop system, a rotatable table with 1.5 m height is used.
- If the EUT is a floor standing device, it is placed on the ground plane with insulation between both.
- Auxiliary equipment and cables were positioned to simulate normal operation conditions
- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.
- The measurement distance is 1 meter.
- The EUT was set into operation.

Pre measurement:

- The antenna is moved spherical over the EUT in different polarisations of the antenna.

Final measurement:

- The final measurement will be performed at the position and antenna orientation for all detected emissions that were found during the premeasurements with Peak and Average detector.
- The final levels, frequency, measuring time, bandwidth, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the premeasurement and the limit will be stored.



6.7.6 DATA SAMPLE

Below 1GHz

| Frequency (MHz) | Reading (dBuV) | Correct Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Antenna Pole (V/H) | Remark |
|-----------------|----------------|-----------------------|-----------------|----------------|-------------|--------------------|--------|
| XXX.XXXX | 36.37 | -12.20 | 24.17 | 40.00 | -15.83 | V | QP |

Frequency (MHz) = Emission frequency in MHz
 Reading (dBuV) = Uncorrected Analyzer / Receiver reading
 Correct Factor (dB/m) = Antenna factor + Cable loss – Amplifier gain
 Result (dBuV/m) = Reading (dBuV) + Corr. Factor (dB/m)
 Limit (dBuV/m) = Limit stated in standard
 Margin (dB) = Result (dBuV/m) – Limit (dBuV/m)
 Q.P. = Quasi-peak Reading

Above 1GHz

| Frequency (MHz) | Reading (dBuV) | Correction Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Antenna Pole (V/H) | Remark |
|-----------------|----------------|--------------------------|-----------------|----------------|-------------|--------------------|--------|
| XXXX.XXXX | 62.09 | -11.42 | 50.67 | 74.00 | -23.33 | V | Peak |
| XXXX.XXXX | 49.78 | -11.42 | 38.36 | 54.00 | -15.64 | V | AVG |

Frequency (MHz) = Emission frequency in MHz
 Reading (dBuV) = Uncorrected Analyzer / Receiver reading
 Correction Factor (dB/m) = Antenna factor + Cable loss – Amplifier gain
 Result (dBuV/m) = Reading (dBuV) + Corr. Factor (dB/m)
 Limit (dBuV/m) = Limit stated in standard
 Margin (dB) = Result (dBuV/m) – Limit (dBuV/m)
 Peak = Peak Reading
 AVG = Average Reading

Calculation Formula

$$\text{Margin (dB)} = \text{Result (dBuV/m)} - \text{Limits (dBuV/m)}$$

$$\text{Result (dBuV/m)} = \text{Reading (dBuV)} + \text{Correction Factor}$$



6.7.7 TEST RESULTS

Below 1 GHz

Test Mode: TX

Tested by: Jackson Luo

Ambient temperature: 24°C Relative humidity: 52% RH

Date: June 29, 2016

| Frequency (MHz) | Reading (dBuV) | Correction Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Antenna Pole (V/H) | Remark |
|-----------------|----------------|--------------------------|-----------------|----------------|-------------|--------------------|--------|
| 61.0400 | 50.12 | -13.43 | 36.69 | 40.00 | -3.31 | V | QP |
| 109.5400 | 54.49 | -13.59 | 40.90 | 43.50 | -2.60 | V | QP |
| 143.4900 | 52.78 | -11.93 | 40.85 | 43.50 | -2.65 | V | QP |
| 206.5400 | 45.78 | -11.73 | 34.05 | 43.50 | -9.45 | V | QP |
| 519.8500 | 38.63 | -6.74 | 31.89 | 46.00 | -14.11 | V | QP |
| 668.2600 | 42.22 | -4.83 | 37.39 | 46.00 | -8.61 | V | QP |
| | | | | | | | |
| 143.4900 | 48.87 | -11.93 | 36.94 | 43.50 | -6.56 | H | QP |
| 296.7500 | 45.42 | -9.96 | 35.46 | 46.00 | -10.54 | H | QP |
| 519.8500 | 39.41 | -6.74 | 32.67 | 46.00 | -13.33 | H | QP |
| 594.5400 | 42.29 | -6.03 | 36.26 | 46.00 | -9.74 | H | QP |
| 668.2600 | 41.86 | -4.83 | 37.03 | 46.00 | -8.97 | H | QP |
| 742.9500 | 40.96 | -3.56 | 37.40 | 46.00 | -8.60 | H | QP |

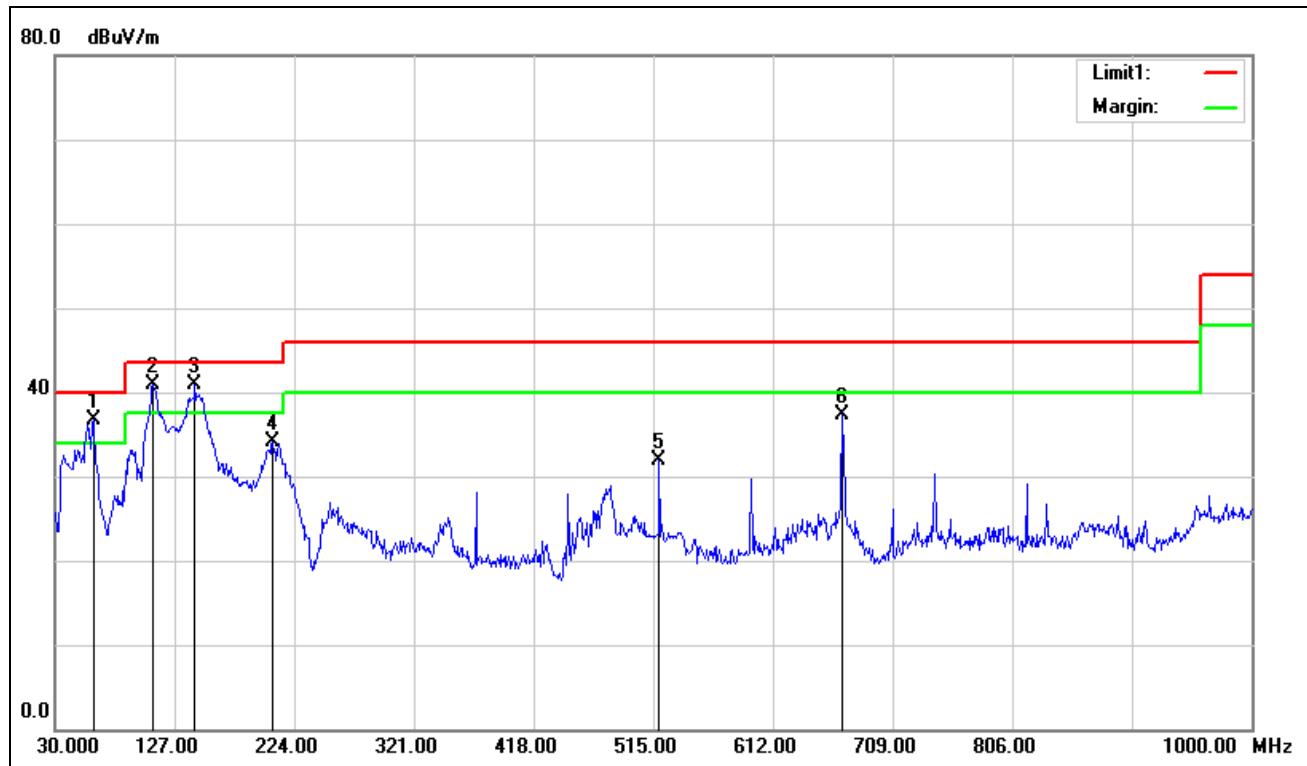
Note: 1. Pre-scan all mode and recorded the worst case results in this report (802.11a (Mid Channel)

Remark:

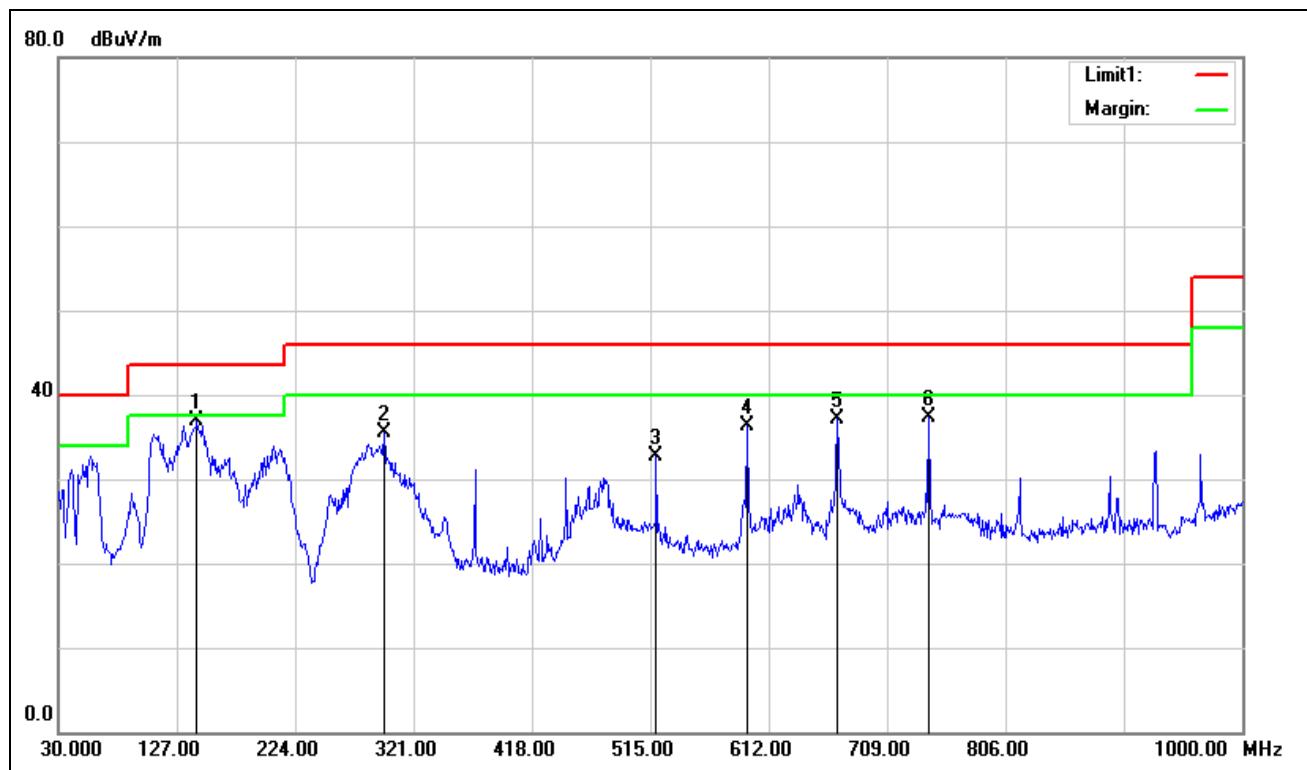
1. No emission found between lowest internal used/generated frequency to 30MHz (9kHz~30MHz)
2. Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using peak/quasi-peak detector mode.
3. Quasi-peak test would be performed if the peak result were greater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



Vertical



Horizontal



**Above 1 GHz****1GHz~6GHz****Test Mode: TX****Tested by: Jacksan Luo****Ambient temperature: 24°C Relative humidity: 52% RH****Date: November 2, 2016**

| Frequency (MHz) | Reading (dBuV) | Correction Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Antenna Pole (V/H) | Remark |
|-----------------|----------------|--------------------------|-----------------|----------------|-------------|--------------------|--------|
| 1190.000 | 56.55 | -7.83 | 48.72 | 74.00 | -25.28 | V | peak |
| 1260.000 | 56.93 | -7.57 | 49.36 | 74.00 | -24.64 | V | peak |
| 1710.000 | 53.31 | -6.46 | 46.85 | 74.00 | -27.15 | V | peak |
| 1855.000 | 59.02 | -5.92 | 53.10 | 74.00 | -20.90 | V | peak |
| 1855.000 | 54.02 | -5.92 | 48.10 | 54.00 | -5.90 | V | AVG |
| 2565.000 | 52.21 | -2.14 | 50.07 | 74.00 | -23.93 | V | peak |
| 4825.000 | 44.51 | 4.41 | 48.92 | 74.00 | -25.08 | V | peak |
| | | | | | | | |
| 1190.000 | 53.36 | -7.83 | 45.53 | 74.00 | -28.47 | H | Peak |
| 1635.000 | 51.78 | -6.62 | 45.16 | 74.00 | -28.84 | H | Peak |
| 1930.000 | 51.48 | -5.44 | 46.04 | 74.00 | -27.96 | H | Peak |
| 2565.000 | 48.09 | -2.14 | 45.95 | 74.00 | -28.05 | H | peak |
| 3620.000 | 43.12 | -0.01 | 43.11 | 74.00 | -30.89 | H | peak |
| 4825.000 | 45.38 | 4.41 | 49.79 | 74.00 | -24.21 | H | peak |

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).

**Test Mode: TX / IEEE 802.11a / 5180MHz /(CH Low)****Tested by: Jacksan Luo****Ambient temperature: 24°C Relative humidity: 52% RH****Date: November 2, 2016**

| Frequency (MHz) | Reading (dBuV) | Correction Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Antenna Pole (V/H) | Remark |
|-----------------|----------------|--------------------------|-----------------|----------------|-------------|--------------------|--------|
| 7716.000 | 30.80 | 9.10 | 39.90 | 74.00 | -34.10 | V | peak |
| 8784.000 | 30.73 | 9.22 | 39.95 | 74.00 | -34.05 | V | peak |
| 9372.000 | 30.85 | 10.17 | 41.02 | 74.00 | -32.98 | V | peak |
| 10608.000 | 30.45 | 13.86 | 44.31 | 74.00 | -29.69 | V | peak |
| 12180.000 | 30.29 | 15.24 | 45.53 | 74.00 | -28.47 | V | peak |
| 12900.000 | 29.42 | 17.62 | 47.04 | 74.00 | -26.96 | V | peak |
| | | | | | | | |
| 7104.000 | 30.81 | 7.90 | 38.71 | 74.00 | -35.29 | H | Peak |
| 8160.000 | 30.88 | 9.56 | 40.44 | 74.00 | -33.56 | H | Peak |
| 9756.000 | 30.84 | 11.28 | 42.12 | 74.00 | -31.88 | H | Peak |
| 11304.000 | 30.25 | 14.95 | 45.20 | 74.00 | -28.80 | H | peak |
| 12600.000 | 29.68 | 16.63 | 46.31 | 74.00 | -27.69 | H | peak |
| 13176.000 | 29.01 | 18.41 | 47.42 | 74.00 | -26.58 | H | peak |

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).

**Test Mode: TX / IEEE 802.11a / 5200MHz /(CH Mid)****Tested by: Jacksan Luo****Ambient temperature: 24°C****Relative humidity: 52% RH****Date: November 2, 2016**

| Frequency (MHz) | Reading (dBuV) | Correction Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Antenna Pole (V/H) | Remark |
|-----------------|----------------|--------------------------|-----------------|----------------|-------------|--------------------|--------|
| 7020.000 | 30.86 | 7.74 | 38.60 | 74.00 | -35.40 | V | peak |
| 7740.000 | 30.78 | 9.14 | 39.92 | 74.00 | -34.08 | V | peak |
| 9264.000 | 30.53 | 9.86 | 40.39 | 74.00 | -33.61 | V | peak |
| 10872.000 | 29.91 | 14.68 | 44.59 | 74.00 | -29.41 | V | peak |
| 12204.000 | 30.29 | 15.32 | 45.61 | 74.00 | -28.39 | V | peak |
| 13284.000 | 28.60 | 18.70 | 47.30 | 74.00 | -26.70 | V | peak |
| | | | | | | | |
| 7200.000 | 30.28 | 8.09 | 38.37 | 74.00 | -35.63 | H | Peak |
| 8136.000 | 30.52 | 9.58 | 40.10 | 74.00 | -33.90 | H | Peak |
| 9480.000 | 30.86 | 10.48 | 41.34 | 74.00 | -32.66 | H | Peak |
| 10308.000 | 30.15 | 12.93 | 43.08 | 74.00 | -30.92 | H | peak |
| 11508.000 | 30.21 | 14.86 | 45.07 | 74.00 | -28.93 | H | peak |
| 13068.000 | 28.79 | 18.13 | 46.92 | 74.00 | -27.08 | H | peak |

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).

**Test Mode: TX / IEEE 802.11a / 5240MHz /(CH High)****Tested by: Jacksan Luo****Ambient temperature: 24°C****Relative humidity: 52% RH****Date: November 2, 2016**

| Frequency (MHz) | Reading (dBuV) | Correction Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Antenna Pole (V/H) | Remark |
|-----------------|----------------|--------------------------|-----------------|----------------|-------------|--------------------|--------|
| 7740.000 | 30.91 | 9.14 | 40.05 | 74.00 | -33.95 | V | peak |
| 8460.000 | 30.87 | 9.40 | 40.27 | 74.00 | -33.73 | V | peak |
| 10020.000 | 30.59 | 12.04 | 42.63 | 74.00 | -31.37 | V | peak |
| 10572.000 | 30.16 | 13.75 | 43.91 | 74.00 | -30.09 | V | peak |
| 11148.000 | 29.80 | 15.01 | 44.81 | 74.00 | -29.19 | V | peak |
| 12972.000 | 29.34 | 17.86 | 47.20 | 74.00 | -26.80 | V | peak |
| | | | | | | | |
| 7452.000 | 30.51 | 8.58 | 39.09 | 74.00 | -34.91 | H | Peak |
| 8184.000 | 30.65 | 9.55 | 40.20 | 74.00 | -33.80 | H | Peak |
| 9108.000 | 30.81 | 9.41 | 40.22 | 74.00 | -33.78 | H | Peak |
| 10656.000 | 30.17 | 14.01 | 44.18 | 74.00 | -29.82 | H | peak |
| 11676.000 | 30.37 | 14.78 | 45.15 | 74.00 | -28.85 | H | peak |
| 12348.000 | 30.01 | 15.79 | 45.80 | 74.00 | -28.20 | H | peak |

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).

**Test Mode: TX / IEEE 802.11a / 5745MHz /(CH Low)****Tested by: Jacksan Luo****Ambient temperature: 24°C****Relative humidity: 52% RH****Date: November 2, 2016**

| Frequency (MHz) | Reading (dBuV) | Correction Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Antenna Pole (V/H) | Remark |
|-----------------|----------------|--------------------------|-----------------|----------------|-------------|--------------------|--------|
| 7752.000 | 30.68 | 9.17 | 39.85 | 74.00 | -34.15 | V | peak |
| 9228.000 | 30.26 | 9.76 | 40.02 | 74.00 | -33.98 | V | peak |
| 9984.000 | 30.95 | 11.93 | 42.88 | 74.00 | -31.12 | V | peak |
| 11016.000 | 29.74 | 15.07 | 44.81 | 74.00 | -29.19 | V | peak |
| 11820.000 | 30.36 | 14.72 | 45.08 | 74.00 | -28.92 | V | peak |
| 12876.000 | 29.57 | 17.54 | 47.11 | 74.00 | -26.89 | V | peak |
| | | | | | | | |
| 7128.000 | 30.52 | 7.95 | 38.47 | 74.00 | -35.53 | H | Peak |
| 8148.000 | 30.31 | 9.57 | 39.88 | 74.00 | -34.12 | H | Peak |
| 9720.000 | 31.12 | 11.17 | 42.29 | 74.00 | -31.71 | H | Peak |
| 10608.000 | 30.22 | 13.86 | 44.08 | 74.00 | -29.92 | H | peak |
| 11880.000 | 30.13 | 14.69 | 44.82 | 74.00 | -29.18 | H | peak |
| 12924.000 | 29.42 | 17.70 | 47.12 | 74.00 | -26.88 | H | peak |

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).

**Test Mode: TX / IEEE 802.11a / 5785MHz /(CH Mid)****Tested by: Jacksan Luo****Ambient temperature: 24°C****Relative humidity: 52% RH****Date: November 2, 2016**

| Frequency (MHz) | Reading (dBuV) | Correction Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Antenna Pole (V/H) | Remark |
|-----------------|----------------|--------------------------|-----------------|----------------|-------------|--------------------|--------|
| 7428.000 | 30.77 | 8.53 | 39.30 | 74.00 | -34.70 | V | peak |
| 8244.000 | 30.33 | 9.52 | 39.85 | 74.00 | -34.15 | V | peak |
| 9396.000 | 30.26 | 10.24 | 40.50 | 74.00 | -33.50 | V | peak |
| 10920.000 | 29.75 | 14.83 | 44.58 | 74.00 | -29.42 | V | peak |
| 11916.000 | 30.35 | 14.68 | 45.03 | 74.00 | -28.97 | V | peak |
| 12936.000 | 29.07 | 17.74 | 46.81 | 74.00 | -27.19 | V | peak |
| | | | | | | | |
| 6924.000 | 30.28 | 7.58 | 37.86 | 74.00 | -36.14 | H | Peak |
| 7668.000 | 31.09 | 9.00 | 40.09 | 74.00 | -33.91 | H | Peak |
| 9168.000 | 30.59 | 9.58 | 40.17 | 74.00 | -33.83 | H | Peak |
| 10596.000 | 30.11 | 13.83 | 43.94 | 74.00 | -30.06 | H | peak |
| 11664.000 | 30.30 | 14.79 | 45.09 | 74.00 | -28.91 | H | peak |
| 12936.000 | 29.15 | 17.74 | 46.89 | 74.00 | -27.11 | H | peak |

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).

**Test Mode: TX / IEEE 802.11a / 5825MHz /(CH High)****Tested by: Jackson****Luo****Ambient temperature: 24°C Relative humidity: 52% RH Date: November 2, 2016**

| Frequency (MHz) | Reading (dBuV) | Correction Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Antenna Pole (V/H) | Remark |
|-----------------|----------------|--------------------------|-----------------|----------------|-------------|--------------------|--------|
| 6876.000 | 30.44 | 7.50 | 37.94 | 74.00 | -36.06 | V | peak |
| 7776.000 | 30.98 | 9.21 | 40.19 | 74.00 | -33.81 | V | peak |
| 9024.000 | 30.91 | 9.17 | 40.08 | 74.00 | -33.92 | V | peak |
| 10404.000 | 30.30 | 13.23 | 43.53 | 74.00 | -30.47 | V | peak |
| 11652.000 | 30.74 | 14.79 | 45.53 | 74.00 | -28.47 | V | peak |
| 13176.000 | 28.98 | 18.41 | 47.39 | 74.00 | -26.61 | V | peak |
| | | | | | | | |
| 6852.000 | 30.83 | 7.46 | 38.29 | 74.00 | -35.71 | H | Peak |
| 8112.000 | 30.53 | 9.59 | 40.12 | 74.00 | -33.88 | H | Peak |
| 9780.000 | 30.78 | 11.35 | 42.13 | 74.00 | -31.87 | H | Peak |
| 11112.000 | 30.13 | 15.03 | 45.16 | 74.00 | -28.84 | H | peak |
| 12216.000 | 29.71 | 15.35 | 45.06 | 74.00 | -28.94 | H | peak |
| 12888.000 | 29.22 | 17.58 | 46.80 | 74.00 | -27.20 | H | peak |

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).



Test Mode: TX / IEEE 802.11n HT 20 MHz / 5180MHz /(CH Low) Tested by: Jacksan Luo
Ambient temperature: 24°C Relative humidity: 52% RH Date: November 2, 2016

| Frequency (MHz) | Reading (dBuV) | Correction Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Antenna Pole (V/H) | Remark |
|-----------------|----------------|--------------------------|-----------------|----------------|-------------|--------------------|--------|
| 7668.000 | 30.97 | 9.00 | 39.97 | 74.00 | -34.03 | V | peak |
| 8172.000 | 30.78 | 9.56 | 40.34 | 74.00 | -33.66 | V | peak |
| 9312.000 | 30.93 | 10.00 | 40.93 | 74.00 | -33.07 | V | peak |
| 10416.000 | 29.87 | 13.27 | 43.14 | 74.00 | -30.86 | V | peak |
| 11148.000 | 29.81 | 15.01 | 44.82 | 74.00 | -29.18 | V | peak |
| 12900.000 | 29.16 | 17.62 | 46.78 | 74.00 | -27.22 | V | peak |
| | | | | | | | |
| 7152.000 | 30.78 | 8.00 | 38.78 | 74.00 | -35.22 | H | Peak |
| 7872.000 | 30.63 | 9.40 | 40.03 | 74.00 | -33.97 | H | Peak |
| 9768.000 | 30.68 | 11.31 | 41.99 | 74.00 | -32.01 | H | Peak |
| 10560.000 | 30.11 | 13.72 | 43.83 | 74.00 | -30.17 | H | peak |
| 11916.000 | 30.62 | 14.68 | 45.30 | 74.00 | -28.70 | H | peak |
| 12888.000 | 29.29 | 17.58 | 46.87 | 74.00 | -27.13 | H | peak |

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).

**Test Mode: TX / IEEE 802.11n HT 20 MHz / 5200MHz /(CH Mid) Tested by: Jacksan Luo****Ambient temperature: 24°C Relative humidity: 52% RH Date: November 2, 2016**

| Frequency (MHz) | Reading (dBuV) | Correction Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Antenna Pole (V/H) | Remark |
|-----------------|----------------|--------------------------|-----------------|----------------|-------------|--------------------|--------|
| 7668.000 | 30.85 | 9.00 | 39.85 | 74.00 | -34.15 | V | peak |
| 8412.000 | 31.00 | 9.42 | 40.42 | 74.00 | -33.58 | V | peak |
| 9756.000 | 30.47 | 11.28 | 41.75 | 74.00 | -32.25 | V | peak |
| 11016.000 | 29.75 | 15.07 | 44.82 | 74.00 | -29.18 | V | peak |
| 11640.000 | 30.67 | 14.80 | 45.47 | 74.00 | -28.53 | V | peak |
| 13092.000 | 28.81 | 18.19 | 47.00 | 74.00 | -27.00 | V | peak |
| | | | | | | | |
| 7092.000 | 30.48 | 7.88 | 38.36 | 74.00 | -35.64 | H | Peak |
| 7752.000 | 30.81 | 9.17 | 39.98 | 74.00 | -34.02 | H | Peak |
| 9756.000 | 30.54 | 11.28 | 41.82 | 74.00 | -32.18 | H | Peak |
| 10908.000 | 29.55 | 14.79 | 44.34 | 74.00 | -29.66 | H | peak |
| 11652.000 | 30.28 | 14.79 | 45.07 | 74.00 | -28.93 | H | peak |
| 13176.000 | 28.76 | 18.41 | 47.17 | 74.00 | -26.83 | H | peak |

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).



Test Mode: TX / IEEE 802.11n HT 20 MHz / 5240MHz /(CH High) Tested by: Jacksan Luo
Ambient temperature: 24°C Relative humidity: 52% RH Date: November 2, 2016

| Frequency (MHz) | Reading (dBuV) | Correction Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Antenna Pole (V/H) | Remark |
|-----------------|----------------|--------------------------|-----------------|----------------|-------------|--------------------|--------|
| 7356.000 | 30.43 | 8.39 | 38.82 | 74.00 | -35.18 | V | peak |
| 8160.000 | 30.54 | 9.56 | 40.10 | 74.00 | -33.90 | V | peak |
| 9744.000 | 30.87 | 11.24 | 42.11 | 74.00 | -31.89 | V | peak |
| 11280.000 | 29.90 | 14.96 | 44.86 | 74.00 | -29.14 | V | peak |
| 12912.000 | 29.17 | 17.66 | 46.83 | 74.00 | -27.17 | V | peak |
| 13320.000 | 28.43 | 18.79 | 47.22 | 74.00 | -26.78 | V | peak |
| <hr/> | | | | | | | |
| 7608.000 | 31.07 | 8.89 | 39.96 | 74.00 | -34.04 | H | Peak |
| 8340.000 | 30.67 | 9.46 | 40.13 | 74.00 | -33.87 | H | Peak |
| 9936.000 | 30.88 | 11.80 | 42.68 | 74.00 | -31.32 | H | Peak |
| 10980.000 | 30.03 | 15.02 | 45.05 | 74.00 | -28.95 | H | peak |
| 12312.000 | 30.34 | 15.67 | 46.01 | 74.00 | -27.99 | H | peak |
| 13356.000 | 28.39 | 18.89 | 47.28 | 74.00 | -26.72 | H | peak |

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).



Test Mode: TX / IEEE 802.11n HT 20 MHz / 5745MHz /(CH Low) Tested by: Jacksan Luo
Ambient temperature: 24°C Relative humidity: 52% RH Date: November 2, 2016

| Frequency (MHz) | Reading (dBuV) | Correction Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Antenna Pole (V/H) | Remark |
|-----------------|----------------|--------------------------|-----------------|----------------|-------------|--------------------|--------|
| 6696.000 | 30.78 | 7.21 | 37.99 | 74.00 | -36.01 | V | peak |
| 7860.000 | 30.60 | 9.38 | 39.98 | 74.00 | -34.02 | V | peak |
| 9336.000 | 30.68 | 10.07 | 40.75 | 74.00 | -33.25 | V | peak |
| 10584.000 | 30.55 | 13.79 | 44.34 | 74.00 | -29.66 | V | peak |
| 11292.000 | 30.31 | 14.95 | 45.26 | 74.00 | -28.74 | V | peak |
| 13236.000 | 28.49 | 18.57 | 47.06 | 74.00 | -26.94 | V | peak |
| <hr/> | | | | | | | |
| 7044.000 | 30.95 | 7.79 | 38.74 | 74.00 | -35.26 | H | Peak |
| 8148.000 | 30.84 | 9.57 | 40.41 | 74.00 | -33.59 | H | Peak |
| 9456.000 | 31.06 | 10.41 | 41.47 | 74.00 | -32.53 | H | Peak |
| 10656.000 | 30.35 | 14.01 | 44.36 | 74.00 | -29.64 | H | peak |
| 11676.000 | 30.69 | 14.78 | 45.47 | 74.00 | -28.53 | H | peak |
| 13284.000 | 28.54 | 18.70 | 47.24 | 74.00 | -26.76 | H | peak |

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).



Test Mode: TX / IEEE 802.11n HT 20 MHz / 5785MHz /(CH Mid) Tested by: Jacksan Luo
Ambient temperature: 24°C Relative humidity: 52% RH Date: November 2, 2016

| Frequency (MHz) | Reading (dBuV) | Correction Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Antenna Pole (V/H) | Remark |
|-----------------|----------------|--------------------------|-----------------|----------------|-------------|--------------------|--------|
| 7008.000 | 30.63 | 7.72 | 38.35 | 74.00 | -35.65 | V | peak |
| 8172.000 | 30.57 | 9.56 | 40.13 | 74.00 | -33.87 | V | peak |
| 9072.000 | 30.69 | 9.31 | 40.00 | 74.00 | -34.00 | V | peak |
| 10308.000 | 30.11 | 12.93 | 43.04 | 74.00 | -30.96 | V | peak |
| 11892.000 | 30.25 | 14.69 | 44.94 | 74.00 | -29.06 | V | peak |
| 13308.000 | 28.30 | 18.76 | 47.06 | 74.00 | -26.94 | V | peak |
| <hr/> | | | | | | | |
| 7104.000 | 30.57 | 7.90 | 38.47 | 74.00 | -35.53 | H | Peak |
| 8196.000 | 30.73 | 9.54 | 40.27 | 74.00 | -33.73 | H | Peak |
| 9048.000 | 31.19 | 9.24 | 40.43 | 74.00 | -33.57 | H | Peak |
| 10656.000 | 30.35 | 14.01 | 44.36 | 74.00 | -29.64 | H | peak |
| 11652.000 | 30.42 | 14.79 | 45.21 | 74.00 | -28.79 | H | peak |
| 12912.000 | 29.65 | 17.66 | 47.31 | 74.00 | -26.69 | H | peak |

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).



Test Mode: TX / IEEE 802.11n HT 20 MHz / 5825MHz /(CH High) Tested by: Jacksan Luo
Ambient temperature: 24°C Relative humidity: 52% RH Date: November 2, 2016

| Frequency (MHz) | Reading (dBuV) | Correction Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Antenna Pole (V/H) | Remark |
|-----------------|----------------|--------------------------|-----------------|----------------|-------------|--------------------|--------|
| 6456.000 | 30.84 | 6.82 | 37.66 | 74.00 | -36.34 | V | peak |
| 7824.000 | 30.83 | 9.31 | 40.14 | 74.00 | -33.86 | V | peak |
| 9432.000 | 30.62 | 10.34 | 40.96 | 74.00 | -33.04 | V | peak |
| 10572.000 | 29.85 | 13.75 | 43.60 | 74.00 | -30.40 | V | peak |
| 11268.000 | 30.23 | 14.96 | 45.19 | 74.00 | -28.81 | V | peak |
| 12912.000 | 29.40 | 17.66 | 47.06 | 74.00 | -26.94 | V | peak |
| <hr/> | | | | | | | |
| 7332.000 | 30.14 | 8.35 | 38.49 | 74.00 | -35.51 | H | Peak |
| 8400.000 | 30.65 | 9.43 | 40.08 | 74.00 | -33.92 | H | Peak |
| 9576.000 | 30.49 | 10.76 | 41.25 | 74.00 | -32.75 | H | Peak |
| 10920.000 | 29.81 | 14.83 | 44.64 | 74.00 | -29.36 | H | peak |
| 12156.000 | 30.07 | 15.16 | 45.23 | 74.00 | -28.77 | H | peak |
| 12912.000 | 29.29 | 17.66 | 46.95 | 74.00 | -27.05 | H | peak |

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).



6.8 CONDUCTED UNDESIRABLE EMISSION

6.8.1 LIMIT

According to 15.407(b) ,

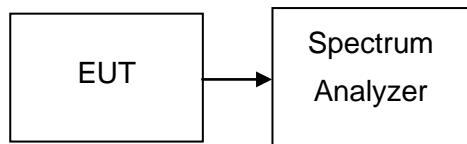
- (1) For transmitters operating in the 5.15-5.25 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz.
- (2) All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.
- (3) The provisions of §15.205 apply to intentional radiators operating under this section.

6.8.2 MEASUREMENT EQUIPMENT USED

| Name of Equipment | Manufacturer | Model | Serial Number | Last Calibration | Due Calibration |
|-------------------|--------------|--------|---------------|------------------|-----------------|
| Spectrum Analyzer | Agilent | N9010A | MY52221469 | 02/21/2016 | 02/20/2017 |

Remark: Each piece of equipment is scheduled for calibration once a year.

6.8.3 TEST CONFIGURATION



6.8.4 TEST PROCEDURE

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

The transmitter output is connected to the spectrum analyzer. The resolution bandwidth is set to 1 MHz. The video bandwidth is set to 1 MHz. Peak detection measurements are compared to the average EIRP limit, adjusted for the maximum antenna gain. If necessary, additional average detection measurements are made.

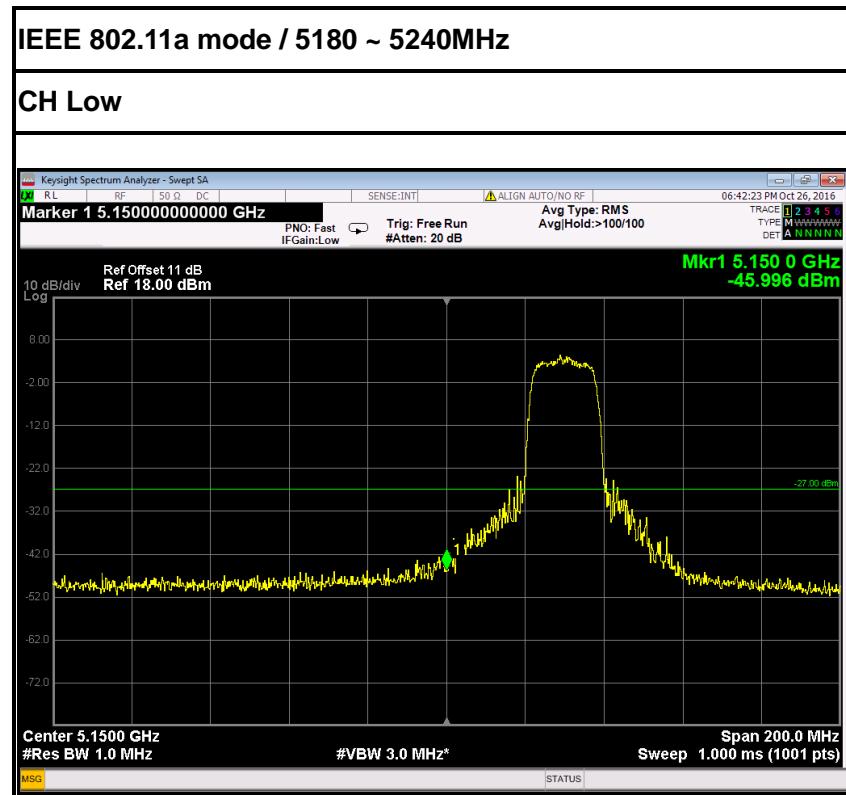
Measurements are made over the 30 MHz to 40 GHz range with the transmitter set to the lowest, middle, and highest channels.

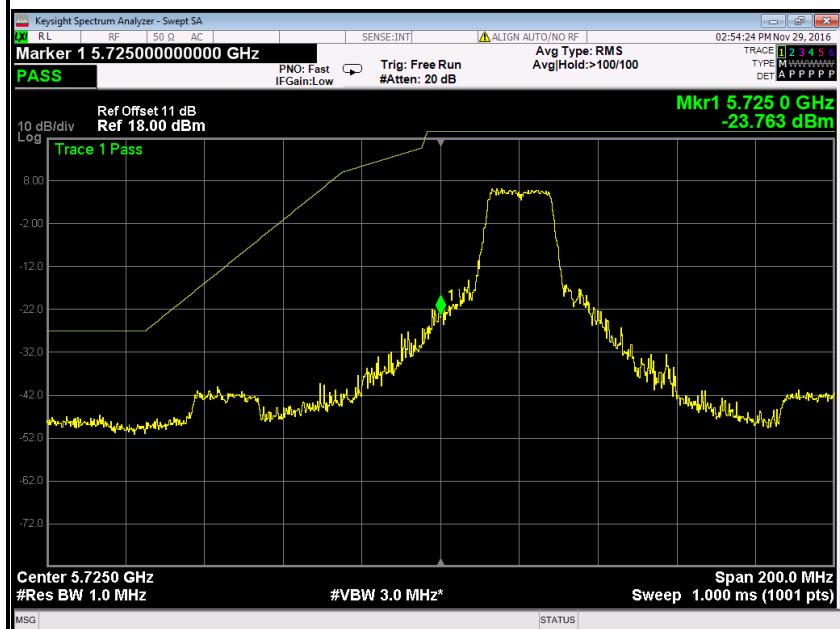


6.8.5 TEST RESULTS

No non-compliance noted

Test Plot

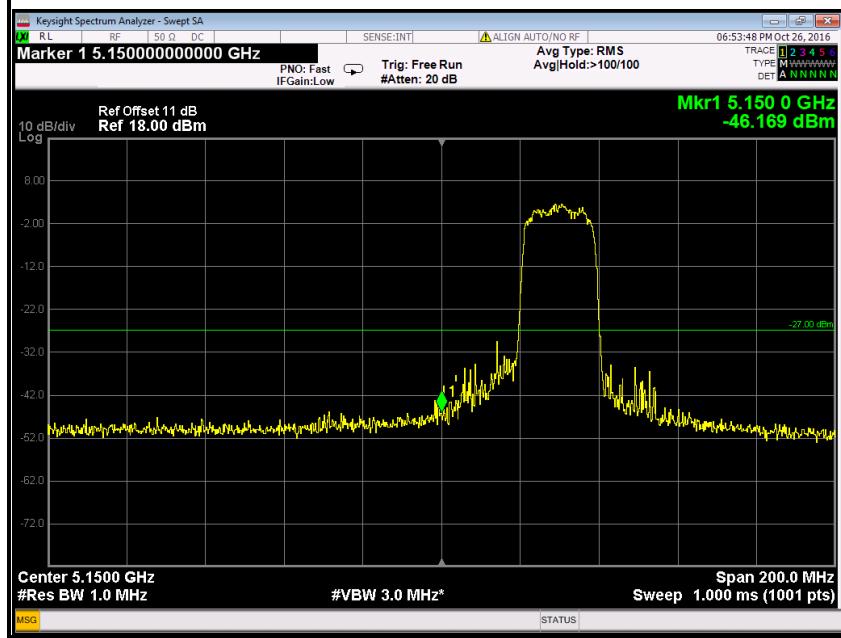


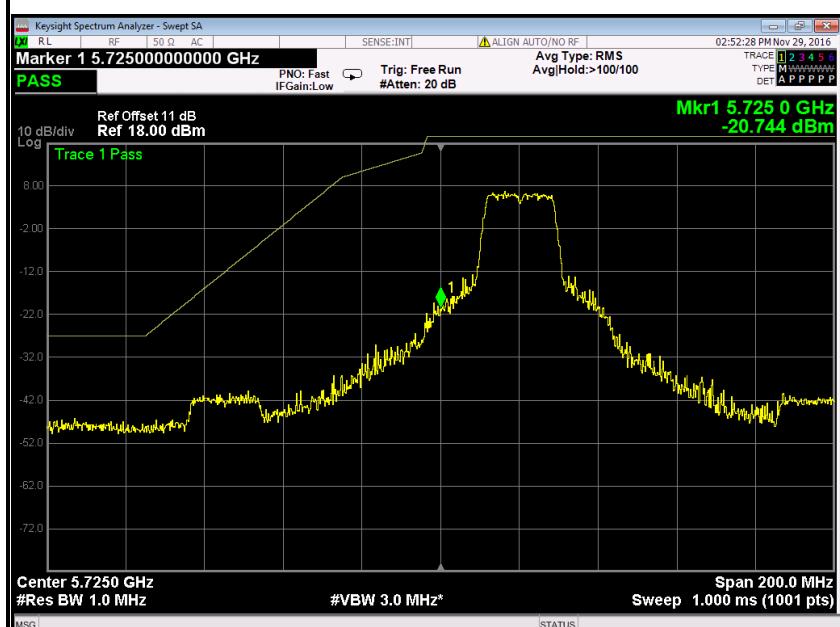
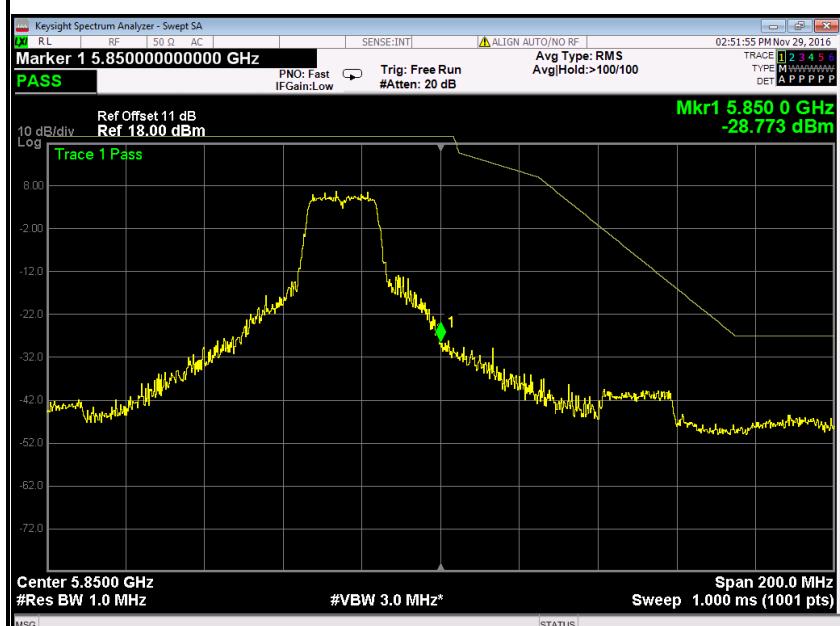
**IEEE 802.11a mode / 5745 ~ 5825MHz****CH Low****CH High**



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

CH Low



**IEEE 802.11n HT 20 MHz mode / 5745 ~ 5825MHz****CH Low****CH High**



6.9 POWERLINE CONDUCTED EMISSIONS

6.9.1 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.

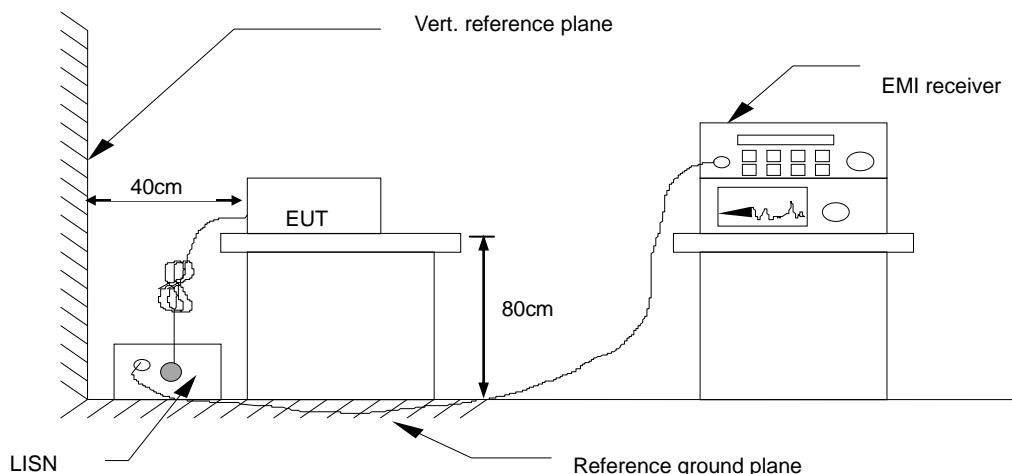
6.9.2 TEST INSTRUMENTS

| Conducted Emission Test Site | | | | | |
|------------------------------|---------------|--------------------|---------------|------------------|-----------------|
| Name of Equipment | Manufacturer | Model Number | Serial Number | Last Calibration | Due Calibration |
| EMI TEST RECEIVER | ROHDE&SCHWARZ | ESCI | 100783 | 02/21/2016 | 02/20/2017 |
| LISN(EUT) | ROHDE&SCHWARZ | ENV216 | 101543-WX | 02/21/2016 | 02/20/2017 |
| LISN | EMCO | 3825/2 | 8901-1459 | 02/21/2016 | 02/20/2017 |
| Temp. / Humidity Meter | VICTOR | HTC-1 | N/A | 02/21/2016 | 02/20/2017 |
| Test S/W | FARAD | EZ-EMC/ CCS-3A1-CE | | | |

NOTE: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

2. N.C.R = No Calibration Request.

6.9.3 TEST CONFIGURATION



6.9.4 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.

6.9.5 DATA SAMPLE

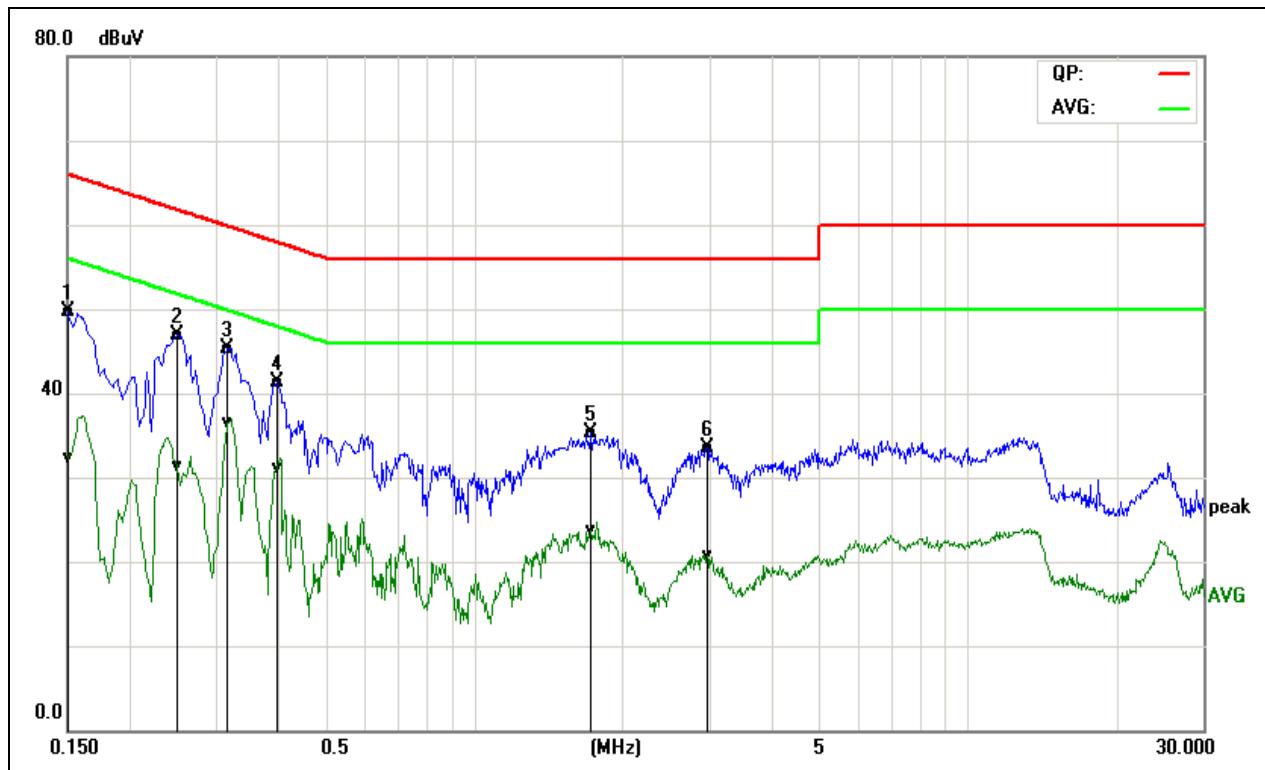
| Frequency (MHz) | QuasiPeak Reading (dBuV) | Average Reading (dBuV) | Correction Factor (dB) | QuasiPeak Result (dBuV) | Average Result (dBuV) | QuasiPeak Limit (dBuV) | Average Limit (dBuV) | QuasiPeak Margin (dB) | Average Margin (dB) | Remark |
|-----------------|--------------------------|------------------------|------------------------|-------------------------|-----------------------|------------------------|----------------------|-----------------------|---------------------|--------|
| X.XXXX | 32.69 | 25.65 | 11.52 | 44.21 | 37.17 | 65.78 | 55.79 | -21.57 | -18.62 | Pass |

Factor = Insertion loss of LISN + Cable Loss
Result = Quasi-peak Reading/ Average Reading + Factor
Limit = Limit stated in standard
Margin = Result (dBuV) – Limit (dBuV)



6.9.6 TEST RESULTS

| | | | |
|--------------------------|------------------|-----------|--------|
| Model No. | EO2 | RBW,VBW | 9 kHz |
| Environmental Conditions | 22°C, 45% RH | Test Mode | Mode 1 |
| Tested by | Jackson Luo | Line | L1 |
| Test Date | October 20, 2016 | | |

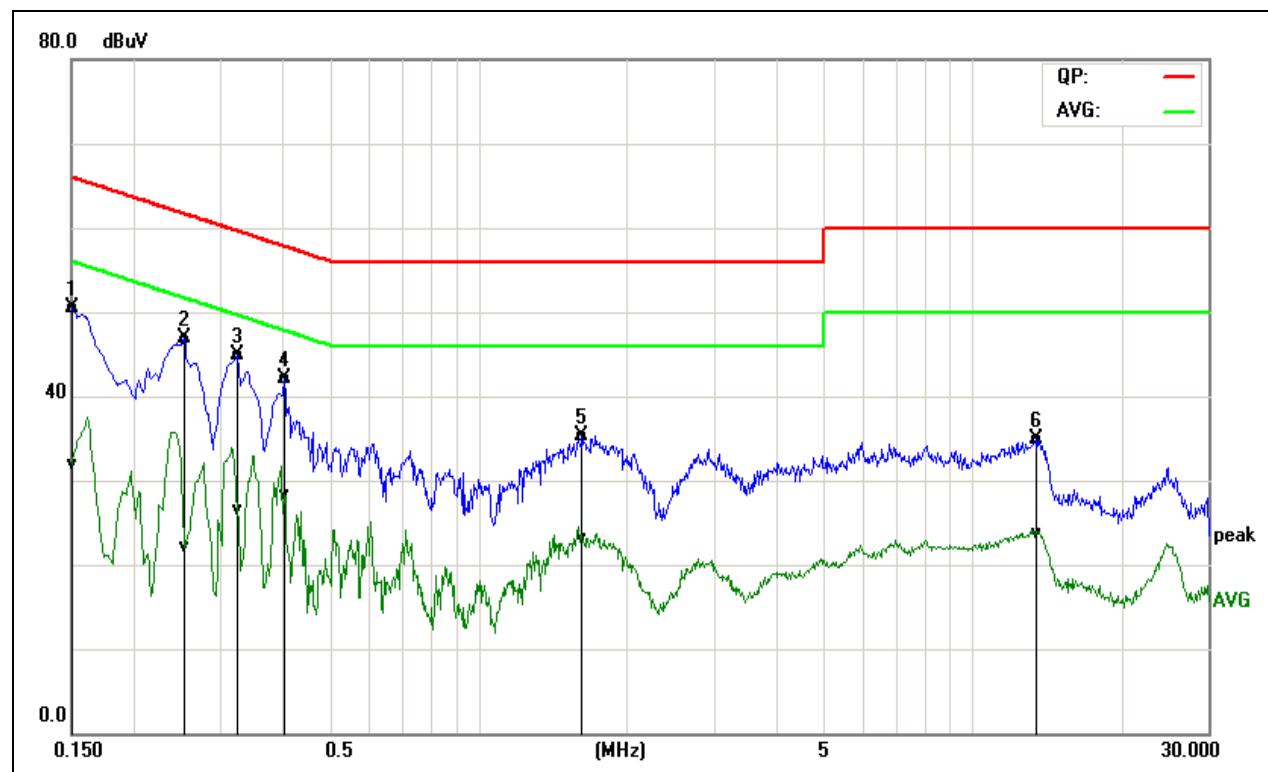


| Frequency (MHz) | QuasiPeak Reading (dBuV) | Average Reading (dBuV) | Correction Factor (dB) | QuasiPeak Result (dBuV) | Average Result (dBuV) | QuasiPeak Limit (dBuV) | Average Limit (dBuV) | QuasiPeak Margin (dB) | Average Margin (dB) | Remark (Pass/Fail) |
|-----------------|--------------------------|------------------------|------------------------|-------------------------|-----------------------|------------------------|----------------------|-----------------------|---------------------|--------------------|
| 0.1500 | 39.75 | 22.35 | 9.88 | 49.63 | 32.23 | 65.99 | 56.00 | -16.36 | -23.77 | Pass |
| 0.2500 | 36.96 | 21.40 | 9.91 | 46.87 | 31.31 | 61.75 | 51.76 | -14.88 | -20.45 | Pass |
| 0.3180 | 35.30 | 26.54 | 9.93 | 45.23 | 36.47 | 59.76 | 49.76 | -14.53 | -13.29 | Pass |
| 0.3980 | 31.38 | 21.16 | 9.95 | 41.33 | 31.11 | 57.89 | 47.90 | -16.56 | -16.79 | Pass |
| 1.7260 | 25.27 | 13.67 | 10.02 | 35.29 | 23.69 | 56.00 | 46.00 | -20.71 | -22.31 | Pass |
| 2.9700 | 23.48 | 10.57 | 10.11 | 33.59 | 20.68 | 56.00 | 46.00 | -22.41 | -25.32 | Pass |

REMARKS: L1 = Line One (Live Line)



| | | | |
|---------------------------------|------------------|------------------|--------|
| Model No. | EO2 | RBW,VBW | 9 kHz |
| Environmental Conditions | 22°C, 45% RH | Test Mode | Mode 1 |
| Tested by | Jackson Luo | Line | L2 |
| Test Date | October 20, 2016 | | |



| Frequency (MHz) | QuasiPeak Reading (dBuV) | Average Reading (dBuV) | Correction Factor (dB) | QuasiPeak Result (dBuV) | Average Result (dBuV) | QuasiPeak Limit (dBuV) | Average Limit (dBuV) | QuasiPeak Margin (dB) | Average Margin (dB) | Remark (Pass/Fail) |
|-----------------|--------------------------|------------------------|------------------------|-------------------------|-----------------------|------------------------|----------------------|-----------------------|---------------------|--------------------|
| 0.1500 | 40.55 | 21.97 | 9.98 | 50.53 | 31.95 | 65.99 | 56.00 | -15.46 | -24.05 | Pass |
| 0.2540 | 36.81 | 12.20 | 9.99 | 46.80 | 22.19 | 61.62 | 51.63 | -14.82 | -29.44 | Pass |
| 0.3260 | 34.98 | 16.53 | 9.99 | 44.97 | 26.52 | 59.55 | 49.55 | -14.58 | -23.03 | Pass |
| 0.4060 | 32.07 | 18.24 | 9.98 | 42.05 | 28.22 | 57.73 | 47.73 | -15.68 | -19.51 | Pass |
| 1.6220 | 25.28 | 13.03 | 10.02 | 35.30 | 23.05 | 56.00 | 46.00 | -20.70 | -22.95 | Pass |
| 13.4340 | 24.62 | 13.45 | 10.30 | 34.92 | 23.75 | 60.00 | 50.00 | -25.08 | -26.25 | Pass |

REMARKS: L2 = Line Two (Neutral Line)



6.10 FREQUENCY STABILITY

6.10.1 LIMIT

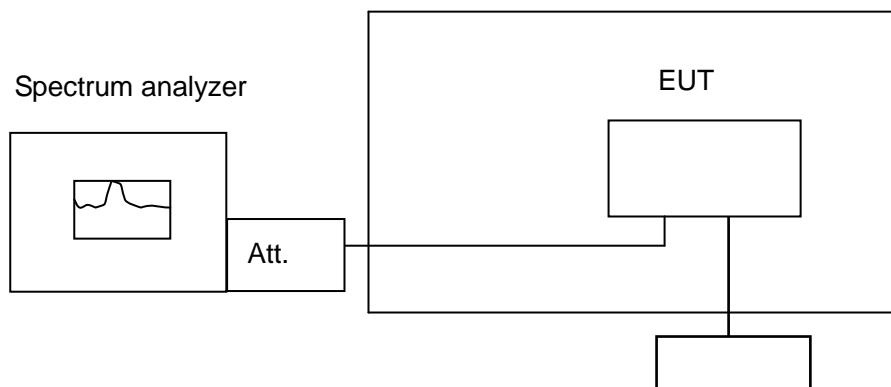
According to §15.407(g), manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the operational description.

6.10.2 TEST INSTRUMENTS

| Name of Equipment | Manufacturer | Model Number | Serial Number | Last Calibration | Due Calibration |
|------------------------|--------------|--------------|---------------|------------------|-----------------|
| Spectrum Analyzer | Agilent | N9010A | MY52221469 | 02/21/2016 | 02/20/2017 |
| DC Power Supply | DAZHENG | PS-605D | 20018978 | N.C.R | N.C.R |
| AC POWER SOUCE | UMART | HPA1010 | N/A | N.C.R | N.C.R |
| Power Meter | Anritsu | ML2495A | 1204003 | 02/21/2016 | 02/20/2017 |
| Power Sensor | Anritsu | MA2411B | 1126150 | 02/21/2016 | 02/20/2017 |
| Temperature Chamber | TERCHY | MHG-800N | E21104 | 11/18/2015 | 11/17/2016 |
| Temp. / Humidity Meter | Anymetre | JR913 | N/A | 02/21/2016 | 02/20/2017 |

6.10.3 TEST CONFIGURATION

Temperature Chamber



Variable Power Supply

Remark: Measurement setup for testing on Antenna connector



6.10.4 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.

6.10.5 TEST RESULTS

No non-compliance noted.

**Test Data****IEEE 802.11a MHz mode / 5180 ~ 5240MHz (Low)**

| Environment Temperature (°C) | Voltage (V) | Measured Frequency (MHz) | limit Range | Test Result |
|--------------------------------|-------------|--------------------------|-------------|-------------|
| 50 | 120 | 5179.958469 | 5150-5250 | PASS |
| 40 | 120 | 5179.971599 | 5150-5250 | PASS |
| 30 | 120 | 5179.974594 | 5150-5250 | PASS |
| 20 | 120 | 5179.821000 | 5150-5250 | PASS |
| 10 | 120 | 5179.951156 | 5150-5250 | PASS |
| 0 | 120 | 5179.997297 | 5150-5250 | PASS |
| -10 | 120 | 5179.988673 | 5150-5250 | PASS |
| -20 | 120 | 5179.964080 | 5150-5250 | PASS |

| Environment Temperature (°C) | Voltage (V) | Measured Frequency (MHz) | limit Range | Test Result |
|--------------------------------|-------------|--------------------------|-------------|-------------|
| 20 | 108 | 5179.994155 | 5150-5250 | PASS |
| | 120 | 5179.821000 | 5150-5250 | PASS |
| | 132 | 5179.983923 | 5150-5250 | PASS |

IEEE 802.11a MHz mode / 5180 ~ 5240MHz (High)

| Environment Temperature (°C) | Voltage (V) | Measured Frequency (MHz) | limit Range | Test Result |
|--------------------------------|-------------|--------------------------|-------------|-------------|
| 50 | 120 | 5239.965341 | 5150-5250 | PASS |
| 40 | 120 | 5239.992326 | 5150-5250 | PASS |
| 30 | 120 | 5239.965821 | 5150-5250 | PASS |
| 20 | 120 | 5239.819000 | 5150-5250 | PASS |
| 10 | 120 | 5239.995494 | 5150-5250 | PASS |
| 0 | 120 | 5239.953921 | 5150-5250 | PASS |
| -10 | 120 | 5239.966939 | 5150-5250 | PASS |
| -20 | 120 | 5239.975320 | 5150-5250 | PASS |

| Environment Temperature (°C) | Voltage (V) | Measured Frequency (MHz) | limit Range | Test Result |
|--------------------------------|-------------|--------------------------|-------------|-------------|
| 20 | 108 | 5239.952883 | 5150-5250 | PASS |
| | 120 | 5239.819000 | 5150-5250 | PASS |
| | 132 | 5239.990705 | 5150-5250 | PASS |

**IEEE 802.11a mode / 5745 ~ 5825MHz (Low)**

| Environment Temperature (°C) | Voltage (V) | Measured Frequency (MHz) | limit Range | Test Result |
|------------------------------|-------------|--------------------------|-------------|-------------|
| 50 | 120 | 5744.992495 | 5725-5850 | PASS |
| 40 | 120 | 5744.960033 | 5725-5850 | PASS |
| 30 | 120 | 5744.969374 | 5725-5850 | PASS |
| 20 | 120 | 5744.803000 | 5725-5850 | PASS |
| 10 | 120 | 5744.971531 | 5725-5850 | PASS |
| 0 | 120 | 5744.984970 | 5725-5850 | PASS |
| -10 | 120 | 5744.974339 | 5725-5850 | PASS |
| -20 | 120 | 5744.960508 | 5725-5850 | PASS |

| Environment Temperature (°C) | Voltage (V) | Measured Frequency (MHz) | limit Range | Test Result |
|------------------------------|-------------|--------------------------|-------------|-------------|
| 20 | 108 | 5744.971275 | 5725-5850 | PASS |
| | 120 | 5744.803000 | 5725-5850 | PASS |
| | 132 | 5744.983924 | 5725-5850 | PASS |

IEEE 802.11a mode / 5745 ~ 5825MHz (High)

| Environment Temperature (°C) | Voltage (V) | Measured Frequency (MHz) | limit Range | Test Result |
|------------------------------|-------------|--------------------------|-------------|-------------|
| 50 | 120 | 5824.993907 | 5725-5850 | PASS |
| 40 | 120 | 5824.986564 | 5725-5850 | PASS |
| 30 | 120 | 5824.977107 | 5725-5850 | PASS |
| 20 | 120 | 5824.800500 | 5725-5850 | PASS |
| 10 | 120 | 5824.991178 | 5725-5850 | PASS |
| 0 | 120 | 5824.957526 | 5725-5850 | PASS |
| -10 | 120 | 5824.954157 | 5725-5850 | PASS |
| -20 | 120 | 5824.957948 | 5725-5850 | PASS |

| Environment Temperature (°C) | Voltage (V) | Measured Frequency (MHz) | limit Range | Test Result |
|------------------------------|-------------|--------------------------|-------------|-------------|
| 20 | 108 | 5824.991847 | 5725-5850 | PASS |
| | 120 | 5824.800500 | 5725-5850 | PASS |
| | 132 | 5824.979154 | 5725-5850 | PASS |

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

| Environment Temperature (°C) | Voltage (V) | Measured Frequency (MHz) | limit Range | Test Result |
|------------------------------|-------------|--------------------------|-------------|-------------|
| 50 | 120 | 5179.977360 | 5150-5250 | PASS |
| 40 | 120 | 5179.964819 | 5150-5250 | PASS |
| 30 | 120 | 5179.976796 | 5150-5250 | PASS |
| 20 | 120 | 5179.834000 | 5150-5250 | PASS |
| 10 | 120 | 5179.985246 | 5150-5250 | PASS |
| 0 | 120 | 5179.990871 | 5150-5250 | PASS |
| -10 | 120 | 5179.986154 | 5150-5250 | PASS |
| -20 | 120 | 5179.953081 | 5150-5250 | PASS |

| Environment Temperature (°C) | Voltage (V) | Measured Frequency (MHz) | limit Range | Test Result |
|------------------------------|-------------|--------------------------|-------------|-------------|
| 20 | 108 | 5179.951994 | 5150-5250 | PASS |
| | 120 | 5179.834000 | 5150-5250 | PASS |
| | 132 | 5179.972524 | 5150-5250 | PASS |

IEEE 802.11n HT 20 MHz mode / 5180 ~ 5240MHz (High)

| Environment Temperature (°C) | Voltage (V) | Measured Frequency (MHz) | limit Range | Test Result |
|------------------------------|-------------|--------------------------|-------------|-------------|
| 50 | 120 | 5239.961442 | 5150-5250 | PASS |
| 40 | 120 | 5239.970656 | 5150-5250 | PASS |
| 30 | 120 | 5239.970242 | 5150-5250 | PASS |
| 20 | 120 | 5239.836000 | 5150-5250 | PASS |
| 10 | 120 | 5239.978803 | 5150-5250 | PASS |
| 0 | 120 | 5239.967881 | 5150-5250 | PASS |
| -10 | 120 | 5239.951642 | 5150-5250 | PASS |
| -20 | 120 | 5239.985712 | 5150-5250 | PASS |

| Environment Temperature (°C) | Voltage (V) | Measured Frequency (MHz) | limit Range | Test Result |
|------------------------------|-------------|--------------------------|-------------|-------------|
| 20 | 108 | 5239.961940 | 5150-5250 | PASS |
| | 120 | 5239.836000 | 5150-5250 | PASS |
| | 132 | 5239.967555 | 5150-5250 | PASS |

**IEEE 802.11n HT 20 MHz mode / 5745 ~ 5825MHz (Low)**

| Environment Temperature (°C) | Volage (V) | Measured Frequency (MHz) | limit Range | Test Result |
|------------------------------|------------|--------------------------|-------------|-------------|
| 50 | 120 | 5744.987962 | 5725-5850 | PASS |
| 40 | 120 | 5744.991783 | 5725-5850 | PASS |
| 30 | 120 | 5744.991036 | 5725-5850 | PASS |
| 20 | 120 | 5744.823000 | 5725-5850 | PASS |
| 10 | 120 | 5744.969479 | 5725-5850 | PASS |
| 0 | 120 | 5744.987569 | 5725-5850 | PASS |
| -10 | 120 | 5744.967329 | 5725-5850 | PASS |
| -20 | 120 | 5744.978933 | 5725-5850 | PASS |

| Environment Temperature (°C) | Volage (V) | Measured Frequency (MHz) | limit Range | Test Result |
|------------------------------|------------|--------------------------|-------------|-------------|
| 20 | 108 | 5744.971644 | 5725-5850 | PASS |
| | 120 | 5744.823000 | 5725-5850 | PASS |
| | 132 | 5744.950125 | 5725-5850 | PASS |

IEEE 802.11n HT 20 MHz mode / 5745 ~ 5825MHz (High)

| Environment Temperature (°C) | Volage (V) | Measured Frequency (MHz) | limit Range | Test Result |
|------------------------------|------------|--------------------------|-------------|-------------|
| 50 | 120 | 5824.975520 | 5725-5850 | PASS |
| 40 | 120 | 5824.966949 | 5725-5850 | PASS |
| 30 | 120 | 5824.949032 | 5725-5850 | PASS |
| 20 | 120 | 5824.812400 | 5725-5850 | PASS |
| 10 | 120 | 5824.967812 | 5725-5850 | PASS |
| 0 | 120 | 5824.950530 | 5725-5850 | PASS |
| -10 | 120 | 5824.958474 | 5725-5850 | PASS |
| -20 | 120 | 5824.979578 | 5725-5850 | PASS |

| Environment Temperature (°C) | Volage (V) | Measured Frequency (MHz) | limit Range | Test Result |
|------------------------------|------------|--------------------------|-------------|-------------|
| 20 | 108 | 5824.967296 | 5725-5850 | PASS |
| | 120 | 5824.812400 | 5725-5850 | PASS |
| | 132 | 5824.986454 | 5725-5850 | PASS |