



INDUSTRY CANADA RSS-247

TEST REPORT

for

WiFi Everywhere Powerline 1200 AV2 Access Point

MODEL: TEW-430AP/A

Brand: TRENDnet Inc.

Test Report Number:

C170525Z01-RC1-2

Issued Date: July 6, 2017

Issued for

TRENDnet, Inc.

20675 Manhattan Place, Torrance, CA 90501

Issued by:

Compliance Certification Services (Shenzhen) Inc.

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Certificate Number: 2861.01

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Revision History

| Rev. | Issue Date | Revisions | Effect Page | Revised By |
|------|--------------|---------------|-------------|--------------|
| 00 | July 6, 2017 | Initial Issue | ALL | Sabrina Wang |
| | | | | |
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1 TEST CERTIFICATION

| | |
|---------------------|--|
| Product | WiFi Everywhere Powerline 1200 AV2 Access Point |
| Model | TEW-430AP/A |
| Brand | TRENDnet Inc. |
| Tested | May 25~ July 6, 2017 |
| Applicant | TRENDnet, Inc. 20675 Manhattan Place, Torrance, CA 90501 |
| Manufacturer | TRENDnet, Inc. 20675 Manhattan Place, Torrance, CA 90501 |

| APPLICABLE STANDARDS | |
|---|-------------------------|
| STANDARD | TEST RESULT |
| IC RSS-247 ISSUE 2 with amendment February 2017 | No non-compliance noted |

We hereby certify that:

Compliance Certification Services (Shenzhen) Inc. tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

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 | WiFi Everywhere Powerline 1200 AV2 Access Point |
| Model Number | TEW-430AP/A |
| Brand | TRENDnet Inc. |
| Model Discrepancy | N/A |
| Serial Number | C170525Z01-RC1-2 |
| Received Date | May 25, 2017 |
| Power Supply | Input: AC100-240V ~ 50/60Hz, 0.2A |
| Frequency Range | UNII Band I: IEEE 802.11a, 802.11n HT20 : 5180MHz ~ 5240MHz; IEEE 802.11n HT40: 5190MHz ~ 5230MHz IEEE 802.11ac 80: 5210MHz |
| Transmit Power | UNII Band I: IEEE 802.11a: 21.68dBm (Antenna 0) 21.30dBm (Antenna 1) IEEE 802.11n HT 20 MHz mode: 19.20dBm (Combine with Antenna 0 and Antenna 1) IEEE 802.11n HT 40 MHz mode: 22.59dBm (Combine with Antenna 0 and Antenna 1) IEEE 802.11ac 80: 22.43dBm (Combine with Antenna 0 and Antenna 1) |
| Modulation Technique | OFDM (QPSK, BPSK, 16-QAM, 64-QAM) |
| Transmit Data Rate | IEEE 802.11a mode: 48, 36, 24, 18, 12, 9, 6Mbps IEEE 802.11n HT20MHz mode(800ns GI): 13,26,39,52,78,104,117,130Mbps IEEE 802.11n HT40MHz mode(800ns GI): 27,54,81,108,162,216,243,270Mbps IEEE 802.11ac 80 mode(800ns GI): 58.6,117,175.6,234,351,468,526.6, 585,702,780Mbps |
| Number of Channels | UNII Band I: IEEE 802.11a, 802.11n HT20 : 4 Channels IEEE 802.11n HT40 : 2 Channels IEEE 802.11ac 80: 1 Channel |
| Antenna Specification | Dipole Antenna 0 with 3dBi gain (Max) Dipole Antenna 1 with 3dBi gain (Max) |
| Channels Spacing | IEEE 802.11a, 802.11n HT20 : 20MHz IEEE 802.11n HT40: 40MHz IEEE 802.11ac 80: 80MHz |
| Temperature Range | 0°C ~ +45°C |
| Hardware Version | 1.0.0 |
| Software Version | 1.0.0 |

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 |
| 38 | 5190 |
| 40 | 5200 |
| 42 | 5210 |
| 44 | 5220 |
| 46 | 5230 |
| 48 | 5240 |

Remark:

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



3 TEST METHODOLOGY

The tests documented in this report were performed in accordance with IC RSS-247, IC RSS-Gen, and ANSI C63.10.

This submittal(s) (test report) is intended for IC Certification No: 6337A-TPL430AP filing to comply with Industry CANADA RSS247.

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

3.1. RSS-247 RESTRICTED BANDS OF OPERATIONS

Restricted bands, identified in Table 3 of RSS-Gen.

^(Note)

Table 3: Restricted Frequency Bands

| MHz | MHz | MHz | GHz |
|-------------------|---------------------|---------------|-------------|
| 0.090-0.110 | 12.57675-12.57725 | 960-1427 | 9.0-9.2 |
| 2.1735-2.1905 | 13.36-13.41 | 1435-1626.5 | 9.3-9.5 |
| 3.020-3.026 | 16.42-16.423 | 1645.5-1646.5 | 10.6-12.7 |
| 4.125-4.128 | 16.69475-16.69525 | 1660-1710 | 13.25-13.4 |
| 4.17725-4.17775 | 16.80425-16.80475 | 1718.8-1722.2 | 14.47-14.5 |
| 4.20725-4.20775 | 25.5-25.67 | 2200-2300 | 15.35-16.2 |
| 5.677-5.683 | 37.5-38.25 | 2310-2390 | 17.7-21.4 |
| 6.215-6.218 | 73-74.6 | 2655-2900 | 22.01-23.12 |
| 6.26775-6.26825 | 74.8-75.2 | 3260-3267 | 23.6-24.0 |
| 6.31175-6.31225 | 108-138 | 3332-3339 | 31.2-31.8 |
| 8.291-8.294 | 156.52475-156.52525 | 3345.8-3358 | 36.43-36.5 |
| 8.362-8.366 | 156.7-156.9 | 3500-4400 | Above 38.6 |
| 8.37625-8.38675 | 240-285 | 4500-5150 | |
| 8.41425-8.41475 | 322-335.4 | 5350-5460 | |
| 12.29-12.293 | 399.9-410 | 7250-7750 | |
| 12.51975-12.52025 | 608-614 | 8025-8500 | |

Note: Certain frequency bands listed in Table 3 and in bands above 38.6 GHz are designated for licence-exempt applications. These frequency bands and the requirements that apply to the devices are set out in the 200- and 300- series RSSs, such as RSS-247 and RSS-310, which contain the requirements that apply to licence-exempt radio apparatus.



3.2. DESCRIPTION OF TEST MODES

The EUT has been tested under operating condition.

Use Certification Tool 1.26 to control the EUT for staying in continuous transmitting mode was programmed.

| Test Item | Test mode | Worse mode |
|--------------------|--|-------------------------------------|
| Conducted Emission | Mode 1: 1000Mbps 20%(AC120V/60Hz) | <input checked="" type="checkbox"/> |
| | Mode 2: 1000Mbps 20%(AC240V/50Hz) | <input checked="" type="checkbox"/> |
| | Mode 3: Stand by(AC120V/60Hz) | <input type="checkbox"/> |
| | Mode 4: Stand by(AC240V/50Hz) | <input type="checkbox"/> |
| Radiated Emission | Mode 1: Continuously Transmitting | <input checked="" type="checkbox"/> |

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, and power line conducted emission below 30MHz, which worst case was in normal link mode.



The EUT is a 2x2 configuration spatial (2TX & 2RX) without beam forming function.

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

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

UNII Band I:

IEEE 802.11a for 5180 ~ 5240MHz:

Channel Low (5180MHz), Channel Mid (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.

IEEE 802.11n HT 40 MHz Channel for 5190 ~ 5230MHz:

Channel Low (5190MHz) and Channel High (5230MHz) with 27Mbps data rate were chosen for full testing.

IEEE 802.11ac 80 Channel for 5210MHz:

Channel Low (5210MHz) with 27Mbps data rate were chosen for full testing.



4 FACILITIES AND ACCREDITATIONS

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

4.2. 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.ccssz.com>

4.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

| Parameter | Uncertainty |
|--|-------------|
| Radiated Emission, 30 to 200 MHz Test Site : 966(2) | +/-3.6880dB |
| Radiated Emission, 200 to 1000 MHz Test Site : 966(2) | +/-3.6695dB |
| Radiated Emission, 1 to 8 GHz | +/-5.1782dB |
| Radiated Emission, 8 to 18 GHz | +/-5.2173dB |
| Conducted Emissions | +/-3.6836dB |
| Band Width | 178kHz |
| Peak Output Power MU | +/-1.906dB |
| Band Edge MU | +/-0.182dB |
| Channel Separation MU | 416.178Hz |
| Duty Cycle MU | 0.054ms |
| Frequency Stability MU | 226Hz |

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

The measured result is above (below) the specification limit by a margin less than the measurement uncertainty; it is therefore not possible to state compliance based on the 95% level of confidence. However, the result indicates that compliance (non-compliance) is more probable than non-compliance) with the specification limit.



5 SETUP OF EQUIPMENT UNDER TEST

5.1. 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.

5.2. SUPPORT EQUIPMENT

| No. | Equipment | Model No. | Serial No. | FCC ID | Brand | Data Cable | Power Cord |
|-----|----------------------------|---------------|------------|--------|---------------|------------------|--|
| 1 | Notebook 1 | Thinkpad | N/A | DoC | LENOVO | Unshielded 2.00m | Shielded 1.70m (AC Cable) Unshielded 1.80m (DC Cable) |
| 2 | Notebook 2 | Probook 5310M | N/A | DoC | HP | Unshielded 2.00m | Shielded 1.70m (AC Cable) Unshielded 1.80m (DC Cable) |
| 3 | Powerline 1200 AV2 Adapter | TPL-421E | N/A | DoC | TRENDnet Inc. | Unshielded 2.00m | N/A |

Note:

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



6 RSS 247 REQUIREMENTS

6.1. 99% BANDWIDTH

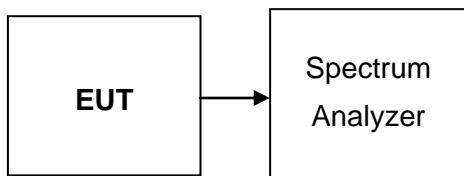
The test of the item was performed in accordance with the standards RSS-Gen 4.6.1.

MEASUREMENT EQUIPMENT USED

| Name of Equipment | Manufacturer | Model | Serial Number | Last Calibration | Due Calibration |
|-------------------|--------------|----------------|---------------|------------------|-----------------|
| Spectrum Analyzer | Agilent | N9010A | MY52221469 | 02/21/2017 | 02/20/2018 |
| Cable | Huber Suhner | SUCOFLEX104PEA | N/A | N/A | N/A |

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

TEST CONFIGURATION



TEST PROCEDURE

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



TEST RESULTS

Test Data

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

| Channel | Frequency (MHz) | Bandwidth(B) (MHz) | |
|---------|-----------------|--------------------|-----------|
| | | Antenna 0 | Antenna 1 |
| Low | 5180 | 16.491 | 16.471 |
| Mid | 5200 | 16.482 | 16.472 |
| High | 5240 | 16.484 | 16.480 |

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

| Channel | Frequency (MHz) | Bandwidth(B) (MHz) | |
|---------|-----------------|--------------------|-----------|
| | | Antenna 0 | Antenna 1 |
| Low | 5180 | 17.693 | 17.673 |
| Mid | 5200 | 17.670 | 17.666 |
| High | 5240 | 17.698 | 17.694 |

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

| Channel | Frequency (MHz) | Bandwidth(B) (MHz) | |
|---------|-----------------|--------------------|-----------|
| | | Antenna 0 | Antenna 1 |
| Low | 5190 | 36.027 | 36.101 |
| High | 5230 | 36.041 | 36.068 |

Test mode: IEEE 802.11ac 80 mode / 5210MHz

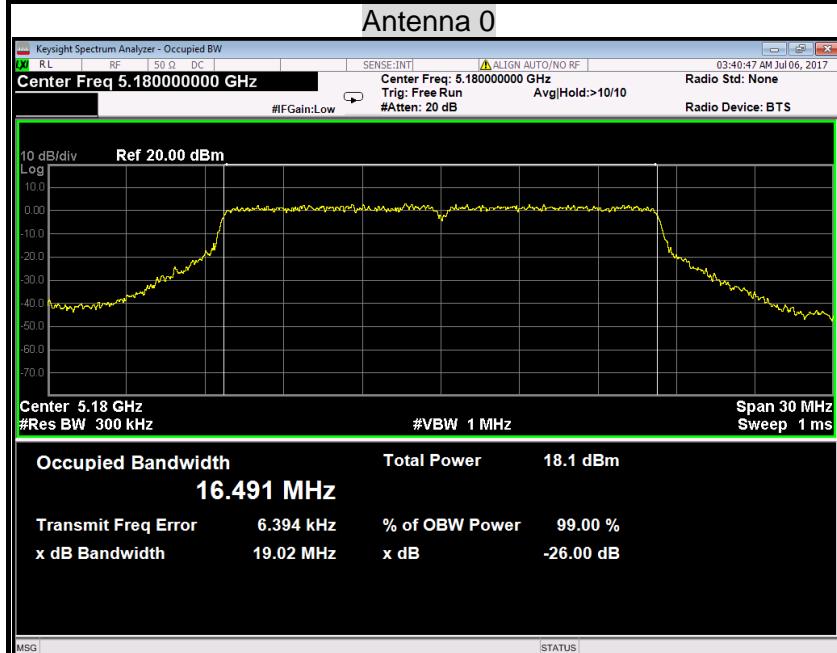
| Channel | Frequency (MHz) | Bandwidth(B) (MHz) | |
|---------|-----------------|--------------------|-----------|
| | | Antenna 0 | Antenna 1 |
| | 5210 | 75.969 | 75.845 |



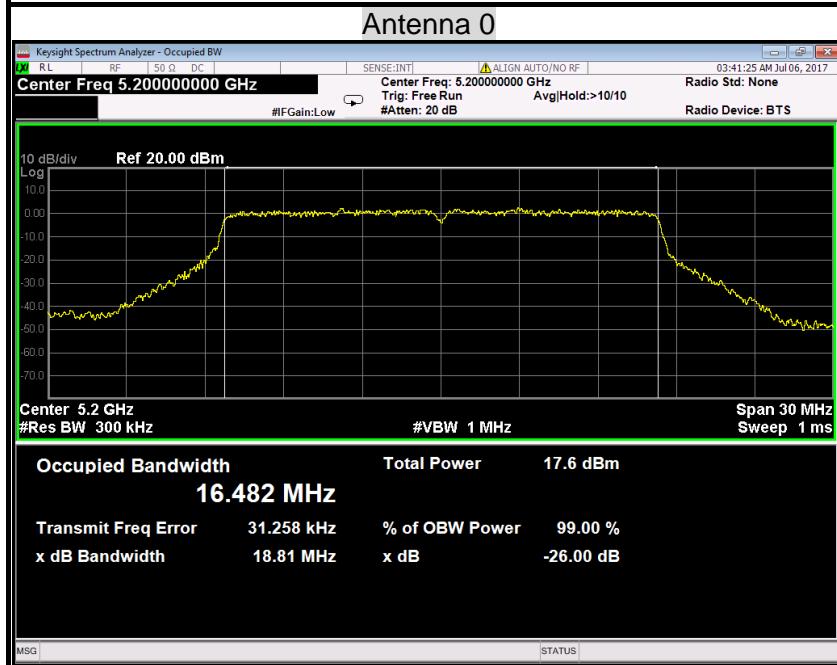
Test Plot

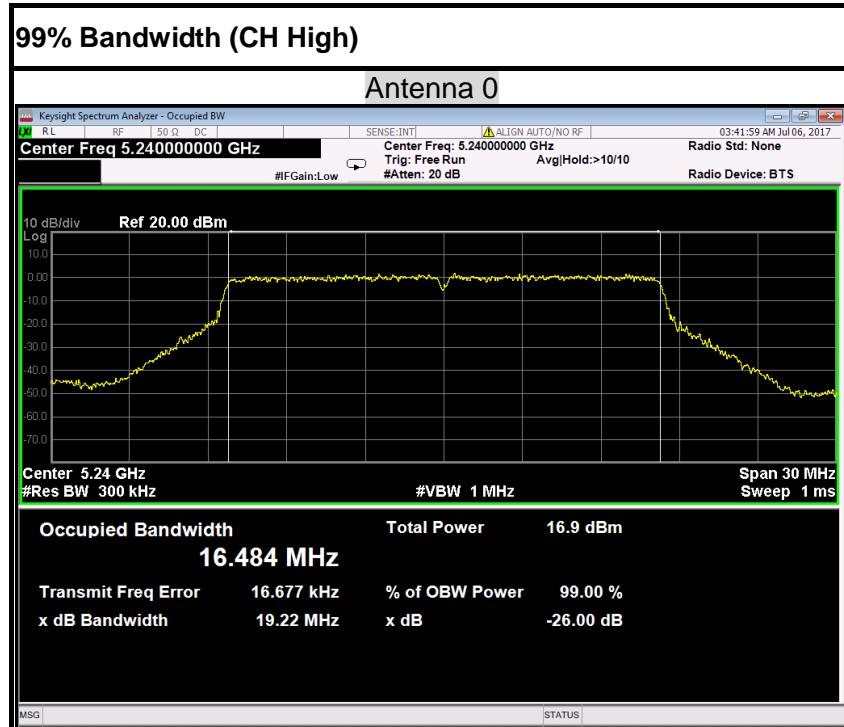
IEEE 802.11a mode / 5180 ~ 5240MHz

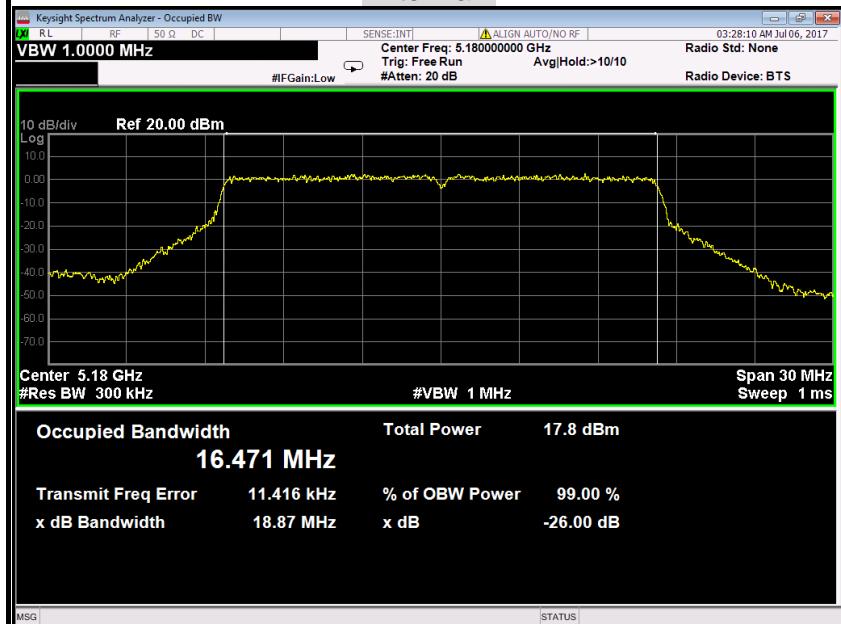
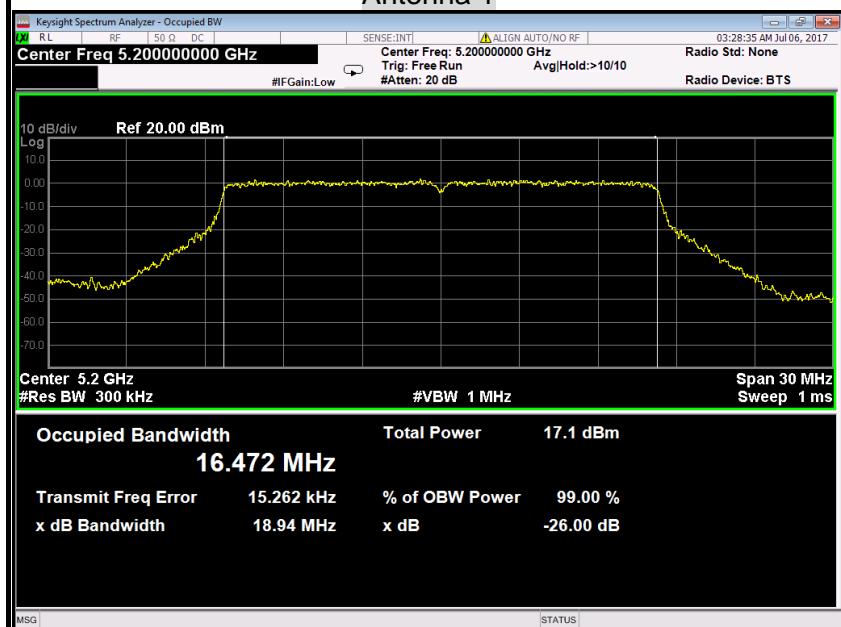
99% Bandwidth (CH Low)

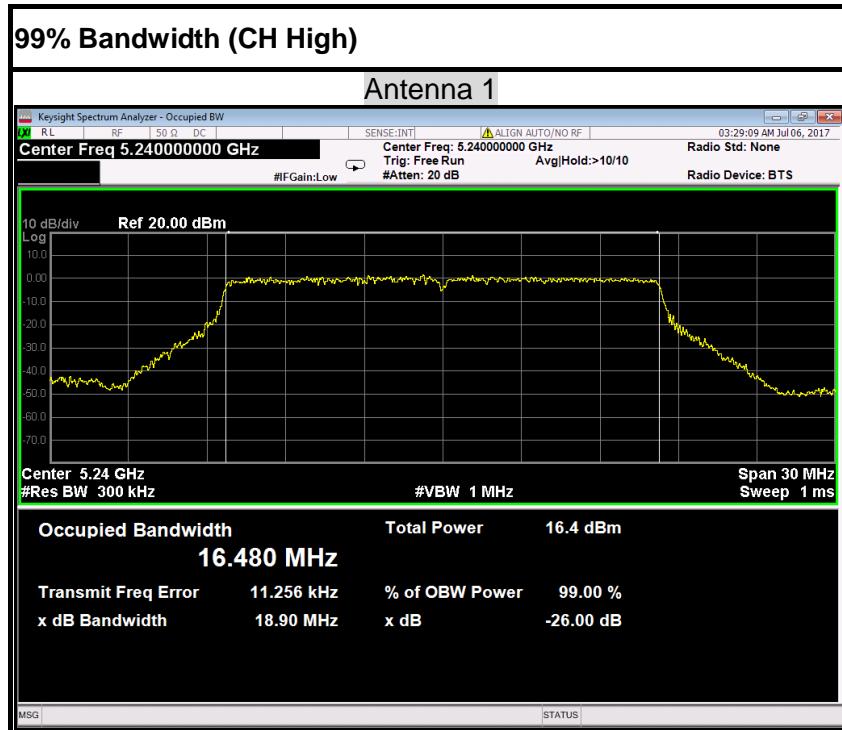


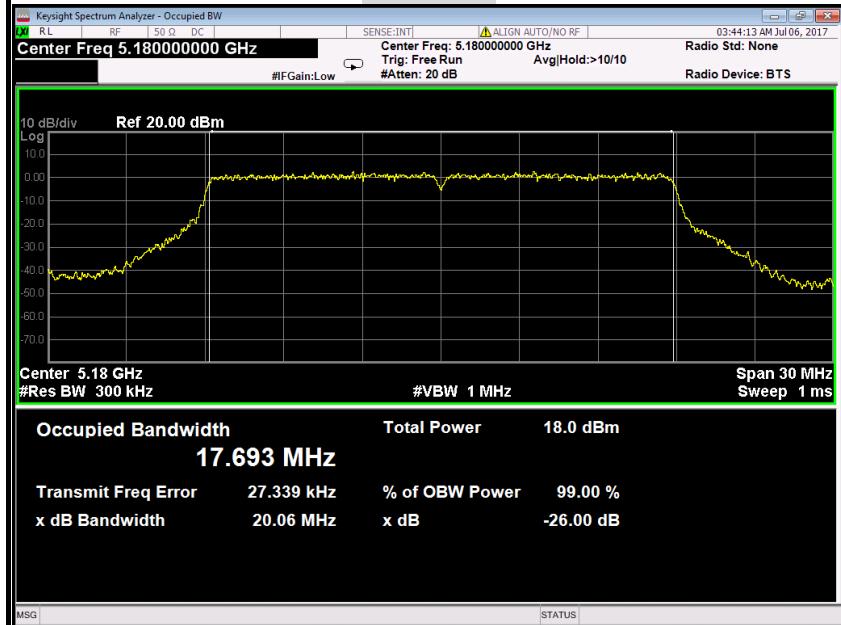
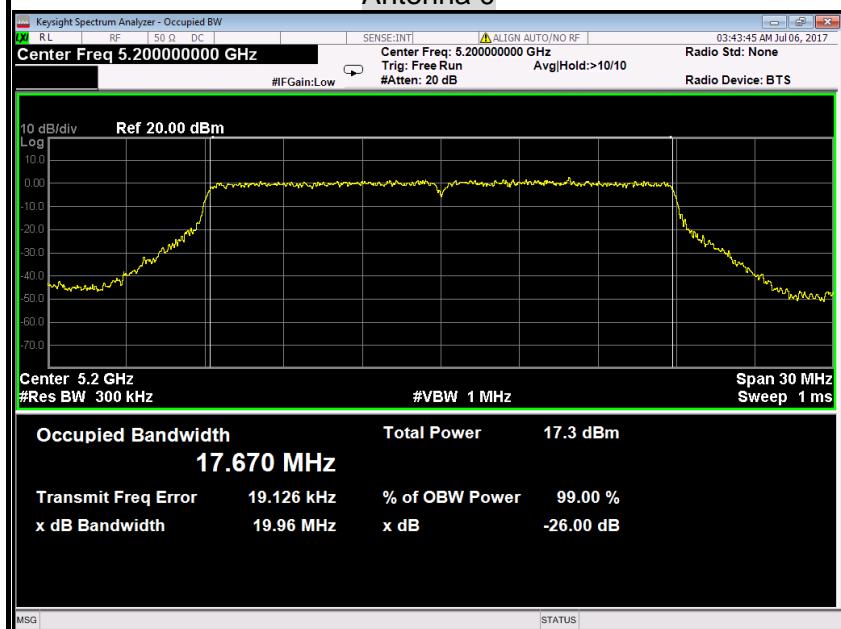
99% Bandwidth (CH Mid)

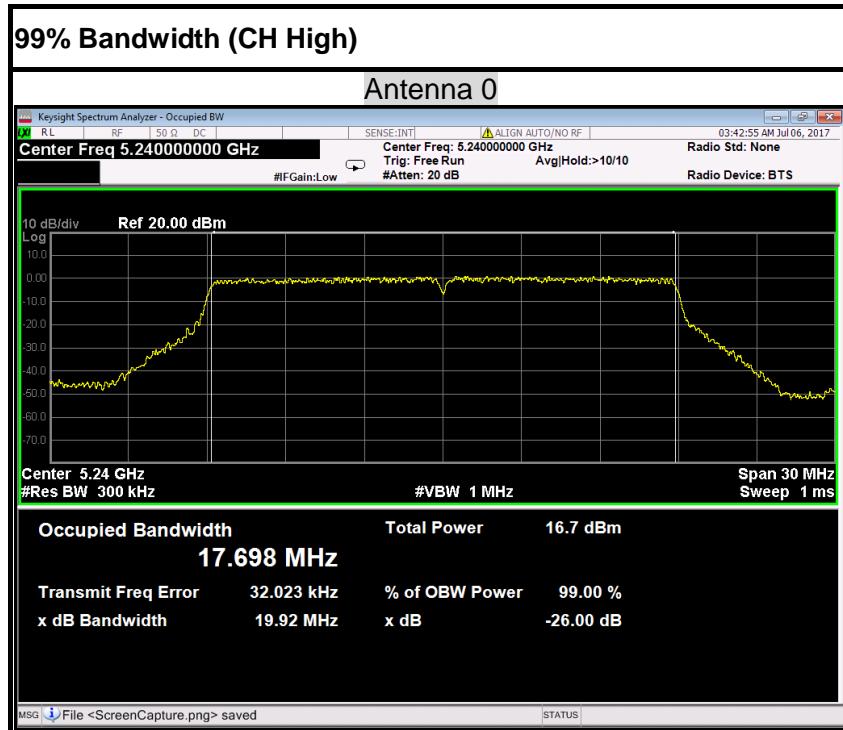


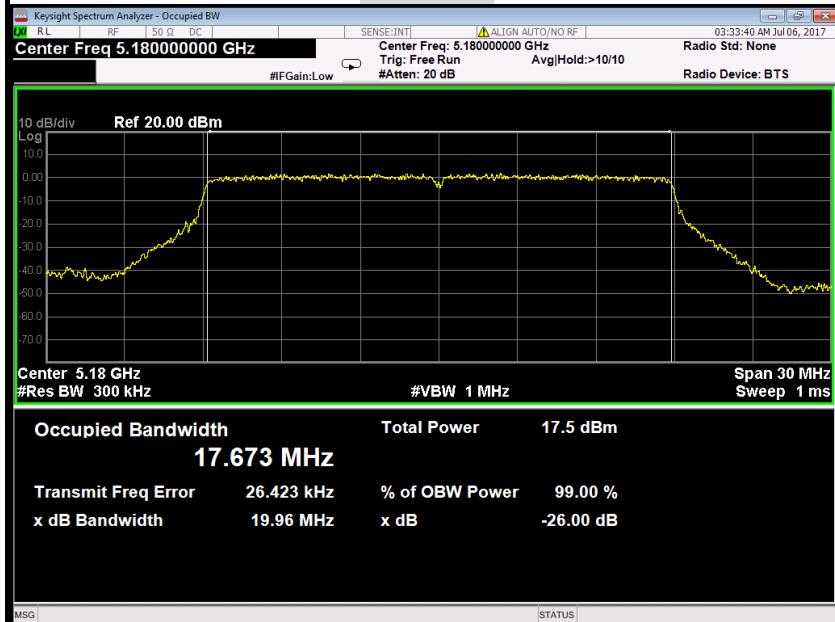
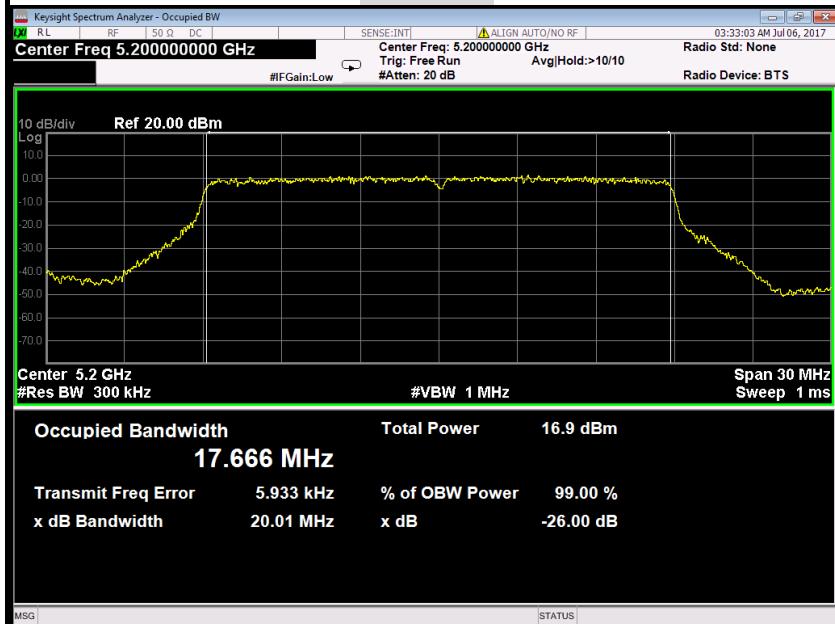


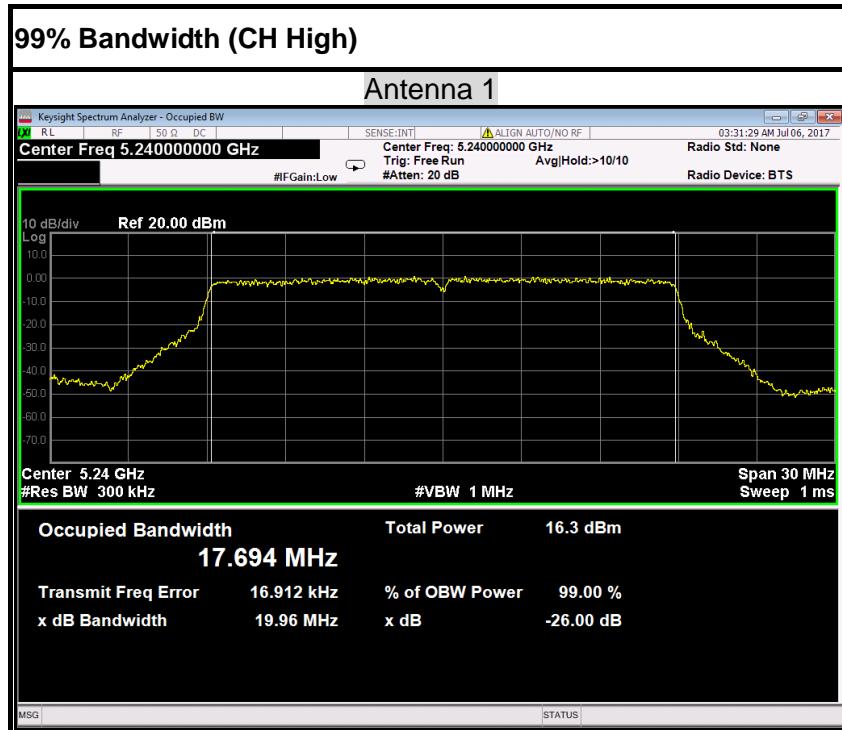
**IEEE 802.11a mode / 5180 ~ 5240MHz****99% Bandwidth (CH Low)****Antenna 1****99% Bandwidth (CH Mid)****Antenna 1**

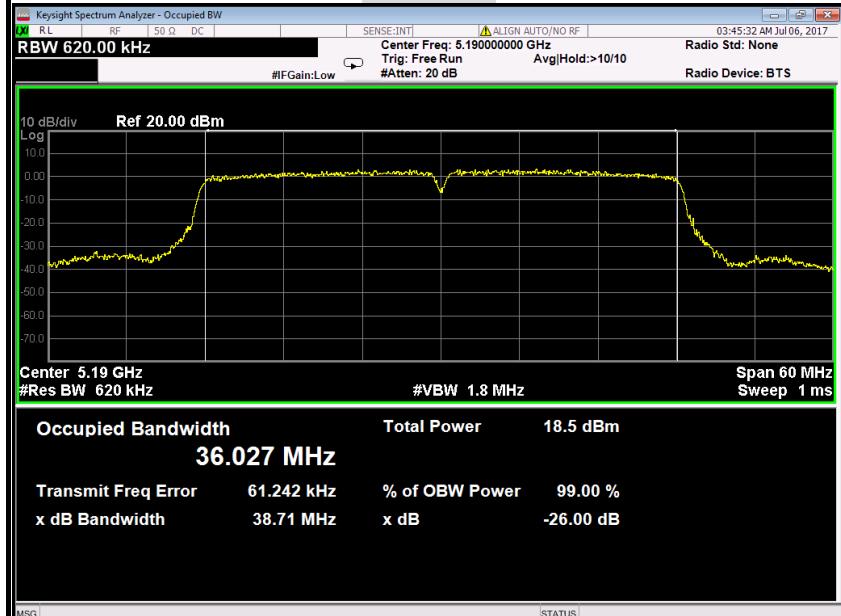
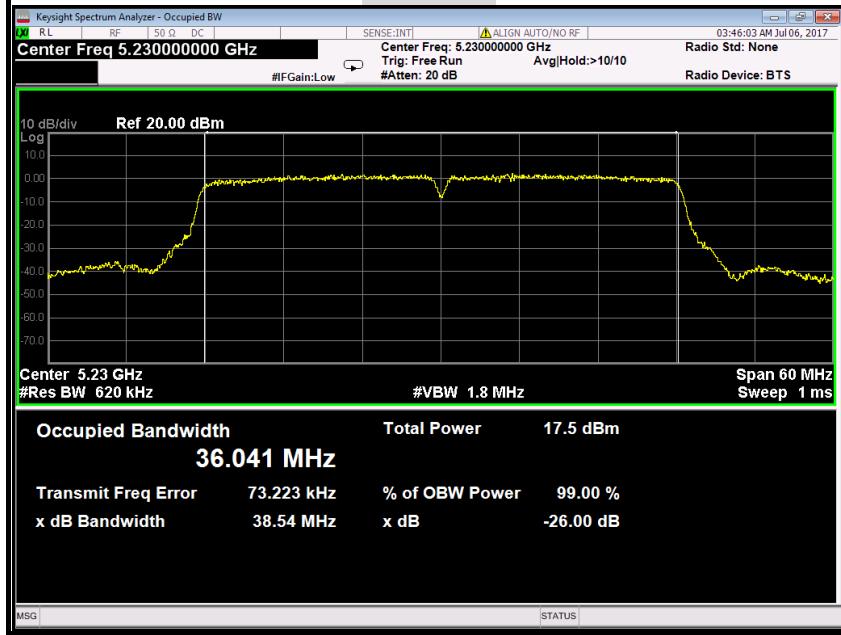


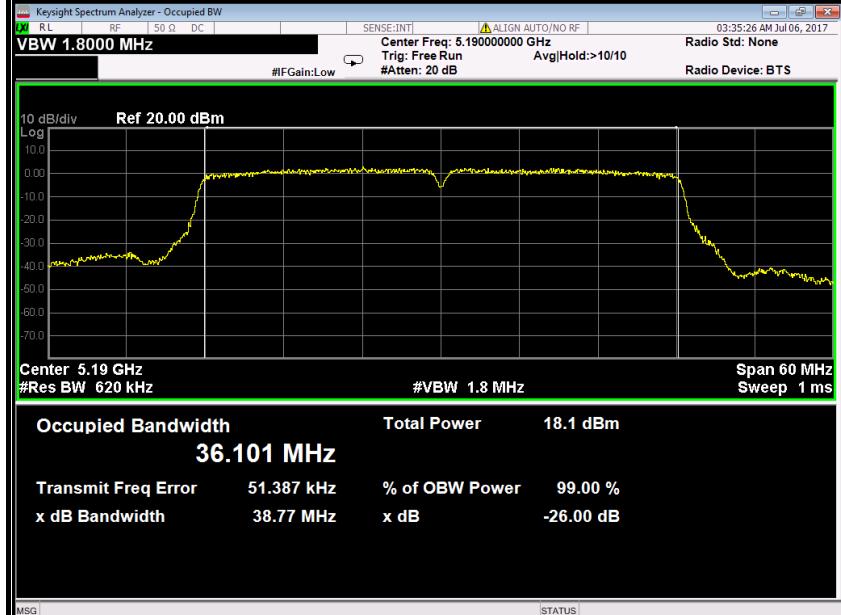
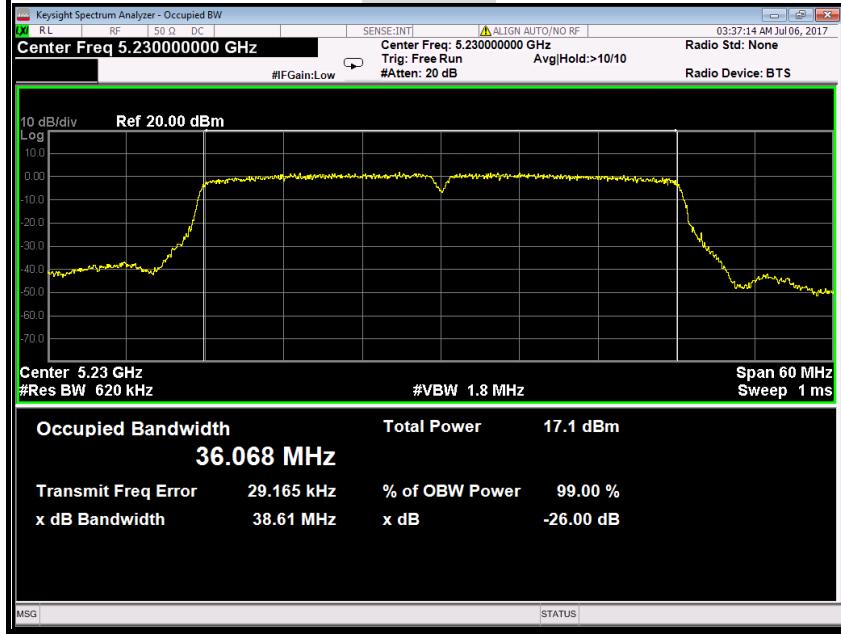
**IEEE 802.11n HT 20 MHz mode / 5180 ~ 5240MHz****99% Bandwidth (CH Low)****Antenna 0****99% Bandwidth (CH Mid)****Antenna 0**

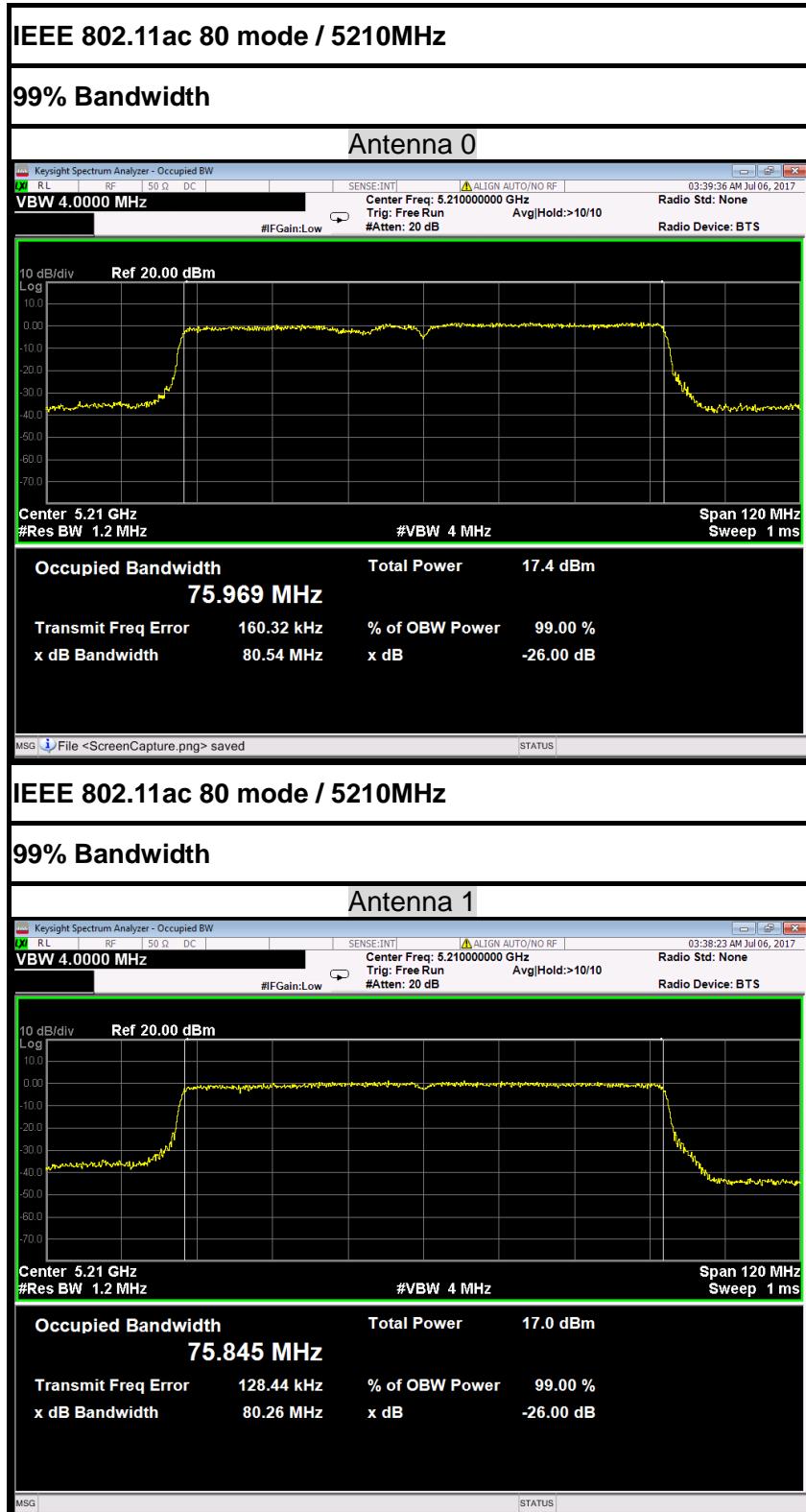


**IEEE 802.11n HT 20 MHz mode / 5180 ~ 5240MHz****99% Bandwidth (CH Low)****Antenna 1****99% Bandwidth (CH Mid)****Antenna 1**



**IEEE 802.11n HT 40 MHz mode / 5190 ~ 5230MHz****99% Bandwidth (CH Low)****Antenna 0****99% Bandwidth (CH High)****Antenna 0**

**IEEE 802.11n HT 40 MHz mode / 5190 ~ 5230MHz****99% Bandwidth (CH Low)****Antenna 1****99% Bandwidth (CH High)****Antenna 1**





6.2. 26dB EMISSION BANDWIDTH

LIMIT

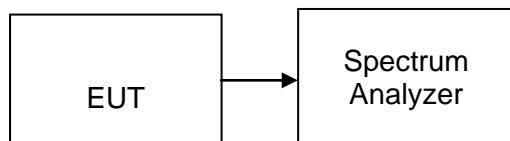
No Limit.

MEASUREMENT EQUIPMENT USED

| Name of Equipment | Manufacturer | Model | Serial Number | Last Calibration | Due Calibration |
|-------------------|--------------|----------------|---------------|------------------|-----------------|
| Spectrum Analyzer | Agilent | N9010A | MY52221469 | 02/21/2017 | 02/20/2018 |
| Cable | Huber Suhner | SUCOFLEX104PEA | N/A | N/A | N/A |

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

TEST CONFIGURATION



TEST PROCEDURE

1. Place the EUT on the table and set it in the transmitting mode.
2. Remove the antenna from the EUT and then connect a low-loss RF cable from the antenna port to the spectrum analyzer.
3. Set the spectrum analyzer as RBW > 1%EBW, VBW > RBW, Span >26dB bandwidth, 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.



TEST RESULTS

No non-compliance noted

Test Plot

The test plots please refer to 6.1 for detail.

Test Data

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

| Channel | Frequency (MHz) | 26dB Bandwidth(B) (MHz) | |
|---------|--------------------|----------------------------|-----------|
| | | Antenna 0 | Antenna 1 |
| Low | 5180 | 19.02 | 18.87 |
| Mid | 5200 | 18.81 | 18.94 |
| High | 5240 | 19.22 | 18.90 |

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

| Channel | Frequency (MHz) | 26dB Bandwidth(B) (MHz) | |
|---------|--------------------|----------------------------|-----------|
| | | Antenna 0 | Antenna 1 |
| Low | 5180 | 20.06 | 19.96 |
| Mid | 5200 | 19.96 | 20.01 |
| High | 5240 | 19.92 | 19.96 |

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

| Channel | Frequency (MHz) | 26dB Bandwidth(B) (MHz) | |
|---------|--------------------|----------------------------|-----------|
| | | Antenna 0 | Antenna 1 |
| Low | 5190 | 38.71 | 38.77 |
| High | 5230 | 38.54 | 38.61 |

Test mode: IEEE 802.11ac 80 mode / 5210MHz

| Channel | Frequency (MHz) | 26dB Bandwidth(B) (MHz) | |
|---------|--------------------|----------------------------|-----------|
| | | Antenna 0 | Antenna 1 |
| | 5210 | 80.54 | 80.26 |



6.3. 6dB BANDWIDTH

LIMIT

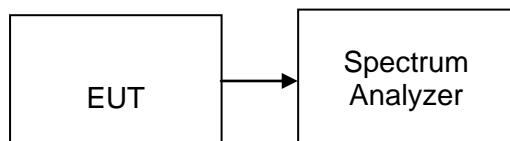
According to RSS-247 §6.2.4, for equipment operating in the band 5725-5850 MHz, the minimum 6 dB bandwidth shall be at least 500 kHz.

MEASUREMENT EQUIPMENT USED

| Name of Equipment | Manufacturer | Model | Serial Number | Last Calibration | Due Calibration |
|-------------------|--------------|----------------|---------------|------------------|-----------------|
| Spectrum Analyzer | Agilent | N9010A | MY52221469 | 02/21/2017 | 02/20/2018 |
| Cable | HuberSuhner | SUCOFLEX104PEA | N/A | N/A | N/A |

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

TEST CONFIGURATION



TEST PROCEDURE

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.

TEST RESULTS

No non-compliance noted

Not applicable, Since the EUT only has Band I.



6.4. 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 UNII devices, the IEEE 802.11a 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

Antenna 0

IEEE 802.11a mode / 5180 ~ 5240MHz

| T_{nom} | V_{nom} | Lowest channel 5180MHz | Highest channel 5240MHz |
|---|--|-----------------------------------|------------------------------------|
| Conducted power [dBm] Measured with OFDM modulation | | 6.51 | 5.49 |
| Radiated power [dBm] Measured with OFDM modulation | | 8.97 | 8.27 |
| Gain [dBi] Calculated | | 2.46 | 2.78 |
| Measurement uncertainty | ± 1.5 dB (cond.) / ± 3 dB (rad.) | | |

Antenna 1

IEEE 802.11a mode / 5180 ~ 5240MHz

| T_{nom} | V_{nom} | Lowest channel 5180MHz | Highest channel 5240MHz |
|---|--|-----------------------------------|------------------------------------|
| Conducted power [dBm] Measured with OFDM modulation | | 6.13 | 5.10 |
| Radiated power [dBm] Measured with OFDM modulation | | 8.79 | 7.96 |
| Gain [dBi] Calculated | | 2.66 | 2.86 |
| Measurement uncertainty | ± 1.5 dB (cond.) / ± 3 dB (rad.) | | |



6.5. OUTPUT POWER

LIMIT

According to RSS-247 §6.2,

1. For the band 5150-5250 MHz, the maximum e.i.r.p. shall not exceed 200 mW or $10 + 10 \log_{10}B$, dBm, whichever power is less. B is the 99% emission bandwidth in megahertz. The e.i.r.p. spectral density shall not exceed 10 dBm in any 1.0 MHz band.
2. For the band 5250-5350 MHz, the maximum conducted output power shall not exceed 250 mW or $11 + 10 \log_{10}B$, dBm, whichever is less. The power spectral density shall not exceed 11 dBm in any 1.0 MHz band.
3. For the band 5470-5600 MHz and 5650-5725 MHz, the maximum conducted output power shall not exceed 250 mW or $11 + 10 \log_{10}B$, dBm, whichever is less. The power spectral density shall not exceed 11 dBm in any 1.0 MHz band.
4. For the band 5725-5850 MHz, The maximum conducted output power shall not exceed 1 W. The 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 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 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-multipoint3 systems, omnidirectional applications and multiple collocated transmitters transmitting the same information.

**Specified Limit of the Output Power****Test mode: IEEE 802.11a mode / 5180 ~ 5240MHz**

| Channel | Frequency (MHz) | 26 dB Bandwidth (B) (MHz) | | 10*Log(B) (dB) | | 10 + 10*Log(B) (dBm) | | Maximum Conducted Output Power Limit (dBm) | |
|---------|-----------------|---------------------------|-----------|----------------|-----------|----------------------|-----------|--|-----------|
| | | Antenna 0 | Antenna 1 | Antenna 0 | Antenna 1 | Antenna 0 | Antenna 1 | Antenna 0 | Antenna 1 |
| Low | 5180 | 19.02 | 18.87 | 12.79 | 12.76 | 22.79 | 22.76 | 22.79 | 22.76 |
| Mid | 5200 | 18.81 | 18.94 | 12.74 | 12.77 | 22.74 | 22.77 | 22.74 | 22.77 |
| High | 5240 | 19.22 | 18.90 | 12.84 | 12.76 | 22.84 | 22.76 | 22.84 | 22.76 |

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

| Channel | Frequency (MHz) | 26 dB Bandwidth (B) (MHz) | | 10*Log(B) (dB) | | 10 + 10*Log(B) (dBm) | | Maximum Conducted Output Power Limit (dBm) | |
|---------|-----------------|---------------------------|-----------|----------------|-----------|----------------------|-----------|--|-----------|
| | | Antenna 0 | Antenna 1 | Antenna 0 | Antenna 1 | Antenna 0 | Antenna 1 | Antenna 0 | Antenna 1 |
| Low | 5180 | 20.06 | 19.96 | 13.02 | 13.00 | 23.02 | 23.00 | 23.00 | 23.00 |
| Mid | 5200 | 19.96 | 20.01 | 13.00 | 13.01 | 23.00 | 23.01 | 23.00 | 23.00 |
| High | 5240 | 19.92 | 19.96 | 12.99 | 13.00 | 22.99 | 23.00 | 23.00 | 23.00 |

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

| Channel | Frequency (MHz) | 26 dB Bandwidth (B) (MHz) | | 10*Log(B) (dB) | | 10 + 10*Log(B) (dBm) | | Maximum Conducted Output Power Limit (dBm) | |
|---------|-----------------|---------------------------|-----------|----------------|-----------|----------------------|-----------|--|-----------|
| | | Antenna 0 | Antenna 1 | Antenna 0 | Antenna 1 | Antenna 0 | Antenna 1 | Antenna 0 | Antenna 1 |
| Low | 5190 | 38.71 | 38.77 | 15.88 | 15.88 | 25.88 | 25.88 | 23.00 | 23.00 |
| High | 5230 | 38.54 | 38.61 | 15.86 | 15.87 | 25.86 | 25.87 | 23.00 | 23.00 |

IEEE 802.11ac 80 mode / 5210MHz

| Channel | Frequency (MHz) | 26 dB Bandwidth (B) (MHz) | | 10*Log(B) (dB) | | 10 + 10*Log(B) (dBm) | | Maximum Conducted Output Power Limit (dBm) | |
|---------|-----------------|---------------------------|-----------|----------------|-----------|----------------------|-----------|--|-----------|
| | | Antenna 0 | Antenna 1 | Antenna 0 | Antenna 1 | Antenna 0 | Antenna 1 | Antenna 0 | Antenna 1 |
| | 5210 | 80.54 | 80.26 | 16.00 | 19.04 | 29.06 | 30.04 | 23.00 | 23.00 |

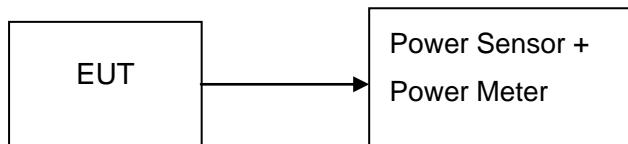


MEASUREMENT EQUIPMENT USED

| Name of Equipment | Manufacturer | Model | Serial Number | Last Calibration | Calibration Due |
|-------------------|--------------|----------------|---------------|------------------|-----------------|
| Power Meter | Anritsu | ML2495A | 1204003 | 02/21/2017 | 02/20/2018 |
| Power Sensor | Anritsu | MA2411B | 1126150 | 02/21/2017 | 02/20/2018 |
| Cable | HuberSuhner | SUCOFLEX104PEA | N/A | N/A | N/A |

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

TEST CONFIGURATIONS



TEST PROCEDURE

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

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

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



TEST RESULTS

No non-compliance noted

Test Data

IEEE 802.11a mode / 5180 ~ 5240MHz

| Channel | Frequency (MHz) | AVG Output Power (dBm) | | G _{ant} (dBi) | AVG Output Power (W) | | Maximum e.i.r.p (W) | | Limit (dBm) | Result |
|---------|-----------------|------------------------|-----------|------------------------|----------------------|-----------|---------------------|-----------|-------------|--------|
| | | Antenna 0 | Antenna 1 | | Antenna 0 | Antenna 1 | Antenna 0 | Antenna 1 | | |
| Low | 5180 | 18.68 | 18.30 | 3.00 | 21.68 | 21.30 | 0.14723 | 0.13490 | 22.74 | PASS |
| Mid | 5200 | 18.10 | 17.70 | | 21.10 | 20.70 | 0.12882 | 0.11749 | | PASS |
| High | 5240 | 17.66 | 17.27 | | 20.66 | 20.27 | 0.11641 | 0.10641 | | PASS |

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

| Channel | Frequency (MHz) | AVG Output Power (dBm) | | G _{ant} (dBi) | 10log(N _{ant}) | Total (dBm) | Maximum e.i.r.p (W) | Limit (dBm) | Result |
|---------|-----------------|------------------------|-----------|------------------------|--------------------------|-------------|---------------------|-------------|--------|
| | | Antenna 0 | Antenna 1 | | | | | | |
| Low | 5180 | 13.42 | 12.95 | 3.00 | 3.01 | 22.21 | 0.16640 | 22.99 | PASS |
| Mid | 5200 | 12.79 | 12.56 | | | 21.70 | 0.14780 | | PASS |
| High | 5240 | 12.53 | 12.36 | | | 21.47 | 0.14016 | | PASS |

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

| Channel | Frequency (MHz) | AVG Output Power (dBm) | | G _{ant} (dBi) | 10log(N _{ant}) | Total (dBm) | Maximum e.i.r.p (W) | Limit (dBm) | Result |
|---------|-----------------|------------------------|-----------|------------------------|--------------------------|-------------|---------------------|-------------|--------|
| | | Antenna 0 | Antenna 1 | | | | | | |
| Low | 5190 | 13.85 | 13.27 | 3.00 | 3.01 | 22.59 | 0.18155 | 22.99 | PASS |
| High | 5230 | 13.47 | 13.54 | | | 22.53 | 0.17887 | | PASS |

IEEE 802.11ac 80 mode / 5210MHz

| Channel | Frequency (MHz) | AVG Output Power (dBm) | | G _{ant} (dBi) | 10log(N _{ant}) | Total (dBm) | Maximum e.i.r.p (W) | Limit (dBm) | Result |
|---------|-----------------|------------------------|-----------|------------------------|--------------------------|-------------|---------------------|-------------|--------|
| | | Antenna 0 | Antenna 1 | | | | | | |
| | 5190 | 13.24 | 13.58 | 3.00 | 3.01 | 22.43 | 0.17513 | 22.99 | PASS |

Remark:

Directional Gain= G_{ant} + 10log (N_{ant}) dB

G_{ant}: Gain of Individual Antennas (Same for Each Antenna)

N_{ant}: Number of Transmit Antennas



6.6. BAND EDGES MEASUREMENT

LIMIT

According to RSS-247 §5.5, In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided that the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of root-mean-square averaging over a time interval, as permitted under Section 5.4(4), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general field strength limits specified in RSS-Gen is not required.

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 | 02/21/2017 | 02/20/2018 |
| EMI TEST RECEIVER | ROHDE&SCHWARZ | ESCI | 100783 | 02/21/2017 | 02/20/2018 |
| Amplifier | EMEC | EM330 | 060661 | 03/18/2017 | 03/17/2018 |
| High Noise Amplifier | Agilent | 8449B | 3008A01838 | 02/21/2017 | 02/20/2018 |
| Loop Antenna | COM-POWER | AL-130 | 121044 | 09/25/2016 | 09/24/2017 |
| Bilog Antenna | SCHAFFNER | CBL6143 | 5082 | 02/21/2017 | 02/20/2018 |
| Horn Antenna | SCHWARZBECK | BBHA9120 | D286 | 02/27/2017 | 02/27/2018 |
| Board-Band Horn Antenna | Schwarzbeck | BBHA 9170 | 9170-497 | 02/27/2017 | 02/27/2018 |
| 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 | 02/21/2017 | 02/20/2018 |
| Test S/W | FARAD | LZ-RF / CCS-SZ-3A2 | | | |

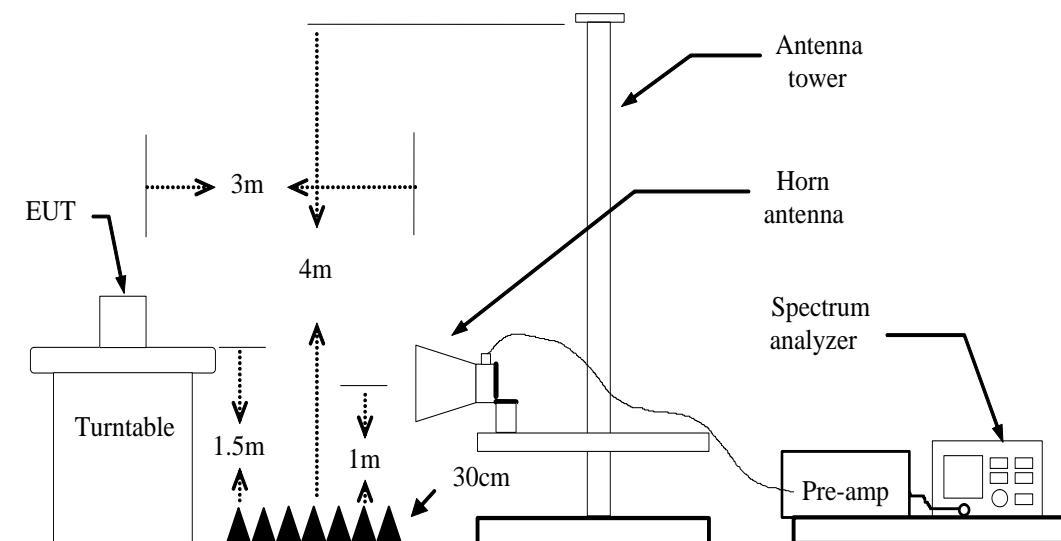
NOTE:

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.

6.6.4. TEST PROCEDURES (please refer to measurement standard)

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=1MHz / VBW=3MHz / Sweep=AUTO
 - (b) AVERAGE: RBW=1MHz / VBW=10Hz / Sweep=AUTO / Detector=Peak
5. Repeat the procedures until all the PEAK and AVERAGE versus POLARIZATION are measured.

6.6.5. TEST SETUP

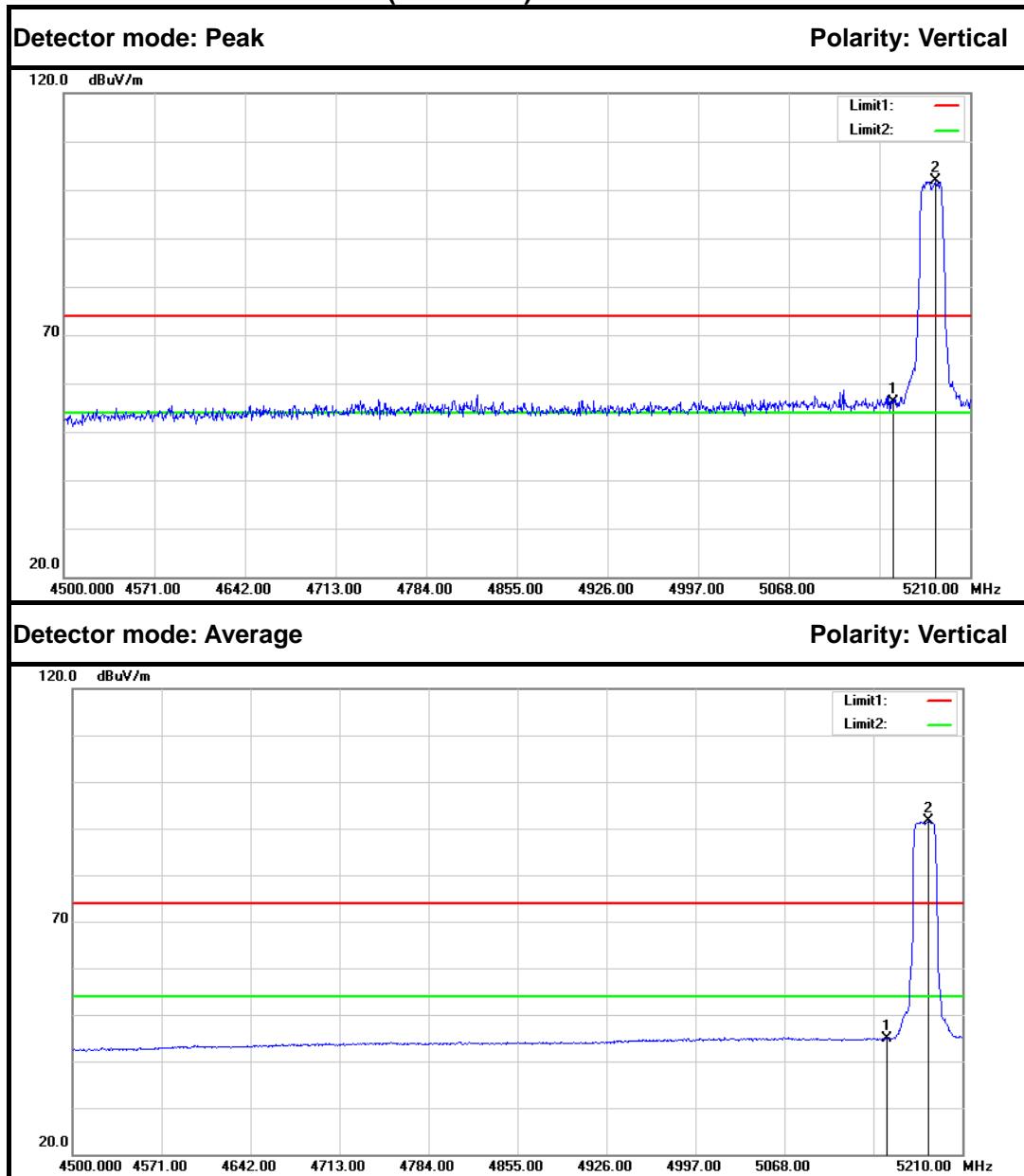




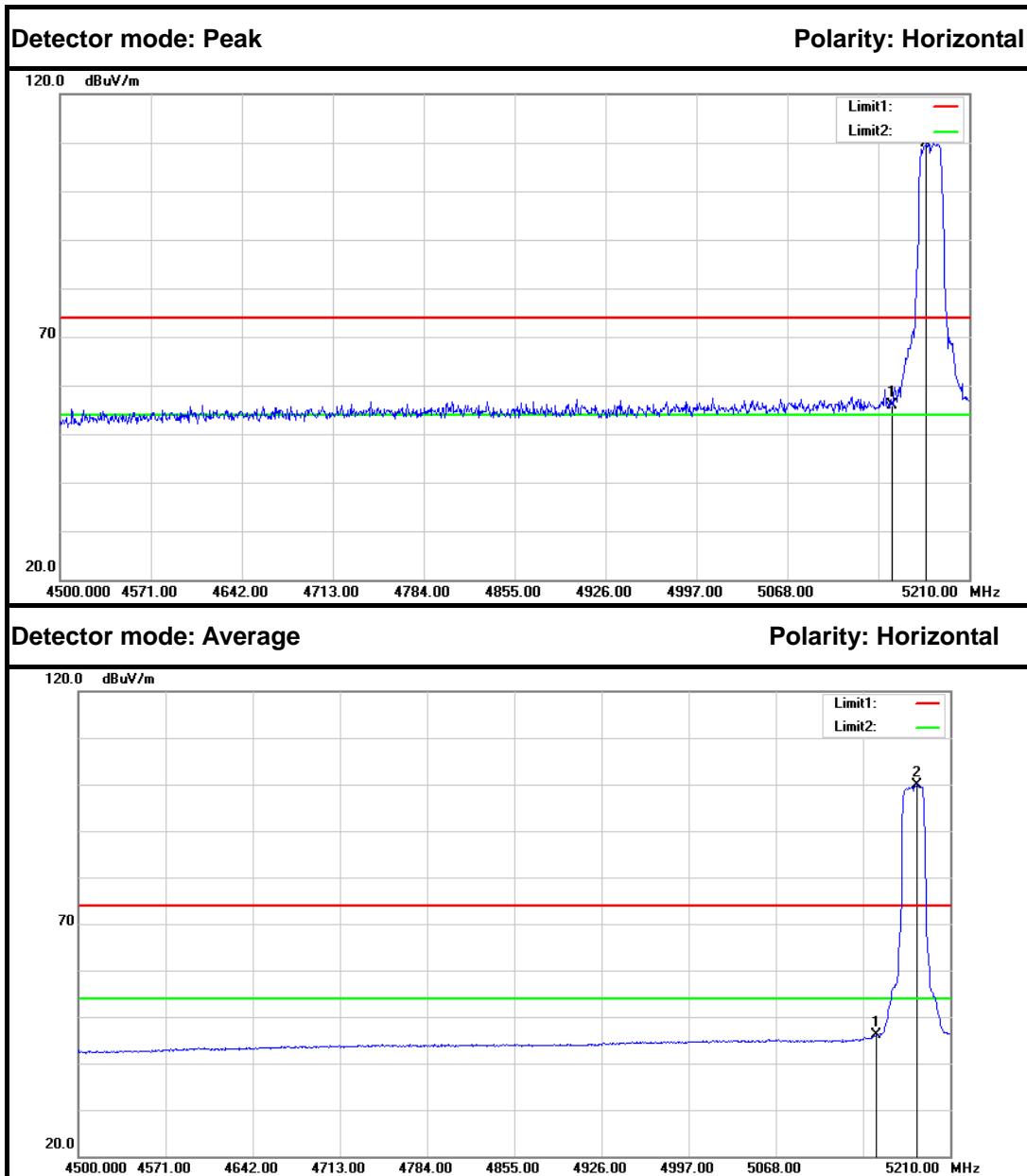
6.6.6. TEST RESULTS

Test Plot

IEEE 802.11a mode / 5180MHz (Antenna 0)



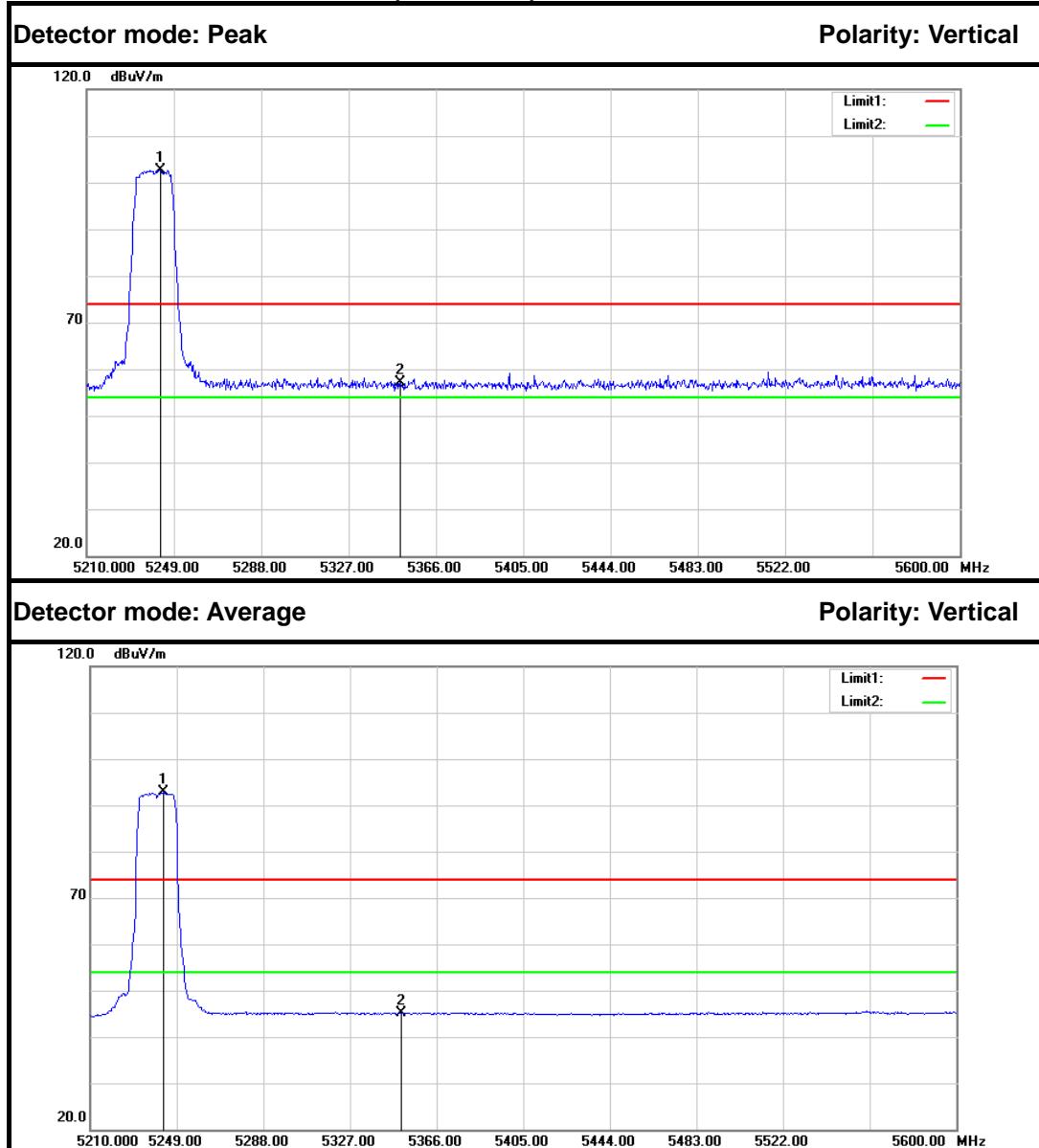
| No. | Frequency (MHz) | Reading (dB) | Factor (dB/m) | Result (dB/m) | Limit (dB/m) | Margin (dB) | Remark | Antenna Polar |
|-----|-----------------|--------------|---------------|---------------|--------------|-------------|---------|---------------|
| 1 | 5150.000 | 50.95 | 5.25 | 56.20 | 74.00 | -17.80 | Peak | Vertical |
| 2 | 5183.020 | 96.48 | 5.31 | 101.79 | --- | --- | Peak | Vertical |
| 1 | 5150.000 | 39.52 | 5.25 | 44.77 | 54.00 | -9.23 | Average | Vertical |
| 2 | 5183.020 | 86.34 | 5.31 | 91.65 | --- | --- | Average | Vertical |



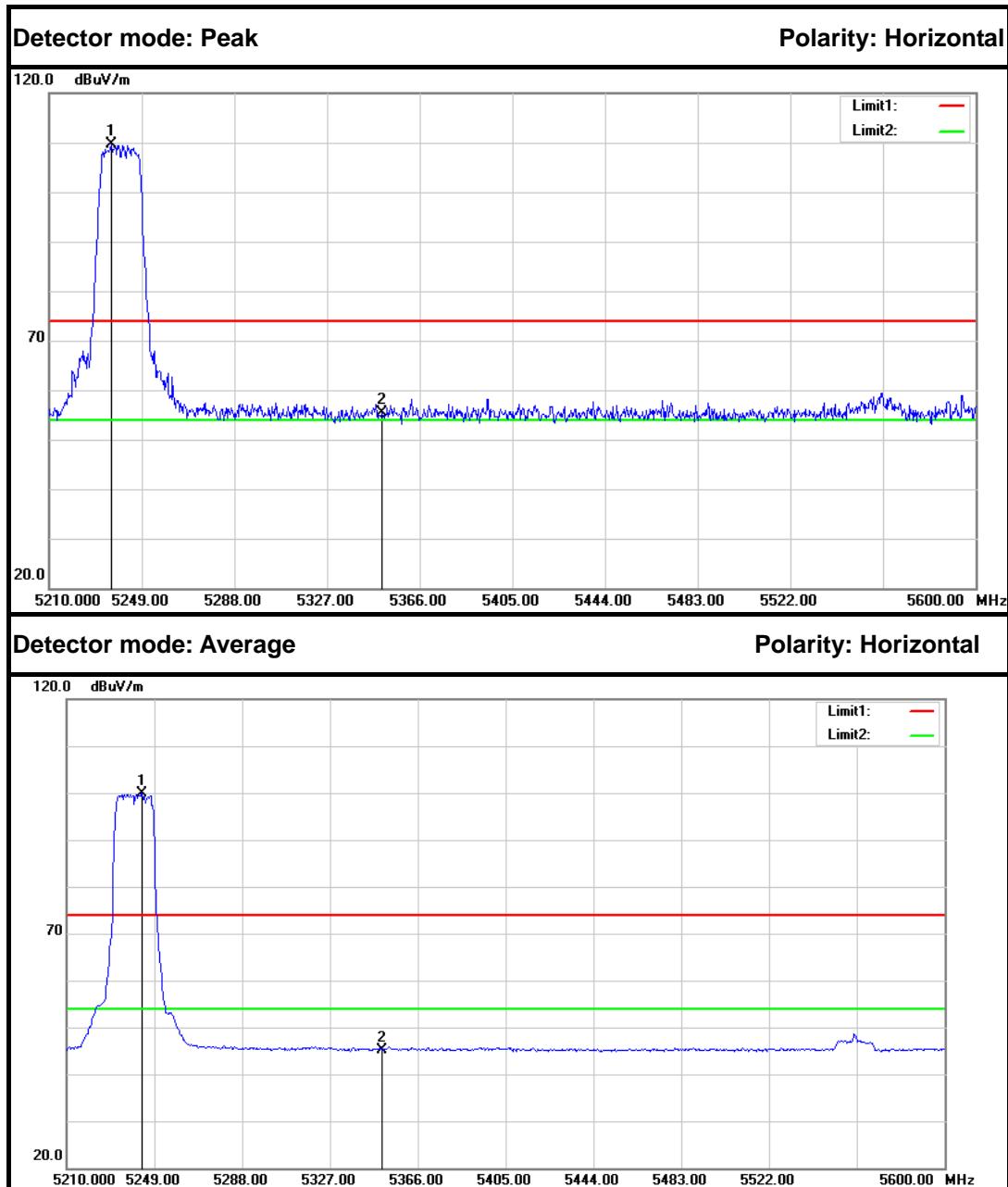
| No. | Frequency (MHz) | Reading (dB) | Factor (dB/m) | Result (dB/m) | Limit (dB/m) | Margin (dB) | Remark | Antenna Polar |
|-----|-----------------|--------------|---------------|---------------|--------------|-------------|---------|---------------|
| 1 | 5150.000 | 50.71 | 5.25 | 55.96 | 74.00 | -18.04 | Peak | Horizontal |
| 2 | 5176.630 | 104.55 | 5.29 | 109.84 | --- | --- | Peak | Horizontal |
| 1 | 5150.000 | 40.91 | 5.25 | 46.16 | 54.00 | -7.84 | Average | Horizontal |
| 2 | 5183.020 | 94.61 | 5.31 | 99.92 | --- | --- | Average | Horizontal |



IEEE 802.11a mode / 5240MHz (Antenna 0)



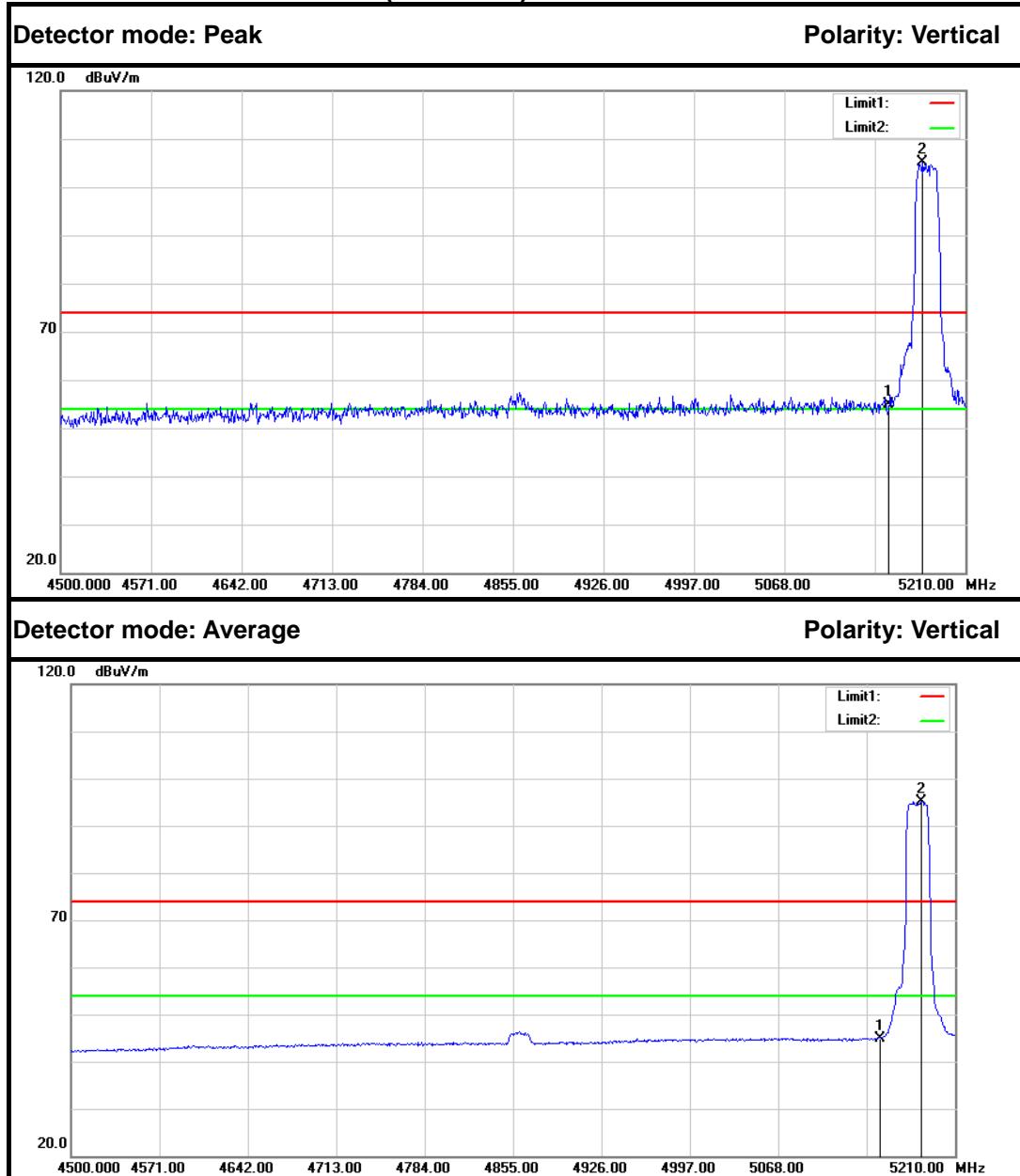
| No. | Frequency (MHz) | Reading (dB) | Factor (dB/m) | Result (dB/m) | Limit (dB/m) | Margin (dB) | Remark | Antenna Polar |
|-----|-----------------|--------------|---------------|---------------|--------------|-------------|---------|---------------|
| 1 | 5243.150 | 97.33 | 5.41 | 102.74 | --- | --- | Peak | Vertical |
| 2 | 5350.000 | 51.49 | 5.60 | 57.09 | 74.00 | -16.91 | Peak | Vertical |
| 1 | 5243.150 | 87.40 | 5.41 | 92.81 | --- | --- | Average | Vertical |
| 2 | 5350.000 | 39.48 | 5.60 | 45.08 | 54.00 | -8.92 | Average | Vertical |



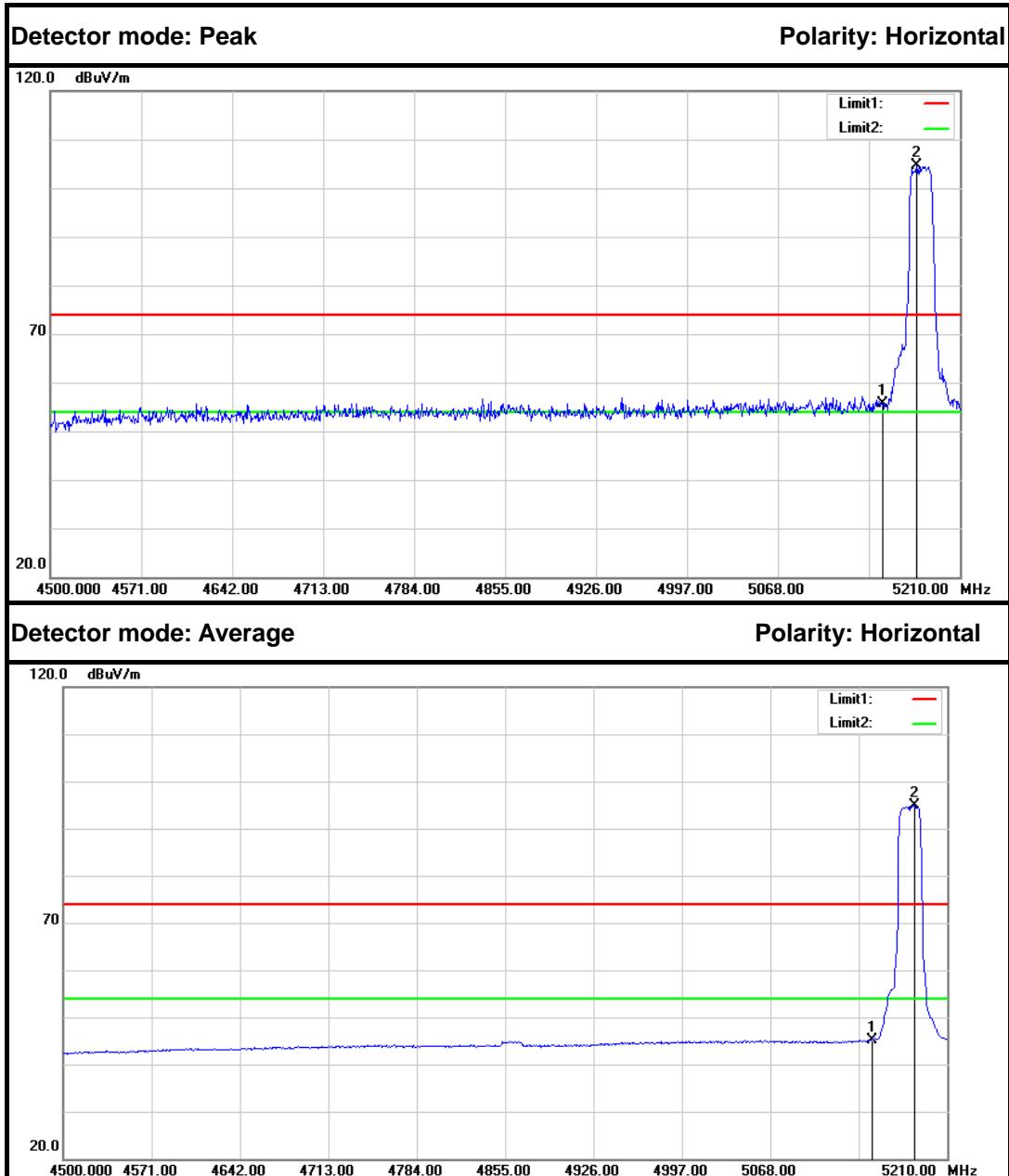
| No. | Frequency (MHz) | Reading (dB) | Factor (dB/m) | Result (dB/m) | Limit (dB/m) | Margin (dB) | Remark | Antenna Polar |
|-----|-----------------|--------------|---------------|---------------|--------------|-------------|---------|---------------|
| 1 | 5236.130 | 104.21 | 5.40 | 109.61 | --- | --- | Peak | Horizontal |
| 2 | 5350.000 | 49.83 | 5.60 | 55.43 | 74.00 | -18.57 | Peak | Horizontal |
| 1 | 5243.540 | 94.51 | 5.41 | 99.92 | --- | --- | Average | Horizontal |
| 2 | 5350.000 | 39.49 | 5.60 | 45.09 | 54.00 | -8.91 | Average | Horizontal |



IEEE 802.11a mode / 5180MHz (Antenna 1)



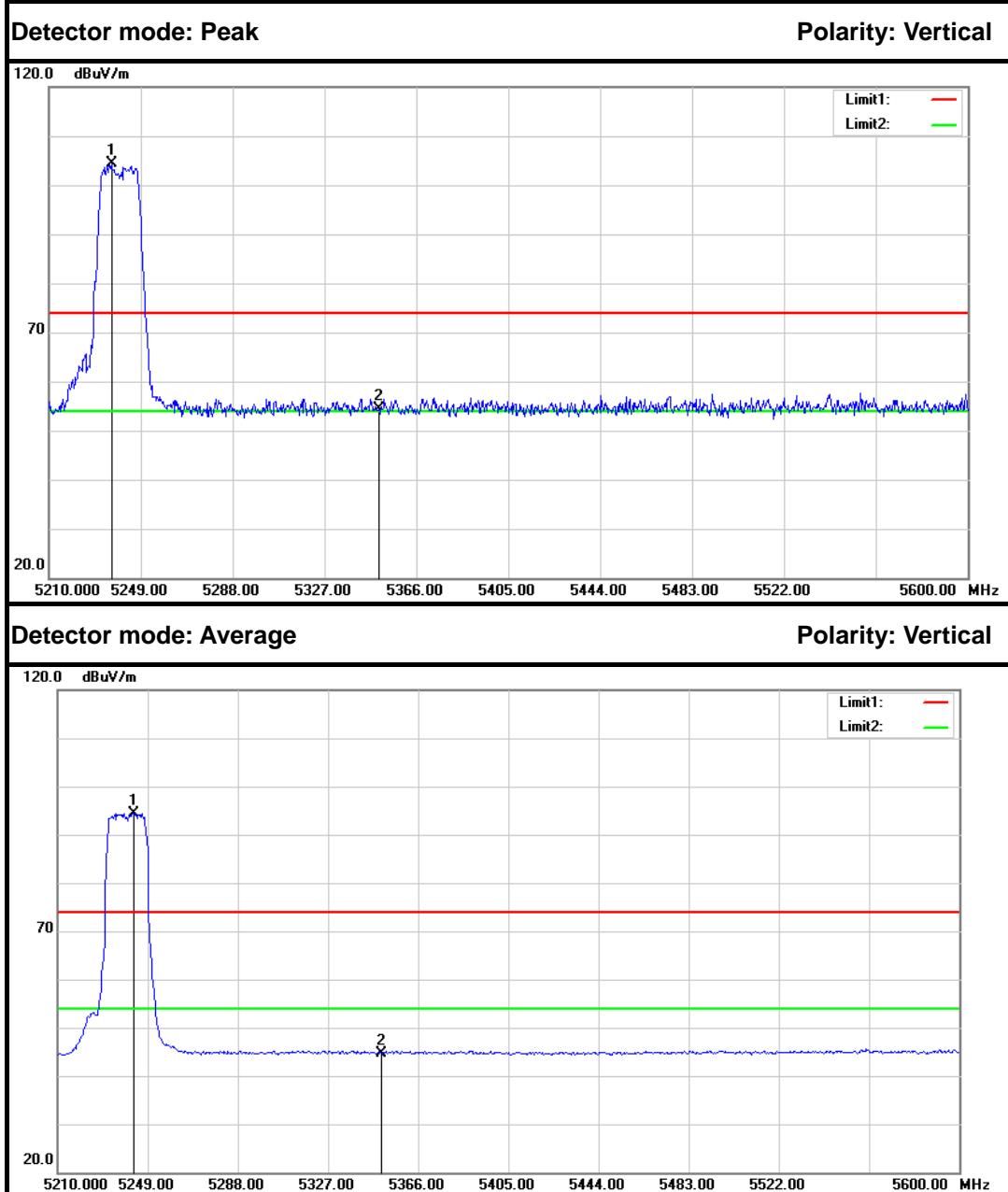
| No. | Frequency (MHz) | Reading (dB) | Factor (dB/m) | Result (dB/m) | Limit (dB/m) | Margin (dB) | Remark | Antenna Polar |
|-----|-----------------|--------------|---------------|---------------|--------------|-------------|---------|---------------|
| 1 | 5150.000 | 49.72 | 5.25 | 54.97 | 74.00 | -19.03 | Peak | Vertical |
| 2 | 5176.630 | 99.93 | 5.29 | 105.22 | --- | --- | Peak | Vertical |
| 1 | 5150.000 | 39.74 | 5.25 | 44.99 | 54.00 | -9.01 | Average | Vertical |
| 2 | 5183.020 | 89.83 | 5.31 | 95.14 | --- | --- | Average | Vertical |



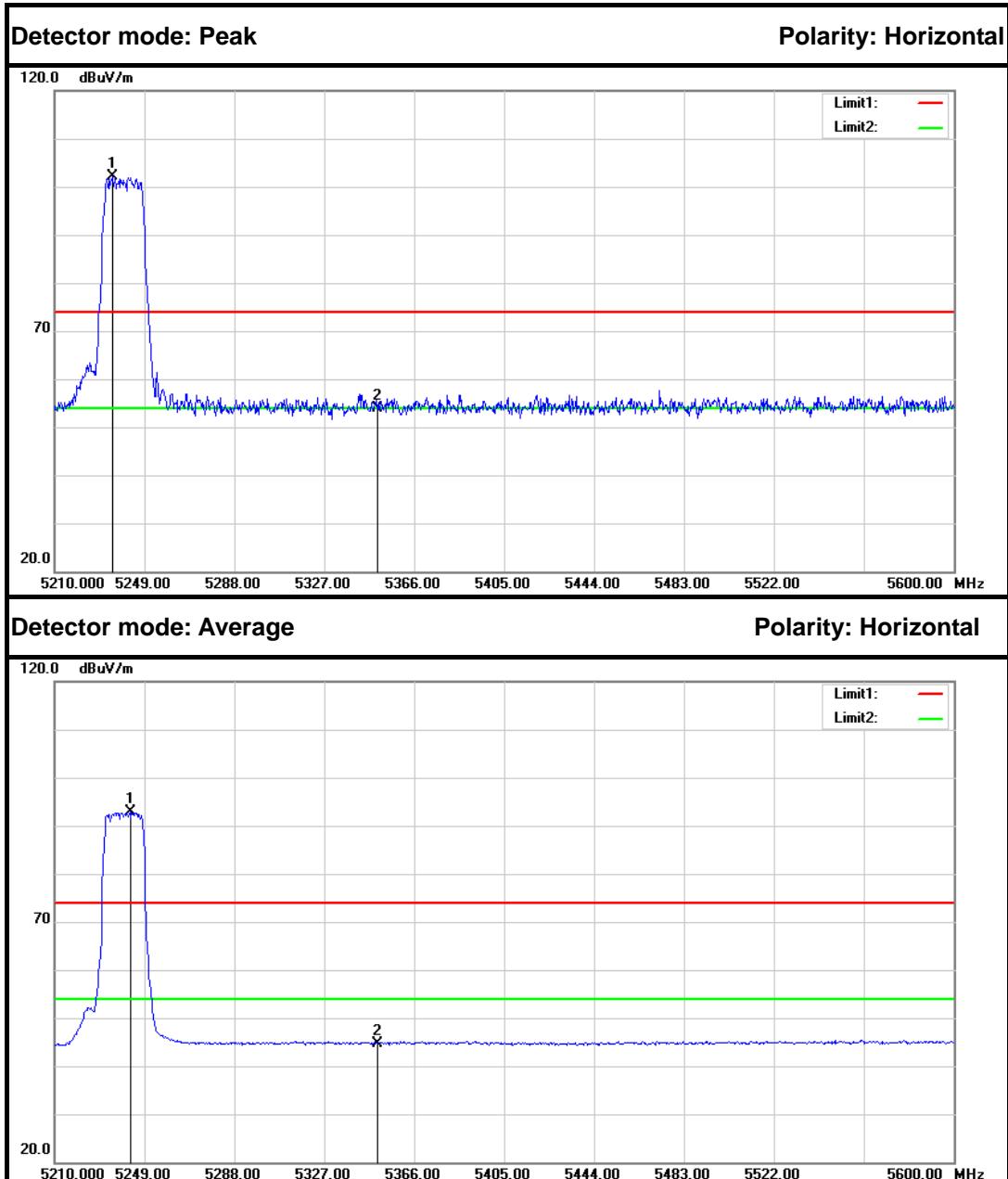
| No. | Frequency (MHz) | Reading (dB) | Factor (dB/m) | Result (dB/m) | Limit (dB/m) | Margin (dB) | Remark | Antenna Polar |
|-----|-----------------|--------------|---------------|---------------|--------------|-------------|---------|---------------|
| 1 | 5150.000 | 50.39 | 5.25 | 55.64 | 74.00 | -18.36 | Peak | Horizontal |
| 2 | 5176.630 | 99.33 | 5.29 | 104.62 | --- | --- | Peak | Horizontal |
| 1 | 5150.000 | 39.92 | 5.25 | 45.17 | 54.00 | -8.83 | Average | Horizontal |
| 2 | 5183.730 | 89.49 | 5.31 | 94.80 | --- | --- | Average | Horizontal |



IEEE 802.11a mode / 5240MHz (Antenna 1)



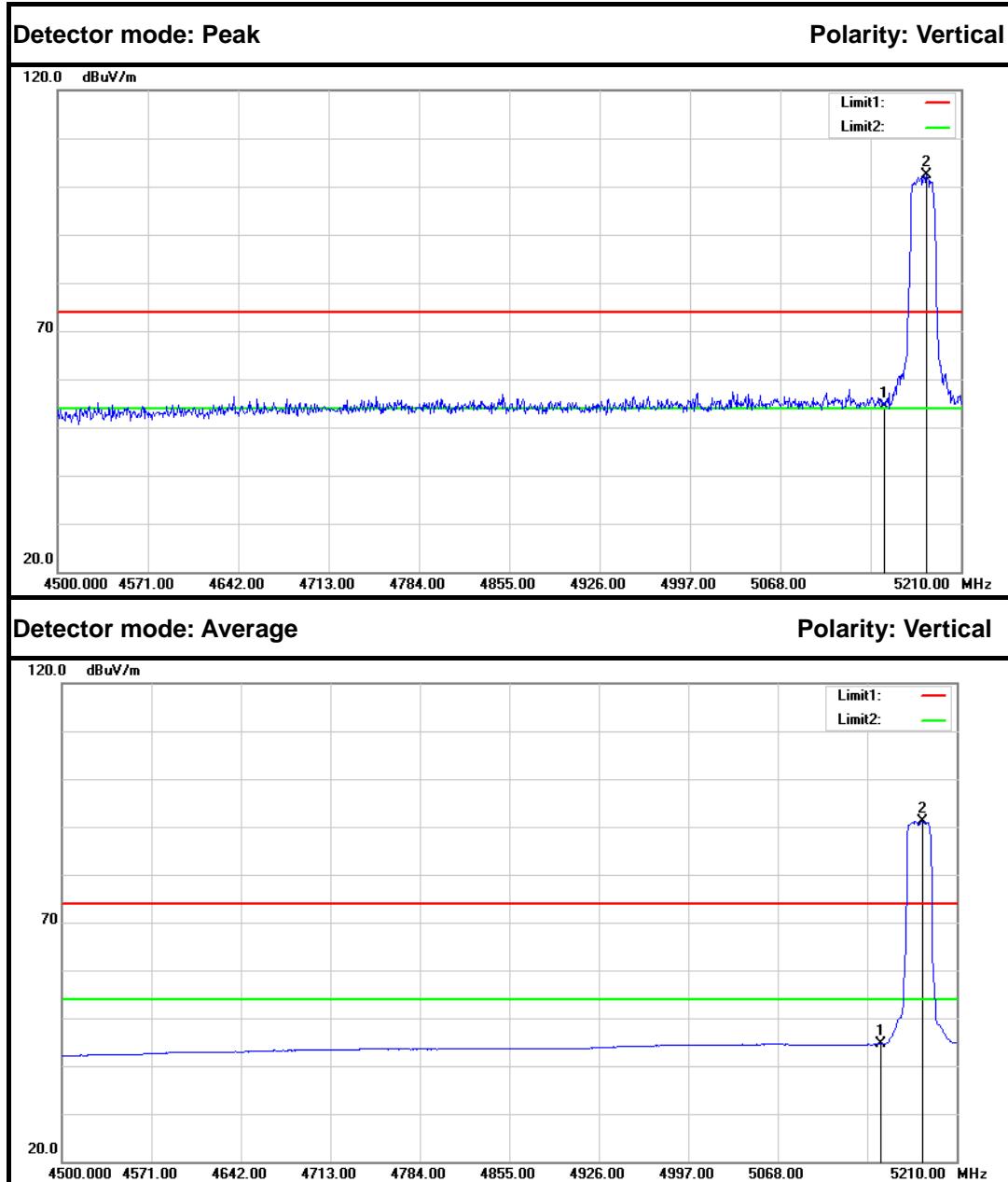
| No. | Frequency (MHz) | Reading (dB) | Factor (dB/m) | Result (dB/m) | Limit (dB/m) | Margin (dB) | Remark | Antenna Polar |
|-----|-----------------|--------------|---------------|---------------|--------------|-------------|---------|---------------|
| 1 | 5236.520 | 98.97 | 5.40 | 104.37 | --- | --- | Peak | Vertical |
| 2 | 5350.000 | 48.83 | 5.60 | 54.43 | 74.00 | -19.57 | Peak | Vertical |
| 1 | 5242.760 | 89.05 | 5.41 | 94.46 | --- | --- | Average | Vertical |
| 2 | 5350.000 | 39.08 | 5.60 | 44.68 | 54.00 | -9.32 | Average | Vertical |



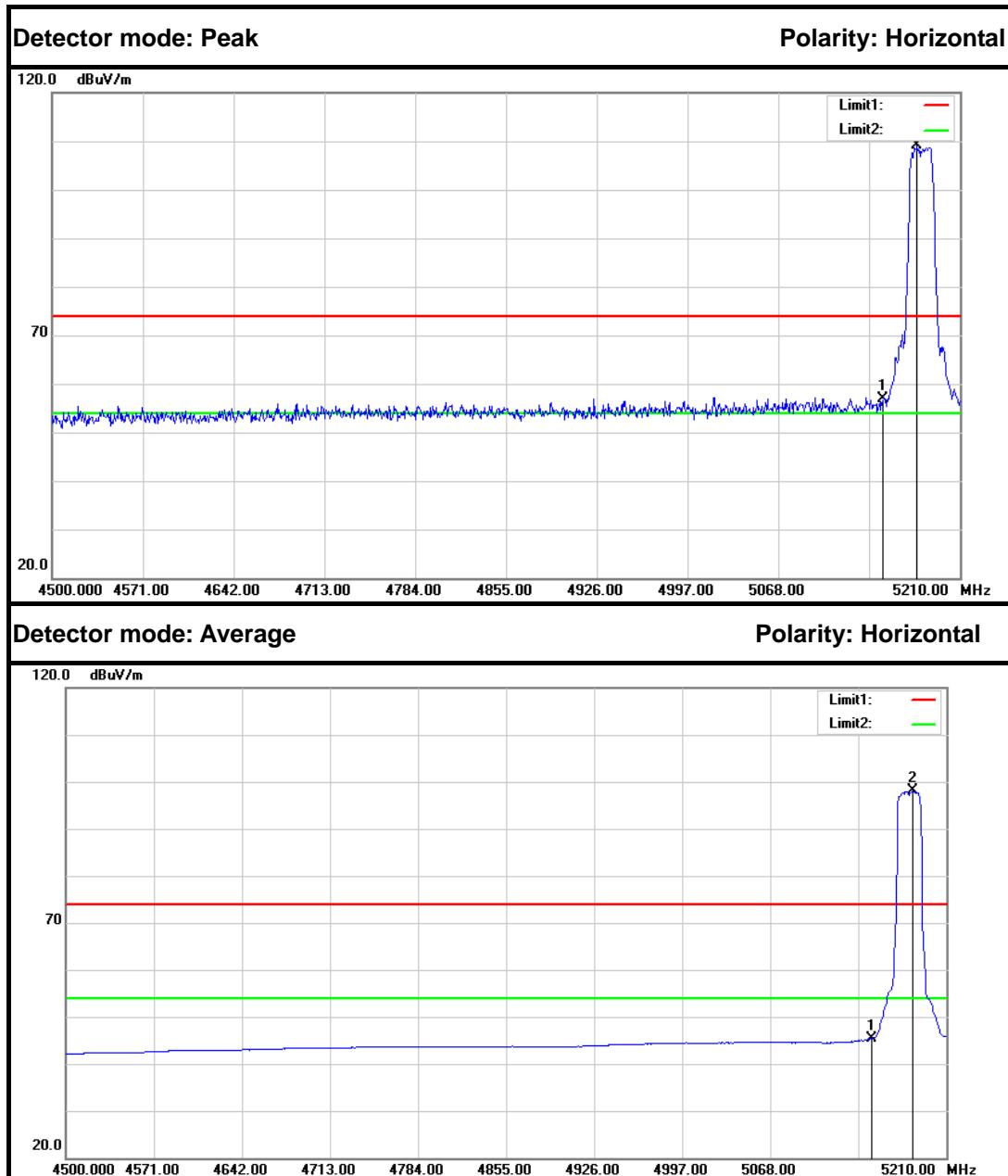
| No. | Frequency (MHz) | Reading (dB) | Factor (dB/m) | Result (dB/m) | Limit (dB/m) | Margin (dB) | Remark | Antenna Polar |
|-----|-----------------|--------------|---------------|---------------|--------------|-------------|---------|---------------|
| 1 | 5235.350 | 96.83 | 5.40 | 102.23 | --- | --- | Peak | Horizontal |
| 2 | 5350.000 | 48.28 | 5.60 | 53.88 | 74.00 | -20.12 | Peak | Horizontal |
| 1 | 5242.760 | 87.42 | 5.41 | 92.83 | --- | --- | Average | Horizontal |
| 2 | 5350.000 | 39.10 | 5.60 | 44.70 | 54.00 | -9.30 | Average | Horizontal |



Combine with Antenna 0 and Antenna 1
IEEE 802.11n HT 20 MHz mode / 5180 MHz



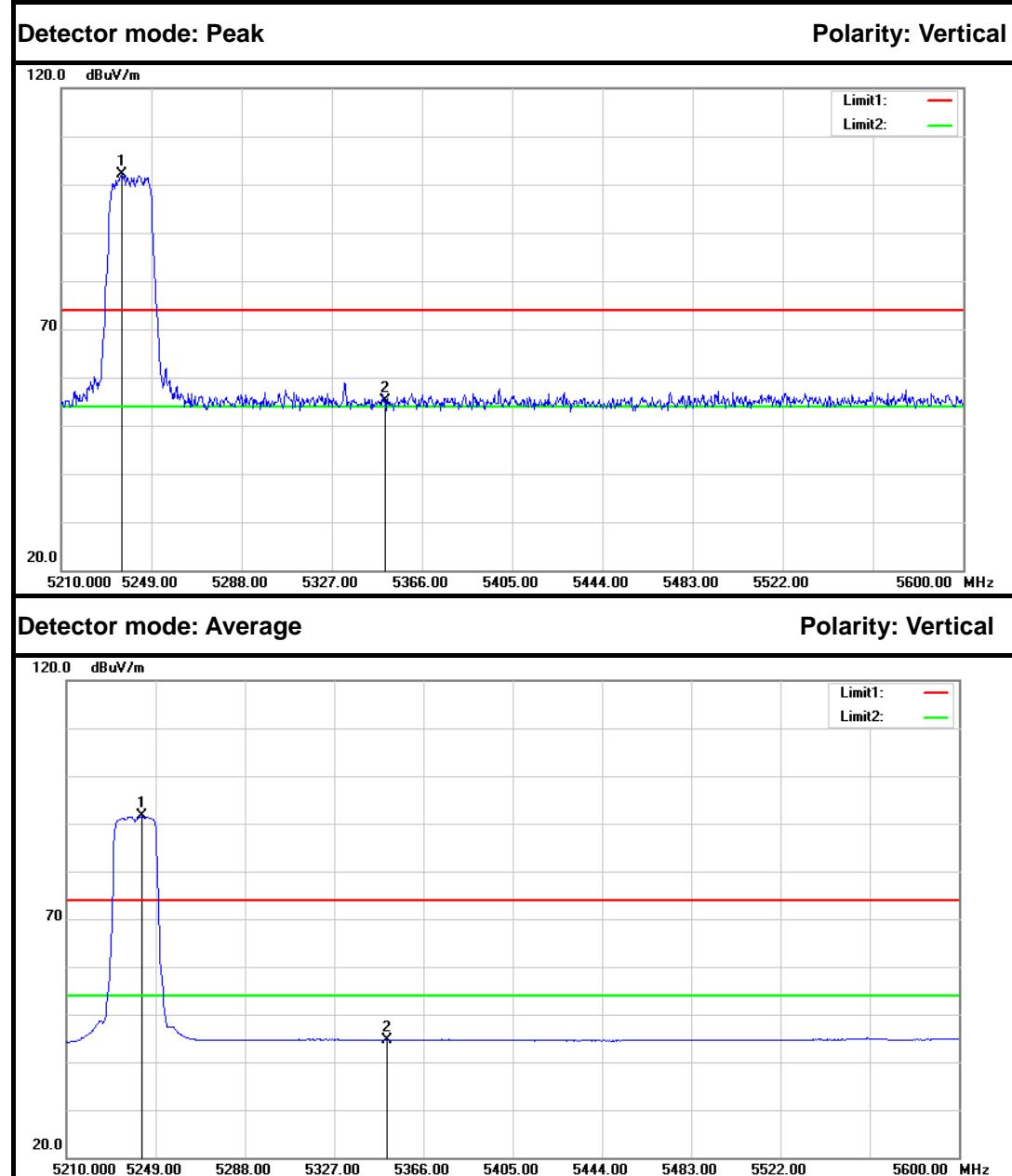
| No. | Frequency (MHz) | Reading (dB) | Factor (dB/m) | Result (dB/m) | Limit (dB/m) | Margin (dB) | Remark | Antenna Polar |
|-----|-----------------|--------------|---------------|---------------|--------------|-------------|---------|---------------|
| 1 | 5150.000 | 49.10 | 5.25 | 54.35 | 74.00 | -19.65 | Peak | Vertical |
| 2 | 5183.020 | 97.09 | 5.31 | 102.40 | — | — | Peak | Vertical |
| 1 | 5150.000 | 39.34 | 5.25 | 44.59 | 54.00 | -9.41 | Average | Vertical |
| 2 | 5183.020 | 85.83 | 5.31 | 91.14 | — | — | Average | Vertical |



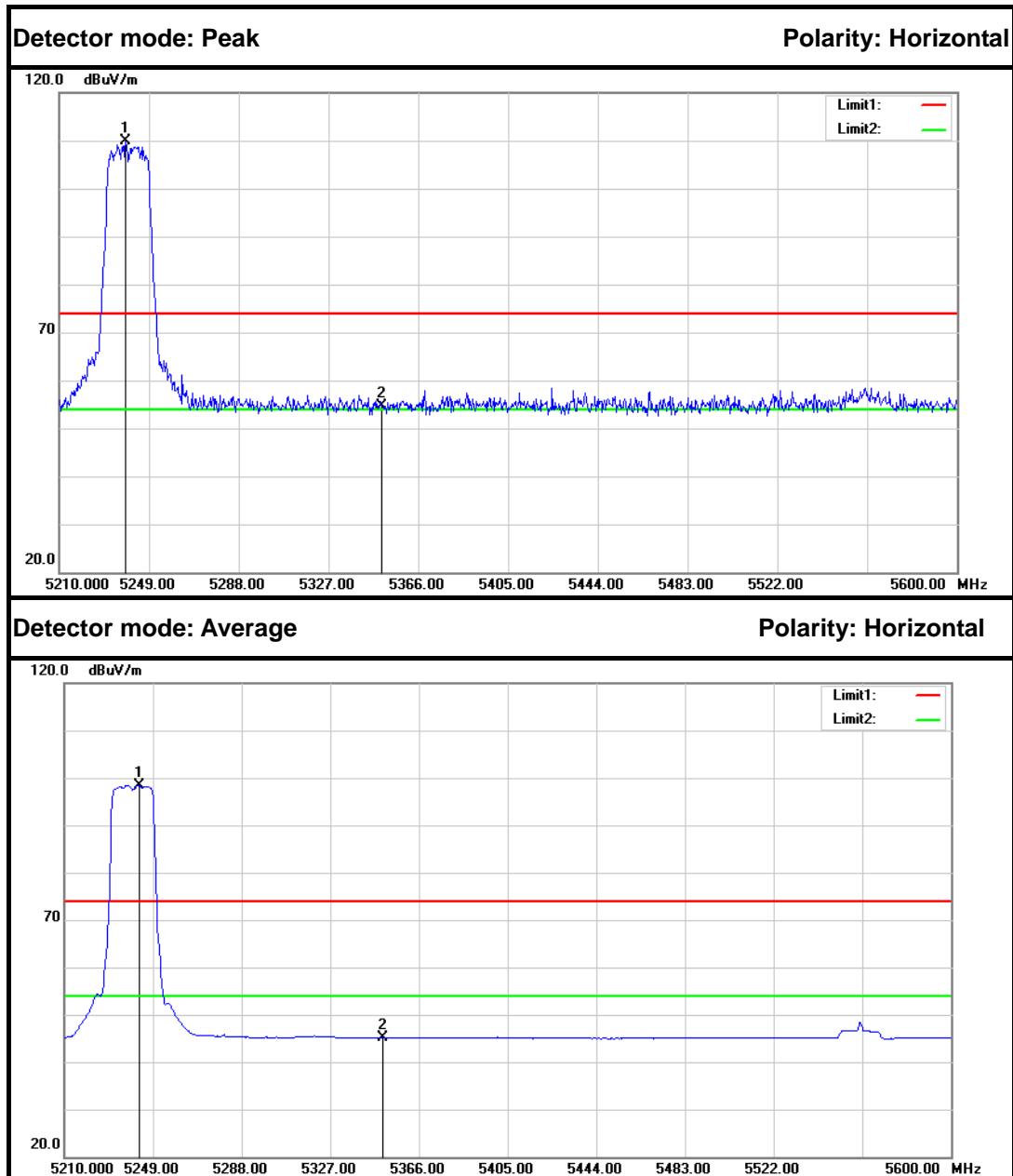
| No. | Frequency (MHz) | Reading (dB) | Factor (dB/m) | Result (dB/m) | Limit (dB/m) | Margin (dB) | Remark | Antenna Polar |
|-----|-----------------|--------------|---------------|---------------|--------------|-------------|---------|---------------|
| 1 | 5150.000 | 51.52 | 5.25 | 56.77 | 74.00 | -17.23 | Peak | Horizontal |
| 2 | 5176.630 | 103.93 | 5.29 | 109.22 | --- | --- | Peak | Horizontal |
| 1 | 5150.000 | 40.15 | 5.25 | 45.40 | 54.00 | -8.60 | Average | Horizontal |
| 2 | 5183.020 | 92.75 | 5.31 | 98.06 | --- | --- | Average | Horizontal |



IEEE 802.11n HT 20 MHz mode / 5240 MHz



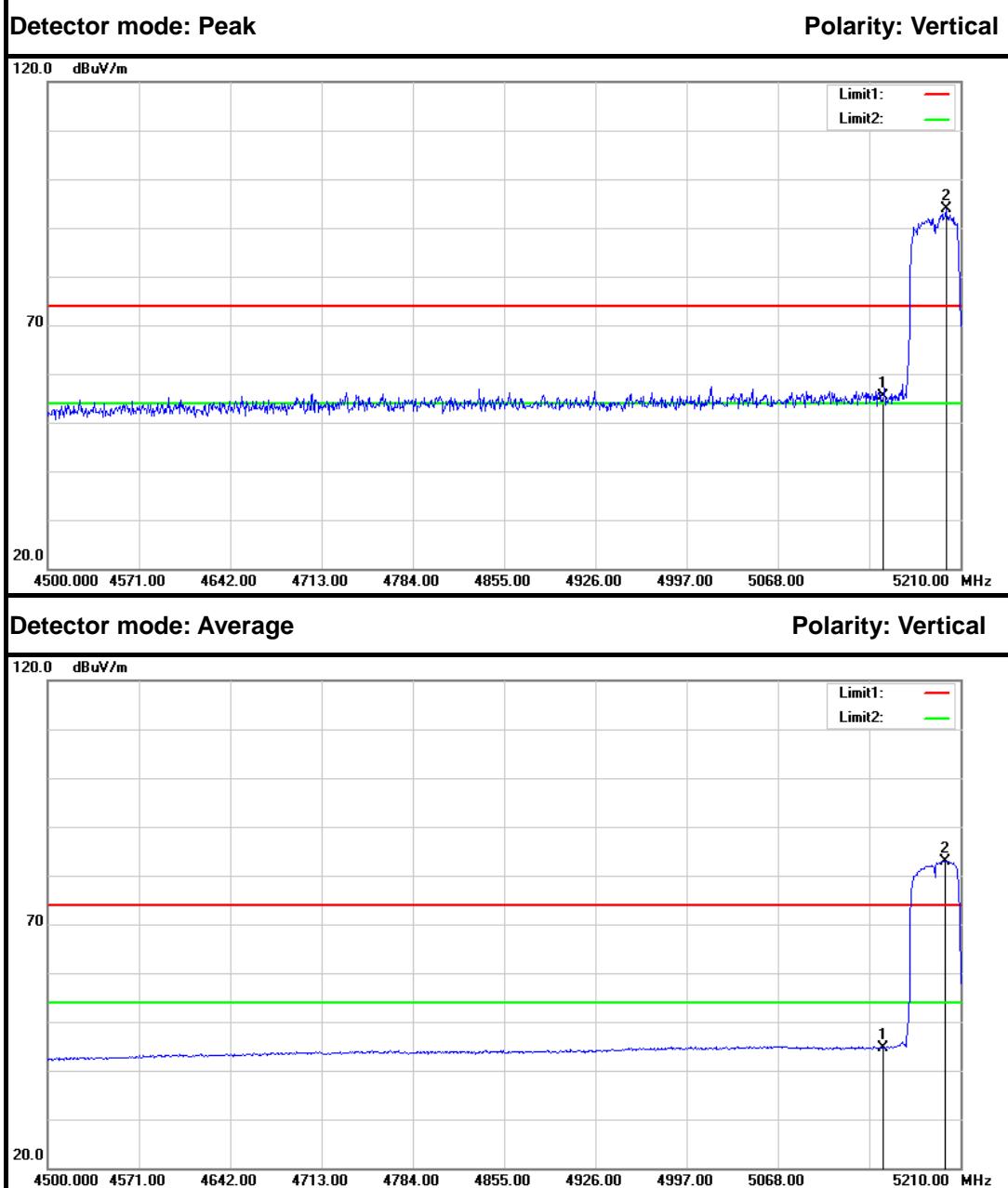
| No. | Frequency (MHz) | Reading (dB) | Factor (dB/m) | Result (dB/m) | Limit (dB/m) | Margin (dB) | Remark | Antenna Polar |
|-----|-----------------|--------------|---------------|---------------|--------------|-------------|---------|---------------|
| 1 | 5236.130 | 96.66 | 5.40 | 102.06 | --- | --- | Peak | Vertical |
| 2 | 5350.000 | 49.46 | 5.60 | 55.06 | 74.00 | -18.94 | Peak | Vertical |
| 1 | 5243.150 | 86.14 | 5.41 | 91.55 | --- | --- | Average | Vertical |
| 2 | 5350.000 | 39.10 | 5.60 | 44.70 | 54.00 | -9.30 | Average | Vertical |



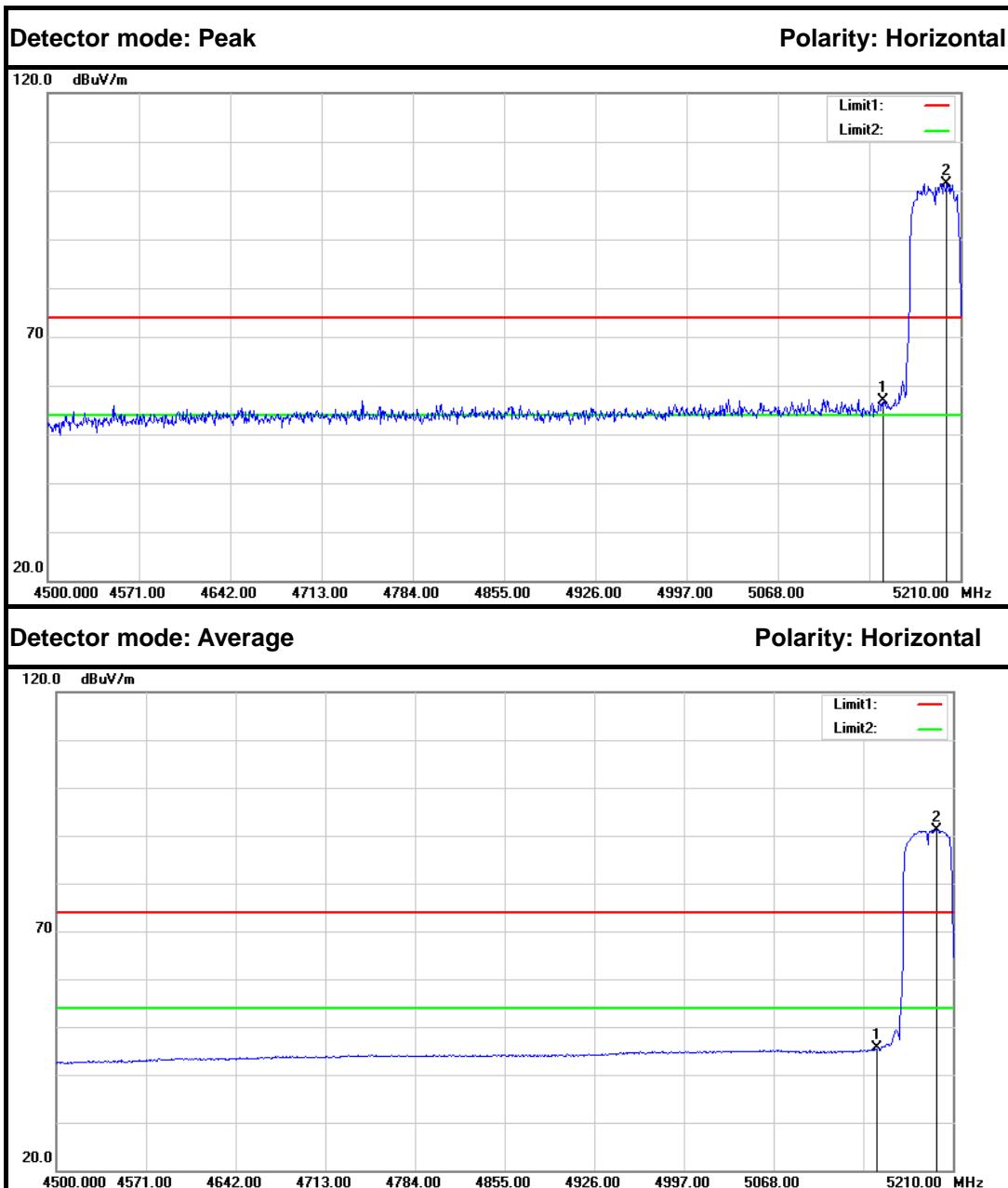
| No. | Frequency (MHz) | Reading (dB) | Factor (dB/m) | Result (dB/m) | Limit (dB/m) | Margin (dB) | Remark | Antenna Polar |
|-----|-----------------|--------------|---------------|---------------|--------------|-------------|---------|---------------|
| 1 | 5238.860 | 104.43 | 5.41 | 109.84 | --- | --- | Peak | Horizontal |
| 2 | 5350.000 | 49.09 | 5.60 | 54.69 | 74.00 | -19.31 | Peak | Horizontal |
| 1 | 5243.150 | 92.99 | 5.41 | 98.40 | --- | --- | Average | Horizontal |
| 2 | 5350.000 | 39.57 | 5.60 | 45.17 | 54.00 | -8.83 | Average | Horizontal |



IEEE 802.11n HT 40 MHz mode / 5190 MHz



| No. | Frequency (MHz) | Reading (dB) | Factor (dB/m) | Result (dB/m) | Limit (dB/m) | Margin (dB) | Remark | Antenna Polar |
|-----|-----------------|--------------|---------------|---------------|--------------|-------------|---------|---------------|
| 1 | 5150.000 | 50.02 | 5.25 | 55.27 | 74.00 | -18.73 | Peak | Vertical |
| 2 | 5198.640 | 88.57 | 5.33 | 93.90 | --- | --- | Peak | Vertical |
| 1 | 5150.000 | 39.35 | 5.25 | 44.60 | 54.00 | -9.40 | Average | Vertical |
| 2 | 5197.930 | 77.64 | 5.33 | 82.97 | --- | --- | Average | Vertical |



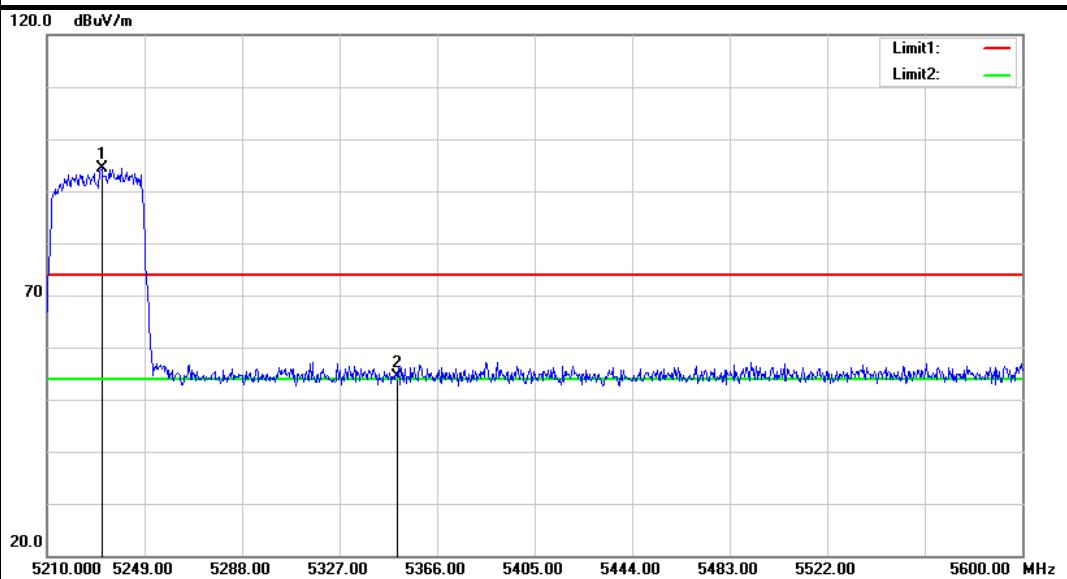
| No. | Frequency (MHz) | Reading (dB) | Factor (dB/m) | Result (dB/m) | Limit (dB/m) | Margin (dB) | Remark | Antenna Polar |
|-----|-----------------|--------------|---------------|---------------|--------------|-------------|---------|---------------|
| 1 | 5150.000 | 51.53 | 5.25 | 56.78 | 74.00 | -17.22 | Peak | Horizontal |
| 2 | 5199.350 | 96.12 | 5.33 | 101.45 | --- | --- | Peak | Horizontal |
| 1 | 5150.000 | 40.27 | 5.25 | 45.52 | 54.00 | -8.48 | Average | Horizontal |
| 2 | 5197.220 | 85.82 | 5.33 | 91.15 | --- | --- | Average | Horizontal |



IEEE 802.11n HT 40 MHz mode / 5230 MHz

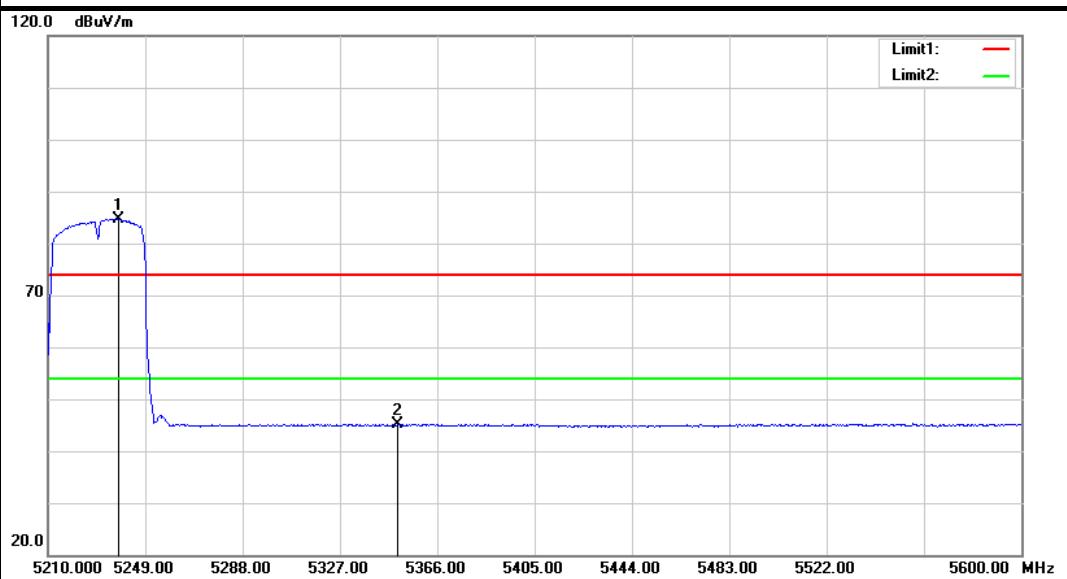
Detector mode: Peak

Polarity: Vertical

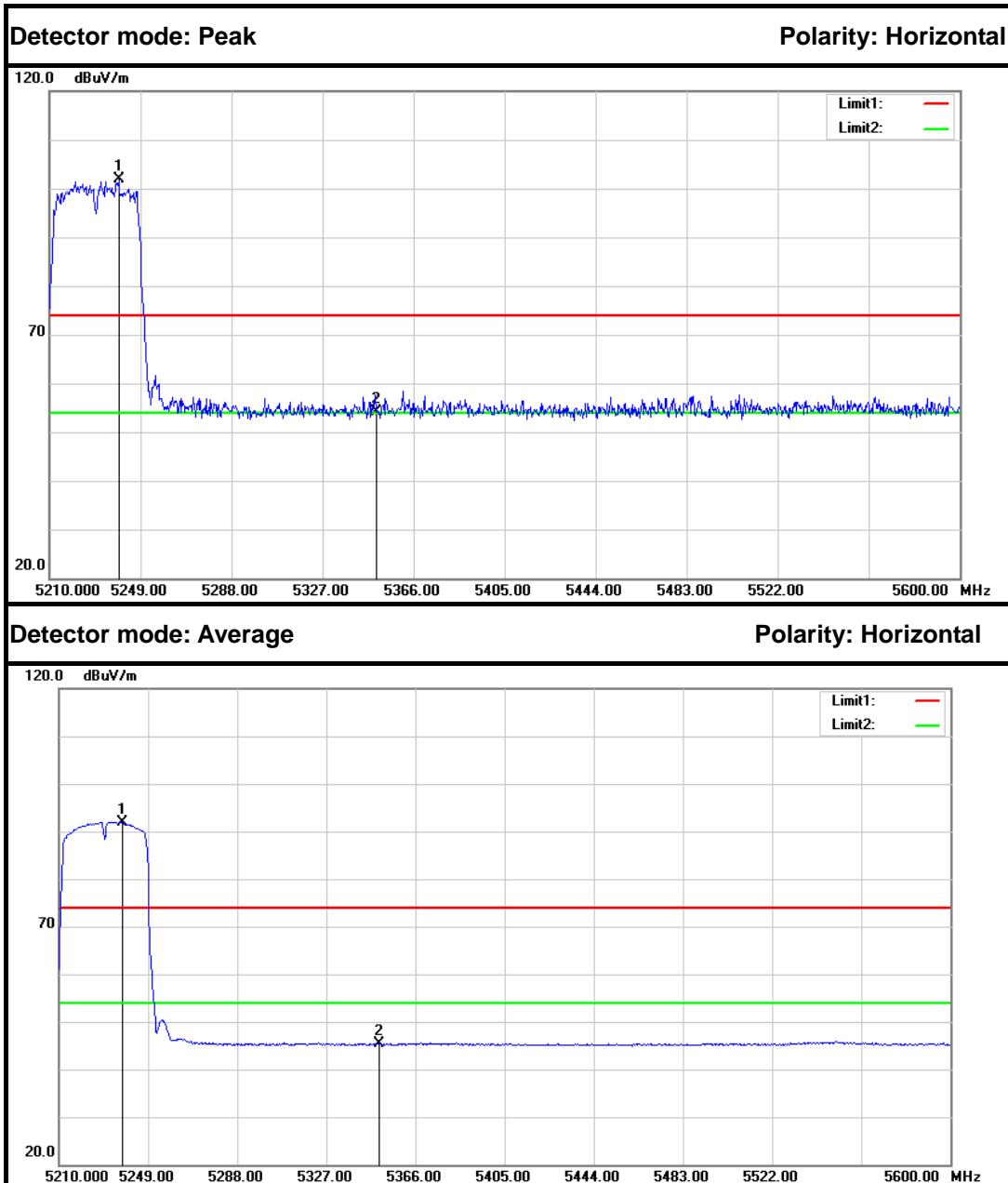


Detector mode: Average

Polarity: Vertical



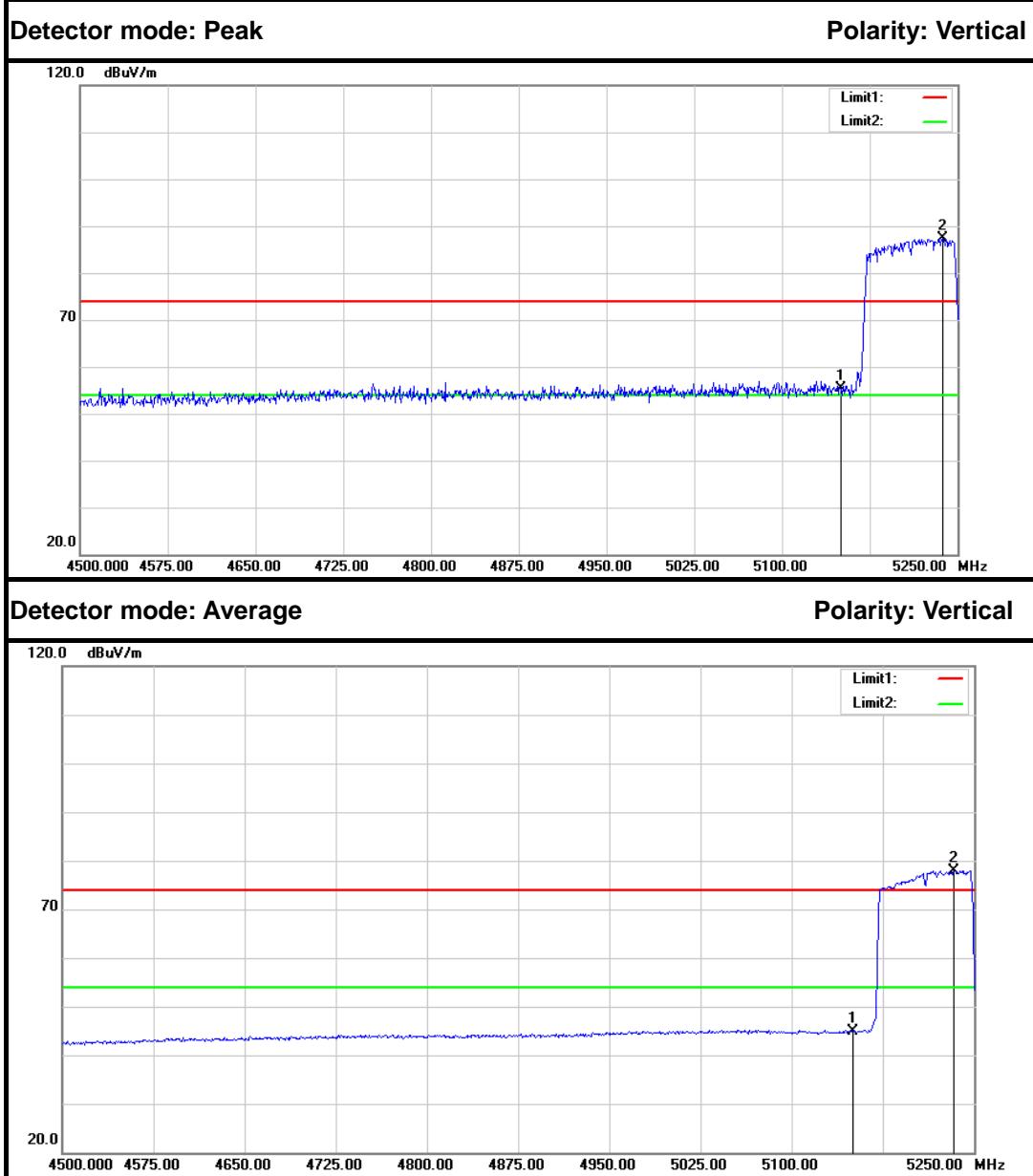
| No. | Frequency (MHz) | Reading (dB) | Factor (dB/m) | Result (dB/m) | Limit (dB/m) | Margin (dB) | Remark | Antenna Polar |
|-----|-----------------|--------------|---------------|---------------|--------------|-------------|---------|---------------|
| 1 | 5231.840 | 88.96 | 5.39 | 94.35 | --- | --- | Peak | Vertical |
| 2 | 5350.000 | 48.71 | 5.60 | 54.31 | 74.00 | -19.69 | Peak | Vertical |
| 1 | 5238.080 | 79.30 | 5.40 | 84.70 | --- | --- | Average | Vertical |
| 2 | 5350.000 | 39.44 | 5.60 | 45.04 | 54.00 | -8.96 | Average | Vertical |



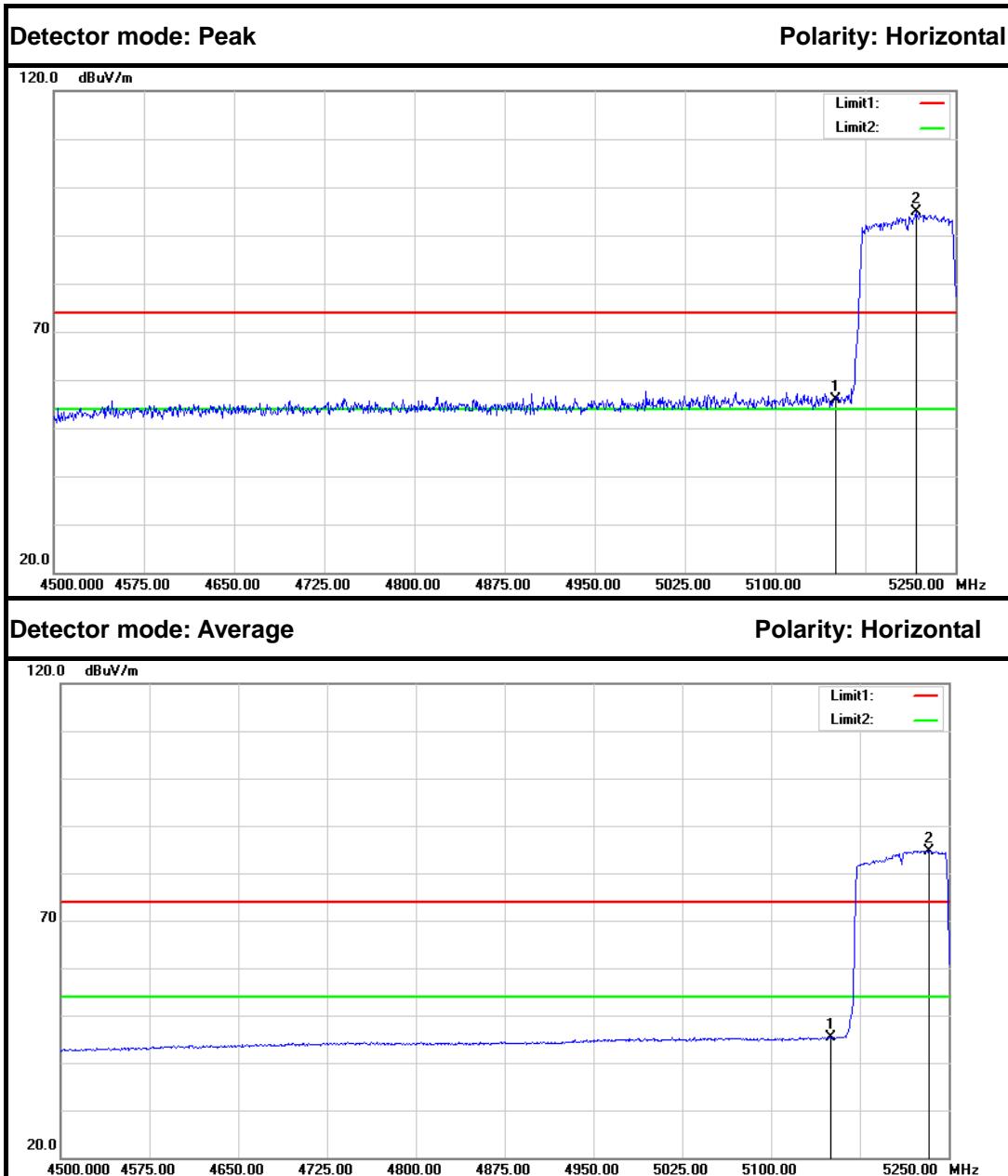
| No. | Frequency (MHz) | Reading (dB) | Factor (dB/m) | Result (dB/m) | Limit (dB/m) | Margin (dB) | Remark | Antenna Polar |
|-----|-----------------|--------------|---------------|---------------|--------------|-------------|---------|---------------|
| 1 | 5239.640 | 96.44 | 5.41 | 101.85 | --- | --- | Peak | Horizontal |
| 2 | 5350.000 | 48.43 | 5.60 | 54.03 | 74.00 | -19.97 | Peak | Horizontal |
| 1 | 5237.690 | 86.50 | 5.40 | 91.90 | --- | --- | Average | Horizontal |
| 2 | 5350.000 | 39.78 | 5.60 | 45.38 | 54.00 | -8.62 | Average | Horizontal |



IEEE 802.11ac 80 mode / 5210 MHz



| No. | Frequency (MHz) | Reading (dB) | Factor (dB/m) | Result (dB/m) | Limit (dB/m) | Margin (dB) | Remark | Antenna Polar |
|-----|-----------------|--------------|---------------|---------------|--------------|-------------|---------|---------------|
| 1 | 5150.000 | 50.12 | 5.25 | 55.37 | 74.00 | -18.63 | Peak | Vertical |
| 2 | 5237.250 | 81.99 | 5.40 | 87.39 | --- | --- | Peak | Vertical |
| 1 | 5150.000 | 39.73 | 5.25 | 44.98 | 54.00 | -9.02 | Average | Vertical |
| 2 | 5233.500 | 72.57 | 5.40 | 77.97 | --- | --- | Average | Vertical |



| No. | Frequency (MHz) | Reading (dB) | Factor (dB/m) | Result (dB/m) | Limit (dB/m) | Margin (dB) | Remark | Antenna Polar |
|-----|-----------------|--------------|---------------|---------------|--------------|-------------|---------|---------------|
| 1 | 5150.000 | 50.57 | 5.25 | 55.82 | 74.00 | -18.18 | Peak | Horizontal |
| 2 | 5217.000 | 89.49 | 5.37 | 94.86 | --- | --- | Peak | Horizontal |
| 1 | 5150.000 | 40.04 | 5.25 | 45.29 | 54.00 | -8.71 | Average | Horizontal |
| 2 | 5233.500 | 79.34 | 5.40 | 84.74 | --- | --- | Average | Horizontal |



6.7. PEAK POWER SPECTRAL DENSITY

LIMIT

According to RSS-247 §6.2,

- (1) For the band 5150-5250 MHz, the e.i.r.p. spectral density shall not exceed 10 dBm in any 1.0 MHz band.
- (2) For the band 5250-5350 MHz and 5470-5725 MHz, the power spectral density shall not exceed 11 dBm in any 1.0 MHz band.
- (3) For the band 5725-5850 MHz, the power spectral density shall not exceed 30 dBm in any 500 kHz band.

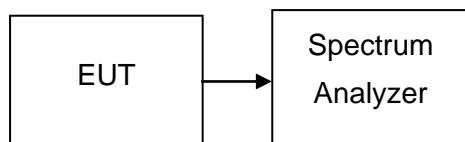
If transmitting antennas of directional gain greater than 6dBi are used, both the peak transmits power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

MEASUREMENT EQUIPMENT USED

| Name of Equipment | Manufacturer | Model | Serial Number | Last Calibration | Due Calibration |
|-------------------|--------------|----------------|---------------|------------------|-----------------|
| Spectrum Analyzer | Agilent | N9010A | MY52221469 | 02/21/2017 | 02/20/2018 |
| Cable | HuberSuhner | SUCOFLEX104PEA | N/A | N/A | N/A |

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

TEST CONFIGURATION



TEST PROCEDURE

1. Place the EUT on the table and set it in transmitting mode. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
2. For devices operating in the bands 5.15-5.25 GHz, Set the spectrum analyzer as RBW = 1MHz, VBW = 3MHz, Span >26dB bandwidth, Sweep=1ms
3. For devices operating in the bands 5.725-5.85 GHz, Set the spectrum analyzer as RBW = 1MHz, VBW = 3MHz, Span >26dB bandwidth, Sweep=1ms
4. Record the max. reading.
5. Repeat the above procedure until the measurements for all frequencies are completed



TEST RESULTS

No non-compliance noted

Test Data

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

| Channel | Frequency (MHz) | PPSD (dBm) | | Antenna Gain (dBi) | | PPSD (dBm) | | Limit (dBm) | Margin | | Result |
|---------|-----------------|------------|-----------|--------------------|------|------------|-----------|-------------|-----------|-----------|--------|
| | | Antenna 0 | Antenna 1 | 1 | 2 | Antenna 0 | Antenna 1 | | Antenna 0 | Antenna 1 | |
| Low | 5180 | 6.661 | 6.528 | 3.00 | 3.00 | 9.661 | 9.528 | 10 | -0.339 | -0.472 | PASS |
| Mid | 5200 | 5.816 | 5.854 | | | 8.816 | 8.854 | | -1.184 | -1.146 | PASS |
| High | 5240 | 5.018 | 5.277 | | | 8.018 | 8.277 | | -1.982 | -1.723 | PASS |

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

| Channel | Frequency (MHz) | PPSD (dBm) | | Antenna Gain (dBi) | | Array Antenna Gain(dBi) | Total (dBm) | Limit (dBm) | Margin | Result |
|---------|-----------------|------------|-----------|--------------------|------|-------------------------|-------------|-------------|--------|--------|
| | | Antenna 0 | Antenna 1 | 0 | 1 | | | | | |
| Low | 5180 | 0.095 | 0.132 | 3.00 | 3.00 | 3.00 | 9.124 | 10.00 | -0.876 | PASS |
| Mid | 5200 | 0.331 | 0.053 | | | | 9.205 | | -0.795 | PASS |
| High | 5240 | 0.053 | 0.359 | | | | 9.219 | | -0.781 | PASS |

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

| Channel | Frequency (MHz) | PPSD (dBm) | | Antenna Gain (dBi) | | Array Antenna Gain(dBi) | Total (dBm) | Limit (dBm) | Margin | Result |
|---------|-----------------|------------|-----------|--------------------|------|-------------------------|-------------|-------------|--------|--------|
| | | Antenna 0 | Antenna 1 | 0 | 1 | | | | | |
| Low | 5190 | 0.270 | -0.122 | 3.00 | 3.00 | 3.00 | 9.089 | 10.00 | -0.911 | PASS |
| High | 5230 | 0.250 | -0.250 | | | | 9.017 | | -0.983 | PASS |

Test mode: IEEE 802.11ac 80 mode / 5210MHz

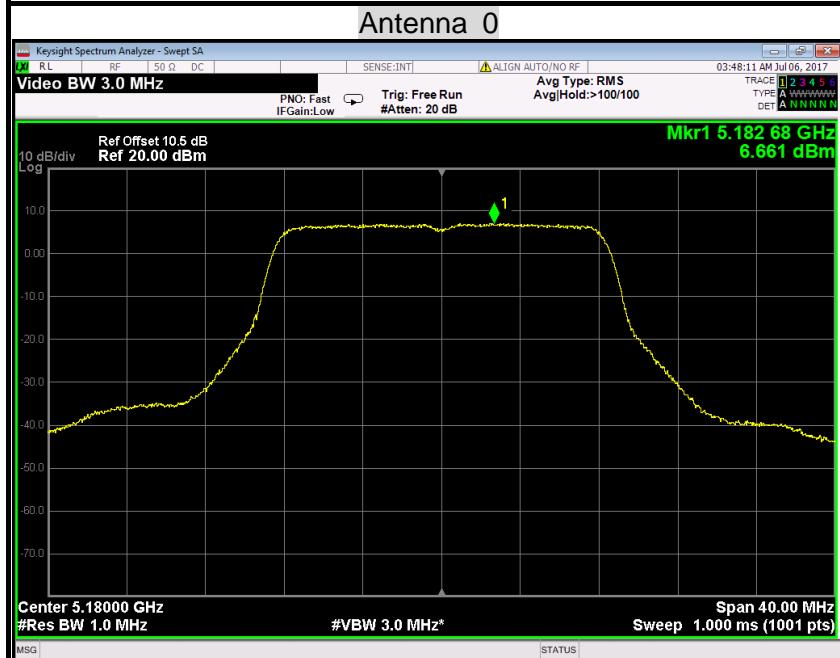
| Channel | Frequency (MHz) | PPSD (dBm) | | Antenna Gain (dBi) | | Array Antenna Gain(dBi) | Total (dBm) | Limit (dBm) | Margin | Result |
|---------|-----------------|------------|-----------|--------------------|------|-------------------------|-------------|-------------|--------|--------|
| | | Antenna 0 | Antenna 1 | 0 | 1 | | | | | |
| | 5210 | 0.102 | -0.926 | 3.00 | 3.00 | 3.00 | 8.629 | 10.00 | -1.371 | PASS |



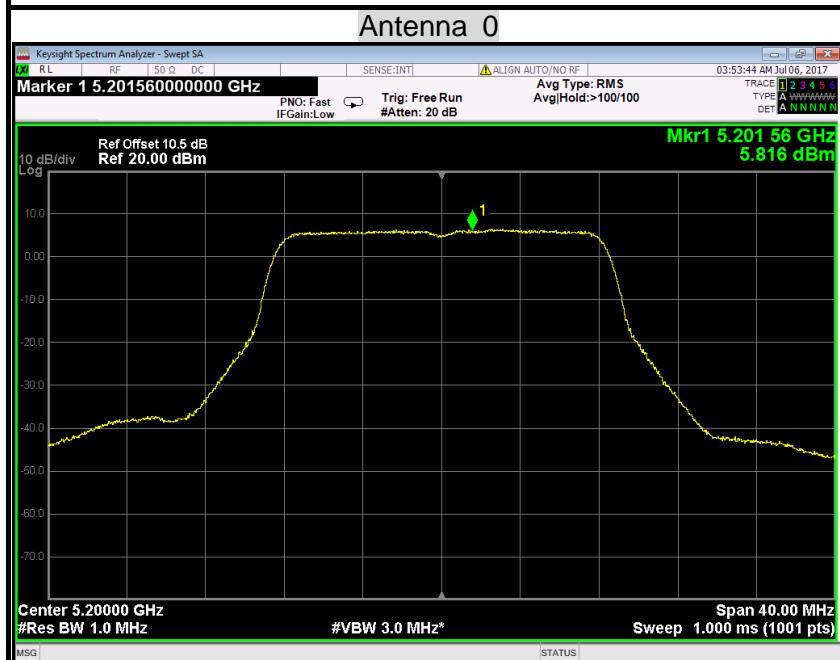
Test Plot

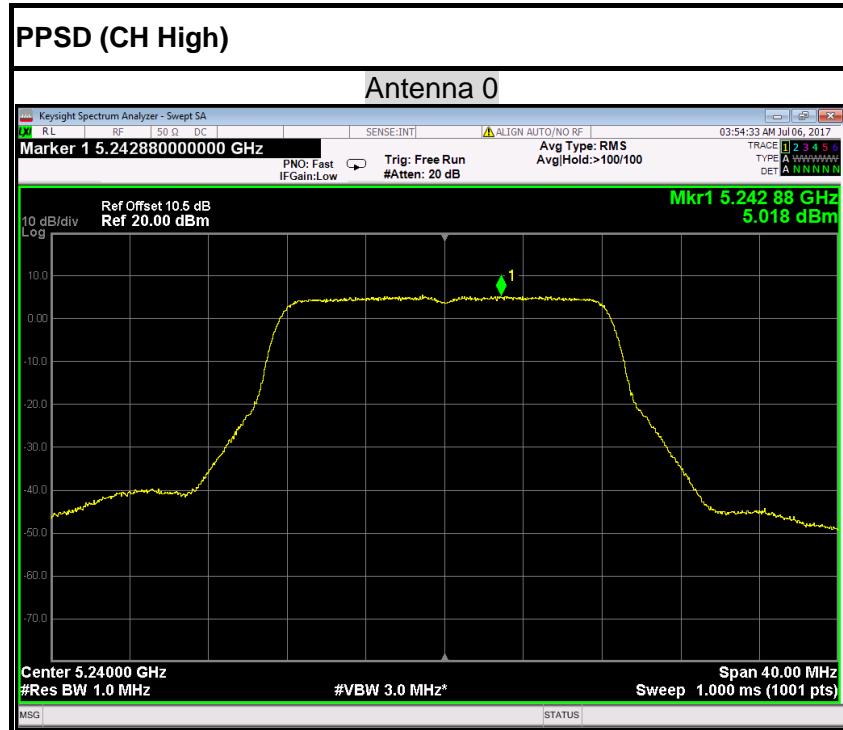
IEEE 802.11a mode / 5180 ~ 5240MHz

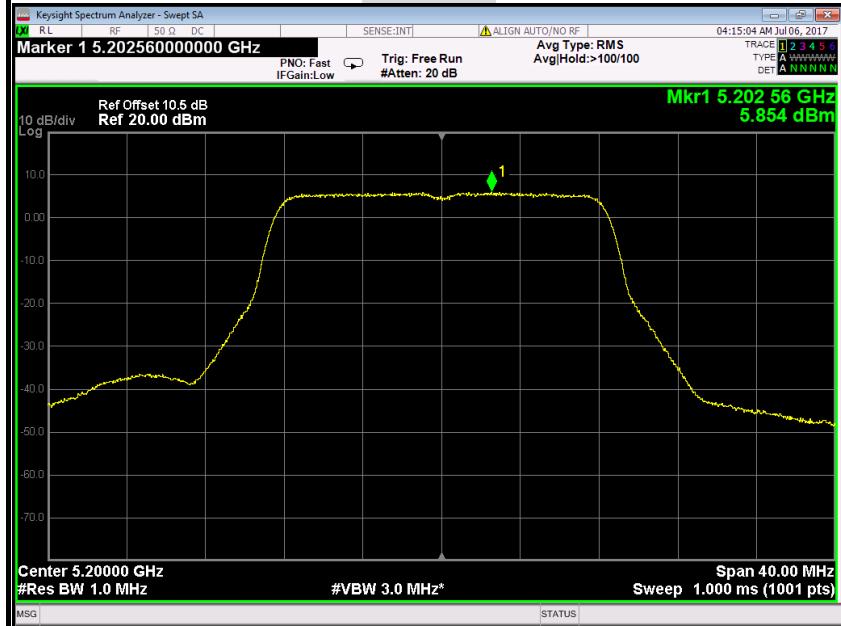
PPSD (CH Low)

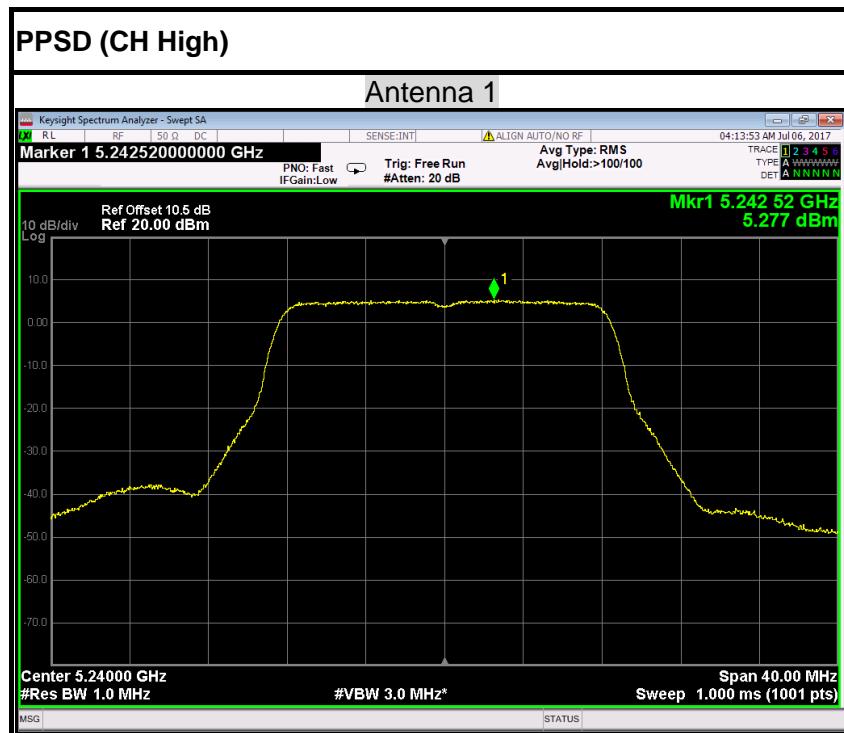


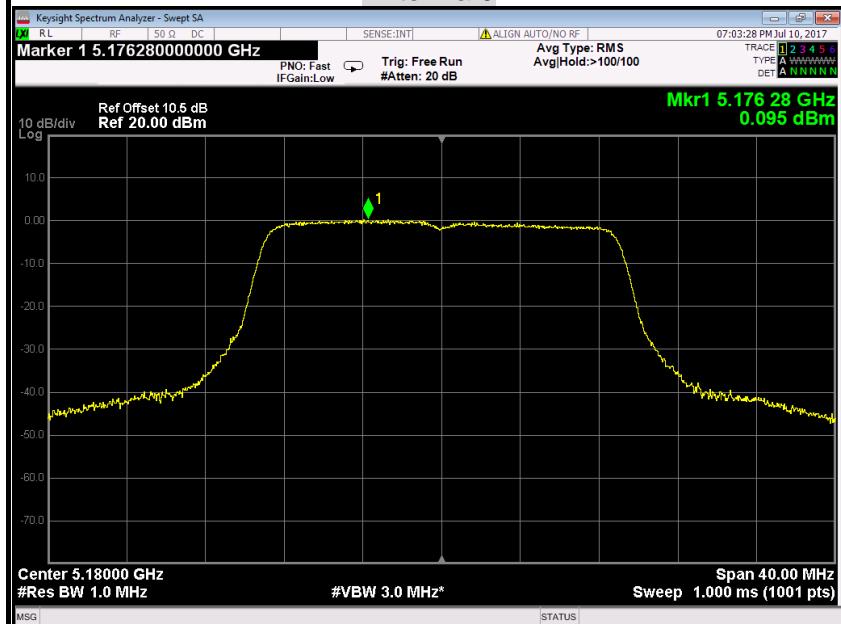
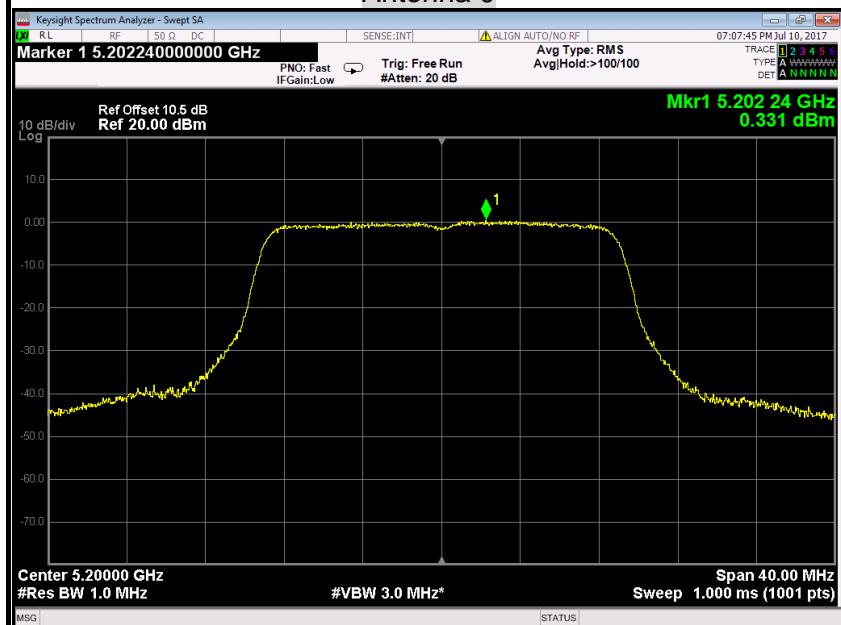
PPSD (CH Mid)

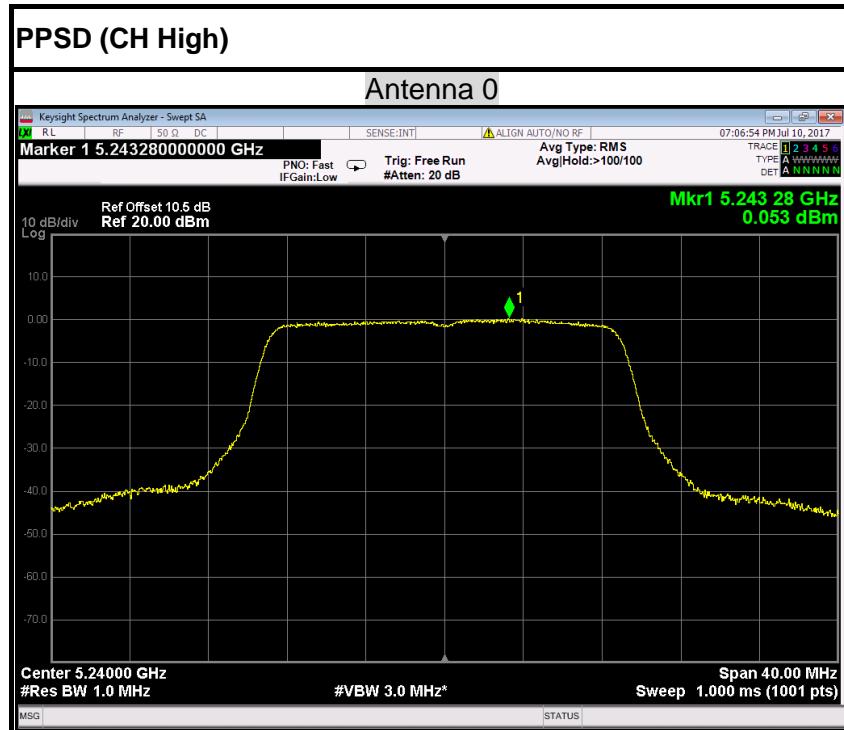


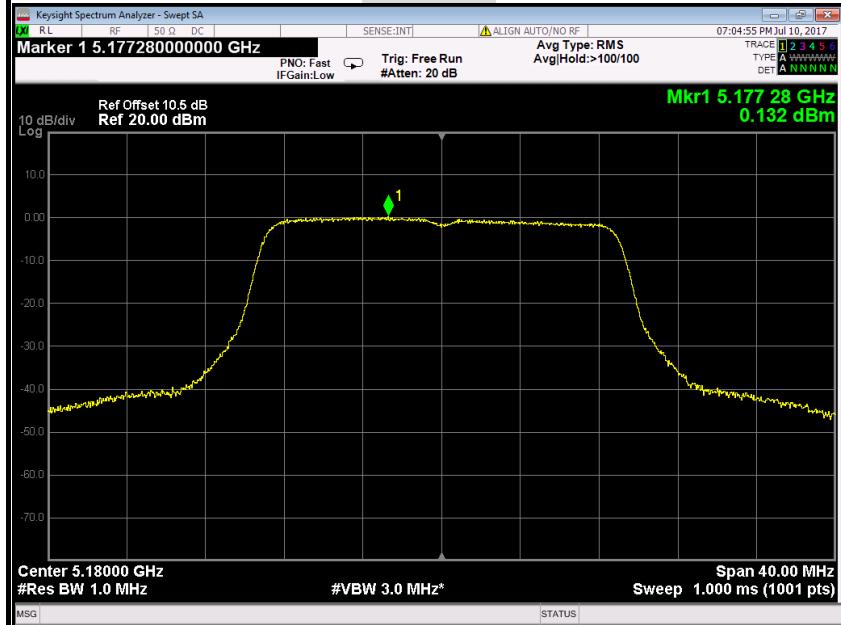
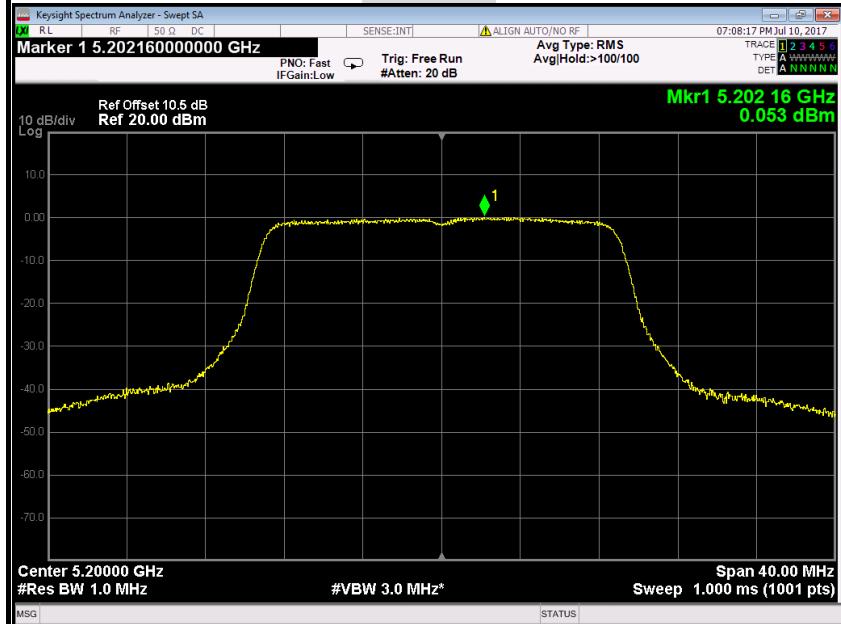


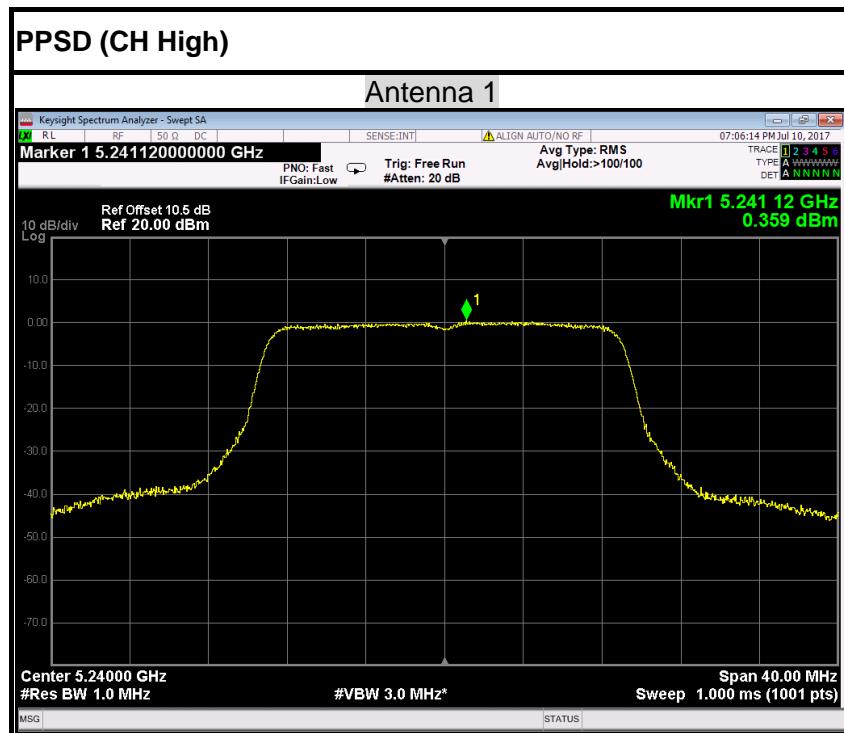
**IEEE 802.11a mode / 5180 ~ 5240MHz****PPSD (CH Low)****Antenna 1****PPSD (CH Mid)****Antenna 1**

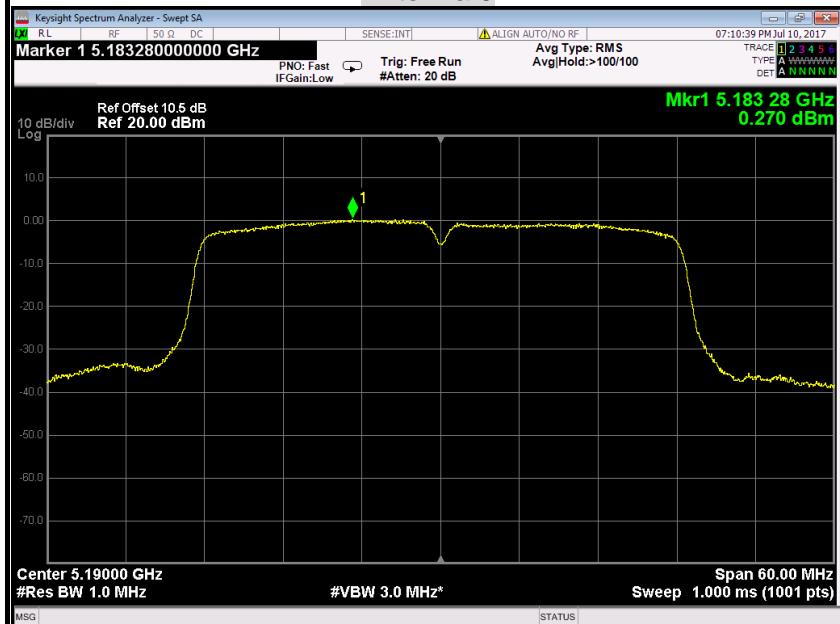
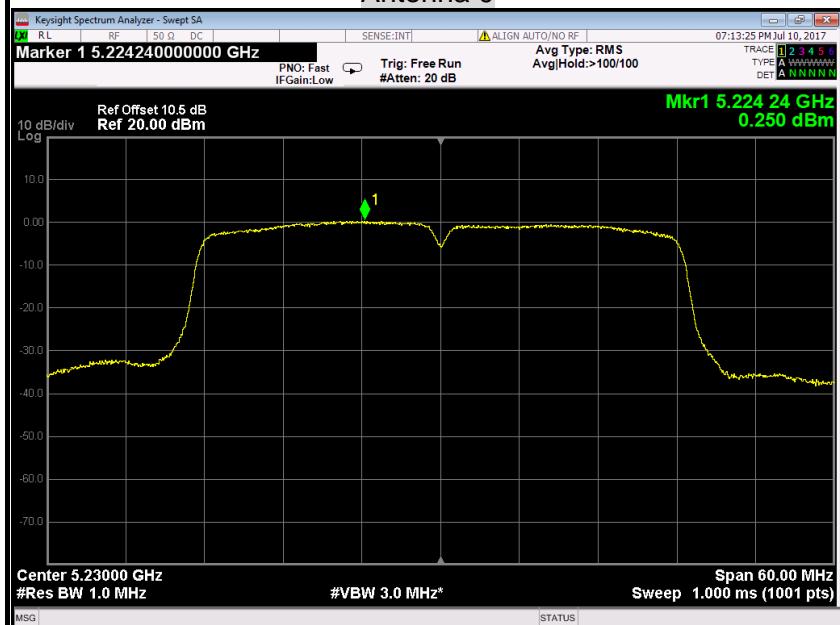


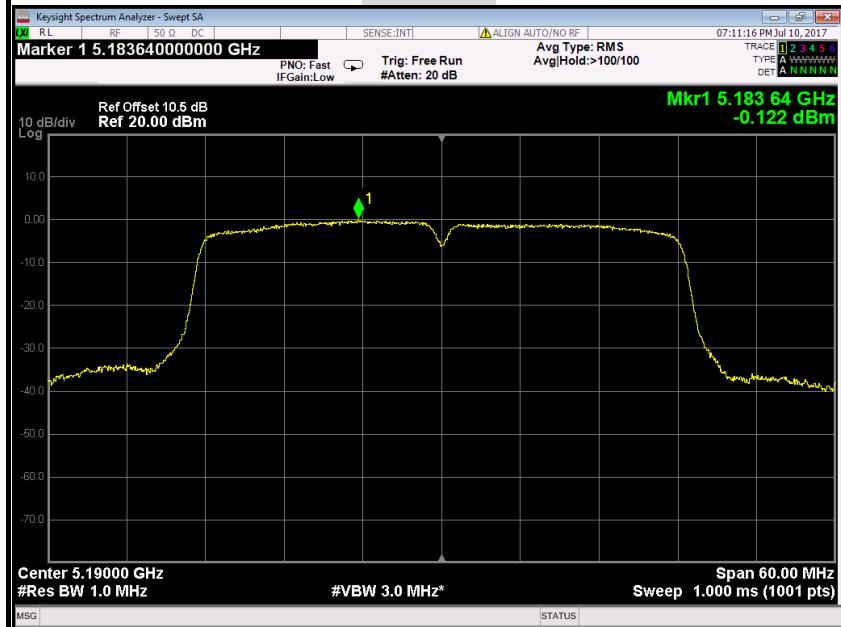
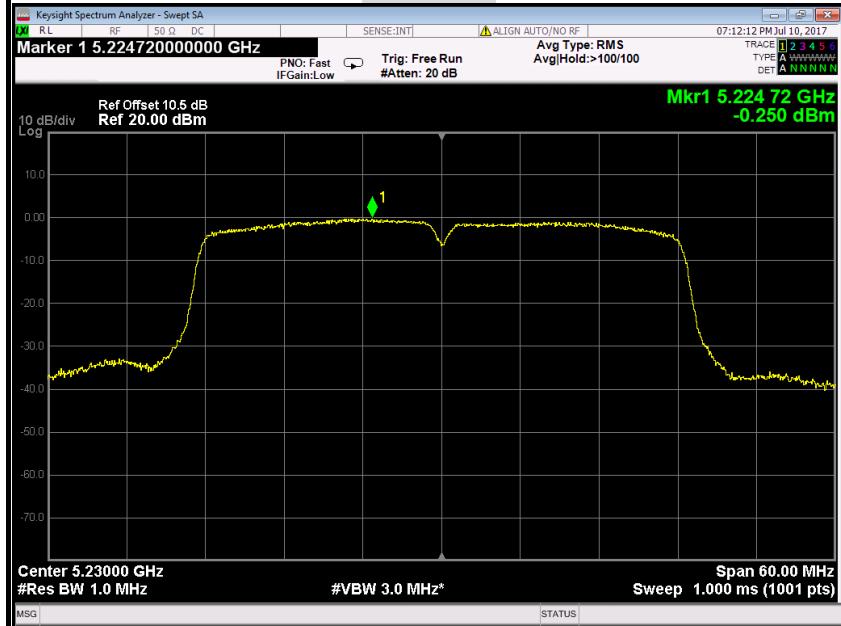
**IEEE 802.11n HT 20 MHz mode / 5180 ~ 5240MHz****PPSD (CH Low)****Antenna 0****PPSD (CH Mid)****Antenna 0**

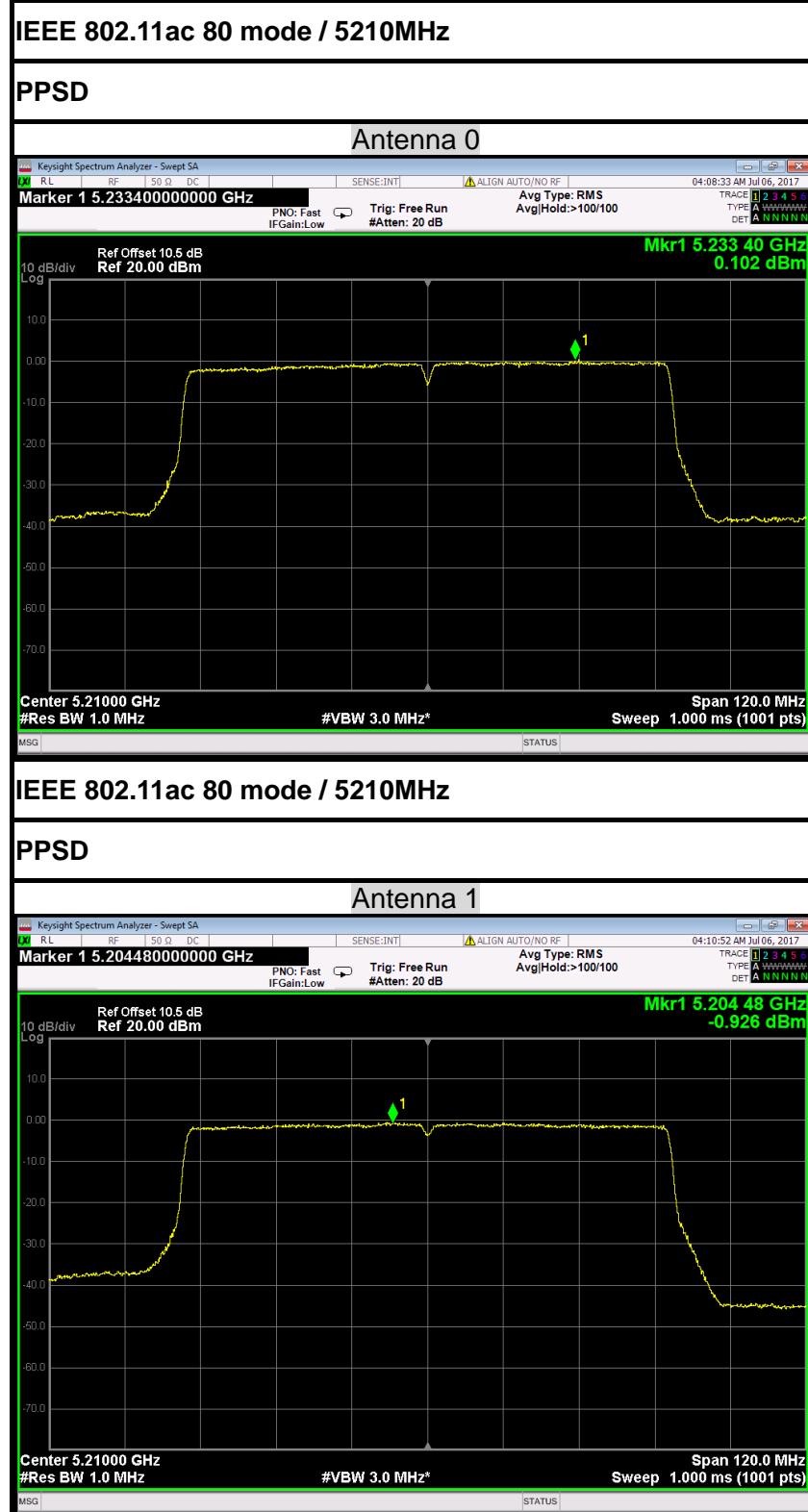


**IEEE 802.11n HT 20 MHz mode / 5180 ~ 5240MHz****PPSD (CH Low)****Antenna 1****PPSD (CH Mid)****Antenna 1**



**IEEE 802.11n HT 40 MHz mode / 5190 ~ 5230MHz****PPSD (CH Low)****Antenna 0****PPSD (CH High)****Antenna 0**

**IEEE 802.11n HT 40 MHz mode / 5190 ~ 5230MHz****PPSD (CH Low)****Antenna 1****PPSD (CH High)****Antenna 1**





6.8. SPURIOUS EMISSIONS MEASUREMENT

6.8.1. CONDUCTED EMISSIONS MEASUREMENT

6.8.1.1. LIMITS OF CONDUCTED EMISSIONS MEASUREMENT

According to RSS-247 §5.5, in any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the radio frequency power that is produced shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under section 5.4(4), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Tables 2 and 3 is not required. In addition, radiated emissions which fall in the restricted bands of Table 1 must also comply with the radiated emission limits specified in Tables 2 and 3.

6.8.1.2. TEST INSTRUMENTS

| Name of Equipment | Manufacturer | Model | Serial Number | Last Calibration | Due Calibration |
|-------------------|--------------|----------------|---------------|------------------|-----------------|
| Spectrum Analyzer | Agilent | N9010A | MY52221469 | 02/21/2017 | 02/20/2018 |
| Cable | HuberSuhner | SUCOFLEX104PEA | N/A | N/A | N/A |

6.8.1.3. TEST PROCEDURE (please refer to measurement standard)

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 1MHz. The video bandwidth is set to 3MHz.

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

6.8.1.4. TEST RESULTS

No non-compliance noted

Not applicable, since the EUT only has Band I.



6.8.2. RADIATED EMISSIONS MEASUREMENT

6.8.2.1. LIMITS OF RADIATED EMISSIONS MEASUREMENT

All spurious emissions shall comply with the limits of RSS-Gen Table 2&5&6.

Table 2: Radiated Limits of Receiver Spurious Emissions

| Frequency (MHz) | Field Strength (microvolts/m at 3 meters)* |
|-----------------|--|
| 30-88 | 100 |
| 88-216 | 150 |
| 216-960 | 200 |
| Above 960 | 500 |

Note: *Measurements for compliance with limits in the above table may be performed at distances other than 3 metres, in accordance with Section 7.2.7

Table 5: General Field Strength Limits for Transmitters at Frequencies Above 30 MHz

| Frequency (MHz) | Field Strength (microvolts/m at 3 meters)* |
|-----------------|--|
| 30-88 | 100 |
| 88-216 | 150 |
| 216-960 | 200 |
| Above 960 | 500 |

Note: Transmitting devices are not permitted in restricted frequency bands or, unless stated otherwise, in TV bands (54-72 MHz, 76-88 MHz, 174-216 MHz, 470-608 MHz and 614-806 MHz)

Table 6: General Field Strength Limits for Transmitters at Frequencies Below 30 MHz (Transmit)

| Frequency (MHz) | Field Strength (microvolts/m) | Magnetic H-Field (microamperes/m) | Measurement Distance (metres) |
|-----------------|-------------------------------|-----------------------------------|-------------------------------|
| 0.009-0.490 | 2,400/F (F in kHz) | 2,400/377F (F in kHz) | 300 |
| 0.490-1.705 | 24,000/F (F in kHz) | 24,000/377F (F in kHz) | 30 |
| 1.705-30.0 | 30 | N/A | 30 |

Note: The emission limits for the bands 9-90 kHz and 110-490 kHz are based on measurements employing an average detector.



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 |

NOTE: (1) The lower limit shall apply at the transition frequencies.

(2) Emission level (dB μ V/m) = 20 log Emission level (μ V/m).



6.8.2.2. 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 | N9010A | MY52221469 | 02/21/2017 | 02/20/2018 |
| EMI TEST RECEIVER | ROHDE&SCHWARZ | ESCI | 100783 | 02/21/2017 | 02/20/2018 |
| Amplifier | EMEC | EM330 | 060661 | 03/18/2017 | 03/17/2018 |
| High Noise Amplifier | Agilent | 8449B | 3008A01838 | 02/21/2017 | 02/20/2018 |
| Loop Antenna | COM-POWER | AL-130 | 121044 | 09/25/2016 | 09/24/2017 |
| Bilog Antenna | SCHAFFNER | CBL6143 | 5082 | 02/21/2017 | 02/20/2018 |
| Horn Antenna | SCHWARZBECK | BBHA9120 | D286 | 02/27/2017 | 02/27/2018 |
| Board-Band Horn Antenna | Schwarzbeck | BBHA 9170 | 9170-497 | 02/27/2017 | 02/27/2018 |
| 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 | 02/21/2017 | 02/20/2018 |
| 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.



6.8.2.3. 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 |

6.8.2.4. TEST PROCEDURE (please refer to measurement standard)

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:

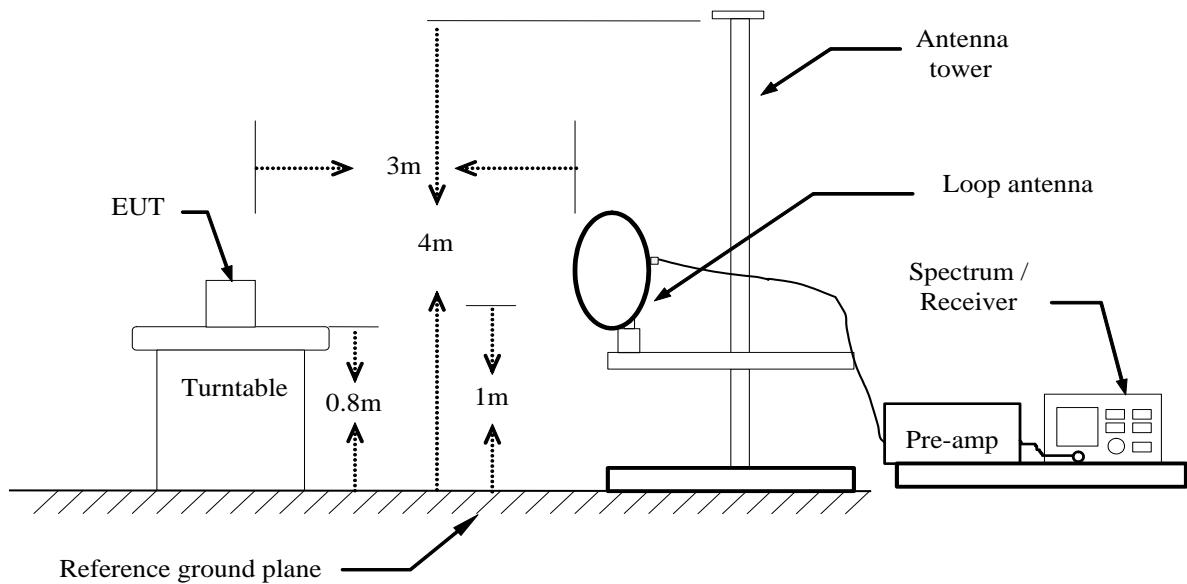
- The antenna is moved spherical over the EUT in different polarisations of the antenna.

Final measurement:

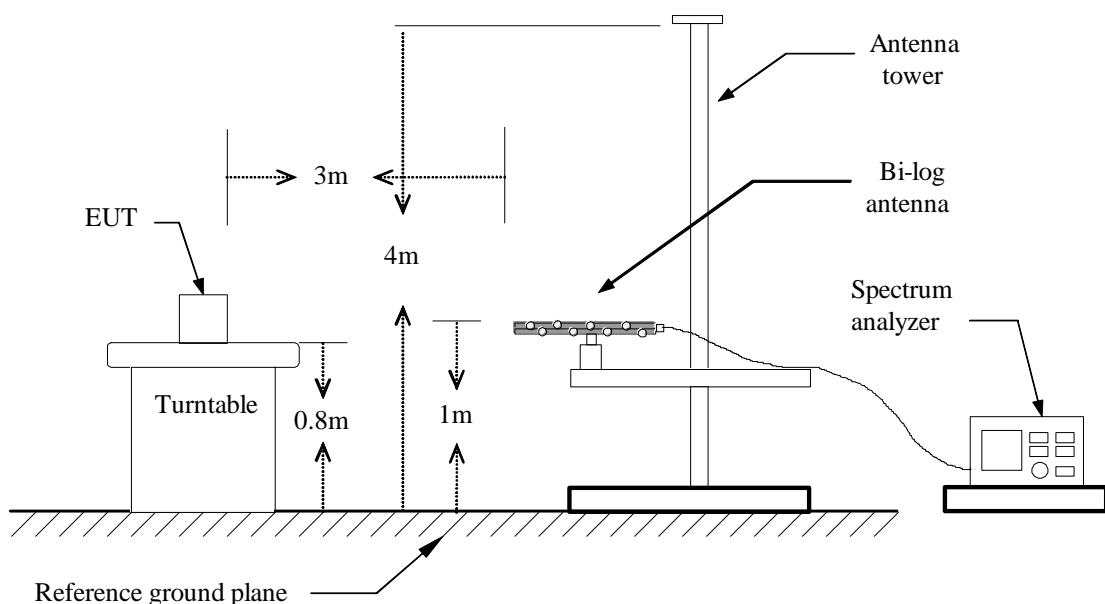
- The final measurement will be performed at the position and antenna orientation for all detected emissions that were found during the premeasurements with Peak and Average detector.
- The final levels, frequency, measuring time, bandwidth, correction factor, margin to the limit and limit will be recorded.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

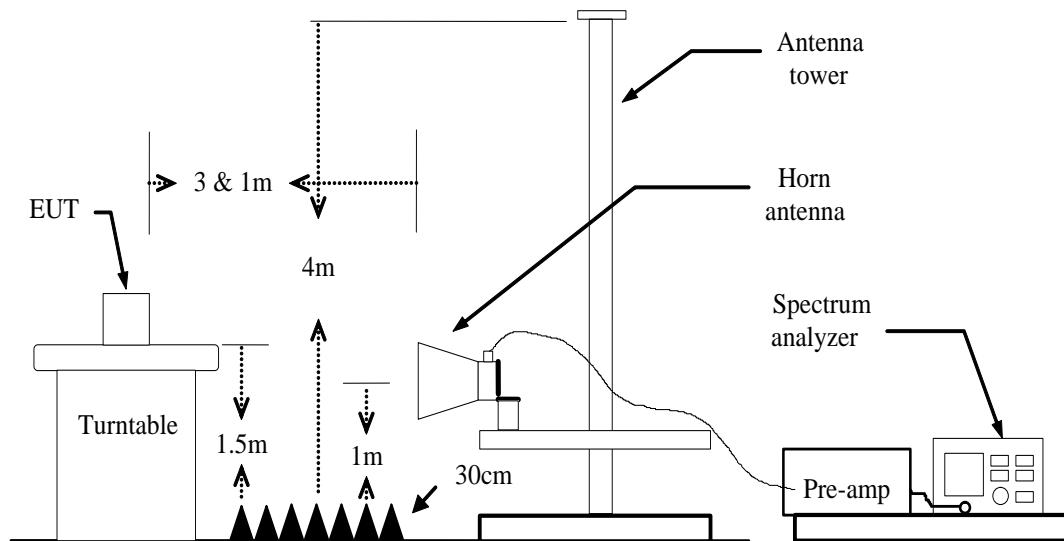
6.8.2.5. TEST SETUP

Below 30MHz



Below 1 GHz



Above 1 GHz

For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

**6.8.2.6. 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

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

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



6.8.2.7. TEST RESULTS

Below 1 GHz

Test Mode: TX / IEEE 802.11a / 5180MHz /(CH Low)

Tested by: Fadé Zhong

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

Date: June 19, 2017

| Frequency (MHz) | Reading (dBuV) | Correction Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Antenna Pole (V/H) | Remark |
|-----------------|----------------|--------------------------|-----------------|----------------|-------------|--------------------|--------|
| 37.7600 | 56.52 | -20.04 | 36.48 | 40.00 | -3.52 | V | QP |
| 80.4400 | 52.27 | -15.97 | 36.30 | 40.00 | -3.70 | V | QP |
| 197.8100 | 44.31 | -10.29 | 34.02 | 43.50 | -9.48 | V | QP |
| 248.2500 | 42.49 | -9.13 | 33.36 | 46.00 | -12.64 | V | QP |
| 325.8500 | 40.62 | -8.15 | 32.47 | 46.00 | -13.53 | V | QP |
| 434.4900 | 42.95 | -5.55 | 37.40 | 46.00 | -8.60 | V | QP |
| <hr/> | | | | | | | |
| 78.5000 | 51.13 | -16.12 | 35.01 | 40.00 | -4.99 | H | QP |
| 97.9000 | 52.35 | -15.42 | 36.93 | 43.50 | -6.57 | H | QP |
| 197.8100 | 46.18 | -10.29 | 35.89 | 43.50 | -7.61 | H | QP |
| 288.9900 | 43.17 | -8.40 | 34.77 | 46.00 | -11.23 | H | QP |
| 325.8500 | 41.61 | -8.15 | 33.46 | 46.00 | -12.54 | H | QP |
| 376.2900 | 38.48 | -7.25 | 31.23 | 46.00 | -14.77 | H | QP |

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

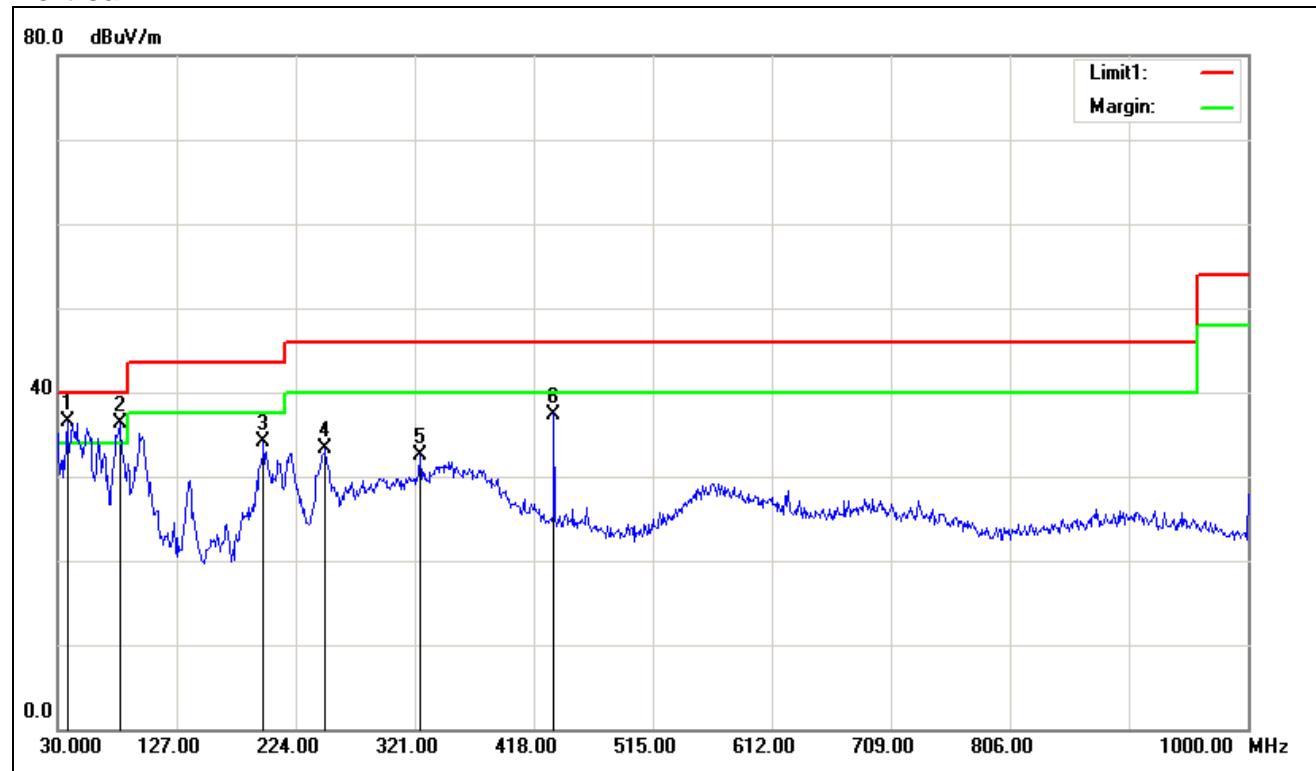
Remark:

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).

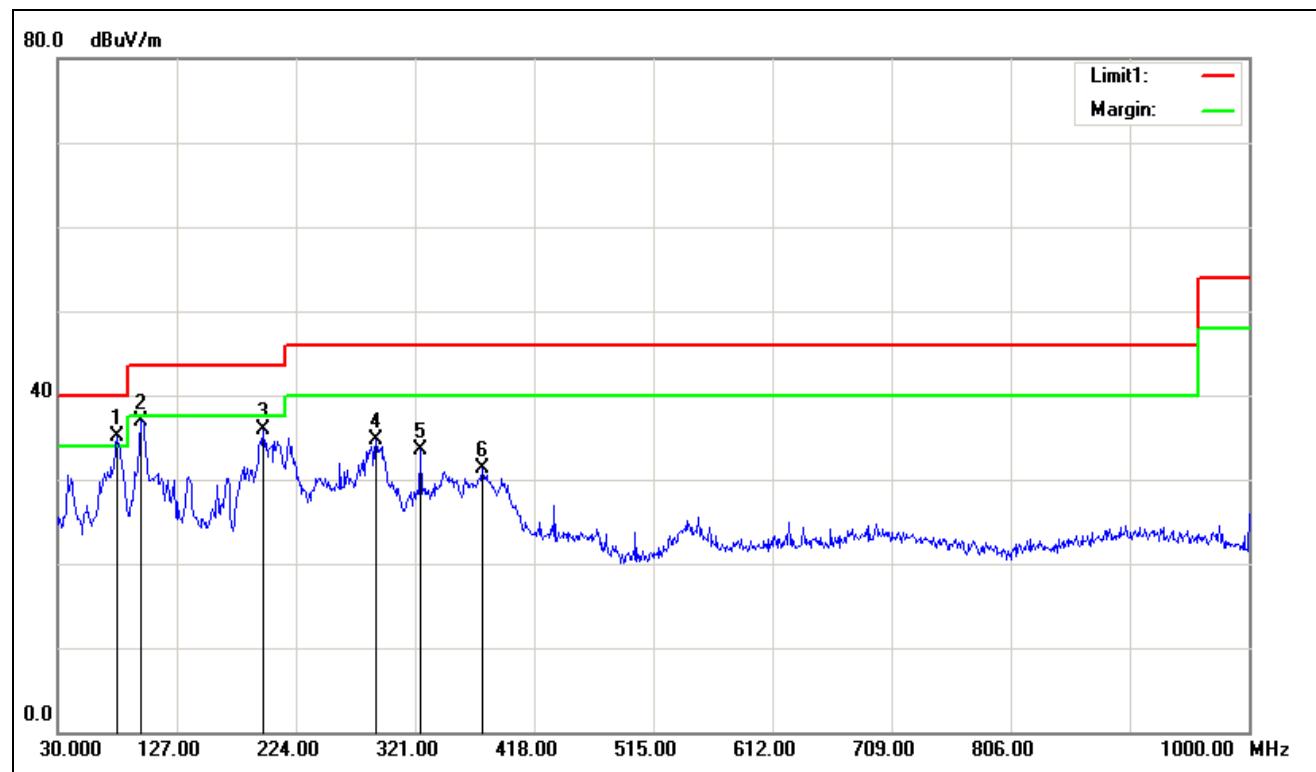
1.



Vertical



Horizontal



**Above 1 GHz****1GHz~6GHz****Test Mode: TX / IEEE 802.11a / 5180MHz /(CH Low)****Tested by: Fadé Zhong****Ambient temperature: 24°C Relative humidity: 52% RH****Date: June 19, 2017**

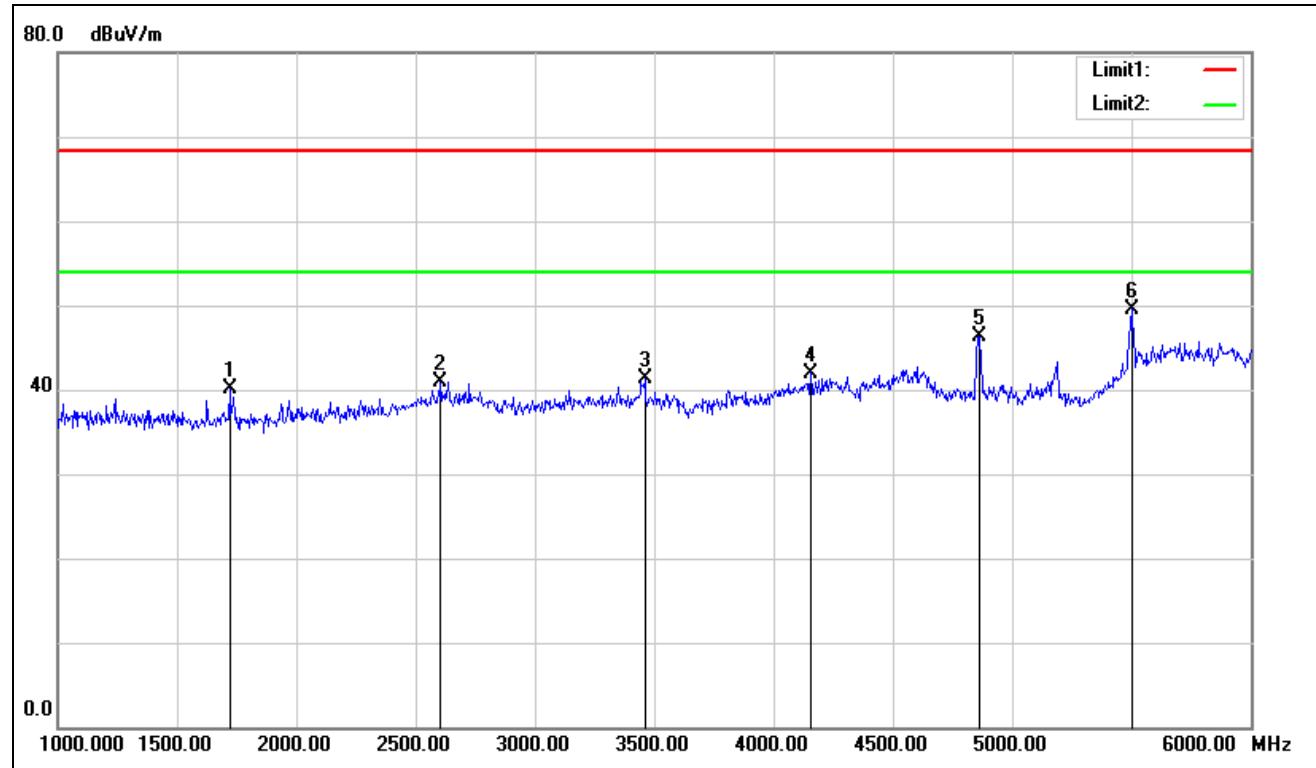
| Frequency (MHz) | Reading (dBuV) | Correction Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Antenna Pole (V/H) | Remark |
|-----------------|----------------|--------------------------|-----------------|----------------|-------------|--------------------|--------|
| 1720.000 | 46.56 | -6.44 | 40.12 | 68.23 | -28.11 | V | peak |
| 2605.000 | 43.02 | -2.07 | 40.95 | 68.23 | -27.28 | V | peak |
| 3460.000 | 41.87 | -0.59 | 41.28 | 68.23 | -26.95 | V | peak |
| 4155.000 | 39.86 | 2.14 | 42.00 | 68.23 | -26.23 | V | peak |
| 4860.000 | 41.80 | 4.52 | 46.32 | 68.23 | -21.91 | V | peak |
| 5500.000 | 43.73 | 5.87 | 49.60 | 68.23 | -18.63 | V | peak |
| | | | | | | | |
| 1305.000 | 47.32 | -7.41 | 39.91 | 68.23 | -28.32 | H | Peak |
| 1725.000 | 46.22 | -6.43 | 39.79 | 68.23 | -28.44 | H | Peak |
| 2395.000 | 42.73 | -2.84 | 39.89 | 68.23 | -28.34 | H | Peak |
| 2825.000 | 41.34 | -1.67 | 39.67 | 68.23 | -28.56 | H | peak |
| 3460.000 | 40.82 | -0.59 | 40.23 | 68.23 | -28.00 | H | peak |
| 4010.000 | 37.60 | 1.63 | 39.23 | 68.23 | -29.00 | H | peak |

Remark:

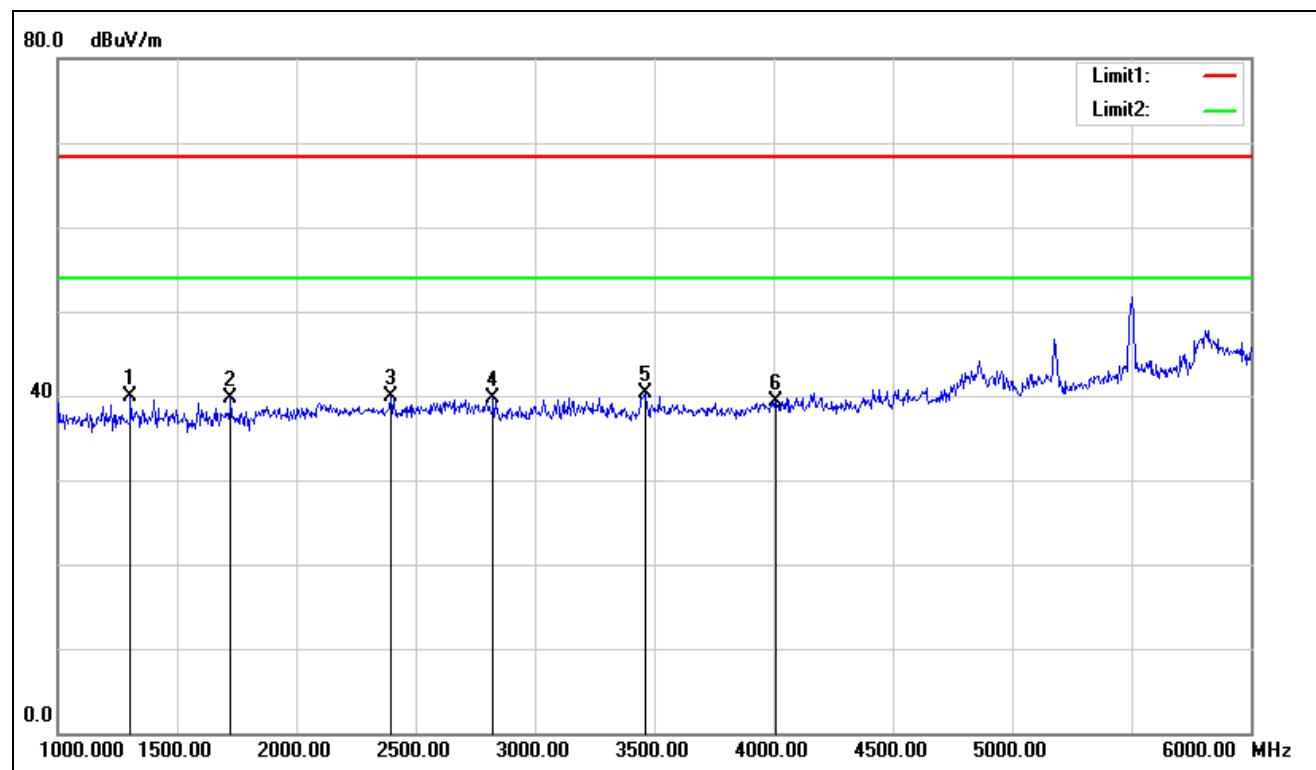
1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit.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



Vertical



Horizontal



**Above 6GHz****Antenna 0****Test Mode:** TX / IEEE 802.11a / 5180MHz /(CH Low)**Tested by:** Fade Zhong**Ambient temperature:** 24°C **Relative humidity:** 52% RH**Date:** June 19, 2017

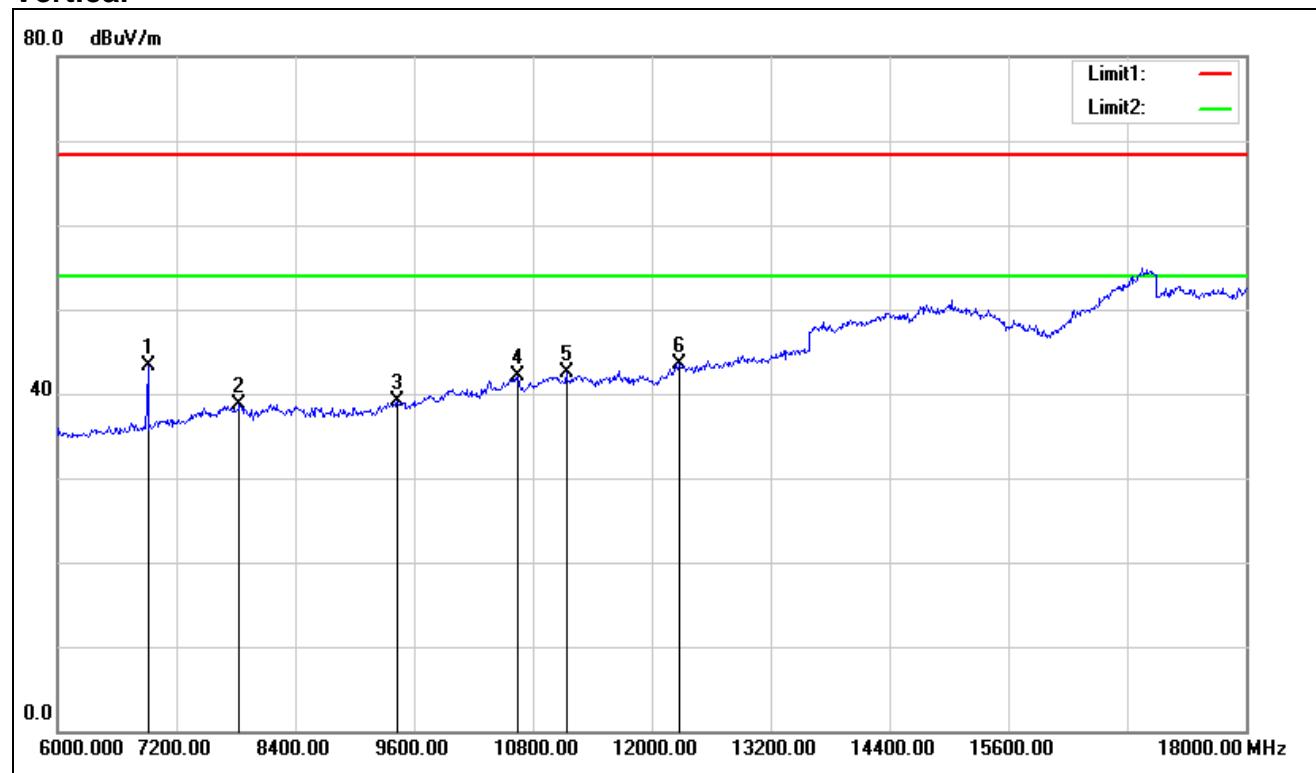
| Frequency (MHz) | Reading (dBuV) | Correction Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Antenna Pole (V/H) | Remark |
|-----------------|----------------|--------------------------|-----------------|----------------|-------------|--------------------|--------|
| 6912.000 | 35.73 | 7.56 | 43.29 | 68.23 | -24.94 | V | peak |
| 7836.000 | 29.45 | 9.33 | 38.78 | 68.23 | -29.45 | V | peak |
| 9432.000 | 28.85 | 10.34 | 39.19 | 68.23 | -29.04 | V | peak |
| 10644.000 | 28.03 | 13.98 | 42.01 | 68.23 | -26.22 | V | peak |
| 11136.000 | 27.54 | 15.02 | 42.56 | 68.23 | -25.67 | V | peak |
| 12276.000 | 27.96 | 15.55 | 43.51 | 68.23 | -24.72 | V | peak |
| | | | | | | | |
| 6912.000 | 43.51 | 7.56 | 51.07 | 68.23 | -17.16 | H | Peak |
| 7860.000 | 29.85 | 9.38 | 39.23 | 68.23 | -29.00 | H | Peak |
| 9768.000 | 29.10 | 11.31 | 40.41 | 68.23 | -27.82 | H | Peak |
| 11148.000 | 28.04 | 15.01 | 43.05 | 68.23 | -25.18 | H | peak |
| 12912.000 | 26.97 | 17.66 | 44.63 | 68.23 | -23.60 | H | peak |
| 13716.000 | 28.40 | 19.83 | 48.23 | 68.23 | -20.00 | H | peak |

Remark:

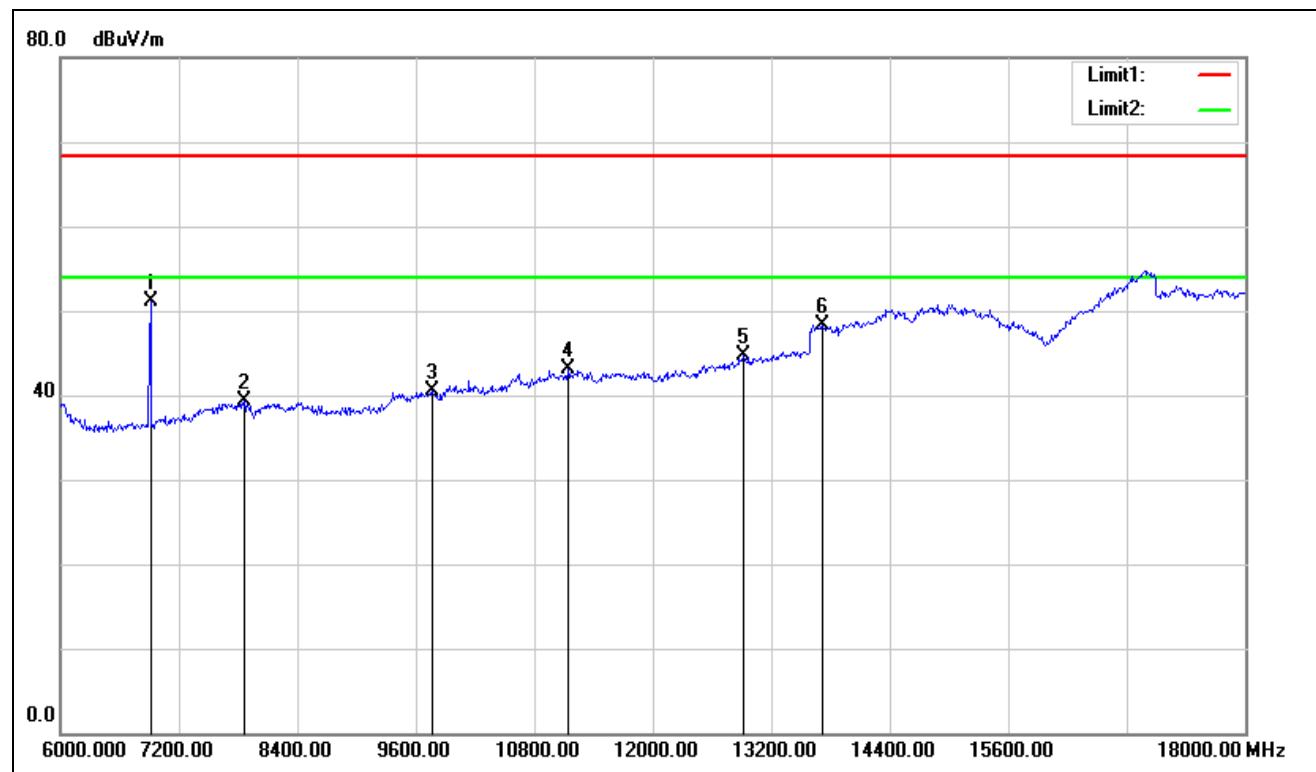
1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit.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



Vertical



Horizontal



**Test Mode: TX / IEEE 802.11a / 5200MHz /(CH Mid)****Tested by: Fadé Zhong****Ambient temperature: 24°C****Relative humidity: 52% RH****Date: June 19, 2017**

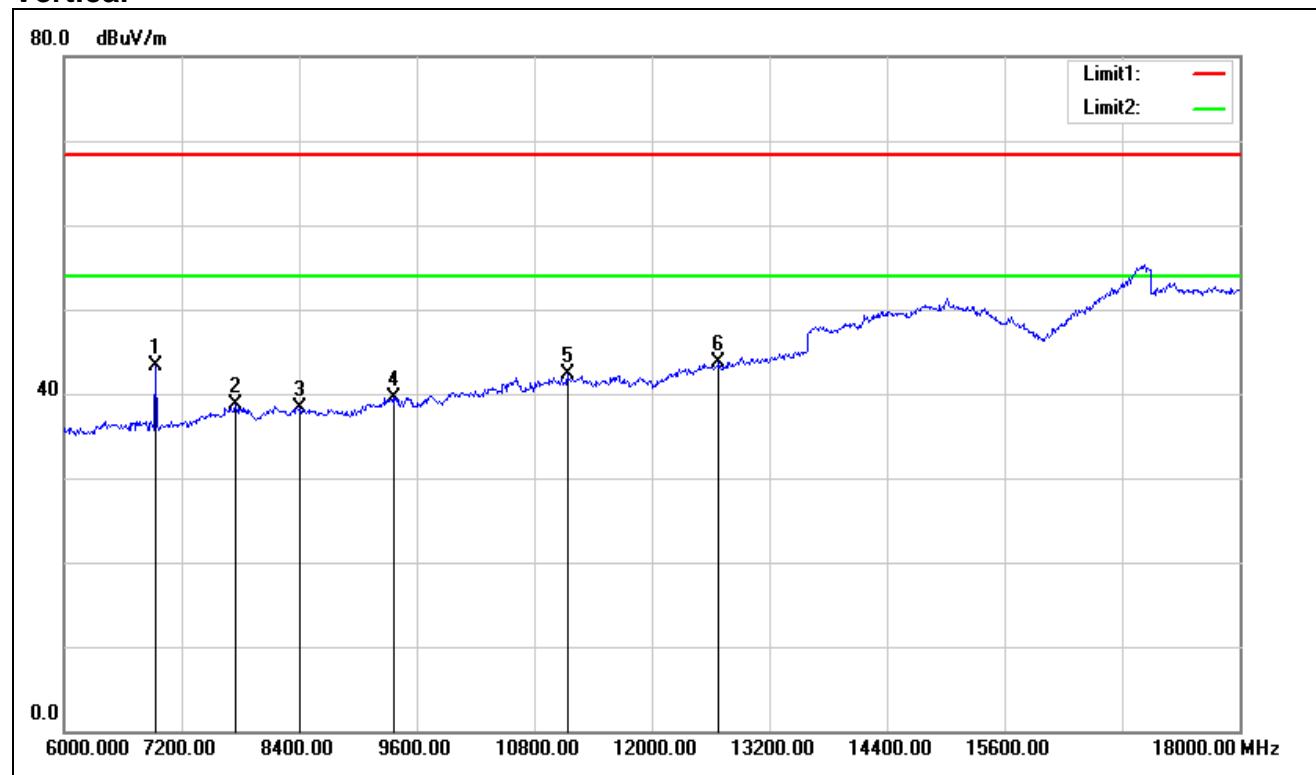
| Frequency (MHz) | Reading (dBuV) | Correction Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Antenna Pole (V/H) | Remark |
|-----------------|----------------|--------------------------|-----------------|----------------|-------------|--------------------|--------|
| 6936.000 | 35.80 | 7.60 | 43.40 | 68.23 | -24.83 | V | peak |
| 7752.000 | 29.56 | 9.17 | 38.73 | 68.23 | -29.50 | V | peak |
| 8400.000 | 28.83 | 9.43 | 38.26 | 68.23 | -29.97 | V | peak |
| 9360.000 | 29.35 | 10.14 | 39.49 | 68.23 | -28.74 | V | peak |
| 11136.000 | 27.32 | 15.02 | 42.34 | 68.23 | -25.89 | V | peak |
| 12684.000 | 26.75 | 16.90 | 43.65 | 68.23 | -24.58 | V | peak |
| | | | | | | | |
| 6936.000 | 44.03 | 7.60 | 51.63 | 68.23 | -16.60 | H | Peak |
| 7716.000 | 30.53 | 9.10 | 39.63 | 68.23 | -28.60 | H | Peak |
| 9120.000 | 30.85 | 9.45 | 40.30 | 68.23 | -27.93 | H | Peak |
| 9948.000 | 29.87 | 11.83 | 41.70 | 68.23 | -26.53 | H | peak |
| 11688.000 | 28.70 | 14.78 | 43.48 | 68.23 | -24.75 | H | peak |
| 13176.000 | 26.19 | 18.41 | 44.60 | 68.23 | -23.63 | H | peak |

Remark:

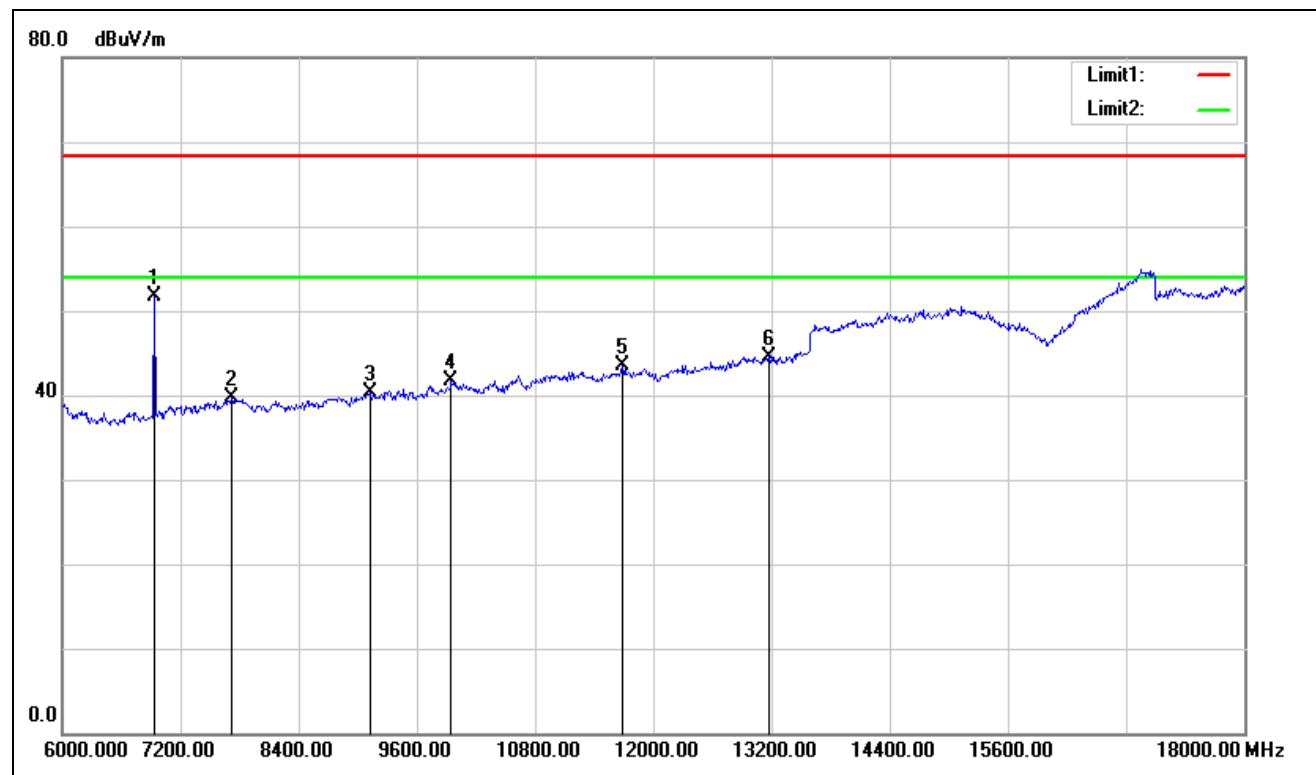
1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit.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



Vertical



Horizontal



**Test Mode: TX / IEEE 802.11a / 5240MHz /(CH High)****Tested by: Fade Zhong****Ambient temperature: 24°C Relative humidity: 52% RH****Date: June 19, 2017**

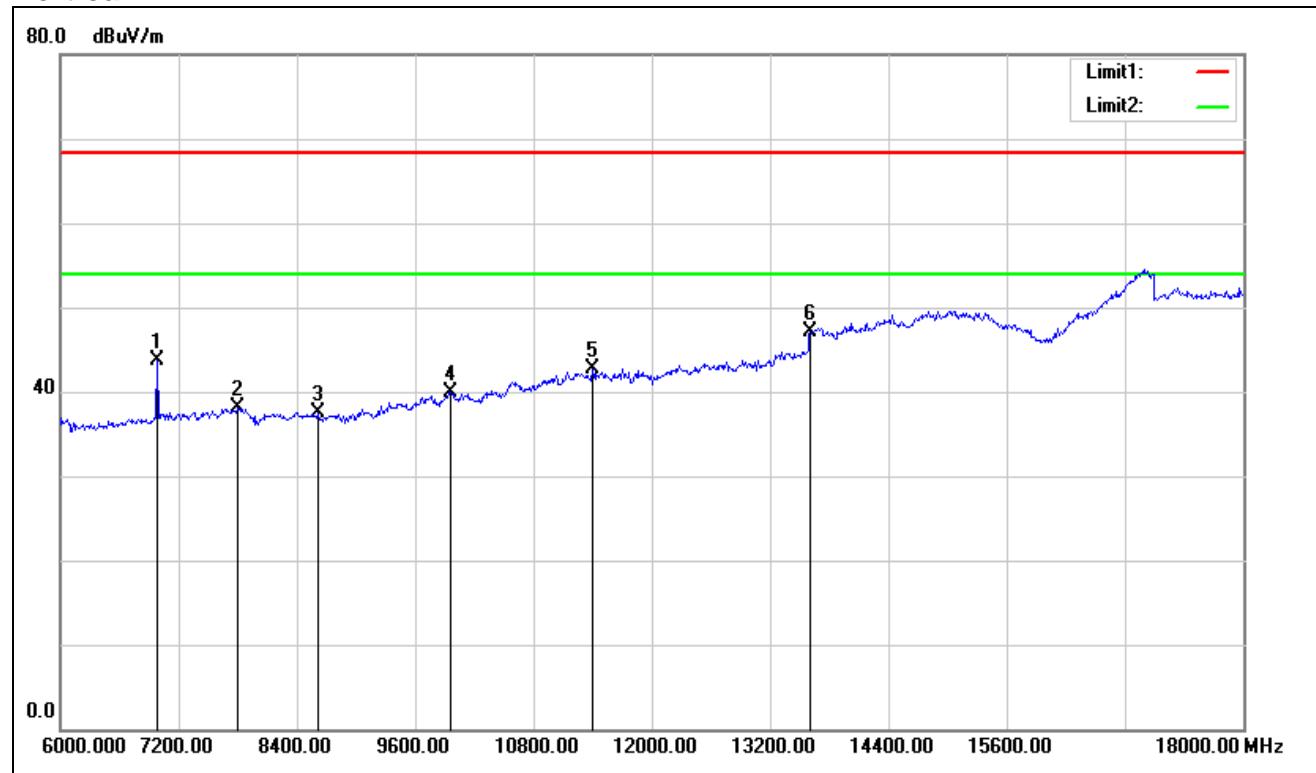
| Frequency (MHz) | Reading (dBuV) | Correction Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Antenna Pole (V/H) | Remark |
|-----------------|----------------|--------------------------|-----------------|----------------|-------------|--------------------|--------|
| 6984.000 | 36.09 | 7.67 | 43.76 | 68.23 | -24.47 | V | peak |
| 7800.000 | 28.75 | 9.26 | 38.01 | 68.23 | -30.22 | V | peak |
| 8616.000 | 28.27 | 9.31 | 37.58 | 68.23 | -30.65 | V | peak |
| 9960.000 | 28.13 | 11.86 | 39.99 | 68.23 | -28.24 | V | peak |
| 11400.000 | 27.88 | 14.90 | 42.78 | 68.23 | -25.45 | V | peak |
| 13608.000 | 27.60 | 19.55 | 47.15 | 68.23 | -21.08 | V | peak |
| <hr/> | | | | | | | |
| 6984.000 | 43.02 | 7.67 | 50.69 | 68.23 | -17.54 | H | Peak |
| 8424.000 | 29.28 | 9.42 | 38.70 | 68.23 | -29.53 | H | Peak |
| 10044.000 | 28.23 | 12.12 | 40.35 | 68.23 | -27.88 | H | Peak |
| 11604.000 | 29.41 | 14.81 | 44.22 | 68.23 | -24.01 | H | peak |
| 13440.000 | 27.63 | 19.11 | 46.74 | 68.23 | -21.49 | H | peak |
| 14424.000 | 29.83 | 20.83 | 50.66 | 68.23 | -17.57 | H | peak |

Remark:

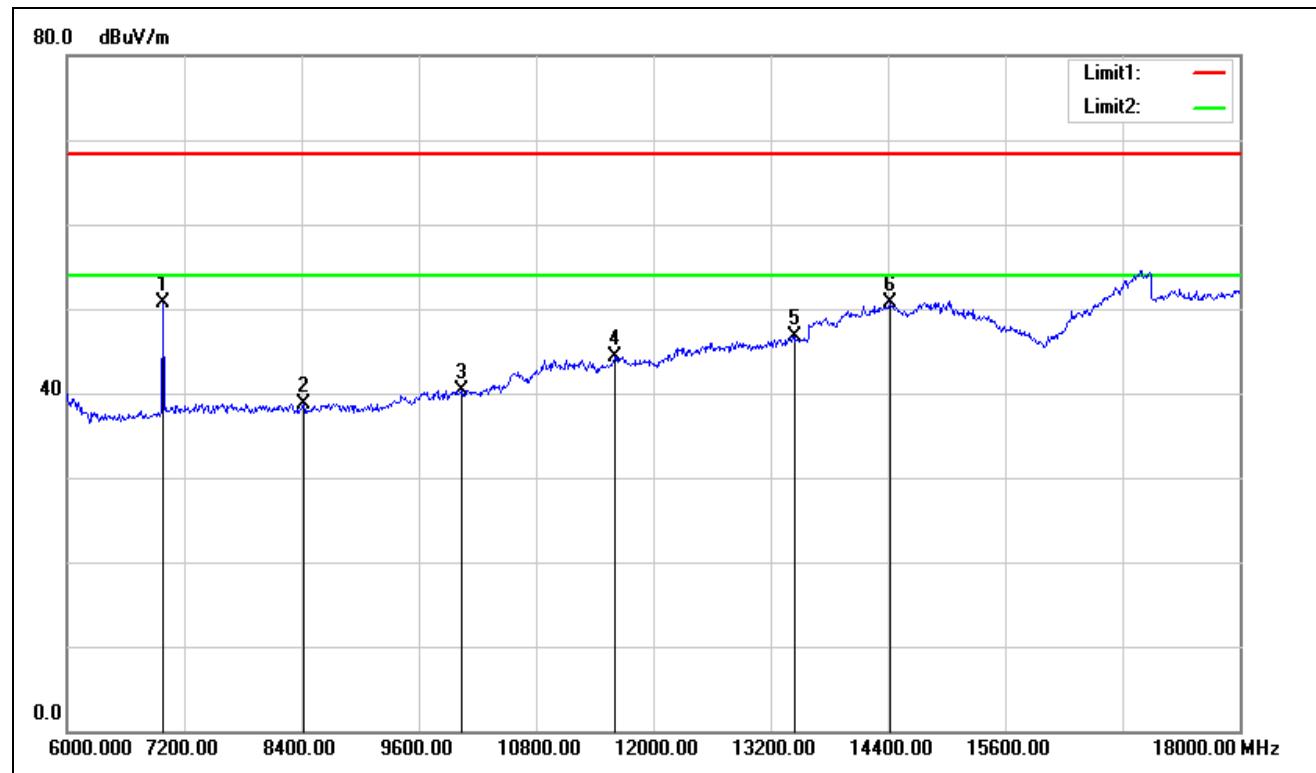
1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit.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



Vertical



Horizontal



**Antenna 1****Test Mode: TX / IEEE 802.11a / 5180MHz /(CH Low)****Tested by: Fade Zhong****Ambient temperature: 24°C Relative humidity: 52% RH****Date: June 19, 2017**

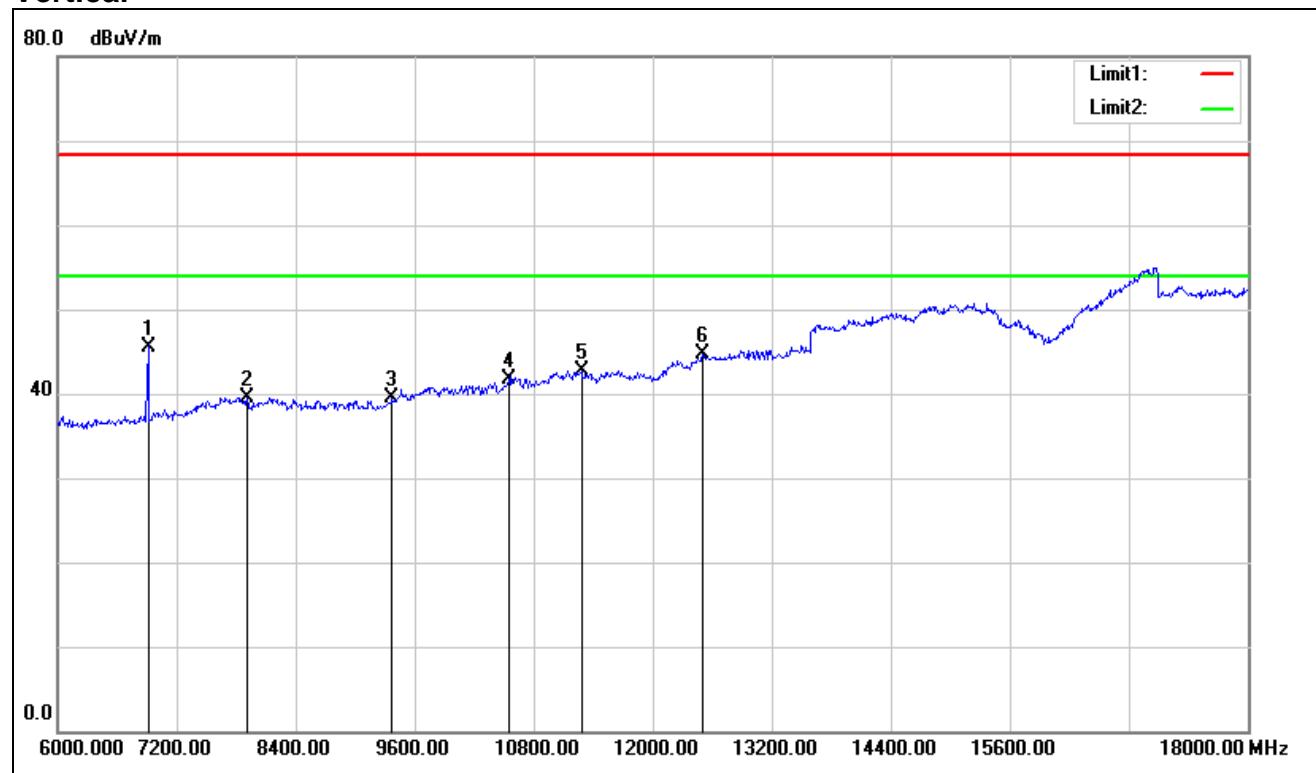
| Frequency (MHz) | Reading (dBuV) | Correction Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Antenna Pole (V/H) | Remark |
|-----------------|----------------|--------------------------|-----------------|----------------|-------------|--------------------|--------|
| 6912.000 | 38.04 | 7.56 | 45.60 | 68.23 | -22.63 | V | peak |
| 7908.000 | 30.04 | 9.47 | 39.51 | 68.23 | -28.72 | V | peak |
| 9372.000 | 29.28 | 10.17 | 39.45 | 68.23 | -28.78 | V | peak |
| 10548.000 | 27.94 | 13.68 | 41.62 | 68.23 | -26.61 | V | peak |
| 11280.000 | 27.70 | 14.96 | 42.66 | 68.23 | -25.57 | V | peak |
| 12504.000 | 28.35 | 16.31 | 44.66 | 68.23 | -23.57 | V | peak |
| | | | | | | | |
| 6912.000 | 31.61 | 7.56 | 39.17 | 68.23 | -29.06 | H | Peak |
| 8172.000 | 30.33 | 9.56 | 39.89 | 68.23 | -28.34 | H | Peak |
| 9600.000 | 30.25 | 10.83 | 41.08 | 68.23 | -27.15 | H | Peak |
| 11112.000 | 29.81 | 15.03 | 44.84 | 68.23 | -23.39 | H | peak |
| 12228.000 | 30.00 | 15.39 | 45.39 | 68.23 | -22.84 | H | peak |
| 13284.000 | 28.25 | 18.70 | 46.95 | 68.23 | -21.28 | H | peak |

Remark:

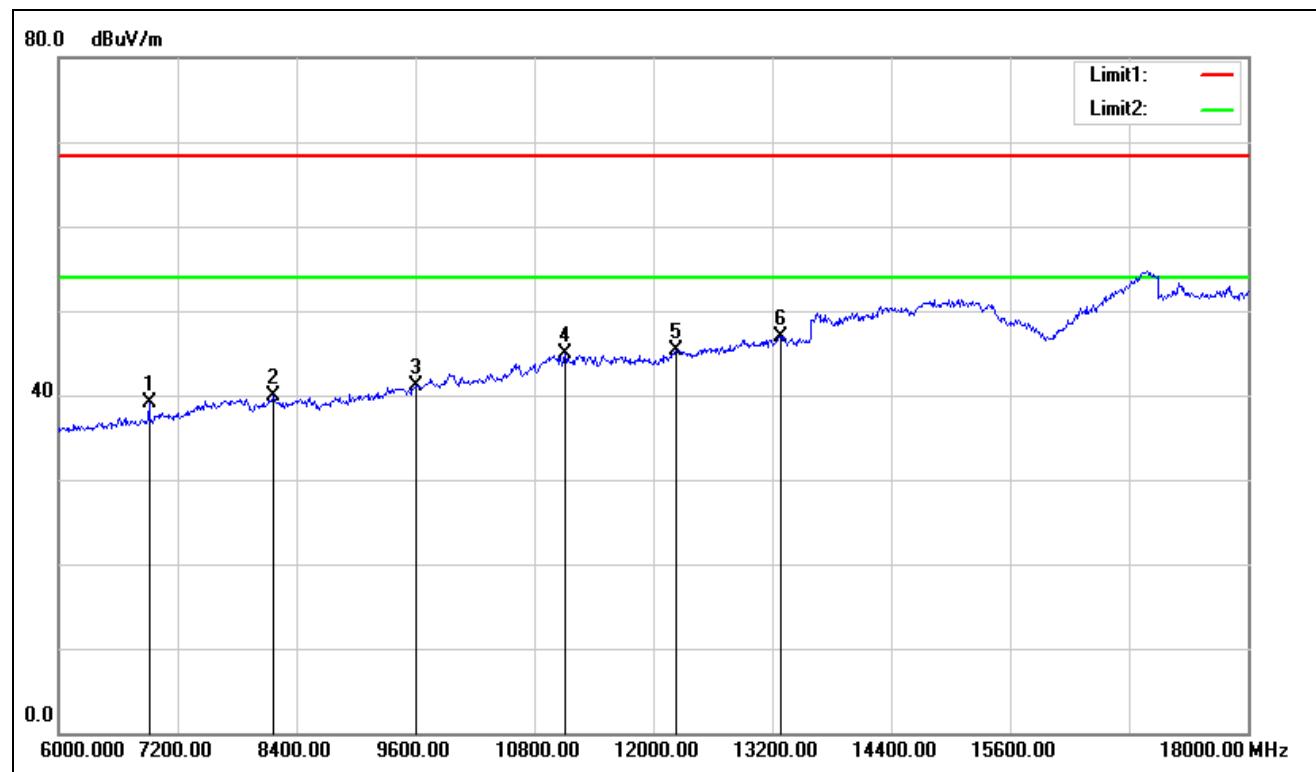
1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit.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



Vertical



Horizontal



**Test Mode: TX / IEEE 802.11a / 5200MHz /(CH Mid)****Tested by: Fadé Zhong****Ambient temperature: 24°C****Relative humidity: 52% RH****Date: June 19, 2017**

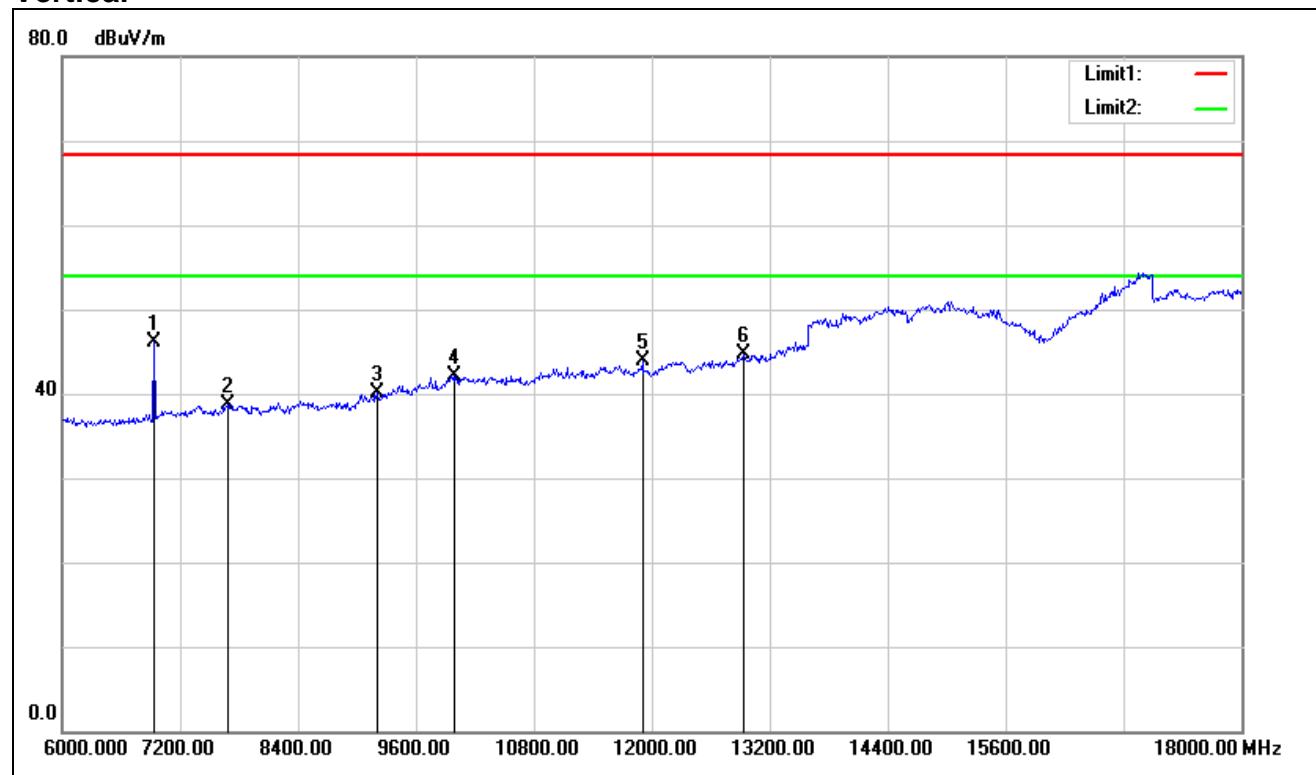
| Frequency (MHz) | Reading (dBuV) | Correction Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Antenna Pole (V/H) | Remark |
|-----------------|----------------|--------------------------|-----------------|----------------|-------------|--------------------|--------|
| 6936.000 | 38.45 | 7.60 | 46.05 | 68.23 | -22.18 | V | peak |
| 7680.000 | 29.67 | 9.03 | 38.70 | 68.23 | -29.53 | V | peak |
| 9204.000 | 30.36 | 9.69 | 40.05 | 68.23 | -28.18 | V | peak |
| 9984.000 | 30.13 | 11.93 | 42.06 | 68.23 | -26.17 | V | peak |
| 11904.000 | 29.20 | 14.68 | 43.88 | 68.23 | -24.35 | V | peak |
| 12936.000 | 26.89 | 17.74 | 44.63 | 68.23 | -23.60 | V | peak |
| | | | | | | | |
| 6936.000 | 32.63 | 7.60 | 40.23 | 68.23 | -28.00 | H | Peak |
| 8160.000 | 30.58 | 9.56 | 40.14 | 68.23 | -28.09 | H | Peak |
| 9144.000 | 30.49 | 9.51 | 40.00 | 68.23 | -28.23 | H | Peak |
| 10248.000 | 29.32 | 12.75 | 42.07 | 68.23 | -26.16 | H | peak |
| 11280.000 | 27.70 | 14.96 | 42.66 | 68.23 | -25.57 | H | peak |
| 12276.000 | 28.38 | 15.55 | 43.93 | 68.23 | -24.30 | H | peak |

Remark:

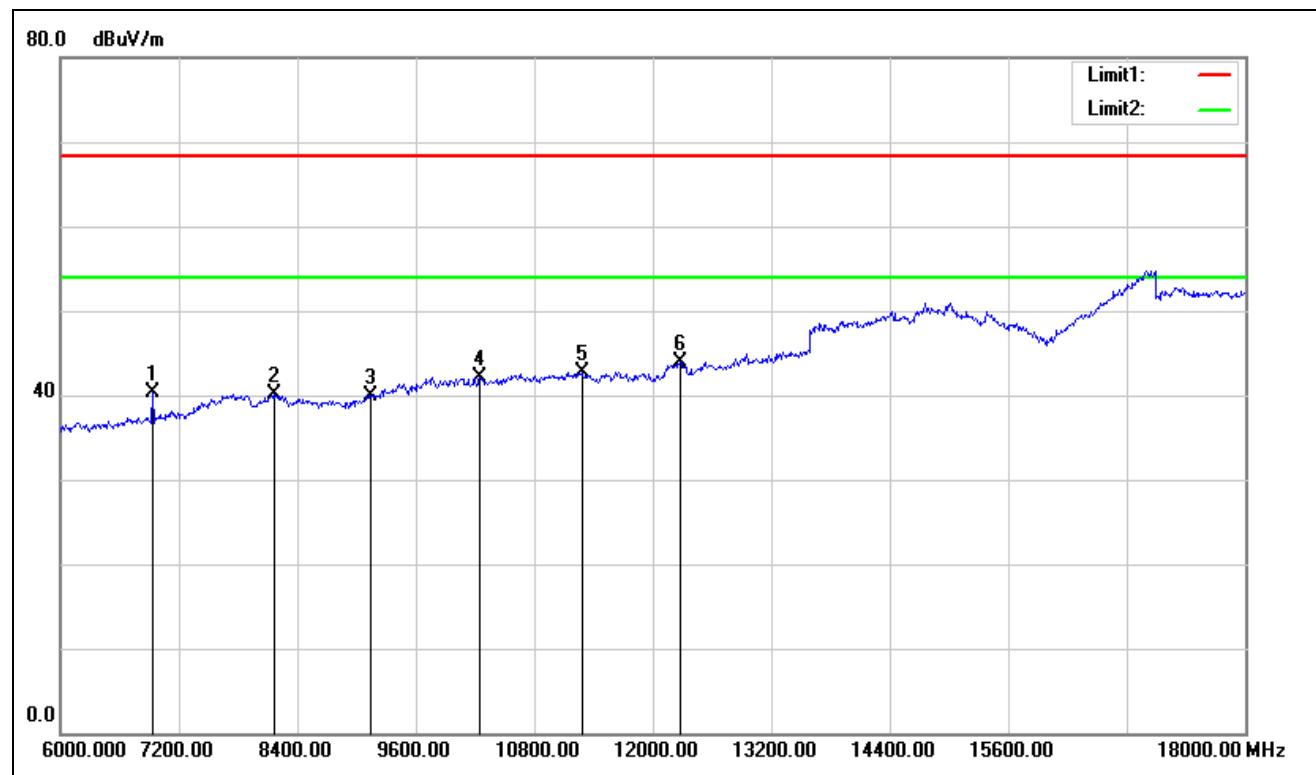
1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit.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



Vertical



Horizontal



**Test Mode: TX / IEEE 802.11a / 5240MHz /(CH High)****Tested by: Fade Zhong****Ambient temperature: 24°C Relative humidity: 52% RH****Date: June 19, 2017**

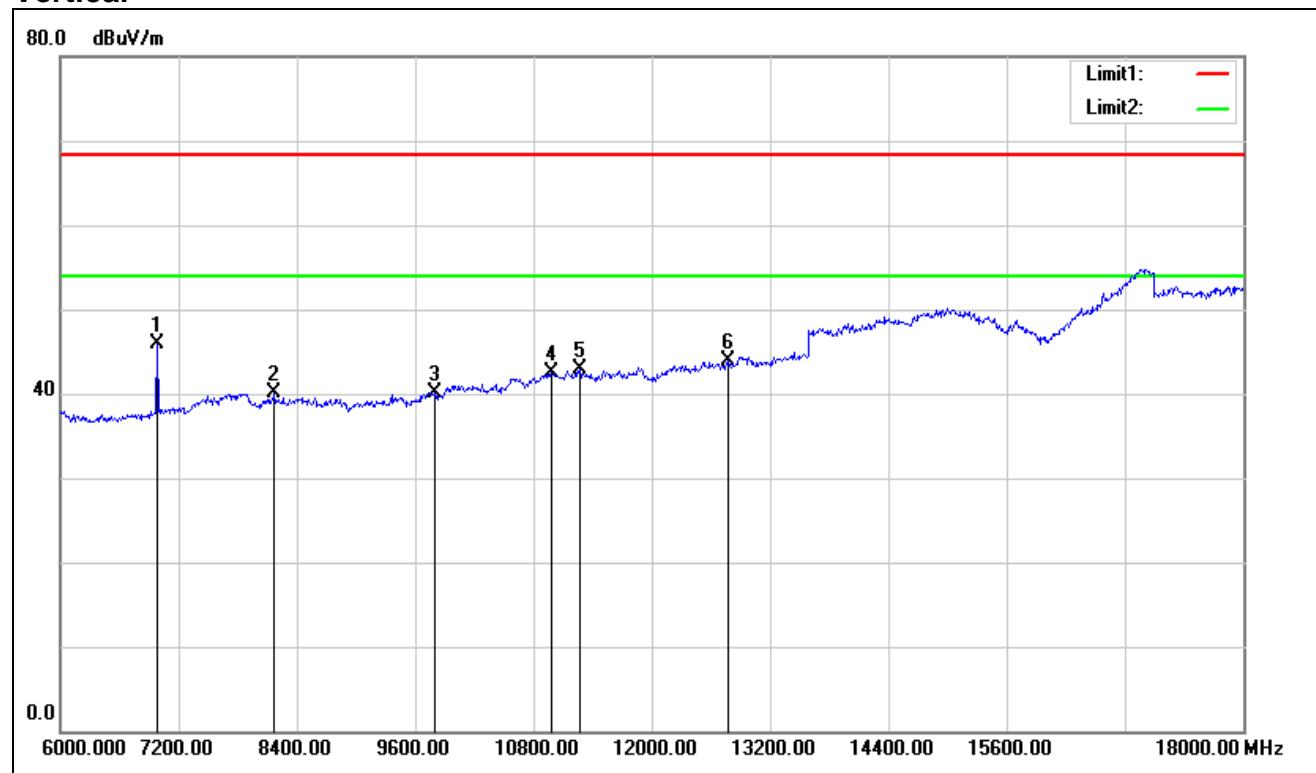
| Frequency (MHz) | Reading (dBuV) | Correction Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Antenna Pole (V/H) | Remark |
|-----------------|----------------|--------------------------|-----------------|----------------|-------------|--------------------|--------|
| 6984.000 | 38.21 | 7.67 | 45.88 | 68.23 | -22.35 | V | peak |
| 8172.000 | 30.51 | 9.56 | 40.07 | 68.23 | -28.16 | V | peak |
| 9804.000 | 28.65 | 11.42 | 40.07 | 68.23 | -28.16 | V | peak |
| 10980.000 | 27.39 | 15.02 | 42.41 | 68.23 | -25.82 | V | peak |
| 11268.000 | 27.94 | 14.96 | 42.90 | 68.23 | -25.33 | V | peak |
| 12780.000 | 26.66 | 17.22 | 43.88 | 68.23 | -24.35 | V | peak |
| | | | | | | | |
| 6984.000 | 32.89 | 7.67 | 40.56 | 68.23 | -27.67 | H | Peak |
| 8220.000 | 31.09 | 9.53 | 40.62 | 68.23 | -27.61 | H | Peak |
| 9312.000 | 30.67 | 10.00 | 40.67 | 68.23 | -27.56 | H | Peak |
| 10608.000 | 30.26 | 13.86 | 44.12 | 68.23 | -24.11 | H | peak |
| 11652.000 | 30.39 | 14.79 | 45.18 | 68.23 | -23.05 | H | peak |
| 12564.000 | 29.77 | 16.51 | 46.28 | 68.23 | -21.95 | H | peak |

Remark:

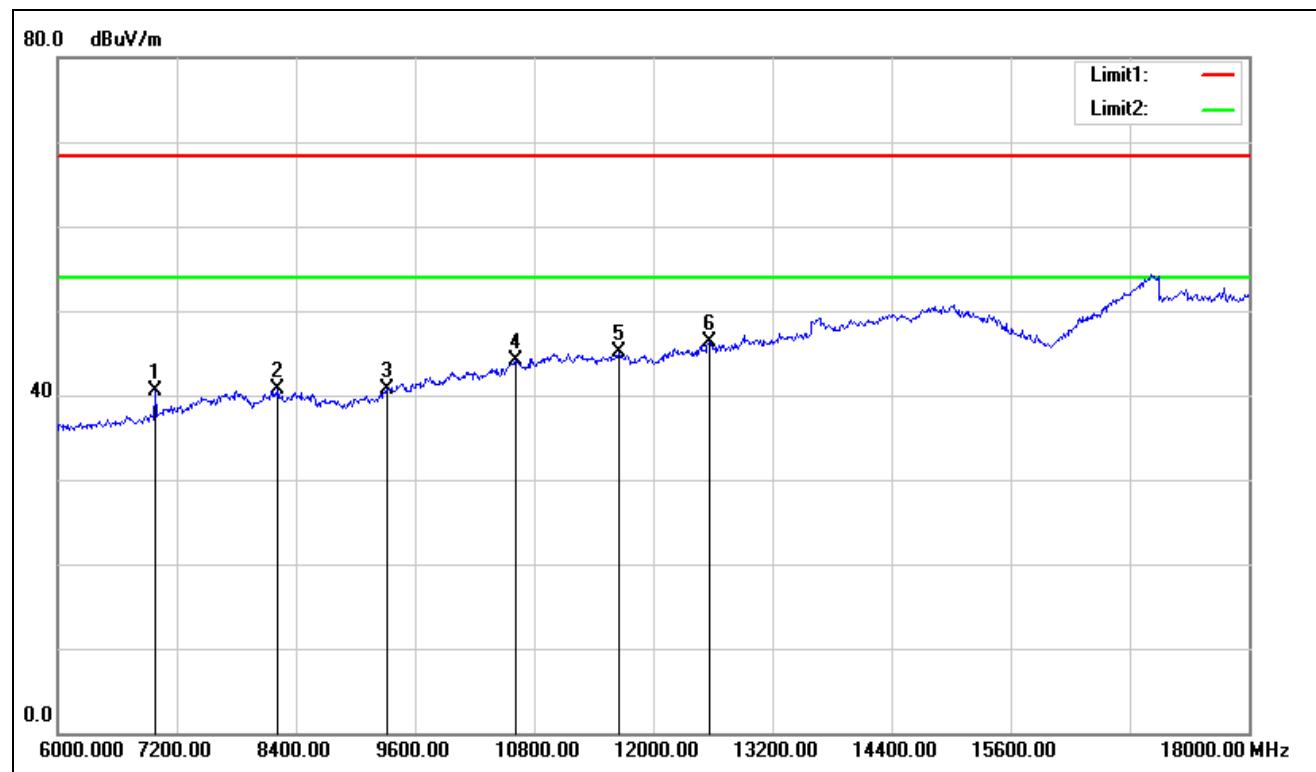
1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit.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



Vertical



Horizontal



**Combine with Antenna 0 and Antenna 1****Test Mode: TX / IEEE 802.11n HT 20 MHz / 5180MHz /(CH Low) Tested by: Fade Zhong****Ambient temperature: 24°C Relative humidity: 52% RH Date: June 19, 2017**

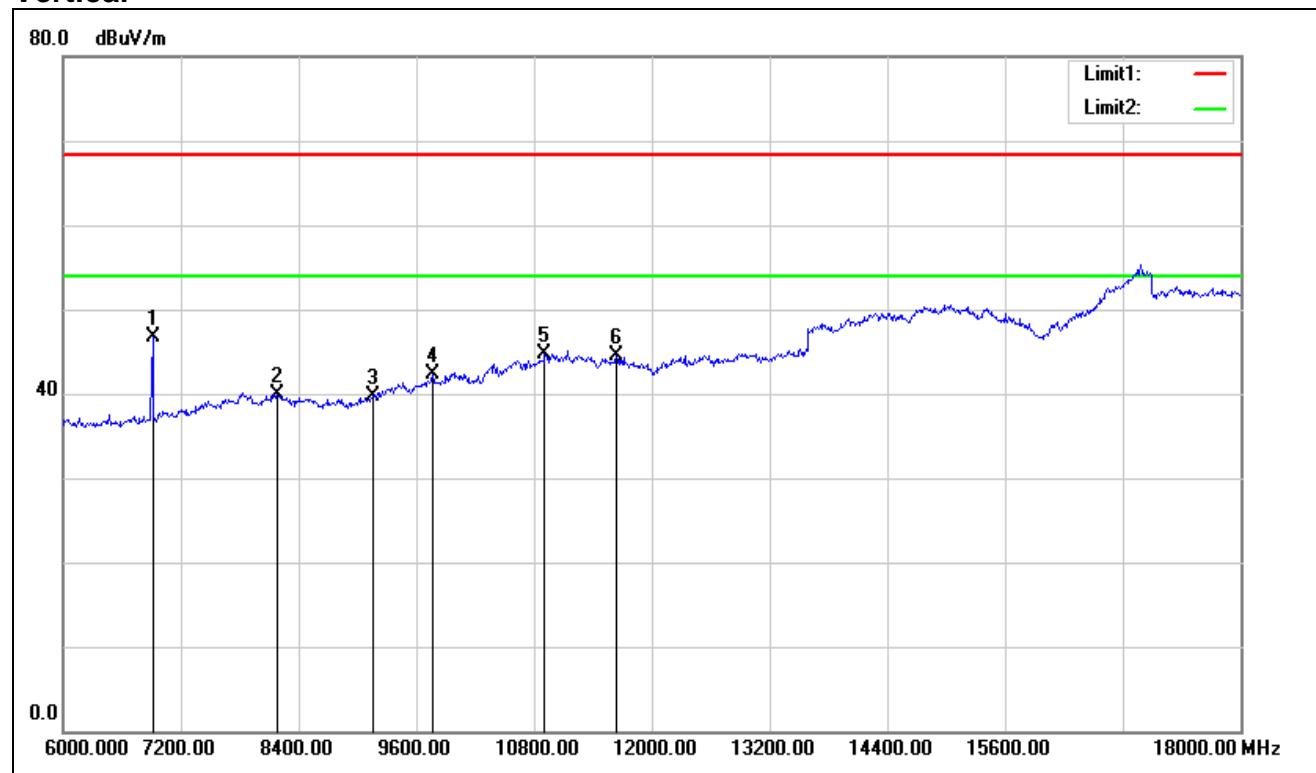
| Frequency (MHz) | Reading (dBuV) | Correction Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Antenna Pole (V/H) | Remark |
|-----------------|----------------|--------------------------|-----------------|----------------|-------------|--------------------|--------|
| 6912.000 | 39.14 | 7.56 | 46.70 | 68.23 | -21.53 | V | peak |
| 8184.000 | 30.37 | 9.55 | 39.92 | 68.23 | -28.31 | V | peak |
| 9156.000 | 30.17 | 9.55 | 39.72 | 68.23 | -28.51 | V | peak |
| 9768.000 | 30.96 | 11.31 | 42.27 | 68.23 | -25.96 | V | peak |
| 10908.000 | 29.84 | 14.79 | 44.63 | 68.23 | -23.60 | V | peak |
| 11640.000 | 29.74 | 14.80 | 44.54 | 68.23 | -23.69 | V | peak |
| | | | | | | | |
| 6912.000 | 41.45 | 7.56 | 49.01 | 68.23 | -19.22 | H | Peak |
| 7812.000 | 31.99 | 9.28 | 41.27 | 68.23 | -26.96 | H | Peak |
| 9432.000 | 31.30 | 10.34 | 41.64 | 68.23 | -26.59 | H | Peak |
| 11196.000 | 29.30 | 14.99 | 44.29 | 68.23 | -23.94 | H | peak |
| 11616.000 | 29.53 | 14.81 | 44.34 | 68.23 | -23.89 | H | peak |
| 13464.000 | 26.53 | 19.17 | 45.70 | 68.23 | -22.53 | H | peak |

Remark:

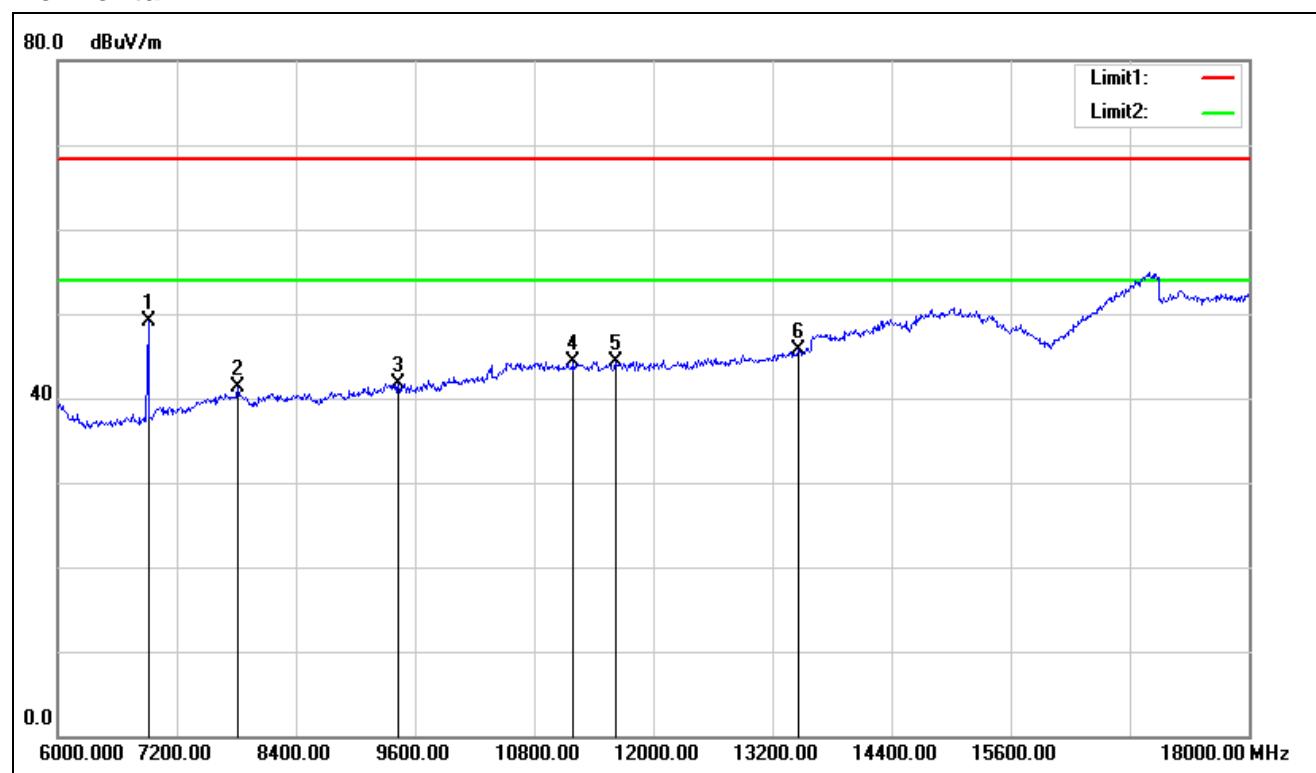
1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit.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



Vertical



Horizontal



**Test Mode: TX / IEEE 802.11n HT 20 MHz / 5200MHz /(CH Mid) Tested by: Fade Zhong****Ambient temperature: 24°C Relative humidity: 52% RH Date: June 19, 2017**

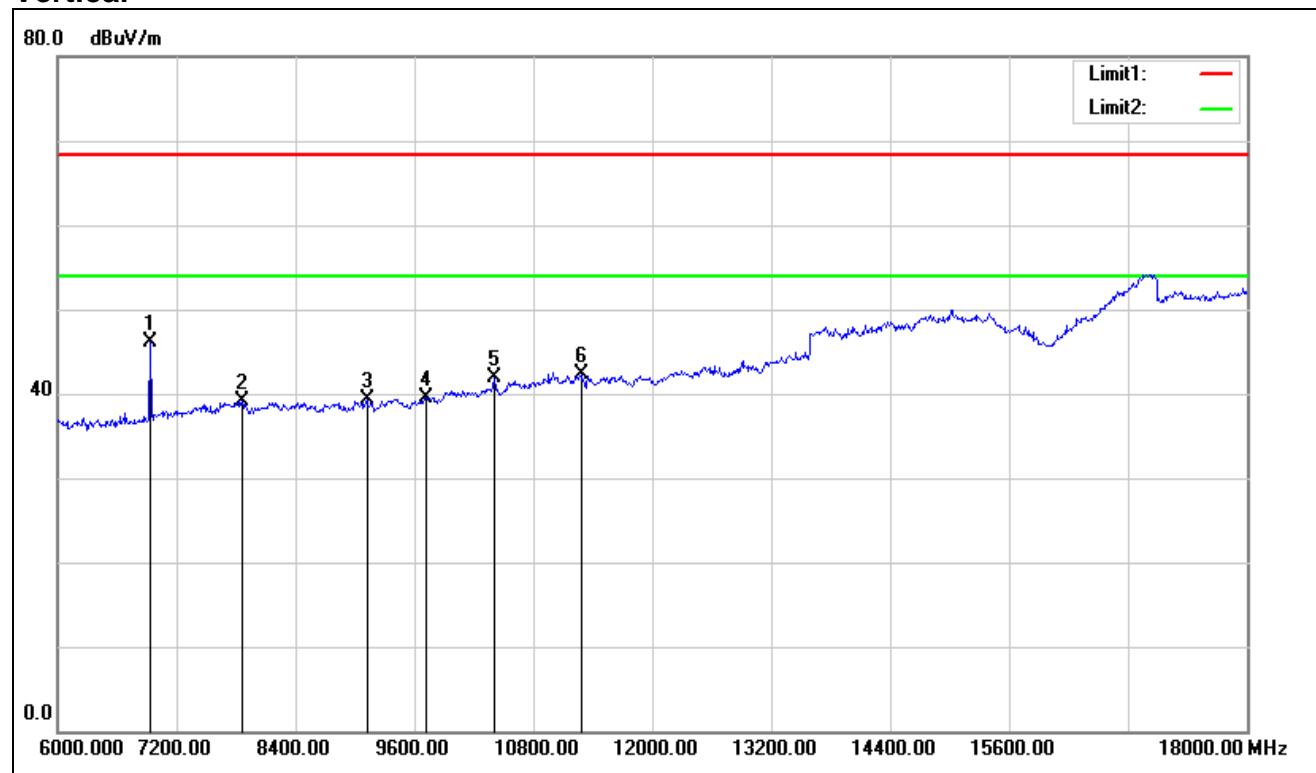
| Frequency (MHz) | Reading (dBuV) | Correction Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Antenna Pole (V/H) | Remark |
|-----------------|----------------|--------------------------|-----------------|----------------|-------------|--------------------|--------|
| 6936.000 | 38.57 | 7.60 | 46.17 | 68.23 | -22.06 | V | peak |
| 7860.000 | 29.65 | 9.38 | 39.03 | 68.23 | -29.20 | V | peak |
| 9120.000 | 29.81 | 9.45 | 39.26 | 68.23 | -28.97 | V | peak |
| 9720.000 | 28.42 | 11.17 | 39.59 | 68.23 | -28.64 | V | peak |
| 10404.000 | 28.77 | 13.23 | 42.00 | 68.23 | -26.23 | V | peak |
| 11280.000 | 27.35 | 14.96 | 42.31 | 68.23 | -25.92 | V | peak |
| | | | | | | | |
| 6936.000 | 42.69 | 7.60 | 50.29 | 68.23 | -17.94 | H | Peak |
| 8148.000 | 30.32 | 9.57 | 39.89 | 68.23 | -28.34 | H | Peak |
| 9696.000 | 30.70 | 11.10 | 41.80 | 68.23 | -26.43 | H | Peak |
| 11256.000 | 30.04 | 14.97 | 45.01 | 68.23 | -23.22 | H | peak |
| 12276.000 | 30.07 | 15.55 | 45.62 | 68.23 | -22.61 | H | peak |
| 14304.000 | 28.94 | 20.76 | 49.70 | 68.23 | -18.53 | H | peak |

Remark:

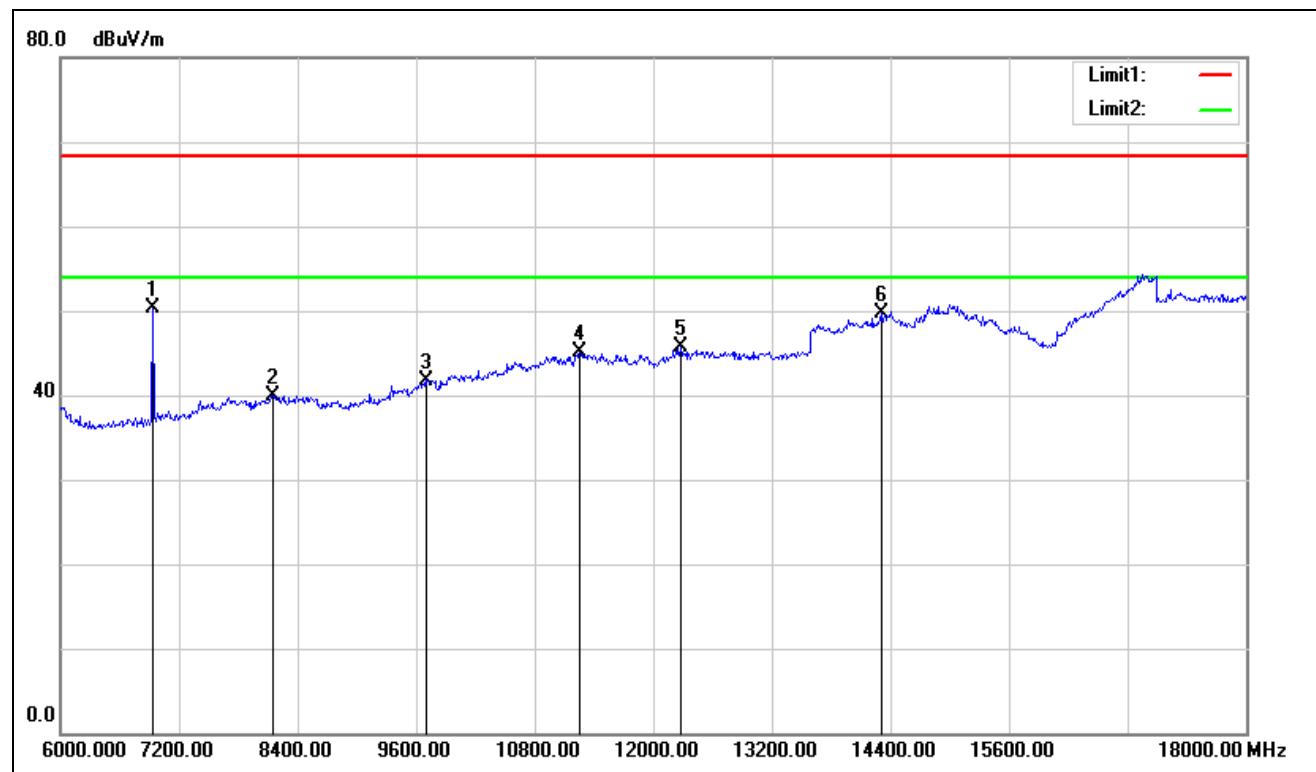
1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit.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



Vertical



Horizontal



**Test Mode: TX / IEEE 802.11n HT 20 MHz / 5240MHz /(CH High)****Tested by: Ad Gan****Ambient temperature: 24°C****Relative humidity: 52% RH****Date: June 19, 2017**

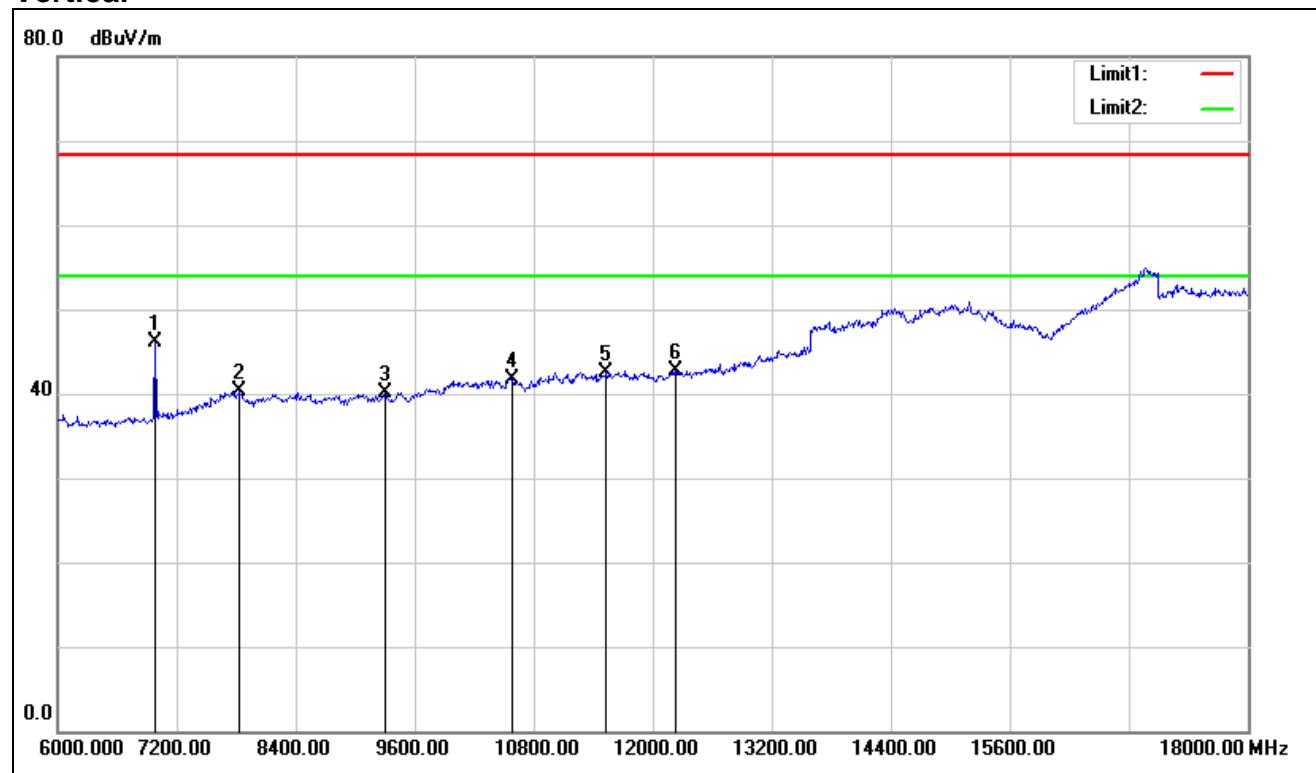
| Frequency (MHz) | Reading (dBuV) | Correction Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Antenna Pole (V/H) | Remark |
|-----------------|----------------|--------------------------|-----------------|----------------|-------------|--------------------|--------|
| 6984.000 | 38.37 | 7.67 | 46.04 | 68.23 | -22.19 | V | peak |
| 7836.000 | 30.98 | 9.33 | 40.31 | 68.23 | -27.92 | V | peak |
| 9300.000 | 30.23 | 9.96 | 40.19 | 68.23 | -28.04 | V | peak |
| 10584.000 | 27.97 | 13.79 | 41.76 | 68.23 | -26.47 | V | peak |
| 11532.000 | 27.70 | 14.85 | 42.55 | 68.23 | -25.68 | V | peak |
| 12228.000 | 27.28 | 15.39 | 42.67 | 68.23 | -25.56 | V | peak |
| | | | | | | | |
| 6984.000 | 41.85 | 7.67 | 49.52 | 68.23 | -18.71 | H | Peak |
| 7704.000 | 30.17 | 9.07 | 39.24 | 68.23 | -28.99 | H | Peak |
| 9372.000 | 29.40 | 10.17 | 39.57 | 68.23 | -28.66 | H | Peak |
| 10644.000 | 28.83 | 13.98 | 42.81 | 68.23 | -25.42 | H | peak |
| 11952.000 | 29.93 | 14.66 | 44.59 | 68.23 | -23.64 | H | peak |
| 13560.000 | 27.34 | 19.42 | 46.76 | 68.23 | -21.47 | H | peak |

Remark:

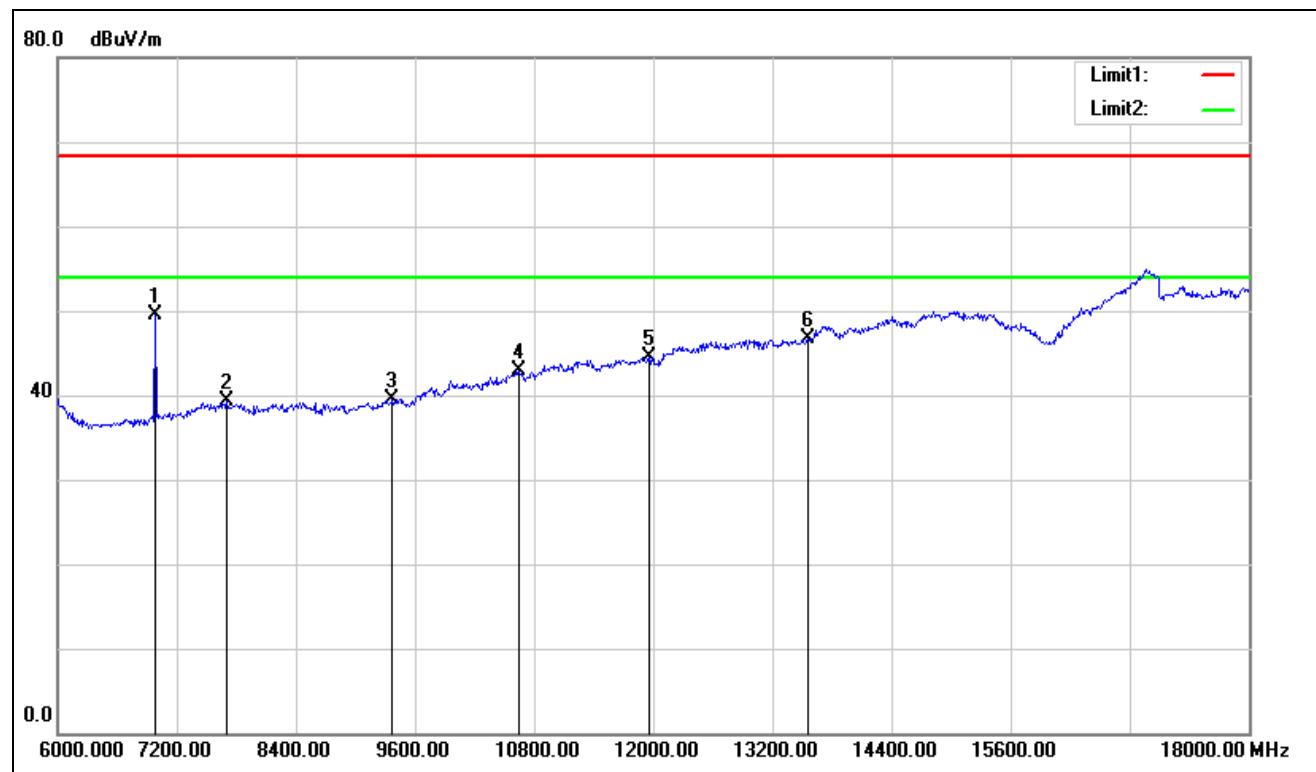
1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit.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



Vertical



Horizontal



**Combine with Antenna 0 and Antenna 1****Test Mode: TX / IEEE 802.11n HT 40 MHz / 5190MHz /(CH Low) Tested by: Fade Zhong****Ambient temperature: 24°C Relative humidity: 52% RH Date: June 19, 2017**

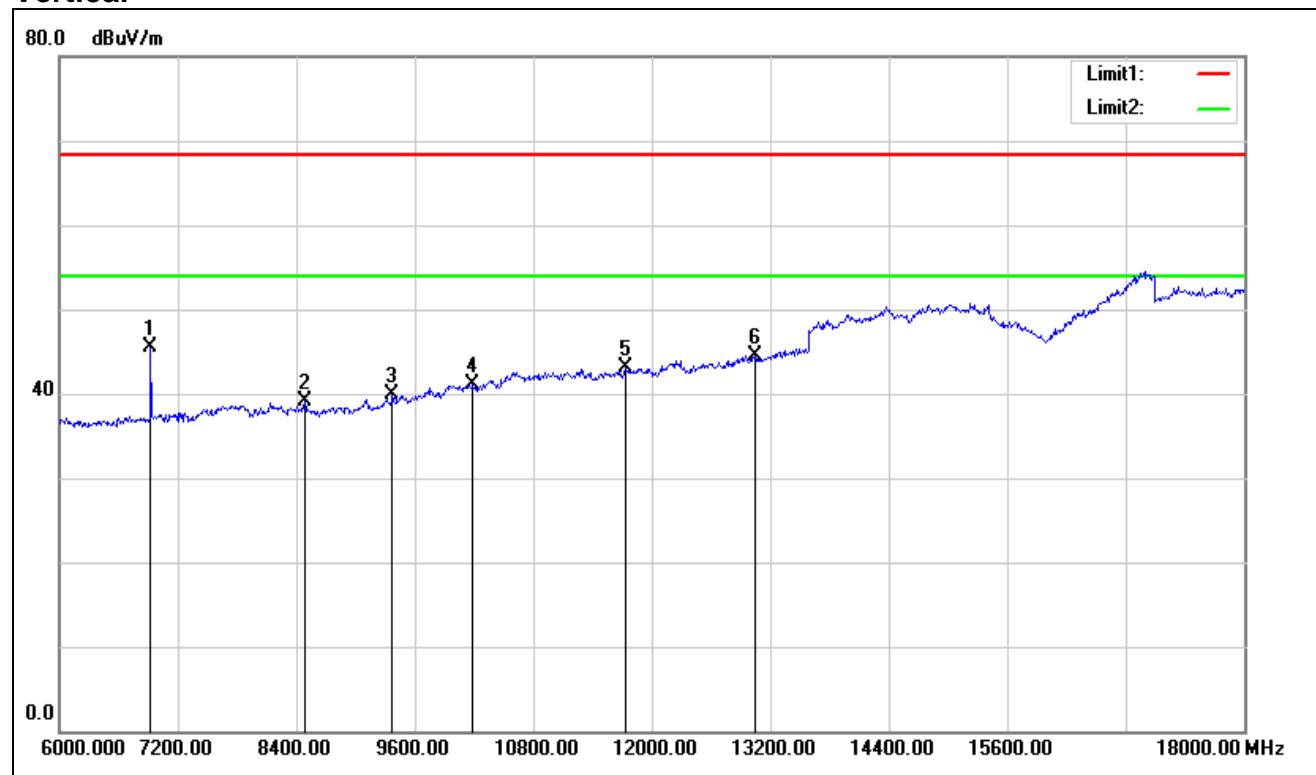
| Frequency (MHz) | Reading (dBuV) | Correction Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Antenna Pole (V/H) | Remark |
|-----------------|----------------|--------------------------|-----------------|----------------|-------------|--------------------|--------|
| 6924.000 | 38.01 | 7.58 | 45.59 | 68.23 | -22.64 | V | peak |
| 8484.000 | 29.67 | 9.38 | 39.05 | 68.23 | -29.18 | V | peak |
| 9372.000 | 29.80 | 10.17 | 39.97 | 68.23 | -28.26 | V | peak |
| 10188.000 | 28.60 | 12.56 | 41.16 | 68.23 | -27.07 | V | peak |
| 11736.000 | 28.43 | 14.76 | 43.19 | 68.23 | -25.04 | V | peak |
| 13044.000 | 26.34 | 18.07 | 44.41 | 68.23 | -23.82 | V | peak |
| | | | | | | | |
| 6924.000 | 40.70 | 7.58 | 48.28 | 68.23 | -19.95 | H | Peak |
| 8448.000 | 29.93 | 9.40 | 39.33 | 68.23 | -28.90 | H | Peak |
| 11004.000 | 27.62 | 15.08 | 42.70 | 68.23 | -25.53 | H | Peak |
| 11928.000 | 28.00 | 14.67 | 42.67 | 68.23 | -25.56 | H | peak |
| 12912.000 | 26.66 | 17.66 | 44.32 | 68.23 | -23.91 | H | peak |
| 13956.000 | 27.78 | 20.46 | 48.24 | 68.23 | -19.99 | H | peak |

Remark:

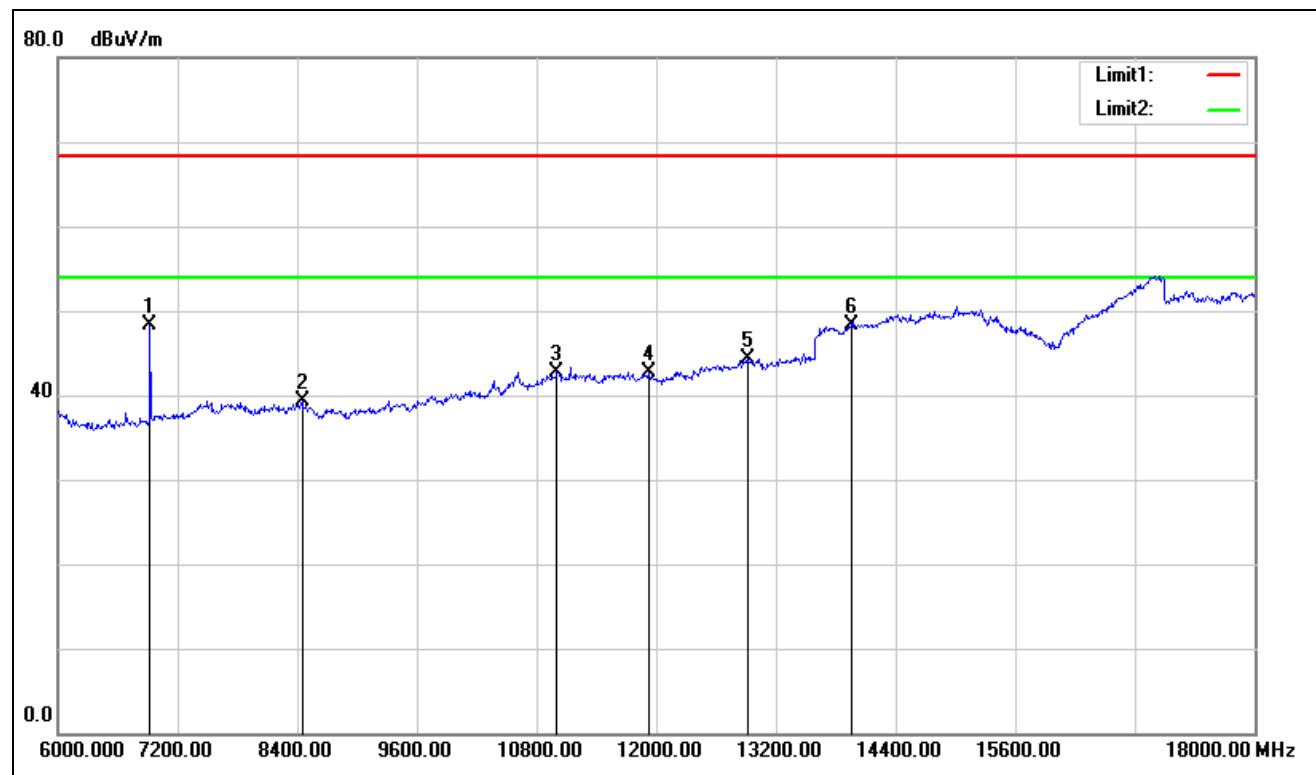
1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit.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



Vertical



Horizontal





Test Mode: TX / IEEE 802.11n HT 40 MHz / 5230MHz /(CH High) Tested by: Fade Zhong
Ambient temperature: 24°C Relative humidity: 52% RH Date: June 19, 2017

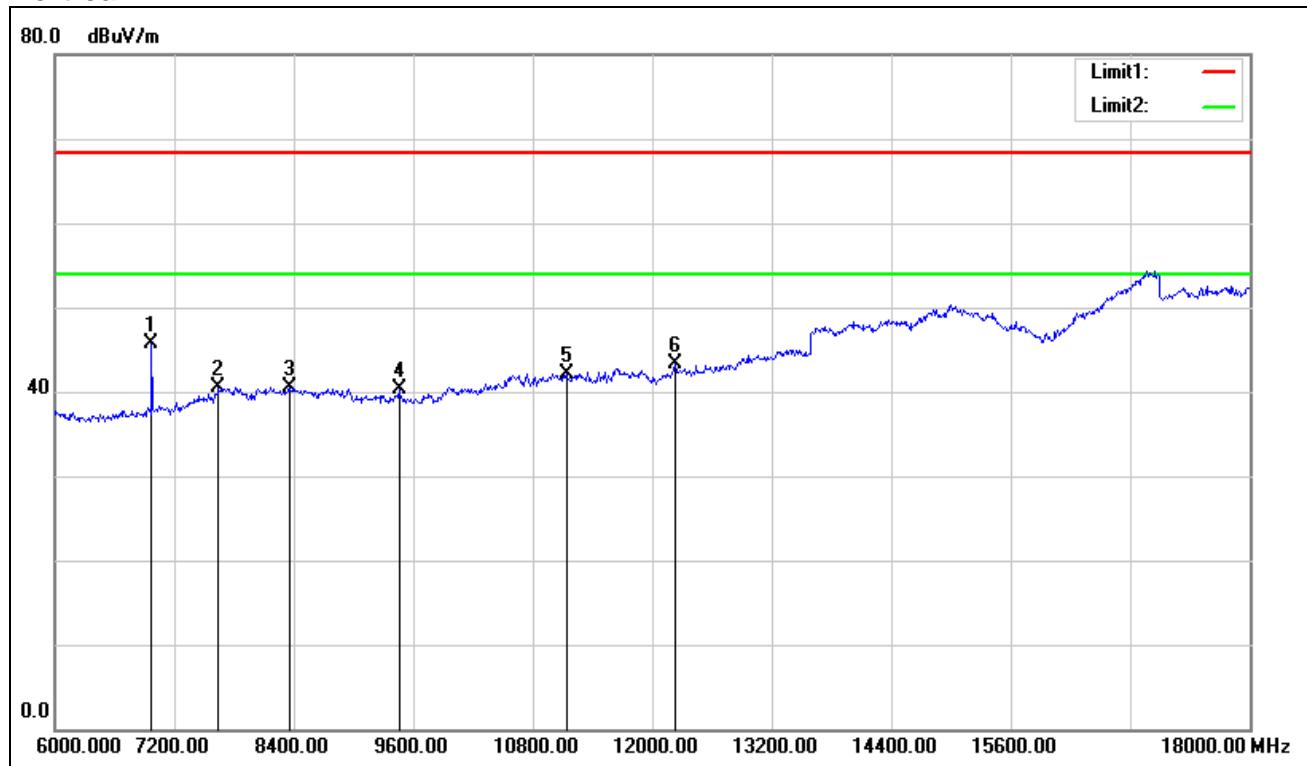
| Frequency (MHz) | Reading (dBuV) | Correction Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Antenna Pole (V/H) | Remark |
|-----------------|----------------|--------------------------|-----------------|----------------|-------------|--------------------|--------|
| 6972.000 | 38.01 | 7.65 | 45.66 | 68.23 | -22.57 | V | peak |
| 7644.000 | 31.57 | 8.96 | 40.53 | 68.23 | -27.70 | V | peak |
| 8352.000 | 30.99 | 9.46 | 40.45 | 68.23 | -27.78 | V | peak |
| 9456.000 | 29.85 | 10.41 | 40.26 | 68.23 | -27.97 | V | peak |
| 11136.000 | 27.15 | 15.02 | 42.17 | 68.23 | -26.06 | V | peak |
| 12228.000 | 27.82 | 15.39 | 43.21 | 68.23 | -25.02 | V | peak |
| | | | | | | | |
| 6972.000 | 40.89 | 7.65 | 48.54 | 68.23 | -19.69 | H | Peak |
| 8064.000 | 29.06 | 9.61 | 38.67 | 68.23 | -29.56 | H | Peak |
| 9444.000 | 29.22 | 10.38 | 39.60 | 68.23 | -28.63 | H | Peak |
| 10668.000 | 27.98 | 14.05 | 42.03 | 68.23 | -26.20 | H | peak |
| 11628.000 | 27.78 | 14.80 | 42.58 | 68.23 | -25.65 | H | peak |
| 13620.000 | 28.15 | 19.58 | 47.73 | 68.23 | -20.50 | H | peak |

Remark:

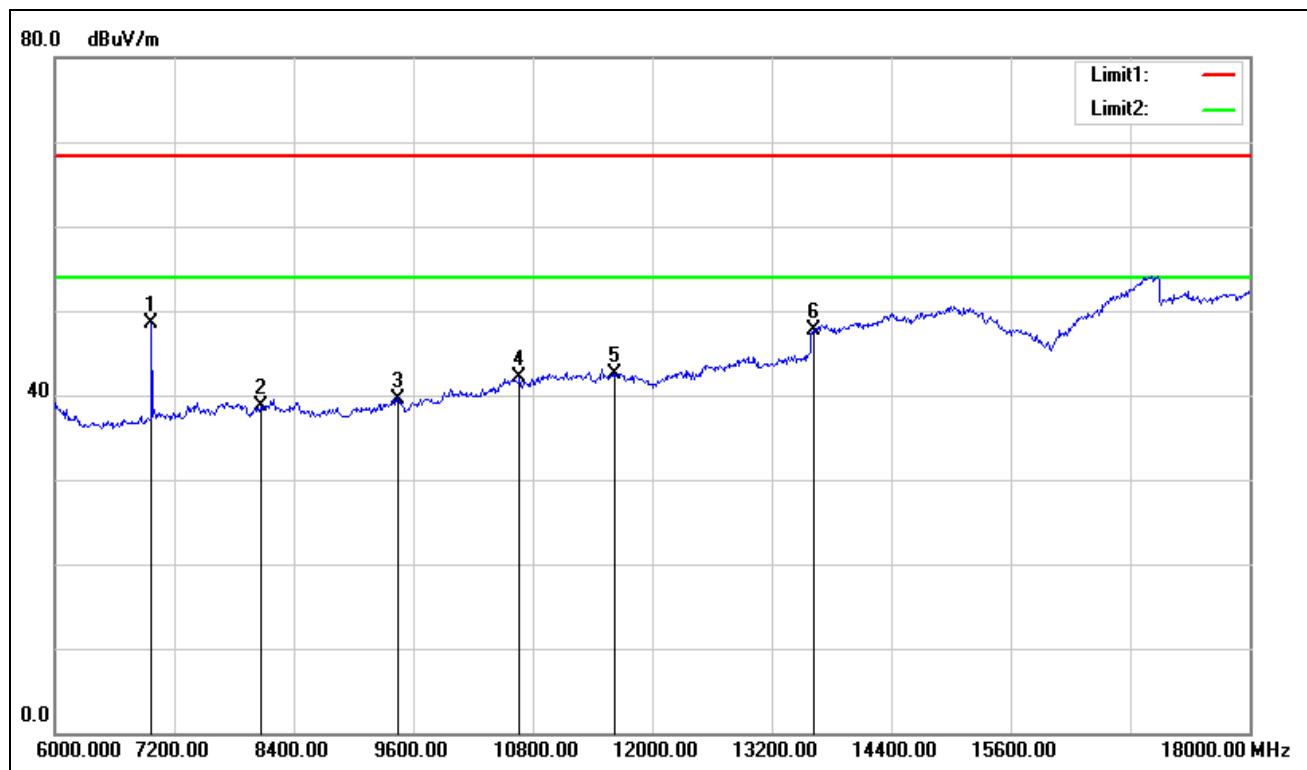
1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit.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



Vertical



Horizontal

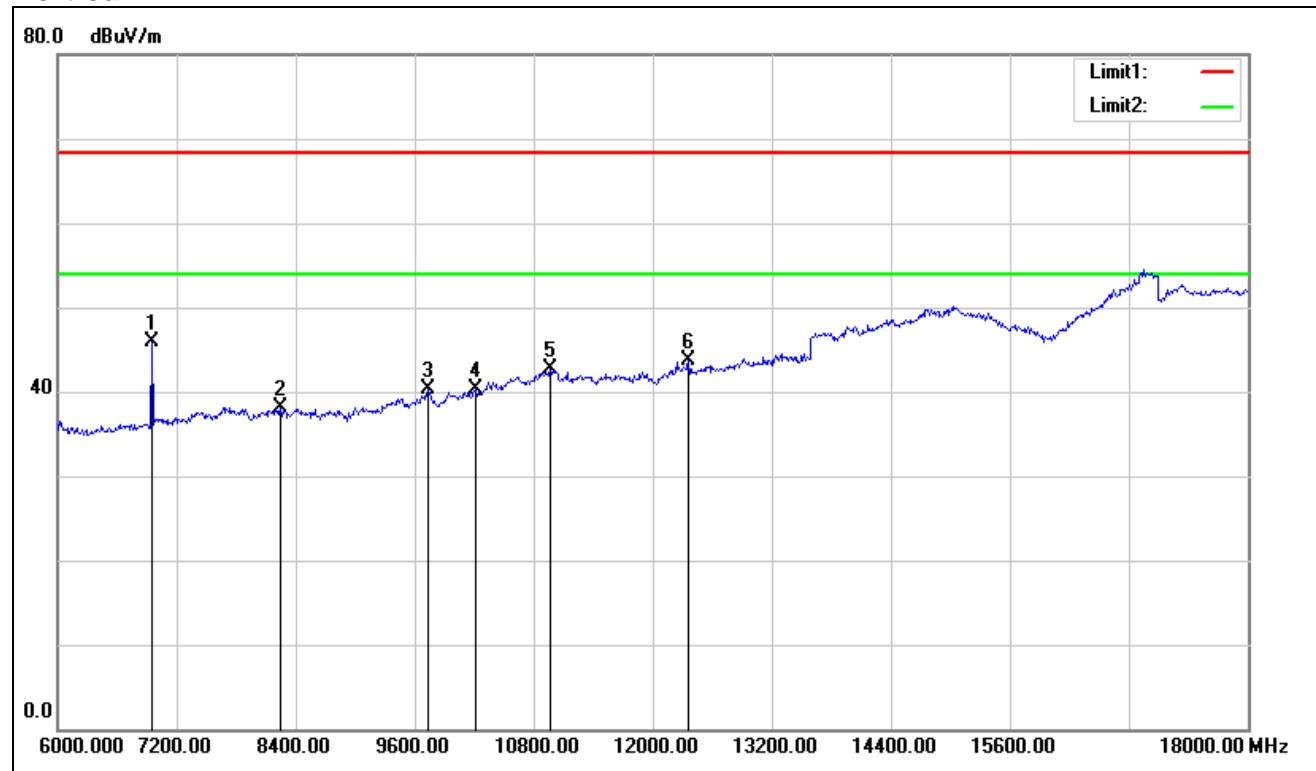
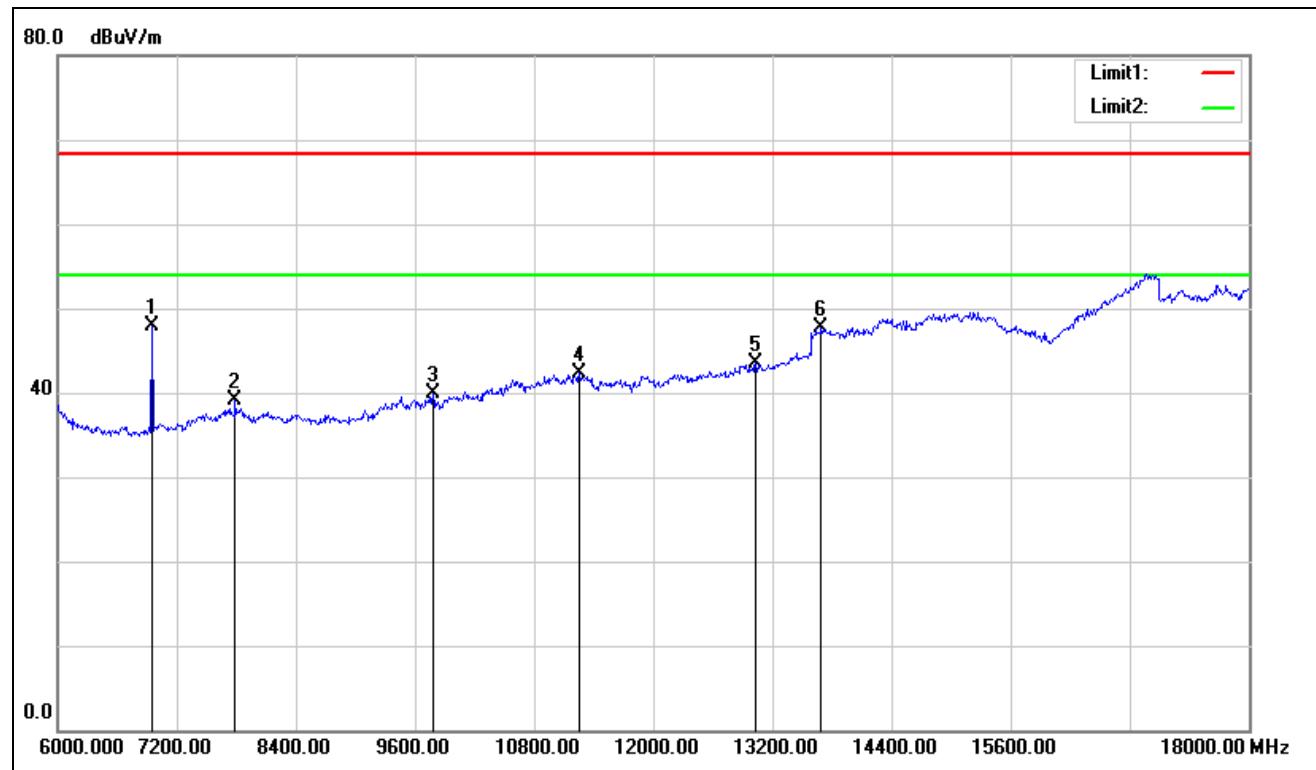


**Combine with Antenna 0 and Antenna 1****Test Mode:** TX / IEEE 802.11ac 80 / 5210MHz /(CH Low)**Tested by:** Fadé Zhong**Ambient temperature:** 24°C **Relative humidity:** 52% RH**Date:** June 19, 2017

| Frequency (MHz) | Reading (dBuV) | Correction Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Antenna Pole (V/H) | Remark |
|-----------------|----------------|--------------------------|-----------------|----------------|-------------|--------------------|--------|
| 6948.000 | 38.26 | 7.62 | 45.88 | 68.23 | -22.35 | V | peak |
| 8244.000 | 28.56 | 9.52 | 38.08 | 68.23 | -30.15 | V | peak |
| 9732.000 | 29.05 | 11.21 | 40.26 | 68.23 | -27.97 | V | peak |
| 10212.000 | 27.71 | 12.64 | 40.35 | 68.23 | -27.88 | V | peak |
| 10968.000 | 27.65 | 14.98 | 42.63 | 68.23 | -25.60 | V | peak |
| 12360.000 | 27.82 | 15.83 | 43.65 | 68.23 | -24.58 | V | peak |
| | | | | | | | |
| 6948.000 | 40.37 | 7.62 | 47.99 | 68.23 | -20.24 | H | Peak |
| 7788.000 | 29.96 | 9.24 | 39.20 | 68.23 | -29.03 | H | Peak |
| 9780.000 | 28.50 | 11.35 | 39.85 | 68.23 | -28.38 | H | Peak |
| 11256.000 | 27.25 | 14.97 | 42.22 | 68.23 | -26.01 | H | peak |
| 13032.000 | 25.53 | 18.03 | 43.56 | 68.23 | -24.67 | H | peak |
| 13692.000 | 27.87 | 19.77 | 47.64 | 68.23 | -20.59 | 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).

**Vertical****Horizontal**



7 POWERLINE CONDUCTED EMISSION

7.1.1. LIMIT

According to RSS-Gen §7.2.2, except when the requirements applicable to a given device state

otherwise, for any licence-exempt radio communication device equipped to operate from the public utility AC power supply, either directly or indirectly, the radio frequency voltage that is conducted back onto the AC power lines in the frequency range of 0.15 MHz to 30 MHz shall not exceed the limits shown in Table 2. The tighter limit applies at the frequency range boundaries. The conducted emissions shall be measured with a 50 ohm/50 microhenry line impedance stabilization network. A description of the method of measurement that is acceptable to Industry Canada is found in RSS-212.

| 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 |

NOTE:

- (1) The lower limit shall apply at the transition frequencies.
- (2) The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.
- (3) All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

7.3.2. 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 | 02/21/2017 | 02/20/2018 |
| LISN(EUT) | ROHDE&SCHWARZ | ENV216 | 101543-WX | 02/21/2017 | 02/20/2018 |
| LISN | EMCO | 3825/2 | 8901-1459 | 02/21/2017 | 02/20/2018 |
| Temp. / Humidity Meter | VICTOR | HTC-1 | N/A | 02/21/2017 | 02/20/2018 |
| Cable | HuberSuhner | SUCOFLEX104PEA | N/A | N/A | N/A |
| Test S/W | FARAD | EZ-EMC/ CCS-3A1-CE | | | |

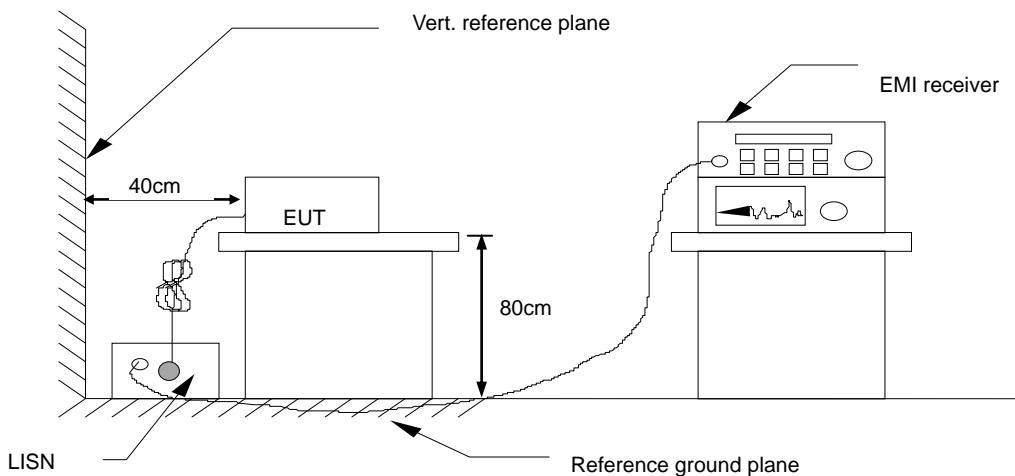
NOTE: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. N.C.R = No Calibration Request.



7.1.3. TEST PROCEDURES (please refer to measurement standard)

- The EUT and Support equipment, if needed, was placed on a non-conducted table, which is 0.8m above the ground plane and 0.4m away from the conducted wall.
- The test equipment EUT installed received AC main power, through a Line Impedance Stabilization Network (LISN), which supplied power source and was grounded to the ground plane. All support equipment power received from a second LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
- The EUT test program was started. Emissions were measured on each current carrying line of the EUT using an EMI Test Receiver connected to the LISN powering the EUT.
- The frequency range from 150 kHz to 30 MHz was searched. The test data of the worst-case condition(s) was recorded. Emission levels under limit 20dB were not recorded.

7.1.4. TEST SETUP



- For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

7.3.5. DATA SAMPLE

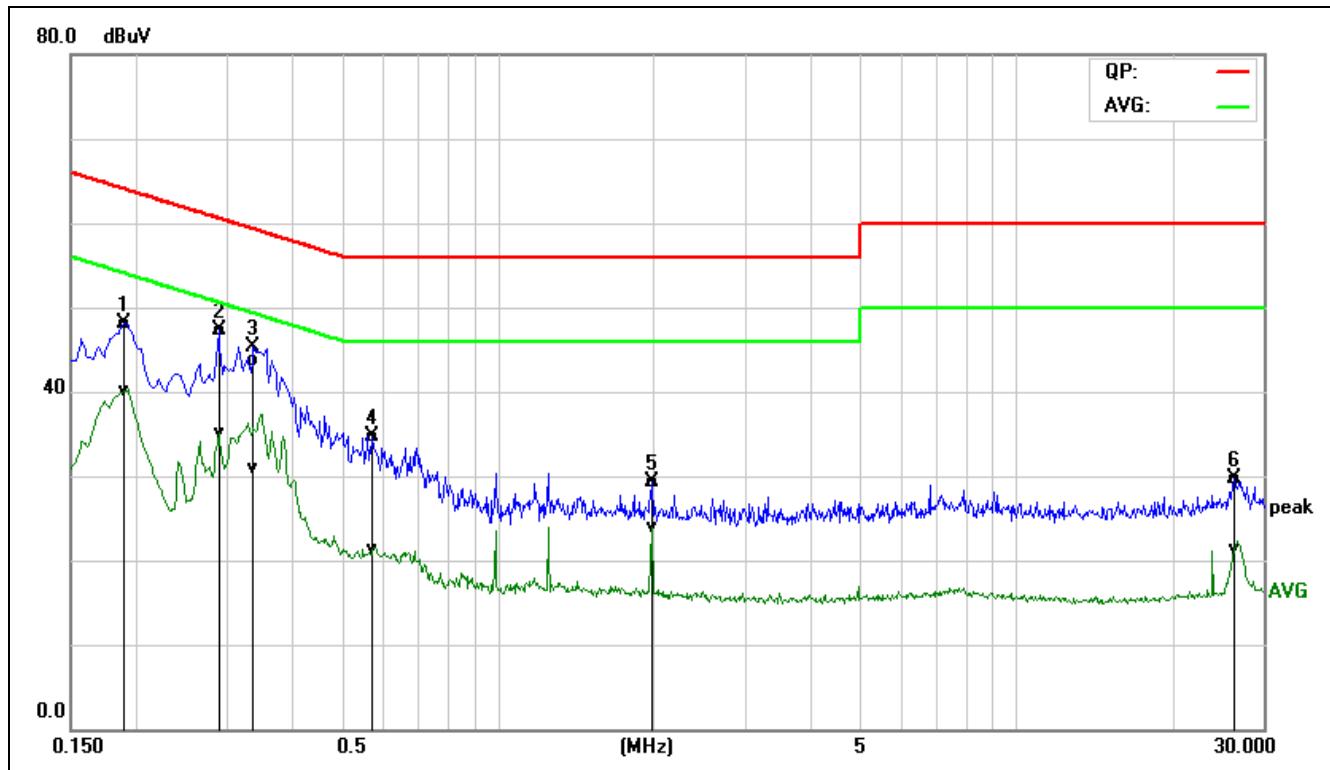
| Frequency (MHz) | QuasiPeak Reading (dBuV) | Average Reading (dBuV) | Correction Factor (dB) | QuasiPeak Result (dBuV) | Average Result (dBuV) | QuasiPeak Limit (dBuV) | Average Limit (dBuV) | QuasiPeak Margin (dB) | Average Margin (dB) | Remark (Pass/Fail) |
|-----------------|--------------------------|------------------------|------------------------|-------------------------|-----------------------|------------------------|----------------------|-----------------------|---------------------|--------------------|
| 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)



7.3.6. TEST RESULTS

| | | | |
|--------------------------|---------------|--------------|-------------|
| Model No. | TEW-430AP/A | RBW,VBW | 9 kHz |
| Environmental Conditions | 22°C, 45% RH | Test Mode | Mode 1 |
| Tested by | Fade Zhong | Line | L1 |
| Test Date | June 30, 2017 | Test Voltage | AC120V/60Hz |

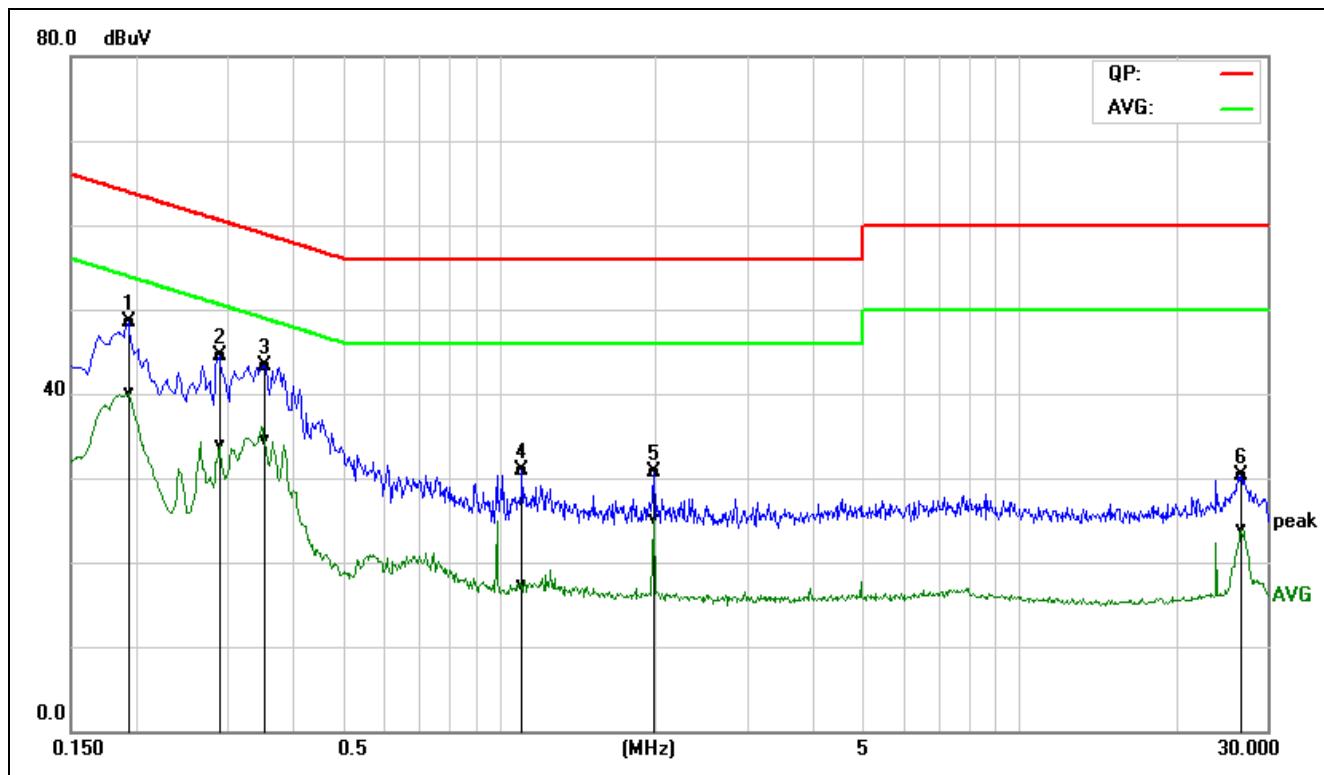


| Frequency (MHz) | QuasiPeak Reading (dBuV) | Average Reading (dBuV) | Correction Factor (dB) | QuasiPeak Result (dBuV) | Average Result (dBuV) | QuasiPeak Limit (dBuV) | Average Limit (dBuV) | QuasiPeak Margin (dB) | Average Margin (dB) | Remark (Pass/Fail) | Line (L1/L2) |
|-----------------|--------------------------|------------------------|------------------------|-------------------------|-----------------------|------------------------|----------------------|-----------------------|---------------------|--------------------|--------------|
| 0.1900 | 28.47 | 20.38 | 19.64 | 48.11 | 40.02 | 64.03 | 54.04 | -15.92 | -14.02 | Pass | L1 |
| 0.2900 | 27.70 | 15.54 | 19.61 | 47.31 | 35.15 | 60.52 | 50.52 | -13.21 | -15.37 | Pass | L1 |
| 0.3379 | 24.10 | 11.36 | 19.59 | 43.69 | 30.95 | 59.25 | 49.25 | -15.56 | -18.30 | Pass | L1 |
| 0.5740 | 15.13 | 1.80 | 19.56 | 34.69 | 21.36 | 56.00 | 46.00 | -21.31 | -24.64 | Pass | L1 |
| 1.9820 | 9.62 | 4.23 | 19.72 | 29.34 | 23.95 | 56.00 | 46.00 | -26.66 | -22.05 | Pass | L1 |
| 26.4100 | 9.21 | 0.77 | 20.46 | 29.67 | 21.23 | 60.00 | 50.00 | -30.33 | -28.77 | Pass | L1 |

REMARKS: L1 = Line One (Live Line)



| | | | |
|--------------------------|---------------|--------------|-------------|
| Model No. | TEW-430AP/A | RBW,VBW | 9 kHz |
| Environmental Conditions | 22°C, 45% RH | Test Mode | Mode 1 |
| Tested by | Fade Zhong | Line | L2 |
| Test Date | June 30, 2017 | Test Voltage | AC120V/60Hz |

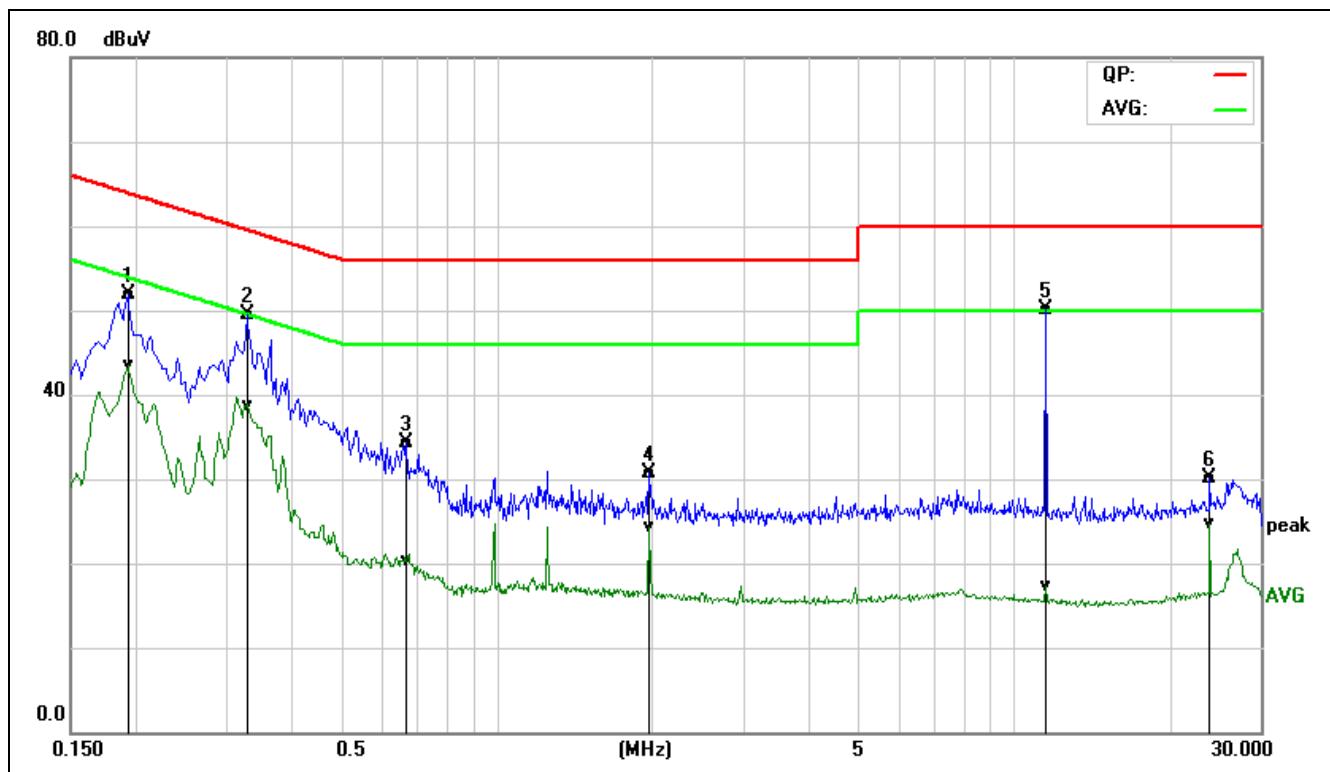


| Frequency (MHz) | QuasiPeak Reading (dBuV) | Average Reading (dBuV) | Correction Factor (dB) | QuasiPeak Result (dBuV) | Average Result (dBuV) | QuasiPeak Limit (dBuV) | Average Limit (dBuV) | QuasiPeak Margin (dB) | Average Margin (dB) | Remark (Pass/Fail) | Line (L1/L2) |
|-----------------|--------------------------|------------------------|------------------------|-------------------------|-----------------------|------------------------|----------------------|-----------------------|---------------------|--------------------|--------------|
| 0.1940 | 28.97 | 20.65 | 19.54 | 48.51 | 40.19 | 63.86 | 53.86 | -15.35 | -13.67 | Pass | L2 |
| 0.2900 | 25.02 | 14.31 | 19.54 | 44.56 | 33.85 | 60.52 | 50.52 | -15.96 | -16.67 | Pass | L2 |
| 0.3540 | 23.87 | 14.99 | 19.53 | 43.40 | 34.52 | 58.87 | 48.87 | -15.47 | -14.35 | Pass | L2 |
| 1.1060 | 11.38 | -2.20 | 19.57 | 30.95 | 17.37 | 56.00 | 46.00 | -25.05 | -28.63 | Pass | L2 |
| 1.9820 | 10.98 | 5.33 | 19.72 | 30.70 | 25.05 | 56.00 | 46.00 | -25.30 | -20.95 | Pass | L2 |
| 26.8380 | 9.77 | 3.19 | 20.62 | 30.39 | 23.81 | 60.00 | 50.00 | -29.61 | -26.19 | Pass | L2 |

REMARKS: L2 = Line Two (Neutral Line)



| | | | |
|---------------------------------|---------------|---------------------|-------------|
| Model No. | TEW-430AP/A | RBW,VBW | 9 kHz |
| Environmental Conditions | 22°C, 45% RH | Test Mode | Mode 2 |
| Tested by | Fade Zhong | Line | L1 |
| Test Date | June 30, 2017 | Test Voltage | AC240V/50Hz |

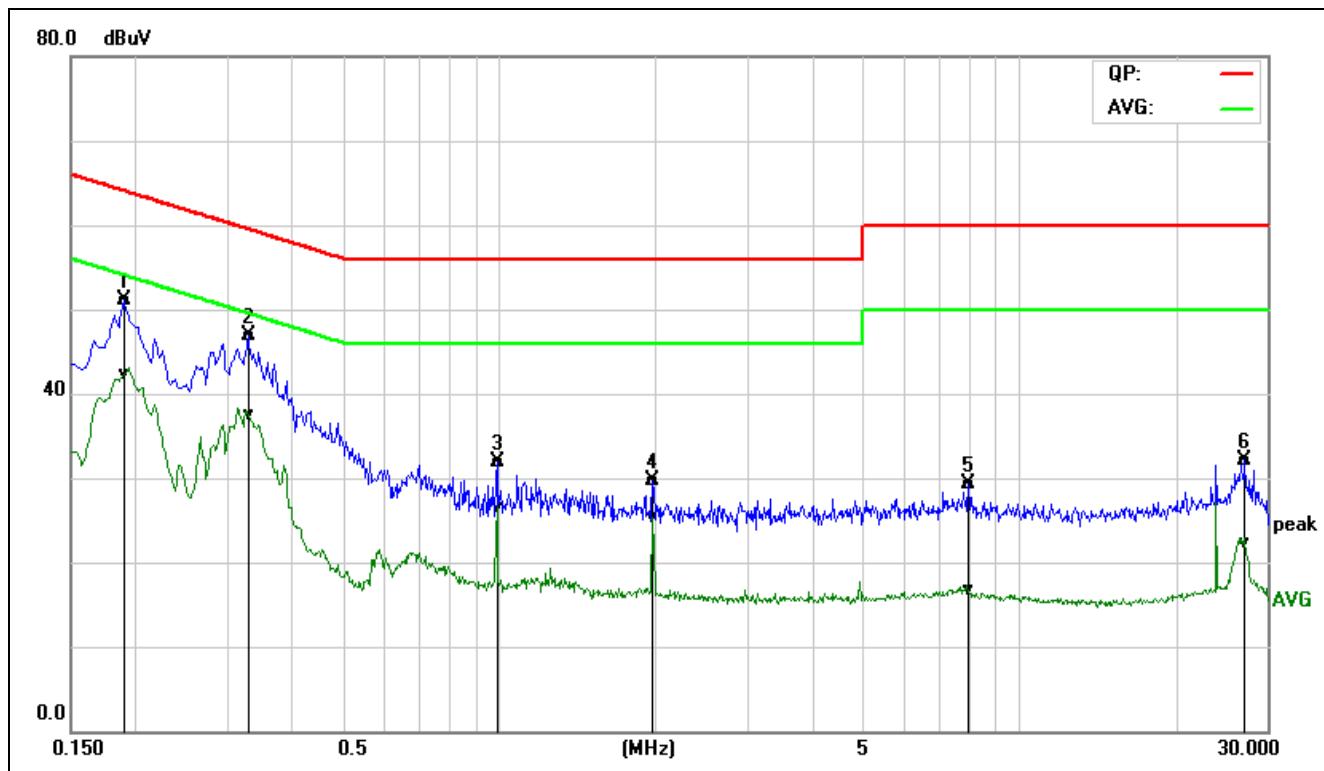


| Frequency (MHz) | QuasiPeak Reading (dBuV) | Average Reading (dBuV) | Correction Factor (dB) | QuasiPeak Result (dBuV) | Average Result (dBuV) | QuasiPeak Limit (dBuV) | Average Limit (dBuV) | QuasiPeak Margin (dB) | Average Margin (dB) | Remark (Pass/Fail) | Line (L1/L2) |
|-----------------|--------------------------|------------------------|------------------------|-------------------------|-----------------------|------------------------|----------------------|-----------------------|---------------------|--------------------|--------------|
| 0.1940 | 32.34 | 23.78 | 19.64 | 51.98 | 43.42 | 63.86 | 53.86 | -11.88 | -10.44 | Pass | L1 |
| 0.3300 | 29.94 | 19.20 | 19.60 | 49.54 | 38.80 | 59.45 | 49.45 | -9.91 | -10.65 | Pass | L1 |
| 0.6700 | 14.76 | 0.66 | 19.60 | 34.36 | 20.26 | 56.00 | 46.00 | -21.64 | -25.74 | Pass | L1 |
| 1.9780 | 10.93 | 4.52 | 19.72 | 30.65 | 24.24 | 56.00 | 46.00 | -25.35 | -21.76 | Pass | L1 |
| 11.5140 | 30.08 | -2.81 | 20.11 | 50.19 | 17.30 | 60.00 | 50.00 | -9.81 | -32.70 | Pass | L1 |
| 23.9980 | 9.69 | 4.33 | 20.42 | 30.11 | 24.75 | 60.00 | 50.00 | -29.89 | -25.25 | Pass | L1 |

REMARKS: L1 = Line One (Live Line)



| | | | |
|--------------------------|---------------|--------------|-------------|
| Model No. | TEW-430AP/A | RBW,VBW | 9 kHz |
| Environmental Conditions | 22°C, 45% RH | Test Mode | Mode 2 |
| Tested by | Fade Zhong | Line | L2 |
| Test Date | June 30, 2017 | Test Voltage | AC240V/50Hz |



| 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) | Line (L1/L2) |
|-----------------|--------------------------|------------------------|------------------------|-------------------------|-----------------------|------------------------|----------------------|-----------------------|---------------------|--------------------|--------------|
| 0.1900 | 31.45 | 22.68 | 19.64 | 51.09 | 42.32 | 64.03 | 54.04 | -12.94 | -11.72 | Pass | L2 |
| 0.3300 | 27.22 | 17.87 | 19.60 | 46.82 | 37.47 | 59.45 | 49.45 | -12.63 | -11.98 | Pass | L2 |
| 0.9900 | 12.27 | 7.05 | 19.55 | 31.82 | 26.60 | 56.00 | 46.00 | -24.18 | -19.40 | Pass | L2 |
| 1.9780 | 10.01 | 5.51 | 19.72 | 29.73 | 25.23 | 56.00 | 46.00 | -26.27 | -20.77 | Pass | L2 |
| 7.9900 | 9.30 | -3.26 | 19.94 | 29.24 | 16.68 | 60.00 | 50.00 | -30.76 | -33.32 | Pass | L2 |
| 27.2060 | 11.73 | 1.81 | 20.47 | 32.20 | 22.28 | 60.00 | 50.00 | -27.80 | -27.72 | Pass | L2 |

REMARKS: L2 = Line Two (Neutral Line)