ACCREDITED
TESTING LABORATORY
CERTIFICATE # 4821.01

# FCC PART 15.407

# TEST REPORT

For

## Grandstream Networks, Inc.

126 Brookline Ave., 3rd Floor Boston, MA 02215, USA

**FCC ID: YZZGWN7660**

| **Report Type:** | **Product Type:** |
|---|---|
| Class II Permissive Change | 802.11ax 2x2:2 Wi-Fi 6 Access Point |

**Report Number:** RSZ201228006-00D

**Report Date:** 2021-03-11

Jacob Kong

**Reviewed By:** RF Engineer

**Prepared By:** Bay Area Compliance Laboratories Corp. (Shenzhen)
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# GENERAL INFORMATION

## Product Description for Equipment under Test (EUT)

| | |
|---|---|
| Product | 802.11ax 2x2:2 Wi-Fi 6 Access Point |
| Tested Model | GWN7660 |
| Frequency Range | 5G Wi-Fi: 5250-5350MHz; 5470-5725MHz |
| Maximum Conducted Ave.erage Ouput Power | 5250-5350MHz:<br>15.2dBm (802.11a), 15.5dBm(802.11n20), 18.3dBm(802.11n40)<br>15.1dBm (802.11ac20), 18.3dBm(802.11 ac40), 19.02dBm(802.11 ac80)<br>13.3dBm (802.11ax20), 16.2dBm(802.11 ax40), 18.3dBm(802.11 ax80)<br>5470-5725MHz:<br>14.7dBm (802.11a), 14.9dBm(802.11n20), 18.1dBm(802.11n40)<br>14.9dBm (802.11ac20), 18.2dBm(802.11 ac40), 19.36dBm(802.11 ac80)<br>12.7dBm (802.11ax20), 16.4dBm(802.11 ax40), 19.1dBm(802.11 ax80) |
| Modulation Technique | OFDM, OFDMA |
| Antenna Specification* | 4 dBi(It is provided by the applicant) |
| Voltage Range | DC44-57V from POE |
| Sample serial number | RSZ201228006-RF-S1 ( Assigned by BACL, Shenzhen) |
| Received date | 2020-12-28 |
| Sample/EUT Status | Good condition |
| Adapter information | N/A |

## Objective

This test report is in accordance with Part 2-Subpart J, Part 15-Subparts A and E of the Federal Communication Commissions rules.

The tests were performed in order to determine compliance with FCC Part 15, Subpart E, section 15.203, 15.205, 15.207, 15.209 and 15.407 rules.

This is a CIIPC application of the device; the differences between the original device and the current one are as follows:

(1) Adding DFS bands (5250-5350MHz & 5470-5725MHz) by software, no any other hardware change or modification to the device.

Based on above differences, it will affected partial test data, so the changed items were performed.

## Test Methodology

All measurements contained in this report were conducted with ANSI C63.10-2013, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices. And KDB789033 D02 General U-NII Test Procedures New Rules v02r01.

All emissions measurement was performed at Bay Area Compliance Laboratories Corp. (Shenzhen). The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

## Measurement Uncertainty

| Parameter | | Uncertainty |
|---|---|---|
| Occupied Channel Bandwidth | | ±5% |
| RF Output Power with Power meter | | ±0.73dB |
| RF conducted test with spectrum | | ±1.6dB |
| AC Power Lines Conducted Emissions | | ±1.95dB |
| Emissions, Radiated | Below 1GHz | ±4.75dB |
| | Above 1GHz | ±4.88dB |
| Temperature | | ±1℃ |
| Humidity | | ±6% |
| Supply voltages | | ±0.4% |

*Note: The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval.Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.*

## Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Shenzhen) to collect test data is located on the 6/F., West Wing, Third Phase of Wanli Industrial Building, Shihua Road, Futian Free Trade Zone, Shenzhen, Guangdong, China.

The test site has been approved by the FCC under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No.: 342867, the FCC Designation No.: CN1221.

The test site has been registered with ISED Canada under ISED Canada Registration Number 3062B.

# SYSTEM TEST CONFIGURATION

## Description of Test Configuration

The system was configured for testing in an engineering mode, which was provided by manufacturer.

The EUT can operate in 802.11a/n20/n40/ac20/ac40/ac80/ax20/ax40/ax80 modes.

For 5250-5350MHz Band, 7 channels are provided to testing:

| Channel | Frequency (MHz) | Channel | Frequency (MHz) |
|---|---|---|---|
| 52 | 5260 | 60 | 5300 |
| 54 | 5270 | 62 | 5310 |
| 56 | 5280 | 64 | 5320 |
| 58 | 5290 | / | / |

For 5470-5725MHz Band, 18 channels are provided to testing:

| Channel | Frequency (MHz) | Channel | Frequency (MHz) |
|---|---|---|---|
| 100 | 5500 | 124 | 5620 |
| 102 | 5510 | 126 | 5630 |
| 104 | 5520 | 128 | 5640 |
| 106 | 5530 | 132 | 5660 |
| 108 | 5540 | 134 | 5670 |
| 110 | 5550 | 136 | 5680 |
| 112 | 5560 | 140 | 5700 |
| 116 | 5580 | / | / |
| 118 | 5590 | / | / |
| 120 | 5600 | / | / |
| 122 | 5610 | / | / |

EUT support SISO and MIMO mode, and for the MIMO mode support Beamforming and Non-beamforming, all those modes share the same power level setting and have same output power in each antenna port, the worst case is MIMO mode with Beamforming was selected to test for compliance.

## EUT Exercise Software

"CRT"* was used. Test frequencies and power level were configured as below:

| U-NII | Mode | Frequency (MHz) | Data Rate | Power Level* |
|---|---|---|---|---|
| 5250 – 5350MHz | 802.11 a | 5260 | 6Mbps | 14 |
| | | 5280 | 6Mbps | 14 |
| | | 5320 | 6Mbps | 15 |
| | 802.11 n20 | 5260 | MCS0 | 15 |
| | | 5280 | MCS0 | 15 |
| | | 5320 | MCS0 | 15 |
| | 802.11 n40 | 5270 | MCS0 | 17 |
| | | 5310 | MCS0 | 17 |
| | 802.11 ac20 | 5260 | MCS0 | 14 |
| | | 5280 | MCS0 | 15 |
| | | 5320 | MCS0 | 15 |
| | 802.11 ac40 | 5270 | MCS0 | 17 |
| | | 5310 | MCS0 | 17 |
| | 802.11 ac80 | 5290 | MCS0 | 19.5 |
| | 802.11 ax20 | 5260 | MCS0 | 13 |
| | | 5280 | MCS0 | 13 |
| | | 5320 | MCS0 | 13 |
| | 802.11 ax40 | 5270 | MCS0 | 15 |
| | | 5310 | MCS0 | 16 |
| | 802.11 ax80 | 5290 | MCS0 | 18 |

| U-NII | Mode | Frequency (MHz) | Data Rate | Power Level* |
|---|---|---|---|---|
| 5470 – 5725MHz | 802.11 a | 5500 | 6Mbps | 14 |
| | | 5580 | 6Mbps | 14 |
| | | 5700 | 6Mbps | 10 |
| | 802.11 n20 | 5500 | MCS0 | 15 |
| | | 5580 | MCS0 | 15 |
| | | 5700 | MCS0 | 10 |
| | 802.11 n40 | 5510 | MCS0 | 17 |
| | | 5550 | MCS0 | 17 |
| | | 5670 | MCS0 | 14 |
| | 802.11 ac20 | 5500 | MCS0 | 15 |
| | | 5580 | MCS0 | 15 |
| | | 5700 | MCS0 | 8 |
| | 802.11 ac40 | 5510 | MCS0 | 17 |
| | | 5550 | MCS0 | 17 |
| | | 5670 | MCS0 | 11 |
| | 802.11 ac80 | 5530 | MCS0 | 19.5 |
| | | 5610 | MCS0 | 19.5 |
| | 802.11 ax20 | 5500 | MCS0 | 13 |
| | | 5580 | MCS0 | 13 |
| | | 5700 | MCS0 | 10 |
| | 802.11 ax40 | 5510 | MCS0 | 16 |
| | | 5550 | MCS0 | 16 |
| | | 5670 | MCS0 | 12 |
| | 802.11 ax80 | 5530 | MCS0 | 18 |
| | | 5610 | MCS0 | 19 |

The worse-case data rates are determined to be as follows for each mode based upon investigations by measuring the Average power and PSD across all data rated bandwidths, and modulations.

The software and power level was provided by the applicant.

## Duty cycle

Test Result: Pass. Please refer to the Appendix.

## Equipment Modifications

No modification was made to the EUT tested.

## Support Equipment List and Details

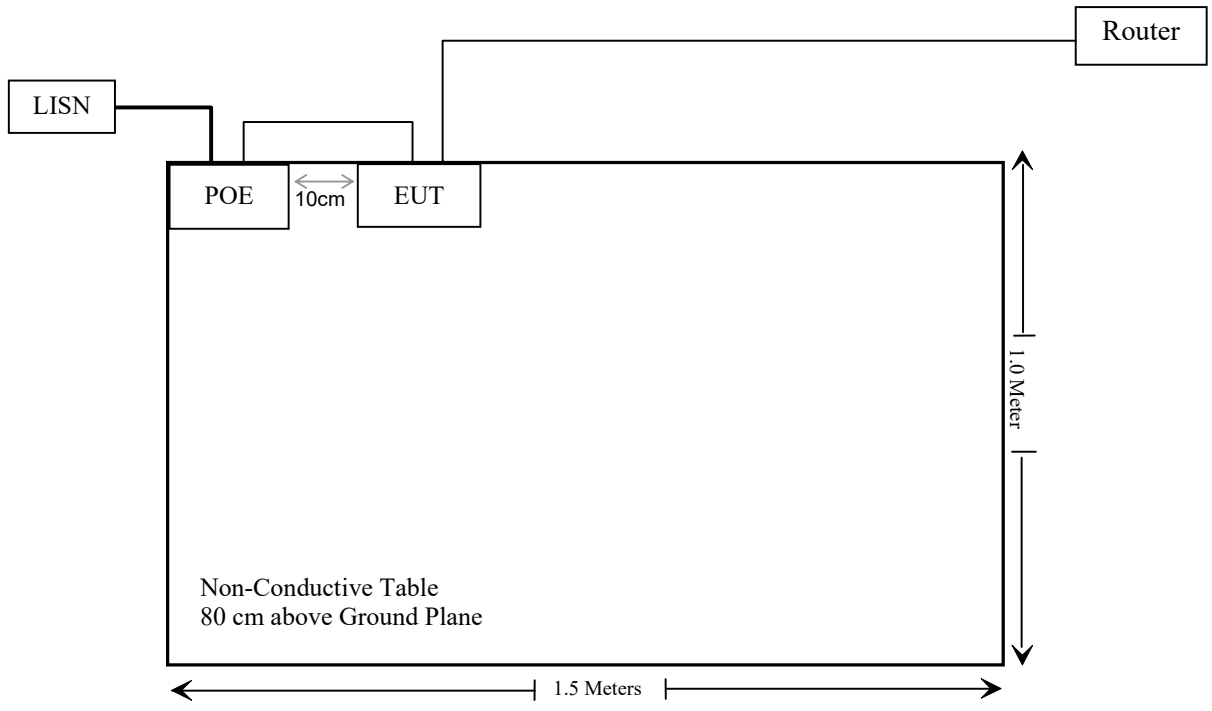
| Manufacturer | Description | Model | Serial Number |
|---|---|---|---|
| GOSPELL | POE | G0720-480-050 | G0720-480-050 |
| HIKVISION | Router | DS-3WR03-E | 10021642429 |

## External I/O Cable

| Cable Description | Length (m) | From Port | To |
|---|---|---|---|
| Un-shielded Un-detachable AC Cable | 1.2 | LISN | POE |
| Un-shielded detachable RJ45 Cable | 3.1 | Router | EUT |
| Un-shielding detachable RJ45 Cable | 0.8 | EUT | POE |

## Block Diagram of Test Setup

For conducted emission:



# SUMMARY OF TEST RESULTS

| FCC Rules | Description of Test | Result |
|---|---|---|
| §1.1307 (b) (1) & §2.1091 | MaximuM Permissible exposure (MPE) | Compliance |
| §15.203 | Antenna Requirement | Compliance |
| §15.407(b)(6)& §15.207(a) | Conducted Emissions | Compliance |
| §15.205& §15.209 &§15.407(b) (1), (2), (3), (4), (6) (7) | Undesirable Emission& Restricted Bands | Compliance |
| §15.407(a) (1), (5),(e) | 26 dB Emission Bandwidth & 6dB Bandwidth | Compliance |
| §15.407(a)(1),(2), (3) | Conducted Transmitter Output Power | Compliance |
| §15.407 (a)(1), (2), (3) | Power Spectral Density | Compliance |
| §15.407 (h) | Transmit Power Control (TPC) | Not Applicable |
| §15.407 (h) | Dynamic Frequency Selection (DFS) | Compliance** |

Not Applicable: The supplier declared that EUT not support TPC mechanism.
Compliance**: Please refer to the DFS report: RSZ201228006-RFA.

# TEST EQUIPMENT LIST

| Manufacturer | Description | Model | Serial Number | Calibration Date | Calibration Due Date |
|---|---|---|---|---|---|
| **AC Line Conducted test** | | | | | |
| Rohde & Schwarz | EMI Test Receiver | ESCI | 101120 | 2020/08/04 | 2021/08/03 |
| Rohde & Schwarz | LISN | ENV216 | 101613 | 2020/08/04 | 2021/08/03 |
| Rohde & Schwarz | Transient Limitor | ESH3Z2 | DE25985 | 2020/11/29 | 2021/11/28 |
| Unknown | CE Cable | CE Cable | UF A210B-1-0720-504504 | 2020/11/29 | 2021/11/28 |
| Rohde & Schwarz | CE Test software | EMC 32 | V8.53.0 | NCR | NCR |
| **Radiated Emission Test** | | | | | |
| R&S | EMI Test Receiver | ESR3 | 102455 | 2020/08/04 | 2021/08/03 |
| Sonoma instrument | Pre-amplifier | 310 N | 186238 | 2020/08/04 | 2021/08/03 |
| Sunol Sciences | Broadband Antenna | JB1 | A040904-2 | 2020/12/22 | 2023/12/21 |
| Unknown | Cable 2 | RF Cable 2 | F-03-EM197 | 2020/11/29 | 2021/11/28 |
| Unknown | Cable | Chamber Cable 1 | F-03-EM236 | 2020/11/29 | 2021/11/28 |
| Rohde & Schwarz | Auto test software | EMC 32 | V9.10 | NCR | NCR |
| Rohde & Schwarz | Spectrum Analyzer | FSV40-N | 102259 | 2020/08/04 | 2021/08/03 |
| COM-POWER | Pre-amplifier | PA-122 | 181919 | 2020/11/29 | 2021/11/28 |
| Quinstar | Amplifier | QLW-18405536-J0 | 15964001002 | 2020/11/29 | 2021/11/28 |
| Sunol Sciences | Horn Antenna | DRH-118 | A052604 | 2020/12/22 | 2023/12/21 |
| Insulted Wire Inc. | RF Cable | SPS-2503-3150 | 02222010 | 2020/11/29 | 2021/11/28 |
| Unknown | RF Cable | W1101-EQ1 OUT | F-19-EM005 | 2020/11/29 | 2021/11/28 |
| Unknown | Signal Cable | RG-214 | 2 | 2020/11/29 | 2021/11/28 |
| SNSD | Band Reject filter | BSF5150-5850MN-0899-004 | 5G filter | 2020/04/20 | 2021/04/20 |
| Ducommun Technolagies | Horn antenna | ARH-4223-02 | 1007726-02 1304 | 2020/12/06 | 2023/12/05 |
| Ducommun Technolagies | Horn antenna | ARH-2823-02 | 1007726-02 1302 | 2020/12/06 | 2023/12/05 |
| **RF Conducted Test** | | | | | |
| Tonscend Corporation | RF control Unit | JS0806-2 | 19D8060154 | 2020/08/04 | 2021/08/03 |
| Rohde & Schwarz | Signal and Spectrum Analyzer | FSV40 | 101473 | 2020/08/04 | 2021/08/03 |
| Unknown | RF Cable 2 | Unknown | F-03-EM198 | 2020/11/12 | 2021/11/12 |

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations hAve.e been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

# 1.1307 (b) (1) & §2.1091- MAXIMUM PERMISSIBLE EXPOSURE (MPE)

## Applicable Standard

According to subpart 1.1307 (b)(1), 2.1091 systems operating under the provisions of this section shall be operated in a manner that ensures the public is not exposed to RF energy level in excess of the communication guidelines.

Limits for General Population/Uncontrolled Exposure

| Limits for General Population/Uncontrolled Exposure | | | | |
|---|---|---|---|---|
| **Frequency Range (MHz)** | **Electric Field Strength (V/m)** | **Magnetic Field Strength (A/m)** | **Power Density ($mW/cm^2$)** | **Ave.eraging Time (Minutes)** |
| 0.3-1.34 | 614 | 1.63 | *(100) | 30 |
| 1.34-30 | 824/f | 2.19/f | *($180/f^2$) | 30 |
| 30-300 | 27.5 | 0.073 | 0.2 | 30 |
| 300-1500 | / | / | f/1500 | 30 |
| 1500-100,000 | / | / | 1.0 | 30 |

f = frequency in MHz
* = Plane-wAve.e equivalent power density

## Result

**Calculated Formulary:**

Predication of MPE limit at a given distance

$$S = \frac{PG}{4\pi R^2}$$

S = power density (in appropriate units, e.g. $mW/cm^2$)
P = power input to the antenna (in appropriate units, e.g., mW).
G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain.
R = distance to the center of radiation of the antenna (appropriate units, e.g., cm)

For simultaneously transmit system, the calculated power density should comply with:

$$\sum_i \frac{S_i}{S_{Limit,i}} \le 1$$

| Frequency (MHz) | Antenna Gain | | Tune up conducted power | | Evaluation Distance (cm) | Power Density ($mW/cm^2$) | MPE Limit ($mW/cm^2$) |
|---|---|---|---|---|---|---|---|
| | (dBi) | (numeric) | (dBm) | (mW) | | | |
| 2412-2462 | 6 | 3.98 | 26.0 | 398.11 | 20 | 0.315 | 1 |
| 5150-5250 | 7 | 5.01 | 22.5 | 177.83 | 20 | 0.177 | 1 |
| 5725-5850 | 7 | 5.01 | 22.5 | 177.83 | 20 | 0.177 | 1 |
| 5250-5350 | 7 | 5.01 | 20.0 | 100.00 | 20 | 0.100 | 1 |
| 5470-5725 | 7 | 5.01 | 20.0 | 100.00 | 20 | 0.100 | 1 |

Note: The tune up power of 2.4GHz Wi-Fi and 5G Wi-Fi 5150-5250MHz/5725-5850MHz band refer to the MPE report of FCC ID: YZZGWN7660
The 2.4G Wi-Fi and 5G Wi-Fi can transmit at the same time.
The antenna gain is 3dBi for 2.4GHz Wi-Fi and 4dBi for 5G Wi-Fi.
EUT support beamforming
Directional gain = $G_{ANT}$ + Array Gain
*Array Gain=10*log($N_{ant}/N_{ss}$)* dB
For the worst case, $N_{ss}$=1, so:
For 2.4GHz Wi-Fi, Directional gain=3dBi+10*log(2/1)dB=6dBi
For 5GHz Wi-Fi, Directional gain=4dBi+10*log(2/1)dB=7dBi

Simultaneous transmitting consideration:

The ratio=$MPE_{DTS}$/limit+$MPE_{NII}$/limit =0.315/1+0.177/1=0.492＜1.0

To maintain compliance with the FCC's RF exposure guidelines, place the equipment at least 20cm from nearby persons.

**Result: Pass**

# FCC §15.203 – ANTENNA REQUIREMENT

## Applicable Standard

According to § 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the user of a standard antenna jack or electrical connector is prohibited. The structure and application of the EUT were analyzed to determine compliance with section §15.203 of the rules. §15.203 state that the subject device must meet the following criteria:

a. Antenna must be permanently attached to the unit.
b. Antenna must use a unique type of connector to attach to the EUT.

Unit must be professionally installed, and installer shall be responsible for verifying that the correct antenna is employed with the unit.

And according to FCC 47 CFR section 15.407 (a), if the transmitting antennas of directional gain greater than 6dBi are used, the transmit power and power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

## Antenna Connector Construction

The EUT has two internal antennas arrangement for 5G Wi-Fi, which was permanently attached and the antenna gain is 4.0dBi, fulfill the requirement of this section. Please refer to the EUT photos.

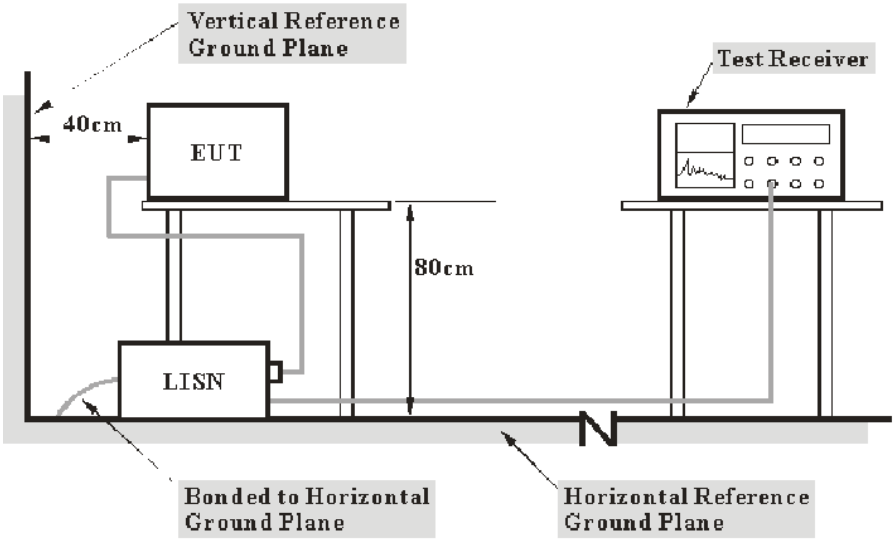
**Result:** Compliance.

# FCC §15.407 (b) (6) §15.207 (a) – CONDUCTED EMISSIONS

## Applicable Standard

FCC §15.207, §15.407(b) (6)

## EUT Setup




Note: 1. Support units were connected to second LISN.
2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with the FCC Part 15.207 limits.

The spacing between the peripherals was 10 cm.

## EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

| Frequency Range | IF B/W |
|---|---|
| 150 kHz – 30 MHz | 9 kHz |

## Test Procedure

During the conducted emission test, the adapter was connected to the LISN.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All data was recorded in the Quasi-peak and Ave.erage detection mode.

## Test Data

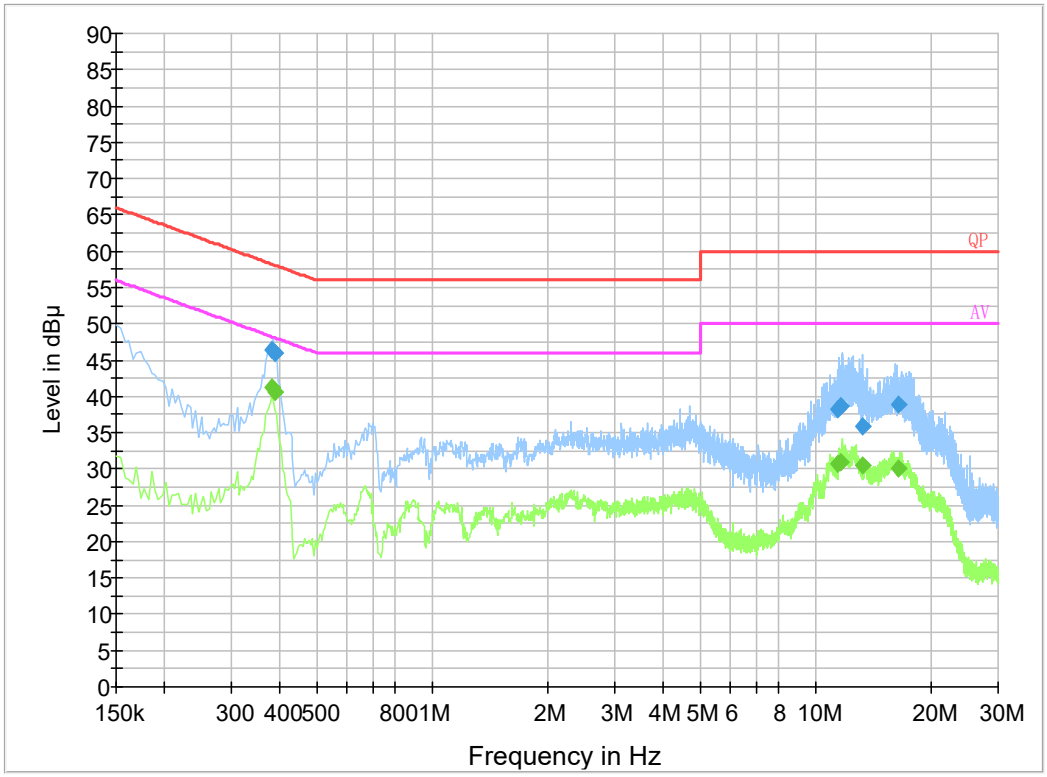
### Environmental Conditions

| | |
|---|---|
| **Temperature:** | 25 ℃ |
| **Relative Humidity:** | 65 % |
| **ATM Pressure:** | 101.0 kPa |

*The testing was performed by Haiguo Li on 2021-03-11.*

*EUT operation mode: Transmitting*

**AC 120V/60 Hz, Line:**



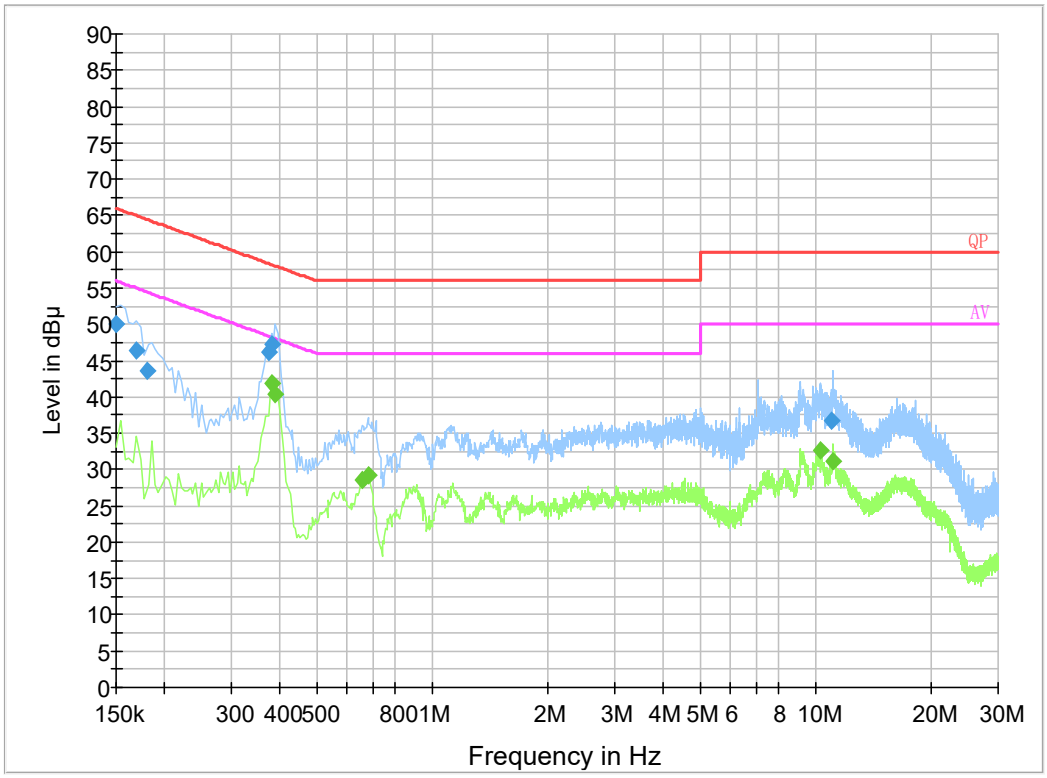

## Final Result 1

| Frequency (MHz) | QuasiPeak (dB µ V) | Bandwidth (kHz) | Line | Corr. (dB) | Margin (dB) | Limit (dB µ V) |
|---|---|---|---|---|---|---|
| 0.384210 | 46.4 | 9.000 | L1 | 19.9 | 11.8 | 58.2 |
| 0.388090 | 45.9 | 9.000 | L1 | 19.9 | 12.2 | 58.1 |
| 11.444690 | 38.3 | 9.000 | L1 | 20.0 | 21.7 | 60.0 |
| 11.685750 | 38.6 | 9.000 | L1 | 20.0 | 21.4 | 60.0 |
| 13.311550 | 36.0 | 9.000 | L1 | 20.0 | 24.0 | 60.0 |
| 16.462370 | 38.8 | 9.000 | L1 | 20.1 | 21.2 | 60.0 |

## Final Result 2

| Frequency (MHz) | Average (dB µ V) | Bandwidth (kHz) | Line | Corr. (dB) | Margin (dB) | Limit (dB µ V) |
|---|---|---|---|---|---|---|
| 0.384210 | 41.2 | 9.000 | L1 | 19.9 | 7.0 | 48.2 |
| 0.388090 | 40.5 | 9.000 | L1 | 19.9 | 7.6 | 48.1 |
| 11.444690 | 30.7 | 9.000 | L1 | 20.0 | 19.3 | 50.0 |
| 11.685750 | 31.0 | 9.000 | L1 | 20.0 | 19.0 | 50.0 |
| 13.311550 | 30.5 | 9.000 | L1 | 20.0 | 19.5 | 50.0 |
| 16.462370 | 30.1 | 9.000 | L1 | 20.1 | 19.9 | 50.0 |

**AC 120V/60 Hz, Neutral:**




## Final Result 1

| Frequency (MHz) | QuasiPeak (dB µ V) | Bandwidth (kHz) | Line | Corr. (dB) | Margin (dB) | Limit (dB µ V) |
|---|---|---|---|---|---|---|
| 0.150000 | 50.0 | 9.000 | N | 19.8 | 16.0 | 66.0 |
| 0.169500 | 46.3 | 9.000 | N | 19.8 | 18.7 | 65.0 |
| 0.181500 | 43.7 | 9.000 | N | 19.8 | 20.7 | 64.4 |
| 0.376270 | 46.1 | 9.000 | N | 19.8 | 12.3 | 58.4 |
| 0.384150 | 47.2 | 9.000 | N | 19.8 | 11.0 | 58.2 |
| 11.015230 | 36.7 | 9.000 | N | 20.0 | 23.3 | 60.0 |

## Final Result 2

| Frequency (MHz) | Average (dB µ V) | Bandwidth (kHz) | Line | Corr. (dB) | Margin (dB) | Limit (dB µ V) |
|---|---|---|---|---|---|---|
| 0.382000 | 41.9 | 9.000 | N | 19.8 | 6.3 | 48.2 |
| 0.390000 | 40.3 | 9.000 | N | 19.8 | 7.8 | 48.1 |
| 0.658000 | 28.7 | 9.000 | N | 19.8 | 17.3 | 46.0 |
| 0.682000 | 29.1 | 9.000 | N | 19.8 | 16.9 | 46.0 |
| 10.354000 | 32.7 | 9.000 | N | 20.0 | 17.3 | 50.0 |
| 11.134000 | 31.2 | 9.000 | N | 20.0 | 18.8 | 50.0 |

# §15.205 & §15.209 & §15.407(B) (1), (2), (3), (4),(6),(7) – UNDESIRABLE EMISSION

## Applicable Standard

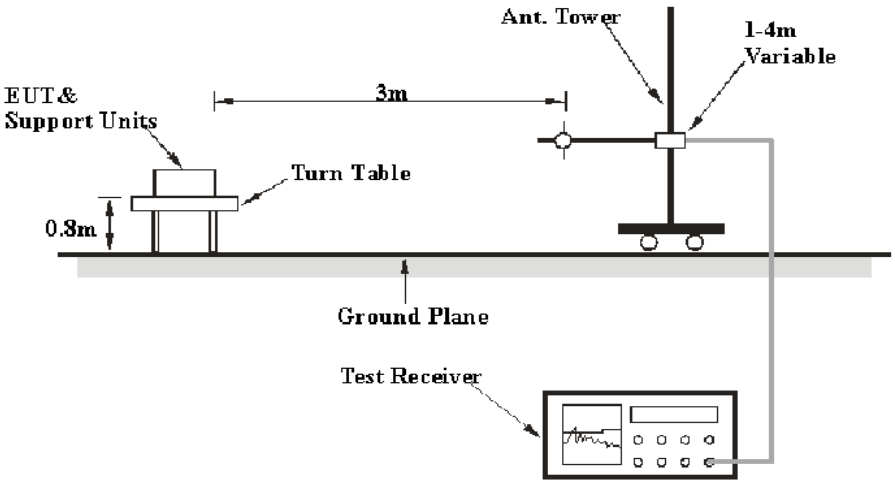
FCC §15.407 (b) (1), (2), (3), (4), (6), (7); §15.209; §15.205;

(b) Undesirable emission limits. Except as shown in paragraph (b)(7) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:
(1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.
(2) For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.
(3) For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.
(4) For transmitters operating in the 5.725-5.85 GHz band:
(i) All emissions shall be limited to a level of −27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

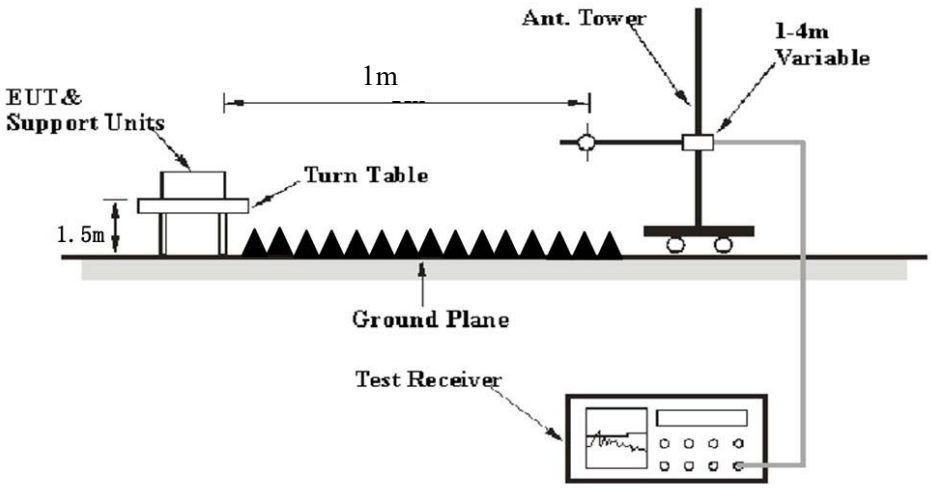
Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in §15.209.

## EUT Setup

**Below 1 GHz:**



**Above 1 GHz:**




The setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with the FCC 15.209 and FCC 15.407 limits.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

## EMI Test Receiver & Spectrum Analyzer Setup

The system was investigated from 30 MHz to 40 GHz.

During the radiated emission test, the EMI test receiver & Spectrum Analyzer Setup were set with the following configurations:

| Frequency Range | RBW | Video B/W | IF B/W | Measurement |
|---|---|---|---|---|
| 30 MHz – 1000 MHz | 100 kHz | 300 kHz | 120 kHz | QP |
| Above 1 GHz | 1 MHz | 3 MHz | / | PK |
| | 1MHz | 10 Hz Note 1 | / | Ave.erage |
| | 1MHz | ＞1/T Note 2 | / | Ave.erage |

Note 1: when duty cycle is no less than 98%
Note 2: when duty cycle is less than 98%

## Test Procedure

### Radiated Spurious Emission

During the radiated emission test, the adapter was connected to the AC floor outlet.

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all the installation combinations.

Data was recorded in Quasi-peak detection mode for frequency range of 30 MHz-1GHz, peak and Ave.erage detection modes for frequencies above 1GHz.

## Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

Corrected Amplitude = Meter Reading + Antenna Factor + Cable Loss - Amplifier Gain

The "**Margin**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7dB means the emission is 7dB below the limit. The equation for margin calculation is as follows:

Margin = Limit – Corrected Amplitude

## Test Data

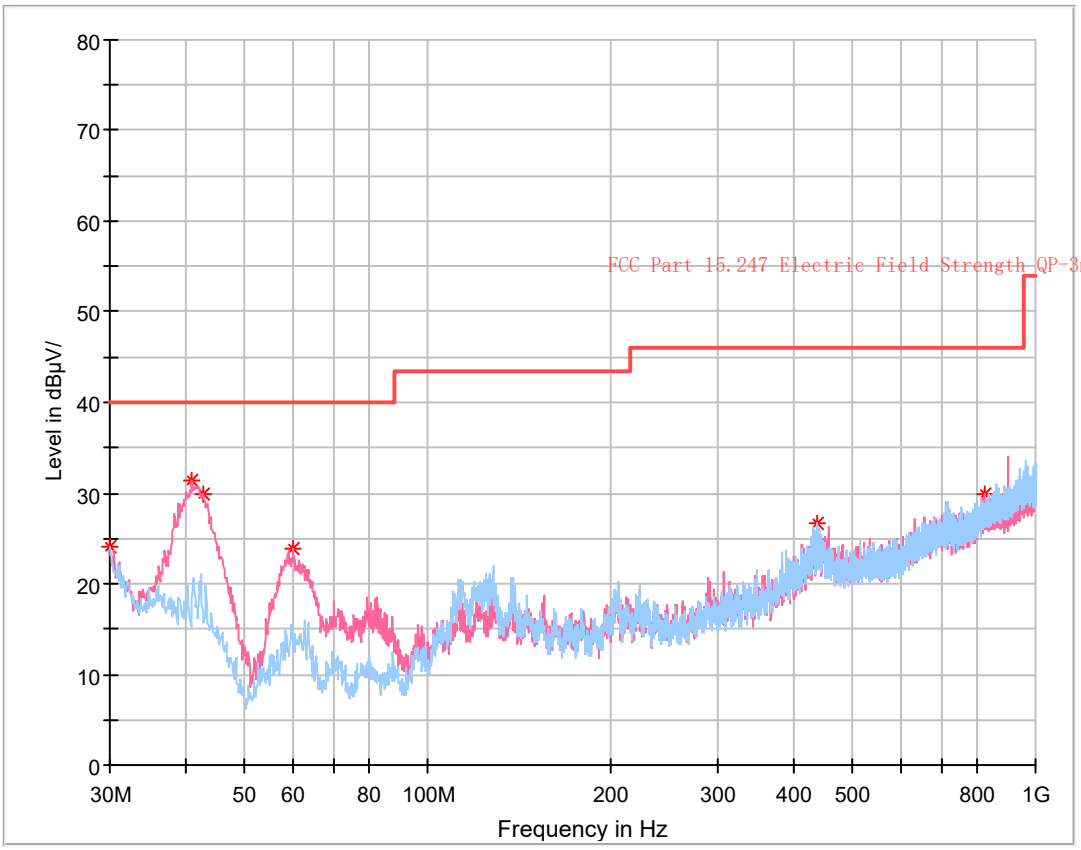
### Environmental Conditions

| | |
|---|---|
| **Temperature:** | 21.7~24 ℃ |
| **Relative Humidity:** | 44~51% |
| **ATM Pressure:** | 100.9~101.0 kPa |

*The testing was performed by Holland Yang on 2021-03-10 for below 1GHz and by Leven Gan on 2021-03-11 for above 1GHz.*

*EUT operation mode: Transmitting*

**30 MHz – 1 GHz:** *(worst case is 802.11ac80 mode 5530 MHz)*




## Final_Result

| Frequency (MHz) | QuasiPeak (dB µ V/m) | Limit (dB µ V/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB) |
|---|---|---|---|---|---|---|---|
| 30.000000 | 24.03 | 40.00 | 15.97 | 100.0 | H | 322.0 | -3.5 |
| 41.033750 | 31.33 | 40.00 | 8.67 | 100.0 | V | 147.0 | -11.1 |
| 42.731250 | 29.82 | 40.00 | 10.18 | 100.0 | V | 51.0 | -12.3 |
| 60.070000 | 23.82 | 40.00 | 16.18 | 100.0 | V | 83.0 | -16.5 |
| 438.733750 | 26.65 | 46.00 | 19.35 | 200.0 | H | 128.0 | -6.0 |
| 823.702500 | 29.88 | 46.00 | 16.12 | 100.0 | V | 28.0 | -0.2 |

**1 ~ 40 GHz:**

**Note: The test distance is 1m, so the correct factor from 3m to 1m is 20log(3/1)=9.5dB which was added into the final limit.**

**5250-5350 MHz:**

| Frequency (MHz) | Receiver | | Turn-Table | Rx Antenna | | Corrected Factor (dB/m) | Corrected Amplitude (dBμV/m) | FCC Part15.407 | |
|---|---|---|---|---|---|---|---|---|---|
| | Reading (dBμV) | Detector (PK/QP/Ave.) | Angle Degree | Height (m) | Polar (H / V) | | | Limit (dBμV/m) | Margin (dB) |
| 802.11A | | | | | | | | | |
| 5260 MHz | | | | | | | | | |
| 5147.64 | 32.85 | PK | 251 | 1.4 | V | 38.36 | 71.21 | 83.5 | 12.29 |
| 5147.64 | 17.81 | Ave. | 251 | 1.4 | V | 38.36 | 56.17 | 63.5 | 7.33 |
| 5355.76 | 32.41 | PK | 201 | 1.0 | V | 39.09 | 71.50 | 83.5 | 12.00 |
| 5355.76 | 17.48 | Ave. | 201 | 1.0 | V | 39.09 | 56.57 | 63.5 | 6.93 |
| 10520.00 | 50.00 | PK | 326 | 2.5 | V | 17.25 | 67.25 | 77.7 | 10.45 |
| 5280 MHz | | | | | | | | | |
| 10560.00 | 50.61 | PK | 2 | 1.9 | V | 17.91 | 68.52 | 77.7 | 9.18 |
| 5320 MHz | | | | | | | | | |
| 5146.38 | 30.85 | PK | 115 | 1.0 | V | 38.36 | 69.21 | 83.5 | 14.29 |
| 5146.38 | 16.71 | Ave. | 115 | 1.0 | V | 38.36 | 55.07 | 63.5 | 8.43 |
| 5357.05 | 31.41 | PK | 132 | 1.4 | V | 39.09 | 70.50 | 83.5 | 13.00 |
| 5357.05 | 16.63 | Ave. | 132 | 1.4 | V | 39.09 | 55.72 | 63.5 | 7.78 |
| 10640.00 | 48.58 | PK | 310 | 1.5 | V | 18.01 | 66.59 | 83.5 | 16.91 |
| 10640.00 | 42.96 | Ave. | 310 | 1.5 | V | 18.01 | 60.97 | 63.5 | 2.53 |
| 802.11n20 | | | | | | | | | |
| 5260 MHz | | | | | | | | | |
| 5148.34 | 32.74 | PK | 134 | 2.1 | V | 38.36 | 71.10 | 83.5 | 12.40 |
| 5148.34 | 17.86 | Ave. | 134 | 2.1 | V | 38.36 | 56.22 | 63.5 | 7.28 |
| 5354.18 | 32.81 | PK | 265 | 2.2 | V | 39.09 | 71.90 | 83.5 | 11.60 |
| 5354.18 | 17.52 | Ave. | 265 | 2.2 | V | 39.09 | 56.61 | 63.5 | 6.89 |
| 10520.00 | 50.54 | PK | 2 | 1.2 | V | 17.25 | 67.79 | 77.7 | 9.91 |
| 5280 MHz | | | | | | | | | |
| 10560.00 | 48.93 | PK | 143 | 1.1 | V | 17.91 | 66.84 | 77.7 | 10.86 |
| 5320 MHz | | | | | | | | | |
| 5146.38 | 32.76 | PK | 248 | 2.3 | V | 38.36 | 71.12 | 83.5 | 12.38 |
| 5146.38 | 17.84 | Ave. | 248 | 2.3 | V | 38.36 | 56.20 | 63.5 | 7.30 |
| 5351.70 | 32.54 | PK | 338 | 1.4 | V | 39.09 | 71.63 | 83.5 | 11.87 |
| 5351.70 | 17.65 | Ave. | 338 | 1.4 | V | 39.09 | 56.74 | 63.5 | 6.76 |
| 10640.00 | 50.26 | PK | 145 | 2.5 | V | 18.01 | 68.27 | 83.5 | 15.23 |
| 10640.00 | 43.38 | Ave. | 145 | 2.5 | V | 18.01 | 61.39 | 63.5 | 2.11 |

| Frequency (MHz) | Receiver | | Turn-Table | Rx Antenna | | Corrected Factor (dB/m) | Corrected Amplitude (dBμV/m) | FCC Part15.407 | |
|---|---|---|---|---|---|---|---|---|---|
| | Reading (dBμV) | Detector (PK/QP/Ave.) | Angle Degree | Height (m) | Polar (H / V) | | | Limit (dBμV/m) | Margin (dB) |
| 802.11N40 | | | | | | | | | |
| 5270 MHz | | | | | | | | | |
| 5146.57 | 32.85 | PK | 267 | 1.5 | V | 38.36 | 71.21 | 83.5 | 12.29 |
| 5146.57 | 17.65 | Ave. | 267 | 1.5 | V | 38.36 | 56.01 | 63.5 | 7.49 |
| 5353.54 | 32.57 | PK | 162 | 1.2 | V | 39.09 | 71.66 | 83.5 | 11.84 |
| 5353.54 | 17.64 | Ave. | 162 | 1.2 | V | 39.09 | 56.73 | 63.5 | 6.77 |
| 10540.00 | 50.68 | PK | 353 | 1.4 | V | 17.25 | 67.93 | 77.7 | 9.77 |
| 5310 MHz | | | | | | | | | |
| 5148.14 | 32.85 | PK | 59 | 2.3 | V | 38.36 | 71.21 | 83.5 | 12.29 |
| 5148.14 | 17.62 | Ave. | 59 | 2.3 | V | 38.36 | 55.98 | 63.5 | 7.52 |
| 5351.39 | 32.74 | PK | 33 | 1.8 | V | 39.09 | 71.83 | 83.5 | 11.67 |
| 5351.39 | 17.78 | Ave. | 33 | 1.8 | V | 39.09 | 56.87 | 63.5 | 6.63 |
| 10620.00 | 52.37 | PK | 317 | 1.0 | V | 18.01 | 70.38 | 83.5 | 13.12 |
| 10620.00 | 43.81 | Ave. | 317 | 1.0 | V | 18.01 | 61.82 | 63.5 | 1.68 |
| 802.11AC20 | | | | | | | | | |
| 5260 MHz | | | | | | | | | |
| 5147.63 | 32.27 | PK | 225 | 2.0 | V | 38.36 | 70.63 | 83.5 | 12.87 |
| 5147.63 | 17.74 | Ave. | 225 | 2.0 | V | 38.36 | 56.10 | 63.5 | 7.40 |
| 5353.54 | 32.43 | PK | 70 | 1.7 | V | 39.09 | 71.52 | 83.5 | 11.98 |
| 5353.54 | 17.38 | Ave. | 70 | 1.7 | V | 39.09 | 56.47 | 63.5 | 7.03 |
| 10520.00 | 50.66 | PK | 314 | 1.3 | V | 17.25 | 67.91 | 77.7 | 9.79 |
| 5280 MHz | | | | | | | | | |
| 10560.00 | 49.84 | PK | 264 | 1.7 | V | 17.91 | 67.75 | 77.7 | 9.95 |
| 5320 MHz | | | | | | | | | |
| 5147.25 | 33.05 | PK | 12 | 2.3 | V | 38.36 | 71.41 | 83.5 | 12.09 |
| 5147.25 | 17.45 | Ave. | 12 | 2.3 | V | 38.36 | 55.81 | 63.5 | 7.69 |
| 5352.83 | 32.14 | PK | 5 | 2.2 | V | 39.09 | 71.23 | 83.5 | 12.27 |
| 5352.83 | 17.65 | Ave. | 5 | 2.2 | V | 39.09 | 56.74 | 63.5 | 6.76 |
| 10640.00 | 48.95 | PK | 93 | 1.3 | V | 18.01 | 66.96 | 83.5 | 16.54 |
| 10640.00 | 41.47 | Ave. | 93 | 1.3 | V | 18.01 | 59.48 | 63.5 | 4.02 |

| Frequency (MHz) | Receiver | | Turn-Table | Rx Antenna | | Corrected Factor (dB/m) | Corrected Amplitude (dBμV/m) | FCC Part15.407 | |
|---|---|---|---|---|---|---|---|---|---|
| | Reading (dBμV) | Detector (PK/QP/Ave.) | Angle Degree | Height (m) | Polar (H / V) | | | Limit (dBμV/m) | Margin (dB) |
| 802.11AC40 | | | | | | | | | |
| 5270 MHz | | | | | | | | | |
| 5146.25 | 32.87 | PK | 164 | 2.1 | V | 38.36 | 71.23 | 83.5 | 12.27 |
| 5146.25 | 17.65 | Ave. | 164 | 2.1 | V | 38.36 | 56.01 | 63.5 | 7.49 |
| 5352.41 | 32.04 | PK | 192 | 2.1 | V | 39.09 | 71.13 | 83.5 | 12.37 |
| 5352.41 | 17.48 | Ave. | 192 | 2.1 | V | 39.09 | 56.57 | 63.5 | 6.93 |
| 10540.00 | 49.96 | PK | 313 | 2.4 | V | 17.25 | 67.21 | 77.7 | 10.49 |
| 5310 MHz | | | | | | | | | |
| 5147.38 | 33.25 | PK | 1 | 1.6 | V | 38.36 | 71.61 | 83.5 | 11.89 |
| 5147.38 | 17.37 | Ave. | 1 | 1.6 | V | 38.36 | 55.73 | 63.5 | 7.77 |
| 5351.29 | 31.67 | PK | 328 | 1.1 | V | 39.09 | 70.76 | 83.5 | 12.74 |
| 5351.29 | 17.96 | Ave. | 328 | 1.1 | V | 39.09 | 57.05 | 63.5 | 6.45 |
| 10620.00 | 50.19 | PK | 194 | 2.2 | V | 18.01 | 68.20 | 83.5 | 15.30 |
| 10620.00 | 43.77 | Ave. | 194 | 2.2 | V | 18.01 | 61.78 | 63.5 | 1.72 |
| 802.11AC80 | | | | | | | | | |
| 5290 MHz | | | | | | | | | |
| 5147.26 | 34.32 | PK | 276 | 1.0 | V | 38.36 | 72.68 | 83.5 | 10.82 |
| 5147.26 | 19.48 | Ave. | 276 | 1.0 | V | 38.36 | 57.84 | 63.5 | 5.66 |
| 5352.47 | 38.15 | PK | 26 | 2.5 | V | 39.09 | 77.24 | 83.5 | 6.26 |
| 5352.47 | 21.35 | Ave. | 26 | 2.5 | V | 39.09 | 60.44 | 63.5 | 3.06 |
| 10580.00 | 51.15 | PK | 224 | 2.4 | V | 17.91 | 69.06 | 77.7 | 8.64 |
| 802.11AX20 | | | | | | | | | |
| 5260 MHz | | | | | | | | | |
| 5148.36 | 32.74 | PK | 341 | 2.3 | V | 38.36 | 71.10 | 83.5 | 12.40 |
| 5148.36 | 17.82 | Ave. | 341 | 2.3 | V | 38.36 | 56.18 | 63.5 | 7.32 |
| 5354.03 | 32.15 | PK | 41 | 1.3 | V | 39.09 | 71.24 | 83.5 | 12.26 |
| 5354.03 | 17.65 | Ave. | 41 | 1.3 | V | 39.09 | 56.74 | 63.5 | 6.76 |
| 10520.00 | 50.12 | PK | 204 | 1.2 | V | 17.25 | 67.37 | 77.7 | 10.33 |
| 5280 MHz | | | | | | | | | |
| 10560.00 | 49.68 | PK | 150 | 2.3 | V | 17.91 | 67.59 | 77.7 | 10.11 |
| 5320 MHz | | | | | | | | | |
| 5148.62 | 32.45 | PK | 172 | 1.2 | V | 38.36 | 70.81 | 83.5 | 12.69 |
| 5148.62 | 17.81 | Ave. | 172 | 1.2 | V | 38.36 | 56.17 | 63.5 | 7.33 |
| 5354.95 | 32.17 | PK | 350 | 2.3 | V | 39.09 | 71.26 | 83.5 | 12.24 |
| 5354.95 | 17.68 | Ave. | 350 | 2.3 | V | 39.09 | 56.77 | 63.5 | 6.73 |
| 10640.00 | 50.14 | PK | 256 | 1.5 | V | 18.01 | 68.15 | 83.5 | 15.35 |
| 10640.00 | 42.38 | Ave. | 256 | 1.5 | V | 18.01 | 60.39 | 63.5 | 3.11 |

| Frequency (MHz) | Receiver | | Turn-Table | Rx Antenna | | Corrected Factor (dB/m) | Corrected Amplitude (dBµV/m) | FCC Part15.407 | |
|---|---|---|---|---|---|---|---|---|---|
| | Reading (dBµV) | Detector (PK/QP/Ave.) | Angle Degree | Height (m) | Polar (H / V) | | | Limit (dBµV/m) | Margin (dB) |
| 802.11AX40 | | | | | | | | | |
| 5270 MHz | | | | | | | | | |
| 5149.75 | 33.25 | PK | 23 | 2.3 | V | 38.36 | 71.61 | 83.5 | 11.89 |
| 5149.75 | 17.56 | Ave. | 23 | 2.3 | V | 38.36 | 55.92 | 63.5 | 7.58 |
| 5352.41 | 32.14 | PK | 10 | 2.3 | V | 39.09 | 71.23 | 83.5 | 12.27 |
| 5352.41 | 17.71 | Ave. | 10 | 2.3 | V | 39.09 | 56.80 | 63.5 | 6.70 |
| 10540.00 | 49.94 | PK | 254 | 1.6 | V | 17.25 | 67.19 | 77.7 | 10.51 |
| 5310 MHz | | | | | | | | | |
| 5147.63 | 33.15 | PK | 29 | 1.8 | V | 38.36 | 71.51 | 83.5 | 11.99 |
| 5147.63 | 17.62 | Ave. | 29 | 1.8 | V | 38.36 | 55.98 | 63.5 | 7.52 |
| 5357.83 | 32.41 | PK | 35 | 2.0 | V | 39.09 | 71.50 | 83.5 | 12.00 |
| 5357.83 | 17.87 | Ave. | 35 | 2.0 | V | 39.09 | 56.96 | 63.5 | 6.54 |
| 10620.00 | 50.17 | PK | 267 | 2.1 | V | 18.01 | 68.18 | 83.5 | 15.32 |
| 10620.00 | 43.26 | Ave. | 267 | 2.1 | V | 18.01 | 61.27 | 63.5 | 2.23 |
| 802.11AX80 | | | | | | | | | |
| 5290 MHz | | | | | | | | | |
| 5149.38 | 33.60 | PK | 280 | 2.3 | V | 38.36 | 71.96 | 83.5 | 11.54 |
| 5149.38 | 17.65 | Ave. | 280 | 2.3 | V | 38.36 | 56.01 | 63.5 | 7.49 |
| 5351.47 | 37.56 | PK | 102 | 1.4 | V | 39.09 | 76.65 | 83.5 | 6.85 |
| 5351.47 | 20.14 | Ave. | 102 | 1.4 | V | 39.09 | 59.23 | 63.5 | 4.27 |
| 10580.00 | 50.15 | PK | 340 | 1.5 | V | 17.91 | 68.06 | 77.7 | 9.64 |

**5470-5725MHz:**

| Frequency (MHz) | Receiver | | Turn-Table | Rx Antenna | | Corrected Factor (dB/m) | Corrected Amplitude (dBμV/m) | FCC Part15.407 | |
|---|---|---|---|---|---|---|---|---|---|
| | Reading (dBμV) | Detector (PK/QP/Ave.) | Angle Degree | Height (m) | Polar (H / V) | | | Limit (dBμV/m) | Margin (dB) |
| 802.11A | | | | | | | | | |
| 5500 MHz | | | | | | | | | |
| 5467.65 | 32.40 | PK | 263 | 2.5 | V | 39.37 | 71.77 | 77.7 | 5.93 |
| 5907.47 | 33.93 | PK | 65 | 2.4 | V | 39.87 | 73.80 | 77.7 | 3.90 |
| 11000.00 | 51.03 | PK | 263 | 2.2 | V | 17.66 | 68.69 | 83.5 | 14.81 |
| 11000.00 | 38.22 | Ave. | 263 | 2.2 | V | 17.66 | 55.88 | 63.5 | 7.62 |
| 5580 MHz | | | | | | | | | |
| 11160.00 | 52.01 | PK | 30 | 1.5 | V | 17.39 | 69.40 | 83.5 | 14.10 |
| 11160.00 | 39.51 | Ave. | 30 | 1.5 | V | 17.39 | 56.90 | 63.5 | 6.60 |
| 5700 MHz | | | | | | | | | |
| 5469.56 | 32.53 | PK | 120 | 1.8 | V | 39.37 | 71.90 | 77.7 | 5.80 |
| 5726.72 | 33.18 | PK | 32 | 1.5 | V | 39.49 | 72.67 | 77.7 | 5.03 |
| 11400.00 | 50.02 | PK | 225 | 1.0 | V | 17.73 | 67.75 | 83.5 | 15.75 |
| 11400.00 | 44.72 | Ave. | 225 | 1.0 | V | 17.73 | 62.45 | 63.5 | 1.05 |
| 802.11n20 | | | | | | | | | |
| 5500 MHz | | | | | | | | | |
| 5465.89 | 30.51 | PK | 118 | 1.2 | V | 39.37 | 69.88 | 77.7 | 7.82 |
| 5726.68 | 32.28 | PK | 296 | 2.4 | V | 39.49 | 71.77 | 77.7 | 5.93 |
| 11000.00 | 51.03 | PK | 340 | 1.8 | V | 17.66 | 68.69 | 83.5 | 14.81 |
| 11000.00 | 39.30 | Ave. | 340 | 1.8 | V | 17.66 | 56.96 | 63.5 | 6.54 |
| 5580 MHz | | | | | | | | | |
| 11160.00 | 52.95 | PK | 44 | 2.4 | V | 17.39 | 70.34 | 83.5 | 13.16 |
| 11160.00 | 39.48 | Ave. | 44 | 2.4 | V | 17.39 | 56.87 | 63.5 | 6.63 |
| 5700 MHz | | | | | | | | | |
| 5467.87 | 32.41 | PK | 187 | 1.7 | V | 39.37 | 71.78 | 77.7 | 5.92 |
| 5725.85 | 32.42 | PK | 188 | 1.5 | V | 39.49 | 71.91 | 77.7 | 5.79 |
| 11400.00 | 56.45 | PK | 203 | 2.1 | V | 17.73 | 74.18 | 83.5 | 9.32 |
| 11400.00 | 44.55 | Ave. | 203 | 2.1 | V | 17.73 | 62.28 | 63.5 | 1.22 |
| 802.11n40 | | | | | | | | | |
| 5510 MHz | | | | | | | | | |
| 5469.39 | 31.25 | PK | 110 | 1.7 | V | 39.37 | 70.62 | 77.7 | 7.08 |
| 5924.19 | 32.41 | PK | 143 | 1.9 | V | 39.97 | 72.38 | 77.7 | 5.32 |
| 11020.00 | 51.27 | PK | 223 | 1.8 | V | 17.66 | 68.93 | 83.5 | 14.57 |
| 11020.00 | 40.30 | Ave. | 223 | 1.8 | V | 17.66 | 57.96 | 63.5 | 5.54 |
| 5550 MHz | | | | | | | | | |
| 11100.00 | 54.14 | PK | 41 | 2.4 | V | 16.72 | 70.86 | 83.5 | 12.64 |
| 11100.00 | 41.55 | Ave. | 41 | 2.4 | V | 16.72 | 58.27 | 63.5 | 5.23 |

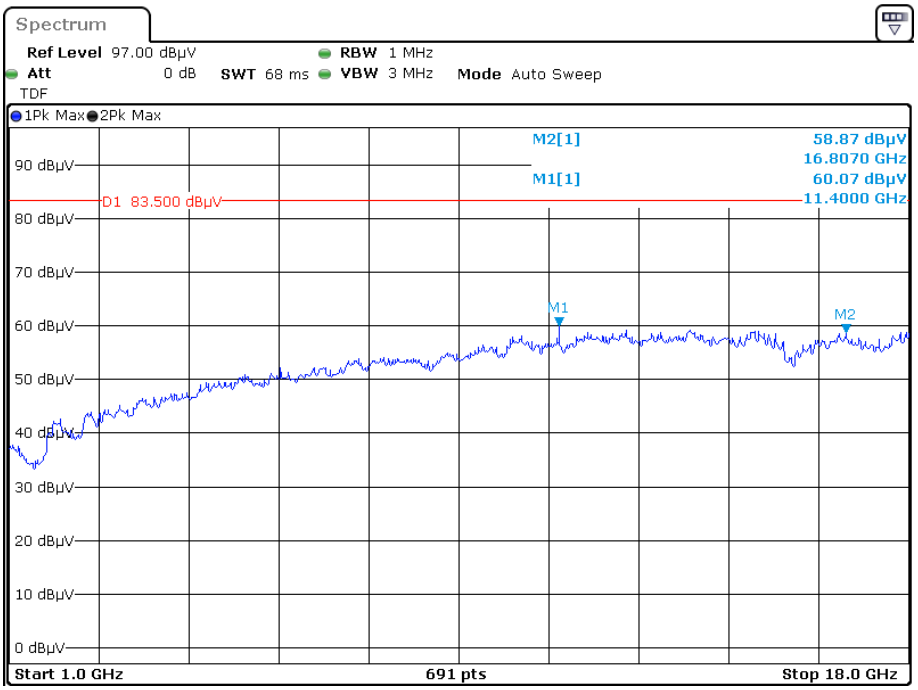
| Frequency (MHz) | Receiver | | Turn-Table | Rx Antenna | | Corrected Factor (dB/m) | Corrected Amplitude (dBμV/m) | FCC Part15.407 | |
|---|---|---|---|---|---|---|---|---|---|
| | Reading (dBμV) | Detector (PK/QP/Ave.) | Angle Degree | Height (m) | Polar (H / V) | | | Limit (dBμV/m) | Margin (dB) |
| 5670 MHz | | | | | | | | | |
| 5305.29 | 30.73 | PK | 298 | 1.8 | V | 38.72 | 69.45 | 77.7 | 8.25 |
| 5850.96 | 32.70 | PK | 298 | 1.8 | V | 39.87 | 72.57 | 77.7 | 5.13 |
| 11340.00 | 58.23 | PK | 25 | 1.4 | V | 17.43 | 75.66 | 83.5 | 7.84 |
| 11340.00 | 44.66 | Ave. | 25 | 1.4 | V | 17.43 | 62.09 | 63.5 | 1.41 |
| 802.11AC20 | | | | | | | | | |
| 5500 MHz | | | | | | | | | |
| 5468.89 | 30.79 | PK | 297 | 2.3 | V | 39.37 | 70.16 | 77.7 | 7.54 |
| 5843.00 | 31.42 | PK | 297 | 2.3 | V | 39.61 | 71.03 | 77.7 | 6.67 |
| 11000.00 | 51.01 | PK | 110 | 1.6 | V | 17.66 | 68.67 | 83.5 | 14.83 |
| 11000.00 | 37.34 | Ave. | 110 | 1.6 | V | 17.66 | 55.00 | 63.5 | 8.50 |
| 5580 MHz | | | | | | | | | |
| 11160.00 | 51.52 | PK | 181 | 1.3 | V | 17.39 | 68.91 | 83.5 | 14.59 |
| 11160.00 | 37.23 | Ave. | 181 | 1.3 | V | 17.39 | 54.62 | 63.5 | 8.88 |
| 5700 MHz | | | | | | | | | |
| 5461.25 | 31.38 | PK | 134 | 2.1 | V | 39.37 | 70.75 | 77.7 | 6.95 |
| 5784.65 | 32.07 | PK | 134 | 2.1 | V | 39.61 | 71.68 | 77.7 | 6.02 |
| 11400.00 | 52.81 | PK | 268 | 2.4 | V | 17.73 | 70.54 | 83.5 | 12.96 |
| 11400.00 | 44.67 | Ave. | 268 | 2.4 | V | 17.73 | 62.40 | 63.5 | 1.10 |
| 802.11AC40 | | | | | | | | | |
| 5510 MHz | | | | | | | | | |
| 5463.78 | 30.94 | PK | 264 | 1.7 | V | 39.37 | 70.31 | 77.7 | 7.39 |
| 5815.34 | 31.06 | PK | 264 | 1.7 | V | 39.61 | 70.67 | 77.7 | 7.03 |
| 11020.00 | 52.18 | PK | 78 | 1.5 | V | 17.66 | 69.84 | 83.5 | 13.66 |
| 11020.00 | 38.92 | Ave. | 78 | 1.5 | V | 17.66 | 56.58 | 63.5 | 6.92 |
| 5550 MHz | | | | | | | | | |
| 11100.00 | 46.56 | PK | 251 | 1.7 | V | 16.72 | 63.28 | 83.5 | 20.22 |
| 11100.00 | 41.49 | Ave. | 251 | 1.7 | V | 16.72 | 58.21 | 63.5 | 5.29 |
| 5670 MHz | | | | | | | | | |
| 5467.42 | 30.54 | PK | 11 | 2.1 | V | 39.37 | 69.91 | 77.7 | 7.79 |
| 5734.25 | 32.04 | PK | 89 | 1.7 | V | 39.49 | 71.53 | 77.7 | 6.17 |
| 11340.00 | 54.59 | PK | 131 | 2.0 | V | 17.43 | 72.02 | 83.5 | 11.48 |
| 11340.00 | 44.46 | Ave. | 131 | 2.0 | V | 17.43 | 61.89 | 63.5 | 1.61 |

| Frequency (MHz) | Receiver | | Turn-Table | Rx Antenna | | Corrected Factor (dB/m) | Corrected Amplitude (dBμV/m) | FCC Part15.407 | |
|---|---|---|---|---|---|---|---|---|---|
| | Reading (dBμV) | Detector (PK/QP/Ave.) | Angle Degree | Height (m) | Polar (H / V) | | | Limit (dBμV/m) | Margin (dB) |
| 802.11AC80 | | | | | | | | | |
| 5530 MHz | | | | | | | | | |
| 5468.64 | 31.12 | PK | 68 | 1.1 | V | 39.37 | 70.49 | 77.7 | 7.21 |
| 5731.47 | 31.08 | PK | 127 | 1.5 | V | 39.49 | 70.57 | 77.7 | 7.13 |
| 11060.00 | 52.30 | PK | 309 | 2.5 | V | 16.72 | 69.02 | 83.5 | 14.48 |
| 11060.00 | 38.96 | Ave. | 309 | 2.5 | V | 16.72 | 55.68 | 63.5 | 7.82 |
| 5610 MHz | | | | | | | | | |
| 5461.55 | 30.59 | PK | 254 | 1.3 | V | 39.37 | 69.96 | 77.7 | 7.74 |
| 5728.43 | 30.87 | PK | 304 | 2.2 | V | 39.49 | 70.36 | 77.7 | 7.34 |
| 11220.00 | 54.50 | PK | 247 | 2.1 | V | 17.39 | 71.89 | 83.5 | 11.61 |
| 11220.00 | 39.46 | Ave. | 247 | 2.1 | V | 17.39 | 56.85 | 63.5 | 6.65 |
| 802.11AX20 | | | | | | | | | |
| 5500 MHz | | | | | | | | | |
| 5467.87 | 31.64 | PK | 246 | 1.8 | V | 39.37 | 71.01 | 77.7 | 6.69 |
| 5740.34 | 31.06 | PK | 73 | 2.1 | V | 39.49 | 70.55 | 77.7 | 7.15 |
| 11000.00 | 49.49 | PK | 90 | 2.4 | V | 17.66 | 67.15 | 83.5 | 16.35 |
| 11000.00 | 37.55 | Ave. | 90 | 2.4 | V | 17.66 | 55.21 | 63.5 | 8.29 |
| 5580 MHz | | | | | | | | | |
| 11160.00 | 50.61 | PK | 316 | 2.4 | V | 17.39 | 68.00 | 83.5 | 15.50 |
| 11160.00 | 37.60 | Ave. | 316 | 2.4 | V | 17.39 | 54.99 | 63.5 | 8.51 |
| 5700 MHz | | | | | | | | | |
| 5467.25 | 31.21 | PK | 23 | 1.8 | V | 39.37 | 70.58 | 77.7 | 7.12 |
| 5728.41 | 31.28 | PK | 73 | 2.5 | V | 39.49 | 70.77 | 77.7 | 6.93 |
| 11400.00 | 56.04 | PK | 267 | 2.3 | V | 17.73 | 73.77 | 83.5 | 9.73 |
| 11400.00 | 44.38 | Ave. | 267 | 2.3 | V | 17.73 | 62.11 | 63.5 | 1.39 |

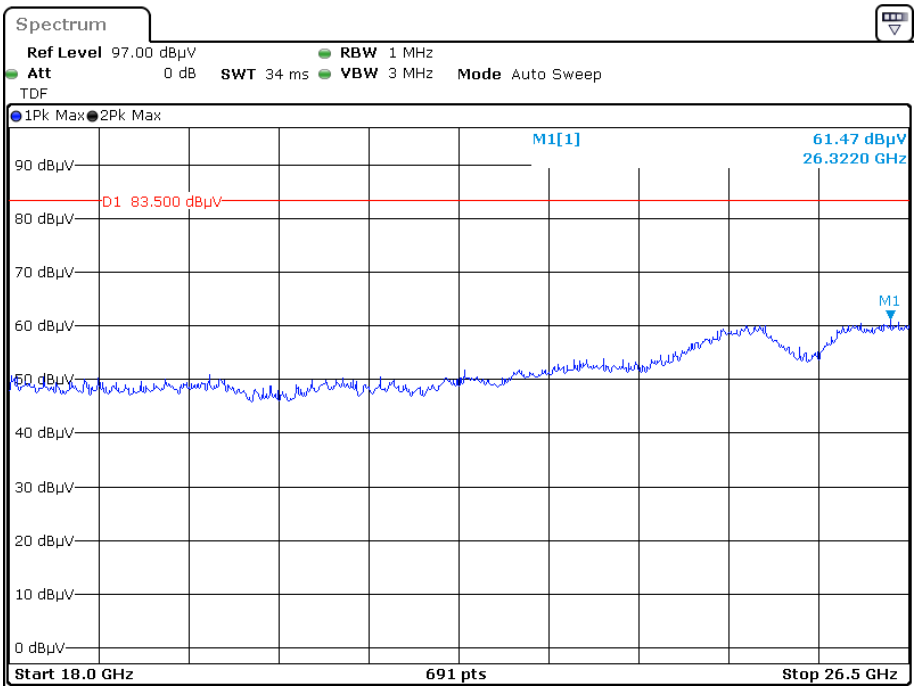
| Frequency (MHz) | Receiver | | Turn-Table | Rx Antenna | | Corrected Factor (dB/m) | Corrected Amplitude (dBµV/m) | FCC Part15.407 | |
|---|---|---|---|---|---|---|---|---|---|
| | Reading (dBµV) | Detector (PK/QP/Ave.) | Angle Degree | Height (m) | Polar (H / V) | | | Limit (dBµV/m) | Margin (dB) |
| 802.11AX40 | | | | | | | | | |
| 5510 MHz | | | | | | | | | |
| 5462.19 | 30.67 | PK | 48 | 2.0 | V | 39.37 | 70.04 | 77.7 | 7.66 |
| 5729.16 | 31.24 | PK | 162 | 1.9 | V | 39.49 | 70.73 | 77.7 | 6.97 |
| 11020.00 | 48.88 | PK | 21 | 1.3 | V | 17.66 | 66.54 | 83.5 | 16.96 |
| 11020.00 | 37.90 | Ave. | 21 | 1.3 | V | 17.66 | 55.56 | 63.5 | 7.94 |
| 5550 MHz | | | | | | | | | |
| 11100.00 | 50.14 | PK | 0 | 1.5 | V | 16.72 | 66.86 | 83.5 | 16.64 |
| 11100.00 | 37.71 | Ave. | 0 | 1.5 | V | 16.72 | 54.43 | 63.5 | 9.07 |
| 5670 MHz | | | | | | | | | |
| 5465.36 | 31.06 | PK | 311 | 2.2 | V | 39.37 | 70.43 | 77.7 | 7.27 |
| 5736.16 | 30.48 | PK | 295 | 2.4 | V | 39.49 | 69.97 | 77.7 | 7.73 |
| 11340.00 | 54.83 | PK | 327 | 2.2 | V | 17.43 | 72.26 | 83.5 | 11.24 |
| 11340.00 | 44.86 | Ave. | 327 | 2.2 | V | 17.43 | 62.29 | 63.5 | 1.21 |
| 802.11AX80 | | | | | | | | | |
| 5530 MHz | | | | | | | | | |
| 5462.21 | 30.82 | PK | 53 | 1.7 | V | 39.37 | 70.19 | 77.7 | 7.51 |
| 5729.61 | 30.82 | PK | 254 | 2.4 | V | 39.49 | 70.31 | 77.7 | 7.39 |
| 11060.00 | 49.75 | PK | 85 | 1.2 | V | 16.72 | 66.47 | 83.5 | 17.03 |
| 11060.00 | 37.88 | Ave. | 85 | 1.2 | V | 16.72 | 54.60 | 63.5 | 8.90 |
| 5610 MHz | | | | | | | | | |
| 5463.15 | 31.13 | PK | 11 | 1.7 | V | 39.37 | 70.50 | 77.7 | 7.20 |
| 5768.81 | 31.27 | PK | 279 | 1.8 | V | 39.61 | 70.88 | 77.7 | 6.82 |
| 11220.00 | 53.92 | PK | 342 | 1.2 | V | 17.39 | 71.31 | 83.5 | 12.19 |
| 11220.00 | 39.57 | Ave. | 342 | 1.2 | V | 17.39 | 56.96 | 63.5 | 6.54 |

**Note:**
Corrected Amplitude = Corrected Factor + Reading
Corrected Factor=Antenna factor (RX) + Cable Loss – Amplifier Factor
Margin = Limit- Corr. Amplitude
All other spurious emissions are 20 dB below the limit or are on the system noise floor level.

**Peak**
**Pre-scan with 802.11a 5700MHz**
**Horizontal**




Date: 11.MAR.2021 18:37:42

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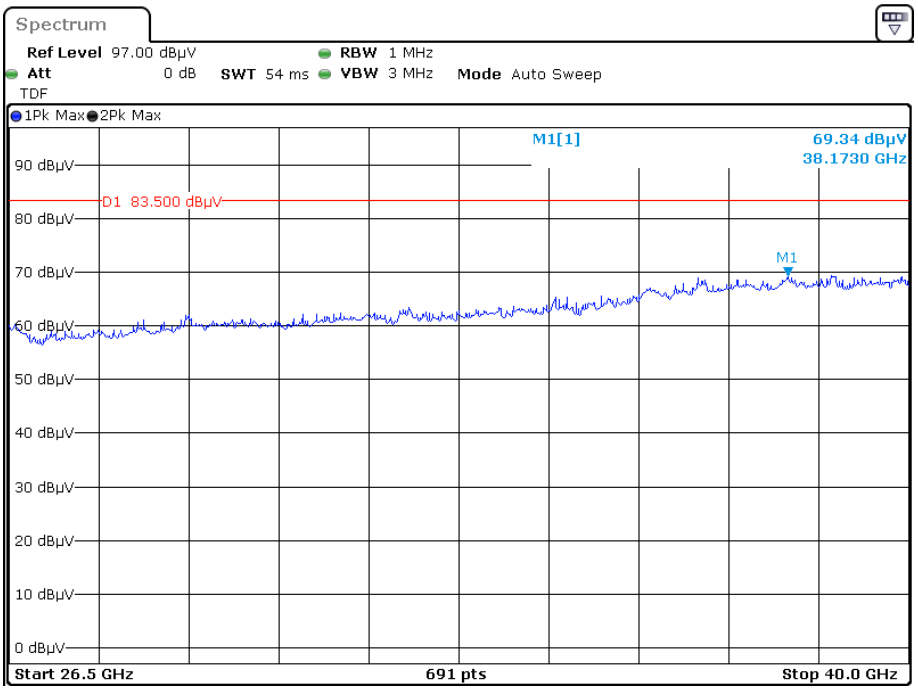
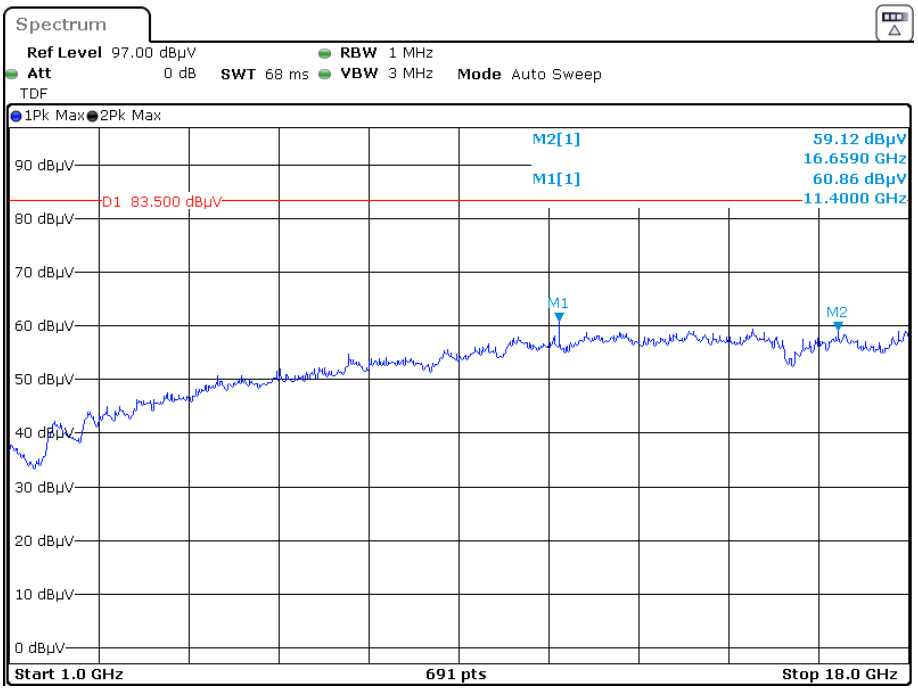



Date: 11.MAR.2021 19:33:49

**Vertical**

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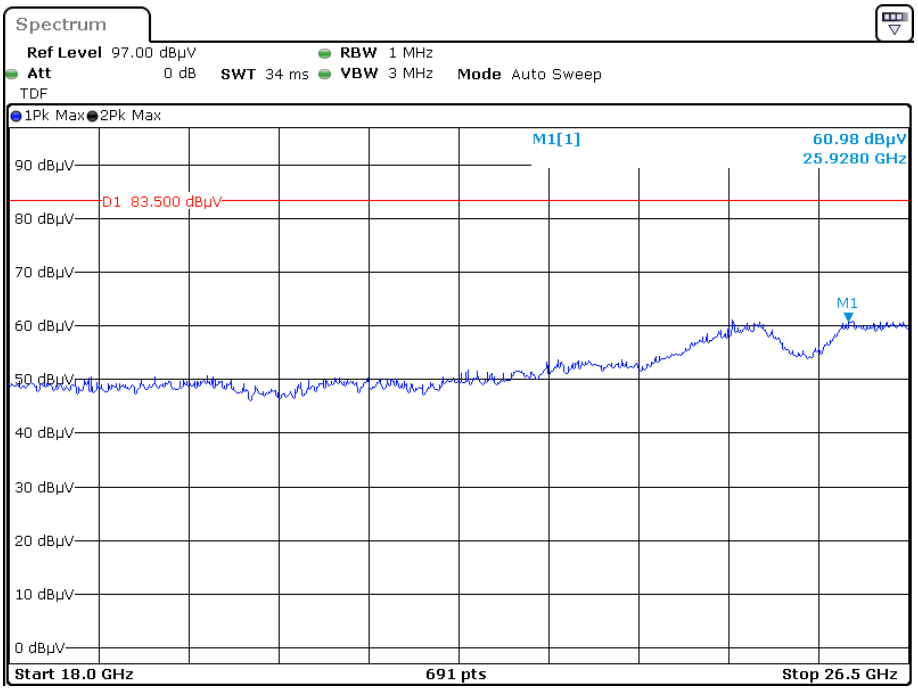


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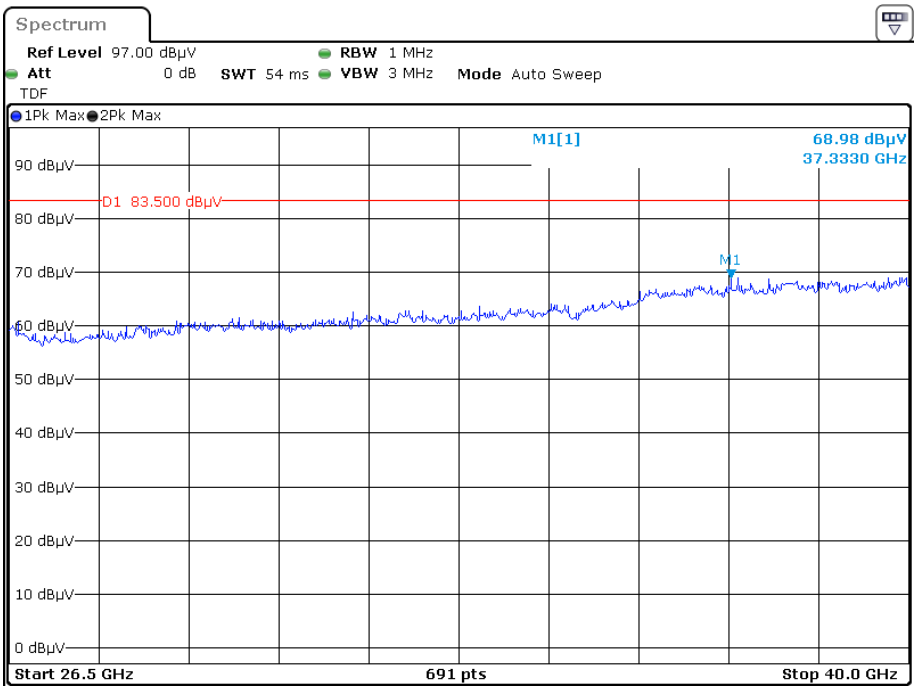
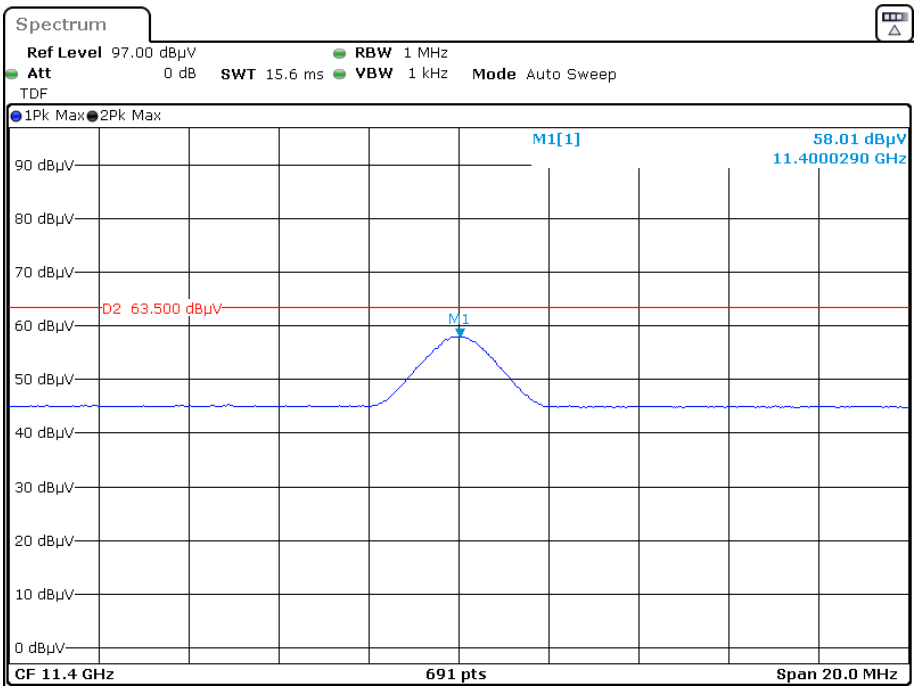



Date: 11.MAR.2021 19:43:42

**Average**
**Horizontal**

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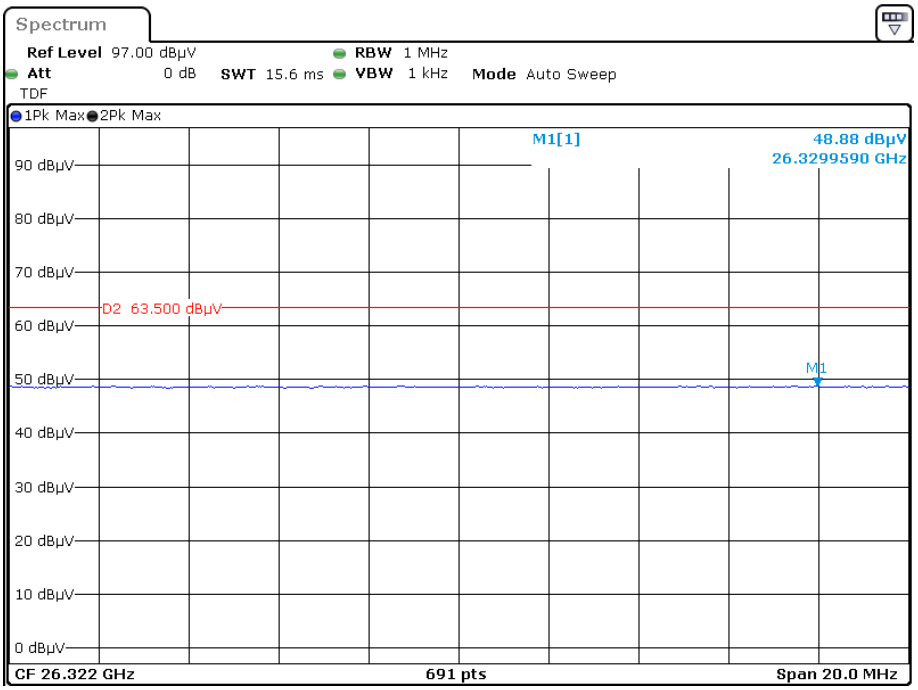


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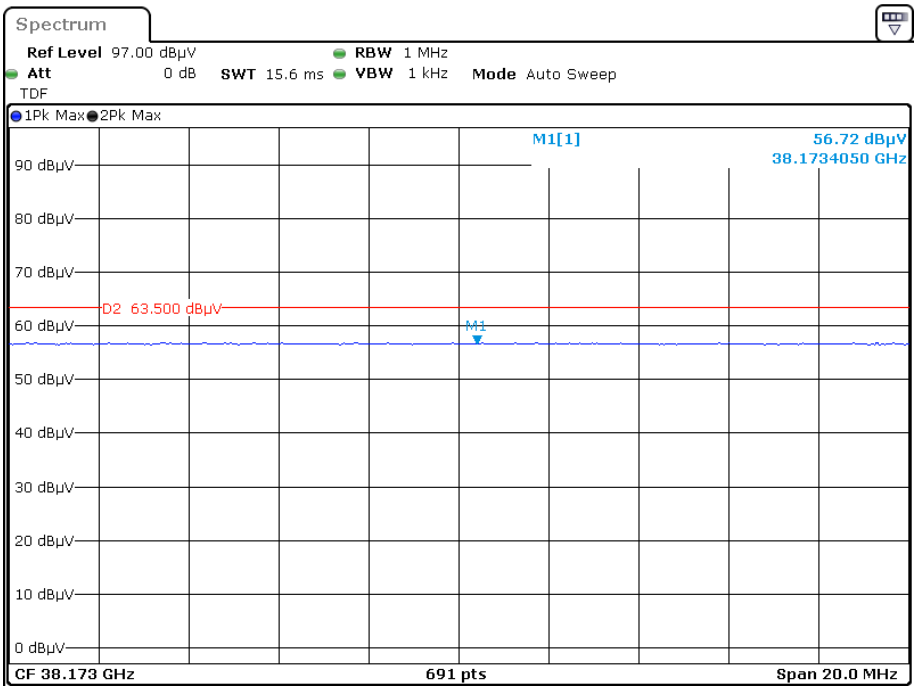
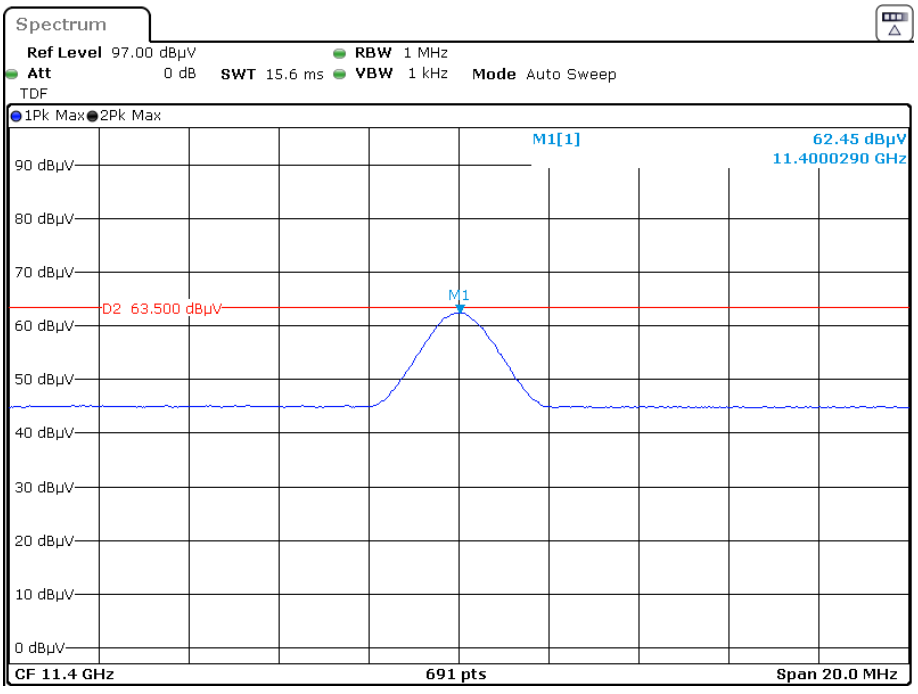



Date: 11.MAR.2021 19:38:52

## Vertical

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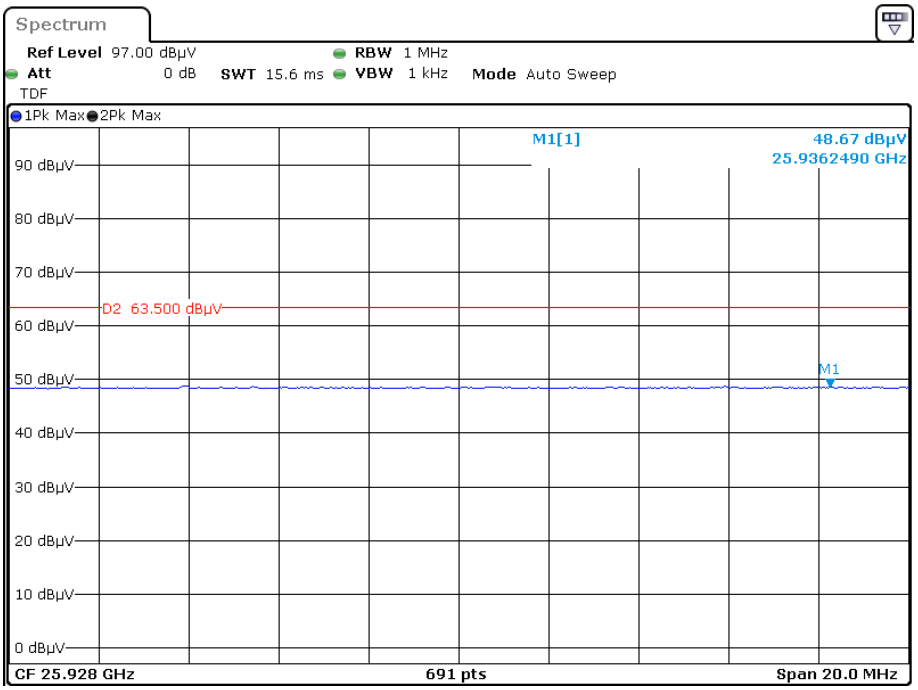


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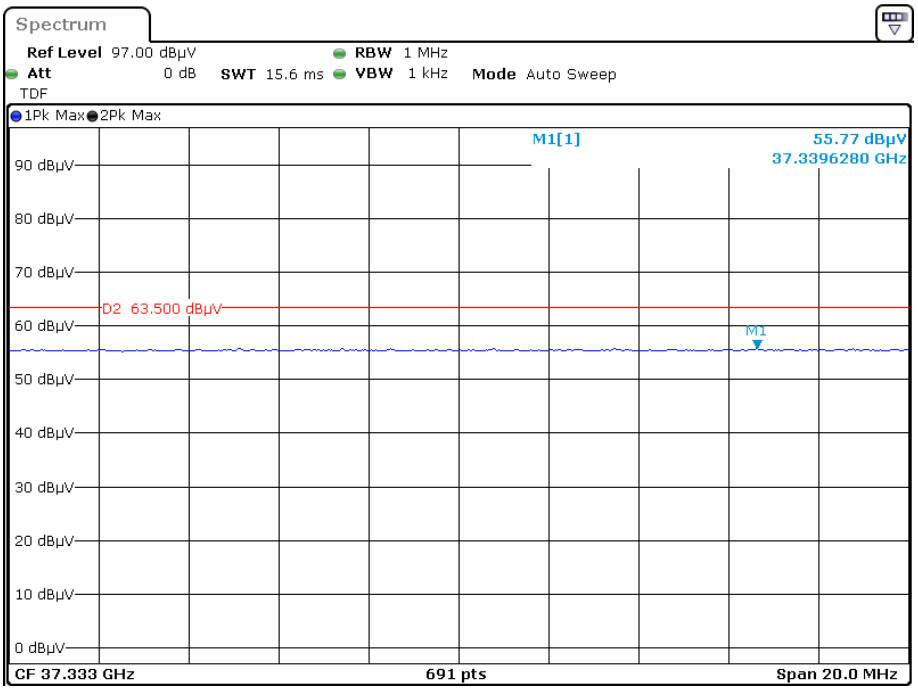



Date: 11.MAR.2021 19:48:31

# FCC §15.407(1), (5),(e) – 26 dB & 6dB EMISSION BANDWIDTH

## Applicable Standard

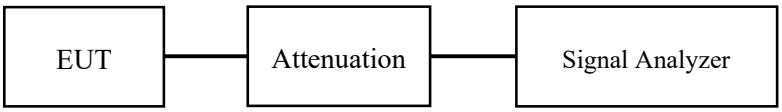
The maximum power spectral density is measured as a conducted emission by direct connection of a calibrated test instrument to the equipment under test. If the device cannot be connected directly, alternative techniques acceptable to the Commission may be used. Measurements in the 5.725-5.85 GHz band are made over a reference bandwidth of 500 kHz or the 26 dB emission bandwidth of the device, whichever is less. Measurements in the 5.15-5.25 GHz, 5.25-5.35 GHz, and the 5.47-5.725 GHz bands are made over a bandwidth of 1 MHz or the 26 dB emission bandwidth of the device, whichever is less. A narrower resolution bandwidth can be used, provided that the measured power is integrated over the full reference bandwidth.

Within the 5.725-5.85 GHz band, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.

## Test Procedure

**1. Emission Bandwidth (EBW)**
a) Set RBW = approximately 1% of the emission bandwidth.
b) Set the VBW > RBW.
c) Detector = Peak.
d) Trace mode = max hold.
e) Measure the maximum width of the emission that is 26 dB down from the maximum of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

2. **Minimum Emission Bandwidth for the band 5.725-5.85 GHz**
Section 15.407(e) specifies the minimum 6 dB emission bandwidth of at least 500 KHz for the band 5.725-5.85 GHz. The following procedure shall be used for measuring this bandwidth:
a) Set RBW = 100 kHz.
b) Set the video bandwidth (VBW) ≥ 3 × RBW.
c) Detector = Peak.
d) Trace mode = max hold.
e) Sweep = auto couple.
f) Allow the trace to stabilize.
g) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.



## Test Data

### Environmental Conditions

| | |
|---|---|
| **Temperature:** | 24 ℃ |
| **Relative Humidity:** | 56 % |
| **ATM Pressure:** | 101.0 kPa |

*The testing was performed by Coco Liu from 2021-01-03 to 2021-02-05.*

*EUT operation mode: Transmitting*

**Test Result: Pass**

*Please refer to the Appendix.*

# FCC §15.407(a)(1)(2)(3) – CONDUCTED TRANSMITTER OUTPUT POWER

## Applicable Standard

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

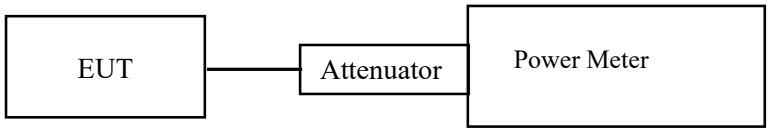
For client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting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

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

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

## Test Procedure

1. Place the EUT on a bench and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to one test equipment.
3. Add a correction factor to the display.



## Test Data

### Environmental Conditions

| | |
|---|---|
| **Temperature:** | 24 ℃ |
| **Relative Humidity:** | 56 % |
| **ATM Pressure:** | 101.0 kPa |

*The testing was performed by Coco Liu from 2021-01-03 to 2021-02-05.*

*EUT operation mode: Transmitting*

**Test Result: Pass**

*Please refer to the Appendix.*

# FCC §15.407(a) (1) (2) (3) - POWER SPECTRAL DENSITY

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

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

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

## Test Procedure

For devices operating in the bands 5.15-5.25 GHz, 5.25-5.35 GHz, and 5.47-5.725 GHz, the above procedures make use of 1 MHz RBW to satisfy directly the 1 MHz reference bandwidth specified in § 15.407(a)(5). For devices operating in the band 5.725-5.85 GHz, the rules specify a measurement bandwidth of 500 kHz. Many spectrum analyzers do not hAve.e 500 kHz RBW, thus a narrower RBW may need to be used. The rules permit the use of a RBWs less than 1 MHz, or 500 kHz, "provided that the measured power is integrated over the full reference bandwidth" to show the total power over the specified measurement bandwidth (i.e., 1 MHz, or 500 kHz). If measurements are performed using a reduced resolution bandwidth (< 1 MHz, or < 500 kHz) and integrated over 1 MHz, or 500 kHz bandwidth, the following adjustments to the procedures apply:

a) Set RBW ⩾ 1/T, where T is defined in section II.B.l.a).
b) Set VBW ⩾ 3 RBW.
c) If measurement bandwidth of Maximum PSD is specified in 500 kHz, add 10 log (500 kHz/RBW) to the measured result, whereas RBW (< 500 kHz) is the reduced resolution bandwidth of the spectrum analyzer set during measurement.
d) If measurement bandwidth of Maximum PSD is specified in 1 MHz, add 10 log (1MHz/RBW) to the measured result, whereas RBW (< 1 MHz) is the reduced resolution bandwidth of spectrum analyzer set during measurement.
e) Care must be taken to ensure that the measurements are performed during a period of continuous transmission or are corrected upward for duty cycle.

## Test Data

### Environmental Conditions

| | |
|---|---|
| **Temperature:** | 24 ℃ |
| **Relative Humidity:** | 56 % |
| **ATM Pressure:** | 101.0 kPa |

*The testing was performed by Coco Liu from 2021-01-04 to 2021-02-22.*

*EUT operation mode: Transmitting*

**Test Result: Pass**

*Please refer to the Appendix.*

# APPENDIX

## Appendix A1: EmissionBandwidth

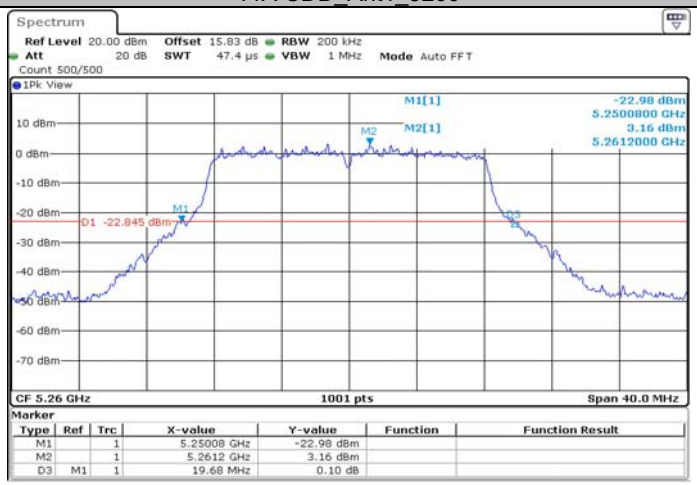
**Test Result**

| TestMode | Antenna | Channel | 26db EBW [MHz] | Limit[MHz] | Verdict |
|---|---|---|---|---|---|
| 11A CDD | Ant1 | 5260 | 19.680 | --- | PASS |
| | Ant2 | 5260 | 20.640 | --- | PASS |
| | Ant1 | 5280 | 19.920 | --- | PASS |
| | Ant2 | 5280 | 20.720 | --- | PASS |
| | Ant1 | 5320 | 19.920 | --- | PASS |
| | Ant2 | 5320 | 20.160 | --- | PASS |
| | Ant1 | 5500 | 19.920 | --- | PASS |
| | Ant2 | 5500 | 20.200 | --- | PASS |
| | Ant1 | 5580 | 20.080 | --- | PASS |
| | Ant2 | 5580 | 20.520 | --- | PASS |
| | Ant1 | 5700 | 20.320 | --- | PASS |
| | Ant2 | 5700 | 20.480 | --- | PASS |
| 11N20MIMO | Ant1 | 5260 | 20.480 | --- | PASS |
| | Ant2 | 5260 | 20.320 | --- | PASS |
| | Ant1 | 5280 | 20.840 | --- | PASS |
| | Ant2 | 5280 | 20.360 | --- | PASS |
| | Ant1 | 5320 | 20.800 | --- | PASS |
| | Ant2 | 5320 | 21.200 | --- | PASS |
| | Ant1 | 5500 | 20.640 | --- | PASS |
| | Ant2 | 5500 | 20.920 | --- | PASS |
| | Ant1 | 5580 | 20.680 | --- | PASS |
| | Ant2 | 5580 | 21.160 | --- | PASS |
| | Ant1 | 5700 | 20.560 | --- | PASS |
| | Ant2 | 5700 | 20.480 | --- | PASS |
| 11N40MIMO | Ant1 | 5270 | 41.040 | --- | PASS |
| | Ant2 | 5270 | 40.640 | --- | PASS |
| | Ant1 | 5310 | 40.400 | --- | PASS |
| | Ant2 | 5310 | 40.800 | --- | PASS |
| | Ant1 | 5510 | 40.960 | --- | PASS |
| | Ant2 | 5510 | 40.320 | --- | PASS |
| | Ant1 | 5550 | 40.880 | --- | PASS |
| | Ant2 | 5550 | 40.720 | --- | PASS |
| | Ant1 | 5670 | 40.960 | --- | PASS |
| | Ant2 | 5670 | 40.480 | --- | PASS |
| 11AC20MIMO | Ant1 | 5260 | 20.880 | --- | PASS |
| | Ant2 | 5260 | 20.760 | --- | PASS |
| | Ant1 | 5280 | 20.320 | --- | PASS |
| | Ant2 | 5280 | 20.720 | --- | PASS |
| | Ant1 | 5320 | 21.040 | --- | PASS |
| | Ant2 | 5320 | 20.680 | --- | PASS |
| | Ant1 | 5500 | 20.360 | --- | PASS |
| | Ant2 | 5500 | 20.560 | --- | PASS |
| | Ant1 | 5580 | 20.960 | --- | PASS |
| | Ant2 | 5580 | 20.880 | --- | PASS |
| | Ant1 | 5700 | 20.480 | --- | PASS |
| | Ant2 | 5700 | 21.200 | --- | PASS |
| 11AC40MIMO | Ant1 | 5270 | 41.120 | --- | PASS |
| | Ant2 | 5270 | 41.040 | --- | PASS |
| | Ant1 | 5310 | 41.280 | --- | PASS |
| | Ant2 | 5310 | 40.880 | --- | PASS |
| | Ant1 | 5510 | 41.120 | --- | PASS |
| | Ant2 | 5510 | 40.640 | --- | PASS |
| | Ant1 | 5550 | 41.040 | --- | PASS |
| | Ant2 | 5550 | 41.040 | --- | PASS |

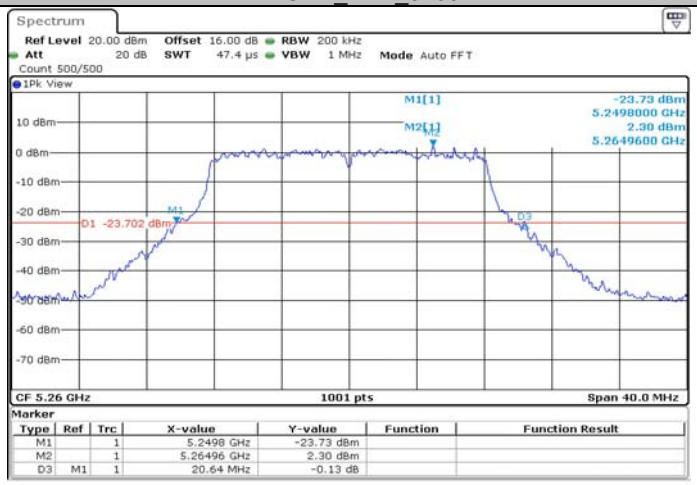
| | | | | | |
|---|---|---|---|---|---|
| | Ant1 | 5670 | 41.200 | --- | PASS |
| | Ant2 | 5670 | 40.880 | --- | PASS |
| 11AC80MIMO | Ant1 | 5290 | 82.720 | --- | PASS |
| | Ant2 | 5290 | 82.240 | --- | PASS |
| | Ant1 | 5530 | 82.400 | --- | PASS |
| | Ant2 | 5530 | 83.040 | --- | PASS |
| | Ant1 | 5610 | 82.720 | --- | PASS |
| | Ant2 | 5610 | 82.560 | --- | PASS |
| 11AX20MIMO | Ant1 | 5260 | 21.160 | --- | PASS |
| | Ant2 | 5260 | 21.400 | --- | PASS |
| | Ant1 | 5280 | 21.240 | --- | PASS |
| | Ant2 | 5280 | 21.200 | --- | PASS |
| | Ant1 | 5320 | 21.280 | --- | PASS |
| | Ant2 | 5320 | 21.040 | --- | PASS |
| | Ant1 | 5500 | 20.880 | --- | PASS |
| | Ant2 | 5500 | 21.440 | --- | PASS |
| | Ant1 | 5580 | 21.200 | --- | PASS |
| | Ant2 | 5580 | 21.600 | --- | PASS |
| | Ant1 | 5700 | 21.880 | --- | PASS |
| | Ant2 | 5700 | 21.480 | --- | PASS |
| 11AX40MIMO | Ant1 | 5270 | 41.600 | --- | PASS |
| | Ant2 | 5270 | 41.440 | --- | PASS |
| | Ant1 | 5310 | 41.360 | --- | PASS |
| | Ant2 | 5310 | 41.200 | --- | PASS |
| | Ant1 | 5510 | 41.200 | --- | PASS |
| | Ant2 | 5510 | 41.280 | --- | PASS |
| | Ant1 | 5550 | 41.200 | --- | PASS |
| | Ant2 | 5550 | 41.200 | --- | PASS |
| | Ant1 | 5670 | 41.440 | --- | PASS |
| | Ant2 | 5670 | 41.600 | --- | PASS |
| 11AX80MIMO | Ant1 | 5290 | 83.040 | --- | PASS |
| | Ant2 | 5290 | 82.720 | --- | PASS |
| | Ant1 | 5530 | 83.680 | --- | PASS |
| | Ant2 | 5530 | 82.560 | --- | PASS |
| | Ant1 | 5610 | 83.200 | --- | PASS |
| | Ant2 | 5610 | 83.040 | --- | PASS |

## Test Graphs

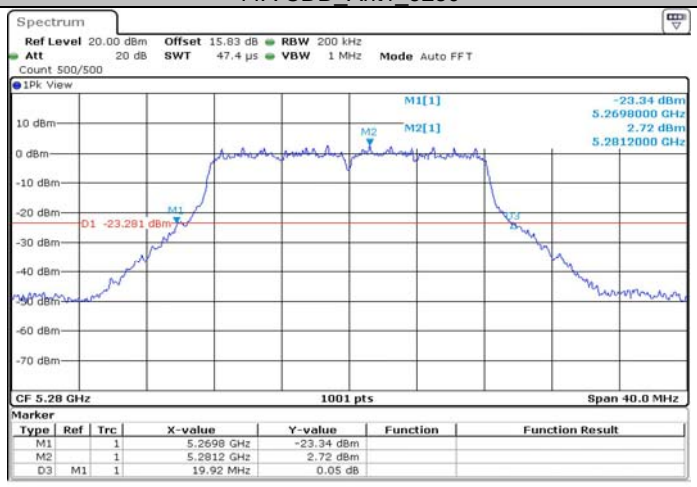
11A CDD_Ant1_5260



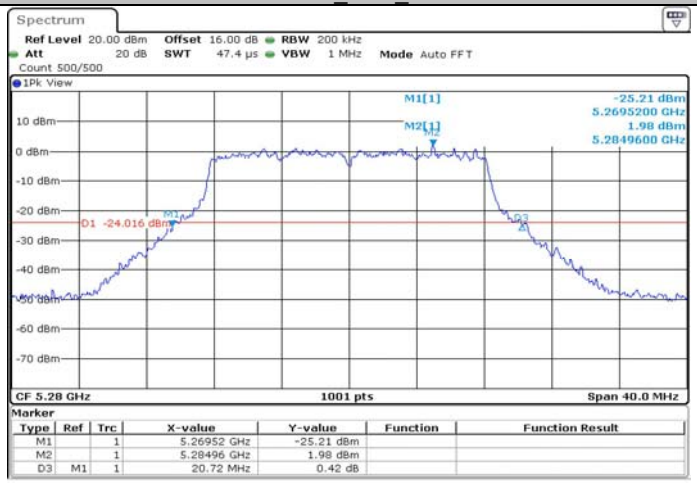

11A CDD_Ant2_5260



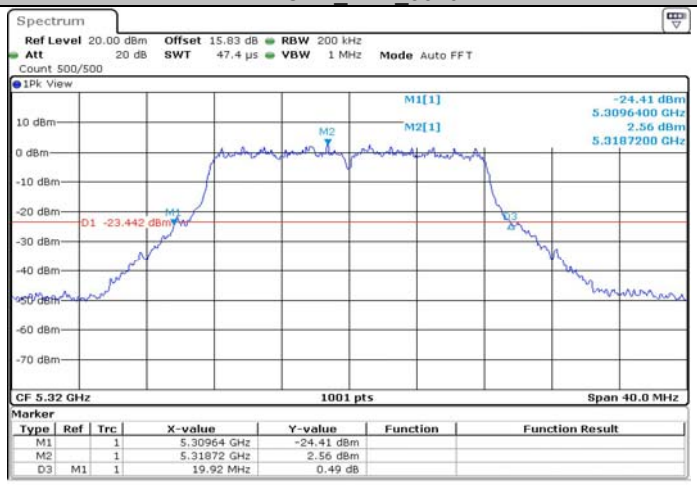

11A CDD_Ant1_5280



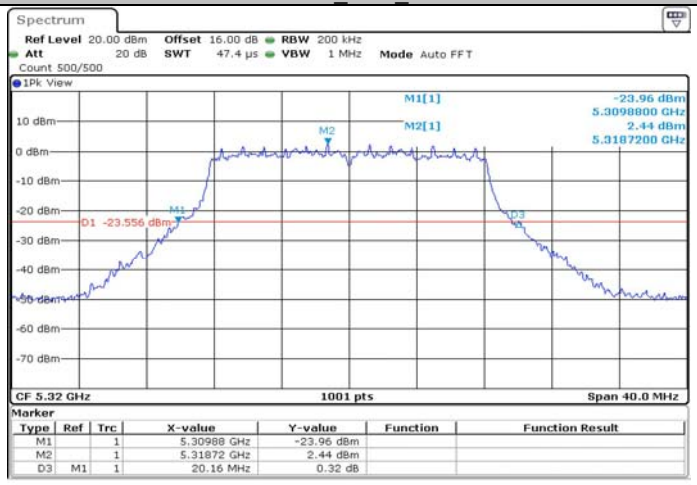
11A CDD_Ant2_5280



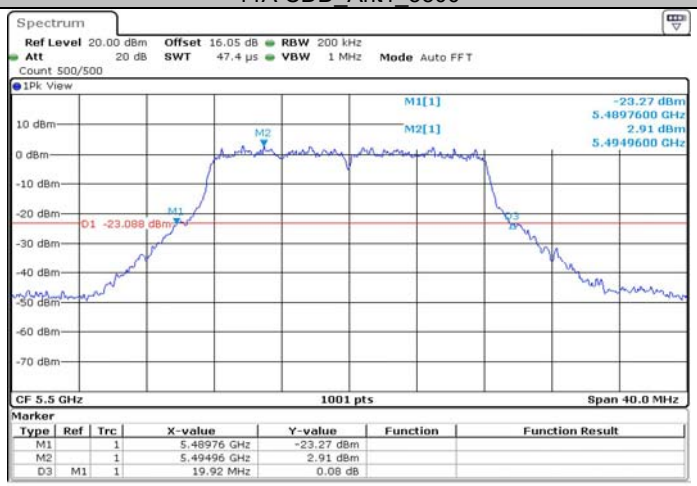

11A CDD_Ant1_5320



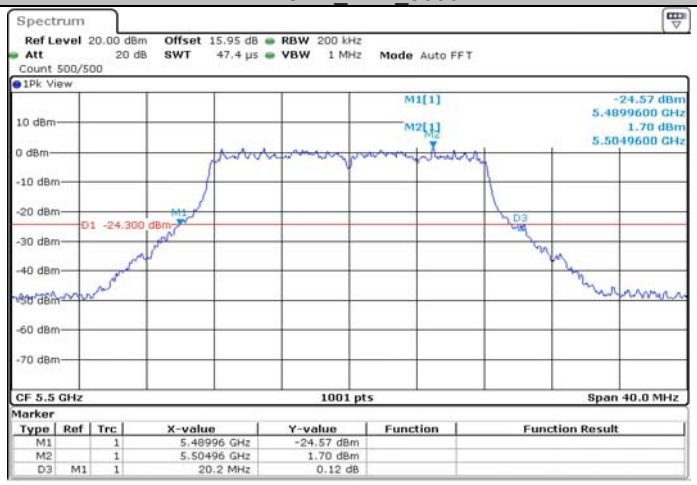

11A CDD_Ant2_5320



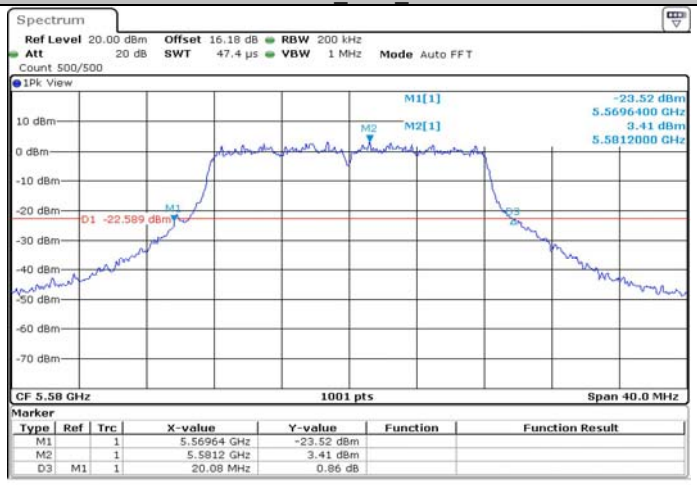
11A CDD_Ant1_5500



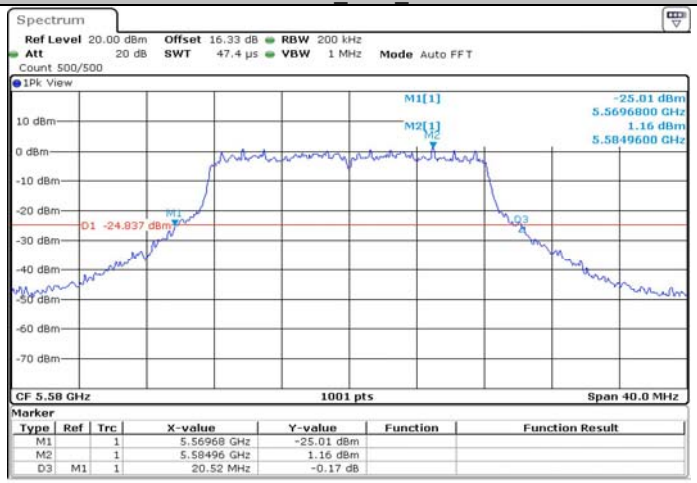

11A CDD_Ant2_5500




11A CDD_Ant1_5580



11A CDD_Ant2_5580

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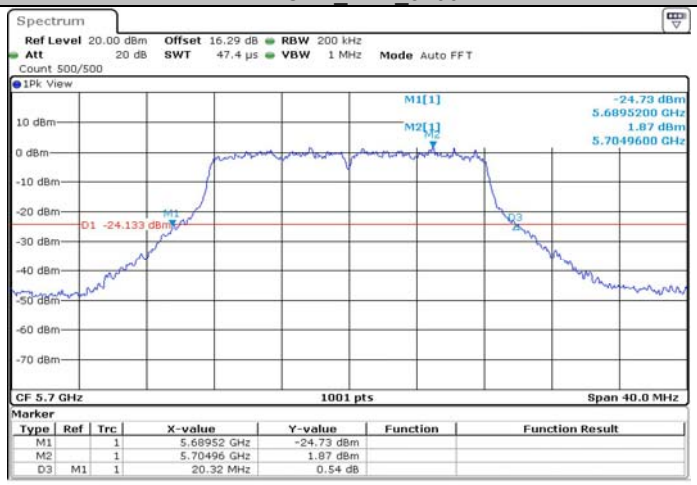
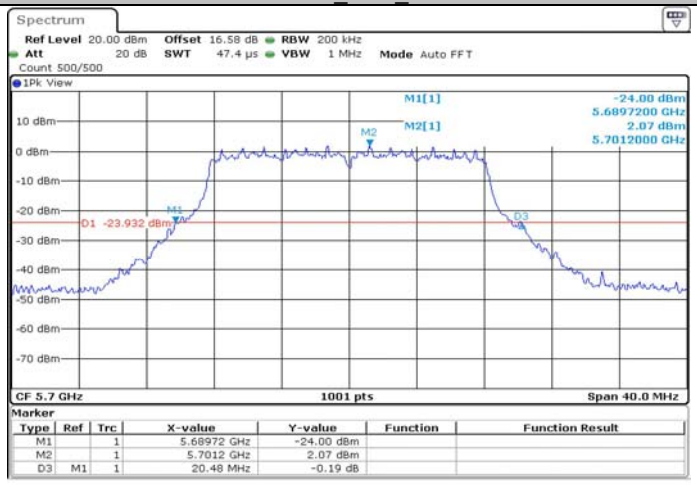
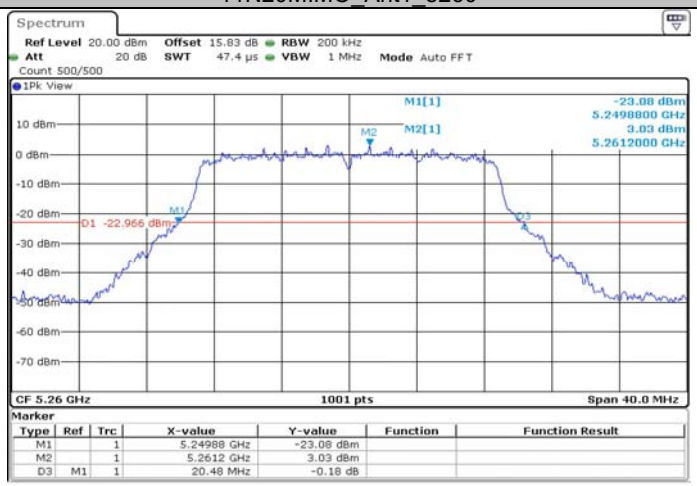


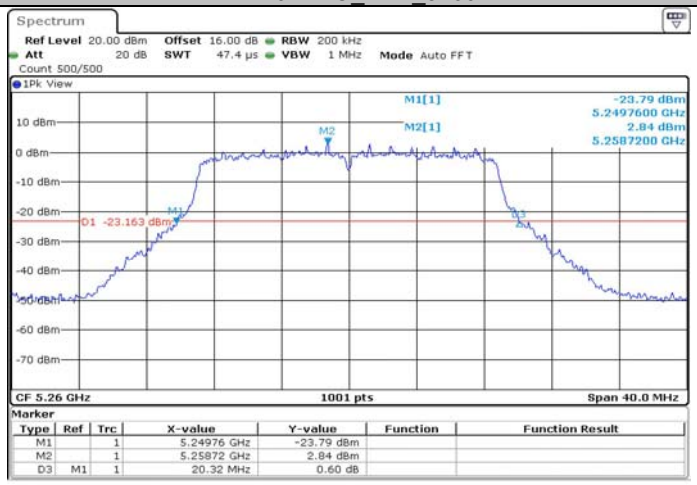

11A CDD_Ant2_5700



11N20MIMO_Ant1_5260




11N20MIMO_Ant2_5260

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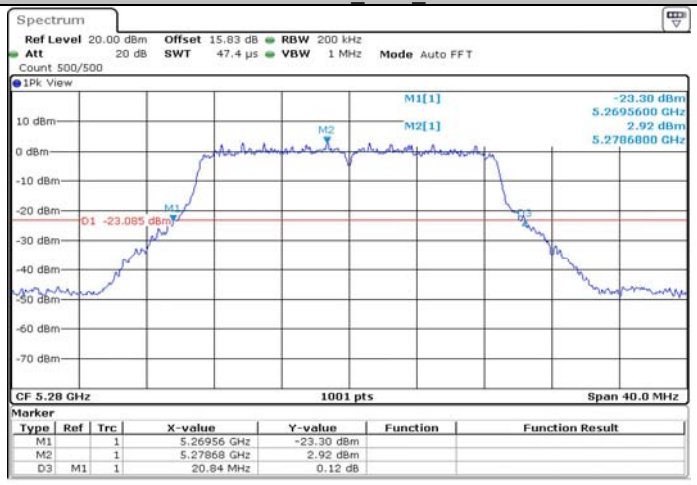
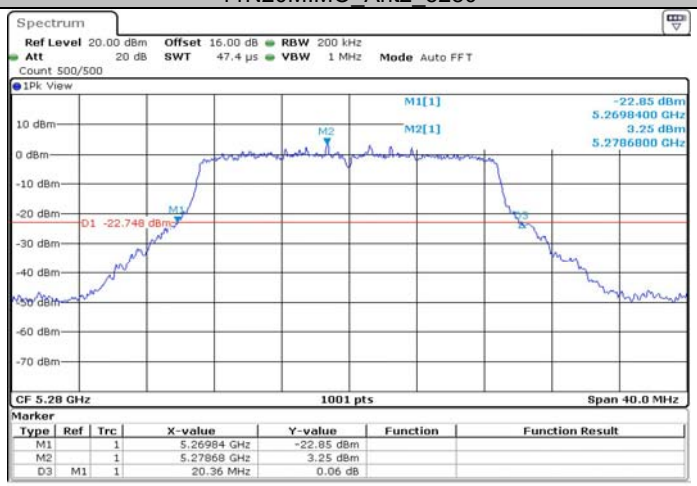
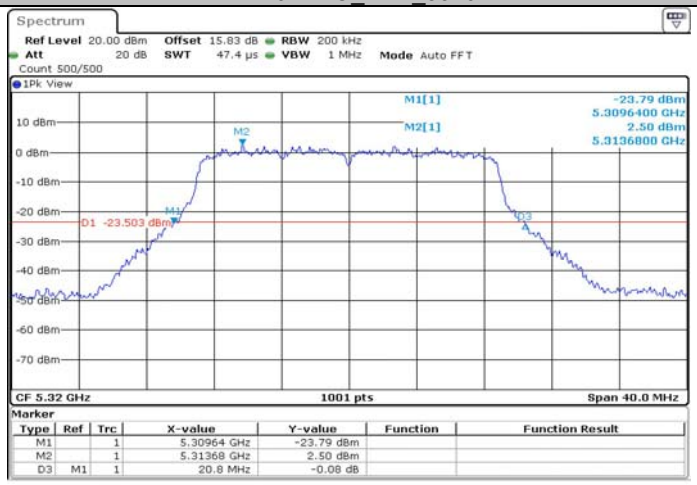


11N20MIMO_Ant2_5280




11N20MIMO_Ant1_5320




11N20MIMO_Ant2_5320