



# FCC TEST REPORT

According to

**CFR47 §15.407**

**Applicant** : Guangzhou Shirui Electronics Co.,Ltd.  
**Address** : 192 Kezhu Road, Sciencetech Park, Guangzhou Economic & Technology  
Development District, Guangzhou,Guangdong,China  
**Manufacturer** : Guangzhou Shirui Electronics Co.,Ltd.  
**Address** : 192 Kezhu Road, Sciencetech Park, Guangzhou Economic & Technology  
Development District, Guangzhou,Guangdong,China  
**Equipment** : WiFi/BT Module  
**Model No.** : WF-R22C-USA1  
**Brand** : seewo  
**FCC ID** : 2AFG6-WF-R22C-USA1  
**Test Period** : Jul. 04, 2019~ Jul. 25, 2019

- The test result refers exclusively to the test presented test model / sample.
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- The test report must not be used by the clients to claim product certification approval by any agency of the Government.

I **HEREBY CERTIFY THAT** :

The measurements shown in this test report were made in accordance with the procedures given in **ANSI C63.10 – 2013& FCC Part15.407** and the energy emitted by this equipment was **passed**.

Approved by:

Miro Chueh  
EMC/RF Manager

Laboratory Accreditation:

CerpPASS Technology Corporation Test Laboratory



**TAF LAB Code: 1439**

CerpPASS Technology (SuZhou) Co., Ltd.



**A2LA LAB Code: 4981.01**

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## History of this test report

| Report No.  | Issue Date    | Description |
|-------------|---------------|-------------|
| SEDL1907135 | Jul. 25, 2019 | Original    |
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## 1. Summary of Test Procedure and Test Results

### 1.1. Applicable Standards

**ANSI C63.4:2014**

**ANSI C63.10:2013**

**FCC Rules and Regulations Part 15 Subpart E §15.407**

**First R&O 14-30**

**KDB662911**

**KDB789033**

**KDB644545**

| FCC Rule               | Description of Test                    | Result |
|------------------------|----------------------------------------|--------|
| 15.203                 | Antenna Requirement                    | Pass   |
| 15.207(a)              | AC Power Line Conducted Emission       | Pass   |
| 15.407(b)<br>15.209    | Radiated Spurious Emission             | Pass   |
| 15.407(a)              | 26 dB Occupied Bandwidth               | Pass   |
| 15.407                 | 6 dB Bandwidth                         | Pass   |
| 15.407<br>(a) & (a)(3) | Average Power                          | Pass   |
| 15.407(a)              | Output and PPSD                        | Pass   |
| 15.407(g)              | Frequency Stability                    | Pass   |
| 15.407(c)              | Automatically Discontinue Transmission | Pass   |
| 2.1091                 | Radio Frequency Exposure               | Pass   |



## 2. Test Configuration of Equipment under Test

### 2.1. Feature of Equipment under Test

|                       |                                                                                                                                                                                                                                             |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Equipment             | WiFi/BT Module                                                                                                                                                                                                                              |
| Model No.             | WF-R22C-USA1                                                                                                                                                                                                                                |
| Model Discrepancy     | N/A                                                                                                                                                                                                                                         |
| IEEE Standards        | IEEE 802.11a/b/g/n/ac                                                                                                                                                                                                                       |
| Operating Frequencies | 5.15~5.85GHz                                                                                                                                                                                                                                |
| Modulation            | 802.11b: CCK, DQPSK, DBPSK<br>802.11a/g: 64-QAM, 16-QAM, QPSK, BPSK<br>802.11n: 64-QAM, 16-QAM, QPSK, BPSK<br>802.11ac: 256-QAM, 64-QAM, 16-QAM, QPSK, BPSK                                                                                 |
| Wireless Data Rate    | 802.11b: 1, 2, 5.5, 11Mbps<br>802.11a/g: 6, 9, 12, 18, 24, 36, 48, 54Mbps<br>802.11n: HT20 reach up to 144.4Mbps, HT40 reach up to 300Mbps<br>802.11ac: VHT20 reach up to 173.3Mbps, VHT40 reach up to 400Mbps, VHT80 reach up to 866.7Mbps |

Note: For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.



## 2.2. Carrier Frequency of Channels

Band 1: 5150MHz-5250MHz

802.11a, 802.11n HT20, 802.11ac VHT20

| Channel    | Frequency(MHz) | Channel    | Frequency(MHz) |
|------------|----------------|------------|----------------|
| <b>*36</b> | <b>5180</b>    | <b>*44</b> | <b>5220</b>    |
| 40         | 5200           | <b>*48</b> | <b>5240</b>    |

802.11n HT40, 802.11ac VHT40

| Channel    | Frequency(MHz) | Channel    | Frequency(MHz) |
|------------|----------------|------------|----------------|
| <b>*38</b> | <b>5190</b>    | <b>*46</b> | <b>5230</b>    |

802.11ac VHT80

| Channel    | Frequency(MHz) |
|------------|----------------|
| <b>*42</b> | <b>5210</b>    |

Band 2: 5250MHz -5350MHz

802.11a, 802.11n HT20, 802.11ac VHT20

| Channel    | Frequency(MHz) | Channel    | Frequency(MHz) |
|------------|----------------|------------|----------------|
| <b>*52</b> | <b>5260</b>    | <b>*60</b> | <b>5300</b>    |
| 56         | 5280           | <b>*64</b> | <b>5320</b>    |

802.11n HT40, 802.11ac VHT40

| Channel    | Frequency(MHz) | Channel    | Frequency(MHz) |
|------------|----------------|------------|----------------|
| <b>*54</b> | <b>5270</b>    | <b>*62</b> | <b>5310</b>    |

802.11ac VHT80

| Channel    | Frequency(MHz) |
|------------|----------------|
| <b>*58</b> | <b>5290</b>    |

Band 3: 5470MHz -5725MHz

802.11a, 802.11n HT20, 802.11ac VHT20

| Channel     | Frequency(MHz) | Channel     | Frequency(MHz) |
|-------------|----------------|-------------|----------------|
| <b>*100</b> | <b>5500</b>    | 124         | 5620           |
| 104         | 5520           | 128         | 5640           |
| 108         | 5540           | 132         | 5660           |
| 112         | 5560           | 136         | 5680           |
| <b>*116</b> | <b>5580</b>    | <b>*140</b> | <b>5700</b>    |
| 120         | 5600           |             |                |

802.11n HT40, 802.11ac VHT40

| Channel     | Frequency(MHz) | Channel     | Frequency(MHz) |
|-------------|----------------|-------------|----------------|
| <b>*102</b> | <b>5510</b>    | 126         | 5630           |
| <b>*110</b> | <b>5550</b>    | <b>*134</b> | <b>5670</b>    |
| <b>118</b>  | <b>5590</b>    |             |                |

802.11ac VHT80

| Channel     | Frequency(MHz) | Channel     | Frequency(MHz) |
|-------------|----------------|-------------|----------------|
| <b>*106</b> | <b>5530</b>    | <b>*122</b> | <b>5610</b>    |

Band 4: 5725MHz -5850MHz

802.11a, 802.11n HT20, 802.11ac VHT20

| Channel     | Frequency(MHz) | Channel     | Frequency(MHz) |
|-------------|----------------|-------------|----------------|
| <b>*149</b> | <b>5745</b>    | 161         | 5805           |
| 153         | 5765           | <b>*165</b> | <b>5825</b>    |
| <b>*157</b> | <b>5785</b>    |             |                |

802.11n HT40, 802.11ac VHT40

| Channel     | Frequency(MHz) | Channel     | Frequency(MHz) |
|-------------|----------------|-------------|----------------|
| <b>*151</b> | <b>5755</b>    | <b>*159</b> | <b>5795</b>    |

802.11ac VHT80

| Channel     | Frequency(MHz) |
|-------------|----------------|
| <b>*155</b> | <b>5775</b>    |

Note: Channels remarked \* are selected to perform test.



### 2.3. Test Mode and Test Software

- a. During testing, the interface cables and equipment positions were varied according to ANSI C63.4.
- b. The complete test system included remote workstation and EUT for RF test. The remote workstation included Notebook.

An executive program, "REALTEK 11ac 8812AU USB WLAN NIC Massproduction Kit" under WIN 7 was executed to transmit and receive data via WLAN.

- c. The following test modes were performed for the test:

| Conducted Emissions from the AC mains power ports                                      |                           |
|----------------------------------------------------------------------------------------|---------------------------|
| Test Mode                                                                              | Operating Description     |
| 1                                                                                      | 802.11a (6Mbps)           |
| 2                                                                                      | 802.11ac VHT20 (6.5Mbps)  |
| 3                                                                                      | 802.11ac VHT40 (13.5Mbps) |
| 4                                                                                      | 802.11ac VHT80 (29.3Mbps) |
| caused "Test Mode 1" generated the worst case, it was reported as the final data.      |                           |
| Radiation Emissions (30MHz ~ 1GHz)                                                     |                           |
| Test Mode                                                                              | Operating Description     |
| 1                                                                                      | 802.11a (6Mbps)           |
| 2                                                                                      | 802.11ac VHT20 (6.5Mbps)  |
| 3                                                                                      | 802.11ac VHT40 (13.5Mbps) |
| 4                                                                                      | 802.11ac VHT80 (29.3Mbps) |
| caused "Test Mode 1" generated the worst case, they were reported as the final data.   |                           |
| Radiation Emissions (1GHz ~ 40GHz )                                                    |                           |
| Test Mode                                                                              | Operating Description     |
| 1                                                                                      | 802.11a (6Mbps)           |
| 2                                                                                      | 802.11ac VHT20 (6.5Mbps)  |
| 3                                                                                      | 802.11ac VHT40 (13.5Mbps) |
| 4                                                                                      | 802.11ac VHT80 (29.3Mbps) |
| caused "Test Mode 1~4" generated the worst case, they were reported as the final data. |                           |

### 2.4. Description of Test System

| Device   | Manufacturer | Model No.  | Description                    |
|----------|--------------|------------|--------------------------------|
| Notebook | SONY         | PCG-71811P | Power Cable, Unshielding, 1.7m |

**2.5. General Information of Test**

|                                     |           |                                                                                                                                                                                                                                                                                                                 |
|-------------------------------------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <input type="checkbox"/>            | Test Site | <b>CerpPASS Technology Corporation Test Laboratory</b><br>Address: No.10, Ln. 2, Lianfu St., Luzhu Dist., Taoyuan City 33848, Taiwan (R.O.C.)<br>Tel:+886-3-3226-888<br>Fax:+886-3-3226-881<br>Address: No.68-1, Shihbachongsi, Shihding Township, New Taipei City 223, Taiwan, R.O.C.<br>Tel: +886-2-2663-8582 |
|                                     | TAF       | 1439                                                                                                                                                                                                                                                                                                            |
|                                     | FCC       | TW1079, TW1061                                                                                                                                                                                                                                                                                                  |
|                                     | IC        | 4934E-1, 4934E-2                                                                                                                                                                                                                                                                                                |
|                                     | VCCI      | T-2205 for Telecommunication Test<br>C-4663 for Conducted emission test<br>R-4399, R-4218 for Radiated emission test<br>G-812, G-813 for radiated disturbance above 1GHz                                                                                                                                        |
| <input checked="" type="checkbox"/> | Test Site | CerpPASS Technology (Suzhou) Co.,Ltd<br>Address: No.66,Tangzhuang Road, Suzhou Industrial Park, Jiangsu 215006, China<br>Tel: +86-512-6917-5888<br>Fax: +86-512-6917-5666                                                                                                                                       |
|                                     | CNAS      | L5515                                                                                                                                                                                                                                                                                                           |
|                                     | FCC       | CN1243                                                                                                                                                                                                                                                                                                          |
|                                     | A2LA      | 4981.01                                                                                                                                                                                                                                                                                                         |
|                                     | IC        | 7290A-1, 7290A-2                                                                                                                                                                                                                                                                                                |
|                                     | VCCI      | T-1945 for Telecommunication Test<br>C-2919 for Conducted emission test<br>R-2670 for Radiated emission test<br>G-227 for radiated disturbance above 1GHz                                                                                                                                                       |



## 2.6. Measurement Uncertainty

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2)).

### RF Conducted Measurement

| Test Item                     |            | Uncertainty               | Limit                   |
|-------------------------------|------------|---------------------------|-------------------------|
| Radio Frequency               |            | $\pm 8.7 \times 10^{-7}$  | $\pm 1 \times 10^{-5}$  |
| RF output power, conducted    |            | $\pm 0.63\text{dB}$       | $\pm 1.5\text{dB}$      |
| Power density, conducted      |            | $\pm 1.21\text{dB}$       | $\pm 3\text{dB}$        |
| Unwanted emissions, conducted | 30-1000MHz | $\pm 0.51\text{dB}$       | $\pm 3\text{dB}$        |
|                               | 1-25GHz    | $\pm 0.67\text{dB}$       | $\pm 3\text{dB}$        |
| All emissions, radiated       | 30-1000MHz | $\pm 2.28\text{dB}$       | $\pm 6\text{dB}$        |
|                               | 1-25GHz    | $\pm 2.59\text{dB}$       | $\pm 6\text{dB}$        |
| Temperature                   |            | $\pm 0.8^{\circ}\text{C}$ | $\pm 1^{\circ}\text{C}$ |
| Humidity                      |            | $\pm 3\%$                 | $\pm 5\%$               |
| DC and low frequency voltages |            | $\pm 3\%$                 | $\pm 3\%$               |

### AC Conducted Measurement

| Measurement                   | Frequency    | Uncertainty   |
|-------------------------------|--------------|---------------|
| Conducted emissions(LINE)     | 9KHz-30MHz   | +/- 0.7738 dB |
| Conducted emissions(NEUTRAL)  | 9KHz-30MHz   | +/- 0.7886 dB |
| Conducted emissions(10Mbps)   | 150KHz-30MHz | +/- 1.3013dB  |
| Conducted emissions(100Mbps)  | 150KHz-30MHz | +/- 1.3197 dB |
| Conducted emissions(1000Mbps) | 150KHz-30MHz | +/- 1.2987 dB |

### Radiated Measurement

| Measurement        | Polarity   | Frequency  | Uncertainty    |
|--------------------|------------|------------|----------------|
| Radiated emissions | Horizontal | below 1GHz | +/- 3.8936 dB  |
|                    | Vertical   | below 1GHz | +/- 3.8928 dB  |
|                    | Horizontal | above 1GHz | +/- 5.18858dB  |
|                    | Vertical   | above 1GHz | +/- 5.18928 dB |



### 3. Test Equipment and Ancillaries Used for Tests

| Instrument/Ancillary | Manufacturer | Model No. | Serial No. | Calibration Date | Valid Date. |
|----------------------|--------------|-----------|------------|------------------|-------------|
| EMI Receiver         | R&S          | ESCI3     | 100563     | 2019.06.21       | 2020.06.20  |
| LISN                 | Schwarzbeck  | NSLK 8127 | 8127-920   | 2018.09.25       | 2019.09.24  |
| Pulse Limiter        | R&S          | ESH3-Z2   | 100529     | 2019.03.11       | 2020.03.10  |
| Software             | Farad        | Ez-EMC    | ver.ct3a1  | N/A              | N/A         |

| Instrument/Ancillary | Manufacturer         | Model No.        | Serial No.            | Calibration Date | Valid Date. |
|----------------------|----------------------|------------------|-----------------------|------------------|-------------|
| Bilog Antenna        | Sunol                | JB1              | A072414-2<br>-2       | 2019.07.13       | 2020.07.13  |
| EMI Receiver         | R&S                  | ESCI3            | 101183                | 2019.06.28       | 2020.06.27  |
| EMI Receiver         | R&S                  | ESCI7            | 100968                | 2018.07.30       | 2019.07.29  |
| Preamplifier         | EM Electronics corp. | EM330            | 60618                 | 2019.03.11       | 2020.03.10  |
| Horn Antenna         | Schwarzbeck          | BBHA9120 D       | 9120D-619             | 2019.07.13       | 2020.07.13  |
| Horn Antenna         | Schwarzbeck          | BBHA9170         | 9170-348              | 2019.06.23       | 2020.06.22  |
| Spectrum Analyzer    | R&S                  | FSP40            | 100324                | 2019.07.13       | 2020.07.12  |
| Preamplifier         | EMCI                 | EMCI 030-00-3230 | SN016723              | 2019.03.11       | 2020.03.10  |
| Preamplifier         | EM Electronics corp. | EM01G18G         | SN060714              | 2019.03.23       | 2020.03.22  |
| Spectrum Analyzer    | KEYSIGHT             | N9010A           | MY53400169            | 2018.08.25       | 2019.08.24  |
| Software             | E3                   | AUDIX            | Version:<br>8.14.806b | N/A              | N/A         |



## 4. Antenna Requirements

### 4.1. Standard Applicable

For intentional device, according to FCC 47 CFR Section 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.

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

### 4.2. Antenna Construction and Directional Gain

|              |                                                                                                                                                                                                                                                                                      |
|--------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Antenna Type | Dipole Antenna                                                                                                                                                                                                                                                                       |
| Antenna Gain | 2400MHz-2500MHz: Chain 1: 3.18dBi ; Chain 2: 3.18dBi<br>5150MHz-5250MHz: Chain 1: 3.53dBi ; Chain 2: 3.53dBi<br>5250MHz-5350MHz: Chain 1: 3.53dBi ; Chain 2: 3.53dBi<br>5470MHz-5725MHz: Chain 1: 3.24dBi ; Chain 2: 3.24dBi<br>5725MHz-5850MHz: Chain 1: 4.36dBi ; Chain 2: 4.36dBi |

|                                                                                                                                                     |
|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| 2412-2462MHz                                                                                                                                        |
| For Power directional gain= $G_{ant}=3.18\text{dBi}$<br>For PSD directional gain = $10 \log[(10^{G1/20} + 10^{G2/20})^2 / N_{ANT}]$<br>= 6.19 (dBi) |
| 5150MHz -5250MHz                                                                                                                                    |
| For Power directional gain= $G_{ant}= 3.53\text{dBi}$<br>For PSD directional gain = $10 \log[(10^{G1/20} + 10^{G2/20})^2 / N_{ANT}]$<br>=6.54(dBi)  |
| 5250MHz -5350MHz                                                                                                                                    |
| For Power directional gain= $G_{ant}= 3.53\text{dBi}$<br>For PSD directional gain = $10 \log[(10^{G1/20} + 10^{G2/20})^2 / N_{ANT}]$<br>=6.54(dBi)  |
| 5470MHz -5725MHz                                                                                                                                    |
| For Power directional gain= $G_{ant}= 3.24\text{dBi}$<br>For PSD directional gain = $10 \log[(10^{G1/20} + 10^{G2/20})^2 / N_{ANT}]$<br>=6.25(dBi)  |
| 5725MHz -5850MHz                                                                                                                                    |
| For Power directional gain= $G_{ant}= 4.36\text{dBi}$<br>For PSD directional gain = $10 \log[(10^{G1/20} + 10^{G2/20})^2 / N_{ANT}]$<br>= 7.37(dBi) |



## 5. Test of AC Power Line Conducted Emission

### 5.1. Test Limit

Conducted Emissions were measured from 150 kHz to 30 MHz with a bandwidth of 9 KHz, according to the methods defined in ANSI C63.4-2014. The EUT was placed on a nonmetallic stand in a shielded room 0.8 meters above the ground plane. The interface cables and equipment positioning were varied within limits of reasonable applications to determine the position produced maximum conducted emissions.

| Frequency (MHz) | Quasi Peak (dB $\mu$ V) | Average (dB $\mu$ V) |
|-----------------|-------------------------|----------------------|
| 0.15 – 0.5      | 66-56*                  | 56-46*               |
| 0.5 – 5.0       | 56                      | 46                   |
| 5.0 – 30.0      | 60                      | 50                   |

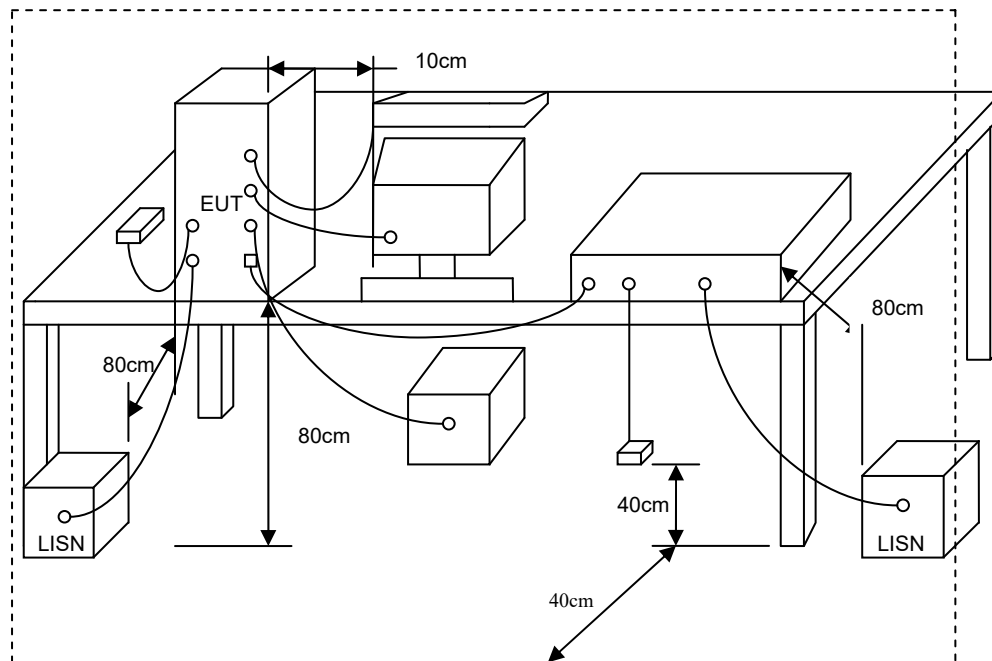
\*Decreases with the logarithm of the frequency.

### 5.2. Test Procedures

- The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
- Connect EUT to the power mains through a line impedance stabilization network (LISN).
- All the support units are connecting to the other LISN.
- The LISN provides 50 ohm coupling impedance for the measuring instrument.
- The FCC states that a 50 ohm, 50 micro-Henry LISN should be used.
- Both sides of AC line were checked for maximum conducted interference.
- The frequency range from 150 kHz to 30 MHz was searched.
- Set the test-receiver system to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.



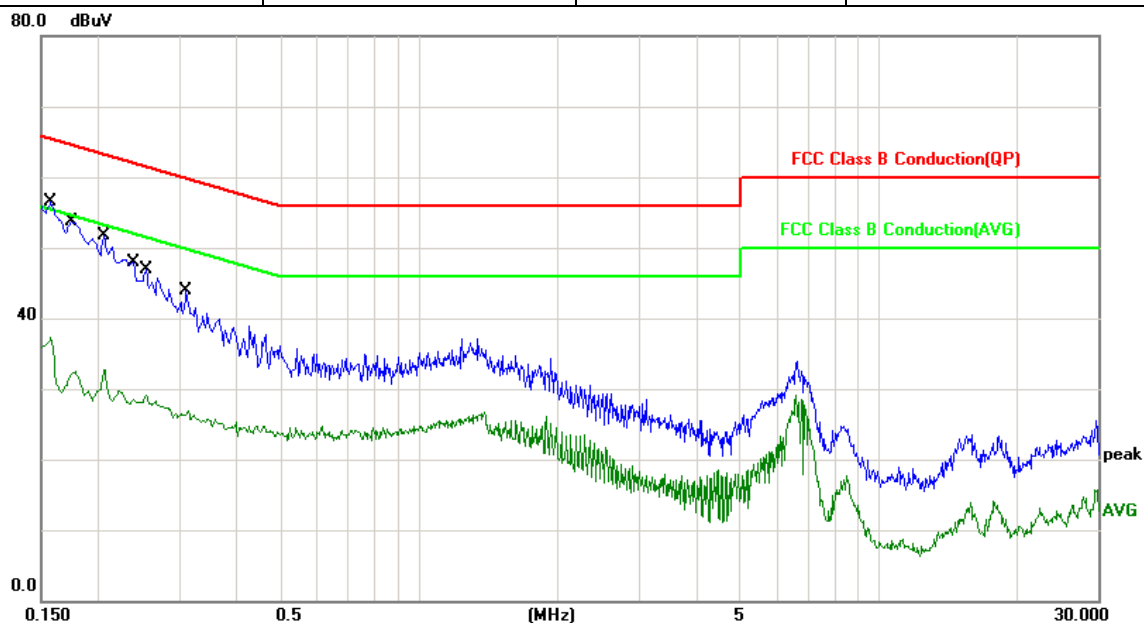
### 5.3. Typical Test Setup





## 5.4. Test Result and Data

|                  |                |           |            |
|------------------|----------------|-----------|------------|
| Test Mode :      | Mode 1, Band 1 |           |            |
| AC Power :       | AC 120V/60Hz   | Phase:    | LINE       |
| Temperature :    | 26°C           | Humidity: | 60%        |
| Pressure(mbar) : | 1002           | Date:     | 2019-07-22 |

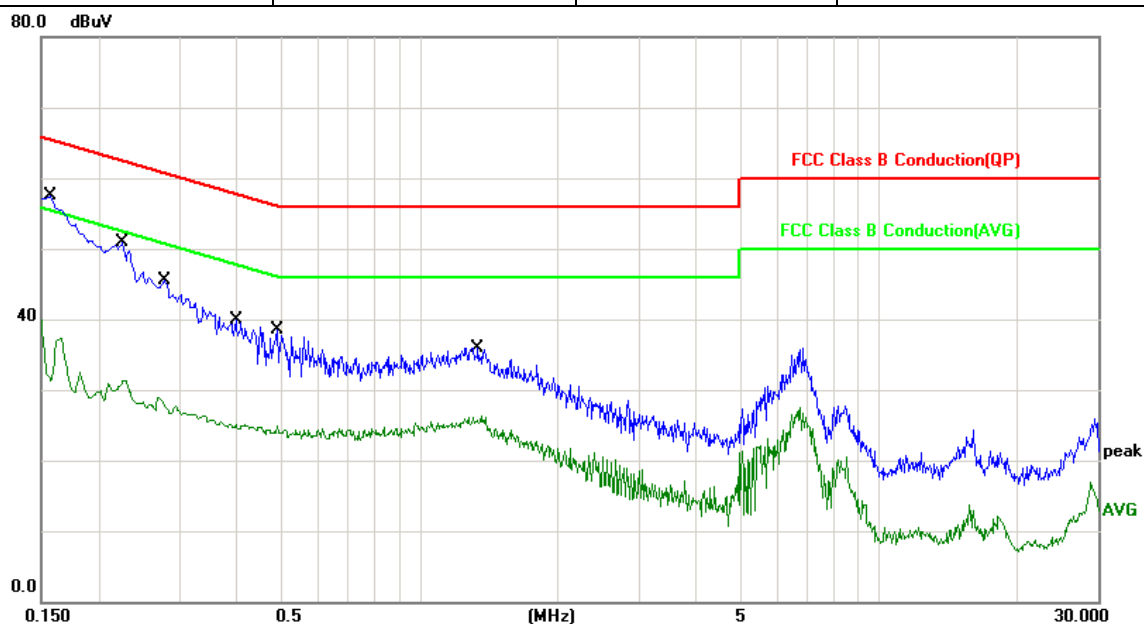


| No. | Frequency (MHz) | Factor (dB) | Reading (dBuV) | Level (dBuV) | Limit (dBuV) | Margin (dB) | Detector |
|-----|-----------------|-------------|----------------|--------------|--------------|-------------|----------|
| 1   | 0.1580          | 10.06       | 37.46          | 47.52        | 65.56        | -18.04      | QP       |
| 2   | 0.1580          | 10.06       | 20.13          | 30.19        | 55.56        | -25.37      | AVG      |
| 3   | 0.1740          | 10.06       | 35.84          | 45.90        | 64.76        | -18.86      | QP       |
| 4   | 0.1740          | 10.06       | 22.42          | 32.48        | 54.76        | -22.28      | AVG      |
| 5   | 0.2060          | 10.06       | 31.89          | 41.95        | 63.36        | -21.41      | QP       |
| 6   | 0.2060          | 10.06       | 18.55          | 28.61        | 53.36        | -24.75      | AVG      |
| 7   | 0.2380          | 10.04       | 29.07          | 39.11        | 62.16        | -23.05      | QP       |
| 8   | 0.2380          | 10.04       | 17.84          | 27.88        | 52.16        | -24.28      | AVG      |
| 9   | 0.2540          | 10.03       | 27.88          | 37.91        | 61.62        | -23.71      | QP       |
| 10  | 0.2540          | 10.03       | 17.48          | 27.51        | 51.62        | -24.11      | AVG      |
| 11  | 0.3100          | 10.00       | 24.32          | 34.32        | 59.97        | -25.65      | QP       |
| 12  | 0.3100          | 10.00       | 16.52          | 26.52        | 49.97        | -23.45      | AVG      |

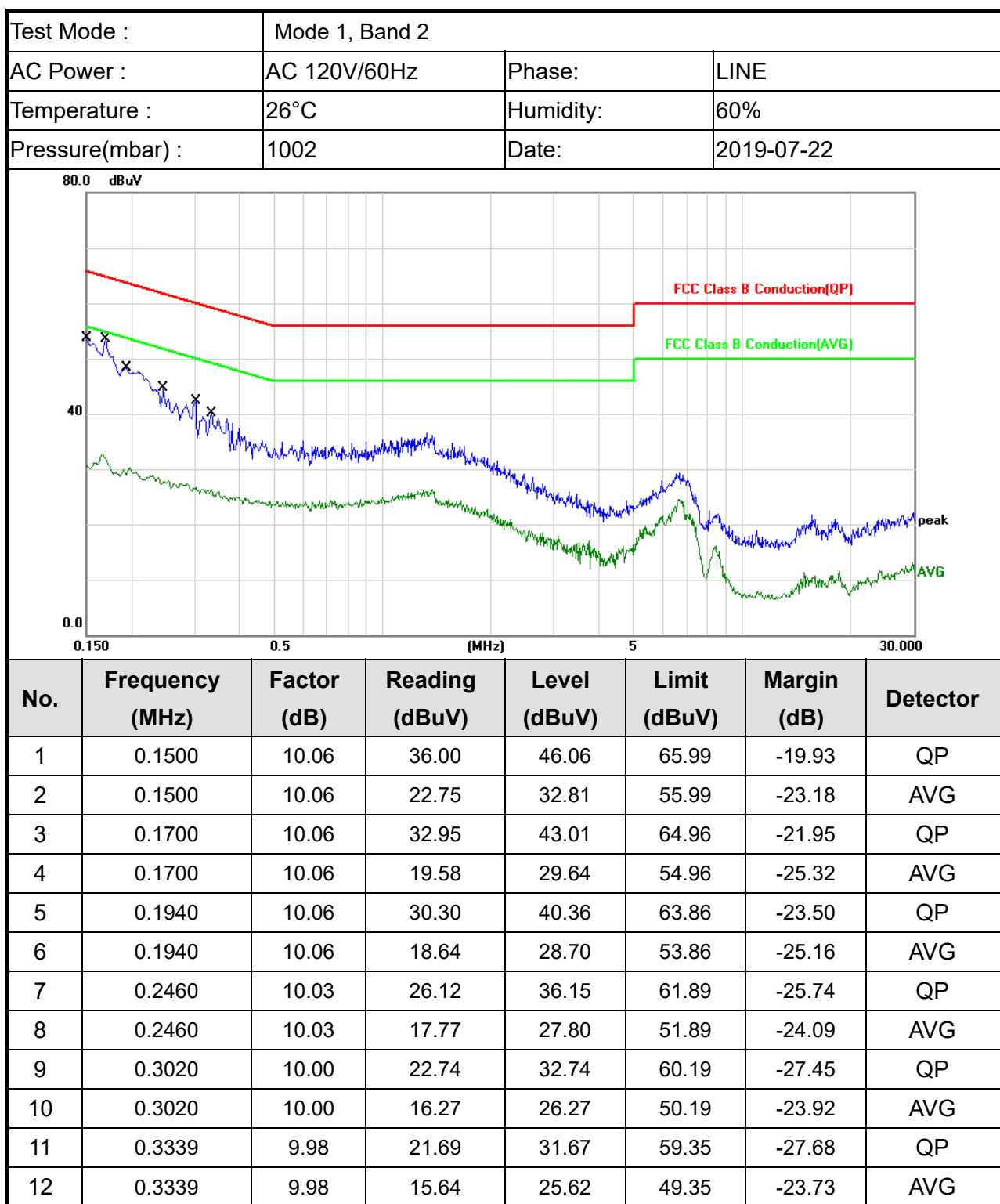
Note: Measurement Level = Reading Level + Correct Factor



|                  |                |           |            |
|------------------|----------------|-----------|------------|
| Test Mode :      | Mode 1, Band 1 |           |            |
| AC Power :       | AC 120V/60Hz   | Phase:    | NEUTRAL    |
| Temperature :    | 26°C           | Humidity: | 60%        |
| Pressure(mbar) : | 1002           | Date:     | 2019-07-22 |



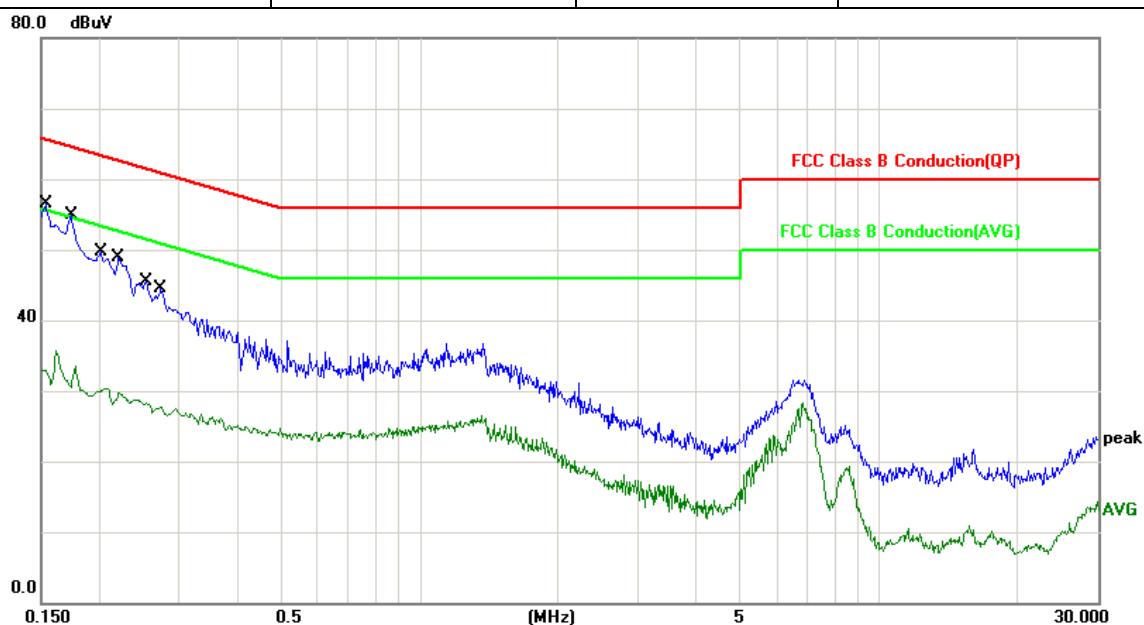
| No. | Frequency (MHz) | Factor (dB) | Reading (dBuV) | Level (dBuV) | Limit (dBuV) | Margin (dB) | Detector |
|-----|-----------------|-------------|----------------|--------------|--------------|-------------|----------|
| 1   | 0.1580          | 10.06       | 38.81          | 48.87        | 65.56        | -16.69      | QP       |
| 2   | 0.1580          | 10.06       | 22.78          | 32.84        | 55.56        | -22.72      | AVG      |
| 3   | 0.2260          | 10.05       | 31.78          | 41.83        | 62.59        | -20.76      | QP       |
| 4   | 0.2260          | 10.05       | 18.75          | 28.80        | 52.59        | -23.79      | AVG      |
| 5   | 0.2779          | 10.02       | 27.57          | 37.59        | 60.88        | -23.29      | QP       |
| 6   | 0.2779          | 10.02       | 17.50          | 27.52        | 50.88        | -23.36      | AVG      |
| 7   | 0.3980          | 9.95        | 21.39          | 31.34        | 57.89        | -26.55      | QP       |
| 8   | 0.3980          | 9.95        | 14.65          | 24.60        | 47.89        | -23.29      | AVG      |
| 9   | 0.4900          | 9.90        | 24.57          | 34.47        | 56.17        | -21.70      | QP       |
| 10  | 0.4900          | 9.90        | 21.66          | 31.56        | 46.17        | -14.61      | AVG      |
| 11  | 1.3420          | 10.14       | 20.21          | 30.35        | 56.00        | -25.65      | QP       |
| 12  | 1.3420          | 10.14       | 15.14          | 25.28        | 46.00        | -20.72      | AVG      |



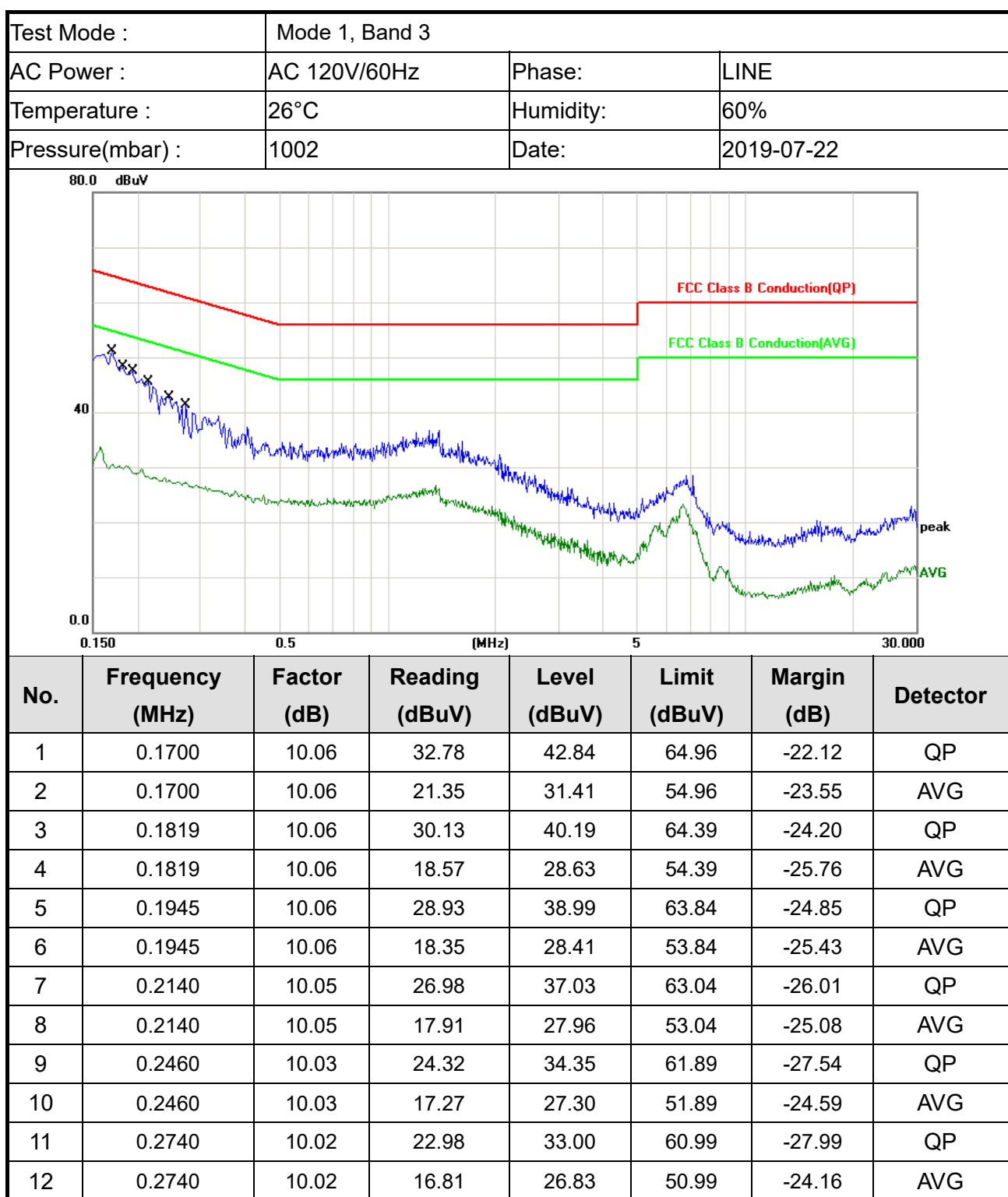
Note: Measurement Level = Reading Level + Correct Factor



|                  |                |           |            |
|------------------|----------------|-----------|------------|
| Test Mode :      | Mode 1, Band 2 |           |            |
| AC Power :       | AC 120V/60Hz   | Phase:    | NEUTRAL    |
| Temperature :    | 26°C           | Humidity: | 60%        |
| Pressure(mbar) : | 1002           | Date:     | 2019-07-22 |



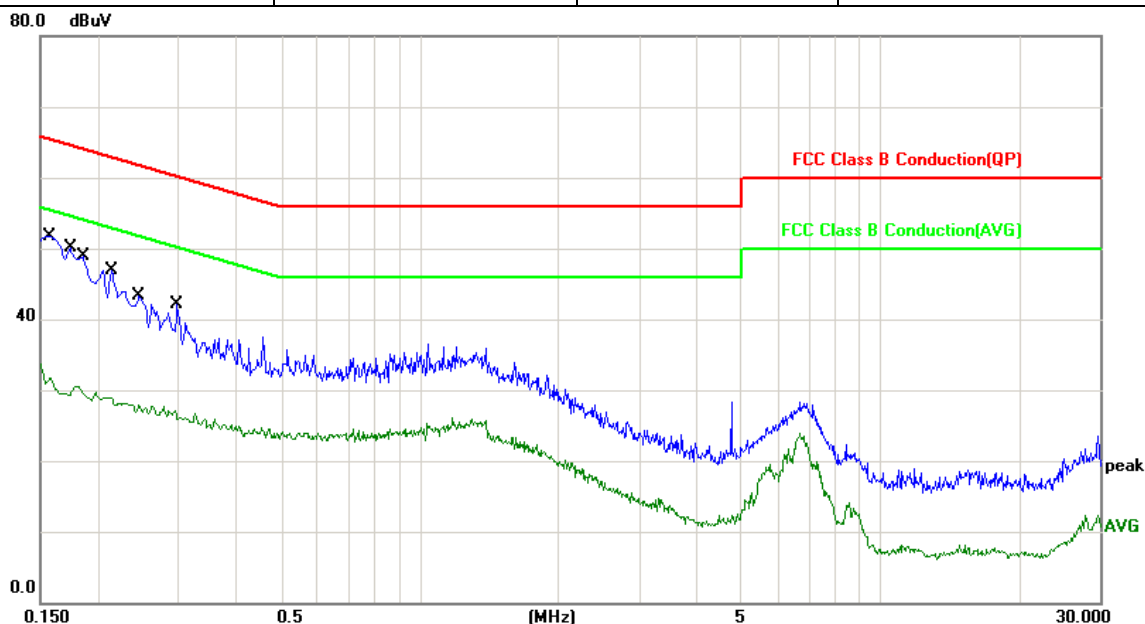
| No. | Frequency (MHz) | Factor (dB) | Reading (dBuV) | Level (dBuV) | Limit (dBuV) | Margin (dB) | Detector |
|-----|-----------------|-------------|----------------|--------------|--------------|-------------|----------|
| 1   | 0.1539          | 10.06       | 35.96          | 46.02        | 65.78        | -19.76      | QP       |
| 2   | 0.1539          | 10.06       | 20.12          | 30.18        | 55.78        | -25.60      | AVG      |
| 3   | 0.1740          | 10.06       | 33.47          | 43.53        | 64.76        | -21.23      | QP       |
| 4   | 0.1740          | 10.06       | 19.48          | 29.54        | 54.76        | -25.22      | AVG      |
| 5   | 0.2020          | 10.06       | 30.44          | 40.50        | 63.52        | -23.02      | QP       |
| 6   | 0.2020          | 10.06       | 19.44          | 29.50        | 53.52        | -24.02      | AVG      |
| 7   | 0.2220          | 10.05       | 28.07          | 38.12        | 62.74        | -24.62      | QP       |
| 8   | 0.2220          | 10.05       | 17.96          | 28.01        | 52.74        | -24.73      | AVG      |
| 9   | 0.2540          | 10.03       | 25.55          | 35.58        | 61.62        | -26.04      | QP       |
| 10  | 0.2540          | 10.03       | 17.21          | 27.24        | 51.62        | -24.38      | AVG      |
| 11  | 0.2740          | 10.02       | 24.71          | 34.73        | 60.99        | -26.26      | QP       |
| 12  | 0.2740          | 10.02       | 16.88          | 26.90        | 50.99        | -24.09      | AVG      |



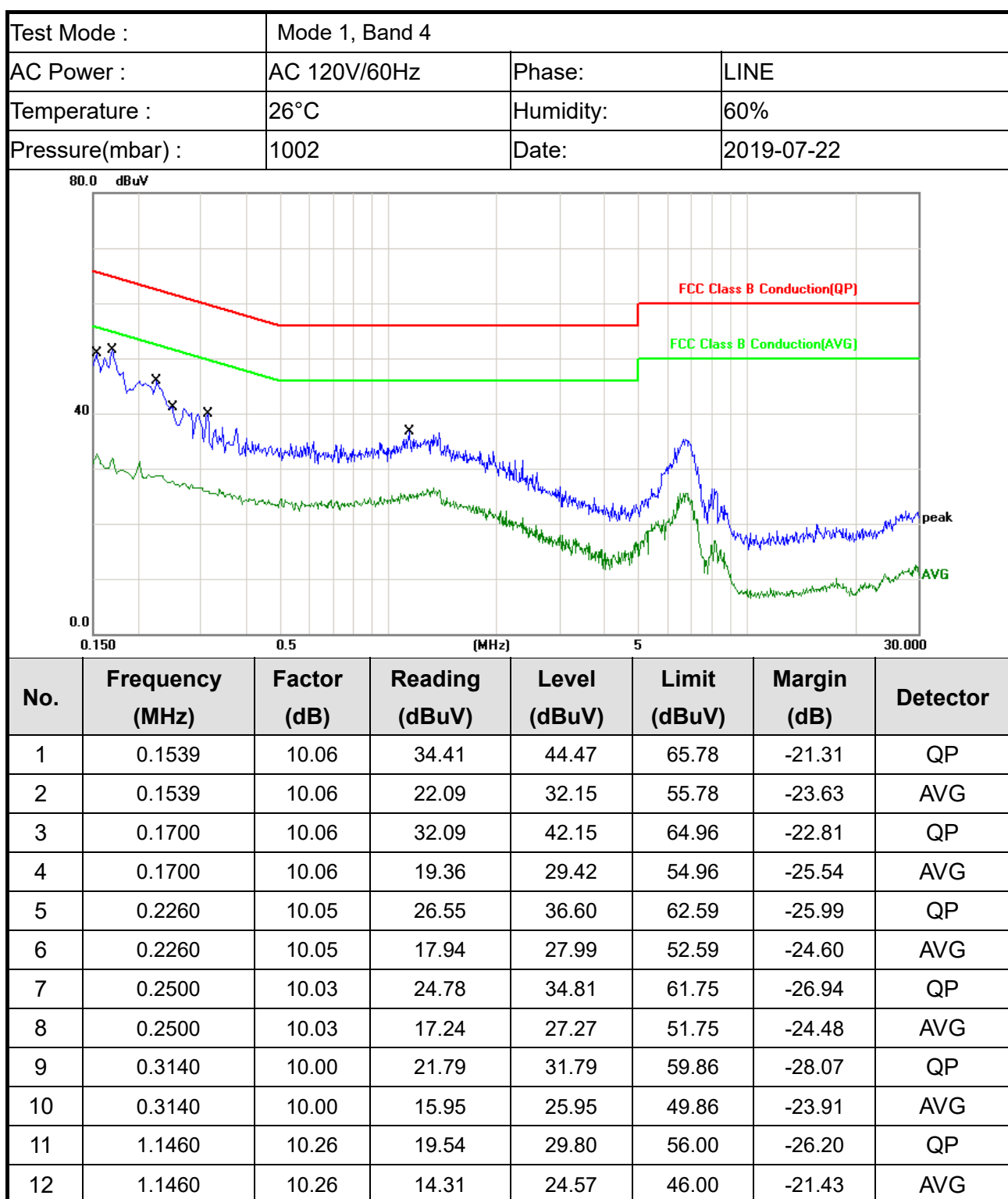
Note: Measurement Level = Reading Level + Correct Factor



|                  |                |           |            |
|------------------|----------------|-----------|------------|
| Test Mode :      | Mode 1, Band 3 |           |            |
| AC Power :       | AC 120V/60Hz   | Phase:    | NEUTRAL    |
| Temperature :    | 26°C           | Humidity: | 60%        |
| Pressure(mbar) : | 1002           | Date:     | 2019-07-22 |



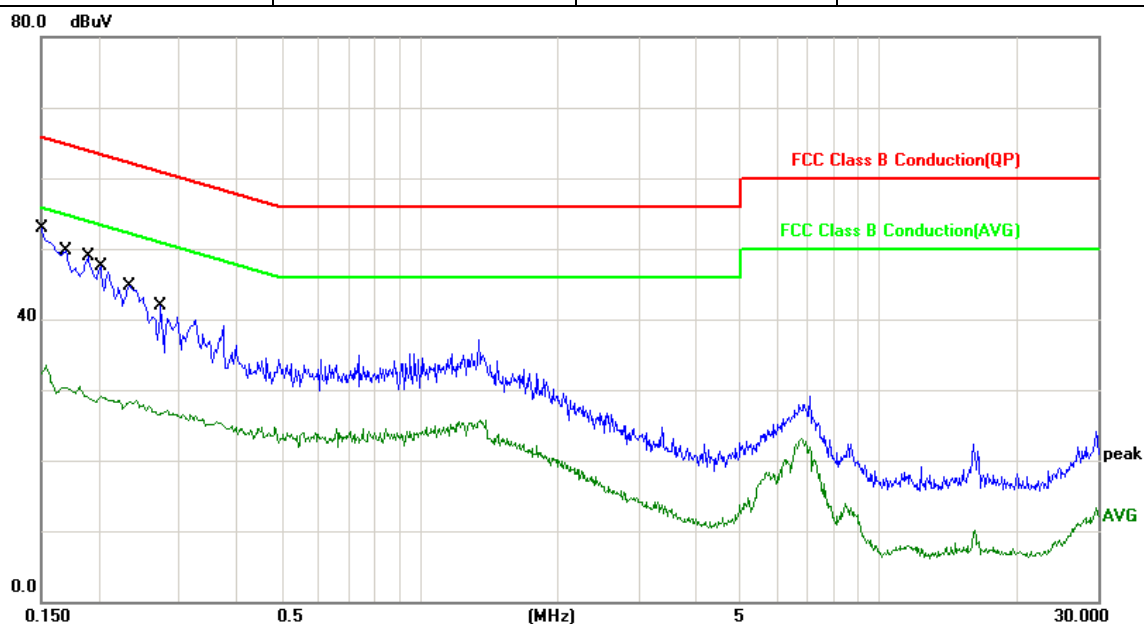
| No. | Frequency (MHz) | Factor (dB) | Reading (dBμV) | Level (dBμV) | Limit (dBμV) | Margin (dB) | Detector |
|-----|-----------------|-------------|----------------|--------------|--------------|-------------|----------|
| 1   | 0.1580          | 10.06       | 34.10          | 44.16        | 65.56        | -21.40      | QP       |
| 2   | 0.1580          | 10.06       | 21.58          | 31.64        | 55.56        | -23.92      | AVG      |
| 3   | 0.1740          | 10.06       | 31.60          | 41.66        | 64.76        | -23.10      | QP       |
| 4   | 0.1740          | 10.06       | 19.26          | 29.32        | 54.76        | -25.44      | AVG      |
| 5   | 0.1860          | 10.06       | 30.39          | 40.45        | 64.21        | -23.76      | QP       |
| 6   | 0.1860          | 10.06       | 19.42          | 29.48        | 54.21        | -24.73      | AVG      |
| 7   | 0.2140          | 10.05       | 27.72          | 37.77        | 63.04        | -25.27      | QP       |
| 8   | 0.2140          | 10.05       | 18.36          | 28.41        | 53.04        | -24.63      | AVG      |
| 9   | 0.2460          | 10.03       | 24.85          | 34.88        | 61.89        | -27.01      | QP       |
| 10  | 0.2460          | 10.03       | 17.32          | 27.35        | 51.89        | -24.54      | AVG      |
| 11  | 0.2980          | 10.00       | 22.22          | 32.22        | 60.30        | -28.08      | QP       |
| 12  | 0.2980          | 10.00       | 16.19          | 26.19        | 50.30        | -24.11      | AVG      |



Note: Measurement Level = Reading Level + Correct Factor



|                  |                |           |            |
|------------------|----------------|-----------|------------|
| Test Mode :      | Mode 1, Band 4 |           |            |
| AC Power :       | AC 120V/60Hz   | Phase:    | NEUTRAL    |
| Temperature :    | 26°C           | Humidity: | 60%        |
| Pressure(mbar) : | 1002           | Date:     | 2019-07-22 |



| No. | Frequency (MHz) | Factor (dB) | Reading (dBuV) | Level (dBuV) | Limit (dBuV) | Margin (dB) | Detector |
|-----|-----------------|-------------|----------------|--------------|--------------|-------------|----------|
| 1   | 0.1500          | 10.06       | 34.70          | 44.76        | 65.99        | -21.23      | QP       |
| 2   | 0.1500          | 10.06       | 21.14          | 31.20        | 55.99        | -24.79      | AVG      |
| 3   | 0.1700          | 10.06       | 31.90          | 41.96        | 64.96        | -23.00      | QP       |
| 4   | 0.1700          | 10.06       | 19.27          | 29.33        | 54.96        | -25.63      | AVG      |
| 5   | 0.1900          | 10.06       | 29.73          | 39.79        | 64.03        | -24.24      | QP       |
| 6   | 0.1900          | 10.06       | 18.85          | 28.91        | 54.03        | -25.12      | AVG      |
| 7   | 0.2020          | 10.06       | 28.64          | 38.70        | 63.52        | -24.82      | QP       |
| 8   | 0.2020          | 10.06       | 18.87          | 28.93        | 53.52        | -24.59      | AVG      |
| 9   | 0.2340          | 10.04       | 25.84          | 35.88        | 62.30        | -26.42      | QP       |
| 10  | 0.2340          | 10.04       | 17.89          | 27.93        | 52.30        | -24.37      | AVG      |
| 11  | 0.2740          | 10.02       | 23.36          | 33.38        | 60.99        | -27.61      | QP       |
| 12  | 0.2740          | 10.02       | 16.84          | 26.86        | 50.99        | -24.13      | AVG      |



## 6. Test of Spurious Emission (Radiated)

### 6.1. Test Limit

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:  
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 25MHz 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 27dBm/MHz at the band edge.
- (5) The emission measurements shall be performed using a minimum resolution bandwidth of 1 MHz. A lower resolution bandwidth may be employed near the band edge, when necessary, provided the measured energy is integrated to show the total power over 1 MHz.
- (6) Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in §15.209. Further, any U-NII devices using an AC power line are required to comply also with the conducted limits set forth in §15.207.
- (7) The provisions of §15.205 apply to intentional radiators operating under this section.
- (8) When measuring the emission limits, the nominal carrier frequency shall be adjusted as close to the upper and lower frequency band edges as the design of the equipment permits.

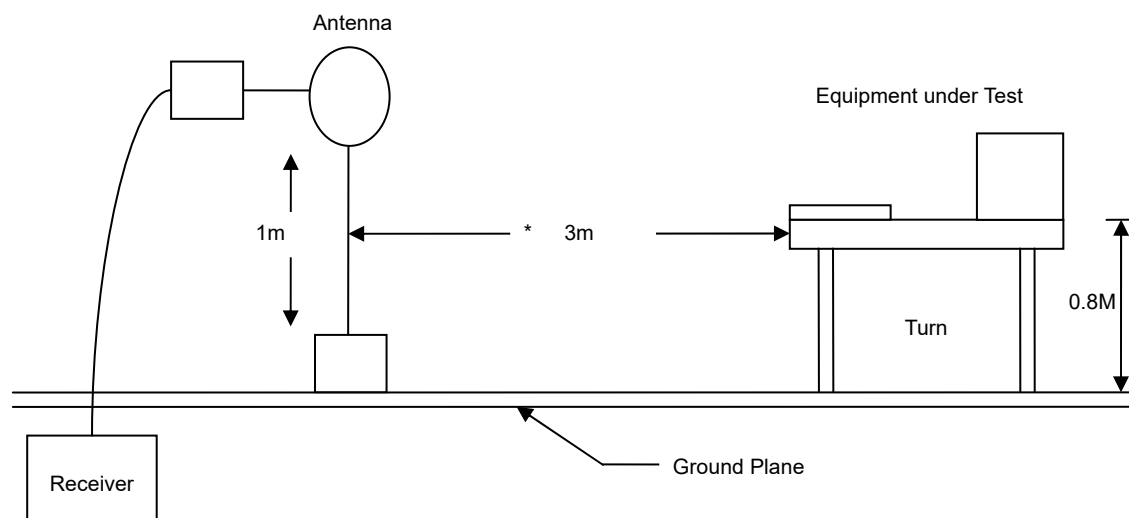
### 6.2. Test Procedures

- a. The EUT was placed on a rotatable table top 0.8 meter above ground.
- b. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
- c. The table was rotated 360 degrees to determine the position of the highest radiation.
- d. The antenna is a broadband antenna and its height is varied between one meter and four meters above ground to find the maximum value of the field strength both horizontal polarization and vertical polarization of the antenna are set to make the measurement.
- e. For each suspected emission the EUT was arranged to its worst case and then tune the antenna tower (from 1 M to 4 M) and turn table (from 0 degree to 360 degrees) to find the maximum reading.
- f. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function and specified bandwidth with Maximum Hold Mode.
- g. If the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method and reported.
- h. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
- i. "Cone of radiation" has been considered to be 3dB bandwidth of the measurement antenna.

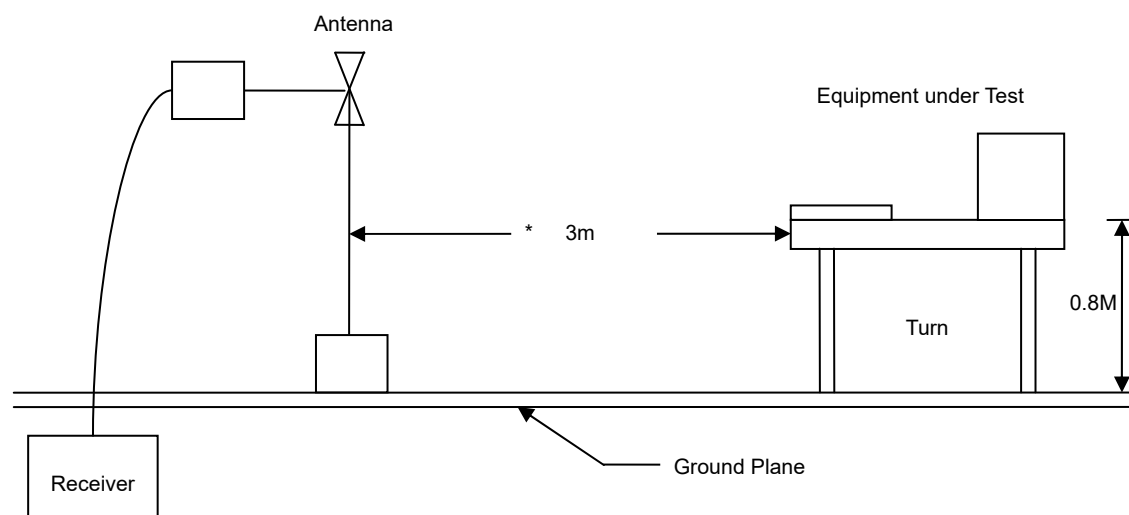


### 6.3. Typical Test Setup

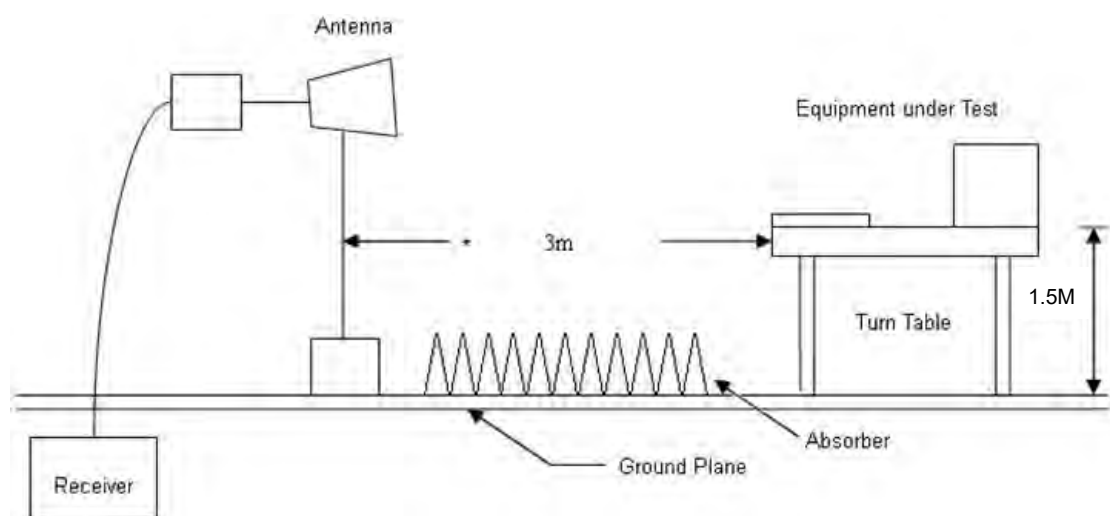
Below 30MHz test setup



30MHz- 1GHz Test Setup



Above 1GHz Test Setup





#### 6.4. Test Result and Data (9kHz ~ 30MHz)

The 9kHz - 30MHz spurious emission is under limit 20dB more.

#### 6.5. Test Result and Data (30MHz ~ 1GHz)

|           |   |                |                      |   |          |
|-----------|---|----------------|----------------------|---|----------|
| Power     | : | DC 3.3V        | Temperature          | : | 24 °C    |
| Test Mode | : | Mode 1, Band 1 | Humidity             | : | 54 %     |
| Test date | : | Jul. 21, 2019  | Atmospheric Pressure | : | 1010 hpa |

| Frequency (MHz) | Correct Factor (dB) | Reading level (dBuV) | Measure Level (dBuV/m) | Limit 3m (dBuV/m) | Safe Margin (dB) | Detector mode (PK/QP) | AntPol. H/V |
|-----------------|---------------------|----------------------|------------------------|-------------------|------------------|-----------------------|-------------|
| 119.2400        | -10.36              | 45.45                | 35.09                  | 43.50             | -8.41            | peak                  | H           |
| 208.4800        | -9.62               | 46.28                | 36.66                  | 43.50             | -6.84            | peak                  | H           |
| 239.5200        | -7.03               | 47.23                | 40.20                  | 46.00             | -5.80            | QP                    | H           |
| 277.3500        | -6.51               | 45.68                | 39.17                  | 46.00             | -6.83            | QP                    | H           |
| 481.0500        | -1.97               | 40.78                | 38.81                  | 46.00             | -7.19            | peak                  | H           |
| 720.6400        | -0.71               | 32.93                | 32.22                  | 46.00             | -13.78           | peak                  | H           |
|                 |                     |                      |                        |                   |                  |                       |             |
| 33.8800         | -7.99               | 41.68                | 33.69                  | 40.00             | -6.31            | peak                  | V           |
| 206.5399        | -8.63               | 45.53                | 36.90                  | 43.50             | -6.60            | peak                  | V           |
| 239.5200        | -8.93               | 46.33                | 37.40                  | 46.00             | -8.60            | peak                  | V           |
| 277.3500        | -10.51              | 45.35                | 34.84                  | 46.00             | -11.16           | peak                  | V           |
| 482.0200        | -2.03               | 37.28                | 35.25                  | 46.00             | -10.75           | peak                  | V           |
| 692.5100        | -2.23               | 35.85                | 33.62                  | 46.00             | -12.38           | peak                  | V           |

Note: Level = Reading + Factor

Margin = Level – Limit

Factor = Antenna Factor + Cable Loss - Amplifier Factor



|           |   |                |                      |   |          |
|-----------|---|----------------|----------------------|---|----------|
| Power     | : | DC 3.3V        | Temperature          | : | 24 °C    |
| Test Mode | : | Mode 1, Band 2 | Humidity             | : | 54 %     |
| Test date | : | Jul. 21, 2019  | Atmospheric Pressure | : | 1010 hpa |

| Frequency (MHz) | Correct Factor (dB) | Reading level (dBuV) | Measure Level (dBuV/m) | Limit 3m (dBuV/m) | Safe Margin (dB) | Detector mode (PK/QP) | AntPol. H/V |
|-----------------|---------------------|----------------------|------------------------|-------------------|------------------|-----------------------|-------------|
| 132.8199        | -11.46              | 47.20                | 35.74                  | 43.50             | -7.76            | peak                  | H           |
| 179.3799        | -9.97               | 46.28                | 36.31                  | 43.50             | -7.19            | peak                  | H           |
| 235.6400        | -7.29               | 47.35                | 40.06                  | 46.00             | -5.94            | QP                    | H           |
| 285.1099        | -6.27               | 44.46                | 38.19                  | 46.00             | -7.81            | QP                    | H           |
| 478.1400        | -2.00               | 40.76                | 38.76                  | 46.00             | -7.24            | peak                  | H           |
| 567.3799        | -3.55               | 36.82                | 33.27                  | 46.00             | -12.73           | peak                  | H           |
|                 |                     |                      |                        |                   |                  |                       |             |
| 38.7299         | -11.19              | 44.27                | 33.08                  | 40.00             | -6.92            | peak                  | V           |
| 151.2500        | -13.20              | 44.40                | 31.20                  | 43.50             | -12.30           | peak                  | V           |
| 206.5399        | -8.63               | 43.53                | 34.90                  | 43.50             | -8.60            | peak                  | V           |
| 244.3700        | -9.23               | 47.20                | 37.97                  | 46.00             | -8.03            | peak                  | V           |
| 474.2600        | -2.20               | 38.31                | 36.11                  | 46.00             | -9.89            | peak                  | V           |
| 582.8999        | -3.55               | 32.27                | 28.72                  | 46.00             | -17.28           | peak                  | V           |

Note: Level = Reading + Factor

Margin = Level – Limit

Factor= Antenna Factor + Cable Loss - Amplifier Factor



|           |   |                |                      |   |          |
|-----------|---|----------------|----------------------|---|----------|
| Power     | : | DC 3.3V        | Temperature          | : | 24 °C    |
| Test Mode | : | Mode 1, Band 3 | Humidity             | : | 54 %     |
| Test date | : | Jul. 21, 2019  | Atmospheric Pressure | : | 1010 hpa |

| Frequency (MHz) | Correct Factor (dB) | Reading level (dBuV) | Measure Level (dBuV/m) | Limit 3m (dBuV/m) | Safe Margin (dB) | Detector mode (PK/QP) | AntPol. H/V |
|-----------------|---------------------|----------------------|------------------------|-------------------|------------------|-----------------------|-------------|
| 145.4299        | -13.07              | 47.16                | 34.09                  | 43.50             | -9.41            | peak                  | H           |
| 179.3799        | -9.97               | 46.28                | 36.31                  | 43.50             | -7.19            | peak                  | H           |
| 244.3700        | -6.79               | 47.23                | 40.44                  | 46.00             | -5.56            | QP                    | H           |
| 276.3798        | -6.63               | 46.54                | 39.91                  | 46.00             | -6.09            | QP                    | H           |
| 479.1100        | -1.96               | 39.81                | 37.85                  | 46.00             | -8.15            | peak                  | H           |
| 761.3799        | 0.99                | 34.40                | 35.39                  | 46.00             | -10.61           | peak                  | H           |
|                 |                     |                      |                        |                   |                  |                       |             |
| 36.7899         | -9.79               | 42.28                | 32.49                  | 40.00             | -7.51            | peak                  | V           |
| 179.3799        | -13.91              | 49.19                | 35.28                  | 43.50             | -8.22            | peak                  | V           |
| 205.5700        | -8.64               | 43.93                | 35.29                  | 43.50             | -8.21            | peak                  | V           |
| 380.1700        | -6.57               | 40.56                | 33.99                  | 46.00             | -12.01           | peak                  | V           |
| 477.1700        | -2.06               | 39.88                | 37.82                  | 46.00             | -8.18            | peak                  | V           |
| 717.7300        | -1.08               | 35.70                | 34.62                  | 46.00             | -11.38           | peak                  | V           |

Note: Level = Reading + Factor

Margin = Level – Limit

Factor= Antenna Factor + Cable Loss - Amplifier Factor



|           |   |                |                      |   |          |
|-----------|---|----------------|----------------------|---|----------|
| Power     | : | DC 3.3V        | Temperature          | : | 24 °C    |
| Test Mode | : | Mode 1, Band 4 | Humidity             | : | 54 %     |
| Test date | : | Jul. 21, 2019  | Atmospheric Pressure | : | 1010 hpa |

| Frequency (MHz) | Correct Factor (dB) | Reading level (dBuV) | Measure Level (dBuV/m) | Limit 3m (dBuV/m) | Safe Margin (dB) | Detector mode (PK/QP) | AntPol. H/V |
|-----------------|---------------------|----------------------|------------------------|-------------------|------------------|-----------------------|-------------|
| 132.8199        | -11.46              | 47.70                | 36.24                  | 43.50             | -7.26            | peak                  | H           |
| 193.9299        | -10.18              | 44.73                | 34.55                  | 43.50             | -8.95            | peak                  | H           |
| 244.3700        | -6.79               | 47.31                | 40.52                  | 46.00             | -5.48            | QP                    | H           |
| 299.6600        | -8.46               | 47.52                | 39.06                  | 46.00             | -6.94            | QP                    | H           |
| 481.0500        | -1.97               | 40.28                | 38.31                  | 46.00             | -7.69            | peak                  | H           |
| 754.5900        | 0.83                | 35.58                | 36.41                  | 46.00             | -9.59            | peak                  | H           |
|                 |                     |                      |                        |                   |                  |                       |             |
| 35.8200         | -9.14               | 40.90                | 31.76                  | 40.00             | -8.24            | peak                  | V           |
| 185.2000        | -11.43              | 45.02                | 33.59                  | 43.50             | -9.91            | peak                  | V           |
| 212.3600        | -8.40               | 44.56                | 36.16                  | 43.50             | -7.34            | peak                  | V           |
| 237.5800        | -8.69               | 46.94                | 38.25                  | 46.00             | -7.75            | peak                  | V           |
| 480.0800        | -1.92               | 39.10                | 37.18                  | 46.00             | -8.82            | peak                  | V           |
| 656.6200        | -1.90               | 36.51                | 34.61                  | 46.00             | -11.39           | peak                  | V           |

Note: Level = Reading + Factor

Margin = Level – Limit

Factor= Antenna Factor + Cable Loss - Amplifier Factor

**6.6. Test Result and Data (1GHz ~ 40GHz)**

|           |   |                     |                      |   |          |
|-----------|---|---------------------|----------------------|---|----------|
| Power     | : | DC 3.3V             | Temperature          | : | 24 °C    |
| Test Mode | : | Mode 1, CH36 Band 1 | Humidity             | : | 54 %     |
| Test date | : | Jul. 21, 2019       | Atmospheric Pressure | : | 1010 hpa |

| Frequency (MHz) | Factor (dB/m) | Reading (dBuV) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector mode (PK/AVG) | AntPol. H/V |
|-----------------|---------------|----------------|----------------|----------------|-------------|------------------------|-------------|
| 5150.000        | 1.73          | 38.59          | 40.32          | 74.00          | -33.68      | peak                   | H           |
| 5150.000        | 1.73          | 28.48          | 30.21          | 54.00          | -23.79      | AVG                    | H           |
| 10360.000       | 12.85         | 37.46          | 50.31          | 68.20          | -17.89      | peak                   | H           |
| 15540.000       | 25.25         | 26.85          | 52.10          | 74.00          | -21.90      | peak                   | H           |
| 15540.000       | 25.25         | 17.26          | 42.51          | 54.00          | -11.49      | AVG                    | H           |
|                 |               |                |                |                |             |                        |             |
| 5150.000        | 1.73          | 58.93          | 60.66          | 74.00          | -13.34      | peak                   | V           |
| 5150.000        | 1.73          | 44.18          | 45.91          | 54.00          | -8.09       | peak                   | V           |
| 10360.000       | 12.85         | 38.47          | 51.32          | 68.20          | -16.88      | peak                   | V           |
| 15540.000       | 25.25         | 29.58          | 54.83          | 74.00          | -19.17      | peak                   | V           |
| 15540.000       | 25.25         | 19.27          | 44.52          | 54.00          | -9.48       | peak                   | V           |

Note: Level = Reading + Factor

Margin = Level – Limit

Factor= Antenna Factor + Cable Loss - Amplifier Factor



|           |   |                     |                      |   |          |
|-----------|---|---------------------|----------------------|---|----------|
| Power     | : | DC 3.3V             | Temperature          | : | 24 °C    |
| Test Mode | : | Mode 1, CH44 Band 1 | Humidity             | : | 54 %     |
| Test date | : | Jul. 21, 2019       | Atmospheric Pressure | : | 1010 hpa |

| Frequency (MHz) | Factor (dB/m) | Reading (dBuV) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector mode (PK/AVG) | AntPol. H/V |
|-----------------|---------------|----------------|----------------|----------------|-------------|------------------------|-------------|
| 5150.000        | 1.73          | 39.59          | 41.32          | 74.00          | -32.68      | peak                   | H           |
| 5150.000        | 1.73          | 28.68          | 30.41          | 54.00          | -23.59      | AVG                    | H           |
| 5350.000        | 1.89          | 40.00          | 41.89          | 74.00          | -32.11      | peak                   | H           |
| 5350.000        | 1.89          | 28.74          | 30.63          | 54.00          | -23.37      | AVG                    | H           |
| 10440.000       | 13.03         | 37.44          | 50.47          | 68.20          | -17.73      | peak                   | H           |
| 15660.000       | 25.30         | 27.09          | 52.39          | 74.00          | -21.61      | peak                   | H           |
| 15660.000       | 25.30         | 16.68          | 41.98          | 54.00          | -12.02      | AVG                    | H           |
|                 |               |                |                |                |             |                        |             |
| 5150.000        | 1.73          | 40.19          | 41.92          | 74.00          | -32.08      | peak                   | V           |
| 5150.000        | 1.73          | 28.81          | 30.54          | 54.00          | -23.46      | AVG                    | V           |
| 5350.000        | 1.89          | 39.85          | 41.74          | 74.00          | -32.26      | peak                   | V           |
| 5350.000        | 1.89          | 28.97          | 30.86          | 54.00          | -23.14      | AVG                    | V           |
| 10440.000       | 13.03         | 39.10          | 52.13          | 68.20          | -16.07      | peak                   | V           |
| 15660.000       | 25.30         | 29.02          | 54.32          | 74.00          | -19.68      | peak                   | V           |
| 15660.000       | 25.30         | 18.77          | 44.07          | 54.00          | -9.93       | AVG                    | V           |

Note: Level = Reading + Factor

Margin = Level – Limit

Factor= Antenna Factor + Cable Loss - Amplifier Factor



|           |   |                     |                      |   |          |
|-----------|---|---------------------|----------------------|---|----------|
| Power     | : | DC 3.3V             | Temperature          | : | 24 °C    |
| Test Mode | : | Mode 1, CH48 band 1 | Humidity             | : | 54 %     |
| Test date | : | Jul. 21, 2019       | Atmospheric Pressure | : | 1010 hpa |

| Frequency<br>(MHz) | Factor<br>(dB/m) | Reading<br>(dBuV) | Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Detector<br>mode<br>(PK/AVG) | AntPol.<br>H/V |
|--------------------|------------------|-------------------|-------------------|-------------------|----------------|------------------------------|----------------|
| 5350.000           | 1.89             | 39.67             | 41.56             | 74.00             | -32.44         | peak                         | H              |
| 5350.000           | 1.89             | 28.53             | 30.42             | 54.00             | -23.58         | AVG                          | H              |
| 10480.000          | 13.12            | 37.44             | 50.56             | 68.20             | -17.64         | peak                         | H              |
| 15720.000          | 25.33            | 27.77             | 53.10             | 74.00             | -20.90         | peak                         | H              |
| 15720.000          | 25.33            | 17.34             | 42.67             | 54.00             | -11.33         | AVG                          | H              |
|                    |                  |                   |                   |                   |                |                              |                |
| 5350.000           | 1.89             | 39.97             | 41.86             | 74.00             | -32.14         | peak                         | V              |
| 5350.000           | 1.89             | 28.54             | 30.43             | 54.00             | -23.57         | AVG                          | V              |
| 10480.000          | 13.12            | 38.74             | 51.86             | 68.20             | -16.34         | peak                         | V              |
| 15720.000          | 25.33            | 28.79             | 54.12             | 74.00             | -19.88         | peak                         | V              |
| 15720.000          | 25.33            | 18.54             | 43.87             | 54.00             | -10.13         | AVG                          | V              |

Note: Level = Reading + Factor

Margin = Level – Limit

Factor= Antenna Factor + Cable Loss - Amplifier Factor



|           |   |                     |                      |   |          |
|-----------|---|---------------------|----------------------|---|----------|
| Power     | : | DC 3.3V             | Temperature          | : | 24 °C    |
| Test Mode | : | Mode 1, CH52 Band 2 | Humidity             | : | 54 %     |
| Test date | : | Jul. 21, 2019       | Atmospheric Pressure | : | 1010 hpa |

| Frequency<br>(MHz) | Factor<br>(dB/m) | Reading<br>(dBuV) | Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Detector<br>mode<br>(PK/AVG) | AntPol.<br>H/V |
|--------------------|------------------|-------------------|-------------------|-------------------|----------------|------------------------------|----------------|
| 5350.000           | 1.89             | 39.86             | 41.75             | 74.00             | -32.25         | peak                         | H              |
| 5350.000           | 1.89             | 28.74             | 30.63             | 54.00             | -23.37         | AVG                          | H              |
| 10520.000          | 13.22            | 37.46             | 50.68             | 68.20             | -17.52         | peak                         | H              |
| 15780.000          | 25.36            | 27.10             | 52.46             | 74.00             | -21.54         | peak                         | H              |
| 15780.000          | 25.36            | 16.75             | 42.11             | 54.00             | -11.89         | AVG                          | H              |
|                    |                  |                   |                   |                   |                |                              |                |
| 5350.000           | 1.89             | 39.84             | 41.73             | 74.00             | -32.27         | peak                         | V              |
| 5350.000           | 1.89             | 28.56             | 30.45             | 54.00             | -23.55         | AVG                          | V              |
| 10520.000          | 13.22            | 39.41             | 52.63             | 68.20             | -15.57         | peak                         | V              |
| 15780.000          | 25.36            | 28.67             | 54.03             | 74.00             | -19.97         | peak                         | V              |
| 15780.000          | 25.36            | 18.21             | 43.57             | 54.00             | -10.43         | AVG                          | V              |

Note: Level = Reading + Factor

Margin = Level – Limit

Factor= Antenna Factor + Cable Loss - Amplifier Factor



|           |   |                     |                      |   |          |
|-----------|---|---------------------|----------------------|---|----------|
| Power     | : | DC 3.3V             | Temperature          | : | 24 °C    |
| Test Mode | : | Mode 1, CH60 Band 2 | Humidity             | : | 54 %     |
| Test date | : | Jul. 21, 2019       | Atmospheric Pressure | : | 1010 hpa |

| Frequency (MHz) | Factor (dB/m) | Reading (dBuV) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector mode (PK/AVG) | AntPol. H/V |
|-----------------|---------------|----------------|----------------|----------------|-------------|------------------------|-------------|
| 5350.000        | 1.89          | 39.36          | 41.25          | 74.00          | -32.75      | peak                   | H           |
| 5350.000        | 1.89          | 28.54          | 30.43          | 54.00          | -23.57      | AVG                    | H           |
| 10600.000       | 13.46         | 37.33          | 50.79          | 74.00          | -23.21      | peak                   | H           |
| 10600.000       | 13.46         | 25.49          | 38.95          | 54.00          | -15.05      | AVG                    | H           |
| 15900.000       | 25.41         | 26.90          | 52.31          | 74.00          | -21.69      | peak                   | H           |
| 15900.000       | 25.41         | 14.84          | 40.25          | 54.00          | -13.75      | AVG                    | H           |
|                 |               |                |                |                |             |                        |             |
| 5350.000        | 1.89          | 46.18          | 48.07          | 74.00          | -25.93      | peak                   | V           |
| 5350.000        | 1.89          | 31.76          | 33.65          | 54.00          | -20.35      | AVG                    | V           |
| 10600.000       | 13.46         | 38.68          | 52.14          | 74.00          | -21.86      | peak                   | V           |
| 10600.000       | 13.46         | 28.21          | 41.67          | 54.00          | -12.33      | AVG                    | V           |
| 15900.000       | 25.41         | 28.90          | 54.31          | 74.00          | -19.69      | peak                   | V           |
| 15900.000       | 25.41         | 18.82          | 44.23          | 54.00          | -9.77       | AVG                    | V           |

Note: Level = Reading + Factor

Margin = Level – Limit

Factor= Antenna Factor + Cable Loss - Amplifier Factor



|           |   |                     |                      |   |          |
|-----------|---|---------------------|----------------------|---|----------|
| Power     | : | DC 3.3V             | Temperature          | : | 24 °C    |
| Test Mode | : | Mode 1, CH64 Band 2 | Humidity             | : | 54 %     |
| Test date | : | Jul. 21, 2019       | Atmospheric Pressure | : | 1010 hpa |

| Frequency<br>(MHz) | Factor<br>(dB/m) | Reading<br>(dBuV) | Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Detector<br>mode<br>(PK/AVG) | AntPol.<br>H/V |
|--------------------|------------------|-------------------|-------------------|-------------------|----------------|------------------------------|----------------|
| 5350.000           | 1.89             | 39.99             | 41.88             | 74.00             | -32.12         | peak                         | H              |
| 5350.000           | 1.89             | 28.60             | 30.49             | 54.00             | -23.51         | AVG                          | H              |
| 10640.000          | 13.58            | 37.30             | 50.88             | 74.00             | -23.12         | peak                         | H              |
| 10640.000          | 13.58            | 25.24             | 38.82             | 54.00             | -15.18         | AVG                          | H              |
| 15960.000          | 25.44            | 27.23             | 52.67             | 74.00             | -21.33         | peak                         | H              |
| 15960.000          | 25.44            | 16.94             | 42.38             | 54.00             | -11.62         | AVG                          | H              |
|                    |                  |                   |                   |                   |                |                              |                |
| 5350.000           | 1.89             | 60.75             | 62.64             | 74.00             | -11.36         | peak                         | V              |
| 5350.000           | 1.89             | 46.60             | 48.49             | 54.00             | -5.51          | AVG                          | V              |
| 10640.000          | 13.58            | 38.55             | 52.13             | 74.00             | -21.87         | peak                         | V              |
| 10640.000          | 13.58            | 27.74             | 41.32             | 54.00             | -12.68         | AVG                          | V              |
| 15960.000          | 25.44            | 28.97             | 54.41             | 74.00             | -19.59         | peak                         | V              |
| 15960.000          | 25.44            | 19.13             | 44.57             | 54.00             | -9.43          | AVG                          | V              |

Note: Level = Reading + Factor

Margin = Level – Limit

Factor= Antenna Factor + Cable Loss - Amplifier Factor



|           |   |                      |                      |   |          |
|-----------|---|----------------------|----------------------|---|----------|
| Power     | : | DC 3.3V              | Temperature          | : | 24 °C    |
| Test Mode | : | Mode 1, CH100 Band 3 | Humidity             | : | 54 %     |
| Test date | : | Jul. 21, 2019        | Atmospheric Pressure | : | 1010 hpa |

| Frequency<br>(MHz) | Factor<br>(dB/m) | Reading<br>(dBuV) | Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Detector<br>mode<br>(PK/AVG) | AntPol.<br>H/V |
|--------------------|------------------|-------------------|-------------------|-------------------|----------------|------------------------------|----------------|
| 5460.000           | 1.99             | 39.33             | 41.32             | 74.00             | -32.68         | peak                         | H              |
| 5460.000           | 1.99             | 28.21             | 30.20             | 54.00             | -23.80         | AVG                          | H              |
| 5470.000           | 1.99             | 39.47             | 41.46             | 68.20             | -26.74         | peak                         | H              |
| 11000.000          | 14.67            | 35.90             | 50.57             | 74.00             | -23.43         | peak                         | H              |
| 11000.000          | 14.67            | 24.57             | 39.24             | 54.00             | -14.76         | AVG                          | H              |
| 16500.000          | 29.95            | 23.33             | 53.28             | 68.20             | -14.92         | peak                         | H              |
|                    |                  |                   |                   |                   |                |                              |                |
| 5460.000           | 1.99             | 50.03             | 52.02             | 74.00             | -21.98         | peak                         | V              |
| 5460.000           | 1.99             | 35.63             | 37.62             | 54.00             | -16.38         | AVG                          | V              |
| 5470.000           | 1.99             | 60.93             | 62.92             | 68.20             | -5.28          | peak                         | V              |
| 11000.000          | 14.67            | 38.45             | 53.12             | 74.00             | -20.88         | peak                         | V              |
| 11000.000          | 14.67            | 27.90             | 42.57             | 54.00             | -11.43         | AVG                          | V              |
| 16500.000          | 29.95            | 25.03             | 54.98             | 68.20             | -13.22         | peak                         | V              |

Note: Level = Reading + Factor

Margin = Level – Limit

Factor= Antenna Factor + Cable Loss - Amplifier Factor



|           |   |                      |                      |   |          |
|-----------|---|----------------------|----------------------|---|----------|
| Power     | : | DC 3.3V              | Temperature          | : | 24 °C    |
| Test Mode | : | Mode 1, CH116 Band 3 | Humidity             | : | 54 %     |
| Test date | : | Jul. 21, 2019        | Atmospheric Pressure | : | 1010 hpa |

| Frequency (MHz) | Factor (dB/m) | Reading (dBuV) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector mode (PK/AVG) | AntPol. H/V |
|-----------------|---------------|----------------|----------------|----------------|-------------|------------------------|-------------|
| 5460.000        | 1.99          | 39.54          | 41.53          | 74.00          | -32.47      | peak                   | H           |
| 5460.000        | 1.99          | 28.46          | 30.45          | 54.00          | -23.55      | AVG                    | H           |
| 5470.000        | 1.99          | 39.60          | 41.59          | 68.20          | -26.61      | peak                   | H           |
| 5725.000        | 2.58          | 39.93          | 42.51          | 68.20          | -25.69      | peak                   | H           |
| 11160.000       | 15.05         | 35.98          | 51.03          | 74.00          | -22.97      | peak                   | H           |
| 11160.000       | 15.05         | 24.62          | 39.67          | 54.00          | -14.33      | AVG                    | H           |
| 16740.000       | 29.65         | 24.09          | 53.74          | 68.20          | -14.46      | peak                   | H           |
|                 |               |                |                |                |             |                        |             |
| 5460.000        | 1.99          | 39.60          | 41.59          | 74.00          | -32.41      | peak                   | V           |
| 5460.000        | 1.99          | 28.43          | 30.42          | 54.00          | -23.58      | AVG                    | V           |
| 5470.000        | 1.99          | 39.94          | 41.93          | 68.20          | -26.27      | peak                   | V           |
| 5725.000        | 2.58          | 39.01          | 41.59          | 68.20          | -26.61      | peak                   | V           |
| 11160.000       | 15.05         | 38.19          | 53.24          | 74.00          | -20.76      | peak                   | V           |
| 11160.000       | 15.05         | 27.62          | 42.67          | 54.00          | -11.33      | AVG                    | V           |
| 16740.000       | 29.65         | 22.19          | 51.84          | 68.20          | -16.36      | peak                   | V           |

Note: Level = Reading + Factor

Margin = Level – Limit

Factor= Antenna Factor + Cable Loss - Amplifier Factor



|           |   |                      |                      |   |          |
|-----------|---|----------------------|----------------------|---|----------|
| Power     | : | DC 3.3V              | Temperature          | : | 24 °C    |
| Test Mode | : | Mode 1, CH140 Band 3 | Humidity             | : | 54 %     |
| Test date | : | Jul. 21, 2019        | Atmospheric Pressure | : | 1010 hpa |

| Frequency<br>(MHz) | Factor<br>(dB/m) | Reading<br>(dBuV) | Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Detector<br>mode<br>(PK/AVG) | AntPol.<br>H/V |
|--------------------|------------------|-------------------|-------------------|-------------------|----------------|------------------------------|----------------|
| 5725.000           | 2.58             | 39.86             | 42.44             | 68.20             | -25.76         | peak                         | H              |
| 11400.000          | 15.62            | 35.82             | 51.44             | 74.00             | -22.56         | peak                         | H              |
| 11400.000          | 15.62            | 24.57             | 40.19             | 54.00             | -13.81         | AVG                          | H              |
| 17100.000          | 29.73            | 24.12             | 53.85             | 68.20             | -14.35         | peak                         | H              |
|                    |                  |                   |                   |                   |                |                              |                |
| 5725.000           | 2.58             | 62.56             | 65.14             | 68.20             | -3.06          | peak                         | V              |
| 11400.000          | 15.62            | 36.86             | 52.48             | 74.00             | -21.52         | peak                         | V              |
| 11400.000          | 15.62            | 25.74             | 41.36             | 54.00             | -12.64         | AVG                          | V              |
| 17100.000          | 29.73            | 24.78             | 54.51             | 68.20             | -13.69         | peak                         | V              |

Note: Level = Reading + Factor

Margin = Level – Limit

Factor= Antenna Factor + Cable Loss - Amplifier Factor



|           |   |                      |                      |   |          |
|-----------|---|----------------------|----------------------|---|----------|
| Power     | : | DC 3.3V              | Temperature          | : | 24 °C    |
| Test Mode | : | Mode 1, CH149 Band 4 | Humidity             | : | 54 %     |
| Test date | : | Jul. 21, 2019        | Atmospheric Pressure | : | 1010 hpa |

| Frequency<br>(MHz) | Factor<br>(dB/m) | Reading<br>(dBuV) | Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Detector<br>mode<br>(PK/AVG) | AntPol.<br>H/V |
|--------------------|------------------|-------------------|-------------------|-------------------|----------------|------------------------------|----------------|
| 5650.000           | 2.39             | 38.84             | 41.23             | 68.20             | -26.97         | peak                         | H              |
| 5700.000           | 2.52             | 39.15             | 41.67             | 105.20            | -63.53         | peak                         | H              |
| 5720.000           | 2.57             | 48.77             | 51.34             | 110.80            | -59.46         | peak                         | H              |
| 5725.000           | 2.58             | 61.79             | 64.37             | 122.20            | -57.83         | peak                         | H              |
| 11490.000          | 15.84            | 35.80             | 51.64             | 74.00             | -22.36         | peak                         | H              |
| 11490.000          | 15.84            | 24.36             | 40.20             | 54.00             | -13.80         | AVG                          | H              |
| 17235.000          | 30.26            | 23.22             | 53.48             | 68.20             | -14.72         | peak                         | H              |
|                    |                  |                   |                   |                   |                |                              |                |
| 5650.000           | 2.39             | 39.18             | 41.57             | 68.20             | -26.63         | peak                         | V              |
| 5700.000           | 2.52             | 41.57             | 44.09             | 105.20            | -61.11         | peak                         | V              |
| 5720.000           | 2.57             | 58.77             | 61.34             | 110.80            | -49.46         | peak                         | V              |
| 5725.000           | 2.58             | 69.83             | 72.41             | 122.20            | -49.79         | peak                         | V              |
| 11490.000          | 15.84            | 36.90             | 52.74             | 74.00             | -21.26         | peak                         | V              |
| 11490.000          | 15.84            | 25.83             | 41.67             | 54.00             | -12.33         | AVG                          | V              |
| 17235.000          | 30.26            | 24.60             | 54.86             | 68.20             | -13.34         | peak                         | V              |

Note: Level = Reading + Factor

Margin = Level – Limit

Factor= Antenna Factor + Cable Loss - Amplifier Factor



|           |   |                      |                      |   |          |
|-----------|---|----------------------|----------------------|---|----------|
| Power     | : | DC 3.3V              | Temperature          | : | 24 °C    |
| Test Mode | : | Mode 1, CH157 Band 4 | Humidity             | : | 54 %     |
| Test date | : | Jul. 21, 2019        | Atmospheric Pressure | : | 1010 hpa |

| Frequency (MHz) | Factor (dB/m) | Reading (dBuV) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector mode (PK/AVG) | AntPol. H/V |
|-----------------|---------------|----------------|----------------|----------------|-------------|------------------------|-------------|
| 5650.000        | 2.39          | 39.22          | 41.61          | 68.20          | -26.59      | peak                   | H           |
| 5700.000        | 2.52          | 40.16          | 42.68          | 105.20         | -62.52      | peak                   | H           |
| 5720.000        | 2.57          | 40.16          | 42.73          | 110.80         | -68.07      | peak                   | H           |
| 5725.000        | 2.58          | 39.22          | 41.80          | 122.20         | -80.40      | peak                   | H           |
| 5850.000        | 2.89          | 38.96          | 41.85          | 122.20         | -80.35      | peak                   | H           |
| 5855.000        | 2.90          | 39.52          | 42.42          | 110.80         | -68.38      | peak                   | H           |
| 5875.000        | 2.95          | 39.23          | 42.18          | 105.20         | -63.02      | peak                   | H           |
| 5925.000        | 3.07          | 38.26          | 41.33          | 68.20          | -26.87      | peak                   | H           |
| 11570.000       | 16.00         | 35.40          | 51.40          | 74.00          | -22.60      | peak                   | H           |
| 11570.000       | 16.00         | 23.87          | 39.87          | 54.00          | -14.13      | AVG                    | H           |
| 17355.000       | 30.74         | 22.65          | 53.39          | 68.20          | -14.81      | peak                   | H           |
|                 |               |                |                |                |             |                        |             |
| 5650.000        | 2.39          | 39.37          | 41.76          | 68.20          | -26.44      | peak                   | V           |
| 5700.000        | 2.52          | 39.50          | 42.02          | 105.20         | -63.18      | peak                   | V           |
| 5700.000        | 2.52          | 39.11          | 41.63          | 105.20         | -63.57      | peak                   | V           |
| 5720.000        | 2.57          | 39.57          | 42.14          | 110.80         | -68.66      | peak                   | V           |
| 5725.000        | 2.58          | 38.78          | 41.36          | 122.20         | -80.84      | peak                   | V           |
| 5850.000        | 2.89          | 39.51          | 42.40          | 122.20         | -79.80      | peak                   | V           |
| 5875.000        | 2.95          | 38.47          | 41.42          | 105.20         | -63.78      | peak                   | V           |
| 5925.000        | 3.07          | 37.60          | 40.67          | 68.20          | -27.53      | peak                   | V           |
| 11570.000       | 16.00         | 36.86          | 52.86          | 74.00          | -21.14      | peak                   | V           |
| 11570.000       | 16.00         | 25.69          | 41.69          | 54.00          | -12.31      | AVG                    | V           |
| 17355.000       | 30.74         | 23.79          | 54.53          | 68.20          | -13.67      | peak                   | V           |

Note: Level = Reading + Factor

Margin = Level – Limit

Factor= Antenna Factor + Cable Loss - Amplifier Factor



|           |   |                     |                      |   |          |
|-----------|---|---------------------|----------------------|---|----------|
| Power     | : | DC 3.3V             | Temperature          | : | 24 °C    |
| Test Mode | : | Mode 1, CH165 Band4 | Humidity             | : | 54 %     |
| Test date | : | Jul. 21, 2019       | Atmospheric Pressure | : | 1010 hpa |

| Frequency<br>(MHz) | Factor<br>(dB/m) | Reading<br>(dBuV) | Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Detector<br>mode<br>(PK/AVG) | AntPol.<br>H/V |
|--------------------|------------------|-------------------|-------------------|-------------------|----------------|------------------------------|----------------|
| 5850.000           | 2.89             | 39.04             | 41.93             | 122.20            | -80.27         | peak                         | H              |
| 5855.000           | 2.90             | 39.11             | 42.01             | 110.80            | -68.79         | peak                         | H              |
| 5875.000           | 2.95             | 38.39             | 41.34             | 105.20            | -63.86         | peak                         | H              |
| 5925.000           | 3.07             | 39.67             | 42.74             | 68.20             | -25.46         | peak                         | H              |
| 11650.000          | 16.16            | 35.26             | 51.42             | 74.00             | -22.58         | peak                         | H              |
| 11650.000          | 16.16            | 24.07             | 40.23             | 54.00             | -13.77         | AVG                          | H              |
| 17475.000          | 31.21            | 22.46             | 53.67             | 68.20             | -14.53         | peak                         | H              |
|                    |                  |                   |                   |                   |                |                              |                |
| 5850.000           | 2.89             | 58.06             | 60.95             | 122.20            | -61.25         | peak                         | V              |
| 5855.000           | 2.90             | 55.07             | 57.97             | 110.80            | -52.83         | peak                         | V              |
| 5875.000           | 2.95             | 39.82             | 42.77             | 105.20            | -62.43         | peak                         | V              |
| 5925.000           | 3.07             | 38.48             | 41.55             | 68.20             | -26.65         | peak                         | V              |
| 11650.000          | 16.16            | 37.50             | 53.66             | 74.00             | -20.34         | peak                         | V              |
| 11650.000          | 16.16            | 25.98             | 42.14             | 54.00             | -11.86         | AVG                          | V              |
| 17475.000          | 31.21            | 23.51             | 54.72             | 68.20             | -13.48         | peak                         | V              |

Note: Level = Reading + Factor

Margin = Level – Limit

Factor= Antenna Factor + Cable Loss - Amplifier Factor



|           |   |                     |                      |   |          |
|-----------|---|---------------------|----------------------|---|----------|
| Power     | : | DC 3.3V             | Temperature          | : | 24 °C    |
| Test Mode | : | Mode 2, CH36 Band 1 | Humidity             | : | 54 %     |
| Test date | : | Jul. 21, 2019       | Atmospheric Pressure | : | 1010 hpa |

| Frequency<br>(MHz) | Factor<br>(dB/m) | Reading<br>(dBuV) | Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Detector<br>mode<br>(PK/AVG) | AntPol.<br>H/V |
|--------------------|------------------|-------------------|-------------------|-------------------|----------------|------------------------------|----------------|
| 5150.000           | 1.73             | 48.91             | 50.64             | 74.00             | -23.36         | peak                         | H              |
| 5150.000           | 1.73             | 34.47             | 36.20             | 54.00             | -17.80         | AVG                          | H              |
| 10360.000          | 12.85            | 38.49             | 51.34             | 68.20             | -16.86         | peak                         | H              |
| 15540.000          | 25.25            | 27.40             | 52.65             | 74.00             | -21.35         | peak                         | H              |
| 15540.000          | 25.25            | 16.12             | 41.37             | 54.00             | -12.63         | AVG                          | H              |
|                    |                  |                   |                   |                   |                |                              |                |
| 5150.000           | 1.73             | 60.32             | 62.05             | 74.00             | -11.95         | peak                         | V              |
| 5150.000           | 1.73             | 45.87             | 47.60             | 54.00             | -6.40          | AVG                          | V              |
| 10360.000          | 12.85            | 40.07             | 52.92             | 68.20             | -15.28         | peak                         | V              |
| 15540.000          | 25.25            | 29.40             | 54.65             | 74.00             | -19.35         | peak                         | V              |
| 15540.000          | 25.25            | 18.69             | 43.94             | 54.00             | -10.06         | AVG                          | V              |

Note: Level = Reading + Factor

Margin = Level – Limit

Factor= Antenna Factor + Cable Loss - Amplifier Factor



|           |   |                     |                      |   |          |
|-----------|---|---------------------|----------------------|---|----------|
| Power     | : | DC 3.3V             | Temperature          | : | 24 °C    |
| Test Mode | : | Mode 2, CH44 Band 1 | Humidity             | : | 54 %     |
| Test date | : | Jul. 21, 2019       | Atmospheric Pressure | : | 1010 hpa |

| Frequency (MHz) | Factor (dB/m) | Reading (dBuV) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector mode (PK/AVG) | AntPol. H/V |
|-----------------|---------------|----------------|----------------|----------------|-------------|------------------------|-------------|
| 5150.000        | 1.73          | 39.57          | 41.30          | 74.00          | -32.70      | peak                   | H           |
| 5150.000        | 1.73          | 29.95          | 31.68          | 54.00          | -22.32      | AVG                    | H           |
| 5350.000        | 1.89          | 39.09          | 40.98          | 74.00          | -33.02      | peak                   | H           |
| 5350.000        | 1.89          | 28.86          | 30.75          | 54.00          | -23.25      | AVG                    | H           |
| 10440.000       | 13.03         | 38.16          | 51.19          | 68.20          | -17.01      | peak                   | H           |
| 15660.000       | 25.30         | 27.63          | 52.93          | 74.00          | -21.07      | peak                   | H           |
| 15660.000       | 25.30         | 16.42          | 41.72          | 54.00          | -12.28      | AVG                    | H           |
|                 |               |                |                |                |             |                        |             |
| 5150.000        | 1.73          | 39.62          | 41.35          | 74.00          | -32.65      | peak                   | V           |
| 5150.000        | 1.73          | 28.81          | 30.54          | 54.00          | -23.46      | AVG                    | V           |
| 5350.000        | 1.89          | 39.44          | 41.33          | 74.00          | -32.67      | peak                   | V           |
| 5350.000        | 1.89          | 28.89          | 30.78          | 54.00          | -23.22      | AVG                    | V           |
| 10440.000       | 13.03         | 39.68          | 52.71          | 68.20          | -15.49      | peak                   | V           |
| 15660.000       | 25.30         | 29.23          | 54.53          | 74.00          | -19.47      | peak                   | V           |
| 15660.000       | 25.30         | 19.17          | 44.47          | 54.00          | -9.53       | AVG                    | V           |

Note: Level = Reading + Factor

Margin = Level – Limit

Factor= Antenna Factor + Cable Loss - Amplifier Factor



|           |   |                     |                      |   |          |
|-----------|---|---------------------|----------------------|---|----------|
| Power     | : | DC 3.3V             | Temperature          | : | 24 °C    |
| Test Mode | : | Mode 2, CH48 band 1 | Humidity             | : | 54 %     |
| Test date | : | Jul. 21, 2019       | Atmospheric Pressure | : | 1010 hpa |

| Frequency<br>(MHz) | Factor<br>(dB/m) | Reading<br>(dBuV) | Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Detector<br>mode<br>(PK/AVG) | AntPol.<br>H/V |
|--------------------|------------------|-------------------|-------------------|-------------------|----------------|------------------------------|----------------|
| 5350.000           | 1.89             | 38.96             | 40.85             | 74.00             | -33.15         | peak                         | H              |
| 5350.000           | 1.89             | 28.78             | 30.67             | 54.00             | -23.33         | AVG                          | H              |
| 10480.000          | 13.12            | 38.19             | 51.31             | 68.20             | -16.89         | peak                         | H              |
| 15720.000          | 25.33            | 28.28             | 53.61             | 74.00             | -20.39         | peak                         | H              |
| 15720.000          | 25.33            | 17.19             | 42.52             | 54.00             | -11.48         | AVG                          | H              |
|                    |                  |                   |                   |                   |                |                              |                |
| 5350.000           | 1.89             | 39.46             | 41.35             | 74.00             | -32.65         | peak                         | V              |
| 5350.000           | 1.89             | 28.79             | 30.68             | 54.00             | -23.32         | AVG                          | V              |
| 10480.000          | 13.12            | 39.21             | 52.33             | 68.20             | -15.87         | peak                         | V              |
| 15720.000          | 25.33            | 29.24             | 54.57             | 74.00             | -19.43         | peak                         | V              |
| 15720.000          | 25.33            | 18.96             | 44.29             | 54.00             | -9.71          | AVG                          | V              |

Note: Level = Reading + Factor

Margin = Level – Limit

Factor= Antenna Factor + Cable Loss - Amplifier Factor



|           |   |                     |                      |   |          |
|-----------|---|---------------------|----------------------|---|----------|
| Power     | : | DC 3.3V             | Temperature          | : | 24 °C    |
| Test Mode | : | Mode 2, CH52 Band 2 | Humidity             | : | 54 %     |
| Test date | : | Jul. 21, 2019       | Atmospheric Pressure | : | 1010 hpa |

| Frequency<br>(MHz) | Factor<br>(dB/m) | Reading<br>(dBuV) | Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Detector<br>mode<br>(PK/AVG) | AntPol.<br>H/V |
|--------------------|------------------|-------------------|-------------------|-------------------|----------------|------------------------------|----------------|
| 5350.000           | 1.89             | 39.34             | 41.23             | 74.00             | -32.77         | peak                         | H              |
| 5350.000           | 1.89             | 28.83             | 30.72             | 54.00             | -23.28         | AVG                          | H              |
| 10520.000          | 13.22            | 37.50             | 50.72             | 68.20             | -17.48         | peak                         | H              |
| 15780.000          | 25.36            | 26.81             | 52.17             | 74.00             | -21.83         | peak                         | H              |
| 15780.000          | 25.36            | 15.90             | 41.26             | 54.00             | -12.74         | AVG                          | H              |
|                    |                  |                   |                   |                   |                |                              |                |
| 5350.000           | 1.89             | 39.67             | 41.56             | 74.00             | -32.44         | peak                         | V              |
| 5350.000           | 1.89             | 28.85             | 30.74             | 54.00             | -23.26         | AVG                          | V              |
| 10520.000          | 13.22            | 39.33             | 52.55             | 68.20             | -15.65         | peak                         | V              |
| 15780.000          | 25.36            | 29.40             | 54.76             | 74.00             | -19.24         | peak                         | V              |
| 15780.000          | 25.36            | 18.83             | 44.19             | 54.00             | -9.81          | AVG                          | V              |

Note: Level = Reading + Factor

Margin = Level – Limit

Factor= Antenna Factor + Cable Loss - Amplifier Factor



|           |   |                     |                      |   |          |
|-----------|---|---------------------|----------------------|---|----------|
| Power     | : | DC 3.3V             | Temperature          | : | 24 °C    |
| Test Mode | : | Mode 2, CH60 Band 2 | Humidity             | : | 54 %     |
| Test date | : | Jul. 21, 2019       | Atmospheric Pressure | : | 1010 hpa |

| Frequency (MHz) | Factor (dB/m) | Reading (dBuV) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector mode (PK/AVG) | AntPol. H/V |
|-----------------|---------------|----------------|----------------|----------------|-------------|------------------------|-------------|
| 5350.000        | 1.89          | 40.09          | 41.98          | 74.00          | -32.02      | peak                   | H           |
| 5350.000        | 1.89          | 28.38          | 30.27          | 54.00          | -23.73      | AVG                    | H           |
| 10600.000       | 13.46         | 36.85          | 50.31          | 74.00          | -23.69      | peak                   | H           |
| 10600.000       | 13.46         | 25.18          | 38.64          | 54.00          | -15.36      | AVG                    | H           |
| 15900.000       | 25.41         | 27.50          | 52.91          | 74.00          | -21.09      | peak                   | H           |
| 15900.000       | 25.41         | 15.89          | 41.30          | 54.00          | -12.70      | AVG                    | H           |
|                 |               |                |                |                |             |                        |             |
| 5350.000        | 1.89          | 49.30          | 51.19          | 74.00          | -22.81      | peak                   | V           |
| 5350.000        | 1.89          | 33.92          | 35.81          | 54.00          | -18.19      | AVG                    | V           |
| 10600.000       | 13.46         | 39.27          | 52.73          | 74.00          | -21.27      | peak                   | V           |
| 10600.000       | 13.46         | 27.93          | 41.39          | 54.00          | -12.61      | AVG                    | V           |
| 15900.000       | 25.41         | 29.21          | 54.62          | 74.00          | -19.38      | peak                   | V           |
| 15900.000       | 25.41         | 19.09          | 44.50          | 54.00          | -9.50       | AVG                    | V           |

Note: Level = Reading + Factor

Margin = Level – Limit

Factor= Antenna Factor + Cable Loss - Amplifier Factor



|           |   |                     |                      |   |          |
|-----------|---|---------------------|----------------------|---|----------|
| Power     | : | DC 3.3V             | Temperature          | : | 24 °C    |
| Test Mode | : | Mode 2, CH64 Band 2 | Humidity             | : | 54 %     |
| Test date | : | Jul. 21, 2019       | Atmospheric Pressure | : | 1010 hpa |

| Frequency<br>(MHz) | Factor<br>(dB/m) | Reading<br>(dBuV) | Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Detector<br>mode<br>(PK/AVG) | AntPol.<br>H/V |
|--------------------|------------------|-------------------|-------------------|-------------------|----------------|------------------------------|----------------|
| 5350.000           | 1.89             | 49.25             | 51.14             | 74.00             | -22.86         | peak                         | H              |
| 5350.000           | 1.89             | 34.06             | 35.95             | 54.00             | -18.05         | AVG                          | H              |
| 10640.000          | 13.58            | 37.20             | 50.78             | 74.00             | -23.22         | peak                         | H              |
| 10640.000          | 13.58            | 24.96             | 38.54             | 54.00             | -15.46         | AVG                          | H              |
| 15960.000          | 25.44            | 27.64             | 53.08             | 74.00             | -20.92         | peak                         | H              |
| 15960.000          | 25.44            | 16.88             | 42.32             | 54.00             | -11.68         | AVG                          | H              |
|                    |                  |                   |                   |                   |                |                              |                |
| 5350.000           | 1.89             | 63.42             | 65.31             | 74.00             | -8.69          | peak                         | V              |
| 5350.000           | 1.89             | 48.89             | 50.78             | 54.00             | -3.22          | AVG                          | V              |
| 10640.000          | 13.58            | 38.78             | 52.36             | 74.00             | -21.64         | peak                         | V              |
| 10640.000          | 13.58            | 26.83             | 40.41             | 54.00             | -13.59         | AVG                          | V              |
| 15960.000          | 25.44            | 29.33             | 54.77             | 74.00             | -19.23         | peak                         | V              |
| 15960.000          | 25.44            | 18.95             | 44.39             | 54.00             | -9.61          | AVG                          | V              |

Note: Level = Reading + Factor

Margin = Level – Limit

Factor= Antenna Factor + Cable Loss - Amplifier Factor



|           |   |                      |                      |   |          |
|-----------|---|----------------------|----------------------|---|----------|
| Power     | : | DC 3.3V              | Temperature          | : | 24 °C    |
| Test Mode | : | Mode 2, CH100 Band 3 | Humidity             | : | 54 %     |
| Test date | : | Jul. 21, 2019        | Atmospheric Pressure | : | 1010 hpa |

| Frequency<br>(MHz) | Factor<br>(dB/m) | Reading<br>(dBuV) | Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Detector<br>mode<br>(PK/AVG) | AntPol.<br>H/V |
|--------------------|------------------|-------------------|-------------------|-------------------|----------------|------------------------------|----------------|
| 5460.000           | 1.99             | 40.25             | 42.24             | 74.00             | -31.76         | peak                         | H              |
| 5460.000           | 1.99             | 28.43             | 30.42             | 54.00             | -23.58         | AVG                          | H              |
| 5470.000           | 1.99             | 40.46             | 42.45             | 68.20             | -25.75         | peak                         | H              |
| 11000.000          | 14.67            | 36.69             | 51.36             | 74.00             | -22.64         | peak                         | H              |
| 11000.000          | 14.67            | 24.84             | 39.51             | 54.00             | -14.49         | AVG                          | H              |
| 16500.000          | 29.95            | 23.14             | 53.09             | 68.20             | -15.11         | peak                         | H              |
|                    |                  |                   |                   |                   |                |                              |                |
| 5460.000           | 1.99             | 57.36             | 59.35             | 74.00             | -14.65         | peak                         | V              |
| 5460.000           | 1.99             | 43.11             | 45.10             | 54.00             | -8.90          | AVG                          | V              |
| 5470.000           | 1.99             | 62.94             | 64.93             | 68.20             | -3.27          | peak                         | V              |
| 11000.000          | 14.67            | 38.43             | 53.10             | 74.00             | -20.90         | peak                         | V              |
| 11000.000          | 14.67            | 26.96             | 41.63             | 54.00             | -12.37         | AVG                          | V              |
| 16500.000          | 29.95            | 24.91             | 54.86             | 68.20             | -13.34         | peak                         | V              |

Note: Level = Reading + Factor

Margin = Level – Limit

Factor= Antenna Factor + Cable Loss - Amplifier Factor



|           |   |                      |                      |   |          |
|-----------|---|----------------------|----------------------|---|----------|
| Power     | : | DC 3.3V              | Temperature          | : | 24 °C    |
| Test Mode | : | Mode 2, CH116 Band 3 | Humidity             | : | 54 %     |
| Test date | : | Jul. 21, 2019        | Atmospheric Pressure | : | 1010 hpa |

| Frequency (MHz) | Factor (dB/m) | Reading (dBuV) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector mode (PK/AVG) | AntPol. H/V |
|-----------------|---------------|----------------|----------------|----------------|-------------|------------------------|-------------|
| 5460.000        | 1.99          | 39.58          | 41.57          | 74.00          | -32.43      | peak                   | H           |
| 5460.000        | 1.99          | 28.66          | 30.65          | 54.00          | -23.35      | AVG                    | H           |
| 5470.000        | 1.99          | 39.99          | 41.98          | 68.20          | -26.22      | peak                   | H           |
| 5725.000        | 2.58          | 39.34          | 41.92          | 68.20          | -26.28      | peak                   | H           |
| 11160.000       | 15.05         | 36.34          | 51.39          | 74.00          | -22.61      | peak                   | H           |
| 11160.000       | 15.05         | 24.77          | 39.82          | 54.00          | -14.18      | AVG                    | H           |
| 16740.000       | 29.65         | 23.56          | 53.21          | 68.20          | -14.99      | peak                   | H           |
|                 |               |                |                |                |             |                        |             |
| 5460.000        | 1.99          | 40.02          | 42.01          | 74.00          | -31.99      | peak                   | V           |
| 5460.000        | 1.99          | 28.60          | 30.59          | 54.00          | -23.41      | AVG                    | V           |
| 5470.000        | 1.99          | 39.74          | 41.73          | 68.20          | -26.47      | peak                   | V           |
| 5725.000        | 2.58          | 39.70          | 42.28          | 68.20          | -25.92      | peak                   | V           |
| 11160.000       | 15.05         | 37.41          | 52.46          | 74.00          | -21.54      | peak                   | V           |
| 11160.000       | 15.05         | 26.27          | 41.32          | 54.00          | -12.68      | AVG                    | V           |
| 16740.000       | 29.65         | 14.20          | 43.85          | 68.20          | -24.35      | peak                   | V           |

Note: Level = Reading + Factor

Margin = Level – Limit

Factor= Antenna Factor + Cable Loss - Amplifier Factor



|           |   |                      |                      |   |          |
|-----------|---|----------------------|----------------------|---|----------|
| Power     | : | DC 3.3V              | Temperature          | : | 24 °C    |
| Test Mode | : | Mode 2, CH140 Band 3 | Humidity             | : | 54 %     |
| Test date | : | Jul. 21, 2019        | Atmospheric Pressure | : | 1010 hpa |

| Frequency<br>(MHz) | Factor<br>(dB/m) | Reading<br>(dBuV) | Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Detector<br>mode<br>(PK/AVG) | AntPol.<br>H/V |
|--------------------|------------------|-------------------|-------------------|-------------------|----------------|------------------------------|----------------|
| 5725.000           | 2.58             | 44.71             | 47.29             | 68.20             | -20.91         | peak                         | H              |
| 11400.000          | 15.62            | 35.52             | 51.14             | 74.00             | -22.86         | peak                         | H              |
| 11400.000          | 15.62            | 24.30             | 39.92             | 54.00             | -14.08         | AVG                          | H              |
| 17100.000          | 29.73            | 23.56             | 53.29             | 68.20             | -14.91         | peak                         | H              |
|                    |                  |                   |                   |                   |                |                              |                |
| 5725.000           | 2.58             | 63.77             | 66.35             | 68.20             | -1.85          | peak                         | V              |
| 11400.000          | 15.62            | 37.11             | 52.73             | 74.00             | -21.27         | peak                         | V              |
| 11400.000          | 15.62            | 25.17             | 40.79             | 54.00             | -13.21         | AVG                          | V              |
| 17100.000          | 29.73            | 24.85             | 54.58             | 68.20             | -13.62         | peak                         | V              |

Note: Level = Reading + Factor

Margin = Level – Limit

Factor= Antenna Factor + Cable Loss - Amplifier Factor



|           |   |                      |                      |   |          |
|-----------|---|----------------------|----------------------|---|----------|
| Power     | : | DC 3.3V              | Temperature          | : | 24 °C    |
| Test Mode | : | Mode 2, CH149 Band 4 | Humidity             | : | 54 %     |
| Test date | : | Jul. 21, 2019        | Atmospheric Pressure | : | 1010 hpa |

| Frequency (MHz) | Factor (dB/m) | Reading (dBuV) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector mode (PK/AVG) | AntPol. H/V |
|-----------------|---------------|----------------|----------------|----------------|-------------|------------------------|-------------|
| 5650.000        | 2.39          | 39.37          | 41.76          | 68.20          | -26.44      | peak                   | H           |
| 5700.000        | 2.52          | 45.56          | 48.08          | 105.20         | -57.12      | peak                   | H           |
| 5720.000        | 2.57          | 63.17          | 65.74          | 110.80         | -45.06      | peak                   | H           |
| 5725.000        | 2.58          | 66.27          | 68.85          | 122.20         | -53.35      | peak                   | H           |
| 11490.000       | 15.84         | 35.63          | 51.47          | 74.00          | -22.53      | peak                   | H           |
| 11490.000       | 15.84         | 24.02          | 39.86          | 54.00          | -14.14      | AVG                    | H           |
| 17235.000       | 30.26         | 22.13          | 52.39          | 68.20          | -15.81      | peak                   | H           |
|                 |               |                |                |                |             |                        |             |
| 5650.000        | 2.39          | 40.87          | 43.26          | 68.20          | -24.94      | peak                   | V           |
| 5700.000        | 2.52          | 60.37          | 62.89          | 105.20         | -42.31      | peak                   | V           |
| 5720.000        | 2.57          | 70.80          | 73.37          | 110.80         | -37.43      | peak                   | V           |
| 5725.000        | 2.58          | 74.70          | 77.28          | 122.20         | -44.92      | peak                   | V           |
| 11490.000       | 15.84         | 37.13          | 52.97          | 74.00          | -21.03      | peak                   | V           |
| 11490.000       | 15.84         | 25.53          | 41.37          | 54.00          | -12.63      | AVG                    | V           |
| 17235.000       | 30.26         | 24.67          | 54.93          | 68.20          | -13.27      | peak                   | V           |

Note: Level = Reading + Factor

Margin = Level – Limit

Factor= Antenna Factor + Cable Loss - Amplifier Factor



|           |   |                      |                      |   |          |
|-----------|---|----------------------|----------------------|---|----------|
| Power     | : | DC 3.3V              | Temperature          | : | 24 °C    |
| Test Mode | : | Mode 2, CH157 Band 4 | Humidity             | : | 54 %     |
| Test date | : | Jul. 21, 2019        | Atmospheric Pressure | : | 1010 hpa |

| Frequency (MHz) | Factor (dB/m) | Reading (dBuV) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector mode (PK/AVG) | AntPol. H/V |
|-----------------|---------------|----------------|----------------|----------------|-------------|------------------------|-------------|
| 5650.000        | 2.39          | 39.29          | 41.68          | 68.20          | -26.52      | peak                   | H           |
| 5700.000        | 2.52          | 39.14          | 41.66          | 105.20         | -63.54      | peak                   | H           |
| 5720.000        | 2.57          | 39.21          | 41.78          | 110.80         | -69.02      | peak                   | H           |
| 5725.000        | 2.58          | 39.52          | 42.10          | 122.20         | -80.10      | peak                   | H           |
| 5850.000        | 2.89          | 39.00          | 41.89          | 122.20         | -80.31      | peak                   | H           |
| 5855.000        | 2.90          | 38.62          | 41.52          | 110.80         | -69.28      | peak                   | H           |
| 5875.000        | 2.95          | 38.51          | 41.46          | 105.20         | -63.74      | peak                   | H           |
| 5925.000        | 3.07          | 38.24          | 41.31          | 68.20          | -26.89      | peak                   | H           |
| 11570.000       | 16.00         | 34.83          | 50.83          | 74.00          | -23.17      | peak                   | H           |
| 11570.000       | 16.00         | 23.14          | 39.14          | 54.00          | -14.86      | AVG                    | H           |
| 17355.000       | 30.74         | 22.23          | 52.97          | 68.20          | -15.23      | peak                   | H           |
|                 |               |                |                |                |             |                        |             |
| 5650.000        | 2.39          | 39.50          | 41.89          | 68.20          | -26.31      | peak                   | V           |
| 5700.000        | 2.52          | 39.69          | 42.21          | 105.20         | -62.99      | peak                   | V           |
| 5700.000        | 2.52          | 39.34          | 41.86          | 105.20         | -63.34      | peak                   | V           |
| 5720.000        | 2.57          | 39.59          | 42.16          | 110.80         | -68.64      | peak                   | V           |
| 5725.000        | 2.58          | 39.25          | 41.83          | 122.20         | -80.37      | peak                   | V           |
| 5850.000        | 2.89          | 39.06          | 41.95          | 122.20         | -80.25      | peak                   | V           |
| 5875.000        | 2.95          | 38.80          | 41.75          | 105.20         | -63.45      | peak                   | V           |
| 5925.000        | 3.07          | 38.24          | 41.31          | 68.20          | -26.89      | peak                   | V           |
| 11570.000       | 16.00         | 36.87          | 52.87          | 74.00          | -21.13      | peak                   | V           |
| 11570.000       | 16.00         | 25.26          | 41.26          | 54.00          | -12.74      | AVG                    | V           |
| 17355.000       | 30.74         | 24.09          | 54.83          | 68.20          | -13.37      | peak                   | V           |

Note: Level = Reading + Factor

Margin = Level – Limit

Factor= Antenna Factor + Cable Loss - Amplifier Factor



|           |   |                     |                      |   |          |
|-----------|---|---------------------|----------------------|---|----------|
| Power     | : | DC 3.3V             | Temperature          | : | 24 °C    |
| Test Mode | : | Mode 2, CH165 Band4 | Humidity             | : | 54 %     |
| Test date | : | Jul. 21, 2019       | Atmospheric Pressure | : | 1010 hpa |

| Frequency<br>(MHz) | Factor<br>(dB/m) | Reading<br>(dBuV) | Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Detector<br>mode<br>(PK/AVG) | AntPol.<br>H/V |
|--------------------|------------------|-------------------|-------------------|-------------------|----------------|------------------------------|----------------|
| 5850.000           | 2.89             | 53.21             | 56.10             | 122.20            | -66.10         | peak                         | H              |
| 5855.000           | 2.90             | 47.62             | 50.52             | 110.80            | -60.28         | peak                         | H              |
| 5875.000           | 2.95             | 38.42             | 41.37             | 105.20            | -63.83         | peak                         | H              |
| 5925.000           | 3.07             | 38.72             | 41.79             | 68.20             | -26.41         | peak                         | H              |
| 11650.000          | 16.16            | 35.15             | 51.31             | 74.00             | -22.69         | peak                         | H              |
| 11650.000          | 16.16            | 23.60             | 39.76             | 54.00             | -14.24         | AVG                          | H              |
| 17475.000          | 31.21            | 21.96             | 53.17             | 68.20             | -15.03         | peak                         | H              |
|                    |                  |                   |                   |                   |                |                              |                |
| 5850.000           | 2.89             | 68.73             | 71.62             | 122.20            | -50.58         | peak                         | V              |
| 5855.000           | 2.90             | 66.64             | 69.54             | 110.80            | -41.26         | peak                         | V              |
| 5875.000           | 2.95             | 52.44             | 55.39             | 105.20            | -49.81         | peak                         | V              |
| 5925.000           | 3.07             | 38.45             | 41.52             | 68.20             | -26.68         | peak                         | V              |
| 11650.000          | 16.16            | 36.53             | 52.69             | 74.00             | -21.31         | peak                         | V              |
| 11650.000          | 16.16            | 24.42             | 40.58             | 54.00             | -13.42         | AVG                          | V              |
| 17475.000          | 31.21            | 23.74             | 54.95             | 68.20             | -13.25         | peak                         | V              |

Note: Level = Reading + Factor

Margin = Level – Limit

Factor= Antenna Factor + Cable Loss - Amplifier Factor



|           |   |                     |                      |   |          |
|-----------|---|---------------------|----------------------|---|----------|
| Power     | : | DC 3.3V             | Temperature          | : | 24 °C    |
| Test Mode | : | Mode 3, CH38 Band 1 | Humidity             | : | 54 %     |
| Test date | : | Jul. 21, 2019       | Atmospheric Pressure | : | 1010 hpa |

| Frequency<br>(MHz) | Factor<br>(dB/m) | Reading<br>(dBuV) | Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Detector<br>mode<br>(PK/AVG) | AntPol.<br>H/V |
|--------------------|------------------|-------------------|-------------------|-------------------|----------------|------------------------------|----------------|
| 5150.000           | 1.73             | 47.09             | 48.82             | 74.00             | -25.18         | peak                         | H              |
| 5150.000           | 1.73             | 34.65             | 36.38             | 54.00             | -17.62         | AVG                          | H              |
| 10380.000          | 12.89            | 37.57             | 50.46             | 68.20             | -17.74         | peak                         | H              |
| 15570.000          | 25.26            | 27.92             | 53.18             | 74.00             | -20.82         | peak                         | H              |
| 15570.000          | 25.26            | 17.48             | 42.74             | 54.00             | -11.26         | AVG                          | H              |
|                    |                  |                   |                   |                   |                |                              |                |
| 5150.000           | 1.73             | 61.53             | 63.26             | 74.00             | -10.74         | peak                         | V              |
| 5150.000           | 1.73             | 49.38             | 51.11             | 54.00             | -2.89          | AVG                          | V              |
| 10380.000          | 12.89            | 39.54             | 52.43             | 68.20             | -15.77         | peak                         | V              |
| 15570.000          | 25.26            | 29.63             | 54.89             | 74.00             | -19.11         | peak                         | V              |
| 15570.000          | 25.26            | 19.35             | 44.61             | 54.00             | -9.39          | AVG                          | V              |

Note: Level = Reading + Factor

Margin = Level – Limit

Factor= Antenna Factor + Cable Loss - Amplifier Factor



|           |   |                     |                      |   |          |
|-----------|---|---------------------|----------------------|---|----------|
| Power     | : | DC 3.3V             | Temperature          | : | 24 °C    |
| Test Mode | : | Mode 3, CH46 Band 1 | Humidity             | : | 54 %     |
| Test date | : | Jul. 21, 2019       | Atmospheric Pressure | : | 1010 hpa |

| Frequency (MHz) | Factor (dB/m) | Reading (dBuV) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector mode (PK/AVG) | AntPol. H/V |
|-----------------|---------------|----------------|----------------|----------------|-------------|------------------------|-------------|
| 5350.000        | 1.89          | 40.74          | 42.63          | 74.00          | -31.37      | peak                   | H           |
| 5350.000        | 1.89          | 28.55          | 30.44          | 54.00          | -23.56      | AVG                    | H           |
| 10460.000       | 13.07         | 37.74          | 50.81          | 68.20          | -17.39      | peak                   | H           |
| 15690.000       | 25.32         | 28.03          | 53.35          | 74.00          | -20.65      | peak                   | H           |
| 15690.000       | 25.32         | 17.05          | 42.37          | 54.00          | -11.63      | AVG                    | H           |
|                 |               |                |                |                |             |                        |             |
| 5350.000        | 1.89          | 42.87          | 44.76          | 74.00          | -29.24      | peak                   | V           |
| 5350.000        | 1.89          | 30.26          | 32.15          | 54.00          | -21.85      | AVG                    | V           |
| 10460.000       | 13.07         | 39.27          | 52.34          | 68.20          | -15.86      | peak                   | V           |
| 15690.000       | 25.32         | 29.35          | 54.67          | 74.00          | -19.33      | peak                   | V           |
| 15690.000       | 25.32         | 18.96          | 44.28          | 54.00          | -9.72       | AVG                    | V           |

Note: Level = Reading + Factor

Margin = Level – Limit

Factor= Antenna Factor + Cable Loss - Amplifier Factor



|           |   |                     |                      |   |          |
|-----------|---|---------------------|----------------------|---|----------|
| Power     | : | DC 3.3V             | Temperature          | : | 24 °C    |
| Test Mode | : | Mode 3, CH54 Band 2 | Humidity             | : | 54 %     |
| Test date | : | Jul. 21, 2019       | Atmospheric Pressure | : | 1010 hpa |

| Frequency<br>(MHz) | Factor<br>(dB/m) | Reading<br>(dBuV) | Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Detector<br>mode<br>(PK/AVG) | AntPol.<br>H/V |
|--------------------|------------------|-------------------|-------------------|-------------------|----------------|------------------------------|----------------|
| 5350.000           | 1.89             | 39.82             | 41.71             | 74.00             | -32.29         | peak                         | H              |
| 5350.000           | 1.89             | 28.48             | 30.37             | 54.00             | -23.63         | AVG                          | H              |
| 10540.000          | 13.28            | 37.75             | 51.03             | 68.20             | -17.17         | peak                         | H              |
| 15810.000          | 25.37            | 27.74             | 53.11             | 74.00             | -20.89         | peak                         | H              |
| 15810.000          | 25.37            | 16.57             | 41.94             | 54.00             | -12.06         | AVG                          | H              |
|                    |                  |                   |                   |                   |                |                              |                |
| 5350.000           | 1.89             | 53.42             | 55.31             | 74.00             | -18.69         | peak                         | V              |
| 5350.000           | 1.89             | 40.79             | 42.68             | 54.00             | -11.32         | AVG                          | V              |
| 10540.000          | 13.28            | 38.14             | 51.42             | 68.20             | -16.78         | peak                         | V              |
| 15810.000          | 25.37            | 29.02             | 54.39             | 74.00             | -19.61         | peak                         | V              |
| 15810.000          | 25.37            | 18.41             | 43.78             | 54.00             | -10.22         | AVG                          | V              |

Note: Level = Reading + Factor

Margin = Level – Limit

Factor= Antenna Factor + Cable Loss - Amplifier Factor



|           |   |                     |                      |   |          |
|-----------|---|---------------------|----------------------|---|----------|
| Power     | : | DC 3.3V             | Temperature          | : | 24 °C    |
| Test Mode | : | Mode 3, CH62 Band 2 | Humidity             | : | 54 %     |
| Test date | : | Jul. 21, 2019       | Atmospheric Pressure | : | 1010 hpa |

| Frequency (MHz) | Factor (dB/m) | Reading (dBuV) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector mode (PK/AVG) | AntPol. H/V |
|-----------------|---------------|----------------|----------------|----------------|-------------|------------------------|-------------|
| 5350.000        | 1.89          | 56.57          | 58.46          | 74.00          | -15.54      | peak                   | H           |
| 5350.000        | 1.89          | 43.43          | 45.32          | 54.00          | -8.68       | AVG                    | H           |
| 10620.000       | 13.52         | 37.83          | 51.35          | 74.00          | -22.65      | peak                   | H           |
| 15930.000       | 25.43         | 27.88          | 53.31          | 74.00          | -20.69      | peak                   | H           |
| 15930.000       | 25.43         | 16.35          | 41.78          | 54.00          | -12.22      | AVG                    | H           |
|                 |               |                |                |                |             |                        |             |
| 5350.000        | 1.89          | 62.49          | 64.38          | 74.00          | -9.62       | peak                   | V           |
| 5350.000        | 1.89          | 49.25          | 51.14          | 54.00          | -2.86       | AVG                    | V           |
| 10620.000       | 13.52         | 38.85          | 52.37          | 74.00          | -21.63      | peak                   | V           |
| 15930.000       | 25.43         | 28.93          | 54.36          | 74.00          | -19.64      | peak                   | V           |
| 15930.000       | 25.43         | 18.09          | 43.52          | 54.00          | -10.48      | AVG                    | V           |

Note: Level = Reading + Factor

Margin = Level – Limit

Factor= Antenna Factor + Cable Loss - Amplifier Factor



|           |   |                      |                      |   |          |
|-----------|---|----------------------|----------------------|---|----------|
| Power     | : | DC 3.3V              | Temperature          | : | 24 °C    |
| Test Mode | : | Mode 3, CH102 Band 3 | Humidity             | : | 54 %     |
| Test date | : | Jul. 21, 2019        | Atmospheric Pressure | : | 1010 hpa |

| Frequency<br>(MHz) | Factor<br>(dB/m) | Reading<br>(dBuV) | Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Detector<br>mode<br>(PK/AVG) | AntPol.<br>H/V |
|--------------------|------------------|-------------------|-------------------|-------------------|----------------|------------------------------|----------------|
| 5460.000           | 1.99             | 43.65             | 45.64             | 74.00             | -28.36         | peak                         | H              |
| 5460.000           | 1.99             | 30.96             | 32.95             | 54.00             | -21.05         | AVG                          | H              |
| 5470.000           | 1.99             | 54.39             | 56.38             | 68.20             | -11.82         | peak                         | H              |
| 11020.000          | 14.72            | 36.17             | 50.89             | 74.00             | -23.11         | peak                         | H              |
| 11020.000          | 14.72            | 23.52             | 38.24             | 54.00             | -15.76         | AVG                          | H              |
| 16530.000          | 29.91            | 23.74             | 53.65             | 68.20             | -14.55         | peak                         | H              |
|                    |                  |                   |                   |                   |                |                              |                |
| 5460.000           | 1.99             | 51.88             | 53.87             | 74.00             | -20.13         | peak                         | V              |
| 5460.000           | 1.99             | 43.67             | 45.66             | 54.00             | -8.34          | AVG                          | V              |
| 5470.000           | 1.99             | 61.58             | 63.57             | 68.20             | -4.63          | peak                         | V              |
| 11020.000          | 14.72            | 37.44             | 52.16             | 74.00             | -21.84         | peak                         | V              |
| 11020.000          | 14.72            | 26.10             | 40.82             | 54.00             | -13.18         | AVG                          | V              |
| 16530.000          | 29.91            | 21.72             | 51.63             | 68.20             | -16.57         | peak                         | V              |

Note: Level = Reading + Factor

Margin = Level – Limit

Factor= Antenna Factor + Cable Loss - Amplifier Factor



|           |   |                      |                      |   |          |
|-----------|---|----------------------|----------------------|---|----------|
| Power     | : | DC 3.3V              | Temperature          | : | 24 °C    |
| Test Mode | : | Mode 3, CH110 Band 3 | Humidity             | : | 54 %     |
| Test date | : | Jul. 21, 2019        | Atmospheric Pressure | : | 1010 hpa |

| Frequency (MHz) | Factor (dB/m) | Reading (dBuV) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector mode (PK/AVG) | AntPol. H/V |
|-----------------|---------------|----------------|----------------|----------------|-------------|------------------------|-------------|
| 5460.000        | 1.99          | 39.04          | 41.03          | 74.00          | -32.97      | peak                   | H           |
| 5460.000        | 1.99          | 28.34          | 30.33          | 54.00          | -23.67      | AVG                    | H           |
| 5470.000        | 1.99          | 39.96          | 41.95          | 68.20          | -26.25      | peak                   | H           |
| 5725.000        | 2.58          | 39.77          | 42.35          | 68.20          | -25.85      | peak                   | H           |
| 11000.000       | 14.67         | 36.59          | 51.26          | 74.00          | -22.74      | peak                   | H           |
| 11000.000       | 14.67         | 25.14          | 39.81          | 54.00          | -14.19      | AVG                    | H           |
| 16650.000       | 29.76         | 23.23          | 52.99          | 68.20          | -15.21      | peak                   | H           |
|                 |               |                |                |                |             |                        |             |
| 5460.000        | 1.99          | 46.51          | 48.50          | 74.00          | -25.50      | peak                   | V           |
| 5460.000        | 1.99          | 33.66          | 35.65          | 54.00          | -18.35      | AVG                    | V           |
| 5470.000        | 1.99          | 48.65          | 50.64          | 68.20          | -17.56      | peak                   | V           |
| 5725.000        | 2.58          | 39.70          | 42.28          | 68.20          | -25.92      | peak                   | V           |
| 11100.000       | 14.91         | 37.58          | 52.49          | 74.00          | -21.51      | peak                   | V           |
| 11100.000       | 14.91         | 26.28          | 41.19          | 54.00          | -12.81      | AVG                    | V           |
| 16650.000       | 29.76         | 25.01          | 54.77          | 68.20          | -13.43      | peak                   | V           |

Note: Level = Reading + Factor

Margin = Level – Limit

Factor= Antenna Factor + Cable Loss - Amplifier Factor



|           |   |                      |                      |   |          |
|-----------|---|----------------------|----------------------|---|----------|
| Power     | : | DC 3.3V              | Temperature          | : | 24 °C    |
| Test Mode | : | Mode 3, CH134 Band 3 | Humidity             | : | 54 %     |
| Test date | : | Jul. 21, 2019        | Atmospheric Pressure | : | 1010 hpa |

| Frequency (MHz) | Factor (dB/m) | Reading (dBuV) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector mode (PK/AVG) | AntPol. H/V |
|-----------------|---------------|----------------|----------------|----------------|-------------|------------------------|-------------|
| 5725.000        | 2.58          | 40.08          | 42.66          | 68.20          | -25.54      | peak                   | H           |
| 11340.000       | 15.48         | 35.75          | 51.23          | 74.00          | -22.77      | peak                   | H           |
| 11340.000       | 15.48         | 24.19          | 39.67          | 54.00          | -14.33      | AVG                    | H           |
| 17010.000       | 29.37         | 23.87          | 53.24          | 68.20          | -14.96      | peak                   | H           |
|                 |               |                |                |                |             |                        |             |
| 5725.000        | 2.58          | 56.05          | 58.63          | 68.20          | -9.57       | peak                   | V           |
| 11340.000       | 15.48         | 37.24          | 52.72          | 74.00          | -21.28      | peak                   | V           |
| 11340.000       | 15.48         | 25.28          | 40.76          | 54.00          | -13.24      | AVG                    | V           |
| 17010.000       | 29.37         | 25.25          | 54.62          | 68.20          | -13.58      | peak                   | V           |

Note: Level = Reading + Factor

Margin = Level – Limit

Factor= Antenna Factor + Cable Loss - Amplifier Factor



|           |   |                      |                      |   |          |
|-----------|---|----------------------|----------------------|---|----------|
| Power     | : | DC 3.3V              | Temperature          | : | 24 °C    |
| Test Mode | : | Mode 3, CH151 Band 4 | Humidity             | : | 54 %     |
| Test date | : | Jul. 21, 2019        | Atmospheric Pressure | : | 1010 hpa |

| Frequency<br>(MHz) | Factor<br>(dB/m) | Reading<br>(dBuV) | Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Detector<br>mode<br>(PK/AVG) | AntPol.<br>H/V |
|--------------------|------------------|-------------------|-------------------|-------------------|----------------|------------------------------|----------------|
| 5650.000           | 2.39             | 38.56             | 40.95             | 68.20             | -27.25         | peak                         | H              |
| 5700.000           | 2.52             | 46.39             | 48.91             | 105.20            | -56.29         | peak                         | H              |
| 5720.000           | 2.57             | 59.49             | 62.06             | 110.80            | -48.74         | peak                         | H              |
| 5725.000           | 2.58             | 63.15             | 65.73             | 122.20            | -56.47         | peak                         | H              |
| 11510.000          | 15.88            | 35.90             | 51.78             | 74.00             | -22.22         | peak                         | H              |
| 11510.000          | 15.88            | 24.29             | 40.17             | 54.00             | -13.83         | AVG                          | H              |
| 17625.000          | 32.74            | 21.07             | 53.81             | 68.20             | -14.39         | peak                         | H              |
|                    |                  |                   |                   |                   |                |                              |                |
| 5650.000           | 2.39             | 43.18             | 45.57             | 68.20             | -22.63         | peak                         | V              |
| 5700.000           | 2.52             | 60.20             | 62.72             | 105.20            | -42.48         | peak                         | V              |
| 5720.000           | 2.57             | 69.75             | 72.32             | 110.80            | -38.48         | peak                         | V              |
| 5725.000           | 2.58             | 71.48             | 74.06             | 122.20            | -48.14         | peak                         | V              |
| 11510.000          | 15.88            | 36.79             | 52.67             | 74.00             | -21.33         | peak                         | V              |
| 11510.000          | 15.88            | 25.90             | 41.78             | 54.00             | -12.22         | AVG                          | V              |
| 17265.000          | 30.38            | 24.55             | 54.93             | 68.20             | -13.27         | peak                         | V              |

Note: Level = Reading + Factor

Margin = Level – Limit

Factor= Antenna Factor + Cable Loss - Amplifier Factor



|           |   |                      |                      |   |          |
|-----------|---|----------------------|----------------------|---|----------|
| Power     | : | DC 3.3V              | Temperature          | : | 24 °C    |
| Test Mode | : | Mode 3, CH159 Band 4 | Humidity             | : | 54 %     |
| Test date | : | Jul. 21, 2019        | Atmospheric Pressure | : | 1010 hpa |

| Frequency<br>(MHz) | Factor<br>(dB/m) | Reading<br>(dBuV) | Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Detector<br>mode<br>(PK/AVG) | AntPol.<br>H/V |
|--------------------|------------------|-------------------|-------------------|-------------------|----------------|------------------------------|----------------|
| 5850.000           | 2.89             | 40.88             | 43.77             | 122.20            | -78.43         | peak                         | H              |
| 5855.000           | 2.90             | 40.10             | 43.00             | 110.80            | -67.80         | peak                         | H              |
| 5875.000           | 2.95             | 39.49             | 42.44             | 105.20            | -62.76         | peak                         | H              |
| 5925.000           | 3.07             | 38.36             | 41.43             | 68.20             | -26.77         | peak                         | H              |
| 11590.000          | 16.04            | 35.39             | 51.43             | 74.00             | -22.57         | peak                         | H              |
| 11590.000          | 16.04            | 23.81             | 39.85             | 54.00             | -14.15         | AVG                          | H              |
| 17385.000          | 30.85            | 23.08             | 53.93             | 68.20             | -14.27         | peak                         | H              |
|                    |                  |                   |                   |                   |                |                              |                |
| 5850.000           | 2.89             | 61.70             | 64.59             | 122.20            | -57.61         | peak                         | V              |
| 5855.000           | 2.90             | 57.93             | 60.83             | 110.80            | -49.97         | peak                         | V              |
| 5875.000           | 2.95             | 53.65             | 56.60             | 105.20            | -48.60         | peak                         | V              |
| 5925.000           | 3.07             | 38.65             | 41.72             | 68.20             | -26.48         | peak                         | V              |
| 11590.000          | 16.04            | 37.38             | 53.42             | 74.00             | -20.58         | peak                         | V              |
| 11590.000          | 16.04            | 26.25             | 42.29             | 54.00             | -11.71         | AVG                          | V              |
| 17385.000          | 30.85            | 24.56             | 55.41             | 68.20             | -12.79         | peak                         | V              |

Note: Level = Reading + Factor

Margin = Level – Limit

Factor= Antenna Factor + Cable Loss - Amplifier Factor



|           |   |                     |                      |   |          |
|-----------|---|---------------------|----------------------|---|----------|
| Power     | : | DC 3.3V             | Temperature          | : | 24 °C    |
| Test Mode | : | Mode 4, CH42 Band 1 | Humidity             | : | 54 %     |
| Test date | : | Jul. 21, 2019       | Atmospheric Pressure | : | 1010 hpa |

| Frequency (MHz) | Factor (dB/m) | Reading (dBUV) | Level (dBUV/m) | Limit (dBUV/m) | Margin (dB) | Detector mode (PK/AVG) | AntPol. H/V |
|-----------------|---------------|----------------|----------------|----------------|-------------|------------------------|-------------|
| 5150.000        | 1.73          | 53.65          | 55.38          | 74.00          | -18.62      | peak                   | H           |
| 5150.000        | 1.73          | 42.74          | 44.47          | 54.00          | -9.53       | AVG                    | H           |
| 5350.000        | 1.89          | 41.23          | 43.12          | 74.00          | -30.88      | peak                   | H           |
| 5350.000        | 1.89          | 28.76          | 30.65          | 54.00          | -23.35      | AVG                    | H           |
| 10420.000       | 12.98         | 38.36          | 51.34          | 68.20          | -16.86      | peak                   | H           |
| 15630.000       | 25.29         | 28.45          | 53.74          | 74.00          | -20.26      | peak                   | H           |
| 15630.000       | 25.29         | 16.36          | 41.65          | 54.00          | -12.35      | AVG                    | H           |
|                 |               |                |                |                |             |                        |             |
| 5150.000        | 1.73          | 61.02          | 62.75          | 74.00          | -11.25      | peak                   | V           |
| 5150.000        | 1.73          | 49.59          | 51.32          | 54.00          | -2.68       | AVG                    | V           |
| 5350.000        | 1.89          | 47.23          | 49.12          | 74.00          | -24.88      | peak                   | V           |
| 5350.000        | 1.89          | 34.89          | 36.78          | 54.00          | -17.22      | AVG                    | V           |
| 10420.000       | 12.98         | 39.86          | 52.84          | 68.20          | -15.36      | peak                   | V           |
| 15630.000       | 25.29         | 29.38          | 54.67          | 74.00          | -19.33      | peak                   | V           |
| 15630.000       | 25.29         | 18.96          | 44.25          | 54.00          | -9.75       | AVG                    | V           |

Note: Level = Reading + Factor

Margin = Level – Limit

Factor= Antenna Factor + Cable Loss - Amplifier Factor



|           |   |                     |                      |   |          |
|-----------|---|---------------------|----------------------|---|----------|
| Power     | : | DC 3.3V             | Temperature          | : | 24 °C    |
| Test Mode | : | Mode 4, CH58 Band 2 | Humidity             | : | 54 %     |
| Test date | : | Jul. 21, 2019       | Atmospheric Pressure | : | 1010 hpa |

| Frequency (MHz) | Factor (dB/m) | Reading (dBuV) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector mode (PK/AVG) | AntPol. H/V |
|-----------------|---------------|----------------|----------------|----------------|-------------|------------------------|-------------|
| 5150.000        | 1.73          | 40.61          | 42.34          | 74.00          | -31.66      | peak                   | H           |
| 5150.000        | 1.73          | 28.37          | 30.10          | 54.00          | -23.90      | AVG                    | H           |
| 5350.000        | 1.89          | 52.46          | 54.35          | 74.00          | -19.65      | peak                   | H           |
| 5350.000        | 1.89          | 40.74          | 42.63          | 54.00          | -11.37      | AVG                    | H           |
| 10580.000       | 13.40         | 38.27          | 51.67          | 68.20          | -16.53      | peak                   | H           |
| 15870.000       | 25.40         | 27.88          | 53.28          | 74.00          | -20.72      | peak                   | H           |
| 15870.000       | 25.40         | 16.22          | 41.62          | 54.00          | -12.38      | AVG                    | H           |
|                 |               |                |                |                |             |                        |             |
| 5150.000        | 1.73          | 45.80          | 47.53          | 74.00          | -26.47      | peak                   | V           |
| 5150.000        | 1.73          | 32.53          | 34.26          | 54.00          | -19.74      | AVG                    | V           |
| 5350.000        | 1.89          | 61.68          | 63.57          | 74.00          | -10.43      | peak                   | V           |
| 5350.000        | 1.89          | 49.53          | 51.42          | 54.00          | -2.58       | AVG                    | V           |
| 10580.000       | 13.40         | 39.07          | 52.47          | 68.20          | -15.73      | peak                   | V           |
| 15870.000       | 25.40         | 29.56          | 54.96          | 74.00          | -19.04      | peak                   | V           |
| 15870.000       | 25.40         | 18.89          | 44.29          | 54.00          | -9.71       | AVG                    | V           |

Note: Level = Reading + Factor

Margin = Level – Limit

Factor= Antenna Factor + Cable Loss - Amplifier Factor



|           |   |                      |                      |   |          |
|-----------|---|----------------------|----------------------|---|----------|
| Power     | : | DC 3.3V              | Temperature          | : | 24 °C    |
| Test Mode | : | Mode 4, CH106 band 3 | Humidity             | : | 54 %     |
| Test date | : | Jul. 21, 2019        | Atmospheric Pressure | : | 1010 hpa |

| Frequency (MHz) | Factor (dB/m) | Reading (dBuV) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector mode (PK/AVG) | AntPol. H/V |
|-----------------|---------------|----------------|----------------|----------------|-------------|------------------------|-------------|
| 5460.000        | 1.99          | 48.68          | 50.67          | 74.00          | -23.33      | peak                   | H           |
| 5460.000        | 1.99          | 35.87          | 37.86          | 54.00          | -16.14      | AVG                    | H           |
| 5470.000        | 1.99          | 49.58          | 51.57          | 68.20          | -16.63      | peak                   | H           |
| 5725.000        | 2.58          | 39.98          | 42.56          | 68.20          | -25.64      | peak                   | H           |
| 11060.000       | 14.81         | 36.81          | 51.62          | 74.00          | -22.38      | peak                   | H           |
| 11060.000       | 14.81         | 24.41          | 39.22          | 54.00          | -14.78      | AVG                    | H           |
| 16590.000       | 29.84         | 23.87          | 53.71          | 68.20          | -14.49      | peak                   | H           |
|                 |               |                |                |                |             |                        |             |
| 5460.000        | 1.99          | 59.39          | 61.38          | 74.00          | -12.62      | peak                   | V           |
| 5460.000        | 1.99          | 48.64          | 50.63          | 54.00          | -3.37       | AVG                    | V           |
| 5470.000        | 1.99          | 60.54          | 62.53          | 68.20          | -5.67       | peak                   | V           |
| 5725.000        | 2.58          | 27.94          | 30.52          | 68.20          | -37.68      | peak                   | V           |
| 11060.000       | 14.81         | 37.88          | 52.69          | 74.00          | -21.31      | peak                   | V           |
| 11060.000       | 14.81         | 25.81          | 40.62          | 54.00          | -13.38      | AVG                    | V           |
| 16590.000       | 29.84         | 25.37          | 55.21          | 68.20          | -12.99      | peak                   | V           |

Note: Level = Reading + Factor

Margin = Level – Limit

Factor= Antenna Factor + Cable Loss - Amplifier Factor



|           |   |                     |                      |   |          |
|-----------|---|---------------------|----------------------|---|----------|
| Power     | : | DC 3.3V             | Temperature          | : | 24 °C    |
| Test Mode | : | Mode 4, CH122 Band3 | Humidity             | : | 54 %     |
| Test date | : | Jul. 21, 2019       | Atmospheric Pressure | : | 1010 hpa |

| Frequency (MHz) | Factor (dB/m) | Reading (dBuV) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector mode (PK/AVG) | AntPol. H/V |
|-----------------|---------------|----------------|----------------|----------------|-------------|------------------------|-------------|
| 5460.000        | 1.99          | 40.55          | 42.54          | 74.00          | -31.46      | peak                   | H           |
| 5460.000        | 1.99          | 28.38          | 30.37          | 54.00          | -23.63      | AVG                    | H           |
| 5470.000        | 1.99          | 39.57          | 41.56          | 68.20          | -26.64      | peak                   | H           |
| 5725.000        | 2.58          | 39.57          | 42.15          | 68.20          | -26.05      | peak                   | H           |
| 11220.000       | 15.19         | 36.76          | 51.95          | 74.00          | -22.05      | peak                   | H           |
| 11220.000       | 15.19         | 24.07          | 39.26          | 54.00          | -14.74      | AVG                    | H           |
| 16830.000       | 29.54         | 23.90          | 53.44          | 68.20          | -14.76      | peak                   | H           |
|                 |               |                |                |                |             |                        |             |
| 5460.000        | 1.99          | 47.54          | 49.53          | 74.00          | -24.47      | peak                   | V           |
| 5460.000        | 1.99          | 34.58          | 36.57          | 54.00          | -17.43      | AVG                    | V           |
| 5470.000        | 1.99          | 50.69          | 52.68          | 68.20          | -15.52      | peak                   | V           |
| 5725.000        | 2.58          | 53.05          | 55.63          | 68.20          | -12.57      | peak                   | V           |
| 11220.000       | 15.19         | 37.48          | 52.67          | 74.00          | -21.33      | peak                   | V           |
| 11220.000       | 15.19         | 25.12          | 40.31          | 54.00          | -13.69      | AVG                    | V           |
| 16830.000       | 29.54         | 25.37          | 54.91          | 68.20          | -13.29      | peak                   | V           |

Note: Level = Reading + Factor

Margin = Level – Limit

Factor= Antenna Factor + Cable Loss - Amplifier Factor



|           |   |                     |                      |   |          |
|-----------|---|---------------------|----------------------|---|----------|
| Power     | : | DC 3.3V             | Temperature          | : | 24 °C    |
| Test Mode | : | Mode 4, CH155 Band4 | Humidity             | : | 54 %     |
| Test date | : | Jul. 21, 2019       | Atmospheric Pressure | : | 1010 hpa |

| Frequency (MHz) | Factor (dB/m) | Reading (dBuV) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector mode (PK/AVG) | AntPol. H/V |
|-----------------|---------------|----------------|----------------|----------------|-------------|------------------------|-------------|
| 5650.000        | 2.39          | 43.00          | 45.39          | 68.20          | -22.81      | peak                   | H           |
| 5700.000        | 2.52          | 59.10          | 61.62          | 105.20         | -43.58      | peak                   | H           |
| 5720.000        | 2.57          | 61.73          | 64.30          | 110.80         | -46.50      | peak                   | H           |
| 5725.000        | 2.58          | 62.76          | 65.34          | 122.20         | -56.86      | peak                   | H           |
| 5850.000        | 2.89          | 58.97          | 61.86          | 122.20         | -60.34      | peak                   | H           |
| 5855.000        | 2.90          | 58.44          | 61.34          | 110.80         | -49.46      | peak                   | H           |
| 5875.000        | 2.95          | 52.60          | 55.55          | 105.20         | -49.65      | peak                   | H           |
| 5925.000        | 3.07          | 39.93          | 43.00          | 68.20          | -25.20      | peak                   | H           |
| 11550.000       | 15.96         | 35.20          | 51.16          | 74.00          | -22.84      | peak                   | H           |
| 11550.000       | 15.96         | 23.25          | 39.21          | 54.00          | -14.79      | AVG                    | H           |
| 17325.000       | 30.62         | 23.22          | 53.84          | 68.20          | -14.36      | peak                   | H           |
|                 |               |                |                |                |             |                        |             |
| 5650.000        | 2.39          | 53.84          | 56.23          | 68.20          | -11.97      | peak                   | V           |
| 5700.000        | 2.52          | 65.15          | 67.67          | 105.20         | -37.53      | peak                   | V           |
| 5700.000        | 2.52          | 67.90          | 70.42          | 105.20         | -34.78      | peak                   | V           |
| 5720.000        | 2.57          | 69.30          | 71.87          | 110.80         | -38.93      | peak                   | V           |
| 5725.000        | 2.58          | 66.64          | 69.22          | 122.20         | -52.98      | peak                   | V           |
| 5850.000        | 2.89          | 65.50          | 68.39          | 122.20         | -53.81      | peak                   | V           |
| 5875.000        | 2.95          | 59.72          | 62.67          | 105.20         | -42.53      | peak                   | V           |
| 5925.000        | 3.07          | 50.18          | 53.25          | 68.20          | -14.95      | peak                   | V           |
| 11550.000       | 15.96         | 37.45          | 53.41          | 74.00          | -20.59      | peak                   | V           |
| 11550.000       | 15.96         | 25.42          | 41.38          | 54.00          | -12.62      | AVG                    | V           |
| 17325.000       | 30.62         | 24.72          | 55.34          | 68.20          | -12.86      | peak                   | V           |

Note: Level = Reading + Factor

Margin = Level – Limit

Factor= Antenna Factor + Cable Loss - Amplifier Factor

**6.7. Restricted Bands of Operation**

Only spurious emissions are permitted in any of the frequency bands listed below:

| MHz                 | MHz                   | MHz             | GHz             |
|---------------------|-----------------------|-----------------|-----------------|
| 0.09000 – 0.11000   | 16.42000 – 16.42300   | 399.9 – 410.0   | 4.500 – 5.150   |
| 0.49500 – 0.505**   | 16.69475 – 16.69525   | 608.0 – 614.0   | 5.350 – 5.460   |
| 2.17350 – 2.19050   | 16.80425 – 16.80475   | 960.0 – 1240.0  | 7.250 – 7.750   |
| 4.12500 – 4.12800   | 25.50000 – 25.67000   | 1300.0 – 1427.0 | 8.025 – 8.500   |
| 4.17725 – 4.17775   | 37.50000 – 38.25000   | 1435.0 – 1626.5 | 9.000 – 9.200   |
| 4.20725 – 4.20775   | 73.00000 – 74.60000   | 1645.5 – 1646.5 | 9.300 – 9.500   |
| 6.21500 – 6.21800   | 74.80000 – 75.20000   | 1660.0 – 1710.0 | 10.600 – 12.700 |
| 6.26775 – 6.26825   | 108.00000 – 121.94000 | 1718.8 – 1722.2 | 13.250 – 13.400 |
| 6.31175 – 6.31225   | 123.00000 – 138.00000 | 2200.0 – 2300.0 | 14.470 – 14.500 |
| 8.29100 – 8.29400   | 149.90000 – 150.05000 | 2310.0 – 2390.0 | 15.350 – 16.200 |
| 8.36200 – 8.36600   | 156.52475 – 156.52525 | 2483.5 – 2500.0 | 17.700 – 21.400 |
| 8.37625 – 8.38675   | 156.70000 – 156.90000 | 2655.0 – 2900.0 | 22.010 – 23.120 |
| 8.41425 – 8.41475   | 162.01250 – 167.17000 | 3260.0 – 3267.0 | 23.600 – 24.000 |
| 12.29000 – 12.29300 | 167.72000 – 173.20000 | 3332.0 – 3339.0 | 31.200 – 31.800 |
| 12.51975 – 12.52025 | 240.00000 – 285.00000 | 3345.8 – 3358.0 | 36.430 – 36.500 |
| 12.57675 – 12.57725 | 322.00000 – 335.40000 | 3600.0 – 4400.0 | Above 38.6      |
| 13.36000 – 13.41000 |                       |                 |                 |

\*\* : Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz



## 7. On Time, Duty Cycle and Measurement methods

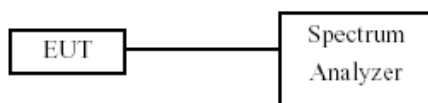
### 7.1. Test Limit

None; for reporting purposes only.

### 7.2. Test Procedure

KDB 789033 Zero-Span Spectrum Analyzer Method.

### 7.3. Test Setup Layout



### 7.4. Test Result and Data

Temperature: 21°C

Humidity: 56%

Test Date: Jul. 21, 2019

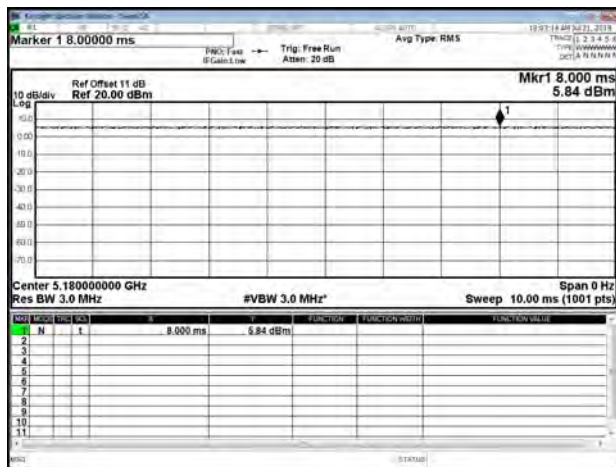
| Modulation Type | On Time (msec) | Period Time (msec) | Duty Cycle (%) | 1/T Minimum VBW(Hz) | Duty Cycle correction Factor (dB) |
|-----------------|----------------|--------------------|----------------|---------------------|-----------------------------------|
| 802.11a         | 100.00         | 100.00             | 100.00%        | 10.00               | 0.00                              |
| 802.11n HT20    | 100.00         | 100.00             | 100.00%        | 10.00               | 0.00                              |
| 802.11n HT40    | 100.00         | 100.00             | 100.00%        | 10.00               | 0.00                              |
| 802.11ac VHT20  | 100.00         | 100.00             | 100.00%        | 10.00               | 0.00                              |
| 802.11ac VHT40  | 100.00         | 100.00             | 100.00%        | 10.00               | 0.00                              |
| 802.11ac VHT80  | 100.00         | 100.00             | 100.00%        | 10.00               | 0.00                              |

### 7.5. Measurement Methods

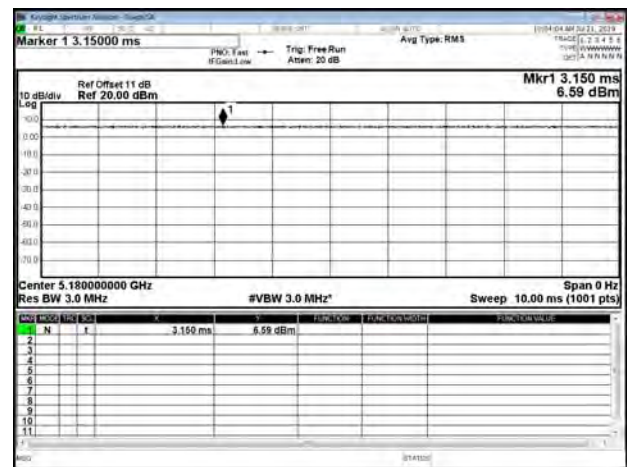
|                                            |                                                              |
|--------------------------------------------|--------------------------------------------------------------|
| 26 dB and 6dB Emission BW                  | KDB 789033 D02 v02r01, Section C                             |
| 99% Occupied BW                            | KDB 789033 D02 v02r01, Section D                             |
| Conducted Output Power                     | KDB 789033 D02 v02r01, Section E.2.d and E.3.b (Method PM-G) |
| Power Spectral Density                     | KDB 789033 D02 v02r01, Section F                             |
| Unwanted emissions in restricted bands     | KDB 789033 D02 v02r01, Sections G and H                      |
| Unwanted emissions in non-restricted bands | KDB 789033 D02 v02r01, Sections G and H                      |



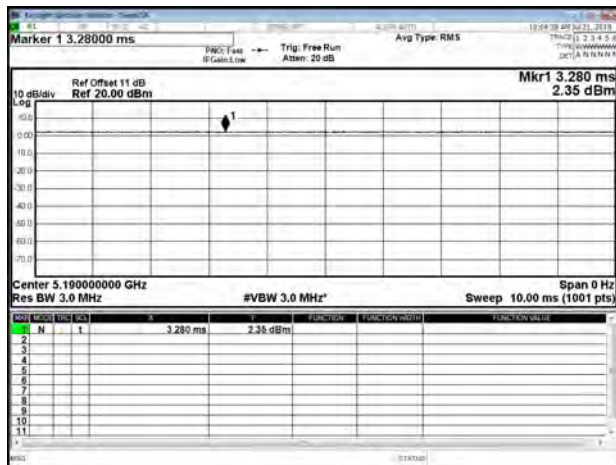
Modulation Standard: 802.11a (6Mbps)



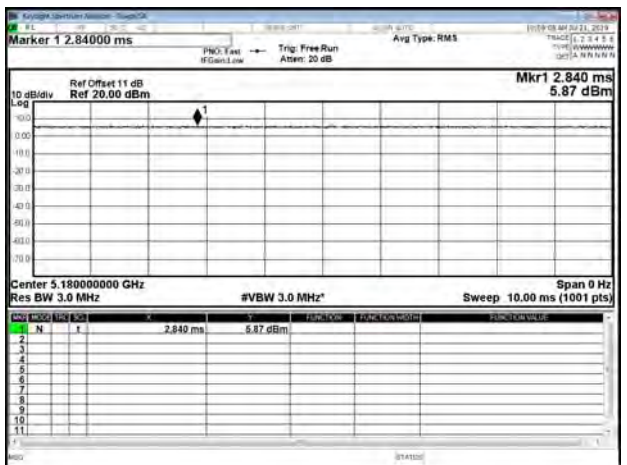
Modulation Standard: 802.11n HT20 (6.5Mbps)



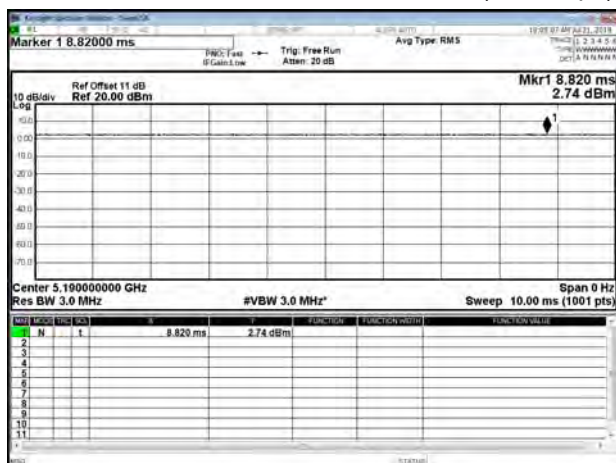
Modulation Standard: 802.11n HT40 (13.5Mbps)



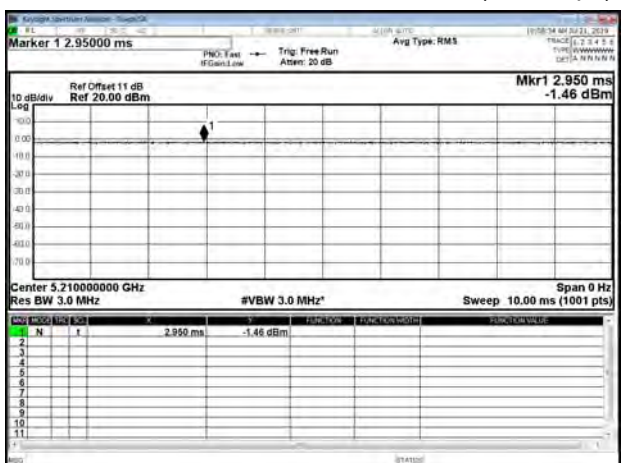
Modulation Standard: 802.11ac VHT20 (29.3Mbps)



Modulation Standard: 802.11ac VHT40 (13.5Mbps)



Modulation Standard: 802.11ac VHT80 (29.3Mbps)





## 8. 6dB Bandwidth & 99% Bandwidth

### 8.1. Test Limit

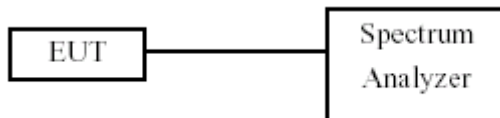
FCC §15.407

The minimum 6 dB bandwidth shall be at least 500 kHz.

### 8.2. Test Procedure

Reference to 789033 D02 General UNII Test Procedures New Rules v01: The transmitter output is connected to a spectrum analyzer with the RBW set to 100KHz, the VBW  $\geq 3 \times$  RBW, peak detector and max hold.

### 8.3. Test Setup Layout



**8.4. Test Result and Data (6dB Bandwidth)**

Temperature: 21°C

Humidity: 56%

Test Date: Jul. 21, 2019

**In the 5.8G Band**

| Modulation Type | Channel | Frequency (MHz) | 6dB Bandwidth (MHz) |         | Minimum Limit (MHz) |
|-----------------|---------|-----------------|---------------------|---------|---------------------|
|                 |         |                 | Chain 1             | Chain 2 |                     |
| 802.11a         | 149     | 5745            | 16.55               | 16.51   | 0.50                |
|                 | 157     | 5785            | 16.53               | 16.51   | 0.50                |
|                 | 165     | 5825            | 16.53               | 16.52   | 0.50                |
| 802.11ac VHT20  | 149     | 5745            | 17.71               | 17.74   | 0.50                |
|                 | 157     | 5785            | 17.75               | 17.75   | 0.50                |
|                 | 165     | 5825            | 17.76               | 17.74   | 0.50                |
| 802.11ac VHT40  | 155     | 5755            | 36.47               | 36.44   | 0.50                |
|                 | 159     | 5795            | 36.46               | 36.46   | 0.50                |
| 802.11ac VHT80  | 155     | 5775            | 76.49               | 76.42   | 0.50                |

**8.5. Test Result and Data (99% Bandwidth)**

Temperature: 21°C

Humidity: 56%

Test Date: Jul. 21, 2019

**In the 5.8G Band**

| Modulation Type | Channel | Frequency (MHz) | 99% Bandwidth (MHz) |         |
|-----------------|---------|-----------------|---------------------|---------|
|                 |         |                 | Chain 1             | Chain 2 |
| 802.11a         | 149     | 5745            | 16.41               | 16.39   |
|                 | 157     | 5785            | 16.40               | 16.40   |
|                 | 165     | 5825            | 16.41               | 16.40   |
| 802.11ac VHT20  | 149     | 5745            | 17.59               | 17.58   |
|                 | 157     | 5785            | 17.59               | 17.59   |
|                 | 165     | 5825            | 17.60               | 17.58   |
| 802.11ac VHT40  | 155     | 5755            | 36.19               | 36.13   |
|                 | 159     | 5795            | 36.13               | 36.07   |
| 802.11ac VHT80  | 155     | 5775            | 75.27               | 75.15   |

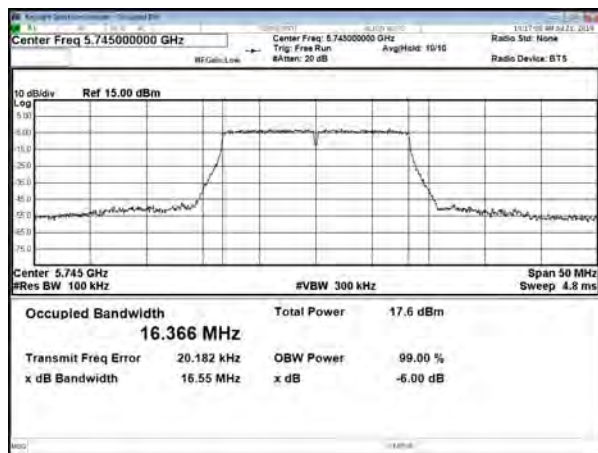
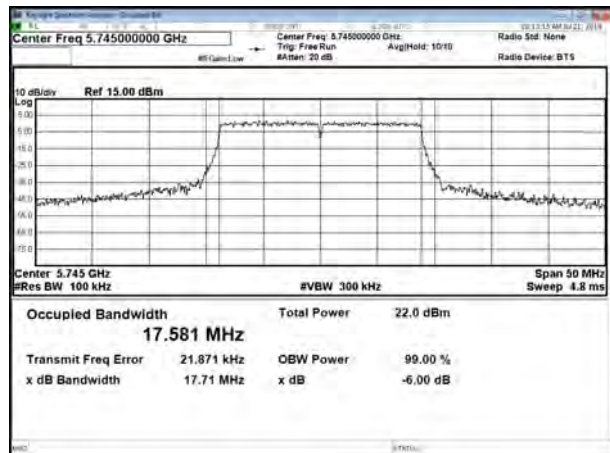


6dB Bandwidth

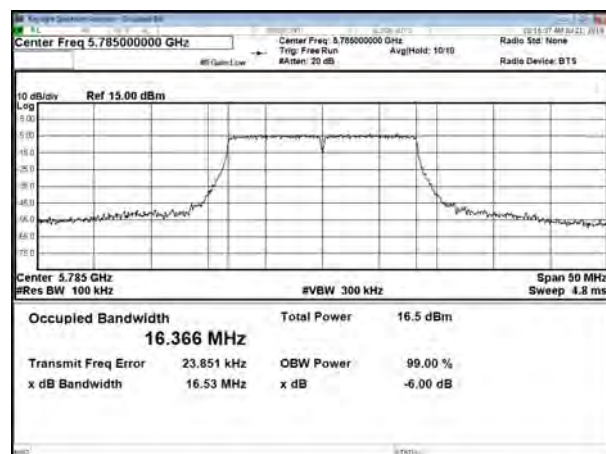
Chain 1

Modulation Standard: 802.11a

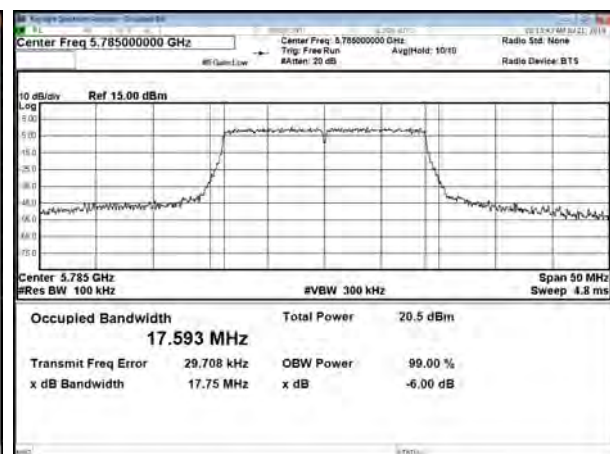
CH149

Modulation Standard: 802.11ac,VHT20  
CH149

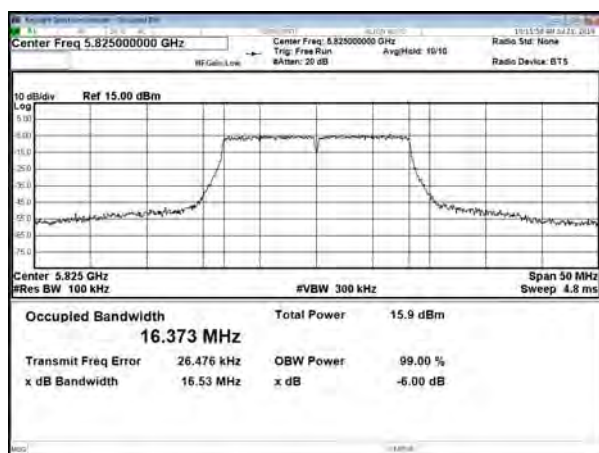
CH157



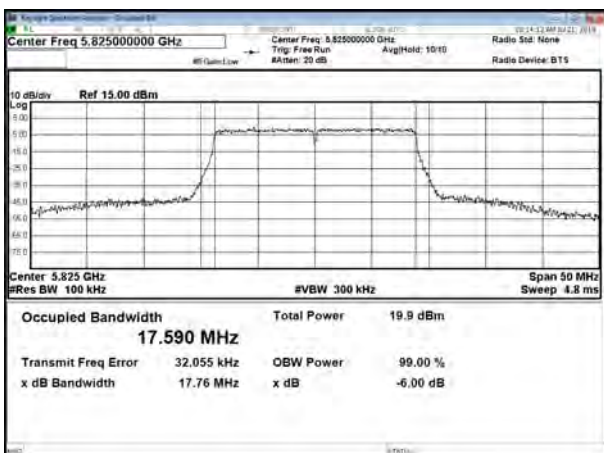
CH157



CH165

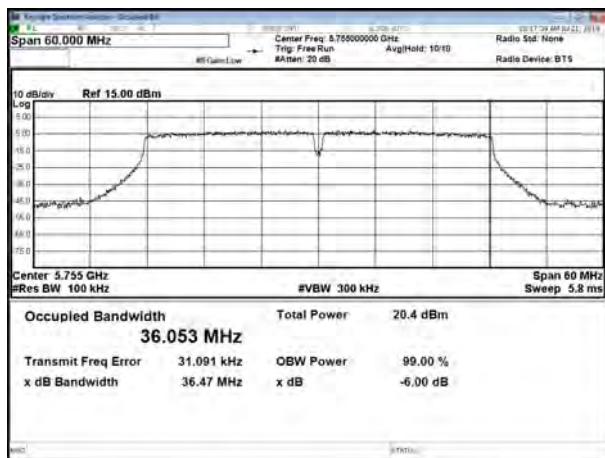


CH165

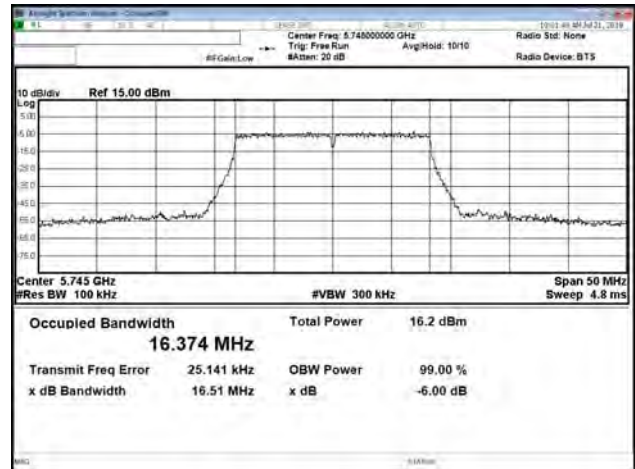




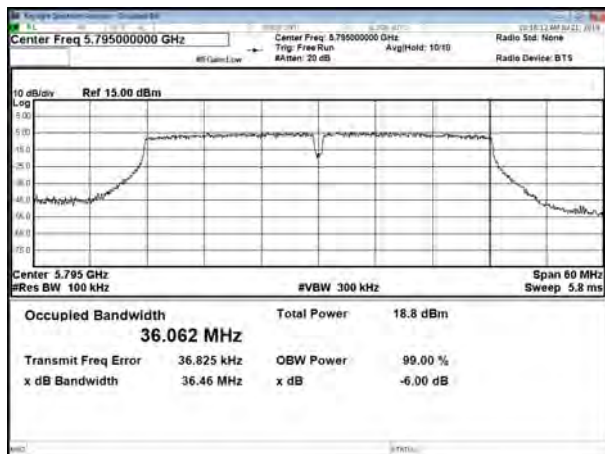
Modulation Standard: 802.11ac,VHT20  
CH151



Chain 2  
Modulation Standard: 802.11a  
CH149



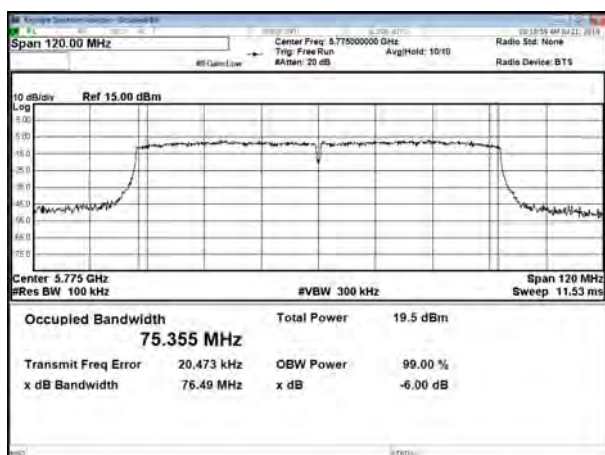
CH159



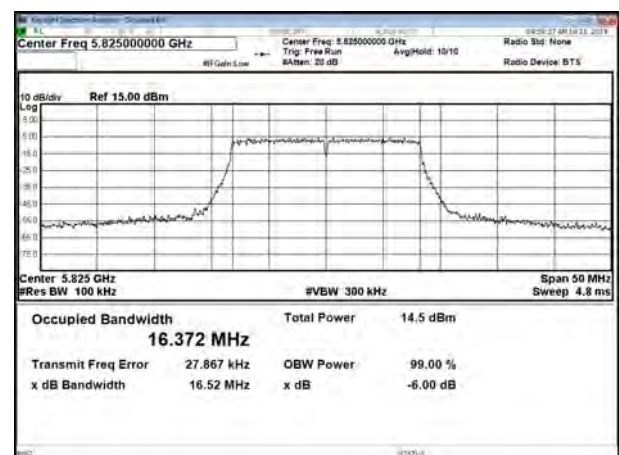
CH157



Modulation Standard: 802.11ac,VHT80  
CH155

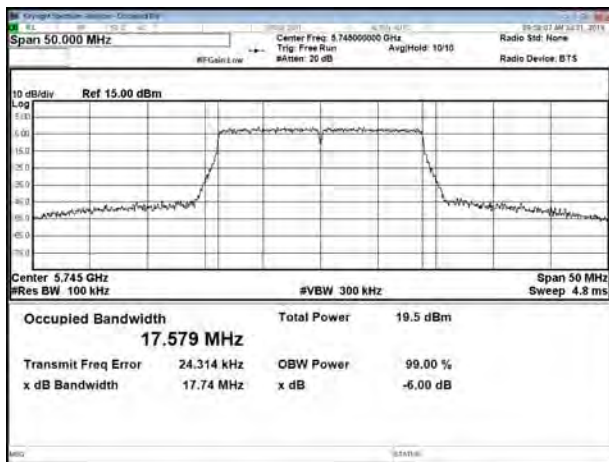


CH165

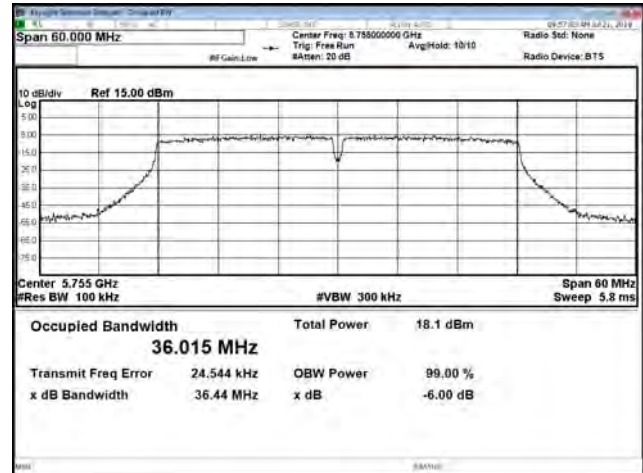




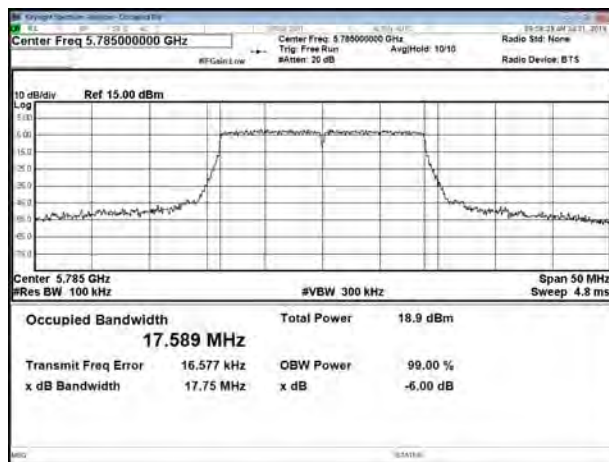
Modulation Standard: 802.11ac,VHT20  
CH149



Modulation Standard: 802.11ac,VHT40  
CH151



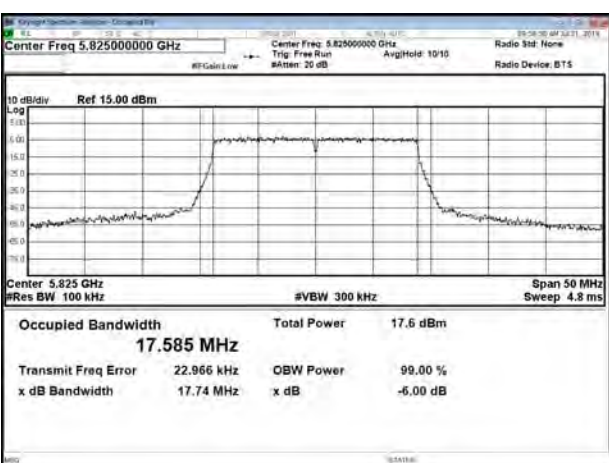
CH157



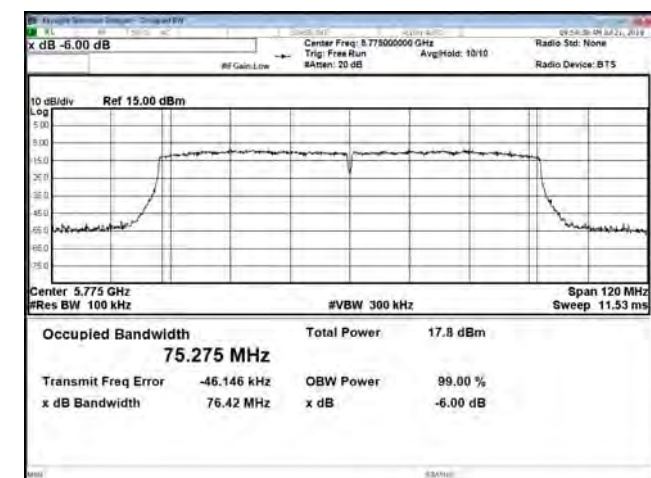
CH159



CH165



Modulation Standard: 802.11ac,VHT80  
CH155



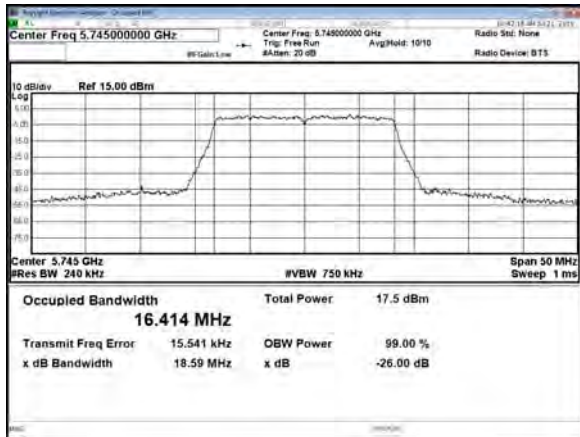


99% Bandwidth

Chain 1

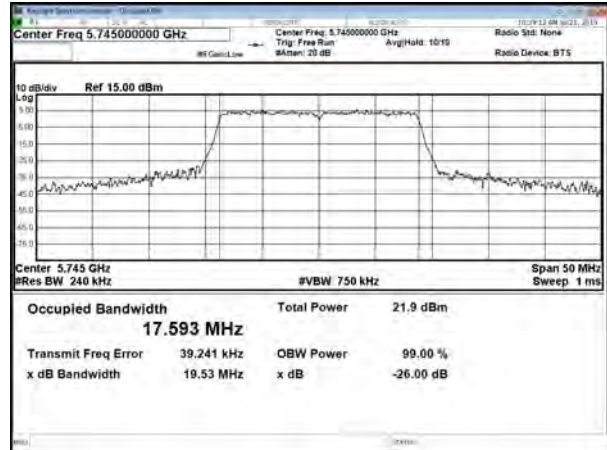
Modulation Standard: 802.11a

CH149

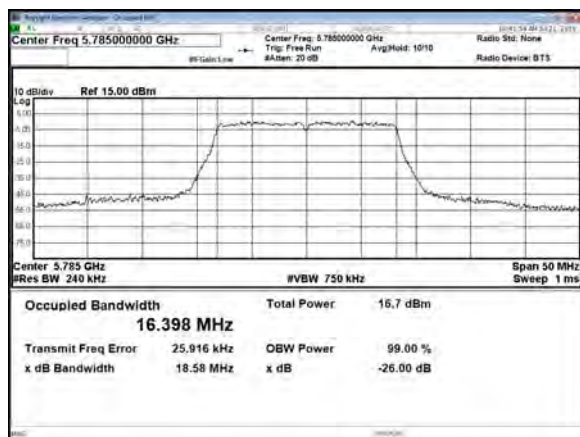


Modulation Standard: 802.11ac,VHT20

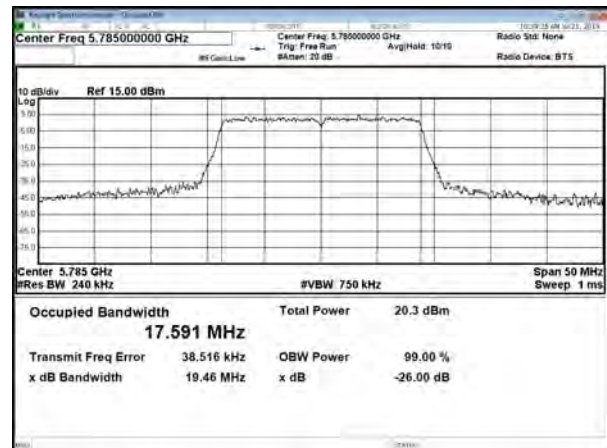
CH149



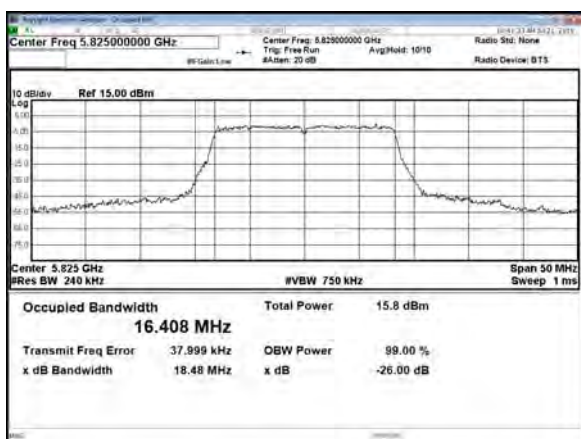
CH157



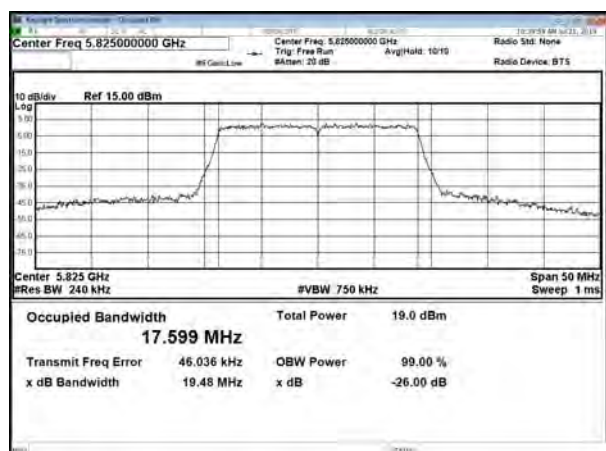
CH157



CH165



CH165

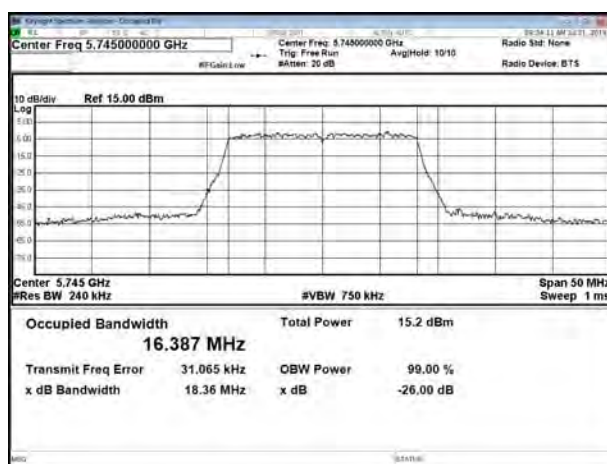




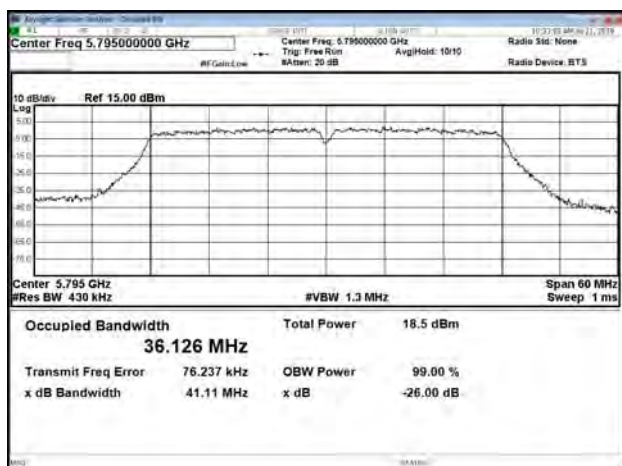
Modulation Standard: 802.11ac,VHT40  
CH151



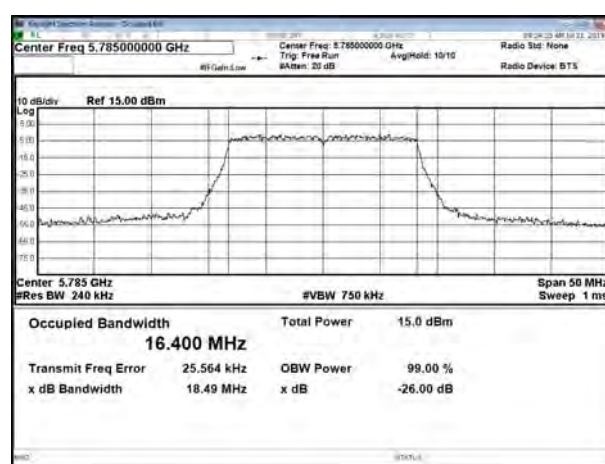
Chain 2  
Modulation Standard: 802.11a  
CH149



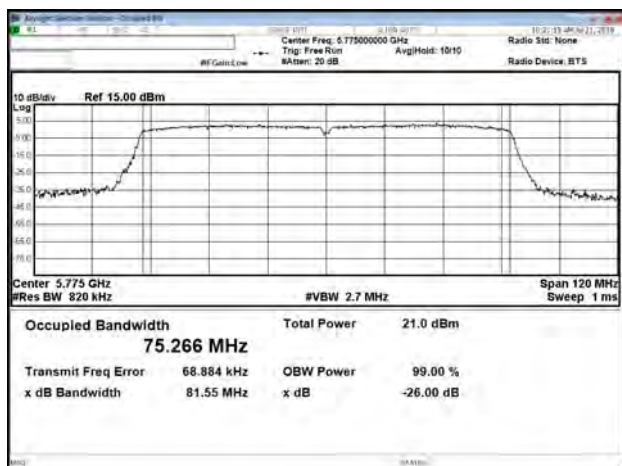
CH159



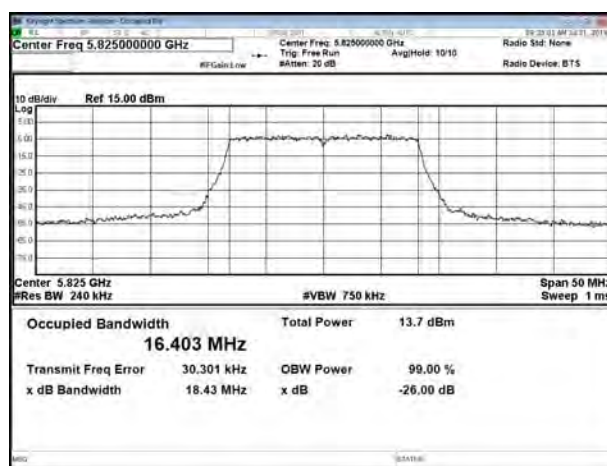
CH157



Modulation Standard: 802.11ac,VHT80  
CH155

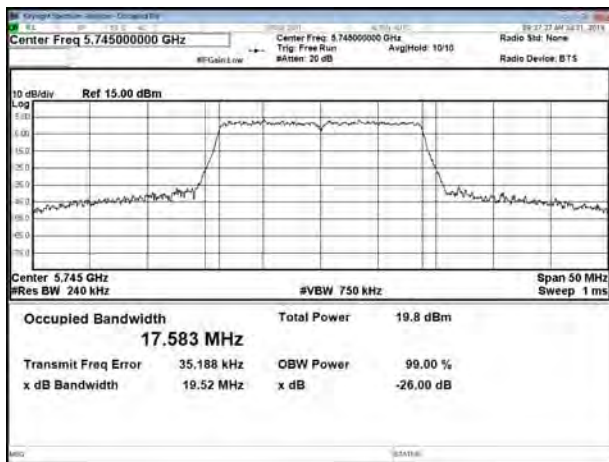


CH165

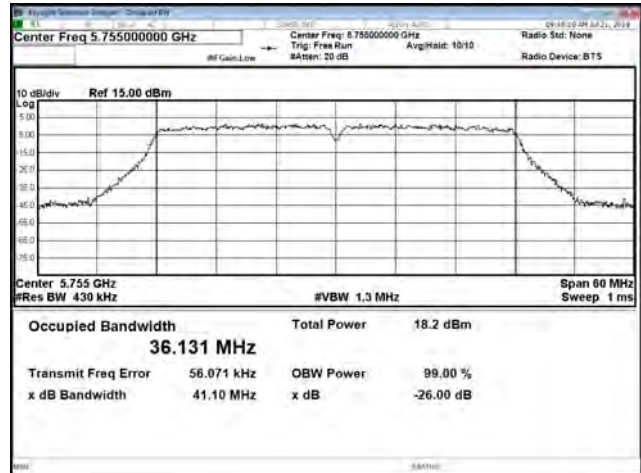




Modulation Standard: 802.11ac,VHT20  
CH149



Modulation Standard: 802.11ac,VHT40  
CH151



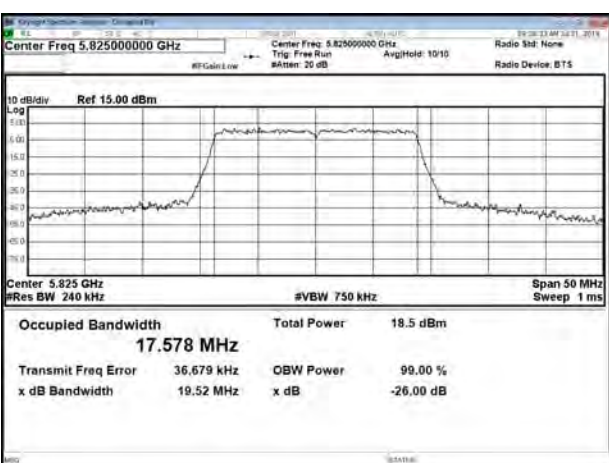
CH157



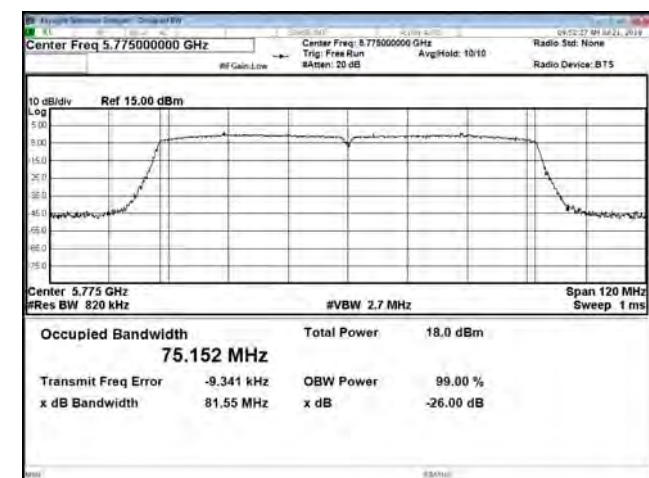
CH159



CH165



Modulation Standard: 802.11ac,VHT80  
CH155





## 9. 26dB Bandwidth & 99% Bandwidth

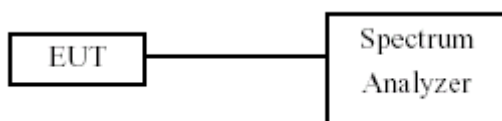
### 9.1. Test Limit

None; for reporting purposes only.

### 9.2. Test Procedure

Reference to 789033 D02 General UNII Test Procedures New Rules v01: The transmitter output is connected to a spectrum analyzer with the RBW = approximately 1% of the emission bandwidth, the VBW  $\geq 3 \times$  RBW, peak detector and max hold.

### 9.3. Test Setup Layout



### 9.4. Test Result and Data

Temperature: 21°C

Humidity: 56%

Test Date: Jul. 21, 2019

#### In the 5.2G Band

| Modulation Type | Channel | Frequency (MHz) | 26dB Bandwidth (MHz) |         | 99% Occupied Bandwidth (MHz) |         |
|-----------------|---------|-----------------|----------------------|---------|------------------------------|---------|
|                 |         |                 | Chain 1              | Chain 2 | Chain 1                      | Chain 2 |
| 802.11a         | 36      | 5180            | 18.43                | 18.55   | 16.401                       | 16.401  |
|                 | 44      | 5220            | 18.47                | 18.43   | 16.394                       | 16.392  |
|                 | 48      | 5240            | 18.47                | 18.52   | 16.396                       | 16.393  |
| 802.11ac VHT20  | 36      | 5180            | 19.54                | 19.6    | 17.586                       | 17.596  |
|                 | 44      | 5220            | 19.42                | 19.6    | 17.589                       | 17.588  |
|                 | 48      | 5240            | 19.48                | 19.51   | 17.6                         | 17.591  |
| 802.11ac VHT40  | 38      | 5190            | 40.83                | 40.68   | 36.086                       | 36.086  |
|                 | 46      | 5230            | 41.13                | 40.93   | 36.06                        | 36.086  |
| 802.11ac VHT80  | 42      | 5210            | 81.04                | 81.16   | 74.967                       | 75.068  |

#### In the 5.3G Band

| Modulation Type | Channel | Frequency (MHz) | 26dB Bandwidth (MHz) |         | 99% Occupied Bandwidth (MHz) |         |
|-----------------|---------|-----------------|----------------------|---------|------------------------------|---------|
|                 |         |                 | Chain 1              | Chain 2 | Chain 1                      | Chain 2 |
| 802.11a         | 52      | 5260            | 18.49                | 18.59   | 16.415                       | 16.392  |
|                 | 60      | 5300            | 18.53                | 18.48   | 16.394                       | 16.39   |
|                 | 64      | 5320            | 18.6                 | 18.6    | 16.389                       | 16.394  |
| 802.11ac VHT20  | 52      | 5260            | 19.6                 | 19.49   | 17.586                       | 17.585  |
|                 | 60      | 5300            | 19.6                 | 19.51   | 17.598                       | 17.59   |
|                 | 64      | 5320            | 19.55                | 19.49   | 17.596                       | 17.582  |
| 802.11ac VHT40  | 54      | 5270            | 41.11                | 41.28   | 36.066                       | 36.073  |
|                 | 62      | 5310            | 41.2                 | 41.12   | 36.067                       | 36.099  |
| 802.11ac VHT80  | 58      | 5290            | 81.11                | 81.12   | 75.069                       | 75.089  |

**In the 5.5G Band**

| Modulation Type | Channel | Frequency (MHz) | 26dB Bandwidth (MHz) |         | 99% Occupied Bandwidth (MHz) |         |
|-----------------|---------|-----------------|----------------------|---------|------------------------------|---------|
|                 |         |                 | Chain 1              | Chain 2 | Chain 1                      | Chain 2 |
| 802.11a         | 100     | 5500            | 18.49                | 18.53   | 16.405                       | 16.398  |
|                 | 116     | 5580            | 18.53                | 18.42   | 16.414                       | 16.408  |
|                 | 140     | 5700            | 18.61                | 18.5    | 16.423                       | 16.399  |
| 802.11ac VHT20  | 100     | 5500            | 19.51                | 19.48   | 17.596                       | 17.588  |
|                 | 116     | 5580            | 19.47                | 19.56   | 17.606                       | 17.595  |
|                 | 140     | 5700            | 19.49                | 19.64   | 17.592                       | 17.585  |
| 802.11ac VHT40  | 102     | 5510            | 41.06                | 40.99   | 36.079                       | 36.111  |
|                 | 110     | 5550            | 41.55                | 41.1    | 36.15                        | 36.133  |
|                 | 134     | 5670            | 41.04                | 41.03   | 36.116                       | 36.105  |
| 802.11ac VHT80  | 106     | 5530            | 81.69                | 81.63   | 75.39                        | 75.327  |



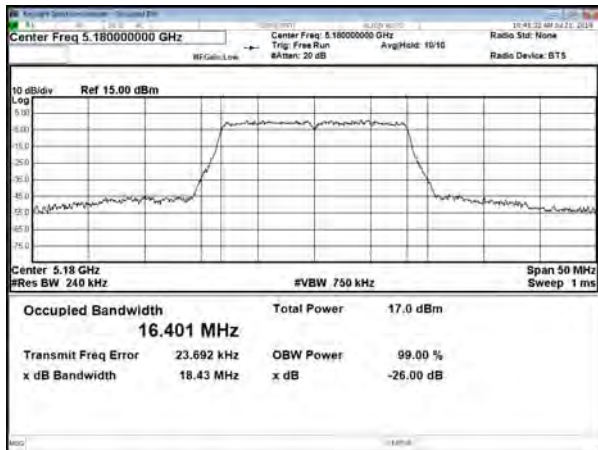
26dB Bandwidth &amp; 99% Bandwidth

5.2G Band:

Chain 1

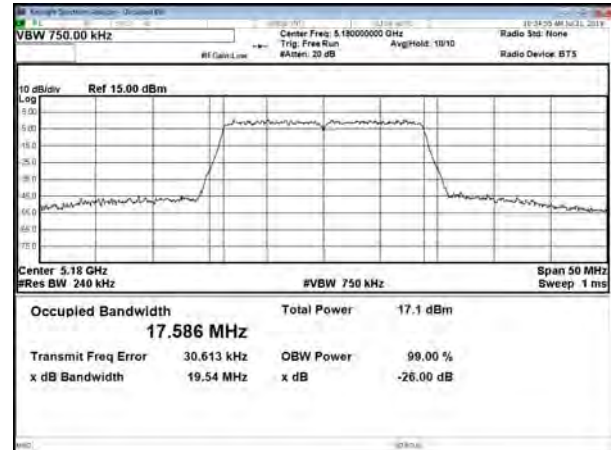
Modulation Standard: 802.11a

CH36

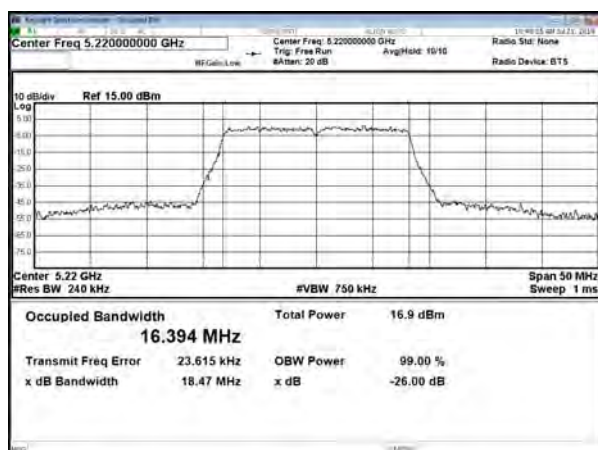


Modulation Standard: 802.11ac, VHT20

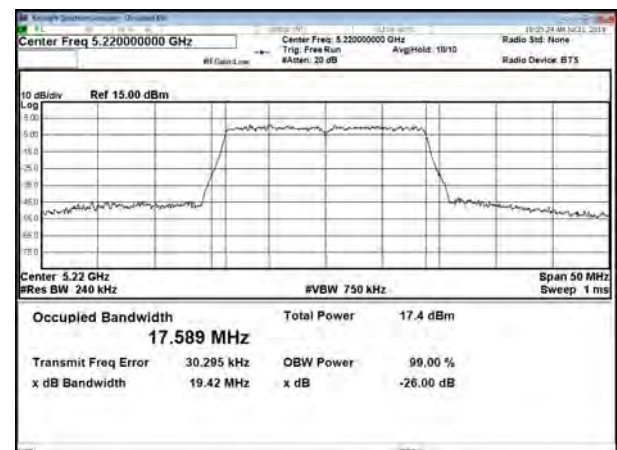
CH36



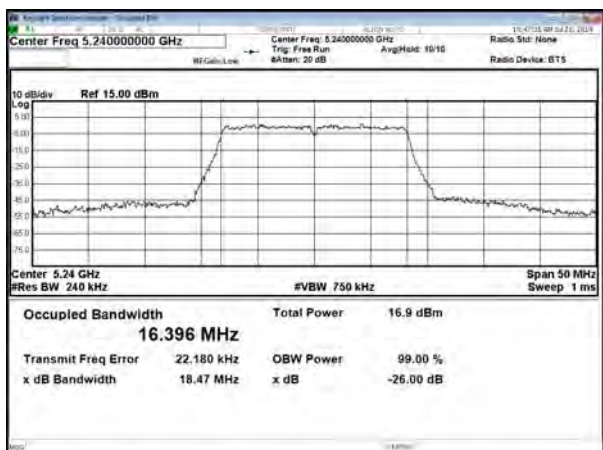
CH44



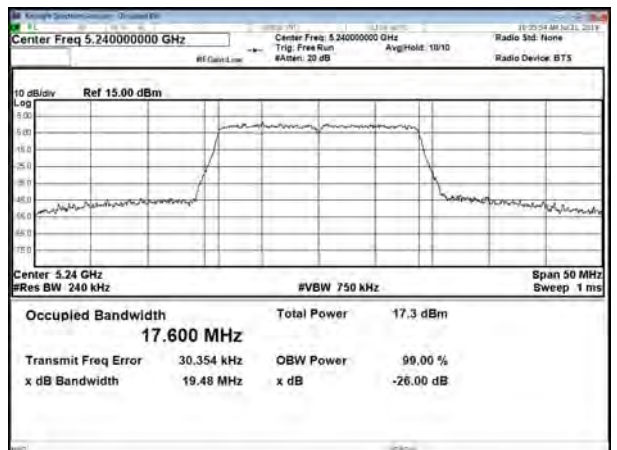
CH44



CH48

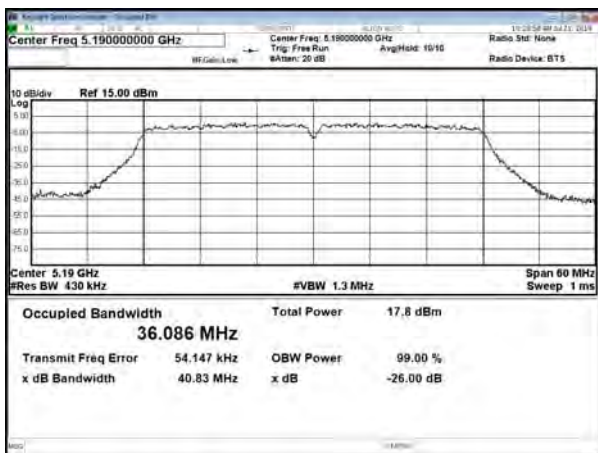


CH48

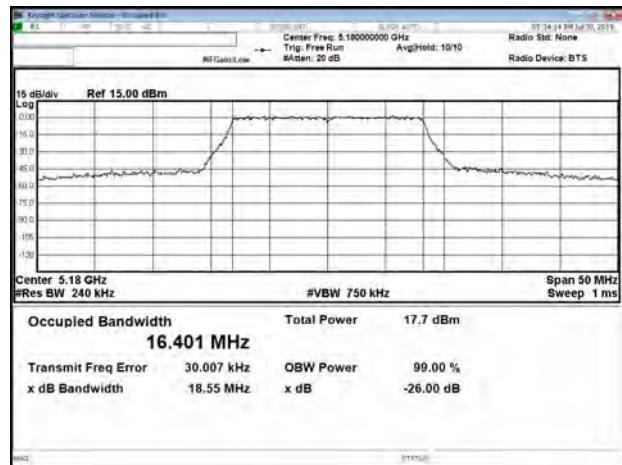




Modulation Standard: 802.11ac,VHT40  
CH38



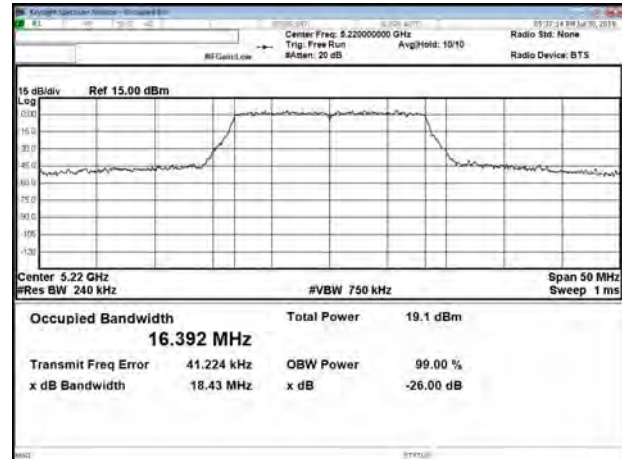
Chain 2  
Modulation Standard: 802.11a  
CH36



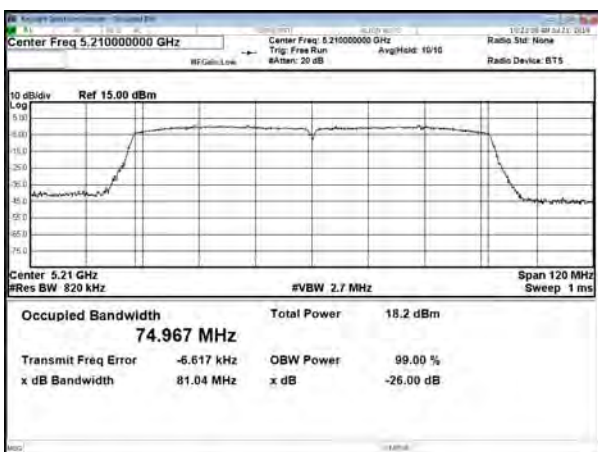
CH46



CH44



Modulation Standard: 802.11ac,VHT80 (58.5Mbps)  
CH42

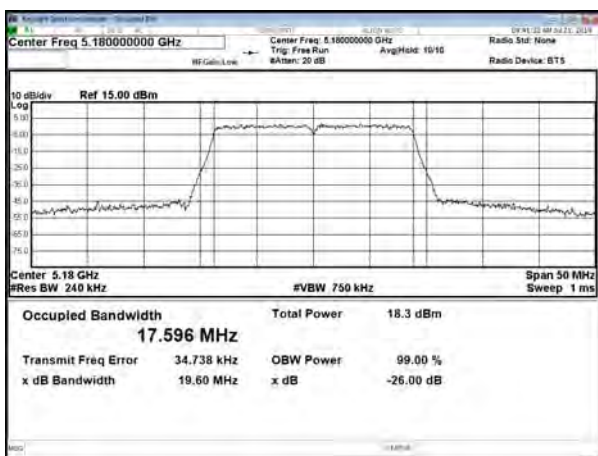


CH48

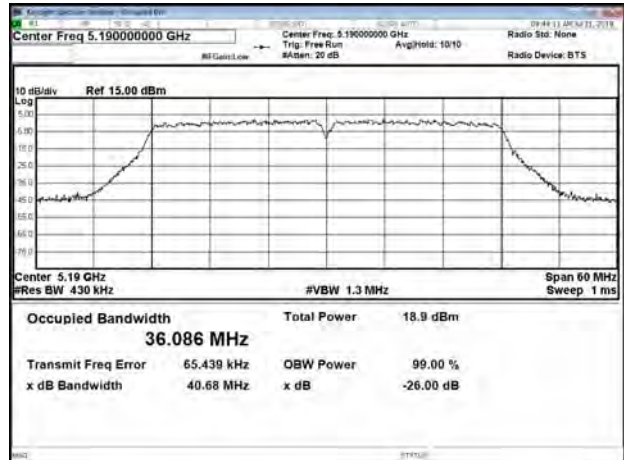




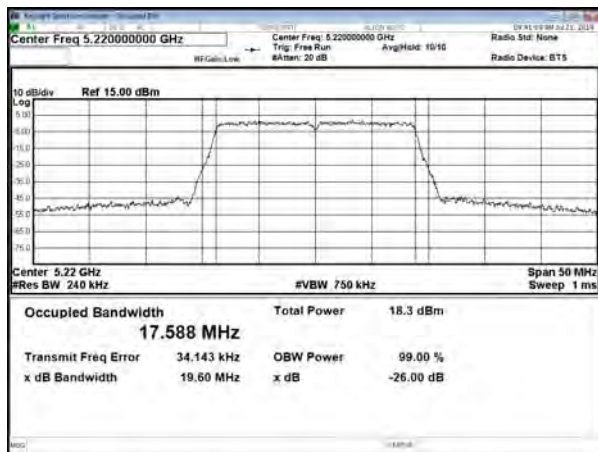
Modulation Standard: 802.11ac,VHT20  
CH36



Modulation Standard: 802.11ac,VHT40  
CH38



CH44

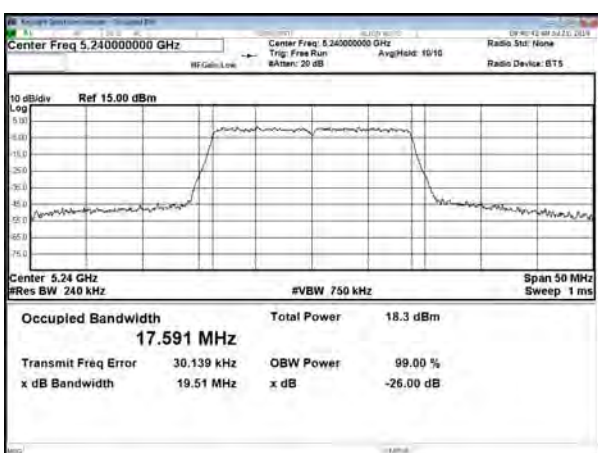


CH46

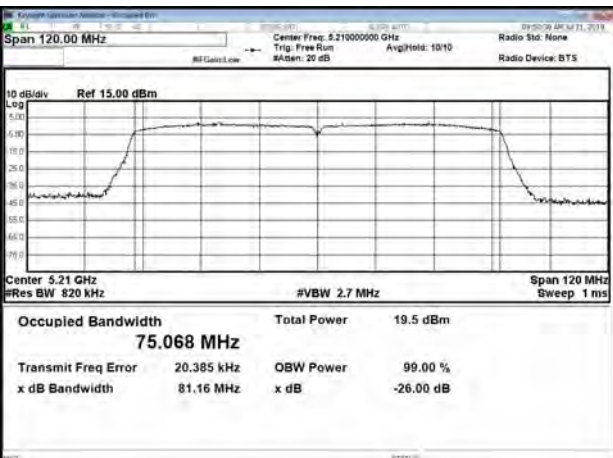


Modulation Standard: 802.11ac,VHT80

CH48



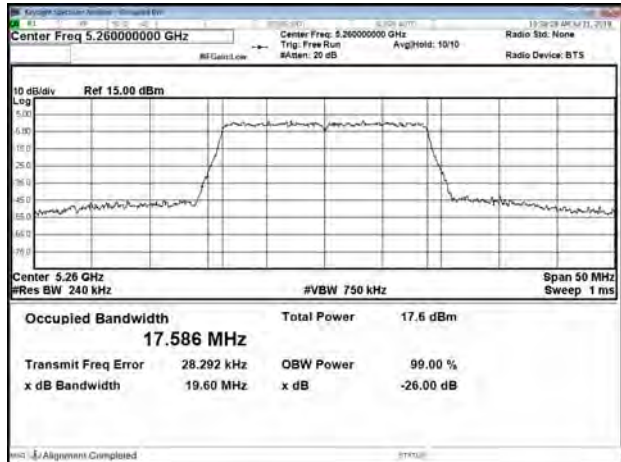
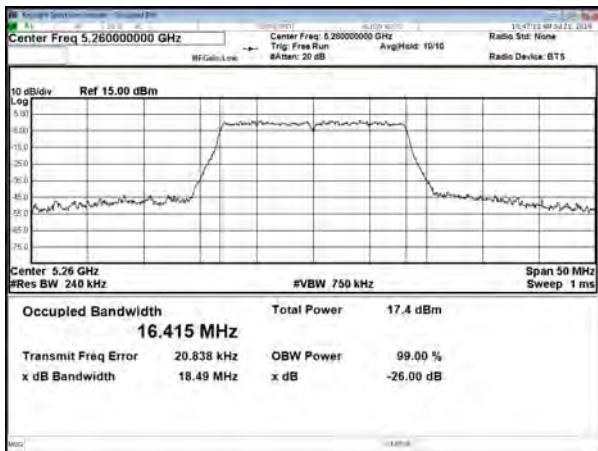
CH42



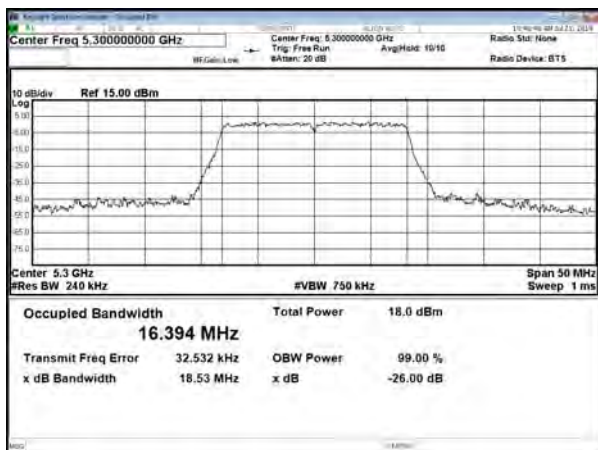


5.3G Band:  
Chain 1  
Modulation Standard: 802.11a  
CH52

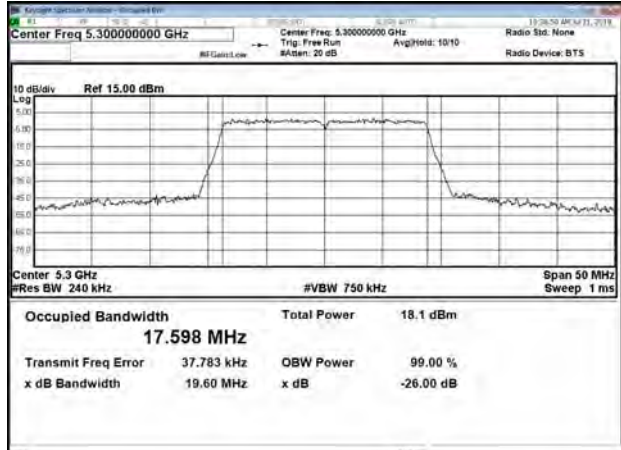
Modulation Standard: 802.11ac,VHT20  
CH52



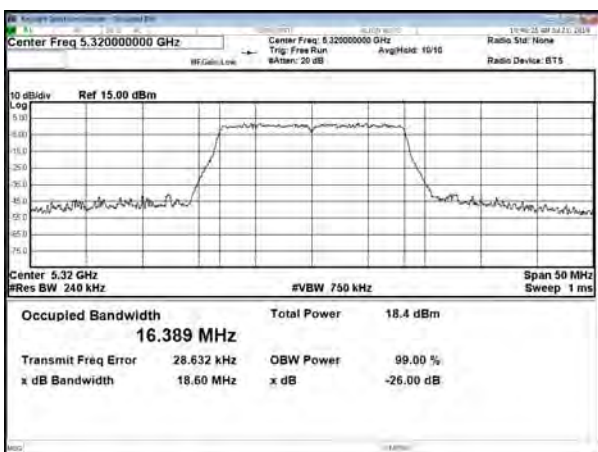
CH60



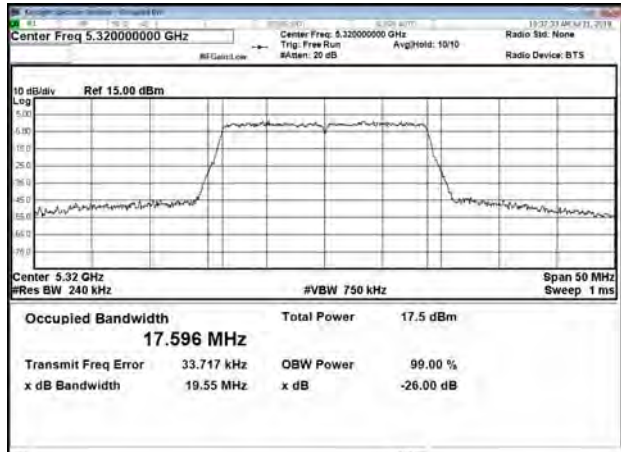
CH60



CH64



CH64





Modulation Standard: 802.11ac,VHT40  
CH54



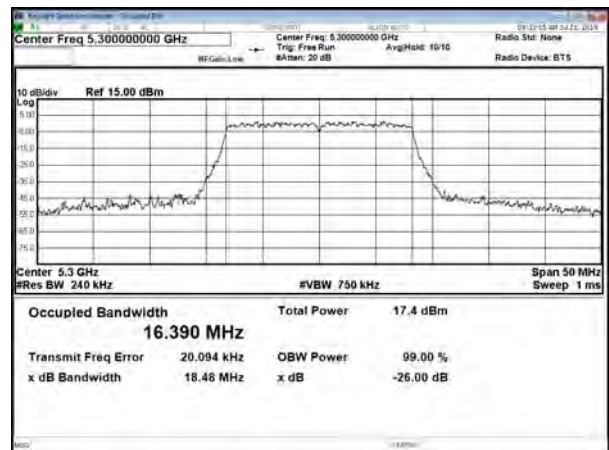
Chain 2  
Modulation Standard: 802.11a  
CH52



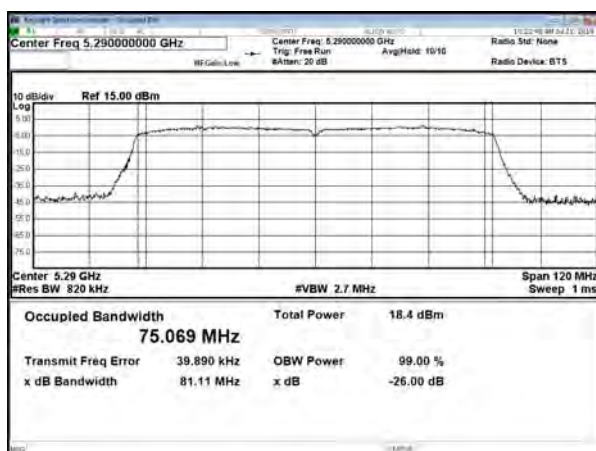
CH62



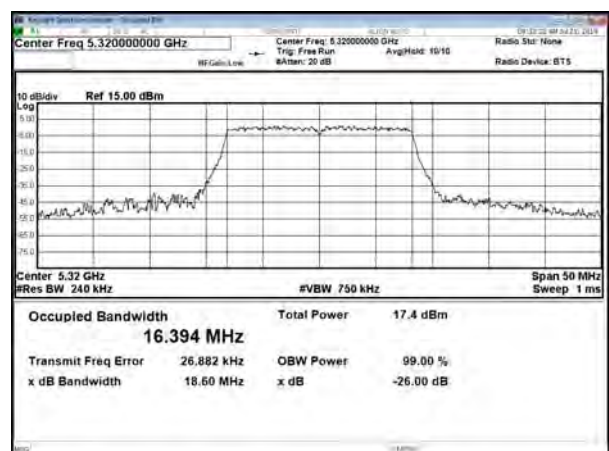
CH60



Modulation Standard: 802.11ac,VHT80  
CH58

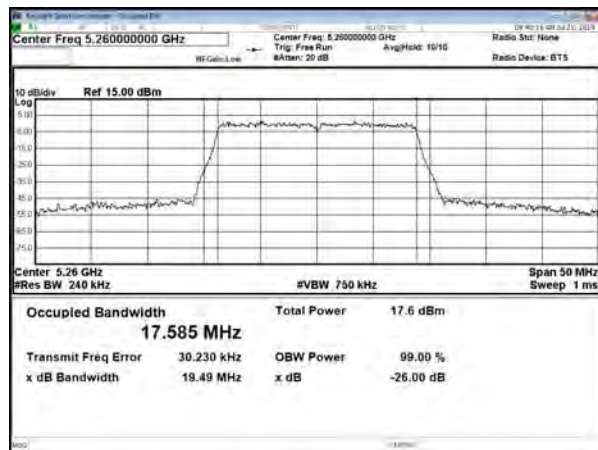


CH64





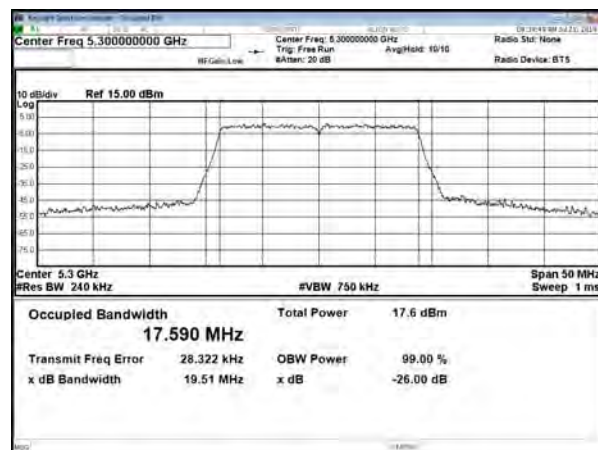
Modulation Standard: 802.11ac,VHT20  
CH52



Modulation Standard: 802.11ac,VHT40  
CH54



CH60

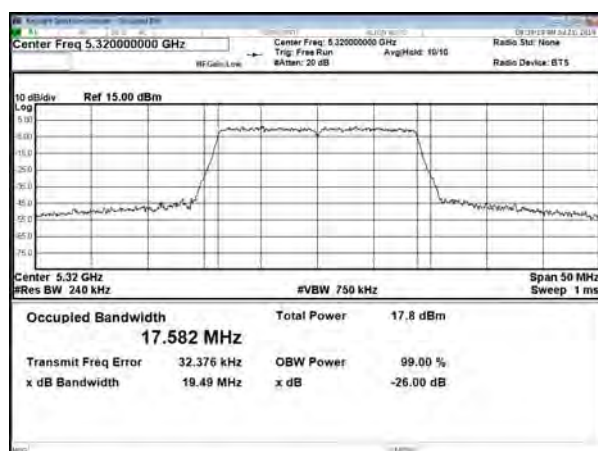


CH62

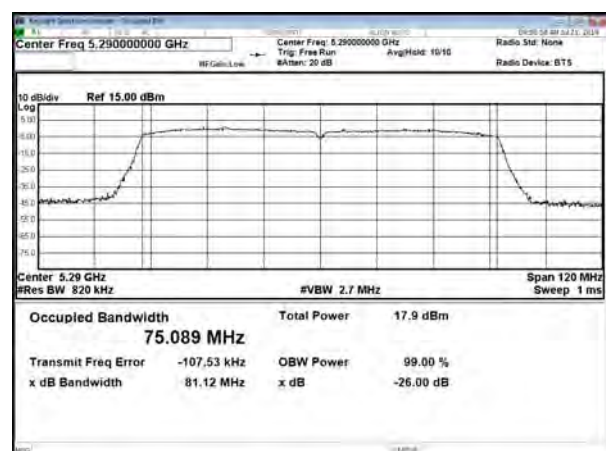


Modulation Standard: 802.11ac,VHT80

CH64



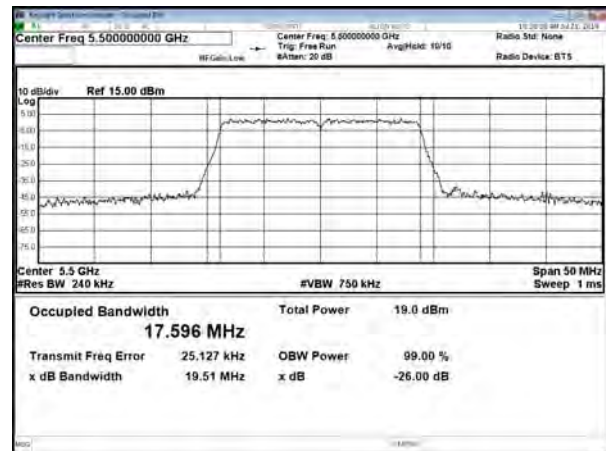
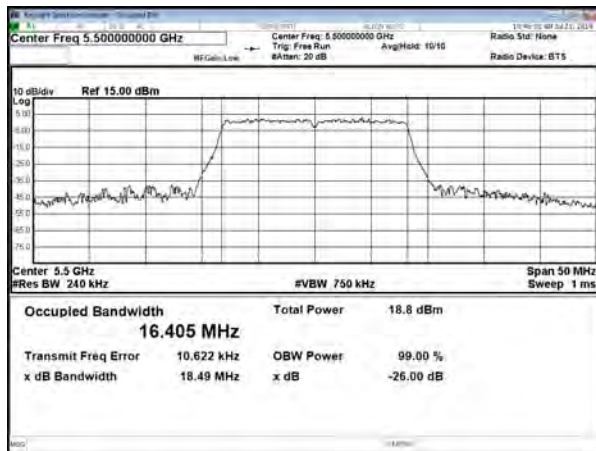
CH58



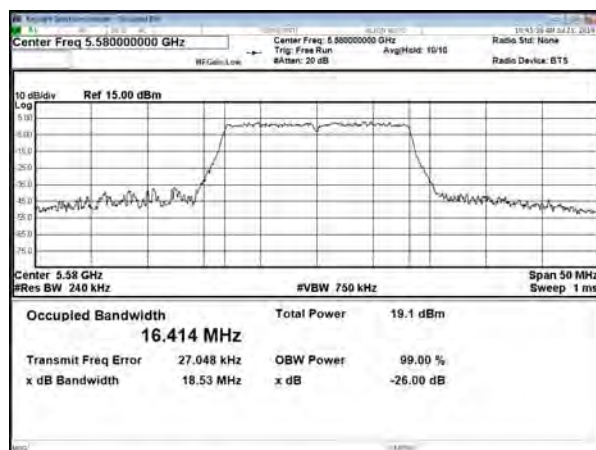


5.5G Band:  
Chain 1  
Modulation Standard: 802.11a  
CH100

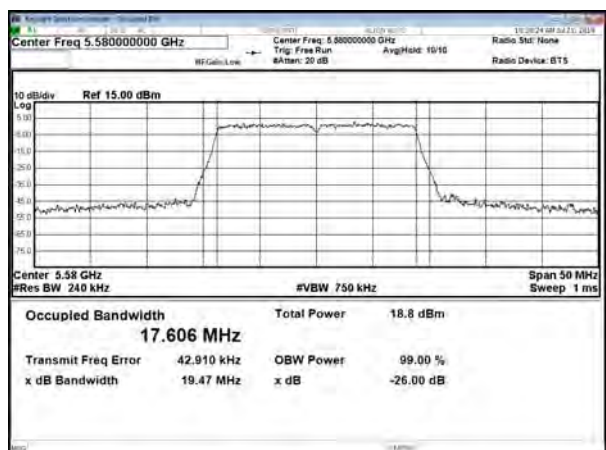
Modulation Standard: 802.11ac, VHT20  
CH100



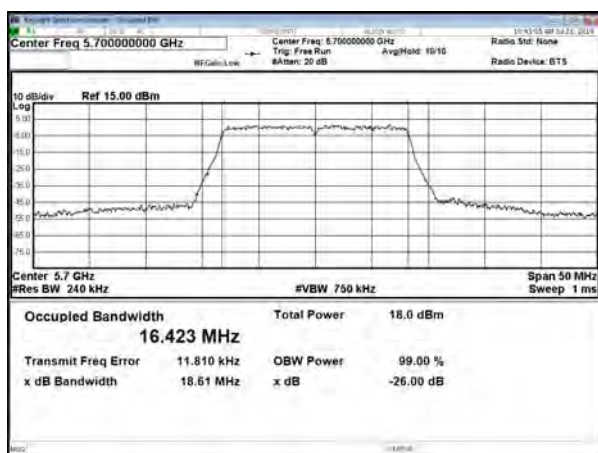
CH116



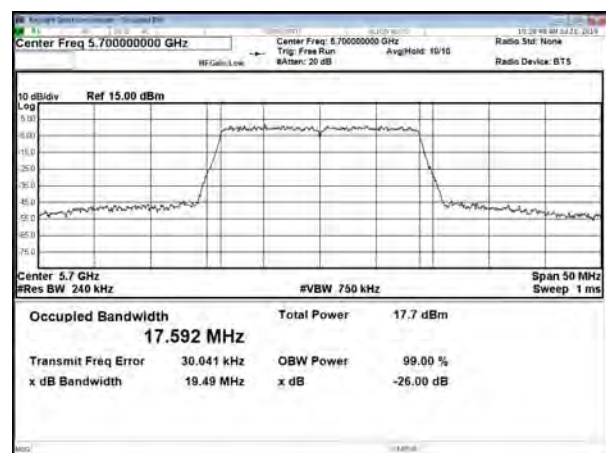
CH116



CH140



CH140

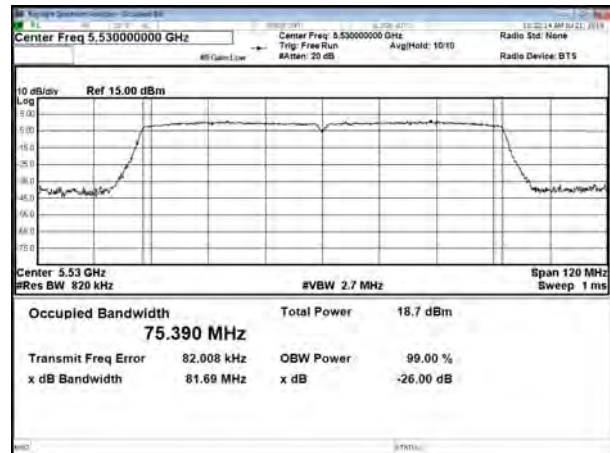




Modulation Standard: 802.11ac,VHT40  
CH102



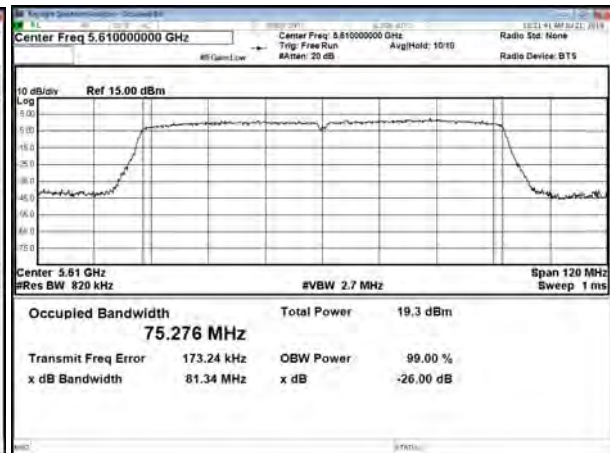
Modulation Standard: 802.11ac,VHT80  
CH106



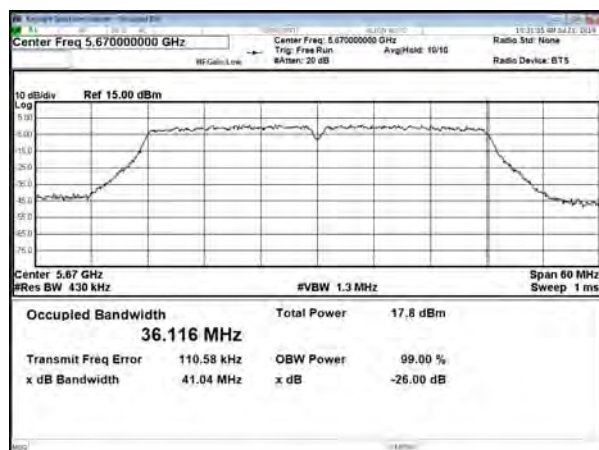
CH110



CH122

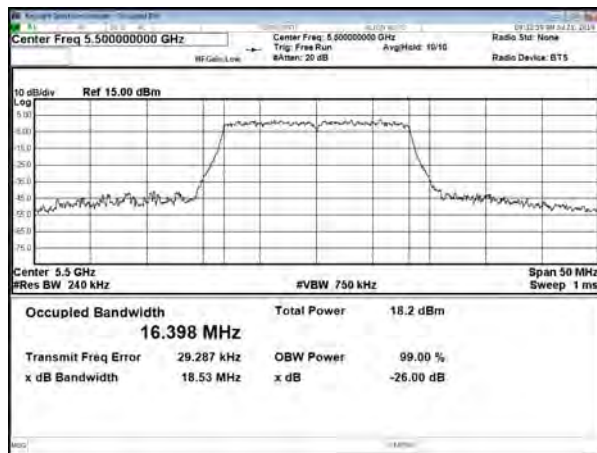
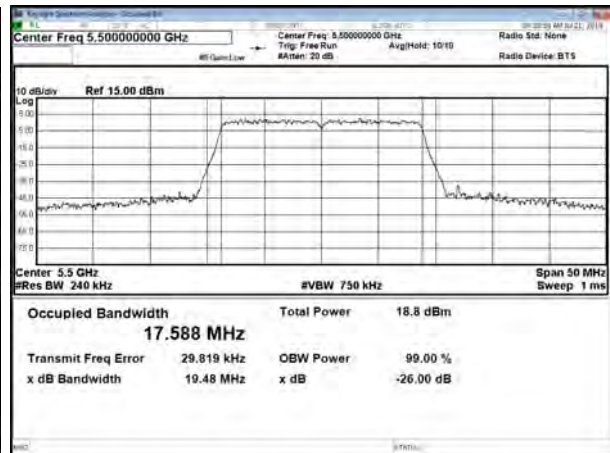


CH134

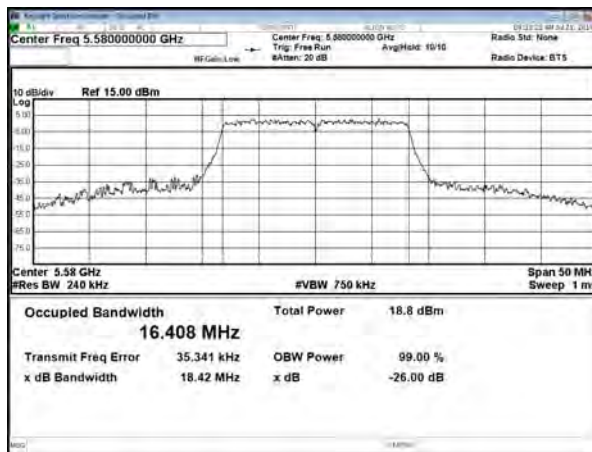




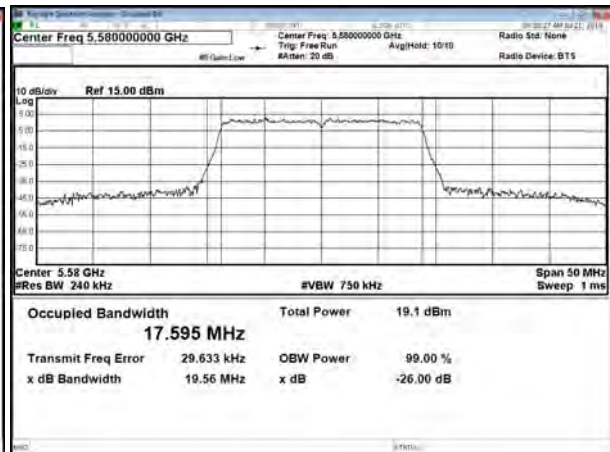
## Chain 2

Modulation Standard: 802.11a  
CH100Modulation Standard: 802.11ac,VHT20  
CH100

## CH116



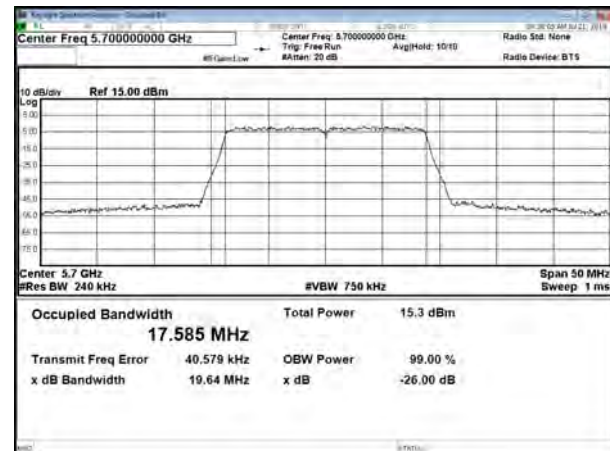
## CH116



## CH140



## CH140

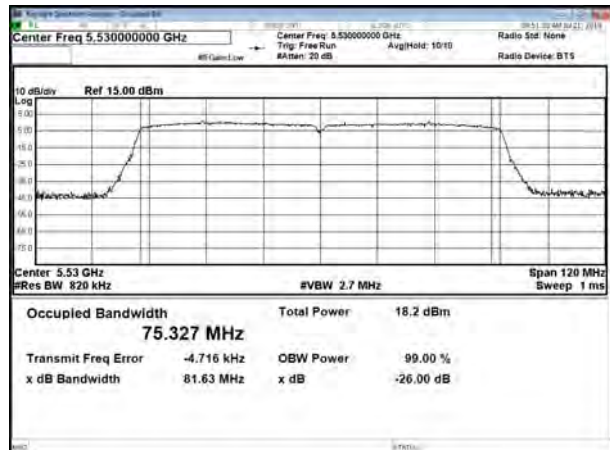




Modulation Standard: 802.11ac,VHT40  
CH102



Modulation Standard: 802.11ac,VHT80  
CH106



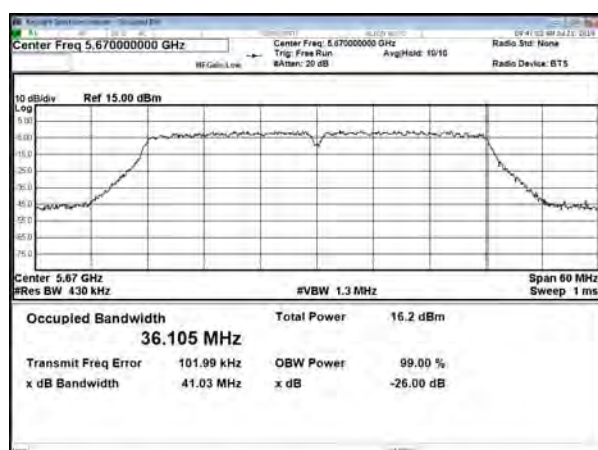
CH110



CH122



CH134





## 10. Average Power

### 10.1. Test Limit

#### Output Power:

| Frequency Band                      |                                    | Limit                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-------------------------------------|------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <input checked="" type="checkbox"/> | 5.15~5.25GHz                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                                     | Operating Mode                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <input type="checkbox"/>            | Outdoor access point               | The maximum conducted output power over the frequency band of operation shall not exceed 1 W (30dBm) provided the maximum antenna gain does not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30degrees as measured from the horizon must not exceed 125 mW (21 dBm).                       |
| <input type="checkbox"/>            | Indoor access point                | The maximum conducted output power over the frequency band of operation shall not exceed 1 W (30dBm) provided the maximum antenna gain does not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.                                                                                                                                                 |
| <input type="checkbox"/>            | Fixed point-to-point access points | The maximum conducted output power over the frequency band of operation shall not exceed 1 W (30dBm). Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. |
| <input checked="" type="checkbox"/> | client devices                     | The maximum conducted output power over the frequency band of operation shall not exceed 250 mW (24dBm) provided the maximum antenna gain does not exceed 6 dBi. 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.                                                                                                                                              |



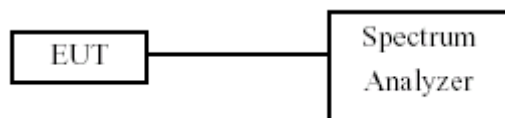
| Frequency Band                      |                 | Limit                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-------------------------------------|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <input checked="" type="checkbox"/> | 5.25-5.35 GHz   | The maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW (24dBm) or 11 dBm $10 \log B$ , where B is the 26 dB emission bandwidth in megahertz. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.                                                                                                                   |
| <input checked="" type="checkbox"/> | 5.470-5.725 GHz |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <input checked="" type="checkbox"/> | 5.725~5.85 GHz  | The maximum conducted output power over the frequency band of operation shall not exceed 1 W (30dBm). 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. |

## 10.2. Test Procedure

The transmitter output is connected to a power meter.

The cable assembly insertion loss of 11 dB (including 10 dB pad and 1 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

## 10.3. Test Setup Layout



**10.4. Test Result and Data**

Temperature: 21°C

Humidity: 56%

Test Date: Jul. 20, 2019

**In the 5.2G Band**

| Modulation Type | Channel | Frequency (MHz) | Avg Power Output (dBm) |         | Total Power (dBm) | Total Power (mW) | Power Limit (dBm) |
|-----------------|---------|-----------------|------------------------|---------|-------------------|------------------|-------------------|
|                 |         |                 | Chain 1                | Chain 2 |                   |                  |                   |
| 802.11a         | 36      | 5180            | 11.09                  | 12.64   | 14.94             | 31.218           | 24.00             |
|                 | 44      | 5220            | 11.70                  | 11.90   | 14.81             | 30.279           | 24.00             |
|                 | 48      | 5240            | 11.28                  | 11.77   | 14.54             | 28.459           | 24.00             |
| 802.11an HT20   | 36      | 5180            | 10.64                  | 12.33   | 14.58             | 28.688           | 24.00             |
|                 | 44      | 5220            | 10.51                  | 12.16   | 14.42             | 27.690           | 24.00             |
|                 | 48      | 5240            | 10.77                  | 12.15   | 14.52             | 28.346           | 24.00             |
| 802.11an HT40   | 38      | 5190            | 11.41                  | 11.99   | 14.72             | 29.648           | 24.00             |
|                 | 46      | 5230            | 11.20                  | 12.08   | 14.67             | 29.326           | 24.00             |
| 802.11ac VHT20  | 36      | 5180            | 10.83                  | 12.47   | 14.74             | 29.766           | 24.00             |
|                 | 44      | 5220            | 10.77                  | 12.26   | 14.59             | 28.767           | 24.00             |
|                 | 48      | 5240            | 10.95                  | 12.26   | 14.66             | 29.272           | 24.00             |
| 802.11ac VHT40  | 38      | 5190            | 11.44                  | 12.10   | 14.79             | 30.150           | 24.00             |
|                 | 46      | 5230            | 11.22                  | 12.14   | 14.71             | 29.612           | 24.00             |
| 802.11ac VHT80  | 42      | 5210            | 10.97                  | 12.00   | 14.53             | 28.352           | 24.00             |

**In the 5.3G Band**

| Modulation Type | Channel | Frequency (MHz) | Avg Power Output (dBm) |         | Total Power (dBm) | Total Power (mW) | Power Limit (dBm) |
|-----------------|---------|-----------------|------------------------|---------|-------------------|------------------|-------------------|
|                 |         |                 | Chain 1                | Chain 2 |                   |                  |                   |
| 802.11a         | 52      | 5260            | 11.39                  | 11.61   | 14.51             | 28.260           | 24.00             |
|                 | 60      | 5300            | 11.91                  | 11.08   | 14.53             | 28.347           | 24.00             |
|                 | 64      | 5320            | 12.1                   | 11.21   | 14.69             | 29.431           | 24.00             |
| 802.11an HT20   | 52      | 5260            | 11.17                  | 11.70   | 14.45             | 27.883           | 24.00             |
|                 | 60      | 5300            | 11.54                  | 11.44   | 14.50             | 28.188           | 24.00             |
|                 | 64      | 5320            | 11.98                  | 11.39   | 14.71             | 29.548           | 24.00             |
| 802.11an HT40   | 54      | 5270            | 11.53                  | 11.03   | 14.30             | 26.900           | 24.00             |
|                 | 62      | 5310            | 12.63                  | 11.28   | 15.02             | 31.751           | 24.00             |
| 802.11ac VHT20  | 52      | 5260            | 11.29                  | 11.86   | 14.59             | 28.805           | 24.00             |
|                 | 60      | 5300            | 11.76                  | 11.52   | 14.65             | 29.187           | 24.00             |
|                 | 64      | 5320            | 12.03                  | 11.45   | 14.76             | 29.922           | 24.00             |
| 802.11ac VHT40  | 54      | 5270            | 11.72                  | 11.26   | 14.51             | 28.225           | 24.00             |
|                 | 62      | 5310            | 12.79                  | 11.39   | 15.16             | 32.783           | 24.00             |
| 802.11ac VHT80  | 58      | 5290            | 12.06                  | 10.62   | 14.41             | 27.604           | 24.00             |

**In the 5.5G Band**

| Modulation Type | Channel | Frequency (MHz) | Avg Power Output (dBm) |         | Total Power (dBm) | Total Power (mW) | Power Limit (dBm) |
|-----------------|---------|-----------------|------------------------|---------|-------------------|------------------|-------------------|
|                 |         |                 | Chain 1                | Chain 2 |                   |                  |                   |
| 802.11a         | 100     | 5500            | 12.74                  | 11.99   | 15.39             | 34.606           | 24.00             |
|                 | 116     | 5580            | 13.74                  | 12.73   | 16.27             | 42.409           | 24.00             |
|                 | 140     | 5700            | 11.99                  | 8.74    | 13.67             | 23.294           | 24.00             |
| 802.11an HT20   | 100     | 5500            | 13.26                  | 12.62   | 15.96             | 39.465           | 24.00             |
|                 | 116     | 5580            | 12.54                  | 13.17   | 15.88             | 38.696           | 24.00             |
|                 | 140     | 5700            | 11.42                  | 8.71    | 13.28             | 21.298           | 24.00             |
| 802.11an HT40   | 102     | 5510            | 11.38                  | 11.20   | 14.30             | 26.923           | 24.00             |
|                 | 110     | 5550            | 13.01                  | 13.24   | 16.14             | 41.085           | 24.00             |
|                 | 134     | 5670            | 11.85                  | 10.05   | 14.05             | 25.427           | 24.00             |
| 802.11ac VHT20  | 100     | 5500            | 13.38                  | 12.32   | 15.89             | 38.838           | 24.00             |
|                 | 116     | 5580            | 12.60                  | 13.40   | 16.03             | 40.075           | 24.00             |
|                 | 140     | 5700            | 11.52                  | 8.94    | 13.43             | 22.025           | 24.00             |
| 802.11ac VHT40  | 102     | 5510            | 11.60                  | 11.39   | 14.51             | 28.226           | 24.00             |
|                 | 110     | 5550            | 13.19                  | 13.93   | 16.59             | 45.562           | 24.00             |
|                 | 134     | 5670            | 11.90                  | 10.11   | 14.11             | 25.745           | 24.00             |
| 802.11ac VHT80  | 106     | 5530            | 11.70                  | 10.57   | 14.18             | 26.194           | 24.00             |
|                 | 122     | 5610            | 12.17                  | 11.74   | 14.97             | 31.410           | 24.00             |

**In the 5.8G Band**

| Modulation Type | Channel | Frequency (MHz) | Avg Power Output (dBm) |         | Total Power (dBm) | Total Power (mW) | Power Limit (dBm) |
|-----------------|---------|-----------------|------------------------|---------|-------------------|------------------|-------------------|
|                 |         |                 | Chain 1                | Chain 2 |                   |                  |                   |
| 802.11a         | 149     | 5745            | 11.59                  | 9.30    | 13.60             | 22.933           | 30.00             |
|                 | 157     | 5785            | 10.84                  | 9.13    | 13.08             | 20.319           | 30.00             |
|                 | 165     | 5825            | 9.09                   | 7.69    | 11.46             | 13.985           | 30.00             |
| 802.11an HT20   | 149     | 5745            | 15.33                  | 12.66   | 17.21             | 52.569           | 30.00             |
|                 | 157     | 5785            | 14.16                  | 12.47   | 16.41             | 43.722           | 30.00             |
|                 | 165     | 5825            | 13.75                  | 11.31   | 15.71             | 37.234           | 30.00             |
| 802.11an HT40   | 151     | 5755            | 13.99                  | 11.89   | 16.08             | 40.514           | 30.00             |
|                 | 159     | 5795            | 12.44                  | 10.87   | 14.74             | 29.757           | 30.00             |
| 802.11ac VHT20  | 149     | 5745            | 15.47                  | 13.22   | 17.50             | 56.226           | 30.00             |
|                 | 157     | 5785            | 14.40                  | 12.53   | 16.58             | 45.448           | 30.00             |
|                 | 165     | 5825            | 13.82                  | 11.45   | 15.81             | 38.063           | 30.00             |
| 802.11ac VHT40  | 151     | 5755            | 14.09                  | 12.03   | 16.19             | 41.604           | 30.00             |
|                 | 159     | 5795            | 12.64                  | 10.90   | 14.87             | 30.668           | 30.00             |
| 802.11ac VHT80  | 155     | 5775            | 12.69                  | 11.38   | 15.09             | 32.318           | 30.00             |



## 11. PPSD

### 11.1.Test Limit

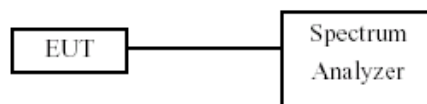
#### PSD:

| Frequency Band                      |                                    | Limit         |
|-------------------------------------|------------------------------------|---------------|
| <input checked="" type="checkbox"/> | 5.15~5.25GHz                       |               |
|                                     | Operating Mode                     |               |
| <input type="checkbox"/>            | Outdoor access point               | 17 dBm/MHz    |
| <input type="checkbox"/>            | Indoor access point                | 17 dBm/MHz    |
| <input type="checkbox"/>            | Fixed point-to-point access points | 17 dBm/MHz    |
| <input checked="" type="checkbox"/> | Mobile and portable client devices | 11 dBm/MHz    |
| <input checked="" type="checkbox"/> | 5.725~5.85 GHz                     | 11 dBm/MHz    |
| <input checked="" type="checkbox"/> | 5.470-5.725 GHz                    | 11 dBm/MHz    |
| <input checked="" type="checkbox"/> | 5.725~5.85 GHz                     | 30 dBm/500kHz |

### 11.2.Test Procedure

Reference to KDB789033 D02 General UNII Test Procedures New Rules v02r01

### 11.3.Test Setup Layout



**11.4. Test Result and Data**

Temperature: 21°C

Humidity: 56%

Test Date: Jul. 20, 2019

**In the 5.2G Band**

| Modulation Type | CH | Freq. (MHz) | Meas PPSSD (dBm/MHz) |         | Sum chain (dBm) | Duty Cycle CF(dB) | Total Corr'd PPSSD (dBm/MHz) | PPSSD Limit (dBm/MHz) |
|-----------------|----|-------------|----------------------|---------|-----------------|-------------------|------------------------------|-----------------------|
|                 |    |             | Chain 1              | Chain 2 |                 |                   |                              |                       |
| 802.11a         | 36 | 5180        | 0.406                | 0.774   | 3.60            | 0.00              | 3.60                         | 10.46                 |
|                 | 44 | 5220        | -0.044               | 0.515   | 3.25            | 0.00              | 3.25                         | 10.46                 |
|                 | 48 | 5240        | 0.062                | 0.992   | 3.56            | 0.00              | 3.56                         | 10.46                 |
| 802.11ac VHT20  | 36 | 5180        | -0.564               | 0.927   | 3.26            | 0.00              | 3.26                         | 10.46                 |
|                 | 44 | 5220        | -0.458               | 0.386   | 2.99            | 0.00              | 2.99                         | 10.46                 |
|                 | 48 | 5240        | -0.118               | 0.115   | 3.01            | 0.00              | 3.01                         | 10.46                 |
| 802.11ac VHT40  | 38 | 5190        | -2.467               | -1.718  | 0.93            | 0.00              | 0.93                         | 10.46                 |
|                 | 46 | 5230        | -3.024               | -2.181  | 0.43            | 0.00              | 0.43                         | 10.46                 |
| 802.11ac VHT80  | 42 | 5210        | -6.178               | -5.222  | -2.66           | 0.00              | -2.66                        | 10.46                 |

Note: PPSSD Limit:  $11 - (6.54 - 6) = 10.46 \text{ dBm/MHz}$ **In the 5.3G Band**

| Modulation Type | CH | Freq. (MHz) | Meas PPSSD (dBm/MHz) |         | Sum chain (dBm) | Duty Cycle CF(dB) | Total Corr'd PPSSD (dBm/MHz) | PPSSD Limit (dBm/MHz) |
|-----------------|----|-------------|----------------------|---------|-----------------|-------------------|------------------------------|-----------------------|
|                 |    |             | Chain 1              | Chain 2 |                 |                   |                              |                       |
| 802.11a         | 52 | 5260        | -0.026               | 0.668   | 3.35            | 0.00              | 3.35                         | 10.46                 |
|                 | 60 | 5300        | 0.536                | 0       | 3.29            | 0.00              | 3.29                         | 10.46                 |
|                 | 64 | 5320        | 0.66                 | 0.131   | 3.41            | 0.00              | 3.41                         | 10.46                 |
| 802.11ac VHT20  | 52 | 5260        | 0.306                | -0.112  | 3.11            | 0.00              | 3.11                         | 10.46                 |
|                 | 60 | 5300        | 0.511                | -0.744  | 2.94            | 0.00              | 2.94                         | 10.46                 |
|                 | 64 | 5320        | 0.401                | 0.008   | 3.22            | 0.00              | 3.22                         | 10.46                 |
| 802.11ac VHT40  | 54 | 5270        | -2.66                | -2.897  | 0.23            | 0.00              | 0.23                         | 10.46                 |
|                 | 62 | 5310        | -2.101               | -3.316  | 0.34            | 0.00              | 0.34                         | 10.46                 |
| 802.11ac VHT80  | 58 | 5290        | -5.808               | -6.11   | -2.95           | 0.00              | -2.95                        | 10.46                 |

Note: PPSSD Limit:  $11 - (6.54 - 6) = 10.46 \text{ dBm/MHz}$

**In the 5.5G Band**

| Modulation Type | CH  | Freq. (MHz) | Meas PPSSD (dBm/MHz) |         | Sum chain (dBm) | Duty Cycle CF(dB) | Total Corr'd PPSSD (dBm/MHz) | PPSSD Limit (dBm/MHz) |
|-----------------|-----|-------------|----------------------|---------|-----------------|-------------------|------------------------------|-----------------------|
|                 |     |             | Chain 1              | Chain 2 |                 |                   |                              |                       |
| 802.11a         | 100 | 5500        | 1.3                  | 1.412   | 4.37            | 0.00              | 4.37                         | 10.75                 |
|                 | 116 | 5580        | 1.908                | 2.504   | 5.23            | 0.00              | 5.23                         | 10.75                 |
|                 | 140 | 5700        | 0.653                | -1.408  | 2.75            | 0.00              | 2.75                         | 10.75                 |
| 802.11ac VHT20  | 100 | 5500        | 1.214                | 1.219   | 4.23            | 0.00              | 4.23                         | 10.75                 |
|                 | 116 | 5580        | 1.176                | 2.204   | 4.73            | 0.00              | 4.73                         | 10.75                 |
|                 | 140 | 5700        | -0.216               | -1.865  | 2.05            | 0.00              | 2.05                         | 10.75                 |
| 802.11ac VHT40  | 102 | 5510        | -2.775               | -2.98   | 0.13            | 0.00              | 0.13                         | 10.75                 |
|                 | 110 | 5550        | -1.008               | -1.051  | 1.98            | 0.00              | 1.98                         | 10.75                 |
|                 | 134 | 5670        | -2.117               | -4.201  | -0.02           | 0.00              | -0.02                        | 10.75                 |
| 802.11ac VHT80  | 106 | 5530        | -6.215               | -6.058  | -3.13           | 0.00              | -3.13                        | 10.75                 |
|                 | 122 | 5610        | -4.671               | -5.41   | -2.01           | 0.00              | -2.01                        | 10.75                 |

Note: PPSSD Limit:11-(6.25-6)=10.75dBm/MHz

**In the 5.8G Band**

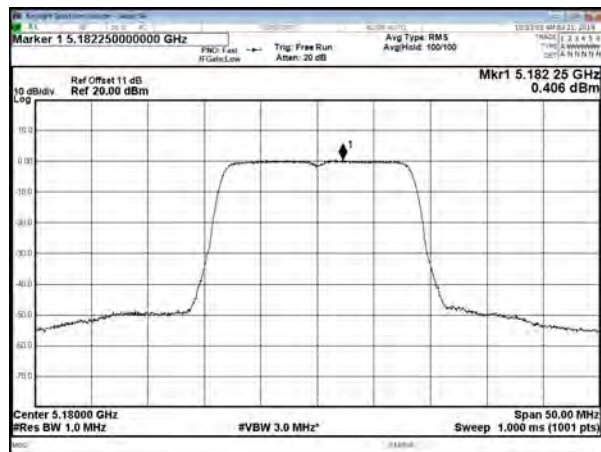
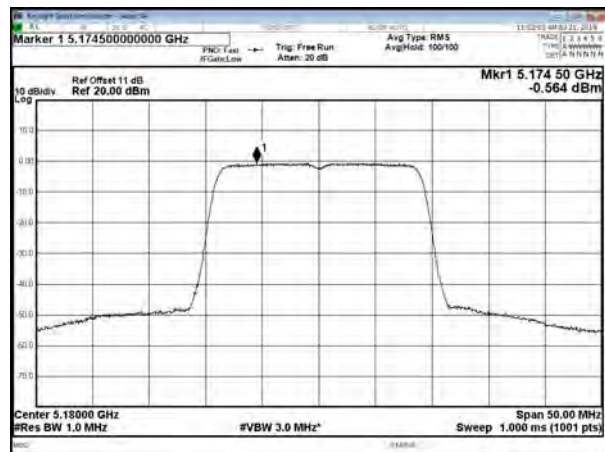
| Modulation Type | CH  | Freq. (MHz) | Meas PPSSD (dBm/MHz) |         | Sum chain (dBm) | Duty Cycle CF(dB) | 10log(500K Hz/RBW) CF (dB) | Total Corr'd PPSSD (dBm/500kHz) | PPSSD Limit (dBm/500kHz) |
|-----------------|-----|-------------|----------------------|---------|-----------------|-------------------|----------------------------|---------------------------------|--------------------------|
|                 |     |             | Chain 1              | Chain 2 |                 |                   |                            |                                 |                          |
| 802.11a         | 149 | 5745        | 0.42                 | -1.133  | 2.72            | 0.00              | -3.01                      | -0.29                           | 28.63                    |
|                 | 157 | 5785        | -1.015               | -1.801  | 1.62            | 0.00              | -3.01                      | -1.39                           | 28.63                    |
|                 | 165 | 5825        | -2.297               | -2.75   | 0.49            | 0.00              | -3.01                      | -2.52                           | 28.63                    |
| 802.11ac VHT20  | 149 | 5745        | 3.837                | 2.257   | 6.13            | 0.00              | -3.01                      | 3.12                            | 28.63                    |
|                 | 157 | 5785        | 3.223                | 1.865   | 5.61            | 0.00              | -3.01                      | 2.60                            | 28.63                    |
|                 | 165 | 5825        | 1.968                | 0.72    | 4.40            | 0.00              | -3.01                      | 1.39                            | 28.63                    |
| 802.11ac VHT40  | 155 | 5755        | -0.226               | -2.314  | 1.86            | 0.00              | -3.01                      | -1.15                           | 28.63                    |
|                 | 159 | 5795        | -1.714               | -3.102  | 0.66            | 0.00              | -3.01                      | -2.35                           | 28.63                    |
| 802.11ac VHT80  | 155 | 5775        | -4.019               | -5.559  | -1.71           | 0.00              | -3.01                      | -4.72                           | 28.63                    |

Note: PPSSD Limit:30-(7.37-6)=28.63dBm/MHz

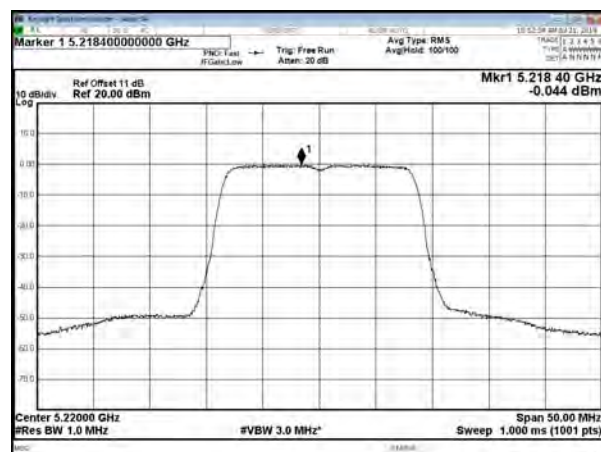


5.2G Band:

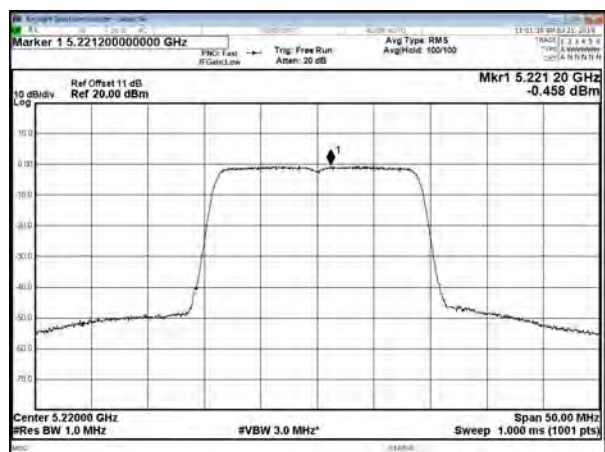
Chain 1

Modulation Standard: 802.11a  
CH36Modulation Standard: 802.11ac,VHT20  
CH36

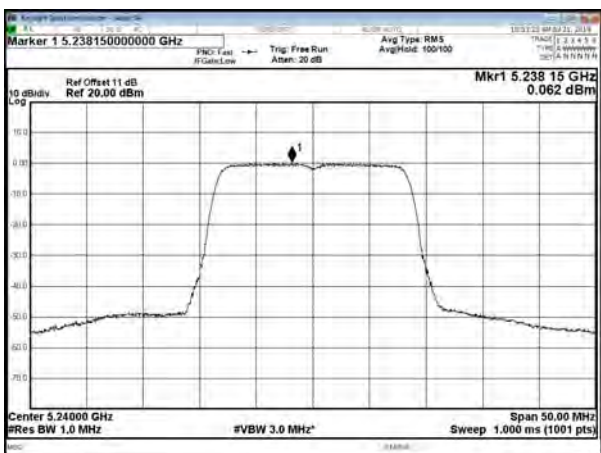
CH44



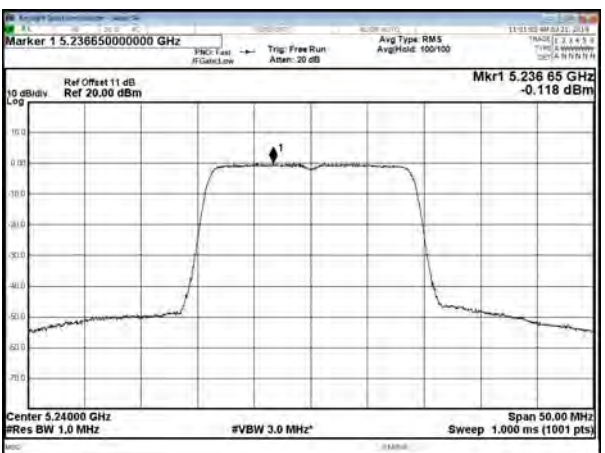
CH44



CH48

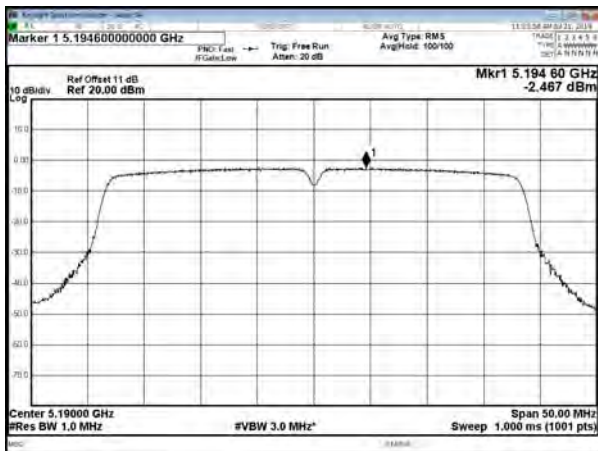


CH48

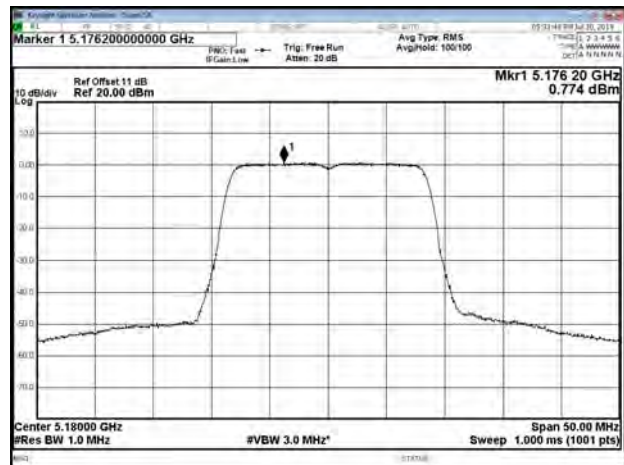




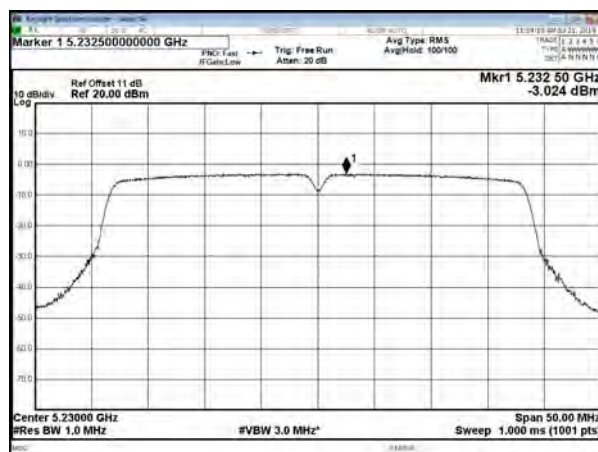
Modulation Standard: 802.11ac,VHT40  
CH38



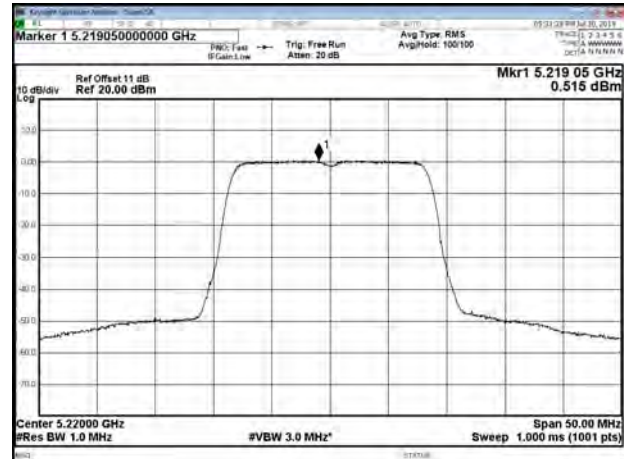
Chain 2  
Modulation Standard: 802.11a  
CH36



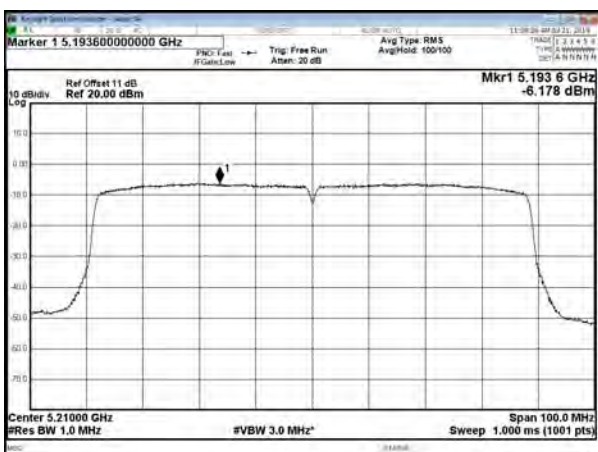
CH46



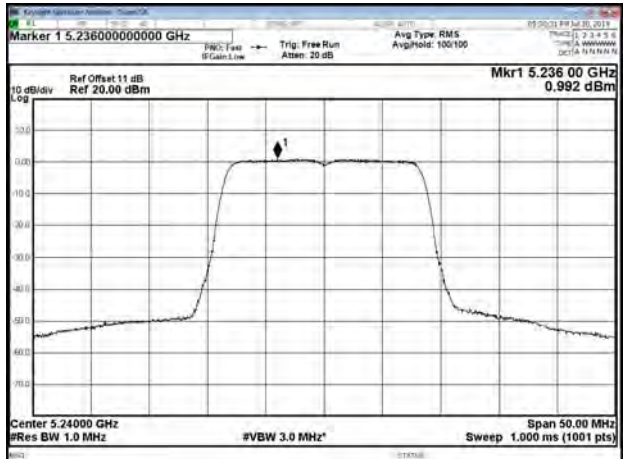
CH44



Modulation Standard: 802.11ac,VHT80  
CH42

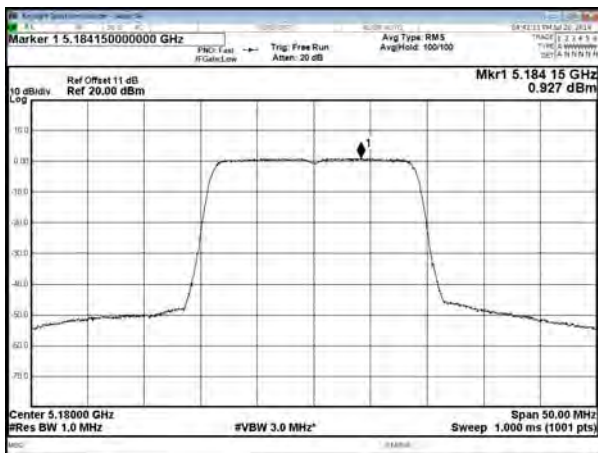


CH48

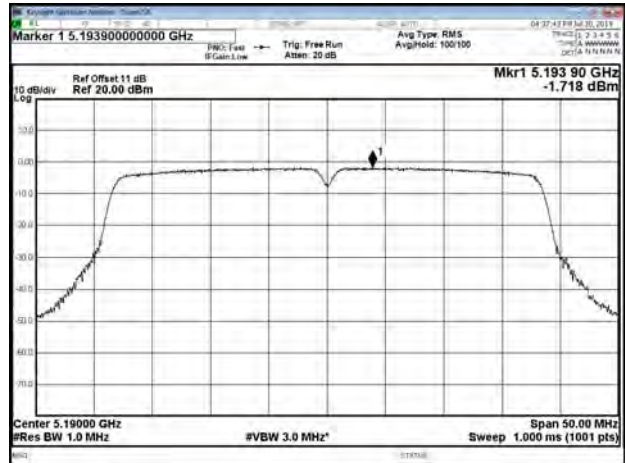




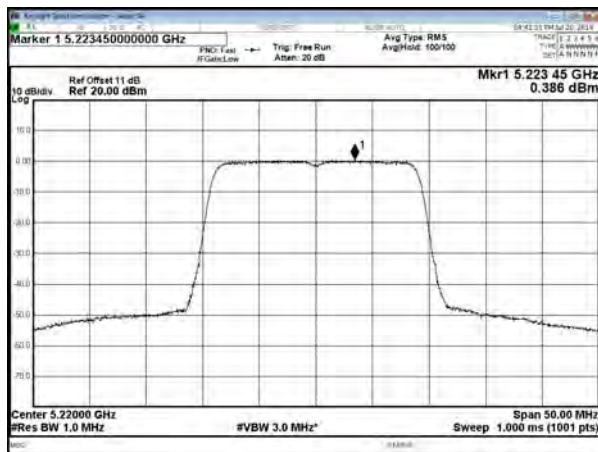
Modulation Standard: 802.11ac,VHT20  
CH36



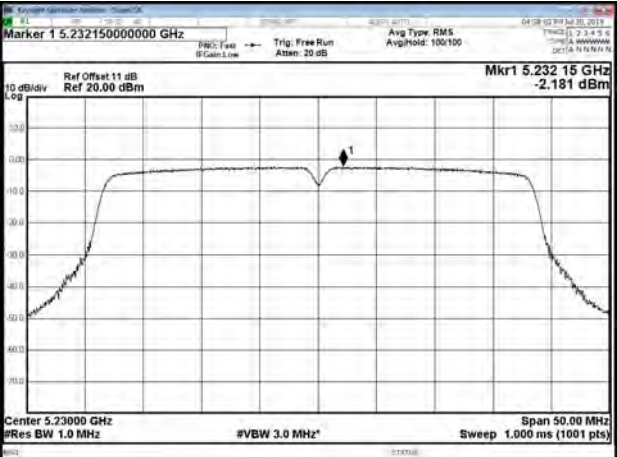
Modulation Standard: 802.11ac,VHT40  
CH38



CH44

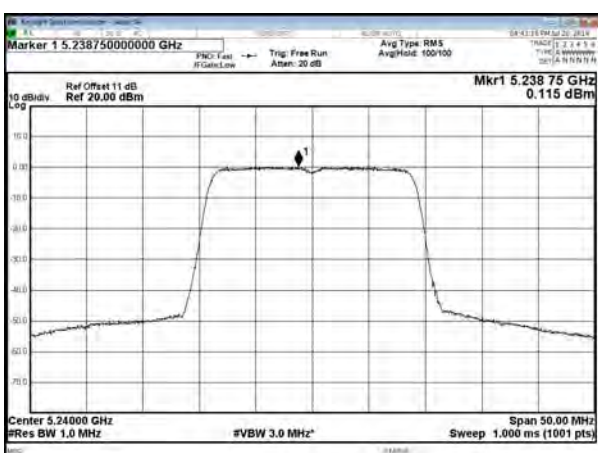


CH46

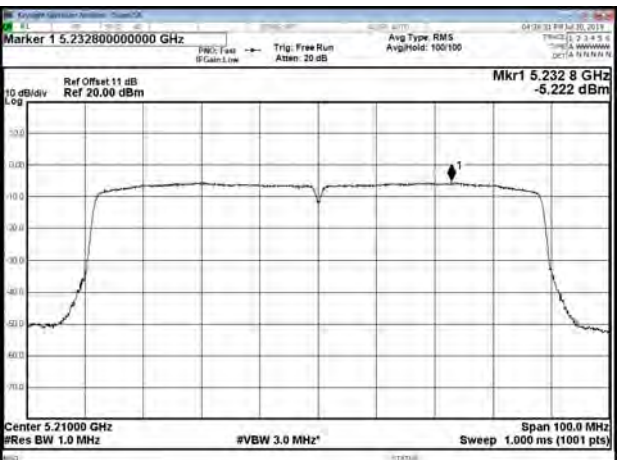


Modulation Standard: 802.11ac,VHT80

CH48



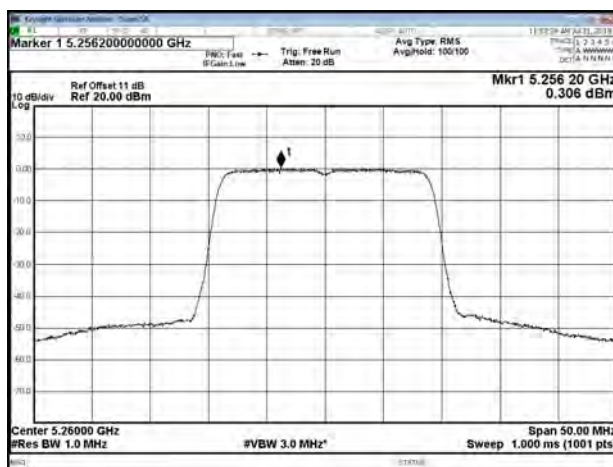
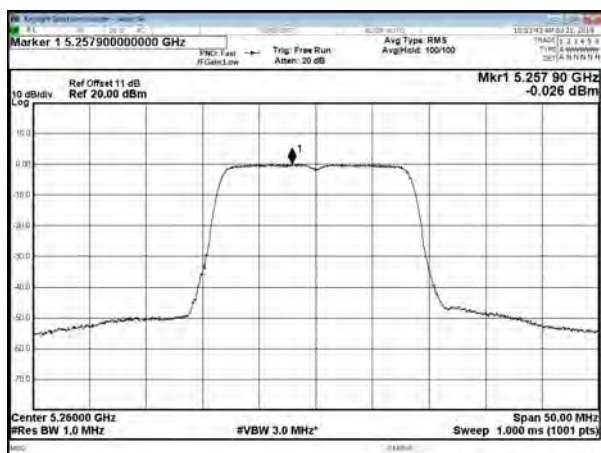
CH42





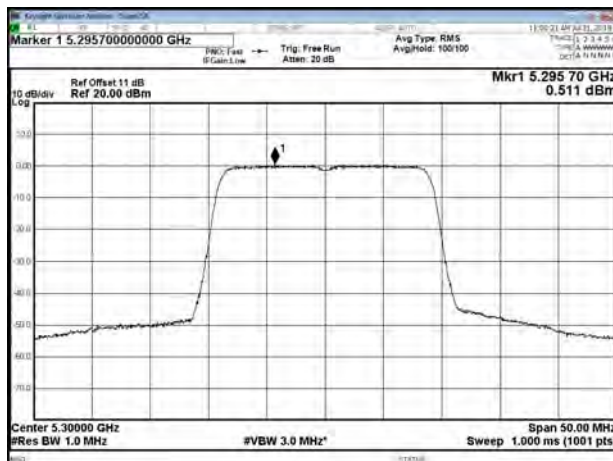
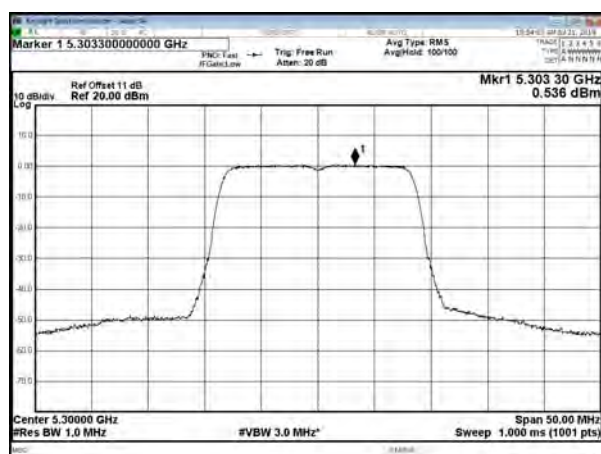
5.3G Band:  
Chain 1  
Modulation Standard: 802.11a  
CH52

Modulation Standard: 802.11ac,VHT20  
CH52



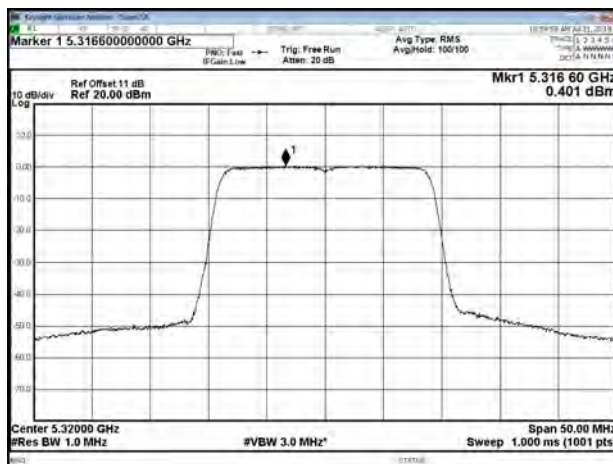
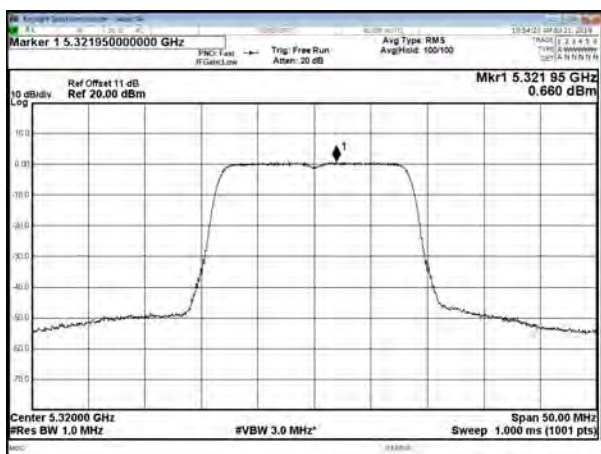
CH60

CH60



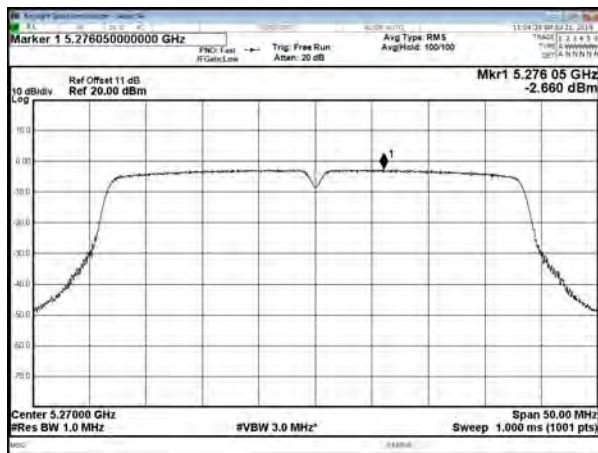
CH64

CH64

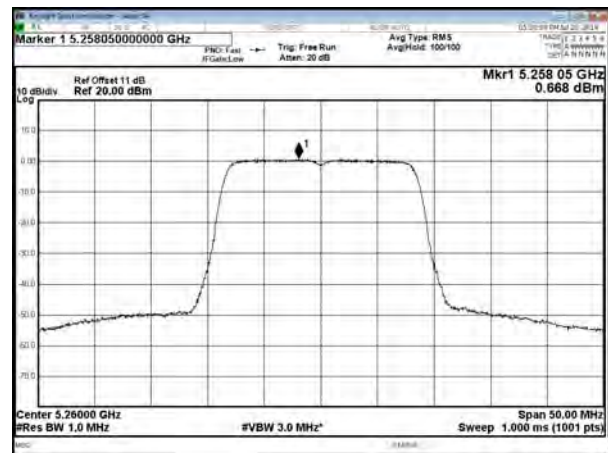




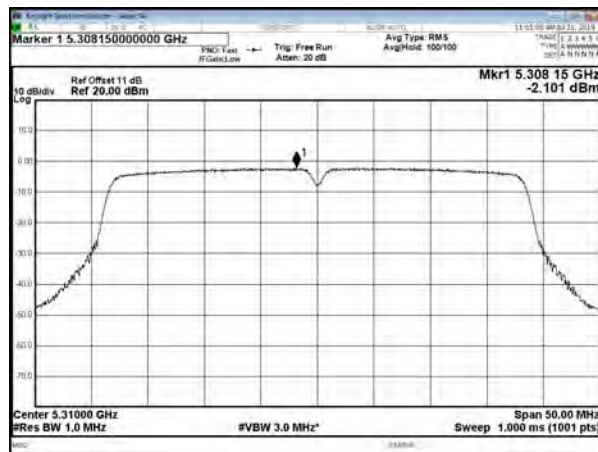
Modulation Standard: 802.11ac,VHT40  
CH54



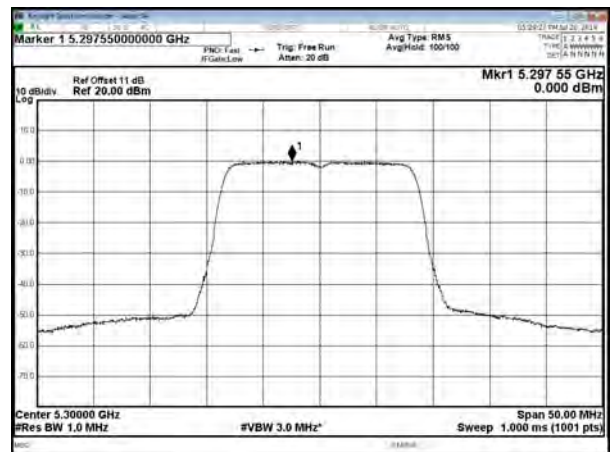
Chain 2  
Modulation Standard: 802.11a  
CH52



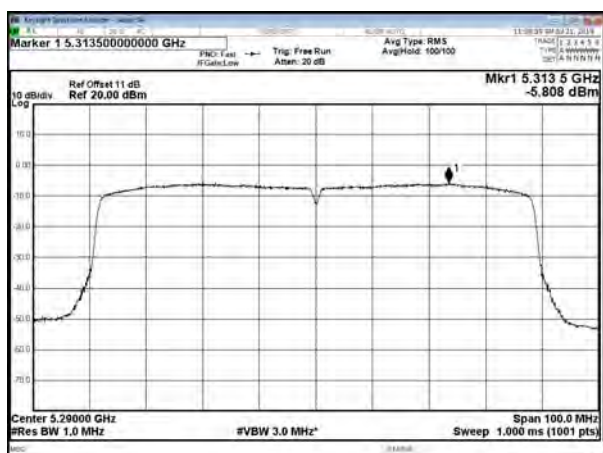
CH62



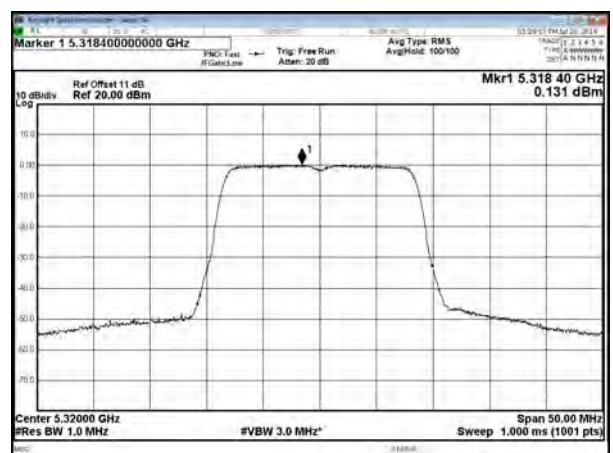
CH60



Modulation Standard: 802.11ac,VHT80  
CH58

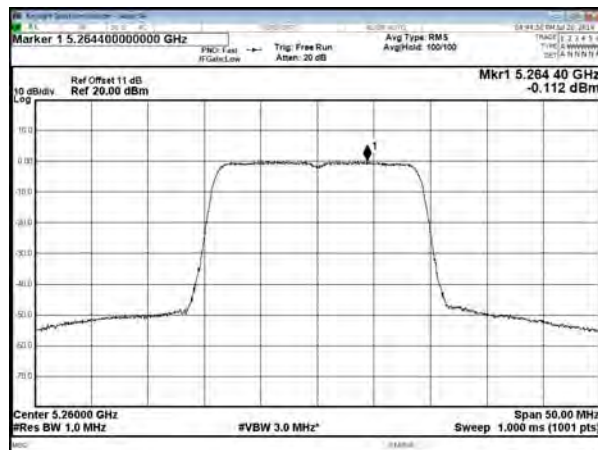


CH64

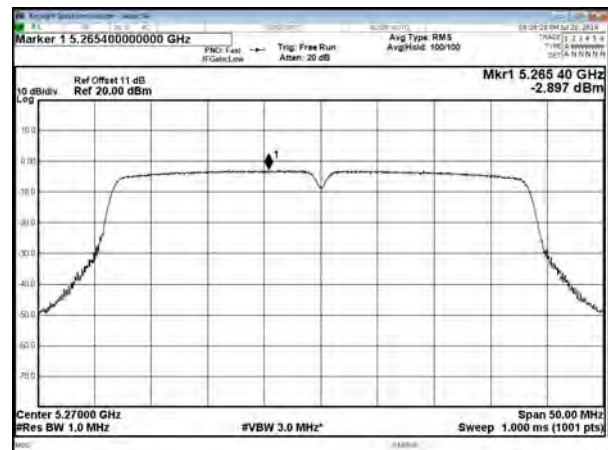




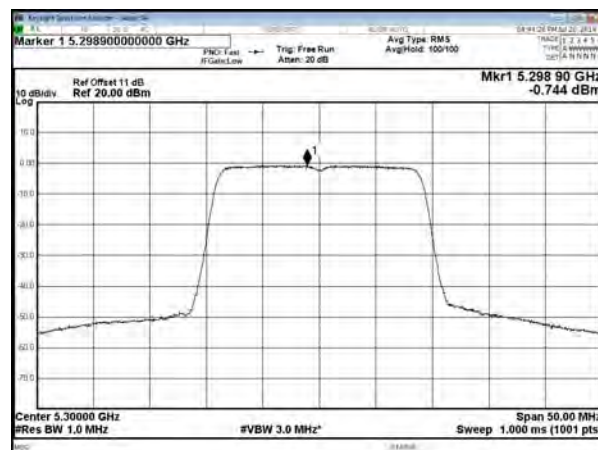
Modulation Standard: 802.11ac,VHT20  
CH52



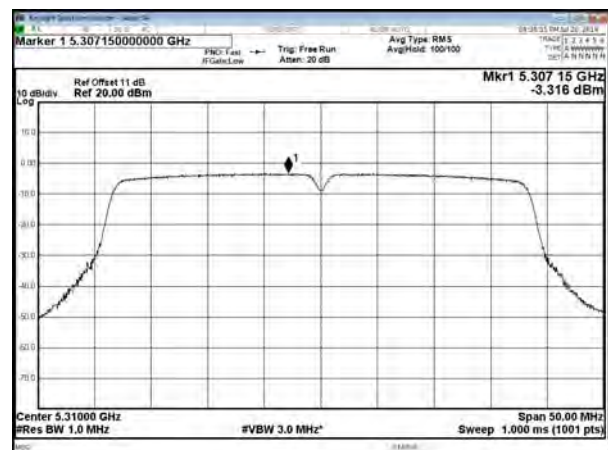
Modulation Standard: 802.11ac,VHT40  
CH54



CH60

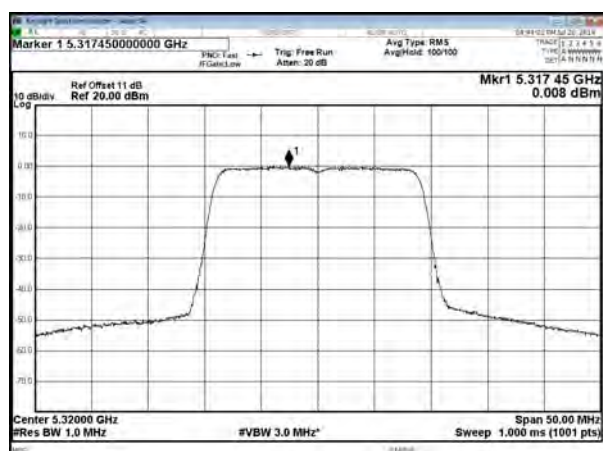


CH62

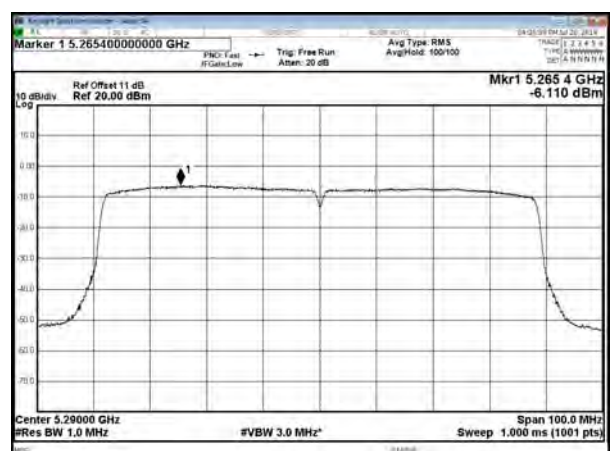


Modulation Standard: 802.11ac,VHT80

CH64



CH58



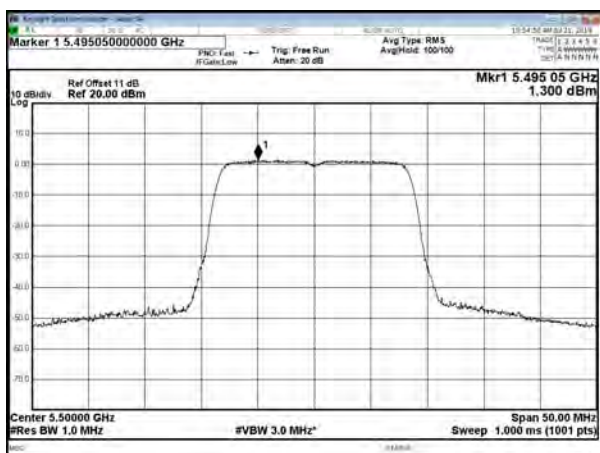
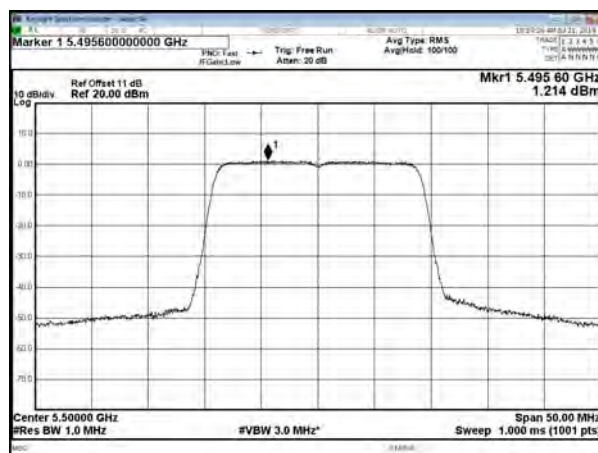


5.5G Band:

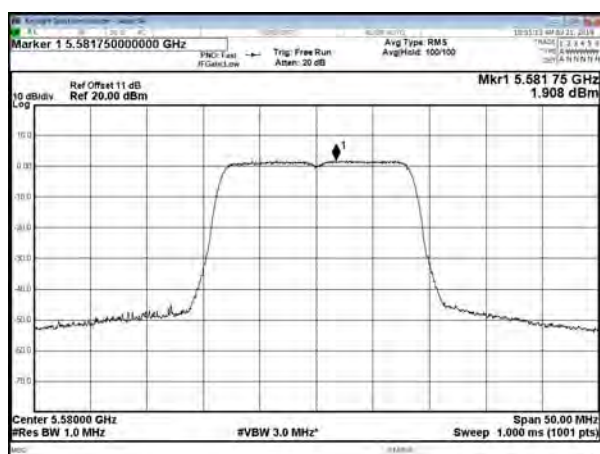
Chain 1

Modulation Standard: 802.11a

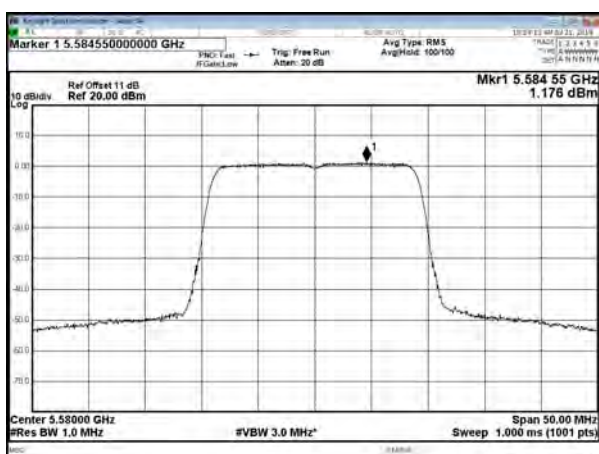
CH100

Modulation Standard: 802.11ac, VHT20  
CH100

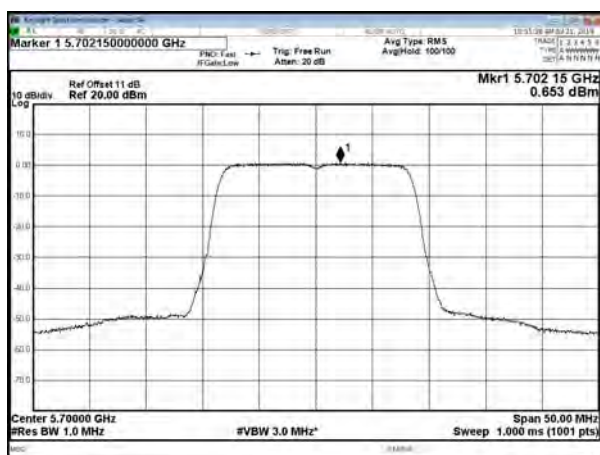
CH116



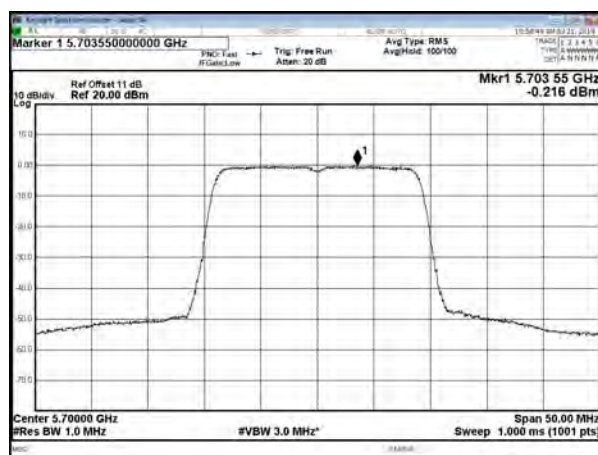
CH116



CH140

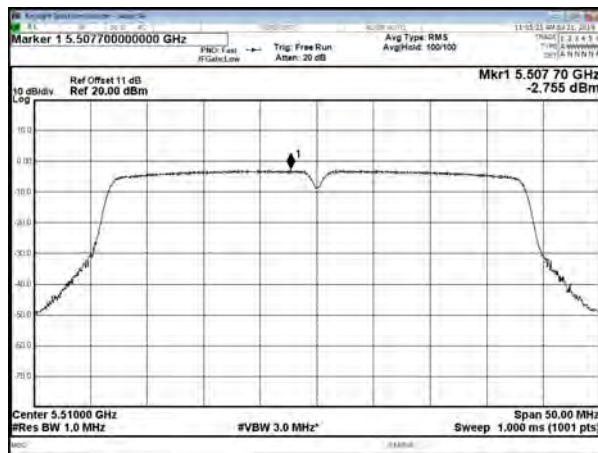


CH140

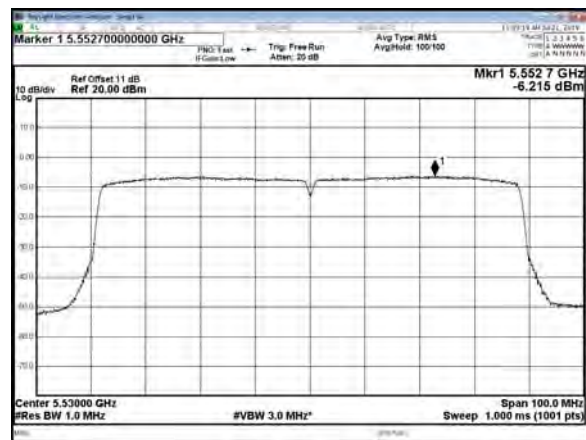




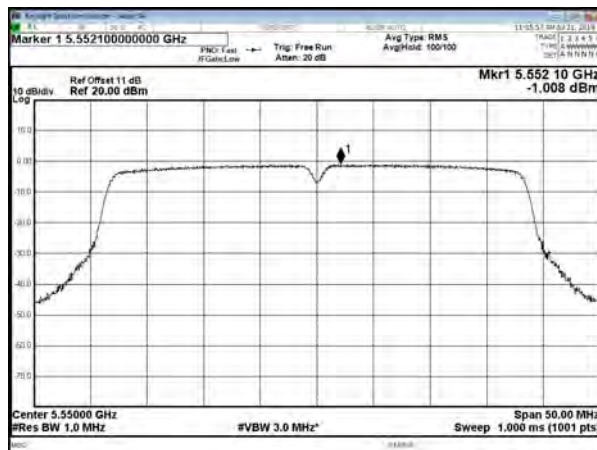
Modulation Standard: 802.11ac,VHT40  
CH102



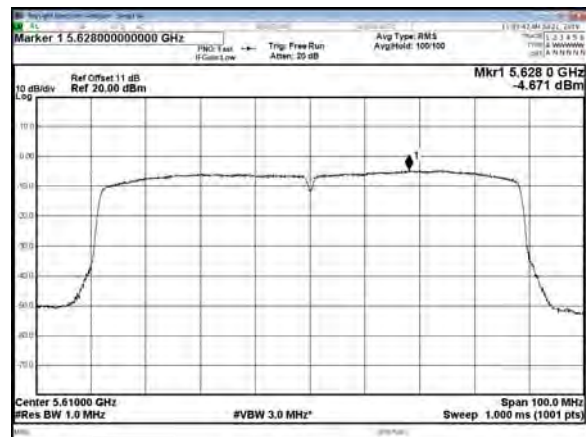
Modulation Standard: 802.11ac,VHT80  
CH106



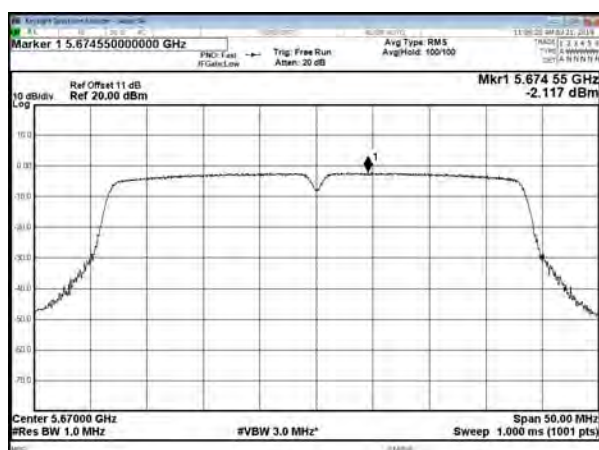
CH110



CH122

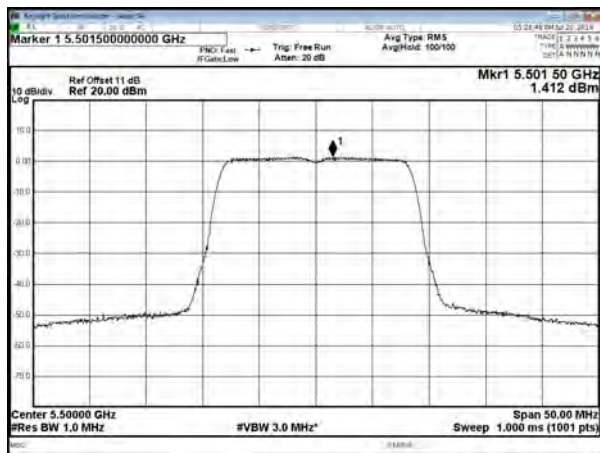


CH134

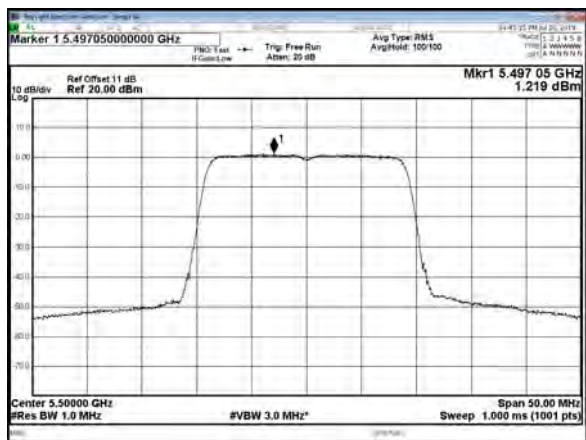




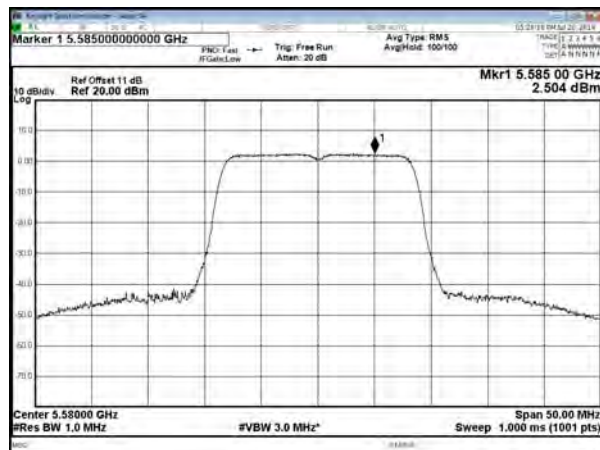
Chain 2  
Modulation Standard: 802.11a  
CH100



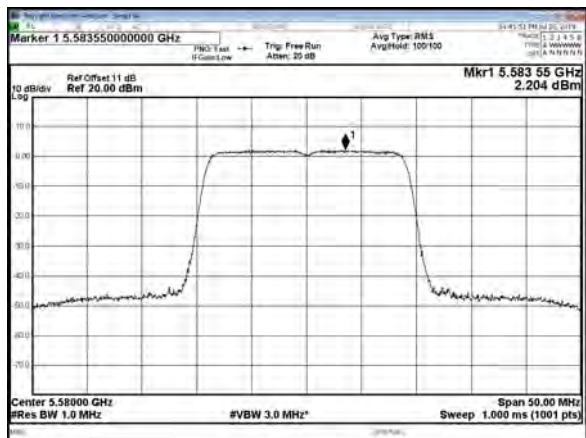
Modulation Standard: 802.11ac,VHT20  
CH100



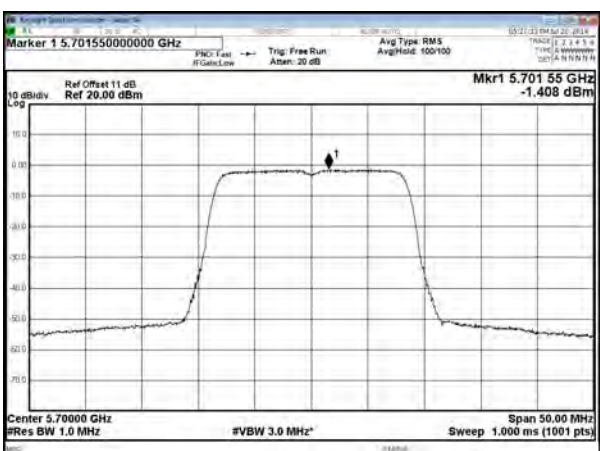
CH116



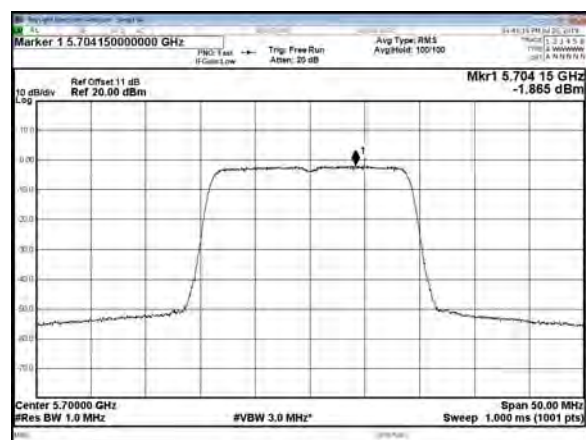
CH116



CH140

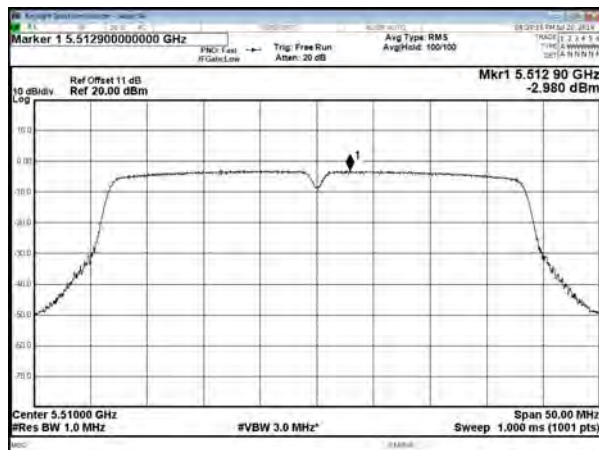


CH140

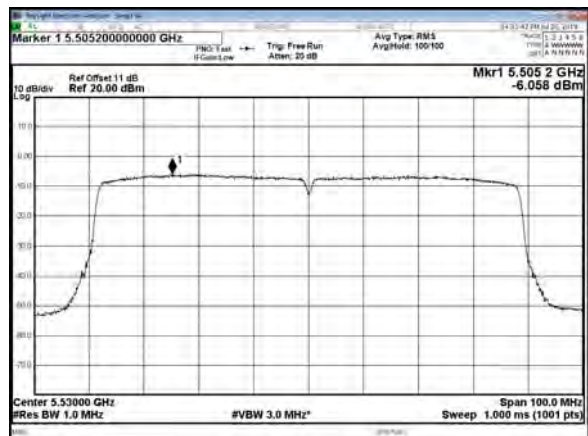




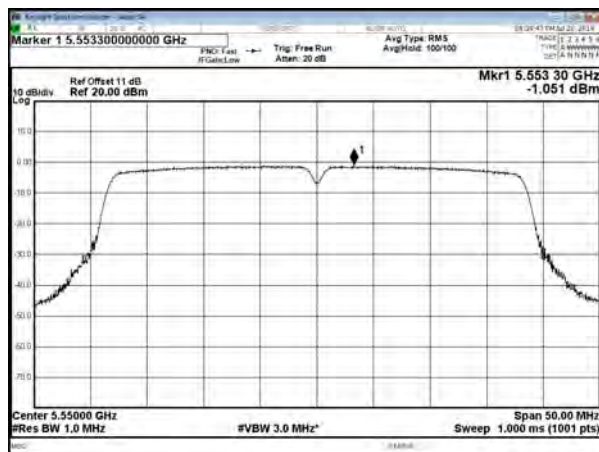
Modulation Standard: 802.11ac,VHT40  
CH102



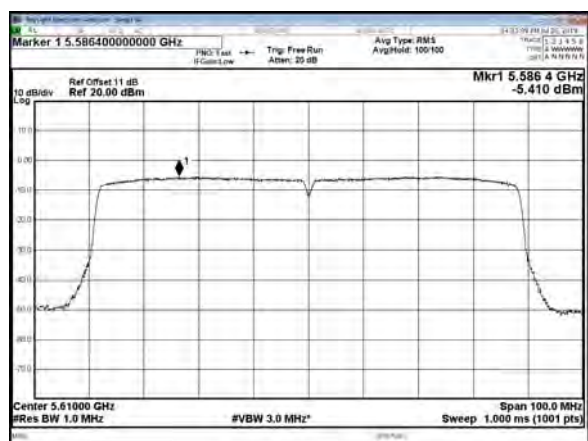
Modulation Standard: 802.11ac,VHT80  
CH106



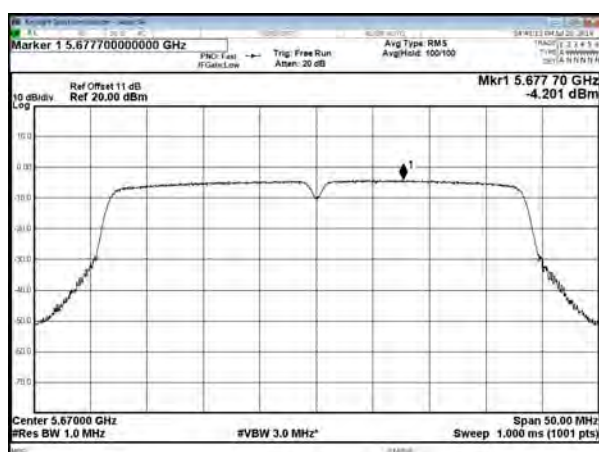
CH110



CH122



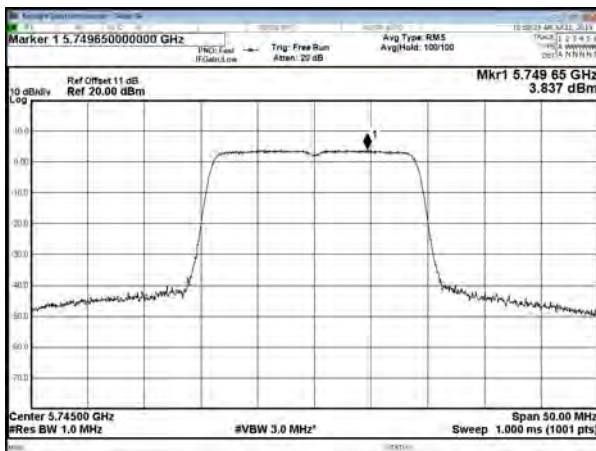
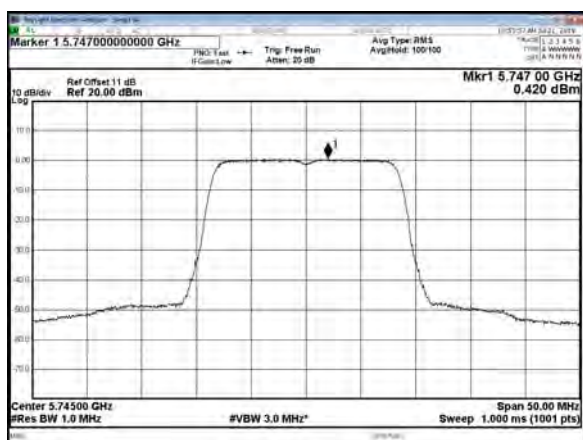
CH134





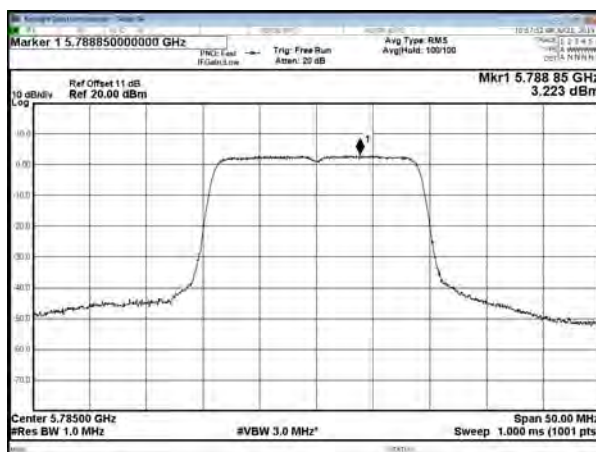
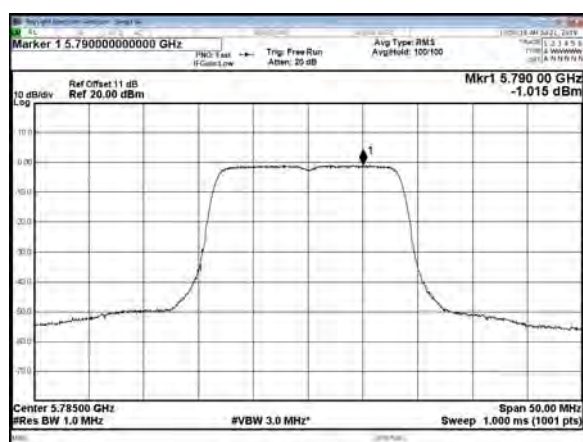
5.8G Band:  
Chain 1  
Modulation Standard: 802.11a  
CH149

Modulation Standard: 802.11ac,VHT20  
CH149



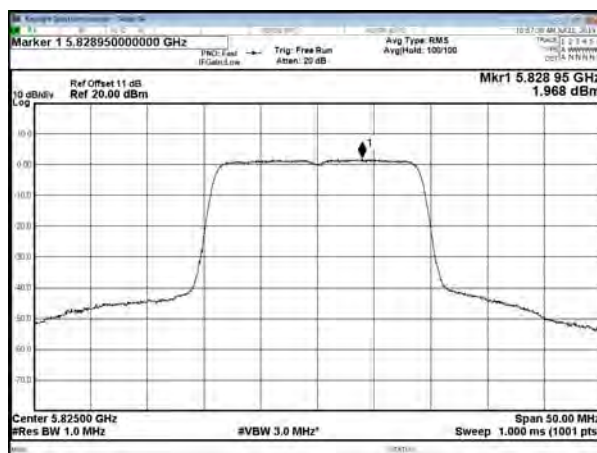
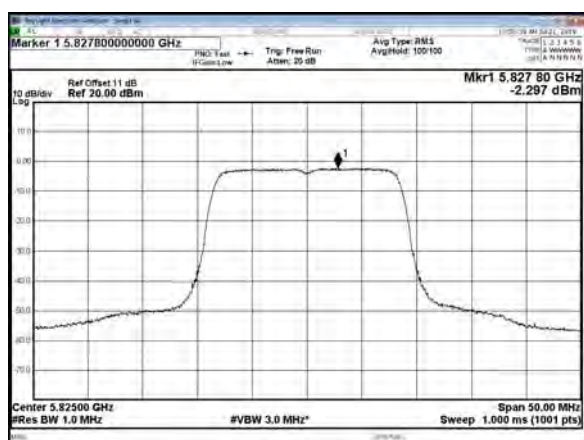
CH157

CH157



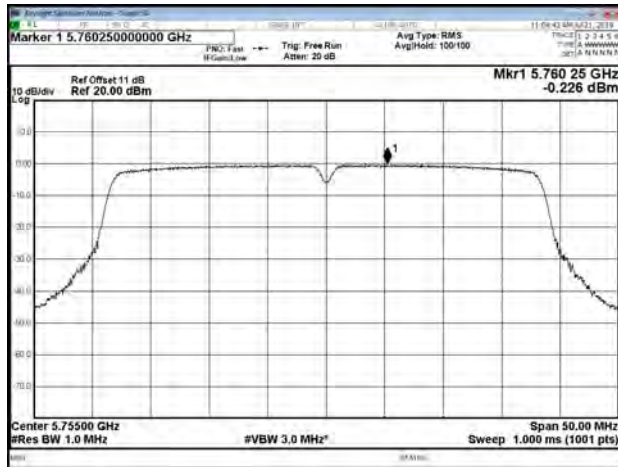
CH165

CH165

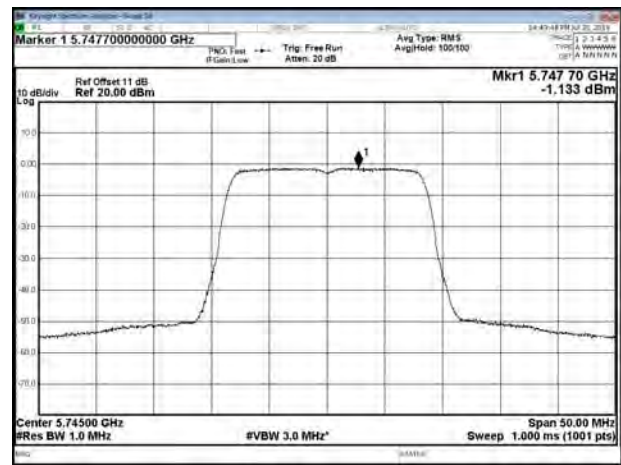




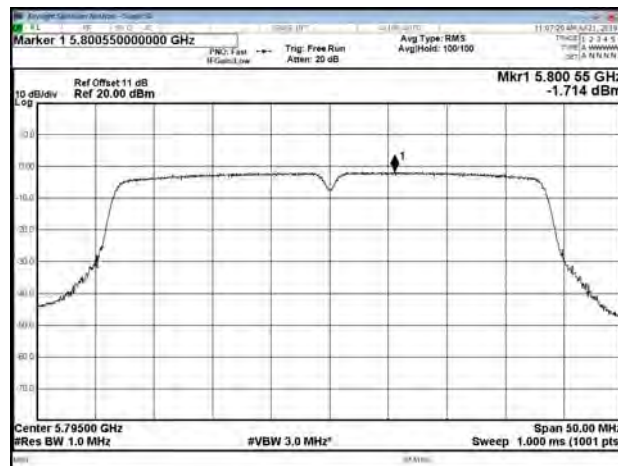
Modulation Standard: 802.11ac,VHT40  
CH151



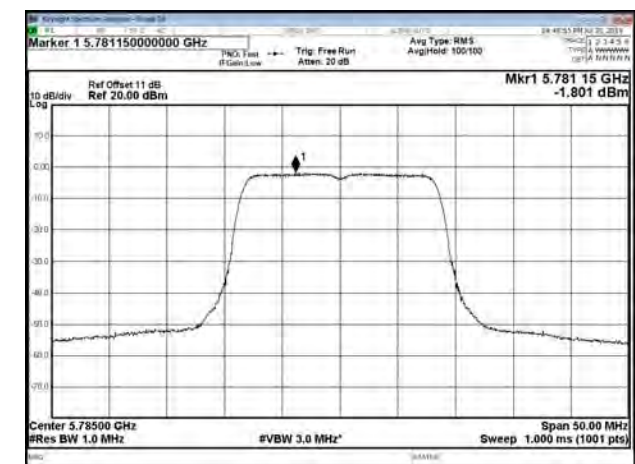
Chain 2  
Modulation Standard: 802.11a  
CH149



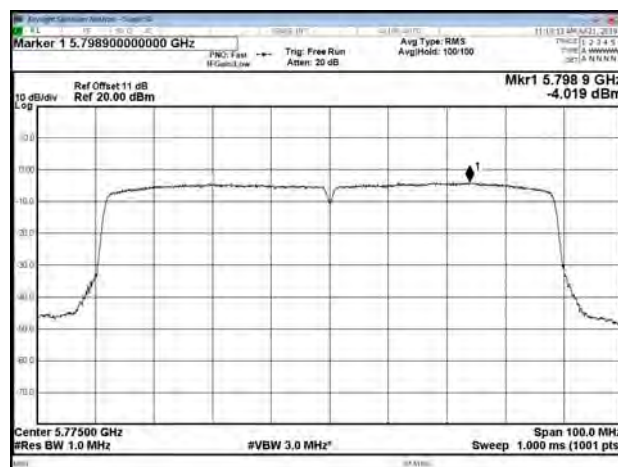
CH159



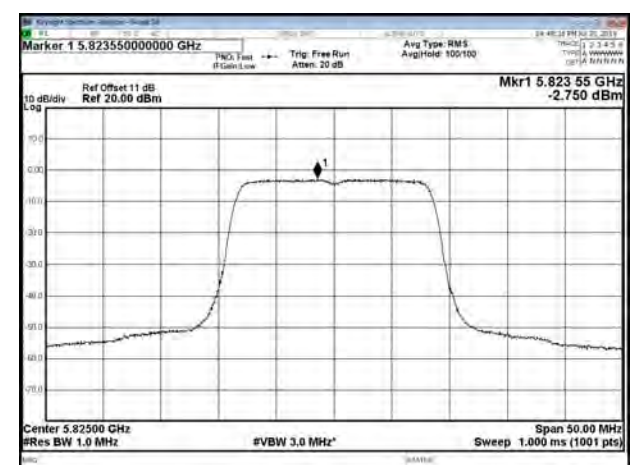
CH157



Modulation Standard: 802.11ac,VHT80  
CH155

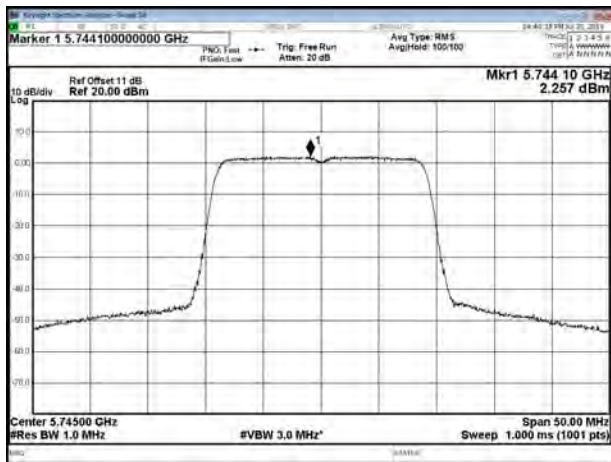


CH165

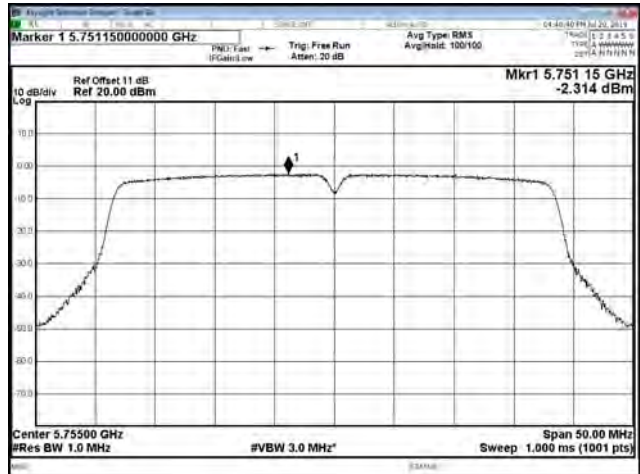




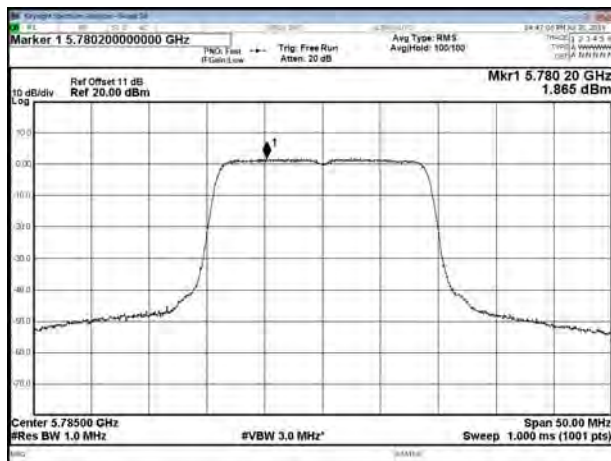
Modulation Standard: 802.11ac,VHT20  
CH149



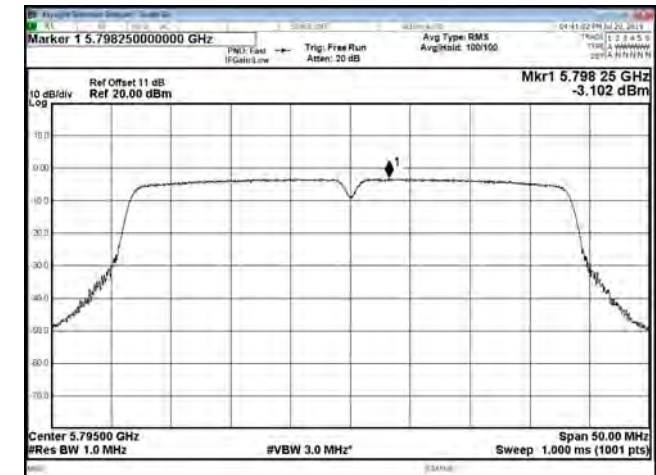
Modulation Standard: 802.11ac,VHT40  
CH151



CH157

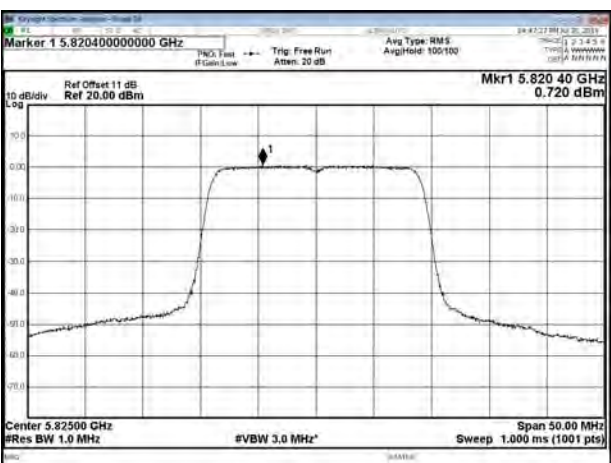


CH159

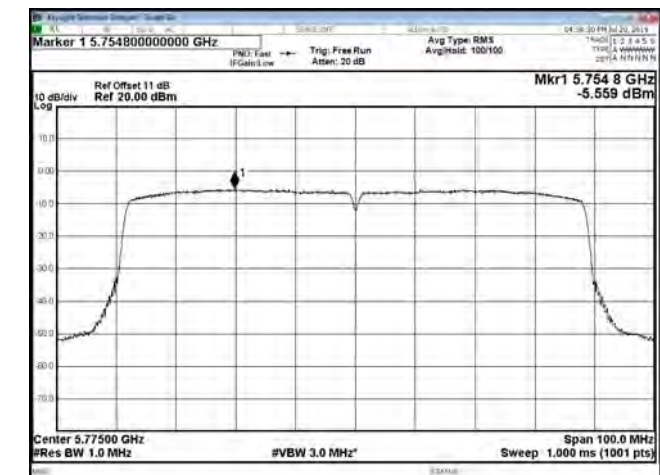


Modulation Standard: 802.11ac,VHT80

CH165



CH155



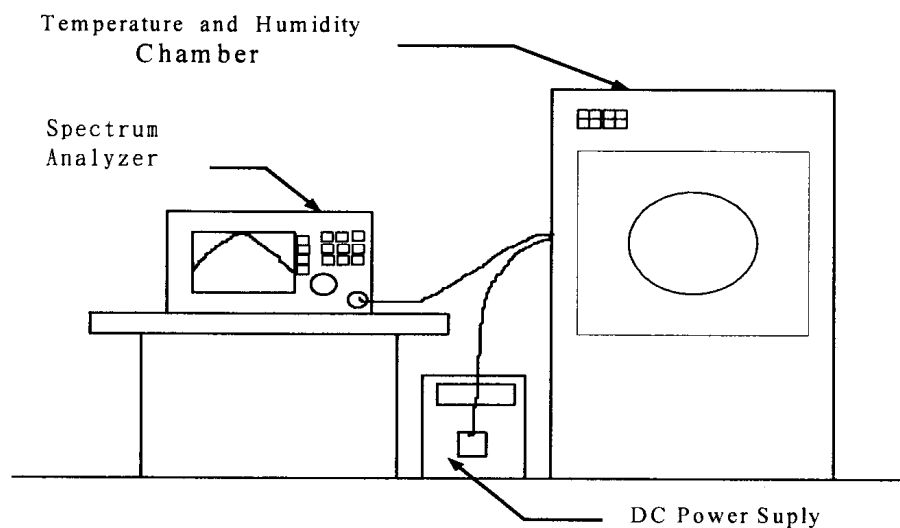


## 12. Frequency Stability

### 12.1. Test Procedure

1. The EUT was placed inside the Temperature and Humidity chamber.
2. The transmitter output was connected to spectrum analyzer.
3. Turn the EUT on and couple its output to a spectrum analyzer.
4. Turn the EUT off and set the chamber to the highest temperature specified.
5. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT on and measure the operating frequency after 2, 5, and 10 minutes.
6. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.
7. The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.

### 12.2. Test Setup Layout





### 12.3. Test Result and Data

Temperature: 21°C

Humidity: 58%

Test Date: Jul. 20, 2019

| Operating frequency: 5240 MHz |              |           |          |           |          |           |          |
|-------------------------------|--------------|-----------|----------|-----------|----------|-----------|----------|
| Temp                          | Power supply | 2 minute  |          | 5 minute  |          | 10 minute |          |
| (°C)                          | (V)          | (MHz)     | (%)      | (MHz)     | (%)      | (MHz)     | (%)      |
| 40                            | 3.6          | 5240.0912 | 0.001740 | 5240.1554 | 0.002966 | 5240.1556 | 0.029695 |
|                               | 3.3          | 5240.0924 | 0.001763 | 5240.1556 | 0.002969 | 5240.1554 | 0.029656 |
|                               | 3.0          | 5240.0928 | 0.001771 | 5240.1552 | 0.002962 | 5240.1548 | 0.029542 |
| 30                            | 3.6          | 5240.0866 | 0.001653 | 5240.1542 | 0.002943 | 5240.1532 | 0.029237 |
|                               | 3.3          | 5240.0854 | 0.001630 | 5240.1543 | 0.002945 | 5240.1540 | 0.029389 |
|                               | 3.0          | 5240.0863 | 0.001647 | 5240.1546 | 0.002950 | 5240.1538 | 0.029351 |
| 20                            | 3.6          | 5240.0543 | 0.001036 | 5240.1504 | 0.002870 | 5240.1512 | 0.028855 |
|                               | 3.3          | 5240.0462 | 0.000882 | 5240.1526 | 0.002912 | 5240.1496 | 0.028550 |
|                               | 3.0          | 5240.0512 | 0.000977 | 5240.1518 | 0.002897 | 5240.1524 | 0.029084 |
| 10                            | 3.6          | 5240.0424 | 0.000809 | 5240.1052 | 0.002008 | 5240.1120 | 0.021374 |
|                               | 3.3          | 5240.0436 | 0.000832 | 5240.1048 | 0.002000 | 5240.1124 | 0.021450 |
|                               | 3.0          | 5240.0428 | 0.000817 | 5240.1046 | 0.001996 | 5240.1088 | 0.020763 |
| 0                             | 3.6          | 5240.0242 | 0.000462 | 5240.0684 | 0.001305 | 5240.0712 | 0.013588 |
|                               | 3.3          | 5240.0257 | 0.000490 | 5240.0688 | 0.001313 | 5240.0698 | 0.013321 |
|                               | 3.0          | 5240.0264 | 0.000504 | 5240.0696 | 0.001328 | 5240.0692 | 0.013206 |

Limit:

Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the users manual.



## **13. Automatically Discontinue Transmission**

### **13.1.Limit of Automatically Discontinue Transmission**

The device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. These provisions are not intended to preclude the transmission of control or signaling information or the use of repetitive codes used by certain digital technologies to complete frame or burst intervals. Applicants shall include in their application for equipment authorization to describe how this requirement is met.

### **13.2.Test Result of Automatically Discontinue Transmission**

While the EUT is not transmitting any information, the EUT can automatically discontinue transmission and become standby mode for power saving. The EUT can detect the controlling signal of ACK message transmitting from remote device and verify whether it shall resend or discontinue transmission.



## 14. Dynamic Frequency Selection

### 14.1. List of Measurement and Examinations

#### EUT Applicability of DFS requirements and Frequency Range

| Operation Mode                 |    | Operating Frequency Range |                                                   |
|--------------------------------|----|---------------------------|---------------------------------------------------|
|                                |    | 5250-5350MHz              | 5470-5725MHz<br>(5600MHz-5650MHz will be disable) |
| Master                         | -- | --                        | --                                                |
| Client without radar detection | √  | √                         | √                                                 |
| Client with radar detection    | -- | --                        | --                                                |

#### DEVICES WITH RADAR DETECTION

| MAXIMUM TRANSMIT POWER                                                       | VALUE (SEE Note 1 and 2) |
|------------------------------------------------------------------------------|--------------------------|
| ≥ 200 milliwatt                                                              | -64 dBm                  |
| EIRP < 200 milliwatt and power spectral density < 10 dBm/MHz                 | -62 dBm                  |
| EIRP < 200 milliwatt that do not meet the power spectral density requirement | -64 dBm                  |

Note 1: This is the level at the input of the receiver assuming a 0 dBi receive antenna.  
Note 2: Throughout these test procedures an additional 1 dB has been added to the amplitude of the test transmission waveforms to account for variations in measurement equipment. This will ensure that the test signal is at or above the detection threshold level to trigger a DFS response.  
Note3: EIRP is based on the highest antenna gain. For MIMO devices refer to KDB Publication 662911

**Table1: Applicability of DFS requirements prior to use of a channel**

| REQUIREMENT<br>RADAR            | OPERATIONAL MODE |                                      |                                   |
|---------------------------------|------------------|--------------------------------------|-----------------------------------|
|                                 | MASTER           | CLIENT WITHOUT<br>RADAR<br>DETECTION | CLIENT WITH<br>RADAR<br>DETECTION |
| Non-Occupancy Period            | V                | V <sub>Note</sub>                    | V                                 |
| DFS Detection Threshold         | V                | Not required                         | V                                 |
| Channel Availability Check Time | V                | Not required                         | Not required                      |
| U-NII Detection Bandwidth       | V                | Not required                         | V                                 |

Note: Regarding KDB 905462 D03 Client Without DFS New Rules section (b)(5/6),  
If the client moves with the master, the device is considered compliant if nothing appears in the client non-occupancy period test. For devices that shut down (rather than moving channels), no beacons should appear. An analyzer plot that contains a single 30-minute sweep on the original channel.

**Table2: Applicability of DFS requirements during normal operation**

| REQUIREMENT<br>RADAR              | OPERATIONAL MODE |                                      |                                   |
|-----------------------------------|------------------|--------------------------------------|-----------------------------------|
|                                   | MASTER           | CLIENT WITHOUT<br>RADAR<br>DETECTION | CLIENT WITH<br>RADAR<br>DETECTION |
| DFS Detection Threshold           | V                | Not required                         | V                                 |
| Channel Closing Transmission Time | V                | V                                    | V                                 |
| Channel Move Time                 | V                | V                                    | V                                 |
| U-NII Detection Bandwidth         | V                | Not required                         | V                                 |

|                                                                   |                                       |                                                      |
|-------------------------------------------------------------------|---------------------------------------|------------------------------------------------------|
| Additional requirements for devices with multiple bandwidth modes | Master or Client with radar detection | Client without radar detection                       |
| U-NII Detection Bandwidth and Statistical Performance Check       | All BW modes must be tested           | Not required                                         |
| Channel Move Time and Channel Closing Transmission Time           | Test using widest BW mode available   | Test using the widest BW mode available for the link |
| All other                                                         | Any single BW mode                    | Not required                                         |

Note: Frequencies selected for statistical performance check (Section 7.8.4) should include several frequencies within the radar detection bandwidth and frequencies near the edge of the radar detection bandwidth. For 802.11 devices it is suggested to select frequencies in each of the bonded 20 MHz channels and the channel center frequency.



## 14.2. Test Setup

### Setup for Master with injection at the Master

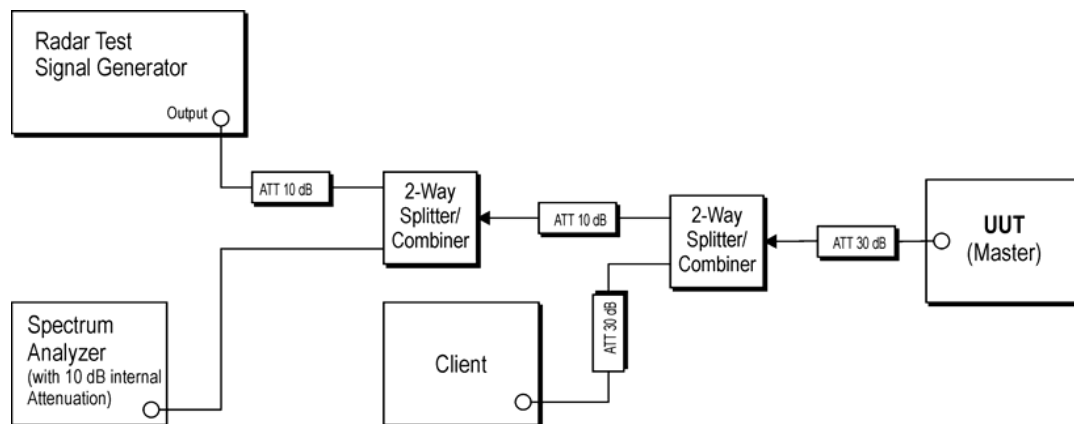


Figure 1: Example Conducted Setup where UUT is a Master and Radar Test Waveforms are injected into the Master

### Setup for Client with injection at the Master

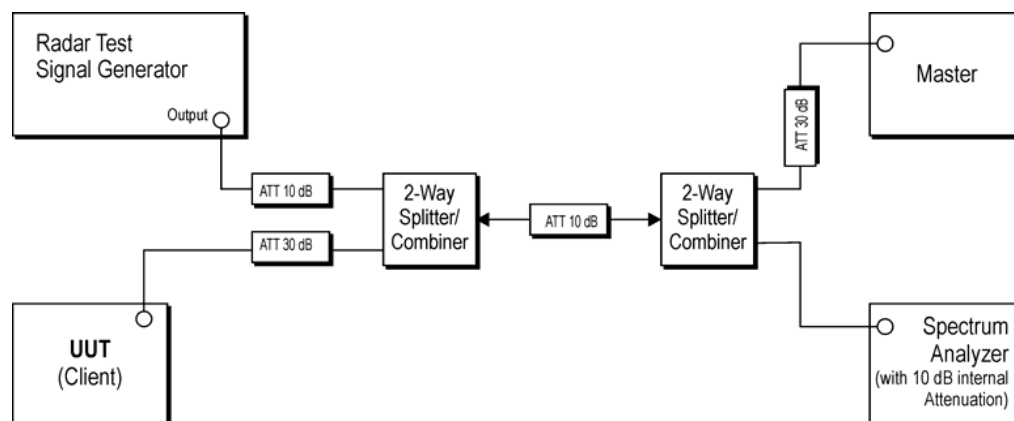


Figure 2: Example Conducted Setup where UUT is a Client and Radar Test Waveforms are injected into the Master



### Setup for Client with injection at the Client

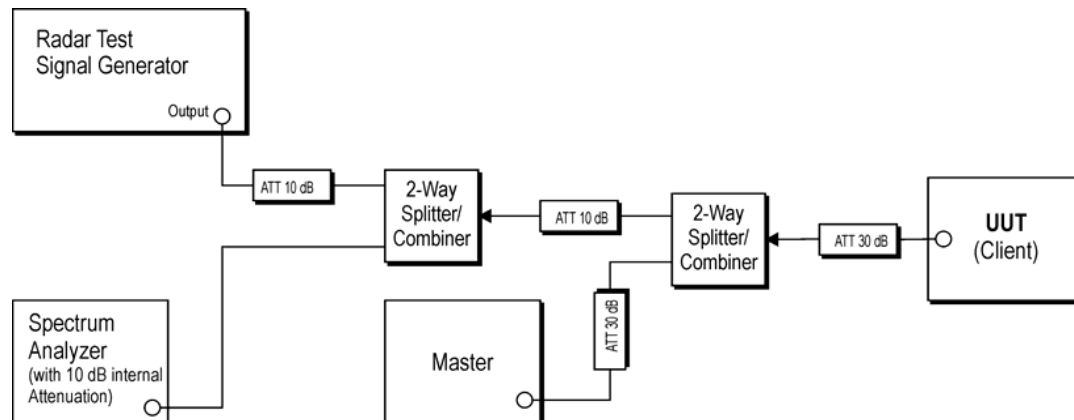


Figure 3: Example Conducted Setup where UUT is a Client and Radar Test Waveforms are injected into the Client



### 14.3. Non-Occupancy Period

The Channel Shutdown is defined as the process initiated by the RLAN device immediately after a radar signal has been detected on an Operating Channel.

The master device shall instruct all associated slave devices to stop transmitting on this channel, which they shall do within the Channel Move Time.

Slave devices with a Radar Interference Detection function, shall stop their own transmissions within the Channel Move Time.

The aggregate duration of all transmissions of the RLAN device on this channel during the Channel Move Time shall be limited to the Channel Closing Transmission Time. The aggregate duration of all transmissions shall not include quiet periods in between transmissions.

#### 14.3.1. Test Limit

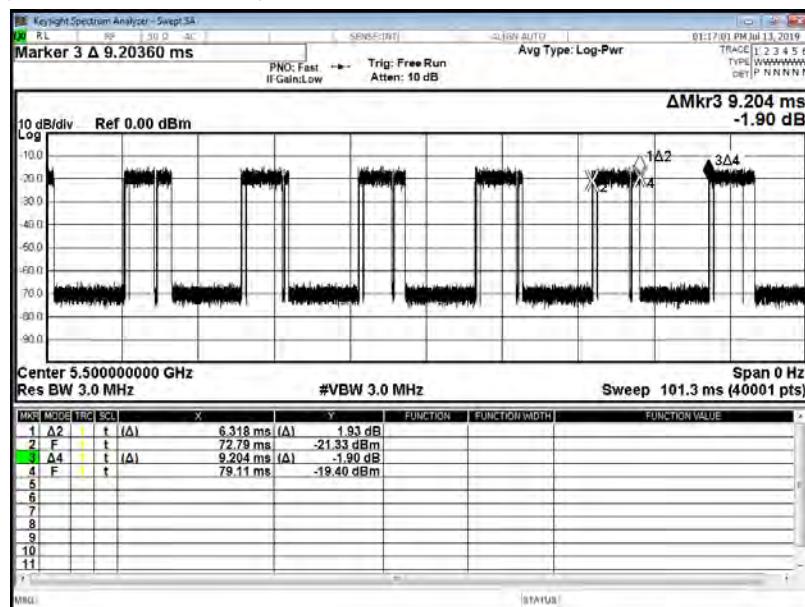
| Radar Test Signal | Master (min) | Client (min) |
|-------------------|--------------|--------------|
| 0                 | > 30         | > 30         |

#### 14.3.2. Channel Loading

Timing plots are required with calculations demonstrating a minimum channel loading of approximately 17% or greater. For example, channel loading can be estimated by setting the spectrum analyzer for zero span and approximate the Time On/ (Time On + Off Time). This can be done with any appropriate channel BW and modulation type

Modulation Standard: 802.11ac VHT20

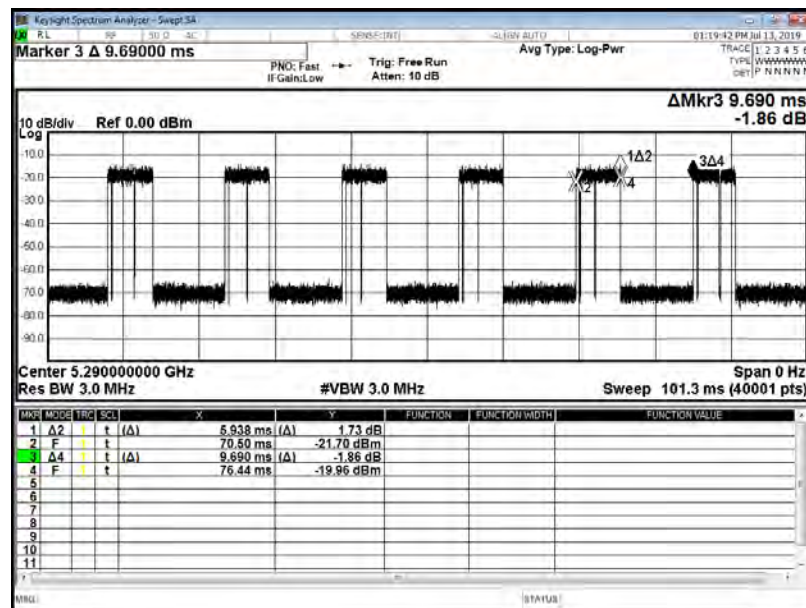
Time On/ (Time On + Off Time) = 6.318ms/15.522ms=40.7%





Modulation Standard: 802.11ac VHT80

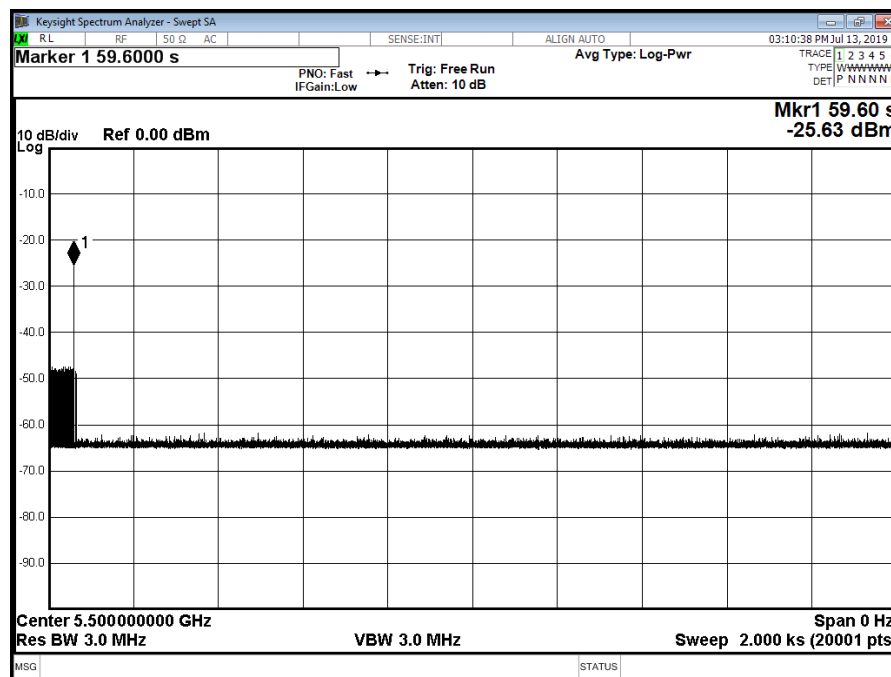
Time On/ (Time On + Off Time) = 5.938ms/15.628ms=38%



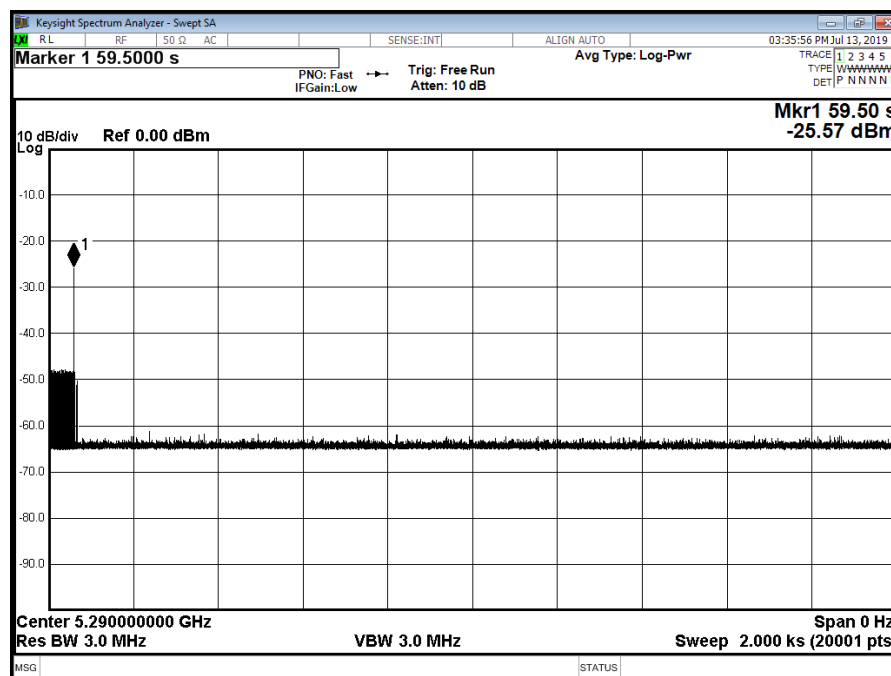


## 14.3.3. Test Result of Non-Occupancy Period

Modulation Standard: 802.11ac VHT20



Modulation Standard: 802.11ac VHT80





## 14.4.DFS Detection Threshold

DFS Detection Threshold is the level used by the DFS mechanism to detect radar interference.

### 14.4.1. Test Limit

Limits Clause 4.7.2.1.2

DFS Detection Thresholds for Master Devices and Client Devices with Radar Detection

| MAXIMUM TRANSMIT POWER                                                       | VALUE (SEE Note 1 and 2) |
|------------------------------------------------------------------------------|--------------------------|
| $\geq 200$ milliwatt                                                         | -64 dBm                  |
| EIRP < 200 milliwatt and power spectral density < 10 dBm/MHz                 | -62 dBm                  |
| EIRP < 200 milliwatt that do not meet the power spectral density requirement | -64 dBm                  |

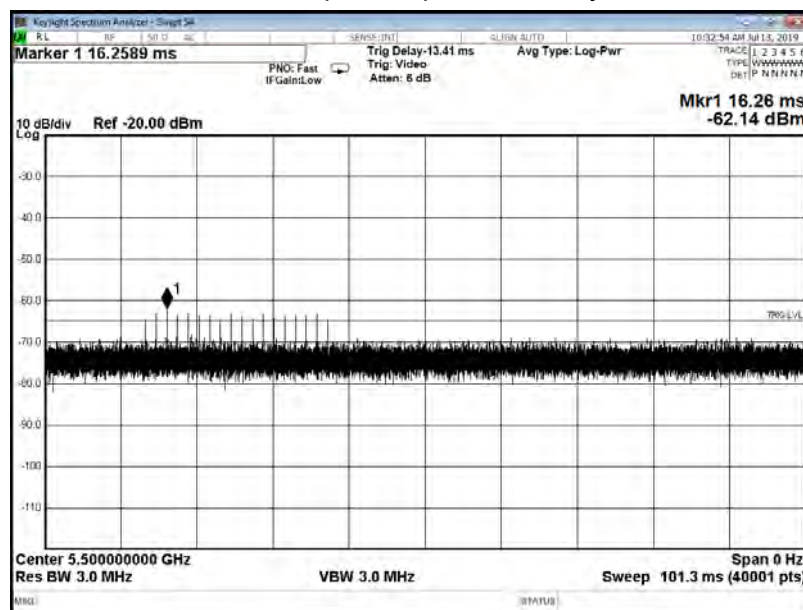
Note 1: This is the level at the input of the receiver assuming a 0 dBi receive antenna.

Note 2: Throughout these test procedures an additional 1 dB has been added to the amplitude of the test transmission waveforms to account for variations in measurement equipment. This will ensure that the test signal is at or above the detection threshold level to trigger a DFS response.

Note3: EIRP is based on the highest antenna gain. For MIMO devices refer to KDB Publication 662911

### 14.4.2. Test Result of DFS Detection Threshold

EIRP < 200 milliwatt and power spectral density < 10 dBm/MHz, Radar 0 VALUE -62dBm



**14.5.Channel Availability Check**

The Channel Availability Check is defined as the mechanism by which an RLAN device checks a channel for the presence of radar signals.

There shall be no transmissions by the device within the channel being checked during this process. If no radars have been detected, the channel becomes an Available Channel valid for a period of time.

The RLAN shall only start transmissions on Available Channels.

At power-up, the RLAN is assumed to have no Available Channels.

**14.5.1. Test Limit**

Limits Clause 4.7.2.1.2

Table D.2: DFS requirement values

| Parameter                  | Value |
|----------------------------|-------|
| Channel Availability Check | > 60s |

**14.5.2. Test Result of Channel Availability Check**

Not required



## **14.6.U-NII Detection Bandwidth**

### **14.6.1. Test Limit**

Limits Clause 4.7.2.1.2 Table D.2: DFS requirement values

| Parameter                                                                                                                                                                                                            | Value                                      |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|
| U-NII Detection Bandwidth                                                                                                                                                                                            | Minimum 100% of the U-NII 99% transmission |
| Note : During the U-NII Detection Bandwidth detection test, radar type 0 should be used. For each frequency step the minimum percentage of detection is 90 percent. Measurements are performed with no data traffic. |                                            |

### **14.6.2. Test Result of U-NII Detection Bandwidth**

Not required



#### **14.7.Uniform Spreading**

The UUT will select channel by random mode and remember this channel when detect radar signal, so that will select unused channel by random mode.

##### **14.7.1. Test Result of Uniform Spreading**

Not required



## 14.8.In-Service Monitoring

The In-Service Monitoring is defined as the process by which an RLAN monitors the Operating Channel for the presence of radar signals.

### 14.8.1. Test Limit

| Parameter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Value                                                                                                    |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|
| Channel Move Time                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | < 10 s (See Note 1)                                                                                      |
| Channel Closing Transmission Time                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | < 200 ms+ an aggregate of 60 milliseconds over remaining 10 second period.<br>(See Notes 1 and Notes 2.) |
| Note 1: Channel Move Time and the Channel Closing Transmission Time should be performed with Radar Type 0. The measurement timing begins at the end of the Radar Type 0 burst.<br>Note 2: The Channel Closing Transmission Time is comprised of 200 milliseconds starting at the beginning of the Channel Move Time plus any additional intermittent control signals required to facilitate a Channel move (an aggregate of 60 milliseconds) during the remainder of the 10 second period. The aggregate duration of control signals will not count quiet periods in between transmissions. |                                                                                                          |

#### Limits Clause 4.7.2.2.2

The In-Service Monitoring shall be used to continuously monitor an Operating Channel.

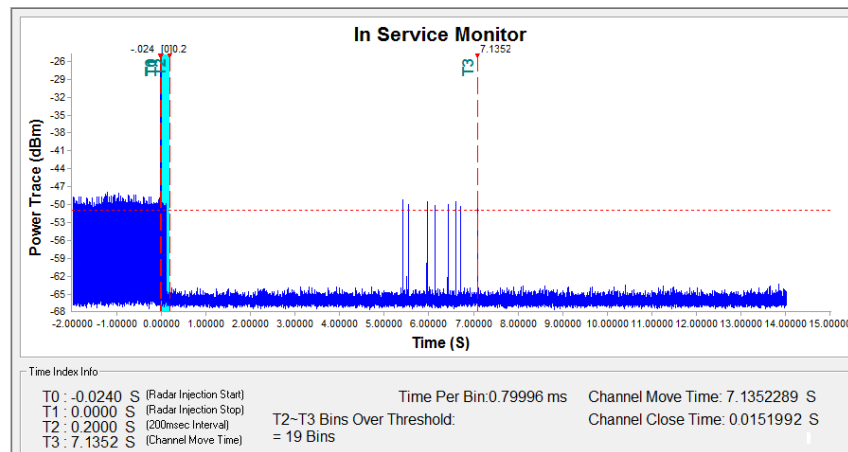
The In-Service-Monitoring shall start immediately after the RLAN has started transmissions on an Operating Channel.



### 14.8.2. Test Result of In-Service Monitoring

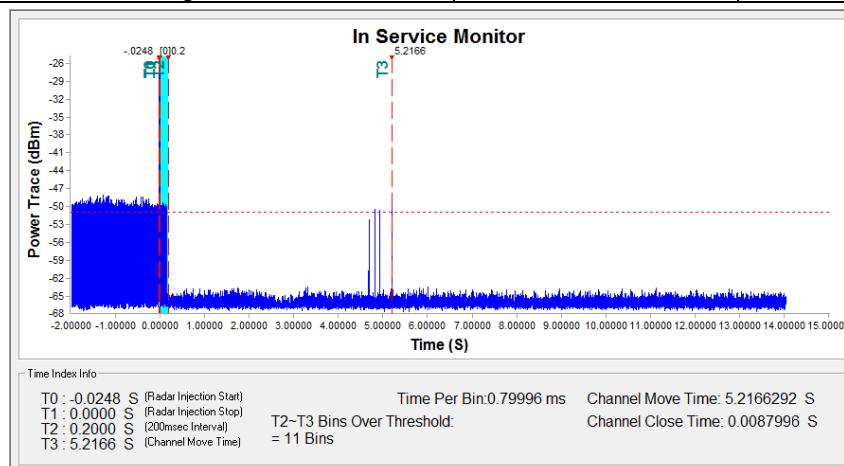
Signal 0 at 5500MHz, ac VHT20

|                                   | Value   | Limit    |
|-----------------------------------|---------|----------|
| Channel Move Time                 | 7.7135s | <10 s    |
| Channel Closing Transmission Time | 15.19ms | < 200 ms |



Signal 0 at 5290MHz, ac VHT80

|                                   | Value   | Limit    |
|-----------------------------------|---------|----------|
| Channel Move Time                 | 5.2166s | <10 s    |
| Channel Closing Transmission Time | 8.80ms  | < 200 ms |



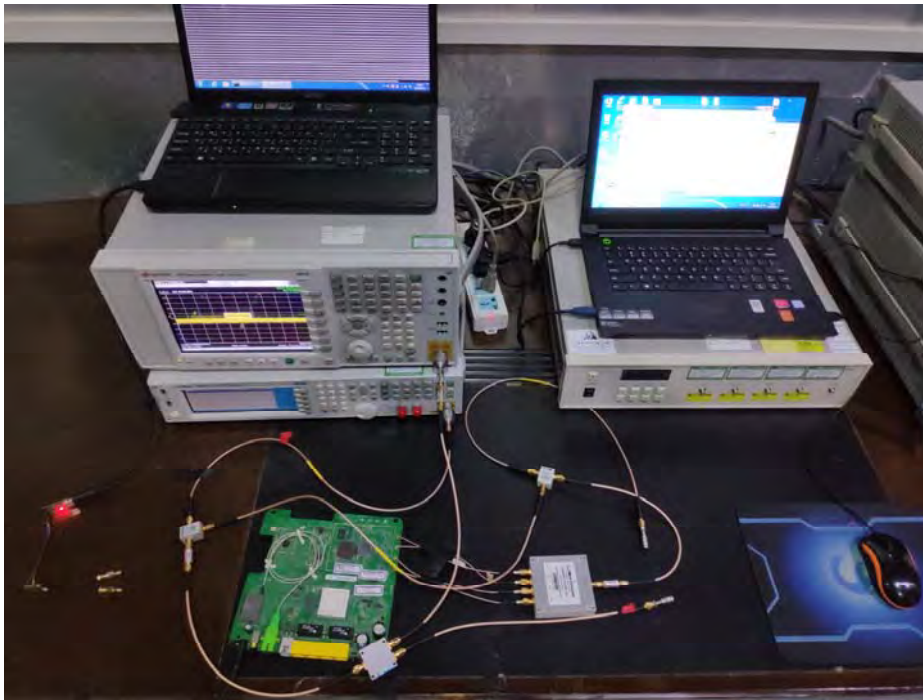
### 14.9.Statistical Performance Check

Not required



## 14.10. EUT Setup Photos

Radar Calibration Setup Photo



Test Setup Photo

