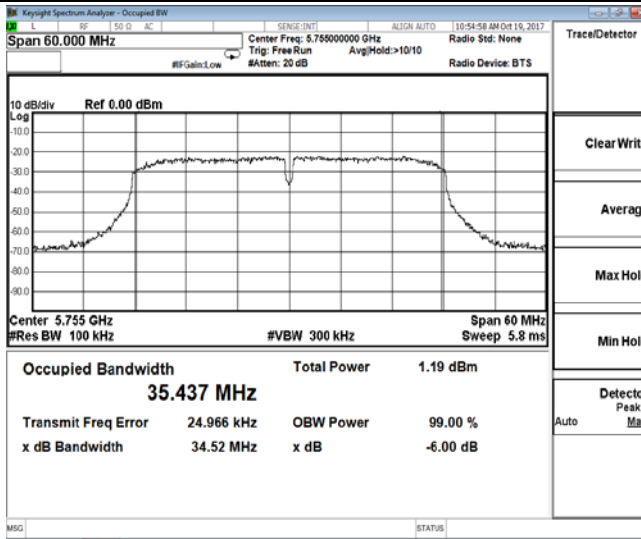


6dB Occupied Bandwidth

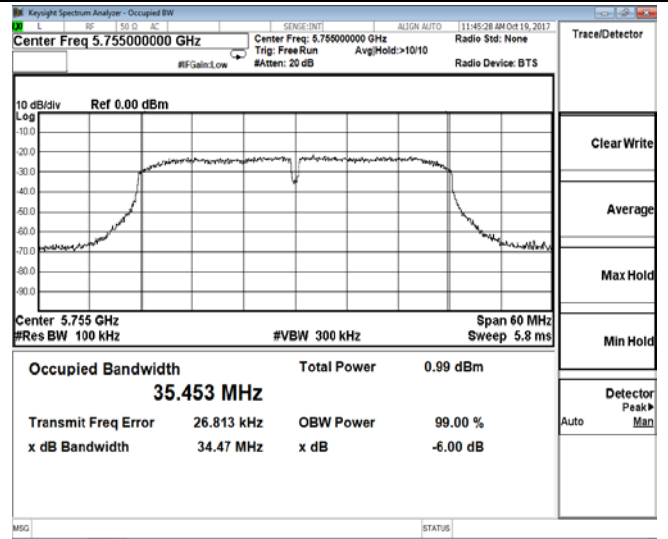
Antenna 2

IEEE 802.11n HT40

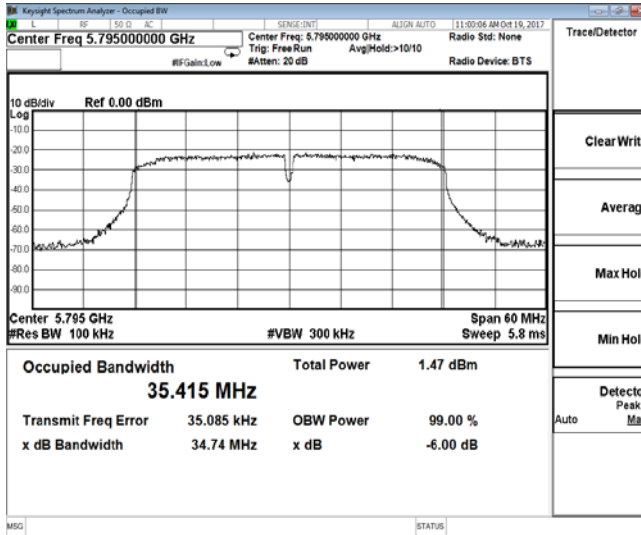


Antenna 2

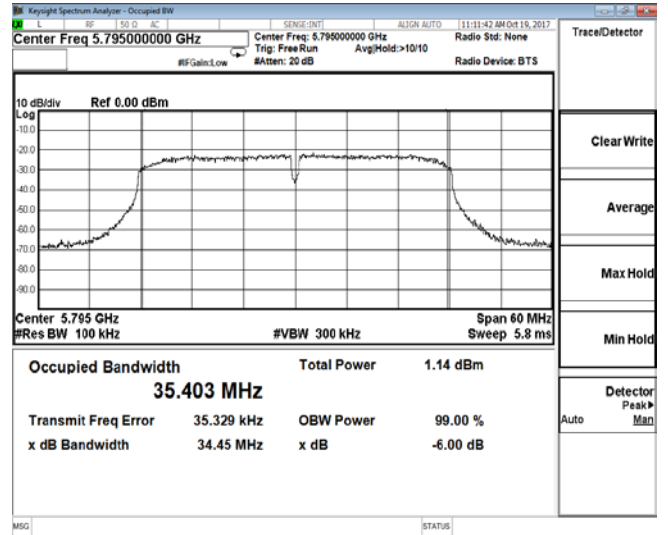
IEEE 802.11ac VHT40



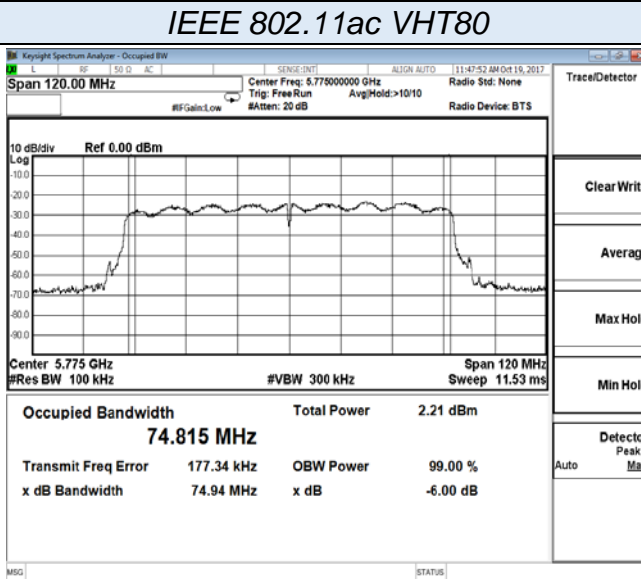
Channel 151 / 5755 MHz



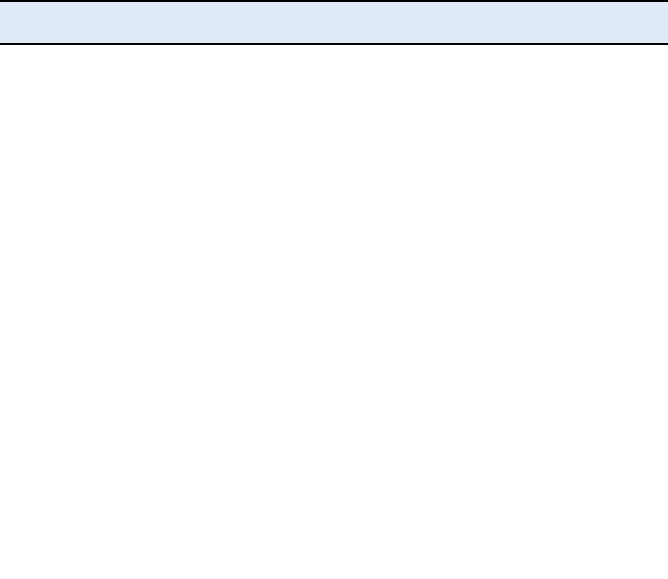
Channel 151 / 5755 MHz



Channel 159 / 5795 MHz



Channel 159 / 5795 MHz

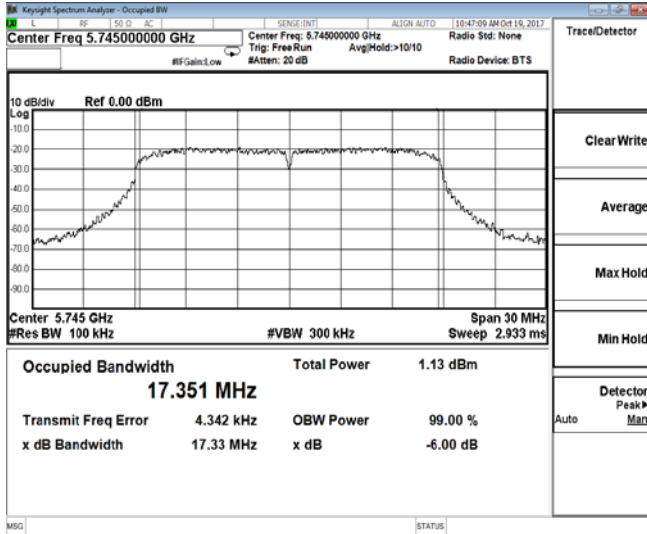


Channel 155 / 5775 MHz

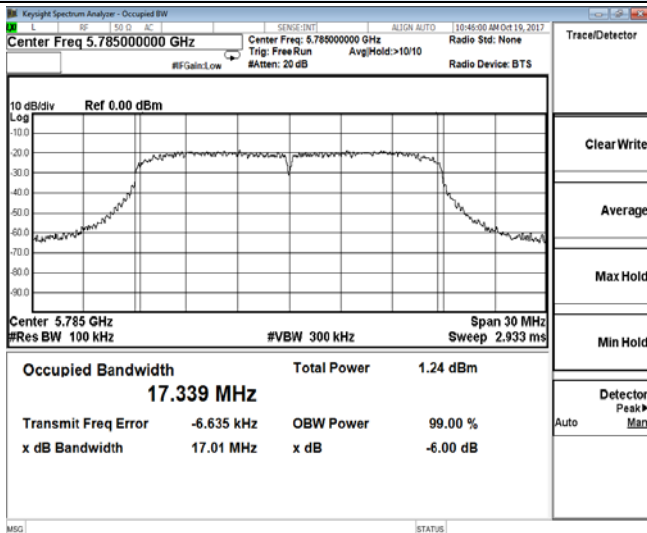
6dB Occupied Bandwidth

Antenna 2

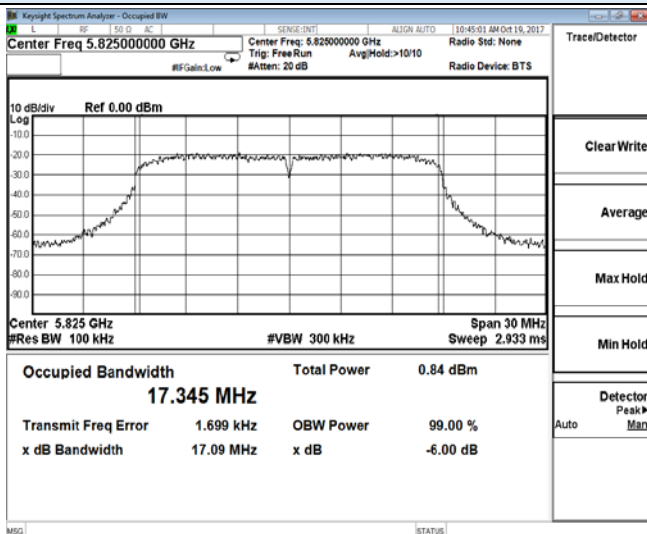
IEEE 802.11ac VHT20



Channel 149 / 5745 MHz



Channel 157 / 5785 MHz



Channel 165 / 5825 MHz

5.5. Radiated Emissions Measurement

5.5.1. Standard Applicable

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

| MHz | MHz | MHz | GHz |
|-------------------|---------------------|---------------|-------------|
| 0.090-0.110 | 16.42-16.423 | 399.9-410 | 4.5-5.15 |
| \1\ 0.495-0.505 | 16.69475-16.69525 | 608-614 | 5.35-5.46 |
| 2.1735-2.1905 | 16.80425-16.80475 | 960-1240 | 7.25-7.75 |
| 4.125-4.128 | 25.5-25.67 | 1300-1427 | 8.025-8.5 |
| 4.17725-4.17775 | 37.5-38.25 | 1435-1626.5 | 9.0-9.2 |
| 4.20725-4.20775 | 73-74.6 | 1645.5-1646.5 | 9.3-9.5 |
| 6.215-6.218 | 74.8-75.2 | 1660-1710 | 10.6-12.7 |
| 6.26775-6.26825 | 108-121.94 | 1718.8-1722.2 | 13.25-13.4 |
| 6.31175-6.31225 | 123-138 | 2200-2300 | 14.47-14.5 |
| 8.291-8.294 | 149.9-150.05 | 2310-2390 | 15.35-16.2 |
| 8.362-8.366 | 156.52475-156.52525 | 2483.5-2500 | 17.7-21.4 |
| 8.37625-8.38675 | 156.7-156.9 | 2690-2900 | 22.01-23.12 |
| 8.41425-8.41475 | 162.0125-167.17 | 3260-3267 | 23.6-24.0 |
| 12.29-12.293. | 167.72-173.2 | 3332-3339 | 31.2-31.8 |
| 12.51975-12.52025 | 240-285 | 3345.8-3358 | 36.43-36.5 |
| 12.57675-12.57725 | 322-335.4 | 3600-4400 | (\2\) |
| 13.36-13.41 | | | |

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

\2\ Above 38.6

For transmitters operating in the 5.725-5.85 GHz band:

All emissions shall be limited to a level of -27 dBm/MHz (68.2 dBuV/m at 3m) at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz (105.2 dBuV/m at 3m) at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 (110.8 dBuV/m at 3m) dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz (122.2 dBuV/m at 3m) at the band edge.

In addition, In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

| Frequencies (MHz) | Field Strength (microvolts/meter) | Measurement Distance (meters) |
|-------------------|-----------------------------------|-------------------------------|
| 0.009~0.490 | 2400/F(KHz) | 300 |
| 0.490~1.705 | 24000/F(KHz) | 30 |
| 1.705~30.0 | 30 | 30 |
| 30~88 | 100 | 3 |
| 88~216 | 150 | 3 |
| 216~960 | 200 | 3 |
| Above 960 | 500 | 3 |

5.5.2. Measuring Instruments and Setting

Please refer to equipment list in this report. The following table is the setting of spectrum analyzer and receiver.

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

| Receiver Parameter | Setting |
|------------------------|--|
| Attenuation | Auto |
| Start ~ Stop Frequency | 9kHz~150kHz / RB/VB 200Hz/1KHz for QP/AVG |
| Start ~ Stop Frequency | 150kHz~30MHz / RB/VB 9kHz/30KHz for QP/AVG |
| Start ~ Stop Frequency | 30MHz~1000MHz / RB/VB 120kHz/1MHz for QP |

5.5.3. Test Procedures

1) Sequence of testing 9 kHz to 30 MHz

Setup:

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

Premeasurement:

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

Final measurement:

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

2) Sequence of testing 30 MHz to 1 GHz

Setup:

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

Premeasurement:

- The turntable rotates from 0° to 315° using 45° steps.
- The antenna is polarized vertical and horizontal.
- The antenna height changes from 1 to 3 meter.
- At each turntable position, antenna polarization and height the analyzer sweeps three times in peak to find the maximum of all emissions.

Final measurement:

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

3) Sequence of testing 1 GHz to 18 GHz

Setup:

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

Premeasurement:

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

Final measurement:

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

4) Sequence of testing above 18 GHz

Setup:

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

Premeasurement:

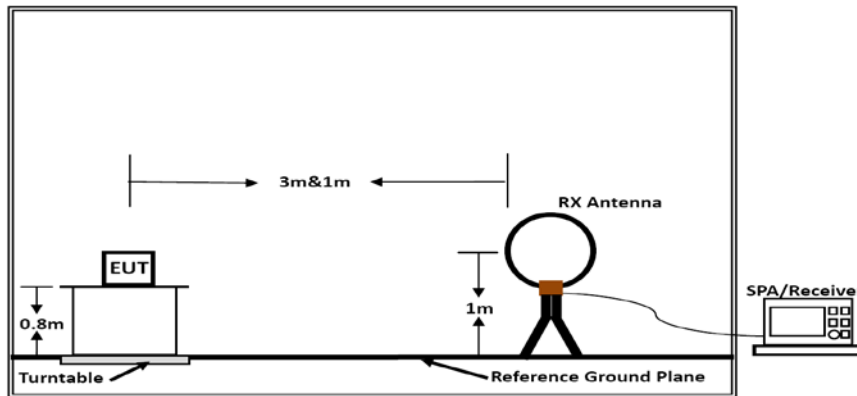
- The antenna is moved spherical over the EUT in different polarizations of the antenna.

Final measurement:

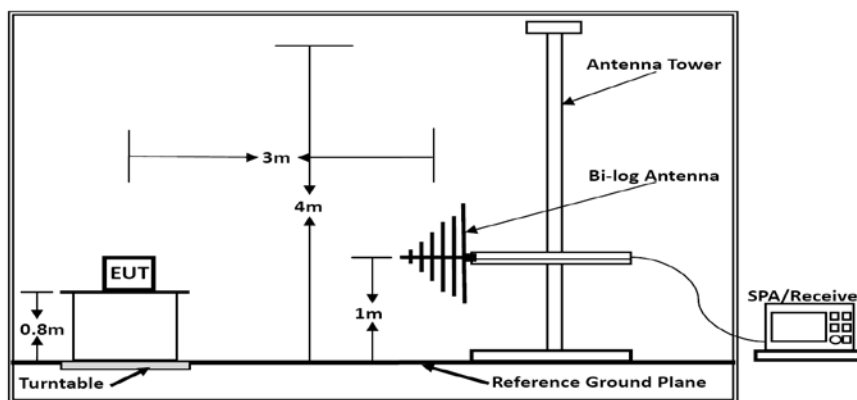
- The final measurement will be performed at the position and antenna orientation for all detected emissions that were found during the premeasurements with Peak and Average detector.
- The final levels, frequency, measuring time, bandwidth, correction factor, margin to the limit and limit will be recorded.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

5.5.4. Test Setup Layout

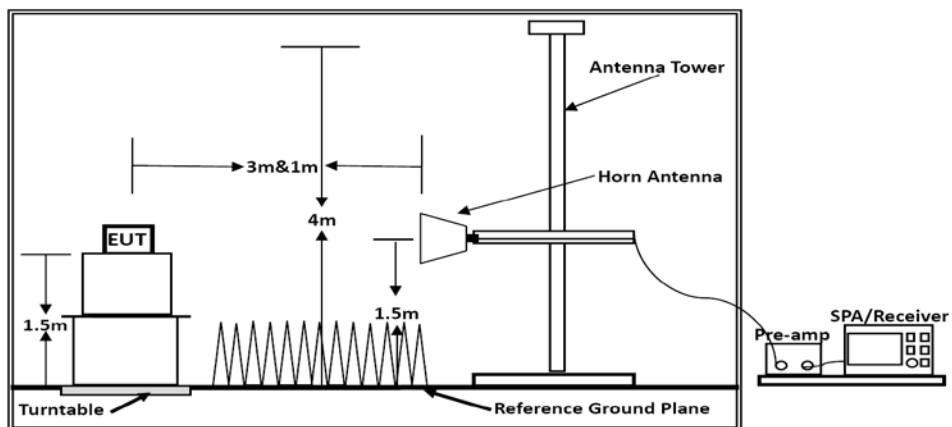
For radiated emissions below 30MHz



Below 30MHz



Below 1GHz



Above 1GHz

Above 18 GHz shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade from 3m to 1m.

Distance extrapolation factor = $20 \log (\text{specific distance [3m]} / \text{test distance [1.5m]})$ (dB);

Limit line = specific limits (dBuV) + distance extrapolation factor [6 dB].

5.5.5. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

5.5.6. Results of Radiated Emissions (9 KHz~30 MHz)

| | | | |
|---------------|-------------|----------------|-------------------|
| Temperature | 25°C | Humidity | 60% |
| Test Engineer | Jayden Zhuo | Configurations | IEEE 802.11a/n/ac |

| Freq. (MHz) | Level (dBuV) | Over Limit (dB) | Over Limit (dB) | Remark |
|-------------|--------------|-----------------|-----------------|----------|
| - | - | - | - | See Note |

Note:

The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.

Distance extrapolation factor = 40 log (specific distance / test distance) (dB);

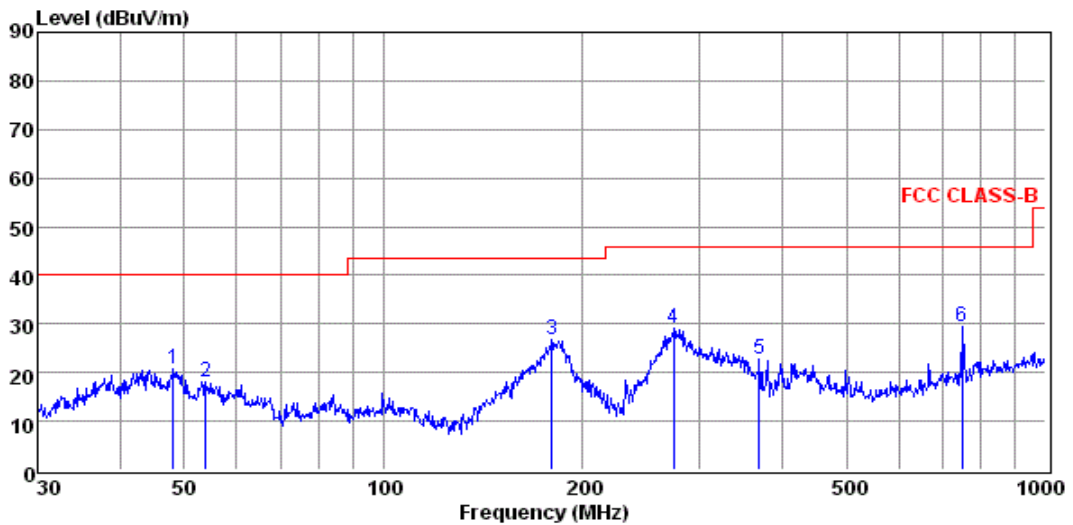
Limit line = specific limits (dBuV) + distance extrapolation factor.

5.4.7. Results of Radiated Emissions (30 MHz~1 GHz)

| | | | |
|---------------|-------------|----------------|---|
| Temperature | 25°C | Humidity | 60% |
| Test Engineer | Jayden Zhuo | Configurations | IEEE 802.11ac VHT20, Low Channel, 5745MHz |

Test result for IEEE 802.11ac VHT20 – Low Channel, Combined Antenna0, Antenna 1 and Antenna 2

Horizontal



pol:

HORIZONTAL

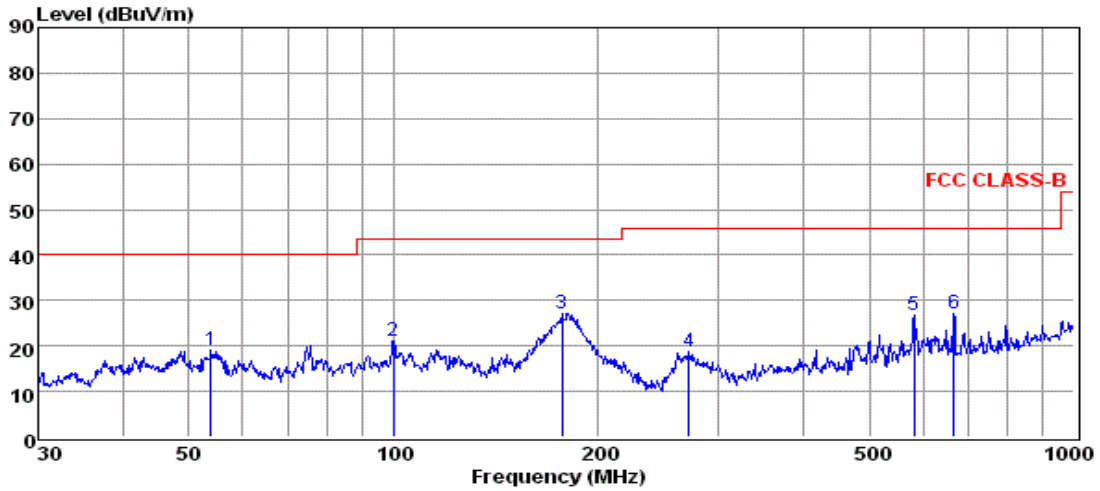
| | Freq | Reading | CabLos | Antfac | Measured | Limit | Over | Remark |
|---|--------|---------|--------|--------|----------|--------|--------|--------|
| | MHz | dBuV | dB | dB/m | dBuV/m | dBuV/m | dB | |
| 1 | 48.16 | 7.13 | 0.35 | 13.36 | 20.84 | 40.00 | -19.16 | QP |
| 2 | 53.88 | 4.66 | 0.46 | 13.07 | 18.19 | 40.00 | -21.81 | QP |
| 3 | 179.39 | 16.19 | 0.89 | 9.64 | 26.72 | 43.50 | -16.78 | QP |
| 4 | 274.19 | 15.42 | 1.04 | 12.49 | 28.95 | 46.00 | -17.05 | QP |
| 5 | 369.40 | 6.95 | 1.22 | 14.51 | 22.68 | 46.00 | -23.32 | QP |
| 6 | 747.48 | 8.28 | 1.65 | 19.40 | 29.33 | 46.00 | -16.67 | QP |

Note: 1. All readings are Quasi-peak values.

2. Measured= Reading + Antenna Factor + Cable Loss

3. The emission that are 20db below the official limit are not reported

Vertical



pol:

VERTICAL

| | Freq | Reading | CabLos | Antfac | Measured | Limit | Over | Remark |
|---|--------|---------|--------|--------|----------|--------|--------|--------|
| | MHz | dBuV | dB | dB/m | dBuV/m | dBuV/m | dB | |
| 1 | 53.88 | 5.48 | 0.46 | 13.07 | 19.01 | 40.00 | -20.99 | QP |
| 2 | 99.88 | 7.29 | 0.60 | 13.15 | 21.04 | 43.50 | -22.46 | QP |
| 3 | 176.89 | 16.83 | 0.73 | 9.46 | 27.02 | 43.50 | -16.48 | QP |
| 4 | 271.32 | 5.44 | 0.99 | 12.40 | 18.83 | 46.00 | -27.17 | QP |
| 5 | 582.74 | 7.09 | 1.54 | 18.13 | 26.76 | 46.00 | -19.24 | QP |
| 6 | 665.80 | 6.74 | 1.55 | 18.69 | 26.98 | 46.00 | -19.02 | QP |

- Note: 1. All readings are Quasi-peak values.
 2. Measured= Reading + Antenna Factor + Cable Loss
 3. The emission that ate 20db blow the official limit are not reported

Note:

Pre-scan all modes and recorded the worst case results in this report (IEEE 802.11ac VHT20-Low Channel, Combined Antenna 0, Antenna 1 and Antenna 2).
 Emission level (dBuV/m) = 20 log Emission level (uV/m).
 Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

5.5.8. Results for Radiated Emissions (Above 1GHz)

IEEE 802.11a

Antenna 0

Channel 149 / 5745 MHz

| Freq GHz | Read Level dBuV | Ant. Fac dB/m | Pre. Fac dB | Cab.Los dB | Measured Level dBuV | Limit Line dBuV/m | Over limit dB | Remark | Pol |
|----------|-----------------|---------------|-------------|------------|---------------------|-------------------|---------------|---------|------------|
| 17.235 | 60.51 | 33.23 | 35.04 | 3.91 | 62.61 | 68.20 | -5.59 | Peak | Horizontal |
| 17.235 | 44.89 | 33.23 | 35.04 | 3.91 | 46.99 | 54.00 | -7.01 | Average | Horizontal |
| 17.235 | 57.14 | 33.23 | 35.04 | 3.91 | 59.24 | 68.20 | -8.96 | Peak | Vertical |
| 17.235 | 42.32 | 33.23 | 35.04 | 3.91 | 44.42 | 54.00 | -9.58 | Average | Vertical |

Channel 157 / 5785 MHz

| Freq GHz | Read Level dBuV | Ant. Fac dB/m | Pre. Fac dB | Cab.Los dB | Measured Level dBuV | Limit Line dBuV/m | Over limit dB | Remark | Pol |
|----------|-----------------|---------------|-------------|------------|---------------------|-------------------|---------------|---------|------------|
| 17.355 | 60.30 | 33.27 | 35.15 | 3.93 | 62.35 | 68.20 | -5.85 | Peak | Horizontal |
| 17.355 | 43.20 | 33.27 | 35.15 | 3.93 | 45.25 | 54.00 | -8.75 | Average | Horizontal |
| 17.355 | 60.31 | 33.27 | 35.15 | 3.93 | 62.36 | 68.20 | -5.84 | Peak | Vertical |
| 17.355 | 41.97 | 33.27 | 35.15 | 3.93 | 44.02 | 54.00 | -9.98 | Average | Vertical |

Channel 163 / 5825 MHz

| Freq GHz | Read Level dBuV | Ant. Fac dB/m | Pre. Fac dB | Cab.Los dB | Measured Level dBuV | Limit Line dBuV/m | Over limit dB | Remark | Pol |
|----------|-----------------|---------------|-------------|------------|---------------------|-------------------|---------------|---------|------------|
| 17.475 | 61.23 | 33.32 | 35.14 | 3.97 | 63.38 | 68.20 | -4.82 | Peak | Horizontal |
| 17.475 | 46.94 | 33.32 | 35.14 | 3.97 | 49.09 | 54.00 | -4.91 | Average | Horizontal |
| 17.475 | 60.36 | 33.32 | 35.14 | 3.97 | 62.51 | 68.20 | -5.69 | Peak | Vertical |
| 17.475 | 43.89 | 33.32 | 35.14 | 3.97 | 46.04 | 54.00 | -7.96 | Average | Vertical |

IEEE 802.11n HT20

Combined Antenna 0, Antenna 1 and Antenna 2

Channel 149 / 5745 MHz

| Freq GHz | Read Level dBuV | Ant. Fac dB/m | Pre. Fac dB | Cab.Los dB | Measured Level dBuV | Limit Line dBuV/m | Over limit dB | Remark | Pol |
|----------|-----------------|---------------|-------------|------------|---------------------|-------------------|---------------|---------|------------|
| 17.235 | 60.84 | 33.23 | 35.04 | 3.91 | 62.94 | 68.20 | -5.26 | Peak | Horizontal |
| 17.235 | 43.26 | 33.23 | 35.04 | 3.91 | 45.36 | 54.00 | -8.64 | Average | Horizontal |
| 17.235 | 56.61 | 33.23 | 35.04 | 3.91 | 58.71 | 68.20 | -9.49 | Peak | Vertical |
| 17.235 | 40.86 | 33.23 | 35.04 | 3.91 | 42.96 | 54.00 | -11.04 | Average | Vertical |

Channel 157 / 5785 MHz

| Freq GHz | Read Level dBuV | Ant. Fac dB/m | Pre. Fac dB | Cab.Los dB | Measured Level dBuV | Limit Line dBuV/m | Over limit dB | Remark | Pol |
|----------|-----------------|---------------|-------------|------------|---------------------|-------------------|---------------|---------|------------|
| 17.355 | 58.85 | 33.27 | 35.15 | 3.93 | 60.90 | 68.20 | -7.30 | Peak | Horizontal |
| 17.355 | 41.57 | 33.27 | 35.15 | 3.93 | 43.62 | 54.00 | -10.38 | Average | Horizontal |
| 17.355 | 56.71 | 33.27 | 35.15 | 3.93 | 58.76 | 68.20 | -9.44 | Peak | Vertical |
| 17.355 | 43.27 | 33.27 | 35.15 | 3.93 | 45.32 | 54.00 | -8.68 | Average | Vertical |

Channel 163 / 5825 MHz

| Freq GHz | Read Level dBuV | Ant. Fac dB/m | Pre. Fac dB | Cab.Los dB | Measured Level dBuV | Limit Line dBuV/m | Over limit dB | Remark | Pol |
|----------|-----------------|---------------|-------------|------------|---------------------|-------------------|---------------|---------|------------|
| 17.475 | 59.41 | 33.32 | 35.14 | 3.97 | 61.56 | 68.20 | -6.64 | Peak | Horizontal |
| 17.475 | 46.60 | 33.32 | 35.14 | 3.97 | 48.75 | 54.00 | -5.25 | Average | Horizontal |
| 17.475 | 59.63 | 33.32 | 35.14 | 3.97 | 61.78 | 68.20 | -6.42 | Peak | Vertical |
| 17.475 | 43.91 | 33.32 | 35.14 | 3.97 | 46.06 | 54.00 | -7.94 | Average | Vertical |

IEEE 802.11n HT40

Combined Antenna 0, Antenna 1 and Antenna 2

Channel 151 / 5755 MHz

| Freq GHz | Read Level dBuV | Ant. Fac dB/m | Pre. Fac dB | Cab.Los dB | Measured Level dBuV | Limit Line dBuV/m | Over limit dB | Remark | Pol |
|----------|-----------------|---------------|-------------|------------|---------------------|-------------------|---------------|---------|------------|
| 17.265 | 59.29 | 33.23 | 35.04 | 3.91 | 61.39 | 68.20 | -6.81 | Peak | Horizontal |
| 17.265 | 43.42 | 33.23 | 35.04 | 3.91 | 45.52 | 54.00 | -8.48 | Average | Horizontal |
| 17.265 | 58.67 | 33.23 | 35.04 | 3.91 | 60.77 | 68.20 | -7.43 | Peak | Vertical |
| 17.265 | 41.97 | 33.23 | 35.04 | 3.91 | 44.07 | 54.00 | -9.93 | Average | Vertical |

Channel 159 / 5795 MHz

| Freq GHz | Read Level dBuV | Ant. Fac dB/m | Pre. Fac dB | Cab.Los dB | Measured Level dBuV | Limit Line dBuV/m | Over limit dB | Remark | Pol |
|----------|-----------------|---------------|-------------|------------|---------------------|-------------------|---------------|---------|------------|
| 17.385 | 59.23 | 33.23 | 35.04 | 3.91 | 61.33 | 68.20 | -6.87 | Peak | Horizontal |
| 17.385 | 42.05 | 33.23 | 35.04 | 3.91 | 44.15 | 54.00 | -9.85 | Average | Horizontal |
| 17.385 | 58.06 | 33.23 | 35.04 | 3.91 | 60.16 | 68.20 | -8.04 | Peak | Vertical |
| 17.385 | 42.48 | 33.23 | 35.04 | 3.91 | 44.58 | 54.00 | -9.42 | Average | Vertical |

IEEE 802.11ac VHT20

Combined Antenna 0, Antenna 1 and Antenna 2

Channel 149 / 5745 MHz

| Freq GHz | Read Level dBuV | Ant. Fac dB/m | Pre. Fac dB | Cab.Los dB | Measured Level dBuV | Limit Line dBuV/m | Over limit dB | Remark | Pol |
|----------|-----------------|---------------|-------------|------------|---------------------|-------------------|---------------|---------|------------|
| 17.235 | 62.46 | 33.23 | 35.04 | 3.91 | 64.56 | 68.20 | -3.64 | Peak | Horizontal |
| 17.235 | 43.23 | 33.23 | 35.04 | 3.91 | 45.33 | 54.00 | -8.67 | Average | Horizontal |
| 17.235 | 56.61 | 33.23 | 35.04 | 3.91 | 58.71 | 68.20 | -9.49 | Peak | Vertical |
| 17.235 | 43.36 | 33.23 | 35.04 | 3.91 | 45.46 | 54.00 | -8.54 | Average | Vertical |

Channel 157 / 5785 MHz

| Freq GHz | Read Level dBuV | Ant. Fac dB/m | Pre. Fac dB | Cab.Los dB | Measured Level dBuV | Limit Line dBuV/m | Over limit dB | Remark | Pol |
|----------|-----------------|---------------|-------------|------------|---------------------|-------------------|---------------|---------|------------|
| 17.355 | 58.95 | 33.27 | 35.15 | 3.93 | 61.00 | 68.20 | -7.20 | Peak | Horizontal |
| 17.355 | 43.43 | 33.27 | 35.15 | 3.93 | 45.48 | 54.00 | -8.52 | Average | Horizontal |
| 17.355 | 58.05 | 33.27 | 35.15 | 3.93 | 60.10 | 68.20 | -8.10 | Peak | Vertical |
| 17.355 | 40.45 | 33.27 | 35.15 | 3.93 | 42.50 | 54.00 | -11.50 | Average | Vertical |

Channel 163 / 5825 MHz

| Freq GHz | Read Level dBuV | Ant. Fac dB/m | Pre. Fac dB | Cab.Los dB | Measured Level dBuV | Limit Line dBuV/m | Over limit dB | Remark | Pol |
|----------|-----------------|---------------|-------------|------------|---------------------|-------------------|---------------|---------|------------|
| 17.475 | 61.26 | 33.32 | 35.14 | 3.97 | 63.41 | 68.20 | -4.79 | Peak | Horizontal |
| 17.475 | 44.83 | 33.32 | 35.14 | 3.97 | 46.98 | 54.00 | -7.02 | Average | Horizontal |
| 17.475 | 58.20 | 33.32 | 35.14 | 3.97 | 60.35 | 68.20 | -7.85 | Peak | Vertical |
| 17.475 | 45.20 | 33.32 | 35.14 | 3.97 | 47.35 | 54.00 | -6.65 | Average | Vertical |

IEEE 802.11ac VHT40

Combined Antenna 0, Antenna 1 and Antenna 2

Channel 151 / 5755 MHz

| Freq GHz | Read Level dBuV | Ant. Fac dB/m | Pre. Fac dB | Cab.Los dB | Measured Level dBuV | Limit Line dBuV/m | Over limit dB | Remark | Pol |
|----------|-----------------|---------------|-------------|------------|---------------------|-------------------|---------------|---------|------------|
| 17.265 | 58.74 | 33.23 | 35.04 | 3.91 | 60.84 | 68.20 | -7.36 | Peak | Horizontal |
| 17.265 | 40.37 | 33.23 | 35.04 | 3.91 | 42.47 | 54.00 | -11.53 | Average | Horizontal |
| 17.265 | 56.87 | 33.23 | 35.04 | 3.91 | 58.97 | 68.20 | -9.23 | Peak | Vertical |
| 17.265 | 39.08 | 33.23 | 35.04 | 3.91 | 41.18 | 54.00 | -12.82 | Average | Vertical |

Channel 159 / 5795 MHz

| Freq GHz | Read Level dBuV | Ant. Fac dB/m | Pre. Fac dB | Cab.Los dB | Measured Level dBuV | Limit Line dBuV/m | Over limit dB | Remark | Pol |
|----------|-----------------|---------------|-------------|------------|---------------------|-------------------|---------------|---------|------------|
| 17.385 | 56.84 | 33.23 | 35.04 | 3.91 | 58.94 | 68.20 | -9.26 | Peak | Horizontal |
| 17.385 | 42.02 | 33.23 | 35.04 | 3.91 | 44.12 | 54.00 | -9.88 | Average | Horizontal |
| 17.385 | 57.05 | 33.23 | 35.04 | 3.91 | 59.15 | 68.20 | -9.05 | Peak | Vertical |
| 17.385 | 38.77 | 33.23 | 35.04 | 3.91 | 40.87 | 54.00 | -13.13 | Average | Vertical |

IEEE 802.11ac VHT40

Combined Antenna 0, Antenna 1 and Antenna 2

Channel 155 / 5775 MHz

| Freq GHz | Read Level dBuV | Ant. Fac dB/m | Pre. Fac dB | Cab.Los dB | Measured Level dBuV | Limit Line dBuV/m | Over limit dB | Remark | Pol |
|----------|-----------------|---------------|-------------|------------|---------------------|-------------------|---------------|---------|------------|
| 17.325 | 59.10 | 33.27 | 35.15 | 3.93 | 61.15 | 68.20 | -7.05 | Peak | Horizontal |
| 17.325 | 42.24 | 33.27 | 35.15 | 3.93 | 44.29 | 54.00 | -9.71 | Average | Horizontal |
| 17.325 | 59.36 | 33.27 | 35.15 | 3.93 | 61.41 | 68.20 | -6.79 | Peak | Vertical |
| 17.325 | 43.06 | 33.27 | 35.15 | 3.93 | 45.11 | 54.00 | -8.89 | Average | Vertical |

Notes:

- 1). Measuring frequencies from 9 KHz ~ 40 GHz, No emission found between lowest internal used/generated frequency to 30MHz.
- 2). Radiated emissions measured in frequency range from 9 KHz ~ 40 GHz were made with an instrument using Peak detector mode.
- 3). 18~40GHz at least have 20dB margin. No recording in the test report.
- 4). Worst case data at 6Mbps at IEEE 802.11a; MCS0 at IEEE 802.11n HT20, IEEE 802.11n HT40, IEEE 802.11a VHT20, IEEE 802.11ac VHT40 and IEEE 802.11ac VHT80;
- 5). Data of measurement within this frequency range shown "---" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 6). Pre-scan at Antenna 0, Antenna 1 and Antenna 2 for IEEE 802.11a mode, pre-scan at Antenna 0, Antenna 1, Antenna 2 and Combined Antenna 0, Antenna 1 and Antenna 2 for IEEE 802.11n and IEEE 802.11ac, recorded worst case;

5.6. Power line conducted emissions

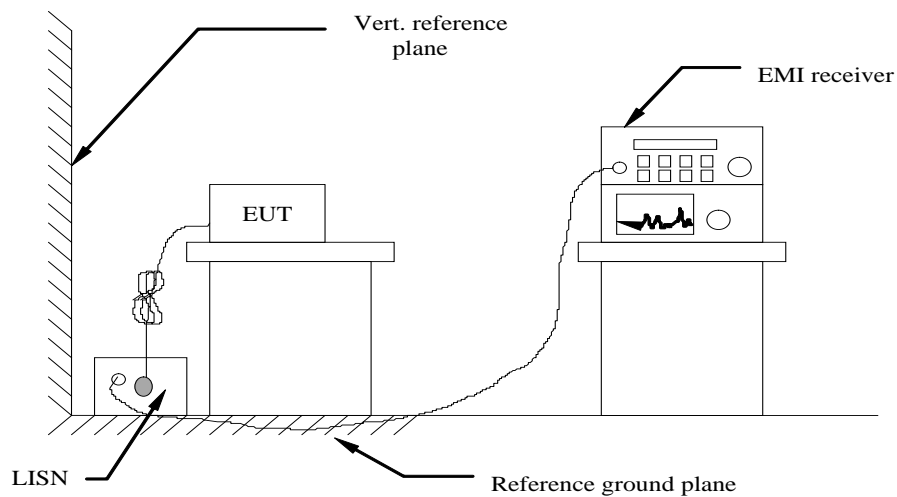
5.6.1 Standard Applicable

According to §15.207 (a): For an intentional radiator which is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed 250 microvolts (The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz). The limits at specific frequency range are listed as follows:

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

* Decreasing linearly with the logarithm of the frequency

5.6.2 Block Diagram of Test Setup



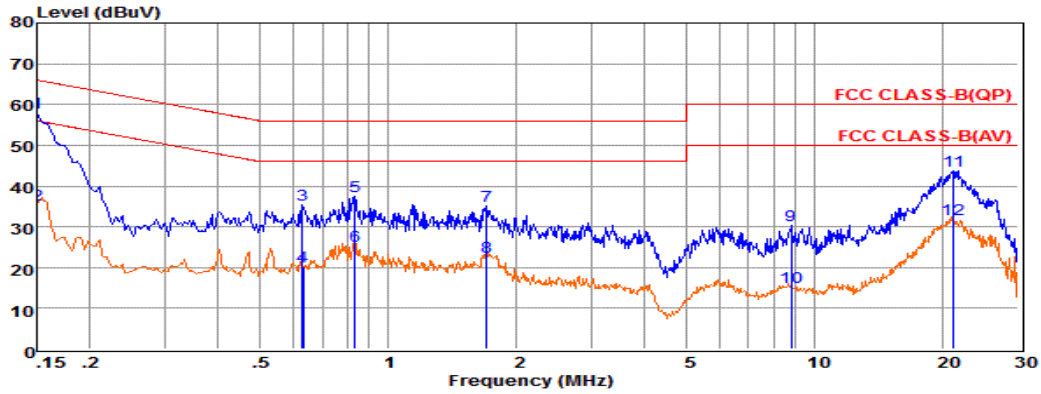
5.6.3 Test Results

PASS.

The test data please refer to following page.

AC Conducted Emission of power by adapter @ AC 120V/60Hz @ IEEE 802.11ac VHT20 (worst case)

Line

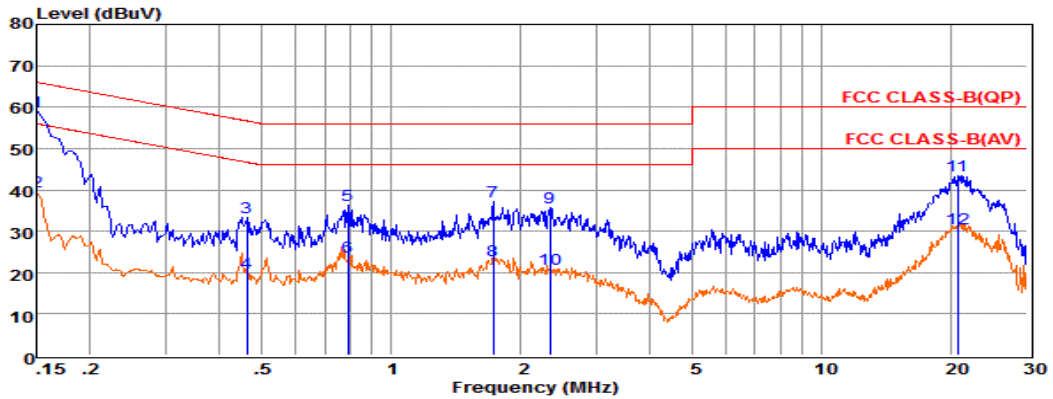


Pol: LINE

| | Freq | Reading | LISNFac | CabLos | Aux2Fac | Measured | Limit | Over | Remark |
|----|-------|---------|---------|--------|---------|----------|-------|--------|---------|
| | MHz | dBuV | dB | dB | dB | dB | dBuV | dBuV | dB |
| 1 | 0.15 | 38.27 | 9.57 | 0.02 | 10.00 | 57.86 | 66.00 | -8.14 | QP |
| 2 | 0.15 | 15.93 | 9.57 | 0.02 | 10.00 | 35.52 | 55.99 | -20.47 | Average |
| 3 | 0.63 | 15.86 | 9.63 | 0.04 | 10.00 | 35.53 | 56.00 | -20.47 | QP |
| 4 | 0.63 | 0.70 | 9.63 | 0.04 | 10.00 | 20.37 | 46.00 | -25.63 | Average |
| 5 | 0.83 | 17.90 | 9.64 | 0.04 | 10.00 | 37.58 | 56.00 | -18.42 | QP |
| 6 | 0.83 | 5.61 | 9.64 | 0.04 | 10.00 | 25.29 | 46.00 | -20.71 | Average |
| 7 | 1.70 | 15.46 | 9.64 | 0.05 | 10.00 | 35.15 | 56.00 | -20.85 | QP |
| 8 | 1.70 | 2.91 | 9.64 | 0.05 | 10.00 | 22.60 | 46.00 | -23.40 | Average |
| 9 | 8.82 | 10.61 | 9.69 | 0.08 | 10.00 | 30.38 | 60.00 | -29.62 | QP |
| 10 | 8.82 | -4.62 | 9.69 | 0.08 | 10.00 | 15.15 | 50.00 | -34.85 | Average |
| 11 | 21.15 | 23.95 | 9.73 | 0.12 | 10.00 | 43.80 | 60.00 | -16.20 | QP |
| 12 | 21.15 | 12.12 | 9.73 | 0.12 | 10.00 | 31.97 | 50.00 | -18.03 | Average |

Remarks: 1. Measured = Reading + LISNFac + Cable Loss + Aux2 Fac.
 2. The emission levels that are 20dB below the official limit are not reported.

Neutral



Pol: NEUTRAL

| | Freq | Reading | LISNFac | CabLos | Aux2Fac | Measured | Limit | Over | Remark |
|----|-------|---------|---------|--------|---------|----------|-------|--------|---------|
| | MHz | dBuV | dB | dB | dB | dB | dBuV | dBuV | dB |
| 1 | 0.15 | 39.29 | 9.70 | 0.02 | 10.00 | 59.01 | 66.00 | -6.99 | QP |
| 2 | 0.15 | 19.89 | 9.70 | 0.02 | 10.00 | 39.61 | 55.99 | -16.38 | Average |
| 3 | 0.46 | 13.78 | 9.62 | 0.04 | 10.00 | 33.44 | 56.67 | -23.23 | QP |
| 4 | 0.46 | 0.41 | 9.62 | 0.04 | 10.00 | 20.07 | 46.67 | -26.60 | Average |
| 5 | 0.79 | 16.53 | 9.63 | 0.04 | 10.00 | 36.20 | 56.00 | -19.80 | QP |
| 6 | 0.79 | 4.23 | 9.63 | 0.04 | 10.00 | 23.90 | 46.00 | -22.10 | Average |
| 7 | 1.73 | 17.54 | 9.63 | 0.05 | 10.00 | 37.22 | 56.00 | -18.78 | QP |
| 8 | 1.73 | 3.30 | 9.63 | 0.05 | 10.00 | 22.98 | 46.00 | -23.02 | Average |
| 9 | 2.33 | 15.88 | 9.64 | 0.05 | 10.00 | 35.57 | 56.00 | -20.43 | QP |
| 10 | 2.33 | 1.07 | 9.64 | 0.05 | 10.00 | 20.76 | 46.00 | -25.24 | Average |
| 11 | 20.70 | 23.57 | 9.86 | 0.12 | 10.00 | 43.55 | 60.00 | -16.45 | QP |
| 12 | 20.70 | 10.60 | 9.86 | 0.12 | 10.00 | 30.58 | 50.00 | -19.42 | Average |

Remarks: 1. Measured = Reading + LISNFac + Cable Loss + Aux2 Fac.
 2. The emission levels that are 20dB below the official limit are not reported.

***Note: Pre-scan all modes and recorded the worst case results in this report (IEEE 802.11ac VHT20 mode).

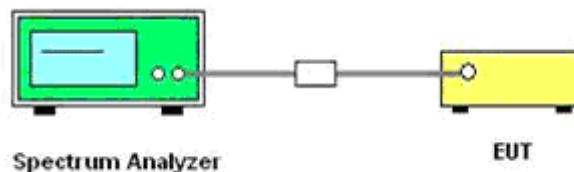
5.7 Undesirable Emissions Measurement

5.7.1 Limit

According to §15.407 (b) Undesirable emission limits. Except as shown in paragraph (b) (7) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

- (a) 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.
- (b) 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.
- (c) 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.
- (d) For transmitters operating in the 5.725-5.85 GHz band:
 - (i) All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.
 - (ii) Devices certified before March 2, 2017 with antenna gain greater than 10 dBi may demonstrate compliance with the emission limits in §15.247(d), but manufacturing, marketing and importing of devices certified under this alternative must cease by March 2, 2018. Devices certified before March 2, 2018 with antenna gain of 10 dBi or less may demonstrate compliance with the emission limits in §15.247(d), but manufacturing, marketing and importing of devices certified under this alternative must cease before March 2, 2020.
- (e) 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.
- (f) 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.
- (g) The provisions of §15.205 apply to intentional radiators operating under this section.
- (h) 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.

5.7.2 Test Configuration



5.7.3 Test Procedure

1. The power was monitored at the coupler port with a Spectrum Analyzer. The power level was set to the maximum level.
2. Set the RBW = 1MHz.
3. Set the VBW \geq 3MHz
4. Number of points in sweep $\geq 2 \times$ span / RBW. (This ensures that bin-to-bin spacing is \leq RBW/2, so that narrowband signals are not lost between frequency bins.)
5. Manually set sweep time $\geq 10 \times$ (number of points in sweep) \times (total on/off period of the transmitted signal).
6. Set detector = power averaging (rms).
7. Sweep time = auto couple.
8. Trace mode = max hold.
9. Allow trace to fully stabilize.

5.7.4 Test Results

Antenna 0

| IEEE 802.11a | | | | | | | |
|-----------------|-----------------------|--------------------|-----------------|----------|------------------|-----------------|---------|
| Frequency (MHz) | Conducted Power (dBm) | Antenna Gain (dBi) | EIRP (dBm/1MHz) | Detector | Limit (dBm/1MHz) | Over limit (dB) | Verdict |
| 5650.000 | -58.225 | 2.000 | -56.225 | Peak | -27.000 | -29.225 | PASS |
| 5700.000 | -58.666 | 2.000 | -56.666 | Peak | 10.000 | -66.666 | PASS |
| 5720.000 | -59.175 | 2.000 | -57.175 | Peak | 15.600 | -72.775 | PASS |
| 5725.000 | -57.468 | 2.000 | -55.468 | Peak | 27.000 | -82.468 | PASS |
| 5850.000 | -60.039 | 2.000 | -58.039 | Peak | 27.000 | -85.039 | PASS |
| 5855.000 | -58.257 | 2.000 | -56.257 | Peak | 15.600 | -71.857 | PASS |
| 5875.000 | -59.977 | 2.000 | -57.977 | Peak | 10.000 | -67.977 | PASS |
| 5925.000 | -61.217 | 2.000 | -59.217 | Peak | -27.000 | -32.217 | PASS |

| IEEE 802.11n HT20 | | | | | | | |
|-------------------|-----------------------|--------------------|-----------------|----------|------------------|-----------------|---------|
| Frequency (MHz) | Conducted Power (dBm) | Antenna Gain (dBi) | EIRP (dBm/1MHz) | Detector | Limit (dBm/1MHz) | Over limit (dB) | Verdict |
| 5650.000 | -61.555 | 2.000 | -59.555 | Peak | -27.000 | -32.555 | PASS |
| 5700.000 | -59.141 | 2.000 | -57.141 | Peak | 10.000 | -67.141 | PASS |
| 5720.000 | -59.514 | 2.000 | -57.514 | Peak | 15.600 | -73.114 | PASS |
| 5725.000 | -58.396 | 2.000 | -56.396 | Peak | 27.000 | -83.396 | PASS |
| 5850.000 | -58.362 | 2.000 | -56.362 | Peak | 27.000 | -83.362 | PASS |
| 5855.000 | -58.165 | 2.000 | -56.165 | Peak | 15.600 | -71.765 | PASS |
| 5875.000 | -59.309 | 2.000 | -57.309 | Peak | 10.000 | -67.309 | PASS |
| 5925.000 | -59.084 | 2.000 | -57.084 | Peak | -27.000 | -30.084 | PASS |

| IEEE 802.11n HT40 | | | | | | | |
|-------------------|-----------------------|--------------------|-----------------|----------|------------------|-----------------|---------|
| Frequency (MHz) | Conducted Power (dBm) | Antenna Gain (dBi) | EIRP (dBm/1MHz) | Detector | Limit (dBm/1MHz) | Over limit (dB) | Verdict |
| 5650.000 | -59.853 | 2.000 | -57.853 | Peak | -27.000 | -30.853 | PASS |
| 5700.000 | -57.923 | 2.000 | -55.923 | Peak | 10.000 | -65.923 | PASS |
| 5720.000 | -57.986 | 2.000 | -55.986 | Peak | 15.600 | -71.586 | PASS |
| 5725.000 | -57.697 | 2.000 | -55.697 | Peak | 27.000 | -82.697 | PASS |
| 5850.000 | -58.037 | 2.000 | -56.037 | Peak | 27.000 | -83.037 | PASS |
| 5855.000 | -56.736 | 2.000 | -54.736 | Peak | 15.600 | -70.336 | PASS |
| 5875.000 | -56.656 | 2.000 | -54.656 | Peak | 10.000 | -64.656 | PASS |
| 5925.000 | -58.615 | 2.000 | -56.615 | Peak | -27.000 | -29.615 | PASS |

| IEEE 802.11ac VHT20 | | | | | | | |
|---------------------|-----------------------|--------------------|-----------------|----------|------------------|-----------------|---------|
| Frequency (MHz) | Conducted Power (dBm) | Antenna Gain (dBi) | EIRP (dBm/1MHz) | Detector | Limit (dBm/1MHz) | Over limit (dB) | Verdict |
| 5650.000 | -60.024 | 2.000 | -58.024 | Peak | -27.000 | -31.024 | PASS |
| 5700.000 | -59.374 | 2.000 | -57.374 | Peak | 10.000 | -67.374 | PASS |
| 5720.000 | -58.658 | 2.000 | -56.658 | Peak | 15.600 | -72.258 | PASS |
| 5725.000 | -57.336 | 2.000 | -55.336 | Peak | 27.000 | -82.336 | PASS |
| 5850.000 | -59.614 | 2.000 | -57.614 | Peak | 27.000 | -84.614 | PASS |
| 5855.000 | -59.095 | 2.000 | -57.095 | Peak | 15.600 | -72.695 | PASS |
| 5875.000 | -58.720 | 2.000 | -56.720 | Peak | 10.000 | -66.720 | PASS |
| 5925.000 | -60.233 | 2.000 | -58.233 | Peak | -27.000 | -31.233 | PASS |

IEEE 802.11ac VHT40

| Frequency (MHz) | Conducted Power (dBm) | Antenna Gain (dBi) | EIRP (dBm/1MHz) | Detector | Limit (dBm/1MHz) | Over limit (dB) | Verdict |
|-----------------|-----------------------|--------------------|-----------------|----------|------------------|-----------------|---------|
| 5650.000 | -60.047 | 2.000 | -58.047 | Peak | -27.000 | -31.047 | PASS |
| 5700.000 | -57.784 | 2.000 | -55.784 | Peak | 10.000 | -65.784 | PASS |
| 5720.000 | -56.685 | 2.000 | -54.685 | Peak | 15.600 | -70.285 | PASS |
| 5725.000 | -57.765 | 2.000 | -55.765 | Peak | 27.000 | -82.765 | PASS |
| 5850.000 | -58.902 | 2.000 | -56.902 | Peak | 27.000 | -83.902 | PASS |
| 5855.000 | -58.788 | 2.000 | -56.788 | Peak | 15.600 | -72.388 | PASS |
| 5875.000 | -57.629 | 2.000 | -55.629 | Peak | 10.000 | -65.629 | PASS |
| 5925.000 | -59.163 | 2.000 | -57.163 | Peak | -27.000 | -30.163 | PASS |

IEEE 802.11ac VHT80

| Frequency (MHz) | Conducted Power (dBm) | Antenna Gain (dBi) | EIRP (dBm/1MHz) | Detector | Limit (dBm/1MHz) | Over limit (dB) | Verdict |
|-----------------|-----------------------|--------------------|-----------------|----------|------------------|-----------------|---------|
| 5650.000 | -60.666 | 2.000 | -58.666 | Peak | -27.000 | -31.666 | PASS |
| 5700.000 | -59.193 | 2.000 | -57.193 | Peak | 10.000 | -67.193 | PASS |
| 5720.000 | -58.303 | 2.000 | -56.303 | Peak | 15.600 | -71.903 | PASS |
| 5725.000 | -57.956 | 2.000 | -55.956 | Peak | 27.000 | -82.956 | PASS |
| 5850.000 | -59.717 | 2.000 | -57.717 | Peak | 27.000 | -84.717 | PASS |
| 5855.000 | -58.342 | 2.000 | -56.342 | Peak | 15.600 | -71.942 | PASS |
| 5875.000 | -59.065 | 2.000 | -57.065 | Peak | 10.000 | -67.065 | PASS |
| 5925.000 | -60.913 | 2.000 | -58.913 | Peak | -27.000 | -31.913 | PASS |

Antenna 1

IEEE 802.11a

| Frequency (MHz) | Conducted Power (dBm) | Antenna Gain (dBi) | EIRP (dBm/1MHz) | Detector | Limit (dBm/1MHz) | Over limit (dB) | Verdict |
|-----------------|-----------------------|--------------------|-----------------|----------|------------------|-----------------|---------|
| 5650.000 | -59.575 | 2.000 | -57.575 | Peak | -27.000 | -30.575 | PASS |
| 5700.000 | -59.404 | 2.000 | -57.404 | Peak | 10.000 | -67.404 | PASS |
| 5720.000 | -58.176 | 2.000 | -56.176 | Peak | 15.600 | -71.776 | PASS |
| 5725.000 | -56.808 | 2.000 | -54.808 | Peak | 27.000 | -81.808 | PASS |
| 5850.000 | -58.297 | 2.000 | -56.297 | Peak | 27.000 | -83.297 | PASS |
| 5855.000 | -58.257 | 2.000 | -56.257 | Peak | 15.600 | -71.857 | PASS |
| 5875.000 | -59.516 | 2.000 | -57.516 | Peak | 10.000 | -67.516 | PASS |
| 5925.000 | -58.995 | 2.000 | -56.995 | Peak | -27.000 | -29.995 | PASS |

IEEE 802.11n HT20

| Frequency (MHz) | Conducted Power (dBm) | Antenna Gain (dBi) | EIRP (dBm/1MHz) | Detector | Limit (dBm/1MHz) | Over limit (dB) | Verdict |
|-----------------|-----------------------|--------------------|-----------------|----------|------------------|-----------------|---------|
| 5650.000 | -60.080 | 2.000 | -58.080 | Peak | -27.000 | -31.080 | PASS |
| 5700.000 | -58.786 | 2.000 | -56.786 | Peak | 10.000 | -66.786 | PASS |
| 5720.000 | -58.324 | 2.000 | -56.324 | Peak | 15.600 | -71.924 | PASS |
| 5725.000 | -56.980 | 2.000 | -54.980 | Peak | 27.000 | -81.980 | PASS |
| 5850.000 | -59.932 | 2.000 | -57.932 | Peak | 27.000 | -84.932 | PASS |
| 5855.000 | -59.952 | 2.000 | -57.952 | Peak | 15.600 | -73.552 | PASS |
| 5875.000 | -61.635 | 2.000 | -59.635 | Peak | 10.000 | -69.635 | PASS |
| 5925.000 | -58.185 | 2.000 | -56.185 | Peak | -27.000 | -29.185 | PASS |

IEEE 802.11n HT40

| Frequency (MHz) | Conducted Power (dBm) | Antenna Gain (dBi) | EIRP (dBm/1MHz) | Detector | Limit (dBm/1MHz) | Over limit (dB) | Verdict |
|-----------------|-----------------------|--------------------|-----------------|----------|------------------|-----------------|---------|
| 5650.000 | -59.093 | 2.000 | -57.093 | Peak | -27.000 | -30.093 | PASS |
| 5700.000 | -57.923 | 2.000 | -55.923 | Peak | 10.000 | -65.923 | PASS |
| 5720.000 | -57.986 | 2.000 | -55.986 | Peak | 15.600 | -71.586 | PASS |
| 5725.000 | -57.551 | 2.000 | -55.551 | Peak | 27.000 | -82.551 | PASS |
| 5850.000 | -57.756 | 2.000 | -55.756 | Peak | 27.000 | -82.756 | PASS |
| 5855.000 | -56.736 | 2.000 | -54.736 | Peak | 15.600 | -70.336 | PASS |
| 5875.000 | -56.656 | 2.000 | -54.656 | Peak | 10.000 | -64.656 | PASS |
| 5925.000 | -58.566 | 2.000 | -56.566 | Peak | -27.000 | -29.566 | PASS |

IEEE 802.11ac VHT20

| Frequency (MHz) | Conducted Power (dBm) | Antenna Gain (dBi) | EIRP (dBm/1MHz) | Detector | Limit (dBm/1MHz) | Over limit (dB) | Verdict |
|-----------------|-----------------------|--------------------|-----------------|----------|------------------|-----------------|---------|
| 5650.000 | -60.427 | 2.000 | -58.427 | Peak | -27.000 | -31.427 | PASS |
| 5700.000 | -59.482 | 2.000 | -57.482 | Peak | 10.000 | -67.482 | PASS |
| 5720.000 | -59.639 | 2.000 | -57.639 | Peak | 15.600 | -73.239 | PASS |
| 5725.000 | -57.149 | 2.000 | -55.149 | Peak | 27.000 | -82.149 | PASS |
| 5850.000 | -59.042 | 2.000 | -57.042 | Peak | 27.000 | -84.042 | PASS |
| 5855.000 | -58.618 | 2.000 | -56.618 | Peak | 15.600 | -72.218 | PASS |
| 5875.000 | -58.720 | 2.000 | -56.720 | Peak | 10.000 | -66.720 | PASS |
| 5925.000 | -58.669 | 2.000 | -56.669 | Peak | -27.000 | -29.669 | PASS |

IEEE 802.11ac VHT40

| Frequency (MHz) | Conducted Power (dBm) | Antenna Gain (dBi) | EIRP (dBm/1MHz) | Detector | Limit (dBm/1MHz) | Over limit (dB) | Verdict |
|-----------------|-----------------------|--------------------|-----------------|----------|------------------|-----------------|---------|
| 5650.000 | -58.753 | 2.000 | -56.753 | Peak | -27.000 | -29.753 | PASS |
| 5700.000 | -57.536 | 2.000 | -55.536 | Peak | 10.000 | -65.536 | PASS |
| 5720.000 | -56.380 | 2.000 | -54.380 | Peak | 15.600 | -69.980 | PASS |
| 5725.000 | -56.611 | 2.000 | -54.611 | Peak | 27.000 | -81.611 | PASS |
| 5850.000 | -57.812 | 2.000 | -55.812 | Peak | 27.000 | -82.812 | PASS |
| 5855.000 | -58.780 | 2.000 | -56.780 | Peak | 15.600 | -72.380 | PASS |
| 5875.000 | -57.629 | 2.000 | -55.629 | Peak | 10.000 | -65.629 | PASS |
| 5925.000 | -59.078 | 2.000 | -57.078 | Peak | -27.000 | -30.078 | PASS |

IEEE 802.11ac VHT80

| Frequency (MHz) | Conducted Power (dBm) | Antenna Gain (dBi) | EIRP (dBm/1MHz) | Detector | Limit (dBm/1MHz) | Over limit (dB) | Verdict |
|-----------------|-----------------------|--------------------|-----------------|----------|------------------|-----------------|---------|
| 5650.000 | -59.443 | 2.000 | -57.443 | Peak | -27.000 | -30.443 | PASS |
| 5700.000 | -58.651 | 2.000 | -56.651 | Peak | 10.000 | -66.651 | PASS |
| 5720.000 | -56.876 | 2.000 | -54.876 | Peak | 15.600 | -70.476 | PASS |
| 5725.000 | -56.148 | 2.000 | -54.148 | Peak | 27.000 | -81.148 | PASS |
| 5850.000 | -59.611 | 2.000 | -57.611 | Peak | 27.000 | -84.611 | PASS |
| 5855.000 | -59.088 | 2.000 | -57.088 | Peak | 15.600 | -72.688 | PASS |
| 5875.000 | -58.602 | 2.000 | -56.602 | Peak | 10.000 | -66.602 | PASS |
| 5925.000 | -61.663 | 2.000 | -59.663 | Peak | -27.000 | -32.663 | PASS |

Antenna 2

| IEEE 802.11a | | | | | | | |
|-----------------|-----------------------|--------------------|-----------------|----------|------------------|-----------------|---------|
| Frequency (MHz) | Conducted Power (dBm) | Antenna Gain (dBi) | EIRP (dBm/1MHz) | Detector | Limit (dBm/1MHz) | Over limit (dB) | Verdict |
| 5650.000 | -61.802 | 2.000 | -59.802 | Peak | -27.000 | -32.802 | PASS |
| 5700.000 | -58.451 | 2.000 | -56.451 | Peak | 10.000 | -66.451 | PASS |
| 5720.000 | -59.695 | 2.000 | -57.695 | Peak | 15.600 | -73.295 | PASS |
| 5725.000 | -58.415 | 2.000 | -56.415 | Peak | 27.000 | -83.415 | PASS |
| 5850.000 | -59.433 | 2.000 | -57.433 | Peak | 27.000 | -84.433 | PASS |
| 5855.000 | -60.362 | 2.000 | -58.362 | Peak | 15.600 | -73.962 | PASS |
| 5875.000 | -60.591 | 2.000 | -58.591 | Peak | 10.000 | -68.591 | PASS |
| 5925.000 | -59.945 | 2.000 | -57.945 | Peak | -27.000 | -30.945 | PASS |

| IEEE 802.11n HT20 | | | | | | | |
|-------------------|-----------------------|--------------------|-----------------|----------|------------------|-----------------|---------|
| Frequency (MHz) | Conducted Power (dBm) | Antenna Gain (dBi) | EIRP (dBm/1MHz) | Detector | Limit (dBm/1MHz) | Over limit (dB) | Verdict |
| 5650.000 | -60.896 | 2.000 | -58.896 | Peak | -27.000 | -31.896 | PASS |
| 5700.000 | -60.463 | 2.000 | -58.463 | Peak | 10.000 | -68.463 | PASS |
| 5720.000 | -58.398 | 2.000 | -56.398 | Peak | 15.600 | -71.998 | PASS |
| 5725.000 | -58.264 | 2.000 | -56.264 | Peak | 27.000 | -83.264 | PASS |
| 5850.000 | -58.494 | 2.000 | -56.494 | Peak | 27.000 | -83.494 | PASS |
| 5855.000 | -60.614 | 2.000 | -58.614 | Peak | 15.600 | -74.214 | PASS |
| 5875.000 | -59.772 | 2.000 | -57.772 | Peak | 10.000 | -67.772 | PASS |
| 5925.000 | -60.908 | 2.000 | -58.908 | Peak | -27.000 | -31.908 | PASS |

| IEEE 802.11n HT40 | | | | | | | |
|-------------------|-----------------------|--------------------|-----------------|----------|------------------|-----------------|---------|
| Frequency (MHz) | Conducted Power (dBm) | Antenna Gain (dBi) | EIRP (dBm/1MHz) | Detector | Limit (dBm/1MHz) | Over limit (dB) | Verdict |
| 5650.000 | -60.709 | 2.000 | -58.709 | Peak | -27.000 | -31.709 | PASS |
| 5700.000 | -58.791 | 2.000 | -56.791 | Peak | 10.000 | -66.791 | PASS |
| 5720.000 | -57.708 | 2.000 | -55.708 | Peak | 15.600 | -71.308 | PASS |
| 5725.000 | -58.352 | 2.000 | -56.352 | Peak | 27.000 | -83.352 | PASS |
| 5850.000 | -58.914 | 2.000 | -56.914 | Peak | 27.000 | -83.914 | PASS |
| 5855.000 | -58.635 | 2.000 | -56.635 | Peak | 15.600 | -72.235 | PASS |
| 5875.000 | -59.175 | 2.000 | -57.175 | Peak | 10.000 | -67.175 | PASS |
| 5925.000 | -59.589 | 2.000 | -57.589 | Peak | -27.000 | -30.589 | PASS |

| IEEE 802.11ac VHT20 | | | | | | | |
|---------------------|-----------------------|--------------------|-----------------|----------|------------------|-----------------|---------|
| Frequency (MHz) | Conducted Power (dBm) | Antenna Gain (dBi) | EIRP (dBm/1MHz) | Detector | Limit (dBm/1MHz) | Over limit (dB) | Verdict |
| 5650.000 | -59.376 | 2.000 | -57.376 | Peak | -27.000 | -30.376 | PASS |
| 5700.000 | -60.351 | 2.000 | -58.351 | Peak | 10.000 | -68.351 | PASS |
| 5720.000 | -59.277 | 2.000 | -57.277 | Peak | 15.600 | -72.877 | PASS |
| 5725.000 | -56.132 | 2.000 | -54.132 | Peak | 27.000 | -81.132 | PASS |
| 5850.000 | -60.764 | 2.000 | -58.764 | Peak | 27.000 | -85.764 | PASS |
| 5855.000 | -60.403 | 2.000 | -58.403 | Peak | 15.600 | -74.003 | PASS |
| 5875.000 | -60.395 | 2.000 | -58.395 | Peak | 10.000 | -68.395 | PASS |
| 5925.000 | -59.849 | 2.000 | -57.849 | Peak | -27.000 | -30.849 | PASS |

IEEE 802.11ac VHT40

| Frequency (MHz) | Conducted Power (dBm) | Antenna Gain (dBi) | EIRP (dBm/1MHz) | Detector | Limit (dBm/1MHz) | Over limit (dB) | Verdict |
|-----------------|-----------------------|--------------------|-----------------|----------|------------------|-----------------|---------|
| 5650.000 | -60.577 | 2.000 | -58.577 | Peak | -27.000 | -31.577 | PASS |
| 5700.000 | -60.339 | 2.000 | -58.339 | Peak | 10.000 | -68.339 | PASS |
| 5720.000 | -59.178 | 2.000 | -57.178 | Peak | 15.600 | -72.778 | PASS |
| 5725.000 | -57.984 | 2.000 | -55.984 | Peak | 27.000 | -82.984 | PASS |
| 5850.000 | -59.414 | 2.000 | -57.414 | Peak | 27.000 | -84.414 | PASS |
| 5855.000 | -59.909 | 2.000 | -57.909 | Peak | 15.600 | -73.509 | PASS |
| 5875.000 | -59.753 | 2.000 | -57.753 | Peak | 10.000 | -67.753 | PASS |
| 5925.000 | -59.187 | 2.000 | -57.187 | Peak | -27.000 | -30.187 | PASS |

IEEE 802.11ac VHT80

| Frequency (MHz) | Conducted Power (dBm) | Antenna Gain (dBi) | EIRP (dBm/1MHz) | Detector | Limit (dBm/1MHz) | Over limit (dB) | Verdict |
|-----------------|-----------------------|--------------------|-----------------|----------|------------------|-----------------|---------|
| 5650.000 | -59.425 | 2.000 | -57.425 | Peak | -27.000 | -30.425 | PASS |
| 5700.000 | -59.141 | 2.000 | -57.141 | Peak | 10.000 | -67.141 | PASS |
| 5720.000 | -57.307 | 2.000 | -55.307 | Peak | 15.600 | -70.907 | PASS |
| 5725.000 | -56.819 | 2.000 | -54.819 | Peak | 27.000 | -81.819 | PASS |
| 5850.000 | -56.757 | 2.000 | -54.757 | Peak | 27.000 | -81.757 | PASS |
| 5855.000 | -56.054 | 2.000 | -54.054 | Peak | 15.600 | -69.654 | PASS |
| 5875.000 | -56.874 | 2.000 | -54.874 | Peak | 10.000 | -64.874 | PASS |
| 5925.000 | -59.121 | 2.000 | -57.121 | Peak | -27.000 | -30.121 | PASS |

Combined Antenna 0, Antenna 1 and Antenna 2

IEEE 802.11n HT20

| Frequency (MHz) | Conducted Power (dBm) | | | | Directional Gain (dBi) | EIRP (dBm/1MHz) | Detector | Limit (dBm/1MHz) | Over limit (dB) | Verdict |
|-----------------|-----------------------|-----------|-----------|---------|------------------------|-----------------|----------|------------------|-----------------|---------|
| | Antenna 0 | Antenna 1 | Antenna 2 | Sum | | | | | | |
| 5650.000 | -61.555 | -60.080 | -60.896 | -56.030 | 6.771 | -49.259 | Peak | -27.000 | -22.259 | PASS |
| 5700.000 | -59.141 | -58.786 | -60.463 | -54.634 | 6.771 | -47.863 | Peak | 10.000 | -57.863 | PASS |
| 5720.000 | -59.514 | -58.324 | -58.398 | -53.941 | 6.771 | -47.170 | Peak | 15.600 | -62.770 | PASS |
| 5725.000 | -58.396 | -56.980 | -58.264 | -53.060 | 6.771 | -46.289 | Peak | 27.000 | -73.289 | PASS |
| 5850.000 | -58.362 | -59.932 | -58.494 | -54.102 | 6.771 | -47.331 | Peak | 27.000 | -74.331 | PASS |
| 5855.000 | -58.165 | -59.952 | -60.614 | -54.679 | 6.771 | -47.908 | Peak | 15.600 | -63.508 | PASS |
| 5875.000 | -59.309 | -61.635 | -59.772 | -55.357 | 6.771 | -48.586 | Peak | 10.000 | -58.586 | PASS |
| 5925.000 | -59.084 | -58.185 | -60.908 | -54.479 | 6.771 | -47.708 | Peak | -27.000 | -20.708 | PASS |

IEEE 802.11n HT40

| Frequency (MHz) | Conducted Power (dBm) | | | | Directional Gain (dBi) | EIRP (dBm/1MHz) | Detector | Limit (dBm/1MHz) | Over limit (dB) | Verdict |
|-----------------|-----------------------|-----------|-----------|---------|------------------------|-----------------|----------|------------------|-----------------|---------|
| | Antenna 0 | Antenna 1 | Antenna 2 | Sum | | | | | | |
| 5650.000 | -59.853 | -59.093 | -60.709 | -55.064 | 6.771 | -48.293 | Peak | -27.000 | -21.293 | PASS |
| 5700.000 | -57.923 | -57.923 | -58.791 | -53.422 | 6.771 | -46.651 | Peak | 10.000 | -56.651 | PASS |
| 5720.000 | -57.986 | -57.986 | -57.708 | -53.120 | 6.771 | -46.349 | Peak | 15.600 | -61.949 | PASS |
| 5725.000 | -57.697 | -57.551 | -58.352 | -53.082 | 6.771 | -46.311 | Peak | 27.000 | -73.311 | PASS |
| 5850.000 | -58.037 | -57.756 | -58.914 | -53.437 | 6.771 | -46.666 | Peak | 27.000 | -73.666 | PASS |
| 5855.000 | -56.736 | -56.736 | -58.635 | -52.510 | 6.771 | -45.739 | Peak | 15.600 | -61.339 | PASS |
| 5875.000 | -56.656 | -56.656 | -59.175 | -52.574 | 6.771 | -45.803 | Peak | 10.000 | -55.803 | PASS |
| 5925.000 | -58.615 | -58.566 | -59.589 | -54.127 | 6.771 | -47.356 | Peak | -27.000 | -20.356 | PASS |

IEEE 802.11ac VHT20

| Frequency (MHz) | Conducted Power (dBm) | | | | Directional Gain (dBi) | EIRP (dBm/1MHz) | Detector | Limit (dBm/1MHz) | Over limit (dB) | Verdict |
|-----------------|-----------------------|-----------|-----------|---------|------------------------|-----------------|----------|------------------|-----------------|---------|
| | Antenna 0 | Antenna 1 | Antenna 2 | Sum | | | | | | |
| 5650.000 | -60.024 | -60.427 | -59.376 | -55.149 | 6.771 | -48.310 | Peak | -27.000 | -21.310 | PASS |
| 5700.000 | -59.374 | -59.482 | -60.351 | -54.943 | 6.771 | -32.244 | Peak | 10.000 | -42.244 | PASS |
| 5720.000 | -58.658 | -59.639 | -59.277 | -54.401 | 6.771 | -19.881 | Peak | 15.600 | -35.481 | PASS |
| 5725.000 | -57.336 | -57.149 | -56.132 | -52.068 | 6.771 | -18.093 | Peak | 27.000 | -45.093 | PASS |
| 5850.000 | -59.614 | -59.042 | -60.764 | -54.978 | 6.771 | -31.490 | Peak | 27.000 | -58.490 | PASS |
| 5855.000 | -59.095 | -58.618 | -60.403 | -54.537 | 6.771 | -32.358 | Peak | 15.600 | -47.958 | PASS |
| 5875.000 | -58.720 | -58.720 | -60.395 | -54.439 | 6.771 | -42.337 | Peak | 10.000 | -52.337 | PASS |
| 5925.000 | -60.233 | -58.669 | -59.849 | -54.760 | 6.771 | -47.396 | Peak | -27.000 | -20.396 | PASS |

IEEE 802.11ac VHT40

| Frequency (MHz) | Conducted Power (dBm) | | | | Directional Gain (dBi) | EIRP (dBm/1MHz) | Detector | Limit (dBm/1MHz) | Over limit (dB) | Verdict |
|-----------------|-----------------------|-----------|-----------|---------|------------------------|-----------------|----------|------------------|-----------------|---------|
| | Antenna 0 | Antenna 1 | Antenna 2 | Sum | | | | | | |
| 5650.000 | -60.047 | -58.753 | -60.577 | -54.952 | 6.771 | -48.378 | Peak | -27.000 | -21.378 | PASS |
| 5700.000 | -57.784 | -57.536 | -60.339 | -53.611 | 6.771 | -48.172 | Peak | 10.000 | -58.172 | PASS |
| 5720.000 | -56.685 | -56.380 | -59.178 | -52.476 | 6.771 | -47.630 | Peak | 15.600 | -63.230 | PASS |
| 5725.000 | -57.765 | -56.611 | -57.984 | -52.639 | 6.771 | -45.297 | Peak | 27.000 | -72.297 | PASS |
| 5850.000 | -58.902 | -57.812 | -59.414 | -53.886 | 6.771 | -48.207 | Peak | 27.000 | -75.207 | PASS |
| 5855.000 | -58.788 | -58.780 | -59.909 | -54.356 | 6.771 | -47.766 | Peak | 15.600 | -63.366 | PASS |
| 5875.000 | -57.629 | -57.629 | -59.753 | -53.457 | 6.771 | -47.668 | Peak | 10.000 | -57.668 | PASS |
| 5925.000 | -59.163 | -59.078 | -59.187 | -54.371 | 6.771 | -47.989 | Peak | -27.000 | -20.989 | PASS |

IEEE 802.11ac VHT80

| Frequency (MHz) | Conducted Power (dBm) | | | | Directional Gain (dBi) | EIRP (dBm/1MHz) | Detector | Limit (dBm/1MHz) | Over limit (dB) | Verdict |
|-----------------|-----------------------|-----------|-----------|---------|------------------------|-----------------|----------|------------------|-----------------|---------|
| | Antenna 0 | Antenna 1 | Antenna 2 | Sum | | | | | | |
| 5650.000 | -60.666 | -59.443 | -59.425 | -55.036 | 6.771 | -48.265 | Peak | -27.000 | -21.265 | PASS |
| 5700.000 | -59.193 | -58.651 | -59.141 | -54.217 | 6.771 | -47.446 | Peak | 10.000 | -57.446 | PASS |
| 5720.000 | -58.303 | -56.876 | -57.307 | -52.684 | 6.771 | -45.913 | Peak | 15.600 | -61.513 | PASS |
| 5725.000 | -57.956 | -56.148 | -56.819 | -52.140 | 6.771 | -45.369 | Peak | 27.000 | -72.369 | PASS |
| 5850.000 | -59.717 | -59.611 | -56.757 | -53.695 | 6.771 | -46.924 | Peak | 27.000 | -73.924 | PASS |
| 5855.000 | -58.342 | -59.088 | -56.054 | -52.857 | 6.771 | -46.086 | Peak | 15.600 | -61.686 | PASS |
| 5875.000 | -59.065 | -58.602 | -56.874 | -53.303 | 6.771 | -46.532 | Peak | 10.000 | -56.532 | PASS |
| 5925.000 | -60.913 | -61.663 | -59.121 | -55.660 | 6.771 | -48.889 | Peak | -27.000 | -21.889 | PASS |

Remark:

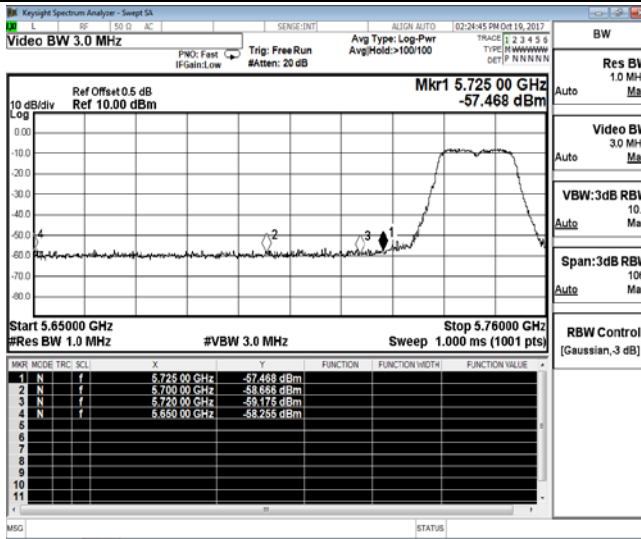
1. Measured unwanted emission at difference data rate for each mode and recorded worst case for each mode.
2. Test results including cable loss;
3. Worst case data at 6Mbps at IEEE 802.11a; MCS0 at IEEE 802.11n HT20, IEEE 802.11n HT40, IEEE 802.11a VHT20, IEEE 802.11ac VHT40 and IEEE 802.11ac VHT80;
4. For MIMO with technology device, The Directional Gain = Gain of individual transmit antennas (dBi) + Array Gain; Array Gain = $10 \cdot \log(N_{ant})$, Where N_{ant} is the number of transmit antennas.
Directional Gain = $2.0 + 10 \cdot \log(3) = 6.771\text{dBi}$;
5. E.I.R.P = Conducted power + Directional Gain
6. EIRP calculation. A value representative of an upper bound on out-of-band antenna gain (in dBi) shall be added to the measured antenna-port conducted emission power to compute EIRP within the specified measurement bandwidth. (For emissions in the restricted bands, additional calculations are required to

convert EIRP to field strength at the specified distance.) The upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands or 2 dBi, whichever is greater. However, for devices that operate in multiple bands using the same transmit antenna, the highest gain of the antenna within the operating band nearest to the out-of-band frequency being measured may be used in lieu of the overall highest gain when measuring emissions at frequencies within 20% of the absolute frequency at the nearest edge of that band, but in no case shall a value less than 2 dBi be selected.

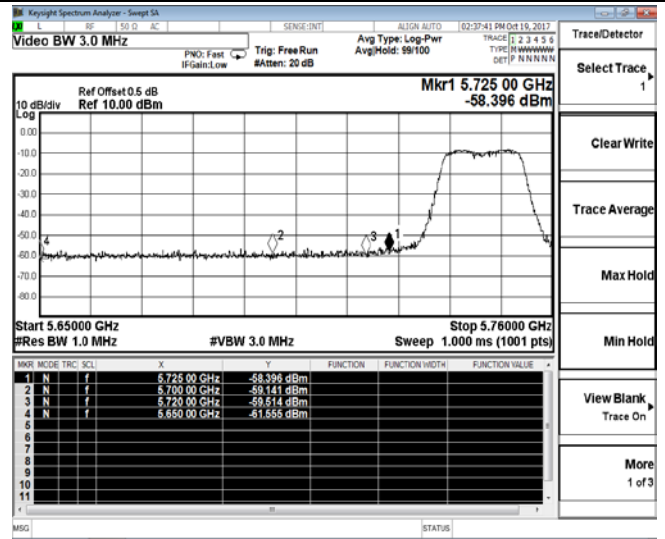
- 7. Over limit = EIRP - Limit*
- 8. Please refer to following test plots;*

Unwanted emission

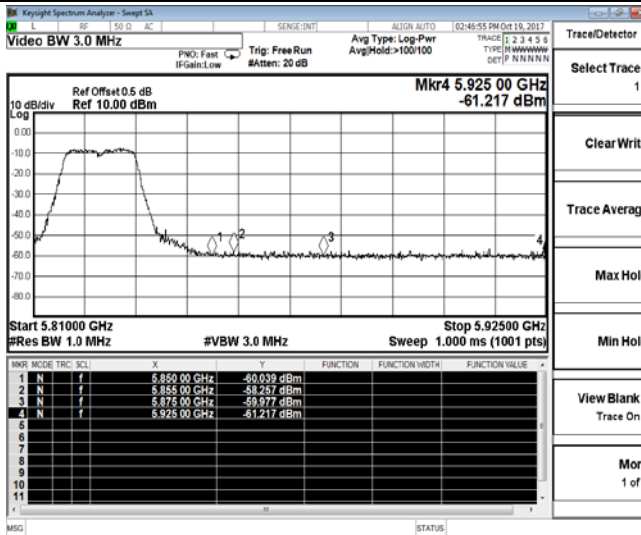
Antenna 0
IEEE 802.11a



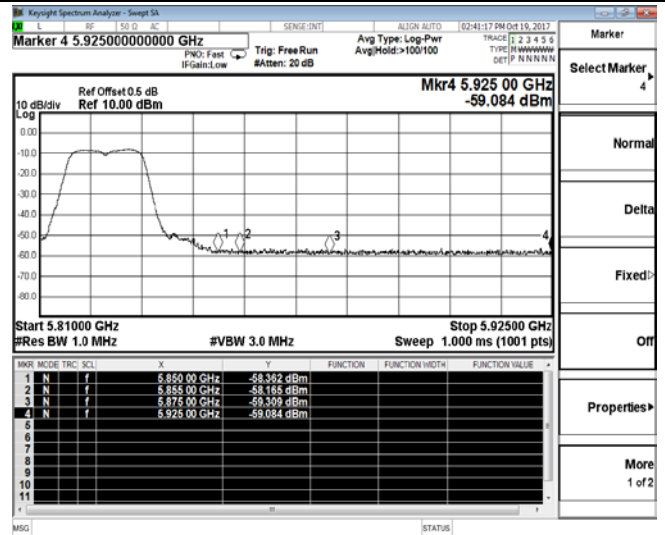
Antenna 0
IEEE 802.11n HT20



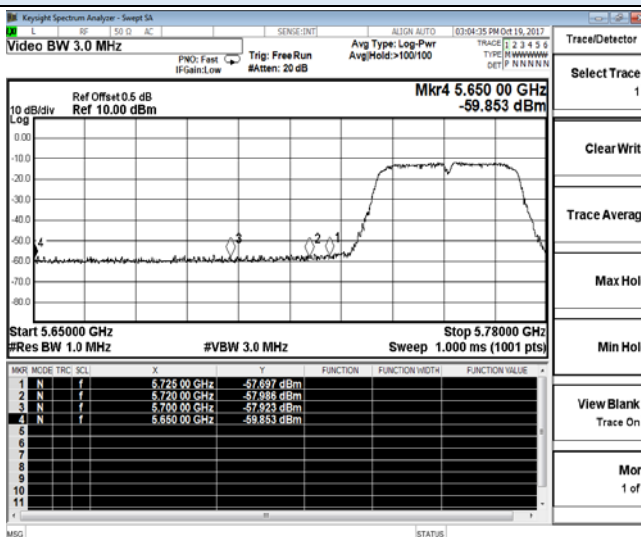
Channel 149 / 5745 MHz – Peak



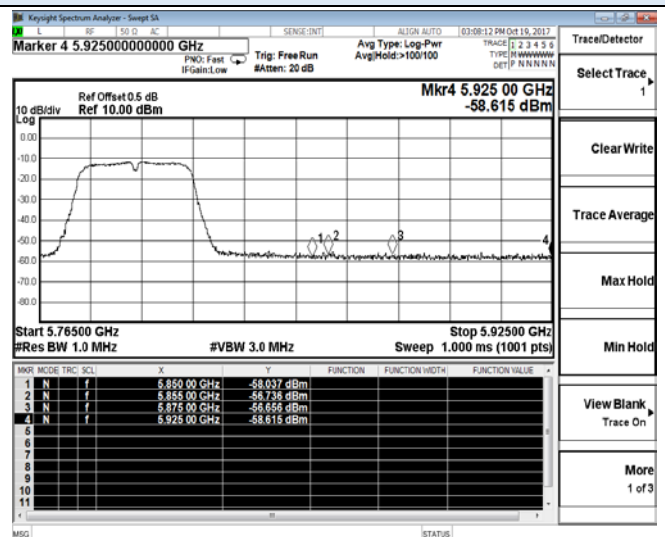
Channel 149 / 5745 MHz – Peak



Channel 165 / 5825 MHz – Peak
IEEE 802.11n HT40



Channel 165 / 5825 MHz – Peak
IEEE 802.11n HT40-Chain 0

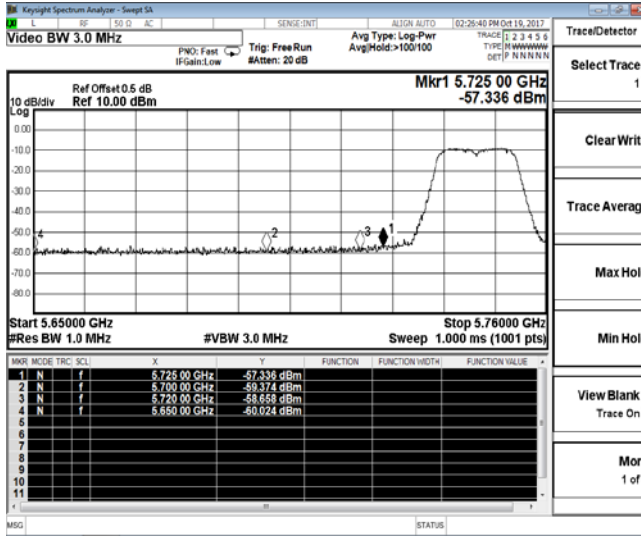


Channel 151 / 5755 MHz – Peak

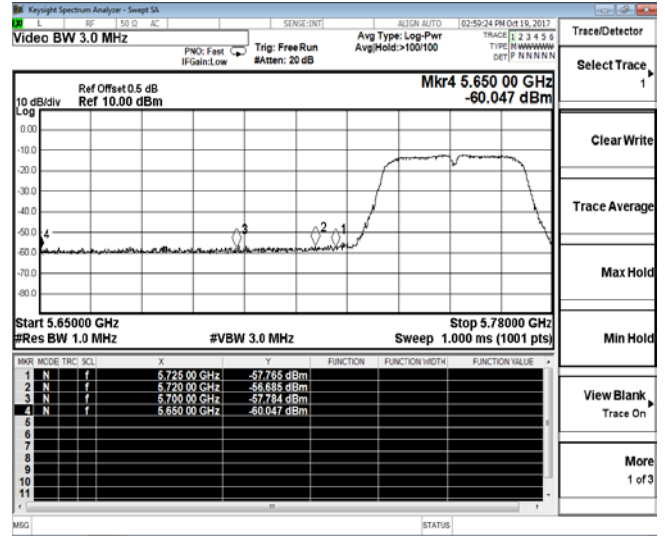
Channel 159 / 5795 MHz – Peak

Unwanted emission

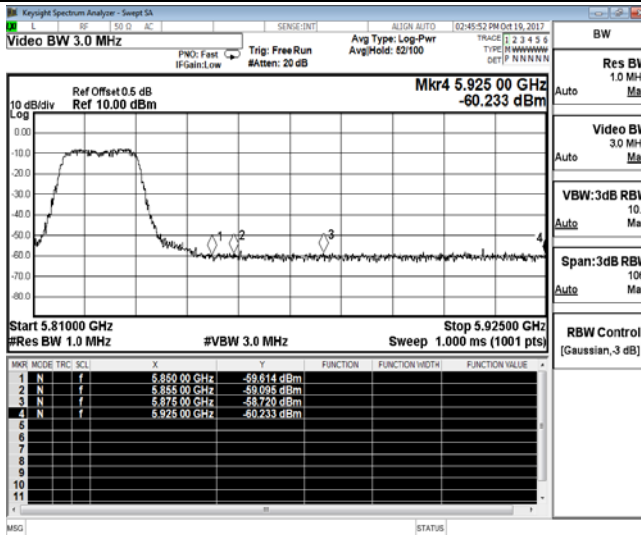
Antenna 0
IEEE 802.11ac VHT20



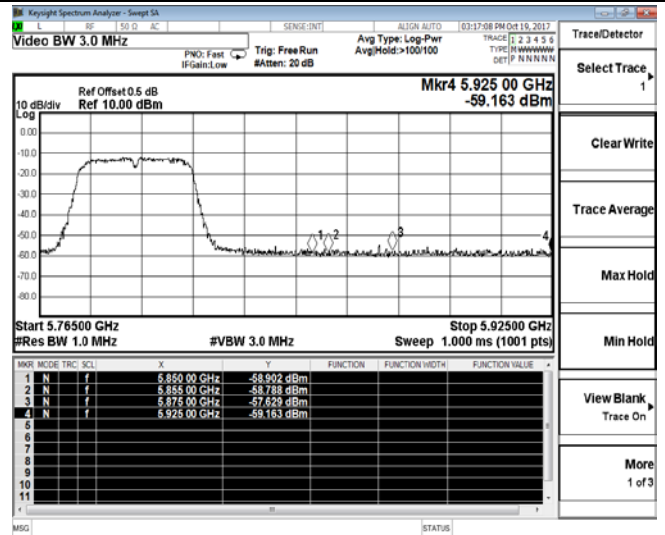
Antenna 0
IEEE 802.11ac VHT40



Channel 149 / 5745 MHz – Peak

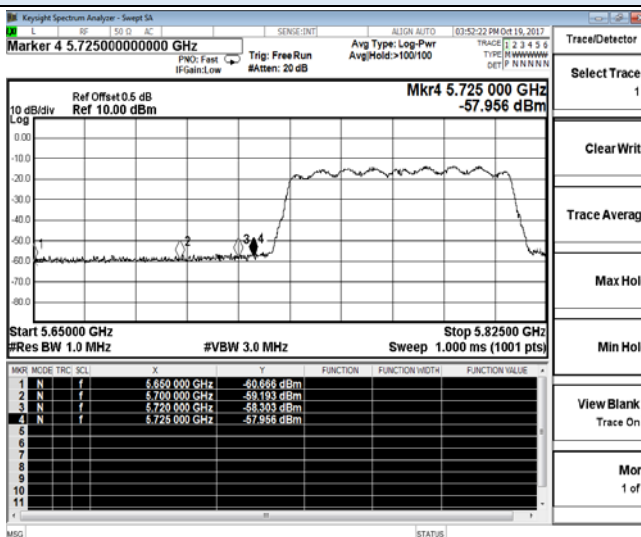


Channel 151 / 5755 MHz – Peak



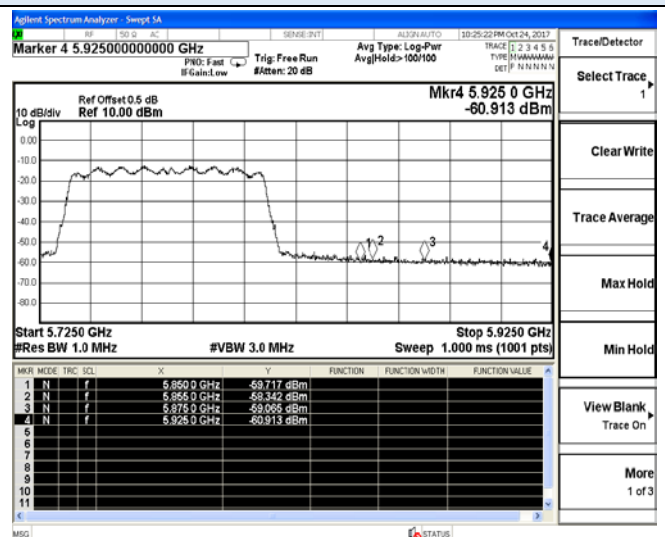
Channel 165 / 5825 MHz – Peak

IEEE 802.11ac VHT80



Channel 159 / 5795 MHz – Peak

IEEE 802.11ac VHT80

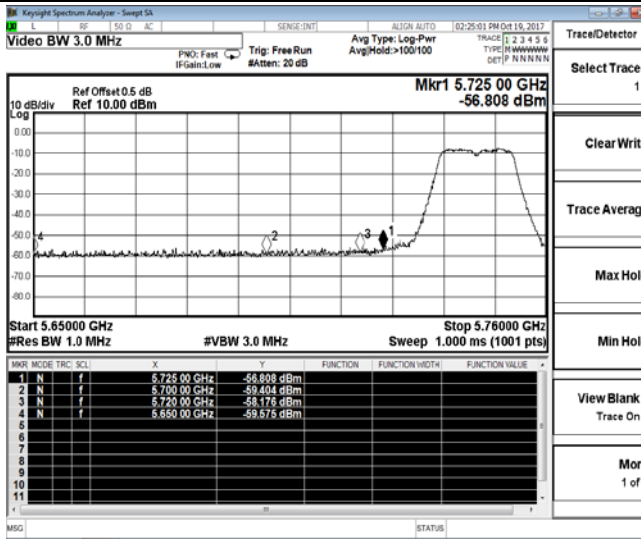


Channel 155 / 5775 MHz – Peak

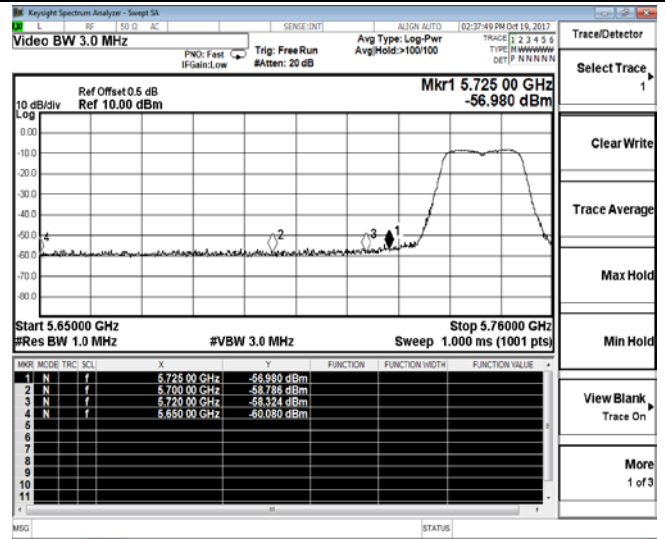
Channel 155 / 5775 MHz – Peak

Unwanted emission

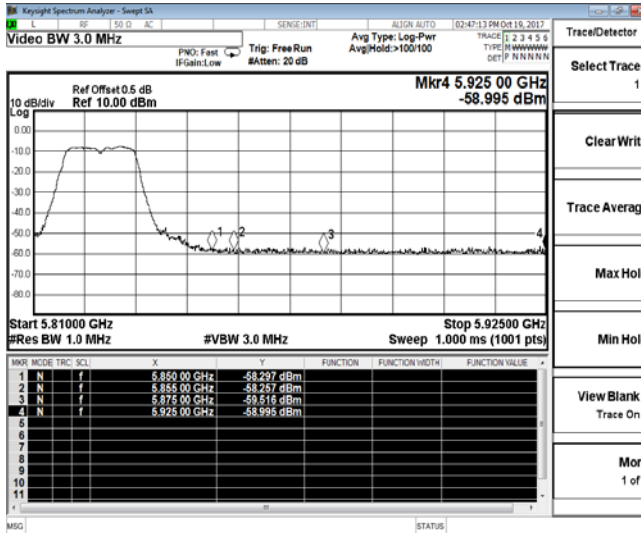
Antenna 1
IEEE 802.11a



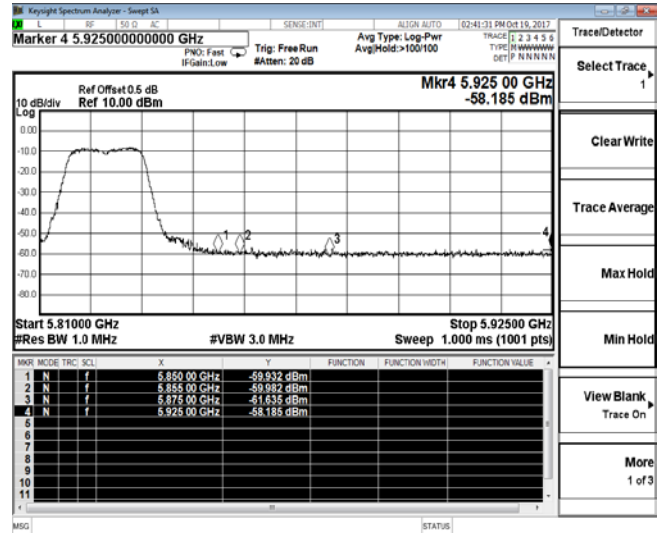
Antenna 1
IEEE 802.11n HT20



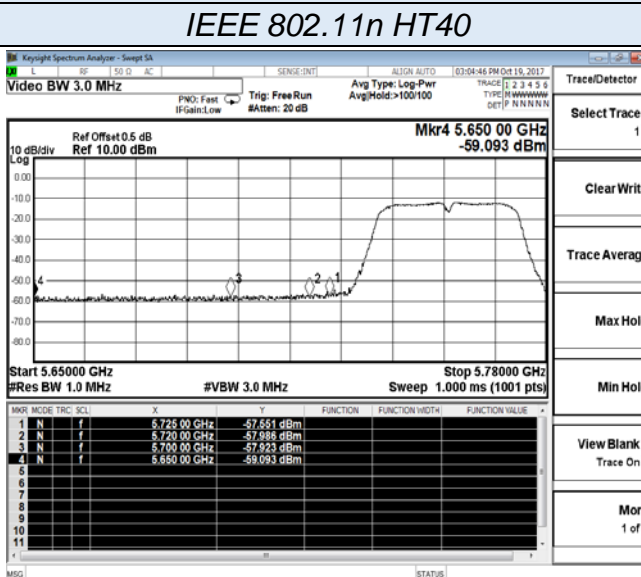
Channel 149 / 5745 MHz – Peak



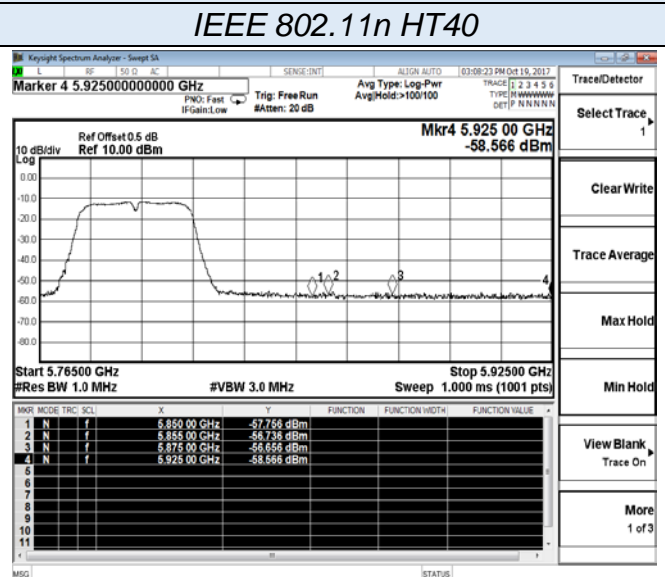
Channel 149 / 5745 MHz – Peak



Channel 165 / 5825 MHz – Peak



Channel 165 / 5825 MHz – Peak

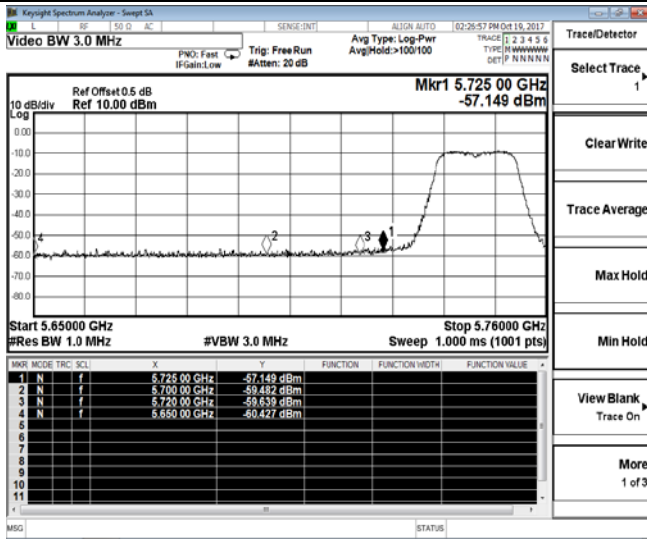


Channel 151 / 5755 MHz – Peak

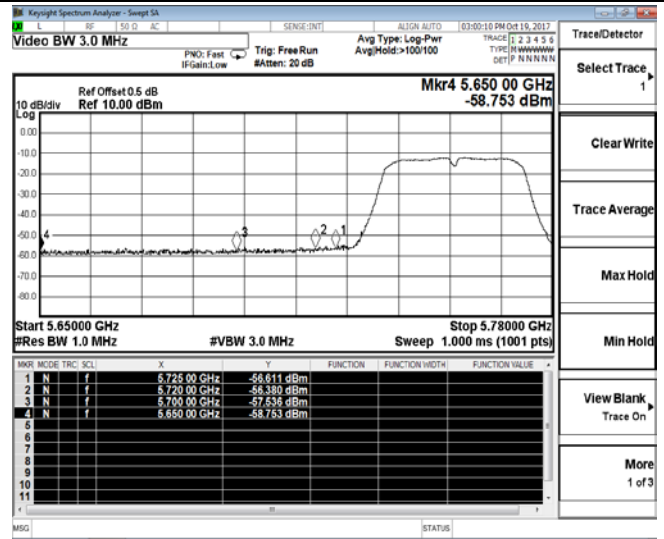
Channel 159 / 5795 MHz – Peak

Unwanted emission

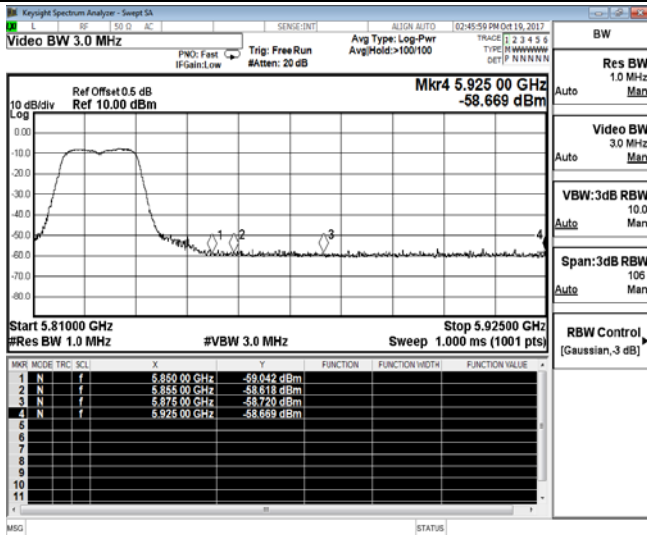
Antenna 1
IEEE 802.11ac VHT20



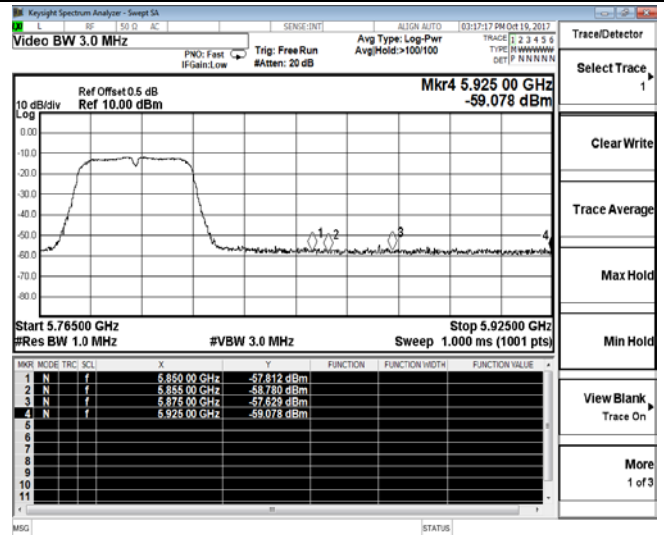
Antenna 1
IEEE 802.11ac VHT40



Channel 149 / 5745 MHz – Peak

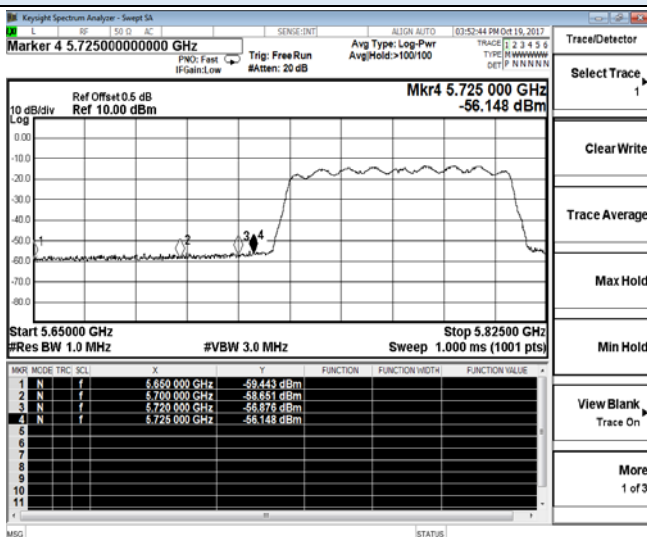


Channel 151 / 5755 MHz – Peak



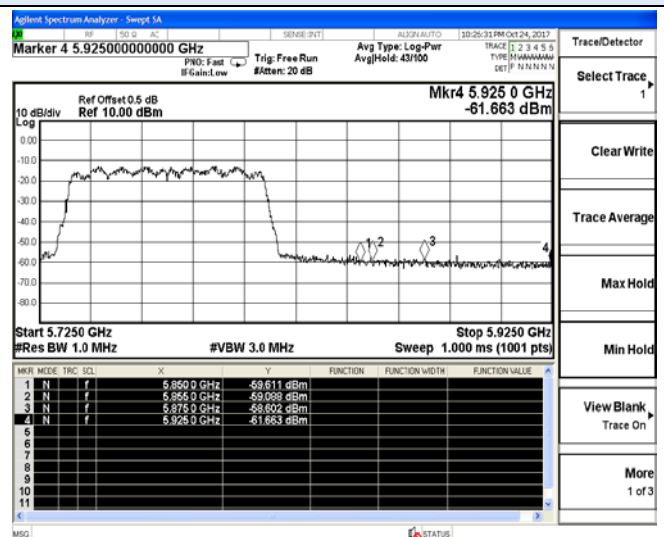
Channel 165 / 5825 MHz – Peak

IEEE 802.11ac VHT80



Channel 159 / 5795 MHz – Peak

IEEE 802.11ac VHT80

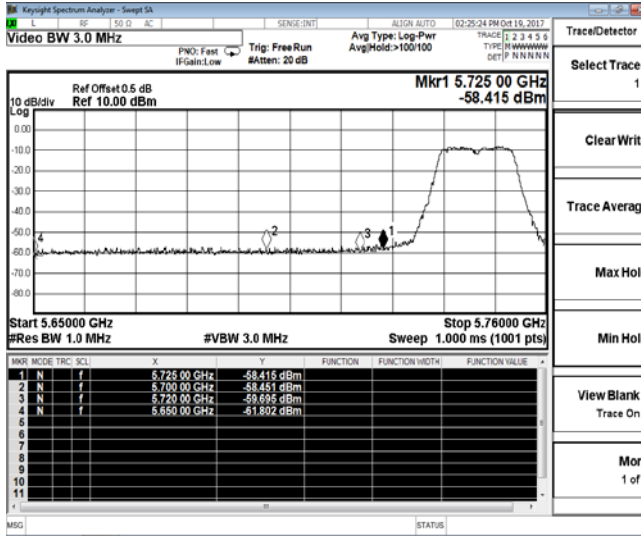


Channel 155 / 5775 MHz – Peak

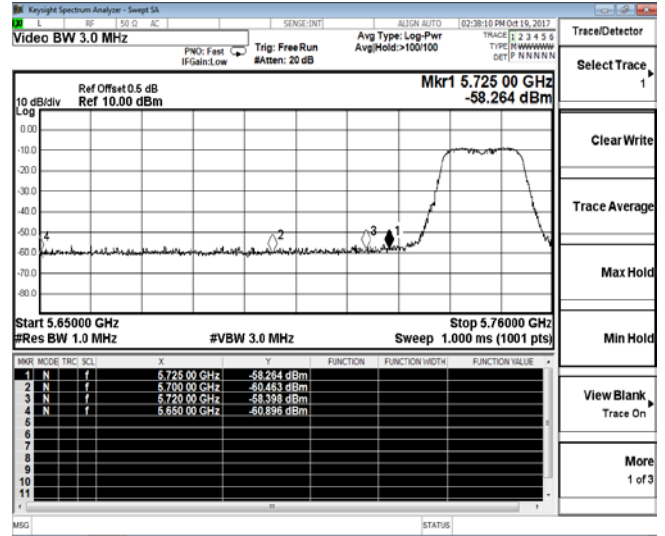
Channel 155 / 5775 MHz – Peak

Unwanted emission

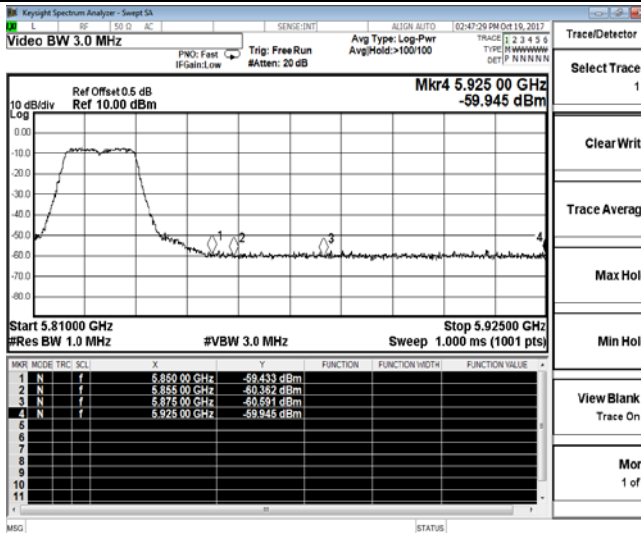
Antenna 2
IEEE 802.11a



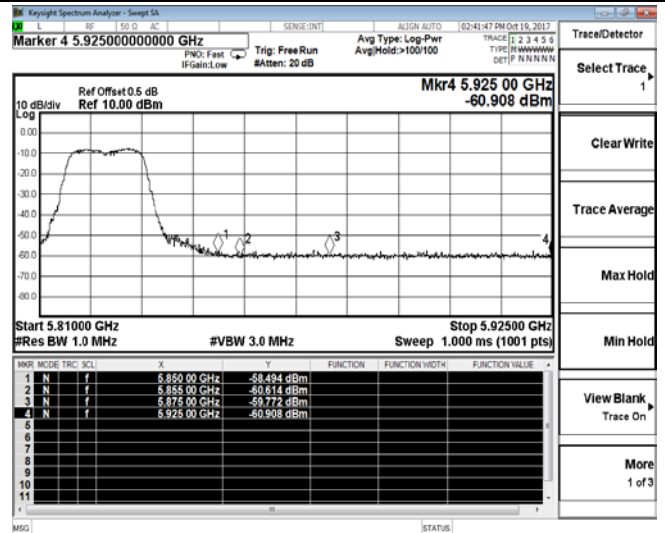
Antenna 2
IEEE 802.11n HT20



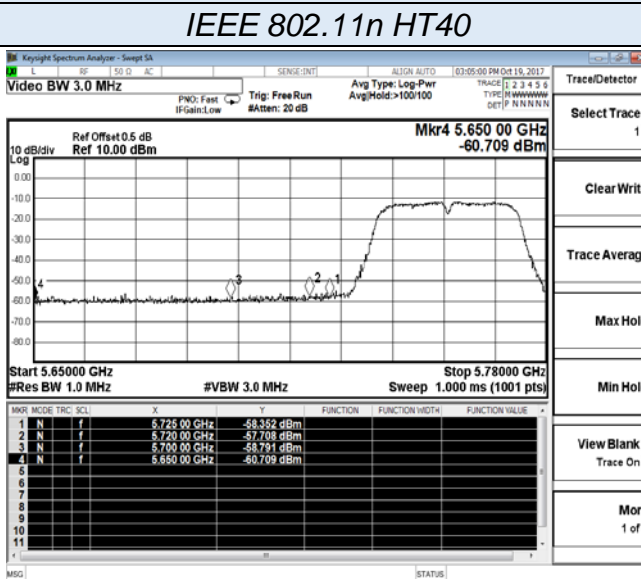
Channel 149 / 5745 MHz – Peak



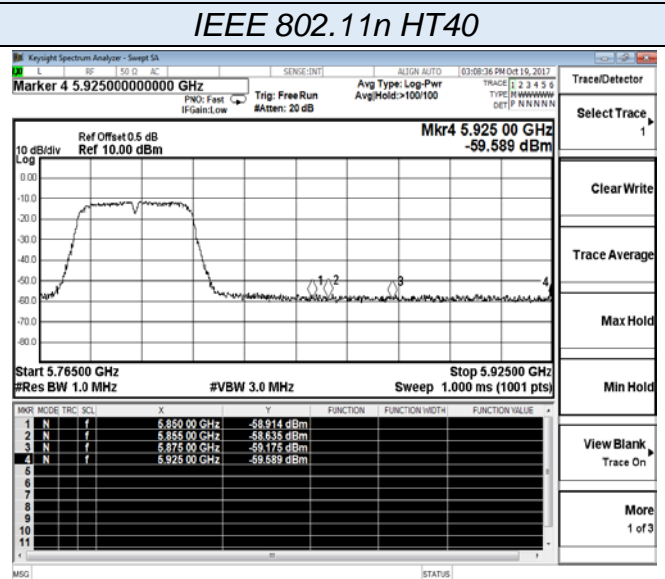
Channel 149 / 5745 MHz – Peak



Channel 165 / 5825 MHz – Peak



Channel 165 / 5825 MHz – Peak

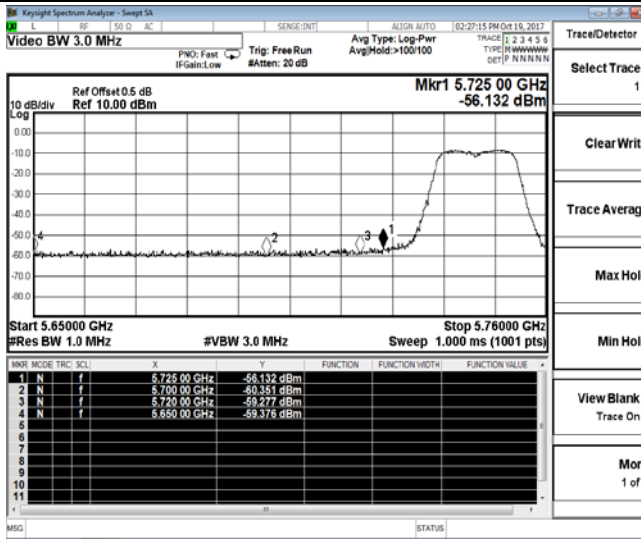


Channel 151 / 5755 MHz – Peak

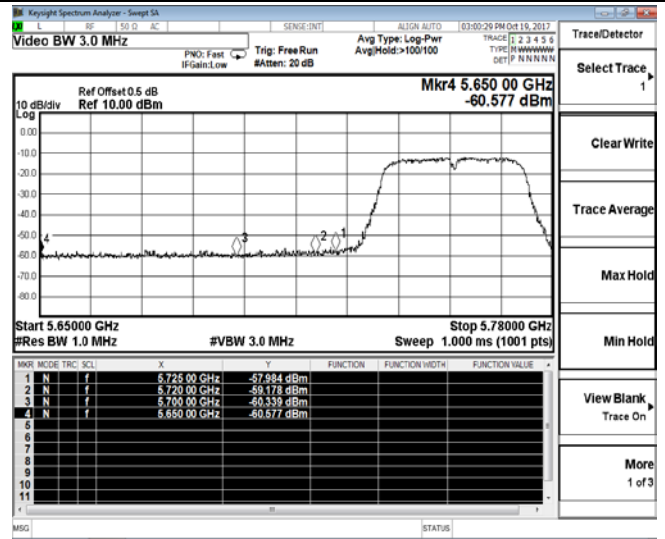
Channel 159 / 5795 MHz – Peak

Unwanted emission

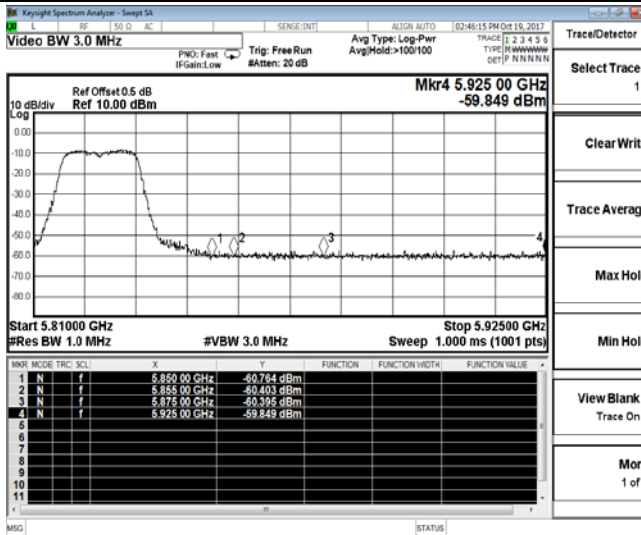
Antenna 2
IEEE 802.11ac VHT20



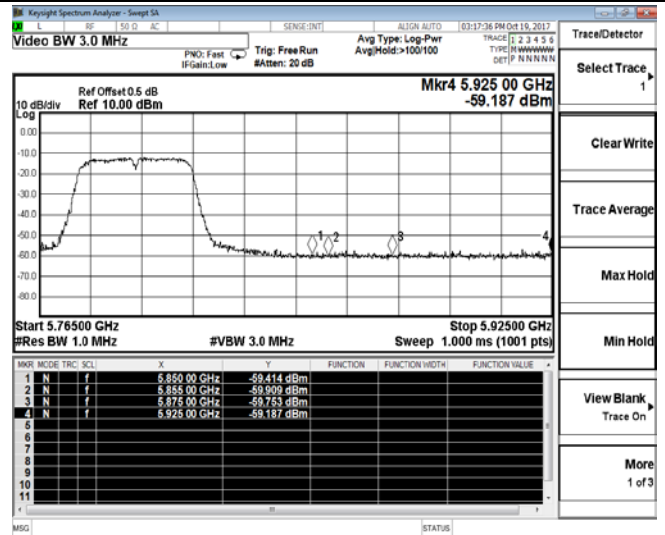
Antenna 2
IEEE 802.11ac VHT40



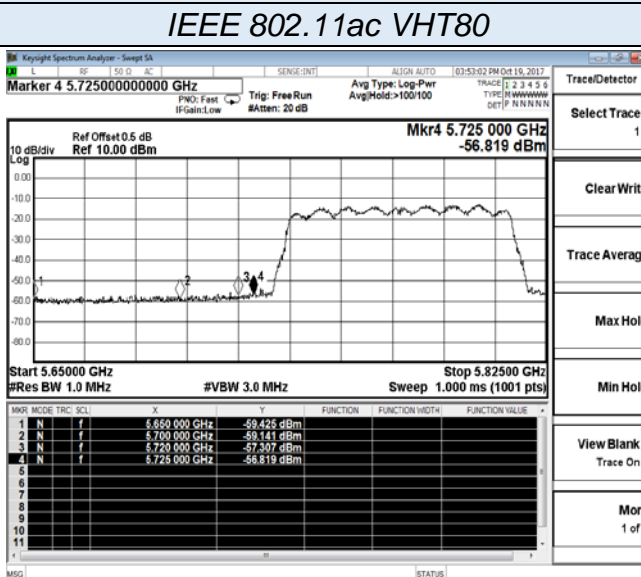
Channel 149 / 5745 MHz – Peak



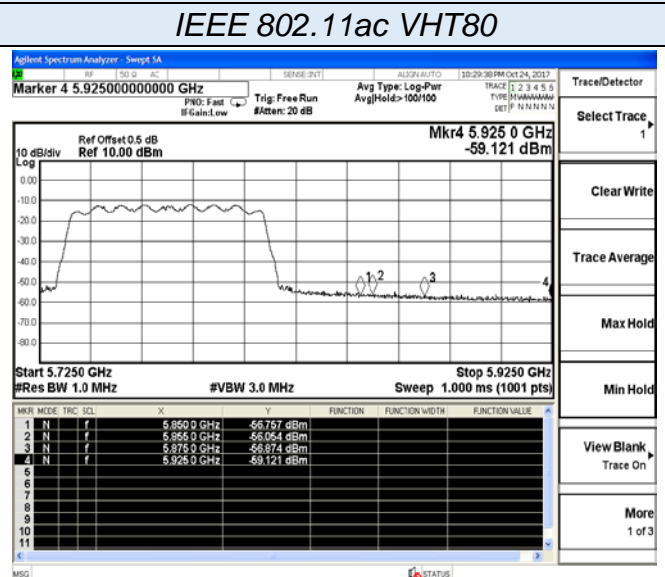
Channel 151 / 5755 MHz – Peak



Channel 165 / 5825 MHz – Peak



Channel 159 / 5795 MHz – Peak



Channel 155 / 5775 MHz – Peak

Channel 155 / 5775 MHz – Peak

5.8. Antenna Requirements

5.8.1 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. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited

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.

5.8.2 Antenna Connected Construction

5.8.2.1. Standard Applicable

According to § 15.203 & RSS-Gen, 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.

5.8.2.2. Antenna Connector Construction

The directional gains of antenna used for transmitting is 2.0dBi, and the antenna is a PCB antenna connect to PCB board and no consideration of replacement. Please see EUT photo for details.

5.8.2.3. Results: Compliance.

Measurement

The antenna gain of the complete system is calculated by the difference of radiated power in EIRP and the conducted power of the module.

Conducted power refers ANSI C63.10:2013 Output power test procedure for NII devices.

Radiated power refers to ANSI C63.10:2013 Radiated emissions tests.

Measurement parameters

| Measurement parameter | |
|-----------------------|----------|
| Detector: | Peak |
| Sweep Time: | Auto |
| Resolution bandwidth: | 1MHz |
| Video bandwidth: | 3MHz |
| Trace-Mode: | Max hold |

Limits

| FCC | ISED |
|--------------|------|
| Antenna Gain | |
| 6 dBi | |

Note: The antenna gain of the complete system is calculated by the difference of radiated power in EIRP and the conducted power of the module. For WLAN devices, the OFDM (IEEE 802.11a) mode is used;

Antenna 0

| T _{nom} | V _{nom} | Lowest Channel 5745 MHz | Middle Channel 5785 MHz | Highest Channel 5825 MHz |
|---|------------------|----------------------------|------------------------------------|-----------------------------|
| Conducted power [dBm] Measured with OFDM modulation | | -0.124 | -0.089 | -0.178 |
| Radiated power [dBm] Measured with OFDM modulation | | 1.650 | 1.692 | 1.614 |
| Gain [dBi] Calculated | | 1.774 | 1.781 | 1.792 |
| Measurement uncertainty | | | ± 1.6 dB (cond.) / ± 3.8 dB (rad.) | |

Antenna 1

| T _{nom} | V _{nom} | Lowest Channel 5745 MHz | Middle Channel 5785 MHz | Highest Channel 5825 MHz |
|---|------------------|----------------------------|------------------------------------|-----------------------------|
| Conducted power [dBm] Measured with OFDM modulation | | -0.141 | -0.102 | -0.173 |
| Radiated power [dBm] Measured with OFDM modulation | | 1.548 | 1.694 | 1.615 |
| Gain [dBi] Calculated | | 1.689 | 1.796 | 1.788 |
| Measurement uncertainty | | | ± 1.6 dB (cond.) / ± 3.8 dB (rad.) | |

Antenna 2

| T _{nom} | V _{nom} | Lowest Channel 5745 MHz | Middle Channel 5785 MHz | Highest Channel 5825 MHz |
|---|------------------|----------------------------|------------------------------------|-----------------------------|
| Conducted power [dBm] Measured with OFDM modulation | | -0.129 | -0.077 | -0.154 |
| Radiated power [dBm] Measured with OFDM modulation | | 1.632 | 1.706 | 1.753 |
| Gain [dBi] Calculated | | 1.761 | 1.783 | 1.907 |
| Measurement uncertainty | | | ± 1.6 dB (cond.) / ± 3.8 dB (rad.) | |

6. LIST OF MEASURING EQUIPMENTS

| Item | Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Next Cal. |
|------|-----------------------------------|----------------|--------------|-----------------|------------|------------|
| 1 | Power Meter | R&S | NRVS | 100444 | 2017-06-17 | 2018-06-16 |
| 2 | Power Sensor | R&S | NRV-Z81 | 100458 | 2017-06-17 | 2018-06-16 |
| 3 | Power Sensor | R&S | NRV-Z32 | 10057 | 2017-06-17 | 2018-06-16 |
| 4 | ESA-E SERIES SPECTRUM ANALYZER | Agilent | E4407B | MY41440754 | 2016-11-18 | 2017-11-17 |
| 5 | MXA Signal Analyzer | Agilent | N9020A | MY49100040 | 2017-06-17 | 2018-06-16 |
| 6 | SPECTRUM ANALYZER | R&S | FSP | 100503 | 2017-06-17 | 2018-06-16 |
| 7 | 3m Semi Anechoic Chamber | SIDT FRANKONIA | SAC-3M | 03CH03-HY | 2017-06-17 | 2018-06-16 |
| 8 | Positioning Controller | MF | MF-7082 | / | 2017-06-17 | 2018-06-16 |
| 9 | EMI Test Software | AUDIX | E3 | N/A | 2017-06-17 | 2018-06-16 |
| 10 | EMI Test Receiver | R&S | ESR 7 | 101181 | 2017-06-17 | 2018-06-16 |
| 11 | AMPLIFIER | QuieTek | QTK-A2525G | CHM10809065 | 2016-11-18 | 2017-11-17 |
| 12 | Active Loop Antenna | SCHWARZBECK | FMZB 1519B | 00005 | 2017-06-23 | 2018-06-22 |
| 13 | By-log Antenna | SCHWARZBECK | VULB9163 | 9163-470 | 2017-05-02 | 2018-05-01 |
| 14 | Horn Antenna | EMCO | 3115 | 6741 | 2017-06-23 | 2018-06-22 |
| 15 | Broadband Horn Antenna | SCHWARZBECK | BBHA 9170 | 791 | 2017-09-21 | 2018-09-20 |
| 16 | Broadband Preamplifier | SCHWARZBECK | BBV 9719 | 9719-025 | 2017-09-21 | 2018-09-20 |
| 17 | RF Cable-R03m | Jye Bao | RG142 | CB021 | 2017-06-17 | 2018-06-16 |
| 18 | RF Cable-HIGH | SUHNER | SUCOFLEX 106 | 03CH03-HY | 2017-06-17 | 2018-06-16 |
| 19 | TEST RECEIVER | R&S | ESCI | 101142 | 2017-06-17 | 2018-06-16 |
| 20 | RF Cable-CON | UTIFLEX | 3102-26886-4 | CB049 | 2017-06-17 | 2018-06-16 |
| 21 | 10dB Attenuator | SCHWARZBECK | MTS-IMP136 | 261115-001-0032 | 2017-06-17 | 2018-06-16 |
| 22 | Artificial Mains | R&S | ENV216 | 101288 | 2017-06-17 | 2018-06-16 |

Note: All equipment is calibrated through GUANGZHOU LISAI CALIBRATION AND TEST CO.,LTD.

7. TEST SETUP PHOTOGRAPHS OF EUT

Please refer to separated files for Test Setup Photos of the EUT.

8. EXTERIOR PHOTOGRAPHS OF THE EUT

Please refer to separated files for External Photos of the EUT.

9. INTERIOR PHOTOGRAPHS OF THE EUT

Please refer to separated files for Internal Photos of the EUT.

-----THE END OF REPORT-----