
(Channel 134, 5670MHz, 802.11ac (VHT40), ANT0)


(Channel 151, 5755MHz, 802.11ac (VHT40), ANT0)


(Channel 159, 5795MHz, 802.11ac (VHT40), ANT0)

**802.11ac (VHT80) Mode**

**A.Test Verdict:**

| Frequency (MHz) | Measured PPSD (dBm/MHz) | | Duty Factor | Total PPSD (dBm/MHz) | Limit (dBm/MHz) | Verdict |
|---|---|---|---|---|---|---|
| | ANT0 | ANT1 | | | | |
| 5210 | -1.37 | -0.49 | 0.00 | 2.10 | 11 | PASS |
| 5290 | -1.66 | -0.19 | | 2.15 | | |
| 5530 | 0.95 | -0.55 | | 3.27 | | |
| 5610 | 1.06 | -1.04 | | 3.15 | | |
| Frequency (MHz) | Measured PPSD (dBm/500KHz) | | Duty Factor | Total PPSD (dBm/500KHz) | Limit (dBm/500KHz) | Verdict |
| | ANT0 | ANT1 | | | | |
| 5775 | -2.61 | -3.33 | 0.00 | 0.06 | 30 | PASS |
| **Note:** Directional gain = -3.5dBi +10log(2) = -0.49dBi＜6dBi, so the limit shall be 11 dBm/MHz for 5.18-5.24 GHz band and 30 dBm/500KHz for 5.745-5.825 GHz band. | | | | | | |

**B.Test Plot:**


(Channel 42, 5210MHz, 802.11ac (VHT80), ANT0)


(Channel 58, 5290MHz, 802.11ac (VHT80), ANT0)


(Channel 106, 5530MHz, 802.11ac (VHT80), ANT0)


(Channel 122, 5610MHz, 802.11ac (VHT80), ANT0)


(Channel 155, 5775MHz, 802.11ac (VHT80), ANT0)

**802.11ac (VHT160) Mode**

**A.Test Verdict:**

| Frequency (MHz) | Measured PPSD (dBm/MHz) | | Duty Factor | Total PPSD (dBm/MHz) | Limit (dBm/MHz) | Verdict |
|---|---|---|---|---|---|---|
| | ANT0 | ANT1 | | | | |
| 5250 | -7.20 | -4.45 | 0.00 | -2.60 | 11 | PASS |
| 5570 | -4.55 | -4.93 | | -1.73 | | |
| **Note:** Directional gain = -3.5dBi +10log(2) = -0.49dBi＜6dBi, so the limit shall be 11 dBm/MHz for 5.18-5.24 GHz band. | | | | | | |

**B.Test Plot:**


(Channel 50, 5250MHz, 802.11ac (VHT160), ANT0)


(Channel 114, 5570MHz, 802.11ac (VHT160), ANT0)

**802.11ax (HEW20) Mode**

**A.Test Verdict:**

| Frequency (MHz) | Measured PPSD (dBm/MHz) | | Duty Factor | Total PPSD (dBm/MHz) | Limit (dBm/MHz) | Verdict |
|---|---|---|---|---|---|---|
| | ANT0 | ANT1 | | | | |
| 5180 | 4.10 | 3.83 | 0.00 | 6.98 | 11 | PASS |
| 5220 | 3.47 | 3.65 | | 6.57 | | |
| 5240 | 4.01 | 3.93 | | 6.98 | | |
| 5260 | 3.91 | 3.94 | | 6.94 | | |
| 5300 | 3.72 | 4.52 | | 7.15 | | |
| 5320 | 3.80 | 4.68 | | 7.27 | | |
| 5500 | 6.46 | 3.87 | | 8.37 | | |
| 5600 | 6.62 | 3.74 | | 8.42 | | |
| 5700 | 6.58 | 3.26 | | 8.24 | | |
| Frequency (MHz) | Measured PPSD (dBm/500KHz) | | Duty Factor | Total PPSD (dBm/500KHz) | Limit (dBm/500KHz) | Verdict |
| | ANT0 | ANT1 | | | | |
| 5745 | 3.20 | 1.01 | 0.00 | 5.25 | 30 | PASS |
| 5785 | 3.05 | 1.71 | | 5.44 | | |
| 5825 | 2.73 | 1.73 | | 5.27 | | |
| **Note:** Directional gain = -3.5dBi +10log(2) = -0.49dBi＜6dBi, so the limit shall be 11 dBm/MHz for 5.18-5.24 GHz band and 30 dBm/500KHz for 5.745-5.825 GHz band. | | | | | | |

**B.Test Plot:**


(Channel 36, 5180MHz, 802.11ax (HEW20), ANT0)


(Channel 44, 5220MHz, 802.11ax (HEW20), ANT0)


(Channel 48, 5240MHz, 802.11ax (HEW20), ANT0)


(Channel 52, 5260MHz, 802.11ax (HEW20), ANT0)


(Channel 60, 5300MHz, 802.11ax (HEW20), ANT0)


(Channel 64, 5320MHz, 802.11ax (HEW20), ANT0)


(Channel 100, 5500MHz, 802.11ax (HEW20), ANT0)


(Channel 120, 5600MHz, 802.11ax (HEW20), ANT0)


(Channel 140, 5700MHz, 802.11ax (HEW20), ANT0)


(Channel 149, 5745MHz, 802.11ax (HEW20), ANT0)


(Channel 157, 5785MHz, 802.11ax (HEW20), ANT0)


(Channel 165, 5825MHz, 802.11ax (HEW20), ANT0)

**802.11ax (HEW20) RU26 Mode**

**A.Test Verdict:**

| Frequency (MHz) | Measured PPSD (dBm/MHz) | | Duty Factor | Total PPSD (dBm/MHz) | Limit (dBm/MHz) | Verdict |
|---|---|---|---|---|---|---|
| | ANT0 | ANT1 | | | | |
| 5180 | 0.06 | -1.51 | 0.00 | 2.36 | 11 | PASS |
| 5220 | 0.13 | -1.17 | | 2.54 | | |
| 5240 | 0.05 | -1.18 | | 2.49 | | |
| 5260 | -0.10 | -1.13 | | 2.43 | | |
| 5300 | -0.16 | -0.75 | | 2.57 | | |
| 5320 | -0.31 | -0.38 | | 2.67 | | |
| 5500 | 2.04 | -0.93 | | 3.81 | | |
| 5600 | 2.26 | -0.84 | | 3.99 | | |
| 5700 | 2.14 | -1.72 | | 3.64 | | |
| Frequency (MHz) | Measured PPSD (dBm/500KHz) | | Duty Factor | Total PPSD (dBm/500KHz) | Limit (dBm/500KHz) | Verdict |
| | ANT0 | ANT1 | | | | |
| 5745 | -0.42 | -4.28 | 0.00 | 1.08 | 30 | PASS |
| 5785 | -0.66 | -3.11 | | 1.30 | | |
| 5825 | -1.03 | -2.96 | | 1.12 | | |
| **Note:** Directional gain = -3.5dBi +10log(2) = -0.49dBi＜6dBi, so the limit shall be 11 dBm/MHz for 5.18-5.24 GHz band and 30 dBm/500KHz for 5.745-5.825 GHz band. | | | | | | |

**B.Test Plot:**


(Channel 36, 5180MHz, 802.11ax (HEW20) RU26, ANT0)


(Channel 44, 5220MHz, 802.11ax (HEW20) RU26, ANT0)


(Channel 48, 5240MHz, 802.11ax (HEW20) RU26, ANT0)


(Channel 52, 5260MHz, 802.11ax (HEW20) RU26, ANT0)


(Channel 60, 5300MHz, 802.11ax (HEW20) RU26, ANT0)


(Channel 64, 5320MHz, 802.11ax (HEW20) RU26, ANT0)


(Channel 100, 5500MHz, 802.11ax (HEW20) RU26, ANT0)


(Channel 120, 5600MHz, 802.11ax (HEW20) RU26, ANT0)


(Channel 140, 5700MHz, 802.11ax (HEW20) RU26, ANT0)


(Channel 149, 5745MHz, 802.11ax (HEW20) RU26, ANT0)


(Channel 157, 5785MHz, 802.11ax (HEW20) RU26, ANT0)


(Channel 165, 5825MHz, 802.11ax (HEW20) RU26, ANT0)

**802.11ax (HEW20) RU52 Mode**

**A.Test Verdict:**

| Frequency (MHz) | Measured PPSD (dBm/MHz) | | Duty Factor | Total PPSD (dBm/MHz) | Limit (dBm/MHz) | Verdict |
|---|---|---|---|---|---|---|
| | ANT0 | ANT1 | | | | |
| 5180 | -0.07 | -2.25 | 0.00 | 1.99 | 11 | PASS |
| 5220 | 0.13 | -1.95 | | 2.22 | | |
| 5240 | -0.02 | -2.10 | | 2.07 | | |
| 5260 | 0.13 | -1.96 | | 2.22 | | |
| 5300 | -0.15 | -1.38 | | 2.29 | | |
| 5320 | -0.42 | -0.94 | | 2.34 | | |
| 5500 | 2.09 | -0.66 | | 3.94 | | |
| 5600 | 2.38 | -0.87 | | 4.06 | | |
| 5700 | 2.56 | -1.62 | | 3.96 | | |
| Frequency (MHz) | Measured PPSD (dBm/500KHz) | | Duty Factor | Total PPSD (dBm/500KHz) | Limit (dBm/500KHz) | Verdict |
| | ANT0 | ANT1 | | | | |
| 5745 | -0.41 | -4.09 | 0.00 | 1.14 | 30 | PASS |
| 5785 | -0.52 | -3.19 | | 1.36 | | |
| 5825 | -0.95 | -3.20 | | 1.08 | | |
| **Note:** Directional gain = -3.5dBi +10log(2) = -0.49dBi＜6dBi, so the limit shall be 11 dBm/MHz for 5.18-5.24 GHz band and 30 dBm/500KHz for 5.745-5.825 GHz band. | | | | | | |

**B.Test Plot:**


(Channel 36, 5180MHz, 802.11ax (HEW20) RU52, ANT0)


(Channel 44, 5220MHz, 802.11ax (HEW20) RU52, ANT0)


(Channel 48, 5240MHz, 802.11ax (HEW20) RU52, ANT0)


(Channel 52, 5260MHz, 802.11ax (HEW20) RU52, ANT0)


(Channel 60, 5300MHz, 802.11ax (HEW20) RU52, ANT0)


(Channel 64, 5320MHz, 802.11ax (HEW20) RU52, ANT0)


(Channel 100, 5500MHz, 802.11ax (HEW20) RU52, ANT0)


(Channel 120, 5600MHz, 802.11ax (HEW20) RU52, ANT0)


(Channel 140, 5700MHz, 802.11ax (HEW20) RU52, ANT0)


(Channel 149, 5745MHz, 802.11ax (HEW20) RU52, ANT0)


(Channel 157, 5785MHz, 802.11ax (HEW20) RU52, ANT0)


(Channel 165, 5825MHz, 802.11ax (HEW20) RU52, ANT0)

**802.11ax (HEW20) RU106 Mode**

**A.Test Verdict:**

| Frequency (MHz) | Measured PPSD (dBm/MHz) | | Duty Factor | Total PPSD (dBm/MHz) | Limit (dBm/MHz) | Verdict |
|---|---|---|---|---|---|---|
| | ANT0 | ANT1 | | | | |
| 5180 | -0.03 | -1.95 | 0.00 | 2.13 | 11 | PASS |
| 5220 | 0.23 | -1.67 | | 2.39 | | |
| 5240 | 0.12 | -1.69 | | 2.32 | | |
| 5260 | 0.11 | -1.71 | | 2.30 | | |
| 5300 | -0.19 | -1.22 | | 2.34 | | |
| 5320 | -0.14 | -0.78 | | 2.56 | | |
| 5500 | -0.92 | -0.79 | | 2.16 | | |
| 5600 | -0.80 | -0.87 | | 2.18 | | |
| 5700 | -0.48 | -1.66 | | 1.98 | | |
| Frequency (MHz) | Measured PPSD (dBm/500KHz) | | Duty Factor | Total PPSD (dBm/500KHz) | Limit (dBm/500KHz) | Verdict |
| | ANT0 | ANT1 | | | | |
| 5745 | -0.49 | -4.47 | 0.00 | 0.97 | 30 | PASS |
| 5785 | -0.49 | -3.59 | | 1.24 | | |
| 5825 | -1.03 | -3.42 | | 0.95 | | |
| **Note:** Directional gain = -3.5dBi +10log(2) = -0.49dBi＜6dBi, so the limit shall be 11 dBm/MHz for 5.18-5.24 GHz band and 30 dBm/500KHz for 5.745-5.825 GHz band. | | | | | | |

**B.Test Plot:**


(Channel 36, 5180MHz, 802.11ax (HEW20) RU106, ANT0)


(Channel 44, 5220MHz, 802.11ax (HEW20) RU106, ANT0)


(Channel 48, 5240MHz, 802.11ax (HEW20) RU106, ANT0)


(Channel 52, 5260MHz, 802.11ax (HEW20) RU106, ANT0)


(Channel 60, 5300MHz, 802.11ax (HEW20) RU106, ANT0)


(Channel 64, 5320MHz, 802.11ax (HEW20) RU106, ANT0)


(Channel 100, 5500MHz, 802.11ax (HEW20) RU106, ANT0)


(Channel 120, 5600MHz, 802.11ax (HEW20) RU106, ANT0)


(Channel 140, 5700MHz, 802.11ax (HEW20) RU106, ANT0)


(Channel 149, 5745MHz, 802.11ax (HEW20) RU106, ANT0)


(Channel 157, 5785MHz, 802.11ax (HEW20) RU106, ANT0)


(Channel 165, 5825MHz, 802.11ax (HEW20) RU106, ANT0)

**802.11ax (HEW40) Mode**

**A.Test Verdict:**

| Frequency (MHz) | Measured PPSD (dBm/MHz) | | Duty Factor | Total PPSD (dBm/MHz) | Limit (dBm/MHz) | Verdict |
|---|---|---|---|---|---|---|
| | ANT0 | ANT1 | | | | |
| 5190 | 1.72 | 1.63 | 0.00 | 4.69 | 11 | PASS |
| 5230 | 1.59 | 1.56 | | 4.59 | | |
| 5270 | 1.41 | 1.74 | | 4.59 | | |
| 5310 | 1.26 | 2.18 | | 4.75 | | |
| 5510 | 4.15 | 1.56 | | 6.06 | | |
| 5630 | 4.79 | 1.71 | | 6.53 | | |
| 5670 | 4.89 | 1.16 | | 6.42 | | |
| Frequency (MHz) | Measured PPSD (dBm/500KHz) | | Duty Factor | Total PPSD (dBm/500KHz) | Limit (dBm/500KHz) | Verdict |
| | ANT0 | ANT1 | | | | |
| 5755 | 0.63 | -1.44 | 0.00 | 2.73 | 30 | PASS |
| 5795 | 0.45 | -1.18 | | 2.72 | | |
| **Note:** Directional gain = -3.5dBi +10log(2) = -0.49dBi＜6dBi, so the limit shall be 11 dBm/MHz for 5.18-5.24 GHz band and 30 dBm/500KHz for 5.745-5.825 GHz band. | | | | | | |

**B.Test Plot:**


(Channel 38, 5190MHz, 802.11ax (HEW40), ANT0)


(Channel 46, 5230MHz, 802.11ax (HEW40), ANT0)


(Channel 54, 5270MHz, 802.11ax (HEW40), ANT0)


(Channel 62, 5310MHz, 802.11ax (HEW40), ANT0)


(Channel 102, 5510MHz, 802.11ax (HEW40), ANT0)


(Channel 126, 5630MHz, 802.11ax (HEW40), ANT0)


(Channel 134, 5670MHz, 802.11ax (HEW40), ANT0)


(Channel 151, 5755MHz, 802.11ax (HEW40), ANT0)


(Channel 159, 5795MHz, 802.11ax (HEW40), ANT0)

**802.11ax (HEW80) Mode**

**A.Test Verdict:**

| Frequency (MHz) | Measured PPSD (dBm/MHz) | | Duty Factor | Total PPSD (dBm/MHz) | Limit (dBm/MHz) | Verdict |
|---|---|---|---|---|---|---|
| | ANT0 | ANT1 | | | | |
| 5210 | -1.68 | -0.63 | 0.00 | 1.89 | 11 | PASS |
| 5290 | -1.92 | -0.27 | | 1.99 | | |
| 5530 | 0.80 | -0.51 | | 3.20 | | |
| 5610 | 0.99 | -1.07 | | 3.09 | | |
| Frequency (MHz) | Measured PPSD (dBm/500KHz) | | Duty Factor | Total PPSD (dBm/500KHz) | Limit (dBm/500KHz) | Verdict |
| | ANT0 | ANT1 | | | | |
| 5775 | -2.74 | -3.34 | 0.00 | -0.02 | 30 | PASS |
| | | | | | | |
| **Note:** Directional gain = -3.5dBi +10log(2) = -0.49dBi＜6dBi, so the limit shall be 11 dBm/MHz for 5.18-5.24 GHz band and 30 dBm/500KHz for 5.745-5.825 GHz band. | | | | | | |

**B.Test Plot:**


(Channel 42, 5210MHz, 802.11ax (HEW80), ANT0)


(Channel 58, 5290MHz, 802.11ax (HEW80), ANT0)


(Channel 106, 5530MHz, 802.11ax (HEW80), ANT0)


(Channel 122, 5610MHz, 802.11ax (HEW80), ANT0)


(Channel 155, 5775MHz, 802.11ax (HEW80), ANT0)

**802.11ax (HEW160) Mode**

**A.Test Verdict:**

| Frequency (MHz) | Measured PPSD (dBm/MHz) | | Duty Factor | Total PPSD (dBm/MHz) | Limit (dBm/MHz) | Verdict |
|---|---|---|---|---|---|---|
| | ANT0 | ANT1 | | | | |
| 5250 | -7.48 | -4.68 | 0.00 | -2.85 | 11 | PASS |
| 5570 | -4.57 | -5.54 | | -2.02 | | |
| **Note:** Directional gain = -3.5dBi +10log(2) = -0.49dBi＜6dBi, so the limit shall be 11 dBm/MHz for 5.18-5.24 GHz band. | | | | | | |

**B.Test Plot:**


(Channel 50, 5250MHz, 802.11ax (HEW160), ANT0)


(Channel 114, 5570MHz, 802.11ax (HEW160), ANT0)

# 2.6. Frequency Stability

### 2.6.1. Requirement

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 user's manual.

### 2.6.2. Test Procedure

The EUT was placed inside of an environmental chamber as the temperature in the chamber was varied between 5°Cto 40°C. The temperature was incremented by 10° intervals and the unit was allowed to stabilize at each temperature before each measurement. The center frequency of the transmitting channel was evaluated at each temperature and the frequency deviation from the channel's center frequency was recorded. Data for the worst case channel is shown below.

### 2.6.3. Test Result

| U-NII-1 (Ch. 36) 5180MHz | | | | |
|---|---|---|---|---|
| VOLTAGE (%) | POWER (VDC) | TEMP (°C) | Fre. Dev. (kHz) | Deviation (ppm) |
| 100% | 7.74 | +20(Ref) | 23 | 4.440 |
| 100% | | -30 | 31 | 5.985 |
| 100% | | -20 | 29 | 5.598 |
| 100% | | -10 | 26 | 5.019 |
| 100% | | 0 | 25 | 4.826 |
| 100% | | +10 | 22 | 4.247 |
| 100% | | +20 | 20 | 3.861 |
| 100% | | +30 | 23 | 4.440 |
| 100% | | +40 | 26 | 5.019 |
| 100% | | +50 | 23 | 4.440 |
| 115% | 8.90 | +20 | 28 | 5.405 |
| 85% | 6.80 | +20 | 30 | 5.792 |

| U-NII-2A (Ch. 52) 5260MHz | | | | |
|---|---|---|---|---|
| VOLTAGE (%) | POWER (VDC) | TEMP (°C) | Fre. Dev. (kHz) | Deviation (ppm) |
| 100% | 7.74 | +20(Ref) | 18 | 3.422 |
| 100% | | -30 | 22 | 4.183 |
| 100% | | -20 | 25 | 4.753 |
| 100% | | -10 | 27 | 5.133 |
| 100% | | 0 | 19 | 3.612 |
| 100% | | +10 | 17 | 3.232 |
| 100% | | +20 | 21 | 3.992 |
| 100% | | +30 | 26 | 4.943 |
| 100% | | +40 | 30 | 5.703 |
| 100% | | +50 | 25 | 4.753 |
| 115% | 8.90 | +20 | 19 | 3.612 |
| 85% | 6.80 | +20 | 21 | 3.992 |

| U-NII-2C (Ch. 100) 5500MHz | | | | |
|---|---|---|---|---|
| VOLTAGE (%) | POWER (VDC) | TEMP (°C) | Fre. Dev. (kHz) | Deviation (ppm) |
| 100% | 7.74 | +20(Ref) | 21 | 3.818 |
| 100% | | -30 | 25 | 4.545 |
| 100% | | -20 | 30 | 5.455 |
| 100% | | -10 | 29 | 5.273 |
| 100% | | 0 | 22 | 4.000 |
| 100% | | +10 | 19 | 3.455 |
| 100% | | +20 | 23 | 4.182 |
| 100% | | +30 | 32 | 5.818 |
| 100% | | +40 | 35 | 6.364 |
| 100% | | +50 | 25 | 4.545 |
| 115% | 8.90 | +20 | 27 | 4.909 |
| 85% | 6.80 | +20 | 30 | 5.455 |

| U-NII-3 (Ch. 149)<br>5745MHz | | | | |
|---|---|---|---|---|
| VOLTAGE (%) | POWER (VDC) | TEMP (°C) | Fre. Dev. (kHz) | Deviation (ppm) |
| 100% | 7.74 | +20(Ref) | 22 | 3.829 |
| 100% | | -30 | 26 | 4.526 |
| 100% | | -20 | 27 | 4.700 |
| 100% | | -10 | 21 | 3.655 |
| 100% | | 0 | 30 | 5.222 |
| 100% | | +10 | 25 | 4.352 |
| 100% | | +20 | 26 | 4.526 |
| 100% | | +30 | 26 | 4.526 |
| 100% | | +40 | 28 | 4.874 |
| 100% | | +50 | 28 | 4.874 |
| 115% | 8.90 | +20 | 31 | 5.396 |
| 85% | 6.80 | +20 | 29 | 5.048 |

# 2.7. Conducted Emission

### 2.7.1. Requirement

According to FCC section 15.207, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency within the band 150kHz to 30MHz shall not exceed the limits in the following table, as measured using a 50μH/50Ω line impedance stabilization network (LISN).

| Frequency Range (MHz) | Conducted Limit (dBμV) | |
|---|---|---|
| | Quai-peak | Average |
| 0.15 - 0.50 | 66 to 56 | 56 to 46 |
| 0.50 - 5 | 56 | 46 |
| 5 - 30 | 60 | 50 |

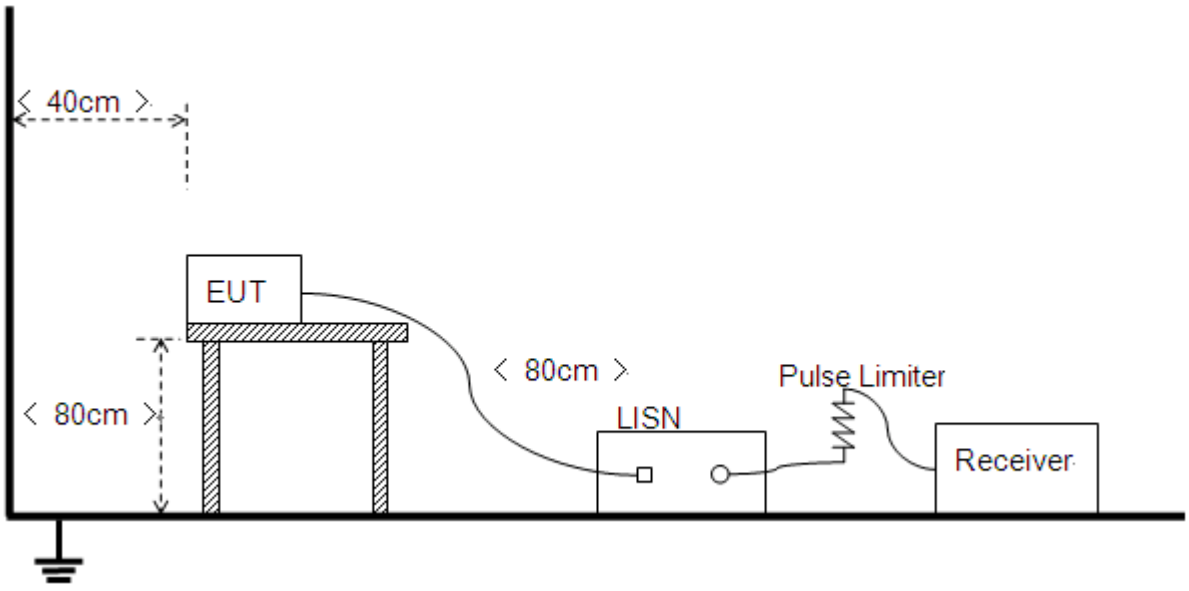
**Note:**

(a) The lower limit shall apply at the band edges.

(b) The limit decreases linearly with the logarithm of the frequency in the range 0.15 - 0.50MHz.

### 2.7.2. Test Description

**Test Setup:**




The Table-top EUT was placed upon a non-metallic table 0.8m above the horizontal metal reference ground plane. EUT was connected to LISN and LISN was connected to reference Ground Plane. EUT was 80cm from LISN. The set-up and test methods were according to ANSI C63.10: 2013.

### 2.7.3. Test Result

The maximum conducted interference is searched using Peak (PK), if the emission levels more than the AV and QP limits, and that have narrow margins from the AV and QP limits will be re-measured with AV and QP detectors. Tests for both L phase and N phase lines of the power mains connected to the EUT are performed. Set RBW=9kHz, VBW=30kHz. Refer to recorded points and Plot below.

**Note:** Both of the test voltage AC 120V/60Hz and AC 230V/50Hzwere considered and tested respectively, only the results of the worst case AC 120V/60Hz were recorded in this report.

**A.Test Setup:**

Test Mode: EUT+Adapter+Earphone+WIFI TX

Test Voltage: AC 120V/60Hz

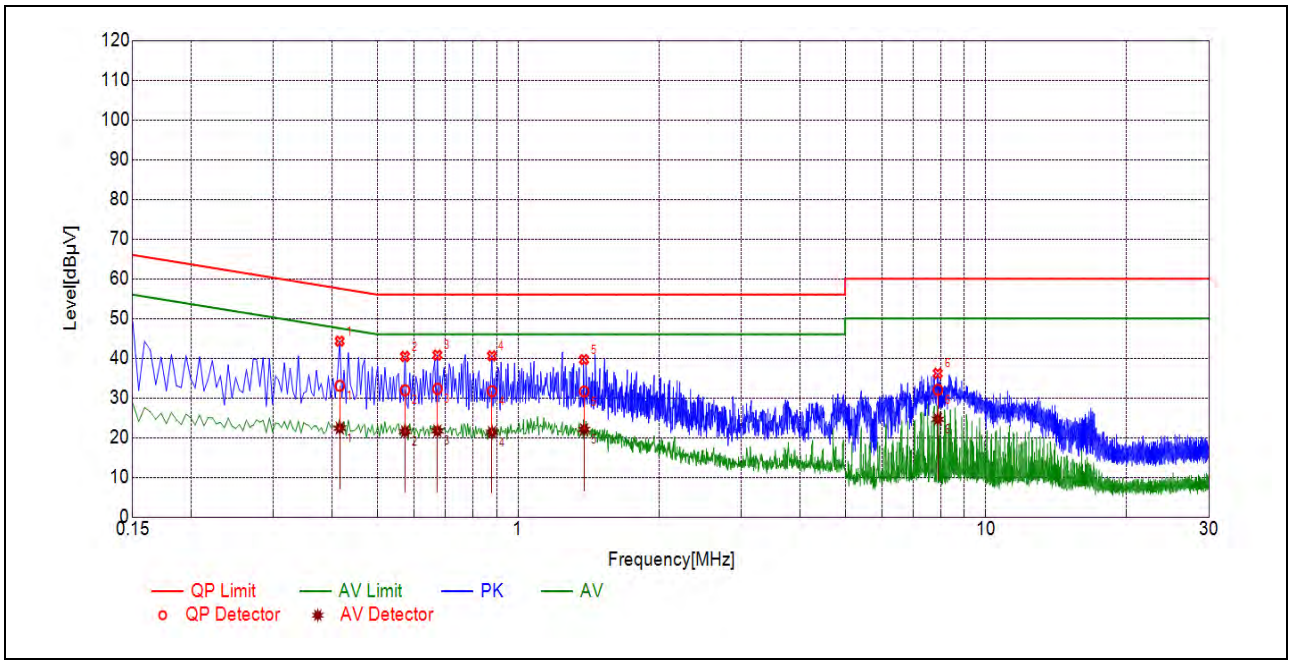
The measurement results are obtained as below:

$E\ [dB\mu V] = U_R + L_{Cable\ loss}\ [dB] + A_{Factor}$

$U_R$: Receiver Reading

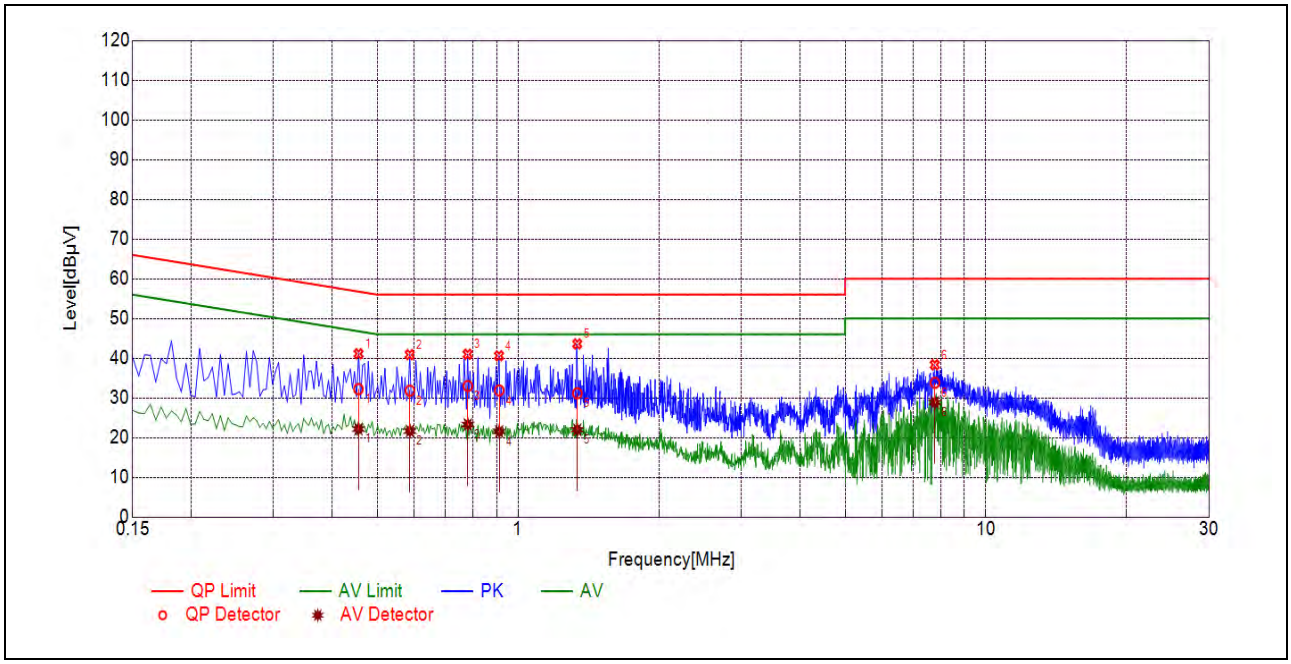
$A_{Factor}$: Voltage division factor of LISN

**B.Test Plot:**




(L Phase)

| No. | Fre. (MHz) | Emission Level (dBµV) | | Limit (dBµV) | | Power-line | Verdict |
|---|---|---|---|---|---|---|---|
| | | Quai-peak | Average | Quai-peak | Average | | |
| 1 | 0.4157 | 33.06 | 22.39 | 57.53 | 47.53 | Line | PASS |
| 2 | 0.5730 | 31.92 | 21.54 | 56.00 | 46.00 | | PASS |
| 3 | 0.6722 | 32.30 | 21.69 | 56.00 | 46.00 | | PASS |
| 4 | 0.8795 | 31.68 | 21.35 | 56.00 | 46.00 | | PASS |
| 5 | 1.3840 | 31.62 | 22.05 | 56.00 | 46.00 | | PASS |
| 6 | 7.8962 | 32.05 | 24.63 | 60.00 | 50.00 | | PASS |




(N Phase)

| No. | Fre. (MHz) | Emission Level (dBµV) | | Limit (dBµV) | | Power-line | Verdict |
|---|---|---|---|---|---|---|---|
| | | Quai-peak | Average | Quai-peak | Average | | |
| 1 | 0.4557 | 32.23 | 22.16 | 56.77 | 46.77 | Neutral | PASS |
| 2 | 0.5869 | 31.83 | 21.64 | 56.00 | 46.00 | | PASS |
| 3 | 0.7808 | 33.00 | 23.30 | 56.00 | 46.00 | | PASS |
| 4 | 0.9112 | 31.89 | 21.55 | 56.00 | 46.00 | | PASS |
| 5 | 1.3380 | 31.17 | 21.98 | 56.00 | 46.00 | | PASS |
| 6 | 7.7828 | 33.82 | 28.86 | 60.00 | 50.00 | | PASS |

# 2.8. Restricted Frequency Bands

### 2.8.1. Requirement

The peak 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 EIRP of -27dBm/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 EIRP of -27dBm/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 EIRP of -27dBm/MHz.

(4) For transmitters operating in the 5.725-5.85 GHz band:

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

The following formula is used to convert the equipment isotropic radiated power(e.i.r.p.) to field strength (dBμV/m);

$$E = 1000000 \times \sqrt{30P} / 3 \ \mu V/m$$

where P is the EIRP in Watts

Therefore: -27 dBm/MHz = 68.23 dBuV/m

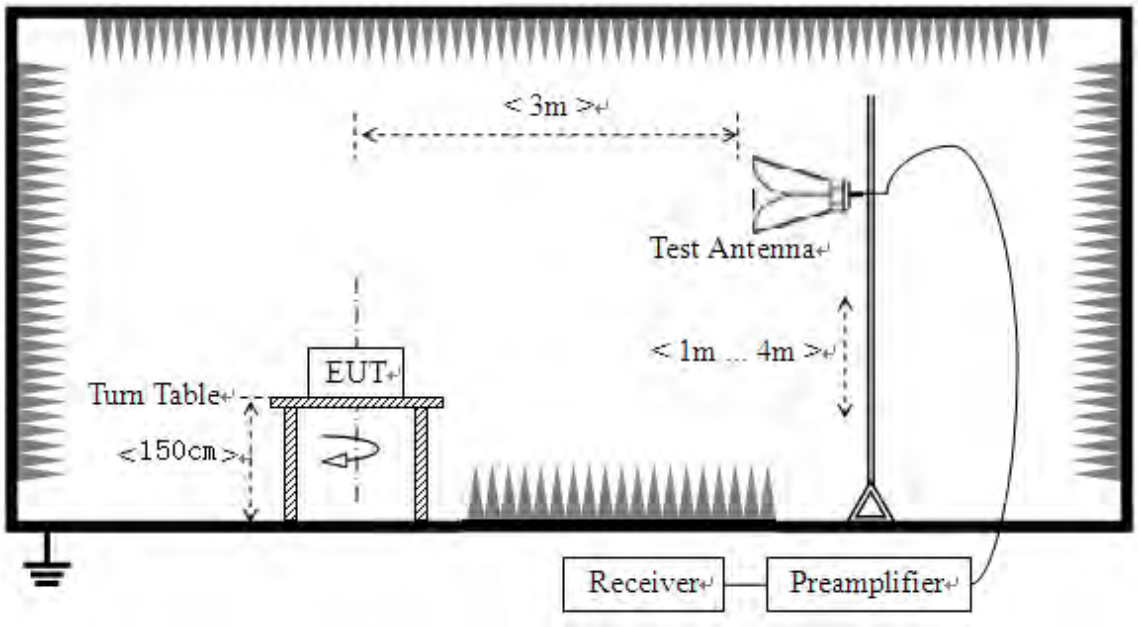
Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in § 15.209. According to FCC section 15.209 (a), except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

| Frequency (MHz) | Field Strength (μV/m) | Measurement Distance (m) |
|---|---|---|
| 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 |

For Above 1000MHz, the emission limit in this paragraph is based on measurement instrumentation employing an average detector, measurement using instrumentation with a peak detector function, corresponding to 20dB above the maximum permitted average limit.
In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), also should comply with the radiated emission limits specified in Section 15.209(a)(above table).

### 2.8.2. Test Description

**Test Setup**



The EUT is located in a 3m Semi-Anechoic Chamber; the antenna factors, cable loss and so on of the site as factors are calculated to correct the reading.
KDB 789033 Section H) 3)5)6(d)) was used in order to prove compliance
For the Test Antenna:
Test Antenna is 3m away from the EUT. Test Antenna height is varied from 1m to 4m above the ground to determine the maximum value of the field strength.

### 2.8.3. Test Result

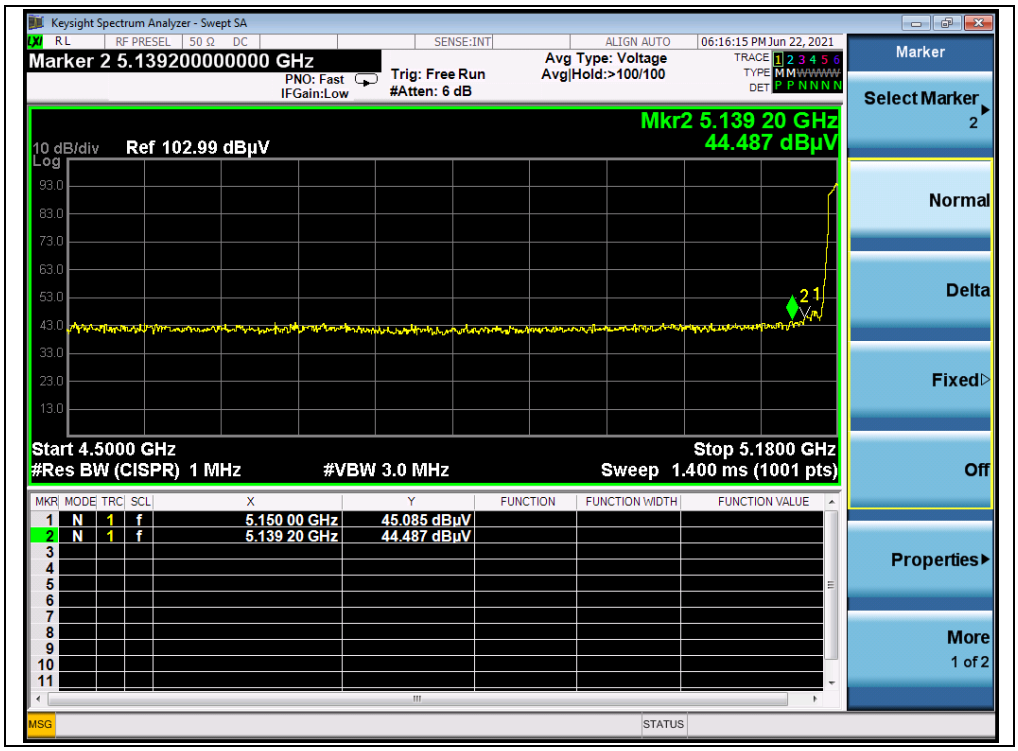
The lowest and highest channels are tested to verify Restricted Frequency Bands.
The measurement results are obtained as below:
E [dBμV/m] =$U_R$ + $A_T$ + $A_{Factor}$ [dB]; $A_T$ =$L_{Cable\ loss}$ [dB]-$G_{preamp}$ [dB]
$A_T$: Total correction Factor except Antenna; $U_R$: Receiver Reading
$G_{preamp}$: Preamplifier Gain; $A_{Factor}$: Antenna Factor at 3m
**Note 1:** Restricted Frequency Bands were performed when antenna was at vertical and horizontal polarity, and only the worse test condition (vertical) was recorded in this test report.
**Note 2** All test modes and bandwidth were considered and evaluated respectively by performing full test, only the worst data were recorded for each bandwidth.

**802.11a Mode**

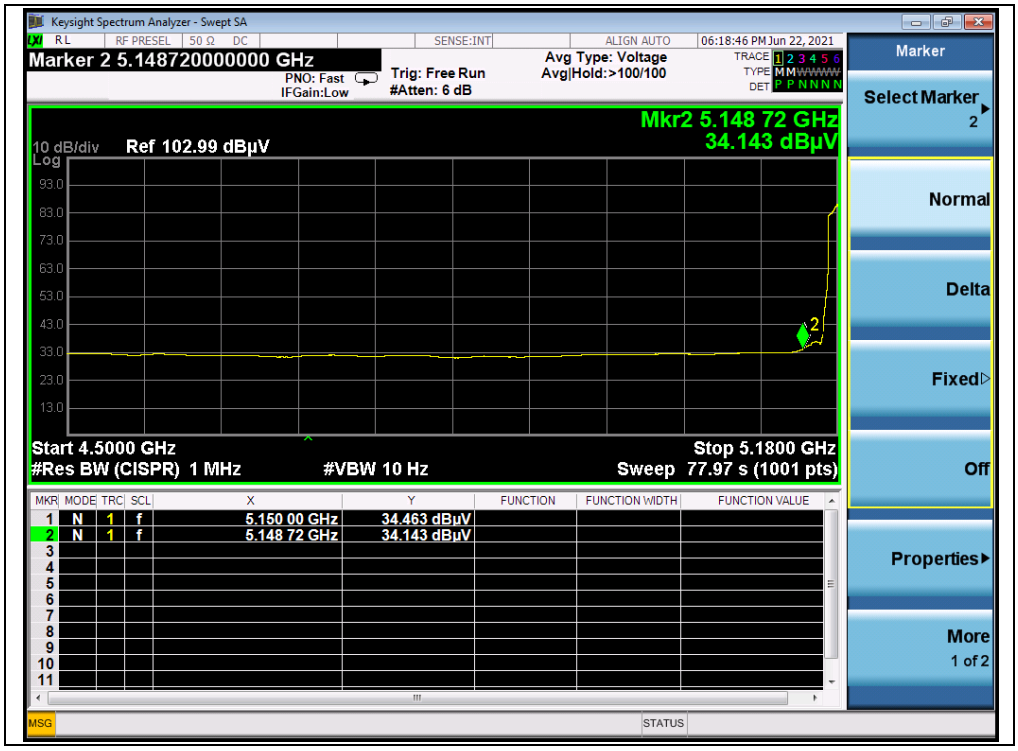
**A.Test Verdict:**

| Channel | Frequency (MHz) | Detector | Receiver Reading $U_R$ (dBμV) | $A_T$ (dB) | $A_{Factor}$ (dB@3m) | Max. Emission E (dBμV/m) | Limit (dBμV/m) | Verdict |
|---|---|---|---|---|---|---|---|---|
| | | PK/ AV | | | | | | |
| 36 | 5150.00 | PK | 45.09 | -16.92 | 32.20 | 60.37 | 74 | PASS |
| 36 | 5150.00 | AV | 34.46 | -16.92 | 32.20 | 49.74 | 54 | PASS |
| 64 | 5354.72 | PK | 42.23 | -16.80 | 32.20 | 57.63 | 74 | PASS |
| 64 | 5350.00 | AV | 31.39 | -16.80 | 32.20 | 46.79 | 54 | PASS |
| 100 | 5470.00 | PK | 44.79 | -16.64 | 32.20 | 60.35 | 68.23 | PASS |
| 100 | 5456.00 | AV | 31.75 | -16.64 | 32.20 | 47.31 | 54 | PASS |
| 140 | 5727.80 | PK | 43.54 | -16.64 | 32.20 | 59.10 | 68.23 | PASS |
| 140 | 5725.00 | AV | 33.64 | -16.64 | 32.20 | 49.20 | 54 | PASS |
| 149 | 5725.00 | PK | 50.18 | -16.23 | 32.20 | 66.15 | 122.23 | PASS |
| 165 | 5925.00 | PK | 42.49 | -16.23 | 32.20 | 58.46 | 68.23 | PASS |

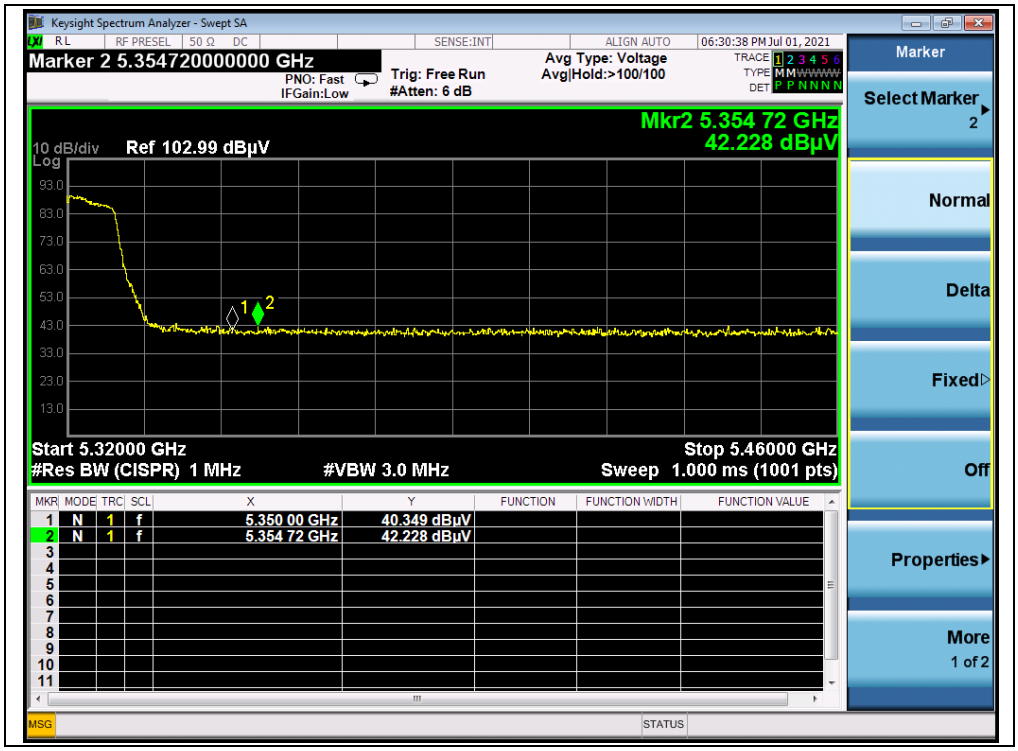
**B.Test Plot:**



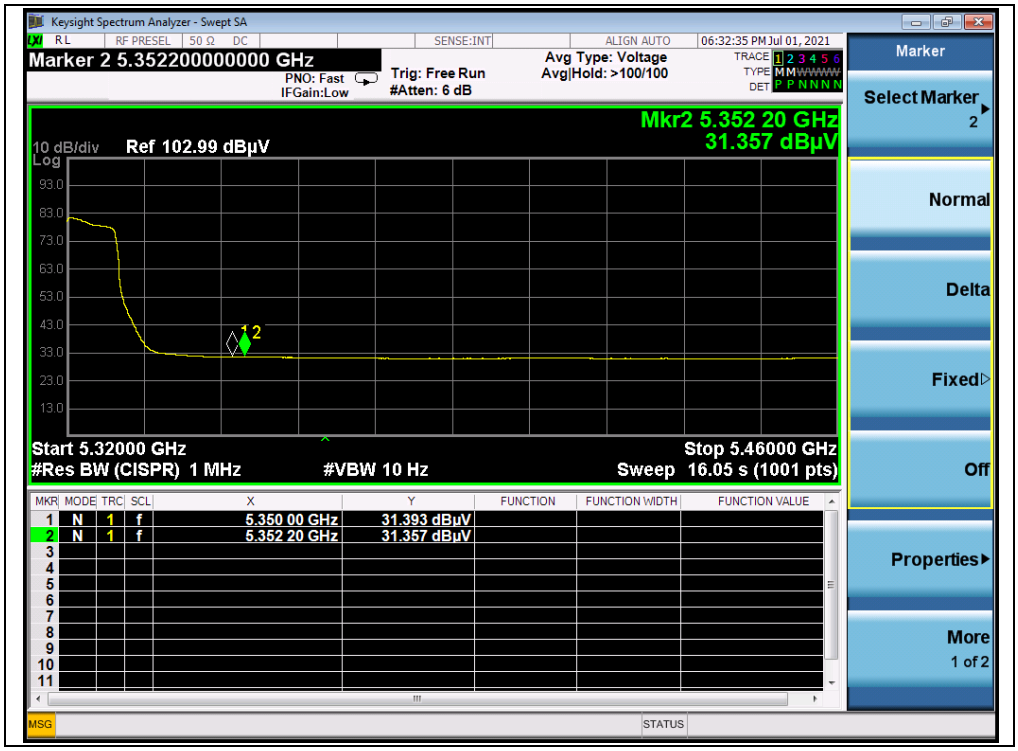

(PEAK, Channel 36, 802.11a)



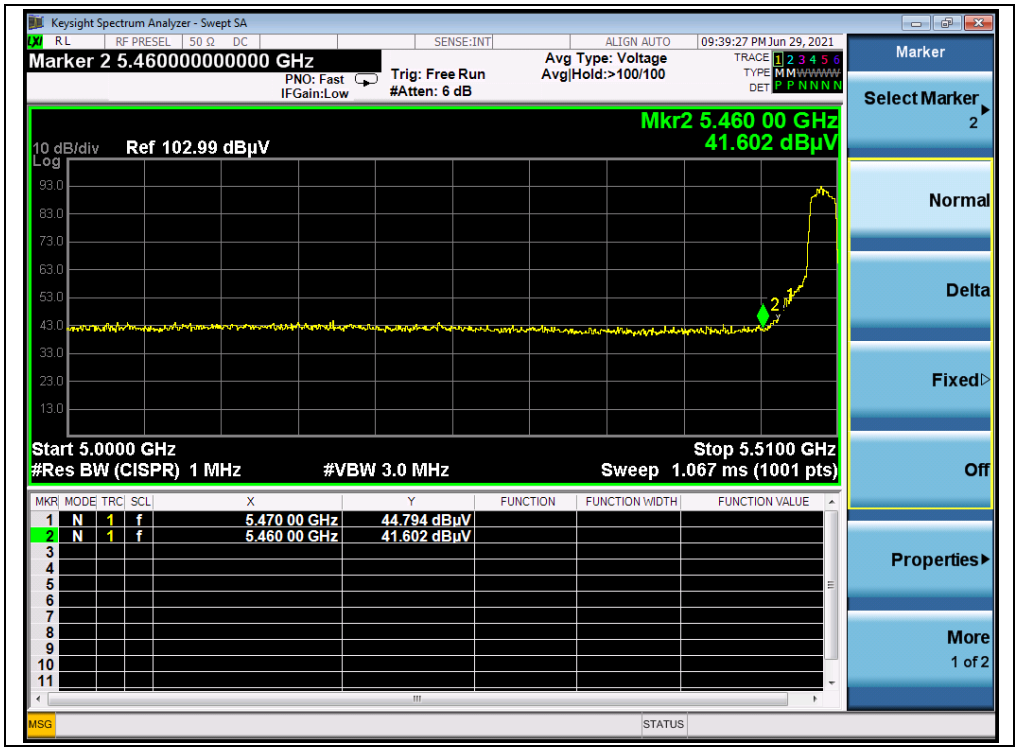

(AVERAGE, Channel 36, 802.11a)



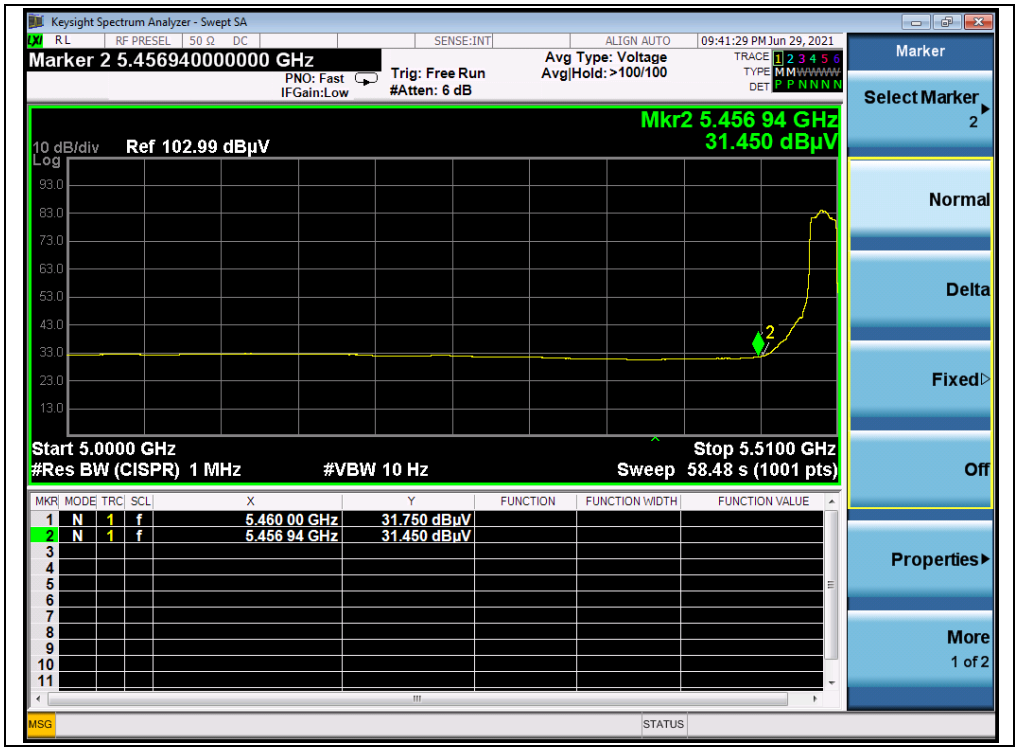

(PEAK, Channel 64, 802.11a)



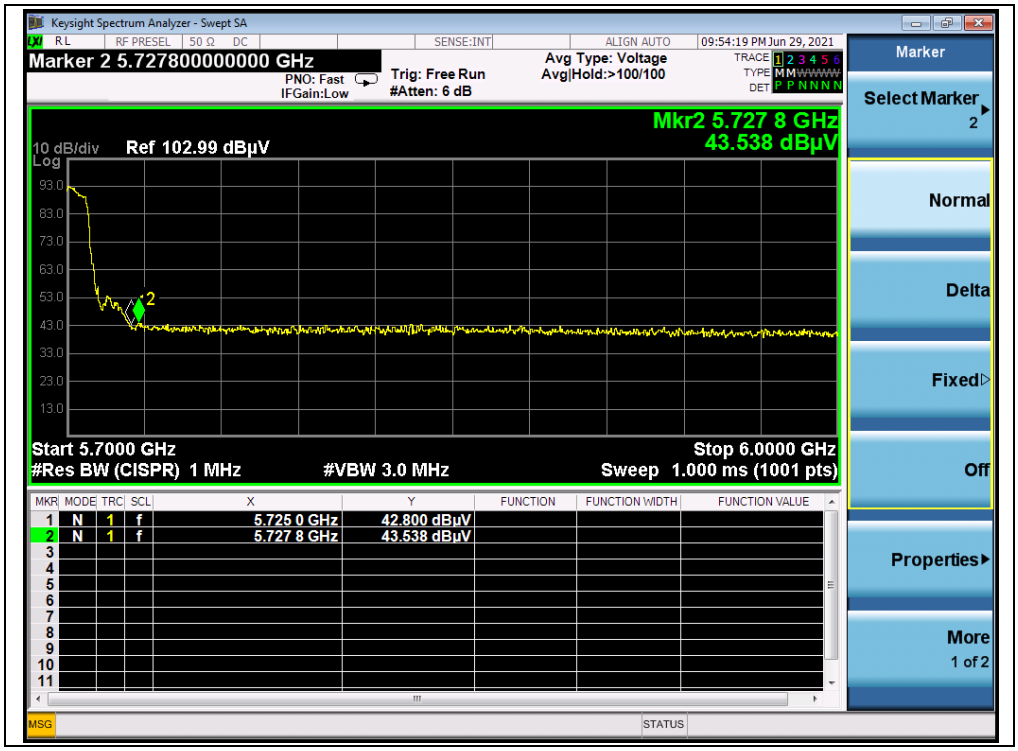

(AVERAGE, Channel 64, 802.11a)



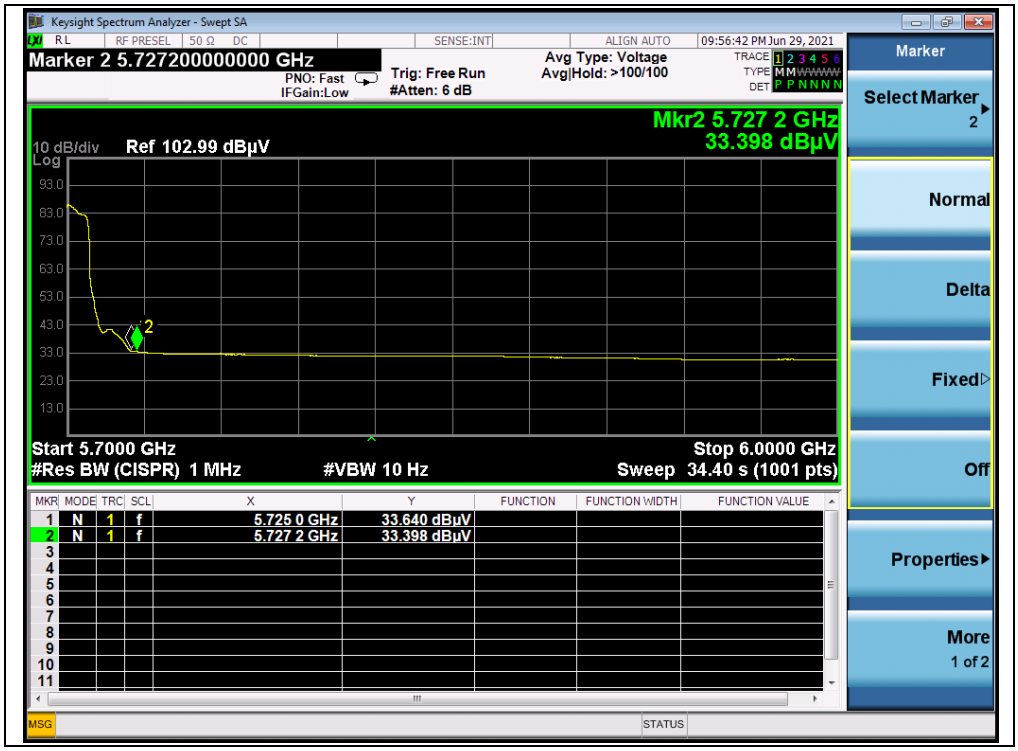

(PEAK, Channel100, 802.11a)




(AVERAGE, Channel 100, 802.11a)

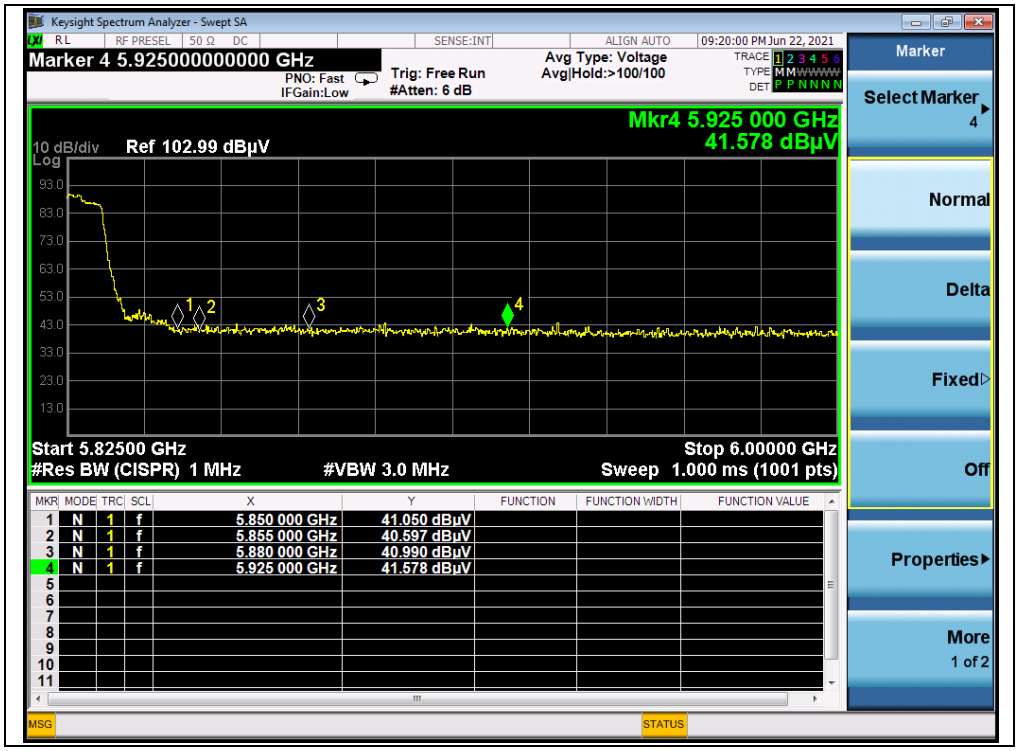



(PEAK, Channel 140, 802.11a)




(AVERAGE, Channel 140, 802.11a)


(PEAK, Channel 149, 802.11a)



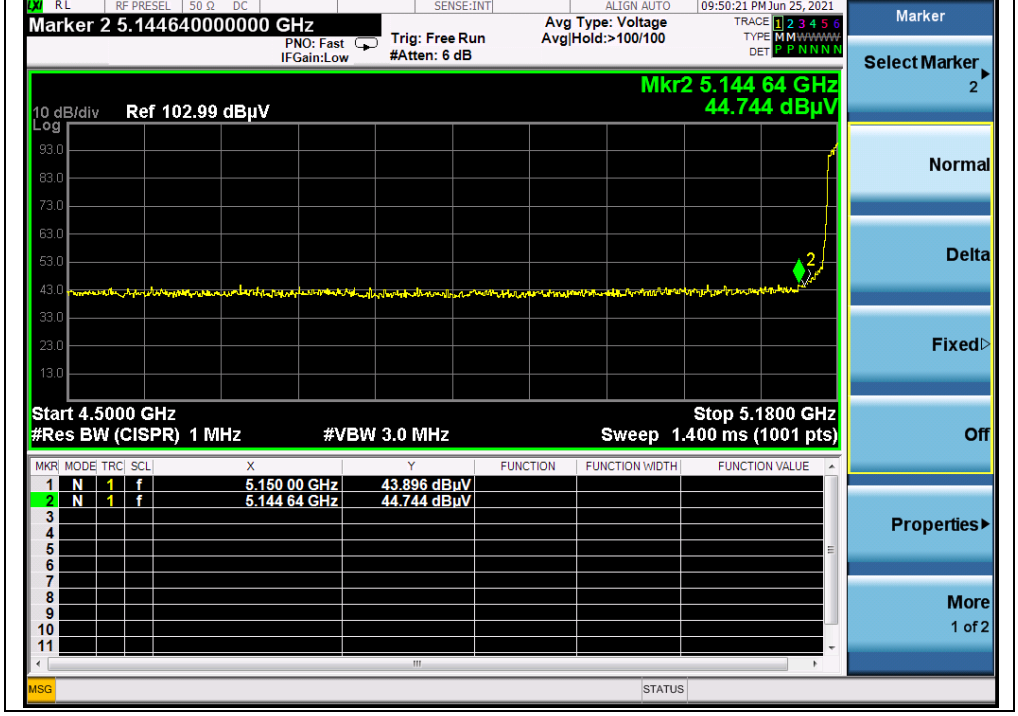

(PEAK, Channel 165, 802.11a)

**802.11ax (HEW20) Mode**

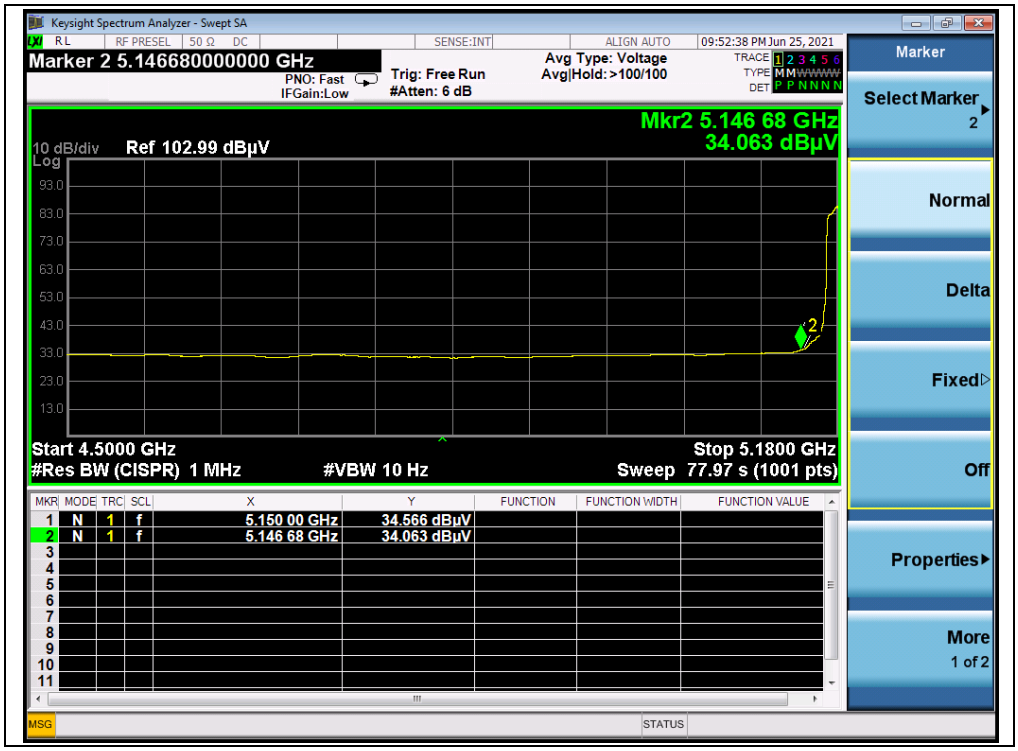
**A.Test Verdict:**

| Channel | Frequency (MHz) | Detector PK/ AV | Receiver Reading $U_R$ (dBμV) | $A_T$ (dB) | $A_{Factor}$ (dB@3m) | Max. Emission E (dBμV/m) | Limit (dBμV/m) | Verdict |
|---|---|---|---|---|---|---|---|---|
| 36 | 5144.64 | PK | 44.74 | -16.92 | 32.20 | 60.02 | 74 | PASS |
| 36 | 5150.00 | AV | 34.57 | -16.92 | 32.20 | 49.85 | 54 | PASS |
| 64 | 5353.04 | PK | 41.44 | -16.80 | 32.20 | 56.84 | 74 | PASS |
| 64 | 5350.00 | AV | 31.52 | -16.80 | 32.20 | 46.92 | 54 | PASS |
| 100 | 5470.00 | PK | 43.09 | -16.64 | 32.20 | 58.65 | 68.23 | PASS |
| 100 | 5460.00 | AV | 31.38 | -16.64 | 32.20 | 46.94 | 54 | PASS |
| 140 | 5767.50 | PK | 43.67 | -16.64 | 32.20 | 59.23 | 68.23 | PASS |
| 149 | 5725.00 | PK | 53.43 | -19.01 | 32.20 | 66.62 | 122.23 | PASS |
| 165 | 5850.00 | PK | 46.59 | -19.01 | 32.20 | 59.78 | 122.23 | PASS |

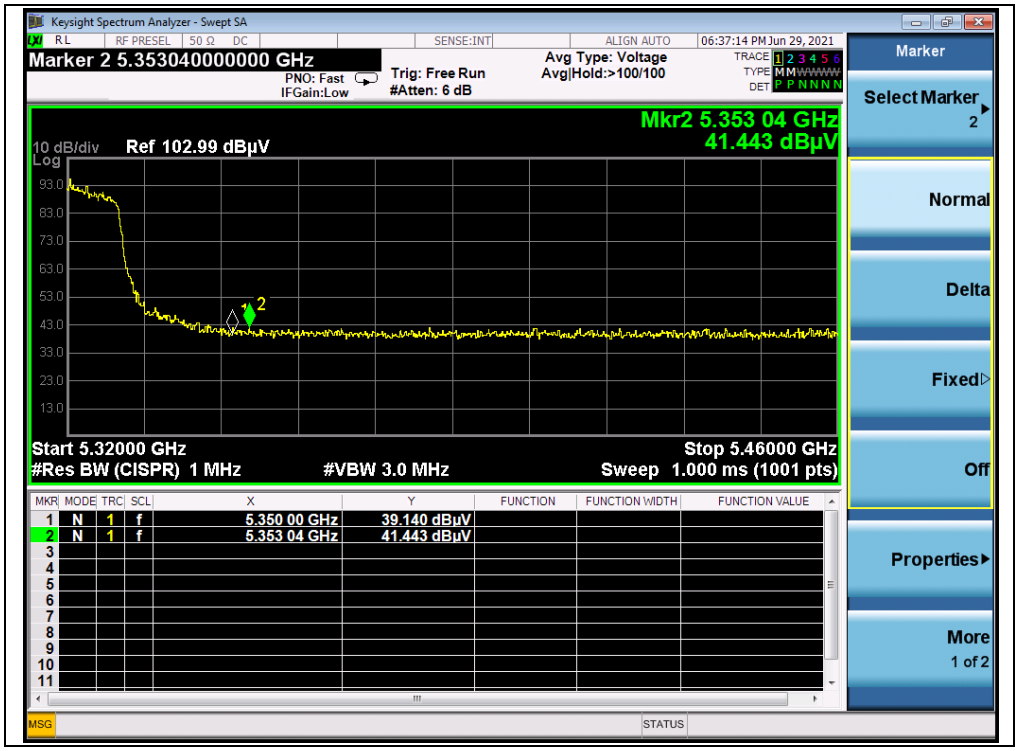
**B.Test Plot:**



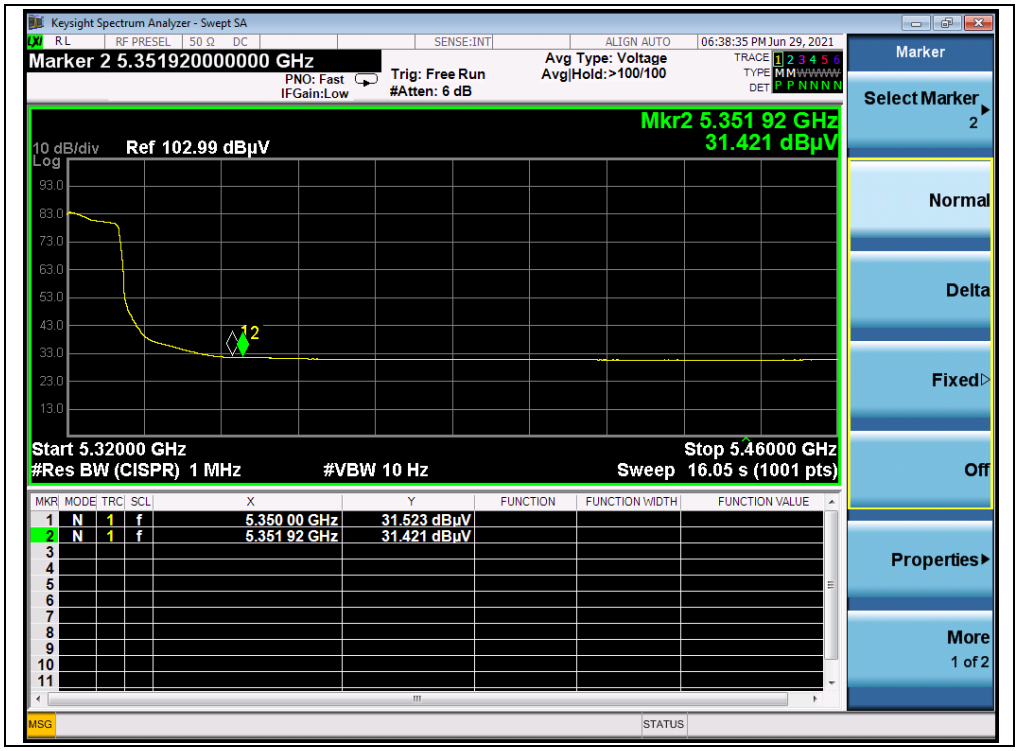

(PEAK, Channel 36, 802.11ax (HEW20))



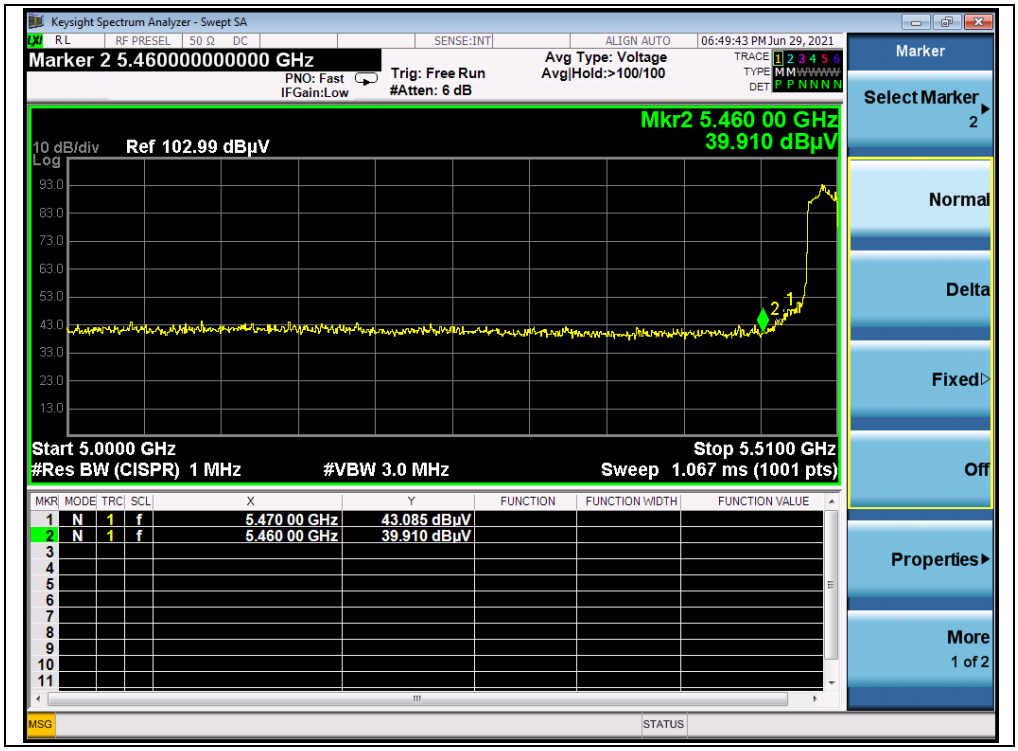

(AVERAGE, Channel 36, 802.11ax (HEW20))



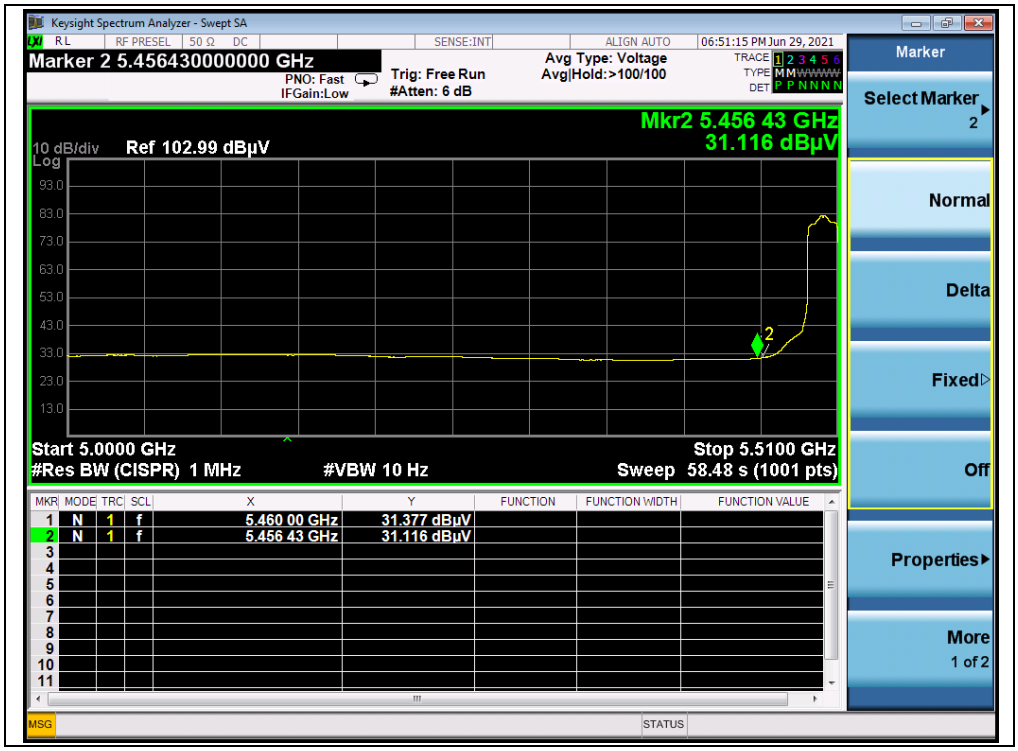

(PEAK, Channel 64, 802.11ax (HEW20))



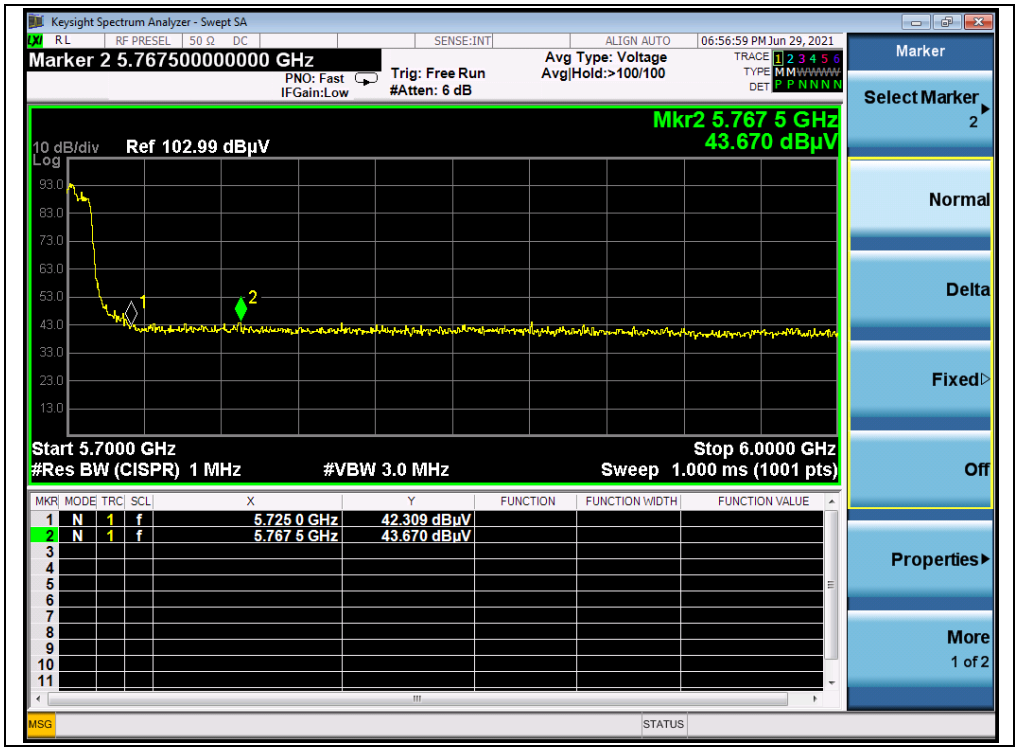

(AVERAGE, Channel 64, 802.11ax (HEW20))




(PEAK, Channel100, 802.11ax (HEW20))




(AVERAGE, Channel 100, 802.11ax (HEW20))




(PEAK, Channel 140, 802.11ax (HEW20))


(PEAK, Channel 149, 802.11ax (HEW20))

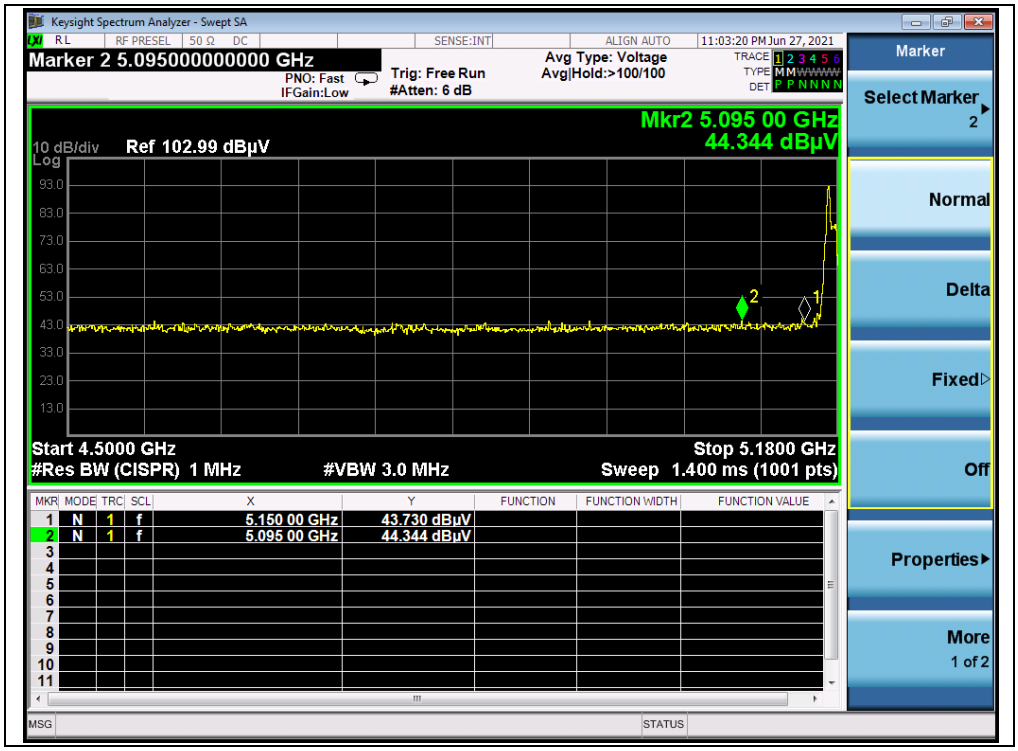

(PEAK, Channel 165, 802.11ax (HEW20))

## 802.11ax (HEW20) RU26 Mode

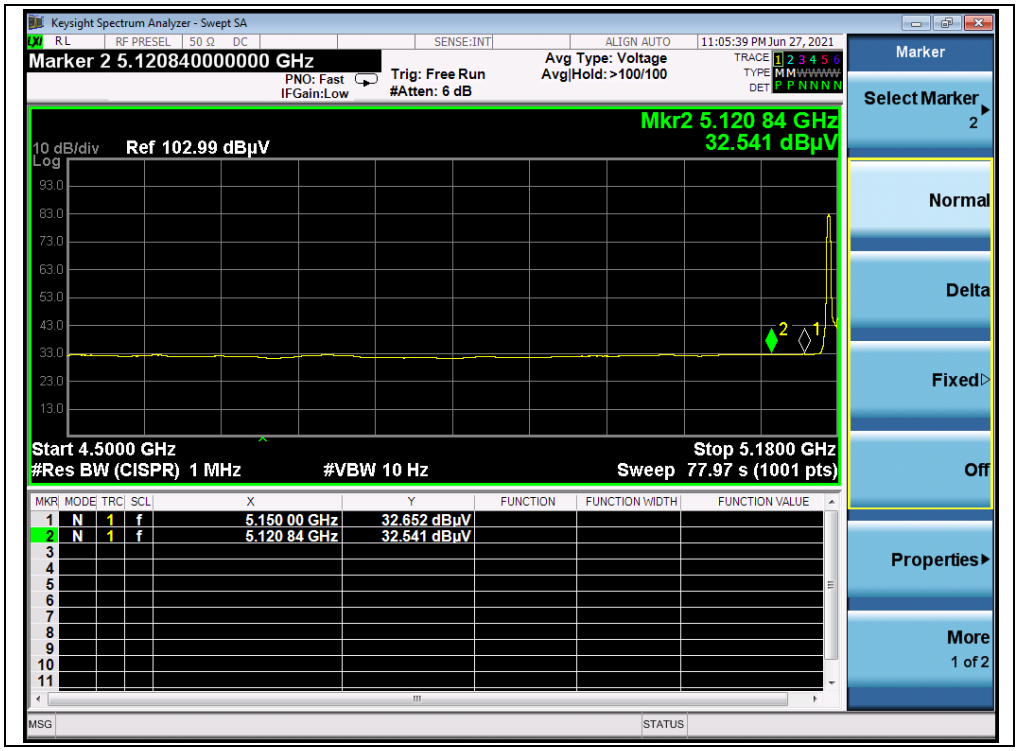
### A.Test Verdict:

| Channel | Frequency (MHz) | Detector | Receiver Reading $U_R$ (dBμV) | $A_T$ (dB) | $A_{Factor}$ (dB@3m) | Max. Emission E (dBμV/m) | Limit (dBμV/m) | Verdict |
|---|---|---|---|---|---|---|---|---|
| | | PK/ AV | | | | | | |
| 36 | 5095.00 | PK | 44.34 | -16.92 | 32.20 | 59.62 | 74 | PASS |
| 36 | 5150.00 | AV | 32.65 | -16.92 | 32.20 | 47.93 | 54 | PASS |
| 64 | 5355.98 | PK | 42.76 | -16.80 | 32.20 | 58.16 | 74 | PASS |
| 64 | 5355.98 | AV | 30.85 | -16.80 | 32.20 | 46.25 | 54 | PASS |
| 100 | 5470.00 | PK | 40.67 | -16.64 | 32.20 | 56.23 | 68.23 | PASS |
| 100 | 5460.00 | AV | 30.78 | -16.64 | 32.20 | 46.34 | 54 | PASS |
| 140 | 5740.80 | PK | 43.01 | -16.64 | 32.20 | 58.57 | 68.23 | PASS |
| 149 | 5720.00 | PK | 42.57 | -19.01 | 32.20 | 55.76 | 110.83 | PASS |
| 165 | 5880.00 | PK | 41.71 | -19.01 | 32.20 | 54.90 | 101.53 | PASS |

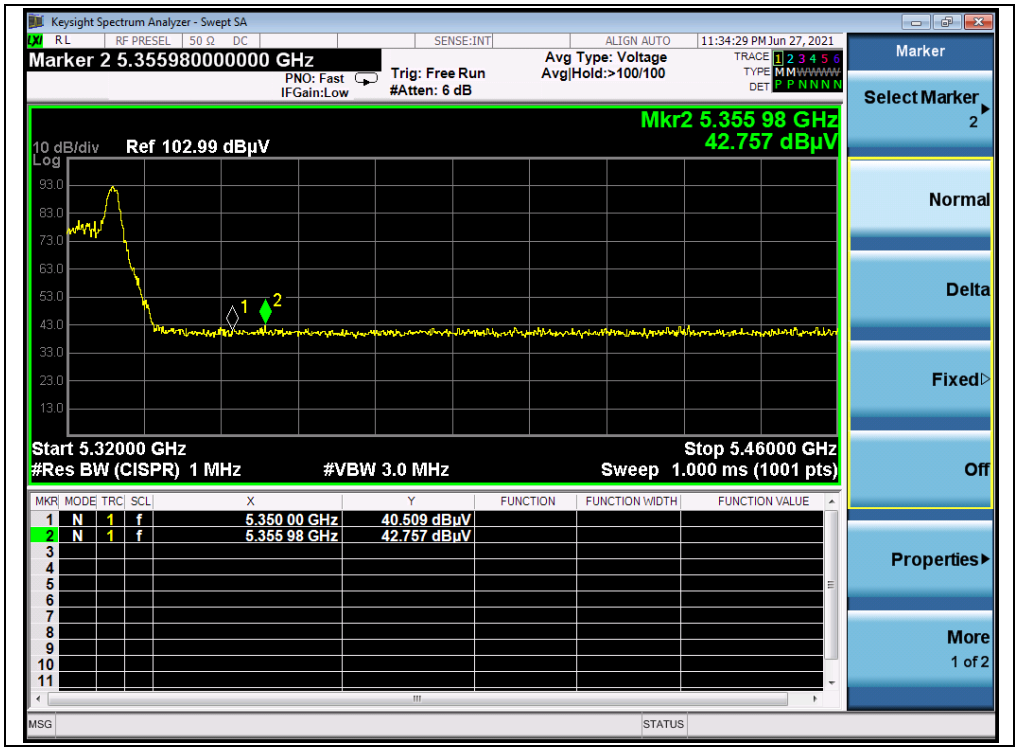
### B.Test Plot:




(PEAK, Channel 36, 802.11ax (HEW20) RU26)




(AVERAGE, Channel 36, 802.11ax (HEW20) RU26)




(PEAK, Channel 64, 802.11ax (HEW20) RU26)