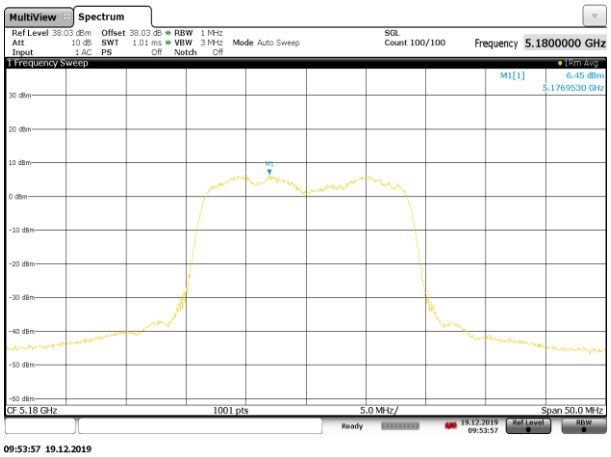
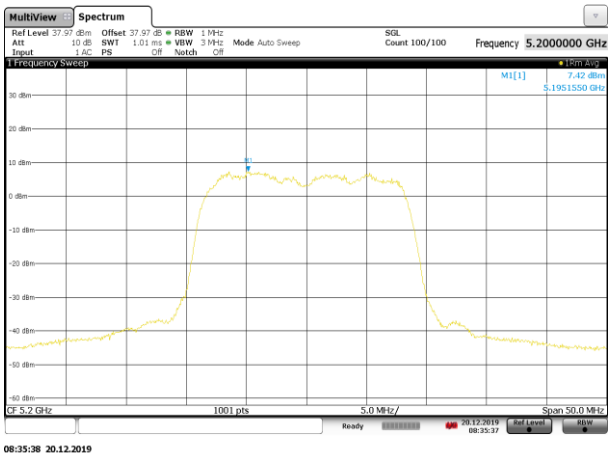
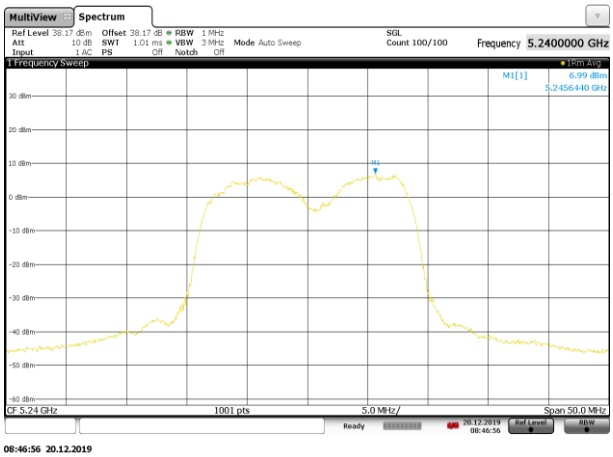



**LOW CHANNEL**




**MID CHANNEL**




**HIGH CHANNEL**

## 8.5.2. 802.11n HT20 MODE IN THE 5.2 GHz BAND

**FCC**

**4TX Antenna 1 + Antenna 2 + Antenna 3 + Antenna 4 CDD MODE**

**Antenna Gain and Limits**

| Channel | Frequency (MHz) | Directional Gain for Power (dBi) | Directional Gain for PSD (dBi) | Power Limit (dBm) | PSD Limit (dBm/ 1MHz) |
|---|---|---|---|---|---|
| Low | 5180 | 6.41 | 9.35 | 23.59 | 7.65 |
| Mid | 5200 | 6.41 | 9.35 | 23.59 | 7.65 |
| High | 5240 | 6.41 | 9.35 | 23.59 | 7.65 |

| | | |
|---|---|---|
| Duty Cycle CF (dB) | 0.31 | Included in Calculations of Corr'd PSD |

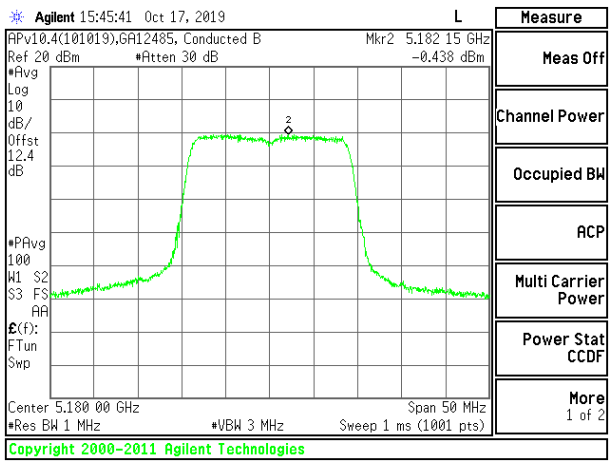
**Output Power Results**

| Channel | Frequency (MHz) | Antenna 0 Meas Power (dBm) | Antenna 1 Meas Power (dBm) | Antenna 2 Meas Power (dBm) | Antenna 3 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---|---|---|---|---|---|---|---|---|
| Low | 5180 | 10.71 | 10.31 | 10.57 | 10.17 | 16.47 | 23.59 | -7.12 |
| Mid | 5200 | 11.17 | 10.83 | 11.04 | 10.88 | 17.00 | 23.59 | -6.59 |
| High | 5240 | 11.20 | 10.87 | 11.11 | 10.67 | 16.99 | 23.59 | -6.60 |

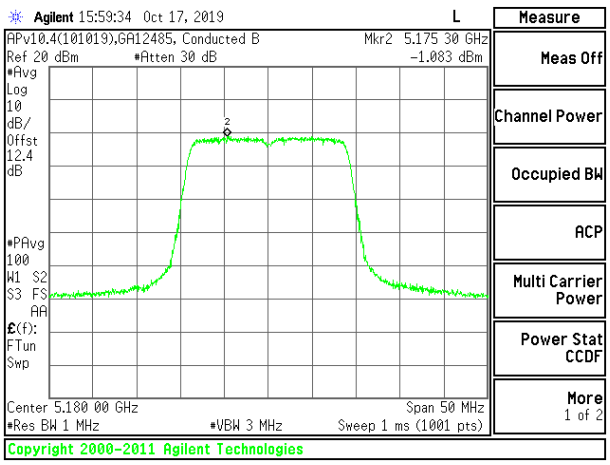
**PSD Results**

| Channel | Frequency (MHz) | Antenna 0 Meas PSD (dBm/ 1MHz) | Antenna 1 Meas PSD (dBm/ 1MHz) | Antenna 2 Meas PSD (dBm/ 1MHz) | Antenna 3 Meas PSD (dBm/ 1MHz) | Total Corr'd PSD (dBm/ 1MHz) | PSD Limit (dBm/ 1MHz) | PSD Margin (dB) |
|---|---|---|---|---|---|---|---|---|
| Low | 5180 | -0.438 | -1.083 | 0.322 | -0.797 | 5.86 | 7.65 | -1.79 |
| Mid | 5200 | 0.364 | -0.462 | 0.691 | -0.152 | 6.46 | 7.65 | -1.19 |
| High | 5240 | 0.326 | -0.310 | 0.605 | -0.703 | 6.34 | 7.65 | -1.31 |

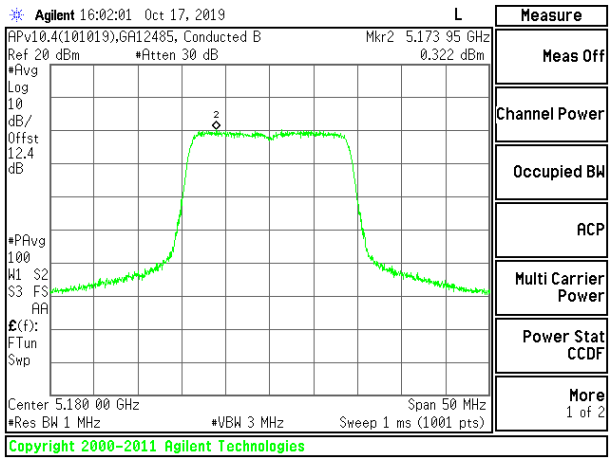
## LOW CHANNEL



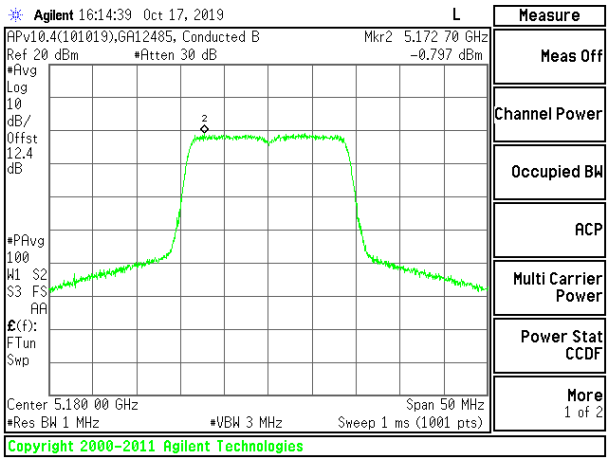

**LOW CHANNEL CHAIN 0**




**LOW CHANNEL CHAIN 1**

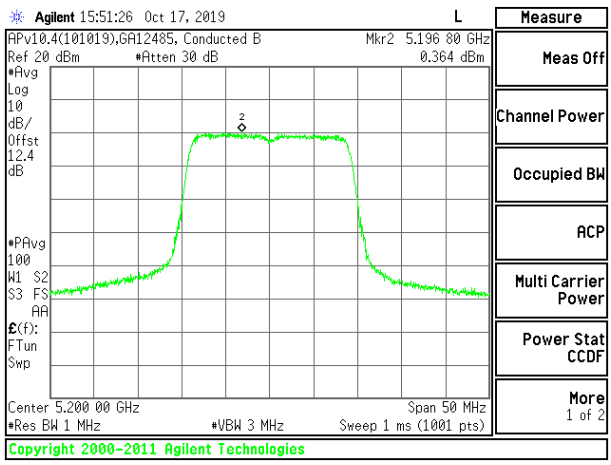



**LOW CHANNEL CHAIN 2**

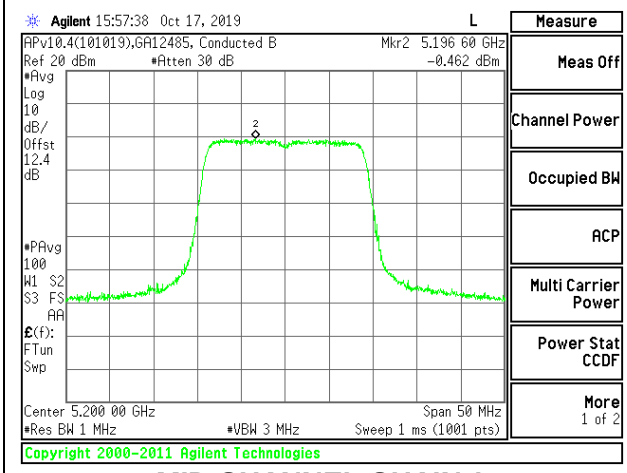



**LOW CHANNEL CHAIN 3**

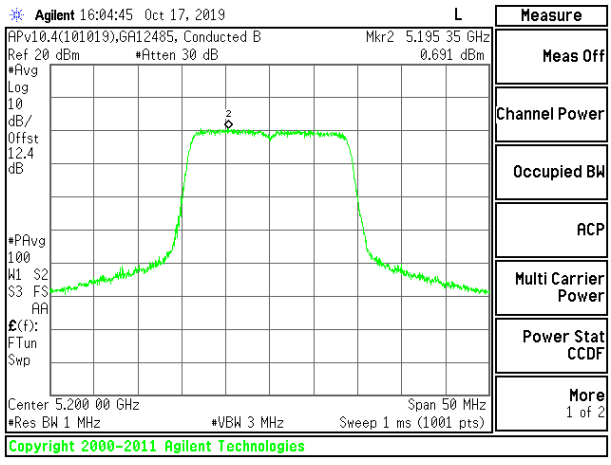
## MID CHANNEL



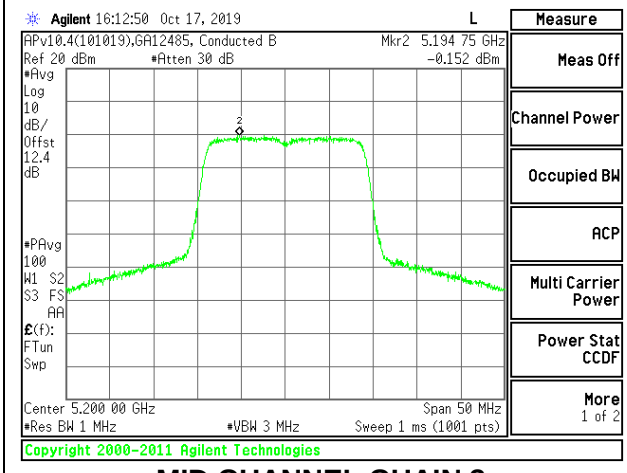

**MID CHANNEL CHAIN 0**




**MID CHANNEL CHAIN 1**

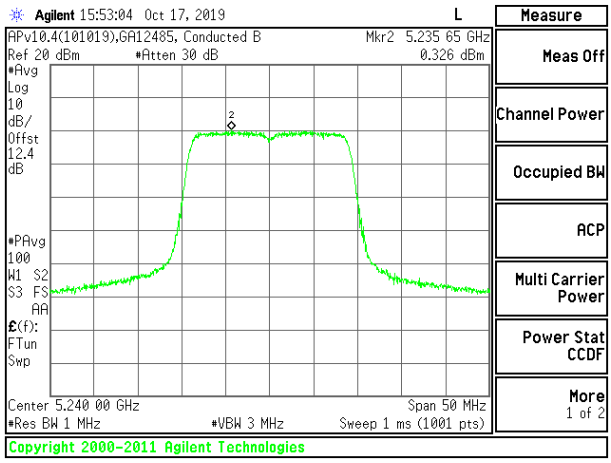



**MID CHANNEL CHAIN 2**

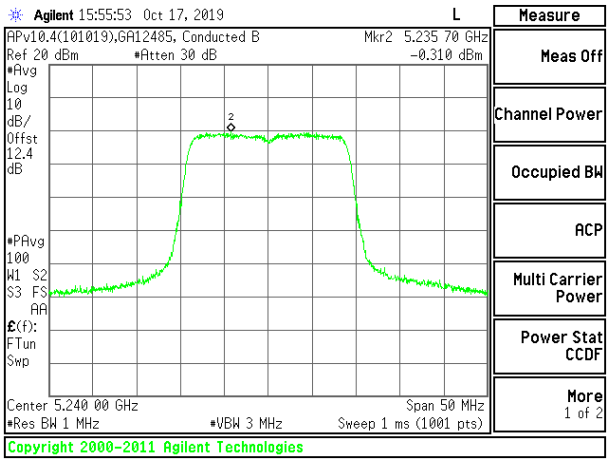



**MID CHANNEL CHAIN 3**

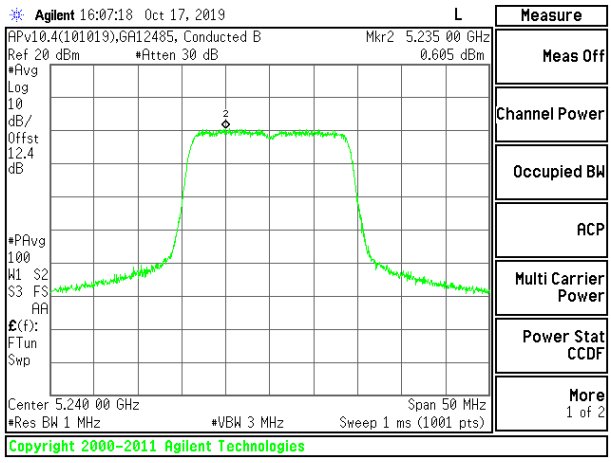
## HIGH CHANNEL



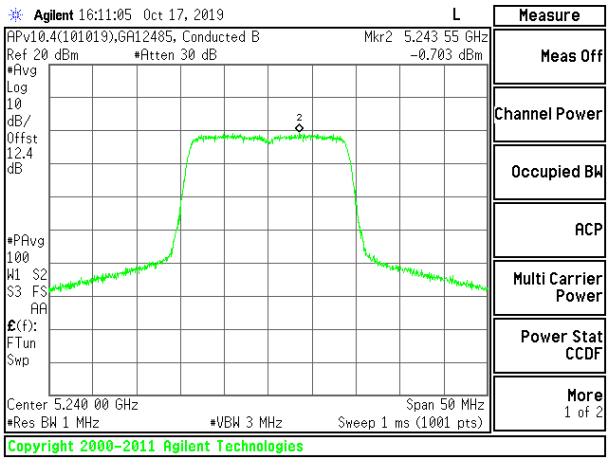

**HIGH CHANNEL CHAIN 0**




**HIGH CHANNEL CHAIN 1**




**HIGH CHANNEL CHAIN 2**




**HIGH CHANNEL CHAIN 3**

**IC**

(**Note:** IC PSD was tested by radiated method)

| **Test Engineer ID:** | 20756 CW |
|---|---|

**Bandwidth and Antenna Gain**

| Channel | Frequency (MHz) | Min 99% BW (MHz) |
|---|---|---|
| Low | 5180 | 17.6386 |
| Mid | 5200 | 17.7028 |
| High | 5240 | 17.6922 |

**Limits**

| Channel | Frequency (MHz) | ISED EIRP Limit (dBm) | ISED eirp PSD Limit (dBm/ 1MHz) |
|---|---|---|---|
| Low | 5180 | 22.46 | 10.00 |
| Mid | 5200 | 22.48 | 10.00 |
| High | 5240 | 22.48 | 10.00 |

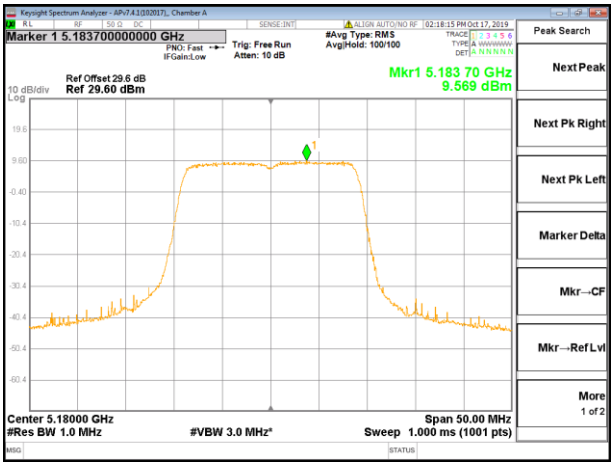
| Duty Cycle CF (dB) | 0.31 | Included in Calculations of Corr'd PSD |
|---|---|---|

**Output Power Results**

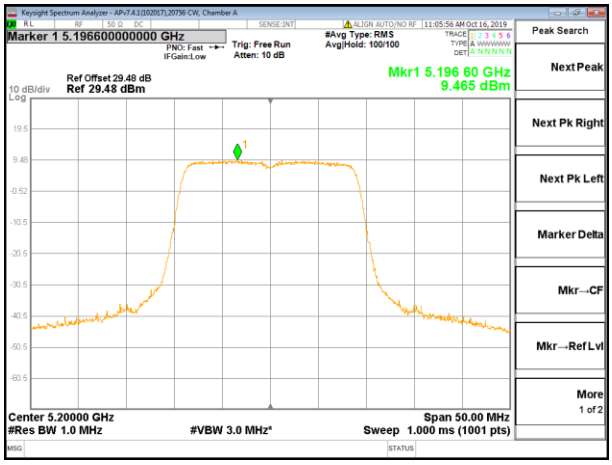
| Channel | Frequency (MHz) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---|---|---|---|---|
| Low | 5180 | 20.04 | 22.46 | -2.42 |
| Mid | 5200 | 19.64 | 22.48 | -2.85 |
| High | 5240 | 20.06 | 22.48 | -2.41 |

**PSD Results**

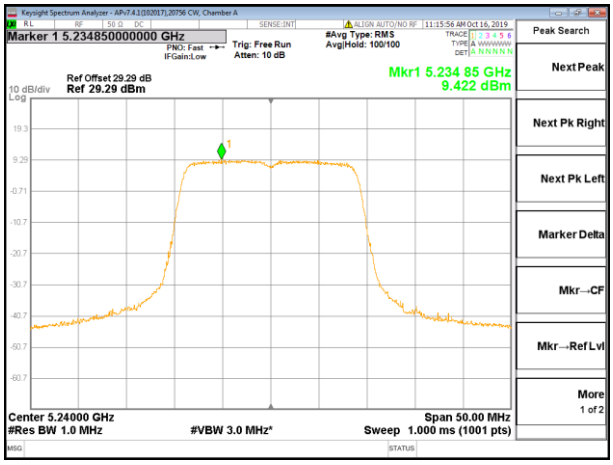
| Channel | Frequency (MHz) | Total Corr'd PSD (dBm/ 1MHz) | PSD Limit (dBm/ 1MHz) | PSD Margin (dB) |
|---|---|---|---|---|
| Low | 5180 | 9.569 | 10.00 | -0.43 |
| Mid | 5200 | 9.465 | 10.00 | -0.54 |
| High | 5240 | 9.422 | 10.00 | -0.58 |




**LOW CHANNEL**




**MID CHANNEL**




**HIGH CHANNEL**

## 8.5.3. 802.11a MODE IN THE 5.3 GHz BAND

**FCC + IC**

**4TX Antenna 1 + Antenna 2 + Antenna 3 + Antenna 4 CDD MODE**

**Bandwidth and Antenna Gain**

| Channel | Frequency (MHz) | Min 26 dB BW (MHz) | Min 99% BW (MHz) | Directional Gain for Power (dBi) | Directional Gain for PPSD (dBi) |
|---|---|---|---|---|---|
| Low | 5260 | 20.25 | 16.496 | 6.66 | 9.66 |
| Mid | 5300 | 20.15 | 16.452 | 6.66 | 9.66 |
| High | 5320 | 20.15 | 16.494 | 6.66 | 9.66 |

**Limits**

| Channel | Frequency (MHz) | FCC Power Limit (dBm) | IC Power Limit (dBm) | IC EIRP Limit (dBm) | Power Limit (dBm) | FCC PPSD Limit (dBm) | IC PSD Limit (dBm) | PPSD Limit (dBm) |
|---|---|---|---|---|---|---|---|---|
| Low | 5260 | 23.34 | 23.17 | 29.17 | 22.51 | 7.34 | 11.00 | 7.34 |
| Mid | 5300 | 23.34 | 23.16 | 29.16 | 22.50 | 7.34 | 11.00 | 7.34 |
| High | 5320 | 23.34 | 23.17 | 29.17 | 22.51 | 7.34 | 11.00 | 7.34 |

| Duty Cycle CF (dB) | 0.00 | Included in Calculations of Corr'd PPSD |
|---|---|---|

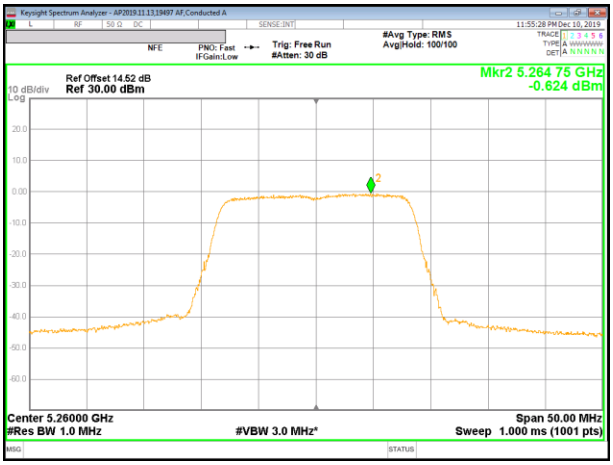
**Output Power Results**

| Channel | Frequency (MHz) | Chain 0 Meas Power (dBm) | Chain 1 Meas Power (dBm) | Chain 2 Meas Power (dBm) | Chain 3 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---|---|---|---|---|---|---|---|---|
| Low | 5260 | 11.60 | 11.20 | 12.30 | 11.39 | 17.66 | 22.51 | -4.85 |
| Mid | 5300 | 12.04 | 11.66 | 12.32 | 11.86 | 18.00 | 22.50 | -4.50 |
| High | 5320 | 12.17 | 11.95 | 12.38 | 11.93 | 18.13 | 22.51 | -4.38 |

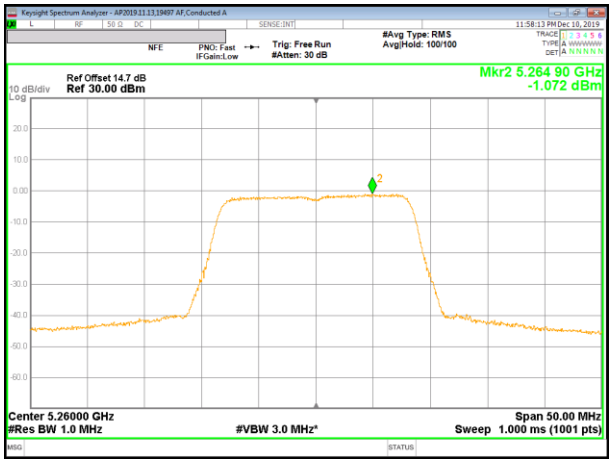
**PPSD Results**

| Channel | Frequency (MHz) | Chain 0 Meas PPSD (dBm/ 1MHz) | Chain 1 Meas PPSD (dBm/ 1MHz) | Chain 2 Meas PPSD (dBm/ 1MHz) | Chain 3 Meas PPSD (dBm/ 1MHz) | Total Corr'd PPSD (dBm/ 1MHz) | PPSD Limit (dBm/ 1MHz) | PPSD Margin (dB) |
|---|---|---|---|---|---|---|---|---|
| Low | 5260 | -0.624 | -1.072 | 0.058 | -0.971 | 5.39 | 7.34 | -1.95 |
| Mid | 5300 | -0.542 | -0.511 | -0.458 | -0.777 | 5.45 | 7.34 | -1.89 |
| High | 5320 | -0.370 | -1.300 | -0.590 | -1.069 | 5.20 | 7.34 | -2.14 |

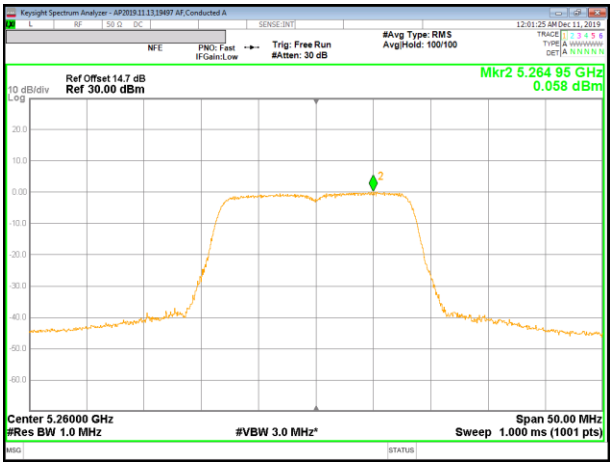
## LOW CHANNEL



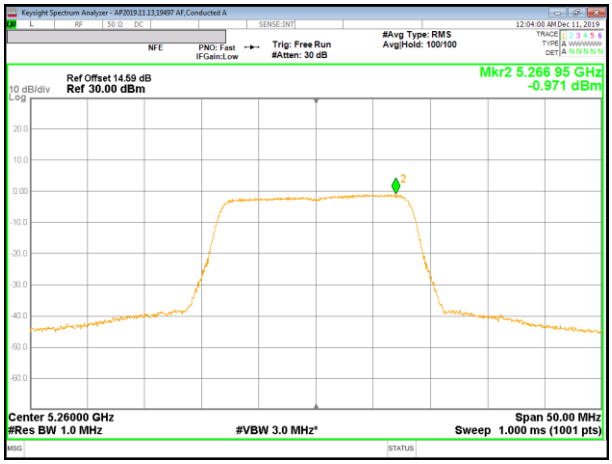

**LOW CHANNEL CHAIN 0**




**LOW CHANNEL CHAIN 1**

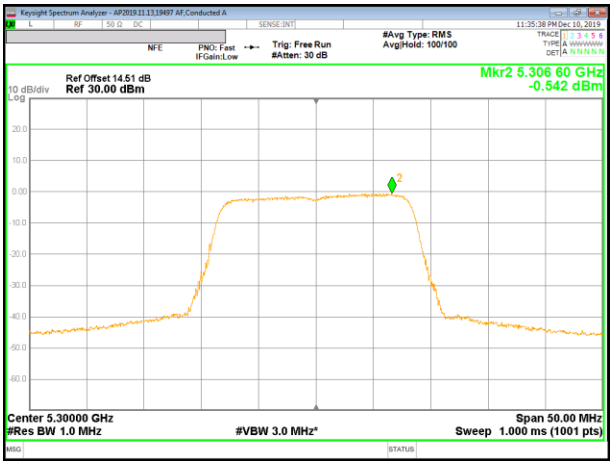



**LOW CHANNEL CHAIN 2**

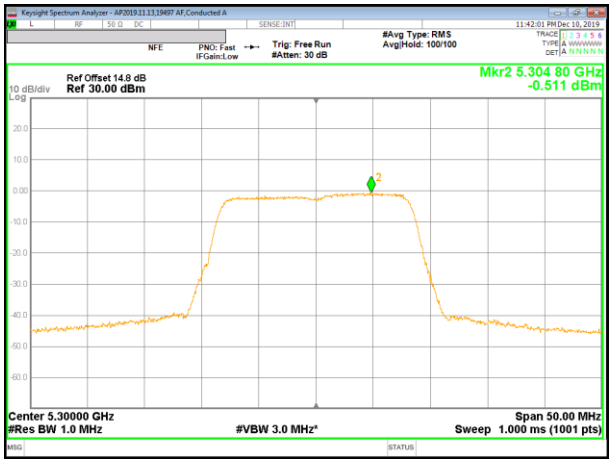



**LOW CHANNEL CHAIN 3**

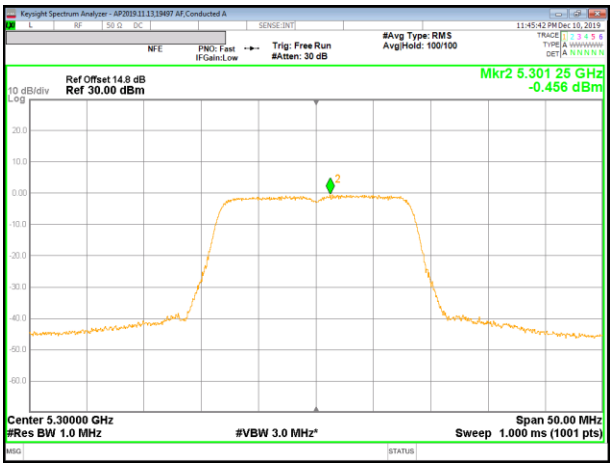
## MID CHANNEL



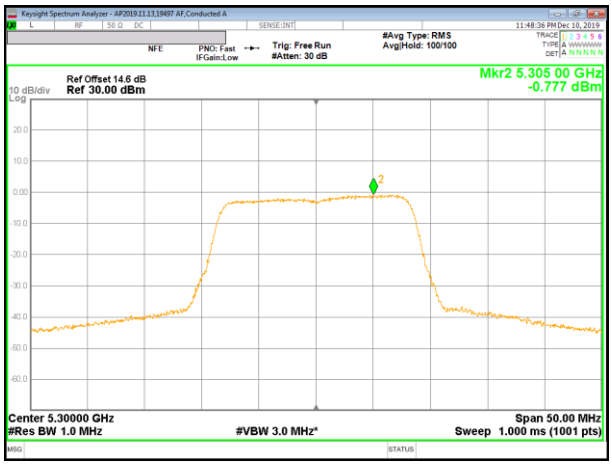

**MID CHANNEL CHAIN 0**




**MID CHANNEL CHAIN 1**




**MID CHANNEL CHAIN 2**

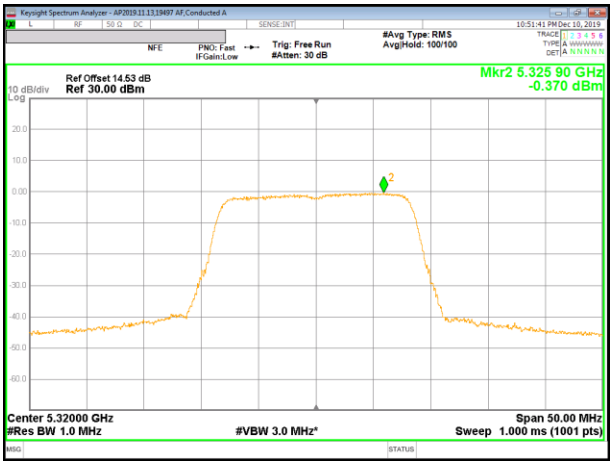



**MID CHANNEL CHAIN 3**

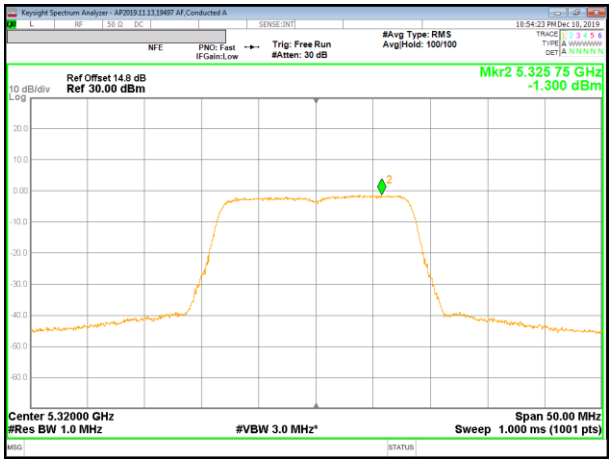


UL VERIFICATION SERVICES INC.
47173 Benicia Street, Fremont, CA 94538; USA TEL:(510) 319-4000 FAX:(510) 661-0888

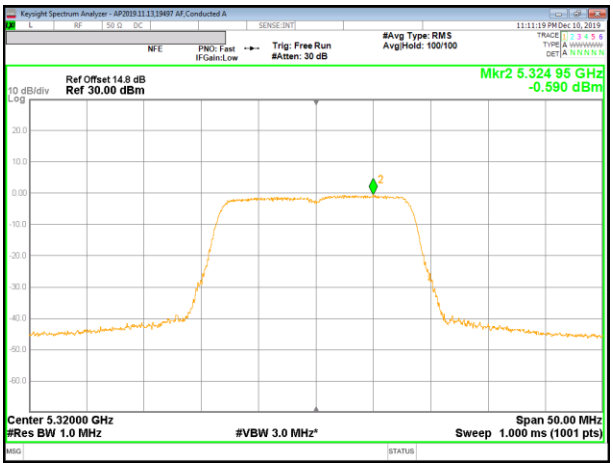
## HIGH CHANNEL



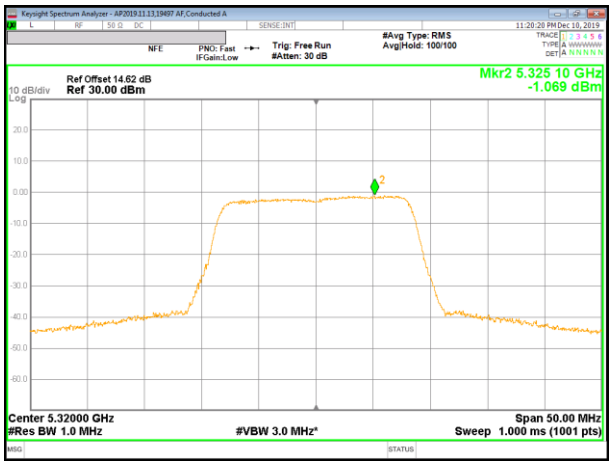

**HIGH CHANNEL CHAIN 0**




**HIGH CHANNEL CHAIN 1**




**HIGH CHANNEL CHAIN 2**




**HIGH CHANNEL CHAIN 3**



UL VERIFICATION SERVICES INC.
47173 Benicia Street, Fremont, CA 94538; USA TEL:(510) 319-4000 FAX:(510) 661-0888

## 8.5.4. 802.11n HT20 MODE IN THE 5.3 GHz BAND

**FCC + IC**

**4TX Antenna 1 + Antenna 2 + Antenna 3 + Antenna 4 CDD MODE**

**Bandwidth and Antenna Gain**

| Channel | Frequency (MHz) | Min 26 dB BW (MHz) | Min 99% BW (MHz) | Directional Gain for Power (dBi) | Directional Gain for PPSD (dBi) |
|---|---|---|---|---|---|
| Low | 5260 | 20.65 | 17.7318 | 6.66 | 9.66 |
| Mid | 5300 | 20.60 | 17.7019 | 6.66 | 9.66 |
| High | 5320 | 20.15 | 17.5283 | 6.66 | 9.66 |

**Limits**

| Channel | Frequency (MHz) | FCC Power Limit (dBm) | IC Power Limit (dBm) | IC EIRP Limit (dBm) | Power Limit (dBm) | FCC PPSD Limit (dBm) | IC PSD Limit (dBm) | PPSD Limit (dBm) |
|---|---|---|---|---|---|---|---|---|
| Low | 5260 | 23.34 | 23.49 | 29.49 | 22.83 | 7.34 | 11.00 | 7.34 |
| Mid | 5300 | 23.34 | 23.48 | 29.48 | 22.82 | 7.34 | 11.00 | 7.34 |
| High | 5320 | 23.34 | 23.44 | 29.44 | 22.78 | 7.34 | 11.00 | 7.34 |

| Duty Cycle CF (dB) | 0.31 | Included in Calculations of Corr'd PPSD |
|---|---|---|

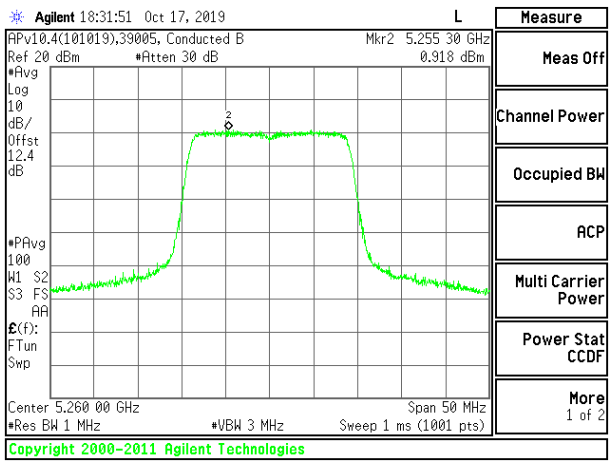
**Output Power Results**

| Channel | Frequency (MHz) | Chain 0 Meas Power (dBm) | Chain 1 Meas Power (dBm) | Chain 2 Meas Power (dBm) | Chain 3 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---|---|---|---|---|---|---|---|---|
| Low | 5260 | 11.78 | 11.42 | 12.20 | 11.38 | 17.73 | 22.83 | -5.10 |
| Mid | 5300 | 12.15 | 11.90 | 12.26 | 12.11 | 18.13 | 22.82 | -4.69 |
| High | 5320 | 12.24 | 12.00 | 12.30 | 11.92 | 18.14 | 22.78 | -4.64 |

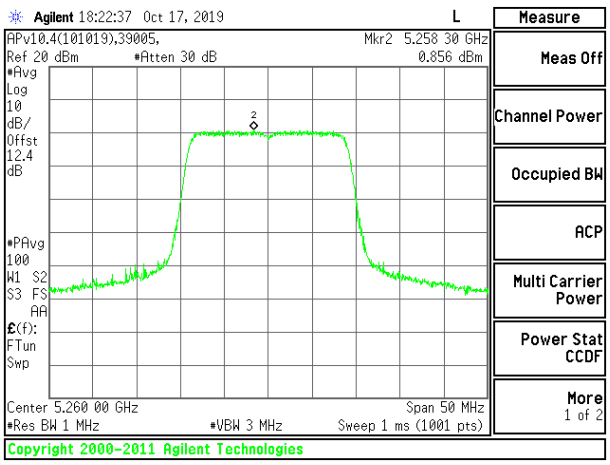
**PPSD Results**

| Channel | Frequency (MHz) | Chain 0 Meas PPSD (dBm/ 1MHz) | Chain 1 Meas PPSD (dBm/ 1MHz) | Chain 2 Meas PPSD (dBm/ 1MHz) | Chain 3 Meas PPSD (dBm/ 1MHz) | Total Corr'd PPSD (dBm/ 1MHz) | PPSD Limit (dBm/ 1MHz) | PPSD Margin (dB) |
|---|---|---|---|---|---|---|---|---|
| Low | 5260 | 0.918 | 0.856 | 1.037 | 0.718 | 7.21 | 7.34 | -0.13 |
| Mid | 5300 | 0.785 | 0.816 | 1.190 | 0.697 | 7.21 | 7.34 | -0.13 |
| High | 5320 | 0.750 | 0.733 | 1.096 | 0.668 | 7.15 | 7.34 | -0.19 |

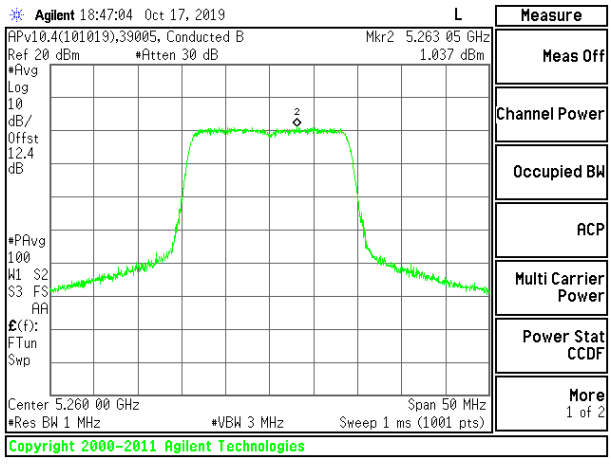
## LOW CHANNEL



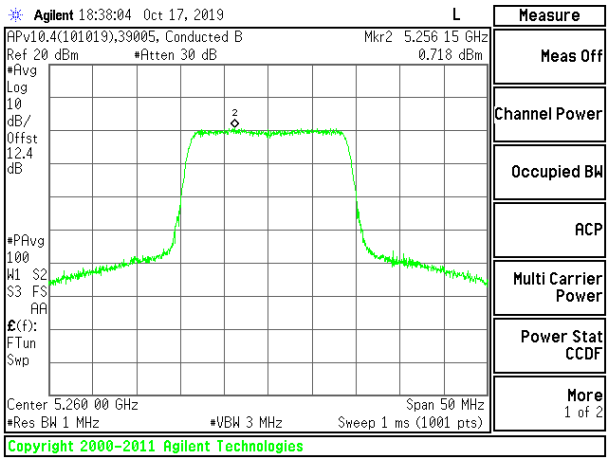

**LOW CHANNEL CHAIN 0**




**LOW CHANNEL CHAIN 1**

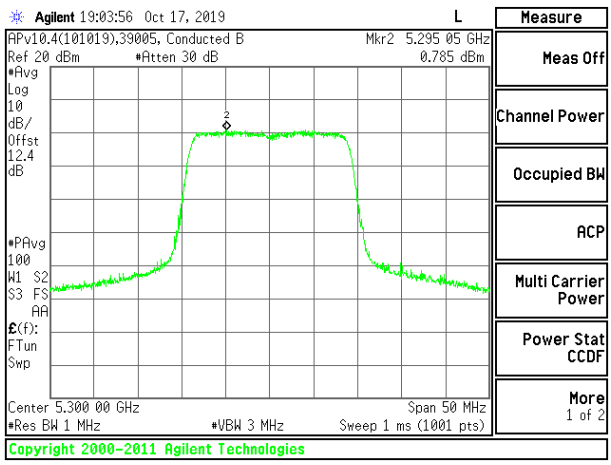



**LOW CHANNEL CHAIN 2**

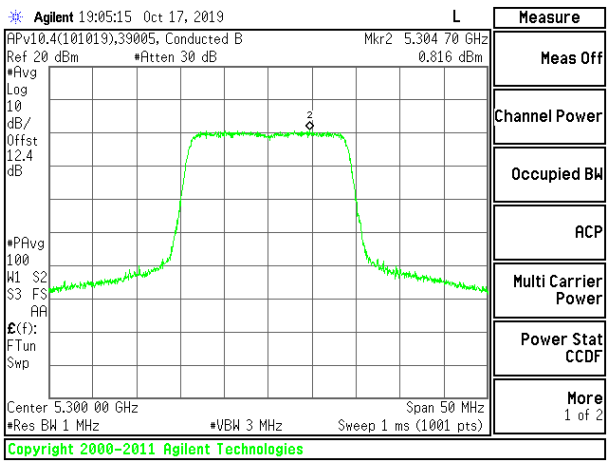



**LOW CHANNEL CHAIN 3**

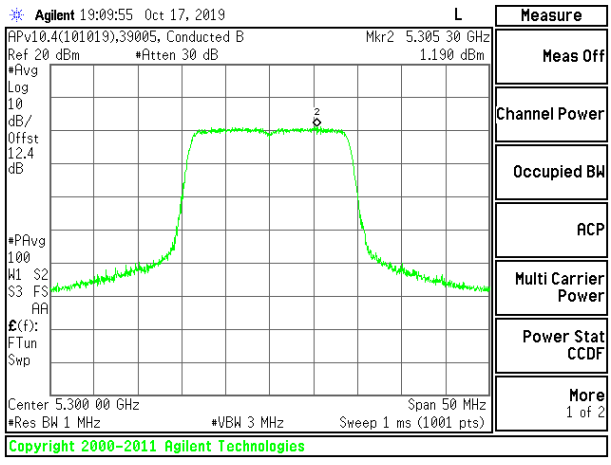
## MID CHANNEL



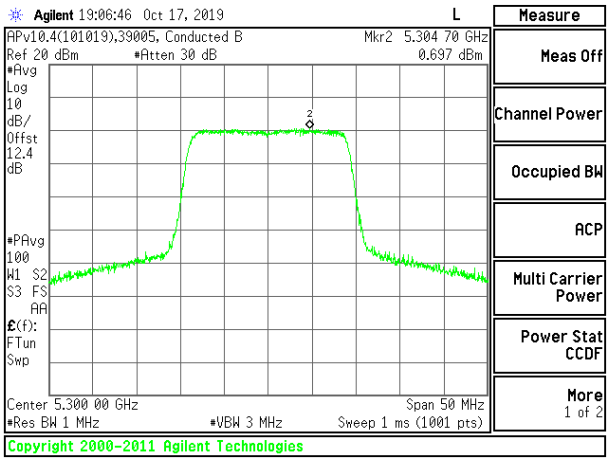

**MID CHANNEL CHAIN 0**




**MID CHANNEL CHAIN 1**

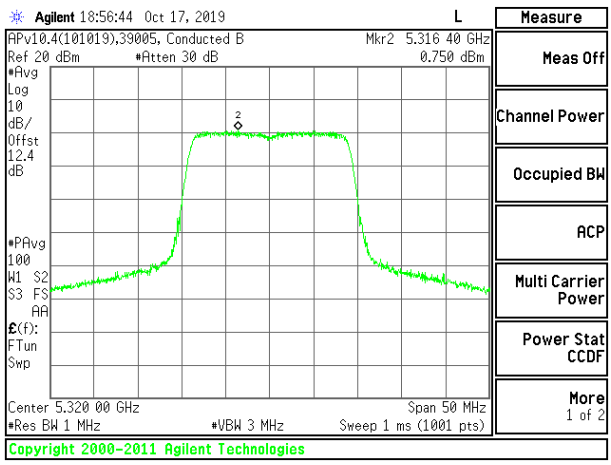



**MID CHANNEL CHAIN 2**

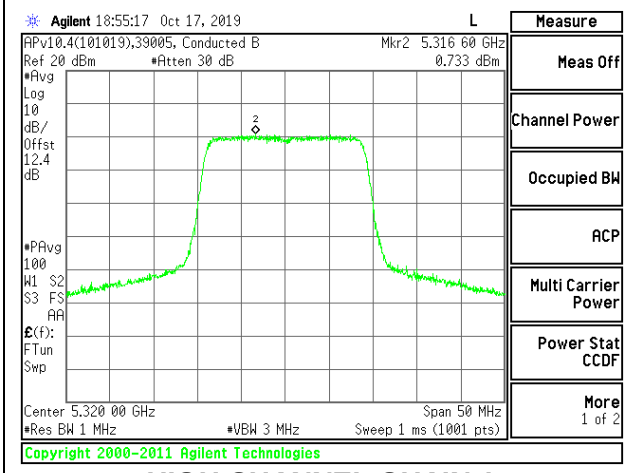



**MID CHANNEL CHAIN 3**

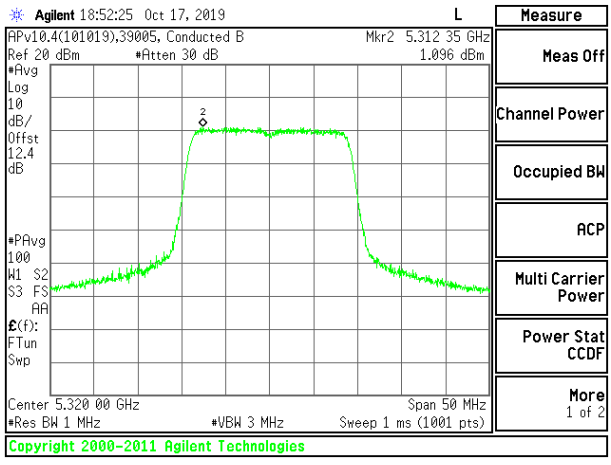
## HIGH CHANNEL



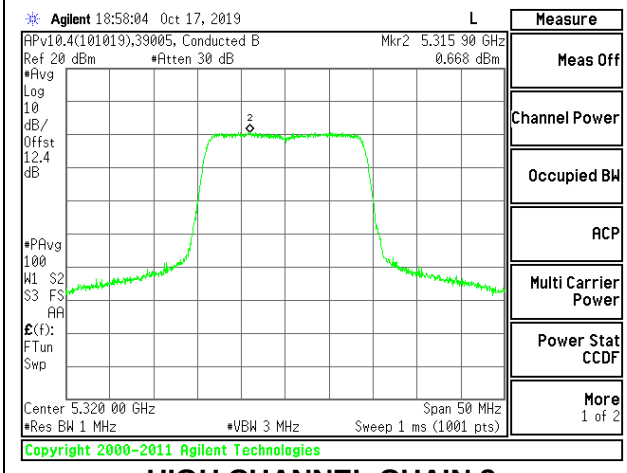

**HIGH CHANNEL CHAIN 0**




**HIGH CHANNEL CHAIN 1**




**HIGH CHANNEL CHAIN 2**




**HIGH CHANNEL CHAIN 3**

## 8.5.5. 802.11a MODE IN THE 5.6 GHz BAND

**FCC+IC**

**4TX Antenna 1 + Antenna 2 + Antenna 3 + Antenna 4 CDD MODE**

**Bandwidth and Antenna Gain**

| Channel | Frequency (MHz) | Min 26 dB BW (MHz) | Min 99% BW (MHz) | Directional Gain for Power (dBi) | Directional Gain for PSD (dBi) |
|---|---|---|---|---|---|
| Low | 5500 | 20.15 | 16.435 | 5.98 | 8.97 |
| Mid | 5580 | 20.15 | 16.406 | 5.98 | 8.97 |
| High | 5700 | 20.20 | 16.484 | 5.98 | 8.97 |

**Limits**

| Channel | Frequency (MHz) | FCC Power Limit (dBm) | ISED Power Limit (dBm) | ISED EIRP Limit (dBm) | Power Limit (dBm) | FCC PSD Limit (dBm/ 1MHz) | ISED PSD Limit (dBm/ 1MHz) | PSD Limit (dBm/ 1MHz) |
|---|---|---|---|---|---|---|---|---|
| Low | 5500 | 24.00 | 23.16 | 29.16 | 23.16 | 8.03 | 11.00 | 8.03 |
| Mid | 5580 | 24.00 | 23.15 | 29.15 | 23.15 | 8.03 | 11.00 | 8.03 |
| High | 5700 | 24.00 | 23.17 | 29.17 | 23.17 | 8.03 | 11.00 | 8.03 |

| Duty Cycle CF (dB) | 0.00 | Included in Calculations of Corr'd PSD |
|---|---|---|

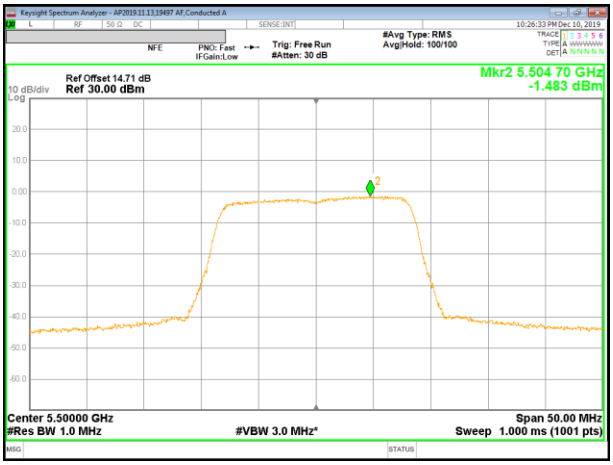
**Output Power Results**

| Channel | Frequency (MHz) | Antenna 0 Meas Power (dBm) | Antenna Meas Power (dBm) | Antenna 2 Meas Power (dBm) | Antenna 3 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---|---|---|---|---|---|---|---|---|
| Low | 5500 | 12.36 | 11.69 | 12.64 | 12.67 | 18.38 | 23.16 | -4.78 |
| Mid | 5580 | 12.61 | 11.81 | 12.95 | 12.51 | 18.51 | 23.15 | -4.64 |
| High | 5700 | 13.06 | 12.28 | 13.33 | 12.44 | 18.82 | 23.17 | -4.35 |

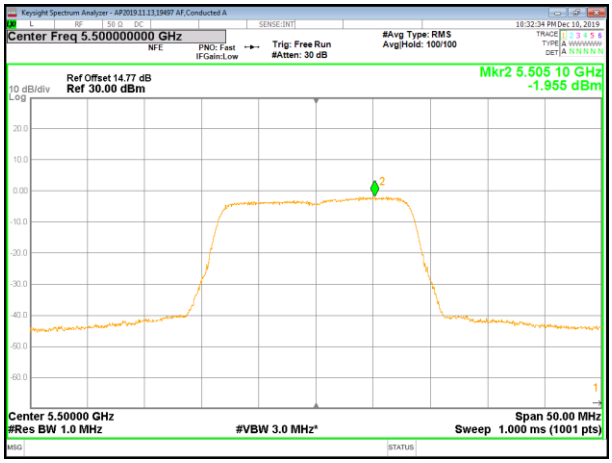
**PSD Results**

| Channel | Frequency (MHz) | Antenna 0 Meas PSD (dBm/ 1MHz) | Antenna Meas PSD (dBm/ 1MHz) | Antenna 2 Meas PSD (dBm/ 1MHz) | Antenna 3 Meas PSD (dBm/ 1MHz) | Total Corr'd PSD (dBm/ 1MHz) | PSD Limit (dBm/ 1MHz) | PSD Margin (dB) |
|---|---|---|---|---|---|---|---|---|
| Low | 5500 | -1.483 | -1.955 | -1.284 | -1.451 | 4.484 | 8.03 | -3.55 |
| Mid | 5580 | -0.510 | -1.303 | -0.340 | -0.593 | 5.349 | 8.03 | -2.68 |
| High | 5700 | 1.040 | 0.453 | 1.013 | 0.523 | 6.786 | 8.03 | -1.24 |

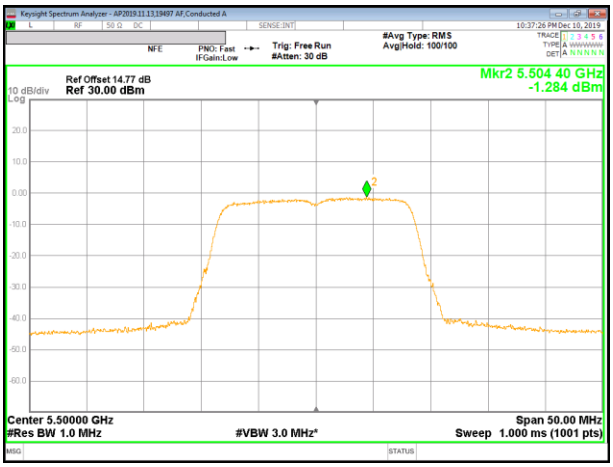
## LOW CHANNEL



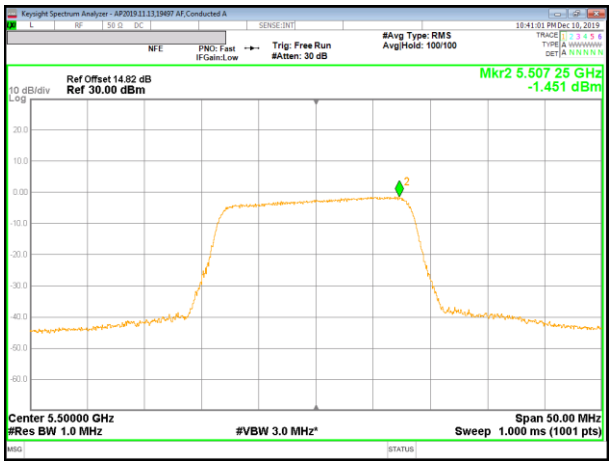

**LOW CHANNEL CHAIN 0**




**LOW CHANNEL CHAIN 1**




**LOW CHANNEL CHAIN 2**

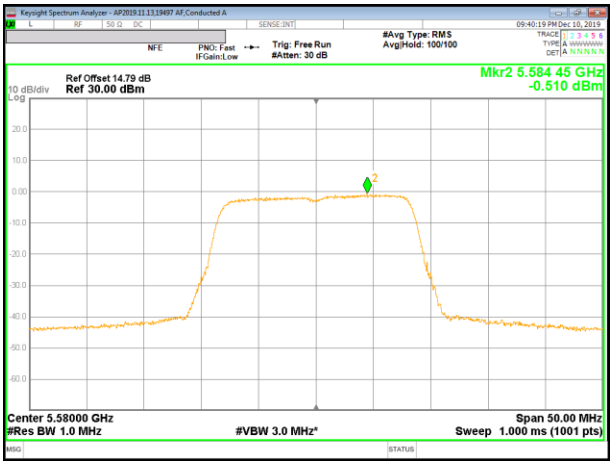



**LOW CHANNEL CHAIN 3**

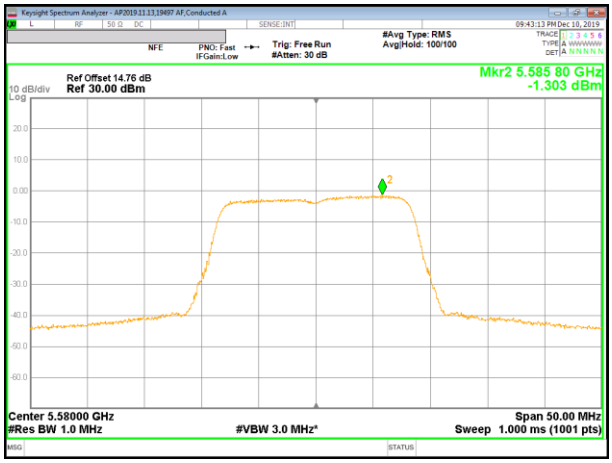


UL VERIFICATION SERVICES INC.
47173 Benicia Street, Fremont, CA 94538; USA TEL:(510) 319-4000 FAX:(510) 661-0888

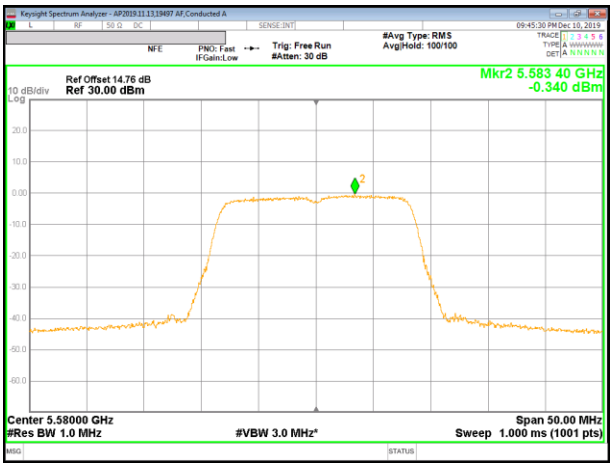
## MID CHANNEL



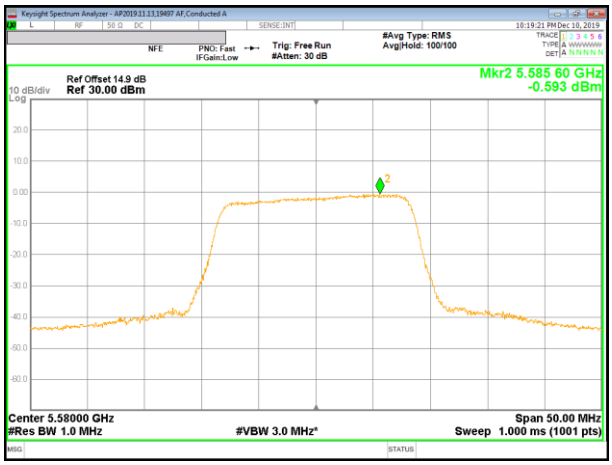

**MID CHANNEL CHAIN 0**




**MID CHANNEL CHAIN 1**

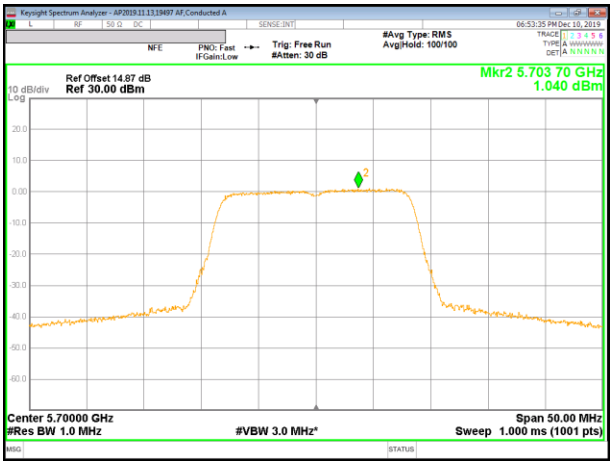



**MID CHANNEL CHAIN 2**

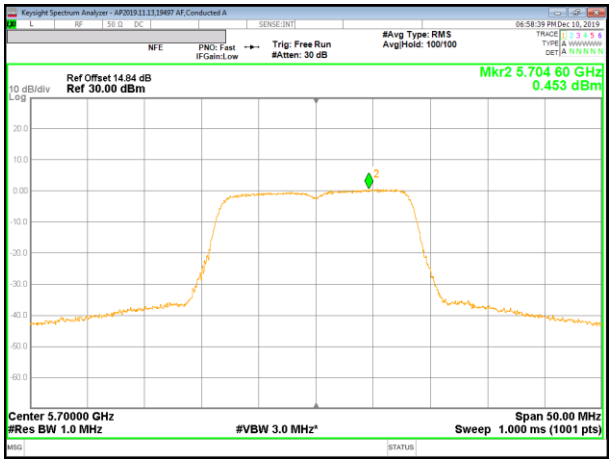



**MID CHANNEL CHAIN 3**

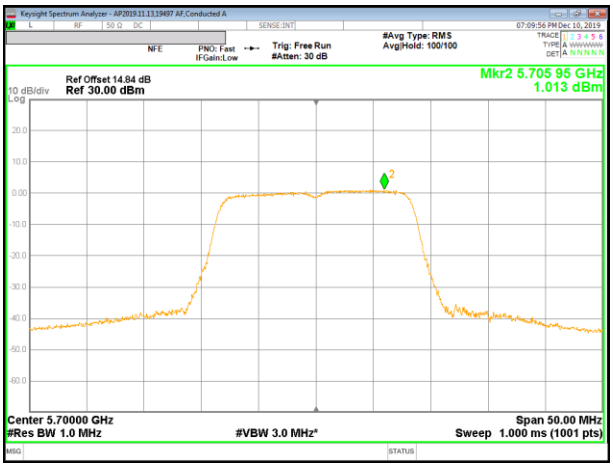
## HIGH CHANNEL



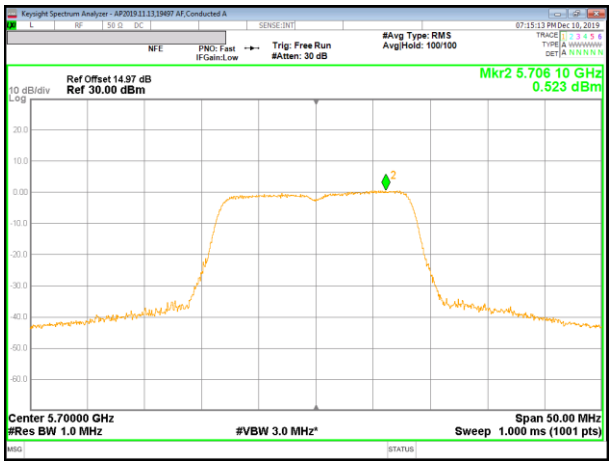

**HIGH CHANNEL CHAIN 0**




**HIGH CHANNEL CHAIN 1**




**HIGH CHANNEL CHAIN 2**




**HIGH CHANNEL CHAIN 3**



UL VERIFICATION SERVICES INC.
47173 Benicia Street, Fremont, CA 94538; USA TEL:(510) 319-4000 FAX:(510) 661-0888

## 8.5.6. 802.11n HT20 MODE IN THE 5.6 GHz BAND

**FCC+IC**

**4TX Antenna 1 + Antenna 2 + Antenna 3 + Antenna 4 CDD MODE**

**Bandwidth and Antenna Gain**

| Channel | Frequency (MHz) | Min 26 dB BW (MHz) | Min 99% BW (MHz) | Directional Gain for Power (dBi) | Directional Gain for PSD (dBi) |
|---|---|---|---|---|---|
| Low | 5500 | 20.30 | 17.5357 | 5.98 | 8.97 |
| Mid | 5580 | 20.60 | 17.6866 | 5.98 | 8.97 |
| High | 5700 | 20.20 | 17.5293 | 5.98 | 8.97 |

**Limits**

| Channel | Frequency (MHz) | FCC Power Limit (dBm) | ISED Power Limit (dBm) | ISED EIRP Limit (dBm) | Power Limit (dBm) | FCC PSD Limit (dBm/ 1MHz) | ISED PSD Limit (dBm/ 1MHz) | PSD Limit (dBm/ 1MHz) |
|---|---|---|---|---|---|---|---|---|
| Low | 5500 | 24.00 | 23.44 | 29.44 | 23.44 | 8.03 | 11.00 | 8.03 |
| Mid | 5580 | 24.00 | 23.48 | 29.48 | 23.48 | 8.03 | 11.00 | 8.03 |
| High | 5700 | 24.00 | 23.44 | 29.44 | 23.44 | 8.03 | 11.00 | 8.03 |

| Duty Cycle CF (dB) | 0.31 | Included in Calculations of Corr'd PSD |
|---|---|---|

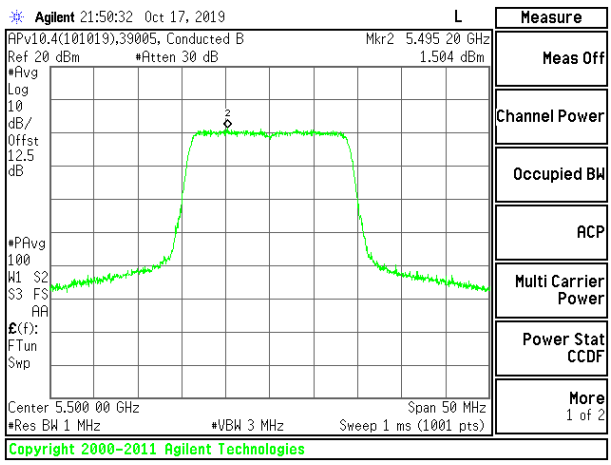
**Output Power Results**

| Channel | Frequency (MHz) | Antenna 0 Meas Power (dBm) | Antenna 1 Meas Power (dBm) | Antenna 2 Meas Power (dBm) | Antenna 3 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---|---|---|---|---|---|---|---|---|
| Low | 5500 | 12.50 | 12.50 | 12.65 | 12.60 | 18.58 | 23.44 | -4.86 |
| Mid | 5580 | 12.60 | 12.61 | 12.89 | 12.70 | 18.72 | 23.48 | -4.75 |
| High | 5700 | 12.73 | 12.65 | 13.20 | 12.74 | 18.86 | 23.44 | -4.58 |

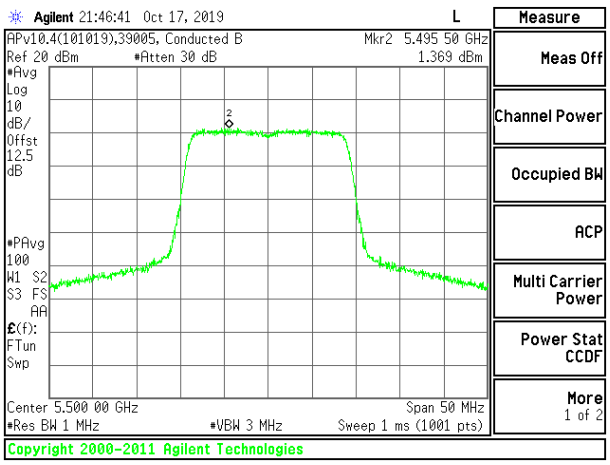
**PSD Results**

| Channel | Frequency (MHz) | Antenna 0 Meas PSD (dBm/ 1MHz) | Antenna 1 Meas PSD (dBm/ 1MHz) | Antenna 2 Meas PSD (dBm/ 1MHz) | Antenna 3 Meas PSD (dBm/ 1MHz) | Total Corr'd PSD (dBm/ 1MHz) | PSD Limit (dBm/ 1MHz) | PSD Margin (dB) |
|---|---|---|---|---|---|---|---|---|
| Low | 5500 | 1.504 | 1.369 | 1.665 | 1.472 | 7.834 | 8.03 | -0.20 |
| Mid | 5580 | 1.363 | 1.408 | 1.654 | 1.505 | 7.815 | 8.03 | -0.22 |
| High | 5700 | 1.462 | 1.534 | 1.666 | 1.311 | 7.826 | 8.03 | -0.20 |

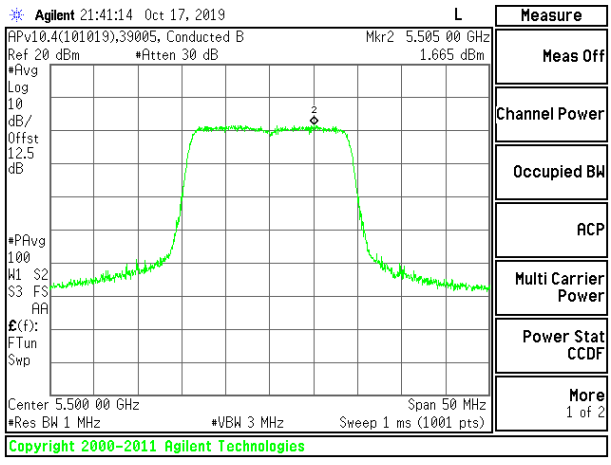
## LOW CHANNEL



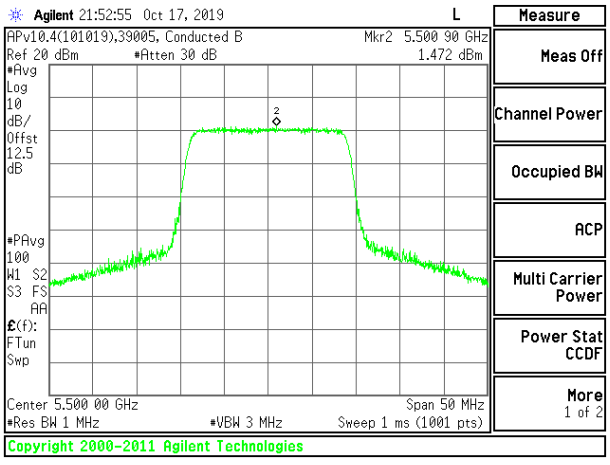

**LOW CHANNEL CHAIN 0**




**LOW CHANNEL CHAIN 1**

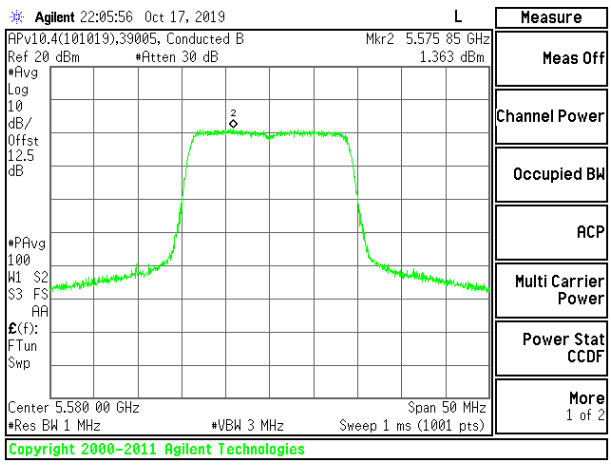



**LOW CHANNEL CHAIN 2**

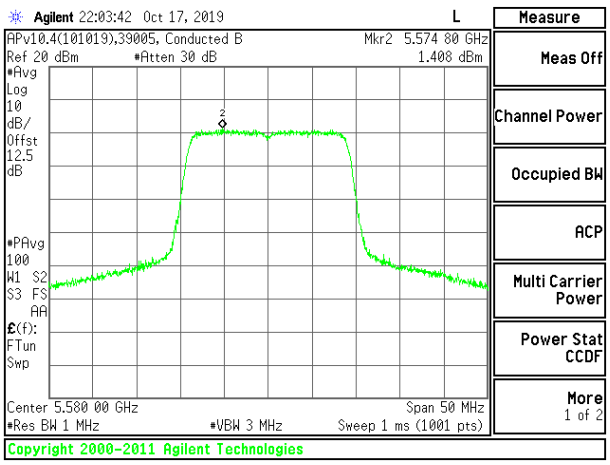



**LOW CHANNEL CHAIN 3**

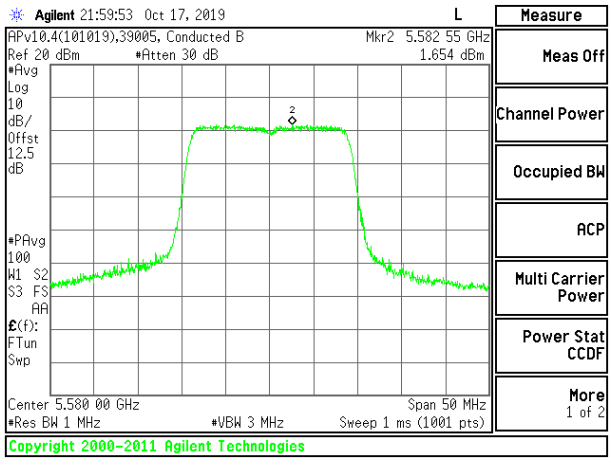
## MID CHANNEL



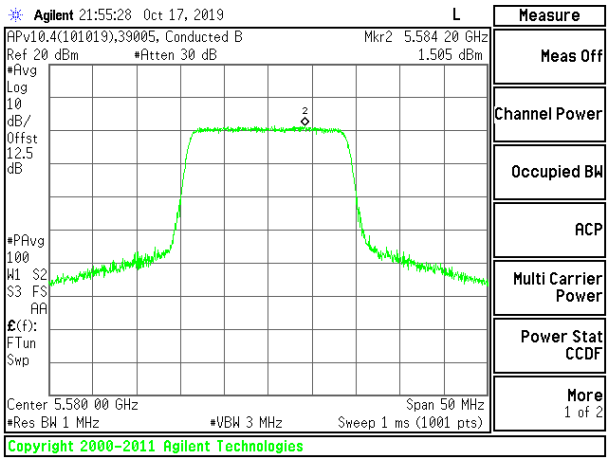

**MID CHANNEL CHAIN 0**




**MID CHANNEL CHAIN 1**

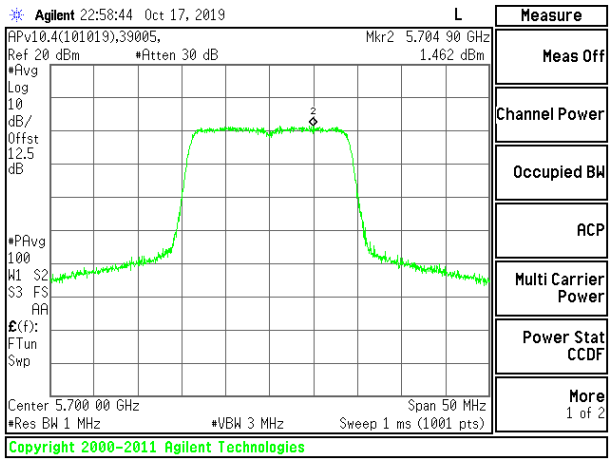



**MID CHANNEL CHAIN 2**

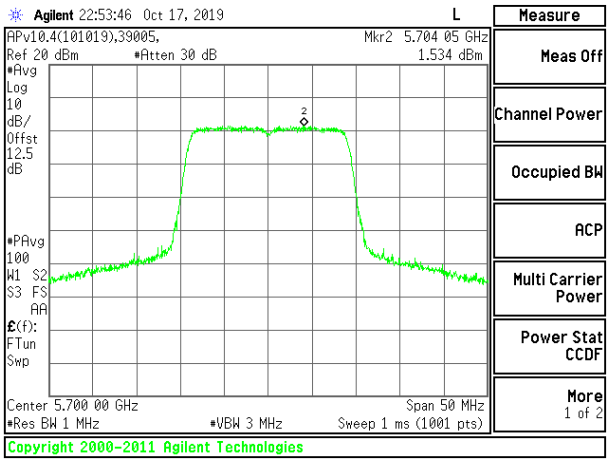



**MID CHANNEL CHAIN 3**

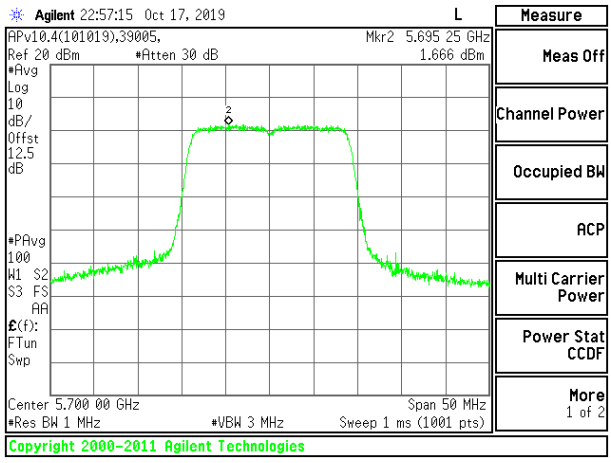
## HIGH CHANNEL



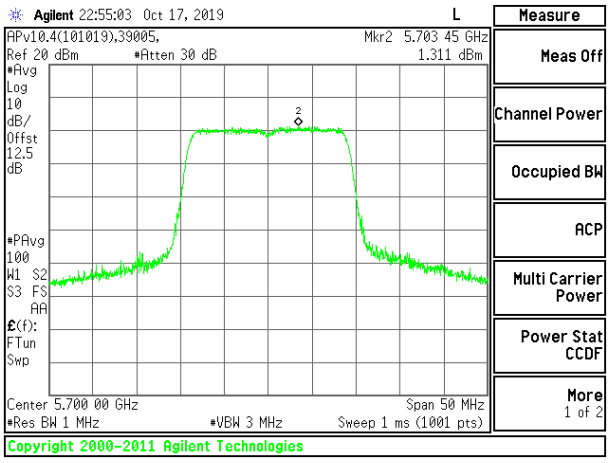

**HIGH CHANNEL CHAIN 0**




**HIGH CHANNEL CHAIN 1**




**HIGH CHANNEL CHAIN 2**




**HIGH CHANNEL CHAIN 3**

## 8.5.7. 802.11a MODE IN THE 5.8 GHz BAND

**FCC+IC**

**4TX Antenna 1 + Antenna 2 + Antenna 3 + Antenna 4 CDD MODE**

**Antenna Gain and Limit**

| Channel | Frequency (MHz) | Directional Gain for Power (dBi) | Directional Gain for PSD (dBm) | FCC/ISED Power Limit (dBm) | FCC/ISED PSD Limit (dBm/ 1MHz) |
|---|---|---|---|---|---|
| Low | 5745 | 5.06 | 8.07 | 30.00 | 27.93 |
| Mid | 5785 | 5.06 | 8.07 | 30.00 | 27.93 |
| High | 5825 | 5.06 | 8.07 | 30.00 | 27.93 |

| Duty Cycle CF (dB) | 0.00 | Included in Calculations of Corr'dPSD |
|---|---|---|

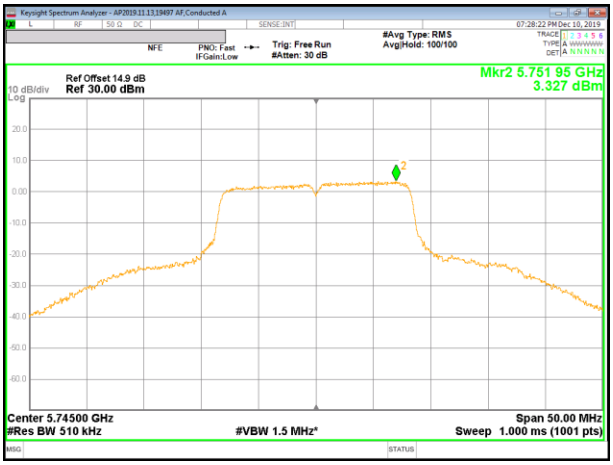
**Output Power Results**

| Channel | Frequency (MHz) | Chain 0 Meas Power (dBm) | Chain 1 Meas Power (dBm) | Chain 2 Meas Power (dBm) | Chain 3 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---|---|---|---|---|---|---|---|---|
| Low | 5745 | 19.10 | 18.46 | 19.06 | 18.64 | 24.84 | 30.00 | -5.16 |
| Mid | 5785 | 18.95 | 18.45 | 19.04 | 18.75 | 24.82 | 30.00 | -5.18 |
| High | 5825 | 18.85 | 18.71 | 18.78 | 18.77 | 24.80 | 30.00 | -5.20 |

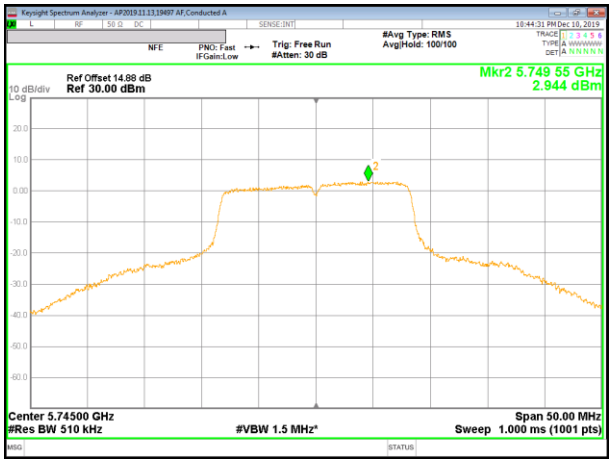
**PSD Results**

| Channel | Frequency (MHz) | Chain 0 Meas PSD (dBm/ 500kHz) | Chain 1 Meas PSD (dBm/ 500kHz) | Chain 2 Meas PSD (dBm/ 500kHz) | Chain 3 Meas PSD (dBm/ 500kHz) | Total Corr'd PSD (dBm/ 500kHz) | PSD Limit (dBm/ 500kHz) | PSD Margin (dB) |
|---|---|---|---|---|---|---|---|---|
| Low | 5745 | 3.327 | 2.944 | 2.878 | 3.221 | 9.117 | 27.93 | -18.81 |
| Mid | 5785 | 3.062 | 3.036 | 2.909 | 3.255 | 9.088 | 27.93 | -18.84 |
| High | 5825 | 3.544 | 4.098 | 3.261 | 3.461 | 9.623 | 27.93 | -18.31 |

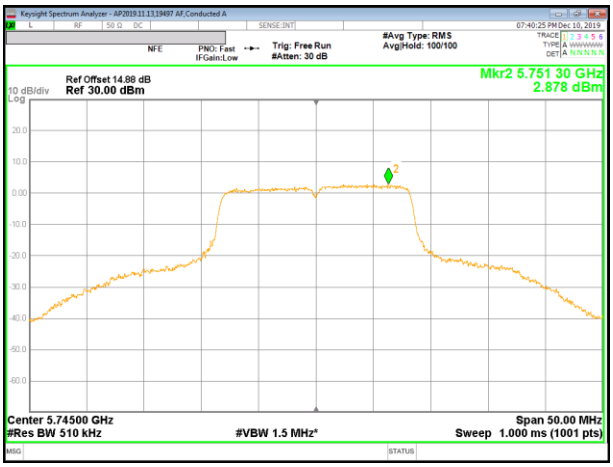
## LOW CHANNEL



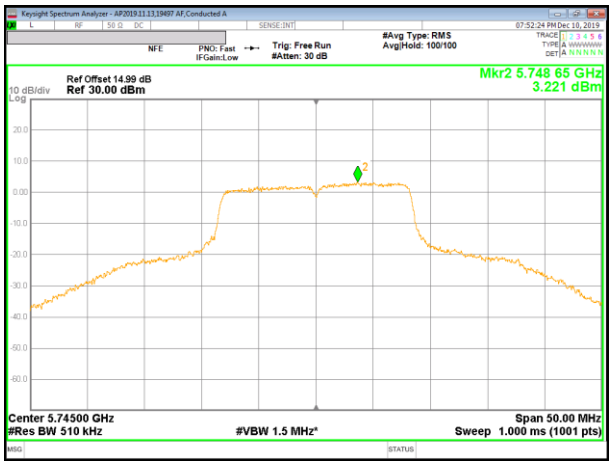

**LOW CHANNEL CHAIN 0**




**LOW CHANNEL CHAIN 1**




**LOW CHANNEL CHAIN 2**

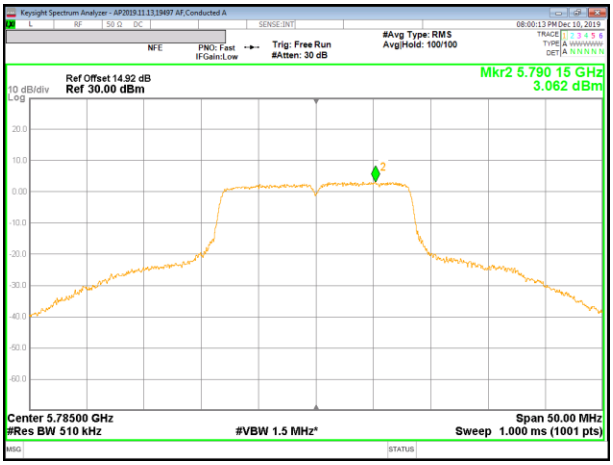



**LOW CHANNEL CHAIN 3**

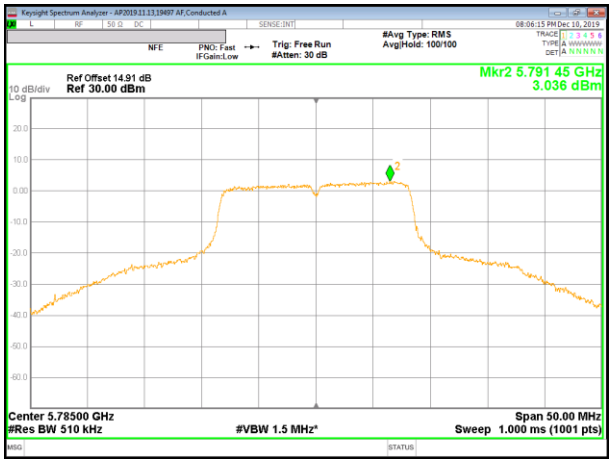


UL VERIFICATION SERVICES INC.
47173 Benicia Street, Fremont, CA 94538; USA TEL:(510) 319-4000 FAX:(510) 661-0888

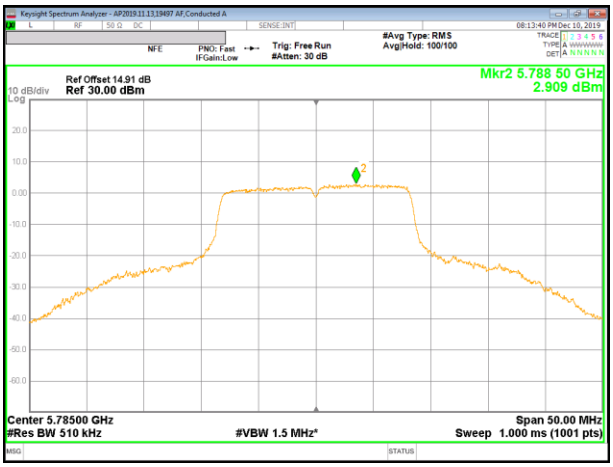
## MID CHANNEL



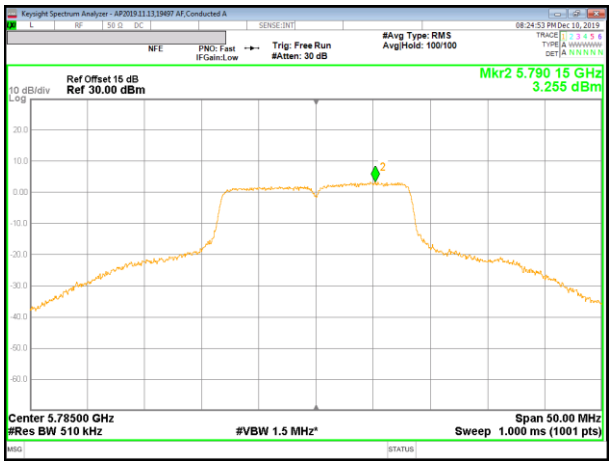

**MID CHANNEL CHAIN 0**




**MID CHANNEL CHAIN 1**

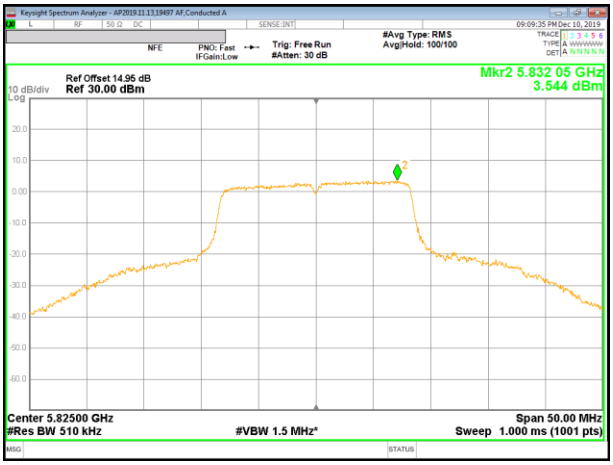



**MID CHANNEL CHAIN 2**

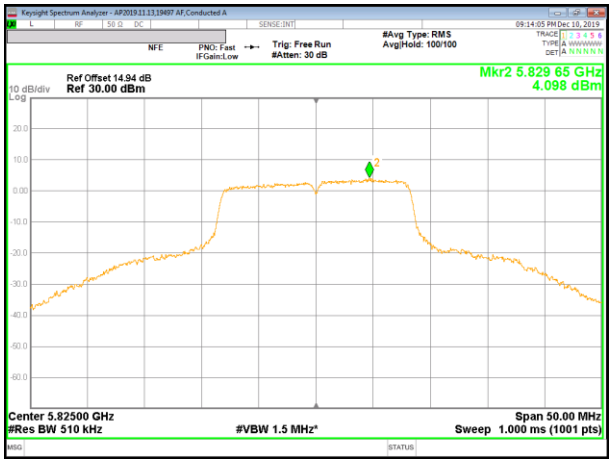



**MID CHANNEL CHAIN 3**

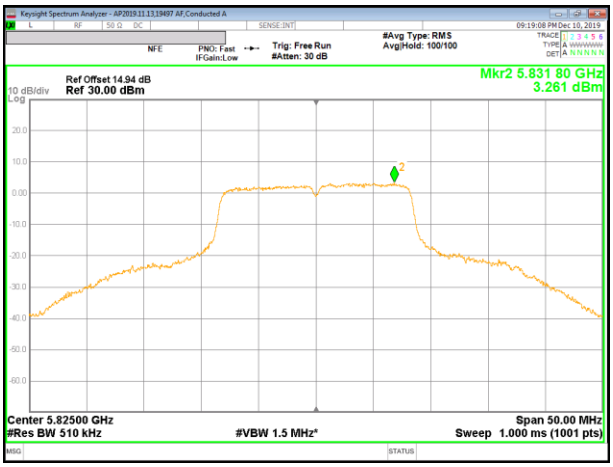
## HIGH CHANNEL



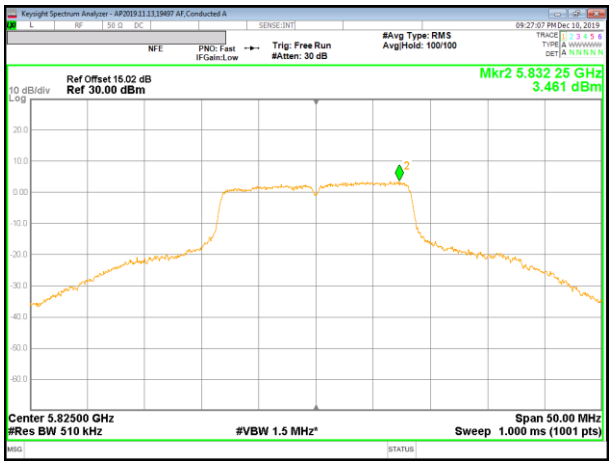

**HIGH CHANNEL CHAIN 0**




**HIGH CHANNEL CHAIN 1**




**HIGH CHANNEL CHAIN 2**




**HIGH CHANNEL CHAIN 3**

## 8.5.8. 802.11n HT20 MODE IN THE 5.8 GHz BAND

**FCC+IC**

**4TX Antenna 1 + Antenna 2 + Antenna 3 + Antenna 4 CDD MODE**

**Antenna Gain and Limit**

| Channel | Frequency (MHz) | Directional Gain for Power (dBi) | Directional Gain for PSD (dBm) | FCC/ISED Power Limit (dBm) | FCC/ISED PSD Limit (dBm/ 1MHz) |
|---|---|---|---|---|---|
| Low | 5745 | 5.06 | 8.07 | 30.00 | 27.93 |
| Mid | 5785 | 5.06 | 8.07 | 30.00 | 27.93 |
| High | 5825 | 5.06 | 8.07 | 30.00 | 27.93 |

| Duty Cycle CF (dB) | 0.31 | Included in Calculations of Corr'dPSD |
|---|---|---|

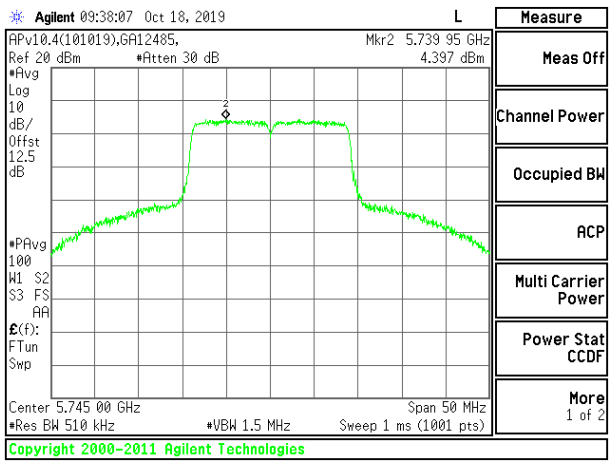
**Output Power Results**

| Channel | Frequency (MHz) | Chain 0 Meas Power (dBm) | Chain 1 Meas Power (dBm) | Chain 2 Meas Power (dBm) | Chain 3 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---|---|---|---|---|---|---|---|---|
| Low | 5745 | 18.22 | 18.34 | 18.19 | 18.38 | 24.30 | 30.00 | -5.70 |
| Mid | 5785 | 18.21 | 18.43 | 18.22 | 18.25 | 24.30 | 30.00 | -5.70 |
| High | 5825 | 18.10 | 18.48 | 18.26 | 18.12 | 24.26 | 30.00 | -5.74 |

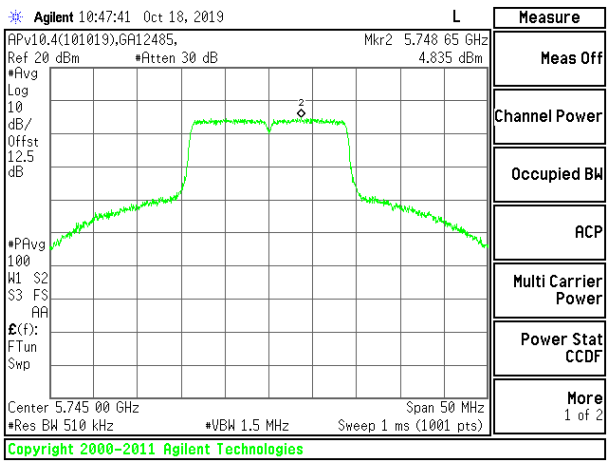
**PSD Results**

| Channel | Frequency (MHz) | Chain 0 Meas PSD (dBm/ 500kHz) | Chain 1 Meas PSD (dBm/ 500kHz) | Chain 2 Meas PSD (dBm/ 500kHz) | Chain 3 Meas PSD (dBm/ 500kHz) | Total Corr'd PSD (dBm/ 500kHz) | PSD Limit (dBm/ 500kHz) | PSD Margin (dB) |
|---|---|---|---|---|---|---|---|---|
| Low | 5745 | 4.397 | 4.835 | 4.200 | 4.838 | 10.907 | 27.93 | -17.02 |
| Mid | 5785 | 4.042 | 4.355 | 3.959 | 4.218 | 10.477 | 27.93 | -17.45 |
| High | 5825 | 4.381 | 5.083 | 4.362 | 4.630 | 10.954 | 27.93 | -16.98 |

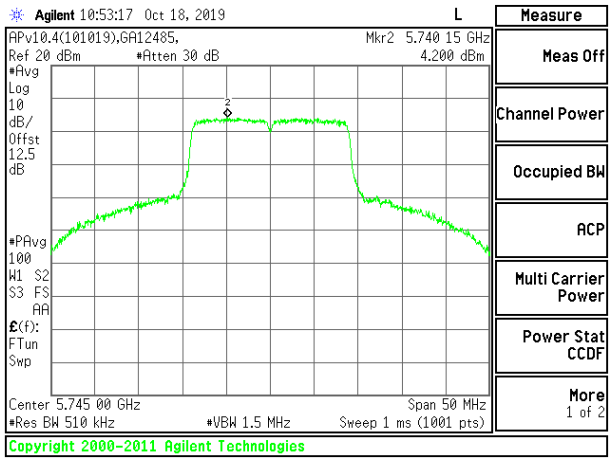
## LOW CHANNEL



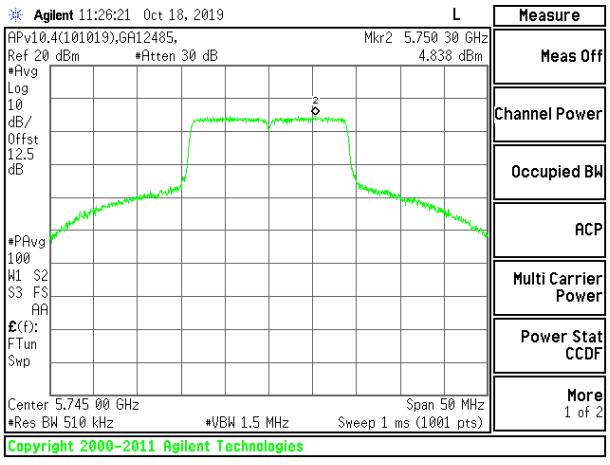

**LOW CHANNEL CHAIN 0**




**LOW CHANNEL CHAIN 1**

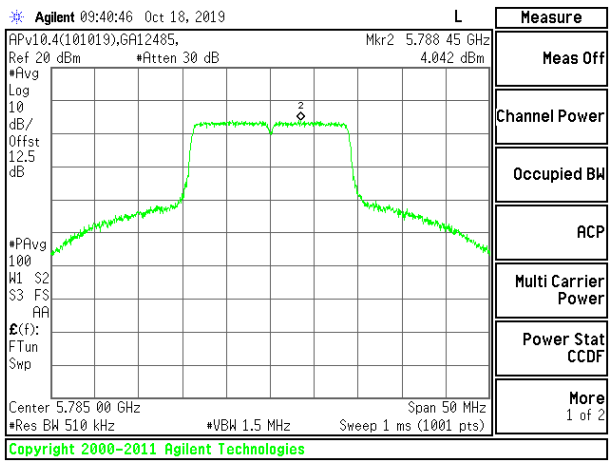



**LOW CHANNEL CHAIN 2**

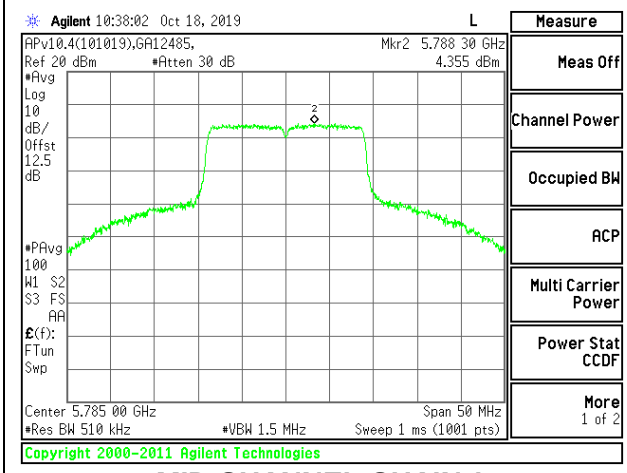



**LOW CHANNEL CHAIN 3**

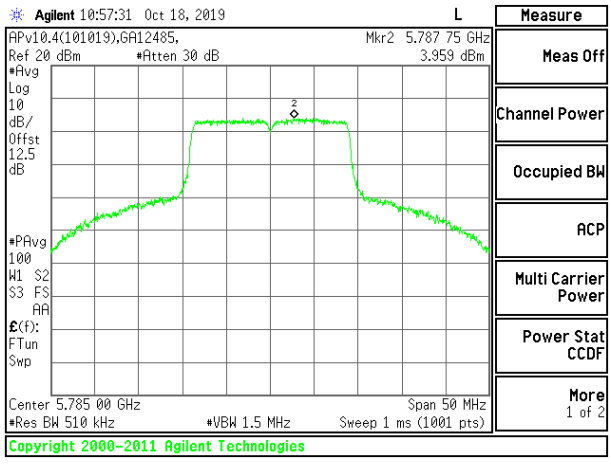
## MID CHANNEL



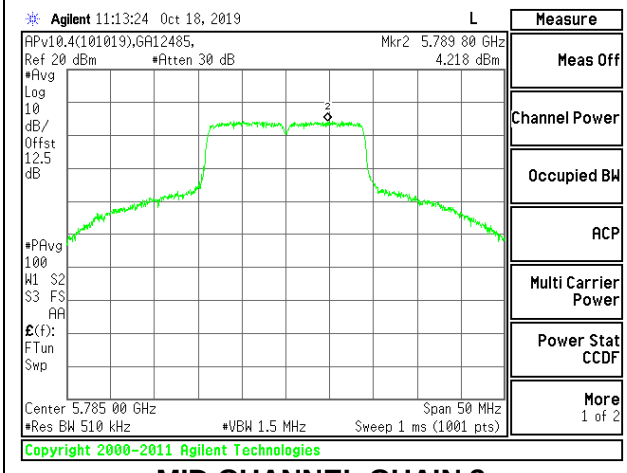

**MID CHANNEL CHAIN 0**




**MID CHANNEL CHAIN 1**

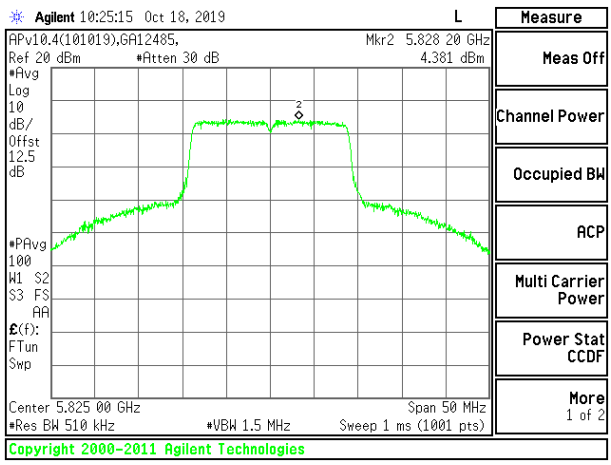



**MID CHANNEL CHAIN 2**

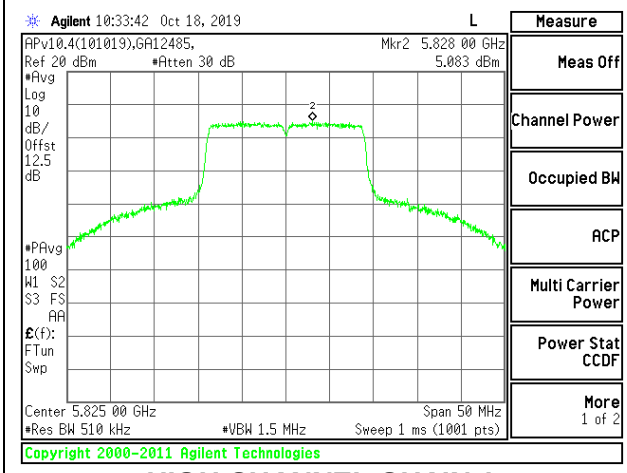



**MID CHANNEL CHAIN 3**

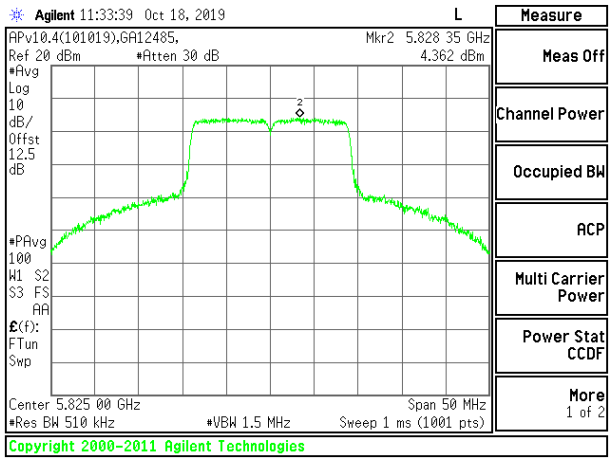
## HIGH CHANNEL



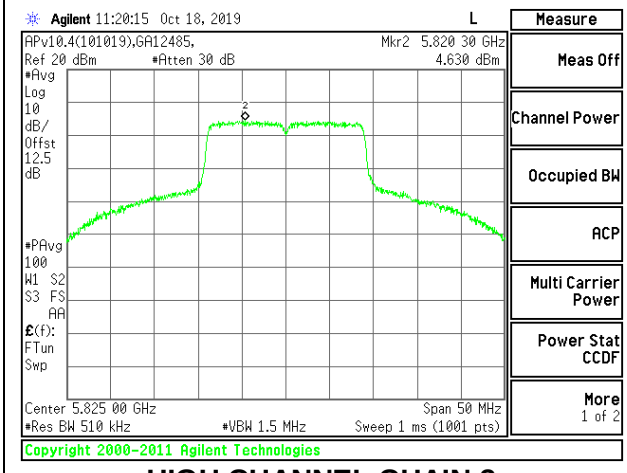

**HIGH CHANNEL CHAIN 0**




**HIGH CHANNEL CHAIN 1**




**HIGH CHANNEL CHAIN 2**




**HIGH CHANNEL CHAIN 3**

# 9. RADIATED TEST RESULTS

**LIMITS**

FCC §15.205 and §15.209 -Restriced bands

FCC §15.407(b)(1-3) -Un-Restriced bands

**After January 01, 2019 for Outside of the Restricted Bands Emissions**

RSS 247 Issue 2 Sections
6.2.1.2 (for 5150-5250 MHz band)
6.2.2.2 (for 5250-5350 MHz band)
6.2.3.2 (for 5470-5600 MHz and 5650-5725 MHz bands)
6.2.4.2 (for 5725-5850 MHz band)

NCC LP0002 §2.7 and §2.8

| Frequency Range (MHz) | Field Strength Limit (uV/m) at 3 m | Field Strength Limit (dBuV/m) at 3 m |
|---|---|---|
| 30 - 88 | 100 | 40 |
| 88 - 216 | 150 | 43.5 |
| 216 - 960 | 200 | 46 |
| Above 960 | 500 | 54 |

**TEST PROCEDURE**

The EUT is placed on a non-conducting table 80 cm above the ground plane for measurement below 1GHz; 1.5 m above the ground plane for measurement above 1GHz. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.10. The EUT is set to transmit in a continuous mode.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For pre-scans above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 30 KHz for peak measurements.

For final measurements above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 3 MHz for peak measurements and as applicable for average measurements.

The spectrum from 30 MHz to 1GHz and 18GHz to 40 GHz is investigated with the transmitter set to transmit at the channel with highest output power as worst-case scenario. 1GHz to 18GHz was set to the lowest, middle, and highest channels in the 5 GHz bands.

The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions.

2D antenna use - For below 30MHz testing, investigation was done on three antenna orientations (parallel, perpendicular, and ground-parallel), parallel and perpendicular are the worst orientations, therefore testing was performed on these two orientations only.

**KDB 414788 Open Field Site(OFS) and Chamber Correlation Justification**

Base on FCC 15.31 (f) (2): measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field.

OFS and chamber correlation testing had been performed and chamber measured test result is the worst case test result.



UL VERIFICATION SERVICES INC.
47173 Benicia Street, Fremont, CA 94538; USA TEL:(510) 319-4000 FAX:(510) 661-0888

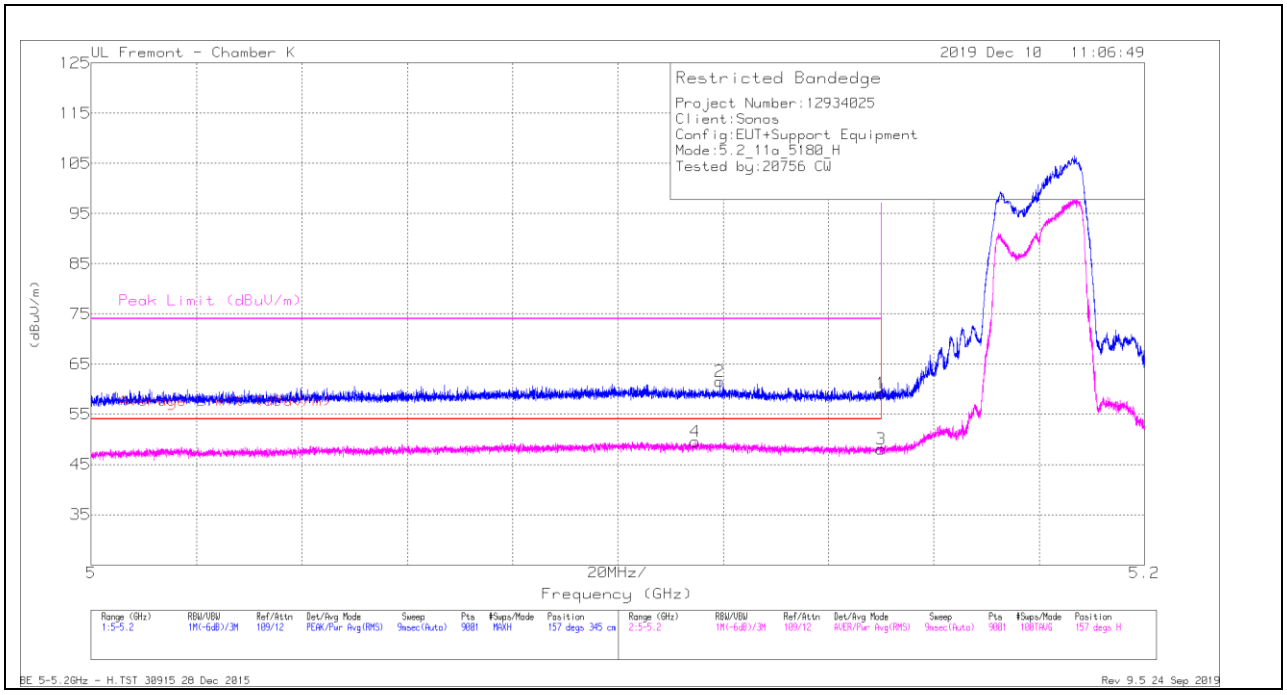
# 9.1. TRANSMITTER ABOVE 1 GHz

## 9.1.1. TX ABOVE 1 GHz 802.11a MODE IN THE 5.2 GHz BAND

**4TX Antenna 1 + Antenna 2 + Antenna 3 + Antenna 4 CDD MODE**

## BANDEDGE (LOW CHANNEL)

### HORIZONTAL RESULT

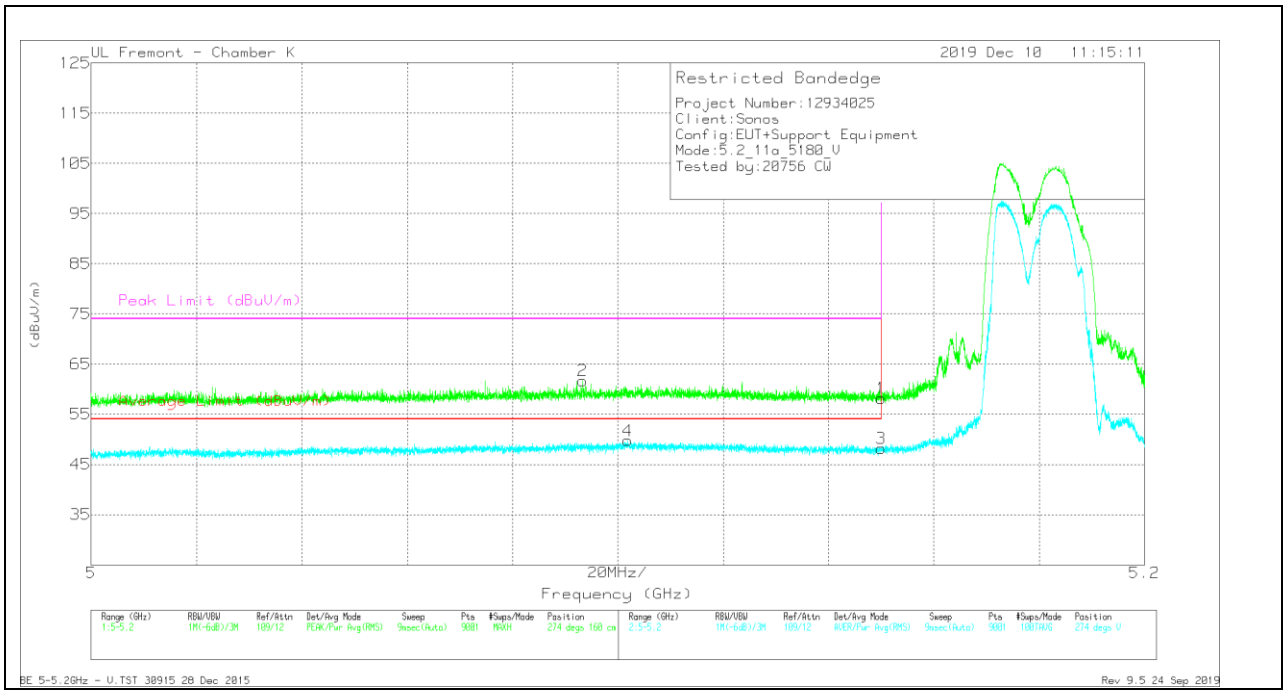



### Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF EMC4294 (dB/m) | Amp/Cbl/Fltr/Pad (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | * 5.15 | 33.1 | Pk | 34.2 | -8.1 | 59.2 | - | - | 74 | -14.8 | 157 | 345 | H |
| 2 | * 5.11935 | 35.3 | Pk | 34.3 | -8 | 61.6 | - | - | 74 | -12.4 | 157 | 345 | H |
| 3 | * 5.15 | 21.92 | RMS | 34.2 | -8.1 | 48.02 | 54 | -5.98 | - | - | 157 | 345 | H |
| 4 | * 5.11475 | 23.33 | RMS | 34.2 | -8 | 49.53 | 54 | -4.47 | - | - | 157 | 345 | H |

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

## VERTICAL RESULT



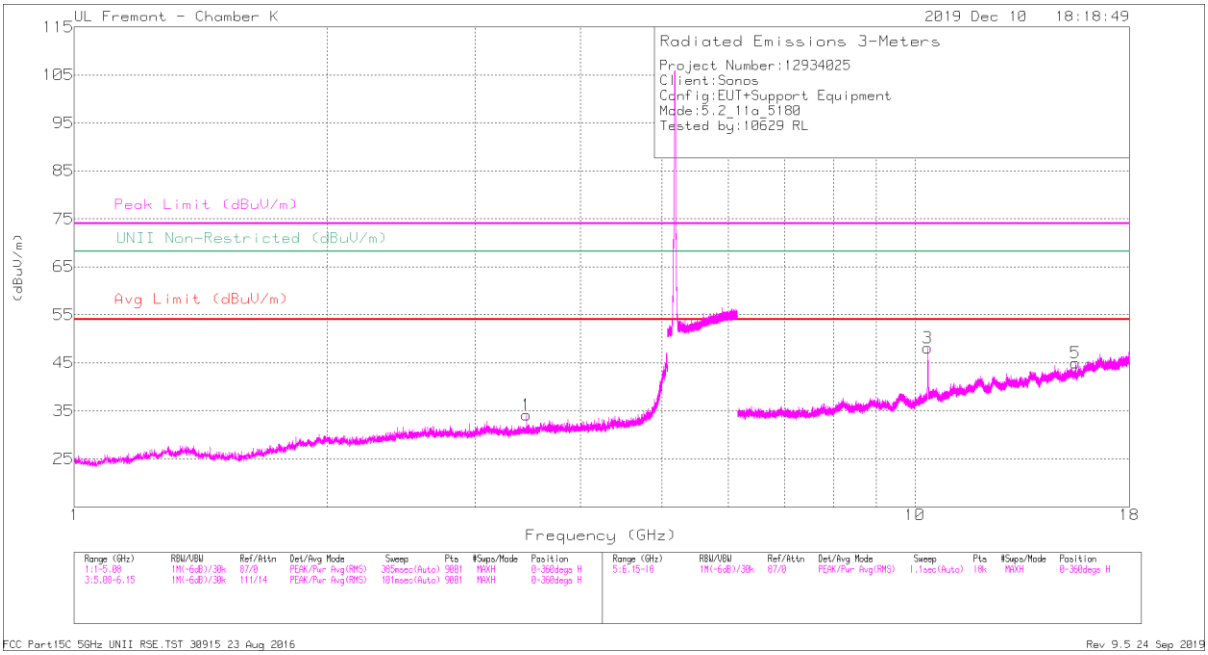

### Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF EMC4294 (dB/m) | Amp/Cbl/Fltr/Pad (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | * 5.15 | 32.11 | Pk | 34.2 | -8.1 | 58.21 | - | - | 74 | -15.79 | 274 | 160 | V |
| 2 | * 5.09333 | 35.66 | Pk | 34.2 | -8.2 | 61.66 | - | - | 74 | -12.34 | 274 | 160 | V |
| 3 | * 5.15 | 22.09 | RMS | 34.2 | -8.1 | 48.19 | 54 | -5.81 | - | - | 274 | 160 | V |
| 4 | * 5.10184 | 23.65 | RMS | 34.3 | -8.2 | 49.75 | 54 | -4.25 | - | - | 274 | 160 | V |

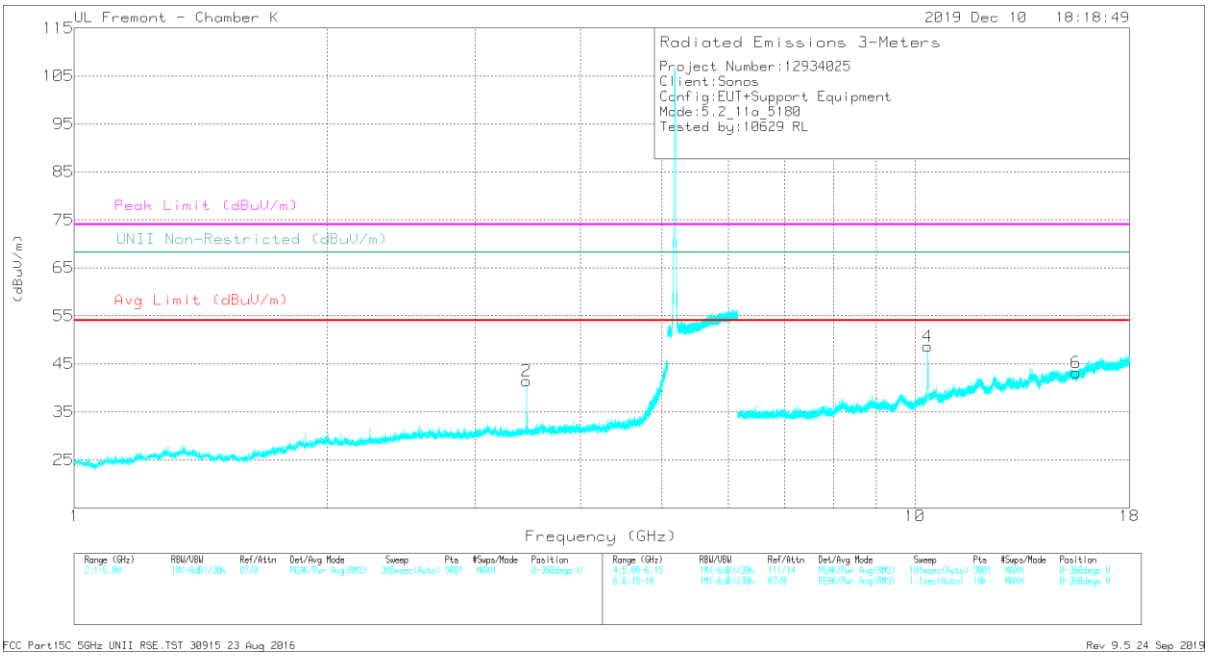
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

## HARMONICS AND SPURIOUS EMISSIONS

### LOW CHANNEL RESULTS




**HORIZONTAL**




**VERTICAL**

## RADIATED EMISSIONS

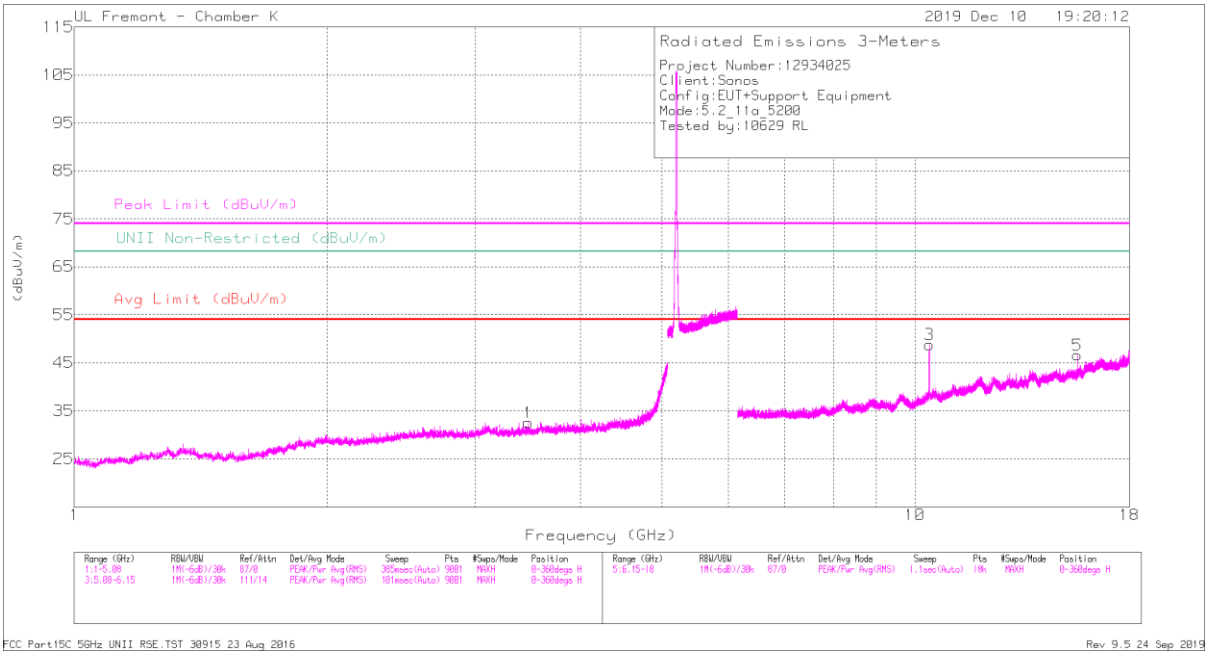
| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF EMC4294 (dB/m) | Amp/Cbl/Fltr/Pad (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | UNII Non-Restricted (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 3.45325 | 40.14 | PK-U | 33.1 | -32.9 | 40.34 | - | - | - | - | 68.2 | -27.86 | 330 | 128 | H |
| 2 | 3.45339 | 44.2 | PK-U | 33.1 | -32.9 | 44.4 | - | - | - | - | 68.2 | -23.8 | 270 | 177 | V |
| 3 | 10.36035 | 45.36 | PK-U | 37.5 | -23.1 | 59.76 | - | - | - | - | 68.2 | -8.44 | 190 | 96 | H |
| 5 | * 15.5383 | 33.29 | PK-U | 40.1 | -18.6 | 54.79 | - | - | 74 | -19.21 | - | - | 294 | 184 | H |
| | * 15.53845 | 22.09 | ADR | 40 | -18.6 | 43.49 | 54 | -10.51 | - | - | - | - | 294 | 184 | H |
| 4 | 10.35611 | 47.47 | PK-U | 37.5 | -23 | 61.97 | - | - | - | - | 68.2 | -6.23 | 194 | 97 | V |
| 6 | * 15.53532 | 31.47 | PK-U | 40.1 | -18.6 | 52.97 | - | - | 74 | -21.03 | - | - | 193 | 292 | V |
| | * 15.53592 | 19.97 | ADR | 40.1 | -18.6 | 41.47 | 54 | -12.53 | - | - | - | - | 193 | 292 | V |

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK-U - U-NII: Maximum Peak
ADR - U-NII AD primary method, RMS average

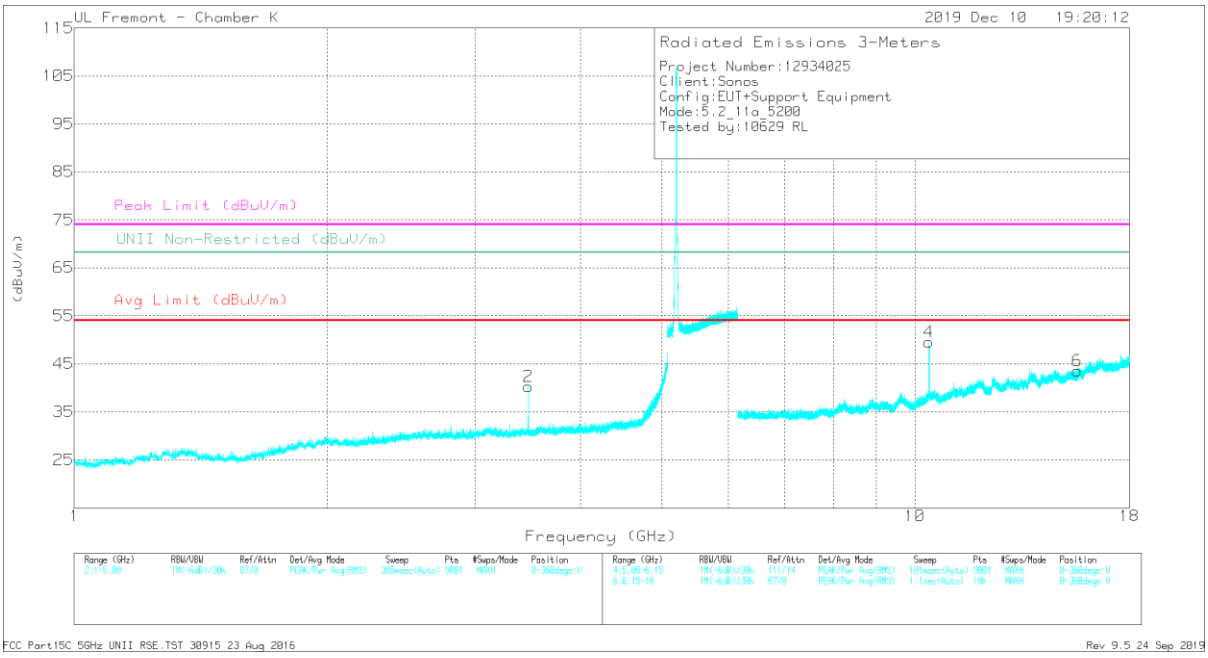


UL VERIFICATION SERVICES INC.
47173 Benicia Street, Fremont, CA 94538; USA TEL:(510) 319-4000 FAX:(510) 661-0888

## MID CHANNEL RESULTS




**HORIZONTAL**




**VERTICAL**

## RADIATED EMISSIONS

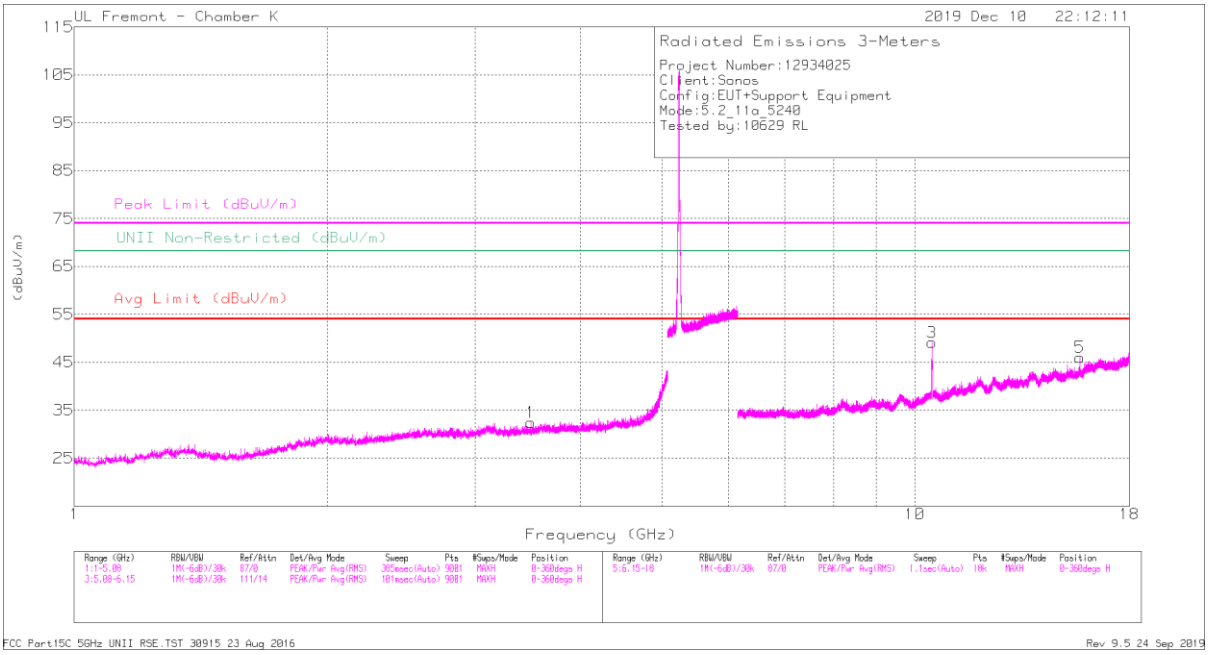
| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF EMC4294 (dB/m) | Amp/Cbl/Fltr/Pad (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | UNII Non-Restricted (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 3.46656 | 41.69 | PK-U | 33.1 | -32.9 | 41.89 | - | - | - | - | 68.2 | -26.31 | 330 | 102 | H |
| 2 | 3.46672 | 43.68 | PK-U | 33.1 | -32.9 | 43.88 | - | - | - | - | 68.2 | -24.32 | 271 | 173 | V |
| 3 | 10.39835 | 44.84 | PK-U | 37.5 | -22.9 | 59.44 | - | - | - | - | 68.2 | -8.76 | 218 | 226 | H |
| 5 | * 15.59851 | 33.04 | PK-U | 40.1 | -18.6 | 54.54 | - | - | 74 | -19.46 | - | - | 295 | 193 | H |
| | * 15.59692 | 22.13 | ADR | 40.1 | -18.6 | 43.63 | 54 | -10.37 | - | - | - | - | 295 | 193 | H |
| 4 | 10.39516 | 46.17 | PK-U | 37.5 | -22.9 | 60.77 | - | - | - | - | 68.2 | -7.43 | 192 | 96 | V |
| 6 | * 15.59595 | 30.91 | PK-U | 40.1 | -18.6 | 52.41 | - | - | 74 | -21.59 | - | - | 195 | 306 | V |
| | * 15.59586 | 19.88 | ADR | 40.1 | -18.6 | 41.38 | 54 | -12.62 | - | - | - | - | 195 | 306 | V |

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK-U - U-NII: Maximum Peak
ADR - U-NII AD primary method, RMS average

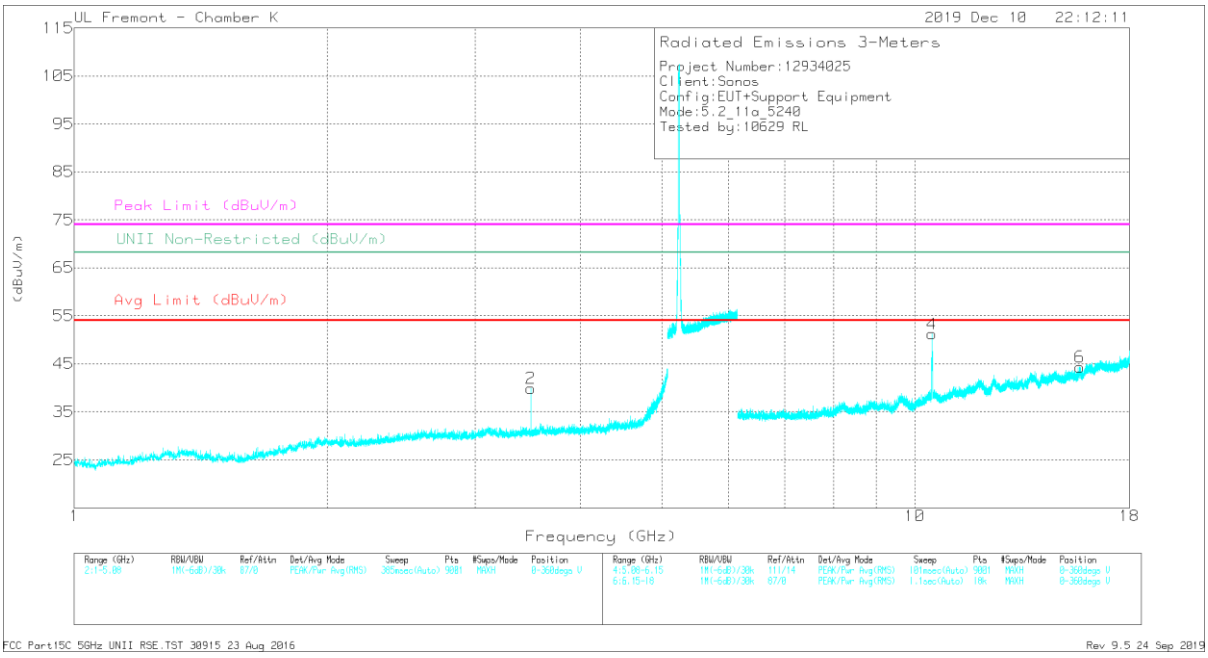


UL VERIFICATION SERVICES INC.
47173 Benicia Street, Fremont, CA 94538; USA TEL:(510) 319-4000 FAX:(510) 661-0888

## HIGH CHANNEL RESULTS




**HORIZONTAL**




**VERTICAL**

## RADIATED EMISSIONS

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF EMC4294 (dB/m) | Amp/Cbl/Fltr/Pad (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | UNII Non-Restricted (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 3.49314 | 39.62 | PK-U | 33 | -32.7 | 39.92 | - | - | - | - | 68.2 | -28.28 | 333 | 165 | H |
| 2 | 3.49329 | 43.97 | PK-U | 33 | -32.7 | 44.27 | - | - | - | - | 68.2 | -23.93 | 260 | 184 | V |
| 3 | 10.47854 | 44.36 | PK-U | 37.7 | -22.9 | 59.16 | - | - | - | - | 68.2 | -9.04 | 216 | 195 | H |
| 5 | * 15.71829 | 33.19 | PK-U | 40 | -17.8 | 55.39 | - | - | 74 | -18.61 | - | - | 295 | 191 | H |
| | * 15.71916 | 22.17 | ADR | 40 | -17.8 | 44.37 | 54 | -9.63 | - | - | - | - | 295 | 191 | H |
| 4 | 10.47617 | 45.21 | PK-U | 37.7 | -22.9 | 60.01 | - | - | - | - | 68.2 | -8.19 | 193 | 107 | V |
| 6 | * 15.71937 | 30.93 | PK-U | 40 | -17.8 | 53.13 | - | - | 74 | -20.87 | - | - | 189 | 107 | V |
| | * 15.72095 | 20.14 | ADR | 40 | -17.8 | 42.34 | 54 | -11.66 | - | - | - | - | 189 | 107 | V |

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK-U - U-NII: Maximum Peak
ADR - U-NII AD primary method, RMS average



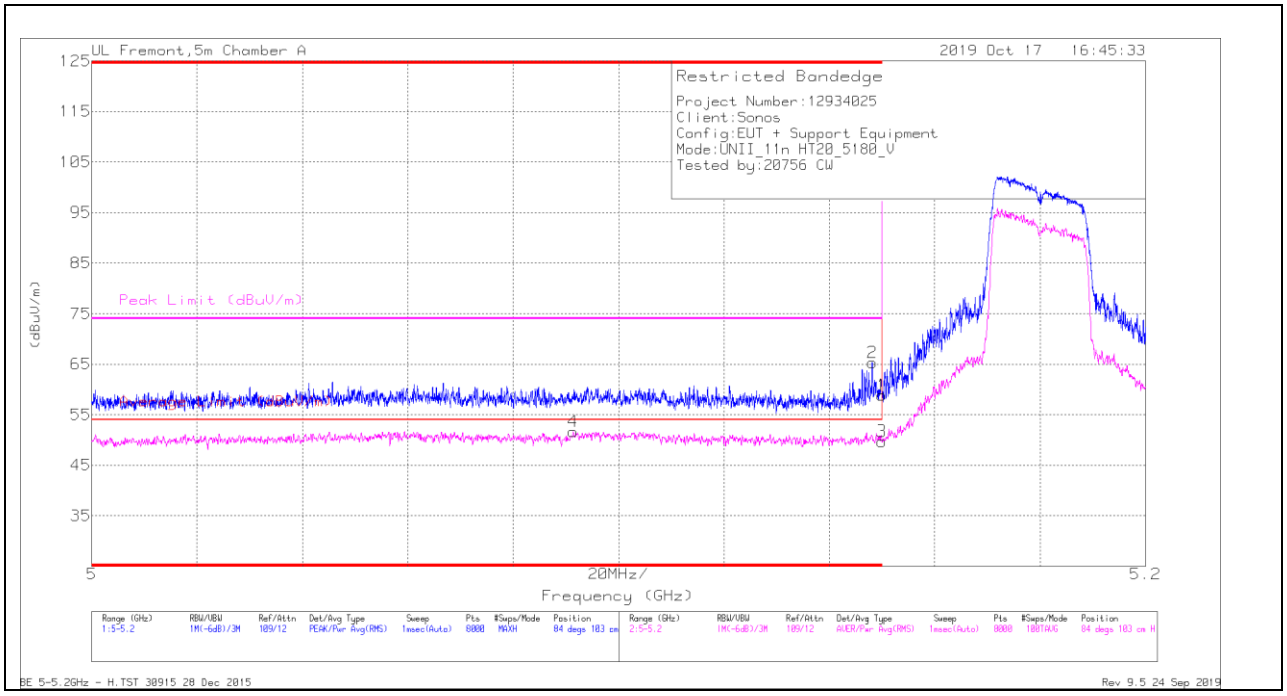
UL VERIFICATION SERVICES INC.
47173 Benicia Street, Fremont, CA 94538; USA TEL:(510) 319-4000 FAX:(510) 661-0888

## 9.1.2. TX ABOVE 1 GHz 802.11n HT20 MODE IN THE 5.2 GHz BAND

**4TX Antenna 1 + Antenna 2 + Antenna 3 + Antenna 4 CDD MODE**

## BANDEDGE (LOW CHANNEL)

### HORIZONTAL RESULT

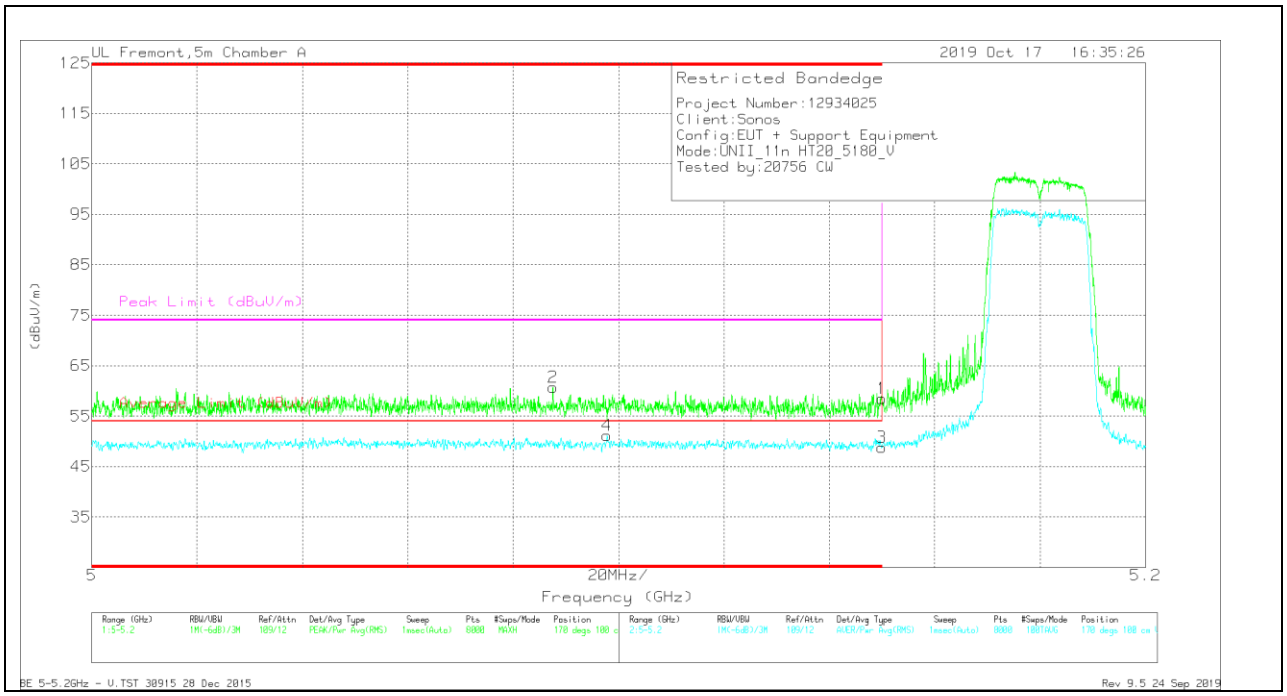



### Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T346 (dB/m) | Amp/Cbl/Fltr/Pad (dB) | DC Corr (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | * 5.09139 | 33.54 | RMS | 34.4 | -16.6 | .31 | 51.65 | 54 | -2.35 | - | - | 84 | 103 | H |
| 2 | * 5.14814 | 47.66 | Pk | 34.5 | -16.8 | 0 | 65.36 | - | - | 74 | -8.64 | 84 | 103 | H |
| 1 | * 5.14999 | 41.09 | Pk | 34.6 | -16.8 | 0 | 58.89 | - | - | 74 | -15.11 | 84 | 103 | H |
| 3 | * 5.14999 | 31.62 | RMS | 34.6 | -16.8 | .31 | 49.73 | 54 | -4.27 | - | - | 84 | 103 | H |

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

## VERTICAL RESULT



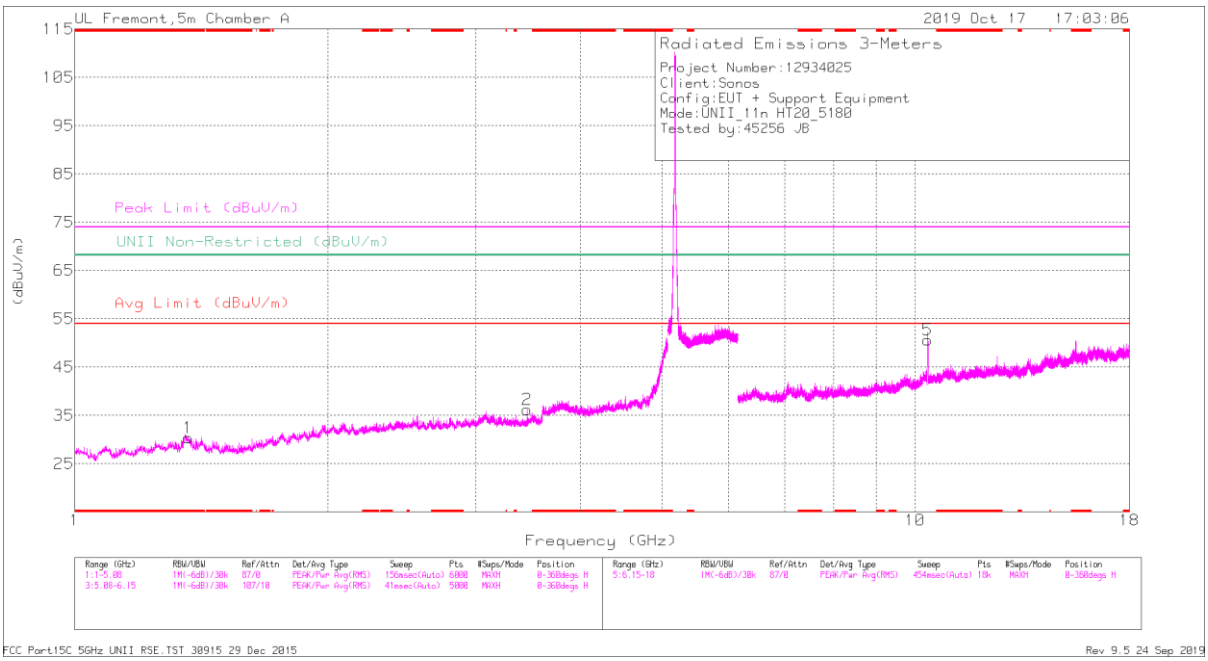

### Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T346 (dB/m) | Amp/Cbl/Fltr/Pad (dB) | DC Corr (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | * 5.08754 | 42.92 | Pk | 34.4 | -16.6 | 0 | 60.72 | - | - | 74 | -13.28 | 170 | 100 | V |
| 4 | * 5.09781 | 32.9 | RMS | 34.5 | -16.6 | .31 | 51.11 | 54 | -2.89 | - | - | 170 | 100 | V |
| 1 | * 5.14999 | 40.64 | Pk | 34.6 | -16.8 | 0 | 58.44 | - | - | 74 | -15.56 | 170 | 100 | V |
| 3 | * 5.14999 | 30.69 | RMS | 34.6 | -16.8 | .31 | 48.8 | 54 | -5.2 | - | - | 170 | 100 | V |

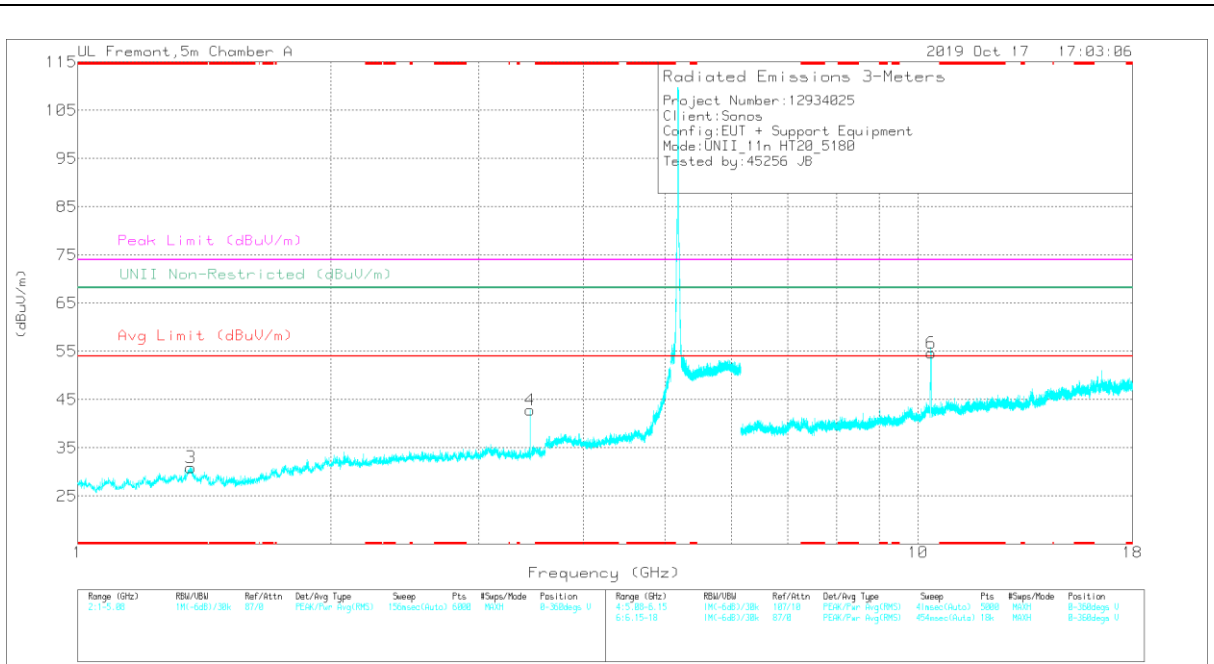
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

## HARMONICS AND SPURIOUS EMISSIONS

### LOW CHANNEL RESULTS




**HORIZONTAL**




**VERTICAL**

## RADIATED EMISSIONS

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T346 (dB/m) | Amp/Cbl/Fltr/Pad (dB) | DC Corr (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | UNII Non-Restricted (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | * 1.36512 | 39.72 | PK-U | 29.6 | -31.6 | 0 | 37.72 | - | - | 74 | -36.28 | - | - | 303 | 157 | H |
| | * 1.36366 | 27.64 | ADR | 29.6 | -31.6 | .31 | 25.95 | 54 | -28.05 | - | - | - | - | 303 | 157 | H |
| 3 | * 1.36499 | 40.06 | PK-U | 29.6 | -31.6 | 0 | 38.06 | - | - | 74 | -35.94 | - | - | 8 | 223 | V |
| | * 1.36183 | 27.77 | ADR | 29.6 | -31.6 | .31 | 26.08 | 54 | -27.92 | - | - | - | - | 8 | 223 | V |
| 4 | 3.45312 | 41.85 | PK-U | 32.8 | -28.9 | 0 | 45.75 | - | - | - | - | 68.2 | -22.45 | 142 | 235 | V |
| 2 | 3.45319 | 38.62 | PK-U | 32.8 | -28.9 | 0 | 42.52 | - | - | - | - | 68.2 | -25.68 | 130 | 234 | H |
| 5 | 10.36163 | 38.52 | PK-U | 37.5 | -19.9 | 0 | 56.12 | - | - | - | - | 68.2 | -12.08 | 90 | 107 | H |
| 6 | 10.3646 | 41.24 | PK-U | 37.4 | -20 | 0 | 58.64 | - | - | - | - | 68.2 | -9.56 | 68 | 106 | V |

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

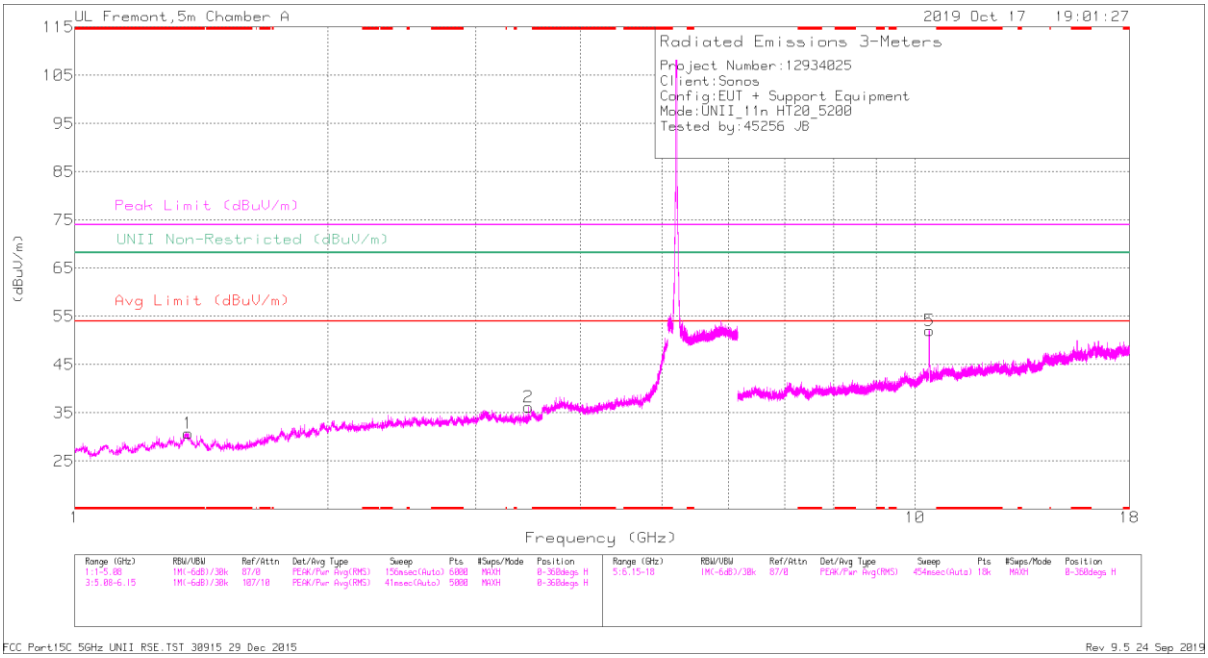
PK-U - U-NII: Maximum Peak

ADR - U-NII AD primary method, RMS average

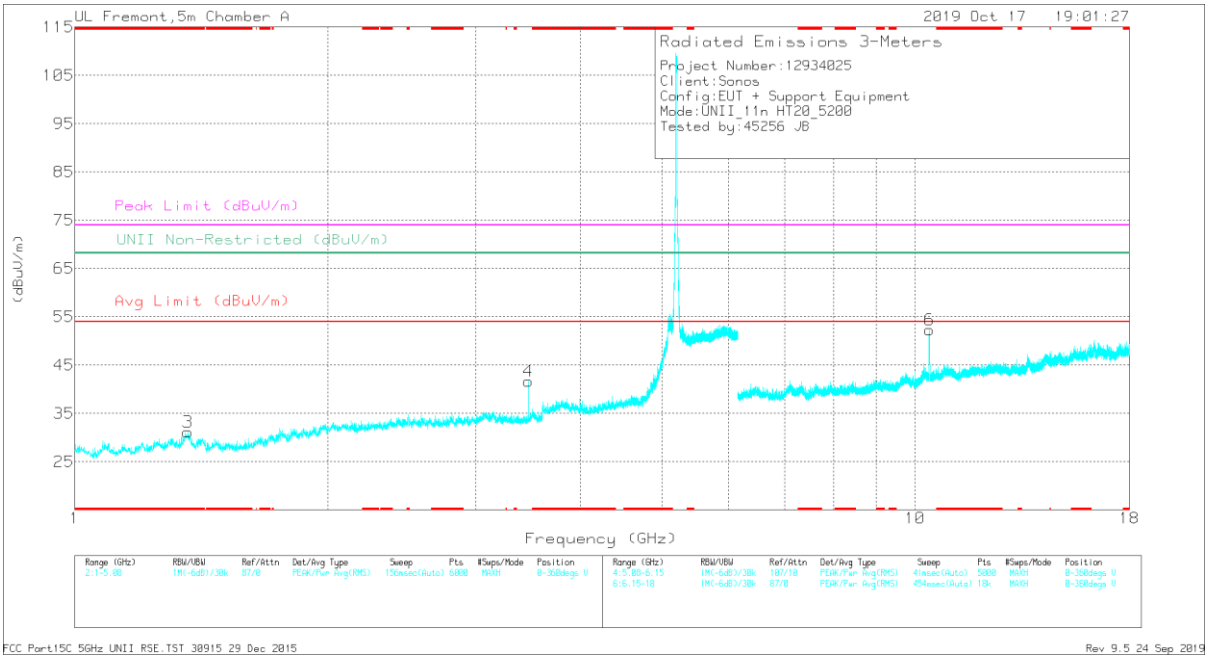


UL VERIFICATION SERVICES INC.
47173 Benicia Street, Fremont, CA 94538; USA TEL:(510) 319-4000 FAX:(510) 661-0888

## MID CHANNEL RESULTS




**HORIZONTAL**




**VERTICAL**

## RADIATED EMISSIONS

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T346 (dB/m) | Amp/Cbl/Fltr/Pad (dB) | DC Corr (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | UNII Non-Restricted (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | * 1.36394 | 39.44 | PK-U | 29.6 | -31.6 | 0 | 37.44 | - | - | 74 | -36.56 | - | - | 348 | 290 | H |
| | * 1.36298 | 27.57 | ADR | 29.6 | -31.6 | .31 | 25.88 | 54 | -28.12 | - | - | - | - | 348 | 290 | H |
| 3 | * 1.36128 | 39.98 | PK-U | 29.5 | -31.6 | 0 | 37.88 | - | - | 74 | -36.12 | - | - | 359 | 283 | V |
| | * 1.36234 | 27.64 | ADR | 29.6 | -31.6 | .31 | 25.95 | 54 | -28.05 | - | - | - | - | 359 | 283 | V |
| 4 | 3.46653 | 41.49 | PK-U | 32.8 | -28.6 | 0 | 45.69 | - | - | - | - | 68.2 | -22.51 | 139 | 230 | V |
| 2 | 3.46668 | 37.96 | PK-U | 32.8 | -28.6 | 0 | 42.16 | - | - | - | - | 68.2 | -26.04 | 137 | 245 | H |
| 5 | 10.39912 | 43.24 | PK-U | 37.6 | -20.4 | 0 | 60.44 | - | - | - | - | 68.2 | -7.76 | 57 | 223 | H |
| 6 | 10.39916 | 42.76 | PK-U | 37.6 | -20.4 | 0 | 59.96 | - | - | - | - | 68.2 | -8.24 | 68 | 104 | V |

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

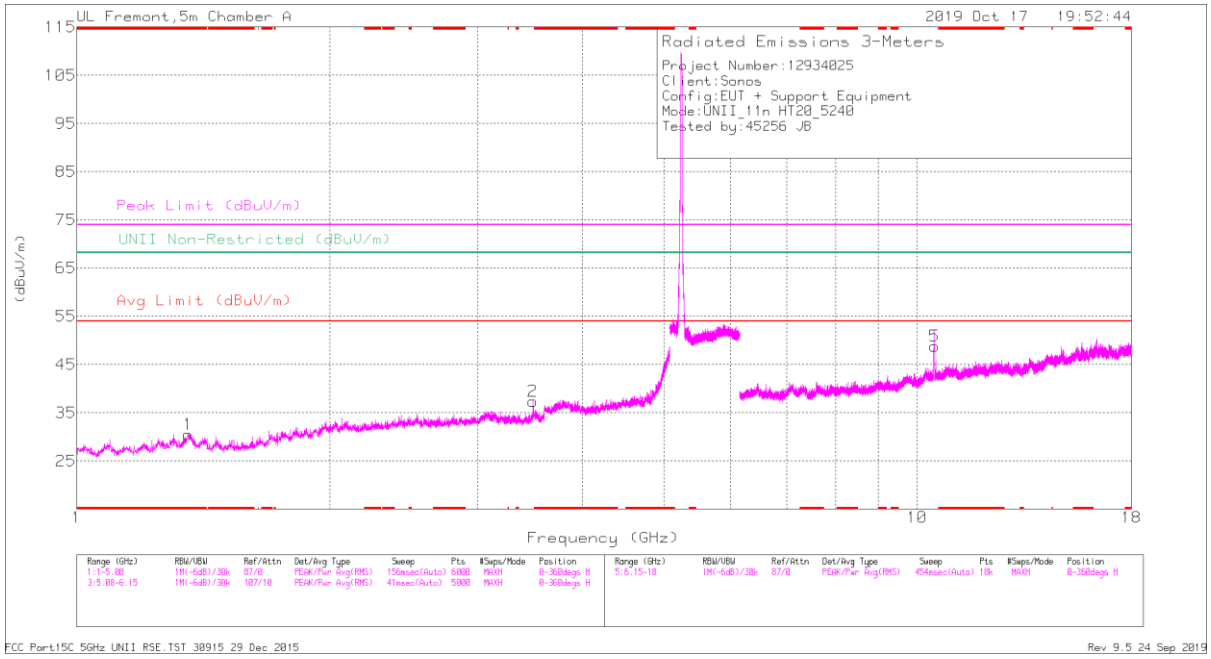
PK-U - U-NII: Maximum Peak

ADR - U-NII AD primary method, RMS average

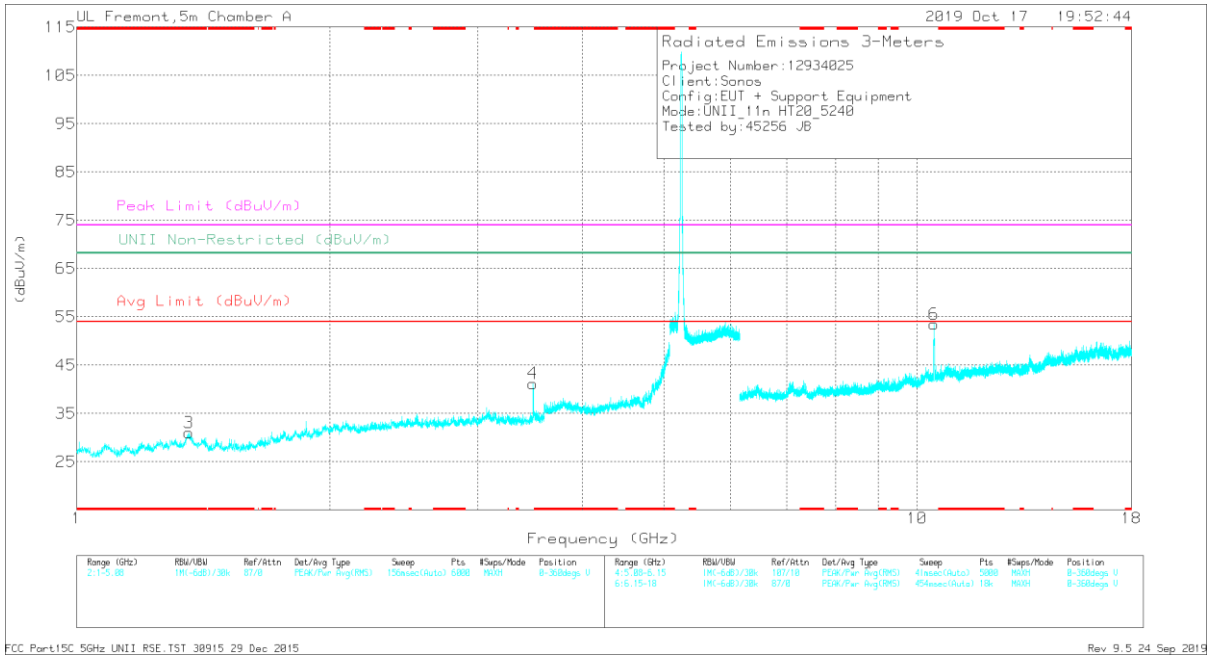


UL VERIFICATION SERVICES INC.
47173 Benicia Street, Fremont, CA 94538; USA TEL:(510) 319-4000 FAX:(510) 661-0888

## HIGH CHANNEL RESULTS




**HORIZONTAL**




**VERTICAL**

## RADIATED EMISSIONS

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T346 (dB/m) | Amp/Cbl/Fltr/Pad (dB) | DC Corr (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | UNII Non-Restricted (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | * 1.35902 | 39.58 | PK-U | 29.5 | -31.6 | 0 | 37.48 | - | - | 74 | -36.52 | - | - | 0 | 275 | H |
| | * 1.358 | 27.74 | ADR | 29.6 | -31.6 | .31 | 26.05 | 54 | -27.95 | - | - | - | - | 0 | 275 | H |
| 3 | * 1.36062 | 39.86 | PK-U | 29.5 | -31.6 | 0 | 37.76 | - | - | 74 | -36.24 | - | - | 204 | 207 | V |
| | * 1.36044 | 27.76 | ADR | 29.5 | -31.6 | .31 | 25.97 | 54 | -28.03 | - | - | - | - | 204 | 207 | V |
| 2 | 3.49332 | 40.74 | PK-U | 33.3 | -28.5 | 0 | 45.54 | - | - | - | - | 68.2 | -22.66 | 135 | 216 | V |
| | 3.49337 | 38.25 | PK-U | 33.3 | -28.5 | 0 | 43.05 | - | - | - | - | 68.2 | -25.15 | 137 | 257 | H |
| 4 | 10.47915 | 41.54 | PK-U | 37.7 | -20.2 | 0 | 59.04 | - | - | - | - | 68.2 | -9.16 | 66 | 186 | V |
| | 10.49011 | 38.91 | PK-U | 37.7 | -20.3 | 0 | 56.31 | - | - | - | - | 68.2 | -11.89 | 96 | 277 | H |
| 6 | * 1.35902 | 39.58 | PK-U | 29.5 | -31.6 | 0 | 37.48 | - | - | 74 | -36.52 | - | - | 0 | 275 | H |
| | * 1.358 | 27.74 | ADR | 29.6 | -31.6 | .31 | 26.05 | 54 | -27.95 | - | - | - | - | 0 | 275 | H |
| 5 | * 1.36062 | 39.86 | PK-U | 29.5 | -31.6 | 0 | 37.76 | - | - | 74 | -36.24 | - | - | 204 | 207 | V |
| | * 1.36044 | 27.76 | ADR | 29.5 | -31.6 | .31 | 25.97 | 54 | -28.03 | - | - | - | - | 204 | 207 | V |

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

PK-U - U-NII: Maximum Peak

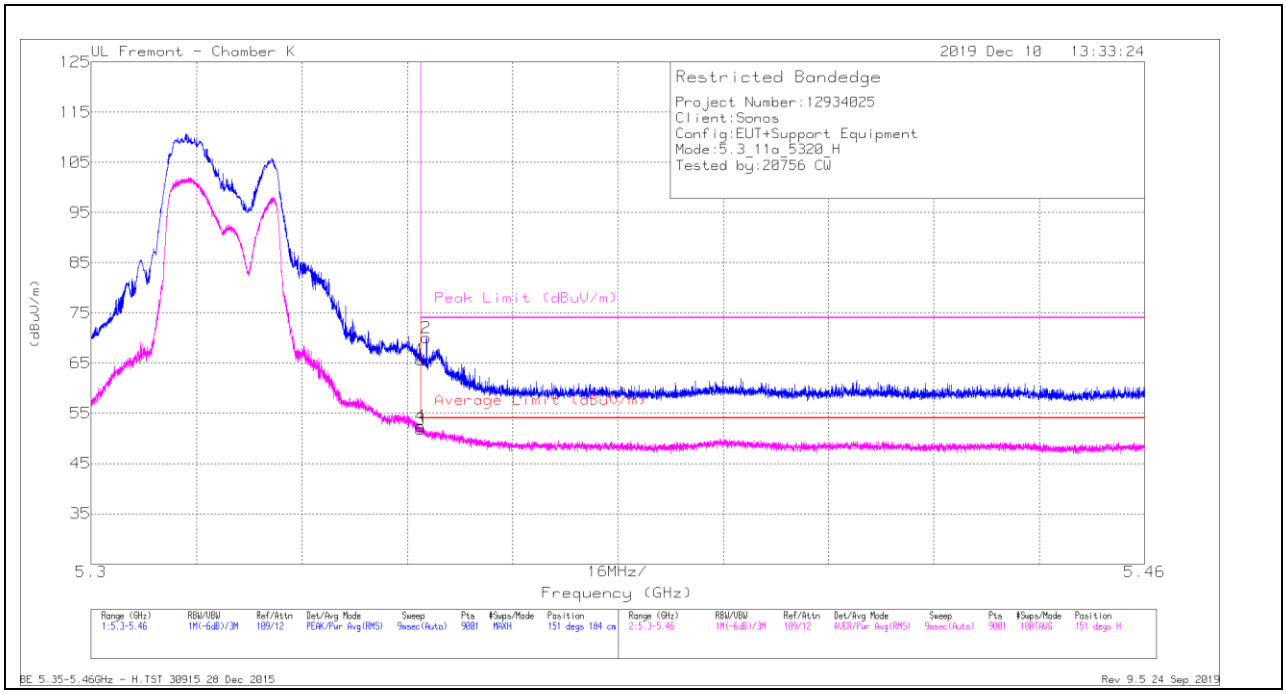
ADR - U-NII AD primary method, RMS average

## 9.1.3. TX ABOVE 1 GHz 802.11a MODE IN THE 5.3 GHz BAND

**4TX Antenna 1 + Antenna 2 + Antenna 3 + Antenna 4 CDD MODE**

## BANDEDGE (HIGH CHANNEL)

### HORIZONTAL RESULT

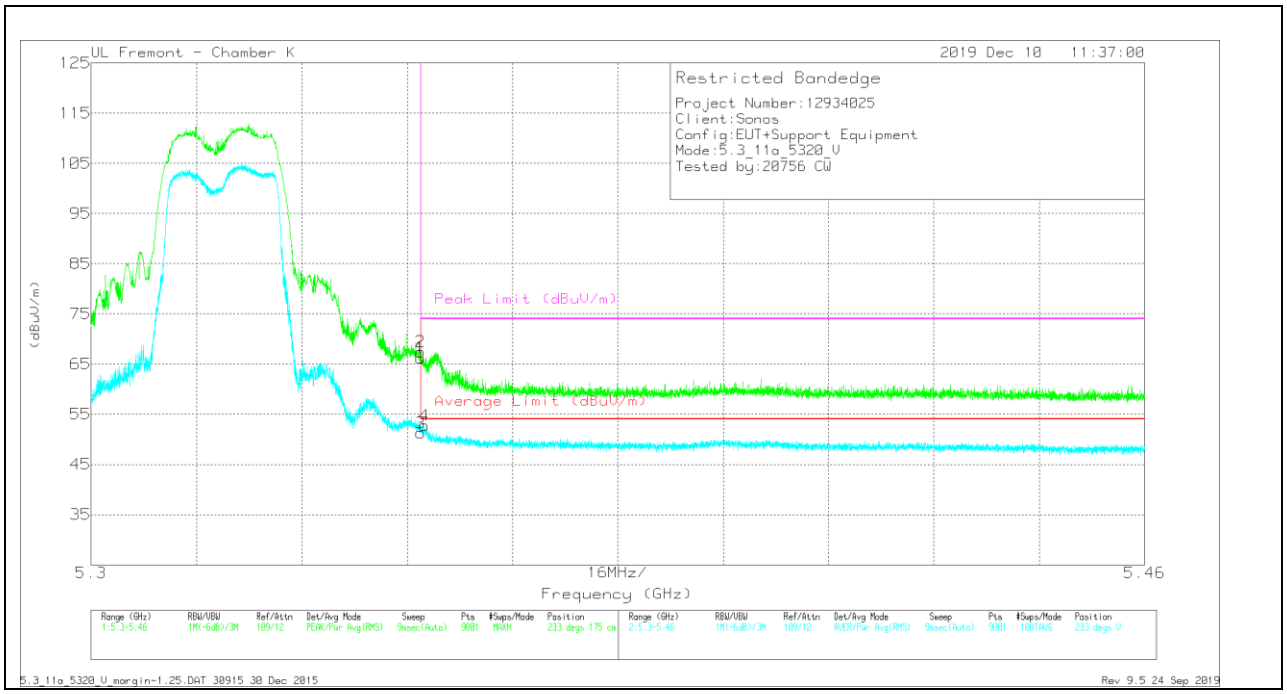



### Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF EMC4294 (dB/m) | Amp/Cbl/Fltr/Pad (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | * 5.35001 | 39.23 | Pk | 34.4 | -7.9 | 65.73 | - | - | 74 | -8.27 | 151 | 184 | H |
| 2 | * 5.35093 | 43.52 | Pk | 34.4 | -7.9 | 70.02 | - | - | 74 | -3.98 | 151 | 184 | H |
| 3 | * 5.35001 | 25.26 | RMS | 34.4 | -7.9 | 51.76 | 54 | -2.24 | - | - | 151 | 184 | H |
| 4 | * 5.35006 | 25.93 | RMS | 34.4 | -7.9 | 52.43 | 54 | -1.57 | - | - | 151 | 184 | H |

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

## VERTICAL RESULT



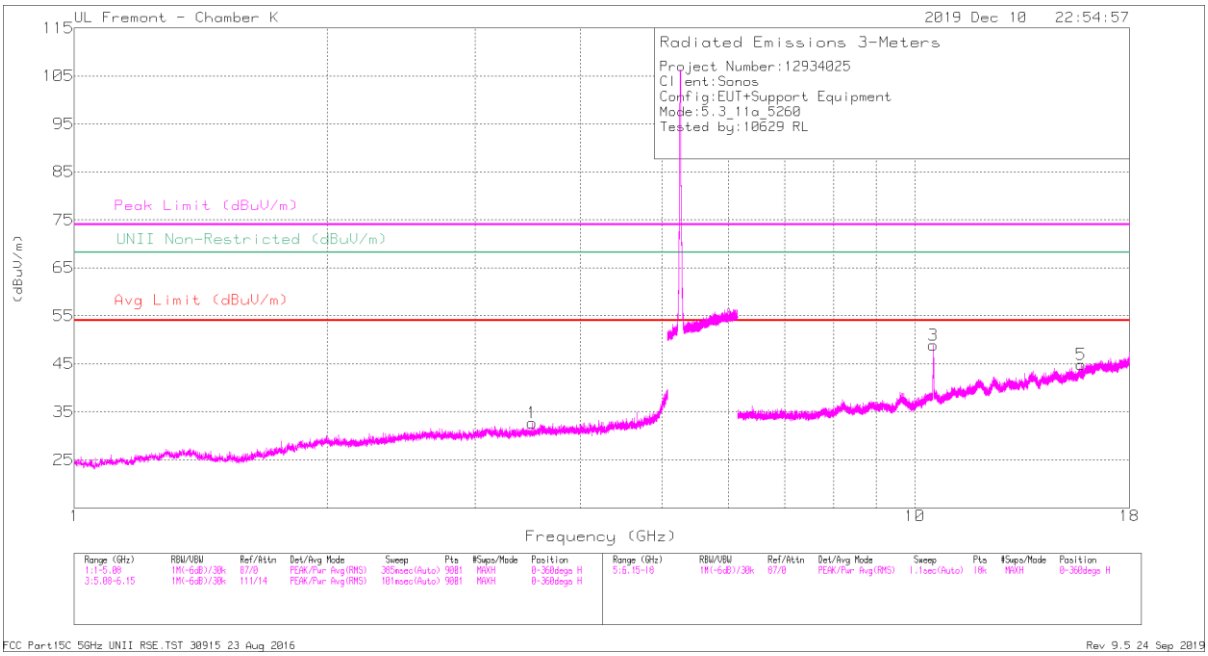

### Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF EMC4294 (dB/m) | Amp/Cbl/Fltr/Pad (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | * 5.35001 | 39.69 | Pk | 34.4 | -7.9 | 66.19 | - | - | 74 | -7.81 | 233 | 175 | V |
| 2 | * 5.35008 | 40.96 | Pk | 34.4 | -7.9 | 67.46 | - | - | 74 | -6.54 | 233 | 175 | V |
| 3 | * 5.35001 | 24.75 | RMS | 34.4 | -7.9 | 51.25 | 54 | -2.75 | - | - | 233 | 175 | V |
| 4 | * 5.3506 | 26.25 | RMS | 34.4 | -7.9 | 52.75 | 54 | -1.25 | - | - | 233 | 175 | V |

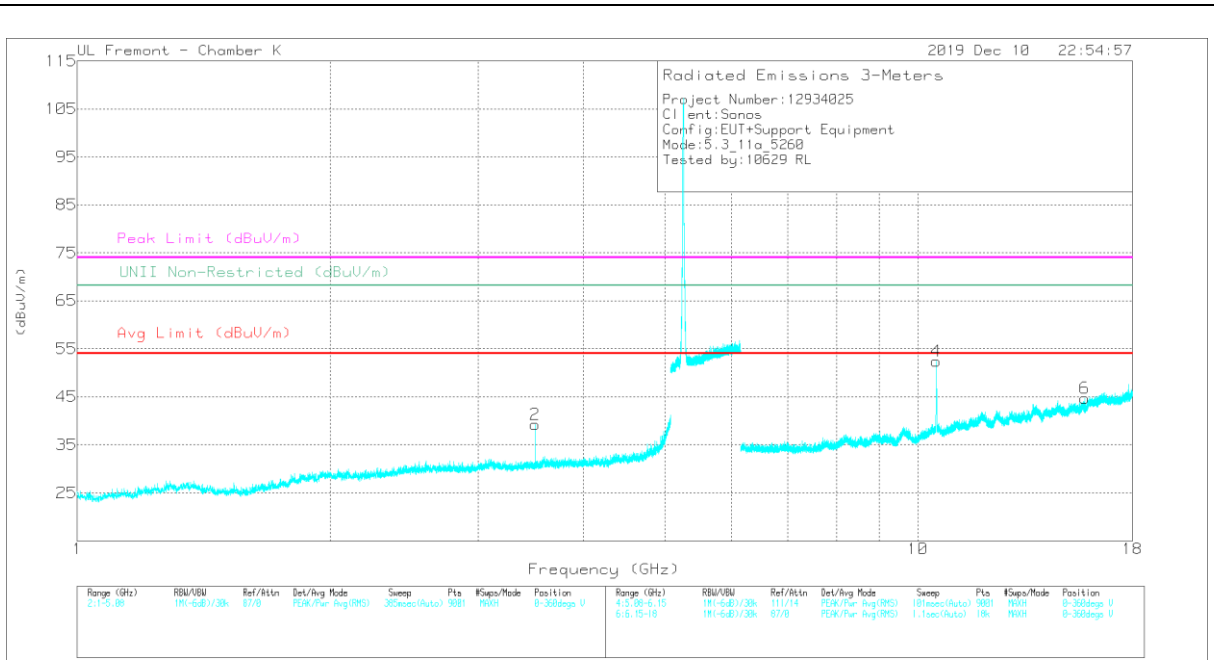
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

## HARMONICS AND SPURIOUS EMISSIONS

### LOW CHANNEL RESULTS




**HORIZONTAL**




**VERTICAL**

## RADIATED EMISSIONS

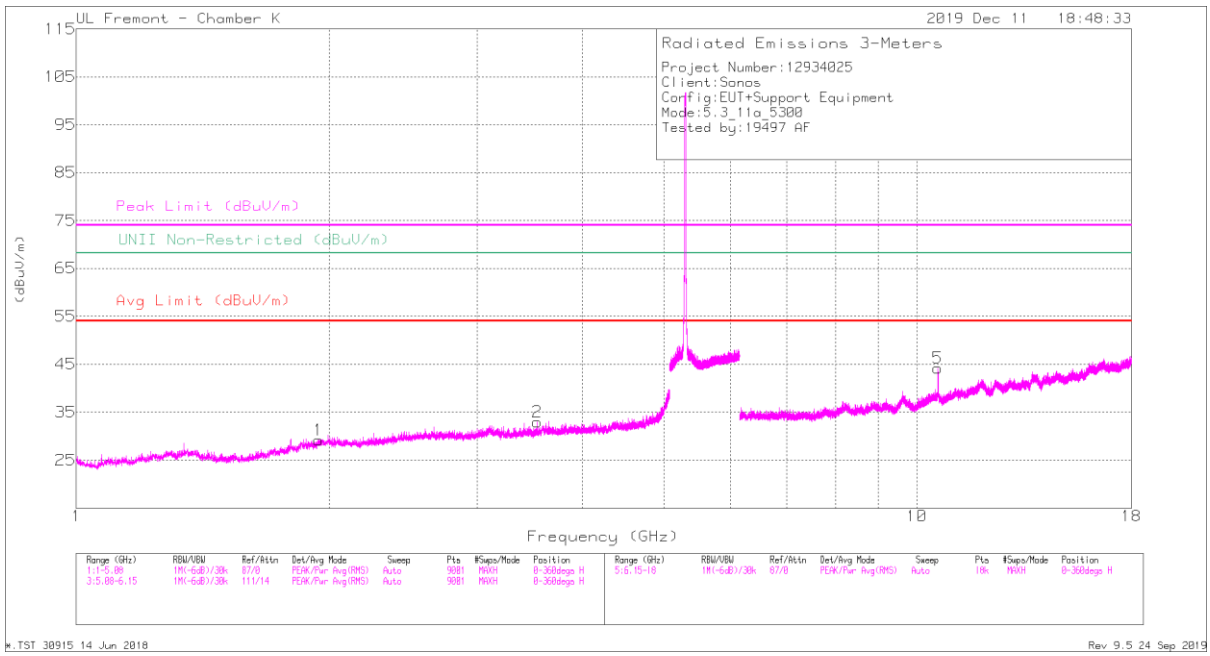
| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF EMC4294 (dB/m) | Amp/Cbl/Fltr/Pad (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | UNII Non-Restricted (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | * 3.50673 | 39.83 | PK-U | 33.1 | -32.8 | 40.13 | - | - | 74 | -33.87 | - | - | 329 | 96 | H |
| | * 3.50666 | 31.81 | ADR | 33.1 | -32.8 | 32.11 | 54 | -21.89 | - | - | - | - | 329 | 96 | H |
| 2 | * 3.50689 | 42.94 | PK-U | 33.1 | -32.8 | 43.24 | - | - | 74 | -30.76 | - | - | 263 | 172 | V |
| | * 3.50666 | 38.19 | ADR | 33.1 | -32.8 | 38.49 | 54 | -15.51 | - | - | - | - | 263 | 172 | V |
| 3 | 10.51975 | 43.73 | PK-U | 37.7 | -22.5 | 58.93 | - | - | - | - | 68.2 | -9.27 | 216 | 198 | H |
| 5 | * 15.77667 | 33.48 | PK-U | 40.1 | -18.1 | 55.48 | - | - | 74 | -18.52 | - | - | 294 | 263 | H |
| | * 15.77771 | 22.27 | ADR | 40.1 | -18 | 44.37 | 54 | -9.63 | - | - | - | - | 294 | 263 | H |
| 4 | 10.52068 | 43.49 | PK-U | 37.7 | -22.5 | 58.69 | - | - | - | - | 68.2 | -9.51 | 197 | 132 | V |
| 6 | * 15.78034 | 32.4 | PK-U | 40.1 | -18 | 54.5 | - | - | 74 | -19.5 | - | - | 189 | 98 | V |
| | * 15.78142 | 20.46 | ADR | 40.1 | -18 | 42.56 | 54 | -11.44 | - | - | - | - | 189 | 98 | V |

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK-U - U-NII: Maximum Peak
ADR - U-NII AD primary method, RMS average

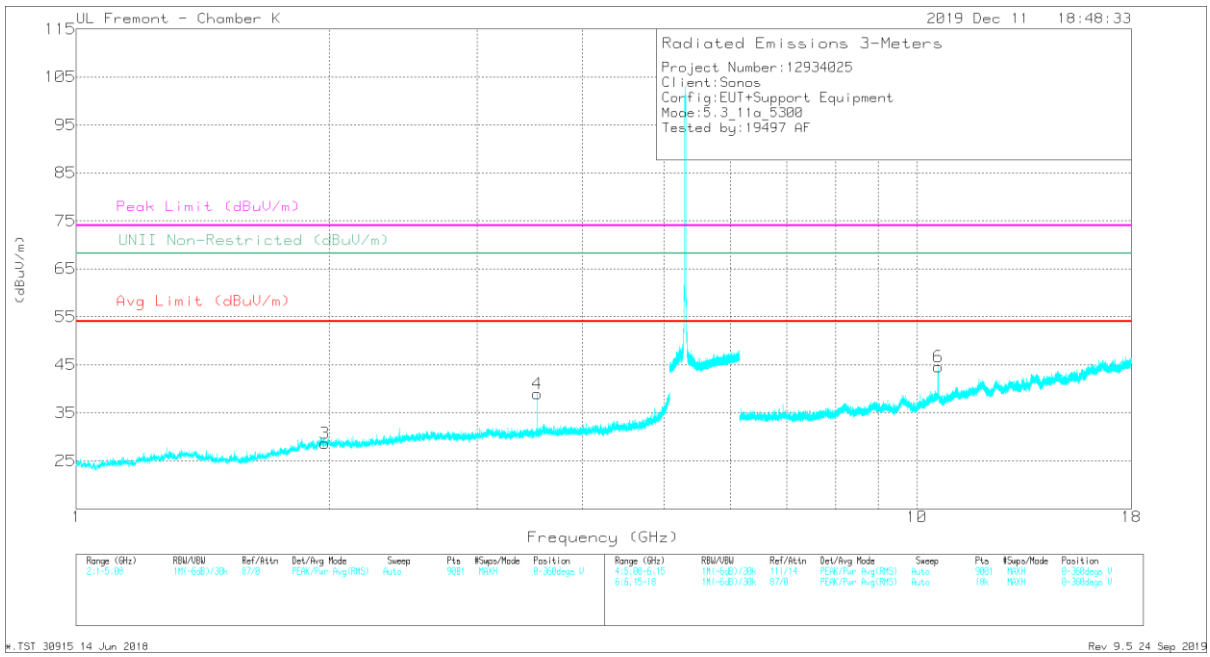


UL VERIFICATION SERVICES INC.
47173 Benicia Street, Fremont, CA 94538; USA TEL:(510) 319-4000 FAX:(510) 661-0888

## MID CHANNEL RESULTS




**HORIZONTAL**




**VERTICAL**

## RADIATED EMISSIONS

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF EMC4294 (dB/m) | Amp/Cbl/Fltr/Pad (dB) | DC Corr (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | UNII Non-Restricted (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | * 3.53304 | 39.86 | PK-U | 33.1 | -32.6 | 0 | 40.36 | - | - | 74 | -33.64 | - | - | 26 | 106 | H |
| | * 3.5333 | 31.18 | ADR | 33.1 | -32.6 | 0 | 31.68 | 54 | -22.32 | - | - | - | - | 26 | 106 | H |
| 1 | 1.94376 | 40.64 | PK-U | 31.3 | -35.2 | 0 | 36.74 | - | - | - | - | 68.2 | -31.46 | 0 | 147 | H |
| 4 | * 3.53334 | 42.74 | PK-U | 33.1 | -32.6 | 0 | 43.24 | - | - | 74 | -30.76 | - | - | 300 | 112 | V |
| | * 3.53334 | 37.8 | ADR | 33.1 | -32.6 | 0 | 38.3 | 54 | -15.7 | - | - | - | - | 300 | 112 | V |
| 3 | 1.97472 | 40.71 | PK-U | 31.6 | -35.2 | 0 | 37.11 | - | - | - | - | 68.2 | -31.09 | 103 | 196 | V |
| 5 | 10.59758 | 37.35 | PK-U | 37.8 | -22.5 | 0 | 52.65 | - | - | - | - | 68.2 | -15.55 | 251 | 197 | H |
| 6 | * 11.57545 | 31.32 | PK-U | 38.4 | -20.9 | 0 | 48.82 | - | - | 74 | -25.18 | - | - | 180 | 105 | V |
| | * 11.83731 | 20.83 | ADR | 38.7 | -20.8 | 0 | 38.73 | 54 | -15.27 | - | - | - | - | 180 | 105 | V |

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

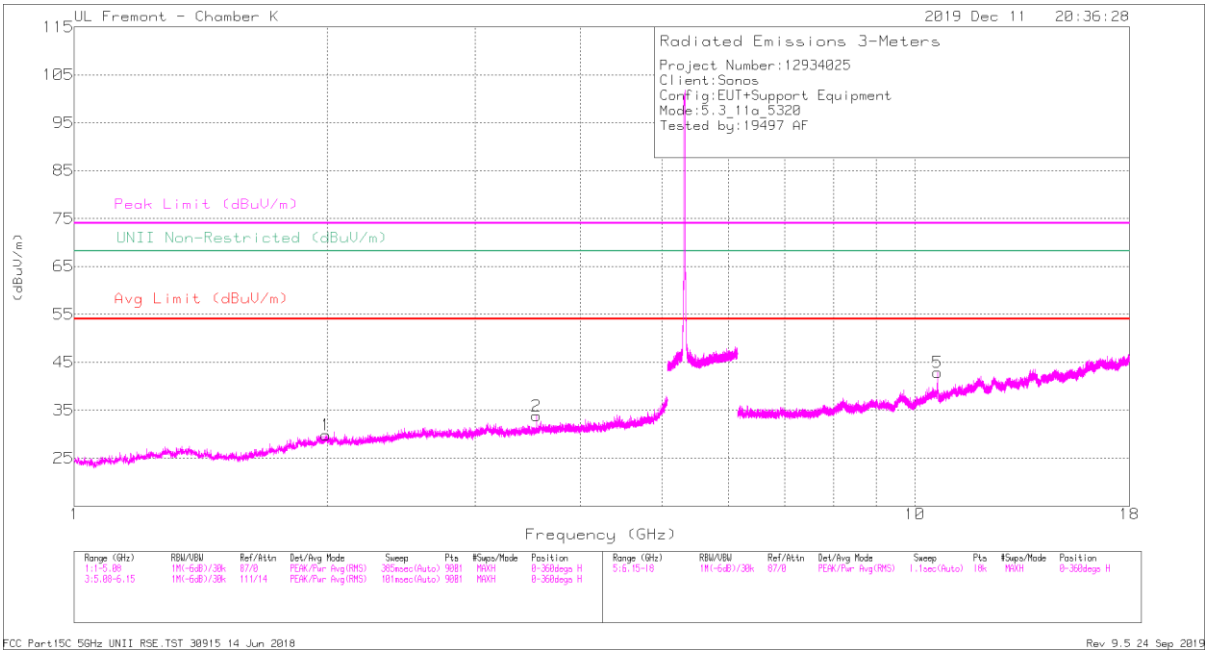
PK-U - U-NII: Maximum Peak

ADR - U-NII AD primary method, RMS average

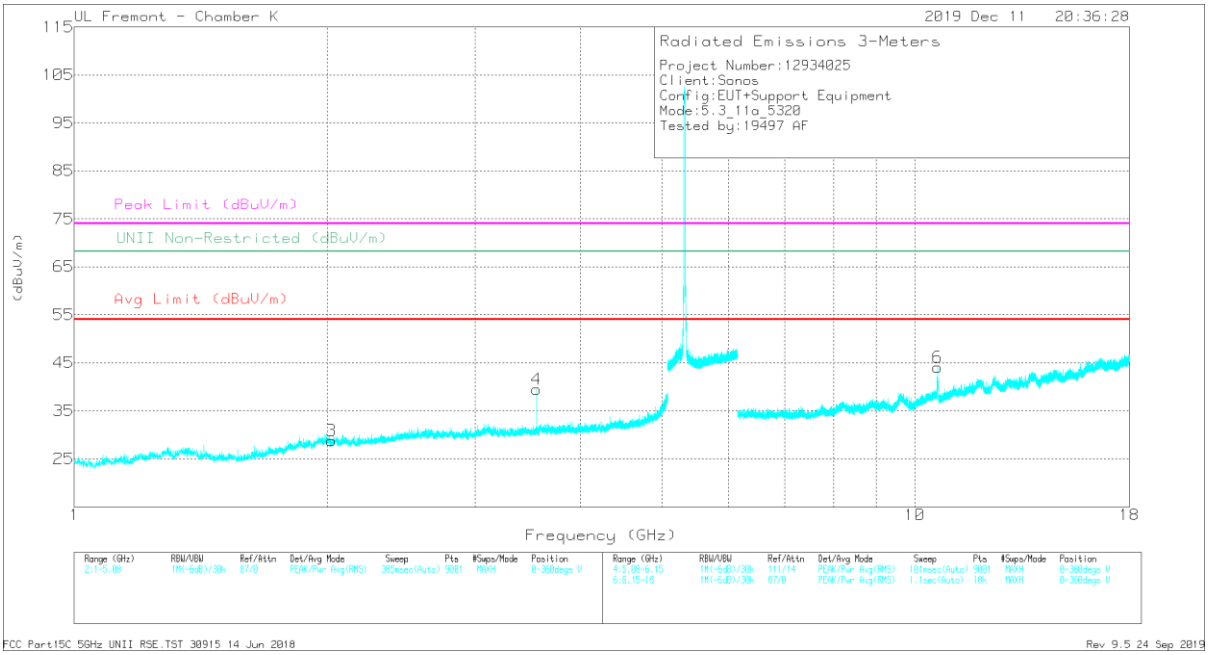


UL VERIFICATION SERVICES INC.
47173 Benicia Street, Fremont, CA 94538; USA TEL:(510) 319-4000 FAX:(510) 661-0888

## HIGH CHANNEL RESULTS




**HORIZONTAL**




**VERTICAL**

## RADIATED EMISSIONS

| Markers | Frequency (GHz) | Meter Reading (dBuV) | Det | AF EMC4294 (dB/m) | Amp/Cbl/Fltr/Pad (dB) | DC Corr (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | UNII Non-Restricted (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.99103 | 40.88 | PK-U | 31.6 | -35.2 | 0 | 37.28 | - | - | - | - | 68.2 | -30.92 | 314 | 251 | H |
| 2 | * 3.54691 | 39.9 | PK-U | 33.2 | -32.5 | 0 | 40.6 | - | - | 74 | -33.4 | - | - | 261 | 301 | H |
| | * 3.54666 | 30.67 | ADR | 33.2 | -32.5 | 0 | 31.37 | 54 | -22.63 | - | - | - | - | 261 | 301 | H |
| 4 | * 3.54668 | 43.25 | PK-U | 33.2 | -32.5 | 0 | 43.95 | - | - | 74 | -30.05 | - | - | 299 | 122 | V |
| | * 3.54665 | 38.18 | ADR | 33.2 | -32.5 | 0 | 38.88 | 54 | -15.12 | - | - | - | - | 299 | 122 | V |
| 3 | 2.0231 | 41.01 | PK-U | 31.4 | -35.1 | 0 | 37.31 | - | - | - | - | 68.2 | -30.89 | 103 | 173 | V |
| 5 | * 10.63698 | 38.95 | PK-U | 37.8 | -22.8 | 0 | 53.95 | - | - | 74 | -20.05 | - | - | 252 | 207 | H |
| | * 10.63763 | 28.49 | ADR | 37.8 | -22.8 | 0 | 43.49 | 54 | -10.51 | - | - | - | - | 252 | 207 | H |
| 6 | * 10.63624 | 40.36 | PK-U | 37.8 | -22.8 | 0 | 55.36 | - | - | 74 | -18.64 | - | - | 222 | 99 | V |
| | * 10.63787 | 28.3 | ADR | 37.9 | -22.8 | 0 | 43.4 | 54 | -10.6 | - | - | - | - | 222 | 99 | V |

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK-U - U-NII: Maximum Peak
ADR - U-NII AD primary method, RMS average



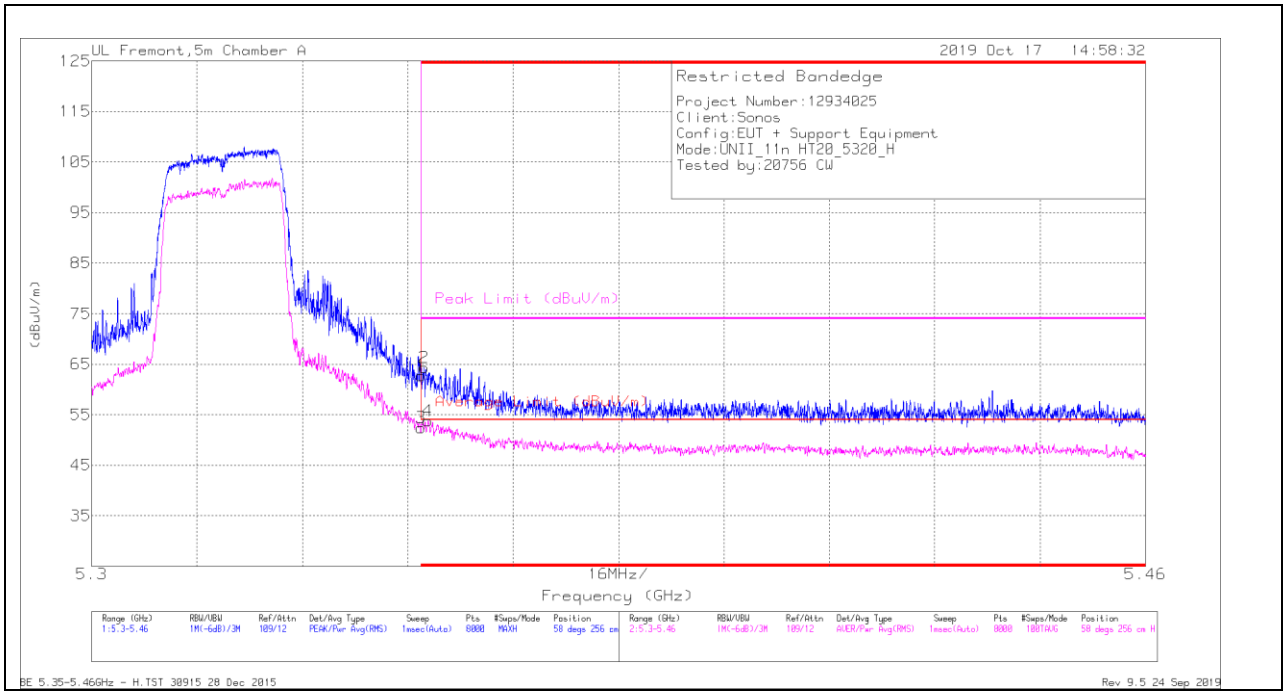
UL VERIFICATION SERVICES INC.
47173 Benicia Street, Fremont, CA 94538; USA TEL:(510) 319-4000 FAX:(510) 661-0888

## 9.1.4. TX ABOVE 1 GHz 802.11n HT20 MODE IN THE 5.3 GHz BAND

**4TX Antenna 1 + Antenna 2 + Antenna 3 + Antenna 4 CDD MODE**

## BANDEDGE (HIGH CHANNEL)

### HORIZONTAL RESULT

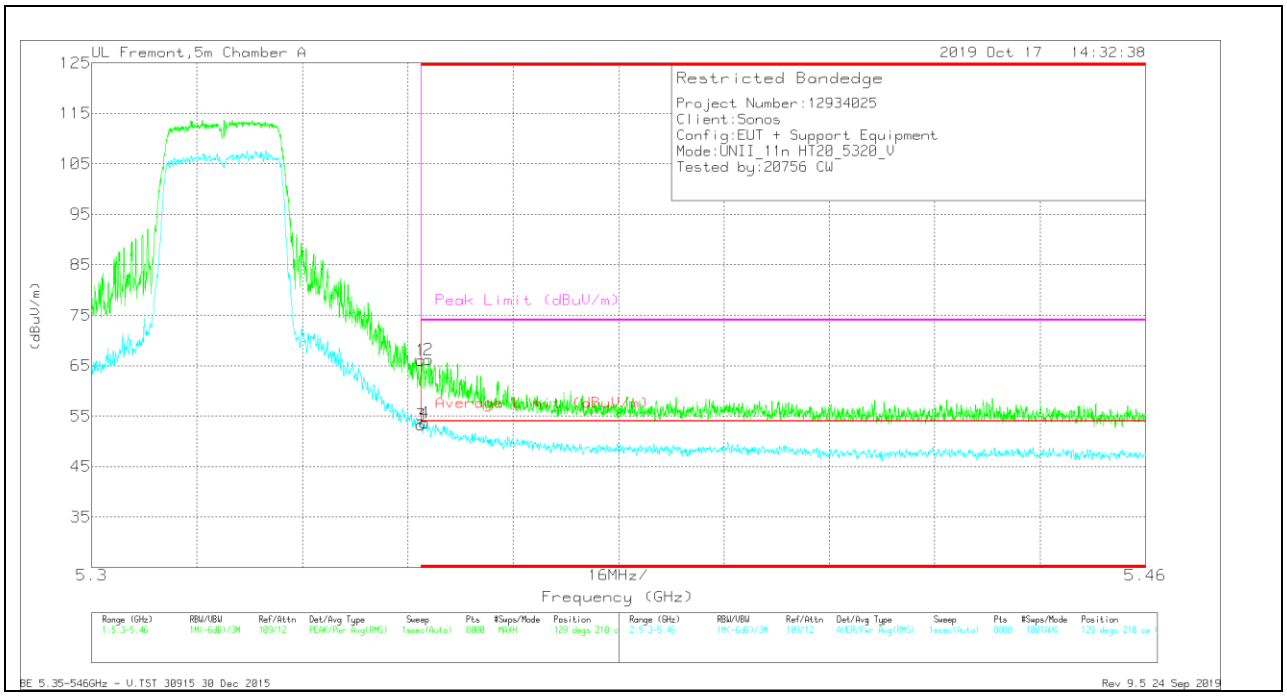



### Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T346 (dB/m) | Amp/Cbl/Fltr/Pad (dB) | DC Corr (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | * 5.35001 | 45.4 | Pk | 35 | -17.7 | 0 | 62.7 | - | - | 74 | -11.3 | 58 | 256 | H |
| 2 | * 5.35047 | 47.04 | Pk | 35 | -17.7 | 0 | 64.34 | - | - | 74 | -9.66 | 58 | 256 | H |
| 3 | * 5.35001 | 34.78 | RMS | 35 | -17.7 | .31 | 52.39 | 54 | -1.61 | - | - | 58 | 256 | H |
| 4 | * 5.35109 | 36.2 | RMS | 35 | -17.7 | .31 | 53.81 | 54 | -.19 | - | - | 58 | 256 | H |

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

## VERTICAL RESULT



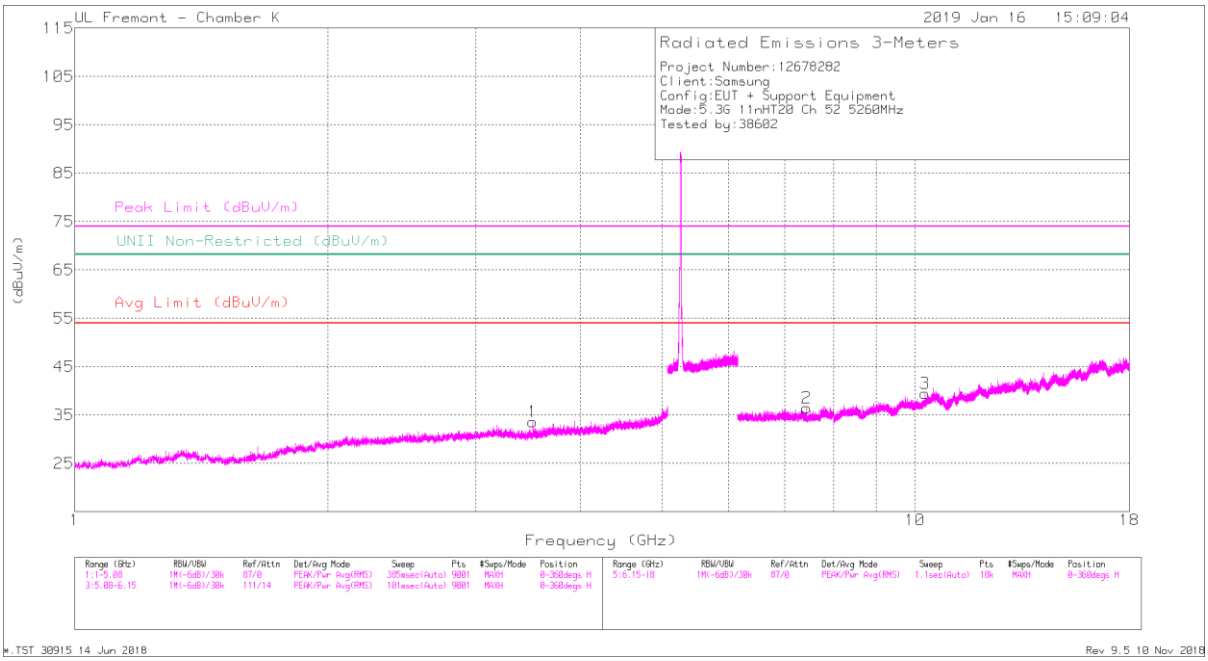

### Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T346 (dB/m) | Amp/Cbl/Fltr/Pad (dB) | DC Corr (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | * 5.35001 | 48.8 | Pk | 35 | -17.7 | 0 | 66.1 | - | - | 74 | -7.9 | 129 | 210 | V |
| 2 | * 5.35117 | 48.92 | Pk | 35 | -17.7 | 0 | 66.22 | - | - | 74 | -7.78 | 129 | 210 | V |
| 3 | * 5.35001 | 35.61 | RMS | 35 | -17.7 | .31 | 53.22 | 54 | -.78 | - | - | 129 | 210 | V |
| 4 | * 5.35055 | 36.09 | RMS | 35 | -17.7 | .31 | 53.7 | 54 | -.3 | - | - | 129 | 210 | V |

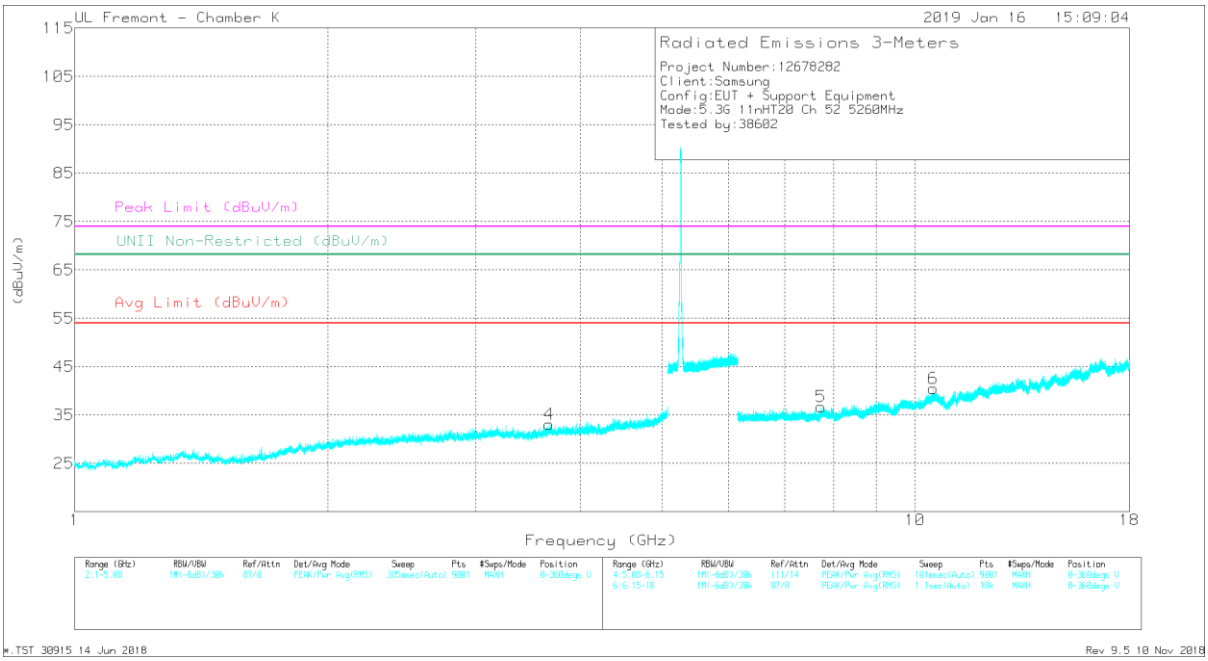
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

## HARMONICS AND SPURIOUS EMISSIONS

### LOW CHANNEL RESULTS




**HORIZONTAL**




**VERTICAL**