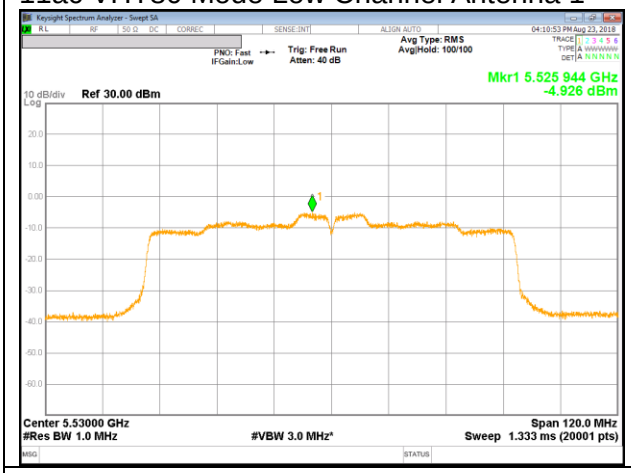
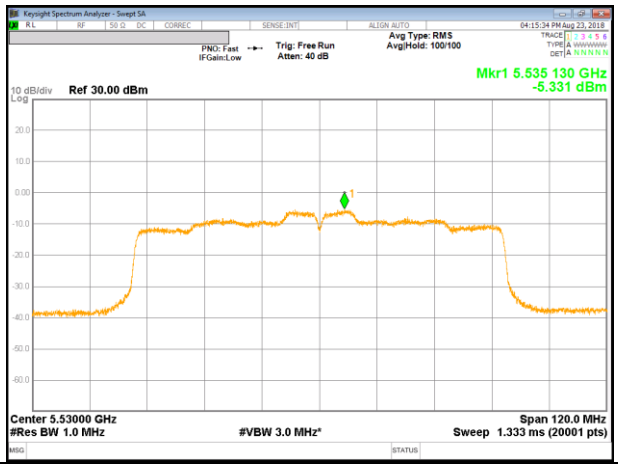
## UNII 5.5 GHz IEEE 802.11ac VHT80 mode PSD

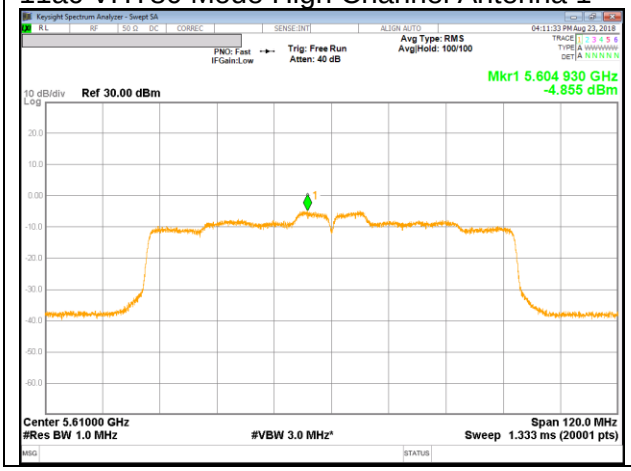
11ac VHT80 Mode Low Channel Antenna 1



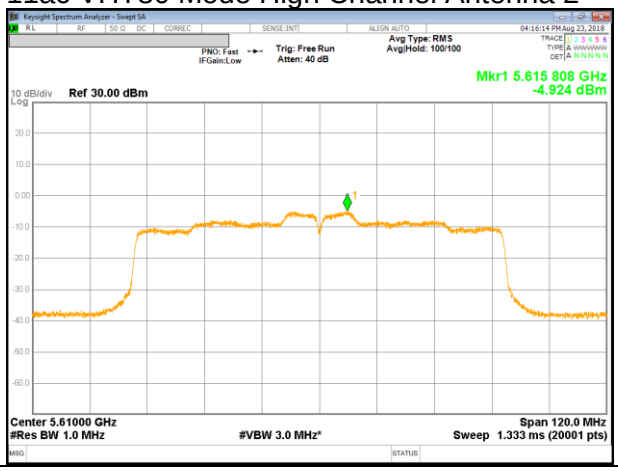

11ac VHT80 Mode Low Channel Antenna 2




11ac VHT80 Mode High Channel Antenna 1




11ac VHT80 Mode High Channel Antenna 2





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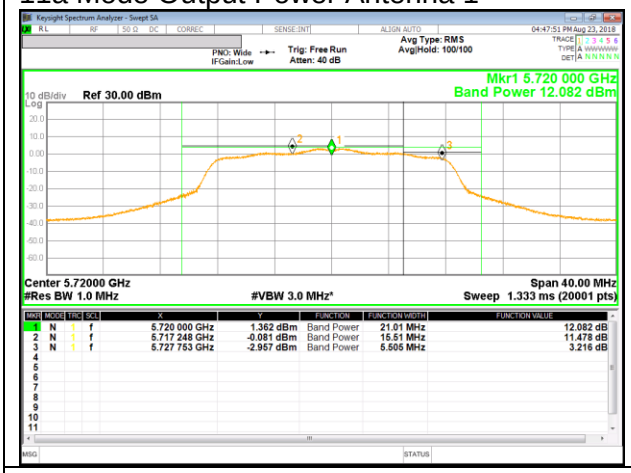
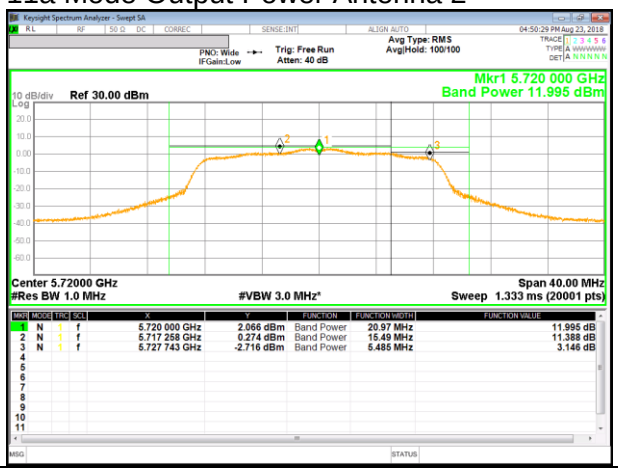
## UNII Straddle Ch. IEEE 802.11a mode Ourput Power and PSD

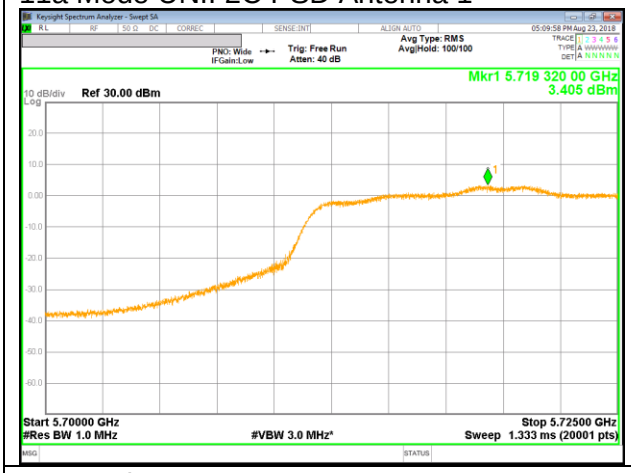
11a Mode Output Power Antenna 1




11a Mode Output Power Antenna 2




11a Mode UNII 2C PSD Antenna 1

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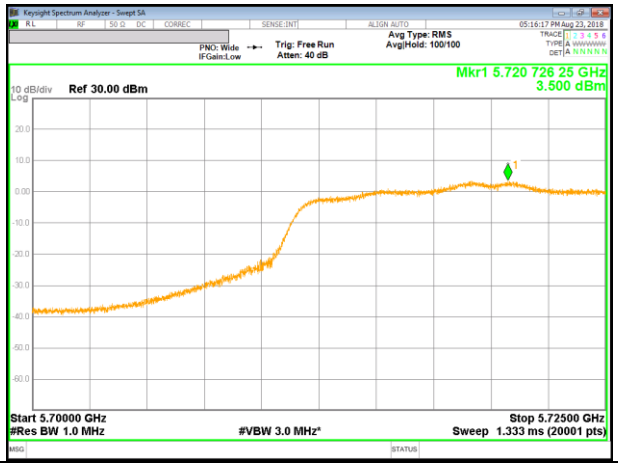
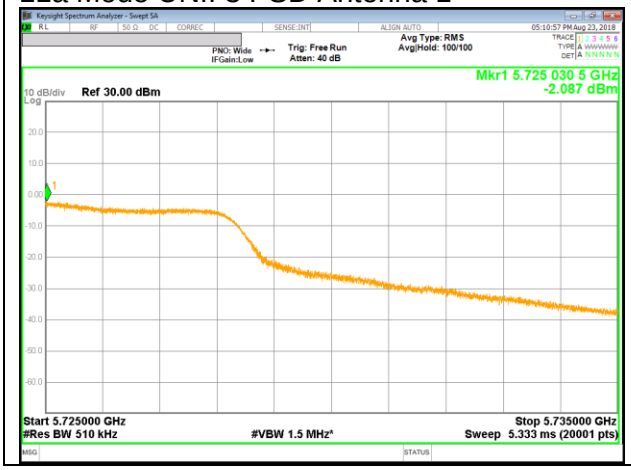



11a Mode UNII 3 PSD Antenna 1

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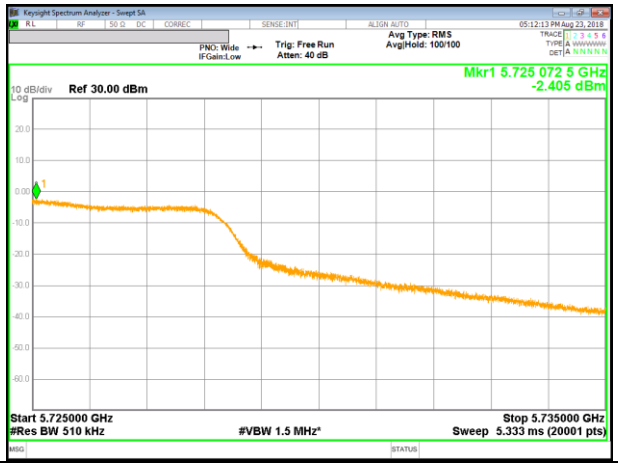



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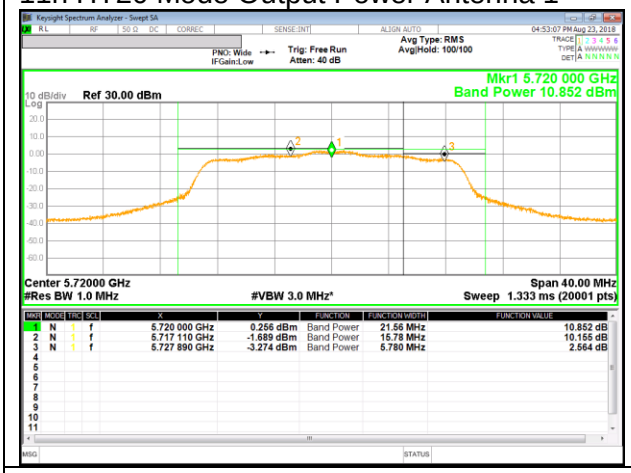
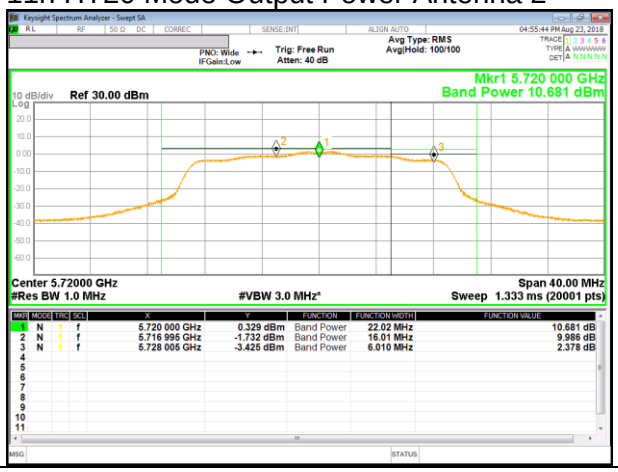
## UNII Straddle Ch. IEEE 802.11n HT20 mode Ourput Power and PSD

11n HT20 Mode Output Power Antenna 1




11n HT20 Mode Output Power Antenna 2

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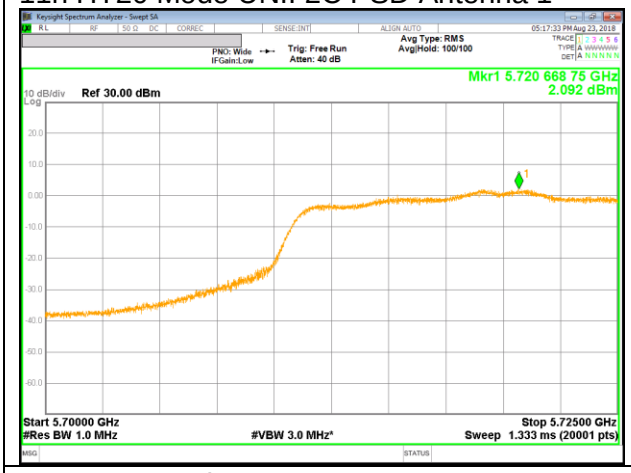


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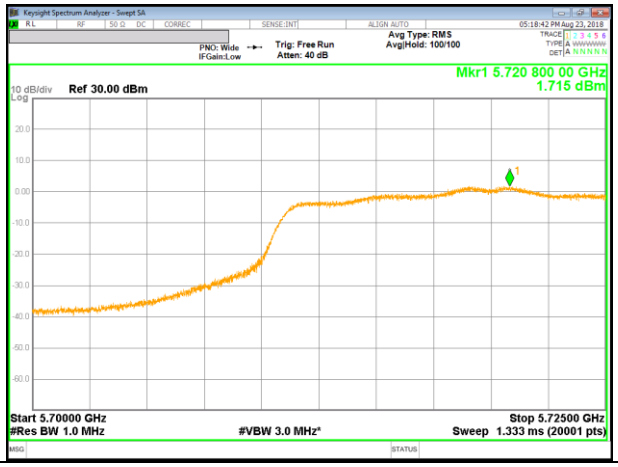


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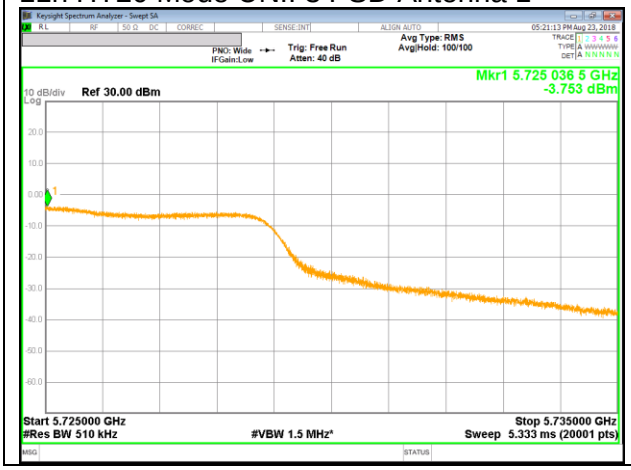


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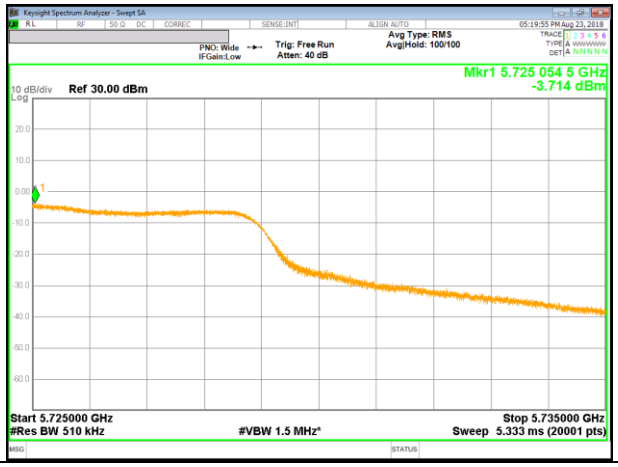




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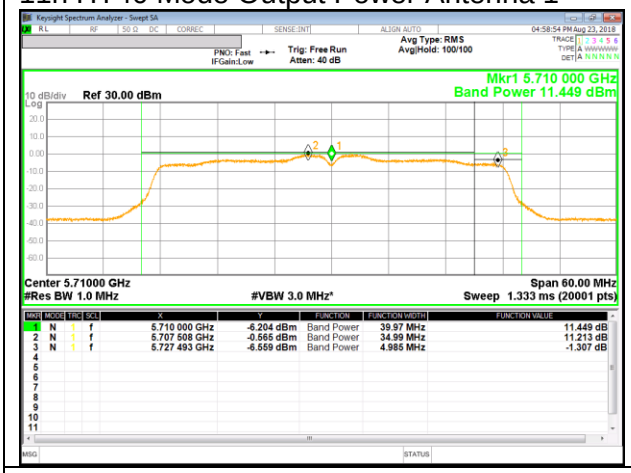
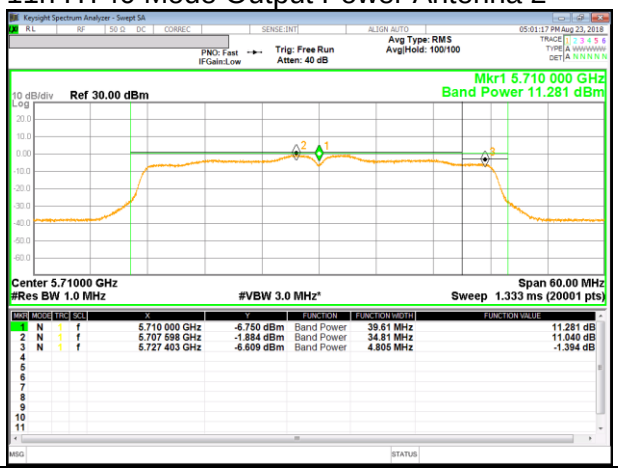
## UNII Straddle Ch. IEEE 802.11n HT40 mode Ourput Power and PSD

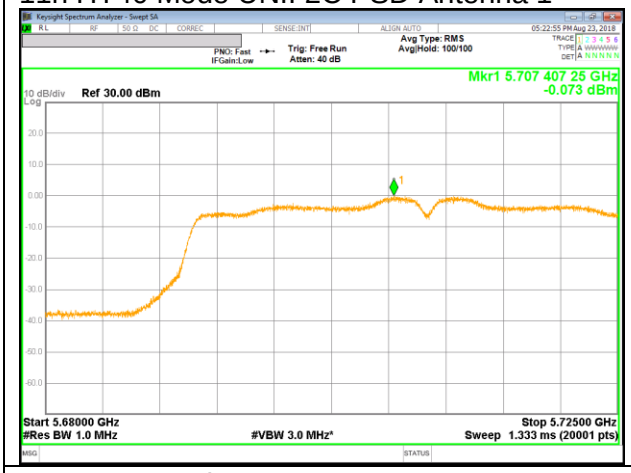
11n HT40 Mode Output Power Antenna 1




11n HT40 Mode Output Power Antenna 2




11n HT40 Mode UNII 2C PSD Antenna 1

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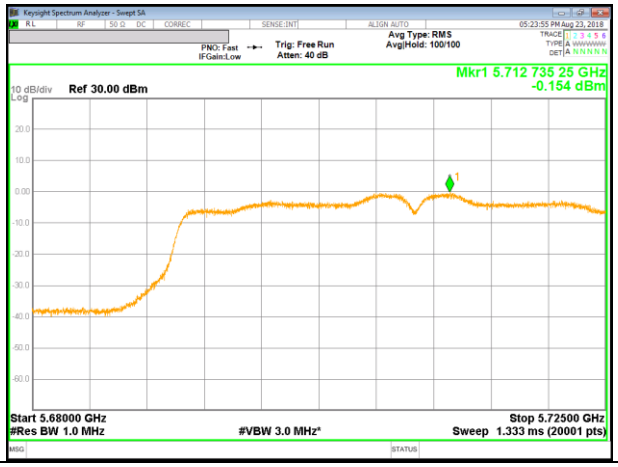


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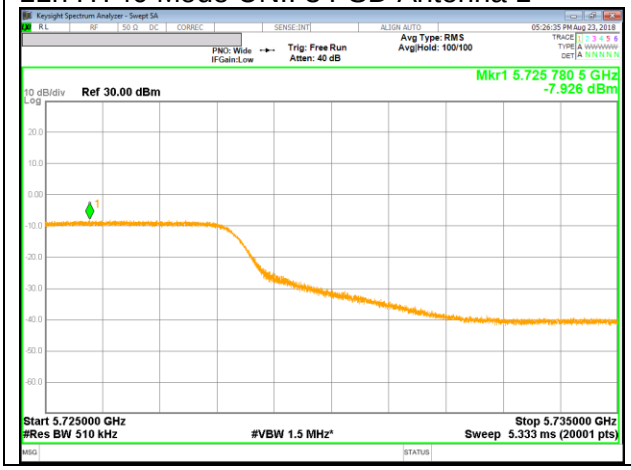


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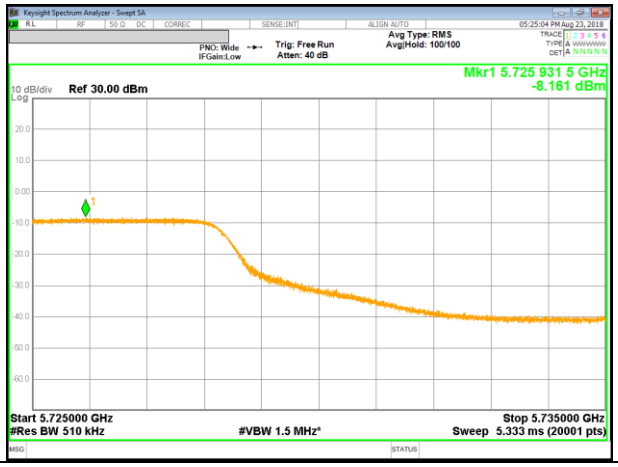




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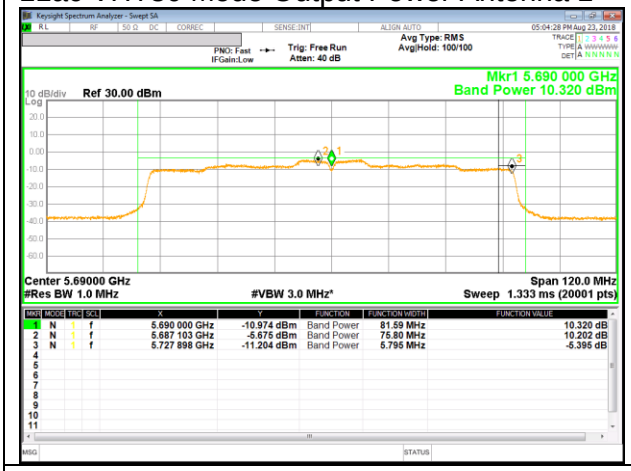
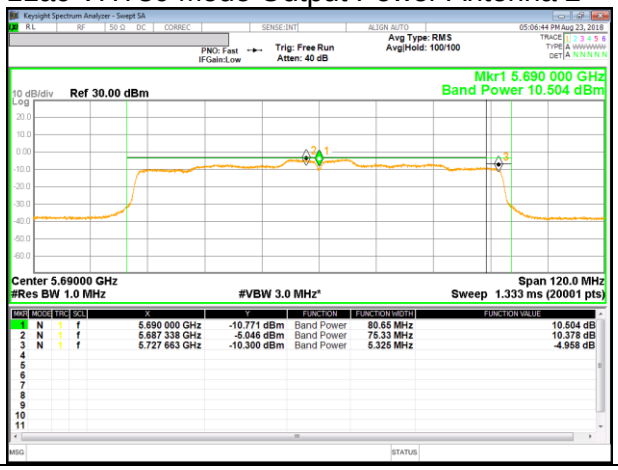
## UNII Straddle Ch. IEEE 802.11ac VHT80 mode Ourput Power and PSD

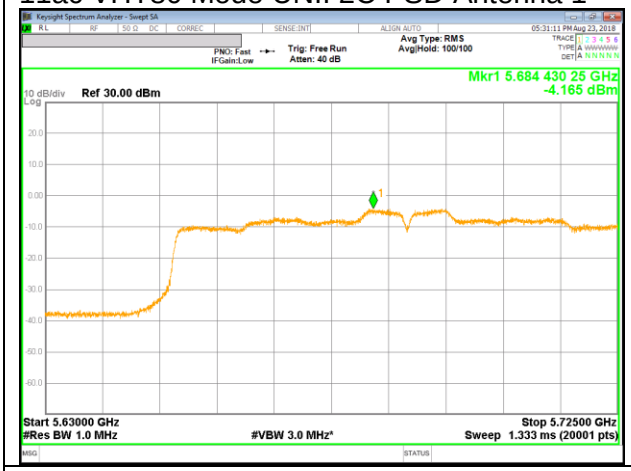
11ac VHT80 Mode Output Power Antenna 1




11ac VHT80 Mode Output Power Antenna 2




11ac VHT80 Mode UNII 2C PSD Antenna 1

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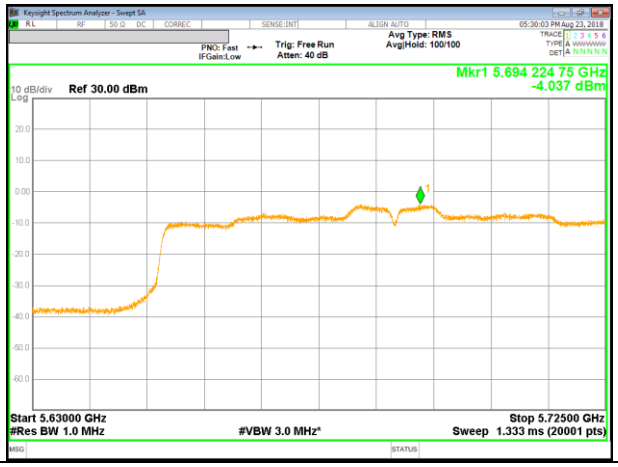
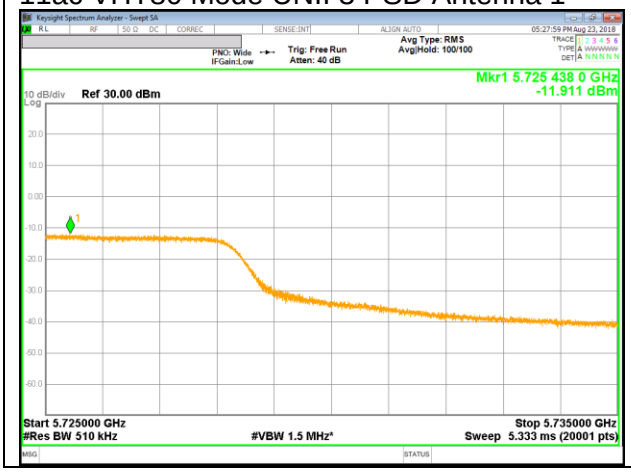
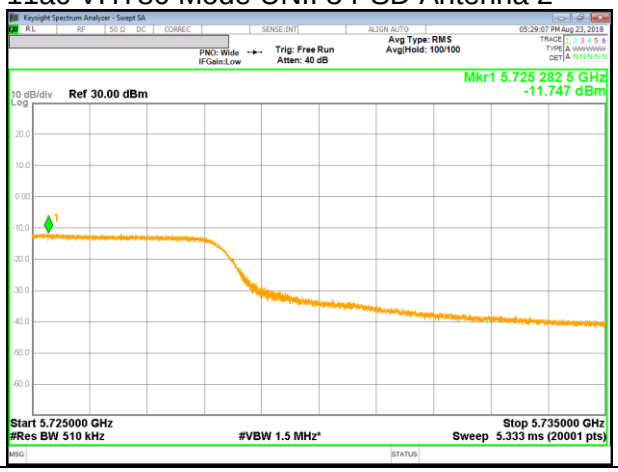



11ac VHT80 Mode UNII 3 PSD Antenna 1




11ac VHT80 Mode UNII 3 PSD Antenna 2





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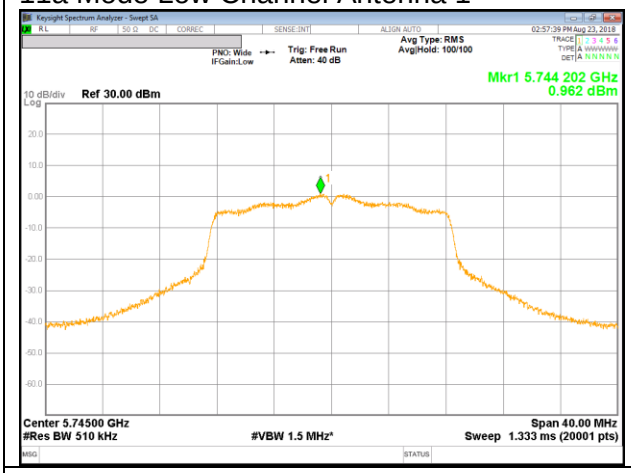
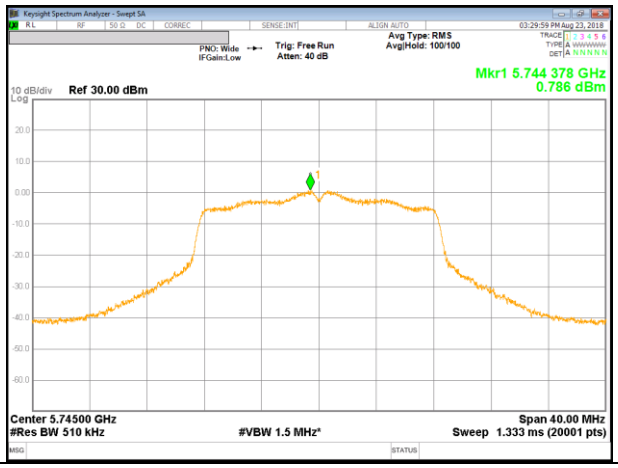
## UNII 5.8 GHz IEEE 802.11a mode PSD

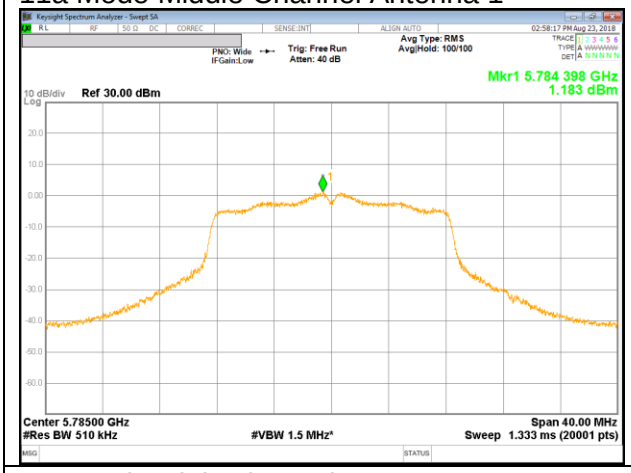
11a Mode Low Channel Antenna 1



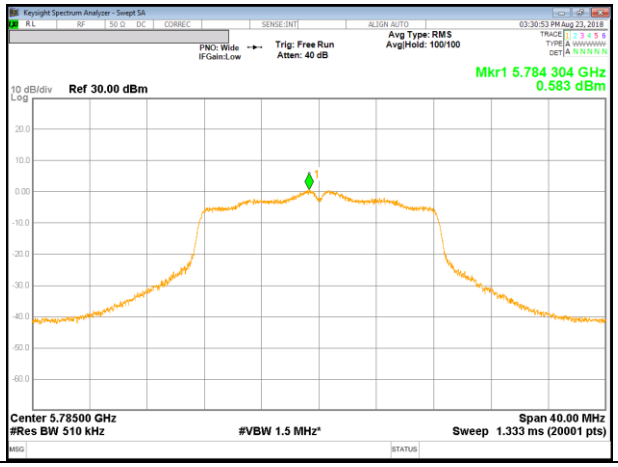

11a Mode Low Channel Antenna 2



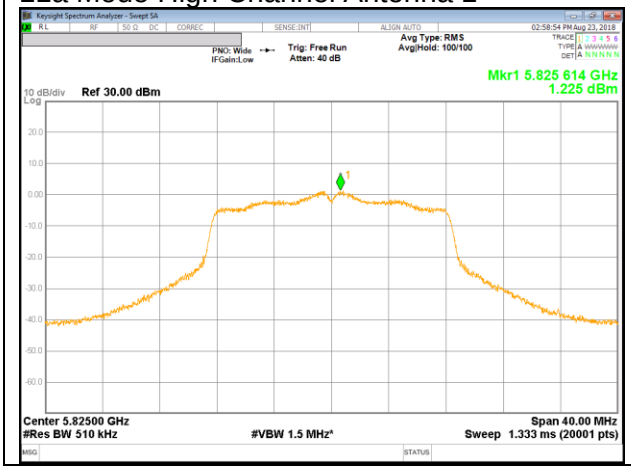

11a Mode Middle Channel Antenna 1



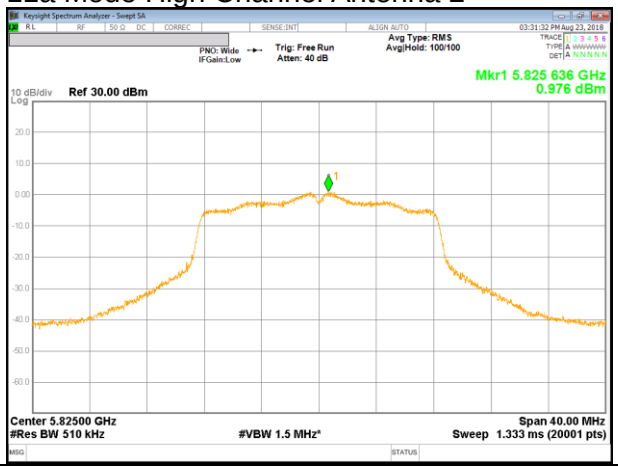

11a Mode Middle Channel Antenna 2




11a Mode High Channel Antenna 1




11a Mode High Channel Antenna 2





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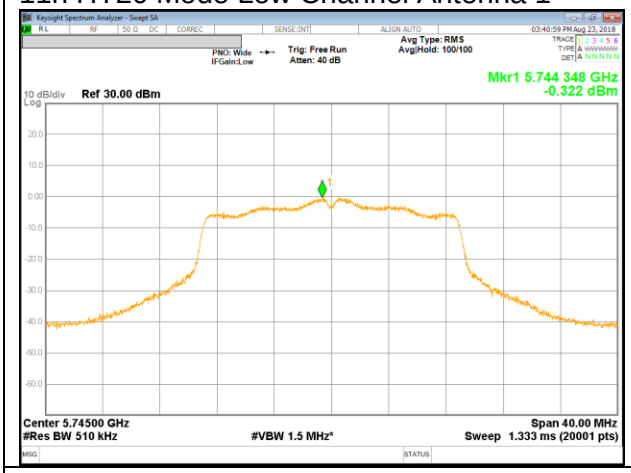
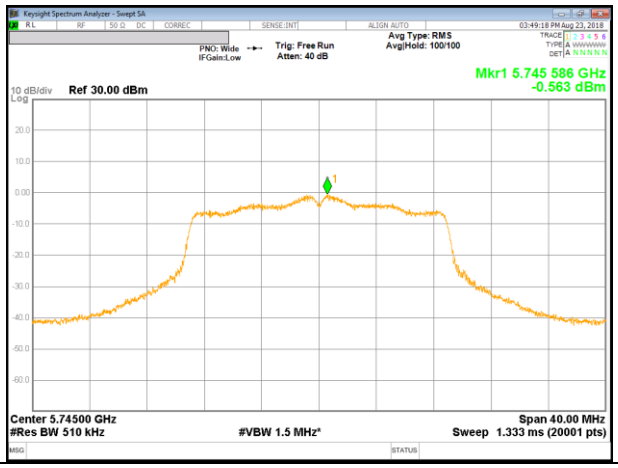
## UNII 5.8 GHz IEEE 802.11n HT20 mode mode PSD

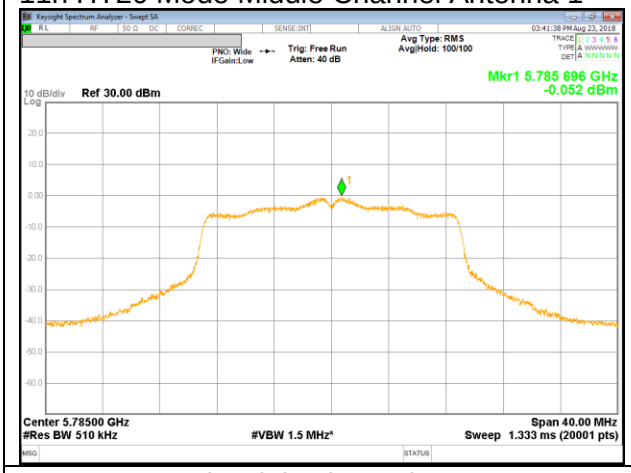
11n HT20 Mode Low Channel Antenna 1



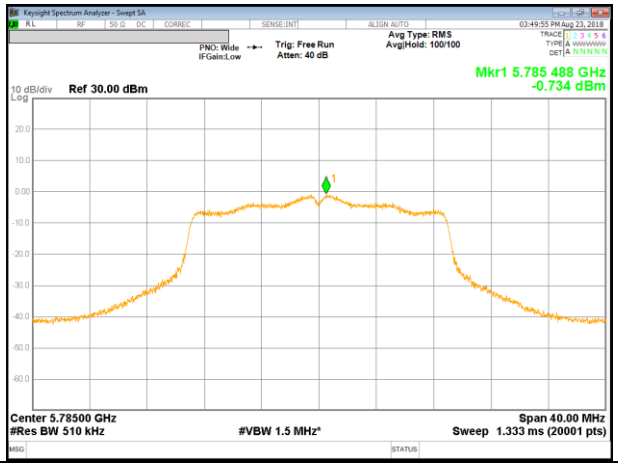

11n HT20 Mode Low Channel Antenna 2



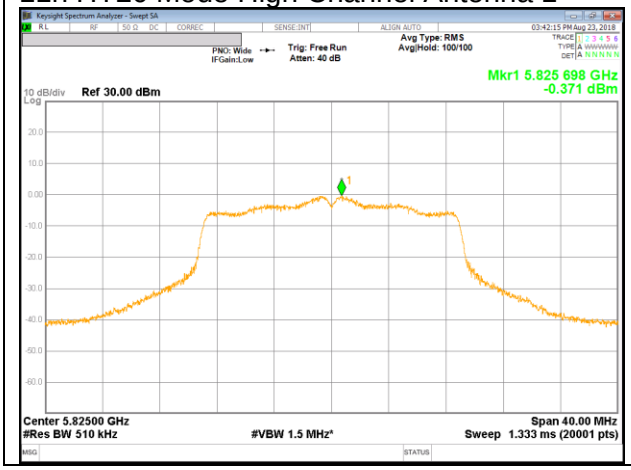

11n HT20 Mode Middle Channel Antenna 1




11n HT20 Mode Middle Channel Antenna 2




11n HT20 Mode High Channel Antenna 1

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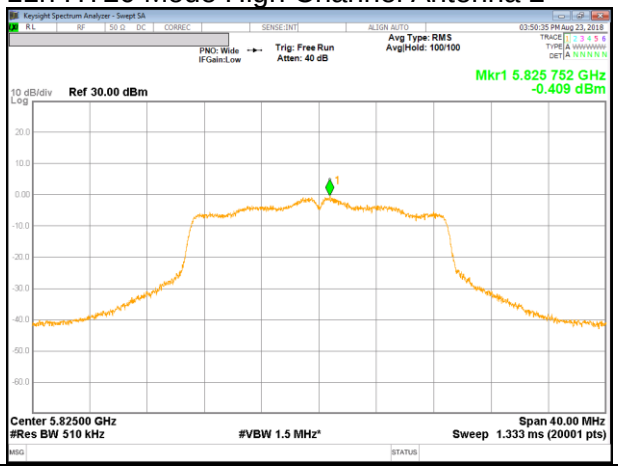



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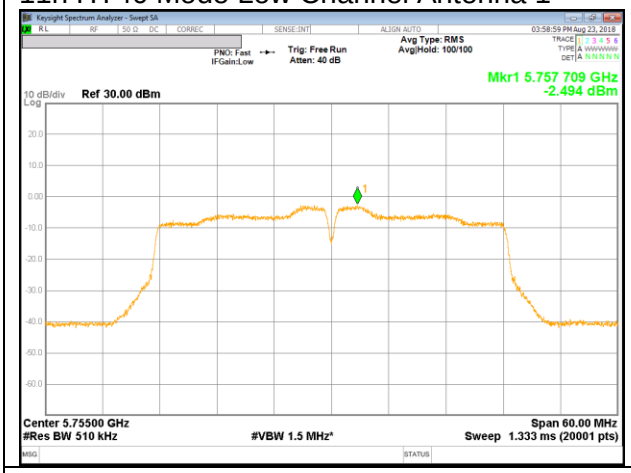
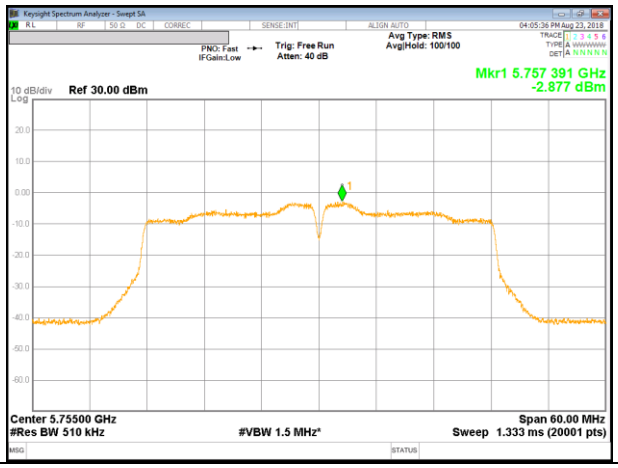
## UNII 5.8 GHz IEEE 802.11n HT40 mode mode PSD

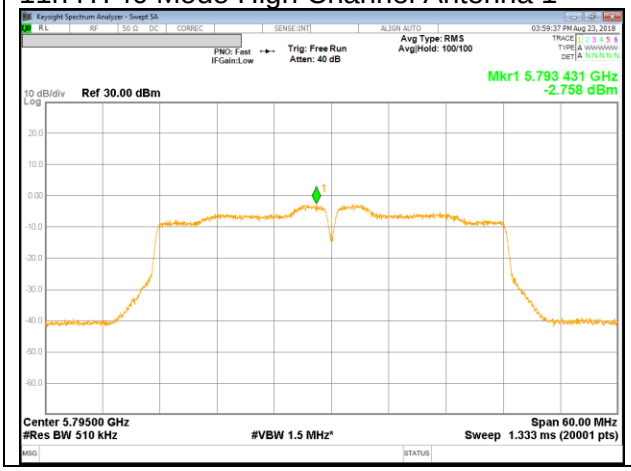
11n HT40 Mode Low Channel Antenna 1




11n HT40 Mode Low Channel Antenna 2




11n HT40 Mode High Channel Antenna 1

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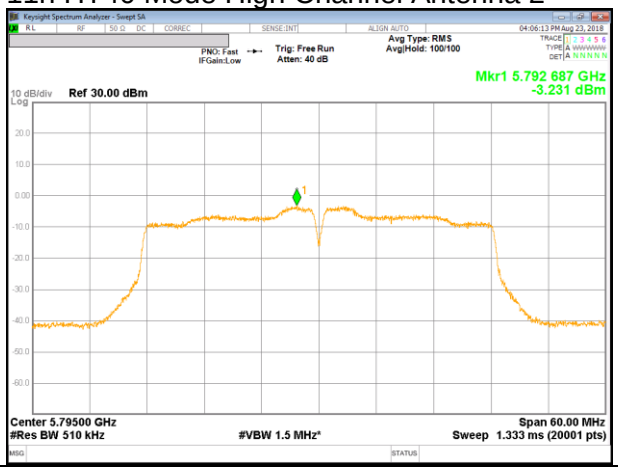
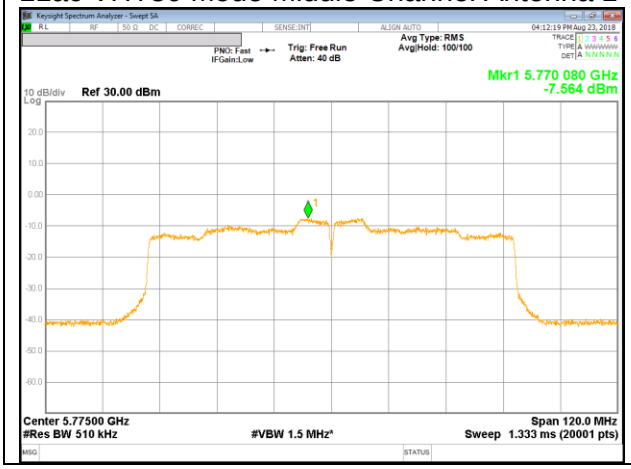
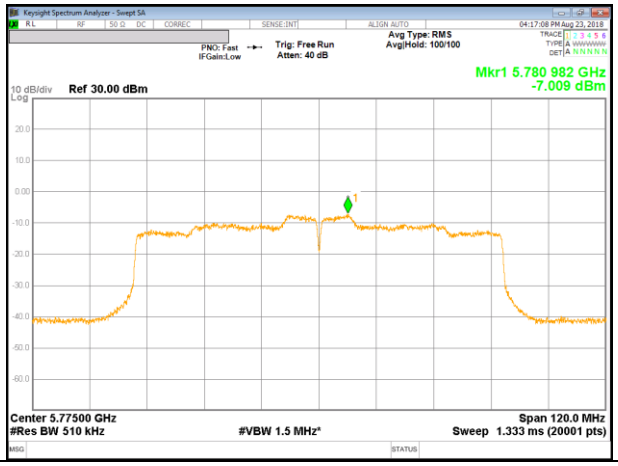



## UNII 5.8 GHz IEEE 802.11ac VHT80 mode mode PSD

11ac VHT80 Mode Middle Channel Antenna 1




11ac VHT80 Mode Middle Channel Antenna 2





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# 11. TRANSMITTER ABOVE 1 GHz

**LIMITS**

FCC §15.205 and §15.209

| Limits for radiated disturbance of an intentional radiator | | |
|---|---|---|
| Frequency range (MHz) | Limits (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 |

** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g. §§ 15.231 and 15.241.

**FCC §15.407 (b)**

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

(1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.
(2) For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.
(3) For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.
(4) For transmitters operating in the 5.725-5.85 GHz band:

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

(5) The emission measurements shall be performed using a minimum resolution bandwidth of 1 MHz. A lower resolution bandwidth may be employed near the band edge, when necessary, provided the measured energy is integrated to show the total power over 1 MHz.


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(6) Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in §15.209. Further, any U-NII devices using an AC power line are required to comply also with the conducted limits set forth in §15.207.
(7) The provisions of §15.205 apply to intentional radiators operating under this section.
(8) When measuring the emission limits, the nominal carrier frequency shall be adjusted as close to the upper and lower frequency band edges as the design of the equipment permits.

**Note**

- Limit translation to field strength level (FCC §15.407)

E[dBuV/m] = EIRP[dBm] + 95.2 = -27dBm + 95.2 = 68.2dBuV/m

E[dBuV/m] = EIRP[dBm] + 95.2 = -17dBm + 95.2 = 78.2dBuV/m


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**TEST PROCEDURE**

The EUT is placed on a non-conducting table 80 cm above the ground plane for below 1GHz and 150 cm for 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.

Reference to KDB 789033 D02 v02r01 UNII part G) 6) c) Method AD:
For measurements above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 3 MHz for peak measurements and add duty cycle factor to the reading offset for average measurements.

Pre-scans to detect harmonic and spurious emissions, the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 30 KHz for peak measurements.

The spectrum from 1GHz to 40 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each applicable band.
(From 30MHz to 1GHz, test was performed with the EUT set to transmit at the channel with highest output power)

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.

Note : Emission was pre-scanned from 9KHz to 30MHz; No emissions were detected which was at least 20dB below the specification limit (consider distance correction factor).
Per FCC part 15.31(o), test results were not reported.

Although these tests were performed other than open area test site, adequate comparison measurements were confirmed against 30 m open are test site.
Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the one of tests made in an open field based on KDB 414788.


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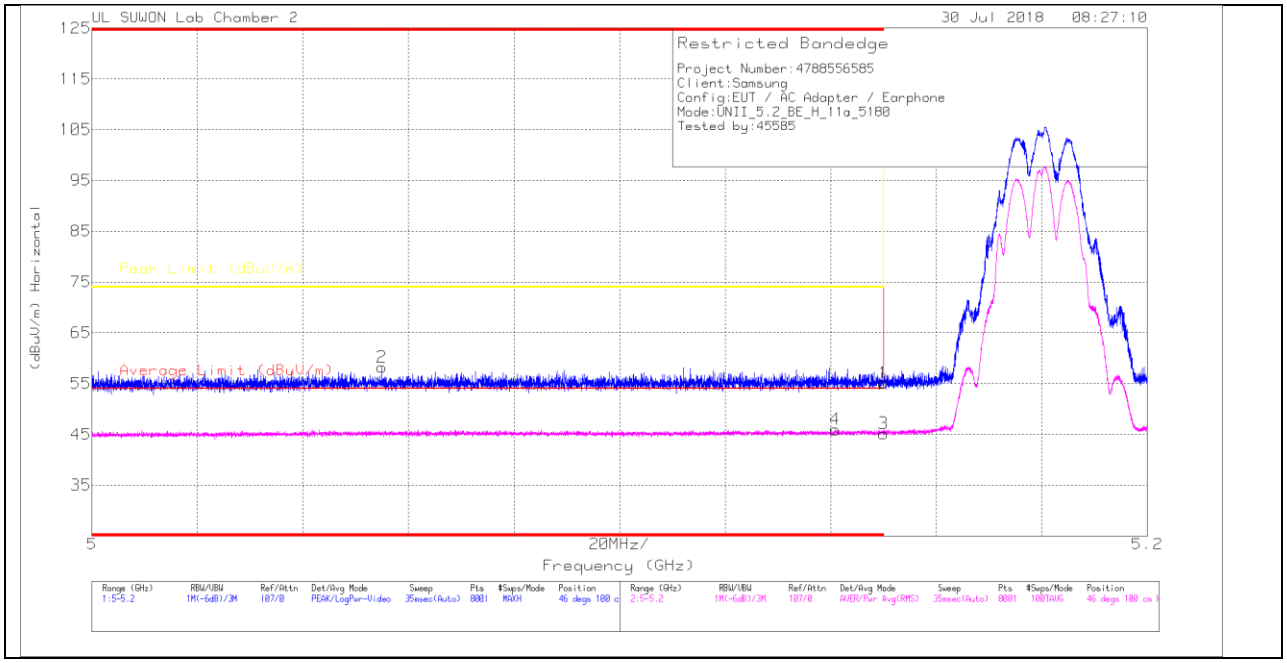
## 11.1. 5.2 GHz

### 11.1.1. TX Above 1GHz 802.11a 2Tx CDD MODE IN THE 5.2GHz BAND

### RESTRICTED BANDEDGE (LOW CHANNEL)

**HORIZONTAL PEAK AND AVERAGE PLOT**




**HORIZONTAL DATA**

Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 170531_3117[00168724] | 10dB[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 | 5.15 | 36.42 | Pk | 34 | -15.3 | 0 | 55.12 | - | - | 74 | -18.88 | 46 | 100 | H |
| 2 | * 5.055 | 39.57 | Pk | 33.9 | -15.2 | 0 | 58.27 | - | - | 74 | -15.73 | 46 | 100 | H |
| 3 | 5.15 | 26.49 | RMS | 34 | -15.3 | 0 | 45.19 | 54 | -8.81 | - | - | 46 | 100 | H |
| 4 | * 5.141 | 27.24 | RMS | 34 | -15.3 | 0 | 45.94 | 54 | -8.06 | - | - | 46 | 100 | H |

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



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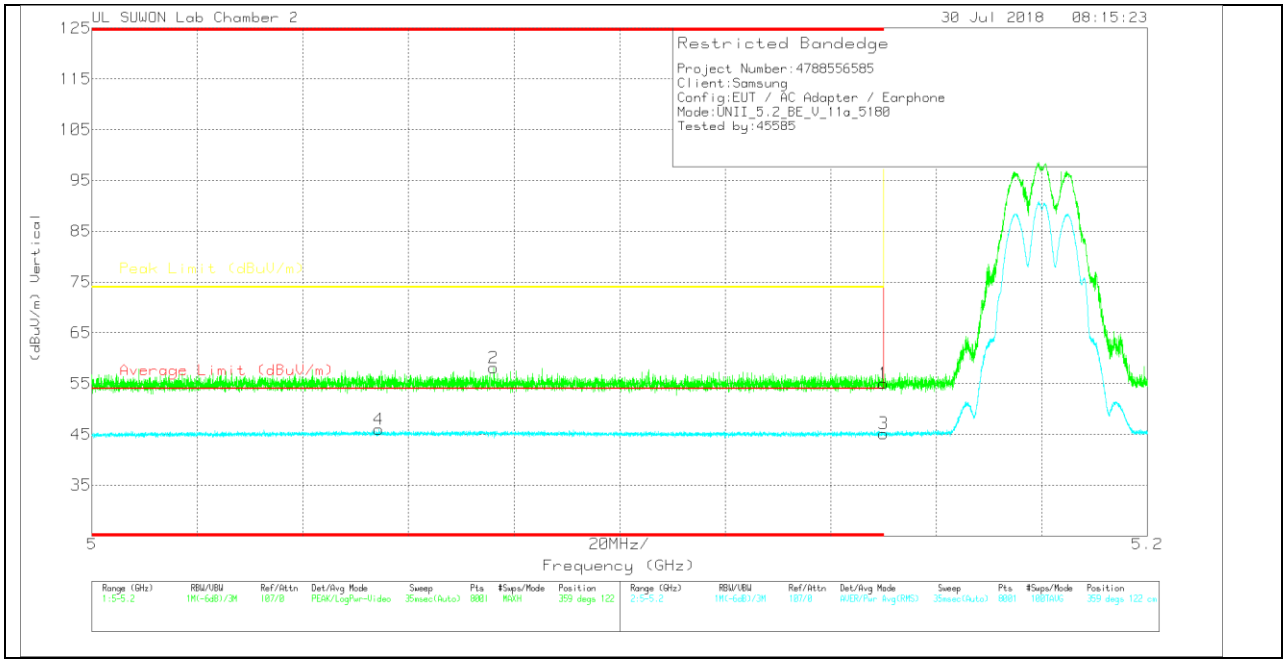
## VERTICAL PEAK AND AVERAGE PLOT




## VERTICAL DATA

Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 170531_3117[00168724] | 10dB[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 | 5.15 | 36.32 | Pk | 34 | -15.3 | 0 | 55.02 | - | - | 74 | -18.98 | 359 | 122 | V |
| 2 | * 5.076 | 39.43 | Pk | 33.9 | -15.2 | 0 | 58.13 | - | - | 74 | -15.87 | 359 | 122 | V |
| 3 | 5.15 | 26.49 | RMS | 34 | -15.3 | 0 | 45.19 | 54 | -8.81 | - | - | 359 | 122 | V |
| 4 | * 5.054 | 27.33 | RMS | 33.9 | -15.2 | 0 | 46.03 | 54 | -7.97 | - | - | 359 | 122 | V |

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection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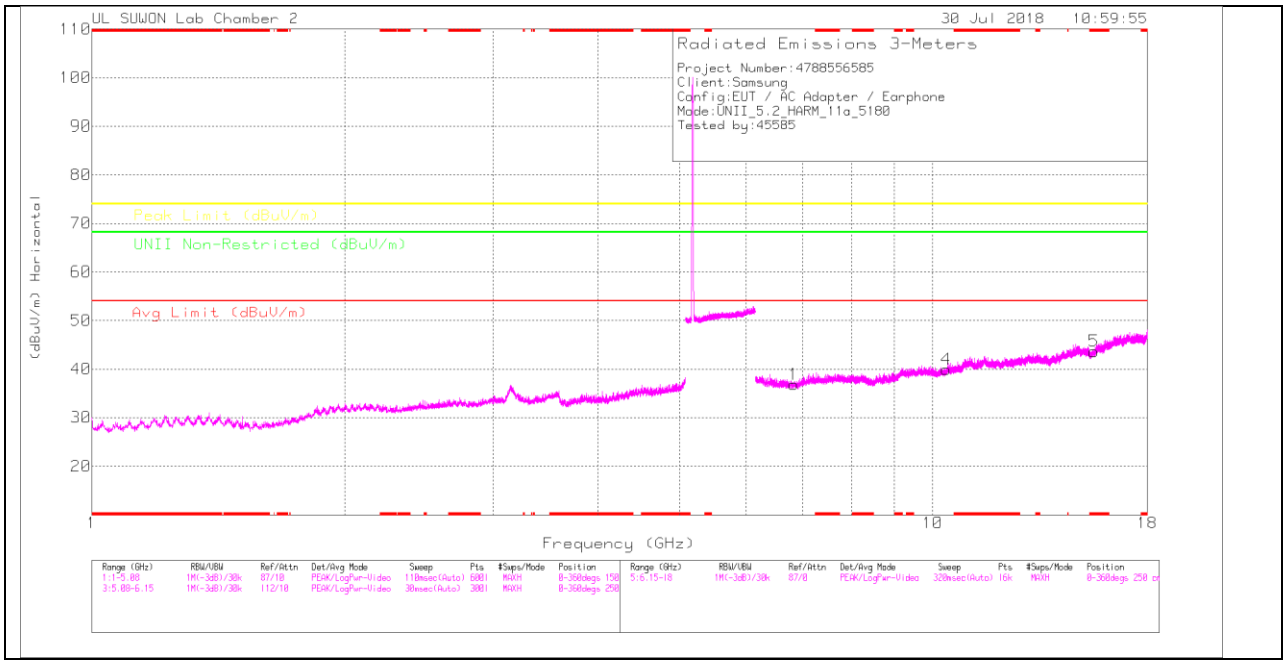
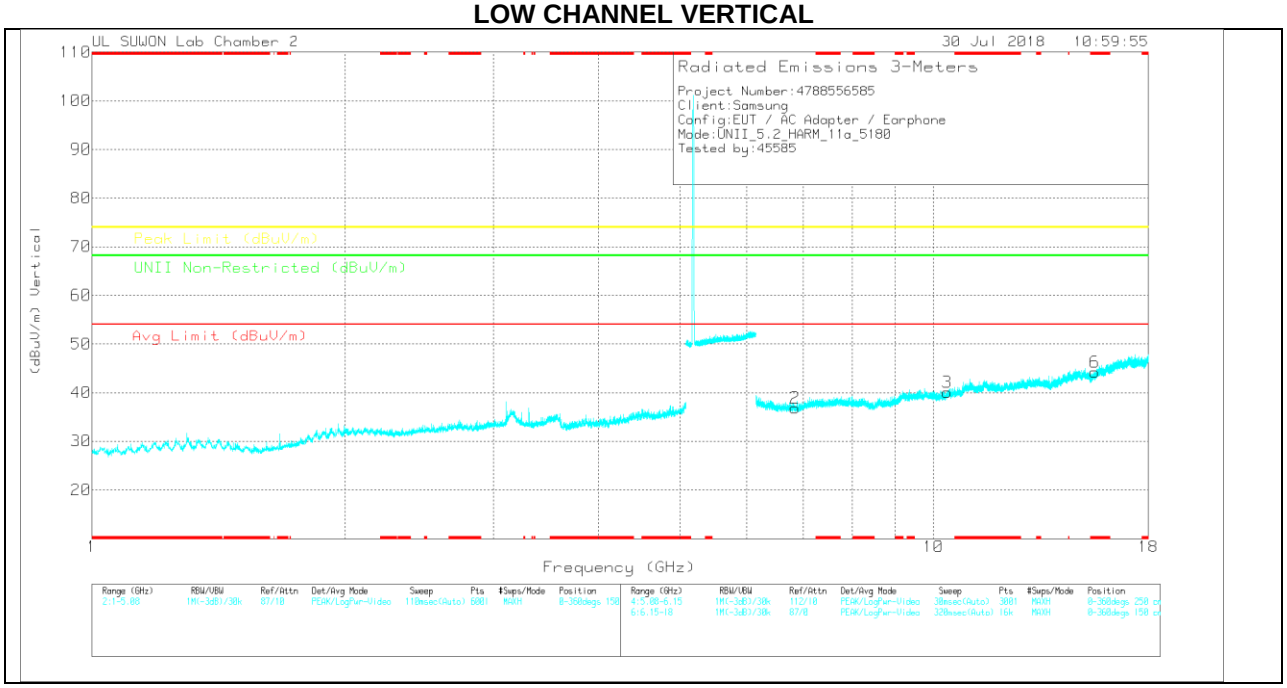
# HARMONICS AND SPURIOUS EMISSIONS

## LOW CHANNEL HORIZONTAL




## LOW CHANNEL VERTICAL




Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.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**LOW CHANNEL DATA**

Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 170531_3117(00168724) | 6GHz_HP[dB] | DC Corr (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | Margin (dB) | UNII Non-Restricted (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 6.837 | 23.39 | PK | 35.4 | -21.9 | 0 | 36.89 | - | - | - | - | 68.2 | -31.31 | 0-360 | 250 | H |
| 4 | 10.378 | 19 | PK | 37.5 | -16.6 | 0 | 39.9 | - | - | - | - | 68.2 | -28.3 | 0-360 | 150 | H |
| 5 | * 15.541 | 18.23 | PK | 39.8 | -14.4 | 0 | 43.63 | - | - | 74 | -30.37 | - | - | 0-360 | 150 | H |
| 2 | 6.849 | 23.36 | PK | 35.4 | -21.9 | 0 | 36.86 | - | - | - | - | 68.2 | -31.34 | 0-360 | 250 | V |
| 3 | 10.378 | 19.17 | PK | 37.5 | -16.6 | 0 | 40.07 | - | - | - | - | 68.2 | -28.13 | 0-360 | 150 | V |
| 6 | * 15.54 | 18.85 | PK | 39.8 | -14.4 | 0 | 44.25 | - | - | 74 | -29.75 | - | - | 0-360 | 150 | V |

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK – Peak Detector

Note: Only peak measurement was performed. Because peak measurement result of unwanted emission is less than average limit (54dBuV/m).


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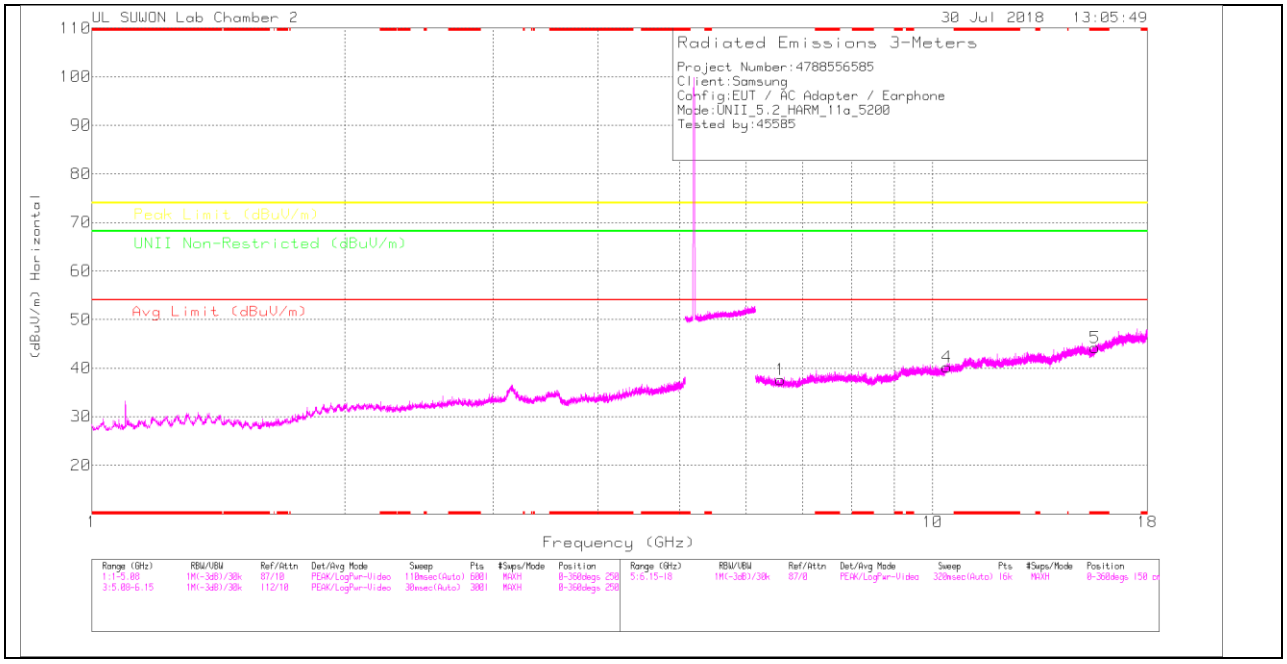
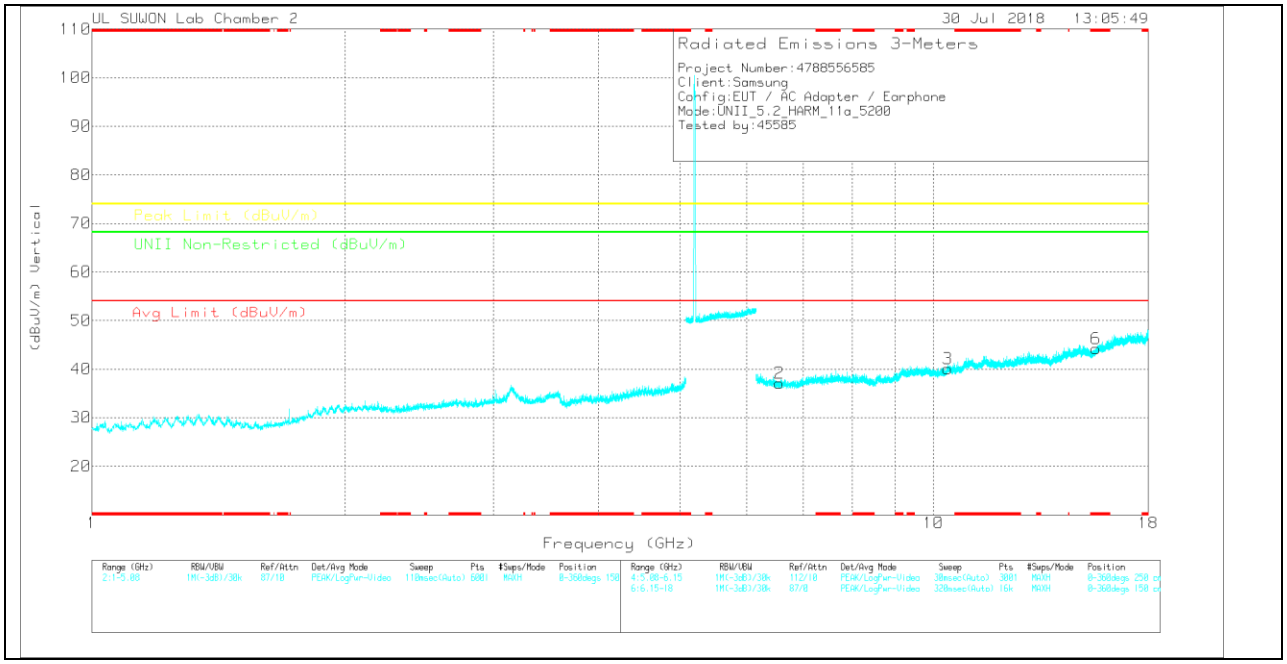
**MID CHANNEL HORIZONTAL**




**MID CHANNEL VERTICAL**




Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.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**MID CHANNEL DATA**

Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 170531_3117(00168724) | 6GHz_HP[dB] | DC Corr (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | Margin (dB) | UNII Non-Restricted (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 6.594 | 24.59 | PK | 35.1 | -22.1 | 0 | 37.59 | - | - | - | - | 68.2 | -30.61 | 0-360 | 150 | H |
| 4 | 10.399 | 19.11 | PK | 37.5 | -16.4 | 0 | 40.21 | - | - | - | - | 68.2 | -27.99 | 0-360 | 150 | H |
| 5 | * 15.599 | 18.89 | PK | 39.8 | -14.5 | 0 | 44.19 | - | - | 74 | -29.81 | - | - | 0-360 | 150 | H |
| 2 | 6.562 | 24.42 | PK | 35.1 | -22.4 | 0 | 37.12 | - | - | - | - | 68.2 | -31.08 | 0-360 | 150 | V |
| 3 | 10.401 | 18.97 | PK | 37.5 | -16.4 | 0 | 40.07 | - | - | - | - | 68.2 | -28.13 | 0-360 | 250 | V |
| 6 | * 15.604 | 18.91 | PK | 39.8 | -14.5 | 0 | 44.21 | - | - | 74 | -29.79 | - | - | 0-360 | 150 | V |

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK – Peak Detector

Note: Only peak measurement was performed. Because peak measurement result of unwanted emission is less than average limit (54dBuV/m).


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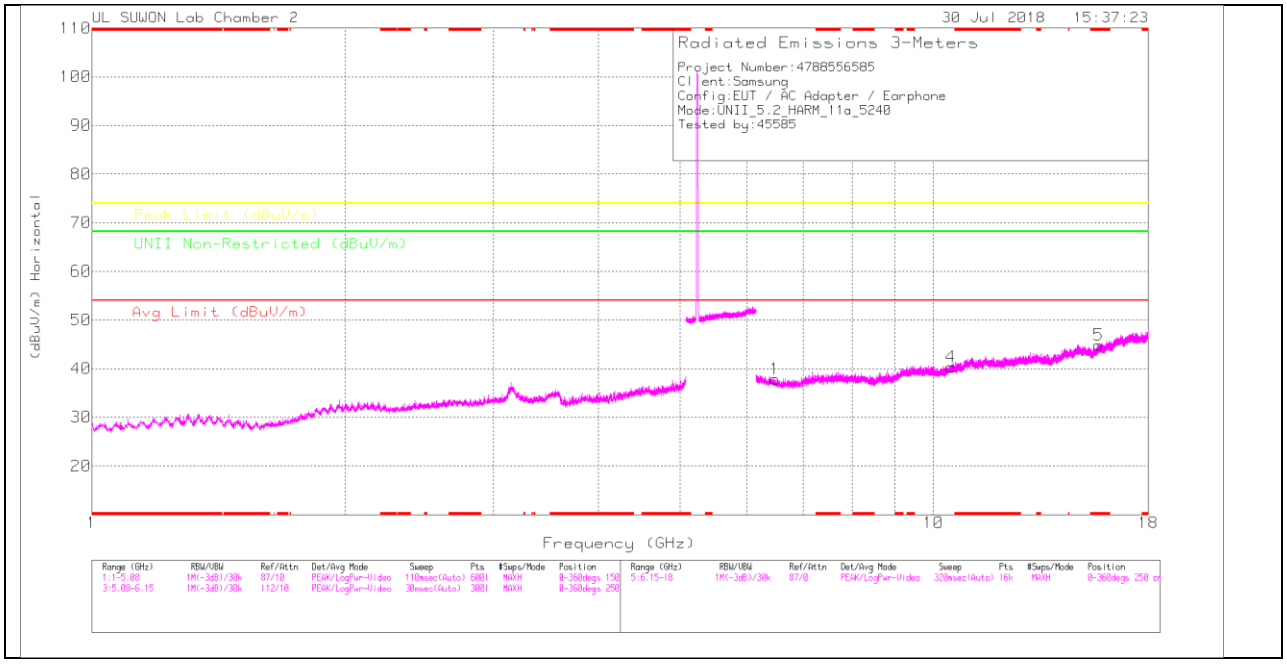
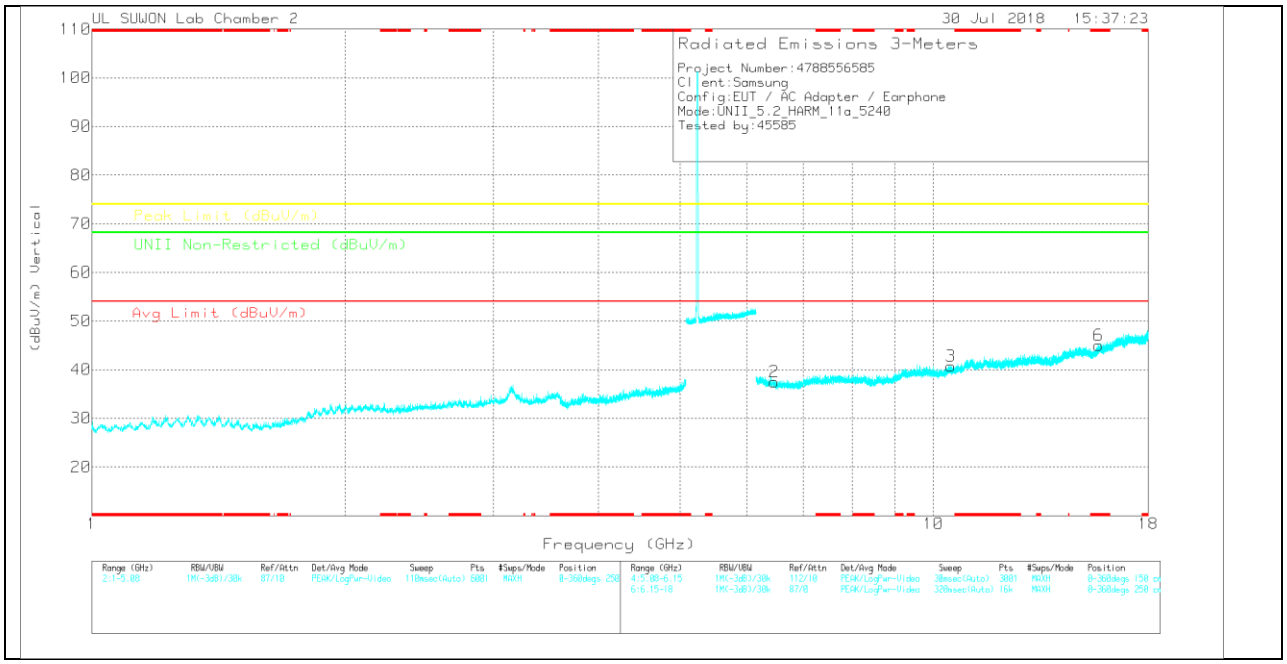
**HIGH CHANNEL HORIZONTAL**




**HIGH CHANNEL VERTICAL**




Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.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**HIGH CHANNEL DATA**

Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 170531_3117[00168724] | 6GHz_HP[dB] | DC Corr (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | Margin (dB) | UNII Non-Restricted (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 6.482 | 24.74 | PK | 35.1 | -22 | 0 | 37.84 | - | - | - | - | 68.2 | -30.36 | 0-360 | 150 | H |
| 4 | 10.48 | 19.2 | PK | 37.5 | -16.4 | 0 | 40.3 | - | - | - | - | 68.2 | -27.9 | 0-360 | 250 | H |
| 5 | * 15.722 | 19.76 | PK | 39.9 | -14.8 | 0 | 44.86 | - | - | 74 | -29.14 | - | - | 0-360 | 150 | H |
| 2 | 6.468 | 24.29 | PK | 35.1 | -21.9 | 0 | 37.49 | - | - | - | - | 68.2 | -30.71 | 0-360 | 150 | V |
| 3 | 10.479 | 19.62 | PK | 37.5 | -16.4 | 0 | 40.72 | - | - | - | - | 68.2 | -27.48 | 0-360 | 250 | V |
| 6 | * 15.721 | 19.84 | PK | 39.9 | -14.8 | 0 | 44.94 | - | - | 74 | -29.06 | - | - | 0-360 | 150 | V |

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK – Peak Detector

Note: Only peak measurement was performed. Because peak measurement result of unwanted emission is less than average limit (54dBuV/m).


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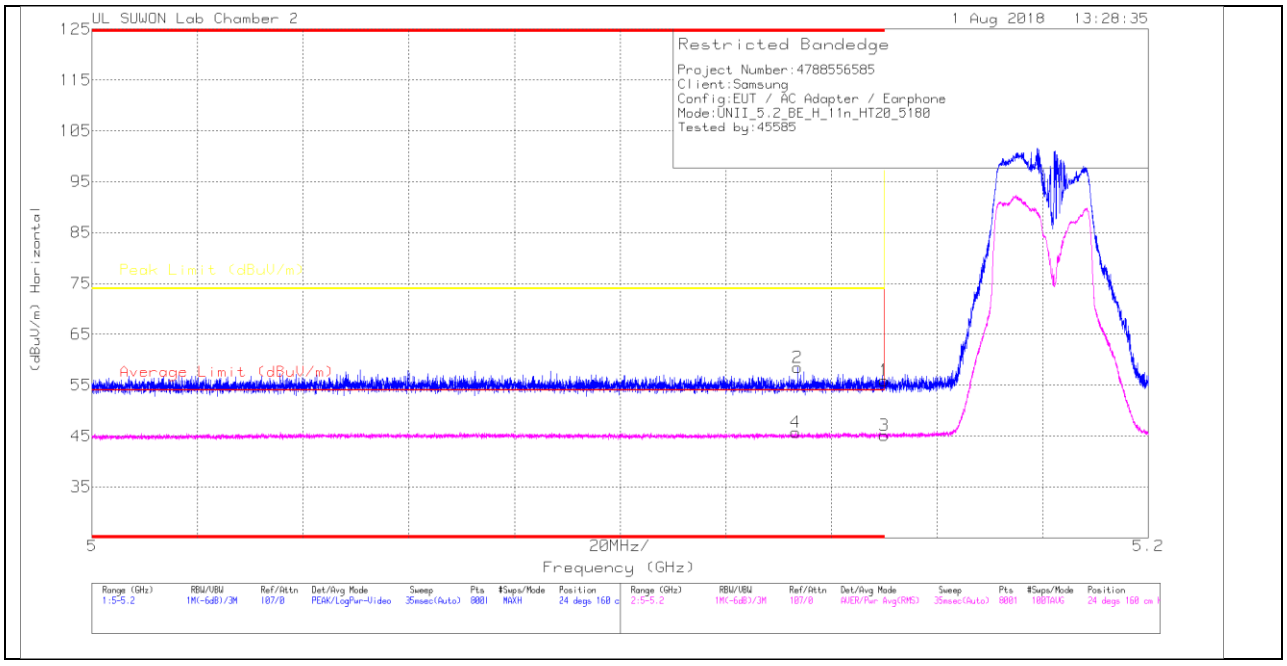
# 11.1.2.TX Above 1GHz 802.11n HT20 2Tx CDD MODE IN THE 5.2GHz BAND RESTRICTED BANDEDGE (LOW CHANNEL)

## HORIZONTAL PEAK AND AVERAGE PLOT




## HORIZONTAL DATA

Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 170531_3117[00168724] | 10dB[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 | 5.15 | 37.25 | Pk | 34 | -15.3 | 0 | 55.95 | - | - | 74 | -18.05 | 24 | 160 | H |
| 2 | * 5.134 | 39.8 | Pk | 34 | -15.3 | 0 | 58.5 | - | - | 74 | -15.5 | 24 | 160 | H |
| 3 | 5.15 | 26.41 | RMS | 34 | -15.3 | 0 | 45.11 | 54 | -8.89 | - | - | 24 | 160 | H |
| 4 | * 5.133 | 27.1 | RMS | 34 | -15.3 | 0 | 45.8 | 54 | -8.2 | - | - | 24 | 160 | H |

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection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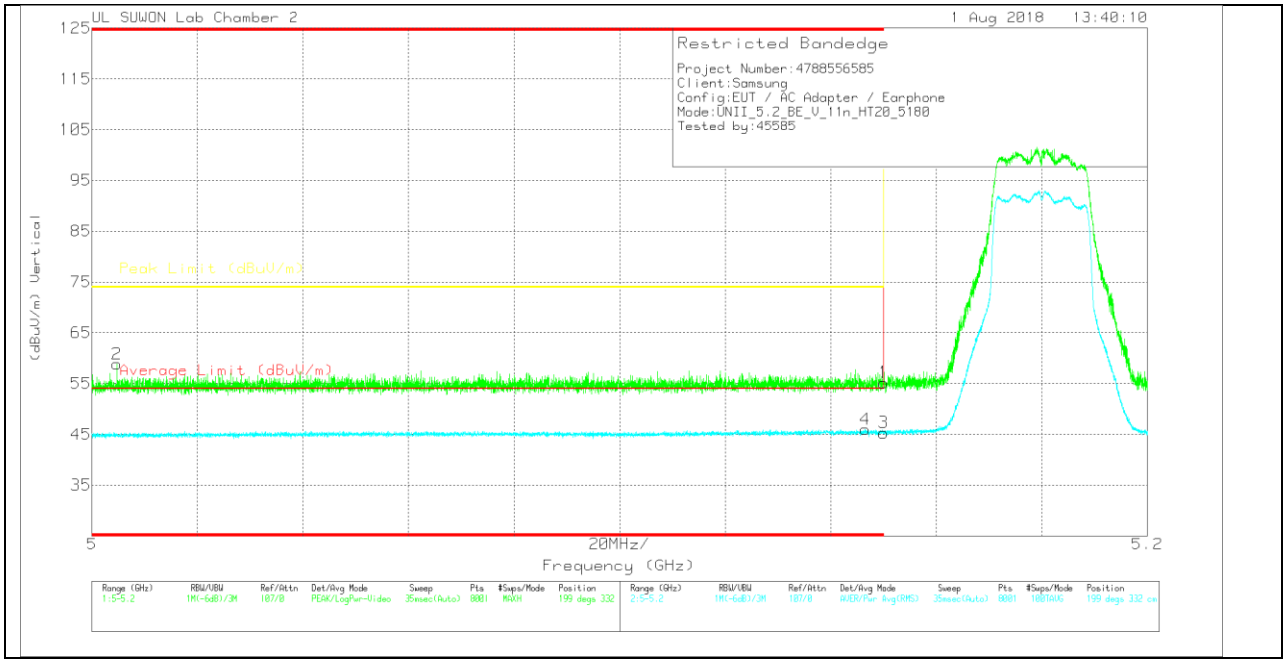
## VERTICAL PEAK AND AVERAGE PLOT




## VERTICAL DATA

Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 170531_3117[00168724] | 10dB[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 | 5.15 | 36.51 | Pk | 34 | -15.3 | 0 | 55.21 | - | - | 74 | -18.79 | 199 | 332 | V |
| 2 | * 5.005 | 40.25 | Pk | 33.8 | -15.2 | 0 | 58.85 | - | - | 74 | -15.15 | 199 | 332 | V |
| 3 | 5.15 | 26.62 | RMS | 34 | -15.3 | 0 | 45.32 | 54 | -8.68 | - | - | 199 | 332 | V |
| 4 | * 5.147 | 27.32 | RMS | 34 | -15.3 | 0 | 46.02 | 54 | -7.98 | - | - | 199 | 332 | V |

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection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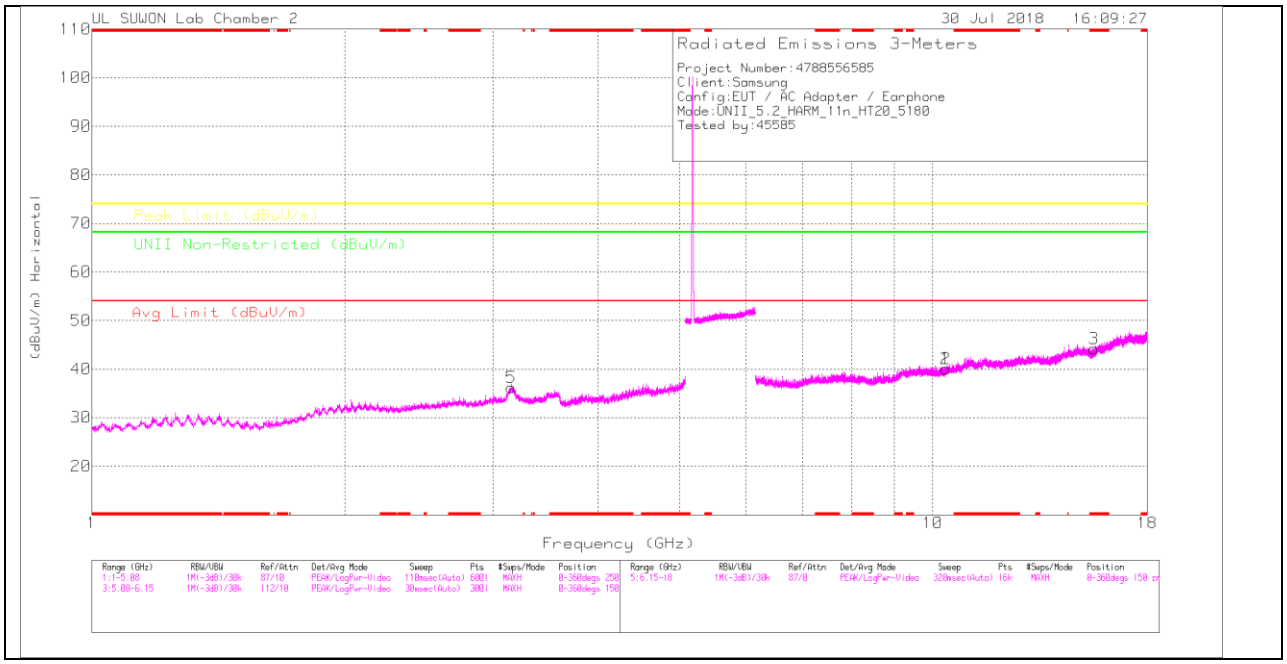
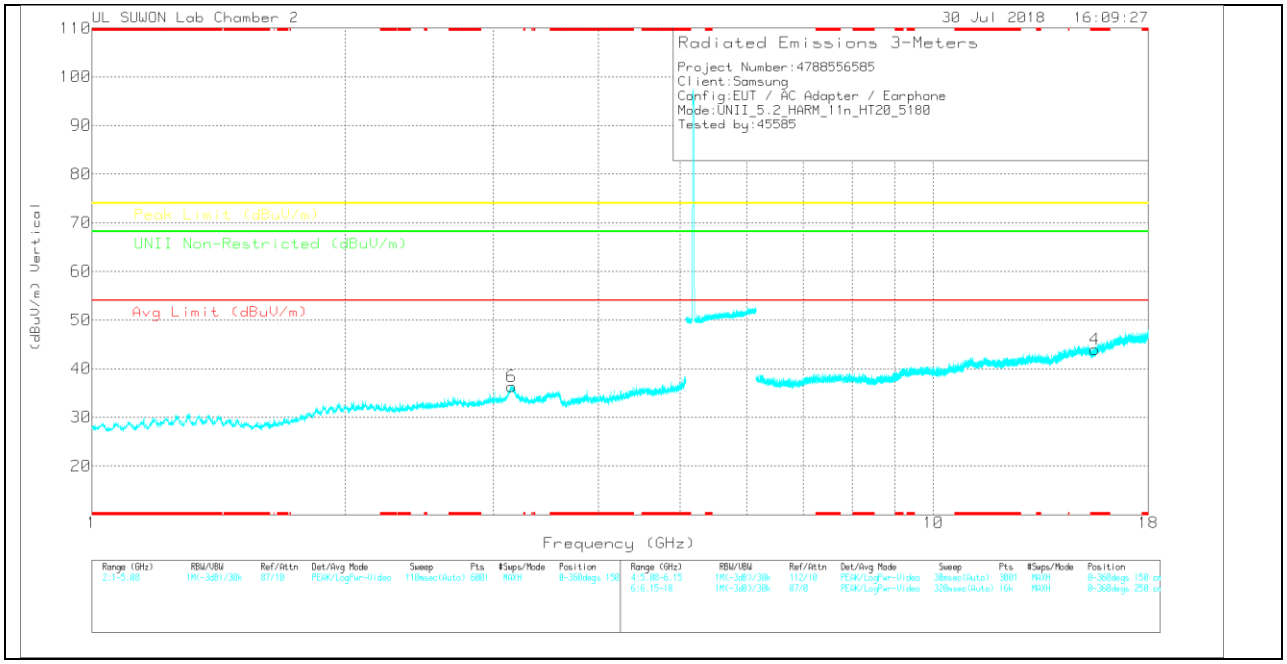
# HARMONICS AND SPURIOUS EMISSIONS

## LOW CHANNEL HORIZONTAL




## LOW CHANNEL VERTICAL




Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.



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## LOW CHANNEL DATA

Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 170531_3117[00168724] | 5GHz_LP[dB] | DC Corr (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | Margin (dB) | UNII Non-Restricted (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5 | 3.154 | 27.39 | PK | 34.8 | -26 | 0 | 36.19 | - | - | - | - | 68.2 | -32.01 | 0-360 | 150 | H |
| 6 | 3.154 | 27.56 | PK | 34.8 | -26 | 0 | 36.36 | - | - | - | - | 68.2 | -31.84 | 0-360 | 250 | V |
| 1 | 10.355 | 19.37 | PK | 37.5 | -16.8 | 0 | 40.07 | - | - | - | - | 68.2 | -28.13 | 0-360 | 250 | H |
| 2 | 10.355 | 19.37 | PK | 37.5 | -16.8 | 0 | 40.07 | - | - | - | - | 68.2 | -28.13 | 0-360 | 250 | H |
| 3 | * 15.535 | 19.02 | PK | 39.7 | -14.5 | 0 | 44.22 | - | - | 74 | -29.78 | - | - | 0-360 | 250 | H |
| 4 | * 15.543 | 18.56 | PK | 39.8 | -14.4 | 0 | 43.96 | - | - | 74 | -30.04 | - | - | 0-360 | 250 | V |

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK – Peak Detector

Note: Only peak measurement was performed. Because peak measurement result of unwanted emission is less than average limit (54dBuV/m).


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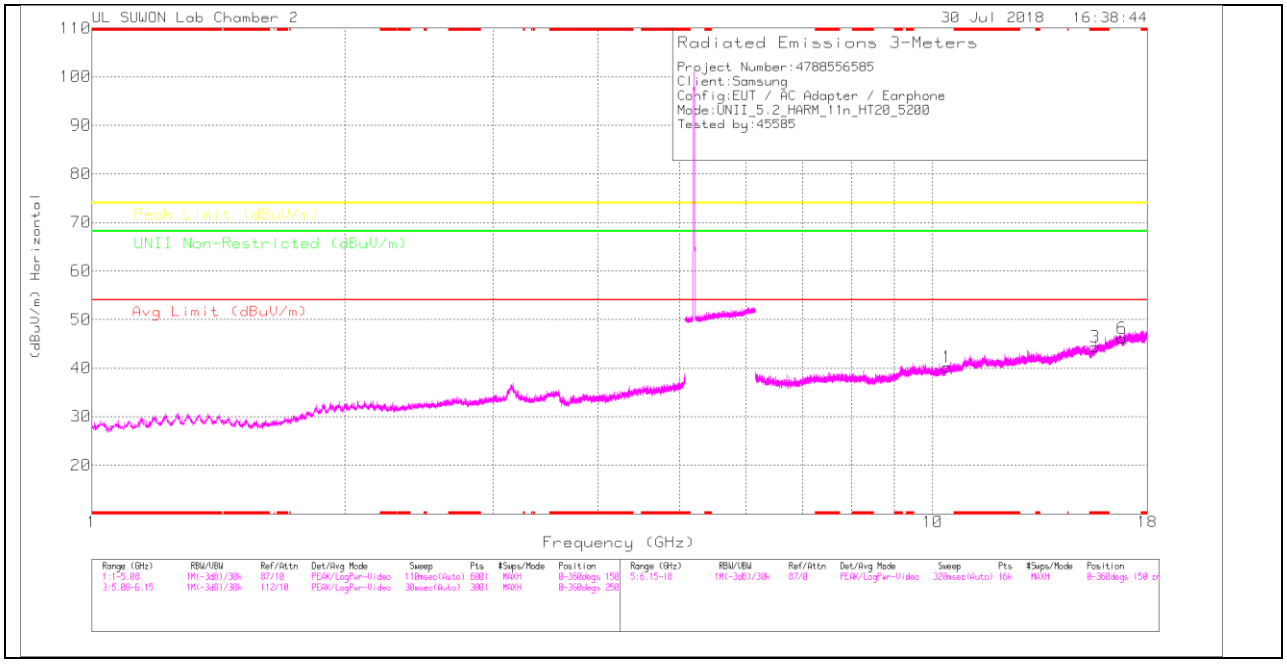
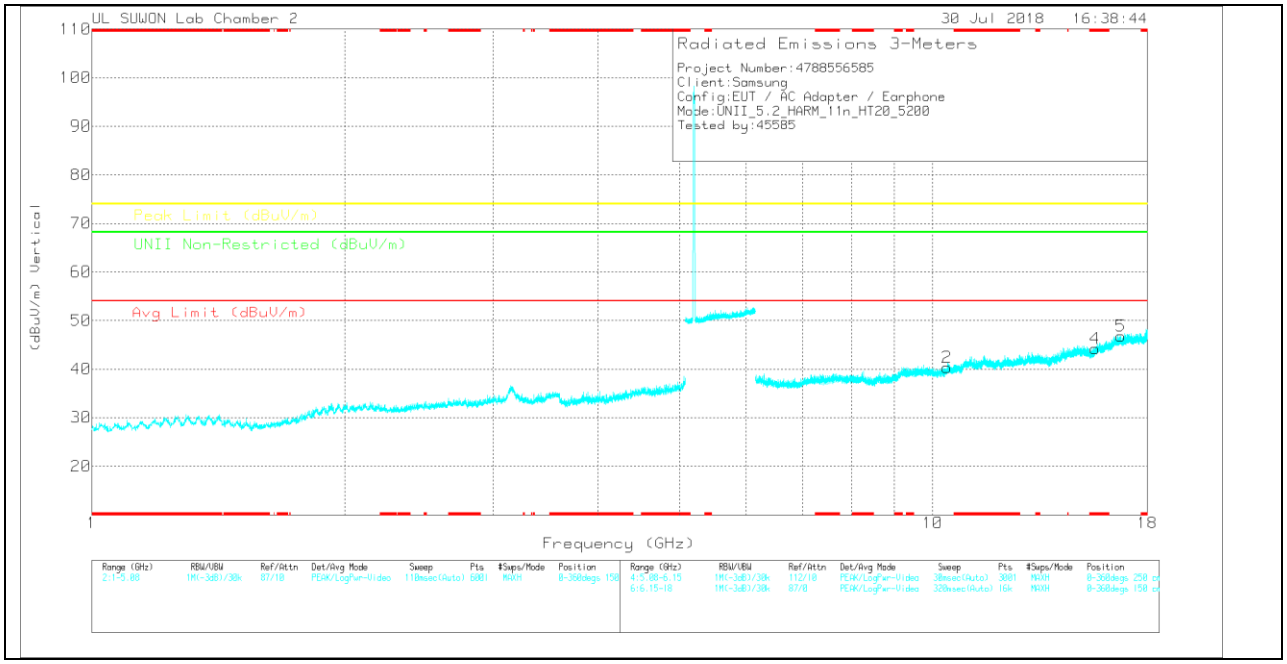
**MID CHANNEL HORIZONTAL**




**MID CHANNEL VERTICAL**




Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.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**MID CHANNEL DATA**

Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 170531_3117[00168724] | 6GHz_HP[dB] | DC Corr (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | Margin (dB) | UNII Non-Restricted (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 10.403 | 18.98 | PK | 37.5 | -16.3 | 0 | 40.18 | - | - | - | - | 68.2 | -28.02 | 0-360 | 250 | H |
| 3 | * 15.598 | 19.19 | PK | 39.8 | -14.6 | 0 | 44.39 | - | - | 74 | -29.61 | - | - | 0-360 | 250 | H |
| 6 | 16.804 | 18.76 | PK | 40.9 | -13.5 | 0 | 46.16 | - | - | - | - | 68.2 | -22.04 | 0-360 | 150 | H |
| 2 | 10.402 | 19.28 | PK | 37.5 | -16.4 | 0 | 40.38 | - | - | - | - | 68.2 | -27.82 | 0-360 | 150 | V |
| 4 | * 15.602 | 18.95 | PK | 39.8 | -14.5 | 0 | 44.25 | - | - | 74 | -29.75 | - | - | 0-360 | 150 | V |
| 5 | 16.733 | 19.68 | PK | 40.9 | -13.8 | 0 | 46.78 | - | - | - | - | 68.2 | -21.42 | 0-360 | 250 | V |

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK – Peak Detector

Note: Only peak measurement was performed. Because peak measurement result of unwanted emission is less than average limit (54dBuV/m).


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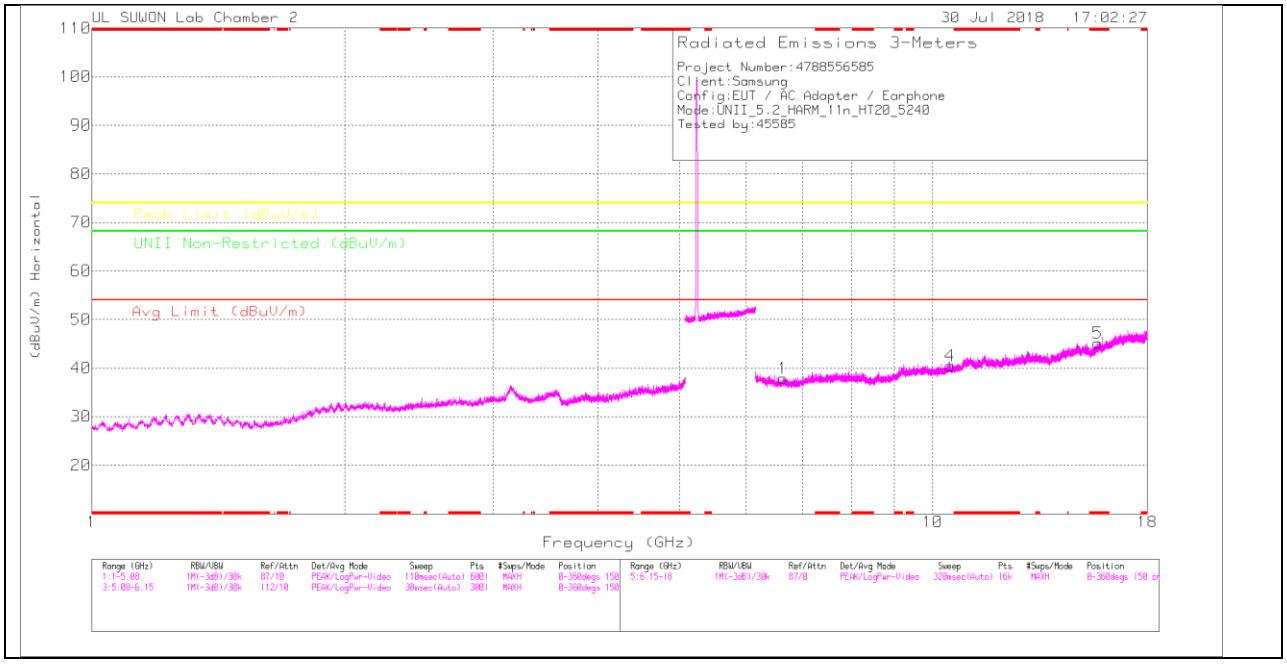
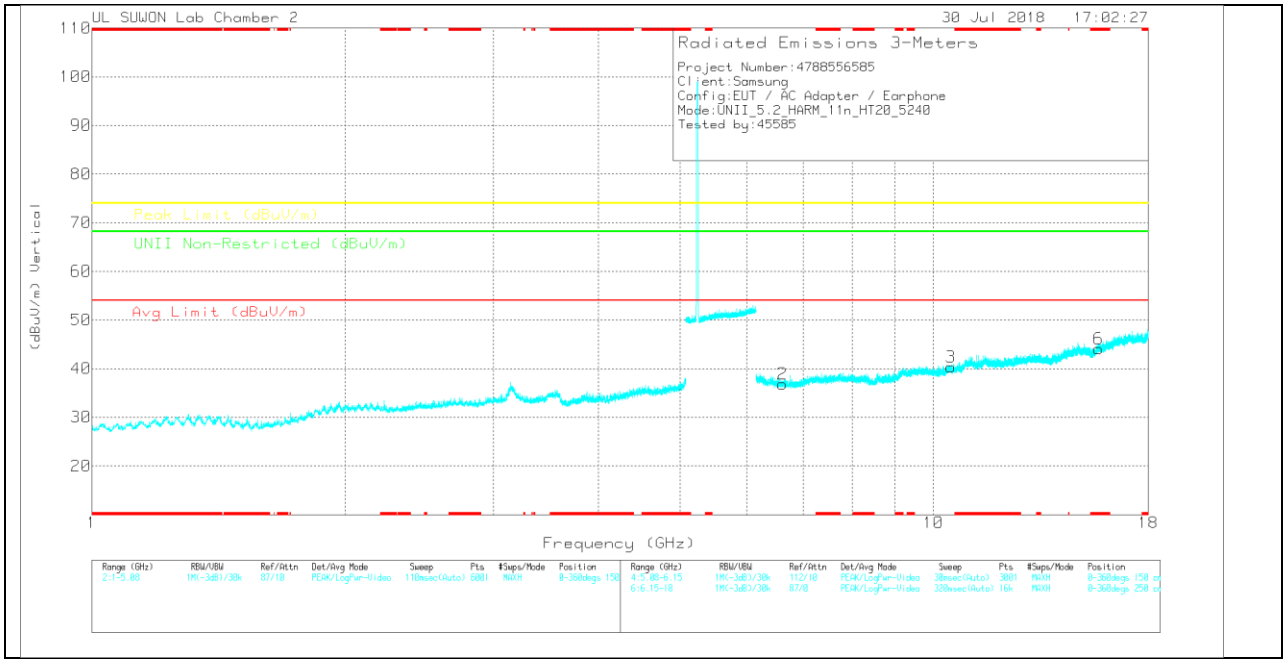
**HIGH CHANNEL HORIZONTAL**




**HIGH CHANNEL VERTICAL**




Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.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**HIGH CHANNEL DATA**

Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 170531_3117(00168724) | 6GHz_HP[dB] | DC Corr (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | Margin (dB) | UNII Non-Restricted (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 6.638 | 24.36 | PK | 35.2 | -21.7 | 0 | 37.86 | - | - | - | - | 68.2 | -30.34 | 0-360 | 150 | H |
| 4 | 10.48 | 19.38 | PK | 37.5 | -16.4 | 0 | 40.48 | - | - | - | - | 68.2 | -27.72 | 0-360 | 250 | H |
| 5 | * 15.721 | 20.07 | PK | 39.9 | -14.8 | 0 | 45.17 | - | - | 74 | -28.83 | - | - | 0-360 | 250 | H |
| 2 | 6.618 | 23.64 | PK | 35.1 | -21.9 | 0 | 36.84 | - | - | - | - | 68.2 | -31.36 | 0-360 | 150 | V |
| 3 | 10.484 | 19.33 | PK | 37.5 | -16.5 | 0 | 40.33 | - | - | - | - | 68.2 | -27.87 | 0-360 | 150 | V |
| 6 | * 15.721 | 18.97 | PK | 39.9 | -14.8 | 0 | 44.07 | - | - | 74 | -29.93 | - | - | 0-360 | 250 | V |

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK – Peak Detector

Note: Only peak measurement was performed. Because peak measurement result of unwanted emission is less than average limit (54dBuV/m).


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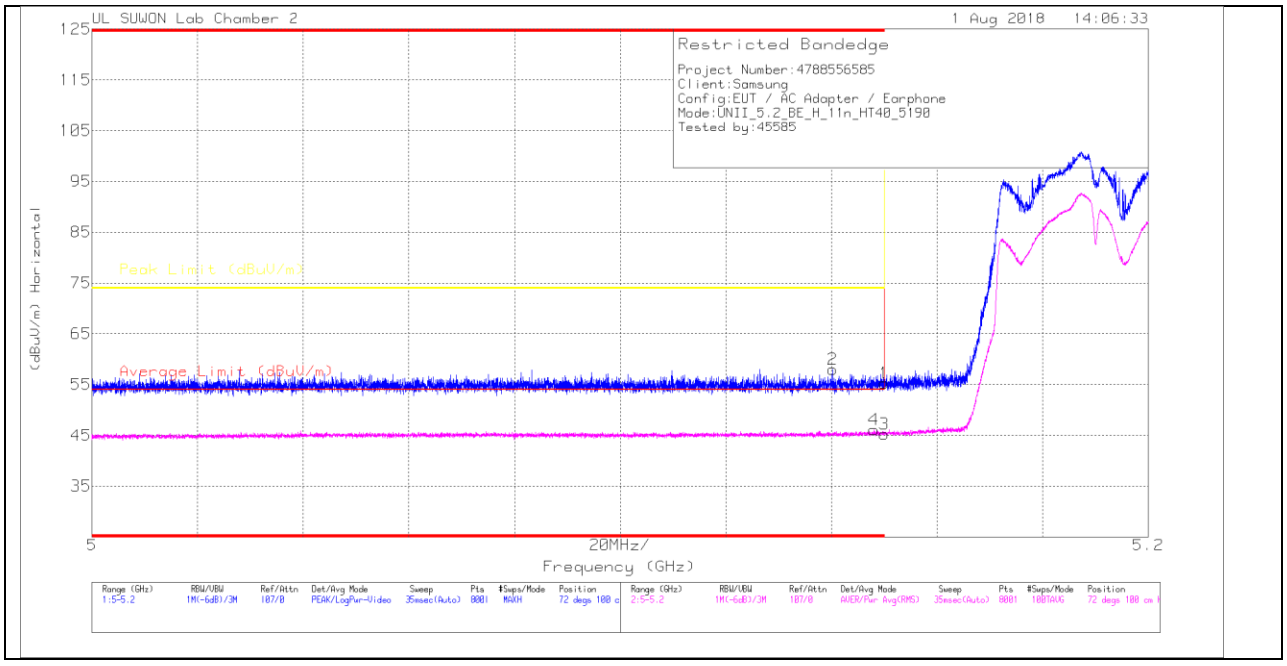
# 11.1.3.TX Above 1GHz 802.11n HT40 2Tx CDD MODE IN THE 5.2GHz BAND RESTRICTED BANDEDGE (LOW CHANNEL)

## HORIZONTAL PEAK AND AVERAGE PLOT




## HORIZONTAL DATA

Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 170531_3117[00168724] | 10dB[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 | 5.15 | 36.63 | Pk | 34 | -15.3 | 0 | 55.33 | - | - | 74 | -18.67 | 72 | 100 | H |
| 2 | * 5.14 | 39.33 | Pk | 34 | -15.3 | 0 | 58.03 | - | - | 74 | -15.97 | 72 | 100 | H |
| 3 | 5.15 | 26.58 | RMS | 34 | -15.3 | 0 | 45.28 | 54 | -8.72 | - | - | 72 | 100 | H |
| 4 | * 5.148 | 27.45 | RMS | 34 | -15.3 | 0 | 46.15 | 54 | -7.85 | - | - | 72 | 100 | H |

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection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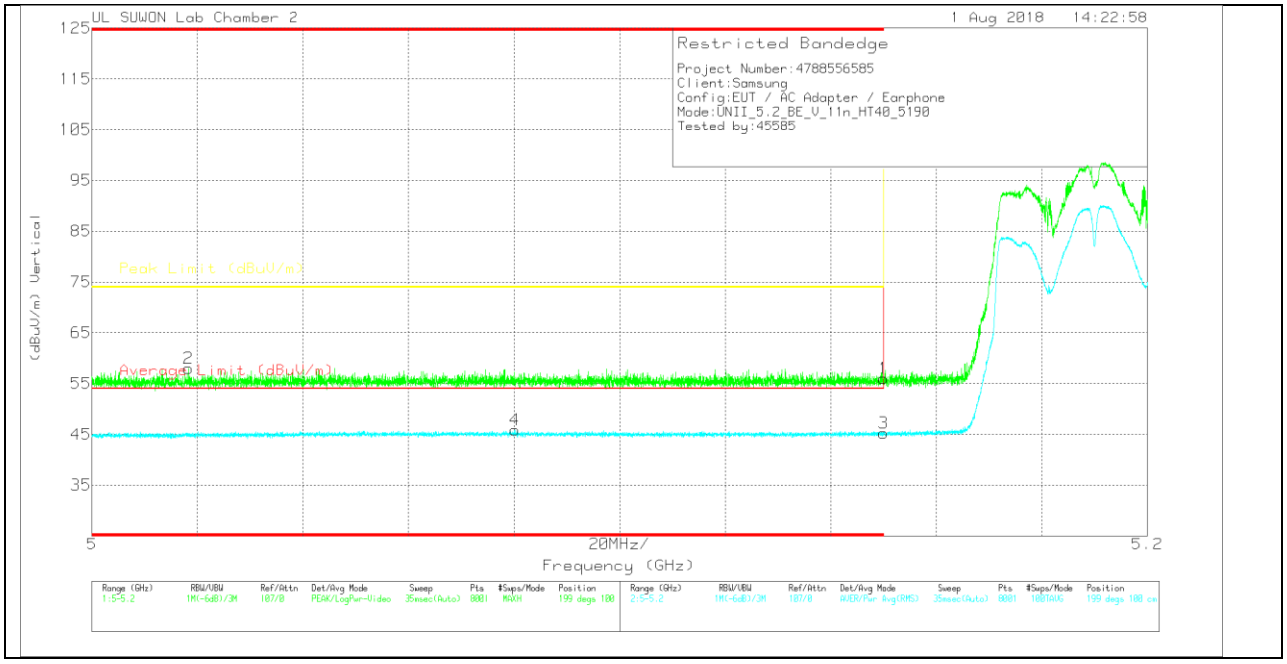
## VERTICAL PEAK AND AVERAGE PLOT




## VERTICAL DATA

Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 170531_3117[00168724] | 10dB[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 | 5.15 | 37.3 | Pk | 34 | -15.3 | 0 | 56 | - | - | 74 | -18 | 199 | 100 | V |
| 2 | * 5.018 | 39.42 | Pk | 33.8 | -15.2 | 0 | 58.02 | - | - | 74 | -15.98 | 199 | 100 | V |
| 3 | 5.15 | 26.55 | RMS | 34 | -15.3 | 0 | 45.25 | 54 | -8.75 | - | - | 199 | 100 | V |
| 4 | * 5.08 | 27.15 | RMS | 33.9 | -15.2 | 0 | 45.85 | 54 | -8.15 | - | - | 199 | 100 | V |

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection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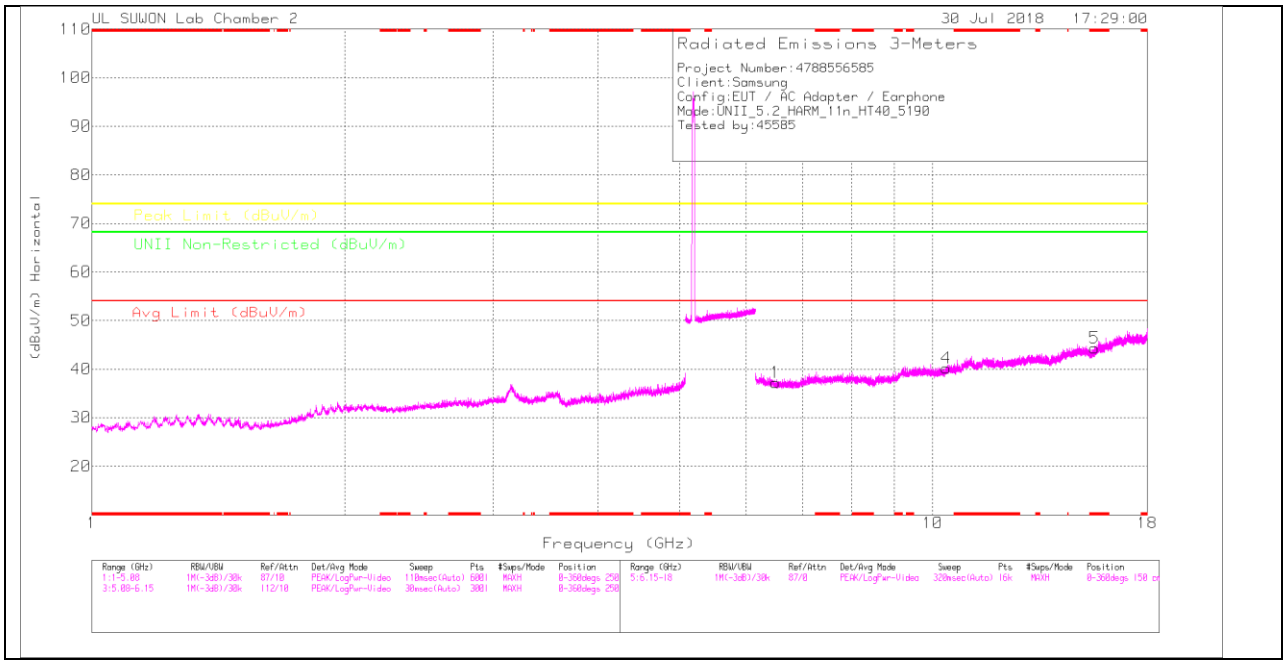
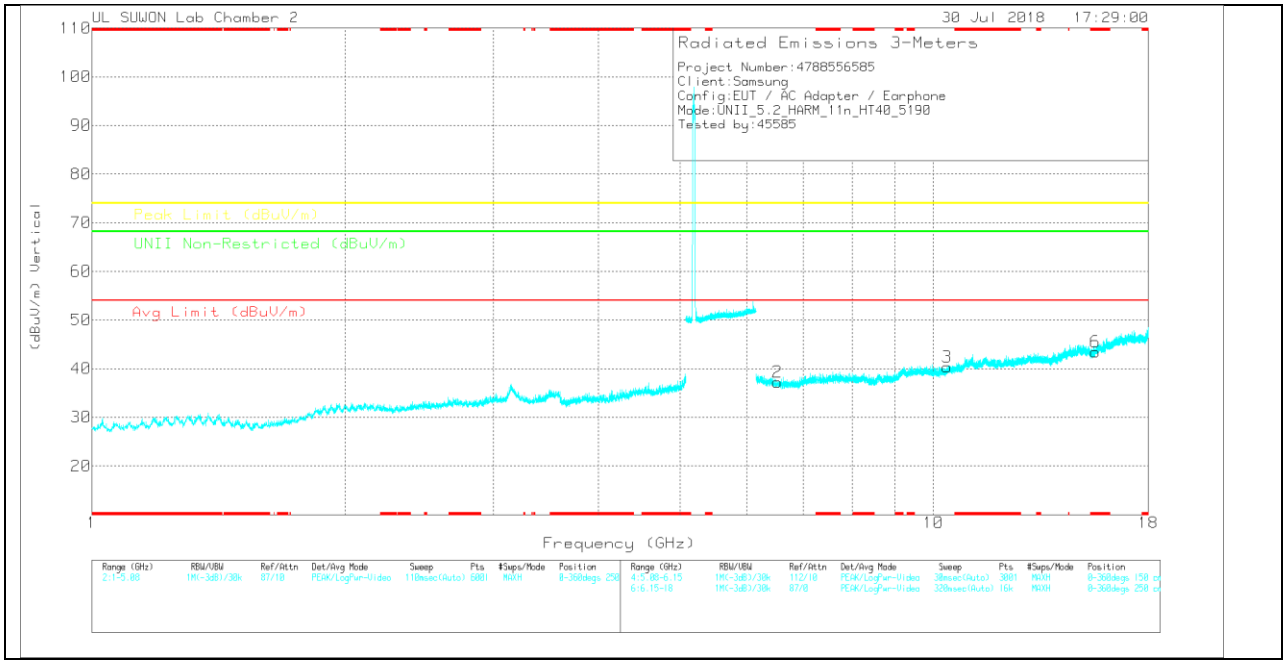
# HARMONICS AND SPURIOUS EMISSIONS

## LOW CHANNEL HORIZONTAL




## LOW CHANNEL VERTICAL




Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.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## LOW CHANNEL DATA

Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 170531_3117[00168724] | 6GHz_HP[dB] | DC Corr (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | Margin (dB) | UNII Non-Restricted (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 6.5 | 24.31 | PK | 35.1 | -22.2 | 0 | 37.21 | - | - | - | - | 68.2 | -30.99 | 0-360 | 150 | H |
| 4 | 10.384 | 19.17 | PK | 37.5 | -16.5 | 0 | 40.17 | - | - | - | - | 68.2 | -28.03 | 0-360 | 150 | H |
| 5 | * 15.569 | 19.05 | PK | 39.8 | -14.5 | 0 | 44.35 | - | - | 74 | -29.65 | - | - | 0-360 | 150 | H |
| 2 | 6.523 | 24.38 | PK | 35.1 | -22.3 | 0 | 37.18 | - | - | - | - | 68.2 | -31.02 | 0-360 | 250 | V |
| 3 | 10.387 | 19.2 | PK | 37.5 | -16.4 | 0 | 40.3 | - | - | - | - | 68.2 | -27.9 | 0-360 | 150 | V |
| 6 | * 15.571 | 18.27 | PK | 39.8 | -14.6 | 0 | 43.47 | - | - | 74 | -30.53 | - | - | 0-360 | 250 | V |

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK – Peak Detector

Note: Only peak measurement was performed. Because peak measurement result of unwanted emission is less than average limit (54dBuV/m).


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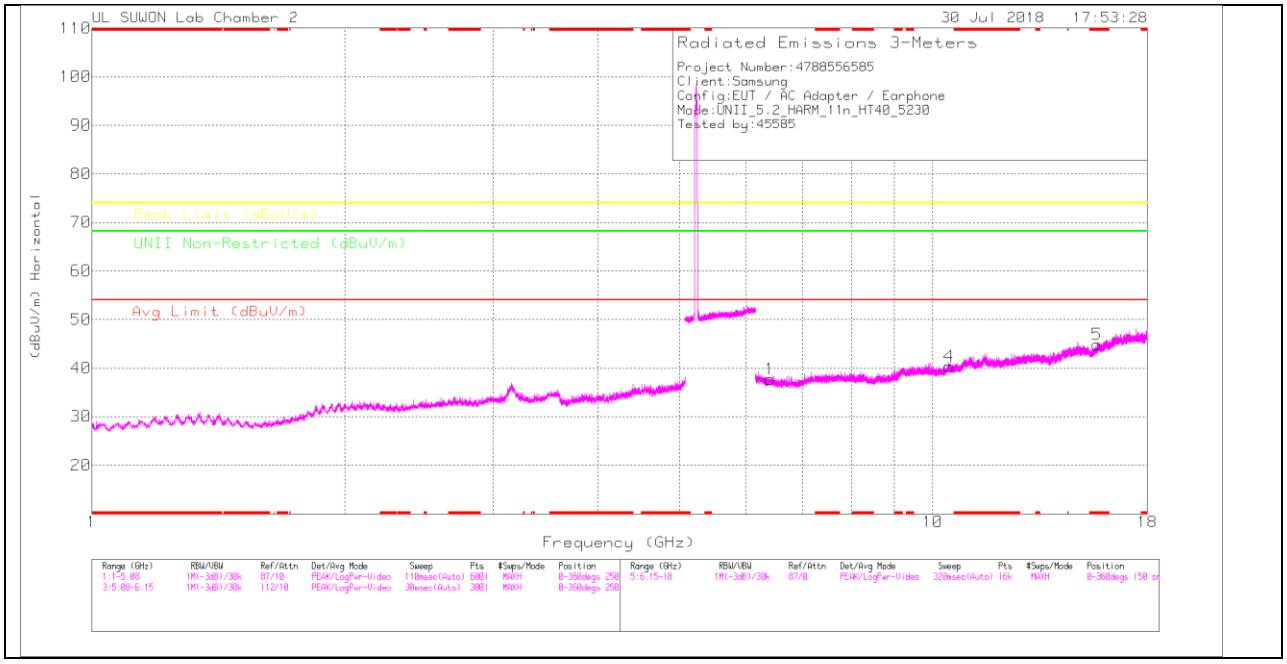
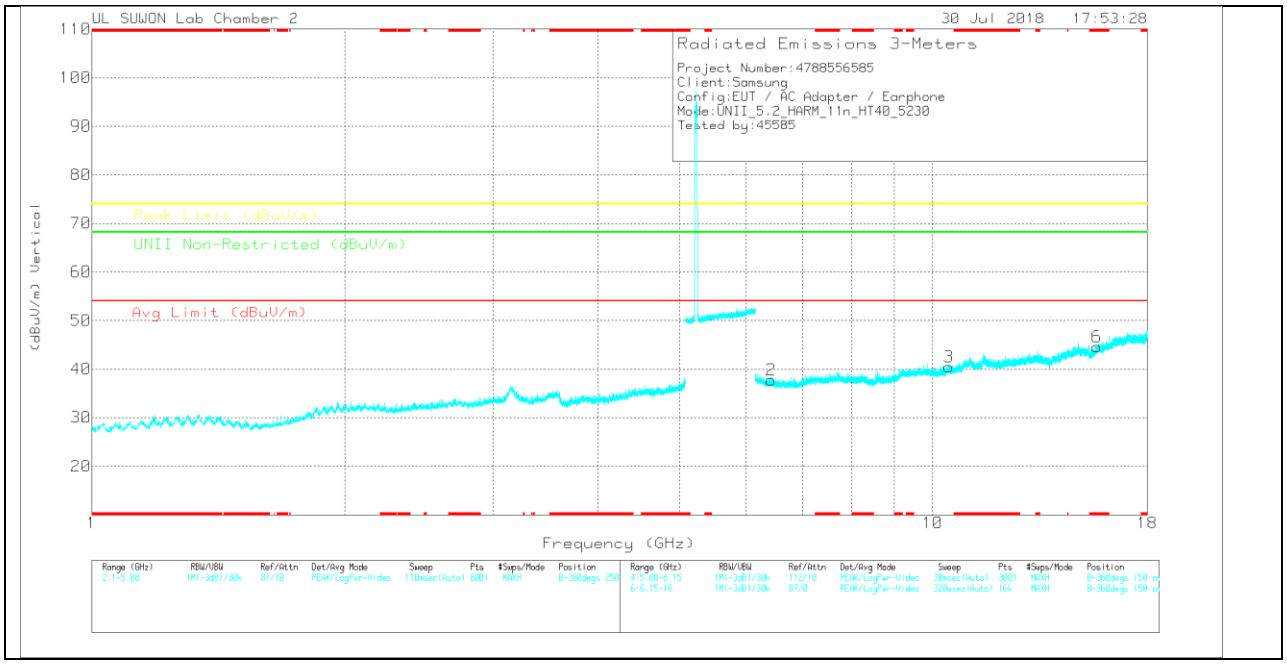
**HIGH CHANNEL HORIZONTAL**




**HIGH CHANNEL VERTICAL**




Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.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## HIGH CHANNEL DATA

Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 170531_3117(00168724) | 6GHz_HP[dB] | DC Corr (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | Margin (dB) | UNII Non-Restricted (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 6.405 | 24.28 | PK | 35.1 | -21.7 | 0 | 37.68 | - | - | - | - | 68.2 | -30.52 | 0-360 | 150 | H |
| 4 | 10.461 | 19.12 | PK | 37.5 | -16.3 | 0 | 40.32 | - | - | - | - | 68.2 | -27.88 | 0-360 | 150 | H |
| 5 | * 15.689 | 19.6 | PK | 39.9 | -14.7 | 0 | 44.8 | - | - | 74 | -29.2 | - | - | 0-360 | 250 | H |
| 2 | 6.423 | 24.11 | PK | 35.1 | -21.5 | 0 | 37.71 | - | - | - | - | 68.2 | -30.49 | 0-360 | 250 | V |
| 3 | 10.459 | 19.25 | PK | 37.5 | -16.3 | 0 | 40.45 | - | - | - | - | 68.2 | -27.75 | 0-360 | 250 | V |
| 6 | * 15.694 | 19.47 | PK | 39.9 | -14.8 | 0 | 44.57 | - | - | 74 | -29.43 | - | - | 0-360 | 150 | V |

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

PK – Peak Detector

Note: Only peak measurement was performed. Because peak measurement result of unwanted emission is less than average limit (54dBuV/m).


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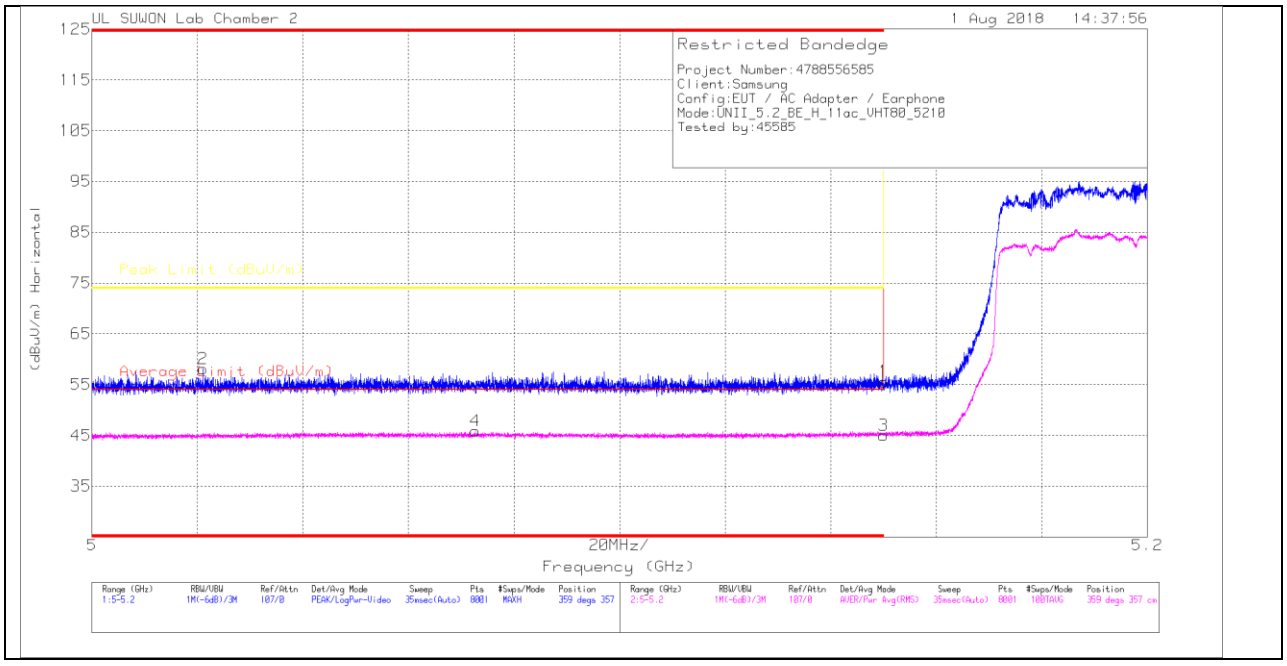
# 11.1.4. TX ABOVE 1GHz 802.11ac VHT80 2Tx CDD MODE IN THE 5.2GHz BAND RESTRICTED BANDEDGE (LOW CHANNEL)

## HORIZONTAL PEAK AND AVERAGE PLOT




## HORIZONTAL DATA

Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 170531_3117[00168724] | 10dB[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 | 5.15 | 36.88 | Pk | 34 | -15.3 | 0 | 55.58 | - | - | 74 | -18.42 | 359 | 357 | H |
| 2 | * 5.021 | 39.54 | Pk | 33.8 | -15.2 | 0 | 58.14 | - | - | 74 | -15.86 | 359 | 357 | H |
| 3 | 5.15 | 26.27 | RMS | 34 | -15.3 | 0 | 44.97 | 54 | -9.03 | - | - | 359 | 357 | H |
| 4 | * 5.073 | 27.12 | RMS | 33.9 | -15.2 | 0 | 45.82 | 54 | -8.18 | - | - | 359 | 357 | H |

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection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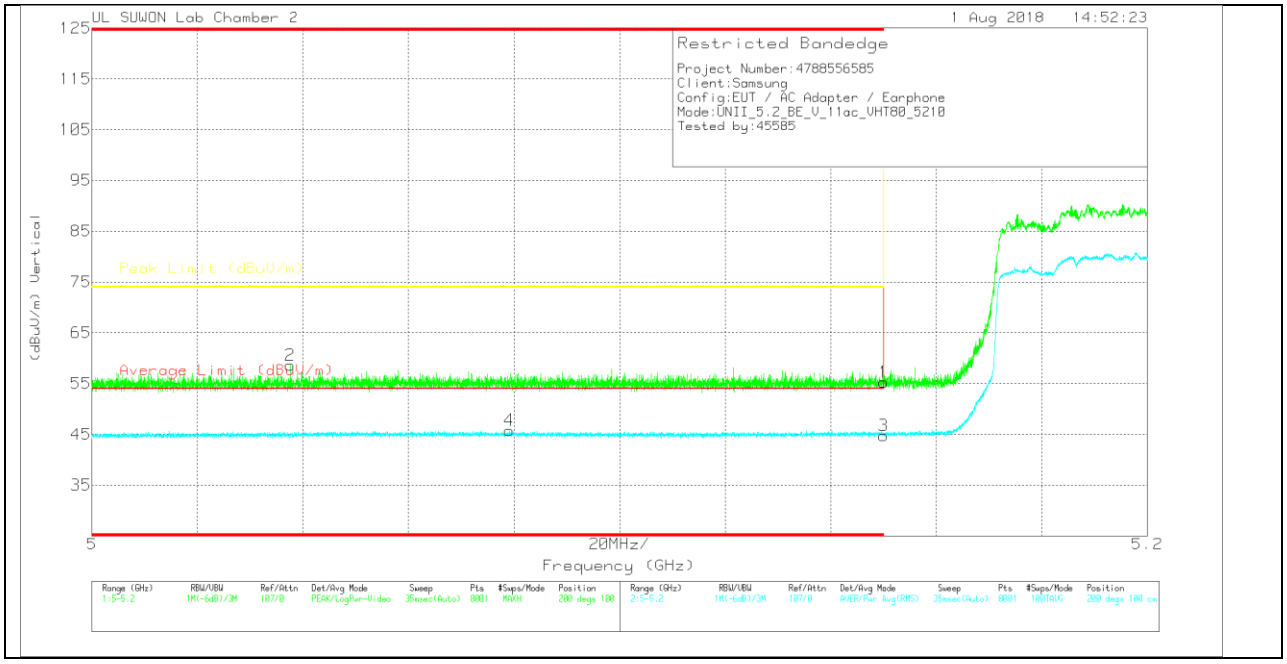
## VERTICAL PEAK AND AVERAGE PLOT




## VERTICAL DATA

Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 170531_3117[00168724] | 10dB[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 | 5.15 | 36.63 | Pk | 34 | -15.3 | 0 | 55.33 | - | - | 74 | -18.67 | 200 | 100 | V |
| 2 | * 5.038 | 39.95 | Pk | 33.9 | -15.2 | 0 | 58.65 | - | - | 74 | -15.35 | 200 | 100 | V |
| 3 | 5.15 | 26.11 | RMS | 34 | -15.3 | 0 | 44.81 | 54 | -9.19 | - | - | 200 | 100 | V |
| 4 | * 5.079 | 27.11 | RMS | 33.9 | -15.2 | 0 | 45.81 | 54 | -8.19 | - | - | 200 | 100 | V |

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection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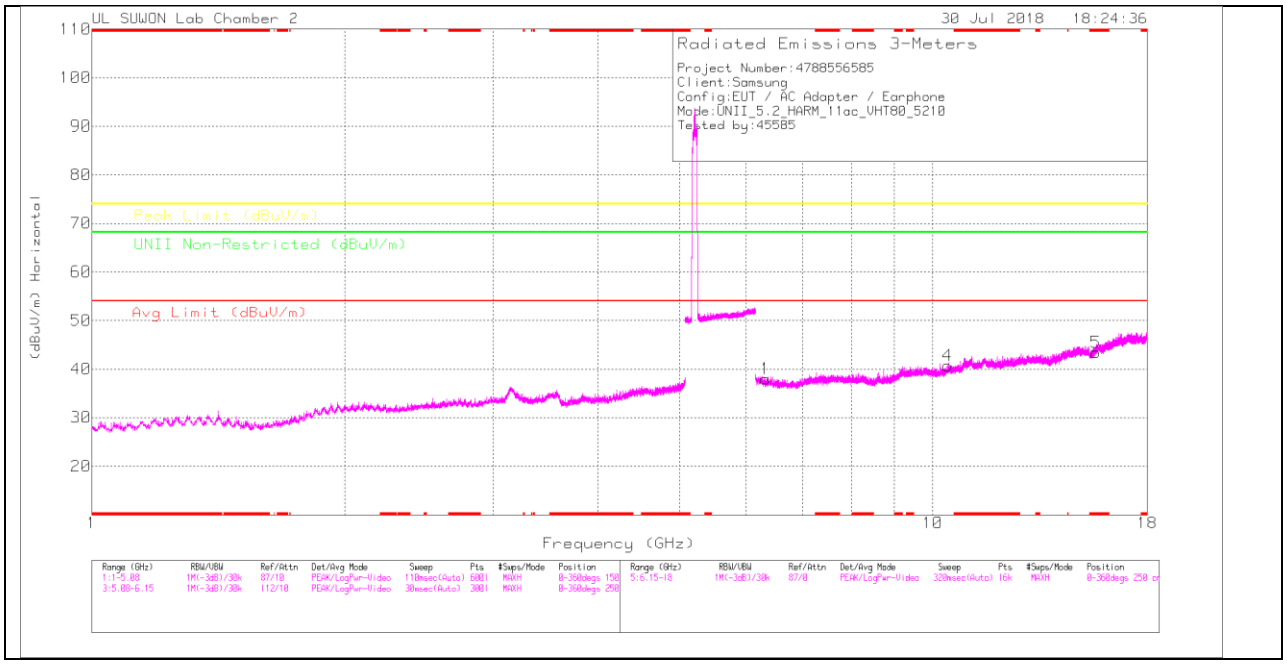
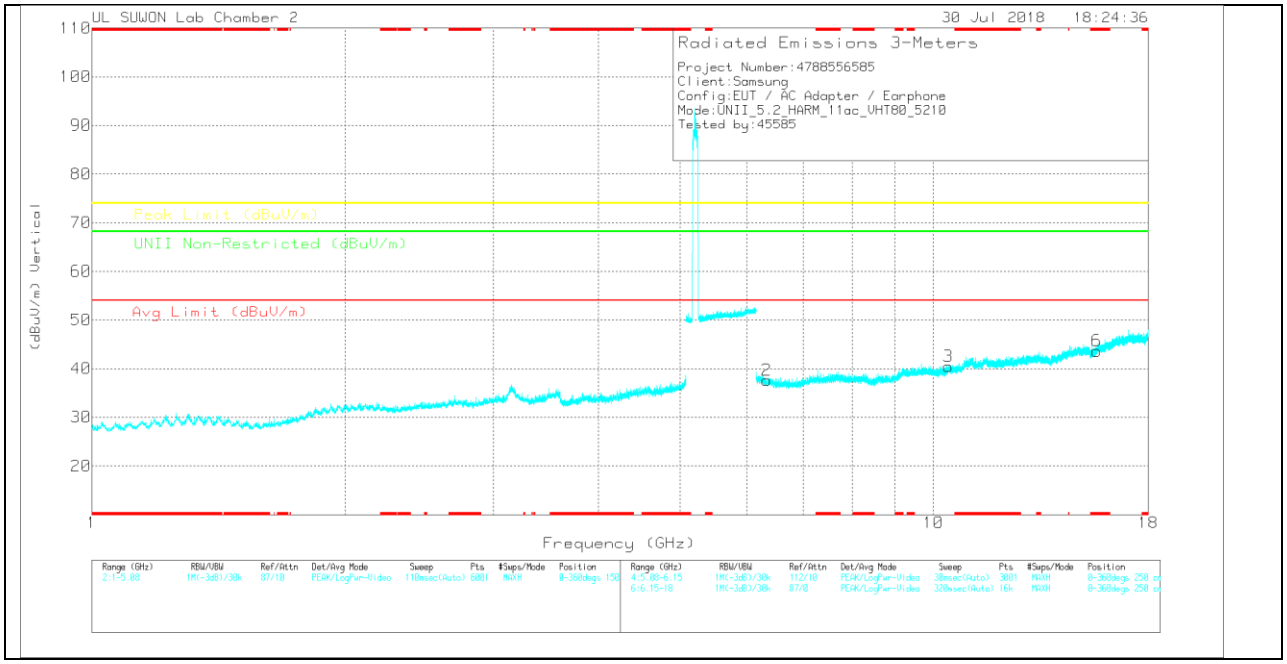
# HARMONICS AND SPURIOUS EMISSIONS

## MID CHANNEL HORIZONTAL




## MID CHANNEL VERTICAL




Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.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**MID CHANNEL DATA**

Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 170531_3117[00168724] | 6GHz_HP[dB] | DC Corr (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | Margin (dB) | UNII Non-Restricted (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 6.329 | 25.45 | PK | 35.1 | -22.6 | 0 | 37.95 | - | - | - | - | 68.2 | -30.25 | 0-360 | 250 | H |
| 4 | 10.421 | 19.41 | PK | 37.5 | -16.2 | 0 | 40.71 | - | - | - | - | 68.2 | -27.49 | 0-360 | 250 | H |
| 5 | * 15.63 | 18.32 | PK | 39.8 | -14.7 | 0 | 43.42 | - | - | 74 | -30.58 | - | - | 0-360 | 150 | H |
| 2 | 6.34 | 25.16 | PK | 35.1 | -22.6 | 0 | 37.66 | - | - | - | - | 68.2 | -30.54 | 0-360 | 250 | V |
| 3 | 10.422 | 19.2 | PK | 37.5 | -16.2 | 0 | 40.5 | - | - | - | - | 68.2 | -27.7 | 0-360 | 250 | V |
| 6 | * 15.63 | 18.53 | PK | 39.8 | -14.7 | 0 | 43.63 | - | - | 74 | -30.37 | - | - | 0-360 | 250 | V |

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK – Peak Detector

Note: Only peak measurement was performed. Because peak measurement result of unwanted emission is less than average limit (54dBuV/m).


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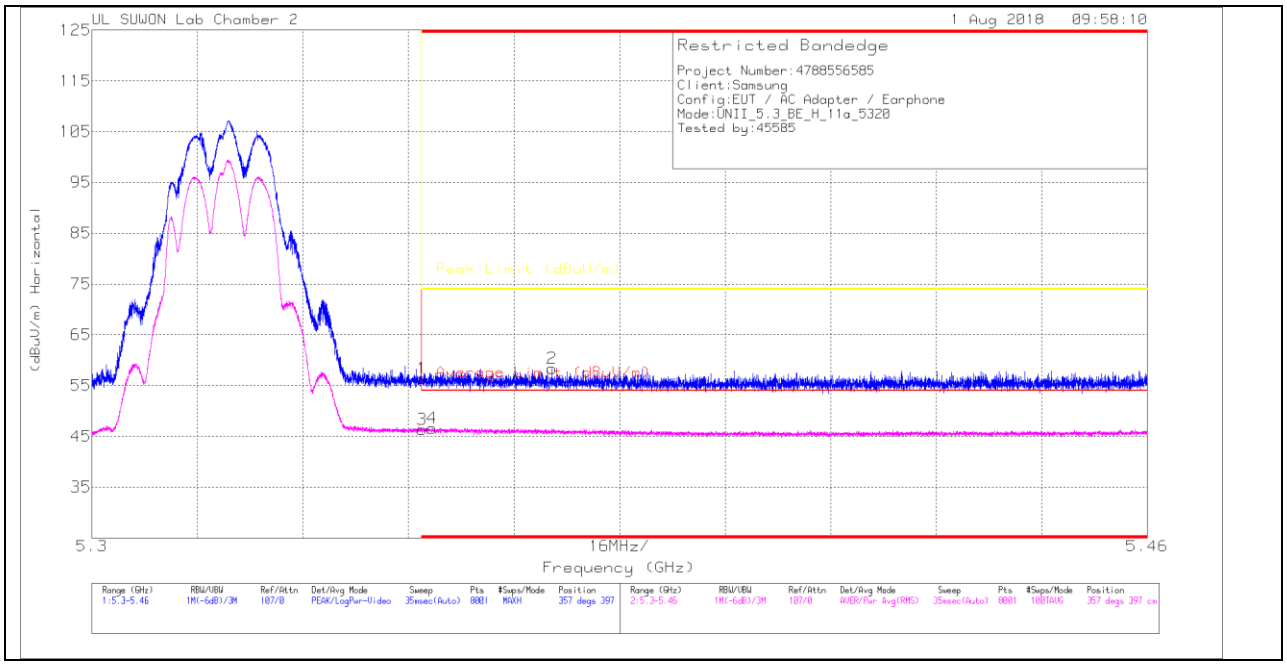
## 11.2. 5.3 GHz

### 11.2.1. TX ABOVE 1 GHz 802.11a 2Tx CDD MODE IN THE 5.3 GHz BAND

### AUTHORIZED BANDEDGE (HIGH CHANNEL)

**HORIZONTAL PEAK AND AVERAGE PLOT**




**HORIZONTAL DATA**

Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 170531_3117[00168724] | 10dB[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 | * 5.35 | 37.41 | Pk | 34.2 | -15.2 | 0 | 56.41 | - | - | 74 | -17.59 | 357 | 397 | H |
| 2 | * 5.37 | 39.39 | Pk | 34.2 | -15.2 | 0 | 58.39 | - | - | 74 | -15.61 | 357 | 397 | H |
| 3 | * 5.35 | 27.35 | RMS | 34.2 | -15.2 | 0 | 46.35 | 54 | -7.65 | - | - | 357 | 397 | H |
| 4 | * 5.352 | 27.64 | RMS | 34.2 | -15.2 | 0 | 46.64 | 54 | -7.36 | - | - | 357 | 397 | H |

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection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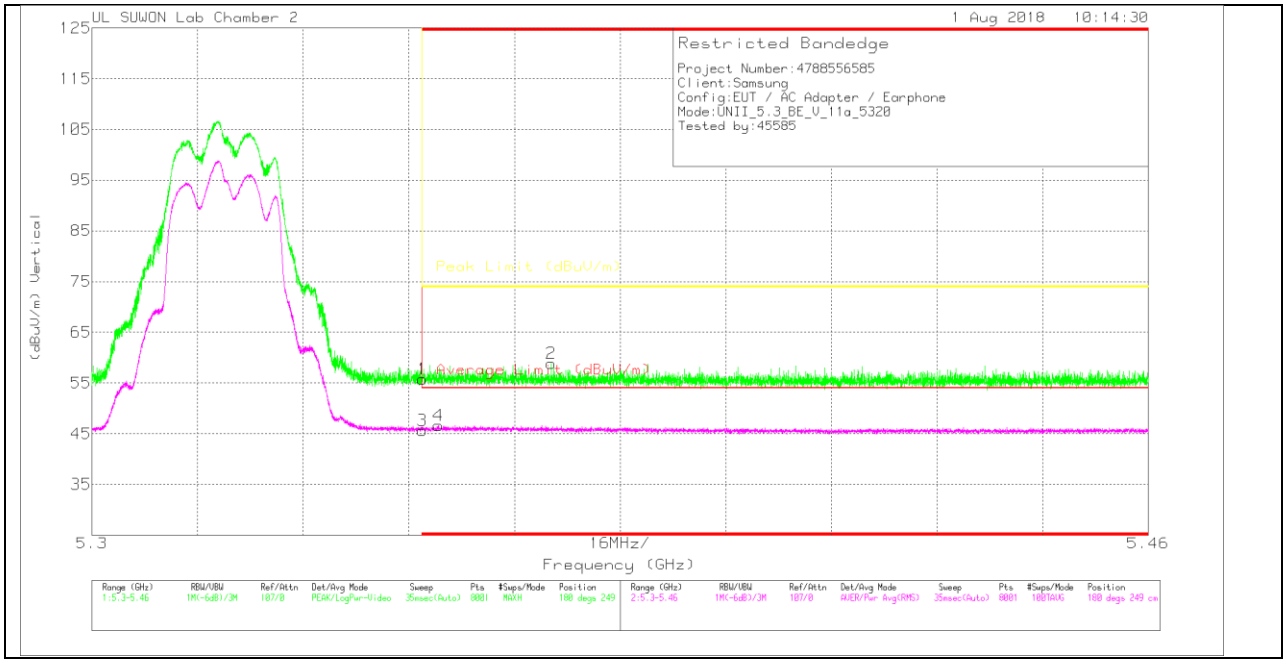
## VERTICAL PEAK AND AVERAGE PLOT




## VERTICAL DATA

Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 170531_3117[00168724] | 10dB[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 | * 5.35 | 36.78 | Pk | 34.2 | -15.2 | 0 | 55.78 | - | - | 74 | -18.22 | 180 | 249 | V |
| 2 | * 5.37 | 39.82 | Pk | 34.2 | -15.2 | 0 | 58.82 | - | - | 74 | -15.18 | 180 | 249 | V |
| 3 | * 5.35 | 26.65 | RMS | 34.2 | -15.2 | 0 | 45.65 | 54 | -8.35 | - | - | 180 | 249 | V |
| 4 | * 5.352 | 27.62 | RMS | 34.2 | -15.2 | 0 | 46.62 | 54 | -7.38 | - | - | 180 | 249 | V |

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



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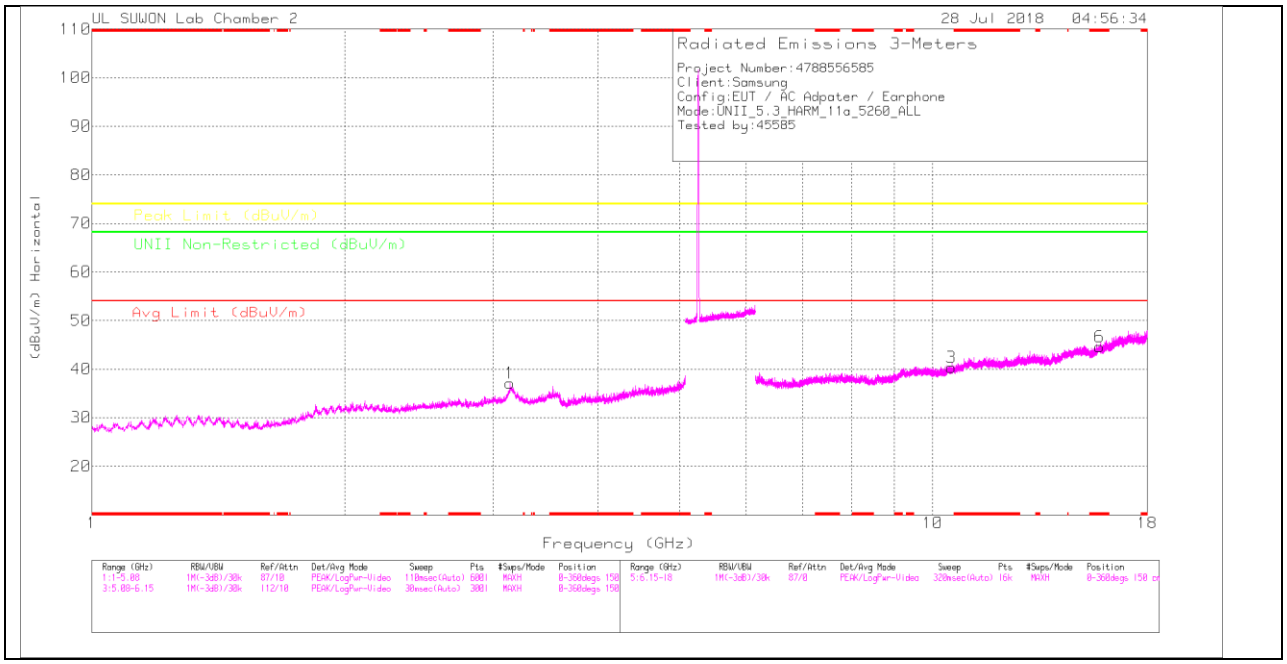
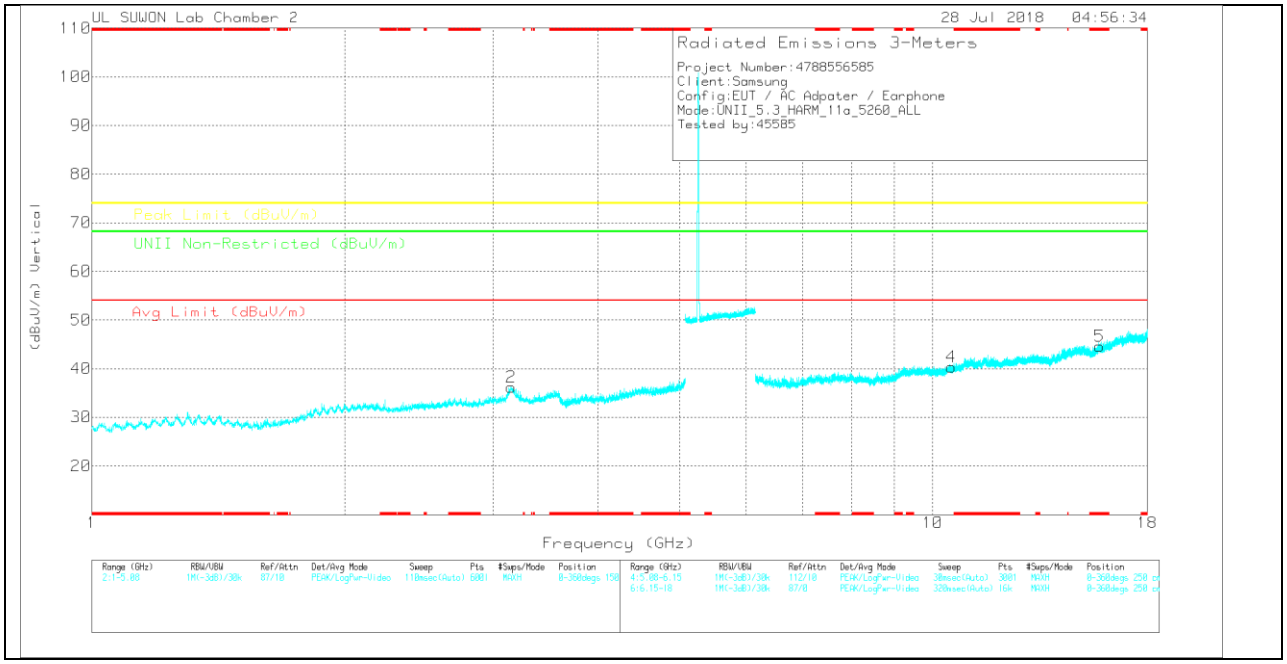
# HARMONICS AND SPURIOUS EMISSIONS

## LOW CHANNEL HORIZONTAL




## LOW CHANNEL VERTICAL




Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.



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**LOW CHANNEL DATA**

Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 170531_3117[00168724] | SGHz_1F[dB] | DC Corr (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | Margin (dB) | UNII Non-Restricted (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 3.141 | 28.88 | PK | 34.5 | -26.3 | 0 | 37.08 | - | - | - | - | 68.2 | -31.12 | 0-360 | 150 | H |
| 2 | 3.156 | 27.45 | PK | 34.7 | -26 | 0 | 36.15 | - | - | - | - | 68.2 | -32.05 | 0-360 | 250 | V |
| 3 | 10.522 | 19.41 | PK | 37.5 | -16.6 | 0 | 40.31 | - | - | - | - | 68.2 | -27.89 | 0-360 | 150 | H |
| 6 | * 15.78 | 19.33 | PK | 40.1 | -14.8 | 0 | 44.63 | - | - | 74 | -29.37 | - | - | 0-360 | 250 | H |
| 4 | 10.523 | 19.37 | PK | 37.5 | -16.6 | 0 | 40.27 | - | - | - | - | 68.2 | -27.93 | 0-360 | 250 | V |
| 5 | * 15.78 | 19.25 | PK | 40.1 | -14.8 | 0 | 44.55 | - | - | 74 | -29.45 | - | - | 0-360 | 150 | V |

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK – Peak Detector

Note: Only peak measurement was performed. Because peak measurement result of unwanted emission is less than average limit (54dBuV/m).


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