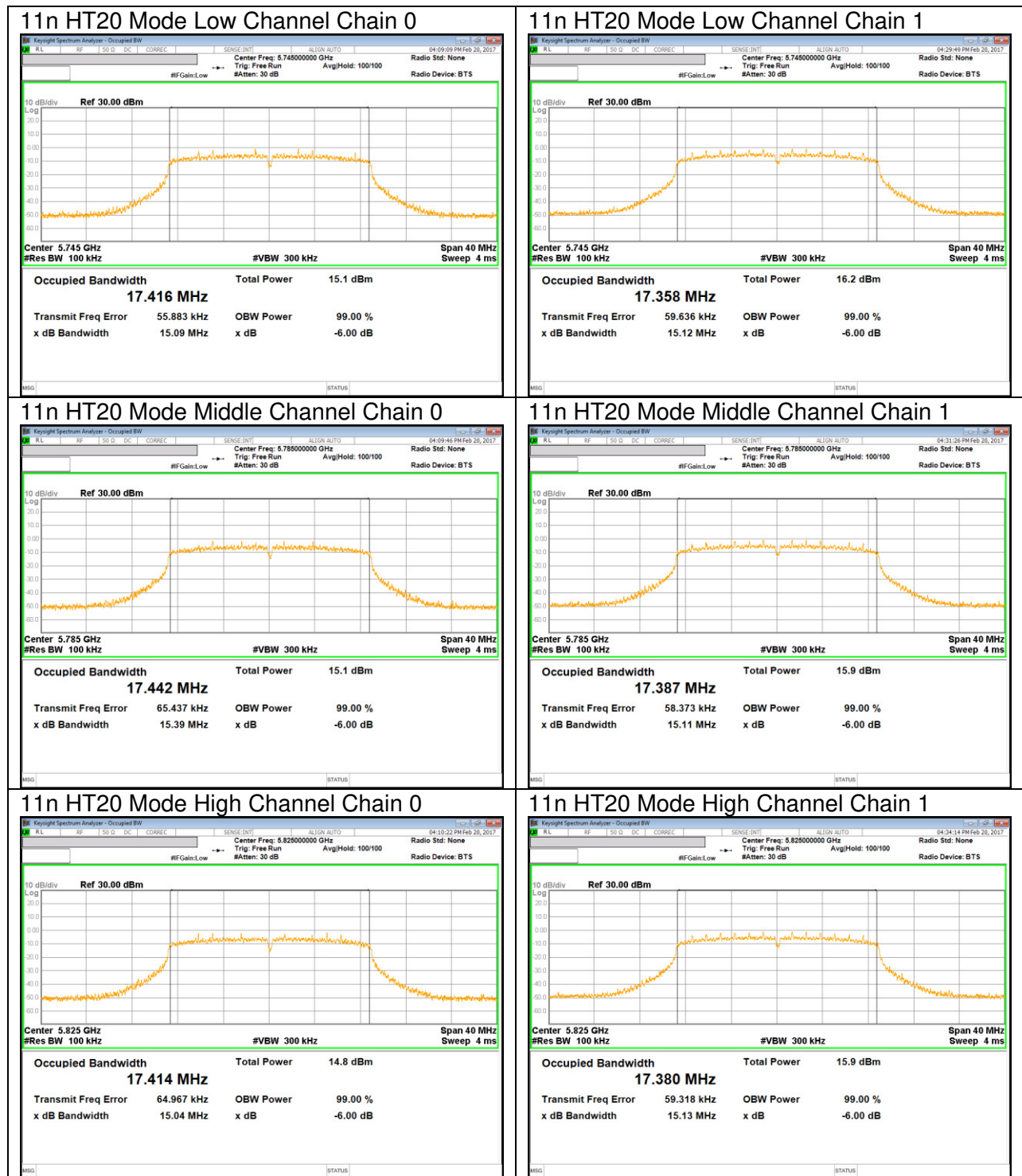
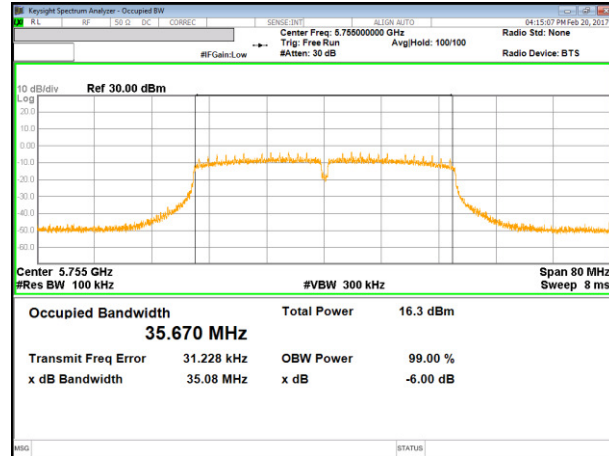


# IEEE 802.11n HT20 mode

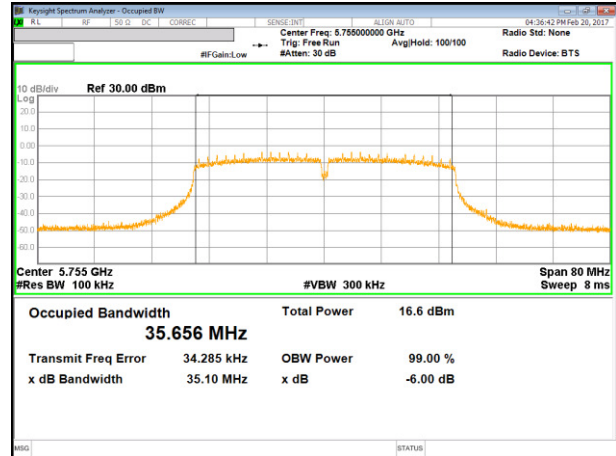


## IEEE 802.11n HT40 mode

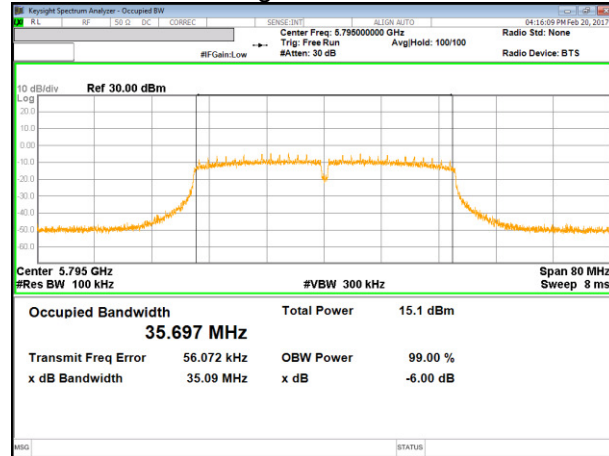
### 11n HT40 Mode Low Channel Chain 0



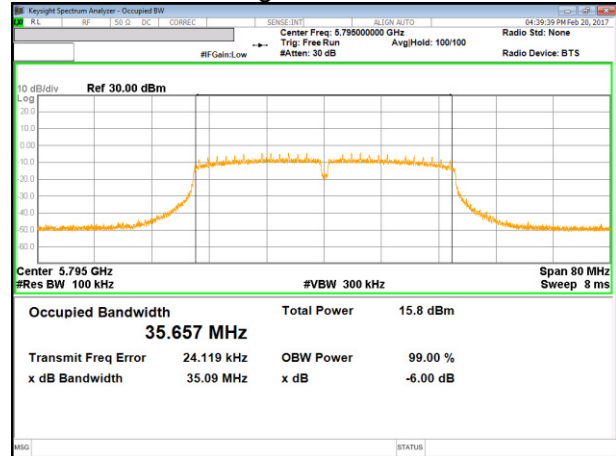
### 11n HT40 Mode Low Channel Chain 1



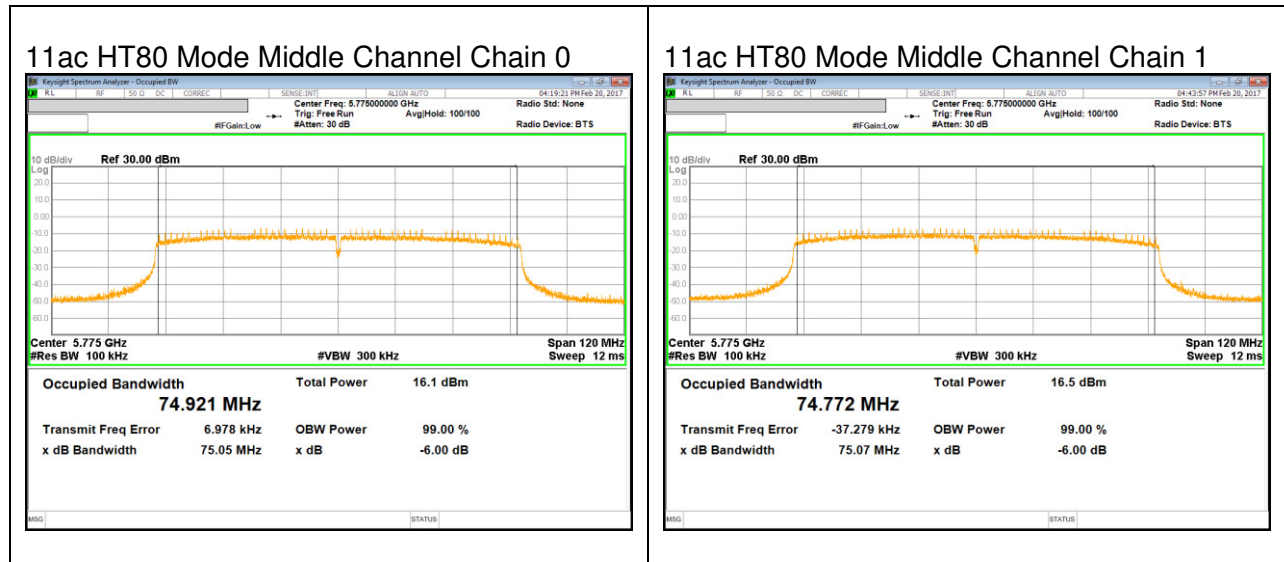
### 11n HT40 Mode High Channel Chain 0



### 11n HT40 Mode High Channel Chain 1



**IEEE 802.11ac VHT80 mode**



## 9.2. OUTPUT POWER AND PPSD

### LIMITS

FCC §15.407 (a) (1) (2) (3)

### FCC

For the band 5.15–5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or  $11 \text{ dBm} + 10 \log B$ , where B is the 26–dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or  $11 \text{ dBm} + 10 \log B$ , where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band.

### TEST PROCEDURE

KDB 789033 Method SA-2 is used for PPSD. RBW set to 1MHz (500kHz for the band 5.725-5.85 GHz, the VBW  $\geq 3 \times \text{RBW}$ , RMS detector and trace averaging). Peak marker value of the spectrum is used for PSD. Add duty cycle correction factor.

KDB 789033 Method PM is used for output power. Duty cycle correction factor is already added to the average output power results.

### DIRECTIONAL ANTENNA GAIN

For OUTPUT POWER and PSD: The TX chains are correlated and the antenna gains are unequal among the chains. The directional gain is:

| Frequency<br><br>Band<br><br>[MHz] | Chain 0<br><br>Antenna<br>Gain<br>[dBi] | Chain 1<br><br>Antenna<br>Gain<br>[dBi] | Correlated<br>Chains<br>Directional<br>Gain<br>[dBi] |
|------------------------------------|-----------------------------------------|-----------------------------------------|------------------------------------------------------|
| 5150 - 5250                        | -1.86                                   | -1.69                                   | 1.24                                                 |
| 5250 - 5350                        | -2.43                                   | -1.84                                   | 0.88                                                 |
| 5470 - 5725                        | -2.18                                   | -2.67                                   | 0.59                                                 |
| 5725 - 5850                        | -2.22                                   | -2.72                                   | 0.54                                                 |

## RESULTS

### 9.2.1.802.11a MODE IN THE 5.2 GHz BAND

#### Bandwidth and Antenna Gain

| Channel | Frequency<br>[MHz] | Min<br>26 dB<br>BW<br>[MHz] | Directional<br>Gain<br>for Power<br>[dBi] | Directional<br>Gain<br>for PPSD<br>[dBi] |
|---------|--------------------|-----------------------------|-------------------------------------------|------------------------------------------|
| Low     | 5180               | 18.96                       | 1.24                                      | 1.24                                     |
| Mid     | 5200               | 18.80                       | 1.24                                      | 1.24                                     |
| High    | 5240               | 18.81                       | 1.24                                      | 1.24                                     |

#### Limits

| Channel | Frequency<br>[MHz] | FCC<br>Power<br>Limit<br>[dBm] | Power<br>Limit<br>[dBm] | FCC<br>PPSD<br>Limit<br>[dBm] |
|---------|--------------------|--------------------------------|-------------------------|-------------------------------|
| Low     | 5180               | 23.78                          | 23.78                   | 11.00                         |
| Mid     | 5200               | 23.74                          | 23.74                   | 11.00                         |
| High    | 5240               | 23.74                          | 23.74                   | 11.00                         |

|                    |      |                                  |
|--------------------|------|----------------------------------|
| Duty Cycle CF [dB] | 0.29 | Included in Calculations of PPSD |
|--------------------|------|----------------------------------|

#### Output Power Results

| Channel | Frequency<br>[MHz] | Primary<br>Antenna 1<br>Power<br>[dBm] | Secondary<br>Antenna 2<br>Power<br>[dBm] | Total<br>Corr'd<br>Power<br>[dBm] | Power<br>Limit<br>[dBm] | Power<br>Margin<br>[dB] |
|---------|--------------------|----------------------------------------|------------------------------------------|-----------------------------------|-------------------------|-------------------------|
| Low     | 5180               | 10.19                                  | 10.02                                    | 13.12                             | 23.78                   | -10.66                  |
| Mid     | 5200               | 10.21                                  | 10.06                                    | 13.15                             | 23.74                   | -10.60                  |
| High    | 5240               | 10.22                                  | 10.22                                    | 13.23                             | 23.74                   | -10.51                  |

#### PPSD Results

| Channel | Frequency<br>[MHz] | Primary<br>Antenna 1<br>PPSD<br>[dBm] | Secondary<br>Antenna 2<br>PPSD<br>[dBm] | Total<br>Corr'd<br>PPSD<br>[dBm] | PPSD<br>Limit<br>[dBm] | PPSD<br>Margin<br>[dB] |
|---------|--------------------|---------------------------------------|-----------------------------------------|----------------------------------|------------------------|------------------------|
| Low     | 5180               | -0.69                                 | -0.70                                   | 2.60                             | 11.00                  | -8.40                  |
| Mid     | 5200               | -0.60                                 | -0.67                                   | 2.66                             | 11.00                  | -8.34                  |
| High    | 5240               | -0.31                                 | -0.43                                   | 2.93                             | 11.00                  | -8.07                  |

## 9.2.2.802.11n HT20 MODE IN THE 5.2 GHz BAND

### Bandwidth and Antenna Gain

| Channel | Frequency<br>[MHz] | Min<br>26 dB<br>BW<br>[MHz] | Directional<br>Gain<br>for Power<br>[dBi] | Directional<br>Gain<br>for PPSD<br>[dBi] |
|---------|--------------------|-----------------------------|-------------------------------------------|------------------------------------------|
| Low     | 5180               | 19.70                       | 1.24                                      | 1.24                                     |
| Mid     | 5200               | 19.65                       | 1.24                                      | 1.24                                     |
| High    | 5240               | 19.46                       | 1.24                                      | 1.24                                     |

### Limits

| Channel | Frequency<br>[MHz] | FCC<br>Power<br>Limit<br>[dBm] | Power<br>Limit<br>[dBm] | FCC<br>PPSD<br>Limit<br>[dBm] |
|---------|--------------------|--------------------------------|-------------------------|-------------------------------|
| Low     | 5180               | 23.94                          | 23.94                   | 11.00                         |
| Mid     | 5200               | 23.93                          | 23.93                   | 11.00                         |
| High    | 5240               | 23.89                          | 23.89                   | 11.00                         |

|                    |      |                                  |
|--------------------|------|----------------------------------|
| Duty Cycle CF [dB] | 0.30 | Included in Calculations of PPSD |
|--------------------|------|----------------------------------|

### Output Power Results

| Channel | Frequency<br>[MHz] | Chain 0<br>Meas<br>Power<br>[dBm] | Chain 1<br>Meas<br>Power<br>[dBm] | Total<br>Corr'd<br>Power<br>[dBm] | Power<br>Limit<br>[dBm] | Power<br>Margin<br>[dB] |
|---------|--------------------|-----------------------------------|-----------------------------------|-----------------------------------|-------------------------|-------------------------|
| Low     | 5180               | 10.06                             | 10.82                             | 13.47                             | 23.94                   | -10.48                  |
| Mid     | 5200               | 10.06                             | 10.88                             | 13.50                             | 23.93                   | -10.43                  |
| High    | 5240               | 10.04                             | 10.05                             | 13.06                             | 23.89                   | -10.84                  |

### PPSD Results

| Channel | Frequency<br>[MHz] | Chain 0<br>Meas<br>PPSD<br>[dBm] | Chain 1<br>Meas<br>PPSD<br>[dBm] | Total<br>Corr'd<br>PPSD<br>[dBm] | PPSD<br>Limit<br>[dBm] | PPSD<br>Margin<br>[dB] |
|---------|--------------------|----------------------------------|----------------------------------|----------------------------------|------------------------|------------------------|
| Low     | 5180               | -0.96                            | 0.00                             | 2.86                             | 11.00                  | -8.14                  |
| Mid     | 5200               | -0.87                            | -0.11                            | 2.84                             | 11.00                  | -8.16                  |
| High    | 5240               | -1.01                            | -0.65                            | 2.49                             | 11.00                  | -8.51                  |

### 9.2.3.802.11n HT40 MODE IN THE 5.2 GHz BAND

#### Bandwidth and Antenna Gain

| Channel | Frequency<br>[MHz] | Min<br>26 dB<br>BW<br>[MHz] | Directional<br>Gain<br>for Power<br>[dBi] | Directional<br>Gain<br>for PPSP<br>[dBi] |
|---------|--------------------|-----------------------------|-------------------------------------------|------------------------------------------|
| Low     | 5190               | 40.28                       | 1.24                                      | 1.24                                     |
| High    | 5230               | 40.04                       | 1.24                                      | 1.24                                     |

#### Limits

| Channel | Frequency<br>[MHz] | FCC<br>Power<br>Limit<br>[dBm] | Power<br>Limit<br>[dBm] | FCC<br>PPSP<br>Limit<br>[dBm] |
|---------|--------------------|--------------------------------|-------------------------|-------------------------------|
| Low     | 5190               | 24.00                          | 24.00                   | 11.00                         |
| High    | 5230               | 24.00                          | 24.00                   | 11.00                         |

|                    |      |                                  |
|--------------------|------|----------------------------------|
| Duty Cycle CF [dB] | 0.59 | Included in Calculations of PPSP |
|--------------------|------|----------------------------------|

#### Output Power Results

| Channel | Frequency<br>[MHz] | Chain 0<br>Meas<br>Power<br>[dBm] | Chain 1<br>Meas<br>Power<br>[dBm] | Total<br>Corr'd<br>Power<br>[dBm] | Power<br>Limit<br>[dBm] | Power<br>Margin<br>[dB] |
|---------|--------------------|-----------------------------------|-----------------------------------|-----------------------------------|-------------------------|-------------------------|
| Low     | 5190               | 10.63                             | 10.62                             | 13.64                             | 24.00                   | -10.36                  |
| High    | 5230               | 10.64                             | 10.59                             | 13.63                             | 24.00                   | -10.37                  |

#### PPSP Results

| Channel | Frequency<br>[MHz] | Chain 0<br>Meas<br>PPSP<br>[dBm] | Chain 1<br>Meas<br>PPSP<br>[dBm] | Total<br>Corr'd<br>PPSP<br>[dBm] | PPSP<br>Limit<br>[dBm] | PPSP<br>Margin<br>[dB] |
|---------|--------------------|----------------------------------|----------------------------------|----------------------------------|------------------------|------------------------|
| Low     | 5190               | -3.53                            | -3.64                            | 0.02                             | 11.00                  | -10.98                 |
| High    | 5230               | -3.42                            | -3.54                            | 0.13                             | 11.00                  | -10.87                 |

## 9.2.4. 802.11ac VHT80 MODE IN THE 5.2 GHz BAND

### Bandwidth and Antenna Gain

| Channel | Frequency<br>[MHz] | Min<br>26 dB<br>BW<br>[MHz] | Directional<br>Gain<br>for Power<br>[dBi] | Directional<br>Gain<br>for PPSP<br>[dBi] |
|---------|--------------------|-----------------------------|-------------------------------------------|------------------------------------------|
| Middle  | 5210               | 82.66                       | 1.24                                      | 1.24                                     |

### Limits

| Channel | Frequency<br>[MHz] | FCC<br>Power<br>Limit<br>[dBm] | Power<br>Limit<br>[dBm] | FCC<br>PPSP<br>Limit<br>[dBm] |
|---------|--------------------|--------------------------------|-------------------------|-------------------------------|
| Middle  | 5210               | 24.00                          | 24.00                   | 11.00                         |

|                    |      |                                  |
|--------------------|------|----------------------------------|
| Duty Cycle CF [dB] | 1.12 | Included in Calculations of PPSP |
|--------------------|------|----------------------------------|

### Output Power Results

| Channel | Frequency<br>[MHz] | Chain 0<br>Meas<br>Power<br>[dBm] | Chain 1<br>Meas<br>Power<br>[dBm] | Total<br>Corr'd<br>Power<br>[dBm] | Power<br>Limit<br>[dBm] | Power<br>Margin<br>[dB] |
|---------|--------------------|-----------------------------------|-----------------------------------|-----------------------------------|-------------------------|-------------------------|
| Middle  | 5210               | 10.35                             | 10.28                             | 13.33                             | 24.00                   | -10.67                  |

### PPSP Results

| Channel | Frequency<br>[MHz] | Chain 0<br>Meas<br>PPSP<br>[dBm] | Chain 1<br>Meas<br>PPSP<br>[dBm] | Total<br>Corr'd<br>PPSP<br>[dBm] | PPSP<br>Limit<br>[dBm] | PPSP<br>Margin<br>[dB] |
|---------|--------------------|----------------------------------|----------------------------------|----------------------------------|------------------------|------------------------|
| Middle  | 5210               | -7.10                            | -7.24                            | -3.04                            | 11.00                  | -14.04                 |

### 9.2.5.802.11a MODE IN THE 5.3 GHz BAND

#### Bandwidth and Antenna Gain

| Channel | Frequency<br>[MHz] | Min<br>26 dB<br>BW<br>[MHz] | Directional<br>Gain<br>for Power<br>[dBi] | Directional<br>Gain<br>for PPSD<br>[dBi] |
|---------|--------------------|-----------------------------|-------------------------------------------|------------------------------------------|
| Low     | 5260               | 18.72                       | 0.88                                      | 0.88                                     |
| Mid     | 5300               | 18.93                       | 0.88                                      | 0.88                                     |
| High    | 5320               | 18.76                       | 0.88                                      | 0.88                                     |

#### Limits

| Channel | Frequency<br>[MHz] | FCC<br>Power<br>Limit<br>[dBm] | Power<br>Limit<br>[dBm] | FCC<br>PPSD<br>Limit<br>[dBm] |
|---------|--------------------|--------------------------------|-------------------------|-------------------------------|
| Low     | 5260               | 23.72                          | 23.72                   | 11.00                         |
| Mid     | 5300               | 23.77                          | 23.77                   | 11.00                         |
| High    | 5320               | 23.73                          | 23.73                   | 11.00                         |

|                    |      |                                  |
|--------------------|------|----------------------------------|
| Duty Cycle CF [dB] | 0.29 | Included in Calculations of PPSD |
|--------------------|------|----------------------------------|

#### Output Power Results

| Channel | Frequency<br>[MHz] | Primary<br>Antenna 1<br>Power<br>[dBm] | Secondary<br>Antenna 2<br>Power<br>[dBm] | Total<br>Corr'd<br>Power<br>[dBm] | Power<br>Limit<br>[dBm] | Power<br>Margin<br>[dB] |
|---------|--------------------|----------------------------------------|------------------------------------------|-----------------------------------|-------------------------|-------------------------|
| Low     | 5260               | 10.28                                  | 10.38                                    | 13.34                             | 23.72                   | -10.38                  |
| Mid     | 5300               | 10.11                                  | 10.13                                    | 13.13                             | 23.77                   | -10.64                  |
| High    | 5320               | 10.14                                  | 10.13                                    | 13.15                             | 23.73                   | -10.59                  |

#### PPSD Results

| Channel | Frequency<br>[MHz] | Primary<br>Antenna 1<br>PPSD<br>[dBm] | Secondary<br>Antenna 2<br>PPSD<br>[dBm] | Total<br>Corr'd<br>PPSD<br>[dBm] | PPSD<br>Limit<br>[dBm] | PPSD<br>Margin<br>[dB] |
|---------|--------------------|---------------------------------------|-----------------------------------------|----------------------------------|------------------------|------------------------|
| Low     | 5260               | -0.47                                 | -0.32                                   | 2.90                             | 11.00                  | -8.10                  |
| Mid     | 5300               | -0.61                                 | -0.79                                   | 2.60                             | 11.00                  | -8.40                  |
| High    | 5320               | -0.50                                 | -0.73                                   | 2.68                             | 11.00                  | -8.32                  |

## 9.2.6.802.11n HT20 MODE IN THE 5.3 GHz BAND

### Bandwidth and Antenna Gain

| Channel | Frequency<br>[MHz] | Min<br>26 dB<br>BW<br>[MHz] | Directional<br>Gain<br>for Power<br>[dBi] | Directional<br>Gain<br>for PPSD<br>[dBi] |
|---------|--------------------|-----------------------------|-------------------------------------------|------------------------------------------|
| Low     | 5260               | 19.70                       | 0.88                                      | 0.88                                     |
| Mid     | 5300               | 19.60                       | 0.88                                      | 0.88                                     |
| High    | 5320               | 19.50                       | 0.88                                      | 0.88                                     |

### Limits

| Channel | Frequency<br>[MHz] | FCC<br>Power<br>Limit<br>[dBm] | Power<br>Limit<br>[dBm] | FCC<br>PPSD<br>Limit<br>[dBm] |
|---------|--------------------|--------------------------------|-------------------------|-------------------------------|
| Low     | 5260               | 23.94                          | 23.94                   | 11.00                         |
| Mid     | 5300               | 23.92                          | 23.92                   | 11.00                         |
| High    | 5320               | 23.90                          | 23.90                   | 11.00                         |

|                    |      |                                  |
|--------------------|------|----------------------------------|
| Duty Cycle CF [dB] | 0.30 | Included in Calculations of PPSP |
|--------------------|------|----------------------------------|

### Output Power Results

| Channel | Frequency<br>[MHz] | Chain 0<br>Meas<br>Power<br>[dBm] | Chain 1<br>Meas<br>Power<br>[dBm] | Total<br>Corr'd<br>Power<br>[dBm] | Power<br>Limit<br>[dBm] | Power<br>Margin<br>[dB] |
|---------|--------------------|-----------------------------------|-----------------------------------|-----------------------------------|-------------------------|-------------------------|
| Low     | 5260               | 10.05                             | 10.14                             | 13.11                             | 23.94                   | -10.84                  |
| Mid     | 5300               | 10.95                             | 10.93                             | 13.95                             | 23.92                   | -9.97                   |
| High    | 5320               | 10.95                             | 10.94                             | 13.96                             | 23.90                   | -9.95                   |

### PPSD Results

| Channel | Frequency<br>[MHz] | Chain 0<br>Meas<br>PPSD<br>[dBm] | Chain 1<br>Meas<br>PPSD<br>[dBm] | Total<br>Corr'd<br>PPSD<br>[dBm] | PPSD<br>Limit<br>[dBm] | PPSD<br>Margin<br>[dB] |
|---------|--------------------|----------------------------------|----------------------------------|----------------------------------|------------------------|------------------------|
| Low     | 5260               | -1.06                            | -0.78                            | 2.40                             | 11.00                  | -8.60                  |
| Mid     | 5300               | 0.06                             | -0.18                            | 3.25                             | 11.00                  | -7.75                  |
| High    | 5320               | -0.34                            | -0.07                            | 3.11                             | 11.00                  | -7.89                  |

## 9.2.7.802.11n HT40 MODE IN THE 5.3 GHz BAND

### Bandwidth and Antenna Gain

| Channel | Frequency<br>[MHz] | Min<br>26 dB<br>BW<br>[MHz] | Directional<br>Gain<br>for Power<br>[dBi] | Directional<br>Gain<br>for PPSD<br>[dBi] |
|---------|--------------------|-----------------------------|-------------------------------------------|------------------------------------------|
| Low     | 5270               | 40.22                       | 0.88                                      | 0.88                                     |
| High    | 5310               | 40.16                       | 0.88                                      | 0.88                                     |

### Limits

| Channel | Frequency<br>[MHz] | FCC<br>Power<br>Limit<br>[dBm] | Power<br>Limit<br>[dBm] | FCC<br>PPSD<br>Limit<br>[dBm] |
|---------|--------------------|--------------------------------|-------------------------|-------------------------------|
| Low     | 5270               | 24.00                          | 24.00                   | 11.00                         |
| High    | 5310               | 24.00                          | 24.00                   | 11.00                         |

|                    |      |                                  |
|--------------------|------|----------------------------------|
| Duty Cycle CF [dB] | 0.59 | Included in Calculations of PPSD |
|--------------------|------|----------------------------------|

### Output Power Results

| Channel | Frequency<br>[MHz] | Chain 0<br>Meas<br>Power<br>[dBm] | Chain 1<br>Meas<br>Power<br>[dBm] | Total<br>Corr'd<br>Power<br>[dBm] | Power<br>Limit<br>[dBm] | Power<br>Margin<br>[dB] |
|---------|--------------------|-----------------------------------|-----------------------------------|-----------------------------------|-------------------------|-------------------------|
| Low     | 5270               | 10.62                             | 10.72                             | 13.68                             | 24.00                   | -10.32                  |
| High    | 5310               | 10.48                             | 10.46                             | 13.48                             | 24.00                   | -10.52                  |

### PPSD Results

| Channel | Frequency<br>[MHz] | Chain 0<br>Meas<br>PPSD<br>[dBm] | Chain 1<br>Meas<br>PPSD<br>[dBm] | Total<br>Corr'd<br>PPSD<br>[dBm] | PPSD<br>Limit<br>[dBm] | PPSD<br>Margin<br>[dB] |
|---------|--------------------|----------------------------------|----------------------------------|----------------------------------|------------------------|------------------------|
| Low     | 5270               | -3.53                            | -3.60                            | 0.04                             | 11.00                  | -10.96                 |
| High    | 5310               | -4.05                            | -3.81                            | -0.32                            | 11.00                  | -11.32                 |

### 9.2.8. 802.11ac VHT80 MODE IN THE 5.3 GHz BAND

#### Bandwidth and Antenna Gain

| Channel | Frequency<br>[MHz] | Min<br>26 dB<br>BW<br>[MHz] | Directional<br>Gain<br>for Power<br>[dBi] | Directional<br>Gain<br>for PPSD<br>[dBi] |
|---------|--------------------|-----------------------------|-------------------------------------------|------------------------------------------|
| Middle  | 5290               | 81.50                       | 0.88                                      | 0.88                                     |

#### Limits

| Channel | Frequency<br>[MHz] | FCC<br>Power<br>Limit<br>[dBm] | Power<br>Limit<br>[dBm] | FCC<br>PPSD<br>Limit<br>[dBm] |
|---------|--------------------|--------------------------------|-------------------------|-------------------------------|
| Middle  | 5290               | 24.00                          | 24.00                   | 11.00                         |

|                    |      |                                  |
|--------------------|------|----------------------------------|
| Duty Cycle CF [dB] | 1.12 | Included in Calculations of PPSD |
|--------------------|------|----------------------------------|

#### Output Power Results

| Channel | Frequency<br>[MHz] | Chain 0<br>Meas<br>Power<br>[dBm] | Chain 1<br>Meas<br>Power<br>[dBm] | Total<br>Corr'd<br>Power<br>[dBm] | Power<br>Limit<br>[dBm] | Power<br>Margin<br>[dB] |
|---------|--------------------|-----------------------------------|-----------------------------------|-----------------------------------|-------------------------|-------------------------|
| Middle  | 5290               | 10.20                             | 10.15                             | 13.19                             | 24.00                   | -10.81                  |

#### PPSD Results

| Channel | Frequency<br>[MHz] | Chain 0<br>Meas<br>PPSD<br>[dBm] | Chain 1<br>Meas<br>PPSD<br>[dBm] | Total<br>Corr'd<br>PPSD<br>[dBm] | PPSD<br>Limit<br>[dBm] | PPSD<br>Margin<br>[dB] |
|---------|--------------------|----------------------------------|----------------------------------|----------------------------------|------------------------|------------------------|
| Middle  | 5290               | -7.16                            | -7.69                            | -3.29                            | 11.00                  | -14.29                 |

### 9.2.9.802.11a MODE IN THE 5.5 GHz BAND

#### Bandwidth and Antenna Gain

| Channel | Frequency<br>[MHz] | Min<br>26 dB<br>BW<br>[MHz] | Directional<br>Gain<br>for Power<br>[dBi] | Directional<br>Gain<br>for PPSP<br>[dBi] |
|---------|--------------------|-----------------------------|-------------------------------------------|------------------------------------------|
| Low     | 5500               | 19.42                       | 0.59                                      | 0.59                                     |
| Mid     | 5580               | 18.95                       | 0.59                                      | 0.59                                     |
| High    | 5700               | 18.68                       | 0.59                                      | 0.59                                     |

#### Limits

| Channel | Frequency<br>[MHz] | FCC<br>Power<br>Limit<br>[dBm] | Power<br>Limit<br>[dBm] | FCC<br>PPSP<br>Limit<br>[dBm] |
|---------|--------------------|--------------------------------|-------------------------|-------------------------------|
| Low     | 5500               | 23.88                          | 23.88                   | 11.00                         |
| Mid     | 5580               | 23.78                          | 23.78                   | 11.00                         |
| High    | 5700               | 23.71                          | 23.71                   | 11.00                         |

|                    |      |                                  |
|--------------------|------|----------------------------------|
| Duty Cycle CF [dB] | 0.29 | Included in Calculations of PPSP |
|--------------------|------|----------------------------------|

#### Output Power Results

| Channel | Frequency<br>[MHz] | Primary<br>Antenna 1<br>Power<br>[dBm] | Secondary<br>Antenna 2<br>Power<br>[dBm] | Total<br>Corr'd<br>Power<br>[dBm] | Power<br>Limit<br>[dBm] | Power<br>Margin<br>[dB] |
|---------|--------------------|----------------------------------------|------------------------------------------|-----------------------------------|-------------------------|-------------------------|
| Low     | 5500               | 10.06                                  | 10.19                                    | 13.14                             | 23.88                   | -10.75                  |
| Mid     | 5580               | 10.38                                  | 10.51                                    | 13.46                             | 23.78                   | -10.32                  |
| High    | 5700               | 10.10                                  | 10.15                                    | 13.14                             | 23.71                   | -10.58                  |

#### PPSP Results

| Channel | Frequency<br>[MHz] | Primary<br>Antenna 1<br>PPSP<br>[dBm] | Secondary<br>Antenna 2<br>PPSP<br>[dBm] | Total<br>Corr'd<br>PPSP<br>[dBm] | PPSP<br>Limit<br>[dBm] | PPSP<br>Margin<br>[dB] |
|---------|--------------------|---------------------------------------|-----------------------------------------|----------------------------------|------------------------|------------------------|
| Low     | 5500               | -0.84                                 | -0.46                                   | 2.65                             | 11.00                  | -8.35                  |
| Mid     | 5580               | -0.35                                 | -0.33                                   | 2.96                             | 11.00                  | -8.04                  |
| High    | 5700               | -0.74                                 | -0.18                                   | 2.85                             | 11.00                  | -8.15                  |

## 9.2.10.802.11n HT20 MODE IN THE 5.5 GHz BAND

### Bandwidth and Antenna Gain

| Channel | Frequency<br>[MHz] | Min<br>26 dB<br>BW<br>[MHz] | Directional<br>Gain<br>for Power<br>[dBi] | Directional<br>Gain<br>for PPSD<br>[dBi] |
|---------|--------------------|-----------------------------|-------------------------------------------|------------------------------------------|
| Low     | 5500               | 19.67                       | 0.59                                      | 0.59                                     |
| Mid     | 5580               | 19.82                       | 0.59                                      | 0.59                                     |
| High    | 5700               | 19.68                       | 0.59                                      | 0.59                                     |

### Limits

| Channel | Frequency<br>[MHz] | FCC<br>Power<br>Limit<br>[dBm] | Power<br>Limit<br>[dBm] | FCC<br>PPSD<br>Limit<br>[dBm] |
|---------|--------------------|--------------------------------|-------------------------|-------------------------------|
| Low     | 5500               | 23.94                          | 23.94                   | 11.00                         |
| Mid     | 5580               | 23.97                          | 23.97                   | 11.00                         |
| High    | 5700               | 23.94                          | 23.94                   | 11.00                         |

|                    |      |                                  |
|--------------------|------|----------------------------------|
| Duty Cycle CF [dB] | 0.30 | Included in Calculations of PPSD |
|--------------------|------|----------------------------------|

### Output Power Results

| Channel | Frequency<br>[MHz] | Chain 0<br>Meas<br>Power<br>[dBm] | Chain 1<br>Meas<br>Power<br>[dBm] | Total<br>Corr'd<br>Power<br>[dBm] | Power<br>Limit<br>[dBm] | Power<br>Margin<br>[dB] |
|---------|--------------------|-----------------------------------|-----------------------------------|-----------------------------------|-------------------------|-------------------------|
| Low     | 5500               | 10.80                             | 10.94                             | 13.88                             | 23.94                   | -10.06                  |
| Mid     | 5580               | 10.15                             | 10.27                             | 13.22                             | 23.97                   | -10.75                  |
| High    | 5700               | 10.89                             | 10.87                             | 13.89                             | 23.94                   | -10.05                  |

### PPSD Results

| Channel | Frequency<br>[MHz] | Chain 0<br>Meas<br>PPSD<br>[dBm] | Chain 1<br>Meas<br>PPSD<br>[dBm] | Total<br>Corr'd<br>PPSD<br>[dBm] | PPSD<br>Limit<br>[dBm] | PPSD<br>Margin<br>[dB] |
|---------|--------------------|----------------------------------|----------------------------------|----------------------------------|------------------------|------------------------|
| Low     | 5500               | -0.13                            | 0.10                             | 3.30                             | 11.00                  | -7.70                  |
| Mid     | 5580               | -0.88                            | -0.83                            | 2.46                             | 11.00                  | -8.54                  |
| High    | 5700               | -0.01                            | 0.35                             | 3.49                             | 11.00                  | -7.51                  |

## 9.2.11.802.11n HT40 MODE IN THE 5.5 GHz BAND

### Bandwidth and Antenna Gain

| Channel | Frequency<br>[MHz] | Min<br>26 dB<br>BW<br>[MHz] | Directional<br>Gain<br>for Power<br>[dBi] | Directional<br>Gain<br>for PPSD<br>[dBi] |
|---------|--------------------|-----------------------------|-------------------------------------------|------------------------------------------|
| Low     | 5510               | 40.14                       | 0.59                                      | 0.59                                     |
| Mid     | 5550               | 40.06                       | 0.59                                      | 0.59                                     |
| High    | 5670               | 40.01                       | 0.59                                      | 0.59                                     |

### Limits

| Channel | Frequency<br>[MHz] | FCC<br>Power<br>Limit<br>[dBm] | Power<br>Limit<br>[dBm] | FCC<br>PPSD<br>Limit<br>[dBm] |
|---------|--------------------|--------------------------------|-------------------------|-------------------------------|
| Low     | 5510               | 24.00                          | 24.00                   | 11.00                         |
| Mid     | 5550               | 24.00                          | 24.00                   | 11.00                         |
| High    | 5670               | 24.00                          | 24.00                   | 11.00                         |

|                    |      |                                  |
|--------------------|------|----------------------------------|
| Duty Cycle CF [dB] | 0.59 | Included in Calculations of PPSD |
|--------------------|------|----------------------------------|

### Output Power Results

| Channel | Frequency<br>[MHz] | Chain 0<br>Meas<br>Power<br>[dBm] | Chain 1<br>Meas<br>Power<br>[dBm] | Total<br>Corr'd<br>Power<br>[dBm] | Power<br>Limit<br>[dBm] | Power<br>Margin<br>[dB] |
|---------|--------------------|-----------------------------------|-----------------------------------|-----------------------------------|-------------------------|-------------------------|
| Low     | 5510               | 10.39                             | 10.50                             | 13.46                             | 24.00                   | -10.54                  |
| Mid     | 5550               | 10.79                             | 10.92                             | 13.87                             | 24.00                   | -10.13                  |
| High    | 5670               | 10.46                             | 10.55                             | 13.52                             | 24.00                   | -10.48                  |

### PPSD Results

| Channel | Frequency<br>[MHz] | Chain 0<br>Meas<br>PPSD<br>[dBm] | Chain 1<br>Meas<br>PPSD<br>[dBm] | Total<br>Corr'd<br>PPSD<br>[dBm] | PPSD<br>Limit<br>[dBm] | PPSD<br>Margin<br>[dB] |
|---------|--------------------|----------------------------------|----------------------------------|----------------------------------|------------------------|------------------------|
| Low     | 5510               | -4.04                            | -4.07                            | -0.45                            | 11.00                  | -11.45                 |
| Mid     | 5550               | -4.12                            | -4.28                            | -0.59                            | 11.00                  | -11.59                 |
| High    | 5670               | -3.25                            | -2.96                            | 0.50                             | 11.00                  | -10.50                 |

## 9.2.12. 802.11ac VHT80 MODE IN THE 5.5 GHz BAND

### Bandwidth and Antenna Gain

| Channel | Frequency<br>[MHz] | Min<br>26 dB<br>BW<br>[MHz] | Directional<br>Gain<br>for Power<br>[dBi] | Directional<br>Gain<br>for PPSD<br>[dBi] |
|---------|--------------------|-----------------------------|-------------------------------------------|------------------------------------------|
| Low     | 5530               | 81.76                       | 0.59                                      | 0.59                                     |

### Limits

| Channel | Frequency<br>[MHz] | FCC<br>Power<br>Limit<br>[dBm] | Power<br>Limit<br>[dBm] | FCC<br>PPSD<br>Limit<br>[dBm] |
|---------|--------------------|--------------------------------|-------------------------|-------------------------------|
| Low     | 5530               | 24.00                          | 24.00                   | 11.00                         |

|                    |      |                                  |
|--------------------|------|----------------------------------|
| Duty Cycle CF [dB] | 1.12 | Included in Calculations of PPSD |
|--------------------|------|----------------------------------|

### Output Power Results

| Channel | Frequency<br>[MHz] | Chain 0<br>Meas<br>Power<br>[dBm] | Chain 1<br>Meas<br>Power<br>[dBm] | Total<br>Corr'd<br>Power<br>[dBm] | Power<br>Limit<br>[dBm] | Power<br>Margin<br>[dB] |
|---------|--------------------|-----------------------------------|-----------------------------------|-----------------------------------|-------------------------|-------------------------|
| Low     | 5530               | 10.79                             | 10.31                             | 13.57                             | 24.00                   | -10.43                  |

### PPSD Results

| Channel | Frequency<br>[MHz] | Chain 0<br>Meas<br>PPSD<br>[dBm] | Chain 1<br>Meas<br>PPSD<br>[dBm] | Total<br>Corr'd<br>PPSD<br>[dBm] | PPSD<br>Limit<br>[dBm] | PPSD<br>Margin<br>[dB] |
|---------|--------------------|----------------------------------|----------------------------------|----------------------------------|------------------------|------------------------|
| Low     | 5530               | -7.67                            | -7.09                            | -3.24                            | 11.00                  | -14.24                 |

### 9.2.13.802.11a MODE IN THE 5.8 GHz BAND

#### Bandwidth and Antenna Gain

| Channel | Frequency<br>[MHz] | Min<br>26 dB<br>BW<br>[MHz] | Directional<br>Gain<br>for Power<br>[dBi] | Directional<br>Gain<br>for PPSD<br>[dBi] |
|---------|--------------------|-----------------------------|-------------------------------------------|------------------------------------------|
| Low     | 5745               | 18.88                       | 0.54                                      | 0.54                                     |
| Mid     | 5785               | 18.64                       | 0.54                                      | 0.54                                     |
| High    | 5825               | 19.12                       | 0.54                                      | 0.54                                     |

#### Limits

| Channel | Frequency<br>[MHz] | FCC<br>Power<br>Limit<br>[dBm] | Power<br>Limit<br>[dBm] | FCC<br>PPSD<br>Limit<br>[dBm] |
|---------|--------------------|--------------------------------|-------------------------|-------------------------------|
| Low     | 5745               | 30.00                          | 30.00                   | 30.00                         |
| Mid     | 5785               | 30.00                          | 30.00                   | 30.00                         |
| High    | 5825               | 30.00                          | 30.00                   | 30.00                         |

|                    |      |                                  |
|--------------------|------|----------------------------------|
| Duty Cycle CF [dB] | 0.29 | Included in Calculations of PPSP |
|--------------------|------|----------------------------------|

#### Output Power Results

| Channel | Frequency<br>[MHz] | Primary<br>Antenna 1<br>Power<br>[dBm] | Secondary<br>Antenna 2<br>Power<br>[dBm] | Total<br>Corr'd<br>Power<br>[dBm] | Power<br>Limit<br>[dBm] | Power<br>Margin<br>[dB] |
|---------|--------------------|----------------------------------------|------------------------------------------|-----------------------------------|-------------------------|-------------------------|
| Low     | 5745               | 10.68                                  | 10.56                                    | 13.63                             | 30.00                   | -16.37                  |
| Mid     | 5785               | 10.90                                  | 10.07                                    | 13.52                             | 30.00                   | -16.48                  |
| High    | 5825               | 10.71                                  | 10.08                                    | 13.42                             | 30.00                   | -16.58                  |

#### PPSD Results

| Channel | Frequency<br>[MHz] | Primary<br>Antenna 1<br>PPSD<br>[dBm] | Secondary<br>Antenna 2<br>PPSD<br>[dBm] | Total<br>Corr'd<br>PPSD<br>[dBm] | PPSD<br>Limit<br>[dBm] | PPSD<br>Margin<br>[dB] |
|---------|--------------------|---------------------------------------|-----------------------------------------|----------------------------------|------------------------|------------------------|
| Low     | 5745               | -2.96                                 | -2.92                                   | 0.36                             | 30.00                  | -29.64                 |
| Mid     | 5785               | -2.84                                 | -3.67                                   | 0.06                             | 30.00                  | -29.94                 |
| High    | 5825               | -2.71                                 | -3.65                                   | 0.14                             | 30.00                  | -29.86                 |

## 9.2.14.802.11n HT20 MODE IN THE 5.8 GHz BAND

### Bandwidth and Antenna Gain

| Channel | Frequency<br>[MHz] | Min<br>26 dB<br>BW<br>[MHz] | Directional<br>Gain<br>for Power<br>[dBi] | Directional<br>Gain<br>for PPSD<br>[dBi] |
|---------|--------------------|-----------------------------|-------------------------------------------|------------------------------------------|
| Low     | 5745               | 19.85                       | 0.54                                      | 0.54                                     |
| Mid     | 5785               | 19.72                       | 0.54                                      | 0.54                                     |
| High    | 5825               | 19.68                       | 0.54                                      | 0.54                                     |

### Limits

| Channel | Frequency<br>[MHz] | FCC<br>Power<br>Limit<br>[dBm] | Power<br>Limit<br>[dBm] | FCC<br>PPSD<br>Limit<br>[dBm] |
|---------|--------------------|--------------------------------|-------------------------|-------------------------------|
| Low     | 5745               | 30.00                          | 30.00                   | 30.00                         |
| Mid     | 5785               | 30.00                          | 30.00                   | 30.00                         |
| High    | 5825               | 30.00                          | 30.00                   | 30.00                         |

|                    |      |                                  |
|--------------------|------|----------------------------------|
| Duty Cycle CF [dB] | 0.30 | Included in Calculations of PPSD |
|--------------------|------|----------------------------------|

### Output Power Results

| Channel | Frequency<br>[MHz] | Chain 0<br>Meas<br>Power<br>[dBm] | Chain 1<br>Meas<br>Power<br>[dBm] | Total<br>Corr'd<br>Power<br>[dBm] | Power<br>Limit<br>[dBm] | Power<br>Margin<br>[dB] |
|---------|--------------------|-----------------------------------|-----------------------------------|-----------------------------------|-------------------------|-------------------------|
| Low     | 5745               | 10.44                             | 10.36                             | 13.41                             | 30.00                   | -16.59                  |
| Mid     | 5785               | 10.66                             | 10.81                             | 13.75                             | 30.00                   | -16.25                  |
| High    | 5825               | 10.49                             | 10.82                             | 13.67                             | 30.00                   | -16.33                  |

### PPSD Results

| Channel | Frequency<br>[MHz] | Chain 0<br>Meas<br>PPSD<br>[dBm] | Chain 1<br>Meas<br>PPSD<br>[dBm] | Total<br>Corr'd<br>PPSD<br>[dBm] | PPSD<br>Limit<br>[dBm] | PPSD<br>Margin<br>[dB] |
|---------|--------------------|----------------------------------|----------------------------------|----------------------------------|------------------------|------------------------|
| Low     | 5745               | -3.60                            | -3.38                            | -0.17                            | 30.00                  | -30.17                 |
| Mid     | 5785               | -3.13                            | -3.12                            | 0.19                             | 30.00                  | -29.81                 |
| High    | 5825               | -3.27                            | -3.15                            | 0.10                             | 30.00                  | -29.90                 |

## 9.2.15.802.11n HT40 MODE IN THE 5.8 GHz BAND

### Bandwidth and Antenna Gain

| Channel | Frequency<br>[MHz] | Min<br>26 dB<br>BW<br>[MHz] | Directional<br>Gain<br>for Power<br>[dBi] | Directional<br>Gain<br>for PPSD<br>[dBi] |
|---------|--------------------|-----------------------------|-------------------------------------------|------------------------------------------|
| Low     | 5755               | 39.97                       | 0.54                                      | 0.54                                     |
| High    | 5795               | 40.24                       | 0.54                                      | 0.54                                     |

### Limits

| Channel | Frequency<br>[MHz] | FCC<br>Power<br>Limit<br>[dBm] | Power<br>Limit<br>[dBm] | FCC<br>PPSD<br>Limit<br>[dBm] |
|---------|--------------------|--------------------------------|-------------------------|-------------------------------|
| Low     | 5755               | 30.00                          | 30.00                   | 30.00                         |
| High    | 5795               | 30.00                          | 30.00                   | 30.00                         |

|                    |      |                                  |
|--------------------|------|----------------------------------|
| Duty Cycle CF [dB] | 0.59 | Included in Calculations of PPSD |
|--------------------|------|----------------------------------|

### Output Power Results

| Channel | Frequency<br>[MHz] | Chain 0<br>Meas<br>Power<br>[dBm] | Chain 1<br>Meas<br>Power<br>[dBm] | Total<br>Corr'd<br>Power<br>[dBm] | Power<br>Limit<br>[dBm] | Power<br>Margin<br>[dB] |
|---------|--------------------|-----------------------------------|-----------------------------------|-----------------------------------|-------------------------|-------------------------|
| Low     | 5755               | 10.96                             | 10.96                             | 13.97                             | 30.00                   | -16.03                  |
| High    | 5795               | 10.13                             | 10.46                             | 13.31                             | 30.00                   | -16.69                  |

### PPSD Results

| Channel | Frequency<br>[MHz] | Chain 0<br>Meas<br>PPSD<br>[dBm] | Chain 1<br>Meas<br>PPSD<br>[dBm] | Total<br>Corr'd<br>PPSD<br>[dBm] | PPSD<br>Limit<br>[dBm] | PPSD<br>Margin<br>[dB] |
|---------|--------------------|----------------------------------|----------------------------------|----------------------------------|------------------------|------------------------|
| Low     | 5755               | -5.94                            | -5.55                            | -2.14                            | 30.00                  | -32.14                 |
| High    | 5795               | -6.81                            | -6.46                            | -3.03                            | 30.00                  | -33.03                 |

## 9.2.16. 802.11ac VHT80 MODE IN THE 5.8 GHz BAND

### Bandwidth and Antenna Gain

| Channel | Frequency<br>[MHz] | Min<br>26 dB<br>BW<br>[MHz] | Directional<br>Gain<br>for Power<br>[dBi] | Directional<br>Gain<br>for PPSP<br>[dBi] |
|---------|--------------------|-----------------------------|-------------------------------------------|------------------------------------------|
| Middle  | 5775               | 82.49                       | 0.54                                      | 0.54                                     |

### Limits

| Channel | Frequency<br>[MHz] | FCC<br>Power<br>Limit<br>[dBm] | Power<br>Limit<br>[dBm] | FCC<br>PPSP<br>Limit<br>[dBm] |
|---------|--------------------|--------------------------------|-------------------------|-------------------------------|
| Middle  | 5775               | 30.00                          | 30.00                   | 30.00                         |

|                    |      |                                  |
|--------------------|------|----------------------------------|
| Duty Cycle CF [dB] | 1.12 | Included in Calculations of PPSP |
|--------------------|------|----------------------------------|

### Output Power Results

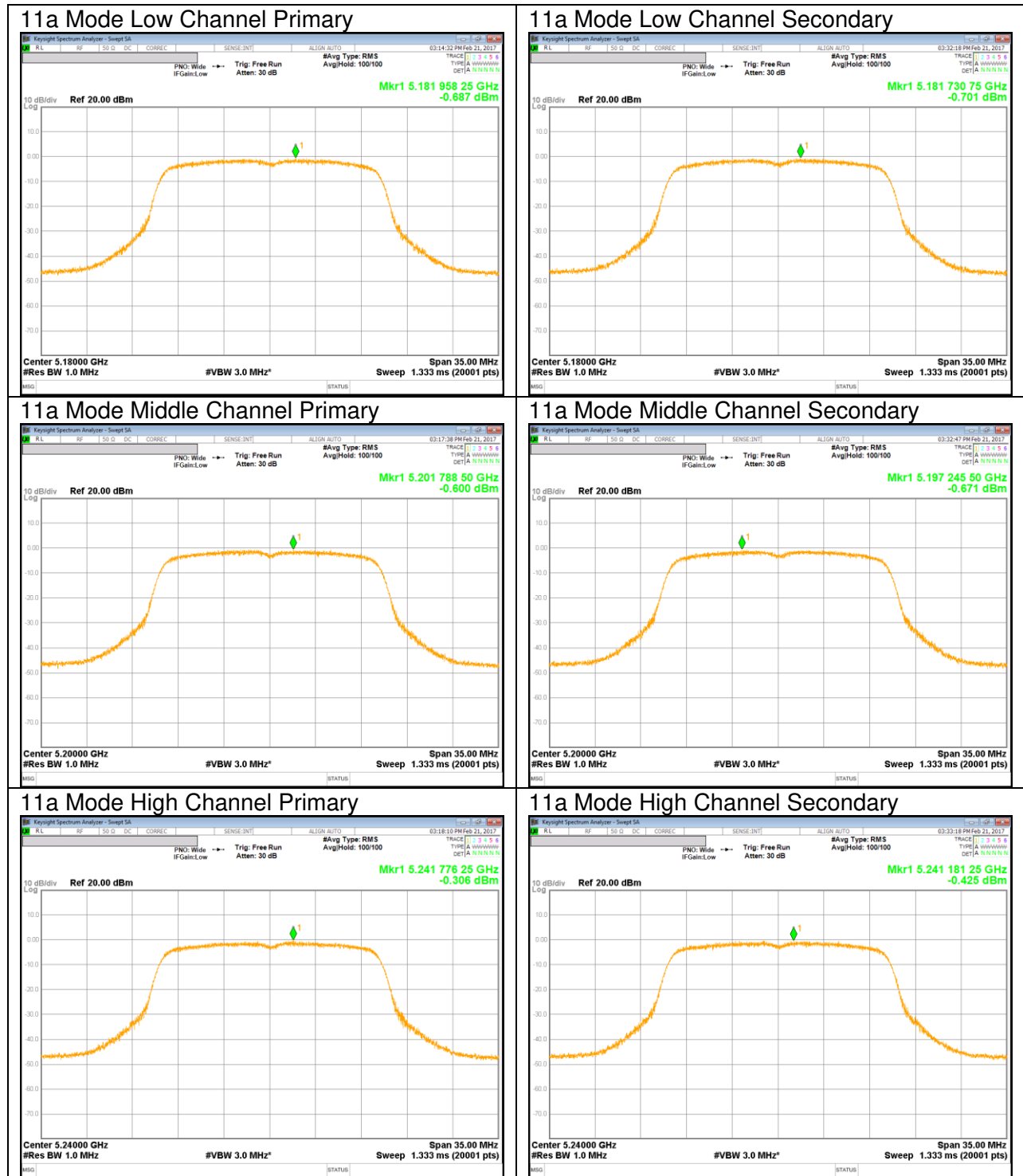
| Channel | Frequency<br>[MHz] | Chain 0<br>Meas<br>Power<br>[dBm] | Chain 1<br>Meas<br>Power<br>[dBm] | Total<br>Corr'd<br>Power<br>[dBm] | Power<br>Limit<br>[dBm] | Power<br>Margin<br>[dB] |
|---------|--------------------|-----------------------------------|-----------------------------------|-----------------------------------|-------------------------|-------------------------|
| Middle  | 5775               | 10.69                             | 10.75                             | 13.73                             | 30.00                   | -16.27                  |

### PPSP Results

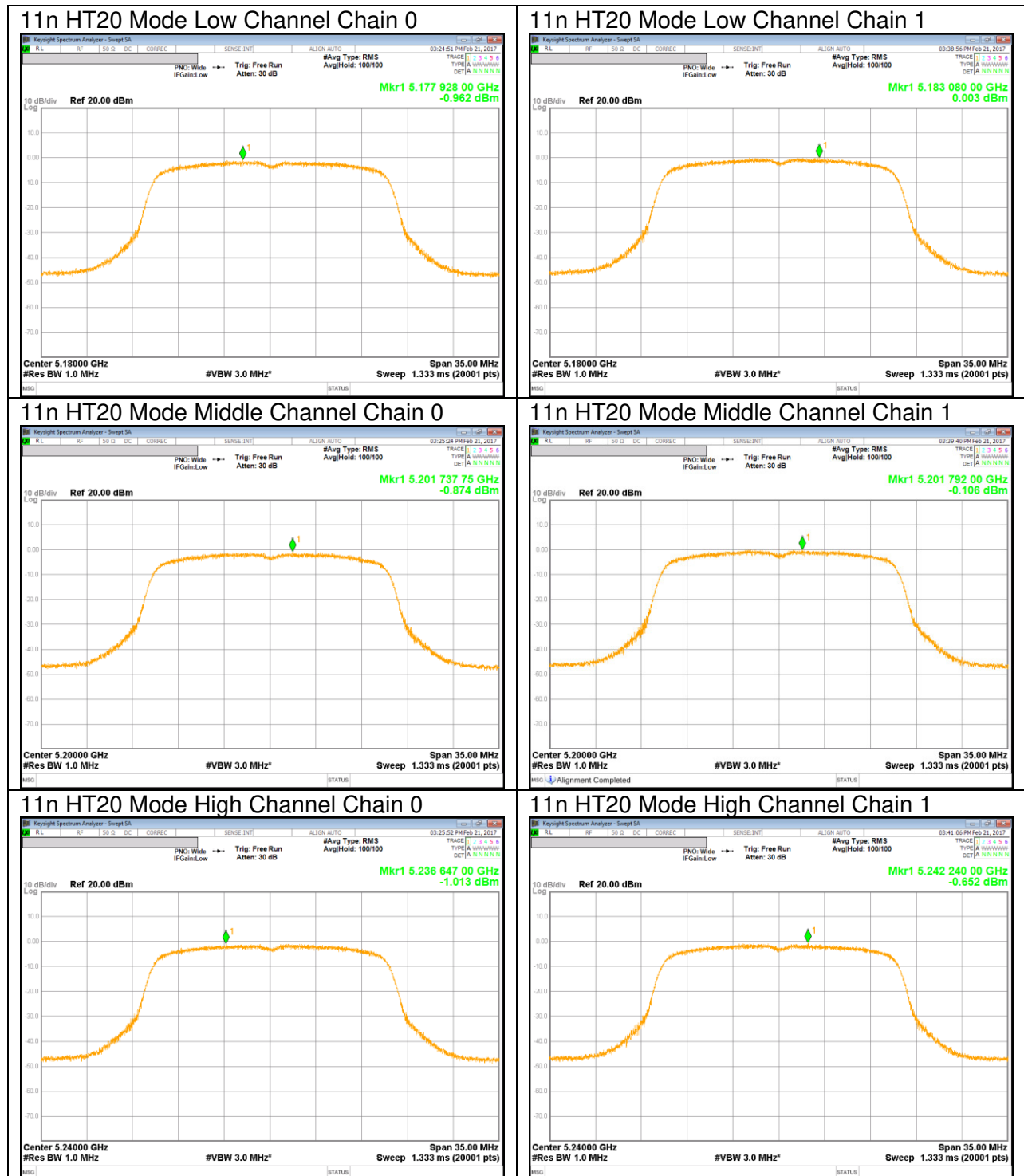
| Channel | Frequency<br>[MHz] | Chain 0<br>Meas<br>PPSP<br>[dBm] | Chain 1<br>Meas<br>PPSP<br>[dBm] | Total<br>Corr'd<br>PPSP<br>[dBm] | PPSP<br>Limit<br>[dBm] | PPSP<br>Margin<br>[dB] |
|---------|--------------------|----------------------------------|----------------------------------|----------------------------------|------------------------|------------------------|
| Middle  | 5775               | -9.99                            | -9.59                            | -5.65                            | 30.00                  | -35.65                 |

## 9.2.17.PPSD PLOTS

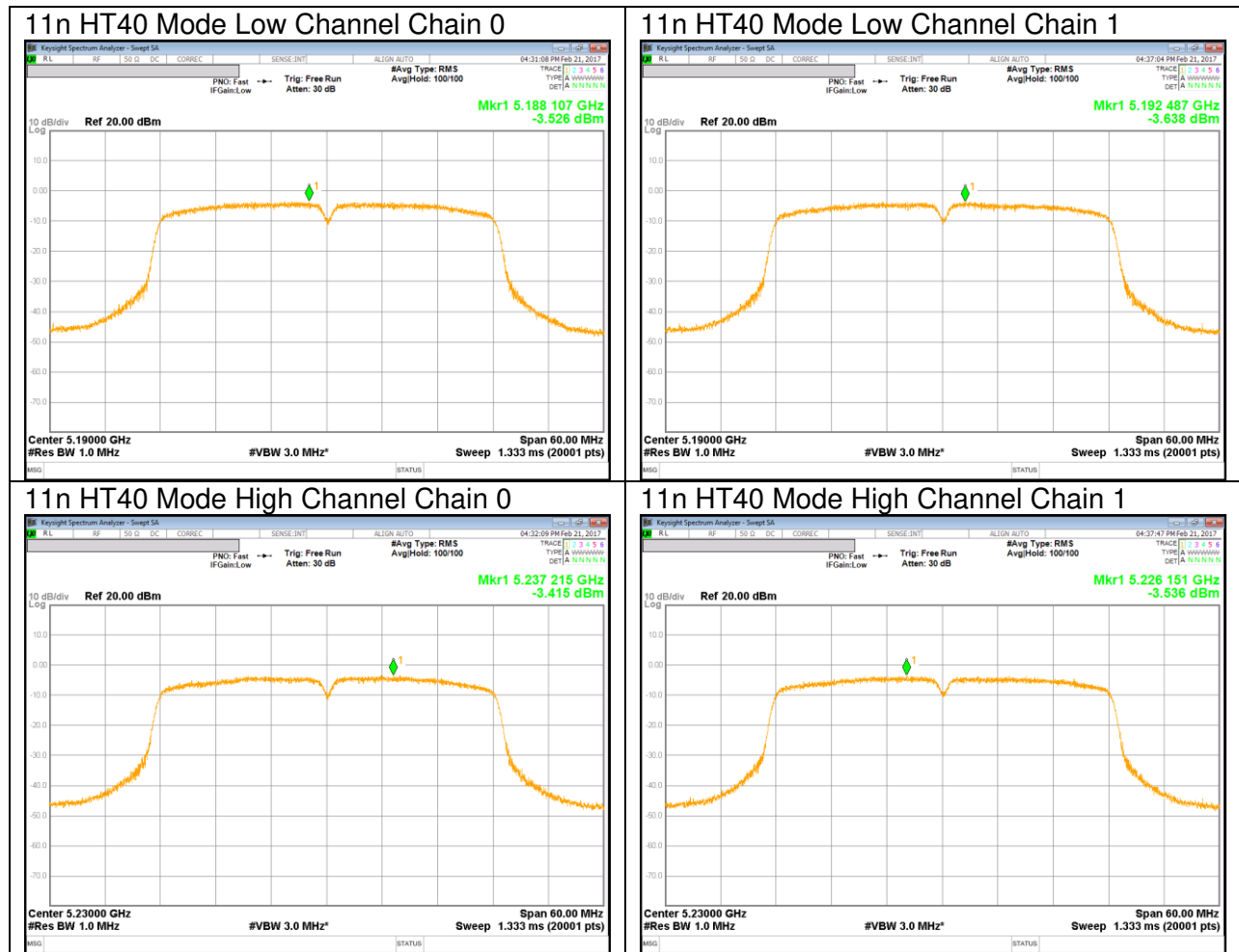
### UNII 5.2 GHz IEEE 802.11a mode



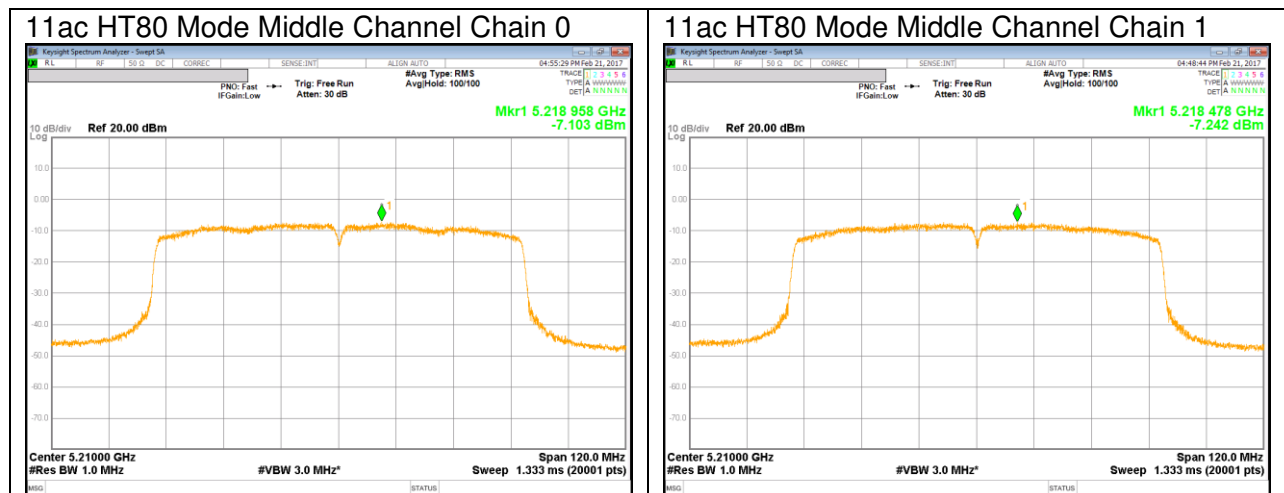
## UNII 5.2 GHz IEEE 802.11n HT20 mode



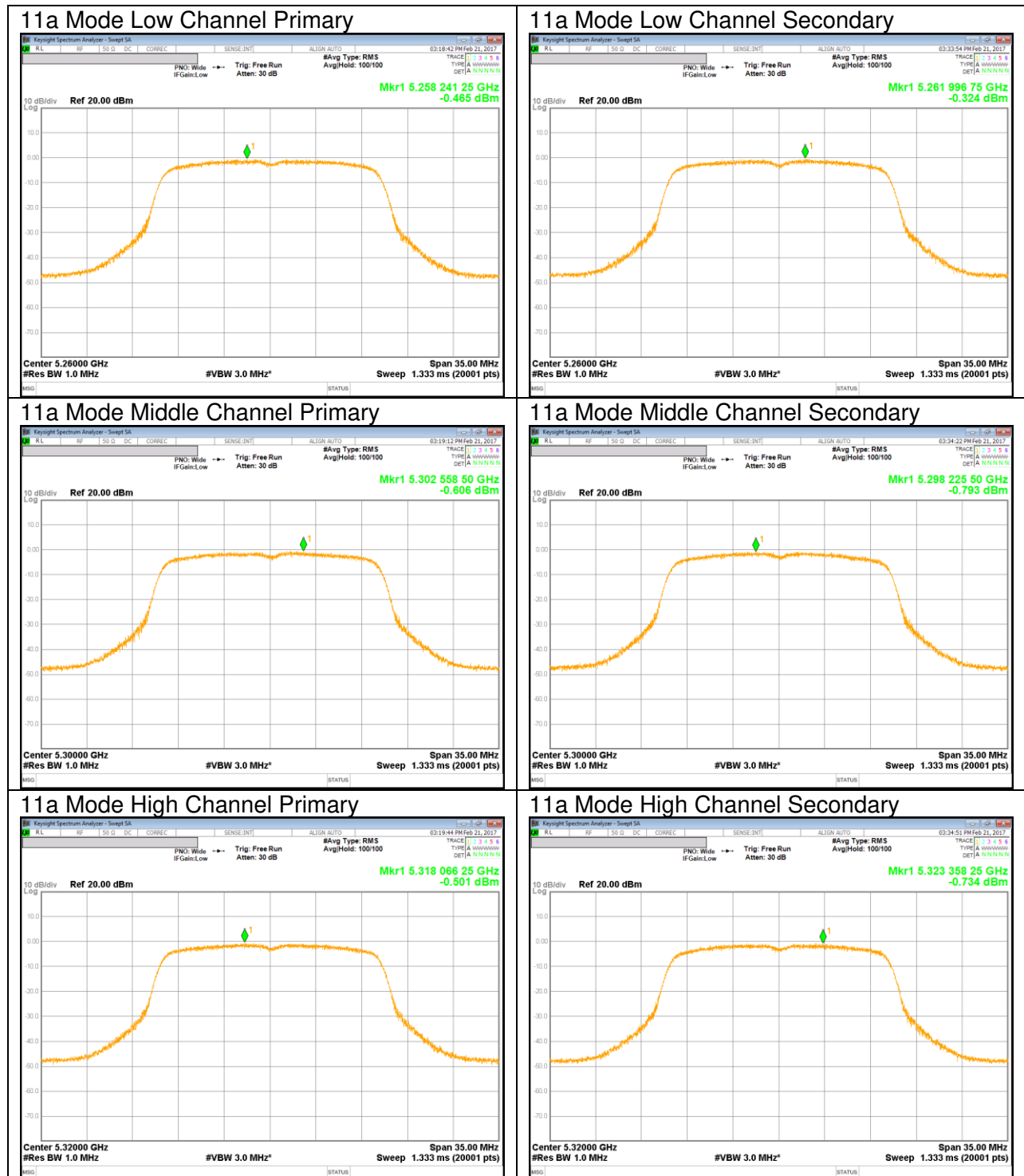
## UNII 5.2 GHz IEEE 802.11n HT40 mode



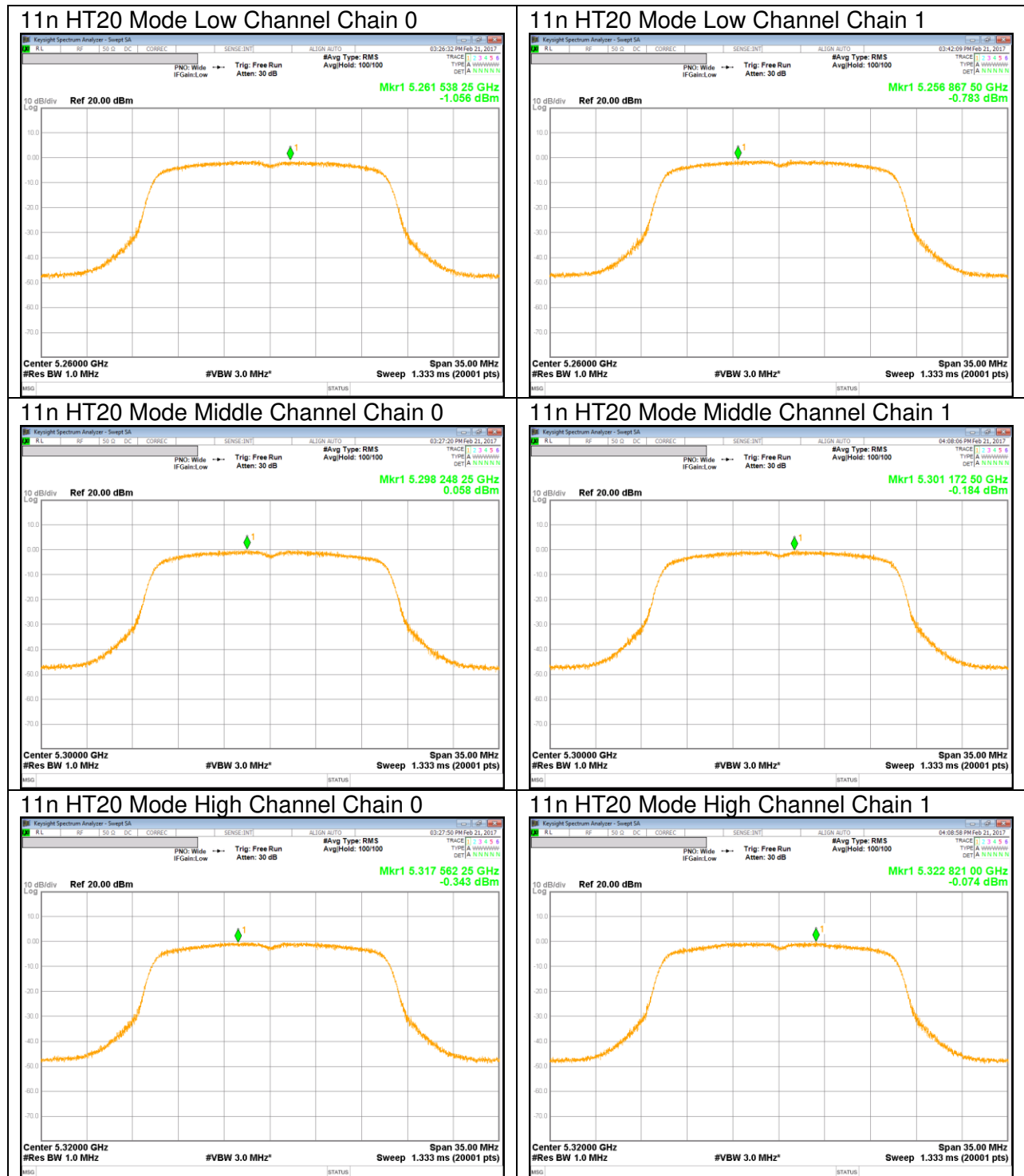
## UNII 5.2 GHz IEEE 802.11ac VHT80 mode



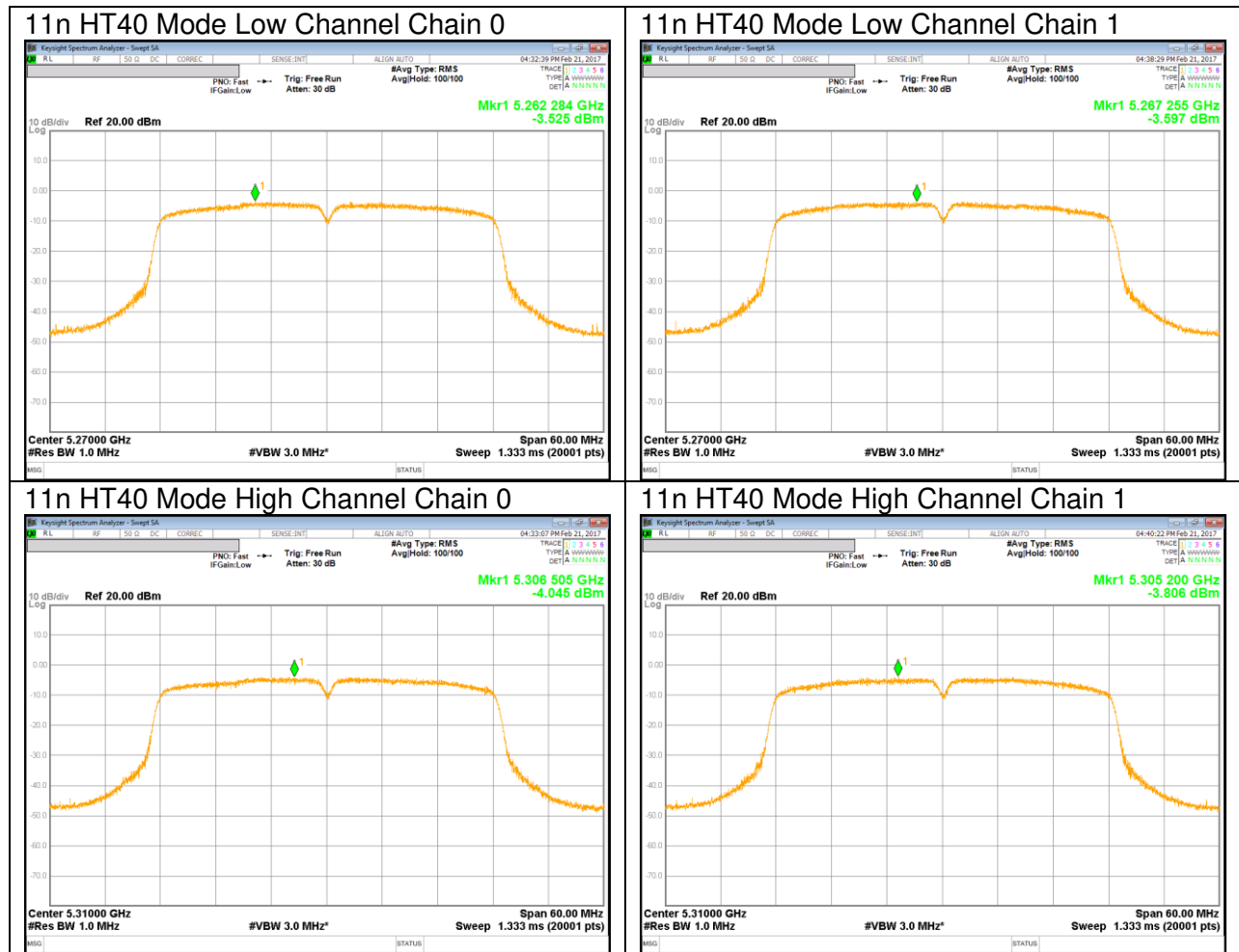
## UNII 5.3 GHz IEEE 802.11a mode



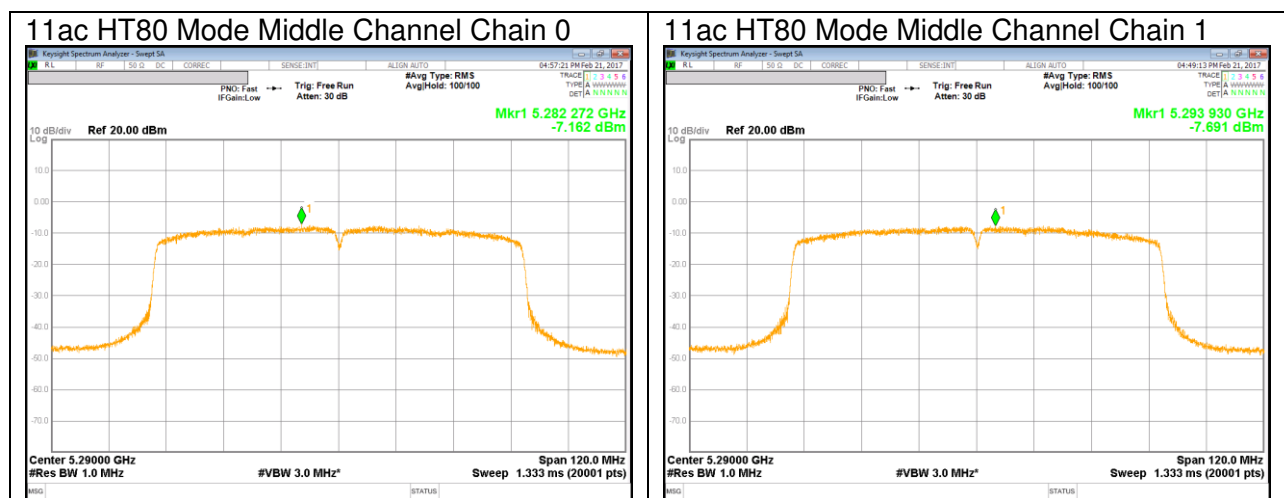
## UNII 5.3 GHz IEEE 802.11n HT20 mode



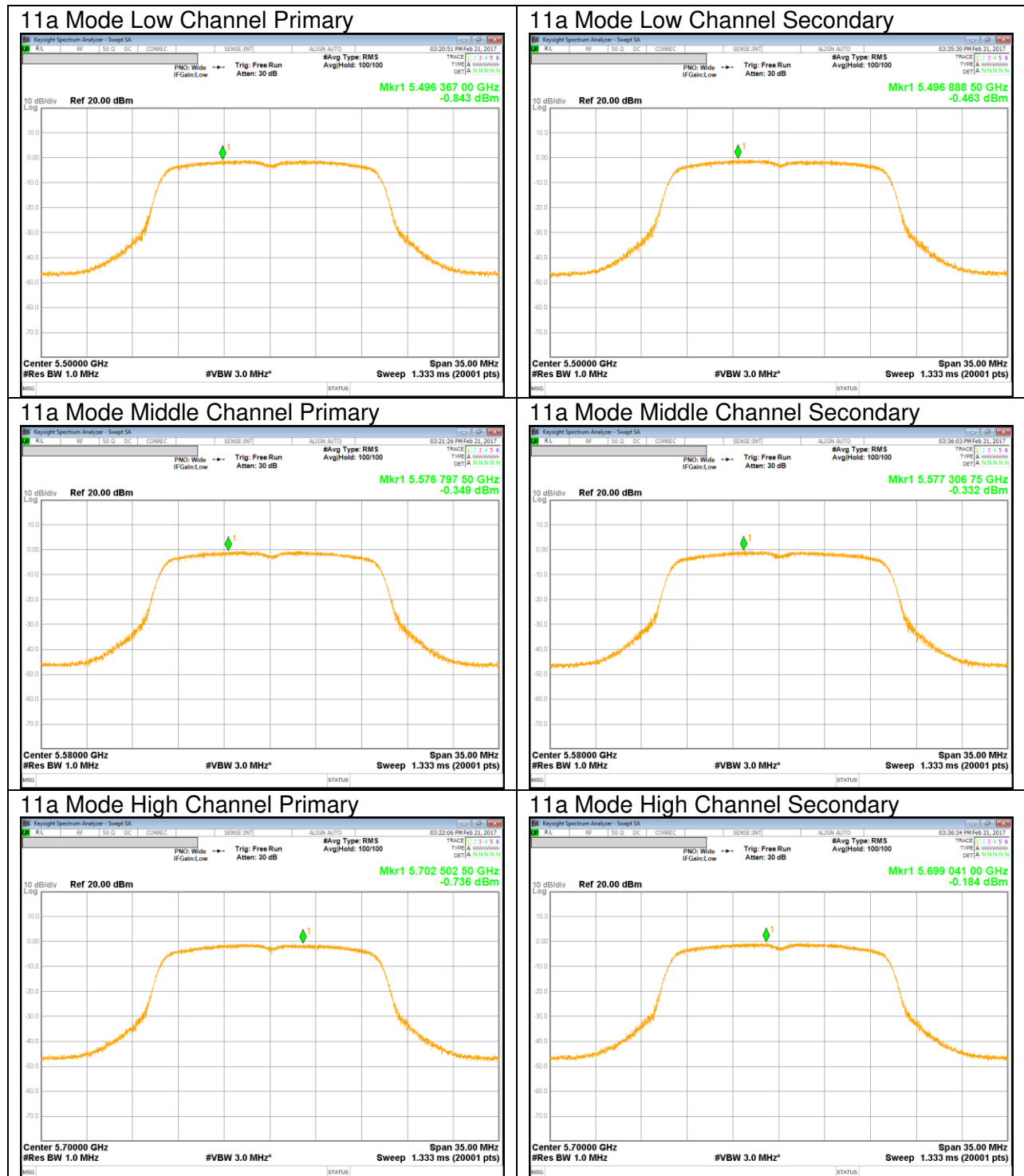
## UNII 5.3 GHz IEEE 802.11n HT40 mode



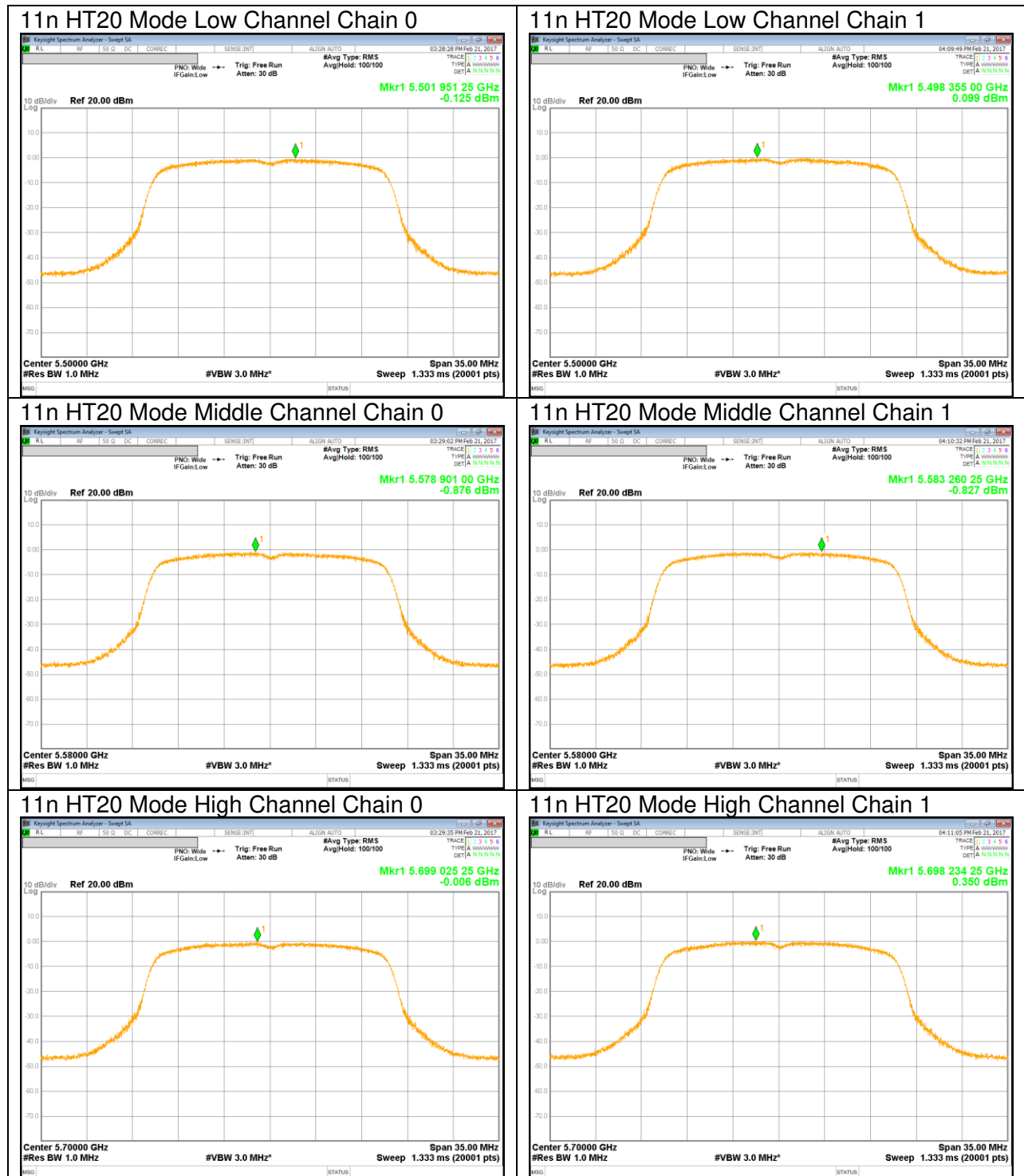
## UNII 5.3 GHz IEEE 802.11ac VHT80 mode



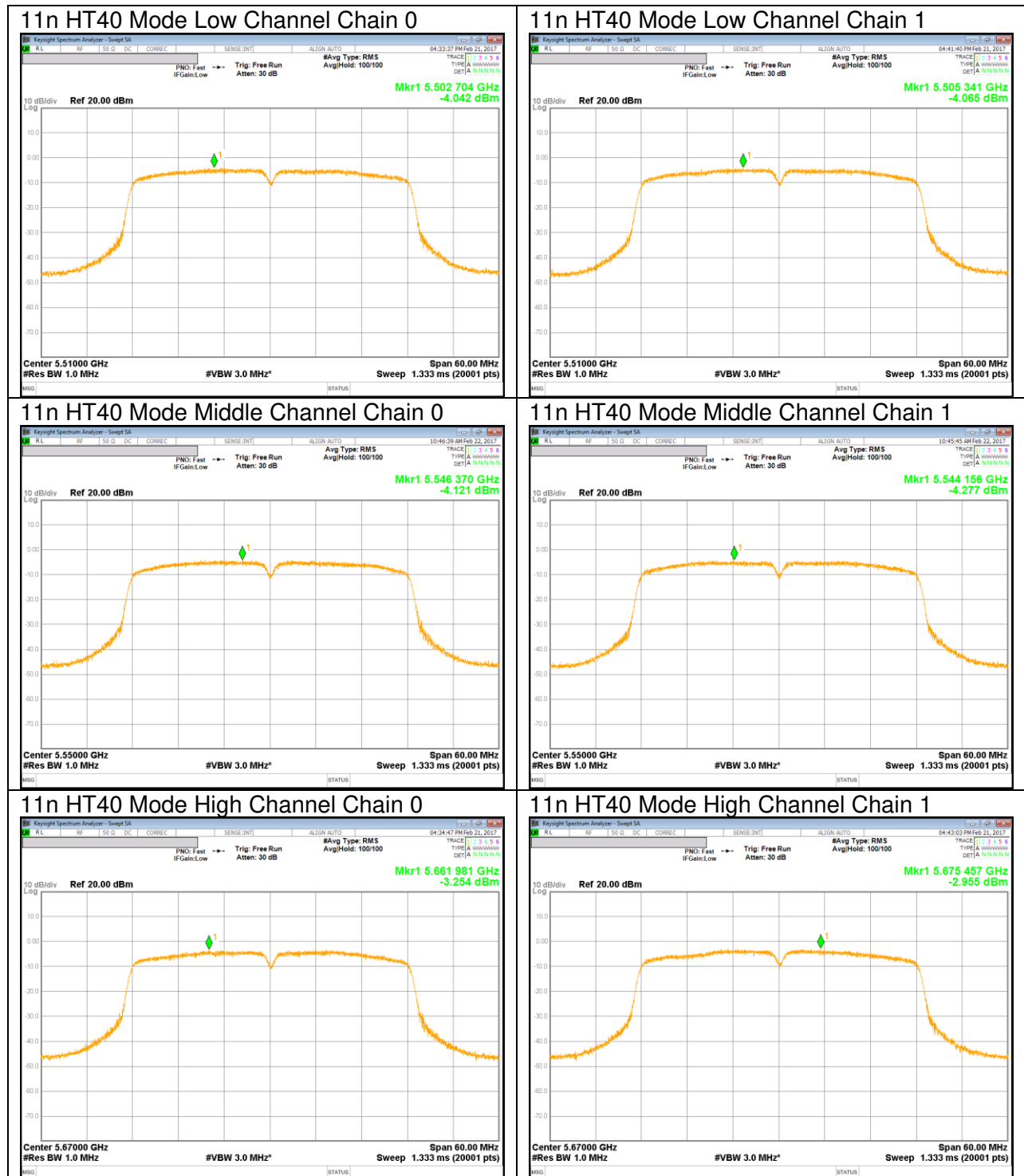
# UNII 5.5 GHz IEEE 802.11a mode



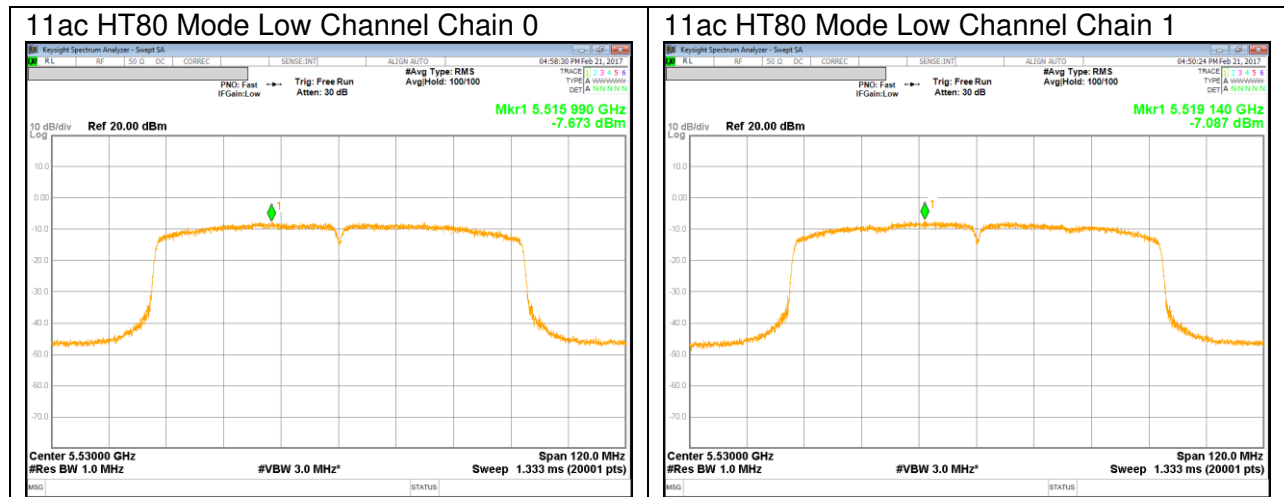
## UNII 5.5 GHz IEEE 802.11n HT20 mode



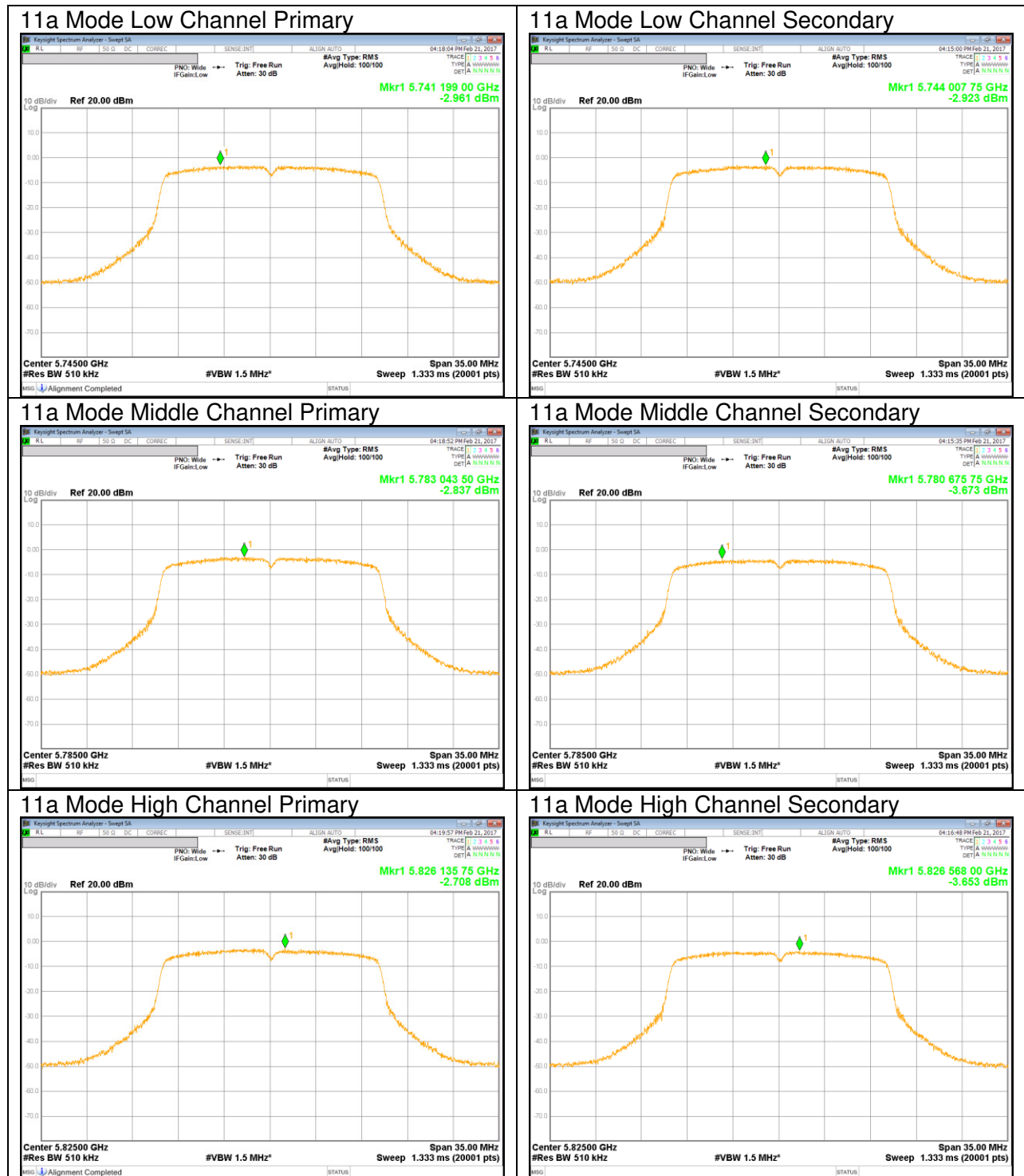
## UNII 5.5 GHz IEEE 802.11n HT40 mode



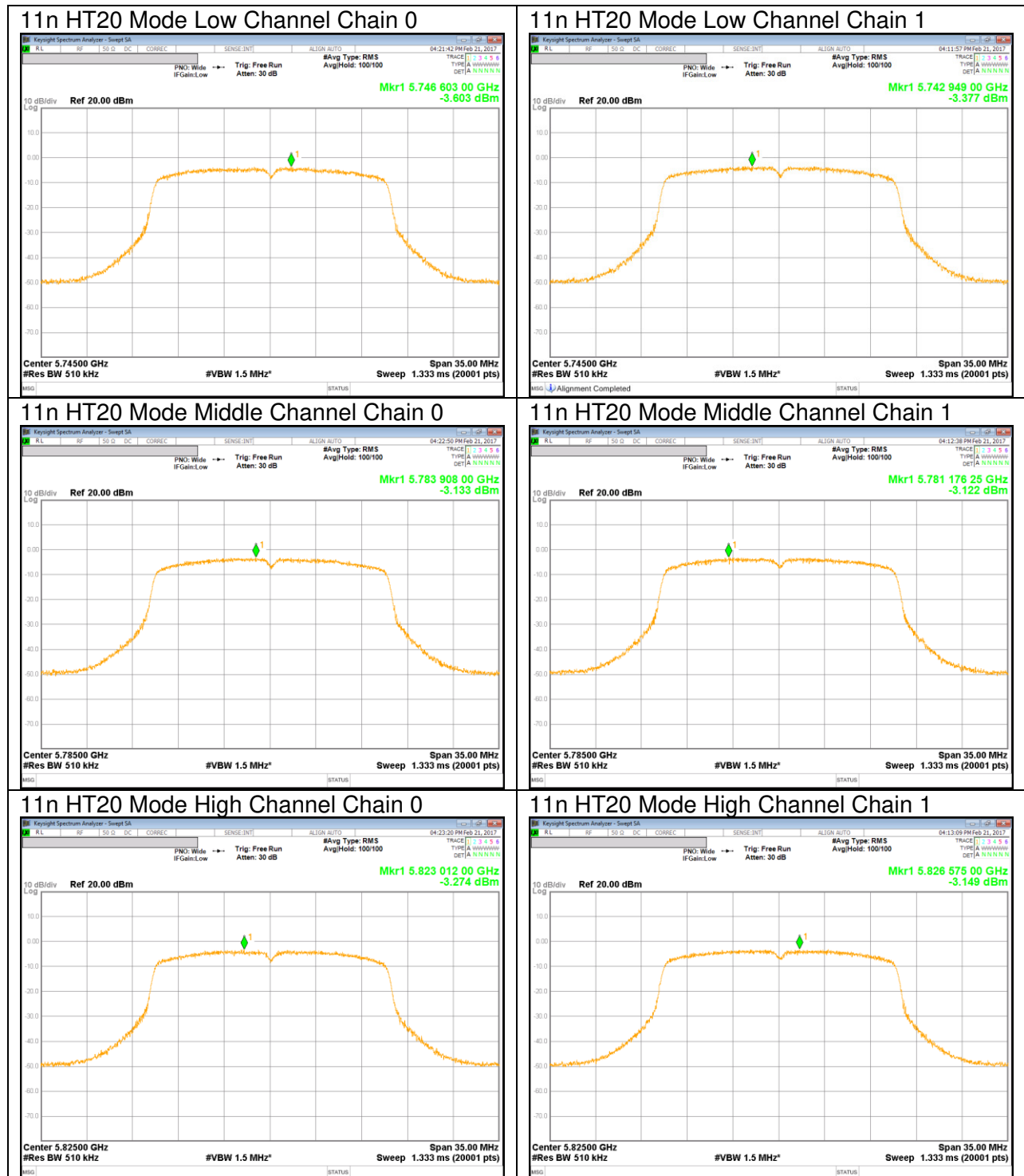
## UNII 5.5 GHz IEEE 802.11ac VHT80 mode



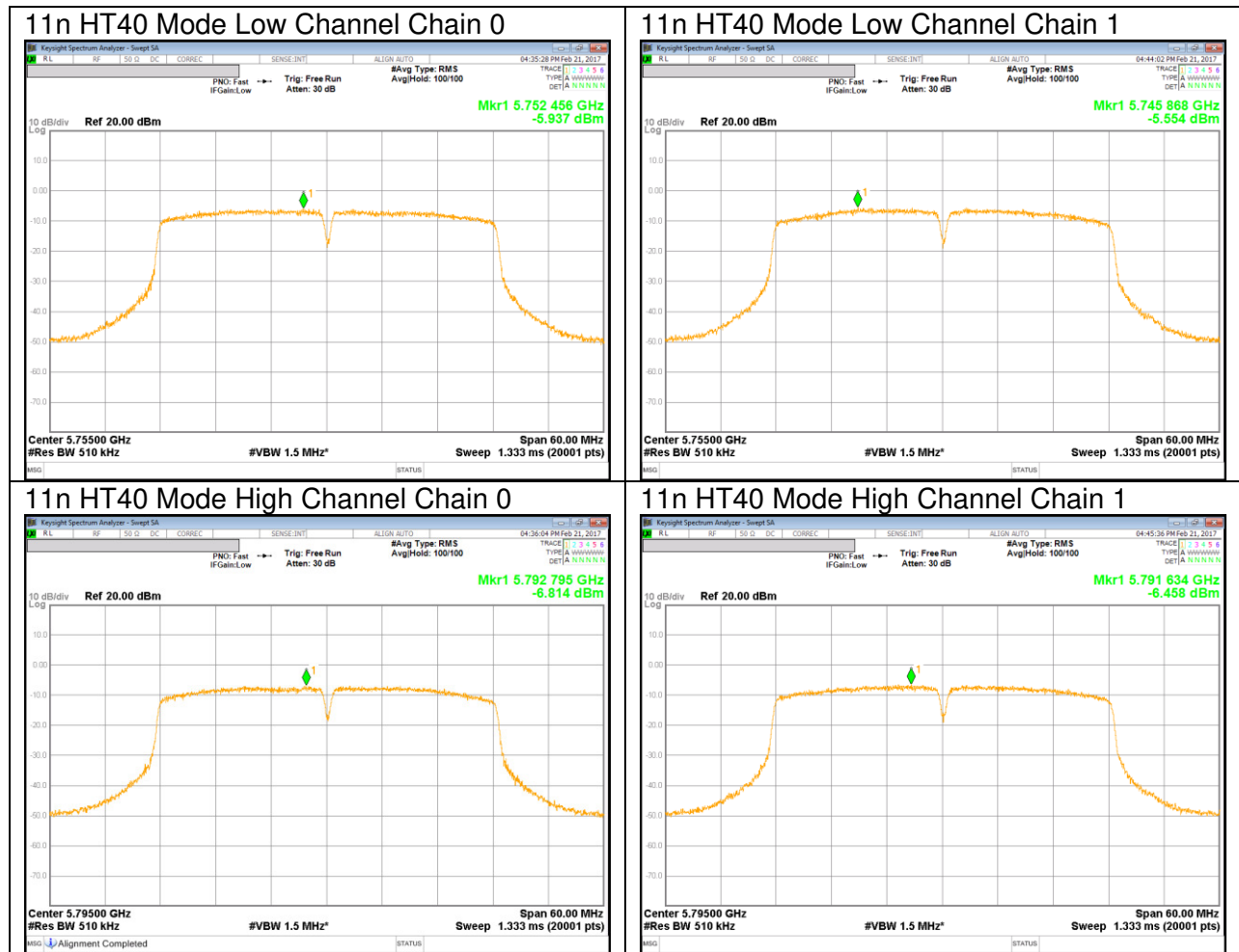
## UNII 5.8 GHz IEEE 802.11a mode



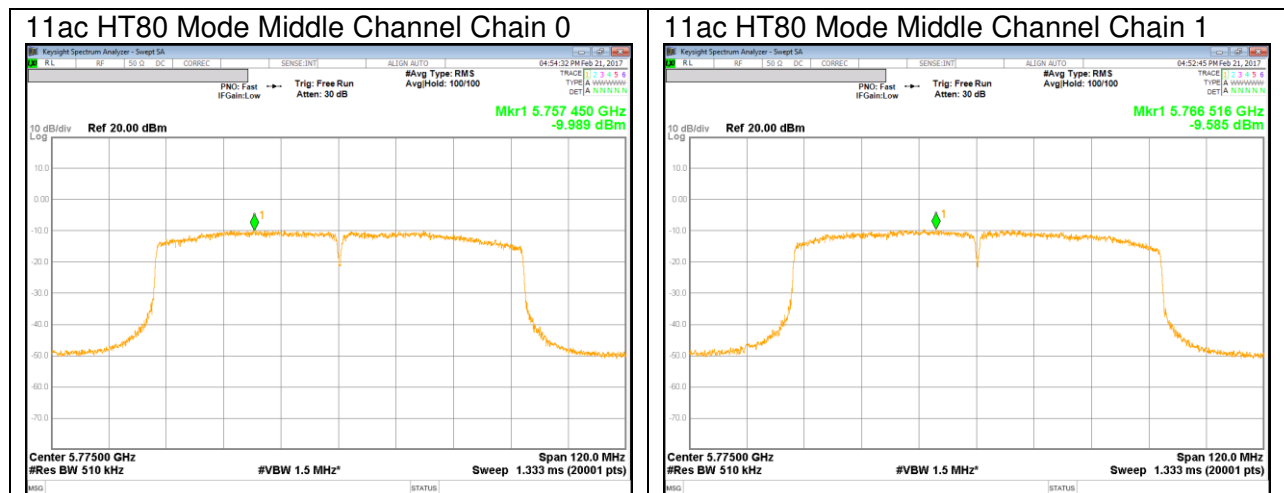
## UNII 5.8 GHz IEEE 802.11n HT20 mode



## UNII 5.8 GHz IEEE 802.11n HT40 mode



## UNII 5.8 GHz IEEE 802.11ac VHT80 mode



## 10. 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.

- (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)

$$E[\text{dBuV/m}] = \text{EIRP}[\text{dBm}] + 95.2 = -27\text{dBm} + 95.2 = 68.2\text{dBuV/m}$$

$$E[\text{dBuV/m}] = \text{EIRP}[\text{dBm}] + 95.2 = -17\text{dBm} + 95.2 = 78.2\text{dBuV/m}$$

## **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 v01r03 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.

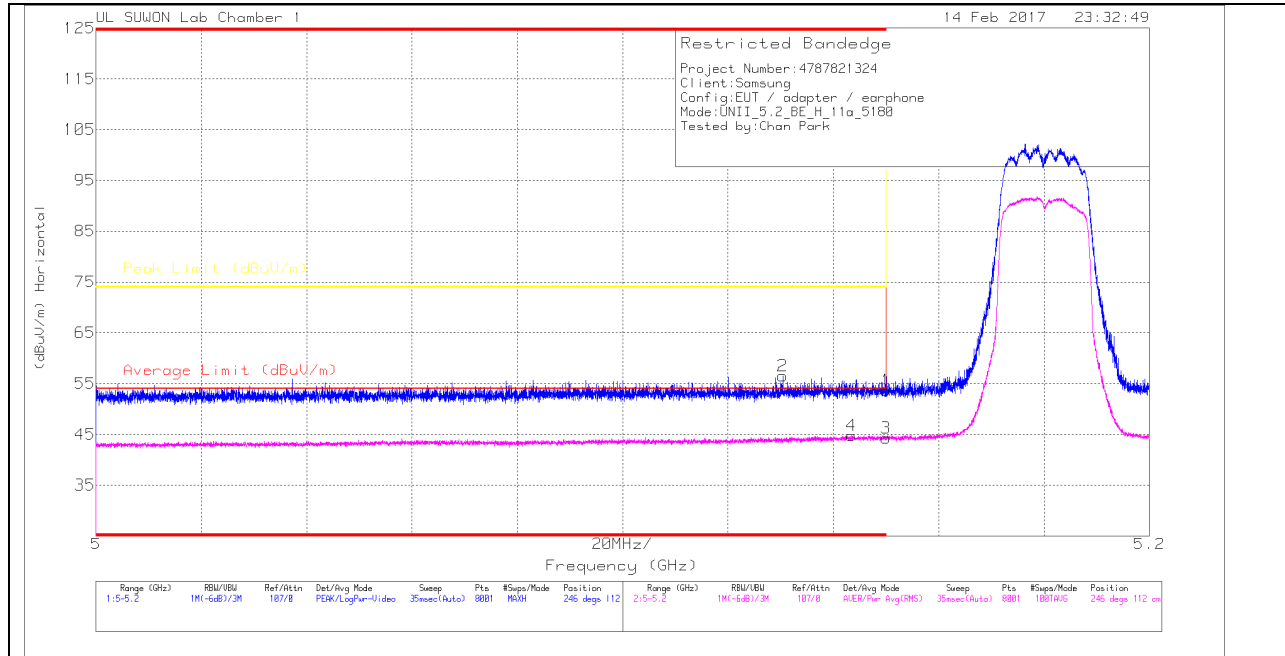
**Note** : Emission was pre-scanned from 9KHz to 30MHz; No emissions were detected which was at least 20dB below the specification limit (consider distance correction factor).  
Per FCC part 15.31(o), test results were not reported.

## 10.1. 5.2 GHz

### 10.1.1. 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

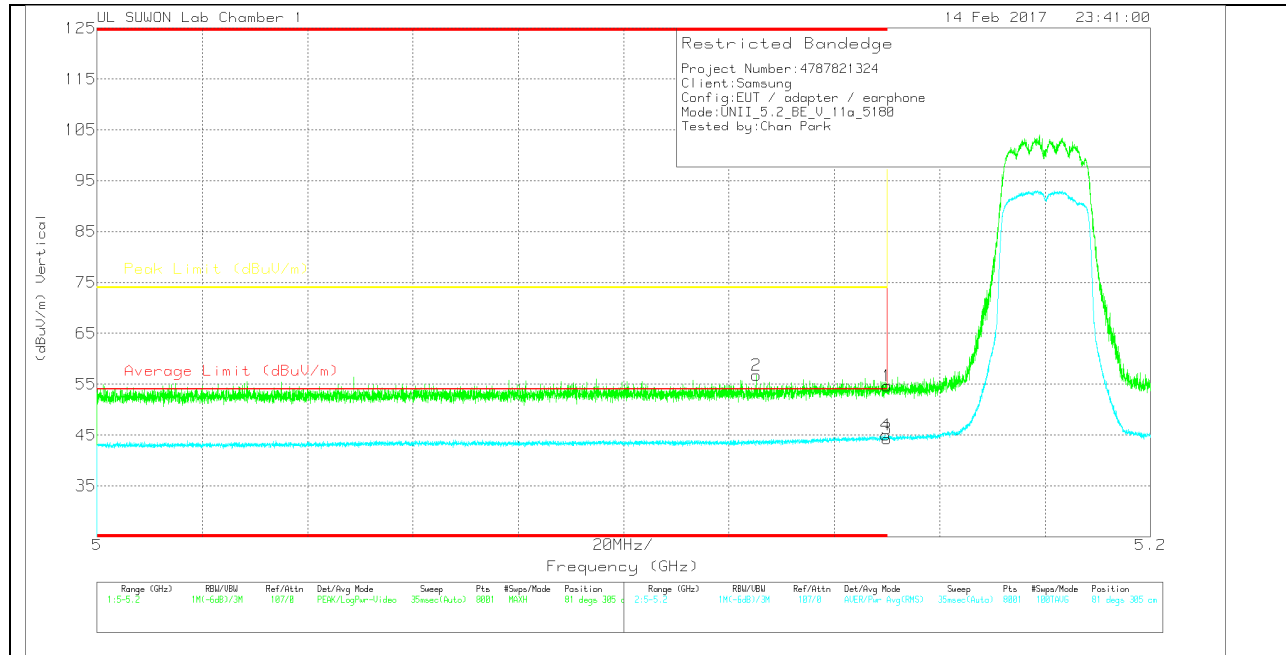
| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 3117/001687 171_150619 | 10dB_Att(dB ) | DC Corr (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|-----|------------------------|---------------|--------------|----------------------------|------------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| 1      | * 5.15          | 43.65                | Pk  | 34.2                   | -24.2         | 0            | 53.65                      | -                      | -           | 74                  | -20.35         | 246            | 112         | H        |
| 2      | * 5.13          | 46.53                | Pk  | 34.2                   | -24.2         | 0            | 56.53                      | -                      | -           | 74                  | -17.47         | 246            | 112         | H        |
| 3      | * 5.15          | 33.91                | RMS | 34.2                   | -24.1         | .29          | 44.3                       | 54                     | -9.7        | -                   | -              | 246            | 112         | H        |
| 4      | * 5.143         | 34.42                | RMS | 34.2                   | -24.1         | .29          | 44.81                      | 54                     | -9.19       | -                   | -              | 246            | 112         | H        |

\* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

RMS - RMS detection

## VERTICAL PEAK AND AVERAGE PLOT



## VERTICAL DATA

### Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 3117/001687 17_150619 | 10dB_Att(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          | 44.65                | Pk  | 34.2                  | -24.2         | 0            | 54.65                      | -                      | -           | 74                  | -19.35         | 81             | 305         | V        |
| 2      | * 5.125         | 46.89                | Pk  | 34.2                  | -24.3         | 0            | 56.79                      | -                      | -           | 74                  | -17.21         | 81             | 305         | V        |
| 3      | * 5.15          | 33.93                | RMS | 34.2                  | -24.1         | .29          | 44.32                      | 54                     | -9.68       | -                   | -              | 81             | 305         | V        |
| 4      | * 5.15          | 34.58                | RMS | 34.2                  | -24.1         | .29          | 44.97                      | 54                     | -9.03       | -                   | -              | 81             | 305         | V        |

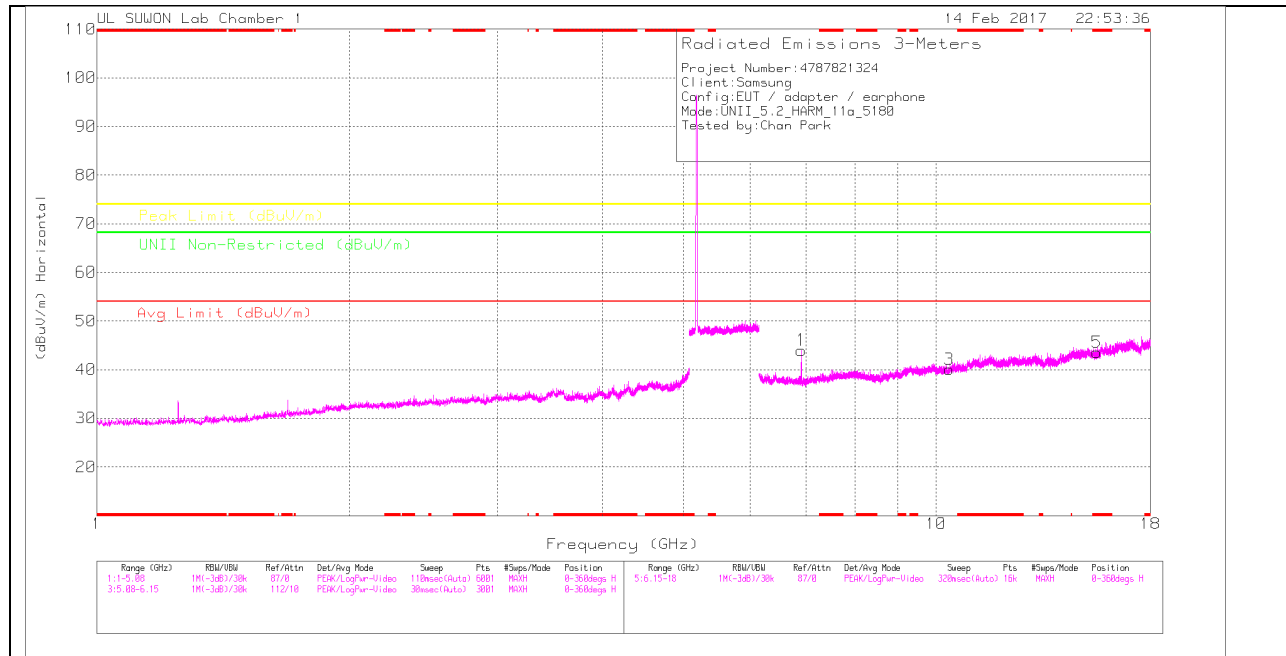
\* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

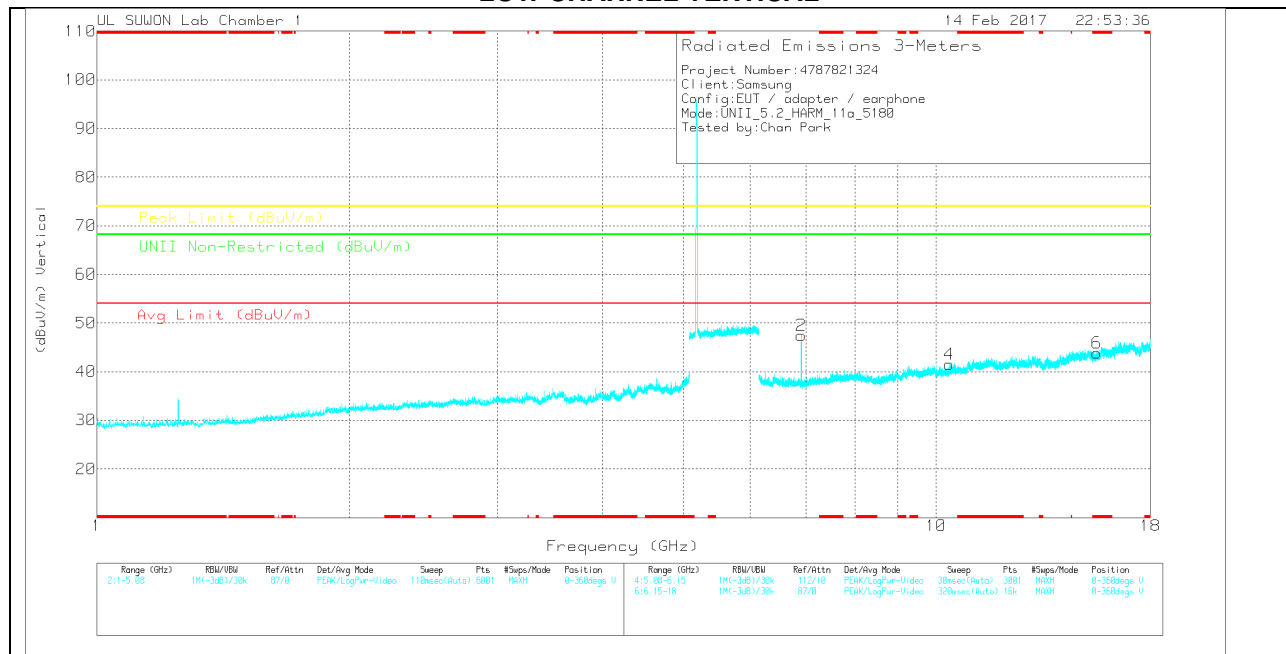
RMS - RMS detection

## 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.

## LOW CHANNEL DATA

### Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 3117(0016 8717)_150 619 | 6Ghz_HP(d B) | 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      | 6.906           | 39.71                | Pk  | 35.6                    | -31.3        | 0            | 44.01                      | -                  | -           | -                   | -           | 68.2                         | -24.19      | 0-360          | 150         | H        |
| 3      | 10.357          | 30.71                | Pk  | 37.8                    | -28.4        | 0            | 40.11                      | -                  | -           | -                   | -           | 68.2                         | -28.09      | 0-360          | 250         | H        |
| 5      | * 15.547        | 23.18                | Pk  | 40.3                    | -19.9        | 0            | 43.58                      | -                  | -           | 74                  | -30.42      | -                            | -           | 0-360          | 150         | H        |
| 2      | 6.906           | 43.16                | Pk  | 35.6                    | -31.3        | 0            | 47.46                      | -                  | -           | -                   | -           | 68.2                         | -20.74      | 0-360          | 150         | V        |
| 4      | 10.362          | 31.99                | Pk  | 37.8                    | -28.3        | 0            | 41.49                      | -                  | -           | -                   | -           | 68.2                         | -26.71      | 0-360          | 150         | V        |
| 6      | * 15.543        | 23.67                | Pk  | 40.3                    | -20.1        | 0            | 43.87                      | -                  | -           | 74                  | -30.13      | -                            | -           | 0-360          | 150         | V        |

\* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk – Peak detector

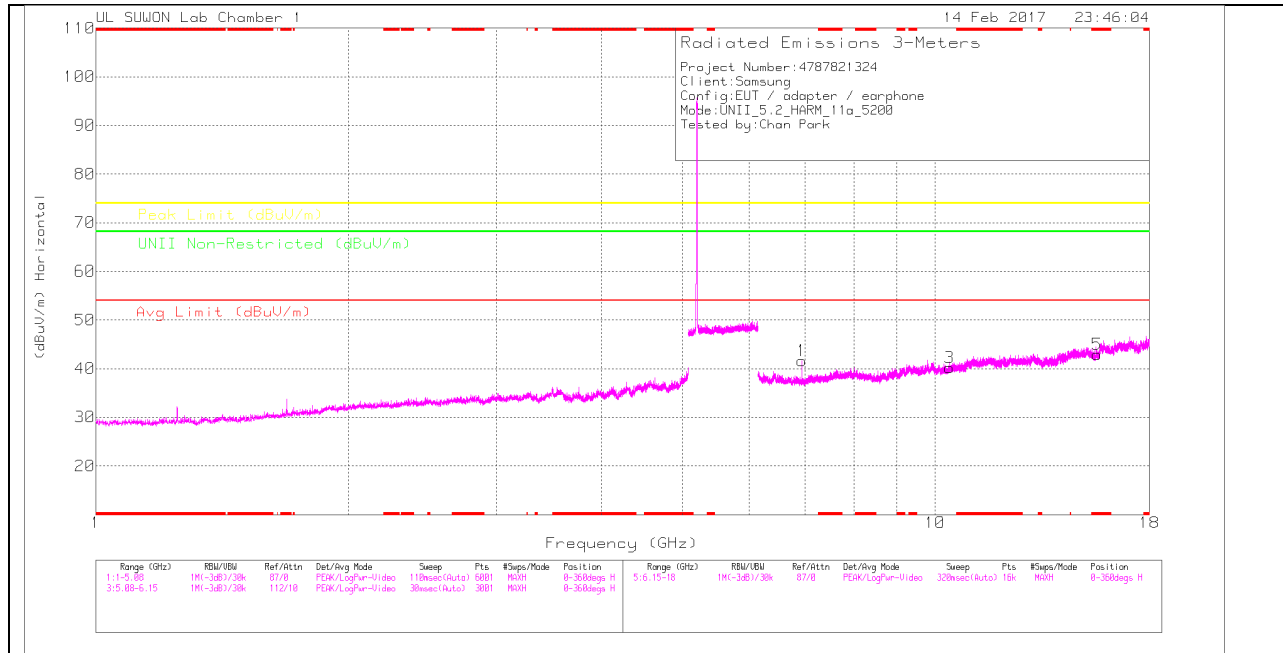
### Radiated Emissions

| Frequency (GHz) | Meter Reading (dBuV) | Det  | 3117(001687 17)_150619 | 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 |
|-----------------|----------------------|------|------------------------|-------------|--------------|----------------------------|--------------------|-------------|---------------------|-------------|------------------------------|-------------|----------------|-------------|----------|
| 6.907           | 47.59                | PK-U | 35.6                   | -31.3       | 0            | 51.89                      | -                  | -           | -                   | -           | 68.2                         | -16.31      | 225            | 101         | H        |
| 6.907           | 49.38                | PK-U | 35.6                   | -31.3       | 0            | 53.68                      | -                  | -           | -                   | -           | 68.2                         | -14.52      | 9              | 102         | V        |

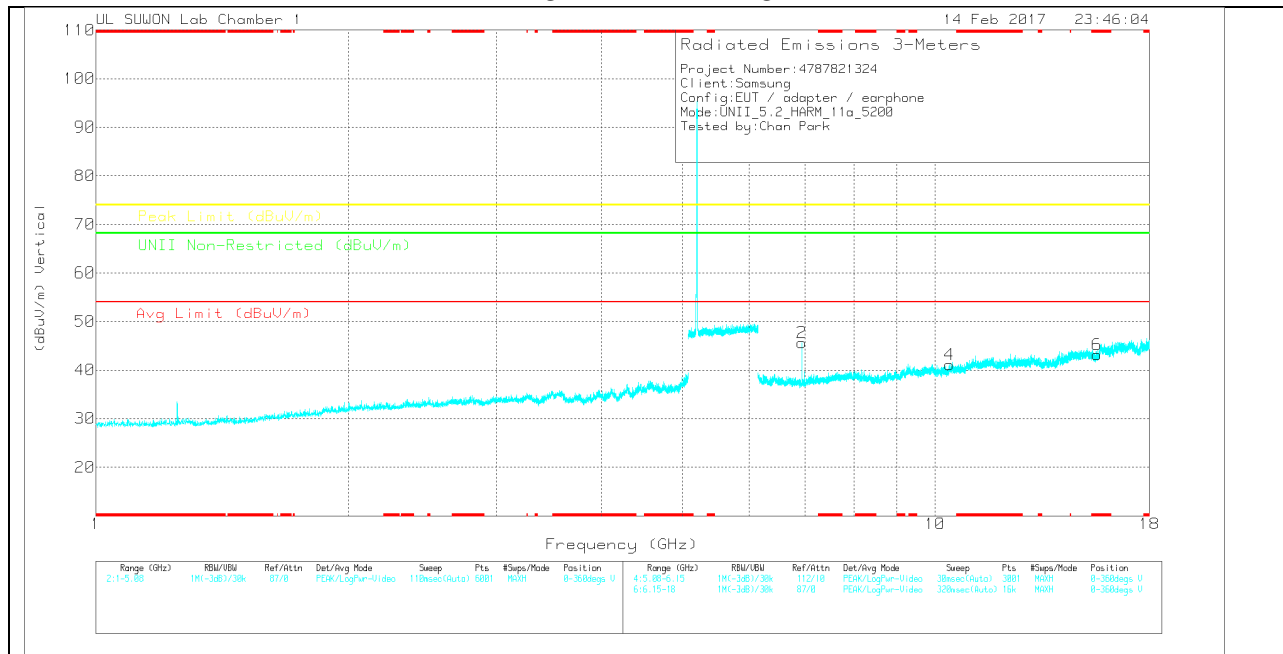
\* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK-U - U-NII: Maximum Peak

### 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.

## MID CHANNEL DATA

### Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 3117(0016 8717)_150 619 | 6Ghz_HP(d B) | 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      | 6.933           | 36.87                | Pk  | 35.7                    | -31          | 0            | 41.57                      | -                  | -           | -                   | -           | 68.2                         | -26.63      | 0-360          | 150         | H        |
| 3      | 10.4            | 30.15                | Pk  | 37.8                    | -27.8        | 0            | 40.15                      | -                  | -           | -                   | -           | 68.2                         | -28.05      | 0-360          | 150         | H        |
| 5      | * 15.603        | 20.98                | Pk  | 40.3                    | -18.4        | 0            | 42.88                      | -                  | -           | 74                  | -31.12      | -                            | -           | 0-360          | 250         | H        |
| 2      | 6.934           | 40.94                | Pk  | 35.7                    | -31          | 0            | 45.64                      | -                  | -           | -                   | -           | 68.2                         | -22.56      | 0-360          | 150         | V        |
| 4      | 10.404          | 31.08                | Pk  | 37.8                    | -27.8        | 0            | 41.08                      | -                  | -           | -                   | -           | 68.2                         | -27.12      | 0-360          | 250         | V        |
| 6      | * 15.601        | 21.27                | Pk  | 40.3                    | -18.4        | 0            | 43.17                      | -                  | -           | 74                  | -30.83      | -                            | -           | 0-360          | 150         | V        |

\* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk – Peak detector

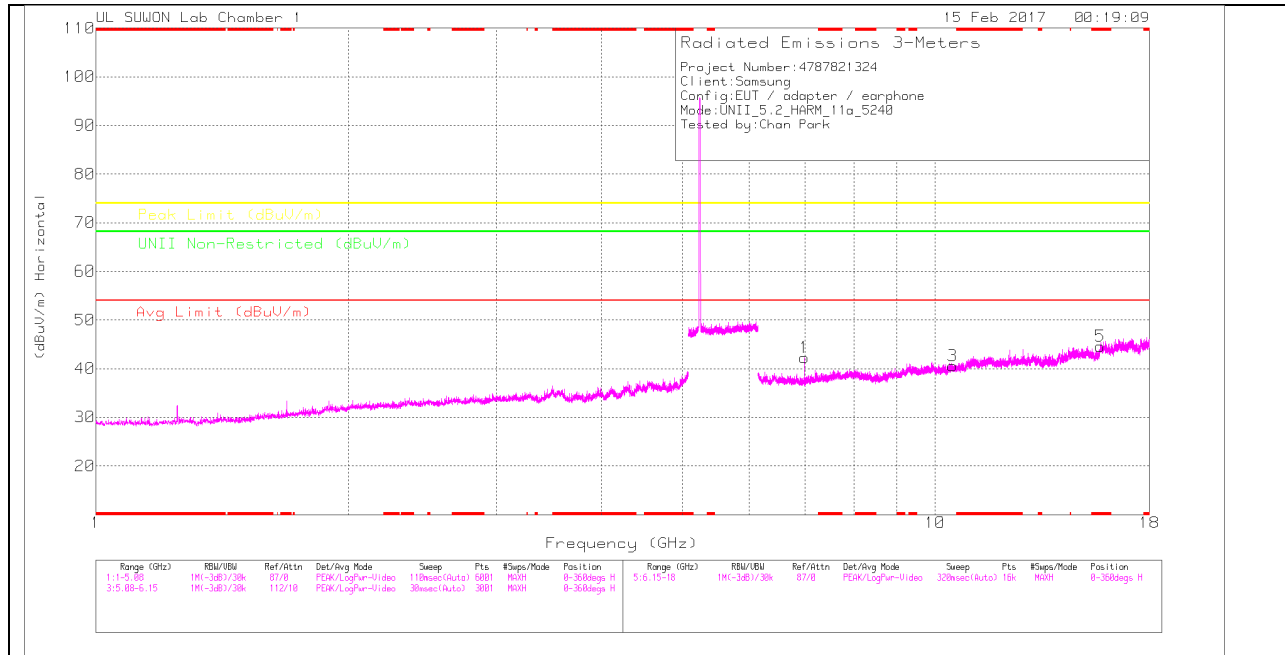
### Radiated Emissions

| Frequency (GHz) | Meter Reading (dBuV) | Det  | 3117(001687 17)_150619 | 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 |
|-----------------|----------------------|------|------------------------|-------------|--------------|----------------------------|--------------------|-------------|---------------------|-------------|------------------------------|-------------|----------------|-------------|----------|
| 6.933           | 47.08                | PK-U | 35.7                   | -31         | 0            | 51.78                      | -                  | -           | -                   | -           | 68.2                         | -16.42      | 227            | 103         | H        |
| 6.933           | 47.9                 | PK-U | 35.7                   | -31         | 0            | 52.6                       | -                  | -           | -                   | -           | 68.2                         | -15.6       | 11             | 108         | V        |

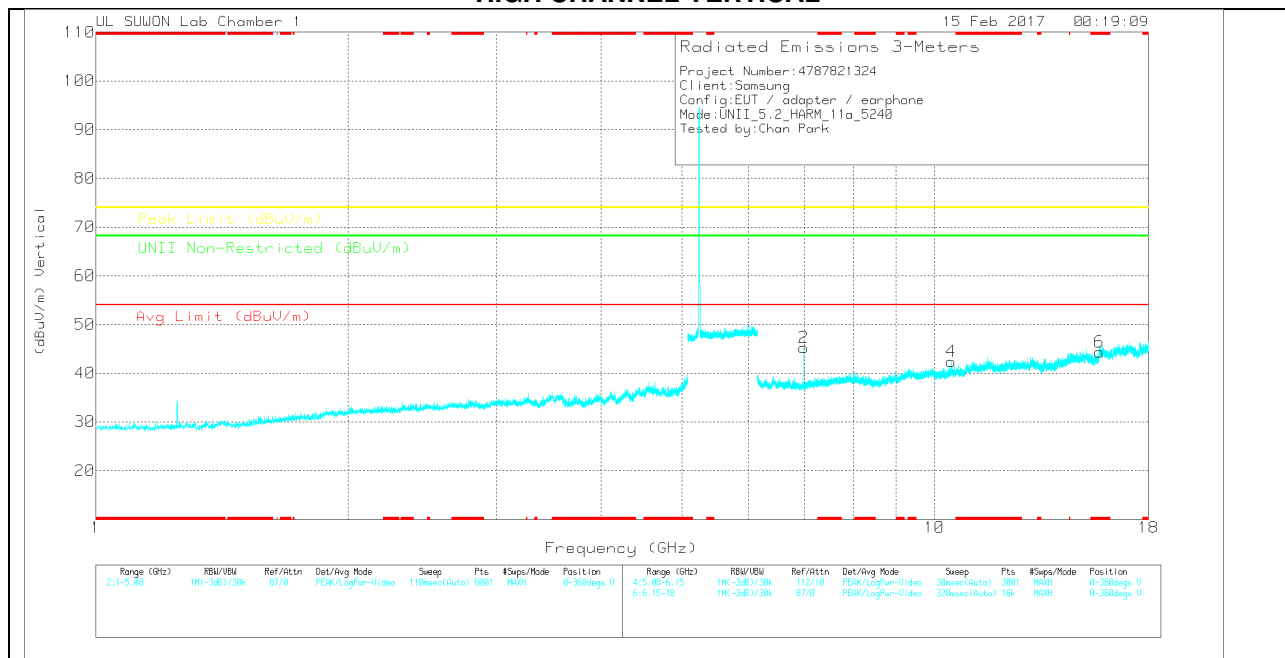
\* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK-U - U-NII: Maximum Peak

### 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.

## HIGH CHANNEL DATA

### Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 3117(0016 8717)_150 519 | 6GHz_HP(d B) | 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      | 6.986           | 37.68                | Pk  | 35.7                    | -31.1        | 0            | 42.28                      | -                  | -           | -                   | -           | 68.2                         | -25.92      | 0-360          | 150         | H        |
| 3      | 10.482          | 31.4                 | Pk  | 37.8                    | -28.6        | 0            | 40.6                       | -                  | -           | -                   | -           | 68.2                         | -27.6       | 0-360          | 250         | H        |
| 5      | * 15.722        | 21.91                | Pk  | 40.4                    | -17.7        | 0            | 44.61                      | -                  | -           | 74                  | -29.39      | -                            | -           | 0-360          | 150         | H        |
| 2      | 6.986           | 40.69                | Pk  | 35.7                    | -31.1        | 0            | 45.29                      | -                  | -           | -                   | -           | 68.2                         | -22.91      | 0-360          | 150         | V        |
| 4      | 10.479          | 33.25                | Pk  | 37.8                    | -28.7        | 0            | 42.35                      | -                  | -           | -                   | -           | 68.2                         | -25.85      | 0-360          | 150         | V        |
| 6      | * 15.718        | 21.89                | Pk  | 40.4                    | -18          | 0            | 44.29                      | -                  | -           | 74                  | -29.71      | -                            | -           | 0-360          | 250         | V        |

\* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk – Peak detector

### Radiated Emissions

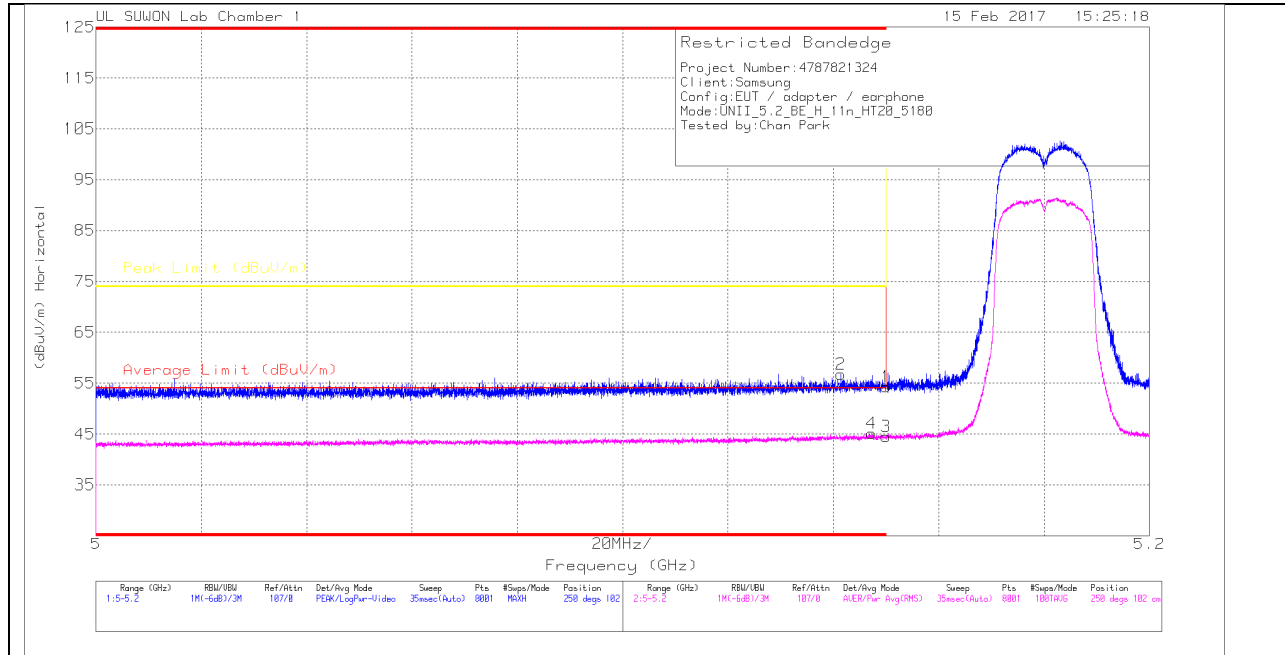
| Frequency (GHz) | Meter Reading (dBuV) | Det  | 3117(001687 17)_150619 | 6GHz_HP(dB) | DC Corr (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | Margin (dB) | UNII Non-Restricted (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|-----------------|----------------------|------|------------------------|-------------|--------------|----------------------------|--------------------|-------------|---------------------|-------------|------------------------------|-------------|----------------|-------------|----------|
| 6.987           | 46.34                | PK-U | 35.7                   | -31.1       | 0            | 50.94                      | -                  | -           | -                   | -           | 68.2                         | -17.26      | 224            | 101         | H        |
| 6.987           | 47.6                 | PK-U | 35.7                   | -31.1       | 0            | 52.2                       | -                  | -           | -                   | -           | 68.2                         | -16         | 107            | 108         | V        |

\* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK-U - U-NII: Maximum Peak

## 10.1.2. 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

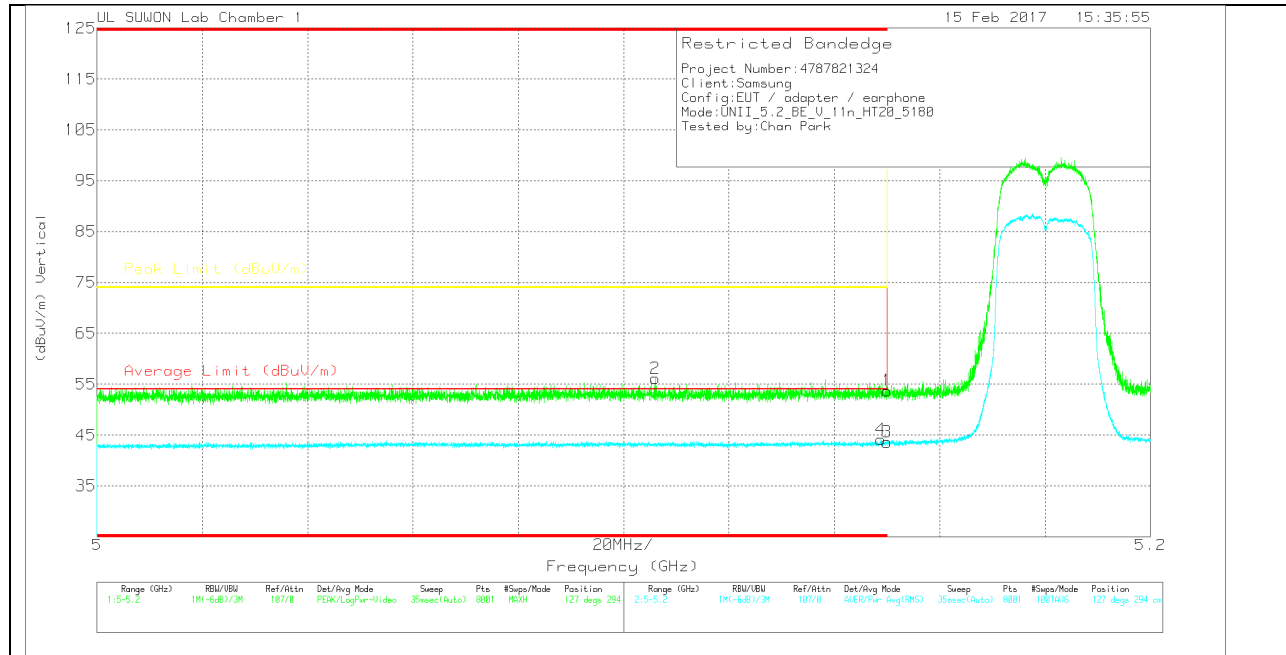
| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 3117/001687 17_150619 | 10dB Att(dB ) | DC Corr (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|-----|-----------------------|---------------|--------------|----------------------------|------------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| 1      | * 5.15          | 44.23                | Pk  | 34.2                  | -24.2         | 0            | 54.23                      | -                      | -           | 74                  | -19.77         | 250            | 102         | H        |
| 2      | * 5.141         | 46.81                | Pk  | 34.2                  | -24.2         | 0            | 56.81                      | -                      | -           | 74                  | -17.19         | 250            | 102         | H        |
| 3      | * 5.15          | 34.06                | RMS | 34.2                  | -24.1         | .3           | 44.46                      | 54                     | -9.54       | -                   | -              | 250            | 102         | H        |
| 4      | * 5.147         | 34.77                | RMS | 34.2                  | -24.1         | .3           | 45.17                      | 54                     | -8.83       | -                   | -              | 250            | 102         | H        |

\* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

RMS - RMS detection

## VERTICAL PEAK AND AVERAGE PLOT



## VERTICAL DATA

### Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 3117(00168 717)_15061 9 | 10dB_Att(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          | 43.73                | Pk  | 34.2                    | -24.2         | 0            | 53.73                      | -                      | -           | 74                  | -20.27         | 127            | 294         | V        |
| 2      | * 5.106         | 46.15                | Pk  | 34.2                    | -24.2         | 0            | 56.15                      | -                      | -           | 74                  | -17.85         | 127            | 294         | V        |
| 3      | * 5.15          | 33.19                | RMS | 34.2                    | -24.1         | .3           | 43.59                      | 54                     | -10.41      | -                   | -              | 127            | 294         | V        |
| 4      | * 5.149         | 33.79                | RMS | 34.2                    | -24.1         | .3           | 44.19                      | 54                     | -9.81       | -                   | -              | 127            | 294         | V        |

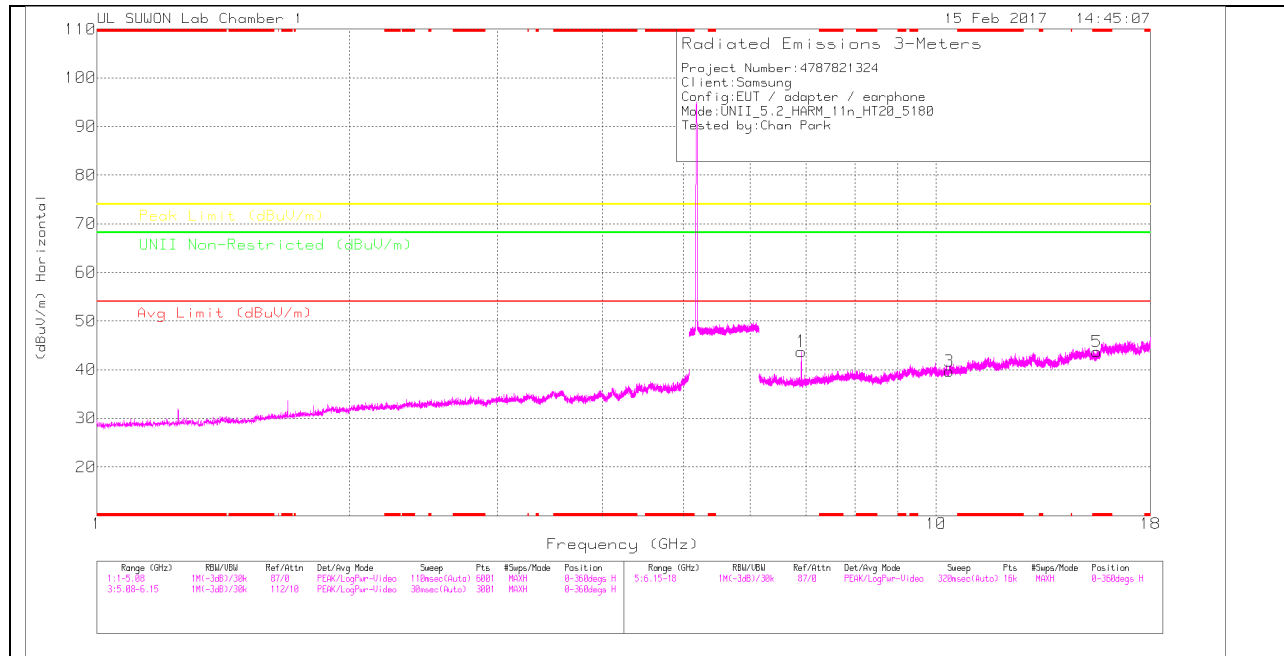
\* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

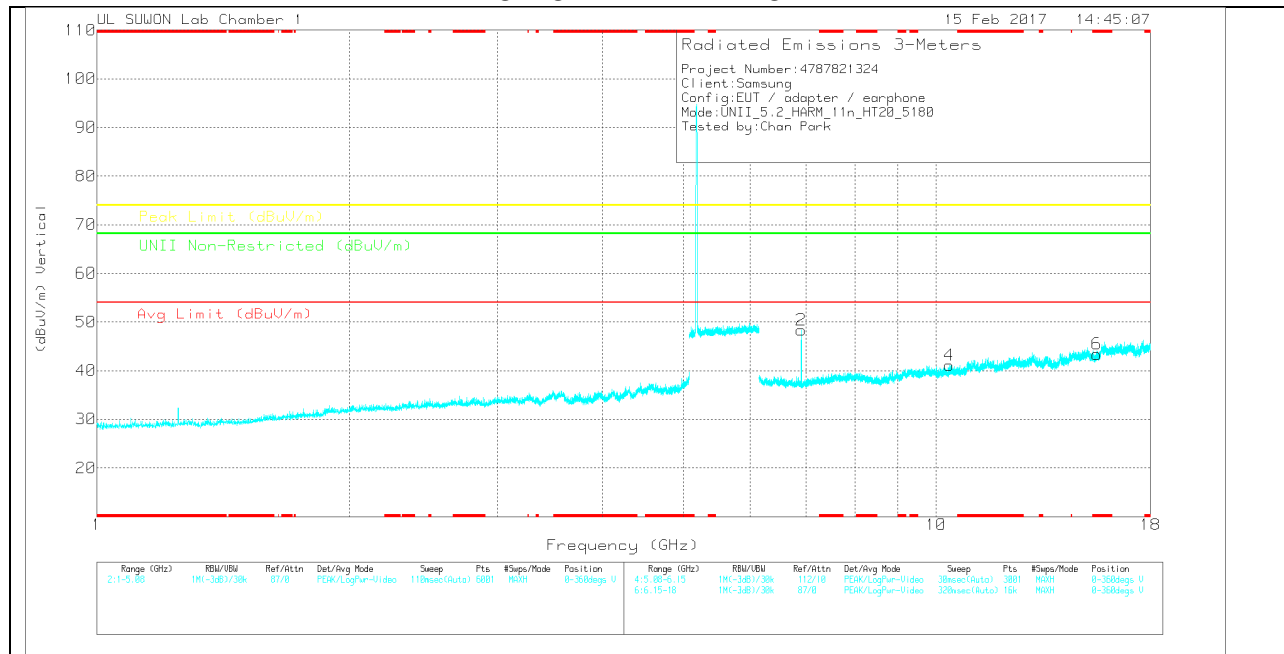
RMS - RMS detection

## 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.

## LOW CHANNEL DATA

### Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 3117(0016 8717)_150 619 | 6Ghz_HP(d B) | 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      | 6.906           | 39.45                | Pk  | 35.6                    | -31.3        | 0            | 43.75                      | -                  | -           | -                   | -           | 68.2                         | -24.45      | 0-360          | 150         | H        |
| 3      | 10.359          | 30.18                | Pk  | 37.8                    | -28.3        | 0            | 39.68                      | -                  | -           | -                   | -           | 68.2                         | -28.52      | 0-360          | 250         | H        |
| 5      | * 15.543        | 23.45                | Pk  | 40.3                    | -20.1        | 0            | 43.65                      | -                  | -           | 74                  | -30.35      | -                            | -           | 0-360          | 150         | H        |
| 2      | 6.906           | 44.02                | Pk  | 35.6                    | -31.3        | 0            | 48.32                      | -                  | -           | -                   | -           | 68.2                         | -19.88      | 0-360          | 150         | V        |
| 4      | 10.362          | 31.65                | Pk  | 37.8                    | -28.3        | 0            | 41.15                      | -                  | -           | -                   | -           | 68.2                         | -27.05      | 0-360          | 150         | V        |
| 6      | * 15.543        | 23.17                | Pk  | 40.3                    | -20.1        | 0            | 43.37                      | -                  | -           | 74                  | -30.63      | -                            | -           | 0-360          | 250         | V        |

\* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk – Peak detector

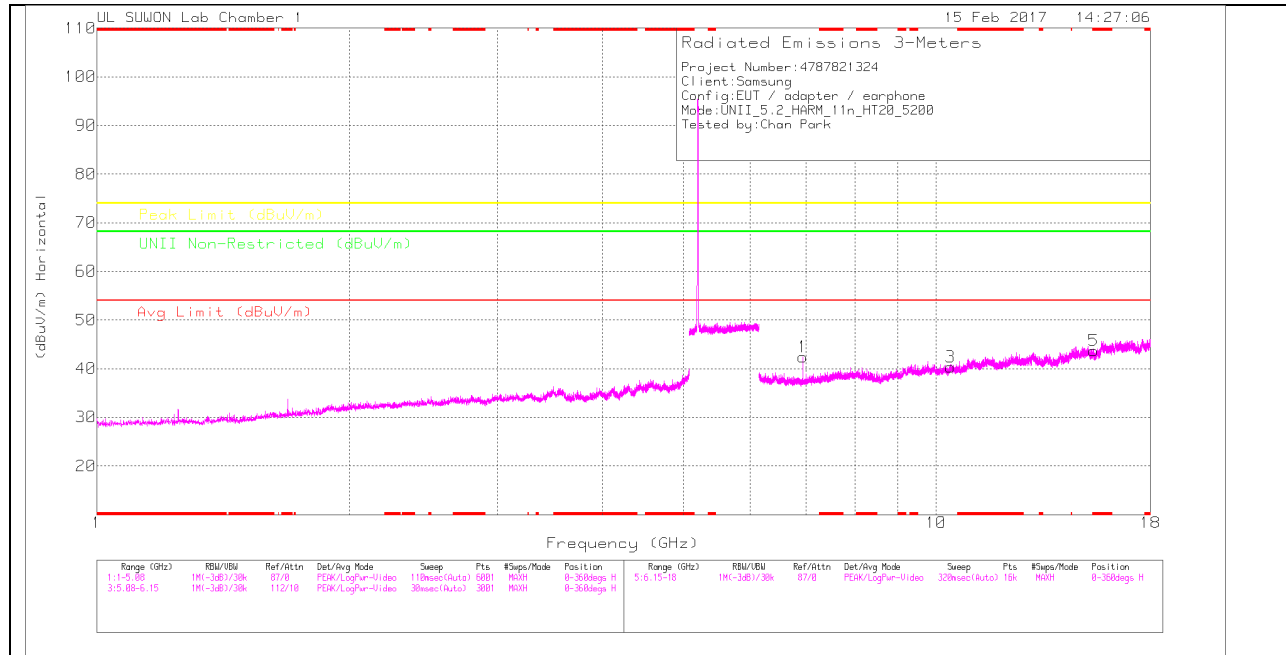
### Radiated Emissions

| Frequency (GHz) | Meter Reading (dBuV) | Det  | 3117(001687 17)_150619 | 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 |
|-----------------|----------------------|------|------------------------|-------------|--------------|----------------------------|--------------------|-------------|---------------------|-------------|------------------------------|-------------|----------------|-------------|----------|
| 6.907           | 47.73                | PK-U | 35.6                   | -31.3       | 0            | 52.03                      | -                  | -           | -                   | -           | 68.2                         | -16.17      | 224            | 100         | H        |
| 6.907           | 49.53                | PK-U | 35.6                   | -31.3       | 0            | 53.83                      | -                  | -           | -                   | -           | 68.2                         | -14.37      | 2              | 101         | V        |

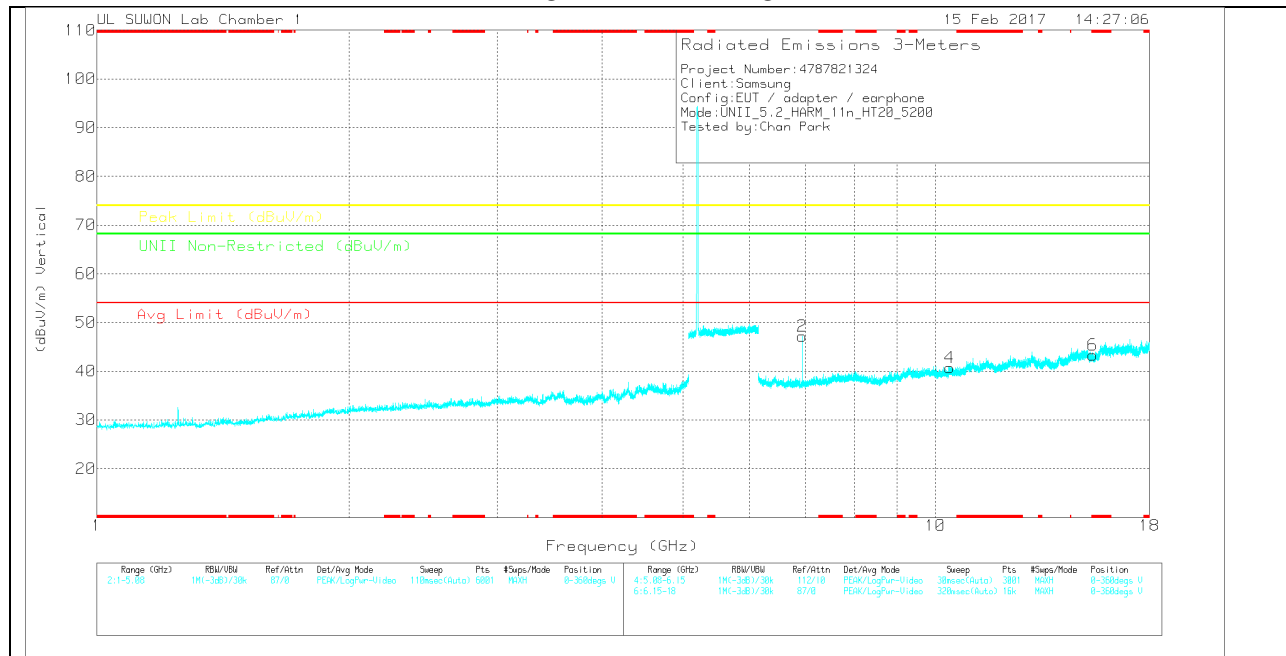
\* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK-U - U-NII: Maximum Peak

### 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.

## MID CHANNEL DATA

### Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 3117(0016 8717_150 619 | 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      | 6.933           | 37.74                | Pk  | 35.7                   | -31         | 0            | 42.44                      | -                  | -           | -                   | -           | 68.2                         | -25.76      | 0-360          | 150         | H        |
| 3      | 10.402          | 30.37                | Pk  | 37.8                   | -27.8       | 0            | 40.37                      | -                  | -           | -                   | -           | 68.2                         | -27.83      | 0-360          | 150         | H        |
| 5      | * 15.399        | 23.93                | Pk  | 40.2                   | -20.4       | 0            | 43.73                      | -                  | -           | 74                  | -30.27      | -                            | -           | 0-360          | 250         | H        |
| 2      | 6.933           | 42.44                | Pk  | 35.7                   | -31         | 0            | 47.14                      | -                  | -           | -                   | -           | 68.2                         | -21.06      | 0-360          | 150         | V        |
| 4      | 10.402          | 30.7                 | Pk  | 37.8                   | -27.8       | 0            | 40.7                       | -                  | -           | -                   | -           | 68.2                         | -27.5       | 0-360          | 150         | V        |
| 6      | * 15.398        | 23.48                | Pk  | 40.2                   | -20.4       | 0            | 43.28                      | -                  | -           | 74                  | -30.72      | -                            | -           | 0-360          | 150         | V        |

\* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk – Peak detector

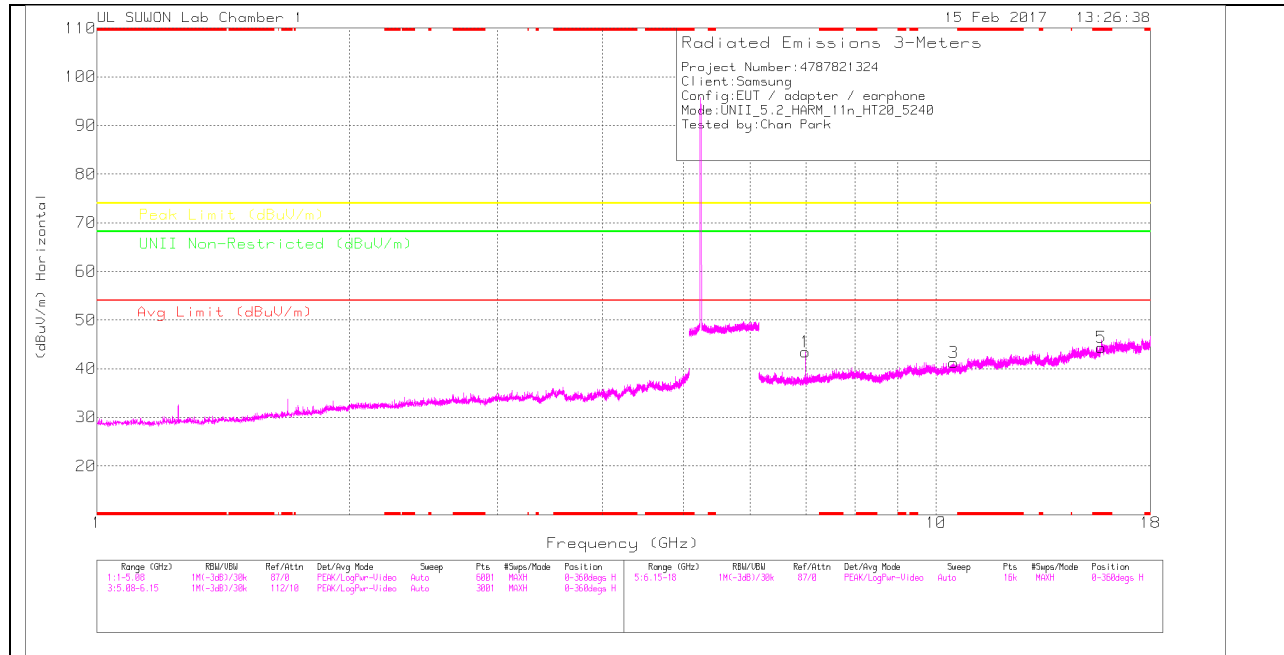
### Radiated Emissions

| Frequency (GHz) | Meter Reading (dBuV) | Det  | 3117(001687 17_150619 | 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 |
|-----------------|----------------------|------|-----------------------|-------------|--------------|----------------------------|--------------------|-------------|---------------------|-------------|------------------------------|-------------|----------------|-------------|----------|
| 6.933           | 46.85                | PK-U | 35.7                  | -31         | 0            | 51.55                      | -                  | -           | -                   | -           | 68.2                         | -16.65      | 224            | 101         | H        |
| 6.933           | 47.96                | PK-U | 35.7                  | -31         | 0            | 52.66                      | -                  | -           | -                   | -           | 68.2                         | -15.54      | 91             | 250         | V        |

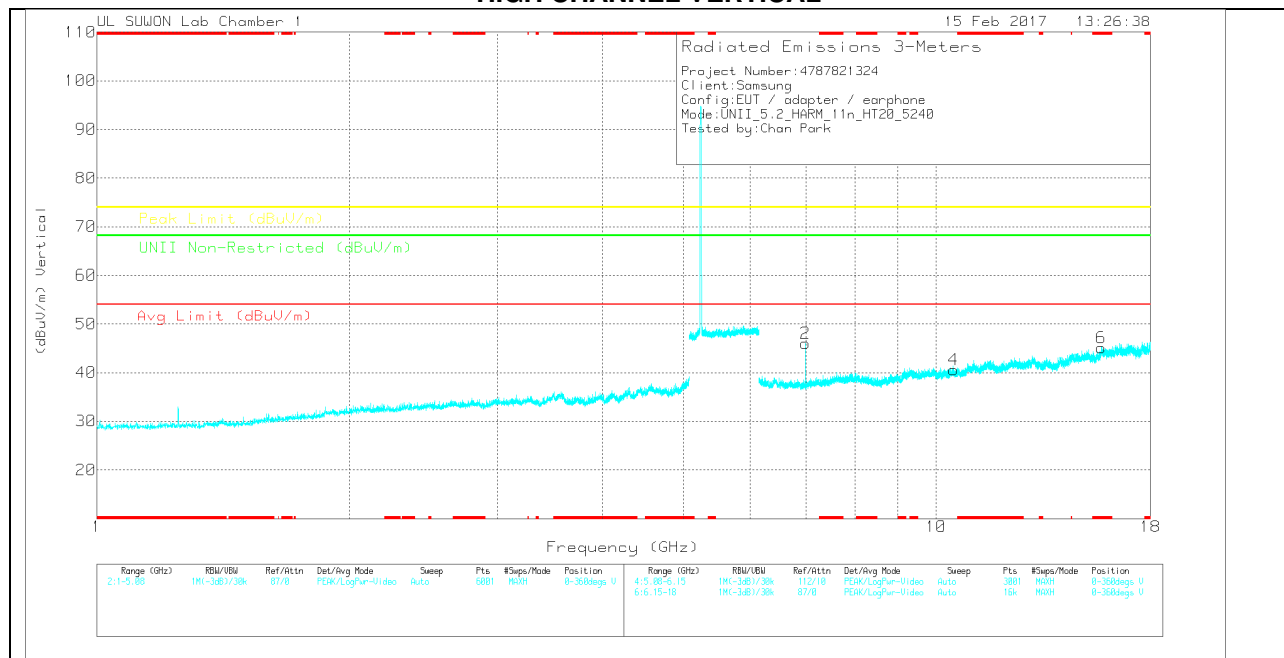
\* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK-U - U-NII: Maximum Peak

### 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.

## HIGH CHANNEL DATA

### Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 3117(0016 8717)_150 519 | 6Ghz_HP(d B) | 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      | 6.986           | 38.85                | Pk  | 35.7                    | -31.1        | 0            | 43.45                      | -                  | -           | -                   | -           | 68.2                         | -24.75      | 0-360          | 150         | H        |
| 3      | 10.48           | 32.2                 | Pk  | 37.8                    | -28.8        | 0            | 41.2                       | -                  | -           | -                   | -           | 68.2                         | -27         | 0-360          | 150         | H        |
| 5      | * 15.72         | 21.82                | Pk  | 40.4                    | -17.9        | 0            | 44.32                      | -                  | -           | 74                  | -29.68      | -                            | -           | 0-360          | 150         | H        |
| 2      | 6.986           | 41.47                | Pk  | 35.7                    | -31.1        | 0            | 46.07                      | -                  | -           | -                   | -           | 68.2                         | -22.13      | 0-360          | 150         | V        |
| 4      | 10.48           | 31.57                | Pk  | 37.8                    | -28.8        | 0            | 40.57                      | -                  | -           | -                   | -           | 68.2                         | -27.63      | 0-360          | 150         | V        |
| 6      | * 15.723        | 22.47                | Pk  | 40.4                    | -17.7        | 0            | 45.17                      | -                  | -           | 74                  | -28.83      | -                            | -           | 0-360          | 250         | V        |

\* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk – Peak detector

### Radiated Emissions

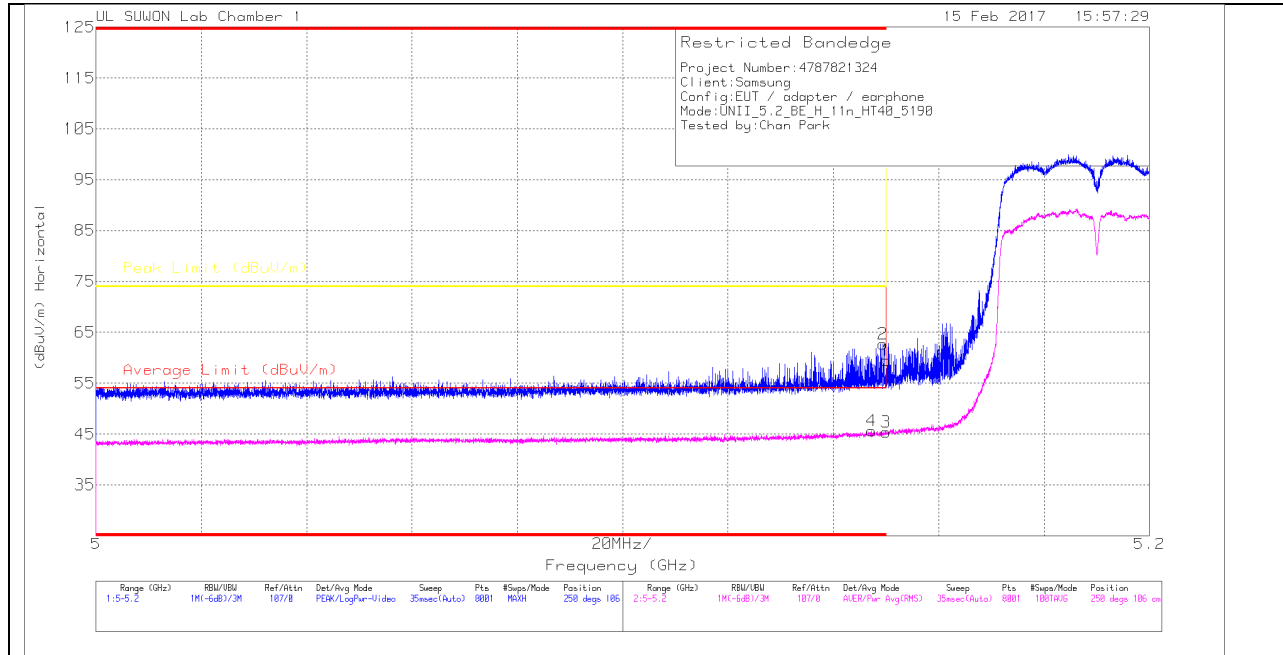
| Frequency (GHz) | Meter Reading (dBuV) | Det  | 3117(001687 17)_150619 | 6Ghz_HP(dB) | DC Corr (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | Margin (dB) | UNII Non-Restricted (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|-----------------|----------------------|------|------------------------|-------------|--------------|----------------------------|--------------------|-------------|---------------------|-------------|------------------------------|-------------|----------------|-------------|----------|
| 6.987           | 46.41                | PK-U | 35.7                   | -31.1       | 0            | 51.01                      | -                  | -           | -                   | -           | 68.2                         | -17.19      | 227            | 100         | H        |
| 6.987           | 48.21                | PK-U | 35.7                   | -31.1       | 0            | 52.81                      | -                  | -           | -                   | -           | 68.2                         | -15.39      | 101            | 121         | V        |

\* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK-U - U-NII: Maximum Peak

### 10.1.3. 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

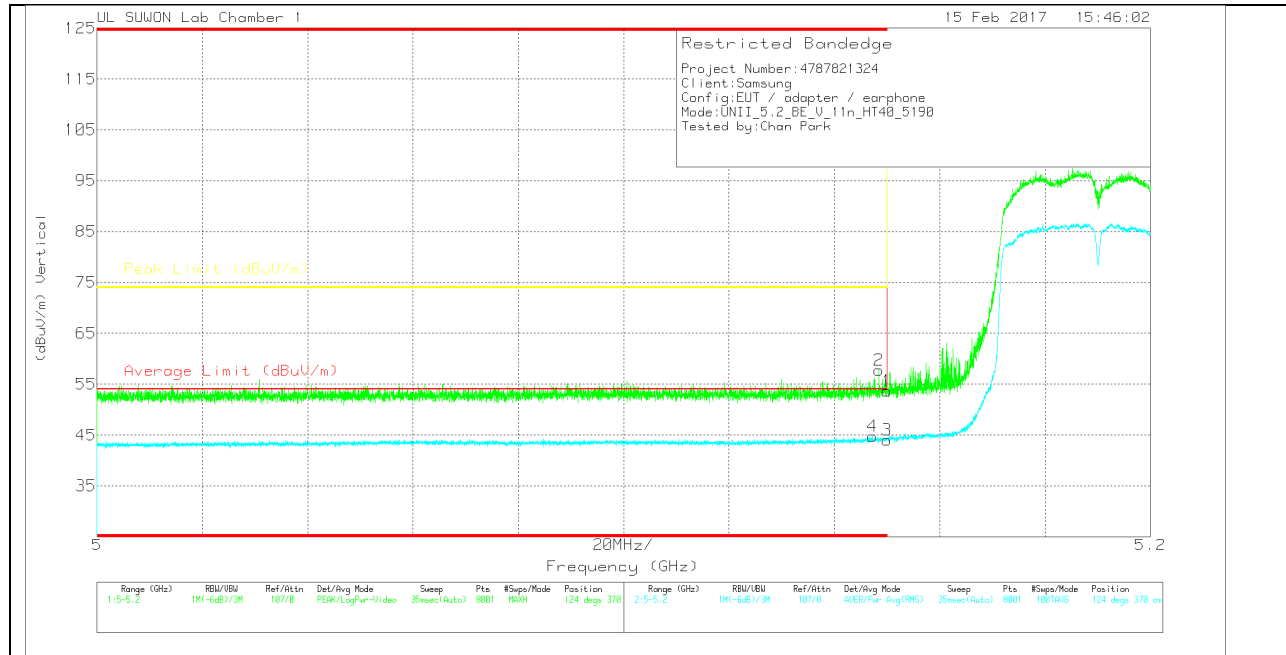
| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 3117(001687 17)_150619 | 10dB_Att(dB ) | DC Corr (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|-----|------------------------|---------------|--------------|----------------------------|------------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| 1      | * 5.15          | 49.48                | Pk  |                        | -24.2         | 0            | 59.48                      | -                      | -           | 74                  | -14.52         | 250            | 106         | H        |
| 2      | * 5.149         | 52.72                | Pk  |                        | -24.2         | 0            | 62.72                      | -                      | -           | 74                  | -11.28         | 250            | 106         | H        |
| 3      | * 5.15          | 34.67                | RMS |                        | -24.1         | .59          | 45.36                      | 54                     | -8.64       | -                   | -              | 250            | 106         | H        |
| 4      | * 5.147         | 34.91                | RMS |                        | -24.1         | .59          | 45.6                       | 54                     | -8.4        | -                   | -              | 250            | 106         | H        |

\* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

RMS - RMS detection

## VERTICAL PEAK AND AVERAGE PLOT



## VERTICAL DATA

### Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 3117/001687 17_150619 | 10dB_Att(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          | 43.71                | Pk  | 34.2                  | -24.2         | 0            | 53.71                      | -                      | -           | 74                  | -20.29         | 124            | 370         | V        |
| 2      | * 5.148         | 47.67                | Pk  | 34.2                  | -24.1         | 0            | 57.77                      | -                      | -           | 74                  | -16.23         | 124            | 370         | V        |
| 3      | * 5.15          | 33.35                | RMS | 34.2                  | -24.1         | .59          | 44.04                      | 54                     | -9.96       | -                   | -              | 124            | 370         | V        |
| 4      | * 5.147         | 34.06                | RMS | 34.2                  | -24.1         | .59          | 44.75                      | 54                     | -9.25       | -                   | -              | 124            | 370         | V        |

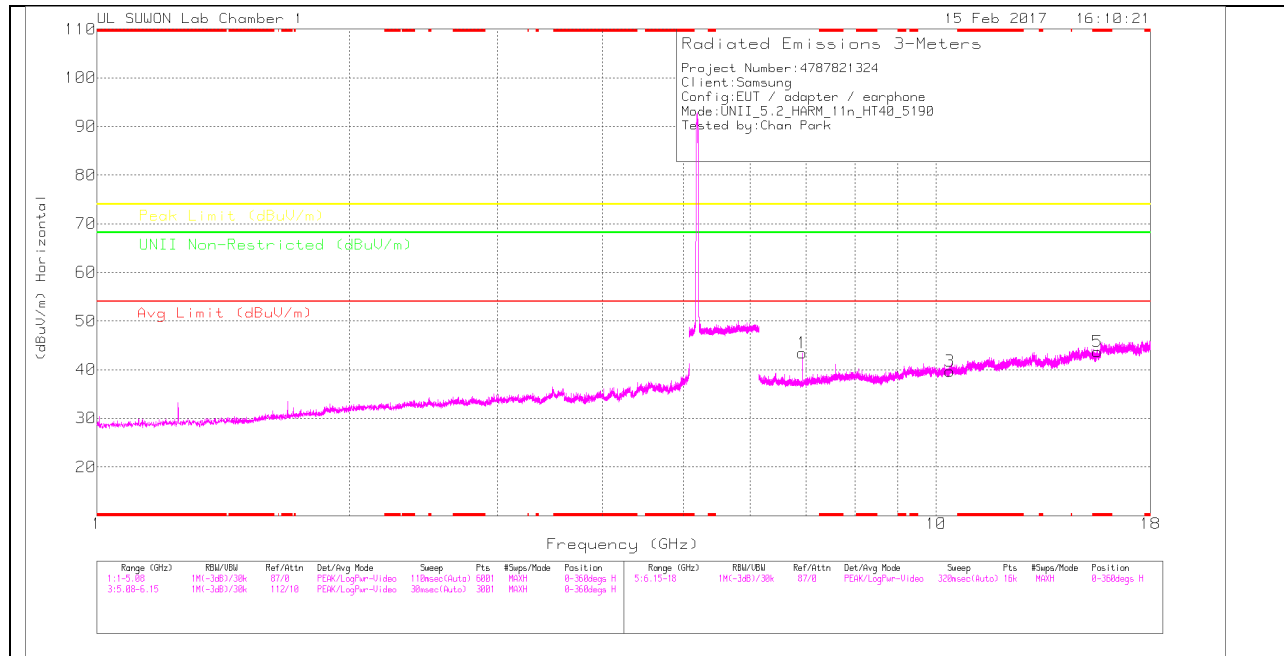
\* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

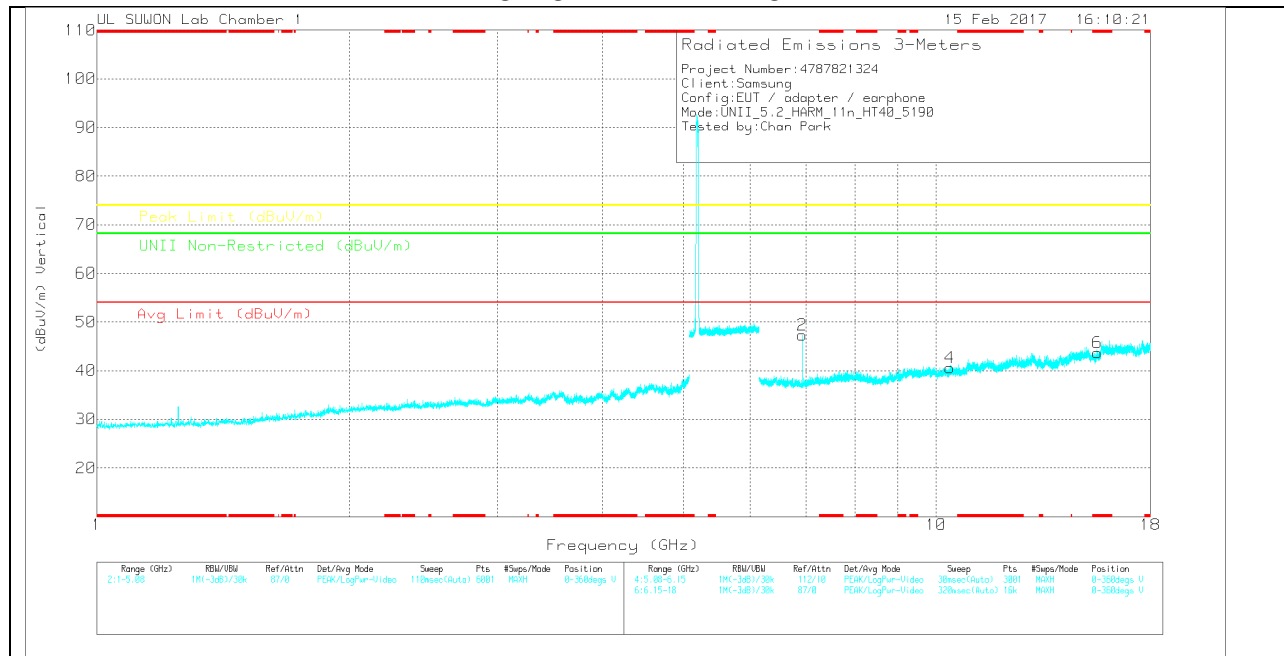
RMS - RMS detection

## 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.

## LOW CHANNEL DATA

### Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 3117(0016 8717)_150 519 | 6GHz_HP(d B) | 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      | 6.92            | 38.94                | Pk  | 35.7                    | -31.2        | 0            | 43.44                      | -                  | -           | -                   | -           | 68.2                         | -24.76      | 0-360          | 150         | H        |
| 3      | 10.379          | 29.84                | Pk  | 37.8                    | -27.9        | 0            | 39.74                      | -                  | -           | -                   | -           | 68.2                         | -28.46      | 0-360          | 250         | H        |
| 5      | * 15.569        | 22.53                | Pk  | 40.3                    | -19.1        | 0            | 43.73                      | -                  | -           | 74                  | -30.27      | -                            | -           | 0-360          | 250         | H        |
| 2      | 6.919           | 42.84                | Pk  | 35.7                    | -31.2        | 0            | 47.34                      | -                  | -           | -                   | -           | 68.2                         | -20.86      | 0-360          | 150         | V        |
| 4      | 10.38           | 30.63                | Pk  | 37.8                    | -27.8        | 0            | 40.63                      | -                  | -           | -                   | -           | 68.2                         | -27.57      | 0-360          | 150         | V        |
| 6      | * 15.572        | 22.35                | Pk  | 40.3                    | -19          | 0            | 43.65                      | -                  | -           | 74                  | -30.35      | -                            | -           | 0-360          | 150         | V        |

\* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk – Peak detector

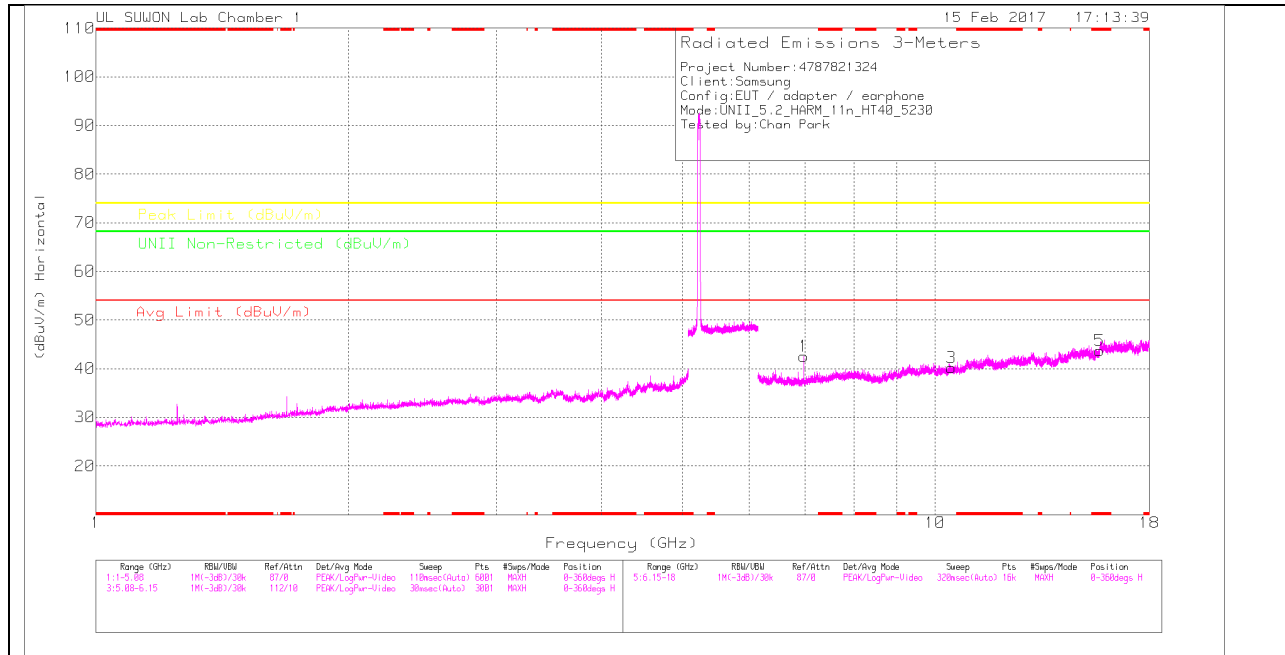
### Radiated Emissions

| Frequency (GHz) | Meter Reading (dBuV) | Det  | 3117(001687 17)_150619 | 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 |
|-----------------|----------------------|------|------------------------|-------------|--------------|----------------------------|--------------------|-------------|---------------------|-------------|------------------------------|-------------|----------------|-------------|----------|
| 6.92            | 47.24                | PK-U | 35.7                   | -31.2       | 0            | 51.74                      | -                  | -           | -                   | -           | 68.2                         | -16.46      | 225            | 103         | H        |
| 6.92            | 49.1                 | PK-U | 35.7                   | -31.2       | 0            | 53.6                       | -                  | -           | -                   | -           | 68.2                         | -14.6       | 7              | 105         | V        |

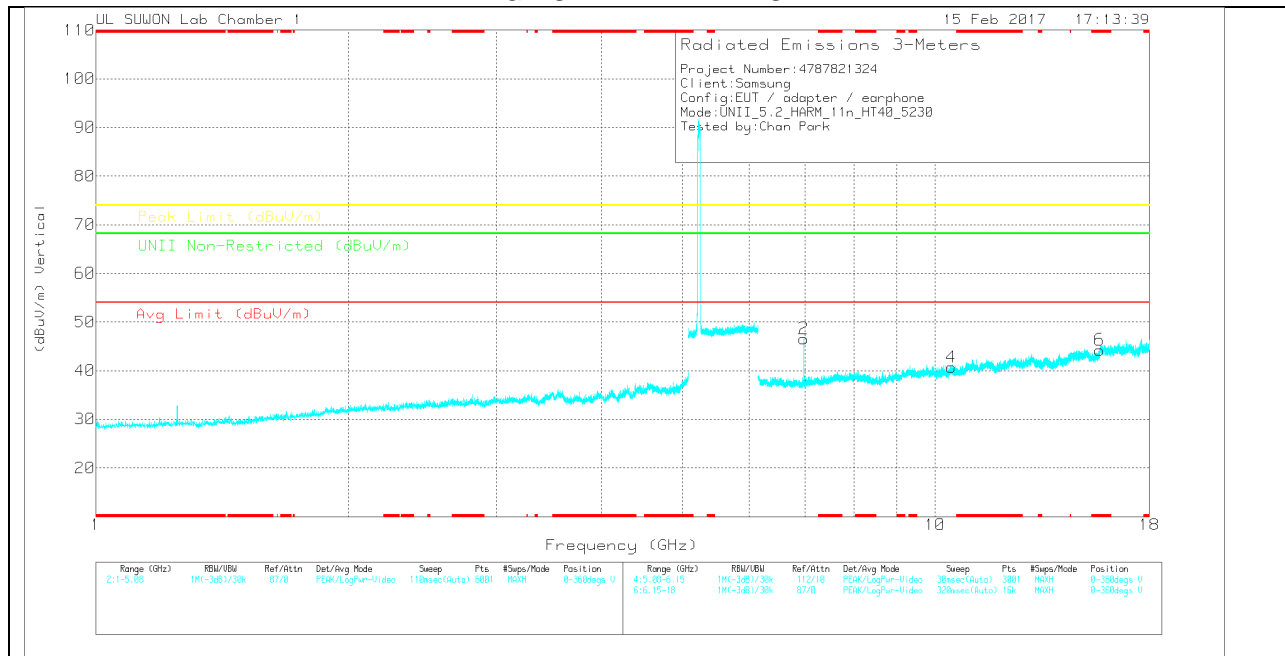
\* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK-U - U-NII: Maximum Peak

## 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.

## HIGH CHANNEL DATA

### Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 3117(0016 8717)_150 619 | 6GHz_HP(d B) | 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      | 6.973           | 37.85                | Pk  | 35.7                    | -31          | 0            | 42.55                      | -                  | -           | -                   | -           | 68.2                         | -25.65      | 0-360          | 150         | H        |
| 3      | 10.46           | 30.94                | Pk  | 37.8                    | -28.5        | 0            | 40.24                      | -                  | -           | -                   | -           | 68.2                         | -27.96      | 0-360          | 150         | H        |
| 5      | * 15.689        | 22.14                | Pk  | 40.4                    | -18.9        | 0            | 43.64                      | -                  | -           | 74                  | -30.36      | -                            | -           | 0-360          | 250         | H        |
| 2      | 6.973           | 41.9                 | Pk  | 35.7                    | -31          | 0            | 46.6                       | -                  | -           | -                   | -           | 68.2                         | -21.6       | 0-360          | 150         | V        |
| 4      | 10.46           | 31.4                 | Pk  | 37.8                    | -28.5        | 0            | 40.7                       | -                  | -           | -                   | -           | 68.2                         | -27.5       | 0-360          | 150         | V        |
| 6      | * 15.691        | 22.77                | Pk  | 40.4                    | -18.9        | 0            | 44.27                      | -                  | -           | 74                  | -29.73      | -                            | -           | 0-360          | 250         | V        |

\* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk – Peak detector

### Radiated Emissions

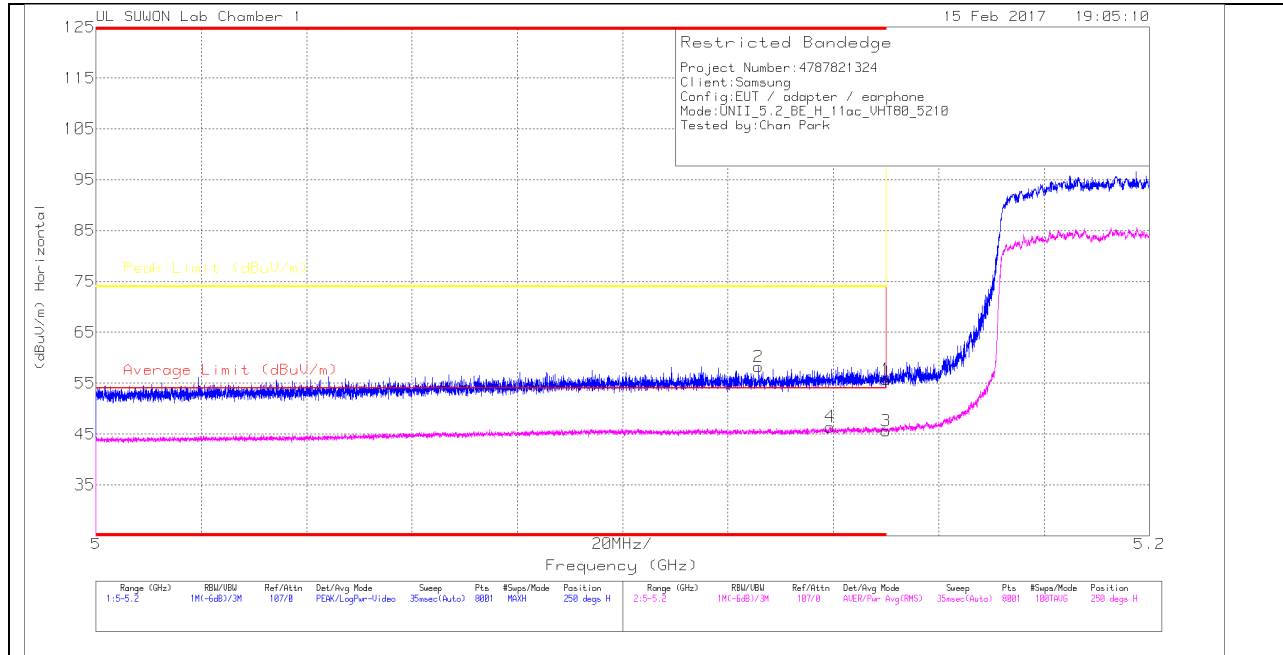
| Frequency (GHz) | Meter Reading (dBuV) | Det  | 3117(001687 17)_150619 | 6GHz_HP(dB) | DC Corr (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | Margin (dB) | UNII Non-Restricted (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|-----------------|----------------------|------|------------------------|-------------|--------------|----------------------------|--------------------|-------------|---------------------|-------------|------------------------------|-------------|----------------|-------------|----------|
| 6.973           | 47.29                | PK-U | 35.7                   | -31         | 0            | 51.99                      | -                  | -           | -                   | -           | 68.2                         | -16.21      | 227            | 105         | H        |
| 6.973           | 46.24                | PK-U | 35.7                   | -31         | 0            | 50.94                      | -                  | -           | -                   | -           | 68.2                         | -17.26      | 229            | 109         | H        |

\* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK-U - U-NII: Maximum Peak

## 10.1.4. 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

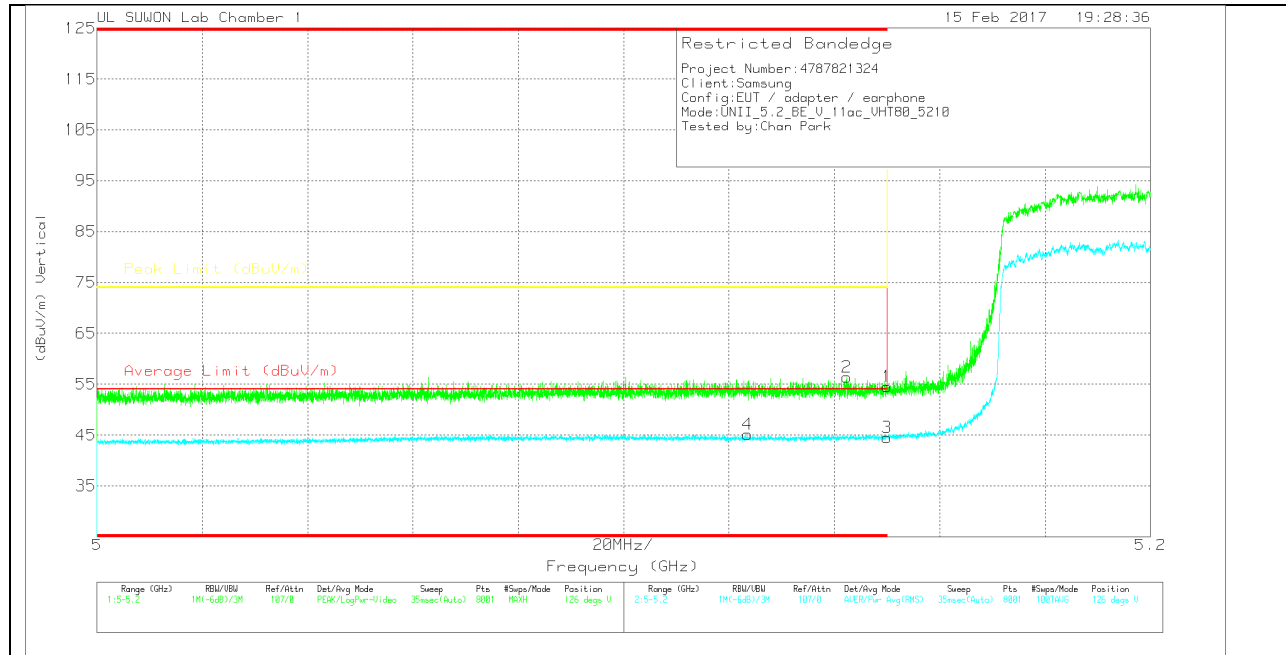
| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 3117(00168717)_150619 | 10dB Att(dB) | DC Corr (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|-----|-----------------------|--------------|--------------|----------------------------|------------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| 1      | * 5.15          | 45.76                | Pk  |                       | -24.2        | 0            | 55.76                      | -                      | -           | 74                  | -18.24         | 250            | 105         | H        |
| 2      | * 5.126         | 48.27                | Pk  |                       | -24.2        | 0            | 58.27                      | -                      | -           | 74                  | -15.73         | 250            | 105         | H        |
| 3      | * 5.15          | 34.45                | RMS |                       | -24.1        | 1.12         | 45.67                      | 54                     | -8.33       | -                   | -              | 250            | 105         | H        |
| 4      | * 5.139         | 35.21                | RMS |                       | -24.1        | 1.12         | 46.43                      | 54                     | -7.57       | -                   | -              | 250            | 105         | H        |

\* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

RMS - RMS detection

## VERTICAL PEAK AND AVERAGE PLOT



## VERTICAL DATA

### Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 3117/001687 17_150619 | 10dB_Att(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          | 44.53                | Pk  |                       | -24.2         | 0            | 54.53                      | -                      | -           | 74                  | -19.47         | 126            | 368         | V        |
| 2      | * 5.142         | 46.42                | Pk  |                       | -24.2         | 0            | 56.42                      | -                      | -           | 74                  | -17.58         | 126            | 368         | V        |
| 3      | * 5.15          | 33.26                | RMS |                       | -24.1         | 1.12         | 44.48                      | 54                     | -9.52       | -                   | -              | 126            | 368         | V        |
| 4      | * 5.124         | 33.89                | RMS |                       | -24.1         | 1.12         | 45.11                      | 54                     | -8.89       | -                   | -              | 126            | 368         | V        |

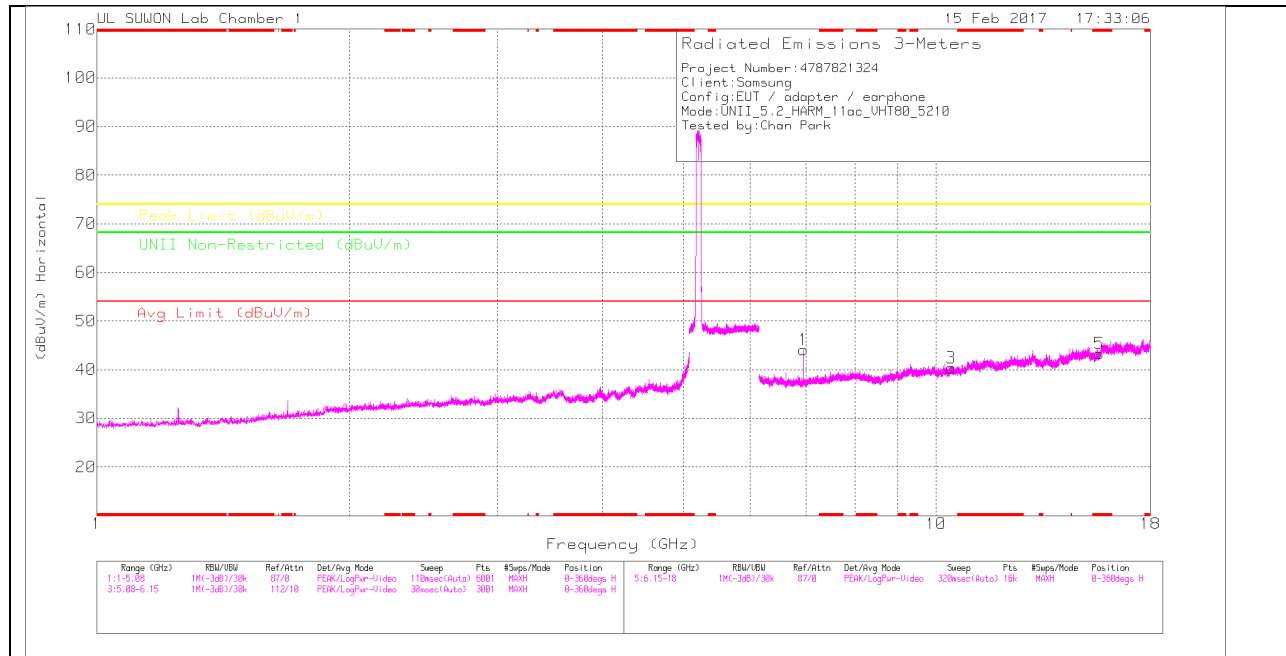
\* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

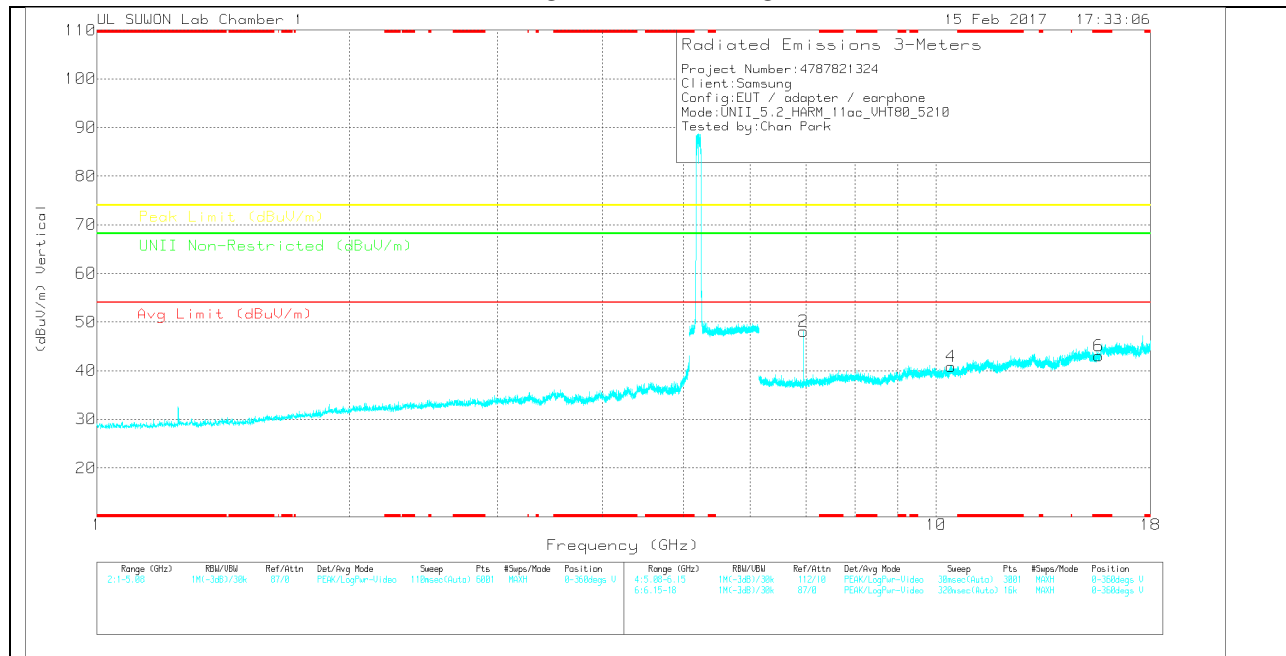
RMS - RMS detection

## 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.

## MID CHANNEL DATA

### Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 3117(0016 8717)_150 519 | 6Ghz_HP(d B) | 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      | 6.946           | 39.35                | Pk  | 35.7                    | -31          | 0            | 44.05                      | -                  | -           | -                   | -           | 68.2                         | -24.15      | 0-360          | 150         | H        |
| 3      | 10.422          | 30.49                | Pk  | 37.8                    | -28          | 0            | 40.29                      | -                  | -           | -                   | -           | 68.2                         | -27.91      | 0-360          | 250         | H        |
| 5      | * 15.632        | 21.18                | Pk  | 40.3                    | -18.2        | 0            | 43.28                      | -                  | -           | 74                  | -30.72      | -                            | -           | 0-360          | 150         | H        |
| 2      | 6.946           | 43.33                | Pk  | 35.7                    | -31          | 0            | 48.03                      | -                  | -           | -                   | -           | 68.2                         | -20.17      | 0-360          | 150         | V        |
| 4      | 10.418          | 30.92                | Pk  | 37.8                    | -27.9        | 0            | 40.82                      | -                  | -           | -                   | -           | 68.2                         | -27.38      | 0-360          | 150         | V        |
| 6      | * 15.628        | 20.88                | Pk  | 40.3                    | -18.1        | 0            | 43.08                      | -                  | -           | 74                  | -30.92      | -                            | -           | 0-360          | 150         | V        |

\* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk – Peak detector

### Radiated Emissions

| Frequency (GHz) | Meter Reading (dBuV) | Det  | 3117(001687 17)_150619 | 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 |
|-----------------|----------------------|------|------------------------|-------------|--------------|----------------------------|--------------------|-------------|---------------------|-------------|------------------------------|-------------|----------------|-------------|----------|
| 6.947           | 46.98                | PK-U | 35.7                   | -31         | 0            | 51.68                      | -                  | -           | -                   | -           | 68.2                         | -16.52      | 228            | 103         | H        |
| 6.947           | 48.33                | PK-U | 35.7                   | -31         | 0            | 53.03                      | -                  | -           | -                   | -           | 68.2                         | -15.17      | 91             | 233         | V        |

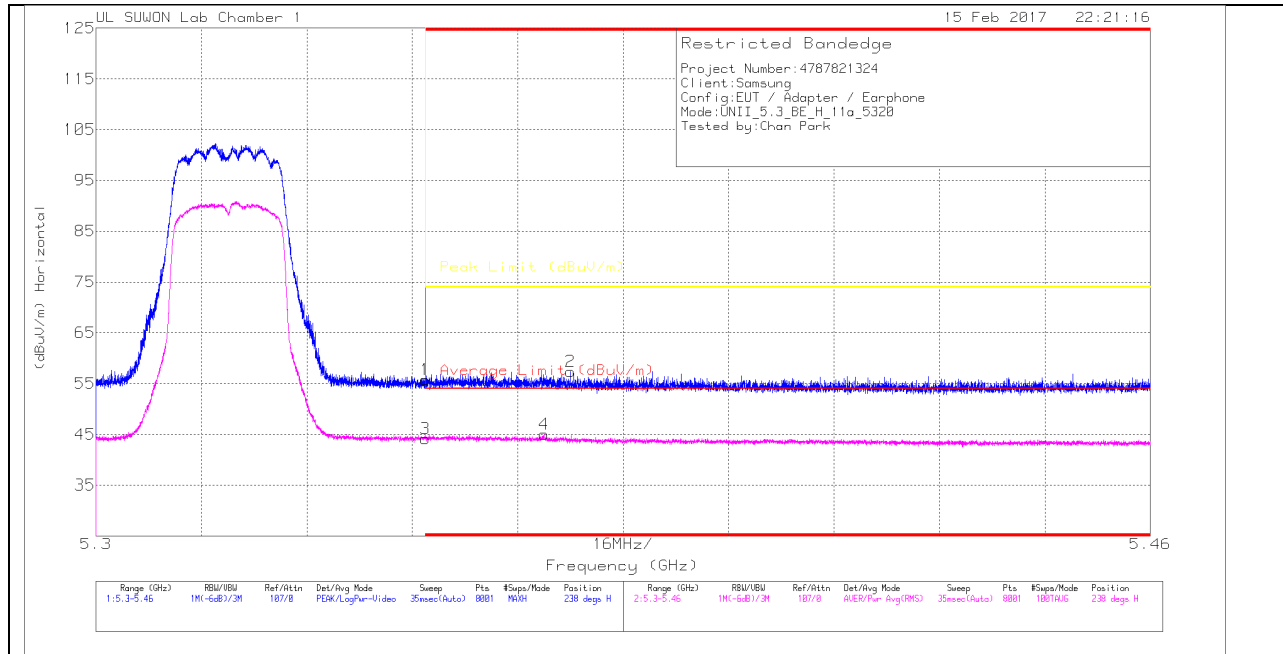
\* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK-U - U-NII: Maximum Peak

## 10.2. 5.3 GHz

### 10.2.1. 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 | 3117(001687 17)_150619 | 10dB_Att(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          | 44.82                | Pk  | 34.5                   | -23.5         | 0            | 55.82                      | -                      | -           | 74                  | -18.18         | 238            | 106         | H        |
| 2      | * 5.372         | 46.15                | Pk  | 34.5                   | -23.3         | 0            | 57.35                      | -                      | -           | 74                  | -16.65         | 238            | 106         | H        |
| 3      | * 5.35          | 33.19                | RMS | 34.5                   | -23.8         | .29          | 44.18                      | 54                     | -9.82       | -                   | -              | 238            | 106         | H        |
| 4      | * 5.368         | 34.03                | RMS | 34.5                   | -23.8         | .29          | 45.02                      | 54                     | -8.98       | -                   | -              | 238            | 106         | H        |

\* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

Pk - Peak detector

RMS - RMS detection