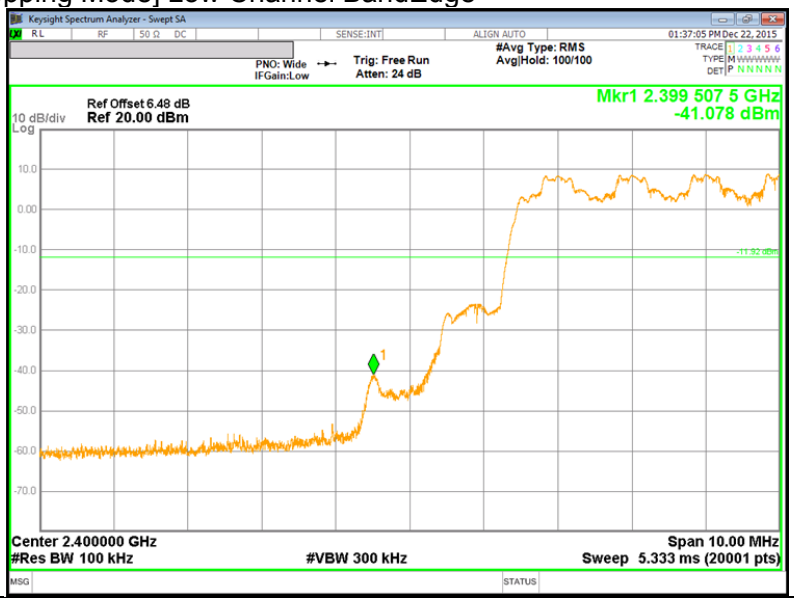
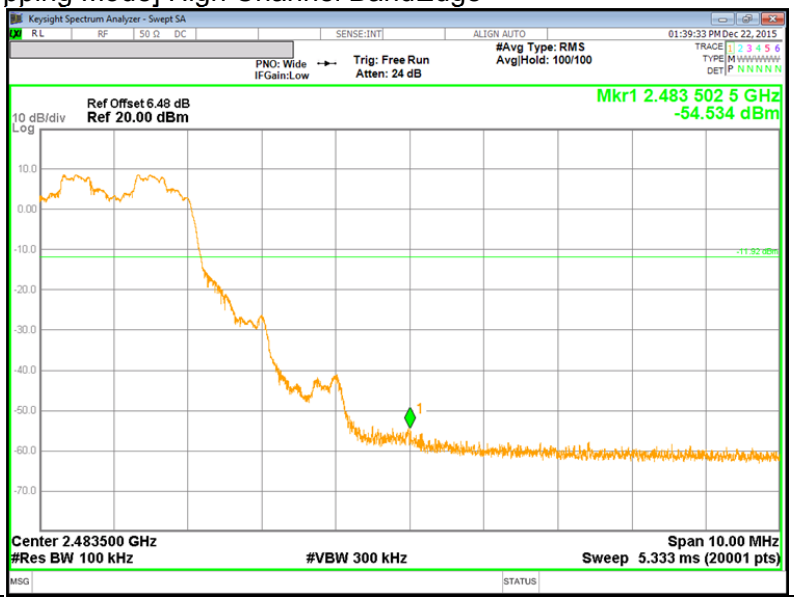
**BandEdge Emission at PI/4-DQPSK Hopping Mode**

[PI/4-DQPSK Hopping Mode] Low Channel BandEdge




[PI/4-DQPSK Hopping Mode] High Channel BandEdge





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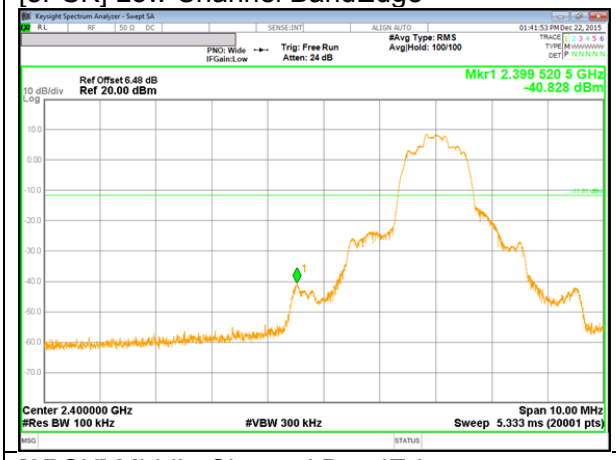
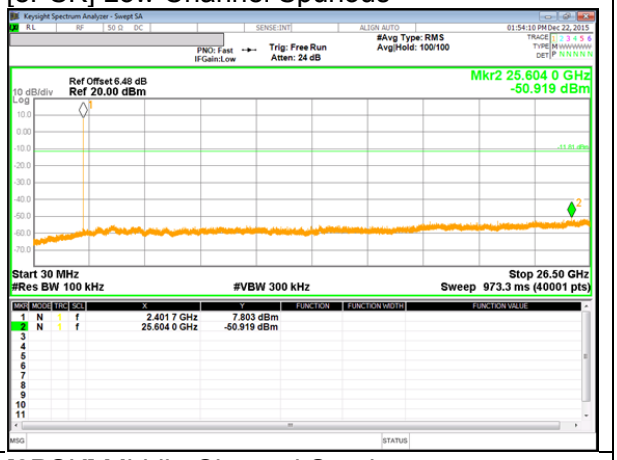
**8PSK Mode**

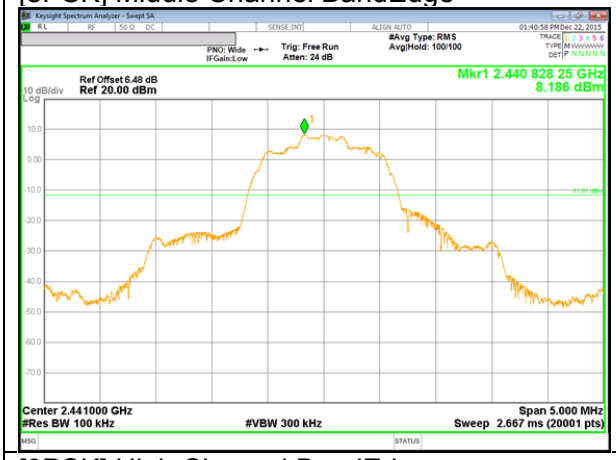
[8PSK] Low Channel BandEdge



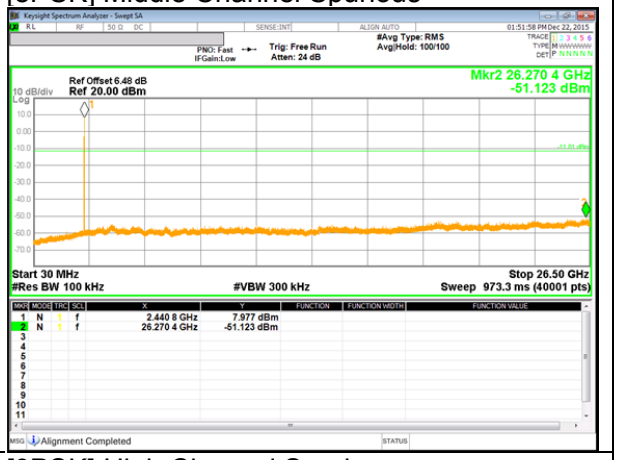

[8PSK] Low Channel Spurious



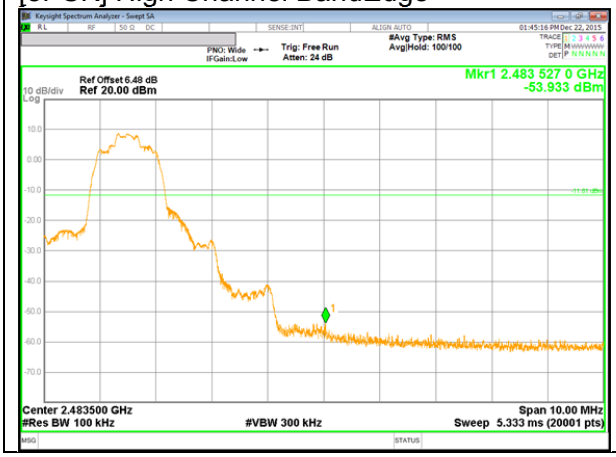

[8PSK] Middle Channel BandEdge



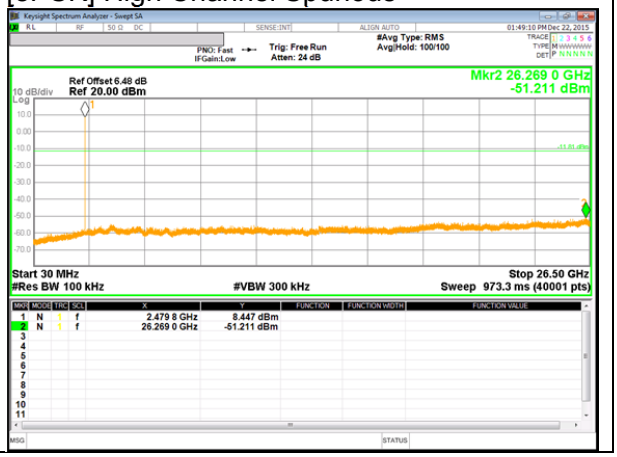

[8PSK] Middle Channel Spurious




[8PSK] High Channel BandEdge




[8PSK] High Channel Spurious





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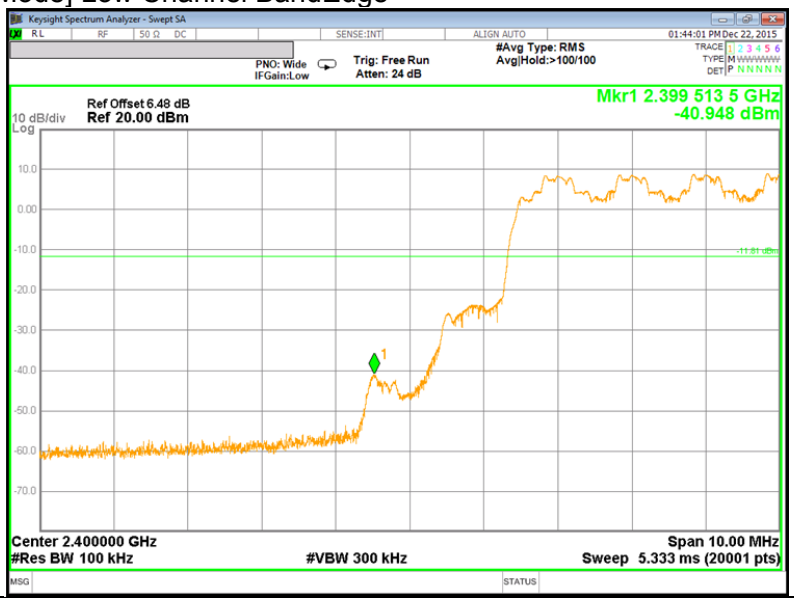
**BandEdge Emission at 8PSK Hopping Mode**

[8PSK Hopping Mode] Low Channel BandEdge




[8PSK Hopping Mode] High Channel BandEdge

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# 9. RADIATED TEST RESULTS

## 9.1. LIMITS AND PROCEDURE

**LIMITS**

FCC §15.205 and §15.209

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

**TEST PROCEDURE**

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

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

For band edge measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 1 MHz for peak measurements and 1/T (on time) for average measurement.

GFSK = 1/T = 1 / 0.0029S = 350Hz.

The spectrum from 1GHzHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in the 2.4 GHz band.

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.


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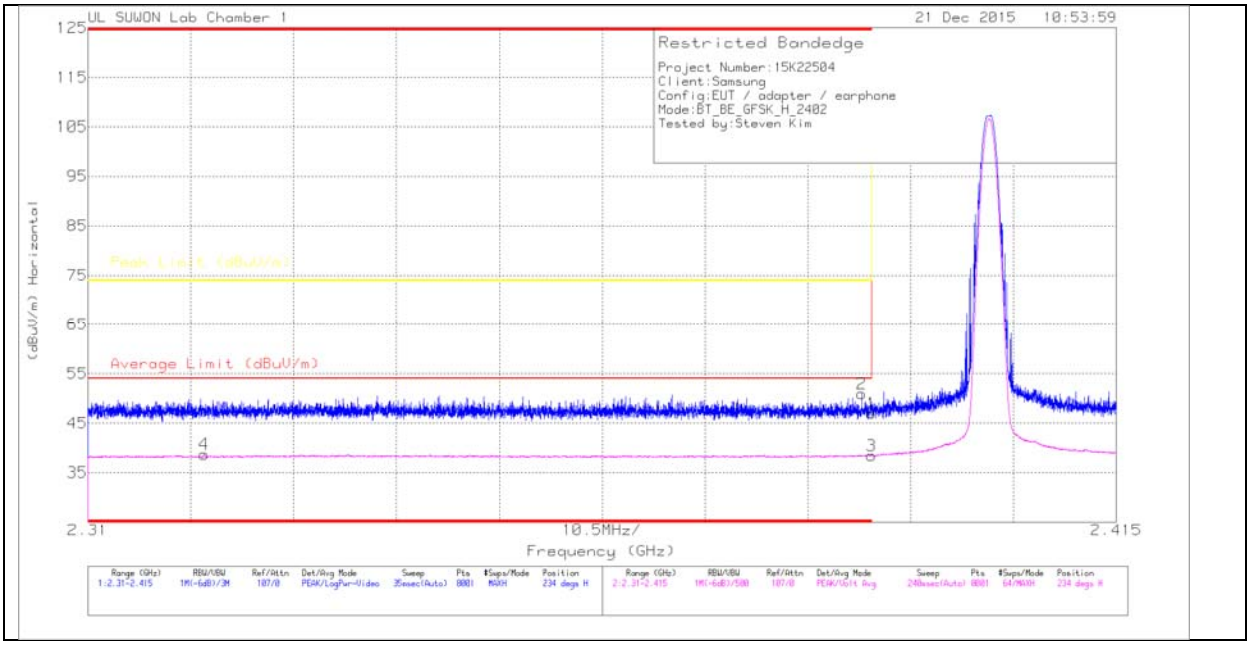
# 9.2. TRANSMITTER ABOVE 1 GHz

## 9.2.1. BASIC DATA RATE GFSK MODULATION

### RESTRICTED BANDEDGE (LOW CHANNEL)

**HORIZONTAL PEAK AND AVERAGE PLOT**




**HORIZONTAL DATA**

Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 3117(00168717)_150619 | Path_2 | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | * 2.39 | 44.23 | Pk | 31.8 | -29 | 47.03 | - | - | 74 | -26.97 | 234 | 105 | H |
| 2 | * 2.389 | 48.2 | Pk | 31.8 | -29 | 51 | - | - | 74 | -23 | 234 | 105 | H |
| 3 | * 2.39 | 35.68 | V1TV | 31.8 | -29 | 38.48 | 54 | -15.52 | - | - | 234 | 105 | H |
| 4 | * 2.322 | 36.06 | V1TV | 31.7 | -29 | 38.76 | 54 | -15.24 | - | - | 234 | 105 | H |

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

Pk - Peak detector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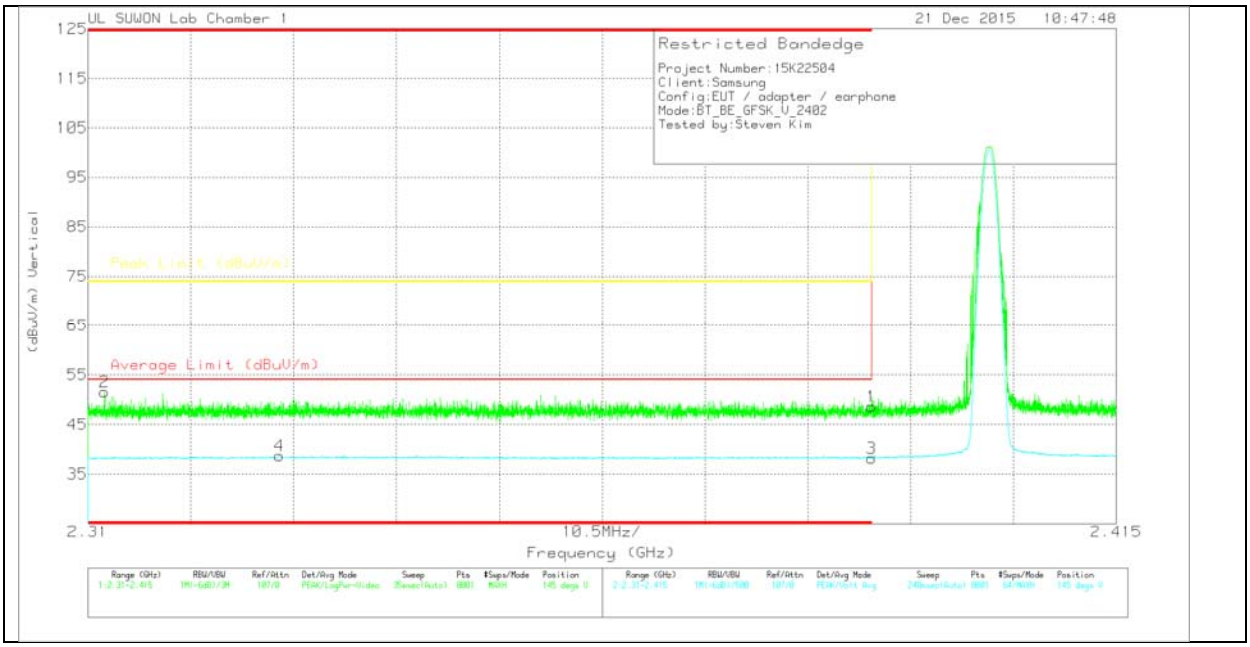
## VERTICAL PEAK AND AVERAGE PLOT




## VERTICAL DATA

Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 3117(0016 8717)_150 619 | Path_2 | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | * 2.39 | 45.79 | Pk | 31.8 | -29 | 48.59 | - | - | 74 | -25.41 | 145 | 243 | V |
| 2 | * 2.312 | 48.98 | Pk | 31.7 | -29.1 | 51.58 | - | - | 74 | -22.42 | 145 | 243 | V |
| 3 | * 2.39 | 35.42 | V1TV | 31.8 | -29 | 38.22 | 54 | -15.78 | - | - | 145 | 243 | V |
| 4 | * 2.33 | 35.98 | V1TV | 31.7 | -29 | 38.68 | 54 | -15.32 | - | - | 145 | 243 | V |

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

Pk - Peak detector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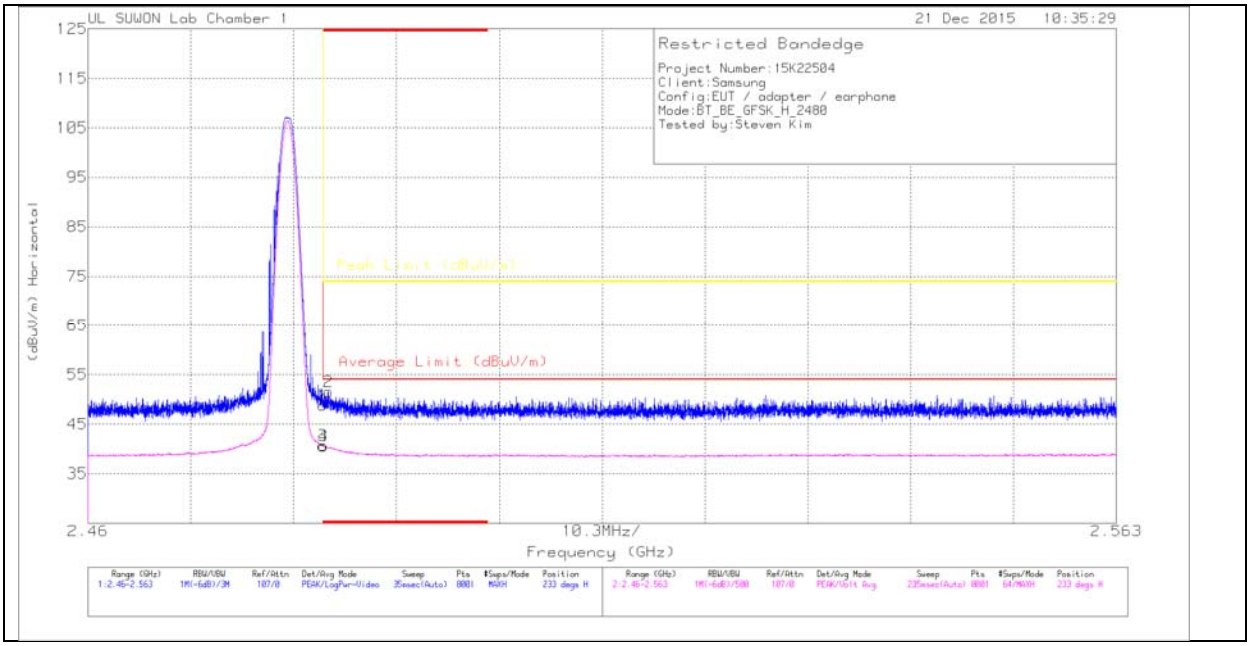
## AUTHORIZED BANDEDGE (HIGH CHANNEL)

### HORIZONTAL PEAK AND AVERAGE PLOT




### HORIZONTAL DATA

Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 3117(00168717)_150619 | Path_2 | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | * 2.484 | 45.76 | Pk | 32 | -28.9 | 48.86 | - | - | 74 | -25.14 | 233 | 101 | H |
| 2 | * 2.484 | 48.46 | Pk | 32 | -28.9 | 51.56 | - | - | 74 | -22.44 | 233 | 101 | H |
| 3 | * 2.484 | 37.58 | V1TV | 32 | -28.9 | 40.68 | 54 | -13.32 | - | - | 233 | 101 | H |
| 4 | * 2.484 | 37.43 | V1TV | 32 | -28.9 | 40.53 | 54 | -13.47 | - | - | 233 | 101 | H |

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

Pk - Peak detector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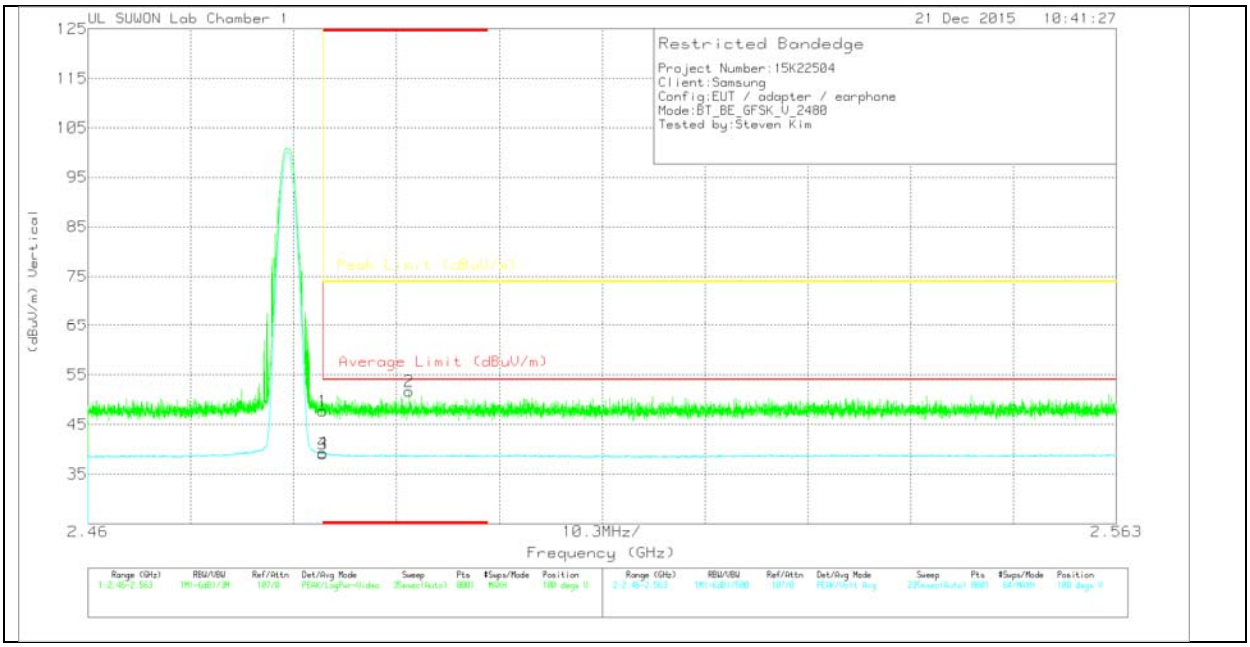
## VERTICAL PEAK AND AVERAGE PLOT




## VERTICAL DATA

Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 3117(00168717)_150619 | Path_2 | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | * 2.484 | 44.6 | Pk | 32 | -28.9 | 47.7 | - | - | 74 | -26.3 | 100 | 340 | V |
| 2 | * 2.492 | 48.56 | Pk | 32 | -28.9 | 51.66 | - | - | 74 | -22.34 | 100 | 340 | V |
| 3 | * 2.484 | 35.97 | V1TV | 32 | -28.9 | 39.07 | 54 | -14.93 | - | - | 100 | 340 | V |
| 4 | * 2.484 | 36.17 | V1TV | 32 | -28.9 | 39.27 | 54 | -14.73 | - | - | 100 | 340 | V |

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

Pk - Peak detector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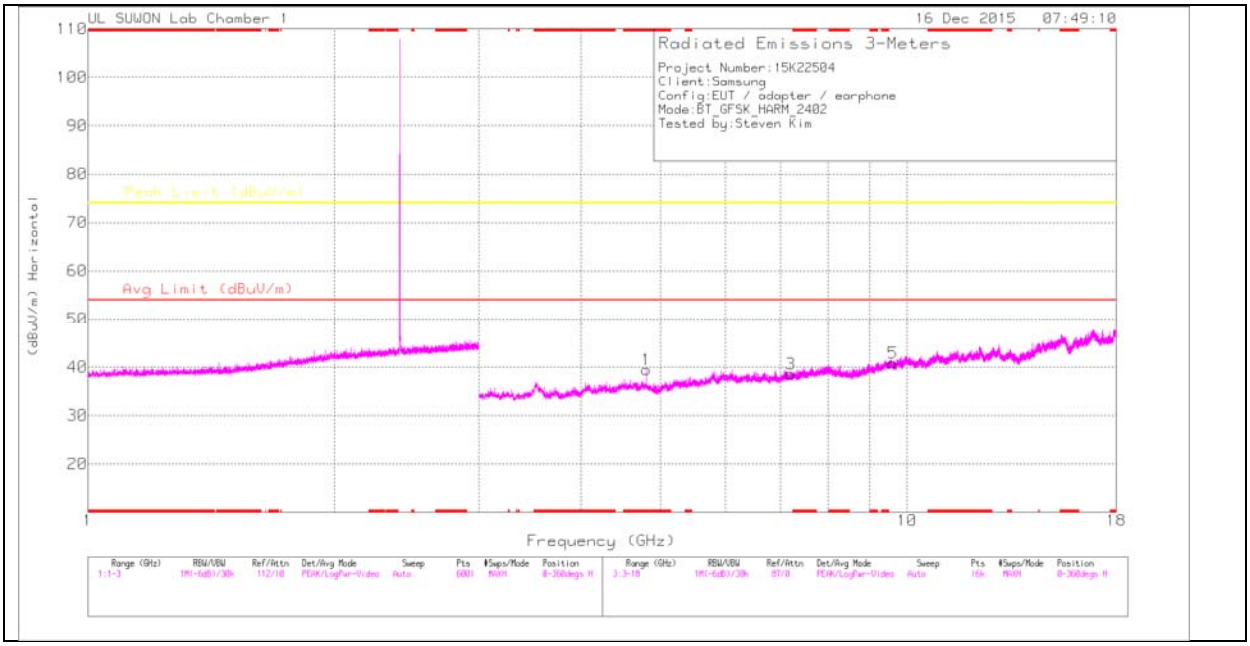
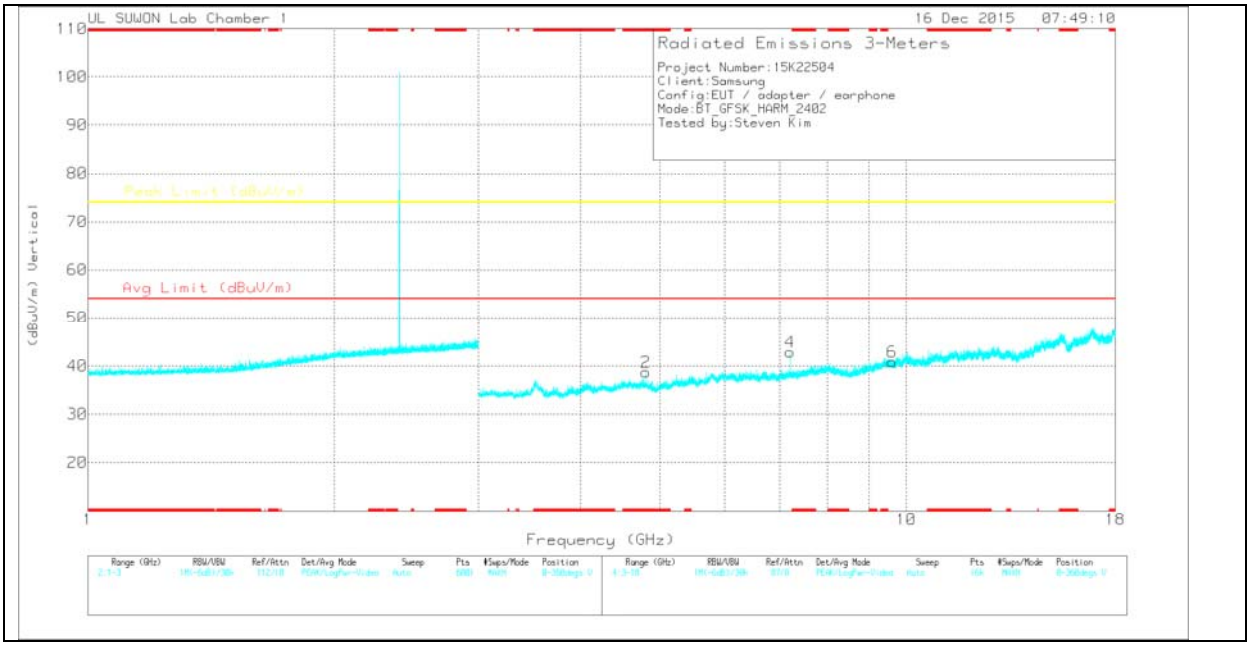
# HARMONICS AND SPURIOUS EMISSIONS

## LOW CHANNEL HORIZONTAL




## LOW CHANNEL VERTICAL




Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.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**LOW CHANNEL DATA**

## Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 3117(0016 8717)_150 619 | Path_3 | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | * 4.804 | 39.28 | PK | 34 | -33.8 | 39.48 | - | - | 74 | -34.52 | 0-360 | 100 | H |
| 3 | 7.207 | 33.75 | PK | 35.7 | -30.8 | 38.65 | - | - | 74 | -35.35 | 0-360 | 200 | H |
| 5 | 9.61 | 31.16 | PK | 37 | -27.3 | 40.86 | - | - | 74 | -33.14 | 0-360 | 200 | H |
| 2 | * 4.804 | 38.52 | PK | 34 | -33.8 | 38.72 | - | - | 74 | -35.28 | 0-360 | 100 | V |
| 4 | 7.205 | 38.04 | PK | 35.7 | -30.8 | 42.94 | - | - | 74 | -31.06 | 0-360 | 100 | V |
| 6 | 9.608 | 31.13 | PK | 37 | -27.3 | 40.83 | - | - | 74 | -33.17 | 0-360 | 100 | V |

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

PK – Peak detector

## Radiated Emissions

| Frequency (GHz) | Meter Reading (dBuV) | Det | 3117(0016 8717)_150 619 | Path_3 | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| * 4.804 | 49.5 | PK2 | 34 | -33.8 | 49.7 | - | - | 74 | -24.3 | 301 | 101 | H |
| * 4.804 | 38.35 | VA1T | 34 | -33.8 | 38.55 | 54 | -15.45 | - | - | 301 | 101 | H |
| * 4.804 | 48.81 | PK2 | 34 | -33.8 | 49.01 | - | - | 74 | -24.99 | 296 | 354 | V |
| * 4.804 | 36.85 | VA1T | 34 | -33.8 | 37.05 | 54 | -16.95 | - | - | 296 | 354 | V |
| 7.205 | 47.54 | PK2 | 35.7 | -30.8 | 52.44 | - | - | 74 | -21.56 | 348 | 101 | V |

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

PK2 - KDB558074 Method: Maximum Peak

VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration


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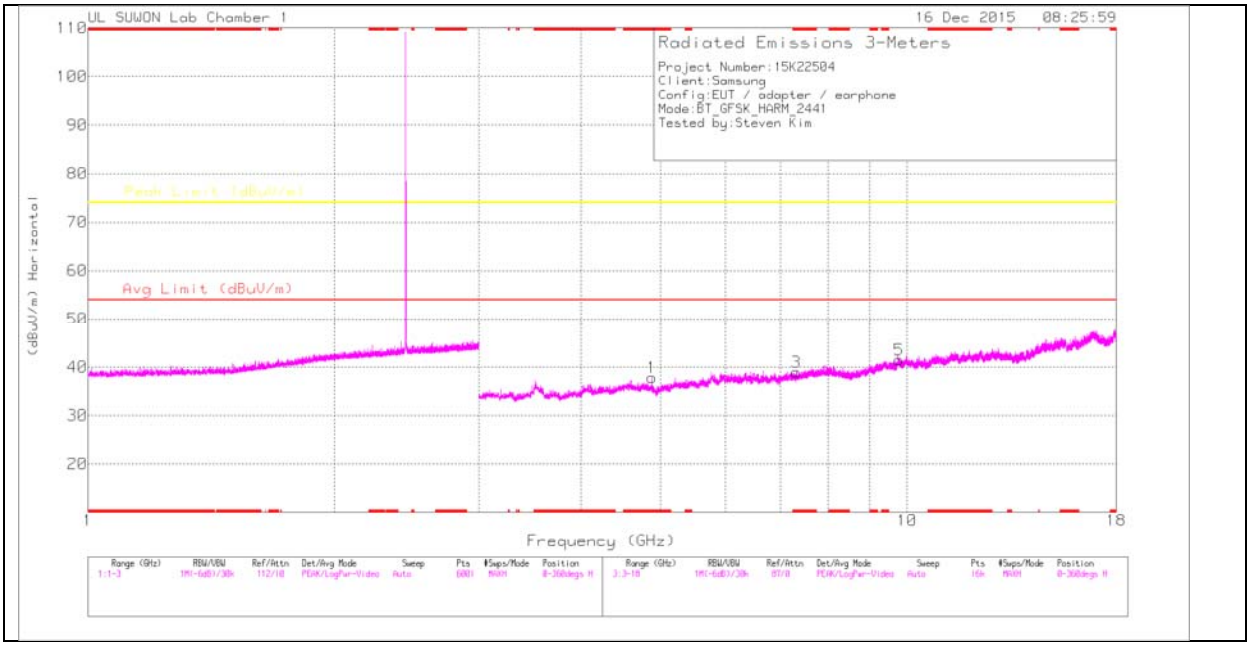
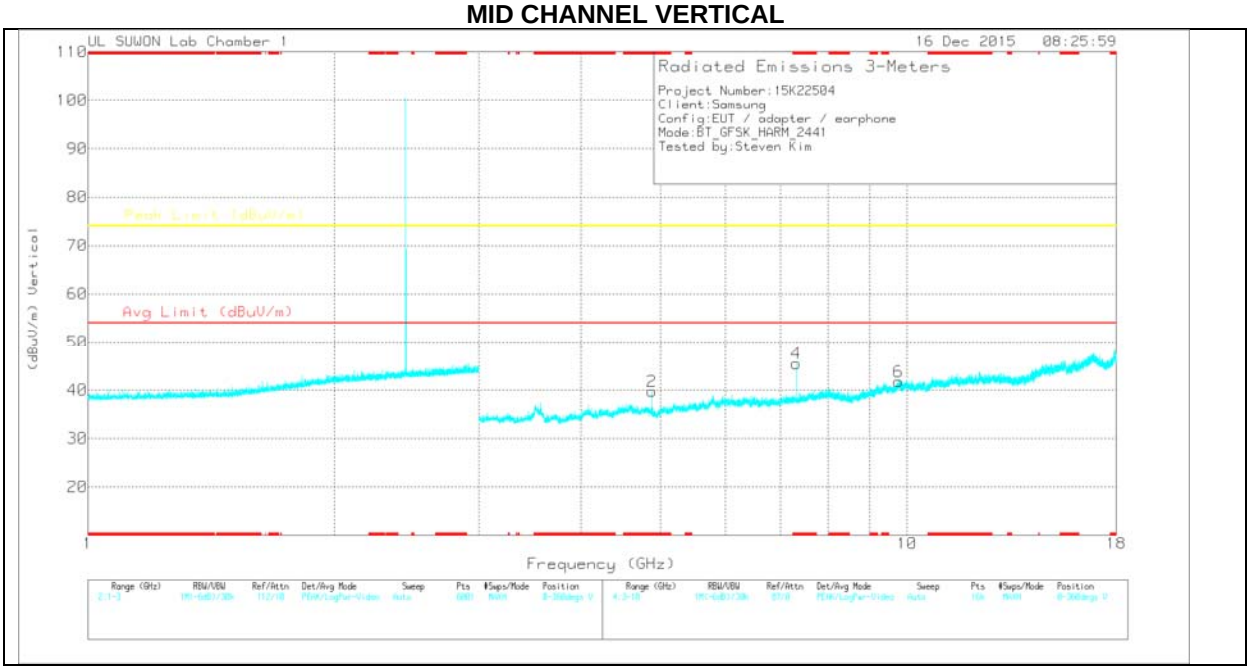
**MID CHANNEL HORIZONTAL**




**MID CHANNEL VERTICAL**




Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.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## MID CHANNEL DATA

### Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 3117(00168717)_150619 | Path_3 | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | * 4.881 | 37.79 | Avg | 34 | -34 | 37.79 | - | - | 74 | -36.21 | 0-360 | 100 | H |
| 3 | * 7.323 | 34.02 | Avg | 35.8 | -30.9 | 38.92 | - | - | 74 | -35.08 | 0-360 | 200 | H |
| 5 | 9.767 | 30.82 | Avg | 37.2 | -26.5 | 41.52 | - | - | 74 | -32.48 | 0-360 | 100 | H |
| 2 | * 4.881 | 39.71 | Avg | 34 | -34 | 39.71 | - | - | 74 | -34.29 | 0-360 | 100 | V |
| 4 | * 7.323 | 40.59 | Avg | 35.8 | -30.9 | 45.49 | - | - | 74 | -28.51 | 0-360 | 100 | V |
| 6 | 9.765 | 31.1 | Avg | 37.2 | -26.6 | 41.7 | - | - | 74 | -32.3 | 0-360 | 200 | V |

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

Avg - Video bandwidth < Resolution bandwidth

### Radiated Emissions

| Frequency (GHz) | Meter Reading (dBuV) | Det | 3117(00168717)_150619 | Path_3 | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| * 4.882 | 48.95 | PK2 | 34 | -34 | 48.95 | - | - | 74 | -25.05 | 269 | 102 | H |
| * 4.882 | 37.52 | VA1T | 34 | -34 | 37.52 | 54 | -16.48 | - | - | 269 | 102 | H |
| * 4.881 | 48.29 | PK2 | 34 | -34 | 48.29 | - | - | 74 | -25.71 | 218 | 114 | V |
| * 4.882 | 37.41 | VA1T | 34 | -34 | 37.41 | 54 | -16.59 | - | - | 218 | 114 | V |
| * 7.323 | 48.57 | PK2 | 35.8 | -30.9 | 53.47 | - | - | 74 | -20.53 | 360 | 107 | V |
| * 7.323 | 40.51 | VA1T | 35.8 | -30.9 | 45.41 | 54 | -8.59 | - | - | 360 | 107 | V |

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

PK2 - KDB558074 Method: Maximum Peak

VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration


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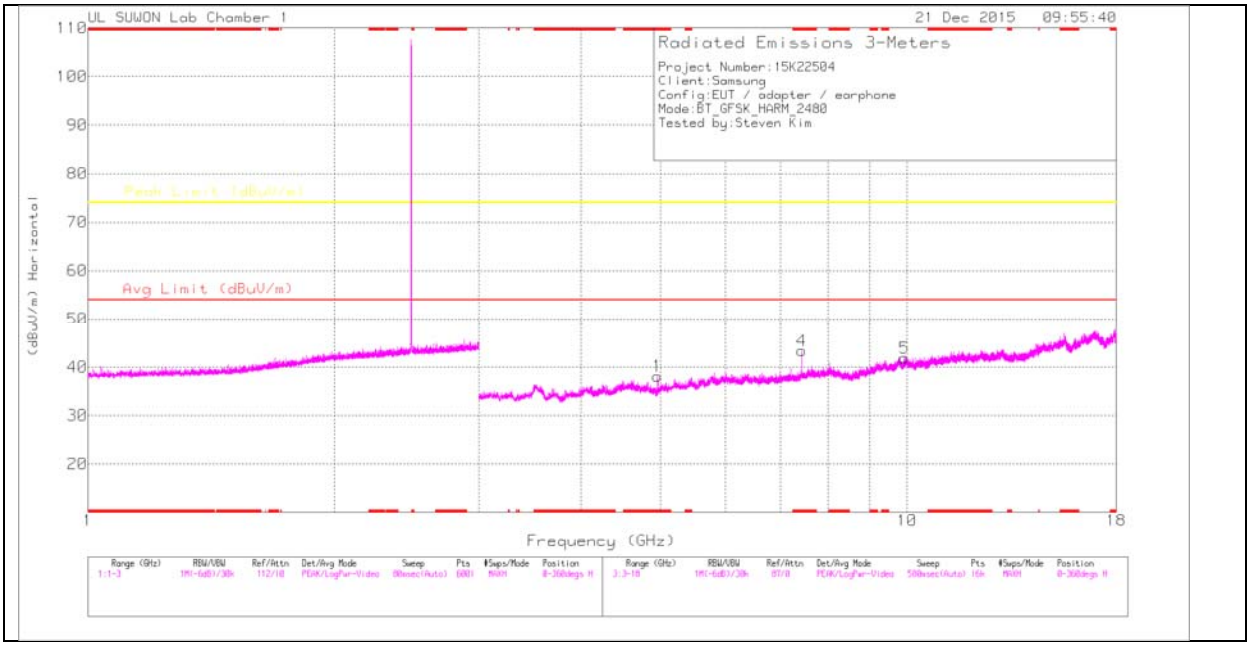
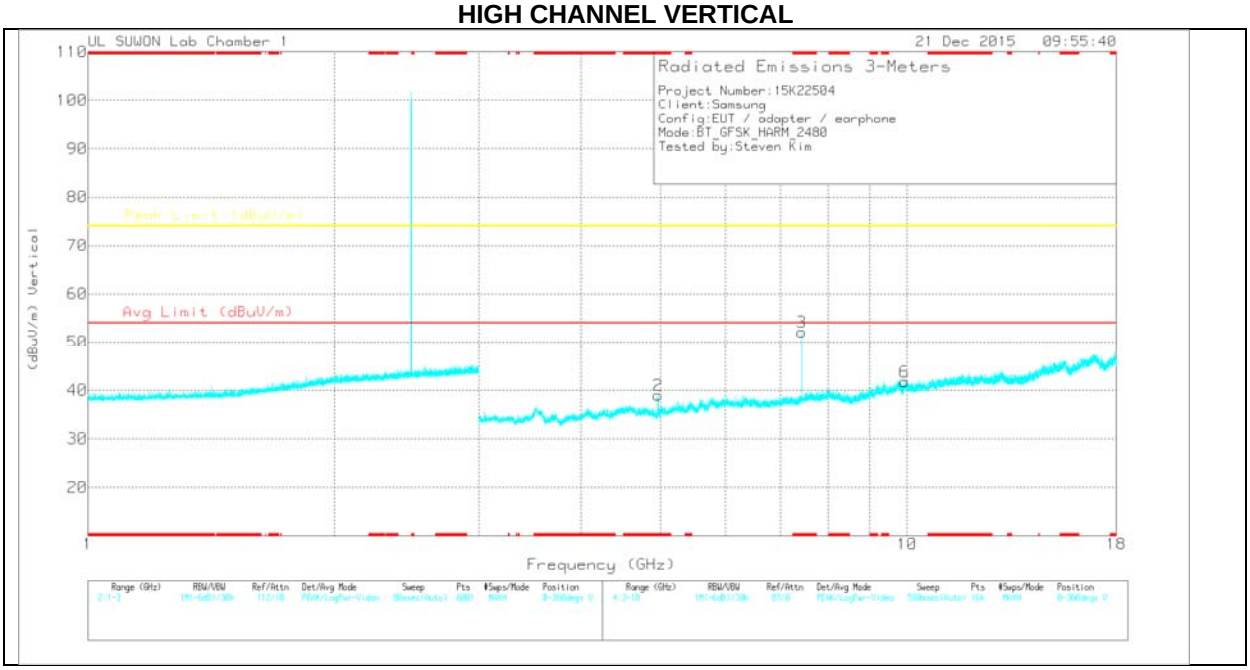
**HIGH CHANNEL HORIZONTAL**




**HIGH CHANNEL VERTICAL**




Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.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**HIGH CHANNEL DATA**

## Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 3117(0016 8717)_150 619 | Path_3 | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | * 4.959 | 38.15 | PK | 34 | -34 | 38.15 | - | - | 74 | -35.85 | 0-360 | 100 | H |
| 4 | * 7.441 | 38.28 | PK | 35.8 | -30.7 | 43.38 | - | - | 74 | -30.62 | 0-360 | 200 | H |
| 5 | 9.923 | 31.55 | PK | 37.4 | -27.1 | 41.85 | - | - | 74 | -32.15 | 0-360 | 100 | H |
| 2 | * 4.96 | 38.92 | PK | 34 | -34 | 38.92 | - | - | 74 | -35.08 | 0-360 | 100 | V |
| 3 | * 7.44 | 47 | PK | 35.8 | -30.7 | 52.1 | - | - | 74 | -21.9 | 0-360 | 100 | V |
| 6 | 9.92 | 31.5 | PK | 37.4 | -27.2 | 41.7 | - | - | 74 | -32.3 | 0-360 | 100 | V |

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

PK – Peak Detector

## Radiated Emissions

| Frequency (GHz) | Meter Reading (dBuV) | Det | 3117(0016 8717)_150 619 | Path_3 | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| * 4.961 | 48.2 | PK2 | 34 | -34 | 48.2 | - | - | 74 | -25.8 | 263 | 102 | H |
| * 4.96 | 37.64 | VA1T | 34 | -34 | 37.64 | 54 | -16.36 | - | - | 263 | 102 | H |
| * 7.44 | 47.16 | PK2 | 35.8 | -30.7 | 52.26 | - | - | 74 | -21.74 | 307 | 244 | H |
| * 7.44 | 37.34 | VA1T | 35.8 | -30.7 | 42.44 | 54 | -11.56 | - | - | 307 | 244 | H |
| * 4.96 | 49 | PK2 | 34 | -34 | 49 | - | - | 74 | -25 | 274 | 390 | V |
| * 4.96 | 39.32 | VA1T | 34 | -34 | 39.32 | 54 | -14.68 | - | - | 274 | 390 | V |
| * 7.44 | 50.36 | PK2 | 35.8 | -30.7 | 55.46 | - | - | 74 | -18.54 | 18 | 288 | V |
| * 7.44 | 44.46 | VA1T | 35.8 | -30.7 | 49.56 | 54 | -4.44 | - | - | 18 | 288 | V |

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

PK2 - KDB558074 Method: Maximum Peak

VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration


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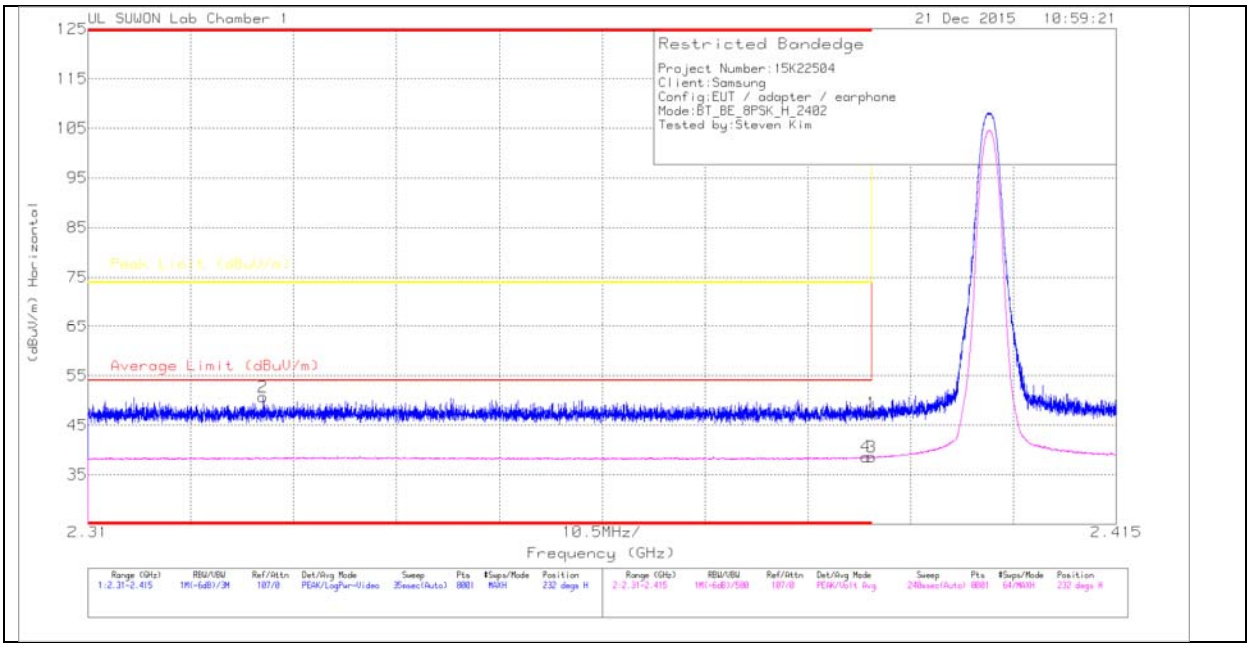
## 9.2.2. ENHANCED DATA RATE 8PSK MODULATION RESTRICTED BANDEDGE (LOW CHANNEL)

### HORIZONTAL PEAK AND AVERAGE PLOT




### HORIZONTAL DATA

Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 3117(00168717)_150619 | Path_2 | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | * 2.39 | 44.64 | Pk | 31.8 | -29 | 47.44 | - | - | 74 | -26.56 | 232 | 100 | H |
| 2 | * 2.328 | 47.98 | Pk | 31.7 | -29 | 50.68 | - | - | 74 | -23.32 | 232 | 100 | H |
| 3 | * 2.39 | 35.78 | V1TV | 31.8 | -29 | 38.58 | 54 | -15.42 | - | - | 232 | 100 | H |
| 4 | * 2.389 | 35.84 | V1TV | 31.8 | -29 | 38.64 | 54 | -15.36 | - | - | 232 | 100 | H |

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

Pk - Peak detector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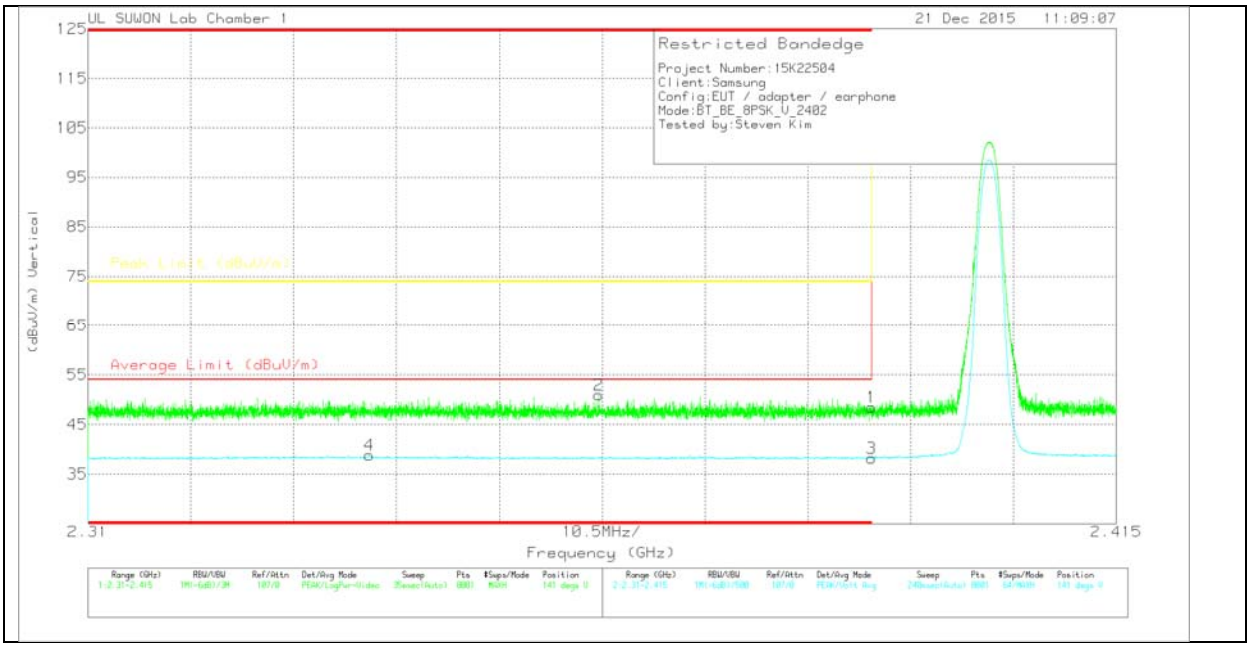
## VERTICAL PEAK AND AVERAGE PLOT




## VERTICAL DATA

Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 3117(00168717)_150619 | Path_2 | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | * 2.39 | 45.67 | Pk | 31.8 | -29 | 48.47 | - | - | 74 | -25.53 | 141 | 250 | V |
| 2 | * 2.362 | 48.19 | Pk | 31.8 | -29 | 50.99 | - | - | 74 | -23.01 | 141 | 250 | V |
| 3 | * 2.39 | 35.46 | V1TV | 31.8 | -29 | 38.26 | 54 | -15.74 | - | - | 141 | 250 | V |
| 4 | * 2.339 | 36.09 | V1TV | 31.7 | -29 | 38.79 | 54 | -15.21 | - | - | 141 | 250 | V |

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

Pk - Peak detector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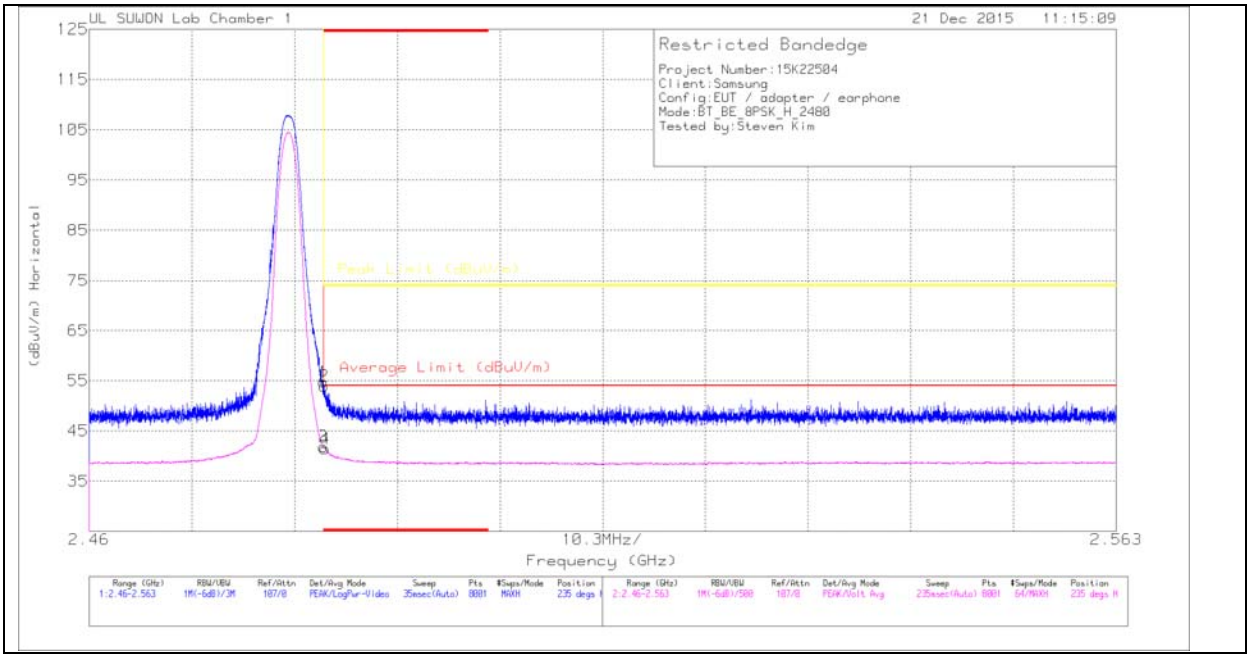
## AUTHORIZED BANDEDGE (HIGH CHANNEL)

### HORIZONTAL PEAK AND AVERAGE PLOT




### HORIZONTAL DATA

Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 3117(0016 8717)_150 619 | Path_2 | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | * 2.484 | 51.63 | Pk | 32 | -28.9 | 54.73 | - | - | 74 | -19.27 | 235 | 100 | H |
| 2 | * 2.484 | 50.82 | Pk | 32 | -28.9 | 53.92 | - | - | 74 | -20.08 | 235 | 100 | H |
| 3 | * 2.484 | 38.77 | V1TV | 32 | -28.9 | 41.87 | 54 | -12.13 | - | - | 235 | 100 | H |
| 4 | * 2.484 | 38.38 | V1TV | 32 | -28.9 | 41.48 | 54 | -12.52 | - | - | 235 | 100 | H |

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

Pk - Peak detector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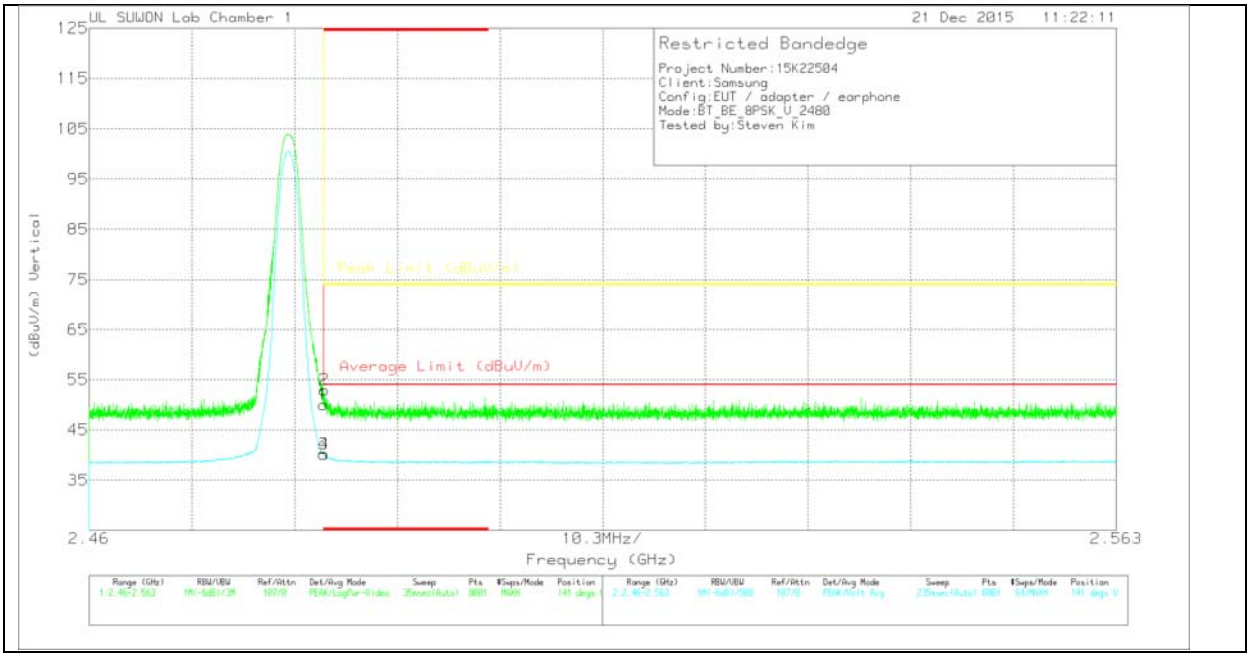
## VERTICAL PEAK AND AVERAGE PLOT




## VERTICAL DATA

Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 3117(00168717)_150619 | Path_2 | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | * 2.484 | 46.92 | Pk | 32 | -28.9 | 50.02 | - | - | 74 | -23.98 | 141 | 237 | V |
| 2 | * 2.484 | 49.87 | Pk | 32 | -28.9 | 52.97 | - | - | 74 | -21.03 | 141 | 237 | V |
| 3 | * 2.484 | 37.1 | V1TV | 32 | -28.9 | 40.2 | 54 | -13.8 | - | - | 141 | 237 | V |
| 4 | * 2.484 | 37.11 | V1TV | 32 | -28.9 | 40.21 | 54 | -13.79 | - | - | 141 | 237 | V |

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

Pk - Peak detector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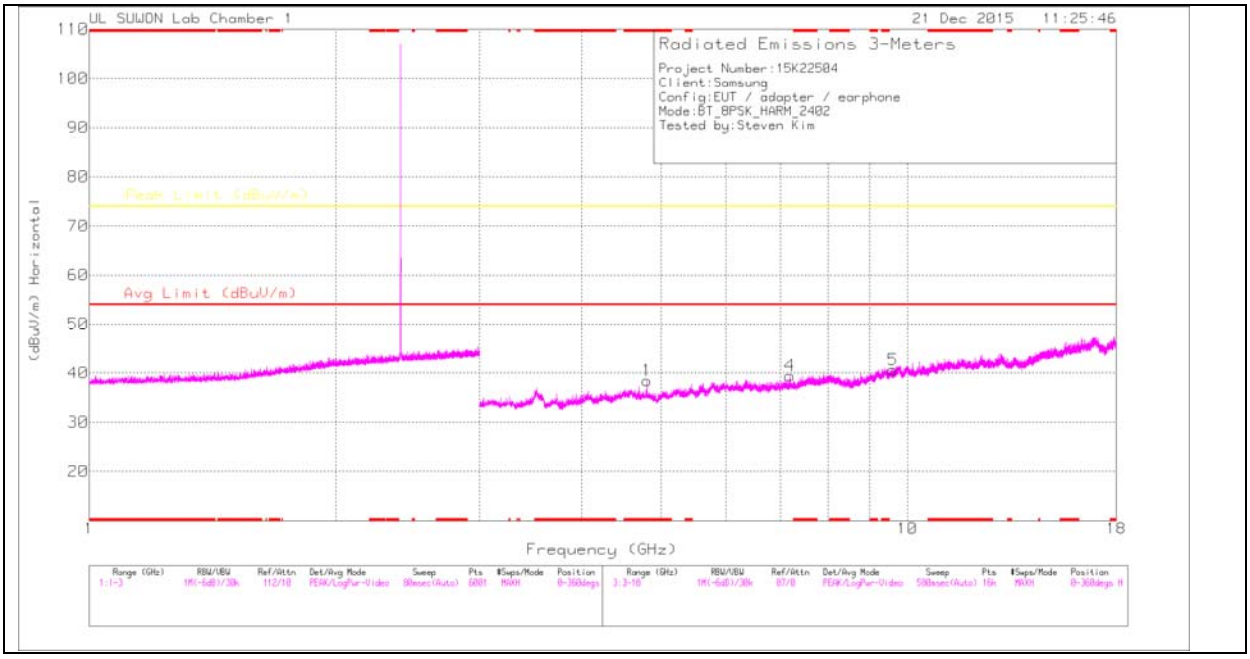
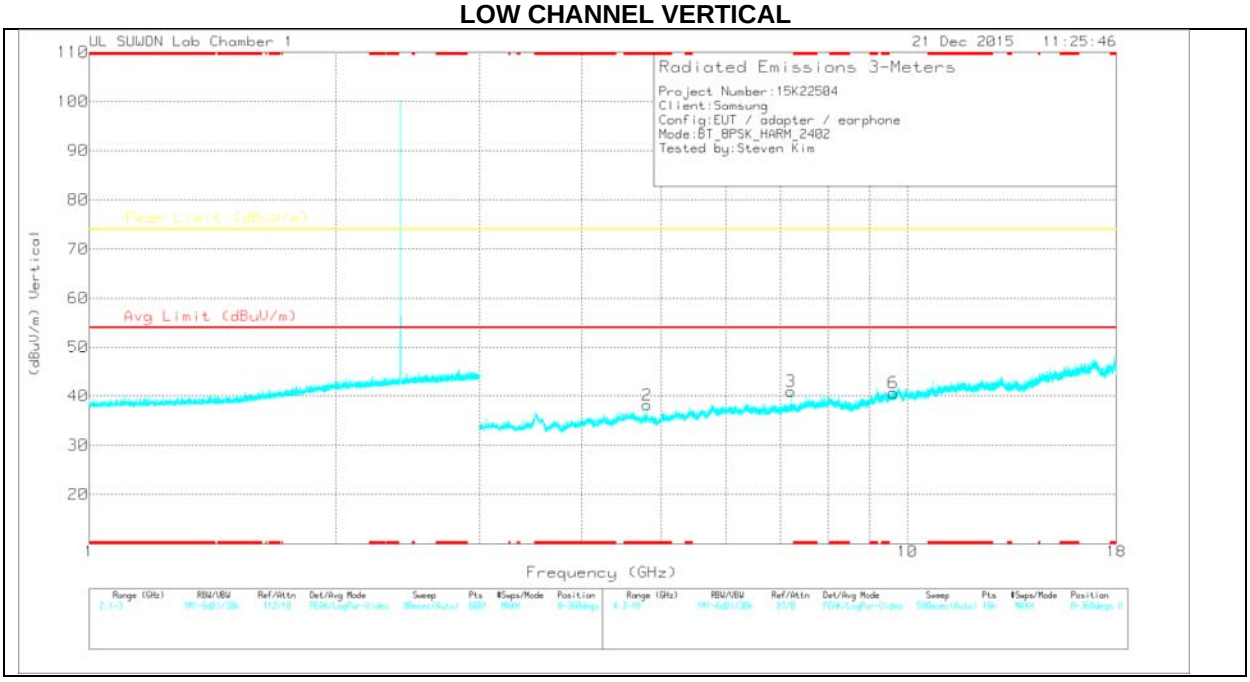
# HARMONICS AND SPURIOUS EMISSIONS

## LOW CHANNEL HORIZONTAL




## LOW CHANNEL VERTICAL




Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.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**LOW CHANNEL DATA**

## Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 3117(00168717)_150619 | Path_3 | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | * 4.804 | 38.27 | PK | 34 | -33.8 | 38.47 | - | - | 74 | -35.53 | 0-360 | 100 | H |
| 4 | 7.185 | 34.57 | PK | 35.7 | -30.8 | 39.47 | - | - | 74 | -34.53 | 0-360 | 100 | H |
| 5 | 9.604 | 30.95 | PK | 37 | -27.3 | 40.65 | - | - | 74 | -33.35 | 0-360 | 200 | H |
| 2 | * 4.804 | 37.97 | PK | 34 | -33.8 | 38.17 | - | - | 74 | -35.83 | 0-360 | 100 | V |
| 3 | 7.206 | 36.03 | PK | 35.7 | -30.8 | 40.93 | - | - | 74 | -33.07 | 0-360 | 100 | V |
| 6 | 9.609 | 30.93 | PK | 37 | -27.3 | 40.63 | - | - | 74 | -33.37 | 0-360 | 200 | V |

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

PK – Peak Detector

## Radiated Emissions

| Frequency (GHz) | Meter Reading (dBuV) | Det | 3117(00168717)_150619 | Path_3 | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| * 4.804 | 48.43 | PK2 | 34 | -33.8 | 48.63 | - | - | 74 | -25.37 | 209 | 102 | H |
| * 4.804 | 35.97 | VA1T | 34 | -33.8 | 36.17 | 54 | -17.83 | - | - | 209 | 102 | H |
| * 4.804 | 49.38 | PK2 | 34 | -33.8 | 49.58 | - | - | 74 | -24.42 | 253 | 214 | V |
| * 4.804 | 35.21 | VA1T | 34 | -33.8 | 35.41 | 54 | -18.59 | - | - | 253 | 214 | V |
| 7.206 | 44.92 | PK2 | 35.7 | -30.8 | 49.82 | - | - | 74 | -24.18 | 52 | 218 | V |
| 7.206 | 31.14 | VA1T | 35.7 | -30.8 | 36.04 | - | - | - | - | 52 | 218 | V |

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

PK2 - KDB558074 Method: Maximum Peak

VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration


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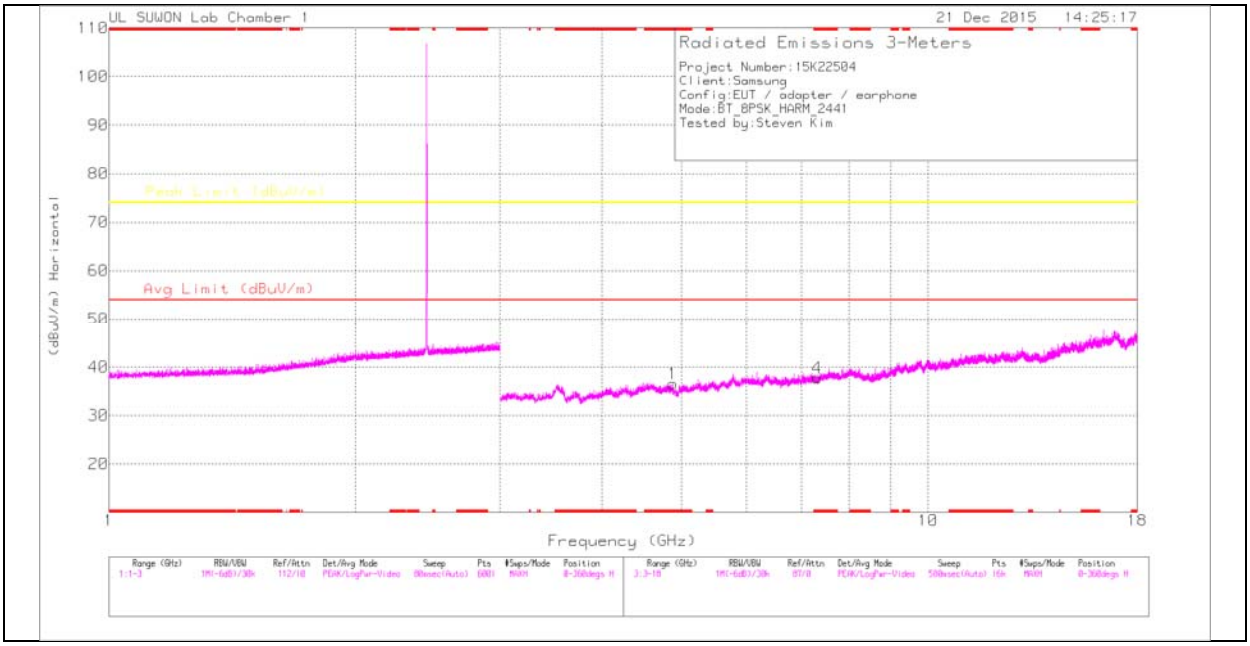
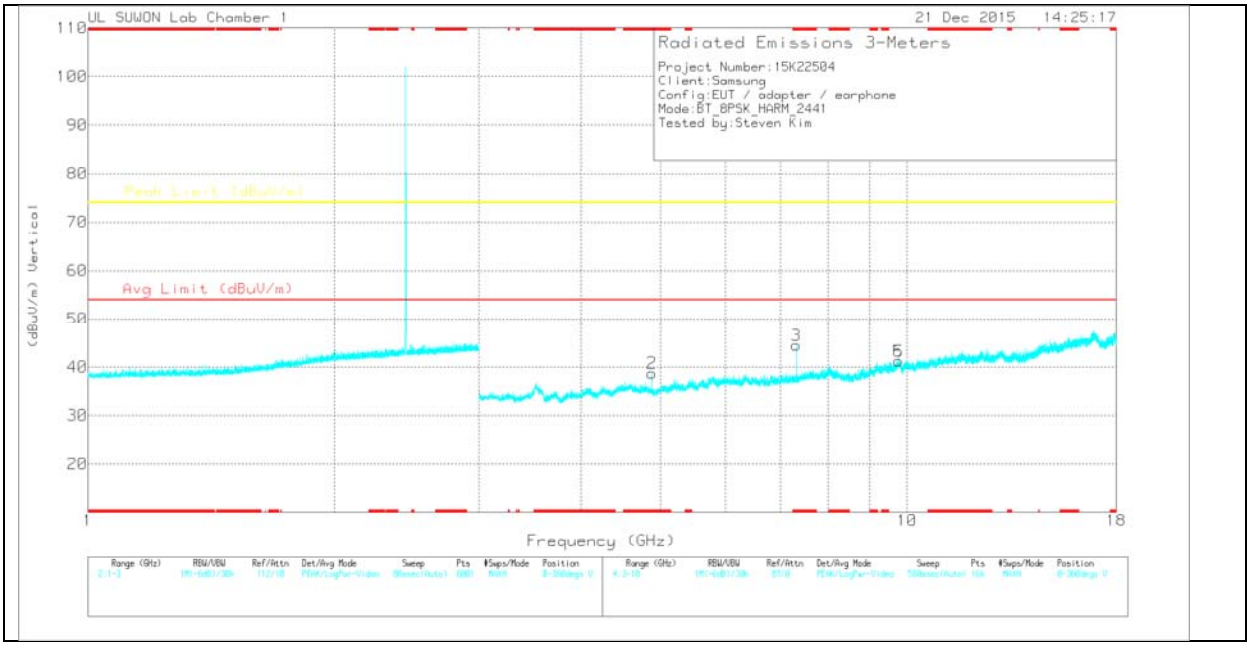
**MID CHANNEL HORIZONTAL**




**MID CHANNEL VERTICAL**




Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.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**MID CHANNEL DATA**

## Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 3117(0016 8717)_150 619 | Path_3 | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | * 4.881 | 36.52 | Pk | 34 | -34 | 36.52 | - | - | 74 | -37.48 | 0-360 | 100 | H |
| 4 | * 7.323 | 32.87 | Pk | 35.8 | -30.9 | 37.77 | - | - | 74 | -36.23 | 0-360 | 200 | H |
| 2 | * 4.881 | 38.78 | Pk | 34 | -34 | 38.78 | - | - | 74 | -35.22 | 0-360 | 100 | V |
| 3 | * 7.323 | 39.59 | Pk | 35.8 | -30.9 | 44.49 | - | - | 74 | -29.51 | 0-360 | 100 | V |
| 5 | 9.763 | 30.66 | Pk | 37.2 | -26.6 | 41.26 | - | - | 74 | -32.74 | 0-360 | 100 | V |
| 6 | 9.763 | 30.66 | Pk | 37.2 | -26.6 | 41.26 | - | - | 74 | -32.74 | 0-360 | 100 | V |

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

Pk – Peak Detector

## Radiated Emissions

| Frequency (GHz) | Meter Reading (dBuV) | Det | 3117(0016 8717)_150 619 | Path_3 | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| * 4.882 | 48 | PK2 | 34 | -34 | 48 | - | - | 74 | -26 | 125 | 376 | V |
| * 4.882 | 35.31 | VA1T | 34 | -34 | 35.31 | 54 | -18.69 | - | - | 125 | 376 | V |
| * 7.323 | 49.77 | PK2 | 35.8 | -30.9 | 54.67 | - | - | 74 | -19.33 | 357 | 100 | V |
| * 7.323 | 37.81 | VA1T | 35.8 | -30.9 | 42.71 | 54 | -11.29 | - | - | 357 | 100 | V |

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

PK2 - KDB558074 Method: Maximum Peak

VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration


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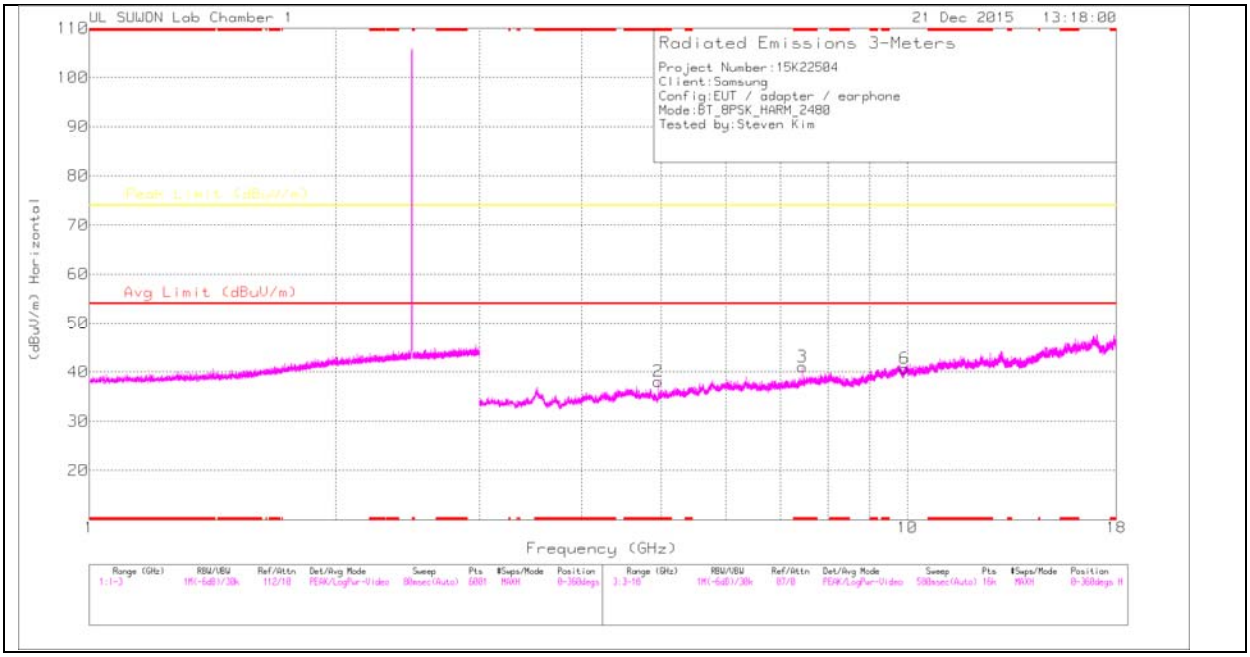
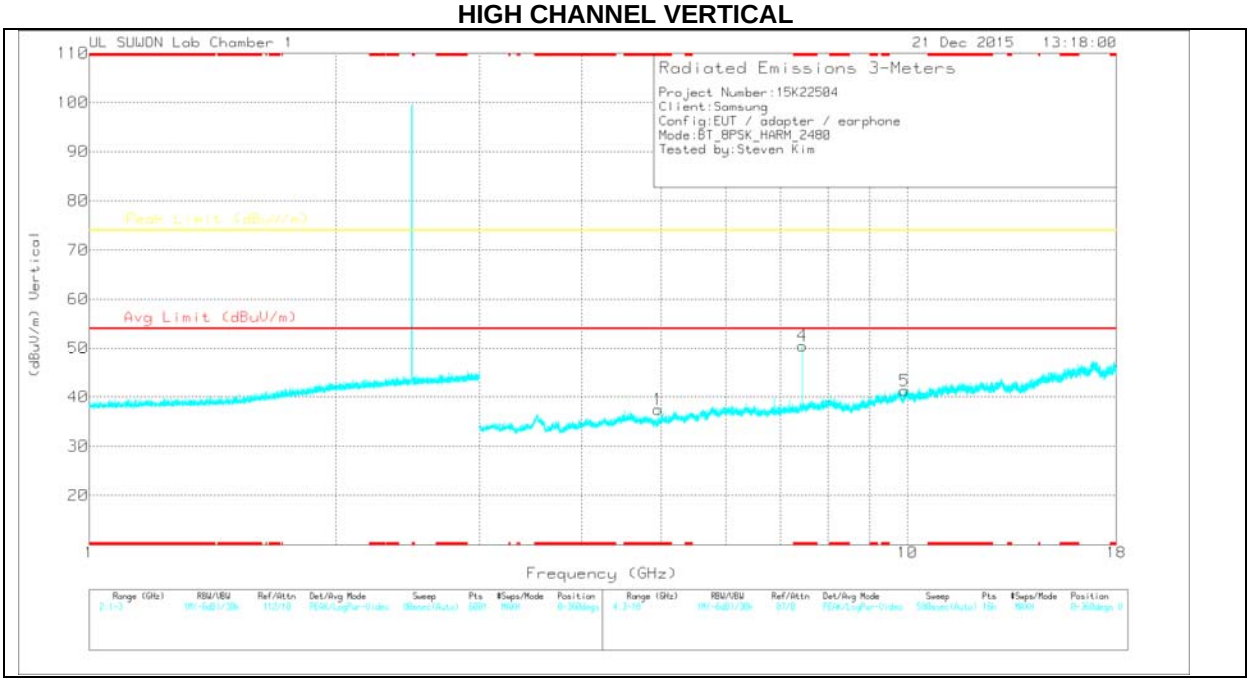
**HIGH CHANNEL HORIZONTAL**




**HIGH CHANNEL VERTICAL**




Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.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**HIGH CHANNEL DATA**

## Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 3117(0016 8717)_150 619 | Path_3 | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | * 4.959 | 38.12 | PK | 34 | -34 | 38.12 | - | - | 74 | -35.88 | 0-360 | 100 | H |
| 3 | * 7.44 | 35.98 | PK | 35.8 | -30.7 | 41.08 | - | - | 74 | -32.92 | 0-360 | 100 | H |
| 6 | 9.927 | 30.43 | PK | 37.4 | -27.1 | 40.73 | - | - | 74 | -33.27 | 0-360 | 100 | H |
| 1 | * 4.959 | 37.48 | PK | 34 | -34 | 37.48 | - | - | 74 | -36.52 | 0-360 | 100 | V |
| 4 | * 7.441 | 45.44 | PK | 35.8 | -30.7 | 50.54 | - | - | 74 | -23.46 | 0-360 | 100 | V |
| 5 | 9.92 | 31.08 | PK | 37.4 | -27.2 | 41.28 | - | - | 74 | -32.72 | 0-360 | 100 | V |

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

PK – Peak Detector

## Radiated Emissions

| Frequency (GHz) | Meter Reading (dBuV) | Det | 3117(0016 8717)_150 619 | Path_3 | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| * 4.96 | 47.47 | PK2 | 34 | -34 | 47.47 | - | - | 74 | -26.53 | 263 | 164 | H |
| * 4.96 | 34.35 | VA1T | 34 | -34 | 34.35 | 54 | -19.65 | - | - | 263 | 164 | H |
| * 7.44 | 46.89 | PK2 | 35.8 | -30.7 | 51.99 | - | - | 74 | -22.01 | 277 | 159 | H |
| * 7.44 | 34.35 | VA1T | 35.8 | -30.7 | 39.45 | 54 | -14.55 | - | - | 277 | 159 | H |
| * 4.961 | 47.47 | PK2 | 34 | -34 | 47.47 | - | - | 74 | -26.53 | 241 | 252 | V |
| * 4.96 | 35.64 | VA1T | 34 | -34 | 35.64 | 54 | -18.36 | - | - | 241 | 252 | V |
| * 7.44 | 54.26 | PK2 | 35.8 | -30.7 | 59.36 | - | - | 74 | -14.64 | 15 | 100 | V |
| * 7.44 | 43.64 | VA1T | 35.8 | -30.7 | 48.74 | 54 | -5.26 | - | - | 15 | 100 | V |

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

PK2 - KDB558074 Method: Maximum Peak

VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration


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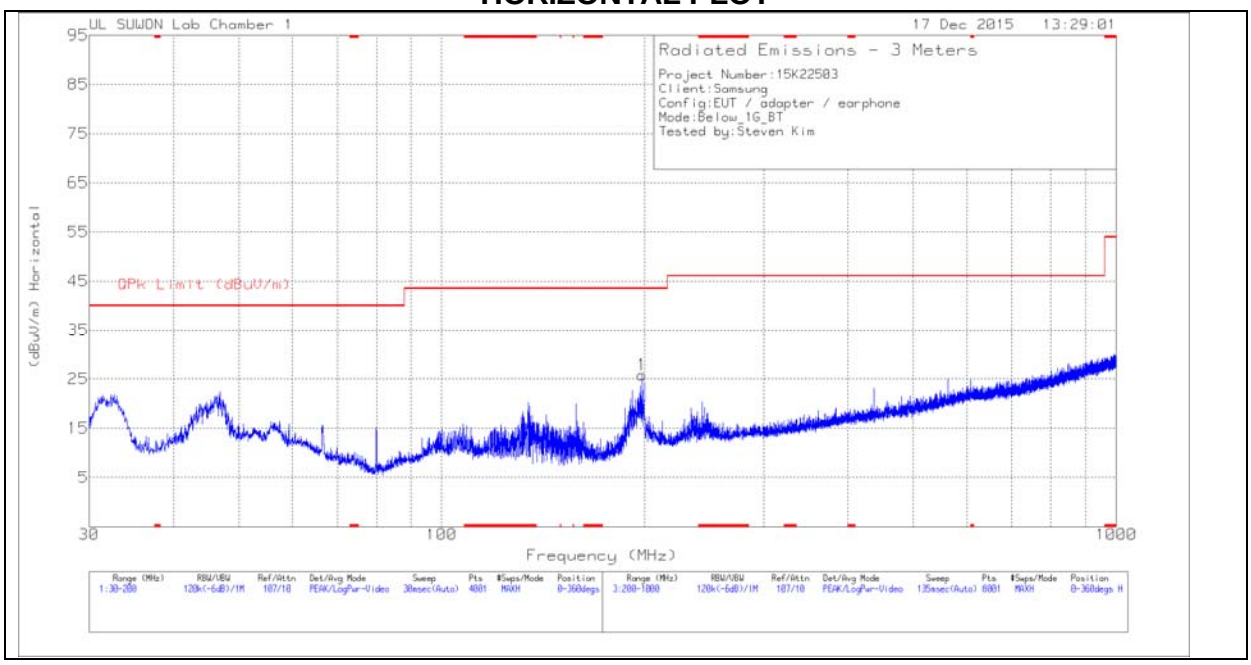
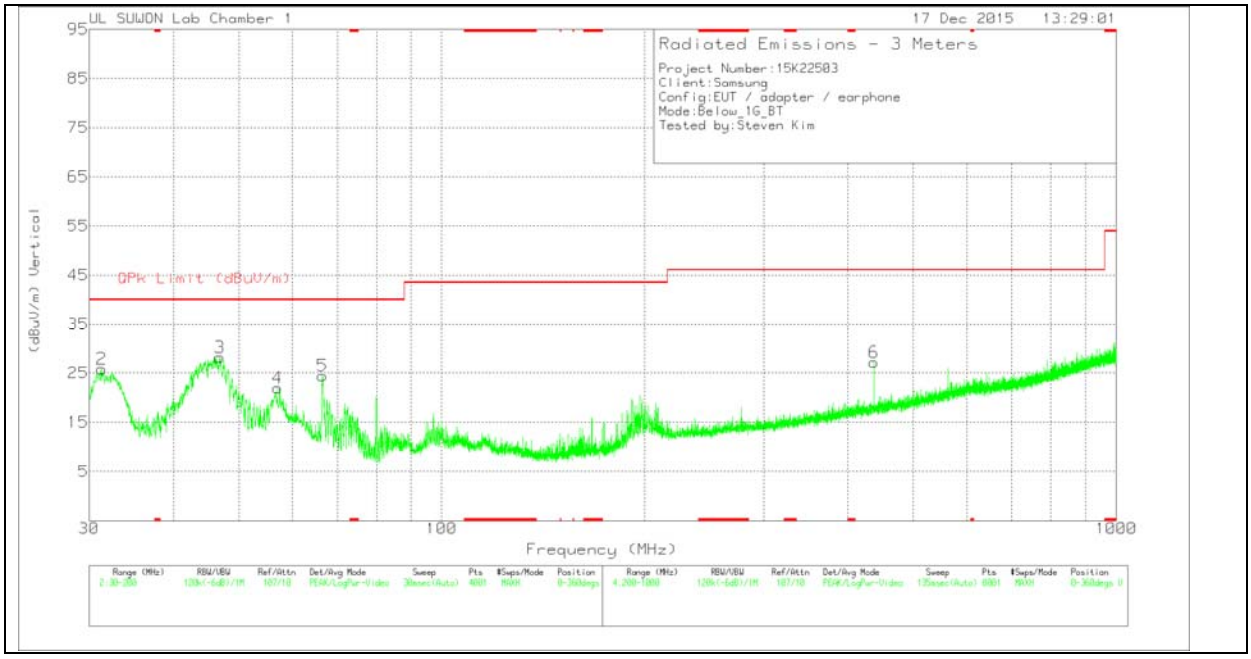
## 9.3. WORST-CASE BELOW 1 GHz

**GFSK SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, HORIZONTAL)**

### HORIZONTAL PLOT




### VERTICAL PLOT





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# BELOW 1 GHz TABLE

Trace Markers

| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det | VULB9163-750 | Bi-Log | Corrected Reading (dBuV/m) | QPk Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 198.3 | 42.82 | Pk | 11.2 | -28.2 | 25.82 | 43.52 | -17.7 | 0-360 | 100 | H |
| 2 | 31.3175 | 46.02 | Pk | 10.3 | -30.5 | 25.82 | 40 | -14.18 | 0-360 | 100 | V |
| 3 | 46.8725 | 44.67 | Pk | 13.7 | -30.2 | 28.17 | 40 | -11.83 | 0-360 | 100 | V |
| 4 | 57.0725 | 38.96 | Pk | 13 | -30 | 21.96 | 40 | -18.04 | 0-360 | 100 | V |
| 5 | 66.55 | 43.57 | Pk | 10.7 | -29.8 | 24.47 | 40 | -15.53 | 0-360 | 100 | V |
| 6 | 437.5 | 37.68 | Pk | 16.1 | -26.6 | 27.18 | 46.02 | -18.84 | 0-360 | 100 | V |

Pk - Peak detector


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# 10. AC POWER LINE CONDUCTED EMISSIONS

**LIMITS**

FCC §15.207 (a)

| Frequency of Emission (MHz) | Conducted Limit (dBuV) | |
|---|---|---|
| | Quasi-peak | Average |
| 0.15-0.5 | 66 to 56 * | 56 to 46 * |
| 0.5-5 | 56 | 46 |
| 5-30 | 60 | 50 |

* Decreases with the logarithm of the frequency.

**TEST PROCEDURE**

The EUT is placed on a non-conducting table 40 cm from the vertical ground plane and 80 cm above the horizontal ground plane. The EUT is configured in accordance with ANSI C63.10.

The receiver is set to a resolution bandwidth of 9 kHz. Peak detection is used unless otherwise noted as quasi-peak or average.

Line conducted data is recorded for both NEUTRAL and HOT lines.

**RESULTS**


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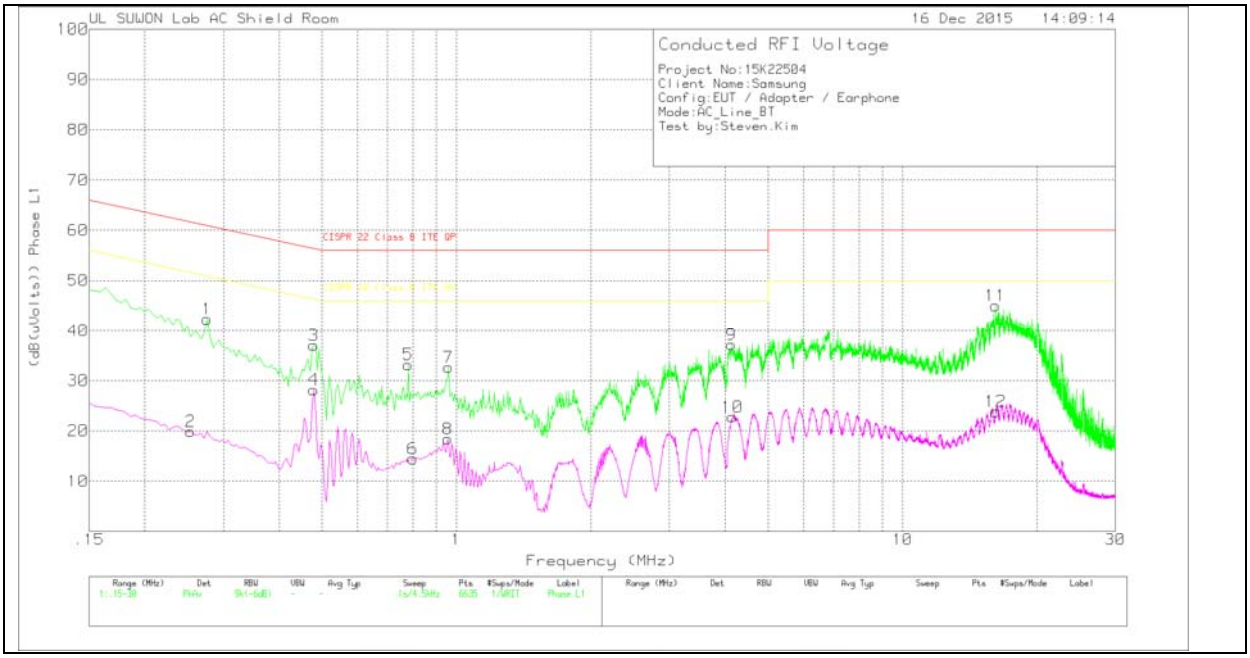
## 6 WORST EMISSIONS

### LINE 1 PLOT





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# LINE 1 RESULTS

## Trace Markers

Phase L1 .15 - 30MHz

| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det | 101837_with ex-cord_L1 | CE Shield Room | Corrected Reading (dB(uVolts)) | CISPR 22 Class B ITE QP | Margin (dB) | CISPR 22 Class B ITE AV | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | .276 | 32.56 | Pk | 9.8 | 0 | 42.36 | 60.94 | -18.58 | - | - |
| 2 | .2535 | 10.2 | Av | 9.7 | 0 | 19.9 | - | - | 51.64 | -31.74 |
| 3 | .4785 | 26.83 | Pk | 10.2 | 0 | 37.03 | 56.37 | -19.34 | - | - |
| 4 | .4785 | 18 | Av | 10.2 | 0 | 28.2 | - | - | 46.37 | -18.17 |
| 5 | .78 | 23.2 | Pk | 10 | 0 | 33.2 | 56 | -22.8 | - | - |
| 6 | .798 | 4.49 | Av | 10 | 0 | 14.49 | - | - | 46 | -31.51 |
| 7 | .96 | 22.74 | Pk | 9.9 | 0 | 32.64 | 56 | -23.36 | - | - |
| 8 | .9555 | 8.53 | Av | 9.9 | 0 | 18.43 | - | - | 46 | -27.57 |
| 9 | 4.137 | 27.27 | Pk | 9.8 | .1 | 37.17 | 56 | -18.83 | - | - |
| 10 | 4.155 | 12.89 | Av | 9.8 | .1 | 22.79 | - | - | 46 | -23.21 |
| 11 | 16.1745 | 34.63 | Pk | 10.2 | .2 | 45.03 | 60 | -14.97 | - | - |
| 12 | 16.1745 | 13.46 | Av | 10.2 | .2 | 23.86 | - | - | 50 | -26.14 |

Pk - Peak detector

Av - Average detection


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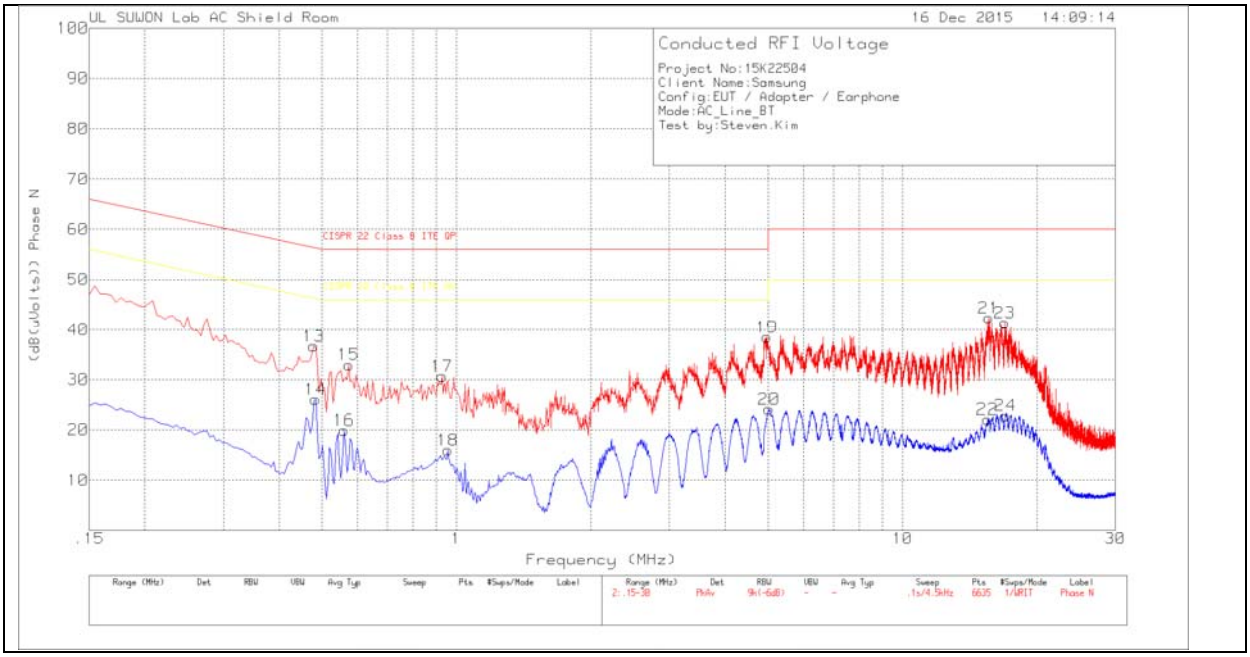
## LINE 2 PLOT





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# LINE 2 RESULTS

Trace Markers

Phase N .15 - 30MHz

| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det | 101837_with ex-cord_N | CE Shield Room | Corrected Reading (dB(uVolts)) | CISPR 22 Class B ITE QP | Margin (dB) | CISPR 22 Class B ITE AV | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|---|
| 13 | .4785 | 26.58 | Pk | 10.1 | 0 | 36.68 | 56.37 | -19.69 | - | - |
| 14 | .483 | 15.97 | Av | 10.1 | 0 | 26.07 | - | - | 46.29 | -20.22 |
| 15 | .573 | 22.86 | Pk | 10.1 | 0 | 32.96 | 56 | -23.04 | - | - |
| 16 | .5595 | 9.82 | Av | 10.1 | 0 | 19.92 | - | - | 46 | -26.08 |
| 17 | .9285 | 20.77 | Pk | 9.9 | 0 | 30.67 | 56 | -25.33 | - | - |
| 18 | .9555 | 6.08 | Av | 9.9 | 0 | 15.98 | - | - | 46 | -30.02 |
| 19 | 4.9695 | 28.58 | Pk | 9.8 | .1 | 38.48 | 56 | -17.52 | - | - |
| 20 | 5.019 | 14.21 | Av | 9.8 | .1 | 24.11 | - | - | 50 | -25.89 |
| 21 | 15.6165 | 31.81 | Pk | 10.4 | .2 | 42.41 | 60 | -17.59 | - | - |
| 22 | 15.4905 | 11.52 | Av | 10.4 | .2 | 22.12 | - | - | 50 | -27.88 |
| 23 | 16.9485 | 30.79 | Pk | 10.4 | .2 | 41.39 | 60 | -18.61 | - | - |
| 24 | 17.0205 | 12.26 | Av | 10.4 | .2 | 22.86 | - | - | 50 | -27.14 |

Pk - Peak detector

Av - Average detection


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